

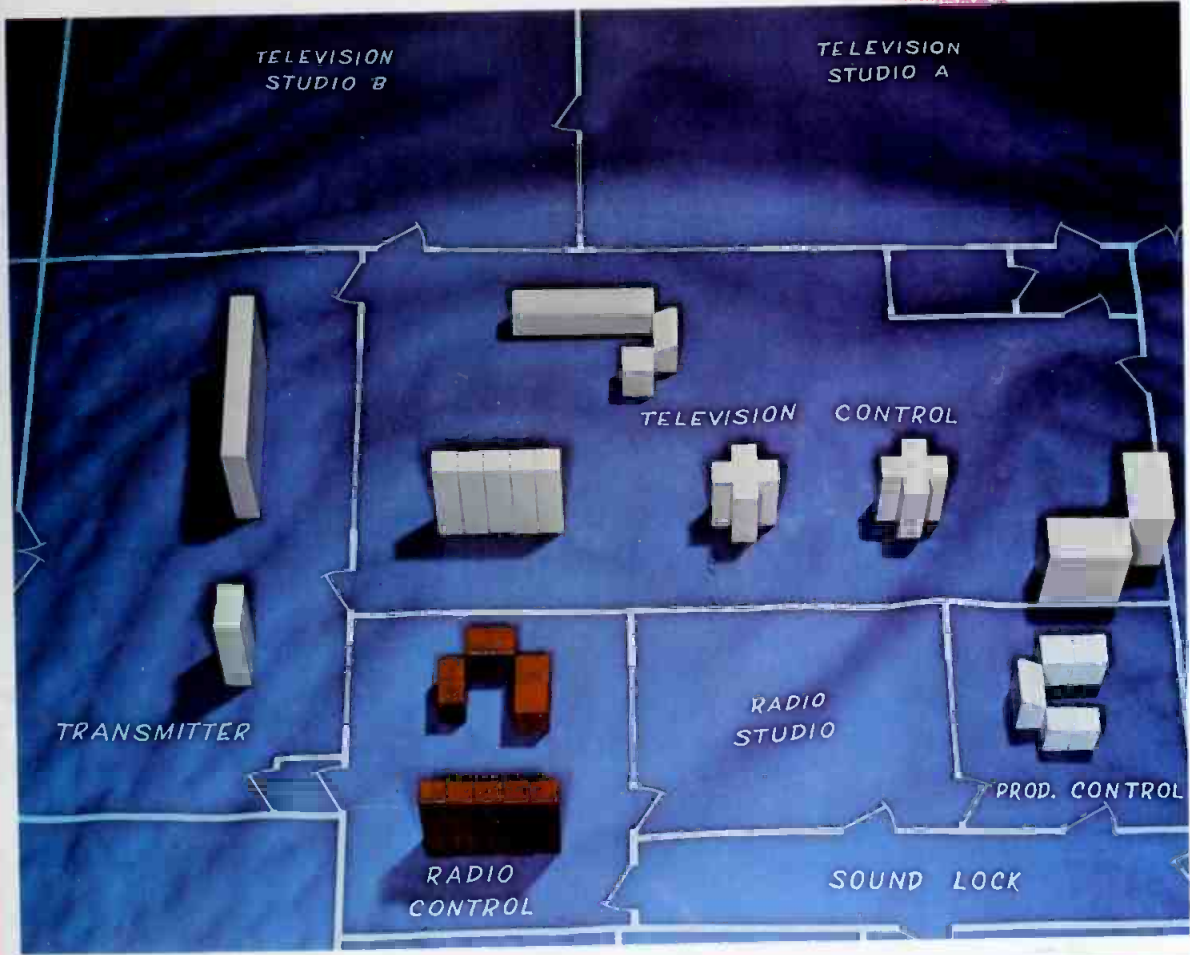
September, 1972 / 75 cents

# BROADCAST **engineering**

the technical journal of the broadcast-communications industry

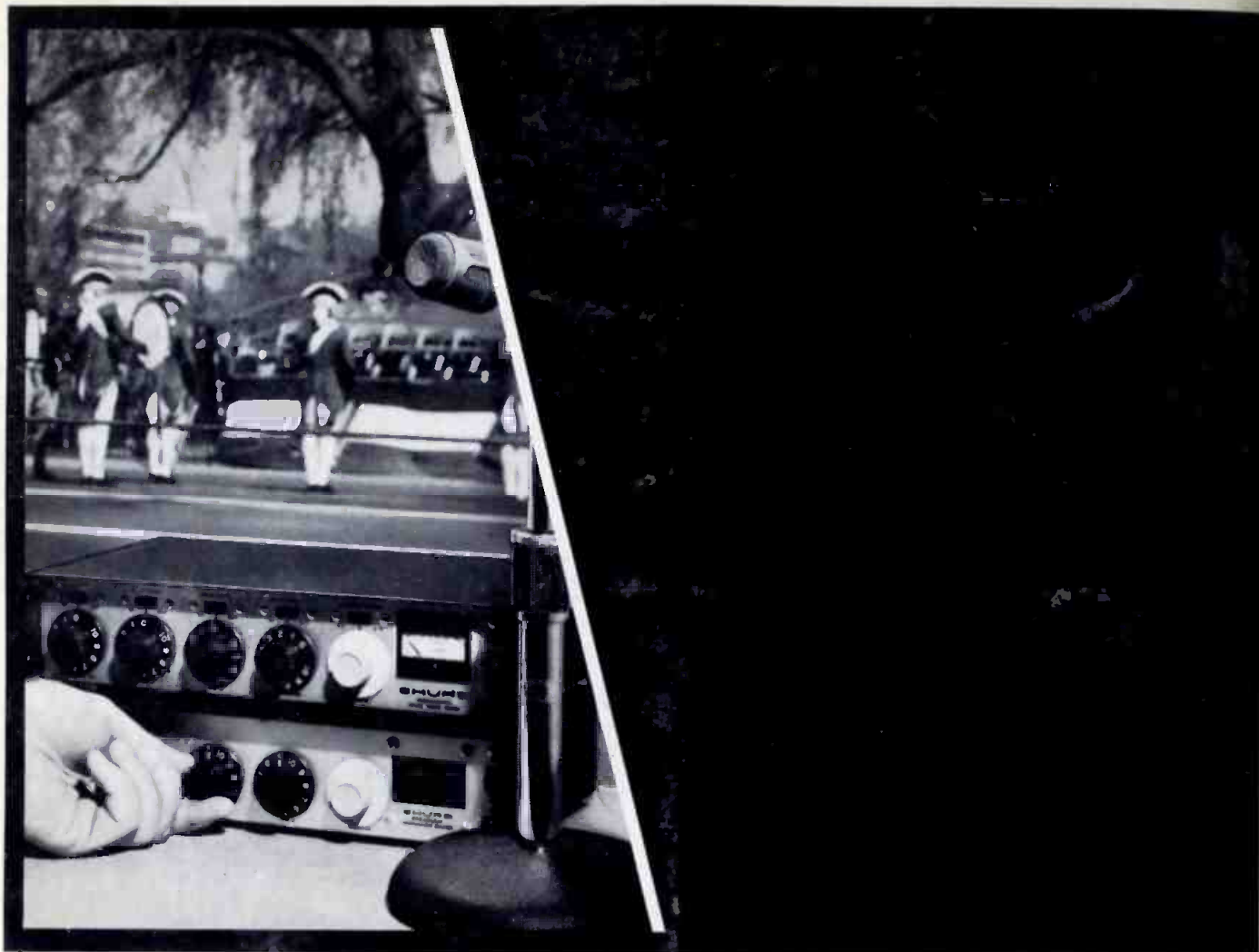
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## 1972 REFERENCE ISSUE

Buyer's guide section  
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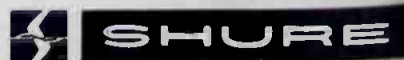


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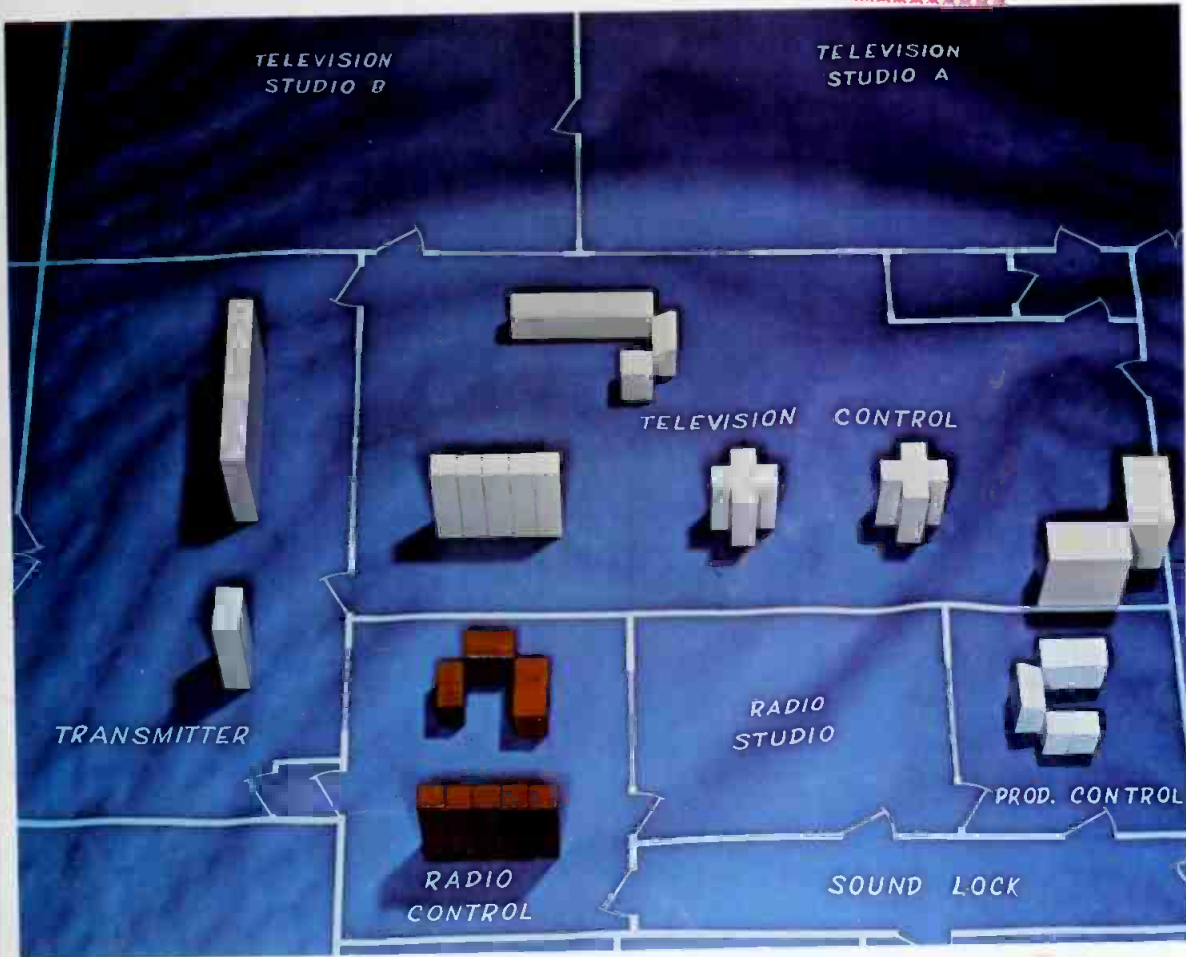
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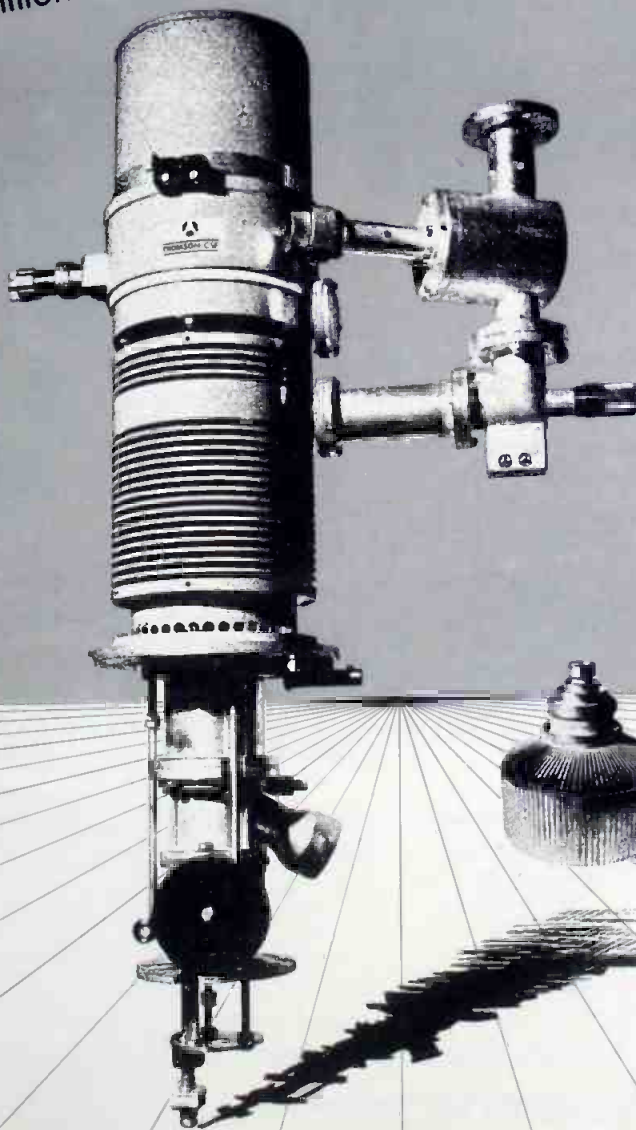


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# BROADCAST engineering®

The technical journal of the broadcast-communications industry

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- 32 **Update on The New Operator Rules.** Includes an easy-to-use chart showing old and new rules and when they apply for AM, FM, and Educational FM. Shows sample form that must be used by stations.

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- 38 **Networks and the Elections.** Details of some of the changes in network coverage of the Presidential elections and how they will affect engineering. **Robert Burns.**

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- 44 **FCC Bureau List.** A compilation of bureaus at the Commission, their officers, and their telephone numbers.

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- 49 **Broadcast Equipment Guide.** The most extensive buyer's guide to broadcast equipment ever published by BE. This edition includes about 500 equipment categories.

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- 80-D **Professional Association Review.** Background information and membership qualifications for several major associations.

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### ABOUT THE COVER

This month's cover depicts the theme of the Buyer's Guide. The extensive revisions and enlargement of the Guide will make it a real asset for your station files. Cover by Webb Streit.

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BROADCAST ENGINEERING is published monthly by Intertec Publishing Corp., 1014 Wyandotte Street, Kansas City, Missouri 64105. Telephone: 913 888-4664.

BROADCAST ENGINEERING is mailed free to qualified persons engaged in commercial and educational radio and television broadcasting. Non-qualified subscriptions in the U.S. are \$6.00 one year, \$10.00 two years, \$13.00 three years. Outside the USA add \$1.00 per year to cover postage. Single copy rate 75 cents. Back issue rate \$1.00. Adjustments necessitated by subscription termination at single copy rate.

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# One of the very best broadcast color monitors is on the shelf...waiting to brighten your day.

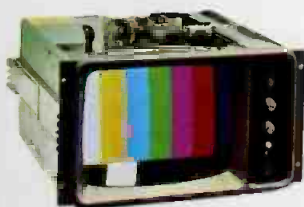
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Dual regulated power supplies hold picture stability with wide input voltage variations. Solid-state circuitry insures low maintenance and consistent performance over the long haul. Switchable long or short time-constant AFC adds to monitor usefulness for VTR alignment, and a front panel switch allows for selection of two video inputs. All critical set-up and adjustment controls are front-mounted for convenience.

The TCB-19 performs the way it's built, and it's built well. Check it out!



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# DIRECT CURRENT FROM D. C.

September, 1972

by Howard T. Head

## Environmental Approval To Be Required for Future Tower Construction

The Commission has proposed new rules intended to implement the National Environmental Policy Act of 1969. Under the new rules, all applications filed with the Commission involving the construction, abandonment, or razing of a structure would require a showing by the applicant as to local measures taken to determine environmental effects.

Reports submitted by the applicants would be reviewed by the Commission. In such a review, the Commission might require the submission of additional information or to consider alternative approaches. In any event, action on applications would be deferred until questions on environmental impact have been satisfactorily resolved.

## Cable Standards Committees Proliferate

The Electronics Industries Association (EIA) has formed a Cable TV Standards Committee. The new committee is a joint undertaking of EIA's Broadband Communications Section and the Consumer Electronics Group (television receivers). The mission of the committee is a study of the feasibility of standards for interaction between viewing devices and cable delivery systems.

The EIA committee is the latest addition to a growing list of industry, government, and professional study groups. Committees to study the problem of cable technical standards are now in operation at different levels (the FCC/Industry Cable TV Advisory Committee, The IEEE Coordinating Committee on Cable Communications Systems (CCCCS), as well as committees organized by NCTA, JTAC, and others.

## Pilot Sub-carrier Rules Proposed During Monophonic Transmissions

The Commission has proposed to incorporate into Part 73 of its rules specific requirements prohibiting the transmission of the stereo pilot sub-carrier at 19 kHz during periods of monophonic transmission. The new rules would continue to incorporate an existing "rule-of-thumb" which provides an exception during periods no longer than five minutes in duration (see 12/69 D.C.). In proposing the new rules, the Commission stated the transmission of the sub-carrier other than for actual stereo transmission is contrary to the intent of the Commission rules, serves no purpose, and can be misleading to listeners.



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Rapid corrections for film and slide density changes are yours with the BEI Auto Light Control. The servo operated neutral density wheel keeps the video level virtually constant with no change in color hue. Picture quality and color fidelity are optimized for both large and small image islands. And, it's compatible with any film chain camera.

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The Commission also has ruled against the transmission of discrete four-channel quadrasonic transmission without specific Commission authority in individual cases. The Commission emphasizes, however, that the ruling does not apply to "pseudo four-channel systems," which are not true quadrasonic systems but simply rely on manipulation of two-channel material to achieve simulated four-channel effects.

#### Deletion of Television Channels 70-83 Proposed for Receivers

The EIA has proposed that the Commission amend its all-channel receiver rules so as to restrict the requirement for all-channel reception capability to the band of Channels 2-69, inclusive. EIA urges that UHF tuner design will be simplified if the tuners are required to function only from Channels 14-69 rather than Channels 14-83.

The Commission has assigned the frequency spectrum formerly occupied by television Channels 70-83 to the land mobile radio services. However, approximately 1000 UHF translators continue to operate in this band, and under present plans will not be displaced until such a move is dictated by interference with the new land mobile stations.

EIA has proposed that these translators be moved to frequencies below Channel 70, a nice trick if they can figure out how to do it without disrupting established TV broadcast allocations.

#### Short Circuits

A Midwest daytime-only station on a Canadian clear channel has been fined for operating prior to sunrise without specific authorization...The Commission has assigned the bands 72-73 MHz and 75.4-76 MHz, adjacent to television Channels 4 and 5, respectively, for low-power classroom operation for training hard-of-hearing persons...Western Union has filed applications for three domestic satellites...The Commission is readying a proposal which would include master antenna television systems within the Commission's CATV jurisdiction if those systems import or originate programs...The 21st Annual IEEE Broadcast Symposium will be held at the Washington Hotel, Washington, D.C., September 21 and 22.

# The most complete line of AM, FM, and Audio products ... from Gates

**Producer recording mixer.** Professional-quality audio mixer designed to fill the void for production recording, dubbing, mixing and monitoring equipment. Inputs to four mixing channels.



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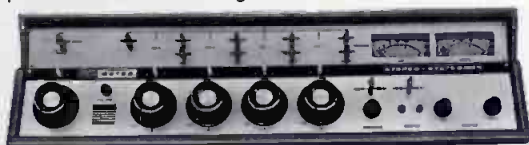


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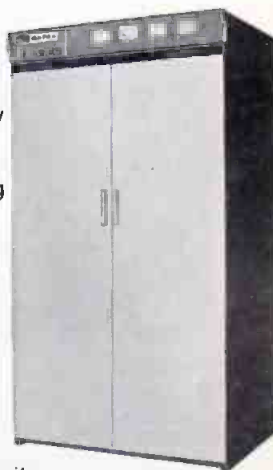
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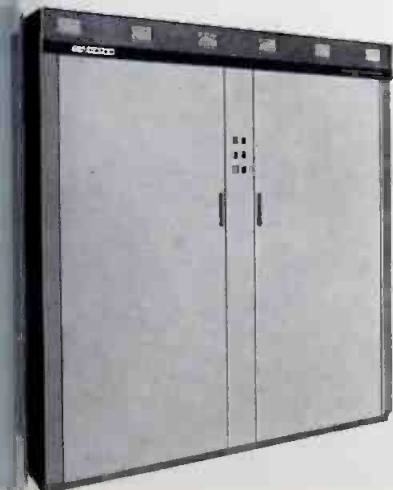


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For complete information, write International Sales Department, Gates Radio Division, Harris-Intertype Corporation, 130 East 34 Street, New York, New York 10016, U.S.A.



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## If You Don't Know, Ask

Dear Editor:

It is with great pleasure that I read *Broadcast Engineering*, and I look forward to comments on the articles and on engineering.

I have been very interested in articles in the past few months dealing with the title "Broadcast Engineer".

I am a staff announcer with a First Class License, and have been with this station for over two years. During my first year I worked with our engineer and learned many things. He left, and I was asked to keep the equipment up, do some maintenance, etc. And I was given the number of an engineer to call for help on the more serious problems.

Although I have been working under this arrangement for a year, I have learned a lot, but it is still difficult for me to take the reins. In the first few months of my new responsibility, the title of Chief Engineer was too fancy for me. I really did not know enough to warrant it.

I have been called a "90 day wonder", and I agree, I was. I still don't know it all, but I have some advice for those who may be in the same situation...or who may not have anyone to call for those serious technical problems.

The number one thing on the list is to be observant and ask questions. Don't be afraid to ask; what

may seem basic to someone else could be a breakthrough for you.

Visit other stations. Find out what equipment they use. They may even have some of the same problems you are experiencing. Meet with other engineers. I haven't found one yet who won't give you some pointers.

Join a chapter of a broadcast engineering technical society, if there's one near you. Read your equipment manuals, magazines serving the industry, and read any other articles dealing with the industry. Try your local library. They have good material. It may be old, but it may be just what you need to get results.

Sometimes when I have fixed what may be a minor thing to some people, it's an accomplishment to me. I used to stare at the transmitters and wonder what they are all about. Now I am able to understand what makes them function.

With a daytime AM and an 18 hour FM plus a 6 to 12 midnight airshift, engineering can be tough...but rewarding.

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Of particular interest is a unique "Poly-Dimensional" cabinet. This series, styled to blend with other consoles and cabinets offered in this system, is available in standard sizes that may be used individually or stacked. Readily modified to non-standard sizes in height, width or depth.

The whole system is amazingly easy to apply and order.

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Delivery lead time averages 4 weeks.

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Yes, I agree, a chief engineer could be someone who is competent in his field, but I do think there is room for us "learners". Remember - when the ship sails smoothly, you're just another member of the crew. But when the sea gets rough, Mother, Your It!

I give my thanks to those chief engineers who have helped me.

Bill Kloop  
WIXK AM/FM  
New Richmond, Wis.

**Editor's Note:** It takes courage to be so honest about your profession. And in the small market stations it is not unusual to find air talent with a First. Trouble is, in too many cases - and this is not limited to small market stations - there are overlooked but nonprofessional engineer-operators. These stations rely on contract engineers every time something breaks down.

The feeling in many engineering quarters is that quality sound is on roller coaster: it hits its peak after Proof and it goes steadily downhill until a major breakdown occurs for the next Proof is pulled.

Certainly, it is important for owners to hire both engineering and air talent. But the combination of talents is rare and the budget may be tight. This is why we have so many consultants and contract engineers today.

But it has become apparent to me that some states are closing the door on people who offer their talents under these titles. This magazine has expected the state and national professional associations to speak out on the general question of titles and licensing. Little has been forthcoming, but we keep looking for it.

We will continue to seek timely letters to the editor, but we suggest you send a carbon to the FCC and one to your association. If you are not currently a member of a professional association, we suggest you lead through those covered in this issue. Also, you may find it easier to affect changes in your local or state area by voicing your opinions within your state association. And when in your meetings you get around to it, why not discuss how

(Continued on page 10)

another  
brand  
new



member



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Here are the newest members of the AEL Advanced Equipment Line with the answer to efficient, economic Class A operation (up to 3kw ERP).

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## Letters To The Editor

(Continued from page 9)

and where we get our engineering talent today. Among the types and titles of engineers today, what kinds of educational experiences are usually tied to what kinds of titles?

The Editor

## Stations Seek Equipment Protection

The following letter is one more important chapter in the continuing effort to protect your facility and equipment from burglars and vandals. The more **BE** asks for comments, the more we find that this kind of letter does not represent an isolated example.

In the owners words, here's the problem that hit KOLA and the way he hopes to keep it from happening again.

I read your article about Radio

Station KSST, in Sulphur Springs, Texas. The same thing happened to our station January 5, 1970, 11:05 PM. We were on the air at the time when our transmitter was stolen.

The transmitter is remote controlled and when they cut the wires to the remote control it took us off the air. So when we couldn't calibrate, we put the blame on the telephone company. When the telephone company checked the line (approximately a half hour later) they found it open at the transmitter.

It takes a half hour to get to the transmitter site, so that gave the thieves an hour to cut the wires and haul out what they could. They broke into the transmitter building first, and took what wasn't tied down (spare tubes, parts, etc. . .). Then they killed the power and started cutting wires. I had the transmitter completely retubed just one month before the burglary.

They had CB two way radios; two guys were at the studio watch-

ing to see when someone would leave to go up to the transmitter. Another four guys were on the hill lugging things out. I met them on the road coming down from the transmitter, but I never suspected anything. The traffic looked heavier than usual coming down from the transmitter for so late at nite, so I got the license plate number of the second car.

When I first entered the transmitter building, I thought that I was having a bad dream. I couldn't believe my eyes, the racks were empty and all spare parts were gone. Somehow I managed to call the California Highway Patrol, but it was out of their jurisdiction and the sheriff didn't know the way to the transmitter site. Finally after two hours wait, the sheriff arrived at the transmitter site. I was one number off the license plate, so they couldn't check it out.

I was up for three days (without sleep) working around the clock trying to get back on the air. I got spare parts for the transmitter from

### THE HEART OF A CITY



This VISCOUNT system installed in the centre of a Canadian city switches broadcast TV, CATV and microwave links.

The video switches are in standard 10 x 10 matrix units, enabling the system to be block-built or expanded after installation. The module includes input and output amplifiers and connectors, and address and reset circuits.

But each control is unique. This one features X-Y address with Select, Salvo, and Switched Memories. A solid state numerical display verifies each selection. The ENTER button puts selections into the Salvo Memory; the TAKE button operates the crosspoints. Other control systems are available; computer language address, binary coded decimal, touchdial or thumbwheel.

Study the specifications; small or large the VISCOUNT range of switchers can give you a great deal.

SWITCHING TIME	less than 500 nanosecs.
CROSSTALK	3.58 MHz -72dB
	6 MHz -66dB
	10 MHz -60dB
DIFFERENTIAL GAIN and PHASE	0.5%; 0.4°
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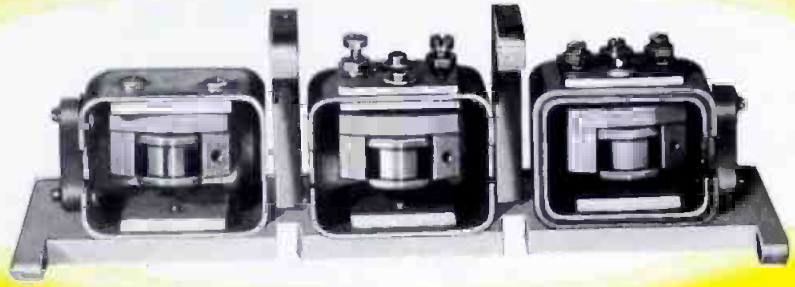
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# NAB Committee Will Hold Six Conferences

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License challenges and renewals, counteradvertising and other prime issues like consumerism and political broadcasting will be discussed along with the nuts and bolts problems of day-to-day station operations during six 1972 Fall Conferences sponsored by the National Association of Broadcasters.

A key member of the Senate or House of Representatives will be invited to address the luncheon in each Conference city.

Tentative plans announced by the NAB Study Committee call for separate Early Bird Radio and Television sessions followed by a joint meeting of all delegates during the morning hours at each of the one-day conferences. The joint Radio-TV afternoon session will feature a quiz on difficult practical matters facing station management and a rap session moderated by NAB President Vincent T. Wasilewski. Tentatively scheduled to follow is a question-and-answer session with a member of the Federal Communications Commission.

A separate Radio Management Development Seminar, sponsored by NAB's Small Market Radio Committee, will be held the afternoon before in each of the six Conference cities.

The series opens in Denver, Colo., on Tuesday, Oct. 30, moves to Las Vegas, Nev., on Thursday, Nov. 2, then switches to Boston, Mass., on Thursday, Nov. 9. The final three Conferences will be held in San Antonio, Tex., Tuesday, Nov. 14, in St. Louis, Mo., on Thursday, Nov. 16, and in Atlanta, Ga., on Tuesday, Nov. 21.

The agenda for the Early Bird Radio Session includes a discussion of radio regulation and other matters of major interest. Cable television is among subjects to be taken up at the concurrent Early Bird Television Session. Both begin at 8:00 a.m. local time.

The Joint Meeting will open at 9:30 a.m. with a twin-purpose discussion on broadcast legislation

and broadcast regulation. It will include such issues as license renewal, license challenges, consumer legislation, counter-advertising, political broadcasting, etc.

The morning program will also include a discussion by a sports personality of this important element of radio and television programming. A large market and small market broadcaster also will participate, outlining practices in sports programming at their stations.

The afternoon session will begin with broadcast operations quiz. After the questions have been asked and each participant has filled in his response, the correct answers will then be discussed by a staff or Board member. The open rap session will follow. FCC Commissioners are being asked to attend one of the six conferences for remarks and a question-answer period.

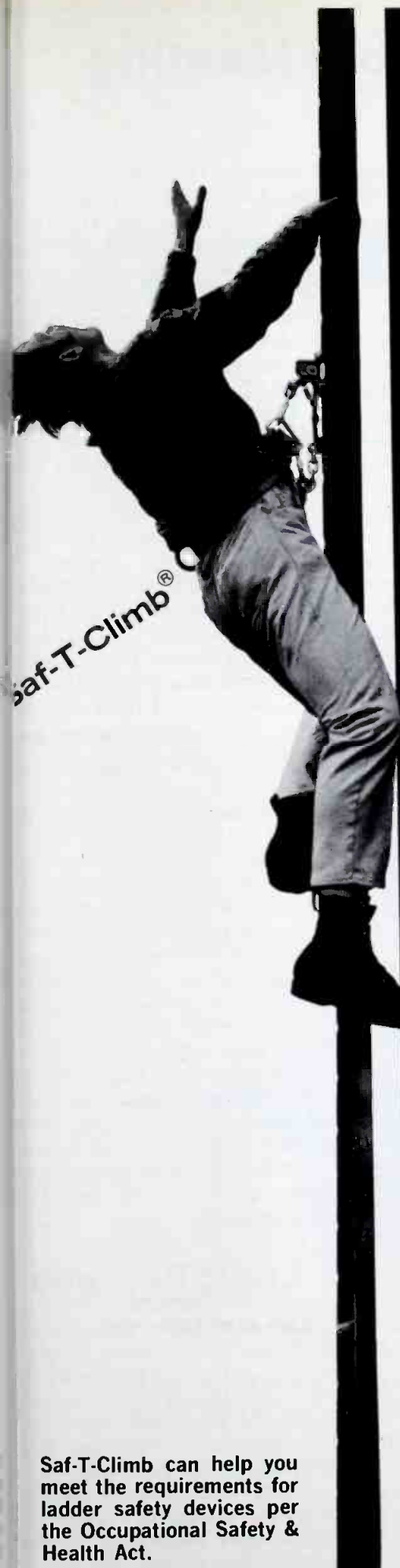
Sherril Taylor of CBS Radio, Chairman of the study committee, said: "Attendance at last year's conferences increased about 16 percent over the previous year. We believe this was due to the quality and variety of the program presented. This year we are aiming at another increase. We believe this will be the most informative single day a broadcaster can spend away from his station."

Each of the conferences will be preceded by a reception the evening before.

Registration for the Radio Management Seminar preceding each conference is being limited to 45 participants. The \$25 registration fee includes course material and a text book.

The purpose of the seminars is to provide radio managers the opportunity to learn more about the basics of management development and to assist each participant in the task of analyzing, developing, and refining his personal working philosophy of management.





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# SMPTE Ready For October Meeting

SMPTE Conference Vice-President Harry Teitelbaum, Hollywood Film Co., and SMPTE Editorial Vice-President Richard E. Putman, General Electric Co., have jointly announced the names of committeemen who will put together the program and handle all the details of the upcoming SMPTE Technical Conference in Los Angeles.

The Conference is set for the Century Plaza Hotel, Oct. 22-27, 1972.

The appointment of Dr. Frank P. Brackett, Jr., Association of Motion Picture and Television Producers (AMPTP), as Program Chairman had been announced earlier. Working with Brackett will be Ralph Westfall, Eastman Kodak Co., as Associate Program Chairman, and Frank P. Clark,

AMPTP, as Chairman of the two-day (Thursday-Friday) Symposium on Communications Satellites and CATV.

Newly appointed topic chairmen, who bring together the papers for the technical sessions, are Winton Hoch, for Motion-Picture Studio Practices, Lighting, Exposure, etc.; Petro Vlahos, AMPTP, for Sound Recording and Reproduction; Julian D. Hopkinson, Agfa-Gevaert, Inc., for Photosensitive Materials for Motion-Picture and TV Practice; Fred J. Scobey, DeLuxe General, Inc. for Laboratory Practice; Paul H. Preo, Eastman Kodak Co., for Theater Presentation Practices; John H. Donlon, Technicolor, for Small-Format Films; and Melvin G. Sawelson, Consolidated Film Industries, for Television Systems and Editing.

The names of the Arrangements

Chairman Tony Bruno, Eastman Kodak Co., and the Exhibit Chairman Warren Strang, Holleywood Film Co., had been previously announced. Working under Bruno as Assistant Arrangements Chairmen are Don Henderson, Eastman Kodak Co., and Fred Detmers Technicolor.

Ed Burns, Eastman Kodak Co. is handling Hotel and Motel Arrangements; Dick Sullivan, Eastman Kodak Co., the Hotel Reservations; C. Carroll Adams III, the Public Address and Recording and Phil Singer, Agfa Gevaert, the Opening Films.

Jack Hall, Producers Service Co., is in charge of the Get-Together Luncheon; Don Kloepfel DeLuxe General Inc., heads up the Projection Committee, and Mrs. Anthony Bruno and Mrs.

*(Continued on page 16)*

## Mountain Prime Time Set

In amendments to Section 73.658(k), "Prime Time Access Rule", the FCC has redesignated the "prime time" hours in the Mountain zone as 6 to 10 p.m. local time instead of 7 to 11 p.m. (Docket 19475).

The new rule becomes effective October 1, 1972.

On October 6, 1971, the Commission granted the nine stations involved (three each in Denver, Phoenix and Salt Lake City) an option to redesignate 6-10 p.m. as prime time. None of the Salt Lake City stations changed their prime time hours resulting in frequent requests for waivers of the rule, "uncertainty, confusion, and some disruption," the Commission said. It stated that as long as one of the Salt Lake City stations remains on a 7-11 p.m. schedule, there will continue to be problems in the operation of the rule.

Most of the waiver requests from the Salt Lake City stations involved material preempting NBC's

Tonight show, and overruns of prime time network programs which occur outside of prime time in the Eastern and Central zones but fall within it in the Mountain zone for stations observing 7-11 p.m. as prime time. The 6-10 p.m. prime time would permit mountain time stations to carry this material outside of prime time without the



need to request waiver of the rules.

The Commission said that the majority of the parties directly involved supported the change to 6-10 p.m., with only the Salt Lake City and Denver CBS affiliates opposing the change and urging that the "option" be retained. Stating that the option arrangement wouldn't work any better in the future than it has in the past, the Commission said that 6-10 p.m. will minimize the problems since it represents a better approximation of what really are prime hours in the Mountain zone and responds more closely to prime-time scheduling practices.

## Logic Reprints

BROADCAST ENGINEERING now has a limited supply of reprints on the four-part series Digital Logic Basics written by E.S. Busby, Jr. The series started in the September 1971 issue and ended with the January 1972 issue.

If you would like to receive a copy free of charge, write to: The Editor, 1014 Wyandotte St., Kansas City, Mo. 64104.

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machine, a semi-automatic machine for putting the bus connector on a cable.

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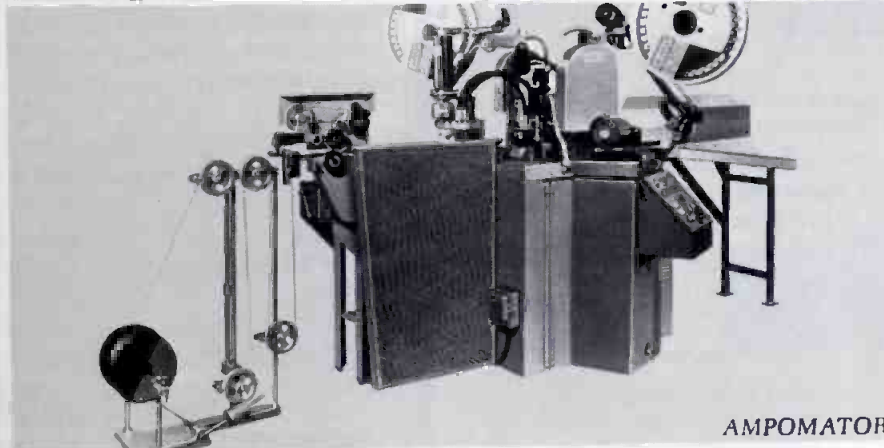
TAPEMATIC



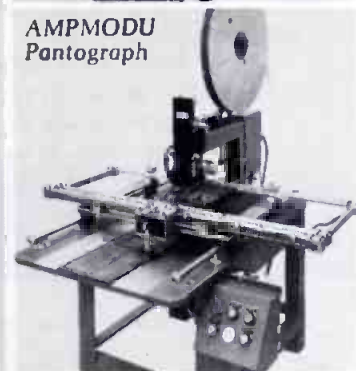
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Kenneth Mason are co-chairmen of the Ladies Committee.

Harry Lehman is Publicity Chairman; Carleton Wright, Agfa Gevaert, and Ken Erhardt, NBC, are handling the hospitality and foreign delegations; and Whiting, Jr., 3M Co., and Marvin Jacobs, are in charge of membership. Transportation is being taken care of by Scott Robertson, Eastman

Kodak Co.; and Mardi Rustam, American Film Industries, will be the Auditor, assisted by Russell F. Dubes.

The Conference will feature five days of technical sessions, plus a 92-booth equipment exhibit. For information on the Program, the equipment exhibit, registration and hotel reservations, write to SMPTE Conference, 9 E. 41st St., New York, N.Y. 10017.

## Predictions For the '70's

A wide-ranging look at current trends and future prospects for the economic growth of the U.S. Electrical/Electronics industries and the potential impact this growth might have on the overall U.S. economy is documented in a report now available from the IEEE. An ad hoc committee of industrialists who completed this comprehensive report detail their principal findings for the 1970's.

In summarizing its deliberations the Committee arrived at the following views for the decade of the 1970s—

1. The demand for engineers will be increasing at a rate of about 1 percent per year, a slower pace than in past years.

2. Supply and demand of electrical engineers will be reasonably in balance, perhaps with some short ages.

3. Government spending in the domestic areas will not offset decreases that have occurred or are expected in military and space programs until late in the decade, if then.

4. The electrical/electronics industry will show a 7.5 to 8.0 percent average annual growth, with some areas showing growth substantially above this amount.

5. There is a need to reduce the number of individual sources of data on manpower and characteristics of the industry, and to establish a more comprehensive and reliable data base to serve a multiplicity of users.

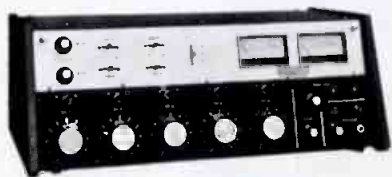
6. There is a need for aggressive governmental action to reduce trade barriers so that competition can be as open and fair as possible.

7. There is an enormous demand for capital that can best be met by a stable economy and incentives to investment.

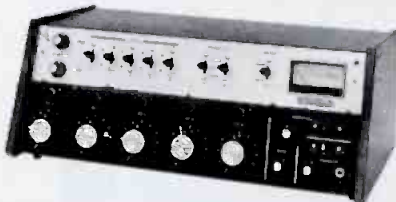
8. To maintain our technical leadership, more support for research and development, probably in the form of tax incentives, is needed. A level of R & D expenditures in relation to GNP, at least comparable to that of the mid 1960s, would be more appropriate.

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Model 8M20 Mono—20 HI/LO inputs into 8 mixers

Model 5S11 Stereo—11 pairs of HI/LO inputs into 5 mixers

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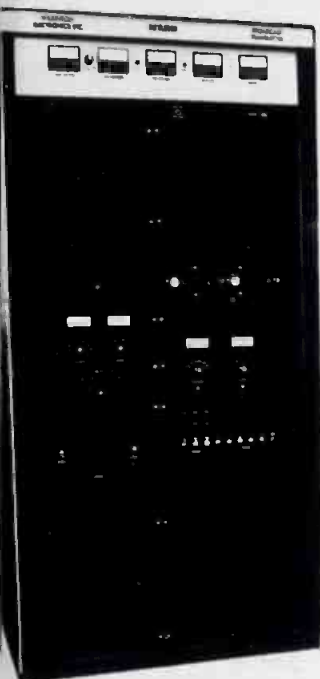
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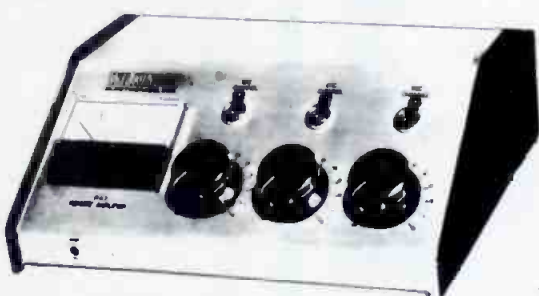
AM TRANSMITTERS - 250 W  
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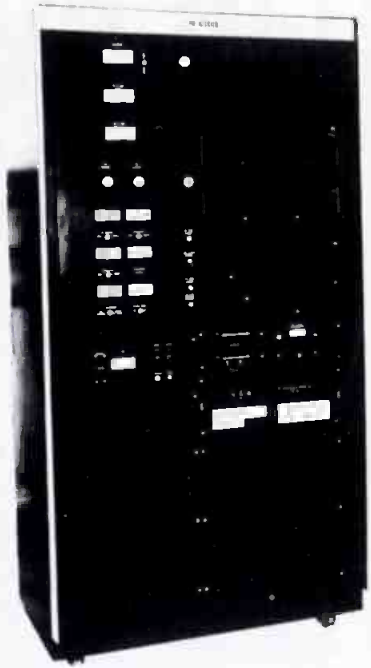
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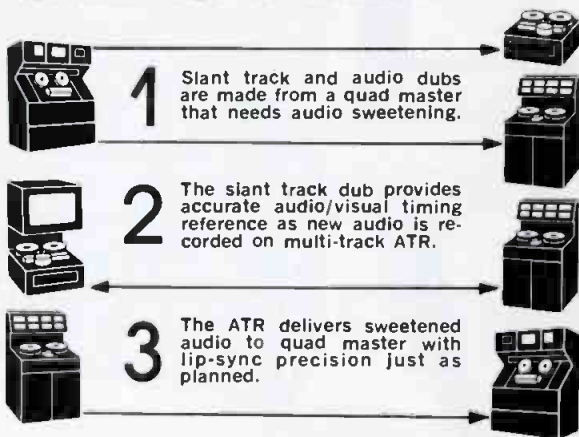
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In the audio-sweetening example above, the SMPTE Edit Code on the quad master has been recorded both on the slant track dub and the multi-channel audio tape. The Synchronizer then keeps every production step in exact timing keyed to final audio recording on quad master.

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## Commission Explains “Lowest Unit Charge”

Community Broadcasting Company, licensee of KRSN, Los Alamos, N. Mex., has been informed by William B. Ray, Chief of the Complaints and Compliance Division of the Broadcast Bureau, that the “lowest unit charge” provision of Section 315(b) of the Communications Act does not apply to the rates charged for political candidates where an advertiser is not charged for any of his announcements.

The text of the letter to KRSN follows:

This is in reply to your letter of June 13, 1972. You ask whether, if you give free announcements to certain students and other individuals to advertise, you are “committing [yourself] . . . to a zero rate for political candidates.” You state that the reason why you give free announcements is that “they need just a little help.”

It does not appear that the “lowest unit charge” provision of Section 315(b) of the Communications Act of 1934, as amended, is applicable to situations where an advertiser is not charged an amount for any of his announcements. This of course does not apply to situations where commercial advertisers receive free “bonus” spots based upon the number or type of announcements they have purchased.

## Weekly Equipment Lists

A new service, listing certified and type accepted equipment on a weekly basis has been initiated by the Technical Division of the Office of Chief Engineer. The listings will be distributed by the Public Information Officer.

Certification and type acceptance are two of the equipment approval procedures used by the Commission. Certification means that the manufacturer or user has filed with the Commission a report of measurements to show that the equipment in question complies with the technical specifications in the Commission's rules.

Type acceptance for equipment is granted after a review of representations and measurement data submitted to the Commission by the applicant shows that the equipment is capable of complying with the applicable rules.

## Reader Service Card

In This Issue

Is Good For

One Year

## Satellite Conference Set For November

The second International Conference on Digital Satellite Communications will be held at the UNES-DO Building in Paris, France, November 28-30. The meet will be sponsored by the International Telecommunications Satellite Consortium (INTELSAT).

About 400 people attended the first Conference held three years ago in London. In light of the increasingly rapid expansion of satellite technology, the second conference will be of even greater importance.

The conference will provide a forum for the exchange of information on at least the following topics: overall systems description; modulation systems; coding and error control; synchronization; transmission and channel effects; interference; base-band equipment; speech interpolation; demand assignment; signaling; operations; and economics.

For further information, contact: W.L. Pritchard, COMSAT Laboratories, Box 115, Clarksburg, Maryland 20734.

## Politics For Politicians

The FCC has told Joseph A. Califano, Jr., General Counsel of the Democratic National Committee, that there is no basis for his request for the disqualification of Chairman Dean Burch from the political broadcast phase of an inquiry into the Fairness Doctrine (Dock-19260).

The Commission made the ruling in a 5-0 vote in which Chairman Burch did not participate.

Califano had contended that Burch's service as chairman of the Republican National Committee from 1964 to 1965 would make it difficult for him to act objectively on a Democratic National Committee fairness inquiry request that the FCC provide an automatic right to respond to broadcast appearances by the president. The Republican National Committee opposed the proposal of the Democratic National Committee.

In a separate statement, Chairman Burch said that he had found no basis for disqualifying himself, but had submitted Califano's request to the full Commission for its consideration.

The Commission noted that Califano did not suggest that the Chairman had shown personal bias or prejudice toward any party participating in the proceeding or had taken any other action that could adversely affect the confidence of the public in the integrity of the government. The entire basis of Califano's request for disqualification was the political party position held by the Chairman before his appointment to the FCC.

"We see nothing in any of the authorities relied upon by you or in any relevant decision of the courts of which we are aware which would indicate that past political activity of a Commissioner is disqualifying in proceedings in which his and other political parties may be participants", the Commission told Califano.

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Circle Number 18 on Reader Reply Card

# Audio monitoring and monitoring distribution

By Pat Finnegan\*

All broadcast stations require audio monitoring to hear the on air product, and for auditioning and maintenance purposes. A good, reliable monitor system is similar to good test equipment when it can reproduce accurate results. While there are many reasons for audio distribution within a station, this article will concern itself only with audio monitoring and distribution of monitor signals.

## Classes of Monitoring

Monitoring can be divided into four general classes: control room, house, special and maintenance.

Control room monitoring includes the studios directly associated with the control room and its console. This monitoring is for the direct benefit of those involved in the production of the air product.

House monitoring is generally from the off air signal and distribution throughout the station at comfortable listening levels. The signal will be provided at many locations for all to hear and use according to their needs.

Special monitoring would include specific areas or circuits to be monitored, such as a network line or remote line, or perhaps the signal from a sister station.

Maintenance monitoring would encompass all the special techniques and check points used throughout the system.

## System Ingredients

Regardless of the size and complexity of the monitor system or systems in use, there are some basic ingredients common to all of them.

In all cases except headphone monitoring, there will be a monitor amplifier. The power output of this amplifier will be dictated by the amount of audio to be distributed

and at what levels. The control console monitor is usually a part of the console itself and its power output prescribed by the console manufacturer. This amplifier is basically designed to supply three or four speakers only in the control room and the studios associated with that console.

House monitor systems often make use of high power amplifiers and in some cases, there may be more than one amplifier. Amplifiers for special purpose monitoring, on the other hand, may be a low power unit to supply a single, small speaker.

Speakers will be needed and at

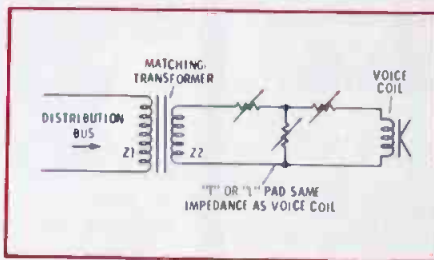


Fig. 1 The T or L speaker pad should be wired between the matching transformer and the voice coil so as not to disturb the bus. The pad impedance should be the same as the voice coil impedance.

many locations. The power handling ability of individual speakers will depend upon how much signal level will be needed at a given location. Many inexpensive speakers and cabinets are available and these have reasonable quality. Yet, there may be some locations, such as a client auditioning room, where a high quality speaker is desired.

Control of signal level at each speaker is most desirable. These controls can either be an operational control mounted on the front of the speaker cabinet or a set up control mounted out of sight at the rear of the speaker. Such controls permit the individual level to be adjusted at a speaker location without

affecting the remainder of the system. In a house monitoring system once the main amplifier level controls have been set, there should be little reason for readjustment.

The monitor in the control room will be used to monitor many things, so its level controls will be adjusted quite regularly. Even so, the speakers associated with the console should have individual controls at the speaker so they can be adjusted for studio listening levels. A comfortable level in the studio may be entirely too low for control room use. Speaker controls of both the "L" and "T" pad varieties are commercially available. The pad selected should match the speaker impedance and should be wired between the matching transformer and the voice coil.

Impedance matching throughout the system is important. The system must be matched, because a matched system will give an efficient transfer of power and will maintain the correct frequency response. This match must be across the entire speaker system. The amplifier output transformer will ordinarily provide a number of impedance taps. A simple system using one speaker would match or connect the speaker voice coil impedance to that impedance tap on the output transformer. As the system becomes more complex, the impedances become very important.

Aside from the fact speaker systems operate with high currents and transformers, they are the amplifier load and can be computed by using Ohm's law. Thus, in a one speaker system using an 8 Ohm voice coil connected to the 8 Ohm tap of the amplifier, the system is matched and an efficient transfer of power will take place.

If a second 8 Ohm speaker is connected in parallel with the first speaker, the combined load impedance is now 4 Ohms and a mis-

\*BE Maintenance Editor





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match has occurred. Adding two more 8 Ohm speakers in parallel with the original two, the load impedance on the amplifier is now 2 Ohms instead of 8 Ohms. The power transfer is now very inefficient.

Correction of the mismatch can be by either of two methods. First, move the connection or the output transformer to the 2 Ohm tap (if such is available) or add a matching transformer at each speaker.

The packaged systems often supplied with the console will include matching transformers in each speaker. The monitor output impedance of the console may be listed at 16 Ohms. This is generally set up for four speakers. You might conclude from these specifications that the tap on the monitor output transformer is set for 16 Ohms; instead, it is set for 4 Ohms. This anticipates that the amplifier will "see" four 16 Ohm speakers in parallel or 4 Ohms. Since most speaker voice coil impedances are 6 to 8 Ohms, it would require a matching transformer to translate the 6 or 8 Ohm to the 16 Ohm impedance.

Amplifiers designed for use in broadcast stations usually have a large number of impedance taps available, while those designed for Public Address work often have fewer taps. Small amounts of mismatch will not be noticeable as the amplifiers usually have enough reserve gain to make up for the loss caused by mismatch. Only when the system becomes more complex and there is little attention to

matching will the problems become serious. If the mismatch is very far off, the amplifier output tubes may be seriously overloaded, resulting in distortion, short tube life or short transistor life. At this point it might be well to say that tubes are more tolerant of an overload and still come back for more. Transistors are not so tolerant and will probably fail.

The distribution system is a very important ingredient in a complex speaker system. Any low impedance, power circuit will carry high current. This can easily be computed by Ohm's law. Thus, the resistance of the connecting wire rises in importance with the length of the wire. Power will be lost in long runs of high resistance wire.

As a matter of practice, when a very low impedance is to be used on a long wire run, the wire should be fairly heavy so as to reduce wire losses from the high current. An alternative method would be to use a higher impedance run and a matching transformer at the speaker. The higher impedance will produce a lower current circuit and the transformer will restore the circuit at the speaker. One can go as high as 600 Ohms if a transformer is available to match 600 Ohms to the voice coil. Go to higher impedances than 600 Ohms and other problems will arise, with frequency response due to capacity of the wire shunted across the signal.

### The 70.7 Volt System

The constant voltage system used in Public Address systems

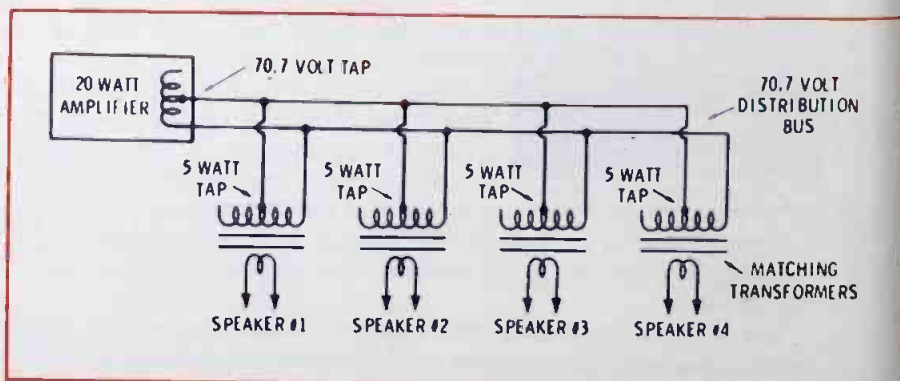


Fig. 2 Components of the 70.7 volt constant voltage bus. The power taps on each transformer are set for the power required at each speaker. The total of all the taps along the bus should equal the power rating of the amplifier.

can be used in a house monitoring system. In recent years, the 25 volt system has also come into use. Transformers in the constant voltage system are marked in power taps rather than impedance taps. Such markings allow the system designer a simpler method and reduce computation to a minimum.

The amplifier output transformer is marked in either 70.7 Volt or 25 Volt tap. The system is based on a constant voltage bus at the maximum output of the amplifier into a properly matched load. While most amplifiers are not operated at their maximum output power, some large systems may do so. Generally it is better to have some reserve in the amplifier rather than operate at its maximum rating. In the constant voltage system, the total speaker power load must be made equal to the maximum rated power output of the amplifier—even though the amplifier may not operate at its maximum power.

### Speaker Selection

Installation or design of a speaker distribution system is a simple matter, if you select components specifically marked for one of the constant voltage systems. Each speaker transformer will have its primary taps marked in power, while the secondary will have taps to match various speaker impedances.

In the system installation, simply connect the primary taps to the bus at the power level selected for that speaker. The only requirement is that the sum of all the

speaker power taps must equal the amplifier maximum rated power output.

For example, a 50 Watt rated amplifier and 10 speakers will be used in a system and each speaker will receive equal power. 50 Watts divided by 10 speakers will be 5 Watts to each speaker. The tap on each transformer will be set to the 5 Watt position. Unequal distribution of power can just as easily be made, just so long as the total power taps equal the maximum rated output of the amplifier. There is no need to worry about the actual power rating of the speaker transformer since there will be no tap higher than what it can actually handle.

You can still use a constant voltage system even though components are not on hand or readily available that are marked for the system. A little more computation is required, some good quality universal output to voice coil transformers of adequate power rating, and an amplifier with a suitable impedance tap. These are the same basic components that go into the constant voltage system with the difference of markings.

### A Constant Voltage System With Unmarked Components

Here is how to design a constant voltage system with "unmarked" components. The 70.7 Volt system will be used.

The first thing is the amplifier and its output transformer and as-

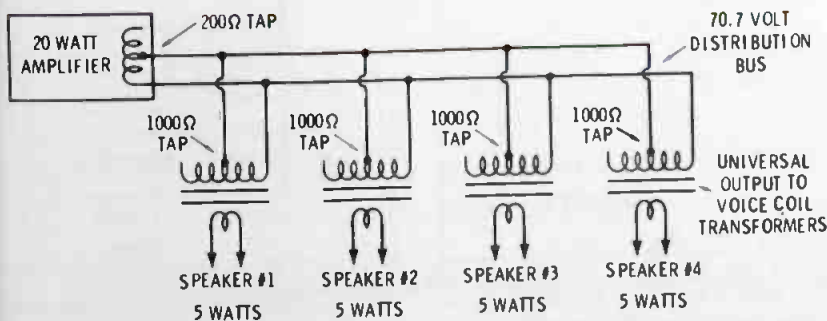


Fig. 3 A constant voltage distribution bus using unmarked components. The output impedance tap on the amp is found by computation. The primary impedance tap of each matching transformer also by computation. Otherwise, this system is identical to that shown in figure 2.

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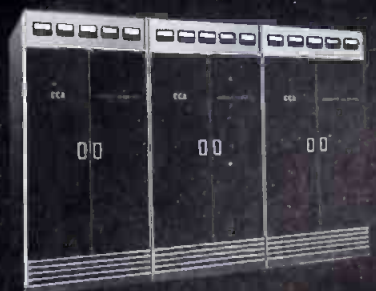
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suming the amplifier has no tap marked 70.7 or 25 Volt system. Compute the impedance tap required on the output transformer by the use of ordinary power formulas.  $Z = E^2/P$ . P is the amplifier maximum output power rating, E is the bus voltage, Z will be the impedance tap on the output transformer. For example, a 50 Watt amplifier and a 70.7 Volt line.  $Z = 70.7 \times 70.7 / 50 = 5,000$  (approx)/50 = 100 Ohms. Find a tap as near to 100 Ohms as possible.

You should note that since the design is for a constant voltage bus, the impedance will change directly with the amplifier power rating. In our previous example, if there is no 100 Ohm tap available, you can try for a 25 Volt system. The impedance for the 25 Volt system would be:  $Z = 25 \times 25 / 50 = 625/50 = 12.5$  Ohms. The amplifier would most likely have a tap very close to this, so a 25 Volt system could be used.

As was stated earlier, the impedance tap will vary with the amplifier output rating. To demonstrate this, assume a 25 Watt amplifier:  $Z = 5000/25 = 200$  Ohms for a 70.7 Volt system, and  $Z = 625/25 = 25$  Ohms for the 25 Volt system. It is obvious that there is no "standard" impedance for a constant voltage bus. A statement could be made that any amplifier of a given maximum power output rating will

have one impedance value for 70.7 Volt system, and one impedance value for a 25 Volt system.

In normal use, the voltage on the bus will certainly not be constant and may not be anywhere near the 70.7 Volt figure. The constant voltage figure is a maximum design figure, just as the amplifier maximum power output is a design figure. For example, a 100 Watt amplifier is supplying a 70.7 Volt bus. The output impedance tap will be 50 Ohms.

In operation, the amplifier gain controls may be set so that the amplifier is actually supplying only 50 Watts to the bus and load. By use of power formulas:  $E = \sqrt{PZ} = \sqrt{50 \times 50} = 50$  Volts. Thus, although the design is for a 70.7 Volt system, the bus voltage is actually only 50 Volts. In the computations 5,000 is used. This figure is easy to remember and work problem than 4998.49, which is the true square value of 70.7. The error is small enough to cause no problem in the system. The 25 Volt figure squares out evenly to 625.

Going back to our original system design, we now know that our 50 Watt amplifier needs a 100 Ohm output tap to supply a 70.7 Volt bus. Assume the amplifier does not have such an impedance tap, we can now design the speaker system. Also, assume that no constant voltage transformers are available

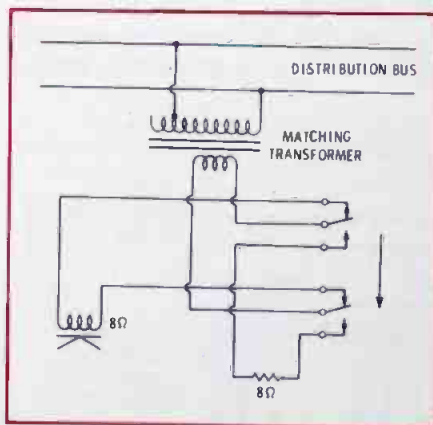


Fig. 4 A simple switch at a speaker location. The switch should be placed between the matching transformer and the voice coil. The switch substitutes a resistor equal in value to the voice coil impedance to keep a constant load on the amplifier.

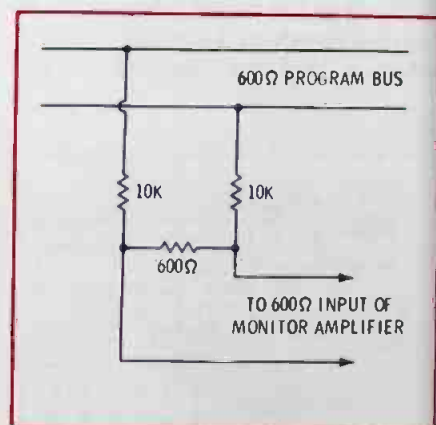


Fig. 5 A simple bridging connection to a program bus with fixed resistors. The low impedance input of the monitor amplifier will have no effect upon the bus. The values shown will drop the program level of the monitor about 20 dB.

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without ordering some, while there are a number of good quality universal output transformers available on the shelf.

Here again, we can use ordinary power formulas to arrive at the correct primary impedance taps on each transformer. We will use the same power formula as just used to find the output impedance of the amplifier transformer, except this time, the power figure in the formula will be the power desired in that speaker.

The impedance factor of the formula will be the primary tap of the transformer, while the voltage will be the bus voltage. Thus:  $Z = E^2/P$  or  $P = E^2/Z$ . Our system has a 50 Watt amplifier and there will be 8 speakers and there will be unequal power distribution. There will be (2) 10 Watt, (1) 7.5 Watt, (1) 2.5 Watt, (4) 5 Watt speaker locations. The total of this wattage distribution equals 50 Watts, the am-

plifier maximum rating.

Using the formula, the primary impedance tap for the 10 Watt speaker will be:  $Z = E^2/P = 5000/10 = 500$  Ohms. The 7.5 Watt speaker will be:  $5000/7.5 = 640$  Ohms, etc. Of course, if a 25 Volt system was to be used, the 25 Volt figure would be used instead of 70.7 Volts.

### Maintenance

**Control room system:** Speakers fed from the console monitor amplifier usually number only 3 or 4. These are located in the control room and studios. It is necessary that the studio speaker be muted when a microphone is opened in the studio, otherwise, there will be positive feedback. Relays normally do this muting and are located inside the console. When these speakers are muted by the relay, the relay disconnects the speaker and substitutes a resistance in its

place so that the load on the amplifier will remain constant. If they were not done, the level of the unmuted speakers would increase. Should it be necessary to replace one of these resistors for some reason, the replacement resistor should have a value equal to the speaker load impedance. This value would be the input value of the matching transformer, and not the voice coil impedance. Thus, if the input impedance of the transformer is 16 Ohms, the resistor should be 16 Ohms. Also, it should have a power rating equal to the speaker power rating.

**Switch Mute:** Sometimes it may be desirable to shut a speaker off completely in a studio. There may be times when someone is rehearsing and the air program would be a distraction. Many of the "T" and "L" pads for speaker use will not completely shut the speaker off. A simple switch arrangement can be built at the speaker location which will completely mute the speaker. The switch should substitute a resistor of the proper value and power rating in place of the speaker.

**Jacks:** If the individual studio speakers do not have a cutout switch in the studio, the speaker input leads should be routed through a jack field. Should the mute relay become defective for any reason during a program, the patch cord plugged into the jack will open the speaker. A plug with a terminating resistor could be used also to plug into the jack and terminate the amplifier, so the amplifier load would remain constant.

**Muting relays:** These will give problems when the contacts become dirty. The sound in the speaker can become intermittent or distorted. Contacts should be cleaned with a small relay burnishing tool if the monitor amplifier cannot be turned off. If the amplifier cannot be turned off, a piece of paper run between the contacts will often do the job. It is especially important with transistors in the output stages that the output does not become shorted. This can blow the transistors.

