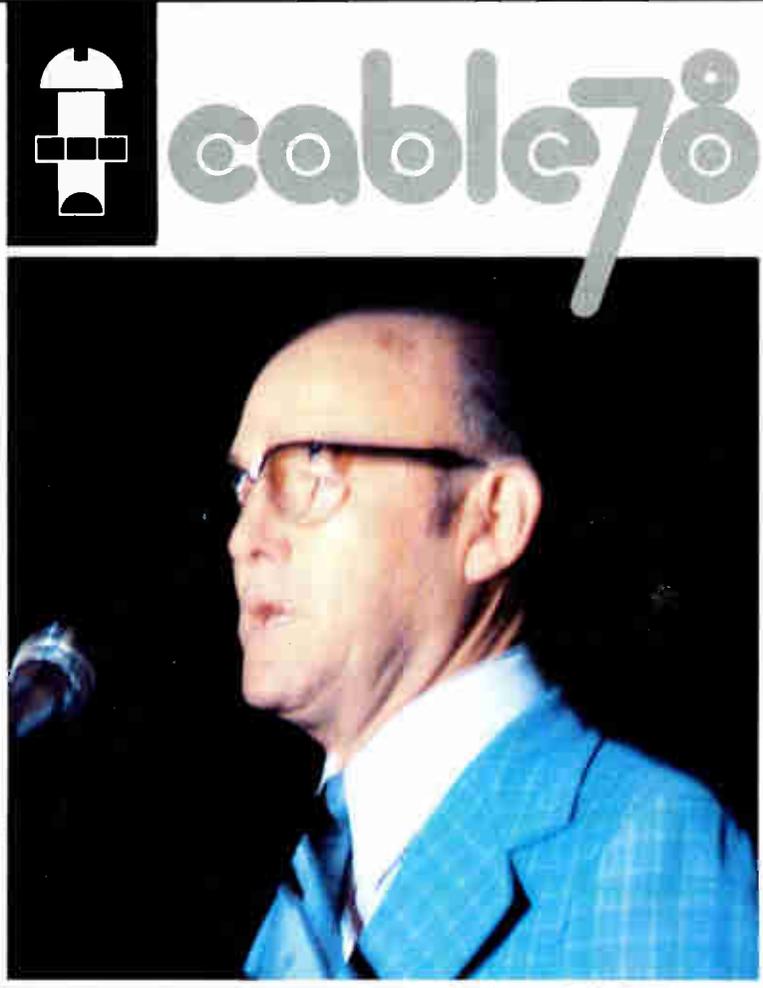


# GED

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S107 B1 3 1X  
FRED E MC CORMACK  
BOX 5221 STATE UNIV STA 33  
FARGO ND 58102  
ENGG

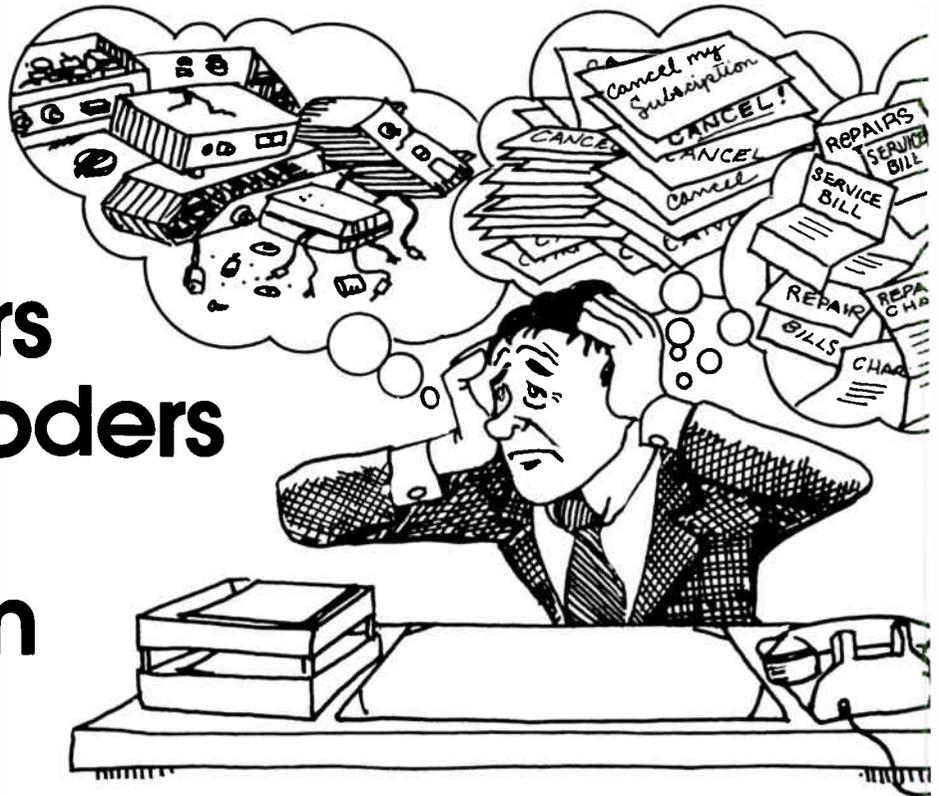
Tech Review  
ANTIOPE Teletext System



**Communications-Engineering Digest**  
Reporting the Technologies of Broadband Engineering

June 1978  
Volume 4, No. 6

# DAK converters and decoders save you more than money.



When you're looking for converters or decoders, you have to look beyond price, and look for the best in performance and reliability as well. The lowest priced terminal in the world would be a bad buy if poor performance and reliability caused frequent service problems, lost revenue and lost subscribers. You can fill your system needs without compromise, because Oak offers a wide product selection.

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Oak offers a full line of converters and decoders and converter-decoders, including: ①SCC single-channel converter, ②Econobloc 7-channel converter, ③Trimline II 35-channel converter, ④Multi-Code 35-channel converter-decoder and ⑤companion Jewel Case remote unit, ⑥Econo-Code single- and two-channel converter-decoder and ⑦Mini-Code single-channel low-band decoder. Contact Oak for all the details.

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### VSM-5A

- 4-350 MHz
  - -50 dBmV Sensitivity
  - Phase Lock
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- Performs all FCC tests except system flatness

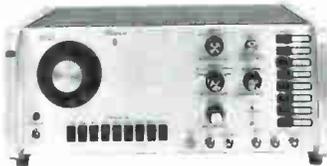
## FREQUENCY COUNT



### TFC-7

- All Channel Performance
- Stripper/Preselector Integral
- -5 dBmV Sensitivity
- Accuracy 1 part in 10<sup>6</sup>

## BENCH SWEEP



### SWEEP GENERATOR

#### VS-40Z

- 1-300 MHz
- ±0.25 Flatness
- +54 dBmV Output
- 7 Markers Available



### DISPLAY SCOPE

**DU-720**  
Large screen, 12" — AC or DC coupling P7 phosphor standard, 1 mV/div. sensitivity

# TEXSCAN'S PROOF PACKAGE!

## RADIATION KIT



### RADIATION DIPOLE

#### AFS-1

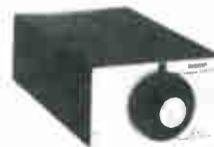
Radiation dipole kit contains antenna, fibreglass mast sections, calibration chart which includes download loss.



### BROAD BAND AMPLIFIER

#### VSX-92

Preamp has 29 dB gain from 40 to 890 MHz, with 7 dB noise figure and flatness of ±1 dB. Operates from internal rechargeable battery.



### TUNABLE BANDPASS FILTER

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Eliminate preamp overload with 3 or 5 section filters. Available with 3 or 5% bandwidth. Low insertion loss.

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### 9550T

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With all the extras that you get from Comm/Scope, you might expect our prices to be higher. Not at all. You get all our extra service along with our great cable - at competitive prices.

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in cable innovation

# GED News at a Glance

WASHINGTON, D.C.—The **FCC** has **issued** its anticipated **Notice of Proposed Rulemaking** for procedures to implement the recently-passed **pole attachment legislation**, and instructed its staff to prepare a rulemaking on telephone company ownership of cable systems in rural areas.

WASHINGTON, D.C.—A **change in the non-duplication rules**, to be implemented May 24, was **stayed by** the **FCC** pending reconsideration possibly by July.

WASHINGTON, D.C.—According to a spokesman for the FCC, the **common carrier bureau is finishing** its **draft of a policy statement on the shared use of earth stations**. A revised policy is expected to be presented to the commission soon.

NEW YORK, NEW YORK—The St. Moritz Hotel has been booked for October 7, 8 and 9 **in anticipation of an eastern cable television show. The New England, New Jersey and Connecticut cable television associations have already joined the New York Association** in plans to sponsor the show. The first time around, New York State Association executive director Tony Esposito expects associate displays to be limited to table-top exhibits but anticipates "something much bigger" down the road.

NEW YORK, NEW YORK—The **world's first full-scale fiberoptic CATV trunkline systems** have been **purchased by Teleprompter Corporation from Times Fiber Communications Inc. on a turnkey basis**. The trunklines will be used on the two coasts—in Lompoc, California, and New York City.

In Lompoc, Teleprompter will use an eight-kilometer fiberoptic supertrunk to replace an existing microwave link.

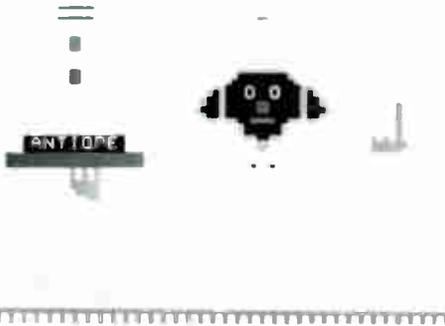
In New York City, Teleprompter Manhattan will use a two-fiber optical tie-line between the Teleprompter Manhattan system and the new Teleprompter corporate offices.

All cable, optical transmitters, optical receivers, optical repeaters, power supplies, connectors, splices and FM equipment for the projects will be supplied by Times.

OKLAHOMA CITY, OKLAHOMA—The **Community Antenna Television Association (CATA) has completed preliminary arrangements to transmit live, via the RCA SATCOM I, a total of 15 hours of the CCOS '78 technical and management programs to more than 400 cable television systems** equipped with satellite receive terminals.

The CCOS '78 schedule will be transmitted beginning 9:00 a.m. on Monday, July 17th. The transmissions will also include segments taped at the CCOS '78 site prior to air time. Seminar transmissions will run from 9:00 a.m. to 2:00 p.m. (CST) on the 17th, 18th and 19th of July.

CATA's CCOS '78 program, being held July 16-19, 1978, at Oklahoma's Fountainhead Lodge, is the third annual gathering of cable system owners and operators.



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## FEATURES

- ANTIOPE: A Magazine on the air**  
*This teletext system permits the transmission of data and graphics over an existing television channel* ..... **Page 11**
- NCTA Wrap-Up**  
*Featured is an overview of Cable '78's engineering/management sessions. NCTA award winners, the Cable Museum and more* ..... **Page 14**
- Tech Review**  
*Presented are the latest innovations and advances in CATV equipment* ..... **Page 22**

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- Inside C-ED** ..... **Page 6**
- SCTE Comments and Chapter News** ..... **Page 8**
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*Security plus comes to Dayton* ..... **Page 31**
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## OPINION

- Editor's Letter** ..... **Page 7**
- Canadian Comments** ..... **Page 35**
- Bibliography** ..... **Page 33**

**Cover:** The thrust of this year's NCTA convention—engineers finally make the winner's circle. Featured are Ken Simons: Delmer Ports award, Bruce Merrill: Robert Beisswenger award, and Robert Bilodeau and Robert Tenton: Outstanding Engineering Achievement awards. For more on Cable '78, see page 14.

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## Editor's Letter

This post convention wrap-up and tech review issue highlights the top events of the New Orleans show as well as those products that have been unveiled since *C-ED's* last tech review issue. Managing editor Toni Barnett literally and figuratively waded through the convention's exhibits and panel sessions. She found the mood to be extremely upbeat, with brisk selling on the convention floor. What particularly struck her was the attention devoted to QUBE and the French ANTIOPE system, which, by the way, is discussed in a special *C-ED* report on pages 11 and 12. The preoccupation with QUBE came not so much from the industry's engineers and technicians but from those generally unfamiliar with cable and from the press. People like Les Brown of *The New York Times* and John Cooney of *The Wall Street Journal*.

We'd like to give a few kudos to some of the winners and those folks who helped to put this year's show together. To Ken Simons for the Delmer Ports award, congratulations; to Bruce Merrill for the Robert Beisswenger award and to Bob Bilodeau and Bob Tenton for this year's NCTA outstanding engineering awards. We'd also like to give a hand to Ken Gunter and Bob Luff, particularly for their efforts in putting together the Cable Museum (and for giving *C-ED* the opportunity to highlight some of cable's artifacts in the May convention issue). Also to Hazel Dyson for her outstanding (as usual) hard work. Her assistance no doubt made Ken's and Bob's jobs a lot easier.

As for next year's show (May 20-23), St. Louis is out . . . and Las Vegas is in. Start saving your coins. The one-arm bandits are waiting.

