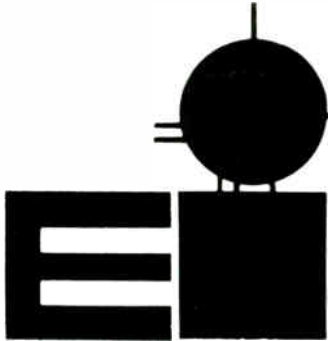


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COMMON POINT®

A MONTHLY NEWSLETTER FOR BROADCASTERS

50 cents
 per copy

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GENTNER ENGINEERING COMPANY MARKETS COST EFFECTIVE PORTABLE TELEPHONE INTERFACE

Gentner Engineering Company Incorporated has designed the ultimate telephone interface which has been the dream of every newsman, sports director and sales executive at one time or another. The new Microtel is a portable, battery operated telephone interface that allows the operator to simultaneously feed and receive information from the telephone line. The unit is very simple to operate and replaces the handset of any standard telephone. Just unplug the handset of the phone and plug Microtel in its place.

Microtel consists of a small box with one XLR connector for a microphone, a minijack input for an audio source such as a cassette deck, a quarter inch plug for a headset or speaker



connection, a minijack output for feeding a tape recorder or a similar device, a standard headset modular jack for direct connection to the telephone and auxiliary send and receive minijacks for additional audio sources.

The Microtel is powered by a standard 9-volt battery. It also has a connector for a backup battery and a submini jack for an optional wall transformer. These features render the Microtel reliable and dependable in the field.

The inputs and the outputs of the unit enable the user to mix a source with a microphone and feed it to a

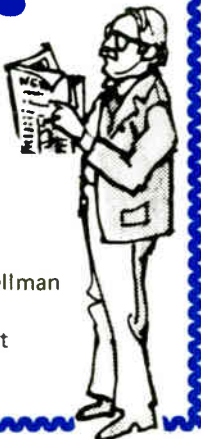
tape recorder or directly down the telephone line. It will also enable the operator to record information directly from the phone line.

Microtel's features make it an ideal piece of equipment for in the field news mixing and telephone feeding, sports console or a back up console, station cue and program interrupt and sales use in feeding demo spots to clients over the phone. There is no doubt that the Microtel is the low cost sensible telephone interface the industry has been waiting for.

Further details outlined on page 10.

COMMON POINT READINGS

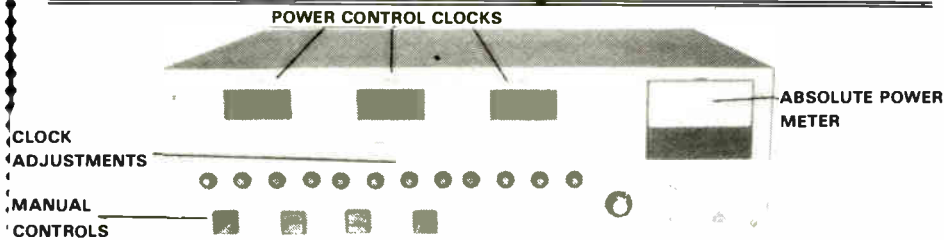
- Page 4 Shepler Says
- Page 6 Memo From Metz
- Page 10 Crosstalk... by Ed Duellman
- Page 15 Persons' Post Scripts



Get Ready Now for Shorter Fall & Winter Broadcast Hours with the Eagle Hill PSA Adaptor



- Normal Transmitter Readings
- No Internal Changes Needed
- Normal Monitor Readings
Plus FCC Required Readings
for Absolute Power
- Operate With Authorized
Power As Low As One Watt
- FCC Authorized And Field
Proven For Over A Year
- Adds Up To 150 Hours
"Prime" Time Each Year



- PSA-1 Capable of three-level power control with completely automatic clock control. Clocks have to be adjusted monthly for local sunrise - local sunset per station. License Power Control up to 1,000 watts \$3,995.
- PSA-2 Same as PSA-1 except controls are set up to work push button or through station Remote Control System \$2,995.
- PSA-3 Single manual cutback to power levels below that available on transmitter. Can be set up to work through Remote Control System \$1,695.
- PSA-5 For stations with power up to 5 KW \$4,495.

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Editor's Notebook

SEPTEMBER is upon us, and for many broadcasters it signals the end of the summer doldrums. With the local high school, college and even the professional football seasons in full swing, plus the fact that this is a major political year, the commercial time disappears in a big hurry.

ON AGAIN, OFF AGAIN . . . The reported merge between the Daytime Broadcasters Association (DBA) and the National Association of Broadcasters (NAB) has been postponed. The announcement by the DBA was made just 2 short months after the proposed marriage. The Daytimers suspended the action to continue its lobbying efforts for extended hours of operation.

PILOT TO CO-PILOT . . . Harris Corporation is sending, free of charge, modification kits to all stations now broadcasting in stereo with Harris stereo exciter. The kits will finalize the switch from the 50hz pilot tone to the 25hz tone announced at the NAB convention. Or will it?

AMPRO/SCULLY . . . It's been a long time in coming but production is picking up. Both machinery and parts supplies are improving.

RELOADING MADE EASY . . . Fidelipac's Dynamax reload kits are so popular it's difficult to keep stocked. But we will try. Seems the most cost effective means to upgrade your used inventory of carts. Check the pricing on Pg. 7.

