

# CED<sup>TM</sup>

Tech Review

Communications Engineering Digest/The Magazine of Broadband Technology

January 1983

## Reusing CARS Frequencies

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We started with the most advanced Sweep Recovery System available, and then surrounded it with options that make it even better. You can do the same thing.

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Then, too, there's a case to be made for value received. Jerrold addressable systems, for example, outsell the competition by far. The reason is simple enough: they're the best cost-performance buy in the business.

The reason for that is simple. As a division of the world's leading producer of specialized custom microelectronics, we have access to highly advanced proprietary microprocessor technology.

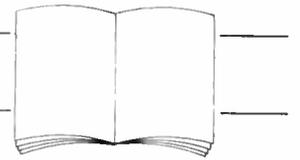
All of which, and more that you'll be hearing about, add to your bottom line. Whether you're looking back or looking ahead.

General Instrument Corporation, Jerrold Division, 2200 Byberry Road, Hatboro, PA 19040

**Jerrold.**  
First in cable TV.



**GENERAL  
INSTRUMENT**



### Techscope 7

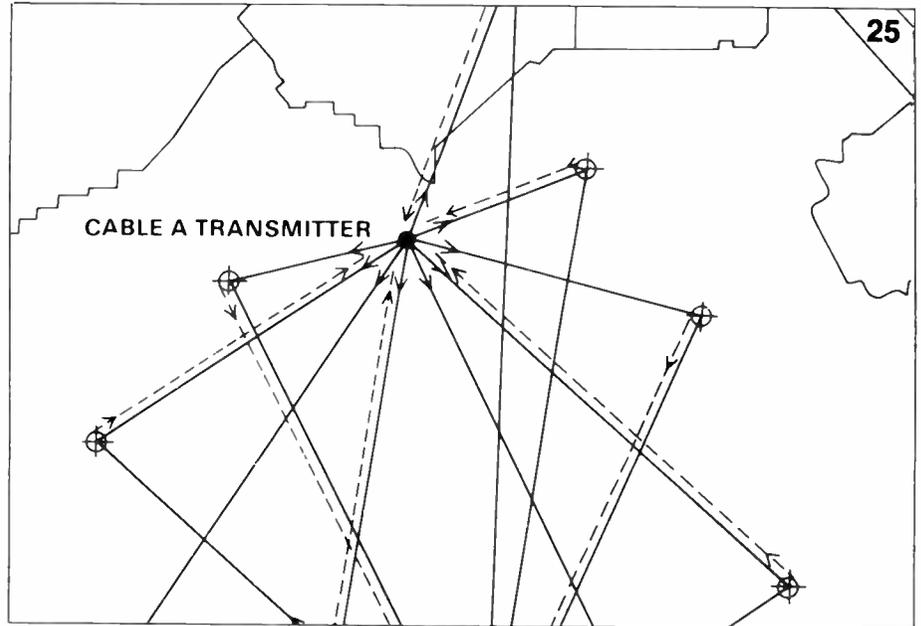
Cable technicians have learned to overcome all sorts of obstacles in the reception of satellite-fed programming but an Iowa TV station has had some peculiar problems with their dish. Also, GOES West, the infrared weather satellite that helps meteorologists across the nation predict weather patterns over the Pacific Ocean, died suddenly several weeks ago. Despite efforts to revive the sick bird, a failure in its infrared sensing device has turned this otherwise reliable weather forecaster into geostationary junk.

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The franchising process has driven the cable industry for many years. As it begins to peak over the next few years, will a shakeout occur among hardware manufacturers? Editor George Sell observes that the days of "blue sky" promises seem to be passing but the lingering effects remain. Will foreign competition for new markets mean that the American manufacturer is facing a potentially bleak future?



### Reusing CARS Frequencies For Signal Distribution 25

Hughes AML equipment allows operators to transmit more than 100 TV channels to (and from) 20 or more receive sites throughout a franchise area without stepping out of the bounds of the 500 MHz CARS band. This article describes the advantages of incorporating AML technology into systems operation.

### Tech Review 33

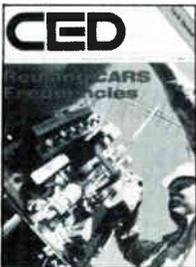
Our six month review of new products from over 120 manufacturers.

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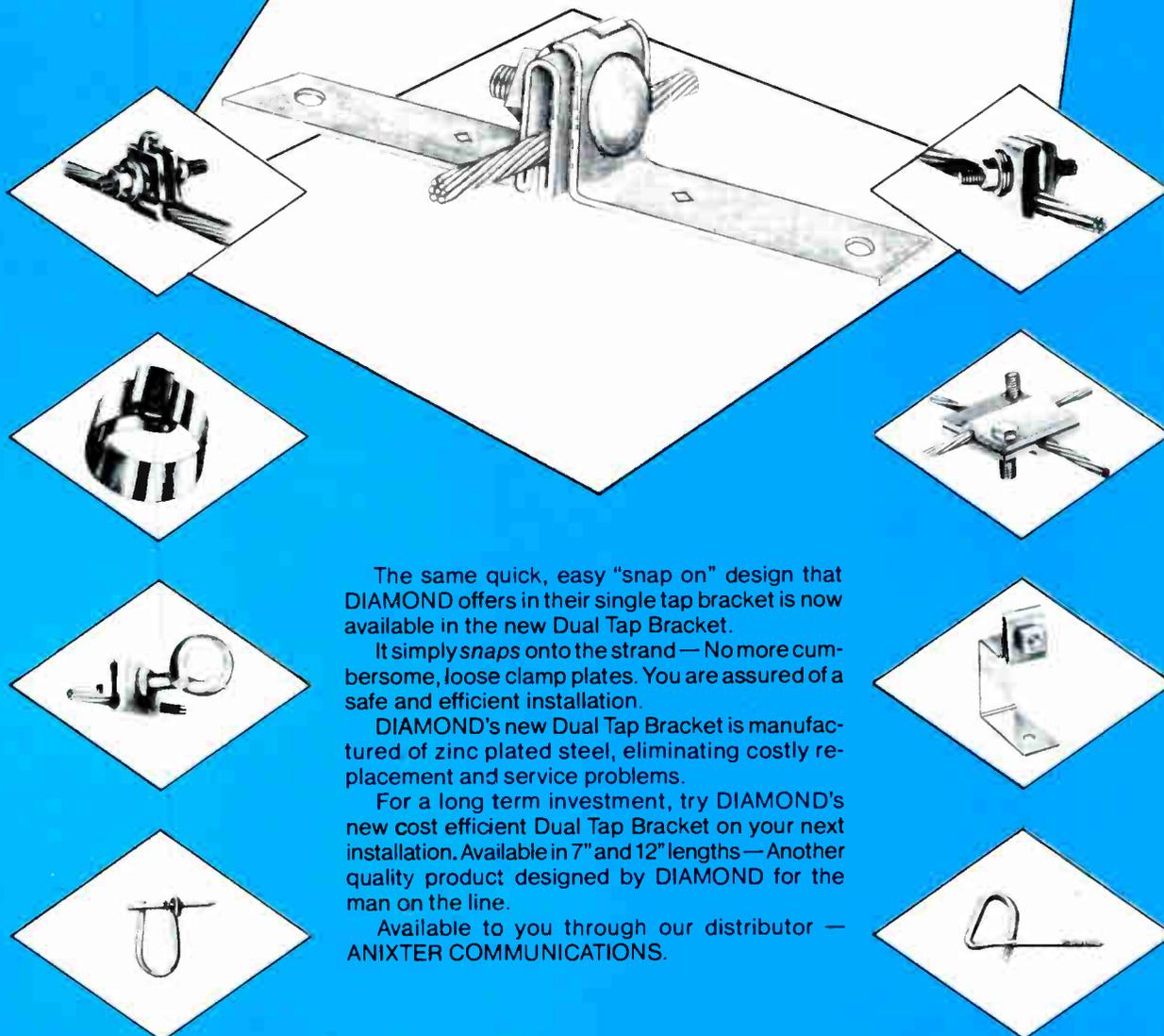
A cable tech inspects a Hughes AML outdoor microwave receiver serving as a 54-channel headend. The cable powered receiver promotes multi-hub receiver networks.



# DIAMOND

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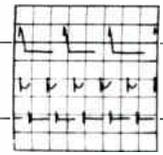
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## Down On The Farm

Cable technicians have learned to overcome all sorts of obstacles in the delivery of satellite signals. When The Associated Press installed a dish at KDEC in Decorah, Iowa, in January, the reception was perfect. Many cable operators who receive AP News cable use a similar dish. Two months after AP installed the dish, intermittent signal problems surfaced. AP technician Bill Bryan investigated and found bird droppings on the lip of the dish. Then, he uncovered a nest of young wrens inside the dish's low noise amplifier. Bryan concluded that the wrens partially blocked the signals by standing on the edge of the dish. But the problems weren't over. In late May, the signal problems recurred. This time he discovered that cattle found the dish a convenient scratching post and that the cables on the dish made an appetizing afternoon snack.

## Way Out West

There may have been a time when weather forecasters depended on the *Farmers Almanac* or some good-natured fellow in Kansas whose bunions never lied. But in this age of satellite communications, meteorologists rely heavily on pictures received from satellites in the geosynchronous orbital arc 22,300 miles above the equator. One of these satellites, GOES West (Geostationary Orbiting Environmental Satellite), died suddenly several weeks ago, and despite efforts to revive the sick bird, an electronic failure in the satellite's infrared sensing device has turned this otherwise reliable weather

forecaster into geostationary junk. Most U.S. meteorologists are using GOES East, as well as other satellites that were retired when GOES West was put in place, to make their daily forecasts. Most of these satellites, however, do not have infrared capability. "I feel like a man who's wearing a patch over one eye," said John Coleman, president of The Weather Channel. "Right now we are using GOES I, which has a visible sensor (not an infrared sensor), which means that during these winter months it can give us usable pictures about six hours a day at this point, and we are using those pictures with abandon both on the air and in forecasting." The GOES satellites are operated by NESS, the National Environmental Satellite Service. A replacement for GOES West is not scheduled for launch until April 1983.

## Hot And Cold

If you're one of those people who'd like to turn on your oven while driving home, then General Electric's Personal Radio Communications Service (PRCS) is for you. GE's Audio Electronics Department envisions such eccentricities as part of a proposed mobile phone service that would use 9 MHz of a 900 MHz spectrum and may eventually be available to 10 million people. The PRCS would be comprised of a base station and mobile phone priced at \$400, and it could be used to remotely activate appliances in the home within a 5-mile range. Repeaters could increase this range to 15 miles. Can't you see it now? A carelessly installed PRCS may result in a cold meal in the oven and a hot football game on the tube.



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# RECEIVE 48 CHANNELS FROM TWO SATELLITES WITH JUST ONE DISH.

Now cable operators can double their programming options at a fraction of the previous cost and bring the savings to their bottom line. The dual beam TVRO modification means you can receive signals from two adjacent satellites without going to the expense of installing a second dish.

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Time Inc.  
Warner Amex  
Times Mirror Satellite  
Programming  
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Turner Broadcasting System  
Southern Satellite Systems  
PTL  
ESPN  
Christian Broadcasting  
Network  
USA Network  
United Video  
Community Service Network  
Reuters  
Landmark Communications  
Modern Satellite Network  
C-SPAN

## Galaxy I

Time Inc.  
Group W Broadcasting  
Company  
Times Mirror Satellite  
Programming  
Viacom International  
Turner Broadcasting System  
SIN Television Network  
C-SPAN



10/82

With the dual beam modification, you can receive Galaxy I and Satcom III-R simultaneously. These are the only two major cable satellites to be placed in adjacent orbital slots, and their transponders will be packed with the leading programmers in the cable industry. With dual beam, you won't be forced to choose between competing satellites ever again.

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**No purchase and installation costs for a second dish**  
**No new real estate required**

**No perceptible loss of signal quality**

**Diversified programming and expanded service tiers**

**Reception of both Galaxy I and Satcom III-R, featuring the strongest programmers in the industry**

To receive programming from these two cable birds, all that is required is a modification of the existing feed system. Reflectors from 4.5 to 7.0 meters in diameter with focal length to diameter ratio ( $f/d$ ) from 0.3 to 0.5 can be accommodated. The modified feed system utilizes a limited offset from the paraboloid focal point to restrict the range between beams to less than 5 degrees and maintain high efficiency.

Once modified, the dual beam feed system will receive signals from 3.7 to 4.2 GHz. The loss of gain due to the production of two beams is on the order of 0.5 db.

Remember, other birds just can't match up to the Galaxy I/Satcom III-R package that you can receive with the dual beam modification. Get the most attractive mix of quality cable programming available. Save on the cost of upgrading your system. Get the dual beam TVRO modification and see what the skies have to offer.

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**MICRODYNE CORPORATION**  
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Ocala, Florida 32672  
(904) 687-4633

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Atlanta, Georgia 30348  
(404) 925-5000

For additional information contact:

Cindi S. Whalen, HUGHES COMMUNICATIONS, P.O. Box 92424, Los Angeles, California 90009 (213) 615-1000

## HUGHES COMMUNICATIONS

**HUGHES**

HUGHES AIRCRAFT COMPANY

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## January

**4-6:** The fourth Western Conference and Exhibition of the **Armed Forces Communications and Electronics Association** will be held at the San Francisco Hilton and Tower. Contact (703) 578-1037.

**6:** The **Society for Private and Commercial Earth Stations** will hold a seminar on "Private Cable (SMATV)" at the Frontier Hotel in Las Vegas, Nev. Contact Carole Sutter, (202) 887-0605.

**7-9:** An SMATV seminar for "start-up" companies sponsored by **Eagan & Associates** will be held in Tampa, Fla. Contact (904) 351-5400.

**12-14: Magnavox CATV Systems** will be conducting a field training seminar with its Mobile Training Center in San Francisco, Calif. For more information contact Laurie Venditti, (800) 448-5171 or (800) 522-7464.

**17-19: Magnavox CATV Systems** will be conducting a field training seminar with its Mobile Training Center in San Francisco, Calif. For more information contact Laurie Venditti, (800) 448-5171 or (800) 522-7464.

**19:** The **New England Cable Television Association** will hold its winter conference at the Sheraton-Tara Hotel in Nashua, N.H. Contact Gary Cain, (603) 224-3373.

**24-26:** The **National Institute for Low Power Television** is sponsoring LPTV West at the Disneyland Hotel in Anaheim, Calif. Contact Frank Camoro, (203) 852-0500.

**24-26:** A conference on "Telephone Bypass Network Opportunities" sponsored by **TeleStrategies Inc.** will be held in New York. Contact Frances Gatz, (703) 734-7050.

**25-27:** A **Blonder-Tongue** "MATV/CATV/TVRO Technical Seminar" will be held in Atlanta in conjunction with Adams and Associates. Contact Tom Adams, (919) 272-6838; or Gloria Rothfuss, (201) 679-4000.

**27-28:** A seminar on "Future Trends in Broadband Networks" sponsored by **Phillips Publishing** will be held at the Marbury House in Washington. Contact Dianne Pontisso, (301) 986-0666.

**31-Feb. 2: Communication Network '83** will be held at The Rivergate in New Orleans. Contact Louise Myerow, (617) 879-0700.

## February

**2-4:** The annual convention of the **Texas Cable TV Association**, the Texas Show, will be held at the San Antonio Convention Center. Contact the TCTA, (512) 474-2082.

**7-8: Phillips Publishing** will sponsor a conference on "Ku-Band Satellite Communications in the '80s" at the Hyatt Regency in Washington, D.C. Contact (202) 463-2970.

**8-9:** The annual meeting of the **Arizona Cable Television Association** will be held at the Phoenix Hilton Hotel. Contact the ACTA, (602) 257-9338.

**9-11: Magnavox CATV Systems** will be conducting a field training seminar with its Mobile Training Center in Denver, Colo. For more information contact Laurie Venditti, (800) 448-5171 or (800) 522-7464.

**9-11:** The **Arkansas Cable Television Association** annual convention will be held at the Excelsior Hotel in Little Rock. Contact (501) 661-7677.

**14-16: Magnavox CATV Systems** will be conducting a field training seminar with its Mobile Training Center in Denver, Colo. For more information contact Laurie Venditti, (800) 448-5171 or (800) 522-7464.

**18-19:** A seminar on "Communication Satellites: Systems and

Networks" sponsored by **New York University** will be held at the Washington Square campus. Contact A. Krebs, (212) 598-7064.

**23-25: A Blonder-Tongue** "MATV/CATV/TVRO Technical Seminar" will be held in Phoenix, Ariz., in conjunction with J.R. Morgan Agency. Contact Chuck Fitzer, (415) 449-0547.

**28-March 2:** A meeting on optical fiber communications, OFC '83, sponsored by the **Quantum Electronics and Applications Society of IEEE** and the **Optical Society of America** will be held at the Hyatt Regency in New Orleans. Contact (202) 223-8130.

## March

**7-8: Phillips Publishing** is sponsoring a seminar entitled "Satellite Technology for Managers and Executives" at Loew's L'Enfant Plaza in Washington. Contact Diane Poutisso, (301) 986-0666.

**9-11: Magnavox CATV Systems** will hold a field training seminar with its Mobile Training Center in Phoenix, Ariz. Contact Laurie Venditti, (800) 448-5171; in New York (800) 522-7464.

**13-15:** The **Ohio Cable Television Association** annual convention and trade show will be held at the Hyatt Regency in Columbus, Ohio. Contact (614) 461-4014.

**14-15: Phillips Publishing** will sponsor a seminar on "Pay Radio and Cable Audio: Programming and Profits" at the Marbury House in Georgetown, Washington, D.C. Contact Diane Pontisso, (301) 986-0666.

**14-16: Magnavox CATV Systems** will hold a field training seminar in its Mobile Training Center in Phoenix, Ariz. Contact Laurie Venditti, (800) 448-5171; in New York (800) 522-7464.

**30-31:** The **Oklahoma Cable Television Association** will hold its annual convention at the Lincoln Plaza in Oklahoma City. Contact Jay Allbaugh, (405) 721-6377.

## April

**25-27:** The **International Association of Satellite Users** will sponsor SATCOM '83 at the Hyatt Hotel in Orlando, Fla. Contact Ann Roark, (703) 759-2094.

## May

**6-8:** The **Society of Cable Television Engineers** will hold its first cable TV hardware exposition, Cable-Tec Expo, at the Dallas Convention Center. Contact SCTE, (202) 293-7841.

## Looking ahead

### 1983

**April 10-13:** National Association of Broadcasters convention, Las Vegas Convention Center.

**May 6-8:** SCTE's Cable-Tec Expo, Dallas Convention Center.

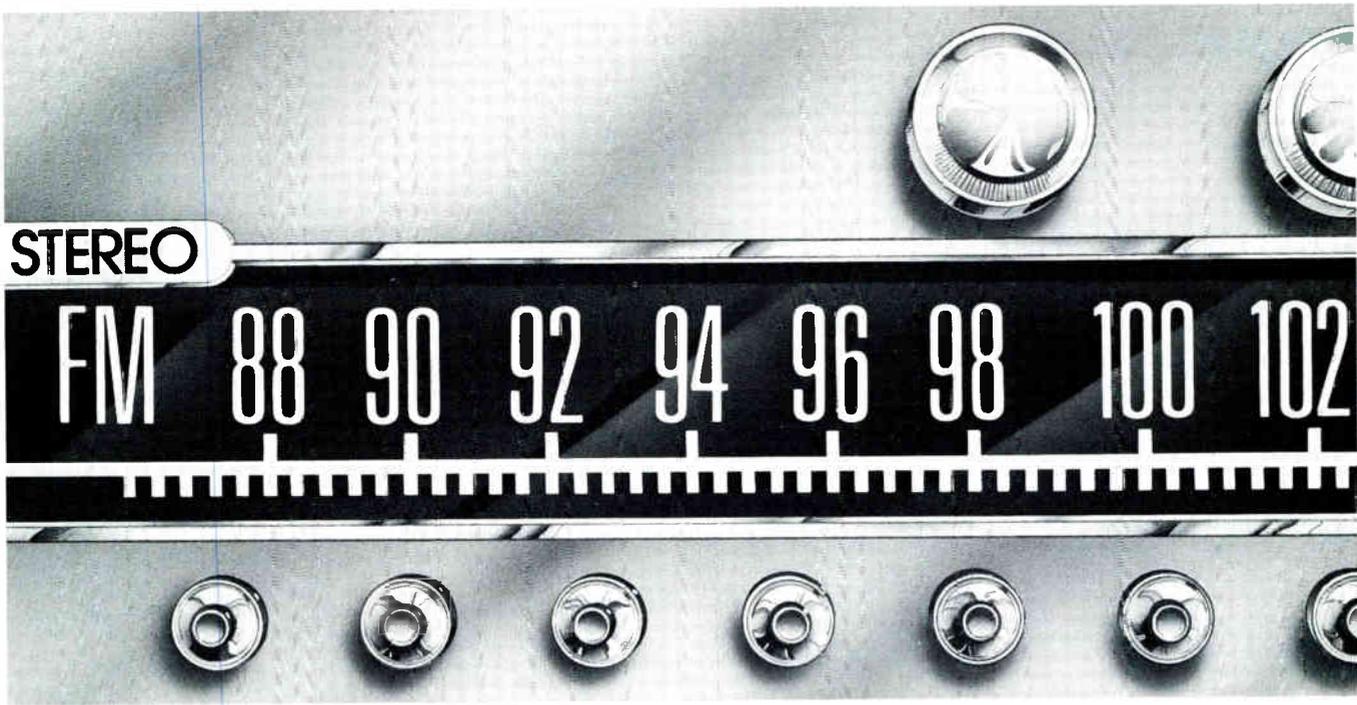
**June 12-15:** National Cable Television Association convention, Houston.

**June 27-29:** Videotex '83, New York Hilton.

**August 11-14:** Community Antenna Television Association's CCOS-83, Arlington Hotel, Hot Springs, Ark.

**September 7-9:** Great Lakes Cable Conference, Indianapolis Convention and Exposition Center.

**September 8-10:** Eastern Show, Georgia World Congress Center, Atlanta.



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The Wegener Series 1600 Expandable Satellite Audio System makes it all possible—satellite audio, synthesized TV stereo, and local origination FM. For a lot less than you think.

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## Where's Hardware Headed?

Could a limited shakeout be coming among hardware manufacturers? As the franchising process peaks out over the next few years, where will vendors look for new markets for their hardware products? The major urban markets remain to be built, but will a few large manufacturers capture these markets leaving the smaller companies begging for crumbs? With equipment reliability foremost among concerns across the industry, will companies whose products have experienced high failure rates in the past continue to play catch-up ball, given the lingering effects of a bad reputation? And what about foreign competition for new markets?

The franchising process has driven this industry for many years. Multiple system operators, faced with stiff competition, demanded advanced technology from equipment suppliers to give them a more resplendent profile before city councils. Wild promises made on the delivery of unproven technology has often caught equipment suppliers in a bind. They were unable to deliver "the blue sky." The days of blue sky promises seem to be passing, but the lingering effects remain.

MSOs have moved to establish their own testing laboratories for the evaluation of products supplied to them for their systems. This has come about in response to a perceived lack of product reliability. It's a move on the part of the MSOs to gain better control over the quality of the equipment and the performance of their plants.

As reported last month, American Television and Communications (ATC) announced an agreement with Toshiba Corp. to develop and produce outside-the-home addressable electronics called the Distributed Subscriber Terminal System (DST). DST was conceptualized by ATC but will be designed, developed and manufactured by Toshiba. In this issue, we reported that the Time Inc. Video Group has announced a similar arrangement with Matsushita for the development of a decoder for Time's teletext service. According to Gerald Levin, Time Inc. Video group vice president, "It makes great sense for us to become an aggressive developer of hardware." Such moves do not augur well for American cable equipment manufacturers.

Converters and subscriber terminals, long the key equipment element in the drive to subscriber control, and the bone of contention between suppliers and

system operators over reliability and delivery, may be about to undergo new design requirements. The redesign of converters may be required by the introduction of multichannel sound (over-the-air transmission of the audio portion in multichannel stereo) by broadcast television as well as the introduction of modular TV receivers (requiring a cable converter module), and the need for an integrated approach to video and stereo audio processing in the home. The obsolescence of older converters and the redesign of future converters may, once again, rekindle the antagonisms between equipment suppliers and system operators.

Meanwhile, there is a growing trend toward equipment that will expand the efficient use of existing cable plant and individual equipment elements in systems. Bandwidth compression systems are on the way that promises to significantly reduce the amount of equipment operators will buy for rebuilding or expanding channel capacity. Much of this bandwidth compression equipment remains unproven but clearly is in the cards for the future. In earth station related equipment, this trend has been seen for a while. Dual and triple feed retrofit equipment has been introduced by several suppliers, and there is increasing use of multiple beam antennas, which reduce the need for more than one earth station antenna.

All this means a reduction of costs for the system operators and a shrinkage in the marketplace for equipment manufacturers. With more products being developed by foreign suppliers and more buyers aggressively seeking foreign equipment, the American manufacturer is facing a potentially bleak future.

And equipment manufacturers must look to new markets for their products. The alternative technologies such as SMATV, DBS, MDS and others may offer expanding markets for existing equipment or markets for new equipment. England, and other European countries, may prove to be lucrative new markets for cable equipment manufacturers.

The effects of the general economy on the CATV industry may not have resulted in a recession for us. But it may have accelerated the trend toward a shrinking marketplace for the smaller manufacturer and an increasingly widespread view that bigger is better and foreign is more reliable.

*George Sell*

Volume 9, No. 1

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**IN 3 YEARS, MOST  
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OBSOLETE.**



# BUT NOT TOCOM'S! 55 PLUS® BASEBAND TECHNOLOGY IS DESIGNED TO LAST.

Obsolete is not a pretty word. For too many years, cable operators have bought converters, even addressable converters, that seemingly would handle the job today and for the foreseeable future, only to see them become obsolete within a few short years. Why? Because those converters did not have the security, flexibility and capacity to accommodate the requirements of the future. The result? Poor return on invested capital and lost marketing and revenue opportunities.

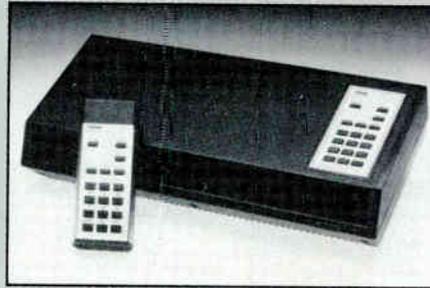
TOCOM has designed its 55 PLUS baseband addressable converter family to last. TOCOM has been addressing terminals by computer over cable since 1970. With more than a decade of experience and engineering expertise, TOCOM brought the first baseband addressable converter to market in 1981.

Compare the 55 PLUS addressable system with any other in use today and you'll see why it is the best choice to provide flexible pay packaging, secure baseband signal scrambling, a range of revenue-producing features and, most importantly, the capability to accommodate the requirements of the future, such as teletext and interactive videotex transactions.

## FLEXIBLE PAY PACKAGING

Other addressable converters still use the restrictive concept of tiering. TOCOM's 55 PLUS replaces tiering with a new concept called "Service Classes." This new concept allows cable operators to package channels and programs in any conceivable configuration to fit subscriber demand. Moreover, it provides pricing alternatives not possible with tiering. There are no restrictions. The same channel can belong to every Service Class and Service Classes operate free from channel-sequential constraints.

In addition to Service Classes, the 55 PLUS has a unique delivery system for pay-per-view called "Subscription Programming." Up to 256 Subscription Programs can be delivered per channel. Each subscriber's 55 PLUS converter can retain authorization from the headend to receive up to four of those subscription programs. Another subscriber may choose four totally separate programs. Subscription events can run the gamut



from championship fights to blockbuster movies, to a series of basketball games, to community college courses offered throughout a semester. No other addressable converter provides as many levels of flexibility in channel and programming delivery.

## SECURE BASEBAND SCRAMBLING

The 55 PLUS is a microprocessor-controlled converter featuring baseband operation and the industry's most advanced design. The baseband

55 PLUS baseband operation provides remote volume control and muting.

The UHF dual-gate MOSFET RF amplifier achieves extremely low noise figures for superb picture quality.

design of the 55 PLUS is the key to a number of its special features. Data required for addressing and program control is encoded in the vertical interval at the headend and transmitted entirely within the standard NTSC video format.

There are widely known ways to defeat the RF scrambling techniques used in most addressable converters. But TOCOM has virtually eliminated the theft-of-service problem with the 55 PLUS Baseband Encoded Scrambling Technique (B.E.S.T.). In addition,

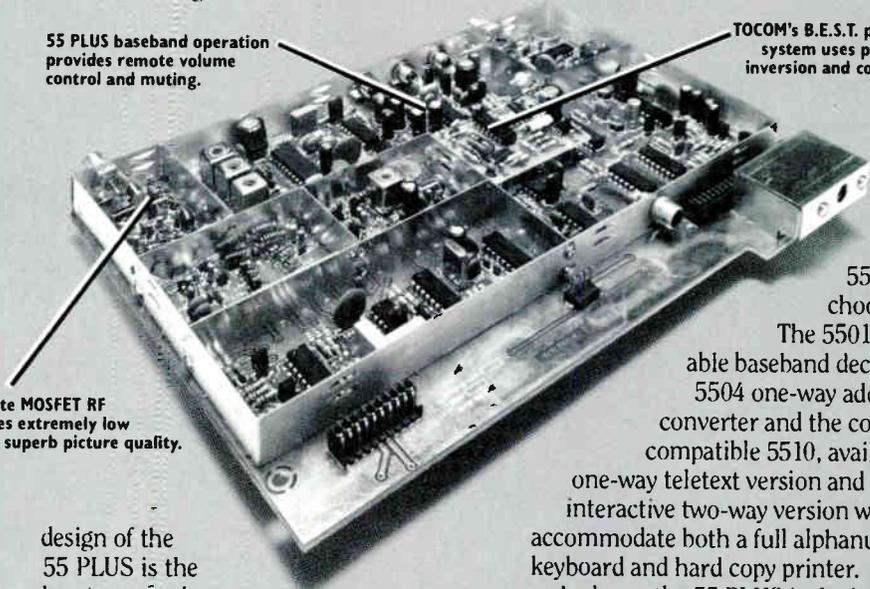
TOCOM's baseband design provides automatic sound suppression and blanked screen for unauthorized pay channels.

## BEST PRICE PERFORMANCE

The 55 PLUS offers more features than any other addressable converter made today. Digital on-screen clock and channel display, parental discretion coding control, single key preferred channels stack and emergency alert are all standard features. So is the digital self-diagnosis code which appears on the subscriber's TV screen in case of technical trouble. TOCOM's optional full-function, wireless remote control has on/off, sound muting, volume control and preferred channel selection. Only baseband design can deliver a full-function remote control. Electronic A/B switch and baseband video/audio output are also options.

TOCOM's baseband design provides an architecture for four models of the

TOCOM's B.E.S.T. pay security system uses partial video inversion and compression.



55 PLUS to choose from.

The 5501 addressable baseband decoder, the 5504 one-way addressable converter and the completely compatible 5510, available in a one-way teletext version and in a fully interactive two-way version which can accommodate both a full alphanumeric keyboard and hard copy printer.

And now the 55 PLUS is the best priced baseband addressable converter system in the industry. To place your order or receive more information, contact Sid Prothro, National Sales Manager, TOCOM, P.O. Box 47066, Dallas, Texas 75247. (214) 438-7691.

