

OCTOBER 1986

COMMUNICATIONS ENGINEERING AND DESIGN
THE MAGAZINE OF BROADBAND TECHNOLOGY

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**BTSC
made
easy**



**Interface
solutions long
time coming**



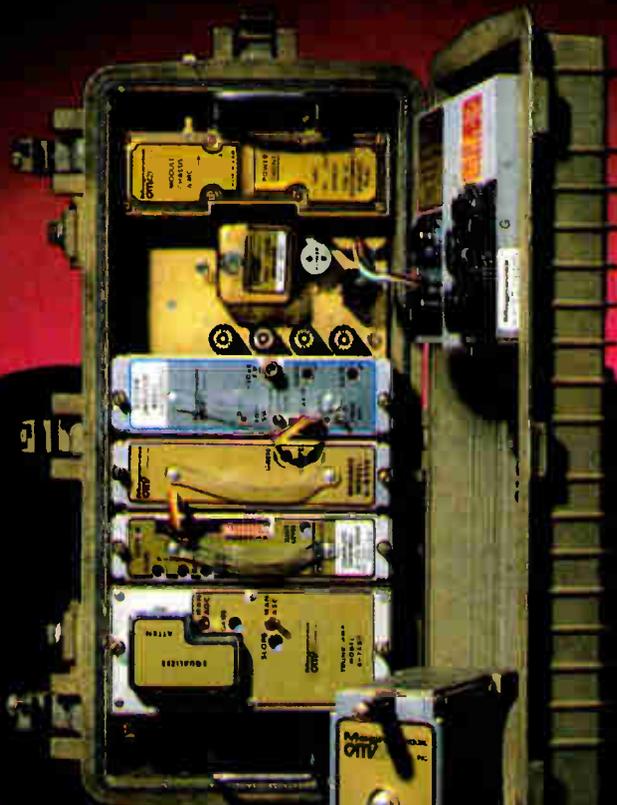
**Ohm's law:
simple yet
complex**

**CATV
Buyers'
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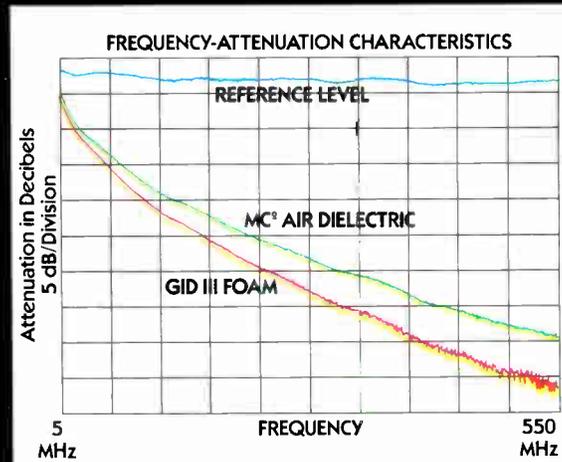
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SPOTLIGHT

On his feet

Tom Polis has used his roller skating techniques—including balance and coordination—during his 20-year career in the cable business.

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About the cover

This month's cover is a model of a network including the nodes of the communication pathways. Photo courtesy of Wang Laboratories Inc.



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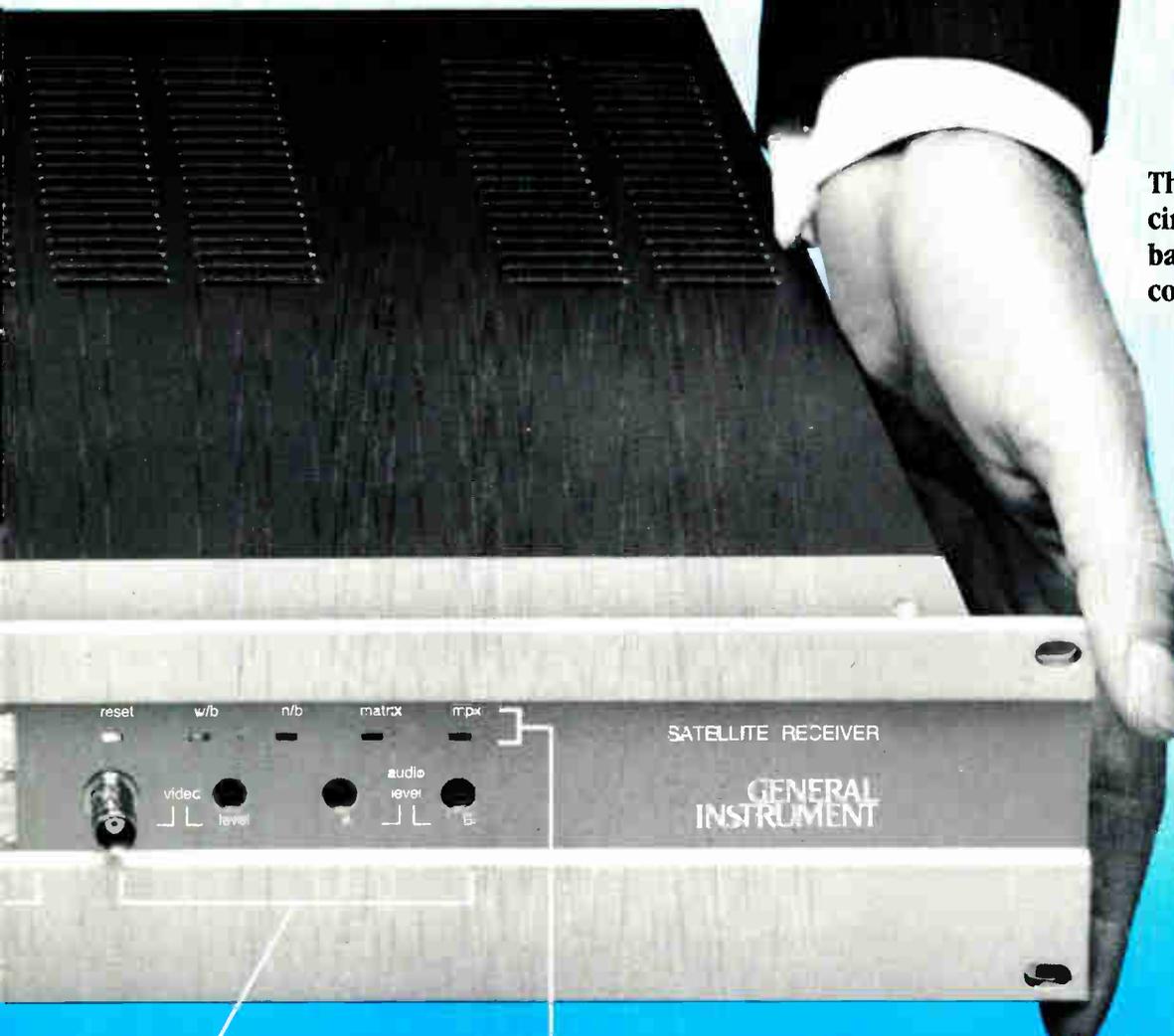
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Tom Polis

Skating skills aid Polis in 20-year career

It's a good thing Tom Polis loves to roller skate.

The ability to stay on his feet while performing a dizzying series of twists and turns has paid off handsomely for Polis, a 20-year veteran of the cable industry who admits he's done everything "from soup to nuts."

But even excellent skaters would have a hard time maneuvering around a rink that is moving in several directions at once—which is exactly the type of environment in which cable engineers have been thrust.

"I think the biggest challenge for cable engineers is just keeping up-to-date with the number of communications engineering disciplines" such as fiber-optics, digital circuitry, earth station technology and stereo sound, says Polis, who is executive vice president of RT/Katek Communications Group. "I see it as being a challenge. I think we (cable) have a great future, we just have to keep up with what other folks are doing because, for example, if a TV set manufacturer has to introduce a new technology to encourage purchases, he's going to do it regardless of what we have to say."

Bringing information on state-of-the-art developments down to the grassroots level was a major concern of Polis' while he served four terms as president of the Society of Cable Television Engineers in the early 1980s. It was during that time that local chapter development was pushed by Polis as a solution to the information gap.

"One of my driving forces for the past six years has been to make sure that information gets to the right people—the people working in the field."

Along with information exchange, the training and testing provided by the SCTE fills the voids that were often overlooked in cable's high-growth era. But the hands-on training, which can complement NCTI's home study program, needs more support from the MSOs, says Polis.

"What seems to be the big hang-up is that folks are allowed to join (SCTE) and allowed to take part as long as they don't lose time in their workplace. But the industry must give technicians and engineers the time to improve their skills. It's kind of a Catch-22—they don't want to lose the people because they need them to service the system, but if the people knew better what they were doing, they wouldn't have to spend as much time servicing the system," Polis maintains.

Polis got his start in the industry when things were simpler. He began as a bench tester in Jerrold's Philadelphia plant, where he tested newly manufactured Starline 1 amplifiers.

After he received his associate's degree, Polis went to work in the field for a couple of years and performed some turnkey projects for Jerrold. He got a taste for the operating side of the industry with Cablevision Corporation of America, which had several suburban Boston franchises. But after those properties were sold, Polis returned to Jerrold as a project manager.

Next came a seven-year stint at Magnavox, where Polis went in as a field engineer and left as director of international sales, traveling throughout Europe and the Orient. It was during this time that Polis joined the SCTE.

In 1979, Polis went back to the operations side with Comcast, where he served for three years as vice president of systems development. He also became heavily involved with the SCTE,

spending much of 1980 recruiting graduating engineering students for the cable industry. "It was pretty successful," says Polis. It must have been because he was honored with the society's Member of the Year award for his efforts.

In 1981, he was elected to the SCTE's board of directors and served his first term as president. A year later he joined George Tamasi's Communications Construction Group as a partner. The company later merged with RT/Katek to form a full-service construction and converter repair company.

Polis believes cable's problems can be resolved by a combination of new technology and proper utilization of the technology that has already been created. Advances in amplifiers, for instance, have already answered a lot of problems in the rebuild area, he says. The introduction of feedforward and power doubling amps have "permitted systems that would've had to be taken down and rebuilt to instead just drop in new electronics without relocating all the amps. I think that's been a big help in dealing with the engineering restrictions of the franchise renewal wars."

But engineers must also learn to use the technology that already exists, Polis says. "What we need to do is get our service calls down and get reaction time to our subscribers' complaints to where it should be. Too many technicians aren't qualified to understand the problems they're looking at and get it fixed the first time."

When he isn't worrying about how to improve cable system performance, Polis and family—his wife of 23 years, and two sons—work on improving their roller skating techniques. With one son reigning as Northeast champion in senior men's world-class figures and a successful seven-year career in dance competition with his wife, it's obvious Polis' work is paying off.

Perhaps skating gave Polis the balance, coordination and timing it takes to stay in step with the changes the cable industry has thrown him. Or maybe his foresight, speed and determination in business made him more competitive on skates. Either way, it's a sure thing he doesn't fall down much.

—Roger Brown

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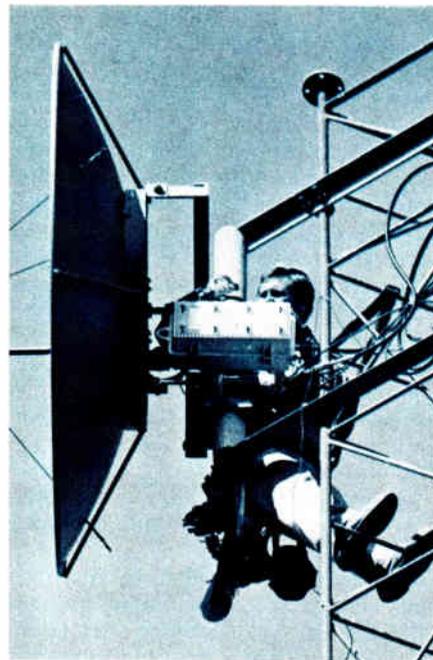
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Telco and Cable TV

On my recent trip to Scandinavia, I learned that the charge for cable TV services in Oslo is included on the monthly telephone bill. In Sweden, cable TV service charges are added to the telephone bill, whether you want it or not. Similar situations probably prevail in other European countries where the telephone company is a government agency.

Thirteen of the 25 papers in the July 1986, issue of the *IEEE Journal on Selected Areas in Communications*, devoted to Broadband Communications Systems, are from European countries with government telephone systems; another one is from England, where the British Telecom has recently been partially privatized; two others are from Bell Laboratories and Belcore in the United States; one is from the Canadian Government Department of Communications. Twenty of the 25 papers specifically cite cable TV distribution (CATV) as a service component for Broadband Communications Networks. Most of those papers relate to some form of the Integrated Services Distribution Network (ISDN).

For at least 30 years, both Bell and

non-Bell telephone personnel have nurtured the concept of delivering all communications services, including TV, into residential or business premises on a single wire (owned by telcos, of course). Because of the 1952 consent decree, the Bell Systems were forced to go the "lease-back" route. General Tel, United Tel, Continental Tel, and others not so restrained, built and operated a number of CATV systems. Now, with divestiture, we see a resurgence of the effort by telephone entities to find a profitable entry in the cable television business. The Palo Alto franchise proposal by Pacific Telesis (formerly Pacific Bell) is a case in point. The "lease-back" arrangement in the District of Columbia is another.

Clearly, European telephone companies are thinking in terms of a broadband cable system using optical fibers capable of delivering to residential or commercial subscribers a wide range of voice and data services, at both low and high speed, in addition to entertainment and other video services. Equally clearly, the technology to accomplish this with optical fiber in the switched star network configuration is, or soon will be, well within the current state-of-the-art.

Optical fiber technology is not presently suitable for the tree and branch configuration universally employed in North America for cable TV distribution, and is unlikely soon to be so used; at least, not for analog transmission. Optical branching devices (taps and splitters) are too expensive, and introduce intolerable losses. Furthermore, electro-optical transducers are not suitable for multi-channel frequency-division-multiplexed analog carriers (35-80 TV channels), although analog FM is considerably better in this regard than AM. The enormous bandwidth needed for either digital or FM transmission could, of course, be reduced considerably by means of sophisticated bandwidth compression techniques.

Therefore, the distribution of CATV type services on optical fiber cables is most likely to utilize the switched star configuration. As with set-top or off-premises converters, the switched star delivers only the selected channel, at a fixed frequency (baseband, HF, VHF or UHF). Non-switched star distribu-

tion on coaxial cable is the established practice in many European and British Cable TV systems, which typically carry fewer than 10 or 15 channels, use no converters, and do not offer premium services. However, telephone companies in the United States, attempting to market cable TV using the switched star configuration, would inevitably encounter the interface confusions and customer irritations cited by my IS-15 presentations (*CEI March and July 1986*) and in my lament for the apparent demise of the off-premises converter (*CEI April 1986*).

Telephone companies are rapidly accelerating the rate of replacement of their physical networks. Traditionally, the cycle was on the order of 20 years; now it is more like 12 to 15 years. As existing plant is replaced, fiber is being phased into the network.

Replacing wire lines with fiber in residential areas is a different matter. By the mid 1990s, the more aggressive companies (e.g. Bell South) may have fiber optic cables serving the majority of residential switching nodes, which still may be as much as one hundred to several thousand feet from individual homes. Fiber cable is not likely to be extended to (or within) large numbers of homes until the next century, because of the astronomical cost which must first be approved by utility commissions already worried by the rate increases following divestiture.

For the foreseeable future (say 20 years or more) telephone companies in the United States will certainly be seeking a higher profile in the business of distributing entertainment TV to private homes. Within five to 10 years, they will probably demonstrate, in one or more well-publicized communities, the technical and operational feasibility of using optical fiber ISDN techniques to provide pay-per-view or demand access TV, or even HDTV, programming on at least one centrally switched video channel.

For technical reasons, however, there seems to be little or no likelihood that optical fibers will be used significantly for multi-channel tree-and-branch TV distribution. Coaxial cable is likely to remain indefinitely as the preferred method for distributing a wide variety of premium and non-premium programs.

By Archer S. Taylor, Senior Vice President, Engineering, Malarkey-Taylor Associates Inc.

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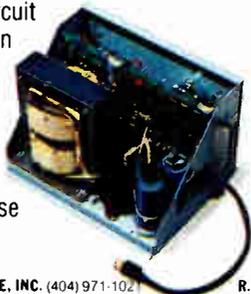
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Calibration of cross modulation measurements

Cross modulation measurement is an especially important parameter in the determination of CATV system performance. In the industry today several cross modulation test sets are available to fulfill the need to measure cross modulation. However, for accurate measurements these test sets must be calibrated in an accurate and repeatable manner.

This calibration is accomplished by the insertion of a known cross modulation level, which is then used as a standard for comparison.

Since detectors used in these signal measurements are basically non-linear devices (which can be approximated with a square law expansion), it becomes essential to have the calibration point near the region of expected cross modulation readings.

When one talks about percent modulation in terms of dB and spectral component levels in dB corresponding to a given cross modulation level, there has usually been a considerable amount of confusion over these terms. Let us attempt to clarify these terms by a look at the facts. As illustrated by Figure 1, the difference between the NCTA definition and conventional definition of an amplitude modulated wave lies in the way the modulation excursion on the carrier is defined. By equating the two definitions and solving mathematically (see proof in Appendix A) we then can see the M_t (NCTA modulation) is equal to M_c (conventional modulation) plus a correction factor T. As shown in Figure 2, the factor T is equal to 0 dB at 100 percent modulation and 6 dB at .1 percent modulation.

Let us first consider several modulation levels using the conventional modulation definition. For a 100 percent square wave modulated carrier the first spectral component away from the carrier is 3.9 dB below the carrier. See Figure 3. For a 100 percent CW (sinusoidal) amplitude-modulated wave the first (and only) spectral components are 6 dB below the carrier. It is then apparent that a .1 percent square wave modulated signal has a first spec-

Steve Kempinski and James Fogle, C-COR Electronics Inc.

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It's an especially important parameter in determining CATV system performance.

tral component 63.9 dB below the carrier and a .1 percent CW amplitude modulated wave has its first (and only) spectral component 66 dB below the carrier level.

Now considering the NCTA defined modulation, a .1 percent modulated signal has its first spectral component 69.9 dB below the carrier. It should be noted here that -60 dB cross modulation means that there is .1 percent induced modulation; not that the first spectral component is down 60 dB.

To produce an accurate calibration point, it is necessary to calibrate at very low cross modulation levels (at least 60 dB below the carrier). At this point, then, one must decide whether to use square wave modulation or amplitude modulation.

One way of accurately simulating a low modulation index is to linearly add and envelope detect two CW signals that are closely spaced in frequency. If one of the signals is sufficiently small when compared to the other, then the detected output is the same as that of

Cable Classics

Can you define modulation depth? Did you know that there is more than one definition? Do you know exactly what a cross modulation ratio, expressed in dB, means? Can you relate cross modulation to spectral component ratios?

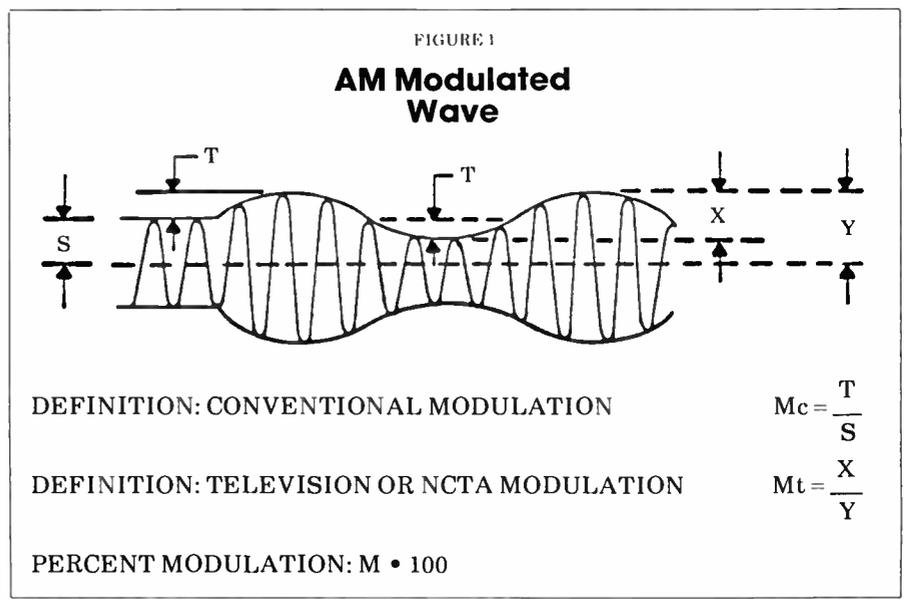
This article by Steve Kempinski and James Fogle on calibration of cross module measurement should get you thinking. The authors set out to clarify the mathematical relationships between the different definitions of modulation depth and to provide a simple but accurate calibration method for cross modulation measurement. Do you agree with their conclusions?

I am indebted to Dan Pike and Joe Van Loan for access to their private libraries of "Classic" articles on cable technology. CED welcomes suggestions for other definitive papers and articles for inclusion as reprints in the "Cable Classics" series.

Graham S. Stubbs, Vice President, Science & Technology, Oak Communications Inc.

a conventional amplitude modulated signal having a modulation index equal to the voltage ratios of the two signals.

Consider the addition of two sinusoids of different and arbitrary relative amplitude M:

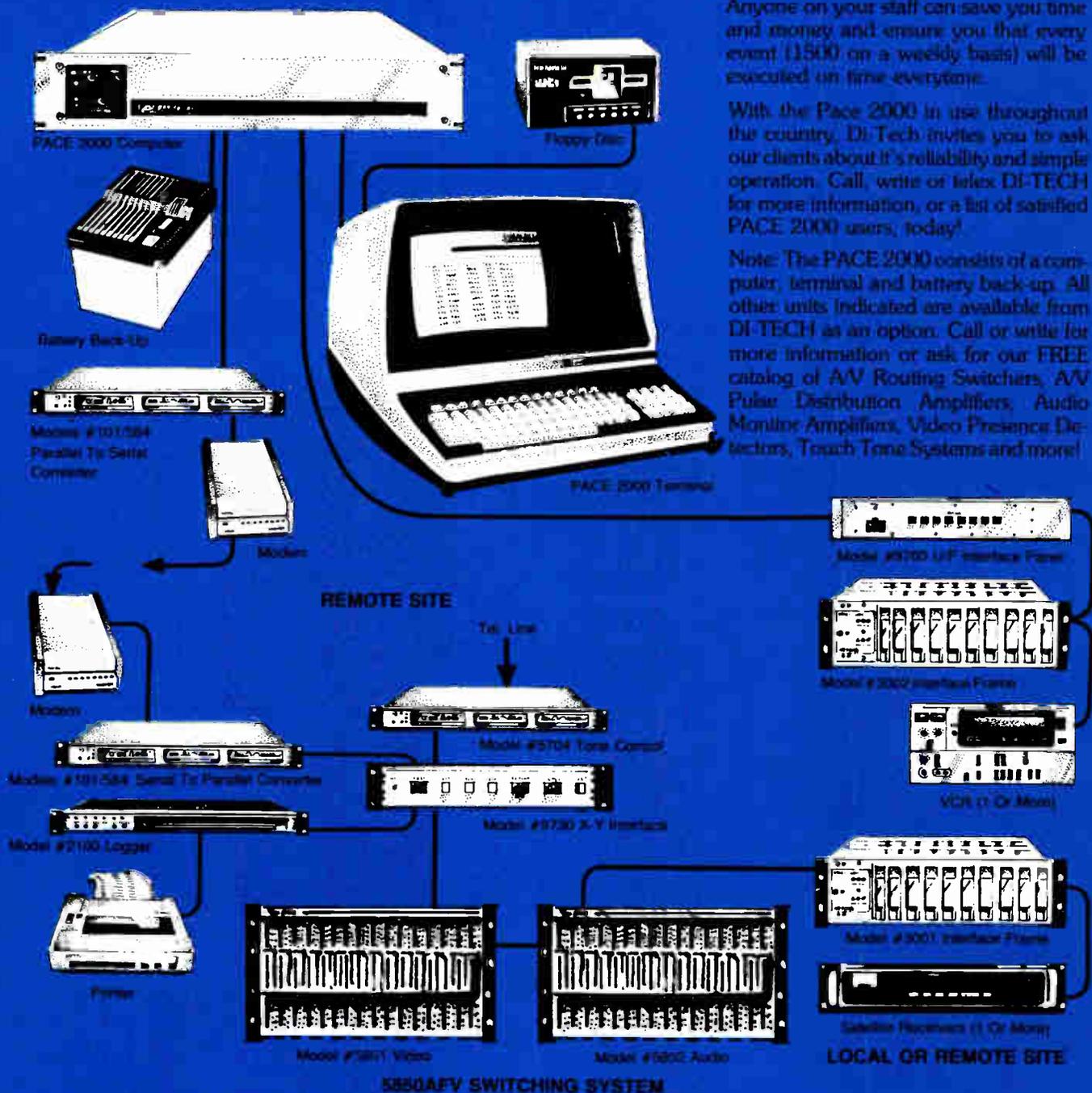


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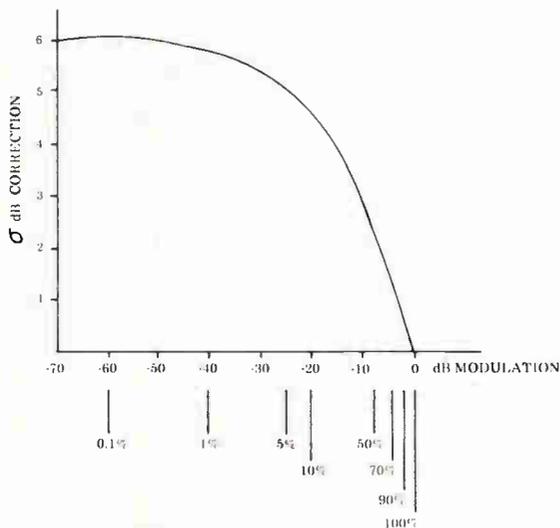
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Reader Service Number 7

Let us first consider several modulation levels using the conventional modulation definition.

FIGURE 2
Modulation Level (NCTA) Verses



$$\sin X + M \sin Y = P \sin \phi$$

where $P^2 = 1 + M^2 + 2 M \cos (X - Y)$

and $\tan \phi =$

$$\frac{\sin X + M \sin Y}{\cos X + M \cos Y}$$

The derivation of these relations is shown in Appendix B.

If $M = 1$, the $\sin X + M \sin Y$ reduces to $2 \cos \frac{1}{2} (X - Y) \sin \frac{1}{2} (X + Y)$, which is not conventional amplitude modulation. However, under the conditions stated before; that is, a large relative amplitude difference ($M \ll 1$) and close frequency spacing ($X \approx Y$), then ϕ is approximately equal to X . Expanding the square root of $1 + M^2 + 2 M \cos (X - Y)$ in a Taylor series about 1 yields

$$P = 1 + M \cos (X - Y) + \text{Higher Order Terms.}$$

Therefore, for these conditions

$$\sin X + M \sin Y =$$

$$1 + M \cos (X - Y) \sin X$$

This does not mean that new spectral components have been added by the linear addition of the two sinusoids; it simply means that this linear addition under the above conditions represents a conventional AM signal to a very good approximation.

Since we use this simulated AM signal to calibrate the cross modulation test set, we must include the 6 dB correction factor as shown in Figure 2. This simulated signal must be at the -66 dB level which corresponds with a -60 dB square wave (NCTA) modulated signal. One more correction factor must be considered; that of the audio analyzer used to read the detected signal. Since the audio analyzer is a narrow band device, one must consider the difference between the first side band, or spectral component, of the amplitude modulated, and the square wave modulated signal. Expanding both signals in a Fourier series and comparing the first two spectral components reveals that the square wave modulated signal is 2.1 dB greater than an AM signal for the same modulation index.

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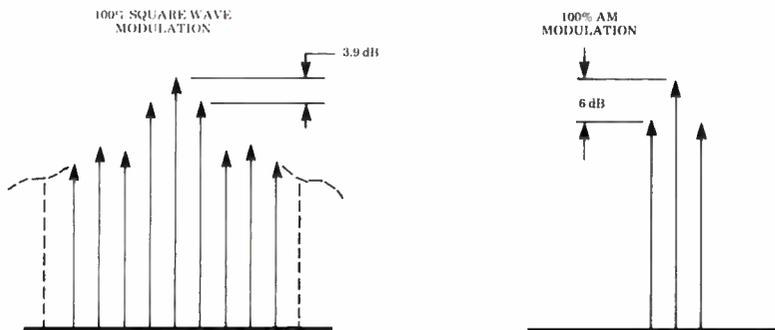
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FIGURE 3
**Spectral lines of a carrier
100% Modulated
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Therefore, +2.1 dB must be added to the -66 dB calibrating wave. Consequently, a -63.9 dB amplitude modulated signal is equal to a -60 dB square wave (NCTA) modulated signal. Again, looking only at the first spectral components we can see the relationship between the NCTA, conventional, and simulated modulation levels.

C-COR has related this theory of calibration to actual operation of a unit which C-COR has built and proven in use for calibration of cross modulation test sets. Its operation follows the theory described to provide a -60 dB cross modulation calibration point. The calibrator employs two crystal controlled oscillators with a difference frequency of 15.75 kHz. The outputs of both oscillators are fed to directional couplers one leg of which is used for a test point.

A calibration on one oscillator is used to equalize the amplitude of that oscillator's output to the second oscillator's output while monitoring both outputs at the test points. The first oscillator's output then is fed to a precision 63.9 dB attenuator (which has been calibrated using a secondary standard). The attenuator output is then fed into a combiner along with the output of the second oscillator.

At the combiner output, then, the signals provide a simulated -60 dB cross modulation calibration reference.

This calibrator has proven itself as an instrument for consistent accuracy and repeatability in calibrating cross modulation test sets. ■

Appendix A

Conventional Modulation —
 $M_c = T/S$ See Figure 1

NCTA Modulation — $M_t = \frac{X}{Y}$

M — Modulation Level = $20 \log M$

Percent Modulation = $100 \times m$

Equate the modulation formulas by reference to Figure.

$$X = 2T = Y M_t$$

$$Y = S + T = X / M_t$$

$$M_t = \frac{X}{Y} = \frac{2T}{S + T}$$

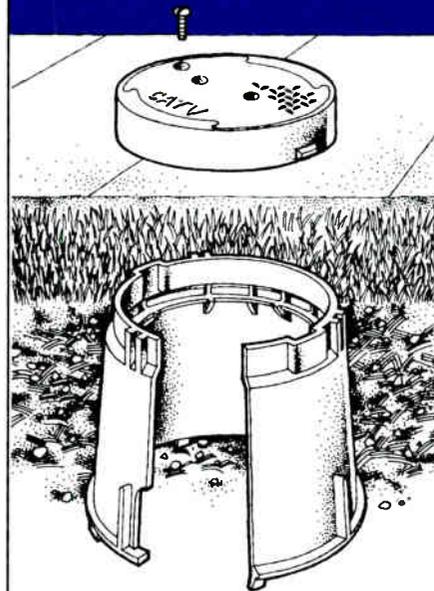
$$M_t = \frac{2 S M_c}{S + S M_c}$$

$$T = \frac{X}{2} = S M_c$$

$$S = Y - T = T / M_c$$

Continued on page 102

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BTSC made easy

Much has been written recently in the various trade journals about stereo and its implementation in the CATV headend. The majority of the discussion has centered around the problems of BTSC implementation while very little has been written about the ease with which stereo encoders can be successfully installed in almost any CATV headend environment. Successful installation of a stereo encoder really is a very simple task. In fact, in many headends, installation can be accomplished in a matter of minutes. Since no two headends are alike, however, this article will describe how to install an encoder in any of several headend configurations.

Implementation

A stereo encoder is a device which has been designed to accept two channels of audio information (left and right channels), either from an over-the-satellite broadcast in stereo, or from local origination programming, and process that information into the BTSC stereo format for transmission to the subscriber. The encoder, because it is an add-on device to existing services, must be an extremely versatile box in order to be easily installed in a multitude of complex headend configurations. In general, for over-the-satellite signals, the encoder will be located somewhere between the satellite receiver and CATV modulator. Its exact location and method of interface between the two will be dependent upon how the headend is configured.

Receiver-encoder interface

Figure 1 outlines a few of the most common methods of interface between the CATV receiver and the BTSC encoder. As shown, this interface is dependent upon several factors. Uplink encryption, uplink narrow-band audio companding, or any out-of-band FM simulcast equipment which is installed in the headend will all affect the way the encoder is installed. The most simple case, shown in Fig. 1A, is where the

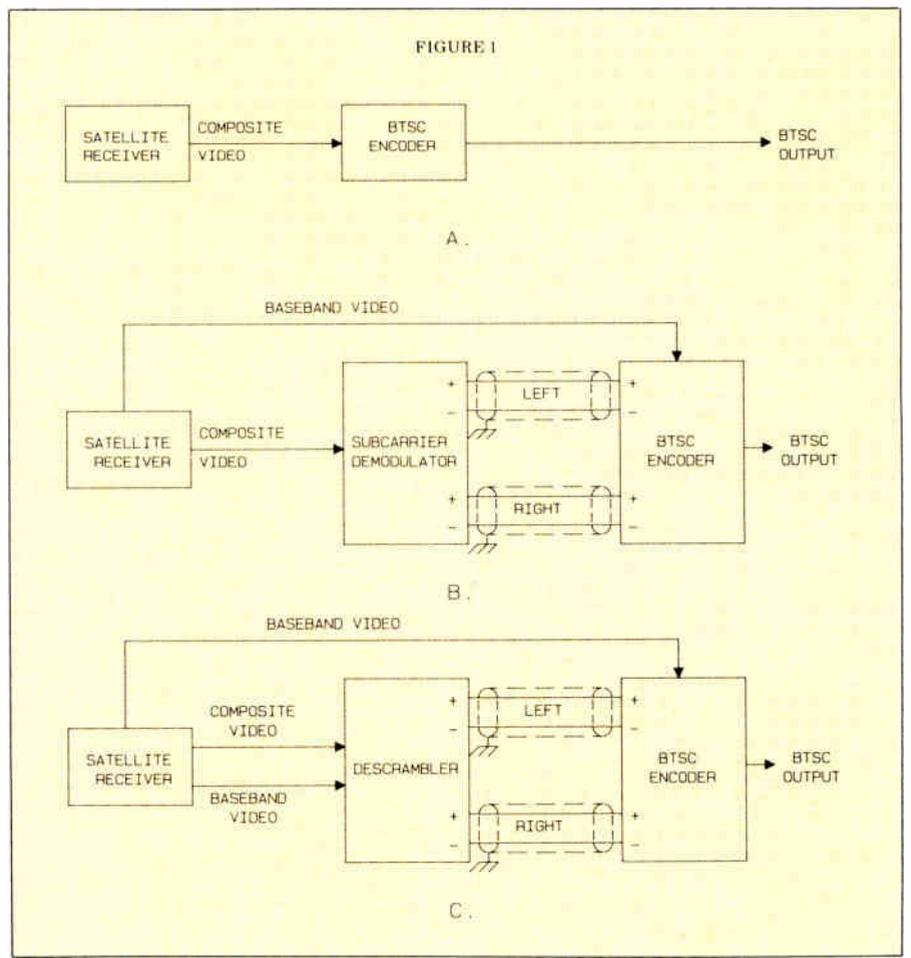
Successful installation of a stereo encoder really is a very simple task.

receiver and encoder are connected via the Composite Video port (video plus subcarriers) of the receiver. The encoder, which has a Wegener compatible, frequency agile, dual subcarrier demodulator available as an option, then demodulates both subcarriers to baseband left and right signals and reprocesses the signals into the BTSC format. This configuration will be useful in applications where the signal is not encrypted over the satellite, and where no previous FM simulcast equipment exists.

CATV systems which are currently providing an FM simulcast service and

who want to begin transmitting the BTSC format may wish to interface as shown in Fig. 1B. In this case, left and right audio information from the existing dual subcarrier demodulator in the FM simulcast equipment can be directly connected to the BTSC encoder. The interface between the receiver and FM equipment remains the same via the composite video port of the receiver.

Many of today's over-the-satellite broadcasts are encrypted or "scrambled". The most prevalent method currently being used is Videocipher. In this system the headend descrambler provides left and right audio outputs directly for stereo broadcasts. Fig. 1C indicates the ease with which the encoder can be connected directly to the descrambler. Again, as before, the encoder simply takes this left and right channel information and processes it



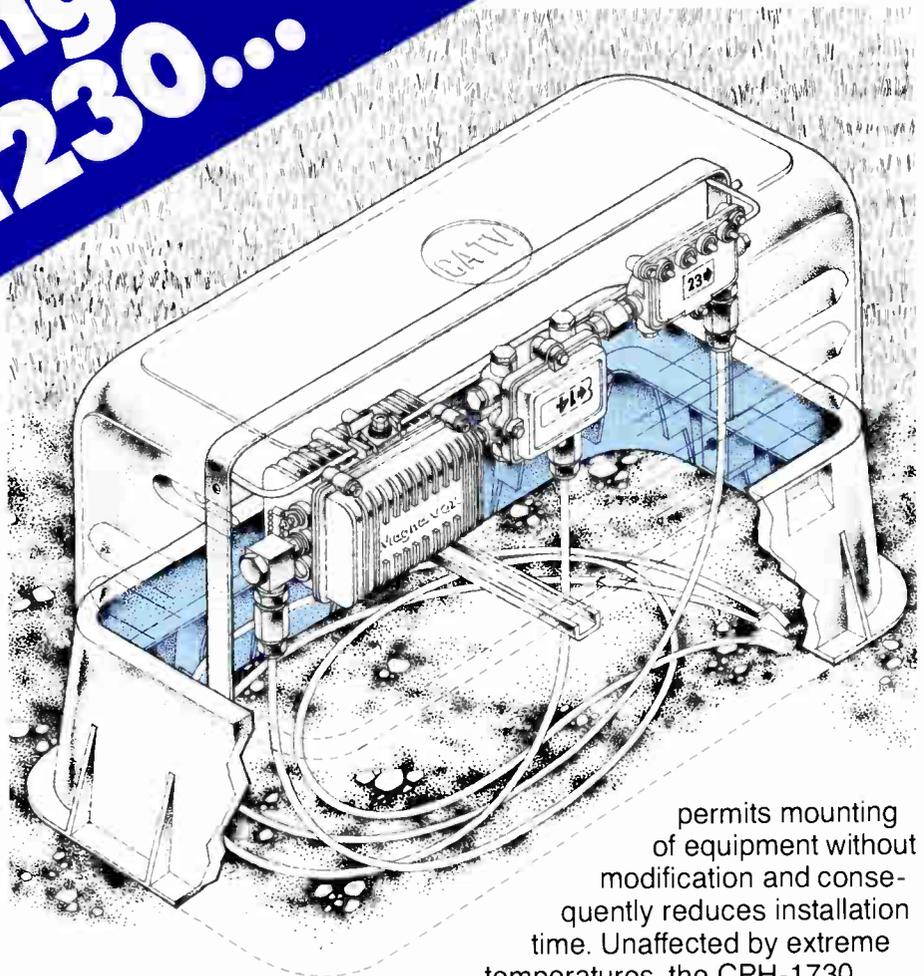
By Chris Bowick,
Engineering Manager, Scientific-Atlanta

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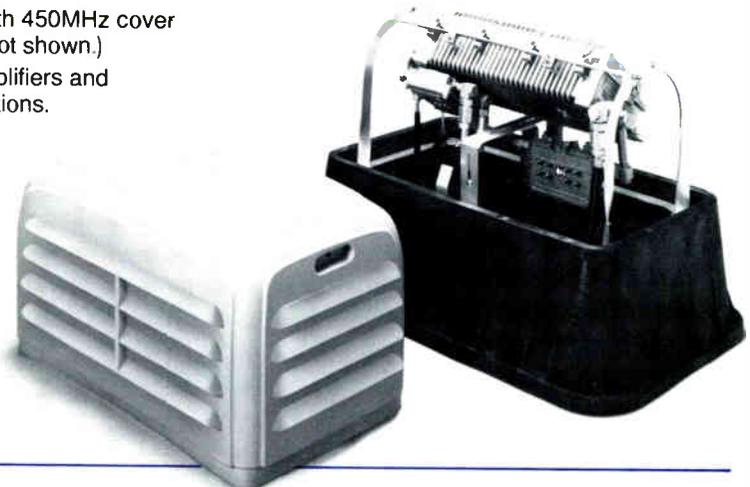


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Once you have access to a modified audio module, headend set-up for this configuration is very simple.

into the BTSC format for transmission on the CATV system.

While its true that there are many different combinations of equipment which may be found in a CATV headend, Fig. 1 has shown how simple the actual installation between the receiver and encoder can be. There are only two practical considerations of importance at this interface that I should caution you about. First, good quality two conductor shielded audio cable should always be used to interconnect equipment at audio baseband. This is done to minimize hum and noise pick-up in the audio paths. Particular attention should be given to shield and chassis grounding. It will typically be recommended that the cable's shield be connected to chassis ground at only one end of each cable. If trouble with 60 Hz hum is encountered, both ends of the shield can then be connected to chassis ground. The second caution about this interface concerns the relative phasing between the two audio paths. Left and right audio is typically routed in a 600 ohm balanced configuration with 2 shielded conductors (+, -) for each channel. It is critical that the correct polarity at both ends of the cable be used. This means plus-to-plus and minus-to-minus. Failure to do so will result in very poor sounding monaural or stereo signals.

Encoder-modulator interface

Once you have made the connection between the receiver and encoder, the next step is to get the output of the encoder into a modulator. As with the receiver-encoder interface, your method of interface between an encoder and modulator will depend upon how your headend is currently configured and can be accomplished in any one of several different ways. The interface between encoder and modulator can be handled at BTSC composite baseband (Fig. 3), or at some audio subcarrier assignment such as 4.5 MHz or 41.25 MHz. While any of the methods shown will work just fine, each has its advantages and disadvantages, and some of you may prefer a particular method for your own reasons.

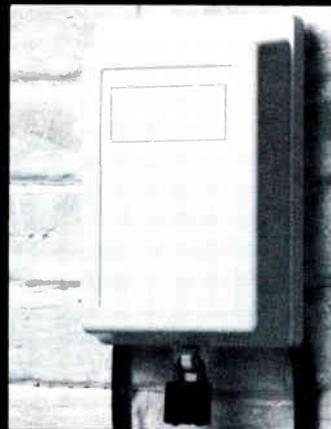
The encoder and modulator are interconnected at BTSC composite baseband; in this method of in-

terconnect, balanced BTSC composite baseband audio is connected via a shielded audio cable to the audio input terminals of the TV modulator. In this application, the modulator's audio module must have been modified for use with stereo signals. This modification requires the removal of the normal pre-emphasis network, and improvements in baseband bandwidth and deviation capability. Manufacturers of headend equipment do have new audio modules available which contain all the necessary modifications. In the case of the Scientific-Atlanta 6350 or 6330, this module is known as the broadband audio module.

Once you have access to a modified audio module, headend set-up for this configuration is very simple. It has been well documented that the main carrier audio deviation must be set very precisely in order to maintain stereo separation (see bibliography). For this reason, some manufacturers of encoders have provided a very pre-

cise audio test tone which has a calibrated level to provide 25 KHz deviation within the modulator. Once connections are made between modulator and encoder, the encoder's test tone is simply turned on and the modulator's audio deviation pot is adjusted until the "overdeviation" indicator is just at the threshold of turning on. The main carrier audio deviation is thus precisely calibrated. The test tone is then turned-off, and the input level pots on the front of the encoder are then tweaked so that the left and right audio signals into the encoder illuminate the green LEDs in their respective bargraph, but seldom the red. This is done much like the typical VU meter would be set for audio recording and, unlike the previous adjustment for main carrier deviation, is not critical. One disadvantage of this approach, and one reason that some operators will prefer one of the other interfaces shown in Fig. 2, is that this method requires that the operator himself set

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There is no longer an accessible deviation pot which can inadvertently be tweaked.

and maintain the main audio carrier deviation of the modulator. While this is indeed a very simple procedure as outlined above, the fact that the operator must do it himself, combined with the criticality of the interface, forces some to shy away from this method. After all, some techs are convinced that pots are made for tweaking and, by-George, they're going to tweak them whether you want them to or not. But the fact remains, and numerous successful installations have confirmed, that if you set the interface level precisely with the test tone provided, and if you can eliminate the casual daily tweaking of the modulator's deviation pot, excellent (greater than 35 dB) separation will be the result.

Figure 2B shows another method of interface between the encoder and modulator. This method, as well as the interfaces outlined in Figs. 2C and 2D, rely on the encoder having an internal audio subcarrier modulator either at 4.5 MHz or 41.25 MHz. The advantage

of having a 4.5 MHz or 41.25 MHz modulator internal to the encoder is that the operator can now rely on the manufacturer to set the precise main audio subcarrier deviation in the factory and guarantee stereo separation performance. There is no longer an accessible deviation pot which can inadvertently be tweaked by an unsuspecting technician. This fact alone is enough to "sell" this encoder option to the operator.

Figures 2B and 2C show two different methods of routing video and 4.5 MHz subcarrier. Both of these approaches are shown because some modulators require that the two signals be combined while other modulators require that video and subcarrier be separated. In addition, in some headends, especially those which are micro-waved, combined baseband video and 4.5 MHz subcarrier are routed everywhere. Thus some headends will require that video and 4.5 MHz be combined. Either method will produce ac-

ceptable performance. Separating the two signals however does have one important advantage. If the video source is not adequately bandlimited, and video and subcarrier are combined, video components can tend to fall on top of the subcarrier, contaminating the audio, and thus producing buzz and other video related audio noise. This resultant is obviously eliminated if video and subcarrier are never combined.

Interconnection between an encoder and modulator at 41.25 MHz is shown in Fig. 2D. This type of interface may be required in some modulators which cannot accept 4.5 MHz subcarriers. In this case, if the modulator is equipped with a dual IF loop-thru, simply breaking the audio IF path and substituting the 41.25 MHz signal from the encoder will do the trick. This method, as well as the 4.5 MHz interface methods outlined above, has the additional advantage that the modulator's audio module does not have to be modified in or-

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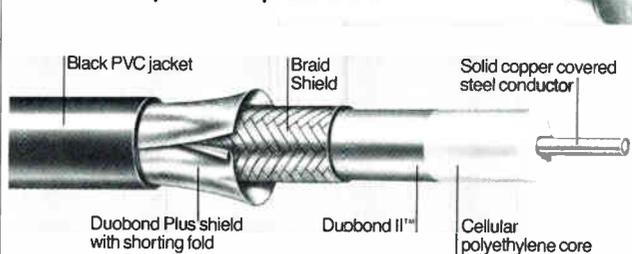
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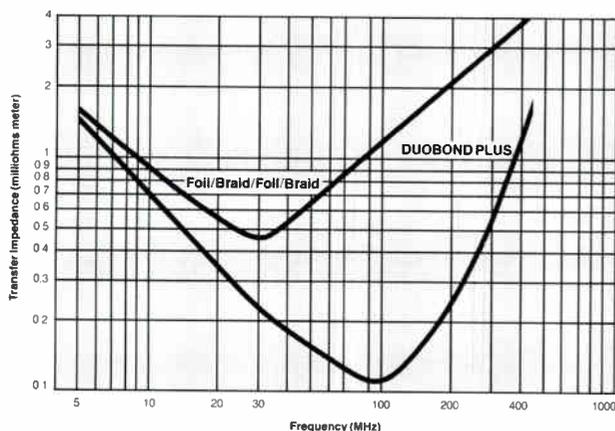
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There are several things that an operator can do to minimize buzz components in the audio.

der to adequately pass the stereo signal. This is true because if the signal is input to the modulator at 4.5 MHz or 41.25 MHz, then we need only to ensure that the audio subcarrier path's RF bandwidth is adequately wide to pass the stereo signal. In most instances this is not a problem as the audio subcarrier paths of most older modulators have sufficient bandwidth.

Equipment adjustment

Once the encoder is installed in the system and all connections are made to the unit, the only thing left to do is to make a couple of very simple signal level adjustments. The unit will then be ready for service. First ensure that you do in fact have left and right audio signals applied to the encoder. Then, in the case of the Scientific-Atlanta 6380 Encoder, adjust the two front panel left and right channel input level pots so that the loudest passages illuminate all of the green LEDs in the respective

left and right channel bargraphs but seldom the red LEDs. These bargraphs can be used in a similar fashion to the standard VU meter with which most everyone is familiar. Once this is accomplished, program input passages with no stereo separation (mono) will cause equal levels and therefore equal numbers of LEDs to light in both channels. True stereo, on the other hand, especially highly uncorrelated stereo (little monaural or common mode signal), will show up on the bargraphs as unequal "dancing" of the LEDs.

After adjusting the left and right channel input sensitivity, the next step is dependent upon whether or not you are using an internal subcarrier modulator. If you are using an internal 4.5 MHz or 41.25 MHz modulator, then all that is required is to adjust this RF subcarrier output level to the required level for the particular modulator in use. You should then be on the air with excellent stereo performance.

If you have elected to interface with

your modulator at BTSC composite baseband, then this level must be calibrated. This is very easily accomplished by simply turning on the Cal Tone via the encoder's front panel slide switch, and then adjusting the audio deviation pot on the front panel of the modulator until the red indicator light is just on the threshold of turning on. Once this is accomplished, the Cal Tone is turned off and you are "on the air".

What kind of performance can you expect?

In one word, excellent. Oh, depending upon your headend configuration, separation results may vary slightly, but only slightly. Our experience has shown that excellent separation (greater than 35 dB) is obtained no matter what the interface (RF or Baseband) between the encoder and modulator. This is true by virtue of the precision Cal Tone which is made available for baseband interface applications. Keep in mind however that separation is not our only concern with BTSC stereo. There is a school of thought in the industry that too much emphasis has been placed on separation performance and not enough emphasis on noise and sync buzz in the audio. Buzz, after all, if it is present on a signal, is a phenomenon which can be noticeable by even the most casual listener. Degradations in separation on the other hand simply will not be noticed by even the most discriminating of your listeners. Minimization of buzz should therefore be fairly high on our priority list.

There are several things that an operator can do to minimize buzz components in the audio. Some are outlined below:

1. Do not allow video over-modulation. While the modulator is supposed to be set up to eliminate this possibility, many headends I have visited have had their "white-clip" LEDs lit brightly indicating the possibility of incorrect operation and a potential source of buzz. When in doubt about the accuracy of the modulator's over-modulation LED, check its calibration by measuring actual modulation on a spectrum analyzer or oscilloscope.

2. Ensure that the modulator's inci-

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The installation of a stereo encoder can be accomplished in a matter of minutes.

dental carrier phase modulation (ICPM) is below 3 degrees. This parameter has been measured on Scientific-Atlanta modulators to be well below 1 degree, much better than is expected of broadcasters. However, there are other modulators which may not meet this requirement and should be checked if you have a problem with buzz.

3. If you interconnect your encoder and modulator with combined video and 4.5 MHz subcarrier, and experience a noticeable buzz component, then your video source might not be band-limited to 4.2 MHz as it should be and video information might therefore be bleeding over on top of the audio subcarrier, creating buzz. Character generators, for example, are notorious for this effect. The solution here, if you do experience buzz, is to run the video and 4.5 MHz subcarrier separately as in Fig. 2B. This should eliminate any possibility of video contaminating the audio. Another solution is to run your video signal through a very sharp and very well equalized 4.2 MHz low-pass-filter before combining it with the audio subcarrier. This filter, which is available from various industry sources, should have a minimum rejection of 50 dB at 4.5 MHz.

4. If you have tried all of the above and are still experiencing buzz, I would suggest that you consult with the manufacturer of your stereo decoders. Different makes and models of stereo decoders have different susceptibilities to buzz. This buzz susceptibility is, to a large degree, dependent upon the type of demodulation scheme used. While it is beyond the scope of this article to define each scheme, let it suffice to say that split sound, quasi parallel, and intercarrier demods all perform differently relative to buzz susceptibility. Of the three, we have found that the least susceptible of the three is the quasi parallel demodulator.

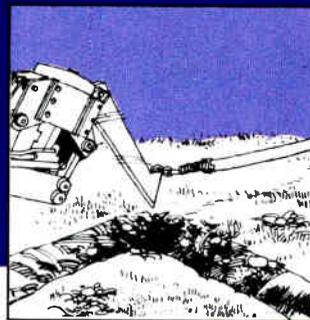
The installation of a BTSC Stereo Encoder is a relatively easy task which can be accomplished in a matter of minutes if a few simple rules are followed. We have discussed several methods of integrating an encoder into various headend configurations, and have seen that most any installation can be easily accommodated. If you have a special application which is not

covered by the detail presented, I recommend that you consult the manufacturer of the headend equipment you are using for specifics. Chances are that your application will not cause much difficulty either. We have also

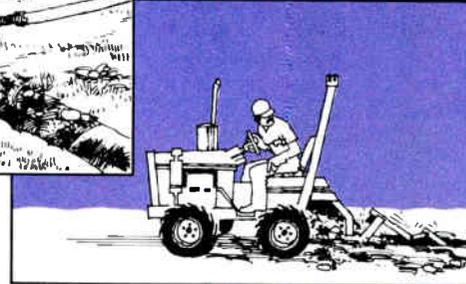
seen how simple initial set-up and calibration can be. In short, BTSC is easy. Try it, I think you'll like it!

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Cablecon[™] Cable-in-Conduit...



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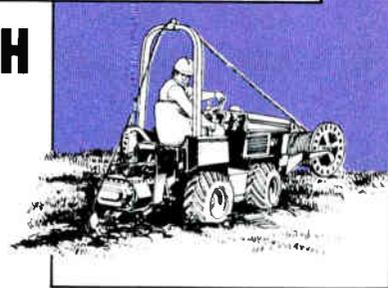
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Reader Service Number 13

Playing the league's leading scorer?

Some things you can't fight. You don't stop Refrigerator Perry one-on-one and you don't easily hold Walter Payton to less than 100 yards a game. Likewise, broadband vendors lining up at scrimmage on the communications playing field have to face some scary facts.

Ethernet and twisted pair networks are out there and aren't going away. Fiber and token ring networks are coming and they'll get their share of business, too. Yes, common ISO-based standards will emerge eventually, but proprietary standards are here now. So what's a broadband network vendor to do? Perhaps, like Wang Laboratories, come out of the huddle running the option.