**Other systems:** There may be situations where a separate monitor is

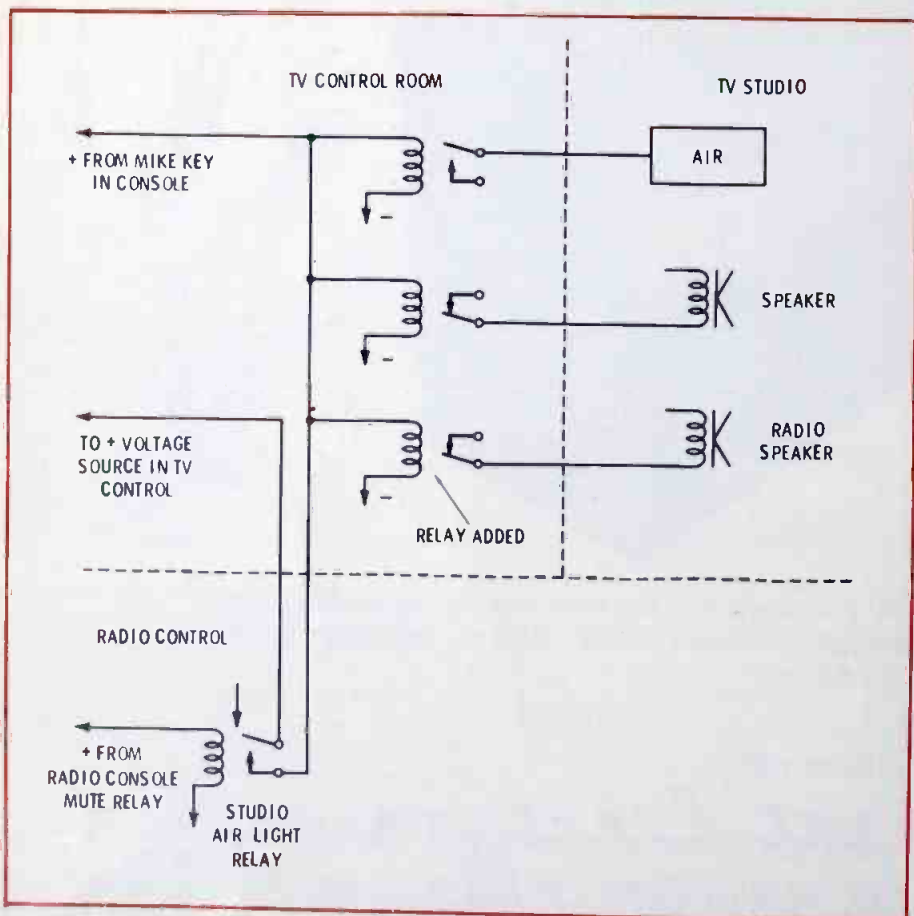
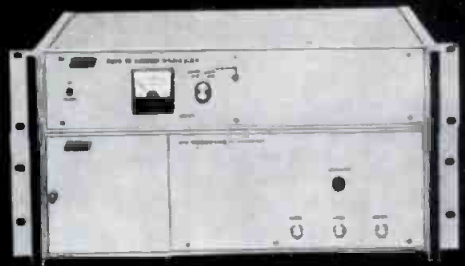


Fig. 6 A single studio in use for two different services can be muted from either Control Room by the addition of a single relay. Turning on a mike key in either console will operate all the necessary relays.

(Continued on page 88)

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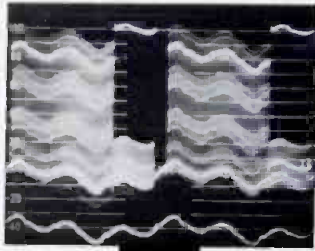
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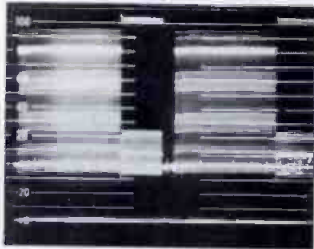
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All of the television pictures from the various venues coming through individual mobile vans or fixed studio installations, will be relayed by microwave units to receivers on the lower deck of the Munich Television Tower (Fernsehturm). This almost 900 foot tower located near the television switching center within the Olympic site, will act as the major relay point for incoming and outgoing signals. The upper deck of the tower adjacent to the television transmitting antenna, will provide a superb platform for a few TV cameras that can scan the whole area from a unique angle.

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First video tape editing

**XVIII Olympiad Tokyo 1964**  
First color coverage  
First satellite transmission  
First monochrome slow and stop motion  
First separate luminance color camera  
First color video tape recording  
First electronic VTR editing  
First helical recording (monochrome)

**XVIV Olympiad Mexico City 1968**  
First portable color cameras  
First portable quad VTR's  
First disc slow/stop instant replay  
First 3 continent satellite hook-up  
First electronic color standards conversion

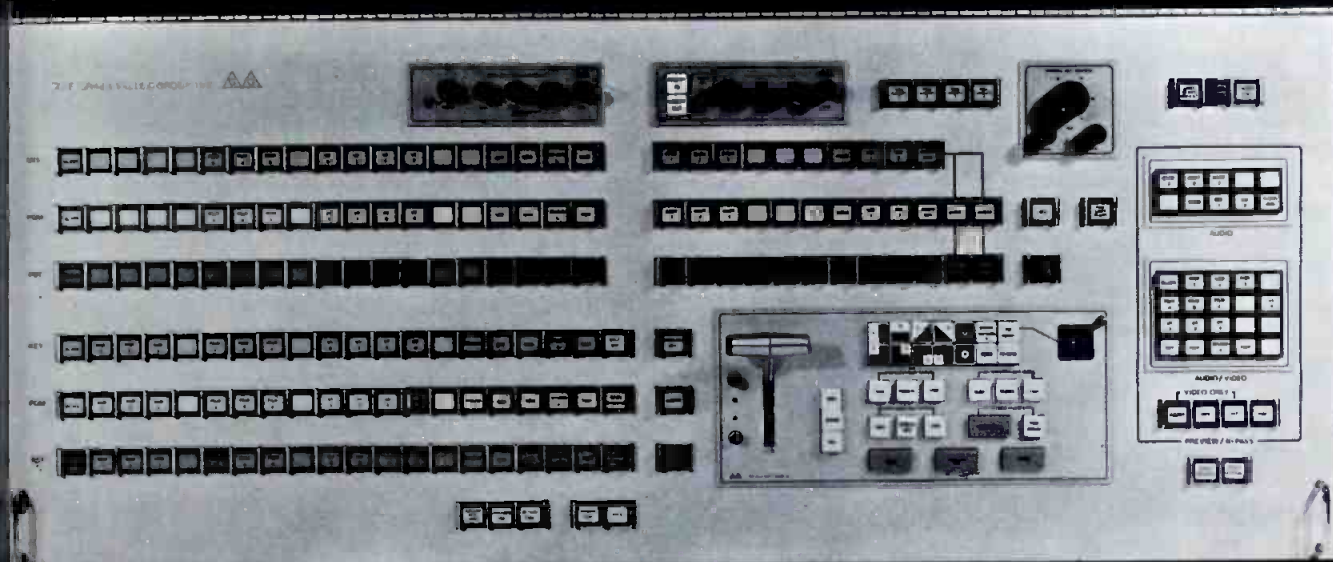
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# Operator Rules Change Update

A. D. Ring & Associates, a consulting firm located in Washington, D. C., has put together some reference material we think will be especially important to management and engineering.

Last month we went into a review of the new operator rules and included several charts that should help each station understand how the rules will affect them. In this issue we want to expand that coverage of the rules to include a chart that can be used as a reference guide for the new and old FCC rules regarding operator requirements.

We also are emphasizing management here, because it is the responsibility of the station licensee to insure that each operator is fully instructed in the performance of all the required adjustments as well as in other required duties (such as reading meters and making log entries).

This responsibility includes making certain that printed step-by-step instructions for those adjustments the lesser grade operator is permitted to make, and a tabulation or chart of upper and lower limits required to be observed and logged, shall be posted at the operating position.

The emissions of the station shall be terminated immediately when the transmitting system is observed operating beyond the posted parameters, or in any manner inconsistent with the rules of the station authorization and these adjustments are not effective in correcting the improper condition when a First Class Operator is not on duty.

At all FM broadcast stations, a complete inspection of the transmitting system and required monitoring equipment in use shall be made by an operator holding a First Class license at least once

each day, five days a week, with a interval of not less than 12 hours between successive inspections.

This inspection shall include such tests, adjustments, and repairs as may be necessary to insure operation in conformance with the provisions of the current station authorization.

In all cases, it pays for the owner and/or manager to know the Part 73 Rules. The FCC does expect you to know. If there are other types of reference material that would be helpful, drop the editor a line and we will do our best to include it in a later issue.

**Rule Changes  
Chart And  
Forms—See  
Pages 34, 46**

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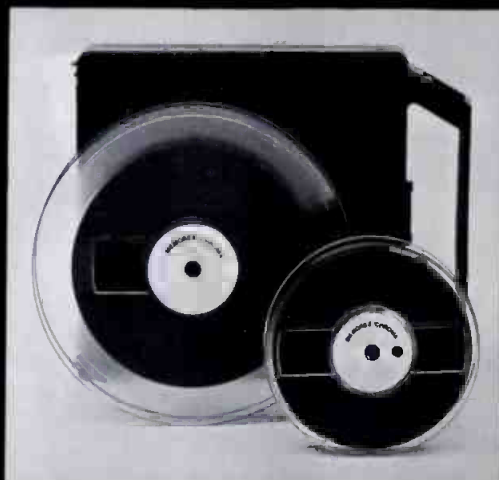
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Los Angeles

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These Los Angeles FM stations have discovered how to cover 9.5 million people more effectively! They've switched to the JAMPRO PENETRATOR ANTENNA. With special engineering help, and computer aided design, these sta-

tions surround the Los Angeles market with solid signals, mile after mile. Get greater signal penetration, and better stereo separation with a Jampro FM antenna! Let Jampro engineers custom design your FM system.

# Let us surround your market too!

J

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O

ANTENNA  
COMPANY

A DIVISION OF  
COMPUTER EQUIPMENT  
CORPORATION  
(916) 383-1177  
6939 POWER INN ROAD  
SACRAMENTO, CALIF.  
95828

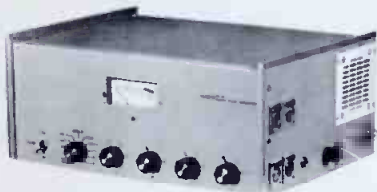
## REFERENCE GUIDE FOR FCC RULES REGARDING OPERATOR REQUIREMENTS

	STANDARD BROADCAST (AM)				FM BROADCAST				EDUCATIONAL FM					
	NON-DIRECTIONAL ANTENNA		DIRECTIONAL ANTENNA		POWER LEVEL		POWER LEVEL		10 Watts 1 kW OR More		25 kW More Than 25 kW		Remote Control	
	10 kW Less	More Than 10 kW	Normal	Critical	Remote Control	More Than 25 kW Less	More Than 25 kW Less	10 Watts 1 kW OR More	25 kW Less	10 Watts 1 kW OR More	25 kW Less	Remote Control	More Than 25 kW Less	Remote Control
I. New requirement for all stations	73.93(g)	73.93(g)	73.93(g)	73.93(g)	73.93(g)	73.265(f)	73.265(f)	73.265(f)	73.265(f)	73.265(f)	73.265(f)	73.265(f)	73.265(f)	73.265(f)
II. Options of operator requirements														
A. All first-class radiotelephone operators.	73.93(a)(4)	73.93(a)(6)	73.93(a)(6)	73.93(a)(6)	73.93(a)(6)	73.265(a)(2)	73.265(a)(2)	73.265(a)(2)	73.265(a)(2)	73.265(a)(2)	73.265(a)(2)	73.265(a)(2)	73.265(a)(2)	73.265(a)(2)
B. At least one first-class radiotelephone operator staff or contract, duty operator lesser class.	73.93(c)	—	—	—	73.93(c)	73.265(c)	73.265(c)	73.265(c)	73.265(c)	73.265(c)	73.265(c)	73.265(c)	73.265(c)	73.265(c)
C. At least one staff first-class radiotelephone operator, duty operator lesser class.	—	73.93(d)	73.93(d)	—	73.93(d)	—	73.265(d)	73.265(d)	73.265(d)	73.265(d)	73.265(d)	73.265(d)	73.265(d)	73.265(d)
III. Functions that must be performed by a first-class operator														
A. All meter readings, adjustments, log entries, equipment failure recognitions (required monitors) and calibrations not permitted of third-class operators.	73.93(b)	73.93(b)	73.93(b)	73.93(b)	73.93(b)	73.265(b)	73.265(b)	73.265(b)	73.265(b)	73.265(b)	73.265(b)	73.265(b)	73.265(b)	73.265(b)
B. All verifications of system performance required by the rules and not specifically delegated—audio proof-field strength measurements, etc.	73.93(d)	73.93(d)	73.93(d)	73.93(d)	73.93(d)	73.265(d)	73.265(d)	73.265(d)	73.265(d)	73.265(d)	73.265(d)	73.265(d)	73.265(d)	73.265(d)
C. Five-day per week equipment and maintenance inspection.	73.93(e)	73.93(e)	73.93(e)	73.93(e)	73.93(e)	73.265(e)	73.265(e)	73.265(e)	73.265(e)	73.265(e)	73.265(e)	73.265(e)	73.265(e)	73.265(e)
D. For DA stations, read and log antenna system parameters daily within first two hours of use of each pattern.	—	73.93(f)	73.93(f)	73.93(f)	73.93(f)	—	73.265(f)	73.265(f)	73.265(f)	73.265(f)	73.265(f)	73.265(f)	73.265(f)	73.265(f)
E. Review of all operating logs kept by lesser grade of operator.	—	73.93(h)	73.93(h)	73.93(h)	73.93(h)	—	73.265(h)	73.265(h)	73.265(h)	73.265(h)	73.265(h)	73.265(h)	73.265(h)	73.265(h)
IV. Functions that may be performed by lesser classes of operators														
A. All switching functions: on/off; pattern or power change.	73.93(i)(4)	73.93(i)(4)	73.93(i)(4)	73.93(i)(4)	73.93(i)(4)	73.265(i)(4)	73.265(i)(4)	73.265(i)(4)	73.265(i)(4)	73.265(i)(4)	73.265(i)(4)	73.265(i)(4)	73.265(i)(4)	73.265(i)(4)
B. Adjustment functions: power to compensate for line voltage changes; modulation level.	73.93(i)(5)	73.93(i)(5)	73.93(i)(5)	73.93(i)(5)	73.93(i)(5)	73.265(i)(5)	73.265(i)(5)	73.265(i)(5)	73.265(i)(5)	73.265(i)(5)	73.265(i)(5)	73.265(i)(5)	73.265(i)(5)	73.265(i)(5)
C. Read and log: switching functions III-A above; carrier outages requiring manual restoration; plate voltage; plate current; antenna or common point current indication; frequency.	73.93(k)	73.93(k)	73.93(k)	73.93(k)	73.93(k)	73.265(k)	73.265(k)	73.265(k)	73.265(k)	73.265(k)	73.265(k)	73.265(k)	73.265(k)	73.265(k)
D. Read and log sample loop currents and phases.	73.113	73.113	73.113	73.113	73.113	73.265(l)	73.265(l)	73.265(l)	73.265(l)	73.265(l)	73.265(l)	73.265(l)	73.265(l)	73.265(l)
V. Management requirements for stations using reduced classes of operators														
A. If contract first-class operators are employed, file contracts.	73.93(c)	—	—	—	73.93(c)	73.265(c)	73.265(c)	73.265(c)	73.265(c)	73.265(c)	73.265(c)	73.265(c)	73.265(c)	73.265(c)
B. If DA or high power, assign chief operator and file contracts; cover if ill or on vacation.	73.93(d)	73.93(d)	73.93(d)	73.93(d)	73.93(d)	73.265(d)	73.265(d)	73.265(d)	73.265(d)	73.265(d)	73.265(d)	73.265(d)	73.265(d)	73.265(d)
C. Give chief operator authority and facilities to supervise station technical operation.	—	73.93(h)(2)	73.93(h)(2)	—	73.93(h)(2)	—	73.265(h)(2)	73.265(h)(2)	73.265(h)(2)	73.265(h)(2)	73.265(h)(2)	73.265(h)(2)	73.265(h)(2)	73.265(h)(2)
D. Post written instructions for duty operators.	73.93(g)	73.93(g)	73.93(g)	73.93(g)	73.93(g)	73.265(g)	73.265(g)	73.265(g)	73.265(g)	73.265(g)	73.265(g)	73.265(g)	73.265(g)	73.265(g)
E. Measure field strength at monitoring points at least once each 30 days	—	73.93(e)(5)	73.93(e)(5)	—	73.93(e)(5)	—	73.265(e)(5)	73.265(e)(5)	73.265(e)(5)	73.265(e)(5)	73.265(e)(5)	73.265(e)(5)	73.265(e)(5)	73.265(e)(5)
F. Make partial proof of performance each year.	—	73.93(e)(3)	73.93(e)(3)	—	73.93(e)(3)	—	73.265(e)(3)	73.265(e)(3)	73.265(e)(3)	73.265(e)(3)	73.265(e)(3)	73.265(e)(3)	73.265(e)(3)	73.265(e)(3)

# MARTI proudly presents

## "The Fourth Generation"

Radio Remote Pickup System 150 AND 450 MHZ



RPT-40 TRANSMITTER



R-30/150 RECEIVER

**FEATURES** All Solid State ★ Direct FM Modulator ★ 40 Watts RF Output ★ 4 Audio Mixing Inputs ★ Plug-in Modular Construction ★ Broadcast Quality — Continuous Duty ★ Completely Self Contained.

MARTI Remote Pickup equipment is in over 2000 Radio Stations throughout the United States and Abroad.

We are pleased to announce this all new line of solid-state equipment for more PROFITABLE BROADCASTING.

**Frequency Response:** + or - 1.5 db. from 30 Hz to 7500 Hz.  
**Distortion:** 2% or less, 50 Hz — 8000 Hz.  
**Signal to Noise:** -50 db. or better.  
**Response available to 12,500 Hz on special order.**

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the spotlight —

## "The Second Generation"

Aural Studio-Transmitter Link, Remote Control & Telemetry System



STL-8 TRANSMITTER



RMC-2AX/5  
STUDIO UNIT

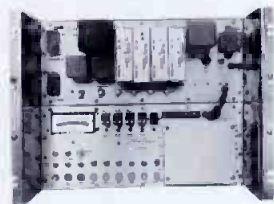
**FEATURES** Direct FM Modulator ★ All Solid-State ★ Field Proven Varactor Final ★ Plug-in Modular Construction ★ Solid-State Ovens and Hi-Accuracy Crystals ★ Automatic Change-over to Standby Transmitter and/or Receiver ★ RF Sensing for "Out of Status" Alarm Indication ★ Current Limiting in Regulated Power Supply.

We will provide the names of over 300 satisfied customers! JUST ASK.

**FREQUENCY RESPONSE:** + or - .5 db. from 40 Hz to 15,000 Hz.  
**DISTORTION:** 0.6% or less, 50 Hz to 15,000 Hz.  
**SIGNAL TO NOISE:** - 65 db. or better. Ref. 400 Hz. Mod. 100%



R-200/950 RECEIVER



RMC-2AX/T  
TRANSMITTER UNIT

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Audio Amplifiers

★ The CLA-40/A—Watch this one—it's a Sleeper! Over 300 units sold in less than 18 months.

- ★ PLUG-IN MODULAR CONSTRUCTION
- ★ SOLID-STATE
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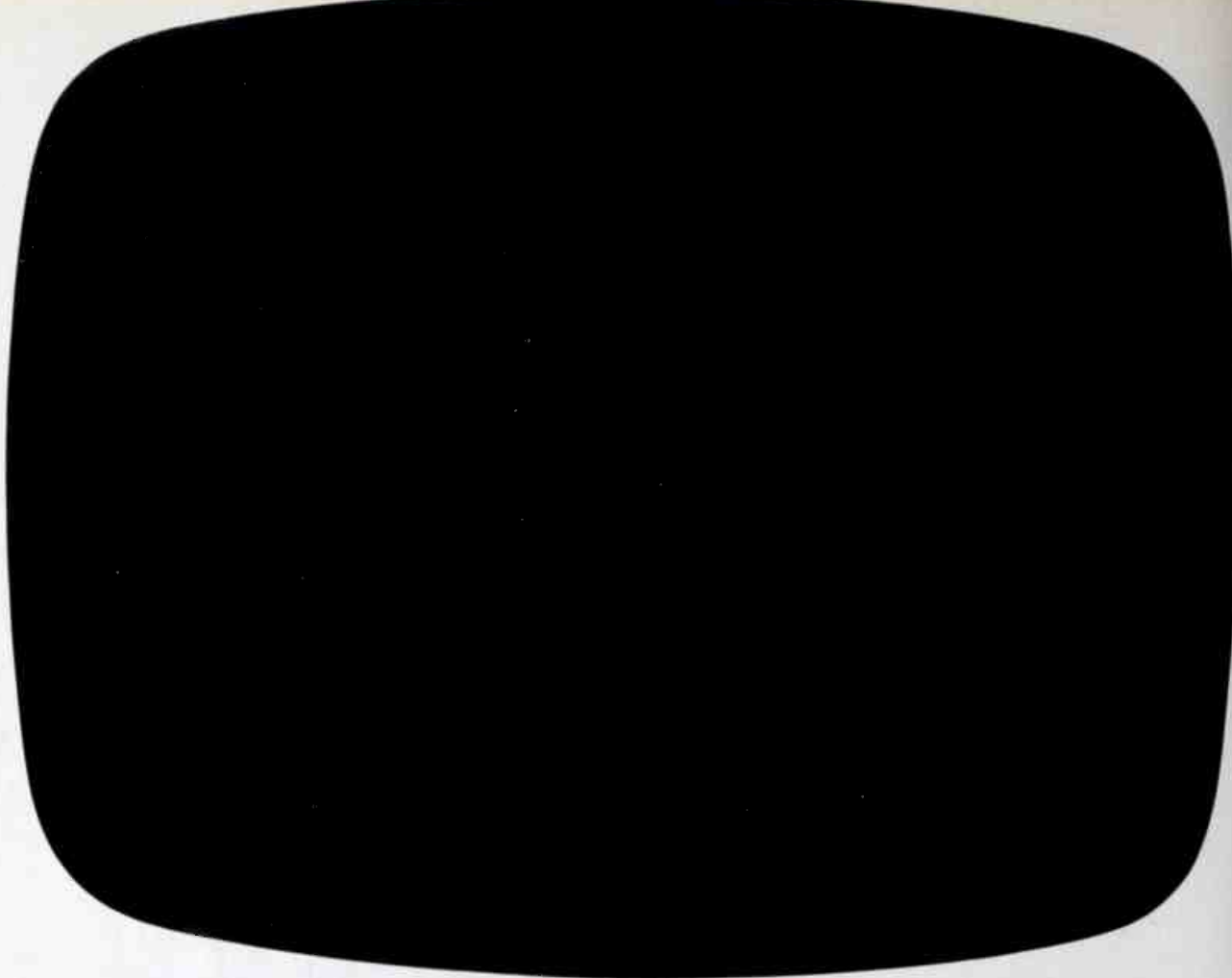
PGM-20  
CLA-40/A  
MA-10

COMPRESSOR/LIMITER AMPLIFIER ● PROGRAM/LINE AMPLIFIER ● MONITOR AMPLIFIER

**MARTI Electronics, Inc.**

P.O. Box 661 • 1501 N. Main • Cleburne, Texas 76031 • 817/645-4091

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for the Broadcaster."



# This is a picture of your picture.

(during a power failure)

Yours may be the finest broadcast facility around. But you aren't transmitting much of a signal when the power is off.

Admittedly, chances of a prolonged power failure aren't great. Yet they do happen.

That's where Onan standby power comes in.

It provides "insurance" against a crippling power outage.

It doesn't have to replace utility power totally. But it can keep you on the air.

It can keep heating and ventilating equipment working. Elevators running. Lighting in critical areas burning.

So when you're ready to talk seriously about standby power for your TV or radio station, remember this:

Onan is the world's number one builder of standby power plants.

Only Onan gives you total system responsibility for the engine, generator and load transfer controls. We build 'em, test 'em, install 'em and

certify that they will perform as rated. Only Onan warrants the complete system for 5 years.

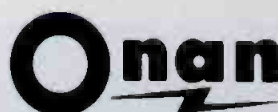
Call your local Onan Distributor (in the Yellow Pages under Generators) or send coupon.

### FREE STANDBY POWER BOOKLET

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Please send a copy of "Standby Power . . . who needs it?" to:

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Circle Number 30 on Reader Reply Card

# Waters Attenuators

not just a pair, but a full house



Choosing professional audio controls involves complex compromises between noise, life, accuracy, and price. No one design can achieve all the alternatives. To satisfy all requirements, a full range of attenuator models is required, and that's what Waters offers: a complete line of attenuators, all of which feature MystR® —a proprietary conductive plastic resistance element.

MystR's glass-hard, smooth wiping surface achieves noise levels below  $20\mu\text{V}$  (at least 100db down) over a trouble-free life of at least ten million operations.

Zero to 90db of truly "stepless" attenuation is achieved with Waters' computer-controlled curve-shaping technique which actually tailors the attenuator resistance element assuring superior tracking accuracy.

If you'd like to call our hand, send for Waters' Audio Attenuator brochure which describes their complete line of linear and rotary attenuators and pan pots. Use the coupon provided, or better yet, phone 617-358-2777 for immediate service.

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Wayland, Ma 01778

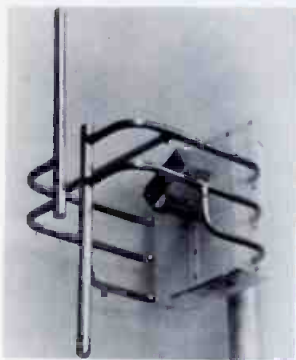
I'd like further information on Waters attenuators and MystR® conductive plastic elements.

- Send me your attenuator brochure and "The MystR Story"
- I need additional information:

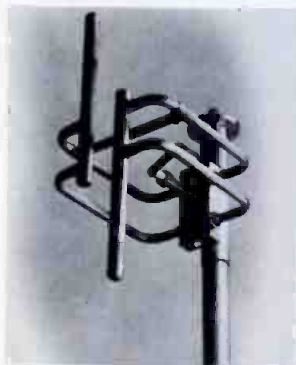
\_\_\_\_\_  
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SHIVELY LABORATORIES  
ANNOUNCES A NEW GENERATION  
OF CIRCULARLY POLARIZED  
FM ANTENNAS



TYPE 6810 • 10 KW PER BAY



TYPE 6813 • 3 KW PER BAY



TYPE 6811 • 1 KW PER BAY

**RADOMES OR DEICERS  
AVAILABLE FOR ALL MODELS**

WRITE FOR INFORMATION ON  
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Circle Number 32 on Reader Reply Card

# Network Election Coverage

By Robert Burns

The major change in election coverage in 1972 is utilization of the newly developed television-compatible character generator by ABC and CBS. The unit provides a real time capability with a signal format that is ready for broadcast without the use of a camera to convert artwork or titles into video signals. Early character generators could convert computer-generated, dot matrix characters, into video signals. But, there was some problem with the standard dot pattern when it appeared on the home screen. It lacked clarity and flexibility as to the style of type and character size available.

With the development of the CBS Laboratories stroke matrix concept, a display that looks like a graphic display was evolved. This produces electronic characters that are both flexible and legible. The character generator can be interfaced with a computer and provides an instantaneous "on the air" reporting system.

The Vidifont system eliminates the need for graphic arts and "flap-board" systems that do not have the flexibility and immediacy required for news reporting.

## Old Method

Incoming votes on N.E.S. (National Election Service) lines (they were five minute updates) were printed out on teletype machines and physically carried across the studio to a "Solari" board operator who operated thumb switches to physically set up the boards. The director then had a cameraman show the board and the director would then cue the camera for "on the air". This meant a delay of almost two minutes for up-dating vote totals.

The titles (lower third) were prepared by the art department and 35mm slides were made. They were then loaded into a carousel projector. The director would call

for graphics for a particular title. If graphics called for slide No. 152, for example, a camera would be focused on slide No. 152 on the screen. The director would then cue control to switch to the slide.

## New Method

To update the returns as soon as possible directly on screen with 51 presidential and 52 senator/gubernatorial races in 1972 there is a requirement for 103 separate formats or "boards". At ABC these boards can be called up by any of the 16 terminals on demand. The terminals are:

- 10 Anchor support position (2 each)
- 2 Central control room
- 2 Computer Central
- 2 Spare units

The time required for any or all terminals to ask for and receive information is less than one second.

This is accomplished by the following: 8 teletype lines from N.E.S. are fed to the mini-computer which has been programmed for each of the 103 board formats. These contain the percent of precincts reporting, the state name and the candidates names. The computer will enter the raw vote total and the percent of the vote calculated up to the instant. The control room terminals, which are located next to the director, control the display that goes on the air. These signals appear at the switcher as video signals, ready for broadcast without the use of any cameras. These signals can be matted, supered, and distributed as any other standard video signal.

The titles (lower third) are also programmed and placed in storage in the computer so that a "hands off" operation is maintained. The director needs only to call up the "board" and the title by having the terminal operator type the required board code and title code and the









*From Amperex...  
who gave you the  
Plumbicon\* TV camera tube  
that revolutionized  
color broadcasting  
all over the world...*

**...a line of power tubes  
for your new transmitters  
that will free you at last  
from worry over reliability.**

**WHEN USED WITH AMPEREX MATED CAVITIES**

TUBE TYPE	CHANNEL 2-8 SYNC LOAD POWER (KW)	CHANNEL 7-13 SYNC LOAD POWER (KW)
8814 	1.5	1.5
8812 	6.25	8.75
8813 	12.5	17.5
8915 	17.5	25.0

Amperex cavity-matched and mated VHF-TV power tetrodes, provide the high reliability that is an absolute necessity for television broadcast stations. Available in sync-level power ratings from 1.5 to 25 KW and for operation in channels 2 through 13, these air-cooled tubes are designed and rated specifically for television broadcast service.

They feature "K" grid material for long and stable life; mesh filaments and grids for high power gain, efficiency and mechanical strength and rugged coaxial metal-ceramic construction that lends itself readily to cavity operation.

Optimally matched cavities for each type are available for both low- and high-band service and for both video and sound transmission.

Amperex precision design and manufacture of the tube and matching cavity is your best assurance of reliable, trouble-free performance. When you think of TV broadcast equipment ... think of it from the Plumbicon tubes in your cameras through the power tubes in your transmitter.

For additional information on the complete line of Amperex cavity-matched VHF-TV power tetrodes, write: Amperex Electronic Corporation, Product Manager, Power Tubes, Hicksville, New York 11802.

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Circle Number 33 on Reader Reply Card

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# STUDIO MONITOR AMPLIFIERS

by  
*Crown*

## D60



compact

Delivers 30w RMS/channel at 8Ω  
Takes 1 3/4" rack space, weighs 8 1/2 lbs.  
IM distortion less than 0.05% from  
1/10w to 30w at 8Ω  
S/N 106dB below 30w output  
\$229 rack mount

## D150



universal

Delivers 75w RMS/channel at 8Ω  
IM distortion less than 0.05% from  
0.01w to 75w at 8Ω  
S/N 110dB below 75w output  
Takes 5 1/4" rack space, weighs 20 lbs.  
\$429 rack mount

## DC300



power

Delivers 150w RMS/channel at 8Ω  
IM distortion less than 0.05% from  
0.01w - 150w at 8Ω  
S/N 110dB below 150w output  
Lab Standard performance and  
reliability  
\$685 rack mount

All Crown amplifiers are warranted  
3 years for parts and labor. They  
are 100% American-made to profes-  
sional quality standards. All are  
fully protected against shorts, mis-  
match and open circuits. Construc-  
tion is industrial grade for years  
of continuous operation.



BOX 1000, ELKHART, INDIANA 46514, U.S.A.

Circle Number 34 on Reader Reply Card

## Election Coverage

(Continued from page 38)

complete display will appear all ready for broadcast.

The anchorman has two video monitors at his desk but no computer control terminals. The director can call up any one of the 103 board to check for any major change in votes. He then cues the anchorman about the change and the director cues the control room terminal operator and the particular board is called up. The character generator displays the board and sends the signal to the switcher ready for broadcast.

The predictions desk is used for the specialized group who are completely familiar with selected precincts in each area that are used to forecast the vote. Each person has a monitor that is connected to a computer in New Jersey that has been pre-programmed for specific precincts or states.

In the computer control center, there are two teletype machines and two control terminals. The NES lines come into the center to a patch panel and are connected to the mini-computers and the teletype machines. The programmer is stationed in this area and is responsible for the complete operation. If any of the remote positions fail he can take over and operate the system from the computer center. He will be responsible for any troubles that involve the computer terminals. He will also enter predicted winners as they are given to him via the teletype machine to the computer so that they will appear, as called up, on the boards that are in storage in the mini-computer.

### The CBS Vidifont System

The need for real-time visual titles for special events, news, weather and sports has been a problem for broadcasters for a long time. When the dot-matrix display produced by computer terminals was introduced, it provided a step in the right direction. This display lacks the flexibility and clarity desired for normal home viewing.

CBS Laboratories studied the problems and evolved the stroke matrix system of visual display. This creates graphic arts style

characters. It eliminates the need for preparing slides and expensive artwork that cannot be changed without time and money being expended. For independent stations that have local origination news and special programs the need for an extensive art department is eliminated. It also frees a camera for other uses since the Vidifont produces video signals that are sent directly to the video switching equipment.

The Vidifont X system now in production is a second generation unit that uses plug-in modules to give an almost unlimited number of languages and type fonts. The basic system can also provide word-by-word color, automatic centering, vertical roll, horizontal crawl and selective flashing of any particular words or portions of the display. The unit can be used in a very simple configuration or can have several peripheral devices such as a mini-computer that has a storage unit capable of pre-programming as many lines as might be required for any program or series of programs.

The final design of the type fonts had to be analyzed and the final evaluation was made directly from a viewing screen. Certain trade-offs had to be made in the type fonts in order to prevent degradation that would be unacceptable to the viewer. Since one of the undesirable effects of poor linearity or focus is a build-up of light along the scanning lines, the weight of the horizontal strokes had to be de-emphasized. A system of corner dots at all of the inside corners is used to minimize the effects of halation and flux. These dots absorb the excess light which tends to build up at the letter stroke intersections.

The upper and lower case letters are 28 TV scan lines high and the smaller, upper case only, letters are 18 lines height. The proportional characters and spacing make it easier for the viewer to distinguish between characters.

Although many of the candidates' faces will be the same as in 1968, the "type" faces on television screens will be new.

# Now showing... the Reliables

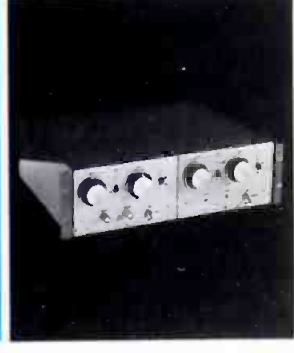
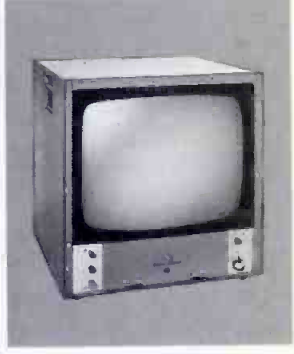
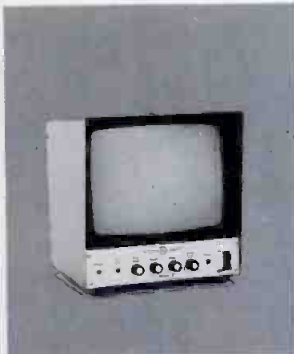
monochrome features three rackmount option. Small size less rack space lar units and monitoring of 3 video signals. lity, all-purpose with Setchell UNIT-IZED® circuit modules.

New 10" monochrome video monitors offer horizontal resolution of 640 lines or better plus 100% solid-state circuitry for long-life reliability. Unit is available in rackmount or in attractive metal cabinet. A 12" model is also available.

In addition to 640-line resolution, the 16" monochrome monitors have all major operating controls located on the front panel for ease of operation. Front-panel screwdriver adjustments for vertical linearity, vertical height, and focus provide protection against accidental misadjustment.

Nineteen inch monochrome video monitors offer traditional Setchell Carlson quality, including exclusive UNIT-IZED® plug-in circuit modules for easy maintenance. Horizontal resolution is 640 lines or better. Available in rackmount or attractive cabinet models.

Professional quality 19" color video monitors offer broadcast quality at a modest price. Horizontal resolution is 300 lines (color) and all set-up controls are located behind a hinged front panel to prevent accidental misadjustment. Also available in 25" model.



monochrome monitor offers that picture quality attractive styling at a cost. Circuitry is solid-state and the resolution is 640 lines or better. Monitor has a multitude of applications of high-quality picture quality.

Regulated circuitry in the 25" color monitor provides extremely stable operation and prevents raster size or brightness deviations due to line voltage fluctuations. Horizontal resolution is 300 lines (color). Set-up and operating controls are front-mounted for ease of operation.

"Educator" Monitor/Receiver, 23" monochrome model, is designed specifically for educational and training applications. Controls are front-located. Tamper-proof control compartment door with lock is optional. Horizontal resolution is 600 lines or better with video signal input. Also available in 25" color model.

The Color "Educator" is a 25" model offering big-screen, sparkling color — 300-line (color) resolution — plus big-room audio. Designed specifically for educational and training applications, the "Educator" series Monitor/Receivers offer the utmost in reliability, flexibility, and ease of operation.

Setchell Carlson's solid-state UHF/VHF television receiver and RF demodulator provides a high-quality composite video signal and separate audio signal, assuring excellent monochrome and color picture quality. It is ideal for video recording and as a signal source for video monitors.

The quality and reliability of Setchell Carlson products is legendary. SC Electronics pioneered the concept of modular circuit construction. Every Setchell Carlson product features this concept in our UNIT-IZED® plug-in circuit modules, assuring operating dependability and maximum ease of maintenance. One hundred percent solid-state circuitry means maximum stability, long-life, low power drain, and a minimum of heat. Every feature in a Setchell Carlson product is meticulously designed to give you outstanding performance at a modest cost.

For many years, people involved in many different facets of broadcasting, closed circuit television, medical training, industrial TV applications, custom remote installations, and in the field of education have been able to depend on Setchell Carlson quality and reliability. It has become a tradition. We know that whatever your application, you will find a product to fit your need in the Setchell Carlson line.

Let your SC Electronics dealer give you a showing of . . . The new Reliables. Or, write to us for more information. Remember SETCHELL CARLSON, where quality is a tradition.

Circle Number 36 on Reader Reply Card

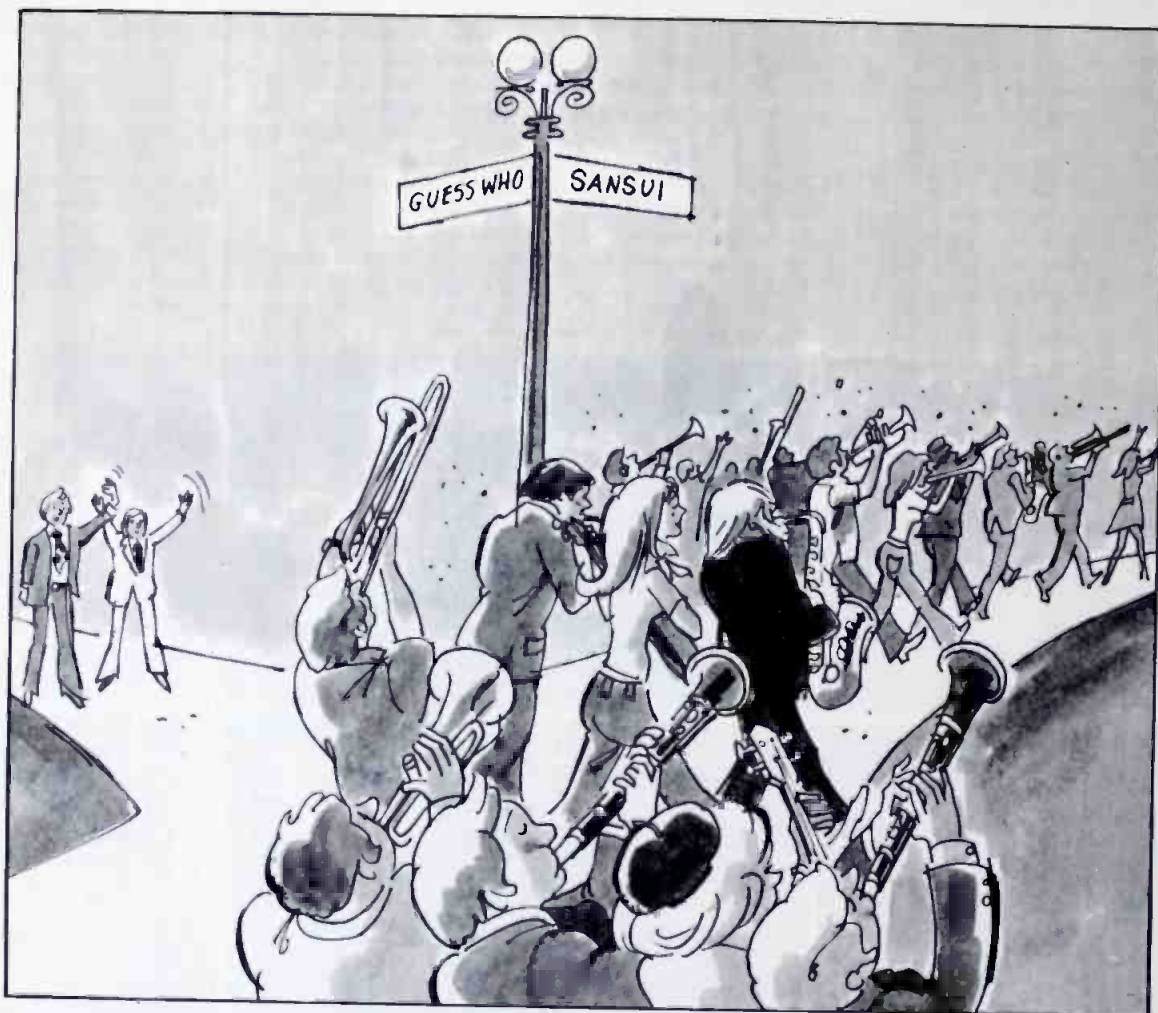


**SC ELECTRONICS, INC.**

A SUBSIDIARY OF AUDIOTRONICS CORPORATION

530 5th AVE. N.W. ST. PAUL, MINNESOTA 55112

# look who's going



You may have heard it already—or you may not have—but more and more recording artists, more and more recording labels, and more and more engineers and producers are using Sansui's QS four-channel technique to encode their records in the four-channel mode. The list, growing from week to week, is quite impressive. But more important than the list itself is the fact that all these independent artists and companies have conducted extensive testing and actual use procedures before they made up their minds. What speaks for Sansui's QS System is not the pressure of a major software company nor exaggerated statements and promises; it's simply the performance.

Whether it is such an outstanding artist as Carole King or Joan Baez; or perhaps eminent musicians and producers like Enoch Light or Dick Schory add to the list such a beloved figure as B. B. King—they all are going Sansui's QS way because they think it is the best way. Some of these artists have actually produced with other matrix four-channel encoding methods, but have found that the most satisfactory results, in terms of the freedom of the producer and the artistic results, are in the one and only balanced and symmetrical system—that is, Sansui's QS method.

# The QS way — and why

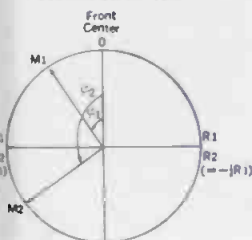
## (Report on the Sansui QS Coding System)

There are now almost three hundred — yes, three hundred — Sansui-type matrixed four-channel record albums available all over the world, most of them encoded with Sansui QS encoders. In this country alone, almost 30 albums are already on the market. And we hate to hold anything back from you, but there are a number of artists who will, in the very near future, be on the market with their QS four-channel recordings. Also, major labels.

While we do not know the particular reasons each of these artists and producers selected Sansui's QS system, we know that it could be any or all of those enumerated here. These are the qualifications that make Sansui's QS matrix system uniquely efficient and effective and musically satisfying. In fact, we believe Sansui's QS System is the only matrix system that can claim that it has no known major drawbacks, that are not subject to refinement. These are the features of Sansui's QS system:

**TOTAL, ACCURATE SOUND-SOURCE LOCALIZATION** In every direction and at any point *inside* the sound field. No dropouts, cancellations or irritating shifts in position. The "overhead" effect, with a performer in the dead center, is readily achieved. This means there are no problems about having to place performers in some positions and avoiding other areas. It means that the total acoustic perspective is the same as that for discrete tape.

Recording and Localization of Sound Images in 360°



**TOTAL COMPATIBILITY.** Sansui's QS Coding System is compatible with two-channel stereo playback of encoded recordings. With four-channel playback (ambience synthesis) of conventional two-channel recordings. With other matrix decoders. With all existing home hardware and with all existing

### Labels Using Sansui QS Encoding

A&M • Audio Treasury/ABC • Black Jazz • Command • Impulse • Ode • Ovalton • Project 3

### Artists Encoded with Sansui QS

The Awakening • Count Basie • Doug Carn • Ray Charles Singers • Alice Coltrane • Henry Franklin • Free Design • Urbie Green • John Lee Hooker • Sammy Kaye • B. B. King • Carole King • Bonnie Koloc • Enoch Light • Tony Mottola • Doc Severinsen • Beverly Sills



For full details, contact your nearest Sansui office now.

**SANSUI ELECTRONICS CORP.**

Sansui Electronics Corp.

New York

32-17, 61st Street, Woodside, N.Y. 11377. Tel.: (212) 721-4408. Cable: SANSUILEC NEW YORK. Telex: 422633 SEC UI.

Sansui Electric Co., Ltd.

Los Angeles  
Tokyo

333 West Alondra Blvd. Gardena, Calif. 90247. Tel.: (213) 532-7670.  
14-1, 2-chome, Izumi Suginami-ku, Tokyo 168, Japan. Tel.: (03) 323-1111. Cable: SANSUIELEC. Telex: 232-2076.

Sansui Audio Europe S.A.

Belgium

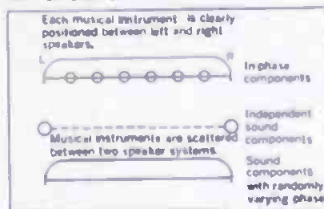
Diaceem Building Vestingstraat 53-55, 2000 Antwerp. Tel.: 315663-5. Cable: SANSUIEURO ANTWERP. Telex: ANTWERP 33538.

Vernitron Ltd.

Germany, W.  
U.K.

6 Frankfurt am Main, Reuterweg 93. Tel.: 33538.  
Thornhill Southampton SO9 5QF. Southampton 44811. Cable: VERNITRON SOTON. Telex: 47138.

Location of Various Sound Components in Left and Right Channels



professional equipment. With present broadcast standards and equipment.

There are many important implications in this comprehensive situation. For

example, when QS-encoded material is played back in conventional two-channel stereo, it produces an entirely correct stereo perspective. The rear-channel information serves to produce a broadened and enhanced stereo perspective instead of jamming rear-channel information unnaturally into the wrong places to confuse directionality and obscure the stereo effect.

We believe that it is in the interest of the entire industry that the very best system be selected, regardless of politics, regardless of cross-currents and undercurrents, regardless of alliances and pride or even some dent in someone's reputation.

We have no other ax to grind than to play the fiddle that will make the best music for the industry. If you care to know more about Sansui's QS System, please contact our New York office for a demonstration and materials. It may interest you that the RIAJ (Record Industry Association of Japan) has adopted the Sansui system under the name of Regular Matrix to be the standard for recordings in Japan. An application for acceptance of our standards is now with the Recording Industry Association of America.

It's no wonder, then, that everybody who is anybody in the four-channel medium is going the QS way. Why not join the trend? The QS encoder is very simple to adjust, easy to use and reliable. Try it. Check out our claims with your own material, in your own way. Learn for yourself what the present members of the Sansui QS bandwagon have already discovered.

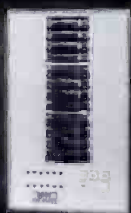


# More than 200 INSTACARTS<sup>®</sup>

now in the hands of satisfied users make this the only proven equipment of its kind.

Many users find the 48-unit Instacart ideal for automated or semi-automated operations involving random access to a large number of taped, repetitive events.

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# FCC Offices

There are any number of times when you may need to call the Engineer-in-Charge in your district. For your records, here is the current list of names, addresses and telephone numbers.

The Washington office of the FCC is: 1919 M Street N.W., Washington, D.C. 20554. Their information number is 632-0002.

### DISTRICT OFFICES

*Field Engineering Bureau*

#### District No. 1

Gerard Sarno, Engineer-in-Charge, Customhouse, Boston, Mass. (02109). Phone: 233-6608.

#### District No. 2

Henry Paulisen, Engineer-in-Charge, Federal Bldg., New York City, (10014). Phone: 620-5745.

#### District No. 3

Vernon P. Wilson, Engineer-in-Charge, U.S. Customhouse, Philadelphia, Pa. (19106). Phone: 597-4410.

#### District No. 4

Benjamin Berkowitz, Engineer-in-Charge, 819 Federal Bldg Baltimore, Md. (21201). Phone: 962-2727.

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Circle Number 200 on Reader Reply Card

Revised Section 73.93(g) of the Commission's rules now *requires* that a notice similar to the following be posted at the operating position of *all* radio stations whenever a lesser grade operator is on duty:

Duty operators holding second-class licenses or third-class permits endorsed for broadcast operation are permitted to make *only* the following adjustments:

1. Turn the transmitter on and off
2. Compensate for voltage fluctuations in the primary power supply (to maintain station power within the licensed value)
3. Maintain modulation levels within prescribed limits
4. Change power as required by the license
5. Change from directional to non-directional operation and vice versa, or change from one directional pattern to another. (You are not permitted to tune the transmitter final amplifier or to make any adjustment to the antenna phasor.)

The transmitter must be turned off immediately whenever the limits listed below are exceeded, if a first-class radiotelephone operator is not present:

#### Non-Directional Operation (AM):

##### Antenna Base Current\*

Night			Day		
Lower Limit	Licensed Value	Upper Limit	Lower Limit	Licensed Value	Upper Limit
_____ A	_____ A	_____ A	_____ A	_____ A	_____ A

#### Directional Operation (AM):

##### Common Point Current\*

Night			Day		
Lower Limit	Licensed Value	Upper Limit	Lower Limit	Licensed Value	Upper Limit
_____ A	_____ A	_____ A	_____ A	_____ A	_____ A

##### Antenna or Remote Antenna Current\*

Tower No.	Night			Day		
	Lower Limit	Licensed Value	Upper Limit	Lower Limit	Licensed Value	Upper Limit
1	_____ A	_____ A	_____ A	_____ A	_____ A	_____ A
2	_____ A	_____ A	_____ A	_____ A	_____ A	_____ A
3	_____ A	_____ A	_____ A	_____ A	_____ A	_____ A
4	_____ A	_____ A	_____ A	_____ A	_____ A	_____ A
etc.	_____ A	_____ A	_____ A	_____ A	_____ A	_____ A

\*The antenna base current for non-directional operation and the common point current must be no more than 5% below, nor more than 2.5% above the license values. Individual antenna currents for directional operation must be no more than 5% either above or below the license values.

# LOW COST DIGITAL CLOCKS, TIMERS AND COUNTERS



ESE digitals are designed and constructed using the latest solid state electronic components and circuitry. This equipment is perhaps the most economical line of digital clocks, timers and counters available. Circuit efficiency and lasting quality are designed into every ESE digital product. Constructed with the built-in ruggedness necessary for studio use. No moving parts.

Special custom items, like the video tape/counter editor, a monitoring system with unique display configuration, 12 and 24 hour clocks or timers, 10 minute timers, 3 digit, 4 digit, 6 digit, record seconds in tenths, hundredths or thousandths... Even a station ID reminder, all available from ESE. Options include: Thumbwheel switch programming, BCD outputs, relay closure outputs, and solid state buffered outputs. Many products available in kit form.

## THESE STANDARD ESE PRODUCTS ARE AVAILABLE FOR IMMEDIATE SHIPMENT:

- ES-112/124, 12 hour or 24 hour clock: 6 digit — Records hours, minutes, seconds ..... \$100.00
- ES-300, 100 minute up/down counter: Displays up to 99:59 — Easy pushbutton: Reset — Count up — Count down — Advance seconds — Advance minutes — Stop .. 125.00
- ES-400, 10 minute timer: Displays up to 9:59 — Pushbutton: Start — Stop — Reset ..... 68.50
- ES-500, 12 hour clock/timer: 6 digit — Records hours, minutes, seconds. Start — Stop — Reset — Slow and Fast Advance buttons. Displays up to 12:59:59 ..... 110.00
- ES-510, 60 minute timer: Displays up to 59:59 — Pushbutton: Start — Stop — Reset, Only 3¼" deep for flush mounting into walls or std. alum. case ..... 95.00

WRITE, WIRE OR CALL TODAY FOR DETAILS:



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Circle Number 39 on Reader Reply Card

## FCC Offices

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### District No. 5

J. J. Freeman, Engineer-in-Charge, Military Circle, 870 N. Military Hwy., Norfolk, Va. (23502). Phone: 420-5100.

### District No. 6

Arthur T. Cline, Jr., Engineer-in-Charge, 1602 Gas Light Tower, 235 Peachtree St., Atlanta, Ga. (30303). Phone: 526-6381.

### District No. 7

Arthur G. Gilbert, Engineer-in-Charge, 51 S.W. First Ave., Miami, Fla. (33130). Phone: 350-5541.

### District No. 8

William J. Simpson, Engineer-in-Charge, Federal Office Bldg., New Orleans, La. (70130). Phone: 527-2094.

### District No. 9

(Vacancy), Engineer-in-Charge, New Federal Office Bldg., Houston, Tex. (77002). Phone: 226-4306.

### District No. 10

Gerald M. Howard, Engineer-in-Charge, New Federal Courthouse & Office Bldg., Dallas, Tex. (75202). Phone: 749-3244.

### District No. 11

J. Lee Smith, Engineer-in-Charge, Room 1758, U.S. Courthouse, 312 N. Spring St., Los Angeles, Calif. (90012). Phone: 688-3276.

### District No. 12

Ney R. Landry, Engineer-in-Charge, Customhouse, San Francisco, Calif., (94111). Phone: 556-7700.

### District No. 13

Francis H. McCann, Engineer-in-Charge, 314 Multnomah Bldg., 319 S.W. Pine St., Portland, Ore. (97204) Phone: 221-3097.

### District No. 14

Robert C. Dietsch, Engineer-in-Charge, 8012 Federal Office Bldg., First Ave. & Marion, Seattle, Wash. (98104). Phone: 442-7653.

### District No. 15

Warren D. George, Engineer-in-Charge, New Customhouse Denver, Colo. (80202). Phone: 837-4053.

### District No. 16

Harold E. Allen, Engineer-in-Charge, 691 Federal Bldg. & U.S. Courthouse, 4th & Robert Sts. St. Paul, Minn. (55101). Phone: 725-7819.

### District No. 17

Paul F. Hampton, Engineer-in-Charge, Federal Bldg., Kansas City, Mo. (64106). Phone: 374-5526.

### District No. 18

Ernest J. Galins, Engineer-in-Charge, 1872 Everett McKinley Dirksen Bldg., 219 S. Dearborn St., Chicago, Ill. (60604). Phone: 353-5388.

### District No. 19

Edward Atems, Engineer-in-Charge, Federal Bldg., Detroit Mich. (48226). Phone: 226-6077.

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# Neve installs consoles in hours- not weeks



Neve Console in André Perry's Studio "A," Montreal, Canada.

Rupert Neve, Inc.: Berkshire Industrial Park, Bethel, Conn. 06801. (203) 744-6230.  
Hollywood: Suite 616, 1800 N. Highland Ave., Hollywood, Ca. 90028. (213) 465-4822.  
Rupert Neve & Co., Ltd., Cambridge House, Melbourn, Royston, Herts, England.  
Rupert Neve of Canada, Ltd., P.O. Box 182, Etobicoke, Ontario, Canada.

Can't believe it? We'll prove it.

Neve can install a sophisticated, perfected, thoroughly tested Sound Mixing Console (like the one shown) in your studio in *less* than a day.

So you can start using it immediately. Instead of waiting indefinitely.

Reason: All modular components are built precisely to specs. Designed for ultra-fast installation. Another surprise: *no* bother with in-studio modifications later on. Neve Console craftsmanship is unmatched. For example: fantastically low distortion (never above 0.075% at 1 kHz).

On-time delivery? It's *always* a matter of policy with Neve. And a matter of honor as well. We'll custom-design a console for your particular needs. We also offer a wide choice of stock audio control consoles. Neve Consoles are used in major studios for music recording, broadcasting, ad commercial, and motion picture production — in 24 countries.

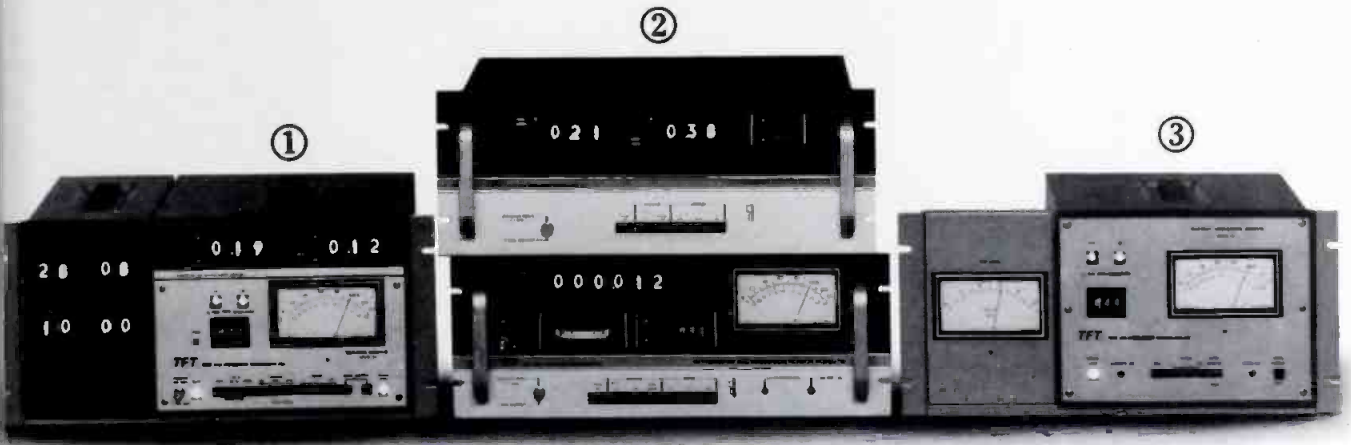
*The sound of Neve is world wide.* Write for more facts. Now. You'll never be disappointed — with Neve.

# Neve

Write for Bulletin BE-1



# UHF-VHF TV and AM monitors optimized for remote operations



TFT's 3rd generation monitors give you off-the-air monitoring without an RF amplifier. Result? A significant reduction in the interference problems caused by the intermodulation products of undesirable signals. And that's only part of the story. TFT instruments are now accepted as the standard of the broadcast industry for convenience, reliability and accuracy.

**① Model 701 TV Frequency and Modulation Monitor**  
Monitors visual and aural frequency and percent aural modulation off-the-air: 250  $\mu$ v sensitivity. Digital readout of frequency errors with 1 Hz resolution. Internal time base stability is 1 PPM/year. Useable as 6-digit precision frequency counter to 10 MHz input. FCC Type approval 3-187.

**② Model 709 TV Frequency Only**  
State-of-the-art instrument for non-remote monitoring of aural, visual and inter-carrier frequency: 500 mv sensitivity. Has all the performance and convenience features of the Model 701 frequency capability. An economical way to upgrade operations at stations with existing aural modulation monitoring capability.

**③ Model 702 TV Aural Modulation Only**  
Monitors percent aural modulation: 250  $\mu$ v sensitivity. Ideal for stations which need to add remote aural monitoring capability to existing frequency monitoring equipment. FCC Type Approval 3-189.

**Other 701 and 702 Features**  
Demodulation of aural modulation from inter-carrier.  
Exclusive "aural carrier only" switch for detecting inter-carrier noise.

Digitally-settable flashers display plus and minus peaks simultaneously.

Built-in aural modulation calibrator.

Provision for SCA output.

## ④ Model 713 AM Broadcast Monitor

Monitors carrier frequency and percent aural modulation off-the-air: 2.5 mv sensitivity. And digital display of frequency error. Frequency accuracy is  $\pm 2$  Hz per year. Instrument also has digitally-settable peak flashers to 129% positive peak, and a 100% negative peak modulation indicator.

Like the Models 701 and 709, the 713 can be used as a precision 6-digit frequency counter to 10 MHz. Other features include built-in modulation calibrator; remote meter and peak flasher outputs; and provision for automatic logging, BCD or analog outputs. Options include off-frequency alarm and +5% and -10% carrier level and carrier off alarm. FCC Type Approval 3-195.

## ACCESSORIES

### ⑤ AGC Meter

Indicates relative input level. Meter is driven by AGC circuits of the Model 701 or Model 702.

### ⑥ Model 725 Automatic Logging Adapter and Digital Clock

Converts visual carrier and inter-carrier measurements to analog signals. Also has digital clock showing day, hours, minutes, and seconds. Clock has BCD outputs to drive parallel clocks or a character generator for displaying information on TV monitor screens. Model 725 clock holds a stability of  $\pm 10$  seconds per year. Version also available (Model 725A) with super stable time base (frequency stability of  $1 \times 10^{-9}$  per day).

### ⑦ Model 704 and 704A Remote Panels (not shown)

Duplicates Modulation Meter and Peak Modulation lamps of monitor. FCC Type Approved.

**NOTE: TFT Monitors comply with all relevant FCC requirements for local and remote monitoring.**

For complete specifications on TFT's optimized remote monitors, and/or a demonstration on your frequency, call or write:

**TFT TIME AND FREQUENCY TECHNOLOGY, INC.**  
2950 SCOTT BLVD., SANTA CLARA, CA 95050 (408) 246-6365

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# We admit... we have created a generation gap!

1954  
D-24

1971  
D-124

1954  
D-19

1971  
D-190

When it comes to cardioid dynamic microphone developments **AKG** is purposely creating a generation gap.

We have to, because we insist on staying far ahead.

Imitation is the sincerest form of flattery and while others attempted to equal the acoustical properties and duplicate the design appearance of the D-19 and D-24, **AKG** continued in setting the pace by developing a new family of transducers with superior performance characteristics.

The D-19 and D-24 are the finest microphones in their

class, as thousands of owners will attest. However, new techniques and materials made fundamental design changes possible. Gone is the complicated "plumbing" within the microphone requiring slots or holes along the microphone body, and these essentials are improved: smoothness of response, uniformity of directional characteristics, front-to-back ratio at all frequencies and ruggedness.

The **AKG** D-124 and D-190 are the newest generation of cardioid dynamic microphones, designed for today's requirements.

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see your authorized  
local **AKG** dealer  
or write to us.



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[www.americanradiohistory.com](http://www.americanradiohistory.com)

# 1972 Broadcast Buyer's Guide

Broadcast Engineering's Reference Issue joins the Computer Age!

This 1972 annual issue, of Broadcast Industry Buyer's Guide and the Manufacturer's Address sections have been prepared for you by computer. We have taken this step so that we may continue to provide you with the most complete and latest information on products and services. Now that we can add and delete listings by computer we will be able to keep pace with the changes taking place in the industry. Not only will you have a better directory with this issue, you will continue to see improvements in the years to come.

Our only limitation is that we send questionnaires to active manufacturers in the field. Some either fail to receive their listing notice or forget to send it in. The

result is almost 600 manufacturers in nearly 500 categories.

For CATV categories not listed in this section, see the CATV Buyer's Guide. It includes products especially designed for CATV use.

## Red Listings

For the second time we are including red listings. A red listing under a category signifies that the manufacturer has an ad in this issue describing that product or service. In this way you will be able to immediately refer to specs and descriptions in categories of interest to you. Addresses of all manufacturers in this portion of the Guide are listed in the Manufacturers Address section.

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- Roh Corporation
- Rupert Neve Incorporated
- Stancil-Hoffman Corp.
- Systems Marketing Corp. And Sono-Mag Corp.
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- Broadcast Electronics
- Burwen Laboratories

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- Danscoll Ltd.
- Datatek Corp.
- Denrad Mfg. Co. Inc.
- Edison Electronics, Div. of McGraw-Edison Co., Daven & Measurements
- Electrodyne Div. of MCA Technology, Inc.
- Electronic Designers Inc.
- Electro-Voice Inc. Div. of Gulton Industries, Inc.
- Fisher Berkeley Corp.
- Gately Electronics
- Gates Division of Harris-Intertype
- GE Electronic Components Sales Dept.
- Grass Valley Group, Inc.
- Hewlett Packard Co.
- Internl. Nuclear Corp.
- Langevin An MCA Technology Company
- Marconi Electronics Inc.
- Marti Electronics
- MCA Technology, Inc.
- McMartin Industries Inc.
- Melcor Electronics Corp.
- Micro-Trak Corporation (Formerly: Gray Research & Dev.)
- Neve Inc., Rupert
- Permadynne Electronics Corp.
- Philips Broadcast Equipment Corp. Subs. North American Philips Corp.
- Precision Elect. Inc.
- Precision Laboratories Precision Cine Equipment Corp.
- Pulse Dynamics Mfg. Corp.
- Quad-Eight Electronics
- Radio Mfg. Co.
- Ramko Research
- RCA Corporation RCA Broadcast Equip. Communications Systems Div.
- Riker Communications Inc.
- Roh Corporation
- Round Hill Assoc.
- Rupert Neve Incorporated
- Russco Electronics Mfg. Inc.
- Sansul Electronics Corp.
- Sarkes Tarzian Inc. Broadcast Equipment Div.
- Scientific Systems, Inc. Broadcast Equipment Div.
- Shintron Co. Inc.
- Shure Brothers Inc.
- Singer Products Co., Inc.
- Sparta Electronic Corp.
- Spectra Sonics
- Systems Marketing Corp. And Sono-Mag Corp.
- TelComp Division Television and Computer Corp.
- Telex Communications Division
- Tri-Tronics
- Ultra Audio Products
- United Recording Electronics Industries
- Visual Communication Products Oper. General Electric Co.
- Wilkinson Electronics, Inc.