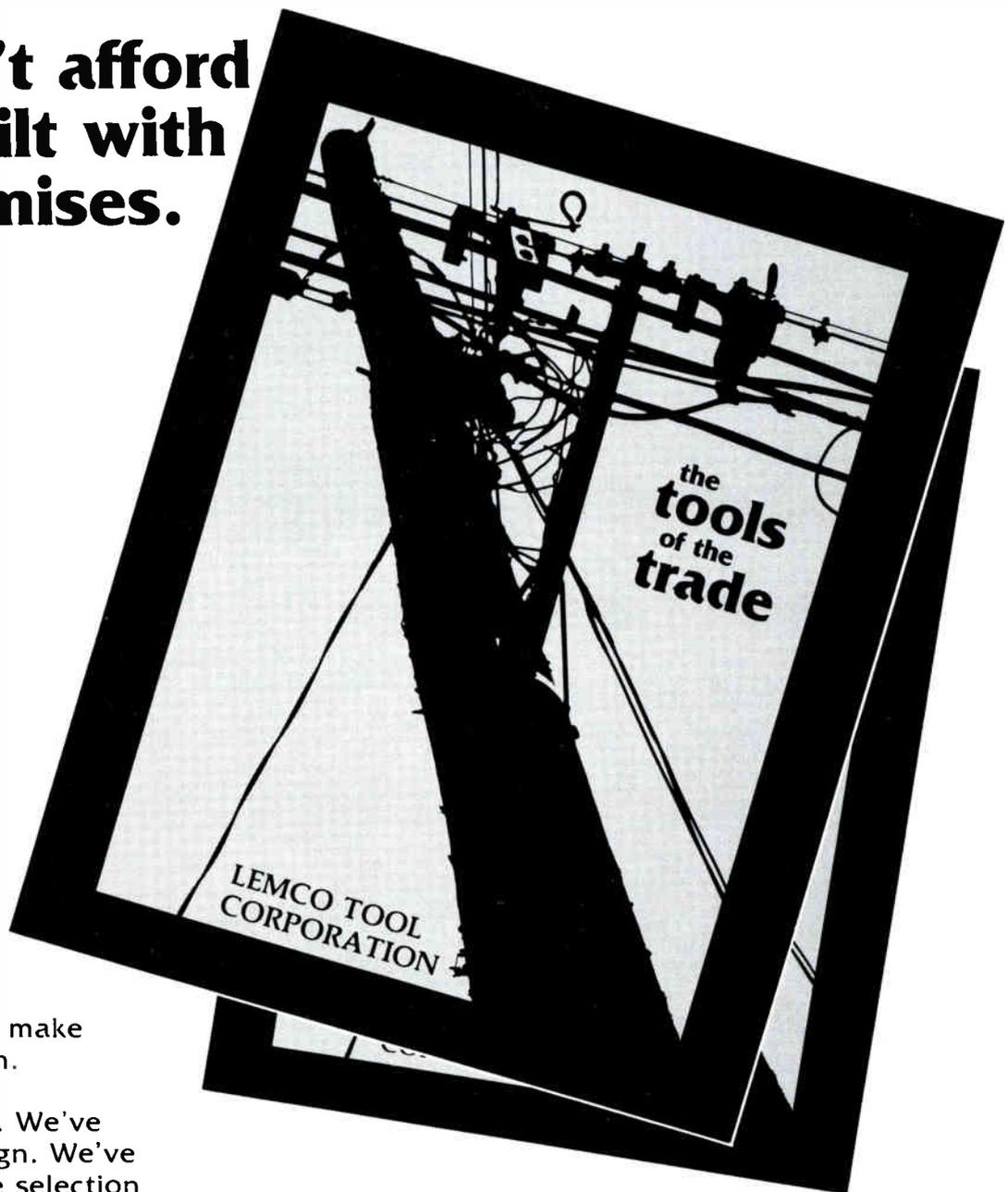
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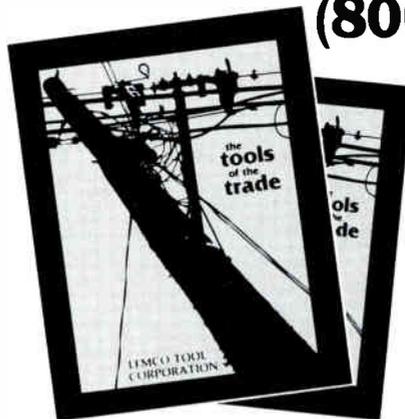


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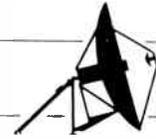
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## Nashville Network To Offer Stereo Audio

NASHVILLE, Tenn.—The Nashville Network, the country-western entertainment network set to launch in early 1983, has announced that they will be providing the audio portion of their programming in full stereo. They have selected the Wegener 1600 subcarrier transmission system. At launch, the Nashville Network will have over six million subscribers signed on, representing the largest number ever for a network turn-on.

According to Tom Griscom, senior vice president of broadcasting for WSM Inc. (program producers for the Nashville Network), "Stereo audio adds another dimension to enhance the Nashville Network subscribers' viewing enjoyment." Ned Mountain, Wegener marketing manager, stated, "The 1600 was chosen by The Nashville Network after a careful evaluation of satellite stereo transmission systems and indicates a growing trend toward stereo audio by cable programmers." The Nashville Network joins five other cable programmers offering their audio in stereo.

Mountain added, "Operators who already have the Wegener 1601 mainframe can add The Nashville Network stereo by simply plugging in another processor." The service also will be transmitted with a conventional monaural subcarrier.

## Matsushita To Manufacture Time Inc. Teletext Decoder

NEW YORK—Time Inc. and Matsushita Electric Co. of America have announced a non-exclusive agreement which calls for Matsushita to manufacture a terminal for Time Inc.'s teletext service currently being market-tested in Orlando, Fla. and San Diego.

The device will be ready in late 1984 and will be sold under the Panasonic brand name. The decoder terminal will also be sold to cable operators directly by Matsushita, officials said. The terminal will have the capability to be used for services other than teletext, including video games and cable system billing.

Matsushita officials said they would produce a computer chip compatible with the Presentation Level Protocol (PLP) teletext standard. The chip, which will enable the production of TV-related consumer electronics, will be compatible with the various teletext and videotex



*Bob Piacok, president of Wegener Communications; Tom Griscom, senior vice president of broadcasting, WSM Inc.; and Ned Mountain of Wegener formally announce plans for the Nashville Network to use Wegener's 1600 subcarrier transmission system to transmit full stereo audio via satellite.*

technologies in today's market. The Time Inc. decoder will be the chip's first application.

"It makes great sense for us to become an aggressive developer of hardware," Time Video Group Vice President Gerald Levin said. For too long, he added, American cable companies have stood by and waited for the hardware industry to determine technical developments.

American Television and Communications (ATC), the second largest cable system operator and a subsidiary of Time Inc., is co-developing a pole-attached addressable decoder with Toshiba, another Japanese manufacturer, Levin said.

Neither Time nor Matsushita officials would reveal the financial details of their arrangement, which they characterized as "long term" and described as a "marriage."

Time Inc. officials said the decoder price would be about \$150.

## Aeronautical Frequency Interference Drawing Fines

WASHINGTON—The Federal Communications Commission, assuming a tougher stance against cable signal leakage in aeronautical frequencies, fined two cable television operators \$7,500 each for the unauthorized use of those frequencies. Western Ohio Cablevision, operating in Bryan, Celina and Van Wert, Ohio, and

VCA Telecable, operating in Leslie, Mich., each received citations, according to Clifford Paul of the FCC Cable Television Bureau.

Paul stated, "I expect to see more of these (fines) coming down." Fines may be as much as \$20,000. According to Ron Parver of the FCC, this is the first time cable operators have been fined for unauthorized use of aeronautical frequencies.

Any intended use of aeronautical frequencies must first be cleared with the FCC for approval, including test or experimental uses.

## HDTV Video Centers Under Study

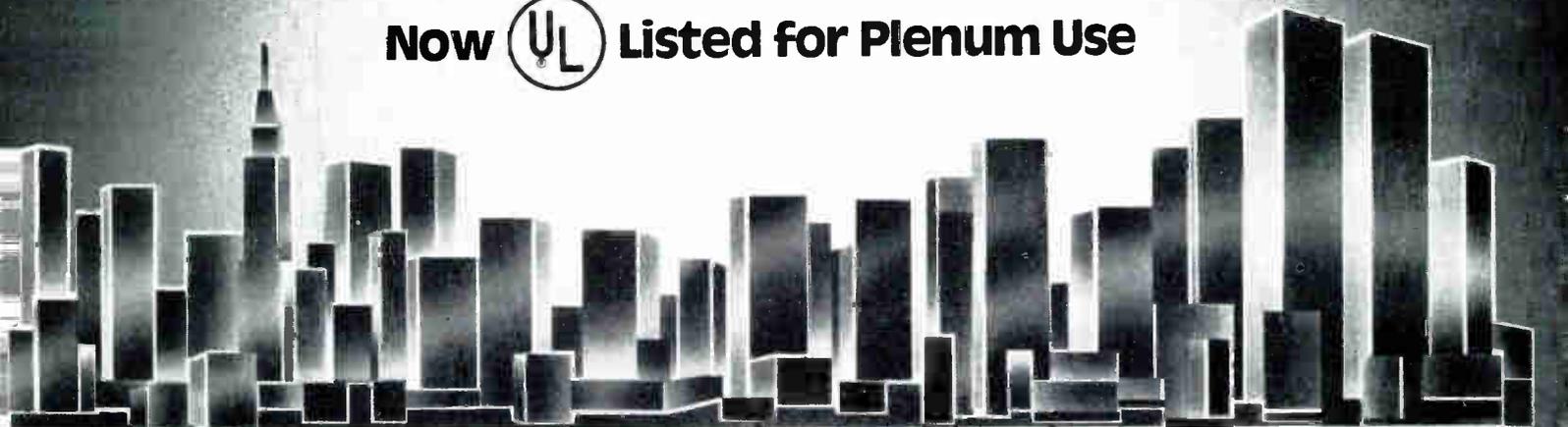
NEW YORK—United States Satellite Systems Inc. (USSSI) is studying the feasibility of High Definition Television (HDTV) video centers. USSSI—a privately held corporation, created in 1981 for constructing, launching and operating a medium-powered, Ku-band communications satellite system—has organized a task force of entertainment and engineering experts, as well as its own staff, to examine the viability and economics of the specially designed audio/video environments.

According to Jeff Moritz, vice president of USSSI and coordinator of the recently

*continued on page 17*

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continued from page 15

organized panel, the video centers will incorporate giant screen and concert-quality stereo equipment and will use medium-power satellites to deliver motion pictures via HDTV, video productions and live premium fare on a pay-per-view basis. One consideration includes converting existing movie theatres into video centers. The study panel includes representatives from a major studio, an independent production company, a theatre chain, an independent film distributor, a display equipment manufacturer and satellite technology marketing and engineering firms.

The task force will use an existing business, the Campus Entertainment Network (CEN) as a "living test lab" for their study. Key technical issues to be examined by the USSSI task force include: the economics of delivery via Ku- or C-band satellites; estimated costs of converting existing theatres to video centers; projected transponder availability for 1986-1996; transmission bandwidth, receiving dish size and display-side technology; encryption, piracy, and billing systems; and the choice of continuous feed or late night/blank tape transmission systems.

Current plans call for the task force to issue its first "White Paper" recommendations during the first quarter of 1983.

## Pennsylvania Bell Offers Cable Construction Services

PHILADELPHIA—Bell of Pennsylvania has offered its services as a subcontractor to bidders in four franchise areas here. If accepted, the proposals would, for the first time, involve a telephone company in the actual construction of a cable television system in a major market, according to company officials.

Bell Of Pennsylvania would subcontract its construction crews to the franchisees for the construction of each of the cable plants. The company sees subcontracting of its crews as a new potential source of revenue. Bell Of Pennsylvania has contacted city officials and has received no objection from them concerning its proposals to the bidders. Bids to the city government are due late in December.

## NCTA Slates Study Of Multichannel Sound

LA QUINTA, Calif.—The National Cable Television Association board of directors held a two-day meeting here to discuss many issues, among them multichannel sound. According to an NCTA spokesman, the 30-member board authorized

new tests to determine the impact of multichannel sound on cable systems.

The board made its determination after hearing a report by Gary Tjaden, vice president of engineering and technology for Cox Cable. Tjaden outlined some of the issues involved in the multichannel sound debate.

The board directed the NCTA engineering and advisory committee to undertake the study immediately. Among the potential problems the test will investigate will be disruption of scrambling devices, signal denegation and station interference. The study is likely to be submitted to the FCC as part of NCTA's comments on the commission's proposal to institute multichannel sound, the NCTA spokesman said.

## MDS Network Tested In Utah

SALT LAKE CITY—An experimental MDS network for the transmission of 8-channels of video is being tested in this western city. According to Jim Schultz, executive vice president of the American Home Theatre, engineers have worked out all the bugs in the transmitter since beginning over-the-air tests Oct. 11 and now can match broadcast signal quality in both

*continued on page 20*



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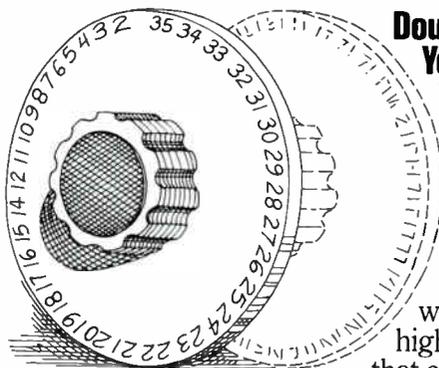
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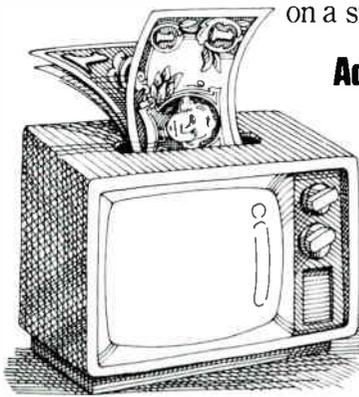
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earth-shattering things to your financial picture.

But thanks to a recent GE breakthrough in bandwidth compression technology, GE's Comband System actually combines two picture sources into the space normally occupied by one. So you're adding more channels, not more cable. In fact, with new CATV systems you can transmit up to 108 channels on a single 440 mhz strand.



## Addressing The Addressability Issue.

An addressable CATV system has its obvious advantages.

It lets you conveniently manage multiple tiers of programming, including pay-per-view service from the headend.

Addressability is a costly improvement to your system. Especially when you're facing pressures to upgrade and rebuild as well as to

add addressability.

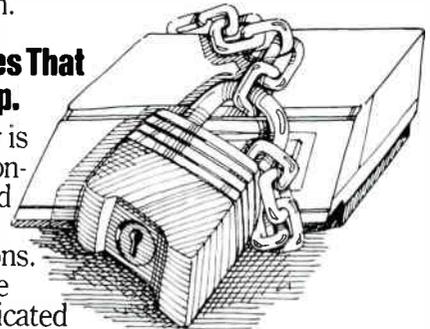
With the Comband System you not only get up to twice the channels, but at the same time, a fully addressable system.

## Security Measures That Really Measure Up.

If program pirating is one of your chief concerns, the Comband System can be one of your best weapons.

Inherent in the system is a sophisticated scrambling mechanism that combines complete sync stripping with a unique modulation technique.

And since the system is addressable, you can discontinue service in cases of non-payment or converter tampering.



Before you get too deep into new construction plans or cable upgrade programs, write Tom Tucker, Comband Product Manager at GE Television, Portsmouth, VA 23705 and get a detailed account of what the Comband System can do for your particular system.

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GENERAL  ELECTRIC

continued from page 17

color bar tests and actual programming transmissions to 135 homes. American Home Theatre is providing the programming and engineering services to Channel View, the common carrier holding the license.

The network transmits eight adjacent channels from eight transmitters. The over-the-air link to the homes involves one single transmission antenna for all eight channels that are received at the home on one antenna. The tests have involved addressability as well, using Texscan and MAAST addressable scrambler/descramblers. Up to eight channels can be controlled for various basic or pay tiering structures.

According to Schultz, 1,000 manhours and over \$1 million have been spent in the testing phase. Engineers monitored the quality of the transmissions by visiting the homes involved, which were selected from diverse locations around the city.

## Business Notes



★ **Anixter Communications** has received a contract from **Telecommunications Inc.** (TCI) for the supply of complete TVRO systems. The order for a minimum of 100 complete packages will include 5-

meter TVRO antennas manufactured by Anixter-Mark and receivers and low noise amplifiers manufactured by Scientific-Atlanta and M/A-COM. They will be used throughout the country for reception of additional services from Westar 5 and for data transmission. The amount of the order was not disclosed.

★ **RCA's Commercial Communications Systems Division** has announced a non-exclusive marketing agreement with **SatCom Technologies Inc.**, under which RCA's broadcast sales network will sell satellite earth stations provided by SatCom. The agreement calls for SatCom Technologies Inc. to provide high-speed, motorized 7- and 9.2-meter receiving dishes capable of meeting 2 degree satellite spacing requirements. The antennas incorporate the model 4010 programmable controller with automatic scheduling feature. The 9.2-meter antenna has been approved by the FCC to serve as an uplink.

★ **Burnup & Sims Inc.** reported losses from continuing operations for the three months ended Oct. 31, 1982 as \$5.5 million on \$51 million compared to earnings of \$2.5 million. The company is discontinuing their REA, site preparation, and commercial electrical operations because they are not compatible with the

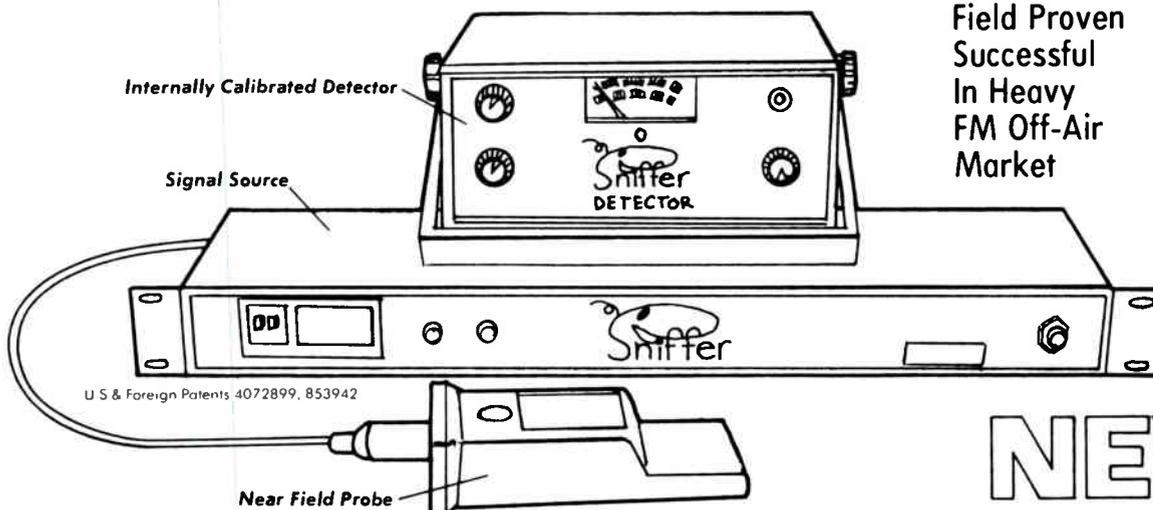
company's strategy to develop its telecommunications and cable TV operations.

★ **Scientific-Atlanta Inc.**, has reported a loss of \$6.1 million in its quarter ended September 30, 1982. The loss, equal to 26 cents per share, results from the provision for trade-in allowances and credits to be made to its cable-TV customers related to the discontinued series 6700 set-top terminal.

★ The municipal government of the **North Slope Borough, Alaska**, has placed an order for two-way CATV security monitoring equipment from **Scientific-Atlanta Inc.** The North Slope Borough has purchased seven Model 2422 cable security monitoring stations to be installed as part of a community improvement project in seven remote villages. One system will be constructed during the fall of 1982 in Wainwright, Alaska, for initial observations and testing. Due to extreme weather conditions, all other systems will delay construction until the spring of 1983.

★ **Mucip Inc.** of Danbury, Conn. has been awarded an installation and apartment building post-wiring contract by **Group W** for its Wayne, Mich., new-build. Services will be rendered from Mucip's regional office in Westland, Mich.

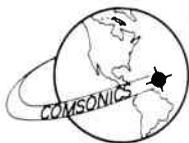
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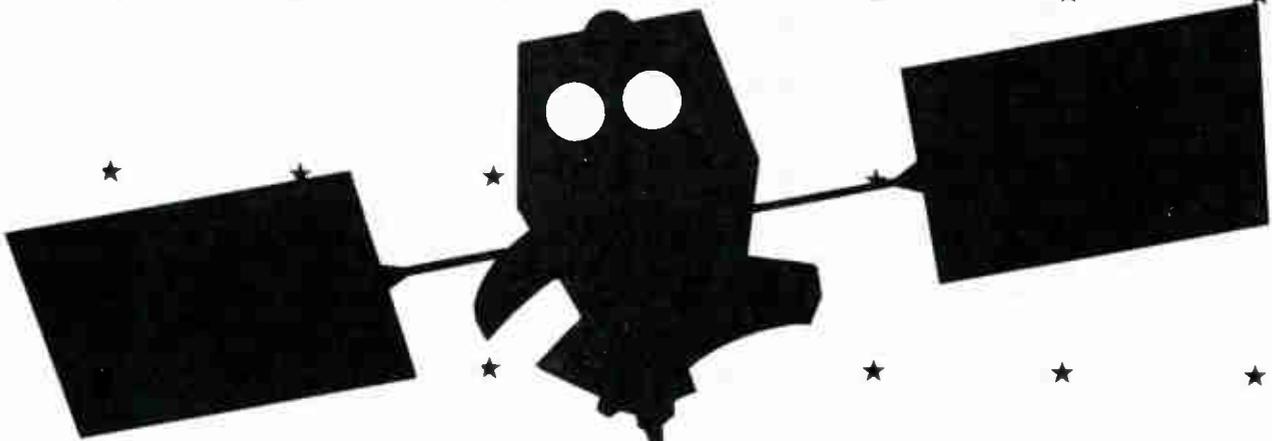
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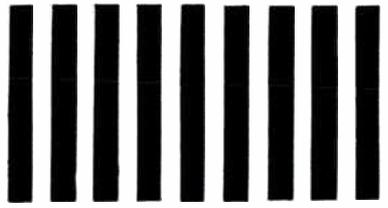
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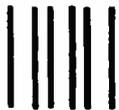
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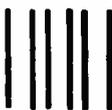
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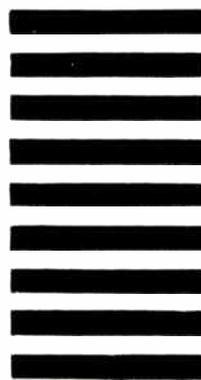
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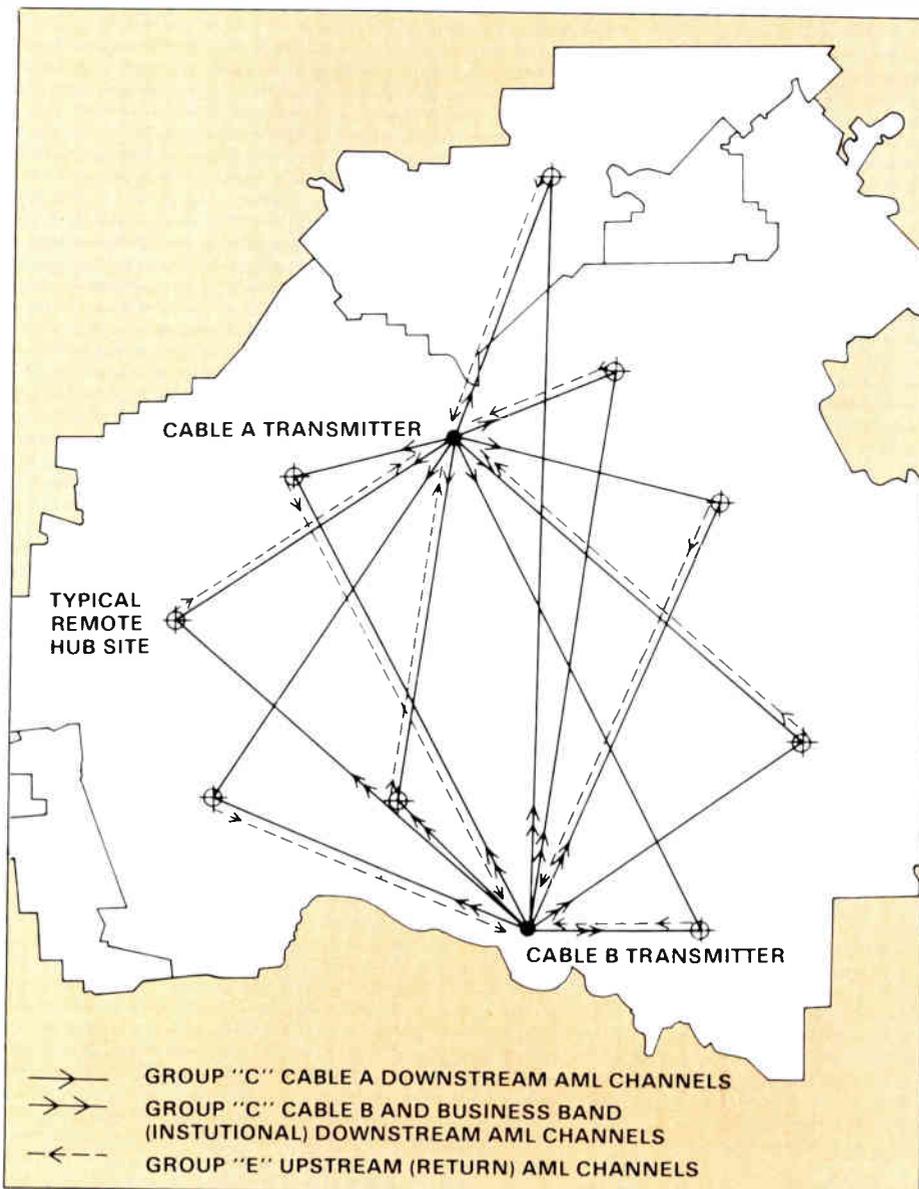
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# Reusing CARS Frequencies For Signal Distribution



Typical dual cable configuration showing multiple reuse of the CARS spectrum

**H**ow can a microwave system, operating in the spectrum limited CARS (Community Antenna Relay Service) band transport more than 100 channels? The answer is simple: frequency reuse. That is, a multiple use of the same frequencies allowing cable operators to transmit more than 100 TV channels to (and from) 20 or more receive sites throughout their respective franchises, all without stepping out of the bounds of the 500 MHz CARS band.

In the Warner-Dallas system, Hughes AML equipment is handling more than 100 channels, including one-way video and two-way interactive, as well as channels to monitor and control the system. In all, Jim Randolph, in charge of overseeing the massive build, notes that AML with frequency reuse must support an initial 80 downstream channels to seven subhubs and three upstream channels from each subhub to the master hub.

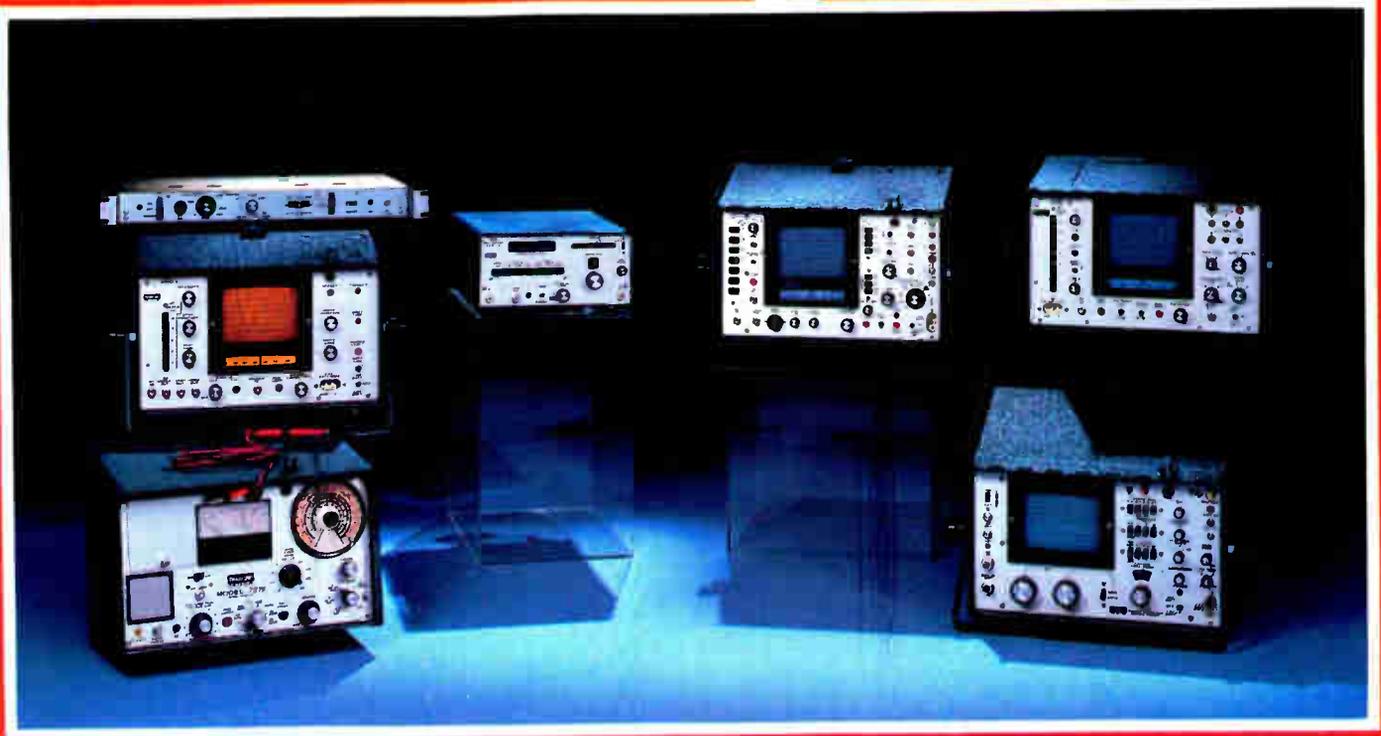
In the Sammons-Ft. Worth system, AML, through frequency reuse, is serving a massive two-way capacity. The system, says Bob Saunders, who faces a 42-month build commitment there, calls for 40 downstream channels to five subhubs and 24 upstream channels from each subhub back to the master . . . or a total of 160 channel signals, all within the 500 MHz CARS band.

"All we're doing is using the same frequency on five different paths," Saunders explains.

What does this mean to cable operators? Simply that, thanks to frequency reuse, state-of-the-art systems—with more than 60 channels, interactive capacities, I-nets, data transmission, sophisticated control and security systems—can now take advantage of Hughes AML equipment.

The basics of frequency reuse for a  
*continued on page 27*

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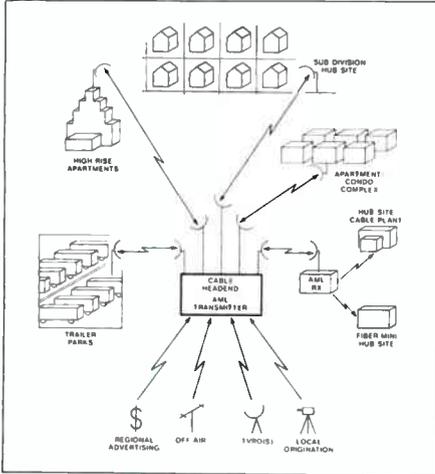
Texscan Communications Inc. • 2750 Pitfield • St. Laurent, Quebec H4S 1G9 • Phone: (514) 335-0152 • TELEX: 05 824 026

# Texscan

continued from page 25

cable franchise are quite simple. For example, to support a 120-channel dual cable plant, an operator begins with two identical AML transmitter arrays, located at opposite ends of the franchise. Each of these arrays can send up to 60 channels to each of many subhub receive sites in the area, giving the operator a total 120-channel capacity.

Each receive hub consists of two cable powered AML receivers and any required upstream transmitters. No TVROs or off-air pickups are needed at these sites. Subscribers are directly served from the receive hubs via conventional push-pull



cable plant. Each AML receiver output (60 channels) is fed directly into the "A" or "B" cable and does not require further processing. Local origination, community or government channels can be added to any hub receive site. In fact, with good engineering, frequencies can be reused repeatedly to accommodate 180 or more channels.

Since the transmitter arrays are located at opposite ends of the franchise areas, their signals generally will reach each receive site at angles that are 90 degrees or more apart. These signals do not interfere with each other and operators can effectively "reuse" the same microwave spectrum.

Each AML transmitter array normally is configured for 16 outputs, each with a full 60-channel capacity. When a receive site is located a good distance from the transmitter, a dedicated output may be needed to insure top-quality signals. When the receive sites are close to the transmitter, however, any or all of these 16 outputs can be split further with no quality loss.

Most major markets typically require only 10 to 12 receive sites. This gives cable operators a number of "extra" outputs available for use and an excellent means for quickly reaching fast-growing multiple-dwelling markets. Operators can use the extra outputs to serve larger

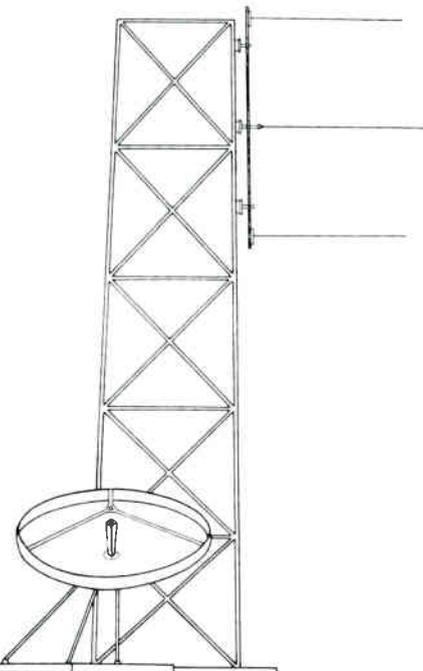
continued on page 31

## Signal Separation Requirements

Recent experience has shown that as long as the angle of separation is approximately 20 degrees, AML signals will not interfere with each other. High performance antennas can improve this further, and special equipment can accommodate angles of separation on the order of 10 degrees or less. In many cases, however, the operator may find it more cost effective to separate the two receive antennas by a city block or so, using existing buildings for shielding, thereby eliminating the need for special equipment.

The cost for different franchise areas will vary, depending on such factors as natural barriers, rivers, railroad crossings, non-contiguous franchise holdings, etc. Rather than belabor various wiring techniques, operators can work with Hughes to develop their own economic and technical models.

## D & D Designs Towers to Save You Time and Money.



We engineer better - it's that simple. Whether you need UHF, VHF, or small microwave towers, we'll customize them for you in three-leg and four-leg styles. Our superior design

- Cuts labor costs by allowing easier, faster erection and by lessening chances for error in assembly of tower and installation of foundation.
- Lowers materials prices; you get more tower for your money.
- Eliminates the need for soil surveys.
- Reduces downtime by requiring less risky excavating for foundations.
- Provides alternative blueprints with each tower at no extra cost.