ELECTRO-VOICE DYNAMIC MICROPHONES



RE15
Variable-D®
Super-Cardioid

181.24



635A
Omnidirectional

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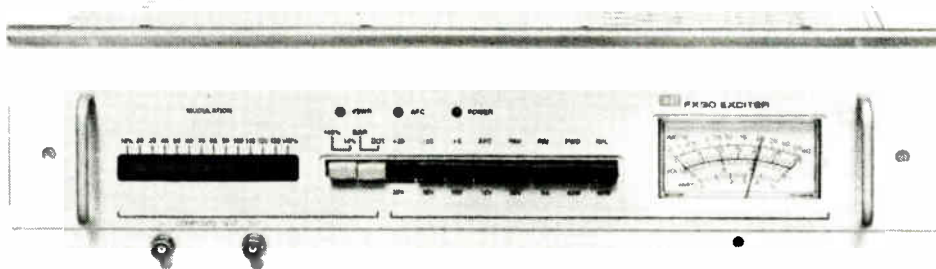
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FX-30 Synthesized FM Exciter



Delivering Performance Broadcasters Demand.

That's why there are more than 550 in use at top stations everywhere.



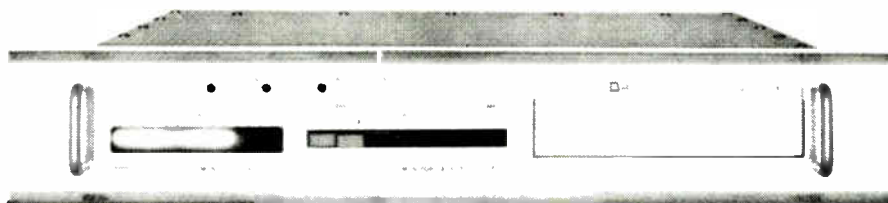
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PRICE
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*September
Orders*
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More than 550 new FX-30's are delivering improved signals as replacement exciters for all brands of FM transmitters. The improved performance... cleaner and crisper sound... ultra-low distortion... has been noticed immediately.

FS-30 Stereo Generator, the Audiophiles Choice



REGULAR
PRICE
\$2995.00

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Coast to coast, audiophiles acclaim B/E's digital stereo generator teamed-up with the FX-30 FM Exciter, the digital FS-30 provides your station with the best performance available based on published specifications of competitive units.

Linear, delay equalized audio lowpass filters for minimum overshoot without the use of clippers or other non-linear devices.

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Common Point/September 1984
Page 3

Shepler Says.



by John Q. Shepler
Technical Consultant

Living Dangerously

When lightning flashes and sparks jump across the ball gaps, there is trouble a-brew. Sometimes it rolls in with a great display of fury. Other times, it hits unexpectedly in the middle of the night. Whenever thunderstorms occur, they spell DANGER for broadcast engineers.

Your instincts tell you that the best place to be during a thunderstorm is far away from a radio station with its tall towers and high power lines. Yet, it is during those storms that you are needed most. All too often you find yourself forced to choose between your duty to keep the station on the air and your duty to yourself and family to stay alive and safe.

How can you deal with this dilemma? A sensible approach is to provide ways to protect both yourself and your station from the violence of thunderstorms.

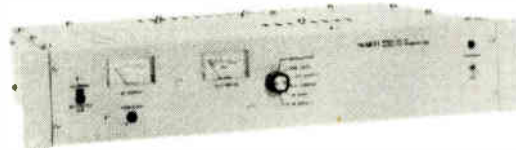
Lightning has two main paths into the station. One is through the tower, and the other is through the power lines. Varistor surge protectors will clamp the over voltages on the lines so that you won't even know a strike occurred. Towers need to be protected with ball gaps, grounding whenever possible, and shorted stub filters for FM transmitters.

Grounding straps from all your equipment to the radials does more than insure a low noise signal. It protects anyone using the equipment from electrical shock due to faulty power cords or lightning surges.

Keeping lightning outside the station is only half the battle. You also need to protect your transmitters and remote control equipment so that they can take a nearby strike without damage. This insures that you can stay on the air, but it also has another important advantage. It keeps your
(cont. on page 11)

MARTI

Aural Broadcast STL-10 Studio-Transmitter Links Intercity Relay



STL-10 Transmitter

Applications of the STL-10 include:

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- ★ STL for AM stereo broadcast (Dual system).
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- ★ Intercity relay for linking two or more broadcast facilities.
- ★ Multi-relay system for radio network distribution.
- ★ Communications link between satellite earth station and broadcast facilities.



R-10 Receiver

PERFORMANCE - VALUE - RELIABILITY

Marti beats the high-priced competition. Compare the Marti STL-10 system with others — Distortion less than 0.25%. Response ± 0.25 db, Noise — 75 db, Crosstalk — 72 db, 60 db signal to noise ratio with only 14uV signal, dual channel reliability and simplicity. Compare Performance, Price and Reliability. Save hundreds - even thousands of dollars with a Marti STL-10 System.

Mono System \$2795
Stereo System \$5795

Why Pay More For An STL?

All prices quoted are subject to change without notice and do not include antennas or cables unless stated. Specifications are also subject to change. Standard credit policy applies to all orders. Terms are N/30.