**Amplifier, AF Peak Limiting AM**

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**Gates** ..... 7, 88

- ALTEC
- Belar Electronics Lab., Inc.
- Burwen Laboratories
- CBS Labs
- CCA Electronics
- Collins Radio Company Broadcasting Marketing.
- Electrodyne Div. of MCA Technology, Inc.
- Electronic System Eng.
- Fairchild Sound Equipment Corp. A Robins Industries Corp.
- Gates Division of Harris-Intertype
- Langevin An MCA Technology Company
- LPB Inc.

- Magnatech Co.
- Masterstone Co.
- Melcor Electronics Corp.
- Neve Inc., Rupert
- Radio Mfg. Co.
- RCA Corporation RCA Broadcast Equip. Communications Systems Div.
- Riker Communications Inc.
- Rupert Neve Incorporated
- Singer Products Co., Inc.
- Spectra Sonics
- Spotmaster Broadcast Electronics
- Systems Marketing Corp. And Sono-Mag Corp.
- Tele Measurements Inc.
- United Recording Electronics Industries
- Wilkinson Electronics, Inc.

**Amplifier, AF Peak Limiting FM**

See Adv. Page

**Gates** ..... 7,  
**Wilkinson Electronics, Inc.**.....

- Belar Electronics Lab., Inc.
- Burwen Laboratories
- CBS Labs
- CCA Electronics
- Collins Radio Company Broadcasting Marketing.
- Electrodyne Div. of MCA Technology, Inc.
- Electronic System Eng.
- Fairchild Sound Equipment Corp. A Robins Industries Corp.
- Gately Electronics
- Gates Division of Harris-Intertype
- Langevin An MCA Technology Company
- LPB Inc.
- Magnatech Co.
- Masterstone Co.
- Neve Inc., Rupert
- RCA Corporation RCA Broadcast Equip. Communications Systems Div.
- Rupert Neve Incorporated
- Singer Products Co., Inc.
- Spotmaster Broadcast Electronics
- Systems Marketing Corp. And Sono-Mag Corp.
- Tele Measurements Inc.
- United Recording Electronics Industries
- Wilkinson Electronics, Inc.

**Amplifier, AF Remote**

See Adv. Page

**Gates** .....

- ALTEC
- Arbor Systems Inc.
- Broadcast Electronics
- Central Dynamics Corp.
- Collins Radio Company Broadcasting Marketing.
- Fairchild Sound Equipment Corp. A Robins Industries Corp.
- Gately Electronics
- Gates Division of Harris-Intertype
- LPB Inc.
- Moseley Assoc. Inc.
- Neve Inc., Rupert
- QRK Electronic Prod.
- RCA Corporation RCA Broadcast Equip. Communications Systems Div.
- Riker Communications Inc.
- Roh Corporation
- Round Hill Assoc.
- Rupert Neve Incorporated
- Sarkes Tarzian Inc. Broadcast Equipment Div.
- Scientific Systems, Inc. Broadcast Equipment Div.
- Singer Products Co., Inc.
- Sparta Electronic Corp.
- Spectra Sonics
- TelComp Division Television and Computer Corp.
- Tele Measurements Inc.
- Tri-Tronics

Audio Products  
nson Electronics, Inc.

**Amplifier, AF Reverberation**

Dept 70, A Div. of Dyma  
Engineering, Inc.  
Engineering, Inc.  
ronic Designers Inc.  
Child Sound Equipment Corp. A  
bins Industries Corp.  
y Electronics  
am Audio Corp.  
ertone Co.  
or Electronics Corp.  
nc., Rupert  
Radio and Video  
os Broadcast Equipment Corp.  
bs. North American Philips Corp.  
l-Eight Electronics  
o Mfg. Co.  
rt Neve Incorporated  
tra Sonics  
Measurements Inc.  
vision Equipment Associates  
Technology  
Electronic Sales Co.  
i Audio Products  
nternational

**Amplifier, AF Stereo**

EC  
ns Radio Company Broadcasting  
arketing.  
ept 70, A Div. of Dyma  
Engineering, Inc.  
wn International  
Elect. Inst. Co., Inc.  
ronic Designers Inc.  
tro-Voice Inc. Div. of Gulton  
dustries, Inc.  
Child Sound Equipment Corp. A  
bins Industries Corp.  
ly Electronics  
es Division of Harris-Intertype  
Hth Co.  
s Corp  
o-Trak Corporation (Formerly:  
ray Research & Dev.)  
cision Elect. Inc.  
A Corporation RCA Broadcast  
quip. Communications Systems  
iv.  
rox Corporation  
ultz Inc., Albert  
ger Products Co., Inc.  
y/Superscope  
e Measurements Inc.  
ex Communications Division  
Tronics  
nson Electronics, Inc.

**Amplifier, Bridging**

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**Gates ..... 88**

eco Inc.  
merican Data Corp.  
aconda Electronics  
oor Systems Inc.  
antic Research Corp. Teleproducts  
iv.  
dio Designs & Mfg.  
nder-Tongue Labs.  
wen Laboratories  
TV Equipment Co.  
or Electronics  
lins Radio Company Broadcasting  
Marketing,  
nputer Image Corp.  
ta Electronics Inc. (N.C.)  
ta Electronics Inc. (Va.)  
rad Mfg. Co. Inc.  
NAIR Electronics, Inc.  
ron, Inc.  
tes Division of Harris-Intertype  
ass Valley Group, Inc.  
ernth. Nuclear Corp.  
ngevin An MCA Technology  
Company  
agnavox Company CATV Division  
stertone Co.  
ve Inc., Rupert  
se Dynamics Mfg. Corp.

Quad-Eight Electronics  
Radio Mfg. Co.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
RCA Corporation RCA Service  
Company Div.  
Riker Communications Inc.  
Roh Corporation  
Rupert Neve Incorporated  
Rust Corp.  
Scientific Systems, Inc. Broadcast  
Equipment Div.  
Singer Products Co., Inc.  
Spectra Sonics  
Spencer-Kennedy Labs., Inc.  
Systems Marketing Corp. And  
Sono-Mag Corp.  
TelComp Division Television and  
Computer Corp.  
Ultra Audio Products  
Vikoa Inc.  
Wilkinson Electronics, Inc.

**Amplifier, Clamping**

See Adv. Page

**Beston Electronics Inc. .... 5**

Alma Engineering Inc.  
American Data Corp.  
Ball Bros. Research Corp. Miratel  
Division  
Bell & Howell Consumer Products  
Group  
Beston Electronics Inc.  
Computer Image Corp.  
DYNAIR Electronics, Inc.  
Grass Valley Group, Inc.  
Internl. Nuclear Corp.  
Marconi Electronics Inc.  
Melcor Electronics Corp.  
Neve Inc., Rupert  
Raytheon Company Raytheon Data  
Systems Co.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
Riker Communications Inc.  
Rupert Neve Incorporated  
Telemet Co.  
Vital Industries

**Amplifier, Compressing**

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**Audio Distributor Inc. .... 116**  
**Gates ..... 88**

Audio Distributor Inc.  
Burwen Laboratories  
Gates Division of Harris-Intertype  
Melcor Electronics Corp.  
Orbit Radio and Video  
RHG Elect Labs, Inc.

**Amplifier, DC**

American Data Corp.  
Burwen Laboratories  
Crown International  
GE Electronic Components Sales Dept.  
Hewlett Packard Co.  
Honeywell Inc. Test Instruments Div.  
Langevin An MCA Technology  
Company  
lectronic Res. Labs. Inc.  
Melcor Electronics Corp.  
Moseley Assoc. Inc.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
Rust Corp.  
Tele Measurements Inc.

**Amplifier, Distribution**

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**Beston Electronics Inc. .... 5**  
**Danscoll Ltd. .... 85**  
**Gates ..... 88**  
**Ramko Research ..... 108**  
**Roh Corporation ..... 12**  
**TelComp Division ..... 103**

**Telemet Co. .... IBC**  
**Wilkinson Electronics,**  
**Inc. .... 17**

Alcor Inc.  
Alma Engineering Inc.  
Ameco Inc.  
American Data Corp.  
Ampro Corp.  
Anaconda Electronics  
Anixter-Pruzan CATV Division  
Applied Elect. Mechanics  
Atlantic Research Corp. Teleproducts  
Div.  
Audio Designs & Mfg.  
Ball Bros. Research Corp. Miratel  
Division  
Bell P/A Prod. Corp.  
Beston Electronics Inc.  
Blonder-Tongue Labs.  
Bradford Information Systems  
Broadcast Electronics  
Broadcast Prod. Co. Inc. Bcst. Division  
CATV Equipment Co.  
CBS Labs  
C Cor Electronics  
Central Dynamics Corp.  
Cleveland Electronics, Inc.  
Cohu, Inc. Electronics Division  
Collins Radio Company Broadcasting  
Marketing,  
Computer Image Corp.  
Danscoll Ltd.  
Datatek Corp.  
Delta Electronics Inc. (N.C.)  
Delta Electronics Inc. (Va.)  
Dyma Engineering, Inc.  
DYNAIR Electronics, Inc.  
Dynamics Corp. Video Products  
Div.  
Electrodyne Div. of MCA Technology.  
Inc.  
Entron, Inc.  
Fairchild Sound Equipment Corp. A  
Robins Industries Corp.  
Gately Electronics  
Gates Division of Harris-Intertype  
GBC Closed Circuit TV Corp.  
Grass Valley Group, Inc.  
Internl. Nuclear Corp.  
Javelin Division Apollo Lasers, Inc.  
Jerrold Electronics Corp. CATV  
Systems Div.  
Kaiser CATV Division Kaiser  
Aerospace & Electronics Corp.  
Langevin An MCA Technology  
Company  
LPB Inc.  
Magnavox Company CATV Division  
Marconi Electronics Inc.  
McCurdy Radio Ind. Inc.  
Melcor Electronics Corp.  
Neve Inc., Rupert  
Philips Broadcast Equipment Corp.  
Subs. North American Philips Corp.  
Pulse Dynamics Mfg. Corp.  
Radio Mfg. Co.  
Ramko Research  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
RCA Corporation RCA Service  
Company Div.  
Riker Communications Inc.  
Robert Bosch Corp. Fernseh Div.  
Roh Corporation  
Rohde & Schwarz Sales  
Rupert Neve Incorporated  
Sarkes Tarzlan Inc. Broadcast  
Equipment Div.  
Shibaden Corp. of America  
Shintron Co. Inc.  
Singer Products Co., Inc.  
Spectra Sonics  
Spencer-Kennedy Labs., Inc.  
Spotmaster Broadcast Electronics  
Tasker Industries Systems Division  
TelComp Division Television and  
Computer Corp.  
TeleMation, Inc.  
Tele Measurements Inc.  
Telemet Co.  
Teleng Inc.  
TV Cable Supply Co.  
Video Engineering Co. Inc.  
Visual Communication Products Oper.  
General Electric Co.  
Vital Industries

Wilkinson Electronics, Inc.

**Amplifier, Keying**

See Adv. Page

American Data Corp.  
Ball Bros. Research Corp. Miratel  
Division  
Central Dynamics Corp.  
Computer Image Corp.  
Grass Valley Group, Inc.  
Quad-Eight Electronics  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
Riker Communications Inc.  
Sarkes Tarzlan Inc. Broadcast  
Equipment Div.  
Shintron Co. Inc.  
Video Devices Co.  
Video Engineering Co. Inc.

**Amplifier, Line**

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**American Data Corp. .... 87**  
**Danscoll Ltd. .... 85**  
**Gates ..... 88**  
**Marti Electronics ..... 35**  
**Ramko Research ..... 108**  
**Roh Corporation ..... 12**  
**Wilkinson Electronics,**  
**Inc. .... 17**

American Data Corp.  
Ampro Corp.  
Audio Designs & Mfg.  
Blonder-Tongue Labs.  
Burwen Laboratories  
C Cor Electronics  
Central Dynamics Corp.  
Danscoll Ltd.  
Entron, Inc.  
Gately Electronics  
Gates Division of Harris-Intertype  
Magnavox Company CATV Division  
Marti Electronics  
Neve Inc., Rupert  
Pulse Dynamics Mfg. Corp.  
Quad-Eight Electronics  
Radio Mfg. Co.  
Ramko Research  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
RCA Corporation RCA Service  
Company Div.  
Roh Corporation  
Rupert Neve Incorporated  
Sparta Electronic Corp.  
Spectra Sonics  
Systems Marketing Corp. And  
Sono-Mag Corp.  
United Recording Electronics  
Industries  
Video Engineering Co. Inc.  
Wilkinson Electronics, Inc.

**Amplifier, Masking**

Burwen Laboratories  
CBS Labs  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
Riker Communications Inc.  
Tele Measurements Inc.

**Amplifier, Monitor**

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**Crown International ..... 40**  
**Gates ..... 88**  
**Marti Electronics ..... 35**  
**Roh Corporation ..... 12**  
**Russco Electronics**  
**Mfg. Inc. .... 105**  
**Wilkinson Electronics,**  
**Inc. .... 17**

Ampro Corp.

CCA Electronics  
 Central Dynamics Corp.  
 Crown International  
 Gates Division of Harris-Intertype  
 Magnatech Co.  
 Marti Electronics  
 Mastertone Co.  
 Melcor Electronics Corp.  
 National Electrolab Assoc. Ltd.  
 Radio Mfg. Co.  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 RCA Corporation RCA Service  
 Company Div.  
 Roh Corporation  
 Russco Electronics Mfg. Inc.  
 Sparta Electronic Corp.  
 Video Engineering Co. Inc.  
 Wilkinson Electronics, Inc.

**Amplifier, Operational**

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**TelComp Division..... 103**

Audio Designs & Mfg.  
 Burwen Laboratories  
 Computer Image Corp.  
 Gately Electronics  
 Melcor Electronics Corp.  
 Quad-Eight Electronics  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 RCA Corporation RCA Service  
 Company Div.  
 Tektronix Inc.  
 TelComp Division Television and  
 Computer Corp.

**Amplifier, Power**

Acrodyne Industries  
 Ampro Corp.  
 Audio Designs & Mfg.  
 Bogen Division Lear Siegler Inc.  
 California Instruments Co.  
 C Cor Electronics  
 Continental Electronics Mfg. Co. Subs.  
 of Resalab, Inc.  
 Crown International  
 Fairchild Sound Equipment Corp. A  
 Robins Industries Corp.  
 Gates Division of Harris-Intertype  
 MCA Technology, Inc.  
 Melcor Electronics Corp.  
 Precision Elect. Inc.  
 Radio Mfg. Co.  
 RCA Corporation RCA Service  
 Company Div.  
 RHA Audio Communications Corp.  
 RHG Elect Labs, Inc.  
 Roh Corporation  
 Spectra Sonics  
 Terminal Hudson Corp. Terminal  
 Hudson Electronics

**Amplifier, Processing Video**

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**American Data Corp. .... 87**  
**Robert Bosch Corp. .... 29**

Acrodyne Industries  
 American Data Corp.  
 Ball Bros. Research Corp. Miratel  
 Division  
 Central Dynamics Corp.  
 Computer Image Corp.  
 Danscoll Ltd.  
 Dyma Engineering, Inc.  
 Dynasciences Corp. Video Products  
 Div.  
 Entron, Inc.  
 Marconi Electronics Inc.  
 Mincom Div. 3M Co.  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 Robert Bosch Corp. Fernseh Div.  
 Shintron Co. Inc.  
 Video Engineering Co. Inc.

**Amplifier, Pulse**

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**American Data Corp. .... 87**  
**Beston Electronics Inc. .... 5**

Acrodyne Industries  
 Alma Engineering Inc.  
 American Data Corp.  
 Applied Elect. Mechanics  
 Applied Video Electronics, Inc.  
 Ball Bros. Research Corp. Miratel  
 Division  
 Beston Electronics Inc.  
 C Cor Electronics  
 Central Dynamics Corp.  
 Cohu, Inc. Electronics Division  
 Computer Image Corp.  
 Danscoll Ltd.  
 Datatek Corp.  
 DYNAIR Electronics, Inc.  
 Dynasciences Corp. Video Products  
 Div.  
 GE Electronic Components Sales Dept.  
 Grass Valley Group, Inc.  
 Hewlett Packard Co.  
 Interntl. Nuclear Corp.  
 Kapco Enterprises  
 Kay Elemetrics Corp.  
 Marconi Electronics Inc.  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 RHG Elect Labs, Inc.  
 Richmond Hill Laboratories Inc.  
 Riker Communications Inc.  
 Robert Bosch Corp. Fernseh Div.  
 Sarkes Tarzian Inc. Broadcast  
 Equipment Div.  
 TeleMaton, Inc.  
 Tele Measurements Inc.  
 Telemet Co.  
 Video Engineering Co. Inc.  
 Viscount Video Systems Ltd.

**Amplifier, Pulse Delay**

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**American Data Corp. .... 87**  
**Beston Electronics Inc. .... 5**

American Data Corp.  
 Beston Electronics Inc.

**Amplifier, Remote**

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**Audio Engineering Co. .... 110**  
**Wilkinson Electronics,  
 Inc. .... 17**

Audio Engineering Co.  
 Dyma Engineering, Inc.  
 Gates Division of Harris-Intertype  
 Moseley Assoc. Inc.  
 Orbit Radio and Video  
 Pulse Dynamics Mfg. Corp.  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 Wilkinson Electronics, Inc.

**Amplifier, RF General Purpose**

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**National Electrolab  
 Assoc. Ltd. .... 101**

Acrodyne Industries  
 AEL Communications Corp., Subs.  
 American Electronics Labs., Inc.  
 Ameco Inc.  
 American Electronics Lab., Inc.  
 Anixter-Pruzan CATV Division  
 Belar Electronics Lab., Inc.  
 Blonder-Tongue Labs.  
 CCA Electronics  
 C Cor Electronics  
 Collins Radio Company Broadcasting  
 Marketing  
 Entron, Inc.  
 Gates Division of Harris-Intertype  
 GE Electronic Components Sales Dept.  
 General Radio Co.

Hewlett Packard Co.  
 Integral Data Devices Inc.  
 Kay Elemetrics Corp.  
 Lectronic Res. Labs. Inc.  
 Magnatech Co.  
 Microwave Assoc. Inc.  
 National Electrolab Assoc. Ltd.  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 RHG Elect Labs, Inc.  
 Robert Bosch Corp. Fernseh Div.  
 Rodelco  
 Singer Co., The Palo Alto Operation  
 Singer Products Co., Inc.  
 Sparta Electronic Corp.  
 Television Technology Corp.  
 TV Cable Supply Co.  
 Video Engineering Co. Inc.  
 Vikoa Inc.

**Amplifier, RF Linear**

Acrodyne Industries  
 CCA Electronics  
 C Cor Electronics  
 Continental Electronics Mfg. Co. Subs.  
 of Resalab, Inc.  
 Dyma Engineering, Inc.  
 Gates Division of Harris-Intertype  
 LPB Inc.  
 National Electrolab Assoc. Ltd.  
 RHG Elect Labs, Inc.  
 Robert Bosch Corp. Fernseh Div.  
 Television Technology Corp.  
 Wilkinson Electronics, Inc.

**Amplifier, RF Peak Limiting**

Belar Electronics Lab., Inc.  
 Magnatech Co.  
 Microwave Assoc. Inc.  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 RHG Elect Labs, Inc.  
 Video Engineering Co. Inc.  
 Wilkinson Electronics, Inc.

**Amplifier, RF Power**

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**National Electrolab  
 Assoc. Ltd. .... 101**  
**Wilkinson Electronics,  
 Inc. .... 17**

Acrodyne Industries  
 Ailtech (Formerly: Microdot)  
 American Electronics Lab., Inc.  
 Amperex Electronic Corp. Power  
 Tubes  
 Belar Electronics Lab., Inc.  
 Blonder-Tongue Labs.  
 CCA Electronics  
 C Cor Electronics  
 Collins Radio Company Broadcasting  
 Marketing  
 Continental Electronics Mfg. Co. Subs.  
 of Resalab, Inc.  
 Eimac Div. Varian Associates  
 EMCEE Broadcast Products Div. of  
 Electronics, Missiles &  
 Communications, Inc.  
 Gates Division of Harris-Intertype  
 Kay Elemetrics Corp.  
 Lectronic Res. Labs. Inc.  
 McMartin Industries Inc.  
 Microwave Assoc. Inc.  
 National Electrolab Assoc. Ltd.  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 RHG Elect Labs, Inc.  
 Singer Products Co., Inc.  
 Sparta Electronic Corp.  
 Television Technology Corp.  
 Video Engineering Co. Inc.  
 Visual Communication Products Oper.  
 General Electric Co.  
 Wilkinson Electronics, Inc.

**Amplifier, Sensing**

Applied Elect. Mechanics  
 Broadcast Prod. Co. Inc. Best. Division

CYBRIX CORPORATION  
 Mastertone Co.  
 Riker Communications Inc.  
 Tele Measurements Inc.

**Amplifier, Stabilizing**

American Data Corp.  
 Ball Bros. Research Corp. Miratel  
 Division  
 Central Dynamics Corp.  
 Dynasciences Corp. Video Products  
 Div.  
 General Radio Co.  
 Grass Valley Group, Inc.  
 Interntl. Nuclear Corp.  
 Marconi Electronics Inc.  
 Mincom Div. 3M Co.  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 Riker Communications Inc.  
 Telemet Co.  
 Vital Industries

**Amplifier, Stereo Limiter**

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**Gates ..... 103**  
**Wilkinson Electronics,  
 Inc. .... 103**

Burwen Laboratories  
 CBS Labs  
 Gates Division of Harris-Intertype  
 MCA Technology, Inc.  
 Neve Inc., Rupert  
 Rupert Neve Incorporated  
 Spectra Sonics  
 Wilkinson Electronics, Inc.

**Amplifier, TV Video**

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**American Data Corp. .... 103**

Acrodyne Industries  
 Alcor Inc.  
 Alma Engineering Inc.  
 American Data Corp.  
 American Pamcor  
 Amperex Electronic Corp. Power  
 Tubes  
 Andersen Labs Inc.  
 Applied Elect. Mechanics  
 Applied Video Electronics, Inc.  
 AVA Elect. & Machine Corp.  
 Ball Bros. Research Corp. Miratel  
 Division  
 Blonder-Tongue Labs.  
 Cascade Electronics  
 Catal, a Div. of United Scientific Cor  
 C Cor Electronics  
 Central Dynamics Corp.  
 Cohu, Inc. Electronics Division  
 Computer Image Corp.  
 Danscoll Ltd.  
 Delta Electronics Inc. (N.C.)  
 DYNAIR Electronics, Inc.  
 Dynasciences Corp. Video Products  
 Div.  
 Entron, Inc.  
 Fung Engineering Co.  
 Gates Division of Harris-Intertype  
 GBC Closed Circuit TV Corp.  
 Grass Valley Group, Inc.  
 Ikegami Tsushinki Co., Ltd. Export  
 Department  
 Integral Data Devices Inc.  
 Interntl. Nuclear Corp.  
 Kay Elemetrics Corp.  
 K'SON Corporation  
 Lenco Inc. Electronics Division  
 Marconi Electronics Inc.  
 Philips Broadcast Equipment Corp.  
 Subs. North American Philips Corp  
 Raytheon Company Raytheon Data  
 Systems Co.  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 Richmond Hill Laboratories Inc.  
 Riker Communications Inc.  
 Sarkes Tarzian Inc. Broadcast  
 Equipment Div.  
 Shintron Co. Inc.

er Products Co., Inc.  
 ncer-Kennedy Labs., Inc.  
 -Cline Inc.  
 dyne Brown Engineering Co.  
 ience & Engrg. Div.  
 eMation, Inc.  
 io Engineering Co. Inc.  
 ount Video Systems Ltd.  
 al Communication Products Oper.  
 eneral Electric Co.  
 al Educom Inc.  
 Industries

RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 Rohde & Schwarz Sales  
 Singer Co., The Palo Alto Operation  
 Spencer-Kennedy Labs., Inc.  
 Tektronix Inc.  
 Texscan Corp.

**Analyzers, Video**

B & K Dynascan Corp.  
 Colorado Video Inc.  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 Rohde & Schwarz Sales  
 Spencer-Kennedy Labs., Inc.  
 Tektronix Inc.  
 Video Engineering Co. Inc.

**Antenna Systems**

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**Bogner Broadcast  
 Equipment Corp. .... 109  
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Admiral Corporation  
 Ameco Inc.  
 Andrew Corp.  
 Andrews Tower Inc.  
 AVA Elect. & Machine Corp.  
 Bogner Broadcast Equipment Corp.  
 Collins Radio Company Broadcasting  
 Marketing.  
 Continental Electronics Mfg. Co. Subs.  
 of Resalab, Inc.  
 Delta Electronics Inc. (Va.)  
 Electromagnetic Specialties  
 Entron, Inc.  
 Gates Division of Harris-Intertype  
 Gulf Telephone & Electronics  
 Hy-Power Electronics Co.  
 Jampro Antenna Co.  
 Mastertone Co.  
 Micro Communications, Inc.  
 Microwave Assoc. Inc.  
 Multronics, Inc.  
 Phelps Dodge Communications Co.  
 Div. Phelps Dodge Industries Inc.  
 Prodelin Inc.  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 RF Systems, Inc.  
 Riker Communications Inc.  
 Robert Bosch Corp. Fernseh Div.  
 Shively Laboratories, Inc.  
 Singer Products Co., Inc.  
 Sitco Antenna Co.  
 Soll, Inc., Joseph M.  
 TACO Technical Appliance Corp. A  
 General Instrument Co.  
 Tri-Ex Tower Corp.  
 TV Cable Supply Co.  
 Video Engineering Co. Inc.  
 Visual Communication Products Oper.  
 General Electric Co.

**Antenna Tuning Units**

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**Wilkinson Electronics,  
 Inc. .... 17**  
 Wilkinson Electronics, Inc.

**Antennas, Directional System**

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**Gates ..... 88**  
 Continental Electronics Mfg. Co. Subs.  
 of Resalab, Inc.  
 Electromagnetic Specialties  
 Gates Division of Harris-Intertype  
 Jampro Antenna Co.  
 Micro Communications, Inc.  
 TACO Technical Appliance Corp. A  
 General Instrument Co.

**Antennas, Dummy Load**

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**Bird Electronic Corp. .... 117  
 Gates ..... 88  
 Shively Laboratories,  
 Inc. .... 38  
 Wilkinson Electronics,  
 Inc. .... 17**

Bird Electronic Corp.  
 Continental Electronics Mfg. Co. Subs.  
 of Resalab, Inc.  
 Gates Division of Harris-Intertype  
 Jampro Antenna Co.  
 Marconi Electronics Inc.  
 Micro Communications, Inc.  
 Ohmite Mfg. Co.  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 Rex Rheostat & Co., Inc.  
 Rohde & Schwarz Sales  
 Shively Laboratories, Inc.  
 Wilkinson Electronics, Inc.

**Antennas, Ice Warning System**

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**Gates ..... 88**

Cook Electric Co.  
 CYBRIX CORPORATION  
 Gates Division of Harris-Intertype  
 Mastertone Co.  
 Micro-Trak Corporation (Formerly:  
 Gray Research & Dev.)

**Antennas, Monitor**

National Electrolab Assoc. Ltd.  
 Phelps Dodge Communications Co.  
 Div. Phelps Dodge Industries Inc.  
 Video Engineering Co. Inc.

**Antennas, Receiving FM**

Anixter-Pruzan CATV Division  
 G.C. Electronics  
 McMartin Industries Inc.  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 RCA Corporation RCA Missile &  
 Surface Radar Div.  
 RCA Corporation RCA Service  
 Company Div.  
 RF Systems, Inc.  
 Saxton Prod. Inc.  
 Scala Radio Corp.  
 TACO Technical Appliance Corp. A  
 General Instrument Co.

**Antennas, Receiving LF**

Andrew Tower Inc.  
 Delta Electronics Inc. (Va.)  
 Honeywell Inc. Test Instruments Div.  
 Singer Co., The Palo Alto Operation

**Antennas, Receiving MF**

Delta Electronics Inc. (Va.)  
 Gulf Telephone & Electronics  
 Singer Co., The Palo Alto Operation  
 Singer Products Co., Inc.

**Antennas, Receiving UHF**

Ameco Inc.  
 American Electronics Lab., Inc.  
 American Pamcor  
 Andrew Corp.  
 Anixter-Pruzan CATV Division  
 Blender-Tongue Labs.  
 EMCEE Broadcast Products Div. of  
 Electronics, Missiles &  
 Communications, Inc.  
 G.C. Electronics  
 Honeywell Inc. Test Instruments Div.  
 Jerrold Electronics Corp. CATV  
 Systems Div.  
 Lectronic Res. Labs. Inc.  
 Phelps Dodge Communications Co.  
 Div. Phelps Dodge Industries Inc.

Prodelin Inc.  
 RF Systems, Inc.  
 Riker Communications Inc.  
 Robert Bosch Corp. Fernseh Div.  
 Rohde & Schwarz Sales  
 Saxton Prod. Inc.  
 Scala Radio Corp.  
 Singer Co., The Palo Alto Operation  
 Sitco Antenna Co.  
 TACO Technical Appliance Corp. A  
 General Instrument Co.  
 TV Cable Supply Co.  
 Video Engineering Co. Inc.

**Antennas, Receiving VHF**

Ameco Inc.  
 American Electronics Lab., Inc.  
 American Pamcor  
 Andrew Corp.  
 Anixter-Pruzan CATV Division  
 Blender-Tongue Labs.  
 CATV Equipment Co.  
 EMCEE Broadcast Products Div. of  
 Electronics, Missiles &  
 Communications, Inc.  
 G.C. Electronics  
 Honeywell Inc. Test Instruments Div.  
 Jerrold Electronics Corp. CATV  
 Systems Div.  
 Lectronic Res. Labs. Inc.  
 Phelps Dodge Communications Co.  
 Div. Phelps Dodge Industries Inc.  
 Prodelin Inc.  
 RF Systems, Inc.  
 Riker Communications Inc.  
 Robert Bosch Corp. Fernseh Div.  
 Rohde & Schwarz Sales  
 Saxton Prod. Inc.  
 Scala Radio Corp.  
 Singer Co., The Palo Alto Operation  
 Singer Products Co., Inc.  
 Sitco Antenna Co.  
 TACO Technical Appliance Corp. A  
 General Instrument Co.  
 TV Cable Supply Co.  
 Video Engineering Co. Inc.

**Antennas, Receiving Microwave**

Andrew Corp.  
 Anixter-Pruzan CATV Division  
 Lectronic Res. Labs. Inc.  
 Mastertone Co.  
 Narda Microwave Corp., The  
 Prodelin Inc.  
 RF Systems, Inc.  
 Singer Co., The Palo Alto Operation  
 TACO Technical Appliance Corp. A  
 General Instrument Co.

**Antennas, Remote Indicator**

Gates Division of Harris-Intertype  
 Potomac Instruments, Inc.

**Antennas, Remote Pickup**

Andrew Corp.  
 Andrews Tower Inc.  
 Gates Division of Harris-Intertype  
 Magnatech Co.  
 Mastertone Co.  
 Phelps Dodge Communications Co.  
 Phelps Dodge Communications Co.  
 Div. Phelps Dodge Industries Inc.  
 RF Systems, Inc.  
 Scala Radio Corp.  
 TACO Technical Appliance Corp. A  
 General Instrument Co.

**Antennas, STL**

Andrew Corp.  
 Magnatech Co.  
 Mastertone Co.  
 Phelps Dodge Communications Co.  
 Div. Phelps Dodge Industries Inc.  
 Scala Radio Corp.

**Antennas, Transmitting FM**

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 Jampro Antenna Co. .... 33**

**Amplifier, Video Sweep**

Applied Video Electronics, Inc.  
 Cor Electronics  
 Elemetrics Corp.  
 Under Instruments Corp.  
 Electronic Res. Labs. Inc.  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.

**Analyzers, Distortion**

Antic Research Corp. Teleproducts  
 Div.  
 Baker & Williamson, Inc.  
 B & K Dynascan Corp.  
 Collins Radio Company Broadcasting  
 Marketing.  
 Omega Engineering, Inc.  
 OPA Marketing Industries, Inc.  
 General Radio Co.  
 Path Co.  
 Hewlett Packard Co.  
 Electronic Res. Labs. Inc.  
 Marconi Instruments  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 Rohde & Schwarz Sales  
 Tektronix Inc.

**Analyzers, Harmonic**

OPA Marketing Industries, Inc.  
 General Radio Co.  
 Hewlett Packard Co.  
 Electronic Res. Labs. Inc.  
 Marconi Instruments  
 com Inc.  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 Rohde & Schwarz Sales  
 Tektronix Inc.

**Analyzers, Intermodulation**

Down International  
 Nelson Electronics, Div. of  
 McGraw-Edison Co., Daven &  
 Measurements  
 Path Co.  
 Rohde & Schwarz Sales  
 Tektronix Inc.

**Analyzers, Sideband**

B & K Instruments Inc.  
 YNAIR Electronics, Inc.  
 ntron, Inc.  
 Marconi Instruments  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 Riker Communications Inc.  
 Rohde & Schwarz Sales  
 Singer Co., The Palo Alto Operation

**Analyzers, Spectrum**

LTEC  
 Anaconda Electronics  
 & K Dynascan Corp.  
 & K Instruments Inc.  
 ntron, Inc.  
 General Radio Co.  
 Leath Co.  
 Hewlett Packard Co.  
 eroid Electronics Corp. CATV  
 Systems Div.  
 Gay Elemetrics Corp.  
 Marconi Instruments

**Sparta Electronic Corp. .... 74**

CCA Electronics  
Electromagnetic Specialties  
Gates Division of Harris-Intertype  
Jampro Antenna Co.  
Magnatech Co.  
Mastertone Co.  
Micro Communications, Inc.  
Phelps Dodge Communications Co.  
Div. Phelps Dodge Industries Inc.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
Scala Radio Corp.  
Shively Laboratories, Inc.  
Sparta Electronic Corp.  
TACO Technical Appliance Corp. A  
General Instrument Co.

**Antennas, Transmitting LF**

Andrews Tower Inc.  
Continental Electronics Mfg. Co. Subs.  
of Resalab, Inc.  
Delta Electronics Inc. (Va.)  
Gates Division of Harris-Intertype  
Jampro Antenna Co.

**Antennas, Transmitting MF**

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**Gates ..... 88**

Andrews Tower Inc.  
Collins Radio Company Broadcasting  
Marketing.  
Continental Electronics Mfg. Co. Subs.  
of Resalab, Inc.  
Delta Electronics Inc. (Va.)  
Gates Division of Harris-Intertype  
Gulf Telephone & Electronics  
Jampro Antenna Co.  
Marconi Electronics Inc.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
Shively Laboratories, Inc.  
Singer Products Co., Inc.

**Antennas, Transmitting UHF**

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**Bogner Broadcast  
Equipment Corp. .... 109**  
**Shively Laboratories,  
Inc. .... 38**

Alford Mfg. Co.  
Andrew Corp.  
Bogner Broadcast Equipment Corp.  
CCA Electronics  
CCA RF Industries, Inc.  
Collins Radio Company Broadcasting  
Marketing.  
Jampro Antenna Co.  
Lectronic Res. Labs. Inc.  
Marconi Electronics Inc.  
Micro Communications, Inc.  
Phelps Dodge Communications Co.  
Div. Phelps Dodge Industries Inc.  
Prodelin Inc.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
RF Systems, Inc.  
Rohde & Schwarz Sales  
Scala Radio Corp.  
Shively Laboratories, Inc.  
Sitco Antenna Co.  
TACO Technical Appliance Corp. A  
General Instrument Co.  
Visual Communication Products Oper.  
General Electric Co.

**Antennas, Transmitting VHF**

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**Bogner Broadcast  
Equipment Corp. .... 109**  
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Alford Mfg. Co.  
Andrew Corp.  
Bogner Broadcast Equipment Corp.

CCA Electronics  
CCA RF Industries, Inc.  
Collins Radio Company Broadcasting  
Marketing.  
Dyma Engineering, Inc.  
EMCEE Broadcast Products Div. of  
Electronics, Missiles &  
Communications, Inc.  
Gates Division of Harris-Intertype  
Jampro Antenna Co.  
Lectronic Res. Labs. Inc.  
Marconi Electronics Inc.  
Micro Communications, Inc.  
Phelps Dodge Communications Co.  
Div. Phelps Dodge Industries Inc.  
Prodelin Inc.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
RF Systems, Inc.  
Rohde & Schwarz Sales  
Scala Radio Corp.  
Shively Laboratories, Inc.  
Singer Products Co., Inc.  
Sitco Antenna Co.  
TACO Technical Appliance Corp. A  
General Instrument Co.  
Visual Communication Products Oper.  
General Electric Co.

**Antennas, Transmitting  
Microwave**

Andrew Corp.  
Bogner Broadcast Equipment Corp.  
Collins Radio Company Broadcasting  
Marketing.  
Lectronic Res. Labs. Inc.  
Microwave Assoc. Inc.  
Prodelin Inc.  
RF Systems, Inc.  
TACO Technical Appliance Corp. A  
General Instrument Co.

**Antennas, VSWR Indicator**

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**Gates ..... 88**

Bird Electronic Corp.  
CCA Electronics  
Collins Radio Company Broadcasting  
Marketing.  
Delta Electronics Inc. (Va.)  
Gates Division of Harris-Intertype  
General Radio Co.  
Lectronic Res. Labs. Inc.  
Micro Communications, Inc.  
Narda Microwave Corp., The  
Shively Laboratories, Inc.

**Arms, Tone**

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**Russo-Trak Corporation ..... 86**  
**Russco Electronics  
Mfg. Inc. .... 105**

Anixter-Pruzan CATV Division  
Broadcast Electronics  
CCA Electronics  
Collins Radio Company Broadcasting  
Marketing.  
Gates Division of Harris-Intertype  
LPB Inc.  
Micro-Trak Corporation (Formerly:  
Gray Research & Dev.)  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
Russco Electronics Mfg. Inc.  
Shure Brothers Inc.  
Singer Products Co., Inc.  
Spotmaster Broadcast Electronics  
Video Engineering Co. Inc.

**Attenuators, Audio**

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**Audio Distributor Inc. .... 116**  
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Allen Avionics Inc.  
ALTEC  
Arbor Systems Inc.  
Atlantic Research Corp. Teleproducts  
Div.  
Audio Designs & Mfg.  
Audio Distributor Inc.  
Burwen Laboratories  
Collins Radio Company Broadcasting  
Marketing.  
Duncan Electronics, Inc.  
Edison Electronics, Div. of  
McGraw-Edison Co., Daven &  
Measurements  
Fairchild Sound Equipment Corp. A  
Robins Industries Corp.  
General Radio Co.  
Gotham Audio Corp.  
Harvey Radio Pro A/V Div.  
Kay Elemetrics Corp.  
Langevin An MCA Technology  
Company  
Leader Instruments Corp.  
Marconi Instruments  
MCA Technology, Inc.  
Neve Inc., Rupert  
Ohmite Mfg. Co.  
Quad-Eight Electronics  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
Roh Corporation  
Rohde & Schwarz Sales  
Rupert Neve Incorporated  
Sennheiser Electronics Corp.  
Shallco, Incorporated  
Tech Laboratories Inc.  
Terminal Hudson Corp. Terminal  
Hudson Electronics  
Texscan Corp.  
TRW Electronic Supply Co. Div. of  
TRW  
Video Engineering Co. Inc.  
Waters Mfg. Inc.  
Weinschel Engineering Co.

**Attenuators, Fixed**

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**Roh Corporation ..... 12**  
**Waters Mfg. Inc. .... 37**

Allen Avionics Inc.  
Audio Distributor Inc.  
Bird Electronic Corp.  
Collins Radio Company Broadcasting  
Marketing.  
Edison Electronics, Div. of  
McGraw-Edison Co., Daven &  
Measurements  
Gates Division of Harris-Intertype  
General Microwave Corp.  
General Radio Co.  
Jerrold Electronics Corp. CATV  
Systems Div.  
Kay Elemetrics Corp.  
Langevin An MCA Technology  
Company  
Lectronic Res. Labs. Inc.  
MCA Technology, Inc.  
Narda Microwave Corp., The  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
Riker Communications Inc.  
Roh Corporation  
Rohde & Schwarz Sales  
Shallco, Incorporated  
Singer Co., The Palo Alto Operation  
Tech Laboratories Inc.  
Texscan Corp.  
Trompeter Electronics  
TV Cable Supply Co.  
Video Engineering Co. Inc.  
Waters Mfg. Inc.  
Weinschel Engineering Co.

**Attenuators, Impedance  
Matching**

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**Roh Corporation ..... 12**  
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Allen Avionics Inc.  
Barker & Williamson, Inc.

Bell P/A Prod. Corp.  
Collins Radio Company Broadcasting  
Marketing.  
Edison Electronics, Div. of  
McGraw-Edison Co., Daven &  
Measurements  
General Radio Co.  
Kay Elemetrics Corp.  
MCA Technology, Inc.  
Ohmite Mfg. Co.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
Roh Corporation  
Rohde & Schwarz Sales  
Shallco, Incorporated  
Tech Laboratories Inc.  
Texscan Corp.  
Video Engineering Co. Inc.  
Waters Mfg. Inc.  
Weinschel Engineering Co.

**Attenuators, Microwave**

American Electronics Lab., Inc.  
Bell P/A Prod. Corp.  
General Microwave Corp.  
General Radio Co.  
Hewlett Packard Co.  
Kay Elemetrics Corp.  
Lectronic Res. Labs. Inc.  
Marconi Instruments  
Narda Microwave Corp., The  
Rohde & Schwarz Sales  
Singer Co., The Palo Alto Operation  
Tech Laboratories Inc.  
Texscan Corp.  
Video Engineering Co. Inc.  
Weinschel Engineering Co.

**Attenuators, RF**

AEL Communications Corp., Subs.  
American Electronics Labs., Inc.  
Allen Avionics Inc.  
Ameco Inc.  
American Electronics Lab., Inc.  
Anaconda Electronics  
Anixter-Pruzan CATV Division  
AVA Elect. & Machine Corp.  
Bird Electronic Corp.  
CATV Equipment Co.  
Edison Electronics, Div. of  
McGraw-Edison Co., Daven &  
Measurements  
Entron, Inc.  
General Microwave Corp.  
General Radio Co.  
Hewlett Packard Co.  
Integral Data Devices Inc.  
Jerrold Electronics Corp. CATV  
Systems Div.  
Kay Elemetrics Corp.  
Lectronic Res. Labs. Inc.  
Marconi Instruments  
Matrix Systems Corp.  
Narda Microwave Corp., The  
OAK Industries Inc. CATV Division  
Riker Communications Inc.  
Rohde & Schwarz Sales  
Shallco, Incorporated  
Singer Co., The Palo Alto Operation  
Tech Laboratories Inc.  
Texscan Corp.  
TV Cable Supply Co.  
Video Engineering Co. Inc.  
Weinschel Engineering Co.

**Automation, Camera Control**

Ameco Inc.  
Bristol Div. of Acco  
Cunningham Corp. Subs. of Gleason  
Works  
Power-Optics Inc.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
Robert Bosch Corp. Fernseh Div.  
Trepac Corp. America  
Video Engineering Co. Inc.

**Automation, Color Corrector**

RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.



Bosch Corp. Fernseh Div.

**Information, Data Processing**

Broadcast Products Inc.  
Central Dynamics Corp.  
CYBRIX CORPORATION  
Sarkes Tarzian Inc. Broadcast  
Equipment Div.  
Systems Marketing Corp. And  
Sono-Mag Corp.

**Information, Equipment Control**

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Autogram Corporation ..... 112  
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Robert Bosch Corp. Fernseh Div.  
TeleMation, Inc.

Autogram Corporation  
Sarkes Tarzian Inc. Broadcast  
Equipment Div.  
Wilcox Co.

Broadcast Products Inc.

Central Dynamics Corp.

Concept 70, A Div. of Dyma

Engineering, Inc.

CYBRIX CORPORATION

Display Systems Corp.

Gates Division of Harris-Intertype

Grass Valley Group, Inc.

Magna-Tech Electronic Co., Inc.

Mastertone Co.

Metorex Corp.

Sarkes Tarzian Inc. Broadcast

Equipment Div.

Schafer Electronics

Schafer International

Sparta Electronic Corp.

STEP Corporation

Systems Marketing Corp. And

Sono-Mag Corp.

Tape-Athon Corp.

Trepac Corp. America

Visual Communication Products Oper.

General Electric Co.

**Information, Film Chain**

Central Dynamics Corp.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
Robert Bosch Corp. Fernseh Div.

**Information, Lighting Control**

Electronic Components Sales Dept.  
General Radio Co.  
Video Engineering Co. Inc.

**Information, Program Control**

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Marconi Electronics Inc.  
Riker Communications Inc. Broadcast  
Marketing Div.

American Data Corp.

Ampro Corp.

For Systems Inc.

Autogram Corporation

Broadcast Products Inc.

Central Dynamics Corp.

Collins Radio Company Broadcasting

Marketing.

Concept 70, A Div. of Dyma

Engineering, Inc.

Mer Division Conrac Corp.

**CYBRIX CORPORATION**

Datron Inc.  
Display Systems Corp.  
Gates Division of Harris-Intertype  
Grass Valley Group, Inc.  
IGM  
Jerrold Electronics Corp. CATV  
Systems Div.  
Orbit Radio and Video  
Quad-Eight Electronics  
Radio Mfg. Co.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
Riker Communications Inc.  
Sarkes Tarzian Inc. Broadcast  
Equipment Div.  
Schafer Electronics  
Schafer International  
Sparta Electronic Corp.  
STEP Corporation  
Systems Marketing Corp. And  
Sono-Mag Corp.  
Tape-Athon Corp.  
Trepac Corp. America  
Visual Communication Products Oper.  
General Electric Co.

**Automation, Program Logging**

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Tech., Inc. .... 47

Aitken Comm. Inc.  
Alto Communications Inc. Broadcast  
Marketing Div.  
American Data Corp.  
Ampex Corp.  
Ampro Corp.  
Atlantic Research Corp. Teleproducts  
Div.  
Autogram Corporation  
Broadcast Products Inc.  
CCA Electronics  
Central Dynamics Corp.  
Collins Radio Company Broadcasting  
Marketing.  
CYBRIX CORPORATION  
Datron Inc.  
Gates Division of Harris-Intertype  
Grass Valley Group, Inc.  
IGM  
Mastertone Co.  
Radio Mfg. Co.  
Sarkes Tarzian Inc. Broadcast  
Equipment Div.  
Schafer Electronics  
Schafer International  
Sparta Electronic Corp.  
STEP Corporation  
Systems Marketing Corp. And  
Sono-Mag Corp.  
Tape-Athon Corp.  
Time & Frequency Tech., Inc.  
Visual Communication Products Oper.  
General Electric Co.

**Automation, Projector**

Central Dynamics Corp.  
Grass Valley Group, Inc.  
Hokushin Elect. Co.  
Magna-Tech Electronic Co., Inc.  
Marconi Electronics Inc.  
Spindler & Sauppe, Inc.

**Automation, Switching**

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Grass Valley Group,  
Inc. .... 31  
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American Data Corp.  
Ampro Corp.  
Atlantic Research Corp. Teleproducts  
Div.  
Broadcast Products Inc.  
Central Dynamics Corp.  
Chrono-Log Corp.

CMX Systems  
Cohu, Inc. Electronics Division  
Concept 70, A Div. of Dyma  
Engineering, Inc.  
Cunningham Corp. Subs. of Gleason  
Works  
CYBRIX CORPORATION  
Grass Valley Group, Inc.  
IGM  
Jerrold Electronics Corp. CATV  
Systems Div.  
Marconi Electronics Inc.  
Riker Communications Inc.  
Sarkes Tarzian Inc. Broadcast  
Equipment Div.  
Schafer Electronics  
Sparta Electronic Corp.  
STEP Corporation  
Systems Marketing Corp. And  
Sono-Mag Corp.  
Tapecaster TCM, Inc.  
Tech Laboratories Inc.  
Trepac Corp. America  
Video Engineering Co. Inc.  
Visual Communication Products Oper.  
General Electric Co.

**Automation, Tape Control Cart**

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Aitken Comm. Inc.  
Alto Communications Inc. Broadcast  
Marketing Div.  
Ampex Corp.  
Ampro Corp.  
Autogram Corporation  
Broadcast Products Inc.  
CCA Electronics  
Central Dynamics Corp.  
Collins Radio Company Broadcasting  
Marketing.  
CYBRIX CORPORATION  
Delta Electronics Inc. (N.C.)  
Gates Division of Harris-Intertype  
Grass Valley Group, Inc.  
Mastertone Co.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
Schafer Electronics  
Sparta Electronic Corp.  
Systems Marketing Corp. And  
Sono-Mag Corp.  
Tapecaster TCM, Inc.  
VIF International

**Automation, Tape Control Reel**

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Autogram Corporation ..... 112  
Gates ..... 88  
Schafer Electronics ..... 101  
Sparta Electronic Corp. .... 74

Aitken Comm. Inc.  
Alto Communications Inc. Broadcast  
Marketing Div.  
Ampro Corp.  
Autogram Corporation  
Broadcast Products Inc.  
CCA Electronics  
Central Dynamics Corp.  
CMX Systems  
Collins Radio Company Broadcasting  
Marketing.  
CYBRIX CORPORATION  
Gates Division of Harris-Intertype  
Grass Valley Group, Inc.  
Magna-Tech Co.  
Mastertone Co.  
Quad-Eight Electronics  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
Schafer Electronics  
Scully Recording Instruments Co.  
Sparta Electronic Corp.  
Systems Marketing Corp. And  
Sono-Mag Corp.

Tape-Athon Corp.  
VIF International  
Wide Response

**Automation, Transmitter Logging**

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Atlantic Research Corp. Teleproducts  
Div.  
Central Dynamics Corp.  
Dorado Systems  
Gates Division of Harris-Intertype  
Mastertone Co.  
Moseley Assoc. Inc.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
Rust Corp.  
Schafer Electronics  
Systems Marketing Corp. And  
Sono-Mag Corp.  
Time & Frequency Tech., Inc.

**Automation, Video Tape Machine**

Ampex Corp.  
Central Dynamics Corp.  
CYBRIX CORPORATION  
Display Systems Corp.  
Orbit Radio and Video  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
Robert Bosch Corp. Fernseh Div.  
TeleMation, Inc.

**Blowers and Fans**

AMCO Engineering Co.  
American-Standard Industrial  
Products Div.  
Collins Radio Company Broadcasting  
Marketing.  
Dynacool Mfg. Co., Inc.  
Mole Richardson Co.  
Terminal Hudson Corp. Terminal  
Hudson Electronics

**Bridge, Common Point**

Collins Radio Company Broadcasting  
Marketing.  
Delta Electronics Inc. (Va.)  
Gates Division of Harris-Intertype

**Cabinets, Consoles and Racks**

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AMCO Engineering Co. .... 88  
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AMCO Engineering Co.  
American Geloso Electronics  
Borg-Warner Corp. Ingersoll Prods.  
Div.  
CCA Electronics  
Comquip, Inc.  
Concept 70, A Div. of Dyma  
Engineering, Inc.  
Duotone Co. Inc.  
Enclosure Corp.  
Equipto  
Gates Division of Harris-Intertype  
Grinnan Fixture Co.  
Micro-Trak Corporation (Formerly:  
Gray Research & Dev.)  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
Sarkes Tarzian Inc. Broadcast  
Equipment Div.  
Sparta Electronic Corp.  
TeleMation, Inc.  
Video Engineering Co. Inc.  
Waber Electronics Inc. Div. SGL  
Industries, Inc.  
Wilson Corp., H.

**Cable, Camera**

Anixter-Pruzan CATV Division

Belden Corp. Electronic Division  
 Boston Insulated Wire & Cable Co.  
 Brand-Rex Company  
 Robert Bosch Corp. Fernseh Div.  
 Rome Cable Div. Cyprus Mines Co.  
 Terminal Hudson Corp. Terminal  
 Hudson Electronics  
 Transco Products International  
 Video Engineering Co. Inc.

**Cable, Coaxial Flexible**

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Anaconda Electronics  
 Andrew Corp.  
 Anixter-Pruzan CATV Division  
 A-Tel-A-Matic  
 Belden Corp. Electronic Division  
 Blonder-Tongue Labs.  
 Brand-Rex Company  
 CATV Equipment Co.  
 Cohu, Inc. Electronics Division  
 Collins Radio Company Broadcasting  
 Marketing  
 Columbia Electronic Cbl.  
 Comm-Scope Corp.  
 Dyma Engineering, Inc.  
 Essex International Inc.  
 Communication & CATV Div.  
 G.C. Electronics  
 General Cable Corp.  
 Gulf Telephone & Electronics  
 Jampro Antenna Co.  
 Javelin Division Apollo Lasers, Inc.  
 Jerrold Electronics Corp. CATV  
 Systems Div.  
 Lectronic Res. Labs. Inc.  
 Mastertone Co.  
 Pace Wire & Cable Corp.  
 Phelps Dodge Communications Co.  
 Phelps Dodge Communications Co.  
 Div. Phelps Dodge Industries Inc.  
 Plastoid Corporation  
 Prodelin Inc.  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 Rome Cable Div. Cyprus Mines Co.  
 Saxton Prod. Inc.  
 Shively Laboratories, Inc.  
 Singer Products Co., Inc.  
 Soll, Inc., Joseph M.  
 Sparta Electronic Corp.  
 Spencer-Kennedy Labs., Inc.  
 Times Wire and Cable Sub. of Insilco  
 Corp.  
 Transco Products International  
 Trompeter Electronics  
 TV Cable Supply Co.  
 Video Engineering Co. Inc.  
 Vikoa Inc.

**Cable, Coaxial Rigid**

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**Shively Laboratories, Inc.** ..... 38

Andrew Corp.  
 Anixter-Pruzan CATV Division  
 A-Tel-A-Matic  
 CATV Equipment Co.  
 Cohu, Inc. Electronics Division  
 Collins Radio Company Broadcasting  
 Marketing  
 Comm-Scope Corp.  
 Dyma Engineering, Inc.  
 Essex International Inc.  
 Communication & CATV Div.  
 General Cable Corp.  
 Gulf Telephone & Electronics  
 Jampro Antenna Co.  
 Jerrold Electronics Corp. CATV  
 Systems Div.  
 Micro Communications, Inc.  
 Pace Wire & Cable Corp.  
 Phelps Dodge Communications Co.

Phelps Dodge Communications Co.  
 Div. Phelps Dodge Industries Inc.  
 Plastoid Corporation  
 Prodelin Inc.  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 Rome Cable Div. Cyprus Mines Co.  
 Shively Laboratories, Inc.  
 Soll, Inc., Joseph M.  
 Sparta Electronic Corp.  
 Times Wire and Cable Sub. of Insilco  
 Corp.  
 Transco Products International  
 TV Cable Supply Co.  
 Video Engineering Co. Inc.

**Cable, Direct Burial**

Anixter-Pruzan CATV Division  
 A-Tel-A-Matic  
 Brand-Rex Company  
 CATV Equipment Co.  
 Collins Radio Company Broadcasting  
 Marketing  
 Columbia Electronic Cbl.  
 Comm-Scope Corp.  
 Essex International Inc.  
 Communication & CATV Div.  
 General Cable Corp.  
 Gulf Telephone & Electronics  
 Jerrold Electronics Corp. CATV  
 Systems Div.  
 Pace Wire & Cable Corp.  
 Phelps Dodge Communications Co.  
 Phelps Dodge Communications Co.  
 Div. Phelps Dodge Industries Inc.  
 Plastoid Corporation  
 Rome Cable Div. Cyprus Mines Co.  
 Singer Products Co., Inc.  
 Spencer-Kennedy Labs., Inc.  
 Times Wire and Cable Sub. of Insilco  
 Corp.  
 Transco Products International  
 TV Cable Supply Co.  
 Video Engineering Co. Inc.  
 Vikoa Inc.

**Cable, Shielded Audio**

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Alpha Wire  
 Amphenol Corp.  
 A-Tel-A-Matic  
 Belden Corp. Electronic Division  
 Birnbach Co. Inc.  
 Boston Insulated Wire & Cable Co.  
 Brand-Rex Company  
 Collins Radio Company Broadcasting  
 Marketing  
 Columbia Electronic Cbl.  
 Comm-Scope Corp.  
 Electrodyne Div. of MCA Technology,  
 Inc.  
 Essex International Inc.  
 Communication & CATV Div.  
 Franz Vertriebs-gesellschaft m.b.H.  
 G.C. Electronics  
 General Cable Corp.  
 Gotham Audio Corp.  
 Gulf Telephone & Electronics  
 Nortronics Co., Inc.  
 Pace Wire & Cable Corp.  
 Prestollite Company  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 Rome Cable Div. Cyprus Mines Co.  
 Saxton Prod. Inc.  
 Singer Products Co., Inc.  
 Sparta Electronic Corp.  
 Terminal Hudson Corp. Terminal  
 Hudson Electronics  
 Times Wire and Cable Sub. of Insilco  
 Corp.  
 Transco Products International  
 Video Engineering Co. Inc.  
 Vikoa Inc.

**Cable Laying Equipment**

Anixter-Pruzan CATV Division

Ditch Witch Div. of Charles Machine  
 Works, Inc.  
 Roll-A-Reel  
 F. B. Ryan Mfg. Co. Inc.  
 Terminal Hudson Corp. Terminal  
 Hudson Electronics

**Calibration Service, Instrument**

American Electronics Lab., Inc.  
 Bird Electronic Corp.  
 B & K Dynascan Corp.  
 Comm. Radio Monitoring  
 Eidson Electronic Co.  
 Honeywell Inc. Test Instruments Div.  
 Instrument Laboratories  
 National Electrolab Assoc. Ltd.  
 Potomac Instruments, Inc.  
 Simpson Electric Co.

**Camera Dollies, Stands and Tripods**

Ameco Inc.  
 Behrends, Inc.  
 Comquip, Inc.  
 Cosmic Optical Co., Ltd.  
 Diamond Power Specialty Corp. Subs.  
 Babcock & Wilcox Co.  
 F&B/Ceco Industries, Inc.  
 GBC Closed Circuit TV Corp.  
 General Microwave Corp.  
 Innovative Television Equipment, Inc.  
 Javelin Division Apollo Lasers, Inc.  
 Jerrold Electronics Corp. CATV  
 Systems Div.  
 Listec TV Equip. Corp.  
 O'Connor Eng. Labs. Inc. Photographic  
 Division  
 Philips Broadcast Equipment Corp.  
 Subs. North American Philips Corp.  
 Precision Laboratories Precision Cine  
 Equipment Corp.  
 Quick-Set Inc.  
 R. H. Tyler Co. Div. of Weather Scan,  
 Inc.  
 Riker Communications Inc.  
 Shibaden Corp. of America  
 Sylvania Comm. Electronic  
 Technology Incorporated HF Photo  
 Systems Div.  
 Tele-Cine Inc.  
 Teledyne Camera Systems  
 TeleMation, Inc.  
 Television Equipment Associates  
 Television Products Co. Inc.  
 Video Engineering Co. Inc.  
 Vikoa Inc.  
 Waber Electronics Inc. Div. SGL  
 Industries, Inc.

**Camera Heads**

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**Technology Incorporated** ..... 90

Technology Incorporated HF Photo  
 Systems Div.

**Camera Remote Control Equipment**

Bristol Div. of Acco  
 Comquip, Inc.  
 Cunningham Corp. Subs. of Gleason  
 Works  
 Diamond Power Specialty Corp. Subs.  
 Babcock & Wilcox Co.  
 F&B/Ceco industries, Inc.  
 GBC Closed Circuit TV Corp.  
 Ikegami Tsushinki Co., Ltd. Export  
 Department  
 Innovative Television Equipment, Inc.  
 Jerrold Electronics Corp. CATV  
 Systems Div.  
 Listec TV Equip. Corp.  
 Moseley Assoc. Inc.  
 Philips Broadcast Equipment Corp.  
 Subs. North American Philips Corp.  
 Power-Optics Inc.  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 Robert Bosch Corp. Fernseh Div.  
 Shibaden Corp. of America

Sylvania Comm. Electronic  
 Tele-Cine Inc.  
 TeleMation, Inc.  
 Tele Measurements Inc.  
 TRACOR, Inc. Instruments Group  
 Trepac Corp. America  
 Video Engineering Co. Inc.

**Cameras, Closed Circuit B&W**

Admiral Corporation  
 Ameco Inc.  
 Anixter-Pruzan CATV Division  
 A-Tel-A-Matic  
 ATV Research  
 Audiotechnics Corp.  
 CATV Equipment Co.  
 Cohu, Inc. Electronics Division  
 Colorado Video Inc.  
 Commercial Elect.  
 Computer Image Corp.  
 Comquip, Inc.  
 Concord Elect. Corp.  
 Denson Electronic Corp.  
 Diamond Power Specialty Corp. Sub  
 Babcock & Wilcox Co.  
 GBC Closed Circuit TV Corp.  
 Gen. Electrodynamics  
 GPL Div. Singer Gen.  
 Gulf Telephone & Electronics  
 International Video  
 Javelin Division Apollo Lasers, Inc.  
 Jerrold Electronics Corp. CATV  
 Systems Div.  
 K'SON Corporation  
 Panasonic, VTR/CCTV Dept.  
 Matsushita Electric Corp. of  
 America  
 Philips Broadcast Equipment Corp.  
 Subs. North American Philips Corp.  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 RCA Corporation RCA Electromagne  
 & Aviation Systems Div.  
 R. H. Tyler Co. Div. of Weather Scan  
 Inc.  
 Riker Communications Inc.  
 Robert Bosch Corp. Fernseh Div.  
 Sarkes Tarzian Inc. Broadcast  
 Equipment Div.  
 Shibaden Corp. of America  
 Singer Co. Simulation Products Div.  
 Sony Corp. of America  
 Teledyne Brown Engineering Co.  
 Science & Engrg. Div.  
 TeleMation, Inc.  
 Tele Measurements Inc.  
 Telesync Corp.  
 Teltron, Inc.  
 Video Engineering Co. Inc.  
 Visual Communication Products Ope  
 General Electric Co.  
 Visual Educom Inc.  
 Westinghouse Electric Corp. Electric  
 Tube Div.

**Cameras, Closed Circuit Color**

Ameco Inc.  
 Ampex Corp.  
 A-Tel-A-Matic  
 CHESTER ELECTRONIC LABS., INC.  
 GTE Information Systems Inc.  
 Cohu, Inc. Electronics Division  
 Commercial Elect.  
 Denson Electronic Corp.  
 GBC Closed Circuit TV Corp.  
 GPL Div. Singer Gen.  
 International Video  
 K'SON Corporation  
 Mincom Div. 3M Co.  
 Norelco, Philips Broadcast Equipmen  
 Corp.  
 Panasonic, VTR/CCTV Dept.  
 Matsushita Electric Corp. of  
 America  
 Philips Broadcast Equipment Corp.  
 Subs. North American Philips Corp.  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 RCA Corporation RCA Electromagne  
 & Aviation Systems Div.  
 R. H. Tyler Co. Div. of Weather Scan  
 Inc.  
 Robert Bosch Corp. Fernseh Div.

s Tarzian Inc. Broadcast  
 Equipment Div.  
 Shiden Corp. of America  
 Singer Co. Simulation Products Div.  
 Singer Corp. of America  
 Teledyne Camera Systems  
 TeleMation, Inc.  
 TeleMeasurements Inc.  
 Telesync Corp.  
 Teledyne Engineering Co. Inc.  
 TeleCommunication Products Oper.  
 General Electric Co.  
 Tele Electronics Corp.  
 Telephone Electric Corp. Electric  
 Tube Div.

**Cameras, Film Chain**

CHESTER ELECTRONIC LABS., INC.  
 GTE Information Systems Inc.  
 Commercial Elect.  
 IGM Corporation  
 International Video Systems, Inc.  
 R. H. Tyler Co. Div. of Weather Scan,  
 Inc.  
 Robert Bosch Corp. Fernseh Div.  
 Sarks Tarzian Inc. Broadcast  
 Equipment Div.  
 TeleMeasurements Inc.  
 Teledyne Engineering Co. Inc.

**Cameras, Film Cine**

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Amquip, Inc. .... 112  
 Robert Bosch Corp. .... 29

Amco, Inc.  
 Amplex Company of America  
 Ampex, Inc.  
 Camera Mart Inc.  
 Cine USA, Inc. Optics Division  
 CTE, Inc. Electronics Division  
 Equip, Inc.  
 Eastman Kodak Co.  
 EMI/Ceco Industries, Inc.  
 EMI Corp.  
 General Incorporated  
 General Laboratories Precision Cine  
 Equipment Corp.  
 IGM Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 R. H. Tyler Co. Div. of Weather Scan,  
 Inc.  
 Robert Bosch Corp. Fernseh Div.  
 Teledyne Camera Systems  
 TeleMeasurements Inc.  
 Thor Duncan, Inc.

**Cameras, Film Still**

Amco, Inc.  
 Bell & James  
 Equip, Inc.  
 Eastman Kodak Co.  
 EMI Corp.  
 General Incorporated  
 Philips Broadcast Equipment Corp.  
 Subs. North American Philips Corp.  
 IGM Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 R. H. Tyler Co. Div. of Weather Scan,  
 Inc.

**Cameras, Image Motion Compensation**

TeleSciences Corp. Video Products  
 Div.  
 Closed Circuit TV Corp.  
 Div. Singer Gen.

**Cameras, Surveillance**

Amel-A-Matic  
 Research  
 Autotronics Corp.  
 Equip, Inc.  
 Closed Circuit TV Corp.  
 Edtel ElectroDynamics  
 Film Division Apollo Lasers, Inc.  
 Geo Enterprises  
 Image Dynamics Mfg. Corp.

RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 R. H. Tyler Co. Div. of Weather Scan,  
 Inc.  
 Riker Communications Inc.  
 Sarks Tarzian Inc. Broadcast  
 Equipment Div.  
 Shibaden Corp. of America  
 Singer Co. Simulation Products Div.  
 Teledyne Brown Engineering Co.  
 Science & Engrg. Div.  
 Teledyne Camera Systems  
 TeleMation, Inc.  
 Telesync Corp.  
 Teltron, Inc.  
 Video Engineering Co. Inc.