You get customized towers at stock prices. Turnkey delivery and installation available nationwide. All towers are designed to meet EIA and AISC standards.

### D & D Electronics Construction, Inc.

We are a full-service designer, manufacturer, and commercial builder of electronic hardware, tele-communications and satellite up-link and down-link.

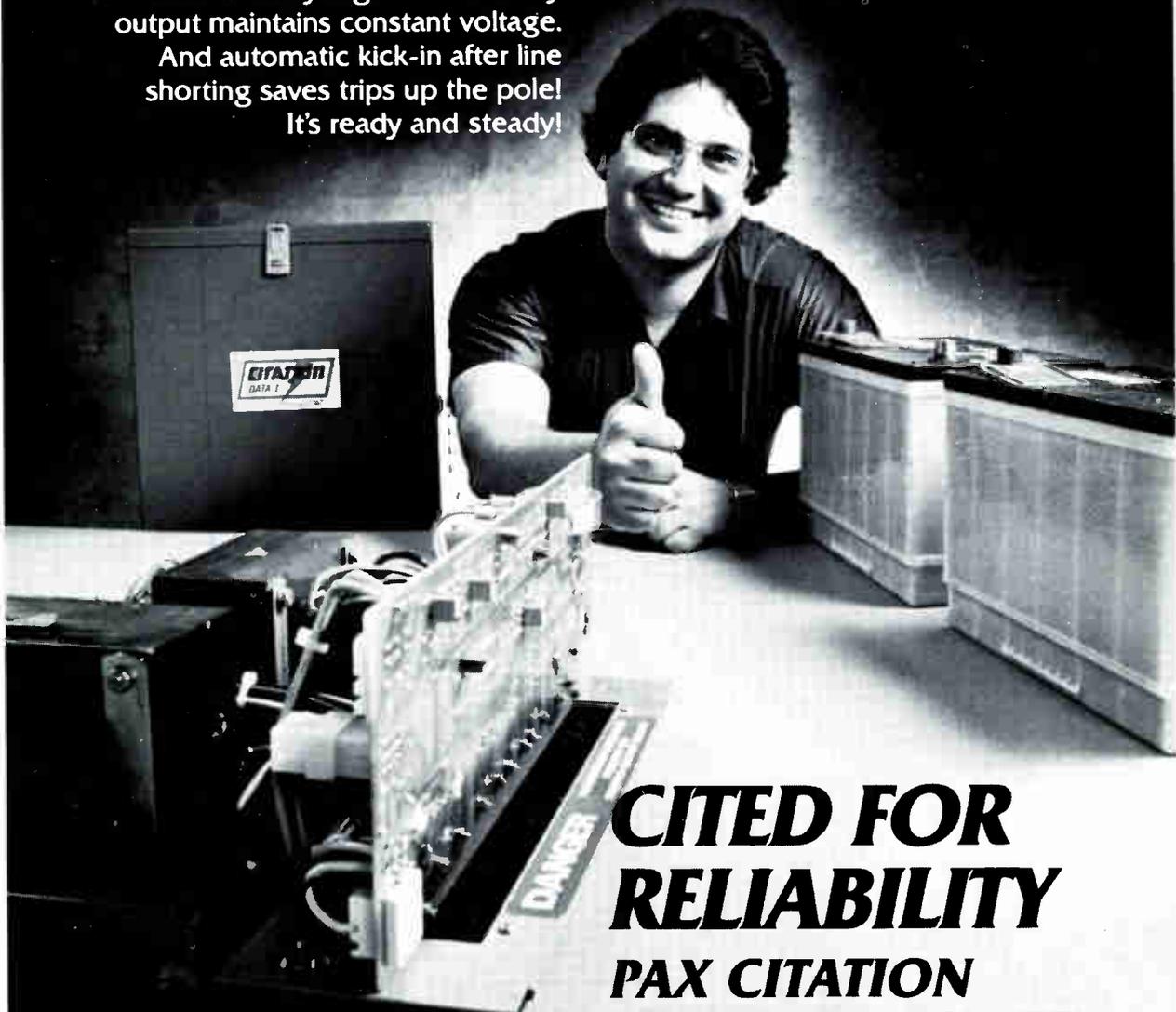
**Call our engineering department collect from anywhere in the U.S. (503) 635-4574.**

And Charles should know. He's installed hundreds of Citations in the last year and a half with no recalls or problems. The Citation has stood by him and now he's standing by it.

The Citation is neat — small, compact, easy to install and service. The hinged door unit smartly swings out for easy access. Battery life is extended with cycle charging (patent pending). Electronically regulated standby output maintains constant voltage. And automatic kick-in after line shorting saves trips up the pole! It's ready and steady!

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**Charles Veri**  
Field Construction Supervisor  
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RELIABILITY  
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- 7 and 14 channel standard units; 26, 36, 52 and 58 channel tunable converters.
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- Available in standard, HRC and IRC formats; in channel 2 and channel 3 output;
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When you need converters, Pioneer delivers. Call Pioneer today.

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**STRONGER THAN A LOCOMOTIVE,  
DELIVERY...FASTER THAN A SPEEDING BULLET,  
ABLE TO MAKE TALL PROFITS  
IN A SINGLE BOUND.**

# Imagine The Features That Will Answer Your Present And Future Needs ... Then Call **Di-Tech**

Audio/video routing switchers come in many different shapes and sizes, offering a variety of features. Since your requirements change from year to year, shouldn't you select the one that fits today's budget AND can meet your present and future needs? Then try **Di-Tech**. We've got that small 4 x 1 matrix switcher and the 200 x 200 switchers. We've even got a selection of in-between sizes for audio only, video only or audio follow video with 1, 2 or 3 channels of audio per input.....

We also manufacture a complete line of **terminal equipment, video detectors, touch tone control systems, audio monitor amplifiers** and a **7 day computer controller**. Our audio, video and pulse distribution amplifiers feature looping inputs with 6 outputs and can be intermixed within the same mounting frame. The model # 101 frame is 1.75" high and mounts up to 3 modules; the model # 103 frame is 5.25" high and mounts up to 10 modules .....

Whatever your present or future needs are, call **Di-Tech** for the high quality, reliable, easy-to-operate answer.



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### Ad Insertion Equipment

Adams-Russell  
MetroData  
Microtime  
Telecommunications Products  
TeleEngineering

### Audio Equipment

Catel  
Comtech  
Interac  
Pioneer  
Viewsonics  
Wegener

### Billing Equipment

CableData  
Gill Management

### Cable

Applied Engineering Products  
Belden  
Cablewave Systems  
CATV Corp. of America  
Gilbert Engineering  
Integral  
M/A-COM Comm Scope  
Pacific Braid and Cable  
Scientific-Atlanta

### Character Generators

CableTex  
Chyron  
Portac  
Teledac  
Texscan

### Construction

Ditch Witch  
Jackson Enterprises  
Klein Tool  
Lemco Tool  
Lowell  
Multiquip  
Parsons Co.  
Poleline  
Reef Industries  
3M  
Vermeer

### Converters

Cabletenna  
Colormax Electronics  
Eagle Comtronics  
Hamlin  
Kanematsu-Gosho  
Magnavox CATV

Pioneer  
RF Monolithics  
Telease  
Texscan  
TOCOM

### Distribution Equipment

Broadband Engineering  
Century III  
Channel Master  
Lindsay Specialty Products  
RCA  
Scientific-Atlanta

### Earth Stations & Related Equipment

Anixter Communications  
Anixter-Mark  
Antenna Technology  
Comtech Antenna  
Conifer  
Gamma-f  
Harris  
Hughes  
LNR Communications  
M/A-COM Video Satellite  
Merrimac Industries  
Microdyne  
Miralite  
National Microtech  
Pico-Savac  
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Avantek  
Blonder-Tongue  
C-COR Electronics  
Comtech Data  
Digital Video Systems  
Eagle Comtronics  
Focus Technology  
General Electric  
GTE Products  
Intercept  
Jerrold  
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Johnson Controls  
Lectro Products  
Siltron  
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### Satellite Receiving Equipment

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Automation Techniques  
Gardiner Communications  
KLM Electronics  
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Hewlett-Packard  
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Radar Engineers  
Sadelco  
Tektronix  
Wavetek Indiana  
Wiltron  
Vitek Electronics

## Ad Insertion Equipment

### ARVIS-7000

The Adams-Russell Co. has introduced the ARVIS-7000 automatic insertion system to handle all aspects of local advertising and sales. The new system automatically schedules inserts and monitors broadcast of commercial spots on cable channels. The system features random access storage of commercial spots to facilitate computer adjustment of schedules, network broadcast irregularities and remote (telephone) changes.

For more information, contact Adams-Russell Co., (617) 894-8540.

### The MAD Commercial Inserter

MetroData Corp.'s fully automated system for satellite ad avails, called the MetroData Advertising Display (MAD), automatically inserts video/tape/audio/character generator ads into satellite programming in two steps. The system is user friendly and includes upper and lower case characters, 16 background character colors, graphics, keyboard, auto return to satellite after avail and video verification of ads.

For more information, contact MetroData Corp., (415) 827-9900.

### Microtime Local Ad Inserter

Microtime Inc.'s automatic local ad inserter, called the C-150, is designed for satellite, CATV and closed-circuit applications that require fully automatic local ad or program insertion. The C-150 can control up to four VTRs.

For more information, contact Microtime Inc., (203) 242-4242.

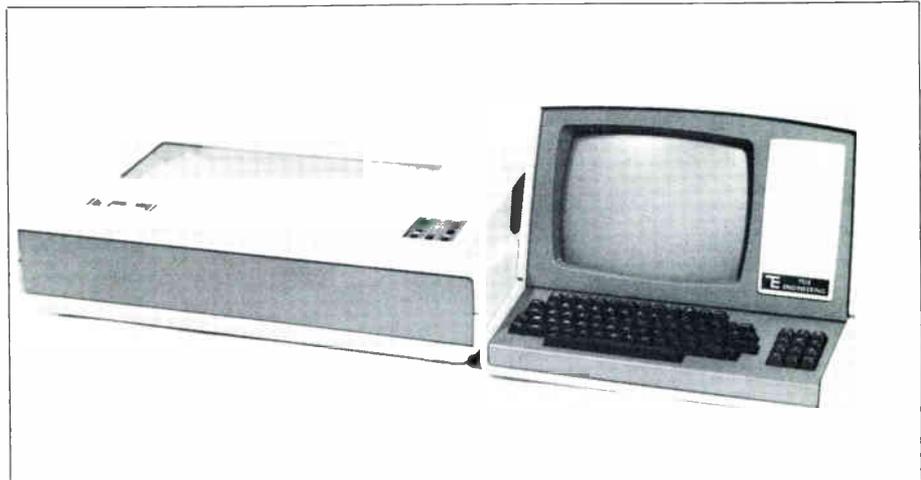
### Random Access Commercial Inserter

The Nexus I random access commercial inserter, manufactured by Telecommunication Products Corp., is, according to company officials, the first true random access controller specifically designed for the CATV industry. It is an automatically, microprocessor controlled ad inserter that combines the features of a tone decoder, a random access VTR controller, a sequencer and a vertical-interval audio/video switch in one unit.

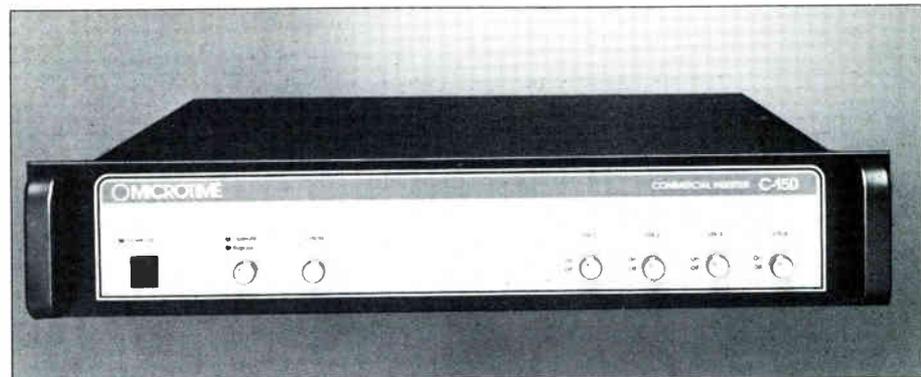
For more information, contact Telecommunication Products Corp., (800) 233-7600.

### Tele-Engineering AD-CUE 100

The AD-CUE 100 system was designed by Tele-Engineering Corp. for central programming and billing of an unlimited number of remote locations requiring



Tele-Engineering AD-CUE 100



Microtime C-150 automatic local ad inserter

time, tone or commercial insert switching. Programming from the control center location is performed with a CRT terminal keyboard connected by standard telephone line to a telephone outlet at each remote location. Billing information from all remote switching/insert locations is automatically stored in a central billing computer via suitable software.

For more information, contact Tele-Engineering Corp., (617) 877-6495.

## Audio

### Two Catel Stereo Processor Systems

The FMU-2150C and the FMU-2150CX are two Catel satellite stereo processor systems that feature updated, frequency agile modulation, programmable on any frequency in the 88-108 MHz range. While the FMU-2150C processor uses dual tone decoders to provide all functions necessary for commercial insertions, its internal matrix/stereo generator converts L&F audio from commercial inserts to true stereo. Frequencies in the 50-200 MHz range can be accommodated on special

order for either system, and both models are compatible with satellite services using separate L+R and L-R subcarriers.

For more information, contact Catel, (408) 988-7722.

### Comtech S.C.P.C. Audio System

Comtech Data Corp.'s S.C.P.C. audio system uses the RCV 350 dual-conversion converter, which mounts at the antenna and downconverts to 70 MHz. The RCV 350 selects any one of three crystal-controlled channels remotely from an equipment room or studio. The S.C.P.C. audio system includes a Comtech 3-meter antenna, a 100 degree-LNA and the RCV 350.

For more information, contact Comtech Data Corp., (602) 949-1155.

### Interac Corp. Stereo Audio

Interac Corp.'s stereo multiplexer and model 7100 converter bring stereo audio to cable operators and subscribers. Most headend systems require only the addition of the Interac stereo multiplexer to begin transmitting two-channel sound. The

# *Descrambler-16D*

**Descramble 1 to 16 Tiers  
Unlimited Channels**

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Model 16D



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stereo cable converter offers wireless remote selection of up to 35 stereo TV channels.

For more information, contact Interac Corp., (213) 870-9631.

#### Viewsonics Stereo Hookup

Viewsonics cable "TV stereo kit" is designed for cable systems to market all FM stereo services. The stereo adapter hooks into existing equipment and costs about six dollars per unit.

For more information, contact Viewsonics Inc., (516) 921-7080.

#### Wegener And Pioneer Audio Venture

Wegener Communications and Pioneer Communications have agreed to collaborate in the packaging and marketing of a delivery system for a stereo audio-pay service. Included in the package is the Wegener plug-in stereo processor system and the Pioneer stereo security converter for off-air, satellite or locally originated stereo programming options.

For more information, contact Wegener Communications, (404) 448-7288 or Pioneer Communications, (614) 876-0771.

## Billing Equipment

#### CableData PEP

CableData's PEP is an automatic voice processing device that handles large volume pay-per-view customer orders without the assistance of customer service representatives. The system uses voice response technology to allow customers to communicate directly with the operator's database.

For more information, contact CableData, (916) 485-2911.

#### Software Package For S-A's AMS

A complete software package from Gill Management Services is designed to be used in Scientific-Atlanta's Addressable Management System (AMS).

For more information, contact Gill Management Services, (408) 998-8078.

## Cable

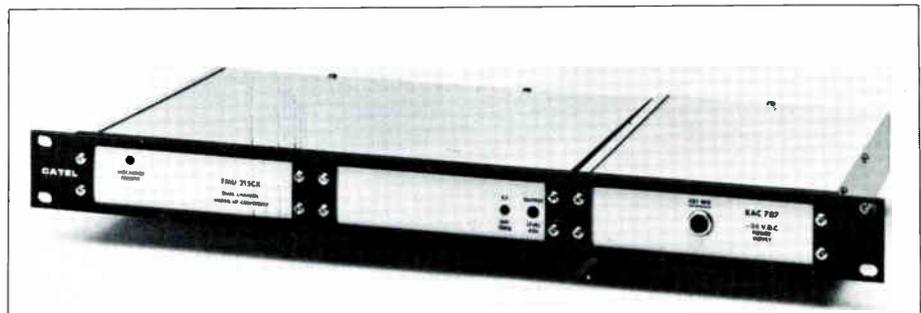
#### Snap-In/Screw-On Connectors

Applied Engineering Products offers its 75 ohm connectors in snap-in or screw-on designs. These connectors can be used with miniature high performance cable or with existing cables.

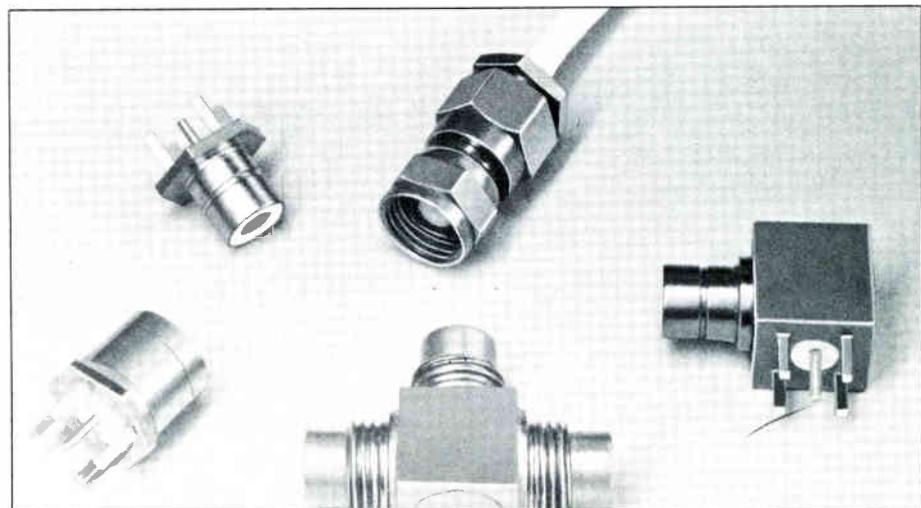
For more information, contact Applied Engineering Products, (203) 387-5282.



Catel FMU-2150C stereo up-converter



Catel FMU-2150CX stereo up-converter



75 ohm connectors from Applied Engineering

#### Dual Configuration Drop Cable

The Belden Corp.'s Duobond Plus™ CATV drop cables are available in dual (Siamese) configuration. These configurations include the RG-59/U-type and RG-6/U-type messengered and flooded burial constructions. Both configurations are 100 percent sweep tested from 5-450 MHz with a minimum return loss of 23 dB for RG-59 types and 26 dB for RG-6 types.

For more information, contact Belden Corp., (312) 232-8900.

#### CableFlex Connector

Gilbert Engineering manufactures integral sleeve connectors for use with

Scientific-Atlanta CableFlex coaxial cable. Available in various sizes, these connectors come in both pin and splice types.

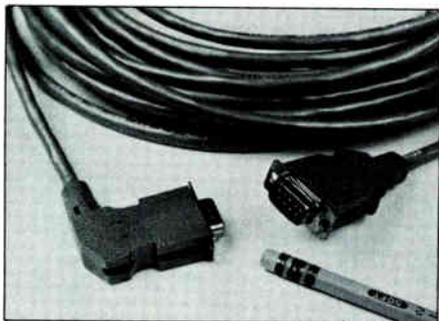
For more information, contact Gilbert Engineering, (800) 528-5567.

#### Coax-Cablecon From Integral

Coax-Cablecon, a cable-in-conduit product developed by Integral Corp., is an annealed polyethylene conduit formed by continually extruding it as a pipe over any number of coaxial cables. The cable can be chosen from any of those types available on the market. Coax-Cablecon is flexible and protects the cable from

kinking and cuts or abrasions.

For more information, contact Integral Corp., (214) 826-0590.



**Belden molded cable assemblies**

**Belden Cable Assemblies**

The Belden Corp. Interconnect Systems Operation (ISO) has developed nine-position straight and right angle handle, general purpose, interface molded cable assemblies. These assemblies, either male or female, meet EIA Standard RS-449 requirements and are designed for interfacing with VF line to printers, low speed TTY, channels for secondary operation, for acknowledgements, and for numerous data applications. Customized features are available on special order.

For more information, contact Belden Corp., (704) 865-4513.



**Comm/Scope Quantum Reach cable**

**Quantum Reach Cable**

Quantum Reach coaxial cable from M/A-COM Comm-Scope features greatly reduced attenuation and a new low-mass dielectric, which, according to the company, gives it superior handling characteristics and far more flexibility than any

solid-sheath coaxial cable on the market today.

For more information, contact M/A-COM Comm Scope, (800) 438-3331.

**Cablewave Low Attenuation Cable**

Cablewave Systems developed its FLC low-loss, low-density, 7/8" foam coaxial cable according to a proprietary design that allows foam cable to exhibit lower

attenuation than other foam cables. The design features closed-cell foam dielectric with low-density and high-velocity specifications.

For more information, contact Cablewave Systems Inc., (203) 239-3311.

**Right Angle Cable Connectors**

CATV Corp. of America has designed its CATV Cable Grip™ CLH right angle

# Power off? keep going...

with standby power

**New Franchise or Rebuild? ALPHA offers you unsurpassed reliability along with these features:**

- Automatic battery cycling.
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APM (Automatic Performance Monitor) Performs selftesting and monitoring functions. Saves costly maintenance time. For even better operating economy, talk to us about the new Micro Processor Status Monitoring and Control.

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		Napa, CA (707) 255-2010	Burnaby, B.C. (604) 430-1476	Minneapolis, MN (612) 881-1311
		Marietta, GA (404) 971-1021	Pickering, Ontario (416) 839-5182	Garland, TX (214) 494-3348

# THE ONLY MULTICHANNEL TRAP FOR TODAY'S MULTI-PROBLEM ECONOMY.

**Vitek's unique patented trap is more economical and effective than any other multichannel trap.**

Edison, N.J.—Industry estimates indicate an alarming proportion of CATV revenues are being lost as a result of equipment tampering, converter theft and dishonest installers.

As always, many CATV systems are turning to Vitek multichannel traps as the inexpensive solution to this multitude of problems.

**Vitek traps have a unique multichannel design.**

Vitek traps are custom-made to match each cable system's individ-

ual channel alignment. Flexible design allows configurations of contiguous and non-contiguous channels, and even tiers to be combined into a single trap.

**Vitek multichannel traps provide maximum security.**

Located outside the home, Vitek traps make it impossible for subscribers to tamper with service. And because Vitek traps have a unique construction, they provide stable performance and drift-free service for years to come.

**Vitek traps are economical.**

Vitek multichannel traps are easy to install and priced so inexpensively, they pay for themselves almost from the moment they are put up. They can even be color-coded so you can tell the "haves" from the "have-nots" with a simple visual audit.

To make sure your subscribers can't watch more than they're paying for, protect your multi-pay service with Vitek's unique patented multichannel traps.

VISIT VITEK AT THE TEXAS CATV SHOW. BOOTH #421/423/520/522. AUGAT CATV PRODUCTS

**VITEK**

*Engineered like no other trap*

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Vitek Electronics, Inc., 4 Gladys Court, Edison, New Jersey 08817 (201) 287-3200

coaxial cable connectors to provide a space-saving connection in installations where cable cannot be bent. These connectors feature highly conductive, corrosive-resistant brass/copper conductors in a chromated zinc housing and can be joined for 180 degree entry.

For more information, contact CATV Corp. of America, (617) 374-0553.

#### Cable Braiding Technique

A cable braiding technique developed by Pacific Braid and Cable was designed to provide improved RF shielding and to eliminate EMI and EMP. The technique can be applied to coaxial, multi-conductor and ribbon cable and uses a flat-wire braid instead of a round-wire braid for shielding purposes.

For more information, contact Pacific Braid and Cable, (714) 842-8388.

#### S-A CableFlex

CableFlex is a bendable coaxial cable from Scientific-Atlanta designed to be pulled through conduit and to be shaped around bends easily without causing distortion. It is a 440 MHz, 75 ohm cable with an attenuation factor equal to GID3 cables.

For more information, contact Scientific-Atlanta, (404) 441-4000.

#### Multi-Shield Drop Cable

Scientific-Atlanta bonded multi-shield drop cable is ideal for urban CATV systems where it is important to prevent RF leakage. Ingress and egress noise are minimized through a bonded, laminated foil layer and heavy braid layer, plus a laminated foil tape layer and a second layer of protective braid.

For more information, contact Scientific-Atlanta, (404) 441-4000.

## Character Generators

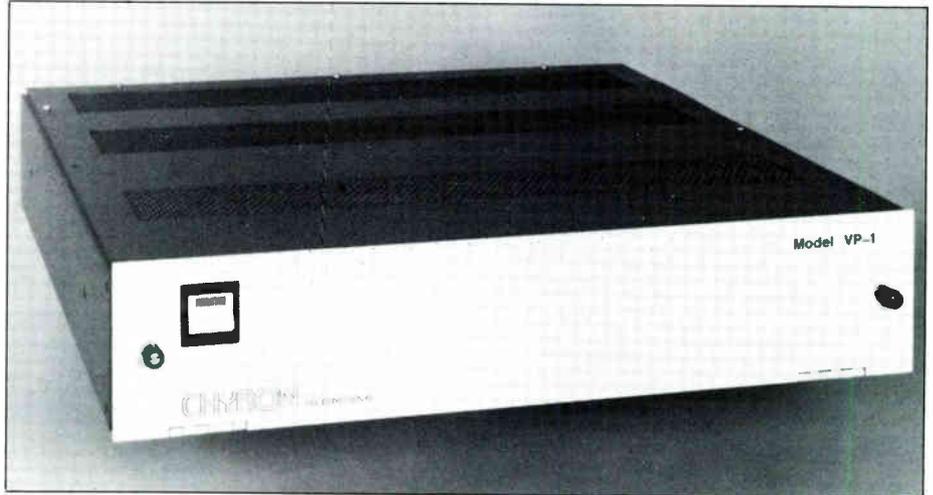
#### Character-Text Generator

Among the character-text generators made by Cable-Tex Instruments Corp. is its CTI-180 "INFOTEL." INFOTEL is a text generator designed for hotels, apartment complexes and the like. It has 16 pages of memory, eight colors flash and underline.

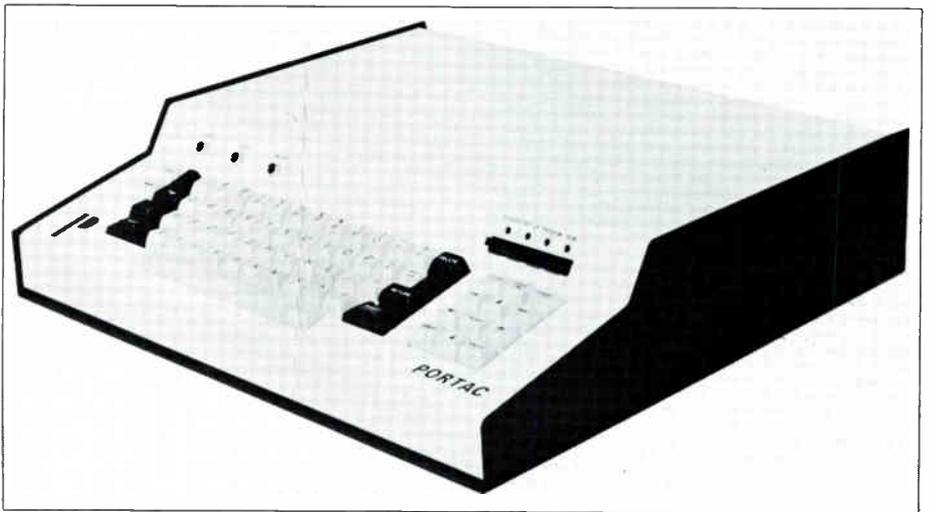
For more information, contact Cable-Tex, (214) 424-2554

#### Chyron VP-1

The model VP-1 is a low-cost character generator that accepts serial data from an RS 232C communication interface that can be generated from any microprocessor utilizing a word processor program. Other features of the unit include: 35



Chyron VP-1 character generator



Portac KBD-2C24 message generator

nanosecond resolution, an 8-color palette, 6-font storage, logo fonts, character edging and tilting.

For more information, contact Chyron Corp., (516) 694-7137.

#### Portac Message Generator

Portac designed its two-way telephone-coupled message generator for SMATV and cable systems. Known as the KBD-4, this system helps the cable operator remote-load all SMATV installations from the main office over standard telephone lines.

For more information, contact Portac, (805) 685-2960.

#### Portac KBD-2C24

Portac's KBD-2C24 is a micro-processor-based message generator that displays data at multiple locations. Standard features of the generator include: automatic line centering, full cursor control for editing, word or character flash, insert/

delete editing mode and programmable order of page display. The generator is priced at \$2,990 and can be delivered from stock within 15 days.

For more information, contact Portac, (805) 968-2120.

#### Teledac Character Generator

Teledac's model T-1016 is a junior/senior, low-cost character generator, equipped with a memory compression technique that provides up to 68 pages of memory. The model includes Spanish characters, graphic text separators and bar charts.

For more information, contact Teledac Inc., (514) 651-3716.

#### Texscan MSG-1

The MSG-1 fixed message generator from Texscan can provide up to eight separate fixed messages for video insertion or tilting. Text is fixed in ROM memory, but pages may be selected

remotely. Ideal for transmitter sites and other remote locations.

For more information, contact Texscan, (801) 262-8475.

**Texscan SpectraGen III**

This character generator, model SG-3, is a microprocessor-based information display system with single channel output capacity and 150 pages of solid state random access memory. Features include a 16 x 32 pixel character matrix, upper and lower case characters and colors selected by the line from a palette of 32 combinations with reverse color and alternate color additional choices.

For more information, contact Texscan, (801) 262-8475.

**Construction Equipment**

**Heavy-Duty Backhoe**

Ditch Witch's heavy-duty utility backhoe, model A4200, was designed for 40-HP-class and 50-HR-class Modularmatic® equipment. This backhoe can dig to depths of 92.5 inches and has a reach from swing post to 134.5 inches. When mounted on front of a 4010 or 5010 vehicle, the A4200 allows one machine to do utility backhoe work, restoration, trenching or vibratory plowing, depending on which work modules are used.

For more information, contact Ditch Witch, (405) 336-4402.

**Ditch Witch Trenching Accessory**

Ditch Witch's trenching accessory for the 350SX vibratory plow is a hydrostatic trenching attachment that was designed for digging starting slots. The attachment enables vibratory plowing installation to begin at specified depths, plugs into the 350SX vehicle's hydraulic manifold and trenches to depths of two feet.

For more information, contact Ditch Witch, (406) 336-4402.

**Utility Backhoe**

Ditch Witch has introduced a new utility backhoe for its model 6510 underground construction equipment. The model A620 backhoe mounts on the front of the 6510 vehicle. It can dig to depths of 109 inches, has a 180 degree swing arc and a reach of 154 inches.

For more information, contact Ditch Witch, P.O. Box 66, Perry, Okla. 73077.

**Jackson Aerial Construction Tool**

Jackson Enterprises' P/N JP-3 is an aerial construction tool that is used to support single CATV coax prior to lashing. Its frame and roller components are



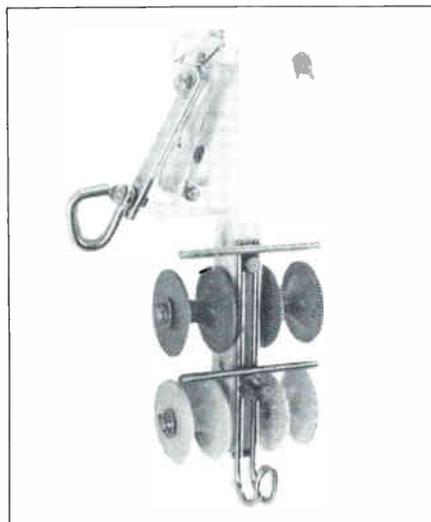
**Ditch Witch A4200 heavy-duty backhoe**

molded in durable lexan plastic with stainless or hardened steel on all wear surfaces. Suggested list price for this tool is \$30.50.

For more information, contact Jackson Enterprises, (513) 836-2641.

**Jackson Construction Tools**

Jackson Enterprises is distributing six cable aerial and installation construction tools, the series 1036 aerial cable blocks, a rod driving tool and a cable block pusher or "shotgun." All these tools are designed to ensure safety and expedite cable construction. The series 1036 aerial cable blocks feature a patented "single action" cable retainer that accelerates placement and support of multiple cables



**Jackson 1036 aerial cable block**

prior to leasing. The ground rod driving tool, available in two sizes, eliminates the need for a sledgehammer or for additional personnel at the installation site. The one-piece "shotgun" pushes cable blocks along the strands as cables are lashed.

For more information, contact Jackson Enterprises, (513) 836-2641.

**Ground Rod Installation**

A one-piece steel tool, the RhamRod, was designed by KDP RhamRod for use in the manual installation of grounding rods. The unit has a protected point of operation, no tool deflection, and is coated in a high dielectric PVC plastisol. Six models of the tool are available.

For more information, contact Jackson Enterprises, (513) 836-2641.