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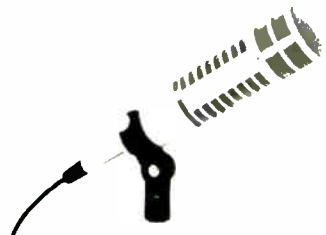











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Common Point/September 1984
Page 5

marantz®

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- Cue and Review
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- 4-Way Powering
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- External Speaker Output
- Line Out
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- Total Mechanism Shutoff
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PMD-220 DELUXE PORTABLE TWO-SPEED CASSETTE RECORDER

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- Memory Rewind and Replay
- Cue and Review
- Separate Tape Bias and Equalization Switch
- Vari-Speed Pitch Control
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- Record Level/Battery Strength Meter
- Auto/Manual/Limiter Record Level
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- Automatic Mic/Line Switching
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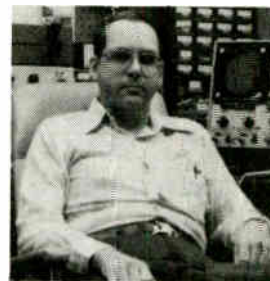
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MEMO FROM METZ



by
David L. Metz

MORE TOWER MAINTENANCE — TRANSMISSION LINES

Maintenance of heliarc transmission lines basically boils down to two subjects, prevention and emergency repairs.

I know of two stations that were put off the air by the yard man who was cutting weeds. It seems the heliarc exited the transmitter building, arced through the air and down into the ground for its run to the tower. In both cases the coax was cut off at the ground with a sickle!

A 2 or 3 foot piece of PVC drain pipe placed over the coax when it was installed would have protected it. Think about that, a few dollars worth of pipe would have saved thousands of dollars of repairs and lost air time.

Check the temperature of the transmission line fittings. At best they should be air temperature. If they are running hot, disassemble them and replace the bullet with a new one. Polish the inside (female socket) of the connectors with something that won't leave a film behind. They must be absolutely clean! Don't even touch the new bullet with your bare hands. The skin acids will corrode the silver and a hot spot might develop.

Any moisture in the feedline will cause corrosion at the joints. Pretty soon the end connectors and bullets start running hot and then hotter and then you have a burnout.

I've always kept the pressure on the feedline below one PSI. That's all you need, and there is less strain on the gaskets. KFMH uses dry nitrogen. The exclusion of oxygen reduces the chance of corrosion inside the line. Connect a pressure operated switch to

(cont. on page 13)



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BROADCAST TAPE CARTRIDGES

PROFESSIONAL TAPE CARTRIDGES

MODEL 300 (NAB TYPE A)				MASTER CART II (NAB TYPE AA - GOLD BASE)			
20 Second	2.87	4 Minute	3.52	20 Second	3.50	4 Minute	4.18
40 Second	2.94	4 ½ Minute	3.59	40 Second	3.56	4 ½ Minute	4.26
70 Second	3.00	5 Minute	3.67	70 Second	3.65	5 Minute	4.35
90 Second	3.06	5 ½ Minute	3.74	90 Second	3.71	5 ½ Minute	4.43
100 Second	3.11	7 ½ Minute	4.03	100 Second	3.78	7 ½ Minute	4.71
2 Minute	3.23	8 Minute	4.10	2 Minute	3.85	8 Minute	4.79
2 ½ Minute	3.31	10 Minute	4.37	2 ½ Minute	3.92	10 Minute	5.08
3 Minute	3.37	10 ½ Minute	4.44	3 Minute	4.02	10 ½ Minute	5.16
3 ½ Minute	3.45			3 ½ Minute	4.10		

MASTER CART (NAB TYPE AA - RED BASE)				MASTER CART DX (NAB TYPE AA - Charcoal Base -Smoked Cover), Loaded with DYNAMAX Series 700 HOLN-DX Tape			
20 Second	3.50	4 Minute	4.18	20 Second	4.22	3 ½ Minute	4.94
40 Second	3.56	4 ½ Minute	4.26	40 Second	4.29	4 Minute	5.03
70 Second	3.65	5 Minute	4.35	70 Second	4.39	4 ½ Minute	5.13
90 Second	3.71	5 ½ Minute	4.43	90 Second	4.46	5 Minute	5.23
100 Second	3.78	7 ½ Minute	4.71	100 Second	4.55	5 ½ Minute	5.33
2 Minute	3.85	8 Minute	4.79	2 Minute	4.64	7 ½ Minute	5.67
2 ½ Minute	3.92	10 Minute	5.08	2 ½ Minute	4.72	8 Minute	5.77
3 Minute	4.02	10 ½ Minute	5.16	3 Minute	4.84	10 Minute	6.11
3 ½ Minute	4.10					10 ½ Minute	6.21

DYNAMAX RELOAD KITS FOR FIDELIPAC TAPE CARTRIDGES

TIME AT 7 ½ IPS	UNIT PRICE
Series 400 Standard Tape (For use in Model 300, Model 350 and Master Cart)	
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5 Minutes - 10 ½ Minutes	1.80
Series 500 H.O.T. Tape (For use in Master Cart II)	
20 Seconds - 100 Seconds	\$1.40
2 Minutes - 4 ½ Minutes	1.70
5 Minutes - 10 ½ Minutes	2.00
Series 700 HOLN-DX Tape (For use in Master Cart DX)	
20 Seconds - 100 Seconds	\$1.60
2 Minutes - 4 ½ Minutes	2.00
5 Minutes - 10 ½ Minutes	2.40

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SI-TEX RADAR LETS EVEN SMALL MARKET DIGITAL ELECTRONICS SUPPLIES — EASE OF BEARING PLOT & RANGE — KEEPS MAINTENANCE & REPAIR TO A MINIMUM . . .

SI-TEX has developed the CR 1011 Color Radar System for the TV and Radio marketplace. This complete unit, designed to operate in the rugged marine environment, has obvious applications as a land based weather radar. The CR 1011 can define and display the intensity of frontal systems, severe weather or plain old rain, to assist your meteorologist and station personnel in identifying problem areas for your audience. The CR 1011 is currently being used by the U.S. Coast Guard and the Florida Department of Water Management to warn of oncoming severe weather. With 10 kilowatts of transmit power and the color display, your presentations are crisp clear. There are 8 ranges to 64 nautical miles to allow you to select the scale that best covers your area.