Wang's game plan calls for offering customers networks running on multiple media simultaneously, using differing modulation and signaling techniques. By adding value to existing networks, Wang migrates from a proprietary broadband network to an open architecture. The idea: combine Wang, DEC, IBM, AT&T, Ethernet and other environments and operate heterogeneously.

"Maybe a company doesn't want to run broadband all the way to the desk top," says Dave Tolwinski, Wang group manager for LANs and building distribution systems. "Maybe it wants to run Ethernet, IBM 3270 or twisted pair." Instead of fighting that cus-

**Give him his points,
watch the rest of your
game.**

tomers preference, Wang runs the sub-network through an interface, "jumps on broadband for high-speed transport and jumps off at the other end."

The point? "We're trying to position WangNet as a value added to other wiring environments," Tolwinski says.

To that end, the company is making sure WangNet—which is not a proprietary LAN—interfaces with the IBM PC Network, IBM Cabling System and AT&T Premises Distribution System. Already, WangNet works with all 802.3, fiber and token bus networks. Asynchronous, synchronous, RS-232 or RS-449 devices all can be hung on the system. In fact, "WangNet" may be a misnomer. It's really a 400 MHz, dual cable, transparent, broadband transport system.

And despite Wang's heavy presence in large, integrated office settings, a modular, user-installable version of WangNet—called FastLAN—also is available. Designed for smaller applications where there isn't a big need for vertical risers or more than 640 ports, FastLAN comes from Wang pre-certified and ready for installation. The

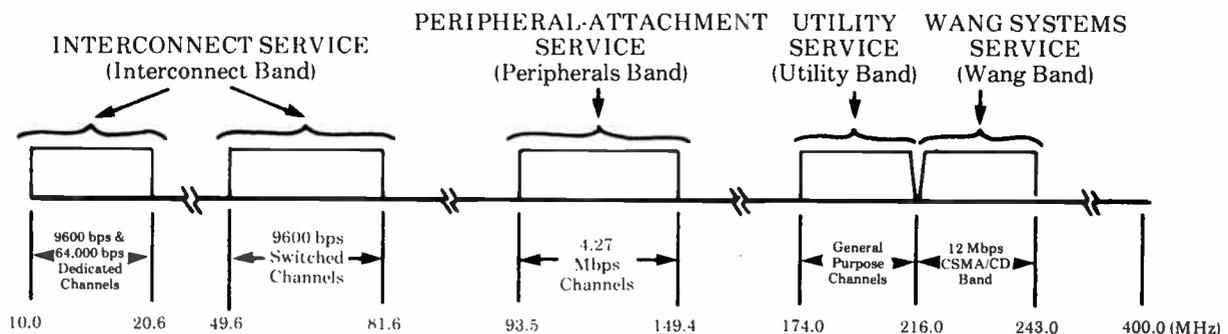
company also is working on a new FastLAN riser, though, that will still be user-installable within a 90-day time-frame. "It's just a logical extension of the cable kit approach," Tolwinski adds.

WangNet has been on the market since 1981 and is installed in about 1,500 locations. This year, about \$50 million worth of new sales should be booked, with a growth rate of about 50 to 60 percent, Tolwinski says. "We're behind IBM and AT&T in terms of building wiring, installed in about 6 percent of all sites wired for communications today." And Wang isn't sitting still. It's committed to evolution of its proprietary standards to the OSI stack, and, conceptually, that'll mean a number of things.

At the transport level, it's adapting interfaces to meet 802.3 and 802.5 standards. The physical, data link and transport layers shouldn't be too hard. The applications layer will be harder.

"We'll migrate our applications to FTAM or X.400 standards, perhaps," Tolwinski says. At present, Wang Systems Networking is the four-layer software framework that forms the underpinning for WangNet. WSN includes a transport layer that establishes data links; a network routing layer that directs the flow of messages between nodes; a services layer that provides terminal emulation, electronic mail, directory and protocol conversion (AS-

FIGURE 1
Allocation of Available Bandwidth



Wang is committed to evolution of its proprietary standards to the OSI stack.

FIGURE 2

Fully extended FastLAN

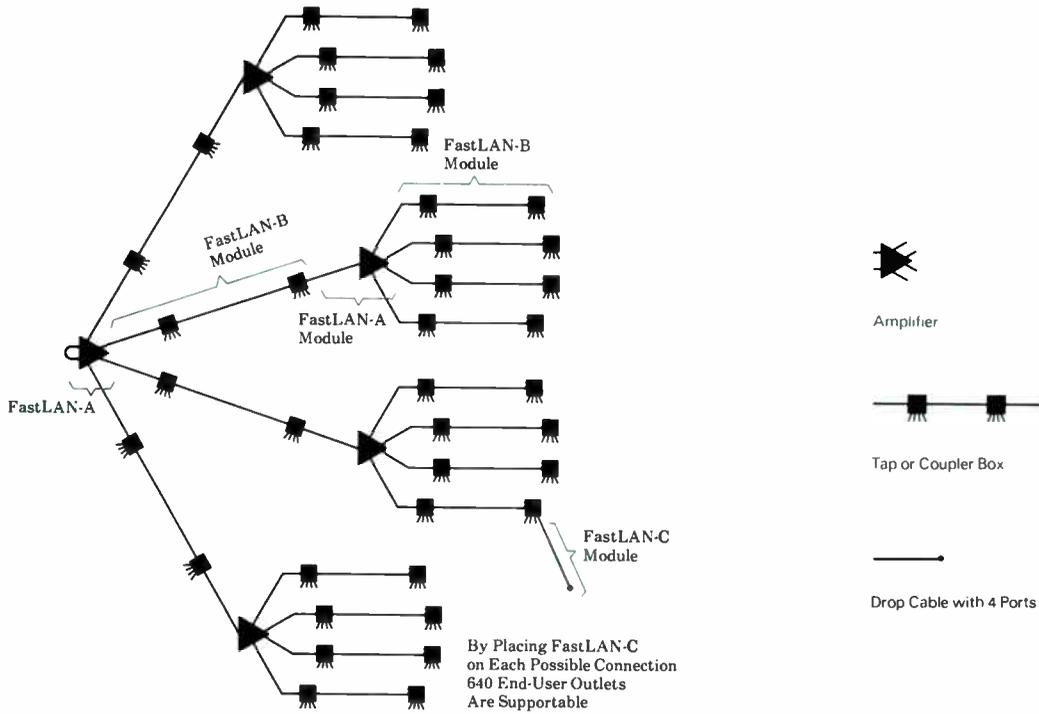
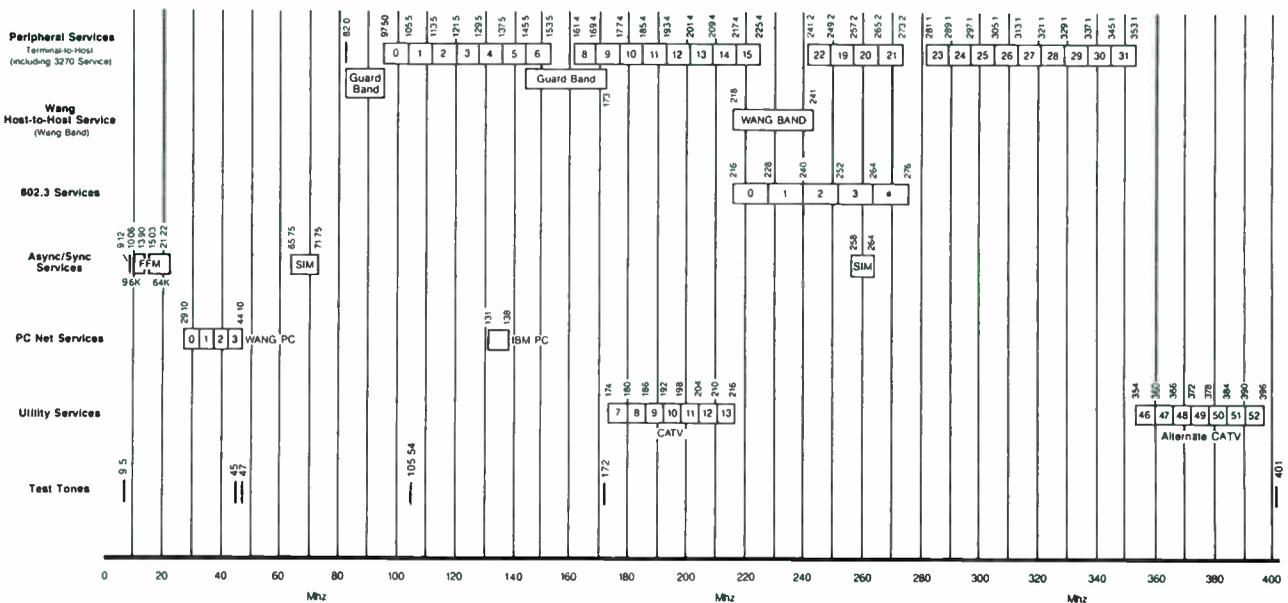


FIGURE 3

WangNet frequency plan



Currently under development are new modems running at various speeds up to 10 Mbps.

CII to EBCDIC, for example) and an applications layer (word processing, for example).

The seven-layer ISO model follows a similar, modular approach in which each subsequent layer is supported by those below it. Which isn't to say that ISO-conformance necessarily provides more functionality for the end-user.

"The problem, really, is that when you move from proprietary to ISO standards, you almost always are looking for a lowest common denominator," Tolwinski points out. Nevertheless, that migration will continue as Wang seeks to develop an expanded role as systems integrator: tying together multivendor equipment into unified networks.

New products may help. Currently under development are new modems running at various speeds up to 10 Mbps. The goal: common frequency selection and modulation techniques adaptable across all bands. The company also is working with vendors on

redundant, addressable amplifiers, capable of making input and output level measurements. In trunking applications, for example, "it would be nice to have an amplifier that can put a loop around its own point on the network so trouble-shooting routines can be run," Tolwinski says.

The aeronautical bands? Wang stays completely out of them. Why dual cable? Because, although the passives cost 10 percent to 15 percent more than a mid-split system, a much simpler headend can be used and almost three times the bandwidth of a mid-split system is gained, the company says. The longest amp cascade supported is 32 and the total number of distribution amps is 568, two in the headend and 283 each on the A and B cables.

Typically, WangNet frequencies are divided into five bands, and when the Wang Systems Network software is being used, two of the bands are reserved for use by Wang hosts and PCs.

Between 10 MHz and 20.6 MHz and 49.6 MHz and 81.6 MHz, Wang runs 9.6 Kbps and 64 Kbps data channels. Between 93.5 MHz and 149.4 MHz, Wang runs serial devices such as terminals and printers. A 42-MHz utility band between 174 MHz and 216 MHz is saved for video communications. The 216 MHz through 243 MHz band is used for Wang hosts. When Ethernet is run on either FastLAN or WangNet, the 216 MHz through 276 MHz band is used, allowing the simultaneous operation of five independent 802.3 networks.

Why use WangNet instead of other general purpose broadband LANs? Tolwinski emphasizes company stability; support for multiple services; higher bandwidth and reliability compared with single cable systems; flexibility and compatibility with token ring, fiber and twisted pair media. In short, because Wang can run the option.

—Gary Kim



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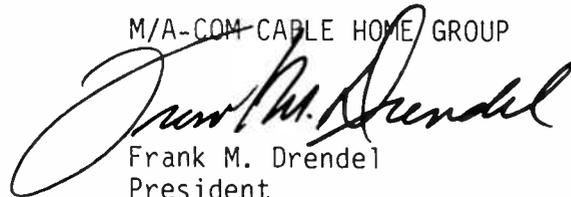
The company has grown on that foundation with innovative ideas and products, such as VideoCipher, converters, and video satellite systems, yet we have not lost sight of our basic commitment to excellence.

I would personally like to thank the industry for recognizing and supporting that philosophy over the last ten years, and reaffirm our commitment as we embark on a new and exciting period for our company and the CATV industry.

Thank you again and Happy Birthday Comm/Scope!!

Sincerely,

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Frank M. Drendel
President

rg

VCR and TV interface problems...

If you think you've got problems interfacing cable with your subscribers' televisions and VCRs now, take note: things aren't going to get any easier—at least in the near-term.

Spurred by sharp increases in sales of stereo televisions and VCRs of all varieties, the cable industry as a whole and individual operators alike are scrambling to respond to the incompatibility issues. But are they reacting fast enough to satisfy the demanding consumer? And what future technological developments in the TV industry pose additional challenges to cable engineers?

According to data supplied by the Electronic Industries Association, manufacturers will sell more than 17 million TVs to dealers in 1986, the latest year in a long line of record sales years (see figure 1). With about 87 million television households in this country, that represents a purchase by one of every five households. And more of the same is likely in 1987, a year in which the EIA estimates 17.5 million color TVs will be sold by the factories.

Industry sources say more people are buying TVs than ever before because they want to take advantage of the new features—more channels, remote control, and MTS stereo sound—that are being touted. In most cases, however, the new purchase is not replacing a retired set, the old one is simply being moved to a secondary location. An EIA study, completed last year, reported that 80 percent of all TVs purchased in 1975 were still in use. Perhaps more surprisingly, the study found that fully 50 percent of all sets purchased in 1970 were still being used.

So, clearly, the features TV manufacturers are building into sets today will continue to impact the market for several years to come. And with VCRs and stereo taking an increasing share of the market (see figures 2 and 3), the cable industry can't afford to rest on its laurels.

And it isn't. Increasingly, operators are taking steps to pass stereo signals, which are now available to 90 percent of the populace (75 million homes) over more than 300 stations. In fact, demands for stereo TVs has become so strong that half of Zenith's line has built-in MTS stereo, according to John

...aren't going to improve in the near future.

Taylor, company spokesman. The EIA predicts that about 17 percent of all sets sold this year will be stereo capable but estimates that figure to jump to nearly 30 percent of all set sales in 1987.

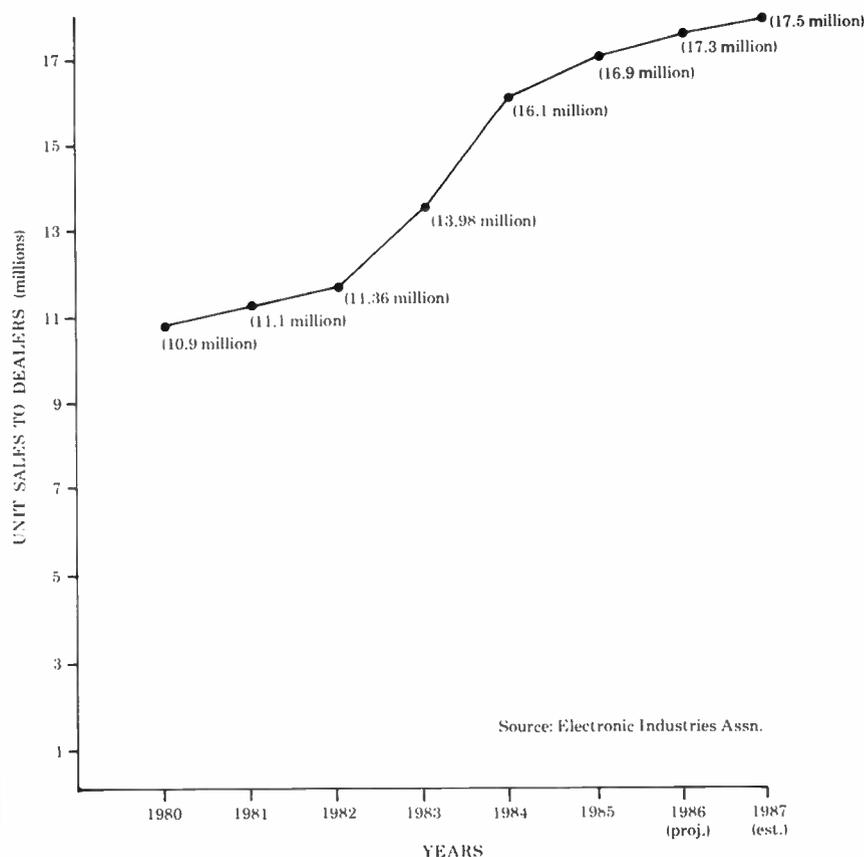
But the biggest obstacle yet to be overcome is the VCR interface problem. Committee work done by the EIA has resulted in a proposed standard—

the IS-15—that will restore full capability back to the VCR and cable-compatible TV. Manufacturers agree that the plug is a good idea, but it's likely to impact the economics of TV set purchases enough to keep them cautious for a long time.

"We need a dialogue between manufacturers of TV products and the cable companies for us to better understand their position," says Jerry Surprise, national product manager for Panasonic Television. "I haven't talked to anyone (in cable). We just haven't had that dialogue."

Although Panasonic plans to offer

FIGURE 1
Color TV receivers
(excluding projection television)



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Reader Service Number 17

It will take a long time before the plug becomes firmly established in the market.

one 1987 model with the IS-15 plug built-in, that model will be toward the top end and will sell for about \$1,000, says Surprise. And although only one model will be offered, the company originally planned to introduce IS-15 in two models next year. Surprise says manufacturers haven't been convinced of the need for IS-15, nor have they determined that there is a willingness for the public to spend an additional sum.

"Television receivers, in general, sell at specific price points and a dealer wants to make a certain amount of (profit) margin," Surprise says. "So, we have to price our sets for that amount—no matter what it costs us to build it. Any feature we add that is above and beyond what is saleable is taken out of our profit." And with profit margins slim to non-existent already, "to add a feature, it's need must be proven."

It's going to take all of the players—the television manufacturers, cable companies and cable products sup-

pliers—working together to educate the public and create awareness of what the additional \$20 expense (the amount many industry observers estimate the final retail cost of IS-15 will be) will do for a cable subscriber, says Bernie Lechner, senior staff scientist at RCA Labs.

"There are a number of good reasons why the television industry should support it," he says. "As it stands currently, people who have set-top converters lose the use of some of the features that are inherent in the TV set and they're paying for, like the remote control. If the receiver does not have a set-top box but interfaces with the cable directly and then does its pay-TV decoding through IS-15, the receiver owner now gets full use of all the features we have put in the set for him. We obviously would like to see all that happen. But the receiver manufacturer alone can't make it happen."

Nevertheless, Tom Mock, staff scientist at EIA, predicts that we'll see

TVs with IS-15 plugs in them sometime this winter. But most likely, the plugs will continue to be featured on top-of-the-line sets where videophiles are less likely to balk at a minor additional charge. Regardless, it will take a significant period of years before the plug becomes firmly established in the market because of a television's long lifespan.

By that time, however, the whole complexion of the television market may have been altered by digital and high definition television.

A number of manufacturers are putting more effort toward turning out digital televisions. At first, present-day analog processing circuitry will be replaced by digital circuits. And, although one day that development will provide significant cost reductions to the manufacturer and consumer, right now it gives slightly poorer performance at a higher cost, says Lechner. The higher cost results from the fact

Continued on page 89

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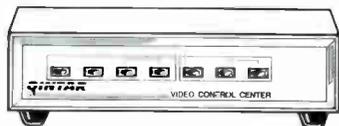
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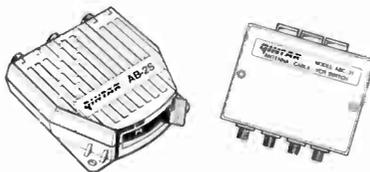
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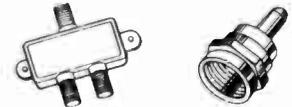
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Those companies not listed here, but wishing to be listed in future guides, should contact us. You are one of the sources available for accurate, up-to-date information in this reference tool.

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 Carlton Intrntl. Manufacturing Corp.
 Channel One Inc.
 Channelmatic Inc.
 Chyron Corp.
 Colvins Inc.
 Comlink Systems Inc.
 Commercial Satellite Systems
 Comsonics Inc.
 Comtech Antenna Div.
 Com-Tek
 Control-Com
 DEL Compu-Cable Systems Inc.
 DX Communications Inc.
 Ditch Witch
 Eastern Earth Boring & Equipment
 Elephant Industries Inc.
 Fisher Research Laboratory Inc.
 General Cable Co./Apparatus Div.
 H A Solutec Ltd.
 Hall Equipment & Suply Co.
 Harris Broadcast Microwave
 Harris Corp.-Satellite Comm. Div.
 Hughes Aircraft Co. Microwave Comm.
 Jacobs Trenching Mfg.
 Kanematsu-Gosho (USA) Inc./Sprucer
 Larson Electronics
 Leader Instruments Corp.
 Leaming Industries
 Lemco Tool Corp.
 Lenco Inc. Electronic Division
 Line Ward Corp.
 M/A-COM MAC Inc.
 McLaughlin Mfg. Co.
 Metrotech Corp.
 Midwest Corp.
 Mycro-Tek
 Norsat Systems
 OEM Sales
 Oak Communications Inc.
 Panasonic Industrial Co.
 PICO MACOM
 Pioneer Comm. of America Inc.
 Pitts, T.R. Co.
 PolyPhaser Corp.
 Power Conversion Products Inc.
 Pow-R Devices Inc.
 Progressive Electronics Inc.
 Q-Bit Corporation
 Radar Engineers
 Riser-Bond Instruments
 Rohm
 SRP Electronics Inc.
 Scala Electronics Corp.
 Seaman Parsons Corp.
 Sior Optical Cable
 Simplicity Tool Co. (Sitco Antennas)
 Sparks Equipment Co.
 Standard Truck & Equipment Co.
 Stelco Inc.
 Strata Communications Ind. Inc.
 TL Systems
 Teco Inc.
 Time Manufacturing Co.
 United Satellite Systems
 VEC Manufacturing Co.
 Vermeer Manufacturing

Installation

Adderley Ind. Inc.
 Aero Cable Inc.

American Comm. Installations (ACI)
 American Earthstations Inc.
 Andrew Corp.
 Antenna Technology Corp.
 Avtec Industries Inc.
 B-Line Construction
 B-Con Construction Co. Inc.
 C-2 Utility Contractors
 C & P Communications Corp.
 CATECH Co. Inc.
 CATV AMIC Co.
 CF Towers
 CT CATV Construction & Maintenance
 Cable Craft Inc.
 Cable Services Co. Inc.
 Cable Technical Services
 Cable TV Installation Inc.
 Cajun Cable Co. Inc.
 Cavision Communications
 Cecon Inc.
 Clear Vision Cable Constructors Inc.
 Comm. Construction Group Inc.
 Edmunds Cable Services
 Elephant Industries Inc.
 English Enterprizes
 Ferguson Communications Corp.
 G & L General Contractors Inc.
 Gabriel Electronics Inc.
 Global Cable Inc.
 Harrell Enterprises of Illinois Inc.
 Head End, The
 Humphrey Bros. Inc. CATV Const.
 Interstate Dropline Installers Inc.
 Interstate Line Contractors
 Lightning Electric of PA Inc.
 Mastercom
 Microflect Co. Inc.
 Nacom Construction Corp.
 Omega Satellite Systems Inc.
 Pyramid Cable Services Inc.
 Quality Cable Underground
 RCH Cable Marketing & Installation
 RF Distribution Systems
 R & L Cable Construction
 RT/Katek Communication
 Summit Cable
 Superior Cablevision Installers Inc.
 System Svcs Cable Construction Inc.
 TVM Systems Inc.
 Terra Link Corporation
 Tru-Level Inc.
 Videophile Inc.

Management Information Systems/Billing

AM Computer Services Corp.
 AMR Cable Services
 Anixter Communications
 Axiom Computer Software Ltd.
 Birchwind Infosystems Ltd.
 Business Systems Inc.
 Cable Systems Design Group Inc.
 CableData
 Computel Inc.
 Computer Utilities of the Ozarks
 Control Technology Inc.
 Creative Data Systems
 Creative Management Systems Inc.
 Data Communications Corp.
 First Data Resources Inc.
 Great Lakes Data Systems Inc.
 Information Systems Development Inc.
 Information Systems Planners Inc.
 InfoSoft Technology Inc.
 Interface Technology Inc.
 KMP Computer Systems

CATV index

LDM Inc.
MICR Data Systems Inc.
Malarkey-Taylor Associates Inc.
Melita Electronics Labs Inc.
Nel Network Engineering Ltd.
Parallex Corp.
Perception Technology

Manufacturers

A.B. Chance Co.
AD Systems Inc.
AVA Electronics Corp.
AVCOM of Virginia Inc.
Aberdeen Co.
Aero Lift Co.
Alpha Technologies
Altec Ind. Inc.
American Trencher Inc.
Andrew Antenna Co. Ltd.
Andrew Corp.
Antenna Development & Manufacturing
Antenna Technology Corp.
Armex Cable Corp.
Armorcast
Artel Comm. Corp.
Augat ESP
Augat/Broadband Comm. Group
Augat/Broadband Engineering Inc.
Auto-Gen Electric Div. of Mercantile
Automation Techniques Licensed
Available Plastics Inc.
Avantek Inc./Telecomm. Div.
Benner-Nawman Inc.
Bethlehem Tower Works
Blonder-Tongue Laboratories Inc.
Bogner Broadcast Equipment Corp.
Border Cable Construction Co.
Broadband Engineering Inc.
Burnup & Sims Cable Products Group
CADCO Inc.
CAM Industries
CASAT Technology Inc.
CATEL Telecommunications
C-COR Electronics Inc.
CF Towers
CSE Technologies
CWY Electronics
CZ Labs
CableBus Systems Corp.
Cabletenna Corp.
Cable Lock Connectors Ltd.
Cable Power Inc.
Cable Prep/Ben Hughes Comm. Prod. Co.
Cable Security Systems Inc.
Cable TV Supply Co.
California Amplifier
Caplec Corp.
Carolina Galvanizing Corp.
Channel Master
Coastcom
Comm/Scope Co.
Commercial Cable Inc. (CCI)
Comtech Antenna Div.
Condux International Inc.
Consolidated Elec. Wire & Cable Corp.
Converter Parts Inc.
DEL Compu-Cable Systems Inc.
Di-Tech
Dialogic Communications Corp.
Diamond Comm. Products Inc.
Diamond Electronics
Digital Video Systems Inc.
Ditch Witch
Drake, R.L. Company
ECA/Manufacturing Division

EEG Enterprises Inc.
EF Data Corp.
Eagle Comtronics Inc.
Electrohome Ltd.
Electroline TV Equipment Inc.
FM Systems Inc.
Facile Technologies
Fairchild Data Corp.
GNB Incorporated
Gabriel Electronics Inc.
Gamco Industries
Gem Top Mfg. Inc.
General Instrument Corp./Tocom Div.
General Semiconductor Ind. Inc.
Gilbert Engineering Co. Inc.
Global Systems Corp.
Gould Inc.
Hewlett-Packard Corp.
ICM Video
ISS (Intern'tl Satellite Systems)
Imperial Products Center Inc.
Independence Electronics
Inner Tite
Integral Corp.
Intercept Corporation
Intern'l Electronic Wire & Cable
Inventronics Ltd.
Island Cable Electronics
JFW Industries Inc.
J1 Case Company
Jackson Enterprises
Jerrold Div.-General Instrument
Kaul Tronics
Kinai Technologies Inc.
Kings Electronics Co. Inc.
Klein Tools Inc.
Knox Video
LNR Communications Inc.
Laird Telemedia
Leitch Video of America Inc.
Lemco Tool Corp.
Lenco Inc. Electronic Division
Lightning Deterrent Corp.
Lightning Eliminators & Consultants
Lindsay Specialty Products Ltd.
M/A-COM Inc.
M/A-COM Cable Home Group
M/A-COM Cable Home Gr. Converter Op.
M/A-COM Telecommunications
M/A-COM Telecommunications Div.
Magnavox CATV Systems Inc.
Mark Antenna Products Inc.
Matrix Test Equipment
McGraw-Edison Power System
MICO Inc.
Microdyne Corp.
Microflect Co. Inc.
Miralite
Monroe Electronics Inc.
NSC Electronics
Newton Electronics Inc.
Nexus Engineering Corp.
Norsat Systems
Oak Communications Inc.
Orbitron Div. of Greenbriar Product
Panduit Corp.
Paraframe Communications Inc.
Parker Metal
Passive Devices Inc.
Perma-Cast Systems
Pico Products Inc.
Pierce Arrow International
PolyPhaser Corp.
Precise Mfg. Co.
Power Guard Inc.

Pyramid Industries Inc.
QRK Electronic Products Inc.
Qintar Inc.
RF Analysts Inc.
Ripley Co. Inc. Utility Tool Div.
Radyne Corp.
Rainbow Satellite Communications
Raychem Telecommunications
Reliable Electric/Utility Products
Remtek Corp.
Riser-Bond Instruments
Roart Div. of Diamond Comm. Prod.
Rohde & Schwarz-Polarad Inc.
Rohn
Roll-A-Reel Company
Rycom Industries Inc.
Sabre Comm. Corp.
Sachs Communications Inc.
Sadelco Inc.
Satcom Technologies Inc.
Scientific-Atlanta Inc.
Seaman Parsons Corp.
Siemens Components Inc.
Signal Processing
Siltron Illumination Inc.
Sitco Antennas
Soft Systems
Southwire Company
Stelco Inc.
Strata Communications Ind. Inc.
Superior Metal Products Inc.
Superior Satellite Engineers
Supra Key Control Ltd.
Synchronous Communications Inc.
3M Test & Measurement Systems
TOCOM Div. General Instrument Corp.
TPC Connectors
Tektronix
Telease/Amtec
Telecommunications Corp.
Telecorp Systems Inc.
Telecrafter Products Corp.
Teledac Inc.
Telpar Inc.
Texscan Corp.
Texscan Instruments Div.
Texscan MSI/Compuvid
Time Manufacturing Co.
Times Fiber Comm. Inc./AN LPL Co.
TOCOM Div. General Instrument Corp.
Trans USA Corp.
Trilogy Communications
Triplett Corporation
UNR-Rohn-Division of UNR Inc.
Underground Equipment & Supply Co.
United Satellite Systems
Universal Electronics Inc.
VEC Manufacturing Co.
Viewsonics Inc.
Vermeer Manufacturing
Videotek Inc.
Viewstar Inc.
W & S Systems
Wavetek Indiana Inc.
Weldone Trading Company Inc.
Westec Communications Inc.
Western Towers
White Radio Ltd.
White Sands Jumper Cables
Wide Band Engineering Co. Inc.
World Video Library Inc.
Zenith Cable Products Div.

Miscellaneous

AM Cable

CATV index

Alacrity Cable Collections Corp.
 Allen Systems Inc.
 Andrews Tower Inc.
 Atlantic Research Corp.
 Bose Associates Inc.
 Bycom Corp.
 Cablemaster Inc.
 Cabletek
 Cable Call Corp.
 Cable Operators Protection Services
 Cable System Survey Co.
 Channels of Communications
 Clair Stern Associates Inc.
 Coaxial Analysts Inc.
 Comsearch Inc.
 Diversified Communications
 Diversified Control Systems
 Dow-Key Microwave Corp.
 Durnell Engineering Inc.
 EPD Electronics Inc.
 Early & Sons Inc.
 Easley Equipment Co. Inc.
 Electrolyn Inc.
 General Electric Co.
 Harris Corp. Video Systems Oper.
 Henkels & McCoy Inc.
 Hitachi Denshi America
 Hughes Communications Inc.
 Ideasonics
 Institute of Electronic Sciences
 Interstate Dropline Installers Inc.
 Jampro Antenna
 L & R Communications Ltd.
 Lemco Engineering
 Lynn Telecommunications Inc.
 MIRA Corp.
 Mich-Com Cable Services Inc.
 Microflect Co. Inc.
 Microwave Filter Co. Inc.
 Oak Communications Inc.
 PECA Inc.
 Phoenix Cable/Lease
 Pro/File Associates
 S.B.M. Communications
 Satellite Systems Engineering Inc.
 Search Associates
 Southern Wood Piedmont Company
 Spectrum Planning Inc.
 Stern Telecommunications Inc.
 Systemhouse Inc.
 System Svcs. Cable Construction Inc.
 TVM Systems Inc.
 Tele-Engineering
 Television Cable Communications
 Tempo Data
 Tempo Enterprises Inc.
 Terra Link Corporation
 Trans Sales International
 Tru-Level Inc.
 U S Television Systems Inc.
 Underground Piercing Inc.
 Vital Industries Inc.
 Vitek Electronics Inc.
 Vibra-King Inc.
 Videotech Services Inc.
 Vital Industries Inc.
 Vitek Electronics Inc.

Power Supplies

Advance Telecom
 Alpha Technologies
 Burnup & Sims Cable Products Group
 C-COR Electronics Inc.
 Cable Power Inc.
 Caplec Corp.

Control Technology Inc.
 Data Transmission Devices Inc.
 Diversified Control Systems
 Electra Motion Inc.
 GNB Incorporated
 Greater Distributing Service Inc.
 Lectro Products Inc.
 Power Conversion Products Inc.
 Power Guard Inc.
 RMS Electronics Inc.
 Siemens Components Inc.
 Siltron Illumination Inc.
 Sola A Unit of General Signal
 Sparks Equipment Co.
 Terado Corp.
 Texscan Corp.
 Triple Crown Electronics Inc.

Services/Repair

ABC Electronic Service
 Arena Systems Inc.
 BK Labs Inc.
 Borson Larry Co.
 Brad Cable Electronics Inc.
 CATV Services Inc.
 Cable AdNet
 Cable Terminal Services Inc.
 Channel One Video Corp.
 Commercial Satellite Systems
 Compu-Trace Inc.
 Comsat Technical Services
 Comsonics Inc.
 Com-Tek
 Cottrell & House Inc.
 DE Gerrity Assoc. CATV Svc. Inc.
 Digi Tel
 Diversified Control Systems
 Fishel Co., The
 Head End, The
 Henkels & McCoy Inc.
 Hoffman & Hoffman Trenching Inc.
 Hughes Aircraft Co. Microwave Comm.
 Incospec Electronics
 Independence Electronics
 Intrastellar Electronics
 Island Cable Electronics
 Lightning Deterrent Corp.
 Linnea Co. Inc.
 MAI Communications Inc.
 Mastercom
 Mich-Com Cable Services Inc.
 Midwest CATV Engineering
 Midwest Corp.
 NCS Industries Inc.
 NSC Electronics
 Northeast Cable Electronics Inc.
 PTS Corp. National Hdqts.
 QRK Electronic Products Inc.
 Quality RF Services Inc.
 RF Analysts Inc.
 RF Distribution Systems
 RT/Katek Communication
 Ro-Com Corporation
 SDI Services
 Sprucer CATV Group
 System Svcs. Cable Construction Inc.
 Technetronics Inc.
 Teletronics - O.L. Inc.
 U S Television Systems Inc.
 Videotech Services Inc.

Suppliers/Supplies

AEG Power Tool
 Andersen Laboratories
 Anixter Communications

Antronix Inc.
 Antsco Corp.
 Arrow Fastener Co. Inc.
 Augat/Broadband Engineering Inc.
 Authorized Parts Co.
 Available Plastics Inc.
 Baltimore Cable Supply Inc.
 Belden Electronic Wire and Cable
 Belmont Satellite
 Brad Cable Electronics Inc.
 Budco Inc.
 CATV Corp. of America
 CF Towers
 Cabletenna Corp.
 Cable Call Corp.
 Cable Link
 Cable Security Systems Inc.
 Cable TV Supply Co.
 Capscan Cable Co.
 Carson Industries Inc.
 Centel Supply Co.
 Channel Master
 Charles Industries-Cable TV Div.
 Chomeric Inc.
 Coil CATV Products Division
 Comsat Technical Services
 Crystal Technology Inc.
 Daburn Electronics and Cable Corp.
 Drop Shop Ltd.
 EM Electronics Inc.
 Federal Telecom Inc.
 General Machine Products Co. Inc.
 Halls Safety Equipment
 Hamlin Internation Corp.
 Holbury Precision Plastics
 ITT Cannon
 ITW Linx
 Interstate Cable Enterprises Inc.
 Jampro Antenna
 Jensen Tools Inc.
 Joslyn Mfg. and Supply Co.
 LRC Electronics Inc.
 Lectro Products Inc.
 Mastercom
 Microwave Filter Co. Inc.
 Midland Metals Corp.
 Midwest Corp.
 P.K. Neuses Inc.
 Panasonic Industrial Co.
 Pierce-Phelps Inc.
 Pirelli Optronic Systems
 Pitts, T.R. Co.
 Preformed Line Products Co.
 Priester Supply Company Inc.
 Production Products Co. Assoc.
 Quality RF Services Inc.
 RF Monolithics Inc.
 RMS Electronics Inc.
 Ripley Company Inc.
 Rosstek Communications Ltd.
 SJC Cable Splicers Inc.
 Sigmacom
 Sigmaform Corp.
 Sola A Unit of General Signal
 Sony Corporation of America
 Sprucer CATV Group
 Standard Communications Corp.
 Supra Key Control Ltd.
 TPC Connectors
 Taikan Co. Inc.
 Tamaqua Cable Products Corp.
 Tapecoat Co.
 Telecrafter Products Corp.
 Telemet Div. of Geotel Inc.
 Toshiba America Inc.

buyers' guide

A.B. Chance Co.

A.B. Chance Co.(314) 682-5521
210 N Allen
Centralia, MO 65240
PERSONNEL: Leif Lomo, President; Jim Mullen, VP/Marketing; Richard Prusiewicz, VP/Sales; Al Knepper, VP/Distributor Relations
DESCRIPTION: Manufacturer of electric utility products.

ABC Electronic Service.....(716) 328-1840
392 Thurston Road
Rochester, NY 14619
PERSONNEL: Ben Fowler, President
DESCRIPTION: Service and repair converters.

AD Systems Inc.....(801) 263-1661
6138 S 380 W
Murray, UT 84107
PERSONNEL: Gerald Van Mondfrans, President; Bob Hall, Vice President
DESCRIPTION: AD Systems manufactures and markets a line of low cost titlers, character generators and ad insertion equipment. AD Systems also sells a line of video program switchers and controls used for sports blackouts, emergency alerts and video loss detection. AD Systems manufactures and markets a broad line of low-cost titlers and character generators which find application as information channels on SMATV systems. The Ad Commander product line provides automatic program control over VCR tape players used to create full signal sound and motion information programs.

AEG Power Tool.....(203) 886-0151
WATS(National).....(800) 243-0870
One Winnenden Road
Norwich, CT 06360
PERSONNEL: Richard Ahrendt, President; Hilmar Matthes, Treasurer/Controller
DESCRIPTION: AEG markets heavy-duty drills, hammer drills, rotary hammers, power screwdrivers, woodworking tools, battery tools, grinders, cut-off machines and metal working tools for the construction industry.



AM Cable TV Ind. Inc.(215) 536-1354
PO Box 505
Quakertown, PA 18951
PERSONNEL: Tom Saldi, President/COO; Maqbool Qurashi, Chairman of the Board; Theodore Kingsley, Treasurer/Financial VP; William Ross, VP/GM Field Services Div.; Philip Verruto, VP/Sales and Marketing
DESCRIPTION: Full turnkey construction including aerial and underground systems engineering involvements—make ready engineering and systems design. E-Com Products multiple addressable services, digital data communications systems, Tier Guard Off-premises, addressable Pay TV Control, Technical monitor and control system for local area networks.

AM Computer Services Corp.....(609) 848-3627
877 Kings Hwy.
Woodbury, NJ 08096

PERSONNEL: Paul Goldy Sr., President; Jake Merriwether, Vice President; Tom Polacek, Vice President
REGIONAL OFFICES: Nine Gallavan Way, Trenton, NJ 08619, (609) 586-1509.
DESCRIPTION: Computerized billing, accounting and management systems for the cable TV office, incorporating order entry, accounts receivable, billing, subscriber base of up to 400,000. Choice of either a self-contained office system, including bills and reports generation; or a single-to-multiple-terminal office system for subscriber record keeping with remote generation of bills and reports. Currently providing on-line computer services for 16 CATV companies and many stand-alone computers coast-to-coast.

AMR Cable Services(817) 540-8511
WATS(National).....(800) 423-8846
Maildrop 1340
PO Box 619285
DFW Airport, TX 75261-9285
PERSONNEL: Kent Arett, President; Lou Pangle, Vice President/Sales
DESCRIPTION: Provide a software package for monthly billing service.

AVA Electronics Corp.....(215) 284-2500
4000 Bridge St.
Drexel Hill, PA 19026
PERSONNEL: Mario Rafalin, Ph.D., President; William Cooper Jr., Sales Manager; Michael Shore, Marketing Director
DESCRIPTION: Manufacturer of F, UHF, BNC, TNC, Twinax, and N connectors, adapters, and cable assemblies.

AVCOM of Virginia Inc.....(804) 794-2500
WATS(National).....(800) 446-2500
500 Southlake Blvd.
Richmond, VA 23236
PERSONNEL: R. Andrew Hatfield, President; Linda Abshire, Sales Manager; Judy Wallace, Sales Specialist
DESCRIPTION: AVCOM manufactures a comprehensive line of high performance satellite receiving equipment and accessories. Additionally, AVCOM manufactures a line of TVRO test equipment featuring the PSA-35 Portable Spectrum Analyzer with accessories to simplify site surveys and TVRO installations.

Abcon Associates Inc.(516) 349-7760
45 Executive Drive
Plainview, NY 11803
PERSONNEL: Michael Zenobio, President; Frank Wedl, Vice President
DESCRIPTION: The design and construction of cable operation facilities, programming facilities, office buildings, etc.

Abiqua International.....(503) 873-4181
417 N Water St.
PO Box 100
Silverton, OR 97381
PERSONNEL: Stu Rasmussen, Sales Manager
DESCRIPTION: Low-cost ad insertion systems and equipment for small cable systems.

Aberdeen Co.....(213) 202-2771
5922 Bowcroft St.
Los Angeles, CA 90016
PERSONNEL: George Acker, President
DESCRIPTION: Manufacturers and distributors of lashing wire and communication hardware.

Advanced Comm. Ind. Inc.



VIDEO INFORMATION SYSTEMS DIVISION

Adams-Russell Co.....(617) 890-5850
WATS(National).....(800) 272-7847
300 Second St.
Waltham, MA 02154
PERSONNEL: John Lynch, President; Trevor Lambert, VP/Video Information Systems; Roger Strawbridge, Project Director
DESCRIPTION: Automated commercial insertion equipment.

Adapt Comm. Supply Co. Inc.....(516) 487-1780
WATS(National).....(800) 232-7826
17 Barstow Road
Great Neck, NY 11021
PERSONNEL: Daniel Pelz, President; Andrea Pelz, Vice President; Leonora Iemmiti, Sales Representative
DESCRIPTION: Distributor of cable television equipment, specializing in: connectors, drop material, cable, enclosures, hardware and tools. We are ADAPTive to your needs!

Adderley Ind. Inc.....(609) 227-8296
1405 Chews Landing Road
Laurel Springs, NJ 08021
PERSONNEL: Herb Adderley, President
REGIONAL OFFICES: PO Box 16030, Philadelphia, PA 19114, (215) 638-1420.
DESCRIPTION: ADDERLEY INDUSTRIES INC. is an installation company operating in the mid Atlantic marketing area with the capability of operating nationwide. We do aerial and underground cable TV installation work, MDU's (Multiple Dwelling Units), as well as Security and CCTV installations. We are a fully owned and certified minority company with excellent credentials.

Advance Telecom.....(602) 998-4441
14405 N Scottsdale Road
Scottsdale, AZ 85254
PERSONNEL: Robert O'Hard, Vice President; Susan Coady, Marketing Manager
REGIONAL OFFICES: 9052 Wonderland Park Ave., Hollywood, CA 90046, (213) 650-4812; 1890 Wise Dr., Napa, CA 94558, (707) 255-2010.
DESCRIPTION: Manufacturers representative for Alpha Power Supplies and other cable related equipment.

Advanced Comm. Ind. Inc.....(813) 873-0660
4206 W Osborne
Tampa, FL 33614
PERSONNEL: Michael Johnson, President; Richard Zahornacky, Vice President; Robert Wilburn, Sales Manager/Texas; Debra Johnson, Sales Manager/Connecticut
REGIONAL OFFICES: 200 Shaw Road, North Branford, CN 06471, (203) 484-2877; 4206 West Osborn, Tampa, FL 33614, (813) 873-0660; 718 6th Ave. E, Bradenton, FL 33508, (813) 746-9853; 12290 49th St. N, Clearwater, FL 33520, (813) 578-0932; 10 Second St. Ye Olde Court House, Dover, NH 03820, (603) 749-1511; PO Box 3220, S Pasadena, CA 91030, (818) 441-5279; 419 Nassa Road 1, Webster, TX 77598, (818) 441-5279; 13777

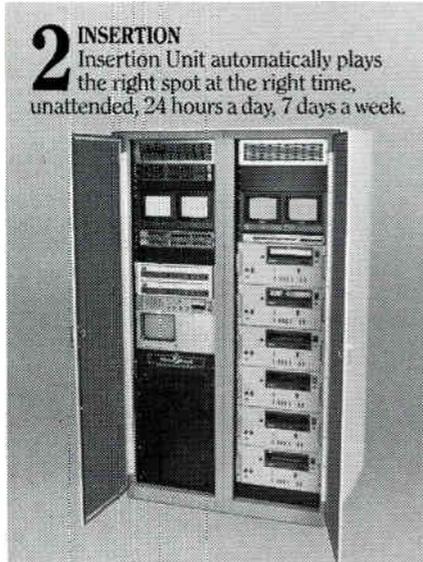
COMPARE!

ONLY ARVIS™ DOES ALL THREE.

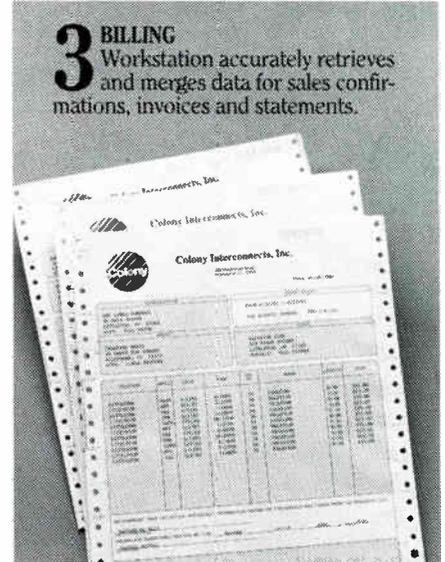
1 TRAFFIC
Workstation programs sales orders
and controls insertion schedules.



2 INSERTION
Insertion Unit automatically plays
the right spot at the right time,
unattended, 24 hours a day, 7 days a week.



3 BILLING
Workstation accurately retrieves
and merges data for sales confir-
mations, invoices and statements.



The complete system for cable advertising.

You get a fourth benefit from ARVIS doing all three.

You get into the profitable business of local cable TV spot sales. And you can do it right away because microprocessor-based ARVIS 7000 Systems are available now. Prices start at \$30,000 on these completely upgradeable systems.

You don't need a big staff with ARVIS. Single-handedly it can bring your advertising performance to industry standards. It's also nice to know that Adams-Russell is a major American Stock Exchange communications company. That means you have no worry about service and support. ARVIS Systems are here to stay.

So, why not do what such leading MSOs as Colony Communications have done? Let ARVIS 7000 Systems do it all for you. Plus put you in the profitable business of local cable TV spot sales.

Why wait? Call the number below today. Get all the facts on ARVIS.

1-800-272-7847

Adams  Russell

VIDEO INFORMATION SYSTEMS DIVISION
1370 Main Street, Waltham, MA 02154

**THE RIGHT SPOT
AT THE RIGHT TIME... EVERY TIME.**



buyers' guide

Advanced Technology Systems Inc.

N Central Expressway, Suite 522, Dallas, TX 75243, (214) 669-0188.
DESCRIPTION: Full coverage of the cable TV industry consulting, customer research, walk off, design, construction. Specializing in multi-unit, and installations. Construction department with full cable TV and telephone overhead and underground services. Complete construction for CATV telephone and interconnect services.

Advanced Technology Systems Inc.(703) 525-2664
 3426 N Washington Blvd.
 Arlington, VA 22205
PERSONNEL: John Renner, President; Henry DeFrancesco, Vice President
DESCRIPTION: Consulting engineers.

Aero Cable Inc.(303) 363-9024
 1405 Florence
 Unit D
 Aurora, CO 80012
PERSONNEL: Dave Sullivan, President; Robert Ducaj, Vice President; Al Baker, Sales Manager
DESCRIPTION: Three functions: 1) consulting to manufacturers, 2) distribute commercial cable equipment to General Instruments, Jerrold, Scientific-Atlanta, among others, 3) system design and installation.

Aero Lift Co.(201) 575-7484
 15 Fairfield Place
 W Caldwell, NJ 07006
PERSONNEL: Peter Bentley, President
DESCRIPTION: Manufacturer of aerial devices and cranes.

Alacrity Cable Collections Corp.(301) 721-2744
 177 Defense Hwy.
 Po Box 3093
 Crofton, MD 21114
PERSONNEL: Susan Hayes, President
DESCRIPTION: Specializing in nationwide recovery of converters, decoders, etc., and past due accounts with very high success in securing reconections.

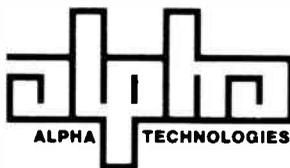
Alcestis Distribution Co.(717) 469-0777
 PO Box 239
 Grantville, PA 17028
PERSONNEL: Joseph Devine, President; Phyllis Devine, General Manager
DESCRIPTION: Manufacturers and distributors of Devine® trailers and accessories. Also Cabeline™ tools and equipment. Parent company is Devine's Machine and Design Inc.

Allied Data Comm. Group Inc.(404) 923-4866
 5375 Oakbrook Parkway
 Norcross, GA 30093
PERSONNEL: J. Randell Hales, President; Thomas Heddoe, Executive Vice President; Don Pisarcik, Vice President Sales & Marketing; Michael Kane, Vice President Finance
REGIONAL OFFICES: 175-U New Boston St., Woburn, MA 01801, (617) 938-0327; 10015 Muirlands Parkway, #E, Irvine, CA 92714, (714) 380-7106; 4800 W 34th St., #D-9, Houston, TX 77092, (713) 681-8509; 4201 48th St., Bladensburg, MD 20710, (301) 864-1711.
DESCRIPTION: Full service local area network engineering contractor—site engineering, design, materials, installation, certification and maintenance.

Allied Steel & Tractor Prod. Inc.(216) 248-2600
 5800 Harper Road
 Solon, OH 44139
DESCRIPTION: Construction tools including underground piercing tools (Hole-Hog), hydraulic impact hammers (Hy-Ram), pneumatic impact hammers (Ho-Ram), rotary hydraulic impact hammers (Rapid-Ram), vibratory compactors/drivers (Ho-Pac).

Allen-Bradley Comm. Div.(313) 973-1500
 555 Briarwood Circle
 Ann Arbor, MI 08105
PERSONNEL: Dennis Gillespie, Vice President/General Manager
DESCRIPTION: Focus primarily on data transfer, cable design, installation, maintenance, etc. Various products for point to point modems, to IBM 3270 terminal multiplexers, also terminal server products to be used as a local area network.

Allen Systems Inc.(713) 943-7213
 WATS(National)(800) 231-2077
 PO Box 33569
 Houston, TX 77233
PERSONNEL: William Cameron, President; William Gordon, Vice President; Ernie Wagner, Vice President
DESCRIPTION: Underground warning tapes. Sell to distributors only.



Alpha Technologies(206) 647-2360
 1305 Fraser St. D-5
 Bellingham, WA 98226
PERSONNEL: Fred Kaiser, President; Bob Bridge, Sales Manager
REGIONAL OFFICES: 7033 Antrim Ave., Burnaby, BC V5J 4M5, Canada, (604) 430-1476.
DESCRIPTION: Manufacturer/Distributor of CATV standby power supplies and status monitoring systems, computer UPS, telephone backup power conversion products.

Altec Ind. Inc.(205) 969-3400
 PO Box 10264
 Birmingham, AL 35202
PERSONNEL: Lee Styslinger Jr., President; Howard Marshall, Vice President/Marketing
REGIONAL OFFICES: PO Box 10264, Birmingham, AL 35202, (205) 969-3400; 2106 S Riverside Road, St. Joseph, MO 64507, (816) 364-2244; PO Box 68308, Indianapolis, IN 46268, (317) 872-3460.
DESCRIPTION: Altec manufactures and distributes utility equipment and bodies, including derricks, aerial lifts and reel lifters. The AT200 29-foot aerial lift features a two-section steel telescopic boom, ideal for CATV work. Also available in 25-foot version. They may be mounted on a chassis with body or van-mounted. The AT200 aerial lift is built rugged and suitable for rebuilding after years of service.

American Cable Contractors(303) 340-4620
 WATS(National)(800) 521-9916

1700 Jasper St.
 Suite C
 Aurora, CO 80011
PERSONNEL: Carl Occhionero, President
DESCRIPTION: Experts in all areas of maintenance and construction for both SMATV and CATV systems. No job too large or too small.

American Communication Installations (ACI)(609) 227-3328
 1405 Chews Landing Road
 Laurel Springs, NJ 08021
PERSONNEL: Joseph Baker III, Executive Partner/GM; Frederic Deitrich, Vice President
REGIONAL OFFICES: 2165 NW 17th Ave., Miami, FL 33142, (305) 326-0582; 190 N Dupont Hwy. #25, Airport Industrial Center, New Castle, DE 19720, (302) 322-0427.
DESCRIPTION: ACI is a cable installation company, operating nationwide. It has a proven track record of excellence in the installation of CATV and SMATV systems. We do aerial and underground installations, as well as MDUs (Multiple Units). We are a company dedicated to professionalism and quality workmanship.

American Earthstations Inc.(503) 222-6000
 0696 SW Bancroft St.
 Portland, OR 97201
PERSONNEL: Norman Hotz, President
REGIONAL OFFICES: 2815 Second Ave., Seattle, WA 98121, (206) 441-3500.
DESCRIPTION: Sell, install and service interactive cable systems along with terrestrial and satellite microwave communications systems.

American Marketing Systems Inc.(205) 821-0745
 621 Stage Road
 PO Box 1389
 Auburn, AL 36831
PERSONNEL: Margaret Cope, Sales Manager
DESCRIPTION: Exclusive distributor of Cable Security Systems Inc. line of high security apartment boxes and locking systems.