**Cameras, TV B&W Portable Broadcast**

Audiotronics Corp.  
 CATV Equipment Co.  
 Cohu, Inc. Electronics Division  
 Denson Electronic Corp.  
 International Video  
 K'SON Corporation  
 Panasonic, VTR/CCTV Dept.  
 Matsushita Electric Corp. of  
 America  
 Philips Broadcast Equipment Corp.  
 Subs. North American Philips Corp.  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 R. H. Tyler Co. Div. of Weather Scan,  
 Inc.  
 Riker Communications Inc.  
 Robert Bosch Corp. Fernseh Div.  
 Shibaden Corp. of America  
 Sony Corp. of America  
 Teledyne Camera Systems  
 TeleMation, Inc.  
 TeleMeasurements Inc.  
 Teltron, Inc.  
 Video Engineering Co. Inc.  
 Visual Communication Products Oper.  
 General Electric Co.

**Cameras, TV B&W Studio Broadcast**

Ameco Inc.  
 Ampex Corp.  
 Cohu, Inc. Electronics Division  
 Denson Electronic Corp.  
 GBC Closed Circuit TV Corp.  
 GPL Div. Singer Gen.  
 International Video  
 K'SON Corporation  
 Marconi Electronics Inc.  
 Panasonic, VTR/CCTV Dept.  
 Matsushita Electric Corp. of  
 America  
 Philips Broadcast Equipment Corp.  
 Subs. North American Philips Corp.  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 R. H. Tyler Co. Div. of Weather Scan,  
 Inc.  
 Robert Bosch Corp. Fernseh Div.  
 Sarks Tarzian Inc. Broadcast  
 Equipment Div.  
 Shibaden Corp. of America  
 Sony Corp. of America  
 TeleMation, Inc.  
 TeleMeasurements Inc.  
 Teltron, Inc.  
 Video Engineering Co. Inc.  
 Visual Communication Products Oper.  
 General Electric Co.  
 Visual Educom Inc.

**Cameras, TV Color Portable Broadcast**

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Robert Bosch Corp. .... 29

Ampex Corp.  
 Commercial Elect.  
 Edtel Productions  
 GBC Closed Circuit TV Corp.  
 GPL Div. Singer Gen.  
 International Video

Mincom Div. 3M Co.  
 Norelco, Philips Broadcast Equipment  
 Corp.  
 Philips Broadcast Equipment Corp.  
 Subs. North American Philips Corp.  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 R. H. Tyler Co. Div. of Weather Scan,  
 Inc.  
 Robert Bosch Corp. Fernseh Div.  
 Sarks Tarzian Inc. Broadcast  
 Equipment Div.  
 TeleMation, Inc.  
 TeleMeasurements Inc.  
 Visual Communication Products Oper.  
 General Electric Co.

**Cameras, TV Color Studio Broadcast**

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Robert Bosch Corp. .... 29

Ameco Inc.  
 Ampex Corp.  
 CHESTER ELECTRONIC LABS., INC.  
 GTE Information Systems Inc.  
 Commercial Elect.  
 International Video  
 K'SON Corporation  
 Marconi Electronics Inc.  
 Mincom Div. 3M Co.  
 Norelco, Philips Broadcast Equipment  
 Corp.  
 Philips Broadcast Equipment Corp.  
 Subs. North American Philips Corp.  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 R. H. Tyler Co. Div. of Weather Scan,  
 Inc.  
 Robert Bosch Corp. Fernseh Div.  
 Sarks Tarzian Inc. Broadcast  
 Equipment Div.  
 Shibaden Corp. of America  
 Soll, Inc., Joseph M.  
 TeleMation, Inc.  
 TeleMeasurements Inc.  
 Video Engineering Co. Inc.  
 Visual Communication Products Oper.  
 General Electric Co.

**Cameras, TV Remote Control Broadcast**

Commercial Elect.  
 International Video  
 Marconi Electronics Inc.  
 Philips Broadcast Equipment Corp.  
 Subs. North American Philips Corp.  
 Robert Bosch Corp. Fernseh Div.  
 Shibaden Corp. of America  
 TeleMation, Inc.  
 TeleMeasurements Inc.  
 Teltron, Inc.  
 Video Engineering Co. Inc.  
 Visual Communication Products Oper.  
 General Electric Co.

**Cartridge Machine, Dual Deck**

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RAPID-Q ..... 119  
 Sparta Electronic Corp. .... 74

Alto Communications Inc. Broadcast  
 Marketing Div.  
 Ampro Corp.  
 Broadcast Products Inc.  
 CCA Electronics  
 Cine Sonic Sound Inc.  
 Collins Radio Company Broadcasting  
 Marketing.  
 Dyma Engineering, Inc.  
 Gates Division of Harris-Intertype  
 International Tapetronics Corp.  
 Joa Cartridge Service  
 MacKenzie Laboratories, Inc.  
 Mastertone Co.  
 McCurdy Radio Ind. Inc.  
 Peripheral Data Machines, Inc. (PER  
 DATA)  
 RAPID-Q Div. of Garron Electronics

RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 Schafer Electronics  
 Singer Products Co., Inc.  
 Sparta Electronic Corp.  
 Spotmaster Broadcast Electronics  
 Systems Marketing Corp. And  
 Sono-Mag Corp.  
 Visual Electronics Corp.

**Cartridge Machine, Multiple Deck**

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Broadcast Electronics ..... 100  
 RAPID-Q ..... 119

Alto Communications Inc. Broadcast  
 Marketing Div.  
 Ampro Corp.  
 Blanchard Electronics  
 Broadcast Electronics  
 Broadcast Products Inc.  
 CCA Electronics  
 Cine Sonic Sound Inc.  
 Collins Radio Company Broadcasting  
 Marketing.  
 Dyma Engineering, Inc.  
 Gotham Audio Corp.  
 IGM  
 International Tapetronics Corp.  
 Joa Cartridge Service  
 MacKenzie Laboratories, Inc.  
 Radio Mfg. Co.  
 RAPID-Q Div. of Garron Electronics  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 Singer Products Co., Inc.  
 Sparta Electronic Corp.  
 Spotmaster Broadcast Electronics  
 Systems Marketing Corp. And  
 Sono-Mag Corp.  
 Telex Communications Division  
 VIF International  
 Visual Electronics Corp.

**Cartridge Machine, Random Access**

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Gates ..... 88  
 IGM ..... 44  
 Sparta Electronic Corp. .... 74

Alto Communications Inc. Broadcast  
 Marketing Div.  
 Ampro Corp.  
 Broadcast Products Inc.  
 CCA Electronics  
 Cine Sonic Sound Inc.  
 Cramer Division Conrac Corp.  
 CYBRIX CORPORATION  
 Gates Division of Harris-Intertype  
 IGM  
 MacKenzie Laboratories, Inc.  
 Mastertone Co.  
 RAPID-Q Div. of Garron Electronics  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 Schafer Electronics  
 Singer Products Co., Inc.  
 Sparta Electronic Corp.  
 Spotmaster Broadcast Electronics  
 Systems Marketing Corp. And  
 Sono-Mag Corp.  
 Television Equipment Associates  
 VIF International

**Cartridge Machine, Single Deck**

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Broadcast Electronics ..... 100  
 Gates ..... 7, 88  
 RAPID-Q ..... 119  
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 Tapecaster TCM, Inc. .... 112

Alto Communications Inc. Broadcast  
 Marketing Div.  
 Ampro Corp.  
 Broadcast Electronics

Broadcast Products Inc.  
CCA Electronics  
Cine Sonic Sound Inc.  
Collins Radio Company Broadcasting Marketing,  
Contel Mfg. Div. of Continental Electronic Wholesale Corp.  
Dyma Engineering, Inc.  
Gates Division of Harris-Intertype IGM  
International Tapetronics Corp.  
Joa Cartridge Service  
LPB Inc.  
MacKenzie Laboratories, Inc.  
McCurdy Radio Ind. Inc.  
Peripheral Data Machines, Inc. (PER DATA)  
Radio Mfg. Co.  
RAPID-Q Div. of Garron Electronics  
RCA Corporation RCA Broadcast Equip. Communications Systems Div  
Schafer Electronics  
Schultz Inc., Albert  
Singer Products Co., Inc.  
Sparta Electronic Corp.  
Spotmaster Broadcast Electronics  
Systems Marketing Corp. And Sono-Mag Corp.  
Tapecaster TCM, Inc.  
Telex Communications Division  
Tri-Tronics  
Visual Electronics Corp.

**Cartridge Reconditioning Services**

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**Joa Cartridge Service ..... 91**

Birmingham Tape Cartridge Co.  
Joa Cartridge Service

**Cartridge Recording Services**

IGM  
Radio Mfg. Co.  
Schultz Inc., Albert  
Stanton Magnetics Inc.

**Cartridge Splice Finder**

Marathon Broadcast Equip.  
Tapecaster TCM, Inc.

**Cartridges, Magnetic Tape**

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**Contel Mfg. .... 80D**  
**Gates ..... 88**

Afga-Gevaert Inc.  
Audio Devices, Inc.  
Audio Magnetics Corp.  
Broadcast Electronics  
Broadcast Products Inc.  
CCA Electronics  
Cine Sonic Sound Inc.  
Collins Radio Company Broadcasting Marketing,  
Contel Mfg. Div. of Continental Electronic Wholesale Corp.  
Cramer Division Conrac Corp.  
Duotone Co. Inc.  
Fidelipac Div. of TelePro Industries, Inc.  
Gates Division of Harris-Intertype IGM  
International Tapetronics Corp.  
Joa Cartridge Service  
MaCarta  
Magnatech Co.  
Magnetic Prod. Div. 3M Company  
Marathon Broadcast Equip.  
Mastertone Co.  
Memorex Corp.  
Radio Mfg. Co.  
RCA Corporation RCA Broadcast Equip. Communications Systems Div.  
RCA Corporation RCA Electronic Components  
Schultz Inc., Albert  
Singer Products Co., Inc.  
Sparta Electronic Corp.

Spotmaster Broadcast Electronics  
Systems Marketing Corp. And Sono-Mag Corp.  
Tapecaster TCM, Inc.  
TelePro Industries, Inc.  
Telex Communications Division  
Wilkinson Electronics, Inc.

**Cartridges, Phono**

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**Gates ..... 88**  
**Stanton Magnetics Inc. .... 21**

AKG Division North Amer. Phillips Corp.  
Bell Sound Studios A & B Duplicators Div.  
Bourns Inc.  
Broadcast Electronics  
CCA Electronics  
Collins Radio Company Broadcasting Marketing,  
Duotone Co. Inc.  
Electro-Voice Inc. Div. of Gulton Industries, Inc.  
Gates Division of Harris-Intertype LPB Inc.  
QRK Electronic Prod.  
RCA Corporation RCA Broadcast Equip. Communications Systems Div.  
Rek-O-Kut Inc.  
Schultz Inc., Albert  
Shure Brothers Inc.  
Singer Products Co., Inc.  
Sparta Electronic Corp.  
Stanton Magnetics Inc.  
Terminal Hudson Corp. Terminal Hudson Electronics

**Cartridges, Stereo**

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**Gates ..... 88**

Fidelipac Div. of TelePro Industries, Inc.  
Gates Division of Harris-Intertype International Tapetronics Corp.  
Marathon Broadcast Equip.  
Mastertone Co.  
QRK Electronic Prod.  
Rek-O-Kut Inc.  
Systems Marketing Corp. And Sono-Mag Corp.  
TelePro Industries, Inc.  
Terminal Hudson Corp. Terminal Hudson Electronics

**Cartridges, Videotape**

Audio Magnetics Corp.  
Magnetic Prod. Div. 3M Company  
RCA Corporation RCA Broadcast Equip. Communications Systems Div.  
Schultz Inc., Albert  
Tele Measurements Inc.

**Character Generators**

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**American Data Corp. .... 87**  
**Cooke Engineering Co. .... 118**  
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Ameco Inc.  
American Data Corp.  
Atlantic Research Corp. Teleproducts Div.  
Broadcast Electronics  
CBS Labs  
Chiron Telesystems Systems Resources Corp.  
Chrono-Log Corp.  
Cooke Engineering Co.  
Datavision, Inc.  
Dyma Engineering, Inc.  
Electronic Engineering Co. of California  
Kapco Enterprises  
Marconi Electronics Inc.  
Mincom Div. 3M Co.

RCA Corporation RCA Broadcast Equip. Communications Systems Div.  
SPI-ITT Instruments Metrix Division  
Spotmaster Broadcast Electronics  
Sterling Television Presentations Inc.  
Sterling Communications Co.  
TeleMation, Inc.  
TELESTRATOR Industries  
Television Equipment Associates  
Video Devices Co.  
Video Engineering Co. Inc.  
VIF International  
Visual Electronics Corp.

**Chroma Keyers**

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**Telemet Co. .... IBC**

Telemet Co.

**Cleaner, Magnetic Tape Head**

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**Miller Stephenson Chemical Co. .... 94**

Audio Magnetics Corp.  
Duotone Co. Inc.  
Javelin Division Apollo Lasers, Inc.  
Joa Cartridge Service  
Miller Stephenson Chemical Co.  
Nortronics Co., Inc.  
Systems Marketing Corp. And Sono-Mag Corp.  
Television Equipment Associates  
Texwipe Co.

**Clocks and Chronographs**

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**American Data Corp. .... 87**

American Data Corp.  
Bradford Information Systems  
Broadcast Products Inc.  
Bulova American Time Products  
Chrono-Log Corp.  
Cooke Engineering Co.  
CYBRIX CORPORATION  
Dataron Inc.  
Electrodyne Div. of MCA Technology, Inc.  
ES Enterprises  
Gates Division of Harris-Intertype  
General Time Service A Talley Industries Co.  
IGM  
Langevin An MCA Technology Company  
Logiconcepts, Inc.  
MCA Technology, Inc.  
Racine & Co., Inc., Jules  
Radio Mfg. Co.  
Riker Communications Inc.  
Standard Electric Time Div. of Johnson Service Co.  
Systems Marketing Corp. And Sono-Mag Corp.  
Tapecaster TCM, Inc.  
TelComp Division Television and Computer Corp.  
Television Equipment Associates  
Time & Frequency Tech., Inc.  
Video Devices Co.  
Video Engineering Co. Inc.  
Visual Electronics Corp.

**Clocks, Digital and Digital Driver**

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**American Data Corp. .... 87**  
**Cooke Engineering Co. .... 111**  
**ES Enterprises ..... 45**

American Data Corp.  
Cooke Engineering Co.  
ES Enterprises  
United Systems Corp. Subs. of Monsanto Co.

**Clocks, Station Master Control**

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**ES Enterprises ..... 45**

American Data Corp.  
Broadcast Products Inc.  
Bulova American Time Products  
Dyma Engineering, Inc.  
ES Enterprises  
Gates Division of Harris-Intertype  
Radio Mfg. Co.  
Standard Electric Time Div. of Johnson Service Co.  
Systems Marketing Corp. And Sono-Mag Corp.

**Color Correction Equipment**

CBS Labs  
Datek Corp.  
Marconi Electronics Inc.  
Phillips Broadcast Equipment Corp. Subs. North American Phillips Co.  
Rank Cintel Rank Precision Ind. Ltd Broadcast Div.  
Rank Precision Ind. Broadcast Div.  
Riker Communications Inc.  
Robert Bosch Corp. Fernseh Div.

**Common Point Bridge -- See Bridge, Common Point**

**Communication Systems, Land Mobile**

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**Moseley Assoc. Inc. .... 94**

Alpha Electronic Services Inc.  
American Gelsolo Electronics  
Andrew Corp.  
Andrews Tower Inc.  
Atlantic Research Corp. Teleproducts Div.  
Belcom Electronics Mfg. Co.  
CCA Electronics  
Comquip, Inc.  
Dyma Engineering, Inc.  
General Electric Co. Mobile Radio Dept.  
Miles Reproducer Co.  
Moseley Assoc. Inc.  
Phelps Dodge Communications Co.  
Phelps Dodge Communications Co. Div. Phelps Dodge Industries Inc.  
RCA Corporation RCA Broadcast Equip. Communications Systems Div.  
Scientific Systems, Inc. Broadcast Equipment Div.  
Scintrex Inc. Communications Div.  
Singer Products Co., Inc.

**Communication Systems, Microwave**

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**Moseley Assoc. Inc. .... 94**

Acrodyne Industries  
Alcor Inc.  
Andrew Corp.  
Andrews Tower Inc.  
Atlantic Research Corp. Teleproducts Div.  
Coastcom Division Scott-Buttner Co.  
Dyma Engineering, Inc.  
GTE Lenkurt Incorporated  
Moseley Assoc. Inc.  
Phelps Dodge Communications Co.  
Raytheon Company Raytheon Data Systems Co.  
RHG Elect Labs, Inc.  
Soladyne International  
Tele Measurements Inc.  
Varian Solid State Div. Micro-Link Products  
Visual Electronics Corp.

**Communication Systems, Multiplex**

Catel, a Div. of United Scientific Co.

stcom Division Scott-Buttner Corp.  
do Systems  
Lenkurt Incorporated  
ley Assoc. Inc.  
heon Company Raytheon Data  
ystems Co.  
er Products Co., Inc.  
ac Corp. America

**Communication Systems, STL**

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**Moseley Assoc. Inc. .... 92**

A. Communications Inc. Broadcast  
Marketing Div.  
Andrews Tower Inc.  
Electronics  
Form-Scope Corp.  
Did Clark Co., Inc.  
Dina Engineering, Inc.  
Lenkurt Incorporated  
Mastertone Co.  
Microwave Assoc. Inc.  
Moseley Assoc. Inc.  
Phelps Dodge Communications Co.  
Phelps Dodge Communications Co.  
Div. Phelps Dodge Industries Inc.  
Elect Labs, Inc.  
Singer Products Co., Inc.  
Electrodyne International  
Te Measurements Inc.  
Pac Corp. America  
Micro Solid State Div. Micro-Link  
Products  
Mual Electronics Corp.

**Communication Systems, Teletypewriter**

Antic Research Corp. Teleproducts  
Div.  
Broadcast Products Inc.  
BRIX CORPORATION  
Lenkurt Incorporated  
morex Corp.  
Singer Products Co., Inc.  
Pac Corp. America

**Computer Equipment**

Central Dynamics Corp.  
mpu/Net, Inc.  
BRIX CORPORATION  
ita Disc Inc.  
tvision, Inc.  
ass Valley Group, Inc.  
hwhitt Packard Co.  
Mastertone Co.  
morex Corp.  
ytheon Company Raytheon Data  
Systems Co.  
A Corporation RCA Missile &  
Surface Radar Div.  
hafer Electronics  
REP Corporation  
Systems Marketing Corp. And  
Sono-Mag Corp.  
ual Communication Products Oper.  
General Electric Co.

**Connectors, Cable**

ixter-Pruzan CATV Division  
A Elect. & Machine Corp.  
nder-Tongue Labs.  
tron, Inc.  
neral Radio Co.  
bert Engineering Co.  
elps Dodge Communications Co.  
Div. Phelps Dodge Industries Inc.  
itchcraft Inc.  
ystems Marketing Corp. And  
Sono-Mag Corp.  
eo Engineering Co. Inc.

**Console, Audio AM**

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**Broadcast Electronics ..... 16**  
**Fairchild Sound Equipment Corp. .... 89**  
**Gates ..... 7, 88**  
**Maze Corporation ..... 98**  
**McMartin Industries Inc. .... 105**  
**Sparta Electronic Corp. .... 74**

**McMartin Industries Inc. .... 105**  
**Sparta Electronic Corp. .... 74**

Accurate Sound Corp.  
Alto Communications Inc. Broadcast  
Marketing Div.  
AMCO Engineering Co.  
Ampro Corp.  
Arbor Systems Inc.  
Audio Designs & Mfg.  
Audio Distributor Inc.  
Blanchard Electronics  
Broadcast Electronics  
CCA Electronics  
Central Dynamics Corp.  
Collins Radio Company Broadcasting  
Marketing.  
Concept 70, A Div. of Dyma  
Engineering, Inc.  
Delta Electronics Inc. (Va.)  
Electrodyne Div. of MCA Technology,  
Inc.  
Fairchild Sound Equipment Corp. A  
Robins Industries Corp.  
Gately Electronics  
Gates Division of Harris-Intertype  
Gotham Audio Corp.  
Granger Assoc.  
IGM  
Ikegami Tsushinki Co., Ltd. Export  
Department  
Langevin An MCA Technology  
Company  
LPB Inc.  
Mastertone Co.  
MCA Technology, Inc.  
McCurdy Radio Ind. Inc.  
McMartin Industries Inc.  
Neve Inc., Rupert  
Orbit Radio and Video  
Philips Broadcast Equipment Corp.  
Subs. North American Philips Corp.  
Radio Mfg. Co.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
Riker Communications Inc.  
Rupert Neve Incorporated  
Sarkes Tarzian Inc. Broadcast  
Equipment Div.  
Scientific Systems, Inc. Broadcast  
Equipment Div.  
Singer Products Co., Inc.  
Sparta Electronic Corp.  
Spectra Sonics  
Spotmaster Broadcast Electronics  
TelComp Division Television and  
Computer Corp.  
Telectro Systems Corp.  
Tele Measurements Inc.  
Tri-Tronics  
Ultra Audio Products  
United Radio Supply Inc.  
Visual Communication Products Oper.  
General Electric Co.  
Visual Electronics Corp.  
Wilkinson Electronics, Inc.

**Console, Audio FM**

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**Broadcast Electronics ..... 16**  
**Fairchild Sound Equipment Corp. .... 89**  
**Gates ..... 7, 88**  
**Maze Corporation ..... 98**  
**McMartin Industries Inc. .... 105**  
**Sparta Electronic Corp. .... 74**

Accurate Sound Corp.  
Alto Communications Inc. Broadcast  
Marketing Div.  
AMCO Engineering Co.  
Ampro Corp.  
Arbor Systems Inc.  
Audio Designs & Mfg.  
Audio Distributor Inc.  
Blanchard Electronics  
Broadcast Electronics  
CCA Electronics  
Central Dynamics Corp.  
Collins Radio Company Broadcasting  
Marketing.

Concept 70, A Div. of Dyma  
Engineering, Inc.  
Electrodyne Div. of MCA Technology,  
Inc.  
Fairchild Sound Equipment Corp. A  
Robins Industries Corp.  
Gately Electronics  
Gates Division of Harris-Intertype  
Gotham Audio Corp.  
Ikegami Tsushinki Co., Ltd. Export  
Department  
Langevin An MCA Technology  
Company  
LPB Inc.  
Mastertone Co.  
Maze Corporation  
MCA Technology, Inc.  
McCurdy Radio Ind. Inc.  
McMartin Industries Inc.  
Neve Inc., Rupert  
Orbit Radio and Video  
Philips Broadcast Equipment Corp.  
Subs. North American Philips Corp.  
Radio Mfg. Co.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
Riker Communications Inc.  
Rupert Neve Incorporated  
Scientific Systems, Inc. Broadcast  
Equipment Div.  
Singer Products Co., Inc.  
Sparta Electronic Corp.  
Spectra Sonics  
Spotmaster Broadcast Electronics  
TelComp Division Television and  
Computer Corp.  
Tele Measurements Inc.  
Tri-Tronics  
Ultra Audio Products  
United Radio Supply Inc.  
Visual Communication Products Oper.  
General Electric Co.  
Visual Electronics Corp.  
Wilkinson Electronics, Inc.

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Alcor Inc.  
AMCO Engineering Co.  
American Electronics, Inc.  
Ampro Corp.  
Audio Designs & Mfg.  
Behrends, Inc.  
CCA Electronics  
Central Dynamics Corp.  
Collins Radio Company Broadcasting  
Marketing.  
Comquip, Inc.  
Concept 70, A Div. of Dyma  
Engineering, Inc.  
Electrodyne Div. of MCA Technology,  
Inc.  
Fairchild Sound Equipment Corp. A  
Robins Industries Corp.  
Gately Electronics  
Gates Division of Harris-Intertype  
Gotham Audio Corp.  
Langevin An MCA Technology  
Company  
LPB Inc.  
Magnatech Co.  
MCA Technology, Inc.  
McCurdy Radio Ind. Inc.  
Moseley Assoc. Inc.  
Neve Inc., Rupert  
Orbit Radio and Video  
Philips Broadcast Equipment Corp.  
Subs. North American Philips Corp.  
QRK Electronic Prod.  
Radio Mfg. Co.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
Rupert Neve Incorporated  
Scientific Systems, Inc. Broadcast  
Equipment Div.  
Sennheiser Electronics Corp.

Singer Products Co., Inc.  
Sparta Electronic Corp.  
Spectra Sonics  
TelComp Division Television and  
Computer Corp.  
Visual Communication Products Oper.  
General Electric Co.

**Console, Audio Recording**

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Accurate Sound Corp.  
Alcor Inc.  
ALTEC  
AMCO Engineering Co.  
Ampro Corp.  
Arbor Systems Inc.  
Audio Designs & Mfg.  
Audio Distributor Inc.  
Behrends, Inc.  
Blanchard Electronics  
Broadcast Prod. Co. Inc. Bcst. Division  
CCA Electronics  
Central Dynamics Corp.  
Collins Radio Company Broadcasting  
Marketing.  
Comquip, Inc.  
Concept 70, A Div. of Dyma  
Engineering, Inc.  
Elektromesstechnik E M T Wilhelm  
Franz G M B H  
Electrodyne Div. of MCA Technology,  
Inc.  
Fairchild Sound Equipment Corp. A  
Robins Industries Corp.  
Gately Electronics  
Gates Division of Harris-Intertype  
Gotham Audio Corp.  
Harvey Radio Pro A/V Div.  
IGM  
Lang Electronics Inc.  
Langevin An MCA Technology  
Company  
LPB Inc.  
Magnatech Co.  
Magna-Tech Electronic Co., Inc.  
Mastertone Co.  
MCA Technology, Inc.  
McCurdy Radio Ind. Inc.  
Nemo Recording Labs  
Neve Inc., Rupert  
Orbit Radio and Video  
Philips Broadcast Equipment Corp.  
Subs. North American Philips Corp.  
Quad-Eight Electronics  
Radio Mfg. Co.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
Riker Communications Inc.  
Rupert Neve Incorporated  
Scientific Systems, Inc. Broadcast  
Equipment Div.  
Singer Products Co., Inc.  
Sparta Electronic Corp.  
Spectra Sonics  
Tascam Corporation  
TelComp Division Television and  
Computer Corp.  
Telectro Systems Corp.  
Television Equipment Associates  
Total Technology  
Ultra Audio Products  
United Radio Supply Inc.  
Visual Communication Products Oper.  
General Electric Co.

**Console, Audio TV**

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**Fairchild Sound Equipment Corp. .... 89**  
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**Vital Industries ..... BC**

Alcor Inc.

AMCO Engineering Co.  
Ampro Corp.  
Audio Designs & Mfg.  
Bradford Information Systems  
Central Dynamics Corp.  
Collins Radio Company Broadcasting  
Marketing.  
Concept 70, A Div. of Dyma  
Engineering, Inc.  
Delta Electronics Inc. (Va.)  
Electrodyne Div. of MCA Technology,  
Inc.  
Fairchild Sound Equipment Corp. A  
Robins Industries Corp.  
Gately Electronics  
Gates Division of Harris-Intertype  
GBC Closed Circuit TV Corp.  
Gotham Audio Corp.  
GPL Div. Singer Gen.  
IGM  
Ikegami Tsushinki Co., Ltd. Export  
Department  
Internatl. Nuclear Corp.  
Lang Electronics Inc.  
Langevin An MCA Technology  
Company  
LPB Inc.  
Marconi Electronics Inc.  
Mastertone Co.  
MCA Technology, Inc.  
McCurdy Radio Ind. Inc.  
Neve Inc., Rupert  
Orbit Radio and Video  
Phillips Broadcast Equipment Corp.  
Subs. North American Phillips Corp.  
QRK Electronic Prod.  
Radio Mfg. Co.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
Riker Communications Inc.  
Rupert Neve Incorporated  
Sarkes Tarzian Inc. Broadcast  
Equipment Div.  
Scientific Systems, Inc. Broadcast  
Equipment Div.  
Singer Products Co., Inc.  
Sparta Electronic Corp.  
Spectra Sonics  
Spotmaster Broadcast Electronics  
TelComp Division Television and  
Computer Corp.  
Tele Measurements Inc.  
Ultra Audio Products  
Viscount Video Systems Ltd.  
Visual Communication Products Oper.  
General Electric Co.  
Visual Electronics Corp.  
Vital Industries

Rupert Neve Incorporated  
Sparta Electronic Corp.  
Visual Electronics Corp.  
Wilkinson Electronics, Inc.

### Console, Video Portable

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**Grass Valley Group,  
Inc.** ..... 31  
**Vital Industries**..... BC

Alcor Inc.  
AMCO Engineering Co.  
American Data Corp.  
Amplex Corp.  
Central Dynamics Corp.  
CHESTER ELECTRONIC LABS., INC.  
GTE Information Systems Inc.  
Gately Electronics  
GBC Closed Circuit TV Corp.  
Grass Valley Group, Inc.  
Internatl. Nuclear Corp.  
Jerrold Electronics Corp. CATV  
Systems Div.  
Kapco Enterprises  
K'SON Corporation  
Nasco Television Systems  
Orbit Radio and Video  
Phillips Broadcast Equipment Corp.  
Subs. North American Philips Corp.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
R. H. Tyler Co. Div. of Weather Scan,  
Inc.  
Richmond Hill Laboratories Inc.  
Riker Communications Inc.  
Sarkes Tarzian Inc. Broadcast  
Equipment Div.  
Shibaden Corp. of America  
Shintron Co. Inc.  
Singer Co. Simulation Products Div.  
TeleMation, Inc.  
Video Engineering Co. Inc.  
Viscount Video Systems Ltd.  
Vital Industries

### Console, Video Studio

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**Danscoll Ltd.** ..... 85  
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Inc.** ..... 31  
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**Vital Industries**..... BC

Alcor Inc.  
AMCO Engineering Co.  
Ameco Inc.  
American Data Corp.  
Applied Video Electronics, Inc.  
Central Dynamics Corp.  
CHESTER ELECTRONIC LABS., INC.  
GTE Information Systems Inc.  
Concord Elect. Corp.  
Danscoll Ltd.  
Gately Electronics  
GBC Closed Circuit TV Corp.  
GPL Div. Singer Gen.  
Grass Valley Group, Inc.  
Internatl. Nuclear Corp.  
Jerrold Electronics Corp. CATV  
Systems Div.  
Kapco Enterprises  
K'SON Corporation  
Marconi Electronics Inc.  
Mobile Color, Inc.  
Nasco Television Systems  
Orbit Radio and Video  
Phillips Broadcast Equipment Corp.  
Subs. North American Philips Corp.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
R. H. Tyler Co. Div. of Weather Scan,  
Inc.  
Richmond Hill Laboratories Inc.  
Riker Communications Inc.  
Sarkes Tarzian Inc. Broadcast  
Equipment Div.

Shibaden Corp. of America  
Singer Products Co., Inc.  
Sylvania Comm. Electronic  
TeleMation, Inc.  
Telemet Co.  
Video Engineering Co. Inc.  
Viscount Video Systems Ltd.  
Visual Communication Products Oper.  
General Electric Co.  
Vital Industries

### Converters

AEL Communications Corp., Subs.  
American Electronics Labs., Inc.  
Andersen Labs Inc.  
Berkey-Colortran Inc.  
Bristol Div. of Acco  
Catel, a Div. of United Scientific Corp.  
CATV Equipment Co.  
C Cor Electronics  
Fung Engineering Co.  
GE Electronic Components Sales Dept.  
General Microwave Corp.  
Honeywell Inc. Test Instruments Div.  
Jerrold Electronics Corp. CATV  
Systems Div.  
K'SON Corporation  
Lectronic Res. Labs. Inc.  
Magnavox Company CATV Division  
OAK Industries Inc. CATV Division  
Riker Communications Inc.  
Tasker Industries Systems Division  
Topaz Electronics  
TV Cable Supply Co.  
Video Engineering Co. Inc.

### Counter-Timers

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**ES Enterprises** ..... 45  
**Tapcaster TCM, Inc.** ..... 82

Cooke Engineering Co.  
ES Enterprises  
Tapcaster TCM, Inc.  
United Systems Corp. Subs. of  
Monsanto Co.

### Decoder, Four Channel Stereo

Electro-Voice Inc. Div. of Gulton  
Industries, Inc.  
Heath Co.  
Sansul Electronics Corp.

### Data Transmitters

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Trepac Corp. America

### Delay Lines

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**Andersen Labs Inc.** ..... 80C  
**Television Equipment  
Associates** ..... 104

Allen Avionics Inc.  
Andersen Labs Inc.  
Cook Electric Co.  
Dynasciences Corp. Video Products  
Div.  
Edison Electronics, Div. of  
McGraw-Edison Co., Daven &  
Measurements  
Franz Vertriebs-gesellschaft m.b.H.  
General Microwave Corp.  
Gotham Audio Corp.  
Kappa Networks  
Lectronic Res. Labs. Inc.  
Phelps Dodge Communications Co.  
Phelps Dodge Communications Co.  
Div. Phelps Dodge Industries Inc.  
Television Equipment Associates  
Television Microtime, Inc. Subs.  
Andersen Laboratories, Inc.  
Terminal Hudson Corp. Terminal  
Hudson Electronics  
Times Wire and Cable Sub. of Insilco  
Corp.

### Demagnetizers, Bulk Tape

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**Taber Mfg. & Engr.  
Co.** ..... 1

Behrends, Inc.  
G.C. Electronics  
Harvey Radio Pro A/V Div.  
Joa Cartridge Service  
Lafayette Radio Electronics  
Marathon Broadcast Equip.  
Minnesota Mining & Mfg. Co.  
Nortronics Co., Inc.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
Scully Recording Instruments Co.  
Shalco, Incorporated  
Sparta Electronic Corp.  
Spotmaster Broadcast Electronics  
Taber Mfg. & Engr. Co.  
TelePro Industries, Inc.

### Demodulators

See Adv. P.  
**DYNAIR Electronics,  
Inc.** .....  
**Gates** .....  
**Telemet Co.** ..... I

Ameco Inc.  
Anixter-Pruzan CATV Division  
Audiotronics Corp.  
Belar Electronics Lab., Inc.  
Coastcom Division Scott-Buttner Co.  
Collins Radio Company Broadcasting  
Marketing.  
DYNAIR Electronics, Inc.  
Fung Engineering Co.  
Gates Division of Harris-Intertype  
Jerrold Electronics Corp. CATV  
Systems Div.  
Kahn Research Lab. Inc.  
National Electrolab Assoc. Ltd.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
RHG Elect Labs, Inc.  
Riker Communications Inc.  
Rohde & Schwarz Sales  
SC Electronics, Inc. Subs. of  
Audiotronics Corp.  
Telemet Co.  
Video Engineering Co. Inc.

### Detectors, Microwave

American Electronics Lab., Inc.  
GE Electronic Components Sales Dept.  
General Microwave Corp.  
General Radio Co.  
Hewlett Packard Co.  
Lectronic Res. Labs. Inc.  
Microwave Assoc. Inc.  
Mosler Electronic Systems Div.  
Narda Microwave Corp., The  
RCA Corporation RCA Electromagnetic  
& Aviation Systems Div.  
Solitron Devices Inc. Semiconductor  
Div.  
Sylvania Semiconductor  
Texscan Corp.  
Thomson-CSF Electron Tubes

### Detectors, RF

Alford Mfg. Co.  
Anixter-Pruzan CATV Division  
Bird Electronic Corp.  
Blonder-Tongue Labs.  
General Microwave Corp.  
General Radio Co.  
Jerrold Electronics Corp. CATV  
Systems Div.  
Kay Elemetrics Corp.  
Lectronic Res. Labs. Inc.  
Microwave Assoc. Inc.  
Narda Microwave Corp., The  
National Electrolab Assoc. Ltd.  
Solitron Devices Inc. Semiconductor  
Div.  
Television Technology Corp.  
Telonic Industries Inc.  
Texscan Corp.

son-CSF Electron Tubes  
 Cable Supply Co.

**ectors, Standing Wave**

Electronic Corp.  
 Collins Radio Company Broadcasting  
 Marketing,  
 General Microwave Corp.  
 General Radio Co.  
 Electronic Res. Labs. Inc.  
 Radio Communications, Inc.  
 Super Electronic Systems Div.  
 Sylvania Microwave Corp., The  
 Fle & Schwarz Sales  
 Sylvania Corp.

**ectors, Video Presence**

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Coll Ltd.

**ixers**

And Mfg. Co.  
 Collins Radio Company Broadcasting  
 Marketing,  
 Continental Electronics Mfg. Co. Subs.  
 Resalab, Inc.  
 Chromagnetic Specialties  
 Kamei Tsushinki Co., Ltd. Export  
 Department  
 Central Data Devices Inc.  
 General Antenna Co.  
 Radio Communications, Inc.  
 Microwave Assoc. Inc.  
 Nortronics, Inc.  
 Sylvania Microwave Corp., The  
 Phelps Dodge Communications Co.  
 Phelps Dodge Communications Co.  
 Phelps Dodge Industries Inc.  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Shively Laboratories, Inc.

**Dolay Equipment, Titling**

Microtronics Corp.  
 Collins Bros. Research Corp. Miratel  
 Division  
 Collins Labs  
 Central Dynamics Corp.  
 Colorado Video Inc.  
 Sylvania Disc Inc.  
 Davision, Inc.  
 Display Systems Corp.  
 General Television Ntwk.  
 Radio Div. Singer Gen.  
 Kamei Tsushinki Co., Ltd. Export  
 Department  
 Norconi Electronics Inc.  
 Radio Research Div. of Kollmorgen  
 Corp.  
 Arnolds/Leteron Co.  
 Robert Bosch Corp. Fernseh Div.  
 Entron Co. Inc.  
 Sterling Television Presentations Inc.  
 Interling Communications Co.  
 Sylvania Comm. Electronic  
 Microtronix Inc.  
 Medyne Brown Engineering Co.  
 Science & Engrg. Div.  
 TeleMation, Inc.  
 RESTRATOR Industries  
 Mesync Corp.  
 Television Equipment Associates  
 Sylvania Audio Products  
 Video Devices Co.  
 Video Engineering Co. Inc.  
 Westinghouse Electric Corp. Electric  
 Tube Div.  
 Sylvania Corp., H.

**Display Units, Time-  
 Temperature-ID**

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American Data Corp. .... **87**

American Data Corp.

**Dividers, Frequency**

Bulova American Time Products  
 Collins Radio Company Broadcasting  
 Marketing,  
 GE Electronic Components Sales Dept.  
 Hartley Prod. Corp.  
 Total Technology

**Dividers, Power**

Alford Mfg. Co.  
 Bird Electronic Corp.  
 Collins Radio Company Broadcasting  
 Marketing,  
 Entron, Inc.  
 Gates Division of Harris-Intertype  
 Jampro Antenna Co.  
 Electronic Res. Labs. Inc.  
 Micro Communications, Inc.  
 Microwave Assoc. Inc.  
 Moseley Assoc. Inc.  
 Multronics, Inc.  
 Narda Microwave Corp., The  
 Phelps Dodge Communications Co.  
 Div. Phelps Dodge Industries Inc.  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 Shively Laboratories, Inc.  
 Trompeter Electronics  
 Welschel Engineering Co.

**Dividers, Voltage**

Burwen Laboratories  
 Collins Radio Company Broadcasting  
 Marketing,  
 Edison Electronics, Div. of  
 McGraw-Edison Co., Daven &  
 Measurements  
 Entron, Inc.  
 GE Electronic Components Sales Dept.  
 General Radio Co.  
 Hickok Elect. Instrument  
 ITT Jennings  
 Electronic Res. Labs. Inc.  
 Shallco, Incorporated  
 Tech Laboratories Inc.

**Dust Control Unit, Video**

Enviroco  
 Liberty Industries  
 Television Equipment Associates

**Edit Code Generator**

Central Dynamics Corp.  
 Electronic Engineering Co. of California  
 Recortec Inc.

**Edit Code Receiver**

Central Dynamics Corp.  
 Electronic Engineering Co. of California

**Editors, Audio Tape**

Behrends, Inc.  
 Central Dynamics Corp.  
 Comquip, Inc.  
 ELPA Marketing Industries, Inc.  
 Nemo Recording Labs  
 Nortronics Co., Inc.

**Editors, Film**

Comquip ..... **112**

Behrends, Inc.  
 CMX Systems  
 Comquip, Inc.  
 F&B/Ceco Industries, Inc.  
 Harwald Company  
 Kaiart Victor Corp.  
 Lipsner Smith Corp.  
 Neumade Prod. Corp.  
 Precision Laboratories Precision Cine  
 Equipment Corp.  
 Victor Duncan, Inc.

**Editors, Video Tape**

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American Data Corp. .... **87**

American Data Corp.

Ampex Corp.  
 Central Dynamics Corp.  
 CMX Systems  
 Dataron Inc.  
 Dynasciences Corp. Video Products  
 Div.  
 Electronic Engineering Co. of California  
 ES Enterprises  
 Franz Vertriebs-gesellschaft m.b.H.  
 GBC Closed Circuit TV Corp.  
 Gotham Audio Corp.  
 Nortronics Co., Inc.  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 Robert Bosch Corp. Fernseh Div.  
 Tele-Cine Inc.  
 Video Engineering Co. Inc.

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Roh Corporation ..... **12**

Roh Corporation

**Encoding Systems, Quad**

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American Data Corp.  
 CHESTER ELECTRONIC LABS., INC.  
 GTE Information Systems Inc.  
 Computer Image Corp.  
 Marconi Electronics Inc.  
 Mincom Div. 3M Co.  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 Robert Bosch Corp. Fernseh Div.  
 TeleMation, Inc.  
 Tele Measurements Inc.  
 Video Engineering Co. Inc.

**Encoder, Four Channel Stereo**

Audio Designs & Mfg.  
 CBS Labs  
 Electro-Voice Inc. Div. of Gulton  
 Industries, Inc.  
 Gately Electronics  
 Sansui Electronics Corp.

**Enhancers, TV Image**

CBS Labs  
 Cohu, Inc. Electronics Division  
 Colorado Video Inc.  
 Dynasciences Corp. Video Products  
 Div.  
 Grass Valley Group, Inc.  
 Philips Broadcast Equipment Corp.  
 Subs. North American Philips Corp.  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 Robert Bosch Corp. Fernseh Div.  
 Shintron Co. Inc.  
 Tele Measurements Inc.  
 Video Engineering Co. Inc.

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Audio Distributor Inc. .... **116**

Spectrum Instruments,  
 Inc. .... **118**

ALTEC  
 Audio Designs & Mfg.  
 Audio Distributor Inc.  
 B & K Dynascan Corp.  
 Burwen Laboratories  
 CBS Labs

Collins Radio Company Broadcasting  
 Marketing,  
 Electrodyne Div. of MCA Technology,  
 Inc.  
 Fairchild Sound Equipment Corp. A  
 Robins Industries Corp.  
 Gately Electronics  
 Gotham Audio Corp.  
 Lang Electronics Inc.  
 Langevin An MCA Technology  
 Company  
 MCA Technology, Inc.  
 McCurdy Radio Ind. Inc.  
 Melcor Electronics Corp.  
 Micro-Trak Corporation (Formerly:  
 Gray Research & Dev.)  
 Neve Inc., Rupert  
 Pulse Techniques Inc.  
 Quad-Eight Electronics  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 Roh Corporation  
 Rupert Neve Incorporated  
 Shallco, Incorporated  
 Spectra Sonics  
 Spectrum Instruments, Inc.  
 TT Electronics, Inc.  
 Ultra Audio Products  
 United Recording Electronics  
 Industries

**Equalizers, Vertical Aperture**

CBS Labs  
 Dynasciences Corp. Video Products  
 Div.  
 Grass Valley Group, Inc.  
 Orbit Radio and Video  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 Robert Bosch Corp. Fernseh Div.  
 Video Engineering Co. Inc.

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Taber Mfg. & Engr.  
 Co. .... **108**

Broadcast Electronics  
 Collins Radio Company Broadcasting  
 Marketing,  
 Comquip, Inc.  
 Duotone Co. Inc.  
 Gould Inc. Instrument Systems Div.  
 International Tapetronics Corp.  
 Joa Cartridge Service  
 MINNEAPOLIS MAGNETICS, INC.  
 Nortronics Co., Inc.  
 Precision Laboratories Precision Cine  
 Equipment Corp.  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 Recortec Inc.  
 Schultz Inc., Albert  
 Shallco, Incorporated  
 Sparta Electronic Corp.  
 Spotmaster Broadcast Electronics  
 Taber Mfg. & Engr. Co.  
 TelePro Industries, Inc.

**Exciters, AM**

CCA Electronics  
 Continental Electronics Mfg. Co. Subs.  
 of Resalab, Inc.  
 Gates Division of Harris-Intertype  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 Wilkinson Electronics, Inc.

**Exciters, FM**

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Wilkinson Electronics,  
 Inc. .... **17**

American Electronics Lab., Inc.  
 Belar Electronics Lab., Inc.

CCA Electronics  
Collins Radio Company Broadcasting Marketing  
Dyma Engineering, Inc.  
Fung Engineering Co.  
Gates Division of Harris-Intertype  
Granger Assoc.  
Magnatech Co.  
Mastertone Co.  
RCA Corporation RCA Broadcast Equip. Communications Systems Div.  
RHG Elect Labs, Inc.  
Rohde & Schwarz Sales  
Singer Products Co., Inc.  
Sparta Electronic Corp.  
Wilkinson Electronics, Inc.

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**Moseley Assoc. Inc.** ..... 92

CCA Electronics  
Dyma Engineering, Inc.  
Gates Division of Harris-Intertype  
Mastertone Co.  
McMartin Industries Inc.  
Moseley Assoc. Inc.  
RCA Corporation RCA Broadcast Equip. Communications Systems Div.  
Sparta Electronic Corp.  
Wilkinson Electronics, Inc.

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CCA Electronics  
Dyma Engineering, Inc.  
Gates Division of Harris-Intertype  
Mastertone Co.  
Moseley Assoc. Inc.  
RCA Corporation RCA Broadcast Equip. Communications Systems Div.  
Sparta Electronic Corp.  
Wilkinson Electronics, Inc.

**Film, Photographic**

ABTO, Inc.  
Afga-Gevaert Inc.  
Comquip, Inc.  
Eastman Kodak Co.  
F&B/Ceco Industries, Inc.  
GAF Corp.

**Film Chain Light Level Control**

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Beston Electronics Inc.

**Film Chain System**

Ameco Inc.  
Ampex Corp.  
Blonder-Tongue Labs.  
CHESTER ELECTRONIC LABS., INC.  
GTE Information Systems Inc.  
Cohu, Inc. Electronics Division  
Comquip, Inc.  
Diamond Power Specialty Corp. Subs.  
Babcock & Wilcox Co.  
Kalart Victor Corp.  
K'SON Corporation  
L-W Photo, Inc.  
Marco Video Systems, Inc.  
Marconi Electronics Inc.  
Philips Broadcast Equipment Corp.  
Subs. North American Philips Corp.  
Rank Cintel Rank Precision Ind. Ltd., Broadcast Div.  
RCA Corporation RCA Broadcast Equip. Communications Systems Div.  
R. H. Tyler Co. Div. of Weather Scan, Inc.  
Riker Communications Inc.  
Robert Bosch Corp. Fernseh Div.

Sarkes Tarzian Inc. Broadcast Equipment Div.  
Singer Co. Simulation Products Div.  
Soll, Inc., Joseph M.  
Tele-Cine Inc.  
TeleMation, Inc.  
Tele Measurements Inc.  
Video Engineering Co. Inc.  
Visual Communication Products Oper.  
General Electric Co.

**Film Processing Services**

Eastman Kodak Co.  
Jamieson Film Co.  
Lipsner Smith Corp.  
Photo Lab Inc.  
Treise Engineering

**Filters, Antenna**

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Ameco Inc.  
Anixter-Pruzan CATV Division  
Barker & Williamson, Inc.  
Bird Electronic Corp.  
Continental Electronics Mfg. Co. Subs. of Resalab, Inc.  
Gates Division of Harris-Intertype  
G.C. Electronics  
Jampro Antenna Co.  
Micro Communications, Inc.  
RCA Corporation RCA Broadcast Equip. Communications Systems Div.  
RF Systems, Inc.  
Telonic Industries Inc.  
TT Electronics, Inc.  
Video Engineering Co. Inc.

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Spectrum Instruments, Inc.

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Burwen Laboratories  
TT Electronics, Inc.

**Filters, Video**

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Coastcom Division Scott-Buttner Corp.

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Phase Corporation

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Danscoll Ltd.

**Generators, Burst**

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**American Data Corp.** ..... 87

American Data Corp.  
Dragnet Engineering Labs., Inc.  
Dynamics Corp. Video Products Div.  
Phase Corporation  
Rohde & Schwarz Sales  
Shintron Co. Inc.  
Tektronix Inc.

Video Engineering Co. Inc.

**Generators, Color Bar**

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**American Data Corp.** ..... 87

American Data Corp.  
Applied Elect. Mechanics  
B & K Dynascan Corp.  
Cohu, Inc. Electronics Division  
Dyma Engineering, Inc.  
Eico Elect. Inst. Co., Inc.  
Engineering Associates  
Heath Co.  
Hickok Elect. Instrument  
Internl. Nuclear Corp.  
Leader Instruments Corp.  
Lectrotech Inc.  
Marconi Electronics Inc.  
Marconi Instruments  
Mincom Div. 3M Co.  
RCA Corporation RCA Broadcast Equip. Communications Systems Div.  
RCA Corporation RCA Electronic Components  
Riker Communications Inc.  
Robert Bosch Corp. Fernseh Div.  
Shintron Co. Inc.  
SPI-ITT Instruments Metrix Division  
Tektronix Inc.  
TeleMation, Inc.  
Tele Measurements Inc.  
Telemet Co.  
Terminal Hudson Corp. Terminal Hudson Electronics  
Troy Electronic Sales Co.  
Video Engineering Co. Inc.

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American Data Corp.  
Beston Electronics Inc.  
Danscoll Ltd.  
Dyma Engineering, Inc.  
Dynamics Corp. Video Products Div.  
RCA Corporation RCA Broadcast Equip. Communications Systems Div.  
RCA Corporation RCA Electronic Components  
Riker Communications Inc.  
Rohde & Schwarz Sales  
Tektronix Inc.  
TeleMation, Inc.  
Video Engineering Co. Inc.

**Generators, Convergence**

Dynamics Corp. Video Products Div.

**Generators, Digital Sync**

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American Data Corp.

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American Electronics Lab., Inc.  
Catel, a Div. of United Scientific Corp.  
CCA Electronics  
Coastcom Division Scott-Buttner Corp.  
Collins Radio Company Broadcasting Marketing  
Data Pulse Div. of Systron-Donner  
Edison Electronics, Div. of McGraw-Edison Co., Daven & Measurements  
Gates Division of Harris-Intertype  
Leader Instruments Corp.

Magnatech Co.  
Marti Electronics  
Mastertone Co.  
Moseley Assoc. Inc.  
RCA Corporation RCA Broadcast Equip. Communications Systems Div.  
RCA Corporation RCA Electronic Components  
Rohde & Schwarz Sales  
Singer Products Co., Inc.  
Sparta Electronic Corp.  
Tektronix Inc.  
Wilkinson Electronics, Inc.

**Generators, NTSC Signal Test**

American Data Corp.  
Dyma Engineering, Inc.  
Dynamics Corp. Video Products Div.  
Rohde & Schwarz Sales  
Shintron Co. Inc.  
Tektronix Inc.  
TeleMation, Inc.  
Video Engineering Co. Inc.

**Generators, Powered (Electric Motor)**

GE Electronic Components Sales Dept.  
Kato Engineering Co.  
Singer Products Co., Inc.

**Generators, Powered (Gasoline Engine)**

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**Onan** .....

F&B/Ceco Industries, Inc.  
Kato Engineering Co.  
Mole Richardson Co.  
Onan  
Singer Products Co., Inc.  
TV Cable Supply Co.

**Generators, SCA**

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**Coastcom Division** .....  
**Gates** .....  
**Moseley Assoc. Inc.** .....

Coastcom Division Scott-Buttner Corp.  
Gates Division of Harris-Intertype  
Mastertone Co.  
McMartin Industries Inc.  
Moseley Assoc. Inc.  
Sparta Electronic Corp.  
Tektronix Inc.  
Wilkinson Electronics, Inc.

**Generators, Signal AF**

Alltech (Formerly: Microdot)  
Barker & Williamson, Inc.  
B & K Dynascan Corp.  
Bulova American Time Products  
CYBRIX CORPORATION  
Data Pulse Div. of Systron-Donner  
Delta Electronics Inc. (N.C.)  
Dragnet Engineering Labs., Inc.  
Dyma Engineering, Inc.  
Eico Elect. Inst. Co., Inc.  
Franz Vertriebs-gesellschaft m.B.H.  
Gates Division of Harris-Intertype  
General Radio Co.  
Gibbs Mfg. & Research Co.  
Heath Co.  
Hewlett Packard Co.  
Kay Elemetrics Corp.  
Leader Instruments Corp.  
Lelectron Res. Labs. Inc.  
Marconi Instruments  
Phase Corporation  
Radio Mfg. Co.  
RCA Corporation RCA Broadcast Equip. Communications Systems Div.  
RCA Corporation RCA Electronic Components  
Roh Corporation  
Rohde & Schwarz Sales  
SPI-ITT Instruments Metrix Division



Terminal Hudson Corp. Terminal Hudson Electronics  
Trepac Corp. America  
Video Engineering Co. Inc.

Terminal Hudson Corp. Terminal Hudson Electronics  
Trepac Corp. America  
Video Engineering Co. Inc.

Colorado Video Inc.  
Concord Elect. Corp.  
Dyma Engineering, Inc.  
DYNAIR Electronics, Inc.  
Dynamics Corp. Video Products Div.  
Electronic Designers Inc.  
Entron, Inc.  
GPL Div. Singer Gen.  
Grass Valley Group, Inc.  
Ikegami Tsushinki Co., Ltd. Export Department  
Interntl. Nuclear Corp.  
K'SON Corporation  
Marconi Electronics Inc.  
Marconi Instruments  
Philips Broadcast Equipment Corp. Subs. North American Philips Corp.  
RCA Corporation RCA Broadcast Equip. Communications Systems Div.  
Richmond Hill Laboratories Inc.  
Riker Communications Inc.  
Robert Bosch Corp. Fernseh Div.  
Rohde & Schwarz Sales  
Shintron Co. Inc.  
Sylvania Comm. Electronic  
Tektronix Inc.  
TeleMation, Inc.  
Tele Measurements Inc.  
Telemet Co.  
Texscan Corp.  
TRACOR, Inc. Instruments Group  
Video Engineering Co. Inc.  
Visual Educom Inc.

### Generators, Staircase

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**American Data Corp. .... 87**

American Data Corp.  
Colorado Video Inc.  
Marconi Instruments  
Phase Corporation  
Rohde & Schwarz Sales  
Tektronix Inc.  
TeleMation, Inc.  
Telemet Co.  
Video Engineering Co. Inc.

### Generators, Stereo

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Catel, a Div. of United Scientific Corp.  
CCA Electronics  
Heath Co.  
Hickok Elect. Instrument  
Leader Instruments Corp.  
Mastertone Co.  
RCA Corporation RCA Electronic Components  
Rohde & Schwarz Sales  
Wilkinson Electronics, Inc.

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Beston Electronics Inc.

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American Data Corp.  
Bulova American Time Products  
Danscoll Ltd.  
Data Pulse Div. of Systron-Donner  
DYNAIR Electronics, Inc.  
Dynamics Corp. Video Products Div.  
Entron, Inc.  
Gen. Electrodynamics  
Hickok Elect. Instrument  
Interntl. Nuclear Corp.  
K'SON Corporation  
RCA Corporation RCA Broadcast Equip. Communications Systems Div.  
R. H. Tyler Co. Div. of Weather Scan, Inc.  
Rohde & Schwarz Sales  
Shibaden Corp. of America  
Shintron Co. Inc.  
Tektronix Inc.  
TeleMation, Inc.  
Video Engineering Co. Inc.  
Visual Electronics Corp.

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Teledyne Isotopes Energy Systems Division

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Entron, Inc.  
Rohde & Schwarz Sales  
Tektronix Inc.  
TRACOR, Inc. Instruments Group  
Video Engineering Co. Inc.

### Generators, Video Sweep

Ailtech (Formerly: Microdot)  
Leader Instruments Corp.

### Generators, Signal RF

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**Lampkin Lab. Inc. .... 80B**

Acrodyne Industries  
Ailtech (Formerly: Microdot)  
Blonder-Tongue Labs.  
Boonton Electronics  
C Cor Electronics  
Collins Radio Company Broadcasting Marketing.  
Delta Electronics Inc. (Va.)  
Edison Electronics, Div. of McGraw-Edison Co., Daven & Measurements  
Eico Elect. Inst. Co., Inc.  
Engineering Associates  
Entron, Inc.  
General Radio Co.  
Gibbs Mfg. & Research Co.  
Heath Co.  
Hewlett Packard Co.  
Hickok Elect. Instrument  
Kay Elemetrics Corp.  
Lampkin Lab. Inc.  
Leader Instruments Corp.  
Leitronic Res. Labs. Inc.  
Marconi Instruments  
Narda Microwave Corp., The  
RCA Corporation RCA Broadcast Equip. Communications Systems Div.  
RCA Corporation RCA Electronic Components  
Rohde & Schwarz Sales  
Sadelco, Inc.  
Shibaden Corp. of America  
Singer Co., The Palo Alto Operation  
Spencer-Kennedy Labs., Inc.  
SPI-ITT Instruments Matrix Division  
Tasker Industries Systems Division  
Texscan Corp.

### Generators, Signal Square Wave

Ailtech (Formerly: Microdot)  
American Data Corp.  
Atlantic Research Corp. Teleproducts Div.  
B & K Dynascan Corp.  
Bulova American Time Products  
Data Pulse Div. of Systron-Donner  
Edison Electronics, Div. of McGraw-Edison Co., Daven & Measurements  
Eico Elect. Inst. Co., Inc.  
General Radio Co.  
Gibbs Mfg. & Research Co.  
Heath Co.  
Hewlett Packard Co.  
Leader Instruments Corp.  
Marconi Instruments  
Phase Corporation  
RCA Corporation RCA Broadcast Equip. Communications Systems Div.  
RCA Corporation RCA Electronic Components  
Rohde & Schwarz Sales  
SPI-ITT Instruments Matrix Division  
Tektronix Inc.  
TeleMation, Inc.  
Tele Measurements Inc.  
Telemet Co.  
Terminal Hudson Corp. Terminal Hudson Electronics  
Troy Electronic Sales Co.  
United Recording Electronics Industries  
Weinschel Engineering Co.

### Generators, Signal TV Synchronizing

American Data Corp.  
Ball Bros. Research Corp. Miratel Division  
Chrono-Log Corp.  
Cleveland Electronics, Inc.  
Cohu, Inc. Electronics Division

### Generators, Signal VITS

American Data Corp.  
Electronic Designers Inc.  
Marconi Instruments  
Richmond Hill Laboratories Inc.  
Riker Communications Inc.  
Rohde & Schwarz Sales  
Tektronix Inc.  
TeleMation, Inc.  
Tele Measurements Inc.  
Telemet Co.  
Video Engineering Co. Inc.

### Generators, Special Effect

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**Danscoll Ltd. .... 85**

Ameco Inc.  
American Data Corp.  
Applied Elect. Mechanics  
Ball Bros. Research Corp. Miratel Division  
B & K Dynascan Corp.  
Central Dynamics Corp.  
Cleveland Electronics, Inc.  
Colorado Video Inc.  
Danscoll Ltd.  
DYNAIR Electronics, Inc.  
Grass Valley Group, Inc.  
Interntl. Nuclear Corp.  
Leader Instruments Corp.  
Marconi Electronics Inc.  
Modern Video Engineering Co.  
Philips Broadcast Equipment Corp. Subs. North American Philips Corp.  
RCA Corporation RCA Broadcast Equip. Communications Systems Div.  
Richmond Hill Laboratories Inc.  
Riker Communications Inc.  
Robert Bosch Corp. Fernseh Div.  
Sarkes Tarzian Inc. Broadcast Equipment Div.  
Shibaden Corp. of America  
Shintron Co. Inc.  
Singer Co. Simulation Products Div.  
Tektronix Inc.  
TeleMation, Inc.  
Tele Measurements Inc.  
Telemet Co.  
TELESTRATOR Industries  
Total Technology  
Video Engineering Co. Inc.  
Viscount Video Systems Ltd.

### Generators, Signal Dot Bar

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**American Data Corp. .... 87**

American Data Corp.  
Colorado Video Inc.  
Dyma Engineering, Inc.  
Elect. Inst. Co., Inc.  
Entron Co.  
Hickok Elect. Instrument  
Leader Instruments Corp.  
Lampkin Lab. Inc.  
Marconi Electronics Inc.  
Marconi Instruments  
Phase Corporation  
Rohde & Schwarz Sales  
Tektronix Inc.  
TeleMation, Inc.  
Telemet Co.  
Texscan Corp.  
TRACOR, Inc. Instruments Group  
Video Engineering Co. Inc.

### Generators, Signal Marker

Ailtech (Formerly: Microdot)  
Blonder-Tongue Labs.  
Eico Elect. Inst. Co., Inc.  
Kay Elemetrics Corp.  
Leader Instruments Corp.  
Leitronic Res. Labs. Inc.  
Marconi Instruments  
Phase Corporation  
RCA Corporation RCA Broadcast Equip. Communications Systems Div.  
RCA Corporation RCA Electronic Components  
SPI-ITT Instruments Matrix Division  
Tektronix Inc.  
TeleMation, Inc.  
Telemet Co.  
Video Engineering Co. Inc.

### Generators, Signal Pulse

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**Beston Electronics Inc. .... 5**

Ailtech (Formerly: Microdot)  
Atlantic Research Corp. Teleproducts Div.  
Entron Electronics Inc.  
Bulova American Time Products  
Data Pulse Div. of Systron-Donner  
Delta Electronics Inc. (Va.)  
Hetz Engineering Labs., Inc.  
Dynamics Corp. Video Products Div.  
Edison Electronics, Div. of McGraw-Edison Co., Daven & Measurements  
Ikegami Tsushinki Co., Ltd. Export Department  
Hewlett Packard Co.  
Hickok Elect. Instrument  
Leader Instruments Corp.  
Kay Elemetrics Corp.  
Leitronic Res. Labs. Inc.  
Marconi Electronics Inc.  
Marconi Instruments  
Narda Microwave Corp., The  
RCA Corporation RCA Broadcast Equip. Communications Systems Div.  
Riker Communications Inc.  
Robert Bosch Corp. Fernseh Div.  
Rohde & Schwarz Sales  
Spencer-Kennedy Labs., Inc.  
Tasker Industries Systems Division  
Tektronix Inc.



Engineering Associates  
Enterprises  
Electronic  
Electronics  
Co.  
Solderless Terminal Co.  
& Phillips Inc.  
Res. Labs. Inc.  
Richardson Co.  
Industries Inc.  
Corporation  
Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
ITT Instruments Matrix Division  
Technology Corp.  
Hudson Corp. Terminal  
Hudson Electronics  
Co.  
Electronic Supply Co. Div. of  
RW  
Products Co.

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Div. Anchor Leasing Corp.

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genieux Corp. of America  
Riflex Company of America  
Tel-A-Matic  
TV Research  
rends, Inc.  
on USA, Inc. Optics Division  
hu, Inc. Electronics Division  
mquip, Inc.  
ncord Elect. Corp.  
smicar Optical Co., Ltd.  
nningham Corp. Subs. of Gleason  
Works  
nson Electronic Corp.  
stcoast Camera Center, Inc.  
B/Ceco Industries, Inc.  
C Closed Circuit TV Corp.  
velin Division Apollo Lasers, Inc.  
rroid Electronics Corp. CATV  
Systems Div.  
s. Schneider & Co. Optische Werke  
Div.  
ank Precision Industries  
ank Precision Ind. Broadcast Div.  
CA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
H. Tyler Co. Div. of Weather Scan,  
Inc.  
le-Cine Inc.  
teledyne Camera Systems  
te Measurements Inc.  
ctor Duncan, Inc.  
ideo Engineering Co. Inc.  
sual Educom Inc.

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Amperex Corp.  
Angenieux Corp. of America  
Riflex Company of America  
Behrends, Inc.  
Canon USA, Inc. Optics Division  
Cohu, Inc. Electronics Division

Comquip, Inc.  
Concord Elect. Corp.  
Cosmicar Optical Co., Ltd.  
Cunningham Corp. Subs. of Gleason  
Works  
Denson Electronic Corp.  
Eastcoast Camera Center, Inc.  
F&B/Ceco Industries, Inc.  
GBC Closed Circuit TV Corp.  
Javelin Division Apollo Lasers, Inc.  
Jerold Electronics Corp. CATV  
Systems Div.  
Jos. Schneider & Co. Optische Werke  
Div.  
Philips Broadcast Equipment Corp.  
Subs. North American Philips Corp.  
Rank Precision Industries  
Rank Precision Ind. Broadcast Div.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
R. H. Tyler Co. Div. of Weather Scan,  
Inc.  
Shibaden Corp. of America  
Tele-Cine Inc.  
Teledyne Camera Systems  
Tele Measurements Inc.  
Television Equipment Associates  
Victor Duncan, Inc.  
Video Engineering Co. Inc.  
Visual Educom Inc.

**Lighting, Preset Dimmer**  
Kliegl Bros. Lighting  
Skirpan Lighting Control Corp.  
Tele Measurements Inc.  
Video Engineering Co. Inc.

**Lighting, TV Controls**  
Behrends, Inc.  
Berkey-Colortran Inc.  
Century Strand, Inc.  
F&B/Ceco Industries, Inc.  
Janson Industries  
Kliegl Bros. Lighting  
Mole Richardson Co.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
Skirpan Lighting Control Corp.  
Tele Measurements Inc.  
Ultra Audio Products  
Utility Tower Co.  
Video Engineering Co. Inc.  
Waber Electronics Inc. Div. SGL  
Industries, Inc.