The Plot feature allows you to chart the relative distance, speed, direction and size of storms.

The Variable Bearing and Range Marker, as standard equipment, assists you in your calculations. The CR 1011 also has a variable warning zone that will trigger an alarm and alert you to any targets with red intensity that have intruded into your preset limits.

The ease of operation and the SI-TEX reliability factor make this system sensible and attractive to all stations, large and small.

The CR 1011 is supplied with 15 meters of interconnect cable between the antenna and display unit. Longer runs are available at additional cost.

Put a SI-TEX weather radar to work at your station. Fully sponsored weather reports take on real meaning. While others are passing along the weather bureau "Chance of Rain" ..you're telling your listeners exactly where that rain shower is..how heavy it is..how fast it's moving and in what direction. Listeners know your SI-TEX radar proximity alarm let you warn them when there isn't time for "one more hole at the golf course" .. when to delay that ball game and cover the infield" .. "When to get those small boats off the lake and head for the dock".

SI-TEX RADAR WITH SINGLE MONITOR \$7995.00
CMi SECOND MONITOR POINT \$3995.00

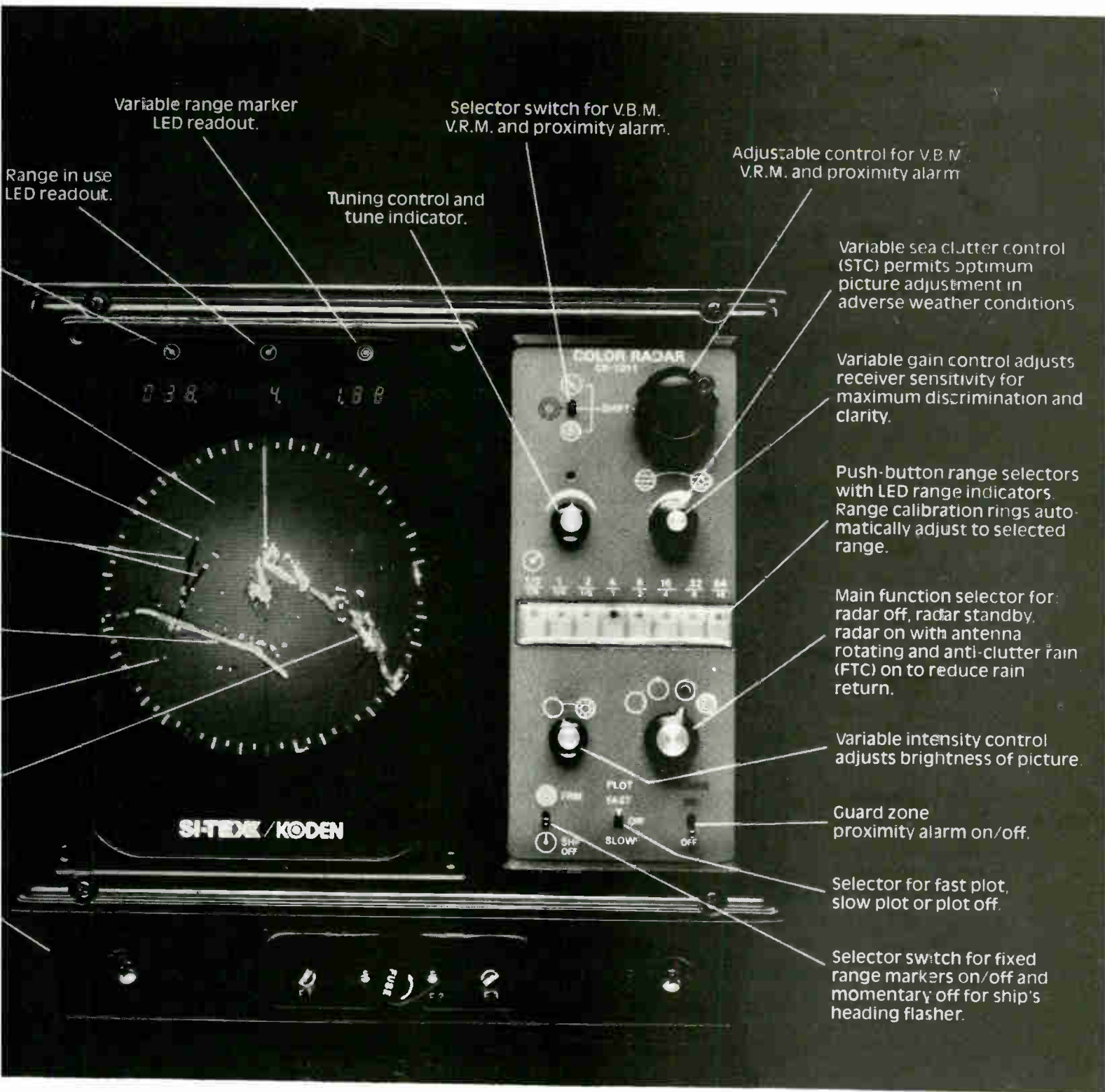
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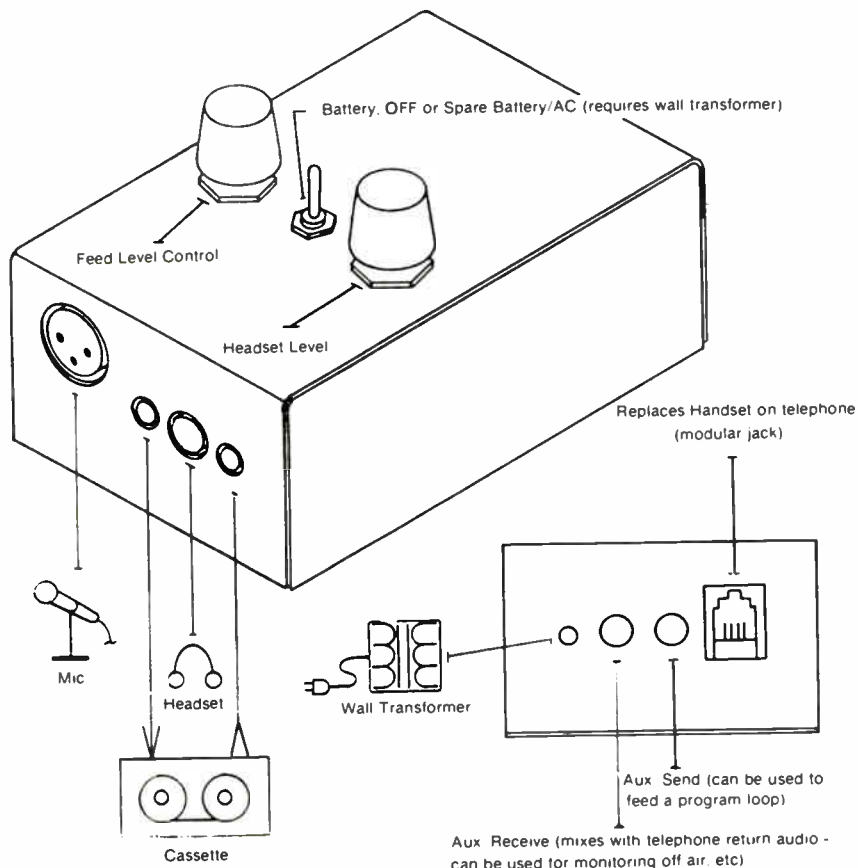
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Microtel

