

HARRIS
COMMUNICATION AND
INFORMATION PROCESSING

FOREWORD

Harris Corporation, Broadcast Products Division, is dedicated to being the single-source supplier for all of your broadcast equipment needs. Our new catalog, "Broadcast Equipment Accessories," carries through on this by adding a wide selection of accessories to Harris' extensive line of manufactured products for the AM, FM and TV broadcast industry.

In the "Broadcast Equipment Accessories" catalog we have listed thousands of items required by the broadcaster in areas of audio, R.F. and video. We hope that the new catalog will be of value to you and will make your equipment procurement task an easier one.

Although the scope of this catalog is extensive, it may not always list the exact item you require. If this should occur, please ask us and we will strive to fill your exact needs. Just contact the main sales office in Quincy, Illinois or any of the district offices listed on the back cover.

The Broadcast Products Division is one of 19 divisions of Harris Corporation, a world leader in communications and information processing equipment, and one of the nation's 500 largest corporations. Harris electronics divisions, in addition to Broadcast Products Division, include Controls Division, Electronic Systems Division, RF Communications Division, Semiconductor Division, PRD Electronics Division and Composition Systems Division.

Harris has built its reputation on quality of craftsmanship, superior service, excellence of engineering design and pioneering of outstanding new products. This same criteria has been employed in selecting the items in the "Broadcast Equipment Accessories" catalog. We invite your patronage and will justify your confidence.

HARRIS



**COMMUNICATION AND
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| | | |
|--|---|--|
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HARRIS
COMMUNICATION AND
INFORMATION PROCESSING

THE HARRIS 9000 PROGRAM CONTROL

- **MULTI-FILE Program Memory**
- **Easy-to-understand video display**
- **Conversational messages**
- **No special skills required**
- **Advanced micro-computer design**
- **Operationally and environmentally proven**

The Harris 9000 Program Control has been designed to give you the best tool available to increase the efficiency and effectiveness of your staff, while providing the opportunity to improve your sound — whatever your format may be.



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THE HARRIS 9000 PROGRAM CONTROL

As the originator of micro-computer program automation, Harris has drawn on its years of experience, and taken the next step forward to give you a more flexible, more convenient, more reliable, and easier to operate system than any available before. Harris 9000 will handle any format flawlessly, yet it is so easy to understand, and so easy to program that even the most non-technical person in your station will readily see how it works and appreciate its help.

With its many exclusives, from live-assist features to the truly advanced MULTI-FILE Program Memory, the Harris 9000 is definitely a unique system. It is the next generation in program automation, and it's the best there is at its job — helping you improve your results, on the air and on the "bottom line."

IMPECCABLE EXECUTION. The Harris 9000 Program Control knows that any format is possible, and concentrates on impeccable execution.

Live or automated operation is no longer the issue when the end result is a significant advantage in ratings and revenues. The Harris 9000 provides multiple overlaps, dependable voice-track synchronization, plus solid support for the fast-paced live announcer.

Live-assist means never having to keep a program log, stack carts or cue records. A count down timer, complete with a ten-second warning, helps maintain a tight sound. Insertion of unscheduled material is easy. This is live-assist that really aids your on-air talent and encourages more creative performance.

A FULL COMPLEMENT OF OPTIONS AVAILABLE. The Harris 9000 has been designed for easy, plus-in expansion to accommodate such options as additional sources, larger memory and Cleartext logging. The memory load/copy option readily connects to almost any external computer or data terminal. If your station has a business computer and a music playlist computer, the Harris 9000 can automatically receive feeds from either. The MULTI-FILE Program Memory facilitates computer interface by allowing independent files for each computer-fed schedule. The memory load/copy terminal prepares separate lists of commercials or music playlists. The terminal is also used for the internal diagnostic feature, which provides on-site analysis and troubleshooting assistance for station personnel.

BUILT AND BACKED TO PROVIDE LONG-TERM VALUE. The Harris 9000 Program Control is built using the latest computer-assisted techniques to assure outstanding reliability in the field. The quality of Harris' micro-computer program control is backed by the most experienced service organization in the industry, and is proven with the largest users' group in the country.

UNLIMITED FLEXIBILITY. Harris' 9000 has versatility. No programming is too complicated — or too simple. It will faultlessly handle everything from fast-paced "lots-of-music, lots-of-talk" programming to a more simple sequence of reel-to-reel events interspersed with commercials at the proper times. In addition, the Harris 9000 enables management to achieve its goal of minimizing the time and errors associated with entering commercials and other schedule changes.

EFFICIENCY AT EVERY STAGE. The Harris 9000 aggressively pursues maximum efficiency at every stage operation. The video terminal provides necessary information — completely yet simply — for schedule entry and review. Even during editing, a status display informs the operator of the on-air situation, alerting him to possible problems. Conversational messages provide easy-to-understand prompting regarding the nature of errors. The keyboard layout, developed from Harris' experience in hundreds of installations, is aimed at fast and reliable scheduling.

SIMPLIFIED SCHEDULE ENTRY WITH THE MULTI-FILE PROGRAM MEMORY. The need to separate commercials from repetitive format elements has been partially satisfied with the use of sub-routines, a concept developed by Harris and now widely copied throughout the industry. Now with the new MULTI-FILE Program Memory, Harris' 9000 has vastly improved on a good idea, providing a real solution to error-prone, time-consuming problems.

Commercial schedules, music rotations, repetitive format elements and special programs are all independent schedules which must be integrated to create the broadcast day. MULTI-FILE Program Memory provides independent files for these schedules, eliminating the need to refer to unrelated material. Traffic, for instance, no longer needs to know where to go after a commercial cluster. Traffic keeps the commercial file, the music director keeps the playlist file, etc. This feature is a real time saver.

The Harris 9000 with MULTI-FILE Program Memory keeps things simple by integrating these various schedule files, according to plan and always on time. The operator can highlight on the video screen the look-ahead display of entries from any particular file; in addition, a bar graph can be displayed, distinctly illustrating the integration of upcoming schedule files. The innovative use of graphics in the Harris 9000 is not only of great assistance to the operator, but minimizes effort in the area of operator training.

SOURCE EQUIPMENT

The Harris 9000 interfaces with all popular random access source equipment and professional reel-to-reel reproducers. Please contact your Harris District Sales Manager or the Sales Department in Quincy, Illinois for complete information.

CHECK THESE HARRIS 9000 FEATURES . . .

- Handles all formats. • Jock-assist countdown clock with 10-second warning. • Automatic power failure restart. • Accepts feeds from most business/traffic computers. • Built-in time announce control.
- Interfaces to all popular random access machines. • Ready sensing to prevent dead air. • Crystal-controlled clock. • Multiple consoles may be employed. • Simple one-time bulletin insertion. • Operator "error sensing". • Automatic voice track control. • Programmable fade-under for talk-over. • Software logic — your safeguard against future obsolescence. • Front panel access to test points and adjustments. • Full function monitoring and audition. • Logging diagnostics facilitates generation of discrepancy reports. • 25 Hz detection included for all reel-to-reel sources. • Ready for most syndicated programming services. • Four "coffee pot" function relays included.
- Micro-computer versatility. • Complete system remote control.
- Dual silence sensors. • Stereo and sum-channel mono outputs.
- Emergency back-up operation panel.

Prices and specifications subject to change without notice



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ABCO WIRE AND METAL PRODUCTS

Abco Wire cartridge rack. Holds (50) cartridges. 5" w. x 60" h. x 7" d. Weighs approximately 4 pounds. Includes tape mounting brackets.

Order Number 730-1492-000

Price \$35.00



Abco Wire lazy susan cartridge rack base. Holds up to (10) Abco Wire cartridge racks. (Cartridge racks not included).

Order Number 730-1493-000

Price \$62.00

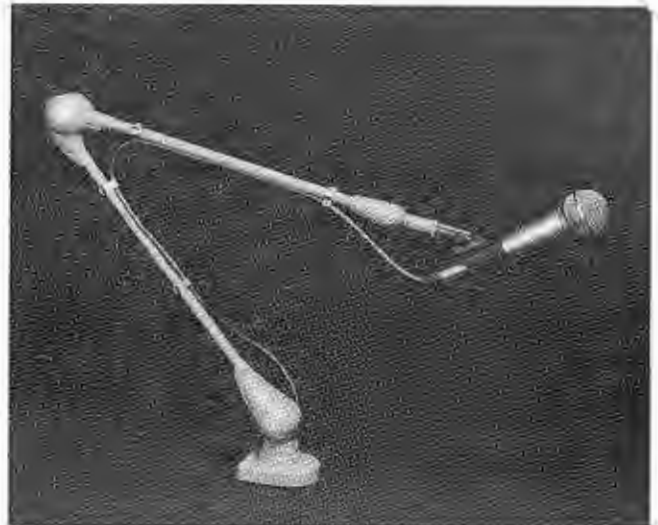


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Flexo®

MIKESTER ARMS



Grey Finish Only

These versatile microphone stands are as flexible as the hand itself. Permits instant stable positioning without separate adjustment. Swings out 36" in any direction when fully extended. Holds any microphone up to 4 lbs. Heavy duty clips hold lead cable neatly in place. Finished in ASCOBOND® double baked oven-fired gray enamel that matches any mike.

No. 1 General Model: clamps or screws to any surface. Packed one to a carton. Wt. 4¾ lbs.

No. 2 Bracket Model: same as No. 1 except with bracket for wall or vertical screw mounting. Packed one to a carton. Wt. 5¼ lbs.

No. 3 Floor Model: same as No. 1 except on 40" floor stand. Heavy 13" diam. base. Packed in two cartons. Wt. 23 lbs.

1 Clamp-On — \$34.95

2 Bracket — \$44.95

3 Floor Stand — \$79.95

TELEDYNE ACOUSTIC RESEARCH



AR10r

AR11

AR12

AR14

AR15

AR17

AR18

AR10r

The **AR10r** — a no-compromise 3-way (woofer, mid-range, tweeter) speaker system with excellent dispersion and even energy output all across the audible spectrum. A pair of 3-position switches allows the owner to adjust the mid- and high-range drivers to the "liveliness" of the room. A 3-position *woofer environmental control* allows the owner to adjust low-end response to speaker placement as explained above. Floor stands are available as an option at extra cost.

AR11

The **AR11** — identical in performance and specifications to the AR10r except that it does not offer the *woofer environmental control*. The AR11 is certainly the most accurate speaker we have ever built which means that it is probably the most accurate speaker of its size ever made. Each of its three drivers represents significant advancement in performance capabilities over original AR speakers. If you want to know what "truth in listening" means, listen to the AR11.

AR12

The **AR12** — offers 3-position adjustment of mid- and high-range speakers and a somewhat smaller woofer, in an enclosure of the same size as the AR11. The primary difference between the two is that the bass response of the AR12 extends slightly lower and its mid-range dispersion characteristics are slightly better. The performance standard for all AR speakers is, however, the same so that the AR12 offers the same high degree of musical accuracy as the AR11, and other AR speakers.

AR14

AR14 — our largest 2-way speaker (woofer, mid/high-range) in an enclosure of the same size as the most expensive AR speakers. A rear-mounted switch allows adjustment of treble energy to room acoustics. The AR14, with only two drivers, is a way of buying AR accuracy for considerably less than in our larger models. A comparison with competitive speakers in its price range will give you some idea of the exceptional value the AR14 represents.

AR15

AR15 — a new addition to the AR range, which is smaller and lighter-weight than the AR14 and thus an ideal speaker for smaller shelves. It offers a 3-position switch so that the high-end contour can be adjusted to the "liveliness" of your listening room. The liquid-cooled high-range driver gives it and our other small speakers greater power-handling capacity than in earlier small AR models.

AR17

AR17 — a slightly smaller and lighter speaker system than the AR15 at a somewhat lower price. A comparison of specifications shows slightly less bass response than the AR15, yet this is one of the most popular speakers we have ever built. There is a 2-position switch which permits adjustment of the high-frequency level. When buying a small speaker system it will be useful to compare the AR17 to the AR10r and AR11, for accuracy and transparency. You will be surprised at how alike they sound, and yet this is the essence of the AR philosophy: a single performance standard for all our speakers.

AR18

AR18 — a new AR speaker system and the smallest we have ever built. Still this is a bookshelf system, with liquid-cooled high-range driver which can be used with amplifiers capable of delivering 100 watts continuous power per channel (being driven to clipping 10 percent of the time) on normal music source material. It features a two-position switch for high-frequency level control. The AR18 makes "truth in listening" available to virtually all high-fidelity enthusiasts, even those with restricted space or tight budgets.

| | AR10r | AR11 | AR12 | AR14 | AR15 | AR17 | AR18 |
|------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Frequency range | 27 Hz-30 kHz | 27 Hz-30 kHz | 36 Hz-30 kHz | 36 Hz-25 kHz | 40 Hz-25 kHz | 43 Hz-25 kHz | 48 Hz-25 kHz |
| Impedance | 4-8 | 4 | 8 | 8 | 8 | 8 | 8 |
| Sensitivity | 9 watts | 9 watts | 9 watts | 9 watts | 10 watts | 9 watts | 9 watts |
| Nominal power handling | 100 watts | 100 watts | 100 watts | 50 watts | 50 watts | 50 watts | 50 watts |
| Maximum power handling | 225 watts | 225 watts | 100 watts | 100 watts | 60 watts | 60 watts | 60 watts |

| | | |
|-------|--|---------------|
| AR10r | Walnut veneer cabinet, finished all sides including rear | \$450.00 each |
| AR11 | Walnut veneer cabinet | \$350.00 each |
| AR12 | Walnut veneer cabinet | \$250.00 each |
| AR14 | Walnut veneer cabinet | \$180.00 each |
| AR15 | Walnut veneer cabinet (Sold only in pairs) | \$130.00 each |
| AR17 | Walnut veneer cabinet (Sold only in pairs) | \$ 95.00 each |
| AR18 | Walnut-grained vinyl veneer cabinet (Sold only in pairs) | \$ 70.00 each |

ACCESSORIES

| | | |
|------|---|---------------|
| ARS1 | Welded steel black finish (Suitable for use with the AR10r, AR11, AR12 and AR14) (Sold only in pairs) | \$ 40.00 pair |
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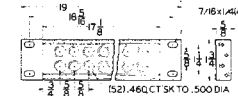
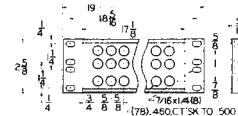
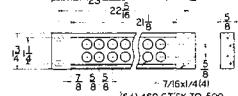
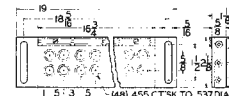
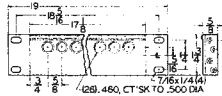
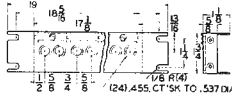




Long Frame Jack Panels

| | NO. JACKS | RACK WIDTH | RACK HEIGHT | MODEL NUMBERS | | | | | DESIG. STRIP INCL: | NOTES |
|-------------------|-----------|------------|-------------|---------------------------|-------------------|-------------------|-------------------|-------------------|------------------------|---|
| | | | | WITHOUT JACKS | WITH PJ-318 JACKS | WITH PJ-338 JACKS | WITH PJ-238 JACKS | WITH PJ-482 JACKS | | |
| SINGLE ROW | 24 | 19" | 1-3/4" | PJ-33 | PJ-343 | PJ-393 | | | PJ-898 | 5/8-in. jack pairs spaced 3/4-in. to prevent cross-patching. |
| | 26 | 19" | 1-3/4" | PJ-36 PJ-36A (WE 230B) | | PJ-396 PJ-396A | | | Reinforcing Strip Only | Includes brackets for flush rack mounting. For designation strips, see Note 1. |
| DOUBLE ROW | 48 | 19" | 2-1/8" | PJ-31 (WE 185) | PJ-341 | PJ-391 | | | PJ-898 | 5/8-in. jack pairs spaced 3/4-in. to prevent cross-patching. |
| | 52 | 19" | 1-3/4" | PJ-30 PJ-30A (WE 230A) | PJ-340 PJ-340A | PJ-390 PJ-390A | | | PJ-901 | Double designation strips. Includes brackets for flush rack mounting. |
| | 64 | 23" | 1-3/4" | PJ-231A (WE 231A) | | | | | Reinforcing Strip Only | For designation strips, see Note 1. |
| TRIPLE ROW | 78 | 19" | 2-5/8" | PJ-37 | | | | | | Double designation strips. Includes brackets for flush rack mounting. |

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| <i>Long Frame Jack Panels [Less Jacks]</i> | <i>Long Frame Jack Panels [With Jacks]</i> |
| PJ-30 \$ 25.00 | PJ-290 \$162.00 |
| PJ-30A 24.50 | PJ-292 145.00 |
| PJ-31 33.00 | PJ-340 112.00 |
| PJ-33 32.00 | PJ-341 115.00 |
| PJ-36 24.50 | PJ-343 75.50 |
| PJ-36A 24.50 | PJ-390 142.00 |
| PJ-37 35.50 | PJ-390A 142.00 |
| PJ-231A 56.00 | PJ-390W 142.00 |
| | PJ-391 150.00 |
| | PJ-393 110.00 |
| | PJ-396 87.00 |
| <i>Designation Strips</i> | |
| PJ-898 \$ 7.00 | |



Single Long Frame Jacks

SELECTION CHART

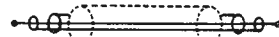
| SCHEMATIC | NUMBER OF CONDUCTORS | STACK HEIGHT | FRAME STYLE | TELEPHONE TYPE | | | |
|-----------|----------------------|------------------------------|-------------|----------------|----------|-------------|------------------------------|
| | | | | SOLDER | | WIRE WRAP | |
| | | | | ADC NO. | MILITARY | WECO EQUIV. | ADC NO. |
| | 2 | .562 in. [14.28 mm] | A | PJ-115 | JJ-084 | 215 A | |
| | 2 | .500 in. [12.70 mm] | A | PJ-117 | JJ-085 | 217 A | |
| | 2 | .375 in. [9.53 mm] | A | PJ-123 | JJ-086 | 223 A | |
| | 2 | .468 in. [11.88 mm] | A | PJ-203 | JJ-016 | 303 A | |
| | 3 | PJ-238 W .531 in. [13.49 mm] | A | PJ-238 | JJ-022 | 238 A | PJ-238 W .531 in. [13.49 mm] |
| | 3 | .667 in. [17.45 mm] | C | PJ-240 | | 240 C | PJ-240 W |
| | 3 | .781 in. [19.84 mm] | | | | | |
| | 3 | PJ-241 W .750 in. [19.05 mm] | A | PJ-241 | JJ-074 | 241 A | PJ-241 W .750 in. [19.05 mm] |
| | 3 | .687 in. [17.45 mm] | C | PJ-242 | | 242 C | |
| | 3 | .687 in. [17.45 mm] | C | PJ-280 | | 280 C | |
| | 2 | .437 in. [11.10 mm] | A | PJ-318 | JJ-024 | 218 A | |
| | 2 | .593 in. [15.05 mm] | C | PJ-336 | | 236 C | |
| | 2 | .648 in. [16.46 mm] | C | PJ-338 | JJ-019 | 438 C | |
| | 3 | .531 in. [13.49 mm] | A | PJ-339 | JJ-042 | 239 A | |
| | 3 | .578 in. [14.68 mm] | | | | | PJ-339 W |
| | 3 | PJ-246 W .531 in. [13.49 mm] | A | *PJ-246 | | 246 A | PJ-246 W .531 in. [13.49 mm] |
| | 3 | .531 in. [13.49 mm] | A | *PJ-248 | | 248 A | |

*For use with PJ-309 or other similar type plugs having .207 in. [5.26 mm] diameter sleeves.

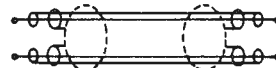
Long Frame Patch Cords

| SHIELDED | | UNSHIELDED | | |
|-----------------|----------------------|-----------------|------------------------|-------------------------|
| LENGTH | ADC NO. W/PJ-1 PLUGS | LENGTH | ADC NO. W/PJ-327 PLUGS | ADC NO. W/PJ-047R PLUGS |
| 1-foot [.305 m] | PJ-11 | 2-feet [.61 m] | PJ-182 | PJ-472 |
| 2-feet [.61 m] | PJ-12 | 4-feet [1.22 m] | PJ-186 | PJ-476 |
| 3-feet [.915 m] | PJ-13 | 6-feet [1.83 m] | PJ-186 | PJ-476 |
| 4-feet [1.22 m] | PJ-14 | | | |
| 6-feet [1.83 m] | PJ-16 | | | |

THREE CONDUCTOR - SHIELDED



| LENGTH | SINGLE PLUGS | | |
|-----------------|----------------------|-------------------------|----------------------|
| | ADC NO. W/PJ-2 PLUGS | ADC NO. W/PJ-051R PLUGS | ADC NO. PJ-310 PLUGS |
| 1-foot [.305 m] | PJ-71 | PJ-81 | PJ-311 |
| 2-feet [.61 m] | PJ-72 | PJ-82 | PJ-312 |
| 3-feet [.915 m] | PJ-73 | PJ-83 | PJ-313 |
| 4-feet [1.22 m] | PJ-74 | PJ-84 | PJ-314 |
| 6-feet [1.83 m] | PJ-76 | PJ-86 | PJ-316 |



| LENGTH | DOUBLE PLUGS | | |
|-----------------|----------------------|----------------------|-----------------------------|
| | ADC NO. W/PJ-7 PLUGS | ADC NO. W/PJ-8 PLUGS | ADC NO. W/DUAL PJ-310 PLUGS |
| 2-feet [.61 m] | PJ-172 | PJ-92 | PJ-412 |
| 4-feet [1.22 m] | PJ-174 | | PJ-414 |
| 6-feet [1.83 m] | PJ-176 | PJ-96 | PJ-416 |

Long Frame Patch Cords

| | |
|--------|----------------|
| PJ-11 | \$ 30.15 |
| PJ-12 | 31.15 |
| PJ-13 | 32.25 |
| PJ-14 | 33.25 |
| PJ-16 | 34.75 |
| PJ-71 | 19.00 |
| PJ-72 | 20.00 |
| PJ-73 | 20.75 |
| PJ-74 | 21.50 |
| PJ-76 | 23.00 |
| PJ-81 | 18.50 |
| PJ-82 | 19.50 |
| PJ-83 | 20.25 |
| PJ-84 | 21.00 |
| PJ-86 | 22.50 |
| PJ-92 | 40.00 |
| PJ-96 | 44.00 |
| PJ-172 | 37.00 |
| PJ-174 | 39.00 |
| PJ-176 | 41.00 |
| PJ-182 | 40.00 |
| PJ-184 | 42.00 |
| PJ-186 | 44.00 |
| PJ-311 | 19.25 |
| PJ-312 | 20.00 |
| PJ-313 | 20.75 |
| PJ-314 | 21.50 |
| PJ-316 | 23.00 |
| PJ-412 | 38.50 |
| PJ-414 | 40.50 |
| PJ-416 | 42.50 |
| PJ-472 | 20.50 |
| PJ-474 | 21.75 |
| PJ-476 | 23.00 |



Prices and specifications subject to change without notice

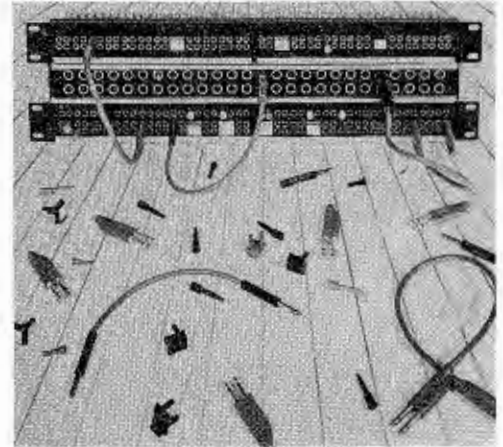


Bantam Jack Panels

PJ731 BANTAM PANEL accommodates 96 bantam single jacks. It is 1-3/4 inches high and requires one rack mounting space. The unit contains four PJ724 inserts. Patching can be accomplished vertically with single patch cords and in the horizontal plane on jack pairs with either dual or single patch cords. A special bantam patch cord in a dual configuration is available to patch vertically from jack position No. 1 on the first row of jacks to No. 49, or the first jack in the second row if desired. This patch cord can be supplied in either 2 or 3-conductor configuration. Four PJ727 Designation Strips are supplied with each unit.

PJ689 PANEL ASSEMBLY contains two PJ776 inserts and will mount 48, PJ889 or PJ889W back-to-back type bantam jacks. The panel is 1-3/4 inches high and requires one rack mounting space. Patching can be accomplished with either single or dual patch cords in the vertical or horizontal planes. This panel assembly, when filled with jacks (PJ789) will provide 48 normal through type circuits, such as those commonly used in two-wire line drop type circuits. Two PJ727 Designation Strips are supplied with each unit.

PJ781 PANEL ASSEMBLY is equipped with two PJ771 inserts and accommodates 48, PJ821 or PJ821W 2 + 1 type jacks. It is 1-3/4 inches high and requires one rack mounting space. Fully equipped with PJ821 jacks, this assembly provides 48 LINE DROP MONITOR type circuits or 24 full duplex send/receive 4-wire type circuits. Two PJ727 Designation Strips are supplied with each unit.



SELECTION CHART

| Bantam Jacks | SOLDER TAILS | | WIRE WRAP | |
|--------------|--------------|---------------------|------------|---------------------|
| | REAR MOUNT | MAX. STACK HEIGHT | REAR MOUNT | MAX. STACK HEIGHT |
| | PJ-803 | .403 in. [10.24 mm] | PJ-803W | .468 in. [11.89 mm] |
| | *PJ-808 | .671 in. [17.04 mm] | | |
| | PJ-816 | .546 in. [13.87 mm] | PJ-816W | .609 in. [15.47 mm] |
| | PJ-818 | .406 in. [10.31 mm] | PJ-818W | .437 in. [11.10 mm] |
| | PJ-823 | .421 in. [10.69 mm] | PJ-823W | .421 in. [10.69 mm] |
| | PJ-836 | .656 in. [16.66 mm] | | |
| | PJ-805† | .671 in. [17.04 mm] | PJ-805W† | .720 in. [18.29 mm] |
| | *PJ-824 | .671 in. [17.04 mm] | PJ-824W† | .750 in. [19.05 mm] |
| | PJ-838† | .531 in. [13.49 mm] | PJ-838W† | .562 in. [14.27 mm] |

| Bantam Jacks | SOLDER TAILS | | WIRE WRAP | |
|---------------------------|--------------|----------------------|------------|----------------------|
| | REAR MOUNT | MAX. STACK HEIGHT | REAR MOUNT | MAX. STACK HEIGHT |
| | PJ-839† | .531 in. [13.49 mm] | PJ-839W† | .578 in. [14.68 mm] |
| | *PJ-841 | .671 in. [17.04 mm] | PJ-841W | .656 in. [16.66 mm] |
| 2 + 1 | PJ-821 | 1.531 in. [38.89 mm] | PJ-821W | 1.625 in. [41.27 mm] |
| 2 + 1 | PJ-831 | 1.531 in. [38.89 mm] | PJ-831W | 1.625 in. [41.27 mm] |
| Twin | PJ-882 | 1.500 in. [38.10 mm] | PJ-882W | 1.562 in. [39.67 mm] |
| Back-to-Back Bantam Jacks | PJ-889 | 1.062 in. [26.97 mm] | PJ-889W | 1.187 in. [30.15 mm] |

NOTE: All loose jacks are supplied with jack mounting screws.
 * Single Jacks having ht. of over .656 will extend beyond periphery of a PJ-731-type 1.750 in. [44.45 mm] panel.
 † To order the military approved model of these jacks, add an "M" to part number (e.g., PJ-839WM).

Bantam Panels With Jacks

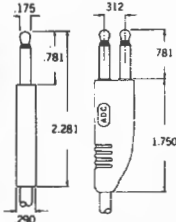
| TYPE OF JACK | CIRCUITS OR NUMBER OF JACKS REQUIRED | | |
|---------------------|--------------------------------------|------------------------|----------------------------|
| | * 96 Jacks (48 pairs) | * 48 Pairs Normal thru | *48 Line-Drop Monitor Cir. |
| PJ818 | PJ737 \$180.00 | | |
| PJ839 | PJ739 \$215.00 | | |
| PJ839W ¹ | PJ739W \$220.00 | | |
| PJ889 | | PJ789 \$295.00 | |
| PJ889W ¹ | | PJ789W \$305.00 | |
| PJ821 | | | PJ721 \$315.00 |
| PJ821W ¹ | | | PJ721W \$325.00 |

Bantam Patch Cords

Bantam Patch Cords are plastic jacketed, shielded cords complete with molded-on plugs. The plugs are made with molded insulation between conductors. Bantam Patch Cords are available with single and double two and three conductor plugs. A cord strain relief feature is included in the plug construction.

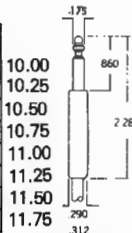
2 CONDUCTOR SINGLE PLUG

| Length | Single (2) Conductor Plug | |
|---------|---------------------------|---------|
| 12 inch | PJ-702 | \$ 8.75 |
| 24 inch | PJ-704 | \$ 9.00 |
| 36 inch | PJ-706 | \$ 9.25 |
| 48 inch | PJ-708 | \$ 9.50 |



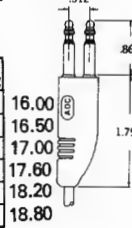
3 CONDUCTOR SINGLE PLUG

| Length | Single (3) Conductor Plug | |
|---------|---------------------------|-------|
| 6 inch | PJ-711 | 10.00 |
| 12 inch | PJ-712 | 10.25 |
| 18 inch | PJ-713 | 10.50 |
| 24 inch | PJ-714 | 10.75 |
| 30 inch | PJ-715 | 11.00 |
| 36 inch | PJ-716 | 11.25 |
| 48 inch | PJ-718 | 11.50 |
| 60 inch | PJ-720 | 11.75 |



3 CONDUCTOR (DOUBLE)

| Length | Double (3) Conductor Plug | |
|---------|---------------------------|-------|
| 12 inch | PJ-762 | 16.00 |
| 24 inch | PJ-764 | 16.50 |
| 30 inch | PJ-765 | 17.00 |
| 36 inch | PJ-766 | 17.60 |
| 48 inch | PJ-768 | 18.20 |
| 60 inch | PJ-770 | 18.80 |



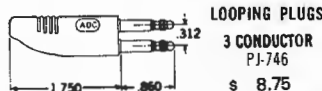
Bantam Panels Without Jacks

| Panel Without Jacks | PJ731 \$ 44.00 | PJ689 \$ 42.50 | PJ781 \$ 47.00 |
|---------------------|----------------|----------------|----------------|
|---------------------|----------------|----------------|----------------|

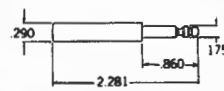
Bantam Panel Inserts

| Uses Insert Number | PJ724 \$ 6.00 | PJ776 \$ 7.50 | PJ771 \$ 11.50 |
|--------------------|---------------|---------------|----------------|
| Panel Height | 1 3/4" | 1 3/4" | 1 3/4" |

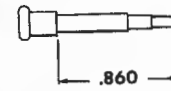
¹ Designates wire-wrapped tails
 * Jacks are spaced in pairs with .370" between pairs to prevent cross-patching adjacent circuits.



LOOPING PLUGS
 3 CONDUCTOR
 PJ-746
 \$ 8.75



TERMINATING PLUGS
 3 CONDUCTOR
 PJ-743
 \$ 6.25



DUMMY PLUGS
 3 CONDUCTOR
 PJ-748
 (All Plastic)
 \$ 0.70

Prices and specifications subject to change without notice



**D-109
Lavalier
Dynamic**

Lightweight microphone for public address, television and motion picture applications. Includes 29 1/2 ft. field-replaceable cable with stripped-and-tinned leads at free end; nylon cord; lavalier clip with tie clasp; and case. Net wt. 5 1/2 oz. w/cable. Matte nickel finish\$80.00

**D-120E/ES
Cardioid
Dynamics**

Smooth-response, general purpose microphone with wire-mesh wind-screen. Includes: SA-23/2 snap-out stand adapter, and case. (D-120ES same as D-120E but with integral on/off switch.)

D120E\$75.00
D120ES\$80.00

**D-140E
Cardioid
Dynamic**

Equally suited to studio or on-location uses. Optimally designed with a shock-suspended transducer and integral wire-mesh wind-screen. Includes integral brass roll-off switch to reduce proximity effects or low-frequency feedback; SA-25/1 stand adapter and case.\$185.00

**D-160E1
Omnidirectional
Dynamic**

Exceptional microphone for vocal recording and broadcast use. The "ideal" ambiance and round table mic. Includes: W-20 foam windscreen; SA-23/2 stand adapter; and case.\$88.00

**D-170E
Supercardioid
Dynamic**

Rugged microphone specially designed for rock vocalists. Internally shock-suspended transducer and wire-mesh windscreen for natural sounding close vocal pickups. Super-cardioid pattern reduces feedback. Includes: SA-12/1 stand adapter; and case.\$125.00

**D-190E/ES
Cardioid
Dynamics**

Excellent general-purpose. P.A. recording and live performance microphones. With sintered bronze wind/pop filter. Cardioid pattern reduces feedback. Includes SA-11 stand adapter; and case. (D-190ES same as D-190E, but with integral on/off switch.)

190E\$90.00
190ES\$95.00



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D-109



D-170E



D-200E



D-120/ES



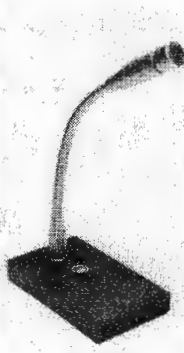
D-510B



D-1000E



D-140E



D-558B



D-2000E



D-160E1



D-590



D-190E/ES

**D-200E1
Two-Way
Cardioid Dynamic**

Dual-transducer microphone for outstanding fidelity and uniform directivity. Has extended frequency response, no proximity effect and superbly linear response for superior recording and equalized sound system performance. Includes: SA-20 stand adapter; and case.\$125.00

**D-1000E
Adjustable-Response
Cardioid Dynamic**

Our most popular live-performance microphone. Designed with built-in 3-position mode switch for low- and mid-frequency equalization right at the microphone. Includes: SA-12 stand adapter; and case.\$100.00

**D-2000E
Adjustable-Response
Supercardioid
Dynamic**

The ultimate professional entertainers microphone. Combines feedback-rejecting supercardioid pattern, smooth response and 3-position bass rolloff and on-off switch. High reliability construction. Includes: SA-12/1 stand adapter; and case. . . \$150.00

**D-510B
Omnidirectional
Dynamic**

Designed for radio/TV/recording "announce booth" applications. Overall length is 12-3/16". Flexible gooseneck shaft permits convenient positioning. Includes: 3 3/4 ft. shielded cable; and mounting hardware.\$92.00

**D-558B
Differential
Noise-Cancelling
Dynamic**

For working distances of about 2", such as in radio newsrooms, industrial paging, studio talk-back, and radio dispatchers. Convenient, flexible gooseneck shaft. Includes: 3 3/4 ft. shielded cable; and mounting hardware. Overall length 12-3/16". . . \$98.00

**D-590
Cardioid
Dynamic**

Designed for sound reinforcement, paging and broadcast applications where ambient noise and feedback are considerations but where a greater working distance than 2" is required. Flexible shaft. Overall length 11 1/4". Includes: 3 3/4 ft. cable and mounting hardware.\$106.00

Prices and specifications subject to change without notice



**C-501E
Electret-Condenser
Cardioid "Combo"**

For most home recording, studio, broadcast and sound-reinforcement applications. Consists of SE-5E basic powering module, CE-1 electret-condenser capsule; W-20 foam windscreen; SA-11/1 stand adapter; battery and case. \$150.00

**C-502E
Electret-Condenser
Omnidirectional "Combo"**

Designed for extra "hall" ambience, extended low-frequency response and for grouping around one mic. Consists of same components as the C-501E except with CE-2 electret-condenser capsule. \$150.00

**C-505E
Electret-Condenser
Cardioid "Combo"**

Ideal for pop and rock vocalists, standup comics, emcees and other "close-talking" applications. Consists of SE-5E basic powering module; CE-5 electret-condenser capsule with shock-suspended transducer and fixed wire mesh wind/pop filter; SA-11/1 stand adapter, battery and case. . . \$155.00

**C-510E
Electret-Condenser
Lavalier "Combo"**

Miniature lavalier for film, TV, lecture-hall and other "hands-free" uses. Consists of 2 3/4 oz. CE-10/1 electret-condenser capsule; 4 ft. cable with adapter to SE-5E; SE-5E powering module; two W-6 foam windscreens; battery; H-16 belt clip and case. \$180.00

CE-1 Cardioid Electret-Condenser Capsule. Uses with SE-5E. \$60.00

CE-2 Omnidirectional Electret-Condenser Capsule. Use with SE-5E. \$60.00

CE-5 Shock-Mounted Cardioid Electret-Condenser Capsule with wire-mesh wind/pop filter. Use with SE-5E. \$70.00

CE-8 Short-Shotgun Electret-Condenser Capsule. Use with SE-5E. \$138.00

CE-10/1 Miniature Lavalier Electret-Condenser Capsule. Capsule size: 7/8" x 9/16". Net wt. 2 3/4 oz. incl. cable. Cable length: 4'. Use with SE-5E. \$105.00

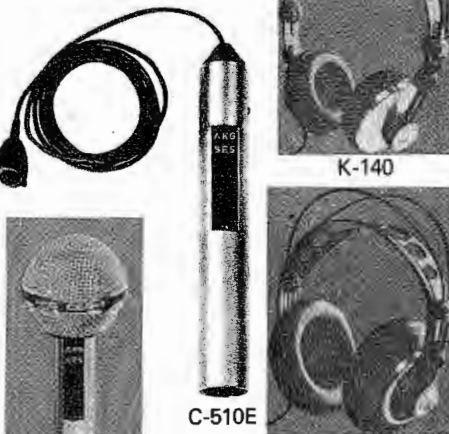
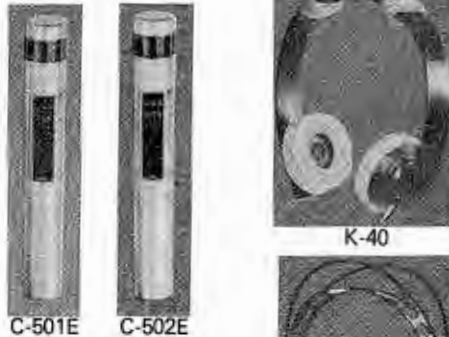
SE-5E Powering Module for use with all CE-series capsules. Requires one PX-23 mercury battery (included). Battery life: Approx. 550 hours continuous use. On-off switch. May be phantom powered. . . \$77.00

**K-40
Supra-Aural
Stereo Headphone**

Ultra-lightweight, high efficiency/wide bandwidth. Matches 4-200 ohm outputs. With 9 3/4 ft. 4-conductor cable and standard 3-conductor stereo phone plug. Wt. 4 1/2 oz. \$27.00



PHILIPS AUDIO VIDEO SYSTEMS CORP
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**K-140S
Supra-Aural
Professional
Monitoring Headphone**

Lightweight. Capable of high sound pressure levels while maintaining low distortion and wide bandwidth. Matches 4-600 ohm outputs. With 9 3/4 ft., 4-conductor cable and standard 3-conductor stereo phone plug. Wt. 6 1/2 oz. \$55.00

**K-141
Deluxe "Cardan"
Stereo Headphone**

Quality stereo headphone that is lightweight and comfortable. It is semi-open featuring resonance-free characteristics but with greater freedom from low-frequency side effects. The K-141 provides an extremely broad, flat response almost totally free of coloration — sound which is warm, not boomy; open and present, without harshness. Wt. 9 1/4 oz. \$69.00

**K-240
Deluxe Circumaural
Stereo Headphone**

Provides better directional sound perspective and distance discrimination, faithfully simulating hearing in natural room conditions. Patented design combines main transducers and 12 passive diaphragms, providing cross-over at 200 Hz. Matches 4-600 ohm outputs. With 9 3/4 ft., 4-conductor cable and standard 3-conductor stereo phone plug. Wt. 9 1/4 oz. \$85.00

K-18 Ultra-Lightweight Boom Set. Consists of two monophonically connected dynamic earphones and boom arm with noise-cancelling dynamic microphone. Headphone impedance matches 4-300 ohm outputs. Nominal microphone impedance 200 ohms matched by all low-impedance unbalanced (25-1000 ohms) inputs. With 3 1/4 ft. non-detachable cable with stripped-and-tinned leads. Wt. 3 1/4 oz. \$49.00

K-158 Boom Set. Consists of two independently wired earphones and boom arm with noise-cancelling dynamic microphone. Designed for on-the-air and intercom use in TV/radio broadcasting, industrial and general applications. Headphone impedance matches 4-600 ohm outputs. Nominal microphone impedance 200 ohms suitably matched by all low-impedance balanced (25-1000 ohms) inputs. With 6 1/2 ft. detachable 6-conductor shielded cable with headset connector and stripped-and-tinned leads. Wt. 12 oz. \$110.00

K-158/T-301 Boom Set. Same as above with built-in transistor microphone preamplifier for use *only* with carbon-microphone inputs. \$110.00

Prices and specifications subject to change without notice

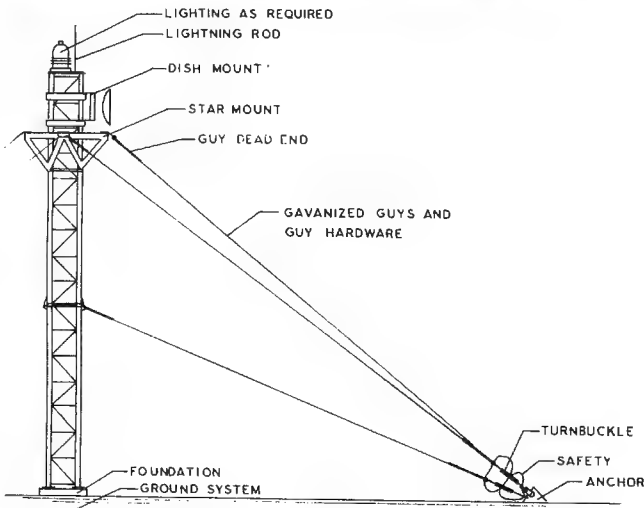




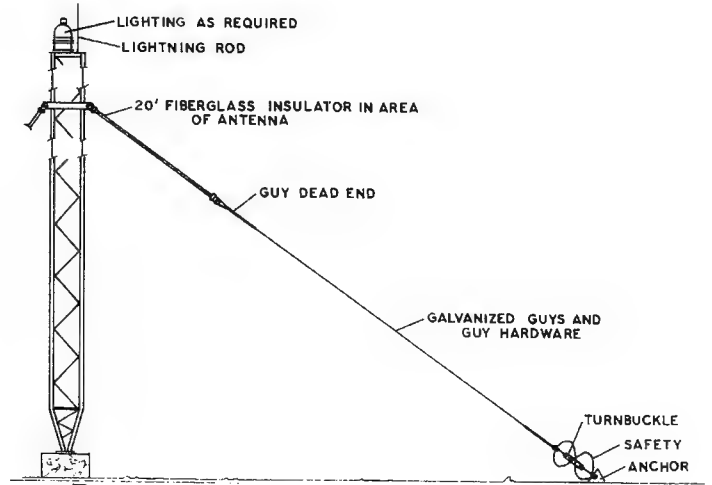
SINGLE SOURCE FOR:

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- **TOWERS**
- **ERECTION**

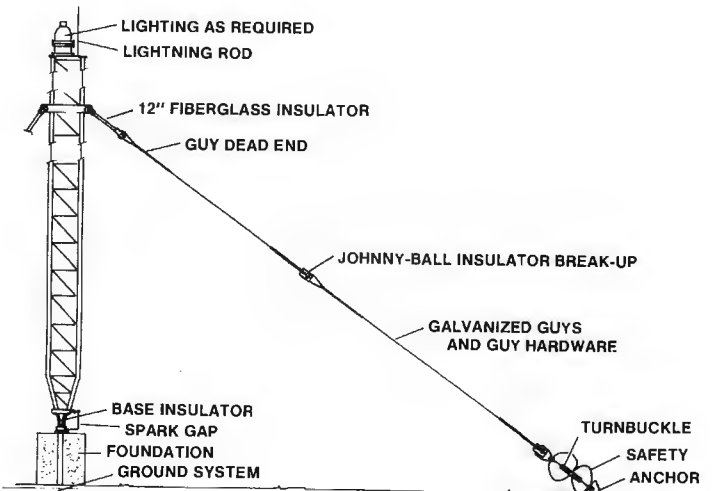
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AM TOWERS



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SPECIAL TOWERS WITH A REDUCED CROSS SECTION AT THE TOP TO HELP REDUCE THE EFFECT OF THE TOWER ON YOUR FM SIGNAL.

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RF COAXIAL LOAD RESISTORS



MODEL 5705

The "Omegaline" Model 5705 is a low cost, lightweight, portable, direct water-cooled dummy load for terminating coaxial transmission lines.

Water is used as a dielectric coolant. Water-flow requirement at 5 KW is 1 gpm. **Internal pressure drop is less than 10 lbs. psi.**

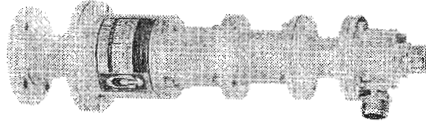
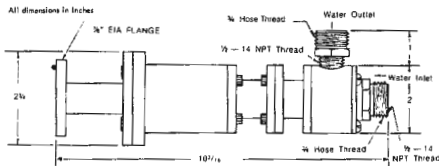
Radio frequency power is dissipated in a film-type cylindrical resistor. The resistor is contained in a patented enclosure that provides an almost reflection-free termination.

These ruggedly constructed dummy loads require no field adjustments. All units undergo complete testing before delivery. **Resistor elements may be replaced in the field in a matter of minutes.** There is no need to send the unit back to the factory.

Additional outstanding features of the Model 5705 are (1) compactness, **only 10 1/4" long**, (2) portability, **only 4 lbs.** in weight, (3) ability to **operate in any position**, (4) reliability, and (5) **ease of maintenance**. A detailed instruction manual is provided with each unit.

Impedance: 50 ohms nominal. **Max Power Rating:** 5 KW continuous. **Frequency Range:** 60 Hz to 2 Ghz. **Max. VSWR:** 1.10 to 1 Ghz; 1.15 to 1.5 Ghz, and 1.2 to 2 Ghz. **Cooling Method:** Ordinary tap or distilled water in open or closed systems. **Max. Output Water Temp:** 90° C. **Max Operating Water Pressure:** 150 psi. **Water Flow:** 2 gpm. **Water Connectors:** 3/4" (garden hose). **Water Circuit Elements:** Non-contaminating. **Resistor Element:** Cylindrical film type. Field replaceable. **Input Connectors:** 1-5/8" EIA flanged. Other connectors may be specified. **Dimensions:** Max. 10-3/16"x 3 1/2". **Weight:** 4 lbs. **Operating Position:** Any. **Construction:** Brass and aluminum. **Finish:** Nickel plate.

5705, 5 KW with 1-5/8" flange, 50 ohm\$350.00



MODEL 5715

The "Omegaline" Model 5715 is a low cost, lightweight, portable, direct water-cooled dummy load for terminating coaxial transmission lines.

Water is used as a dielectric coolant. Water-flow requirement at 15 KW is 4 gpm. **Internal pressure drop is less than 20 lbs. psi.**

Radio frequency power is dissipated in a film-type cylindrical resistor. The resistor is contained in a patented enclosure that provides an almost reflection-free termination.

These ruggedly constructed dummy loads require no field adjustments. All units undergo complete testing before delivery. **Resistor elements may be replaced in the field in a matter of minutes.** There is no need to send the unit back to the factory.

Additional outstanding features of the Model 5715 are (1) compactness, **only 14-5/16" long**, (2) portability, **only 9 1/2 lbs.** in weight, (3) ability to **operate in any position**, (4) reliability, and (5) **ease of maintenance**. A detailed instruction manual is provided with each unit.

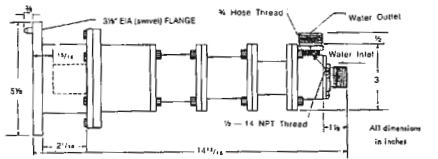
Impedance: 50 ohms nominal. **Max Power Rating:** 15 KW continuous. **Frequency Range:** 60 Hz to 2 Ghz. **Max. VSWR:** 1.10 to 1 Ghz; 1.15 to 1.5 Ghz, and 1.2 to 2 Ghz. **Cooling Method:** Ordinary tap or distilled water in open or closed systems. **Max. Output Water Temp:** 90° C. **Max Operating Water Pressure:** 150 psi. **Water Flow:** 4 gpm. **Water Connectors:** 3/4" (garden hose). **Water Circuit Elements:** Non-contaminating. **Resistor Element:** Cylindrical film type. Field replaceable. **Input Connectors:** 3-1/8" or 1-5/8" EIA flanged. Other connectors may be specified. **Dimensions:** Max. 14-13/16"x3 1/2". **Weight:** 9 1/2 lbs. **Operating Position:** Any. **Construction:** Brass and aluminum. **Finish:** Nickel plate.

5715, 15 KW with 1-5/8" flange, 50 ohm\$525.00

5715R, 15 KW, 1-5/8" flangeless, 50 ohm\$510.00

5715, 15 KW, with 3-1/8" flange, 50 ohm\$525.00

5715R, 15 KW, 3-1/8" flangeless, 50 ohm\$510.00



MODEL 5725A

The "Omegaline" Model 5725A is a low cost, lightweight, portable, direct water-cooled dummy load for terminating 3-1/8" transmission lines.

Water is used as a dielectric coolant. Water-flow requirement at 25 KW is 6 gpm. **Internal pressure drop is less than 10 lbs. psi.**

Radio frequency power is dissipated in a film-type cylindrical resistor. The resistor is contained in a patented enclosure that provides an almost reflection-free termination.

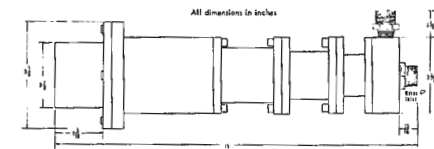
These ruggedly constructed dummy loads require no field adjustments. All units undergo complete testing before delivery. **Resistor elements may be replaced in the field in a matter of minutes.** There is no need to send the unit back to the factory.

Additional outstanding features of the Model 5725A are (1) compactness, **only 15" long**, (2) portability, **only 11 lbs.** in weight, (3) ability to **operate in any position**, (4) reliability, and (5) **ease of maintenance**. A detailed instruction manual is provided with each unit.

Impedance: 50 ohms nominal. **Max Power Rating:** 25 KW continuous. **Frequency Range:** 60 Hz to 1.8 Ghz. **Max. VSWR:** 1.10 to 1 Ghz; 1.15 to 1.5 Ghz, and 1.2 to 1.8 Ghz. **Cooling Method:** Ordinary tap or distilled water in open or closed systems. **Max. Output Water Temp:** 90° C. **Max Operating Water Pressure:** 150 psi. **Water Flow:** 6 gpm. **Water Connectors:** 3/4" (garden hose). **Water Circuit Elements:** Non-contaminating. **Resistor Element:** Cylindrical film type. Field replaceable. **Input Connectors:** 3-1/8" EIA flanged; other connectors may be specified. **Dimensions:** Max. 15"x4 1/2". **Weight:** 11 lbs. **Operating Position:** Any. **Construction:** Brass and aluminum. **Finish:** Nickel plate.

5725A, 25 KW, with 3-1/8" flange, 50 ohm\$975.00

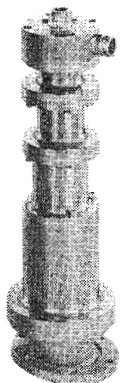
5725R, 25 KW, 3-1/8" flangeless, 50 ohm\$950.00



Prices and specifications subject to change without notice



RF COAXIAL LOAD RESISTORS



MODEL 5750

The Omegaline Model 5750 is a direct-water-cooled termination for 50-ohm coaxial transmission line systems. Transmitters, microwave components, power tube manufacturers, and transmitting stations can be assured of ideal dummy load conditions during designing, testing, adjusting, and aligning of transmitters or components.

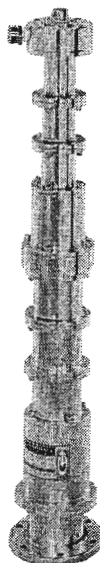
50 KW of radio frequency is dissipated in a film type cylindrical resistor which is contained in a patented new enclosure. This design permits the replacement of resistors in the field in a matter of minutes. Add to this another Altronic "First:" the use of water as a dielectric medium as well as a coolant, an "Omegaline," Model 5750, providing an almost reflection-free termination that features low VSWR, rugged construction, light weight, portability, dependability and ease of maintenance at low cost.

Model 5750 is the first in the 5700 Series. Other power ratings ranging from 1 KW through 25 KW may be specified.

Impedance: 50 ohms nominal. **Max. Power Rating:** 50 KW continuous. **Frequency Range:** 60 to 2000 mc. **Max VSWR:** 1.10 to 1000 mc; 1.15 to 1500 mc; and 1.25 to 2000 mc. **Cooling Method:** Ordinary tap or distilled water in open or closed systems. **Max Output Water Temp:** 90° C. **Water Flow:** 10 gpm. **Water Connectors:** 3/4" (garden hose). **Water Circuit Elements:** Non-contaminating. **Resistor Element:** Cylindrical film type. Field replaceable. **Input Connectors:** 3-1/8" EIA flanged; other connectors may be specified. **Dimensions:** Max. 17-5/8" x 5-1/8". **Weight:** 16 1/2 lbs. **Operating Position:** Any. **Construction:** Brass and aluminum. **Finish:** Nickel plate.

5750, 50 KW, with 3-1/8" flange, 50 ohm\$1275.00

5750R, 50 KW, 3-1/8" flangeless, 50 ohm\$1250.00



MODEL 5780

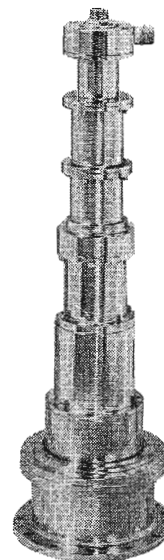
80-Kilowatts Continuous-Duty Rating

The "Omegaline" Model 5780 is a direct water-cooled dummy load for 50-ohm coaxial transmission lines. RF energy is dissipated in a film-type cylindrical resistor which simulates an unending length of 50-ohm line. Water is used both as a dielectric and a coolant. Model 5780 is recommended as a reflection-free termination for higher-power transmitters during testing, aligning, adjusting, etc.

Impedance: 50 ohms. **Power Rating:** 80 KW (RMS) continuous. **Frequency Range:** 60 Hz to above 1200 mc. **VSWR:** Less than 1.10 to 1000 mc. **Input Connectors:** 3-1/8" or 6-1/8" EIA flanged. **Operating Position:** Any. **Cooling Method:** Ordinary tap or pure water. Open or closed system. **Water-Flow Rate:** 10-GPM (Minimum). **Water Pressure:** 150-PSI (Maximum). **Internal Pressure Drop:** 45-PSI. **Input Water Temperature:** 4° C to 60° C. **Output Water Temperature:** 90° C (Max. allowable). **Water Temperature Rise at 80 KW and 10-GPM:** 30.3° C. **Water Circuit Materials:** Non-contaminating. **Water Connectors:** 3/4" garden hose. **Dimensions:** 5 1/2" diameter x 30" length. **Weight:** 19 lbs. **Construction:** Aluminum and brass. **Fasteners:** Stainless steel. **Finish:** Bright nickel plate. **Service:** Factory.

5780, 80 KW, with 3-1/8" flange, 50 ohm\$1675.00

5780 80 KW, with 6-1/8" flange, 50 ohm\$1725.00



MODEL 7580

80-Kilowatts Continuous-Duty Rating

The "Omegaline" Model 7580 is a direct water-cooled dummy load for 75-ohm coaxial transmission lines. RF energy is dissipated in a film-type cylindrical resistor which simulates an unending length of 75-ohm line. Water is used both as a dielectric and as a coolant. Model 7580 is recommended as a reflection-free termination for higher-power transmitters during testing, aligning, adjusting, etc.

Impedance: 75 ohms. **Power Rating:** 80 KW (RMS) continuous. **Frequency Range:** 60 Hz to above 1200 mc. **VSWR:** Less than 1.10 to 1000 mc. **Input Connectors:** 3-1/8" or 6-1/8" EIA flanged. **Operating Position:** Any. **Cooling Method:** Ordinary tap or pure water. Open or closed system. **Water-Flow Rate:** 10-GPM (Minimum). **Water Pressure:** 150-PSI (Maximum). **Internal Pressure Drop:** 45-PSI at 10-GPM. **Input Water Temperature:** 4° C to 60° C. **Output Water Temperature:** 90° C (Max. allowable). **Water Temperature Rise at 80 KW and 10-GPM:** 30.3° C. **Water Circuit Materials:** Non-contaminating. **Water Connectors:** 3/4" garden hose. **Dimensions:** 8 1/4" diameter x 31" length. **Weight:** 26 lbs. **Construction:** Aluminum and brass. **Fasteners:** Stainless steel. **Finish:** Bright nickel plate. **Service:** Factory.

7580 80 KW, with 6-1/8" flange, 75 ohm\$1725.00

Replacement resistors for Altronic loads:

HR-5 for model 5705, 5 KW \$40.00
 HR-15 for model 5715, 15 KW (See Note 2) 60.00
 HR-25 for model 5725, 25 KW (See Note 2) 69.00
 HR-50 for model 5750, 50 KW (See Note 2) 69.00
 HR-80 for model 5780, 80 KW (See Note 2) 69.00
 HR-37 for model 7580, 80 KW (See Note 2) 69.00

NOTE 2: Altronic loads for 15 KW, 25 KW, 50 KW and 80 KW may be factory optimized for 1.05 (or less) VSWR on a particular channel. Specify channel. (Additional charge of \$250.00).



Prices and specifications subject to change without notice

AMPEX

ATR-700



New Versatility

- 3 record/reproduce formats (3-head configuration): full track (1 channel), 2-track (2 channel), 1/4-track (2 channel) • All versions include 2 channel electronics
- Position for a fourth head • Choice of 2 speed pairs • Universal power supply • Separate 3-position switches for bias, equalization, and record level selection • Adjustable pitch range (variable speed control) • NAB/IEC equalization (switchable)

New Convenience

- Feather-touch transport controls • Handles 10 1/2", 7" and 5" reels • Switchable reel size (tension) selector • Tape lifter defeat lever (cue control) • Edit button for dump edit in play mode • Rapid-response electronic motion sensing • 3 mounting

- configurations • Fully remotable, electronically-controlled transport • Professional XLR input/output connectors • 4-digit tape counter with rewind-stop memory

Improved Performance

- 3-motor tape drive system with capstan-servo D.C. motor • Synchronous reproduce system • Improved over-all performance for frequency response, S/N, cross-talk, flutter and wow, erasure depth • Full IC logic circuitry • End of tape auto shut-off (tension arm actuated)

Improved Manual Controls

- "Indicator" push-button electronic controls • Calibrated record/reproduce controls

Improved Tape Guidance

- Sapphire guides • Improved tape tracking

| Speed IN/S | Heads (Tracks) | Mounting | Catalog Number | Price |
|--|-------------------|-----------|-------------------|------------|
| ATR-700-1, Single Channel, Full Track | | | | |
| 3-3/4 - 7-1/2 | Full | Table-Top | 4010270 | \$1,895.00 |
| 7-1/2 - 15 | Full | Table-Top | 4010271 | \$1,895.00 |
| ATR-700-2, Two Channel (1/2 Track Stereo) | | | | |
| 3-3/4 - 7-1/2 | Two | Table-Top | 4010272 | \$1,895.00 |
| 7-1/2 - 15 | Two | Table-Top | 4010273 | \$1,895.00 |
| ATR-700-4, Two Channel, Four Track (1/4 Track Stereo) | | | | |
| 3-3/4 - 7-1/2 | Four | Table-Top | 4010274 | \$1,895.00 |
| 7-1/2 - 15 | Four | Table-Top | 4010275 | \$1,895.00 |

AG-440C



Improved Manual Controls

- "Indicator" push-button electronic controls • Calibrated record/reproduce controls

Improved Tape Guidance

- Sapphire guides • Improved tape tracking

Improved Sel-Sync

- Improved response at 15 in/s • Improved signal-to-noise ratio, equal to reproduce • Automatic monitor switching from Sel-Sync Synchronizer to Input

Improved Edit Mode

- Simplified control • Take-up reel remains stationary when tape is spilled

Improved Serviceability

- Plug-in etched boards for record control

and transport logic circuitry

MODELS

The AG-440C is available in full-track, 1/2-track, 2-track and 4-track configurations for 1/4-inch tape, and a 4-track configuration for 1/2-inch tape. Options include portable or console models, or unmounted machines for rack installation.