*Paul A. FitzPatrick*



**How well do others stack up against Hughes.**

| Item  | Standard Hughes Features | Competitive Features |           |
|---|--------------------------|----------------------|-----------|
|   |                          | Standard?            | Optional? |
| Threshold Extension                                   | X                        |                      |           |
| 24-Channel Agility                                    | X                        |                      |           |
| Choice of Electronic or Manual Agility                | X                        |                      |           |
| No Crystal Changes                                    | X                        |                      |           |
| Transportation to Site                                | X                        |                      |           |
| Installation Supervision                              | X                        |                      |           |
| Installation Hardware                                 | X                        |                      |           |
| Proof of Performance                                  | X                        |                      |           |
| Pressurization for Transmission Line and Antenna Feed | X                        |                      |           |
| Low Attenuation 7/8" RF Transmission Line             | X                        |                      |           |
| Antenna Sidelobe Suppression If Required              | X                        |                      |           |

**When you're pricing an earth terminal make sure you get the whole apple and not just the core.**

Of the several ways to price an earth terminal we favor the all-inclusive approach. Not only will the Hughes price include everything on the chart, it includes some very important intangibles as well. Hughes originated development of synchronous satellites in the 1950's and has pioneered its technology ever since. You benefit from this experience in our current satellite earth terminals.

Study the inset comparison chart. Then call or write Hughes for more information. Hughes Microwave Communications Products, P.O. Box 2999, Torrance, CA 90509. (213) 534-2146. We know how to make an apple very tempting.

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# CATV in 2008 A.D.

By Kenneth Gunter  
Executive Vice President  
UA-Columbia Cablevision  
San Angelo, Texas

**T**hirty years from now, CATV systems will bear little resemblance to those of today, either in technology or range of services. It is not unreasonable to expect that, first of all, we will change because our traditional source of signals—the broadcaster—will change drastically. Increased competition for spectrum will probably drive them to higher frequencies, including satellite broadcasting, but with a consequent rise in the complexity of home reception. Just as it has always been, CATV will continue to be a vital middleman in the link between all broadcast sources and the home.

Collaterally, however, the non-

broadcast program sources now evolving for satellite distribution to cable systems could exceed broadcast sources in number and quality. And distribution systems for CATV might easily be optical fiber all the way to the home receiver, which could be designed to interface directly with the fiber drop.

Without question we will also see an unbelievable extrapolation of the present terminal devices for our subscribers. Microprocessor technology promises to make our future terminals the most intricate and versatile component in the CATV system of the future. Such a terminal is likely to become the home control center for all entertainment, information, electronic shopping, energy and security management, and automatic appliance control.

We have accustomed ourselves to visualize industry changes only in terms of hardware, software and politics. There are also many other possibilities for CATV services unless certain socio-economic trends are reversed. In an energy starved, overpopulated world of 2008 A.D., our highly mobile society may find that

telecommunication services are much cheaper than transportation. In the fields of medicine and psychiatry, for example, we may find it more efficient, though coldly clinical and impersonal, to obtain diagnosis and therapy by simply strapping on the proper body transducer or scanner, plugging in to the home terminal, and waiting for a central medical computer to prescribe treatment.

The luxury of a personal visit with friends, family, or business associates may become so expensive or logistically unpleasant that teleconferencing will literally be the path of least resistance.

Most revolting of all is the prospect for an Orwellian world of tomorrow in which all cable television is owned and operated by the State. All your decisions would be made for you by an invisible hierarchy or computer—no more pressure to be innovative or worry about mundane affairs like your company's Wall Street image or whether to join NCTA or CATA.

Sound too far-fetched to suit you? Then ask your father to tell you what odds he, as a boy, would have given for Man to walk on the Moon during his lifetime.

# Radiation Monitoring

Mid State offers two systems that meet new FCC monitoring requirements. The ST-1 "Cuckoo" with its proven reliability is now an industry standard. A low cost FM radio is used as a receiver to patrol for leaks. The ST-1C is a crystal controlled version for use with the new CR-1 crystal controlled receiver. Write or call for complete details.

ST-1 \$295

CR-1 \$100

ST-1C \$395



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## Ken Simons Receives IEEE Delmer Ports Award

NEW ORLEANS, LOUISIANA—Ken Simons, senior member of the Society of Cable Television Engineers, was the first recipient to be awarded the IEEE Delmer Ports Award during NCTA's annual banquet. This was the first time an engineering award has been presented at this function.

Delmer Ports was vice president of engineering for NCTA from 1971 until his death in 1976. Originally a member of the IRE and IEEE, Ports held numerous offices and contributed to many committees of these organizations. One organization especially important to him was the Broadcast, Cable and Consumer Electronics Society of IEEE. Ports worked hard to elevate cable television engineering to an equal rank with those of broadcasting and consumer electronics. For that reason, IEEE chose to name its first CATV engineering award after Delmer Ports.

The award is presented for a five year period and is not an award administered by NCTA. The decisions regarding who receives this important recognition rest solely with the IEEE BCCE.

Simons is a legend in the CATV industry. He began working in radio in 1928, in television in 1939 and in cable television in 1951. Simons spent 25 years with Jerrold Electronics Corporation and played a very active role in developing CATV technology. He authored NCTA standards for noise interference and for the measurements of distortion components. Simons' "A Technical Handbook for CATV Systems" remains an indispensable sourcebook on the technical aspects of CATV operations.

Simons is the author of several papers presented at NCTA conventions and he actively participates in conventions on CATV in Europe. He is a member of IEEE, SCTE and was chairman of the Cable Television Technical Advisory Committee panel on Measurements and Methods. He is currently a consultant and resides in Florida.

## CATV System Fault Diagnosis Tape Released by SCTE

WASHINGTON, D.C.—"Diagnosing Common Cable Television System Faults" is a 26-minute ¾" cassette color tape, co-produced by the New York State Cable Television Commission and the

Society of Cable Television Engineers. Cassettes are guaranteed first generation made from a 2" high band quad master.

The tape is available exclusively from the Society of Cable Television Engineers, P.O. Box 2665, Arlington, Virginia 22202. Payment must accompany written orders. The cost is \$45.00 for each cassette, plus \$5.00 shipping charge.

## SCTE Members Elevated To Senior Member Status

The following SCTE members have been nominated for senior member status in 1978:

Bert Arnold, RCA-EIE, North Hollywood, CA  
 Frank Baxter, GE Cablevision Corp., Schenectady, NY  
 Frank Bias, Viacom Communications, Pleasanton, CA  
 Thomas E. Bird, Rollins Community TV Systems, Branford, CT  
 Steven Biro, Biro Engineering, Princeton, NJ  
 Edward Callahan, American Television & Communications, Englewood, CO  
 Glenn Chambers, American Television & Communications, Englewood, CO  
 Caywood Cooley, Jr., Consultant, Bala Cynwyd, PA  
 Richard Covell, GTE Sylvania-CATV Division, El Paso, TX  
 Lawrence C. Dolan, Mid State Communications, Inc., Beech Grove, IN  
 Steven Dourdoufis, Vision Cable Communications, New York, NY  
 William Ellis, Newburgh, IN  
 James B. Emerson, Northern CATV Distributors, Manlius, NY  
 Kenneth L. Foster, New York State Commission on Cable Television, Albany, NY  
 Joseph S. Gans, Cable TV Company, Hazelton, PA  
 James Grabenstein, Potomac Valley TV, Cumberland, MD  
 Kenneth Gunter, UA-Columbia Cablevision, San Angelo, TX  
 Alan S. Hahn, Manhattan Cable TV, New York, NY  
 Ralph Haimowitz, Indian River Cablevision, Sebastian, FL  
 James C. Herman, Motorola Semiconductor Products, Phoenix, AZ  
 Richard Hickman, Cox Cable Communications, Atlanta, GA  
 William V. Hinton, Continental Cablevision of New Hampshire, Dover, NH  
 Gayheart C. Kleykamp, UA-Columbia

Cablevision, San Angelo, TX  
 James L. Lahey, Houston, TX  
 Robert A. Luff, National Cable Television Association, Washington, D.C.  
 Edward J. McGinty, Atlantic Coast TV Cable, Atlantic City, NJ  
 Harold Null, Storer Cable TV, Sarasota, FL  
 James R. Palmer, C-COR Electronics, State College, PA  
 John A. Pranke, Electronic Consultant, Phoenix, AZ  
 Oscar W.B. Reed, Jansky & Bailey, Alexandria, VA  
 Sam Salvin, Cable TV Montreal, Quebec  
 Clifford B. Shrock, Textronix, Beaverton, OR  
 Ronald Simon, Teleprompter Corp., New York, NY  
 A.H. Sonnenschein, Hughes Microwave Communication Products, Torrance, CA  
 Graham S. Stubbs, Oak Industries-CATV Division, Crystal Lake, IL  
 Archer Taylor, Malarkey Taylor & Associates, Washington, D.C.  
 Robert C. Tenten, Home Box Office, New York, NY  
 Eric Winston, Jerrold Electronics Corporation, Hatboro, PA

# Cable Television

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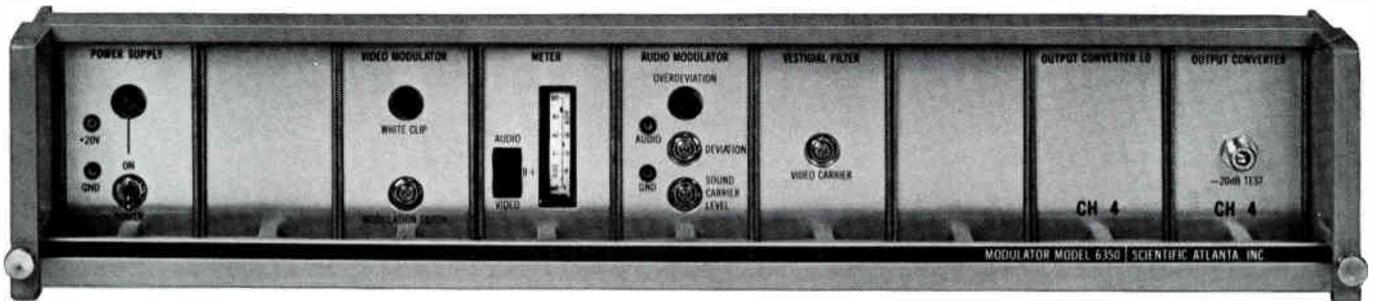
### BY FELIX CHIN

This book—the first bibliography covering the cable television literature—contains annotated citations covering general information and history, regulation and policy, technology and channel capacity, finance and economics, uses of cable television, cable television and education, and community control and franchises. Several useful appendices are also included. 300 pp., 1978, \$45.00

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# Our new Modulator. It can be what you want it to be.



Even when ordered without frills, our new 6350 Television Modulator outclasses units selling for more. Its Surface-Acoustic Wave (SAW) device as the vestigial sideband filter reduces out-of-band emission to a level unmatched in the cable industry. But when you choose any or all of the optional plug-in modules, it's then that the 6350 turns into the modulator you'd want to design yourself.

For instance, the Video Switching option detects loss of primary video and switches to alternate video output with front panel lamp indication. And has remote activation capability.

An Audio Switching module provides for selection of alternate audio source and also permits switching to emergency override

audio. When override is used, the audio response is shaped to enhance voice intelligibility and reduce telephone line noise.

The IF Switching option enables composite (picture plus sound) IF to be interrupted at a point just before up-conversion to the output channel, and may be replaced by an alternate source of composite IF.

Or you can customize the 6350 with options for standby powering from positive or negative source. Audio modulation limiting. Phase lock. Video AGC and Alternate IF AGC control. Call Harry Banks at (404) 449-2000 or write us for your demonstration of the 6350. The modulator you've always wanted.

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additional data which can be coded for proprietary access by special interest groups (doctors, lawyers, police, etc.)

By lowering the data rate to accommodate the transmission channel, ANTIOPE can be sent over phone lines of FM radio stations. Special modems at the receiving end permit viewing the data on ordinary color TV receivers with ANTIOPE decoders.

### Operating Stages

The ANTIOPE system can be used full channel, mixed with programs, via telephone lines or by mail and telephone.

The teletext system involves three

keyboard. A data broadcasting multiplexer to enable the mix of video signals with programs and digital data must be used.

The receiving stage requires specified equipment for individual applications. Reception via microwave requires a standard aerial, a receiver fitted with a decoder and a manual selecting keyboard. Cable reception requires connections to keyboards at the user's set, plus a keyboard. Interactive telephone communications requires connections to the telephone network, a modem, appropriate receiver, special decoder and keyboard.

additional information on a pay channel, local news in closed circuit seminars and shows with affiliated hotel chains, etc. Additional possibilities include financial services, safety (doctors, hospitals, police, etc.) subtitles (multilingual, deaf and dumb, foreign) and leisure (TV and radio programs, transportation schedules, restaurants, educational teaching), just to name a few.

### Characteristics and Specifications

|   | Standard 525 l<br>NTSC color | Standard 625 l<br>PAL color | Standard 625 l<br>SECAM color |              |
|---|------------------------------|-----------------------------|-------------------------------|--------------|
| Blanking lines                                    | 12                           | 17                          | 8                             |              |
| Useful bytes per line                             | 20                           | 32                          | 32                            |              |
| Useful capacity bits/sec                          | 9600                         | 12800                       | 12800                         |              |
| Pages / second for 1 line of data ①               | 1.8                          | 2                           | 2                             |              |
| Maximum capacity with programme (pages/second)    | 21 p/s                       | 34 p/s                      | 16 p/s                        |              |
| Maximum capacity without programme (pages/second) | 450 p/s                      | 610 p/s                     | 610 p/s                       |              |
| Capacity for an average waiting time of           | 1 line frame                 | full channel                | 1.1 frame                     | full channel |
| 5 s   | 18 ②                         | 4500                        | 20 p                          | 6100 p       |
| 10 s  | 35 ②                         | 9000                        | 40 p                          | 12200 p      |
| 30 s  | 105 ②                        | 27000                       | 120 p                         | 36600 p      |

① An average page includes 800 bytes.