American Spliceo Inc.(919) 247-2548
 WATS(National)(800) 334-3968
 PO Box 3367
 Morehead, NC 28557
PERSONNEL: Richard Brakefield, Chairman Of Board; Les Faircloth, President
REGIONAL OFFICES: 4029 W George St., Chicago, IL 60641, (312) 282-8374; 8112 Gatehouse Road, Fairfax, VA 22042, (703) 849-8410.
DESCRIPTION: Project management, engineer for all aspects of CATV construction and maintenance. Full turnkey.

American TV Systems Inc.(216) 425-7000
 1955 Midway Dr. #C
 Twinsburg, OH 44087
PERSONNEL: Joseph Smith, President; Ron Young, Vice President; Pete Johnson, Sales Manager
REGIONAL OFFICES: 2213 E Grandriver, Lansing, MI 48912, (517) 482-6523; Suite 400, Parkview Office Bldg., 10480 Little Patuxent Pkwy., Columbia, MD 21044.
DESCRIPTION: Consulting engineering and technical design turnkey in any area of RF distribution. From headend design to construction of SMATV systems and local area networks. Also stocking distributor for a number of CATV, MATV, Broadcom and satellite TV

buyers' guide

Antsco Corp.

manufacturers.

American TransComm. Inc.(203) 661-7390
80 Field Point Road
Greenwich, CT 06830
PERSONNEL: Howard Hawkins, Chairman;
Robert Button, President; Richard Campbell, Vice
President; Hubert Schlafly, Vice President; Eric
DiSilvestro, Sales Manager
REGIONAL OFFICES: 4250 Perimeter Park S,
Ste. 131, Atlanta, GA 30341, (404) 458-6540.
DESCRIPTION: Management, technical, system,
equipment consultants for cable television,
microwave, and telephone communications
services.

American Trencher Inc.(319) 922-2981
PO Box 266
Delhi, IA 52223
PERSONNEL: Brad Schnittjer, President; Roger
Schnittjer, Vice President
DESCRIPTION: Manufacturer of Tractor/
Loader/Backhoes; attachment trenchers, blades,
backhoes, compactors, loaders; in several sizes.

American Uplinks Inc.(303) 567-4628
WATS (National)(800) 525-9998
WATS (State)(303) 674-8657
PO Box 699
Idaho Springs, CO 80452
PERSONNEL: Tom Sheddan, President; Aimee
Sheddan, Vice President
DESCRIPTION: Transportable satellite uplinks
for concerts, sporting events, news events,
teleconferencing, etc. We can also provide satellite
time, production trucks, downlinks and signal
encryption (scrambling).

American Utility
Construction Inc.(318) 793-2935
LA Hwy. 1 N
PO Box 300
Boyce, LA 71409
PERSONNEL: Delson Ryland, President; Fred
Wilkes, Vice President
DESCRIPTION: Construction of underground
and aerial CATV facilities.

Amperex Electronic Corp.(401) 762-9000
Providence Pike
Slatersville, RI 02876
PERSONNEL: James Robinson, President; R.
Carlin, VP/Sales; H. Hench, Product Marketing
Manager
REGIONAL OFFICES: 8900 N Main Place,
Dayton, OH 45415, (513) 898-9577; 3000 Scott
Blvd., Santa Clara, CA 95054, (408) 727-6132; 129
Morgan Dr., Norwood, MA 02062, (617) 769-6940;
3760 Cahuenga N, Hollywood, CA 91604, (818)
980-4212.
DESCRIPTION: CATV Amplifier Modules,
Linear Wideband Amplifier Modules and Small
Signal RF Transistors.

Amplica Inc.(805) 498-9671
950 Lawrence Dr.
Newbury, CA 91320
DESCRIPTION: Three 7-4, 2 GHz low noise
amplifiers noise temps, from 80 K to 120 K for
CATV and studio quality home use. The
"amplifier" for homesat use 100 K and 120 K
line driver, amplifiers for use with extended cable
use. The "amplifier" for multiple receiver use,
redundant LNA systems and DC blocks. Also a
complete line of eleven 7-12, 2 GHz amplifiers,

with 3.0 dB and 3.5 dB noise figures, gain options
available, from 22 to 40 dB.

Andersen Laboratories(203) 242-0761
1280 Blue Hills Ave.
Bloomfield, CT 06002
PERSONNEL: E. Hodur, President; T. Lewis,
Sales Director; J. Ainley, Ad Manager
DESCRIPTION: I.F. Filters, VSB filters and
delay lines.

Andrew Antenna Co. Ltd.(416) 668-3348
606 Beech St.
Whitby, ONT, L1N 5S2
PERSONNEL: Hugh Swain, President; Dirk
Dejons, Vice President; Alex Mackenzie, Sales
Manager
REGIONAL OFFICES: 120 Holland Ave., Ste.
201, Ottawa, ONT K1Y 0X6, Canada, (613) 728-
7665.
DESCRIPTION: Manufacture ESAs ranging in
size from 1.2 to 12M dia in 4, 4/6 12, 12/14 GHz.
Also special application ESAs as CATV units,
tracking units, polar and transportable trailer
units.

Andrew Corp.(312) 349-3300
10500 W 153rd St.
Orland Park, IL 60462
PERSONNEL: Carl Van Hecke, Sales Manager;
Gary Dorsay, Sales Manager
DESCRIPTION: Andrew is recognized as the
world's leading producer of antenna system
equipment. Products include a complete line of
earth station antennas, CARS band microwave
antennas and related coaxial cables, waveguides,
towers and equipment shelters. Complete field
services including installation and site
construction are available.

Andrews Tower Inc.(817) 831-1222
1420 Layton Ave.
Fort Worth, TX 76117
DESCRIPTION: Engineer, design, fabricate,
deliver, install foundations and erect steel
microwave communication towers for industrial
microwave, educational TV, broadcast (AM/FM/
TV) offshore communications, cable TV systems,
special aluminum designs, system design and
development, tower engineering consultant
service (existing & new designs), microwave
common carrier, tower space rental (southwest)
and system feasibility and appraisals. All towers
are custom manufactured to customer
specifications—we do not stock towers or publish
price list for this reason.



Anixter Comm.(312) 677-2600
4711 Golf Road
Skokie, IL 60076
PERSONNEL: John Pigott, President; John
Egan, Pres. of Comm.; Gordon Halverson, VP/
Comm. Systems Products; Chuck Krone,
Converter Sales Mgr.; Raymond Geraci, VP/
Advertising
REGIONAL OFFICES: 4303 Pleasantdale Road,

Atlanta, GA 30340, (800) 282-8928; 1250
Champion Circle, Carrolltown, TX 75006, (214)
484-2933; 1301 Morse Ave., Elk Grove Village, IL
60007, (312) 640-1156; 1400 Altec St., Unit C,
Anaheim, CA 92805, (714) 778-4414; 312 Richard
Mine Road, Wharton, NJ 07885, (201) 328-0980;
4650 Lake Forest Dr., Blue Ash, OH 45242, (513)
733-9100; 14105 13th Ave. N, Plymouth, MN
55441, (612) 542-1804; 14402 E 33rd Pl., Aurora,
CO 80011, (303) 373-5202; 1125 Orca, Anchorage,
AK 99501, (716) 426-3440; 1105 Schrock #303,
Columbus, OH 43229, (614) 436-1442; 4 Marway
Circle, Rochester, NY 14624.
DESCRIPTION: Complete line of cable TV
products including aerial construction materials,
connectors, descramblers, underground
construction materials, subscriber materials,
satellite receiving antennas, converters and Pay-
TV products, headend distribution, and passive
electronics, coaxial cable, tools and safety
equipment and splicing materials. Anixter also
provides materials management services to the
CATV industry.

Antenna Development
& Manufacturing(314) 686-1484
WATS (National)(314) 785-5988
PO Box 1178
Poplar Bluff, MO 63901
PERSONNEL: James Gowen, President; Ed
Randall, Sales Manager; Ron Rhodes, Systems
Technician; Pat Rains, Advertising Mgr./
Accountant
DESCRIPTION: Manufacturer and distributor of
antennas and earth station systems.

Antenna For Comm. Inc.(904) 687-4121
334 Cypress Road
Ocala, FL 32672
PERSONNEL: William Drouillard, General
Manager
DESCRIPTION: Commercial antennas.

Antenna Technology Corp.(602) 264-7275
1140 E Greenway St. #2
Mesa, AZ 85203
PERSONNEL: Gary Hatch, President; Scott
Grone, Vice President
DESCRIPTION: Manufacturer of the simulsat
multi-beam antenna in 3.3 m, 4.6m, 7m, 10m,
(capable of receiving 30 satellite simultaneously)
versions and parabolic antennas from 1.2m to 32m
in assorted sizes. Distributors of over 200 satellite
and cable related products worldwide. Complete
turnkey satellite headend engineering, installation
crews and MMDS System Design.

Antronix Inc.(201) 251-6482
#2 Tenth Ave.
Monroe Township
Spotswood, NJ 08884
PERSONNEL: Dan Tang, President
DESCRIPTION: CATV set-top converter, block
converters, Pay TV, decoders, descramblers,
amplifiers, outdoor multi-taps, splitters, matching
transformers, attenuator pad, AB switch, wall,
plate, connectors, grounding blocks, pole-line
hardware, apartment house amplifier (U/V/FM),
and other CATV, MATV, MDS active and passive
devices.

Antsco Corp.(818) 355-2510
17 W Sierra Madre Blvd.
PO Box 188
Sierra Madre, CA 91024

buyers' guide

Arena Systems Inc.

PERSONNEL: Ed Rambeau, President/Sales Manager; A. Braun, Vice President
DESCRIPTION: Suppliers for MATV-CATV equipment; satellite TV terrestrial interference filters and traps.

ARENA SYSTEMS INC.

Arena Systems Inc......(215) 630-0320
2118 W Main St.
Norristown, PA 19403
DESCRIPTION: Repair of CATV converters, headend equipment, line equipment. Buy and sell new and used CATV converters.

Armex Cable Corp.....(313) 755-2030
2700 E Nine Mile
Warren, MI 48091
PERSONNEL: Frank Day, President; William Orley, VP/Sales Manager
DESCRIPTION: Manufacturer of coaxial cable connectors. Distributor of drop hardware and drop cable.

Armorcast(714) 630-7500
2900 E LaJolla Road
Anaheim, CA 92806
DESCRIPTION: Manufacturer and distributor of conduit, boxes, bends, pedestals, apt. boxes, vaults and molding.



Arrow Fastener Co. Inc.(201) 843-6900
271 Mayhill St.
Saddlebrook, NJ 07662
PERSONNEL: Allan Abrams, President; Barry Knispel, Vice President
DESCRIPTION: Stapling machines, consisting of staple guns, hammer tackers, plier-type staplers, desk staplers, and staples, fastening system, glue guns, rivet tools.

Artel Comm. Corp.....(617) 752-5690
WATS (NATIONAL)(800) 225-0228
West Side Station
PO Box 100
Worcester, MA 01602
PERSONNEL: Tad Witkowitz, President
DESCRIPTION: Manufacturer of high quality video and audio fiber optic transmission equipment for use in broadcasting, cable TV, CCTV and teleconferencing. Also manufactures equipment for transmission of higher resolution computer graphics signals. Transmission distance is in excess of 3 miles (4.8 km) without the need for equalizers or field amplifiers.

Atlantic Research Corp.(703) 642-4000
5390 Cherokee Ave.
Alexandria, VA 22312
PERSONNEL: William Borten, President; W. Lamm, Executive Vice President; A. Larkins, VP/General Mgr.; A. Turner Jr., Marketing Manager
DESCRIPTION: Provides consulting on franchise specifications, system evaluation, upgrade and rebuild advice, installation evaluation and management, dial access and super band system engineering, site selection, utilities signals and encryption, security systems and special measurement programs, FCC radiation standards and electromagnetic interference and compatibility analysis.

Augat ESP(805) 987-0909
741 Flynn Road
Camirillo, CA 93010
PERSONNEL: Richard Prybyl, General Manager; Eugene Sequeira, Nat. Sales Mgr./Director
REGIONAL OFFICES: 3350 Liliac Dr. N, Golden Valley, MN 55422, (612) 521-1353; 1551 Osgood St., Andover, MA 01845, (617) 975-4177.
DESCRIPTION: ESP manufactures a complete line of automatic interconnection circuit testers, access fixtures that perform open-short, high voltage leakage test, continuity test and resistance measurement on wired products where circuit wiring forms the foundation of interconnect. Product access and test applications include but are not limited to bare P.C. boards, multilayers and thin layers; wired back planes, cable and harness assemblies, ceramic substrates for close center probing, etc.

Augat/Broadband Comm. Group.....(401) 724-4400
701 Naragansett Park Dr.
Pawtucket, RI 02861
PERSONNEL: Roger Wellington, COB, CEO/President; Richard Prybyl, Group Vice President; Bob Goekeler, Sales Manager
DESCRIPTION: Manufacturer of fiber-optic connectors and associated items; also data links and cable assemblies.

Augat/Broadband Engineering Inc.(305) 747-5000
1311 Commerce Lane
Jupiter, FL 33458
PERSONNEL: Bill Ellis, President; Chuck Wise, VP/Engineering; Sherwood Hawley, National Sales Mgr.
DESCRIPTION: Manufacturer of full line of one- and two-way house drop and apartment amplifiers and trunk amplifiers for CATV systems. Also manufactures line of one- and two-way data amplifiers. The leading manufacturer of replacement electronics for upgrading CATV system performance. CATV industries largest independent supplier of replacement components.

Authorized Parts Co(312) 658-0300
200 Berg St.
Algonquin, IL 60102
PERSONNEL: Tom Brannam, Midwest Sales; Gerry LaFountain, East Coast Sales
REGIONAL OFFICES: 146 Berrett St., Schenectady, NY 12301, (518) 374-1113.
DESCRIPTION: Supply converter repair parts and equipment. Buy and sell inventory.

Auto-Gen Electric
Div. of Mercantile(318) 377-0844
316 Dennis Dr.

PO Box 895
Minden, LA 71058
PERSONNEL: Robert Vaughn, President; E. Vickers, Vice President; Jim McDaniel, Sales Manager
DESCRIPTION: Manufacture portable generators, standby generators, voltage regulator, diesel gensets, for the cable TV industry.

Automation Techniques Licensed....(918) 836-2584
WATS(National).....(918) 836-8348
1539 105th E Ave.
Tulsa, OK 74116
PERSONNEL: Denise Thompson, Marketing Director
DESCRIPTION: Manufactures a complete line of satellite receivers and systems for the cable and TVRO industries.

Available Plastics Inc.....(205) 859-4957
5070 Beechmont Dr.
Huntsville, AL 35811
PERSONNEL: Louis Brown, President; Ken Brown, Vice President; Steve Brown, Sales Manager
DESCRIPTION: Manufacturer and supplier of plastic components for underground cable installations including conduit, sweeps, couplings, caps, plugs, cement trailer park pedestals and pulling lubricant.

Avantek Inc./Telecomm. Div.(408) 946-3080
481 Cottonwood Dr.
Milpitas, CA 95035
PERSONNEL: Dr. Brigham, President; Frank Peternell, Sales Manager
DESCRIPTION: Manufactures solid-state components, integrated assemblies for 3, 7-4, 2 GHz TVRO earth stations, including GASS fet preamplifiers (LNAs).

Avtec Industries Inc.....(201) 882-9460
5 Audrey Place
Fairfield, NJ 07006
PERSONNEL: James Gore, President; Sy Miller, Vice President; Donald Jaquin, Sales Manager
DESCRIPTION: Avtec designs, engineers, fabricates, installs and services turnkey audio visual communication systems equipment sales specializing in industrial video projection systems and other specialized communications equipment. Manufactures unique boardroom teleconferencing systems.

Axon Computer Software Ltd.....(604) 988-2900
PO Box 58250 Station L
Vancouver, BC V6P 6E4
PERSONNEL: H. Horsman, President; R. Conarroe, Vice President
DESCRIPTION: K-bil, a subscriber system for cable television, is a comprehensive computer system that provides flexible billing, installation and repair order processing, delinquency analysis and followup, and detailed earned and unearned revenue analysis. The system features subscriber lookup by name, partial name, address, account number, drop number and order number.

BK Labs Inc.....(714) 894-4499
WATS (State).....(800) 843-1306
WATS (National)(800) 233-5122
7231 Garden Grove Blvd.
Suite E
Garden Grove, CA 92641
PERSONNEL: Dale Bock, President; Jeannie

buyers' guide

Bose Associates Inc.

Bock, Vice President; Mack Duncan, Sales Manager; Sally Avila, Purchasing Agent
DESCRIPTION: Full service CATV/MATV electronics repair on studio equipment, VCR, line equipment, test equipment, headend equipment, converters, Alpha Technologies Power Supplies (authorized warranty repairs) and Hughes Klystron Power Supplies repair (including "MOD B" upgrades).

B-Line Construction(704) 649-2853
 75 Ammons Branch Road
 Marshall, NC 28753

PERSONNEL: Bobby Ballard, Owner
DESCRIPTION: Installation of underground cable television, buried house drops and aerial house drops. Also do system audits, trap installation, weather proof (drop connectors), underground horizontal boring (any size).

B & W CATV Construction.....(815) 498-3505
 730 Myrtle Court
 Sandwich, IL 60548

PERSONNEL: Bruce Barragree, Partner; Jim Watson, Partner
DESCRIPTION: Construct cable TV systems.

B-Con Construction Co. Inc.....(318) 688-5200
 361 Mt. Zion Road
 Shreveport, LA 71136

PERSONNEL: Raymond Boyd, President
REGIONAL OFFICES: 310 Range Road, Garland, TX 75040, (214) 276-3954; 915 W Grant, Tucson, AZ 85745, (602) 628-9583.
DESCRIPTION: Full capabilities for overhead and underground CATV construction and installations and rebuilds.

Baltimore Cable Supply Inc.(301) 792-8466
 5830 Jonquil Ave.
 Baltimore, MD 21215

PERSONNEL: Calvin Wofford, President; Gloria Wilson, Vice President; B. Parker, Sales Manager
DESCRIPTION: MBE. Supplier of CATV products and accessories; coaxial cable, pole line hardware, drop material, tools and safety equipment. We fulfill all your CATV needs.

Barker CATV Construction Inc.(817) 295-0454
 145 N Wilson
 Burleson, TX 76028

PERSONNEL: James Barker, President
DESCRIPTION: Offers CATV construction. Includes: system activation, sweep and proof of performance, and total turnkey construction service.

Belden Electronic Wire and Cable.....(317) 983-5200
 PO Box 1980
 Richmond, IN 47375

PERSONNEL: Roger Cornett, Vice President; Bill Donahoe, Sales Manager
REGIONAL OFFICES: 100 Pennsylvania Ave., Suite 450, Framingham, MA 01701, (617) 872-7846; 2955 E Main St., Suite 300, Irvine, CA 92714, (714) 474-1200; 2625 W Butterfield Road, Suite 108E, Oak Brook, IL 60521, (312) 789-0800; 14651 N Dallas Pkwy., Suite 144, Dallas, TX 75240, (214) 788-4300; 2175 Parklake Dr., Suite 120, Atlanta, GA 30345, (404) 934-6767.
DESCRIPTION: Complete line of coaxial drop cables for CATV industry.

Belmont Satellite(512) 875-9211
 Highway 183 North

Luling, TX 78648

PERSONNEL: David Moore, President; Stanley Biggs, General Manager; Louise Fritch, Sales Manager
DESCRIPTION: Sales and construction of major brand equipment. Examples: Stardish, Chaparral, DX, Triple Crown, Cadco, Jerrold, General Instruments and Northsat.

Benner-Nawman Inc.....(707) 746-0500
 WATS(National).....(800) 851-4043
 3070 Bay Vista Court A-1
 Benicia, CA 94510

PERSONNEL: William McKenna, President; E. Kientz, Vice President; J. Keely, Sales Manager
REGIONAL OFFICES: 12375 SE Main, Portland, OR 97233, (503) 254-6447; 517 Pinewood Lane, Los Gatos, CA 95030, (408) 374-4933; 122 N Arden Blvd., Los Angeles, CA 90004, (213) 466-5787; 95 Navaho Trail, Pine, CO 80470, (303) 838-4758; 210 N Sleight, Naperville, IL 60540, (312) 355-6777; 1316 Sumar Road, Birmingham, AL 35213, (205) 591-1459; 12260 Herold Dr., N Huntingdon, PA 15642, (412) 864-0414; 2778 Hargrove Road #379, Atlanta, GA 30080, (404) 434-6117; 310 N Greene Ave., Lindenhurst, NY 11757, (516) 884-6684.

DESCRIPTION: Benner-Nawman manufactures termination and distribution service cabinets and specialty tools. These products are sold through national CATV distributors.

Bethlehem Tower Works(501) 741-1581
 WATS(National).....(800) 551-0025
 Rt #1

Box 220-AA
 Omaha, AR 72662
PERSONNEL: Bud Morrow, Owner
DESCRIPTION: Manufacturers and erectors of broadcast, CATV, microwave and cellular telephone towers and associated products.

Biddle Instruments(215) 646-9200
 510 Township Line Road
 Blue Bell, PA 19422

PERSONNEL: R.E. Voeks, Advertising Manager
DESCRIPTION: Digital TDR radar cable test set. Use for detecting defective connectors, kinks, and bends—also return loss, attenuation loss and impedance mismatches which can be calculated or read directly from a millirho/division scale. On control cables, the test set will locate shorts, opens, taps, connectors, water in cable, and impedance mismatches. In low end range, test set uses pulse width of only 2 nanoseconds to provide a resolution of less than 1 inch. Standard features include battery with built-in charger, built-in memory and padded carrying case. Weight: 16 1/2 lbs.

Bigham Cable Construction Inc.....(904) 932-6869
 PO Box 903
 Gulf Breeze, FL 32561

PERSONNEL: Harold Bigham, President; Herb Biddle, Vice President
REGIONAL OFFICES: 738 NW Renfro, Burleson, TX 76028, (817) 447-1960.
DESCRIPTION: Need your system rebuilt, upgraded, or new build, call: Bigham Cable Construction Inc.

Birchwind Infosystems Ltd.(519) 925-3897
 RR4
 Shelburne, ONT L0N 1S0 Canada
PERSONNEL: Keith Thompson, President

DESCRIPTION: Birchwind offers a number of data processing services. These include cable TV billing and A/R software, service bureau operations, systems consulting, records management, automated document image storage and retrieval.

Biro Engineering.....(609) 883-9866
 Box 2175
 Princeton, NJ 08543

PERSONNEL: Steven Biro, President; Judith Biro, Vice President
DESCRIPTION: Consulting engineers for the CATV industry, performing engineering appraisals of CATV systems, annual FCC proof of performance tests and measurements, TVRO installation proofs and troubleshooting, on-site terrestrial microwave interference measurements and small earth-station placement, off-air TV signal surveys, computerized FM frequency coordination studies, computer printed, computer calculated antenna-array designs.

Blonder-Tongue Laboratories Inc....(201) 679-4000
 One Jake Brown Road
 Old Bridge, NJ 08857

PERSONNEL: Issac Blonder, Chairman of the Board; Ben Tongue, President; Daniel Altieri, Vice President; Glen Tongue, Vice President; Ed Curreri, Sales Manager
DESCRIPTION: Full line of pre-fabricated headends, antennas, downconverters, earth station receivers, low noise amplifiers, channel converters, modulators, demodulators, power supplies, off-premise systems, scramblers, encoders, audio processors, signal processors.

Bogner Broadcast Equipment Corp.(516) 997-7800
 603 Cantiague Rock Road
 Westbury, NY 11590

PERSONNEL: Leonard King, President
DESCRIPTION: Manufacturers of MDS, MMDS transmit antennas (2150-2163, 2500-2690 MHz).

Border Cable Construction Co.....(915) 581-9724
 730 Montclair Dr.
 El Paso, TX 79932

PERSONNEL: Michael Harris Jr., Owner; Joann Harris, Co-owner
DESCRIPTION: Complete CATV and telephone construction, aerial and underground. Rebuilds, make-ready and wreck-out. SMATV construction, operation, and management. Manufacturing of specialized tools for CATV construction—cable trailer reel brakes.

Borson Larry Co.(213) 697-6852
 9461 Canfield Dr.
 La Habra, CA 90631

PERSONNEL: Larry Borson, President
DESCRIPTION: Repair general machine cable lashers. Distribute aerial construction tools and trailers.

Bose Associates Inc.....(609) 429-3170
 422 Lavender Hill Dr.
 Cherry Hill, NJ 08003

PERSONNEL: Swapan Bose, President; D Guha, Vice President
DESCRIPTION: Engineering and management services for the CATV and SMATV industry.

buyers' guide

Brad Cable Electronics Inc.



Brad Cable Electronics Inc......(518) 382-8000
WATS(National).....(800) 382-2723

1023 State St.
 PO Box 739
 Schenectady, NY 12301
PERSONNEL: Ben Price, President; James D'Allaird, Vice President/Operations; Robert Price, Senior Vice President; Richard Koonz, Sales Manager
REGIONAL OFFICES: 4630 Pacific Hwy. E, Fife, WA 98424, (206) 922-9011; 9325 Bay Plaza Blvd., Suite 209, Tampa, FL 33619, (813) 623-1721; Hwy 19, Old Socco Road, Cherokee, NC 28719, (704) 497-5314.
DESCRIPTION: Converter service for most major brands including Jerrold and Oak addressable. CATV equipment repair. Converter sales of new and refurbished units.

Warren L. Braun,
 Div. of Comsonics.....(703) 434-5965
 PO Box 1106
 Harrisonburg, VA 22801
PERSONNEL: Warren Braun, P.E., President; Richard Shimp, Director; Glenn Shomo, P.E.; Donn Meyerhoeffer, P.E.
DESCRIPTION: Consulting services in CATV, microwave, closed circuit and industrial TV, industrial electronic control systems, telecommunications systems, sound systems, sound systems design and acoustics, R & D in each of the above fields.

Broadband Comm. Inc.....(212) 486-0010
 375 Park Ave. #3701
 New York, NY 10152
PERSONNEL: Irving Kahn, Chairman/President; Linda Brodsky, Vice President/Public Relations
DESCRIPTION: Consultant, owner and negotiator.



Broadband Engineering Inc......(305) 747-5000
WATS(National).....(800) 327-6690

1311 Commerce Lane
 Jupiter, FL 33458
PERSONNEL: William Ellis, President; Leo Wise, Vice President/Engineering; Sherwood Hawley, National Sales Manager; Don Donahue, Manufacturing Manager
DESCRIPTION: Manufacturer of apartment and house drop amplifiers, trunk amplifiers, headend amplifiers, line extenders, data network amplifiers. Replacement electronics for upgrading

existing systems. Distributor of CATV replacement components.

Budco

Budco Inc......(918) 252-3420
WATS(National).....(800) 331-2246

PO Box 3065
 Tulsa, OK 74101
PERSONNEL: David Allen, Sales Manager
DESCRIPTION: Taplocks, single digit tags, panel tags, marking and identification products, barrel locks and retrofitting devices. Lemco distributor—Lemco is a manufacturer of construction and installation equipment for the CATV industry.

Burkeen Manufacturing Co.....(601) 895-4150
WATS(National).....(800) 647-9824
 11200 High Point Cove
 Olive Branch, MS 38654
PERSONNEL: Jim Burkeen, President; Betty Burkeen, Vice President; Charles Skaggs, General Manager; Jim Coleman, Sales Manager
DESCRIPTION: B-30 cable plow, trencher and borer attachments, trailers, plow blades and boring accessories.



**BURNUP & SIMS
 CABLE PRODUCTS
 GROUP COMPANY**

**Burnup & Sims Cable
 Products Group**.....(201) 462-8700
WATS(National).....(800) 222-5388

Halls Mills Road
 PO Box 36
 Adelphia, NJ 07710
PERSONNEL: Nick Caporella, President; Kevin Lynch, VP/GM Capscan; Mike Filkins, VP/GM Lectro; Steve Wagner, VP/Sales & Marketing
REGIONAL OFFICES: Six Wildwood Court, Oroville, CA 95965, (916) 533-9290; PO Box 216, Channing, MI 49815, (906) 542-6231; 371 Higherest Dr., Milford, NJ 07480, (201) 838-8178; 8000 E Prentice, Suite C-5, Englewood, CO 80111, (303) 694-6446; 511 Burland Dr., Bailey, CO 80421, (303) 838-6584; 8392 Tulipwood Circle, Westminster, CA 92683, (714) 893-1217; 1235 Tolland Stage Road, Tolland, CT 06084, (203) 875-8805; 14521 Locust, Olathe, KS 66062, (913) 782-4309.
DESCRIPTION: Manufacturer of coaxial cable—Capscan. Manufacturer of power supplies—Lectro.



Business Systems Inc......(803) 297-9290
WATS(National).....(800) 424-0101

One Marcus Dr.
 Greenville, SC 29615
PERSONNEL: Larry Edwards, President; Jack Sunderman, Vice President/Sales; Jann Ratts, Vice President/Communications
DESCRIPTION: In house, real-time computerized billing and management system featuring an interface to addressable converters and taps. Also standalone pay-per-view automation system including complete ANI interface capabilities.

Bycom Corp.(404) 953-8338
 150 Interstate N Pkwy.
 Suite 300
 Atlanta, GA 30339
PERSONNEL: James Kanely, President; Eddie Brooks, Vice President/Operations
REGIONAL OFFICES: 2150 W Union, Englewood, CO 80110, (303) 781-1779.
DESCRIPTION: Used CATV inventory for sale.

C-2 Utility Contractors.....(503) 741-2211
 PO Box 683
 Eugene, OR 97440
PERSONNEL: Curtis Saunders, President; M Scott Saunders, Secretary/Treasurer
DESCRIPTION: Underground and aerial TV and telephone line installations.

C & P Communications Corp.....(515) 262-5833
 3600 E 40th St.
 Des Moines, IA 50317
PERSONNEL: Chuck Ponxs, President/GM
DESCRIPTION: Residential installations, apartment pre/post wiring, specializing in highrise dwellings, internal or external, trappings, system audits, underground construction, drop bury services and drop rebuilds.

C & S Construction Inc.(412) 935-1553
 PO Box 260
 Northgate Dr.
 Warrendale, PA 15086
PERSONNEL: William Summers, President; John Costick, Vice President; Richard Piltz, Sales Manager
DESCRIPTION: C & S Construction Inc.

C.S. Communications Inc.(703) 560-0080
 2929 Eskridge Road
 Fairfax, VA 22031
PERSONNEL: Charles Sampson, President; Earl May, Sales Manager
DESCRIPTION: Engineering company doing frequency coordination, system design, engineering and economical feasibility studies and CATV and satellite system engineering services. Engineering services including computer software to the cable and TVRO industry. PC programs include TI analysis and subscriber management and billing systems.

buyers' guide

CSE Technologies

CADCO Inc......(214) 271-3651
2706 National Circle
Garland, TX 75041
PERSONNEL: W Barnhart, President; Jeanette Magee, Vice President; Bill Smith, Sales Manager
DESCRIPTION: Manufacturer of headend equipment for both CATV and SMATV.

CAM Industries.....(717) 637-5988
215 Philadelphia St.
Hanover, PA 17331
PERSONNEL: C.A. McGough Jr., President; D.L. Raubenstine, Sales and Service
DESCRIPTION: Provide electric motor-shop repair equipment. Manufacturer truck mounted aerial ladders. Manufacture #216 aerial lifts.

CAN-AM Construction Inc......(714) 988-5507
1265 W Brooks St.
PO Box 1532
Ontario, CA 91762
PERSONNEL: Ronald Pierce, President; Keith McCartney, Vice President
DESCRIPTION: Complete aerial and underground construction.

CASAT Technology Inc......(603) 880-1833
6 Northern Blvd.
Unit 5
Amherst, NH 03031
PERSONNEL: Hong Yu, President; Sai Kwok, Vice President
DESCRIPTION: CASAT Technology Inc. is an innovative telecommunications and data communications equipment manufacturer. Present products include splitters, frequency synthesized modulators, active combiners, hot-standby redundancy switch, solid state A/B switches and FM stereo block converters. CASAT Technology Inc. also provides OEM subcontracts.

CATECH Co. Inc......(303) 433-0877
5132 W 26th Ave.
Denver, CO 80212-1312
PERSONNEL: Dildine LyBarger, President; Linda Miller, Vice President; George Sedelmeier, Sales Manager; Howard Ohlson, Sales Manager
REGIONAL OFFICES: 3840 Portola, Santa Cruz, CA 95062, (408) 479-9230.
DESCRIPTION: A cable TV contracting company, offering services in residential and commercial installation, construction, design and turnkey build.

CATEL Telecommunications.....(415) 659-8988
4050 Technology Place
Fremont, CA 94537
PERSONNEL: Frank Genochio, Vice President; George Benton, Vice President/Sales; Wendell Woody, Field Sales Manager; Ron Jones, Eastern Sales Manager; Don Wyckoff, Western Regional Manager
REGIONAL OFFICES: 1900 Erie, Suite 203, Kansas City, MO 64116, (816)474-4289; 4 Wheeler Terrace, Marietta, NY 13110, (315) 636-8488.
DESCRIPTION: Catel supplies multichannel FDM, bi-directional (2-way) single mode fiber optic systems; FM stereo processing system with both agile modulator and off-air processors; stereo TV transmission system with TV stereo generator and TV modulator and processors; PC controlled headend modulator system; agile TV and demodulator.

CATV AMIC Co.....(615) 359-4051
PO Box 748
Lewisburg, TN 37091
PERSONNEL: John Gillespie, President; Jack Gillespie, Vice President; Mel Jenkins, Vice President; Greg McGee, Sales Manager; Cliff Hornketh, Sales Manager
DESCRIPTION: Auditing, marketing, installations, construction. Converter installations.

CATV Corp. of America.....(617) 374-0553
WATS(National).....(800) 343-8234
PO Box 87
Atkinson, NH 03811
PERSONNEL: John Millard, President; Tom Quinlan, Sales Manager
DESCRIPTION: Cable grip brand coaxial cable connectors.

CATV Design Associates Inc......(512) 444-2461
PO Box 33010
Austin, TX 78764
DESCRIPTION: Computer aided new and rebuild design, as-built mapping, strand mapping drafting services, equipment evaluations, and onsite consultations.

CATV Services Inc......(415) 651-4331
WATS(National).....(800) 227-1200
WATS(State).....(800) 223-3152
3270 Seldon Court #5
Fremont, CA 94539
PERSONNEL: Richard Richmond, President; Maria Bogakos, General Manager
DESCRIPTION: Distributor of cable TV products. Specializing in repair and sales of reconditioned electronics. Authorized west coast Wavetek repair facility.



**CATV
Subscriber
Services, Inc.**

CATV Subscriber Services Inc......(919) 273-5553
108 State St. #102
Greensboro, NC 27408
PERSONNEL: Raymond Galtelli, President; Josephine Galtelli, Vice President; G. Haisman, General Manager
DESCRIPTION: Providing full-service capability for mapping, design/engineering, construction, marketing, installation and consultation on individual or turnkey contracts basis. Providing professional results in marketing for both new and remarket campaigns, and in both aerial and underground construction.



C-COR Electronics Inc......(814) 238-2461
WATS(National).....(800) 233-2267

60 Decibel Road
State College, PA 16801
PERSONNEL: Richard Perry, President/CEO; Jack Andrews, VP/Finance-Treasurer; Mark Robertson, VP/Operations & Manufacturing; John Hastings, Manager Cable TV; Arthur McGuire, VP/Sales & Marketing
REGIONAL OFFICES: 4938 Dana Dr., Kennesaw, GA 30144, (404) 928-6922.
DESCRIPTION: Manufacturer of distribution amplifiers, main line passives, terminal products and power supplies for cable TV systems and local area networks.

**CE&S Collier
Engineering & Support**.....(301) 948-5931
PO Box 5086
Laytonsville, MD 20879
PERSONNEL: Richard Collier, President; Terry Collier, Vice President
DESCRIPTION: Construction consultants specializing in design for buildability and construction supervision. Proof of Performance Testing. RF systems for CATV, SMATV and local area networks.

CF Towers.....(812) 423-8017
4902 N St. Joseph Ave.
Evansville, IN 47712
DESCRIPTION: Manufacturer of guyed and self support towers for CATV, microwave and two-way communication. All tower accessories and installation crews.

COM-TEK.....(415) 785-4790
28310 Industrial Blvd. #H
Hayward, CA 94545
PERSONNEL: Nick Ferolito, Owner/Sales; Russell Brown, Owner/Sales; Darrell Rance, Sales; Tom Robinson, Sales
REGIONAL OFFICES: 21688 SW Klickitat Court, Tualatin, OR 97062, (503) 692-6669; Regional Repair Facility, Sadellia, MO 65301, (816) 826-3011.
DESCRIPTION: COM-TEK buys and sells new and used surplus equipment for CATV and SMATV. Also are a complete repair facility. Manufacturer's representative for Standard Communications, Quality RF Services, ISS Modulators, Mult-Link and others.



CSE Technologies.....(612) 354-2081
Box 308
100 W Central
New London, MN 56273
PERSONNEL: Curtis Sampson, President; Wendell Dietrich, Vice President; Don Carley, Sales Manager
REGIONAL OFFICES: 719 Swift St. B12, Santa Cruz, CA 95060, (408) 429-1857.
DESCRIPTION: CSE Technologies manufactures cable lashers and aerial plant placement equipment.

buyers' guide

CWY Electronics



CWY Electronics(317) 448-1611
WATS(National)(800) 428-7596
WATS(State)(800) 382-7526

405 N Earl Ave
 PO Box 4519
 Lafayette, IN 47903
PERSONNEL: William Whiteley, President;
 Terry French, Vice President; Wendell Whitaker,
 Sales Manager
REGIONAL OFFICES: 337 Norborne, Dearborn
 Hts., MI 48127, (313) 562-4982; 5320 Lobo Dr.,
 Indianapolis, IN 46237, (317) 786-8420.
DESCRIPTION: Manufacturer of metal products
 including equipment racks, security enclosures,
 pedestals and accessories. Distributors of
 electronic, mechanical components and products
 to the industrial and cable type industries.
 Manufactures representative for select brands
 regional area.

CZ Labs(914) 947-1554
WATS(National)(800) 423-2322

55 Railroad Ave.
 PO Box 95
 Garnerville, NY 10923
PERSONNEL: Harry Zipkin, President; Steven
 Zipkin, Vice President; Keith Scott, Sales
 Manager
DESCRIPTION: Since 1959, CZ Labs has been a
 manufacturer of quality cable and connectors and
 miscellaneous hardware for the CATV, SMATV
 and other related industries. As a small
 manufacturer, we try to provide materials at a
 reasonable price for the small systems installer as
 well as large contractors.

Cable AdNet(215) 296-9000

350 Technology Dr.
 Suite #1
 Malvern, PA 19355
PERSONNEL: Wayne Bullock, President; Robert
 Bower, Vice President; Scott Torres, Dir. of
 Engineering; Kip Cozart, Dir. of Production;
 Frank Iacona, Dir. of Bus. Dev./Operations
DESCRIPTION: Cable AdNet is an independent
 turnkey operator representing over 1.4 million
 cable subscribers nationwide for the purpose of
 local, regional and national cable advertising sales.
 In addition, Cable AdNet provides commercial
 insertion equipment to the more than 100 cable
 systems it represents; both MSO and single
 system operators. Cable AdNet also provides low-
 cost, high quality commercial production for its
 advertising clients in each of the markets it
 represents. Cable AdNet has offices in major U.S.
 cities including: Philadelphia, St. Louis, San
 Francisco, Charlotte and Pittsburgh.

Cable Call Corp.(301) 363-3000

10324 S Dolfield Road
 Owings Mills, MD 21117
PERSONNEL: Barry Dennis, President
DESCRIPTION: Security systems, wireless RF

systems for subscribers including master
 receivers, transmitters and accessories, low cost
 turnkey program for operators, monitored and
 nonmonitored. New low cost leasing program
 available for operators of CATV/MATV/DBS,
 satellite systems. Video signal switchers,
 electronic low-loss, high isolation subscribers.
 Stereo synthesizer/TV to stereo adapters for
 subscribers. Amplifiers, 10, 20 db amplifiers
 including power transformers for subscribers.
 Also 60, 72, 111, & 140 channel tunes/converters,
 all wireless remote control.

Cable Comm. Scientific Inc.(317) 326-2601

5011 Fortville Pike
 Greenfield, IN 46140
PERSONNEL: John Shaw, President
REGIONAL OFFICES: 13783 Hanover Way,
 Apple Valley, MN 55124, (612) 431-7636; 28310
 Industrial Blvd., Ste. H, Hayward, CA 94545,
 (415) 785-4790; 8120 Knue Road, Ste. 106,
 Indianapolis, IN 46250, (317) 849-7572; PO Box
 768, 58 Robert St., Freeport, NY 11520, (516) 867-
 2137; 2917 Oak Forest Dr., Grapevine, TX 76051,
 (817) 481-1766; 6111 Porter Way, Sarasota, FL
 33582, (813) 371-3444, (813) 371-3447.
DESCRIPTION: National test equipment
 distributor to the cable communications
 industries.

Cable Constructors Inc.(906) 774-6621

105 Kent St.
 Iron Mountain, MI 49801
PERSONNEL: James Klungness, President;
 James Brandt, Vice President; John Jamar,
 Project Engineer; Robert Knoke, Chief Operating
 Officer
DESCRIPTION: CATV construction,
 engineering, design and mapping.

Cable Consultants Inc(404) 761-0854

PO Box 441
 East Point, GA 30364
PERSONNEL: Gregory Bostwick, President;
 Michael Jones, Vice President; Mike Sullivan, Vice
 President; Cecil Halbert, Engineer; Will Valentine,
 Engineer
DESCRIPTION: Engineering and construction
 firm serving the communications industry.
 Engineering services: design, strand mapping,
 make ready and drafting. Construction services:
 aerial construction, underground construction,
 conduit construction, fiber optic installation,
 multi-unit construction, earth station and headend
 installation.

Cable Converter Service Corp.(812) 829-4833

54 E Market St
 PO Box 407
 Spencer, IN 47460
PERSONNEL: John Wright, President
DESCRIPTION: Full service repair facility for
 CATV equipment including converters, line
 equipment and headend equipment. Repairs Oak,
 Jerrold, Scientific-Atlanta, TCOM, RCA,
 Hamlin, Sylvania, Theta Com, Texscan, Pioneer
 and more. Sales of refurbished converters.
 Excellent turn-around. Locations nationwide.
 Main office Spencer, Indiana.

Cable Craft Inc.(312) 226-0473

1430 Minra St.
 Des Plaines, IL 60016
PERSONNEL: Howard Williams, President
DESCRIPTION: Contractor: Installation, MDU,

underground. National coverage.

Cable Engineering Inc.(502) 589-2848

WATS(National)(800) 626-2715
 1615 Mellwood Ave
 Louisville, KY 40206
PERSONNEL: Phillip Lacy, President; Terry
 Johnson, Vice President
DESCRIPTION: Cable TV contractors and
 engineers.

Cable Exchange(303) 694-6789

WATS(National) 950-1088CABLEX
 PO Box 4094
 Englewood, CO 80155
PERSONNEL: Harold Bjorklund, President/Sales
 Manager; Esther Lacy, Vice President
DESCRIPTION: Equipment and services
 brokerage for new or used excess CATV,
 broadcast or computer hardware or software.
 VAR for ITT Personal Computer systems.
 Authorized Magnavox distributor.



Cable Link(614) 221-3131

280 Cozzins St.
 Columbus, OH 43215
PERSONNEL: E. Jack Davis, President; Bill
 Holehouse, Sales Manager; Stan Smith, Sales
 Rep.; Scott Heeter, Sales Rep.; Fritz Juskalian,
 Sales Rep.
DESCRIPTION: Sales of new and refurbished
 converters, distribution electronics, passive
 devices and hardware. Large, centrally located
 facility for converters, distribution electronics
 headend and test gear.

Cable Lock Connectors Ltd.(416) 741-7678

TELEX06-986766
 4272 Weston Road
 Weston, ONT M9L 1W9 Canada
PERSONNEL: Carl Watzeck, President/General
 Manager
DESCRIPTION: Manufacturers of cable
 connectors, fittings for CATV and MATV
 applications.

Cable Man Inc.(601) 374-5832

PO Box 393
 Biloxi, MS 39533
PERSONNEL: David Gary, President; Walter
 Gary, Vice President
DESCRIPTION: A cable construction aerial
 underground service.

Cable Management Associates(313) 525-1045

33455 W Warren Road
 Westland, MI 48185
PERSONNEL: Dennis Fassett, President; Joan
 Horn, Vice President; William Masterson, Sales
 Manager
DESCRIPTION: Government and private sector
 CATV technical and management consulting
 services. Community relations, video
 programming, access programming,
 communications and CATV system management

buyers' guide

CableData

contract services.

Cable Operators Protection Services Inc. (C.O.P.S.).....(602) 827-1483
165 E Southern Ave.
Suite 101
Mesa, AZ 85202
PERSONNEL: Robert Boucher, President
DESCRIPTION: C.O.P.S. offers comprehensive audit services and conversion programs. Retention and theft of service prevention programs are offered. All services feature uniformed audit and conversion personnel with identification vehicle. Education programs plus assistance with amnesty and prosecution cases. Acquisition audits.

CABLE POWER INC.

America's largest cable repair company

Cable Power Inc......(206) 882-2304
14860 NE 95th St.
Redmond, WA 98052
PERSONNEL: Charles Evans, President; Werner Krajicek, Vice President
REGIONAL OFFICES: 601 Fairway Dr., Deerfield Beach, FL 33442, (305) 429-0870, (800) 824-4332.
DESCRIPTION: Manufacturer of all types of power supplies.

Cable Prep/Ben Hughes
Comm. Prod. Co.(203) 526-4337
207 Middlesex Ave.
PO Box 373
Chester, CT 06412-0373
PERSONNEL: Deborah Morrow, President; David Morrow, Vice President
DESCRIPTION: Manufacturer of Cable Prep Tools. Product line includes Hex Crimp Tools, Coring Tools for cables sized .375 through 1.000. Stripping/coring tools for all major cables (included are Cable Flex, Times Fiber, and Quantum Reach Series tools). Accessory tool items available. Products are sold through major distributors. Call or write for information.

Cable Security Systems Inc.(205) 821-0745
621 Stage Road
PO Box 2066
Auburn, AL 36831
PERSONNEL: Curt Cope, President; Mike Springer, Sales Manager
DESCRIPTION: Manufacturers of The Beast™ high security apartment boxes. Eliminates theft of service. Reduces maintenance. OPTIONS: QUICK RACK-Organizes box by separating and identifying subscriber leads. PERFORATED MOUNTING PLATE-Restriction free installation box mounts over plate after wiring. CONTRACTOR LOCK AND RESTRICTED KEYWAY - Complete key control. WE BUILT BETTER BOXES. Distributors of U-guard, Gould-GNB batteries. Sell padlocks.



Cable Services Co. Inc.(717) 323-8518
WATS(National)(800) 233-8452
WATS(State)(800) 332-8545
2113 Marydale Ave.
Williamsport, PA 17701-1498
PERSONNEL: John Roskowski, President; George Ferguson, Vice President; John Kurpinski, Dir. of Marketing; Harry Wahl, Turnkey Administrator; Barry Siegfried, Account Executive
DESCRIPTION: Complete turnkey supply & construction including pole walking, strand mapping, design, engineering and installations both aerial and underground. Stocking distributor of most all major manufacturers, plus on premise repair facility.

Cable Systems Design Group Inc.(202) 737-2306
1301 Pennsylvania Ave. NW #200
Washington, DC 20004
PERSONNEL: Archer Taylor, President; Jonathan Ingram, General Manager
DESCRIPTION: Computer-aided cable TV system design for both new and rebuild systems, as-built survey specialists, CableGrid 2000 computerized drafting system, engineering and planning assistance to the telecommunications industry.

Cable System Survey Co(302) 368-2436
17 Peddler's Row
Newark, DE 19702
PERSONNEL: Thomas Tetreault, President
DESCRIPTION: The company provides technical services to cable television operators, vendors and contractors seeking to build or rebuild CATV systems. Some of the services the company provides include strand mapping, make ready surveys, as built mapping, base map systems, a full line of drafting and graphic services, computer aided design, house counts, tap audits and other specialized technical services and/or consultations.

Cable TV Contracting(816) 966-1736
9321 Fairwood Dr.
Kansas City, MO 64138
PERSONNEL: Ken Hathorn, Owner
DESCRIPTION: Design, construction, splicing activation, prewiring and postwiring.

Cable TV Installations Inc.(713) 686-6880
5891 W 34th St.
Houston, TX 77092
PERSONNEL: Jack Martin Sr., Chairman of the Board; John Reed, President/Sales Manager; Dana Martin, Vice President; Kenny Mrnustik, VP/Construction; David Pickartz, VP/Technical Operations
DESCRIPTION: Complete construction services including aerial construction, underground construction, splicing, drop installation, apartment wiring, and complete system turnkey services.

Cable TV Supply Co.(213) 202-2700
5922 Bowcroft St.
Los Angeles, CA 90016
PERSONNEL: George Acker, Chairman; Mark Engler, President; William Krempasky, VP/Sales; Fred Bergamo, VP/Finance; Steve Brazil, Sales Manager
REGIONAL OFFICES: 5922 Bowcroft St., Los Angeles, CA 90016, (213) 202-2719; 1420 N Post Oak Road, Houston, TX 77055, (713) 681-6141; 250 Gerri Lane, Addison, IL 60101, (312) 543-9800; 8060 Snowville Road, Brecksville, OH 44141, (216) 526-0919; 1610 W Evans Ave., Unit H, Denver, CO 80110 (303) 922-4589; 5342 Morse Dr., Decatur, GA 30035, (404) 981-9220; 1200 Taylor's Lane, Unit 1A, Cinnaminson, NJ 08077, (609) 829-0100; 1110 Ave. HE, Arlington, TX 76011, (817) 640-0912; 35 Industrial Pkwy., Woburn, MA 01801, (617) 938-1221; Mole Business Park, Unit 11, Randalls Road, Leatherhead, Surrey KT 227BA England.
DESCRIPTION: Leading national supplier of virtually all products used to build and maintain cable television systems. Ships quickly through nine strategically located, computer linked distribution centers. Also supplies products, systems and support to SMATV, home satellite markets, and other communications markets through sister companies. Manufactures some products. Has sales office and warehouse in the United Kingdom.

Cable Technical Services(512) 441-1556
3500 S Congress Ave.
Austin, TX 78704
PERSONNEL: Herb Jackson, President & Owner
DESCRIPTION: Construction and installation of cable television.

Cable Terminal Services Inc.(512) 258-1606
7208 McNeil Dr.
Austin, TX 78729
PERSONNEL: Jim Orwick, VP/General Mgr.
DESCRIPTION: We repair converters for cable systems throughout the United States. Authorized Jerrold Warranty service center and authorized out of warranty for Hamlin and Scientific-Atlanta converters.

CableBus Systems Corp.(503) 643-3329
7869 SW Nimbus Ave.
Beaverton, OR 97005
PERSONNEL: George Green, President
DESCRIPTION: Manufacturer of interactive cable communications hardware and software for addressable networking and security systems.

cable data

CableData(916) 636-4500
Sacramento, CA 95873
PERSONNEL: Robert Mathews, President; Gerald Knapp, Sr. Vice President; David Williams, Sr. Vice President; Maggie Wilderotter, VP/Sales, Mktg. & Nat. Support
DESCRIPTION: Leading provider of management information systems for the cable

buyers' guide

Cablemasters Corp.

TV industry. Complete provider of the following products and services: Software-DDP, Pay 80, Cable Accountant; Hardware-Tandem, QuickData; bill processing and mailing; insert printing and processing. Complete 24 hour customer support.

Cablemasters Corp.(814) 774-2616
2184 Rice Ave.
Lake City, PA 16423
PERSONNEL: Bernie Czarnecki, President; Tom Dow, Vice President
DESCRIPTION: Aerial and underground construction services residential and MDU installations, strand mapping, make ready engineering, system design LAN networks. Turnkey available.

Cablemaster Inc.(517) 482-0888
133 E Kilborn
Lansing, MI 48906
PERSONNEL: Julian DeSmith, President; Doug Collier, Vice President; Dana Potter, Sales Manager
DESCRIPTION: Underground cable specialists.



CableTek(606) 259-1366
PO Box 11908
Lexington, KY 40578
PERSONNEL: Warren Crane, Chief Executive Officer; Robert Noren, Sr. Vice President Sales; Norm Johnson, Vice President Sales
REGIONAL OFFICES: 130 Sewaren Ave., Sewaren, NJ 07077-1299.
DESCRIPTION: Computer service for the cable television industry. Both on site computers and a remote service are offered.

Cabletenna Corp.(201) 238-7660
WATS(National)(800) 468-6452
12-4 Edgeboro Road
East Brunswick, NJ 08816
PERSONNEL: Andy Wang, President; Paul Libby, National Sales Manager
DESCRIPTION: Cabletenna Corp. manufactures and supplies cable converters, splitters and matching transformers for CATV and MATV applications.

Cablevision Services Inc.(602) 833-2214
1064 S Center St.
Mesa, AZ 85202
PERSONNEL: William Salk, President; Robert Boucher, VP/General Manager
REGIONAL OFFICES: 205 S Berkeley Circle, Fullerton, CA 92633, (714) 525-5184; 18295 SW Alton, Aloha, OR 97006, (503) 649-6085; 762 Hwy. 121, Lewisville, TX 75067, (214) 221-5714.
DESCRIPTION: Full service CATV contractor; offering the CATV industry specialization in underground construction and all phases of installation. Special emphasis on multiple dwellings. Services also include system design, and turn-on balance.

Cajun Cable Co. Inc.(916) 455-4351
8250 Alpine Ave.
Suite H
Sacramento, CA 95826
PERSONNEL: Kemp Dubea, President
DESCRIPTION: RDU installations from subscriber drop placement to full turnkey, including drop transfer, drop change-out, subscriber equipment change-out, trapping, system audit, pre/post wire (all facets), concrete and asphalt cutting (for subscriber drop), underground construction, system maintenance, consulting and training.