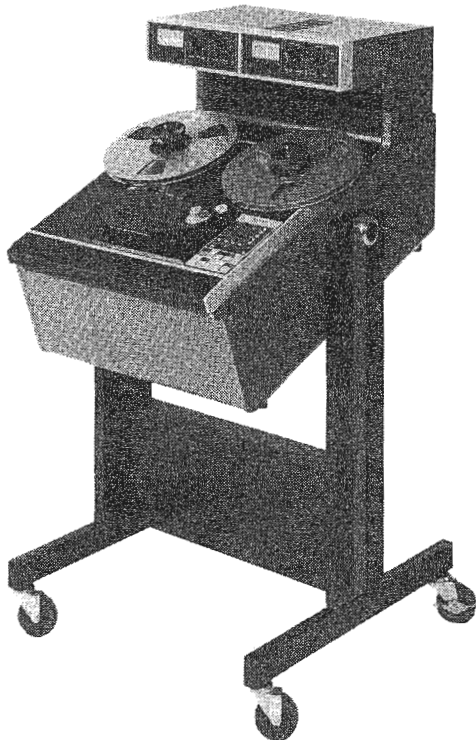
The AG-440C-8 is an 8-track servo-only version which shares the basic advantages of the smaller machines, but offers greater production versatility. The machine is especially noteworthy for the ease and accuracy with which it handles 10 1/2-inch reels of 1-inch tape.

| Speed IN/S NAB | Heads (Tracks) | Mounting | Catalog Number | | Suggested User Price | With Servo Capstan Motor | |
|---|-------------------|--------------|----------------|------------|-------------------------|-----------------------------|-------------|
| | | | 60 Hz | 50 Hz | | Catalog Number | Price |
| AG-440C-1, Single Channel, 1/4" Tape Width | | | | | | | |
| 7 1/2-15 | Full | Unmounted | 4010202-01 | 4010202-02 | \$3,240.00 | 4010202-25 | \$3,700.00 |
| | | Console | 4010202-03 | 4010202-04 | \$3,795.00 | 4010202-26 | \$4,260.00 |
| AG-440C-2, Two Channel, 1/4" Tape Width | | | | | | | |
| 7 1/2-15 | Two | Unmounted | 4010203-01 | 4010203-02 | \$4,395.00 | 4010203-25 | \$4,845.00 |
| | | Console | 4010203-03 | 4010203-04 | \$4,995.00 | 4010203-26 | \$5,445.00 |
| AG-440C-4, Four Channel, 1/2" Tape Width | | | | | | | |
| 7 1/2-15 | Four | Unmounted | | | | 4010204-07 | \$7,000.00 |
| | | Console | | | | 4010204-08 | \$7,640.00 |
| AG-440C-8, Eight Channel, 1" Tape Width | | | | | | | |
| 7 1/2-15 15-30 | Eight | Console Only | | | | 4010205-01 | \$12,120.00 |
| | | Console Only | | | | 4010205-02 | \$12,120.00 |

Prices and specifications subject to change without notice



AMPEX



ATR-100

- "Transparent" recording and re-producing fidelity
- Ferrite heads, movable head gate, entire head assembly easily removable.
- Gentle, precise tape handling, positive motion control, dynamic braking.
- Reel sizes from 2" to 14".
- Speed pairs range from 3.75 to 30 i.p.s.
- Calculator-like matrix-display control panel, removable for remote control.
- L.E.D. status indicators.
- Electronic tape timer reads in hours/minutes/seconds.
- Capstan knob for precise finger-tip tape positioning.
- Fast winding speed — 60 sec. for 2,400 ft. reel.
- Operates on a variety of line power sources.

| MODEL NUMBER | CATALOG NUMBER | PRICE |
|---|----------------|------------|
| ATR-101, Single Channel, 1/4" Tape Width *System | 4010294-00 | \$5,696.00 |
| ATR-102, Two Channel, 1/4" Tape Width *System | 4010295-00 | \$6,740.00 |
| ATR-102S, European Stereo, 1/4" Tape Width *System | 4010297-00 | \$6,740.00 |
| ATR-104, Four Channel, 1/2" Tape Width *System | 4010296-00 | \$8,865.00 |

*System: Including Basic Machine, I/O Mainframe, I/O Modules, mounted in cabinet.

| MOUNTING OPTIONS: | CATALOG NUMBER | PRICE | | | |
|---|----------------|--------|---|------------|----------|
| Cabinet 1 or 2 Channel | 4010258-AE | 170.00 | 1/2" Guide, Supply | 4041240-AC | 45.00 |
| Cabinet 4 Channel | 4010258-AF | 190.00 | 1/2" Guide, Take-up | 4041240-AD | 60.00 |
| Roll-around pedestal* | 4020426-02 | 360.00 | Flux Loop | 4020423-01 | 90.00 |
| Rack Mount—fixed | 4010252-01 | 95.00 | Flux Loop Equalizing Amplifier | 4020424-01 | 400.00 |
| Rack Mount—slides | 4010253-01 | 340.00 | Input/Output Module Extender Board | 4020430-01 | 95.00 |
| Portable Case | 4010259-01 | 290.00 | Input/Output Level Set Assembly | 4020425-01 | 90.00 |
| *Cabinet is a pre-requisite for the roll-around pedestal. | | | Accessory Connector/"Y" Cable | 4020432-01 | 160.00 |
| | | | Scrape Flutter Idler Kit | 4030402-AB | 40.00 |
| | | | Dolby/DBX Interface Kit | 4020433-01 | 275.00 |
| | | | Auditec MKII | 4010241-05 | 2,335.00 |
| | | | Synclock (w/o Pilot Head or Preamp) | 4020391-10 | 1,425.00 |
| | | | Multi-Point Search-to-Cue | 4010284-01 | 1,675.00 |
| | | | Single Point Search to Cue | 4010282-01 | 525.00 |
| | | | 4-Speed Padnet PWA** | 4050901-01 | 320.00 |
| | | | Sync Lock Cable | 4050867-01 | 60.00 |
| | | | VS-10 Variable Speed Oscillator (without Display) | 4010217-07 | 430.00 |
| | | | VS-10 Variable Speed Oscillator with Display | 4010217-08 | 870.00 |

**If Factory installed, deduct price of standard 2-speed Padnet (#4050755-01)

Prices and specifications subject to change without notice





ANDREW

BROADCAST TRANSMISSION LINE

ORDER NO.

| | | |
|--------------|--|------------|
| | Andrew 7/8" Coax and Hardware | |
| 618-0148-000 | Andrew HJ5-50, 7/8", 50 ohm Jacketed Heliax | \$3.46/ft. |
| 620-0192-000 | Andrew 75AR, 7/8" 50 ohm flange, 50 ohm | 52.00 |
| 620-0195-000 | Andrew 75AN Type N female | 40.00 |
| 620-0436-000 | Andrew 75AW, Type N plug | 40.00 |
| 620-0054-000 | Andrew 1060 90 D. Elbow | 72.00 |
| 620-0388-000 | Andrew 75AG, 7/8" EIA Flange/Gas Barrier, 50 ohm | 76.00 |
| 620-0019-000 | Andrew 1260A, 7/8" EIA Gas Barrier, 50 ohm | 78.00 |
| 620-0303-000 | Andrew 19256B, Hoisting Kit for 7/8" heliax | 23.00 |
| 620-0304-000 | Andrew 11662-2 Insulated Hanger for 7/8" heliax | 10.00 |
| 620-0372-000 | Andrew 40993A-5 Grounding Kit for 7/8" jacketed | 12.00 |
| 620-1507-000 | Andrew 42396-5 Hanger Kit of 10 Non-Insulated Hangers for 7/8" heliax | 26.00 |
| 620-0268-000 | Andrew 75AT 7/8" Air End Terminal | 90.00 |
| | Andrew 1-5/8" Coax and Hardware | |
| 618-0198-000 | Andrew HJ7-50A, 1-5/8", 50 ohm Jacketed Heliax | 7.50/ft. |
| 620-0351-000 | Andrew 87R, 1-5/8" EIA Flange, 50 ohm | 105.00 |
| 620-0385-000 | Andrew 87G, 1-5/8" EIA Flange/Gas Barrier, 50 ohm | 124.00 |
| 620-0145-000 | Andrew 1261B, 1-5/8" EIA Gas Barrier, 50 ohm | 106.00 |
| 620-0089-000 | Andrew 1860A Reducer, 1-5/8" EIA, 50 ohm | 88.00 |
| 620-0055-000 | Andrew 1061, 1-5/8" 90 D. EIA Miter Elbow | 110.00 |
| 620-0221-000 | Andrew 24312A Hoisting Kit for 1-5/8" Heliax | 30.00 |
| 620-0426-000 | Andrew 33948-3 Insulated Hanger, 1-5/8" | 18.00 |
| 620-0625-000 | Andrew 42396-2 Hanger Kit of 10 Non-Insulated Hangers for 1-5/8" Heliax | 26.00 |
| 620-0078-000 | Andrew 13550 Round member Hanger Adaptor, for tower legs up to 3" diameter — required w/33948-3 | 9.00 |
| 620-0079-000 | Andrew 13555A Angular Member Hanger Adaptor, for angle member towers — required w/33948-3 | 9.50 |
| 620-0373-000 | Andrew 40993A-2 Grounding Kit for 1-5/8" Jacketed Heliax | 12.00 |
| | Andrew 3" Coax and Hardware | |
| 618-0170-000 | Andrew HJ8-50B, 3", 50 ohm Jacketed Heliax | 14.70/ft. |
| 620-0312-000 | Andrew 78ARM, 3-1/8" EIA Flange, 50 ohm, male | 180.00 |
| 620-0420-000 | Andrew 78ARF, 3-1/8" EIA Flange, 50 ohm, female (does not include inner connector) | 175.00 |
| 620-0376-000 | Andrew 78AGM, 3-1/8" EIA Flange/Gas Barrier, male, 50 ohm | 200.00 |
| 620-0435-000 | Andrew 78AS Reducer/Connector | 220.00 |
| 620-0421-000 | Andrew 78AGF, 3-1/8" EIA Flange/Gas Barrier, 50 ohm female (does not include inner connector) | 195.00 |
| 620-0021-000 | Andrew 1262B, 3-1/8" EIA Gas Barrier, 50 ohm (captive male inner connector) | 220.00 |
| 620-0090-000 | Andrew 1861 Reducer, 3" to 1-5/8" EIA, 50 ohm, (captive male inner connector) | 120.00 |
| 620-0056-000 | Andrew 1062, 3-1/8" EIA, 90 Degree Miter Elbow | 190.00 |
| 620-0017-000 | Andrew 15093A Inner Connector for 3" Heliax | 38.00 |
| 620-0341-000 | Andrew 26985A Hoisting Kit for 3" Heliax | 44.00 |
| 620-0425-000 | Andrew 33948-2 Insulated Hanger, 3" | 32.00 |
| 620-0078-000 | Andrew 13550 Round Member Hanger Adapter for tower legs up to 3" diameter — required with 33948-2 | 9.00 |
| 620-0079-000 | Andrew 13555A Angular Member Hanger Adapter required with 33948-2 | 9.50 |
| 620-0375-000 | Andrew 40993A-11 Grounding Kit for 3" Jacketed Heliax | 18.00 |
| | NOTE: Female flanged end fittings do not include inner connectors. When 3" heliax is used with circular polarized antenna or with horizontal cycloid with 3" input, the male EIA flange should be specified or an inner connector (15093) must be ordered. | |
| 620-0467-000 | 31670-1 (1" - 2" leg member) Kit of 10 Round Member Hanger Adaptors | 11.00 |
| 620-0468-000 | 31670-2 (2" - 3" leg member) Kit of 10 Round Member Hanger Adaptors | 13.00 |
| 620-1506-000 | Andrew 31766-11 Hanger Kit of 10 Non-Insulated Hangers for 3" Heliax | 34.00 |

Prices and specifications subject to change without notice





ANDREW

BROADCAST TRANSMISSION LINE

| | | |
|------------------|--|-------------|
| ORDER NO. | Andrew 4" Coax and Hardware | |
| 618-0338-000 | Andrew HJ11-50, 4", 50 ohm Jacketed Heliax | \$16.80/ft. |
| 620-1067-000 | Andrew 81RF, 3-1/8" EIA Flange Connector, female (does not include inner connector) | 280.00 |
| 620-1068-000 | Andrew 81GF, 3-1/8" EIA Flange Connector, female, including gas barrier (does not include inner connector) | 300.00 |
| 620-0017-000 | Andrew 15093A, Coated Inner Connector for above 3-1/8" EIA flange | 38.00 |
| 620-1069-000 | Andrew 81Z Splice | 300.00 |
| 620-0056-000 | Andrew 1062, 90 D. 3-1/8" EIA Miter Elbow | 190.00 |
| 620-0090-000 | Andrew 1861, Reducer, 3-1/8" EIA to 1-5/8" EIA | 120.00 |
| 620-1070-000 | Andrew 31766-10 Hanger Kit, (10 hangers) for 4" heliax | 38.00 |
| 620-1071-000 | Andrew 31768A Angle Member Hanger Adapter Kit, 10 adapters to mount hangers to towers | 32.00 |
| 620-1072-000 | Andrew 41108A-1 Round Member Tower Adapters, includes 10 adapters for 3" to 4" diameter tower members | 80.00 |
| 620-1073-000 | Andrew 34759 Hoisting Grips for 4" Heliax | 52.00 |
| 620-1074-000 | Andrew 40993A-10 Grounding Kit for 4" Heliax | 18.00 |
| 620-1075-000 | Andrew 33948-4 Insulated Hangers for 4" Heliax | 38.00 |
| 620-0079-000 | Andrew 13555A Angle Adapter for Insulated Hanger | 9.50 |
| 620-0078-000 | Andrew 13550 Round Member Adapter for Insulated Hangers for tower legs up to 3" diameter | 9.00 |
| | Andrew-LDF Form Dielectric Cable-1/2" | |
| 618-0466-000 | Andrew LDF4-50, 1/2", 50 ohm Jacketed Foam Heliax | 1.12 |
| 620-1512-000 | Andrew L44N N Jack (Female) mates with UG-21, for use with 1/2" LDF heliax | 13.20 |
| 620-1513-000 | Andrew L44P UHF Plug (male) mates with SO-239A for use with 1/2" LDF heliax | 11.00 |
| 620-1514-000 | Andrew L44R 7/8" EIA Flange, not pressure tight, includes inner connector for use with 1/2" LDF heliax | 46.00 |
| 620-1686-000 | Andrew L44T End Connector for LDF4-50 1/2" 50 ohm, jacketed foam heliax | 46.00 |
| 620-1515-000 | Andrew L44U UHF Jack (Female) mates with PL-259A for use with 1/2" LDF heliax | 11.00 |
| 620-1516-000 | Andrew L44W N Plug (Male) mates with UG-23 for use with 1/2" LDF heliax | 13.20 |
| 620-1517-000 | Andrew L44Z Splice for use with 1/2" LDF heliax | 46.00 |
| | Andrew-LDF Foam Dielectric Cable-7/8" | |
| 618-0467-000 | Andrew LDF5-50, 7/8", 50 ohm Jacketed Foam Heliax | 2.94 |
| 620-1519-000 | Andrew L45N N Jack (Female) mates with UG-21, for use with 7/8" LDF Heliax | 32.00 |
| 620-1520-000 | Andrew L45P UHF Plug (Male) mates with SO-239A for use with 7/8" LDF Heliax | 30.00 |
| 620-1521-000 | Andrew L45R 7/8" EIA Flange, not pressure tight, includes Inner Connector | 46.00 |
| 620-1522-000 | Andrew L45U UHF Jack (Female) mates with PL259A for use with 7/8" LDF heliax | 30.00 |
| 620-1523-000 | Andrew L45W N Plug (Male) mates with UG-23 for use with 7/8" LDF heliax | 32.00 |
| 620-1524-000 | Andrew L45Z Splice for use with 7/8" LDF heliax | 50.00 |
| 620-1600-000 | Andrew L45T End Terminal for LDF5-50 (for strap type connection) | 56.00 |



Prices and specifications subject to change without notice



ANDREW

BROADCAST TRANSMISSION LINE

| ORDER NO. | Andrew | |
|------------------|--|-----------|
| 618-0203-000 | Andrew FHJ2-50A, 3/8" foam heliax | \$.86/ft. |
| 618-0224-000 | Andrew FHJ-1-50, 1/4" foam heliax | .60/ft. |
| 620-1584-000 | Andrew 43211 Hanger Kit, consisting of ten (10) stainless steel clamps for 1/2" heliax | 24.00 |
| 620-0298-000 | Andrew 44AP, UHF plug (male) for 1/2" foam heliax | 12.00 |
| 620-0302-000 | Andrew 44AW type N Plug (male) for 1/2" foam heliax | 13.50 |
| 620-0301-000 | Andrew 44AU UHF jack (female) for 1/2" foam heliax | 12.00 |
| 620-0368-000 | Andrew 44AN type N jack (female) for 1/2" foam heliax | 13.50 |
| 620-0340-000 | Andrew 45AT End Terminal Connector for 7/8", 50 ohm | 50.00 |
| 620-0393-000 | Andrew 45AR, 7/8" EIA flange, 50 ohm for foam | 44.00 |
| 620-0342-000 | Andrew 45AP UHF plug for 7/8" foam heliax, 50 ohm | 32.00 |
| 620-0317-000 | Andrew 45AU UHF jack for 7/8" foam heliax, 50 ohm | 32.00 |
| 620-0344-000 | Andrew 45AW type N plug for 7/8" foam heliax, 50 ohm | 34.00 |
| 620-0343-000 | Andrew 45AN type N jack for 7/8" foam heliax | 34.00 |
| 618-0193-000 | Andrew FHJ7-50, 1-5/8" 50 ohm jacketed foam heliax | 6.30/ft. |
| 620-0346-000 | Andrew 47R EIA flange for 1-5/8" foam heliax | 104.00 |

Pressurization Equipment and Accessories

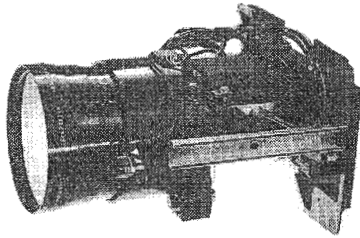
| | | |
|--------------|--|---------|
| 620-1430-000 | Andrew 1920D Automatic Dehydrator 1.3 cu. ft./min. (36 liters/min) dry air output 120V, 60 Hz, 775 watts | 1150.00 |
| 620-1431-000 | Andrew 1930B Automatic Dehydrator 0.2 cu. ft./min. (5.4 liters/min) dry air output 120V, 60 Hz, 400 watts | 800.00 |
| 620-1432-000 | Andrew 1933C spare parts kit for Type 1930B Dehydrator | 36.00 |
| 620-1433-000 | Andrew 40525A Manual Dehydrator 0.9 cu. ft./min. (25 liters/min) dry air output 120V, 60 Hz, 275 watts | 370.00 |
| 620-1464-000 | Andrew 40525A-3 Manual Dehydrator, same as above except 240V, 50 Hz | 430.00 |
| 620-1449-000 | Andrew 210 Replacement Desiccant for Type 40525 Dehydrator — 2 required | 3.50 |
| 620-0132-000 | Andrew 878A dry air hand pump | 1390.00 |
| 620-0131-000 | Andrew 858C nitrogen tank fittings | 140.00 |
| 620-0076-000 | Andrew 3500A pressure gauge | 6.00 |
| 620-0449-000 | Andrew 3028 pipe tee | 1.00 |
| 620-0109-000 | Andrew 3017 gas inlet valve | 1.30 |
| 620-0111-000 | Andrew 12395-1 wraplock kit | 26.00 |

Prices and specifications subject to change without notice



angénieux

The Trusted Name in Quality Lenses

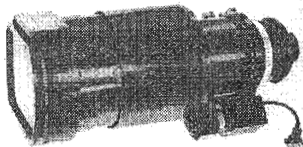


angenieux 10x

Specifications

Tube format 1"
 Type 10x14
 Focal length 14-140mm
 Continuous zoom range 10x
 Maximum aperture f/1.6
 Photometric factor 1.21
 Image field diagonal 16mm
 Minimum object distance 0.95m, 3 ft.
 Minimum object distance with close-up 0.50m, 20"
 Horizontal angle of view 51°-5°
 Vertical angle of view 38°-4°
 Smallest object field . . . 84x111mm, 3.3x4.4"
 Smallest object field with close-up 42x55mm
 1.7x2.2"

Weight; manual package includes lens, mounting plate, iris servo and lens cover 15kg, 33 lbs.

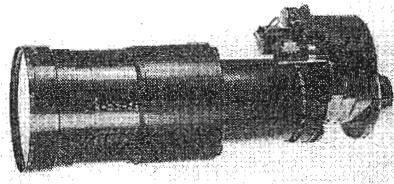


angenieux 12x

Specifications

Tube format 1"
 Type 12x12.5
 Focal length 12.5-150mm
 Continuous zoom range 12x
 Maximum aperture (constant throughout entire zoom range) f/1.5
 Photometric factor 1.10
 Image field diagonal 16mm
 Minimum object distance 0.95m, 3 ft.
 Minimum object distance with close-up 0.50m, 20"
 Minimum object distance for special configuration 0.40m, 16"
 Horizontal angle of view 56°-5°
 Vertical angle of view 43°-4°
 Smallest object field . . . 82x109mm, 3.2x4.3"
 Smallest object field with close-up 52x56mm
 1.65x2.20"

Smallest object field for special configuration 46x61mm, 1.8x2.4"



angenieux 15x

Specifications

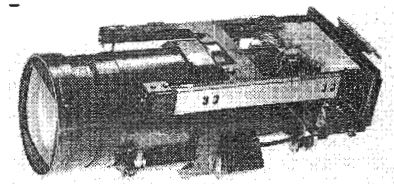
Tube format 1"
 Type 15x14
 Focal length 14-210mm
 Continuous zoom range 15x
 Maximum aperture f/1.6-f/2.4
 Photometric factor 1.21
 Image field diagonal 16mm
 Minimum object distance 0.64m, 25"
 Minimum object distance with close-up 0.32m, 12.6"
 Horizontal angle of view 49°-3 1/2°
 Vertical angle of view 38°-2 1/2°
 Smallest object field . . . 41x55mm, 1.6x2.2"
 Smallest object field with close-up 21x28mm
 0.8x1.1"

1.5x - 2x - 2.5x range extenders may be available.

When used, multiply the focal length and aperture of the lens by the range extender power.

Focusing distance remains unchanged.

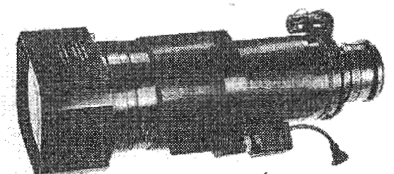
Dimensions of the smallest object field are divided by this power.



angenieux 42x

Specifications

Tube format 1"
 Type 42x12.5
 Focal length 12.5-525mm
 Continuous zoom range 42x
 Maximum aperture (see also charts below) f/1.5-f/5.3
 Photometric factor 1.26
 Image field diagonal 16mm
 Minimum object distance 0.64m, 25"
 Minimum object distance with close-up 0.32m, 12"
 Horizontal angle of view 56°-1 1/2°
 Vertical angle of view 43°-1°
 Smallest object field . . . 17x22mm, 0.7x0.9"
 Smallest object field with close-up .8x11mm
 0.3x0.4"



angenieux tele 42x

Specifications

Tube format 1"
 Type 42x24
 Focal length 24-1000mm
 Continuous zoom range 42x
 Maximum aperture (see also charts below) f/1.7-f/5.7
 Photometric factor 1.26
 Image field diagonal 16mm
 Minimum object distance 4m, 13 ft.
 Minimum object distance with close-up N°1 2m, 6.5 ft.
 Minimum object distance with close-up N°2 1m, 3 ft.
 Horizontal angle of view 30°-0.7°
 Vertical angle of view 22°-0.5°
 Smallest object field . . . 37x50mm, 1.5x2"
 Smallest object field with close-up N° 2 9.2x12.5mm, 0.4x0.5"

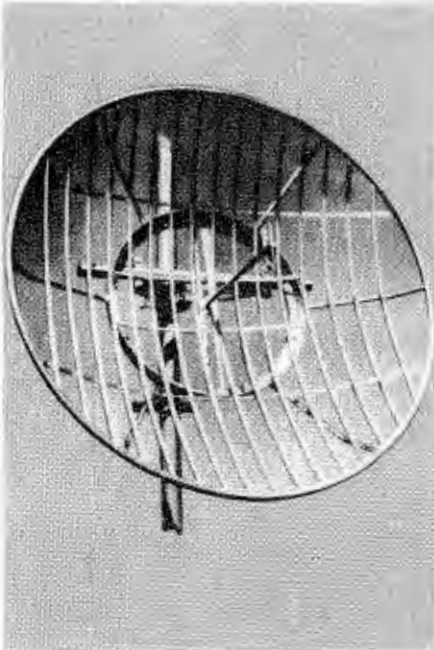
| | 10x14 | 12x12.5 | 15x14 |
|------------------------------|----------|----------|----------|
| MANUAL ZOOM/ MANUAL FOCUS | \$16,280 | \$27,500 | \$19,950 |
| SERVO ZOOM/ MANUAL FOCUS | \$21,245 | \$32,465 | \$24,915 |
| SERVO ZOOM/ SERVO FOCUS | \$24,420 | \$35,640 | \$28,090 |
| | 42x12.5 | 42x24 | |
| MANUAL ZOOM/ MANUAL FOCUS | \$26,500 | \$35,000 | |
| SERVO ZOOM/ MANUAL FOCUS | \$31,465 | \$39,965 | |
| SERVO ZOOM/ SERVO FOCUS | \$34,640 | \$43,140 | |



Prices and specifications subject to change without notice

ANIXTER-MARK

MICROWAVE GRID PARABOLIC ANTENNAS



Anixter-Mark offers a variety of sizes of Heli-Arc welded aluminum Multi-Element Grid Parabolas for point-to-point relay operation in the 890-960 megahertz frequency range. The patented (U.S. No. 2,850,735; Canada No. 545,296) grid construction is lightweight, yet extremely strong. One of the outstanding advantages of the grid antenna is it has wind loading characteristics of only 25 to 40% of comparable size solid parabolas.

Heated grid parabolas come with completely installed de-icing equipment. The lead jacketed heater cable is securely mounted to the back side of each grid element and terminated in a weatherproof cast aluminum enclosure. The thermostat is preset to activate when the temperature drops to the ice forming range. De-icing power is applied only between 25 and 35 degrees Fahrenheit.

Standard input termination of all parabolas in the 890-960 MHz range is 7/8 inch EIA swivel flange. Type "N" female termination non-pressurized feed is available on all models.

VSWR is 1.3:1 or better on all antennas listed. Low VSWR to 1.06:1 is also available (see specs). When ordering, please specify: size, exact operating frequency, pressurized or non-pressurized, heated or non-heated.

SPECIFICATIONS 890 - 960 MHz

| Diameter | Model Number | Gain-dBi Midband | Half Power B/W | F/B Ratio | Max VSWR | | Windthrust 100 MPH | |
|----------|--------------|------------------|----------------|-----------|----------|-----|--------------------|------|
| | | | | | STD | LOW | Grid vs. Solid*** | |
| 4' | P-948GR | 18.9 | 19.8° | 23 | 1.3 | * | 110 | 480 |
| 6' | P-972GR | 22.0 | 11.0° | 28 | 1.3 | * | 250 | 1070 |
| 8' | P-996GR | 25.0 | 9.3° | 29 | 1.3 | * | 500 | 2200 |
| 10' | P-9120GR | 27.0 | 8.0° | 30 | 1.3 | * | 700 | 2990 |
| 15' | P-9180G | 30.0 | 5.2° | 32 | 1.3 | * | 1200 | 6600 |

| Mount to 1.9" - 3.5" | | 890 - 960 MHz Pressurized* | | Mount to 4" IPS | | For Heated Grid Antennas Add "/HC" After Model Number. Add The Following To Price: | |
|----------------------|-------------|----------------------------|-------------|-----------------|-----|--|--|
| 4' | P-948GR-M1 | \$ 489.00 | P-948GR-M2 | \$ 551.00 | 4' | \$ 514.00 | |
| 6' | P-972GR-M1 | 673.00 | P-972GR-M2 | 737.00 | 6' | 590.00 | |
| 8' | P-996GR-M1 | 1207.00 | P-996GR-M2 | 1301.00 | 8' | 800.00 | |
| 10' | P-9120GR-M1 | 1488.00 | P-9120GR-M2 | 1578.00 | 10' | 835.00 | |
| 12' | | | P-9144GR-M2 | 2600.00 | 12' | 1050.00 | |
| 15' | | | P-9180GR-M2 | 5564.00 | 15' | 1340.00 | |

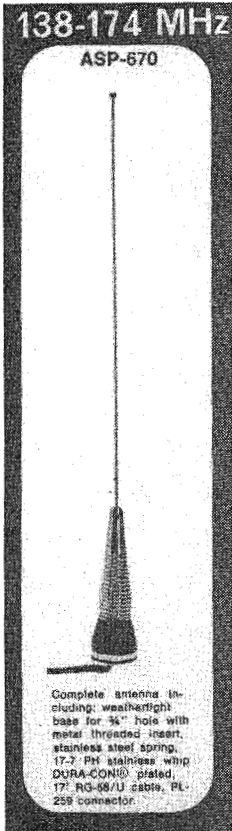
| | | 890 - 960 MHz Non-Pressurized* | | | |
|-----|--------------|--------------------------------|--------------|-----------|--|
| 4' | P-948GRN-M1 | \$ 489.00 | P-948GRN-M2 | \$ 551.00 | Connectors: Pressurized: 7/8" EIA Non-Pressurized: Type "N" Female |
| 6' | P-972GRN-M1 | 673.00 | P-972GRN-M2 | 737.00 | |
| 8' | P-996GRN-M1 | 1207.00 | P-996GRN-M2 | 1301.00 | |
| 10' | P-9120GRN-M1 | 1488.00 | P-9120GRN-M2 | 1578.00 | |
| 12' | | | P-9144GRN-M2 | 2600.00 | |
| 15' | | | P-9180GRN-M2 | 5564.00 | |

* Low VSWR Application — \$110 additional.

Prices and specifications subject to change without notice



ANTENNA SPECIALISTS: VEHICULAR ANTENNAS



Model ASP-670 Series 3 dB Gain High Performance Vehicular Antenna specifications:

Electrical

Gain: 3 dB
 Maximum Power: 100 watts
 Frequency Range: 138-174 MHz
 VSWR: Less than 1.5:1
 Nominal Impedance: ... 50 ohms
 Transformer: 16 AWG copper wire, low loss coil, waterproof cover

Mechanical

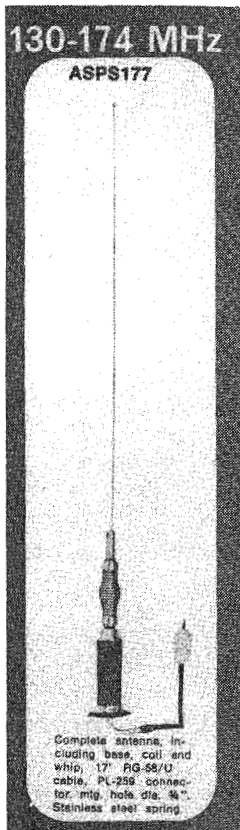
Radiator Material: 17-7 PH stainless steel DURA-CON® plated for high conductivity
 Spring Material: Stainless steel
 Base and Fittings: Molded plastic with metal threaded insert, silver plated contacts
 Cable: 17 feet RG-58/U where furnished
 Connector: PL-259 where furnished
 Whip Length: 49" maximum, 54" maximum including spring and base

description:

Price: \$32.00

Featuring a $\frac{3}{8}$ wavelength DURA-CON® plated whip, the attractive appearance of these models is in keeping with new vehicular styling. The spring and whip may be removed leaving only a 1-3/16" high waterproof coil for car wash clearance and when rooftop mounted, the coil may be removed without fear of water seepage.

Coils are low loss, shock resistant, directly fed ungrounded configuration and encased in weatherproof plastic base with metal threaded insert. Whips are the finest 17-7 PH stainless steel, copper-nickel plated for maximum efficiency. Flat surface mounts are Teflon® insulated aluminum and plated steel.



Model ASPS177 Series 3 dB Gain High Performance Vehicular Antenna Series For Professional Environment specifications:

Electrical

Gain: 3 dB
 Maximum Power: Over 100 watts
 Frequency Range: 130-174 MHz
 VSWR: Less than 1.5:1
 Nominal Impedance: ... 50 ohms
 Transformer: DC grounded, shunt-fed, PVC jacket, weatherproof, shock resistant, dia. 1," length 3 1/4"

Mechanical

Radiator Material: 17-7 PH stainless steel
 Spring Material: Stainless steel
 Base and Fittings: Chrome plated brass or stainless steel
 Cable: RG-58/U where furnished - length specified under model description
 Connector: PL-259 where furnished
 Whip Length: 49" maximum, with spring; 51 1/2" maximum
 Antenna Connections: .. Solderless

description :

Price: \$35.50

Exceptional versatility, outstanding performance and mechanical reliability have made these 3 dB gain vehicular antennas the standard of performance in communications systems for over two decades. A broad selection of mounting options offers a solution to virtually every installation problem.

All fittings are chrome plated brass for appearance and long lasting performance. Coils are shock-resistant, weatherproof, shunt-fed and encased in PVC jackets. Whips are the finest 17-7 PH stainless steel (will bend in a full circle without setting) and feature an adapter providing 1 1/4" adjustment for fine tuning after cutting to chart-specified length. All mounting from outside the vehicle.



Prices and specifications subject to change without notice



the sound column

Wide range for music or voice

professional speaker/baffle systems

all completely preassembled and prewired
...no soldering necessary!

Standard WB-8D wall baffles with 8" speakers

A standard of the industry, these units are available in complete, ready to install packages. Baffle, speakers, 70.7 transformer, volume control...any way you need it.

WB-18 Series—8" speaker with 6 watt capacity, 8 ohms impedance. Size: 10 3/4" high x 10" wide x 6 1/2" deep. Angle of front 16°.

WB-18CS—Speaker system. Shp. Wt. 4 3/4 lbs. (2.13 kg.) \$24.80

WB-18CSV—Speaker system, volume control. Shp. Wt. 4 3/4 lbs. (2.13 kg.) \$27.90

WB-18CST—Speaker system, 70.7-V* transformer. Shp. Wt. 5 lbs. (2.25 kg.) \$33.90

WB-18CSVT—Speaker system, 70.7-V* transformer, volume control. Shp. Wt. 5 1/2 lbs. (2.43 kg.) \$36.70

WB-48 Series—8" speaker with 10 watt capacity, 8 ohms impedance. Size: same as WB-18

WB-48CS—Speaker system. Shp. Wt. 5 1/4 lbs. \$28.40

WB-48CSV—Speaker system, volume control. Shp. Wt. 5 1/4 lbs. \$31.45

WB-48CST—Speaker system, 70.7-V* transformer. Shp. Wt. 5 1/2 lbs. (2.43 kg.) \$37.60

wall baffles

Regular wall baffles contractors top seller for years

Argos Regular Wall Baffles are the most durable you can buy. Rugged construction not only increases rigidity but also eliminates the possibility of baffle resonance and sound distortion. Finished in durable Walnut or Birch wood-grain vinyl with rugged cone grilles, these attractive baffles blend smoothly with almost any installation location. Just screw the Speedy Mounting Clips to the wall and "hang" the baffle as you would a picture. Clips and speaker mounting hardware included.

WB-4/5D—for 4"/5" speaker, maximum speaker depth 2 3/4" (6.9 cm) \$11.50
Capacity 100 cubic inches (1640 cu. cm).
Shp. wt.: 2 lbs. (.91 kg.)

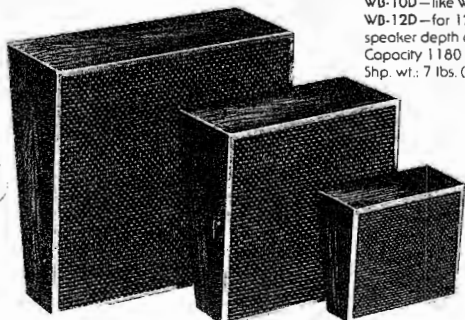
WB-6D—like WB-6D but with 6" speaker. \$13.95

WB-8D—for 8" speaker, maximum speaker depth 4 3/4" (11.1 cm) \$13.95
Capacity 400 cubic inches (6550 cu. cm).
Shp. wt.: 4 lbs. (1.82 kg.)

WB-6 x 9D—like WB-8D except for 6" x 9" speaker \$13.95

WB-10D—like WB-12D but with 10" speaker \$20.50

WB-12D—for 12" speaker, maximum speaker depth 6 3/8" (16.2 cm)
Capacity 1180 cubic inches (19,400 cu. cm)
Shp. wt.: 7 lbs. (3.18 kg.) \$20.50



Prices and Specifications Subject to Change Without Notice.

Model 5D-1064 \$108.35

Designed for use where clarity of speech is of prime importance and where room acoustics or microphone placement cause difficulties such as feed-back or reverberations. It is used for both speaking and singing and is ideal for smaller churches, halls and meeting rooms with moderate power requirements widely used for paging in restaurants, clubs and lobbies.

A low-frequency roll-off of 6 dB per octave to minimize reverberation is part of the column design. The attractive wood housing is finished in walnut clear-guard vinyl with durable matching coned fiber grille.

SPECIFICATIONS

Frequency Range: 200 to 10,000 Hz.
Power Capacity: 30 Watts RMS.
Nominal Impedance: 16 Ohms
Vertical Sound Projection Angle: 30°
Horizontal Sound Projection Angle: 120°
Sound Pressure Level: 94 dB at 30'; 30 Watts
Speakers: Six 5-1/4" special twin cone design
Dimensions: 30-1/4" H x 6-5/8" W x 3-1/8" D
(76.8 x 16.8 x 7.9 cm)
Shipping Wt.: 12 lbs. (5.4 Kg.)

Model 5D-1065 \$108.35

Specifications and performance are identical except for new sculptured look grille.

Model 5D-1100 \$183.35

A larger, more powerful column for a longer throw. Exceptional clarity of voice for both speaking and singing. Ideal for churches, auditoriums, halls and meeting rooms. Cures feedback and gives smooth, even coverage in the most difficult installations.

Low frequency roll-off of 6 dB per octave to minimize reverberation is part of the column design. Adjustable angle feature permits broadening of the vertical dispersion angle from 15° to 22° if desired. Wood housing in walnut woodgrain vinyl with durable matching coned fiber grille.

SPECIFICATIONS

Frequency Range: 200 to 10,000 Hz.
Power Capacity: 50 Watts RMS.
Nominal Impedance: 16 Ohms
Vertical Sound Projection Angle: 15° Adjustable to 22°
Horizontal Sound Projection Angle: 120°
Sound Pressure Level: 99 dB at 30'; 50 Watts
Speakers: Six 5 1/4" twin cone, Four 5 1/4" single cone.
Dimensions: 49-1/4" H x 7" W x 6" D
(125.0 x 17.7 x 15.2 cm)
Shipping Wt.: 25 lbs. (11.2 kg.)

Model 5D-1101 \$208.35

Identical to Model 5D-1100 except finished in beautiful hand rubbed 3/4" oiled walnut. Ideal for those locations requiring a total fine furniture appearance.
Shipping Wt.: 29 lbs. (13.0 Kg.)

Model MSD-1060 \$208.35

Designed for auditoriums, large convention halls or where high power is required. The "brute" can be used for both voice and music. In many actual applications, two MSD-1060's provided uniform sound and intelligibility in areas where multiple horns, baffles and ceiling speakers failed. Special hardware accessory kit allows 2 way focusing. Order kit no. 5DA-1004. Walnut wood-grain vinyl finish.

SPECIFICATIONS

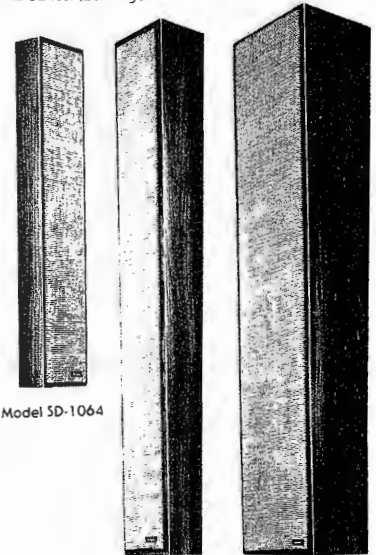
Frequency Range: 70 to 15,000 Hz.
Power Capacity: 60 Watts RMS.
Nominal Impedance: 16 Ohms.
Vertical Sound Projection Angle: 30°
Horizontal Sound Projection Angle: 130°
Sound Pressure Level: 91 dB at 30'; 60 Watts.
Speakers: Six 8" special design
Dimensions: 50-1/2" H x 10-3/4" W x 8-1/4" D
(128.2 x 27.3 x 20.9 cm)
Shipping Wt.: 52 lbs. (23.4 Kg.)

Model MSD-1061 \$241.60

Exactly the same as the MSD-1060 except finished in hand rubbed oiled walnut. Shipping Wt. 52 lbs. (23.4 Kg.)

MODEL MSD-1063 \$241.60

The same as the MSD-1060 except in unfinished birch. Sanded, ready to stain or paint to match decor. Shipping Wt.: 52 lbs. (23.4 Kg.)



Model 5D-1064

Model 5D-1100

Model MSD-1060

corner baffles

Slanting corner baffle

Slant front aims sound down; corner location increases effective air mass. Bass enhanced by acoustic padding and bass reflex design, superb tone. Famous Argos rigid construction with walnut or birch woodgrain vinyl finish and modern cone grille. Argos speedy mounting clips provide quick, sure, concealed mounting. Connection terminals on top of baffle cannot be seen. All mounting hardware included.

Model number: SCB-8D for 8" speaker
Internal capacity: 680 cubic in. (11,200 cu. cm), 5-1/2" (14 cm) speaker depth
Shp. wt.: 7-1/2 lbs. (3.4 kg.) \$32.00

Model number: SCB-12D for 12" speaker
Internal capacity: 1240 cubic in. (20,200 cu. cm), 6-3/8" (10.6 cm) speaker depth
Shp. wt.: 11-1/2 lbs. (5.2 kg.) \$44.90



Model SCB-2085

Regular corner baffle favorite of sound contractors

Combines good looks with rigid construction and effective sound. Air mass is increased by corner location and bass reflex design. Durable wood-grain vinyl walnut or birch with neat cone grille. Mounts neatly with Argos Speedy Mounting Clips. Terminals on top of baffle. Grille held in place by special clips for easy removal or replacement, also eliminates unsightly screw heads which would mar appearance. All mounting hardware included.

Model number: CB-8D for 8" speaker
Internal capacity: 525 cubic in. (8600 cu. cm), 4-1/2" (11.4 cm) speaker depth (15.8 cm)
Shp. wt.: 6 lbs. (2.7 kg.) \$26.55

Model number: CB-12D for 12" speaker
Internal capacity: 1520 cubic in. (24,897 cu. cm), 6-3/8" (15.8 cm) speaker depth
Shp. wt.: 12 lbs. (5.4 kg.) \$43.90

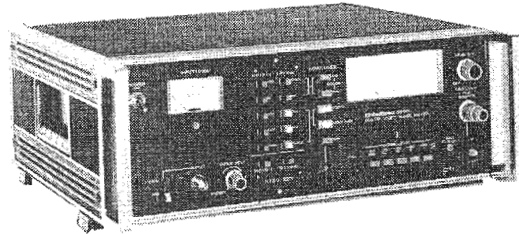


Model CB-8C





925C
Video Noise
Meter



\$10,000.00

The 925C video noise meter measures the units' video noise voltage generated in television transmission equipment, television cameras, video tape recorders, video disc units, digital image processors, and the like.

One conventional method of measuring such noise is to use a video noise meter that employs a power meter. In contrast, the Shibasoku noise meter supplements the conventional meter functions with a new function that allows operators to measure the chroma noise of color signals.

In particular, the Shibasoku model is especially designed to measure the several-kilo-hertz-order color shading noise that is generated in helical video tape recorders.

Measurements of video noise and chroma noise using this model are conducted with the equipment under test subjected to exactly the same conditions as in actual operation.

Employed for the measurement of video band noise is a white signal of the desired level with a sync signal added to it. Chroma band noise is measured with a single-color signal of the desired level that contains both a sync signal and a color burst signal.

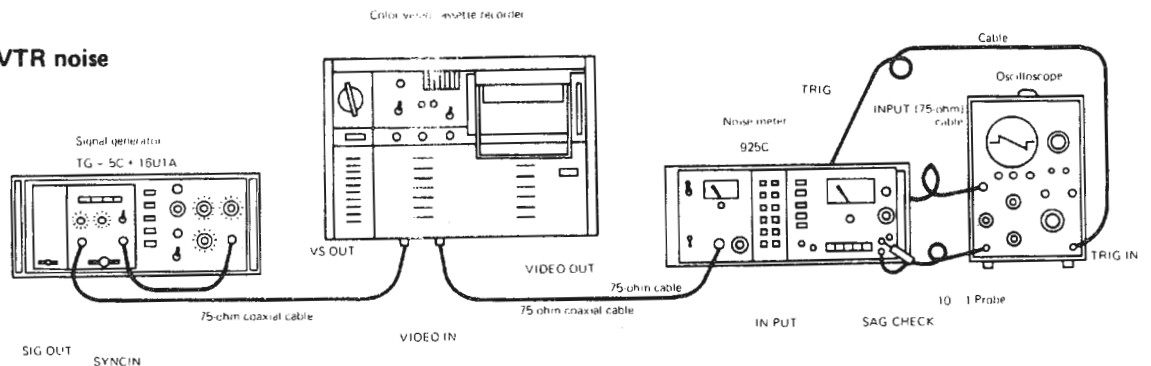
Chroma noise can be split into AM (amplitude modulation) and PM (phase modulation) components which can be measured separately.

At the point of measurement, all the blanking, sync signals and color burst signals that were added to the test signals are canceled out within the unit. Also, this miss pulse, created when head switchover takes place on a 2-head video tape recorder, is also eliminated.

The loss of the noise energy of the extracted component is compensated for at the power meter.

Operating Instructions

Example of measuring VTR noise



TELEVISION SYSTEMS

- 925C/1 System-M
- 925C/2 System-I

SPECIFICATIONS

- Kinds of measured video noise**: Video band noise, Visual weight noise, Chroma band AM noise and Chroma band PM noise
- Noise measurement range**:
 - Video band noise: 0.1 kHz to 10 MHz
 - Visual weight noise: $\tau = 0.245 \mu s$ filter at CGIR REPORT 410-1 (Doc. CMTT/273-E 1974) furnished to standard type, but change of it is acceptable by required
 - Chroma band noise:
 - 925C/1: 3.58 MHz \pm 0.5 MHz
 - 925C/2: 4.43 MHz \pm 0.5 MHz
- Selecting function for noise measuring band**:
 - Low band cut-off frequency (HPF): 0.1/1/10/50/100 kHz switchable
 - High band cut-off frequency (LPF):
 - 925C/1: 0.5/1/3/4 MHz/THROUGH switchable
 - 925C/2: 0.5/1/4/5 MHz/THROUGH switchable
- Measuring signal input**:
 - Input waveforms: 0 to 1 Vp-p white signal which includes the composite sync pulse and blanking pulse is provided, and the color burst included in the signal is acceptable.
 - Noise measurement of video band: 0 to 1 Vp-p white signal which includes the composite sync pulse and blanking pulse is provided, and the color burst included in the signal is acceptable.
 - Noise measurement of chroma band: Single-color signal that the chroma signal of 0.2 Vp-p to 1 Vp-p is superimposed on white signal from 0 to 1 Vp-p

- Sag adjusting range**: $\leq 5\%$ of linearity sag (switch is selected to H or V)
- Sync level range**: > 0.1 Vp-p
- Input impedance**: $75 \Omega \pm 3\%$ or HIGH (1 M Ω 20 pF) selection
- Input level correcting range**: Adjustable within ± 3 dB
- Indication of noise level**: Vrms and S/N: dBp-p/rms
- Definition of noise level (S/N)**: Noise level defined by S (Vp-p)/N (Vrms) and indicated by dB
- Video band noise**:
 - 925C/1: $S=0.714$ Vp-p, 0 dBp-p/rms=0.714 Vrms
 - 925C/2: $S=0.7$ Vp-p, 0 dBp-p/rms=0.7 Vrms
- Chroma band noise**: Effective voltage of PM side band is 0.714 Vrms=0 dBp-p/rms
- Chroma PM noise**: Effective voltage of PM side band is 0.714 Vrms=0 dBp-p/rms
- Measurement of noise voltage**: 0.3 mVrms to 100 mVrms
- Measuring accuracy**:
 - Amplitude response: $> \pm 3$ sigmas at full scale
 - Frequency response: $\leq \pm 0.5$ dB at measurement band
 - Errors: $\leq \pm 0.5$ dB at -20 to -60 dB; $\leq \pm 1.0$ dB at -60 to -70 dB
- RMS voltmeter**:
 - Detection methods: Detection of true RMS value
 - Scale indication: Vrms and dBp-p/rms
 - Meter scale: Voltage: 10 \sim 1/3 \sim 0.5 (Two scale at upward and down ward)
 - Range switch: dB: $+3$ to -12 ; -20 / -30 / -40 / -50 / -60 dB

- Reference value of dB scale**:
 - 925C/1: 0 dB = 0.714 Vrms
 - 925C/2: 0 dB = 0.7 Vrms
- Input voltmeter**:
 - Meter scale: 0 to 1 Vp-p
 - Indication (Vp-p) and calibration for the white signal and the chroms signal
- Noise signal output**:
 - Output level: Approx. 0.5 Vp-p at full scale
 - Output waveform: H/2 Sin² gate waveform
 - Output impedance: $75 \Omega \pm 3\%$
- Sub-carrier trap**: > -20 dB (Internal or External)
- Attenuation**: > -20 dB (Internal or External)
- Sync selection**: Sync separating method
- Internal sync**: Composite sync pulse input: 1 Vp-p to 4 Vp-p
- External sync**: High impedance, bridge connection
- Input impedance**: BNC type, unbalanced
- Input and output connector**: AC 100/115/200/230V \pm 10%, 50/60 Hz, approx. 50 VA 430(W) x 149(H) x 335(D) mm, (inch) 16.9 x 5.9 x 13.1 approx. 15 kg
- Power supply**: Coaxial cables (BNC, 3C2V) 2
- Accessories Supplied**: Extension printed board for P.C.B 1
- Optional**: M-BNC plug 1
- L-150**: Rack mounting adaptor

Prices and specifications subject to change without notice





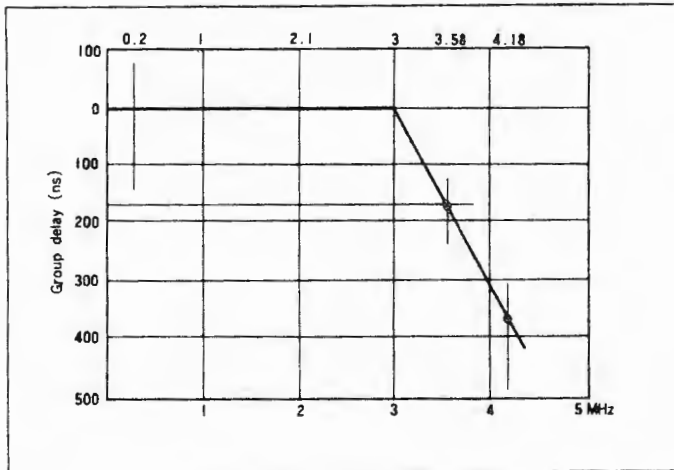
201-1

Envelope Delay
Measuring Set

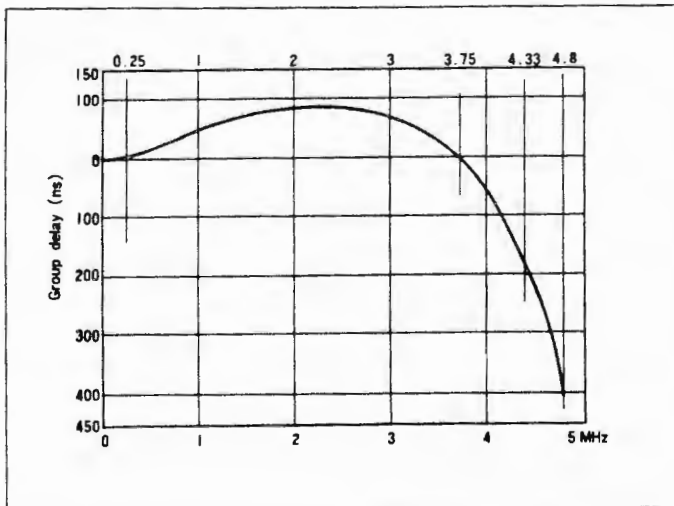


The 201-1 is expressly designed for measuring the envelope delay incurred in equipment used in the transmission and reception of color television signals.

It contains a built-in sweep signal generator which obviates the need for separate signal sources. Direct measurements are possible thanks to the graticule with the appropriate television system's standard gradations which is attached to the surface of the cathode-ray tube in the display section. The model features a choice of signal source between sweep signals and wave signals. Direct read-out is possible even with spot frequencies ranging from about 200 KHz to 10 MHz.



System-M, Color-PAL, NTSC (525 Line)



System-B.G, Color-PAL (625 Line)

FEATURES

- **Built In Sweep Generator** — It can determine sweep measurement and CW (point by point delay of discrete frequencies).
- **Sweep Speed Is Adjustable.**
- **Built In Sync and Blanking Circuit** — Since the unit has its own sync and blanking circuit, one is also able to measure GROUP DELAY.
- **Direct Read-Out by 7 Inch Square CRT** — It is possible to show simultaneously a dual trace for the envelope delay and frequency versus amplitude characteristics.
- **Internal and External Marker** — It has its own fixed internal marker as well as a connector for an external marker.

\$6,500.00

SPECIFICATIONS

- Measuring signal generator
 - Frequency range: Sweep: 100 kHz to > 5 MHz
CW : 100 kHz to > 5 MHz
 - Output frequency response: ± 0.5 db at 100 kHz to 5 MHz
 - CW accuracy: < ± 3%
 - Marker frequency: 0.2/1.0/2.1/3.0/3.58/4.18/5.0 MHz
 - Sweep rate: Approx. 1 Hz to 5 Hz. continuous variable
 - Output impedance: 75 Ω unbalanced < ± 10%
 - Output level:
 - without sync and blanking: 0 to 1.0 Vp-p, continuous variable
 - with sync and blanking: Video: 0.1 to > 0.7 Vp-p
Set-up: approx. 0.07V
Sync: 0.1 to > 0.4 Vp-p
 - Line frequency: 15.734 kHz, < 5 × 10⁻⁴
 - Split frequency: 20 kHz, < 5 × 10⁻⁴
 - CW output: 1 Vp-p (< 1 kHz)
- Envelope delay measuring section
 - Measuring frequency range: Sweep: 200 kHz to > 5.0 MHz
CW : 200 kHz to > 5.0 MHz
 - Measuring range: + 100 ns to 500 ns
 - Phase control: 0 ~ 10 μs
 - Accuracy: < ± 10 ns (at input level variation of within 6 dB)
 - Measuring input level: 0.1 Vp-p to 1.1 Vp-p
 - Noise: < ± 10 ns (at without sync signals)
 - Vertical display calibrated signal: 100 ns ± 3%
- Display section
 - Display methods: Dual trace display by chopper method
 - Vertical sensitivity: 100 ns/div. (1 div. = 14 mm). with MAG. x 2
 - Effective scale: 118 x 84 mm
 - C.R.T.: 7 inches square tube, persistence (B-7), magnetic deflection method.
- Others
 - Power supply: AC 100/117 V ± 10%, 50/60 Hz
 - Dimensions: 430 (W) x 150 (H) x 335 (D) mm
Approx. 16.9 x 5.9 x 13.1 inch.

- 763 NA — Same unit less sync and blanking circuit available at reduced price.
- SHIBASOKU Equipment — sister company of ASACA.

Prices and Specifications Subject to Change Without Notice.



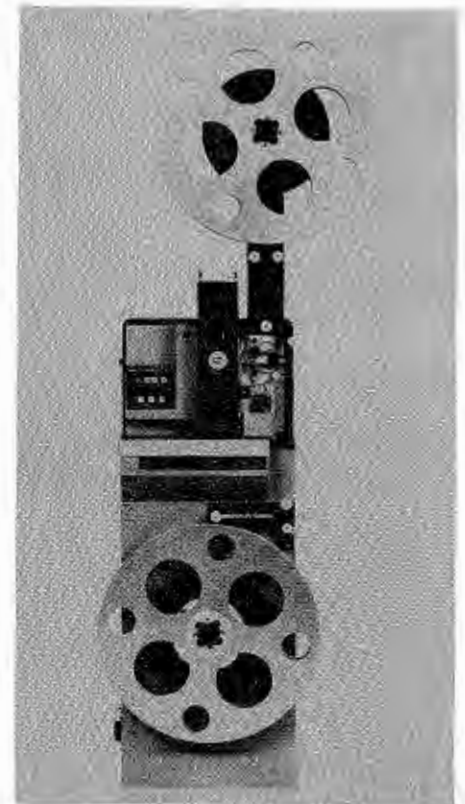


- Freeze-frame, instant stop/start, animation, slo-mo — all direct from Film to tape by TV film chain
- New state of the art digital control CMOS circuitry for complete low-voltage remote control and/or computer control
- 115V 60HZ or 220V 50 HZ
- Modular digital design for easy maintenance and service
- Extended 2 - 3 year warranty
- Insured against obsolescence — retrofittable to new design improvements and options

No other projectors are available that offer so many features — yet are so sensibly priced. Direct transfer from film to tape in a film chain can save countless dollars (and hours) in optical printing, videodisc recorders, special effects equipment, etc. Create superb special effects by using the Athena pushbutton control panel or remote panel for slo-mo, freeze-frame, forward/reverse or instant stop/start. No application bar or "roll-in" — and no second or third generation reproduction, either. You maintain the original image quality of the film. These unique "Made in America" projectors are produced by a company with almost twenty years of experience in developing and manufacturing stop-motion flickerless projectors, which are used world-wide.



ATHENA® 4000



ATHENA® 5000

ATHENA 4000-TSM MK IV

Professional stop-motion, animation projector, less lens. Optical and magnetic playback. 1-2-4-6-8-12-24 FPS. Slo-Mo. Freeze Frame. Step Frame. FWD/REV. Variac Lamp Control (standard only when ordered with L-W pedestal stand).

120V 60HZ\$7,485.00
 240V 50 HZ version, additional cost\$235.00

REMOTE CONTROL

RP-1-FF-V (Rack Mount) 19" for Item No. 1\$398.00

ATHENA 5000 TELECINE BROADCAST PROJECTOR

Professional broadcast projector, with 5000-foot film capacity, less lens. Optical and magnetic playback. 1-2-4-6-8-12-24 FPS. Slo-Mo. Freeze Frame. Step Frame. FWD/REV.

120V 60 HZ\$13,950.00
 240V 50 HZ version, additional cost\$235.00

REMOTE CONTROL

RP-2-FF-V (Rack Mount 19" for Item No. 4)\$398.00

ACCESSORIES

Pedestal Stand for Athena 4000-TSM MK IV\$395.00

Projection Lamps

BTP, 750 watt, 120V\$33.00
 BTL, 500 watt, 120V\$29.00
 EEX, 300 watt, 120V\$25.00
 DKK, 750 watt, 240V (Athena 4000-TSM MK IV)\$33.00
 240V 4000-TSM ordered WITH PEDESTAL may be modified to use Tungsten-Halogen lamps\$150.00

ACCESSORIES

Schneider Lenses - with iris diaphragm

50mm f/4 Componon\$238.00
 60mm f/5.6 Componon\$250.00
 105mm f/4.5 Componar\$250.00

Eastman Kodak Lenses - without iris diaphragm

75mm f/2\$295.00
 100mm f/2.5\$295.00

75mm and 80mm Schneider lenses will be available without iris diaphragm.

Athena Lenses

2.4" f/1.5\$234.00
 75mm f/2\$195.00
 87.5mm f/2.5\$195.00

Lens positioner with pan/tilt/zoom and anamorphic attachmentsPrice On Request

PLEASE FURNISH:

- (1) Distance from film plane to field lens or screen; and
- (2) Width of image required at that point.

RECOMMENDED SPARE PARTS KITS

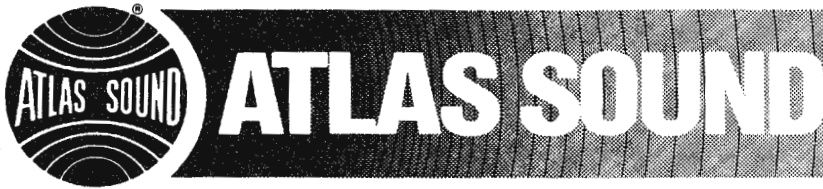
Athena 4000-TSM MK IV\$692.00
 Additional parts recommended for overseas and shipboard back-up\$667.00

RECOMMENDED SPARE PARTS KITS

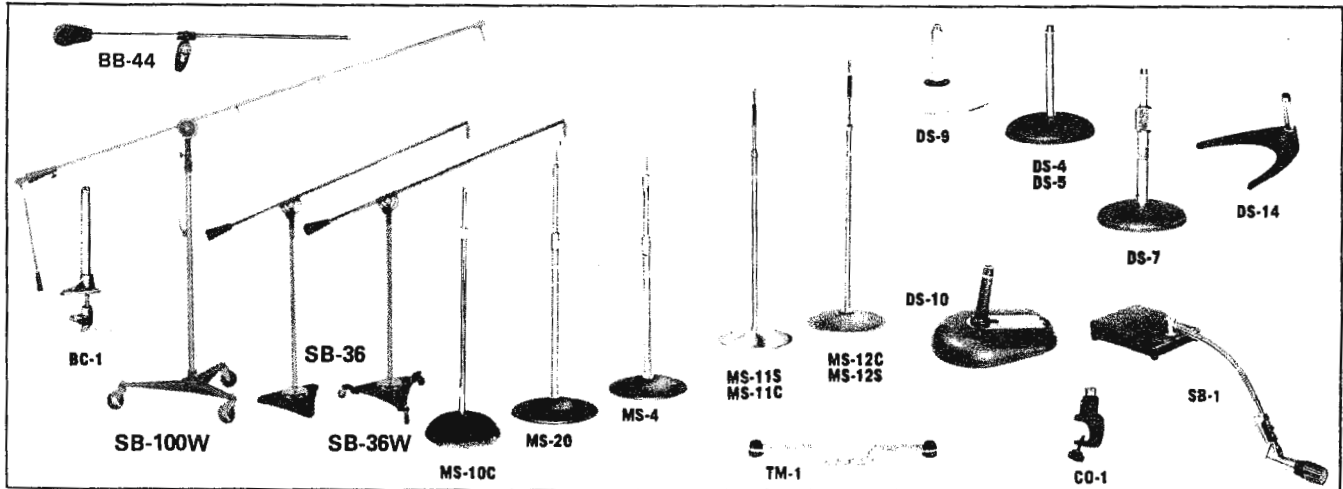
Athena 5000 Telecine Broadcast Projector\$853.00
 Additional parts recommended for overseas and shipboard back-up\$1,021.00



Prices and specifications subject to change without notice



Microphone Stands and Accessories



FLOOR STANDS

| | | |
|--------|---|----------|
| MS-10C | "Leader" Microphone Stand | \$ 22.80 |
| MS-11C | General Purpose Low-Profile Stand; Chrome Base | 27.65 |
| MS-12C | General Purpose Low-Profile Stand; Gloamed Black Base | 23.05 |
| MS-4 | Special Height Stand; 25" to 65" H., 3-Section Tube | 34.05 |
| MS-11B | Touch-Control Studio Stand; Chrome Base | 55.55 |
| MS-12B | Touch-Control Studio Stand; Gloamed Black Base | 50.95 |
| MS-14B | Low-Profile Stand; Gold Finish Tube and Base | 41.55 |
| MS-20 | Heavy Duty Stand; Low Contour, Gloamed Black Base | 36.40 |
| MS-25 | Professional Stand; Heavy Triangular Base | 62.50 |

PORTA-SERIES TELESCOPIC FLOOR STANDS AND BOOM ATTACHMENTS

| | | |
|-------|--|----------|
| PSC | General Purpose Porta-Stand; 35" to 63" H., Black Base | \$ 34.05 |
| PSC-3 | Special Height Stand; 26" to 66" H., 3-Section Tube | 38.90 |
| PSS | Touch-Control Stage Stand; 40" to 63" H., Heavy Base | 70.85 |
| PB-1 | Microphone Boom Arm; 31" Long | 20.85 |
| PB-1X | Microphone Boom with Extension; 31" to 50" L. | 26.95 |
| PB-2X | Microphone Boom with Extension; 21" to 40" L. | 24.45 |

LOUDSPEAKER STANDS

| | | |
|---------|---------------------------------------|----------|
| CSS-100 | Column Speaker Stand for C-80 & C-120 | \$ 80.55 |
| SS-2 | Heavy Duty, Collapsible Speaker Stand | 106.25 |
| SS-4 | All-Purpose Speaker Stand | 51.40 |

BOOM STANDS

| | | |
|---------|---|----------|
| SB-36 | General Purpose Boom Stand | \$148.60 |
| SB-36W | Stage Boom Stand, Mobile; 50" to 74" H., 62" L. Boom | 170.85 |
| SB-100W | Studio Boom, Mobile; 340° Microphone-Direction Control, 62" to 92" H., 110" L. Boom | 513.90 |

DESK STANDS

| | | |
|-------|--|----------|
| DS-1 | Executive Stand; Carrara Marble Base, White | \$ 14.60 |
| DS-2 | Vibration-Isolating Stand; 4" H., Metal Base, Black | 17.10 |
| DS-4 | Lightweight Stand; 4" H., Phenolic Base, Black | 5.70 |
| DS-5 | General Purpose Stand; 4" H., Metal Base, Black | 8.20 |
| DS-7 | Adjustable Height Stand; 8" to 13" H., Metal, Black | 12.50 |
| DS-14 | Contemporary Stand; 3" H., Metal Base, Black | 9.05 |
| SB-1 | Switchboard/Dispatcher Stand; Extra Heavy Base, Black | 36.65 |
| TS-8 | Adjustable Height Banquet Stand; 14" to 26" H., Chrome | 22.90 |

STAND ACCESSORIES

| | | |
|--------|--|----------|
| BB-44 | Contemporary Boom Arm, 31" Long | \$ 16.80 |
| GN-6 | Gooseneck; .338" I.D., 6" Long | 4.45 |
| GN8-6 | "Slimline" Gooseneck; .212" I.D., 6" Long | 4.45 |
| GN-13 | Gooseneck; .338" I.D., 13" Long | 6.10 |
| GN8-13 | "Slimline" Gooseneck; .212" I.D., 13" Long | 6.10 |
| GN-19 | Gooseneck; .338" I.D., 19" Long | 8.60 |
| TM-1 | Twin Microphone Mount | 12.35 |
| VM-1 | Shock Mount Accessory | 14.30 |

CONVENIENCE-PACKAGED ACCESSORIES

| | | |
|-------|------------------------------|---------|
| CH-1B | Cable Hanger | \$ 6.80 |
| CO-1B | Connect-On Microphone Swivel | 10.00 |
| LO-2B | Lock-On Accessory | 8.45 |
| SD-1B | Snap-On Accessory | 7.35 |
| SW-1B | Gyro-Microphone Swivel | 11.40 |

SPECIAL PURPOSE ACCESSORIES

| | | |
|--------|-------------------------------------|---------|
| AD-11 | Flange; 5/8" - 27 F | \$ 2.15 |
| AD-12 | Flange; 5/8" - 27 M | 2.40 |
| AD-1B | Small Horn Microphone Stand Adaptor | 7.90 |
| AD-17 | Small Horn Adaptor; 1/2" Pipe F | 4.60 |
| BC-1 | Bracket Clamp | 9.70 |
| EB-20 | Extension Tube Assembly; 20" L. | 6.95 |
| FS-1 | Foot Switch; Microphone Control | 26.65 |
| TB-58X | Extension Tube; 5/8" Dia. x 31" L. | 5.40 |
| TB-78X | Extension Tube; 7/8" Dia. x 31" L. | 6.80 |
| US-2 | Multi-Purpose Microphone Support | 20.55 |

CONVENIENCE-PACKAGED ADAPTORS

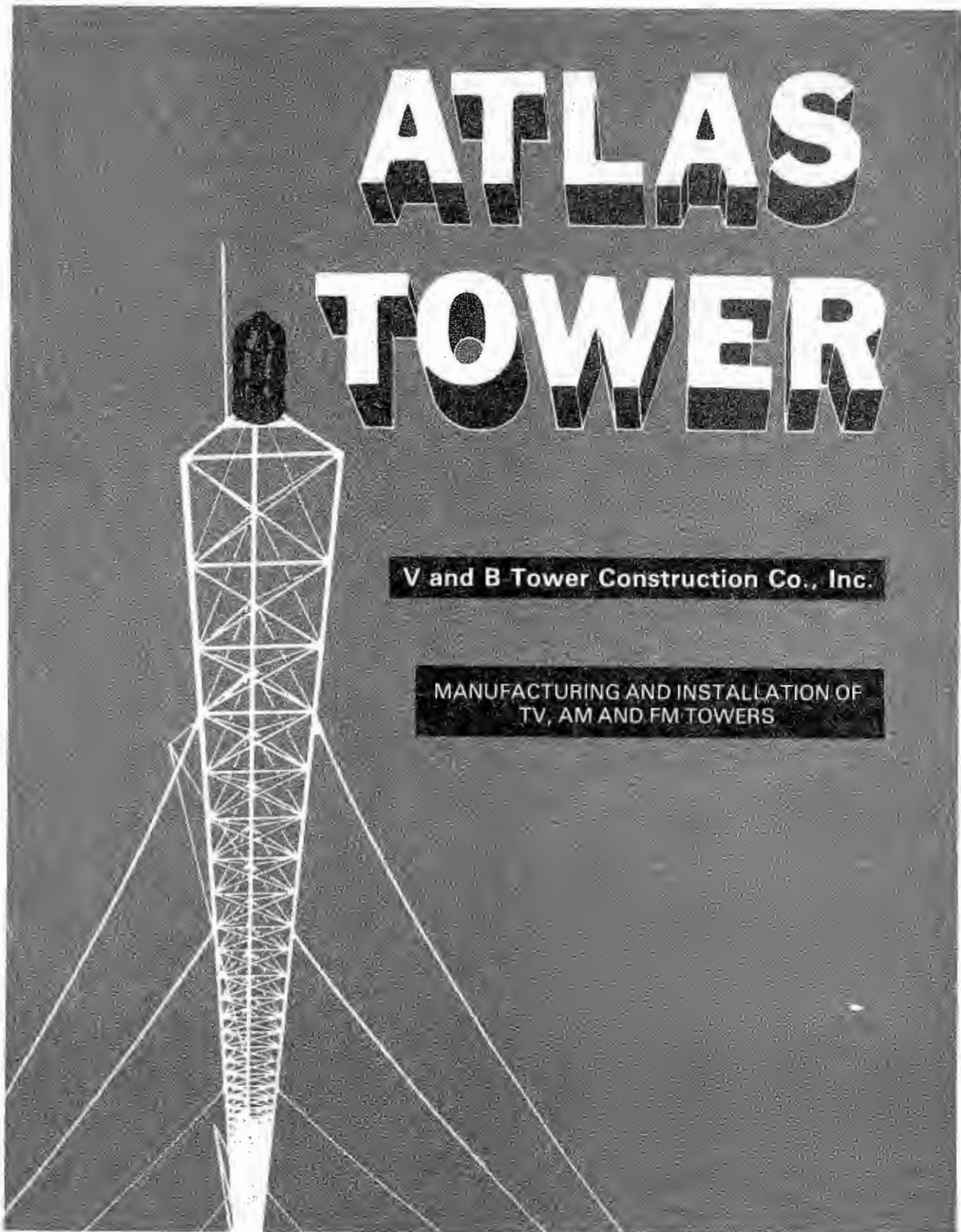
| | | |
|--------|----------------------------------|---------|
| AD-1B | 5/8" - 27 F to 1/2" Pipe M | \$ 2.65 |
| AD-2B | 1/8" Pipe F to 5/8" - 27 M | 2.10 |
| AD-3B | 1/8" Pipe F to 5/8" - 27 F | 2.35 |
| AD-4B | 3/4" Long, 5/8" - 27 M Thread | 1.65 |
| AD-5B | Coupling; 5/8" - 27 F to 5/8" F | 2.20 |
| AD-6B | Coupling; 7/8" - 27 F to 7/8" F | 3.60 |
| AD-7B | 3" Long Tube; 5/8" - 27 M Thread | 2.65 |
| AD-8B | 6" Long Tube; 5/8" - 27 M Thread | 2.65 |
| AD-9B | 7/8" - 27 F to 5/8" - 27 F | 2.80 |
| AD-10B | 5/8" - 24 F to 5/8" - 27 F | 3.60 |
| AD-11B | Flange; 5/8" - 27 F | 2.80 |
| AD-12B | Flange; 5/8" - 27 M | 3.05 |
| AD-13B | 7/8" - 27 M to 5/8" - 27 F | 2.65 |
| AD-14B | 90° Angle Tube; 5/8" - 27 M & F | 4.30 |
| AD-15B | "Feed-Thru"; 5/8" - 27 M & F | 4.45 |
| AD-18B | Heavy Duty Flange; 5/8" - 27 F | 4.45 |
| AD-19B | 45° Angle Tube; 5/8" - 27 M & F | 4.30 |

CONVENIENCE-PACKAGED REPLACEMENT KITS

| | | |
|--------|--|----------|
| PB-K | Boom Arm Swivel Assembly | \$ 13.75 |
| MSC-K | Repair Parts Kit for 7/8" Dia. Tube Assembly | 6.25 |
| MS-20K | Repair Parts Kit for MS-20 & MS-25 | 12.90 |

Prices and specifications subject to change without notice





ATLAS TOWER

V and B Tower Construction Co., Inc.