A NEW GENTNER PRODUCT

Gentner's Microtel is a handheld, battery-operated telephone interface that allows you to simultaneously feed and receive information from the telephone line. Microtel is simple to use: simply unplug the handset of the phone and plug Microtel in its place.



Microtel is ideal for:

- In-the-field News Mixer/telephone feeding
- Portable Mixing
- Telephone Interface
- Studio Talkback
- Sports Console/Back-up Sports Console
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\$175⁰⁰

YOUR ONLY LIMITATION IS YOUR IMAGINATION!

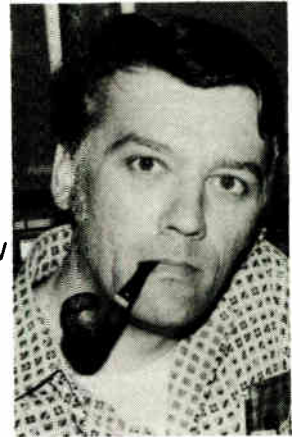
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Crosstalk...

by ED
DUELLMAN



Now I usually mind my own business and stick to engineering, meaning I stay out of the PD's way. We get together and work out whatever needs to be done, have a beer after work, or what have you. Except the other day Herb Tritz, the PD, showed me something about BMI raising there rates.

Now I ain't so dumb, I know what BMI does. They charge broadcasters a percentage of their income and use that to pay the songwriters and what have you for playing their tunes. OK, that sounded not too bad to me.

I even knew that BMI was formed back in the late 30's by broadcasters to protect against ASCAP, who they felt were charging too much for the same type of service. Also an outfit with the name SESAC got into the game somewhere along the line. I can't say that I know what all those names such as BMI stand for, suppose I could have looked it up, huh?

Well, I got to thinking about this BMI business while having my morning coffee, I usually am in a bad mood before I have at least two cups of coffee in the morning. The book-keeper gave me a round-about figure of how much our station paid. That did it. It was ground rod through my side again (got that line from TALK-BACK from one of your people), and I was in the PD's office and told him he was nuts for paying what we did let alone an increase.

Now, give it a thought and you got to come around to my way of thinking on this. These record people hawk the music director to play their music (I use that term lightly) and when you do, these other guys want you to pay

(cont. on page 12)

SHEPLER SAYS...
(cont. from page 4)

fingers out of the equipment during the most dangerous time possible.

Sometimes the only way to keep going during a storm is to switch to low power for an hour or so until the worst is past. Some AM transmitters will take a lot of abuse in the low power mode but will pop off every time a strike occurs at high power. FM transmitters will usually keep running as long as the transmission line is grounded and they are on generator power.

Don't be fooled by storms that seem distant or mild. The truth is that you really don't know when the next discharge will take place or how close it will hit. Dodging lightning bullets. Maybe you'll get away with it this time . . . and maybe you won't. Is it worth the risk?

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RE10

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120.71



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PROGRAMMER 3A

“LIVE ASSIST CONTROLLER”



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TALKBACK

OHIO . . . Nice to see Common Point again. Always enjoy it. Noted the 25th anniversary of SBE, but no acknowledgement of Battison's part in founding it, and nothing from SBE to say thanks.

KANSAS . . . On Syntec S-220 tone arms, attach very small ground wire from rear of arm tube to base, this will stop noise as arm is moved. They depend on bearings to conduct ground, harness is O.K. Factory has no solution yet.

OREGON . . . I don't care what they say, keep Ed and the others coming!! Metz is right about tower maintenance, lots of station operators

have no business operating a station. RE: Persons comment, Document, Document, Document.