**Lighting, TV Portable System**  
Comquip, Inc.  
GBC Closed Circuit TV Corp.  
Harwood Mfg. Co.  
Kliegl Bros. Lighting  
Mole Richardson Co.  
R. H. Tyler Co. Div. of Weather Scan,  
Inc.  
Skirpan Lighting Control Corp.  
TeleMation, Inc.  
Tele Measurements Inc.  
Union Connector Co., Inc.  
Video Engineering Co. Inc.

**Lighting, TV Studio System**  
Bardwell McAlister Inc.  
Behrends, Inc.  
Berkey-Colortran Inc.  
Century Strand, Inc.  
F&B/Ceco Industries, Inc.  
GTE Sylvania Inc. Lighting Products  
Group  
Janson Industries  
Kliegl Bros. Lighting  
Mole Richardson Co.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
R. H. Tyler Co. Div. of Weather Scan,  
Inc.  
Skirpan Lighting Control Corp.  
TeleMation, Inc.  
Tele Measurements Inc.  
Union Connector Co., Inc.  
Utility Tower Co.  
Video Engineering Co. Inc.

**Lightning Arresters**  
Andrews Tower Inc.  
Collins Radio Company Broadcasting  
Marketing.  
Cook Electric Co.  
G.C. Electronics  
GE Electronic Components Sales Dept.  
Jerold Electronics Corp. CATV  
Systems Div.  
Joslyn Electronic Sys.  
Siemens Corporation  
Utility Tower Co.  
Vikoa Inc.

**Lightning Protection Systems**  
GE Electronic Components Sales Dept.  
Lightning Elimination Associates  
Wilkinson Electronics, Inc.

**Lights, Studio Set**  
Comquip, Inc.  
GTE Sylvania Inc. Lighting Products  
Group  
Kliegl Bros. Lighting  
Mole Richardson Co.  
R. H. Tyler Co. Div. of Weather Scan,  
Inc.  
TeleMation, Inc.  
Union Connector Co., Inc.  
Video Engineering Co. Inc.

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Gates Division of Harris-Intertype  
Hughey & Phillips Inc.  
Jampro Antenna Co.  
Radio Mfg. Co.

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**Hughey & Phillips Inc.** ..... 106

Andrews Tower Inc.  
Collins Radio Company Broadcasting  
Marketing.  
Electronic Lights Inc.  
Fort Worth Tower Co., Inc.  
Gates Division of Harris-Intertype  
Hughey & Phillips Inc.  
Jampro Antenna Co.  
Rohn Manufacturing Div. of Unarco  
Industries Inc.  
Sola Basic Industries Dielectric  
Communications Div.  
Utility Tower Co.

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Burwen Laboratories  
CCA Electronics  
Gately Electronics  
Gates Division of Harris-Intertype  
Harvey Radio Pro A/V Div.  
Magnatech Co.  
MCA Technology, Inc.  
Neve Inc., Rupert  
Rupert Neve Incorporated  
Spectra Sonics  
Television Equipment Associates  
Wilkinson Electronics, Inc.

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C Cor Electronics  
Gates Division of Harris-Intertype  
Wilkinson Electronics, Inc.

**Line Taps, CATV**  
American Technology Co.

Anixter-Pruzan CATV Division  
AVA Elect. & Machine Corp.  
Cascade Electronics  
C Cor Electronics  
Entron, Inc.  
Magnavox Company CATV Division  
Video Engineering Co. Inc.

**Load Resistor, Coaxial**  
Bird Electronic Corp.  
Electronic Res. Labs. Inc.  
Micro Communications, Inc.  
Rohde & Schwarz Sales  
Weinschel Engineering Co.

**Maintenance Services, AM**  
Tri-Tronics

**Maintenance Services, Cartridge Tape**  
Broadcast Prod. Co. Inc. Bcst, Division  
Collins Radio Company Broadcasting  
Marketing.  
Gates Division of Harris-Intertype  
International Tapetronics Corp.  
Joa Cartridge Service  
Liberty Industries  
Marathon Broadcast Equip.  
Mastertone Co.  
Nortronics Co., Inc.  
RCA Corporation RCA Service  
Company Div.  
Sparta Electronic Corp.  
Tri-Tronics

**Maintenance Services, FM**  
American Electronics Lab., Inc.  
Collins Radio Company Broadcasting  
Marketing.  
Fort Worth Tower Co., Inc.  
Liberty Industries  
Nortronics Co., Inc.  
RCA Corporation RCA Service  
Company Div.  
Soll, Inc., Joseph M.  
Taber Mfg. & Engr. Co.  
Tri-Tronics  
Utility Tower Co.

**Maintenance Services, Microwave**  
American Electronics Lab., Inc.  
Collins Radio Company Broadcasting  
Marketing.  
Fort Worth Tower Co., Inc.  
Liberty Industries  
Microwave Assoc. Inc.  
Raytheon Company Raytheon Data  
Systems Co.  
RCA Corporation RCA Service  
Company Div.  
Utility Tower Co.

**Maintenance Services, TV**  
Alcor Inc.  
Angenieux Corp. of America  
Fort Worth Tower Co., Inc.  
GBC Closed Circuit TV Corp.  
Liberty Industries  
Nortronics Co., Inc.  
RF Systems, Inc.  
Soll, Inc., Joseph M.  
Taber Mfg. & Engr. Co.  
Teledyne Brown Engineering Co.  
Science & Engr. Div.  
Tele Measurements Inc.  
Television Technology Corp.  
Utility Tower Co.  
Visual Communication Products Oper.  
General Electric Co.

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Potomac Instruments, Inc.

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Atlantic Research Corp. Teleproducts Div.  
Dyma Engineering, Inc.  
ELPA Marketing Industries, Inc.  
Gates Division of Harris-Intertype Heath Co.  
Lectronic Res. Labs. Inc.  
Marconi Instruments  
RCA Corporation RCA Broadcast Equip. Communications Systems Div.

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Collins Radio Company Broadcasting Marketing.  
Defense Electronics  
Delta Electronics Inc. (Va.)  
Engineering Associates  
Gates Division of Harris-Intertype  
Leader Instruments Corp.  
Lectronic Res. Labs. Inc.  
Narda Microwave Corp., The  
Potomac Instruments, Inc.  
RCA Corporation RCA Broadcast Equip. Communications Systems Div.  
Rohde & Schwarz Sales  
Singer Co. Los Angeles Operation  
Solar Electronics Co.  
Sparta Electronic Corp.  
SPI-ITT Instruments Matrix Division  
Terminal Hudson Corp. Terminal Hudson Electronics  
Wilkinson Electronics, Inc.

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Ameco Inc.  
Anixter-Pruzan CATV Division  
Blonder-Tongue Labs.  
CATV Equipment Co.  
Defense Electronics  
Edison Electronics, Div. of McGraw-Edison Co., Daven & Measurements  
Engineering Associates  
Fung Engineering Co.  
Jerrod Electronics Corp. CATV Systems Div.  
Leader Instruments Corp.  
Lectronic Res. Labs. Inc.  
Potomac Instruments, Inc.  
RCA Corporation RCA Broadcast Equip. Communications Systems Div.  
Riker Communications Inc.  
Rohde & Schwarz Sales  
Sadelco, Inc.  
Sencore Inc.  
Singer Co. Los Angeles Operation  
Terminal Hudson Corp. Terminal Hudson Electronics  
TV Cable Supply Co.  
Video Engineering Co. Inc.  
Vikoa Inc.

**Meters, Flutter and Wow**

ELPA Marketing Industries, Inc.  
Franz Vertriebs-gesellschaft m.b.H.  
Gotham Audio Corp.  
Kay Elemetrics Corp.  
Leader Instruments Corp.

Lectronic Res. Labs. Inc.  
Micom Inc.  
Mincom Div. 3M Co.  
Rek-O-Kut Inc.  
Sentinel, Inc.  
Tascam Corporation

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**Lampkin Lab. Inc.** ..... 80B  
Belar Electronics Lab., Inc.  
CCA Electronics  
Collins Radio Company Broadcasting Marketing.  
Edison Electronics, Div. of McGraw-Edison Co., Daven & Measurements  
Engineering Associates  
GE Electronic Components Sales Dept.  
General Microwave Corp.  
General Radio Co.  
Hewlett Packard Co.  
Hickok Elect. Instrument  
Lampkin Lab. Inc.  
Lectronic Res. Labs. Inc.  
Marubeni America Corp. Miida Electronics  
Narda Microwave Corp., The  
RCA Corporation RCA Broadcast Equip. Communications Systems Div.  
Rohde & Schwarz Sales  
Simpson Electric Co.  
Singer Co. Los Angeles Operation  
SPI-ITT Instruments Matrix Division  
Time & Frequency Tech., Inc.  
United Systems Corp. Subs. of Monsanto Co.

**Meters, Frequency RF**

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**Lampkin Lab. Inc.** ..... 80B  
Edison Electronics, Div. of McGraw-Edison Co., Daven & Measurements  
Engineering Associates  
ES Enterprises  
GE Electronic Components Sales Dept.  
General Microwave Corp.  
Heath Co.  
Hickok Elect. Instrument  
Lampkin Lab. Inc.  
Lectronic Res. Labs. Inc.  
Marubeni America Corp. Miida Electronics  
Rohde & Schwarz Sales  
SPI-ITT Instruments Matrix Division  
Time & Frequency Tech., Inc.  
United Systems Corp. Subs. of Monsanto Co.

**Meters, Frequency Calibrating**

Edison Electronics, Div. of McGraw-Edison Co., Daven & Measurements  
General Radio Co.  
Lampkin Lab. Inc.  
Lectronic Res. Labs. Inc.  
Marubeni America Corp. Miida Electronics  
Narda Microwave Corp., The  
RCA Corporation RCA Broadcast Equip. Communications Systems Div.  
RF Systems, Inc.  
Rohde & Schwarz Sales  
Singer Co. Los Angeles Operation

**Meters, Grind Dip**

Leader Instruments Corp.

**Meters, Intermodulation**

Heath Co.

**Meters, Line Voltage**

Alco Electronic Products, Inc.  
Heath Co.

Lectronic Res. Labs. Inc.  
RCA Corporation RCA Electronic Components  
Terminal Hudson Corp. Terminal Hudson Electronics

**Meters, Panel Replacement**

G.C. Electronics  
General Microwave Corp.  
Lectronic Res. Labs. Inc.  
Triplett Corporation

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Collins Radio Company Broadcasting Marketing.  
Dranetz Engineering Labs., Inc.  
GE Electronic Components Sales Dept.  
General Radio Co.  
Lectronic Res. Labs. Inc.  
Neve Inc., Rupert  
Potomac Instruments, Inc.  
RCA Corporation RCA Broadcast Equip. Communications Systems Div.  
Rohde & Schwarz Sales  
Rupert Neve Incorporated  
Singer Co. Los Angeles Operation.

**Meters, Power**

Bird Electronic Corp.  
Boonton Electronics  
CCA Electronics  
Collins Radio Company Broadcasting Marketing.  
Dranetz Engineering Labs., Inc.  
Engineering Associates  
General Microwave Corp.  
Hickok Elect. Instrument  
Lectronic Res. Labs. Inc.  
Marconi Instruments  
Narda Microwave Corp., The  
National Electrolab Assoc. Ltd.  
RCA Corporation RCA Broadcast Equip. Communications Systems Div.  
Rohde & Schwarz Sales  
Simpson Electric Co.  
Terminal Hudson Corp. Terminal Hudson Electronics

**Meters, Standing Wave**

Bird Electronic Corp.  
CCA Electronics  
Collins Radio Company Broadcasting Marketing.  
Delta Electronics Inc. (Va.)  
General Microwave Corp.  
General Radio Co.  
Hewlett Packard Co.  
Lectronic Res. Labs. Inc.  
Narda Microwave Corp., The  
RCA Corporation RCA Broadcast Equip. Communications Systems Div.  
Rohde & Schwarz Sales  
SPI-ITT Instruments Matrix Division  
Weinschel Engineering Co.

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Alco Electronic Products, Inc.  
Heath Co.  
Hickok Elect. Instrument  
Instrument Laboratories  
International Instrument Div. Sigma Instruments, Inc.  
Leader Instruments Corp.  
Marubeni America Corp. Miida Electronics  
RCA Corporation RCA Broadcast Equip. Communications Systems Div.

RCA Corporation RCA Electronic Components  
Rohde & Schwarz Sales  
SPI-ITT Instruments Matrix Division  
Terminal Hudson Corp. Terminal Hudson Electronics  
Triplett Corporation

**Meters, VU**

Burwen Laboratories  
Gately Electronics  
G.C. Electronics  
Hickok Elect. Instrument  
Instrument Laboratories  
International Instrument Div. Sigma Instruments, Inc.  
Lectronic Res. Labs. Inc.  
MCA Technology, Inc.  
Neve Inc., Rupert  
Pulse Dynamics Mfg. Corp.  
RCA Corporation RCA Broadcast Equip. Communications Systems Div.  
Rupert Neve Incorporated  
SPI-ITT Instruments Matrix Division  
Terminal Hudson Corp. Terminal Hudson Electronics  
Triplett Corporation

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**Audio Distributor Inc.** ..... 1  
**Electro-Voice Inc.** .....  
**Sony/Superscope** ..... 98,  
AKG Division North Amer. Philips Corp.  
ALTEC  
Alto Communications Inc. Broadcasting Marketing Div.  
American Gelsco Electronics  
ATLAS Sound  
Audio Distributor Inc.  
Behrends, Inc.  
CATV Equipment Co.  
CCA Electronics  
Century Strand, Inc.  
Collins Radio Company Broadcasting Marketing.  
Comquip, Inc.  
Custom Craft Designs  
Dyma Engineering, Inc.  
Electro-Voice Inc. Div. of Gulton Industries, Inc.  
F&B/Ceco Industries, Inc.  
Gately Electronics  
Gates Division of Harris-Intertype  
G.C. Electronics  
Gotham Audio Corp.  
Innovative Television Equipment, Inc.  
Jerrod Electronics Corp. CATV Systems Div.  
Mole Richardson Co.  
Philips Broadcast Equipment Corp. Subs. North American Philips Corp.  
Primo Co. Ltd.  
RCA Corporation RCA Broadcast Equip. Communications Systems Div.  
RCA Corporation RCA Service Company Div.  
Revox Corporation  
R. H. Tyler Co. Div. of Weather Scan, Inc.  
Schultz Inc., Albert  
Sennheiser Electronics Corp.  
Shure Brothers Inc.  
Singer Products Co., Inc.  
Sony/Superscope  
Sparta Electronic Corp.  
Spotmaster Broadcast Electronics  
Tele Measurements Inc.  
Television Equipment Associates  
Television Products Co. Inc.  
Terminal Hudson Corp. Terminal Hudson Electronics  
Turner Division Conrac Corporation  
Victor Duncan, Inc.  
Video Engineering Co. Inc.

**Microphones, Boom**

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**Electro-Voice Inc.** ..... IFC  
**Gates** ..... 88  
**Sony/Superscope** ..... 88

Division North Amer. Philips Corp.  
 American Geloso Electronics  
 Equipment Co.  
 Radio Company Broadcasting Marketing,  
 Corp.  
 Division of Harris-Intertype Electronics  
 Audio Corp.  
 Television Equipment, Inc.  
 MCA Technology Company  
 Corporation  
 Broadcast Equipment Corp.  
 Subs. North American Philips Corp.  
 RCA Broadcast Equip. Communications Systems Div.  
 Corporation  
 Magnetic Sales Corp.  
 Inc., Albert  
 Electronics Corp.  
 Brothers Inc.  
 Products Co., Inc.  
 Electronic Corp.  
 Broadcast Electronics Measurements Inc.  
 Equipment Associates  
 Terminal Hudson Corp. Terminal Hudson Electronics (Trusonic) ACS Inc.  
 Division Conrac Corporation  
 Victor Duncan, Inc.  
 Engineering Co. Inc.

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Division North Amer. Philips Corp.  
 ALTEC  
 American Geloso Electronics Audio Distributor Inc.  
 Behrends, Inc.  
 Division Lear Siegler Inc.  
 TV Equipment Co.  
 Electronics  
 Radio Company Broadcasting Marketing,  
 Corp.  
 Engineering, Inc.  
 Electro-Voice Inc. Div. of Gulton Industries, Inc.  
 Electronics  
 Division of Harris-Intertype Electronics  
 Audio Corp.  
 Division Apollo Lasers, Inc.  
 MCA Technology Company  
 Mastertone Co.  
 Broadcast Equipment Corp.  
 Subs. North American Philips Corp.  
 Dynamics Mfg. Corp.  
 Corporation RCA Broadcast Equip. Communications Systems Div.  
 Corporation  
 H. Tyler Co. Div. of Weather Scan, Inc.  
 Magnetic Sales Corp.  
 Inc., Albert  
 Electronics Corp.  
 Brothers Inc.  
 Products Co., Inc.  
 Sony/Superscope

Sparta Electronic Corp.  
 Spotmaster Broadcast Electronics  
 TEAC Corp of America  
 Tele Measurements Inc.  
 Television Equipment Associates  
 Terminal Hudson Corp. Terminal Hudson Electronics (Trusonic) ACS Inc.  
 Turner Division Conrac Corporation  
 Victor Duncan, Inc.  
 Video Engineering Co. Inc.

**Microphones, Floor**

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**AKG Division** ..... 48  
**Electro-Voice Inc.** ..... IFC  
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AKG Division North Amer. Philips Corp.  
 ALTEC  
 American Geloso Electronics Audio Distributor Inc.  
 Behrends, Inc.  
 Bogen Division Lear Siegler Inc.  
 CATV Equipment Co.  
 CCA Electronics  
 Collins Radio Company Broadcasting Marketing,  
 Comquip, Inc.  
 Electro-Voice Inc. Div. of Gulton Industries, Inc.  
 Gately Electronics  
 Gates Division of Harris-Intertype  
 G.C. Electronics  
 Gotham Audio Corp.  
 Langevin An MCA Technology Company  
 Mastertone Co.  
 Philips Broadcast Equipment Corp.  
 Subs. North American Philips Corp.  
 RCA Corporation RCA Broadcast Equip. Communications Systems Div.  
 Revox Corporation  
 R. H. Tyler Co. Div. of Weather Scan, Inc.  
 Ryder Magnetic Sales Corp.  
 Schultz Inc., Albert  
 Sennheiser Electronics Corp.  
 Shure Brothers Inc.  
 Sony/Superscope  
 Sparta Electronic Corp.  
 Spotmaster Broadcast Electronics  
 Tele Measurements Inc.  
 Television Equipment Associates  
 Terminal Hudson Corp. Terminal Hudson Electronics (Trusonic) ACS Inc.  
 Turner Division Conrac Corporation  
 Victor Duncan, Inc.  
 Video Engineering Co. Inc.  
 VIF International

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**Electro-Voice Inc.** ..... IFC

AKG Division North Amer. Philips Corp.  
 ALTEC  
 American Geloso Electronics Audio Distributor Inc.  
 Behrends, Inc.  
 Bogen Division Lear Siegler Inc.  
 CATV Equipment Co.  
 CCA Electronics  
 Collins Radio Company Broadcasting Marketing,  
 Comquip, Inc.  
 Dyma Engineering, Inc.  
 Electro-Voice Inc. Div. of Gulton Industries, Inc.  
 Gately Electronics  
 Gates Division of Harris-Intertype  
 G.C. Electronics  
 Gotham Audio Corp.  
 Langevin An MCA Technology Company  
 Mastertone Co.  
 Miles Reproducer Co.

Philips Broadcast Equipment Corp.  
 Subs. North American Philips Corp.  
 Pulse Dynamics Mfg. Corp.  
 RCA Corporation RCA Broadcast Equip. Communications Systems Div.  
 Revox Corporation  
 R. H. Tyler Co. Div. of Weather Scan, Inc.  
 Ryder Magnetic Sales Corp.  
 Schultz Inc., Albert  
 Sennheiser Electronics Corp.  
 Shure Brothers Inc.  
 Singer Products Co., Inc.  
 Sony/Superscope  
 Sparta Electronic Corp.  
 Spotmaster Broadcast Electronics  
 TEAC Corp of America  
 Tele Measurements Inc.  
 Television Equipment Associates  
 Telex Communications Division  
 Terminal Hudson Corp. Terminal Hudson Electronics (Trusonic) ACS Inc.  
 Turner Division Conrac Corporation  
 Victor Duncan, Inc.  
 Video Engineering Co. Inc.

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 ALTEC  
 American Geloso Electronics  
 Bogen Division Lear Siegler Inc.  
 CATV Equipment Co.  
 CCA Electronics  
 Collins Radio Company Broadcasting Marketing,  
 Comquip, Inc.  
 Electro-Voice Inc. Div. of Gulton Industries, Inc.  
 Gately Electronics  
 Gates Division of Harris-Intertype  
 G.C. Electronics  
 Gotham Audio Corp.  
 Langevin An MCA Technology Company  
 Mastertone Co.  
 Miles Reproducer Co.  
 Philips Broadcast Equipment Corp.  
 Subs. North American Philips Corp.  
 Pulse Dynamics Mfg. Corp.  
 RCA Corporation RCA Broadcast Equip. Communications Systems Div.  
 RCA Corporation RCA Electronic Components  
 Revox Corporation  
 R. H. Tyler Co. Div. of Weather Scan, Inc.  
 Ryder Magnetic Sales Corp.  
 Schultz Inc., Albert  
 Sennheiser Electronics Corp.  
 Shure Brothers Inc.  
 Singer Products Co., Inc.  
 Sony/Superscope  
 Sparta Electronic Corp.  
 Spotmaster Broadcast Electronics  
 Tele Measurements Inc.  
 Television Equipment Associates  
 Terminal Hudson Corp. Terminal Hudson Electronics (Trusonic) ACS Inc.  
 Turner Division Conrac Corporation  
 Victor Duncan, Inc.  
 Video Engineering Co. Inc.

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**Electro-Voice Inc.** ..... IFC  
**Sennheiser Electronics Corp.** ..... 80A  
**Sony/Superscope** ..... 98

AKG Division North Amer. Philips Corp.  
 Comquip, Inc.

Electro-Voice Inc. Div. of Gulton Industries, Inc.  
 Radio Mfg. Co.  
 Ryder Magnetic Sales Corp.  
 Schultz Inc., Albert  
 Sennheiser Electronics Corp.  
 Sony/Superscope  
 Television Equipment Associates  
 Victor Duncan, Inc.  
 Video Engineering Co. Inc.

**Microphones, Wireless**

CHESTER ELECTRONIC LABS., INC.  
 GTE Information Systems Inc.  
 Comquip, Inc.  
 Miles Reproducer Co.  
 North Amer. Electronics  
 Orbit Radio and Video  
 RCA Corporation RCA Broadcast Equip. Communications Systems Div.  
 Ryder Magnetic Sales Corp.  
 Schultz Inc., Albert  
 Sennheiser Electronics Corp.  
 Sparta Electronic Corp.  
 Tele Measurements Inc.  
 Television Equipment Associates (Trusonic) ACS Inc.  
 Victor Duncan, Inc.  
 Video Engineering Co. Inc.

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Andrew Corp.  
 CCA Electronics  
 Coastcom Division Scott-Buttner Corp.  
 Collins Radio Company Broadcasting Marketing,  
 Gates Division of Harris-Intertype  
 Mastertone Co.  
 Microwave Assoc. Inc.  
 Moseley Assoc. Inc.  
 Narda Microwave Corp., The  
 North Amer. Electronics  
 Radio Research Instrument Co., Inc.  
 RCA Corporation RCA Broadcast Equip. Communications Systems Div.  
 Sparta Electronic Corp.  
 TeleMation, Inc.  
 Tele Measurements Inc.  
 Varian Solid State Div. Micro-Link Products  
 Video Engineering Co. Inc.

**Microwave Systems, 2500 MHz**

Alcor Inc.  
 Andrew Corp.  
 CHESTER ELECTRONIC LABS., INC.  
 GTE Information Systems Inc.  
 Collins Radio Company Broadcasting Marketing,  
 Microwave Assoc. Inc.  
 North Amer. Electronics  
 RCA Corporation RCA Broadcast Equip. Communications Systems Div.  
 Singer Co., The Palo Alto Operation  
 TeleMation, Inc.  
 Varian Solid State Div. Micro-Link Products  
 Video Engineering Co. Inc.

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Alicor Inc.  
ALTEC  
American Data Corp.  
American Geloso Electronics  
Audio Designs & Mfg.  
Blanchard Electronics  
Collins Radio Company Broadcasting  
Marketing.  
Comqulp, Inc.  
Concept 70, A Div. of Dyma  
Engineering, Inc.  
Danscoll Ltd.  
Delta Electronics Inc. (N.C.)  
Electrodyne Div. of MCA Technology,  
Inc.

Gately Electronics  
Gates Division of Harris-Intertype  
Gotham Audio Corp.  
Lamb Laboratories  
Lang Electronics Inc.  
Magnatech Co.  
MCA Technology, Inc.  
McMartin Industries Inc.  
Melcor Electronics Corp.  
Neve Inc., Rupert  
North Amer. Electronics  
Orbit Radio and Video  
Precision Elect. Inc.  
QRK Electronic Prod.  
Quad-Eight Electronics  
Radio Mfg. Co.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
Roh Corporation  
Rupert Neve Incorporated  
Schultz Inc., Albert  
Singer Products Co., Inc.  
Sony/Superscope  
Sparta Electronic Corp.  
Switchcraft Inc.  
Systems Marketing Corp. And  
Sono-Mag Corp.  
Tascam Corporation  
TeleMation, Inc.  
Tele Measurements Inc.  
Video Engineering Co. Inc.  
Vital Industries  
Weinschel Engineering Co.

### Modulators, TV

Ameco Inc.  
Anlxter-Pruzan CATV Division  
Catel, a Div. of United Scientific Corp.  
Coastcom Division Scott-Buttner Corp.  
DYNAIR Electronics, Inc.  
Gates Division of Harris-Intertype  
North Amer. Electronics  
Orbit Radio and Video  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
Rhode & Schwarz Sales  
Shibaden Corp. of America  
TeleMation, Inc.  
Tele Measurements Inc.  
Telemet Co.  
Video Engineering Co. Inc.

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CCA Electronics  
Collins Radio Company Broadcasting  
Marketing.  
Dyma Engineering, Inc.  
Gates Division of Harris-Intertype  
Magnatech Co.  
Mastertone Co.  
McMartin Industries Inc.  
Melcor Electronics Corp.  
Metron Instruments  
Moseley Assoc. Inc.  
National Electrolab Assoc. Ltd.

RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
Singer Products Co., Inc.  
Sparta Electronic Corp.  
Systems Marketing Corp. And  
Sono-Mag Corp.  
Tele Measurements Inc.  
Time & Frequency Tech., Inc.  
Wilkinson Electronics, Inc.

### Monitors, FM System

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Belar Electronics Lab., Inc.  
CCA Electronics  
Collins Radio Company Broadcasting  
Marketing.  
Dyma Engineering, Inc.  
Gates Division of Harris-Intertype  
Karg Laboratories, Inc.  
Kenwood Electronics, Inc.  
Magnatech Co.  
Mastertone Co.  
McMartin Industries Inc.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
Singer Products Co., Inc.  
Sparta Electronic Corp.  
Systems Marketing Corp. And  
Sono-Mag Corp.  
Tele Measurements Inc.  
Time & Frequency Tech., Inc.

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CCA Electronics  
Collins Radio Company Broadcasting  
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Dyma Engineering, Inc.  
Gates Division of Harris-Intertype  
Karg Laboratories, Inc.  
Magnatech Co.  
Mastertone Co.  
McMartin Industries Inc.  
Singer Products Co., Inc.  
Sparta Electronic Corp.  
Tele Measurements Inc.  
Time & Frequency Tech., Inc.

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CCA Electronics  
Collins Radio Company Broadcasting  
Marketing.  
Dyma Engineering, Inc.  
Eidson Electronic Co.  
ES Enterprises  
Gates Division of Harris-Intertype  
General Microwave Corp.  
Lampkin Lab. Inc.  
Magnatech Co.  
Mastertone Co.  
McMartin Industries Inc.  
Metron Instruments  
Narda Microwave Corp., The  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
Sparta Electronic Corp.

Time & Frequency Tech., Inc.  
Video Engineering Co. Inc.  
Wilkinson Electronics, Inc.

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**Moseley Assoc. Inc.** ..... 92  
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CCA Electronics  
Collins Radio Company Broadcasting  
Marketing.  
Dyma Engineering, Inc.  
Gates Division of Harris-Intertype  
General Microwave Corp.  
Lampkin Lab. Inc.  
Magnatech Co.  
Mastertone Co.  
McMartin Industries Inc.  
Metron Instruments  
Moseley Assoc. Inc.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
Singer Products Co., Inc.  
Sparta Electronic Corp.  
Tele Measurements Inc.  
Time & Frequency Tech., Inc.  
Video Engineering Co. Inc.  
Wilkinson Electronics, Inc.

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Inc.** ..... 96  
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Collins Radio Company Broadcasting  
Marketing.  
Dragnetz Engineering Labs., Inc.  
Gotham Audio Corp.  
Potomac Instruments, Inc.  
Sparta Electronic Corp.

### Monitors, Power

Bird Electronic Corp.  
General Microwave Corp.  
Leotronic Res. Labs. Inc.  
Melcor Electronics Corp.  
Sparta Electronic Corp.

### Monitors, Stereo

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Dyma Engineering, Inc.  
Gates Division of Harris-Intertype  
Kenwood Electronics, Inc.  
McMartin Industries Inc.  
Sparta Electronic Corp.  
Systems Marketing Corp. And  
Sono-Mag Corp.  
Ultra Audio Products

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Anixter-Pruzan CATV Division  
Audiotronics Corp.  
Ball Bros. Research Corp. Miratel  
Division  
Belar Electronics Lab., Inc.  
Concord Elect. Corp.  
Conrac Div. Conrac Corp.  
Cunningham Corp. Subs. of Gleason  
Works

GBC Closed Circuit TV Corp.  
GPL Div. Singer Gen.  
Javelin Division Apollo Lasers, Inc.  
K'SON Corporation  
Leader Instruments Corp.  
Modtec Corp.  
North Amer. Electronics  
Orbit Radio and Video  
Panasonic, VTR/CCTV Dept.  
Matsushita Electric Corp. of  
America  
Philips Broadcast Equipment Corp.  
Subs. North American Philips Co.  
Rank Cintel Rank Precision Ind. Ltd.  
Broadcast Div.  
Rank Precision Ind. Broadcast Div.  
RCA Corporation RCA Service  
Company Div.  
R. H. Tyler Co. Div. of Weather Sea  
Inc.  
Robert Bosch Corp. Fernseh Div.  
SC Electronics, Inc. Subs. of  
Audiotronics Corp.  
Shibaden Corp. of America  
Singer Co. Simulation Products Div  
Sony Corp. of America  
Tektronix Inc.  
Teledyne Brown Engineering Co.  
Science & Engrg. Div.  
TeleMation, Inc.  
Tele Measurements Inc.  
Television Equipment Associates  
Video Engineering Co. Inc.  
Visual Electronics Corp.

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**Ball Bros. Research  
Corp.** .....  
**SC Electronics, Inc.** .....  
Audiotronics Corp.  
Ball Bros. Research Corp. Miratel  
Division  
CHESTER ELECTRONIC LABS., INC.  
GTE Information Systems Inc.  
Conrac Div. Conrac Corp.  
Dyma Engineering, Inc.  
K'SON Corporation  
Leader Instruments Corp.  
Modtec Corp.  
Orbit Radio and Video  
Rank Cintel Rank Precision Ind. Ltd.  
Broadcast Div.  
RCA Corporation RCA Service  
Company Div.  
R. H. Tyler Co. Div. of Weather Sea  
Inc.  
Robert Bosch Corp. Fernseh Div.  
SC Electronics, Inc. Subs. of  
Audiotronics Corp.  
Tektronix Inc.  
TeleMation, Inc.  
Television Equipment Associates  
Video Engineering Co. Inc.  
Visual Electronics Corp.

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**Ultra Audio Products** ..... S  
Ampex Corp.  
Ultra Audio Products

### Monitors, Waveform

Ball Bros. Research Corp. Miratel  
Division  
California Instruments Co.  
Colorado Video Inc.  
Leader Instruments Corp.  
North Amer. Electronics  
Philips Broadcast Equipment Corp.  
Subs. North American Philips Co.  
Robert Bosch Corp. Fernseh Div.  
Tektronix Inc.  
Teledyne Brown Engineering Co.  
Science & Engrg. Div.  
Tele Measurements Inc.  
Ultra Audio Products  
Video Engineering Co. Inc.

**Complexers**

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**on Electronics Inc. .... 5**  
**stcom Division ..... 94**

Mfg. Co.  
Electronics Inc.  
om Division Scott-Buttner Corp.  
Electric Co.  
o Systems  
iv. Singer Gen.  
Victor Corp.  
Enterprises  
Video Systems, Inc.  
Amer. Electronics  
Corporation RCA Broadcast  
p. Communications Systems  
Tyler Co. Div. of Weather Scan.

Tarzan Inc. Broadcast  
Equipment Div.  
Laboratories, Inc.  
Devices Inc. Semiconductor

onix Inc.  
ation, Inc.  
Measurements Inc.  
Engineering Co. Inc.

**ow Band FM Equipment**

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**ley Assoc. Inc. .... 92**

dyne Industries  
in Electronics, Div. of  
Graw-Edison Co., Daven &  
Measurements  
artin Industries Inc.  
ley Assoc. Inc.  
rtific Systems, Inc. Broadcast  
Equipment Div.  
rex Inc. Communications Div.  
r Products Co., Inc.

**etworks, Matching Audio**

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**Corporation ..... 12**

Avionics Inc.  
C  
is Radio Company Broadcasting  
Marketing.  
n Electronics, Div. of  
Graw-Edison Co., Daven &  
Measurements  
y Electronics  
Technology, Inc.  
Corporation  
Measurements Inc.  
Electronics, Inc.

**etworks, Matching RF**

d Mfg. Co.  
Avionics Inc.  
ns Radio Company Broadcasting  
Marketing.  
nental Electronics Mfg. Co. Subs.  
Resalab, Inc.  
eral Radio Co.  
Power Electronics Co.  
ral Data Devices Inc.  
la Microwave Corp., The  
ta Electronic Corp.  
Electronics, Inc.

**etworks, Phasing --See also  
Phasing Units**

Avionics Inc.  
Electronics  
ns Radio Company Broadcasting  
Marketing.  
nental Electronics Mfg. Co. Subs.  
Resalab, Inc.  
Power Electronics Co.  
Electronics, Inc.  
Corporation RCA Electromagnetic  
Aviation Systems Div.  
ta Electronic Corp.  
Measurements Inc.

TT Electronics, Inc.

**Ohmmeters**

Anixter-Pruzan CATV Division  
California Instruments Co.  
Collins Radio Company Broadcasting  
Marketing.  
Edison Electronics, Div. of  
McGraw-Edison Co., Daven &  
Measurements  
Franz Vertriebs-gesellschaft m.b.H.  
Heath Co.  
Hewlett Packard Co.  
Hickok Elect. Instrument  
Honeywell Inc. Test Instruments Div.  
ITT Jennings  
Leader Instruments Corp.  
Lectionic Res. Labs. Inc.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
RCA Corporation RCA Electronic  
Components  
Rohde & Schwarz Sales  
Simpson Electric Co.  
SPI-ITT Instruments Matrix Division  
Triplett Corporation

**Operating Impedance Bridge**

Dranetz Engineering Labs., Inc.  
General Radio Co.  
Heath Co.  
Rohde & Schwarz Sales

**Oscillators, AM**

Alltech (Formerly: Microdot)  
Arbor Systems Inc.  
Bulova American Time Products  
CCA Electronics  
Collins Radio Company Broadcasting  
Marketing.  
CYBRIX CORPORATION  
Dyma Engineering, Inc.  
Engineering Associates  
Gates Division of Harris-Intertype  
Gibbs Mfg. & Research Co.  
Heath Co.  
Instrument Laboratories  
Kay Elemetrics Corp.  
Leader Instruments Corp.  
Marconi Instruments  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
Rohde & Schwarz Sales  
Singer Products Co., Inc.  
Trepac Corp. America

**Oscillators, FM**

Alltech (Formerly: Microdot)  
Belar Electronics Lab., Inc.  
CCA Electronics  
Collins Radio Company Broadcasting  
Marketing.  
Gates Division of Harris-Intertype  
Heath Co.  
Kay Elemetrics Corp.  
Leader Instruments Corp.  
Marconi Electronics Inc.  
Marconi Instruments  
Microwave Assoc. Inc.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
Rohde & Schwarz Sales  
Singer Co., The Palo Alto Operation  
Singer Products Co., Inc.

**Oscillators, Tone**

Belcom Electronics Mfg. Co.  
Bulova American Time Products  
Gates Division of Harris-Intertype  
General Radio Co.  
MCA Technology, Inc.  
Neve Inc., Rupert  
Phase Corporation  
Radio Mfg. Co.  
Rupert Neve Incorporated  
Total Technology  
Trepac Corp. America

**Oscillators, TV**

Heath Co.  
Kay Elemetrics Corp.  
Lectrotech Inc.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
Riker Communications Inc.  
Rohde & Schwarz Sales  
Tektronix Inc.

**Oscilloscope Camera**

Entron, Inc.  
Hewlett Packard Co.  
Polaroid  
SPI-ITT Instruments Matrix Division  
Tektronix Inc.

**Oscilloscopes, Dual Trace**

B & K Dynascan Corp.  
Eico Elect. Inst. Co., Inc.  
Entron, Inc.  
Heath Co.  
Hewlett Packard Co.  
Hickok Elect. Instrument  
Leader Instruments Corp.  
Lectionic Res. Labs. Inc.  
Lectrotech Inc.  
Marconi Instruments  
Marubeni America Corp. Milda  
Electronics  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
SPI-ITT Instruments Matrix Division  
Tektronix Inc.  
Telonic Industries Inc.  
Terminal Hudson Corp. Terminal  
Hudson Electronics  
Troy Electronic Sales Co.

**Oscilloscopes, Rack Type**

Hewlett Packard Co.  
Hickok Elect. Instrument  
Lectionic Res. Labs. Inc.  
Marubeni America Corp. Miida  
Electronics  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
Robert Bosch Corp. Fernseh Div.  
SPI-ITT Instruments Matrix Division  
Tektronix Inc.  
Terminal Hudson Corp. Terminal  
Hudson Electronics  
Video Engineering Co. Inc.

**Oscilloscopes, Triggered Sweep**

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**Hickok Elect.  
Instrument..... 117**

B & K Dynascan Corp.  
Eico Elect. Inst. Co., Inc.  
Entron, Inc.  
Heath Co.  
Hewlett Packard Co.  
Hickok Elect. Instrument  
Leader Instruments Corp.  
Lectionic Res. Labs. Inc.  
Lectrotech Inc.  
Marubeni America Corp. Milda  
Electronics  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
SPI-ITT Instruments Matrix Division  
Tektronix Inc.  
Troy Electronic Sales Co.

**Oscilloscopes, Wideband**

B & K Dynascan Corp.  
Eico Elect. Inst. Co., Inc.  
Entron, Inc.  
Heath Co.  
Hewlett Packard Co.  
Hickok Elect. Instrument  
Leader Instruments Corp.  
Lectionic Res. Labs. Inc.  
Lectrotech Inc.

Mercury Electronics  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
RCA Corporation RCA Electronic  
Components  
SPI-ITT Instruments Matrix Division  
Tektronix Inc.  
Terminal Hudson Corp. Terminal  
Hudson Electronics  
Troy Electronic Sales Co.

**Oscilloscopes with Plug-ins**

California Instruments Co.  
Entron, Inc.  
Hewlett Packard Co.  
Lectionic Res. Labs. Inc.  
SPI-ITT Instruments Matrix Division  
Tektronix Inc.

**Patch Panel**

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**Cooke Engineering Co. .... 82**  
**Gates ..... 88**

Atlantic Research Corp. Teleproducts  
Div.  
Audio Accessories Inc.  
AVA Elect. & Machine Corp.  
Cooke Engineering Co.  
Gates Division of Harris-Intertype  
Phelps Dodge Communications Co.  
Div. Phelps Dodge Industries Inc.  
Potomac Instruments, Inc.  
Sarkes Tarzian Inc. Broadcast  
Equipment Div.  
Shively Laboratories, Inc.  
Switchcraft Inc.  
Terminal Hudson Corp. Terminal  
Hudson Electronics  
Trompeter Electronics  
Video Engineering Co. Inc.  
Virginia Panel Corporation

**Phasing Units --See also  
Networks, Phasing**

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**Wilkinson Electronics,  
Inc. .... 17**

American Electronics Lab., Inc.  
A-Tel-A-Matic  
CCA Electronics  
Collins Radio Company Broadcasting  
Marketing.  
Continental Electronics Mfg. Co. Subs.  
of Resalab, Inc.  
Hy-Power Electronics Co.  
Multronics, Inc.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
Robert Bosch Corp. Fernseh Div.  
Wilkinson Electronics, Inc.

**Photographic Processing  
Chemicals, B&W**

Hunt Chemical Corp., Phillip A.

**Photographic Processing  
Chemicals, Color**

Hunt Chemical Corp., Phillip A.

**Power Supplies, AC**

Advanced High Voltage Co.  
ALTEC  
Ameco Inc.  
American Data Corp.  
Anaconda Electronics  
Anixter-Pruzan CATV Division  
Behrends, Inc.  
Bulova American Time Products  
California Instruments Co.  
Cascade Electronics  
C Cor Electronics  
Collins Radio Company Broadcasting  
Marketing.  
Comquip, Inc.

David Clark Co., Inc.  
Delta Electronics Inc. (N.C.)  
Edison Electronics, Div. of  
McGraw-Edison Co., Daven &  
Measurements  
Eico Elect. Inst. Co., Inc.  
Electrodyne Div. of MCA Technology,  
Inc.  
Engineering Associates  
Entron, Inc.  
Essex International Inc. RBM Div.  
F&B/Ceco Industries, Inc.  
Fisher Berkeley Corp.  
G.C. Electronics  
GE Electronic Components Sales Dept.  
Heath Co.  
Honeywell Inc. Test Instruments Div.  
Ikegami Tsushinki Co., Ltd. Export  
Department  
Lectronic Res. Labs. Inc.  
Magnavox Company CATV Division  
Melcor Electronics Corp.  
Mole Richardson Co.  
Raytheon Company Raytheon Data  
Systems Co.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
Terminal Hudson Corp. Terminal  
Hudson Electronics  
Topaz Electronics  
Video Engineering Co. Inc.

**Power Supplies, Precision**

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**Beston Electronics Inc.** ..... 5

Advanced High Voltage Co.  
ALTEC  
American Data Corp.  
Beston Electronics Inc.  
Bristol Div. of Acco  
Bulova American Time Products  
Burwen Laboratories  
Collins Radio Company Broadcasting  
Marketing,  
Engineering Associates  
Heath Co.  
Hewlett Packard Co.  
Lectronic Res. Labs. Inc.  
Lectrotech Inc.  
MCA Technology, Inc.  
Precision Laboratories Precision Cine  
Equipment Corp.  
Raytheon Company Raytheon Data  
Systems Co.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
Resalab Inc.  
Roh Corporation  
Spectra Sonics  
SPI-ITT Instruments Metrix Division  
Troy Electronic Sales Co.  
Video Engineering Co. Inc.

**Preamplifiers, Audio**

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**American Data Corp.** ..... 87  
**Danscoll Ltd.** ..... 85  
**Gates** ..... 88  
**Roh Corporation** ..... 12  
**Russco Electronics  
Mfg. Inc.** ..... 105

Acrodyne Industries  
Alcor Inc.  
ALTEC  
American Data Corp.  
American Geloso Electronics  
Ampro Corp.  
Arbor Systems Inc.  
Audio Designs & Mfg.  
Bell P/A Prod. Corp.  
Bogen Division Lear Siegler Inc.  
Bradford Information Systems  
Broadcast Electronics  
Burwen Laboratories  
CCA Electronics  
Collins Radio Company Broadcasting  
Marketing,  
Concept 70, A Div. of Dyma  
Engineering, Inc.  
Crown International

Danscoll Ltd  
David Clark Co., Inc.  
Delta Electronics Inc. (N.C.)  
Delta Electronics Inc. (Va.)  
Denrad Mfg. Co. Inc.  
Dyma Engineering, Inc.  
DYNAIR Electronics, Inc.  
Edison Electronics, Div. of  
McGraw-Edison Co., Daven &  
Measurements  
Electrodyne Div. of MCA Technology,  
Inc.  
Fairchild Sound Equipment Corp. A  
Robins Industries Corp.  
Gately Electronics  
Gates Division of Harris-Intertype  
Intern'l. Nuclear Corp.  
Koss Corp  
Lang Electronics Inc.  
Langevin An MCA Technology  
Company  
Leader Instruments Corp.  
LPB Inc.  
Marti Electronics  
MCA Technology, Inc.  
McCurdy Radio Ind. Inc.  
McMartin Industries Inc.  
Melcor Electronics Corp.  
Micro-Trak Corporation (Formerly:  
Gray Research & Dev.)  
Neve Inc., Rupert  
Orbit Radio and Video  
Philips Broadcast Equipment Corp.  
Subs. North American Philips Corp.  
Precision Elect. Inc.  
Precision Laboratories Precision Cine  
Equipment Corp.  
QRK Electronic Prod.  
Quad-Eight Electronics  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
RCA Corporation RCA Electromagnetic  
& Aviation Systems Div.  
RHA Audio Communications Corp.  
RHG Elect Labs, Inc.  
Riker Communications Inc.  
Roh Corporation  
Rupert Neve Incorporated  
Russco Electronics Mfg. Inc.  
Sansul Electronics Corp.  
Schafer Electronics  
Schultz Inc., Albert  
Scientific Systems, Inc. Broadcast  
Equipment Div.  
Shure Brothers Inc.  
Sony/Superscope  
Sparta Electronic Corp.  
Spectra Sonics  
Systems Marketing Corp. And  
Sono-Mag Corp.  
Tape-Athon Corp.  
Telex Communications Division  
Total Technology  
United Recording Electronics  
Industries  
Video Engineering Co. Inc.  
VIF International  
Visual Communication Products Oper.  
General Electric Co.  
Wilkinson Electronics, Inc.

**Preamplifiers, Turntable**

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**Broadcast Electronics** ..... 111  
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**Russco Electronics  
Mfg. Inc.** ..... 105

Ampro Corp.  
Broadcast Electronics  
Burwen Laboratories  
CCA Electronics  
Dyma Engineering, Inc.  
Gately Electronics  
Gates Division of Harris-Intertype  
Lafayette Radio Electronics  
Marathon Broadcast Equip.  
Mastertone Co.  
MCA Technology, Inc.  
Micro-Trak Corporation (Formerly:  
Gray Research & Dev.)  
Neve Inc., Rupert  
QRK Electronic Prod.  
Ramko Research

RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
Roh Corporation  
Rupert Neve Incorporated  
Russco Electronics Mfg. Inc.  
Sparta Electronic Corp.  
Spotmaster Broadcast Electronics  
Video Engineering Co. Inc.  
Wilkinson Electronics, Inc.

**Preamplifiers, Video**

Acrodyne Industries  
Ameco Inc.  
AMF Electrical Products Development  
Division  
C Cor Electronics  
Gen. Electrodynamics  
Intern'l. Nuclear Corp.  
Kay Elemetrics Corp.  
Philips Broadcast Equipment Corp.  
Subs. North American Philips Corp.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
RHG Elect Labs, Inc.  
Riker Communications Inc.  
Robert Bosch Corp. Fernseh Div.  
Shintron Co. Inc.  
Tele Measurements Inc.  
TV Cable Supply Co.  
Video Engineering Co. Inc.

**Pressurization Equipment,  
Transmission Line**

Andrew Corp.  
Collins Radio Company Broadcasting  
Marketing,  
Cook Electric Co.  
Gates Division of Harris-Intertype  
Jampro Antenna Co.  
Phelps Dodge Communications Co.  
Prodelin Inc.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
Soll, Inc., Joseph M.  
Sparta Electronic Corp.

**Probes, Oscilloscope**

Arbor Systems Inc.  
Eico Elect. Inst. Co., Inc.  
Entron, Inc.  
Heath Co.  
Hewlett Packard Co.  
Hickok Elect. Instrument  
Leader Instruments Corp.  
Lectronic Res. Labs. Inc.  
Lectrotech Inc.  
Mercury Electronics  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
RCA Corporation RCA Electronic  
Components  
Sencore Inc.  
SPI-ITT Instruments Metrix Division  
Tektronix Inc.  
Terminal Hudson Corp. Terminal  
Hudson Electronics  
Texscan Corp.  
Troy Electronic Sales Co.

**Processing Chemicals, Film**

Hunt Chemical Corp., Philip A.

**Processors, Film B&W**

Comquip, Inc.  
F&B/Ceco Industries, Inc.  
Filmline Corp.  
Photo-Pic Systems  
Precision Laboratories Precision Cine  
Equipment Corp.  
Technology Incorporated HF Photo  
Systems Div.  
Treise Engineering

**Processors, Film Color**

Comquip, Inc.  
F&B/Ceco Industries, Inc.

Filmline Corp.  
Innovative Television Equipment,  
Jamieson Film Co.  
Photo-Pic Systems  
Precision Laboratories Precision Cine  
Equipment Corp.  
Technology Incorporated HF Photo  
Systems Div.  
Treise Engineering

**Processors, Silver Recovery**

Comquip, Inc.  
Filmline Corp.  
Photo-Pic Systems  
Proft Recovery Systems Div. of C  
Technology Incorporated HF Photo  
Systems Div.  
Treise Engineering

**Processors, VTR**

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**Danscoll Ltd.** .....

Danscoll Ltd.

**Projectors, Film  
Comquip** .....

ABTO, Inc.  
Arriflex Company of America  
Behrends, Inc.  
Christie Electric Corp.  
Comquip, Inc.  
Eastman Kodak Co.  
F&B/Ceco Industries, Inc.  
GAF Corp.  
Kalart Victor Corp.  
Lipsner Smith Corp.  
Listec TV Equip. Corp.  
L-W Photo, Inc.  
Magna-Tech Electronic Co., Inc.  
Paillard Incorporated  
Palmer Films, Inc., W. A.  
Philips Broadcast Equipment Corp.  
Subs. North American Philips Corp.  
Precision Laboratories Precision Cine  
Equipment Corp.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
R. H. Tyler Co. Div. of Weather Sta  
Inc.  
Robert Bosch Corp. Fernseh Div.  
Tele-Cine Inc.  
TeleMaton, Inc.  
Video Engineering Co. Inc.

**Projectors, Film Cassette  
Loading**

Comquip, Inc.  
Hokushin Elect. Co.  
Listec TV Equip. Corp.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.

**Projectors, Film Rear**

Behrends, Inc.  
Christie Electric Corp.  
Comquip, Inc.  
F&B/Ceco Industries, Inc.  
Kalart Victor Corp.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
Video Engineering Co. Inc.  
Wilson Corp., H.

**Projectors, Slide**

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**Spindler & Sauppe,  
Inc.** .....

ABTO, Inc.  
Christie Electric Corp.  
Comquip, Inc.  
Eastman Kodak Co.  
F&B/Ceco Industries, Inc.  
GAF Corp.  
Harwald Company  
Kalart Victor Corp.



Bros. Lighting  
TV Equip. Corp.  
Corporation RCA Broadcast  
p. Communications Systems  
Tyler Co. Div. of Weather Scan.  
Tarzian Inc. Broadcast  
pment Div.  
er & Sauppe, Inc.  
ation, Inc.  
anc Corp.

**ectors, TV Large Screen**

Eco Industries, Inc.  
losed Circuit TV Corp.  
al Television Ntwk.  
Div. Singer Gen.  
shin Elect. Co.  
nn Industries  
Victor Corp.  
easurements Inc.  
Engineering Co. Inc.

**ectors, Video Test Slide**

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**er & Sauppe, Inc. .... 91**

Research Div. of Kollmorgen  
p.  
t Bosch Corp. Fernseh Div.  
er & Sauppe, Inc.

**ultraphonic Systems**

Chia Div. of United Scientific Corp.  
abs  
pt 70, A Div. of Dyma  
neering, Inc.  
Co.  
Laboratories  
Inc., Rupert  
nt Neve Incorporated  
arsal Research Labs

**air, Weather**

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**Research Instrument Co., Inc. .... 119**

Research Instrument Co., Inc.  
neon Company Raytheon Data  
ystems Co.  
Corporation RCA Broadcast  
ulp. Communications Systems  
ystems, Inc.  
er Industries Systems Division

**omes**

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**AS ..... 88**

ance Industries  
New Corp.  
Division of Harris-Intertype  
uro Antenna Co.  
atech Co.  
hlin Inc.  
Corporation RCA Broadcast  
ulp. Communications Systems  
Corporation RCA Missile &  
rface Radar Div.  
ly Laboratories, Inc.

**ivers, AM**

P/A Prod. Corp.  
n Division Lear Siegler Inc.  
e Engineering Co.  
ro-Voice Inc. Div. of Gulton  
dustries, Inc.  
n Co.  
Research Lab. Inc.  
rette Radio Electronics  
oni Instruments  
ley Assoc. Inc.  
nal Electrolab Assoc. Ltd.

Potomac Instruments, Inc.  
RCA Corporation RCA Electromagnetic  
& Aviation Systems Div.  
RHA Audio Communications Corp.  
RHG Elect Labs, Inc.  
Rohde & Schwarz Sales  
Schultz Inc., Albert  
Singer Products Co., Inc.  
Terminal Hudson Corp. Terminal  
Hudson Electronics  
Time & Frequency Tech., Inc.  
Wilkinson Electronics, Inc.

**Receivers, Data**

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**Trepac Corp. America ..... 102**

Trepac Corp. America

**Receivers, EBS**

Ball Bros. Research Corp. Miratel  
Division  
Mastertone Co.  
Tri-Tronics

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**Receivers, FM**

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**Wilkinson Electronics, Inc. .... 17**

Ameco Inc.  
American Geloso Electronics  
Bell P/A Prod. Corp.  
Bogen Division Lear Siegler Inc.  
Cooke Engineering Co.  
Eico Elect. Inst. Co., Inc.  
Electro-Voice Inc. Div. of Gulton  
Industries, Inc.  
GTE Lenkurt Incorporated  
Heath Co.  
Lafayette Radio Electronics  
Lelectronic Res. Labs. Inc.  
Marconi Instruments  
Marti Electronics  
McMartin Industries Inc.  
Permadyne Electronics Corp.  
Potomac Instruments, Inc.  
Precision Elect. Inc.  
RCA Corporation RCA Electromagnetic  
& Aviation Systems Div.  
RCA Corporation RCA Service  
Company Div.  
Revox Corporation  
RHG Elect Labs, Inc.  
Rohde & Schwarz Sales  
Sansul Electronics Corp.  
Schultz Inc., Albert  
Singer Products Co., Inc.  
Tandberg of America Inc.  
Terminal Hudson Corp. Terminal  
Hudson Electronics  
Wilkinson Electronics, Inc.

**Receivers, HF**

American Electronics Lab., Inc.  
Collins Radio Company Broadcasting  
Marketing.  
Cooke Engineering Co.  
Engineering Associates  
Karg Laboratories, Inc.  
Marconi Electronics Inc.  
Marconi Instruments  
Narda Microwave Corp., The  
RHG Elect Labs, Inc.  
Rohde & Schwarz Sales  
Singer Products Co., Inc.

**Receivers, Multiplex**

Belar Electronics Lab., Inc.  
Eico Elect. Inst. Co., Inc.  
Electro-Voice Inc. Div. of Gulton  
Industries, Inc.  
GTE Lenkurt Incorporated  
Heath Co.  
Johnson Electronics, Inc.  
Karg Laboratories, Inc.  
McMartin Industries Inc.  
Permadyne Electronics Corp.  
RHG Elect Labs, Inc.  
Schultz Inc., Albert

Singer Products Co., Inc.  
Sony/Superscope  
Trepac Corp. America

**Receivers, SCA**

Belar Electronics Lab., Inc.  
Bell P/A Prod. Corp.  
Eico Elect. Inst. Co., Inc.  
Karg Laboratories, Inc.  
Marti Electronics  
McMartin Industries Inc.  
Permadyne Electronics Corp.  
Singer Products Co., Inc.

**Receivers, Time Signal**

Lelectronic Res. Labs. Inc.  
Radio Mfg. Co.  
SIMEX/COAST NAVIGATION SCHOOL  
Singer Products Co., Inc.

**Receivers, TV Color**

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**SC Electronics, Inc. .... 41**

Admiral Corporation  
Audiotronics Corp.  
CHESTER ELECTRONIC LABS., INC.  
GTE Information Systems Inc.  
Cohu, Inc. Electronics Division  
Concord Elect. Corp.  
Diamond Power Specialty Corp. Subs.  
Babcock & Wilcox Co.  
Heath Co.  
Jerrold Electronics Corp. CATV  
Systems Div.  
Panasonic, VTR/CCTV Dept.  
Matsushita Electric Corp. of  
America  
RCA Corporation RCA Service  
Company Div.  
SC Electronics, Inc. Subs. of  
Audiotronics Corp.  
Singer Co. Simulation Products Div.  
Soll, Inc., Joseph M.  
Sylvania Comm. Electronic  
Tele Measurements Inc.  
Video Engineering Co. Inc.

**Receivers, TV Monochrome**

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**SC Electronics, Inc. .... 41**

Admiral Corporation  
Anixter-Pruzan CATV Division  
Audiotronics Corp.  
Cohu, Inc. Electronics Division  
Concord Elect. Corp.  
Heath Co.  
Javelin Division Apollo Lasers, Inc.  
Nemo Recording Labs  
Panasonic, VTR/CCTV Dept.  
Matsushita Electric Corp. of  
America  
Rank Precision Ind. Broadcast Div.  
SC Electronics, Inc. Subs. of  
Audiotronics Corp.  
Shibaden Corp. of America  
Singer Co. Simulation Products Div.  
Sony Corp. of America  
Sylvania Comm. Electronic  
Telesync Corp.  
Video Engineering Co. Inc.

**Recorder Replacement Motor**

Broadcast Products Inc.  
Minarik Elect.  
Sparta Electronic Corp.  
Tapecaster TCM, Inc.  
Telectro Systems Corp.

**Recorders, Camera Tape to Film**

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**Mediatech ..... 93**

Comquip, Inc.  
Mediatech  
Palmer Films, Inc., W. A.  
Teddyne Camera Systems  
Victor Duncan, Inc.

**Recorders, Cassette**

Astrocom Electronics, Inc.  
Audiotronics Corp.  
Bell Sound Studios A & B Duplicators  
Div.  
Comquip, Inc.  
Cramer Division Conrac Corp.  
CYBRIX CORPORATION  
Heath Co.  
International Tapetronics Corp.  
Lafayette Radio Electronics  
Marti Electronics Inc.  
MCA Technology, Inc.  
Mincom Div. 3M Co.  
MINNEAPOLIS MAGNETICS, INC.  
Panasonic, VTR/CCTV Dept.  
Matsushita Electric Corp. of  
America  
RAPID-Q Div. of Garron Electronics  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
R. H. Tyler Co. Div. of Weather Scan,  
Inc.  
Sansui Electronics Corp.  
Schafer International  
Sony/Superscope  
Telectro Systems Corp.  
Telex Communications Division  
Terminal Hudson Corp. Terminal  
Hudson Electronics

**Recorders, Disc Magnetic**

CMX Systems  
Colorado Video Inc.  
Comquip, Inc.  
Data Disc Inc.  
Data Memory Inc.  
Dyma Engineering, Inc.  
Memorex Corp.  
Peripheral Data Machines, Inc. (PER  
DATA)  
Schultz Inc., Albert  
Systems Marketing Corp. And  
Sono-Mag Corp.  
Telectro Systems Corp.  
TeleMation, Inc.

**Recorders, Film Light**

Comquip, Inc.  
Magna-Tech Electronic Co., Inc.  
Mincom Div. 3M Co.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.

**Recorders, Film Magnetic**

Behrends, Inc.  
Comquip, Inc.  
Langevin An MCA Technology  
Company  
Magna-Tech Electronic Co., Inc.  
Precision Laboratories Precision Cine  
Equipment Corp.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
Stancil-Hoffman Corp.  
Tele-Cine Inc.  
Telectro Systems Corp.  
Victor Duncan, Inc.

**Recorders, Logging Magnetic**

Alto Communications Inc. Broadcast  
Marketing Div.  
Ampex Corp.  
Broadcast Products Inc.  
CCA Electronics  
Gould Inc. Instrument Systems Div.  
Harvey Radio Pro A/V Div.  
Honeywell Inc. Test Instruments Div.  
Lang Electronics Inc.  
Magnatech Co.  
Metrotech/Scully Div. of Dictaphone  
Corp.  
Miles Reproducer Co.  
Nagra Magnetic Recorders, Inc.  
Philips Broadcast Equipment Corp.  
Subs. North American Philips Corp.  
Radio Mfg. Co.

RCA Corporation RCA Broadcast Equip. Communications Systems Div.  
 Richmond Hill Laboratories Inc.  
 Scully Recording Instruments Co.  
 Soundscriber Corporation  
 Stancil-Hoffman Corp.  
 Systems Marketing Corp. And Sono-Mag Corp.  
 Tape-Athon Corp.  
 Telectro Systems Corp.

**Recorders, Magnetic Tape Logging**

Alto Communications Inc. Broadcast Marketing Div.  
 Ampex Corp.  
 Broadcast Products Inc.  
 CCA Electronics  
 Collins Radio Company Broadcasting Marketing.  
 Honeywell Inc. Test Instruments Div.  
 Magnatech Co.  
 Mastertone Co.  
 Metrotech/Scully Div. of Dictaphone Corp.  
 Philips Broadcast Equipment Corp. Subs. North American Philips Corp.  
 Radio Mfg. Co.  
 RCA Corporation RCA Broadcast Equip. Communications Systems Div.  
 Schafer Electronics  
 Singer Products Co., Inc.  
 Soundscriber Corporation  
 Sparta Electronic Corp.  
 Stancil-Hoffman Corp.  
 Systems Marketing Corp. And Sono-Mag Corp.  
 Tape-Athon Corp.  
 Telectro Systems Corp.  
 Telex Communications Division

**Recorders, Magnetic Tape Video**

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**BSC Incorporated ..... 32**

Akai America, Ltd.  
 Alcor Inc.  
 Ampex Corp.  
 Audiotronics Corp.  
 BSC Incorporated  
 CATV Equipment Co.  
 Concord Elect. Corp.  
 Diamond Power Specialty Corp. Subs. Babcock & Wilcox Co.  
 GBC Closed Circuit TV Corp.  
 General Television Ntwk.  
 GPL Div. Singer Gen.  
 Harvey Radio Pro A/V Div.  
 Ikegami Tsushinki Co., Ltd. Export Department  
 International Video  
 Javelin Division Apollo Lasers, Inc.  
 Mincom Div. 3M Co.  
 Panasonic, VTR/CCTV Dept.  
 Matsushita Electric Corp. of America  
 Philips Broadcast Equipment Corp. Subs. North American Philips Corp.  
 Rank Cintel Rank Precision Ind. Ltd., Broadcast Div.  
 RCA Corporation RCA Broadcast Equip. Communications Systems Div.  
 R. H. Tyler Co. Div. of Weather Scan, Inc.  
 Riker Communications Inc.  
 Robert Bosch Corp. Fernseh Div.  
 Scully Recording Instruments Co.  
 Shibaden Corp. of America  
 Singer Co. Simulation Products Div.  
 Sony Corp. of America  
 Telectro Systems Corp.  
 Video Engineering Co. Inc.  
 Visual Electronics Corp.

**Recorders, Paper Logging and Graphic**

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**Moseley Assoc. Inc. .... 92**

B & K Dynascan Corp.

Bristol Div. of Acco  
 GE Electronic Components Sales Dept.  
 General Radio Co.  
 Gould Inc. Instrument Systems Div.  
 Heath Co.  
 Lectronic Res. Labs. Inc.  
 Moseley Assoc. Inc.  
 Rust Corp.  
 Rustrak Instrument Gulton Ind. Inc.  
 Simpson Electric Co.  
 Systems Marketing Corp. And Sono-Mag Corp.