**MANUFACTURING AND INSTALLATION OF
TV, AM AND FM TOWERS**



For prices and additional information contact your
Harris District Sales Manager or the Harris Quincy Sales Office.

AUDIOLAB ELECTRONICS

TAPE DEGAUSSERS

TD-1A Tape Degausser

- Erases audio, video, computer, data tape, magnetic films, cartridges and cassettes.
- Accommodates up to 10 1/2 inch NAB reels.
- Provides a wide focused magnetic field to assure complete erasure.
- Positive results everytime with a simple two pass operation for broadcast NAB audio cartridges.
- Transient protection to prevent permanent tape damage.
- 115 and 220 volt, 50-60 Hz models available.

SPECIFICATIONS

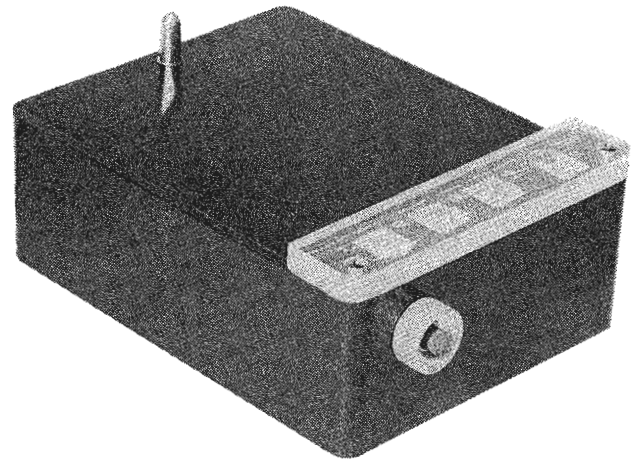
Power Requirements: TD-1A 115 volts AC +/- 10% 50-60 Hz. TD-1AF 230 volts AC +/- 10% 50-60 Hz.

Duty Cycle: One minute ON — Three minutes OFF.

Dimensions: 5 1/4 x 7 1/4 x 3 inches high. 133 x 184 x 76.2 MM.

Weight: Net — 9 1/2 lbs. Shipping — 10 lbs.

Reel Size: Up to 10 1/2 inches in diameter. Removable center post for large carts.



TD-1A (117V 50-60 Hz)\$82.00
TD-1AF (230V 50-60 Hz)\$85.00

TD-2 Tape Degausser

- Erases tape reels up to 14 inches in diameter and 2 1/2 inches wide.
- Built in timer has adjustable 'ON' cycle and automatic shut-off.
- Efficient "ferro-tune" design assures strongest degaussing field.
- Built in blower makes normal continuous service cool and quiet.
- Tapes may be erased in original carton by sliding along guide rail.
- Standard 5/16 inch center post and 3 inch NAB hub supplied.
- Conservative design throughout assures long lasting performance.
- Designed for radio, television, computer and audio-visual tapes.
- Hi-Low operation allows continuous duty on tapes up to 1 inch.

SPECIFICATIONS

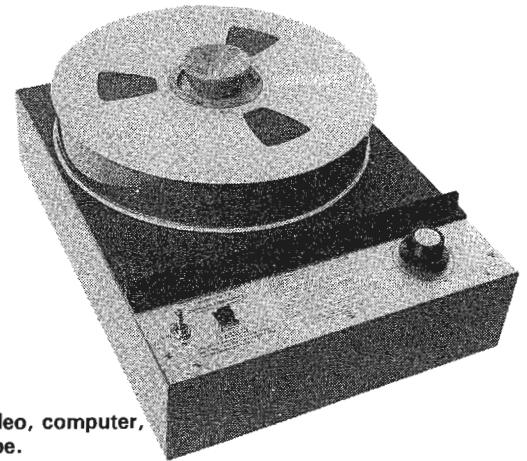
Duty Cycle: 50%, 30 minutes maximum with fan on. Continuous duty on Lo position.

Line Voltage: 108 to 135 volts AC, 60 cycles.

Power Consumption: 500 watts nominal.

Dimensions: 13 x 17 x 4 inches.

Shipping Weight: 49 lbs.



Erases audio, video, computer, and cartridge tape.

TD-2 (117V 50-60 Hz)\$575.00
TD-2AF (230V 50-60 Hz)\$600.00

TD-3 Tape Degausser

- Designed for heavy duty use in the audio-visual, and computer industries.
- Strong degaussing field insures full erasure of new high coercivity tapes.
- Erases tape reels up to 14 inches in diameter and 1 inch wide.
- Tapes may be erased in original carton by sliding along guide rail.
- Timer with adjustable ON cycle and automatic shut-off.
- Built in blower assures cool and quiet operation.
- Standard 5/16 inch center post and NAB hub supplied.
- Conservative design throughout assures long lasting performance.

SPECIFICATIONS

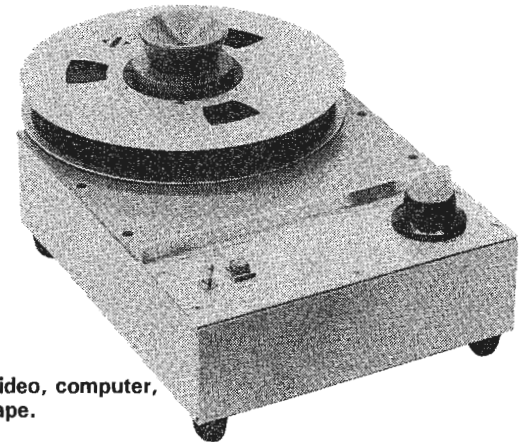
Duty Cycle: 50%, 30 minutes maximum with fan on.

Line Voltage: 108 to 135 volts AC, 60 cycles.

Power Consumption: 1350 watts nominal.

Dimensions: 10 x 13 x 4 inches.

Shipping Weight: 24 lbs.



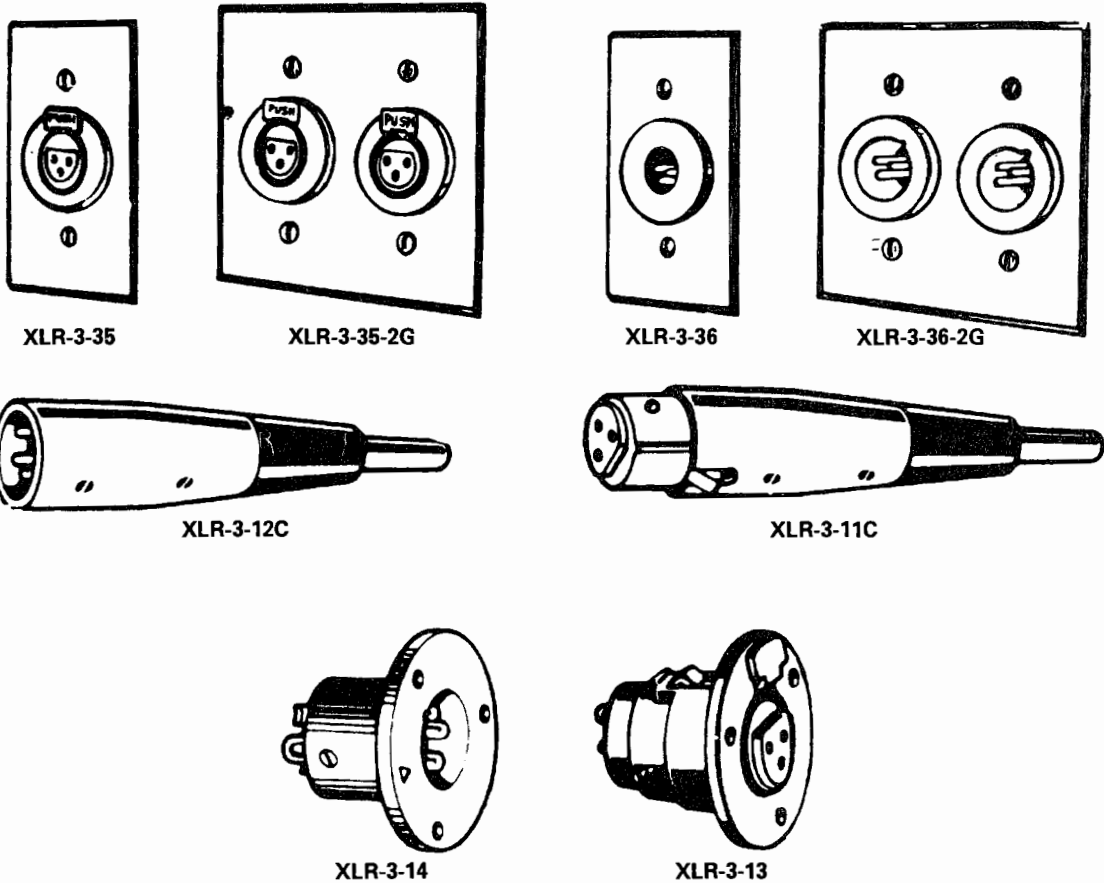
Erases audio, video, computer, and cartridge tape.

TD-3 (117V 50-60 Hz)\$420.00
TD-3AF (230V 50-60 Hz)\$440.00

Prices and specifications subject to change without notice



AUDIO CONNECTORS — PROFESSIONAL TYPE



| STOCK NO. | GENERIC TYPE | DESCRIPTION | PRICE |
|--------------|--------------|------------------------------|---------|
| 612-0182-000 | XLR-3-11C | female, cable | \$ 6.95 |
| 610-0182-000 | XLR-3-12C | male, cable | 2.62 |
| 612-0194-000 | XLR-3-13 | female, panel mount | 4.20 |
| 610-0194-000 | XLR-3-14 | male, panel mount | 5.65 |
| 612-0188-000 | XLR-3-35 | female, box mounting, single | 7.45 |
| 610-0188-000 | XLR-3-36 | male box mounting, single | 9.79 |
| 612-0191-000 | XLR-3-35-2G | female, box mounting, double | 19.98 |
| 610-0191-000 | XLR-3-36-2G | male, box mounting, double | 24.62 |

TERMINAL BLOCKS — AUDIO

| Stock No. | Description | Price |
|--------------|---|---------|
| 614-0337-000 | PJ-104-ADC, terminal board, audio, 4 rows, 20 terminals/row, total 80 | \$13.00 |
| 614-0339-000 | PJ-106-ADC, terminal board, 6 rows, 20 terminals/row, total 120 | 16.00 |

TERMINAL BLOCKS — POWER

| | | |
|--------------|---|---------|
| 614-0225-000 | CDM-4 Curtis, terminal board, 30 amp, 4 terminals | \$ 2.01 |
| 614-0233-000 | CDM-12 Curtis, terminal board, 30 amp, 12 terminals | 7.50 |



Prices and specifications subject to change without notice

Stereo Frequency and Modulation Monitor



The Belar FM monitors were designed as a totally integrated, solid state system to enable the broadcaster to fulfill his monitoring equipment requirements as the need arises. The Belar FMS-1 Stereo Frequency and Modulation Monitor, when added to the FMM-1 FM Frequency and Modulation Monitor, provides complete monitoring and test functions to meet the daily requirements for stereo monitoring and provides additional facilities for making the proper tests for weekly and monthly maintenance checks to insure maximum performance from stereo transmitters.

FM Frequency and Modulation Monitor



The Belar FM monitors are designed as a totally integrated, solid state system to enable the broadcaster to fulfill his monitoring equipment requirements as the need arises. The Belar FMM-1 Frequency and Modulation Monitor is a wideband, all solid state FM monitor designed expressly to fulfill all the new requirements for monaural monitoring as well as to provide a virtually pure, distortionless demodulated signal to drive the companion FMS-1 Stereo Frequency and Modulation Monitor and the SCM-1 SCA Frequency and Modulation Monitor for multiplex monitoring.

AM Modulation Monitor



The AMM-2A Modulation Monitor sets new standards in accurate AM monitoring — the first AM monitor to incorporate true ratio-type peak indicators. The AMM-2A contains a unique modulation cancellation scheme to recover unmodulated carrier to reference the modulation peaks to. Thus the instantaneous program peaks re references to the instantaneous carrier without the need of time-constants, as with AGC devices. True carrier is indicated with asymmetrical modulation encountered in today's high positive peak modulation, and peaks are automatically references to this true carrier to give the most accurate indication of program peaks. FCC Type Approval No. 3-240.

AM Modulation Monitor



The AMM-3 Modulation Monitor sets new standards in accurate AM monitoring — the first AM monitor to incorporate true ratio-type peak indicators, as well as ratio-type metering circuits. The AMM-3 contains a unique modulation cancellation scheme to recover unmodulated carrier to reference the modulation peaks to. Thus the instantaneous program peaks are references to the instantaneous carrier without the need of time-constants, as with AGC devices. True carrier is indicated with asymmetrical modulation encountered in today's high positive peak modulation, and peaks are automatically referenced to this true carrier to give the most accurate indication of program peaks. FCC Type Approval No. 3-231.

FM EQUIPMENT

| | |
|--|-----------|
| FMM-1 FM Frequency and Modulation Monitor | \$1550.00 |
| (FCC Type Approval No. 3-129) | |
| FMS-1 Stereo Frequency and Modulation Monitor | \$1350.00 |
| (FCC Type Approval No. 3-146) | |
| SCM-1 SCA Frequency and Modulation Monitor | \$1250.00 |
| (FCC Type Approval No. 3-162) | |
| RFA-1 FM RF Amplifier | \$ 500.00 |
| MP-1 Remote Meter Panel for FMM-1 | \$ 175.00 |
| MP-2 Remote Meter Panel for FMS-1 | \$ 175.00 |
| MP-3 Remote Meter Panel for SCM-1 | \$ 175.00 |
| MJ-10 Yagi Antenna, 10 Element, used with RFA-1 | \$ 75.00 |

TV EQUIPMENT

| | |
|--|-----------|
| TVM-1 TV Modulation Monitor | \$1550.00 |
| (FCC Type Approval No. 3-181) | |
| TVM-2 TV Frequency Monitor (VHF) | \$1750.00 |
| TVM-3 TV Frequency Monitor (UHF) | \$1950.00 |
| RFA-3 TV RF Amplifier | \$ 550.00 |
| MP-4 Remote Meter Panel for TVM-1 | \$ 100.00 |

AM EQUIPMENT

| | |
|---|-----------|
| AMM-2A AM Modulation Monitor | \$ 875.00 |
| (FCC Type Approval No. 3-240) | |
| AMM-3 AM Modulation Monitor | \$1300.00 |
| (FCC Type Approval No. 3-231) | |
| AMM-4 AM Frequency Monitor | \$ 875.00 |
| OPTIONS 01 Relay Card | \$ 150.00 |
| OPTIONS 02 BCD Output Card | \$ 150.00 |
| RFA-2 AM RF Amplifier | \$ 525.00 |
| MP-6A Remote Meter Panel for AMM-2A | \$ 225.00 |
| MP-7 Remote Meter Panel for AMM-3 | \$ 225.00 |
| Shielded Loop Antenna , with built-in pre-amplifier for RFA-2 | \$ 275.00 |
| OPTION 01 Power Supply for Loop Antenna | \$ 50.00 |

MISCELLANEOUS EQUIPMENT

| | |
|------------------------------------|-----------|
| AS-1 Audio Sentry | \$ 250.00 |
|------------------------------------|-----------|

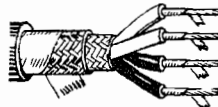
Prices and specifications subject to change without notice



Microphone Cables



**SINGLE
CONDUCTOR**



**MULTIPLE
CONDUCTOR**

| | | |
|--------------|---|-----------|
| 250-0059-000 | 8410 Belden single conductor shielded, black rubber jacket | \$.24/ft. |
| 250-0036-000 | 8412 Belden, 2-conductor stranded 20 AWG braided shield cotton wrap heavy rubber jacket | \$.35/ft. |
| 253-0024-000 | 8428 Belden neoprene jacketed heavy duty mic cable. 2-conductor 18 AWG braided shield | \$.33/ft. |

Two Conductor Shielded Cables



BELDFOIL

| | | |
|--------------|---|----------------------|
| 253-0062-000 | 8437 Belden, 2-conductor 22 AWG solid, w/drain wire and braid shield, black vinyl jacket 1,000 ft. reel of Belden 8437 wire | \$.11/ft. \$80.00 |
| 253-0054-000 | 8450 Belden miniature audio cable, 2-conductor 22 AWG solid drain wire, foil shield, vinyl jacket 1,000 ft. reel of Belden 8450 wire | \$.09/ft. \$50.00 |
| 253-0059-000 | 8451 Belden miniature audio cable, 2-conductor 22 AWG stranded, drain wire, foil shield, vinyl jacket 1,000 ft. reel of Belden 8451 wire | \$.09/ft. \$60.00 |

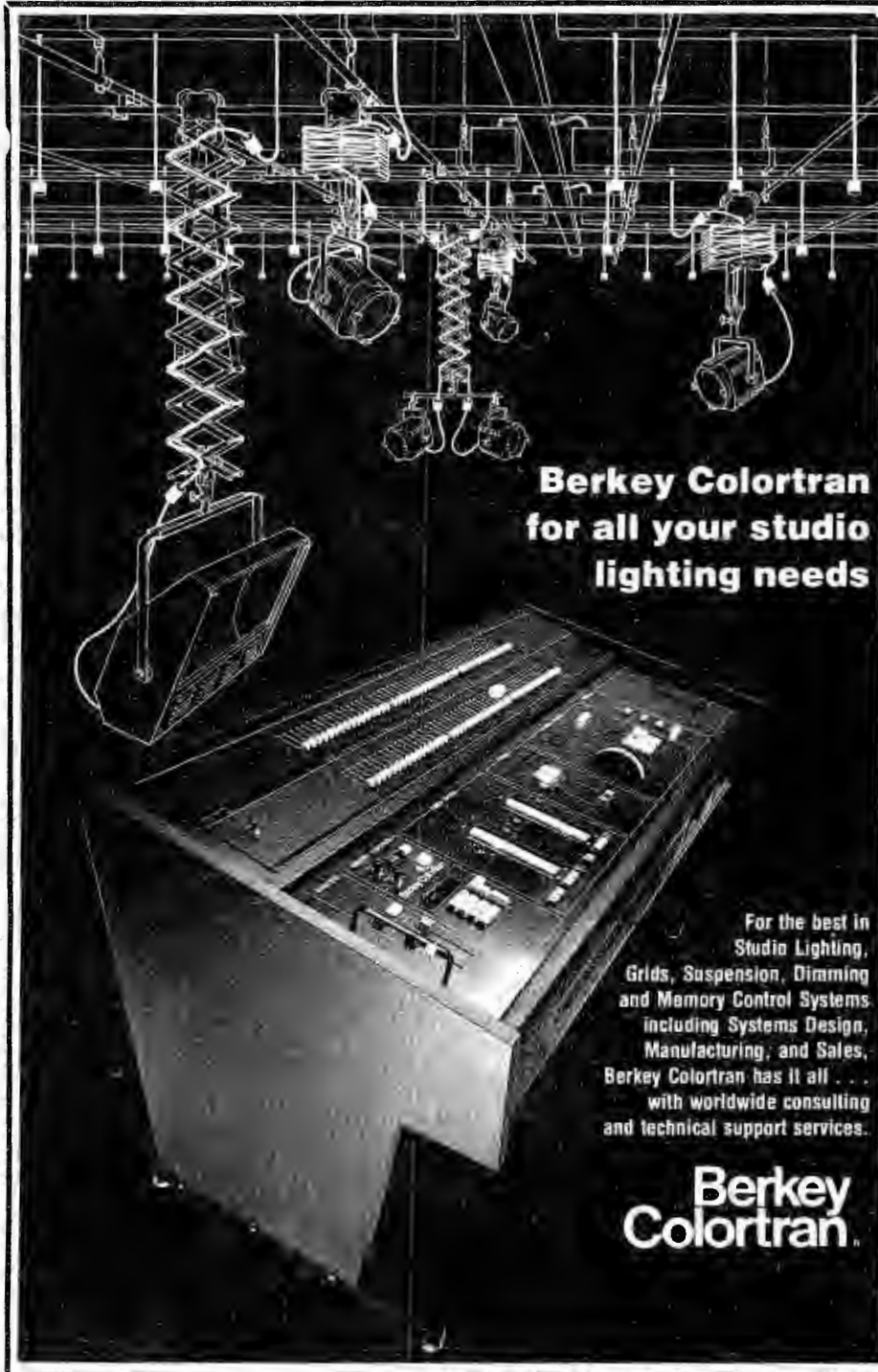


One Source For All Your Broadcast Equipment Needs

THE BROADCAST PRODUCTS DIVISION OF THE HARRIS CORPORATION IS DEDICATED TO SERVING THE REQUIREMENTS OF THE BROADCAST INDUSTRY. IF YOU HAVE PARTS OR EQUIPMENT REQUIREMENTS NOT INCLUDED IN THIS CATALOG — CONTACT YOUR HARRIS DISTRICT SALES MANAGER OR THE HARRIS QUINCY SALES OFFICE.



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**Berkey Colortran
for all your studio
lighting needs**

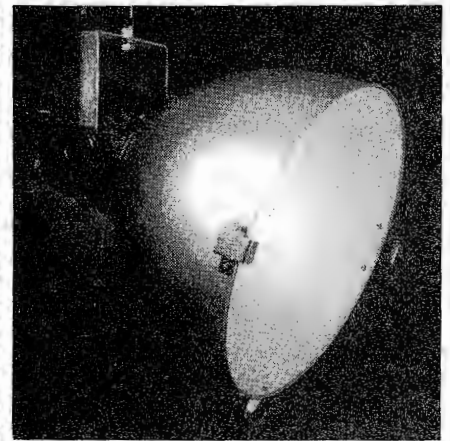
For the best in
Studio Lighting,
Grids, Suspension, Dimming
and Memory Control Systems
including Systems Design,
Manufacturing, and Sales,
Berkey Colortran has it all . . .
with worldwide consulting
and technical support services.

**Berkey
Colortran**

- 10 x 15 Studio Package \$ 2,275.50
- 15 x 20 Studio Package \$ 8,664.00
- 20 x 30 Studio Package \$22,395.00
- 30 x 40 Studio Package \$45,415.00
- 40 x 60 Studio Package \$97,775.50

Please contact your
Harris District Sales Manager or the
Harris Quincy Sales Office
for additional information.

Prices and specifications subject to change without notice



BIRD ELECTRONIC CORPORATION

New Econoload High-Power TERMALINE® RF Loads

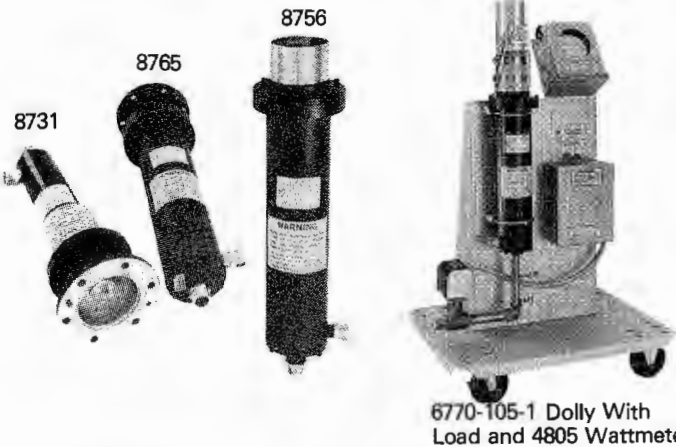
50 ohms nominal

With Field-Replaceable Resistors!

10kW, 20kW, 30kW, 40kW

Line-Mounted RF Terminations for CW, AM, FM, SSB and TV Transmitters.

As with many high power RF measurement and termination ideas, Bird broadcast-system load resistors were an integral part of transmitter equipment right from the industry's days of infancy. From an initial shipping weight of 1400 pounds to a lightweight series of hand-held line terminations, TERMALINE® high power Load Resistors broke new ground at nearly every step of technical innovation.



TERMALINE® RF Coaxial Load Resistors

| MODEL | CONNECTOR | POWER | PRICE |
|---|-----------|-------|--------|
| 8A-88-115, -230 Blower (8890, 91, 92, 95, 97) | | | \$ 300 |
| 8890 QC-LC(F) | | 2½kW | 545 |
| 8890-510 QC-LC(F) | | 7½kW | 1199 |
| 8891 3¼ EIA Fig | | 2½kW | 545 |
| 8891-510 3¼ EIA Fig | | 7½kW | 1199 |
| 8892 1½ EIA Fig | | 2½kW | 545 |
| 8892-510 1½ EIA Fig | | 7½kW | 1199 |
| 8895 1½ Unflg | | 2½kW | 545 |
| 8895-510 1½ Unflg | | 7½kW | 1199 |
| 8897 3¼ Unflg | | 2½kW | 545 |
| 8897-510 3¼ Unflg | | 7½kW | 1199 |
| 8921 QC-LC(F) | | 5kW | 1595 |
| 8922 1½ EIA Fig | | 5kW | 1595 |
| 8926 3¼ EIA Fig | | 5kW | 1595 |
| 8927 3¼ Unflg | | 5kW | 1595 |
| 8931-115 QC-LC(F) | | 10kW | 2150 |
| 8931-230 QC-LC(F) | | 10kW | 2185 |
| 8932-115 1½ EIA Fig | | 10kW | 2150 |
| 8932-230 1½ EIA Fig | | 10kW | 2185 |
| 8936-115 3¼ EIA Fig | | 10kW | 2150 |
| 8936-230 3¼ EIA Fig | | 10kW | 2185 |
| 8937-115 3¼ Unflg | | 10kW | 2150 |
| 8937-230 3¼ Unflg | | 10kW | 2185 |

| MODEL | DESCRIPTION | PRICE |
|------------|------------------------------------|--------|
| 6770-105-1 | Dolly for 20, 30 & 40kW Econoloads | \$ 225 |
| 6770-105-2 | Dolly for 10kW Econoloads | 225 |

| PART NO. | POWER | PRICE |
|----------|-----------|-------|
| 5-898-2 | 20kW | \$ 44 |
| 5-898-3 | 30 & 40kW | 44 |
| 5-898-6 | 10kW | 44 |

MODULOAD® Self-Cooled Load Systems

| MODEL | CONNECTOR | LINE VOLTAGE | POWER | PRICE |
|----------|-----------|--------------|-------|--------|
| 8631-115 | 3¼ EIA FI | 115V 60Hz | 10kW | \$2150 |
| 8631-230 | 3¼ EIA FI | 230V 50Hz | 10kW | 2185 |
| 8635-115 | 1½ EIA FI | 115V 60Hz | 10kW | 2150 |
| 8635-230 | 1½ EIA FI | 230V 50Hz | 10kW | 2185 |
| 8638-115 | 3¼ Unflg | 115V 60Hz | 10kW | 2150 |
| 8638-230 | 3¼ Unflg | 230V 50Hz | 10kW | 2185 |
| 8645-115 | 3¼ EIA FI | 115V 60Hz | 25kW | 3300 |
| 8645-230 | 3¼ EIA FI | 230V 50Hz | 25kW | 3335 |
| 8646-115 | 3¼ Unflg | 115V 60Hz | 25kW | 3300 |
| 8646-230 | 3¼ Unflg | 230V 50Hz | 25kW | 3335 |
| 8655-115 | 3¼ EIA FI | 115V 60Hz | 40kW | 4850 |
| 8655-230 | 3¼ EIA FI | 230V 50Hz | 40kW | 4885 |
| 8656-115 | 3¼ Unflg | 115V 60Hz | 40kW | 4850 |
| 8656-230 | 3¼ Unflg | 230V 50Hz | 40kW | 4885 |

| Control Box Assembly | For all Econoloads | PRICE |
|----------------------|--------------------|--------|
| 8750-100 | | \$ 165 |

| Replacement Resistors | POWER | PRICE |
|-----------------------|-------|-------|
| 8731-021 | 10kW | \$ 90 |
| 8755-027-3 | 30kW | 187 |
| 8755-027-4 | 40kW | 230 |
| 8755-029-2 | 20kW | 124 |

Accessories

50-OHM LINE SECTIONS

| PART NO. | ELEMENT SOCKETS | CONNECTORS | PRICE |
|----------|-----------------|------------|--------|
| 4600-000 | one | 3¼ EIA Fig | \$ 188 |
| 4610-000 | two | 3¼ EIA Fig | 213 |
| 4712-000 | one | 1½ EIA Fig | 153 |
| 4715-000 | two | 1½ EIA Fig | 178 |
| 4716-000 | two, UHF | 1½ EIA Fig | Obs. |
| 4717-000 | one, UHF | 1½ EIA Fig | Obs. |
| 4720-000 | one | 1½ Unflg | 153 |
| 4723-000 | two | 1½ Unflg | 178 |
| 4802-000 | one | 3¼ Unflg | 113 |
| 4805-000 | one | 6¼ EIA Fig | 558 |
| 4902-000 | one | 6¼ Unflg | 583 |
| 4905-000 | two | 6¼ EIA Fig | 583 |
| 4907-000 | one | 6¼ Unflg | 558 |
| 4909-000 | two | 6¼ Unflg | 583 |

New 1500 Watt TERMALINE® RF Load Resistor

| | |
|-------------------------------|----------|
| Model 8890 QC-LC Female | \$675.00 |
| Model 8891 1-5/8" Unflanged | 882.00 |
| Model 8892 1-5/8" EIA Flanged | 800.00 |
| Model 8893 3-1/8" Unflanged | 840.00 |
| Model 8894 3-1/8" EIA Flanged | 837.50 |

Prices and specifications subject to change without notice



Air-Cooled Liquid-Dielectric TERMALINE® RF Load Resistors

Unique New Radiators Extend Upper Limits: 10,000 Watts

Bird TERMALINE® Load Resistors are used during adjustment, testing and alignment of transmitters in place of the antenna, as well as for permanent or stand-by termination of transmission line branches. Their low VSWR assures an excellent match and — at 1.1 — the absorption of at least 99.75% of the RF energy generated.



MODULOAD® RF Load Resistors

50 ohms nominal

The new Self-Cooling MODULOAD® RF Load Resistors operate continually in a few cubic feet of space (3 cu. ft. at 10kW, 5 cu. ft. at 25kW, 11 cu. ft. at 40kW) under full rated RF power without the need for external cooling water. These line terminating systems are, therefore, ideal for locations where water supply is reliable, expensive or simply not available. Self-contained, with integral heat exchanger and protective devices, models are available for 115V 60Hz and 230V 50Hz operation. The suffix indicating which line voltage is applicable is part of each model's number.



New 1500 Watt TERMALINE® RF Load Resistor



1-5/8" LINE 50 ohms nominal

specifications Accuracy: +/-5% of full scale

Insertion VSWR: 1.05 max.

| Model No. | Frequ. Range MHz | Power Range kW | Fig/Unfig | No. of Sockets | Scale Divisions | Element Table | Overall Length | Weight |
|-----------|------------------|----------------|-----------|----------------|-----------------|---------------|----------------|-----------------|
| 4712 | 2-1000 | ¼-25 | EIA Flg | Single | 5/10/25 | 1-5/8A | 6¾" (171mm) | 3 lbs (1¼ kg) |
| 4715-200 | 2-1000 | ¼-25 | EIA Flg | Double | 5/10/25 | 1-5/8A | 6¾" (171mm) | 3¼ lbs (1.4 kg) |
| 4720 | 2-1000 | ¼-25 | Unfig | Single | 5/10/25 | 1-5/8A | 6-3/8" (162mm) | 1¼ lbs (0.6 kg) |
| 4723-2000 | 2-1000 | ¼-25 | Unfig | Double | 5/10/25 | 1-5/8A | 6-3/8" (162mm) | 1½ lbs (0.7 kg) |
| 4712-037 | 50-250 | 0.3-6 | EIA Flg | Single | 15/30/60 | 1-5/8B | 6¾" (171mm) | 3 lbs (1¼ kg) |
| 4715-300 | 50-250 | 0.3-6 | EIA Flg | Double | 15/30/60 | 1-5/8B | 6¾" (171mm) | 3¼ lbs (1.4 kg) |

3-1/8" LINE 50 ohms nominal

| | | | | | | | | |
|----------|--------|-------|---------|--------|----------|--------|-----------------|-----------------|
| 460 | 2-1000 | 1-100 | EIA Flg | Single | 5/10/25 | 3-1/8A | 7-1/32" (179mm) | 7 lbs (3 kg) |
| 4610-200 | 2-1000 | 1-100 | EIA Flg | Double | 5/10/25 | 3-1/8A | 7-1/32" (179mm) | 7¼ lbs (3.1 kg) |
| 4805 | 2-1000 | 1-100 | Unfig | Single | 5/10/25 | 3-1/8A | 6½" (165mm) | 4 lbs (2 kg) |
| 4802-200 | 2-1000 | 1-100 | Unfig | Double | 5/10/25 | 3-1/8A | 6½" (165mm) | 4¼ lbs (2.1 kg) |
| 4600-037 | 50-250 | 1½-30 | EIA Flg | Single | 15/30/60 | 3-1/8B | 7-1/32" (179mm) | 7 lbs (3 kg) |
| 4610-300 | 50-250 | 1½-30 | EIA Flg | Double | 15/30/60 | 3-1/8B | 7-1/32" (179mm) | 7¼ lbs (3.1 kg) |
| 4805-037 | 50-250 | 1½-30 | Unfig | Single | 15/30/60 | 3-1/8B | 6½" (165mm) | 4 lbs (2 kg) |
| 4802-300 | 50-250 | 1½-30 | Unfig | Double | 15/30/60 | 3-1/8B | 6½" (165mm) | 4¼ lbs (2 kg) |

6-1/8" LINE 50 ohms nominal

| | | | | | | | | |
|----------|--------|--------|---------|--------|----------|--------|------------------|-----------------|
| 4902 | 2-1000 | 2½-250 | EIA Flg | Single | 5/10/25 | 6-1/8A | 10-7/32" (260mm) | 21 lbs (9½ kg) |
| 4905-200 | 2-1000 | 2½-250 | EIA Flg | Double | 5/10/25 | 6-1/8A | 10-7/32" (260mm) | 21¼ lbs (9¾ kg) |
| 4907 | 2-1000 | 2½-250 | Unfig | Single | 5/10/25 | 6-1/8A | 9-5/8" (245mm) | 15 lbs (6¾ kg) |
| 4909-200 | 2-1000 | 2½-250 | Unfig | Double | 5/10/25 | 6-1/8A | 9-5/8" (245mm) | 15½ lbs (7 kg) |
| 4902-037 | 50-250 | 3-60 | EIA Flg | Single | 15/30/60 | 6-1/8B | 10-7/32" (260mm) | 12½ lbs (5¾ kg) |
| 4905-300 | 50-250 | 3-60 | EIA Flg | Double | 15/30/60 | 6-1/8B | 10-7/32" (260mm) | 12¾ lbs (6 kg) |

TABLE 1-5/8A
STANDARD ELEMENTS [CATALOG NUMBERS]*

| Power Range | 2-30 | 25-60 | 50-125 | 100-250 | 200-500 | 400-1000 |
|-------------|--------|--------|--------|---------|---------|----------|
| 250 watts | | 250A1 | 250B1 | 250C1 | 250D1 | 250E1 |
| 500 Watts | | 500A1 | 500B1 | 500C1 | 500D1 | 500E1 |
| 1000 watts | 1000H1 | 1000A1 | 1000B1 | 1000C1 | 1000D1 | 1000E1 |
| 2500 watts | 2500H1 | 2500A1 | 2500B1 | 2500C1 | 2500D1 | 2500E1 |
| 5000 Watts | 5000H1 | 5000A1 | 5000B1 | 5000C1 | 5000D1 | 5000E1 |
| 10kW | 10KH1 | 10KA1 | 10KB1 | | | |
| 25kW | 25KH1 | | | | | |

*When ordering, specify catalog number and line section model number.

TABLE 3-1/8A
STANDARD ELEMENTS [CATALOG NUMBERS]*

| Power Range | 2-30 | 25-60 | 50-125 | 100-250 | 200-500 | 400-1000 |
|-------------|--------|--------|--------|---------|---------|----------|
| 1000 watts | | 1000A3 | 1000B3 | 1000C3 | 1000D3 | 1000E3 |
| 2500 watts | | 2500A3 | 2500B3 | 2500C3 | 2500D3 | 2500E3 |
| 5000 watts | 5000H3 | 5000A3 | 5000B3 | 5000C3 | 5000D3 | 5000E3 |
| 10kW | 10KH3 | 10KA3 | 10KB3 | 10KC3 | 10KD3 | 10KE3 |
| 25kW | 25KH3 | 25KA3 | 25KB3 | 25KC3 | 25KD3 | 25KE3 |
| 50kW | 50KH3 | | | | | |
| 100kW | 100KH3 | | | | | |

*When ordering, specify catalog number and line section model number.

TABLE 6-1/8A
STANDARD ELEMENTS [CATALOG NUMBERS]*

| Power Range | 2-30 | 25-60 | 50-125 | 100-250 | 200-500 | 400-1000 |
|-------------|--------|--------|--------|---------|---------|----------|
| 2500 watts | | 2500A6 | 2500B6 | 2500C6 | 2500D6 | 2500E6 |
| 5000 watts | | 5000A6 | 5000B6 | 5000C6 | 5000D6 | 5000E6 |
| 10kW | | 10KA6 | 10KB6 | 10KC6 | 10KD6 | 10KE6 |
| 25kW | 25KH6 | 25KA6 | 25KB6 | 25KC6 | 25KD6 | 25KE6 |
| 50kW | 50KH6 | 50KA6 | 50KB6 | 50KC6 | 50KD6 | 50KE6 |
| 100kW | 100KH6 | | | | | |
| 250kW | 250KH6 | | | | | |

*When ordering, specify catalog number and line section model number.

TABLE 1-5/8B
STANDARD ELEMENTS [CATALOG NUMBERS]*

| Power Range | 50-125 | 100-250 |
|-------------|--------|---------|
| 300 watts | 300B1 | 300C1 |
| 600 watts | 600B1 | 600C1 |
| 1500 watts | 1500B1 | 1500C1 |
| 3000 watts | 3000B1 | 3000C1 |
| 6000 watts | 6000B1 | 6000C1 |

TABLE 3-1/8B
STANDARD ELEMENTS [CATALOG NUMBERS]*

| Power Range | 50-125 | 100-250 |
|-------------|--------|---------|
| 1500 watts | 1500B3 | 1500C3 |
| 3000 watts | 3000B3 | 3000C3 |
| 6000 watts | 6000B3 | 6000C3 |
| 15kW | 15KB3 | 15KC3 |
| 30kW | 30KB3 | 30KC3 |

TABLE 6-1/8B
STANDARD ELEMENTS [CATALOG NUMBERS]*

| Power Range | 50-125 | 100-250 |
|-------------|--------|---------|
| 3000 watts | 3000B6 | 3000C6 |
| 6000 watts | 6000B6 | 6000C6 |
| 15kW | 15KB6 | 15KC6 |
| 30kW | 30KB6 | 30KC6 |
| 60kW | 60KB6 | 60KC6 |

*When ordering, specify catalog number and line section model number.



METER: 4½" meter, shock mounted in aluminum carrying case with 10' (3m) shielded meter cable(s). Dimensions: (WxHxD) 5-9/16" x 6-1/2" x 3-3/8" (141 x 165 x 85).

Single Socket: straight connection.

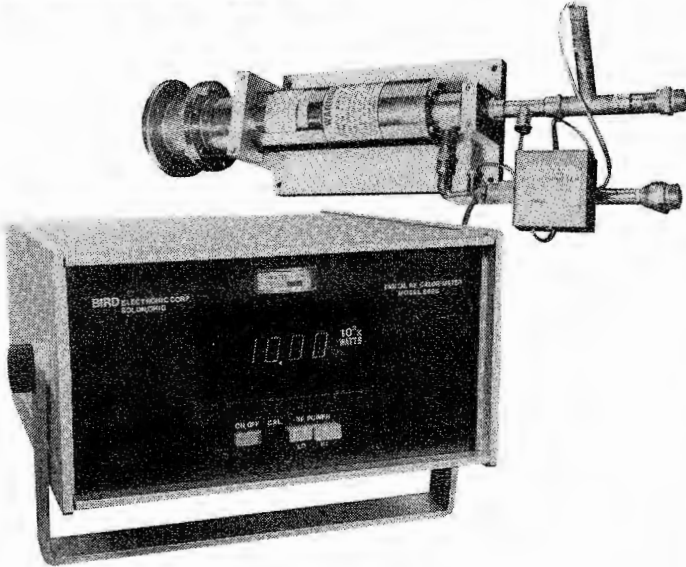
Double Socket: Front panel Forward/Reflected power switch and two shielded cables.

| MODEL | CONNECTORS | PRICE | 4715-200 | 50Ω 1½ EIA Flg | 315 | 4805-037 | 50Ω ¾ Unfig | 185 |
|--------------------------------|-----------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|-----------------|
| 460 | 50 Ω ¾ EIA Flg | \$ 260 | Elements (4715-200) Table 1½ A | 60 | Elements (4805-037) Table ¾ B | 60 | | |
| 4600-037 | 50 Ω ¾ EIA Flg | 260 | 4715-300 | 50 Ω 1½ EIA Flg | 315 | 4902 | 50 Ω 6¼ EIA Flg | 630 |
| Elements (4600-037) Table ¾ B | 60 | Elements (4715-300) Table 1½ B | 60 | Elements (4902) Table 6¼ A | 60 | Elements (4902-037) Table 6¼ B | 60 | |
| 4610-200 | 50 Ω ¾ EIA Flg | 350 | 4720 | 50 Ω 1½ Unfig | 225 | 4902-037 | 50 Ω 6¼ EIA Flg | 630 |
| Elements (4610-200) Table ¾ A | 60 | Elements (4720) Table 1½ A | 60 | Elements (4902-037) Table 6¼ B | 60 | 4905-200 | 50 Ω 6¼ EIA Flg | 720 |
| 4610-300 | 50 Ω ¾ EIA Flg | 350 | 4723-200 | 50 Ω 1½ Unfig | 315 | Elements (4905-200) Table 6¼ A | 60 | |
| Elements (4610-300) Table ¾ B | 60 | Elements (4723-200) Table 1½ A | 60 | 4802-200 | 50 Ω 3¼ Unfig | 275 | 4905-300 | 50 Ω 6¼ EIA Flg |
| 4712 | 50 Ω 1½ EIA Flg | 225 | Elements (4802-200) Table ¾ A | 60 | Elements (4905-300) Table 6¼ B | 60 | Elements (4905-300) Table 6¼ B | 60 |
| Elements (4712) Table 1½ A | 60 | 4802-300 | 50 Ω 3¼ Unfig | 275 | 4907 | 50 Ω 6¼ Unfig | 630 | |
| 4712-037 | 50 Ω 1½ EIA Flg | 225 | Elements (4802-300) Table ¾ B | 60 | Elements (4907) Table 6¼ A | 60 | Elements (4907) Table 6¼ A | 60 |
| Elements (4712-037) Table 1½ B | 60 | 4805 | 50 Ω 3¼ Unfig | 185 | 4909-200 | 50 Ω 6¼ Unfig | 720 | |
| | | Elements (4805) Table ¾ A | 60 | Elements (4909-200) Table 6¼ A | 60 | | | |

Prices and specifications subject to change without notice



BIRD ELECTRONIC CORPORATION



DIGITAL HI-POWER Wide-Range RF Calorimeter 1000W to 80kW

- Measure RF power quickly with precision, after simple set-up.
- Automatically processes all sensor inputs.
- Displays power directly without charts or calculations.
- Conveniently portable.

After more than a quarter century of leadership in THRULINE® broadcast power measurement, Bird introduces convenience and simplicity to accurate high-power RF calorimetry: Place the sensors in series with the cooling water of a water-cooled line termination, let the liquid run until flow and temperature have stabilized, adjust the display to indicate zero, apply RF power and read!

No waiting for stabilization after the first reading: Power readings can be taken in seconds with +/- 3% accuracy. With CW or FM, the power indicated is the same as that measured by our average reading THRULINE wattmeters, which makes the model 6080 calorimeter an ideal in-house calibration instrument. With a black-level television transmission, the indicated power will be 60.1% of peak (as compared to 59.6% on an analog THRULINE wattmeter).

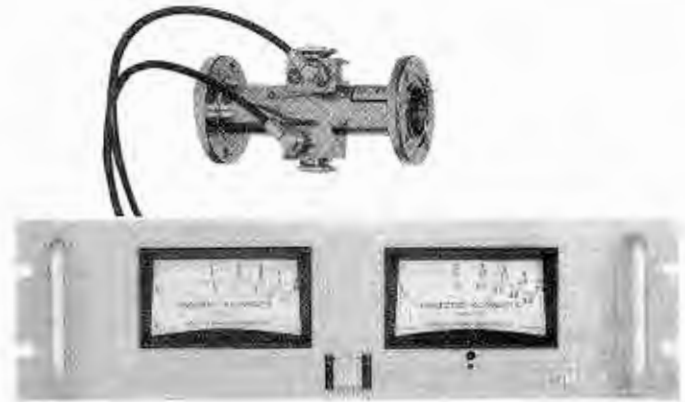
Modulating an AM carrier 100% with a pure single tone will increase the calorimeter reading by 50%, measuring the average power contained in the sidebands in addition to the carrier. In other words, the model 6080 digital readout always indicates the heating power dissipated in the load resistor. The use of a well-matched termination with low VSWR, such as Bird TERMALINE® Load Resistors, is essential.

The outputs of the two temperature sensors and the flow-rate monitor are transferred to a long control cable in an RFI-protected junction box. The control cable permits the main unit to be placed up to eight feet from the point of measurement for convenience of reading and time-saving flexibility. This main control unit processes the sensor data and displays directly in kilowatts the result of:

Flow rate x Temperature differential x Specific heat x Conversion constant = RF Power

Interpolation of flow rates, position of mercury columns in hard-to-read thermometers and of system constants has been completely eliminated.

| MODEL | PRICE |
|--|--------|
| 6080-115 (less TERMALINE® water-cooled load) | \$2000 |
| 6080-230 (less TERMALINE® water-cooled load) | 2000 |

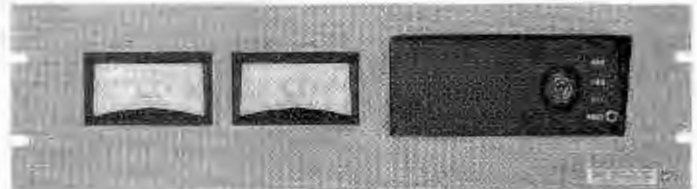


Transmitter Protection: WATTCHER® RF Power Monitor/Alarm

model 3127 for rigid lines model 3128 for cable

Bird WATTCHER® models 3127/3128 are rack mounted instruments complete with power supply, two illuminated 5" meters for incident power and reflected power. The reflected meter has an adjustable set point which controls the contact point on the meter alarm.

Abnormal load conditions quickly cause transmitter shut-down, a buzzer alarm, and a change of illumination color of the reset button from green to red. Audible and visual alarms indicating system malfunction may be removed. Choice of Fail-Safe or Non-Fail-Safe Mode is selected by a rear switch.



HighSpeed WattchER® RF Monitoring System

model 3171

Model 3171 is a new high-speed monitoring system for remote and on-location supervision of transmitters ancillary services. The two most important features of the new design are a shortening of response time down to 200 microseconds — much faster than equipment protection requires — and remote reset capability.

The series 3171 WATTCHER RF Monitoring Systems warn a remote operator 1(Of low power due to detuning, component deterioration, AC line difficulties and 2(Of high VSWR due to antenna icing, transmission line moisture or deformation, sudden accidents or lightning, etc.

| MODEL | PRICE | |
|-----------------------------------|-------|----|
| 3127 for rigid lines | \$575 | |
| 3128 for cables | 575 | |
| DC cables for 3170, 3171: | | |
| 3170-058-1 14" | | 10 |
| 3170-058-2 15' | | 13 |
| 3170-058-3 25' | 16.50 | 15 |
| 3171-010 25' for 6 1/2 Lines only | 20 | 20 |
| 3170 HighSpeed. For cables | 750 | 18 |
| 3171 HighSpeed. For rigid lines | 750 | 20 |
| Elements for 3171 | 60 | |

Prices and specifications subject to change without notice



AIR DIELECTRIC WELLFLEX — CABLE AND CONNECTORS

| STOCK NO. | | PRICE |
|--------------|--|---------|
| 618-0319-000 | 7/8" 50 ohm, Jacketed Wellflex, air | \$ 3.17 |
| 620-1141-000 | 7/8" N-Male Plug | 40.00 |
| 620-1140-000 | 7/8" N-Female Receptacle | 40.00 |
| 620-1143-000 | 7/8" UHF Female Receptable | 38.00 |
| 620-0967-000 | 7/8" End Terminal | 75.00 |
| 620-1139-000 | 7/8" Splice | 50.50 |
| 620-1142-000 | 7/8" LC-Male Plug | 92.00 |
| 620-0969-000 | 7/8" EIA Flange (Gas Barrier) | 72.00 |
| 620-0970-000 | 7/8" EIA Flange (Gas Pass) | 50.50 |
| 620-1403-000 | 7/8" N-Female Receptacle, LO VSWR | 115.00 |
| 620-1400-000 | 7/8" EIA Flange (Gas Barrier) LO VSWR | 122.00 |
| 618-0320-000 | 1-5/8", 50 ohm, Jacketed Wellflex, air | 6.93 |
| 620-1377-000 | 1-5/8" N-Male Plug | 103.00 |
| 620-1378-000 | 1-5/8" N-Female Receptacle | 103.00 |
| 620-0968-000 | 1-5/8" End Terminal | 158.00 |
| 620-1149-000 | 1-5/8" Splice | 148.00 |
| 620-1150-000 | 1-5/8" LC-Female Receptacle | 148.00 |
| 620-1147-000 | 1-5/8" Connector 7/8" EIA Flange (Gas Barrier) | 132.00 |
| 620-1146-000 | 1-5/8" Connector, 7/8" EIA Flange (Gas Pass) | 126.00 |
| 620-0973-000 | 1-5/8" EIA Flange (Gas Barrier) | 115.00 |
| 620-0974-000 | 1-5/8" EIA Flange (Gas Pass) | 100.00 |
| 620-1404-000 | 1-5/8" N-Female Receptacle, LO VSWR | 190.00 |
| 620-1401-000 | 1-5/8" Connector, 7/8" EIA Flange (Gas Barrier), LO VSWR | 252.00 |
| 620-1402-000 | 1-5/8" Connector, 7/8" Flange (Gas Pass), LO VSWR | 246.00 |
| 618-0321-000 | 3", 50 ohm, Jacketed Wellflex, air | 13.20 |
| 620-1153-000 | 3" Cable Splice | 236.00 |
| 620-0975-000 | 3-1/8" EIA Flange Female (Gas Pass) | 190.00 |
| 620-0976-000 | 3-1/8" EIA Flange Female (Gas Barrier) | 200.00 |
| 620-0977-000 | 3-1/8" EIA Anchor Inner Connector | 42.00 |

FOAM DIELECTRIC WELLFLEX — CABLE AND CONNECTORS

| | | |
|--------------|---------------------------------------|----------|
| 618-0316-000 | 3/8", 50 ohm, Jacketed Wellflex, Foam | .82 |
| 618-0317-000 | 1/2", 50 ohm, Jacketed Wellflex, Foam | 1.08/ft. |
| 620-0952-000 | 3/8" N-Male Plug | 16.80 |
| 620-0955-000 | 3/8" N-Female Receptacle | 16.80 |
| 620-0958-000 | 3/8" UHF-Male Plug | 17.32 |
| 620-0961-000 | 3/8" UHF-Female Receptacle | 17.32 |
| 620-1382-000 | 3/8" TNC-Male Plug | 26.25 |
| 620-0964-000 | 3/8" End Terminal | 47.25 |
| 620-1385-000 | 3/8" Cable Splice | 42.00 |
| 620-0953-000 | 1/2" N-Male Plug | 12.60 |
| 620-0956-000 | 1/2" N-Female Receptacle | 12.60 |
| 620-0959-000 | 1/2" UHF-Male Plug | 11.50 |
| 620-0962-000 | 1/2" UHF-Female Receptacle | 11.50 |
| 620-0965-000 | 1/2" End Terminal | 50.40 |

Prices and specifications subject to change without notice



FOAM DIELECTRIC WELLFLEX — CABLE AND CONNECTORS

| STOCK NO. | | PRICE |
|--------------|---|----------|
| 620-1386-000 | 1/2" Cable Splice | \$ 44.10 |
| 620-0971-000 | 1/2" Connector, 7/8" EIA Flange (Gas Barrier) | 57.75 |
| 618-0318-000 | 7/8", 50 ohm, Jacketed Wellflex, Foam | 2.52 |
| 620-0954-000 | 7/8" N-Male Plug | 31.50 |
| 620-0957-000 | 7/8" N-Female Receptacle | 31.50 |
| 620-0960-000 | 7/8" UHF-Male Plug | 33.60 |
| 620-0963-000 | 7/8" UHF-Female Receptacle | 33.60 |
| 620-0966-000 | 7/8" End Terminal | 58.80 |
| 620-1387-000 | 7/8" Cable Splice | 56.70 |
| 620-0972-000 | 7/8" Connector, 7/8" EIA Flange (Gas Barrier) | 52.50 |
| 618-0353-000 | 1-5/8", 50 ohm, Jacketed Wellflex, Foam | 5.98 |
| 620-1376-000 | 1-5/8" N-Male Plug | 100.00 |
| 620-1128-000 | 1-5/8" N-Female Receptacle | 100.00 |
| 620-1384-000 | 1-5/8" End Terminal | 131.00 |
| 620-1388-000 | 1-5/8" Cable Splice | 126.00 |
| 620-1396-000 | 1-5/8" Connector, 7/8" EIA Flange (Gas Barrier) | 126.00 |

ACCESSORIES FOR WELLFLEX CABLE

| | | |
|--------------|---|-----------|
| 620-0978-000 | Stainless Steel Strapping Kit — Consists of 100' of 1/2" strap, fastener buckles and tightening tool | 21.00 |
| 620-1406-000 | Non-Insulated Hanger Kit (10 pcs/kit) for 1/2" cable requires Angle or Round Member Adapters below | 23.00/kit |
| 620-0979-000 | Same except for 7/8" Cable | 25.00/kit |
| 620-0980-000 | Same except for 1-5/8" Cable | 25.00/kit |
| 620-0981-000 | Same except for 3" Cable | 30.00/kit |
| 620-1371-000 | Insulated Hanger for 1/2" Cable — Requires Angle or Round Member Adaptors below | 11.00 |
| 620-1372-000 | Same except for 7/8" Cable | 13.00 |
| 620-0994-000 | Same except for 1-5/8" Cable | 15.00 |
| 620-0995-000 | Same except for 3" Cable | 30.00 |
| 620-0982-000 | Angle Member Adapter Kit (10 pcs/kit) for Non-Insulated and Insulated Hangers 1/2" and 7/8" | 27.50/kit |
| 620-0983-000 | Same except for Non-Insulated Hangers 1-5/8" and 3" | 34.00/kit |
| 620-0984-000 | Same except for Insulated Hangers 1-5/8" and 3" | 58.00/kit |
| 620-0985-000 | Round Member Adapter Kit (10 pcs/kit) for Non-Insulated (1/2", 7/8", 1-5/8", 3") and Insulated Hangers 1/2" and 7/8". Use on 1" to 2" Member. | 13.00/kit |
| 620-0986-000 | Same except 2" to 3" Member | 15.00/kit |
| 620-0987-000 | Same except 3" to 4" Member | 15.00/kit |
| 620-0988-000 | Same except 4" to 5" Member | 15.00/kit |
| 620-0989-000 | Same except 5" to 6" Member | 15.00/kit |
| 620-1373-000 | Round member Adapter Kit (10 pcs/kit) for Insulated Hangers 1-5/8" and 3". Use on 1-1/4" to 2" Member. | 84.00/kit |
| 620-1374-000 | Same except for 2-1/2" to 3" Member | 34.00/kit |
| 620-1375-000 | Same except for 3-1/2" to 4" Member | 89.00/kit |
| 620-1409-000 | Hoisting Grip, Heavy Duty, for 1/2" Cable | 20.00 |
| 620-1410-000 | Same except for 7/8" Cable | 21.00 |
| 620-0996-000 | Same except for 1-5/8" Cable | 21.00 |
| 620-0997-000 | Same except for 3" Cable | 42.00 |

Prices and specifications subject to change without notice



FOAM DIELECTRIC WELLFLEX — CABLE AND CONNECTORS

| STOCK NO. | | PRICE |
|--------------|---|------------|
| 620-1411-000 | Grounding Kit for 1/2" Cable | \$ 9.00 |
| 620-0988-000 | Same except 7/8" Cable | 9.00 |
| 620-0999-000 | Same except 1-5/8" Cable | 11.00 |
| 620-1000-000 | Same except 3" Cable | 13.00 |
| 620-1417-000 | Splice Protection Kit — use one for four 1/2" splices, two 7/8" splices, one 1-5/8" splice. Two required for one 3" splice. | 21.00 |
| 620-1418-000 | Wall/Roof Feed-Thru for 3/8" Cable | 21.00 |
| 620-1419-000 | Same except for 1/2" Cable | 23.00 |
| 620-1420-000 | Same except for 7/8" Cable | 25.00 |
| 620-1421-000 | Same except for 1-5/8" Cable | 34.00 |
| 620-1422-000 | Same except for 3" Cable | 48.00 |
| 464-0060-000 | Dielectric Recessing Tool for 3/8" Foam Wellflex | On Request |
| 464-0061-000 | Same except for 1/2" Cable | On Request |
| 464-0062-000 | Same except for 7/8" Cable | On Request |
| 464-0065-000 | Outer Conductor Flaring Tool for 7/8" Air Wellflex | On Request |
| 464-0066-000 | Same except for 1-5/8" Cable | On Request |
| 464-0067-000 | Same except for 3" Cable | On Request |
| 464-0068-000 | Spanner Wrench for 1-5/8" Cable Connectors | On Request |
| 464-0069-000 | Same except for 3" Cable Connectors | On Request |

RIGID LINE AND FITTINGS

| | | |
|--------------|---|--------|
| 618-0322-000 | Rigid Line, 20', 1-5/8", 50 ohm with EIA Flanges (1-158-50) | 162.80 |
| 618-0323-000 | Rigid Line, 20', 3-1/8", 50 ohm with EIA Flanges (1-318-50) | 283.50 |
| 620-1131-000 | Reducer, Tape Type, 1-5/8" EIA to 7/8" EIA, 50 ohm (17-158-50) | 73.50 |
| 620-1132-000 | Reducer, Taper Type, 3-1/8" EIA to 1-5/8" EIA, 50 ohm (17-318-50) | 98.70 |
| 620-1005-000 | Gas Barrier, 50 ohm, 7/8" EIA (7-78-50) | 52.50 |
| 620-1006-000 | Same except 1-5/8" EIA (7-158-50) | 86.10 |
| 620-1007-000 | Same except 3" EIA (7-318-50) | 151.20 |
| 620-1001-000 | Miter Elbow, 90 D., 50 ohm, 1-5/8" EIA (4-158-50) | 80.90 |
| 620-1002-000 | Same except 3-1/8" EIA (4-318-50) | 134.40 |

PRESSURIZATION EQUIPMENT AND ACCESSORIES

| | | |
|---------------|---|---------|
| 620-1093-000* | Cablewave, single-stage, pressure-reducing regulator for nitrogen gassed lines with 30 lb. and 3,000 lb. gauges. Fits CGA 580 (0.965" r.h. internal) nitrogen tank connection | 150.00 |
| 620-1109-000* | Cablewave, Automatic Dehydrator 1.3 SCFM with low pressure alarm, 115V, 60Hz. | 1040.00 |

Prices and specifications subject to change without notice





CONRAC

COLOR MONITORS



6100 Series: 19-inch Color

The ultimate "master monitor" for professional broadcasting and teleproduction applications. Features a Colormatch, 625-line resolution, shadow-mask CRT, beam current feedback, thirty-eight independent and fully active convergence controls, and optional comb filter which offers improved separation of chrominance and luminance, and reduces cross-color distortions.

6100 Series Broadcast Color Monitors

| 19" CRT; NTSC | | |
|--|--------|-----------------------------|
| 6122C19 | \$5570 | Cabinet |
| 6122RS19 | \$5510 | Rack mount with slides |
| 6122Y19 | \$5590 | Cabinet with mounting studs |
| 19" CRT; NTSC with comb filter accessory | | |
| 6142C19 | \$6310 | Cabinet |
| 6142RS19 | \$6250 | Rack mount with slides |
| 6142Y19 | \$6330 | Cabinet with mounting studs |



5700 Series: 13-inch Color

A compact, 500-line resolution Colormatch, shadow-mask picture or data display monitor, with special controls and configuration for VTR over-console applications. All convergence controls are located in a pull-out drawer for full front access. Also available in rack and portable cabinet configurations. Available in NTSC color transmission standards, with optional vector output, and in an RGB input configuration for computer data/graphics applications.

5700 Series Broadcast Color Monitors

| 13" CRT, RGB | | |
|---------------|--------|-----------------------------|
| 5711C13 | \$3860 | Cabinet |
| 5711RS13 | \$3810 | Rack mount with slides |
| 5711N13 | \$3730 | Chassis with front † |
| 5711Y13 | \$3890 | Cabinet with mounting studs |
| 13" CRT; NTSC | | |
| 5722C13 | \$3990 | Cabinet |
| 5722RS13 | \$3930 | Rack mount with slides |
| 5722N13 | \$3860 | Chassis with front † |
| 5722Y13 | \$4010 | Cabinet with mounting studs |

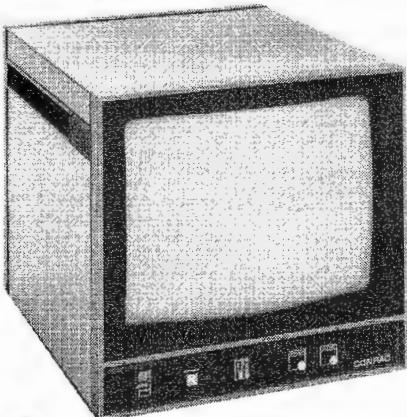


5300 Series: 19-inch Color

The Conrac 5300 is also a 19-inch color monitor, featuring a shadow-mask, Colormatch CRT. Its cost-effective performance capabilities are designed to meet all but the most stringent broadcast requirements.