California Amplifier(805) 987-9000
WATS(National)(800) 621-4080
460 Calle San Pablo
Camarillo, CA 93010-8506
PERSONNEL: Dave Nichols, President; Daivid Thorpe, VP/Sales & Marketing; Dennis Schwab, National Sales Manager
DESCRIPTION: California Amplifier manufactures low noise amplifiers (LNA's), LNB's in various frequency ranges, dual LNB's which incorporate two LNB's and a dual feed in one-housing, (dual polarity switches which allow both horizontal and vertical reception in multi receiver homes) and a wide variety of TVRO accessories, soon to be available are KU products.

Caplec Corp.(914) 963-8200
Point St.
PO Box 391
Yonkers, NY 10702
PERSONNEL: Mr. Schell, President
REGIONAL OFFICES: 17 Squadron Blvd., PO Box 1100, New City, NY 10956, (914) 634-0100.
DESCRIPTION: Manufacturers of power cable.

Capscan Cable Co.(201) 462-8700
WATS(National)(800) 222-5388
PO Box 36
Adelphia, NJ 07710
DESCRIPTION: Supplier of premium trunk and feeder cable and drop cable including quad-shield, RG59, TG6, and RG11.

Carlton International
Manufacturing Corp.(817) 284-5144
WATS(National)(800) 255-9311
1509 Central Park Dr.
Hurst, TX 76053
PERSONNEL: Carlton Williamson, President; Tom Hilsenhoff, Sales Manager
DESCRIPTION: Features porta-mole underground boring equipment. A complete system for getting cable under highways, streets, highways and other permanent fixtures.

Carolina Galvanizing Corp.(919) 944-2171
WATS(National)(800) 334-2156
WATS(State)(800) 682-8029
PO Box 487
Aberdeen, NC 28315
PERSONNEL: Richard Craven, President; Bob Knorr, Vice President Sales; Forrest Kirk, Sales Manager
DESCRIPTION: Manufacturer of (a) copper-bonded ground rods, galvanized ground rods and accessories and, (b) galvanized forged eye anchor rods.

Channell Commercial Corp.



Carson Industries Inc.(714) 596-1988
1925 A St.
PO Box 177
La Verne, CA 91750
PERSONNEL: Eric Carson, Sales Manager
DESCRIPTION: Structural plastic molders and distributors of plastic underground flushmount boxes used for taps, amplifiers, split splices, line extenders and street crossings; lightweight, various sizes.

Cavision Communications(513) 667-4416
PO Box 308
Tipp City, OH 45371
PERSONNEL: John Gaston, President; Craig Gaston, Vice President; Andy Ruffin, Vice President
DESCRIPTION: Complete CATV contractors; aerial and underground construction, strand mapping and design, and installation of resident multiple dwelling units.

Cecon Inc.(814) 445-8921
PO Box 125
Berlin, PA 15530
PERSONNEL: Alan Charlton, President; Robert Beattie, Vice President; Warren Cochran, Sales Manager
DESCRIPTION: Builders of cable TV and telephone systems. Services include drop installations, balancing and engineering, underground and aerial construction, make-ready and strand mapping.

Centel Supply Co.(402) 475-6622
WATS(National)(800) 228-2242
1033 O St.
PO Box 82575
Lincoln, NE 68501
PERSONNEL: Robert Nichols, President
REGIONAL OFFICES: 1342 Interstate 35E, Carrollton, TX 75006, (214) 242-1455; 16215 Marquardt Ave., Cerritos, CA 90701, (213) 926-5911.
DESCRIPTION: Distributor of a complete line of cable TV products (cable, hardware, pedestals, connectors, taps and passives, line extenders, trunk amplifiers, satellite receivers, modulators, antennas, etc.).



Channell Commercial Corp.(818) 963-1694
WATS(National)(800) 423-1863
620 W Foothill Blvd.

Is the U.S. Postal Service the only company responding to your direct mail efforts?

Vendor-Bender Cable Co.
123 Profit Way
Yourtown, USA 34567

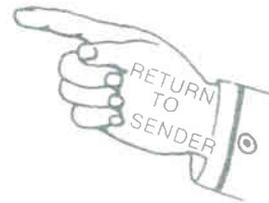
No Such Address
Attempted Not Known
Insufficient Address
Forwarding Order Required
Moved. Left No Address
Rt. # Carrier

NOT DELIVERABLE
AS ADDRESSED
RETURN TO SENDER



Current System Manager
Prospect Cable Co.
123 Let's Spend Drive
Theirtown, USA 34567

ADDRESS UNKNOWN



No matter how good your material, it can't generate a response unless the right person at the right address receives it. Are you tired of paying for lists full of duplicate or incorrect names and addresses? Do you need accurate personnel names and addresses for system managers, programming directors, chief engineers and marketing directors at virtually every cable system in the U.S.? Do you need lists by region for your specific territories? **CableFile Research** has the lists you need. Call today for more information. Together we'll put your next direct mail project directly into the hands of the buyers you need to reach.



600 Grant Street, Suite 600
Denver, Colorado 80203
(303) 860-0111

buyers' guide

Channel Master

Coaxial Analysts Inc.

Glendora, CA 91740
 PERSONNEL: William Channell Sr., President;
 William Channell Jr., Vice President
 DESCRIPTION: Exclusive representative for
 Carson Industries grade level boxes and vaults,
 and also for Integral Corporation Cable Con-
 CATV cable in conduit.



Channel Master.....(919) 934-9711

Industrial Park Dr.
 Smithfield, NC 27577
 PERSONNEL: Sylvester Herlihy, President;
 Richard Deutsch, Vice President; Donald Berg,
 Vice President; Steve Dozier, Sales Mgr./Micro-
 Beam; David Waddington, Sales Mgr./National
 DESCRIPTION: Manufacturers of Micro-Beam™
 CARS-band multichannel microwave relay
 systems. Assistance with path feasibility studies,
 FCC compliance, path alignment and installation
 provided for clients. Also manufacturers of CATV
 satellite headend gear, including dishes, receivers,
 modulators, combiners, etc., as well as
 distribution equipment including wall taps, cable,
 connectors, directional couplers, apartment and
 house-drop amplifiers, a complete line of MATV
 equipment and tools.

Channel One Inc.....(617) 899-1025
 23 Farwell St.
 Newton, MA 02160
 PERSONNEL: Fred Hopengarten, President;
 Norman Priebatsch, Vice President
 DESCRIPTION: Retrofit motorization kit for
 Microdyne 5 meter antennas and Prodelin 4.6/5
 meter antennas.

Channel One Video Corp.....(604) 421-2288
 2965 Bainbridge Ave.
 Burnaby, BC V5A 289 Canada
 PERSONNEL: Peter van der Gracht, President;
 Jerry Clarke-Ames, Sales Manager; Todd Carter,
 Marketing Manager; Calvin Corbett, Sales Rep.;
 Sid Coppido, Sales Rep.
 DESCRIPTION: Channel One is a leading
 distributor to the Cable Television Industry and a
 pioneer in CATV supply. We are committed to
 supplying the highest quality products and
 service. With four engineering technologists on
 staff and a technically trained sales team
 dedicated to excellent service, Channel One can
 supply all your needs in service, equipment and
 repair.



Channelmatic Inc.(619) 445-2691
 WATS(National).....(800) 231-1618

821 Tavern Road
 Alpine, CA 92001
 PERSONNEL: Bill Killion, President; Tom
 Walsh, Executive Vice President; Roger
 Heidenreich, Sales Manager; Dwain Keller,
 Marketing Manager
 REGIONAL OFFICES: 5200 Chicago Ave., Ste.
 F-4, Riverside, CA 92507, (714) 686-8020; 1356 S
 St., Castle Rock, CO 80104, (303) 688-8777; 549
 Park Ave., Prairie Du Sac, WI 53578, (608) 643-
 2445; PO Box 987, Gibsonia, PA 15044, (412) 443-
 3908; 6 Claredon Place, Avondale Estates, GA
 30002, (404) 289-4834.
 DESCRIPTION: Fully automatic random access
 and sequential VCR commercial insert systems,
 programmable video cassette changer and
 multiple VCR playback systems for local
 origination, various standard modules to provide
 video switching, machine control and signal
 processing for custom systems. Complete turnkey
 installed systems are available.

Channels of Communications.....(212) 302-2680
 19 W 44th St.
 New York, NY 10036
 PERSONNEL: Les Brown, Editor in Chief
 DESCRIPTION: Monthly business magazine for
 the communications industry, covering television,
 cable, syndication and satellite communication.

Charles Industries-Cable TV Div.....(312) 398-6600
 4902 Tollview Dr.
 Rolling Meadows, IL 60008
 PERSONNEL: Joe Charles, President; Mike Hels,
 Vice President; Tom Kehe, Sales Manager
 DESCRIPTION: Pedestals apartment house
 security boxes, standard hardware, and custom
 hardware.

Chomeric Inc.....(617) 935-4850
 77 Dragon Court
 Woburn, MA 01888
 PERSONNEL: Charles Ehlers, President; Robert
 Ruthenberg, VP/Dir. of Marketing; William
 Lionetta, Sales Manager
 REGIONAL OFFICES: 16 Flagstone Dr.,
 Hudson, NH 03051; 23839 S Banning Blvd.,
 Carson, CA 90745.
 DESCRIPTION: EMI shielding products, EMI
 attenuators, EMI absorbers, EMI mesh strip
 gasketing, conductive paints and adhesives,
 conductive foil adhesive tape, insulated grounding
 straps, EMI/RFI grounding contacts, EMI/RFI/
 ESD flat cable shield and heat-shrinkable cable
 shielding.

Chyron Corp.....(516) 249-3018
 265 Spagnoli Road
 Melville, NY 11747
 PERSONNEL: Alfred Leupert, Chairman of the
 Board; Joseph Scheuer, President; David Buckler,
 VP/Marketing; Paul Rozzini, VP/Manufacturing;
 John Poserina, Controller
 DESCRIPTION: Products include Chyron IV
 graphics and titling systems, MGM Multimode
 graphics module, major system options creating
 special effects. Scribe-ultra high resolution text
 generator, chameleon-stand alone low cost paint
 system, RG U-2 medium priced high resolution
 character generator, VP1 and VP2 low cost high
 resolution graphics generator.

Clair Stern Associates Inc.....(212) 532-6680
 307 Fifth Ave.
 New York, NY 10016

PERSONNEL: Claire Stern, President
 DESCRIPTION: Market studies, emphasis on
 needs and desires for entertainment and enhanced
 services; analysis of potential market, with
 recommendations for action; special expertise in
 translating technical language for non-technical
 persons, combining data supplied by marketing
 and engineering personnel; site-specific analysis of
 environmental impact, zoning, community
 attitudes and requirements of the FCC for
 microwave and satellite antennas.

Clear Vision Cable
 Constructors Inc.....(816) 966-1736
 9321 Fairwood Dr.
 Kansas City, MO 64138
 PERSONNEL: Ken Hathorn, President; Gary
 Dixon, Vice President
 DESCRIPTION: Cable TV construction design,
 splicing, activation, specialty installation, digital
 RF communications, training and consulting.

Clover Cable Systems.....(609) 696-5997
 PO Box 2246
 S Vineland, NJ 08360
 PERSONNEL: Joseph O'Donnell, President;
 Roman Rakowsky, Vice President
 REGIONAL OFFICES: PO Box 43363, Las
 Vegas, NV 89104, (702) 384-8722.
 DESCRIPTION: Engineering, design, drafting,
 and underground/aerial construction for the cable
 TV industry.

Coastcom.....(415) 825-7500
 WATS(National).....(800) 433-3433
 2312 Stanwell Dr.
 PO Box 27068
 Concord, CA 94527
 PERSONNEL: Edgar Buttner, President; Gerard
 Mülle, Vice President; W. Larry Shaffer, VP/
 Engineering
 REGIONAL OFFICES: 504 Glenleaf Dr.,
 Norcross, GA 30092, (404) 266-4310; 416
 Westover Dr., Granbury, TX 76048, (817) 573-
 4812; 69 Bellevue Ave., Summit, NJ 07901, (201)
 273-0093; PO Box 594, Cupertino, CA 95015, (408)
 730-9666.
 DESCRIPTION: Coastcom is a manufacturer of
 TI Networking product line which includes D/I
 MUX, a drop and insert TI multiplexer for voice,
 data audio and image transmission; distributor
 Data Multiplexer (DDM-12) a low speed data
 multiplexer that permits efficient bandwidth
 usage and switching of bundled data at the DS-O
 level; and digital cross connect (DXC 8/16) a
 customer premise product for cross connecting up
 to 16 TI lines.

Coaxial Analysts Inc.(303) 778-7700
 4582 S Ulster St. Pkwy.
 Suite 1301
 Denver, CO 80237
 PERSONNEL: Ross McPherson, Pres./
 Management Svc. Div.; Jeffrey Gutfreund, Pres./
 Marketing Svc. Div.; Perry Hulseberg, Pres./
 Engineering Svc. Div.; Steven Gower, VP/System
 Design; James MacKenzie, VP/Strand Mapping
 DESCRIPTION: Strand mapping and system
 design utilizing the Magic graphic computer
 system, providing the maximum cost efficiency for
 engineering, construction, project management
 and system operation; as-built and make-ready
 surveys; total marketing packages; direct sales
 campaigns for new systems and remarks; tap
 audits; marketing consultation. Related services

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BUILD YOUR OWN SYSTEM by purchasing a pre-tested, un-racked commercial insertion system from Channelmatic. Choose a system to suit your budget: sequential, pod random-access, or full random-access . . . local or remote control . . . with or without a full Ad Manager traffic and billing system. And, Channelmatic also manufactures any accessories you may need, such as audio and video DAs, switchers, and auto-bypass units. We can even supply the monitors and VCR's, if you desire. We have over 200 products, providing you with the simplicity of dealing with only one solid vendor.

LET US BUILD IT FOR YOU. Discuss your needs with one of our systems engineers and we will quote a fully-wired system designed exclusively for you. Racks, VCR's, monitors, accessories and your choice of our insertion systems, completely assembled, tested and documented . . . we just roll it off the truck, plug it in for you, then train you on it's operation. You're on the air quickly and efficiently . . . and the cost is about the same. Our twelve years of VCR automation experience will be reflected in a system you will be proud to have in your facility.

WE GUARANTEE IT. Channelmatic's Gold Seal Guarantee is your assurance of many things, including the prompt shipment of your order. Delivery is usually accomplished in days . . . not months. Field installation assistance, field or factory training and full field service are available. And, Channelmatic's rock-solid reputation and enviable financial status will assure a support relationship for years to come. Would you expect anything less from the leader?

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ON TIME AND WITHIN BUDGET

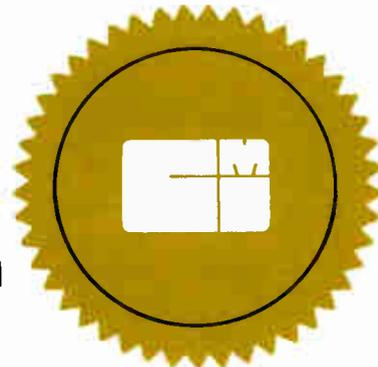
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THE LEADER IN COMMERCIAL INSERTION AUTOMATION

Reader Service Number 21



CHANNELMATIC

buyers' guide

Coaxial Construction Corp.

through Coaxial Construction Corp., Coaxial Capital Corp., and Videophile Inc.

Coaxial Construction Corp.(303) 770-7700
4582 S Ulster St. Pkwy.

Ste. 1301
Denver, CO 80237

PERSONNEL: George Taylor, President
DESCRIPTION: Total aerial and underground CATV construction services; stranding; cabling; splicing; activation; headends; microwave. New builds and rebuilds. Related services through Coaxial Analysts Inc., Coaxial Capital Corp., and Videophile Inc.



Coil CATV Products Division.....(312) 398-6774

4902 Tollview Dr.
Rollings Meadows, IL 60008

PERSONNEL: Joe Charles, President; Mike Hels, Vice President

DESCRIPTION: Directional taps, line splitters, directional couplers, pedestal housings, and aerial bracket. Also apartment security of boxes.

Colormax Electronic Corp.(201) 225-0106
PO Box 353

Hazlet, NJ 07730

PERSONNEL: Sakae Chang, President

Colvins Inc.(617) 893-3900
WATS(National)(800) 343-4614

185 Prospect St.

Waltham, MA 02154

PERSONNEL: Leo LeBlanc, President; Robert LeBlanc, Vice President

DESCRIPTION: Sale of reconditioned aerial bucket trucks.

Comlink Systems Inc.(416) 427-7111
Unit 5

1420 Bayly St.

Pickering, ONT L1W 3R4 Canada

PERSONNEL: Richard Hancock, President; John Hood, Vice President; John Wilson, Vice President

DESCRIPTION: Hughes Microwave Systems, Harris TVRO and uplink systems, Andrew antenna TVRO and microwave products, (LAN), Alpha standby power and UPS systems, ITS 2.5 GHz MMDS systems, Channelmatic satellite tone decoding, commercial insertion, program substitution systems, Swires research signal level meters. Scientific-Atlanta, satellite systems, headend equipment, data product subscriber equipment, UHF/VHS antenna coaxial cable distribution amplifiers.

ComSE Sales Corp.(404) 963-7870
641 Grayson Hwy.

Lawrenceville, GA 30245

PERSONNEL: John Weeks, President; Joe Acker, Paul Legris, Paul Williams, Ivan Jones
REGIONAL OFFICES: 317 25th St. NW, Fayette, AL 35555, (205) 932-7264; 6112 Eagles

Nest Dr., Jupiter, FL 33458, (305) 747-3647; 105 Mt. Vernon Dr., Albemarle, NC 28001, (704) 983-5908.

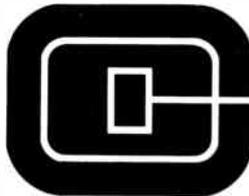
DESCRIPTION: Manufacturers representatives for Wavetek, Catel, Telecommunications Data Transmission Devices, Telecommunications Products Inc., Quality RF Services and Video Tape Systems Inc.

Comm/Scope Co.(704) 241-3142
PO Box 199

Catawaba, NC 28609

PERSONNEL: Frank Drendel, President; James Webb, Vice President/General Manager

DESCRIPTION: Manufacturers of coaxial and specialty cables.



Commercial Cable Inc.

(CCI).....(615) 894-2580

WATS(National)(800) 367-5742

7353 Lee Hwy.
Chattanooga, TN 37421

PERSONNEL: John Brady Jr., President; Richard Eidson, Vice President; Rhonda Boyd, Vice President; Lynn Brady, Secretary/Treasurer
DESCRIPTION: Commercial Cable Inc.

manufactures a complete line of commercial insertion equipment as well as Automated Local Origination systems. Our speciality is computer control of videotape machines with very close tolerance vertical interval switching among machines and network sources. We also feature a very dependable verification system.

Commercial Satellite Systems(415) 848-4331
2955 Russel St.

Berkeley, CA 94705

PERSONNEL: Rob Hurwich, President
DESCRIPTION: Distributes teleconferencing equipment and services, provide SMATV consulting and development, video/RF equipment service and repair, on site microwave interference analysis and field engineering services in addition to items listed above. CSS is a whole sale distributor of TVRO equipment and components.

Comm. Construction Group Inc.(215) 696-1800
235 E Gay St.

PO Box 561

W Chester, PA 19380

PERSONNEL: George Tamasi, President; Thomas Polis, Exec VP/Secretary/Treasurer
DESCRIPTION: Complete construction services including strand mapping, make ready, system design, aerial construction, underground construction, splicing, drop installation, apartment wiring and complete turnkey services.

Communications Design(609) 728-3418
1601 Black Horse Pike

Suite 2

Turnersville, NJ 08012

PERSONNEL: Tony Fiorella, President; Frank Held, Vice President

DESCRIPTION: Designers of CATV and

SMATV systems. Also involved in MDUs (Multiple Dwelling Units).

Communications Engineering.....(416) 676-9600
5790 Campus Road

Mississauga, ONT L4V 1G2

DESCRIPTION: Cable television consulting engineering firm.

Compu-Trace Inc.(818) 886-3551
8803 Shirley Ave.

Northridge, CA 91324

PERSONNEL: M. Kim, President; Julie Kim, Vice President; Pad Amarasinghe, Operations Manager

DESCRIPTION: Set-top converter repair service and assembly manufacturer.

Computel Inc.....(402) 426-9511
1623 Front St.

PO Box 300

Blair, NE 68008

PERSONNEL: Russell Caauwe, President
DESCRIPTION: Data processing—billing services utilizing IBM PC-XT and IBM PC-AT.



DATA / 1

COMPUTER
UTILITIES

OF THE OZARKS, INC.

Computer Utilities

of the Ozarks Inc.(501) 741-1616

103 Industrial Park #C

PO Box 1062

Harrison, AR 72601

PERSONNEL: Herb Lair, President; John Bartlow, Vice President; Lynn Armstrong, Vice President; Jerry Criner, Vice President

DESCRIPTION: CABLE/1 Management information and accounting system for the IBM PC and IBM SERIES/1 (IBM Compatibles) system includes work order processing, billing, marketing, and history information. Accounts receivable, inventory, accounts payable, and general ledger can be integrated for a complete management information system.

Comsat Technical Services(301) 428-4285
2250 Comsat Dr.

Clarksburg, MO 20871-9499

PERSONNEL: Marcel Joseph, President; Dan DiFonzo, Vice President; Keary Cannon, Sales Manager

DESCRIPTION: Communication services maintenance and supply microwave and satellite systems.



Comsearch Inc.(703) 620-6300

11720 Sunrise Valley Dr.

buyers' guide

Creative Data Systems

Reston, VA 22091
DESCRIPTION: Engineering services for satellite earth stations, FCC licensing services, CARS band and 23 GHz services. Interference trouble-shooting and correction.

Comsonics Inc.(703) 434-5965
 WATS(National).....(800) 336-9681
 1350 Port Republic Road
 PO Box 1106
 Harrisonburg, VA 22801
PERSONNEL: Warren Braun, President; Mark Barber, VP/Repair Services; Glen Shomo, VP/Manufacturing; Dick Shimp, VP/Field Services; Dennis Zimmerman, VP/Marketing & Sales
REGIONAL OFFICES: Montreal, Quebec, Canada, (514) 322-5540.
DESCRIPTION: Signal leakage detectors, field strength meters, coaxial relays, surge protectors, line equipment repair services, headend equipment repair services, TVRO equipment repair services, test equipment repair services, field engineering services, and consulting.

Comtech Antenna Div.(305) 892-6111
 3100 Communications Road
 St. Cloud, FL 32769
PERSONNEL: Preston Windus Jr., President; Glenn Higgins, Vice President; Tom Christy, Sales Manager
DESCRIPTION: Comtech Antenna manufactures earth station antenna systems. CATV antenna systems are available in 3.0, 3.8, 5.0 and 7.3 meters. Elevation over azimuth and polar mounts are available. Comtech also manufactures the OFFSAT™ antenna, a 2 degree spacing system for transmit applications. Transportable antenna systems are also available.

Com-Tek

Com-Tek(415) 785-4790
 28310 Industrial Blvd.
 Suite H
 Hayward, CA 94545
PERSONNEL: Nick Ferolito, President; Russell Brown, Vice President
REGIONAL OFFICES: 1710 W Ninth St., Sadelia, MO 65301, (816) 826-3011.
DESCRIPTION: Buy and sell new and used cable equipment. Complete repair facility.

Condux International Inc.(507) 387-6576
 Box 247
 Mankato, MN 56001
PERSONNEL: W. Radichel, President; Chris Brahler Jr., VP/GM Condux & Vibra King Inc.
DESCRIPTION: Manufacturer of PVC conduit, cable pulling equipment and accessories, pneumatic boring tools, swivels, and pulling eyes.

Connecticut CATV
 Construction & Maintenance(203) 342-1805
 WATS(National).....(800) 222-2079
 14 Brownstone Ave.
 Portland, CT 06480
PERSONNEL: Charles Ferrara, President/Owner;

Michael Ciaburri, Vice President
DESCRIPTION: Aerial and underground cable construction for CATV systems and telephone companies. SMATV, MATV and fiber optic installation.

Consolidated Electronic
 Wire & Cable Corp.(312) 455-8830
 11044 King St.
 Franklin Park, IL 60131
PERSONNEL: Thomas Mann, President; Karl Rankin, Vice President/Sales; Marc Abramson, Vice President/Marketing; Steve Boynton, Sales Operations Manager
DESCRIPTION: Manufactures full line of all major categories of wire and cable products, excluding fiber optic.

Contel Information System.....(516) 829-5900
 130 Steamboat Road
 Great Neck, NY 11024
PERSONNEL: Dave Rubin, Vice President
REGIONAL OFFICES: 245 Perimeter Center Pkwy., Atlanta, GA 20314.
DESCRIPTION: Provides CATV system design using large scale computers. Supply turnkey systems solution and consulting services, network management tools and local area network.

Control-Com(404) 873-2298
 430 10th St. NW
 Atlanta, GA 30318
PERSONNEL: Patrick Ryan, President; Donald Dufford, Vice President
DESCRIPTION: Build equipment for off-premise addressability and hotel pay-per-view.



Control Technology Inc.(214) 248-9128
 (214) 272-5544

4221 Airborn Dr.
 Addison, TX 75001
PERSONNEL: Fred Ochsner, President; Tom Reed, Vice President; William Smith, Sales Manager
DESCRIPTION: Manufactures and designs standby power supplies.

Converter Parts Inc.(518) 875-6444
 PO Box 278, Rte. 20
 Esperance, NY 12066
PERSONNEL: Gary Rudolph, President; Peggy Rudolph, Vice President; Tom Johnson, Sales Manager
DESCRIPTION: Manufactures and sales converter parts.

Cooley Associates Inc.(215) 752-0279
 640 Valley View Road
 Box 187
 Langhorne, PA 19047
PERSONNEL: Caywood Cooley Jr., President; Bruce Cooley, Vice President; Isabel Cooley, Vice President
DESCRIPTION: CATV consultant. Specializing in cost efficient applications of cable, AML and

optical concepts in the design of CATV system, rebuilds using proprietary computer aided design techniques. CATV software and hardware for sale or lease.

Cooper Construction Co. Inc.(615) 554-3624
 Star Rte. Box 87-C
 Graysville, TN 37338
PERSONNEL: Lonnie Cooper, President/Sales Manager; Delila Cooper, Vice President
DESCRIPTION: Specializing in construction, aerial and underground, splicing, strand mapping, make ready.

Cooper-Rutter Associates Inc.(609) 596-0057
 The Evesham Commons
 525 Rte., #73 S. Rd.1
 Suite 200
 Marlton, NJ 08053
PERSONNEL: Edward Rutter, President; Howard Friedman, VP/General Counsel; Dave Bartolone, Director of Engineering
DESCRIPTION: Cooper-Rutter Associates is a full service cable consulting company that provides financial, technical and franchising assistance. Services include: franchise modification analysis, rate increase application preparation, financial and operational analysis, computerized financial models, appraisals, system design and engineering, refranchise strategy, feasibility studies, cable TV system management and more.

Cottrell & House Inc.(608) 233-9711
 6300 University Ave.
 Po Box 5648
 Madison, WI 53705
PERSONNEL: Robert Laurion, President; John Lubniewski, CATV Manager
REGIONAL OFFICES: PO Box 110929, Nashville, TN 37211, (615) 331-9900.
DESCRIPTION: Cottrell and House Inc. engineering and management, broadband division.

Cra-Mac Cable Services Inc.(919) 764-2764
 PO Box 420
 Welcome, NC 27374
PERSONNEL: Gary Craven, President; Martha Craven, Vice President; Steve Stone, VP/Sales Manager
DESCRIPTION: Complete construction services for aerial and underground, apartment wiring, installations and turnkey services.

Creative Data Systems.....(913) 451-4618
 9300 W 110th St.
 Suite 150
 Overland Park, KS 66210
PERSONNEL: Dann Kroeger, President; Deane Parkhurst, Sales Manager
DESCRIPTION: In house subscriber billing systems, including all management reports relative to subscriber activity. Trouble call dispatch, penetration reports, churn reports, marketing assistance. A new approach to subscriber billing allows for daily adjustment of subscriber charges. PPV also available as part of addressable sub-system. Commercial scheduling and billing featuring rotation and avails reports. Full credit control for both subscribers and commercial advertisers.

buyers' guide

Creative Management Systems Inc.



Creative Management Systems, Inc.
An IBM Value Added Remarketer

Creative Management Systems Inc.(201) 341-6165
213 Washington St.
PO Box 10

Toms River, NJ 08754
PERSONNEL: Morris Adler, President; Richard Alfonso, Vice President; Alan Meyer, Vice President; Gil Jacobs, Vice President/Sales; Ron Samuel, Vice President/Operations
REGIONAL OFFICES: 1750 Montgomery St., San Francisco, CA 94111, Park 80 West, Plaza 2, Suite 200, Saddle Brook, NJ 07662.
DESCRIPTION: CMS System 1-The easy to use, in-house, on-line subscriber management and billing system. System 1 automatically handles all customer service work, prints your bills, controls your addressable system and provides marketing and management information in a timely manner.

Crystal Technology Inc.(415) 856-7911
1035 E Meadow Circle
Palo Alto, CA 94303
PERSONNEL: Zoann Snow, Sales Manager; Cheryl Holmes, Sales Engineer
REGIONAL OFFICES: 151 Stanton Ave., Newton, MA 02166. (617) 527-6589, Telex: 4930156.
DESCRIPTION: Surface acoustic wave (SAW) filters and delay lines for CATV headends, modulators, demodulators, converters, satellite receivers (70 MHz and UHF) filters are small (to-8), PC board compatible and require no tuning. Filters can be made from 35 to 950 MHz with 40-45 dB rejection of outside signals.

dB Communications Inc.(201) 446-3612
WATS(National)(800) 526-2332
490 Rte. 33 W
Englishtown, NJ 07726
PERSONNEL: James Miller, President; Linda Lotti, Sales Rep.
DESCRIPTION: We represent these leading manufacturers exclusively in northeast: Broadband, Control Tech, EEG, Texscan/Compuvid, Vitek, LRC Electronics, Insulation Systems, NuMedia Corp., Panasonic, and Multi-Link. Distribute Videotek and Panduit, Blonder-Tongue, A/B switches, cable, Texscan test equipment and Lanca Instruments.

DE Gerrity Assoc.
CATV Svc. Inc.(215) 444-0922
PO Box 82
Kennett Square, PA 19348
PERSONNEL: Don Gerrity, President; James Johnston, Vice President
REGIONAL OFFICES: 2124 Main St., Ste. 200, Huntington Beach, CA 92648, (714) 960-2491.
DESCRIPTION: Post construction contract labor services.

DEL Compu-Cable Systems Inc.(306) 934-6884
#6-301-45th St. W

Saskatoon, Sask. S7L 5Z9 Canada
PERSONNEL: Dale Lemke, President; Bob Hodgins, Sales Manager
REGIONAL OFFICES: 1906 S Broadway, Minot, ND 58701, (306) 934-6884.
DESCRIPTION: The SPECTRAVIEW character generator with graphics capability is a low cost, high performance information display system which has optional equipment such as disk drive storage, remote communications and low cost weather display. Systems start below \$500. The new STAR titler/character generator includes graphics capability and has a Genlock/Superimpose feature which allows it to be used for titling, downstream keying as well as a graphics editor. The STAR starts at about \$2000.00

DGH Comm. Systems Ltd.(416) 499-4746
3761 Victoria Park Ave.
Suite 5
Ontario, Canada, M1W 3S2
PERSONNEL: Derek Henry, President; Vladimir Lisk, Sales Manager
REGIONAL OFFICES: 7333 Des Roseaies, Suite 100, Montreal, Quebec, H1M 2X6, Canada (514) 354-6263.
DESCRIPTION: Turnkey communication system builders specializing in microwave links and satellite earth stations.

DLM Enterprises.....(404) 426-6852
PO Box 1207
Marietta, GA 30061
PERSONNEL: David Marshall, President; Robert Connelly, Vice President
DESCRIPTION: Design engineering software and LAN construction.

DX Communications Inc.....(914) 347-4040
10 Skyline Dr.
Hawthorne, NY 10532
PERSONNEL: Hiro Sugiyama, President; Dick Gonzalez, Vice President; Koki Matsumoto, Dir/Commercial Products Mktg.
REGIONAL OFFICES: 1020 Hamilton Court, Menlo Park, CA 94025, (415) 325-7517.
DESCRIPTION: Satellite receivers and down converters, modulators for CATV/SMATV headend systems.

Daburn Electronics
and Cable Corp.(201) 768-5400
70 Oak St.
Norwood, NJ 07648
PERSONNEL: Howard Danziger, President; Randy Hibshman, Sales Manager
DESCRIPTION: Daburn supplies a complete line of wire and cable, shrink tubing, electronic hardware, fastening devices, retractile cords, modular cords, plugs and jacks, shielded braid, lacing cord, insulators and test lead wire. Special constructions are run with small minimums. Most orders are shipped within 24 hours.

Data Communications Corp.(901) 345-3544
3000 Directors Row
Memphis, TN 38131
PERSONNEL: Norfleet Turner, Chairman; James Thornton, President; Dick Bruce, VP/Cable Services; Michael Hunter, Account Executive
REGIONAL OFFICES: MPI, 919 Third Ave., New York, NY 10022, (212) 838-4711.
DESCRIPTION: Features BIAS PC Cable, an IBM PC based computer service for scheduling of program schedules, commercials, billing and

reports for cable franchises and cable networks. Also communications networks for networks, operators, MSOs, program guides, rating services, program services and reps.

Data Transmission Devices, Inc.

Data Transmission Devices Inc......(617) 532-1884
65 Walnut St.

Peabody, MA 01960
PERSONNEL: Thomas Hunter Jr., President
REGIONAL OFFICES: 15750 Los Angeles Ave., #25, Moorpark, CA 93021, (805)529-6693.
DESCRIPTION: Power supplies for CATV systems. Single & dual cable, 12, 18, 24 Amp standard and standby. Headend power supplies. All UL listed.

DeWild Grant
Reckert & Associates.....(712) 472-2531
315 First Ave.
Rock Rapids, IA 51246
PERSONNEL: Robert Reckert, President; John Madden, Vice President; Willis Jongerius, Vice President; Ed Cable, Vice President; Laurence Butler, Sales Manager
REGIONAL OFFICES: 1113 E 14th St., Sioux Falls, SD 57104, (605) 339-4157; 1051 Office Park Road, Des Moines, IA 50265, (515) 225-8346; 3460 W 38th St., Denver, CO 80211, (303) 458-0311; 600 UFS Bldg., Sioux City, IA 51101, (712) 277-3049.
DESCRIPTION: Consulting engineering/architectural firm.



Di-Tech.....(516) 667-6300
48 Jefryn Blvd.
Deer Park, NY 11729
PERSONNEL: Tony Bolletino, Marketing Director
DESCRIPTION: Manufacturer of audio and video routing switches, audio-video distribution amplifiers, touch tone control systems, seven-day computer controller and commercial insertion equipment.



DIALOGIC COMMUNICATIONS CORPORATION

Dialogic Comm. Corp.(615) 790-2882
WATS(National)(800) 553-8505
WATS(National)(800) 321-7586

buyers' guide

EM Electronics Inc.

PO Box 8
Franklin, TN 37065
PERSONNEL: Hugh Lifsey, President; Gary Fitzhugh, VP Marketing
DESCRIPTION: Manufactures and distributes interactive voice processing systems.

Diamond Comm. Products Inc.(201) 789-1400
500 North Ave.
Garwood, NJ 07027
DESCRIPTION: Manufacturers of pole line and drop installation hardware for the telecommunications and cable TV industries. Enclosure division manufactures pedestals and enclosures for the telecommunications and cable TV industries. OEM stamping, wire forming, and mechanical galvanizing.

Diamond Electronics(614) 756-9222
PO Box 200
Lancaster, OH 43130
PERSONNEL: Robert Quinlan, VP/General Manager; Lee Montgomery, Sales Manager
DESCRIPTION: Manufacturer of directional taps.

Digital Video Systems Inc.(416) 299-6888
120 Middlefield Road
Scarborough, ONT M1S 4M6 Canada
PERSONNEL: John Fazackerley, Sales Manager
DESCRIPTION: Manufacturer of time base correctors, frame synchronizers, frame stores, and test pattern generators.

Digi Tel.....(215) 659-4047
2255 E Wyandotte Road
Willow Grove, PA 19090
DESCRIPTION: Repair service specializing in scrambler/encoder (analog or digital) and baseband or RF modems. Headend and LAN consulting.

Dinsmore Communications Corp.(603) 436-6344
WATS(National).....(800) 238-2338
600 State St.
PO Box 4253
Portsmouth, NH 03801
PERSONNEL: Dennis Dinsmore, President; Curtis Mildner, General Manager
DESCRIPTION: Complete turnkey construction services for underground, aerial, and apartment pre/post wiring.

Ditch Witch.....(405) 336-4402
WATS(National).....(800) 654-6481
PO Box 66
Perry, OK 73077
PERSONNEL: Ed Malzahn, President; Paul Rogers, Sales Manager
DESCRIPTION: Ditch Witch manufactures a full line of trenching and vibratory plow equipment for installing television cable underground. In addition, Ditch Witch offers a selection of attachments and accessories including boring equipment, utility backhoes, tampers and equipment trailers.

Diversified Communications.....(416) 476-2003
PO Box 2297
Station B
Richmond Hill, ONT L4E 1A4 Canada
PERSONNEL: Andrew Marshall, President
DESCRIPTION: Purchaser and seller of used cable TV equipment.

Diversified Control Systems(716) 835-1818
327 Windermere Blvd.
Amherst, NY 14226
PERSONNEL: Brent James, President
DESCRIPTION: Security devices, locks for pedestals and apartment boxes and power supplies.

Donley International Inc.....(713) 956-2984
7720 Blankenship St.
Houston, TX 77055
PERSONNEL: J.D. Thomas, President; Larry Burgeson, Sales/Marketing
DESCRIPTION: Distribution of satellite and cable television equipment. Your headend is in stock.

Douserv Group Inc.(514) 845-9201
Ind. Life Tower, Ste. 1750
2000 McGill College Ave.
Montreal, Quebec H3A 3H3 Canada
PERSONNEL: G.R. Doucet, President; Jean Lajoie, VP Finance & Administration; Paul Perron, Director Business Development; Steve Brower, GM/Douserv Consulting Corp.
REGIONAL OFFICES: 9269 Wendell Road, Dallas, TX 75243, (214) 341-9495.
DESCRIPTION: Member of NCTA, offers complete engineering, technical, managerial and support services to the CATV industry. Performs field work, stand mapping, pole contact permit, make-ready, work system design, headend configuration, preparation of tender documents and construction/project management, operated in the U.S. under Douserv Consulting Corp.

Dow-Key Microwave Corp.(805) 684-0427
1110 Mark Ave.
Carpinteria, CA 93013
PERSONNEL: Jack Graham, Chairman; Peter Sutherland, VP/COO/General Manager; L.B. Johnson, Vice President/Operations; Jack Dysart, Sales Manager
DESCRIPTION: Electromechanical coaxial RF and relays and microwave switches.

Drake, R.L. Company(513) 866-2421
9111 Springboro Pike
Miamisburg, OH 45342
PERSONNEL: Ron Wysong, President; Michael Brubaker, Sales Manager
DESCRIPTION: Manufacturer of home and commercial satellite receivers and accessories.



Drop Shop Ltd.....(415) 887-7474
WATS(National)(800) 526-4100
PO Box 284
Roselle, NJ 07203
PERSONNEL: Dan Parsont, President; David Wank, VP/Sales
REGIONAL OFFICES: 2416 Tripaldi, Hayward, CA 94545, (800) 227-0700.
DESCRIPTION: All drop materials, cordless drills, apartment boxes, splitters, cable marking devices, house amplifiers, tools and speciality

items—distributor and consultant to cable TV, Pay TV markets; specialize in prompt delivery. The only one stop center for all drop and installation materials.

Dunkelbarger Construction Inc.(812) 275-5656
RR 14
PO Box 132
Bedford, IN 47421
PERSONNEL: Roger Dunkelbarger, President; Lesa Dunkelbarger, Sales Manager
DESCRIPTION: New or rebuild cable TV construction aerial or underground.

DURNELL industries, co.

Durnell Engineering Inc.(712) 852-2611
1112 Broadway
Emmetsburg, IA 50536
PERSONNEL: Morris Durnell, President; Mike Flannegan, Sales Manager
DESCRIPTION: Aerial personnel bucket lifts, truck or van mounted.

E. A. Design Ltd.....(215) 657-8330
2500 Office Ctr., Maryland Rd.
PO Box 483
Willow Grove, PA 19090
PERSONNEL: Max Spector, President; William Blakeman Jr., VP/Director of Engineering; Alan Katz, Executive VP; Neal Spector, VP/Services
DESCRIPTION: Expert strand mapping-electronic design; as built walk-outs; computer design and drafting; utility make-ready negotiations on the highest level of professionalism and experience; computerized records system multi-purpose.

ECA/Manufacturing Division.....(918) 786-5349
PO Box 2029
Grove, OK 74344
PERSONNEL: Tony Bickel, President
DESCRIPTION: Manufacturer of cable television headend equipment, and custom design and manufacturers of microwave systems and troposcatter systems. Consultant to the CATV industry.

EEG Enterprises Inc.(516) 293-7472
1 Rome St.
Farmingdale, NY 11735
PERSONNEL: Edward Murphy, President; William Posner, VP/Sales Mgr.; William Jorden, Vice President
DESCRIPTION: Manufacturer of parental control locks and TV vertical interval encoding and decoding equipment.

EF Data Corp.....(602) 968-0447
1233 N Stadem Dr.
Tempe, AZ 85281
PERSONNEL: Robert Fitting, President; Steve Eymann, Vice President
DESCRIPTION: Manufacture cable modems.

EM Electronics Inc.....(215) 352-4155
545-547 Commerce Dr.

buyers' guide

EPD Electronics Inc.

Yeadon, PA 19050
PERSONNEL: Elena Dimaggio, President/VP
REGIONAL OFFICES: 3341-47 W Montrose Ave., Chicago, IL 60618.
DESCRIPTION: EM Electronics Inc. is an OEM supplier of active-passive subscriber equipment. We also offer a full line of headend, distribution electronics, hardware, connectors and satellite receiving equipment from selected domestic vendors.

EPD Electronics Inc.(213) 515-4996
 16921 S Western Ave.
 #110

Gardena, CA 90247
PERSONNEL: Mark Itokawa, President
DESCRIPTION: Importer of F, N, BNC connectors. Also import ready made cable.



Eagle Comtronics Inc.(315) 622-3402
WATS(National)(800) 448-7474
 4562 Waterhouse Road
 Clay, NY 13041

PERSONNEL: Alan Devendorf, President;
 Joseph Ostuni, VP/Sales and Marketing; Chester Syp, Manager/National Sales
DESCRIPTION: Super traps, decoding filters, taps, addressable and programmable descramblers, converters.

Early & Sons Inc.(617) 374-8033
 58 S Kimball St.
 Bradford, MA 01830
PERSONNEL: Richard Early, Jr., Vice President
DESCRIPTION: Underground cable TV specialist.

Easley Equipment Co. Inc.(901) 362-7721
 2807 Farrisview Blvd.
 Memphis, TN 38118
PERSONNEL: Warren Easley, President;
 Richard Easley, VP/Sales Manager
REGIONAL OFFICES: 1706 Rossville Ave., Chattanooga, TN 37408, (615) 756-0175.
DESCRIPTION: Sell aerial buckets and all types of trucks and vans.

Eastern Cable Inc.(804) 276-0883
 (804) 733-7031

4510 Sherman Road
 Richmond, VA 23234
PERSONNEL: Charles Wilson, President;
 Charles Stigberg, Vice President
DESCRIPTION: Aerial and underground cable TV construction, splicing, balancing, turn-on. CATV system management, consulting services available. Telephone underground construction.

Eastern Earth Boring
 & Equipment Co. Inc.(717) 287-9621
 99 Parry St.
 Luzerne, PA 18709
PERSONNEL: Walter Remphrey, President;
 Norman Collins, Secretary/Treasurer
DESCRIPTION: Sell and service heavy duty

utility equipment.

Edmunds Cable Services(914) 744-5387
 PO Box 391
 Pine Bush, NY 12566
PERSONNEL: Phillip Edmunds, President
DESCRIPTION: Domestic installations, apartment wiring, drop change out, audit. We use uniformed employees, company owned, brightly lettered vehicles. Operations coast to coast--references many and strong.

Electra Motion Inc.(818) 449-7917
 40 N Daisy Ave.
 Pasadena, CA 91107
PERSONNEL: Gerald Graydon, President/Sales Manager; Dan Cartwright, Vice President
DESCRIPTION: CATV distribution power supply 60 volt, 15 amp. Available in single or dual configuration, pole mount or pedestal.

Electrodyn Inc.(812) 334-1023
 917 S Rogers St.
 Bloomington, IN 47401
PERSONNEL: Mark Adams; Bruce Raper
DESCRIPTION: Electronics servicing and reconditioning of tuners, CATV converters, MATV amplifiers, line and trunk, line extenders, and TVRO service including repair of satellite receivers down converters and antenna positioners.

ELECTROHOME

Electrohome Ltd.(519) 744-7111
 809 Wellington St. N
 Kitchener, Ont Canada, N2G 4J6
PERSONNEL: J.A. Pollock, President/Chairman/CEO; H.H. LaPier, Vice President/Operations; W.A. Janci, Vice President/Finance; W.N. Nobbs, Group GM/Elect Div.
REGIONAL OFFICES: Tonawanda, NY (716) 694-3332; Morristown, TN (615) 587-5250.
DESCRIPTION: Manufactures and/or distributes a wide range of electronic equipment. Video display, projection data/graphics and video TV systems, consumer and commercial earth/satellite systems, videotex computer graphics equipment, single and double sided P.C. boards, contract design, engineering and manufacturing.



ELECTROLINE
Television
Equipment Inc.

Electroline TV Equipment Inc.(514) 374-6335
 8750 8th Ave.
 Montreal, Quebec H1Z 2W4 Canada
PERSONNEL: M. Olfman, Vice President; Henri Bertemes, Sales Manager; Mitchell Goldberg, Applications Engineer

DESCRIPTION: Electroline manufactures an off-premises addressable system in addition to amplifiers, filters, directional couplers & custom made products for the CATV & MATV industry.

Electrotex(713) 526-3456
 2300 Richmond Ave.
 PO Box 66907
 Houston, TX 77098
PERSONNEL: Donald Simon, President; George Langston, Executive Vice President
REGIONAL OFFICES: 813 Morrow, Austin, TX 78757, (512) 454-0318; 1275 S 11th, Beaumont, TX 77701, (713) 838-6421; 4019 Brett, Corpus Christi, TX 78411; (512) 854-5306; 4435 Airline Dr., Houston, TX 77022; (713) 695-6851; 8540 Winkler Dr., Houston, TX 77017; (713) 941-7016; 430 Atkinson Dr., Lufkin, TX 75901, (713) 632-4409; 1200 W Hildebrand, San Antonio, TX 78201, (512) 735-9271; 9151 Forest Lane, Dallas, TX 75243, (214) 234-0433.
DESCRIPTION: Distributor for Belden CATV cable, Winegard electronic components, M/A-Com MATV/CATV, Xcelite tools, Broadline electronic parts.

Elephant Industries Inc.(813) 995-7383
 3949 N Tamiami Trail US N 41
 PO Box 3626
 Fort Myers, FL 33903
PERSONNEL: William Schosek, President
DESCRIPTION: Hydraulic boring equipment for underground pipe and cable installation. Specializing in road and driveway work.



THE
INSTALL
PEOPLE.

ENGLISH
ENTERPRIZES
Serving the industry
since 1974

English Enterprizes.(305) 841-7210
 Box 6494
 Orlando, FL 32853
PERSONNEL: Gary English, President
DESCRIPTION: Contract services to the cable industry: residential installations, underground drop buries, underground construction, MDU wiring, MDU design, pre & post wires, apartment activations, non-pay converter collections, tap audits, rebuild drop swings, 1,000, 000 installs since 1974. The professional choice.

Excalibur Cable Comm. Ltd.(703) 777-5905
WATS(State)(703) 451-7584
 6 Loudon St. SW
 Leesburg, VA 22075
PERSONNEL: Konrad Poth, President; Larry Gibson, Secretary/Treasurer/Chairman; Christopher McCarty, Vice President; James Connors, Vice President
REGIONAL OFFICES: 306 S Pickett St., Alexandria, VA 22304, (703) 370-7204.
DESCRIPTION: Excalibur is a CATV contracting and construction company specializing in residential installations, multi-unit, postwires and prewires, turnkey hi-rise construction and installations, underground construction and all related rough balancing and splicing. Field engineering and design work on apartment complexes is also provided.

buyers' guide

General Electric Co.



FM Systems Inc......(714) 979-3355
WATS(National).....(800) 235-6960

3877 S Main St.
 Santa Ana, CA 92707
PERSONNEL: Frank McClatchie, President; Joe Dean, Sales
DESCRIPTION: FM Systems Inc. manufactures and markets the FMT 633S stereo TV modulator (4.5 megahertz), and a device for transmitting MTS stereo through super trunks (FMU618 MTS and FMD 618 MTS). Manufactures other stereo processors for MTV, HBO, Showtime, etc. FM Systems also manufactures a music distribution system-studio line process-MDS operator to transmit nine musical programs on one transmitter. Digital disc quality audio for distribution on MDS transmitters. Distributed in Canada through DGH communications.

Facile Technologies Inc.(201) 684-1000
 185 Sixth Ave.
 Paterson, NJ 07509
PERSONNEL: H. Weeks Jr., President
DESCRIPTION: Manufacturers of shielding tapes used in coaxial cable.

Falcone International Inc.(404) 427-9496
 PO Box 3067
 Marietta, GA 30060
PERSONNEL: Jim Orton, President; Walter Elliott, Vice President/Marketing
DESCRIPTION: Distribute insertion equipment for commercials.

Fairchild Data Corp.(602) 949-1155
 350 N Hayden Road
 Scottsdale, AZ 85257
PERSONNEL: Louis Harper Jr., President; Steve Oney, VP/Prod. Operations; Karl Gohlke, VP/Technology; Raymond Kelsey, Director/Marketing; Wayne Berry, Marketing Mgr./Broadband Prod.
DESCRIPTION: Manufacturer of high-speed data modems. The modems have data rates of 56 Kbps to 10 Mbps and are frequency agile between 5 and 400 MHz in 50 KHz steps with full independence between send and receive.

Federal Telecom Inc.(815) 338-6000
 1000 Hart Raod
 Barrington, IL 60010
PERSONNEL: John Middlebook, President; Ken Gentry, Production Manager
DESCRIPTION: Federal Telecom Inc. is a leading supplier of Buried Plant Housings to the CATV industry. C124 Series Polyped Housings: Used to house and protect taps, splitters, line extenders, directional couplers & some amplifiers, as well as other components used by the CATV industry. C1230 Amplifier Polyped Housing: Used primarily to house & protect amplifiers.

Ferguson Communications Corp.(214) 854-2405
 Rte. 1

Box 135-A
 Laneville, TX 75667
PERSONNEL: Mac Ferguson, President; Rex Ferguson, Vice President
DESCRIPTION: Design, engineering and installation services.



First Data Resources Inc.

First Data Resources Inc.(402) 399-7000
WATS(National).....(800) 228-9079

7301 Pacific St., C-41
 Omaha, NE 68114
PERSONNEL: Bob Masterson, CEO; Bill Esping, Chairman of the Board; Jay Oxtan, VP/General Manager
DESCRIPTION: First Data Resources offers advanced management information and subscriber billing systems to providers of subscription and pay television services. FDR offers Micro Delivery Option, a personal computer based billing and reporting service to complement their on-line Cable Control System. FDR also offers Profitrack, a unique concept in cable information reporting for profit-minded MSOs.

Fishel Co., The(614) 486-5211
 1170 Kinnear Road
 Columbus, OH 43212
PERSONNEL: J. Keeler Jr., President; Perry Pauley, Vice President
REGIONAL OFFICES: 11441 Mosteller Road, Cincinnati, OH 45241, (513) 771-3650; 4508 Bishop Lane, Louisville, KY 40218, (502) 456-2900; 1625 Brumlow Ave., Southlake TX 76092, (602) 233-0658.
DESCRIPTION: The Fishel Co. is a national utility contractor who can provide full services including: house and apartment wiring; aerial; drop and underground construction, including plowed and trenched cable.

Fisher Research Laboratory Inc.(209) 826-3292
 1005 I St.
 Los Banos, CA 93635
PERSONNEL: Jim Wellen, President; Louis Ciuffo, Sales Manager
DESCRIPTION: Pipe and cable locators, cable fault locators, AC voltage, detectors, liquid leak detectors, water well level indicators.

G & L General Contractors Inc.(205) 821-7407
 PO Box 1232
 Auburn, AL 36830
DESCRIPTION: Provides installation services and general contracting services.

GNB Incorporated.....(612) 681-5000
 1110 Hwy. 110
 Mendota Heights, MN 55118
PERSONNEL: Stanley Gaines, President; Malli Rao, VP/Sales; Don Gray, Sales Manager; Mitch Bregman, Sales Manager; Bill Henry, Sales Manager
REGIONAL OFFICES: 180 Interstate North, Atlanta, GA 30339, (404) 980-9030; 415 E Golf Road, Arlington Heights, IL 60005, (312) 593-

3991; 1880 Valley View Lane, Farmers Branch, TX 75381, (214) 243-1011.
DESCRIPTION: GNB Incorporated is the manufacturer of Watchman™ CATV/Standby power 12 volt batteries.

Gabriel Electronics Inc.(207) 883-5161
 PO Box 70
 Scarborough, ME 04074
PERSONNEL: Harold Whetstone, Sales Manager
REGIONAL OFFICES: 111 W Port Plaza, #600, St. Louis, MO 63146, (314) 878-2982.
DESCRIPTION: Manufacturer of microwave point-to-point antenna systems, including CARS band and studio transmitter links. All microwave transmission lines supplied i.e., elliptical, rectangular, and circular systems, plus accessories, including dry air pressurizers. Installation of antennas and microwave systems plus test and guarantee are provided by Gabriel.