② In standard NTSC 525 lines, a page includes a maximum of 21 rows of text instead of 25 in standard 625 lines.

stages: editorial, transmission and receiving. The editorial stage comprises a composition keyboard available in bi-lettering (Latin, Cyrillic, Greek, Arabic, etc.) or in symbol alphabet. An editorial unit with one or more floppy discs is also needed. Monitors with a decoder and manual selecting keyboard, modems for telephone/modulator-demodulator and a computer complete the equipment needed for the editorial stage. The computer, used for medium and large storage capabilities, allows the user wide access possibilities as well as interactive formulas.

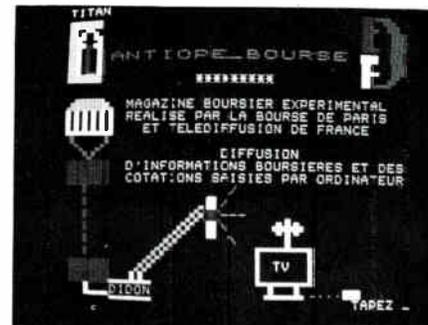
The transmitting stage uses a receiver with decoder and manual selecting

### Present Applications

The ANTIOPE system is currently being used in France to transmit stock market reports to brokerage houses equipped with TV receivers having ANTIOPE decoders. The system was also used recently in the French elections to display instant voting tallies at selected locations.

The ANTIOPE teletext system can provide viewers (with specially equipped TV receivers) a variety of useful information such as late-breaking news, weather reports, sports results, entertainment listings, recipes, shopping tips and many other services.

Other applications include providing



### Tomorrow's Developments

The advanced possibilities for the teletext system are numerous. One example is the use of a teleboard. This method will employ an electronic blackboard, telephone and a TV set. The exchange of writing and drawings will be possible simultaneously with audio communication.

Another development may be the availability of quiz and games to play at home with a remote computer or with a local intelligence of the ANTIOPE decoder. Telefaxing, the printing of news and drawings, will be possible at home with a TV set and ANTIOPE teletext system device.

It may also be possible for viewers to record TV programs on videodiscs and program automatic home TV tape recordings of selected broadcasts.

The ANTIOPE teletext system opens up a wide range of potential services that can be offered by operators via cable, pay-TV and other television distribution systems to their viewers.

For more information on this revolutionary concept, C-ED will provide an in-depth study of the ANTIOPE system in an upcoming issue C-ED

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# Cable '78 Makes Big Splash in New Orleans



Dan Aaron (right) shakes hands with Bruce Merrill, the winner of this year's Robert Beisswenger Award.

By Toni Barnett, Managing Editor

NEW ORLEANS, LOUISIANA—April 30-May 3, 1978. By now the word "Upbeat" may be overkilled, but that was the very thrust of this year's NCTA show. The general attitude of the show supported this theme. Exhibits were bigger, more numerous and more elaborate than ever—159 displays utilized 46,000 square feet of display area in the Rivergate's exhibit halls.

On Sunday afternoon, Daniel Aaron, now immediate past chairman of NCTA, addressed the cable crowd with reflections on cable's history—"Army surplus twin-lead, strung from tree to tree, brought Philadelphia network signals from a nearby mountaintop to John Walson's TV shop in Mahanoy City."—and projections for the industry's future—"The infinite capability of fiberoptics; the full exploration of two-way video communications; the construction of vast urban communications systems; the deployment of our country's creative resources to conceive new forms of entertainment, new techniques of education, new channels of community interaction." Aaron asked that the industry be "assured a reasonable, predictable measure of control" over its destiny.



Ken Simons, recipient of the first Delmer Ports Award.

The technical and management sessions, all held in the mornings for the first time in NCTA's convention history, proved to be an overwhelming success. Many technical sessions were filled to capacity, and many interested parties had to watch the sessions on closed circuit television sets outside of the meeting rooms. RCA and Jerrold joined technological forces in providing closed circuit coverage of many of the speeches and sessions for the benefit of overflow crowds and casual passersby.

## Engineers Recognized at Cable '78

The first engineer to "break into the winners' circle" at NCTA's annual banquet was Ken Simons, recipient of the first IEEE Delmer Ports Award. This award is presented for a five-year period and is not an award administered by NCTA. The decisions regarding who receives this important recognition rest solely with the IEEE BCCE. (See C-ED, page 9.)

Edward M. Allen, president of Western Communications, Inc., was presented with NCTA's highest honor, the 1978 Larry Boggs Memorial Award. This award is given for the most outstanding contribution to the advancement of the cable television industry.

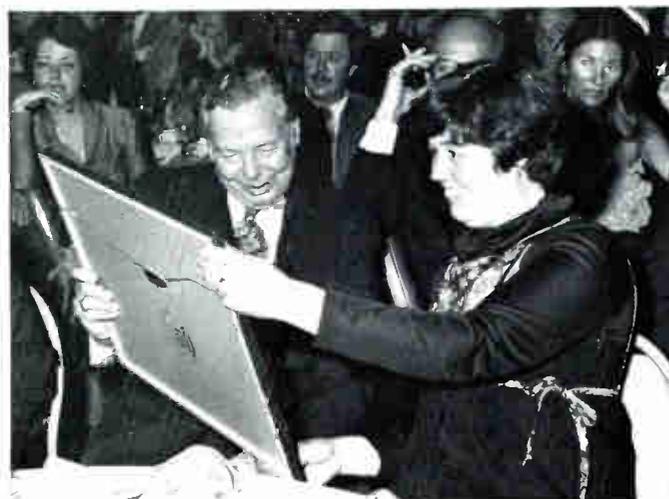
As previously reported in May C-ED, Robert Bilodeau of



Bob Tenton and Bob Bilodeau receive Outstanding Engineering Achievement Awards.



David Wicks (left) receives the Jerry Greene Award from Burt Harris.



Mr. and Mrs. Ed Allen check his biorhythm chart after presentation of the Larry Boggs Award.

# 3 GREAT PRODUCTS FROM EAGLE



## PAY TV SCRAMBLER

This generator is made to complement the Eagle Model 2-DF outdoor decoding filters to form a system that economically secures pay channel reception for the CATV system operator.

This unit is designed to deliver the encoded signal to the system without additional modulators or other expensive peripheral equipment.



## an outdoor-tap mounted DESCRAMBLER

Model 2-DF is ruggedly constructed and potted for temperature stability. Outdoor application (Tap-Mounted) keeps it out of the hands of the subscriber. Tamper proof and theft proof, it requires special tools for installation and removal.



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Suburban Cablevision and Robert Tenten of HBO. received NCTA's annual engineering awards for development and operations.

Bruce Merrill, president of MCE Corporation, received the 1978 Robert Beisswenger Award for creative contributions to the cable television industry by an associate NCTA member. NCTA cited Merrill for his 25 years of service as a "pioneer designer and manufacturer of 'firsts' in cable communications equipment," and for his leadership roles in industry associations.

David O. Wicks, Jr., vice president and managing director of Warburg, Paribas Becker, Inc., was honored with the presentation of the first annual Jerry B. Greene Memorial Award for



Some tech sessions filled up before many could get a seat.



outstanding contributions to CATV by young industry leaders. This new award was established to honor persons (40 years old and under) who have made significant contributions to the cable industry.

### Engineering/Management Work Together

Another major "first" at the 1978 NCTA convention was the interfacing of engineering and management. The industry has finally recognized that managers and engineers are facing decisions which require increased cooperation and mutual understanding. Throughout the convention there were at least five management program sessions which included top cable technical specialists.

Among the key topics covered were the roles each side plays in planning system extensions, system rebuilds and budgeting for new equipment.

On Monday morning, Jim Stilwell, engineering vice president of Communications Properties, joined a panel on illegal taps, with operators and suppliers looking at methods to audit systems, identify unauthorized drops and even how to convert illegal taps into paid subscribers.

On Tuesday morning, co-moderators Don Shuler and Hugh Bramble of Viacom staged a planning session on a two-way cable alarm service as a vehicle for exploring key issues in the manager/engineer relationship.

These were just a few examples of bridging the engineering/management gap. Hopefully next year's NCTA show will progress with even more of these important engineering/management interfacing sessions.

### Convention Cable Museum

NCTA engineering vice president Bob Luff and technical program chairman Ken Gunter should be congratulated for putting together a cable museum of early cable artifacts. The museum included more than 200 nostalgic items, many from the first generation of hand-wired equipment painstakingly created by the industry's pioneers. The equipment predated the first production-line models of currently familiar equipment.

Among the items unearthed by Luff and Gunter were early Entron and Jerrold amplifiers, a pressure tap, and old connectors and cable. In addition, the museum included photos of early NCTA meetings, volumes of decades-old cable industry magazines plus assorted paraphernalia from the early days of the CATV business.



For more photos and background on cable 30 years ago, see the May issue of *C-ED*.

The cable museum was only one significant focal point of Cable '78. Another unique aspect of the show was the SCTE tech session co-sponsored with competitive test equipment vendors.

## SCTE Co-Sponsored Tech Session

The technical session co-sponsored by the SCTE and test equipment vendors was held May 3, beginning with "Breakfast with Ralph Haimowitz"; the theme song for which was "Michael Row the Boat" . . . or "Raindrops Keep Falling on My Head."

Forty-one hardy souls braved the downpour to hear the technical "words of wisdom" from several vendors of test equipment.

Cliff Schrock of Tektronix, Inc., began his presentation with a chorus of "Stormy Weather" and ended with a succinct description of the function and capability of modern oscilloscopes.



Raleigh Stelle of Texscan Corporation performed "Singing in the Rain" and gave a short explanation on the functions of spectrum analyzers.

As the audience donned life jackets and enjoyed danish and coffee, Jack Weeks, representing Avantek, discussed the Avantek method of time domain reflectometry. Bob Welsh of Wavetek Indiana presented a dissertation on sweep measurement by comparison, and Harry Sadel of Sadelco gave an interesting presentation on the use of a return loss bridge with broadband noise and a field strength meter.

Carl Hensley of ComSonic discussed radiation monitoring and Larry Dolan of Mid State Communications reviewed the field strength meter situation: what's new, what's available and what's coming.

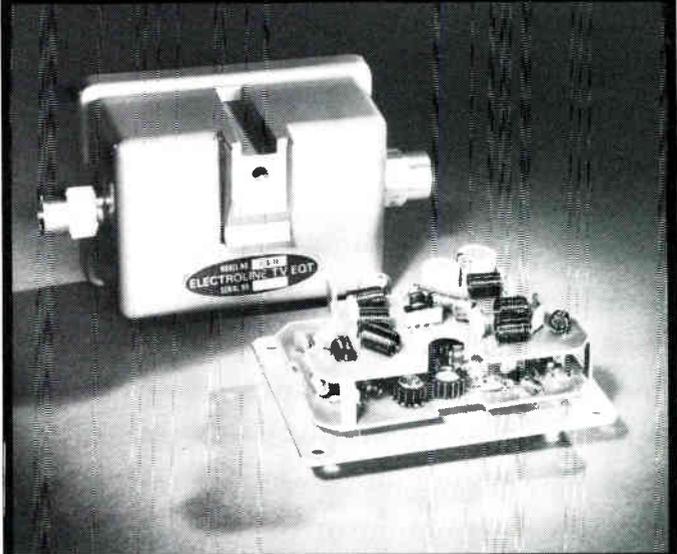
It was a difficult situation for the vendors and they should be congratulated for their restraint. Many of the vendors were direct competitors and the session ground rules required a totally non-competitive demonstration. The original intent was a "hands-on" session, but several factors for delegates and vendors alike prevented a complete success. Wednesday was the last day of the show and the first day of the flood; anyone who will attend an 8:15 a.m. session after three nights on Bourbon Street and numerous "hurricanes" is surely a dedicated person.

Ralph Haimowitz and SCTE are to be commended for consolidating a large number of highly competitive vendors into a non-promotional technical session touching on all facets of CATV measurements.

For Ralph, The Thrill of Victory; for the vendors, The Agony of Wednesday Morning.

## Electroline ELA-14 Bi-directional Push-pull Amplifier

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## Cable '78: Unparalleled Success

NEW ORLEANS, LOUISIANA—April 30-May 3, 1978. It was the best of times—just ask the cable operators and manufacturers. And, it was the worst of times—with nine inches of rain falling in Wednesday's deluge, cable people were stranded in hotels and oyster bars throughout New Orleans.

The general feeling of the show seemed to support the notion that more is more—more participants, more exhibits and certainly more pomp. Exhibits were bigger, more numerous and more elaborate than ever. The booths featured all manner of diversions including live models, mimes, Comm/Scope's now infamous Orion and, all the latest features from the gamut of pay programmers to cable manufacturers. Luggage tags, tote bags and a pot-pourri of edibles—popcorn, cookies, nachos—were among the enticements offered to would-be cable consumers from those manning the booths. However, from the looks of things, sales would have been healthy without the elaborate encouragement from exhibitors.