5300 Series Broadcast Color Monitors

| 19" CRT; NTSC | | |
|---------------|--------|-----------------------------|
| 5322C19 | \$3280 | Cabinet |
| 5322RS19 | \$3200 | Rack mount with slides |
| 5322Y19 | \$3280 | Cabinet with mounting studs |



5200/5400 Series: 19- and 25-inch Color

The 5200 series display monitors are for audience viewing, corporate communications, and instructional applications. They feature a shadow-mask CRT, and preset controls for contrast and brightness. Available in NTSC color transmission standards, or in an RGB version for computer data/graphics applications.

The 5400 series features an 800-line resolution raster-scan RGB color image display with a shadow-mask CRT and horizontal dynamic focus. The ultra-rectangular CRT is specifically designed for computer graphics, industrial control, hospital and alphanumeric display applications.

5200 Series Industrial/Educational Color Monitors

| 19" CRT; RGB | | |
|---------------|--------|-----------------------------|
| 5211C19 | \$2620 | Cabinet |
| 5211RS19 | \$2550 | Rack mount with slides |
| 5211Y19 | \$2650 | Cabinet with mounting studs |
| 19" CRT; NTSC | | |
| 5222C19 | \$2750 | Cabinet |
| 5222RS19 | \$2680 | Rack mount with slides |
| 5222Y19 | \$2780 | Cabinet with mounting studs |
| 25" CRT; RGB | | |
| 5211C25 | \$3050 | Cabinet |
| 5211Y25 | \$3050 | Cabinet with mounting studs |
| 25" CRT; NTSC | | |
| 5222C25 | \$3475 | Cabinet |
| 5222Y25 | \$3475 | Cabinet with mounting studs |

5400 Series High Resolution Color Video Display Monitors

| 19" CRT; RGB | | |
|--------------|--------|-----------------------------|
| 5411C19 | \$4790 | Cabinet |
| 5411RS19 | \$4700 | Rack mount with slides |
| 5411Y19 | \$4800 | Cabinet with mounting studs |



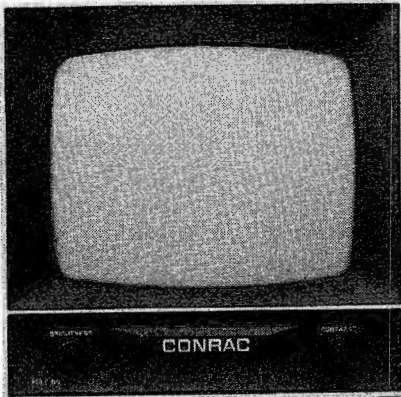
Prices and specifications subject to change without notice

† Chassis with front — for tape bridge mounting



CONRAC

MONOCHROME MONITORS



DZB Series: 15-inch Monochrome

A professional monochrome monitor designed for VTR over-console mounting. Front panel selector switch allows two matched video inputs to be viewed for picture comparison.

SNA Series:

9-, 14-, 17- and 23-inch Monochrome
A family of 800-line high resolution monitors for broadcast, industrial and educational applications. Horizontal AFC time constant is compatible with helical-scan video tape recorders. Quick-disconnect circuit modules are common to all models. The 17-inch display features dynamic focus. Designed for operation at either 525 line, 60 field, or 625 line, 50 field, sync rates without modification. Also optionally available for high line rate operation.

ENA Series:

9- and 12-inch Monochrome

A cost effective, 650-line resolution monochrome display for industrial, data processing, and educational installations. Meets all EIA RS-170 specifications. Horizontal AFC is optimized to meet the requirements of industrial tape recorders. Chassis, rack or cabinet models available. A dual 9-inch model will fit in a 19-inch rack and requires only 8 3/4-inch of vertical rack space.

QQA Series:

14- and 17-inch Monochrome

A very high resolution, dynamic focus, monochrome display which is adjustable to lock on any field rate from 15 to 60 per second. It will lock on any three pre-selected, switch-selectable horizontal rates between 15 kHz and 37 kHz. Aspect ratio and frame size are continuously variable.

DZB Series

Broadcast Monochrome Monitors

| | | |
|----------|--------|-----------------------------|
| 15" CRT | | |
| DZB15/C | \$1600 | Cabinet |
| DZB15/RS | \$1520 | Rack mount with slides |
| DZB15/N | \$1470 | Chassis with front f |
| DZB15/Y | \$1800 | Cabinet with mounting studs |

SNA Series

Broadcast/Industrial Monochrome Monitors

| | | |
|----------|--------|---|
| 9" CRT | | |
| SNA9/C | \$ 770 | Cabinet |
| SNA9/RC | \$ 790 | Rack mount; CRT centered |
| SNA9/2R | \$1440 | Twin 9" CRT units, rack mount |
| SNA9/N | \$ 710 | Chassis only |
| SNA9/RBL | \$ 790 | Rack mount; L front panel blank |
| SNA9/RBR | \$ 790 | Rack mount; R front panel blank |
| SNA9/RXL | \$ 790 | Rack mount; accepts Tek 529 or 1480 on L side |
| SNA9/RXR | \$ 790 | Rack mount; accepts Tek 529 or 1480 on R side |
| SNA9/RKL | \$ 790 | Rack mount; accepts Tek 528 on L side |
| SNA9/RKR | \$ 790 | Rack mount; accepts Tek 528 on R side |
| 14" CRT | | |
| SNA14/c | \$ 860 | Cabinet |
| SNA14/R | \$ 870 | Rack mount |
| SNA14/RS | \$ 980 | Rack mount with slides |
| SNA14/NC | \$ 780 | Chassis only; for cabinet version |
| SNA14/NR | \$ 780 | Chassis only; for rack mount version |

17" CRT; with dynamic focus

| | | |
|----------|--------|-----------------------------|
| SNA17/C | \$ 980 | Cabinet |
| SNA17/R | \$ 910 | Rack mount |
| SNA17/RS | \$ 980 | Rack mount with slides |
| SNA17/N | \$ 860 | Chassis only |
| SNA17/Y | \$ 980 | Cabinet with mounting studs |

23" CRT; with dynamic focus

| | | |
|---------|--------|-----------------------------|
| SNA23/C | \$1085 | Cabinet |
| SNA23/Y | \$1085 | Cabinet with mounting studs |

ENA Series

Low Cost Monochrome Monitors

| | | |
|----------|--------|---------------------------------------|
| 9" CRT | | |
| ENA9/C | \$ 420 | Cabinet |
| ENA9/2R | \$ 800 | Twin 9" CRT units; rack mount |
| ENA9/N | \$ 370 | Chassis only |
| ENA9/RBL | \$ 440 | Rack mount; L front panel blank |
| ENA9/RBR | \$ 440 | Rack mount; R front panel blank |
| ENA9/RKL | \$ 460 | Rack mount; accepts Tek 528 on L side |
| ENA9/RKR | \$ 460 | Rack mount; accepts Tek 528 on R side |

12" CRT

| | | |
|---------|--------|--------------|
| ENA12/C | \$ 480 | Cabinet |
| ENA12/R | \$ 510 | Rack mount |
| ENA12/N | \$ 400 | Chassis only |

QQA Series

High Resolution Monochrome Monitors

| | | |
|----------|--------|-----------------------------|
| 14" CRT | | |
| QQA14/C | \$2150 | Cabinet |
| QQA14/RS | \$2210 | Rack mount with slides |
| QQA14/N | \$2020 | Chassis only |
| QQA14/Y | \$2170 | Cabinet with mounting studs |

17" CRT

| | | |
|----------|--------|-----------------------------|
| QQA17/C | \$2150 | Cabinet |
| QQA17/RS | \$2240 | Rack mount with slides |
| QQA17/N | \$2050 | Chassis only |
| QQA17/Y | \$2210 | Cabinet with mounting studs |

Prices and specifications subject to change without notice





D-75 Power Amplifier

The Crown D-75 power amplifier, requiring only 1 1/4" (4.45cm) of vertical rack space, was designed to operate safely and continuously into a variance of load requirements. The D-75 provides 35 watts per channel minimum RMS (both channels operating) into an 8 ohm load over a bandwidth of 20Hz-20KHz at a rated sum total harmonic distortion that is 0.05% of the fundamental output voltage. The frequency response of the unit varies no more than +/-0.1dB from 20Hz-20KHz at 1 watt into 8 ohms. Features of the D-75 include active balanced inputs, Cannon XLR connectors, an easily accessible mono-stereo switch, and front panel LEDs indicating overloads and signal presence. A special feature of the D-75 is the provision for isolating chassis ground from electrical ground.



D-75
\$399.00

D-150A Single or Dual Channel Power Amplifier

The Crown D-150A is a single or dual channel power amplifier designed for precision amplification of frequencies from 1Hz to 20KHz. The design of the D-150A provides extremely low harmonic and intermodulation distortion with very low noise. A switch on the rear of the unit allows stereo or mono operation with no internal wiring changes. In the mono mode, the D-150A is capable of a 50 volt balanced line output. The unit operates on AC current from 120V to 240V.

The D-150A embodies the simplest and yet most accurate distortion display available in any audio product. The IOC — Input-Output Comparator — senses any form of amplifier non-linear behaviour and reports its existence through front panel LEDs. Slew-induced distortion, protection circuit activation, and clipping distortion will all be detected by the IOC circuit at levels below the rated distortion of the amplifier. Thus, the amplifier becomes a valuable tool in the hands of the user to facilitate proper amplifier-speaker-environment matching, as well as a continuous monitor of the purity of the signal reproduction through the amplifier under actual operating conditions.

Stereo Output: 80 W RMS per channel.



D-150A
\$599.00
HMB-5 optional handle kit
\$20.00

DC-300A Single or Dual Channel Power Amplifier

The Crown DC-300A is a single or dual channel power amplifier designed for precision amplification of frequencies from 1Hz to 20KHz. The design of the DC-300A provides extremely low harmonic and intermodulation distortion with very low noise. A switch on the rear of the unit allows stereo or mono operation with no internal wiring changes. In the mono mode, the DC-300A is capable of a 70V balanced line output. The unit operates on AC current from 120V to 256V.

The DC-300A embodies the simplest and yet most accurate distortion display available in any audio product. The IOC — Input-Output Comparator — senses any form of amplifier non-linear behavior and reports its existence through front panel LEDs. Slew-induced distortion, protection circuit activation, and clipping distortion will all be detected by the IOC circuit at levels below the rated distortion of the amplifier. Thus, the amplifier becomes a valuable tool in the hands of the user to facilitate proper amplifier-speaker-environment matching, as well as a continuous monitor of the purity of the signal reproduction through the amplifier under actual operating conditions.

The DC-300A contains output protection circuitry pioneered by Crown. This circuitry protects the unit completely against shorted, mismatched, or open loads and completely eliminates the need for DC fuses and mode switches to protect the amplifier. With this unique protection system, the DC-300A can safely drive any speaker load, resistive or reactive, with no fear of harming the amplifier. The speakers can be paralleled with no deterioration of sound quality since changing the load impedance only affects the maximum power available, not the ability of the amplifier to produce clean sound.

The DC-300A has two totally separate direct coupled amplifier circuits employing dual integrated circuit op amp input stages and silicon transistors in succeeding stages. The DC-300A exhibits essentially flat frequency and phase response down to DC and eliminates thumping from non-symmetrical wave forms. Output stages utilize Crown class AB + B circuitry in which the driver transistors carry the quiescent bias current while the output transistors serve only as boosters which sense and deliver large currents.

Stereo Output: 155 W RMS per channel.



DC-300A
\$949.00
HMB-7 optional handle kit
\$20.00



Prices and specifications subject to change without notice

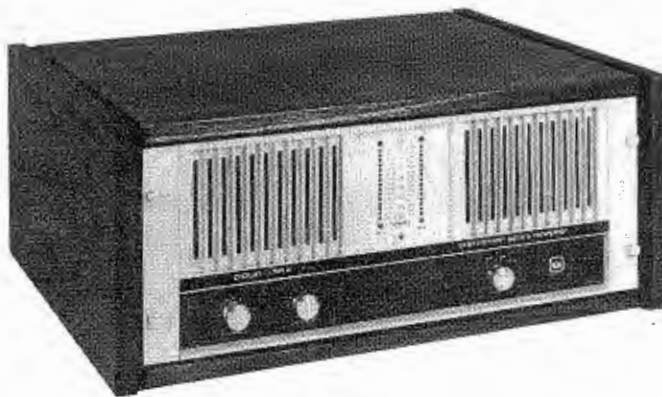


SA2 Stereo Power Amplifier

The Crown SA2 Distinction Series stereo power amplifier is rated at 220 watts per channel minimum RMS into an 8 ohm load (both channels operating, 20Hz to 20KHz, total harmonic distortion less than 0.05%). For a 4 ohm load the output is 350 watts per channel.

The SA2 incorporates new circuit technology which makes it possible to avoid the arbitrary output limits used in voltage or current limiting amps which had to be designed for worst-case possibilities. The SA2 self-analyzing circuit allows output devices to function at optimum levels under any conditions. The SA2 limits output only when a built-in computer reports that the power transistors are approaching their safe operating limits for the conditions under which it is operating. The user of the SA2 thus will have much more power available from a given number of output devices.

The two channels in the Crown SA2 are electrically separate, each with its own proper supply and circuitry so that they function essentially as two separate amplifiers. The power transformers are shock-mounted to prevent transformer vibrations from being radiated to other parts of the amp. Significant improvement in sonic quality, reliability and trouble-free operation are the benefits to the user resulting from these design decisions.

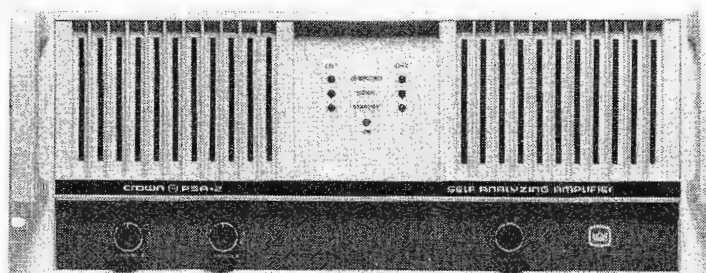


SA2
\$1595.00

DS-HMB-7 optional handle kit
\$20.00

PSA-2 Power Amplifier

The Crown PSA-2 power amplifier, requiring 7" (17.78cm) of vertical rack space, was designed to operate safely and continuously into a variety of load requirements. The PSA-2 provides 400 watts +1dB per channel (both channels operating) into a 4 ohm load over a bandwidth of 20Hz to 20KHz with no more than 1.0% THD, and 250 watts +/-1dB per channel (both channels operating) into an 8 ohm load over a bandwidth of 20Hz to 20KHz with no more than 1.0% THD. The frequency response of the unit varies no more than +0.1dB from 20Hz to 20KHz at 1 watt into 8 ohms. Features of the PSA-2 include a two-speed fan and completely enclosed high-efficiency heat sinks, balanced variable gain (XLR) inputs on a back panel plug-in module, switchable high and low pass 3-pole Butterworth filters that are factory-set for 50Hz-15KHz, (other roll-off points available), a push-button test-tone generator, an adjustable-threshold compressor to limit output at the user's discretion, switch selectable low-frequency load protection, switch selectable turn-on delay, thermal-sensing power supply protection to eliminate premature fuse-blowing, stackability (without a cabinet), an easily accessible mono-stereo switch, and front panel LEDs indicating standby mode, signal presence and IOC.



PSA-2
\$1495.00

DS-HMB-7 optional handle kit
\$20.00

PSA-2D (with peak LED display)
\$1695.00

Prices and specifications subject to change without notice





SERIES SPA

Secondary Power Arresters

FEATURES

- Three basic models provide optimum protection for most secondary power installations: SPA-100 for 120 volt AC circuits, SPA-200 for 208-277 volt AC circuits, SPA-400 for 480 volt AC circuits.
- Consumer protection — SPA-100 is **UL listed. Control No. 509H.**
- Automatically resets — has multi-stroke protection capability.
- Weatherproof housing for indoor or outdoor use.
- Easy installation.
- Maintenance free.
- No power consumption.



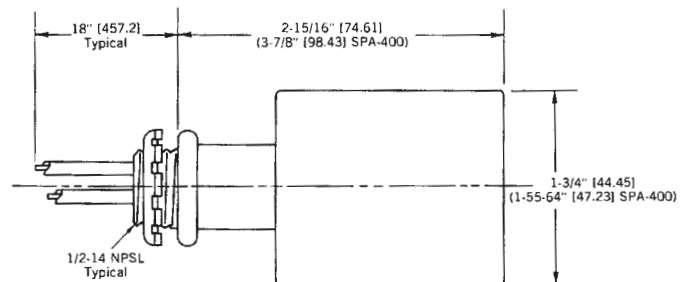
DESCRIPTION

Dale SPA secondary power arresters, when connected across an AC power line, limit surge voltages caused by lightning and other transients. They provide excellent protection for wiring, appliances, electrical and electronic equipment of all kinds. These arresters use the Dale rotating arc spark gap which has the capability to withstand multiple lightning strokes. In addition, SPA arresters provide protection from extreme surge amplitudes. Power-follow current is limited and extinguished within one-half cycle. Pre-ionizing of the spark gap yields protection during the fast-rising wavefront of the transient. The arresters are hermetically sealed in a strong steel case and completely contain the surge discharge. High reliability and long life make these arresters especially suitable for isolated or remote installations.

SPA-100 \$35.00 SPA-200 \$35.00 SPA-400 \$60.00

SPA arresters meet or exceed the requirements of the following specifications.

NEMA LA-1
IEEE STD 28
ANSI C62.1
MIL-A-21907A (Type 1, Class 1, Size 0, Outdoor Service)



SPECIFICATIONS

| TYPE | SPA-100 | SPA-200 | SPA-400 |
|---|--|---------------------------|---------------------------|
| Line Voltage Rating Volts RMS | 175 | 277 | 500 |
| Intended Service Volts RMS | 120 | 220-277 | 480 |
| 60 Hz Sparkover Voltage Min. Volts RMS | 390 | 550 | 920 |
| Impulse Sparkover Voltage @ 10 KV/ μ s Rate of Rise Volts Peak | 1000 average 1200 max. | 1300 average 1500 max. | 2000 average 3000 max. |
| Discharge Voltage, max. volts peak | | | |
| 8x20 μ s 1500 amp | 1500 | 2000 | 2500 |
| 8x20 μ s 5000 amp | 1800 | 2200 | 2800 |
| 8x20 μ s 10,000 amp | 2000 | 2500 | 3000 |
| 8x20 μ s 20,000 amp | 2500 | 3000 | 4200 |
| Discharge Current Life Capability | At least 50 discharges at 5000 amperes. At least 1 discharge at 50,000 amperes. (Both include power-follow current.) | | |
| Power-follow Current Characteristic | Extinguishes in 1/2 cycle or less | | |



Prices and specifications subject to change without notice

142 broadcast noise reduction system

The dbx Model 142 broadcast noise reduction system is a two-channel compressor/expander providing a minimum of 30 dB broadband audio noise reduction with a 10 dB increase in system headroom. The two channels are independent and switchable from the front panel to record (encode), bypass, or play (decode) functions. In addition, either channel may be remotely bypassed.

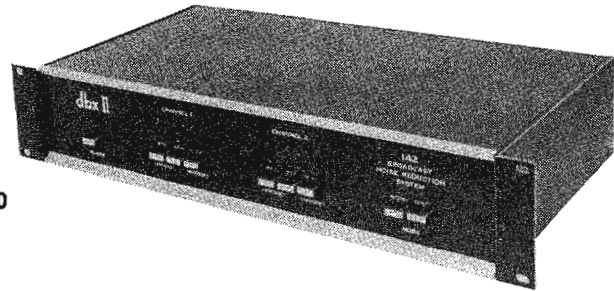
In the record mode, the system compresses the input signal by a 2:1 ratio, linear in decibels over a 100 decibel range. Upon playback, the circuitry is switched to provide an exact mirror image 1:2 expansion of the encoded signal.

True RMS level sensing insures perfect encode/decode tracking for accurate transient response irrespective of phase shifts in the transmission or storage medium. There is no audible breathing, pumping or other coloration of the sound with this encode/decode system, and there are no pilot tones or routine calibration procedures necessary for its use.

The dbx system eliminates tape hiss in recording, and prevents the noise built-up normally encountered in transferring information from one recorded medium to another; it does not remove noise present in the original signal. The dbx 142 noise reduction system is built to professional standards using the latest advances in circuit design and technology, and is fully warranted (parts and labor) for two years.

dbx

dbx, Incorporated



\$750.00

input impedance

20 k ohm balanced differential input; rear panel push button switches unit to 600 ohm termination; optional rear panel plug-in bridging transformer.

output impedance

600 ohm nominal with 80 ohm source resistance; operates into any impedance greater than 150 ohms.

input level

+24 dBm maximum

output level

+24 dBm maximum into 600 ohms
+30 dBm maximum into 10 k ohms

bypass

front panel switch provides hard-wired bypass; electronically switched bypass from electrical command signal.

distortion

0.1% total harmonic typical
0.2% total harmonic for full compression/expansion cycle maximum

equivalent input noise

-90 dBm typical

frequency response

30 Hz to 20,000 Hz ± 1 dB for full compression/expansion cycle

operating temperature range

32°F to 140°F (0°C to 60°C)

dimensions

3" H x 19" W x 10" D (89mm H x 483mm W x 254mm D)
standard relay rack mounting

net weight

8 pounds (3.6 kg)

shipping weight

12 pounds (5.5 kg)

power line requirement

120 VAC, 50-60 Hz (240 VAC available)

power consumption

10 watts

148 broadcast noise reduction system

The dbx Model 148 is an eight-channel playback-only noise reduction system. It includes the F148 main frame and as many as 9 plug-in modules — 8 active and one spare. The two modules available for the 148 system are the 408, a dbx II module for tape playback; and the 409, a dbx II module for playback of dbx-encoded discs.

The dbx broadcast noise reduction system offers 30 dB of noise reduction and 10 dB of hearoom improvement. It is optimized to avoid low frequency mistracking, caused by warped records and turntable rumble and high frequency mistracking, caused by low speed tape machines, such as cartridge players and low speed reel to reel decks.

dbx's patented RMS level detector insures perfect decode tracking for accurate transient response despite phase shifts in the transmission or storage medium.

The dbx system eliminates tape hiss when recording a live source, and prevents the noise build-up normally encountered in transferring information from one recorded medium to another. It does not remove noise of the mixing board.

\$3000.00



input impedance

40 k ohm maximum balanced (transformer input); switchable 600 ohm termination option; nominal input level for unit gain
-12 dBm (195 mV) to +12 dBm (3.0 V).

input level

+24 dBm maximum into 600 ohms.

frequency response

30 Hz to 20 kHz, ± 1 dB.

distortion

0.3% T.H.D. (decode);
0.05% T.H.D. (above 1 kHz).

equivalent input noise

-88 dBm, 30 Hz to 20 kHz (30 mV RMS).

crosstalk isolation

greater than 70 dB.

effective noise reduction

30 dB for tape recorders with S/N ratio of 45 dB or better;
40 dB for dbx-encoded discs (A weighted).

remote bypass

switch closure to ground; operates 24 V relay of 1200 ohms (one per channel).

operating temperature range

32°F to 140°F (0°C to 60°C).

connectors

two 27-pin "Jones" type; signal input output
one 15-pin molex accessory; remote bypass remote master gain.

dimensions F148 main frame

5 1/4" H x 19" W x 12 3/4" D (133.35 mm H x 482.60 mm W x 314.45 mm D).

dimensions 408 or 409 module

5 1/4" H x 1 1/2" W x 9 5/8" D (133.35 mm H x 38.1 mm W x 244.48 mm D).

net weight (system)

19 pounds 14 ounces (9 015 Kg)

power line requirement

120 V AC, 50-60 Hz; may be reset for 100 to 220 V or 240 V AC.

power consumption

40 watts

warranty

dbx products are covered under a limited warranty (parts and labor) for two years from date of original purchase.

Prices and specifications subject to change without notice





DECCA AUSTIN INSULATORS

Austin Ring Type Isolation Transformers for Radio Tower and Mast Lighting

•**Air Insulation** — Minimum R.F. loss. •**Low Capacitance** — Minimum and stable effect on tuning. •**Regulation** — Better than 10% under normal load conditions. •**Efficiency** — Better than 90% under normal load conditions. •**Mounting** — Standard Pipe Unions supplied. •**Lightning Gap** — Supplied.

| TYPE | CAPACITY KVA |
|-----------|-----------------|
| A-07S1-S2 | 0.7 |
| A-07D1-D2 | 0.7 |
| A-17S1-S2 | 1.7 |
| A-17D1-D2 | 1.7 |
| A-25S1-S2 | 2.5 |
| A-35S1-S2 | 3.5 |
| A-35D1-D2 | 3.5 |
| A-50D1-D2 | 5.0 |

Guy Strain Insulators Open End Type

•For non-critical applications such as breaking up guy wires to minimize re-radiation effects. •Not recommended for primary guy insulation in positions next to the radiator where the full RF voltage is applied.

| | AOA 20 | AOA 35 | AOA 45 | AOA 65 | AOA 80 | AOA 130 |
|---------------------------|-----------|-----------|-----------|-----------|-----------|------------|
| Tensile Strength Lb. | 20,000 | 35,000 | 45,000 | 65,000 | 80,000 | 130,000 |
| Maximum Cable Size Inches | 3/8 | 5/8 | 3/4 | 7/8 | 1 | 1-1/4 |

Austin Guy Insulator Oil Filled Safety Core

•Long leakage path providing high insulation value and high safe RF working voltage. •Low capacity giving minimum charging current, minimum effect on tuning and ensuring that this insulator handles a high proportion of the working voltage on the guy — thus relieving the strain on lower guy breakup insulators. •Oil filling provides high dielectric strength within the insulator body.

| TYPE | RECOMMENDED MAXIMUM WORKING LOAD |
|---------|-------------------------------------|
| A-3003 | 6,000 lb. 2,720 kg. |
| A-4006 | 10,500 lb. 4,760 kg. |
| A-4006S | 10,500 lb. 4,760 kg. |
| A-5008 | 16,000 lb. 7,260 kg. |

Austin Base Insulators

•Oil filled to eliminate Radio Frequency loss due to water condensation on internal surfaces. •Smooth insulator finish minimizes leakage and flashover due to surface contamination. •Thermostatically controlled heaters available as an extra — these must be specified at time of ordering. •Items listed are types recommended for new construction. Previously listed Austin types are available for replacement purposes. •Insulators for higher mechanical and electrical loads are readily available from standard Austin designs. Please write, stating your requirements.

for Self Supporting Radio Towers and Masts

| TYPE | RECOMMENDED MAXIMUM WORKING DOWNLOAD |
|-----------|---|
| A-4950 | 25,000 lb. 11,350 kg. |
| A-4938 | 50,000 lb. 22,700 kg. |
| A-4881-C | 75,000 lb. 34,000 kg. |
| A-4729-C | 100,000 lb. 45,400 kg. |
| A-3167-C | 150,000 lb. 68,000 kg. |
| A-2812M-C | 200,000 lb. |
| A-2812M | 90,700 kg. |
| A-2812-C | 250,000 lb. |
| A-2812 | 113,400 kg. |
| A-2913-C | 375,000 lb. |
| A-2913 | 170,100 kg. |
| A-3782-C | 600,000 lb. |
| A-3782 | 272,200 kg. |
| A-4049-C | 900,000 lb. |
| A-4049 | 408,800 kg. |

for Guyed Radio Antenna Masts

| TYPE | RECOMMENDED MAXIMUM WORKING DOWNLOAD |
|----------|---|
| A-4101 | 20,000 lb. 9,070 kg. |
| A-4197-L | 40,000 lb. 18,140 kg. |
| A-4722-B | 80,000 lb. 36,280 kg. |
| A-0881 | 150,000 lb. 68,100 kg. |
| A-0729 | 200,000 lb. 90,800 kg. |
| A-0167 | 270,000 lb. 122,580 kg. |
| A-3663-B | 375,000 lb. 170,250 kg. |
| A-4447-B | 625,000 lb. 283,750 kg. |
| A-3820-R | 1,000,000 lb. 453,600 kg. |
| A-4544 | 1,500,000 lb. 680,400 kg. |
| A-4598 | 2,500,000 lb. 1,134,000 kg. |

Specifications subject to change without notice.

For prices and additional information contact your Harris District Sales Manager or the Harris Quincy Sales Office.

Austin Guy Insulator Spring Loaded Safety Core

•Long leakage path providing high insulation value and high safe RF working voltage. •Low capacity giving minimum charging current, minimum effect on tuning and ensuring that this insulator handles a high proportion of the working voltage on the guy — thus relieving the strain on lower guy breakup insulators. •Smooth insulator surface minimizing leakage and flashover due to dirt contamination. •Oil filling provides high dielectric strength within the insulator body.

| TYPE | RECOMMENDED MAXIMUM WORKING LOAD |
|--------|-------------------------------------|
| A-4008 | 18,000 lb. 8,160 kg. |
| A-6013 | 28,000 lb. 12,700 kg. |
| A-6018 | 40,000 lb. 18,200 kg. |
| A-8027 | 60,000 lb. 27,200 kg. |
| A-8040 | 90,000 lb. 40,800 kg. |
| A-8056 | 125,000 lb. 56,700 kg. |
| A-0078 | 175,000 lb. 79,400 kg. |
| A-0100 | 225,000 lb. 102,100 kg. |
| A-0123 | 275,000 lb. 124,800 kg. |

Austin Guy Insulator Fail Safe-Break Up Type

Decca Austin "Break-Up" guy insulators are designed for applications where the working loads exceed the capability of an Egg or similar type of "Fail Safe" insulator.

•Electrical grade porcelain for VLF, LF, and MF. High alumina ceramic for HF use. •Shedded ceramic to ensure minimum surface leakage. •Not recommended for primary insulation at the mast or tower — use Decca Austin Safety Core or High Voltage Fail Safe, oil-filled types.

| TYPE | RECOMMENDED MAXIMUM WORKING LOAD |
|-------|-------------------------------------|
| C-018 | 40,000 lb. 18,200 kg. |
| C-027 | 60,000 lb. 27,200 kg. |
| C-040 | 90,000 lb. 40,800 kg. |
| C-056 | 125,000 lb. 56,700 kg. |
| C-078 | 175,000 lb. 79,400 kg. |
| C-100 | 225,000 lb. 102,100 kg. |
| C-123 | 275,000 lb. 124,800 kg. |





DECIBEL PRODUCTS, INC.

BASE STATION ANTENNAS

| Model Number | Description | Gain in dB [Ⓞ] | Frequency Range - MHz [Ⓞ] | | | |
|--------------|-------------------------------|-------------------------|------------------------------------|---------|---------|---------|
| | | | 120-144 | 144-174 | 406-420 | 450-512 |
| DB-201 | Ground Plane, Heavy Duty | Unity | \$100.00 | \$84.00 | \$72.00 | \$72.00 |
| DB-205 | Coaxial, Heavy Duty | Unity | 112.00 | 94.00 | | |
| DB-210 | Side Mount Array (1 element) | 2.5 | 108.00 | 94.00 | | |
| DB-212-2 | Side Mount Array (2 element) | 3/6 | | | | |
| DB-212-3 | Side Mount Array (3 element) | 4.5/7.5 | | | | |
| DB-212-4 | Side Mount Array (4 element) | 6/9 | | | | |
| DB-212-6 | Side Mount Array (6 element) | 7.5/10.5 | | | | |
| DB-214 | Bi-Directional Array | 3.6 | 150.00 | 132.00 | | |
| DB-214-2 | Array (two phased DB-214's) | 6.0 | 334.00 | 296.00 | | |
| DB-214-4 | Array (four phased DB-214's) | 8.4 | 694.00 | 626.00 | | |
| DB-215 | Keyhole Pattern Array | 10/0 | 336.00 | 308.00 | | |
| DB-222 | Broadband Array, Omni | 3.0 | 138.00 | 120.00 | | |
| DB-222E | Broadband Array, Off-Center | 6.0 | 138.00 | 120.00 | | |
| DB-224 | Broadband Array Omni | 6.0 | 250.00 | 242.00 | | |
| DB-224E | Broadband Array, Off-Center | 9.0 | 250.00 | 242.00 | | |
| DB-224S | Dual Broadband Antenna, Omni | 3/3 | 250.00 | 242.00 | | |
| DB-224ES | Dual Antenna, Off-Center | 6/6 | 250.00 | 242.00 | | |
| DB-224-X | Broadband Array Omni | 6.0 | 290.00 | 290.00 | | |
| DB-225 | Side Mount, Broad Pattern | 5.0 | 120.00 | 96.00 | | |
| DB-225-2 | Array (two phased DB-225's) | 8.0 | 274.00 | 222.00 | | |
| DB-225-4 | Array (four phased DB-225's) | 11.0 | 578.00 | 478.00 | | |
| DB-228 | Broadband Array, Omni | 9.0 | | 684.00 | | |
| DB-228E | Broadband Array, Off-Center | 12.0 | | 684.00 | | |
| DB-230 | 3 Element Yagi, Directional | 7.0 | 142.00 | 110.00 | | |
| DB-230-2 | Array (two phased DB-230's) | 10.0 | 320.00 | 252.00 | | |
| DB-230-4 | Array (four phased DB-230's) | 13.0 | 674.00 | 536.00 | | |
| DB-252 | Para-Corner Reflector | 8.0 | | 186.00 | | |
| DB-252-2 | Array (two phased DB-252's) | 11.0 | | 374.00 | | |
| DB-252-4 | Array (four phased DB-252's) | 14.0 | | 778.00 | | |
| DB-254 | Para-Corner Reflector | 10.0 | | | 124.00 | 114.00 |
| DB-254-2 | Array (two phased DB-254's) | 12.5 | | | 268.00 | 246.00 |
| DB-254-4 | Array (four phased DB-254's) | 15.0 | | | 566.00 | 524.00 |
| DB-258 | Fiberglass Enclosed Collinear | 5.6 | | 246.00 | | |
| DB-264 | Broadband Array, Omni | 6.0 | | 259.00 | | |
| DB-264E | Broadband Array, Off-Center | 9.0 | | 259.00 | | |
| DB-268 | Broadband Array, Omni | 9.0 | | 726.00 | | |
| DB-268E | Broadband Array, Off-Center | 12.0 | | 726.00 | | |
| DB-286 | Dual Yagi Array, 6-Element | 10.0 | 232.00 | 166.00 | | |
| DB-286-2 | Array (two phased DB-286's) | 13.0 | 494.00 | 358.00 | | |
| DB-286-4 | Array (four phased DB-286's) | 16.0 | 988.00 | 736.00 | | |
| DB-286B | Dual Yagi, Bi-Directional | 5/5 | 232.00 | 166.00 | | |
| DB-292 | 6 Element Yagi, Directional | 9.5 | | 148.00 | | |
| DB-292-2 | Yagi Array (2 phased 292's) | 12.1 | | 312.00 | | |
| DB-292-4 | Yagi Array (4 phased 292's) | 14.7 | | 642.00 | | |
| DB-304 | Broadband Array, Omni | 6.1 | | 320.00 | | |
| DB-304L | Broadband Array, Elliptical | 6.7 | | 320.00 | | |
| DB-304D | Dual Broadband, Omni | 3.2/3.2 | | 326.00 | | |
| DB-304DL | Dual Broadband, Elliptical | 3.8/3.8 | | 326.00 | | |
| DB-314 | Broadband VHF and UHF | 3.0/6.6 | | 340.00 | | 340.00 |
| DB-315 | Broadband VHF and UHF | 6.0/9.2 | 565.00 | | | |
| DB-316 | Broadband VHF and UHF | 6.0/12 | 492.00 | | | |
| DB-404 | Broadband, Omni | 3.8 | | | 100.00 | 100.00 |
| DB-404L | Broadband, Elliptical | 5.0 | | | 100.00 | 100.00 |

Prices and specifications subject to change without notice





DECIBEL PRODUCTS, INC.

BASE STATION ANTENNAS

(Continued)

| Model Number | Description | Gain in dB ¹ | | | | | |
|--------------|-------------------------------|-------------------------|---------|---------|----------|----------|----------|
| | | | 120-144 | 144-174 | 406-420 | 450-512 | 806-960 |
| DB-408 | Broadband, Omni | 6.6 | | | | \$194.00 | \$194.00 |
| DB-408L | Broadband, Elliptical | 7.8 | | | | 194.00 | 194.00 |
| DB-408D | Dual Broadband, Omni | 3.8/3.8 | | | | 214.00 | 214.00 |
| DB-408DL | Dual Broadband Elliptical | 5.0/5.0 | | | \$216.00 | 216.00 | |
| DB-408T-4 | Omni, 4.5° Downtilt | 6.5 | | | 216.00 | 216.00 | |
| DB-408LT-4 | Elliptical, 4.5° Downtilt | 7.7 | | | 216.00 | 216.00 | |
| DB-408T-9 | Omni, 9° Downtilt | 6.5 | | | 216.00 | 216.00 | |
| DB-408LT-9 | Elliptical, 9° Downtilt | 6.5 | | | 216.00 | 216.00 | |
| DB-410 | Broadband, Omni | 9.2 | | | 314.00 | 314.00 | |
| DB-410L | Broadband, Elliptical | 10.4 | | | 314.00 | 314.00 | |
| DB-410D | Dual Broadband, Omni | 6.6/6.6 | | | 334.00 | 334.00 | |
| DB-410DL | Dual Broadband, Elliptical | 7.8/7.8 | | | 334.00 | 334.00 | |
| DB-410Q | Quad Broadband, Omni | 3.8 | | | 356.00 | 356.00 | |
| DB-410QL | Quad Broadband, Elliptical | 5.0 | | | 356.00 | 356.00 | |
| DB-411 | Broadband, Off-Center | 9.0 | | | 140.00 | 140.00 | |
| DB-413 | Broadband, Off-Center | 12.0 | | | 242.00 | 242.00 | |
| DB-413D | Dual Broadband, Off-Center | 9.0/9.0 | | | 264.00 | 264.00 | |
| DB-413Q | Quad Broadband, Off-Center | 6.0 | | | 286.00 | 286.00 | |
| DB-416 | Fiberglass Enclosed Collinear | 6.3 | | | | 198.00 | |
| DB-436 | 6-Element Yagi, Directional | 10.0 | | | 98.00 | 98.00 | |
| DB-436-2 | Array (two phased DB-436's) | 13.0 | | | 212.00 | 212.00 | |
| DB-436-4 | Array (four phased DB-436's) | 16.0 | | | 440.00 | 440.00 | |
| DB-480 | Broadband With Null Fill | 7.5 | | | | | 524.00 |
| DB-495 | Corner Reflector | 9.0 | | | | | 122.00 |
| DB-496 | Cylindrical Parabola | 13.5 dBi | | | | | 148.00 |
| DB-496-2 | Array (two phased DB-496's) | 16.0 dBi | | | | | 310.00 |

¹ Gain is with respect to a vertical half wave dipole, except as noted.

² Figures do not indicate band width — for pricing purposes only.

³ Gain reduced slightly in 120-144 MHz band.

Termination: Each antenna has a short flexible lead terminated with a Type N male connector.

Mounting Clamps: All antennas are supplied with mounting clamps.

Corrosion Protection: For antennas that are to be operated in corrosive atmosphere an iridite chemical bath treatment is recommended. For this treatment add 20% to the price of the antenna.

Precipitation Static: Precipitation static can be further reduced by wrapping radiator elements with poly tape. Add 25% to antenna price for poly tape wrapping.

Frequency: Specify operating frequency on orders; all antennas are tested for minimum VSWR before shipment.

ANTENNA MOUNTING KITS, CLAMPS AND BRACKETS

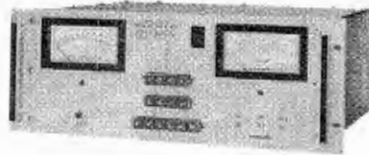
| Model Number | Description | Price |
|--------------|--|----------|
| DB-365 | Mounting clamps (set of two) | \$ 24.00 |
| DB-365W | Mounting clamps (set of two) for mounting antenna to wood pole | 30.00 |
| DB-5001 | Side Mount Kit | 88.00 |
| DB-5002 | Side Mount Kit | 88.00 |
| DB-5004 | Adjustable Side Mount Kit (two 10' supports) | 176.00 |
| DB-5007 | Side Mount Kit | 68.00 |
| DB-5009 | Mounting bracket, for side by side mounting of DB-436-2 | 52.00 |
| DB-5012 | Side Mount Kit | 88.00 |
| DB-5018 | Mounting bracket, for quad mounting of DB-436-4 | 98.00 |



Prices and specifications subject to change without notice

DELTA ELECTRONICS

MODEL AAM-1 Analog Antenna Monitor



FCC Type Approval Number 3-235

The AAM-1 Analog Antenna Monitor is designed specifically for measuring the parameters of AM broadcast frequency directional antenna systems. The monitor measures the relative current in each tower, the ratio of the current in each tower to that of a reference tower and the phase of the current in each tower relative to that of the reference tower.

The AAM-1 can be equipped for up to eight input samples without external switching. Two reference towers can also be selected for DA-2 applications.

Two front panel mirror scale meters permit simultaneous reading of phase and current ratio or phase and relative amplitude of the unknown radiator.

- AAM-1** Analog Antenna Monitor — Two Towers\$1895.00
- For Each Input Above Two Add\$ 50.00
- SH-1** Sample and Hold Option for Extremely High Modulation Conditions\$ 215.00
- AAMH-1** Hardwire Remote Control Unit\$ 825.00
- ARI-1** Alternate Reference Input\$ 150.00
- RF-1** Rejection Filters\$ 295.00

MODEL DAM-1 Digital Antenna Monitor



FCC Type Approval Number 3-218

The DAM-1 is a true digital antenna monitor designed specifically for measuring the parameters of broadcast frequency directional antenna systems. Digital data is not obtained by adding an A/D converter to the output of conventional analog circuitry; instead, the latest digital techniques and TTL components are applied to achieve a truly digital approach to phase and current ratio measurements. Data is displayed on front panel seven-segment digital readouts to minimize reading error. A simplified selection system reduces operation of the DAM-1 to a straight-forward procedure. While the price of the DAM-1 is compatible with that of inexpensive analog meters, its performance and accuracy are as good as or better than other "Precision Monitors."

The simplified block diagram below shows the fundamental principles of the DAM-1 circuit. The RF samples are converted to a low intermediate frequency. Zero crossing detectors are used to open a gate for the time interval between the crossings of the reference and

unknown signals. A 3600 pulse per cycle clock signal is passed through this gate and counted to give a 0.1° per count phase measurement. True current ratio (independent of magnitude) is computed from two extremely linear voltage to frequency converters and displayed on the front panel. A front panel switch permits optional digital readout of the relative amplitude of the sampled currents.

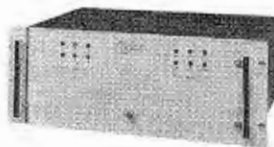
Output data from the true digital circuit appears on a rear connector, as well as on the front panel display, permitting remote reading without any loss of accuracy.

The DAM-1 and remote reading accessories are designed to comply with all of the requirements of the FCC's new antenna monitor and remote reading specifications.

- DAM-1** Digital Antenna Monitor
- 2 Towers\$3150.00 8 Towers\$3850.00
- 3 Towers\$ 3200.00 9 Towers\$ 3900.00
- 4 Towers\$ 3250.00 10 Towers\$ 3950.00
- 5 Towers\$ 3300.00 11 Towers\$4000.00
- 6 Towers\$ 3350.00 12 Towers\$ 4050.00
- 7 Towers\$ 3800.00
- RF-1** Rejection Filters\$ 295.00
- SH-1** Sample and Hold Option for Extremely High Modulation Conditions\$ 215.00
- ARI** Alternate Reference Input\$ 150.00

MODEL DAMR-1 Remote Control Unit

MODEL DAML-1 Line Interface Unit



The Delta DAMR-1/DAML-1 Remote Control System provides for the control and readout of directional antenna parameters as measured by the DAM-1 Digital Antenna Monitor. Control data is encoded from the front panel switches of the remote readout unit

and transmitted to the transmitter site as FSK tone signals in teletype character format. The line interface unit decodes the control data and operates relays in the DAM-1 Antenna Monitor to select the desired tower and operating modes (DAY/NIGHT and RATIO/AMPLITUDE). Parallel BCD current and phase data from the DAM-1 are converted to serial format and transmitted to the Remote Control Unit for decoding and display.

The readouts and mode switches are the same as employed in the DAM-1 Antenna Monitor and the readings displayed will be identical to the DAM-1 readings. The displayed data is updated at intervals of 0.53 seconds, and tower and control mode changes occur less than one second after selections are made. Control information is encoded and transmitted as a single asynchronous word at an information rate of 300 baud. Updated control data is transmitted every 0.53 seconds. The DATA TEST light emitting diode (LED) display flashes if a test bit is valid after a round trip thru the data transmission system.

- DAMR-1/DAML-1** Remote Control System
- 2 to 6 Towers\$3250.00 7 to 12 Towers\$3500.00

Prices and specifications subject to change without notice



DELTA ELECTRONICS

BROADCAST PRODUCTS

MODEL DAMH-1 Remote Control Unit (Hardwire)

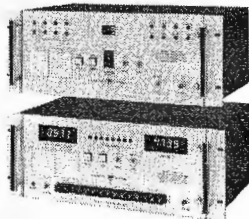


The DAMH-1 Remote Control Unit provides (via hardwire connection) for remote operation and readout of the DAM-1 Antenna Monitor at locations up to 1,000 feet from the Monitor. Six pushbuttons are provided for tower selection and two toggle switches permit selection of the DAY/NIGHT and RATIO/AMPLITUDE modes, thus providing full control by means of reed relay switches contained in the DAM-1 Monitor. Separate four-digit readouts are provided for

simultaneous display of RATIO/AMPLITUDE and PHASE data. The readings displayed on the Remote Control Unit are identical to the readings on the DAM-1 Monitor, thus there is no reduction in accuracy. BCD data transfer is provided by a shielded multiconductor cable which can be supplied in lengths up to 400 feet. For applications requiring remote control over greater distances, the DAML-1/DAMR-1 and TMCS-1 Remote Control Systems are available for operation via a telephone line.

- DAMH-1** Hardwire Remote Control Unit, 2 to 6 Towers \$825.00
- D50-15** Remote Control Cable, 26 Pair \$2.25/ft.
- Installation of Connectors on Cable, per end (Connectors are furnished with basic equipment) \$25.00

MODEL TMCS-1, 1A, 1B Digital Antenna/Transmitter Remote Control System



The Delta Model TMCS-1 Remote Control System was designed to provide the necessary control and meter monitoring functions for broadcast stations which utilize the Delta Model DAM-1 Antenna Monitor. The control system provides for complete control and readout of the DAM-1 Antenna Monitor and for the digital readout of up to 15 metering channels. The system also features up to 15 ON/RAISE and OFF/LOWER control circuits. Eight on/off

alarm indicators are mounted on the remote unit and an alarm is sounded when one or more alarm signals are present. The entire system is contained in two units with 7" panels for mounting in 19" rack cabinets.

- TMCS** Transmitter Monitor Control System
- Digital Control Systems Consisting of TMCS-1R Remote Control Unit and TMCS-1T Transmitter Interface Unit
- TMCS-1B** Digital Control System, 15 Metering Channels, 15 Control Channels, Up to 6 Towers** \$5250.00
- TMCS-1C/TMX-1B** Digital Control System, 30 Metering Channels, 15 Control Channels, Up to 6 Towers** \$6300.00
- TMCS-1C/TMX-1D** Digital Control System, 30 Metering Channels, 30 Control Channels, Up to 6 Towers** \$6550.00
- **For antenna systems with up to 12 towers add \$200.00 to above prices.

MODEL LPD-1 Line Protective Device

The Delta Electronics LPD-1 Line Protective Device is designed to protect Delta Electronics remote control equipment or other similar equipment from unusual telephone line surges of all causes. The LPD-1 is connected between the telephone line and the modem input/output terminals of the remote control system. The Protective Device may be installed at either or both the remote and transmitter

station locations. Zener diodes located in an octal plug-in module limit the line to line voltage and line to ground voltage while the chassis mounted fuses provide protection against a continuous high voltage or large surge. Should a line surge cause damage to one or more of the zener diodes, the entire plug-in module may be conveniently replaced without interrupting the associated equipment operation. The LPD-1 is designed to mount directly on the rear inspection plate of the Delta Electronics remote control equipment (TMCS-1R, TMCS-1T, DAML-1, DAMR-1).

- LPD-1** Line Protection Device (For use with DAM-1/DAML-1 and TMCS-1) \$79.00

MODELS TCT-1, TCT-2 and TCT-3 Toroidal Current Transformers



The TCT-1, TCT-2 and TCT-3 are precision toroidal current transformers designed primarily for obtaining sampling voltages for phase and magnitude measurements on broadcast arrays. The units are housed in rectangular aluminum shield enclosures with a 1 1/4" teflon lined pass hole through which the current carrying conductor is passed.

The TCT-1 and TCT-2 may both be used in the same system since they have identical tracking characteristics. The TCT-3 has somewhat different characteristics and preferably should not be mixed with the other two types.

- TCT-1** Toroidal Current Transformer
- 0.5V/amp \$215.00
- High Voltage (HV) Model \$315.00
- TCT-2** Toroidal Current Transformer
- 0.25V/amp \$215.00
- High Voltage (HV) Model \$315.00
- TCT-3** Toroidal Current Transformer
- 1.00V/amp \$215.00
- High Voltage (HV) Model \$345.00

MODEL TCTR-1 Compensated Rectifier Circuit



The TCTR-1 is a compensated rectifier circuit intended primarily for use with the Delta Electronics TCT series Toroidal Current Transformers. When used with a TCT it converts the RF sample to a positive DC voltage useful for remote current magnitude measurement.

The TCTR-1 is designed for a 10 kilohm DC load, although it will work well for other load values. When terminated in a 10 kilohm load it will deliver approximately 1.3 to 1.4 volts of DC for each volt RMS of RF input. This factor is linear to better than 5% for input levels of 1.5 to approximately 20 volts RMS.

The TCTR-1 case is 5.250 inches long by 2.625 inches wide by 1.687 inches high. Mounting holes, 0.187 in diameter, are located on centers 4.750 inches by 1.750 inches.

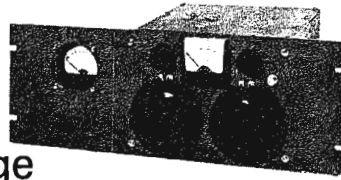
- TCTR-1** Compensated Rectifier Circuit \$125.00

Prices and specifications subject to change without notice



DELTA ELECTRONICS

MODELS CPB-1/CPB-1A Common Point Impedance Bridge



The Delta Electronics Model CPB-1 and CPB-1A Common Point Impedance Bridges* are operating impedance bridges similar to the Model OIB-1, but designed for permanent installation in your phasing equipment at the antenna common point. The CPB-1 will handle common point powers up to 5 kW with 100% amplitude modulation on a continuous basis. The CPB-1A is designed for transmitter powers up to 50 kW. Both instruments have two 4" dials calibrated directly in resistance and reactance. A panel meter is provided for use as a null detector. The R and X dials are manipulated as a normal bridge to give a null indication on the panel meter while the transmitter is operating at full or reduced power. The value of the common point resistance and reactance can then be read directly from the two dials.

- CPB COMMON POINT IMPEDANCE BRIDGE**
 CPB-1 Common Point Impedance Bridge, 5kW \$ 995.00
 CPB-1A Common Point Impedance Bridge, 50kW \$1195.00

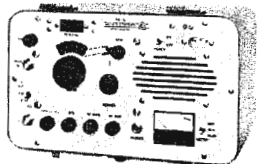
MODEL OIB-1 Operating Impedance Bridge



The Model OIB-1 Operating Impedance Bridge* measures the operating impedance of the individual radiators, networks, transmission line sections, and common point of directional antenna systems while they are functioning under normal power. This "operating impedance" cannot be measured by usual impedance bridge methods because the system characteristics are disrupted when the bridge is inserted in the circuit. The OIB-1 thus satisfies a critical requirement long felt by consulting and broadcast station engineers. In addition it has many applications in other fields that cannot be duplicated by any other instrument.

- OIB OPERATING IMPEDANCE BRIDGE**
 OIB-1 Operating Impedance Bridge (Specify lead length
 12" or 18") \$ 995.00
 Extended R and X Ranges \$ 300.00
 Permits reading resistance to 1000 ohms.
 Reactance to 900 ohms. Includes recalibration.

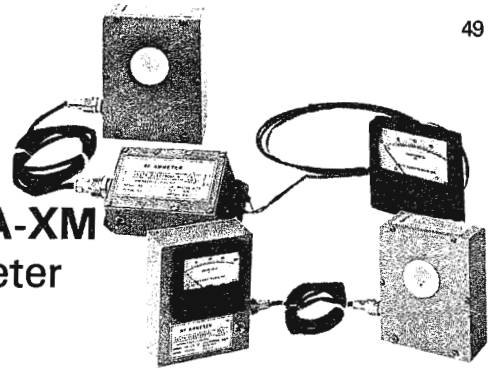
MODEL RG-3 Receiver/ Generator



The Delta Electronics Model RG-3 Receiver/Generator is an improved version of the RG-1B. The RB-3 has the added features of a frequency counter and a correlation detector. These features along with high output power, excellent receiver shielding and metering provide the broadcast engineer with an excellent antenna measurement tool.

The RG-3 is designed to be used in conjunction with any conventional impedance bridge for antenna measurements in the AM broadcast band. However, a dramatic improvement in signal-to-noise ratio will be realized when the RG-3 is used with the Delta Model

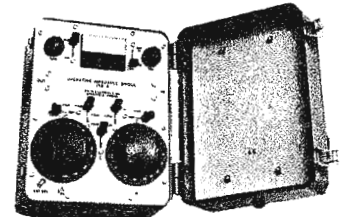
MODELS TCA/TCA-XM RF Ammeter Systems



The Delta Electronics Models TCA and TCA-XM are radio frequency current measuring instruments designed to measure currents in broadcast antenna systems. These instruments are intended for applications where conventional thermocouple meters have been used in the past. The TCA and TCA-XM are substantially more accurate for all operating conditions, and they meet FCC requirements for 2% accuracy. Calibration at broadcast frequencies assures that there are no errors due to frequency effects when using these instruments.

- CPB-1/TCA-N-EX Common Point Impedance Bridge,**
 5kW with TCA installed \$1365.00
CPB-1/TCA-N/N-EX Common Point Impedance Bridge,
 5kW with TCA installed \$1470.00
CPB-1A/TCA-N-EX Common Point Impedance Bridge,
 50kW with TCA-N-EX installed \$1565.00
CPB-1A/TCA-N/N-EXR Common Point Impedance Bridge,
 50kW with TCA-N-EXR installed \$1670.00

MODEL OIB-3 Operating Impedance Bridge



The OIB-3 is an advanced version of the industry standard OIB-1 operating impedance bridge. It has all of the OIB-1 features plus an extended resistance and reactance range and an improved meter amplifier. It is built in a heavy drawn aluminum case and no additional carrying case is required.

- OIB-3 Operating Impedance Bridge** \$1350.00
TC-1 Transport Case for OIB-1 \$ 150.00
D51-3-1 12" Replacement Leads for OIB-1 or OIB-3 \$ 60.00
D51-3-2 18" Replacement Leads for OIB-1 or OIB-3
 (Changing lead length requires recalibration) \$ 60.00
Recalibration Cleaning and recalibration of OIB-1,
OIB-3 and CPB-1/1A \$ 150.00
 Repair labor and parts additional.
 Return authorization not required.

OIB-1 or OIB-3. The unique patented circuit of the Delta impedance bridges places the high-level output (two watts) directly in parallel with the interfering signals on the antenna. The generator is attenuated by the measuring network in other bridges before competing in the interfering signals.

- RG-3 Receiver/Generator with Improved Type PSA-1**
 Power Supply, AC and DC Supply Operation \$2950.00
 (Batteries for DC sold separately)
D51-8-4 Set of 2 Coaxial Cables for RG-3 \$ 25.00
D05-72 Set of ten rechargeable nickel-cadmium batteries ... \$ 150.00
D05-72 Spare rechargeable nickel-cadmium batteries each ... \$ 16.00
PSA-1 Factory modification of RG-1 to install new Type
PSA-1 Power Supply (less batteries) \$ 275.00
FMK-PSA-1 Field Modification Kit for Field Conversion
of RG-1 to RG-1B, Delta Part Number D44-3
 (less batteries) \$ 240.00
D05-40 Battery Pack (Replacement for Model RG-1) \$ 150.00

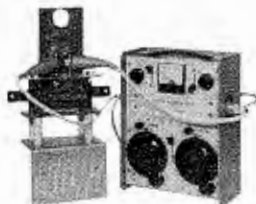
Prices and specifications subject to change without notice



DELTA ELECTRONICS

BROADCAST PRODUCTS

MODEL MJ-50 In-Line High Power Meter Jack and Accessories

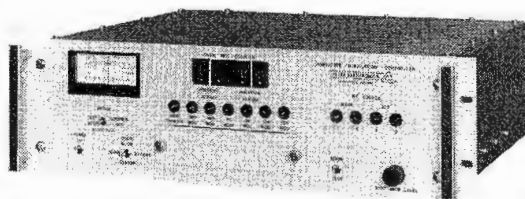


The Delta Electronics Model MJ-50 Meter Jack is a make-before-break in-line jack assembly especially designed for permanent installation in broadcast antennas, transmission lines, and networks to permit the "hot" insertion of a Delta OIB-1 Operating Impedance Bridge or ammeter without interruption to normal program operation. The Meter Jack is rated for continuous operation at currents of up to 50 amperes and is insulated for 10 kV RMS. Accessory plug panels are available for use with the OIB-1 and for all of the most commonly used ammeters. The BP-50 Bridge Panel is a plug panel designed for insertion in the Meter Jack and has terminals suitable

for connection to the Delta OIB-1 bridge leads and is also rated for 50 ampere operation. The MP-308 as depicted above is a plug-panel for use with a Weston Model 308 Ammeter for "hot" ammeter insertion. Plug panels for use with other meters are also available on request.

| | |
|---------------------------------|----------------|
| MJ-50 Meter Jack | \$95.00 |
| BP-50 Plug Panel | \$50.00 |
| MP-308 Meter Panel | \$50.00 |

MODEL AMC-1 Amplitude Modulation Controller

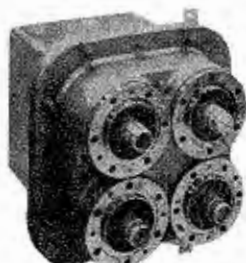


The Automatic Modulation Controller is the only modulation controlling system that provides a completely closed loop around the transmitter. The sampling of actual modulation levels after the PA output network assures precise adjustment for optimum modulation levels. The AMC-1 also keeps a digital count of positive and

negative overmodulation bursts for both present and previous one minute periods.

| | |
|--|------------------|
| AMC-1 Amplitude Modulation Controller | \$2195.00 |
| With ATS Option | \$2495.00 |

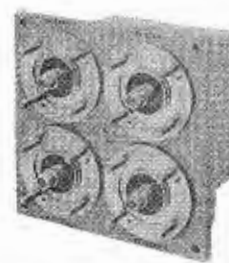
TRANSMISSION LINE SWITCHES



Model 6740B/6742B
5-5/8" Coaxial Transfer Switch



Model 33630A
Coaxial Switch Control Panel



Model 6730E/6732E
3-1/8" Coaxial Transfer Switch

The manually or remotely operated Coaxial Transfer Switches are designed to change coaxial connections with a minimum of change-over or off-air-time. They can switch pairs of transmission lines in less than two seconds.

The Models 6730E and 6732E Coaxial Transfer Switches are manufactured for use with 1-5/8 in. 50-ohm transmission line. The 6740B and 6742B Coaxial Transfer Switches are designed for use with 3-1/8 in. 50-ohm transmission line. The Models 6730E and 6740B operate on 120 V., 50/60 Hz. The Models 6732E and 6742B operate on 220/240 V., 50/60 Hz.

Transfer switches are used to switch transmitters, transmission lines, antennas, dummy loads and auxiliary equipment quickly and efficiently when failures occur, when operating procedure is changed, or during scheduled maintenance periods. They also simplify equipment tuning, testing, and emergency repairs by facilitating quick checks under actual operating conditions.