Gamco Industries(201) 381-0700
 19 Walnut St.
 Clark, NJ 07066
PERSONNEL: Fred Whiting, Executive Vice President; Joe Dolan, VP/Sales & Mktg.; Carmine Amatucci, National Sales Manager
DESCRIPTION: Manufacturer passive and active line equipment: line extenders, channel droppers, traps, passive lines and trunk amplifiers.

Gem Top Mfg. Inc.(503) 659-3733
WATS(National).....(800) 547-9706
 8811 SE Herbert Court
 Clackamas, OR 97015
PERSONNEL: Henry Geisler, President; Roger Foster, National Sales Manager; James Fuglestad, Western Reg. Sales
DESCRIPTION: Manufacture and sales of steel commercial Gem Top Pickup covers and distributors of interior shelving and ladder racks for use in both pickups and vans. Manufacturer of recreational pickup covers made from steel and rovel plastic.



General Cable Co./ Apparatus Div......(303) 427-3700

5600 W 88th Ave.
 Westminster, CO 80030
PERSONNEL: Joseph Fiamingo, Vice President; Van Walbridge, Sales Manager
REGIONAL OFFICES: 2249B Davis Ct., Hayward, CA 94545, (415) 785-0821; PO Box 579, Hughes Ford Road, Frederick, MD 21701, (301) 662-6262; 5220 Minola Road, Lithonia, GA 30058, (404) 981-7470.
DESCRIPTION: Telsta aerial lifts for splicing, maintenance & construction of CATV aerial plant.

General Electric Co.(804) 483-5000
WATS(National).....(800) 626-2000
 Consumer Electronics Division
 Portsmouth, VA 23705
PERSONNEL: Raphael Richman, Mgr. Mktg. Comm. & Support; Ron Polomsky, Mgr. Cable TV

buyers' guide

General Instrument Corp.

Product Oper.
DESCRIPTION: Comband systems, an addressable system which compresses pairs of video and audio program sources on a single 6 mega hertz RF channel, providing carriage of up to twice the number of program sources as currently carried.

GENERAL INSTRUMENT

General Instrument Corp.

Jerrold Div.(215) 674-4800
WATS(National)(800) 523-6678
WATS(State)(800) 562-6965

2200 Byberry Road
Hathboro, PA 19040

PERSONNEL: George Safiol, Exec. VP/
Operations; Hal Krisbergh, VP/GM, Sub. Systems
Div.; Bill Lambert, VP/GM, Jerrold Dist. Systems
Div.; Larry Fry, Vice President/Sales; Ed Breen,
VP/Subscriber Marketing
REGIONAL OFFICES: 767 Fifth Ave., 45th
Floor, New York, NY 10153, (212) 207-6300; 2611
Westgrove Road, Suite 109, Carrollton, TX 75006,
(214) 248-7931; 7100 East Belleview Ave., Suite
101, Englewood, CO 80111, (303) 740-6118.
DESCRIPTION: Designer and manufacturer of
full line of electronic CATV, TVRO and SMATV
equipment. Distribution Systems: conventional,
feedforward and power-doubling amplifiers, taps
and passives, and accessory equipment;
Subscriber Systems: plain, pay and addressable
converters, addressable controllers, scrambling
equipment, stereo decoders and add-on terminals
for impulse pay-per-view. Headend Systems:
MATV and CATV satellite receivers, frequency
agile headend modulators and encoders; Local
Area Network: broadband distribution equipment,
advanced status monitoring and point-to-point
broadband modems.

General Instrument Corp.

Tocom Div.(214) 438-7691
PO Box 47066
Dallas, TX 75247

PERSONNEL: Michael Corboy, President;
William Flaherty, Exec. Vice President; Sid
Prothro, National Sales Manager; Tom Martin,
Dir./Research & Development; John Fullingim,
Mgr. of Marketing
DESCRIPTION: Manufactures a complete line of
advanced communications systems for the CATV
industry. Products include the Tocom Plus line of
baseband addressable set-top converters, decoders
also headend control systems and home security
products including home alarm terminals and
alarm only terminals.

General Machine

Products Co. Inc.(215) 357-5500
3111 Old Lincoln Hwy.
Trevose, PA 19047

PERSONNEL: William Pfundt, Mktg. Mgr.; D.
Clemens, VP/Sales
REGIONAL OFFICES: 525 Reactor Way,
Reno, NV 89502, (702) 786-5500.
DESCRIPTION: Outside plant tools and

accessories for telecommunications industry.

General Semiconductor Ind. Inc.(602) 968-3101
2001 W Tenth Pl.
Tempe, AZ 85281

PERSONNEL: Gerald Myers, Pres./Chairman of
Board
DESCRIPTION: Manufacturers of voltage
suppressors designed for power, insertion
applications with cable communication systems.

Gilbert Engineering Co. Inc.(602) 245-1050
WATS(National)(800) 528-0199
PO Box 23189

Phoenix, AZ 85063
PERSONNEL: Robert Spann, President
DESCRIPTION: Gilbert Engineering
manufactures a full line of coaxial connectors for
trunk, distribution and drop cables including
housing to housing, right angle connectors, 90
degree connectors, and GX-59-AHS/series, GX-6-
AHS/series weather tight connectors.

Global Cable Inc.(414) 272-7716
324 W Cherry St.

Milwaukee, WI 53212
PERSONNEL: Robert Valente, President; Mike
Brown, VP/Construction & Engineering; Edward
Pask, VP/Residential Operations
DESCRIPTION: Cable television construction, all
phases: residential and commercial installation,
and system analysis. Consultant to municipalities,
planning, and undergoing cable TV builds.
Provide programming concepts, storylines and
treatments.

Global Systems Corp.(617) 373-4392
15 Hale St.
Haverhill, MA 01830

PERSONNEL: Thomas Jarman, President;
George Young, Engineering Manager
DESCRIPTION: Manufactures MDS and ITFS
down converters and transmitters.

Gould Inc.(312) 640-4000
10 Gould Center
Rolling Meadows, IL 60008

PERSONNEL: David Simpson, Vice Chairman of
the Board; Henry Peppers, Exec VP Defense
System; Richard Abraham, Exec. VP/Electric
Components; James McDonald, President/COO;
Dr. J. Rowe, V Chairman/Chief Technical Off;
Gerard Corbett, Director Public Relations
DESCRIPTION: International developer and
manufacturer for electronic systems, products,
and components.

Great Lakes Data Systems Inc.(414) 887-7651
WATS(National)(800) 882-7950
1519 N Spring St.

Beaver Dam, WI 53916
PERSONNEL: Lon Rosado, President; Gerry
Pauls, VP/Sales Manager
DESCRIPTION: Provides in-house user defined
cable billing systems designed by cable
management people written in a PC compatible
language for systems from 300-20,000 subs.

Great Plains Inc. Systems(417) 682-3536
PO Box 32
Lamar, MO 64759

PERSONNEL: J.R. Foree, President
DESCRIPTION: Aerial pole line construction.

Greater Distributing Service Inc.(312) 998-0444

2011 John's Dr.

Glenview, IL 60025
PERSONNEL: Alan Schulman, President; Diane
Cohen, Vice President
DESCRIPTION: Nationwide distributors of
stand-by power batteries. Distributors of GNB
(Gould), Watchman 1, Watchman 11 and Gelseal
batteries.

Griffin, Frederick G., P.C.(804) 237-2044
3229 Waterlick Road
Lynchburg, VA 24502

PERSONNEL: Frederick Griffin, PE; John
Hayden, PE; Martin Barringer, EIT Staff
Engineer; Bernhard Klein, Staff Engineer
DESCRIPTION: Consulting in the areas of
engineering, construction, feasibility study,
refranchising and system appraisal.

H A Solutec Ltd.(514) 524-6893
4360 D'iBerville
Montreal, Quebec H2H 2L8 Canada

PERSONNEL: Ernest Grondin, President; Gilles
Fortin, VP/Marketing
DESCRIPTION: SOL 6800 and SOL 6800/mini
automated broadcasting system for commercial
insertion SOL 8100 impulse noise reducers SOL
8200 co-channel filt. Also: SOL 6800/UIS and
6800/MICRO automated broadcasting system for
commercial inserts.

Hall Equipment & Supply Co.(713) 783-1710
5711 Schumacher
Houston, TX 77057

PERSONNEL: Conway Hall, President; Larry
Dewey, Vice President
REGIONAL OFFICES: 1100 N Loop 12, Irving,
TX 75061, (214) 445-0848.
DESCRIPTION: Distributes drop plows,
trenchers, backhoes & boring equipment.

Halls Safety Equipment Inc.(412) 458-7202
Box 230
Grove City, PA 16127

DESCRIPTION: Halls boots, Klein tools,
Carhart clothing and Lemco & Jackson cable
supplies.

Hamlin International Corp.(206) 246-9330
13610 First Ave.S
Seattle, WA 98168

PERSONNEL: Philip Hamlin, President; Tom
Minami, Vice President
DESCRIPTION: Provides 42-channel converters,
pay TV scrambling and descrambling, and 58-
channel digital wireless converters; addressable
scrambling and descrambling system MLD-
1200A.

Harrell Enterprises

of Illinois(312) 226-0533
2033 W Walnut St.
Chicago, IL 60612

PERSONNEL: Glen Kirsch, President; Robert
Young, Vice President
REGIONAL OFFICES: 3419 W Wisconsin Ave.,
Milwaukee, WI 53208, (414) 344-2255.
DESCRIPTION: Contractor performing
installation, multiple dwelling unit and
underground services nationally. Experienced;
union, non union, EEO, bonding, insurance.
Presently employs 100 + people.

Harris Broadcast Microwave(415) 969-9100
967 Stierlin Road

buyers' guide

ICM Video

Mountain View, CA 94043
PERSONNEL: I. T. Corbell, VP/General Manager; Cliff Fields, Domestic Sales Manager; Mert Knold, Central Regional Sales Mgr.; John Morrissey, Western Regional Sales Mgr.
REGIONAL OFFICES: 64 Shadow Oak Dr., Sudbury, MA 01776, (617) 443-7042.
DESCRIPTION: Fixed and portable video microwave systems. Video exciters for portable uplink.

Harris Corp.-Satellite Comm. Div.(305) 724-3910
 PO Box 1700
 Melbourne, FL 32901
PERSONNEL: A. Lloyd Burns, General Manager; Herbert Shannon, Sales Director; Todd Gross, Sales
DESCRIPTION: Offer full product line of TVROs and up/down links for video and digital systems. Harris Corp., includes computers, printing, semi-conductors, etc.

Harris Corp.
 Video Systems Operation.....(415) 969-9100
 967 Stierlin Road
 Mountain View , CA 94043
PERSONNEL: H. Kenneth Regnier Jr., VP/ General Manager; Ron Frillman, Manager/TV Video Sales
REGIONAL OFFICES: 1451 Owen Dr., Clearwater, FL 33519, (813) 797-4191; 17 Tally Ho, Ridgefield, CT 06877, (203) 431-9386; PO Box 710, Blue Jay, CA 92317, (714) 336-3046; 8663 W 108th Pl., Overland Park, KS 66210, (913) 451-9966; 605 Samoset Lane, Schaumburg, IL 60193-1454, (312) 529-1611.
DESCRIPTION: Time base correctors, frame synchronizers, still/slide storage systems, and digital video effects systems.

Head End, The(614) 766-0874
 2690 Sawbury Blvd.
 Worthington , OH 43085
PERSONNEL: Steve Shaefer, President; Denise Shaefer, Vice President; Tim Holzer, Sales Manager
DESCRIPTION: Specialize in turnkey headend installation, engineering and building of systems, also service and repair work.

Henkels & McCoy Inc.(215) 283-7600
 Jolly Road
 Blue Bell, PA 19422
PERSONNEL: Joseph Barnett, Engineering Div. Mgr.
REGIONAL OFFICES: NJ Div., Elbow Lane, Burlington, NJ 08016, (609) 387-9000; SE Div., Bellcor Dr., Industrial Park, Newcastle, DE (302) 328-1586; Rising Sun Div., Rising Sun, MD 21911, (301) 658-5522; York Div., PO Box 1742, York, PA 17405, (717) 266-5641; SW Div., 4220 Justin Road, Lewisville, TX 75067, (214) 539-1746; Rocky Mtn. Div., 1630 Chambers Road, Ste. 107, Aurora, CO 80011, (303) 360-0472; Great Lakes Div., 1800 Johnson St., Elkhart, IN 46514 (219) 264-1121; W Div., 5031 NE 148th Ave., Portland, OR 97220, (503) 255-5125.
DESCRIPTION: All phases of engineering, construction, and training. Presently our services include the following: Feasibility studies, strand mapping, application/make ready survey, bills of material, technical and engineering consulting services in all phases of Cable TV, as built and post surveys, permit preparation, system activation/proof of performance, on site

maintenance personnel, training services (linemen to technicians), aerial and U.G. construction, make ready construction, tower and building foundations .

Herbert Boyer Co.....(212) 744-7558
 14 E 77th St.
 New York, NY 10021
PERSONNEL: Herbert Boyer, President; Donald Franz, Vice President
DESCRIPTION: Engineering consulting, market research, investment consultants and executive searches. Clients are equipment manufacturers and MSOs.

Hewlett-Packard Co.(415) 857-1501
 3000 Hanover
 Palo Alto, CA 94304
PERSONNEL: John Young, Chief Executive Officer; Dean Morton, Exec. VP/COO
DESCRIPTION: Manufacturers of RF spectrum analyzers geared for CATV measurements, and a broad line of general purpose test equipment such as voltmeters.

High Technology Group.....(203) 966-4820
 72 Park St.
 New Canaan, CT 06840
DESCRIPTION: Industry consultants.



Hitachi Denshi America(516) 921-7200
 175 Crossways Park W
 Woodbury, NY 11797
PERSONNEL: J. Tosaka, President; Bernard Munzelle, Vice President; S. Hotta, General Manager
REGIONAL OFFICES: 250 E Devon Ave., Itasca, IL 60143, (312) 250-8050; 3610 Clearview Pkwy., Doraville, GA 30340, (404) 451-9453; 14169 Proton Road, Dallas, TX 75234, (214) 233-7623; 18005 S Adria Maru Lane, Carson, CA 90746, (213) 538-4880.
DESCRIPTION: Manufacture auto set-up color video cameras and 1" video tape recorders. Ideal for use in portable or field production, studio production, graphics and mobile vans.

Hoffman & Hoffman
 Trenching Inc.....(319) 232-4807
 PO Box 866
 Cedar Falls, IA 50613
PERSONNEL: Duane Hoffman, President; David Hoffman, Vice President
DESCRIPTION: All types of underground cable placing and boring. Excellent reputation on cleanup restoration of areas where cable has been placed. We work all of the midwest states.

Holbury Precision Plastics(616) 782-7620
 One Woodhouse Dr.
 Dowagiac, MI 49047-0699
PERSONNEL: Jerry Wilson, President; Greg Holbury, Sales Manager
DESCRIPTION: Flag markers for buried cable lines. Environment safe; brightly color-coded;

personalized w/messages, logos, telephone numbers; biodegradeable.

Hughes Communications Inc.....(213) 607-4000
 1990 Grand Ave.
 El Segundo, CA 90245
PERSONNEL: John Koehler, President/CEO; Steven Petrucci, Executive Vice President
DESCRIPTION: Hughes Communications Inc. owns and operates three Galaxy and three Leasat satellites. Galaxy serves the voice, video, and data transmission needs of large corporations, long-haul carriers, cable programmers and broadcasters. Leasat provides worldwide tactical communications service to the U.S. Navy and other agencies of the Department of Defense.

Hughes Aircraft Co.
 Microwave Comm. Products(213) 517-6233
 WATS(National)(800) 227-7359
 PO Box 2940
 Mail Stop 245/2772
 Torrance, CA 90509-2940
PERSONNEL: Abe Sonnenschein, Manager-AML; L. Eugene Stanley, Marketing Manager; Steve King, Domestic Sales Manager
DESCRIPTION: Hughes Microwave Communications Products offers a complete line of multichannel microwave distribution equipment currently being used to deliver 100,000 channels of programming to CATV hubs. Equipment includes low, medium and high power microwave systems capable of transmitting 1 to 60 TV channels, FM modulated equipment for interties, and enhancement products for existing systems. A new low-cost on-frequency active repeater has just been introduced by Hughes. The MWB-122 is designed to permit cable operators to extend existing microwave paths, and to implement paths where the direct line-of-sight transmission is obstructed. Hughes also provides a full line of support services such as system design, field engineering assistance, applications engineering, product support (24 hour service telephone), and training seminars.

Humphrey Bros. Inc.
 CATV Construction.....(602) 878-0633
 8200 N 75th Ave.
 Peoria, AZ 85345
PERSONNEL: Doy Humphrey, President
DESCRIPTION: Underground and aerial cable installation.



ICM Video(405) 232-5808
WATS(National)(800) 426-9825
 701 W Sheridan
 Oklahoma City, OK 73102
PERSONNEL: Royden Freeland, President; Mike Janko, Division Manager
REGIONAL OFFICES: 2010 W Burbank Blvd., Burbank, CA 91506, (213) 849-5716; 776 Walnut St., New Milford, NJ 07646, (213) 265-5200; PO Box 16876, Ft. Lauderdale, FL 33318, (305) 587-7481.

buyers' guide

ISS (Intern'l Satellite Systems)

DESCRIPTION: Video enhancer/processors, audio and video distribution amplifiers, video/audio routing switchers and character generators. All products available in NTSC version; many also available in PAL.

ISS (Intern'l Satellite Systems).....(415) 853-0833
 WATS(National).....(800) 227-6288
 104 Constitution Dr. #4
 Menlo Park, CA 94025
 PERSONNEL: Norman Gillaspie, President; Lydia Gillaspie, Marketing Director; John Cioro, Eastern Regional Office
 DESCRIPTION: ISS Engineering Inc. manufactures and imports commercial satellite receivers, CATV/SMATV modulators, frequency agile processors and low noise amplifiers as well as most headend equipment needed for cable systems.

ITT Cannon.....(714) 557-4700
 666 E Dyer Road
 Santa Ana, CA 92702
 PERSONNEL: L. Wayne Oliver, President; Bruce Simpson, Vice President/Sales
 DESCRIPTION: ITT Cannon is a worldwide supplier of connectors, interconnection systems and assembly tools. The company's product line encompasses more than one hundred thousand connector assembly configurations that are used in the computer, telecommunication, medical, aerospace, defense, transportation, broadcast, military and energy industries.

ITW Linx(312) 296-5469
 195 Algonquin Road
 Des Plaines, IL 60016
 PERSONNEL: Russell Duggan, Manager
 DESCRIPTION: Fastening devices. Wire and cable routing and clamping components.

Ideaonics.....(701) 786-3904
 Box 224
 Mayville, ND 58257
 PERSONNEL: Austin Kramer, Manager; Norman Bakken, Engineer
 DESCRIPTION: Emergency alert units for CATV and SMATV systems.

Imperial Products Center Inc.....(718) 784-7227
 50-14 39th Street
 Long Island City, NY 11104
 PERSONNEL: Charles Mkhitarian, President; Bernard Ashkinazy, Sales Manager
 DESCRIPTION: Manufacturer of security devices and the V.I.P. "The Videointerphone."

Incospec Electronics.....(514) 322-5540
 WATS(National).....(800) 361-3896
 4651 Desgrandes Parities
 St. Leonard, QUE H1R 1A5 Canada
 PERSONNEL: Mario Sebastivani, President; Mike Steiner, Vice President; Doug Lawson, Marketing Manager/Sales
 DESCRIPTION: Full service distributor, complete design and repairs (full bench). CATV/SMATV technical briefs and field engineering. Supply and service equipment.

Independence Electronics(816) 836-1094
 117 E Alton
 Independence, MO 64055
 PERSONNEL: Douglas Jones, President; Colleen Jones, Vice President
 DESCRIPTION: Independence Electronics does

converter repair, we also tune positive traps for cable systems. We manufacture and design test equipment for the converter repair business, such as a converter test set.

Information Systems
 Development Inc.....(305) 753-8220
 3773 NW 126th Ave.
 Coral Springs, FL 33065
 PERSONNEL: Paul Barre, President; Steve Reiss, VP/Sales Manager
 DESCRIPTION: Information Systems Development Inc. provides a subscriber management system called CableMaster which addresses the areas of customer service, dispatch, billing, trouble-call analysis, addressability, data retrieval, and all other operations of a cable system. A fully integrated financial system is also available. Both run on IBM Systems 36 and 38.



Information Systems
 Planners Inc.(901) 795-8314
 6094 Apple Tree
 Suite 9
 Memphis, TN 38115
 PERSONNEL: Snowden Bunch, President; Bruce Gronich, Vice President
 REGIONAL OFFICES: 6319 Briarwood Road, Columbia, S.C. 29206, (803) 787-7256.
 DESCRIPTION: Our Cabill Management System is written in a state-of-the-art 4th generation relational data base language. Computer software tailored to CATV firms, including billing and accounts receivable, accounts payable, general ledger, payroll, work order maintenance and subscriber addressing. Staff training, support and software maintenance. Established customer base. Spanish versions of software available, and supported. Software runs on AT compatibles and AT&T 3B Series Mini Computers. See our Display Ad.

InfoSoft Technology Inc.(206) 638-2670
 12345 Lake City Way NE
 Seattle, WA 98125
 PERSONNEL: Gloria Doyle, President; Ken Doyle, Vice President
 DESCRIPTION: Computer software products designed for character generation. Applications for local origination channels (community access) and cable advertising. Other software products include: cable TV guides, closed circuit displays, VCR controller, temperature display and addressable tap controller software, other software products currently under development.

Ingersoll Industries Inc.....(414) 422-1700
 PO Box 425
 Muskego, WI 53150
 PERSONNEL: John Ingersoll, President; Norman Dubec, General Manager
 DESCRIPTION: Turnkey construction of newly built or rebuilt cable systems.

Inner Tite(201) 376-3255
 78 Diamond Road
 Springfield, NJ 07081
 PERSONNEL: George Davis, President; Edward Engle, Vice President
 DESCRIPTION: Manufacture locking devices for pedestals to prevent tampering.

Institute of Electronic Sciences(409) 845-6763
 & Electronics Training Div. TX
 Texas A&M University System
 College Station, TX 77843
 PERSONNEL: James Wallace, Division Head
 DESCRIPTION: Institute of Electronic Science trains students for positions as technicians in all areas of electronics industry. Students spend approximately 1900 hours in the 18 month program learning mathematical analysis, computer technology and logic, microprocessor or programming and interfacing, basic and advanced electronics, digital techniques, trouble shooting and data communication. Approximately half of the instruction time is spent in laboratory sessions to reinforce the theory classes. Lab sessions cover generic circuits to help students conceptualize the theory.



Integral Corp.(214) 826-0590
 PO Box 11269
 Dallas, TX 75223
 PERSONNEL: J. Gray, President; John Sullivan, Vice President; Bill Channell, Marketing Coordinator
 DESCRIPTION: Manufacturer of polyethylene cable conduits with cables pre-installed.

Intercept Corporation.....(201) 471-2212
 WATS(National).....(800) 526-0623
 220 Entin Road
 Clifton, NJ 07014
 PERSONNEL: Sandor Garfinkle, President; Peter Ramsden, Vice President; Herbert Javer, Vice President/Finance; Kenneth Augustine, Sales Manager
 DESCRIPTION: Manufacturers of a complete line of drop material for the cable industry. Products include tier traps, band reject filters, parental control traps, splitters, matching transformers, block converters, A/B switches, fixed attenuator pads, grounding block, grounding block with high pass filter, directional couplers, multi-taps, cylinder locks.



Interface Technology Inc.(314) 426-6880
 10500 Kahlmeyer Dr.

buyers' guide

JI Case Company

St. Louis, MO 63132
PERSONNEL: H. Richard Grodsky, President; W. Gary Lowe, Vice President; David Young, Sales Manager
DESCRIPTION: Interface Technology provides the TOES/350 (T'otal Entry System) interactive voice response system to the cable industry. TOES handles calls for Pay-Per-View ordering, Technician Check-In, Account Balance Inquiry, Subscriber Information Service, and other inbound and outbound applications.

Intern'l Electronic Wire & Cable.....(312) 299-0021
 520 Business Center Dr.
 Mt. Prospect, IL 60056
PERSONNEL: Dale Heilenbach, President
REGIONAL OFFICES: 4921 Exposition, Los Angeles, CA 90016. (213) 731-1105.
DESCRIPTION: Manufacture coaxial wire and cable and related items.

Intern'l Optical
 Telecommunications.....(617) 778-1442
 720 Main St.
 Hyannis, MA 02601
PERSONNEL: Dr. Herb Elion, President; Sheila Thall, Executive Vice President; Robert Campbell, Vice President/Marketing; Dr. Glenn Elion, Vice President/Engineering
DESCRIPTION: Network designers and consultants. High resolution and standard voice, video and data. Networks and wide area networks. Specialists in satellite/fiber optics.

Interstate Cable Enterprises Inc.(813) 371-3444
 WATS(National)(800) 282-3952
 6111 Porter Way
 Po Box 10158
 Sarasota, FL 34278
PERSONNEL: N. Lindberg, President; B. Lindberg, Vice President; W. Lindberg, Vice President
DESCRIPTION: Suppliers for CATV and SMATV systems. Installers of drop material, safety equipment, test equipment and specialty products.

Interstate Dropline Installers Inc....(201) 535-9798
 PO Box 128
 Livingston, NJ 07039
PERSONNEL: Philip Collins, President; Howard Bradley, Vice President; Jerry Rufft, Operations Manager
DESCRIPTION: Supplier of independent contractor installers throughout the United States. . . providing drop installations, churn/service work, trapping, audits, MDU overwires, sales and marketing, collections, converter recovery, and drop rebuilds. Turnkey service available.

Interstate Line Contractors(402) 873-9188
 PO Box 456
 Nebraska City, NE 68410
PERSONNEL: Randy Deniuse, President; David Ek, Vice President
DESCRIPTION: All communications installation.

Intrastellar Electronics(312) 658-0300
 200 Berg St.
 Algonquin, IL 60102
PERSONNEL: Thomas Brannam, President; Mary Jane Jelden, National Sales Manager
DESCRIPTION: Repair CATV converters and

equipment, including Jerrold addressable.
 Inventronics Ltd.....(204) 728-2001
 1420 Van Horne Ave. E
 PO Box 1135
 Brandon, Manitoba, Canada R7A 6A4
PERSONNEL: G. Thompson, President; Murray Boles, Sales Manager
DESCRIPTION: Inventronics manufactures quality enclosures of galvanized steel construction with a baked-on polyester powder paint finish.

Irwin Utilities(813) 376-1587
 PO Box 30
 New Port Richey, FL 33552
PERSONNEL: G. Irwin, President; H. Spear, Vice President
REGIONAL OFFICES: 934 E Centerville Road, Garland, TX 75041, (214) 271-9641; 2649 S Parklane, Hallandale, FL 33009, (305) 981-9116; 9523 Lee Hwy., Fairfax, VA, (703) 591-0139.
DESCRIPTION: Underground, aerial, post and pre-wire, splicing, activation and complete turnkey construction operations.

Island Cable Electronics.....(516) 931-8484
 WATS(National)(800) 431-5433
 10 Bethpage Ct.
 Hicksville, NY 11801
PERSONNEL: David Cohen, President; Jay Stekler, Sales Manager; Gene Paraska, Director of Operations

DESCRIPTION: Manufacturer of a complete line of cable TV converters and descramblers. Also sales and quality repairs.

J.B. Emerson & Associates.....(215) 367-2981
 345 Thrush Dr.
 Gilbertsville, PA 19525
PERSONNEL: James Emerson, President
DESCRIPTION: Engineering services for digital, microwave and cable TV systems.

JFW Industries Inc.(317) 887-1340
 5134 Commerce Square Dr.
 Indianapolis, IN 46237
PERSONNEL: Joetta Walker, President; Fred Walker, Vice President; Jaqueline Buescher, Inside Sales
DESCRIPTION: Manufacturer of attenuators, fixed, pushbutton, variable, programmable, rotary, coaxial switches, terminations, detectors, 5, 10, 30, 50 and 100 watt fixed attenuators, RF fuse holders.

JI Case Company(414) 636-6011
 700 State St.
 Racine, WI 53404
PERSONNEL: Jerome Green, President; John Borden, Executive VP/Marketing; John Gleason, Senior VP/Sales & Marketing; John Boylan, Executive VP/Manufacturing; Jack Michaels, Executive VP/Planning & Eng.
DESCRIPTION: Manufacturer of construction



Our **CABILL** Management System is a high tech solution for your business. It's written in a state of the art 4th generation relational database language. This system has indescribable power. Search for customer or subscriber information by any field in the database. Cross check subscribers by combinations of fields. You choose them.

CABILL operates on AT compatibles with hard disks as well as on AT&T 3B series minicomputers. MSOs can use **CABILL** on their smallest to largest systems—getting comparable reports from system to system—with communications back to the home office.

CABILL Management Systems start as low as \$4,000 for our software. We also sell the full line of AT&T computers. Interested in state of the art solutions, call isp.

Information Systems Planners, Inc.
 6094 Apple Tree Suite 9
 Memphis, TN 38115
901-795-8314



buyers' guide

Jacobs Trenching Mfg.

equipment—trenchers, cable layers, loader/backhoes, forklifts, skid steer loaders, wheel loaders, crawlers, loaders and dozers, excavators.

Jacobs Trenching Mfg.(803) 756-6442.
Rte. 2 Box 357
PO Box 517
Loris, SC 29569
PERSONNEL: Jimmie Jacobs, President
DESCRIPTION: Two trenchers available for trenching needs. One small trencher, 7 inches deep and one commercial heavy duty, 12 inches deep.

Jackson Enterprises(513) 836-2641
4 Jacks Lane
PO Box 6
Clayton, OH 45315
PERSONNEL: Richard Jackson, Owner
DESCRIPTION: Manufacturer of the Jackson Tool System of CATV aerial construction and installation tools. Services include: strand mapping, make-ready surveys, as-built maps, customer audits, and all related mapping and design services.

Jampro Antenna(916) 383-1177
PO Box 28425
Sacramento, CA 95828
PERSONNEL: James Oliver, President; Alex Perchevitch, Vice President; Bill Cunningham, Sales Manager
DESCRIPTION: Full line of high quality TV and FM transmitting antennas plus transmission line accessories and combiner, filters, etc.

Jensen Tools Inc.(602) 968-6241
WATS(National)(910) 950-0115
7815 S 46th St.
Phoenix, AZ 85044
PERSONNEL: Uma Aggarwal, President; Bill Hewitt, Sales Manager
DESCRIPTION: Supplier of tools, tool kits, tool cases and test equipment to the cable TV and communication industries.

GENERAL INSTRUMENT

Jerrold Div.
General Instrument Corp.(215) 674-4800
WATS(National)(800) 523-6678
WATS(State)(800) 562-6965
2200 Byberry Road
Hatboro, PA 19040
PERSONNEL: George Safiol, Exec. VP/
Operations; Hal Krisbergh, VP/GM, Sub. Systems Div.; Bill Lambert, VP/GM, Jerrold Dist. Systems Div.; Larry Fry, Vice President/Sales; Ed Breen, VP/Subscriber Marketing
REGIONAL OFFICES: 767 Fifth Ave., 45th Floor, New York, NY 10153, (212) 207-6300; 2611 Westgrove Road, Suite 109, Carrollton, TX 75006, (214) 248-7931; 7100 East Belleview Ave., Suite 101, Englewood, CO 80111, (303) 740-6118.
DESCRIPTION: Designer and manufacturer of full line of electronic CATV, TVRO and SMATV equipment. Distribution Systems: conventional, feedforward and power-doubling amplifiers, taps

and passives, and accessory equipment; Subscriber Systems: plain, pay and addressable converters, addressable controllers, scrambling equipment, stereo decoders and add-on terminals for impulse pay-per-view. Headend Systems: MATV and CATV satellite receivers, frequency agile headend modulators and encoders; Local Area Network: broadband distribution equipment, advanced status monitoring and point-to-point broadband modems.



Jerry Conn Associates, Inc.

Jerry Conn Associates Inc.(717) 263-8258
WATS(National)(800) 233-7600
WATS(State)(800) 692-7370
130 Industrial Dr.
PO Box 444
Chamersburg, PA 17201
PERSONNEL: Thomas Carbaugh, President; David Showalter, Sales Manager; Sherri Nitterhouse, SMATV Sales Rep.
DESCRIPTION: Manufacturer's representative and distributor for many products in the CATV/SMATV industry; everything from drop materials to headend electronic and test equipment.

Joslyn Mfg. and Supply Co.(312) 625-1500
9200 W Fullerton Ave.
Franklin Park, IL 60131
PERSONNEL: Richard Kruck, President
DESCRIPTION: Offers a complete line of drop line hardware, guy support, poleline hardware, installation equipment and pole reinforcing systems.

K & B Contractors(918) 744-0844
Box 4498
Tulsa, OK 74159
PERSONNEL: James Bolton, Owner
DESCRIPTION: Engaged in construction of aerial and buried CATV projects; including turnkey construction and engineering. Construction area includes all portions of the U.S., and past experience of contractor consists of an excess of 100 REA financed and completed projects in buried telephone systems. Completed projects exceed \$60 million.

KES (Klungness Electronic Supply Inc.(800) 682-7140
WATS(State)(800) 338-9292
107 Kent St.
PO Box 885
Iron Mountain, MI 49801
DESCRIPTION: Distributor of RF electronics cable hardware, antennas, tools, safety equipment, test equipment, headend equipment, and earth stations.

KMP Computer Systems(505) 672-1600
135 Longview Dr.
Los Alamos, NM 87544
PERSONNEL: Eldon Pequette, President/Sales Manager
DESCRIPTION: CABLESTAR singular and multi-station, in-office computer systems provide

order entry, billing, accounts receivable, inquiry, marketing, and management reporting for cable TV operators.

Kanematsu-Gosho (USA) Inc./
Sprucer Cable Group(201) 271-7544
400 Cottontail Lane
Summerset, NJ 08873
PERSONNEL: Mr. Tanaka, President; Mr. O'Hara, Vice President; Ken Ogiso, Sales Manager/Electronics; Neil DeCostanza, Manager/Marketing & Sales
DESCRIPTION: Sprucer II, two-way addressable baseband converter and related headend equipment complete with hand-held remote (IR) control unit for complete subscriber/CATV system interaction for pay-per-view requests/ authorization, opinion polling, program/channel authorization (upgrades and downgrades) and parental guidance 4-level control input via a 3-digit subscriber code.

Kaul Tronics(608) 647-8902
Po Box 637, Rte. 2, Hwy. 14 E
Richland Center, WI 53581
PERSONNEL: John Kaul, President; Mary Kaul, Vice President; Ross Halverson, VP/Production; Jim Atkinson, VP/Marketing
DESCRIPTION: Manufacture stainless steel dishes in sizes of 66", 90", 112" diameters. Manufacture mesh dishes 6', 8', 9', 10', 10-1/2'. Manufacture KU mesh antennas.

Keiser Engineering Inc.(702) 281-9582
2046 Carrhill Road
Vienna, VA 22180
PERSONNEL: Bernhard Keiser, President
DESCRIPTION: Keiser Engineering Inc. provides consulting engineering and feasibility studies in wideband communication systems, including analog and digital video, both standard and high resolution and high-speed data transmission. Work includes both fiber optic and coaxial cable transmission, as well as satellite links.



Kennedy Cable Construction Inc.(912) 557-4751
WATS(State)(800) 841-4361
Hwy. 280 W
PO Box 760
Reidsville, GA 30453
PERSONNEL: Roger Kennedy Jr., President; Robert West, Vice President; Bob Skelton, Vice President
REGIONAL OFFICES: Florida, (813) 439-3621.
DESCRIPTION: Aerial and underground line construction services, splicing and balance, strand mapping, engineering and design, splicing upgrades - rebuilds.

Kinai Technologies Inc.(206) 676-4459
PO Box 34925
Seattle, WA 98124-1925
PERSONNEL: Jack Van der Star, President;

buyers' guide

LNR Communications Inc.

Terry Johnston, Sales Manager
 REGIONAL OFFICES: 2121 Columbia St.,
 Vancouver, BC Canada, (604) 874-0211.
 DESCRIPTION: Communications/Satellite
 engineered systems and manufacturers of the
 easy-to-use low-cost "Tang" information display
 systems.

Kings Electronics Co. Inc.(914) 793-5000
 40 Marbledale Road
 Tuckahoe, NY 10707
 PERSONNEL: Fred Lorge, President; Oscar
 Wayne, Vice President/Finance; Ed Corcoran,
 Vice President/Sales
 DESCRIPTION: Manufacturer of coaxial
 connectors.

Kinsman Design Associates Inc.(303) 793-0649
 8140 E Phillips Ave.
 Englewood, CO 80112
 PERSONNEL: Sally Kinsman, President
 DESCRIPTION: Consulting engineering
 company providing broadband electronic system
 design for cable television operators and
 manufacturers, plus SMATV and LAN systems.
 Utilize Wang MVP computer system with
 proprietary software. Capable of designing with
 any combination of frequency & equipment, and
 adapting to any drafting symbols: Also draft
 strand maps.

Klein Tools Inc.(312) 677-9500
 7200 McCormick Blvd.

Chicago, IL 60645
 DESCRIPTION: Major manufacturer of hand
 tools and occupational protective equipment.

Knight Construction Co.(313) 689-4030
 1931 Austin Ave.
 Troy, MI 48083
 PERSONNEL: S.K. Knight, President; J.C.
 Hanley, Executive Vice President
 DESCRIPTION: Provides nationwide
 underground CATV construction.

Knox Video(301) 840-5805
 8547 Grovemont Cr.
 Gaithersburg, MD 20877
 PERSONNEL: Phillip Edwards, President;
 Roland Blood, VP/Sales Manager
 DESCRIPTION: Manufacture character
 generators.

L & R Communications Ltd.(712) 252-4101
 WATS(National)(800) 831-0979
 2301 Bridgeport Dr.
 Sioux City, IA 51102
 PERSONNEL: Don Cuthbertson, President; Ron
 Gibbs, Vice President; Dave Hansen, Sales
 Supervisor
 DESCRIPTION: Communication cellular
 microwave, two-way towers, fiberglass,
 aluminum, rhinohide, steel pre assembled shelters.

LDM Inc.(818) 967-1506
 529 S Second Ave.

Covina, CA 91723
 PERSONNEL: Rick Brutocao, President
 DESCRIPTION: 1) SAS, Subscriber Management
 System, utilizes Burroughs computers and
 peripheral equipment. SAS in-house system or
 LDM Service Bureau (SAS Mail Batch, Remote
 Batch or On-Line) Features include: Proven
 addressability, anniversary date. (Cycle) Billing,
 Pay-Per-View, churn analysis, integrates to other
 LDM software packages: Vehicle and fleet
 management, financial accounting system,
 inventory management. 2) Complete mailing,
 inserting, post office delivery. 3) Full commercial
 printing operation: direct mail to program guides.
 4) Technical programming and support:
 communications interface. 5) Data processing
 consulting services.

LNR Communications Inc.(516) 273-7111
 180 Marcus Blvd.
 Hauppauge, NY 11788
 PERSONNEL: S. Okwit, President; F. Arams,
 Vice President/Marketing; E. Salamone, Vice
 President/Administration; P. Lombardo, Vice
 President/Eng; H. Okean, Vice President/ R&D
 DESCRIPTION: Manufacturer of
 telecommunications equipment for satellite earth
 stations including low noise amplifiers, FM/FDM,
 video receivers and excitors, audio subcarriers,
 MODS/DFMODS, FM MODEMS, if filters/
 equalizers, up/down converters, loop, test
 translators, and spacecraft communications
 subsystems.

Audio is Changing We Have What You Need

BTSC Stereo Generators to transmit stereo television audio throughout your cable system.

AGC (Automatic Gain Control) Amplifiers to control your mono or stereo audio level variation on satellite feeds and local Ad insertions.

Audio Processors to receive services such as WFMT, Tempo Sound (Starship), Moody, and many others, and retransmit these services into the FM band.

FM Mono and Stereo Modulators to modulate mono or left and right baseband into the FM band in either synthesized or true stereo.

Audio Modulators and Demodulators for use in Satellite, Microwave and Supertrunk applications.

Band Elimination Filters to notch out unwanted subcarrier frequencies.



180 McCormick Avenue • Costa Mesa • CA 92626 • (714) 979-4511 TWX: 510 600 4362

Reader Service Number 23

buyers' guide

LRC Electronics Inc.



Quality and Innovation

LRC Electronics Inc......(607) 739-3844
PO Box 111

Horseheads, NY 14845

PERSONNEL: John McQuaid, President/General Manager

DESCRIPTION: A complete line of connectors for cable TV, products vary from "F" fittings to hard line aluminum entry and splices. Also miscellaneous aluminum connectors such as, housing splices and angle connectors. Also heat shrink, and cable kits including jumper assemblies along with active and passive electronics.

Laird Telemedia(801) 972-5900
2424 S 2570 W

Salt Lake City, UT 84119

PERSONNEL: William Laird, President; Gary Erickson, National Sales Manager

DESCRIPTION: Manufacture character generators and telecine equipment.

Larson Electronics.....(817) 387-0002
311 S Locust

Denton, TX 76201

PERSONNEL: Ernie Larson, Owner

DESCRIPTION: Power equipment for all CATV systems.

Leader Instruments Corp.(516) 231-6900
WATS(National).....(800) 645-5104
380 Oser Ave.

Hauppauge, NY 11788

PERSONNEL: S. Hirota, President; B. Storch, Vice President/Sales; R. Sparks, Director/Marketing

REGIONAL OFFICES: 20807 Higgins Court, Torrance CA 90501 (213) 618-0695.

DESCRIPTION: Electronic Test Instrument-CATV/MATV field level meter, oscilloscopes, digital storage oscilloscopes, color bar pattern generators, waveform monitors, vectroscopes (NTSC, PAL and SECAM), programmable video generator, instrument carts, frequency counters and sweep and function generators.



LEAMING INDUSTRIES

Leaming Industries(714) 979-4511

180 McCormick Ave.

Costa Mesa, CA 92626

PERSONNEL: James Leaming, President; Robert Leaming, Vice President; John Hoge, Dir. of Eng.; Kim Litchfield, Sales

REGIONAL OFFICES: 5-3761 Victoria Park Ave., Toronto, Ontario M1W 3S2 Canada.

DESCRIPTION: Audio transmission equipment for satellite, cable, and broadcast. Our product line includes STL and SCPC equipment, stereo processors, BTSC generators, and audio automatic gain control amplifiers.

Lectro Products Inc.(404) 353-1159
WATS(National).....(800) 551-3790
PO Box 567

Athens, GA 30603

PERSONNEL: Michael Filkins, VP/General Manager; Steven Wagner, VP/Marketing

DESCRIPTION: Supplier of standby power supplies and ferroresonant power supplies of CATV and LAN distributions systems.

Leitch Video of America Inc.(804) 424-7920
825 K Greenbrier Circle

Chesapeake, VA 23320

PERSONNEL: John Walter, President; William Thompson, Vice President; Bob Henson, Marketing Manager

DESCRIPTION: Manufactures video sync generators, vertical interval inserters, video processors, video test signal generators, video equalizing, clamping & delay amplifiers, audio distribution amplifiers, master clock systems and high security video/audio scrambling systems.

Lemco Engineers Inc.(314) 576-5950
11933 Westline Industrial Dr.

St. Louis, MO 63146

PERSONNEL: W. Sebastian, President; J. Orr, Vice President

REGIONAL OFFICES: 8402 Laurel Fair Circle, Ste. 109, Tampa, FL 33610, (813) 623-1575; 6610 Harwin, Ste. 278, Houston, TX 77036, (713) 789-2545; Ste. 500, 1178 Grimes Bridge Road, Roswell, GA 30075.

DESCRIPTION: Feasibility studies, system design, and strand mapping.



LEMCO TOOL CORP.

Lemco Tool Corp......(717) 494-0620

WATS(National).....(800) 233-8713

Road #2

Box 330A

Cogan Station, PA 17728

PERSONNEL: Glenn Miller, President; Bob Brantlinger, Sales Manager

DESCRIPTION: Designer and manufacturer of mechanical tools, equipment and material for the construction and maintenance of cable TV systems.

Lenco Inc. Electronic Division(314) 243-3147

WATS(National).....(800) 325-8494

300 N Maryland St.

PO Box 348

Jackson, MO 63755

PERSONNEL: Andrew Perrin, President; Jerry Ford, CEO/Chairman of the Board; Max Prill, Executive Vice President; Bruce Blair, VP/

General Manager; Bob Bergfeld, National Sales Manager

REGIONAL OFFICES: 10 Stokes Road,

Lightning Electric of PA Inc.

Vincetown, NJ 08088, (609) 953-9101; 5901 Spanish Moss Ct., Mobile, AL 36609, (205) 660-0738; 2520 Laurel Lane, Plano TX 75074, (214) 578-0419; 320 Harding Ave., Los Gatos, CA 95030, (408) 356-0221.

DESCRIPTION: Manufacturer of video terminal equipment including video generators, system timing, video & pulse distribution, processing, encoding, decoding test equipment, video noise meters, B&W and color monitors, audio distribution. Monitor power amplifier, time base corrector.

Lexco(602) 997-6999
2329 W Mescal

Ste. 306

Phoenix, AZ 85029

PERSONNEL: Alexa Higashi, President

DESCRIPTION: Underground cable contractor.

Lightning Deterrent Corp.(312) 434-7912
5321 S Kedzie Ave.

Chicago, IL 60632

PERSONNEL: Donald Hudalla, President

DESCRIPTION: Lightning Deterrent Corp.

manufactures and services Verda lightning deterrent units for use on communication towers and buildings. It is the only one of several patented lightning deterrents which uses a set number of points, usually 40 or more per square inch.

Lightning Eliminators

& Consultants Inc.(213) 946-6886
13007 Lakeland Road

Santa Fe Springs, CA 90670

PERSONNEL: Roy Carpenter, President; E. Alvin Rich, Exec. VP/Marketing-Sales

DESCRIPTION: Provides an engineering service (system design, lightning prevention, power conditioning and grounding systems). Also a manufacturer of lightning strike prevention systems, chemically activated ground rods and lightning and tornado warning systems. In addition, carry specialized forms of power protection and conditioning systems. Product lines are: Dissipation Arrays (DA)-prevent lightning strikes to towers, tanks, buildings and complete facilities. Chem-ROD (CR)- a rechargeable chemically activated grounding electrode which provides much lower grounding resistance than other chemically charged or conventional rods in identical soil. Lightning Warning Systems (LWS)-senses the local electrostatic voltage level and warns of impending danger.

Lightning Technology Group.....(717) 533-4983

Road 1

Box 148-B

Hershey, PA 17033

PERSONNEL: Harry Galletly, President; Anthony Brong, Vice President; Paul Light, Operations Manager; Oscar Davis, General Manager

REGIONAL OFFICES: PO Box 177 Callahan, FL 32011, (904) 879-1311.

DESCRIPTION: Construction services for turnkey.

Lightning Electric of PA Inc.(717) 533-4983

Road #1

Box 148-B

Hershey, PA 17033

PERSONNEL: Russell Brong, Chairman/CEO;

SCTE

Society of Cable
Television Engineers

CABLE-TEC EXPO.® '87



For Conference Details call: (215) 363-6888

April 2-5, 1987

Hyatt Orlando Hotel
Orlando, Florida

buyers' guide

Lindsay Specialty Products Ltd.

Harry Galletly, President; Anthony Brong, GM/ Lightning Elec of PA Inc.; Paul Light, GM/ Walton Towers; Oscar Davis, GM/Southeast
REGIONAL OFFICES: Walton Tower Inc., Road 1, Box 148-B, Hershey, PA 17003 (717) 533-4983; SE Cable Construction Corp., PO Box 177, Callahan FL 32011, (904) 879-1311.
DESCRIPTION: Construction services including new, rebuild, line, extension, underground and tower work, also pole line, hardware, tap, traps and filters and house drop, installations, consultants in engineering, finance, earth stations, strand mapping and surge protection.



SPECIALTY PRODUCTS LIMITED

Lindsay Speciality Products Ltd.(705) 324-2196

50 Mary St. W
 Lindsay, ONT K9V 4S7 Canada
PERSONNEL: Roy Price, President; Dave Atman, Sales Manager

DESCRIPTION: Lindsay is a quality manufacturer of CATV equipment and has been established for over thirty years. We specialize in system requirements for small, medium, and large builds and rebuilds. Systems benefit from our wide range of trunk amplifiers, line extenders, apartment amplifiers, system passives and directional multitaps. Connectors and drop materials, coupled with full headend surveys and commercial antennas of superior quality, complete our line.

Line Ward Corp.(716) 675-7373
 157 Seneca Creek Road
 Buffalo, NY 14224

PERSONNEL: E. Ward, President
DESCRIPTION: The L-1 Cable line layer was designed expressly for installing house drops at depths of 6 to 13 inches. Our new entry, the L-2 Cable line layer is designed for tough going at depths of 6 to 16 inches. Both have tracks to achieve minimal lawn damage and maximum traction.

Linnea Co. Inc.(609) 758-8227
 Route 2, Box 45
 Wrightstown, NJ 08562
PERSONNEL: Mike Cannon Sr., President
DESCRIPTION: We are in the business of remanufacturing cable equipment - converters, line equipment etc. We also repair RF and other modules.

Lynn Telecommunication Inc.(216) 274-3116
 PO Box 370
 Mantua, OH 44255
PERSONNEL: Lynn Westover, President
DESCRIPTION: CATV engineering consulting firm offering expertise in areas such as: system operations, new construction, system rebuilds, SMATV systems, turnkey services, system engineering and design, fiber optics, feasibility studies, system development and analysis, etc. Currently operating a cable system.

M/A-COM Inc.(617) 272-9600
 7 New England Executive Park
 Burlington, MA 01803
DESCRIPTION: Manufacturer of cable, antennas, earth stations and other electronics through 21 subsidiaries.



M/A-COM Cable Home Group(704) 324-2200
WATS(National)(800) 982-1708

PO Box 1729
 Hickory, NC 28603
PERSONNEL: Frank Drendel, President; Jim Webb, VP/General Manager; Stan Lindsay, VP/ Sales & Marketing
DESCRIPTION: Manufacturer of COMM/SCOPE coaxial cable-trunk and distribution and dropwire; networking cables; and converters-RF and baseband. Also available are satellite receivers, antenna systems and VideoCipher II.



M/A-COM Cable Home Group Converter Operations(915) 593-2250

10737 Gateway W
 Suite 350
 El Paso, TX 79935
PERSONNEL: Mike Ellis, Dir. of Mktg.
DESCRIPTION: Manufacture addressable RF & baseband converters.

M/A-COM MAC Corp.(617) 272-3100
 5 Omni Way
 Chelmsford, MA 01824
PERSONNEL: Yong Lee, President; Bob Morrill, Executive VP Operations; Fred Collins, Executive VP Engineering; Dave Erikson, National Sales Manager
DESCRIPTION: Microwave equipment and service point-to-point microwave importation systems, local origination, pick-ups and FM multi-channel microwave distribution systems.

M/A-COM Telecommunications(301) 428-5500
 11717 Exploration Lane
 Germantown, MD 20874
PERSONNEL: Jack Shaw, President; Pradman Kaul, Vice President; Kathy Velky, Mgr. Marketing Services
DESCRIPTION: Distributors and manufacturers of state of the art telecommunication products and systems.

M/A-COM Telecommunications Div.(619) 457-2340
 3033 Science Park Road
 San Diego, CA 92121

PERSONNEL: Tom Bernard, President; Mike Lubin, VP/National Sales
DESCRIPTION: Manufacture satellite dishes, video ciphers, local area networks and switches.

MAI Communications Inc.(609) 547-1600
WATS(National)(800) 624-2288
 141 Shreve Ave.
 Barrington, NJ 08007
PERSONNEL: Robert Mai Sr., CFO; Thomas Girard, President CATV; Martin Greenburg, VP/ Operations; Robert Mai Jr., VP/Finance; Daniel Dougherty, Sales Manager
DESCRIPTION: Complete turnkey operation, converter repair, consulting, strand mapping, fiber optic construction, system engineering, design, equipment evaluation, engineering training, and two way activation.

MECUM Enterprises Inc.(714) 598-1182
 1135 Centre Dr.
 Unit F
 Walnut, CA 91789
PERSONNEL: Delbert Mecum, President; Jan Van Greuningen Sr., VP/Western Operations
REGIONAL OFFICES: 2568 Valleyview, Troy, MI 48098, (714) 598-1182.
DESCRIPTION: We specialize in underground and aerial construction of all CATV systems, including new build and rebuilds. Our attention to detail is your guarantee for excellence.

MICO Inc.(507) 625-6426
 1911 Lee Blvd.
 Mankato, MN 56001
PERSONNEL: G. McGrath, President; Daniel McGrath, Vice President; Fred Cords, Vice President
DESCRIPTION: Manufactures hydraulic brake systems and components: hydraulic brake locks and throttle controls.

MICR Data Systems Inc.(212) 509-2376
 47 West St.
 New York, NY 10006
PERSONNEL: Richard Zoch, President; Vivian Cantor, Sales
DESCRIPTION: We have specialized in automatic subscriber payment service for the past 12 years. If you have difficulty collecting your fee on time and find the cost of billing and reminders high, let MICR Data Systems do it for you via preauthorized checking.

MIRA Corp.(517) 337-1525
 PO Box 23037
 Lansing, MI 48909
PERSONNEL: James Dinkelacker Ph.D., CEO; Kimberly Downing, President
DESCRIPTION: A media research company, we do full service media and marketing research, and specialize in quantitative and qualitative applications.

MUC Tele-A-Cable Comm. Inc.(612) 421-5111
WATS(National)(800) 328-2220
 PO Box 127
 Anoka, MN 55303
PERSONNEL: Charles Lundgren, President; Stanley Lebakken, CFO; John Pietri, Operations Mgr.
DESCRIPTION: CATV and telephone construction including: aerial and underground, residential and MDU installation, engineering, CATV and telephone design, fiber optic

buyers' guide

Microdyne Corp.

construction and splicing, manhole and conduit construction.