**Recorders, Tape Audio**

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**Audio Distributor Inc. .... 116**

**Comquip ..... 112**

**Gates ..... 88**

**Tape-Athon Corp. .... 96**

Accurate Sound Corp.  
 Alcor Inc.  
 Alto Communications Inc. Broadcast Marketing Div.  
 American Geloso Electronics  
 Ampex Corp.  
 Arriflex Company of America  
 Astrocom Electronics, Inc.  
 Audio Distributor Inc.  
 Audiotronics Corp.  
 Behrends, Inc.  
 Bell & Howell Consumer Products Group  
 Broadcast Electronics  
 Broadcast Products Inc.  
 CCA Electronics  
 Cline Sonic Sound Inc.  
 Collins Radio Company Broadcasting Marketing.  
 Comquip, Inc.  
 Concord Elect. Corp.  
 Crown International  
 CYBRIX CORPORATION  
 Denson Electronic Corp.  
 Electrodyne Div. of MCA Technology, Inc.  
 Gates Division of Harris-Intertype  
 General Radio Co.  
 Gotham Audio Corp.  
 Harvey Radio Pro A/V Div.  
 IGM  
 Lang Electronics Inc.  
 Langevin An MCA Technology Company  
 Magnatech Co.  
 Magna-Tech Electronic Co., Inc.  
 Martel Electronics Inc.  
 Mastertone Co.  
 MCA Technology, Inc.  
 Metrotech/Scully Div. of Dictaphone Corp.  
 Miles Reproducer Co.  
 Nagra Magnetic Recorders, Inc.  
 Nemo Recording Labs  
 Orbit Radio and Video  
 Otari of America, Ltd.  
 Peripheral Data Machines, Inc. (PER DATA)  
 Philips Broadcast Equipment Corp. Subs. North American Philips Corp.  
 Radio Mfg. Co.  
 RCA Corporation RCA Broadcast Equip. Communications Systems Div.  
 Recordex Corporation  
 Revox Corporation  
 Roberts Div. of Rheem Mfg. Co.  
 Ryder Magnetic Sales Corp.  
 Sansui Electronics Corp.  
 Schafer Electronics  
 Schultz Inc., Albert  
 Scully Recording Instruments Co.  
 Singer Products Co., Inc.  
 Sony/Superscope  
 Soundscriber Corporation  
 Sparta Electronic Corp.  
 Stancil-Hoffman Corp.  
 Systems Marketing Corp. And Sono-Mag Corp.  
 Taber Mfg. & Engr. Co.  
 Tandberg of America Inc.  
 Tape-Athon Corp.  
 Tascam Corporation  
 TEAC Corp of America  
 Telectro Systems Corp.  
 Tele Measurements Inc.  
 Telex Communications Division

Terminal Hudson Corp. Terminal Hudson Electronics  
 Victor Duncan, Inc.  
 VIF International

**Recorders, Tape Audio Cartridge**

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**Contel Mfg. .... 80D**

**Gates ..... 88**

**RAPID-Q ..... 119**

**Tapecaster TCM, Inc. .... 112**

Alto Communications Inc. Broadcast Marketing Div.  
 Ampro Corp.  
 Bell & Howell Consumer Products Group  
 Broadcast Electronics  
 Broadcast Prod. Co. Inc. Bcst. Division  
 Broadcast Products Inc.  
 CCA Electronics  
 Collins Radio Company Broadcasting Marketing.  
 Concord Elect. Corp.  
 Contel Mfg. Div. of Continental Electronic Wholesale Corp.  
 Dyma Engineering, Inc.  
 Franz Vertriebs-gesellschaft m.b.H.  
 Gates Division of Harris-Intertype IGM  
 International Tapetronics Corp.  
 Joa Cartridge Service  
 Lang Electronics Inc.  
 MacCarta  
 MacKenzie Laboratories, Inc.  
 Mastertone Co.  
 MCA Technology, Inc.  
 Nemo Recording Labs  
 Philips Broadcast Equipment Corp. Subs. North American Philips Corp.  
 RAPID-Q Div. of Garron Electronics  
 RCA Corporation RCA Broadcast Equip. Communications Systems Div.  
 Recordex Corporation  
 Roberts Div. of Rheem Mfg. Co.  
 Schafer Electronics  
 Schultz Inc., Albert  
 Scully Recording Instruments Co.  
 Singer Products Co., Inc.  
 Sony/Superscope  
 Sparta Electronic Corp.  
 Spotmaster Broadcast Electronics  
 Systems Marketing Corp. And Sono-Mag Corp.  
 Tandberg of America Inc.  
 Tapecaster TCM, Inc.  
 Telectro Systems Corp.  
 Tele Measurements Inc.  
 Telex Communications Division

**Recorders, Video Kinescope**

Ampex Corp.  
 Comquip, Inc.  
 Mincom Div. 3M Co.  
 Palmer Films, Inc., W. A.  
 Philips Broadcast Equipment Corp. Subs. North American Philips Corp.  
 RCA Corporation RCA Broadcast Equip. Communications Systems Div.  
 Teledyne Camera Systems  
 Tele Measurements Inc.  
 Video Engineering Co. Inc.

**Recorders, Video Tape Clean Air Hood**

Liberty Industries  
 RCA Corporation RCA Broadcast Equip. Communications Systems Div.  
 Television Equipment Associates  
 Video Engineering Co. Inc.

**Recording Services, Audio Tape**

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**The CnB Studios ..... 44**

Accurate Sound Corp.  
 Alto Communications Inc. Broadcast Marketing Div.

Audio Magnetics Corp.  
 Bell Sound Studios A & B Duplicator Div.  
 Cine Sonic Sound Inc.  
 The CnB Studios  
 Duotone Co. Inc.  
 IGM  
 Nemo Recording Labs  
 Orbit Radio and Video  
 Recordex Corporation  
 Schafer Electronics  
 Ultra Audio Products

**Recording Services, Videotape Film**

Mediatech  
 Palmer Films, Inc., W. A.

**Recording Synchronizers**

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**Electronic Engineering Co. of California.....**

Electronic Engineering Co. of California

**Reels, Cable and Mike**

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**Hannay Reels ..... 1.**

**Roll-A-Reel ..... 1.**

Hannay Reels Clifford B. Hannay & Son Inc.  
 Industrial Electric Reel  
 RCA Corporation RCA Broadcast Equip. Communications Systems Div.  
 Roll-A-Reel

**Reflectors, Passive**

Advance Industries  
 Andrews Tower Inc.  
 Collins Radio Company Broadcasting Marketing.  
 Fort Worth Tower Co., Inc.  
 Microelect Co. Inc.  
 Rohn Manufacturing Div. of Unarco Industries Inc.  
 Utility Tower Co.

**Regulators, Voltage**

Arbor Systems Inc.  
 B & K Dynascan Corp.  
 California Instruments Co.  
 Collins Radio Company Broadcasting Marketing.  
 GE Electronic Components Sales Dept  
 General Radio Co.  
 Kato Engineering Co.  
 Lectronic Res. Labs. Inc.  
 Northlake Engineering, Inc.  
 Terminal Hudson Corp. Terminal Hudson Electronics  
 Topaz Electronics  
 Total Technology  
 Video Engineering Co. Inc.

**Remote Control Monitors, VIT**

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**Gates ..... 11**

**Telemet Co. .... 11**

Gates Division of Harris-Intertype  
 Telemet Co.  
 Video Engineering Co. Inc.

**Remote Control Systems**

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**Moseley Assoc. Inc. .... 9**

Alto Communications Inc. Broadcast Marketing Div.  
 Atlantic Research Corp. Teleproduct Div.  
 Belcom Electronics Mfg. Co.  
 Bristol Div. of Acco  
 CCA Electronics

Dynamics Corp.  
 Systems  
 Radio Company Broadcasting  
 Marketing.  
 Electronics Mfg. Co. Subs.  
 esalab, Inc.  
 Systems Corp.  
 Systems  
 erbering Associates  
 Division of Harris-Intertype  
 Electronic Components Sales Dept.  
 gtech Co.  
 Tech Electronic Co., Inc.  
 Electronics  
 Anertone Co.  
 sey Assoc. Inc.  
 tial Electrolab Assoc. Ltd.  
 Corporation RCA Broadcast  
 ip. Communications Systems  
 Audio Communications Corp.  
 ond Hill Laboratories Inc.  
 Corp.  
 ns Marketing Corp. And  
 So-Mag Corp.  
 Corp. America  
 Engineering Co. Inc.

**Route Pickup Systems, Radio**  
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**Electronics ..... 35**  
 Electronics  
**berberation Systems**  
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**o Distributor Inc. .... 116**  
**ild Sound**  
**Equipment Corp. .... 89**  
 Distributor Inc.  
 ild Sound Equipment Corp. A  
 bins Industries Corp.

**enders, Film**  
 ehnds, Inc.  
 quip, Inc.  
 ceo Industries, Inc.  
 alld Company  
 t Victor Corp.  
 ade Prod. Corp.  
 sion Laboratories Precision Cline  
 Equipment Corp.  
 Corporation RCA Broadcast  
 ulp. Communications Systems

**enders, Tape**  
 ound Studios A & B Duplicators  
 ocast Products Inc.  
 Collins Radio Company Broadcasting  
 Marketing.  
 uthon Broadcast Equip.  
 onade Prod. Corp.  
 o Research  
 Corporation RCA Broadcast  
 ulp. Communications Systems

dex Corporation  
 rtec Inc.  
 or Products Co., Inc.  
 a Electronic Corp.  
 ision Equipment Associates

**ty Devices, Ladder**  
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**Space Devices Inc. .... 13**  
 Space Devices Inc.

**blers, Speech**  
 ns Radio Company Broadcasting  
 Marketing.  
 Research Lab. Inc.  
 er Products Co., Inc.  
 ac Corp. America

**Screens, Projection Front**

Behrends, Inc.  
 Comquip, Inc.  
 F&B/Ceco Industries, Inc.  
 Raven Screen Corp.  
 Tele Measurements Inc.  
 Telesync Corp.  
 Video Engineering Co. Inc,

**Screens, Projection Rear**

Behrends, Inc.  
 F&B/Ceco Industries, Inc.  
 Raven Screen Corp.  
 Tele Measurements Inc.  
 Video Engineering Co. Inc.  
 Wilson Corp., H.

**Semiconductors, IC's**

Motorola Semiconduct Motorola Inc,  
 Solitron Devices Inc. Semiconductor  
 Div.  
 Terminal Hudson Corp. Terminal  
 Hudson Electronics  
 Texas Instrument Components Group  
 Transco Products International

**Semiconductors, Rectifier General**

Amperex Corp.  
 Collins Radio Company Broadcasting  
 Marketing.  
 GE Electronic Components Sales Dept.  
 Heintz and Kaufman Ltd.  
 Motorola Semiconduct Motorola Inc.  
 RCA Corporation RCA Electronic  
 Components  
 Singer Products Co., Inc.  
 Solitron Devices Inc. Semiconductor  
 Div.  
 Sylvania Semiconductor  
 Terminal Hudson Corp. Terminal  
 Hudson Electronics  
 Texas Instrument Components Group  
 Thor Electronics Corp.  
 Transco Products International  
 TRW Electronic Supply Co. Div. of  
 TRW  
 Westinghouse Electric Corp.

**Semiconductors, Rectifier High Voltage Stack**

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**Wilkinson Electronics, Inc. .... 17**

Amperex Electronic Corp. Power  
 Tubes  
 Ampex Corp.  
 Collins Radio Company Broadcasting  
 Marketing.  
 Heintz and Kaufman Ltd.  
 Motorola Semiconduct Motorola Inc.  
 RCA Corporation RCA Electronic  
 Components  
 Singer Products Co., Inc.  
 Solitron Devices Inc. Semiconductor  
 Div.  
 Terminal Hudson Corp. Terminal  
 Hudson Electronics  
 Thor Electronics Corp.  
 Transco Products International  
 Westinghouse Electric Corp.  
 Wilkinson Electronics, Inc.

**Semiconductors, Rectifier Power**

Amperex Corp.  
 Collins Radio Company Broadcasting  
 Marketing.  
 GE Electronic Components Sales Dept.  
 Heintz and Kaufman Ltd.  
 Motorola Semiconduct Motorola Inc.  
 RCA Corporation RCA Electronic  
 Components  
 Singer Products Co., Inc.  
 Solitron Devices Inc. Semiconductor  
 Div.  
 Sylvania Semiconductor  
 Terminal Hudson Corp. Terminal  
 Hudson Electronics  
 Texas Instrument Components Group

Thor Electronics Corp.  
 Transco Products International  
 Westinghouse Electric Corp.

**Semiconductors, Rectifier Silicon Controlled-SCR**

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**Wilkinson Electronics, Inc. .... 17**

Amperex Corp.  
 Collins Radio Company Broadcasting  
 Marketing.  
 GE Electronic Components Sales Dept.  
 Heintz and Kaufman Ltd.  
 Motorola Semiconduct Motorola Inc.  
 RCA Corporation RCA Electronic  
 Components  
 Singer Products Co., Inc.  
 Solitron Devices Inc. Semiconductor  
 Div.  
 Terminal Hudson Corp. Terminal  
 Hudson Electronics  
 Texas Instrument Components Group  
 Thor Electronics Corp.  
 Transco Products International  
 Westinghouse Electric Corp.  
 Wilkinson Electronics, Inc.

**Semiconductors, Thyristor**

GE Electronic Components Sales Dept.  
 Heintz and Kaufman Ltd.  
 Motorola Semiconduct Motorola Inc.  
 RCA Corporation RCA Electronic  
 Components  
 Singer Products Co., Inc.  
 Solitron Devices Inc. Semiconductor  
 Div.  
 Terminal Hudson Corp. Terminal  
 Hudson Electronics  
 Texas Instrument Components Group  
 Thor Electronics Corp.  
 Transco Products International  
 Westinghouse Electric Corp.

**Semiconductors, Transistor AF**

Heintz and Kaufman Ltd.  
 Motorola Semiconduct Motorola Inc.  
 Raytheon Company Raytheon Data  
 Systems Co.  
 RCA Corporation RCA Electronic  
 Components  
 Singer Products Co., Inc.  
 Solitron Devices Inc. Semiconductor  
 Div.  
 Sylvania Semiconductor  
 Terminal Hudson Corp. Terminal  
 Hudson Electronics  
 Texas Instrument Components Group  
 Thor Electronics Corp.  
 Transco Products International  
 Westinghouse Electric Corp.

**Semiconductors, Transistor FET**

Amperex Corp.  
 Heintz and Kaufman Ltd.  
 Motorola Semiconduct Motorola Inc.  
 RCA Corporation RCA Electronic  
 Components  
 Singer Products Co., Inc.  
 Terminal Hudson Corp. Terminal  
 Hudson Electronics  
 Texas Instrument Components Group  
 Thor Electronics Corp.  
 Transco Products International  
 Westinghouse Electric Corp.

**Semiconductors, Transistor General**

CATV Equipment Co.  
 GE Electronic Components Sales Dept.  
 Motorola Semiconduct Motorola Inc.  
 Raytheon Company Raytheon Data  
 Systems Co.  
 RCA Corporation RCA Electronic  
 Components  
 Singer Products Co., Inc.  
 Solitron Devices Inc. Semiconductor  
 Div.  
 Sylvania Semiconductor

Terminal Hudson Corp. Terminal  
 Hudson Electronics  
 Texas Instrument Components Group  
 Thor Electronics Corp.  
 Transco Products International  
 Westinghouse Electric Corp.

**Semiconductors, Transistor RF**

Heintz and Kaufman Ltd.  
 Hewlett Packard Co.  
 Motorola Semiconduct Motorola Inc.  
 Raytheon Company Raytheon Data  
 Systems Co.  
 RCA Corporation RCA Electronic  
 Components  
 Singer Products Co., Inc.  
 Solitron Devices Inc. Semiconductor  
 Div.  
 Sylvania Semiconductor  
 Terminal Hudson Corp. Terminal  
 Hudson Electronics  
 Texas Instrument Components Group  
 Thor Electronics Corp.  
 Transco Products International  
 Westinghouse Electric Corp.

**Shifters, Phase Microwave**

Andersen Labs Inc.  
 Collins Radio Company Broadcasting  
 Marketing.  
 General Radio Co.  
 Hewlett Packard Co.  
 Lectronic Res. Labs. Inc.  
 Micro Communications, Inc.  
 Microwave Assoc. Inc.  
 Narda Microwave Corp., The  
 Raytheon Company Raytheon Data  
 Systems Co.  
 Television Microtime, Inc. Subs.  
 Andersen Laboratories, Inc.  
 Weinschel Engineering Co.

**Slow Scan TV Systems**

Colorado Video Inc.  
 Gates Division of Harris-Intertype  
 Gen. Electrodynamics  
 Teledyne Brown Engineering Co.  
 Science & Engrg. Div.  
 Teltron, Inc.  
 Video Engineering Co. Inc.

**Sound Systems, Outdoor**

Alcor Inc.  
 ALTEC  
 American Gelo Electronics  
 Applied Elect. Mechanics  
 ATLAS Sound  
 Audio Distributor Inc.  
 Bell P/A Prod. Corp.  
 Bogen Division Lear Siegler Inc.  
 Concept 70. A Div. of Dyma  
 Engineering, Inc.  
 Electrodyne Div. of MCA Technology,  
 Inc.  
 Electro-Voice Inc. Div. of Gulton  
 Industries, Inc.  
 Jensen Sound Laboratories Div.  
 Pemcor, Inc.  
 Lafayette Radio Electronics  
 Langevin An MCA Technology  
 Company  
 Philips Broadcast Equipment Corp.  
 Subs. North American Philips Corp.  
 Q-TV Sales & Distributing Corp.  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 Shure Brothers Inc.  
 Spectra Sonics  
 Terminal Hudson Corp. Terminal  
 Hudson Electronics  
 Ultra Audio Products

**Sound Systems, Portable**

Alcor Inc.  
 ALTEC  
 American Gelo Electronics  
 Applied Elect. Mechanics  
 ATLAS Sound  
 Audio Distributor Inc.  
 Bell Sound Studios A & B Duplicators  
 Div.

Bogen Division Lear Siegler Inc.  
CCA Electronics  
Comquip, Inc.  
Concept 70, A Div. of Dyma Engineering, Inc.  
Custom Craft Designs  
Electrodyne Div. of MCA Technology, Inc.  
Electro-Voice Inc. Div. of Gulton Industries, Inc.  
Gately Electronics  
Jensen Sound Laboratories Div. Pemcor, Inc.  
Langevin An MCA Technology Company  
Neve Inc., Rupert  
Phillips Broadcast Equipment Corp. Subs. North American Phillips Corp.  
Pulse Dynamics Mfg. Corp.  
Q-TV Sales & Distributing Corp.  
RCA Corporation RCA Broadcast Equip. Communications Systems Div.  
Roberts Div. of Rheem Mfg. Co.  
Rupert Neve Incorporated  
Shure Brothers Inc.  
Singer Products Co., Inc.  
Spectra Sonics  
Tape-Athon Corp.  
Terminal Hudson Corp. Terminal Hudson Electronics  
Ultra Audio Products

### Sound Systems, Studio

Alcor Inc.  
American Geloso Electronics  
Behrends, Inc.  
CCA Electronics  
Cleveland Electronics, Inc.  
Comquip, Inc.  
Concept 70, A Div. of Dyma Engineering, Inc.  
Delta Electronics Inc. (N.C.)  
Edison Electronics, Div. of McGraw-Edison Co., Daven & Measurements  
Gately Electronics  
Gotham Audio Corp.  
Jensen Sound Laboratories Div. Pemcor, Inc.  
Langevin An MCA Technology Company  
Magna-Tech Electronic Co., Inc.  
Melcor Electronics Corp.  
Neve Inc., Rupert  
Phillips Broadcast Equipment Corp. Subs. North American Phillips Corp.  
RCA Corporation RCA Broadcast Equip. Communications Systems Div.  
Rupert Neve Incorporated  
Scintrex Inc. Communications Div.  
Shure Brothers Inc.  
Singer Products Co., Inc.  
Sparta Electronic Corp.  
Spectra Sonics  
Total Technology (Trusonic) ACS Inc.  
Visual Electronics Corp.

### Sound Systems, Theater

Alcor Inc.  
ALTEC  
American Geloso Electronics  
Audio Distributor Inc.  
Behrends, Inc.  
Bell Sound Studios A & B Duplicators Div.  
Bogen Division Lear Siegler Inc.  
Comquip, Inc.  
Concept 70, A Div. of Dyma Engineering, Inc.  
Delta Electronics Inc. (N.C.)  
Electrodyne Div. of MCA Technology, Inc.  
Electro-Voice Inc. Div. of Gulton Industries, Inc.  
Gately Electronics  
Jensen Sound Laboratories Div. Pemcor, Inc.  
Langevin An MCA Technology Company  
Melcor Electronics Corp.  
Neve Inc., Rupert

Phillips Broadcast Equipment Corp. Subs. North American Phillips Corp.  
Q-TV Sales & Distributing Corp.  
RCA Corporation RCA Broadcast Equip. Communications Systems Div.  
RHA Audio Communications Corp.  
Rupert Neve Incorporated  
Scintrex Inc. Communications Div.  
Shure Brothers Inc.  
Spectra Sonics  
(Trusonic) ACS Inc.

### Speakers and Enclosures

Alcor Inc.  
ALTEC  
American Geloso Electronics  
ATLAS Sound  
Behrends, Inc.  
Bogen Division Lear Siegler Inc.  
Cleveland Electronic Speaker Div.  
Collins Radio Company Broadcasting Marketing,  
Comquip, Inc.  
Electrodyne Div. of MCA Technology, Inc.  
Electro-Voice Inc. Div. of Gulton Industries, Inc.  
G.C. Electronics  
Gotham Audio Corp.  
Hartley Prod. Corp.  
Heath Co.  
Jensen Sound Laboratories Div. Pemcor, Inc.  
Koss Corp.  
Lafayette Radio Electronics  
Langevin An MCA Technology Company  
Oaktron Industries Inc.  
Phillips Broadcast Equipment Corp. Subs. North American Phillips Corp.  
RCA Corporation RCA Broadcast Equip. Communications Systems Div.  
Schultz Inc., Albert  
Scientific Systems, Inc. Broadcast Equipment Div.  
Singer Products Co., Inc.  
Sony/Superscope  
Sparta Electronic Corp.  
Spectra Sonics  
Tandberg of America Inc.  
TEAC Corp of America  
Tele Measurements Inc.  
Terminal Hudson Corp. Terminal Hudson Electronics  
(Trusonic) ACS Inc.

### STL Equipment

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**Marti Electronics** ..... 35  
**Moseley Assoc. Inc.** ..... 92  
Alto Communications Inc. Broadcast Marketing Div.  
Andrews Tower Inc.  
CCA Electronics  
Coastcom Division Scott-Buttner Corp.  
Collins Radio Company Broadcasting Marketing,  
David Clark Co., Inc.  
Dyma Engineering, Inc.  
Electromagnetic Sciences, Inc.  
GTE Lenkurt Incorporated  
Magnatech Co.  
Marti Electronics  
Mastertone Co.  
Microwave Assoc. Inc.  
Moseley Assoc. Inc.  
Raytheon Company Raytheon Data Systems Co.  
RCA Corporation RCA Broadcast Equip. Communications Systems Div.  
RHG Elect Labs, Inc.  
Richmond Hill Laboratories Inc.  
Singer Products Co., Inc.  
Sparta Electronic Corp.  
Tektronix Inc.  
Trepac Corp. America  
Varian Solid State Div. Micro-Link Products  
Visual Communication Products Oper. General Electric Co.  
Visual Electronics Corp.

### Studio Scenery

Feller Vacuum Form Studios  
Janson Industries  
Video Engineering Co. Inc.

### Subcarrier Multiplex Equipment

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**Coastcom Division** ..... 94

Coastcom Division Scott-Buttner Corp.

### Switchers

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**American Data Corp.** ..... 87

**Danscoll Ltd.** ..... 85

**Grass Valley Group, Inc.** ..... 31

**Richmond Hill Laboratories Inc.** ..... 100

**Sparta Electronic Corp.** ..... 74

**Telemet Co.** ..... IBC

**Viscount Video Systems Ltd.** ..... 10

**Vital Industries** ..... BC

Alco Electronic Products, Inc.  
Alma Engineering Inc.  
American Data Corp.  
Ampex Corp.  
Atlantic Research Corp. Teleproducts Div.  
Audio Deslgn & Mfg.  
Ball Bros. Research Corp. Miratel Division  
Central Dynamics Corp.  
CHESTER ELECTRONIC LABS., INC.  
GTE Information Systems Inc.  
Cohu, Inc. Electronics Division  
Concept 70, A Div. of Dyma Engineering, Inc.  
Cook Electric Co.  
Cunningham Corp. Subs. of Gleason Works  
Danscoll Ltd.  
DYNIAIR Electronics, Inc.  
Essex International Inc. RBM Div  
Fung Engineering Co.  
Gates Division of Harris-Intertype  
GBC Closed Circuit TV Corp.  
General Microwave Corp.  
Grass Valley Group, Inc.  
IGM  
Internatl. Nuclear Corp.  
Javelin Division Apollo Lasers, Inc.  
Kapro Enterprises  
Kay Elemetrics Corp.  
K'SON Corporation  
Marconi Electronics Inc.  
McCurdy Radio Ind. Inc.  
Mincom Div. 3M Co.  
Neve Inc., Rupert  
RCA Corporation RCA Broadcast Equip. Communications Systems Div.  
R. H. Tyler Co. Div. of Weather Scan, Inc.  
Richmond Hill Laboratories Inc.  
Riker Communications Inc.  
Roh Corporation  
Rupert Neve Incorporated  
Sarkes Tarzian Inc. Broadcast Equipment Div.  
Seacor Inc.  
Shintron Co. Inc.  
Sparta Electronic Corp.  
Systems Marketing Corp. And Sono-Mag Corp.  
TeleMation, Inc.  
Telemet Co.  
Total Technology  
Video Engineering Co. Inc.  
Vikoa Inc.  
Viscount Video Systems Ltd.  
Visual Educom Inc.  
Visual Electronics Corp.  
Vital Industries

### Switches, Coaxial

See Adv. P

**Shively Laboratories, Inc.** .....

Alford Mfg. Co.  
American Data Corp.  
American Electronics Lab., Inc.  
Andrew Corp.  
A-Tel-A-Matic  
Atlantic Research Corp. Teleproduct Div.  
Bird Electronic Corp.  
Blonder-Tongue Labs.  
CATV Equipment Co.  
Collins Radio Company Broadcasting Marketing,  
CYBRIX CORPORATION  
Delta Electronics Inc. (Va.)  
Electronic Inst. & Spec.  
Fung Engineering Co.  
Gates Division of Harris-Intertype  
General Microwave Corp.  
Integral Data Devices Inc.  
ITT Jennings  
Jampro Antenna Co.  
Kay Elemetrics Corp.  
Lectronic Res. Labs. Inc.  
Magnecraft Electric Co.  
Matrix Systems Corp.  
Micro Communications, Inc.  
Narda Microwave Corp., The  
OAK Industries Inc. CATV Division  
Prodelin Inc.  
RCA Corporation RCA Broadcast Equip. Communications Systems Div.  
Shively Laboratories, Inc.  
Singer Products Co., Inc.  
Soll, Inc., Joseph M.  
Sparta Electronic Corp.  
Terminal Hudson Corp. Terminal Hudson Electronics  
Texscan Corp.  
Trompeter Electronics  
TRW Electronic Supply Co. Div. of TRW  
TV Cable Supply Co.  
Virginia Panel Corporation

### Switches, Crossbar

American Data Corp.  
Andrew Corp.  
Atlantic Research Corp. Teleproduct Div.  
CHESTER ELECTRONIC LABS., INC.  
GTE Information Systems Inc.  
Collins Radio Company Broadcasting Marketing,  
Cunningham Corp. Subs. of Gleason Works  
CYBRIX CORPORATION  
Delta Electronics Inc. (Va.)  
Integral Data Devices Inc.  
Internatl. Nuclear Corp.  
Marconi Electronics Inc.  
Matrix Systems Corp.  
RCA Corporation RCA Broadcast Equip. Communications Systems Div.  
Robert Bosch Corp. Fernseh Div.  
Rust Corp.  
Tape-Athon Corp.  
Trompeter Electronics  
Video Engineering Co. Inc.  
Viscount Video Systems Ltd.  
Vital Industries

### Switching Systems

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**American Data Corp.** .....

**Gates** .....

**Grass Valley Group, Inc.** .....

**Roh Corporation** .....

**Telemet Co.** .....

**Viscount Video Systems Ltd.** .....

Alcor Inc.  
Alma Engineering Inc.  
American Data Corp.

Ampex Corp.  
 New Corp.  
 Systems Inc.  
 Tele Research Corp. Teleproducts  
 Information Systems  
 Dynamics Corp.  
**STER ELECTRONIC LABS., INC.**  
 Information Systems Inc.  
 Electronics, Inc.  
 Systems  
 Inc. Electronics Division  
 Radio Company Broadcasting  
 Marketing,  
 Dept 70, A Div. of Dyma  
 Engineering, Inc.  
 ingham Corp. Subs. of Gleason  
 rks  
**IX CORPORATION**  
 coll Ltd.  
 Electronics Inc. (Va.)  
**YAIR Electronics, Inc.**  
 Division of Harris-Intertype  
 Valley Group, Inc.  
 Electronics  
 Data Devices Inc.  
 Nuclear Corp.  
 tional Video  
 neral Controls  
 Division Apollo Lasers, Inc.  
**7N Corporation**  
 Video Systems, Inc.  
 Electronics Inc.  
 Systems Corp.  
 urdy Radio Ind, Inc.  
 ble Color, Inc.  
 onics, Inc.  
 Inc., Rupert  
 Sales & Distributing Corp.  
 Corporation RCA Broadcast  
 Equip. Communications Systems  
 7.  
 onard Hill Laboratories Inc.  
 Communications Inc.  
**ort Bosch Corp. Fernseh Div.**  
 Corporation  
 irt Neve Incorporated  
 Corp.  
 ubs Zarzian Inc. Broadcast  
 quipment Div.  
 Inc., Joseph M.  
 chcraft Inc.  
 ystems Marketing Corp. And  
 no-Mag Corp.  
 er Industries Systems Division  
 ation, Inc.  
**emet Co.**  
 ac Corp. America  
 mpetor Electronics  
 ngineering Co. Inc.  
 h Inc.  
 irla Panel Corporation  
 ount Video Systems Ltd.  
**BI Electronics Corp.**  
 Industries

**Lafayette Radlo Electronics**  
 Magnatech Co.  
 Magnetic Prod. Div. 3M Company  
 Mastertone Co.  
 Memorex Corp.  
 Miles Reproducer Co.  
 Nortronics Co., Inc.  
 Otari of America, Ltd.  
 Philips Broadcast Equipment Corp.  
 Subs. North American Phillips Corp.  
 Q-TV Sales & Distributing Corp.  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 RCA Corporation RCA Electronic  
 Components  
 Recordex Corporation  
 Ryder Magnetic Sales Corp.  
 Schafer Electronics  
 Schultz Inc., Albert  
 Singer Products Co., Inc.  
 Sony/Superscope  
 Soundscriber Corporation  
 Sparta Electronic Corp.  
 Systems Marketing Corp. And  
 Sono-Mag Corp.  
 Tape-Athon Corp.  
 TDK Electronics Corp.  
 Tele Measurements Inc.  
 Transco Products International  
 Victor Duncan, Inc.  
 Wide Response

**Tape, Magnetic Recording Audio Cartridge**  
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**Broadcast Electronics ..... 100**  
**Contel Mfg. .... 80D**  
**Fidelipac ..... 109**  
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Alto Communications Inc. Broadcast  
 Marketing Div.  
 American Geloso Electronics  
 Audio Devices, Inc.  
 Audio Magnetics Corp.  
 Bell & Howell Consumer Products  
 Group  
 Bell Sound Studios A & B Duplicators  
 Div.  
 Birmingham Tape Cartridge Co.  
 Broadcast Electronics  
 Broadcast Prod. Co. Inc. Bcst. Division  
 Broadcast Products Inc.  
 BSC Incorporated  
 Cine Sonic Sound Inc.  
 Collins Radio Company Broadcasting  
 Marketing  
 Contel Mfg. Div. of Continental  
 Electronic Wholesale Corp.  
 Cramer Division Conrac Corp.  
 Fidelipac Div. of TelePro Industries,  
 Inc.  
 Gates Division of Harris-Intertype  
 IGM  
 International Tapetronics Corp.  
 Irish Magnetic Recording Tape Div.  
 Morhan Nat'l. Sales Co. Inc.  
 Joa Cartridge Service  
 Magnetic Prod. Div. 3M Company  
 Marathon Broadcast Equip.  
 Mastertone Co.  
 Memorex Corp.  
 Nemo Recording Labs  
 Nortronics Co., Inc.  
 Q-TV Sales & Distributing Corp.  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 RCA Corporation RCA Electronic  
 Components  
 Recordex Corporation  
 Schafer Electronics  
 Schultz Inc., Albert  
 Singer Products Co., Inc.  
 Sony/Superscope  
 Sparta Electronic Corp.  
 Spotmaster Broadcast Electronics  
 Systems Marketing Corp. And  
 Sono-Mag Corp.  
 Tapecaster TCM, Inc.  
 TDK Electronics Corp.  
 TelePro Industries, Inc.  
 Transco Products International  
 Visual Electronics Corp.

**Tape, Magnetic Recording Computer**  
 Arbor Systems Inc.  
 Audio Devices, Inc.  
**CYBRIX CORPORATION**  
 Magnetic Prod. Div. 3M Company  
 Memorex Corp.  
 Nortronics Co., Inc.  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 Systems Marketing Corp. And  
 Sono-Mag Corp.  
 TDK Electronics Corp.

**Tape, Magnetic Recording Test**  
 Ampex Corp.  
 G.C. Electronics  
 International Tapetronics Corp.  
 Mastertone Co.  
 Nortronics Co., Inc.  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 Schultz Inc., Albert  
 Systems Marketing Corp. And  
 Sono-Mag Corp.  
 Taber Mfg. & Engr. Co.  
 Tascam Corporation  
 VIF International

**Tape, Magnetic Recording Video**  
 Anixter-Pruzan CATV Division  
 Audio Magnetics Corp.  
 BSC Incorporated  
 Computer Image Corp.  
 Comquip, Inc.  
 Concord Elect. Corp.  
 Diamond Power Specialty Corp. Subs.  
 Babcock & Wilcox Co.  
 GBC Closed Circuit TV Corp.  
 Irish Magnetic Recording Tape Div.  
 Morhan Nat'l. Sales Co. Inc.  
 Javelin Division Apollo Lasers, Inc.  
 Karex, Inc. Subs. of Rohm and Haas  
 Co.  
 Magnetic Prod. Div. 3M Company  
 Memorex Corp.  
 Mincom Div. 3M Co.  
 Philips Broadcast Equipment Corp.  
 Subs. North American Phillips Corp.  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 Recordex Corporation  
 R. H. Tyler Co. Div. of Weather Scan,  
 Inc.  
 Robert Bosch Corp. Fernseh Div.  
 Schultz Inc., Albert  
 Shilbaden Corp. of America  
 Sony Corp. of America  
 TDK Electronics Corp.  
 Tele Measurements Inc.  
 Video Engineering Co. Inc.

**Tape, Recording Logging**  
 Alto Communications Inc. Broadcast  
 Marketing Div.  
 Audio Devices, Inc.  
 Broadcast Products Inc.  
 Cine Sonic Sound Inc.  
 IGM  
 Magnetic Prod. Div. 3M Company  
 Metrotech/Scully Div. of Dictaphone  
 Corp.  
 Phillips Broadcast Equipment Corp.  
 Subs. North American Phillips Corp.  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 Richmond Hill Laboratories Inc.  
 Schafer Electronics  
 Singer Products Co., Inc.  
 Soundscriber Corporation  
 Sparta Electronic Corp.  
 Stancil-Hoffman Corp.  
 Systems Marketing Corp. And  
 Sono-Mag Corp.  
 Tape-Athon Corp.  
 Tele-Cine Inc.

**Tape Cart Loaders**  
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**Ramko Research ..... 108**  
 Ramko Research  
**Tape Cleaners**  
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**Miller Stephenson Chemical Co. .... 94**

Audio Magnetics Corp.  
 Lipsner Smith Corp.  
 Miller Stephenson Chemical Co.  
 Recortec Inc.  
 Taber Mfg. & Engr. Co.  
 Television Equipment Associates  
 Virginia Panel Corporation

**Tape Decks, Magnetic**  
 Accurate Sound Corp.  
 Alto Communications Inc. Broadcast  
 Marketing Div.  
 Ampex Corp.  
 Ampro Corp.  
 Astrocom Electronics, Inc.  
 Broadcast Electronics  
 Broadcast Products Inc.  
 BSC Incorporated  
 CCA Electronics  
**CHESTER ELECTRONIC LABS., INC.**  
 GTE Information Systems Inc.  
 Cine Sonic Sound Inc.  
 Collins Radio Company Broadcasting  
 Marketing  
 Comquip, Inc.  
 Cramer Division Conrac Corp.  
 Crown International  
 Electrodyne Div. of MCA Technology,  
 Inc.  
 Gates Division of Harris-Intertype  
 Gotham Audio Corp.  
 IGM  
 International Tapetronics Corp.  
 Lang Electronics Inc.  
 Langevin An MCA Technology  
 Company  
 Magnatech Co.  
 Otari of America, Ltd.  
 Philips Broadcast Equipment Corp.  
 Subs. North American Phillips Corp.  
 Q-TV Sales & Distributing Corp.  
 Radio Mfg. Co.  
**RAPID-Q Div. of Garron Electronics**  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 Recordex Corporation  
 Revox Corporation  
 Roberts Div. of Rheem Mfg. Co.  
 Sansui Electronics Corp.  
 Schafer Electronics  
 Schultz Inc., Albert  
 Scully Recording Instruments Co.  
 Singer Products Co., Inc.  
 Sony/Superscope  
 Soundscriber Corporation  
 Sparta Electronic Corp.  
 Systems Marketing Corp. And  
 Sono-Mag Corp.  
 Tandberg of America Inc.  
 Tape-Athon Corp.  
 Tapecaster TCM, Inc.  
 TEAC Corp of America  
 Tele Measurements Inc.  
 Telex Communications Division  
 VIF International

**Tape Duplicators**  
 Alcor Inc.  
 Ampex Corp.  
 Audiotronics Corp.  
 Behrends, Inc.  
 Bell Sound Studios A & B Duplicators  
 Div.  
 Electrodyne Div. of MCA Technology,  
 Inc.  
 Lang Electronics Inc.  
 Langevin An MCA Technology  
 Company  
 Mastertone Co.  
 Orbit Radio and Video

**Wire, Magnetic Recording Audio**  
 Gevaert Inc.  
 Communications Inc. Broadcast  
 Marketing Div.  
 Mex Corp.  
 Audio Devices, Inc.  
 Audio Magnetics Corp.  
 Trends, Inc.  
 Bell & Howell Consumer Products  
 Group  
 Bell Sound Studios A & B Duplicators  
 v.  
 Broadcast Electronics  
 Broadcast Products Inc.  
 Incorporated  
 Electronics  
 Cine Sonic Sound Inc.  
 Collins Radio Company Broadcasting  
 Marketing,  
 Equip, Inc.  
 n International  
 one Co. Inc.  
 tromesstechnik E M T Wilhelm  
 anz G M B H  
 Division of Harris-Intertype  
 Magnetic Recording Tape Div.  
 orhan Nat'l. Sales Co. Inc.  
 Cartridge Service  
 x, Inc. Subs. of Rohm and Haas  
 o.

Phillips Broadcast Equipment Corp.  
Subs. North American Philips Corp.  
Recordex Corporation  
Recortec Inc.  
Schultz Inc., Albert  
Telectro Systems Corp.  
Telex Communications Division

**Tape Racks, Cartridge**

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**Broadcast Electronics** ..... 100  
**Gates** ..... 88  
**Sparta Electronic Corp.** ..... 74

Broadcast Electronics  
Concept 70, A Div. of Dyma  
Engineering, Inc.  
Gates Division of Harris-Intertype  
Joa Cartridge Service  
Mastertone Co.  
Neumade Prod. Corp.  
Sparta Electronic Corp.  
Tele Measurements Inc.  
TelePro Industries, Inc.

**Tape Recording Accessories**

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**Broadcast Electronics** ..... 111

Broadcast Electronics  
ELPA Marketing Industries, Inc.  
Nortronics Co., Inc.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
Recortec Inc.  
Technology Incorporated HF Photo  
Systems Div.

**Tape Transport**

Ampro Corp.  
Comquip, Inc.  
Cramer Division Conrac Corp.  
Gates Division of Harris-Intertype  
IGM  
Langevin An MCA Technology  
Company  
MCA Technology, Inc.  
Peripheral Data Machines, Inc. (PER  
DATA)  
Radio Mfg. Co.  
Sparta Electronic Corp.  
Systems Marketing Corp. And  
Sono-Mag Corp.  
VIF International

**Teletype Alarm Receiver**

Atlantic Research Corp. Teleproducts  
Div.  
Audio Engineering Co.  
Concept 70, A Div. of Dyma  
Engineering, Inc.  
Trepac Corp. America

**Test Sets, Multifunction**

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**American Data Corp.** ..... 87  
**Sadelco, Inc.** ..... 104  
**Telemet Co.** ..... IBC

American Data Corp.  
Sadelco, Inc.  
Telemet Co.

**Test Slides, Video**

D AND S CORLEY LIMITED  
Marconi Electronics Inc.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
Tele Measurements Inc.  
Television Equipment Associates  
Teltron, Inc.  
Video Engineering Co. Inc.

**Testers, Semiconductor**

Acrodyne Industries

American Electronics Lab., Inc.  
Collins Radio Company Broadcasting  
Marketing,  
Delta Electronics Inc. (N.C.)  
Delta Electronics Inc. (Va.)  
Eico Elect. Inst. Co., Inc.  
General Microwave Corp.  
Heath Co.  
Hickok Elect. Instrument  
Jud Williams Company  
Leader Instruments Corp.  
Lelectronic Res. Labs. Inc.  
Lectrotech Inc.  
Ramko Research  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
RCA Corporation RCA Electronic  
Components  
Rohde & Schwarz Sales  
Sencore Inc.  
SPI-ITT Instruments Matrix Division  
Tektronix Inc.  
Terminal Hudson Corp. Terminal  
Hudson Electronics  
Tranco Products International  
Triplett Corporation  
Troy Electronic Sales Co.

**Testers, Vacuum Tube**

Eico Elect. Inst. Co., Inc.  
Heath Co.  
Hickok Elect. Instrument  
Leader Instruments Corp.  
Lelectronic Res. Labs. Inc.  
Lectrotech Inc.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
RCA Corporation RCA Electronic  
Components  
Sencore Inc.  
Singer Products Co., Inc.  
SPI-ITT Instruments Matrix Division  
Terminal Hudson Corp. Terminal  
Hudson Electronics  
Triplett Corporation

**Time Announcers**

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**Gates** ..... 88

Ampro Corp.  
CYBRIX CORPORATION  
ES Enterprises  
Gates Division of Harris-Intertype  
IGM  
Schafer Electronics  
Sparta Electronic Corp.  
Stancil-Hoffman Corp.  
Systems Marketing Corp. And  
Sono-Mag Corp.

**Time Base Corrector, Helical  
Scan and Quad**

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**Andersen Labs Inc.** ..... 80C

Andersen Labs Inc.  
Television Microtime, Inc. Subs.  
Andersen Laboratories, Inc.

**Timers, Program**

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**Tapecaster TCM, Inc.** ..... 82

Cooke Engineering Co.  
Tapecaster TCM, Inc.

**Tool Kits**

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**Jensen Tools & Alloys** ..... 106  
**Western Electronic  
Prods. Co.** ..... 82

Anixter-Pruzan CATV Division  
Channelock, Inc.  
Greenlee Tool Co.  
Heath Co.

Jensen Tools & Alloys  
P. K. Neuses Inc.  
Systems Marketing Corp. And  
Sono-Mag Corp.  
Terminal Hudson Corp. Terminal  
Hudson Electronics  
Upton Tools Inc.  
Vaco Products Co.  
Western Electronic Prods. Co.  
Xcelite

**Tower Beacon Light Flashers**

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**Hughey & Phillips Inc.** ..... 106

Electronic Lights Inc.  
Hughey & Phillips Inc.  
Jampro Antenna Co.  
Mastertone Co.  
Radio Mfg. Co.  
Rohn Manufacturing Div. of Unarco  
Industries Inc.  
Utility Tower Co.

**Tower Light Indicator Panels**

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**Hughey & Phillips Inc.** ..... 106

CCA Electronics  
Hughey & Phillips Inc.  
Mastertone Co.

**Tower Lighting Isolation  
Transformers**

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**Hughey & Phillips Inc.** ..... 106

Hughey & Phillips Inc.

**Towers, Antenna**

Advance Industries  
Allied Tower Co. Inc.  
Andrews Tower Inc.  
Antenna Products Company  
Collins Radio Company Broadcasting  
Marketing,  
Dresser Crane Hoist and Tower Div.  
Dyma Engineering, Inc.  
E Z Way Prod. Inc.  
Fort Worth Tower Co., Inc.  
Gates Division of Harris-Intertype  
G.C. Electronics  
Gulf Telephone & Electronics  
Jampro Antenna Co.  
Kline Iron & Steel Co. Tower Division  
Magnatech Co.  
Mastertone Co.  
Microelect Co. Inc.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
RF Systems, Inc.  
Rohn Manufacturing Div. of Unarco  
Industries Inc.  
Sparta Electronic Corp.  
Stainless, Incorporated  
Swager Tower Corp.  
Tri-Ex Tower Corp.  
Up Right Scaffolds  
Utility Tower Co.

**Towers, Antenna Receiving**

Allied Tower Co. Inc.  
Ameco Inc.  
Andrews Tower Inc.  
Antenna Products Company  
Dresser Crane Hoist and Tower Div.  
E Z Way Prod. Inc.  
Gulf Telephone & Electronics  
Microelect Co. Inc.  
RF Systems, Inc.  
Rohn Manufacturing Div. of Unarco  
Industries Inc.

Singer Products Co., Inc.  
Stainless, Incorporated  
Swager Tower Corp.  
TV Cable Supply Co.  
Up Right Scaffolds  
Utility Tower Co.

**Towers, Antenna Transmitting  
AM**

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**Gates** ..... 8

Advance Industries  
Allied Tower Co. Inc.  
Alto Communications Inc. Broadcast  
Marketing Div.  
Andrews Tower Inc.  
Antenna Products Company  
CCA Electronics  
Collins Radio Company Broadcasting  
Marketing,  
Dresser Crane Hoist and Tower Div.  
E Z Way Prod. Inc.  
Fort Worth Tower Co., Inc.  
Gates Division of Harris-Intertype  
Jampro Antenna Co.  
Kline Iron & Steel Co. Tower Division  
Mastertone Co.  
Microelect Co. Inc.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
Rohn Manufacturing Div. of Unarco  
Industries Inc.  
Singer Products Co., Inc.  
Sparta Electronic Corp.  
Stainless, Incorporated  
Swager Tower Corp.  
Tri-Ex Tower Corp.  
United State Towers  
Up Right Scaffolds  
Utility Tower Co.

**Towers, Antenna Transmitting  
FM**

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**Gates** ..... 8

Advance Industries  
Allied Tower Co. Inc.  
Alto Communications Inc. Broadcast  
Marketing Div.  
Andrews Tower Inc.  
Antenna Products Company  
CCA Electronics  
Collins Radio Company Broadcasting  
Marketing,  
Dresser Crane Hoist and Tower Div.  
E Z Way Prod. Inc.  
Fort Worth Tower Co., Inc.  
Gates Division of Harris-Intertype  
Jampro Antenna Co.  
Kline Iron & Steel Co. Tower Division  
Magnatech Co.  
Microelect Co. Inc.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
Rohn Manufacturing Div. of Unarco  
Industries Inc.  
Shively Laboratories, Inc.  
Singer Products Co., Inc.  
Sparta Electronic Corp.  
Stainless, Incorporated  
Swager Tower Corp.  
United State Towers  
Up Right Scaffolds  
Utility Tower Co.

**Towers, Antenna Transmitting  
TV**

See Adv. Pa

**Gates** ..... 8

Advance Industries  
Allied Tower Co. Inc.  
Andrews Tower Inc.  
Antenna Products Company  
Dresser Crane Hoist and Tower Div.

lly Prod. Inc.  
 North Tower Co., Inc.  
 Division of Harris-Intertype  
 Antenna Co.  
 Iron & Steel Co. Tower Division  
 lect Co. Inc.  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Manufacturing Div. of Unarco  
 Industries Inc.  
 Laboratories, Inc.  
 Products Co., Inc.  
 Electronic Corp.  
 s, Incorporated  
 ar Tower Corp.  
 State Towers  
 ht Scaffolds  
 Tower Co.

**Transmitter Systems, High Power**

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**Revision Technology Corp.** ..... 111

ayne Industries  
 Latus & Co., Inc.  
 Broadcast Products Div. of  
 Electronics, Missiles &  
 Communications, Inc.  
 eation, Inc.  
 sion Technology Corp.

**Transmitter Systems, Low Power**

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**De-Benco Ltd.** ..... 81  
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**Revision Technology Corp.** ..... 111

Analyne Industries  
 dex Corp.  
 Collins Radio Company Broadcasting  
 Marketing.  
 De-Benco Ltd.  
 Latus & Co., Inc.  
 Broadcast Products Div. of  
 Electronics, Missiles &  
 Communications, Inc.  
 Division of Harris-Intertype  
 Miami Tsushinki Co., Ltd. Export  
 Department  
 ro Antenna Co.  
 Marconi Electronics Inc.  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 v.  
 Systems, Inc.  
 Radio Audio Communications Corp.  
 Mexico  
 ole & Schwarz Sales  
 r Products Co., Inc.  
 dMaton, Inc.  
 sion Technology Corp.

**Transmission Lines**

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**Ges** ..... 88

Communications Inc. Broadcast  
 Marketing Div.  
 lico Inc.  
 ew Corp.  
 en Corp. Electronic Division  
 C Electronics  
 Collins Radio Company Broadcasting  
 Marketing.  
 ombia Electronic Cbl.  
 ya Engineering, Inc.  
 s Division of Harris-Intertype  
 ro Antenna Co.  
 onic Res. Labs. Inc.  
 natech Co.  
 Mastertone Co.  
 o Communications, Inc.  
 ida Microwave Corp., The  
 ps Dodge Communications Co.  
 ps Dodge Communications Co.  
 v. Phelps Dodge Industries Inc.  
 eo Mfg. Co.

RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 Shively Laboratories, Inc.  
 Singer Products Co., Inc.  
 Soll, Inc., Joseph M.  
 Sparta Electronic Corp.

**Transmission Sets**

Atlantic Research Corp. Teleproducts  
 Div.  
 GTE Lenkurt Incorporated  
 lectronic Res. Labs. Inc.  
 Narda Microwave Corp., The  
 Phelps Dodge Communications Co.  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 Riker Communications Inc.  
 TeleMaton, Inc.  
 United Recording Electronics  
 Industries

**Transmitter Kits**

Gates Division of Harris-Intertype  
 Heath Co.  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.

**Transmitters, AM Carrier**

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**Sparta Electronic Corp.** ..... 74

Bristol Div. of Acco  
 CCA Electronics  
 Dyma Engineering, Inc.  
 GTE Lenkurt Incorporated  
 LPB Inc.  
 Radio Mfg. Co.  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 Singer Products Co., Inc.  
 Sparta Electronic Corp.

**Transmitters, AM Low Power**

See Adv. Page  
**Gates** ..... 88

American Electronics Lab., Inc.  
 CCA Electronics  
 Collins Radio Company Broadcasting  
 Marketing.  
 Continental Electronics Mfg. Co. Subs.  
 of Resalab, Inc.  
 Gates Division of Harris-Intertype  
 LPB Inc.  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 RHA Audio Communications Corp.  
 Singer Products Co., Inc.  
 Sparta Electronic Corp.

**Transmitters, AM 250 Watt**

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**Gates** ..... 88  
**Wilkinson Electronics, Inc.** ..... 17

American Electronics Lab., Inc.  
 CCA Electronics  
 Collins Radio Company Broadcasting  
 Marketing.  
 Gates Division of Harris-Intertype  
 Mastertone Co.  
 Radio Mfg. Co.  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 Singer Products Co., Inc.  
 Sparta Electronic Corp.  
 Wilkinson Electronics, Inc.

**Transmitters, AM 500 Watt**

See Adv. Page  
**Gates** ..... 88

American Electronics Lab., Inc.  
 CCA Electronics  
 Collins Radio Company Broadcasting  
 Marketing.  
 Gates Division of Harris-Intertype  
 Mastertone Co.  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 Singer Products Co., Inc.  
 Sparta Electronic Corp.  
 Wilkinson Electronics, Inc.

**Transmitters, AM 1 kw**

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**CCA Electronics** ..... 23  
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**Wilkinson Electronics, Inc.** ..... 17

American Electronics Lab., Inc.  
 CCA Electronics  
 Collins Radio Company Broadcasting  
 Marketing.  
 Contel Mfg. Div. of Continental  
 Electronic Wholesale Corp.  
 Gates Division of Harris-Intertype  
 Marconi Electronics Inc.  
 Mastertone Co.  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 Singer Products Co., Inc.  
 Sparta Electronic Corp.  
 Wilkinson Electronics, Inc.

**Transmitters, AM 5 kw**

See Adv. Page  
**Continental Electronics Mfg. Co.** ..... 25  
**Gates** ..... 88  
**Wilkinson Electronics, Inc.** ..... 17

American Electronics Lab., Inc.  
 CCA Electronics  
 Collins Radio Company Broadcasting  
 Marketing.  
 Contel Mfg. Div. of Continental  
 Electronic Wholesale Corp.  
 Continental Electronics Mfg. Co. Subs.  
 of Resalab, Inc.  
 Gates Division of Harris-Intertype  
 Mastertone Co.  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 Singer Products Co., Inc.  
 Sparta Electronic Corp.  
 Wilkinson Electronics, Inc.

**Transmitters, AM 10 kw**

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**Continental Electronics Mfg. Co.** ..... 25  
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**Wilkinson Electronics, Inc.** ..... 17

American Electronics Lab., Inc.  
 CCA Electronics  
 Collins Radio Company Broadcasting  
 Marketing.  
 Contel Mfg. Div. of Continental  
 Electronic Wholesale Corp.  
 Continental Electronics Mfg. Co. Subs.  
 of Resalab, Inc.  
 Gates Division of Harris-Intertype  
 Marconi Electronics Inc.  
 Mastertone Co.  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 Singer Products Co., Inc.  
 Sparta Electronic Corp.

Wilkinson Electronics, Inc.

**Transmitters, AM 25 kw**

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**Gates** ..... 88

American Electronics Lab., Inc.  
 CCA Electronics  
 Contel Mfg. Div. of Continental  
 Electronic Wholesale Corp.  
 Continental Electronics Mfg. Co. Subs.  
 of Resalab, Inc.  
 Gates Division of Harris-Intertype  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 Singer Products Co., Inc.  
 Sparta Electronic Corp.

**Transmitters, AM 50 kw**

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**Gates** ..... 88  
**Wilkinson Electronics, Inc.** ..... 17

American Electronics Lab., Inc.  
 CCA Electronics  
 Continental Electronics Mfg. Co. Subs.  
 of Resalab, Inc.  
 Gates Division of Harris-Intertype  
 Hy-Power Electronics Co.  
 Marconi Electronics Inc.  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 Singer Products Co., Inc.  
 Visual Communication Products Oper.  
 General Electric Co.  
 Wilkinson Electronics, Inc.

**Transmitters, AM over 50 kw**

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**Gates** ..... 88

American Electronics Lab., Inc.  
 CCA Electronics  
 Collins Radio Company Broadcasting  
 Marketing.  
 Continental Electronics Mfg. Co. Subs.  
 of Resalab, Inc.  
 Gates Division of Harris-Intertype  
 Hy-Power Electronics Co.  
 Marconi Electronics Inc.  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.

**Transmitters, AM to order**

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American Electronics Lab., Inc.  
 CCA Electronics  
 Collins Radio Company Broadcasting  
 Marketing.  
 Continental Electronics Mfg. Co. Subs.  
 of Resalab, Inc.  
 Gates Division of Harris-Intertype  
 Hy-Power Electronics Co.  
 RCA Corporation RCA Broadcast  
 Equip. Communications Systems  
 Div.  
 Singer Products Co., Inc.  
 Sparta Electronic Corp.  
 Wilkinson Electronics, Inc.

**Transmitters, FM**

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American Electronics Lab., Inc.  
 Bristol Div. of Acco  
 CCA Electronics

Collins Radio Company Broadcasting Marketing.

Dyma Engineering, Inc.

Fung Engineering Co.

Gates Division of Harris-Intertype

GTE Lenkurt Incorporated

Marconi Electronics Inc.

Mastertone Co.

Miles Reproducer Co.

RCA Corporation RCA Broadcast

Equip. Communications Systems Div.

RCA Corporation RCA Electromagnetic

& Aviation Systems Div.

Singer Products Co., Inc.

Soll, Inc., Joseph M.

Sparta Electronic Corp.

Wilkinson Electronics, Inc.

### Transmitters, FM 500 Watt

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**Gates** ..... 88

CCA Electronics

Collins Radio Company Broadcasting Marketing.

Gates Division of Harris-Intertype

Mastertone Co.

RCA Corporation RCA Broadcast

Equip. Communications Systems Div.

Singer Products Co., Inc.

Sparta Electronic Corp.

Wilkinson Electronics, Inc.

### Transmitters, FM 1 kw

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**American Electronics Lab., Inc.** ..... 9

**Gates** ..... 88

**Wilkinson Electronics, Inc.** ..... 17

American Electronics Lab., Inc.

CCA Electronics

Collins Radio Company Broadcasting

Marketing.

Fung Engineering Co.

Gates Division of Harris-Intertype

Marconi Electronics Inc.

Mastertone Co.

RCA Corporation RCA Broadcast

Equip. Communications Systems Div.

Singer Products Co., Inc.

Sparta Electronic Corp.

Wilkinson Electronics, Inc.

### Transmitters, FM 2.5 kw

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**American Electronics Lab., Inc.** ..... 9

**Gates** ..... 88

**Wilkinson Electronics, Inc.** ..... 17

American Electronics Lab., Inc.

CCA Electronics

Collins Radio Company Broadcasting

Marketing.

Gates Division of Harris-Intertype

Magnatech Co.

Marconi Electronics Inc.

Mastertone Co.

RCA Corporation RCA Broadcast

Equip. Communications Systems Div.

Singer Products Co., Inc.

Sparta Electronic Corp.

Wilkinson Electronics, Inc.

### Transmitters, FM 3 kw

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**Gates** ..... 88

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**Wilkinson Electronics, Inc.** ..... 17

American Electronics Lab., Inc.

CCA Electronics

Collins Radio Company Broadcasting

Marketing.

Gates Division of Harris-Intertype

Magnatech Co.

Marconi Electronics Inc.

Mastertone Co.

RCA Corporation RCA Broadcast

Equip. Communications Systems Div.

Singer Products Co., Inc.

Sparta Electronic Corp.

Wilkinson Electronics, Inc.

### Transmitters, FM 5 kw

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American Electronics Lab., Inc.

CCA Electronics

Collins Radio Company Broadcasting

Marketing.

Gates Division of Harris-Intertype

### Transmitters, FM 10 Watt

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**Gates** ..... 7, 88

**Wilkinson Electronics, Inc.** ..... 17

American Electronics Lab., Inc.

Amplex Corp.

CCA Electronics

Collins Radio Company Broadcasting

Marketing.

Gates Division of Harris-Intertype

GTE Lenkurt Incorporated

Magnatech Co.

Marti Electronics

Mastertone Co.

RCA Corporation RCA Broadcast

Equip. Communications Systems Div.

Rohde & Schwarz Sales

Singer Products Co., Inc.

Sparta Electronic Corp.

Wilkinson Electronics, Inc.

### Transmitters, FM 50 Watt

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**Wilkinson Electronics, Inc.** ..... 17

CCA Electronics

Collins Radio Company Broadcasting

Marketing.

Gates Division of Harris-Intertype

Mastertone Co.

RCA Corporation RCA Broadcast

Equip. Communications Systems Div.

Rohde & Schwarz Sales

Singer Products Co., Inc.

Wilkinson Electronics, Inc.

### Transmitters, FM 100 Watt

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American Electronics Lab., Inc.

CCA Electronics

Collins Radio Company Broadcasting

Marketing.

Gates Division of Harris-Intertype

Marti Electronics

RCA Corporation RCA Broadcast

Equip. Communications Systems Div.

Singer Products Co., Inc.

Wilkinson Electronics, Inc.

### Transmitters, FM 250 Watt

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**Gates** ..... 88

**Wilkinson Electronics, Inc.** ..... 17

CCA Electronics

Gates Division of Harris-Intertype

Mastertone Co.

Wilkinson Electronics, Inc.

### Transmitters, FM 7.5 kw

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**Gates** ..... 88

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American Electronics Lab., Inc.

CCA Electronics

Collins Radio Company Broadcasting

Marketing.

Gates Division of Harris-Intertype

RCA Corporation RCA Broadcast

Equip. Communications Systems Div.

Singer Products Co., Inc.

Wilkinson Electronics, Inc.

### Transmitters, FM 10 kw

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**Gates** ..... 88

**Wilkinson Electronics, Inc.** ..... 17

American Electronics Lab., Inc.

CCA Electronics

Collins Radio Company Broadcasting

Marketing.

Gates Division of Harris-Intertype

Magnatech Co.

Marconi Electronics Inc.

Mastertone Co.

RCA Corporation RCA Broadcast

Equip. Communications Systems Div.

Singer Products Co., Inc.

Wilkinson Electronics, Inc.

### Transmitters, FM 15 kw

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**Gates** ..... 88

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**Wilkinson Electronics, Inc.** ..... 17

American Electronics Lab., Inc.

CCA Electronics

Collins Radio Company Broadcasting

Marketing.

Gates Division of Harris-Intertype

RCA Corporation RCA Broadcast

Equip. Communications Systems Div.

Singer Products Co., Inc.

Sparta Electronic Corp.

Wilkinson Electronics, Inc.

### Transmitters, FM 20 kw

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**Gates** ..... 88

**Wilkinson Electronics, Inc.** ..... 17

American Electronics Lab., Inc.

CCA Electronics

Collins Radio Company Broadcasting

Marketing.

Gates Division of Harris-Intertype

Magnatech Co.

Mastertone Co.

RCA Corporation RCA Broadcast

Equip. Communications Systems Div.

Singer Products Co., Inc.

Sparta Electronic Corp.

Wilkinson Electronics, Inc.

### Transmitters, FM 40 kw

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**Gates** ..... 88

**Wilkinson Electronics, Inc.** ..... 17

American Electronics Lab., Inc.

CCA Electronics

Collins Radio Company Broadcasting

Marketing.

Gates Division of Harris-Intertype

Mastertone Co.

RCA Corporation RCA Broadcast

Equip. Communications Systems Div.

Singer Products Co., Inc.

Sparta Electronic Corp.

Wilkinson Electronics, Inc.

### Transmitters, FM 50 kw

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**American Electronics Lab., Inc.** ..... 9

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CCA Electronics

Gates Division of Harris-Intertype

Singer Products Co., Inc.

Sparta Electronic Corp.

### Transmitters, FM 100 kw

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CCA Electronics

Gates Division of Harris-Intertype

Singer Products Co., Inc.

Sparta Electronic Corp.

Wilkinson Electronics, Inc.

### Transmitters, FM to order

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CCA Electronics

CCA RF Industries, Inc.

Gates Division of Harris-Intertype

Ikegami Tsushinki Co., Ltd. Export

Department

Marconi Electronics Inc.

RCA Corporation RCA Broadcast

Equip. Communications Systems Div.

Soll, Inc., Joseph M.

Television Technology Corp.

Varian Solid State Div. Micro-Link

Products

Visual Communication Products Oper

General Electric Co.

### Transmitters, TV 1 Watt

Acrodyne Industries

CCA Electronics

DYNAIR Electronics, Inc.

EMCEE Broadcast Products Div. of

Electronics, Missiles &

Communications, Inc.

Fung Engineering Co.

Gates Division of Harris-Intertype

GTE Lenkurt Incorporated

Orbit Radio and Video

RCA Corporation RCA Broadcast

Equip. Communications Systems Div.

Rohde & Schwarz Sales

Television Technology Corp.

Varian Solid State Div. Micro-Link

Products

### Transmitters, TV 10 Watt

Acrodyne Industries

CCA Electronics

Delta-Benco Ltd.

EMCEE Broadcast Products Div. of

Electronics, Missiles &

Communications, Inc.

Gates Division of Harris-Intertype

GTE Lenkurt Incorporated

RCA Corporation RCA Broadcast

Equip. Communications Systems Div.

Rodelco

Television Technology Corp.

Varian Solid State Div. Micro-Link

Products

### Transmitters, TV 20 Watt

Acrodyne Industries



Electronics  
Broadcast Products Div. of  
Electronics, Missiles &  
Communications, Inc.  
Division of Harris-Intertype  
Corporation RCA Broadcast  
Equip. Communications Systems  
Division Technology Corp.

**Transmitters, TV 60 Watt**

Rayne Industries  
Electronics  
Broadcast Products Div. of  
Electronics, Missiles &  
Communications, Inc.  
Division of Harris-Intertype  
Corporation RCA Broadcast  
Equip. Communications Systems  
Division Technology Corp.

**Transmitters, TV 100 Watt**

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Rayne Industries  
Electronics  
Benco Ltd.  
Broadcast Products Div. of  
Electronics, Missiles &  
Communications, Inc.  
Division of Harris-Intertype  
Corporation RCA Broadcast  
Equip. Communications Systems  
Division Technology Corp.

**Transmitters, TV 500 Watt**

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88

Electronics  
Broadcast Products Div. of  
Electronics, Missiles &  
Communications, Inc.  
Division of Harris-Intertype  
Corporation RCA Broadcast  
Equip. Communications Systems  
Division Technology Corp.

**Transmitters, TV 1 kw**

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88

Rayne Industries  
Electronics  
Division of Harris-Intertype  
Corporation RCA Broadcast  
Equip. Communications Systems  
Division Technology Corp.

**Transmitters, TV 2 kw**

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88

Electronics  
Broadcast Products Div. of  
Electronics, Missiles &  
Communications, Inc.  
Division of Harris-Intertype  
Corporation RCA Broadcast  
Equip. Communications Systems  
Division Technology Corp.

**Transmitters, TV 5 kw**

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88

Electronics

EMCEE Broadcast Products Div. of  
Electronics, Missiles &  
Communications, Inc.  
Gates Division of Harris-Intertype  
Marconi Electronics Inc.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
Visual Communication Products Oper.  
General Electric Co.

**Transmitters, TV 6 kw**

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88

CCA Electronics  
Gates Division of Harris-Intertype  
Philips Broadcast Equipment Corp.  
Subs. North American Philips Corp.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
Visual Communication Products Oper.  
General Electric Co.

**Transmitters, TV 10 kw**

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88

CCA Electronics  
CCA RF Industries, Inc.  
Gates Division of Harris-Intertype  
Marconi Electronics Inc.  
Philips Broadcast Equipment Corp.  
Subs. North American Philips Corp.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.

**Transmitters, TV 11 kw**

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88

CCA Electronics  
Gates Division of Harris-Intertype  
Philips Broadcast Equipment Corp.  
Subs. North American Philips Corp.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
Visual Communication Products Oper.  
General Electric Co.

**Transmitters, TV 12 kw**

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88

CCA Electronics  
Gates Division of Harris-Intertype  
Philips Broadcast Equipment Corp.  
Subs. North American Philips Corp.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.