6700 TRANSFER SWITCHES

| | |
|--|------------------|
| 6730E Coaxial Transfer Switch, 1-5/8", 120V, 50/60 Hz | \$ 875.00 |
| 6732E Coaxial Transfer Switch 1-5/8", 220/240V, 50/60Hz | \$ 940.00 |
| 6740B Coaxial Transfer Switch 3-1/8", 120V, 50/60Hz | \$2050.00 |
| 6742B Coaxial Transfer Switch 3-1/8", 220/240V, 50/60Hz | \$2245.00 |
| 33630A Control Panel for any Transfer Switch | \$ 249.00 |

CONNECTOR ADAPTERS

| | |
|---|-----------------|
| D81-13 Large UHF to BNC Female | \$ 25.00 |
| D81-59 BNC Male to GR | \$ 30.00 |
| D81-76-1 BNA Female to N Male | \$ 10.00 |
| D81-76-2 BNC Male to N Female | \$ 15.00 |
| D81-77 Large UHF to N Female | \$ 25.00 |
| D81-100 N Male to UHF Female | \$ 9.00 |

BPPL EFFECTIVE FEBRUARY 8, 1979

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DIELECTRIC COMMUNICATIONS

COAXIAL SWITCHES

| STOCK NO. | | PRICE |
|--------------|---|-----------|
| 583-0015-000 | Dielectric Communications, Motorized Coax Transfer Switch, 4 pole, 1-5/8" EIA fixed flange, 50 ohms, power source 115 VAC, 60HZ, relay control voltage 12VDC. | \$1498.00 |
| 583-0052-000 | Same as above except power source and control voltage 115VAC, 60 HZ | 1498.00 |
| 583-0016-000 | Dielectric Communications, Motorized Coax Transfer Switch, 4 pole, 3-1/8" EIA fixed flange, 50 ohms, power source 115VAC, 60 HZ, relay control voltage 12VDC | 2113.00 |
| 583-0041-000 | Same as above, except power source and control voltage 115VAC, 60 HZ | 2113.00 |
| 583-0036-0XX | Dielectric Communications Coaxial Switch, 4 pole, motorized, 50 ohm, 6-1/8" flange, high power version, VHF or UHF. | 6355.00 |
| 583-0038-000 | Dielectric Communications, Coaxial Switch, 50 ohms, 3-1/8" flange, high power version, VHF or UHF. | 2810.00 |
| 620-1435-000 | Dielectric Communication Control Panel for use with motorized switches. | 261.00 |

TRANSMISSION LINE

| | | |
|--------------|--|---------|
| 618-0357-000 | 20', 50 ohm, 3-1/8" with EIA flange | 443.00 |
| 618-0358-000 | Same as above except sexless | 478.00 |
| 618-0359-000 | 20' 50 ohm, 4-1/16" with EIA flange | 813.00 |
| 618-0360-000 | Same as above except sexless | 813.00 |
| 618-0361-000 | 20' 50 ohm, 6-1/8" with EIA flange | 1296.00 |
| 618-0362-000 | Same as above except sexless | 1340.00 |
| 618-0363-000 | 20' 50 ohm, 9-3/16" with EIA flange | 2786.00 |
| 618-0364-000 | 20' 75 ohm, 6-1/8" with EIA flange | 1127.00 |
| 618-0365-000 | Same as above except sexless | 1149.00 |
| 618-0366-000 | 20' 75 ohm, 8-3/16" with EIA flange | 2275.00 |
| 618-0367-000 | 20' 75 ohm, 9-3/16" with EIA flange | 2652.00 |
| 620-1174-000 | 90 D. elbow, 50 ohm, 3-1/8" with EIA flange | 236.00 |
| 620-1175-000 | Same as above except sexless | 236.00 |
| 620-1185-000 | Same as above, unequal legs with EIA flange | 280.00 |
| 620-1186-000 | Same as above, unequal legs, sexless | 280.00 |
| 620-1176-000 | 90 D. elbow, 50 ohm, 4-1/16" with EIA flange | 358.00 |
| 620-1177-000 | Same as above except sexless | 358.00 |
| 620-1187-000 | Same as above, unequal legs with EIA flange | 412.00 |
| 620-1188-000 | Same as above, unequal legs, sexless | 412.00 |
| 620-1178-000 | 90 D. elbow, 50 ohm, 6-1/8" with EIA flange | 636.00 |
| 620-1179-000 | Same as above except sexless | 666.00 |
| 620-1189-000 | Same as above, unequal legs, with EIA flange | 724.00 |
| 620-1190-000 | Same as above, unequal legs, sexless | 763.00 |
| 620-1180-000 | 90 D. elbow, 50 ohm, 9-3/16" with EIA flange | 1747.00 |
| 620-1195-000 | Same as above except unequal legs | 1860.00 |
| 620-1181-000 | 90 D. elbow, 75 ohm, 6-1/8" with EIA flange | 581.00 |
| 620-1182-000 | Same as above except sexless | 595.00 |
| 620-1192-000 | Same as above, unequal legs with EIA flange | 658.00 |
| 620-1183-000 | Same as above, unequal legs, sexless | 672.00 |
| 620-1194-000 | 90 D. elbow, 75 ohm, 8-3/16" with EIA flange | 1530.00 |
| 620-1184-000 | 90 D. elbow, 75 ohm, 9-3/16" with EIA flange | 1664.00 |
| 620-1191-000 | Same as above, except unequal legs | 1770.00 |
| 620-1196-000 | Gas Barrier, 50 ohm, 3-1/8" with EIA flange | 204.00 |
| 620-1197-000 | Same as above except sexless | 216.00 |
| 620-1198-000 | Same as above, 4-1/16" with EIA flange | 401.00 |
| 620-1199-000 | Same as above, 4-1/6", sexless | 401.00 |
| 620-1200-000 | Same as above, 6-1/8" with EIA flange | 1021.00 |
| 620-1201-000 | Same as above, 6-1/8", sexless | 1066.00 |
| 620-1202-000 | Same as above, 9-3/16" with EIA flange | 2395.00 |

Prices and specifications subject to change without notice



DIELECTRIC COMMUNICATIONS

TRANSMISSION LINE

| STOCK NO. | | PRICE |
|--------------|--|-----------|
| 620-1203-000 | Gas Barrier, 75 ohm, 6-1/8" with EIA flange | \$ 604.00 |
| 620-1204-000 | Same as above except sexless | 595.00 |
| 620-1205-000 | Same as above 8-3/16" with EIA flange | 2006.00 |
| 620-1206-000 | Same as above 9-3/16" with EIA flange | 2281.00 |
| 620-1214-000 | "O" Ring, 3-1/8" for EIA flange | 1.30 |
| 620-1215-000 | Same as above for sexless flange | 3.55 |
| 620-1216-000 | Same as above except 4-1/16" for EIA flange | 3.55 |
| 620-1217-000 | Same as above, 4-1/16" for sexless flange | 3.55 |
| 620-1221-000 | Same as above except 6-1/8" for EIA flange | 3.55 |
| 620-1222-000 | Same as above, 6-1/8" for sexless flange | 3.55 |
| 620-1223-000 | Same as above, except 8-3/16" for EIA flange | 7.15 |
| 620-1220-000 | Same as above, except 9-3/16" for EIA flange | 8.90 |
| 620-1218-000 | Flange Hardware Kit, EIA, 3-1/8" | 6.25 |
| 620-1225-000 | Same as above except 4-1/16" | 10.70 |
| 620-1227-000 | Same as above except 6-1/8" | 16.00 |
| 620-1230-000 | Same as above except 8-3/16" | 33.00 |
| 620-1229-000 | Same as above except 9-3/16" | 36.00 |
| 620-1224-000 | Flange Hardware Kit, sexless, 3-1/8" | 23.00 |
| 620-1226-000 | Same as above except 4-1/16" | 30.00 |
| 620-1228-000 | Same as above except 6-1/8" | 49.00 |
| 620-1219-000 | Field Flange, EIA, 3-1/8" | 58.00 |
| 620-1232-000 | Same except 4-1/16" | 89.00 |
| 620-1234-000 | Same except 6-1/8" | 89.00 |
| 620-1237-000 | Same except 8-3/16" | 267.00 |
| 620-1236-000 | Same except 9-3/16" | 284.00 |
| 620-1231-000 | Field Flange, sexless, 3-1/8" | 67.00 |
| 620-1233-000 | Same except 4-1/16" | 96.00 |
| 620-1235-000 | Same except 6-1/8" | 186.00 |
| 620-1238-000 | Fixed Flange, EIA 3-1/8" | 26.00 |
| 620-1240-000 | Same except 4-1/16" | 61.00 |
| 620-1242-000 | Same except 6-1/8" | 80.00 |
| 620-1245-000 | Same except 8-3/16" | 195.00 |
| 620-1244-000 | Same except 9-3/16" | 213.00 |
| 620-1239-000 | Fixed Flange, sexless, 3-1/8" | 26.00 |
| 620-1241-000 | Same except 4-1/16" | 61.00 |
| 620-1243-000 | Same except 6-1/8" | 109.00 |
| 620-1246-000 | Swivel Flange, EIA, 3-1/8" | 35.00 |
| 620-1247-000 | Same except 4-1/16" | 96.00 |
| 620-1248-000 | Same except 6-1/8" | 81.00 |
| 620-1250-000 | Same except 8-3/16" | 373.00 |
| 620-1249-000 | Same except 9-3/16" | 392.00 |
| 620-1207-000 | Anchor Connector, 50 ohm, 3-1/8" | 38.00 |
| 620-1208-000 | Same except 4-1/16" | 86.00 |
| 620-1209-000 | Same except 6-1/8" | 164.00 |
| 620-1210-000 | Same except 9-3/16" | 366.00 |
| 620-1211-000 | Anchor Connector, 75 ohm, 6-1/8" | 98.00 |
| 620-1212-000 | Same except 8-3/16" | 258.00 |
| 620-1213-000 | Same except 9-3/16" | 349.00 |

DIELECTRIC COMMUNICATIONS

TRANSMISSION LINE

| STOCK NO. | | PRICE |
|--------------|---|----------|
| 620-1251-000 | Spring Hanger, 3-1/8" | \$ 58.00 |
| 620-1252-000 | Same except 4-1/16" | 86.00 |
| 620-1253-000 | Same except 6-1/8" with 2 mounting holes use for runs over 600 ft. | 150.00 |
| 620-1682-000 | Same except 6-1/8" with one mounting hole. DO NOT use for runs over 600 ft. | 150.00 |
| 620-1255-000 | Same except 8-3/16" | 236.00 |
| 620-1254-000 | Same except 9-3/16" | 249.00 |
| 620-1256-000 | Fixed Hanger, 3-1/8" | 101.00 |
| 620-1257-000 | Same except 4-1/16" | 169.00 |
| 620-1258-000 | Same except 6-1/8" | 195.00 |
| 620-1260-000 | Same except 8-3/16" | 383.00 |
| 620-1259-000 | Same except 9-3/16" | 387.00 |
| 620-1261-000 | Roller Assembly, 3-1/8" | 44.00 |
| 620-1262-000 | Same except 4-1/8" | 61.00 |
| 620-1263-000 | Same except 6-1/8" | 129.00 |
| 620-1265-000 | Same except 8-3/16" | 230.00 |
| 620-1264-000 | Same except 9-3/16" | 230.00 |
| 620-1266-000 | Horizontal Anchor, single, 3-1/8" | 195.00 |
| 620-1267-000 | Same except 4-1/16" | 213.00 |
| 620-1268-000 | Same except 6-1/8" | 230.00 |
| 620-1270-000 | Same except 8-3/16" | 267.00 |
| 620-1269-000 | Same except 9-3/16" | 267.00 |
| 620-1271-000 | Horizontal Anchor, dual, 3-1/8" | 356.00 |
| 620-1272-000 | Same except 4-1/16" | 373.00 |
| 620-1273-000 | Same except 6-1/8" | 463.00 |
| 620-1275-000 | Same except 8-3/16" | 526.00 |
| 620-1274-000 | Same except 9-3/16" | 573.00 |
| 620-1276-000 | Lateral Brace, 3-1/8" | 27.00 |
| 620-1277-000 | Same except 4-1/16" | 27.00 |
| 620-1278-000 | Same except 6-1/8" | 30.00 |
| 620-1280-000 | Same except 8-3/16" | 35.00 |
| 620-1279-000 | Same except 9-3/16" | 35.00 |
| 620-1281-000 | Horizontal Spring Hanger, single, 3-1/8" | 61.00 |
| 620-1282-000 | Same except 4-1/16" | 115.00 |
| 620-1283-000 | Same except 6-1/8" | 118.00 |
| 620-1285-000 | Same except 8-3/16" | 204.00 |
| 620-1284-000 | Same except 9-3/16" | 204.00 |
| 620-1286-000 | Horizontal Spring Hanger, dual, 3-1/8" | 146.00 |
| 620-1287-000 | Same except 4-1/16" | 230.00 |
| 620-1288-000 | Same except 6-1/8" | 240.00 |
| 620-1290-000 | Same except 8-3/16" | 453.00 |
| 620-1289-000 | Same except 9-3/16" | 453.00 |
| 620-1291-000 | Gas Inlet Kit | 26.00 |

Prices and specifications subject to change without notice



SERIES 5900 BROADCAST DISTRIBUTION EQUIPMENT

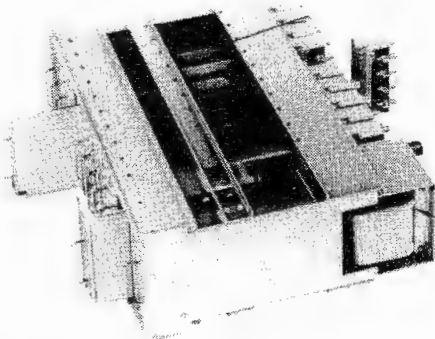


FOR ALL YOUR DISTRIBUTION NEEDS

- Video and pulse distribution amplifiers.
- Subcarrier distribution amplifier.
- Pulse delay distribution amplifier.
- Black burst generator.
- Video and audio switching.
- Audio distribution amplifier.

The DYNAIR Series 5900 Broadcast Signal Distribution equipment is state-of-the-art in design, uncompromising in performance and offers specifications equal to, or better than those of professional equipment available today.

SERIES 5900 FRAME



The Series 5900 module frame provides mounting space for two power supplies (PS-5920A) and ten modules in any combination. The frame contains: a unique power distribution bus, eliminating the need for hand wiring between modules, the power transformer mounted on the back of the frame, open construction for cooling, removable frame adapters (supplied with modules). The frame requires 5 1/4 inches of standard 19" rack space.

SERIES 5900 MODULES



AD-5980A AUDIO DISTRIBUTION AMPLIFIER

- Six +18 or +24dBm outputs — gain adjustable over 27-dB range.
- Bridging input — 60dB common mode rejection.
- Flat response to 24 kHz.
- Extended bandwidth to 50 kHz for data distribution.
- Can be used with the Series 5900 modules in same frame.



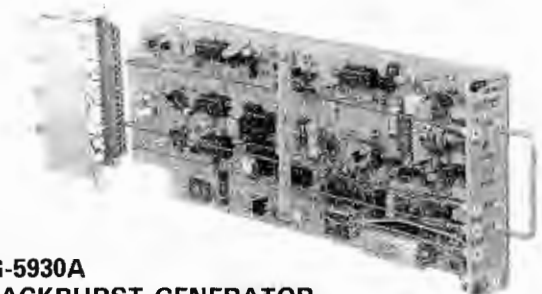
DA-5960A VIDEO DISTRIBUTION AMPLIFIER

- Six d-c coupled outputs.
- Better than 40dB isolation between outputs.
- Differential looping input — 60dB common mode rejection.
- 0.2° differential phase, 0.3% differential gain.
- On-board I.C. d-c regulators.



DA-5966A SUBCARRIER DISTRIBUTION AMPLIFIER

- Six outputs — two independently adjustable groups of three.
- Signal quality maintained by regeneration.
- Full 360 degrees phase adjustment.
- Low distortion — excellent stability.
- NTSC and PAL compatible.



SG-5930A BLACKBURST GENERATOR

- Two d-c coupled outputs.
- Signal quality assured by regeneration.
- Full 360 degrees phase adjustment.
- Composite or non-composite output.
- NTSC and PAL compatible.



PD-5941A PULSE DISTRIBUTION AMPLIFIER

- Six d-c coupled outputs.
- Better than 40dB isolation between outputs.
- Signal quality maintained by regeneration.
- Low distortion — excellent stability.
- On-board I.C. d-c regulators.

Prices and specifications subject to change without notice



DYNAIR ELECTRONICS, INC.

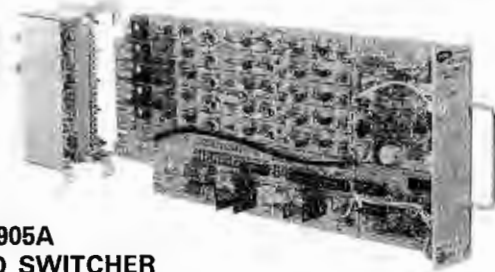
SERIES 5900 BROADCAST DISTRIBUTION EQUIPMENT

SERIES 5900 MODULES, cont'd



PD-5942A PULSE DELAY DISTRIBUTION AMPLIFIER

• Six outputs — two independently adjustable groups of three. • Signal quality maintained by regeneration. • Delay adjustable to 4 microseconds. • Low distortion — excellent stability. • NTSC and PAL compatible.



SW-5905A VIDEO SWITCHER

• High quality, solid state, vertical interval color video switching. • Remote momentary control — internal latch and tally supply. • Control tie for 2 or 3 switchers — RGB video or audio-follow-video systems. • 5x1, 10x1 and 5x5 standard configurations.



SY-5990A/SY-5995A COLOR SYNC GENERATOR AND GENLOCK

• Full NTSC operation. • Excellent time-base stability. • Optional genlock module. • Meets FCC Part 97 requirements.



SW-5985A AUDIO SWITCHER

• High quality, solid-state switching. • Remote momentary control — internal latch and tally supply. • Control tie for 2 or 3 switchers — multiple channel audio or audio-follow-video systems. • 5x1, 10x1 and 5x5 standard configurations.

| Model No. | Description | Price |
|------------|--|----------|
| AD-5980A | One-Input, Six-Output Audio DA | \$275.00 |
| BP-5901A | One-Space Module Blank Panel | 30.00 |
| BP-5920A | One-Space Power Supply Blank Panel | 40.00 |
| CE-0052 | Module Extender for PS-5920A | 35.00 |
| CE-0056 | Module Extender for all Modules except PS-5920A | 50.00 |
| CJ-5905A | Control Jumper Cable for parallel control of two 5x1 switch modules | 25.00 |
| CJ-5910A | Control Jumper Cable for parallel control of two 10x1 switch modules | 35.00 |
| CP-590A | Ten-Button Remote Control Panel | 200.00 |
| CP-595A | Five-Button Remote Control Panel | 150.00 |
| DA-5960A | One-Input, Six-Output Video DA | 250.00 |
| DA-5966A | One-Input, Six-Output Subcarrier DA | 350.00 |
| FA-5905A | Five-Input Terminating Frame Adapter for SW-5905A Module | 95.00 |
| FA-5905A-B | Five-Input Looping Frame Adapter for SW-5905A Module | 125.00 |
| FA-5910A | Ten-Input Terminating Frame Adapter for two SW-5905A Modules | 125.00 |
| FA-5910A-B | Ten-Input Looping Frame Adapter for two SW-5905A Modules | 175.00 |
| FA-5955A | Five-Input, Five-Output Frame Adapter for five SW-5905A Modules | 400.00 |
| FA-5985A | Five-Input Solder Pin Frame Adapter for SW-5985A Module | 95.00 |
| FA-5985A-B | Five-Input Screw Terminal Frame Adapter for SW-5985A Module | 125.00 |
| FA-5987A | Five-Input, Five-Output Frame Adapter for five SW-5985A Modules | 450.00 |
| FA-5995A | Ten-Input Solder Pin Frame Adapter for two SW-5985A Modules | 125.00 |
| FA-5995A-B | Ten-Input Screw Terminal Frame Adapter for two SW-5985A Modules | 175.00 |
| FR-5900A | Series 5900 Module Frame | 400.00 |
| FR-5901A | Series 5900 Module Frame for AD-5980A High Level Output | 400.00 |
| PD-5941A | One-Input, Six-Output Pulse DA | 250.00 |
| PD-5942A | One-Input, Six-Output Pulse Delay DA | 360.00 |
| PS-5920A | Power Supply Module | 150.00 |
| SW-5905A | Five-Input, One-Output Video Switch Module | 350.00 |
| SW-5985A | Five-Input, One-Output Audio Switch Module | 325.00 |
| SG-5930A | Two-Output Black Burst Generator | 525.00 |
| SY-5990A | NTSC Color Sync Generator | 575.00 |
| SY-5995A | Genlock Module for SY-5990A | 425.00 |

Prices and specifications subject to change without notice



The Series 10 Solid-State Video and Audio Switching Equipment provides 10-input/10-output high-quality vertical-interval monochrome or color video switching and on-air quality audio switching. Each 10x10 matrix is housed in a 5 1/4" H x 14 1/2" D x 19" rack mount chassis (13.34 x 36.83 x 48.26 cm) which includes power supply.

The control system is microprocessor-based and allows local and remote operation. Remote master and individual output bus control panels are available to operate over a single coaxial cable control line. Up to four levels of switching, 1 video and 3 audios as an example, can be controlled locally and/or remotely. A total of 15 remote control panels may be used to control a system.

Models SVA-100A, SVA-101A, SAA-110A and SAA-111A include 10 Form A tally relays and facilities to control the slave matrices, Models SVA-102A and SAA-112A.

SVA-100A

Video Switcher, self contained, for local control. 10 input, 10 dual outputs with tally and regulated power supply. **\$3200.00**

Inputs: 10 high-impedance looping, 1.5 VPP maximum

Outputs: 10 dual 75-ohm source terminated

Frequency Response: 100 kHz to 12 MHz ± 0.5 dB (1 MHz ref.)

Tilt: Less than 1%

Crosstalk: Better than 60 dB at 5 MHz (worst case)

Gain: Unity

Differential Gain: 0.25% with 1-VPP output, 10-90% APL

Differential Phase: 0.25° with 1-VPP output, 10-90% APL

Vertical-Interval Switching Drive: Composite sync, 4 VPP nominal, high-impedance looping

Hum and Noise: 70 dB RMS below 1 VPP

Switching Time: 5 µS

Tally: Form A contact per input, 24 VDC at 0.5A maximum. 25 pin "D" connector with mate included

Signal Connectors: BNC

Power Required: 115/230 VAC ±10%, 50/60 Hz

Size: 5 1/4" H x 14 1/2" D x 19" rack mount (13.34 x 36.83 x 48.26 cm)

Net Weight: 20 pounds (9.07 kg)

SVA-101A

Video Switcher. Same as SVA-100A but for remote control operation only. Control by single coaxial comm line. Requires remote control panel(s) options shown at right. **\$3000.00**

SVA-102A

Video Switcher. Same as SVA-101A but for slave control only. Controlled from switcher control bus only. (Model CC-1130A Control Bus Jumper Cable Assembly not included.) Tally not provided. **\$2600.00**

SAA-110A

Audio Switcher, self contained, for local control. 10 input by 10 output with tally and regulated power supply. **\$2700.00**

Inputs: 10 high-impedance bridging, +24 dBm maximum

Common Mode Rejection: 60 dB at 60 Hz

Outputs: 10 balanced low-impedance with short circuit protection, +24 dBm maximum with 600-ohm load, +30 dBm maximum with 150-ohm load

Frequency Response: 30 Hz to 15 kHz ± 0.5 dB

Harmonic Distortion: 0.25% at 15 kHz +8 dBm in/out; 0.5% at 15 kHz maximum in/out

Hum and Noise: 70 dB below maximum out

Crosstalk: 70 dB at 15 kHz (worst case)

Gain: Unity

Tally: Form A contact per input, 24 VDC at 0.5A maximum. 25 pin "D" connector with mate included

Signal Connectors: Screw terminals

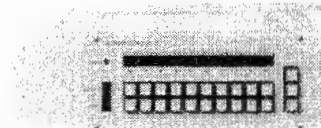
Power Required: 115/230 VAC ±10%, 50/60 Hz

Size: 5 1/4" H x 14 1/2" D x 19" rack mount (13.34 x 36.83 x 48.26 cm)

Net Weight: 20 pounds (9.07 kg)

SAA-111A

Audio Switcher, Same as SAA-110A but for remote control operation only. Control by single coaxial comm line. Requires remote control panel(s) options shown below. **\$2500.00**



SVA-100A



SVA-101A



SVA-102A



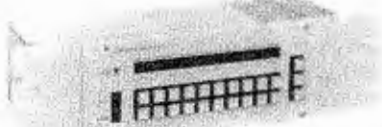
SAA-110A



SAA-111A



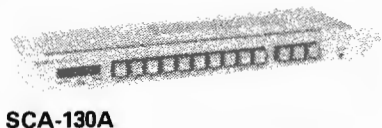
SAA-112A



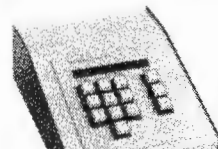
SCA-120A



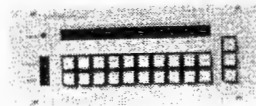
SCA-122A



SCA-130A



SCA-131A



CP-1100A



BP-1109A

SAA-112A

Audio Switcher. Same as SAA-111A but for slave control only. Controlled from switcher control bus only. (Model CC-1130A Control Bus Jumper Cable Assembly not included.) Tally not provided. **\$2100.00**

SCA-120A

Master Remote Control Panel, rack mounting. For remotely controlling all 10 outputs of video and/or audio switchers. **\$650.00**

Status: 7-segment LED readouts

Comm Line: Single coax serial data

Control Connector: BNC

Power Required: 115/230 VAC ±10%, 50/60 Hz

Finish: DYNAIR gray

Size: 5 1/4" H x 6 1/2" D x 19" rack mount (13.34 x 16.51 x 48.26 cm)

Net Weight: 4 pounds (1.81 kg)

SCA-122A

Master Remote Control Panel, desk-top use. Same as SCA-120A except for housing. **\$650.00**

Size: 3 1/2" H x 9" D x 14 1/8" W (8.89 x 22.86 x 35.88 cm)

Net Weight: 3 1/2 pounds (1.59 kg)

SCA-130A

Single Bus Remote Control Panel, rack mounting. For remotely controlling 1 output of video and/or audio switchers. **\$450.00**

Status: 7-segment LED readouts

Comm Line: Single coax serial data

Control Connector: BNC

Power Required: 115/230 VAC ±10%, 50/60 Hz

Finish: DYNAIR gray

Size: 1 3/4" H x 6 1/2" D x 19" rack mounting (4.45 x 16.51 x 48.26 cm)

Net Weight: 3 pounds (1.36 kg)

SCA-131A

Single Bus Remote Control Panel, desk-top use. Same as SCA-130A except for housing. **\$450.00**

Size: 3 1/2" H x 9" D x 6 3/4" W (8.89 x 22.86 x 17.15 cm)

Net Weight: 2 1/2 pounds (1.13 kg)

CP-1100A

Basic Master Control Panel Assembly for mounting into switch matrix chassis or MB-1120A and MB-1121A. **\$230.00**

BP-1109A

Blank Panel for video or audio switch matrix chassis. Provided with Models SVA-101A, SVA-102A, SAA-111A, and SAA-112A. **\$30.00**

CC-1130A

Switcher Control Bus Jumper Cable Assembly. Allows control of slave matrix, Model SVA-102A and/or SAA-112A from SVA-100A or SAA-110A. **\$50.00**

MB-1120A

Rack-mounting Chassis with power supply for housing Model CP-1100A Master Remote Control Panel. Provided with Model SCA-120A. **\$420.00**

MB-1121A

Desk-top Chassis with power supply for housing Model CP-1100A Master Remote Control Panel. Provided with Model SCA-122A. **\$420.00**

TC-260A

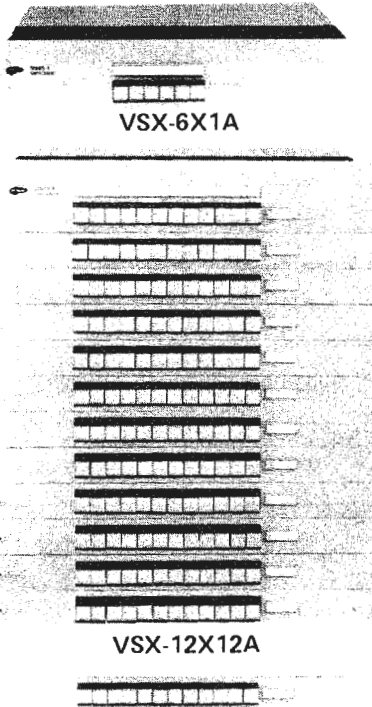
75-ohm BNC Termination Plug for terminating looping video or sync inputs. **\$6.00**

Prices and Specifications Subject to Change Without Notice.



DYNAIR Series-X Switchers are pushbutton patch panels for distributing multiple monochrome or color video inputs (with optional audio-follow) to multiple outputs. Input amplifiers and output amplifiers are incorporated to provide isolation. A single input may be routed to any or all outputs simultaneously.

The switcher is available with either 6 or 12 inputs. Output units are individual modules which couple to the unit above. A single assembly of up to 12 outputs is easily constructed. If more than 12 outputs are desired, the looping video (and audio) input may be extended to one or more additional assemblies for up to 120 outputs.



XD-12A



TC-260A

VSX-6X1A thru VSX-12X12A VIDEO SPECIFICATIONS

Inputs: 6 or 12, 1.5 VPP maximum
 Input Impedance: High-impedance bridging
 Outputs: 1 to 12, channels, 1.5 VPP maximum, 75-ohm source-terminated, dual outputs
 Frequency Response: 30 Hz to 12 MHz, ±0.5 dB
 Crosstalk: Better than 50 dB at 3.58 MHz, better than 40 dB at 12 MHz
 Video Gain per Output: Variable-3 dB to +3 dB
 Tilt: Less than 1%
 Differential Gain: Less than 0.5%, 10-90 APL
 Differential Phase: Less than 0.5°, 10-90 APL
 Bounce on Output: DC coupled output video amplifier
 Hum and Noise: Greater than 60 dB RMS below 1-VPP output (30 Hz to 12 MHz)

OPTIONAL AUDIO-FOLLOW SPECIFICATIONS

Inputs: 6 or 12 (+8 dBm maximum)
 Input Impedance: Balanced, high-impedance bridging
 Outputs: 1 to 12, channels, +14 dBm maximum, 600-ohm balanced
 Frequency Response: 30 Hz to 20 KHz ±1 dB
 Harmonic Distortion: Less than 1.5% at maximum output
 Hum and Noise: Better than 70 dB below maximum output (30 Hz to 20 kHz)
 Crosstalk: Better than 60 dB
 Gain: Adjustable -8 dB to +14 dB

AI-6A
 Audio Input Bridging Amplifier Plug-In Assembly. Provides six high-impedance inputs for audio-follow requirements. Includes input terminals and wiring harness. For use in master units only. Two required in twelve input switcher. **\$125.00**

XD-6A
 Output Expansion Unit, 6 input, for expanding VSX-6X1A up to 12 outputs. One XD-6A required per output. **\$275.00 (basic price)**

-S Option Provides factory installed audio-follow-video switching. Add \$75.00 to XD-6A basic price.

-M Option Provides factory installed sync-mixing circuitry. Add \$100.00 to XD-6A basic price.

*-T Option Provides factory installed dry contact tally circuitry. Includes mating connector. Add \$35.00 to XD-6A basic price.

*-I Option Provides factory installed input expansion circuitry. Allows switcher to expand beyond 6 inputs. (Expansion cable assembly not included.) Add \$150.00 to XD-6A basic price.

XD-12A
 Output Expansion Unit, 12 input, for expanding VSX-12X1A up to 12 outputs. One XD-12A required per output. **\$375.00 (basic price)**

-S Option Provides factory installed audio-follow-video switching. Add \$75.00 to XD-12A basic price.

-M Option Provides factory installed sync-mixing circuitry. Add \$100.00 to XD-12A basic price.

*-T Option Provides factory installed dry contact tally circuitry. Includes mating connector. Add \$50.00 to XD-12A basic price.

*-I Option Provides factory installed input expansion circuitry. Allows switcher to expand beyond 12 inputs. (Expansion cable assembly not included.) Add \$150.00 to XD-12A basic price.

*All options can be ordered at the same time except tally and input expansion. The -T and -I options cannot be included together.

TA-6A
 Audio Input Termination Assembly. Provides six resistive terminations for terminating audio input lines in 600 ohms. Mounted on easy to install fiber board. Two required for twelve input switcher assembly. **\$10.00**

AO-6A
 Audio Output Amplifier Plug-In Assembly. Provides 600-ohm balanced output. One required per switcher output. **\$75.00**

SI-6A
 Sync-Mixing Input Amplifier Plug-In Assembly. Provides high-impedance sync input circuitry. One required in master unit only (six or twelve inputs). **\$100.00**

SO-6A
 Sync-Mixing Output Amplifier Plug-In Assembly. Provides isolation and sync gain control. One required per switcher output. **\$100.00**

TL-6A
 Six-Input Tally Harness Assembly. Includes tally chassis connector and mate. One required per switcher output. **\$35.00**

TL-12A
 Twelve-Input Tally Harness Assembly. Includes tally chassis connector and mate. One required per switcher output. **\$50.00**

EX-6A
 Input Expansion Kit for expanding system inputs by adding additional six- or twelve-input switchers. Does not include external control or video jumper cables. One required per output. (Cannot be used with tally option). **\$170.00**

TC-260A
 75-ohm BNC Termination Plug for terminating looping video or sync inputs. **\$5.00**

CC-X
 Input Expansion Cable assembly, for use with EX-6A Expansion Kit. Specify length. Includes audio jumper and interlock control leads. CJ-5101A Video Jumper Cable not included. **\$75.00 plus 2.00/ft. 6.58/meter**

CJ-5101A
 Video Jumper Cable, standard length 1 foot (30.48 cm). Type RG-59B/U coax with BNC connectors attached. For use with input expansion or looping switcher video inputs. Specify additional length as required. **\$6.00 plus 0.50/per add'l ft. 1.65/meter**

CJ-3081A
 Audio Jumper Cable. Shielded twisted pair for looping switcher audio inputs. Specify length. **\$6.00 plus 0.20 ft. 0.66 meter**

| MODEL NO. | BASIC PRICE | OPTIONAL FEATURES (additional cost) | | | |
|--------------------------|-------------|-------------------------------------|------------------|--------------|------------------------|
| | | -S (audio) | -M (sync-mixing) | -T (tally) * | -I (input expansion) * |
| 6-Input Switchers | | | | | |
| VSX-6X1A | \$ 750.00 | \$ 200.00 | \$ 200.00 | \$ 35.00 | \$ 150.00 |
| VSX-6X2A | 1025.00 | 275.00 | 300.00 | 70.00 | 300.00 |
| VSX-6X3A | 1300.00 | 350.00 | 400.00 | 105.00 | 450.00 |
| VSX-6X4A | 1575.00 | 425.00 | 500.00 | 140.00 | 600.00 |
| VSX-6X5A | 1850.00 | 500.00 | 600.00 | 175.00 | 750.00 |
| VSX-6X6A | 2125.00 | 575.00 | 700.00 | 210.00 | 900.00 |
| VSX-6X7A | 2400.00 | 650.00 | 800.00 | 245.00 | 1050.00 |
| VSX-6X8A | 2675.00 | 725.00 | 900.00 | 280.00 | 1200.00 |
| VSX-6X9A | 2950.00 | 800.00 | 1000.00 | 315.00 | 1350.00 |
| VSX-6X10A | 3225.00 | 875.00 | 1100.00 | 350.00 | 1500.00 |
| VSX-6X11A | 3500.00 | 950.00 | 1200.00 | 385.00 | 1650.00 |
| VSX-6X12A | 3775.00 | 1025.00 | 1300.00 | 420.00 | 1800.00 |

| MODEL NO. | BASIC PRICE | OPTIONAL FEATURES (additional cost) | | | |
|---------------------------|-------------|-------------------------------------|------------------|--------------|------------------------|
| | | -S (audio) | -M (sync-mixing) | -T (tally) * | -I (input expansion) * |
| 12-Input Switchers | | | | | |
| VSX-12X1A | \$ 980.00 | 325.00 | 200.00 | 50.00 | 150.00 |
| VSX-12X2A | 1355.00 | 400.00 | 300.00 | 100.00 | 300.00 |
| VSX-12X3A | 1730.00 | 475.00 | 400.00 | 150.00 | 450.00 |
| VSX-12X4A | 2105.00 | 550.00 | 500.00 | 200.00 | 600.00 |
| VSX-12X5A | 2480.00 | 625.00 | 600.00 | 250.00 | 750.00 |
| VSX-12X6A | 2855.00 | 700.00 | 700.00 | 300.00 | 900.00 |
| VSX-12X7A | 3230.00 | 775.00 | 800.00 | 350.00 | 1050.00 |
| VSX-12X8A | 3605.00 | 850.00 | 900.00 | 400.00 | 1200.00 |
| VSX-12X9A | 3980.00 | 925.00 | 1000.00 | 450.00 | 1350.00 |
| VSX-12X10A | 4355.00 | 1000.00 | 1100.00 | 500.00 | 1500.00 |
| VSX-12X11A | 4730.00 | 1075.00 | 1200.00 | 550.00 | 1650.00 |
| VSX-12X12A | 5105.00 | 1150.00 | 1300.00 | 600.00 | 1800.00 |

Prices and Specifications Subject to Change Without Notice.





Eastman 16mm Videofilm Projector

MODEL TV-12M6

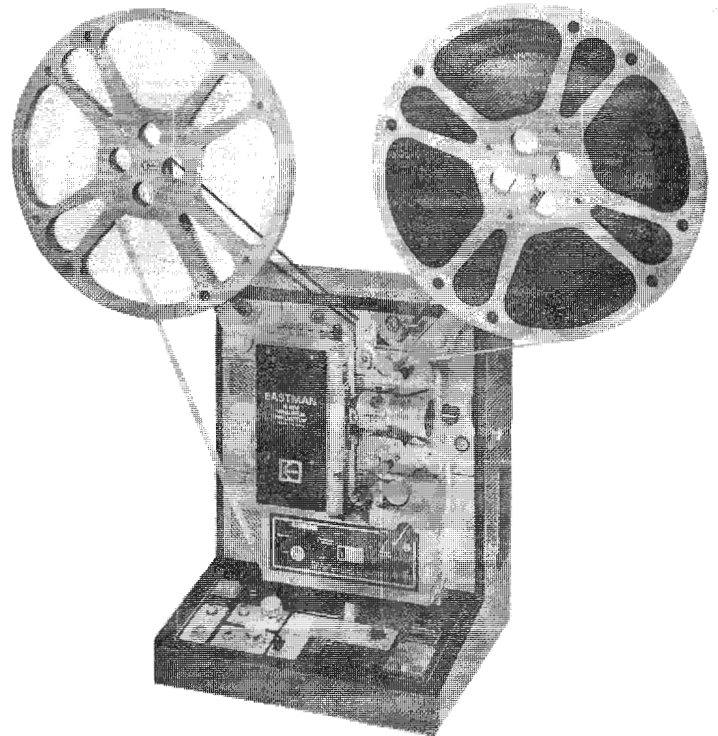
The Eastman 16mm Videofilm Projector, Model TV-12M6, provides television stations, CATV systems, and closed-circuit television systems with a low-cost means of projecting 16mm motion pictures with either optical or magnetic sound tracks into a television system. The circuitry has been wired so that a remote control unit (not supplied by Kodak) can be used to operate the projector from a remote location.

In addition to a low impedance microphone input, a high impedance phono input is provided with a separate level control to enable the user to record from a studio mixer, phonograph, tape recorder, radio, or other source. The projector also has a preamp output, extending the versatility of the amplifier to enable the user to insert a set of low impedance headphones to monitor sound while recording.

Model TV-12M6 \$2075.00

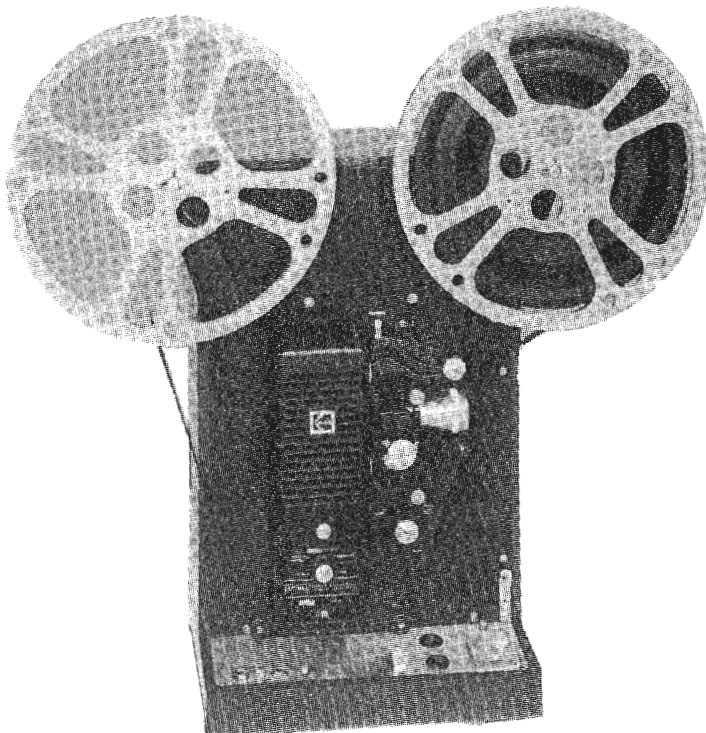
PROJECTION LENSES (Not supplied with Projector):

Kodak Projection Ektanar Lens,
2-inch f/1.6. \$ 52.50



Kodak Projection Ektanon Lens,
3-inch f/2.0. \$ 200.00
Cine-Kodak Bifocal Converter—provides 1-5/8 inch or
2½ inch focal length when used with 2-inch lens \$ 61.50

Eastman Super 8 Videofilm Projector



MODEL TV-M100A

This new super 8 videofilm projector is designed specifically for professional television application. Incorporated into the projector are the many special features requested by television personnel as well as the quality and reliability that is standard in all Kodak projectors.

Features which distinguish the Eastman Super 8 Videofilm Projector:

- Semi-automatic film threading
- Quality record/playback of magnetic sound with sound/picture separation of 18 frames
- Five-bladed shutter
- 24 fps synchronous projection
- Receptacles to allow remote control
- 600-ohm balanced audio output
- Three light levels for longer lamp life

Model TV-M100A \$1825.00

PROJECTION LENSES (Not supplied with Projector):

Kodak Ektanar Lens, 2-inch, f/1.6 \$ 52.50
Cine-Kodak Bifocal Converter—provides 1-5/8 inch or
2½ inch focal length when used with 2-inch lens \$ 61.50
Kodak Projection Ektanon Lens, 3-inch, f/2.0 \$200.00



Prices and Specifications Subject to Change Without Notice.



Wireless Microphone and Sound Systems



PM-1 DEMONSTRATOR \$198.00

The PM-1 combines transmitter, antenna and battery into a rugged lightweight case. It features a mini jack that accepts low impedance microphones. An external toggle switch to enable battery life prolonged when in off position. Standard 9 volt alkaline battery (4-5 hours of operation). May be ordered with E-289 battery for longer periods of operation (15-20 hours). PM-1 Transmitter may be clipped to your belt or worn in a costume or taped to your body. Operates on 30-50 MHz Business Band.

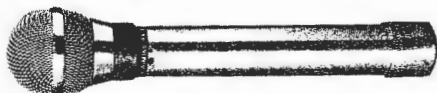
EDCOR offers the PM-1 Demonstrator in various options permanently attached in place of mini-jack.

PM-1 Demonstrator/E-109 — a transmitter with an omnidirectional electret microphone. Features a neck cord, lapel clasp, and windscreen. **\$300.00**

PM-1 Demonstrator/Cannon — transmitter with a standard 3 pin XLR connector permanently attached via long cable. **\$210.00**

PM-1 Demonstrator/Headset — transmitter with a boom microphone with a headset. Excellent for high ambient noise areas. **\$406.00**

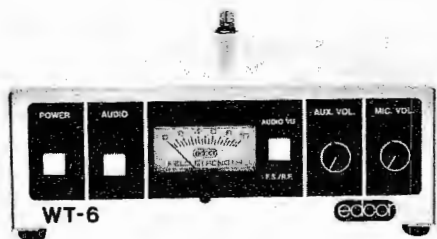
PM-1 Demonstrator/C090 — transmitter with an Electrovoice electret condenser microphone. Features a lapel clasp. **\$454.00**



PM-5 PERFORMER \$478.00

The PM-5 Performer with a dynamic cardioid microphone element operating on 30-50 MHz band. No dangling antenna to interfere with your speaking or singing performance. Base of transmitter firmly holds the standard E-289 battery. The Performer enhances a matte nickel case with a polished nickel microphone element.

PM-5 Entertainer — Same as the PM-5 Performer except the Entertainer enhances a satin black case with a polished nickel microphone element. Optional WSB black windscreen available for the all black look. **\$488.00**



WT-6 INNOVATOR \$644.00

Wireless single channel crystal controlled transmitter operating on the 30-50 MHz Business Band. Separate microphone and auxiliary inputs with individual gain controls. Features an auxiliary output.



ST-3B RECEIVER \$440.00

Crystal controlled receiver with separate lo and hi impedance outputs operating on 30-50 MHz band. Connects to existing PA system to accommodate a wireless microphone. AC or 12 VDC. Features a signal energized electronic switch (SEES) that can be used to electronically control other electronic devices.



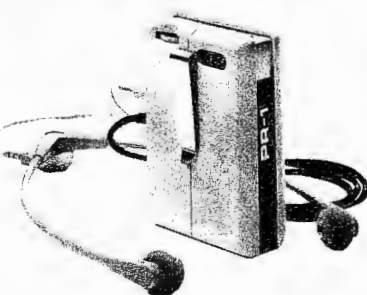
ST-3B DIVERSITY \$730.00

A complete wireless microphone diversity system consists of a transmitter, two receivers, two antennas and an electronic switch. Both receivers on the same frequency (30-50 MHz) enclosed in the ST-3B Diversity case. The electronic switch selects the best quality audio signal of the two receivers. ST-3B Diversity connects to existing PA systems. Lo and hi impedance outputs. AC or 12 VDC. No more drop outs.



MA-110 MEETING AMPLIFIER \$500.00

Portable wireless meeting amplifier/PA system. Includes a wireless receiver, 10 watt amplifier, a wired microphone input and a hi Z auxiliary input. Separate gain controls for each. AC or 12 VDC (NEDA 926 battery). 30-50 MHz Band.



PR-1 PERSONAL RECEIVER \$220.00

A single channel crystal controlled receiver provides the luxury of pocket size portability and battery powered (9V alkaline) operation. 30-50 MHz Band. Earphones provide substantial audio amplification, as well as user privacy. Ask about the availability of a TK-10 Kit with ten PR-1's and one PM-1 Demonstrator for tours or translation applications.



E-COM 1 THE ELITE \$596.00

Crystal controlled transmitter with mini jack for use with low impedance microphones. Optional phantom power for electret microphones available. A compressor circuit provides 40 db of compression. Features an external antenna for increased transmission range. Standard battery 9V alkaline. 150-210 MHz Band for less random electrical noise, unwanted radio interference or skip.



E-COM 3 RECEIVER \$640.00

A single channel crystal controlled receiver operating on 150-210 MHz. Individual lo impedance and hi impedance outputs for connecting to an existing PA system to accommodate a wireless microphone. AC or 12 VDC. Features a signal energized electronic switch (SEES) that can be used to electronically control other electronic devices.



E-COM 5 DIVERSITY \$930.00

No more drop outs or null areas. Two receivers on a single frequency (150-210 MHz Band), enclosed in a single cabinet. The reliability of signal reception is greatly improved at all working distances because two antennas each feed an independent receiver. A switch (electronically) selects the stronger of the two signals. Connects to existing PA system. Lo and hi impedance outputs. AC or 12 VDC.



E-COM 7 BODY RECEIVER \$396.00

A battery powered crystal controlled pocket size receiver for cueing, tours, bilingual or amplification for hard of hearing. Audio amplification via optional earphones. Standard battery is 9V alkaline. (150-210 MHz)

Prices and specifications subject to change without notice

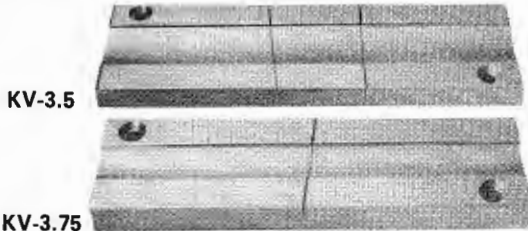


NOW YOU CAN SPLICE, EDIT, REPAIR ANY TAPE IN SECONDS, WITH THE EDITall® SYSTEM!

EDItabs Pre-Cut Splicing Tabs for Audio and Video

- Pre-cut. No trimming of tape overhang.
- Eliminates hard, brittle, sticky splices.
- Automatically positions and centers on tape in EDITall block.
- Tape may be erased and used indefinitely.
- Assures click-free recordings.
- Smooth tapered edges prevent wow.
- Never damages tape or tape heads.
- Tough. Outlasts the original tape.
- Retains the original quality of sound reproduction.

CX-1 — ¼" tabs for ¼" tape. For open reel and cartridge machines. Used with KS-3 kit; S-2, S-3 splicing blocks. 50 tabs. **\$2.50**



KV-3.5

KV-3.75

Video Splicing Blocks

CX-2 — ¼" metallized tabs for ¼" tape. For automatic reverse and/or automatic stop; metal foil sensing. Used with KS-3 kit; S-2, S-3 splicing blocks. 50 tabs. **\$2.75**

CX-3 — .150 mil. tabs. For cassettes. Used with S-1 block and KS-1 kit. 60 tabs. **\$2.50**

CX-4 — For ½" video tape. Used with KV-3.5 kit and V-3.5 block. 100 tabs. **\$4.50**

CX-5 — For ¾" video tape. Used with KV-3.75 kit and V-3.75 block. 98 tabs. **\$5.00**

CX-6 — For ½" audio tape. Used with KS-3.5 kit and S-3.5 block. 100 tabs. **\$5.25**

CX-7 — For ¾" audio tape. Used with KC-3.75 kit and S-3.75 block. 98 tabs. **\$5.75**

In order to accurately edit the video segment of tape, the pinpoint precision of the EDITall video tape splicing system is used by broadcasting studios throughout the world.

Video Splicing and Editing Kits

KV-3.5 — For ½" video tape. V-3.5 aluminum splicing block (4 ½" x 1 ¼" x 3/8") for machines operating at 7 ½ ips. Pkg. of CX-4 EDItabs, can of nonflammable magnetic tape developer, cutting blade, instruction booklet. **\$30.00**

KV-3.75 — For ¾" video tape. V-3.75 aluminum splicing block (5" x 1 ½" x 5/16"), pkg. of CX-5 EDItabs, can of nonflammable magnetic tape developer, cutting blade, instruction booklet. **\$35.00**

KV-4 — For 1" video tape. V-4 aluminum splicing block (5 ¾" x 1 ¼" x 3/8"), roll of 1" video splicing tape, can of nonflammable magnetic tape developer, cutting blade, instruction booklet. **\$40.00**

Magnetic Tape Developer — This nonflammable aerosol spray contains iron oxide particles suspended in freon. It is especially vital for critical video splicing. When sprayed on the recorded portion of the video tape, the magnetic track becomes visible. This helps to pinpoint precise editing locations. It is also widely used in audio taping since it's a great aid in checking tape head alignment. **\$5.00**



Video Splicing Kits

For All Audio Professional Tape Splicing

EDITall is preferred by broadcast, recording studios and manufacturers of 4 and 8 track cartridges, and cassettes. No other tape splicing system can provide such accurate, simple tape splices because no other system has. EDItabs Precision Splicing Tabs.

Audio Splicing, Repair and Editing Kits. In addition to contents shown, all kits contain cutting blade, marking pencil, instruction and editing information booklet.

KS-3 — For consoles using ¼" audio tape. S-3 aluminum splicing block (5 ¾" x 1" x 3/8") with counter-sunk mounting holes. 30 CX-1 EDItabs **\$14.00**

KS-3.5 — For ½" audio tape. S-3.5 aluminum splicing block (5 ¾" x 1 ¼" x 3/8") with countersunk mounting holes. 30 CX-6 EDItabs. **\$30.00**

KS-3.75 — For ¾" audio tape. S-3.75 aluminum splicing block (5 ¾" x 1 ½" x 5/16") with countersunk mounting holes. 28 CX-7 EDItabs. **\$35.00**

KS-4 — For 1" audio tape. S-4 aluminum splicing block (5 ¾" x 1 ¼" x 3/8") with countersunk mounting holes. 68° cutting angle for 4 and 8 track use, also 45° and 90° cutting slots. Includes roll of ½" splicing tape. **\$40.00**

KA-2 — For multi-track 2" audio tape. Special clamp aluminum splicing block (6" x 3 ¼" x ½") with countersunk mounting holes. **\$75.00**



KA-2
EDITall 2" Splicing Block

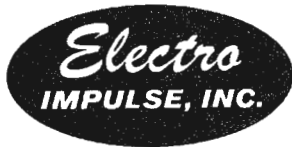


EDITall Brushed Aluminum Splicing Blocks

Used in all EDITall kits, these splicing blocks are manufactured so precisely that tape manufacturers often use them to check for proper tape width. The groove in the block has protruding flanges in its sides. This automatically centers and holds tape for correct splicing.



Prices and specifications subject to change without notice



ELECTRO IMPULSE LABORATORY, INC.

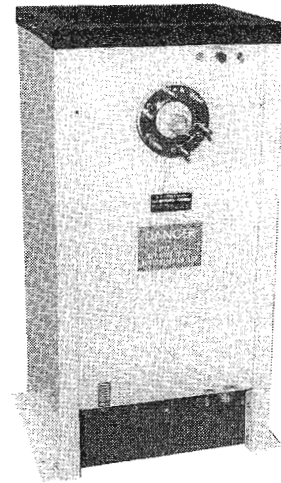
RF COAXIAL LOADS



DACT-5K [TO 30 MHz]
DACT-5KFM [TO 110 MHz]
5000-7500 WATTS

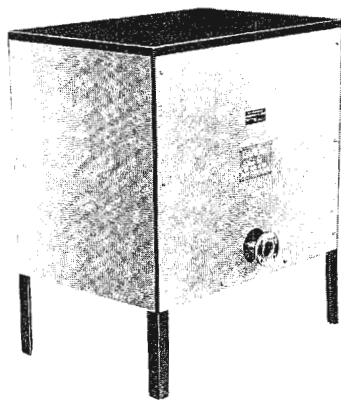
- Dry, convection cooled. • Frequency: DC - 30 MHz (DACT-5K), DC - 110 MHz (DACT-5KFM). • VSWR: 1.15:1 Max. • *Power: 5000 watts continuous, 7500 watts intermittent. • Ambient: -40 to +52°C. • Input: 1-5/8 EIA, 3-1/8 EIA. • Weight: 65 pounds. • Op. Position: Upright only. • Finish: White Enamel. • Outdoor versions available.

*7500 watts continuous average power is acceptable with possible slight degradation of VSWR.



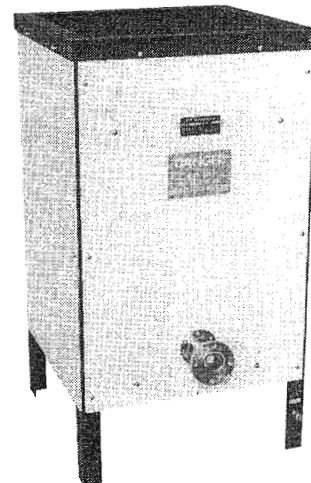
DPTC-10KFM
10,000 WATTS

- Dry, convection cooled. • Frequency: DC - 30 MHz. • VSWR: 1.15:1 Max. • Power: 10,000 watts continuous, 12,000 watts intermittent. • Ambient: -40 to +52°C. • Input: 1-5/8 EIA. • Weight: 65 pounds. • Op. Position: Upright only. • Finish: White Enamel. • Outdoor version Model DACT-14A available.



DPTU-153 [AM BAND]
DACT-153 [TO 30 MHz]
15KW

- Dry, convection cooled no line power needed. • Frequency: DC - 1750 KHz (DPTU-153), DC - 30 MHz (DACT-153). • VSWR: 1.15:1 Max. • Power: 15 KW continuous. • Ambient: -40 to +52°C. • Input: 1-5/8 or 3-1/8 EIA. • Weight: 90 pounds. • Op. Position: Upright. • Finish: White Enamel. • Interlock: Thermostat included.



DACT-14
10,000 WATTS

- Dry, forced air cooled. • Frequency: DC - 110 MHz. • VSWR: 1.1:1 Max. • Power: 10,000 watts continuous, 12,000 watts intermittent. • Ambient: -40 to +40°C. • Input: 3-1/8 or 1-5/8 EIA. • Weight: 75 pounds. • Op. Position: Upright only. • Finish: White Enamel. • Air Flow: 1600 CFM. • AC Power: 115VAC 5A 60Hz (50Hz optional extra).

Prices and specifications subject to change without notice





**DPTC-20KFM
25KW***

- Dry, forced air cooled. • Frequency: DC - 110 MHz. • VSWR: 1.15:1. • Power: 25,000 watts continuous. • Ambient: -40 to +45°C.
- Input: 3-1/8 EIA. • Weight: 100 pounds. • Op. Position: Upright.
- Finish: White Enamel. • Air Flow: 1000 CFM. • Interlocked for line power, air flow, and over temperature. • AC Required: 115VAC 8A 60Hz (50 Hz available optional).

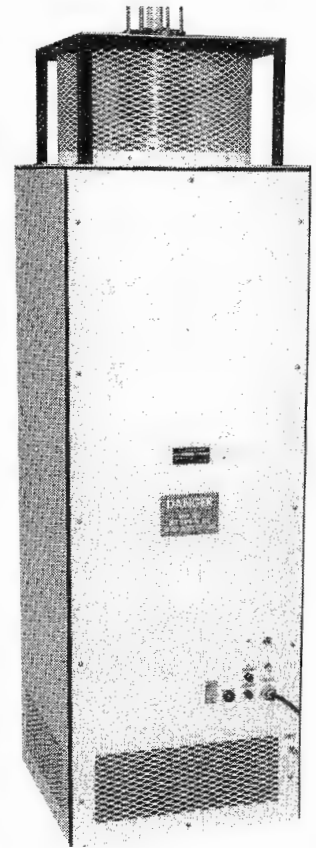
*Rated 25 KW in maximum ambient of 80°F.

**DPTC-50KFM
55KW**

- Dry, forced air cooled. • Frequency: DC - 110 MHz. • VSWR: 1.15:1. • Power: 55 KW continuous. • Ambient: -40 to +45°C.
- Input: 3-1/8, 6-1/8 Opt. • Weight: 120 pounds. • Op. Position: Upright. • Finish: White Enamel. • Air Flow: 3600 CFM. • Interlocked for line power and air flow. • AC Power: 220VAC 7A 60Hz (50Hz available optional).



DPTC-20KFM



DPTC-50KFM



**DACT-253
25KW**

- Dry, convention cooled no line power needed. • Frequency: DC - 30 MHz. • VSWR: 1.2:1 Max. • Power: 25 KW continuous. • Ambient: -40 to +52°C. • Input: 3-1/8 EIA. • Weight: 150 pounds.
- Op. Position: Upright. • Finish: White Enamel. • Interlock thermostat included. • Outdoor version available.

RF COAXIAL LOADS

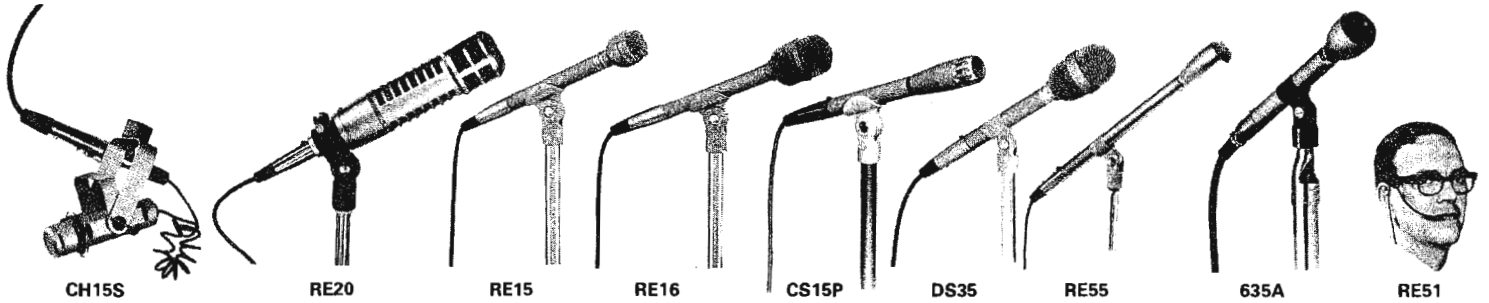
| Model | Average Power (Watts) | Price | Comments |
|-------------|---|-----------|-----------------------------------|
| CPTN-500 | 500/750 | \$ 220.00 | |
| CPTN-1500 | 1500/2000 | 395.00 | Add \$50.00 for 1 1/8 EIA |
| CPTN-3000 | 2500/3000 | 520.00 | Add \$50.00 for 1 1/8 EIA |
| CPTC-5K | 5000 | 797.00 | Add \$50.00 for 1 1/8 EIA |
| | | | Now rated 5KW Continuous |
| DACT-5KFM | 5000/7500 | 1195.00 | Specify 1 1/8 or 3 1/8 EIA |
| DACT-7.5KFM | 7500 | 1195.00 | Add \$45.00 for Over Temp Switch |
| DACT-14 | 10,000/12,000 | 1600.00 | |
| DPTC-10KFM | 10,000/12,000 | 1600.00 | |
| DPTU-153 | 15,000 | 2200.00 | |
| DACT-153 | 15,000 | 2250.00 | |
| CPTC-15K | 15,000 | 3250.00 | Replaces CPTC-10K |
| DPTC-20KFM | 20,000/25,000 | 2925.00 | Reject Load Option - \$200.00 |
| DACT-253 | 25,000 | 4000.00 | |
| CPTC-25K | 25,000 | 4100.00 | |
| CPTC-30K | 40,000 | 4450.00 | |
| DPTU-50K | Use DPTC-50KFM | | |
| DPTC-50KFM | 55,000 | 4550.00 | |
| CPTC-50K | 50,000 | INQUIRE | |
| DPTC-65KFM | 65,000 | 5500.00 | 3 1/8 EIA; add \$100.00 for 6 1/8 |
| CPTC-80K | 80,000 | INQUIRE | |
| DPTU-75K | 80,000 | 6450.00 | |
| DPTC-75KFM | Use CPTC-80K or DPTU-75K depending on frequency | | |



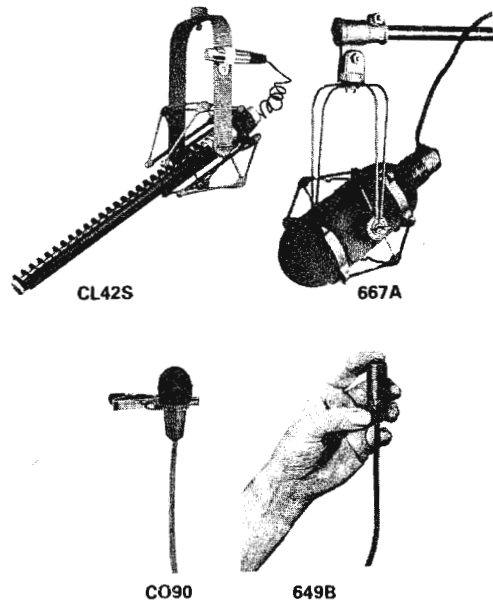
Prices and specifications subject to change without notice



Electro-Voice® microphones



professional models



| model: | CL42S | 667A | CH15S | RE20 | RE15 |
|-----------------|---|------------------------------------|-----------------------------------|---|---|
| type: | Cardiline condenser | Cont. Variable-D® cardioid dynamic | single-d hyper-cardioid condenser | Cont. Variable-D® cardioid dynamic | Cont. Variable-D® super-cardioid dynamic |
| response: | 90-12k Hz | 40-10k Hz | 55-13.5k Hz | 45-18k Hz | 80-15k Hz |
| impedance: | lo-z | 50/150/250 ohms | lo-z | 50/150/250 ohms | lo-z |
| output: | -33 dB | -51 dB | -40 dB | -57 dB | -56 dB |
| finish: | fawn beige | gray | fawn beige | fawn beige | fawn beige |
| applications: | long range pick-up; TV & movie booms, ENG | boom/fishpole | TV, movie boom/fishpole | highest quality wide-range recording/p.a. | hand, stand, or boom/broadcast/recording/p.a. |
| comments: | phantom or A-B powerable | 6 response variations selectable | phantom or A-B powerable | bass tilt-down switch | bass tilt-down switch |
| similar models: | DL42—dynamic | | | | RE10—less exacting applications |

CL42S ..\$637.00 667A ..\$346.00 CH15S \$491.00 RE20 ..\$349.00 RE15 ..\$202.00
DL42 ..\$400.00 RE10 ..\$127.50

Prices and Specifications Subject to Change Without Notice.

professional lavalier

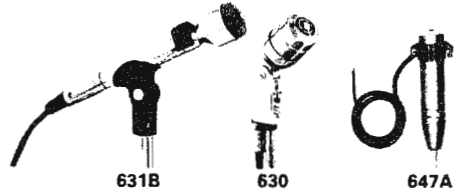
| RE16 | CS15P | DS35 | RE55 | 635A | RE51 | CO90 | 649B |
|--|--|--|--------------------------------|--|---|----------------------------|-------------------------------------|
| Cont. Variable-D® super-cardioid dynamic | single-d cardioid electret condenser | single-d cardioid dynamic | omni-directional dynamic | omni-directional dynamic | personal headset dynamic | omni-directional condenser | lavalier dynamic |
| 80-15k Hz | 40-18k Hz | 60-17k Hz | 40-20k Hz | 80-13k Hz | 80-10k Hz | 40-15k Hz | 70-10k Hz |
| lo-z | lo-z | lo-z | lo-z | lo-z | lo-Z | lo-z | lo-z |
| -56 dB | -45 dB | -60 dB | -57 dB | -55 dB | -56 dB | -57 dB | -61 dB |
| fawn beige | fawn beige | fawn beige | fawn beige | fawn beige | black | fawn beige | fawn beige |
| close-up handheld vocal | highest quality p.a./recording | prof. entertainer broadcast/p.a./recording | highest quality p.a./recording | hand or stand vocal/instrumental broadcast/recording | sports/news remotes/lecturing | TV news, interview | concealed walkaround p.a./broadcast |
| bass tilt-down switch/super pop filter | remotely powerable/ removable pop filter | emphases bass close-up super pop filter | smoothest widest range dynamic | built-in pop filter | hands-free use/clips on eyeglasses | tie clasp mounting | small and lightweight |
| RE11—less exacting applications | BS9—Opt. plug-in battery supply | | DO54—50-18k Hz —55 dB | RE50—noiseless construction | 967M—communications model 967ME—with earphone | CO85—"tie-tac" | RE85—noiseless construction |

RE16 ..\$210.00 CS15P ..\$237.00 DS35 ..\$115.50 RE55 ..\$232.00 635A ..\$ 69.75 RE51 ..\$153.00 CO90 ..\$112.50 649B ..\$102.00
RE11 ..\$141.00 BS9 ..\$ 50.75 DO54 ..\$112.50 RE50 ..\$106.50 CO85 ..\$164.00 RE85 ..\$106.50





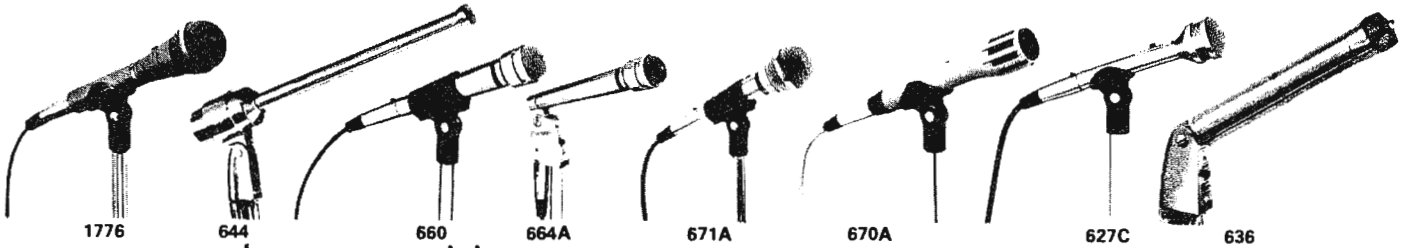
Electro-Voice® microphones



631B

630

647A



1776

644

660

664A

671A

670A

627C

636

general purpose models

| model: | 1776 | 644 | 660 | 664A | 671A | 670A | 627C |
|------------------------|--|---|--|--|--|--|--|
| type: | single-d cardioid electret condenser | unidirectional line dynamic | super-cardioid Variable-D [®] dynamic | super-cardioid Variable-D [®] dynamic | single-d cardioid dynamic | single-d cardioid dynamic | single-d cardioid dynamic |
| response: | 60-18k Hz | 40-10k Hz | 90-13k Hz | 90-13k Hz | 60-14k Hz | 60-14k Hz | 60-13k Hz |
| impedance: | lo-z | dual hi-z/lo-z | dual hi-z/lo-z | dual hi-z/lo-z | dual hi-z/lo-z | dual hi-z/lo-z | dual hi-z/lo-z |
| output: | -50 dB | -53 dB | -56 dB | -56 dB | -58 dB | -60 dB | -58 dB |
| finish: | gray | satn chrome | satn chrome | satn chrome | satn chrome | gray | satn chrome |
| applications: | entertainers' p.a./recording | long-range pickup stage/outdoors/classrooms | entertainers' p.a./recording | p.a./recording communications | entertainers' p.a./recording | entertainers' p.a./recording | entertainers' p.a./recording |
| comments: | emphasizes bass close-up; on/off switch; powered by internal battery | 90° acceptance angle on/off switch | no proximity effect | no proximity effect on/off switch | emphasizes bass close-up on/off switch | emphasizes bass close-up on/off switch | emphasizes bass close-up on/off switch |
| similar models: | 1777—phantom powerable | | 660A—gray | 664AA—gray | 672—stud mounted with switch | | 626A—integral cable/dual z/70-12k Hz |

1776...\$111.50

644...\$148.00

660...\$82.75
660A...82.75

664A...\$84.25
664AA...84.25

671A...\$86.25
672...92.50

670A...\$89.25

627C...\$63.75
626A...51.75

| 636 | 631B | 630 | 647A | RE18 | DO56 |
|--------------------------|----------------------------------|-------------------------------|---------------------------|------------------------|--------------------------|
| omni-directional dynamic | omni-directional dynamic | omni-directional dynamic | lavalier dynamic | super cardioid dynamic | omni-directional dynamic |
| 60-13k Hz | 80-13k Hz | 60-11k Hz | 70-10k Hz | 80-15k Hz | 80-18k Hz |
| dual hi-z/lo-z | specify hi or lo-z | dual hi-z/lo-z | specify hi or lo-z | lo-z | lo-z |
| -58 dB | -55 dB | -55 dB | -60 dB | -57 dB | -61 dB |
| satn chrome | satn chrome | satn chrome | gray | silver tone beige | silver tone beige |
| p.a./recording/schools | entertainers'/p.a. recording | p.a./recording schools/paging | concealed walkaround p.a. | braodcasting recording | TV/Radio Vocalists |
| on/off switch | on/off switch—removable actuator | on/off switch | small/light weight | internal shock mount | Shock-isolated |
| | | | | RE16 | |

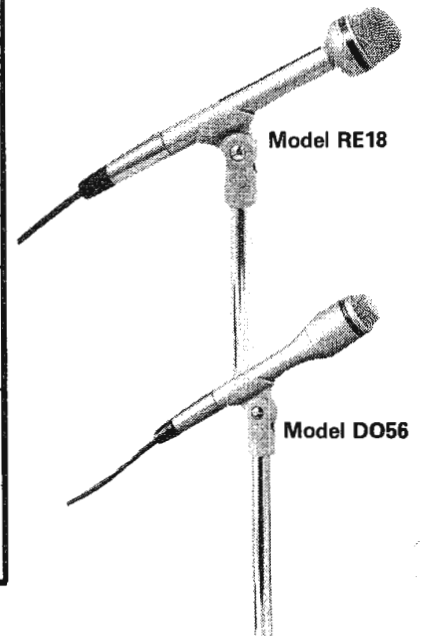
636...\$86.25

631B...\$60.75

630...\$71.50

647A...\$79.75

RE18...\$225.00 DO56...\$100.00



Model RE18

Model DO56



Prices and specifications subject to change without notice



Electro-Voice® Accessories

Electrical Accessories

AC24: Phantom power supply. AC24M provides remote power for two microphones from standard 117 VAC power. Expandable in multiples of four to accept up to 10 microphones by using AC24S Expander Modules. **AC24M \$96.00, AC24S \$81.00**

BS9: Remote Battery power supply. To power any E-V professional condenser microphone. Inserts in mic. line between mic. and mixer. For balanced or unbalanced lo-z (150 ohms) inputs. Uses two standard 9v batteries. **\$50.75**

CA10: For any E-V professional condenser system head. Reduces output level by approximately 10 dB. For use where extremely high sound pressure levels may cause distortion in the microphone electronics. **\$26.40**

CO9R: Repair kit for CO90 mike. **\$19.10**

380: Attenuator for use in mike line. Reduces signal 10 dB, does not affect response. Prevents overloading of electronics with extremely high-level sound input. Mates with A3-type professional connectors. (For other value attenuators, send for E-V "Design your own attenuator" plans.) **\$20.60**

381: Switch/connector and cable. SPST switch built into mike connector. Converts mikes with no switch into switch type. Fits mikes with A3-type professional connector. 15' cable replaces cable supplied with mike. **\$24.00**

502C: Transformer for matching low impedance microphones to high impedance amp inputs. Input is A3F connector; MC1M output connects directly to amp. Matching A3M cable connector furnished. **\$20.60**

502CP: Same as 502C but with 1/4" phone plug output. **\$20.60**

513A: Low-frequency cutoff filter for use with Lo-Z mikes. Eliminates unwanted noise and reverberation components below 100 Hz. Professional A3-type connectors. **\$62.50**

Windscreens

Specially formulated Acoustifoam™ cellular material is transparent to normal sounds, but stops sudden air blasts as caused by wind, movement of the mike, and voice "P" and "T" pops. Unaffected by temperature extremes, water resistant, protects against mechanical shock and pickup of dust, magnetic particles.