### They Came in Doves

The NCTA count put this year's attendance at 6,019—that's 50 percent more than last year's tally for the Chicago show and 14 percent more than the record-breaking crowd that was on hand in Anaheim in 1973. NCTA president Robert Schmidt commented on the magnitude of the four-day cable event: "We're impressed and pleased with both the size and sophistication of this year's show."

Saturday's warm-up activities were primarily social and convention-goers took advantage of the opportunity to renew old acquaintanceships over lobs and aces on the tennis court and during a three-hour evening cruise on the waters of the Mississippi, courtesy of NCTA. The exhibit floor opened on schedule at 11:00 a.m. Sunday and reaction to the Rivergate facilities was extremely favorable. The layout and ample floor space assured a smooth flow of pedestrian traffic among the booths and "optimistic" seemed to be this year's catch phrase from the manufacturers' point of view. "It's the best ever," commented Scientific-Atlanta's John Feight. "Everybody is buying . . . In other years, we'd talk and they'd go home to think about buying. This year they're showing up with checks."

Convention chairman Rex Bradley stepped to the podium Sunday afternoon to welcome the show's participants, and Daniel Aaron, now immediate past chairman of NCTA, addressed the crowd with reflections on cable's history.

Representative Hensen Moore (R-LA), a member of the House communications subcommittee, was on hand Sunday afternoon to introduce Speaker of the House Thomas (Tip) O'Neill, who delivered the keynote address.

The tone of Sunday's speeches was what might best be described as safe—little substance for controversy or debate. O'Neill reflected on the changes cable has seen over the last five years (in marked contrast to the stance Ferris took two days later at Tuesday's luncheon) and spoke positively of the prospect of televised House proceedings. He mentioned cable's "tremendous potential" and its responsibility to provide diversity—a choice. "Continue, continue, continue," O'Neill exclaimed in closing. "America is proud of the cable television industry."

Philip Verveer, the new FCC Cable Bureau chief, rounded out Sunday's orations and, despite several minutes at the podium, was able to maintain what he described as the "vow of silence" on cable issues he has taken for his first six months as cable chief.

For more on the NCTA wrap-up, see page 14.

### Cable TV Convention Channel Created for New Orleans Hotels

NEW ORLEANS, LOUISIANA—For the first time in New Orleans, over 2,000 guests were able to follow daily convention activities by television from their rooms at the Hilton and Marriott hotels during Cable '78, the cable television industry's 30th anniversary celebration at the Rivergate Convention Center April 30 - May 3.

The National Cable Television Association, in cooperation with management of the two hotels, established a microwave link to unused TV channels to transmit segments of convention sessions and program notices from the convention center.

"In planning Cable 78, we looked for something unique cable could contribute to the city," NCTA president Robert L. Schmidt said. "We are demonstrating a convention-hotel television link which is

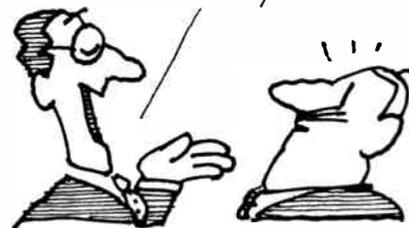
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an attractive service with tremendous potential for use and expansion for other conventions in New Orleans, should it be made permanent."

## FCC Won't Limit "Superstation" Signals, Raises Exemption Level for Cable System Regulation

WASHINGTON, D.C.—A potential threat to satellite-transmitted "superstations" was diminished recently when the Federal Communications Commission

unanimously rejected a request that it reconsider FCC regulations covering satellite carriage of distant independent signals.

In another significant action—also unanimously decided—the commissioners expanded the number of cable systems exempt from the bulk of its regulations by raising the exemption level to include all systems with fewer than 1,000 subscribers.

Stuart Feldstein, general counsel for the National Cable Television Association commended the commission for

what he cites as another indication of the FCC's "deregulatory posture." Feldstein commented, "The commissioners are unwilling to impose new restrictions in the absence of persuasive evidence and they are reexamining all of the old assumptions." Feldstein added, "We hope that soon more of the sacred cows of cable regulation will be put out to pasture."

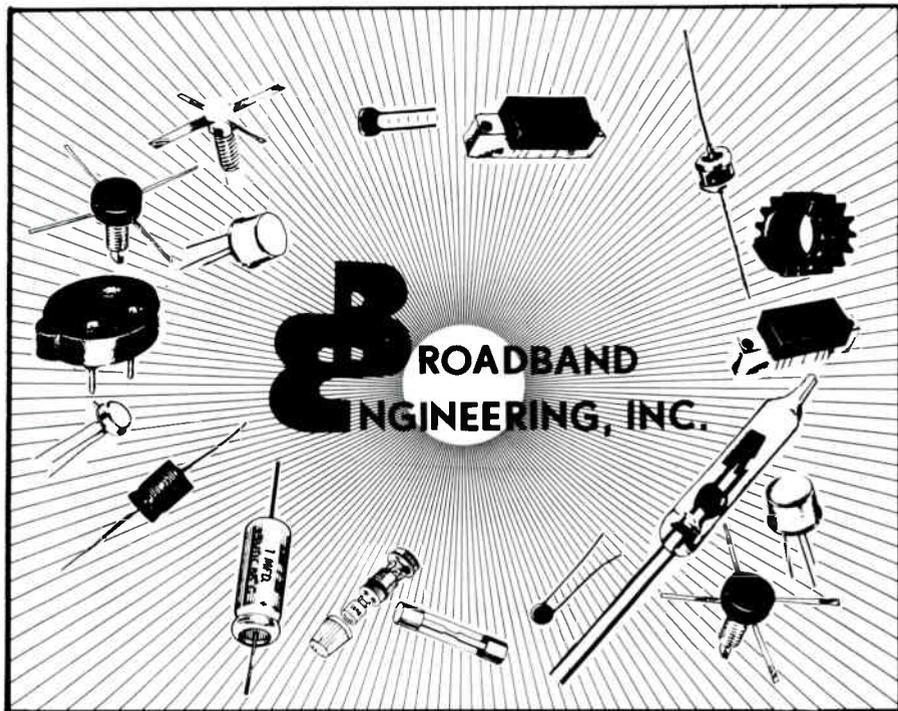
## NCTA Election Results At Cable '78

NEW ORLEANS, LOUISIANA—The new slate of NCTA officers assumed their positions May 2 at Tuesday evening's banquet—Robert Hughes (CPI), chairman; Douglas Dittrick (Viacom), vice chairman; J. Richard Munro (Time Inc.), treasurer; and William Strange (Sammons Communications), secretary. Hughes lost little time in appointing 18 NCTA committee chairmen. The new NCTA chairman also announced the appointment of William Bresnan (Teleprompter) and Lee Wallenhaupt (Summit Communications) as board representatives to the NCTA executive committee. The NCTA board considered a recommendation that the association redefine its position on legislation to provide REA loans in support of cable television service in low-density rural areas.

Four new NCTA directors were announced last month—Richard S. Leghorn (Cape Cod Cablevision) and Frank Scarpa (National Video Systems). As a result of a protest lodged by John Watson of Service Electric Cable TV, Inc., the NCTA board invalidated Frank Scarpa's election and ordered a new election for the seat to be held within 30 days.

Newly-elected at-large directors are Bill Brazeal (Community Tele-Communications), Allen T. Gilliland (Gill Cable, Inc.), Richard W. Loftus (AmVideo Corporation), Gail Oldfather (Televents), John V. Saeman (Daniels & Associates, Inc.) and Donald Tykeson (Liberty Communications).

As a result of the Associates' elections, Rod Hansen (CableData) will serve two years as senior associate director and Frank Drendel (Comm/Scope) will replace Irv Faye as the second associate director. Nat Marshall (Systems Wire and Cable) and Abe Sonnenschein (Hughes Microwave) have been designated alternate directors of the Associates. Mel Gilbert (Synder Community Antenna TV) has assumed the chairmanship of the Independent Operators Board and McLean Clark (Big Timber Cable TV) is IOB director.



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on the satellites and can be easily reconfigured in the field for other assignments.

Superior 8.0 dB C/N FM demodulator threshold extension characteristics (patent pending) are standard. Exceptional video and audio baseband performance of Microdyne receivers have been well documented by many competitive technical evaluations. These receivers readily interface with any existing TV earth terminal.

Additional data may be obtained by contacting Microdyne Corporation, P.O. Box 1527, Rockville, Maryland 20850, (301) 762-8500.

### **Hughes Features 3700-4200 MHz Satellite Video Receiver**

The Hughes model SVR-462 is a phase lock, single channel satellite video receiver providing full 24 transponder coverage. Channel selection is achieved via a front panel screwdriver adjustment without the use of special crystals, test equipment or field modifications. It is designed for use in multiple channel video receive only terminals and is generally used in conjunction with one or more frequency agile receivers such as the Hughes model SVR-461.



The SVR-462 features the same proven quality and reliability as the Hughes model SVR-461, excluding digital control and logic circuitry. Both receivers include down converter, phase lock demodulator, video processor audio subcarrier demodulator, associated power supplies and control circuitry.

For more information, contact Hughes Microwave Communications Products, P.O. Box 2999, Torrance, California 90509, (213) 534-2146.

### **New Low-Cost Microwave Transmitter Receiver System Announced by Microwave Associates**

A new low-cost microwave transmitter/receiver system that will allow cable television operators to service rural areas where before it was not economically feasible, was introduced at the NCTA show by Microwave Associates, Incorporated.

Designated the MA-12X, the new CARS band FM microwave unit is an

improved version of the previously announced MA-12XC on which deliveries have already begun.

The new 12X system incorporates state-of-the-art, field-proven solid state circuitry including digital circuitry and Gunn oscillator devices. It is designed for direct mounting in a standard 19 inch rack and is equipped for optional audio modulators, demodulators and filters from the PAC-6 series.

This compatibility enables the user to easily incorporate separate audio into the MA-12X transmitter generating composite video/subcarrier, or to demodulate subcarrier material from the composite video/subcarrier output from the receiver. Such audio options are in the plug-in modules which are readily accepted in the 12X rack.

For further information, contact Dale DeLancey, (617) 272-3100.

## **Converters**

### **STARPACK Pay-TV Security Descramblers from Jerrold**

Jerrold Electronics' STARPACK pay-TV security systems use a positive scrambling technique to suppress video sync information for any CATV channel within the 54-300 MHz range.

The headend signal is scrambled directly at RF by adding 6 dB of additional attenuation to the signal path during the sync interval. A separate modulated RF carrier is sent out on the cable system as a reference for the individual descramblers and used to reconstitute the scrambled video.



With Jerrold's outdoor descramblers, the descrambling electronics is in a rugged, weather-proof, RF-sealed housing for strand, eave or pedestal mounting—inaccessible to the subscriber. All indoor descramblers contain a self-destruct, anti-tamper device to prevent theft of services and equipment.

For additional data, contact Jerrold Electronics Corporation, P.O. Box 487, Hatboro, Pennsylvania 19040, (215) 674-4800.

### **Oak Multi-Code 35 Channel Converter Decoder**

The Oak Multi-Code is a multiple channel converter decoder for premium cablevision. It incorporates an Oak set top or Jewel Case AFC converter. The cable system operator is able to provide subscribers with a single unit for "normal" viewing and "pay" viewing, thus minimizing the initial investment for pay viewing while maximizing the revenue base.

The Multi-Code permits the option of pre-determining any number of scrambled channels up to a total of 35 channels. A single detented rotary selector controls both "normal" channel selection and automatically unscrambles the "pay" channels. A low-cost option provides dual security. A keylock option is also available for parental control of "pay" channels.

For more information, call Oak Industries Inc., (815) 459-5000.



### **GTE Sylvania Presents Programmable 40-Channel Converter**

The CATV Equipment & Installation Operation of GTE Sylvania Incorporated has introduced a programmable 40-channel converter which allows cable television subscribers to store up to ten selected channels in the unit's memory system and recall them sequentially at the touch of a button.

The converter's hand-held remote control unit has a "light-touch" 12-button, sealed keyboard and an LED channel indicator. It connects to an RF processor at the television receiver with a plug-in 25-foot interconnect cable which can be easily replaced by the subscriber. The unit employs a crystal-controlled frequency synthesizer which eliminates fine tuning circuitry and converter drift.

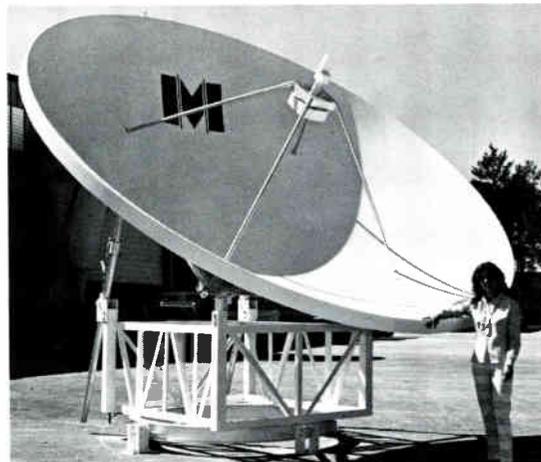
The Sylvania programmable converter, designated model #4041, can be obtained with optional on/off remote action and a one, two or three-channel descrambling module for pay-television applications. Optional extension cords for the interconnect cable are also available.