**Klein Wire Mesh Tools**

A full line of wire mesh pulling grips—including a full range of sizes in flexible eye pulling grips, rotating eye pulling grips and offset eye slack pulling grips—are available from Klein Tools Inc. They can be used for pulling overhead or underground cable, for stringing service or communications lines or for pulling wire through conduit.

For more information, contact Klein Tool Inc., (312) 677-9500.

**Lemco Construction Tools**

Among other products Lemco Tool Corp. has engineered and field-tested are a series of cable pullers and a mechanical loop-forming tool the company currently manufactures. The cable pullers are available in three sizes: the J1234 to pull

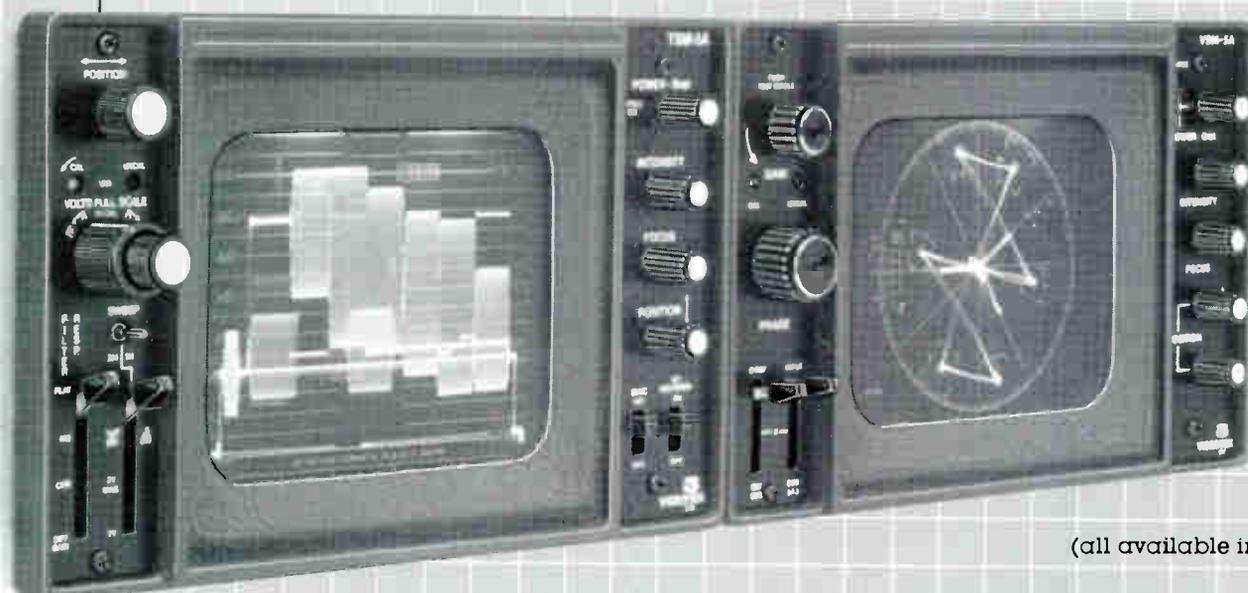
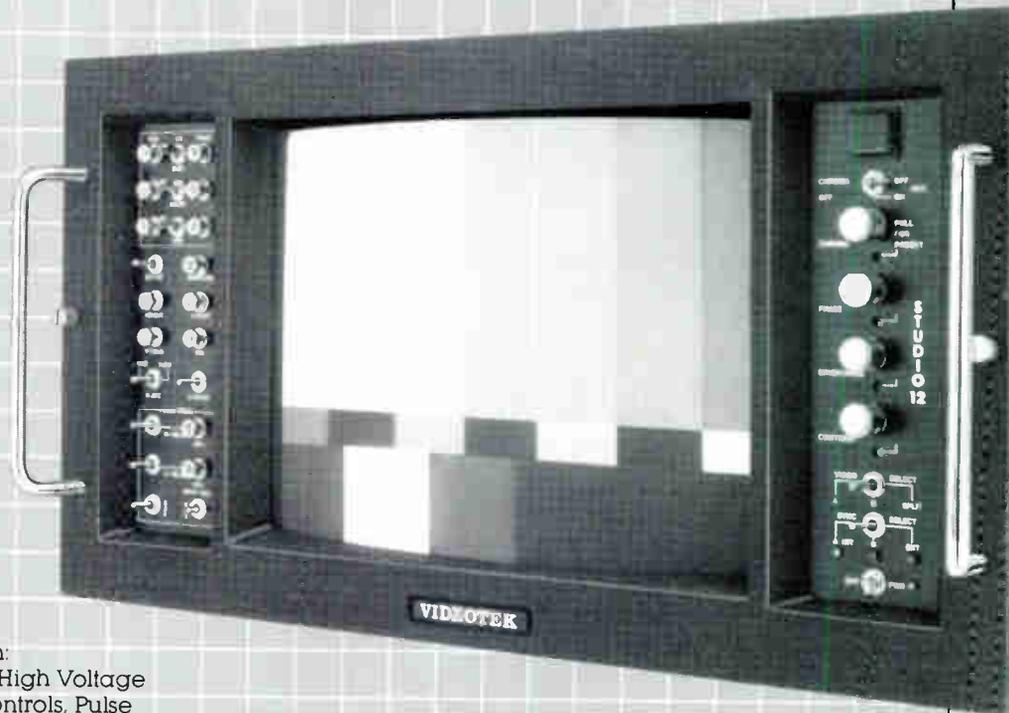
*continued on page 45*

# Progress by Design

Videotek's philosophy is to progressively design & refine the quality, function, and reliability of our products, and to provide equally aggressive service-after-the-sale.

Videotek's state-of-the-art TSM-5A Waveform Monitor and VSM-5A Vectorscope reflect this on-going commitment, with such innovative features as Internal Graticule CRT for precise parallax-free signal analysis, and Non-Glare Shields to eliminate distracting ambient light. TSM-5A also includes selectable 1H mode for easy one-line viewing, and  $0.5 \mu\text{s}/\text{div}$ . scan rate for the most accurate time-base measurements.

Our popular Studio 12 picture monitor includes, as standard equipment, the features found on monitors costing twice as much: A-B Split Screen, Selective H-AFC, High Voltage Regulation, ACC-Defeat, Preset Controls, Pulse Cross, Underscan, External Sync plus more.



(all available in PAL standard.)

In only 7 years, Videotek has become an industry leader. We design and build more sizes and configurations of color monitors than anyone—worldwide! And our 1981 "Distinguished Video Industries Service Award" stands as a testimonial to our commitment to your needs.

**Now that's Progress...by Design.**



**VIDEOTEK  
INC.**

# NOBODY SCRAMBLES LIKE ZENITH.

**Introducing Z-TAC, with the security of 5-mode scrambling.  
A multi-tiered, 60-channel, fully addressable  
converter system with remote volume control.**

*The Z-TAC scramble is secure. The scramble is not only 5-mode, you can make almost limitless variations at the encoder. It's designed to lock out unauthorized viewing and assure maximum revenues. Z-TAC is truly format agile.*



5-MODE BASE BAND SCRAMBLING.

*The Z-TAC system offers 20 categories of services that will allow control of all 60 channels. Tiering allows customers to put together,*

and change at will, a selection of program categories. Decoders are authorized by signals from the encoder.

*Z-TAC offers full head-end addressability.* Each decoder has its own individual address consisting of a market code and a subscriber number. Both are part of the decoder's unique memory. Market code prevents the functioning of a decoder moved to another system. Decoders which have been lost, stolen, or are of no-pay status are addressed OFF.

*The Z-TAC system also has these innovative options.* Remote dual A-B Switching. Z-ALERT emergency signal. Redi-Plug output for connection with monitors, interactive two-way modules and Z-TEXT. BASE-TAC-Video-output unit for monitor applications. TAC-ALONG, Stand Alone TAC addressability for existing converter systems.

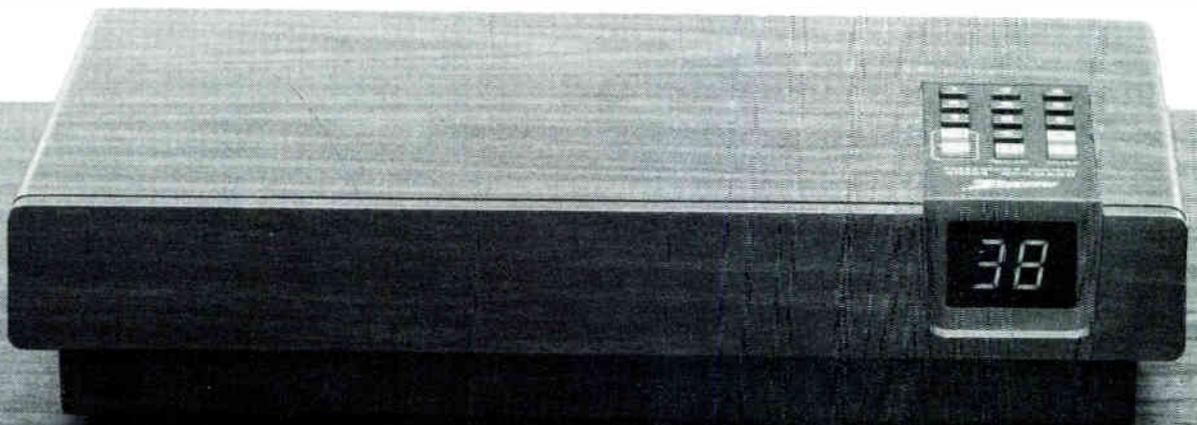
Z-TAC offers cable operators the most advanced converter system available, plus Zenith reliability and service. For complete information, contact: Zenith CATV sales, 1000 Milwaukee Ave., Glenview, IL 60025 Phone: 312-391-7600.

COMPUTER  
SPACE COMMAND  
WITH REMOTE  
VOLUME CONTROL.



**ZENITH**<sup>®</sup>

THE QUALITY GOES IN BEFORE THE NAME GOES ON.



# "MSO's have enough worries. Construction shouldn't be one of them"

*Bill Pitney, Executive Vice President/Corporate Development.*

"At Byers, we've developed a totally new kind of cable construction management, designed to take the supervisory burden off MSO's.

"We call it Byers System Management. It is revolutionizing cable construction.

"Instead of an MSO tying up a supervisory staff on every build, Byers can supervise and coordinate everything—labor, materials, and testing. We can provide total turnkey delivery of your plant, ready for marketing.

"We furnish experienced local supervision, plus a matrix of highly skilled specialists available out of our Atlanta office for any particular assignment.

"Besides this central pool of specialists, we provide centralized procurement, inventory, and delivery of materials—for cost efficiency and on time delivery.

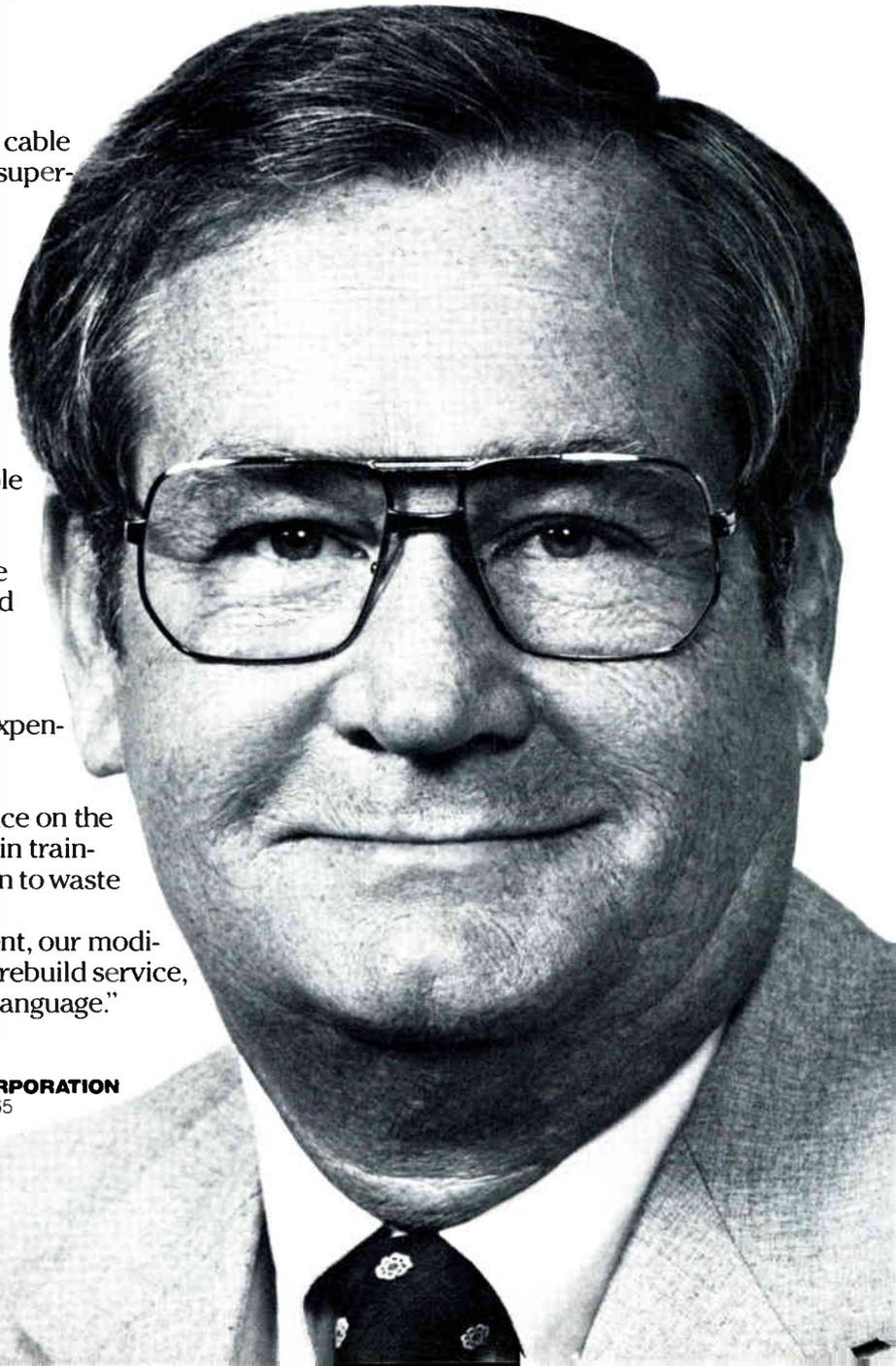
"Today's builds are often complex 400-440 Megahertz, dual-cable plants. It would be very expensive for any single MSO to sustain our level of construction supervision.

"From my own seventeen years of experience on the MSO side, I know the kind of problems you face in training and developing key people. There is no reason to waste them on construction.

"For details on our total System Management, our modified turnkey services, or our economical retrofit rebuild service, call me today at (404) 696-7455. We speak your language."

**BYERS**  **COMMUNICATIONS CORPORATION**  
100 Wendell Court, Suite 165  
Atlanta, Georgia 30336  
(404) 696-7455

A world of experience.  
Affiliated Company:  
Byers Engineering Company



continued from page 40

single feeder cable, the J1234-5 to pull up to five cables and the J1234-10 to pull up to ten cables. The loop-forming tool, called the G-120 "Lemco Looper," forms 12-inch flat, six-inch deep bottom loops with a maximum capacity of forming dual .750 trunk and dual .500 feeder at one time. A combined tool action that guides the cables into the accepted flat bottom configuration moves the cables into the loop form with minimum force.

For more information, contact Lemco Tool Corp., (800) 233-8713.

**Lemco Cable Chute**

A cable chute that guides cable from the trailer into the path of the strand is available from Lemco Tool Corp. This chute, the S1059, features a UHMW friction-free wear strip on the cast aluminum shoe and is available in dual model number S1059D.

For more information, contact Lemco Tool Corp., (800) 233-8713.



**Lemco R-731 hex crimp tool**

**Lemco Hex Crimp Tool**

Lemco Tool Corp.'s R-731 is a hex crimp tool whose jaws are high carbon through-hardened alloy steel with a black oxide finish. Its three hex cavities handle RG-59, RG-6 and RG-6U double tape and braid.

For more information, contact Lemco Tool Corp., (800) 233-8713.



**Poleline CorePrep 5 coring and stripping tool**



six-position backfill blade and heavy-duty rear axle drive.

For more information, contact Parsons Co., (414) 781-8900.

**Poleline Coring And Stripping Tool**

CorePrep 5™, Poleline Corp.'s coring and stripping tool, enables the installer to both core and strip anyone of five popularly sized cables with only a simple change of a cutting blade and guide sleeve. Colored bright orange for visibility, this tool prepares .412, .500, .625, .750 and .875 coaxial cables and can be adapted for use with a power drill.

For more information, contact Poleline Corp., (212) 892-6700.

**Underground Line Protection**

Terra Tape, from Reef Industries, is a 1,000-foot long continuous roll of brightly colored plastic tape available in widths ranging from 2-36 inches. Bearing a continuous printed message that warns of the presence of buried communications lines, the tape also can accommodate a company's printed name and telephone number and is available in both standard and metallic black types.

For more information, contact Reef Industries, (800) 231-2417.

**T-Handle Torque Wrench**

Lowell Corp.'s T-handle torque limiting wrench features an automatic release reversing collar for loosening bolts and torquing without changing grip. This T-TM T-handle wrench is factory preset from 20 to 80 inch-lbs and is compatible with any standard ¼-inch sq. male drive accessory.

For more information, contact Lowell Corp., (617) 756-5103.

**Soil Compaction Rammer**

The Mikasa MTR-55, Multiquip Inc.'s 132-pound soil compaction rammer, features a 1640 pound impact at surface level and can travel 58 feet per minute. Powered by an OSHA quiet, 3.3 horsepower engine, the MTR-55 has a simple float type carburetor and is available with an 11.2- or 4.5-inch wide shoe.

For more information, contact Multiquip Inc., (213) 537-3700.

**Parsons T-950 Trencher**

Parson Co.'s T-950 trencher is a 94 horsepower model with a turning radius of 3 feet, 9 inches. The T-950 trenches to a depth of 108 inches and a width of 18 inches and has a working speed of 2 mph. The trencher incorporates a patented combination of articulation and front wheel drive steering arrangement and features a

**Trencher/Plow Combo**

The T-450 trencher/plow combo, offered by Parsons Co., is powered by either a gasoline or three diesel engines, delivers up to 52 hp of trenching power and can trench up to 72 inches deep and 18 inches wide. This fully hydrostatic five-speed trencher/plow combo also can be switched from centermount to off-set trenching and vice-versa within 30 minutes.

For more information, contact Parsons Co., (414) 781-8900.

**3M Heat Shrink Tape**

3M's TelComm Products Division is manufacturing a heat reactive tape for splice protection and sheath repair. When heat is applied, the tape shrinks to provide a weathertight, watertight bond on buried, underground or aerial cable. Subsequent temperature variations cannot alter the integrity of this seal.

For more information, contact 3M, (612) 733-8132.

**Vermeer Plow Option**

Vermeer Manufacturing Co. designed its hydraulically steerable plow to provide greater maneuverability on slopes, contour streets or around obstructions. The plow option is available on all rubber-tired M-series machines and can pivot 15 degrees left or right.

For more information, contact Vermeer, (515) 628-3141.

**Converters**

**58-Channel Hamlin Converter**

The CRX-5000 converter, currently marketed by Anixter Communications, is a cordless, hand-held remote 58-channel



**Hamlin CRX-5000 58-channel converter**

Hamlin converter. It features a synthesized first local oscillator and operates on infrared wireless remote control.

For more information, contact Anixter Communications, (312) 677-2600.

**Cabletenna Converters**

A push-button 36-channel remote converter and four-block converters are available from Cabletenna Corp. These converters, fully warranted and available from stock, are particularly applicable for systems that require minimum-maintenance converters. The four-block converters include a three-channel, 40-channel and seven-channel UHF block.

For more information, contact Cabletenna Corp., (201) 238-7660

**Colormax Cable Caption**

According to Colormax Electronic Corp., their Cable Caption Systems can serve up to 16 million subscribers. These systems decode line 21 closed captions, which helps deaf and hearing impaired

people enjoy TV. These systems include the CM2001, which combines a 36 channel cable converter and closed caption decoder into one unit, and the CM3001, which uses any converter on the market to decode closed captions. Both systems can select two text channels.

For more information, contact Colormax Electronic Corp., (201) 225-0106.

**Eagle Comtronics Descrambler**

A 15-tier addressable descrambler from Eagle Comtronics is, according to the company, the first economical computer controlled pay-TV descrambler. Through use of an in-band sync suppression technique, each channel is controlled from the CATV headend on an individual subscriber basis. The system can be adapted for pay-per-view, tiered channel service and for non-payment disconnect service.

For more information, contact Eagle Comtronics, (315) 622-3402.

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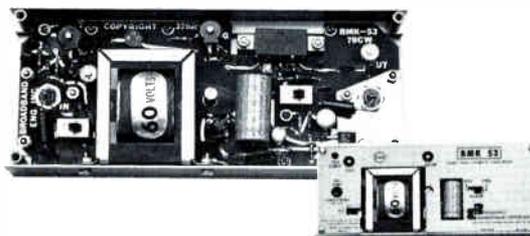
**Upgrade your SLE line extenders with push-pull hybrid electronics - Broadband now offers the BMK-53 in ready-to install modules.\***

With our BMK-53 now in ready-to-install modules, it's a relatively simple matter to upgrade your Jerrold® SLE-1, 20 2P line extenders to 300 MHz push-pull hybrid electronics. Another cost effective option from Broadband, it features:

- Push-pull hybrid electronics
- 300 MHz - 35 channel capacity
- 30 or 60 volt powering options
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- Three levels of surge protection
- 12 to 20 dB of equalization at 300 MHz

Pricing as low as \$99.50 for more than 50 pieces.

\*Also available as a replacement assembly ready to install in your existing module.



For free specification sheets and pricing, call our toll-free number (800-327-6690) or write Broadband Engineering, Inc., P.O. Box 1247, Jupiter, Florida 33458.



# Scientific-Atlanta

# Cable-Gram

## New Scientific-Atlanta scrambling technique pulls the plug on signal piracy

Signal security. It's the business end of cable TV. And with millions of revenue dollars at stake each year, it's serious business indeed.

To meet that need, the new Scientific-Atlanta Series 8500 Terminal offers the most extensive range of security features in the industry.

### Taking the profit out of piracy

Consider our new scrambling technique, for example. It's a new system, called Dynamic Switched Sync Suppression, that randomly varies the sync information needed to restore video images.

Built around a microprocessor which unlocks the signal code, the 8500 is designed to make internal tampering pointless.

Best of all, Dynamic Switched Sync Suppression is our standard scrambling system—not an expensive option.

### The intelligent terminal

As one of its "soft security" features, the 8500 can be programmed to tune to any pre-determined frequency whenever unauthorized channels are requested. This denies access to audio as well as scrambled video program material.

If you like, the 8500 will automatically tune to a "barker" channel which displays a sales message and subscription information. This makes a great selling tool!

The 8500 also offers strict parental control for adult programming.

### Added security for addressable systems

In the addressable mode, the 8500 offers virtually unbreakable security features.

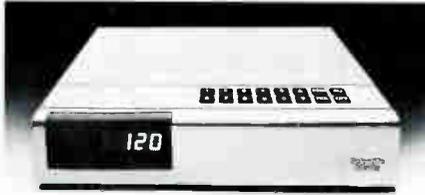
For example, your headend control unit can perform periodic "legal terminal" tests that automatically shut down unauthorized terminals.

Also, each 8500 contains an internal clock that must be reset by periodic "refresh signals." If these coded signals are not received, the terminal is instructed to disable itself.

So you can be confident that each addressable 8500 in your system is delivering only the services your subscribers are billed for.

### Write or call for more information

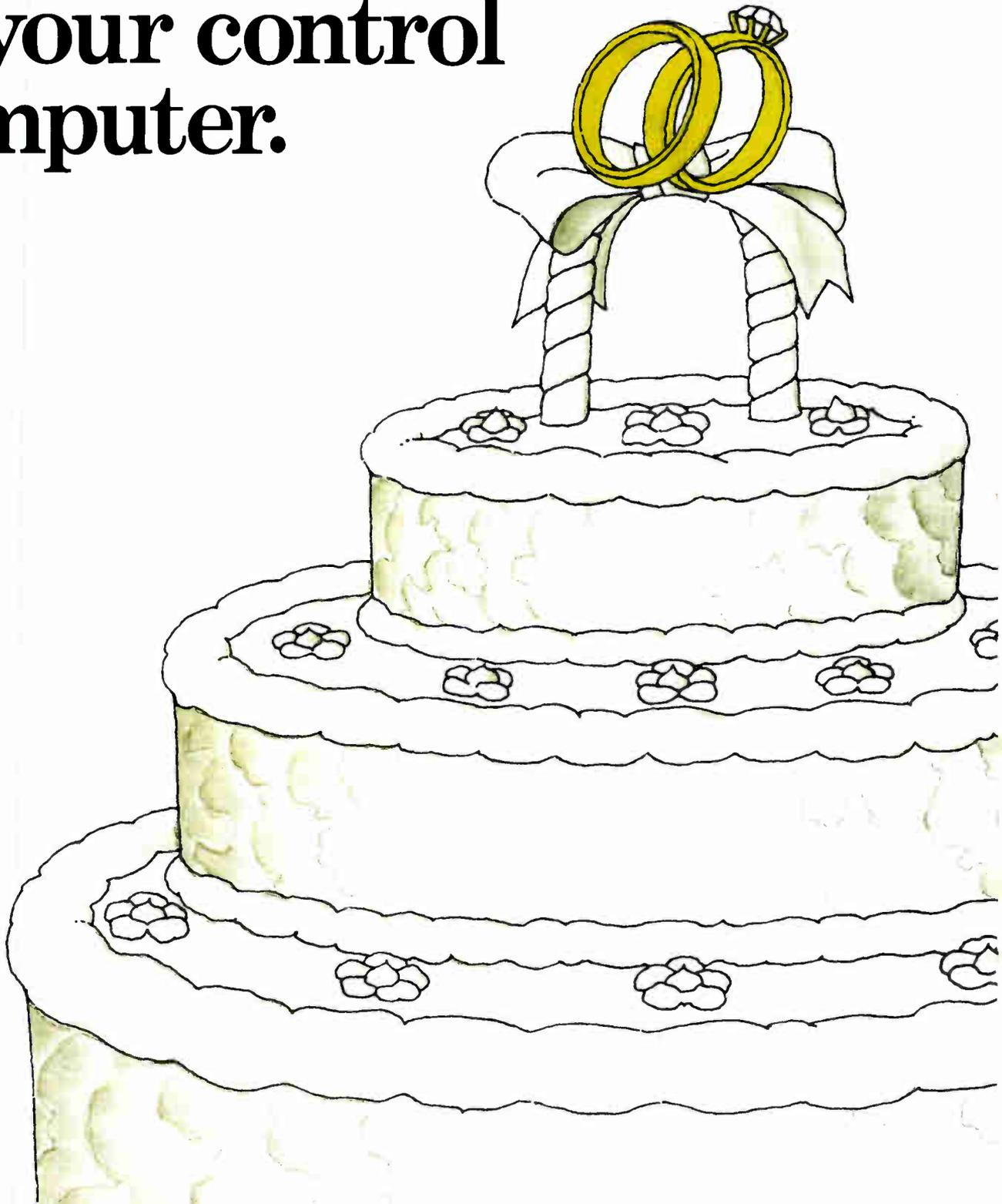
These are just a few of the security features available *only* with the Scientific-Atlanta Series 8500. For more information and free literature, please contact Don Meyer at (800) 241-5909. Or write us, Scientific-Atlanta, Box 105027, Dept. A-R, Atlanta, Georgia 30348.



*Dynamic Switched Sync Suppression is the standard scrambling system for Series 8500 Set-Top Terminals.*

**Scientific  
Atlanta**  
The Strongest Link

**An Oak addressable  
system can marry your  
billing computer  
to your control  
computer.**



Every time you make a service level change or add a subscriber, you're probably using one system to start or change service and another to handle the billing. That duplication doubles your costs, and all too often results in delays, inaccuracies and lost information.

When your systems are two-timing you, it can cost you plenty in subscriber good will, as well as operating overhead to straighten things out. In the meantime, you're waiting for your billing system to catch up with your control system, so you can start enjoying the profits that are rightly yours.

### **Oak to your rescue.**

It took Oak Communications Systems (formerly Oak Communications CATV Division), with over 15 years of involvement in the cable

industry, to find a way to free you from doing the same work twice.

Oak married cable business management systems to addressable control systems. Only Oak addressability offers this capability because only Oak offers an addressable system with a headend software package called the Interfaceable Addressing System (IAS).

### **Oak gets computers talking to each other.**

What IAS means is that now you can get an addressable system where you enter customer data only once to the billing computer.

With single keying, IAS saves you time and improves your business office efficiency. It ensures that your customers are billed for all the programming they receive.

IAS uses a simple transaction format which speeds up data communications and makes data access more flexible.

### **Why Oak is well received.**

Exclusive proven features like IAS have made Oak the leader in addressability. That's why you find more Oak addressable systems in operation in the U.S. today than any other manufacturer.

For more information on Oak addressability and IAS, contact your Oak representative, or call us direct at (815) 459-5000. Let us show you how getting your billing computer and control computer to work together can be a piece of cake.

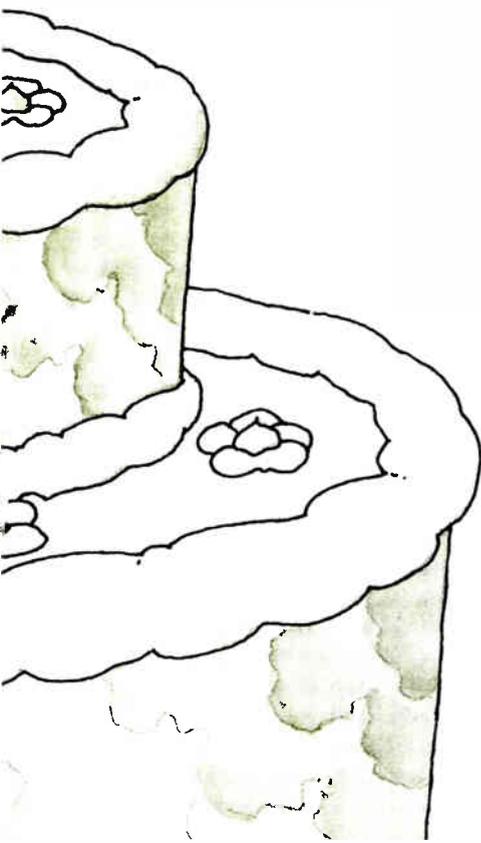
**Oak: The first choice in addressability.**

# **OAK**

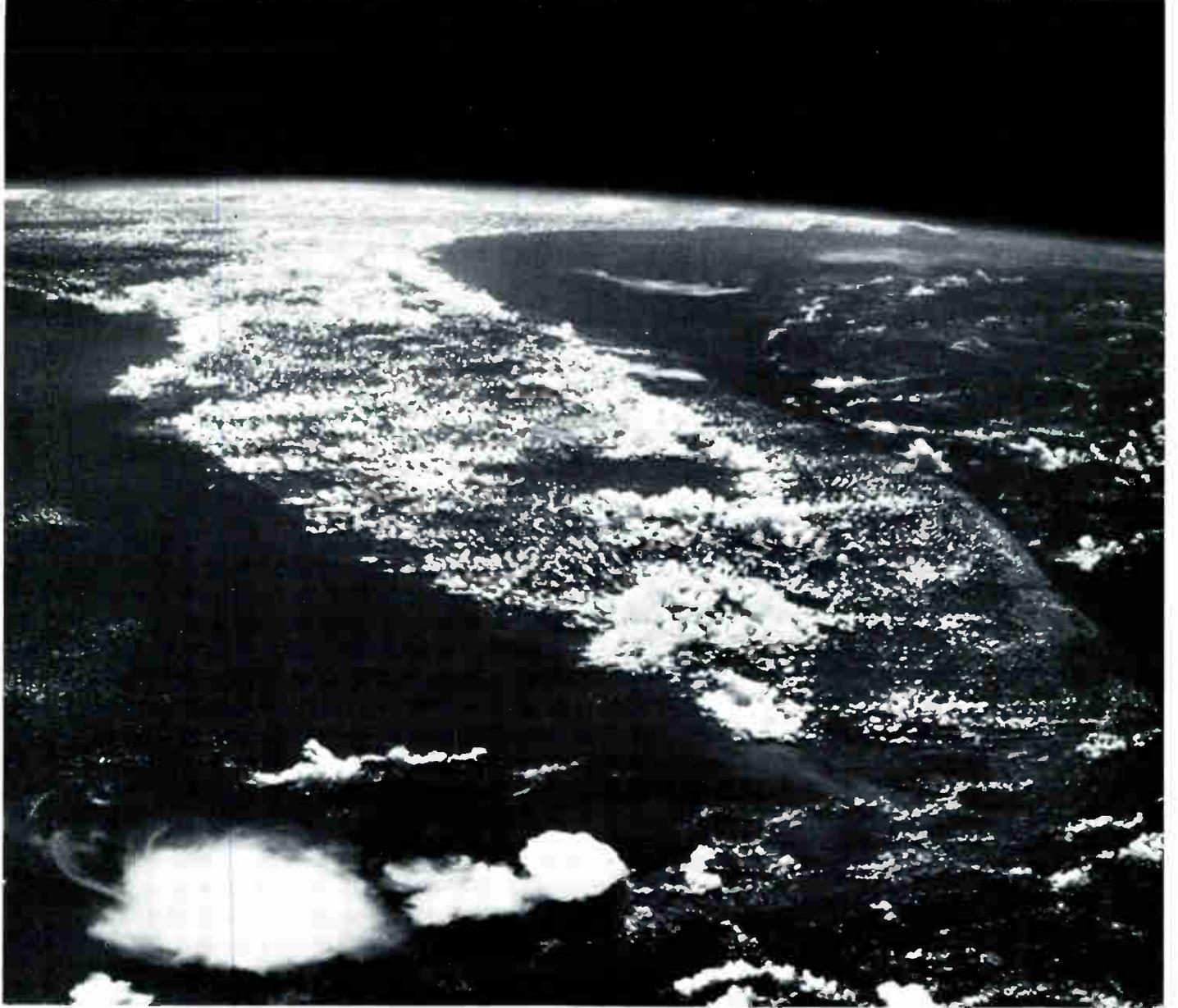
**Oak Communications Systems**

P.O. Box 517 Crystal Lake, Illinois 60014

Subsidiary of Oak Communications Inc.