**Transmitters, TV 15 kw**

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88

CCA Electronics  
CCA RF Industries, Inc.  
Gates Division of Harris-Intertype  
Marconi Electronics Inc.  
Philips Broadcast Equipment Corp.  
Subs. North American Philips Corp.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
Visual Communication Products Oper.  
General Electric Co.

**Transmitters, TV 25 kw**

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88

CCA Electronics  
CCA RF Industries, Inc.

Gates Division of Harris-Intertype  
Marconi Electronics Inc.  
Philips Broadcast Equipment Corp.  
Subs. North American Philips Corp.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.

**Transmitters, TV 30 kw**

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88

CCA Electronics  
CCA RF Industries, Inc.  
Gates Division of Harris-Intertype  
Marconi Electronics Inc.  
Philips Broadcast Equipment Corp.  
Subs. North American Philips Corp.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
Visual Communication Products Oper.  
General Electric Co.

**Transmitters, TV 35 kw**

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88

CCA Electronics  
Gates Division of Harris-Intertype  
Marconi Electronics Inc.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.

**Transmitters, TV 50 kw**

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88

CCA Electronics  
CCA RF Industries, Inc.  
Gates Division of Harris-Intertype  
Marconi Electronics Inc.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.

**Transmitters, TV 55 kw**

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88

CCA Electronics  
CCA RF Industries, Inc.  
Gates Division of Harris-Intertype  
Marconi Electronics Inc.  
Philips Broadcast Equipment Corp.  
Subs. North American Philips Corp.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
Visual Communication Products Oper.  
General Electric Co.

**Transmitters, TV 100 kw**

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CCA Electronics  
CCA RF Industries, Inc.  
Gates Division of Harris-Intertype  
Marconi Electronics Inc.  
Visual Communication Products Oper.  
General Electric Co.

**Transmitters, TV Specify Power**

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CCA Electronics  
Gates Division of Harris-Intertype  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
Visual Communication Products Oper.  
General Electric Co.

**Transmitters, TV to order**

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CCA Electronics  
Gates Division of Harris-Intertype  
Miles Reproducer Co.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
Television Technology Corp.

**Turntables, Phonograph**

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Audio Distributor Inc. .... 116  
Broadcast Electronics ..... 111  
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Mfg. Inc. .... 105  
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AKG Division North Amer. Philips  
Corp.  
Audio Distributor Inc.  
Broadcast Electronics  
Broadcast Products Inc.  
CCA Electronics  
Collins Radio Company Broadcasting  
Marketing  
CYBRIX CORPORATION  
Dyma Engineering, Inc.  
Franz Vertriebs-gesellschaft m.b.H.  
Gates Division of Harris-Intertype  
Gotham Audio Corp.  
Heath Co.  
Koss Corp.  
LPB Inc.  
Mastertone Co.  
McCurdy Radio Ind. Inc.  
Micro-Trak Corporation (Formerly:  
Gray Research & Dev.)  
QRK Electronic Prod.  
RCA Corporation RCA Broadcast  
Equip. Communications Systems  
Div.  
Rek-O-Kut Inc.  
Russco Electronics Mfg. Inc.  
Sansui Electronics Corp.  
Schultz Inc., Albert  
Singer Products Co., Inc.  
Sony/Superscope  
Sparta Electronic Corp.  
Spotmaster Broadcast Electronics  
Video Engineering Co. Inc.

**TV Systems, Closed Circuit**

Admiral Corporation  
Alcor Inc.  
American Data Corp.  
Anaconda Electronics  
Anixter-Pruzan CATV Division  
A-Tel-A-Matic  
ATV Research  
Audiotronics Corp.  
AVA Elect. & Machine Corp.  
Ball Bros. Research Corp. Miratel  
Division  
Berkey-Colortran Inc.  
Boston Insulated Wire & Cable Co.  
Catel, a Div. of United Scientific Co.  
CHESTER ELECTRONIC LABS., INC.  
GTE Information Systems Inc.  
Cohu, Inc. Electronics Division  
Colorado Video Inc.  
Comquip, Inc.  
Concord Elect. Corp.  
Cunningham Corp. Subs. of Gleason  
Works  
Danscoll Ltd.  
Davis & Sanford Co. Inc.  
Delta Electronics Inc. (N.C.)  
Denson Electronic Corp.  
DYNAIR Electronics, Inc.  
F&B/Ceco Industries, Inc.  
GBC Closed Circuit TV Corp.  
Gen. Electrodynamics  
Gulf Telephone & Electronics  
Ikegami Tsushinki Co., Ltd. Export  
Department  
Intern'l. Nuclear Corp.  
International Video  
Janson Industries

Javelin Division Apollo Lasers, Inc.  
 Jerrold Electronics Corp. CATV Systems Div.  
 K'SON Corporation  
 Marconi Electronics Inc.  
 Mincom Div. 3M Co.  
 Mosier Electronic Systems Div.  
 Orbit Radio and Video  
 Philips Broadcast Equipment Corp.  
 Subs. North American Philips Corp.  
 RCA Corporation RCA Broadcast Equip. Communications Systems Div.  
 RCA Corporation RCA Electromagnetic & Aviation Systems Div.  
 Riker Communications Inc.  
 Robert Bosch Corp. Fernseh Div.  
 Sarkes Tarzian Inc. Broadcast Equipment Div.  
 Shibaden Corp. of America  
 Singer Co. Simulation Products Div.  
 Soil, Inc., Joseph M.  
 Sylvania Comm. Electronic  
 Tasker Industries Systems Division  
 Tektronix Inc.  
 Teledyne Brown Engineering Co. Science & Engrg. Div.  
 TeleMation, Inc.  
 Tele Measurements Inc.  
 Telesync Corp.  
 Teltron, Inc.  
 Varian Solid State Div. Micro-Link Products  
 Video Engineering Co. Inc.  
 Vikoa Inc.  
 Visual Communication Products Oper. General Electric Co.  
 Visual Educom Inc.  
 Westinghouse Electric Corp. Electric Tube Div.

**Vacuum Tubes, Camera Image-Orthicon**

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**Teltron, Inc.** ..... 90

Amperex Corp.  
 GE Electronic Components Sales Dept.  
 General Electric Co. Imaging Devices Operation  
 Heintz and Kaufman Ltd.  
 RCA Corporation RCA Electronic Components  
 Robert Bosch Corp. Fernseh Div.  
 Shibaden Corp. of America  
 Tele Measurements Inc.  
 Teltron, Inc.  
 Terminal Hudson Corp. Terminal Hudson Electronics  
 Thor Electronics Corp.  
 Transco Products International  
 Video Engineering Co. Inc.  
 Visual Communication Products Oper. General Electric Co.

**Vacuum Tubes, Camera Plumbicon**

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**Amperex Electronic Corp.** ..... 39

Amperex Corp.  
 Amperex Electronic Corp.  
 Electro-Optical Devices Div.  
 Amperex Electronic Corp. Power Tubes  
 Philips Broadcast Equipment Corp.  
 Subs. North American Philips Corp.  
 Shibaden Corp. of America  
 Tele Measurements Inc.  
 Teltron, Inc.  
 Terminal Hudson Corp. Terminal Hudson Electronics  
 Thor Electronics Corp.  
 Transco Products International  
 Video Engineering Co. Inc.  
 Westinghouse Electric Corp.

**Vacuum Tubes, Camera Vidicon**

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**Teltron, Inc.** ..... 90

Amperex Corp.  
 Amperex Electronic Corp.  
 Electro-Optical Devices Div.  
 A-Tel-A-Matic  
 ATV Research  
 GBC Closed Circuit TV Corp.  
 GE Electronic Components Sales Dept.  
 General Electric Co. Imaging Devices Operation  
 Gen. Electrodynamics  
 Heintz and Kaufman Ltd.  
 ITT Electron Tube Div.  
 Javelin Division Apollo Lasers, Inc.  
 Phillips Broadcast Equipment Corp.  
 Subs. North American Philips Corp.  
 RCA Corporation RCA Electronic Components  
 Shibaden Corp. of America  
 Siemens Corporation  
 Teltron, Inc.  
 Terminal Hudson Corp. Terminal Hudson Electronics  
 Texas Instrument Components Group  
 Thomson-CSF Electron Tubes  
 Thor Electronics Corp.  
 Transco Products International  
 Video Engineering Co. Inc.  
 Visual Communication Products Oper. General Electric Co.  
 Westinghouse Electric Corp. Electric Tube Div.

**Vacuum Tubes, Cathode Ray Oscilloscope**

Amperex Electronic Corp.  
 Electro-Optical Devices Div.  
 Heintz and Kaufman Ltd.  
 Lectronic Res. Labs. Inc.  
 RCA Corporation RCA Electronic Components  
 Terminal Hudson Corp. Terminal Hudson Electronics  
 Thomson-CSF Electron Tubes  
 Thor Electronics Corp.  
 Transco Products International  
 Video Engineering Co. Inc.

**Vacuum Tubes, Cathode Ray TV Color**

Amperex Corp.  
 GE Electronic Components Sales Dept.  
 RCA Corporation RCA Electronic Components  
 Terminal Hudson Corp. Terminal Hudson Electronics  
 Thomson-CSF Electron Tubes  
 Thor Electronics Corp.  
 Transco Products International  
 Video Engineering Co. Inc.  
 Westinghouse Electric Corp. Electric Tube Div.

**Vacuum Tubes, Cathode Ray TV Monochrome**

Amperex Corp.  
 Amperex Electronic Corp.  
 Electro-Optical Devices Div.  
 RCA Corporation RCA Electronic Components  
 Shibaden Corp. of America  
 Terminal Hudson Corp. Terminal Hudson Electronics  
 Thor Electronics Corp.  
 Transco Products International  
 Video Engineering Co. Inc.  
 Westinghouse Electric Corp. Electric Tube Div.

**Vacuum Tubes, Rectifier**

Amperex Electronic Corp. Power Tubes  
 Lectronic Res. Labs. Inc.  
 Terminal Hudson Corp. Terminal Hudson Electronics  
 Transco Products International  
 Westinghouse Electric Corp. Electric Tube Div.

**Vacuum Tubes, Translator**

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Thomson-CSF Electron Tubes

**Vacuum Tubes, Transmitting**

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Amperex Corp.  
 Amperex Electronic Corp. Power Tubes  
 Collins Radio Company Broadcasting Marketing  
 Eimac Div. Varian Associates  
 Gates Division of Harris-Intertype  
 GE Electronic Components Sales Dept.  
 ITT Electron Tube Div.  
 Joa Cartridge Service  
 Lectronic Res. Labs. Inc.  
 Raytheon Company Raytheon Data Systems Co.  
 RCA Corporation RCA Electronic Components  
 Singer Products Co., Inc.  
 Terminal Hudson Corp. Terminal Hudson Electronics  
 Thomson-CSF Electron Tubes  
 Thor Electronics Corp.  
 Transco Products International  
 Varian Solid State Div. Micro-Link Products

**Vacuum Tubes, Transmitting Rebuilt**

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Econco Broadcast Service Inc.  
 Freeland Products Co.  
 Terminal Hudson Corp. Terminal Hudson Electronics  
 Transco Products International  
 Westinghouse Electric Corp. Electric Tube Div.

**Vector Display, Color**

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**Beston Electronics Inc.** ..... 5

Beston Electronics Inc.

**Viewfinder for Closed Circuit Cameras**

Comquip, Inc.  
 Javelin Division Apollo Lasers, Inc.  
 Video Engineering Co. Inc.  
 Visual Educom Inc.

**Voltmeters, AC**

A-Tel-A-Matic  
 B & K Dynascan Corp.  
 Boonton Electronics  
 Bristol Div. of Acco  
 California Instruments Co.  
 Dranetz Engineering Labs., Inc.  
 Eico Elect. Inst. Co., Inc.  
 GE Electronic Components Sales Dept.  
 Heath Co.  
 Hewlett Packard Co.  
 Hickok Elect. Instrument  
 Honeywell Inc. Test Instruments Div.  
 Instrument Laboratories  
 International Instrument Div. Sigma Instruments, Inc.  
 ITT Jennings  
 Leader Instruments Corp.  
 Lectronic Res. Labs. Inc.  
 RCA Corporation RCA Broadcast Equip. Communications Systems Div.  
 RCA Corporation RCA Electronic Components

Rohde & Schwarz Sales  
 Simpson Electric Co.  
 Singer Co. Los Angeles Operation  
 SPI-ITT Instruments Metrix Division  
 Terminal Hudson Corp. Terminal Hudson Electronics  
 Triplett Corporation

**Voltmeters, DC**

A-Tel-A-Matic  
 B & K Dynascan Corp.  
 Boonton Electronics  
 Bristol Div. of Acco  
 California Instruments Co.  
 Eico Elect. Inst. Co., Inc.  
 GE Electronic Components Sales Dept.  
 General Microwave Corp.  
 Heath Co.  
 Hewlett Packard Co.  
 Hickok Elect. Instrument  
 Honeywell Inc. Test Instruments Div.  
 International Instrument Div. Sigma Instruments, Inc.  
 ITT Jennings  
 Leader Instruments Corp.  
 Lectronic Res. Labs. Inc.  
 RCA Corporation RCA Broadcast Equip. Communications Systems Div.  
 RCA Corporation RCA Electronic Components  
 Rohde & Schwarz Sales  
 Simpson Electric Co.  
 SPI-ITT Instruments Metrix Division  
 Terminal Hudson Corp. Terminal Hudson Electronics  
 Triplett Corporation

**Voltmeters, FET**

B & K Dynascan Corp.  
 Eico Elect. Inst. Co., Inc.  
 Heath Co.  
 Hickok Elect. Instrument  
 Leader Instruments Corp.  
 RCA Corporation RCA Broadcast Equip. Communications Systems Div.  
 Sencore Inc.  
 Simpson Electric Co.  
 Terminal Hudson Corp. Terminal Hudson Electronics  
 Triplett Corporation

**Voltmeters, Vacuum Tube**

B & K Dynascan Corp.  
 Boonton Electronics  
 Edison Electronics. Div. of McGraw-Edison Co., Daven & Measurements  
 Eico Elect. Inst. Co., Inc.  
 Heath Co.  
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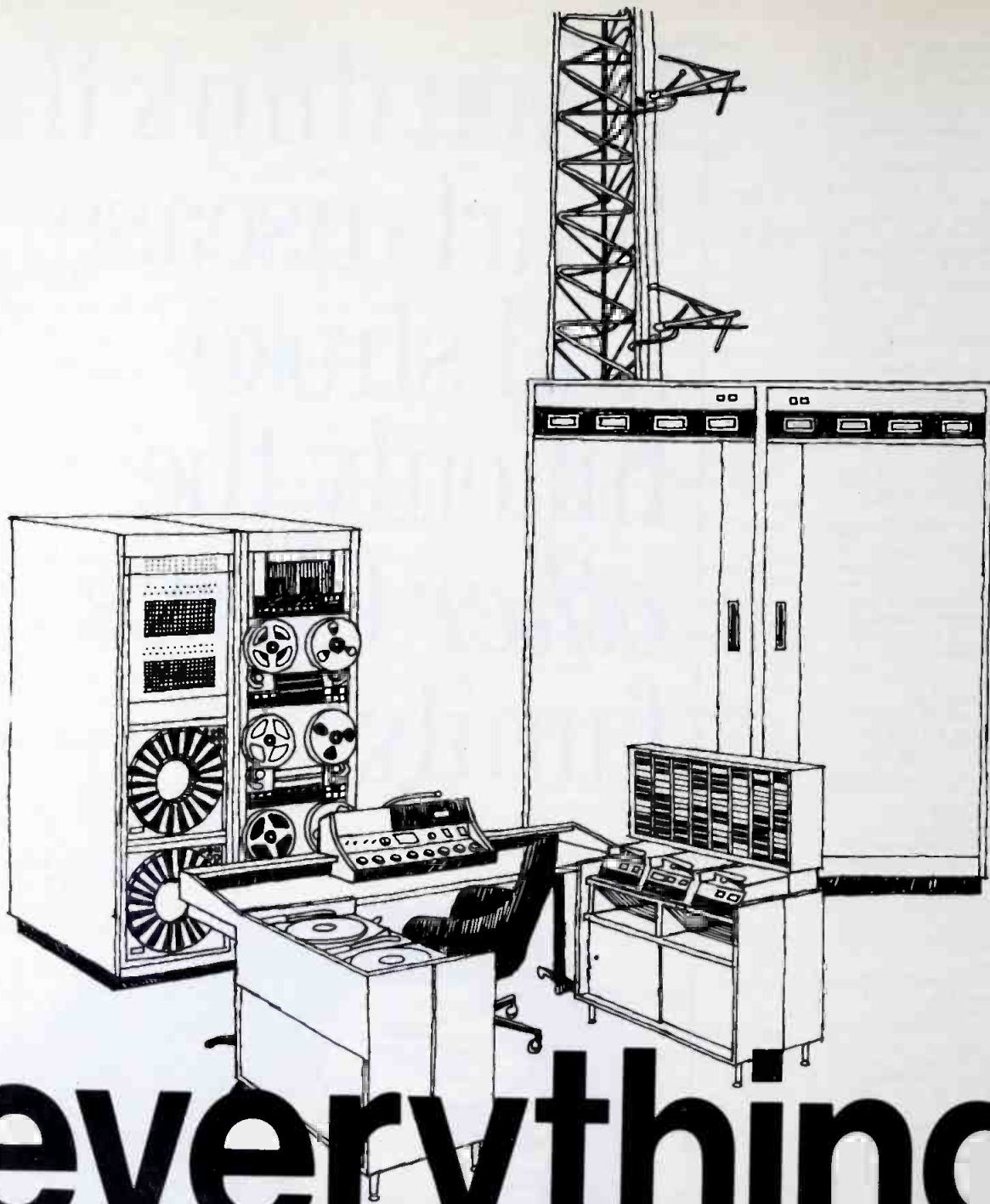
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**Joa Cartridge Service Box** 3087 Philadelphia Pa. 19150  
**Johnson Electronics, Inc. P.O. Box** 7 Casselberry Fla. 32707  
**Jos. Schneider & Co. Optische Werke Div.** Bosenheimer Str. 6550 Bad Kreuznach West Germany  
**Joslyn Electronic Sys. Box** 817 Goleta Cal. 93017  
**Jud Williams Company Box** 671 Winter Haven Fla. 33880

**K**

**Kahn Research Lab. Inc.** 81 S. Bergen Place Freeport N.Y. 11520  
**Kaiser CATV Division Kaiser Aerospace & Electronics Corp.** 2216 West Peoria Ave. Phoenix Ariz. 85020  
**Kalart Victor Corp.** Hultenius St. Plainville Conn. 06062  
**Kapco Enterprises** 947 Janesville Ave. Fort Atkinson Wis. 53538  
**Kappa Networks** 165 Rosevelt Ave. Carteret N.J. 07008  
**Karex, Inc. Subs. of Rohm and Haas Co.** 1262 Lawrence Station Rd. Sunnyvale Cal. 94086  
**Karg Laboratories, Inc.** 44 N. Main St. South Norwalk Conn. 06854  
**Kato Engineering Co.** 1415 First Ave. Mankato Minn. 56001  
**Kay Elemetrics Corp.** 12 Maple Ave. Pine Brook N.J. 07058  
**Kenwood Electronics, Inc.** 15777 S. Broadway Gardena Calif. 90248  
**Kliegl Bros. Lighting** 32-32 48th Ave. Long Island N.Y. 11101  
**Kline Iron & Steel Co. Tower Division** Box 1013 Columbia S.C. 29202  
**Koss Corp** 4129 N. Port Washington Ave. Milwaukee Wis. 53212  
**K'SON Corporation** 743 Dunn Way Placentia Calif. 92670

**L**

**Lafayette Radio Electronics** 111 Jericho Turnpike Syosset N. Y. 11791  
**Lamb Laboratories** 155 Michael Dr. Syosset N. Y. 11791  
**Lampkin Lab. Inc.** Box 2048 Bradenton Fla. 33506  
**Lang Electronics Inc.** 14 E. 39th St. New York N.Y. 10016  
**Langevin An MCA Technology Company** 13035 Satlcoy St. North Hollywood Cal. 91605

**Leader Instruments Corp.** 37-27 27th St. Long Island City N.Y. 11101  
**Lelectron Res. Labs. Inc.** 1423 Ferry Ave. BE Camden N.J. 08104  
**Lectrotech Inc.** 4529 N. Kedzie Ave. Chicago Ill. 60625  
**Lenco Inc. Electronics Division** 319 W. Main St. Jackson Mo. 63755  
**Liberty Industries** 598 Deming Road Berlin Conn. 06037  
**Lightning Elimination Associates** 9102 Frestone Blvd. Downey Calif. 90241  
**Lipps Inc.** 1630 Euclid St. Santa Monica Cal. 90404  
**Lipsner Smith Corp.** 7334 N. Clark St. Chicago Ill. 60626  
**Llsted TV Equip. Corp.** 35 Cain Dr. Plainview N.Y. 11803  
**Logiconcepts, Inc.** 3831 Catalina St. Los Alamitos Calif. 90720  
**LPB Inc.** 520 Lincoln Hwy. Frazer Pa. 19355  
**L-W Photo, Inc.** 15451 Cabrito Road Van Nuys Cal. 91406

**M**

**MaCarta** 709 Railroad Ave. West Des Moines Iowa 50265  
**MacKenzie Laboratories, Inc.** 5507 N. Peck Road Arcadia Calif. 91006  
**Magnatech Co.** 3745 Monterey Drive Minneapolis Minn. 55416  
**Magna-Tech Electronic Co., Inc.** 630 Ninth Ave. New York N.Y. 10036  
**Magnavox Company CATV Division** 133 W. Seneca St. Manlius N. Y. 13104  
**Magnecraft Electric Co.** 5575 N. Lynch Ave. Chicago Ill. 60630  
**Magnetic Prod. Div. 3M Company** 3M Center St. Paul Minn. 55101  
**Magnusonic Devices Inc.** 124 Duffy Ave. Hicksville N.Y. 11801  
**Marathon Broadcast Equip.** 57 N. Putnam St. Danvers Mass. 01923  
**Marco Video Systems, Inc.** 6114 North 20th St. Philadelphia Pa. 19138  
**Marconi Electronics Inc.** 500 Executive Blvd. Elmsford N.Y. 10523  
**Marconi Instruments** 111 Cedar Lane Englewood N.J. 07631  
**Martel Electronics Inc.** 2339 S. Cotner Ave. Los Angeles Calif. 90064  
**Marti Electronics P.O. Box** 661, 1501 N. Main St. Cleburne Tex. 76031  
**Marubeni America Corp. Miida Electronics** 2 Hammarokjold Plaza New York N. Y. 10017  
**Mastertone Co.** 8101 University Blvd. Des Moines Iowa 50311  
**Matrix Systems Corp.** 20426 Corisco St. Chatsworth Cal. 91311  
**Maze Corporation** Box 6636 Birmingham Ala. 35210  
**MCA Technology, Inc.** 13035 Satlcoy St. North Hollywood Calif. 91605  
**McCurdy Radio Ind. Inc.** 1051 Clinton St. Buffalo N.Y. 14206  
**McMartin Industries Inc.** 605 N. 13th St. Omaha Neb. 68102  
**Mediatech** 824 Busse Highway Park Ridge Ill. 60068  
**Melcor Electronics Corp.** 1750 New Highway Farmingdale N.Y. 11735

**Memorex Corp. San Tomas & C** Santa Clara Cal. 95052  
**Mercury Electronics** 315 Roslyn MIneola N.Y. 11501  
**Metron Instruments** 1051 S. River Dr. Denver Colo. 80223  
**Metrotech/Scully Div. of Dictaphone Corp.** 475 Eills St. Mountain Cal. 94040  
**Michigan Magnetics** 203 W. Thimontville Mich. 49096  
**Micom Inc.** 855 Commercial St. Alto Cal. 94303  
**Micro Communications, Inc. RF Grenier Field** Manchester 03103  
**Microelect Co. Inc.** 3575 25th St. Salem Ore. 97302  
**Micro-Trak Corporation (Formerly Gray Research & Dev.)** 630 St. Holyoke Mass. 01040  
**Microwave Assoc. Inc. South Ave Industrial Prk.** Burlington 01803  
**Miles Reproducer Co.** 598 Broadway New York N.Y. 10012  
**Miller Stephenson Chemical Co. Inc.** 7 Danbury Conn. 06810  
**Minarik Elect.** 224 E. Third St. Los Angeles Cal. 90013  
**Mincom Div. 3M Co.** 300 South I Rd. Camarillo Cal. 93010  
**MINNEAPOLIS MAGNETICS,** 8125 Pleasant Ave. S. Minnea Minn. 55420  
**Minnesota Mining & Mfg. Co. 3M** Ter St. Paul Minn. 55101  
**Mobile Color, Inc. P.O. Box** 7 Omaha Neb. 68107  
**Modern Video Engineering Co. Inc.** Fifth Street Muskegon Mich. 49701  
**Modtec Corp.** 9611 James Av Bloomington Minn. 55431  
**Mole Richardson Co.** 937 N. Sycamore Ave. Hollywood Cal. 90038  
**Moseley Assoc. Inc.** 111 Cass Drive Goleta Cal. 93017  
**Mosler Electronic Systems Div.** South St. Danbury Conn. 06811  
**Motorola Semiconductor** Motorola 5005 E. McDowell Rd. Phoenix 85008  
**Multronics, Inc.** 12307 Washington Ave. Rockville Md. 20852

**N**

**Nagra Magnetic Recorders, Inc.** 144th St. New York N.Y. 10036  
**Narda Microwave Corp., The** 75 Commercial St. Plainview N.Y. 11803  
**Nasco Television Systems** 947 Janesville Ave. Fort Atkinson Wis. 53102  
**National Electrolab Assoc. Ltd.** Box 100 Blaine Wash. 98230  
**Nemo Recording Labs Box** 505 Times Sq. Sta. New York N.Y. 10036  
**Neumade Prod. Corp.** 720 W. Plains Rd. Scarsdale N.Y. 10583  
**P. K. Neuses Inc.** 1401 Rohlwing Rolling Meadow Ill. 60008  
**Neve Inc., Rupert Berkshire Industries** Park Bethel Conn. 06801  
**Norelco, Philips Broadcast Equipment Corp.** One Philips Prkwy. Mont N. J. 07645



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e. Antioch Ill. 60002  
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d. Minneapolis Minn. 55416

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vision 3490 E. Foothill Pasadena  
il. 91107  
ite Mfg. Co. 3601 Howard St.  
okie Ill. 60076  
a 1400 73rd Avenue NE Min-  
neapolis Minn. 55432  
e Radio and Video Box 1644  
ulsville Ky. 40201  
er of America, Ltd. 8295 S. La.  
enega Blvd. Inglewood Calif.  
0301

## P

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ceanside Road Oceanside N. Y.  
1572  
ard Incorporated 1900 Lower Rd.  
nden N.J. 07036  
ner Films, Inc., W. A. 611 Howard  
t. San Francisco Cal. 94105  
asonic, VTR/CCTV Dept. Matsun-  
nita Electric Corp. of America 200  
ark Ave. New York N. Y. 10017  
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ATA) 102 New South Rd. Hicks-  
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madynne Electronics Corp. 2929  
Southport Chicago Ill. 60657  
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edford Mass. 02155  
lps Dodge Communications Co. 60  
odge Ave., Box 187 North Haven  
onn. 06473  
lps Dodge Communications Co.  
iv. Phelps Dodge Industries Inc.  
te. 79 Marlboro N.J. 07746  
lps Broadcast Equipment Corp.  
ubs. North American Phillips Corp.  
ine Phillips Prkwy. Montvale N.J.  
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ong Island City N. Y. 11101  
aroid 549 Technology Square Cam-  
bridge Mass. 02139  
omac Instruments, Inc. 932 Phila-  
delphia Ave. Silver Spring Md.  
20910  
wer-Optics Inc. Box 266 Fairview  
village Pa. 19409  
cision Elect. Inc. 9101 King St.  
ranklin Park Ill. 60131  
cision Laboratories Precision Cine  
Equipment Corp. 999 East 46th St.  
Brooklyn N.Y. 11203

Prestolite Company Port Huron Mich.  
48060  
Primo Co. Ltd. 1-25-6 Chome Mure  
Mitakashi, Tokyo Japan  
Prodelin Inc. Box 131 Hightstown N.J.  
08520  
Profit Recovery Systems Div. of CPAC  
Box 25 Leicester N. Y. 14481  
Pulse Dynamics Mfg. Corp. Fulton St.  
Colchester Ill. 62326  
Pulse Techniques Inc. 1411 Palisade  
Ave. W. Englewood N.J. 07666

## Q

QRK Electronic Prod. 716 Jersey Ave.  
Gloucester City N. J. 08030  
Q-TV Sales & Distributing Corp. 342  
W. 40th St. New York N.Y. 10018  
Quad-Eight Electronics 11929 Vose  
St. North Hollywood Calif. 91605  
Quick-Set Inc. 3650 Woodhead Drive  
Northbrook Ill. 60062

## R

Racine & Co., Inc., Jules 85 Executive  
Bvd. Elmsford N.Y. 10523  
Radio Mfg. Co. 4350 S.W. 60 Place  
Miami Fla. 33155  
Radio Research Instrument Co., Inc. 3  
Quincy St. Norwalk Conn. 06850  
Ramko Research Box 6031 Sacra-  
mento Calif. 95860  
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Rank Precision Industries 5926 E.  
Washington Blvd. Los Angeles Calif.  
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260 North Rt. 303 West Nyack N.Y.  
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94086  
Raven Screen Corp. 124 East 124th  
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Raytheon Company Raytheon Data  
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Recortec Inc. 777 Palomar Ave. Sun-  
nyvale Calif. 94086  
Rek-O-Kut Inc. 716 Jersey Ave.  
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Resalab Inc. 4000 Campbell Ave.  
Menlo Park Calif. 94025  
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Syosset N.Y. 11791

Rex Rheostat & Co., Inc. 149 Babylon  
Turnpike Roosevelt N. Y. 11575  
Reynolds/Leteron Co. Pacoima Calif.  
91331  
RF Systems, Inc. 155 King St. Cohas-  
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RHA Audio Communications Corp.  
625 60th Street West New York N.  
J. 07093  
RHG Elect Labs, Inc. 94 Milbar Blvd.  
Farmingdale New York 11735  
R. H. Tyler Co. Div. of Weather Scan,  
Inc. Star Route Loop 132 & Throck-  
morton Hwy. Olney Tex. 76374  
Richmond Hill Laboratories Inc. 964  
Koeht Ave. Union N. J. 07083  
Riker Communications Inc. 142 Cen-  
tral Ave. Clark N.J. 07066  
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Roberts Div. of Rheem Mfg. Co. 5922  
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Rohde & Schwarz Sales 111 Lexing-  
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Rohn Manufacturing Div. of Unarco In-  
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61601  
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cinnati Ohio 45237  
Rome Cable Div. Cyprus Mines Co.  
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Round Hill Assoc. R. E. Morris 325  
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Industrial Park Bethel Conn. 06801  
Russo Electronics Mfg. Inc. 1070  
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Rust Corp. 168 Tremont St. Everett  
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lton Iowa 50049  
Ryder Magnetic Sales Corp. 1147 N.  
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hawken N. J. 07087  
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Queens Blvd. Woodside N. Y. 11377  
Sarkes Tarzian Inc. Broadcast Equip-  
ment Div. East Hillside Dr. Bloom-  
ington Ind. 47401  
Saxton Prod. Inc. 215 N. Route 303  
Congress N.Y. 10920  
SC Electronics, Inc. Subs. of Audio-  
tronics Corp. 530 Fifth Ave., N.W.  
St. Paul Minn. 55112  
Scala Radio Corp. 1970 Republic Ave.  
San Leandro Cal. 94577  
Schafer Electronics 75 Castilian Drive  
Goleta Calif. 93017  
Schafer International 1355 Harbor  
Drive San Diego Calif. 92101  
Schultz Inc., Albert 116 West 14 St.  
New York N.Y. 10011  
Scientific Systems, Inc. Broadcast  
Equipment Div. 293 Oak Ridge Rd.  
Clark N. J. 07066

Scintrex Inc. Communications Div.  
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N.Y. 14150  
Scully Recording Instruments Co. 480  
Bunnell St. Bridgeport Conn. 06607  
Seacor Inc. 598 Broadway Norwood N.  
J. 07648  
Sencore Inc. 426 S. Westgate Dr. Ad-  
dison Ill. 60101  
Sennheiser Electronics Corp. 10 West  
37th St. New York N. Y. 10018  
Sentinel, Inc. 613 Easy St. Garland  
Tex. 75042  
Shalco, Incorporated Hwy. 301 South,  
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27577  
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bridge Mass. 02142  
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Portland Ore. 97220  
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munications Div. Raymond Me.  
04071  
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Court San Diego Calif. 92111  
Solar Electronics Co. 901 N. Highland  
Ave. Hollywood Calif. 90038  
Solitron Devices Inc. Semiconductor  
Div. 8808 Balboa Ave. San Diego  
Calif. 92120  
Soll, Inc., Joseph M. 311 E. 72nd St.  
New York N.Y. 10021  
Sony Corp. of America 47-47 Van  
Dam Street Long Island City N.Y.  
11101  
Sony/Superscope 8150 Vineland Ave.  
Sun Valley Calif. 91352  
Soundscriber Corporation 680 Third  
Ave. West Haven Conn. 06515  
Sparta Electronic Corp. 5851 Florin  
Perkins Rd. Sacramento Cal. 95828  
Spectra Sonics 770 Wall Ave. Ogden  
Utah 84404  
Spectrum Instruments, Inc. 35 Grand  
St. New Rochelle N. Y. 10801  
Spencer-Kennedy Labs., Inc. 2 Lowell  
Ave. Winchester Mass. 01890  
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**SPI-ITT Instruments Metrix Division** P.O. Box 30 74010 Anncy France  
**Spotmaster Broadcast Electronics** 8810 Brookville Rd. Silver Spring Md. 20910  
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**Standard Electric Time Div. of Johnson Service Co.** 89 Logan St. Springfield Mass. 01101  
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**STEP Corporation** P.O. Box 527 Havertown Pa. 19083  
**Sterling Television Presentations Inc.** Sterling Communications Co. 120 East 23rd St. New York N. Y. 10010  
**Swager Tower Corp.** Box 498 Fremont Ind. 46737  
**Switchcraft Inc.** 5555 N. Elston Ave. Chicago Ill. 60630  
**Sylvania Comm. Electronic** Box 268 Burlington Rd. Bedford Mass. 01730  
**Sylvania Semiconductor** 100 Sylvan Road Woburn Mass. 01801  
**Systems Marketing Corp. And Sono-Mag Corp.** 1013 West Washington St. Bloomington Ill. 61701

**T**

**Taber Mfg. & Engr. Co.** 2081 Edison Ave. San Leandro Cal. 94577  
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**Tandberg of America Inc.** 8 Third Avenue Pelham N.Y. 10803  
**Tape-Athon Corp.** 502 S. Isis Inglewood Cal. 90301  
**Tapecaster TCM, Inc.** Box 662 Rockville Md. 20851  
**Tascam Corporation** 5440 McConnell Ave. Los Angeles Calif. 90066  
**Tasker Industries Systems Division** 20131 Sunburst St. Chatsworth Cal. 91311  
**TDK Electronics Corp.** 23-73 48th St. Long Island City N. Y. 11103  
**TEAC Corp of America** 7733 Telegraph Rd. Montebello Cal. 90640  
**Tech Laboratories Inc.** Bergen & Edsall Blvds. Palisades Park N.J. 07650  
**Technology Incorporated HF Photo Systems Div.** 11801 W. Olympic Blvd. Los Angeles Calif. 90064  
**Tektronix Inc.** Box 500 Beaverton Ore. 97005  
**TelComp Division Television and Computer Corp.** 2385 Beryllium Rd. Scotch Plains N. J. 07076  
**Tele-Cine Inc.** 18 Unqua Road Masapequa, L.I. N.Y. 11758  
**Telectro Systems Corp.** 96-18 43rd Ave. Corona N.Y. 11368  
**Teledyne Brown Engineering Co. Science & Engrg. Div.** Research Park M.S. No. 15 Huntsville Ala. 35807  
**Teledyne Camera Systems** 131 N. Fifth Ave. Arcadia Calif. 91006  
**Teledyne Isotopes Energy Systems Division** 110 W. Timonium Rd. Timonium Md. 21093

**TeleMatlon, Inc.** Box 15068 Salt Lake City Utah 84115  
**Tele Measurements Inc.** 145 Main Ave. Clifton N.J. 07014  
**Telemet Co.** 185 Dixon Avenue Amityville N.Y. 11701  
**Teleng Inc.** 405 Serrano Dr. Suite 4E San Francisco Calif. 94132  
**TelePro Industries, Inc.** 3 Olney Ave. Cherry Hill N.J. 08034  
**TELESTRATOR Industries** 166 East Superior St. Chicago Ill. 60641  
**Telesync Corp.** 20 Insley St. Demarest N.J. 07627  
**Television Equipment Associates P.O.** Box 1391 Bayville N.Y. 11709  
**Television Microtime, Inc. Subs. Andersen Laboratories, Inc.** 1280 Blue Hills Ave. Bloomfield Conn. 06002  
**Television Products Co. Inc.** 9016 Aviation Blvd. Inglewood Calif. 90301  
**Television Technology Corp.** 9150 B Brookville Rd. Silver Spring Md. 20910  
**Telex Communications Division** 9600 Aldrich Ave. S. Minneapolis Minn. 55420  
**Telonic Industries Inc.** Box 277 Laguna Beach Calif. 92652  
**Teltron, Inc.** 940 Willow St. Pottstown Pa. 19464  
**Terminal Hudson Corp. Terminal Hudson Electronics** 236 West 17th St. New York N. Y. 10011  
**Texas Electronics** Box 7225 Inwood Station Dallas Tex. 75209  
**Texas Instrument Components Group** Box 5012 Dallas Tex. 75222  
**Texscan Corp.** 2446 N. Shadeland Indianapolis Ind. 46219  
**Texwipe Co.** Box 278 Hillsdale N. J. 07642  
**Thomson-CSF Electron Tubes** 50 Rockefeller Plaza New York N.Y. 10020  
**Thor Electronics Corp.** 741 Livingston St. Elizabeth N.J. 07207  
**Time & Frequency Tech., Inc.** 2950 Scott Blvd. Santa Clara Cal. 95050  
**Times Wire and Cable Sub. of Insilco Corp.** 358 Half Avenue Wallingford Conn. 06492  
**Topaz Electronics** 3855 Ruffin Road San Diego Calif. 92123  
**Total Technology** Box 828 Belmont Cal. 94002  
**TRACOR, Inc. Instruments Group** 6500 Tracor Lane Austin Tex. 78721  
**Transco Products International** One World Trade Center New York N.Y. 10048  
**Treise Engineering** 1941 First St. San Fernando Cal. 91340  
**Trepac Corp. America** 30 W. Hamilton Ave. Englewood N.J. 07631  
**Tri-Ex Tower Corp.** 7182 Rasmussen Ave. Visalia Calif. 93277  
**Triplett Corporation** 286 Harmon Rd. Bluffton Ohio 45817  
**Tri-Tronics** 829 Eighth St. Lillington N.C. 27546  
**Trompeter Electronics** 8936 Comanche Ave. Chatsworth Cal. 91311  
**Troy Electronic Sales Co.** 5810 N. Western Ave. Chicago Ill. 60659

**(Trusonic) ACS Inc.** 335 S. Raymond Ave. Pasadena Cal. 91105  
**TRW Electronic Supply Co. Div. of TRW** 414 N. 13th St. Philadelphia Pa. 19108  
**TT Electronics, Inc.** 2214 S. Barry Ave. Los Angeles Calif. 90064  
**Turner Division Conrac Corporation** 909 17th St. N.E. Cedar Rapids Iowa 52402  
**TV Cable Supply Co.** Box 38 Carlisle Pa. 17013

**U**

**Ultra Audio Products** Box 921 Beverly Hills Cal. 90213  
**Union Connector Co., Inc.** 149-A Babylon Turnpike Roosevelt N. Y. 11575  
**United Radio Supply Inc.** 123 N.E. 7th Portland Ore. 97232  
**United Recording Electronics Industries** 11922 Valerio St. North Hollywood Cal. 91605  
**United State Towers** 249 Bartow Lane Petersburg Ky. 41080  
**United Systems Corp. Subs. of Monsanto Co.** 918 Woodley Rd. Dayton Ohio 45403  
**Universal Research Labs** 2501 United Lane Elk Grove Village Ill. 60007  
**Up Right Scaffolds** 1013 Pardee St. Berkeley Cal. 94710  
**Upson Tools Inc.** Box 4750 Rochester N.Y. 14612  
**Utility Tower Co.** 3200 N.W. 38th St. P.O. Box 12027 Oklahoma City Okla. 73112

**V**

**Vaco Products Co.** 510 N. Dearborn St. Chicago Ill. 60610  
**Valad Electric Heating Corp.** 71 Courtlandt St. Tarrytown N.Y. 10591  
**Varian Solid State Div. Micro-Link Products** 8 Salem Rd. Beverly Mass. 01915  
**Victor Duncan, Inc.** 11043 Gratiot Ave. Detroit Mich. 48213  
**Video Devices Co.** 17000 Western Ave. No. 6 Gardena Calif. 90247  
**Video Engineering Co. Inc.** 356 West 40th St. New York N. Y. 10018  
**VIF International** Box 1555 Mountain View Cal. 94040  
**Vikoa Inc.** 400 Ninth St. Hoboken N.J. 07030  
**Vikron** 3300 Raleigh Ave. S. Minneapolis Minn. 55416  
**Virginia Panel Corporation** Box 1106 Waynesboro Va. 22980  
**Viscount Video Systems Ltd.** 105 East 69th Vancouver 15 8. C. Canada  
**Visual Communication Products Oper. General Electric Co. No. 7 Electronics Park** Syracuse N.Y. 13201  
**Visual Educom Inc.** 4333 S. Ohio St. Michigan City Ind. 46360  
**Visual Electronics Corp.** 356 West 40th New York N. Y. 10018  
**Vital Industries** 3614 S.W. Archer Rd. Gainesville Fla. 32601

**W**

**Waber Electronics Inc. Div. SGL Int'l** tries, Inc. 300 Harvard Ave. V. ville N. J. 08093  
**Waters Mfg. Inc.** 533 Boston Pos Wayland Mass. 01778  
**Weinschel Engineering Co.** Box Clopper Road Gaithersburg 20760  
**Western Electronic Prods. Co.** Los Molinos San Clemente 92672  
**Westinghouse Electric Corp. Ele Tube Div.** Box 284 Elmira 49502  
**Westinghouse Electric Corp. West house Bldg.** Pittsburgh Pa. 15  
**Wide Response** 2926 Bently Ave. Angeles Calif. 90064  
**Wilkinson Electronics, Inc.** 193 MacDade Blvd. Woodlyn Pa. 19  
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the  
**LITTLESHOT**

an innovative new condenser microphone  
with the best virtues of cardioid and shotgun

and the  
**BIGSHOT**

worthy successor to the  
famous MKH 805

You did it. You and your fellow professionals. You made our MKH 805 shotgun condenser microphone the industry standard.

While we're not particularly surprised, we are grateful. Grateful you appreciate our MKH 805's unusually wide, flat response, extreme directionality and high overload resistance. Grateful you appreciate its ruggedness, compactness and light weight. And most of all, we're grateful you use it so widely, both in studio and field-recording, that it's become the most talked-about microphone success story of the decades.

But the MKH 805 shotgun microphone was a hard act to follow, especially since we don't bring out new products for change's sake. Now, however, we are pleased to bring you our new MKH 415 and 815—the "littleshot" and the "bigshot"—two remarkable microphones representing a third generation of Sennheiser condenser microphone design.

### the littleshot

Not too long ago, we discovered our shotgun microphone being used for applications beyond our original intentions. Because of its small diameter and longer-than-normal size, reporters used it for interviews at normal miking distances. And because of its flat response and high directionality, studios often used it to pick up performers and to actually "close-mike" instruments from a distance, due to its lack of proximity effect, and "pop" reduction.

"Why not," we reasoned, "create a new condenser microphone especially for these diverse applications, where extreme directionality is not required?" The MKH 415, the "littleshot" is the result.

Using an improved combination of pressure-gradient and interference principles, the MKH 415 is truly a remarkable microphone. Directionally speaking, it behaves as a super-cardioid below 2 kHz; at higher frequencies, it exhibits a beam-type (or baseball-bat) pattern. Besides reducing leakage, this design provides higher on-axis conversion efficiency, with two more benefits.

Circle Number 91 on Reader Reply Card



First, pops and wind-noise are reduced, even without its accessory windscreen and shockmount. But even more important in many applications, is the MKH 415's virtually total freedom from proximity effect, which, coupled with its unusually flat response, makes possible "close-miking" of singers and instruments without need for bass attenuators. Beyond these features, the extremely wide response, low ambient noise, high output and overload resistance characteristic of all Sennheiser microphones have also been retained.

Physically, the MKH 415's 10" length provides reporters and other outdoor users with the added "reach" they seek, while performers will find the design less fatiguing to use and more aesthetically pleasing, since they need not hide their faces to project their sound.

### the bigshot

In the MKH 815, all the good things that made its predecessor's reputation in filmmaking and broadcasting have been retained. And another advantage has been added: through an improvement in the microphone's interference design, by increasing the number of slots along the microphone's sides (to reduce the area of individual ports), the MKH 815 has additional resistance to pops and wind noise. Thus, in many situations formerly requiring additional precautions, the MKH 815's accessory windscreen and shockmount will not be required.

### more encores

Besides the amazing new "littleshot" and the improved "bigshot," there are many more new things on the way from Sennheiser. While we'll be talking about them in the future, you can find out about them now by requesting the second edition of our Micro-Revue—which contains a good deal of useful audio information besides. Please write or call:

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A family of standalone television signal products which alone or in combination provide line-by-line or continuous resolution of input video time base errors in monochrome and color composite video signals. Correction to better than  $\pm 3$  nanoseconds absolute or short-term jitter can be made either to reference sync, or to an average time phase of sync or color subcarrier derived from the input composite video signal.

The nominal input video signal to any of these units is 1.0 v p-p composite video sync negative, 75 ohms terminating internally. The signal source will typically be the DEMOD or TBC output of a VTR, or the output of a standalone or integral Dropout Compensator. Applications not involving a VTR include complex video switching or teleproduction processing facilities, and satellite communication down link receivers, for continuous, automatic correction of re-routed or drifting video signals.

**Delta 44 TIME BASE CORRECTOR**  
(AVAILABLE NOW - SEE YOUR DISTRIBUTOR)

Base product of the Delta Series. Input window  $\pm 2.2$  microseconds wide with respect to external fixed or drifting H or color subcarrier reference. Output resolution: monochrome -  $\pm 25$  nanoseconds; color -  $\pm 3$  nanoseconds, both with respect to selected fixed or drifting reference. Standalone Time Base Corrector for all heliscan and quad VTRs equipped with head servo systems which reference external sync in reproduce mode. All versions include adjustable color processing amplifier which rebuilds V and H blanking intervals using sync and subcarrier from reference source.

**Delta 28 TIME BASE DIRECTOR**  
(AVAILABLE IN OCTOBER)

Input processor accessory to Delta 44. Detects time phase of H pulse or burst in input video signal line by line, and derives drifting average value for use as window-shifting reference in the Delta 44 in place of fixed reference. Interfaces to heliscan VTRs equipped with "electronic editor" feature (head servo references external V sync in reproduce mode), and quad VTRs not equipped with "Intersync" or "Pixlock" head servo circuitry, both of whose maximum acceleration is less than 25 cycles/sec<sup>2</sup>. Drifting reference may be looped through Delta 44 to gen lock studio sync generator, permitting limited post-production processing and dubbing of tape from v-locked VTR.

**Delta 7 HEAD VELOCITY ERROR CORRECTOR**  
(AVAILABLE IN NOVEMBER)

Input processor accessory to Delta 44, or may be used as standalone signal processor when time base correction is not required. Detects average rate of acceleration or deceleration of video head to tape velocity through line by line computation of burst phase differences in incoming video, and inserts a new, complementing, linearly varying delay in each succeeding line. This reduces the hue shift effects attributable to the head velocity error component of the total detected error to  $\pm 3$  nanoseconds with respect to color burst phase at the beginning of each line. Interfaces to VTRs which reference external V and H in reproduce mode.

**Delta 635 FULL LINE DRIFT CORRECTOR**  
(AVAILABLE IN EARLY 1973)

Input accessory to Delta 44. Locates H pulse of each incoming TV line, computes its time phase with respect to stable external reference H, and delays that line appropriately to cause its arrival at the Delta 44 input within  $\pm 0.5$  microseconds of the time of arrival of the next external reference H pulse. Interfaces to heliscan monochrome and color VTRs whose H frequency drift is less than 25 cycles/sec<sup>2</sup>.

**Delta 400 HEAD SERVO DRIFT SUPPRESSOR**  
(AVAILABLE IN SEPTEMBER)

Output accessory for Delta 44. Utilizes the internal voltage input to the Delta 44 Delay Status Meter to generate steering voltage of  $\pm 12$  VDC at 10 milliamps. This voltage is available as an input to any VTR with a V-locked head servo system. It provides a means of holding the off-tape signal of VTR in the window of the Delta 44, after-modification and adjustment of the VTR to utilize these signals.

# TMI EXPANDS ITS DELTA SERIES

## TELEVISION SIGNAL TIME BASE PROCESSING SYSTEMS



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## Associations Keep Industry On Target

The International Tape Association is a professional trade association for the tape industry. They have brought together for the first time a wide range of manufacturers and suppliers from throughout the world to identify and develop positions on matters of great importance. The ITA has quickly become a focal point not only for the tape industry but for consumer and government interests as well.

The ITA Newsletter is sent out by-monthly to ITA Regular and Sustaining Members. The Newsletter reports industry-wide developments to its members as well as to consumer and government interests. It also contains feature articles from ITA members and from experts in the fields of government, education, training, business, insurance, medicine, and other areas of the use and application of the industry's goods and services.

In addition to receiving the association's Newsletter Sustaining Members will receive a source list of the ITA member companies, the products and services they offer.

Sustaining Memberships in ITA are welcome only from firms who are not eligible for Regular Membership but who are interested in the Audio/Video Tape and Video Information Medium Industry. Sustaining Members are permitted to attend ITA Seminars and functions at the same reduced fee as Regular Members. They also have access to certain information which is determined by the ITA Board of Directors but do not have the right to vote.

For further information on ITA membership, write to Larry Finley, Executive Director, International Tape Association, Inc., 315 West 70th Street, New York, N.Y. 10023.

A summer FCC count of over-the-air broadcast stations shows that there is still growth in some types of service. Notably, FM has been gaining more ground. In June of 1969 there were an even 2000 FM stations on the air. A year later their number had moved to 2134. From there it went to 2258 in 1971 and now it is well over 2300.

During this same period, AM . . . in the freeze, has moved only from 4251 to 4367. The growth in FM probably can be attributed to the increasing profitability of FM and the fact that there has been no FM freeze. Of course, educational FM is on the move, too. This activity should translate FM into a much more viable market.

Here are the 1972 summer standings:

AM Radio	4367
FM Radio	2352
Educational FM	521
UHF TV Commercial	190
VHF TV Commercial	511
UHF TV Educational	125
VHF TV Educational	89

(Continued on page 90)

# DELTA-BENCO *ANNOUNCES*

## THE TS-010D

# SOLID STATE 10 WATT TV REBROADCAST TRANSMITTER

## FCC APPROVED



MODEL TS-010D with IU-TS

The Model TS-010D comprises two self-contained units, the Benavac Mark II dual heterodyne channel processor and the VPS-10 amplifier. Any off-air channel 2 to 83 can be converted and re-transmitted on any VHF channel 2 to 13.

When required, an identification unit, Model IU-TS, is available to provide automatic station identification by superimposing a 4 KHz, AM modulated code signal on the aural carrier of the transmitter channel.

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## FCC Offices

(Continued from page 46)

Rule Changes-  
See Page 32

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**District No. 21**  
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**District No. 22**  
Eugene W. Klein, Engineer-in-Charge, Federal Bldg., San Juan, Puerto Rico (00903). Phone: 722-4562.

**District No. 23**  
Harold De Voe, Engineer-in-Charge, U.S. Post Office & Courthouse, Anchorage, Alaska (99501). Phone: 272-1822.

**District No. 24**  
Harold R. Richman, Engineer-in-Charge, 1919 M. St. N.W., Room 216, Washington, D.C. (20554). Phone: 632-7000.

## FCC's Washington Offices

If you would like to correspond with someone at the FCC write to: Federal Communications Commission, 1919 M Street N.W. Washington, D.C. 20554.

To telephone the FCC call the Information Operator at 655-4000. The first number (in parenthesis) is the room number, and the next is the phone number.

### Broadcast Bureau

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(Continued on page 84)

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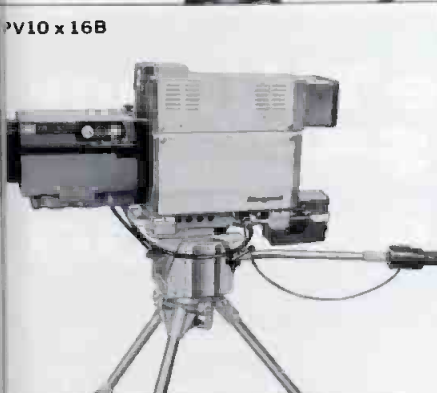
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BROADCAST ENGINEERING



# Canon offers the perfect zoom lens for the camera of your choice



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operate with any make of TV camera.

Shown on this page are only a few examples of the quality lenses Canon has available to more than meet your particular demands. Specify Canon to stay ahead.

The following are Canon TV Zoom Lenses for the Plumbicon® color cameras currently available on the market:

Size of Image tube	Lens	Image format covered
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	P17 x 30B1	
	P17 x 30B2	
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	PV10 x 15B2	
	PV17 x 24B1	
	PV 6 x 18B1	

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#### The Canon TV Lenses Naming System



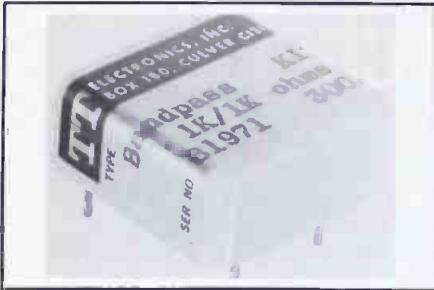
Symbol	Image Format	Applications
P	21.4mmφ	1½" Plumbicon
PV	16mmφ	1" Plumbicon
B	45.7mmφ 40.6mmφ	3" & 4½" Image Orthicon

# Canon

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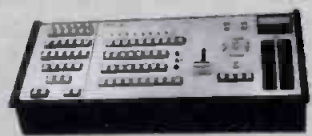
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(Continued on page 86)

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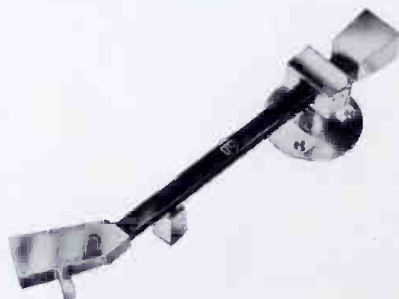
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92. **Operator & Examination:** John W. Reiser, Chief, (744) 632-040.

**MONITORING SYSTEMS:** Ivan J Lorenzen, Chief, (728) 632-2445. **Methods & Review:** Carl T. Luhn, Chief, (728) 632-6345.

If you've been wondering who you should call at the FCC to give you the specific kind of information you need, you'll find this listing most interesting. In order that **Broadcast Engineering** produce a true reference issue, we felt it necessary to include this kind of material. If you would like to see other types of reference material included in next year's issue, drop the editor a line and let us know your needs.

## NAB Asks For Claim Relief

The National Association of Broadcasters has urged the Federal Communications Commission to reject a claim by a citizens' group for expenses incurred in opposing a license renewal for station WSNT in Sandersville, Ga.

NAB said in a statement that FCC approval of the request would amount to involuntary "exactment" of the licensee.

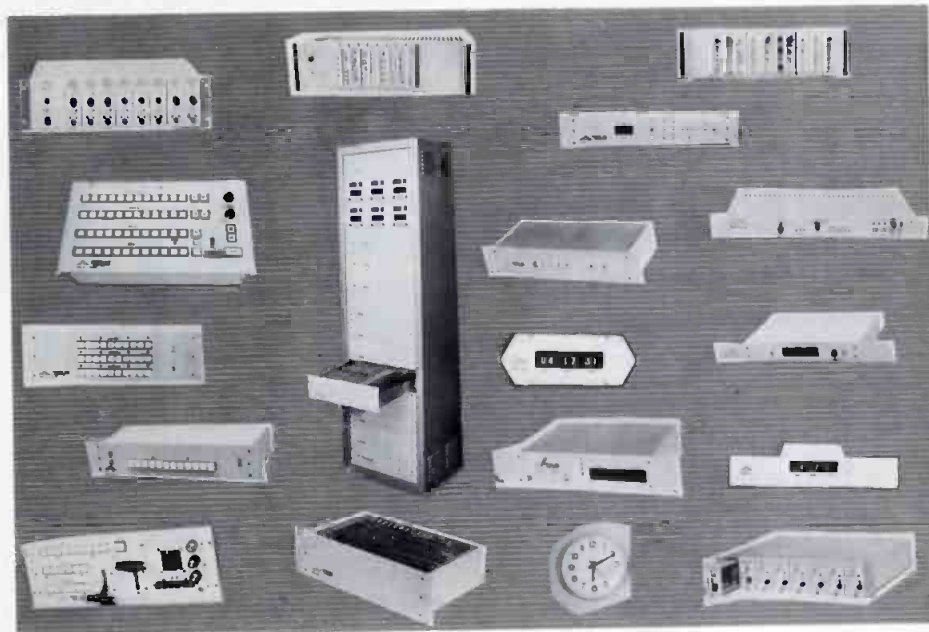
"It is the NAB's position that ordering a station to pay a petitioner's attorney and/or other expenses against its will is a sanction," the NAB statement said. "The Communications Act... does not include the power to assess attorney and other expenses in a situation where the licensee has not voluntarily agreed to pay such expenses."

NAB urged the FCC to adhere to its past policy which said, in part, that "it would be inappropriate for the Commission to compel reimbursement of expenses in the absence of a voluntary agreement of the parties" involved.

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Page 4

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## Station Monitors

(Continued from page 26)

desired for a specific service or purpose. For example, the station may use a Network service and would want constant monitoring of the Network line. The amplifier should have a gain control near the operator so that this could be reduced (or, rather, the level reduced) to a background level until it is desired for more definite listening for cues. This should be a remote gain control, unless the amplifier can be located within reach of the operator. The control can be on the speaker or on the input of the amplifier as is most suited for the situation. Although I have never had direct experience with one, there is available a single speaker unit with two voice coils into which two separate amplifiers may be fed.

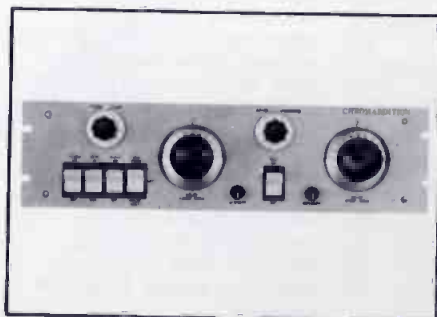
**Common studio:** In some stations a studio is used with another control room. For example, a TV studio may be used at times as a radio studio also. This common studio would be equipped with a speaker for TV and one for radio. The mute and on air light relays must be interlocked so that a program originating in the studio will not be bothered by a program from the sister station.

The interlocking is not difficult and can be accomplished with the addition of one single mute relay for the secondary studio speaker. The console in TV and the console in radio will have a mute relay for

its own speaker, plus relays for on air lights.

It is necessary that muting of both speakers take place when either the TV console or the radio console mike key is closed. The relay added would mute the secondary speaker (let's say it will be radio), and its coil should be wired in parallel with the mute and on air light relay from TV console. When the TV mike key is closed, this will mute both speakers. The on air light relay provided with the radio console would not have 120 VAC wired to its contacts, but instead have DC relay voltage from TV control. When this relay is closed by the radio mike key, its contacts will then provide relay voltage for the other relays and thus mute both speakers and turn on the TV studio air light.

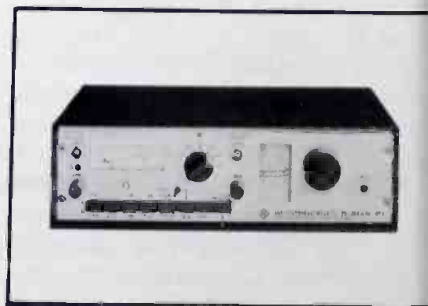
**Multiple speaker muting:** In some locations, such as Newsrooms, there may be a number of speakers on various monitors going on and off intermittently. It may also be desirable to do recording in the newsroom with a microphone and all this chatter from speakers can prevent this. Here is one method to mute all speakers at one time. Build a speaker cabinet and mount enough small speakers to satisfy all the needs of the newsroom. Small 3-inch speakers can be used, as that may be what is in the mobile radios that are being monitored.



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disconnect the speaker in each cabinet, wire it through a single ganged switch to the speaker box. Have a ganged switch that will handle the number of speakers involved. Now, with one switching motion, all speakers can be muted immediately. Make sure there is a resistor switched onto the receiver amplifier when the speaker is switched off. As an additional feature, wire one set of contacts on the switch to a light on the box to indicate that the speakers are switched off. Of course, you could mount a relay at each speaker and wire all the relays common to one single switch. This would do the job just as well.

**Bridging:** All monitor systems could bridge the program source. Generally the audio is a bus feeding program somewhere for program purposes. The monitor taps into the bus. To prevent loading of program busses, the amplifier inputs should use a bridge circuit, either transformer or resistors or both. This is a must if the amplifier has a low impedance. If it is unbalanced it will cause problems, as most audio buses are balanced. Use isolating transformers or resistors to prevent upsetting the balanced circuits. Transformers provide the best circuit isolation. Balanced bridging controls are commercially available. These provide dual, ganged potentiometers plus series resistors to provide both a variable as well as fixed levels.

In many cases, a fixed bridging connection is all that is required. If the amplifier is low impedance input, three resistors will do the job. For example, an amplifier with 600 Ohm input. Add a 10,000 Ohm resistor in series with each leg and shunt a 600 Ohm across the input. This will give approximately 20 dB loss and will not affect a 600 Ohm circuit. If less loss is desired, one can go as low as 5,000 Ohms in each leg. If only one amplifier will be bridged across the circuit, one can go as low as 2700 Ohms in each leg, but it isn't advisable to go much lower than this.

### Summary

Audio monitor systems are not

difficult to design or install, and require very little maintenance. The monitor amplifier should not affect the circuit it is monitoring, so its input should always be a bridge connection. The amplifier should always have a load maintained on the output, especially transistor amplifiers. The 70.7 and 25 Volt distribution systems are easily designed for house monitor systems

and require less computations than trying to derive multiple impedance matching by other methods.

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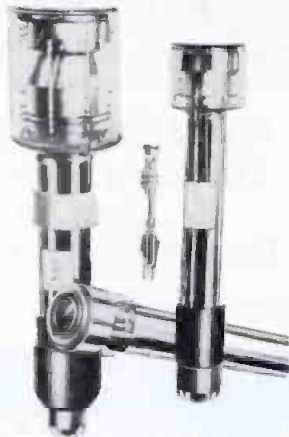
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IBS was founded in 1939 by 13 college radio stations to act as a trade association, assisting the stations in obtaining national advertising, representing them to the FCC, and furnishing information to other schools interested in educational radio or constructing campus stations. The System is a non-profit Rhode Island corporation.

Although these statistics are impressive, the real story of IBS growth is in the area of its services to the industry. These include the availability of IBS printed forms, the College Radio Placement Service (an annual poll of commercial stations on their requirements and qualifications for summer positions), a programming service, Iota Beta Sigma national honorary, an annual National Convention, College Radio magazine (published monthly during the academic year),

and FCC representative... especially Call Letter reservation.

The System strives to expand both the depth and the scope of its programs and services (an annual poll of commercial stations on their requirements and improving existing ones.

### IBS Services

Two services of particular interest to new stations are the IBS general, technical and sales consultation service, and the IBS Master Handbook. The MH is a complete manual of station operation encompassing programming, sales technical, and administrative information. Since IBS's inception, prime effort has been to furnish stations with technical data and assistance. The System has technical requirements (as well as other

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(es) for Voting membership, and significant portion of the MH is devoted to engineering informa-

IBS has also developed a region-activity and runs periodic region-conferences. Regions publish newsletters, run programming ex-changes, regional sales offices, and news networks.

A recent addition to IBS ser-vice is being instituted by the Record Company Relation Depart-ment. The RCRD is publishing a weekly IBS Charts & Review sec-tion as a feature of College Radio magazine. In addition, the RCRD will furnish to Record Manufactur-er promotional offices data on member stations.

### Membership

Industry Affiliate membership is another new facet of IBS. As a result of a complete revision of IBS organizational structure and By-Laws three years ago, the System

offers Affiliate membership to firms in the industry. Three classes of Industry Affiliate membership are offered.

As outlined in the By-Laws, a broadcast group related to an insti-tution of higher or secondary edu-cation, or an organization whose purpose coincides in whole or in part with that of the System is eligi-ble for membership. IBS does not offer individual membership. Sta-tion dues are \$45 per year.

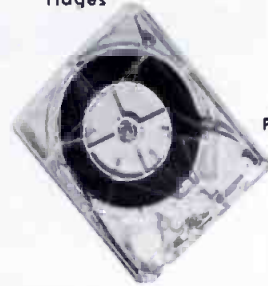
Conferences in IBS's 14 regions are held once a year, and a Nation-al Convention is held each spring.

Further information on the IBS may be obtained by writing to: In-tercollegiate Broadcasting System, Bethlehem, Pa.