Complete information may be obtained from GTE Sylvania, 114 S. Oregon St., El Paso Texas 79901.

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Whether its the new SATRO-5 Five Meter Turnkey TVRO Terminal just introduced at NCTA '78 or its new 1100-FFC(X1) and 1100-TVR(X12) Satellite TV Receivers— Microdyne provides fast delivery at competitive prices. In fact, the first ten of thirty TVRO Terminals are already on their way to various sites around the country.

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## Miscellaneous

### American Microsystems Introduces Two New VMOS 4096-Bit Random Access Memories

American Microsystems, Incorporated, has introduced two new fully static 4,096-bit random access memories (RAMs) fabricated by the AMI-proprietary VMOS process.

Intended for microprocessor applications where higher speed is desirable, the new AMI S2114 VMOS RAM (1,024 x 4-bit) is a higher-speed pin-compatible replacement for the Intel 2114. The S2114 is available in versions with maximum access times ranging from 150 to 450 ns and supply currents as low as 50 ma. The 150 ns version of the S2114 is the fastest 2114-type memory available today.

For more information, contact American Microsystems, Inc., 3800 Homestead Rd., Santa Clara, California 95051, (408) 246-0330.

### New 7-Meter Earth Station from Fort Worth Tower

The new FWT-7 7-meter earth station from Fort Worth Tower is priced comparably to competitive 4.5 and 5-meter dishes. It is computer-engineered to suppress side-lobe interference and guaranteed precision assembly is due to pre-assembly at the factory (to 015" tolerance across 7m diameter). Fiberglass backs up the metalized reflective surface, providing unsurpassed structural qualities and weather resistance. The FWT-7 has adjustable prime focal feed and compound azimuth adjustment to facilitate aiming.

Write to Fort Worth Tower Company, Inc., P.O. Box 8597, Fort Worth, Texas 76112, for additional information.

### SAE Expands Low-Cost 3600 Series IC Socket Line

With the introduction of new low profile IC sockets, Stanford Applied Engineering has expanded its 3600 series to a full range of low-cost IC sockets.

Latest additions are the 18-position and 20-position sockets. The 3600 series also has sockets with 14, 16, 22, 24 and 40 contacts.

The low-profile sockets are only .150 in. (3.8 mm) high above the circuit board and maintain their .100 in. (2.5 mm) contact centers when butted end-to-end,

providing continuous rows of contacts for universal applications and high-density packaging.

The 3600 series has a contact resistance of 15 milliohms (max.) at 1 amp, and an insulation resistance of 5000 megohms (min.) at 500 VDC. The insulator is 30 percent glass-filled thermoplastic polyester with a UL rating of 94V-2 or better. Operating temperature is minus 55 degrees C to plus 150 degrees C.

For more information about the 3600 series low-profile IC sockets, contact Tim McGarvey at SAE, 340 Martin Ave., Santa Clara, California 95050, (408) 243-9200.



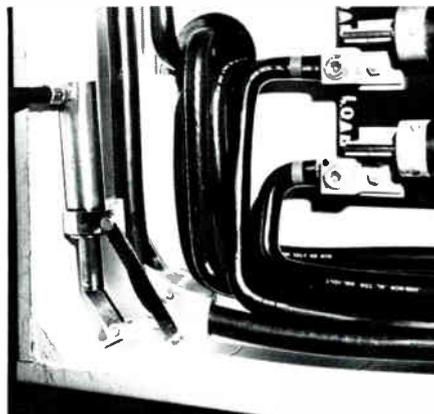
### Cable Bender Model 750

The model 750 cable bender, from Electrovision, Inc., will handle 600 volt conductors, either copper or aluminum, from 250 MCM to 750 MCM. It will form all cable effortlessly and neatly to the required dimensions and angles. The tool is so compact and versatile it will perform within any enclosure.

The cable bender does not reduce the circular mils area of the conductor or the dielectric strength of the insulation at the bend.

The complete unit consists of the forming mechanism, hydraulic actuator, hydraulic foot pump, interconnecting hose and convenient carrying case.

For additional information, contact Silas Ray Crees, director, Electrovision, Incorporated, P.O. Box EG 841, Melbourne, Florida 32935, (305) 259-4304.



### Electronic Program Guide for CATV

Data Guide, from MSI Television, permits full flexibility of program listing display. Program design allows for flexibility in displaying the number of channels in keeping with the needs of your system. Program may be presented in page print format or in a roll-up mode. Program controls allow the operator to select the look ahead period. Program can display current half hour program or current half hour alternating with next half hour or any number of additional half hour segments or pages desired. On the half hour, the previously current half hour is dropped and the next program segment is added to the display sequence automatically.

The system consists of a basic character generator, disc storage system with local keyboard which can be either purchased or leased. All circuits for split-screen, synchronous external video input, color raster segment generator, and fixed titles are included. Dual video program outputs are provided, as well as a full complement of EIA color sync pulse drives (with CSG-1 sync generator installed).

More information may be obtained by contacting MSI Television, 4788 S. State St., Salt Lake City, Utah 84107, (801) 262-8475.

### New PAC-6 Subcarrier Demodulator From Microwave Associates

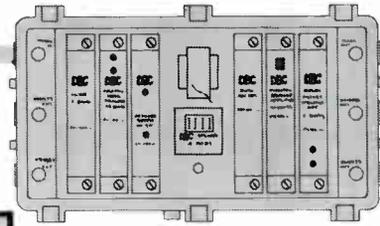
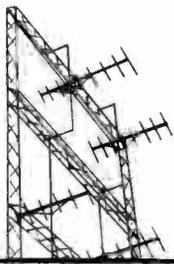
A new low cost, high quality subcarrier demodulator for the cable television market was introduced by Microwave Associates Communications Equipment Group at the National Cable Television Association convention in New Orleans.

Priced at approximately one-half of what existing units cost, the new PAC-6 is designed to provide the most economical means of extracting subcarrier audio of data material for delivery as baseband audio.

The new unit is available in two configurations: as a companion subcarrier demodulator to Microwave Associates new low cost 12X receivers, and also as a complementary unit to its 12G microwave receivers or VR satellite receivers.

Basically the PAC-6 will allow cable operators expanded service of up to four channels for such flexibility as "piggy backing" of audio signals, cue tones or data.

For further information, contact Dale DeLancey, Microwave Associates, 63 Third Ave., Bldg. 5, Burlington, Massachusetts 01803, (617) 272-3100.

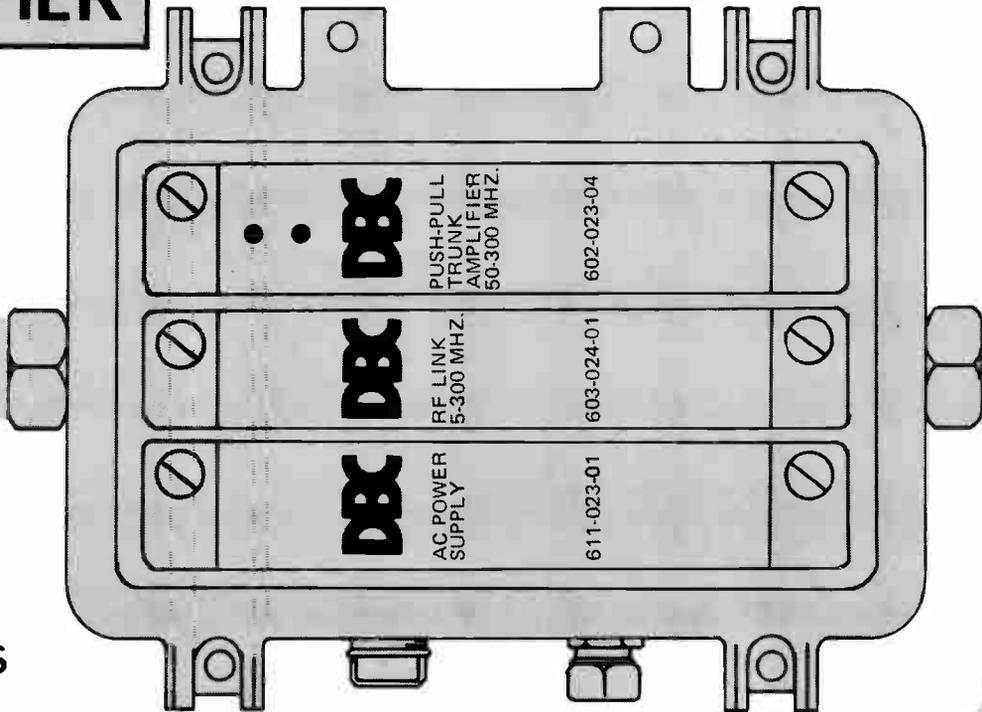


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# Security Plus Comes To Dayton

By Hugh Bramble  
Director of Operations  
Viacom Cablevision of Dayton Inc.

The Dayton franchise was granted in 1973 and, as was typical at that time, included many services and promises which came to be known as "Blue Sky." The franchise ownership changed hands several times over the years until Viacom acquired it in 1975. By this time, most of the original promises could be accomplished with little additional cost or trouble compared to a traditional system. Viacom's stance was to proceed immediately to implement a fully operative two-way system.

## Concept

The Dayton market needed and had been promised the highest performance 30 channel down-stream system that could be built. Very good performance was also dictated by the fact that the furthest point in the franchise was only 12 miles from the three network transmitters.

## Design

In order to insure the utmost in reliability, the system design priorities were minimum cascade length followed by minimum total active count. The only time these goals were compromised was when active equipment could be placed on street poles for ease of maintenance. It was decided that since converters were to be supplied to all customers, a harmonically related headend could be effectively utilized to increase system "headroom." Additional "dynamic" range was obtained by utilizing AGC and ASC on all trunk stations and programmed thermal control on all line extenders. Line extender cascades were limited to two.

It was decided that each trunk would be allocated three video returns with the 7 MHz remaining reserved for data transmission. Video operation occurs between 6 MHz and 24 MHz, with data from 5 MHz to 6 MHz and between 24 MHz and 30 MHz so that the citizens band can be left vacant. Thirty MHz of bandwidth was allocated for downstream data transmission.

## Cableguard

Shortly after system activation began, Viacom was approached by a company called Cableguard of Dayton, Inc. Its plan was to utilize our two-way system to monitor burglar, fire, intrusion and medical alert functions from homes and small businesses in Dayton. Since the basic CATV entertainment service was completed, as established by the FCC and plans for Showtime had been made, the idea of adding a non-entertainment service, which was of benefit to the community, was appealing and appropriate.

After lengthy discussions, it was decided that Viacom would act as a transmission company, Cableguard would install and service the alarm and monitoring equipment, and Tocom would provide the interface and computer hardware and software. Tocom III equipment began arriving on March 15 and on the 17th, was connected into the CATV system. Five home terminals were placed in employees' homes scattered throughout the system

and testing began. Clock driven and manually operated switches were installed on the terminals so that any type alarm condition could be simulated and checked for accuracy of response.

System operation starts with the computer polling each home terminal in order via an FSK binary signal. When the home terminal recognizes its address, it responds via another FSK binary signal with its address and the status of its alarm sensors. The entire polling sequence for 2000 terminals occurs every six seconds. In the event an alarm condition exists, the computer delays the sequence long enough to ask that particular terminal to verify the alarm condition. If it is verified, the computer responds by sounding a bell in the monitor room and by printing the type of alarm, address, time and other pertinent information, both in hard copy and on a CRT display. The computer resumes the scanning sequence immediately upon verifying the alarm condition. Monitor operator action is necessary to silence the bell. Fire and medical alert information is transmitted simultaneously to the central fire and ambulance dispatch center. Police related activity is screened by the monitor operator to reduce false alarms. In all appropriate conditions, (fire, burglar, and intrusion) an alarm at the home, operating independently of the computer, is sounded to insure that an alarm condition exists and is recognized at the location.

Marketing and installation of the alarm system started in late April to allow the testing and full confidence in both the terminal equipment and CATV system to be developed. Results have been very encouraging with only small changes in software and fuse blowing-type problems to date.

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With its aim on solutions, a new feature will premier in July **C-ED: TECHNICAL DIFFICULTIES**. Every month, this special section will be devoted solely to answering your particular technical questions.

No matter what the question or problem, we want to hear from you. You will be corresponding with a cable audience chock-full of technicians and engineers who have had their hands on oscilloscopes, attenuators, calibrators and the like for years. Some may have the same questions and be glad you asked. Others may submit their own solutions and possibly suggest a different if not better way of handling those close encounter technical situations.

To submit your questions for the next issue of **C-ED**, either call Managing Editor Toni Barnett on our toll free number, 800-525-6370, or write to:

Technical Difficulties  
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1139 Delaware  
Denver, CO 80204

**TECHNICAL DIFFICULTIES. Beginning in July C-ED. Your personal forum for the exchange of technical information.**

**Please stand by . . .**

## Multi Products International Publishes New Brochure

Multi Products International (MPI) recently published a four-page file folder brochure. The newly published brochure presents an overview of MPI's products and capabilities. The cover illustrates a variety of electronic components supplied and manufactured by the firm. This is followed by a description of the firm's manufacturing operations and quality control procedures. The brochure concludes with a partial listing of electronic components and assemblies currently available.