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Satellite Antenna That  
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Florida.



Pico-Savac has met the Southern Florida Challenge . . . giving the nation a clear choice in a three-meter satellite antenna.

With an eye to the future, the Pico-Savac three-meter satellite antenna comes ready for the arrival of 2° spacing.

Call or write today and let Pico-Savac do for you what was once an impossibility in Southern Florida.

Pico-Savac, Inc.—technology for now and for the future.

**PICO - SAVAC, INC.**

7165 30th Avenue N.  
St. Petersburg, Fla 33710 Phone: 813-344-1634

continued from page 46

**Sprucer II**

The Sprucer II, designed by Kanematsu-Gosho, is a 444 MHz multimode baseband, addressable terminal with a microprocessor-based, phase-locked synthesized converter. It has three tuning options. Through the use of an optional electronic RF switch, it doubles the number of channels from 64 to 128 for a dual-cable plant.

For more information, contact Kanematsu-Gosho.



**Magnavox Magna 6400 converter**

**The Magna 6400 Converter**

Magnavox CATV's 64-channel 440 MHz converter incorporates standard features (remote IR receiver built-in and parental control) that are optional on other converters. It also has an optional handheld remote control unit, equipped with the same keyboard design as the converter.

For more information, contact Magnavox CATV, (800) 522-7464.



**Pioneer VIP one-way addressable subscriber terminal**

**Pioneer VIP**

The VIP one-way addressable subscriber terminal from Pioneer has 54 channels in single operation and 108 channels in dual operation, parental control, tamper-proof devices and a SAW output filter. By adding supplemental equipment to the system's foundation components, security systems or other two-way services can be implemented.

For more information, contact Pioneer, (614) 876-0771.

**Telease MAAST System**

The Telease MAAST System is a Multiple Application Addressable Secure Television System that uses a digital device, a proprietary encryption system and advanced modulation techniques to prevent signal piracy. Cryptographic techniques are used to scramble audio channels, while sync removal and inversion are used to scramble video.

For more information, contact Telease, (213) 552-1055.



**Texscan Textop Converters**

**Texscan Textop Converters**

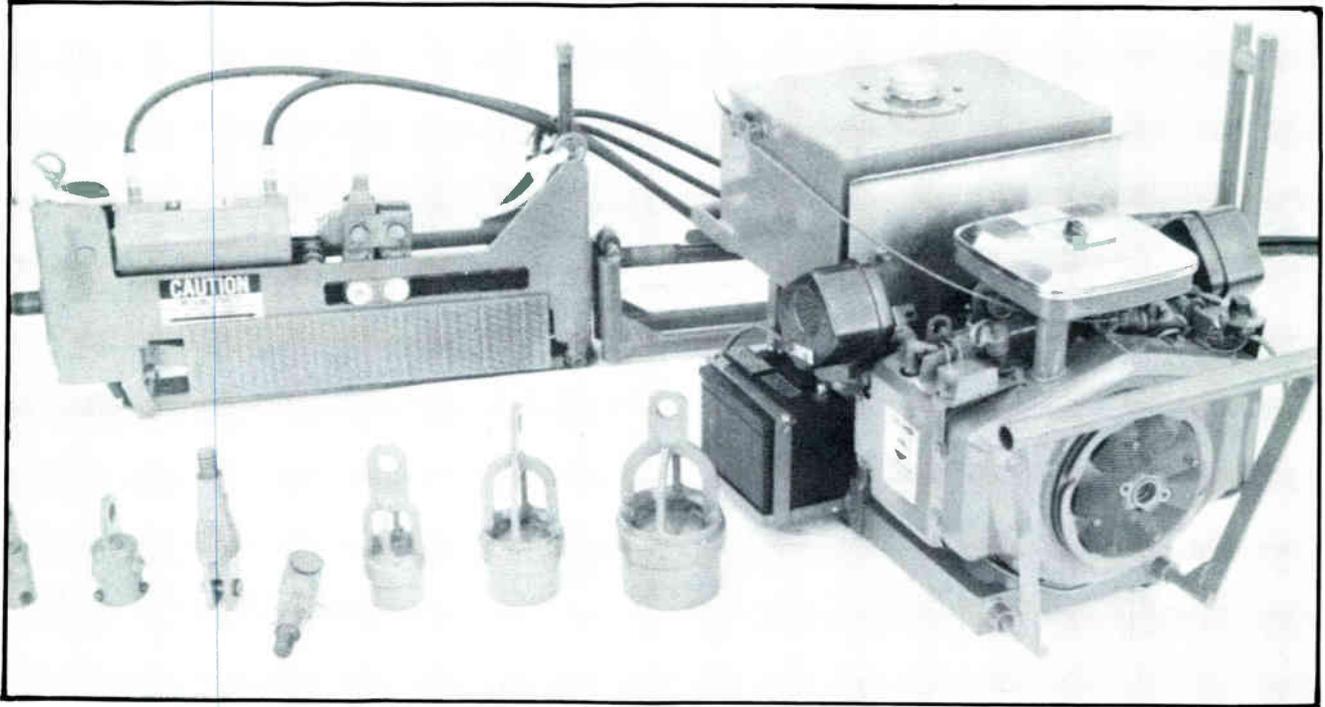
Texscan Corp.'s converter line includes three levels of set-top converter capabilities: the Textop 60, Textop Plus and Textop Ultra. Performance features include: up to 60 channels capability, 11 dB typical noise figure and cross modulation, intermodulation and composite triple beats below 60 dB. All units use frequency synthesized tuning with bright LED readouts.

For more information, contact Texscan Corp., (800) 528-4066.

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## PRESENTS "THE E4"

The answer for small bores up to 4"



MODEL E4

**Pulls 1" - 4" Pipe      Wt. 199 lbs.**

Trench Needed - 6" x 6" - 2 Men Can Handle Easily

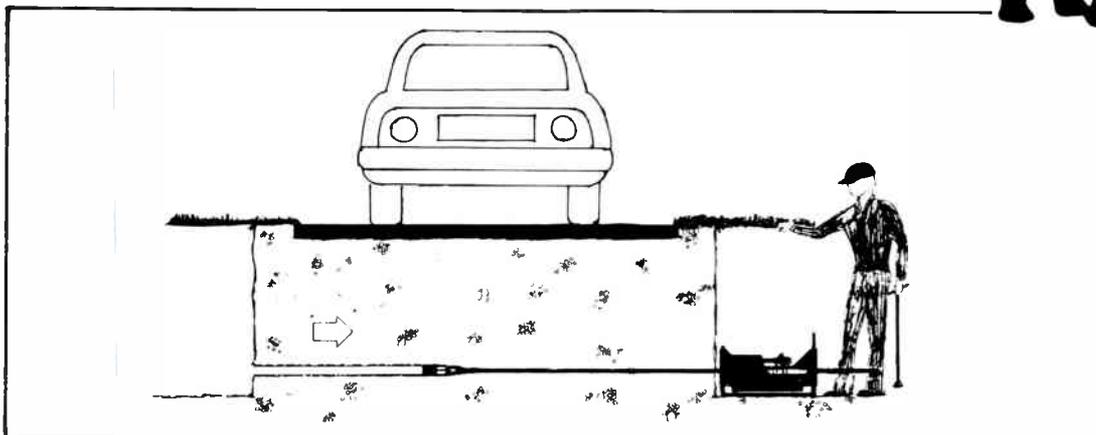
Hydraulic Gates Lock Elephant In Trench

The "E4" Develops 31,416 lbs.

of Pressure at 2,500 PSI.

# ELEPHANT INDUSTRIES INC.

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NORTH FORT MYERS, FL 33903  
PHONE 813-995-7383



**SAW Clean-Up Filters**

The SAW (surface acoustic wave) clean-up filter from RF Monolithics was designed to eliminate picture distortion caused by interference from adjacent TV channels. Assigned the model number CTVF-3, this filter can be connected to the external cable, (thereby linking the converter and TV receiver units), carries an insertion loss of less than 5dB and is priced at \$16.25 when ordered in quantity. Another SAW product manufactured by RF Monolithics is the SAW resonator, which is available in frequencies ranging from 600 MHz to over 1 GHz in the TO-18 header with a height dimension of .090 inches. When used as a quartz-stable oscillator frequency source directly at frequency, this resonator avoids crystal multiplier chains.

For more information, contact RF Monolithics, (214) 233-2903.

**TOCOM Pay-Per-View Technique**

Through "subscription programming," TOCOM's one-way addressable converters permit operators to deliver pay-per-view programming without the assistance of a tiering structure. Since subscription programming does not require any interactive transmission, it can be applied immediately in any one-way cable system.

For more information, contact TOCOM, (214) 438-7691.

**TOCOM Adds To 55 PLUS Line**

TOCOM has added the 5501A addressable baseband decoder to its 55 PLUS addressable system product line. The 5501A is a microprocessor-controlled decoder that was designed to adapt multichannel TV converters to baseband addressable operation. It used the same baseband scrambling, addressing and headend technology that the rest of the 55 PLUS products use, can be installed between an existing RF converter and the subscriber's TV set and is powered by a low-voltage plug-in transformer.

For more information, contact TOCOM, (214) 438-7691.

**Distribution Equipment**

**Broadband Amplifier Addition**

Broadband Engineering has named its latest house-drop and apartment amplifier the Super Multiple Dwelling Amplifier (SMDA). Designed to meet the changing requirements of a system, the SMDA can be purchased in a one-way configuration. It can later be upgraded to two-way by

simply inserting a plug-in return amplifier. For more information, contact Broadband Engineering, (800) 327-6690.

**Century III Feedforward Amplifier**

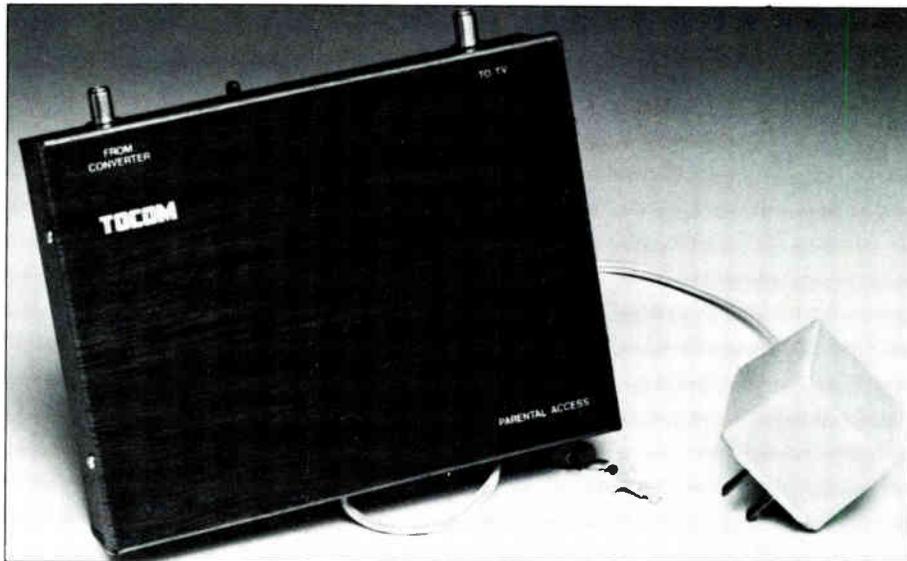
The Century III 4130-400 feedforward line amplifier, developed for CATV feeder applications, can be used in systems operating at bandwidths of 5 MHz to 400 MHz. With the addition of a reverse module, the system can provide 5-30 MHz.

For more information, contact Century III, (714) 671-2800.

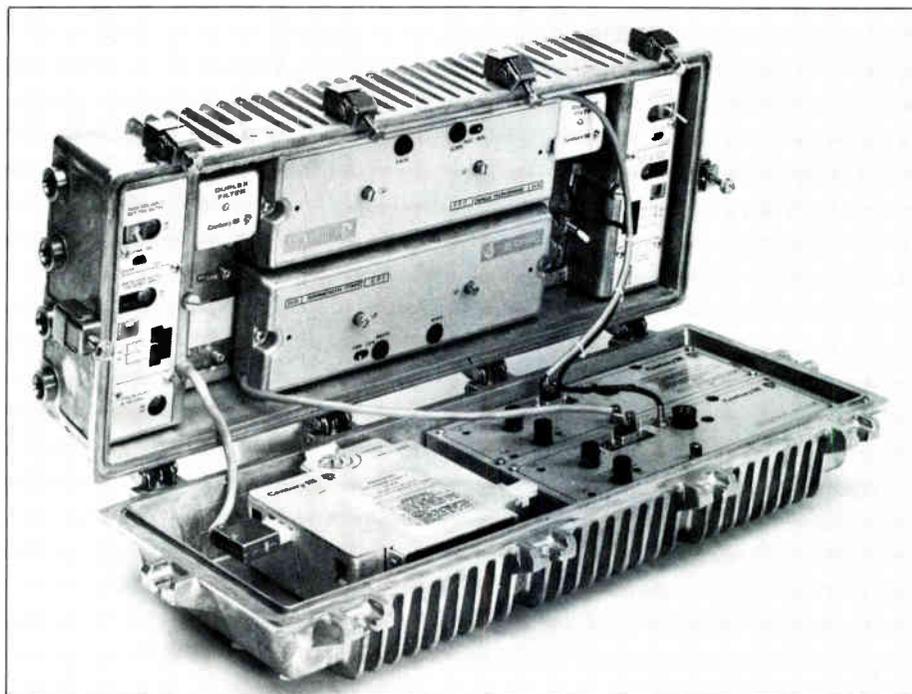
**Trunk Stations For Cable And Data**

Century III Electronics International Inc. designed its 4200 Series mid-split and high-split feedforward trunk stations for institutional cable systems and data transmission systems. While the feedforward mid-split trunk stations provide 160 to 440 MHz forward transmission and 5 to 120 MHz return transmission, the high-split trunk stations provide 235 to 440 MHz forward transmission and 5 to 185 MHz return transmission.

For more information, contact Century III, (714) 630-3714.



**TOCOM 5501A addressable baseband decoder**



**Century III 4200 series feedforward trunk station**

**Micro-Beam**

Micro-beam is a 52-channel wireless signal delivery system offered by Channel Master Satellite Systems. This system can be used to beam CATV signals via CARS frequency over rugged terrain or non-franchised areas. It has a single transmitter housing unit located behind the tower-mounted transmitting antenna.

For more information, contact Channel Master Satellite Systems, (914) 647-5000.

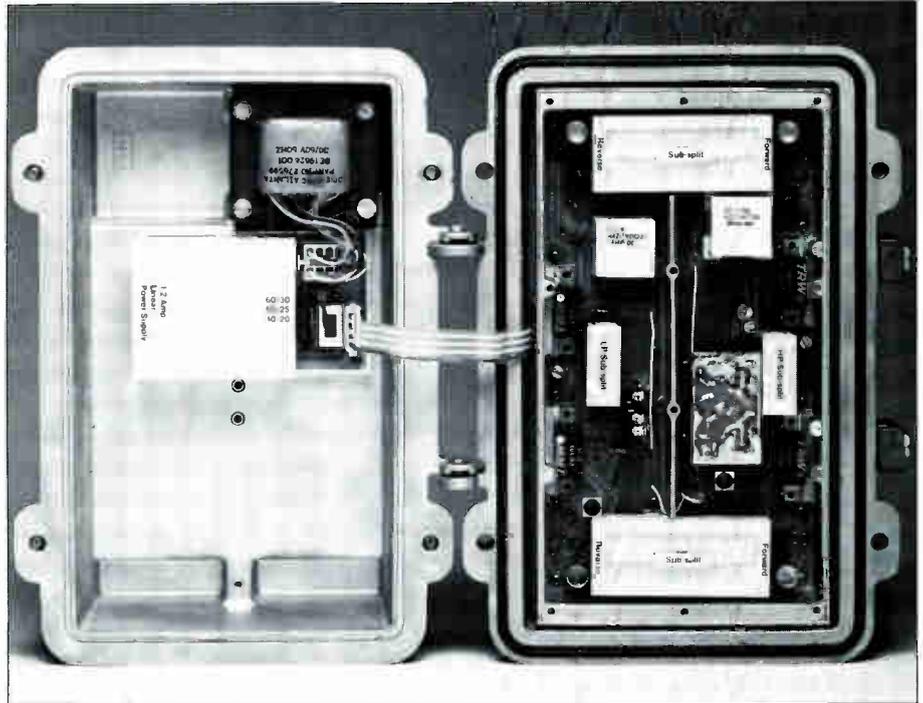
**Lindsay '100' Series**

Lindsay Speciality Products "100" series line of CATV equipment was designed for sparsely populated areas in the U.S. and Canada. The line uses trunk tapping to reduce system costs. Available equipment includes mini-trunk amplifiers, couplers, splitters and power inserters.

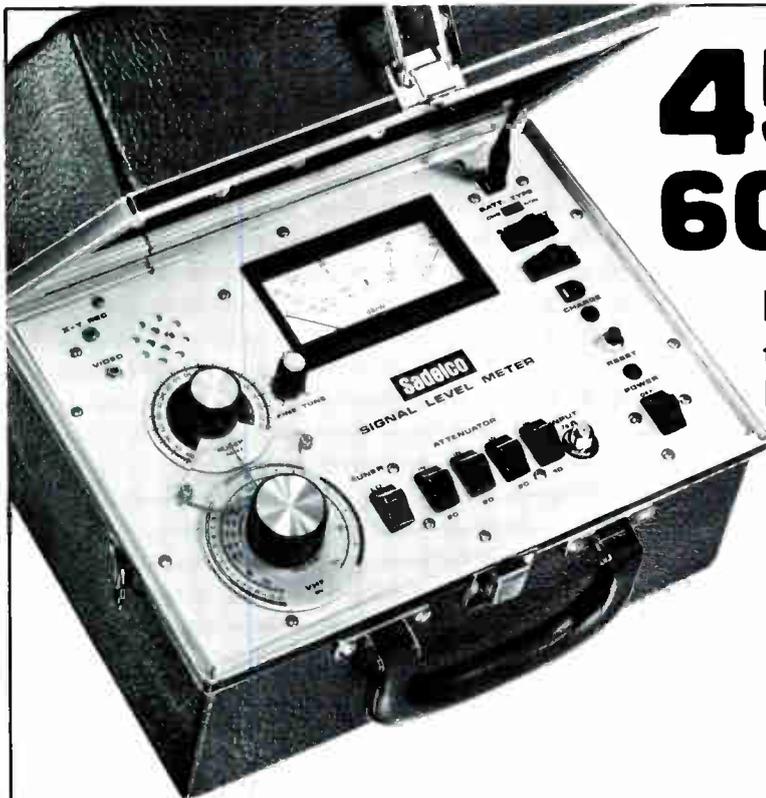
For more information, contact Lindsay Speciality Products, (705) 324-2196.

**Trunk Amp Drop-Ins**

RCA Cablevision Systems has developed two new high-gain trunk amplifier configurations that permit upgrading of existing and outdated systems. These



Scientific-Atlanta model 6501 distribution amplifier



# 450 MHz 60 Channels

PLUS . . .

the FS 3D-VS Professional SLM has Built-in Quality Features . .

- ± 1.0 dB Accuracy
- Electronic Auto. Shut-off
- New High-Impact case
- AC/Battery Operation:  
3 types of Battery Options;  
Nicads, Alkaline or  
Carbon Zinc

Available at major CATV Distributors  
Call or write for free color brochure

**Sadelco, Inc.** 75 West Forest Avenue, Englewood, New Jersey 07631 201-569-3323  
General representative for Europe: Catec AG Luzern/Switzerland, Habsburgerstr 22. Tel. 041-23-90-56 Telex: TELFI 78168

amplifiers are drop-in replacements for in-place units that allow for retention of existing cable.

For more information, contact RCA, (213) 891-7911.

#### S-A Model 6501

Scientific-Atlanta's model 6501 distribution amplifier station offers better operation and more flexibility than a line extender, needs only 9½-inches vertical clearance and has AGC capability and switching regulated power supplies. By providing up to 36 dB forward and up to 30 dB reverse gain, the station reserves maximum spacing for forward transmission in a two-way system.

For more information, contact Scientific-Atlanta, (404) 441-4000.

## Earth Stations

### Anixter-Mark 4-Meter TVRO

Anixter Communications is distributing an Anixter-Mark 4-meter TVRO earth station antenna that operates in the 3.7-4.2 GHz band. The antenna is dual polarized and features a parabolic reflector and feed and a simplified mount structure.

For more information, contact Anixter Communications, (312) 677-2600.

### Anixter-Mark Steerable Antenna

Anixter-Mark's 5-meter steerable antenna system uses a design that features a hydraulically actuated, single axis position control. This design allows operators to switch between satellite signals easily.

For more information, contact Anixter-Mark, (800) 323-5273.

### ATC Tri-Sat

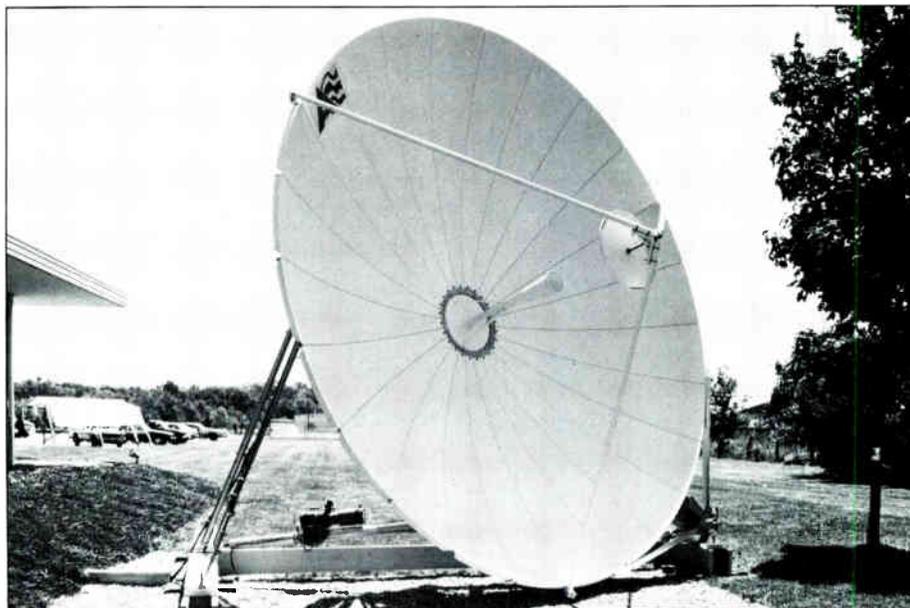
A Tri-Sat antenna, available from Antenna Technology Corp., receives signals from three adjacent satellites simultaneously. Manufactured in 4- and 5-meter parabolic versions, this antenna is an extension of the company's multi-beam satellite antenna product line.

For more information, contact Antenna Technology Corp., (305) 851-1112.

### Comtech Dual/Triple Beam

Comtech Antenna Corp. has recently integrated a specially designed multi-feed system into the company's existing 3.8- and 5-meter antennas, allowing the reception of simultaneous signals from a maximum of three adjacent satellites spaced 4 degrees apart in the orbital arc.

For more information, contact Comtech Antenna Corp., (305) 892-6111.

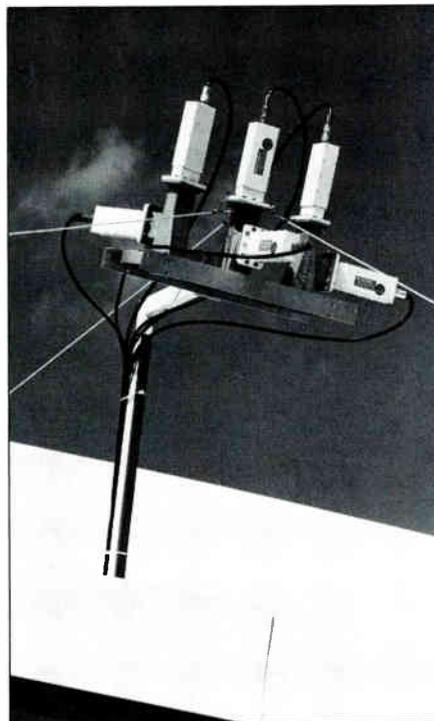


Anixter-Mark 5-meter steerable antenna

### Anixter-Mark Rear-Feed Design

Anixter-Mark has developed a rear-feed design for its microwave antenna. This design features weatherproof construction and positive sealing. The microwave grid antenna with rear-mounted feed includes a slot excited cavity feed for operation in the bands from 1400-2700 MHz.

For more information, contact Anixter-Mark, (312) 298-9420.



M/A-COM triple feed

### Simulsat 7 and Simulsat 3

Antenna Technology Corp. has expanded its Simulsat antenna line to include 3- and 7-meter multi-beam satellite antennas.

For more information, contact ATC, (602) 264-7275.

### Comtech 5-Meter Fiberglass Antenna

A remote controlled, 5-meter fiberglass antenna from Comtech handles up to 16 preset satellite positions on its satellite tracking system. The polarization rotator can be supplied with a dual pole OMT for simultaneous reception of horizontal and vertical signals, while the polar mount permits full satellite arc coverage from most U.S. locations.

For more information, contact Comtech Antenna, (305) 892-6111.

### Comtech Transportable Antenna

A 5-meter transportable antenna system, manufactured by Comtech Antenna Corp., features a heavy-duty commercial tandem trailer with low travel profile and Comtech's 5-meter, 3-piece hinged parabolic reflector. The system was designed for one-man setup and operation.

For more information, contact Comtech Antenna Corp., (305) 892-6111.

### Conifer TVRO System

The Conifer "System S-2001" includes all essential earth station components (antenna, LNA, receiver) and has a suggested retail of under \$3,000. Conifer's 12-foot polar mount antenna, model AN-4150, features a gold anodized expanded aluminum reflector surface supported by

aircraft grade aluminum alloy framing in matching gold anodized finish. The antenna's motorized polar mount permits movement of the antenna from satellite to satellite via push-button controls on the receiver.

For more information, contact Conifer Corp., (319) 752-3607.

**Gamma-Feeds Reduce Noise Ratings**

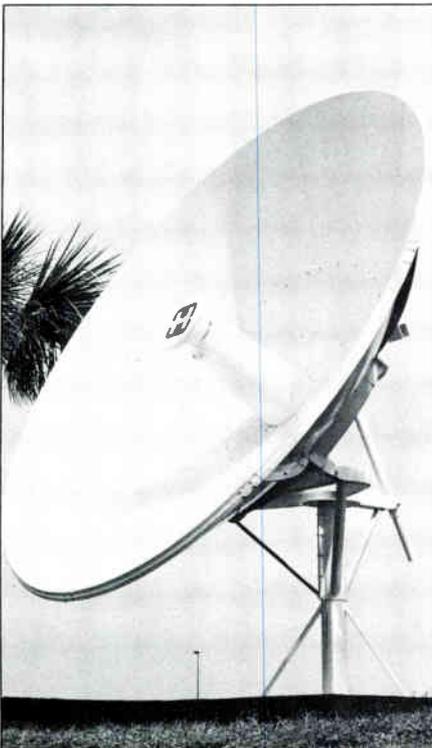
Gamma-f Corp. reduced the noise figure ratings on its production Gamma-feeds to a composite figure of 100°K (equivalent to an 88°K LNA). The Gamma-feed, for use in parabolic reflectors with F/D ratios from .3 to .5, can be mounted with either a four- or three-strut arrangement.

For more information, contact Gamma-f Corp., (213) 539-6704.

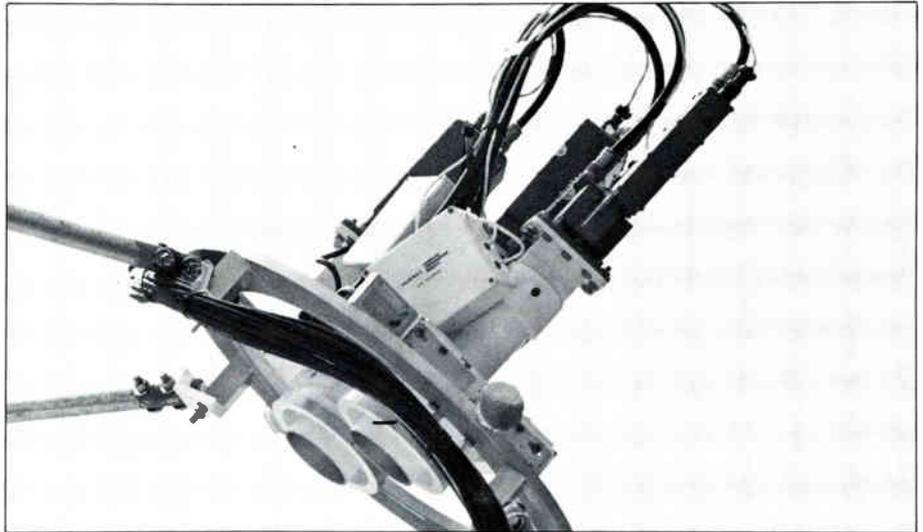
**Harris Ku-Band Antenna**

Harris Corp.'s Delta Gain Ku-Band antenna, model 5120, requires only a feed and low noise converter replacement to the existing Model 5115 Delta Gain antenna to provide Ku-Band communications of DBS. This retrofit eliminates the need for new antenna hardware and reinstallation and provides high antenna efficiency (68 percent), adjacent satellite interference rejection and simple mount adjustment.

For more information, contact Harris Corp., (305) 724-3000.



**Harris Delta-Gain antenna**



**Hughes dual beam feed**

**Intelsat Qualified Antenna**

The Intelsat Qualified Antenna is an easily transportable (E.T.) 6.1-meter earth station antenna from Harris Corp. This high-gain antenna achieves full elevation coverage without field adjustments and, when equipped with the properly polarized feed sub-system, can operate with any Domsat or Intelsat geostationary satellite from any location on the globe.

For more information, contact Harris Corp. (214) 984-0555.

**Pier-Mounted Load Frame**

Harris Satellite Communications has developed a pier-mounted load frame accessory for the 3-meter Delta Gain antenna. The frame can be assembled easily by one person.

For more information, contact Harris, (305) 724-3445.

**Hughes Dual Beam Feed**

Hughes Communications' dual beam feed TVRO modification is designed as a retrofit device. It allows system operators to modify existing parabolic dish antennas to receive signals from two adjacent satellites, spaced 3-5 degrees apart.

For more information, contact Hughes, (213) 517-6100.

**LNR's LNA**

The model CF4-60 is a high-performance FET low-noise amplifier. Manufactured by LNR Communications Inc., the CF4-60 uses solid state cooling to provide good noise performance. It covers the 3.7 to 4.2 GHz band and is available in—among other options—single, redundant and the TRIDUNDANT®

one-for-two configurations for frequency reuse.

For more information, contact LNR Communications Inc., (516) 273-7111.

**Motorized Antenna From M/A-COM**

A motorized version of M/A-COM Video Satellite's 5-meter antenna is powered by a 110 Vac circuit and can track the entire geostationary arc. Its polar mount, available in two options, is coded for all satellites of interest during installation.

For more information, contact M/A-COM Video Satellite Inc., (617) 272-3100.

**M/A-COM Triple Feed**

M/A-COM Video Satellite Inc.'s triple feed is designed for mini-cable TV systems. Each of the three prime focus feeds accommodates two LNAs or LNBs for reception of vertically and horizontally polarized signals from one, two or three satellites.

For more information, contact M/A-COM Video Satellite Inc., (617) 272-3100.

**High Isolation TVRO Power Dividers**

Merrimac Industries' PDI series of power dividers, equipped with internal dividers, can be used to divide an RF input signal into equal in-phase output signals. The dividers cover the 3.7 to 4.2 GHz TVRO band with isolation between output ports of a minimum 60 dB.

For more information, contact Merrimac Industries, (201) 575-1300.

**Microdyne's MAPS II**

Microdyne's MAPS II antenna positioning system is comprised of two microprocessor controlled subsystems, including a rack-mounted data processor/control unit and a keyboard/display unit. The



**Gardiner Communications Corporation**

*A Burnup & Sims Company*

GCC  
SERIES  
4350

THE RECEIVER TO TRUST.

# SERIES 4350 RECEIVER



THE RECEIVER TO TRUST.

The latest "state-of-the-art" technology together with the characteristics that have made our receivers unique in the industry; introducing Gardiner Communication's new 4350 Satellite Receiver.