314: For RE10 and RE15 mikes. Zippered for easy installation. Rear portion can be used on RE11 and RE16 for wind protection. For additional protection use 307 shock mount and 368 windscreen. **\$12.00**

314E: For 635A. Can be used for pop protection only on front of RE10, and RE15. **\$6.40**

315A: for CS15P mike. **\$6.40**

343: For CL42 and DL42 mikes. **\$25.60**

351: For pop filter on DS35, RE11 & RE16. **\$6.40**

351: for pop filter on DS35, RE15, RE11, 671, & 672. **\$6.40**

355A: For DO54, RE55, mikes. **\$6.40**

368: For 667A. Also fits over 3/4" dia. mikes in 307 shock mount and over RE20 in 309 shock mount for added wind protection. **\$94.00**



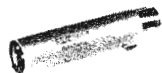
AC24



BS9



CA10



380



381



502C



502CP



513A



314



314E



315A



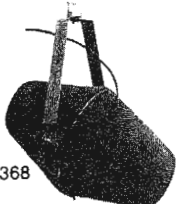
343



351



355A



368

385: For CO90, CO90E and CO85 mikes.

Cables

520: 4.6m (15') 2-cond., shielded, gray vinyl jacketed, with Switchcraft A3F connector at one end and 1/4" phone plug at the other end. **\$17.00**

521: 7.6m (25') 2-cond., shielded, brown rubber jacketed, with Switchcraft A3F connector at one end and A3M at the other end. **\$23.40**

Shock Mounts

304: Shock mount for SE15 "Short" electronics with CO15, CS15E or CH15E heads of the E-V condenser mic. system. Will also work with microphones with 3/4" or 1 inch barrels. Attaches directly to boom head, fishpole, or floor stand. Includes 3/8"-27 stand adapter. **\$28.80**

307: Shock mount adapts any microphone with 3/4" diameter cylindrical shank for boom or stand use. Accommodates 314 and/or 368 windscreens. **\$33.40**

309: Shock mount for RE20 mike. Accommodates 368 windscreen. **\$44.00**

Desk Stands

411: Floor-mount "mike mouse" for medium and long-distance pickup on stage, desk top, wall, ceiling, etc. Recommended for use with RE10, RE15 mikes. Uses reflected sound wave for increased gain before feedback. **\$12.80**

400: Desk stand in non-reflecting gray with foam rubber base pads; for most microphones whether clamp mounted or fitted with switch stud. **\$14.40**

422: Low profile desk stand with rubber shock mount, accepts E-V stand clamps into which mike is placed. **\$15.90**

423A: Desk stand with 5/8" diameter base and 5" riser, 3/8"-27 mounting thread. Rests on rubber feet. Gray. **\$11.70**

428: Desk stand, 5/8" diameter base with grip-to-talk switch in riser. Lever type DPDT switch controls mike and relay. Momentary contact or locks in "talk" position. Gray. 7" high. **\$31.90**

Stand Clamps and Mounts

301: Stand clamp for 1" to 1 1/8" diameter microphones. Allows snap-out use. Black. **\$5.60**

301A: Same as 301 except gray. **\$5.60**

310: Stand clamp for 3/4" microphones. Allows slip-out use. Black. **\$5.60**

310A: Same as 310 except gray. **\$5.60**

312: Stand clamp for 3/4" microphones. Allows snap-out use. Black. **\$5.60**

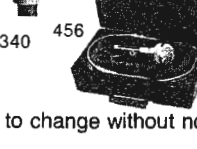
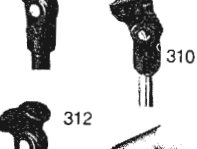
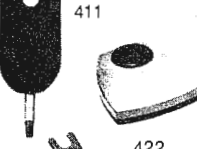
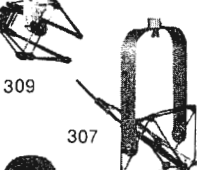
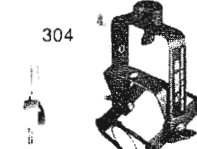
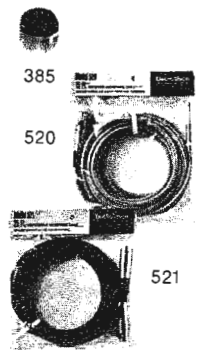
312A: Same as 312 except gray. **\$5.60**

340: Security Clamp. For 3/4" diameter cylindrical shank mikes. Allen set screws lock mike and connector in place. Standard 3/8"-27 thread mounting. **\$11.90**

342: Security stud-mount adapter. Converts studless mikes with 3/4" cylindrical barrel and A3-type connector to stud type with on/off switch. Allen set screw holds mike in position. **\$22.30**

Carrying Case

456: Tough molded carrying case with foam plastic universal insert, holds virtually any E-V microphone and cable. Keeps mike clean, free from damage. **\$12.50**



Prices and specifications subject to change without notice





High Fidelity Speaker Systems



Electro-Voice®
a gulton company



Interface: 1



Interface: 2



Interface: 3



Interface: A



Interface: C



Interface: B



Interface: D

Interface: 1

8" two way

Frequency Response: 47-20,000 Hz; +/- 3 dB 56-18,000 Hz, 1 meter on axis. Recommended Amplifier Power: 3.6 watts per channel minimum; 250 watts maximum. Sound Pressure Level: 92 dB at 1 meter, 1 watt in. Midband Sound Pressure Levels in a Typical Listening Room: 90 dB average, 100 dB peak with a 3.6-watt amplifier; 108 dB average, 118 dB peak (10 ms) with a 250-watt amplifier. Crossover Frequencies: 76 Hz acoustic; 1500 Hz electrical. Transducers: 8" midrange/woofer; 1 1/2" Super-Dome tweeter with acoustic lens. Impedance: 8 ohms nominal; 5 ohms minimum. Size: 21 1/4" x 11-3/8" x 9-11/16" hwd. Cabinet: Simulated walnut-grained vinyl. Optional Accessories: BBR-1 speaker stands (pair). Weight: 23 lbs.

Interface: 1 \$120.00

Interface: 2

10" three way

Frequency Response: 39-20,000 Hz; +/- 3 dB 47-18,000 Hz, 1 meter on axis. Recommended Amplifier Power: 3.6 watts per channel minimum; 250 watts maximum. Sound Pressure Level: 92 dB at 1 meter, 1 watt in. Midband Sound Pressure Levels in a Typical Listening Room: 90 dB average, 100 dB peak with 3.6-watt amplifier; 108 dB average, 118 dB peak (10 ms) with a 250-watt amplifier. Crossover Frequencies: 66 Hz acoustic; 1500 Hz electrical. Transducers: 10" low-frequency radiator; 8" midrange/woofer; 1 1/2" Super-Dome tweeter with acoustic lens. Impedance: 8 ohms nominal; 5 ohms minimum. Size: 24 1/4" x 13 3/4" x 10-11/16" hwd. Cabinet: Simulated walnut-grained vinyl. Optional Accessories: BBR-1 speaker stands (pair). Weight: 25 lbs.

Interface: 2 \$160.00

Interface: 3

12" three way

Frequency Response: 34-20,000 Hz; + 3 dB 40-18,000 Hz, 1 meter on axis. Recommended Amplifier Power: 3.6 watts per channel minimum; 250 watts maximum. Sound Pressure Level: 92 dB at 1 meter, 1 watt in. Midband Sound Pressure Levels in a Typical Listening Room: 90 dB average, 100 dB peak with a 3.6-watt amplifier; 108 dB average, 118 dB peak (10 ms) with a 250-watt amplifier. Crossover Frequencies: 57 Hz acoustic; 1500 Hz electrical. Transducers: 12" low-frequency radiator; 8" midrange/woofer; 1 1/2" Super-Dome tweeter with acoustic lens. Impedance: 8 ohms nominal; 5 ohms minimum. Size: 25 1/4" x 14 1/4" x 13-1/8" hwd. Cabinet: Simulated walnut-grained vinyl. Optional Accessories: BBR-1 speaker stands (pair). Weight: 33 lbs.

Interface: 3 \$199.95

Interface: A

12" three way

Frequency Response: 29-20,000 Hz; +/- 2.5 dB 35-18,000 Hz, 1 meter on axis. Dispersion Angle: 125° +/- 30° in the 500-8000 Hz octave bands; 75° in the 12,500 Hz 1/2-octave band. Recommended Amplifier Power: 3.6 watts per channel minimum; 250 watts maximum. Sound Pressure Level: 92 dB at 1 meter, 1 watt in. Midband Sound Pressure Levels in a Typical Listening Room: 90 dB average, 100 dB peak with a 3.6-watt amplifier; 108 dB average, 118 dB peak (10 ms) with a 250-watt amplifier. Maximum High-Frequency Sound Pressure Level in a Typical Listening Room (10,000 Hz): 101 dB long-term average. Broadband Power Capacity (above 35 Hz): 25 watts long-term average; 250 watts peak (10 ms). Crossover Frequencies: 49 Hz acoustic; 1500 Hz electrical. Transducers: 12" low-frequency radiator; 8" midrange/woofer; 1 1/2" Super-Dome tweeter with acoustic lens. Impedance: 8 ohms nominal; 5 ohms minimum. Size: 24 1/2" x 15-3/8" x 8 1/4" hwd. Cabinet: Walnut veneer. Optional Accessories: BBR-2 speaker stands (pair). Weight: 30 lbs.

Interface: A \$546.00/pair

Interface: B

12" three way

Frequency Response: 26-20,000 Hz; +/- 2.5 dB 30-18,000 Hz, 1 meter on axis. Dispersion Angle: 125° +/- 30° in the 500-8000 Hz octave bands; 75° in the 12,500 Hz 1/2-octave band. Recommended Amplifier Power: 3.6 watts per channel minimum; 250 watts maximum. Sound Pressure Level: 92 dB at 1 meter, 1 watt in. Midband Sound Pressure Levels in a Typical Listening Room: 90 dB average, 100 dB peak with a 3.6-watt amplifier; 108 dB average, 118 dB peak (10 ms) with a 250-watt amplifier. Maximum High-Frequency Sound Pressure Level in a Typical Listening Room (10,000 Hz): 101 dB long-term average. Broadband Power Capacity (above 30 Hz): 25 watts long-term average; 250 watts peak (10 ms). Crossover Frequencies: 42 Hz acoustic; 1500 Hz electrical. Transducers: 12" low-frequency radiator; 8" midrange/woofer; 1 1/2" Super-Dome tweeter with acoustic lens. Impedance: 8 ohms nominal; 5 ohms minimum. Size: 29 1/4" x 16" x 11" hwd. Cabinet: Walnut veneer. Weight: 42 lbs.

Interface: B \$733.00/pair

Interface: C

10" three way

Frequency Response: 25-20,000 Hz; +/- 2.5 dB 30-18,000 Hz, 1 meter on axis. Horizontal Dispersion Angle: 160° +/- 8° in the 500-4,000 Hz octave bands; 90° in the 8,000 Hz 1/2-octave band; 75° in the 12,500 Hz 1/2-octave band. Recommended Amplifier Power: 2.8 watts per channel minimum; 350 watts maximum. Sound Pressure Level: 93 dB at 1 meter, 1 watt in. Midband Sound Pressure Levels in a Typical Listening Room: 90 dB average, 100 dB peak with a 2.8-watt amplifier; 111 dB average, 121 dB peak (10 ms) with a 350-watt amplifier. Maximum High-Frequency Sound Pressure Level in a Typical Listening Room (10,000 Hz): 111 dB long-term average. Power Capacity (30-2,500 Hz): 35 watts long-term average; 350 watts peak (10 ms). Crossover Frequencies: 42 Hz acoustic; 400 and 2500 Hz electrical (may be bi-amplifier at 400 Hz). Transducers: 10" woofer; 6 1/2" vented midrange (VMR II); 1 1/2" Super-Dome tweeter with acoustic lens. Impedance: 6 ohms nominal; 4 ohms minimum. Size: 31 1/2" x 20" x 12 1/2". Cabinet: Walnut veneer. Weight: 60 lbs.

Interface: C \$909.00/pair

Interface: D

12" three way

Frequency Response: 23-20,000 Hz; +/- 2.5 dB 28-18,000 Hz, 1 meter on axis. Horizontal Dispersion Angle: 170° +/- 5° in the 500-1000 Hz octave bands; 115° +/- 10° in the 2000-16,000 Hz bands; 100° in the 16,000 Hz 1/2-octave band. Recommended Amplifier Power: 1.5 watts per channel minimum; 500 watts maximum. Sound Pressure Level: 97 dB at 1 meter, 1 watt in. Midband Sound Pressure Levels in a Typical Listening Room: 1.5-watt amplifier; 115 dB average, 125 dB peak (10 ms) with a 500-watt amplifier. Maximum High-Frequency Sound Pressure Level in a Typical Listening Room (10,000 Hz): 103 dB long-term average; 500 watts peak (10 ms). Crossover Frequencies: 40 Hz acoustic; 350 and 3000 Hz electrical (may be bi-amplified at 350 Hz). Transducers: 12" downward-firing woofer; 6 1/2" vented midrange (VMR); radial horn tweeter. Impedance: 8 ohms nominal; 5 ohms minimum. Controls: Environment (floor or floor/wall). Size: 32" x 21 1/4" x 15 1/2" hwd. Cabinet: Walnut veneer. Weight: 114 lbs.

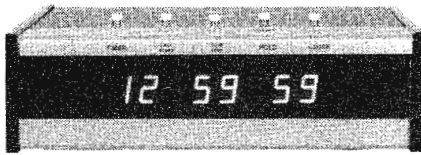
Interface: D \$1750.00/pair



Prices and specifications subject to change without notice

ESE DIGITALS

Six Digit Clock



ES 562/564 (\$275)

ES 562/564 is a combination six digit clock and 24 hour timer with memory, allowing the user to set the clock to the correct time of day, switch to timer mode, then switch back to time of day by pushing one button; time of day will be correctly displayed, in hours, minutes and seconds. Five pushbutton controls are mounted on the top of the unit, near the front of the desk-top case. When panel mounting is specified, they will be mounted on the front panel, below the display. The controls may also be removed, through two rear-mounted five pin connectors (Option R or Option D). These controls are Clock, Fast/Start, Slow/Stop, Timer and Hold.

When "Clock" is pushed, the unit behaves like a digital clock, displaying hours, minutes

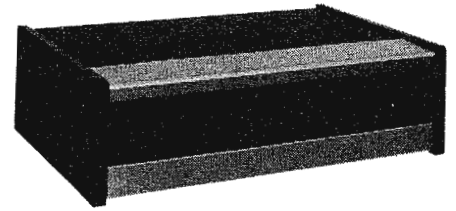
and seconds in 12 or 24 hour format, as specified (ES 562 is 12 hr., ES 564 is 24 Hr.).

In the clock mode, depressing "Fast/Start" advances the minutes at a fast rate, in order to bring the display near the correct time; actuating Slow/Stop advances the minutes at a slower rate, in order to set the display ahead of real time; pushing "Hold" prevents the clock from counting ahead until the real time catches up with the time displayed on the ES 562/564.

After the correct time of day is established, the timer may be started from 00:00:00 merely by depressing the "Timer" button. To stop the timer, push "Slow/Stop" and to start again from the point at which the timer was stopped, "Fast/Start" is pushed. To stop the timer at 00:00:00, it is necessary to push "Timer" and "Slow/Stop" at the same time, releasing the "Timer" button first.

Options: B, C, D, J, P, Q, R and W.

Electrical: 117AC, 60 Hz, 8 watts Max.
Mechanical: 8" Wide x 2 3/4" High x 5-5/8" Deep.
Case: Etched Aluminum.
Display: Six digits of .55" Planar Gas Discharge Display.



Digital Clock

ES 112/124 (\$145)

ES 112 (12 hr.) and ES 124 (24 hr.) are solid state, six digit clocks. Three simple controls make setting to the precise second easy: Fast Advance, Slow Advance, Hold. Can drive Jumbo Slaves.

Dimensions: 2 1/2" High x 8" Wide x 5-5/8" Deep.

Case: Etched Aluminum.

Electrical: 117V AC 50/60 Hz 10W max.

Options: B, C, D, J, K, L, P, Q, R, S, W.

Do you need a contact closure one or more times during the hour? Many ESE clocks can be equipped to generate a time pulse. Contact Harris for pricing.

100 Minute Up/Down Timers



300



301



302

ES 300 (\$187)

ES 300 is a four digit, one hundred minute timer (99:59) with six controls: Count Up, Count Down, Stop, Minutes Advance, Seconds Advance, Reset. Controls are single pole, momentary, push-button switches. When "Stop" control is pressed the four digit display is held. Counting direction (up or down) can be changed or time can be reset for zero without stopping the count. It will continue to register elapsed time beyond the zero setting unless stopped. The ES 300 can drive Jumbo Slaves.

Dimensions: 2 1/2" High x 8" Wide x 5-5/8" Deep.

Electrical: 117V AC 60 Hz 10W max.

Options: B, D, J, K, P, Q, R, S, W, Y, Z.

ES 301 (\$206)

The ES 302 is similar to the ES 300, except that planar gas discharge displays are used in the ES 301/302. Display height is .55".

All the ES 300 features are included in the ES 301. Additionally, with the ES 302, the user can preset times much faster than with the ES 300 or ES 301, because lever-wheel type switches are used for the preset feature. The ES 301/302 can drive Jumbo Slaves.

Dimensions:

ES 301: 2 1/2" High x 8" Wide x 6" Deep.

ES 302: 2 1/2" High x 10" Wide x 6" Deep.

Electrical: 117V AC 60 Hz, 7W max.

Options:

301: B, D, J, K, N, P, Q, R, S, T, W, Y, Z.

302: B, D, J, K, N, P, R, S, T, W, Y, Z.

Options

Please Note: Some combinations of options are not compatible. Consult factory if in doubt.

B BCD Output

C Crystal Timebase: A +/- .002% crystal is employed in an oscillator for those applications requiring independence from the power line frequency. Trimmer included for greater accuracy.

D Remote Connector, 6' Cable and Control Switch Set: This option consists of a rear-mounted connector wired for all control functions, a mating connector, wired to six

feet of cable, the other end of which is connected to control switches which are mounted on a 1/8" anodized satin finish aluminum plate suitable for mounting on most surfaces.

L .55" Planar Gas Discharge Display

M Front-mounted pushbutton controls: available on 70 Series except for ES 371.

N Available on ES 301, 302, 380, 381.

Provides a change in count direction from down to up at zero when the unit has been counting down from a preset time.

P 19" Front Panel, 3 1/2" high.

Q 9" Front Panel, 3 1/2" high.

R Remote Connector.

S Slave/Remote Display: User must specify option B (BCD Output) on master when ordering a slave.

T Tenths of Seconds.

V DC Operation (Includes crystal timebase)

W Three Wire Cord

Y Relay Closure at Zero: Available on ES 300, 301, 302, 380 and 381 only.

Z Relay Contact Closure and Stop at Zero: Available on ES 300, 301, 302, 380 and 381 only.

Prices and specifications subject to change without notice



Eventide

the next step

EVENTIDE CLOCKWORKS INC.

digital delay line

In the studio or concert hall, the Eventide 1745M yields a number of previously unobtainable effects. "Signal Doubling," achieved by inserting 12-40 milliseconds of delay, makes one voice or instrument sound like two or more. The insertion of longer delays creates realistic echo effects. Eventide's exclusive "Audio Recirculation" feature allows for the trapping and continuous repetition of 640 milliseconds of signal.

In large auditoriums and at festival sites, the 1745M can synchronize reinforcement speakers, thereby eliminating echoes caused by the signals from different speakers arriving at different times.

FEATURES

The 1745M employs random access memories instead of shift registers for maximum versatility. The standard 1745M offers two independent outputs, each providing up to 320 ms. of delay in 20 microsecond steps. Up to 3 additional outputs are available.

Delay is read out in milliseconds on solid-state digital readouts, one for each output. There is little or no noise when changing delay settings — switching can even be made during soft passages. For convenience, the 1745M's front panel includes switches for instant zeroing of all delays, plus switches for audio recirculation and delay doubling (up to 640 milliseconds in 40 microsecond steps at one-half frequency response). An input level control and optimum level indicator is included.



MODEL 1745M DIGITAL AUDIO DELAY LINE
(320 ms delay, two outputs)

Basic Price \$4100.00

OPTIONS:

| | |
|---|-------------------|
| 01 230 V, 50-60 Hz. | N/C |
| 02 less 160 ms delay (160 ms maximum) | subtract \$300.00 |
| 03 extra outputs, fully switchable | \$550.00 ea. |
| 05 balanced transformer outputs | \$ 25.00 ea. |
| 07 balanced transformer input | \$ 15.00 |
| 08 variable pitch/delay output, high resolution readout | \$850.00 |
| 09 remote control, GPIB compatible | \$550.00 |
| Operating and service manual (if bought separately) | \$ 25.00 |

NOTE: Sound reinforcement configurations available — request separate price list.

The 1745M main frame has five slots. Each output module takes one slot, the remote module takes one slot, and the pitch change module takes two slots.

instant flanger

New control configuration: oscillator, manual, remote and envelope may be used in any combination!

Old model phasing units used analog circuitry to modify the frequency spectrum. Eventide's Instant Flanger uses a true time delay circuit, producing many more nulls and thus a much deeper effect than previously available with an all-electronic unit.

To simulate true tape flanging we have introduced an effect modifier block which allows the operator to imitate motor or servo hunting "bounce". Our exclusive "depth" control will permit any desired percentage of direct versus delayed signal, and relative phase of each.

FEATURES

- Internal regulated power supply. •Remote control capability. •Dual outputs for pseudo-stereo. •Internal envelope follower. •Line in/out control and indicator. •High level input and output. •Optional balanced line in/out. •Full frequency response to 15KHZ. •Automatic operation with oscillator. •Mode indicating lamps.



MODEL FL201 INSTANT FLANGER™

Basic Price \$615.00

OPTIONS:

| | |
|--|---------|
| 01 230 V, 50-60Hz | N/C |
| 02 stereo interconnect (when two units ordered) | N/C |
| 03 balanced in/out transformer coupling (three transformers) | \$50.00 |
| 04 feedback control added to front panel | \$25.00 |
| Operating and service manual (if bought separately) | \$10.00 |



Prices and specifications subject to change without notice

Eventide

the next step

EVENTIDE CLOCKWORKS INC.

omnipressor

The Eventide Omnipressor is a professional-quality dynamic modifier, combining the characteristics of a compressor, expander, noise gate, and limiter in one convenient package. Its dynamic reversal feature makes high level input signals lower than corresponding low level inputs. Musically, this reverses the attack-decay envelope of plucked string and similar instruments, and gives the effect of "talking backwards" when applied to a voice signal.

The Omnipressor provides an unusually wide range of controls, useful in all program-controlled gain changes. The continuously variable Expansion/Compression control goes from an expansion range of 10 to 1 (gate) to a compression range of -10:1 (abrupt reversal); attenuation and gain limit controls adjust the gain control range from a full 60 db to as little as plus and minus 1 db; and variable time constant controls adjust attack/decay times over an approximate 1000 to 1 ratio. The unit's bass cut switch limits low frequency response in the level detector.

The Omnipressor's unique metering system employs a logarithmic amplifier to generate information on Input, Output and Gain. When a return to normalcy is desired, the IN/OUT switch is used to bypass the Omnipressor.



FEATURES

- Dynamic Reversal — An input level of +10 results in an output of -10. An input level of -10 results in an output of +10.
- Gate — As the signal increases above -20, the device gain rapidly goes to maximum.
- Expansion — A 40db input range results in a 60db output range.
- Control Centered — Input level equals output level.
- Limiting — Gain is unity until input is 0dbm, above 0dbm, a 30db change in input produces a 6db output change. (Line is offset for clarity).
- Infinite Compression — Output level remains unchanged regardless of input level.

MODEL 2830 OMNIPRESSOR™

Basic Price \$600.00

OPTIONS:

01 230 V, 50-60 Hz N/C
 03 balanced in/out transformer coupling \$40.00
 Operating and service manual (if bought separately) \$10.00

harmonizer™

The Eventide Harmonizer may well be the most versatile special effects instrument ever packaged in a single chassis! Judge for yourself

It's a full-fledged digital delay line. It's a pitch change with a 2 octave range. It's an anti-feedback unit which allows boosting sound levels. It can be used to speed up and slow down tapes. And it can create some of the wildest effects on record!

PITCH CHANGER

The Harmonizer employs digital circuitry and Random Access memories to actually transpose input signals by up to a full octave up or down. Unlike the so-called "frequency shifter" which creates dissonances, the Harmonizer preserves all harmonic ratios and thus musical values. Any musical interval can be achieved by the continuously variable control and an optional keyboard allows real-time "playing" of the Harmonizer, so that the musician can harmonize with himself.

DIGITAL DELAY

The Harmonizer is a low-cost, very versatile digital delay line. Uses include "doubling" vocals, delay equalization in sound reinforcement, and many special effects, including several types of reverb/echo. The delay is variable in 7.5 millisecond steps up to 112.5 milliseconds; a second output is optionally available that varies up to 82.5 ms, allowing vocal multiplying, distributing speaker systems, and more effects. The delay is available with some restrictions during pitch change.



ANTI-FEEDBACK

Feedback caused by energy build-up due to room resonance is decreased by shifting successive repetitions of the same signal away from the resonant frequency. The Harmonizer incorporates a control which periodically shifts the signal pitch up and down to accomplish this. Unlike heterodyne "frequency shifters", no dissonances are introduced to drive musicians batty or worse.

SPECIAL EFFECTS

Simultaneous use of feedback, delay, and pitch change can be used to create previously unobtainable effects. Maximum delay and one interval of pitch change combined with feedback generates a musical progression from a single note. Pitch change and feedback with no delay gives a rather strange robot or alien speech effect. Short delay with feedback but no pitch change gives a hollow flanging or tunneling effect, long delay generates a distinctive reverb.

MODEL H910 HARMONIZER™

Basic Price \$1500.00

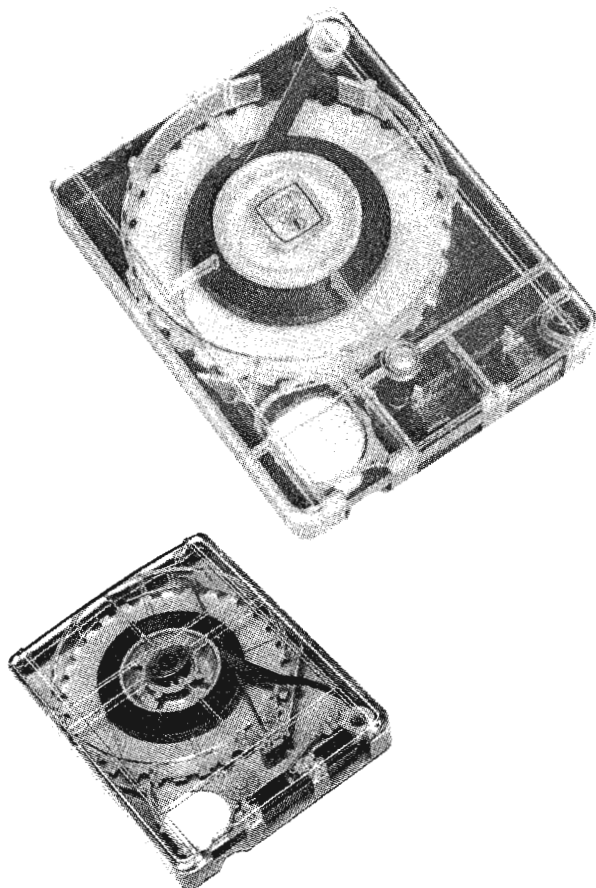
OPTIONS:

01 230 V, 50-60 Hz N/C
 02 digital pitch ratio readout \$125.00
 03 balanced in/out transformer coupling \$ 40.00
 04 extra variable delay output \$240.00
 05 2-octave phase locked keyboard-mono, controls one H910 \$500.00
 06 keyboard-polyphonic, controls up to three H910 \$600.00
 07 keyboard socket (when ordered without keyboard) \$ 10.00
 Operating manual (if bought separately) \$ 5.00
 Operating and service manual (if bought separately) \$ 10.00

Prices and specifications subject to change without notice



FIDELIPAC® MASTER CART¹



Model 300

The most popular NAB cartridge. . . performance and price make it the mono broadcaster's first choice.



On-Air Light

Fidelipac Studio Warning lights 65-340 "On Air" legend. 120/240 volt. Uses two 6S6 or #c# lamp which are included. Specify voltage when ordering. \$33.00

NOTE: Other legends available at \$15.00 additional. Delivery on specials should be quoted at 4 weeks.

The Master Cart, unlike conventional cartridges, does not rely upon the cartridge for precision tape guidance. Plastic parts are easily worn by the abrasive action of magnetic tape and, therefore, guidance by internal plastic pieces cannot be successful. This is particularly true when considering the precision necessary for stereo phase performance.

- Within 60° of zero phase at 12,500 Hz
- Precision cartridge molding
- Rear corner post tape path
- Circular brake
- Simple construction for easy repair
- Cart machine guides the tape

| Fidelipac Part # | Time at 7 ½ ips | 1-95 | 96-287 | 288-575 |
|------------------|-----------------|--------|--------|---------|
| 65-380-C | Empty | \$3.21 | \$2.74 | \$2.53 |
| 65-380-13 | 20 Sec. | 3.59 | 3.15 | 2.84 |
| 65-380-25 | 40 Sec. | 3.68 | 3.24 | 2.91 |
| 65-380-44 | 70 Sec. | 3.80 | 3.34 | 3.01 |
| 65-380-57 | 90 Sec. | 3.90 | 3.44 | 3.09 |
| 65-380-63 | 100 Sec. | 3.98 | 3.51 | 3.15 |
| 65-380-88 | 140 Sec. | 4.11 | 3.62 | 3.26 |
| 65-380-94 | 2 ½ Min. | 4.19 | 3.70 | 3.33 |
| 65-380-113 | 3 Min. | 4.32 | 3.82 | 3.43 |
| 65-380-132 | 3 ½ Min. | 4.44 | 3.93 | 3.53 |
| 65-380-150 | 4 Min. | 4.56 | 4.05 | 3.63 |
| 65-380-169 | 4 ½ Min. | 4.69 | 4.17 | 3.74 |
| 65-380-188 | 5 Min. | 4.82 | 4.29 | 3.84 |
| 65-380-207 | 5 ½ Min. | 4.95 | 4.42 | 3.95 |
| 65-380-285 | 7 ½ Min. | 5.28 | 4.70 | 4.21 |
| 65-380-300 | 8 Min. | 5.42 | 4.82 | 4.32 |
| 65-380-375 | 10 Min. | 5.76 | 5.13 | 4.60 |
| 65-380-394 | 10 ½ Min. | 5.90 | 5.27 | 4.72 |

NOTE: Items may be mixed for quantity price.

Foil Splice (0.75 inch) available at \$0.10 additional per cartridge.

Last group of digits in Fidelipac part # indicates length of tape in feet. (65-380-13 = feet in length).

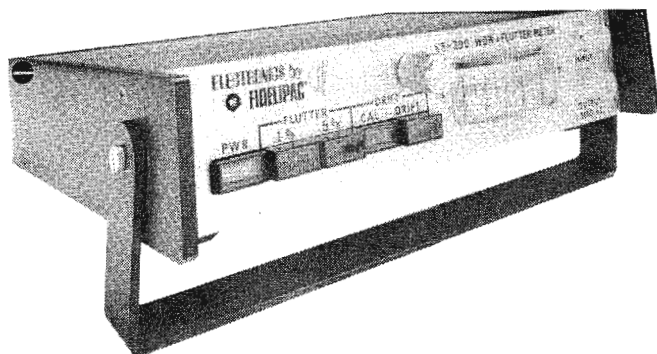
FIDELIPAC TAPE 300 CARTRIDGES

| Tape Cartridges [Fidelipac] | 1-95 | 96-287 | 288-575 |
|---|--------|--------|---------|
| 65-140-E empty cartridge, assembled, packed 6/box, each | \$3.06 | \$2.62 | \$2.40 |
| 65-140-13 20 second cartridge, packed 6/box, each | 3.47 | 2.84 | 2.63 |
| 65-140-25 40 second cartridge, packed 6/box, each | 3.55 | 2.91 | 2.69 |
| 65-140-44 70 second cartridge, packed 6/box, each | 3.66 | 3.01 | 2.77 |
| 65-140-63 100 second cartridge, packed 6/box, each | 3.84 | 3.14 | 2.89 |
| 65-140-94 2 ½ minute cartridge, packed 6/box, each | 4.03 | 3.31 | 3.04 |
| 65-140-132 3 ½ minute cartridge, packed 6/box, each | 4.28 | 3.52 | 3.22 |
| 65-140-207 5 ½ minute cartridge, packed 6/box, each | 4.81 | 3.93 | 3.59 |
| 65-140-394 10 ½ minute cartridge, packed 6/box, each | 5.80 | 4.75 | 4.33 |
| 65-149-E empty cartridge, assembled, packed 2/box, each | 4.91 | 3.83 | 3.55 |
| 65-149-600 16 minute cartridge, packed 2/box, each | 10.30 | 8.12 | 7.46 |
| 65-150-E empty cartridge, assembled, packed 2/box, each | 7.01 | 5.83 | 5.40 |
| 65-150-1163 31 minute cartridge, packed 6/box, each | 17.33 | 14.01 | 12.99 |

Prices and specifications subject to change without notice



FIDELIPAC®



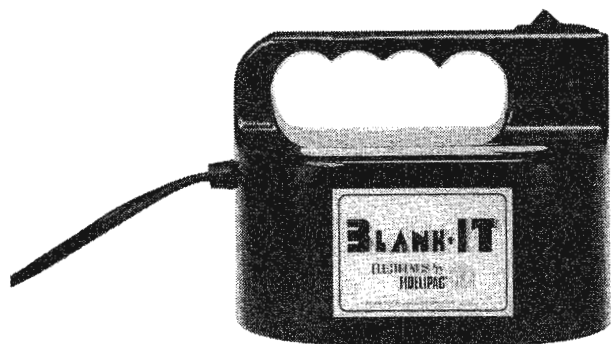
Model 65-390 WOW AND FLUTTER METER

Checks and expedites correction of periodic or cyclical variations in speed at high or low rates in: • Cartridge, reel-to-reel and cassette audio tape recorders • Video tape recorders • Phonographs and turntables • Film projectors.

For the broadcaster, technician or serious audio hobbyist, this compact, lightweight, solid-state portable test instrument is indispensable for accurately measuring the wow and flutter components in all types of recording and playback devices. Single meter readout indicates the deviation from true speed of a device within a 5% range by the use of a precision zero-center drift meter. Features an internal 3,150 Hz reference oscillator, self-contained switchable weighting filter and a standard phone output jack for oscilloscope connection. All metal interlocked construction assures immunity to EMI and RFI.

MEASUREMENTS CONFORM TO
LATEST IEEE AND DIN STANDARDS.

Model 65-395 BLANK-IT BULK ERASER



THE MULTI FORMAT MAGNETIC TAPE ERASER FOR:

• NAB cartridges • 8 track cartridges • ¼" to 1" reel-to-reel audio tape • 8, 16 or 35mm magnetic film • Audio cassettes • Video cassettes — VHS or Beta • Computer tape • Dictation Cassettes.

FEATURES:

• Greatest magnetic field strength of any hand-held eraser. • Longest ON duty cycle of any hand-held unit — PERMITS CONTINUOUS ERASURE OF MORE TAPE. • Internal thermal overload coil protection — CAN'T BURN OUT. • Faster and better erasure of video tape than possible with internal erase circuitry of any VTR — VHS or Beta. • Handsome, rugged, shock-proof case. • No-MAR work surface — WON'T SCRATCH ITEMS BEING ERASED. • Human engineered for proper balance and ease of operation.

CARTRIDGE MACHINE PRECISION ALIGNMENT EQUIPMENT

| | | |
|--------|-------------------------|----------|
| 65-390 | Wow and Flutter Meter | \$425.00 |
| 65-326 | Height Gage | 23.50 |
| 65-328 | Head Insertion Gage | 6.00 |
| 65-387 | Right Angle Zenith Gage | 26.75 |

FIDELIPAC HIGH PERFORMANCE LUBRICATED TAPE — H.O.T. TAPE

| | | |
|---------|---------------------------------------|-------|
| TAS-500 | 3600 ft. 10" hub (bulk packed) | 11.00 |
| TAS-501 | 1800 ft. 7" reel (individually boxed) | 7.00 |
| TAS-502 | 3600 ft. 10" hub (individually boxed) | 12.75 |

CARTRIDGE MAINTENANCE AND TAPE ITEMS

| | | |
|----------|--|-------|
| 65-395 | BLANK-IT, Bulk Eraser, Hand Held (110 volt) | 59.95 |
| 65-395-2 | BLANK-IT, Bulk Eraser, Hand Held (220 volt) | 64.50 |
| TAS-431 | Splicing Tape — 7/32 wide x 100 feet long roll (2400 ½" splices) | 8.65 |
| 65-406 | Professional Splicing Block, for ¼" Tape | 13.00 |
| 65-310 | Professional Splicing Kit — ¼" Tape | 16.75 |

Prices and specifications subject to change without notice



SERIES 63300D Outdoor Lighting Controls

3000 Watt Rating — 50-60HZ. Field Adjustable 0 to 10fc.

Series 63300D units will fit standard watt-hour meter sockets. Fisher Pierce sockets feature conduit and bracket mounting.

SERIES 63300D Lighting Controls

| Model No. | Load Rating (Watts) | Load Fusing | Supply Voltage 50/60 Hz-AC | Built-In Load Contactor |
|-----------|---------------------|-------------|----------------------------|-------------------------|
| 63300DA2 | 3000 | None | 105-130 | SPDT, DB |
| 63300DE2 | 3000 | 30A Cart | 105-130 | SPDT, DB |
| 63301DA2† | 3000 | None | 105-130 | SPST, DB, N. C. |
| 63303DA2 | 3000 | None | 105-130 | SPST, DB, N. C. |
| 63303DE2 | 3000 | 30A Cart | 105-130 | SPST, DB, N. C. |
| 63305DA2* | 3000 | None | 105-130 | SPST, DB, N. C. |
| 63308DA2 | 3000 | None | 105-130 | SPST, DB, N. O. |
| 63364DA2 | 3000** | None | 210-250 | DPST, N. C. |
| 63364DE2 | 3000** | 30A Cart | 210-250 | DPST, N. C. |

† isolated contacts

* 63305DA2 — FAA approved for hi-level turn-on: 35 ±5f.c.

** 3000 watt per pole

Note: All controls with the suffix "2" have approximately 2-4 seconds time delay

All models in the 63300 series may be supplied with meter socket assembly. Replacement parts are also available.

Meter Sockets

| Model No. | Description |
|-----------|-------------------------------|
| 2101AFA | Fits all models Series 63300D |

SERIES 63300D Outdoor Lighting Controls

3000 Watt Rating 50-60 Cycle, Standard turn on factory set 1 f.c. ±.25 except 63305 has 35 f.c. ±5 f.c.

Series 63300 units will fit standard watt-hour meter sockets, and are field adjustable from 0 to 10 foot candles.

SERIES 63300D Lighting Controls

| Model No. | Load Rating (Watts) N.C. | Load Fusing | Supply Voltage 50/60 Hz-AC | Built-In Load Contactor | Price |
|------------|--------------------------|-------------|----------------------------|-------------------------|--------|
| 63300DA2 | 3000 | None | 105-130 | SPDT, DB | 120.10 |
| 63300DE2 | 3000 | 30A Cart | 105-130 | SPDT, DB | 125.70 |
| 63301DA2 | 3000 | None | 105-130 | SPST, DB, NC | 120.05 |
| 63303DA2 | 3000 | None | 105-130 | SPST, DB, NC | 119.40 |
| 63303DE2 | 3000 | 30A Cart | 105-130 | SPST, DB, NC | 125.30 |
| **63305DA2 | 3000 | None | 105-130 | SPST, DB, NC | 139.45 |
| **63305DE2 | 3000 | 30A Cart | 105-130 | SPST, DB, NC | 145.40 |
| 63308DA2 | 3000 | None | 105-130 | SPST, DB, NO | 120.10 |
| 63364DA2 | 3000* | None | 210-250 | DPST, NC | 161.25 |
| 63364DE2 | 3000* | 30A Cart | 210-250 | DPST, NC | 167.25 |

*3000 watt per pole

† Isolated Contacts

** FAA Approved

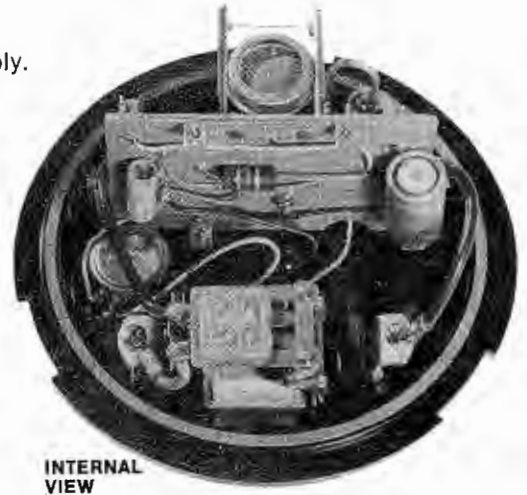
All models in the 63300D series may be supplied with meter socket assembly. Replacement parts are also available.

SERIES 63300D Meter Sockets

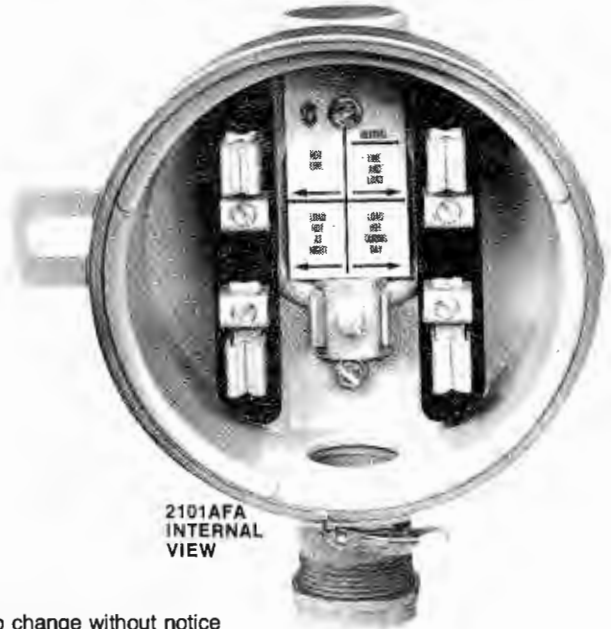
| Model No. | Description | Price |
|-----------|---|-------|
| 2101AFA | Meter Sockets for Series 63300 Controls | 27.30 |



EXTERNAL VIEW



INTERNAL VIEW



2101AFA INTERNAL VIEW

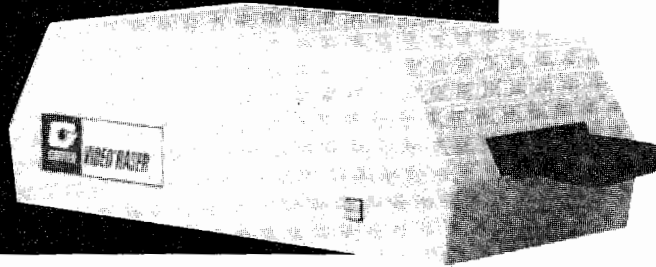


Prices and specifications subject to change without notice

Garner Industries High Speed Tape Erasers

Garner's New VIDEO'RASER

*Erases video cassettes
in less than 5 seconds*



Imagine getting video tape erasure depth that exceeds professional standards in less than 5 seconds! Garner's compact Video'Raser Unit lets you completely automate your video tape erasing jobs. It's a simple one-step, in-and-out operation that gives you perfect tape erasures in one pass. High flux coils eliminate slow, time-consuming operations. Simply insert video cassette, cartridge or reel in the Video'Raser opening and erased tape is automatically ejected at end of machine.

Model 270

Video'Raser Specifications

Operating Cycle: Less than 5 seconds.

Reel Sizes: Handles up to 7" reels and cassettes.

Overall Dimensions:

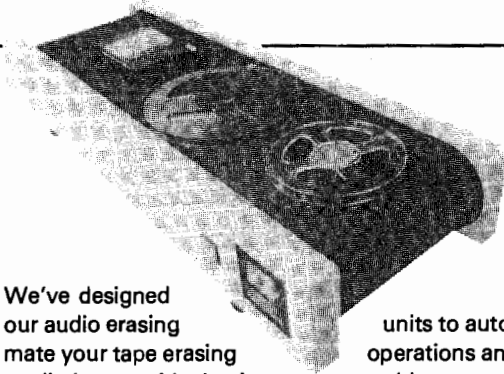
Length: 28½" Width: 16" Height: 9"

Weight: 145 lbs.

Method of Operation: Tapes are passed on continuous belt between four high flux coils and ejected at end of machine.

Power: 120 VAC, 60 Hz @ 10 Amps., or 240 VAC, 50 Hz @ 5 Amps. Specify when ordering.

Thermal Protection: Overheating is prevented by automatic cutoff switch, which reactivates eraser after cool-down period.



We've designed our audio erasing units to automate your tape erasing operations and to eliminate residual noise problems...and our customers tell us we've got a winner! Just hit the power button and drop any reel or cassette up to 10½" on endless belt. In four seconds it delivers a clean, "no-whump" erasure that will meet the most stringent recording standards. You'll save valuable man-hours and do a better job.

Model 70:

Model 105:

Garner's Audio Erasing Units

Turn a boring job into a breeze

Audio and Video Specifications

| Overall Dimensions: | MODEL 70 | MODEL 105 |
|---------------------|----------|-----------|
| Length | 27" | 27½" |
| Width | 10" | 13¼" |
| Height | 5" | 5" |

Belt Width* 7½" 11"

Power: 117 VAC, 4 amps 117 VAC, 6 amps

Method of Operation: Tapes are passed on continuous belt over high flux coils and deposited at end of machine.

Thermal Protection: Overheating is prevented by automatic cut-off switch, which reactivates eraser after cool-down period.

*Conveyor belt width can be ordered up to 16 inches. Specify Model 114.

Automatic Tape Degausser – Endless Belt Models

| Model | Description | Price |
|-------|---|------------|
| 70 | Bulk Eraser, 7" capacity Erases reels, cassettes, cartridges | \$775.00 |
| 105 | Bulk Eraser, 10½" capacity Erases reels, cassettes, cartridges | \$985.00 |
| 114 | Bulk Eraser, 14" capacity Erases reels, cassettes, cartridges | \$1,485.00 |
| 116 | Bulk Eraser, 16" capacity Erases reels, cassettes, cartridges | \$1,690.00 |
| 270 | Erases Video cassettes, cartridges and 1" x 8½" reels | \$2,380.00 |

Prices and specifications subject to change without notice

GENERAL ELECTRIC

INDUCTROL Voltage Regulators

INDUCTROL voltage regulators are designed to perform either of two basic functions on electric circuits:

- Maintain an output voltage or current at +/-1% despite variations in the supply voltage or the connected load.
- Provide a widely adjustable output voltage or current from an essentially constant supply.
- A combination of these two functions.

The design is simple and reliable. Essentially, the INDUSTROL voltage regulator is a variable ratio auto-transformer consisting of a laminated steel stator on which is wound the exciting or shunt winding. The construction is similar to that of an electric motor except that the rotor rotates only 180 mechanical and electrical degrees.

In operation, the automatic control circuit monitors the output voltage, senses any need for voltage correction and actuates a reversible electric motor which drives the regulator rotor.

As the position of the rotor winding changes, the flux linkages between windings change to increase or decrease the magnitude of the voltage induced in the series winding, thus adding to or subtracting from the supply voltage and producing a precisely controlled output voltage.

The voltage correction is obtained solely by transformer action by varying the degree of mutual coupling between the shunt and series windings of the regulator. There are no sliding contacts or brushes.

STANDARD DESIGN, SINGLE-PHASE, DRY-TYPE, TYPE AIRS [60 HERTZ]

10% Raise and Lower

| PART NO. | Circuit | | Approx. Dimensions in Inches | | | Approx. Wt. in Lb. | | Price |
|----------|---------|------|------------------------------|-------|-------|--------------------|-------|-------|
| | Kva | Amps | Height | Width | Depth | Net | Ship. | |

480 VOLTS, 2-WIRE (Connection Sketch 1)

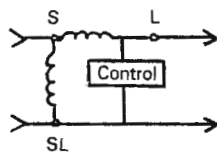
| | | | | | | | | |
|--------------|-----|-----|-----------------------|--------|----|-----|------|-------------|
| 472-1122-000 | 50 | 104 | 20-3/8 | 24-1/4 | 28 | 230 | 280 | \$ 3,989.00 |
| 472-1119-000 | 75 | 156 | 20-3/8 | 24-1/4 | 28 | 300 | 350 | \$ 4,341.00 |
| 472-1123-000 | 100 | 208 | 47-3/4 | 24-1/4 | 28 | 550 | 600 | \$ 8,067.00 |
| 472-1124-000 | 150 | 312 | 47-3/4 | 24-1/4 | 28 | 690 | 740 | \$ 9,902.00 |
| 472-1125-000 | 225 | 468 | 47-3/4 | 24-1/4 | 28 | 950 | 1000 | \$12,654.00 |
| 472-1126-000 | 250 | 520 | Dimensions on Request | | | | | \$13,076.00 |
| 472-1127-000 | 333 | 693 | | | | | | \$14,477.00 |

STANDARD DESIGN, THREE-PHASE, DRY-TYPE, TYPE AIRT [60 HERTZ]

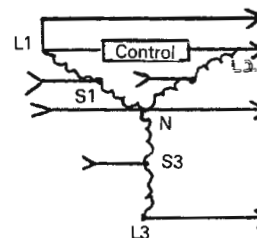
10% Raise and Lower

480Y/277, 4-WIRE (Connection Sketch 2)

| | | | | | | | | |
|--------------|------|------|--------|--------|--------|------|------|-------------|
| 472-1128-000 | 150 | 180 | 47-3/4 | 24-1/4 | 28 | 740 | 810 | \$ 9,574.00 |
| 472-1129-000 | 225 | 270 | 47-3/4 | 24-1/4 | 28 | 950 | 1000 | \$11,763.00 |
| 472-1130-000 | 300 | 360 | 57-3/8 | 22-7/8 | 44-1/4 | 1075 | 1175 | 12,887.00 |
| 472-1131-000 | 500 | 600 | 57-3/8 | 22-7/8 | 44-1/4 | 1165 | 1265 | \$16,023.00 |
| 472-1132-000 | 750 | 900 | 57-3/8 | 22-7/8 | 44-1/4 | 1420 | 1520 | \$18,311.00 |
| 472-1133-000 | 1000 | 1200 | 69-1/4 | 28-7/8 | 52-1/2 | 1900 | 2000 | \$22,670.00 |



Connection Sketch 1



Connection Sketch 2

NOTE: Call Harris if the type of voltage regulator you require is not listed here. Prices and specifications subject to change without notice

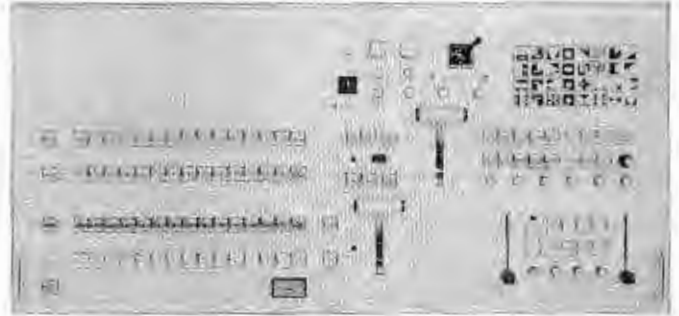


1600 SERIES SWITCHING SYSTEMS

Model 1600-2V is a general-purpose NTSC switching system intended for use in small studios, television remote units and post production suites. The 1600-2V provides rotary wipe transitions as well as conventional ones. It is supplied complete with module extenders, and two instruction manuals.

The switcher employs a 16x5 primary matrix, Buses 1 and 2 feed a mixing and special effects system, which is available as an input to buses 3 and 4 — PGM and PST; the fifth bus is an optional preview selector. Sources selected on the PST bus can be switched to the PGM bus by means of either the flip-flop mixer, or cut-bar switch.

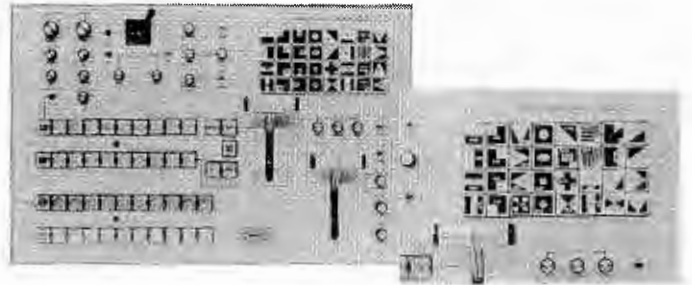
Options for the 1600-2V include an RBG chroma keyer with shadow key or an encoded chroma keyer, chroma key matrix, BORDERLINE® generators, and downstream keyer system with fade-to-black.



The system is also available in PAL (625/50) and PAL-m (525/60) versions.

Models 1600-1A and 1600-1L are general purpose switching systems intended for use in remote vans or small studios. The systems are identical in concept and format. The 1600-1L differs from the 1600-1A in that rotary wipe patterns are available in addition to conventional wipe patterns.

The switchers utilize a 10-input, 4-output primary matrix. Buses 1 and 2 feed the combined mixing and special effects system, which is available as a re-entry source to buses 3 and 4 — program and preset. Sources selected on the preset bus can be switched to the program bus by means of a cut-bar switch. In addition, a video mixing amplifier allows dissolves to be made between the program and preset buses.

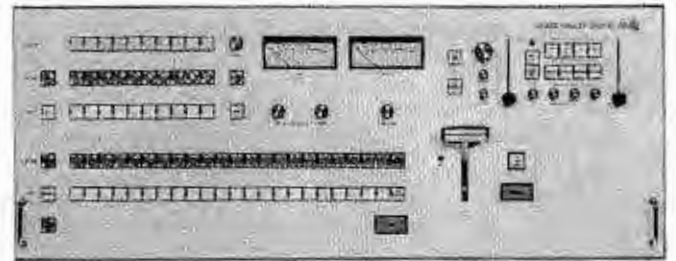


Model 1600-IT (16 input) and Model 1600-4T (24 input) Master Control Switchers are general-purpose audio/video systems intended for master control room applications. The systems are supplied complete with module extenders, and two instruction manuals.

Two video buses are provided — PGM and PST. Sources selected on the PST bus can be switched to the PGM bus with a cut-bar switch. A video mixing amplifier also allows dissolves to be made between the PGM and PST buses.

The audio section can be operated in an audio-follow-video (AFV) mode for married sources, or alternatively, an unmarried source can be selected. The latter can be placed over the program output when desired, VU meters are provided for both PGM or PST channels.

Optional equipment includes a downstream keyer system with BORDERLINE®, a preroll system for telecine and video tape sources, automatic start for audio cartridge machines, and a video preview selector with separate control panel.



The systems are also available in PAL (625/50) and PAL-M (525/60) versions.

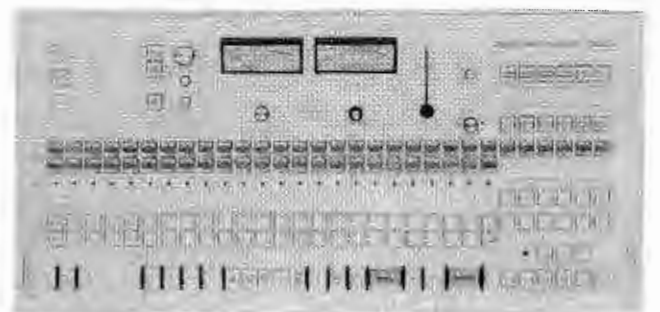
Model 1600-4S Audio-Video Master Control Switcher is designed to optimize the efficiency of the master control operator whether used as a manual switcher or as part of the M200 automation system.

Three video buses are provided — PGM, PST and KEY. A sophisticated automatic transition system provides Take, Fade, Fade/Take, Take/Fade and Mix transitions between PGM and PST. The transition system also provides keys and programmed matte keys.

Four audio buses — PGM, PGM OVER, PST, PST OVER — provide a complete range of married, breakaway and audio over/under capability. Audio mixing follows the five video transitions between PGM and PST.

Optional Equipment Includes:

Borderline® generator, a video auxiliary bus with separate control panel, a preset start system for telecine and video tape sources, as well as the M200 modular automation system.



The 1600-4S is available in NTSC (525/60), PAL (625/50) and PAL-M (525/60) versions.

For prices and additional information, contact your Harris District Sales Manager or the Harris Quincy Sales Office.



1600 SERIES SWITCHING SYSTEMS

Grass Valley Group created the 1600 Series in direct response to customer requests for improved production facilities. Acceptance of the 1600 philosophy is attested by the hundreds of systems in service throughout the world. The soundness of the basic design is also indicated by the number of similar offerings from other manufacturers. The 1600 concept has thus become the industry standard — the standard by which all other systems are measured.

Model 1600-3K (16 input) and Model 1600-7K (24 input) are Grass Valley Group's largest, most comprehensive switching systems, expressly designed to satisfy the most demanding requirements.

The primary switching matrix provides 8 output buses. Buses 1 through 6 feed the three mixing and special effects systems. Buses 1 through 4 also feed the optional quad split generator. The mix/effects and quad split outputs are available as inputs to buses 7 and 8 (PGM and PST). Sources selected on the PST bus can be switched to the PGM bus with cut-bar switch. A video mixing amplifier also allows dissolves to be made between the PGM and PST buses. A separate facility is provided for previewing the mix/effects outputs as well as the optional quad split generator and downstream keyer systems.

Model 1600-3H (16 input) and Model 1600-7H (24 input) are NTSC switching systems intended for use in large television studios. Both provide rotary wipes. The systems are supplied complete with module extenders and two instruction manuals.

The primary switching matrix provides 8 output buses. Buses 1 through 6 are utilized to feed the three mixing and special effects systems. Buses 1 through 4 are also employed as input selectors for the optional quad split generator. Bus 7 is a combined preview/key bus. The eighth bus is an optional preview selector with a separate, remotely-located control panel.

Other options for the systems include RBG chroma keyers with shadow key, encoded chroma keyers, chroma key switching matrix, quad split generator, BORDERLINE® generators, and a downstream keyer system.

Models 1600-3F (16 input) and 1600-7F (24 input) are flexible, general-purpose NTSC switching systems, with rotary wipes, intended for use in moderate to large-sized television studios. The systems are complete with module extenders and two instruction manuals.

The primary switching matrix provides 8 output buses. Buses 1 through 4 feed two mixing and special effects systems as well as an optional quad split generator. The mix/effects and quad split outputs are available as inputs to buses 5 and 6 — PGM and PST. Sources selected on the PST bus can be switched to the PGM bus with a cut-bar switch. A video mixing amplifier also allows dissolves to be made between the PGM and PST buses. Bus 7 is a preview/key selector, and bus 8 is an optional preview selector.

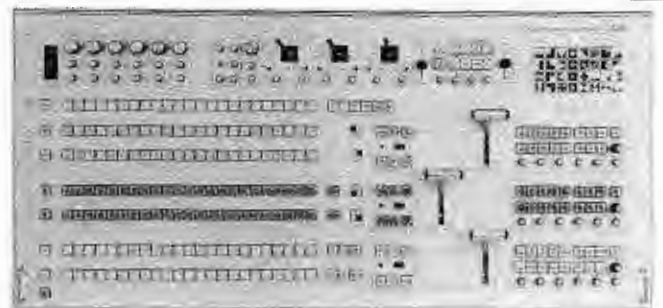
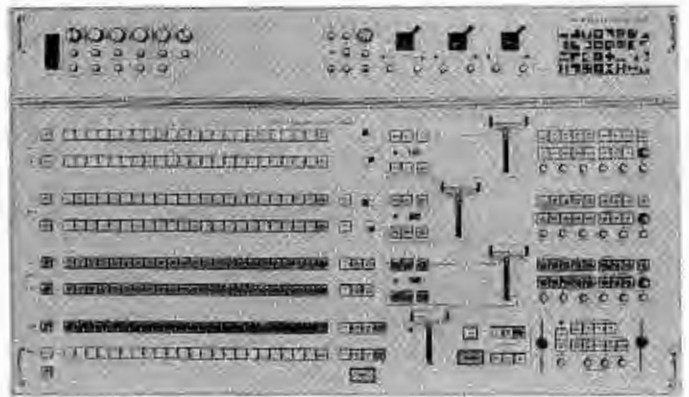
Other optional equipment includes RBG chroma keyers with shadow key, encoded chroma keyers, chroma key switching matrix, BORDERLINE® generators, and a downstream keyer system.