For a free copy, write to Multi Products International, P.O. Box 684, Clifton, New Jersey 07012. (201) 778-1978.

## Wide Band Engineering Offers Catalog on Test Instruments and Devices

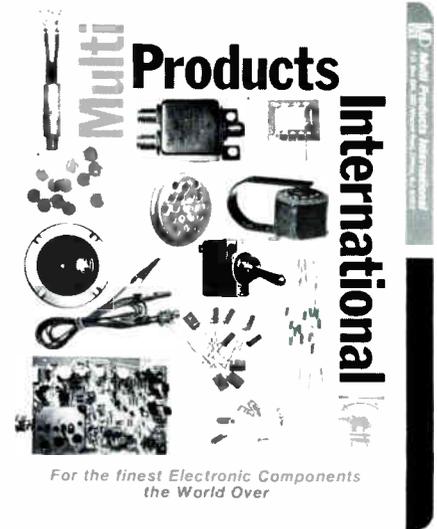
An eight-page product catalog #78 outlines Wide Band Engineering Company's 1-500 MHz RF test instruments and devices. Short descriptions of each item are supplemented by specification charts for rapid comparison of various models. Products included are RF sweep amplifiers, miniature RF amplifiers, RF analysers, RF impedance bridges, RF terminations, RF comparator, RF detectors, directional couplers, DC block, hybrid power divider/combiners, and RF switches.

For additional information, contact Wide Band Engineering Company, Inc., P.O. Box 21652, Phoenix, Arizona 85036. (602) 254-1570.

## Portable Oscilloscope Brochure from Tektronix

A new 24 page, color brochure from Tektronix describes their complete line of portable oscilloscopes. Included are nine industry standard, 400-series portables; four medium-size Sony/Tektronix portables; four 3½-pound 200-series miniscopes; and six low-cost T900-series portables. Bandwidths range from 500 kHz to 350 MHz; storage is available in six models; and DMM's are available in six models. Selection considerations, applications and basic specifications are included in the brochure.

Readers may obtain copies free of charge by contacting a local Tektronix field engineer or by writing to Tektronix, Inc., P.O. Box 500, Beaverton, Oregon 97077.



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Delivery of the SL-300 is stock to 30 days.

For a technical data sheet and a copy of the TVC staff feature which describes how the SL-300 performed in their actual field tests, write or call Avantek or your closest representative.

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## The Freedom to Innovate

By Kenneth Hancock, director of engineering, CCTA

Some of you may recognize the title as the theme for this year's Canadian Cable Television Association Convention. In fact this article is being taped while I am at the NCTA Convention at New Orleans and the title contrasts with the theme of that convention, which of course was "Cable 78 Thirty Years of Innovation & Service." The theme of the CCTA Convention is more of a plea and concern, rather than a statement of current truth.

Perhaps the major concern in the Canadian cable television industry today is the predominance of restrictive regulations and policies that affect us at this time. Both in Canada and the United States, the cable industry has thrived on innovation and the freedom to perceive and fulfill subscribers needs.

One has only to look at the subjects of the plenary sessions at the CCTA convention to find out what these major concerns are:

- Shared Jurisdiction - New Freedom or Double Jeopardy.
- Payment for Programs, Why, to Whom, and How?
- Cable and Satellite - The Basis for Partnership.
- Pay-TV - How Soon is Inevitable?

Let us look at these major concerns one by one and see why there are concerns in Canada and how they have been restrictive of our freedom to innovate.

First, shared jurisdiction. In Canada we have been fortunate inasmuch that for the whole of the lifetime of the Canadian cable television industry, we have had a single regulatory jurisdiction. In the early days this was the Federal Department of Transport, and since 1968 it has been the Canadian Radio-Television and Telecommunications Commission (CRTC). The CRTC reports to the Minister of Communication, and is a Federal entity. The basic argument for cable television being a Federal jurisdiction is that radio waves know no boundaries and therefore come under Federal purview. For a number of years, virtually all provinces have disagreed with this approach for cable television, arguing that cable television is a hard wired distribution system easily limited by boundaries. Most provinces feel that they should have the jurisdiction. Many meetings have taken place over the last five years and there is currently legislation before the Canadian House of Commons which would permit the Minister of Communications to delegate jurisdiction to the provinces. This drawn out battle has had a very restrictive effect on the Canadian cable television industry. The uncertainty of knowing under whose jurisdiction one will be from year to year has had a restrictive effect on financing, planning and general expansion. There is considerable concern that shared jurisdiction could mean duplicate jurisdiction in some instances, with the cable television industry being trapped between two masters, each of whom could insist upon conflicting regulations. This whole problem of jurisdiction has perhaps been the one major factor in Canada which has contributed to our lack of freedom to innovate.

The next concern, identified by the plenary session "Payment for Programs, why, to whom, and how?", refers to the unresolved matter of copyright. The Canadian cable television industry does not pay copyright for signals received off-air and distributed over the cable television system. There is a very strong legal and

moral basis for this position, as all broadcast signals, once they have been transmitted, are public domain. The concept of payment of copyright for intellectual property in the public domain is to many people absurd. On the moral issue the copyright has already been paid by the broadcaster, and the whole intent of broadcasting is to distribute the information to as many people as possible. Additional distribution by cable television systems merely aids this end. Over the past few years there has been considerable pressure from other groups, and unfortunately from departments of the Canadian government, for payment to be made for off-air signals.

This matter of the use of the satellite, is of course hinged to the possibility of carrying revenue producing programming. This brings us to our final major concern, that of pay-TV. Currently, pay-TV is not permitted in Canada, despite the announcement two years ago by the Minister of Communications that pay-TV was inevitable in Canada and the Department wished to see plans for pay-TV distribution submitted as soon as possible. Since that time there have been many hearings and many submissions with the result of a decision by the CRTC that the time is not appropriate for pay-TV, and if the government should consider reversing this decision, it should do so under a set of very restrictive guidelines.

It is hoped that the deliberations at the Montreal convention, which includes many presentations by government personnel, will help to resolve these problems and concerns. The whole industry is eager for "the freedom to innovate" and awaits only the releasing of regulatory shackles and the cloud of government policy uncertainty.

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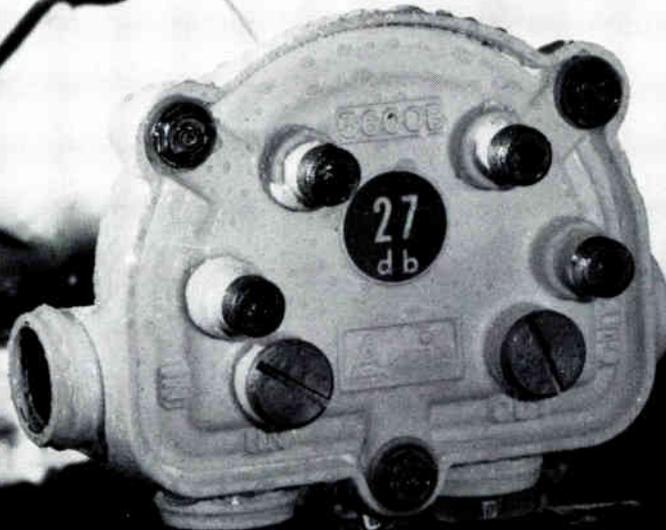
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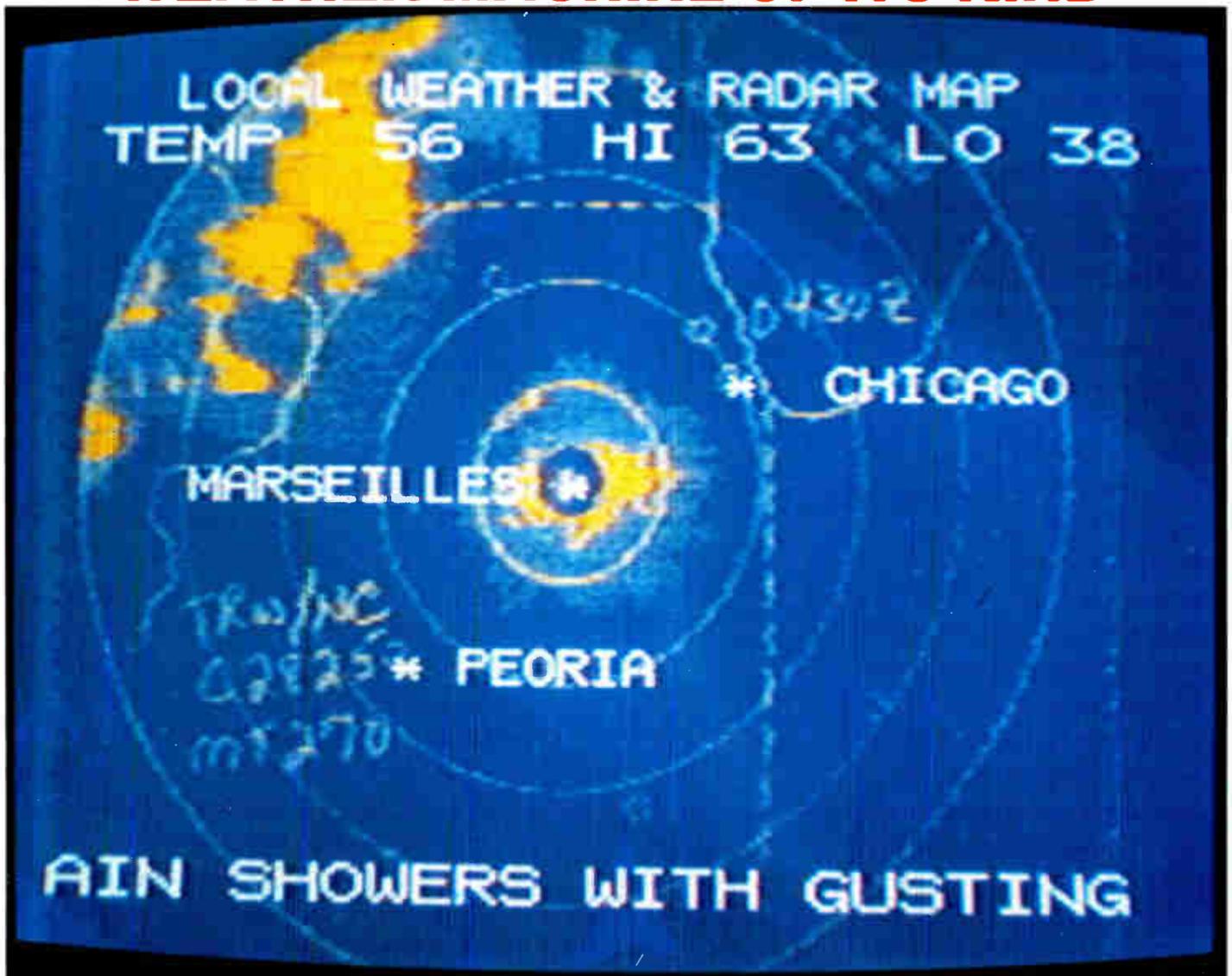
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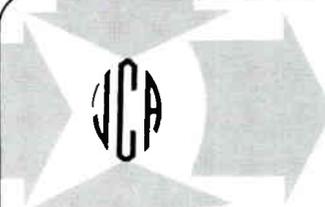
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## NCTA Disputes Broadcasters' Claim on Economic Inquiry

WASHINGTON, D.C.—NCTA has disputed claims by broadcasters that cable systems imperil the broadcasters' ability to service the public in a market-by-market analysis submitted to the FCC. The study was filed in response to the FCC's economic inquiry of cable and broadcasting. NCTA has commissioned Ernst and Ernst for consultation on NAB's filing to the commission on the economic inquiry. (See May C-ED.)

## Asian-Pacific Television Conference Scheduled for June 6-9 at San Francisco State University

SAN FRANCISCO, CALIFORNIA—The third Asian-Pacific Television Conference will be held June 6-9, 1978, at San Francisco State University.

The theme of the conference will be "Satellite Communication for the Asian Pacific Region: Effective Message Formulation and Message Distribution Through Television."

The Cultural and Social Center for the Asian and Pacific Region in Seoul, Korea, is sponsoring the conference, with San Francisco State University as the co-host. Over 80 delegates from Asian and Pacific countries, the U.S. and Canada are expected to attend.

The conference will explore the potential for satellite communication for the Asian and Pacific countries.

For further information, contact Dr. Herbert Zettl, Broadcast Communication Arts Department, San Francisco State University, 1600 Holloway Avenue, San Francisco, California 94132.

## Hughes Schedules June Seminars on Ground Terminals, AML Equipment

TORRANCE, CALIFORNIA—Two technical seminars—one on satellite earth terminals and another on AML local distribution microwave equipment—have been set for early summer by Hughes Aircraft Company's microwave communications products.

The seminars, to be held at the Hughes plant in Torrance in June, are part of a series of sessions held by Hughes to brief technical personnel from CATV systems and multiple system operators throughout the country on the company's latest equipment and technology. The seminars are designed to present both theory and

practice and will include discussions on equipment operation and maintenance.

The first meeting, a five-day seminar scheduled for June 5 through 9, will cover AML (amplitude modulated link) systems, the multi-channel technique now used for local distribution by more than 180 CATV systems throughout the U.S., Canada and Europe.