At only 1 3/4 inches in height the new 4350 combines sophistication with reliability.

The slim design provides more space for effective convection cooling, while increasing density in the rack.

Impulse noise reduction is accomplished within the video demodulator resulting in a cleaner, less grainy video.

With a lower second IF band, gain and

selectivity are achieved more economically.

Our larger barrier terminal strip for audio output accommodates standard spade lugs. Optional notch filters for terrestrial microwave interference rejection will fit within the radio.

Controls and test points are located on the front panel with IF loop-through options available at the rear.

Each 4350 receiver is equipped with 24 channel, remote control, synthesized tuning capabilities and is designed to handle any two audio subcarriers for 5.4 to 8 MHz. 6.8 and 6.2 MHz are standard. "Loss of video" alarm output is also available.

**We go beyond.**



**Gardiner  
Communications**

*A Burnup & Sims Company*

3605 Security Street • Garland, Texas 75042 • (214) 348-4747

system's 20-key keyboard features an access code required for memory storage to restrict unauthorized entries and a battery back-up RAM for power outage protection.

For more information, contact Microdyne Corp., (904) 687-4633.

**Filter For Terrestrial Interference**

The model 4127 filter from Microwave Filter Co. permits reception of a single transponder signal during severe terrestrial interference. This combination bandpass filter and double notch filter assembly can be inserted in either the coax line between the LNA and downconverter or between the feedhorn and the LNA through the use of WR-229 waveguide flanges.

For more information, contact Microwave Filter Co., (800) 448-1666.

**Miralite System III And System IV**

Miralite Corp. has developed two programmable computer-driven antenna control systems for use with its 3.7 M series earth station antenna. These systems are called the System III and System IV. The System III features a programmable single-axis steerable 3.7-meter antenna for satellite-to-satellite reception, polarization control that is directed by a desk top microcomputer and a built-in electronic polarizer for polarization switching. The System IV features a rack-mounted microcomputer for use in headend control rooms and offers a dual polarity feed. Both systems come equipped with full instructions erection hardware cable and relays.

For more information, contact Miralite Corp., (714) 641-7000.

**The Apollo X10 Antenna**

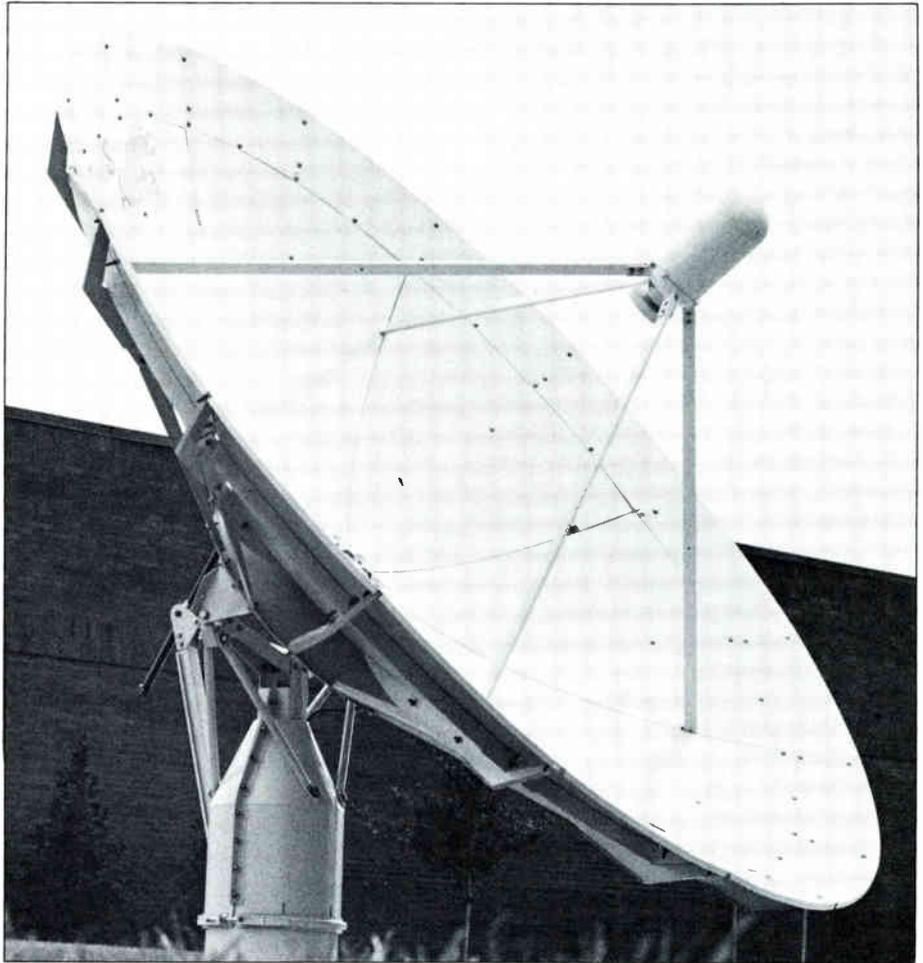
The Apollo X10 antenna from National Microtech Inc. uses a 10-foot eight-segment compression molded fiberglass reflector to achieve a high strength-to-weight-ratio. The size of the shipping container for this antenna saves handling and transportation costs. The X10 delivers 40.1 dB gain at 3.95 GHz and has a textured front surface that diffuses sunlight and diminishes solar heating at the focal point.

For more information, contact National Microtech Inc., (800) 647-6144.

**RF Metal Film For TVROs**

Pico-Savac has developed a 100 percent reflective RF metal film for post application into existing and installed satellite antennas. These metal films have a pre-primed metal surface, a special weatherized pressure sensitive adhesive system and varying roll lengths and sizes.

For more information, contact Pico-Savac, (813) 344-1634.



**Scientific-Atlanta series 9000 3.2-meter earth station**

**S-A's 2.8-Meter Antennas**

The series 9000 2.8-meter earth stations, manufactured by Scientific-Atlanta, render current S-A models 8006 3-meter and 8012 3.65-meter antennas obsolete. S-A's 2.8-meter antennas consist of a universal mount, a feed system that is available in single or dual-polarized configuration for C-band operation and a motorized option.

Through the use of extender panels, the 2.8-meter antennas can be expanded to 3.2 meters. This option offers 1 dB additional gain. All panels are fabricated by a die stamping technique that produces a high surface tolerance.

For more information, contact Scientific-Atlanta, (404) 441-4000.

**Mount For SMATV, TVRO**

A commercial-grade mount for SMATV and TVRO applications is available from South River Metal Products Co. The mount can support antennas up to 13 feet in diameter and is hot-dip galvanized for corrosion resistance. Through the use of a single manual or motorized linear actuator, the mount tracks the full geo-

synchronous arc from all locations in the continental U.S.

For more information, contact South River Co., (201) 566-7081.

**Enclosures**

**Alpha Pedestal Mount**

A pedestal mount enclosure, from Alpha Technologies Inc., stores standby power supplies and associated batteries or general CATV equipment. The enclosure is available in two and three shelf sizes.

For more information, contact Alpha Technologies Inc., (206) 671-7703.

**S.A.F.E Enclosures**

The S.A.F.E., a Secure Access-Free Enclosure manufactured by Reliable Electric/Utility Products, is being distributed by Anixter Communications. Made of heavy gauge galvanized steel, the S.A.F.E was designed to prevent pay-TV theft in apartments and residential complexes and features four optional

**Lectro Products  
introduces the Sentry,  
the first and only cable TV  
standby power supply that  
contains advanced  
technology...like  
standby and ferroresonant  
modules that plug in...and out,  
plug-in battery charge and  
inverter cards, with test points  
on the control panel,  
automatic switch-over, surge  
protection and is available with  
a status monitoring interface.**



**We go beyond.**



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maximum security systems, including: the SUPRA (Keyed Alike) Lock, a K-Lock, padlock hasp or padlock sidemount. A four-stage bath painting process, ensures that the S.A.F.E. can be used for outdoor applications.

For more information, contact Anixter Communications, (312) 677-2600.

#### Tandem Guardian Enclosures

The Tandem Group has made its Guardian line of cable enclosures available in a wide range of sizes with seamless construction and knockouts for cables.

For more information, contact the Tandem Group, (414) 421-2501.

## Fiberoptics

#### Artel Modular Fiber Optics System

The T/R-2013 fiber optic computer graphics communications system from Artel Communications Corp. transmits ultra-high resolution computer-generated video up to 100 times further than is possible with conventional coaxial cable. Both the T-2013 and R-2013 are plug-in transmit/receive modules whose typical applications include CAD/CAM, process control and image processing.

For more information, contact Artel Communications Corp., (617) 752-5690.

#### Fiberoptic Alarm Control Unit

Artel Communication Corp.'s fiberoptic alarm control unit, the ACU-2000 plug-in module, alarms up to seven communications channels, with audible and visual alarms, and also provides an automatically switched redundant power supply. The unit plugs directly into Artel's SL-2000 fiberoptic transmission system 19-inch card frame and monitors critical input/output signals—both electrical and optical—of all video/audio/data transmission modules in the card frame.

For more information, contact Artel (617) 752-5690.

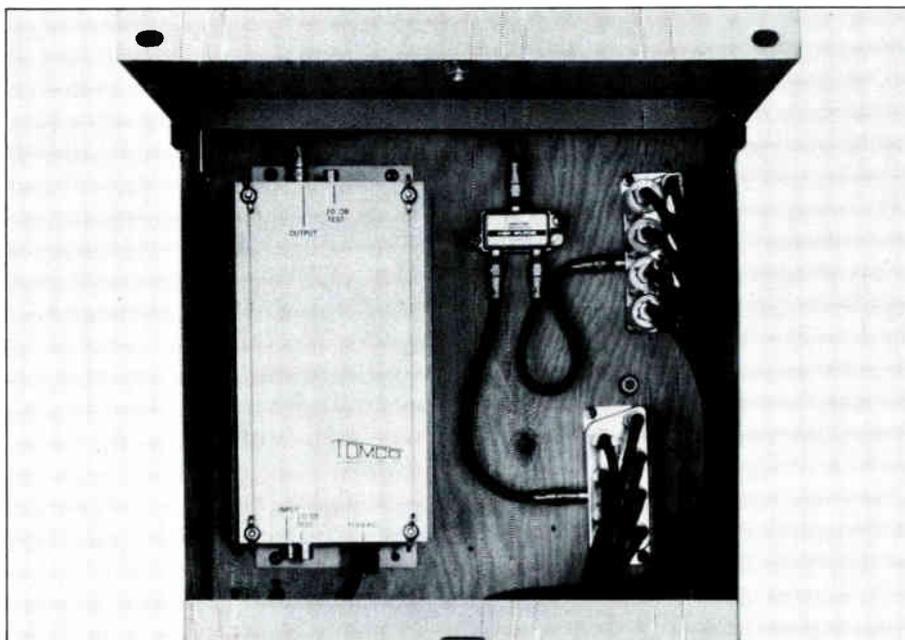
#### Artel Transmitter/Receiver Module Set

The T-2020/R-2020 transmitter/receiver module set, an addition to Artel Communications Corp.'s SL-2000 Fiber Optic Transmission System, combines broadcast quality video and audio on a single card module set. The module set achieves a maximum transmission distance of one kilometer and its price is \$2,250.

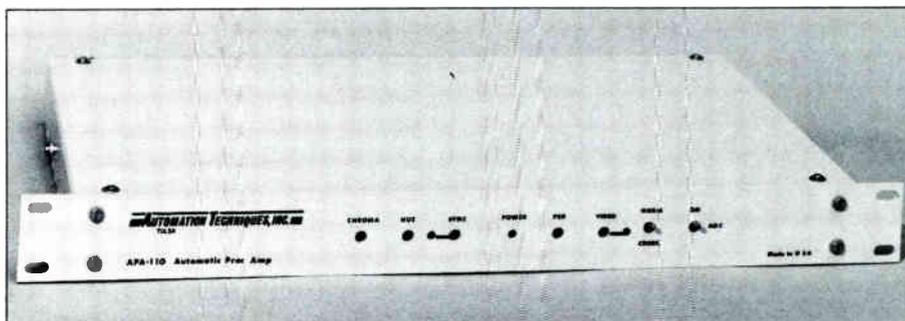
For more information, contact Artel Communications Corp., (617) 752-5690.

#### Fotec Fiber Optics

Fotec's test instrument, the model C200, measures the optical power in fiber



Reliable Electric S.A.F.E. enclosure



Automation Techniques APA-110 processing amplifier

optic communication systems in units of watts or dB simultaneously and is battery powered for field service but is equally suited to laboratory work. Fotec's model A400 attenuators, available with AMP optimate and SMA-type connectors, are, according to the company, a fraction of the size, weight and expense of other attenuators. These attenuators are priced from \$225 to \$250.

For more information, contact Fotec Inc., (617) 542-1719.

## Headend Equipment

#### Automation Techniques APA-110

A low cost processing amplifier, the APA-110 from Automation Techniques, features several innovations in proc amp technology that resolve previously unsolvable signal processing problems. Automatic gain control ensures proper sync-level ratio, while a sync extractor

eliminates the "jitter" caused by conventional genloc methods.

For more information, contact Automation Techniques, (918) 836-2584.

#### Avantek Midband Pilot Converter

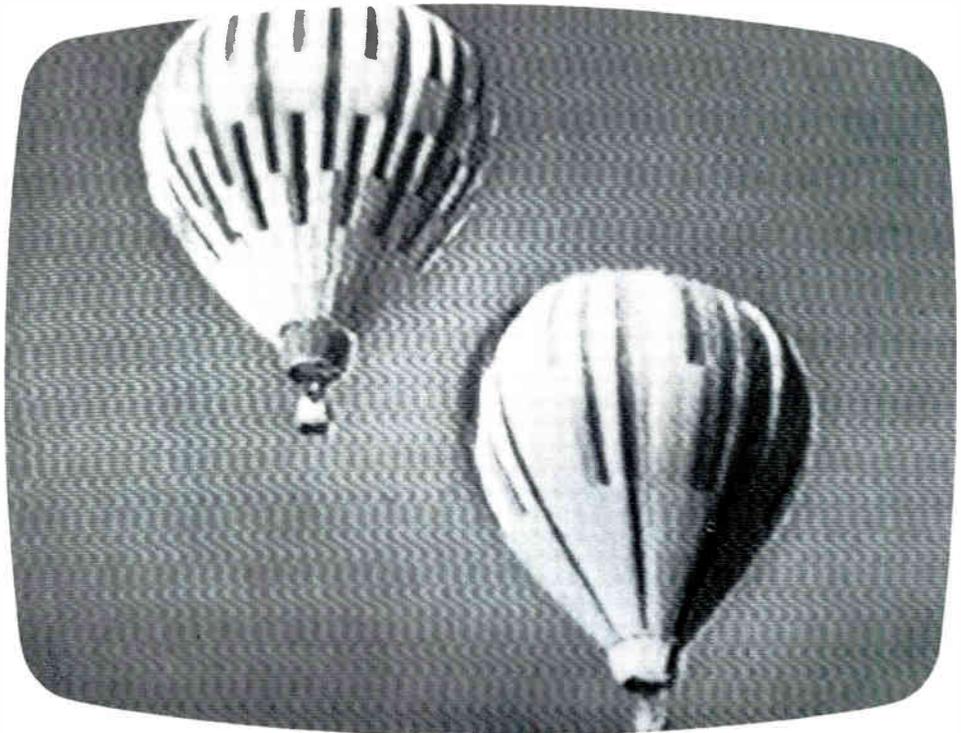
Avantek designed its midband pilot converter as a feature for its CR/CT-4000, 50 to 440 MHz (58-channel) low-level sweep system. This converter allows the operator to choose either the standard 50-MHz or a 220-MHz pilot frequency for locking the remote receiver CRT display to the headend-mounted transmitter.

For more information, contact Avantek, (408) 727-0700.

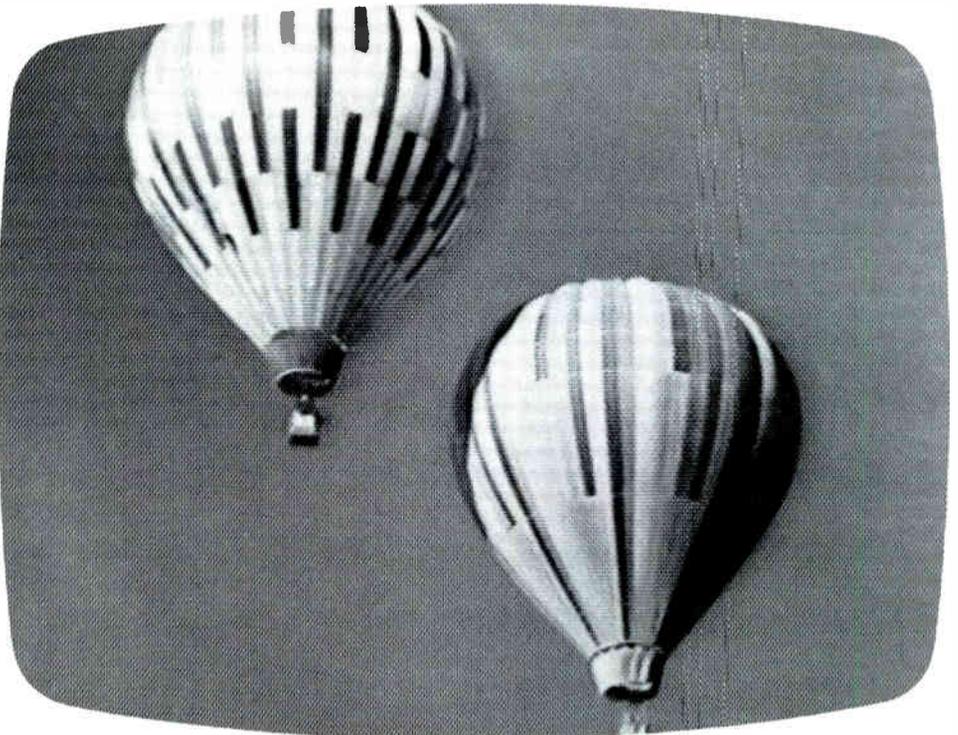
#### Blonder-Tongue Crystal Converter

Blonder-Tongue's VHF crystal-controlled single-channel converter is designed for CATV headend installations and is electrically and mechanically compatible with the company's DYNAMATIC channel processor, BPF-C band-pass filter and AUDIOMATIC aural/visual

# Before.



# After.



By installing RF Monolithics' CTVF-3 filter, you can easily eliminate picture distortion resulting from adjacent television channel interference.

And you can clear up the picture for under \$17\*. Which is less than the cost of an ineffective service call.

To install the filter, all the serviceman does is connect the cigarette pack-sized unit between the channel converter and television. Instantly, a clear, sharp picture appears. And you have a happy, satisfied subscriber.

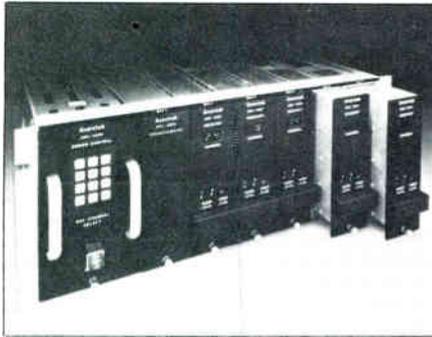
So, if you want to cut down on expensive service calls, get the filter that won't cost you a bundle to purchase and install. The CTVF-3.

Only from RF Monolithics. The leader in surface acoustic wave (SAW) components to the cable television industry.

For more information, contact RF Monolithics, 4441 Sigma Road, Dallas, TX 75234. Or phone (214) 233-2903.



**RF Monolithics, Inc.**  
4441 Sigma Road  
Dallas, Texas 75234  
214 233-2903



Avantek ARI-1000

ratio controller. The DYNAVERTER (NO. 4457), converts any VHF channel to another VHF channel, subband, IF, mid-band or superband channel and also can operate in reverse, converting a subband or IF channel to VHF.

For more information, contact Blonder-Tongue, (201) 679-4000.

**Telephone Interface**

Avantek's ARI-1000 telephone interface was designed for Avantek's AR 1000 Simulchannel™ multichannel TVRO system. This telephone interface permits remote selection of transponder channels

from any Touch-Tone™ telephone.

For more information, contact Avantek, (408) 727-0700.

**SCAT Series 10**

The SCAT Series 10 is C-COR's upgraded version of the SCAT Series 1. This upgraded, off-premise addressable converter delivers signals to volatile sets in a subscriber's home from one drop, is compatible with dual cable and helps prevent theft and pirating.

For more information, contact C-COR Electronics Inc., (814) 238-2461.

**Comtech 1155 Agile Modulator**

The CDM 1155 tuneable modulator, developed by Comtech Data Corp., features a thumbwheel channel-select switch that permits rapid tuning for any one of 55 channels. The modulator uses a SAW filter and a phase-locked channel synthesizer locked to a 45.75 MHz crystal reference.

For more information, contact Comtech Data Corp., (602) 949-1155.

**MAC System**

Digital Video Systems Inc.'s MAC (Multiplexed Analog Components) format satellite transmission system provides secure scrambling, high data channel capacity, multi-channel digital audio and hard encryption in a satellite optimized format. Chrominance is separated from luminance in a time multiplexed rather than a frequency multiplexed manner.

For more information, contact Digital Video Systems Inc., (212) 695-5311.

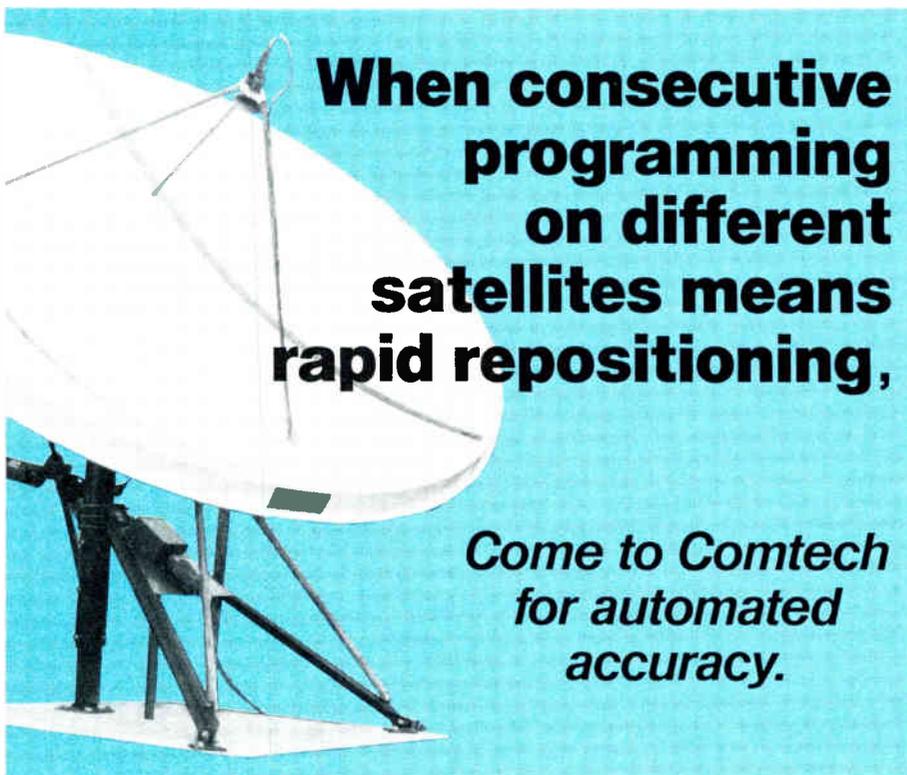
**Eagle Comtronics Descrambler**

Eagle Comtronics has designed its programmable descrambler to control any one or up to fifteen tiers of pre-determined pay channels. Compatible with all manufacturer's channels 2, 3 or 4 CATV converters, this descrambler features a plug-in security module that can be used by the system operator to upgrade or downgrade the service.

For more information, contact Eagle Comtronics, (315) 622-3402.

**UPI Markets Encryption System**

An encode/decode system for pay TV was developed by Focus Technology and is being marketed by United Press International. Labelled the USA video encryption system for Universal Syncless Addressable video encryption, this system was designed for universal application in the pay TV. The system is digitally addressable, can address up to five million individual users within a five-minute period, includes decoding information as part of the video signal and



Comtech's fully automated 5 meter polar mount antenna can provide you with cost-effective speed and accuracy—and warrantied performance. Complete earth stations, including video receiver, modulator, LNA etc.—prepackaged and system tested—are available from Comtech Antenna Corp., P.O. Box 428, St. Cloud, FL 32769, (305) 892-6111, TWX 810-870-0220 or Comtech Data Corp., 350 North Hayden Rd., Scottsdale AZ 85257, (602) 949-1155, TWX 910-950-0085.



**COMTECH**

Comtech Data Corporation  
Comtech Antenna Corporation

Subsidiaries of Comtech Telecommunications Corp.

Creative solutions in satellite communications.



# At Last . . . MAAST™!

## The "MULTIPLE APPLICATION ADDRESSABLE SECURE T.V." System That Meets Your Needs!

### We Asked You:

"What are the most important features for a subscriber-based television system?"

That was the question we asked Cable, Pay-TV, Satellite, SMATV, and teleconference operators, program suppliers, communication and financial institution executives, educators, broadcast authorities and government officials. We checked it out with subscribers, too.

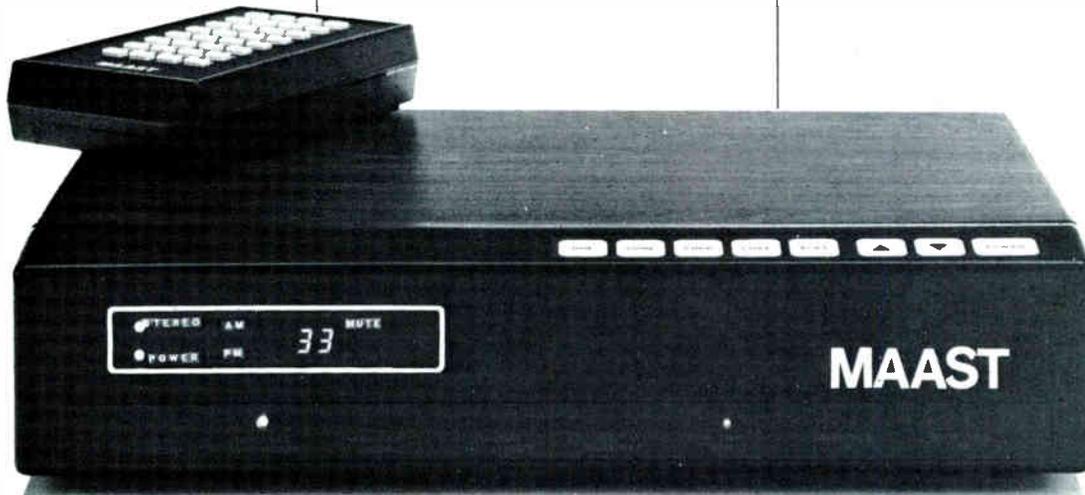
### We Took You Seriously:

It was a tall order, but early in 1980 Telease took on the task and assembled a staff of more than 40 scientists, engineers, and technologists to create such a system. Most members of the Telease Technology team have advanced engineering degrees and more than ten years experience designing secure military communication systems. The MAAST (Multiple Application Addressable Secure TV) system is the

### Call Or Write For More Information:

For a MAAST system description, a schedule of worldwide demonstrations, an appointment for a private demonstration at Telease facilities, or to schedule a MAAST test on your system, please call, write, or telex: Dave Block at Telease, Inc.

We promise a lot; we deliver even more.



### You Told Us You Want:

- A reliable high-quality, addressable system at an affordable cost.
- Secure transmission, data encryption, and hardware that pirates cannot defeat.
- A system that provides both tiering and impulse-pay-per-view (IPPV) for one-way systems (and is compatible with two-way upgrades).
- A 440MHz, 120 channel tuning system with dual cable inputs and automatic A/B switching. (plus UHF for some applications).
- An audio system that provides stereo and multiple language capability within the standard TV bandwidth.
- A subscriber control system that permits lock out of selected programs or channels (parental control).
- An expandable system architecture that is ready for two-way cable, interactive teletext/videotext/transaction TV, and home security.

product of more than two years work of this dedicated team. To meet the stated requirements took the design and implementation of three custom microprocessors, a custom LSI chip, a high security multi-key encryption system, and the use of advanced modulation techniques. The result... MAAST does more. It establishes a new state-of-the-art standard for subscriber-based systems.

### You Get A Big Bonus For Having Waited:

The MAAST system not only meets the stated requirements, it also provides three important additional benefits:

- MAAST will reduce installation, operating and service costs.
- MAAST will open profitable new business opportunities.
- MAAST will increase retention (decrease churn) by increasing subscriber satisfaction.

### MAAST™ Demonstrations

EBU CONFERENCE	OCT. 8, 1982	MARSEILLES, FRANCE
VIDCOM '82	OCT. 15-19, 1982	CANNES, FRANCE
PRESS DEMO	OCT. 21, 1982	LONDON, ENGLAND
STV CONFERENCE	NOV. 7-9, 1982	LOS ANGELES, CA
WESTERN CABLE SHOW	NOV. 17-19, 1982	ANAHEIM, CA
PHILIPPINE FILM FESTIVAL	JAN. 24, 1983	MANILA, PHILIPPINES

### MAAST™ Deliveries:

Orders will be accepted for early '83 delivery and thereafter. Manufacturing commitments for one million units a year have been made with a large high reliability manufacturer. Deliveries will begin Feb/Mar, 1983. Second and third source suppliers will be available mid '83.

The MAAST system is based on Telease, Inc. proprietary technology and is covered by worldwide patents, and patents pending.

1875 Century Park East, Suite 930  
Los Angeles, CA 90067

(213) 552-1055    TELEX: 677-235

**telease**<sub>inc.</sub>

Telecommunications Technology and Systems Since 1972

combines video inversion on a random encryption basis with a syncless TV signal that contains the digital address information in the vertical interval.

For more information, contact UPI, (212) 850-8834.

### Comband

General Electric's Comband system is a bandwidth compression system that has applications for cable TV, multipoint distribution systems (MDS), satellite master antenna television (SMATV), direct broadcast satellite (DBS), amplitude modulation microwave links (AML) and subscription TV. Comband synthesizes the headend processing of two channels of standard NTSC signals, normally requiring 12 MHz, into a combined signal requiring only 6 MHz for transmission. This signal then can be reconstituted into the original two signals.

For more information, contact General Electric, (804) 483-5470.

### GTE Split-Band Transmission

A split-band transmission system, developed by GTE Products, was designed to provide increased return capabilities for two-way communications. The system uses one model 1201 forward amplifier and one model 1701 return amplifier to offer four separate split bands in the 5-450 MHz range.

For more information, contact GTE Products, (800) 351-2345.

### Status Monitoring From GTE

GTE Products Corp.'s CATV Division designed a status monitoring system that maintains signal continuity and prevents cable system downtime. In the event of equipment failure, the status monitoring system either will bypass failed equipment or switch to backup equipment if the system has redundant functions.

For more information, contact GTE Products Corp., (800) 351-2345.

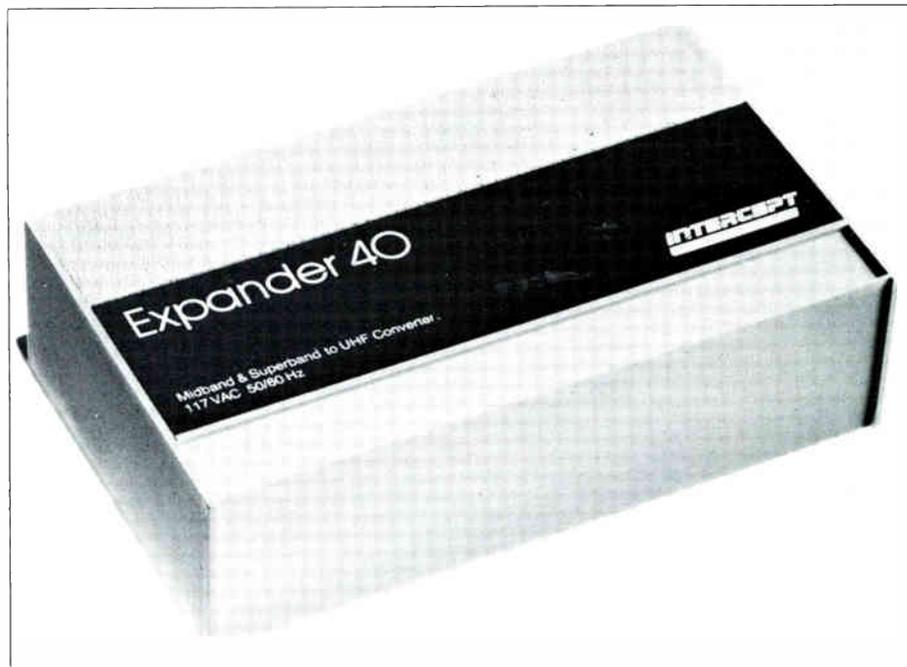
### The Expander 40 Block Converter

Intercept Corp. has developed a new block converter, labelled the Expander 40. A 40-channel VHF to UHF block converter, it converts all VHF bands (54-300 MHz) into UHF channels 36 to 76 (602-848 MHz).