OHIO . . . Appreciate the various articles. Very helpful, also bring back some memorable experiences . . . Andy! Glad to oblige . . . send them in.

IOWA . . . I think the most impressive figure in the NRBA survey is the 87.6% of those polled NOT in stereo and "waiting". I have a feeling that if asked they will respond that stereo is a psuedo-solution to AM's ratings problem. Let's talk about Daytime only, nighttime interference and ask programming about ratings. Is stereo going to sell more ads? Find the whole issue "KAHNIAN HYPE". I can hardly wait to hear a tornado warning in stereo amidst the static.

Great stuff?

TEXAS . . . Enjoyed Person's column about questioning by police. Nearly got shot checking tower lights one night. How about some tips on building audio switchers and the like. Have built automationish controller, would like to share ideas with others. Can always be improved.

INDIANA . . . LOOKS LIKE MOTOROLA WINS!!

NEBRASKA . . . Persons: Watch those McMartin EBS generators. Had no documentation on one bridged across line between audio stages within a console. Looked for months for source of hum (filter caps in EBS gen. went south) Couldn't imagine it would be wired in where it was. Keep those anecdotes coming!

CROSSTALK...

(cont. from page 10)

so they can pay the artists. That's a lot of bull! If the Sears store calls and talks you into playing their commercials and then sends you a bill for it, I think someone would hit the roof, don't you?

Hey, look here; your station plays a record, the guy that wrote it and the one that sings it make tons of money and you're suppose to pay them cause you helped make them rich?!?! Hey BMI, ASCAP and SESAC...I think you ripped off the broadcasters enough. You guys shouldn't get ten cents. You ought to be paying us for playing your music. Like Jerry Reid said, "They get the mine and we get the shaft," or something to that effect. Enough said on that subject, now I feel better.

I have a correction to make. In July issue on page 4, the second to the last sentence should read: Most SCPC carriers are about 10 dbw as compared to the 34dbw of a typical video signal in the U.S.

That's about it for this month. Hey, wait a minute...don't go to black yet. You know summer's about over and I didn't see anyone with a stereo AM radio. Fact of the matter, I don't know of any place around here that sells them. The people I talked with personally and on the phone don't have them and said basically they don't plan on getting any. You folks that are pushing stereo AM better get off your duff and promote stereo AM radio to the general public. Then when the electronic stores and mass merchandisers get enough people asking for AM stereo radios, stereo AM may take off and amount to something. Sometimes it looks like the manufacturers of Stereo AM transmitting equipment are only interested in getting the broadcasters hyped up to buy their product and don't give two hoots and a holler if the broadcasters have anyone with two ears to listen in stereo.

Go to black!!

73

ED K9FWR

OTARI

Model 5050 B-II

1/4" Two Channel Recorder



Each 5050 B-II incorporates these standard features:

- Transformerless balanced inputs and outputs with XL type connectors.
- Line output switch selectable for +4 dBm or -10 dBV level.
- Mic input has switch selectable 20 dB pad and mute.
- Mic/Line mixing on each channel.
- Headphone monitor output.
- Lighted VU meters with L.E.D. peak indication.
- 3 speeds switch selectable in 15/7.5 ips or 7.5/3.75 ips speed pairs.
- Record reference level switch selectable (185, 250, 320 nWb/m.)
- Equalization switch selectable (NAB, IEC).
- Reel Size switch selectable (5"-7", 10.5") EIA or NAB.
- Low frequency reproduce eq. adjustable.
- Fourth head switch selectable for 1/4 track stereo playback.
- Plug-in head assembly with hinged cover for easy access.
- Front panel record setup adjustments.
- Integral splicing block.
- Built-in test oscillator (1 kHz, 10 kHz).
- Microprocessor-controlled HRS/MINS/SECS real-time counter with L.E.D. display.
- Dump Edit and Cue (lifter defeat) modes.
- D.C. capstan motor, servo controlled.
- Variable speed control ($\pm 7\%$) usable in record and play.
- Memory stop switch selectable to stop tape when rewinding past 0:00:00.

The 5050 B-II Recorders are covered by a one year parts and six months labor limited warranty. Heads, pinch-roller, fuses and lamps have a 90 day parts warranty.

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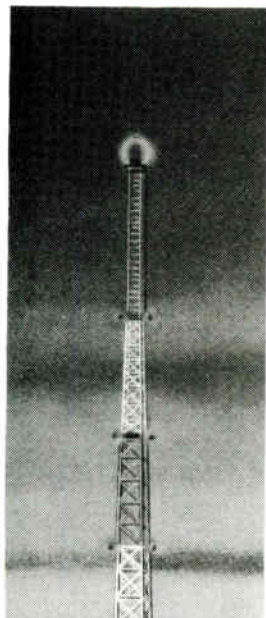
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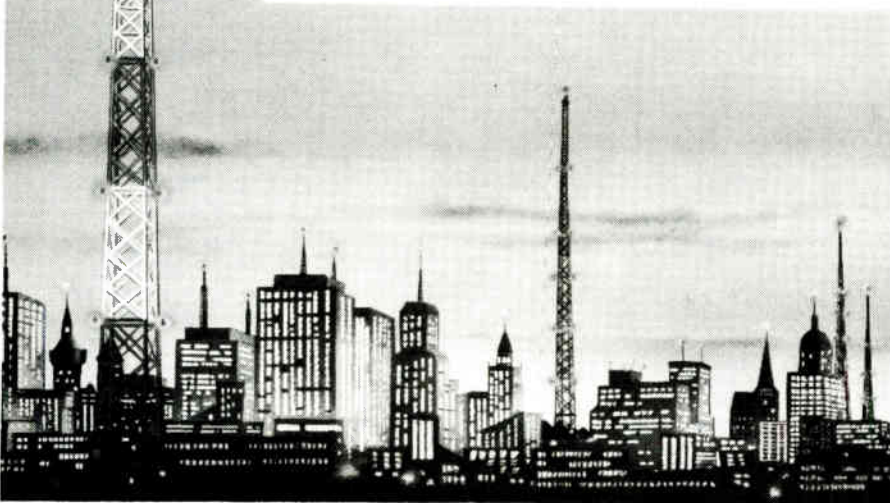
offers a complete line of Solid State products to control the lighting on communication towers and other tall structures. SSAC Flashers and accessories have proven performance and reliability with years of in-field use. Flash single or multiple beacons: *simultaneously, alternately or sequentially*. Sense lamp failure in the beacon or obstruction lighting with an alarm output. SSAC products give you a modular approach to *all* your lighting needs with efficiency and economy.