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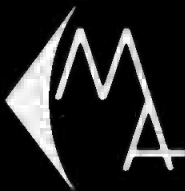


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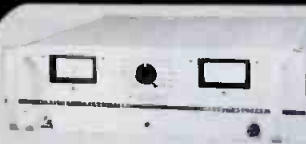


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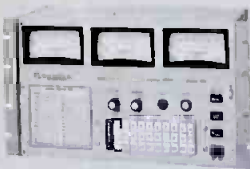


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# Professional Association Officer List

The following is a list of addresses and presidents/chairmen of some of the major active national associations and professional societies. Since each of these annually strive to keep their membership informed on their specific slice of the state-of-the-art we recommend that interested parties contact these groups for further information on membership qualification and fees. Some, such as the Audio Engineering Society and the Society of Motion Picture and Television Engineers, publish technical journals at regularly scheduled intervals.

Equally important, we suggest you take an active interest in your state association. It does pay to get together with people in your area to discuss communications problems. What's more, it should be easier to have your ideas heard in these smaller groups. You can get involved.

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**Assn. of Motion Picture Television Producers Inc.**

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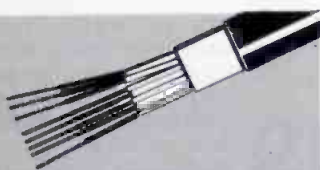
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*(Continued on page 94)*

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(Continued from page 93)

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**International Radio & Television Foundation**  
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**International Radio & Television Society**  
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**Joint Council on Edu. Telecommunications**  
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Washington, D.C. 20036

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Washington, D.C. 20006

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**National Assn. of Television Program Executives Inc.**

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**National Broadcasters Club**

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Washington, D.C. 20036

**National Cable Television Assn.**

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*(Continued on page 96)*

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1972



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PMA-19 PRECISION MONITOR ADAPTER



AM-19 ANTENNA MONITOR



PM-112 PHASE MONITOR



DDA-19 DIGITAL DISPLAY ADAPTER

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## IEEE Stays On Target

The Institute of Electrical and Electronics Engineers, Inc. is one of the largest engineering societies in the world. It was started in 1884. Today there are more than 160,000 members.

The purposes of the organization are scientific and educational, directed toward the theory and practice of electrical engineering, electronics, radio, allied branches of engineering or the related arts and

sciences.

Throughout the year the many sections of the IEEE hold many meetings, conferences and symposiums for the purpose of keeping all members informed on the latest innovations, experiments, and possible future directions.

While many groups have split into specific interest areas, they remain aligned with the IEEE. An example of this includes the Canadian broad-

(Continued from page 95)

**Society of Broadcast Engineers Inc.**

Robert Flanders, Pres.  
1330 N. Meridian  
Indianapolis, Ind. 46202

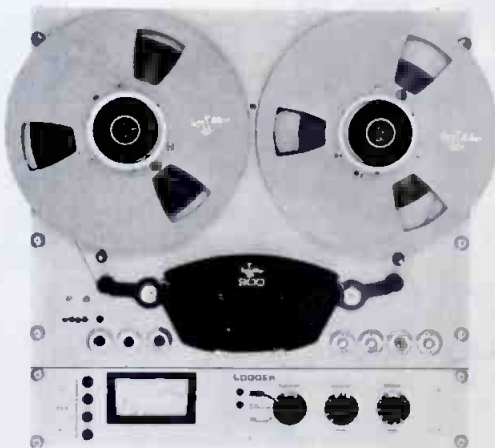
**Society of Motion Picture & Television Engineers**

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sters.

### Benefits of IEEE Membership

As a member of a local IEEE Section, you may attend and participate in meetings where matters of particular technical interest in the specialty are discussed by people who know them best. At these meetings you will meet and exchange views with people who share your interests. You may join one or more of the IEEE Groups and Societies, which provides the opportunity to broaden knowledge in your specialty field.

There is the opportunity for personal contributions, to serve on IEEE Committees to learn what others are doing, and to contribute your own knowledge to the profession.

### Meetings

In addition to the local Section meetings, the IEEE sponsors a large number and variety of other meetings, symposia and confer-

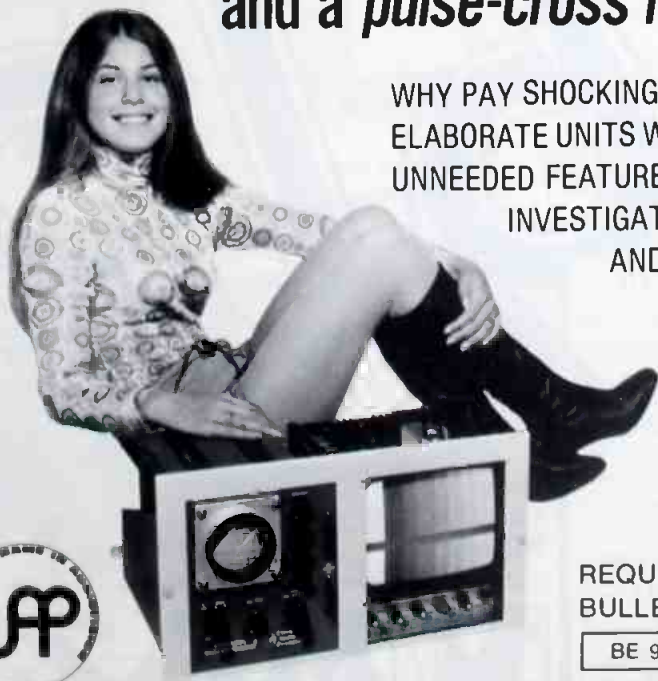
ences to meet the interests of all its members.

The world's largest technical meeting, the IEEE International Convention and Exposition, is held in New York City every March. The four-day program draws engineers and scientists from all parts of the world to learn about and discuss the latest developments in electrical and electronics engineering. Complementing the technical sessions is an exhibition of technological products by hundreds of manufacturers.

Special annual meetings sponsored by IEEE Regions and Sections at a location geographically convenient provide a smaller scale equivalent to the International Convention and Exposition.

Also, throughout the year, IEEE Groups and Societies sponsor or co-sponsor many major conferences in areas of special interest. These meetings provide the most up-to-date coverage available on their specific subjects.

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\*Used at Academy Award and Emmy Award T.V. presentations 1972.



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The cardioid capsule assembly contains a permanently charged condenser capsule and FET/IC amplifier. A Cannon connector houses the battery supply.

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Also Consider:

Tie-tack/lapel condenser mic ECM-50.

Telescopic (from 7 $\frac{3}{4}$ " to 17 $\frac{1}{2}$ ") condenser mic ECM-51.

**SONY SUPERSCOPE**

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## Membership

Interest in electrical/electronics engineering is the basic requirement for membership in the IEEE. The grade of membership to which you will be admitted, depends on the extent of your involvement in, and contribution to the field of electrical/electronics engineering.

The grade of **Fellow** is conferred only upon a person of outstanding and extraordinary qualifications and experience in the fields of electrical and electronics engineering, related arts and sciences, or allied branches of engineering. It is an unusual professional distinction that must be earned, not applied for.

**Senior Member** is the highest grade for which application can be made and requires experience or attainment reflecting professional competence in the fields of electrical or electronics engineering, related arts and sciences, or allied branches of engineering.

**Associate membership** is offered to those with engineering interests

who are capable of rendering service to IEEE and the profession.

**Student membership** privileges are extended to registered student enrolled in electrical engineering or related courses.

The IEEE membership offers you professional and personal advantages. If you are interested in becoming a member or would like more information write to: The Institute of Electrical and Electronics Engineers, Inc., 345 East 47th Street, N.Y. 10017.

As an IEEE member, you will know about the conferences and their programs in advance and can attend at a reduced member rate.

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## New ITV And Lighting Associations

There are two relatively new associations in the industry. The Industrial Television Society (ITS) recently held their fourth annual meeting in Chicago. This year's meeting was aimed toward the business or firm embarking on videotape productions and the program was arranged to serve as an educational function and helpmate for the potential user of VTR. The critical judging of tape productions proved to be a valuable tool and educational milestone for the persons already engaged in VTR work.

For more information on the ITS write to: Joseph Gorman, Pres., P.O. Box 542, Niagara Falls, N.Y. The second is the Illuminating Engineering Society. They held their eighth annual theatre, television and film lighting symposium last May.

The Chairman of the Theater, Television and Film Lighting Committee is C. Schuyler Bramley. Salvatore J. Bonsignore is Chairman of the World Colloquium Committee.

Further information may be obtained by writing: Robert Link, Illuminating Engineering Society, 345 East 47th Street, New York, N.Y.

## Audio Society An Industry Leader

### AES Journal

The Audio Engineering Society started to publish its own Journal in January 1953. Started as a quarterly, it contains engineering studies and reports from audio authorities in the United States and abroad.

The AES serves members, industry and the public by stimulating and directing advances in this vital technology. It makes new developments promptly and widely

Variable-directivity condenser studio microphone provides 130 dB dynamic range.



Dynamic range (130 dB)  
+ noise level (24 dB)  
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Sony's variable-directivity (Omni-Uni) C-37P\* contains an advanced FET amplifier. A switchable attenuator is placed between the capsule and amplifier to prevent distortion even at extreme sound pressure levels.

The combination of proven excellence in sound quality, and the very latest in semiconductor technology makes the Sony C-37P indispensable in today's quality-oriented recording studio.

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**SONY SUPERSCOPE**

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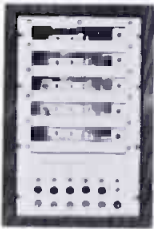


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Versatile Five-Spot

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The nation's leader in cartridge tape technology can fill your every need, quickly and economically. That's how we became the leader. Write:

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known through semiannual technical sessions and through the AES Journal, a professional publication.

### Conventions

AES conventions include a full program of technical sessions for the presentation and discussion of papers describing current research and developments in audio. Exhibits of professional equipment from manufacturers here and from other countries give AES members a first-hand look at the latest products for audio application.

### Membership

Honorary Memberships and Fellowships are given for past contributions to the profession.

Qualifications for membership in the Audio Engineering Society are as Follows:

A Member may be any person active in audio engineering who has an academic degree, or its equivalent in scientific or professional experience in the field of audio engineering and its allied arts, and who is familiar with the application of engineering principles and data in that field.

An Associate may be any person interested in the objectives of the Audio Engineering Society.

A Student may be any student interested in audio engineering and enrolled in a recognized school, college or university.

At the present time the scope of the Society's concern, while still including the areas delineated at the time of its organization 20 years ago, has expanded in order to keep pace with new technological developments in audio and in order to

better meet the Society's responsibility to the engineering community and to society at large.

The membership of the Society includes engineers, scientists, administrators, and technicians involved in research, development design or operation of all forms of audio apparatus and systems; executives, sales engineers, and technical personnel involved in the production, marketing and installation of audio equipment; and educators who use audio apparatus in teaching or who teach acoustics, electronics, or other sciences basic to audio engineering, sound reproduction and allied fields.

The AES serves its membership by offering opportunities for the exchange of technical information for self-improvement and for professional recognition. The vigorous and progressive state of audio technology at this time will surely be matched by the growth and contributions of the Society during the next two decades of its existence.

For further information on AES membership, write to: Audio Engineering Society, Room 428, 6 East 42nd Street, New York City, 10017.

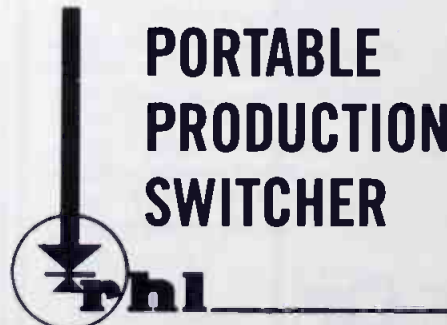
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# NAB Represents Broadcast Interests

While you can't always agree with the National Association of Broadcasters, you must recognize that without their concerted efforts over the years there might not be the sound business reason for being an owner today.

In each decade of broadcasting history there have been any number of challenges for owners, managers and engineers. Some challenges nudge the state-of-the-art slowly uphill. Others threaten the existence of stations.

The voice of broadcasting constantly thunders out of Washington when the NAB's Vince Wasilewsky spots another derailing FCC proposal. Trouble is, not enough of the broadcasters themselves make their individual voices heard.

The NAB started in a modest enough way with a handful of members, back in 1922. A non-profit organization, its goal was "to foster and promote the development of the arts of aural and visual broadcasting in all its forms: to protect its members in every lawful and proper manner from injustices and unjust exactions; to do all things necessary and proper to encourage and promote customs and practices which will strengthen and maintain the broadcasting industry to the end that it may best serve the public."

Association activities center on this aim, and today NAB has

among its members over 3,800 radio and television stations throughout the 50 states.

## Function of NAB

The function of the National Association of Broadcasters is to represent the industry before Congress, at the White House and before administrative agencies. It has been the channel through which the industry has been moved to alert the public to the effectiveness of radio and television, both as informational and entertainment media and as a means to help move the nation's goods and services. In this latter function it proves to be a very important source in stimulating and boosting the national economy.

Another vital function of the NAB is to oppose schemes to convert the American system of broadcasting from a powerful means of free communication into a medium of special interest enjoyed by a privileged few who can pay for their programs. In its stand against pay television, the Association has had the general support of the public and the leaders throughout the country.

## Goals Achieved

The NAB also has been instrumental in promoting various activities leading to the betterment of the communications industry. Some of

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**RECEIVERS**

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All plug-in sealed modules measure only 1½" x 1⅞" x 4".

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**DATATONE TRANSMITTER:** Designed to bridge a 600 ohm transmission line with less than 1 db loading and through contact closure deliver an undistorted tone signal level of 1 Milliwatt.

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2. Upholding the American system of broadcasting, free from government censorship.

3. Combatting discriminatory legislation proposals.

4. Obtaining more liberal acceptance of radio and television coverage of public proceedings.

5. Improving the industry's relationship with public service groups.

6. Achieving fair labor relations laws and wage-hour regulations.

7. Improving the efficiency of broadcasting operations by gaining authorization by the FCC for remote control for radio and television stations, drafting engineering and recording standards universally acceptable by the broadcasting industry, and introducing simplified program and engineering logs which meet FCC requirements.

Subscribers who are eligible consist of any individual, firm or corporation engaged in the operation of a TV broadcast station or network, holding a construction permit for a television broadcast station in the United States or dependencies. Subscribers are subject to approval by the Television Board of Directors. Again—no subscription is given for each station and/or network.

Affiliate subscribers are composed of individuals, firms or corporations engaged in the production or distribution, lease or sale of recorded products recorded programs for television presentation subject to approval of the Television Code Review Board, which a committee of not more than nine members, all of whom are subscribers to the Television Code. Appointed by the Television Board, they may include one member from each of the subscriber nationwide television network. Meetings shall be at least twice a year on a date determined by the

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**T-40 Console**  
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Also available:  
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airman.  
The National Association of Broadcasters also accepts associate members in fields allied to

broadcasting.

Further information on the NAB may be obtained from its Washington headquarters at 1812 K Street, N.W. Washington, D. C. 20006.

## Educational Broadcasters

The National Association of Educational Broadcasters has refuted the predictions of government surveys: their portion of the communications industry is growing more rapidly than any other.

Trouble is, the national association name often does not fit its membership. There are those who want to be known as Public Broadcasters, and they are better known now that "Sesame Street" and "Misterogers" have made their way into millions of homes across the country.

But the membership also includes over-the-air educational radio, campus limited radio, Instructional TV Fixed Station, Closed Circuit, Instructional TV and on and on.

With this diverse membership and through the leadership of William Harley, the NAEB has grown into one of the largest associations in the broadcast-communications field. In fact, while some refer to it as the "little NAB," the national conventions would lead you to believe that there are none larger.

The convention this year will be held in October in Las Vegas.

The need for strong, local community-based programming in public broadcasting, the crucial role that educational broadcasters must play in the educational structure of American life and the ability to change are all points president Harley will stress in the '70's. Harley warns that "if distasteful realities are what community involve-

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- Solid-state Circuits ■ Price: \$219.95



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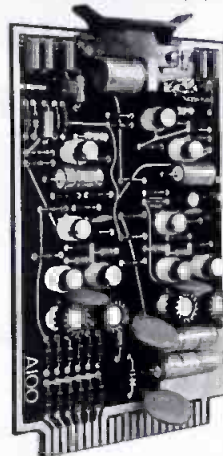
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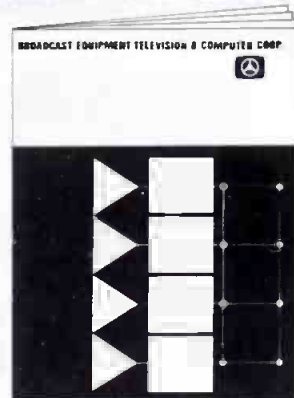
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Reads Adjacent Channels.  
Covers 2 to 13 in one continuous range.  
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Indicates average signal level.  
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can be added later when required.

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2 Units ..... @ 299.50  
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INDICATES PEAK LEVELS  
READS ADJACENT CHANNELS**

Built to the same high quality standards as our regular FS-3 Series but does not have the extra UHF or Super-Band tuner. (Either a UHF tuner or Super-Band tuner can be factory added at a later date if required.)

Will work with our Low Frequency Adaptor, extending range down to 5 MHz.

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ment yields, then that is the arena in which we must operate.

Harley emphasises that educational broadcasting can be a major instrument for the people's participation in the conduct of their affairs. "Such participation," he says, "can range all the way from the initial efforts to understanding problems, trends, and issues through efforts to identify and define alternative approaches and solutions. Every educational radio and television facility must be educational, public and community oriented. To expect less of ourselves is unprofessional. To do less is to fail."

And it was just two years ago when FCC Chairman Dean Burch told an NAEB convention audience, "Do not strive to compete with the commercial broadcasters for the maximum audience. Do your own thing. Don't play a numbers game." Meanwhile, just as John W. Macy, Jr. has warned, the educational, public broadcasting future is restricted mostly by funding. This condition is bound to improve, but that end is not yet in sight.

Information on the NAEB membership qualifications may be obtained by writing to: National Association of Educational Broadcasters, 1346 Connecticut Avenue, N.W. Washington, D.C. 20036.

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**Special Group  
For FM Stations**

The National Association of F Broadcasters (NAFMB) was formed by a group of independent FM broadcasters to deal with special problems of the FM broadcast industry. It is a non-profit organization devoted to the promotion and development of FM radio.

The Association has been involved in projects related to the FM industry such as—support for the Federal Communication Commission's separate programming policy for combined AM and FM operations; launched campaign for car radios; set in motion "all-channel" legislation which would require that all radio sets sold in the U.S. be capable of FM reception. These are merely a few of the efforts being initiated under the leadership and the active interest of NAFMB members.

The Association offers continuing services of research, program information, promotion, engineering, management and FCC liaison specifically related to the FM industry.

Monthly dues are based upon gross income. Gross income is defined as all income resulting from air time sales on the main FM carrier.

**For Information on the NAFMB**

You may obtain more information on the NAFMB by writing to the National Association of F Broadcasters, 420 Madison Avenue, New York, N.Y. 10017

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Infinitely variable range of 10-165 ns. In 5 ns. steps, selectable by switches, with fine trim of ± 4 ns. by screw adjustment. Cascade with fixed delay boxes of 50, 200, 500 and 1,000 ns. 75 dB—fully-equalized—insertion loss .1 dB. In service at all three networks, numerous stations.

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Complete literature and prices on video delays (boxed and PCB modules)—pulse delays—pulse cleaners for under- and over-shoot—low-pass video filters from

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**Television Equipment Associates**  
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# NEW PRODUCTS

(circle number on reader service card for further information)

## September Reader Service Card Good For One Year

### Audio-Video Recorder Synchronizer

Designed to synchronize an audio tape recorder (ATR) to a quad or slant track video tape recorder (VTR), or another ATR, the ECO BE 450 Synchronizer keeps two mag tapes in frame to frame lock regardless of normal tape stretch or slippage.

The Synchronizer compares identical SMPTE edit codes recorded on any two mag tapes: quad, slant track, sprocketed or unsprocketed audio. If the tapes are within 30 seconds of synchronization, the BE 450 automatically adjusts control voltage to one of the recorders until tapes are in perfect sync. It then keeps the tapes in a frame to frame lock.

The BE 450, with identical SMPTE edit code indexing on each tape, can provide exact synchronization between ATR and VTR tapes.

Circle Number 169 on Reader Reply Card

### Automatic Film Chain Light Control

Beston Electronics, Inc., a company specializing in operational problem solving equipment, has developed an automatic film chain

light level control and a unit that will display color vectors on your oscilloscope or waveform monitor.

The film chain control unit corrects for film and slide density changes. The servo operated neutral density wheel keeps the video level virtually constant with no change in color hue.

The new model 531 vector display provides a vector presentation of NTSC or NTSC compatible chroma. This polar coordinate type display allows operator to obtain correct phase and amplitude relationship of the chrominance signal.

Beston also manufactures a long line of broadcast and closed circuit amplifiers.

Circle Number 170 on Reader Reply Card

### Audio Consoles, Control Room Equipment Furniture

Broadcast Electronics, Inc., manufacturers of the Spotmaster Tape Cartridge Systems, announce the availability of a complete line of audio consoles and modular equipment furniture.

The line of quality audio consoles includes 5 and 8 channel, monaural or stereo systems. All console mixing inputs are supplied with preamplifiers, with provision

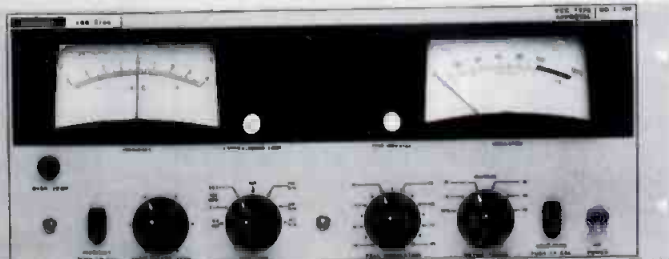
(Continued on page 106)

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FREQUENCY  
MODULATION

# monitor

TBM-3700  
\$1350

Built in calibration  
mono/stereo add on  
am fm s/n and  
remote metering  
complete information  
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OMAHA, NEBRASKA, 68102 TELEPHONE (402) 342-2753.

September, 1972

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The perfect tone arm for the finest turntable! The RUSSCO TA-12 all metal, anti-skating tone arm — only \$49.00

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RUSSCO's MONITOR MASTER amplifier gives you clean sound in a trim standard 19" rack size... Quick installation & easy service with plug-in P.C. boards. A trouble-free Powerhouse! only \$210.00

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for use in low or high level input  
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Electronic FET switching of  
input channels to program and au-  
dition buses is a design standard on  
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uators.

The control room furniture in-  
cludes a single and dual turntable  
or audio accessory pedestals, con-  
sole desk-top section that may be  
utilized in conjunction with the  
turntable pedestals, or with sup-  
porting tubular metal legs.

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Md. 20910. Refer them to this page  
number and issue date of Broad-  
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### Modular Audio Equipment

**ROH Corporation, 200 Series,**  
offers a modular audio equipment  
product line designed for the  
broadcast industry. Audio modules  
include frequently used equipment  
such as preamplifiers, power am-  
plifiers, and line amplifiers, as well  
as system oriented products like an  
AGC amplifier, distribution ampli-  
fiers, and a solid state switch ma-  
trix.

All modules are compatible with  
a choice of different enclosures or  
unenclosed module socket assem-  
blies. The product line includes the  
necessary accessories for system  
construction.

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### Pulse Cross TV Monitor

**Ultra Audio Products** introduces  
a low cost video monitor incorpo-  
rating virtually every desirable fea-  
ture: Pulse cross and normal dis-  
plays, underscan, 10MHz. re-  
sponse, built-in audio, variable  
bandwidth, 9" diag. screen, d.c res-  
toration, external mixed-sync. and  
vertical sync. inputs. The PC-95 is  
offered unmounted, in carrycase,  
or singly or 2-across in rackmount.

It will also mount side by side with  
the low cost VW-O waveform  
monitor.

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KCIM	KHOU	WRUF
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WDAE	WIRK	WSAV
WDAK	WIVK	WSEV
WDBO	WJCW	WSMB
WEEB	WJDX	WTAE
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BROADCAST ENGINEERING



### Plug-in Module Broadcast Console

Fairchild Sound Equipment Corp. has developed a new approach to broadcast console design. Their new design is based on plug-in modules (with limiters on some inputs), allowing a custom approach to each console.

The modules are assembled in building block fashion, according to need. They provide for mic, medium level, high level, and remote inputs and output, communications and monitoring. Each module is a complete channel.

Modules are available individually, in kit form, or completely assembled at the factory.

Equivalent noise of -127 dBm and distortion of 0.1 percent are said to be typical of each operation amplifier used in the console. Console shells are available in standard widths up to 48 inches.

Circle Number 173 on Reader Reply Card

### Four-Channel Converter

Owners of existing two-channel stereo systems need only add two extra rear-channel speakers, in addition to the Sansui QS100, for a complete updating that accommodates all forms of four-channel sound—synthesized, matrixed or discrete—on discs, tape or FM.

The versatile QS100, now available from Sansui Electronics Corporation, combines a synthesizer, a matrix decoder, two channels of power amplification and a complete set of controls and accessory circuits for two- and four-channel stereo performance.

The synthesizer can detect the non-direct ambient information that already exists in most two-channel stereo recordings and broadcasts, processing these signals for rear-channel presentation to produce a remarkably realistic surround effect. This is enhanced by Sansui's exclusive phase-modulation technique, which propagates the sound throughout the listening space in the same way the natural, live sound field is developed.

The decoder can accurately re-

Continued on page 108)



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Outstanding sensitivity and near perfect reproduction. RIAA/NAB equalized — 0.5 mv sensitivity @ 1 KHz for +4 dbm out — Balanced 600 ohm out — minus 65 db S/N ratio — +20 dbm out max — ±1 db freq. response — Internal power supply — Table top/bracket mount. Shipping weight, 3½ lbs.



**MIC/LINE AMPS**

MLA-1 (Mono) \$68  
MLA-2 (Dual) \$96

Dual function utility amp. Inputs for mic and/or line — 600 ohm balanced outputs — mic input, —65 db for +4 dbm out — +20 dbm out max. — ±0.5 db response, 10 Hz-20 KHz — 0.1% or less dist. — Internal power supply — Tabletop/bracket mount. MLA-2, Stereo/Dual Mono. MLA-1, Mono. Shipping weight, 4 lbs.



**DISTRIBUTION AMP  
6 BALANCED OUT**

DA-6 \$95

One third the cost of comparable units. Six 600 ohm balanced outputs — Balanced bridging input — 26 db gain — +20 dbm out max. — Input level control — 0.1% or less dist. — ±0.5 db response, 10 Hz-20 KHz — Internal power supply — Tabletop/bracket mount — Shipping weight, 4 lbs.



**TAPE CARTRIDGE  
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ACL-25 \$159

Precision winding without guesswork. Dial in the minute and/or seconds desired, throw switch to run. That's it! The exact amount of tape is fed onto the cartridge hub to the second, and shuts off automatically. No waiting around, no guesswork and 1 sec. accuracy. Also has exclusive torsion control for proper tape pack and winding of various cart hub sizes. TTL digital control circuitry. Shipping weight, 30 lbs.



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## New Products (Continued from page 107)

cover and reproduce the four original channels of any compatibly matrixed four-channel recording or FM broadcast. Moving out of the experimental stage, the broadcasts are now originating from an increasing number of FM outlets throughout the nation. Matrixed four-channel discs are also being released by a rapidly growing number of well-known recording companies. In the decoder mode, Sansui's original phase-shift network design prevents the sound dropouts and confused or lost sound-source localization that plague many matrixed systems. And the phase modulators are also operative to implement and sustain the "live sound field" effect.

Circle Number 174 on Reader Reply Card

### Video Noise Meter

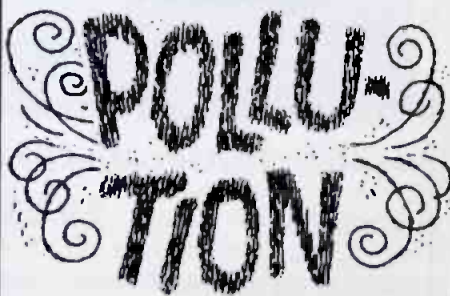
Rohde and Schwarz introduces a new all solid state Video Noise Meter for noise voltage measurements on composite video signals. Its main application is on TV cameras, film scanners, video tape re-

orders, radio and coaxial line links, TV transmitters, TV receivers and TV translators.

The Video Noise Meter, Type UPSF, is based on the same principle as its well known tube type predecessor, which is the accepted standard for cameras, video tape recorders and studio equipment. It is basically a wideband (10 Hz - 17 MHz) millivoltmeter, with two independent detectors, true rms and peak to peak calibration. The extremely wide measuring range of -85 dB, referred to the standard P and B value of 0 dB = 0.714 V, is obtained by gating out the sync and blanking pulses and measuring the remaining noise level.

In addition, standard weighting filters, low and high pass filters, permit complete analysis of the noise component. A scope output is available for this purpose. Plug-in filters for NTSC or PAL enable the use of the same instrument for different standards. A sag and tilt corrector is incorporated in the instrument. The repeatability of the Video Noise Meter is of the order

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0.1 dB, while that of equipments using a substitution method is, at best, of the order of 1 dB or more.

Circle Number 175 on Reader Reply Card

Shure Brothers Inc. has introduced a new, rugged omnidirectional dynamic microphone that provides all the features and performance characteristics required for a variety of broadcast, recording, and professional sound reinforcement applications—and does so with freedom from the problems of mechanically induced noise.

The new microphone, called the Model SM61, offers a smooth, wide-range frequency response and an extremely natural, uncolored sound. Frequency levels are held constant through varying distances between the user and microphone. This permits the performer to "work" the SM61 without variations in tone or balance.

The SM61's shock-mount design eliminates or minimizes cable, handling, and mechanical noises.

"Pop" and wind filters make the SM61 suitable for outdoor recording, public-address, and broadcasting applications. Its design protects the SM61's performance characteristics, even against a drop on its nose.

Circle Number 176 on Reader Reply Card

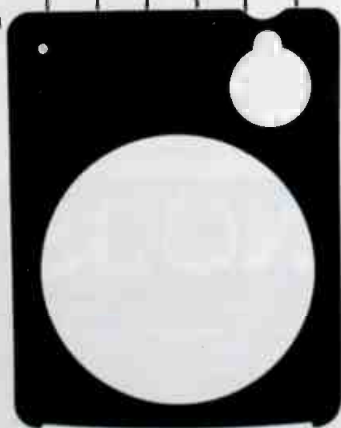
### Professional Lab Scope

The Kenwood KC-6060A Audio Lab Scope, a professional test instrument, provides an economical means of monitoring the performance of FM stations. The Lab Scope consists of a 1 kHz sine wave oscillator with variable output level from zero to 1 V rms, regulated by a front panel volume control; and a large oscilloscope with a 3-inch viewing screen for easy-to-see waveform displays up to 200 kHz.

A 5-position selector knob provides the following displays: (1) Test 0.1 V Peak-to-Peak...to

(Continued on page 110)

only  
975000000 to go



Over 25 million Fidelipac Automatic Tape Cartridges have already been sold and that means our goal of 1 billion isn't really that far away. Because being compatible with all standard broadcast cartridge

machines and available in all standard lengths, Broadcasters know Fidelipac. They

know its operating superiority, they know its true sound fidelity and they know its long-lasting life. That's why they want it. That's why they buy it. That's why it's the standard for the Broadcast Industry. Get to know Fidelipac yourself. With your help, we'll be able to say, "Only 974,999,999 to go."

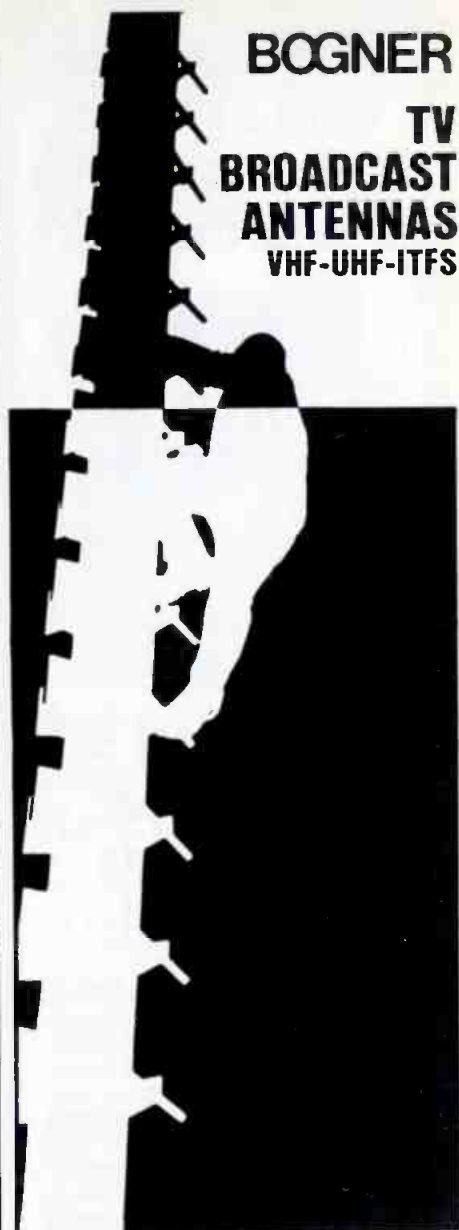
For additional information on the Broadcaster Comprehensive Fidelipac Cartridge Line, call your local Fidelipac distributor or write to



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Omnidirectional & directional, high gain, rugged slot arrays.

Available in 9 standard horizontal patterns, choice of vertical patterns, power gains to over 100 and power ratings to 10KW.

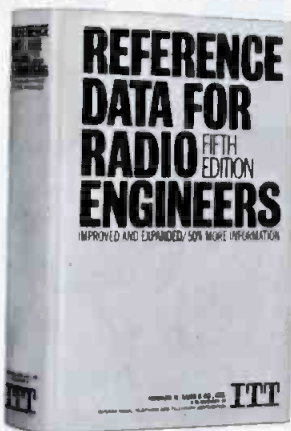
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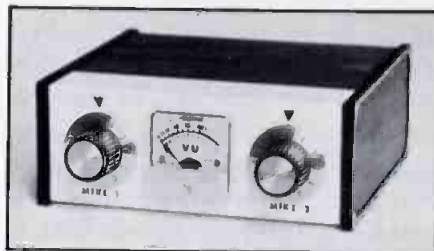
City \_\_\_\_\_

State \_\_\_\_\_ Zip \_\_\_\_\_

Circle Number 135 on Reader Reply Card

compare the voltage measurement of an input signal against a 1 kHz sine waveform. (2) Waveform Left...for left channel audio signal. (3) Waveform Right...for right channel audio signal. (4) Stereo Display...with left channel signal applying to the vertical section, right channel signal to the horizontal section. (5) FM Multipath...to check the performance of a tuner or to adjust the antenna correctly for minimum multipath reception.

Other important tests that can be made by the KENWOOD KC-6060A include checking an amplifier for linearity, frequency response and phase characteristics; testing by square wave signals to determine frequency characteristics; measuring phase difference between two signals; and testing a phone cartridge for frequency response, phase characteristics, er-



#### REMOTE BROADCAST AMPLIFIER

The type RA 303 SPORTSAMP is a compact 2 channel battery operated remote amplifier for broadcast use. In addition to the usual considerations given remote amplifier design, care has been taken to provide a unit which will also meet the difficult conditions often encountered in sports broadcasting — high background noise, limited space, and no secure a.c. power. The case size of the RA 303 is only 6 x 6 1/4 x 2 1/2 inches and weighs complete with low cost battery complement just 2 1/2 pounds. The price is \$135. Audio Engineering Co., 4112 Oak Lane, Gary, Ind. 46408

Circle Number 136 on Reader Reply Card

atic stylus tracking, transient characteristics and optimum stylus pressure.

Circle Number 177 on Reader Reply Card

#### Tape Eraser

"Taberaser" is the name given to the new tape eraser introduced by Taber Manufacturing & Engineering Co. to the television and recording industries.

The new "Taberaser" is precision made to erase audio, video, instrumentation tape, and magnetic films from 150 mil to 2" widths. The new eraser is designed so that tapes on reels or in cartridges can be degaussed without the necessity of unpackaging.

According to Taber, an added feature of this tape eraser is that the field is automatically diminished slowly at the end of each 30-second cycle, thereby eliminating the well-known "Thump". Between 30Hz and 15KHz the depth of erasure is 76db below saturation.

The unit will not overheat and is kept below 71°C by the "Taberaser's" Automatic Heat Limiting circuit, which activates an internal blower until the unit returns to the correct operating temperature.

The 45-lb. eraser measures 6-1/4" high by 14-1/8" wide and 16" deep. Power requirements are 95-135 VAC, 58-62 Hz, 1 phase, 3 wire and uses less than 8 amps under any condition.

Taber Mfg. & Engineering Co., based in San Leandro, California anticipates the "Taberaser" will fill a real need in the television and recording industries for a preci-

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n, low-cost eraser. They expect to be received as enthusiastically as their tape heads and STL test des.

Circle Number 178 on Reader Reply Card

### Super 8 Projector

A new, sound, super 8 motion-picture projector, featuring a total new design in operation and appearance, has been announced by Eastman Kodak Company.

The horizontal, low-profile design of the Kodak Supermatic 60 Super 8 projector eliminates the bulky inconveniences of many conventional upright projectors. It provides instant loading of projection cartridges, allows movies to be shown on a large screen or on a built-in Kodak Ektalite projection screen, and makes the projector ideal for individualized study or use in carrels.

Circle Number 179 on Reader Reply Card

### Dual Channel 5-Mixer Console

McMartin Industries, Inc., Omaha, Nebraska, announces the availability of a dual-channel version, the Model B-503, supplementing the previously available B-501 (monaural) and B-502 Stereo five-mixer audio control consoles.

The B-503 features dual program channel capability at a nominal +8 dBm, 600 ohm balanced output. The B-503 provides extreme input flexibility with plug-in modules to accommodate microphone or high-level input requirements for each of the five input mixing channels. Two inputs per channel are availa-

ble through interlocked pushbutton preswitching.

Each program channel delivers frequency response characteristics of  $\pm 0.5$  dB, 30-15,000 Hz with THD of 0.5 percent or less at a +18 dBm output level.

Individual VU meters for each output channel are included.

The completely self-contained unit includes 4-watt RMS monitor amplifier output and complete cue facilities.

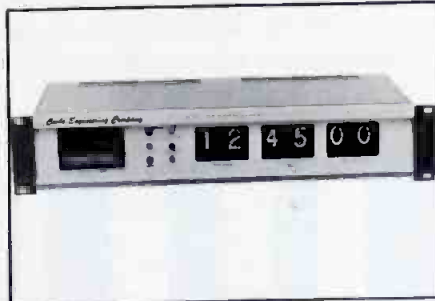
The B-503 is particularly suited for TV production and subcontrol applications.

Circle Number 180 on Reader Reply Card

### Broadcast Cassette System

International Tapetronics Corporation has available a new, broadcast oriented cassette system. The

(Continued on page 118)



### COOKE MODEL 724 DIGITAL MASTER CLOCK

Drives digital readouts and/or impulse slave clocks. ADVANTAGES: — Long-life nixie readout display in hours, minutes, and seconds — Time base is 1 MHz crystal oscillator — Accepts 1 or 5 MHz external reference — Display 12 or 24 hours — Accuracy of 1-second per month or better — Operates from 12 VDC standby battery — 115/120 VAC, 50/60 Hz.

COOKE ENGINEERING COMPANY — 900 Slaters Lane, Alexandria, Va. 22314 — 703/548-3889

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# TRANSLATORS

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Television Technology Corporation

9150-B Brookville Road, Silver Spring, Md. 20910  
(301) 588-8836

Circle Number 138 on Reader Reply Card

Spotmaster

## The Top Turntable



... is Spotmaster's new Studio Pro B, offering instant start and the tightest cue potential in the industry. Heavy duty hysteresis motor drives a 6½ lb. machined aluminum platter in a solid-cast aluminum chassis for inaudible rumble, lowest wow and flutter. Indicator lights tell speed (33 or 45) at a glance, and speeds can be changed with platter in motion. Detachable mounting plate (accepts any tonearm), integrated 45 spindle and neutral cue position are other features ... all for just \$198.00.

## And an Outstanding New Tonearm

... is the Spotmaster stereo BE-402 (mounted on Studio Pro B above), which combines reasonable cost, rugged design and professional specs. Features include high compliance for modern stereo cartridges, minimum tracking error, anti-skating, low mass, quick-change head, easy single-hole mounting ... for only \$54.95.

Complete line of Gray professional arms and all broadcast quality phono cartridges also available at competitive prices.

## And the Best Turntable Preamp



... is our new Model TT-22, all solid state, modular, stereo equalized and completely self-contained. Features separate balance/level controls, high output (+8dbm), phone jack ... plus switchable and removable rumble and scratch filters. Both stereo and mono models are available, starting at \$121.50. Our time-tested TT-20B mono preamp and PR-4C power supply (will power up to 4 preamps) are also available, providing top performance at economy prices.

## ...all from Spotmaster

PLUS a complete range of accessories for both turntable and cartridge tape operation. Write for details.

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(301) 588-4983

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- program logging
- cartridge systems
- reel systems

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PLANT: 631 J PLACE, PLANO, (214) 424-8585

Circle Number 140 on Reader Reply Card

**100. AMCO ENGINEERING CO.**—Amco's Color Catalog 310-A, and all new Broadcast, Monitor & Control Console Catalog 400 for the broadcast and TV studio is now available. The selection of the equipment in the Amco system is unique in itself. Each category of equipment—as an example, low silhouette monitor—has a base unit identified by number. To this one has a wide variety and selection of standard part arrangements that mount on the base unit. These various combinations, in turn, are given a console number. Thus, ordering is made extremely easy by merely ordering a given number for a complete console and adding digits, -2, -3, or -4, as an example, where multiple units are desired.

**101. AMPHENOL BARNES DIV.**—Barnes line of sockets, contactors and carriers for solid state devices is described in a new 24 page catalog. The new catalog features an array of rugged easy-to-select sockets, carriers and contactors. Quick selection charts offer visual and preliminary specification by sight, number of pins, method of mounting, material used and part number. Barnes catalog separates flat pack, DIP and TO type sockets into two categories—test sockets and production sockets. Contactor and carrier charts are aligned to provide instant cross referencing. The Barnes contactors and carriers offer the ability to test a solid state device without risking damage to the device. Carriers provide the best method of shipment and assure that a device can be tested without removal from the carrier.

**102. ANACONDA WIRE AND CABLE CO.**—Splicing of new Plus-2 cables, designed for use with T-Carrier systems, is illustrated and described in a bulletin by Anaconda. Plus-2 contains isolated send and receive units and features

TAPECASTER

## NEW X-700RP

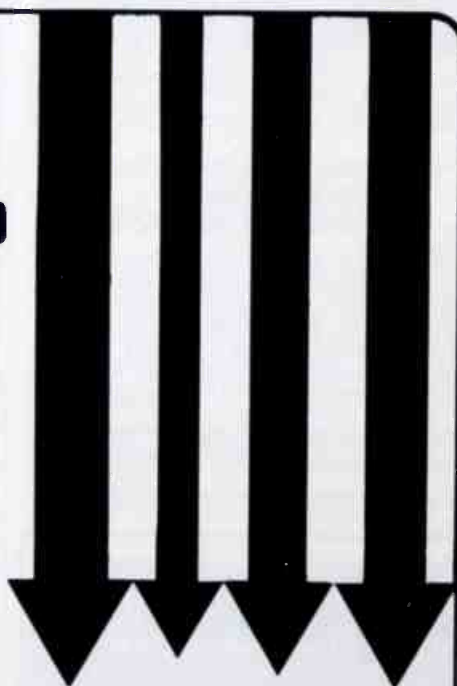
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### FREE Catalog

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Circle Number 142 on Reader Reply Card  
**BROADCAST ENGINEERING**

tra pairs for interrogation of re-  
aters, and for voice order cir-  
ts. Procedures include splicing  
both the standard filled core  
struction, and non-filled con-  
struction, of the cable. Protection  
ethods are extensively explained  
direct burial, aerial and pedestal  
el end splices of filled and non-  
ed core Plus-2 cables. Prepara-  
n, splicing of cable to repeater  
bs, and encapsulation of these  
ices is fully described in a sepa-  
e section, which also lists recom-  
ended encapsulating materi-  
s. The bulletin also describes  
ecautions applicable to shield  
nding.

**103. ASARCO**—A new six-page  
lder describes application of  
sarco's Acoustilead® for machin-  
y enclosures and supplemental  
alls for noise reduction. Acousti-  
lead—1/64-inch thin lead sheet—is,  
ound for pound, the most effec-  
ve barrier for airborne noise. The  
lder explains why Acoustilead is  
prime sound barrier; describes its  
se of use; and lists the compo-  
ents of an effective machinery  
nclosure. Panel construction and  
stallation and the construction of  
ound-rated doors and supplemen-  
l walls are treated in detail. Spe-  
ific ways to work with leaded  
supplemental walls, and how to  
eat completed joints are dia-  
ramed. Ways of improving exist-  
g, inadequate walls and construc-  
on of new walls are described and  
e resultant reductions in trans-  
mission loss charted.

**104. BIRNBACH CO.**—A bro-  
chure on the expansion of Birn-

bach's line of retractile cords is  
now available. The expanded line  
includes power cords, shielded and  
unshielded communication cords,  
cord sets and miniature cords.  
Lengths retracted, 1 to 4 feet. Ex-  
panded lengths, 6 to 25 feet.

**105. COLORADO VIDEO, INC.**  
—The CVI 1972 Short Form Cata-  
log lists 27 unique video instru-  
ments including data display de-  
vices, video analysers, video disc  
recorders, special effects, image  
enhancers, test and sync genera-  
tors, and TV-to-computer interface  
equipment.

**106. CONRAC CORP.**—A bro-  
chure describing the SNA Series of  
all solid-state television monitors,  
ranging from 9-inch through 23-  
inch screen sizes is now available.  
Included in the brochure are di-  
mensional drawings of 9-, 14-, 17-  
and 23-inch units in cabinet, chas-  
sis and rack mount configurations.  
Features are listed, a general de-  
scription is included and complete  
technical specifications are de-  
tailed. The SNA Series of mono-  
chrome television monitors are  
currently in use in professional  
broadcast, industrial, educational  
and data display applications.

**107. EASTMAN KODAK CO.**—  
"Silver Recovery with the Kodak  
Chemical Recovery Cartridge,  
Type P and Type 3" is the new title  
for the extensively-revised Kodak  
Publication No. J-9. The pamphlet  
outlines procedures for recovering  
silver from photographic process-  
ing solutions, using the Kodak  
*(Continued on page 117)*

# AUDIO SWEEP GENERATOR

## \$108.09

Available as Kit \$84.85



Continuously  
sweeps the entire audio  
range **ELECTRONICALLY!**

Or use it as a function generator.

### SPECIFICATIONS & FEATURES

Functions: sine, square, triangle, positive and  
negative sawtooth with variable  
slope control

Controls: range, frequency, functions, at-  
tenuator, sweep speed (VCO fre-  
quency), VCO amplitude

Frequency Range: 0.02 Hz. to 20 KHz.—all  
functions

Dial Accuracy: better than 2% linear

Power: 115 vac. 50/60 Hz.

Output Impedance: 50 OHMS

Output Voltage: 0-10 volts, peak-peak

Sweep Speed: variable 1/25 sec.-10 sec.

Sweep Width: continuously variable  
maximum: 20Hz-20KHz.  
minimum: zero!

Waveform Distortion: less than 1% (sine,  
square, triangle)

Frequency Response: 20Hz-20KHz  $\pm 1$  db

Frequency Stability: 0.1% per °C (0-50° C)

Square Wave Rise Time: less than 80 ns.

Triangle Linearity Error: less than 0.5%

VCO Access: use the ASG-200 to trigger  
other equipment, or use other  
outputs to trigger the ASG-200!

Added Features: smooth continuous sweep,  
no external inputs needed,  
short-circuit proof!

Dimensions: 4 3/4 in. high, 8 1/4 in. wide,  
6 1/2 in. deep

Weight: 48 ounces

*Purchase price includes factory as-  
sembly and testing, two year warranty  
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if not satisfied for any reason!*



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3/72

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# console

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the Director of Sales  
Dept. B-50



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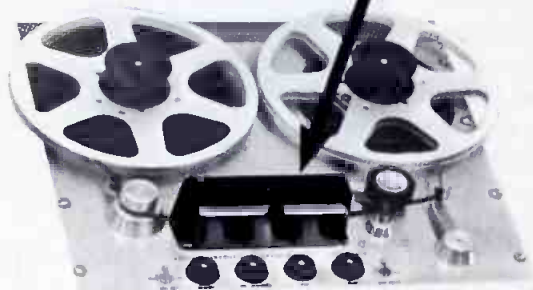
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## Microwave Study Is Available From FCC

The concluding portion of a two-part microwave study carried out for the FCC by Communications and Systems, Inc., has been completed and is now available from the National Technical Information Service.

Entitled "Frequency Assignment Techniques for Microwave Systems," Part two is concerned with the mechanics required to implement Part I. It includes material on data gathering, identification of specific data to be assembled, and storage, processing and analysis. The study emphasizes the need for a uniform, comprehensive, and current data base.

The first part of the study analyzed present microwave utilization and frequency assignment techniques in the bands allocated to the fixed point-to-point radio services and recommended changes leading to more effective use of the spectrum. It also recommends that the FCC play a more active role in determining spectrum usage through the medium of a microwave spectrum management task force.

Copies of Part two may be purchased from the National Technical Information Service, Springfield, Va. 22151. When ordering the report, specify the following title, accession number and price: "Frequency Assignment Techniques for Microwave Systems" Phase II - PB207536 - \$3.00.



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Load cable, wire, rope or anything on reels onto Roll-A-Reel for easy, smooth pay-out or take-up.

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All are drilled for optional auxiliary ball-bearing side rollers, \$7.50 per set extra.

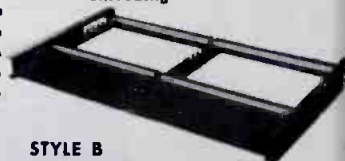


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# Motion Picture/Television Engineers

The SMPTE (Society of Motion Picture and Television Engineers) is a non-profit organization of people concerned with the engineering aspects of motion pictures, television, instrumentation, high-speed photography and the allied arts and sciences.

The membership includes engineers, scientists, technicians and executives in motion pictures, television, instrumentation and high-speed photography, educators and students, and workers in many allied fields.

The objectives of the Society are: (1) To provide an organization and a climate in which persons of like interests can meet, exchange ideas, and present technical papers for the advancement of, and education within, the sphere of interest of the Society; (2) To provide a technical journal for the publication of papers and the maintenance of a record of progress; and (3) To foster the advancement of engineering technology and to sponsor lectures, exhibitions and conferences designed to advance the theory and practice of engineering

The Society of Motion Picture Engineers was founded in 1916, and in 1950 "Television" was added to its name to recognize the expanding segment of its activities.

In 1948 an engineering committee on high-speed photography was organized in the Society to foster scientific development and to encourage better dissemination of knowledge in this field. This program has expanded to encompass numerous aspects of photo-instrumentation, including photography and pictorial communication for missiles, satellites and space vehicles.

From 24 members in 1916, the Society has grown today to about 1000 members. Although the majority of its members live in the United States and in Canada, nearly 800 are located in over 60 other countries throughout the world.

## **SMPTE Journal**

The Journal of the SMPTE is

sent to all members monthly. It contains technical articles keyed to the interests of Society members, new product information and industry news.

Over the years, the SMPTE Journal and its predecessor, the Transactions of the SMPTE, have become the principal technical and historical reference of the industry. Journal papers of special interest or importance are reprinted and made available from Society headquarters.

From time to time, reports and manuscripts by the engineering committees are published as special bound volumes, such as: Control Techniques in Film Processing; Elements of Color in Professional Motion Pictures; Proceedings of the Fifth International Congress on High-Speed Photography; Principles of Color Sensitometry; Special Effects in Motion Pictures; and Motion-Picture Projection and Theatre Presentation Manual. A list of available publications may be obtained by writing to SMPTE Headquarters.

## **Sustaining Members**

Sustaining memberships are available to individuals, firms or corporations who subscribe substantially to the financial support of the Society. Names of sustaining members are published each month in the Journal. The Society's Directory includes a descriptive listing of each the sustaining members.

## **For Information on the SMPTE**

If you are interested in becoming a member of the SMPTE or would like more information write to: Executive Secretary, Society of Motion Picture and Television Engineers, 9 East 41st Street, New York, N.Y. 10017.

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**SEND YOUR  
LETTERS TO THE EDITOR  
to  
Broadcast Engineering  
1014 Wyandotte  
Kansas City, Mo. 64105**

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## Special Engineers' Group

Since its beginning, the SBE objectives have been to: Provide a forum for exchange of professional discussion of mutual broadcast engineering problems; to provide for and to maintain professional recognition of members; to group together broadcast engineers generally in a body to assist in the professional education, and to raise the technical standards of broadcast engineers and to advance the broadcast technician and novice; and to encourage a continuing interest in the broadcast engineering field by students of technical and engineering courses on broadcasting.

## **Membership**

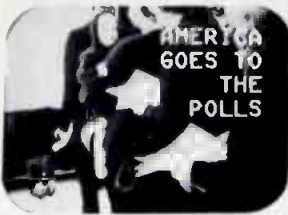
Because the SBE doesn't come

on as strong as some national organizations, membership has not grown by leaps and bounds. Yet every time you count them up, it's growing. More than 1,600 members at this time.

The grades of membership are: Student, Associate, Charter, Member, Senior Member, and Fellow. Qualifications for member grade are at least a First Class Phone License or equivalent and adequate experience.

Details for membership are included in the "Constitution and Bylaws" and may be received by writing to: The Society of Broadcast Engineers, PO Box 88123, Indianapolis, Ind. 46208.

Current president of the SBE is Bob Flanders, chief engineer of WFBM-TV, Indianapolis.



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GOES TO  
THE  
POLLS

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CANERO	132,341
ULMANSKY	78,965
FINESTEIN	62,986
DULANEY	12,342
FREDERICK	5,987

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### DATAVISION, INC.

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Specify Hannay electric rewind reels to handle long lengths of live power cable or for coaxial cable storage. Positive chain and sprocket rewind mechanism assures smooth, dependable re-winding at the touch of a button.



Send for complete catalog of power and manual rewind reels to handle cable.



# HANNAY REELS

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## NCTA Fills The Bill

Back in the 1920's there was quite a stir over a new strange device called a radio (crystal radio, if you prefer). And as time went on that fledgling industry grew into a giant.

Cable television was on the scene long before gained any recognition. But it grew... and grew. It was represented by an association called the National Cable Television Association.

But when CATV finally burst into full bloom, the prophets were quick to speak of wired cities and blue sky industry predictions too numerous to mention here. Suddenly, many were struck by the extra far sighted potential of cable, especially broadband two way cable. Everyone wanted into the act.

With the waters muddied, with directions tangled with a shortage of technical help, and a multitude of new demands upon them, the cable operators turned ever more continuously to their national association.

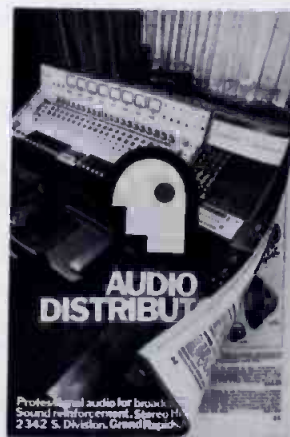
It is possible that without the NCTA the industry might coast a bit further. It's possible, but not probable.

Every year the word is either "promise" or "potential". The final equation seems impossible to solve mainly because of the excessive number of unknowns.

For more information on the NCTA, write to: National Cable Television, Inc., 918 Sixteenth Street N.W., Washington, D.C. 20006 or call 202-466-8111.

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(THIS IS NO BOOK FOR AMATEURS.)



It's crammed with pictures, poop, and prices. Features top grade electronics from around the world. Strictly for professional audio, broadcast, television, recording and motion picture moguls. We specialize in fast, off-the-shelf delivery on recorders.

Duplicators. Microphones. Turntables. Reverbs. Amplifiers. Attenuators. Equalizers. Compressors. Speakers. Broadcast and recording consoles. Write for your free copy of our catalog today.



### AUDIO DISTRIBUTORS, INC.

2342 S. Division Avenue  
Grand Rapids, Michigan 49507

Circle Number 151 on Reader Reply Card

## ch Data

(continued from page 113)

chemical recovery cartridges type and contains a new section devoted to the recently-introduced type 3 cartridge. The type 3 cartridge was designed for the convenience of those users whose volume requires frequent changes of five-gallon, type 1-P cartridges. This publication explains how to install and use this equipment and how to use Kodak silver estimating books. A handy table continued the previous J-9 publication defining the type of cartridge recommended for particular types of applications has been greatly expanded in the revised J-9. Specific cartridge capacities (in gallons) and minimum flow rate (in milliliters per minute) for maximum efficiency are included in the table.

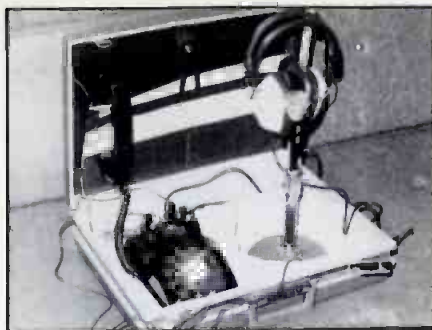
## 10. MAGNAVOX CATV DIV.

A new and comprehensive Axial Connector Catalog and the list is now available. The 18-

page listing includes nearly 200 connectors, terminals, adaptors and accessories. It is divided into two basic sections. Section I calls out Trunk and Distribution Connectors according to cable type and application. Section II calls out fittings according to application, fitting type, then cable type. Included are Magnavox newest 990 Series high RFI integrity connectors and some very novel and useful adaptations of the lowly "F" connector.

## 121. TELEX COMM. DIV.—A

new catalog for the Telex broadcast and industrial line of professional magnetic tape equipment is now available. The comprehensive catalog covers the complete line of recorder/reproducers, reel and cartridge transports, amplifiers, pre-amplifiers and accessories. The 20-page, two-color brochure gives product information, specifications and ordering information.



## RBT-500 PHONE LINE REMOTE UNIT

Unscrew mike section on any telephone, remove carbon mike, clip RBT-500 to these terminals, and you're ready to broadcast. Interface voice coupler built in; connect directly to telephone line. Why lease when you can own for just \$395.00, complete with attache case. AC or battery operation. Lightweight. **AMERICAN ELECTRONICS, INCORPORATED**, Box 458, Saint George, South Carolina 29477 (803) 563-4374.

Circle Number 154 on Reader Reply Card

A new and comprehensive Axial Connector Catalog and the list is now available. The 18-



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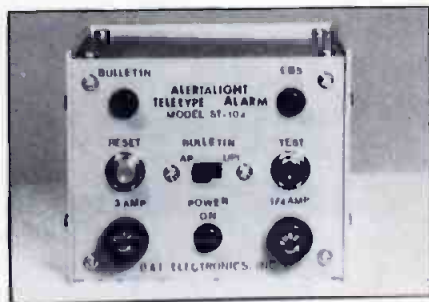


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(Continued from page 111)

cassette units are designed along the same rugged lines as the heavy-duty ITC tape cartridge machines for strictly professional broadcast applications.

The design concept provides features that will allow the cassette recorder to perform most of the functions now provided by reel-to-reel equipment and with the automatic cueing capabilities found in cartridge equipment.

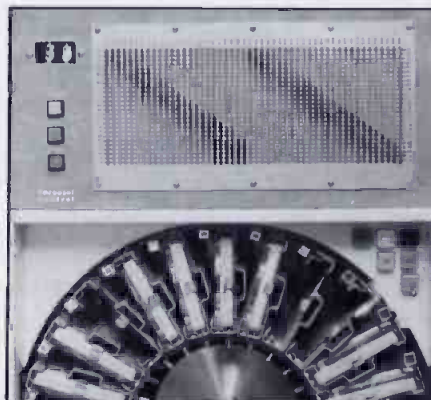
The complete line of ITC single and multiple-deck cartridge units will also be on display, including the economy Encore Series.

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**Multiplex Translator**

The **COASTCOM** Division of **Scott-Buttner Corporation** recently introduced its new **SBC-190** multiplex translator that offers significant cost and performance benefits to microwave users.

Designed primarily to provide local drop and insert of six or twelve voice frequency multiplex channels from super-groups 1 and 2 on high density microwave basebands to low density 960 MHz or 2 GHz spurs for local distribution, the **SBC-190** may also be used to relocate channel groups within the baseband itself. The **SBC-190** multiplex translator concept eliminates any demodulation/modulation equipment at the super-group, group and channel levels and results in an equipment savings to the user of 80 percent in cost over tra-



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ditional practices.

The compact **SBC-190** unit fits into two vertical spaces in a standard 19" equipment rack, features solid-state construction, and a 36 pole highly selective hermetically sealed filter combination.

Its design concept also simplifies high impedance bridging practice and provides highly stable frequency control.

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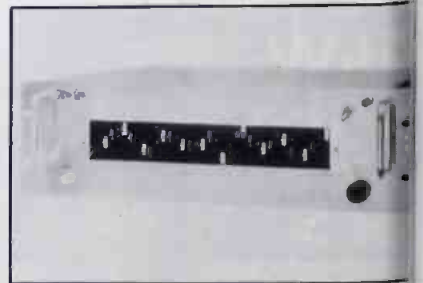
**Step Attenuators**

**Sparta Electronic Corporation** has announced new optional precision step attenuators for their entire audio console line. When the attenuators are ordered for a new console from the factory, the price is \$20 per channel monaural, \$37.50 per channel stereo. If the mixers are purchased separately from **SPARTA** for field modification on an existing board, the price is \$25.50 for monaural, and \$37.50 for stereo.

All **SPARTA "B"** - series consoles will accept the high-quality, 20-step attenuator, but the factory should be consulted about installation in earlier consoles.

**SPARTA** warrants the product for one full year, but in practice the attenuators should last for the life of the equipment. The stereo model is of concentric construction rather than ganged, allowing clearing of the stepping points. Resistance accuracy is plus/minus 5 percent.

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5	13	21	29	37	45	53	61	69	77	85	93	101	109	117	125	133	141	149	157	165	173	181	189	197	205
6	14	22	30	38	46	54	62	70	78	86	94	102	110	118	126	134	142	150	158	166	174	182	190	198	206
7	15	23	31	39	47	55	63	71	79	87	95	103	111	119	127	135	143	151	159	167	175	183	191	199	207
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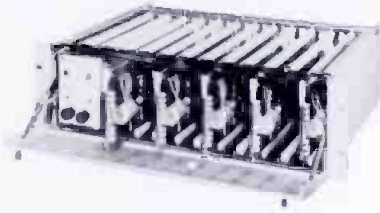


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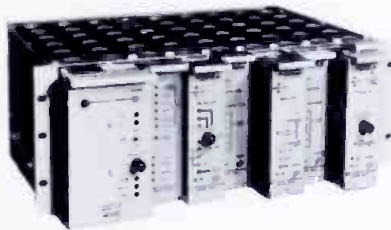
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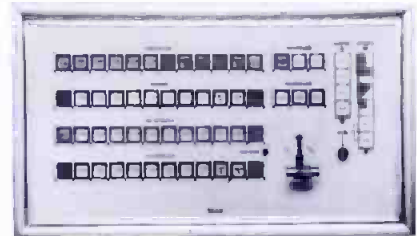
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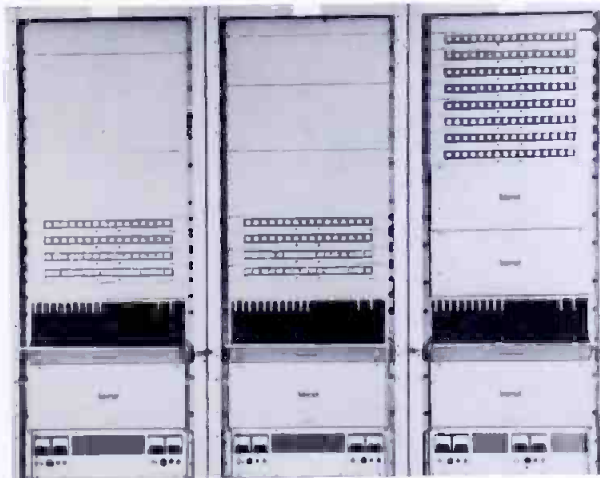
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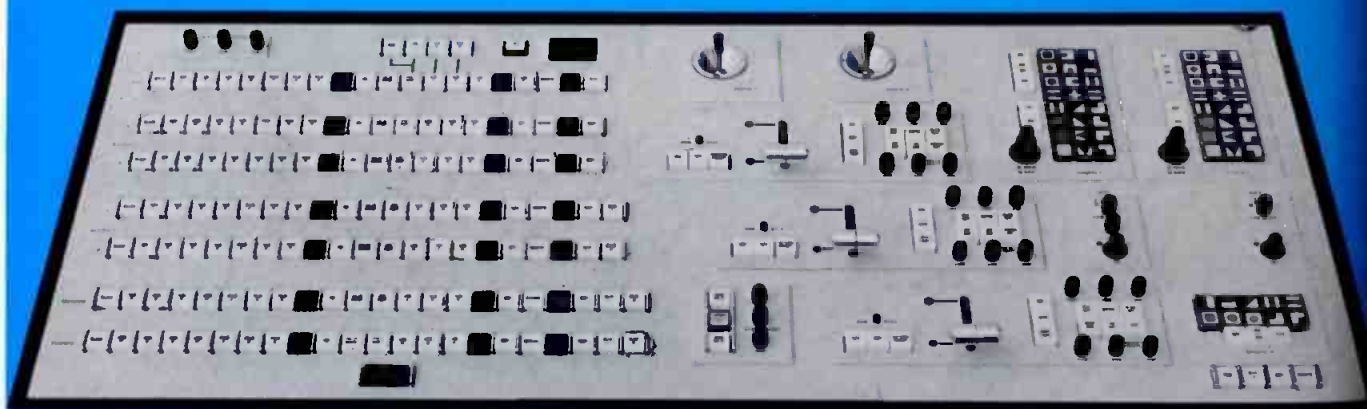
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