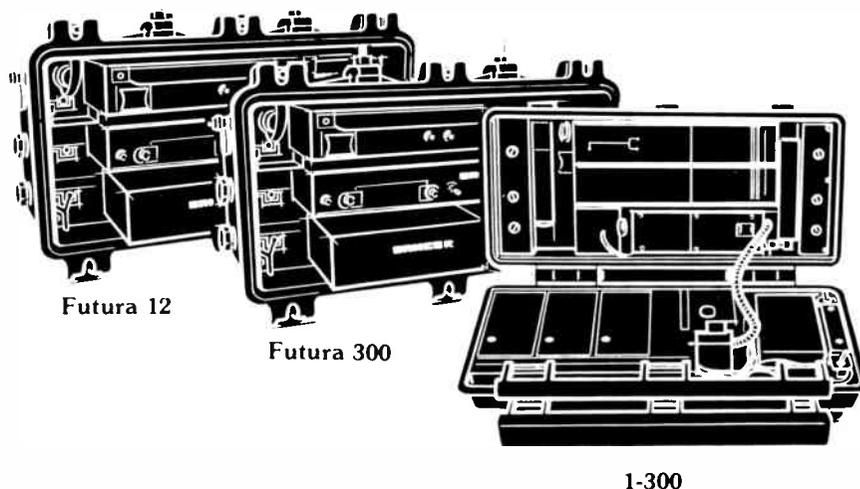
The second meeting will be a three-day session, set for June 27, 28 and 29, and will deal with design, installation and operation of small aperture ground stations used by CATV systems operators

to receive satellite-transmitted television programming. Speakers will include industry figures from both Hughes and outside companies involved in providing equipment and services to the CATV industry.

The seminars are offered on a tuition-free basis, and registrations are accepted on a first-come first-served basis. For further information, contact registrar, Hughes Microwave Communications Products, Building 237, P.O. Box 2999, Torrance, California 90509. (213) 534-2146, ext. 2763.

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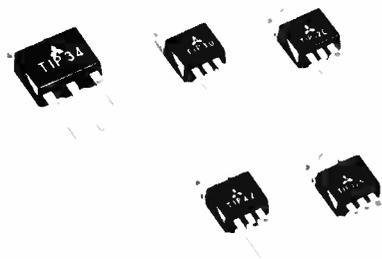
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## Power Supplies

### Family of Power and High-Voltage, High-Current Plastic Transistors from Panasonic

A family of power and high-voltage, high-current plastic transistors is now available from the Electronic Components Division of Panasonic Company. Suitable for power amplifiers and high-speed switching, these units offer power ratings from 30 to 65 watts, and collector-to-emitter voltages from 40 to 500 volts. While all transistors within the family are silicon, they are either NPN or PNP.



Designated as the "TIP" family, there are seven series, four transistors per series. Series TIP29 units offer 1A rated collector current at voltages up to 100 volts (NPN). These units can be complemented with series TIP30 PNP transistors with the same ratings. Series TIP41 NPN units offer 6A rated collector current at voltages up to 100 volts and they can be complemented with series TIP42 PNP transistors that offer the same electrical performance. Series TIP47 through TIP50 NPN transistors are ideally suited for high-voltage and high-energy applications—their rated collector current is 1A at voltages up to 500 volts. Series TIP120 through TIP122 units are Darlingtons NPN power transistors offering 5A rated collector current, 100 volts voltages and the capability of being complemented with series TIP125 through TIP127 Darlingtons PNP power transistors with the same electrical characteristics.

All units within the TIP family are mechanically interchangeable within TO-66 packages when mounted on a printed circuit board.

For additional information, contact Panasonic Company, One Panasonic Way, Secaucus, New Jersey 07094, (201) 348-7276

### Standby Power from Powervision

The Powervision NB113B provides an uninterruptible source of 12 amperes of clean 30 or 60 volt square wave power to CATV systems. The unit includes a Powervision PS750 ferroresonant CATV power supply as standard equipment. A solid state static switch transfers the cable load between the ferroresonant regulator output and the inverter output as required.

During utility power failures or brownouts, the load is switched to the square wave inverter output operating from a 36 volt battery pack. Thirty seconds after utility power returns within limits, the solid state switch transfers the load to the normal power supply and the battery conditioner within the 113B recharges the battery pack.

For more information, contact Powervision, Inc., 1600 W. Redondo Beach Blvd., Gardena, California 90247, (213) 327-3512.

### GTE Sylvania's 3340 Standby Power Supply

The 3340 standby power supply from GTE Sylvania is used to supply DC power to individual series 1000, 2000 and 3000 stations when power outages occur. They may be employed at selected, critical station locations or throughout a system employing Sylvania Pathmaker stations.

This unit is maintenance free and reliable. The sealed cell, lead calcium electrolyte batteries employed typically provide a maintenance-free, five-year life span. Supply circuitry is solid-state with no mechanical parts or relays. Automatic temperature compensating circuitry adjusts recharging voltage to provide maximum capacity and longer battery life.

For additional data, contact GTE Sylvania, Inc., 114 S. Oregon St., El Paso, Texas 79901.

### AEL Introduces Dual-Channel Converter Unscrambler

For the fully-loaded, 12-channel system, the AEL-DCU converts and unscrambles two midband or superband, non-adjacent channels to a lowband channel.

Operating characteristics feature input frequency range of 126-168 MHz or 216-264 MHz, output frequency range for channels 2, 3 or 4, and worse case insertion loss of 16 dB. Noise figures are 1

dB off, and 8 dB on.

AEL is introducing this device for \$29.00, effective for 90 days with delivery starting August 1, 1978.

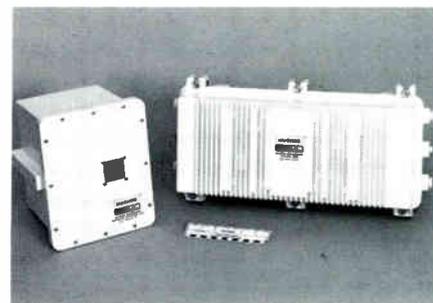
For additional information, contact AEL Communications Corporation, P.O. Box 552, Lansdale, Pennsylvania 19446, (215) 822-2929.

### New Hughes AML Redundancy System Assures Backup Receiver Operation

An automatic switching system to provide hot standby operation for AML multi-channel transmission systems is now being offered to the CATV market by Hughes Aircraft Company's microwave communications products.

Called the AML receiver redundancy system, the new equipment is aimed at reducing down-time on a CATV system at the relatively modest cost of a standby receiver.

The redundancy system continuously monitors the performance of two AML receivers, each of which is capable of handling up to 40 video channels, and automatically selects the superior output signal to feed the cable system.



Three major characteristics of each receiver are monitored—receiver VHF output level (on either a predetermined video channel or AML pilot tone), phase lock loop alarm, and solid state source alarm. If both receivers or the transmitter should become inoperative, switching is also provided to a local signal source such as a standby low-cost headend for off-the-air signals.

The Hughes AML receiver redundancy system, AML-RRS-20, consists of two major components: the control unit, AML-RRCU-21; and the waveguide switching unit, AML-RRWGSU-22.

For further information, contact Hughes Microwave Communications Products, P.O. Box 2999, Torrance, California 90509, (213) 534-2146.

## Cable

### Times Wire and Cable Announces Optical Reflectometer

Times Wire and Cable Division of Times Fiber Communications has announced the addition of the optical reflectometer model OR-1 to its line of optical fiber cable-related products. The optical reflectometer is a time domain device to determine discontinuities in an optical fiber cable.

The optical reflectometer monitors reflected pulses from discontinuities and measures the elapsed time in terms of position along the fiber. After injecting a short, intense optical pulse into the fiber, the OR-1 monitors the reflections due to breaks, inclusions, microcracks and other backscattering phenomena. The reflections can be displayed and the elapsed time measured with most 50 ohm impedance 100 MHz bandwidth oscilloscopes.



This new device is compact and portable (17" x 7" x 13"). Narrow pulse width allows one meter resolution. High gain PMT offers superior signal-to-noise ratio. The OR-1 accepts a range of fiber diameters up to 150 micrometers, and features an adjustable signal level and repetition rate.

For more information, contact Times Wire and Cable Company, 358 Hall Ave., Wallingford, Connecticut 06492, (203) 265-2361.

### Parameter III from Comm/Scope

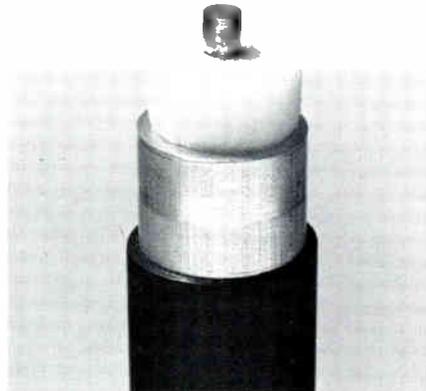
A new, super low-loss coaxial cable—Parameter III—has been unveiled by Comm/Scope Company.

Parameter III adds greatly improved handling characteristics to the superb electricals of Parameter II, resulting in a trunk and feeder cable that will stand up to the toughest conditions of general handling and installation.

Parameter III offers a gas-expanded polyethylene dielectric, with complete moisture lock-out; a seamless aluminum shield surrounded by virgin high

molecular weight black polyethylene; copper clad or solid copper center conductor; sequential footage marking (jacketed .750 and 1 inch sizes). Options are available for armored, messengered or flooded cable. PIII is 100 percent sweep tested for SRL and attenuation and 100 percent pressure tested for moisture ingress. It offers a full frequency utilization to 300 MHz.

For more information, write Comm/Scope Company, P.O. Box 1519, N. Myrtle Beach, South Carolina 29582.



### Belden Introduces Bonded Drop Cable Line

A new line of coaxial CATV drop cable employs a double aluminum foil shield bonded to the dielectric core for increased durability under severe flexing and improved resistance to radial cracking.

Called Duobond® II, the new shield design incorporates a laminate of two thicknesses of foil separated by a polyester film. Like the original Duobond single foil/film bonded shield, Duobond II shielding provides 100 percent physical coverage to minimize signal radiation and pickup. Bonding the shield to the dielectric core enables the laminate to resist push back during termination, and potential signal radiation from the unprotected connector area.

Duobond II-shielded 75 ohm drop cable, featuring low-loss cellular polyethylene insulation, is available in 19 59/U Type (20AWG) and six 6/U Type (18 AWG) designs including messengered constructions. In the 59/U Type, Duobond II shielding is supplemented by aluminum braid with coverages ranging from 40 to 95 percent; 6/U Type Duobond II-shielded versions are offered with aluminum braid shields of 40 and 61 percent.

For additional information, contact Manager, Marketing Communications, Belden Corporation, 2000 S. Batavia Ave., Geneva, Illinois, 60134.

## Video

### Philips Introduces New, Lightweight Compact Portable Camera

Philips Broadcasting has unveiled a new, lightweight, compact portable color television camera representing a major design advance in its field. Known as the Philips LDK 14, the new 2/3-inch Plumbicon camera is a fully automatic, self-contained ENG portable of minimal weight and low power consumption, combined with a rugged, shockproof design. Picture quality is of such high standard that the LDK 14 is also well qualified for use as an EFP portable or studio camera with an optional remote control unit.

Major engineering features have been incorporated in the electronic/optical systems of the LDK 14. A new, unique camera yoke was designed with the focus coil placed nearest the tube, thereby reducing focus power and operating temperatures. Circuitry has been designed to maximize the performance capabilities of the latest Plumbicons. Other features include increased static and dynamic resolution, f/1.4 optics, low-light operation, contrast compensation, and highlight discharge circuitry.

For additional information, write Philips Broadcasting Equipment Corporation, 91 McKee Dr., Mahwah, New Jersey or call (201) 529-3800.



### New Editing System From JVC Features High Speed Search

JVC introduced its latest video development—the CR-8500LU 3/4" fully electronic editing recorder. Its state-of-the-art features include high speed search and automatic search in both forward and reverse.

The teleproduction system—including two CR-8500U editing decks and an RM85U automatic editing control unit—will be available this month.

Among the CR-8500's most advanced features is its sophisticated search

function. It operates at approximately ten times normal speed in both fast forward and rewind. In forward and reverse modes, the search control, in addition to normal speed (real time), can be set at two times, one-fifth, and one-twentieth the normal speed, as well as in still-frame. During search, the tape remains wrapped around the head drum for fast, accurate locating of the edit point.

The CR-8500 performs both assemble and insert editing, and offers automatic pre-roll editing. When set, this function automatically pre-rolls the tape after completion of one edit to instantly prepare for the next.

Elimination of distortion at the edit points is ensured with capstan and framing servo mechanisms, which also allow for frame-to-frame editing. Horizontal sync phase compensation is employed to minimize timing error at the edit points.

Other features of the JVC CR-8500LU ¾-inch editing recorder include self-illuminating control buttons; and full logic tape transport for direct mode switching without pressing "STOP" button.

For more information, contact JVC Industries, Inc., 5875 Queens-Midtown Expressway, Maspeth, New York 11378, (212) 476-8010.



### CHYRON Telesystems Introduces New TV Graphics and Titling System

CHYRON Telesystems has introduced the CHYRON IV, a new state-of-the-art graphics and titling system with operational and display features never before available for television production, including instant italics, 64-color palette and action graphics. A full-function second channel is optional.