SSAC

SOLID STATE **TOWER CONTROLS**

- BEACON TOWER FLASHERS
- BEACON & OBSTRUCTION LIGHT ALARM RELAYS
- SOLID STATE AUXILIARY MODULES



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MEMO FROM METZ
(cont. from page 6)

the station alarm system to warn the staff of system failure.

So let's say the feedline does get cut, shot or burns out, what then? First you absolutely must have some spares on hand. No tower maintenance crew can be expected to have all the possible combinations of end connectors, bullets, etc. on their truck. Keep at least two end connectors and two new bullets on hand. Believe me, when you'll need them the worst, the factory will be out of stock.

Reattachment kits are very important. They don't cost much and they allow you to reuse your existing end connectors. Use them whenever you disassemble a connector. The original connector gaskets often are deformed or nicked and will leak if used again.

Leave a few extra feet of coax on the tower. I know it doesn't look neat to have "S" curves of coax on the tower, but if you ever have a bad burnout you'll need about three extra feet of line from somewhere! You'll be back on the air a lot faster if that coax is already, on the tower.

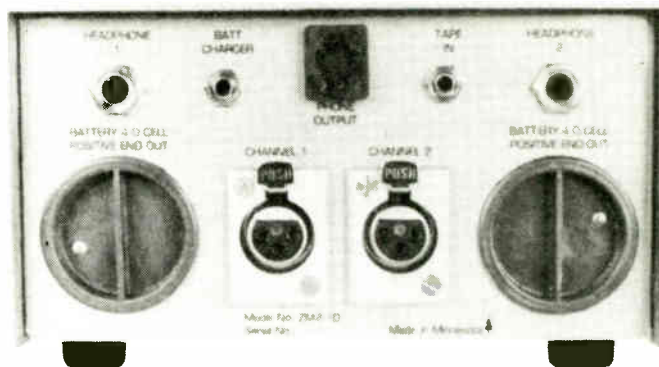
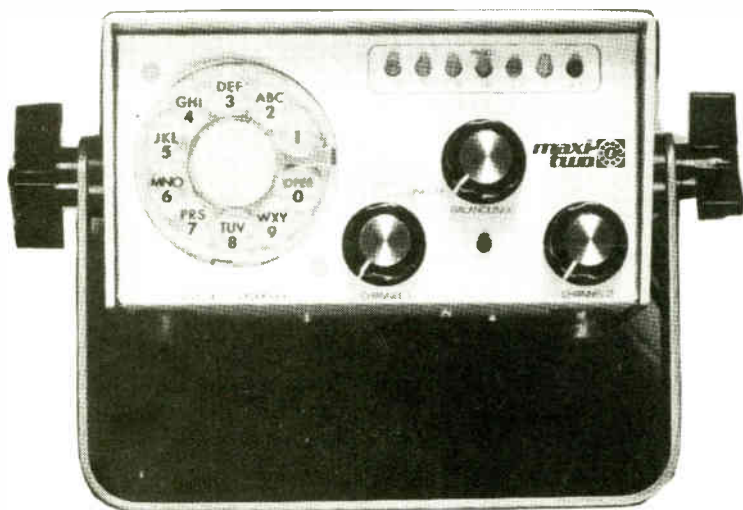
Avoid using splice kits. Splices often leak and are hard to install on the tower. They are so labor intensive that your money ahead to use two end connectors and a bullet.

I've always kept some scraps of copper pipe, thin copper sheet metal and a few assorted stainless steel hose clamps on hand. In an emergency you can cut out the damaged sections of feed line with a hack saw. Then slot the inner conductor and jam fit a piece of copper water pipe over it and solder the joint. The outer conduct can be replaced with a section of large diameter copper pipe with a slot cut down the side. It can be fastened in place with hose clamps. The slot allows the edges of the overlap when you tighten down the hose clamps so the sleeve makes a tight fit. If you can't find pipe the proper diameter, bend some sheet metal to shape! It can be sealed with Silastic and tape. I know it sounds crude, but I have done it several times and it works, or at least until I got the proper parts to do the job right!