Model 1600-3D is a general-purpose 16 input switching system intended for use in moderate to large-sized television studios. The system is supplied complete with module extenders, and two instruction manuals.

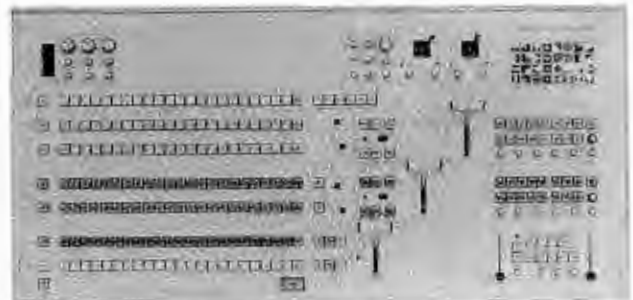
The primary switching matrix provides 8 output buses. Buses 1 through 4 feed two combined mixing and special effects systems, the outputs of which are available as inputs to bus 5 — a direct switching row. Buses 1 through 4 are also used to feed an optional quad split generator. Bus 6 is a preview/key selector, and buses 7 and 8 are optional additional preview selectors, with separate, remotely-located control panels.

Other optional equipment includes RBG chroma keyers with shadow key, encoded chroma keyers, chroma key switching matrix, BORDERLINE® generators, and a downstream keyer system.

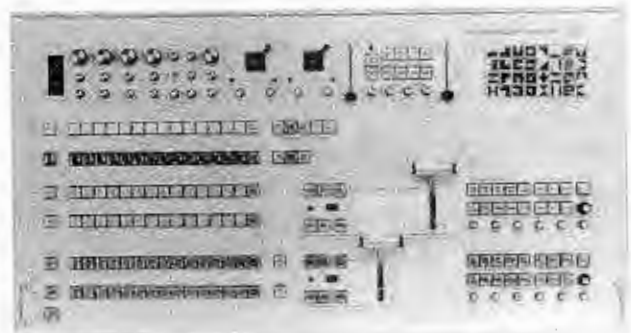
The system is also available in PAL (625/50) and PAL-M (525/60) versions.



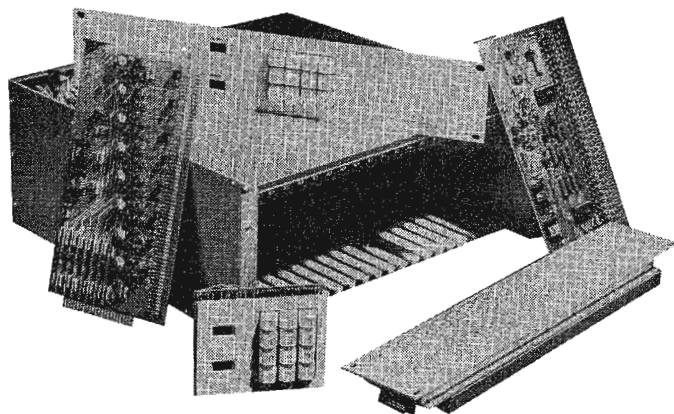
The systems are also available in PAL (625/50) and PAL-M (525/60) versions.



The systems are also available in PAL (625/50) and PAL-M (525/60) versions.



400 SERIES ROUTING SWITCHERS



FEATURES

- High performance. • DC restored inputs. • Vertical interval switching. • Destination oriented matrices. • Expandable. • Built-in short term memory protection.

OPTIONS

- Additional audio matrices. • Breakaway audio control systems. • Tally relay systems. • Special control systems. • Dual power supplies. • Expansion systems.

The basic video switching matrix is arranged in a 32-input by 16-output format. A complete frame contains 21 printed circuit modules consisting of four input buffer amplifiers, sixteen crosspoint modules, and an interface module. Each buffer contains eight DC restorers together with other circuitry to drive eight 32 by 1 crosspoint modules. The latter also contain the line driving amplifiers. The interface module is used to "marry" the video matrix with other matrices, e.g., audio and tally.

The mounting frame employs exclusive Grass Valley Group zero insertion force connectors for mating the input buffer amplifiers to the crosspoint modules via the frame-mounted mother board. Modules are removed by a quarter turn screw on the front of each connector.

Since all video crosspoints for an output bus are contained on a single module, the system is thus destination oriented. A failure in a crosspoint module only affects one output bus; all other buses continue to operate normally. It is not necessary to switch the system off when removing modules.

The audio switching matrices are similar to video switching matrices; consisting of input buffer modules, crosspoint modules, and a single interface module. The buffer modules utilize differential input circuitry to provide up to 80 dB of common mode rejection at 60 Hz. Grass Valley group can supply systems with audio input and/or output transformers at extra cost — on special order.

It should be noted from the specifications that the audio system will operate at levels up to +24 dBm at 600 ohms or +30 dBm at 150 ohms — with full performance.

A tally relay matrix is available to provide contact closures corresponding to input sources. The system can be enabled on a bus by bus basis.

On special order, Grass Valley Group can provide matrices with relays corresponding to each crosspoint. The latter are particularly useful in distributing special control signals through a routing switcher.

The power supply system is unique. AC line current is first rectified to provide 48 volts direct current. This voltage is then converted to 15 volts DC by means of high efficiency DC to DC converters for distribution to the matrices. The latter also provide regulation.

The 48 volt rectifiers, as well as the DC to DC converters, are plug-in modules for ease of maintenance. Systems can be supplied with dual rectifiers fed from separate AC inputs for maximum system protection. A 400 Series routing switcher can also be fed directly from (nominal) 48 volt direct current sources.

System crosspoint status can be maintained by an optional battery system. Short term protection (nominally 1 minute) is inherent in the standard system as a result of the CMOS memory elements employed.

The flexible control concept employed in the 400 Series allows systems to be addressed in two basic ways; (1) on an individual bus-by-bus basis, and (2) by means of a single X-Y panel for control of all buses.

Several types of panels are offered for controlling individual output buses. These consist of panels with momentary illuminated push-buttons corresponding to input sources, panels employing thumb-wheel preset, LED status indicators and a take button, and 10-digit keyboards with LED status indication.

The X-Y control panel provides the means for both input selection and output assignment. This method of control operates via the input/output data port available on each matrix, as opposed to addressing the individual control bus connectors used with the panels described above. The data port also can be used for controlling systems via a computer.

A unique feature of the control system allows several panels to be paralleled on a single output bus, even panels of different types, e.g., keyboard and pushbutton. The only limitation to paralleling panels is the current available for lighting lamps.

Special control panels can be provided on a custom-built basis. Consult Grass Valley Group with your requirements.

Output expansion of a basic 32x16 system requires that input sources be distributed to each frame. We recommend that this fan-out be accomplished by distribution amplifiers; however, for less critical applications input signals can be looped through several frames.

Input expansion is accomplished by means of the secondary switching technique; the outputs of individual 32x16 matrices are applied as input sources to secondary crosspoint groups. Each secondary crosspoint represents 32 input sources; thus, the 2x1 groups allow 64 sources to be selected.

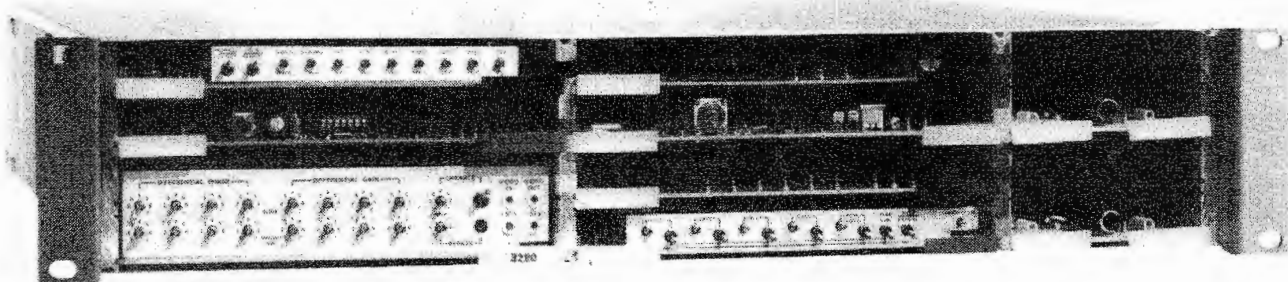
Grass Valley Group's modular approach to routing switcher requirements allows users to start with a small system and expand as needs change. It is not necessary to initially purchase additional frames, power supplies, or other equipment to accommodate future expansion.

For prices and additional information, contact your Harris District Sales Manager or the Harris Quincy Sales Office.





3240 SERIES VIDEO PROCESSING SYSTEM



The 3240 processor, with options, in two-rack unit frame. The basic processor modules occupy topmost four cells.

The 3240 Video Processing System

is a modular approach to the varied processing requirements of production studios, master control rooms, remotes and transmitters. This design philosophy allows users to tailor systems for their specific requirements now as well as to add new features when needs change. The most basic system is contained in a 1.75 inch x 19 inch rack mounting frame. A 3.5 inch frame is available for systems requiring one or more optional modules.

Features Include:

reduction of sync time base error; correction of burst axis offset errors; maintenance and convergence of SCH phasing, common mode and differential hum rejection mode; selectable VIT pass-through or blanking; regeneration of sync and burst, and continuous output (color black) in the event of input interruption.

All 3240 systems provide control of video gain, setup, chroma gain, burst phase and level, sync level, soft and hard clip, and reliable cable equalization.

The control concept

employed in the 3240 is particularly flexible: for example, in production switcher applications where there is normally no need to adjust operating parameters, or in an outside broadcast van where rack space is at a premium, the system can be operated without an accessory control panel, all adjustments being made by controls located on the circuit modules in the electronics frame. A LOC/REM switch on the input module permits operation from the optional panels described below.

Remote Control options

are separated into two levels. The first is a 'master' panel containing all operating controls plus toggle switches for delegating any or all operating adjustments to 'secondary' remote panels. The latter are offered in two versions, 1) a 1.75 inch x 19 inch rack mounting model and 2) a compact version for mounting in the accessory area of Grass Valley Group 1600 Series Switchers.

Typically, master panels would be installed in a master control room or a maintenance area, adjacent to the electronics frame. If the delegating feature of the master panel is not required, either type of secondary panel can be directly connected to the electronics frame.

The fade-to-black feature of the processing system can be controlled from an optional console mounting level assembly. Alternatively, the fade-to-black function could be controlled by a pot or lever assembly in existing customer equipment. Customers can easily control other processing functions from their own panels since all control circuitry is of a passive DC design.

An Automatic Gain Control module

is optionally available for reducing signal level fluctuations. If either peak white video or luminance levels, highest RGB levels, or peak sync level exceed preset limits, the video gain is automatically reduced. The reference levels for each type of sample are controllable by the operator. Gain fluctuations, possible when one field has a higher peak level than another, are prevented by a technique which samples an entire frame. The samplers may be gated on during a) picture and vertical interval times, b) picture only time, c) on picture and vertical interval lines which are passed, and d) only vertical lines which are passed. The AGC feature can be switched off either locally or remotely.

Two types of Pulse DA options are offered,

both of which convert TTL pulses from the sync generator to conventional output pulses. Pulse DA-1 provides two outputs for each pulse: burst flag, sync, blanking, H and V drives, PAL pulse (PAL systems only), and color frame. The DA-1 also provides a switch-selectable test signal output: black or white picture, dots, H or V lines, cross hatch, window or field square wave, or black phase reference. All pulses have sin² rise times.

A lower-cost, DA-2 option provides one output each of the pulses listed above, except for the PAL pulse. The DA-2 pulse edges are ramps as opposed to the sin² shapes of the DA-1. Both types of DA's provide adjustment to 2 or 4 Volt pulses.

A Relay Bypass option

permits 'straight through' operation of a 3240 system in case of power failure by connecting the input to one output. Operation is either automatic or manual, with an 'Operate/Bypass' switch on the module or from the accessory control panels. LED's indicate the bypass status, either at the electronics frame or the remote panel.

The 3220 Linearity Corrector option

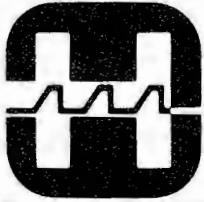
provides variable differential phase and differential gain correction at four adjustable amplitude levels. Although the 3220 is a useful accessory for 3240 processing systems, the latter is also offered as a stand-alone device in a separate 1.75 inch x 19 inch frame.

Other options

for 3240 systems include an External Sync Reference module and a VIR AGC module. The External Sync Reference module also provides for an optional non-synchronous detector sub module. The VIR AGC option will use the VIR signal to control the processor video gain, chroma gain, burst phase, and set-up parameters.



For prices and additional information, contact your Harris District Sales Manager or the Harris Quincy Sales Office.



HARRIS
COMMUNICATION AND
INFORMATION PROCESSING

SECURE VOICE SYSTEM

**RF-2922/2925 (VHF) — RF-2953 (UHF)
DIGITAL CODED VOICE MOBILE RADIO**

DIGITALLY ENCRYPTED — MOBILE RADIOS

Supplied with a solid-state radio aligned and ready for operation on specified frequencies and complete with a RF-2901 Secure Voice Module having 3.77×10^{23} code capability, RF-2975A Control Unit, RF-4903 5 watt speaker, RF-4927 Microphone with connector, power cable, control cable and installation accessories for +12 VDC vehicles as required for front or trunk mount. Keylock is standard on trunk mount. Units are capable of clear or secure mode of operation. ORDER ANTENNA SEPARATELY.



**RF-2922-VHF — 25 Watts — 148-174 MHz
Front Mount**

| ORDER NO. | NO. OF CHANNELS | PRICE |
|-----------|-----------------|------------|
| RF-2922-1 | 1 | \$4,800.00 |
| RF-2922-2 | 2 | \$4,855.00 |
| RF-2922-3 | 3 | \$4,910.00 |
| RF-2922-4 | 4 | \$4,965.00 |
| RF-2922-5 | 5 | \$5,020.00 |
| RF-2922-6 | 6 | \$5,075.00 |

**RF-2922-VHF — 25 Watts — 148-174 MHz
Trunk Mount**

| ORDER NO. | NO. OF CHANNELS | PRICE |
|------------|-----------------|------------|
| RF-2922T-1 | 1 | \$4,940.00 |
| RF-2922T-2 | 2 | \$4,995.00 |
| RF-2922T-3 | 3 | \$5,050.00 |
| RF-2922T-4 | 4 | \$5,105.00 |
| RF-2922T-5 | 5 | \$5,160.00 |
| RF-2922T-6 | 6 | \$5,215.00 |

**RF-2925-VHF — 100 Watts — 148-174 MHz
Trunk Mount**

| ORDER NO. | NO. OF CHANNELS | PRICE |
|------------|-----------------|------------|
| RF-2925T-1 | 1 | \$5,510.00 |
| RF-2925T-2 | 2 | \$5,565.00 |
| RF-2925T-3 | 3 | \$5,620.00 |
| RF-2925T-4 | 4 | \$5,675.00 |
| RF-2925T-5 | 5 | \$5,730.00 |
| RF-2925T-6 | 6 | \$5,785.00 |

**RF-2953-UHF — 25 Watts — 450-470 MHz
Front Mount**

| ORDER NO. | NO. OF CHANNELS | PRICE |
|-----------|-----------------|------------|
| RF-2953-1 | 1 | \$5,550.00 |
| RF-2953-2 | 2 | \$5,605.00 |
| RF-2953-3 | 3 | \$5,660.00 |
| RF-2953-4 | 4 | \$5,715.00 |
| RF-2953-5 | 5 | \$5,770.00 |
| RF-2953-6 | 6 | \$5,825.00 |

**RF-2953-UHF — 25 Watts — 450-470 MHz
Trunk Mount**

| ORDER NO. | NO. OF CHANNELS | PRICE |
|------------|-----------------|------------|
| RF-2953T-1 | 1 | \$5,600.00 |
| RF-2953T-2 | 2 | \$5,655.00 |
| RF-2953T-3 | 3 | \$5,710.00 |
| RF-2953T-4 | 4 | \$5,765.00 |
| RF-2953T-5 | 5 | \$5,820.00 |
| RF-2953T-6 | 6 | \$5,875.00 |

SECURE VOICE EQUIPMENT OPTIONS

RF-2903 SECURE ONLY OPERATION \$ 28.00
For optimum system security the RF-2903 option permits transmission and reception of communication messages only in the "secure" mode. There is no external switching capability in the unit to switch from secure to clear text. Substitutes RF-2975C control unit for standard RF-2975A on trunk mounted models.

MICROPHONES, HANDSETS AND ACCESSORIES

DC-0047 PALM MICROPHONE DELETION (Credit) \$ 30.00
Deletes standard RF-4927 palm microphone.
RF-2206 HANDSET AND HANGER \$ 145.00
Use in place of standard microphone. Provides speaker muting.
RF-4927 SPARE PALM MICROPHONE — TRANSLATOR DYNAMIC \$ 45.00
Complete with connector and coiled cord. Standard on Series 2900.

CONTROL UNITS AND ASSOCIATED OPTIONS

RF-2975A SPARE STANDARD SECURE VOICE MOBILE CONTROL UNIT \$ 94.00
Supplied as standard with secure voice mobile units. Complete with 1-8 channel selector, on/off, volume and squelch controls, clear/secure switch, and code plug receptacle.
RF-2975C SPARE SECURE VOICE MOBILE CONTROL UNIT WITH SECURE ONLY CAPABILITY \$ 94.00
Similar to RF-2975A except with clear/secure switch. Supplied as standard when RF-2903 option selected.
RF-4903 SPARE 5 WATT SPEAKER FOR RF-4904 SERIES CONTROL UNITS \$ 25.00
Includes trunk mount with window hanger and 5 ft. of cable. Standard on trunk mount.

MOUNTING AND INSTALLATION ACCESSORIES

996-0400 SPARE CONTROL/POWER CABLE — TRUNK MOUNT MOBILE — RF-2922, RF-2925, RF-2951 AND RF-2953 \$ 145.00
Used with the RF-2922, RF-2925, RF-2951 and RF-2953 models. Power cable 27 ft., control cable 23 ft. Supplied as standard.
450-0039 SPARE POWER CABLE — FRONT MOUNT MOBILE — RF-2922 \$ 20.00
Series RF-2920 — 12 ft. of No. 8 two conductor wire with plastic sleeve. Supplied as standard.
972-1039 SPARE POWER CABLE — FRONT MOUNT MOBILE — RF-2953 \$ 25.00
450-8046 SPARE MOUNTING BRACKET — FRONT MOUNT — NON LOCKING \$ 15.00
For mounting Series RF-2922 and 2953 front mount mobiles, less mounting hardware. Supplied as standard.
996-1045 MOUNTING BRACKET KIT — FRONT MOUNT — LOCKING \$ 30.00
For mounting Series RF-2922 and 2953 front mount mobiles, less mounting hardware.
972-8091 SPARE MOUNTING BASE — BOTTOM COVER — LOCKING \$ 20.00
For mounting of Series RF-2922 and 2953 in trunk or front with key lock. Standard on trunk mount.
996-8091 SPARE MOUNTING BASE — BOTTOM COVER — NON LOCKING \$ 15.00
For front mounted mobile unit. Supplied as standard, less mounting hardware.
RF-4507 KEY LOCK — FRONT MOUNT MOBILE — FIELD INSTALLED \$ 40.00
Provides key lock assembly. Includes 996-1045 mounting bracket kit and 972-8091 mounting base.
6601-1011 LOCKING KIT — FRONT MOUNT MOBILE — FIELD INSTALLED \$ 65.00
Provides key lock assembly, key, top and bottom covers, mounting bracket and front panel overlay for field modification of front mount Series RF-2900.
RF-489 POWER UNIT 24/36 VDC \$ 180.00
Provides 13.6 VDC, 7 Amp. (intermittent peak) regulated output to power Series RF-2920 from 24 to 36 VDC.
RF-1536 WIDEBAND RECEIVER (VHF) — FACTORY INSTALLED \$ 50.00
Frequency spread greater than 1.5 MHz not to exceed 6 MHz.
1525-0070 TRANSMIT TIME PROTECTOR — FACTORY INSTALLED — TRUNK MOUNT \$ 45.00
1525-1070 TRANSMIT TIME PROTECTOR — FACTORY INSTALLED — FRONT MOUNT \$ 45.00

PROGRAMMERS

RF-2960 MASTER CODE PROGRAMMER \$10,980.00
The Harris Master Code Programmer, RF-2960, provides for the selection of 25 octal digits, i.e., one of 8^4 (3.77×10^{23}) possible codes. The 25 digit number is automatically translated to a higher-order set of twenty 5-bit binary variables. From the twenty 5-bit variables, 3.77×10^{23} combinations are selected to produce the longest sequences for utmost security between codes. Price includes the Programmer, RF-2963 rechargeable NiCad batteries (2), RF-2866-1A charger and carrying case with lock and handle. Includes interface cable.
RF-2961 FIELD CODE SELECTOR \$ 1,645.00
The Harris Field Code Selector, RF-2961, allows for selection of three octal digit permutations of the code. This provides 8^3 (512) different combinations in the field. Includes interface cable.

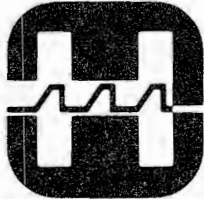
Note: Secure Voice units require special U.S. Government Export License.

Prices and specifications subject to change without notice



Harris digital coded voice equipment provides the most advanced FM radio communications digitally coded system available today. Voice transmissions are effectively concealed from third parties, and sensitive information can be transmitted immune from eavesdropping.





HARRIS
COMMUNICATION AND
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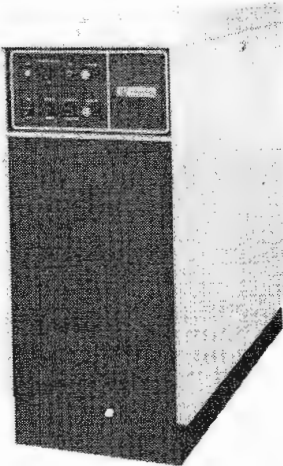
SECURE VOICE SYSTEM

**ST /SD /SP-2925 VHF /2953 UHF
SECURE-VOICE BASE STATIONS**

Pole/Wall
Mount
(SP)



Desk-side
Model
(SD)



Desktop
Model
(ST)



DIGITALLY ENCRYPTED — BASE STATIONS

DESK TOP MOUNT

Standard local control Secure Voice Base Station is supplied with an all solid-state transceiver with a RF-2901 Secure Voice Module having 3.77 x 10²¹ code capability, pedestal base for desk top mount, aligned and ready for operation on the specified channels. 115/230 VAC 50/60 Hz power supply with 8 ft. AC power cord, power cable and RF-4907 transistorized dynamic desk microphone. Extended control capability is standard. Order antenna and control options separately. Units are capable of clear or secure mode of operation.

DESK SIDE

Supplied complete in desk side enclosure with locking doors, all solid-state transceiver aligned and ready for operation on the specified frequencies with a RF-2901 Secure Voice Module having 3.77 x 10²¹ code capability, built-in 115/230 VAC 50/60 Hz power supply, front control panel, RF-2907 transistorized dynamic desk microphone with 7 ft. cord/connector and 8 ft. AC power cord. Extended control capability is standard. Order antenna and control options separately. Units are capable of clear or secure mode of operation.

WEATHERPROOF — POLE/WALL MOUNT

Supplied complete in weatherproof enclosure with locking doors, including an all solid-state transceiver aligned and ready for operation on the specified frequencies with a RF-2901 Secure Voice Module having 3.77 x 10²¹ code capability, built-in 115/230 VAC 50/60 Hz power supply, maintenance panel, extended control adapter and mounting hardware. Order antenna and control options separately. Units are capable of clear or secure mode of operation.

SERIES 2900 — BASE STATIONS
VHF — 148-174 MHz — 100 Watts (25-100 Watts adjustable)

| DESK TOP — ST-2925 | | | DESK SIDE — SD-2925 | | | WEATHERPROOF POLE/WALL MOUNT — SP-2925 | | |
|--------------------|-----------------|------------|---------------------|-----------------|------------|--|-----------------|------------|
| ORDER NO. | NO. OF CHANNELS | PRICE | ORDER NO. | NO. OF CHANNELS | PRICE | ORDER NO. | NO. OF CHANNELS | PRICE |
| ST-2925-1 | 1 | \$5,810.00 | SD-2925-1 | 1 | \$8,125.00 | SP-2925-1 | 1 | \$6,300.00 |
| ST-2925-2 | 2 | \$5,865.00 | SD-2925-2 | 2 | \$6,180.00 | SP-2925-2 | 2 | \$6,355.00 |
| ST-2925-3 | 3 | \$5,920.00 | | | | | | |
| ST-2925-4 | 4 | \$5,975.00 | | | | | | |
| ST-2925-5 | 5 | \$6,030.00 | | | | | | |
| ST-2925-6 | 6 | \$6,085.00 | | | | | | |

UHF — 450-470 MHz — 25 Watts

| DESK TOP — ST-2953 | | | DESK SIDE — SD-2953 | | | WEATHERPROOF POLE/WALL MOUNT — SP-2953 | | |
|--------------------|-----------------|------------|---------------------|-----------------|------------|--|-----------------|------------|
| ORDER NO. | NO. OF CHANNELS | PRICE | ORDER NO. | NO. OF CHANNELS | PRICE | ORDER NO. | NO. OF CHANNELS | PRICE |
| ST-2953-1 | 1 | \$5,890.00 | SD-2953-1 | 1 | \$6,420.00 | SP-2953-1 | 1 | \$6,595.00 |
| ST-2953-2 | 2 | \$5,945.00 | SD-2953-2 | 2 | \$6,475.00 | SP-2953-2 | 2 | \$6,650.00 |
| ST-2953-3 | 3 | \$5,000.00 | | | | | | |
| ST-2953-4 | 4 | \$6,055.00 | | | | | | |
| ST-2953-5 | 5 | \$6,110.00 | | | | | | |
| ST-2953-6 | 6 | \$6,165.00 | | | | | | |

MICROPHONES, HANDSETS AND ACCESSORIES

| | | |
|-----------|--|-------------------|
| DC-0018 | DESK MICROPHONE DELETION Deletes standard RF-4907 desk microphone. | (Credit) \$ 65.00 |
| RF-2206 | HANDSET AND HANGER Use in place of regular desk microphone. Provides speaker muting. | \$ 145.00 |
| RF-4907 | SPARE TRANSISTORIZED DYNAMIC DESK MICROPHONE Includes transistor amplifier, heavy base with press-to-talk bar and 7 ft. cord with connector. Standard on Series 2900 Base Stations. | \$ 90.00 |
| RF-4927 | PALM MICROPHONE — TRANSISTORIZED DYNAMIC Complete with coil and connector. | \$ 45.00 |
| RF-480A | POWER UNIT 115/230 VAC 50/60 Hz — EXTERNAL Provides 3.8V, 25 Amp. peak, regulated output from 115/230 50/60 Hz source complete with 8 ft. AC power cord, DC mating connector but less DC power cable. Order 1939-0018 power cable assembly. | \$ 440.00 |
| 1939-0018 | POWER CABLE — DC Interconnects ST-2900 Series stations to RF-480A power unit. 8 ft. of No. 8 two conductor copper wire with plastic sleeve and with connectors. Standard with ST-2900 stations. | \$ 30.00 |

CODE PROGRAMMERS

| | | |
|---------|---|-------------|
| RF-2960 | MASTER CODE PROGRAMMER The Harris Master Code Programmer, RF-2960, provides for the selection of 25 octal digits, i.e., one of 8 ²⁵ (3.77 x 10 ²¹) possible codes. The 25 digit number is automatically translated to a higher-order set of twenty 8-bit binary variables. From the twenty 8-bit variables, 3.77 x 10 ²¹ combinations are selected to produce the longest sequences for utmost security between codes. | \$10,880.00 |
| RF-2961 | FIELD CODE SELECTOR The Harris Field Code Selector, RF-2961, allows for selection of three octal digit permutations of the code. This provides 8 ³ (512) different combinations in the field. | \$ 1,645.00 |

CONTROL UNITS AND OPTIONS

| | | |
|---------|--|-----------|
| RF-4710 | EXTENDED CONTROL UNIT — DESK TELEPHONE STYLE (NO REMOTE CLEAR/SECURE SELECTION) Interconnected to base stations with RF-4719 multi-conductor cable. Maximum recommended cable length: 100 ft. (30 m). Connectors supplied. (RF-2901 located in base station.) | \$ 210.00 |
| RF-2970 | EXTENDED CONTROL UNIT — DESK TELEPHONE STYLE — WITH CLEAR/SECURE SELECTION AT CONTROL UNIT Interconnected to base station with RF-4719 multi-conductor cable. Maximum recommended cable length 100 ft. (30 m). (RF-2901 located in base station.) | \$ 230.00 |
| RF-4719 | MULTI-CONDUCTOR CABLE For RF-4710. Supplied on 100 ft. (30 m) spool, used to interconnect between base stations and extended control units. | \$ 55.00 |
| RF-4720 | DC REMOTE CONTROL UNIT — DESK TELEPHONE STYLE — NO REMOTE CLEAR/SECURE SELECTION Provides simplex audio and DC voltage control functions over single (600 ohm) pair of metallic telephone wires. Specify 115 or 230 VAC for internal strapping at time of order. | \$ 375.00 |
| RF-2971 | DC REMOTE CONTROL UNIT — DESK TELEPHONE STYLE — WITH CLEAR/SECURE SELECTION AT CONTROL UNIT Provides simplex audio and DC voltage control functions over single (600 ohm) metallic telephone wires. Specify 115 or 230 VAC for internal strapping at time of order. (RF-2901 located in base station.) | \$ 395.00 |

CONTROL UNIT ADAPTERS AND ASSOCIATED OPTIONS

| | | |
|---------|--|-----------|
| RF-4732 | EXTENDED CONTROL CAPABILITY "ONLY" — ALL SD-2900 SERIES BASE STATIONS | \$ 55.00 |
| RF-2972 | DC CONTROL ADAPTER — FACTORY INSTALLED Adds DC line remote control capability to stations. Requires extended control adapter kit RF-4702. Order separately. | \$ 50.00 |
| RF-4742 | CONTINUOUS DUTY KIT — SD-2925 | \$ 180.00 |
| RF-4741 | CONTINUOUS DUTY KIT — SD-2953 | \$ 165.00 |
| RF-4743 | CONTINUOUS DUTY KIT — SP-2953 | \$ 175.00 |
| RF-4744 | CONTINUOUS DUTY KIT — SP-2925 | \$ 190.00 |

Note: Secure Voice units require special U.S. Government Export License.

SECURE VOICE EQUIPMENT OPTIONS

SECURE ONLY OPERATION \$ 28.00
For optimum system security the RF-2903 option permits transmission and reception of communication messages by the equipment only in the "secure" mode. There is no external switching capability in the unit to switch from secure to clear text.



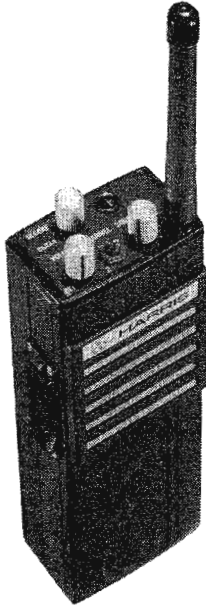
Prices and specifications subject to change without notice



HARRIS
COMMUNICATION AND
INFORMATION PROCESSING

SECURE VOICE SYSTEM

**RF-2910 VHF /FM, RF-2940 UHF /FM DIGITAL
CODED VOICE PORTA-PHONE TRANSCEIVERS**



Harris digital coded voice equipment provides the most advanced FM radio communications encryption system available today. Voice transmissions are effectively concealed from third parties, and sensitive information can be transmitted immune from eavesdropping.

FEATURES

• **System Versatility.**

Harris Porta-Phone transceivers are standard portable, handheld radios providing either normal two-way or digitally coded voice communications. Normal two-way operation is compatible with any existing two-way radio system. Coded messages are completely private, sounding like white noise to ordinary two-way radios or secure radios having a different code setting. Decoded messages are clear, crisp, received with excellent intelligibility including voice reflection for easy speaker recognition.

• **Harris Dependability.**

Harris Porta-Phone transmitters develop high output power with a high frequency stability and low distortion. The output power is two watts when used with its rechargeable nickel-cadmium battery. The output stage is fully protected from damage from overheating, or broken or shorted antennas. A high-performance receiver assures that Porta-Phone radios will be sensitive to the weakest signals while maintaining excellent selectivity. A full one watt of audio output provides crisp-sounding audio even in the noisiest environment.

• **Fast and Tamper-Proof Code Programming.**

Code settings are stored in an electronic memory until deliberately changed through external code programmers, allowing the user to control the code assignments. Code changes are made quickly and simply with either a Master Code Programmer or Field Code Selector by authorized persons only, and visual or electronic inspection of the radio or the programmer cannot reveal the code assignments.

• **Modular Construction.**

This provides reliable operation and permits faster, easier servicing. Separate transmit/receive frequency circuits permit easy system expansion and/or frequency changes and Harris' simple module construction helps keep radio downtime to a minimum.

• **Rugged Construction.**

While compact and lightweight enough to be carried comfortably in the hand, Porta-Phone radios are exceptionally rugged. The dust- and splashproof case is formed of tempered aluminum to protect all internal circuitry from physical damage. The circuitry itself is mounted on a military-grade glass epoxy printed circuit board to absorb shock and vibration. Full operating performance is maintained in the extremes of hot and cold, from -30° to +60°C.

• **Coded Only Transmission Option.**

Radios operate only in the digital coded mode.

**DIGITALLY ENCRYPTED — PORTA-PHONE
HAND-HELD RADIO — 2 WATTS**

Supplied with built-in speaker/microphone, a RF-2901 Secure Voice Module having 3.77 × 10²² code capability, RF-2863 nickel-cadmium battery, RF-2876 carrying case, and antenna, aligned and ready for operation on the specified frequencies. Units are capable of clear or secure mode of operation.

RF-2910 - VHF — 148-174 MHz

**RF-2940 - UHF — 406-420 MHz
450-470 MHz
470-512 MHz**

| ORDER NO. | NO. OF CHANNELS | PRICE |
|-----------|-----------------|------------|
| RF-2910-1 | 1 | \$4,620.00 |
| RF-2910-2 | 2 | \$4,685.00 |

| ORDER NO. | NO. OF CHANNELS | PRICE |
|-----------|-----------------|------------|
| RF-2940-1 | 1 | \$4,830.00 |
| RF-2940-2 | 2 | \$4,990.00 |
| RF-2940-3 | 3 | \$5,100.00 |

SECURE VOICE EQUIPMENT OPTIONS

| | | |
|--|-----------------------|----------|
| RF-2903 | SECURE ONLY OPERATION | \$ 28.00 |
| For optimum system security the RF-2903 option permits transmission and reception of communication messages only in the "secure" mode. There is no external switching capability in the unit to switch from secure to clear. | | |

ACCESSORIES

| | | |
|--|--|---------------------|
| BATTERIES | | |
| RF-2883 | SPARE BATTERY PACK, RECHARGEABLE, MULTI-LINE | \$ 80.00 |
| Rechargeable nickel-cadmium battery pack for use with any unit | | |
| DC-0043 | DELETES BATTERY PACK | (Credit) (\$ 60.00) |
| Deletes nickel-cadmium from package. | | |

CHARGERS

| | | |
|--|---|-----------|
| RF-2866-1A | ONE UNIT MULTI-LINE CHARGER — 115/230 VAC | \$ 120.00 |
| Desk top charger with one unit capacity for all Multi-Line Series units (containing RF-2863 battery) or a loose RF-2863 battery from 115/230 VAC supply. Includes automatic trickle feature. Specify 115 or 230 VAC operation. | | |
| RF-2866-1M | ONE UNIT MULTI-LINE CHARGER — 115/230 VAC | \$ 60.00 |
| Same as RF-2866-1A except includes manual trickle. | | |
| RF-2868-6AB | SIX UNIT MULTI-LINE CHARGER — 115/230 VAC | \$ 350.00 |
| Same as RF-2866-1A except has 6 unit/battery capacity. Includes automatic trickle. | | |
| RF-2866-6M | SIX UNIT MULTI-LINE CHARGER — 115/230 VAC | \$ 310.00 |
| Same as RF-2866-1A except has 6 unit/battery capacity. Includes manual charger. | | |

CRYSTALS AND CRYSTAL OPTIONS

| | | |
|---|--|---------------------|
| DC-0048 | CHANNEL CRYSTAL DELETION — VHF | (Credit) (\$ 50.00) |
| Deletes transmit and receive crystals, per channel. | | |
| Y-0008 | RECEIVER CRYSTAL (148-174 MHz) | \$ 20.00 |
| For use with all RF-2910 Series 148-174 MHz portables. Specify operating frequency. | | |
| Y-0009 | TRANSMITTER CRYSTAL (148-174 MHz) | \$ 40.00 |
| For use with all RF-2910 Series 148-174 MHz portables. Specify operating frequency. | | |
| DC-0053 | DELETE RECEIVER TCXO CRYSTAL MODULE — UHF | (Credit) (\$ 35.00) |
| Deletes receiver crystal from multi-channel UHF hand-held. | | |
| DC-0054 | DELETE TRANSMITTER TCXO CRYSTAL MODULE — UHF | (Credit) (\$ 50.00) |
| Deletes transmitter crystal from multi-channel UHF hand-held. | | |
| RF-2888 | RECEIVE TCXO CRYSTAL MODULE (406-420 AND 450-512 MHz) | \$ 50.00 |
| For use with all RF-2940 Series 406-420 and 450-512 MHz portables. Specify operating frequency. | | |
| RF-2889 | TRANSMIT TCXO CRYSTAL MODULE (406-420 AND 450-512 MHz) | \$ 65.00 |
| For use with all RF-2940 Series 406-420 and 450-512 MHz portables. Specify operating frequency. | | |

ANTENNAS

| | | |
|---------------------------------|---|----------|
| RF-2882 | FLEXIBLE HELICAL ANTENNA (148-174 MHz) | \$ 11.00 |
| Standard on RF-2910 Series. | | |
| RF-2884 | STUB ANTENNA (450-470 MHz) | \$ 17.00 |
| Stub spring type antenna. | | |
| RF-2885 | QUARTER WAVE SPRING ANTENNA (406-420 MHz and 450-512 MHz) | \$ 11.00 |
| Standard on the RF-2940 Series. | | |

CARRYING ACCESSORIES

| | | |
|--|----------------------------------|----------|
| RF-2876 | MULTI-LINE CARRYING CASE | \$ 28.00 |
| Leather carrying case for use with all Multi-Line Series. | | |
| RF-2877 | CARRYING STRAP | \$ 8.00 |
| Leather shoulder strap for use with all carrying cases. | | |
| RF-2879 | BELT CLIP OPTION | \$ 22.00 |
| Factory installed clip on rear of RF-2900 Series units to permit unit to be clipped to belts, etc. | | |
| RF-2879A | REAR COVER WITH BELT CLIP OPTION | \$ 33.00 |
| Similar to RF-2879 except includes clip mounted to unit rear cover plate. For field installation. | | |

MISCELLANEOUS/PROGRAMMERS

| | | |
|--|------------------------|-------------|
| RF-2850 | SERVICE KIT | \$ 50.00 |
| Includes four (4) adapter cables and tuning tools for field maintenance RF-2900 Series. | | |
| RF-2960 | MASTER CODE PROGRAMMER | \$10,980.00 |
| The HARRIS MASTER CODE PROGRAMMER, RF-2960, provides for the selection of 25 octal digits, i.e., one of 8 th (3.77 × 10 ²²) possible codes. The 25 digit number is automatically translated to a higher-order set of twenty 5-bit binary variables. From the twenty 5-bit variables, 3.77 × 10 ²² combinations are selected to produce the longest sequences for utmost security between codes. Price includes the programmer, two RF-2863 rechargeable NiCad batteries, RF-2866-1A charger, and carrying case with locking door and handle. | | |
| RF-2961 | FIELD CODE SELECTOR | \$ 1,645.00 |
| The Harris Field Code Selector, RF-2961, allows for selection of three octal digit permutations of the code. This provides 8 ³ (512) different combinations in the field. | | |

Note: Secure Voice units require special U.S. Government Export License.

Prices and specifications subject to change without notice





HARRIS
COMMUNICATION AND
INFORMATION PROCESSING



Thin-Line
RF-2814

- Up to 2 Channels
- 2 Watt RF Output
- Tone-Coded Squelch* +
- Selective Call* +

HIGH-BAND PORTA-PHONE SERIES — 5 WATTS

The RF-2822 Series is supplied with built-in speaker/microphone, RF-2863 nickel-cadmium battery, RF-2876 carrying case, and RF-2882 spring antenna, aligned and ready for operation on the specified frequencies. See Notes.

| ORDER NO. | NO. OF CHANNELS | PRICE |
|-----------|-----------------|------------|
| RF-2822-1 | 1 | \$ 950.00 |
| RF-2822-2 | 2 | \$1,020.00 |
| RF-2822-3 | 3 | \$1,185.00 |
| RF-2822-4 | 4 | \$1,260.00 |
| RF-2822-5 | 5 | \$1,335.00 |
| RF-2822-6 | 6 | \$1,410.00 |

RF-2842 UNIVERSAL MULTI-LINE PORTA-PHONE — 5 WATTS

The RF-2842 Series is supplied with RF-2870 plug-in external speaker/microphone unit on coiled cord, built-in speaker/microphone unit, RF-2863 nickel-cadmium battery, RF-2876 carrying case, and RF-2882 spring antenna, aligned and ready for operation on the specified frequencies. See Notes.

| ORDER NO. | NO. OF CHANNELS | PRICE |
|-----------|-----------------|------------|
| RF-2842-1 | 1 | \$1,055.00 |
| RF-2842-2 | 2 | \$1,125.00 |
| RF-2842-3 | 3 | \$1,295.00 |
| RF-2842-4 | 4 | \$1,370.00 |
| RF-2842-5 | 5 | \$1,445.00 |
| RF-2842-6 | 6 | \$1,520.00 |

Note 1: 'Single channel only (no two channel switch). These radios are not designed to permit simple field channel expansion. If future expansion of capacity is contemplated, order unit with maximum anticipated capacity and take DC-0048 deletion credit for crystals as appropriate.

Note 2: The maximum spread between the transmit or receive frequencies is 1 MHz. With the addition of the RF-2894 Wide Spaced Receiver option, the receive frequency spread is increased to 5 MHz.

Note 3: One Operator/Maintenance Manual is supplied with each radio.

CRYSTALS AND ACCESSORIES

| | | |
|---------|---|---------------------|
| DC-0048 | CHANNEL CRYSTAL DELETION Deletes transmit and receive crystals. Per channel. | (Credit) (\$ 50.00) |
| Y-0008 | SPARE RECEIVER CRYSTAL — .0015% Specify operating frequency. | \$ 20.00 |
| Y-0009 | SPARE TRANSMITTER CRYSTAL — .0005% Specify operating frequency. | \$ 40.00 |

UHF PORTA-PHONE RADIO — 5 WATTS

RF-2829 MULTI-LINE PORTA-PHONE — 5 WATTS

The RF-2829 Series is supplied with built-in speaker/microphone, RF-2863 nickel-cadmium battery, RF-2876 carrying case, and RF-2885 quarter wave spring antenna, aligned and ready for operation on the specified frequencies. See Notes.

| ORDER NO. | NO. OF CHANNELS | PRICE |
|------------|-----------------|------------|
| RF-2829-00 | 1 | \$1,090.00 |
| RF-2829-01 | 1 | \$1,130.00 |
| RF-2829-02 | 2 | \$1,255.00 |
| RF-2829-03 | 3 | \$1,380.00 |
| RF-2829-04 | 4 | \$1,505.00 |
| RF-2829-05 | 5 | \$1,630.00 |
| RF-2829-06 | 6 | \$1,820.00 |
| RF-2829-07 | 7 | \$1,945.00 |
| RF-2829-08 | 8 | \$2,065.00 |

RF-2849 UNIVERSAL MULTI-LINE PORTA-PHONE — 5 WATTS

The RF-2849 Series unit is supplied with plug-in RF-2870 external speaker/microphone unit on coiled cord, built-in speaker/microphone unit, RF-2863 nickel-cadmium battery, RF-2876 carrying case, and RF-2885 quarter wave spring antenna, aligned and ready for operation on the specified frequencies. See Notes.

| ORDER NO. | NO. OF CHANNELS | PRICE |
|------------|-----------------|------------|
| RF-2849-00 | 1 | \$1,195.00 |
| RF-2849-01 | 1 | \$1,235.00 |
| RF-2849-02 | 2 | \$1,360.00 |
| RF-2849-03 | 3 | \$1,485.00 |
| RF-2849-04 | 4 | \$1,610.00 |
| RF-2849-05 | 5 | \$1,800.00 |
| RF-2849-06 | 6 | \$1,925.00 |
| RF-2849-07 | 7 | \$2,050.00 |
| RF-2849-08 | 8 | \$2,175.00 |

Note 1: "00" units are dedicated single channel with no possibility for field channel expansion. Other models include four or eight channel selector switch and can be field expanded.

Note 2: The maximum spacing between the highest and lowest transmit or receive channel frequencies is 5 MHz.

Note 3: One Operator/Maintenance Manual is supplied with each radio.

OPTIONS AND ACCESSORIES

| | | |
|---------|---|---------------------|
| RF-2868 | SPARE RECEIVER TCXO CRYSTAL MODULE Specify operating frequency. | \$ 50.00 |
| RF-2869 | SPARE TRANSMITTER TCXO CRYSTAL MODULE Specify operating frequency. | \$ 65.00 |
| DC-0053 | DELETE RECEIVER TCXO CRYSTAL MODULE — UHF From multi-channel RF-2800 UHF. | (Credit) (\$ 35.00) |
| DC-0054 | DELETE TRANSMITTER TCXO CRYSTAL MODULE — UHF From multi-channel RF-2800 UHF. | (Credit) (\$ 50.00) |

PORTA-PHONE TRANSCEIVERS

LOW-BAND PORTA-PHONE SERIES — 2 WATTS

RF-2814 THIN-LINE PORTA-PHONE — 2 WATTS

The RF-2814 Series is supplied with built-in speaker/microphone, RF-2861 nickel-cadmium battery, RF-2875(A) carrying case, and RF-2886A base loaded spring antenna, aligned and ready for operation on the specified frequencies.

| ORDER NO. | NO. OF CHANNELS | PRICE |
|-----------|-----------------|----------|
| RF-2814-1 | 1* | \$820.00 |
| RF-2814-2 | 2 | \$895.00 |

RF-2824 MULTI-LINE PORTA-PHONE — 2 WATTS

The RF-2824 Series is supplied with built-in speaker/microphone, RF-2863 nickel-cadmium battery, RF-2876 carrying case, and RF-2885A base loaded spring antenna, aligned and ready for operation on the specified frequencies.

| ORDER NO. | NO. OF CHANNELS | PRICE |
|-----------|-----------------|----------|
| RF-2824-1 | 1* | \$860.00 |
| RF-2824-2 | 2 | \$935.00 |

RF-2844 UNIVERSAL MULTI-LINE PORTA-PHONE — 2 WATTS

The RF-2844 Series unit is supplied with plug-in RF-2870 external speaker/microphone unit on coiled cord, built-in speaker/microphone unit, RF-2863 nickel-cadmium battery, RF-2876 carrying case, and RF-2886A base loaded spring antenna, aligned and ready for operation on the specified frequencies.

| ORDER NO. | NO. OF CHANNELS | PRICE |
|-----------|-----------------|------------|
| RF-2844-1 | 1* | \$ 970.00 |
| RF-2844-2 | 2 | \$1,045.00 |

Note 1: 'Single channel only (no two channel switch). These radios are not designed to permit simple field channel expansion. If future expansion of capacity is contemplated, order unit with maximum anticipated capacity and take DC-0048 deletion credit for crystals as appropriate.

Note 2: The maximum spread between the highest and lowest transmit or receive channel frequencies is 1%.

Note 3: One Operator/Maintenance Manual is supplied with each radio.

Note 4: Available with up to six channels on special order.

CRYSTALS AND ACCESSORIES

| | | |
|---------|---|---------------------|
| DC-0048 | CHANNEL CRYSTAL DELETION Deletes transmit and receive crystals. Per channel. | (Credit) (\$ 50.00) |
| Y-0920 | SPARE RECEIVER CRYSTAL — .001% Specify operating frequency. | \$ 20.00 |
| Y-0921 | SPARE TRANSMITTER CRYSTAL — .002% Specify operating frequency. | \$ 40.00 |

HIGH-BAND PORTA-PHONE RADIO — 2 WATTS

RF-2810 THIN-LINE PORTA-PHONE SERIES — 2 WATTS

The RF-2810 Series is supplied with built-in speaker/microphone, RF-2861 nickel-cadmium battery, RF-2875(A) carrying case, and RF-2882 spring antenna, aligned and ready for operation on the specified frequencies. See Notes.

| ORDER NO. | NO. OF CHANNELS | PRICE |
|-------------|-----------------|------------|
| RF-2810-1 | 1* | \$ 785.00 |
| RF-2810-2 | 2 | \$ 865.00 |
| RF-2810-3** | 3 | \$1,030.00 |
| RF-2810-4** | 4 | \$1,105.00 |

**Case extended 0.5 inches and Option RF-2890C and RF-2893A not available.

RF-2820 MULTI-LINE PORTA-PHONE — 2 WATTS

The RF-2820 Series is supplied with built-in speaker/microphone, RF-2863 nickel-cadmium battery, RF-2876 carrying case, and RF-2882 spring antenna, aligned and ready for operation on the specified frequencies. See Notes.

| ORDER NO. | NO. OF CHANNELS | PRICE |
|-----------|-----------------|------------|
| RF-2820-1 | 1* | \$ 820.00 |
| RF-2820-2 | 2 | \$ 890.00 |
| RF-2820-3 | 3 | \$1,055.00 |
| RF-2820-4 | 4 | \$1,130.00 |
| RF-2820-5 | 5 | \$1,205.00 |
| RF-2820-6 | 6 | \$1,280.00 |

RF-2840 UNIVERSAL MULTI-LINE PORTA-PHONE — 2 WATTS

The RF-2840 Series unit is supplied with plug-in RF-2870 external speaker/microphone unit on coiled cord, built-in speaker/microphone unit, RF-2863 nickel-cadmium battery, RF-2876 carrying case, and RF-2882 spring antenna, aligned and ready for operation on the specified frequencies. See Notes.

| ORDER NO. | NO. OF CHANNELS | PRICE |
|-----------|-----------------|------------|
| RF-2840-1 | 1 | \$ 930.00 |
| RF-2840-2 | 2 | \$1,000.00 |
| RF-2840-3 | 3 | \$1,065.00 |
| RF-2840-4 | 4 | \$1,240.00 |
| RF-2840-5 | 5 | \$1,315.00 |
| RF-2840-6 | 6 | \$1,390.00 |

Note 1: 'Single channel only (no two channel switch). These radios are not designed to permit simple field channel expansion. If expansion of capacity is contemplated, order unit with maximum anticipated capacity and take DC-0048 deletion credit for crystals as appropriate.

Note 2: The maximum spacing between the highest and lowest transmit or receive channel frequencies is 1 MHz. The RF-2894 Wide Spaced Receiver option increases the receive frequency spread to 5 MHz.

Note 3: One Operator/Maintenance Manual is supplied with each radio.

CRYSTALS AND ACCESSORIES

| | | |
|---------|---|---------------------|
| DC-0048 | CHANNEL CRYSTAL DELETION Deletes transmit and receive crystals. Per channel. | (Credit) (\$ 50.00) |
| Y-0008 | SPARE RECEIVER CRYSTAL — .0015% Specify operating frequency. | \$ 20.00 |
| Y-0009 | SPARE TRANSMITTER CRYSTAL — .0005% Specify operating frequency. | \$ 40.00 |

UHF PORTA-PHONE RADIO — 2 WATTS

RF-2818 THIN-LINE PORTA-PHONE SERIES — 2 WATTS

The RF-2818 Series is supplied with built-in speaker/microphone, RF-2861 nickel-cadmium battery, RF-2875(A) carrying case, and RF-2885 quarter wave spring antenna, aligned and ready for operation on the specified frequencies. See Notes.

| ORDER NO. | NO. OF CHANNELS | PRICE |
|-------------|-----------------|------------|
| RF-2818-00* | 1 | \$ 845.00 |
| RF-2818-01* | 1 | \$ 885.00 |
| RF-2818-02* | 2 | \$1,110.00 |
| RF-2818-03* | 3 | \$1,235.00 |
| RF-2818-04* | 4 | \$1,360.00 |

*Option RF-2890C and RF-2893A available in an extended 0.8 inch case.

RF-2828 MULTI-LINE PORTA-PHONE — 2 WATTS

The RF-2828 Series is supplied with built-in speaker/microphone, RF-2863 nickel-cadmium battery, RF-2876 carrying case, and RF-2885 quarter wave spring antenna, aligned and ready for operation on the specified frequencies. See Notes.

| ORDER NO. | NO. OF CHANNELS | PRICE |
|------------|-----------------|------------|
| RF-2828-00 | 1 | \$ 980.00 |
| RF-2828-01 | 1 | \$1,020.00 |
| RF-2828-02 | 2 | \$1,145.00 |
| RF-2828-03 | 3 | \$1,270.00 |
| RF-2828-04 | 4 | \$1,395.00 |
| RF-2828-05 | 5 | \$1,585.00 |
| RF-2828-06 | 6 | \$1,710.00 |
| RF-2828-07 | 7 | \$1,835.00 |
| RF-2828-08 | 8 | \$1,960.00 |

RF-2848 UNIVERSAL MULTI-LINE PORTA-PHONE — 2 WATTS

The RF-2848 Series unit is supplied with plug-in RF-2870 external speaker/microphone unit on coiled cord, built-in speaker/microphone unit, RF-2863 nickel-cadmium battery, RF-2876 carrying case, and RF-2885 quarter wave spring antenna, aligned and ready for operation on the specified frequencies. See Notes.

| ORDER NO. | NO. OF CHANNELS | PRICE |
|------------|-----------------|------------|
| RF-2848-00 | 1 | \$1,085.00 |
| RF-2848-01 | 1 | \$1,125.00 |
| RF-2848-02 | 2 | \$1,250.00 |
| RF-2848-03 | 3 | \$1,375.00 |
| RF-2848-04 | 4 | \$1,500.00 |
| RF-2848-05 | 5 | \$1,690.00 |
| RF-2848-06 | 6 | \$1,815.00 |
| RF-2848-07 | 7 | \$1,940.00 |
| RF-2848-08 | 8 | \$2,065.00 |

Note 1: "00" units are dedicated single channel with no possibility for field channel expansion. Other models include four or eight channel selector switch and can be field expanded.

Note 2: The maximum spacing between the highest and lowest transmit or receive channel frequencies is 5 MHz.

Note 3: Tone-Coded Squelch and Selective Call options not available on RF-2818.

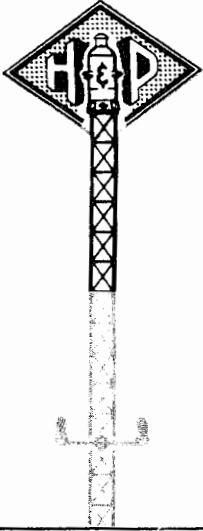
Note 4: One Operator/Maintenance Manual is supplied with each radio.

OPTIONS AND ACCESSORIES

| | | |
|---------|---|---------------------|
| RF-2868 | SPARE RECEIVER TCXO CRYSTAL MODULE Specify operating frequency. | \$ 50.00 |
| RF-2869 | SPARE TRANSMITTER TCXO CRYSTAL MODULE Specify operating frequency. | \$ 65.00 |
| DC-0053 | DELETE RECEIVER TCXO CRYSTAL MODULE — UHF From multi-channel RF-2800 UHF. | (Credit) (\$ 35.00) |
| DC-0054 | DELETE TRANSMITTER TCXO CRYSTAL MODULE — UHF From multi-channel RF-2800 UHF. | (Credit) (\$ 50.00) |



Prices and specifications subject to change without notice

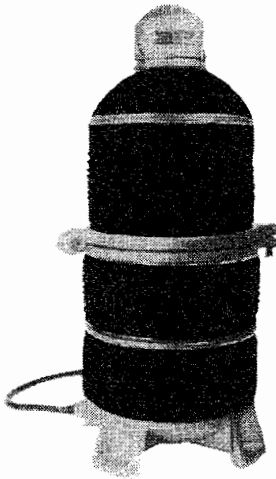


HUGHEY & PHILLIPS, Inc.

COMPLETE TOWER LIGHTING KITS
Designed to Meet FCC and FAA Specifications

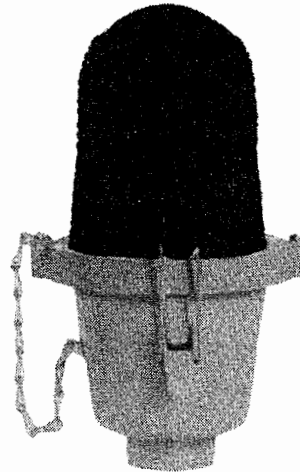
- PHOTOELECTRIC CONTROL UNITS — Outdoor and Indoor Housings
- ISOLATION TRANSFORMERS — For Tower Obstruction Lighting
- BEACON FLASHERS — The BF60 and BF70 Series, Fused and Non-Fused
- TOWER LIGHTING CONTROL UNITS

MODEL KG 114 300mm BEACON (TYPE F)
FOR AIRPORT AND OBSTRUCTION LIGHTING
Approved Under FAA Specification 446
Meets ICAO Requirements



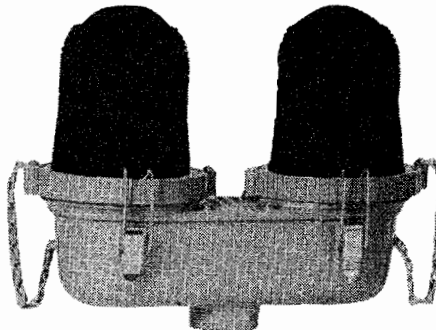
MODEL KG 114 CODE BEACON
TYPE F

OBSTRUCTION LIGHTS
Single — Models OB20 and OB21



MODEL OB20 OBSTRUCTION LIGHT
(bottom entrance conduit fitting type)
MODEL OB21 OBSTRUCTION LIGHT
(side entrance conduit fitting type)

DOUBLE OBSTRUCTION LIGHTS
Models OB22 and OB24



MODEL OB22 OBSTRUCTION LIGHT **MODEL OB24 OBSTRUCTION LIGHT**
(bottom entrance conduit fitting type) (side entrance conduit fitting type)

For prices and additional information, contact your
HARRIS DISTRICT SALES MANAGER

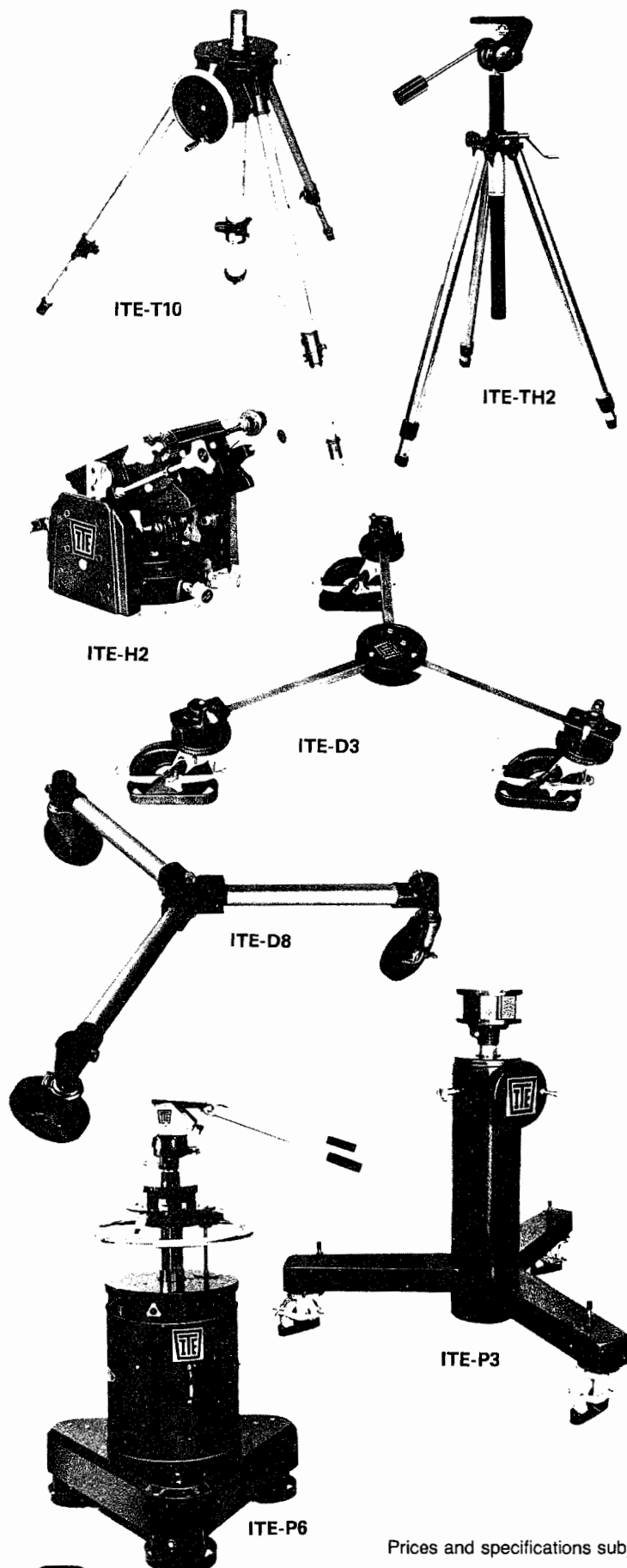
or

THE HARRIS QUINCY SALES OFFICE.

Prices and specifications subject to change without notice



INNOVATIVE TELEVISION EQUIPMENT



TRIPODS/TROLLIES:

| | | Load Capacity | Price |
|---------|--------------------------------------|---------------|-----------|
| ITE-T1 | Wood Tripod — (M-E) | 25 lbs. | \$ 255.00 |
| ITE-T1B | Wood Tripod — (M-E/Ball) | | 295.00 |
| ITE-T2 | Tripod | 30 lbs. | 195.00 |
| ITE-T3 | Wood Tripod — (M-F/Ball) | 40 lbs. | 485.00 |
| ITE-T4 | Wood Tripod — (M-P/Ball) | 50 lbs. | 495.00 |
| ITE-T5 | Trolley — Elevation | 60 lbs. | 255.00 |
| ITE-T6 | Tripod — Elevation | 60 lbs. | 235.00 |
| ITE-T7 | Tripod — (M-M/Ball) | 50 lbs. | 575.00 |
| ITE-T8 | Tripod — (M-P/Ball) Mini 19" Lg | | 440.00 |
| ITE-T9 | Wood Tripod — (M-P/Ball) Mini 27" Lg | 50 lbs. | 450.00 |
| ITE-T10 | Tripod — Elevation | 140 lbs. | 440.00 |
| ITE-TH2 | Tripod — Elevation/Friction Head | 25 lbs. | 135.00 |
| ITE-MT1 | Tripod | 250 lbs. | 570.00 |
| ITE-MT5 | Tripod — Microwave | | 575.00 |

DOLLIES

| | | | |
|---------|---------------------------|----------|--------|
| ITE-D3 | Dolly | 130 lbs. | 290.00 |
| ITE-D3G | Dolly — With Cable Guards | | 330.00 |
| ITE-D4 | Dolly — (M) | 100 lbs. | 460.00 |
| ITE-D6 | Dolly | 40 lbs. | 125.00 |
| ITE-D6G | Dolly — With Cable Guards | | 160.00 |
| ITE-D7 | Dolly — With Cable Guards | 250 lbs. | 465.00 |
| ITE-D8 | Dolly | 35 lbs. | 75.00 |

PEDESTALS

| | | | |
|----------|---|----------|---------|
| ITE-P3 | Pedestal — Elevation | 60 lbs. | 625.00 |
| ITE-P3/7 | Pedestal — Elevation — 7" Wheels and Cable Guards | | 7650.00 |
| ITE-P4 | Pedestal — Counterbalance Studio | 140 lbs. | 2550.00 |
| ITE-P5 | Pedestal — Counterbalance Studio | 265 lbs. | 3450.00 |
| ITE-P6 | Pedestal — Counterbalance Studio | 90 lbs. | 2350.00 |
| ITE-P8 | Pedestal — Remote — Elevation | 225 lbs. | 2500.00 |

MOUNTING HEADS

| | | | |
|---------|--|----------|---------|
| ITE-H1 | Torsion Head | 30 lbs. | 99.00 |
| ITE-H2 | Cam Head | 130 lbs. | 725.00 |
| ITE-H3 | Cam Head | 250 lbs. | 1495.00 |
| ITE-H4 | Torsion Head | 40 lbs. | 195.00 |
| ITE-H4D | Torsion Head With Dual Handles | | 255.00 |
| ITE-H5A | Hydro Head — Counterbalanced | 50 lbs. | 1350.00 |
| ITE-H7 | Torsion Head With Dual Handles | 60 lbs. | 500.00 |
| ITE-H8 | Microwave Head | 250 lbs. | 435.00 |
| ITE-H8C | Microwave Head With Handle | | 495.00 |
| ITE-H9 | Hydro Head — Counterbalanced | 30 lbs. | 795.00 |
| ITE-H9P | Hydro Head — Counterbalanced — Philips | | 795.00 |
| ITE-H11 | Fluid Head — (M-E) — "Eight" | 10 lbs. | 240.00 |
| ITE-H12 | Fluid Head — (M-F) — "F" | 20 lbs. | 495.00 |
| ITE-H13 | Fluid Head — (M-P) — "Pro" | 30 lbs. | 695.00 |
| ITE-H14 | Fluid Head — (M-P/TL) — "Pro" | 30 lbs. | 750.00 |
| ITE-H15 | Fluid Head — (M-V) | 40 lbs. | 790.00 |

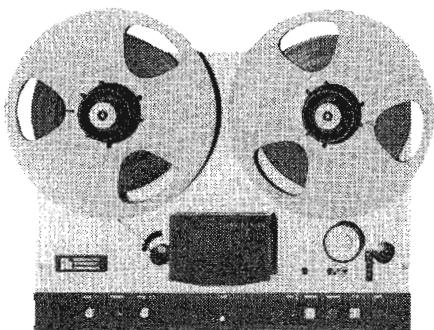
ACCESSORIES

| | | |
|-------------|---|--------|
| ITE-WA | Wedge Adapter — H2 | 120.00 |
| ITE-WA5 | Wedge Adapter — H5 | 165.00 |
| ITE-WP | Wedge Plate | 90.00 |
| ITE-RH | Right Hand Zoom Handle for H2 — H4 | 60.00 |
| ITE-RH3 | Right Hand Zoom Handle For H3 | 75.00 |
| ITE-RH5 | Right Hand Zoom Handle for H5 | 70.00 |
| ITE-RH9 | Right Hand Zoom Handle for H9 | 65.00 |
| ITE-RH9P | Right Hand Zoom Handle for H9P — Philips | 65.00 |
| ITE-RHM | Right Hand Handle — M — H13 and H15 | 55.00 |
| ITE-H79P | Adapter — H7 and H9 to P4 and P6 Pedestals | 99.00 |
| ITE-H25T | Adapter — H2 and H5 to T6 and T10 Tripods | 75.00 |
| ITE-H9T48CB | Adapter — H9 to T4 and T8 Tripods — Claw Ball | 95.00 |
| ITE-H11T56 | Adapter — H11 to T5 and T6 Tripods | 65.00 |
| ITE-HH6 | Hi Hat — 6" | 95.00 |
| ITE-CW | Counterweight Set (40 lbs.) for P4/P5 | 115.00 |
| ITE-TK | Adapter — RCA TK-44, 45 and 46 | 125.00 |
| ITE-TS | Tripod Spreader — M Tripods | 150.00 |
| ITE-RFPM | Rubber Foot Pad Set — M Tripods | 65.00 |
| ITE-RFPI | Rubber Foot Pad Set — T2 and T6 Tripods | 90.00 |
| ITE-CB1 | Claw Ball Assy — M — For T1B | 40.00 |
| ITE-CB2 | Claw Ball Assy — M — For T3 | 65.00 |
| ITE-CB3 | Claw Ball Assn — M — For T4 and T7 | 85.00 |
| ITE-LQR | Quick Release Adapter Assy | 185.00 |
| ITE-LQRS | Quick Release Plate | 75.00 |

Prices and specifications subject to change without notice



750 SERIES Reproducer



ITC's 750 Series has been designed and built for broadcasters and is ideally suited for use in program automation systems. The overall objective was to provide a professional reel-to-reel playback unit which would be competitive in price with the "semi-professional" or "consumer" machines. In the 750, all efforts have been channeled into constructing a durable, reliable, practical machine — eliminating unused features and controls — and offering it for the lowest possible selling price. The result is an open reel unit that will withstand the stress of continuous operation and provide the dependability demanded by broadcast applications — especially by unattended automation systems.