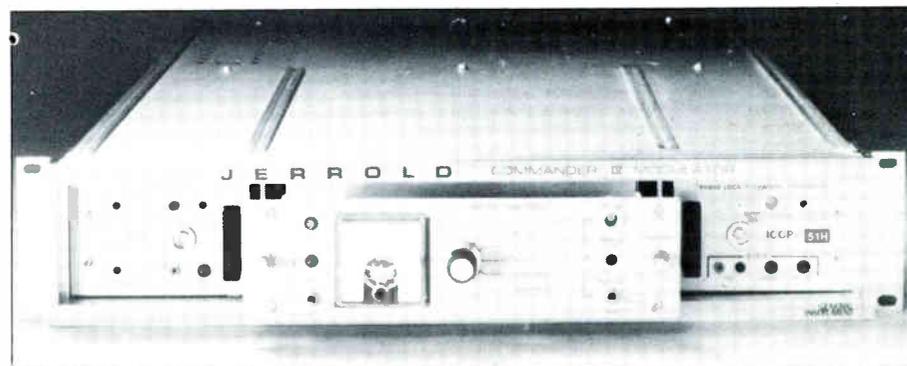
For more information, contact Intercept Corp., (800) 526-0623.

### EPIC Improves Cable Security

A headend scrambling system, successfully field-tested by the Jerrold Division of General Instrument Corp., improves signal security for cable systems. Designated "EPIC" for electronic program intrusion control, this system rendered



Intercept EXPANDER 40 block converter



Jerrold C4MP modulator with SAW filter

inoperable "pirate" descramblers purchased on the open market.

For more information, contact the Jerrold Division of General Instrument Corp., (215) 674-4800.

### Jerrold Modulator With SAW Filter

Jerrold Division of General Instrument Corp., designed its scrambling compatible modulator with a surface acoustical wave (SAW) filter to help reduce adjacent channel interference through improved vestigial sideband cut off attenuation. Known as the COMMANDER Model C4MP, this modulator can be used for either IRC or HRC phaselock operation.

For more information, contact Jerrold, (215) 674-4800.

### Headend Scrambling System

M/A-COM Linkabit's headend scrambling system for DBS and SMATV appli-

cations uses the data encryption standard (DES) algorithm, a digital technique that scrambles the analog by taking sections of lines and restructuring them on different lines.

For more information, contact M/A-COM Linkabit, (617) 272-3000.

### Microdyne Downconverter System

According to Microdyne officials, the 1100 BDC/1100 DCR, the company's most recent downconverter system, is a cost-effective and highly flexible way to provide programming to subscribers. The 1100 BDC converter uses a 110 degree K GaAs FET LNA to achieve an optimum signal-to-noise ratio, while the 1100 DCR downconverter receiver uses a double conversion tuner to obtain maximum image rejection.

For more information, contact Microdyne, (904) 687-4633.

*continued on page 67*

# For fast, easy and economical installation- it's Prodelin's newest performer.



## 3.7 meter (12') Earth Station Antenna System specifically designed for today's market.

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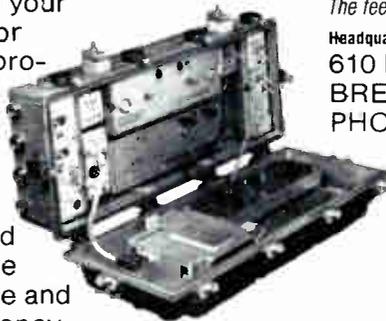
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continued from page 64

**Microdyne TV Modulator**

The 1000 LCM, a television modulator from Microdyne Corp., is, according to the company, a high-quality, reliable, low cost modulator.

For more information, contact Microdyne Corp., (904) 687-4633.

**Cars Filter From MFC**

Microwave Filter Co. manufactures a CARS band bandpass filter that is designed to pass the entire CARS band with less than 2 dB passband loss. Passband VSWR is less than 1.5 with a selectivity of 40 dB minimum at  $\pm 1400$  MHz.

For more information, contact Microwave Filter Co., (800) 448-1666.

**MFC TVRO Triplexer**

A TVRO triplexer that permits long distance, single coax runs is available from Microwave Filter Co. The triplexer allows the combination/separation of up to three different block downconverted spectra. Priced at \$3,270 per set, the triplexer can be delivered in four weeks.

For more information, contact Microwave Filter Co., (800) 448-1666.

**UPI SAT**

Modulation Associates offers a United Press International compatible SCPC satellite terminal that allows UPI affiliates to receive eight kHz UPI audio services simultaneously with state wire services. A full line of optional demodulation equipment is available with the UPI SAT.

For more information, contact Modulation Associates, (415) 962-8000.

**TV Modulator With SAW Filter**

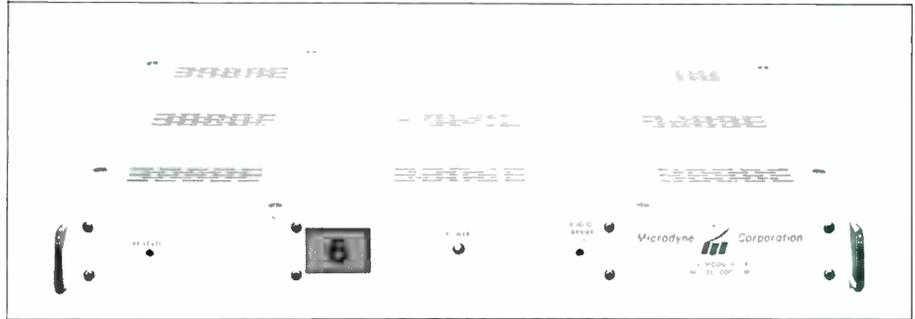
Precise Manufacturing is marketing a TV modulator with SAW filter. Low spurious emissions permit any number of these modulators to be combined at one headend, while a saw bandpass filter at the IF frequency provides textbook vestigial sideband characteristics. No tuning is necessary, and the addition of options or change of output channel is simplified by the modulator's modular construction.

For more information, contact Precise Manufacturing, (602) 967-0030

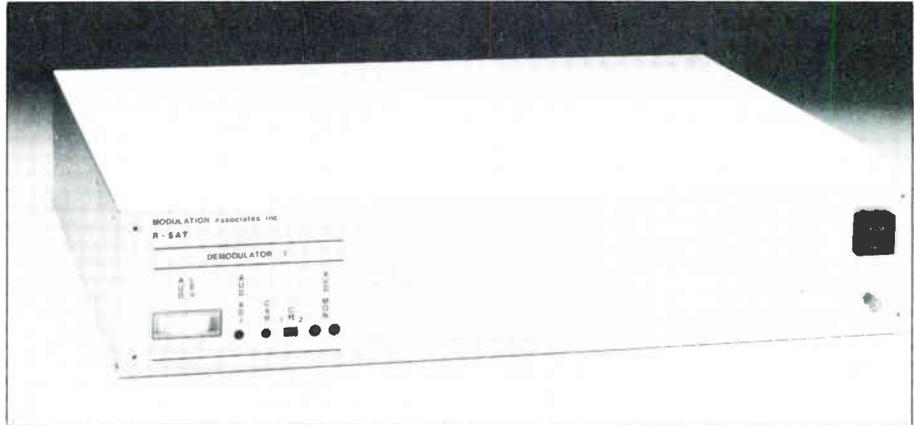
**Mini-Cable From S-A**

A mini-cable system package from Scientific-Atlanta includes the series 9000 2.8- or 3.2-meter earth station antenna, field-tested model 6650 video receivers, a low-noise converter and compact modulators. Channels can be added to the system through the use of the block down conversion technique.

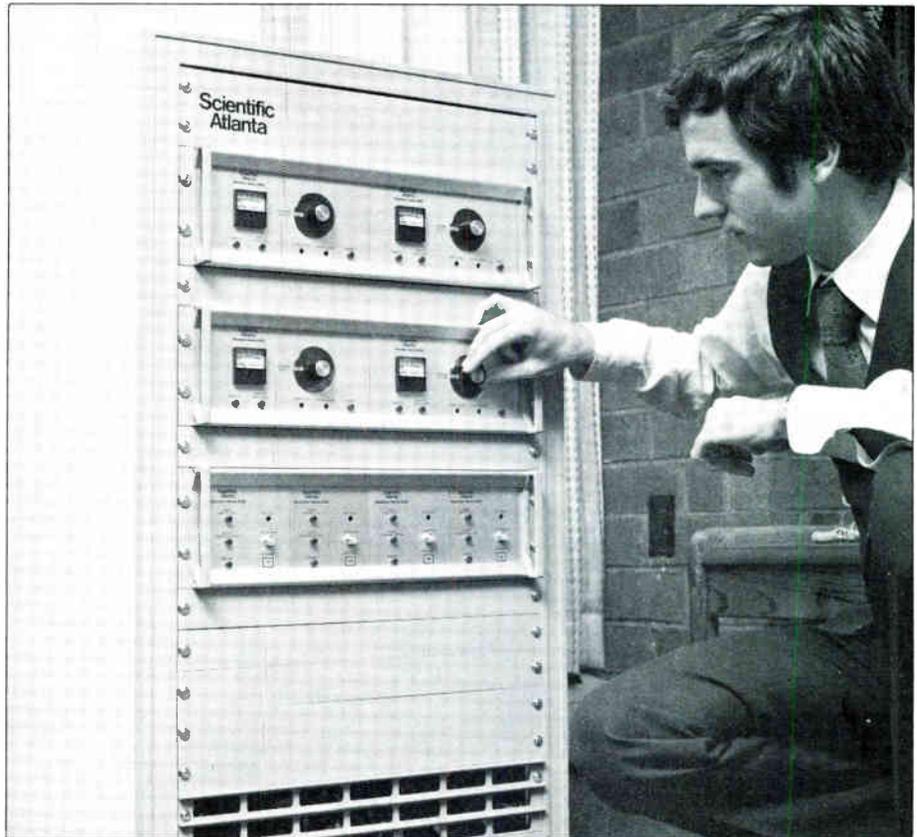
For more information, contact Scientific-Atlanta, (404) 441-4000.



**Microdyne 1000-LCM TV modulator**



**Modulation Associates UPI SAT**



**Scientific-Atlanta's mini-cable headend rack**

# It's Clear MSO's Demand **QUALITY**



Confronted with the task of building a long-lasting cable television system, MSO's and system operators alike are demanding quality products. Consequently, for a high quality closure they insist on Utility Products, the best selling closure in the world.

System operators demand Utility Products pedestals because they last. In most cases they are in use 25 years or more. Utility Products has engineered this longevity into each pedestal through a unique engineering and manufacturing design.

All pedestals are coated with unique 5-step finish to resist corrosion and

weathering. Vents, screens and louvers are also available on many pedestals to increase air flow and heat dissipation.

Security is another built-in feature of Utility Products pedestals. Many models include a three-point lock, key locks, padlock hasps, or a flange-free construction to restrict unauthorized entry.

In addition, Utility Products pedestals include a greater mounting space for enclosing passive and active equipment.

For your next installation insist on the pedestal MSO's demand, Utility Products, the best selling closure in the world.

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**S-A Broadband Data Modem**

A broadband data modem for point-to-point data communications is available from Scientific-Atlanta. This modem operates through cable TV bands and can translate data for transmission over coaxial cable. In addition to being low speed, the modem can serve as a business communications tool for CATV systems with "B" cable.

For more information, contact Scientific-Atlanta, (404) 441-4000.

**Scientific-Atlanta Multiplexer**

The model DML-1256 is a data multiplexer from Scientific-Atlanta that, according to the company, allows simultaneous operation of two of its power line carrier energy management systems over the same building wiring. Designed specifically for hotels/motels with extensive public area, this multiplexer controls up to 1,300 guest rooms and 256 public area loads.

For more information, contact Scientific-Atlanta, (404) 925-5069.

**Video Modulator From S-A**

Scientific-Atlanta's 6330 video modulator is, according to the company, smaller and more cost effective than previous S-A modulators. The 6330 operates over 21 VHF and mid-band channels and meets FCC predistortion requirements. Four of these modulators can be mounted in a standard 19-inch headend chassis.

For more information, contact Scientific-Atlanta, (404) 441-4000.

**Plug-In Upgrade**

RCA Cablevision Systems has developed a plug-in module upgrade that permits cable operators to accommodate full 400 MHz inputs at their systems' headend using RCA's HSP1 signal processor or CTD10 demodulator. The new plug-in module is easily retrofitted to systems now in operation.

For more information, contact RCA, (213) 891-7911.

**Genlock Sync Generator**

The GLS-RM genlock sync generator provides all video synchronizing signals to genlock a SpectraGen character generator or other television equipment to an external video signal. Genlocking provides full color synchronization to allow intermixing of video signals.

For more information, contact Texscan, (801) 262-8475.

**TOCOM 55 PLUS ACS**

The 5530A is a TOCOM computer-based addressable control system that the company designed for use with its

one-way and two-way addressable terminals. The system is based on the Hewlett-Packard 3000 computer system, uses TOCOM ACS software that controls personnel access, and delivers up to 55 channels of video programming, protected by baseband video scrambling.

For more information, contact TOCOM, (214) 438-7691.

**Programmable Tuner Demodulator**

The DM-40R, a programmable 105-channel tuner demodulator from Videotek, was designed for broadcast, CATV, microwave modulation and CCTV applications. Once the demodulator receives "off-the-air" signals, it processes them to provide buffered composite video and audio inputs.

Among other characteristics, the demodulator features three composite looping video and dual channel audio inputs that can be switched to a direct line output and a remote control commander that

allows operators to change channels and switch inputs via wireless remote control.

For more information, contact Videotek, (215) 327-2292.

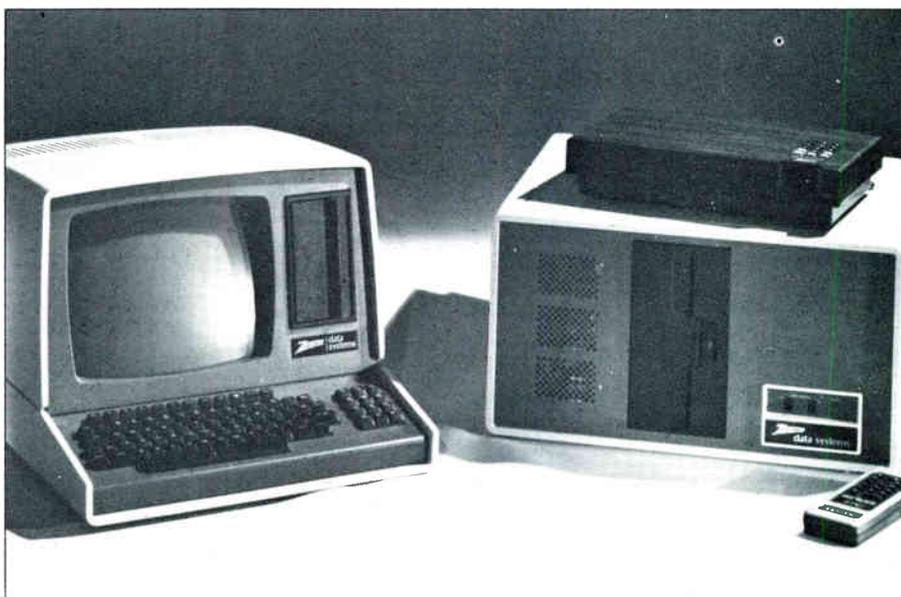
**Z-TAC Headend System**

Zenith's microcomputer-based CATV control system offers full headend addressability for entry level and small cable operators using the Z-TAC tiered addressable cable system. The new Tac-100 addressable mini system is capable of serving as many as 15,000 subscribers.

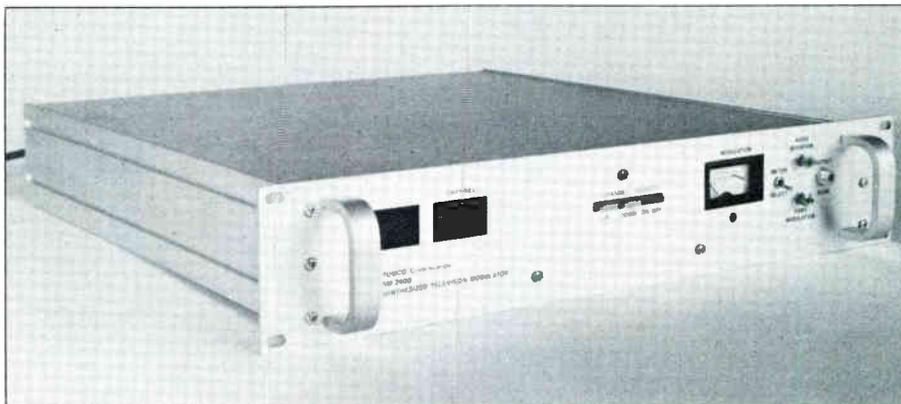
For more information, contact Zenith, (312) 391-8181.

**Tomco 38-Channel TV Modulator**

Tomco's 38-channel TV modulator, the SM-2400, is designed to bring an IF modulated frequency agile unit within reach of any CATV system. A built-in battery holds channel selection during a power failure. Full scrambler capability is



**Zenith TAC-100 headend system**



**Tomco SM-2400 TV modulator**

assured by the provision of aural and visual IF loops.

For more information, contact Tomco Communications, (408) 988-7722.

## Passives

### Blonder-Tongue Two-Piece Trap

A two-piece cable pay TV trap, manufactured by Blonder-Tongue, permits system operators to offer a single program or up to a one-month time segment of premium programming. The trap consists of a compact base attached to the TV coaxial cable input and a replaceable power module. The trap is fully compatible with PAL, SECAM, NTSC and their system variations.

For more information, contact Blonder-Tongue, (201) 679-4000.

### Colormax 400 MHz Taps

Anixter Communications is distributing Colormax 400 MHz taps that provide four-way subscriber taps over a broad range of tap values. Constructed of stainless steel hardware, these taps are equipped with housing and ports, which have separate moisture sealing gaskets and can puncture sealing rubber membranes on F connectors.

For more information, contact Anixter Communications, (800) 323-0436.

### Channel Master Addressable Trap

Address-A-Trap is a new patent-pending device that Channel Master Satellite Systems offers with its programmable addressing system, the Subscriber Control System. Through "picket fence jamming," a technique that contains a "fence" of more than 40 jamming signals per channel, Channel Master's addressable system provides hard audio and video security.

For more information, contact Channel Master Satellite Systems, (914) 647-5000.

### Intercept Parental Control Traps

Intercept Corp. extended its trap product line with the development of four series of single- and multiple-channel video- and audio or video-only parental control traps. These traps feature the industry's only keylock trap that uses printed circuit board construction.

For more information, contact Intercept Corp., (800) 526-7452.

### LRC Electronics "F" Connector

An "F" connector, offered by LRC Electronics, seals not only to the female post but also through a silicone crimp



Intercept parental control trap

seal, to the jacket of the cable. The connector features standard cable penetration, a standard seal to the female "F" connector end and a seal that keeps moisture from the braid of the cable.

For more information, contact LRC Electronics, (607) 739-3844.

### Jerrold Full Feature Taps

Jerrold Division of General Instruments manufactures a series of full feature Taps that include directional coupler-type taps. Designated the FET Series F, these taps



Intercept band reject filter

incorporate comprehensive standard features and come in 40 different models to accommodate various system designs.

For more information, contact Jerrold, (215) 674-4800.

### Multi Products Splitters

Multi Products International added the 2-, 3-, 4- and 8-way models to its line of stainless steel indoor/outdoor splitters. These splitters can be installed and reinstalled in a variety of applications and are constructed of corrosion-proof stainless steel for protection against harsh indoor or outdoor weather.

For more information, contact Multi Products International, (201) 239-8183.

### The Lockinator

The Lockinator™ is a security device designed by Viewsonics Inc. that helps prevent signal theft in pay TV. This device is a diecast unit, which locks in and terminates (75 ohm  $\pm$  5 percent) unassigned signal ports on outdoor or indoor taps, splitter, wall plates, etc. A unique feature of the Lockinator is its concealed key entry system.

For more information, contact Viewsonics Inc., (516) 921-7080.

### Descrambler-Trap

Vitek Electronics Inc.'s Descrambler-Trap™ intercepts decoding information outside the home. This process renders

# The Avantek Secret Service



## CATV system surveillance without bugging your customer.

Now you can sweep test your entire CATV system during prime time, or anytime with no interference to your subscribers' reception. The CR/CT 4000 low-level sweep system can automatically monitor the performance of up to 58 channel capacity systems. A low-level, non-interfering test signal below video occupies each channel for only milliseconds. The response is displayed on a portable tracking receiver. It's everything you need for regular maintenance and proof of performance including the spectrum analyzer functions of signal level, co-channel interference, cross modulation, hum, and other system conditions. The CR/CT 2000 offers the same features, but is designed for lower frequency systems.

## Now, accurate measurement of scrambled carriers.

Only the Avantek SL 400 and SL 300A signal level meters can offer the same level of accuracy in measuring both scrambled and standard video carriers. Readings are based on vertical interval sync pulses rather than horizontal sync pulses, thus eliminating problems associated with other techniques.

## And there's more at the Avantek store.

Many other products are available to fill out your testing and reception needs. There are instruments such as the CT 202 return-link transmitter and the CA 100B TDR cable analyzer. There are microwave components such as 3.7-4.2 GHz GaAs FET LNAs, line extender amplifiers and power

dividers, and low-noise pre-amplifiers to increase CARS-band link performance and capacity. And now, the versatile AR 1000 TVRO earth station receiver is available with a choice of antenna-mounted LNA/downconverters, or rack-mounted downconverters for use with already-installed LNAs.

Any Avantek product will make your system run better. All of them could make it run the best. Call or write today for immediate applications information or to set up a product demonstration.

## Avantek

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unauthorized descramblers in the home useless and provides a relatively inexpensive solution to descrambler pirating.

For more information, contact Vitek Electronics Inc., (201) 287-3200.

**Multi-Channel Trap**

Vitek Electronics' multi-channel trap protects up to four separate levels of pay and blocks from three to 21 channels. Cable operators can use one of these traps per subscriber.

For more information, contact Vitek Electronics Inc., (201) 287-3200.

**Power Supplies**

**Modular Power Supply**

The model AP-880 from Alpha Technology is a standby power supply, featuring a two-module concept. This allows the user to purchase the transformer modules, thereby minimizing initial cash layout. The model AP-880 operates with all standard and optional plug-in boards and has modules that can function independently of each other.

For more information, contact Alpha Technologies, (206) 671-7703.

**Watchman Battery**

The Watchman SB-27 is a maintenance-free battery designed by Gould Inc. as a back-up system for cable TV booster stations. The Watchman switches on automatically during power failures and can operate without interruption for up to 4-8 hours. It costs approximately \$60 when purchased in quantities of 30 or more.

For more information, contact Greater Distributing Service, (312) 998-0444.

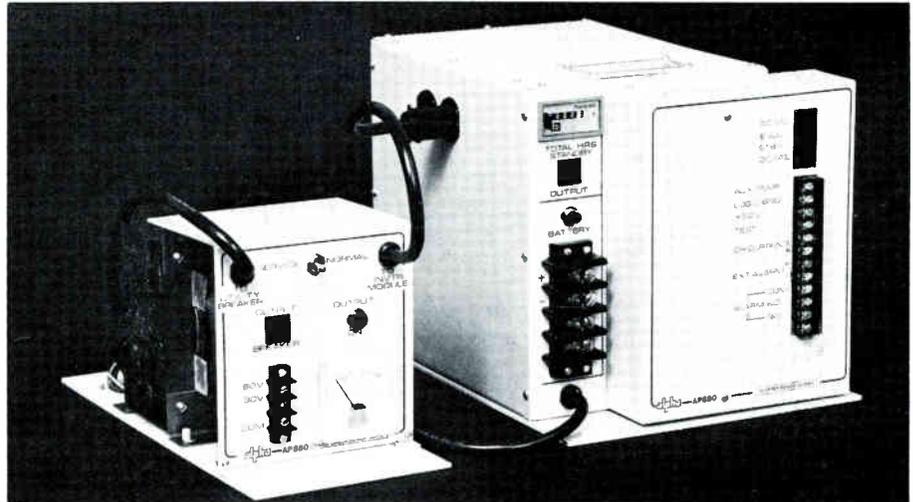
**Gel/Cell Battery From Globe**

Globe Battery Division of Johnson Controls Inc. made its high-power, sealed, maintenance-free battery with gelled electrolyte to prevent leakage and spilling during installation and shipping. This Gel/Cell battery, model GC12800, is rated at 12 volts and 80 ampere hours and provides an extra measure of protection against breakage due to freezing.

For more information, contact Globe Battery Division, Johnson Controls Inc., (414) 228-2393.

**Sentry CATV Standby Power Unit**

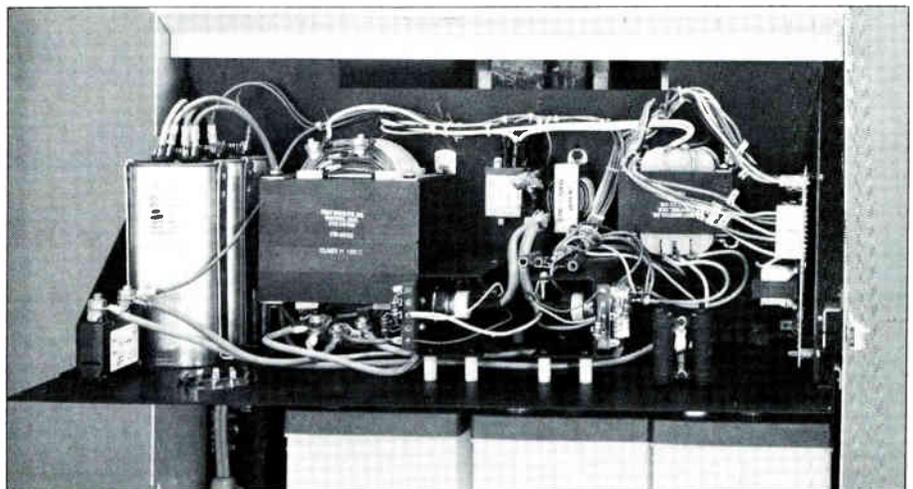
Lectro Products has developed a CATV standby power unit, the Sentry, which is pre-wired, except for the battery and input AC connections from the power supply. Upon request, a status monitoring interface



Alpha Technologies AP880 power supply



Wilmore standby power system



Siltron power supply



CATV Subscriber Services, Inc.  
108 State Street  
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919-273-5553  
Raymond L. Galtelli, President



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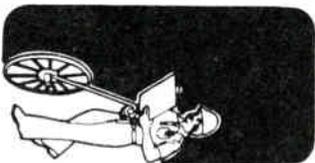
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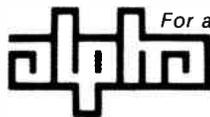
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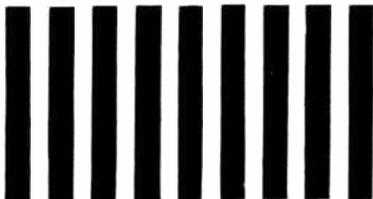
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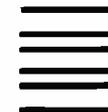
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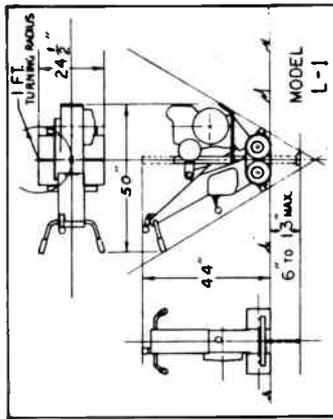
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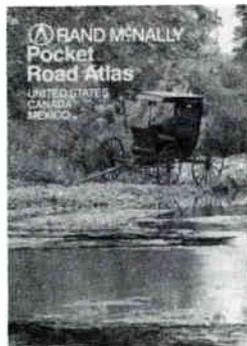


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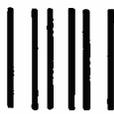
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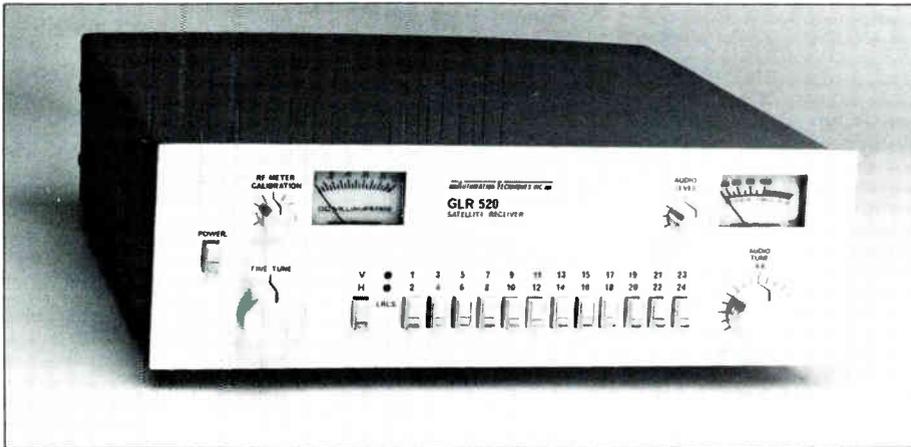
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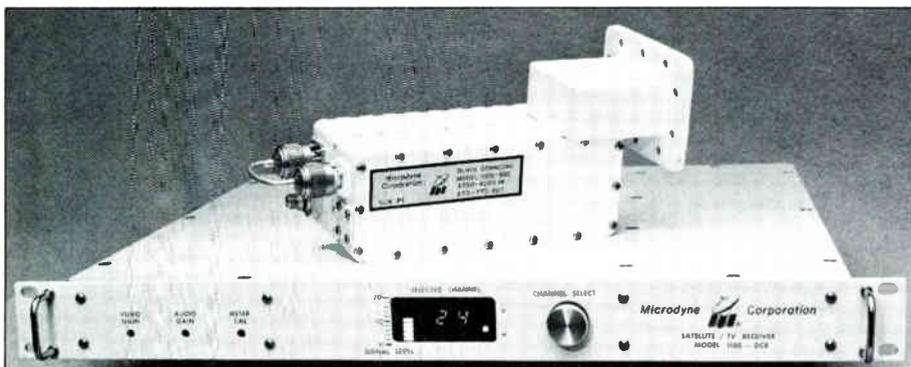


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Automation Techniques GLR-520 satellite receiver



Microdyne 1100 BDC/DCR receiver

can be built into a drawer. Standby and ferroresonant modules plug in and out.

For more information, contact Lectro Products, (404) 353-1159.

#### Siltron Power Supplies

Anixter Communications is the exclusive distributor of Siltron A.C./standby power supplies. These battery-operated power inverter systems are designed for interactive CATV systems and feature lightweight, all aluminum enclosures, short circuit protection and field replacement logic control boards.

For more information, contact Anixter Communications, (312) 677-2600.

#### Welco Power Supply

Welco industries uninterruptible power supply produces free power for protection of sensitive equipment. The compact unit keeps equipment operating despite glitches, spikes, brownouts or power outages and does not require line conditioners or dedicated lines.

For more information, contact Welco Industries Inc., (513) 891-6600.

#### UPS From Wilmore

The 1000-watt model 1409 uninterruptible power supply from Wilmore Electron-

ics Inc. is targeted for both the OEM and the end-user markets. The model 1409 consists of a DC-to-AC inverter, battery charger and sensing and line-to-inverter transfer circuitry. The model is priced at \$1,250 and can be delivered from stock.

For more information, contact Wilmore Electronics, (919) 732-9351.

## Satellite Receiving Equipment

#### Amplica's RD-10 Satellite Receiver

Amplica Inc.'s RD-10 satellite receiver was developed for those who prefer a separate downconverter component that interfaces with Amplica's R-10 receiver and any quality LNA. This receiver consists of a model D-10 downconverter and a model R-10 satellite video receiver and is available in weatherproof housing.

For more information, contact Amplica Inc., (805) 499-2621.

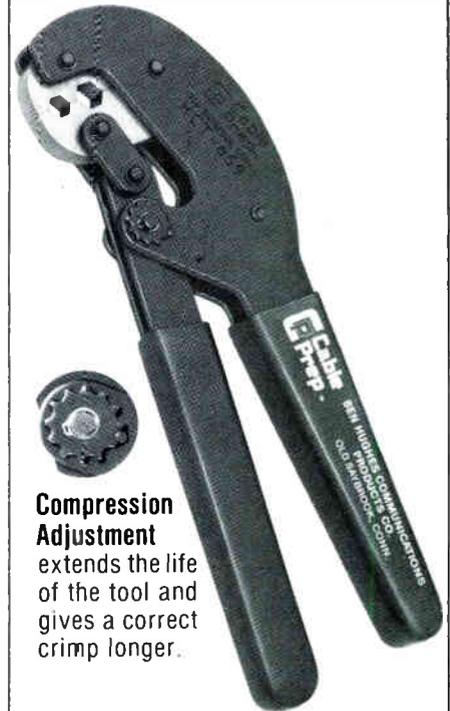
#### Automation Techniques GLR-520

The GLR-520 from Automation Techniques combines many of the features of its predecessors: the GLR-550 and GLR-550 imageless receivers. The GLR-520

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features the imageless mixer design of the GLR-500, push-button transponder selection with fine tuning control, a front-panel audio level control meter and a relative RF signal meter.

For more information, contact Automation Techniques, (918) 836-2584.