A NORTH AMERICAN PHILIPS COMPANY
100 FAIRGROUNDS DR., MANLIUS, N.Y. 13104

**Magnavox CATV Systems Inc.(800) 448-5171
WATS(State).....(800) 522-7464**

100 Fairgrounds Dr.
Manlius, NY 13104

PERSONNEL: D. Horowitz, Chairman; R. Roscher, President; K. Weil, Marketing Manager; M. Senken, Controller; R. Finnerty, National Sales Manager
DESCRIPTION: Manufacturers of a full line of amplifiers in 330, 450, 550 & 600 MHz configurations, including feedforward, powerdoubling and conventional technologies, line extenders. Also available: headend equipment, digital systems sentry, subscriber passives, connectors, taps (2, 4 & 8 way), and local area networks.

Malarkey-Taylor Associates Inc.(202) 737-2300
1301 Pennsylvania Ave. NW #200
Washington, DC 20004

PERSONNEL: Martin Malarkey, President/CEO; Archer Taylor, Sr. VP/ Engineering; James Kearney, Director of Engineering; David Coe, Engineering Associate; Robert Jones, CPA, Executive Vice President
DESCRIPTION: A management, financial, investment, and engineering consulting firm specializing in cable communications systems and related technologies. Our services include financial analysis and evaluation, systems valuation and appraisals, systems engineering, market analysis and research, professional management services, operations analysis, refranchising strategy, regulatory affairs, expert testimony and specialized one-time services.

Maple Leaf Communications Inc.(516) 728-1070
205 W Montauk Hwy.

Hampton Bays, NY 11946
PERSONNEL: John Sheehan, President
DESCRIPTION: Complete construction of cable TV systems including sweep and proof of performance tests. We specialize in rebuilds with six years experience in that area.

Mark Antenna Products Inc.(312) 298-9420
2180 S Wolf Road

Des Plaines, IL 60018
PERSONNEL: Richard Thomas, President; Robert Pevenstein, Vice President; Edward Lamarre, Sales Manager
DESCRIPTION: Manufacturers 3, 4, and 5 meter "C" band earth station antennas. 1.0 meter to 3.7 meter "KU Band" earth station antennas. Manufacturer microwave point to point communications antennas.

Marmax Sales

(Div. of World Products Inc.)(414) 272-4048
623 W Vliet St.
Milwaukee, WI 53212
PERSONNEL: Steven Lees, President; Frank

Zinner, General Manager

DESCRIPTION: Marmax Sales (Division of World Products Inc.) is a wholesale distributor of MDS-STV-CATV equipment.

Mastercom(301) 469-6688
7536 Spring Lake Dr.

Bethesda, MD 20817
PERSONNEL: O. Page, Owner
DESCRIPTION: Design, furnish, install and maintain CATV, SMATV, CCTV, security, communications systems. Local distributor for leading product lines, make-ready engineering, site surveys, rebuilds and up-grades.

Matrix Test Equipment.....(201) 469-9510
200 Wood Ave.

Middlesex, NJ 08846
PERSONNEL: Jack Kouzoujian, President/Sales Mgr.
DESCRIPTION: Manufacture test equipment primarily cross modulation and inter-modulation.

McCullough Satellite

Equipment Inc.(501) 895-3167
Route 5, Box 97

Salem, AR 72576
PERSONNEL: John McCullough, President; Mary McCullough, Secretary/Treasurer; Brenda Smith, Sales Manager
DESCRIPTION: Market all McCullough Communications and McCullough Manufacturing Inc. products. Includes single and dual conversion receivers, LNAs, feeds, antennas, mounts, controls, cable and connectors.

McGraw-Edison Power System(412) 777-3200
Cooper Industries Inc.

PO Box 2850
Pittsburgh, PA 15230
PERSONNEL: L. Barwick, General Manager
REGIONAL OFFICES: Power Systems Div., N Burson St., E Stroudsburg, PA 18301, (714) 421-8580.
DESCRIPTION: McGraw-Edison Power System/Cooper Industries Inc. is a manufacturer of line construction materials and pole line hardware.

McLaughlin Mfg. Co.(815) 436-9113
WATS(National)(800) 435-9340

PO Box 303
Plainfield, IL 60544
PERSONNEL: Fred Lord, President; Bill Gilman, Sales Manager
REGIONAL OFFICES: Greenville, SC 29605, (803) 277-5870; Arlington, TX 76011, (817) 640-8605.
DESCRIPTION: Rotary drilling systems for utilities, cable, electric, etc....and horizontal boring machines, augers, cutting heads, pipe pushers, fiber optic installation equipment.

Mega Hertz Sales

**Mega Hertz Sales(303) 779-1717
WATS(National)(800) 525-8386**
6940 S Holly Circle

Ste. 200

Englewood, CO 80112
PERSONNEL: Steven Grossman, President/Sales Manager; Pierre Cabbage, Sales Manager; M. Doug Sherar, Sales Manager
REGIONAL OFFICES: 12115 Lackland Road, Ste. 383, St. Louis, MO 63146, (314) 878-6881; 4001 Airport Freeway, Ste. 590, Bedford, TX 76021, (817) 267-2288.

DESCRIPTION: Manufacturer's representative for: Broadband Engineering-replacement CATV components and electronics; Coil-PVC pedestals and brackets; Data Transmission Devices-standby power systems for CATV headends and cable lines; LRC Electronics-coaxial connectors for all CATV applications; Nucable-"Phototext" digitized video, classified advertising channel; Panasonic-converters and subscriber switchers; Standard Communications-satellite receivers and antennas; Tamaqua-coaxial cable in conduit; Telescripts-IR transmission system of video and/or data; Vitek Electronics-Pay TV taps and RF detection devices; and Wavetek-test equipment. Distribution of: Antennas-CATV log and yagis and satellite antennas; Blonder Tongue-Headend and satellite equipment; Coaxial Cable- Low loss trunk, distribution and drop cables; Catel-FM systems and modulators; ComPedCo-Metal pedestals; Character Generators-Mycrotek and Compu Cable; Electronics-Broadband, Cadco, ISS, Jerrold, Scientific-Atlanta and Triple Crown; Honeywell-Portable electric generators; ISS-Agile modulators and demodulators; Mega Herta Sales-reconditioned equipment.

Melita Electronics Labs Inc.(602) 998-3600
PO Box 5120

Scottsdale, AZ 85261
PERSONNEL: Michael Domer, Pres./Chief Executive Officer
DESCRIPTION: Melita Electronics Labs Inc. distributes robotic telecommunications computers for service call scheduling and verification, credit and collection notification, and marketing programs implementation. The Melita 3000 series telecommunications place and receive telephone communication between customers and the cable service supplier. These automated communications are much more efficient than approaching these functions with your service personnel.

Metrotech Corp.(415) 940-4900
670 National Ave.

Mountain View, CA 94043
PERSONNEL: Stephen Schmid, President; Dan Housh, Chairman; Edward North, Sales Manager
DESCRIPTION: Sells cable locators.

Mich-Com Cable

Services Inc.(313) 753-3311
21164 Otter Road
Belleville, MI 48111
PERSONNEL: Larry Bonadeo, President
DESCRIPTION: Tear-down and winding of old cable systems.

Microdyne Corp.(904) 687-4633
491 Oak Road

PO Box 7213
Ocala, FL 32672
PERSONNEL: Louis Wolcott, CEO; Donald Feller, Vice President; Michael Balbes, Vice President; Hank Lin, Vice President; Eugene Day, Vice President

buyers' guide

Microflect Co. Inc.

DESCRIPTION: Microdyne Corp., along with its subsidiary Antennas For Communications, produces a full line of satellite receivers, modulators, antennas and accessory products for the cable television industry. In addition, Microdyne also engineers and constructs fixed and transportable uplinks for both C-band and Ku-band transmissions.

Microflect Co. Inc.(503) 363-9267
3575 25th St. SE
PO Box 12985
Salem, OR 97309
PERSONNEL: John Kranitz, Marketing Manager

DESCRIPTION: Designs, fabricates, and installs microwave telecommunications antenna support structures, passive repeaters, and waveguide support systems. Microflect also designs, manufactures, and/or supplies helicopters concrete lift systems, manhole platform supports, tower accessories, and tower hardware.

Microwave Filter Co. Inc.(315) 437-3953
WATS(National).....(800) 448-1666
6743 Kinne St.

E. Syracuse, NY 13057
PERSONNEL: Glyn Bostick, President; Emily Bostick, Exec. VP/Dir-Sales & Marketing; Richard Jones, VP/Finance; William Johnson, VP/Engineering; Alice Berry, VP/Personnel Devel.
DESCRIPTION: Microwave Filter Company supplies a wide variety of filters, traps and other passive components to combat interference in SMATV, cable TV, broadcast TV and general communications. Microwave Filter Company maintains a telephone group, which serves our 6,000 U.S. and 600 Canadian cable systems via field trips, publications and video tapes. Microwave Filter Company monthly handles 3,000 problems experienced by satellite distributors and dealers.

Midland Metals Corp.(201) 939-1900
301 Route 17N
Rutherford, NJ 07070

PERSONNEL: Sam de Vries, President; Jacques de Vries, Vice President; Philippe de Vries, Vice President; Richard Wojtovitz, Sales Manager; Joan Salvatore, Purchasing Manager
DESCRIPTION: Suppliers/Distributors of: guy wire, on reels or in coils; overhead ground wire; aluminum conductor; copper wire and conductor; telecommunication cable.

Midwest CATV Engineering.....(219) 259-8611
1818 N Went St.

Mishawaka, IN 46545
PERSONNEL: Jim Wiseman, President; Andy Wood, Sales Manager
DESCRIPTION: Repair facility for converters, home equipment, headend equipment, meters and TVROs.

Midwest Comm.
Construction Co. Inc.....(614) 452-7514
2405 Maysville Ave.
Zanesville, OH 43701
DESCRIPTION: Construction aerial-underground cable. Constructing, maintaining and operating small cable systems.



Midwest Comm. Corp.(606) 331-8990
WATS(National).....(800) 543-1584

1 Sperti Dr.
Edgewood, KY 41017
REGIONAL OFFICES: 8875 NW 23rd St.,
Miami, FL 33172, (305) 592-5355; 2730 Aycliff
Road, Norfolk, VA 23513 (804) 853-2600.
DESCRIPTION: Midwest Communications Corp. is a complete supplier of CATV equipment including, satellite, TVRO receivers, LNA's and all associating equipment; also line equipment, headend equipment and hardware. Midwest Communications Corp. is also the largest supplier of video equipment in the United States, and manufacturer of mobile video systems, production studios, individual components.

Midwest Corp.(304) 622-4700
WATS(National).....(800) 532-2288
414 N Fifth St.

Clarksburg, WV 26301
PERSONNEL: Jack Crouse, Vice President
DESCRIPTION: Engineering services, equipment and supplies for SMATV/CATV systems.

Miralite.....(714) 611-7000
4050 Chandler Ave.

Santa Ana, CA 92704
PERSONNEL: Fred Foucher, President; Glenn Turner, General Manager; Dana Swancutt, National Sales Manager
DESCRIPTION: Manufacture satellite antennas including the new 5.0 meter offset and new 1.8 meter offset. As well as Miralite's well known 3.7 meter and the 78% efficient 2.4 meter.

Monroe Electronics Inc.(716) 765-2254
100 Housel Ave.
Lydonville, NY 14098

PERSONNEL: E. Fuller, Sales Manager; Karl Miller, Applications Engineer
REGIONAL OFFICES: 297 Evans Ave.,
Toronto, Ontario M8Z 1K2 Canada.
DESCRIPTION: Manufacturers time/tone/remote switching equipment, commercial insertion equipment, cue tone encoders and decoders, emergency override systems, telephone couplers, DTMF encoders and decoders, remote control and status monitoring systems, audio/video switches.

Mucip Cable TV Services.....(203) 797-9464
57 North St.
Ste. 222

Danbury, CT 06810
PERSONNEL: Paul Mucci, President; Robert Cipolla, Vice President; Terence Mahon, Sales Manager
DESCRIPTION: Established 1973. Contractor for residential installation, trapping, audits, electronic design, system construction of apartment buildings, aerial and underground construction splicing.

Munn Jr., E. Harold
& Associates Inc.(517) 278-7339
100 Airport Road
Coldwater, MI 49036

PERSONNEL: E. Harold Munn Jr., President
DESCRIPTION: Broadcasting engineers and consultants.

Mycro-Tek.....(316) 681-0550
9229 E 37th N
Wichita, KS 67226

PERSONNEL: Jacob Sorg, President; Al Aulbach, Vice President; Rich Caldarola, Vice President; Richard Bailey, Vice President; Dave Gilbert, Vice President
DESCRIPTION: The Single Channel Supra Star One and dual-channel Supra Star Two provide 64K memory & up to nine fonts online. Both have system-to-system communication and genlock. Max is a stand alone character generator with 32K RAM memory & a product life battery. Ernie, like Max, has a product life battery system and genlock capabilities.

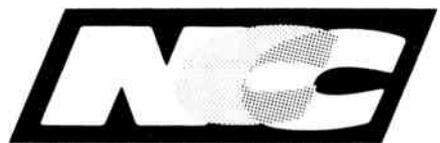


NCS Industries Inc.(215) 657-4690
WATS(National)(800) 523-2342
WATS(State)(800) 492-2032

2255 E Wyandotte Road
Willow Grove, PA 19090
PERSONNEL: Dick Grasso, President; J. Bartholemew, VP/Purchasing; W. Sugarman, VP/Treasurer; Ted Mayo, VP/Engineering; Jerry Quinn, Sales Manager
DESCRIPTION: Product: Repair service—headend, microwave, satellite receivers, test equipment, trunk & distribution all manufacturers. Authorized warranty repair center for Wavetek, Alpha Technologies, Phasecom, Catel, Distributes—Jerrold, Catel, Magnavox, Scientific-Atlanta, Olson Technologies, Videotek, Metratech, CADCO, MSL, Mid-Atlantic representative for Wavetek, Alpha Technologies, Standard Communications, Tamaqua Cable Products.

NSC Electronics.....(312) 956-8000
2201 E Landmeier Road
Elk Grove Village, IL 60007

PERSONNEL: Dominick Palombella, President; James Marx, Sales Rep.; Dean Ritchie, Director of Engineering; Edward Warzyniak, General Manager, Mexico Plant
DESCRIPTION: Manufacturer and servicer of company cable converters and cable tuners for converters.



Nacom Construction Corp.(614) 895-7307
WATS(National)(800) 848-3998
1900 E Dublin-Granville Road

buyers' guide

Oak Communications

Columbus, OH 43229
PERSONNEL: Bob Powelson, Chairman; Len Gibson, Vice Chairman; Larry Linhart, President & CEO; Jerry Evans, Vice President; Larry Brown, Vice President
DESCRIPTION: Full service system installation services for CATV, LAN, & other telecommunications industries; plant & drops; indoor & outdoor; construction & engineering/certification; aerial & underground; coax, fiber, twisted pair; labor only or turnkey. LAN Division specializes in broadband backbone installation services for CATV I-Nets and Local Area Networks.

Nel Network Engineering Ltd.(416) 474-0206
 180 Amber St.
 Markham, Ontario, Canada L3R 3J8
PERSONNEL: K. Odabashian, President; John MacMicking, Vice President
DESCRIPTION: NEL is a Canadian firm providing professional consultancy and technical services to the cable television industry. Specific expertise is offered in the areas of franchise studies and evaluations, market studies, planning and engineering, hardware evaluations, project management and administration, operational administration and staffing, training and human resources management.

Nelson Electric Supply Co.(214) 741-6341
 1123 Slocum St.
 Dallas, TX 75207
PERSONNEL: H. Campbell, President; Robert Nelson, Vice President
REGIONAL OFFICES: 2121 Baylor Dr., Lubbock, TX 79417, (806) 763-6006.
DESCRIPTION: Wholesaler for a complete line of pole line hardware, test equipment, passives, headend electronics, cable equipment, and various amplifiers and antennas.

Nemal Electronics Inc.(305) 893-3924
WATS(National)(800) 327-5999
 12240 NE 14th Ave.
 North Miami Beach, FL 33161
PERSONNEL: Benjamin Nemser, President
DESCRIPTION: Nemal Electronics Inc. is a major distributor of coaxial cable, connectors, and SMATV products. Our lines include Blonder-Tongue, Times, Amphenol, Kings, and our own private label mil spec brand. All popular items are in stock for immediate delivery worldwide.

Network Technologies(215) 536-1354
 (Div/AM Cable)
 PO Box 505
 Quakertown, PA 18951
PERSONNEL: Tom Saldi, President/CEO; Maqbool Qurashi, Chairman of the Board; Bill Ross, VP Field Services; Stan Cook, VP/Manufacturing; Joe Rocci, VP/Engineering
DESCRIPTION: Full turnkey construction including aerial and underground systems; engineering involvements—make ready engineering, subscriber installs and systems design. E-COM Products—multiple addressable services, digital data communications systems. Tier Guard Off-premises, addressable Pay TV Control, TMC-8000 Broadband Status Monitoring and control system.

New England Cable Contractors.....(617) 754-6537
 219 Ludlow St.
 PO Box 2474

Worcester, MA 01613
PERSONNEL: Larry Noon, President
DESCRIPTION: Cable aerial and underground construction and installations.

Newton Electronics Inc.(408) 732-3290
 165 Sangabriel Dr.
 Sunnyvale, CA 94086
PERSONNEL: Robert Nallick, President; Karen Nallick, Vice President; Bud Smith, Sales Manager
DESCRIPTION: Newton Electronics manufactures test equipment for use in testing and aligning TVRO systems, components, and circuits using the NTSC color bar. The GBS1600 and GBS2600 signal generators are low and medium range portable and bench sets and the GBS 2000 signal generator is a lab quality set used primarily in OEM and dedicated service centers. The Siteman test set/spectrum analyzer receives signals and like the signal generators troubleshoots components in a satellite receive and transmission systems including LNA's, LNC's, downconverters, receivers, video and audio systems.



Nexus Engineering Corp......(604) 420-5322
 7000 Lougheed Hwy.
 Burnaby, BC, Canada V5A 4K4
PERSONNEL: Peter Van der Gracht, President; Dr. J.B. Peters, Chairman, CEO; Lyle Horne, Sales Manager
DESCRIPTION: Manufacturer of complete lines of commercial headend equipment including television modulators, heterodyne signal processors, on-channel processors, block converters, satellite receivers, stereo generators, stereo decoders, active combiners, audio modulators and completely racked and tested headends. Products for non-NTSC television standards are also available. Nexus Engineering also manufactures a complete line of television transmitters in the UHF and VHF range. These units range from 2 to 100 watt power levels and are also available in non-NTSC standard.

Norman Weinhouse Associates.....(818) 884-3105
 6355 Topanga Canyon Blvd.
 Suite 526
 Woodland Hills, CA 91367
PERSONNEL: Norman Weinhouse, President
DESCRIPTION: Engineering consultant, microwave and satellite telecommunications.

Norsat Systems(604) 591-3334
WATS(National)(800) 663-8733
WATS(State)(800) 663-8752
 302, 12886 78th Ave.
 Surry, BC, Canada V3W 8E7
PERSONNEL: Gordon Skeene, President; Ian Power, Executive Vice President; Greg Deet, Executive VP/Sales; Wayne Meadows, VP/Product Development
DESCRIPTION: Satellite communications equipment.

North Supply Company.....(913) 791-7000
WATS(National)(800) 255-6458
 600 Industrial Pkwy.
 Industrial Airport, KS 66031
PERSONNEL: Stan Fisher, President; Andy Harris, Vice President
DESCRIPTION: A full line national distributor of telecommunications, security and alarm, cable television equipment and electrical utility products.



Northern CATV Sales Inc......(315) 463-8433
WATS(National)(800) 448-1655
 PO Box 6729
 6116 Boss Road
 Syracuse, NY 13211
PERSONNEL: Andy Tresness, President
DESCRIPTION: Distributor of CATV products.



Northeast Cable Electronics Inc.(203) 443-7675
 61 Myrock Ave.
 Waterford, CT 06385
PERSONNEL: William Mickle, President; Albert Dimmock, Vice President
DESCRIPTION: Repair of converters and line equipment.

OEM Sales(818) 897-1120
WATS(National)(800) 421-2379
 12500 Foothill Blvd.
 Lakeview Terrace, CA 91342
DESCRIPTION: Receivers, amplifiers, connectors and installation material for completely assembled headends or separate components.

OL Teletronics
 Rte. 20
 PO Box 278
 Esperance, NY 12066
PERSONNEL: Gary Rudolph, President
DESCRIPTION: Repair cable converters.



Oak Communications Inc.(619) 451-1500
 16516 Via Esprillo

buyers' guide

Omega Satellite Systems Inc.

San Diego, CA 92127
PERSONNEL: John Donohue, President; Rj Smith, VP/Sales & Marketing; Tony Wechselberger, VP/Engineering
REGIONAL OFFICES: 9624 Cincinnati Columbus Road, Suite 214, Cincinnati, OH 45241, (513) 777-5577; Raritan Plaza #1, Suite 2000, Edison, NJ 08837, (201) 225-2246.
DESCRIPTION: Converters, converter/decoders, addressable Pay TV systems, control software, satellite signal security systems.

Omega Satellite Systems Inc.(415) 432-7470
 3799 Chatworth St.
 Pittsburg, CA 94565
PERSONNEL: Dan DeVincent II, President; Kathy DeVincent, Vice President
DESCRIPTION: Installations in TVRO, SMATV, CATV, pre-wiring, MATV. Satellite: C & Ku Band, apartment and motels, etc. CATV: aerial-underground/postwire, audits. 6 years.

Orbitron Div. of
 Greenbriar Products Inc.(608) 588-2923
 351 S Peterson St.
 Spring Green, WI 53588
PERSONNEL: Frank Leach, President; James Garvoille, Vice President; Tor Caraway, VP/Marketing; David Johnson, National Sales
DESCRIPTION: Manufacturers of aluminum mesh antennas.

Owens Tower Construction Co.(817) 968-3921
 PO Box 640
 Stephenville, TX 76401
DESCRIPTION: Provides fabrication, construction and engineering, consulting for antennas and towers.

P.K. Neuses Inc.(312) 253-6555
 1401 Rohlwing Road
 PO Box 100
 Arlington Heights, IL 60006
DESCRIPTION: Supplier of cable tools, electronic tools, relay adjusting equipment, computer tools and supplies.

PECA Inc.(215) 245-1550
 592 Winks Lane
 Bensalem, PA 19020
DESCRIPTION: Specialty communications and switching equipment and system design, installation of electronics and proof of performance broadband and baseband local area network equipment.

PICO MACOM(818) 897-0028
 WATS(National)(800) 421-6511
 12500 Foothill Blvd.
 Lakeview Terrace, CA 91342
PERSONNEL: Michael Holland, President; Michael Spratlin, Sales Manager
DESCRIPTION: Drop materials and amplifiers for CATV/MATV.

PTS Corp. National Hdqts.(812) 824-9331
 5233 S Hwy. 37
 Bloomington, IN 47401
PERSONNEL: Jack Craig, President; Jeff Hamilton, VP/Director of Marketing; John Rollison, Vice President; Bill Terrell, Vice President; Bob Gidgumb, Vice President
DESCRIPTION: Cable converter and amplifier repair service with nationwide locations. Satellite receiver repair in selected locations. PTS is also a

Jerrold distributor and also buys and sells used converters.

P. Bee Enterprises(215) 345-0134
 82 Pawnee Road
 Doylestown, PA 18901
PERSONNEL: Pat Bartol, President/Chief Engineer
DESCRIPTION: Technical services and consultant, FCC proof of performance, H.E. alignment, co-channel surveys, system sweep, alignment, signal surveys, engineering surveys evaluations, system remedial and technical trouble shooting.

Page OD(301) 469-6688
 Prof. Eng & Consultants
 7536 Spring Lake Dr.
 Bethesda, MD 20817
PERSONNEL: O. Page, Owner
DESCRIPTION: Engineering and management consultants for CATV, MATV, SMATV, CCTV design, construction supervision and contract administration, appraisal franchising, analysis and evaluation studies.

Panasonic Industrial Co.(201) 348-7000
 Audio-Video Systems Division
 Two Panasonic Way
 Secaucus, NJ 07094
PERSONNEL: K. Seki, President; S. Minakami, Executive Vice President
DESCRIPTION: Supplies a full line of video equipment, including: cartridge, cassette and open-reel in both player and recorder player versions and a wide range of cameras, monitors and accessories.

Panduit Corp.(312) 532-1800
 17301 Ridgeland Ave.
 Tinley Park, IL 60477
PERSONNEL: C. Miller, Nat'l Market Manager
REGIONAL OFFICES: Santa Ana, CA 92405, (714) 546-5700; Atlanta, GA 30328, (404) 256-5940; Leonia, NJ 07605, (201) 461-7790; Dallas, TX 75234, (214) 620-7717.
DESCRIPTION: Manufacturers of cable ties, mounting accessories and markers for the CATV industry.

Paraframe Communications Inc.(403) 451-5532
 15606 116th Ave.
 Edmonton, ALTA T5M 3S5 Canada
PERSONNEL: Walter Baydala, President
DESCRIPTION: Manufacturer of 4.8, 6.0 and 7.6 meter earth station antennas for 4 and 12 GHz service. Sizes to 12 meters available on special order. Installation service provided throughout North and South America.

Parallex Corp.(919) 722-5167
 437 Goldfloss
 Winston-Salem, NC 27107
PERSONNEL: Dale Kline, President; Winton Wilcox, VP/Marketing; Bruce Odell, VP/Michigan
REGIONAL OFFICES: 609 E Jolly, #11, Lansing, MI 48910, (517) 882-6063.
DESCRIPTION: Parallex provides automated subscriber billing, management and marketing information to cable systems. Services are available in batch, remote batch, and on-line processing modes.

Parker Metal(617) 791-7131
 PO Box 128

Worcester, MA 01613
PERSONNEL: Peter Consiglio Jr., President; Jorgan Levy, Executive Vice President
DESCRIPTION: Manufacturers of fasteners, hardware and antenna installation hardware.

Passive Devices Inc.(305) 493-5000
 5120 NE 12th Ave.
 Ft. Lauderdale, FL 33334
PERSONNEL: Donald Edelman, President; Barbara Edelman, VP/Finance
DESCRIPTION: Manufacturers of high quality passive devices, surge voltage protectors such as the Surpender™ Patents Pend, and suppliers of ancillary hardware items for CATV.

Pearl, J.C. Ltd.(716) 882-0500
 50 Brayton St.
 Buffalo, NY 14213
DESCRIPTION: Cable TV sub-contractor.

Peirce-Phelps Inc.(215) 879-7171
 WATS(National)(800) 523-4682
 2000 N 59th St.
 Philadelphia, PA 19131
PERSONNEL: W. Peirce, President; Henry Grove III, Vice President; R. Dyer, Vice President; Dennis Egan, Vice President; Fred Bergstrasser, Vice President
REGIONAL OFFICES: Rockville, MD 20852, (301) 984-7979; Camp Hill, PA (717) 761-0240.
DESCRIPTION: Provide video and audio equipment for commercial insertion and local origination; complete turnkey mobile vans and production studios.

Perception Technology(617) 821-0320
 Shawmut Park
 Canton, MA 02021-1409
PERSONNEL: Joseph Scally, President; Leon Ferber, Executive Vice President; Frank Tripi, Vice President/Sales; Daniel Matthews, Vice President/Operations; Richard Grant, Vice President/Finance
DESCRIPTION: Perception Technology manufactures the BT-II, a data entry/voice response peripheral which transforms any telephone into a terminal. The BT-II can be used with any host computer running Pay-Per-View application software. A subscriber calls the Pay-Per-View number, enters his account number, and an event code. Voice response verifies and gives a confirmation. Prices start at \$33,500, for an 8 line system with 176 seconds of speech and also call referral.

Perma-Cast Systems(215) 926-5336
 PO Box 305
 Temple, PA 19560
PERSONNEL: Walter Greth, President; Christopher Miller, Sales Manager
DESCRIPTION: Manufacturer of precast concrete headend buildings and transmitter buildings.

Phoenix Cable/Lease(404) 872-2406
 100 Colony Square
 Ste. 200
 Atlanta, GA 30361
PERSONNEL: Ronald Demer, Vice President
DESCRIPTION: Cable equipment leasing and financing; subordinated debt for acquisitions and upgrades; serve franchised and private cable industries.

buyers' guide

Professional Line Construction

Pico Products Inc.(315) 451-7700
 WATS(National)(800) 336-3363
 103 Commerce Blvd.
 Liverpool, NY 13088
PERSONNEL: Bernard Hitchcock, Chairman of Board/CEO; George Knapp, President; Danny O'Connell, Executive Vice President; Ralph Yahn, Chief Financial Officer; Jim Mead, Sales Manager
DESCRIPTION: Pico Products Inc. manufactures and markets a complete line of system components for CATV, SMATV and MATV including security devices, home satellite systems and components, modulators, single channel amplifiers, channel converters, wall taps, preamps, and complete headends for TV signal distribution in CATV, SMATV and STV.

Pierce Arrow International(414) 781-9093
 PO Box 300
 Menominee Falls, WI 53051
PERSONNEL: Ron MacFarland, President; Art Phenicie, Vice President
DESCRIPTION: Manufacture pneumatically driven underground piercing tool.



Pioneer Comm. of America Inc. (614) 876-0771
WATS(National)(800) 421-6450
 2200 Dividend Dr.
 Columbus, OH 43228
PERSONNEL: Pete Imamura, President; Jim Williamson, VP/Administration; Yoshi Furukawa, Treasurer; Jerry Nelson, Director of Sales & Marketing; Larry Shredl, National Sales Manager
REGIONAL OFFICES: 340 W Diversey Pkwy., Ste. 1118, Chicago, IL 60657, (312) 472-3621; 9745 E Hampden, #420, Denver, CO 80231, (303) 696-1694; 762 Summer Dr., Acworth, GA 30101, (404) 928-6811.
DESCRIPTION: Complete line of home terminals and converters including standard, tunable and one-way addressable. Also offers add-ons for MTS adaptor (stereo sound) and the PULSE adaptor for two-way communications. Three headend configurations available for all size systems.

Pirelli Optronic Systems(203) 238-9665
 WATS(National)(800) 523-7893
 300 Research Pkwy.
 Meriden, CT 06450
PERSONNEL: Stanley Johnson, VP/General Manager; A. Deichmiller, Marketing Manager; Alan Kent, Sales Manager; David Friel, Marketing Support Manager
DESCRIPTION: Multi-channel, fiber optic supertrunks capable of 16 video signals up to 12 miles, using single-mode, single-fiber, with better than 53 dB S/N.

Pitts, T.R. Co.(507) 452-2629
 WATS(National)(800) 533-8092
 501 W Fifth St.
 Winona, MI 55987
PERSONNEL: T.R. Pitts, President; Marian Gammey, Sales Manager; Bill Brookhis, Sales Manager; Don Thompson, Sales Manager

DESCRIPTION: CATV-SMATV materials and supplies, headends, cable, antennas, line and distribution materials and supplies amplifiers, origination, tools, test and drop equipment and supplies, commercial insertion equipment, marking flags and paint, corrosion inhibitors, and many regular and specialty items. Call us for sales office nearest you.

PolyPhaser Corp.(702) 782-2511
 WATS(National)(800) 325-7170
 1425 Industrial Way
 Gardnerville, NV 89410-1237
PERSONNEL: Roger Block, President
DESCRIPTION: Over 40 models of patented lightning and nuclear EMP protection for DC to 2.5 GHz. Telephone line, tone remote and data line protection. Power mains, power line, power supply and DC protectors. Also manufacture DC voltage breakdown tester.

Power Conversion Products Inc.(815) 459-9100
 42 East St.
 PO Box 380
 Crystal Lake, IL 60014
PERSONNEL: S. Weil, President; C. Seyer, Executive Vice President; J. Mitchell, Vice President Engineering
REGIONAL OFFICES: Richardson, TX (214) 644-0108.
DESCRIPTION: Battery charges, power supplies, complete DC power systems, battery eliminators, regulating/isolating transformers, DC to DC converters, ringing generators, and other power equipment for the telecommunications and cable industry.



Power Guard Inc.(404) 354-8129
 PO Box 549
 Hull, GA 30064
PERSONNEL: Mason Hamilton, President; Jerry Schultz, Vice President; Dwayne Hamilton, Customer Service Manager
DESCRIPTION: Manufacturers of standby and nonstandby power supplies and power grounding devices. Represent various standby battery manufacturers: Gould, Exide and Globe Union.



Power & Telephone Supply Co. Inc.(901) 324-6116
WATS(National)(800) 235-7514
 2668 Yale Ave.
 Memphis, TN 38112
PERSONNEL: Jim Pentecost, Executive VP; Laburn Dye, VP/Comm. Sales; Tommy

Doddridge, Director/Comm. Prod.; Mary Pentecost, Director/Mktg. & Adv.; Bill Rogers, Comm. Specialist
DESCRIPTION: Full line distributor for cable, amplifiers, taps, strand, hardware, drop material, headends, earth stations and all associated equipment.

Pow-R Devices Inc.(716) 741-2841
 5940 Goodrich Road
 Clarence Center, NY 14032
PERSONNEL: Lloyd Yoder, President/Sales Mgr.; Paul Yoder, Vice President
DESCRIPTION: Tool for installing pipe or cable under roadways to eliminate the need for open cutting the roadway.

Preformed Line Products Co.(216) 461-5200
 PO Box 91129
 Cleveland, OH 44101
PERSONNEL: Jon Ruhlman, President; Max Lekson, Vice President; R. Skilton, Sales Manager
DESCRIPTION: Guy-grip dead-ends, splices, false dead-ends, lashwrap connectors and plastic guy guards for guying and messenger strand construction. Telegrrips, custom coaxial dead-ends, teletaps and telesplices for coaxial cables. Dead-ends for figure 8 coaxial cables.

Priester Supply Company Inc.(817) 261-1111
 701 107th St.
 PO Box 5507
 Arlington, TX 76011
PERSONNEL: Steve Vincent, Sales; Oran Christian, Sales
DESCRIPTION: Supplier to the CATV industry. Product lines include Theta-Com, Comm/Scope, Gilbert, Catel, Joslyn, Chance, McGraw-Edison, Diamond, Preformed, Panduit, MSI and others.

Pro/File Associates(303) 770-5389
 7076 S Knolls Way
 Littleton, CO 80122
PERSONNEL: RoseAnne Strauser, President; Lari Leibsohn, Vice President
DESCRIPTION: Recruitment of staffing in the areas of Management, Marketing & Engineering from corporate through system level positions.

Production Products Co. Assoc.
 WATS(National)(800) 468-2288
 133 W Seneca St.
 Manlius, NY 13104
PERSONNEL: John Mezzalingua, Chairman; Daniel Mezzalingua, President; Andrew Szegda, Vice President; Dominic Maio, Vice President
DESCRIPTION: A complete product line of aluminum and brass connectors and fittings for CATV industry, along with the hardware related to aluminum and brass applications.

Progressive Electronics Inc.(602) 966-2931
 WATS(National)(800) 528-8224
 325 S El Dorado
 Mesa, AZ 85202
PERSONNEL: Richard Anderson, President; Douglas Anderson, Vice President; Steve Youtsey, Marketing Director
DESCRIPTION: Tone generators, multipurpose. Installation and repair test sets. Inductive amplifier for electronic cable identification, cable fault locators.

Professional Line Construction(616) 924-6405
 3250 Van Wagoner Ave.

buyers' guide

Precise Mfg. Co.

Fremont, MI 49412
PERSONNEL: Charles Lathrop, President
DESCRIPTION: CATV aerial construction.

Precise Mfg. Co.(602) 967-0030
WATS(National).....(800) 821-0862
 2143 E Fifth St.
 Tempe, AZ 85281
PERSONNEL: Frank Conti, President; Harold Wedell, VP/Operations; Ferrell Anderson, Sales Manager
DESCRIPTION: Precise manufactures, in Tempe Arizona, a line of high quality headend equipment for satellite, off air and video/audio inputs with outputs from sub channel through hyperband. The equipment was designed with an emphasis on reliability and performance in bad environments.

Pyramid Cable Services inc.(305) 729-8803
 7805 Ellis Road
 W Melbourne, FL 32904
PERSONNEL: Joseph McCool, President; Douglas Cooper, Vice President
REGIONAL OFFICES: 857 Warehouse Dr., Unit E, Toledo, OH 43615, (419) 382-5152.
DESCRIPTION: Complete turnkey contractor, installations, pre-wiring, post-wiring, underground & aerial construction, splicing, headend set up, earth station & tower construction.

Pyramid Industries Inc.(602) 269-6431
WATS(National).....(800) 528-4529
 PO Box 23169
 Phoenix, AZ 85063
PERSONNEL: Earl Gilbert, President; Paul Rhodes, Vice President; Charles Scurr, Vice President
DESCRIPTION: Manufactures a full line of CATV coaxial connectors, fittings and adaptors. Also manufactures a full line of metal pedestals for CATV and plant applications.

Q-Bit Corporation(305) 727-1838
 2575 Pacific Ave. NE
 Palm Bay, FL 32905
PERSONNEL: Howard Hillman, Owner/President; Gary Callaway, VP/General Manager; Hansel Mead, Vice President Engineer
DESCRIPTION: CATV headend equipment, tower mounted preamplifiers, heterodyne processor, signal combiners, hybrid to-8 amplifiers.

QRK Electronic Products Inc.(408) 971-7977
 1151 S Seventh St.
 San Jose, CA 95112
PERSONNEL: Janice Vasquez-Muller, President; Jim Muller, VP/General Manager; Don Reiman, Technical Consultant
DESCRIPTION: Distributors of audio consoles, turntables, tone arms, preamplifiers and small audio mixers. Parts and repair of REK-O-KUT and QRK equipment. Manufacturer of computer interface cabling.



Qintar Inc.(818) 706-1940
WATS(National).....(800) 252-7889

WATS(State).....(800) 572-6262
 PO Box 6579
 West Lake Village, CA 91359
PERSONNEL: Randall Tishkoff, President
DESCRIPTION: Manufactures RF switches, including 4 and 5 input 3 output switches. Custom labeling available. Also manufactures or distributes amplifiers, connectors, jumper cables, splitters, tapoffs, bandpass filters, transformers, converters, coaxial drop cable, and band separators. Also manufactures modular telephone accessories. 70 channel remote controlled set-top converter includes fine tuning and works with HRC, ICC, or standard channels. Custom designs available.

Quality Cable Underground(303) 693-0457
 PO Box 4835
 Englewood, CO 80155
PERSONNEL: Harold Bowen, President
DESCRIPTION: Underground installation for cable TV.



Quality RF Services Inc......(305) 747-4998
WATS(National).....(800) 327-9767
WATS(State).....(800) 443-0107
 850 Parkway
 Jupiter, FL 33477
PERSONNEL: Fred Rogers, President; Ernest Cantelmo, Vice President; Sylvia Rathbone, Sales Manager
DESCRIPTION: Module upgrades, new power doubling "P2", hybrid push-pull. Also "kits" equalizers, plus in pads. Repair Service: Amplifier repair with distortion documentation. Repair Supplies: test repair components parts for all manufactures. Same day shipment.



R. Alan Communications Inc......(317) 849-7572
WATS(National).....(800) 367-1450
 8120 Knue Road
 Ste. 106
 Indianapolis, IN 46250
PERSONNEL: Randy Pattison, President; Scott Widaman, Sales Manager
DESCRIPTION: Manufacturer's representative for CATV, business and industrial communications equipment.

RCH Cable Marketing
 & Installation(609) 461-5640
 119 River Road
 Riverside, NJ 08075
PERSONNEL: Robert Halgas, President; James Arthis, Vice President; Robert DiBetta, Vice

RMS Electronics Inc.

President
DESCRIPTION: Contract direct sales, systems audits, drop installations, post and pre-wiring, cable systems management.

RF Analysts Inc.(313) 750-9341
 112 E Ellen St.
 Fenton, MI 48430
PERSONNEL: Louis Edmonson, President; Jack Hooper, VP Operation; Dena Barcome, Dir. of Marketing; Dewayne Lipp, VP/Engineering
REGIONAL OFFICES: 1255 Boston Ave., W Columbia, SC 29169, (803) 794-3910; 2010 Pine Terrace, Sarasota, FL 33581, (813) 922-1551.
DESCRIPTION: R.F. Analysts does converter repair, satellite equipment repair, line equipment, headend gear, and test equipment repair. Capacity 16.00 per month. Manufacturing of a computer aided testing system.

RF Distribution Systems(209) 239-3332
 969 Carmel Ave.
 Manteca, CA 95336
PERSONNEL: J. Jenkins, President
DESCRIPTION: RF Distribution Systems offers complete engineering and design service for CATV and SMATV systems. From site surveys to complete installation and maintenance. In business since 1965.

RF Monolithics Inc.....(214) 233-2903
 4441 Sigma Road
 Dallas, TX 75244
PERSONNEL: Gary Andersen, President
DESCRIPTION: Converter output filter and traps.

R & L Cable Installation(419) 299-3400
 702 E Michigan Ave.
 Lima, OH 45801
PERSONNEL: Rodger Wauben, President; C. Lynn Wauben, Vice President
DESCRIPTION: Residential aerial and underground installations, rebuilds, highrise postwire and apartments, prewires, audits and systems service work.

R.L.Drake Company(513) 866-2421
 PO Box 112
 Miamisburg, OH 45342
PERSONNEL: Ronald Wysong, President; Mike Brubaker, VP/Sales; Merl Powell, VP/Marketing; Steve Koogler, VP/Engineering; Richard Renken, Sales Manager
DESCRIPTION: The R.L. Drake Company is a manufacturer of commercial grade earth station receivers, modulators, low noise amplifiers, and LNB's.



RMS Electronics Inc.(212) 892-1000
WATS(National).....(800) 223-8312
 50 Antin Place
 Bronx, NY 10462
PERSONNEL: Ray Perez, VP/CATV Div.; Harry Bogatch, VP/Finance; Dominick Padilla, VP/Plant



now has 27 local chapters and meeting groups across the country, each providing bi-monthly technical training seminars for area cable engineers and technicians.

SCTE CHAPTERS AND MEETING GROUPS

APPALACHIA MID-ATLANTIC CHAPTERS

Warner Cable of Marietta
P.O. Box 129
Marietta, PA 17547
Contact: Ron Mountain, Sec./Treas. (717) 684-2878

CHATTAHOOCHEE CHAPTER

P.O. Box 76339
Atlanta, GA 30358
Contact: Michael Aloisi, President (404) 979-0010

DELAWARE VALLEY CHAPTER

P.O. Box 282
Jamison, PA 19829
Contact: Bev Zane, President (215) 674-4800

FLORIDA CHAPTER

P.O. Box 7835
Sarasota, FL 34278
Contact: Dick Kirn, Sec./Treas. (813) 924-8541

GOLDEN GATE CHAPTER

P.O. Box 455
Pleasanton, CA 94566
Contact: Walt Reames, President (408) 998-7333

HUDSON VALLEY CHAPTER

P.O. Box 72
Newburgh, NY 12550
Contact: Andy Healey, President (914) 561-7880

NEW ENGLAND CHAPTER

Suite 118
1614 Middlesex Street
Lowell, MA 01851
Contact: Bill Riley (617) 472-1231

NORTH JERSEY CHAPTER

P.O. Box 3522
Wayne, NJ 07470
Contact: Ed Buchman (201) 239-8183 or Don Daniels, President (201) 997-6600

ROCKY MOUNTAIN CHAPTER

P.O. Box 5317
Englewood, CO 80155
Contact: Joe Thomas (303) 978-9770

BLUE GRASS MEETING GROUP

Louisville, KY
Contact: Roy Ehman, Sec./Treas. (502) 584-6111

BLUE RIDGE MOUNTAIN MEETING GROUP

P.O. Box 2362
North Wilkesboro, NC 28659
Contact: Jim Beavers, President (919) 667-4151

CACTUS MEETING GROUP

Texscan Corp.
P.O. Box 27548
Phoenix, AZ 85061
Contact: Bill Down (800) 528-0199 or Harold Mackey, Chairman (602) 866-0072

CAPITOL CITIES MEETING GROUP

2004 6th Street South
Arlington, VA 22204
Contact: Randy Paschak (202) 338-8556

CARIBBEAN AREA MEETING GROUP

P.O. Box 4198
Hato Ray, Puerto Rico 00919
Contact: Phillip Glidewell, President (809) 758-8408, (809) 766-0909

GREATER CHICAGO AREA MEETING GROUP

P.O. Box 72
Palatine, IL 60078-0072
Contact: William Gutknecht, Chairman (312) 577-1818

CENTRAL INDIANA MEETING GROUP

P.O. Box 18439
Indianapolis, IN 46218
Contact: Lou Zimmerman, Sec./Treas. (317) 632-9077

DAIRYLAND MEETING GROUP

P.O. Box 55312
Madison, WI 53705
Contact: David Devereaux-Weber, Sec./Treas. (608) 238-7781

GREAT LAKES MEETING GROUP

P.O. Box 375
Bloomfield Hills, MI 48303
Contact: David Spallinger, President (313) 827-7330

MIDLANDS CABLE TRAINING ASSOCIATION

P.O. Box 1113
Council Bluffs, Iowa
Contact: John Page, President (712) 323-0420

MISSISSIPPI VALLEY MEETING GROUP

Vicksburg, MS
Contact: Rick Jubeck (601) 932-4461

NORTH CENTRAL TEXAS MEETING GROUP

P.O. Box 15154
Dallas, TX 75201
Contact: M.J. Jackson, President (214) 475-3665

OHIO VALLEY MEETING GROUP

Columbus, Ohio
Contact: Charles Hanchett, President (614) 221-3131

RAZORBACK MEETING GROUP

P.O. Box 5082
Jonesboro, AR 72403
Contact: Ron Boyer (800) 438-0812

SOUTH LAKE MEETING GROUP

P.O. Box 488
Valparaiso, IN 48383
Contact: Bill Griechen (219) 464-2288

SOUTHERN CALIFORNIA MEETING GROUP

P.O. Box 378
Van Nuys, CA 91411
Contact: Joe Girard, President (213) 969-0231

TIP-O-TEX MEETING GROUP

P.O. Box 2106
Harlingen, TX 78551
Contact: Arnold Cisneros (512) 425-7880

WEST TEXAS MEETING GROUP

P.O. Box 1871
Big Springs, TX 79721
Contact: Jim McCain, President (915) 267-3821

buyers' guide

RMT Engineering Inc.

Operations; Seymour Goldberg, National Sales Mgr./Dist. Div.
 REGIONAL OFFICES: 27281 Las Ramblas, Ste. 200 B, Mission Viejo, CA 92691, (800) 624-2511.
 DESCRIPTION: Standby, inverter & AC regulated power supplies, power passing line splitters, directional couplers & directional taps; indoor-outdoor hybrid splitters & directional couplers; matching transformers & filters; attenuators; aluminum & "F" type connectors; apt. house boxes; pedestals, plastic and metal moulding duct, cable, heat shrink tubing, traps, grease & sealant, indoor amplifiers, hardware, ground blocks & rods and tools.



RMT Engineering Inc......(408) 733-4830
WATS(National).....(800) 228-0633
 625 E Taylor Ave.
 Sunnyvale, CA 94086
 PERSONNEL: Richard McLean, President;
 Patricia McLean, Vice President; Danny Pfister,
 National Sales Manager

REGIONAL OFFICES: RMT II, 1129 Koster St., Eureka, CA 95501, (707) 444-9437.
 DESCRIPTION: Distributor of new and remanufactured electronics; manufacturer of field strength meter modifications; factory warranty repair facility; and a repair facility for distribution, headend, satellite and test equipment.

RT/Katek Communication(201) 678-2083
 Seven Glenwood Ave.
 East Orange, NJ 07017
 PERSONNEL: Robert Bilodeau, Company Chairman; Richard Thomas, Installation President; Ron Katz, Converter President; George Tamasi, Construction President; Tom Polis, Construction Executive VP
 REGIONAL OFFICES: Seven Glenwood Ave., Installation Services Div., East Orange, NJ 07017, (201) 678-2083; 215 Wood Ave., Converter Services Div., Middlesex, NJ 08846, (201) 356-8940; 319 J Westtown Road, Comms. Construction Div., West Chester, PA 19380, (215) 269-1946.
 DESCRIPTION: Communications Construction Div.: Full/modified/ management/BOM turnkey construction; strand mapping, make ready survey, system design, engineering/franchise/as built/splicing services. Installation Services Div.: Turnkey residential and commercial installations; audits, rebuilds, converter changeouts and upgrades; MDU pre-and post-wire. Converter

Services Div.: Factory authorized repair of Jerrold, Hamlin, RCA, Pioneer and GTE/Texscan converters at regional repair centers in New Jersey, Florida, Indiana and California.

Radar Engineers(503) 256-3417
 9535 NE Colfax St.
 Portland, OR 97220
 PERSONNEL: James Groom, President; Robert Larson, VP/Sales Mgr.
 DESCRIPTION: Test equipment for tracing cables and locating faults in underground cables.

Radyne Corp.(516) 567-8484
 170 Wilbur Place
 Bohemia, NY 11716
 PERSONNEL: Howard Hirschman, President; Alan Entenman, Vice President; Robert Petrucelli, Director/Marketing
 DESCRIPTION: Radyne manufactures data modems for satellite, CATV, and terrestrial communications.

Rainbow Satellite Communications

Rainbow Satellite Comm.(904) 326-8030
 PO Box 395
 Leesburg, FL 32748
 PERSONNEL: Brian Wilkes, VP/Engineering
 DESCRIPTION: Manufacture multibeam antennas.

Raychem Telecommunications(919) 552-3811
 PO Box 3000
 Fuquay Varina, NC 27526-3000
 PERSONNEL: Steve Fairchild, Operations Manager
 DESCRIPTION: Manufacture heat shrinkable plastic wrap repair sleeves for cable.

Reed Communications.....(215) 459-2982
 PO Box 233
 Chadds Ford, PA 19317
 PERSONNEL: Jack Reed, President
 DESCRIPTION: CATV system design. 20,000 miles of experience. Computerized bi-directional system design; computerized bill of material, rebuild analysis and design, design consultation, design critique, comparative equipment analysis.



Reliable Electric/Utility Products.....(312) 455-8010
 11333 Addison St.
 Franklin Park, IL 60131
 PERSONNEL: Bill Sedlacek, VP/General Manager; Ray Kubacki, Director of Sales & Marketing; Rick Siemens, Sales & Marketing

5 Star General

MULTI-BEAM FEEDS

- Maximize your programming capability, by receiving Galaxy I, Satcom III R, Telstar 303, Westar 5 and Spacenet with the use of one dish.
- Add to system revenues, through tier expansion.
- Eliminate additional land acquisition and the installation costs of multiple dishes, while increasing your earth station investment.

MULTI-DISH? OR MULTI-FEED?

The Rainbow Multi-Beam Feed allows you up to 5 prime focus feeds, depending on the size of your antenna.

For a complete list of antennas that can be retrofitted call or write:

RAINBOW SATELLITE COMMUNICATIONS

Attn: Brian Wilkes • 1015 Thomas Road
 P.O. Box 395 Leesburg, FL 32748 • (904) 326-8030
 Reader Service Number 24

buyers' guide

Sachs Communications Inc.

Manager: Tim Ahrens, Sales Manager; Pete Torres, Sales Manager; Doug Frassrand, Sales Manager
REGIONAL OFFICES: 9 Jackson Ct. W, Marlton, NJ 08053, (609) 985-0165; 4118 E Kasselryne Ct., Tucker, GA 30084, (404) 496-0653; 25119 Ecloga Ct., Ramona, CA 92065, (619) 789-6864.
DESCRIPTION: Reliable Electric/Utility Products manufactures heavy-gauge, mill galvanized steel enclosures and apartment boxes. All enclosures are treated to a nine-stage finishing process for superior resistance to the environment. Also available are warning labels, decals, mounting hardware and a variety of locks.

Remtek Corp.(415) 490-3999
 46107 Landing Pkwy.
 Fremont, CA 94538
PERSONNEL: Bruce Michels, President; Ralph Gesell, Executive Vice President; Thomas French, Vice President
REGIONAL OFFICES: PO Box 6906, Marietta, GA 30066, (404) 977-1630.
DESCRIPTION: Remtek's Medium Wall Cable sleeves (MWS), a quick shrinking, medium wall polyolefin tubing with large expansion ratio, provides good electrical insulation and at the same time resists abrasion and corrosion. In addition, Remtek supplies a variety of heat shrinkable tubing for cable harnessing, jacketing applications, and wire/cable markers.

Ripley Co. Inc. Utility Tool Div.(203) 635-2200
 46 Nooks Hill Road
 Cromwell, CT 06416
PERSONNEL: Robert Clark, Marketing Manager; Lisa Harris, Customer Service
DESCRIPTION: Manufactures a complete line of coaxial cable preparation tools.

Ripley Company Inc.(203) 635-2200
 46 Nooks Hill Road
 Cromwell, CT 06416
PERSONNEL: H. Thayer, President; J. Matthews, Vice President; R. Clark, Sales Manager
DESCRIPTION: A complete line of cable preparation tools including coax cable strippers, jacket strippers, coring tools, combination core/strip tools, hex crimp tools, conductor cleaners & accessories.

Riser-Bond Instruments.....(402) 694-5201
 505 16th St.
 Box 188
 Aurora, NE 68818
PERSONNEL: Marshall Borchert, President; Jennie Borchert, Vice President; W. Campbell, Sales Manager
DESCRIPTION: Manufacturer of electronic test equipment. The 2901B is a time domain reflectometer cable fault locator, and can be used to test all types of transmission cable. The 2901B can be used to locate opens, shorts, or major impedance discontinuities in cable that is underground, aerial, in conduits and behind finished walls. It can be used for measuring cable on reels, and for cable identification in new construction.

Roart Div. of Diamond Communications Products.....(201) 789-1400
 500 North Ave.
 Garwood, NJ 07027

PERSONNEL: Robert Muir, President; Tony DiPace, Vice President; Gene Coll, Sales Manager
DESCRIPTION: Manufacturer of fiberglass above and below ground pedestals, and out-of-sight closures.

Ro-Com Corporation.....(617) 295-2542
 186 Merchants Way
 Wareham, MA 02571
PERSONNEL: Arthur Terceira, President; Charlene Terceira, Vice President
DESCRIPTION: Televideo communications. Repair cable TV, VCRs, TVs, audio products, telephones.