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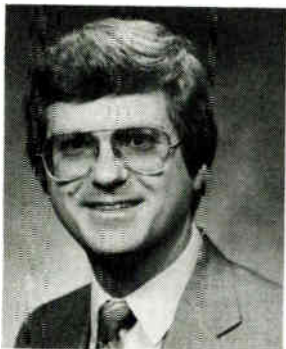
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PERSONS' POST SCRIPTS

by Mark Persons

FUSES

Fuses in electronic circuits are normally used for protection of one circuit from another in the event of failure of one of the two circuits. However, since a fuse is a component it is subject to failure as well. Often fuse sized are selected close to the normal expected current in a circuit. This is fine except during start-up and shutdown cycles of the circuit, when brief over current surges often occur. Fuses become "stressed" and are then more prone to failure. A visible sign of stress on a standard fast blow fuse is the fuse element will not be straight, but will instead have a curve or wave. After enough stress, a fuse will open at less than its rated current. Engineers taking care of Harris MW-1A transmitters have noticed this on the output modules. A module will blow a fuse for no apparent reason after a few years of use. Replacing the fuse solves the problem.

Fuses, especially those with elements exposed to air, tend to develop an oxide coating on their element surfaces. This oxide is made up of the fuse metal and oxygen from the air. Since oxides do not conduct electricity, the current handling capability of an oxidized fuse is less than its normal rating. Fuses present a finite amount of series resistance to the current carrying circuits they protect. The resistance varies from hundredths of an ohm to many ohms, depending on the construction of the fuse element. Ohms Law tells us that heat will be generated in a fuse as current flows through it. When used in the original circuit, an oxidized fuse will run physically warmer than a non-oxidized fuse. The heat will in turn promote more oxidation and further sensitize the fuse to burnout. To make things even worse, the oxide thermally insulates the fuse element from surrounding air allowing the element's temperature to elevate even more. This snowballing effect will, to the untrained observer, make the fuse fail for no reason at all.

Good engineers regularly check fuses for good physical appearance

and heat. One of the most important places is at the transmitter site where fuses carry heavy currents. A good way to do this is to shut off the power and check fuses for warmth immediately after sign off. Check the main power box on the wall for warm cartridge fuses. You may be surprised how hot a fuse can get when it is in the process of oxidation failure. If you discover a hot fuse, be sure to look at tightness of the physical connections where wiring is connected at the fuse holder. You may find that there is a loose wire and that heat from that poor connection is heating and destroying otherwise good fuses. This is especially true where aluminum wire is used. There is a grease that electricians use on an aluminum wire to protect it from oxidation where it is connected at each end.

Another trick you can use to check fuses, while they are in service, is to measure the voltage drop across each one with a voltmeter. Yes, that's right. There will be some voltage drop across the fuse. If you are checking fuses in a three phase service to a transmitter, the voltage drop across all three fuses should be the same. Throw out any fuses that have significantly higher voltage drop than others in the same circuit.

I guess it almost goes without saying that a good supply of new replacement fuses of the correct size should be kept on hand for every piece of equipment in a broadcast facility.

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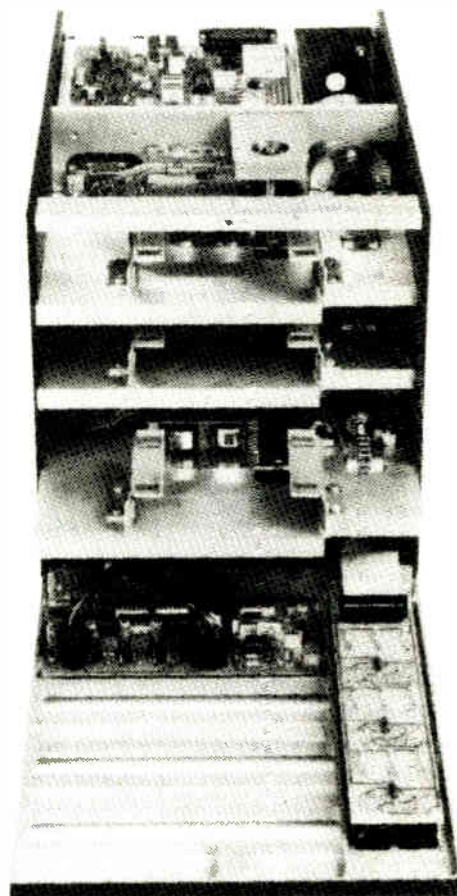
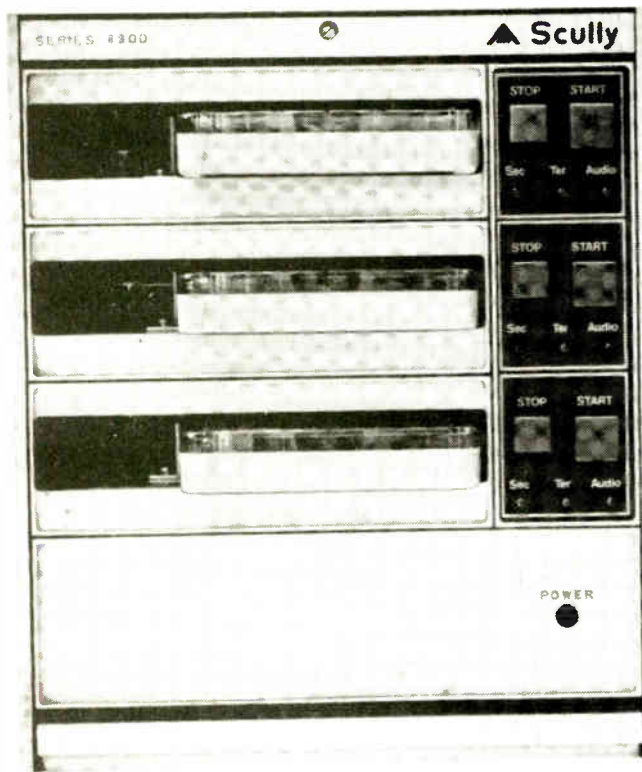
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