#### Amplifier And Satellite Receiver Line

Automation Technique's APA-110 amplifier and GLR-500 imageless satellite receiver series respectively feature innovated proc amp technology and detent tuning and tuneable audio. While the APA-110's proc amp technology helps resolve previously unsolvable signal processing problems, the detent tuning and tuneable audio features of the satellite receiver series allow the user to adjust the audio output to specific frequencies from 5 to 8 MHz.

For more information, contact Automation Techniques, (918) 836-2584.

#### Gardiner Satellite Receiver

The model 4350 is a Gardiner Communications Corp. satellite receiver that features block down conversion (first IF, 940-1940 MHz; second IF, 300 MHz); double conversion; 1 3/4-inch height; remote control; optional notch filters for terrestrial microwave interference; 100-130 volts power input and video demodulator's impulse noise reduction.

For more information, contact Gardiner Communications Corp., (713) 961-7348.

#### 12 GHz Satellite Receiving Systems

M/A-COM Video Satellite Inc.'s 12 GHz satellite receiving systems incorporate many of the same features as the company's 3.7 and 4.2 GHz satellite receiving equipment. The systems use 12 GHz low noise block downconverters that are compatible with the MA-1001 and MA-1003 LNB satellite receivers. A typical four-channel system includes a small diameter antenna, two LNBS and four satellite receivers.

For more information, contact M/A-COM Video Satellite Inc., (617) 272-3100.

#### Modulation R-SAT SCPC Receiver

Modulation Associates refers to its "optimized" SCPC audio satellite receiver as the R-SAT. Through the use of an optimized SCPC demodulator and a 3.7-meter antenna, the R-SAT reduces satellite power from 80 to 10 watts.

For more information, contact Modulation Associates, (415) 962-8000.

#### KLM Receiving Equipment

KLM Electronics Inc. offers a "Sky-Eye VI" satellite receiver and "Memory-Trak" remote dish-control console to accom-



**KLM SKY EYE VI satellite receiver**



**TOCOM 3000 home alarm terminal**

pany its 11-foot, alt-aluminum parabolic antenna. By providing VHF-cable/satellite source switching that automatically isolates local VHF-cable signals when the receiver is being used, the Sky-Eye VI prevents co-channel interference. Other features of the Sky-Eye VI include: single knob, fully variable polarizers; two-speed scan that slows down when crossing active channels; large slide rule tuning; fully tuneable audio and other components. The Memory-Trak dish-control console has a 50-satellite memory, is designed for use with KLM's new X-11 satellite antenna and Polar-Trak motorized mount, and includes: a memory safety lock that protects against accidental programming changes, an eight-hour memory retention in the event of a power failure and 0-180 degrees relative dish position readout.

For more information, contact KLM Electronics Inc., (408) 779-7363.

## Security

#### S-A Security Monitoring Station

Scientific-Atlanta's model 2422 security monitoring station consists of a model 2420 microprocessor-based headend alarm scanner, a model 2412 display terminal and a software package. The station is capable of performing the major monitoring functions of a more expensive central monitoring computer. Subscriber data base information, however, must be manually filed.

For more information, contact Scientific-Atlanta, (404) 441-4000.

#### Security Transponder

Scientific-Atlanta's model 2431 is a cable security transponder that is compatible with most residential alarm systems currently on the market. The compact

transponder has automatic reverse RF level adjustment for easy installation and several features that increase the flexibility of the CATV security monitoring package.

For more information, contact Scientific-Atlanta, (404) 441-4000.

### **TOCOM And Transcience Security System**

The combination of the TOCOM 3000 home alarm terminal with Transcience Inc.'s supervised wireless system results in a complete cable security system that is compatible with all of the TOCOM III central data systems. Wireless technology allows intrusion sensors and smoke detectors to be located throughout the subscribers home. Battery-powered wireless transmitters report alarms, low battery levels and tamper signals to the TOCOM 3000 home alarm terminal and to the CDS via the cable TV network.

For more information, contact TOCOM, (214) 438-7691.

## **Test Equipment**

### **CABLE-MATE Reflectometer**

CABLE-MATE, model 2901A, is a digital time domain reflectometer made by Avtek Inc. The compact reflectometer weighs 3 lbs. and is a radar-type cable fault locator that can be used to locate opens and shorts in all types of aerial or buried cable. The model 2901A is accurate to +1 percent of full scale.

For more information, contact Avtek Inc., (402) 694-5201.

### **ComSonics Model SA440**

The ComSonics model SA440 spectrum analyzer offers lab grade performance and features: a storage display mainframe, internal calibration capabilities, an on-screen dynamic range of 72 dB at 1 KHz and a rigid front cover. Operable at 1-440 MHz, the SA440 is



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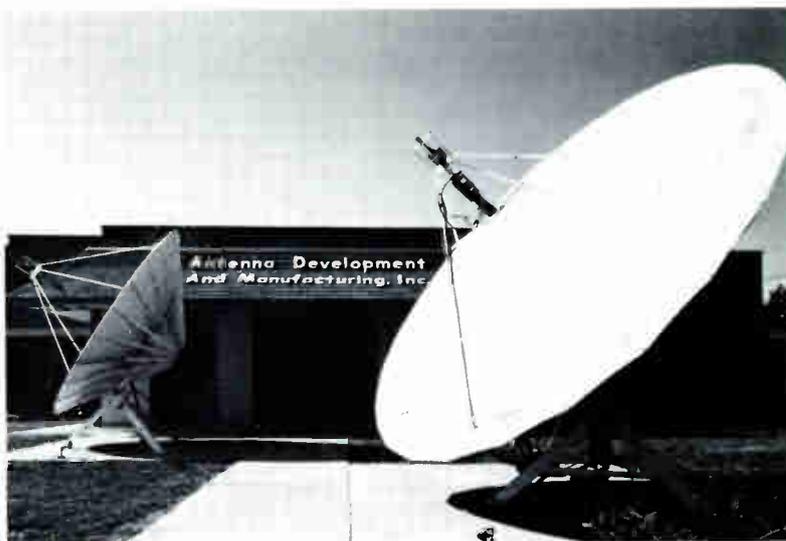
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For more information, contact Com-Sonics, (800) 336-9681.

**Dynatel Cable Fault Locators**

Anixter Communications is the exclusive distributor of Dynatel 3M's 500C cable locator, and the 573 cable and sheath and fault locator. Both products locate, trace and measure the depth of buried CATV transmission cable without interfering with signal service or signal transmission. The 573C also locates damages in cable's outer sheath.

For more information, contact Anixter Communications, (800) 323-8166.

**HP's 853A Portable Analyzer**

Hewlett-Packard developed its model 853A spectrum-analyzer display as a ruggedized, portable mainframe with a digital display system that could be used with HP's series of spectrum analyzer

plug-ins. The unit, combined with the analyzer plug-ins, can be used in diverse environments, including field service, production test and R&D labs. The unit provides two independent 480- and 800-point resolution traces.

For more information, contact Hewlett-Packard, (415) 857-1501.

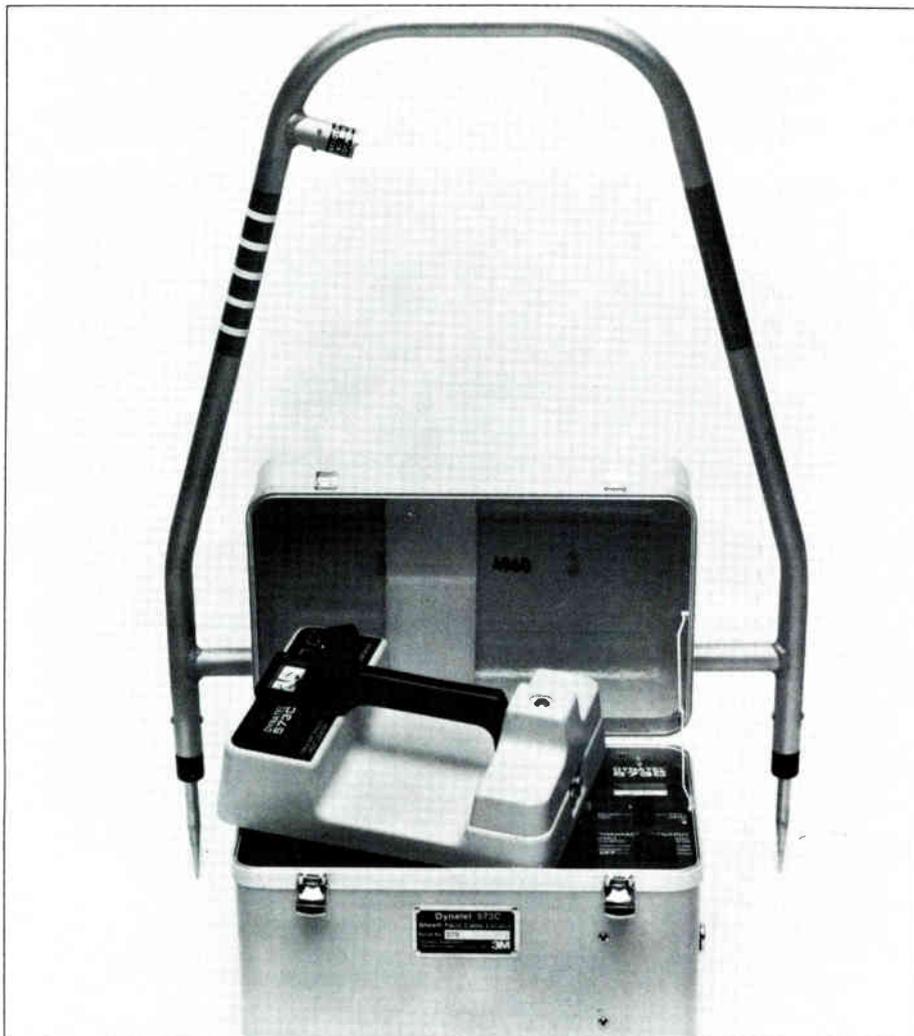
**TVRO Filter Kit**

"Sky-Doc" TVRO filter kit, available from Microwave Filter Co. Inc., contains a selection of TVRO interference filters that diagnose and/or eliminate interference. Each kit is priced at \$1,325 and delivery is ten days.

For more information, contact Microwave Filter Co. Inc., (315) 437-3953.

**Terrestrial Tracer From MFC**

Microwave Filter Co.'s model 4043 Terrestrial Tracer is a tuneable, calibrated wavemeter for diagnostic evaluation of TVRO system terrestrial interference in



**Dynatel 3M's cable and sheath fault locator**

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the 3.7-4.2 GHz band. Its tuneable notches are approximately 20 dB deep and can be adjusted to obtain optimal system performance while viewing a transponder that shows symptoms of interference.

For more information, contact Microwave Filter Co., (315) 437-3953.

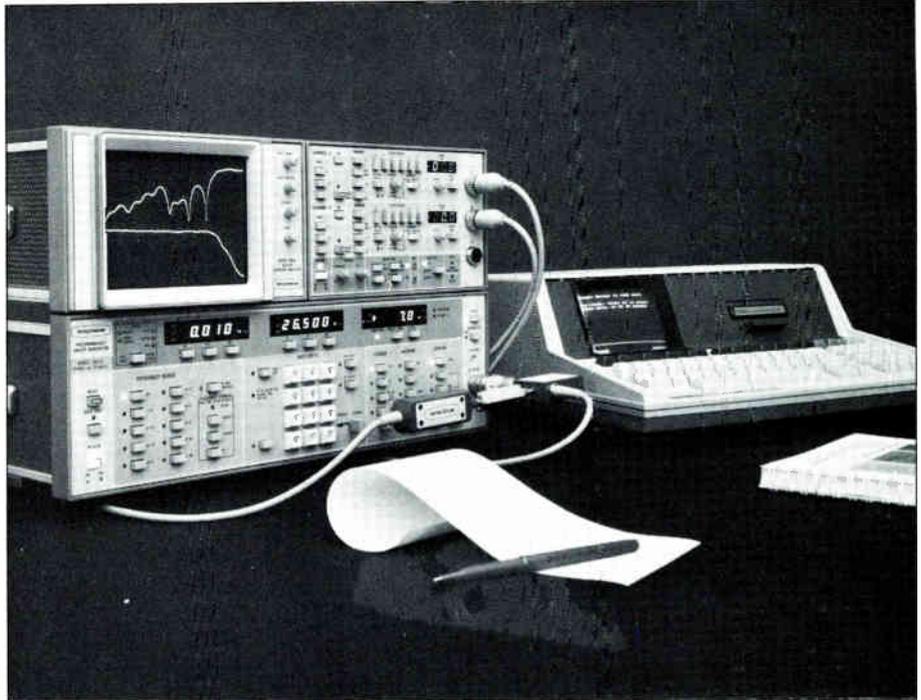
**Improved Cable Ranger**

The improvements Radar Engineers made on its model 1455 cable ranger include a built-in DC option, AC circuits and a calibration circuit. The upgraded model 1455 uses a reflective radar principle to locate open and shorted cable faults in buried primary power cable, some secondary cable, coaxial cable and CATV cable.

For more information, contact Radar Engineers, (503) 256-3417.

**Sadelco Carrying Case**

An optional protective carrying case for Sadelco's hand-held signal level meter features an easy flip open cover that not only protects the meter but also exposes the meter's LED bar graph dB and read-out so that the installer can operate the



**Wiltron 5659 scalar network analyzer**

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meter while it's in the carrying case. The interior of the case is foam-filled, while its exterior is finished in a leatherette design.

For more information, contact Sadelco, (201) 569-3323.

**The 5D10 Waveform Digitizer**

The model 5D10 waveform digitizer from Tektronix Inc. is a plug-in unit that transforms all Tek's 5000 series oscilloscope mainframes into a digital storage scope. In addition to providing the ability to store transient events with frequency components up to 100 kHz for a single channel acquisition, the 5D10 uses its own resident memory to provide waveform storage without a storage CRT.

For more information, contact Tektronix, (502) 643-8967.

**Scalar Network Analyzer**

The Wiltron 5659 automated scalar network analyzer system allows broadband coaxial measurements of transmission and reflection to be made from 10 MHz to 26.5 GHz. The system is comprised

of Wiltron's 560A scalar network analyzer; 6659A sweep generator; 85 controller, precision components; and user-friendly software. Price for the 5659 is \$49,210 and delivery is 12 weeks ARO.

For more information, contact Wiltron Co., (415) 969-6500.

**Vitek Tracer™**

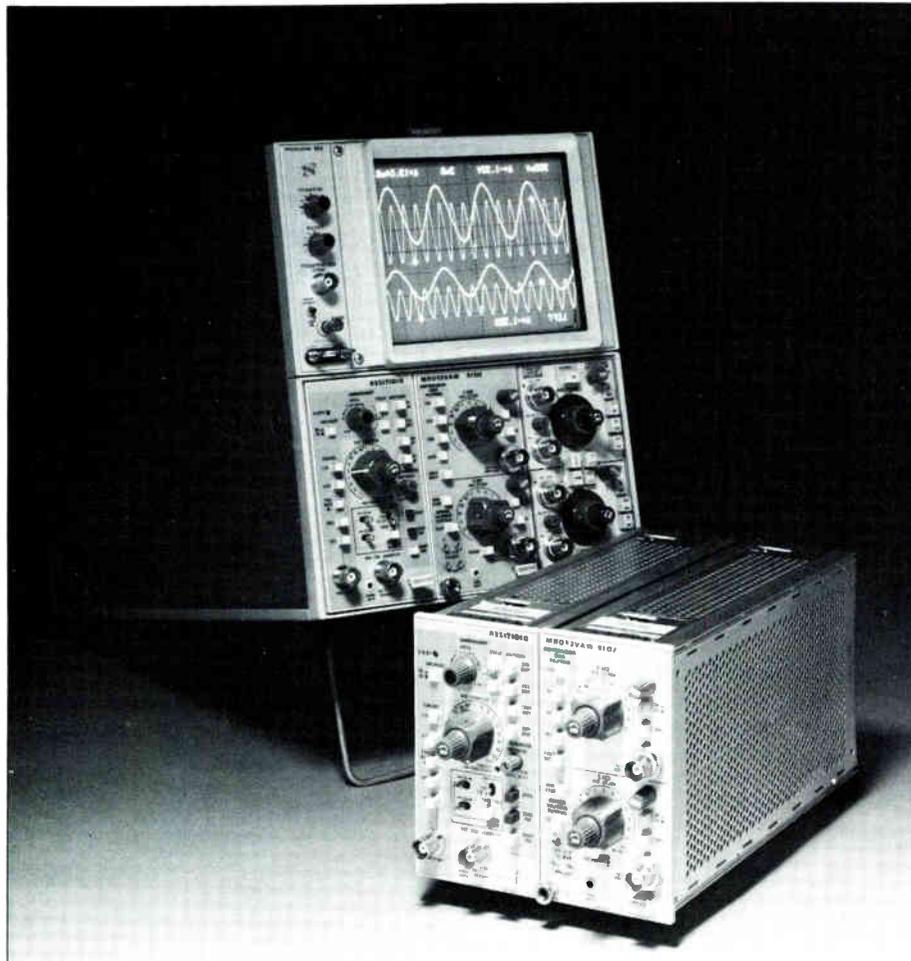
The Tracer™, manufactured by Vitek Electronics Inc., helps system operators detect signal leakage. The unit assures system compliance with FCC radiation specifications and is available in two models.

For more information, contact Vitek Electronics Inc., (201) 287-3200.

**Wavetek CATV Test Equipment**

Wavetek Indiana Inc. has added the model 1880 system analyzer to its line of CATV test equipment. The model 1880 was designed as a field-portable, micro-processor-controlled instrument that features pushbutton selection of system

*continued on page 88*



**Tektronix 5D10 waveform digitizer**

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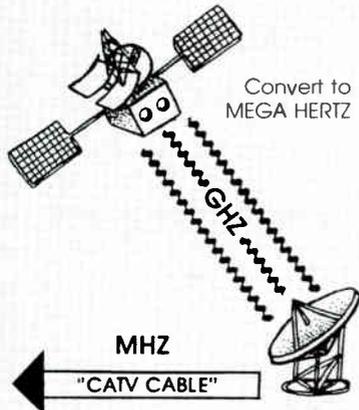
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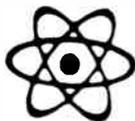
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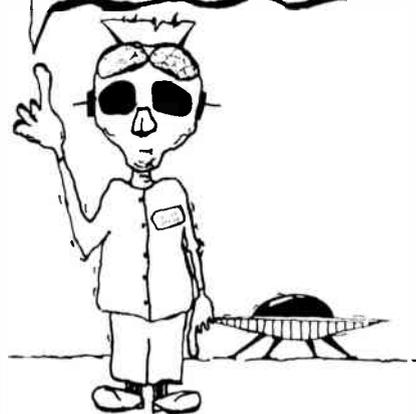
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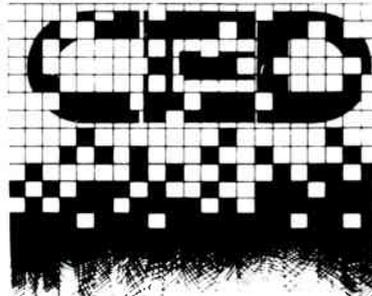
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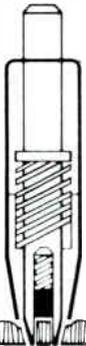
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*continued from page 83*

parameters, one-button calibration, a built-in audio detector and speaker and a split-screen image system. The model cost \$4,995 and delivery is approximately 120 days ARO.

For more information, contact Wavetek Indiana Inc., (800) 428-4424.

### SAM III-D Signal Level Meter

Wavetek's Model SAM III-D computer controlled signal level meter can be used with an RS-232 compatible interface to permit measurements to be accessed via a telephone line or two-way cable. This information can either be stored or compared to correct levels. Microprocessor techniques pre-program the meter for a total of 120 channels.

For more information, contact Wavetek Indiana, (800) 428-4424.

### Wavetek Remote Controller

The Wavetek model SP549 remote

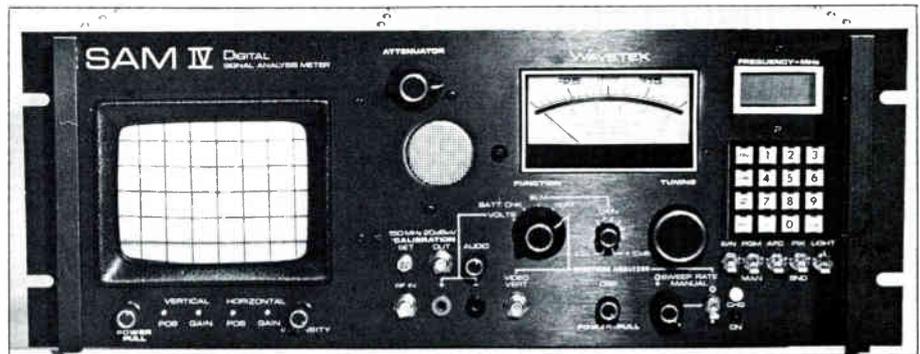
controller, designed for use with the model 1402A converter sweep, links directly into the converter sweep's tuning circuitry. The controller allows for remote foot-pedal operation or push-button tuning, which, in turn, helps the technician rapidly tune across the converter under alignment.

For more information, contact Wavetek Indiana, (800) 428-4424.

### The SAM IV

The SAM IV, a rack-mounted signal level meter, was pre-programmed by Wavetek Indiana for amplitude measurements with 60 standard channels and 60 HRC channels. It permits direct keyboard entry of channels in any sequence, features pre-programmed audio carriers of all channels and is built directly into a standard 19-inch rack mount to take up seven inches of panel space.

For more information, contact Wavetek Indiana, (800) 428-4424. **CEO**



Wavetek SAM IV signal level meter



Wavetek model 1880 system analyzer

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T4's powerful moisture barrier is provided by thermally activated bonding agents which encapsulate and seal the center conductor while simultaneously forming a polymeric linkage with the foamed dielectric.

This precisely controlled conductor interface layer provides an effective moisture shield without sacrificing handling ease. T4 strips quickly and conveniently for reliable, scrape-free connections.

T4's cell structure is formed by the use of proprietary nucleating agents combined with advanced foam processing technology. The result is an

ultra-fine, moisture blocking, closed cell matrix. Cell integrity is maintained from the conductor coating through the outside surface and remains moisture resistant through the stresses of drawing, installation and environmental exposure.

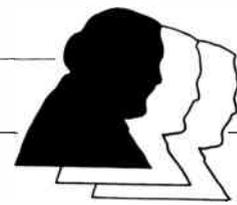
For a sample of this remarkable new T4 cable, contact TFC today at P.O. Box 384, Wallingford, CT 06492, (203) 265-8500.



TIMES FIBER COMMUNICATIONS, INC.  
An  Company

A photomicrograph showing a cross-section of a cable. The central conductor is highlighted in red. The surrounding dielectric material is shown in various colors (green, blue, orange) to indicate moisture ingress. The top portion of the image shows the cable after moisture ingress testing, with significant moisture visible in the dielectric layers.

Moisture revealing ultraviolet dyes and photomicrography show superiority of new T4 cable (top) after moisture ingress testing.



William Randall

★ **William Randall** has been appointed executive vice president of **Pioneer Communications of America, Inc.** Randall will be primarily responsible for directing Pioneer's cable sales, engineering and planning efforts. Randall is

returning to Pioneer after a five year interval with computer hardware and software manufacturer, Data General. He first joined Pioneer as vice president in 1974, charged with the responsibility for implementing the original Warner QUBE two-way interactive cable system in Columbus, Ohio. He and Pioneer President Bob Matsumoto directed the team of engineers who defined both the architecture and set of functions that gave Warner the flexible tools necessary for their business experiment.

★ **Oak Communications Inc.** has promoted **Douglas Lindquist** to vice president of planning. In his new position, Lindquist will be responsible for strategic planning, market research and development of new foreign and domestic STV licensing opportunities.

Although Lindquist joined Oak in 1973, he most recently was involved in planning for Oak's DBS activities. Prior to his promotion, Lindquist was vice president, Oak Satellite; vice president, STV licensing for Oak Communications; and regional manager for the company's southeastern sales territory.

★ **M/A-COM Video Satellite Inc.** has appointed **Ronnie Garrison** to the post of south central regional sales manager. Garrison will be based in Richardson, Texas.

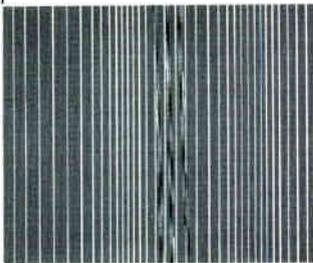
Prior to this appointment, Garrison held engineering positions with Telephone Engineering Inc., GTE Lenkurt and, most recently, with Southwestern Bell Telephone. Garrison's outside interests include working as a professional stuntman in movie and TV spots.

★ **Microband Corp. of America**, a subsidiary of **Tymshare Inc.**, has announced the following appointments:

**Peter Lubell** as chief engineer. Previously, Lubell was manager, transmission engineering with the company. Prior to that he was with the ALL division of the Eaton Corp.

**Stanley Mazur** as manager, station construction. Previously, Mazur was operations manager for Seville Electronics, product manager for the Radio Shack division of Tandy Corp. and an engineering manager and staff TV engineer at CBS and Westinghouse. At Microband, he will be responsible for all matters relating to

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To fill your need for a superior coax which better withstands the abuses of installation and use, Times Fiber Communications developed T4: a new generation of polyethylene foam core cable. T4's ultra-hard core is highly resistant to kinking during bending or forming.

T4's very fine cell structure results from the use of proprietary nucleating agents, much harder polyethylene resins and

advanced foam processing techniques. With its precise cell matrix, you get vastly improved mechanical integrity both during cable installation and after severe environmental exposure.

T4's attenuation performance is more consistent. Its gradient foam density provides a signal

velocity approaching 90%. Even with the increased "foaming" of the dielectric, hardness is maintained so that ease and reliability of installation are not affected.

For a sample of this remarkable new T4 cable, contact TFC today at P.O. Box 384, Wallingford, CT 06492, (203) 265-8500.

**TFC** TIMES FIBER COMMUNICATIONS, INC.  
An  Insko Company



Photomicrography reveals precise closed cell structure of new T4 ultra-hard cable. (above)

the construction of stations and installation of equipment.

**James McRobbie** as microwave systems engineer. Previously, McRobbie was a staff engineer with the Astro-Electronics division of RCA. At Microband, he will be responsible for propagation and interference analysis and computer-aided design activities.

**Brett Siegel** as systems facilities engineer. Previously, Siegel was a systems engineer with the federal government markets division of Motorola. At Microband, he will be responsible for evaluations, specifications and procurement of equipment used throughout Microband's facilities.

★ **James Bostick** has been named associated director of technical education for **Microwave Filter Co. Inc.** Bostick will be responsible for conducting in-house mathematics and other educational programs for MFC employees.

**Terry Owens** has joined the research and development team at **Microwave Filter Co. Inc.** As an electrical engineer, Owens will primarily be responsible for filter research and design for the CATV, satellite and industrial microwave communications markets.

★ **Itac Corp.** has promoted **John Kaplan** to vice president of product management. He was formerly director of product management. His new responsibilities include supervising product development,



James Bostick

manufacturing and assembly of all Itac product lines.

★ **Eugene White** has been named regional engineer for the Midwest region of Warner Amex Cable Communications. White will be responsible for the technical operations of 41 Warner Amex cable systems throughout nine Midwest states. He had been a district engineer for Warner Amex's Stephenville, Texas, group, responsible for 13 systems throughout the state of Texas.

★ **M. Frank Litty** has joined **Blonder-Tongue Laboratories, Inc.** as project engineer in the company's data communications engineering department. In this position, Litty will be responsible for developing customer support programs,

technical troubleshooting and training programs for data communications systems. Formerly associated with Speery Gyroscope Corp., Mohawk Data Sciences Corp. and Control Data Corp., Litty has an M.S. in physics from the University of the City College of New York-Queens College.

★ **Bob Morrison** has been promoted to manager of host development for **Gill Management Services.** Morrison had been a technical consultant for GMS and recently managed quality assurance groups for the computer services company. Prior to GMS, Morrison served in various development capacities for ATC in Denver.

★ **Timothy Martin** has been named general manager of **Field Cablevision**, a subsidiary of Field Communications Corp., San Francisco. Martin was previously with Times Mirror Cable Television as division business manager and general manager of a 45,000 subscriber system in Hartford, Conn. He was responsible for various pay service launches and campaigns and for the adoption of an on-line computer system.

★ **George Freeman** has been promoted to Southeastern regional sales manager by **Blonder-Tongue Laboratories Inc.** Freeman joined Blonder-Tongue in 1959 and, prior to his present position, was applications engineer in the company's engineering department.

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This new cantilever mounting feature is specifically designed to meet the flexibility demands of today's installations. This feature consists of a high strength mast mount bolted to the rear of the antenna boom. Bracing is provided by a steel horizontal crosspiece U-bolted to the upper portion of the mast, and connected by diagonally opposed tubular braces running down to a steel support bracket which is bolted to the midpoint of the antenna boom. All parts are treated for corrosion resistance.

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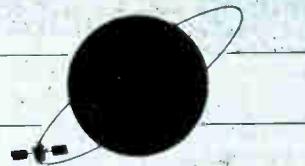
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Signal	Day	Start/Stop	Alert Tone	Transponder	Signal	Day	Start/Stop	Alert Tone	Transponder																																																																																									
<b>Satcom 3R</b>					<b>Satcom 4</b>																																																																																													
ASCN-The Learning Channel	Weekdays	6 a.m./4 p.m.	192*/#	16	Modern Satellite Network	Weekdays	10 a.m./1 p.m.	243*/# 421*/#	22																																																																																									
	Weekends	6 a.m./1 p.m.			MTV: Music Television		24 hrs.	None	11																																																																																									
ARTS	Daily	9 p.m./12 a.m.	311*/# (E,C,M) 519*/#(P)	1	National Jewish Television	Sundays	1 p.m./4 p.m.	None	16																																																																																									
Cable Health Network		24 hrs.	361*/#	17	Nickelodeon	Daily	8 p.m./9 p.m.	311*/# (E,M,C) 519*/#(P)	1																																																																																									
CBN		24 hrs.	None	8	PTL		24 hrs.	None	2																																																																																									
Cinemax		24 hrs.	None	20 (E,C) 23 (M,P)	Reuters	Weekdays	4 a.m./8 p.m.	None	18																																																																																									
CNN		24 hrs.	024*/#	14	Showtime		24 hrs.	576*/#	12 (E,C) 10 (M,P)																																																																																									
CNN Headline News		24 hrs.	635*/# 541*/#	15	Spotlight		24 hrs.	None	4																																																																																									
C-SPAN		24 hrs.	195*/#	19	USA Blackout Network		O/V after 5 p.m.	295*/#	22																																																																																									
Daytime	Weekdays	1 p.m./5 p.m.	None	22	USA Cable Network		24 hrs.	438*/#	9																																																																																									
ESPN		24 hrs.	048*/#	7	WGN		24 hrs.	None	3																																																																																									
Eternal World Television Network	Daily	8 p.m./12 p.m.	762*/#	18	WTBS		24 hrs.	None	6																																																																																									
HBO		24 hrs.	Program 729*/# Scramble 835*/# Duplication 940*/#	24 (E,C) 13, 22 (M,P)	The Weather Channel		24 hrs.	None	21																																																																																									
HTN Plus	Daily	4 p.m./4 a.m.	207*/#	16	<b>Satcom 4</b>																																																																																													
The Movie Channel		24 hrs.	None	5	The American Network	Daily	5 p.m./5 a.m.	None	19																																																																																									
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The Entertainment Channel		24 hrs.	None	8	HBO	Mon-Fri 5:30 a.m./12 p.m. Saturday 6:30 a.m./5:20 a.m. Sunday 6:15 a.m./1 a.m.	729*/#	18																																																																																										
The Playboy Channel		8 p.m./6 a.m.		7	The Playboy Channel		8 p.m./6 a.m.		7																																																																																									
National Christian Network		6 a.m./8 p.m.	073*/#	7	National Christian Network		6 a.m./8 p.m.	073*/#	7																																																																																									
Trinity		24 hrs.	None	17	Trinity		24 hrs.	None	17																																																																																									
<b>Westar 4</b>					<b>Westar 5</b>																																																																																													
Eros	Thurs-Sat	11 p.m./2 a.m.		10D	BET	Daily	8 p.m./2 a.m.	406*/#	12X																																																																																									
Financial News Network	Weekdays	10 a.m./5 p.m.	975*/# 738*/#	9X	CBS Cable	Weekdays 4:30 p.m./4:30 a.m. Weekends 5 p.m./5 a.m.	524*/# 531*/#	4D																																																																																										
GalaVision	Weekdays	4 p.m./4 a.m.		12X	Satellite News Channel		24 hrs.	None	4X, 6D 7X, 8X, 9X																																																																																									
SelecTV	Weekdays	8 p.m./4 a.m.		9X	WOR		24 hrs.	None	2D																																																																																									
SIN		24 hrs.	None	8X																																																																																														
SPN		24 hrs.	429*/#	11X																																																																																														

E eastern M mountain  
C central P pacific

Alert tones listed are for sign-on, sign-off

All program times are listed for the eastern time zone, unless otherwise noted.

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5-NF A-F, mid band	-75db	1.0db	-5db	-1db
5-NF G-I, mid band	-75db	1.5db	-6db	-1db
5-NF 7-13, high band	-75db	2.0db	-10db	-2db
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