Rohde & Schwarz-Polarad Inc.....(516) 328-1100
 5 Delaware Dr.
 Lake Success, NY 11042
PERSONNEL: J. Shimony, Treasurer; W. Wend, Plant Manager; W. Thompson, Director Engineering
DESCRIPTION: Manufacturers of spectrum analyzers, auto-bus controlled transceiver test sets, modulation analyzers, synthesizers.

Rohn(309) 697-4400
 PO Box 2000
 Peoria, IL 61656
PERSONNEL: R. Kleine, Vice President; Kenneth Cordrey, Div. Sales Manager; Larry Grimes, Div. Sales Manager; Fred Hardee, Div. Sales Manager
REGIONAL OFFICES: PO Box 106, Worton, MD 21678, (301) 778-4441; 2631 Tarna St., Dallas, TX 75229, (214) 241-7791.
DESCRIPTION: Manufacturer of towers and equipment shelters for broadcast, microwave, mobile radio; tower obstruction lighting and tower accessories.

Roll-A-Reel Company(513) 761-8500
 7881 Reading Road
 PO Box 37381
 Cincinnati, OH 45222
PERSONNEL: Leonard Shifres, President/Sales Mgr.; Dolores Shifres, Vice President
DESCRIPTION: Manufacturer and distributor of cable reel platforms for pay out, and take up of materials packaged on reels (ie; wire, cable, hose).

Rosstek Communications Ltd.....(604) 291-7130
 4343 E Hastings St.
 Burnaby, BC V5C 2J7
PERSONNEL: Lyman Lai, President/Sales Manager
DESCRIPTION: Products: DBC, Triple Crown, Sadelco, Catel, RCA, Magnavox, DX Antenna Nexus engineering, reconditioned trunk and brider amps, line amps, apartment amps. Service: All makes of CATV products, TV modulator processors, demodulators, FM processors, trunk amps, apartment amps. Change modulator, processor and demodulator to different channels, field strength meters.

Rycom Instruments Inc.(816) 353-2100
WATS(National).....(800) 851-7347
 9351 E 59th St.
 Raytown, MO 64133
PERSONNEL: E. Reitz, President; Charles Jasper, Sales Engineer; Jack Rice, Operations Mgr.
DESCRIPTION: Manufacturers of buried cable fault and pipe locators.

S.B.M. Communications(616) 345-0109
 517 E Kalamazoo Ave.
 Kalamazoo, MI 49007
PERSONNEL: Earl Drake, President; Tom Ridley, Vice President
DESCRIPTION: Specializing in activation - sweeping - reverse upgrade - fiber optics.

SDI Services(305) 791-3451
 650 NW 27th Ave.
 Fort Lauderdale, FL 33311
DESCRIPTION: Full service cable TV company. Feasibility studies, site survey, engineering, design, strand mapping, make ready, headend and system construction, aerial and underground, post and pre-wiring, system management and maintenance and teleconferencing.

SJC Cable Splicers Inc.....(517) 821-5900
 9142 W Higgins Lake Dr.
 Rasconunon, MI 48653
PERSONNEL: Steve Collini, President
DESCRIPTION: Experienced with all types of cable, connectors, and equipment associated with modern cable systems; dual or single with institutional; aerial or underground. "We do one job and do it best." Experienced with "hot" upgrades or rebuilds of CATV plant.

SRP Electronics Inc.(404) 963-7870
WATS(National).....(800) 241-1232
 641 Grayson Hwy.
 Lawrenceville, GA 30245
PERSONNEL: Joe Acker; John Weeks
DESCRIPTION: Economical character generators with graphics capabilities for CATV, SMATV applications.

Sabre Comm. Corp.(712) 258-6690
 PO Box 536
 Sioux City, IA 51102
PERSONNEL: D. Bailey Aalfs, President; Jerry Audus, Sales Manager
DESCRIPTION: Manufacture antenna systems, HF, UHF/VHF, tower systems both guyed and self supporting, preassembled equipment shelters.



Sachs Communications Inc.(514) 636-6560
WATS(National).....(800) 361-3685
 30 W Service Road
 Champlain, NY 12919
PERSONNEL: I. Sachs, President; Peter Hineson, Technical Manager; Sam Wells, Technical Manager; Joanne Dolbec, Inside Sales
DESCRIPTION: Sachs is a manufacturer of quality telecommunications hardware equipment, specializing in INNOVATIVE AND COST EFFICIENT SUSPENSION, FASTENING AND UL APPROVED GROUNDING DEVICES for construction and subscriber drop line installations. Sachs quality equipment has been designed to meet the requirements of today's cable TV industry. Sachs manufactures long-lasting, labor-saving and security designed products such as: cable support straps, lashing wire clamps, span

buyers' guide

Sadelco Inc.

clamps, strand-tap brackets, drop clamps for messengered or non-messengered coaxial cable, UL approved grounding blocks, and straps, fastening clips and hooks. Introducing the: "SAXXON" metal clip with a hardened cadmium plated nail, and our easily installed aluminum ID tags, write or scribe on with regular ballpoint pen.

Sadelco Inc.(201) 569-3323
75 W Forest Ave.
Englewood, NJ 07631

PERSONNEL: H. Sadel, President; G. Goldman, VP/Sales Manager
DESCRIPTION: Manufactures a full range of signal level meters from 4.5 to 900 MHz, including a white noise generator and a bridge.

Satcom Technologies Inc.(404) 448-2116
2912 Pacific Dr.

Norcross, GA 30071
PERSONNEL: Marvin Shomake, President; David Speed, VP Marketing/Sales; James Oliver, VP/Engineering; Doug Henderson, Broadcast Marketing Mgr.
DESCRIPTION: Manufacture and sale of earth station antennas. Five meter through 11 meter diameters and 2.4 KU-SNG antennas.

Satellite Systems Engineering Inc.(301) 652-4660
7315 Wisconsin Ave.
#512 E

Bethesda, MD 20814
PERSONNEL: W. Pritchard, President; Al Griebenow, VP Systems Marketing; Robert Napp, VP Radio Systems
DESCRIPTION: Consulting services for satellite systems FM and cellular mobile radio engineering, economics, finance and planning. Publishes a quarterly update service, Satellite Systems Digest, which offers technical and non-technical seminars on satellite communications.

Scala Electronic Corp.(503) 779-6500
PO Box 4580
Medford, OR 97501

PERSONNEL: Ellis Feinstein, VP/General Manager; Dan Fowler, Marketing Mgr.
DESCRIPTION: For more than 30 years Scala antennas have earned a reputation for high performance and long-term reliability in CATV systems in every type of environment ranging from arctic to tropical marine. Careful electrical and mechanical design, conservative specifications and consistent quality control assure you of maximum value for your dollar.

Schenck Construction(206) 827-4884
25 Central Way
Ste. 410

Kirkland, WA 98033
PERSONNEL: Edward Schenck, President; Oliver Longnecker, Vice President
DESCRIPTION: Aerial and underground cable TV construction; turnkey.

Scientific Atlanta

Scientific Atlanta Inc.(404) 441-4000
One Technology Pkwy.

Atlanta, GA 30348

PERSONNEL: Sidney Topol, Chairman of the Board/CEO; John Levergood, Chief Operating Officer; Harry Topliss Jr., Chief Financial Officer; James Hart, Group Vice President; Larry Bradner, Div. VP/Broadband Comm.
REGIONAL OFFICES: 4025 Pleasantdale Road, Atlanta, GA 30340, (404) 449-2530; 814 W Emmett St., PO Box 2143, Kissimmee, FL 32741, (305) 846-0055; 936 S 59th St., Belleville, IL 62223, (618) 233-7203; 901 International Pkwy., Ste. 141, Richardson, TX 75081, (214) 238-1116.
DESCRIPTION: Complete line of cable TV products including earth stations and receivers, low noise converter, headend electronics, distribution products, taps and passives, coaxial cable, set-top terminals, and status monitoring system.

Seaman Parsons Corp.(414) 769-8900
147 E Becher St.

Milwaukee, WI 53207
PERSONNEL: Charles Read, President; Scott Anfinson, Sales Administrator
DESCRIPTION: Manufacture trenchers. Import and sell compaction equipment.

Search Associates(813) 261-0917
PO Box 783

Naples, FL 33939
PERSONNEL: Brad Estes, President
DESCRIPTION: Executive search and placement firm specializing in management, professional and technical positions in cable television.

Siecor Optical Cable(704) 327-5000
489 Siecor Park

Hickory, NC 28603
PERSONNEL: Dr. Charles Wakeman, President; Joseph Hicks, Sr. VP/Sales & Marketing; Salim Bhatia, VP/Marketing
DESCRIPTION: Optical cable and ancillary equipment for telephone, CATV, CCTV, computer process control, military and government applications.

Siemens Components Inc.(201) 321-3400
186 Wood Ave. S

Iselin, NJ 08830
PERSONNEL: Helmut Schwab, President; Klaus Bahr, Sr. VP & General Manager
DESCRIPTION: Manufactures power surge protectors for CATV.

Sigmacom(416) 666-1991
111 Industrial Dr.

Unit #5
Whitby, ONT L1N 5Z9
PERSONNEL: Randy Zedic, President; Mike Taylor, Vice President; Smelko, Sales Manager
DESCRIPTION: Cable MA-CATV-SMATV, design, engineering, special audio up-and-downlinking, data carrier systems.

Sigmaform Corp.(408) 727-6510
2401 Walsh Ave.

Santa Clara, CA 95051
PERSONNEL: W. Weagant, Pres./Chairman of the Board; W. Neiman, Vice President
DESCRIPTION: Provide heat shrinkable tubing and heat shrinkable molded shapes.

Signal Processing(214) 341-6595
WATS(National)(800) 527-4361

WATS(State)(800) 442-3574

Soft Systems

11630 Chairman Dr.
Dallas, TX 75243

PERSONNEL: Dave Koncak, President; Jim Austin, VP/Engineering; Hank Bawcum, VP/Manufacturing; Carl Fors, VP/Marketing
DESCRIPTION: Headend electronics manufacturing including receivers, modulators, processors, combiners.



Signal Vision Inc.(714) 586-3196
3 Wrigley

Irvine, CA 92718
PERSONNEL: Neil Phillips, President; Mike Thatcher, Marketing Manager
DESCRIPTION: West coast distributor of underground construction products, passives, aerial drop hardware, connectors, fittings, security boxes, shrink tubing, apartment house amplifiers, molding, pedestals and flush to ground vaults, tools and installation materials.

Siltron Illumination Inc.(714) 980-4484
7915 Center Ave.

Cucamonga, CA 91730
PERSONNEL: Albert Lange, President; Carlos Ruiz, VP/Operations; Ray Gardner, VP/Engineering
DESCRIPTION: Manufacturer of standby power supplies and uninterruptable power supplies for the cable industry.

Simplicity Tool Co.

(Sitco Antennas)(503) 253-2000
PO Box 20456
10330 NE Marx St.
Portland, OR 97220
PERSONNEL: G. Berliner, President; Lee Pellet, Engineer; Marcus Bureker, Engineer
DESCRIPTION: CATV, UHF and VHF antennas.



Sitco Antennas(503) 253-2000

PO Box 20456
10330 NE Marx St.
Portland, OR 97220
PERSONNEL: Gustave Berliner, President; Steven Berliner, Vice President
DESCRIPTION: Manufacturers of MATV, CATV, SMATV, translator antennas and antenna arrays. Custom antennas built to order.

Soft Systems(704) 542-5155
PO Box 2405

Charlotte, NC 28211
PERSONNEL: Bryan Baker, President
DESCRIPTION: Manufacture software.

Proof Positive

Have you ever wondered if your advertising dollars were really getting their money's worth? According to an independent study performed on the February 1986 issue of CED magazine, our readers are **decision makers** with real purchasing power, and they actually buy as a result of what they see in CED.

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CED readers study
our pages for an average of

39

minutes

and

95%

are making actual
purchasing
decisions or
recommendations
based on what they've
read.

**We've known it all along,
but now we have proof.
Positive.**

Leadership

Influence

Results

buyers' guide

Sola A Unit of General Signal

Sola A Unit of General Signal(312) 439-2800
1717 Busse Road
Elk Grove, IL 60007
PERSONNEL: John Hutson, President; James Kimball, VP/Sales Marketing; Fred Lemke, Director of Sales & Mktg.
DESCRIPTION: Sola is a major supplier of power conditioning, power supply and battery backup equipment to all areas utilizing sensitive electronics or critical applications.

Sony Corporation of America(201) 930-1000
Sony Dr.
Park Ridge, NJ 07656
PERSONNEL: Neil Vander Dussen, President; Jason Farrow, Dir. Corp. Communications
DESCRIPTION: Consumer and industrial electronics products.

Southeast Cable
Construction Corp.(904) 879-1311
PO Box 177
Callahan, FL 32011
PERSONNEL: Jay Galetly, President; Oscar Davis, General Manager
DESCRIPTION: Construction for cable TV companies.

Southern Wood Piedmont Co.(803) 576-7660
WATS(National)(800) 845-1992
PO Box 5447
Spartanburg, SC 29304
PERSONNEL: Timothy Brannon, President; Lowell Shead, Sales Manager
REGIONAL OFFICES: PO Box 458, Baldwin, FL 32234, (904) 266-4242; PO Box 95025, Raleigh, NC 27625, (919) 878-8441; PO Box 144, E Pearl St., Burlington, NJ 08016, (609) 386-1508.
DESCRIPTION: CCA, Creosote and Pentachlorophenol pressure treated electric and telephone utility poles.

Southland Underground CATV Inc.
WATS(National)(800) 228-2151
#28 Industrial Loop
Suite 176
Orange Park, FL 32073
PERSONNEL: Richard Barnett, President; Roger Barnett, Vice President; Jon Eckert, Manager/Titusville; Donnie Damico, Manager/Clearwater; Martin Wakula, Manager/Orange Park
REGIONAL OFFICES: 12570 66th St., N Largo, FL 33540, (813) 535-0861; 2313 Mountain Road, Pasadena, MD 21122, (301) 437-9101; 369 Blanding Blvd., Orange Park, FL 32073, (904) 264-1003.
DESCRIPTION: Provide all phases of CATV construction strand mapping, design, turn on etc., for both underground and aerial; unit prices as well as turnkey.

Southwire Company(404) 832-4242
PO Box 1000
Carrollton, GA 30119
PERSONNEL: J. Griffin, Sr. Vice President; Roy Richards, Group Vice President
DESCRIPTION: Manufactures electrical wire and cable in aluminum or copper; copper and aluminum rod, continuous cast coils.

Sparks Equipment Co.(209) 245-6946
PO Box 413
Plymouth, CA 95669
PERSONNEL: Don Sparks, Owner
DESCRIPTION: Complete coverage of power

generating equipment inverters, dynamotors, portable generators, standby generators, prime power generators, battery operated standby (5 ms transfer) UPS (uninterruptable power supply).

Spectrum Planning Inc.(214) 680-1000
WATS(National)(800) 527-4607
251 W Renner Road
Richardson, TX 75080
PERSONNEL: Jerry Armes, President; Duncan McIntosh, Co Chairman; Lyman Bishop, VP/Sales & Marketing
DESCRIPTION: Comprehensive telecommunications management and engineering services including the design, engineering and implementation of satellite, microwave, mobile and fiber optic communications networks. 1) Frequency coordination of satellite earth stations, 2) Terrestrial microwave frequency planning, 3) Radio frequency, interface (RFI) measurements, 4) Frequency protection, 5) VHF translator filing, 6) Path surveys, 7) Route/path design, 8) Software development.

Sprucer CATV Group(201) 271-7544
400 Cottontail Lane
Somerset, NJ 08873
PERSONNEL: Fred Baier, Vice President; Bertram Hoffman, Vice President; K. Okamoto, Engineering/System Design; Y. Tanaka, President; Ken Ogiso, Group Mgr./Sprucer Cable TV Group
DESCRIPTION: Sprucer two-way addressable cable system consists of: baseband converter, modulators, encoders, FSK/PSK modems, system computers, bridge gate controllers (BGC), printers, uninterrupted power supply, system operation and application software. Warranty and maintenance provided.

Standard Communications Corp.(213) 532-5300
WATS(National)(800) 243-1357
PO Box 92151
Los Angeles, CA 90009
PERSONNEL: Donald Thomas, President; Mark Thomas, Vice President; Mason Truluck, Marketing Manager; Dianne Hinte, National Sales
DESCRIPTION: A complete line of antennas, low noise amplifier/block downconverters and receivers in both C and Ku Band is offered. The product line features: commercial grade components, flexible operation utilizing 4 GHz or LNBC input, block downconversion, active loop thru design, temperature stabilized dielectric resonator oscillator, and the industry's strongest warranty and 5 year replacement program.

Standard Truck & Equipment Co.(404) 622-4461
WATS(National)(800) 241-9357
1155 Hill St. SE
Atlanta, GA 30315
PERSONNEL: Jack Taffel, President; Harvey Taffel, Partner/Sales Manager; Fran Quinn, Sales Manager
DESCRIPTION: Large selection of aerial bucket trucks geared for CATV/trenchers/plows/backhoes/crane trucks/derrick diggers.

Stark & Associates(404) 962-4800
490 Buford Dr.
Lawrenceville, GA 30245
PERSONNEL: James Stark, President; Jack Walker, Vice President
DESCRIPTION: Engineering consulting to SMATV and CATV; industrial manufacturer rep

Superior Cablevision Installers Inc.

for major lines. Feature nationwide construction capacity.

Starvision Communication Inc.(403) 252-7100
D-11 6115 3rd St. SE
Calgary, AB, Canada T2H 2L2
PERSONNEL: W.W. Armstrong, President; D.J. Graham, Vice President; J.R. Doucette, Sales Manager
REGIONAL OFFICES: 6036 103rd St., Edmonton, AB, Canada T6H 2H6, (403) 436-4445; 3006 2nd Ave. N, Lethbridge, Canada, T1H 0C6, (403) 327-1933.
DESCRIPTION: Industrial electronics distributor specializing in CATV and SMATV satellite components and systems. Warehouses in all three locations, over a million dollars inventory per warehouse. Stock distributor for Amphol, Andrews, Triple Crown, Electrahome and many others.

Stelco Inc.(913) 287-1500
5500 Kansas Ave.
Kansas City, KS 66106
PERSONNEL: Wayne Stallard, President; George Eckels, Vice President
DESCRIPTION: Manufacturers of aerial devices, material handling, cable placing and equipment associated therewith.

Stern Telecommunications Inc.(212) 725-5470
307 Fifth Ave.
New York, NY 10016
PERSONNEL: Joseph Stern, President
DESCRIPTION: An engineering, consulting and development organization providing innovative and cost-effective application engineering in broadcasting, satellite transmission, cable television, data transmission, telephony and electronics. Services offered include operational studies, equipment evaluation, product planning, system design and development and venture analysis.

Strata Communications Ind. Inc.(507) 452-2629
501 W Fifth St.
Winona, MN 55987
PERSONNEL: T. Pitts, President
DESCRIPTION: Manufactures commercial insertion equipment that automatically inserts local commercials on satellite channels that permit local ADV.'s! ROS-upgradeable, simple operation, low cost.

Stubblefield Company Inc.(214) 592-1623
223 E Fifth St.
Tyler, TX 75701
PERSONNEL: Charles Stubblefield, President; Marc Helmer, Sales Manager
DESCRIPTION: Cable auditing and marketing.

Summit Cable(817) 277-6995
1162 W Pioneer Pkwy.
Arlington, TX 76013
DESCRIPTION: Provide cable installation for aerial, underground, residential.

Superior Cablevision
Installers Inc.(201) 992-1792
PO Box 128
Livingston, NJ 07039
PERSONNEL: Phillip Collins Sr., President; Howard Bradley, Vice President; Jerry Rufft, Director of Operations; Cheryl Collins, Controller

eadership

**CED readers are
decision makers**

***35%**

***53%**

Engineering Vice
Presidents or
Directors

System Managers or
Supervisors

Engineers or Chief
Technicians

**Put your message where
it will be seen by the
Decision Makers who count in cable.**

*Drawn from Research done by the Harvey Research Organization on the February 1986 issue of CED.

buyers' guide

Superior Metal Products Inc.

DESCRIPTION: Superior provides drop installations, multiple dwelling overwires, trapping, service changes, drop changeovers (old to new plant), sales and marketing through its various contract installers. With regard to drop installations, both aerial and underground are completed either within or without a turnkey approach.

Superior Metal Products Inc.(206) 455-9159
2120-116th Ave. NE
Bellevue, WA 98005

PERSONNEL: Joseph Bookter, President; Ray Bookter, Vice President; Fred Larsen, Sales Manager

DESCRIPTION: Takes great pride in offering a complete line of high quality custom constructed enclosures, special requirements of the CATV industry. Manufactures three major product categories; Wall mounted enclosures, pedestal mounted above-ground enclosures, flush-to-ground encapsulating vault enclosures.

Superior Satellite Engineers(916) 791-3315
PO Box 2549

Roseville, CA 95746

PERSONNEL: Doyle Catlett, Sole Proprietor
DESCRIPTION: Superior Satellite Engineers is engaged in the manufacture and distribution of multibeam satellite antenna feed systems. Basically 2 models are available, which originally or retrofit existing satellite antennas in the 3 meter to the 11 meter size range. Company also builds commercial remote steerable satellite systems with computer controls for broadcast TV, as well as cable TV headend systems.

Supra Key Control Ltd.(613) 523-1280
WATS(National).....(800) 267-6317
Box 8963

Ottawa, ONT K1G 3J2 Canada

PERSONNEL: Iral Barrett, President; Preston Davis, Operations Manager

DESCRIPTION: Supplying a complete line of Key Control products to the CATV industry for over 30 years. Supra's lock boxes, locking wallplates and cabinet/pedestal locks allow your serviceman and technicians immediate access to locked customer's locations with our one "Title" key. The only entry system you need.

Swartzlander Radio Inc.(419) 332-5681
1524 Oak Harbor Road

Fremont, OH 43420

PERSONNEL: Michael Gruss, President
DESCRIPTION: System consultants, providing engineering of antenna systems. Provide consulting data on sub-leasing towers and data system management.

Synchronous Comm. Inc.(408) 943-0222
1885 Lundy Ave.

Ste. 102

San Jose, CA 95131

PERSONNEL: Vincent Borelli, President; Al Johnson, Dir. of Marketing; Herman Gysel, Dir. of Engineering

DESCRIPTION: Manufacturer of frequency agile headend components. Also of broadcast quality multi-channel fiber optic video links.

System Services

Cable Construction Inc.(805) 688-7720
1075 Meadowvale Road
Santa Ynez, CA 93460

PERSONNEL: R. Scott, President; Valerie Scott, Vice President; Jeff Williamson, Engineering
DESCRIPTION: Specializing in full line of services. Overhead, underground, installation, prewiring, postwiring, and general maintenance. Engineering services, walk-out and design, auditing and management consulting.

Systemhouse Inc.(703) 276-0500
1655 N Fort Meyer Dr.

Arlington, VA 22209

PERSONNEL: Rod Bryden, Chairman/CEO; Peter Sandiford, President

DESCRIPTION: Systems integration (total ADP services).

Sytek Inc.(415) 966-7300
1225 Charleston Road

Mountain View, CA 94039

PERSONNEL: Ed Cooper, Mgr. Network

Integration Group

DESCRIPTION: Sytek is a broadband-based data communications company that provides engineering consulting services and local area network product line, LocalNet™ for data communications applications.

3M Test &

Measurement Systems(512) 834-1800
PO Box 2963

Austin, TX 78769-2963

PERSONNEL: Merle Ackerman, Dept. Manager; Joe Minarovic, Market Manager

DESCRIPTION: Manufacturers of cable locator Dynatel 500A/C, and cable sheath fault locator Dynatel 573A/C, for use on buried CATV trunk, distribution and service drop cable runs.

TL Systems(619) 320-8006
762 Vella Road

Palm Springs, CA 92264

PERSONNEL: Ted Lafleur, President

DESCRIPTION: Headend equipment consisting of satellite receivers, TV modulators, UHF/VHF processors; Model 7682-BLK block converted satellite receivers; Model 7682-LPM-satellite receiver with built-in TV modulators; Model 7610-LPM low cost TV modulators; Model 7610-UHF/VHF UHF to VHF or VHF to VHF processors. Model 7620 VHF or UHF audio/video demodulators.

TPC Connectors(203) 274-3628
PO Box 4537

Waterbury, CT 06704

PERSONNEL: Guy Grey Jr., President/Sales Mgr.

DESCRIPTION: Manufactures and supplies F series connectors to the CATV industry. Production quantity discounts available, special components manufactured upon request. Phone or write us with your specifications.

TVC Supply Company Inc.(717) 533-4982
WATS(National)(800) 233-2147

WATS(State)(800) 482-2398
1746 E Chocolate Ave.

Hershey, PA 17033

PERSONNEL: Robert Ackerman, President; Jim Manari, Manager/Major Accounts

DESCRIPTION: Full line distributor. Microdyne earth stations, Texscan pathmaker distribution, Belden drop cable, Joslyn hardware, Antronix passives, Gilbert connectors, Klein Tools, Pioneer converters, Times Fiber cable, Lemco tools.

TVM Systems Inc.(817) 268-6061
PO Box 1526

Hurst, TX 76053

PERSONNEL: William Millett, President

DESCRIPTION: Consulting management and services group to CATV system management, analysis, auditing, CATV installation and construction.

Taikan Co. Inc.(913) 841-5538
PO Box 3327

Lawrence, KS 66046

PERSONNEL: Shu Wu, President; Ching Wang, VP/Sales Manager

DESCRIPTION: CATV/MATV passive and active devices, including converters.

Tamaqua Cable Products Corp.(717) 385-4381
PO Box 347

Schuylkill Haven, PA 17972

PERSONNEL: William Combs III, President;

John Dutton, Sr. Vice President; Andrew Pavlick,

VP/Finance; Michael Homa, VP/Manufacturing;

George Combs, Sales Manager

DESCRIPTION: Coaxial or fiberoptic cable (from the manufacturer of your choice) pre-installed in flexible high density polyethylene duct in continuous lengths up to 6.3 kilometers (19, 200').

Tapcoat Co.(312) 866-8500
PO Box 631

Evanston, IL 60204

PERSONNEL: J. O'Brien, President; G. Harris,

VP/Technical Svcs.; A. Maki, Sales Manager

DESCRIPTION: Moldable sealant and tapes for above and below ground applications to protect cable splices, conduit and other irregular surfaces from corrosion.

Taylor Telecommunications Inc.(216) 784-2960
2040 E Market

Akron, OH 44312

PERSONNEL: Rich Taylor, President; Tam

Taylor, Vice President

DESCRIPTION: Cable installation contractor; underground construction, apartment pre-wiring, residential installation.

Technetronics Inc.(914) 561-7880
192 Rte. 9W

New Windsor, NY 12550

PERSONNEL: Andrew Healey, President

DESCRIPTION: Full service communications construction engineering company. Specializing in rebuilds, upgrades and turnkeys. All services available FFI.

Teco Inc.(219) 747-1631
PO Box 9247

9733 Indianapolis Road

Fort Wayne, IN 46809

PERSONNEL: Bruce Dammeyer, President;

Dave Wick, Sales Manager; Steve Heiniger, Sales Manager

REGIONAL OFFICES: 118 Little Valley Court, Birmingham, AL 35244, (205) 987-7534.

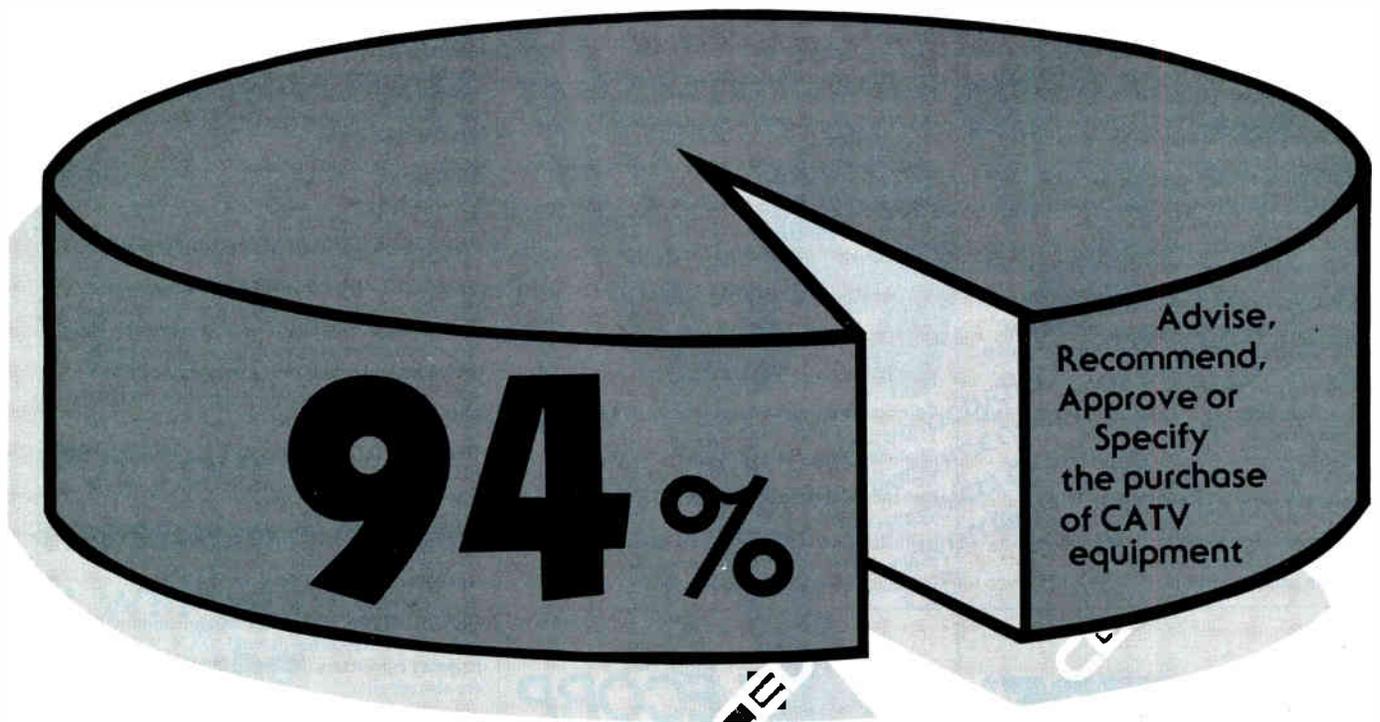
DESCRIPTION: Aerial lifts (buckets), aerial lifts (complete trucks), 40 models available with over-center, non over-center and telescopic booms. Also heavy-duty material lifting capabilities and tree trimming features. Heights from 28 feet to 85 feet.

Tektronix(503) 627-7111
PO Box 500

Beaverton, OR 97077



**CED readers have
buying influence**



**Put your message where it
will be studied by the
Decision Makers
who count in cable.**

*Drawn from Research done by the Harvey Research Organization on the February 1986 issue of CED.

buyers' guide

Tempo Data

generators. Character text generator with up to 64 pages of memory. On board battery back-up, and weather system options. Suitable for remote operation through modems. Key design feature is user friendliness!!

Tempo Data(918) 496-3200
PO Box 702160
Tulsa, OK 74170

PERSONNEL: Selman Kremer, Executive VP
DESCRIPTION: Tempo Data offers various teletext services. One example is Electra, a national teletext magazine featuring national and international news, sports, business and weather reports.

Tempo Enterprises Inc.(918) 496-3200
PO Box 702160
Tulsa, OK 74170

DESCRIPTION: Tempo Enterprises Inc. is a diversified satellite communications company involved in distribution of Superstation WTBS, Tempo Sound, Southern Satellite Systems, Tempo Data, Tempo Television (See separate listings for details). The company also owns 22 cable systems, an independent UHF station, an AM radio station, a video production company, and holds interests in other communications ventures.

Temtron Electronics Ltd.(516) 599-6400
WATS(National)(800) 645-2300
15 Main St.

East Rockaway, NY 11518
PERSONNEL: Sid Sussman, President; Glen Haimes, National Sales Manager
DESCRIPTION: Distributor of CATV replacement parts and equipment, microwave tubes, TWT's, klystrons, camera tubes, surge arrestors, capacitors, transistors of all types, integrated circuits, RF hybrids (all types), and drop and line supplies. Also available: Jerrold equipment, plug in pads, stage and studio lamps, and all types of commercial lighting.

Terado Corp.(612) 646-2868
1068 Raymond Ave.
St. Paul, MN 55108

PERSONNEL: D. Munson, President; R. Munson, Vice President; Fred Munson, Sales Manager; Fred Albright, Production Manager
DESCRIPTION: Standby emergency electric power inverters—uninterruptable electric power.

Terra Link Corporation(512) 282-8430
11600 Manchaca, Ste. 112
PO Box 783

Manchaca, TX 78652
PERSONNEL: Stephen Brown, President; William Matthews, Vice President
DESCRIPTION: Complete CATV and SMATV services. Capabilities include mapping, design, construction, LANs, maintenance, installations, MDUs and performance testing. Engineering and consulting services are available. As well as turnkey operations.

Texscan CORPORATION

Texscan Corp.(915) 594-3555
1440 Goodyear Dr.
El Paso, TX 79936
DESCRIPTION: Founded in 1965, manufacturer of CATV distribution equipment, power supplies, commercial insertion equipment, character generators, converters, test equipment, RF components, status monitoring, security systems, and MDS reception systems.

Texscan CORPORATION

Texscan Instrument Div.(317) 545-4196
WATS(National)(800) 344-2412
3169 N Shadeland Ave.
Indianapolis, IN 46226
PERSONNEL: Gary Gerhold, Vice President/
GM; Ronald Adamson, Sales Manager
DESCRIPTION: Manufacture CATV test equipment, components, filters and VITAL SIGNS.

Texscan MSI/COMPUVID

Texscan MSI/Compuvid(801) 262-8475
WATS(National)(800) 367-6011
3855 South 500 W
Ste. S
Salt Lake City, UT 84115
PERSONNEL: David Keller, Div. General Manager; Ken Lawson, Dir. of Marketing
DESCRIPTION: This division of Texscan Corp. manufactures automated program origination systems including generators, graphics displays, commercial insertion and VCR program playback.

Time Manufacturing Co.(817) 776-0900
7601 Imperial Dr.
Waco, TX 76710
PERSONNEL: Van Smith, President; John Harrison, Sales Manager; Lee Taylor, Sales Manager
DESCRIPTION: Manufacturers of "Versalift" aerial lifts, telescopic and "elbow" types, truck or van-mounted, with working heights up to 55 feet. Sold internationally, through distributors.

TFC

Times Fiber Comm. Inc.
An LPL Co.(203) 265-8500
358 Hall Ave.
Wallingford, CT 06492
PERSONNEL: Jack Forde, President; Rex Porter, VP Cable Prod. Div.
DESCRIPTION: Manufacturers of coaxial cables, trunk and feeder cable, drop cable for CATV, MATV, CCTV and STV. RF Transmission line cable.

TOCOM Division
General Instrument Corp.(214) 438-7691
PO Box 47066
Dallas, TX 75247
PERSONNEL: Mike Corboy, President; Bill Flaherty, Executive Vice President; Sid Prothro, National Sales Manager; Tom Martin, Director of Research and Development; John Fullingim, Mgr. Marketing
REGIONAL OFFICES: 767 Fifth Ave., 45th Floor, New York, NY 10153, (212) 207-6300; 2611 Westgrove Road, Carrollton, TX 75006, (214) 248-7931; 7100 E Belleview Avenue, Ste. 101, Englewood, CO 80111, (303) 740-6118.
DESCRIPTION: Manufacturer of a complete line of advanced communications systems for the CATV industry. Products include the TOCOM Plus line of baseband addressable set-top converters, decoders and headend control systems and home security products including home alarm terminals and alarm only terminals.

Toner cable equipment, inc.

Toner Cable Equipment Co.(215) 675-2053
WATS(National)(800) 523-5947
WATS(State)(800) 492-2512
969 Horsham Road
Horsham, PA 19044
PERSONNEL: Robert Toner, President/Sales Manager
DESCRIPTION: Distributor of CATV headend electronics, computer billing systems, distribution and installation equipment. Cable converter interfaces.

Toshiba America Inc.(312) 564-1200
2900 Mac Arthur Blvd.
Northbrook, IL 60062
PERSONNEL: Mr. Suzuki, President; Mr. Oghino, Sr. Vice President; Mr. Kiriya, Marketing Manager; Mr. Takato, Engineering Manager

buyers' guide

Vermeer Manufacturing

DESCRIPTION: CATV converter, up/down tuner, modulator, digital audio system, home security system, satellite receiver.

Trans Sales International.....(303) 694-1960
3600 S Yosemite St.
Ste. 300
Denver, CO 80237
PERSONNEL: Roland Young, President
DESCRIPTION: Provides headend and earth station pre-assembled buildings. Also provides battery hydrogen gas detector.

Trans USA Corp.(201) 254-3020
WATS(National).....(800) 526-3656
PO Box 548
Seven G Joanna Court
E Brunswick, NJ 08816
PERSONNEL: Li Liaw, President; Steve Kovacs, Sales Manager
DESCRIPTION: Trans USA Corp. manufactures distribution amplifiers, taps, splitters, matching transformers, filters, connectors, poleline hardware and converters. Products are imported from Taiwan, with maximum savings for cable companies. Accessories for video, audio, CATV, MATV. Serving the industry since 1975.



Trilogy Communications(601) 932-4461
WATS(National).....(800) 874-5649
2910 Hwy. 80 E
Pearl, MS 39208
PERSONNEL: Steven Hallock, President; John Kaye, VP/Engineering & Manufacturing; Shinn Lee, Executive Vice President; Bill Kloss, National Sales Manager
DESCRIPTION: Manufacturer of 75 and 50 ohm MC2 coaxial cables along with UL approved plenum cables.



Triple Crown Electronics Inc.....(416) 629-1111
WATS(National).....(800) 824-4332
4560 Fieldgate Dr.
Mississauga, Ontario L4W 3W6
PERSONNEL: Charles Evans, President; P. Ayiotis, Vice President; A. Kleopa, Vice President; K. Poirier, Vice President; David Fear, Director of Marketing
REGIONAL OFFICES: 601 Fairway Dr., Deerfield Beach, FL 33442, (305) 429-0870.
DESCRIPTION: Triple Crown Electronics manufactures satellite receivers for 4 and 12 GHz, TV and FM modulators, processors and demodulators, indoor and line amplifiers (300 &

450 MHz), DBC Addressable products and Cable Power Inc. standby power supplies.

Triplett Corporation(419) 358-5015
WATS(National).....(800) TRI-PLETT
One Triplett Dr.
Bluffton, OH 45817
PERSONNEL: Warren Hess, President; Richard Anderson, Vice President; Stan Naylor, Product Manager; Don Klaus, Product Manager; Hubert Hauser, Product Manager
DESCRIPTION: Manufacturer of electronic/ electrical test and panel instrumentation.

Tru-Level Inc.(602) 924-1083
925 N Stapley
Ste. C
Mesa, AZ 85203
PERSONNEL: Steven Holtman, President
DESCRIPTION: Tru-Level Inc. is a well diversified company that handles all jobs from engineering to installation of cable, and installation of customer to audit system.

Tulsat Corp.(918) 836-8348
WATS(National)(800) 331-5997
1839 N 105th E Ave.
Tulsa, OK 74116
DESCRIPTION: Distributor for Automation Techniques and service center. For SMATV, modifications to make receivers compatible with descramblers.

Turner Cable Construction Co.....(314) 729-3119
PO Box 576
Salem, MO 65560
PERSONNEL: Butch Turner, President; Jane Turner, Vice President
DESCRIPTION: Provide outside plant construction and aerial buried splicing drops.

UNR-Rohn-Division of UNR Inc.(309) 697-4400
PO Box 2000
Peoria, IL 61656
PERSONNEL: Donald Rohn, President; R. Kleine, VP/Sales & Marketing
DESCRIPTION: Manufacturers of tower and related accessory items including equipment shelters, lighting equipment and safety devices.

U S Antenna Inc.(718) 442-4772
2096 Clove Road
Staten Island, NY 10305
PERSONNEL: Edith Gaughan, President; Terry Pfeffer, Sales Manager
REGIONAL OFFICES: 20946 Corsair Blvd., Hayward, CA 94545, (415) 887-2775.
DESCRIPTION: Cable TV contracting services for multi-unit pre and post wiring and residential installations. We are a woman-owned business enterprise and are certified as such. We operate nationwide.

U.S. Cable Inc.(414) 733-3321
2911 N Ballard Road
Appleton, WI 54913
PERSONNEL: Glenn Mullen, President; Jerry Wood, Vice President; Robert Frazier, Secretary
DESCRIPTION: Construct cable TV and telephone. LAN networks.

U S Television Systems Inc.....(512) 454-5779
WATS(National)(800) 252-9742
914 Banyon St.
Austin, TX 78757

PERSONNEL: T. Burger Jr., President; Howard Kay, Vice President; Bob Saringer, Supervisor of Design
DESCRIPTION: Provide system design, system alignment, proof of performance, FCC compliance testing, amplifier repair, construction, aerial and underground.

Underground Equipment
& Supply Co.(713) 448-8444
10006 Airline Dr.
Houston, TX 77037
PERSONNEL: Bill Edwards, President; Don Edwards, Vice President
DESCRIPTION: Manufacturer of earth boring machines for drilling under roads, streets, driveways; from 2"-24" diameter, 200 ft. in length; wet, dry compaction types, hand held, wheel, track models, above ground or below ground drilling; accurate, portable, low maintenance quality, long line machines, designed for utility work.

Underground Piercing Inc.....(612) 425-4172
PO Box 225
Osseo, MN 55369
PERSONNEL: Virgil Dittes, President; Jim Dittes, Vice President
DESCRIPTION: We specialize in boring streets, driveways, sidewalks, lawns and shrubs, etc. We have mobile units designed specifically for underground boring and pipe or conduit installation.

United Satellite Systems.....(218) 681-5616
Rte. One
St. Hilaire, MN 56754
PERSONNEL: Doug Dehnert, President; Richard Andersen, Sales Manager
DESCRIPTION: USS manufactures equipment for CATV headends. We manufacture satellite antennas from 3.8 to 7.6 meters. The satellite antennas are constructed of durable fiberglass and backed by rugged, galvanized mounts. Our headend products include the SR -500 satellite receiver and MD450 Frequency Turnable Modulator.

Universal Electronics Inc.....(614) 866-4605
4555 Groves Road
Ste. 13
Columbus, OH 43232
PERSONNEL: Thomas Harrington, President; Tim Harrington, Vice President; S. Cohen, Sales Manager
DESCRIPTION: Manufacturer and distributor Coax-Seal products. Coax-Seal is a new pliable plastic connector sealant used in microwave, satellite, SMATV, CATV installations. Products are used to waterproof coaxial connectors and all other types of RF equipment hook-ups from the largest to the smallest. Basically is known as a cable sealant- 154 cable sealant, 222 sealant tape.

VEC Manufacturing Co.....(405) 528-3479
PO Box 54979
Oklahoma City, OK 73154
DESCRIPTION: Manufacturer of Skyjacker and Skyvan articulating and telescoping aerial baskets, in several models, and 3 power sources: Electric/hydraulic, PTO/Fan Belt Pump, or dual power with both. Mounts on pickups, vans or cab and chassis.

Vermeer Manufacturing (515) 628-3141
PO Box 200

buyers' guide

Vibra-King Inc.

New Sharon Road
Pella, IA 50219

PERSONNEL: Bob Vermeer, President; Mary Vermeer Andringa, President; Pat Weiler, VP/Engineering; Lyle Borg, VP/Sales & Marketing; Carl Boat, VP/International Sales

DESCRIPTION: Manufacturer of Industrial Equipment: trencher, cable plows, concrete cutters, asphalt cutters, backhoes, and boring tools.

Vibra-King Inc.(507) 387-6574
WATS(National)(800) 533-2077
Box 247

Mankato, MN 56001

PERSONNEL: C. Brahler Jr., Vice President; Dave Holcomb, Sales Manager

REGIONAL OFFICES: 707 Ocean Blvd., Apt. C, Seal Beach, CA 90740, (213) 430-6934; Rte. #3, Box 1132A Busbe, Gaston, SC 29053, (803) 755-2303.

DESCRIPTION: Accupunch is an underground piercing tool for making bores under streets and driveways. Our machines are extremely accurate, and have the ability to pull pipe. Recently available is our new 1-3/4" machine just for the cable TV market.

Videophile Inc.(303) 770-7000
4582 S Ulster St. Pkwy.

Ste. 1300

Denver, CO 80237

PERSONNEL: Jeffrey Gutfreund, President; Steven Barber, Vice President

DESCRIPTION: Local Area Network design, installation. Distributors of videoconferencing services; cable television and SMATV design and construction; local area network design and construction; headend, satellite dish, micro-wave, and distribution network construction. Related services through Coaxial Analysts Inc., Coaxial Construction Corp., and Coaxial Capital Corp.

Videotech Services Inc.(213) 970-9012

4505-D W Rosecrans Ave.

Hawthorne, CA 90250

PERSONNEL: Hugo Munoz, President/General Manager

DESCRIPTION: Provides maintenance and repair service of CATV equipment, line and distribution amplifiers, field strength meters, headend and CCTV gear, system troubleshooting and FCC compliance tests.

Videotek Inc.(215) 327-2292

243 Shoemaker Road

Pottstown, PA 19464

PERSONNEL: Philip Steyaert, President; Peter Choi, Vice President/Sales

DESCRIPTION: Videotek manufactures a comprehensive line of: color receiver/monitors; professional rackmount color monitors; waveform monitor; vectorscope; distribution amplifiers for video, audio, pulse and subcarrier signals, routing switchers, demodulators; and audio program monitors.

Viewsonics Inc.(516) 921-7080

WATS(National)(800) 645-7600

170 Eileen Way

Syosset, NY 11791

PERSONNEL: Abram Ackerman, President;

Cynthia Brown, Sales/Marketing Liaison

DESCRIPTION: Manufacturer of the Lockinator

Security System (patented), specialized security enclosures; broadband amplifiers; high tech: high RFI passive and FM devices, digital multimeters; protective cases; poleline construction and installation materials. Private label and custom design products. Product and service information upon request.

Viewstar Inc.(416) 298-9919
55 Milner Ave.

Scarborough, Ontario M1S 3P6 Canada

PERSONNEL: Rob Harris, General Manager; Al Sopol, Marketing Manager

DESCRIPTION: Manufacturers of cable converters.

Vital Industries Inc.(904) 378-1581
3700 NE 53rd Ave.

Gainesville, FL 32601

PERSONNEL: C. Donoyan, President; Linda Buickel, Vice President Sales

DESCRIPTION: Video switching systems on-air video/audio switching, systems, video and audio distribution systems, pulse distribution, video effects generators, TV automation, frame synchronizers and manipulators.



Quality and Innovation

Vitek Electronics Inc.(607) 796-2611

901 South Ave.

PO Box 111

Horseheads, NY 14845

PERSONNEL: John McQuaid, General Manager/VP; Edwin Eschliman Marketing Manager;

Leonard DeRenzo, Sales Manager

DESCRIPTION: Pay TV security devices and test equipment: Narrow notch, audio and single through multi-channel traps; jumper traps, tracers (RF Leakage Detectors).

W P Telectronics Ltd.(403) 250-8888

#5 2215 27th Ave. NE

Calgary, ALTA T2E 7M4 Canada

PERSONNEL: Chester Wiens, President

DESCRIPTION: Full service cable and LPTV contractor with 12 years of service in Western Canada. The Earth Station Group services the High Artic as well as the settled areas of Western Canada.

W & S Systems Co.(412) 642-3524

WATS(National)(800) 323-9935

11 Stanwix St.

Pittsburgh, PA 15222

PERSONNEL: Romano Salvatori, President;

Larry North, VP/Sales & Marketing

DESCRIPTION: Provide stereo modules, addressable converters, VCR interfaces and their related accessories.

Wade Communications Inc.(713) 785-3143

2500 City West Blvd.

Suite 460

Houston, TX 77042

PERSONNEL: Michael H. Wade, President

DESCRIPTION: Two-way off-premise addressable trap and tap.

Walton Towers Inc.(717) 533-3635

Box 148B Road 1

Rte. 7435

Hershey, PA 17033

PERSONNEL: Joann Brong, President

DESCRIPTION: Install guyed towers to 500' and

self-supporting towers to 400'. We install

lightning systems, climbing and waveguide

ladders, antennas, microwave dishes, mini-horns,

transmission line, waveguide and other

accessories on new or existing towers.

Additionally, we align microwave dishes and

horns, inspect, reguy, retension and paint new or

existing towers.

Ward Enterprises(716) 675-6661

157 Seneca Creek

Buffalo, NY 14224

PERSONNEL: Kurt Ward, President

DESCRIPTION: Underground construction,

contractor boring, plowing, trenching, splicing

and service drops.

Washington Cable Supply Inc.(202) 726-0319

601 13th St., NW

Ste. 434

Washington, DC 20005

PERSONNEL: W. Henry Parker, President; C. Ramon Wofford, Vice President; B. Parker, Sales

Manager

DESCRIPTION: Minority owned.

Manufacturers' representative/Distributor of

CATV products and accessories, cable and wire

products, pole line hardware, drop materials, tools

and safety equipment.

Wavecom(619) 456-0042

PO Box 8495

LaJolla, CA 92038

PERSONNEL: Greg Williams, President; Mattie

Williams, Vice President

REGIONAL OFFICES: 7345 Draper Ave.,

LaJolla, CA 92037, (619) 456-0042.

DESCRIPTION: Wavecom is a broadband

communications contractor serving the southern

California area. Wavecom has installed & serviced

antenna, cable and satellite systems for the

military and various CATV, SMATV, LAN &

teleconference network companies.



Wavetek Indiana Inc.(317) 788-5965

WATS(National)(800) 622-5515

5808 Churchman Ave.

Po Box 190

Beech Grove, IN 46107

PERSONNEL: Jim Walcutt, General Manager;

John Webb, Sales Manager

DESCRIPTION: Full line manufacturer of

broadband cable test equipment including

analyzers, signal level meters, signal leakage

detectors, automatic test equipment, signal

buyers' guide

Zenith Cable Products Div.

generators, system sweep, bench sweep, TVRO/bench, set top converter test, accessories and components.

Weeks, John Enterprises.....(404) 963-7870
641 Grayson Hwy.
Lawrenceville, GA 30245
PERSONNEL: John Weeks, President
REGIONAL OFFICES: 317 25th St. NW,
Fayette, AL 35555, (205) 932-7264; 6112 Eagles
Nest Dr., Jupiter, FL 33458, (305) 747-3647; 105
Mt. Vernon Dr., Albemarle, NC 28001, (704) 983-
5908.
DESCRIPTION: Complete full line distributor for
installation materials, connectors, headend
equipment and cable.

Wegener Communications Inc.(404) 448-7288
150 Technology Park/Atlanta
Norcross, GA 30092
PERSONNEL: Robert Placek, President; Heinz
Wegener, Vice President
REGIONAL OFFICES: 111 Industrial Dr.,
Whitby, ONT L1N 5Z9 Canada, (416) 666-1661.
DESCRIPTION: Products for mono and stereo
audio transmission via satellite, cable and
terrestrial microwave. Products include subcarrier
modulators, demodulators, FM stereo generators
and modulators, and stereo synthesizers. Data
transmission products for satellite cable and
terrestrial microwave distribution of teletext,
vertical interval and other digital information.

WELDONE TRADING CO. INC.

Weldone Trading Company Inc. (514) 381-8861
1401 Legendre W
#106
Montreal, PQ H4N 2S2 Canada
PERSONNEL: Murray Shenkman, President/
Sales Manager
DESCRIPTION: Manufactures Tower Cable
Clips-Sizes to fit all cables including Quad and
double shielded coaxial for single and dual
systems. Available in black and white. Plated,
hardened steel masonry nails. Pre-assembled
ready for use. Sure-fit for quick simple
installation. Sold by most leading distributors.



WESTEC COMMUNICATIONS, INC.

Westec Communications Inc.(602) 948-4484
14405 N Scottsdale Road
Scottsdale, AZ 85254
PERSONNEL: Robert O'Hara, President; Keith
Larsen, Operations Manager; Charles Bissegger,
VP/Engineering; Candy McKay, Office Manager
DESCRIPTION: Manufacturer of solid state

sources for the commercial and military markets.
Repair and service microwave equipment. Products
serviced include solid state sources and
upconverters for the Hughes AML microwave and
servicing of M/A-COM MA 12X and 12G.



Western CATV Distributors Inc. ..(213) 539-8030
WATS(National)(800) 551-2288
WATS(State)(800) 641-2288
3430 Fujita Ave.
Torrance, CA 90505
PERSONNEL: Bill Ewing, President; Dave
Herman, V.P. Engineering; Chris Ewing, Sales
Manager
DESCRIPTION: Distributor of Cable TV
Components. Total CATV repair center,
authorized Magnavox and Phasecom warranty.

Western Towers(915) 658-6539
WATS(National)(800) 622-6539
PO Box 2040
San Angelo, TX 76902
PERSONNEL: W. Anderson, President; Daniel
Anderson, Vice President
DESCRIPTION: Manufacture full line of guide
towers - 3 standard sizes. Erect, maintain and sell
tower accessories, including lighting, electronic
flasher control units, out-riggers and antenna
mounts. Also full line of VHF log periodic
antennas, and 450 MHz communications
antennas.

White Radio Ltd.(416) 632-6894
940 Gateway Dr.
Burlington ONT L7L 5K7 Canada
PERSONNEL: David Martin, President; Richard
Martin, Vice President; J. Little, Vice President;
Richard Kelly, Sales Manager
REGIONAL OFFICES: Montreal, Quebec H4B
2M8 Canada, (514) 481-0158; North Vancouver,
BC V7P 1M7 Canada, (604) 984-4301; Calgary,
Alberta T2G 4B7 Canada, (403) 243-0055;
Edmonton, Alberta T6B 2P5 Canada, (403) 468-
6916; Winnipeg, Manitoba R3H 0M7 Canada,
(204) 633-6354.
DESCRIPTION: We are manufacturers'
representatives who sell to the Canadian CATV
industry. Exclusive product lines to White Radio
in Canada are: Belden, Oak Communications, Oak
Satellite, Blonder-Tongue, Canusa, Master
Appliance, SED, Augat/LRC, H.O.M.E.