CHYRON IV, like its CHYRON II predecessor, is designed with 27 nanosecond resolution, highest in the television broadcast industry, to produce characters and graphics with sharp edges, smooth curves, and refinement of detail comparable to live camera video.

The standard CHYRON IV font library offers a choice of 25 fonts in 14 different type faces. The instant italics feature automatically converts any standard font in the font library into italicized characters

having a 14 degree slant or a 28 degree slant. Italics can be used to create a complete message or can be intermixed with a standard font, on a word basis, to provide emphasis and impact.

For additional information, write to CHYRON Telesystems, 223 Newtown Rd., Plainview, New York 11803, (516) 249-3296.



### Multi-Role Lens for Standard, Portable Cameras

A multi-role lens that needs no registration or camera adjustment is available from Rank Precision Industries, Inc. Varotal MRL from Rank Taylor-Hobson provides a common set of optical zoom lens modules for both standard and portable television cameras. Three interchangeable lens fronts give wide angle, narrow angle, or standard capabilities with a total focal length of 56 to 1. Available for most broadcast television cameras, Varotal MRL accepts manual or servo zoom and focus modules, and includes a set of three turret range extenders (1.4X, 2X and 2.8X), with automatic aperture compensation. A quartic shot box designed in consultation with cameramen is also available as optional equipment.

For additional information on the Varotal MRL, write to Rank Precision Industries, Inc., 260 North Route #303, West Nyack, New York 10994.



### Video Data's MicroSystem 1™

Video Data's MicroSystem 1™ is a versatile microprocessor managed automated information system for single or multiple channel displays. MicroSystem 1™ features ease of operation, optional diskette memory, the industry's most advanced special editing functions

to speed data entry and manipulations, and operator programmable displays.

Advanced technology and design provides unparalleled flexibility to create individual channel display formats. Select one of three character heights, two character widths, six choices for font enhancement, and any of eight standard colors on a line by line basis.

For additional data, call Video Data Systems, (516) 231-4400.

### MSI Announces FLEXICASTER™

MSI Television has announced the newest addition to the MSI line of quality products for automatic cablecasting, the FLEXICASTER™. Features of this new device include adaptability to existing MSI character generator systems with no need to replace high quality reliable equipment for the sake of adding additional video special effects; line-by-line color control; black or white character selection on a line-by-line basis; four character heights; two character widths; and variable display time on a page-by-page basis under keyboard control.

For more data, contact MSI Television, 4788 S. State St., Salt Lake City, Utah 84107, (801) 262-8475.

## Passives

### C-COR Announces New Mainline Passives

New mainline passives have been announced by C-COR Electronics, Incorporated. These items, which include two-way, three-way and four-way splitters and directional couplers with 8, 12 and 16 dB values, were displayed for the first time at the NCTA convention in New Orleans.

The splitters and directional couplers have outstanding electrical performance characteristics with particular attention for performance down to 5 MHz. RFI integrity is ensured with a separate metal gasket. All capacitors are 500 volt minimum rating to ensure freedom from lightning and power surge damage. AC power can be blocked without changing the electrical characteristics. No fuses or fuse clips are used in the units, since these pose reliability problems with the addition of added connection points.

The mechanical configuration of the unit is a new die-cast aluminum housing of corrosion-resistant alloy #A-360. Also available as an option (manufactured to

order) is corrosion protection by chemical conversion coating to spec Mil-C-5541 (such as Alodine and Iridite.) There are extended bosses for each coaxial input with a retention lip for the use of heat shrink tubing. The housing is long enough to allow splicing of the device on existing cable without cable extension devices. Up to one inch diameter cable can be accommodated. All cover bolts are captive and a pivot bolt allows the cover to swing open but holds the cover captive.

For additional information, contact: James R. Palmer, president, (814) 238-2461.

### Directional Taps from Theta-Com

The Theta-Com XR2 PLUS series directional taps have been specially designed and optimized for stable performance, ultimate reliability and operational life.

The mechanical design of each tap has been carefully oriented to assure long term electrical and RF stability without performance deterioration. Maximum RFI integrity is assured by deep RFI wells cast into the lid and housing. Environmental protection is provided by the inclusion of a durable O-ring seal.



Tap response and attenuation is exceptionally flat from 5 to 300 MHz with high isolation and very low VSWR. Each tap is capable of up to 7 amps AC power bypass, with up to 12 amps momentary bypass.

For more data, contact Theta-Com CATV/Texscan, 2960 Grand, Phoenix, Arizona 85061, (602) 252-5021.

### ComSonics' New Coaxial Relay

This totally passive coaxial switch from ComSonics is excellent for all lower power switching applications requiring high performance specifications. Passive design eliminates third order distortion inherent in solid state switches, making it desirable for CATV headend use where additional distortion cannot be tolerated.

Features of this new coaxial switch include no third order distortion, excellent

return loss (VSWR), single polarity control voltage, high isolation, virtually no insertion loss and two switching methods available.

For more information, contact ComSonics Inc., P.O. Box 1106, Harrisonburg, Virginia 22801, (703) 434-5965.

### RMS Exclusive Hybrid Splitter

Available only from RMS Electronics, is the CA-3006 six-way splitter in a non-corroding stainless steel housing.

RMS offers the CATV industry a complete line of 2, 3, 4, 6, and 8-way stainless steel splitters suitable for indoor/outdoor use under the most severe corrosion conditions. The special stainless steel housing more than doubles the "life" of the splitter over any competitive brand.

Screw machine brass terminals, with silver plated protection, assures easy application of "F" connectors. This "one time investment" eliminates additional replacement and service call costs.

For more on this unique tap, write RMS Electronics, Inc., 50 Antin Place, Bronx, New York 10462 or call collect (212) 892-1000.

## Headend Electronics

### Earth Terminal Preamplifiers From Avantek

Avantek AW-4280 series Low Noise Amplifiers offer excellent performance and reliability as stand-alone preamplifiers for receivers in 3.7 to 4.2 GHz earth terminals. They combine extremely low noise figures (1.5 dB, 120 degrees K—full bandwidth) with low input and output VSWR (less than 1.25:1) and the gain slope/group delay characteristics vital to wideband communications performance. In addition, their relatively high output power (+10 dBm/10mW) allows the designer to safely include multicouplers, filters or other passives ahead of the microwave receiver.

Since AW-4280 series amplifiers have a wide dynamic range, systems can be optimized for reliable performance during fading without experiencing overloading or cross modulation during signal peaks.

The AW-4280 series amplifiers are packaged in cast aluminum cases with an integral waveguide input flange and a coaxial cable connector output. The

cases are coated with a urethane finish and the lids are sealed with elastomeric O-rings to assure complete weather-tightness in an unprotected environment.

Avantek's LNAs are ideal for antenna feedpoint mounting when used as the sole preamplifier in light and medium capacity earth terminals, placing them ahead of all feedline losses for best system noise performance.

For more data, write Avantek, Inc., 3175 Bowers Ave., Santa Clara, California 95051, or call (408) 249-0700.



### Jerrold Adds Demodulator to COMMANDER III Family

Jerrold Electronics Corporation has introduced a high-performance demodulator to its COMMANDER III family of equipment. This new demod has an envelope detector system that rivals any synchronous detector. A unique (patent pending) complementary-diode network insures unsurpassed linearity. The second diode complements and cancels out any adverse diode effects in the envelope detector, resulting in synchronous-detector performance.

The built-in precision chopper system makes accurate depth-of-modulation measurements simple and the easy-to-read reference pulse can be positioned anywhere in the vertical blanking interval.

Either video-output connection can deliver pure video or one can have added sound sub-carrier (4.5 MHz). Separate balanced and unbalanced (600 ohms) audio outputs are available at the barrier-strip terminal or standard XLR broadcast-audio connection.

Other advantages include front-panel test points, convenient electronics-in-a-drawer design, plug-in modular construction with hybrid ICs, group-delay equalization from edge to edge of the video-information passband, and 100 percent crystal control for maximum stability of broadcast-quality signals.

For more information, contact Jerrold Electronics Corporation, P.O. Box 487, Hatboro, Pennsylvania 19040, (215) 674-4800.

## Test Equipment

### New High-Speed Variable Persistence Storage Oscilloscope Captures Fast Transients

A new variable persistence storage CRT, used for the first time in Hewlett-Packard's new 100 MHz, model 1744A oscilloscope, has an 1800 cm per microsecond single-shot writing speed for the capture and display of fast transient signals. The ability to capture transients at the maximum 100 MHz bandwidth of the vertical deflection system is achieved with a technique called 'expansion storage.'

This new 1744A oscilloscope is the first to offer high-speed variable persistence storage with writing speeds compatible with 100 MHz bandwidth without reducing the display scan. Combining storage with high-speed writing fulfills measurement applications requiring high-speed integration and light amplification capabilities as well as full-screen single-shot measurements at 100 MHz bandwidth.

Inquiries on this product should be mailed to the Inquiries Manager, Hewlett-Packard Company, 1507 Page Mill Rd., Palo Alto, California 94304.



### Tektronix' Programmable Digital Instrument Makes NTSC Video Measurements Automatically

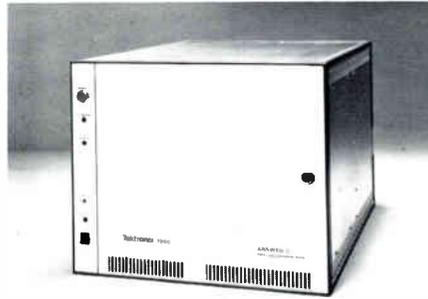
ANSWER is a microprocessor-based automated television measurement set that will measure: video signal timing; blanking, sync, and burst parameters; transmission quality parameters, including signal to noise ratio, per NTC-7; and any VIT, VIR, or full field test signal.

Tektronix' ANSWER is factory programmed for 37 measurements and can run a complete in-service NTC-7 and timing measurement routine in less than one minute with worst case accuracies of 0.5 percent, 0.5 degrees for most measurements. ANSWER can also analyze the FCC remote transmitter

control VIT signals and is easily adaptable to test signal format changes.

Measurement results are output in ASCII code and can be recorded in English on a peripheral printer, providing a permanent record. Programmable measurement limits allow ANSWER to warn the user when out-of-limit signal distortion occurs. Alarm signals are output in ASCII code and may be interfaced as desired by the user.

For more information, contact Tektronix Inc., P.O. Box 500, Beaverton, Oregon 97077.



### Sadelco Features DIGIT-LEVEL-100

Sadelco's DIGIT-LEVEL-100 features a major break-through in signal level meter design. The DIGIT-LEVEL-100 digital signal level meter has a unique display window containing a half-inch three-digit LED readout. The DIGIT-LEVEL provides a 90 dB total range with 0.1 dB resolution. Even the smallest signal changes can be determined with ease.

The digital dynamic range is 20 dB within any individual attenuator position. Attenuators can be switched in 10 and 20 dB steps. This permits placing any signal level reading either within 5 dB of the center of the 20 dB dynamic range, or more than 15 dB from the top or bottom of the 20 dB dynamic range, and provides a 90 dB total range from -30 to +60 dBmV.

For more information on this device, contact Sadelco, Inc., 299 Park Ave., Weehawken, New Jersey 07087, (201) 866-0912.

### Video Noise Meter from Lenco, Inc.

The Lenco model VNM-428 video noise meter is a newly developed, patented device which utilizes a different principle of operation than any other instrument now in use. The VNM-428 was designed specifically for the video signal-to-noise measurement requirements of TV studios, CATV, and microwave system users where portability, simplicity of operation, and accurate measurements are desired.

A major feature of the VNM-428 is the

in-service capability of making accurate, real time signal-to-noise measurements even on live off-the-air signals. The VNM-428 is small, rugged, stable, and has a built-in calibrator that insures accuracy of  $\pm 0.5$  dB throughout the range of 20 dB to 55 dB. The signal-to-noise ratio is shown directly on a large LED display and is calibrated to EIA standards.

For more information, contact Lenco, Inc., Electronics Division, 300 N. Maryland St., Jackson, Missouri 63755 (314) 243-3147.

### ComSonics' Sniffer® RF Leakage Detection System

The Sniffer is designed solely for troubleshooting RFI/EMI leakage in a CATV system. Proper use of the instrument can even permit distinction between leakage sources such as a loose drop fitting, loose major port connector, or a hairline cable fracture in such close proximity as at a multitap location. The Sniffer may also be used very effectively to locate underground plant and leaks. The Sniffer is a three-part system, including a source, sensing unit and detector. All accessories for operation are included and extra detectors are separately available.

Further details may be obtained from ComSonics Inc., P.O. Box 1106, Harrisonburg, Virginia 22801, (703) 434-5965.

## Receivers

### New Satellite Earth Station Receiver from Microdyne

The 1100-TRV (X12) represents one of Microdyne's newest products developed for the reception of wideband satellite data. These receivers are EIA and CCIR compatible and are designed for reception of wideband FM signals via domestic and international satellites. Applications include pay-TV (CATV), independent television stations, wideband business data and related future areas of development where optimum phase linearity and sensitivity, are required.

The 1100-TRV (X12), featuring Microdyne's patented voltage tuned preselector, provides 12 selectable channels either locally or remotely switchable. The receiver can be provided with any 12 of the 24 channels available