White Sands Cable Co.

CABLE ASSEMBLIES

White Sands Jumper Cables.....(602) 726-4908
3780 S 4th Ave. #2D
Yuma, AZ 85364

PERSONNEL: Homer Harmon, President; Randy
Harmon, Vice President
DESCRIPTION: Manufacture CATV jumper
cables.

Wide Band Engineering Co. Inc.....(602) 254-1570
PO Box 21652
Phoenix, AZ 85036
PERSONNEL: S. Ticknor, President; M. Ticknor,
Sales Manager
DESCRIPTION: Manufacturers of 1-900 MHz
RF test instruments, including sweep amplifiers,
comparators, impedance bridges, terminations,
directional couplers, hybrid power divider/
combiners, RF switches, filters, RF detectors,
impedance transformers, DC blocks, etc.

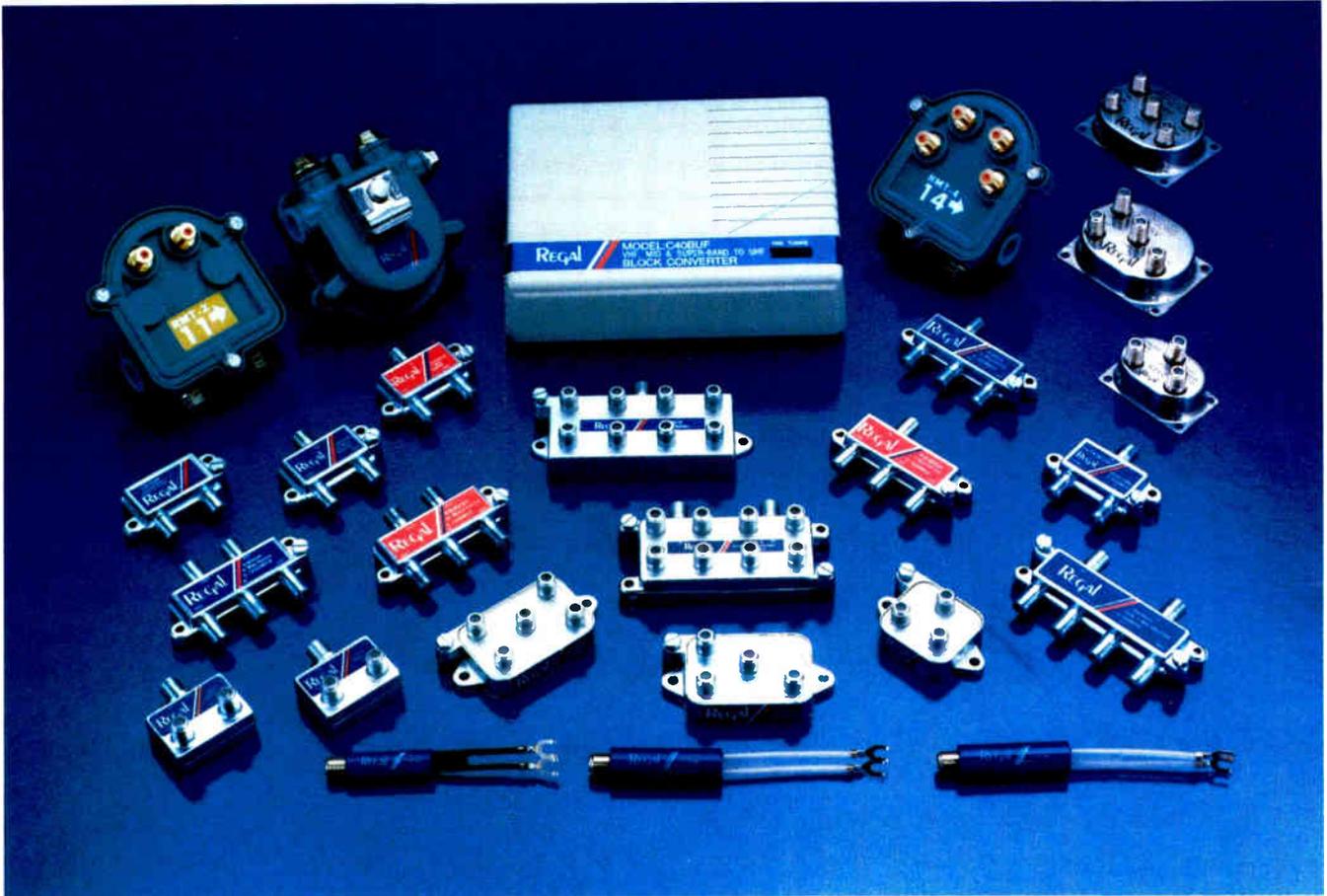
Williams, L.W. Contractor, Inc.(502) 651-5638
Rte. 3 Box 46-A
Glasgow, KY 42141
PERSONNEL: L. Williams, President; James
Meyers III, General Manager
DESCRIPTION: CATV contractor: aerial,
underground, splicing, installation, etc.

World Video Library Inc.(817) 831-3811
2747 Airport Freeway
Fort Worth, TX 76111
PERSONNEL: John Ratliff, President; Joseph
Sigler, Vice President/Operations; Gerry Jordan,
Senior Vice President; Wayne Burruss, Marketing
Director
DESCRIPTION: Manufacturer, distributor, and
service representative of the "Impulser" system
which provides pay-per-view equipment and
software. The "Impulser" upgrades one way
addressable systems to impulse pay-per-view
WVL. Also provides early window movies for
"Impulse pay-per-view" customers.

Worrell, JM Comm.
Construction Co.(404) 586-9152
38 Haynes St. NW
Atlanta, GA 30313
PERSONNEL: John Worrell, President; Beverly
Worrell, Vice President; Alyce Kimball,
Administrative Coordinator
REGIONAL OFFICES: 8695 NW 64th St.,
Miami, FL 33166, (305) 592-9785.
DESCRIPTION: Install and construct
communications systems, e.g. Cable TV, PA
Systems, CCTV Systems, radio antenna,
underground, telephone and intercom systems,
uninterruptible power systems, commercial and
industrial electrical work.

Zenith Cable Products Div.(312) 391-7000
1000 Milwaukee Ave.
Glenview, IL 60025
PERSONNEL: James Faust, President; Vito
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Digital televisions will result in the introduction of some great features.

Continued from page 32

that digital circuits are not yet being used in huge quantities. The poorer performance is a result of analog circuits—having the advantage of being refined repeatedly over time—being difficult to emulate, much less improve upon, he says.

But over time, digital televisions will result in the introduction of some great features, some of which a consumer can see and some of which he cannot.

For instance, as the cost of frame and field memories comes down and they are included in the sets, Lechner says frame comb filters, rather than line comb filters, will be used to better separate the luminance and chrominance signals. Secondly, progressive scanning will replace interlace scan, which will eliminate the interline flicker and line crawl effects of present-day NTSC. And thirdly, noise reduction can be added.

But beyond the improvements behind the screen, digital TV will make possible such features as pictures within a picture and control of contrast, brightness and tint from a hand-held remote unit, says Panasonic's Surprise. Both Surprise and Lechner say that as the cost of digital circuitry comes down, the cost of producing sets will also drop.

Panasonic introduced a 20-inch digital television last year, Surprise says, only to see it suffer in the marketplace because of the decline of the Japanese yen. Zenith also is making a high-profile move into the digital TV market with the introduction of Bose audio into its cabinets.

Despite all the technological advances digital TVs promise, only one may cause minor problems related to cable, according to one industry source. Some sets use ITT chips that can lock up to a suppressed sync signal, he says. Consequently, it may be possible for a knowledgeable consumer to program his television to defeat the suppressed sync, resulting in a pirate box. "That's been heavily discussed and widely written about and is really only a minor consideration," he notes.

But high definition TV is another story. Enough problems exist today (the high cost of the hardware, the lack of a transmission standard, not enough bandwidth to handle the signal, etc.) to

easily keep HDTV away from consumers for at least a decade, industry experts say.

Hardware cost and deciding a transmission standard are issues likely to be overcome relatively simply, but freeing up enough bandwidth to offer high definition will remain a troubling issue for some time, say observers.

The total bandwidth of a high definition signal is about 30 MHz, according to RCA's Lechner, compared to 4.2 MHz for a standard NTSC signal. Not enough room exists in the spectrum for terrestrial broadcasting of several channels. Even on cable, a system that presently offers 42 channels would be reduced to no more than six if it carried the HDTV signal.

Proposed solutions to the problem have included compressing the signal to allow for easier transmission. However, a receiver would then have to be equipped with an expensive processor to read the signal and because signal compression is not a transparent process, the signal would be subject to various forms of degradation.

One proposal calls for the use of two channels to transmit a single HDTV channel, thus allowing a conventional TV to co-exist with an HDTV receiver. But Lechner says using two channels "isn't enough to do true high definition TV. Most approaches using two channels are for extended definition, providing twice the resolution, but not four times the resolution" that true HDTV would offer. And even if the two-channel approach was taken, a cable operator would effectively lose half his present channel capacity for the benefit of a few viewers who had HDTV receivers.

Because offering HDTV would require broadcasters to change out their equipment to HDTV cameras and tape machines, most of the present-day effort is being placed upon closed-circuit HDTV systems, such as hospital and educational uses, says Surprise, whose company successfully demonstrated an NHK system.

As a result, Lechner says we're likely to see improvements in NTSC before true HDTV. And besides, Lechner argues, is HDTV truly necessary when much of the improvement most likely won't be detected by the eye anyway? To prove his point, Lechner

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Reader Service Number 51

Ohm's law: voltage, current and resistance

Ohm's Law can be defined by three electrical quantities: voltage, current and resistance. Current flow is directly proportional to total circuit voltage and inversely proportional to total circuit resistance.

This is probably the most important single theorem in the field of electronics, simply because it is so useful. It is a simple and easily understood law but, at the same time, it forms the basis for highly complex circuit and system analysis.

An explanation

We know that Ohm's Law considers three quantities: (1) voltage, or electrical pressure, represented by "E" and measured in volts, (2) current flow, represented by "I" and measured in amperes, and (3) resistance to the flow of current, represented by "R" and measured in ohms. The law states that voltage equals current times resistance ($E = IR$).

It is a simple and easily understood law.

will be less than the original amount. Electrically, this is known as power, and is measured in watts.

From Ohm's Law ($E = IR$), we see that, if for a fixed current flow we have a specific, fixed resistance, there will be a pressure or voltage drop across this resistance. This amount of work done by the resistance is equal to the flow of current times the pressure or voltage drop which occurs. In other words, power dissipated by a resistance equals the amount of current times the quantity of voltage drop across the resistance ($P = IE$).

Similarly, the power dissipated in an entire system is simply the total voltage or total pressure in the system times the current flow through the system.

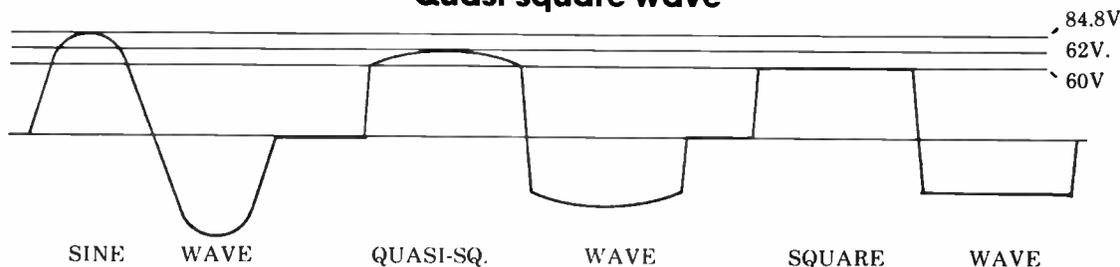
quired power by drawing current as needed ($P = IE$).

Therefore, from Observation 1, any section of wire carrying current will have a small voltage drop per foot. As current increases, the voltage drop per foot increases. In a real life situation, the voltage drop over a very long length of wire (thousands of feet) can become appreciable. Operating high current electrical equipment, through an extension cord that is too small, will have a reduced voltage at its input because of the voltage drop through the cord.

3. In powering the amplifiers we use something called a quasi-square wave. It is neither a sine nor a square wave yet it exhibits some of the characteristics of both. There are advantages to using this wave form a) Its source is a ferroresonant transformer which provides good AC regulation. b) The unit is current limited and is therefore short proof. c) Because of the truncated peaks the rectified voltage has less rip-

FIGURE 1

Quasi-square wave



A hydraulic system can be used as an analogy.

Voltage is analogous to the pressure in the pipe or how much force is involved. Current is similar to how much fluid would be flowing in the pipe. Resistance is related to the size of the pipe. With a larger pipe, more fluid can flow at the same pressure.

If a certain level of energy is supplied to an energy absorbing device, then at least part of this energy will be absorbed and dissipated in some fashion or, in some cases, stored for use at a later time. Accordingly, the amount of energy left over for use elsewhere

This concept of power can be compared to the hydraulic system analogy where more energy must be expended to move fluid through a very rough pipe than through a smooth pipe.

In order to apply these two laws to a specific area in CATV, observe that:

1. All electrical conductors have a specific value of DC resistance, which is inversely proportional to the diameter of the conductor. (The larger the diameter, the smaller the resistance). *The resistance is measured in ohms per foot.*

2. Every item of electrical or electronic equipment requires a certain amount of power (P) to operate. When designed for a specific voltage, the item of equipment will absorb the re-

ple and is easier to filter. (d) The peak to RMS ratio is reduced to 1.234, thus producing less stress on system components.

Calculating power requirements

Cable type .750
DC loop resistance .96 ohms per 1000 ft.

Cable attenuation @ 300 MHz 1.05 dB per 100 ft.

Current needed by amp. @ 60 volts .9 amps.

Current needed by amp. @ 30 volts 1.8 amps.

Passive loss will be disregarded.

Cable length between main stations must be calculated. Using the stan-

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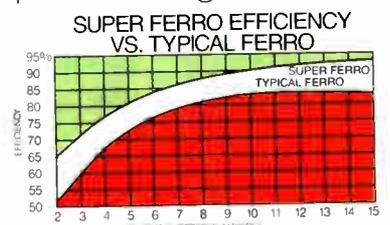
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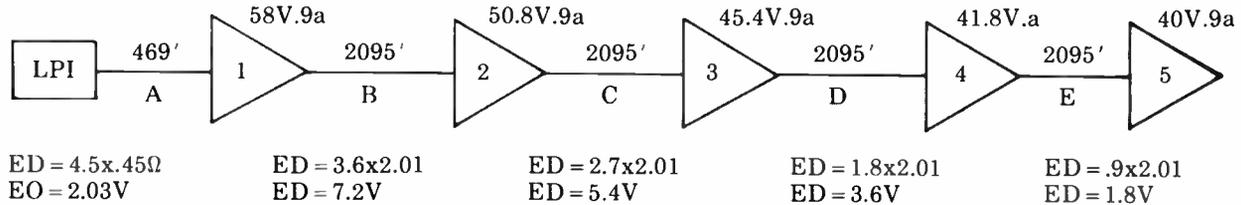
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Each section of cable must carry all of the current for the station following it.

FIGURE 3

Cable system



the cable that follows it.

The current at station #4 must include the current required by station #5 as well as the current required by station #4. Each amplifier is a parallel load on the system. Each section of cable must, therefore, carry all of the current for the station following it, as well as current for all units farther down the cable.

$$E_D = 1.8 \cdot 2.01, E_D = 3.6V$$

Station #3.

E = 45.4 volts, Station #4 volt-

age + voltage drop in span "D."

I = 2.7 amps, Total current, station #5 + station #3.

R = 2.01, 2095 feet of .750 cable preceding amplifier #3

$$V_D = 2.7 \cdot 2.01, V_D = 5.4 \text{ volts.}$$

Station #2.

E = 50.8 volts, Station #3 voltage + voltage drop in span "C"

I = 3.6 amps, Total current stations 2, 3, 4 & 5.

R = 2.01, 2095 feet of .750 cable preceding amplifier #2

$$V_D = 3.6 \cdot 2.01, V_D = 7.2 \text{ volts.}$$

Station #1.

E = 58 volts, Station #3 voltage + voltage drop in span "B."

I = 4.5 amps, Total current stations 1, 2, 3, 4 & 5

R = .48, 500 feet of .750 cable preceding power supply.

$$E_D = 4.5 \cdot .45, E_D = 2.16 \text{ volts.}$$

Power supply location:

Given—Source Voltage E = 60 volts, Total Load I = 4.5 amps. Objec-

Continued on page 101

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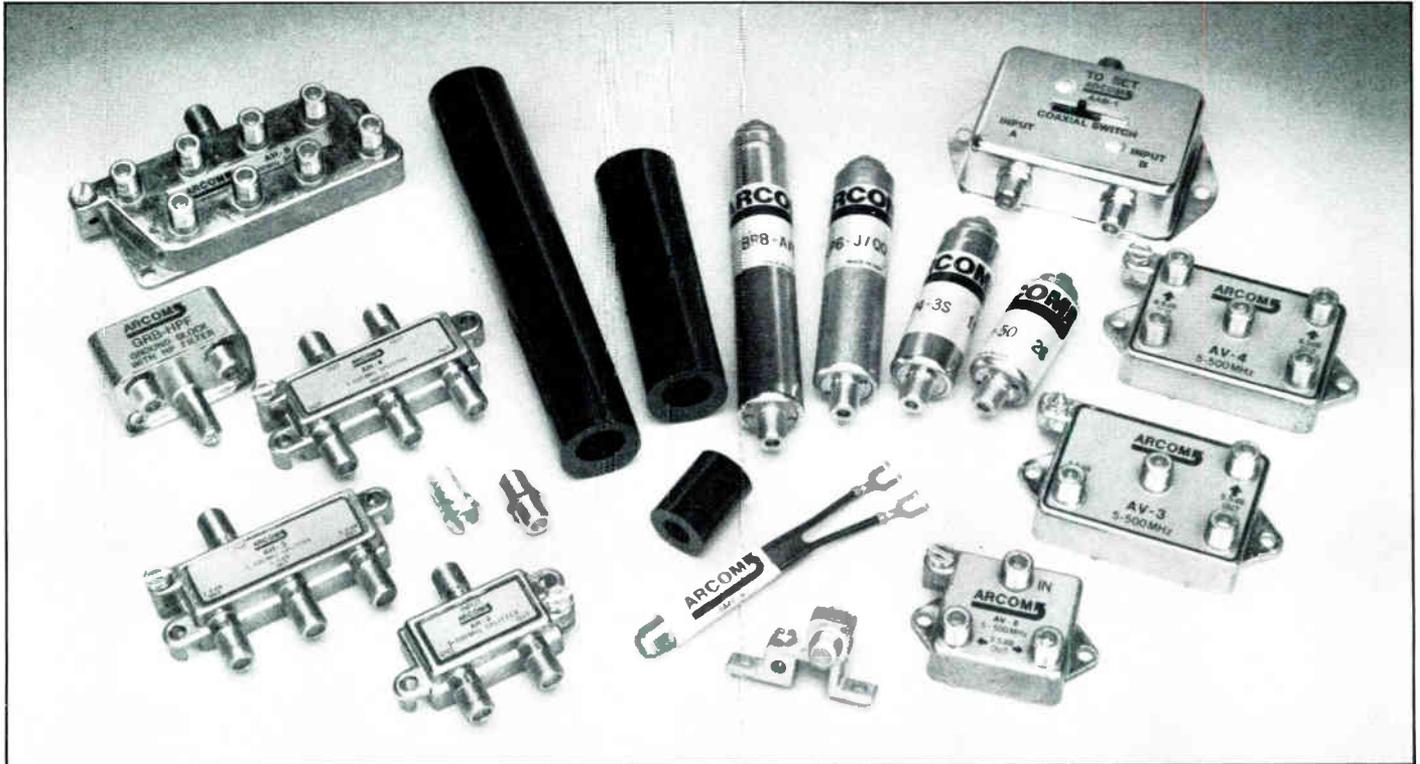
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Employed from: _____ to _____	Employed from: _____ to _____

Professional Activities & Memberships:

Activity or membership: _____	Activity or Membership: _____
Your most significant contribution: _____	Your most significant contribution: _____
Activity or membership: _____	Current SCTE/BCTE Certifications: _____
Your most significant contribution: _____	_____

EDUCATION HISTORY: (Attach all appropriate transcripts)

High School Level Completed: 9 10 11 12

Names & Locations of Schools: (Attach additional page if necessary.)

Diploma Granted: Yes No Date _____ Diploma Granted: Yes No Date _____

Course of Study: _____ GPA _____ Dates of Attendance: _____

College Level Completed: 1 2 3 4 5 6

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Degree Granted: _____ Date: _____ Major: _____ GPA: _____ Dates of Attendance: _____ to _____

Vocational/Military School:

Name & Location of School: _____ Course of Study: _____ Dates of Attendance: _____ to _____ Graduated: ___Yes ___No Date _____ Grade Point Average (4.0 scale): _____

Correspondence Courses:

Name and Location of Institution: _____ Course of Study: _____ Dates of Attendance: _____ to _____ Diploma Granted: ___Yes ___No Date _____ Grade Point Average (4.0 scale): _____

PERSONAL REFERENCES: (Industry-Related)

Name: _____ Title/Position: _____ Company: _____ Address: _____ Telephone Number: () _____

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*As reported to the IRS in last tax year; for married couples filing separately, include both incomes.

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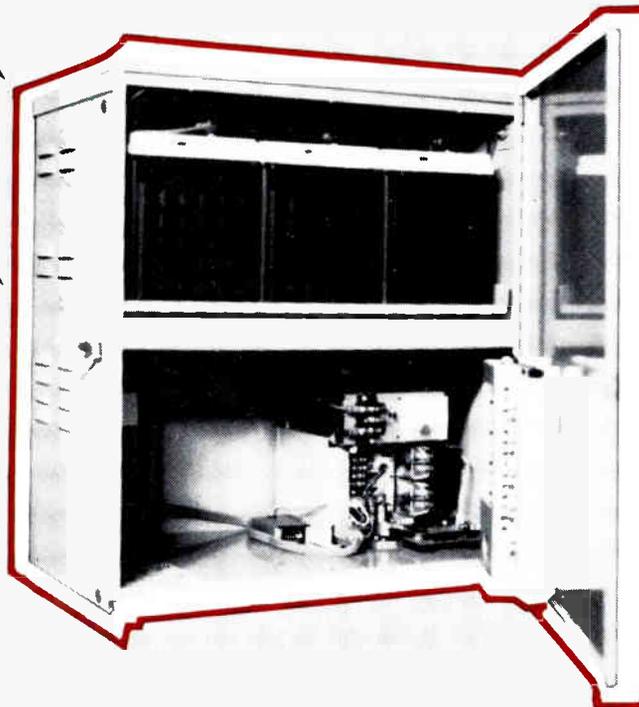
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Reader Service Number 35

Continued from page 96

tive: determine the maximum distance from the first amplifier served. Voltage @ station #1 = 58 volts, Current through cable 4.5 amps, Voltage drop across cable $E_{12} = IR, 2 = 4.5R$. Solving for R, $R = 2V \div 4.5 a, R = .444r$. From manufacturer specifications: 1,000 ft. of cable = .96r

$$\frac{.444r}{X} = \frac{.96r}{1000 \text{ ft.}}$$

Unknown distance X =

$$\frac{.444 r \times 1000 \text{ ft.}}{.96r} = 462.5 \text{ ft.}$$

This is the maximum allowable distance between the line power inserter and the first amplifier. The advantage is that when 60 volts is provided less current is required in order to maintain a constant power output. Because less current is flowing, there will be less $I \cdot R$ loss through the cable. This enables us to supply more amplifiers from one power source.

60 volt vs. 30 volt operation

We have performed the previous example using 60 volt amplifiers. Recently designed cable systems use 60 volt power supplies and amplifiers because it reduces the current flow and, therefore the voltage drop in the cable, making the overall system more power-efficient.

Each amplifier requires power to operate. The power used by an amplifier is expressed in watts. A power, voltage, current relationship can be expressed by the formula of watts (power) = (voltage) x (current).

Power drawn by a mainstation at 60 volts:

$$P = EI$$

$$P = 60 (.9)$$

54 watts

Power drawn by a mainstation at 30 volts:

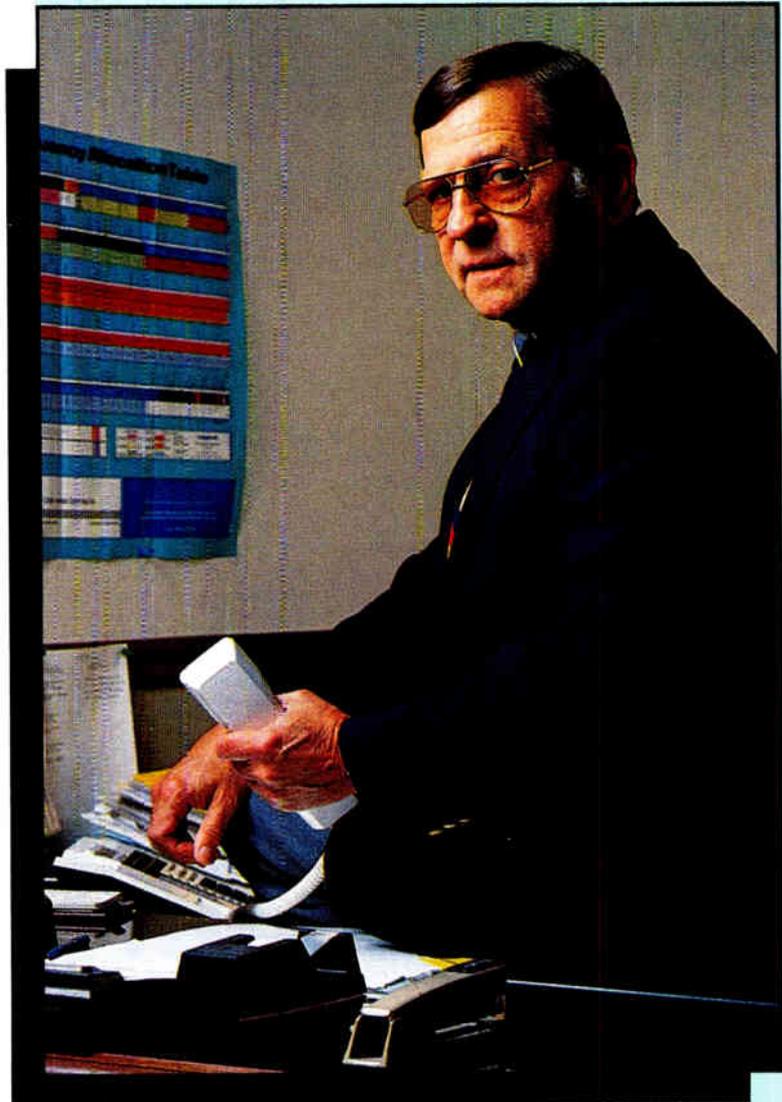
$$P = I$$

$$P = 30 (1.8)$$

54 watts

The power required remains the same regardless of the voltage. ■

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Continued from page 17

By factoring and cancelling:

$$M_t = \frac{2 M_c}{1 + M_c}$$

Likewise: $M_c = T/S = \frac{X/2}{Y-T} =$

$$\frac{X/2}{Y-X/2}$$

$$M_c = \frac{\frac{X}{2}}{\frac{2Y-X}{2}} = \frac{X}{2Y-X}$$

Again by substitution

$$M_c = \frac{Y M_t}{2Y - Y M_t}$$

Therefore $M_c = \frac{M_t}{2 - M_t}$

Taking the expression for M_t and expressing in dB yields

$$20 \log M_t = 20 \log 2 + 20 \log M_c - 20 \log (1 + M_c)$$

$$20 \log 2 = 20 (.3) = 6$$

Then let $T = 6 - 20 \log (1 + M_c)$

for which the original equation then becomes

$$\underbrace{20 \log M_t}_{M_t} = \underbrace{20 \log M_c}_{M_c} + T = T$$

Appendix B

$$\sin x + M \sin Y = P \sin \phi \quad (1)$$

Using trigonometric relationships and considering the addition of two phasors which then becomes

$$e^{jX} + M e^{jY} = P e^{j\phi}$$

Since this holds identically then,

$$\cos X + M \cos Y = P \cos \phi$$

Thus $\tan \phi = \frac{\sin \phi}{\cos \phi} =$

$$\frac{\sin X + M \sin Y}{\cos X + M \cos Y}$$

Then $P^2 = (e^{jX} + M e^{jY})(e^{-jX} + M e^{-jY})$

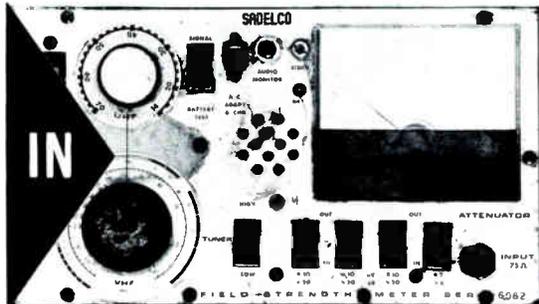
which yields $P^2 = 1 + M^2 + 2M \cos (X - Y)$

Equation (1) now becomes

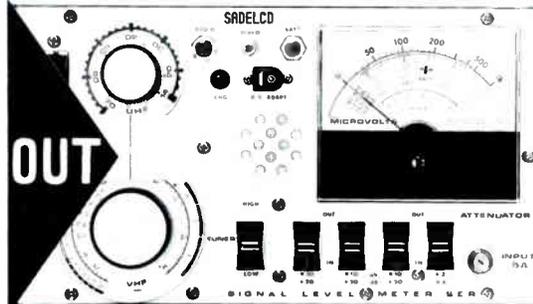
$$\sin X + M \sin Y = \left[1 + M^2 + 2M \cos (X - Y) \right]^{1/2} \sin \phi$$

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* For $M = 1$

$$\sin X + M \sin Y =$$

$$\left[1 + \frac{M^2 + 2M \cos(X-Y)}{2} \right] \sin \phi$$

$$+ \left[1 + M \cos(X-Y) \right] \sin \phi +$$

$$\frac{M^2}{2} \sin \phi$$

Which equation is like conventional amplitude modulation where M has the same meaning as in amplitude modulation.

$$\text{If } M = 1 \quad P^2 = 2 + 2 \cos(X-Y)$$

$$\text{or } P = \sqrt{2} \left[1 + \cos(X-Y) \right]^{1/2}$$

$$= 2 \cos \frac{1}{2}(X-Y)$$

and when applied to equation (1), the equation becomes

$$\frac{\sin X + \sin Y}{\sin \frac{1}{2}(X-Y)} = 2 \cos \frac{1}{2}(X-Y)$$

$$\text{Since } \tan \phi = \frac{\sin X + \sin Y}{\cos X + \cos Y} =$$

$$\tan \frac{1}{2}(X-Y)$$

it follows that

$$\phi = \frac{X + Y}{2}$$

* See No. 3 Bibliography.

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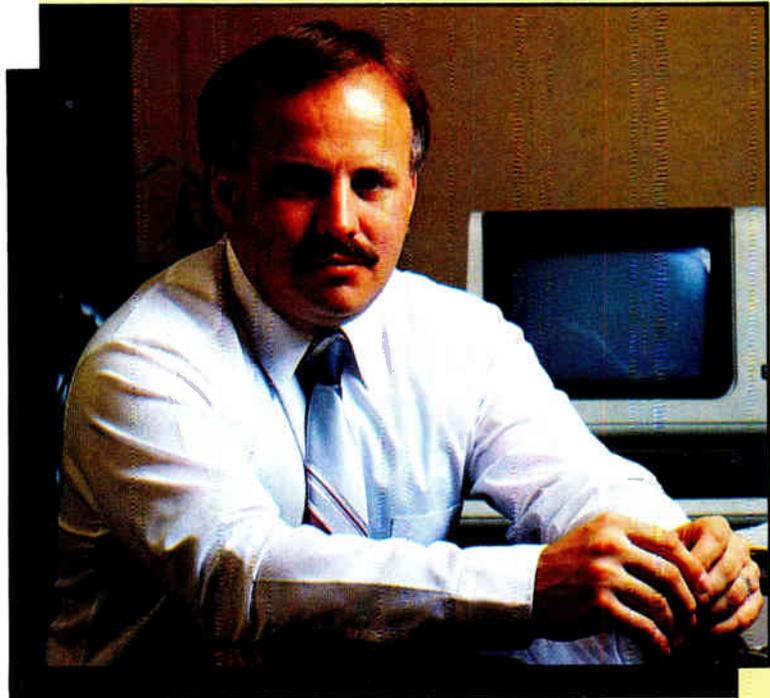
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Reader Service Number 39

in the news

SCTE gearing up

No rider at the World Cycling Championships, recently held in Colorado Springs, Colo., has got anything on the

SCTE. Pedaling its way uphill to the head of the pack, the Society of Cable TV Engineers now is shifting into higher gears as it prepares for a break-away sprint in the middle section of the course. Six new meeting groups

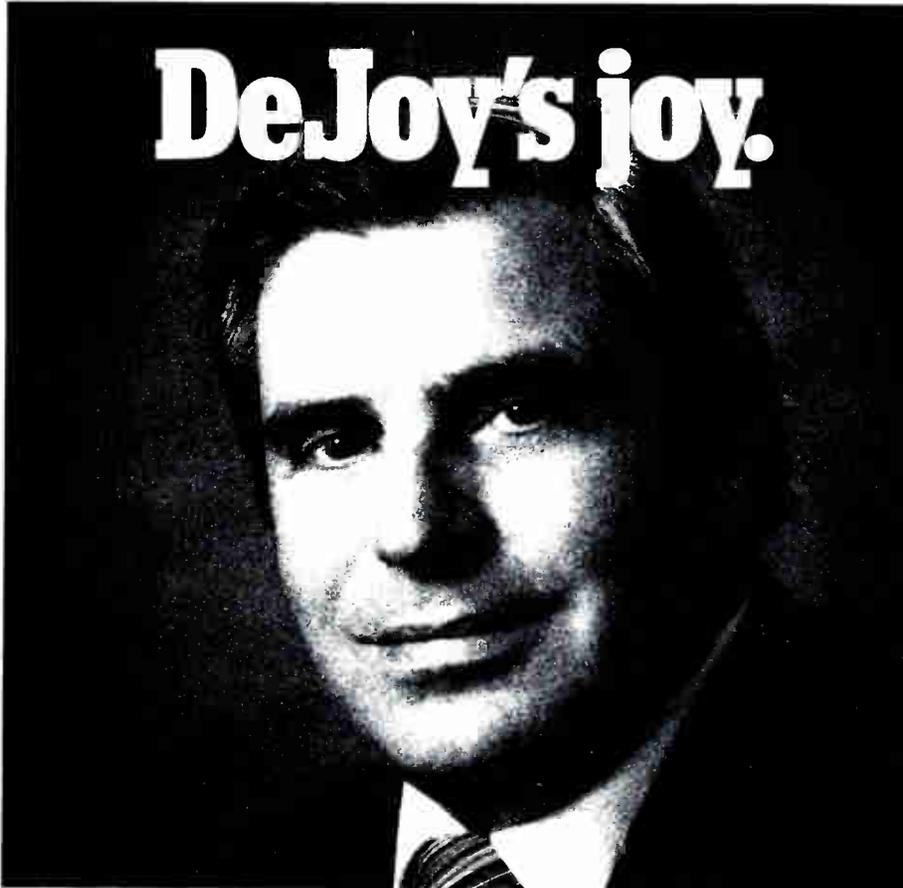
have formed, bringing the total of SCTE chapters and groups to 27. They are the Mississippi Valley (Mississippi), Blue Grass (Kentucky), Tip-O-Tex (Texas), Blue Ridge Mountain (North Carolina), Ohio Valley (Ohio) and Greater Chicago meeting groups.

And remember, you can join the team. The SCTE now is calling for nominations for seats on its board of directors. The term of office is two years beginning in March 1987 and nominations must be received at SCTE headquarters by Oct. 30, 1986. In addition to the two vacant at-large positions, four regional seats also will open soon, representing the West, Intermountain, Plains, and Southern areas. For more information contact Bill Riker, (215) 363-6888.

The team's also looking for coaches. If you have an idea for a technical paper or workshop at the upcoming 1987 SCTE Expo, to be held April 2 in Orlando, Fla., contact Program Chairman Ralph Haimowitz, (305) 946-7011. Act now. There's an Oct. 30 deadline.

Oops!

In the September issue of *CEJ* we accidentally printed a facsimile number for Pioneer Communications. Unless you want to communicate in hard copy, you need to call (614) 876-0771. We apologize for any inconvenience this may have caused our readers.



When they put you in charge of operations for a cable system of 185,000 subscribers, you're faced with a lot of tough decisions.

Frank DeJoy, Vice President of Operations of Suburban Cable in East Orange, New Jersey can testify to that. He and his staff took a year and a half to study all the problems and considerations of addressability for a system as large as Suburban's.

When they finally made their choice, it was Sigma. "It offers security we'll be able to rely on for the next ten years," DeJoy explains, "and technically, it is far superior to anything else we looked at."

But technology wasn't the only reason DeJoy chose Sigma. "I like the cooperation

and support of the Oak organization," and later added, "Oak engineers worked with us to develop an electronic second set relationship which allows the converter of the primary set to authorize the secondary set converter to function."

Oak solved a dilemma for Frank DeJoy and Suburban Cable. And in the process, developed a technology that is now a standard part of Oak's Sigma converter-decoder.

If you'd like more information concerning Sigma, call your nearest Oak representative or contact us directly at (619) 451-1500.

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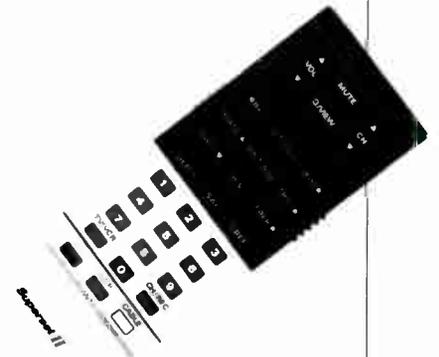
Oak Communications Inc. 16516 Via Esplanada Rancho Bernardo, CA 92127 (619) 451-1500
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Reader Service Number 38



New smart remote

North American Philips now is selling a smart remote for Magnavox and Sylvania TV receivers that is preprogrammed for operation of 29 VCRs and



15 different converters. The Magnavox Universal Remote and Sylvania SuperRemote 44 come in two versions; a 33-button that works with converters and a 24-button version that works only with VCRs. The company claims the learning process should take only about a minute; quite a bit faster than anything we've seen so far. The converter version of the remote comes standard on 10 new Magnavox and 9 new Sylvania color and projection TVs.

Better ICs

Jerrold has introduced Quadrapower, using power-doubled ICs in parallel in the output stage of bridgers or line extenders. Used in the company's "X" series gear, the new ICs produce five dB better distortion compared to standard power doubling, and 10 dB compared to conventional amplifiers. Looking for higher output? Contact Jerrold, (215) 674-4800.

Lower prices

Been waiting for lower-priced commercial insertion systems? Tele-Engineering Corp. may have an answer. It's just released Ad Cue Jr., a sequential insertion system costing \$2,090 for one or two channels and \$3,335 for a three or four channel system, (800) 832-TELE.

Jerrold now has a Commander MTS stereo encoder, converting locally generated and satellite signals into BTSC format, (215) 674-4800.

Looking for VCR installation kits? Pico Macom now has the VSK-1, used for VCRs with source input select switches, and the VSK-2, used for VCRs with on source input switches. The VSK-1 contains a switch, an RCA to RCA cable and two jumpers. The VSK-2 contains a combiner and two jumpers. The VSK-3 contains one switch, one splitter and three jumpers. The VSK-1 costs \$6.25, the VSK-2 \$9.00 and the VSK-3 \$5. The company also has new J30-MFF jumper cables, priced at 80 cents, (800) 421-6511.

3M is introducing Magnashrink, a heat-shrink medium-wall tubing for CATV applications, (512) 834-6563.

Klein Tools, meanwhile, has added two new tool pouches, the 5125, made

“Addressability and billing on the same computer.”



Barry Siegfried, Account Executive

“We can provide a single piece of software to run both your addressable system and your billing.

“One computer instead of two: that’s the kind of system my customers appreciate. We’re also helping them take advantage of impulse pay per view, data services, security, remote controls, and other revenue sources.

“Maybe you just have a question about converters. Whatever your concern, call us. That’s what we’re here for.”

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Reader Service Number 41

Jacobs Trenching, a new company, will be selling a lightweight trencher.

of canvas, and the 5125L, made of leather, (312) 677-9500.

New in software: Interface Technology has voice response system interfaces to CableData, First Data Resources and CableTEK systems. (314)

426-6880; also, CableEXPRESS, a comprehensive, in-house billing system is available from Business Systems Inc. now, (800) 297-9290.

Zenith Electronics has added an integrated satellite receiver and posi-

tioner—the ZS-4000—to its home TVRO line, available in 6-, 8-, or 10-foot systems, (312) 391-8181.

RF Industries has two new connectors for Belden 9913 and 9914 cables, (305) 888-1676.

Standard Communications, meanwhile, has released a remote computer interface for use with the company's Agile Omni satellite receiver, (213) 532-5300. The CRC-800 will be available this fall at an estimated cost of \$169. The printed circuit board is field-mounted on the Omni chassis, and comes with software that's IBM PC or Apple compatible.

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Reader Service Number 42



Pico Products now has a T.I. filter package, containing three filters to suppress T.I.; notch filters, a dual switchable filter and the SAW-70 bandpass filter, (315) 451-7700.

New in power

A Super Ferro power supply that is 93 percent efficient when loads are in the 80 percent 100 percent range is new from the Lectro Division of Burnup & Sims Cable Products Group. That should mean about a 10 percent savings on power bills, (800) 551-3790.

Power Guard also has released a 90 percent efficient, 18 amp power supply, priced at \$375 base, (404) 354-8129. And for surge protection, Passive Devices, headed by former RMS President Don Edelman, is offering the "Surgender," an RF voltage protection device for converter/descramblers, TVs, VCRs or other equipment. Attack time for the device is 100 nanoseconds and the maximum surge current is 5,000 amps, (305) 493-5000.

C-COR, meanwhile, has added a new 24-hour emergency field engineering hotline, (814) 238-0427, as well as 48-hour emergency equipment repair service. Emergency repair rates, aside from standard labor and parts charge, are: trunk and bridge amps, \$50; power supplies and smaller amps, \$30; filters and passives, \$20. Also, all power

products can now be ordered through the State College, Pa., office.

New businesses

Jacobs Trenching Mfg., a new company, will be selling a lightweight trencher. Contact Jimmie Jacobs, (803) 756-6442. The company address is Route 2, Box 357, Loris, S.C.

Also, Allen Lipp recently formed MainLine Equipment Co., which will distribute CATV gear and act as a manufacturer's representative. Principals in the company include Edward Manley, formerly with Production Products Co. and Mark Lipp, formerly with Eaton Corp. The company address is 24430 Hawthorne Blvd., Suite 204, Torrance, Calif. 90505, (213) 375-5353.

Training opportunity: C-COR is running a CATV technical seminar Oct. 21-23 in Atlanta, (800) 233-2267.

Advisors named

Several industry technical figures have been named to a 20-member advisory committee for the NCTA's Office of Cable Signal Theft.

On the board are Jim Farmer, principal engineer at Scientific-Atlanta; Graham Stubbs, vice president, engineering, at Oak Communications; and Ronald Putnam, director of security, General Instrument. The group will give advice on programs to reduce signal theft.

Also moving: Earl Currier has joined Tele-Wire Supply Corp. as general manager for the company's Voice, Video and Data Division. Also, Sam Elliott is now the firm's sales manager for the Southwest.

And taking over Cable Link's chief engineer spot is Charles Hanchett.

Richard Taylor will be handling North Central accounts for C-COR, while Jeffrey Harrison has signed on with the firm as manager of the power products line.

At GI, Dr. Lemuel Tarshis has been elected vice president, technology, and is responsible for long-range R&D.

At Tocom, Kasren Fishkind is now market analyst, responsible for company research.

And heading up sales of Zenith's new Z-LAN system is Neil Pietrangeli.

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Reader Service Number 43

At Malarkey-Taylor, James Kearney has been named director of engineering.

Meanwhile, Richard Eidson, Commercial Cable's vice president, will assume the post of national sales manager; while Rhonda Boyd takes a vice president's spot and oversees engineering and software.

Texscan's MSI/Compavid unit also has made a number of recent appointments. Dennis Gourley is now national accounts manager, with a special charge to increase OEM, commercial and distributor markets. Dave Allen is new national CATV sales manager, while K. Randy Wegner is eastern region sales manager. Gary Hoffman is now manager of marketing services, and will be working with Deanna Riccardi, sales services administrator, and Paula Lawson, advertising and promotion administrator.

At Malarkey-Taylor Associates, James Kearney has been named director of engineering.

C-COR Electronics has named James Wonn vice president, engineering. Roger Dagan is now company

manager, strategic planning and marketing services.

At CableData, Maggie Wilderotter is new vice president, sales, marketing and national support. In a related move, Bob Crowley has relocated from Atlanta to Sacramento as director of sales.

At CMS, Gina Marucci has been picked to oversee company advertising, public relations and marketing.

At Kelly-Western Corp., Sally Olson is new director of technical support.

Sales expansion

PTS Corp., meanwhile, has announced its expansion into SMATV sales and service. It will stock Jerrold SMATV equipment for immediate delivery (812) 824-9331.

Tele-Wire Supply Corp. also has signed an agreement with Jerrold, and will be a general line distributor of Jerrold's product line, stocked at each of the company's regional centers, (516)

293-7788.

Anixter Communications also has a contract to stock and sell Jerrold Starcom VI converters, (312) 677-2600. The company also will carry Wegener Stereo products, such as the BTSC modulators.

And Alpha Technologies has moved to 3767 Alpha Way, Bellingham, Wash. 98225, (206) 647-2360.

Control Technology has added Mega Hertz Sales of Bedford, Texas, as an exclusive sales representative in the states of Texas, Oklahoma, Louisiana and Arkansas, (214) 272-5544.

Passive Devices Inc. has relocated from Chappaqua, N.Y., to Fort Lauderdale, Fla., 5120 NE 12 Ave., (305) 493-5000.

Also moving: Pioneer Communications corporate headquarters, from Columbus, Ohio, to Ramsey, N.J., effective Nov. 1, 1986. The cable engineering staff, sales and repair staffs will remain in Columbus, (614) 876-0771.

—Gary Kim

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Reader Service Number 45

in perspective

Yikes!

It's probably safe to say the CATV industry was blindsided by the FCC's recent Aug. 7 A/B switch ruling. Al-

though the full text of the decision hadn't been released as *CED* went to press, it's expected the proposal rules will call for mandatory antenna cable switches for all new subscribers, beginning this fall. In addition, for a period

of five years, all existing subscribers would have to be offered a switch at least once a year, with system operators providing consumer education materials on how to use the switch.

The intent? Allow consumers to choose between CATV and off-the-air methods of signal reception while must-carry is being phased out.

Aside from the expense, a number of interesting customer service and signal quality issues are raised by the possible new rule. For starters, consumers will be able to compare off-air with CATV-delivered signals rather easily. Systems with degraded picture quality will be quite noticeable.

Isolation, insertion loss

Consider isolation. Assume for the sake of argument that switch isolation isn't a major problem. There are still two baluns hanging there—one on each side. And that will introduce two more sources of signal degradation. And don't forget insertion loss. The FCC's decision seems to assume that a typical viewing household contains only a TV receiver, converter and off-air antenna. What about VCRs? How about second set attachments and in-home cabling, authorized or not. Especially if unauthorized and using some of the gear available at certain electronics stores?

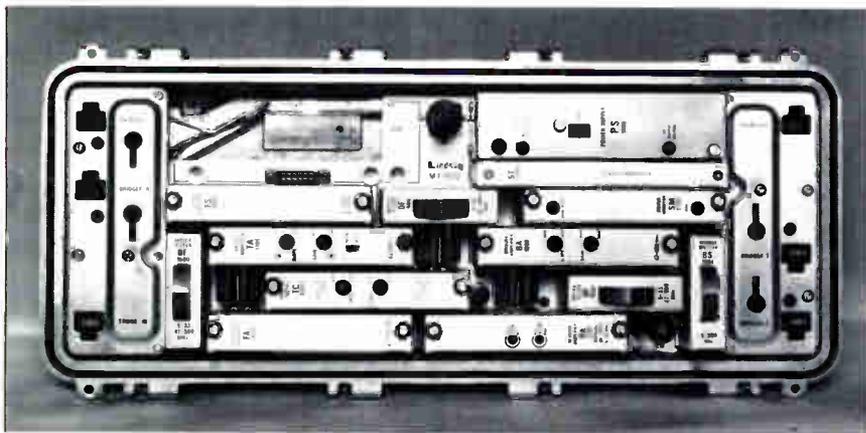
And maybe there are some level (equalization) issues as well. When a consumer flips between satellite-delivered and off-air signals, there are likely to be some level swings. Let's hope those customers aren't listening to audio delivered through their home stereos and cranked up to the top. And who owns the switch? The customer or the cable company? Who's responsible for possible damage from power surges that might come through the switch? Those systems with switcher boxes are going to find one switch too few on the units. Yikes.

SCTE members

An application form for training scholarships offered by the Society of Cable Television Engineers is in this copy of *CED*. The SCTE is offering the scholarships to members who have the desire to improve their technical skills and need a little extra help to do so.

Continued on page 116

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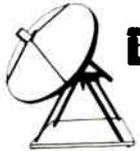
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And so the rub: will the industry get IS-15 and the box; or only one of them?

Continued from page 112

Line of demarcation

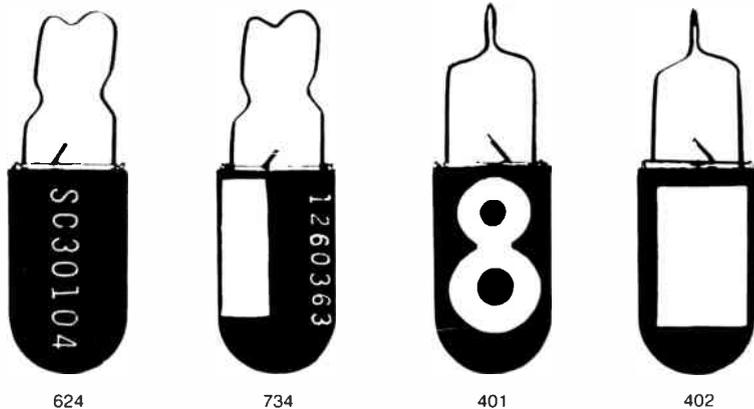
TCI looks ready to roll out its new concept in consumer friendliness beginning in January 1987, when the first 10,000 or so units of its new on-

premise device come off the production lines. The 9½ by 11-inch box will serve as a point of demarcation between TCI's plant and the customer's home. The modular box will be designed to accommodate amplifiers, descramblers, interdiction devices or splitters.

Initially, most subscribers will have a ground block and splitters, although the box can hold addressable devices as well. A new positive trap TCI wants will be used when customers want three pays. The company says it has solved the insertion loss and cost problems with the new positive trap.

As more boxes are installed, TCI plans to discontinue charging for second outlets, establish national 12 channel line-ups, and get out of the business of additional outlets in customer homes. The company will, however, issue a list of approved contractors who can run in-home coax and install extra outlets. TCI also has been working on better F-fittings and improved drop cable, which the company prefers to call extended feeder. The new feeder will likely be aluminum because that way kinks are easy to spot.

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Reader Service Number 47

Out of descramblers

In the future, TCI may be looking for new hybrids or other ways to improve signal levels, and will be exploring adding a customer-accessible portion of the new box. The company estimates that about 70 percent of its customers have second set outlets; far more than the 28 percent who are paying for them.

TCI estimates it will take about five years to get 100 percent penetration of the boxes. And note, the company wants all descramblers gone from subscriber homes within a year's time. Long term, the company wants out of the descrambler business entirely. So what's TCI going to do with all those descramblers? Sell them to customers; probably at company depreciated cost.

And although the on-premise box and proposed IS-15 baseband interface accomplish the same ends as far as consumer friendliness, each goes about it a different way. Is TCI opposed to IS-15? No. But they'll move ahead with the on-premise box in any case. And so the rub remains: will the industry get IS-15 and the box; or only one of them?

A handwritten signature in cursive script, which appears to read 'Gary L. Bond'.

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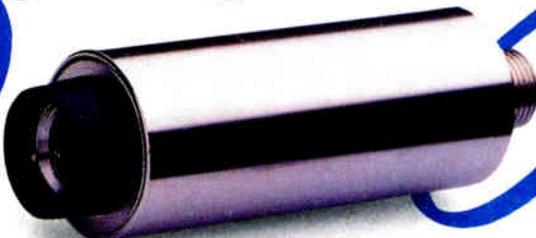
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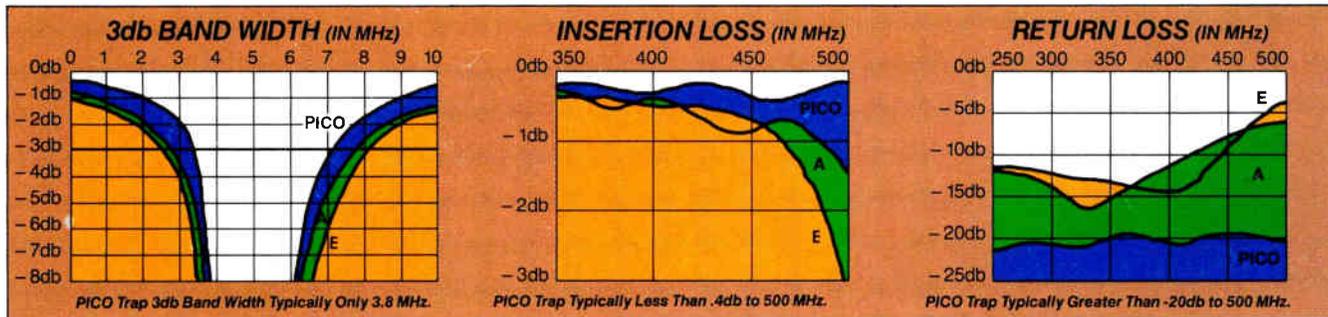
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