750 SERIES

750 Series 10 1/2 Inch Recorder/Reproducers

[Motion Sensing, Input and Output Transformers Standard]

| | | |
|----------|--|-----------|
| 855-7514 | Full Track Monophonic, 3 3/4"-7 1/2" IPS. | \$2300.00 |
| 855-7515 | Full Track Monophonic, 7 1/2"-15 IPS. | 2300.00 |
| 855-7524 | 1/2 Track Monophonic, 3 3/4"-7 1/2" IPS. | 2300.00 |
| 855-7525 | 1/2 Track Monophonic, 7 1/2"-15 IPS. | 2300.00 |
| 855-7534 | 1/2 Track Stereophonic (Two Channel), 3 3/4"-7 1/2" IPS. | 2600.00 |
| 855-7535 | 1/2 Track Stereophonic (Two Channel), 7 1/2"-15 IPS. | 2600.00 |
| 855-7544 | 1/4 Track Stereophonic (Two Channel), 3 3/4"-7 1/2" IPS. | 2825.00 |
| 855-7545 | 1/4 Track Stereophonic (Two Channel), 7 1/2"-15 IPS. | 2825.00 |

750 Series 10 1/2 Inch Reproducers

| | | |
|----------|--|-----------|
| 856-7514 | Full Track Monophonic, 3 3/4"-7 1/2" IPS. | \$1500.00 |
| 856-7515 | Full Track Monophonic, 7 1/2"-15 IPS. | 1500.00 |
| 856-7524 | 1/2 Track Monophonic, 3 3/4"-7 1/2" IPS. | 1500.00 |
| 756-7525 | 1/2 Track Monophonic, 7 1/2"-15 IPS. | 1500.00 |
| 856-7532 | 1/2 Track Stereophonic (Two Channel), 7 1/2" IPS. | 1415.00 |
| 856-7534 | 1/2 Track Stereophonic (Two Channel), 3 3/4"-7 1/2" IPS. | 1515.00 |
| 856-7535 | 1/2 Track Stereophonic (Two Channel), 7 1/2"-15 IPS. | 1515.00 |
| 856-7544 | 1/4 Track Stereophonic (Two Channel), 3 3/4"-7 1/2" IPS. | 1625.00 |
| 856-7545 | 1/4 Track Stereophonic (Two Channel), 7 1/2"-15 IPS. | 1625.00 |

Special Accessories for 750 Series Reel-to-Reel Equipment

| | | |
|--------------|--|-----------|
| 833-0018-200 | 25 Hz Detector for 750 Reproducer. | \$ 130.00 |
| 864-0016-000 | Remote Control for 750 Reproducer Only. | 190.00 |
| 864-0017-000 | Remote Control for 750 Recorder/Reproducer. | 200.00 |
| 864-0014-010 | Console Cabinet for 750 Recorder/Reproducer. | 525.00 |
| 864-0015-000 | Add-on stacking kit, add 3 1/2 inches of vertical space. | 65.00 |
| 281-0014-012 | 1 3/4 inches Filler Panel. | 10.00 |
| 878-0045-000 | Motion Sensing (Reproducer Only). | 50.00 |
| AT-0001 | Audio Output Transformers (Reproducer Only—Two Transformers Included). | 35.00 |
| 830-0022-001 | Alignment Gauge. | 25.00 |
| 831-0075-003 | Reproducer Test Extender. | 20.00 |
| 831-0119-003 | Recorder Test Extender. | 20.00 |

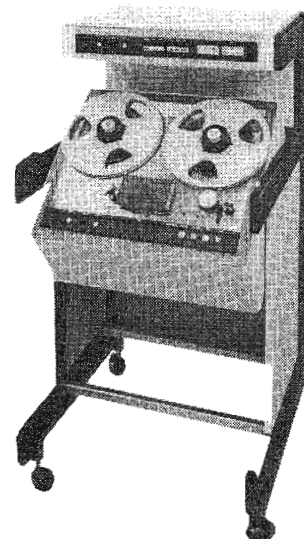
Note: Standard for all reel-to-reel equipment: rack mounting, 117v/60 Hz, AC operation. Console cabinets are available as an option.

CONSOLE CABINET For ITC 750 or 850 Recorder/Reproducer

Like our tape recorders themselves, ITC's console cabinet for reel-to-reel machines has been designed with the broadcaster in mind. Strips of solid walnut accent the beige color of the metal which will attractively fit into every studio design or color scheme.

DIMENSIONS: Height 44 1/2", Width 23 3/4", Depth 24 3/4". Shipping Weight: 90 pounds.

| | | |
|--------------|---|-----------|
| 864-0014-000 | Console Cabinet for 850 Series Reel-to-Reel Recorder/Reproducer | \$ 525.00 |
| 864-0014-010 | Console Cabinet for 750 Series Reel-to-Reel Recorder/Reproducer (Includes special 1 3/4" deck filler panel) | 525.00 |
| 864-0015-000 | Add-on Stacking Kits. Provides 3 1/2" of vertical rack space, 19" wide. | 65.00 |
| 281-0038-012 | Filler Panel, 1 3/4" x 19" (used with extension kit only). | 10.00 |



Prices and specifications subject to change without notice





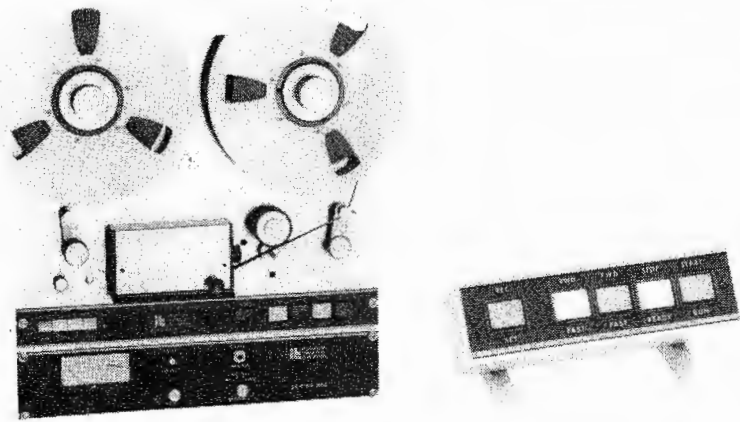
850 SERIES

ITC's 850 Series reel-to-reel equipment was a second generation product before it ever found its way into the marketplace. It was designed, sent into the field for rigorous testing, then redesigned in keeping with the excellent suggestions made by engineers and operators.

The result is a rugged, reliable, open reel system that embodies the features most wanted and needed by users of professional tape recording equipment. But the key word in describing ITC's 850 Series is "integrity". We can actually claim it is machines like a fine watch. Every component, every part was selected for its ability to perform faithfully under the most demanding conditions. Our engineers had quiet "in studio" operation in mind during the design phase. They even gave careful consideration to front panel layout and location of controls. Nothing was treated as unimportant. As a consequence, we offer the 850 Series with complete confidence that it will outperform, and outlast any reel machine on the market.

The 850 Series offers a wide variety of 16 different configurations capable of handling reels up to 10 1/2 inches in diameter. The machines are available in either one channel or two channel configurations. In the one channel models you can choose between a full track or half track monophonic format, while in the two channel models you have a choice of either a half track or quarter track stereophonic format. All machines have a two speed capability with a choice of either 3 3/4-7 1/2 or 7 1/2-15 IPS.

A prime example of the integrity built into the 850 Series is the aluminum tool and jig plate deck. This 1/2 inch thick deck is inherently stress relieved so that thermal changes will not cause the instability sometimes encountered with cast decks. The surface is guaranteed flat within .005 to the nearest one thousandth. A stainless steel overlay is then added to provide shielding and a handsome appearance that defies hard use and the rigors of time.



855 Monophonic with Optional Remote Control

850 SERIES

850 Series 10 1/2 Inch Recorder/Reproducers

| | | |
|-----------------|--|------------------|
| 855-0001 | Full Track Monophonic, 7 1/2-15 IPS. | \$3550.00 |
| 855-0002 | Full Track Monophonic, 3 3/4-7 1/2 IPS. | 3550.00 |
| 855-0003 | 1/2 Track Monophonic, 7 1/2-15 IPS. | 3500.00 |
| 855-0004 | 1/2 Track Monophonic, 3 3/4-7 1/2 IPS. | 3550.00 |
| 855-0005 | 1/2 Track Stereophonic (Two Channel), 7 1/2-15 IPS. | 4250.00 |
| 855-0006 | 1/2 Track Stereophonic (Two Channel), 3 3/4-7 1/2 IPS. | 4250.00 |
| 855-0007 | 1/4 Track Stereophonic (Two Channel), 7 1/2-15 IPS. | 4400.00 |
| 855-0008 | 1/4 Track Stereophonic (Two Channel), 3 3/4-7 1/2 IPS. | 4400.00 |

850 Series 10 1/2 Inch Reproducers

| | | |
|-----------------|--|------------------|
| 856-0001 | Full Track Monophonic, 7 1/2-15 IPS. | \$2855.00 |
| 856-0002 | Full Track Monophonic, 3 3/4-7 1/2 IPS. | 2855.00 |
| 856-0003 | 1/2 Track Monophonic, 7 1/2-15 IPS. | 2855.00 |
| 856-0004 | 1/2 Track Monophonic, 3 3/4-7 1/2 IPS. | 2855.00 |
| 826-0005 | 1/2 Track Stereophonic (Two Channel), 7 1/2-15 IPS. | 3150.00 |
| 856-0006 | 1/2 Track Stereophonic (Two Channel), 3 3/4-7 1/2 IPS. | 3150.00 |
| 856-0007 | 1/4 Track Stereophonic (Two Channel), 7 1/2-15 IPS. | 3300.00 |
| 856-0008 | 1/4 Track Stereophonic (Two Channel), 3 3/4-7 1/2 IPS. | 3300.00 |

Special Accessories for 850 Reel-to-Reel Equipment

| | | |
|---------------------|--|-----------------|
| 864-0001 | Micro-Mark Tape Editing Marker | \$ 50.00 |
| 864-0014-000 | Console Cabinet for 850 Recorder/Reproducer. | 525.00 |
| 864-0015-000 | Add-on Stacking Kit, Add 3 1/2 inches of Vertical Space. | 65.00 |
| 281-0014-012 | 1 3/4 inches Filler Panel. | 10.00 |
| 864-0006 | Remote Control for 850 Reproducer Only. | 190.00 |
| 864-0007 | Remote Control for 850 Recorder/Reproducer. | 200.00 |
| 831-0054-013 | 25 Hz Cue Detector for 850 Reproducer. | 125.00 |
| 830-0015-002 | Alignment Gauge. | 55.00 |
| 878-0032-000 | Test Extender Kit (Includes three test extender boards). | 55.00 |

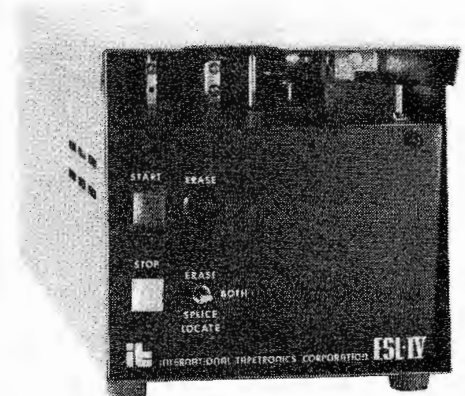
ESL-IV SERIES Cartridge Tape Eraser/ Splice Locator

Combines cartridge erasing
and splice locating in a
single, automatic operation.

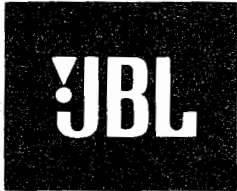
ESL-IV Eraser/Splice Locator

Eraser/Splice Locator accepts the NAB "A" size cartridge.
Table top mounting, 117v/60 Hz AC.

\$ 580.00



Prices and specifications subject to change without notice



James B. Lansing Sound, Inc.



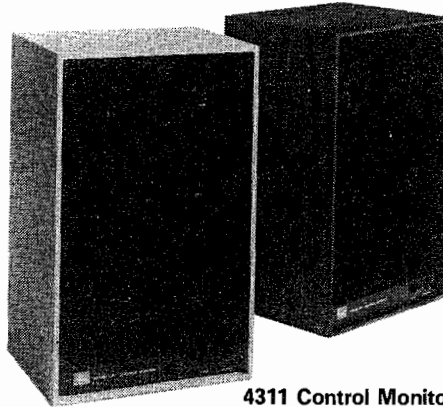
4350 Studio Monitor

4301 Broadcast Monitor, 2-way

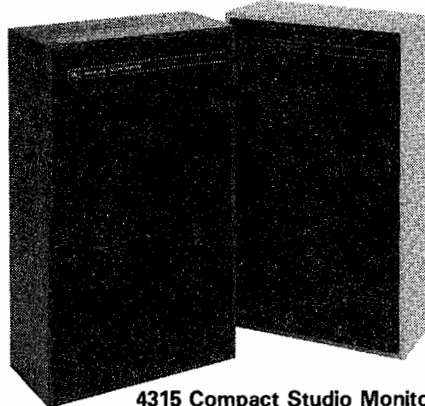
JBL's smallest monitor is designed primarily for the broadcast control room and edit booth, and has achieved wide acceptance in home studios, remote recording and quality control areas. Smooth, wide range response and low distortion are obtained from 200-mm (8-in) low frequency and 36-mm (1.4-in) high frequency loudspeakers. A high frequency level control is provided on the front baffle. Available in oiled walnut with dark blue grille.

4311 Control Monitor, 3-way

A compact loudspeaker system designed for control rooms and other applications where space is restricted, the 4311 utilizes 300-mm (12-in) low frequency, 130-mm (5-in) midrange and 36-mm (1.4-in) high frequency loudspeakers. Front panel controls, below the grille, permit convenient adjustment of midrange and high frequency levels. Available in textured gray or oiled walnut with black grille.



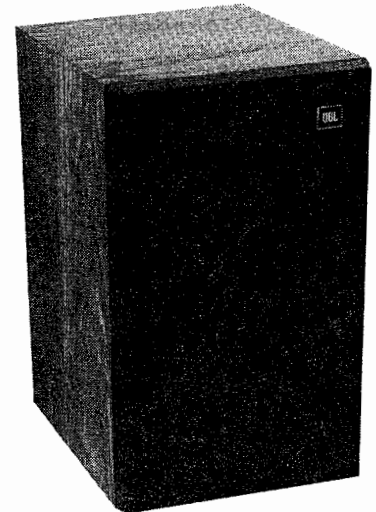
4311 Control Monitor



4315 Compact Studio Monitor

4315 Compact Studio Monitor, 4-way

Exhibiting exceptionally smooth, wide-band reproduction, clarity, superior transient response and controlled dispersion, the 4315 is similar in sound character to the larger studio monitors. It is recommended whenever the high SPL of the larger systems is not required or where space is limited. The system consists of 300-mm (12-in) low frequency, 200-mm (8-in) midrange, 130-mm (5-in) high frequency loudspeakers and an ultra-high frequency transducer. The 4315 can be positioned with the high frequency units at the top or bottom when vertical, or at the left or right when horizontal, to optimize high frequency coverage. Eye bolts can be inserted on the back to suspend the system. It is available in textured gray with black grille, or oiled walnut with dark blue grille.



4301 Broadcast Monitor

4350 Studio Monitor, 4-way

JBL's largest monitor, the 4350 represents the ultimate in high acoustic output, board bandwidth, definition and efficiency. Designed for bi-amplification, the system consists of two 380-mm (15-in) low frequency loudspeakers, a 300-mm (12-in) midrange loudspeaker, a high frequency compression driver with horn and acoustic lens, and an ultra-high frequency transducer. The enclosure allows mirror image mounting of high frequency components for optimum source localization. The bottom panel is finished and the base is removable to facilitate inverted suspension by eye bolts anchored to an internal steel support. Available in textured gray with black grilles or oiled walnut with dark blue grilles.

| MODEL | FINISH | PRICE |
|--------|--------------|----------|
| 4301WX | Oiled Walnut | \$168.00 |
| 4311 | Studio Gray | 327.00 |
| 4311WX | Oiled Walnut | 336.00 |

| MODEL | FINISH | PRICE |
|---------|--------------|----------|
| 4315 | Studio Gray | \$891.00 |
| 4315 WX | Oiled Walnut | 906.00 |
| 4350 | Studio Gray | 1986.00 |
| 4350 WX | Oiled Walnut | 2016.00 |

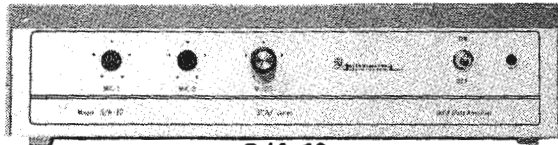
| | Frequency Response (±3 dB) | Power Capacity (Continuous Sine Wave) | Nominal Impedance | Sensitivity ¹ | | Crossover Frequencies ² | Enclosure Volume | Exterior Dimensions (Height x Width x Depth) | Net Weight |
|------|-------------------------------|--|--|--------------------------|---------------------|------------------------------------|-----------------------------------|---|------------------|
| | | | | 1 W, 1 m (3.3 ft) | 1 mW, 30 ft (9.1 m) | | | | |
| 4301 | 45 Hz - 15 kHz | 15 W | 8 Ω | 88 dB SPL | 39 dB SPL | 2.5 kHz | 30 litres 1 ft ³ | 483 mm x 306 mm x 211 mm 19 in x 12 1/4 in x 11 1/4 in | 12 kg 26 lb |
| 4311 | 45 Hz - 15 kHz | 40 W | 8 Ω | 91 dB SPL | 42 dB SPL | 1.5 kHz, 6 kHz | 40 litres 1.5 ft ³ | 597 mm x 362 mm x 298 mm 23 1/2 in x 14 1/4 in x 11 3/4 in | 19 kg 42 lb |
| 4315 | 35 Hz - 20 kHz | 60 W | 8 Ω | 89 dB SPL | 40 dB SPL | 400 Hz, 2 kHz, 8 kHz | 90 litres 3.2 ft ³ | 854 mm x 521 mm x 327 mm 33 3/8 in x 20 1/2 in x 12 3/4 in | 43 kg 95 lb |
| 4350 | 30 Hz - 20 kHz | 200 W below 250 Hz 100 W above 250 Hz | 4 Ω below 250 Hz 8 Ω above 250 Hz | 95.5 dB SPL | 46.5 dB SPL | 250 Hz, 1.1 kHz, 9 kHz | 270 litres 9.5 ft ³ | 889 mm x 121 mm x 508 mm 35 in x 4 7/8 in x 20 in | 140 kg 243 lb |

1. Sensitivity measured with an input averaged from 500 Hz to 2.5 kHz, with controls set for flattest response.

2. The lowest crossover frequency specified for the 4350 is the recommended crossover frequency for bi-amplification.

Prices and specifications subject to change without notice





S/A-10

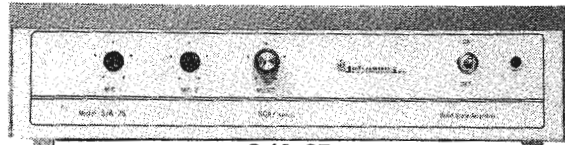
The Johnson model S/A-10 is a uniquely designed ten watt RMS power amplifier, offering the ultimate in function, flexibility, features, and benefits that no other amplifier can offer.

It is the first amplifier to feature, and have the ability to be converted to a Tuner/Amplifier, combined in one unit, simply by the addition of the exclusive Johnson SCA/880 Tuner Module card.

In addition to the cost and labor saving features, the S/A-10 basic amplifier offers five inputs and is designed specifically for all background music and sound system applications.

The S/A-10 has provisions for plug-in modules and can be equipped with one or two low impedance balanced input mic preamplifiers or any combination, telephone page preamplifier, chime, buzzer, siren, etc. (see plug-in accessories)

The S/A-10 has built-in gain control and individual bass and treble controls. All controls are accessible from the rear of the chassis. Electronic muting is standard in all S/A series amplifiers and assures silent muting. If program muting is desired, simply connect the press to talk switch pair to the mute and ground terminals provided on the rear panel.



S/A-25

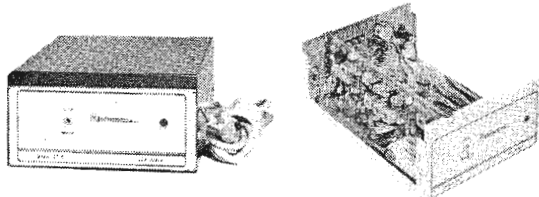
The Johnson model S/A-25 is a uniquely designed twenty-five watt RMS power amplifier, offering the ultimate in function, flexibility, features, and benefits that no other amplifier can offer.

It is the first amplifier to feature, and have the ability to be converted to a Tuner/Amplifier, combined in one unit, simply by the addition of the exclusive Johnson SCA/880 Tuner Module card.

In addition to the cost and labor saving features, the S/A-25 basic amplifier offers five inputs and is designed specifically for all background music and sound systems applications.

The S/A-25 has provisions for plug-in modules and can be equipped with one or two low impedance balanced input mic preamplifiers or any combination — telephone page preamplifier, chime, buzzer, siren, etc. (see plug-in accessories)

The S/A-25 has built-in gain control and individual bass and treble controls. All controls are accessible from the rear of the chassis. Electronic muting is standard in all S/A series amplifiers and assures silent muting. If program muting is desired, simply connect the press to talk switch pair to the mute and ground terminals provided on the rear panel.



ST-4 TUNER

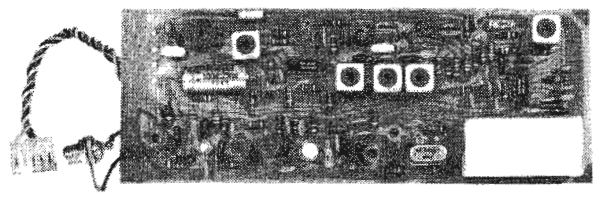
The Johnson Model ST-4 is a complete FM/SCA crystal controlled tuner, utilizing the same SCA/880 Tuner Module used in both the S/A-10 and S/A-25 amplifiers, and is designed for reception of SCA multiplex signals in the FM band 88-108 mHz.

The ST-4 Tuner provides two (2) 600 ohm outputs as a standard, one (1) unbalanced output terminated into a standard phono jack. The other output is a balanced transformer coupled output terminated into a (3) terminal strip. Both outputs are located on the rear of the chassis. (no plug-in extra cost transformer needed)

Slider channels are provided in the ST-4 Tuner, exactly as in the S/A-10 and S/A-25 amplifiers to accept the SCA/880 Tuner Module, thus affording interchangeability with all three models.

An optional main/sub switch is available for those who wish to switch to the main program for special events.

The ST-4 Tuner has an internal audio set level control and is accessible from the rear chassis.



SCA/880

Johnson Electronic's model SCA/880 Tuner Module is a complete FM and SCA Tuner mounted on a single glass epoxy circuit board measuring 9" W x 1.8" D x 3.3" H.

This new concept provides the capability of converting the S/A-10 or S/A-25 amplifier into a receiver with maximum flexibility at minimum cost. It is also used in our Model ST-4 Tuner.

The SCA/880 is designed for reception of SCA multiplex signals or main channel FM signals in the 88-108 mHz band and features:

- Crystal controlled for high stability and precise, on channel, tuning.
- All solid-state construction utilizing a maximum of design proven integrated circuits.
- Cross-talk performance improved through the use of a highly symmetrical SCA input filter with optimum band width characteristics.
- Improved triple mute system with extended range carrier and sub-carrier threshold controls, for thump-free switching.
- Extended range AGC system — exceeds 100 db — provides improved performance under varying signal conditions.
- Quick interchangeability of RF-IF Tuner Modules, when required for service or where two radio frequency channels are utilized.
- Furnished with an Antenna Connector Assembly and Main/Sub jumper for easy installation.
- An optional main channel/sub channel switch kit is available for all three models — ST-4 Tuner, S/A-10/880 and S/A-25/880.

Johnson Electronics Model ST-4 SCA Tuner for main and sub-channel reception. Bal. and unbal. 600 ohms outputs at 1.4 and 1.8 V RMS. 120 V 60 Hz. Weight: 2 3/4 lbs. (1.24 kg). Size: 3 1/2" (8.9 cm) high, 7" (17.8 cm) wide and 9 1/4" (23.5 cm) deep.....\$125.90

NOTE: Main channel frequency and subchannel frequency must be stated with order.

JOHNSON ELECTRONICS SCA RECEIVERS/AMPLIFIERS

Johnson Electronics Model ER-5 Educational Receiver for main and subchannel reception. Completely self-contained with built-in speaker and telescopic antenna. 120V, 60 Hz, 7 watts. Weight: 2.3 lbs. (1 kg). Size: 3 3/4" (9.5 cm) high, 6 1/2" (16.5 cm) deep and 7 1/2" (19 cm) wide.....\$95.35

Johnson Electronics Model S/A-10/880 SCA Tuner/Amplifier for main and subchannel reception. 12.5 watt RMS output into 8 ohms, 10 watts RMS into 70.7 V line; electronic muting, separate bass, treble and gain controls. 120 V, 50/60 Hz, 40 watts. Weight: 7 lbs. (3.15 kg). Size: 3 1/2" (8.9 cm) high, 9 1/2" (24 cm) deep and 14 1/2" (36.8 cm) wide.\$190.80

Johnson Electronics Model S/A-25/880 SCA Tuner/Amplifier for main and subchannel reception. 30 watts RMS into 8 ohms, 25 watts RMS into 70.7 V line, electronic muting separate bass, treble and gain controls, 120 V 50/60 Hz, 70 watts. Weight: 9 lbs. (4.05 kg). Size: 3 1/2" (8.9 cm) high, 9 1/2" (24 cm) deep and 14 1/2" (36.8 cm) wide.....\$204.60

Prices and specifications subject to change without notice

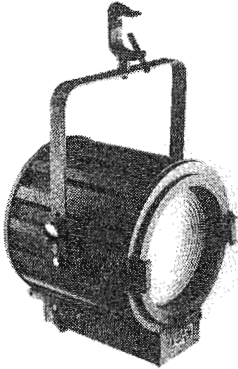


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Studio Lighting Packages

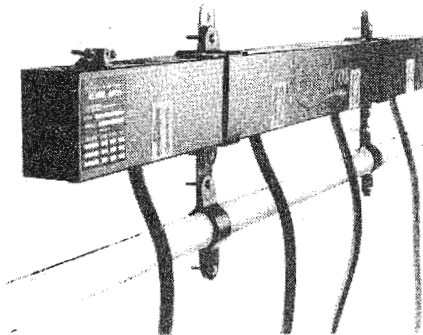
SIX STUDIO LIGHTING PACKAGES

These packages have been designed and engineered by Kliegl to cover a broad spectrum of studio lighting applications as they apply to most commercial, educational, and industrial users. Each package has been carefully laid out to ensure that the compliment of lighting fixtures, distribution equipment and the lighting control system will prove adequate in the area for which it is designed.



LIGHTING FIXTURES

LIGHTING FIXTURES — A varying compliment of Key, Back, Base, Fill and Set lights, including their accessories, are provided in every package. Pattern Projectors and special Cyc lighting instruments are included in certain packages. All fixtures are provided with 36" leads, C-clamp, safety cable and connector.

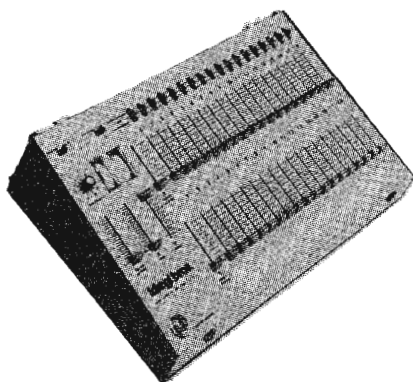


DISTRIBUTION EQUIPMENT

DISTRIBUTION EQUIPMENT — Wireway connector strips and wall outlet boxes are provided in various quantities for each package (except the STUDIO/FIELD Package, which uses a portable plugging box), in order to ensure proper power distribution throughout the specified studio. Cyc drop boxes are also used in the two larger packages for powering the cyc lighting units.

LIGHTING CONTROL SYSTEM — A solid state, low voltage control dimming system has been designed for each of the studio packages. Each system consists of an SCR Dimmer Bank, a Safpatch Panel, a portable 2 Scene Control Console and Plugging Box. The STUDIO/FIELD Package has the option of using a KLIEGPAC 9 portable dimming system in place of the portable Plugging Box normally provided.

In addition to the above, each of the studio packages contain a studio layout, the power requirements of the package, a system riser (flow) diagram and pricing information for budgeting purposes. The packages are listed as follows:



LIGHTING CONTROL SYSTEM

| CATALOG NUMBER | PACKAGE DESCRIPTION | PRICE \$ |
|----------------|--------------------------|-----------|
| 771015 | STUDIO/FIELD | 2,286.00 |
| 771520 | 15' x 20' (300 sq. ft.) | 10,447.00 |
| 771825 | 18' x 25' (450 sq. ft.) | 17,134.00 |
| 772030 | 20' x 30' (600 sq. ft.) | 20,926.00 |
| 773040 | 30' x 40' (1200 sq. ft.) | 45,638.00 |
| 774060 | 40' x 60' (2400 sq. ft.) | 76,015.00 |

kliegl

Kliegl is also available to work with you in the custom design of a lighting control and distribution system to meet your studio needs. Memory control is available using the affordable PERFORMANCE lighting control system. Please contact your Harris District Sales Manager or the Harris Quincy Sales Office to arrange for a no-obligation review of your studio requirements.

Prices and Specifications Subject to Change Without Notice.





HV/1 HIGH VELOCITY MICRO-WEIGHT STEREOPHONE

Superb Tonal Quality

Koss engineers have greatly reduced the mass of the moving diaphragm assemblies used in your new HV/1. The result is a high range frequency response of unusual fidelity. The delicate overtones which add to the faithfulness of the reproduction are retained. The low range frequency response is extended, clean and "unmuddied".

Stylish Low-Silhouette Design

Your new HV/1 has been designed to fit close to your head without the cone-type projections found in other headphone designs. This slim design permits unusually fine acoustical tuning of the element chamber at the factory as well as presenting a smart, professional appearance.



Designed For Unprecedented Comfort

Your micro/weight HV/1 can be worn for extended periods of time in complete comfort. The acoustical sponge earcushions and glove-soft headband rest lightly on your head for fatigue-free listening.

- HV/1 Sponge cushions; light weight \$49.95
- HV/1A Decilite® elements \$54.95
- HV/1LC Volume controls; Decilite® \$59.95

K/6A DYNAMIC STEREOPHONE

Frequency Response

Your new Koss K/6A Stereophone is engineered with low-angle drivers to deliver breathtaking stereo sound with minimum distortion. The extra smooth 10-16,000 Hz frequency response range promotes excellent transient response for realistic musical reproduction.

Contoured Earcushions

The K/6A features soft, foam-filled vinyl earcushions that exclude distracting outside noises. The cushions are slightly contoured for exceptional wearing comfort and seal against the head to extend linear bass response with complete smoothness. Earcushions can be cleaned by wiping with a damp, lightly soaped cloth.



NEW!

Comfort and Construction

Fitted with a wide, sponge headband cushion, the K/6A is comfortable even when worn for extended periods. Stainless steel yokes and slidebars and end clips made of Celcon permit easy adjustments. The K/6A is constructed with a snap fit headband assembly and space age engineering materials for durability.

- K/6A 10-16,000 Hz; vinyl covered cushions \$26.95

PRO/4AA PROFESSIONAL DYNAMIC STEREOPHONE

Extended Frequency Response

Your new Koss PRO/4AA gives you smooth, fatigue-free response two full octaves beyond ordinary dynamic Stereophones. The almost indestructible driver elements use an efficient, fully enclosed magnet structure and a strong polyester diaphragm to provide a uniform, extended high frequency range. The 25mm (1"), self-supporting voice coil is the largest ever used in a Stereophone driver element. An oversized diaphragm compliance ring allows wider diaphragm excursions to deliver deep bass tones cleanly, without a trace of muddiness.

Pneumalite Earcushions

Your PRO/4AA features exclusive Koss Pneumalite earcushions to provide maximum wearing comfort and extended response. The cushions seal against the head to extend the bass response to below human audibility with complete smoothness. Distracting outside noises are effectively excluded.



Designed for Wearing Comfort

The PRO/4AA is fitted with a soft, wide headband cushion for maximum comfort even when worn for extended periods. The fully adjustable, stainless steel headband and pivoting, self-adjusting yokes allow you to custom fit the PRO/4AA to your head size and shape.

- PRO/4AA Pneumalite®; boom mount \$70.00
- PRO/4AAA Contoured Pneumalite® earcushions; Pneumalite® suspension headband \$80.00

ACCESSORIES

- EC/25KK* 25 ft. Coiled Extension Cord \$7.95
- TPA* 2-Phone Adapter Cables \$5.95
- 3350* Mini-plug Adapter \$1.49



EC/25KK



TPA

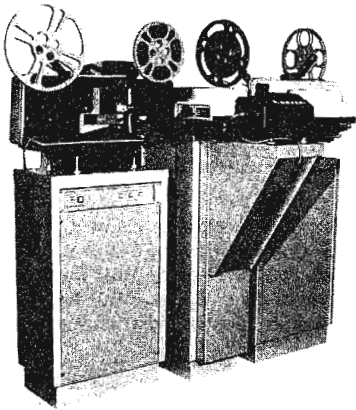


MINI-PLUG ADAPTER

Prices and specifications subject to change without notice



LAIRD TELEMEDIA INC.®

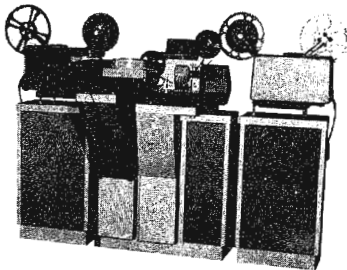


The Model 5300 Optical Multiplexer shown in combination with a Color Camera and a full 3-Input Projector Complement.

The **MODEL 5300 OPTICAL MULTIPLEXER** provides a method by which as many as three separate film images may be selectively projected for televising by a single camera. The use of first-surface mirrors and precision optics ensure excellent results in color TV applications. An integral field lens provides an intermediate image plane upon which both camera and projector lenses are focused. The field lens mounting is designed to permit insertion of a special screen for alignment purposes. The movable mirrors are shifted by individual electric gear motors through a unique torsion-bar/pitman coupling and produce an "instant" vertical wipe image transfer.

The basic 5300 Multiplexer consists of an optical transfer assembly, a main "bench" pedestal and a local control chassis. The entire optical area is protected against dust and ambient light by a plastic cover. The optical transfer assembly is supported for a 48" optical center by a bench pedestal constructed of heavy gauge die-formed steel. An enclosed entry box enables concealed connection and distribution of AC power to camera and projectors. The local control chassis permits push-button selection of projector inputs at the Multiplexer location and furnishes logic and power for remote control. A set of dry contacts provide for remote switching of audio or other purposes for each optical input.

A complete line of 16mm TV film projectors, slide projectors, interconnecting stands and shelves as well as other accessories and peripherals are available. Also available is engineering assistance in equipment selection and system design.



The Model 5400 Optical Multiplexer shown in combination with a Color Camera and a full 4-Input Projector Complement.

The **MODEL 5400 OPTICAL MULTIPLEXER** is similar to the Model 5300 described above except that it has the capability of multiplexing up to four separate film images. It has two field lenses to provide intermediate image planes upon which both the camera and the projector lenses are focused. The movable mirrors are shifted by a cam/aperture coupling but in both the 5300 and the 5400, automatic self-dousing is inherent in the vertical-wipe image transfer so that all unused input images are eliminated.

Two vacuum-formed plastic covers protect the entire optical area from dust and ambient light. The bench pedestals on both the 5300 and the 5400 have the lower portion of the pedestal surrounded by a recessed kick plate. Also, in both systems, the bench pedestal, stands and shelves feature removable panel sections for rack equipment mounting and access during installation. A large port in the rear section of each shelf and stand allows power and control cable entry and each has a rotatable cover which both closes the cable opening and furnishes strain relief for the cable.

MULTIPLEXERS

5300 Optical Multiplexer for three input sources (Small Image). Includes optical transfer assembly with field lens and cover, bench pedestal and local control. (Does not include camera or projector mounting shelves or stands). Note: Refer to lens extenders accessories section for special camera to lens interface components.
..... \$1495.00

5340 Optical Multiplexer for three or four input sources (Large Image. Less field lens). Includes optical transfer assembly with cover, bench pedestal and local control. Three input unit may be field converted for fourth input source. (Does not include camera or projector mounting shelves or stands.)
For three input sources 2575.00
For four input sources 3150.00

5040 Large Image Field Lens and mounting assembly for 5340 Optical Multiplexer. (Required for camera without integral field lens).
..... 825.00

5400 Optical Multiplexer for four input sources (Small Image). Includes optical transfer assembly with field lens and cover, bench pedestal and local control. Requires 5041 ND mounting bracket for 410 light control. (Does not include camera or projector mounting shelves or stands) 1975.00

SHELVES AND STANDS

(For 5300, 5340 and 5400 Multiplexers)

5104 Stand for cameras or projectors with optical center height between 8 1/4" and 12 1/4". Includes mounting adapter. (Specify camera or projector model when ordering) 310.00

5107 Shelf for small camera or projector. Includes mounting adapter. (Specify camera or projector model when ordering) 225.00

5108 Stand for camera or projector with height of less than 8 1/4" from mounting base to center of optics. Includes mounting adapter. (Specify camera or projector model when ordering) 310.00

UNIPLXERS

5116 Optical Assembly with first surface mirror and field lens. Includes shelves and adapters for camera and 16mm film projector. (Specify camera and projector when ordering). Requires 50mm camera lens with 3/8" extender and 3" projection lens. (Lenses not included) \$ 875.00

5135 Optical Uniplxer Assembly same as above for one 35mm slide projector. (Less mirror) 785.00

5135m Optical Uniplxer Assembly for monochrome camera and 35mm slide projector. (Less field lens and mirror) 395.00

5136 105mm Camera taking lens and 1.57" lens barrel for use with 5135 Uniplxer. ("C" Mount) 180.00

LENS EXTENDERS

5015 3/8" Lens Extender for 50mm lens to "C" mount camera adapter 17.00

5016 Lens Extender Kit (Casmacar) 45.00

MULTIPLEXER ACCESSORIES

5021 Test Film Kit Loop. Includes RES, REG, FLESH TONE slides. RES 16mm film loop 200.00

5022 Eastman Kodak Gray Scale Slide 300.00

5036 Neutral Density Filter Kit — 6 density filters supplied for mounting. For small image. (One Kit for each projector recommended).
..... 100.00

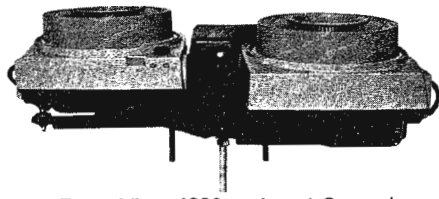
5037 Neutral Density Filter Kit — 6 density filters supplied for mounting. For large image. (One Kit for each projector recommended).
..... 225.00

5041 Mounting Bracket for 5050 light control for use with 5400 4-input optical multiplexer 40.00

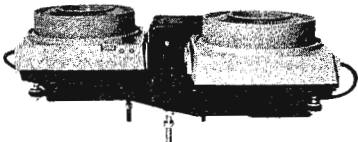
Prices and specifications subject to change without notice



LAIRD TELEMEDIA INC.®



Front View 4220 — Local Control



Front View 4210

The **MODEL 4220 DISSOLVE DUAL DRUM SLIDE PROJECTOR** provides a large slide capacity projector with time-controlled dissolve transitions. The 4220 Dual Projector offers the alternate sequencing of up to 160 glass, metal, plastic or paper-mounted 2" x 2" slides from a dual configuration of Eastman Ektagraphic projectors. Both projectors share a single, high-quality projector lens. This, together with quartz halogen light sources, make the projector ideal for color television applications.

The image transfer between successive slide exposures is accomplished by means of an optical beam splitter which produces a smooth time-controlled dissolve. This fade from one slide to the other can be varied, by means of a panel control, from less than half of a second up to a full 15 seconds. On the same control panel, push buttons allow a choice of the dissolve mode or a minimum-time "cut" transfer. There are also push buttons to control the functions of "off", "Ready", "Advance", "Reverse", and "Alternate" plus buttons to deactivate one drum while maintaining use of the other thus allowing independent use of either projector.

Accessories available include the Model 2525 Remote Control with a full complement of control functions, and the Model 2526 Tone Generator/Decoder which not only can be used for audible change-slide cues in the normal manner but also offers the capability for a completely automated slide show.

The **4210 DUAL DRUM SLIDE PROJECTOR** provides a large slide capacity projector with broadcast-quality lap-dissolve transitions. The 4210 projector offers the alternate sequencing of up to 160 glass, metal, plastic or paper-mounted 2" x 2" slides from the dual configuration of Eastman Ektagraphic projectors. Image transfer between successive slides is accomplished by means of movable first surface mirrors.

Accessories available include the Model 2515 Remote Control that provides "Off", "Ready", "Show", "Advance", "Reverse" and "Alternate". The 2513 Remote Reconcile provides individual control of each drum.

PROJECTORS

4110 Eastman Single Drum Slide Projector. Holds 80, 35mm slides. Includes modified 7" lens and adjustable mount. (Requires 5107 Shelf or 5108 Stand). (Use 2508 Remote and 3504 Adapter for remote control) \$ 395.00

4210 Dual Drum Slide Projector. Holds 160, 35mm Slides. Includes lens and adjustable mount.

With 7" lens for Small Image System..... \$1695.00

With 7 1/2" lens for Large Image System..... \$2075.00

With 9" lens..... \$2075.00

(Requires 5107 Shelf or 5108 Stand). (Uses 2515 for remote control). (Uses 2513 for remote reconcile).

4210-P Same as 4210 with optical slide preview feature.

With 7" lens for Small Image System..... \$1900.00

With 7 1/2" lens for Large Image System..... \$2295.00

With 9" lens..... \$2295.00

4220 Dual Drum Dissolve Slide Projector. Hold 160, 35mm Slides. Includes lens and adjustable mount.

With 7" lens for Small Image System..... \$2950.00

With 7 1/2" lens for Large Image System..... \$3330.00

With 9" lens..... \$3330.00

(Requires 5107 Shelf or 5108 Stand). (Uses 2525 for remote control). (Uses 2526 for program tone generator).

TV-M100A Eastman Super 8mm TV Film Projector. Includes 40mm lens. (Requires 5104 Stand). (Uses 2510 remote and 3509 adapter for remote control) \$2775.00

TV-12M6 Eastman 16mm TV Film Projector, Includes 3" lens. (Requires 5104 Stand). (Uses 2510 remote and 3509 adapter for remote control) \$3200.00

930LTI Graflex 16mm TV Film Projector. Includes 3" lens, optical/magnetic sound. (Requires 5108 Stand). (Uses 2510 remote and 3501 adapter for remote control)..... \$2200.00

930R LTI Graflex 16mm TV Film Projector. Includes 3" lens, optical/magnetic sound. (Requires 5108 Stand). (Uses 2510 remote and 3501 adapter for remote control)..... \$2600.00

REMOTE CONTROL

(All modules use 1/3 of rack width unless otherwise indicated)

1506 Rack Frame — accepts up to three remote control modules. Blank filler panels provided, if necessary. Frame is 19" w x 3 1/2" h x 3" d \$ 50.00

2508 Control, Remote — for Model 4110 Single Drum Slide Projector. "Off", "Ready", "Show", "Forward", and "Reverse" slide change \$ 125.00

2509 Control, Remote — for two 16mm TV Film Projectors. (Dual configuration of 2510 below) \$ 150.00

2510 Control, Remote — for slide and film projectors. Controls "Off", "Ready", and "Show" modes \$ 75.00

2513 Control, Remote Reconcile — (optional) for Model 4210 Dual Drum Slide Projector. Adds individual "Forward" and "Reverse" control of Drum A and Drum B \$ 100.00

2515 Control, Remote — for Model 4210 Dual Drum Slide Projector. "Off", "Ready", "Show", "Forward", "Reverse", and "Alternate" \$ 150.00

2516 Control, Remote — for 5400 Multiplexer. Controls input sources 1, 2, 3 and 4. Uses 3/8 of rack frame. (Not required with LTI projector remote control system) \$ 100.00

2517 Control, Remote — for 5300 Multiplexer. Controls input sources 1, 2 and 3. (Not required with LTI projector remote control system) \$ 75.00

2519 Control, Remote — for Splinder and Sauppe' S-32B slide projector. Controls "Off", "Ready", "Show", "Alternate", "Auto Change", "Advance Left", "Advance Right", "Hold Left", and "Hold Right" \$ 240.00

2520 Control, Remote — for Model 562A Bell and Howell projector with Bell and Howell electronics in stand with "Off", "Ready", "Show", "Forward", and "Reverse" \$ 135.00

2523 Control, Remote — for Model 561A and 562A Bell and Howell projector with LTI mod. "Off", "Ready", and "Show", "Forward", and "Reverse" \$ 125.00

2525 Control, Remote — for Model 4220 Dual Drum Dissolve Slide Projector. Includes all local control functions. Uses 3/8 of rack frame \$ 350.00

2526 Tone Generator — for Model 4220/2525 Dissolve Slide Projection System \$ 290.00

ADAPTERS FOR REMOTE CONTROL

3501 Adapter, Projector Remote — for 930 LTI TV Film Projector \$ 60.00

3503 Adapter, Projector Remote — for 1130 LTI TV Film Projector \$ 60.00

3504 Adapter, Projector Remote — for 4110 Slide Projector. \$ 90.00

3507 Adapter, Projector Remote — for 322 Spindler and Sauppe' Slide Projector..... \$ 90.00

3510 Universal Adapter, Projector Remote — with A.C. power cord for all projectors without remote provisions. Includes local controls "Off" and "Ready" \$ 125.00

3513 Adapter, Projector Remote — for 561A Bell and Howell TV Film Projector \$ 180.00

3516 Adapter, Projector Remote — for 562A Bell and Howell TV Film Projector \$ 180.00

3509 Adapter, Projector Remote — for TV-M100A and TV-12M6 Kodak TV Film Projector \$ 90.00

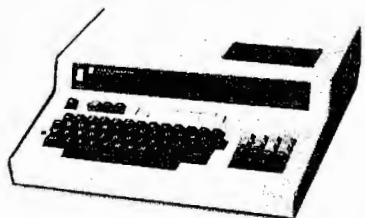


Prices and Specifications Subject to Change Without Notice.

3600A Chassis



3610A Keyboard



3615A Keyboard and Data-Cassette Recorder

The **MODEL 3600A TELEVISION CHARACTER GENERATOR** includes standard features such as 10 line by 25 character format with adjustable character width, 1k (four page) solid state memory, preview and program outputs, keyboard controlled program character on/off edging. Other standard keyboard control functions permit selective Underline, Overline, Crawl, Roll, Box, Flash and word length selection of either black or white characters. As many as five additional solid state memories, each of four page capacity, may be either included or added later, giving a total of twenty-four pages of solid state memory. (A special memory with sixteen page depth can be installed on request.)

The standard Preview/Program output of the 3600A may be expanded to provide an additional independent output that is controlled from the first program output. Such options as Lower Case Font, Full Edging, Auto Center, Pulse Interface, Color Sync Generator, Color Billboard Generator and Data Sources such as the Time Generator, Date Generator, Up/Down Counter, Temperature Display and Fixed Title Memory fit nicely into the 3600A package. Any combination of two Data sources and sixteen Fixed Titles may be used. If more than two Data Sources are required, the small sized font must be sacrificed.

A unique Format Window Position feature permits selective assembly of various Data Source and Keyboard Memory information for assignment, in virtually any combination, to each of the independent Video Outputs. All such Display information, including that of format, position and output assignment, may then be preserved by committing it to magnetic tape storage using the Data Cassette Recorder. By this method, an extensive library of formats may be created for future use or reference.

Unlimited, non-volatile storage is offered by the 3615A Data Cassette Recorder of the 3600A system. The recorder is connected for memory access, through an audio interface circuit, to both record and playback all character and format data. The record/playback is accomplished incrementally at a rate of approximately 30 characters per second. This, theoretically, enables more than 50,000 key strokes to be recorded on a 30-minute cassette. Per/tape-capacity, however, is not the primary advantage in the flexibility of this method of storage. The advantage lies in the use of many cassettes to preserve any display, format, or character message of value. Tapes may be recorded as the message is being composed, or any previously entered information may be copied directly from any active memory.

CHARACTER GENERATOR

3600A Character Generator — 10 lines of 25 characters with one preview and one program output, 9 x 14 font with large and small characters, 1000 Character Memory (4 pages roll/crawl) and horizontal edging. Must be driven by composite video. (Requires 3610A or 3615A Keyboard). Includes operators manual ... **\$2295.00**

3610A Keyboard for 3600A Character Generator with character on/off, black/white, large/small and fast roll/slow roll switches and 16-key control. Includes 15' interconnect cable **650.00**

3615A Keyboard/Memory for 3600A Character Generator with character on/off, black/white, large/small and fast roll/slow roll switches, and 22-key control. Provides unlimited data storage on built-in heavy duty industrial audio cassette unit. Includes 15' interconnect cable **1650.00**

3600A OPTIONS

3620A Output Channel (Additional) — for 3600A Character Generator. Provides one additional video input/output channel programmed from the first program channel. (One additional output can be used per generator) **750.00**

3630A Fixed Title — Provides 25 Character title line. (Total of 16 fixed title lines can be used per generator. Indicate line and characters when ordering) **50.00**

3634B Solid State Memory — PC Board for 1000 characters of roll/crawl/10 LN 2 LN pop-up. Total of 4 memories can be used per generator) **550.00**

3634C Solid State Memory — PC Board for 1000 characters of roll/crawl/10 LN2 LN pop-up. (Requires 3634B Memory. Total of 3 add-on memories can be used per 3634B memory) **330.00**

3640A Temperature Sensor — includes PC Board interface electronics, sensor and 100 ft. of interconnect cable. Provides fixed

| | |
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| title and temperature display.** | 290.00 |
| 3641A Time Generator — provides fixed title and time display.** | 240.00 |
| 3642A Date Generator — provides fixed and date display.** | 350.00 |
| 3643A Up/Down Counter — provides up/down counting time clock display with fixed title.** | 460.00 |
| 3650A NTSC Color Sync Generator — includes single outputs and adjustable pulse delays for color phasing with external video source. (Less Genlock). Provides H, V, SY, BL, BF and SC | 600.00 |
| 3652A Pulse Interface — provides interface with drive pulse from external sync Generator. (Requires SY, BL, BF and SC) | 350.00 |
| 3662A Color Billboard Generator — provides keyboard controlled format display of any combination of RGB. (Other color combinations available on request). (Requires 3650A internal sync generator or 3652A interface for external sync source) | 500.00 |
| 3663A Color Billboard Generator — add-on for additional output channel (Same as 3662A) | 100.00 |
| 3685A 9 x 14 Character Font with upper case and lower case characters | 500.00 |
| 3690A Auto Centering — provides automatic centering line by line or full page | 600.00 |
| 3695A Character Edging — provides full character or shadow edging with adjustable edging width. | 500.00 |
| Service Manual | 25.00 |

* Total of 6 memories per generator, i.e. 3 each 3634A roll/crawl memories and 3 each 3634-PA pop-up memories.

**Any combination of 2 data source options can be used per chassis.



Model 1021 Electronic "Q" Board

MODEL 1021 ELECTRONIC "Q" BOARD

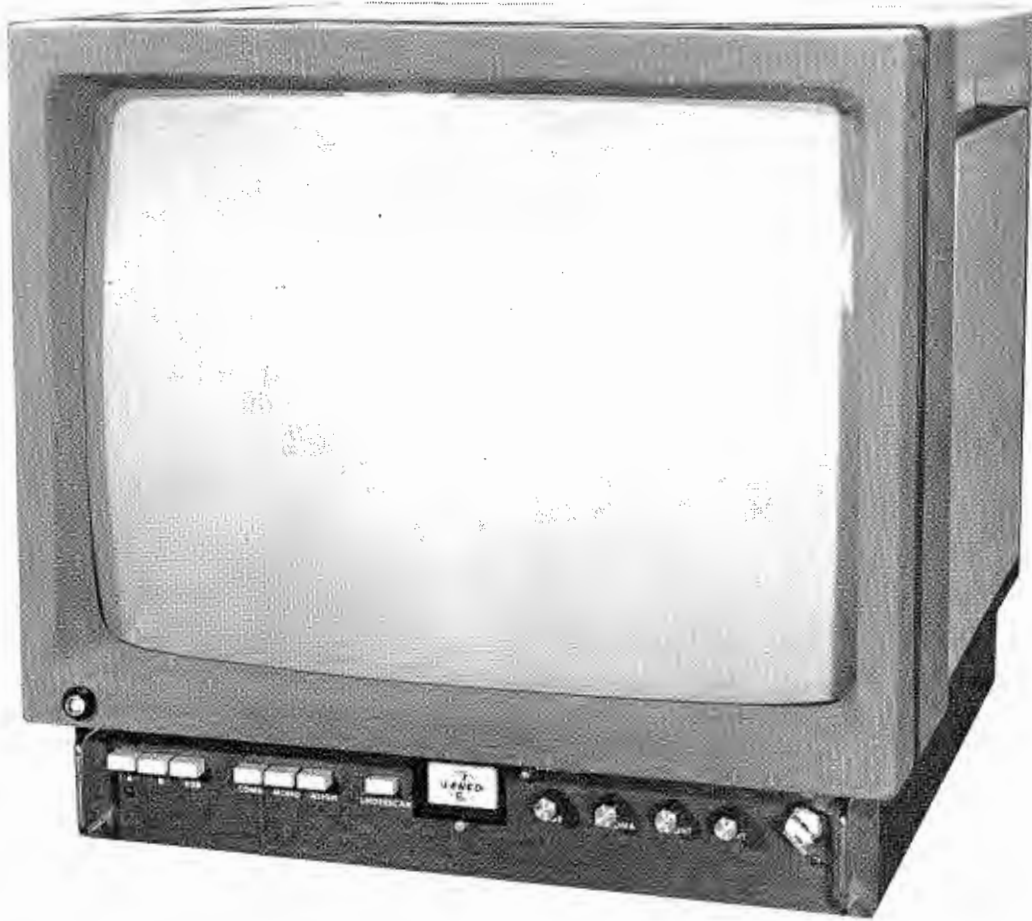
- ☆ LARGE COUNTDOWN DISPLAY
- ☆ REUSABLE WRITING SURFACE
- ☆ LOCAL AND REMOTE CONTROL
- ☆ SOLID STATE/IC ELECTRONICS
- ☆ AUDIO CUE TONE
- ☆ BUILT IN SPEAKER
- ☆ RUGGED — PORTABLE
- ☆ NO MOVING PARTS

The 1021 Q Board adds that professional touch to your video tape productions. By a method similar to that involving a "clap" board used in movie making, important production information may be televised and recorded on the leader of any commercial or program tape. Also, both an aural and visual countdown, recorded just prior to program information, will allow accurate cueing in playback. Emission of a countdown beep tone from the built-in speaker serves to alert the studio crew and talent during taping sessions.

1021 Electronic "Q" Board — with built-in speaker. May be remotely controlled. **\$ 395.00**

Prices and Specifications Subject to Change Without Notice.





500 SERIES COLOR MONITORS

FEATURES

- Comb Filter Standard
- A, B, and RGB Inputs
- Shadow Mask, P11 Tube
- Underscan Standard
- 625 Line Resolution
- Differential Inputs
- Automatic Degaussing
- Remote Control Option

The PCM-500 Series of professional color monitors were engineered to exacting specifications for performance and stability. They provide a high quality, master monitor line that include all the features desired by the discerning engineer.

The reliability of the PCM-500 Series is greatly enhanced by the use of a modern type of CRT. 625 lines of resolution is achieved by the use of a black matrix, shadow mask precision in line gun that all but eliminates the need for convergence controls. Up to 24 operational amplifiers and their controls are eliminated by the use of this advanced type tube as well as the need and cost of a built in cross hatch generator.

The design concept of the PCM-500 Series color monitors was to provide a universal device that can be used for any situation. A switchable comb filter, two NTSC inputs, and an RGB input were incorporated as well as differential input amplifiers for maximum hum rejection and eliminating interfering ground loops.

For operator convenience the brightness, contrast, chroma, and hue controls have an internal preset control. The preset is a push-pull switch so the manual control does not have to be turned to minimum to engage the preset switch. Other controls on the front panel include comb filter in and out, mono only, align (or blue only),

and underscan switches. With the exception of the underscan switch, all the controls, including the three input selectors are completely remote controllable. The optionable remote control panel is DC controlled and can be placed any distance from the monitor up to 1000 feet.

The PCM-500 Series offers three different models with the same basic specifications. The major difference is the size of the CRT. The PCM-514 is a 14" monitor designed for VTR over-console mounting, the PCM-519, a 19" CRT with optionable rack mounting slides and the popular PCM-522, a maximum viewing area device.

The PCM-500 Series carries the Lenco 2 year warranty, with the exception of the picture tube which has a one year warranty. The units can easily be converted to any of the PAL system standards by simply changing the decoder board. The cabinets are a clean modern appearance with screen mask in a flat black for minimum screen reflection.

Automatic degaussing when the unit is turned on and low power requirements round out the outstanding professionalism of the PCM-500 Series Color Monitors.

| | |
|---|-----------|
| PCM-514 14" Color Monitor | \$4295.00 |
| PCM-519 19" Color Monitor | \$4795.00 |
| PCM-522 22" Color Monitor | \$4995.00 |
| PMR-500 Remote Control Panel | \$ 250.00 |
| Rack Slide Assembly For PCM-519 and PCM-522 | \$ 50.00 |



Prices and specifications subject to change without notice



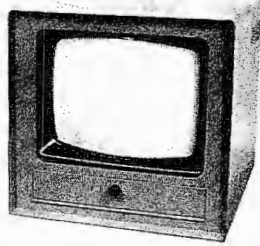
LENCO, INC., ELECTRONICS DIVISION

Professional Quality PMM-900 Series Monochrome Monitors

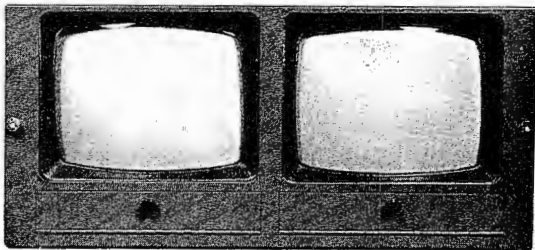
9" MONOCHROME VIDEO MONITOR



MODEL PMM-910



MODEL PMM-911



MODEL PMM-912

FEATURES:

- Professional Quality
- 900 Line Resolution
- Modular Construction
- Underscan Option
- Cross Pulse Option
- Regulated Low and High Voltage

The Lenco PMM-900 Series Monochrome Monitors is the most advanced design of professional monochrome video monitors in the industry. The 900 Series monitor is a high resolution display device for use in broadcasting, industrial, and educational facilities where quality and reliability are most required.

The 100% modular chassis consists of five individually shielded circuit modules that plug in directly from the rear of the chassis. This unique and exclusive feature simplifies any required servicing allowing for a minimum of down time. The five plug-in modules are common to all the 900 Series monitors regardless of CRT size.

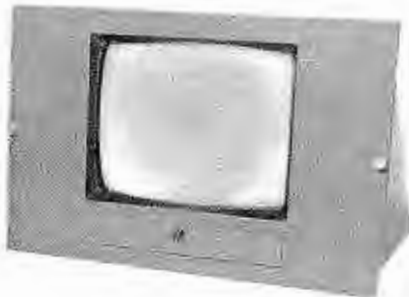
The PMM-900 Series Video Monitors are designed for continuous operation and to give stable pictures without adjustment. The regulated low and high voltage power supplies maintains constant picture size and brightness with line voltages between 105 and 130 volts AC (or 210 to 260 volts AC).

The Lenco PMM-900 Series monitors 900 line center resolution provides outstanding picture clarity which is necessary in most studio and educational facilities. This sharp, bright picture provides excellent viewing even under high ambient lighting conditions. This is extremely important to ensure full details when used in surveillance or observation systems.

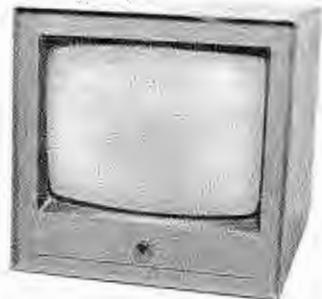
Video response is down 3 DB at 20 MHz providing for 900 line center and 750 line corner resolution. Differential gain of the video amplifier is less than 5% for 50 volt kinescope drive. Size of the raster can be switched from the front to show all four sides and corners. Optional cross pulse features can be provided to display the sync signals in the picture area for analysis. DC restoration is standard and is switchable on the rear panel.

The PMM-900 Series Video Monitors meet or exceed all EIA RS-170 specifications and are compatible with 525/60 U.S. and 625/50 CCR scan rates.

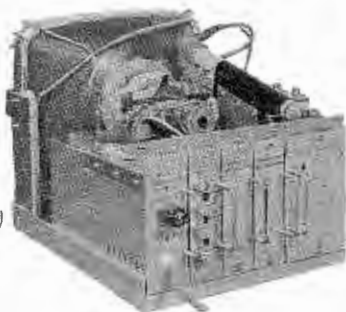
12" MONOCHROME VIDEO MONITOR



MODEL PMM-922



MODEL PMM-921



9" VIDEO MONITORS

| | |
|---|----------|
| PMM-910 Chassis Only | \$699.00 |
| PMM-911 Cabinet | 755.00 |
| PMM-912 Dual 9" units, Rack Mount | 1450.00 |
| PMM-913 Rack Mount, Right Side Blank | 775.00 |
| PMM-914 Rack Mount, Left Side Blank | 775.00 |
| PMM-915 Rack Mount for Tek 529 or 1480 Right Side | 775.00 |
| PMM-916 Rack Mount for Tek 529 or 1480 Left Side | 775.00 |
| PMM-917 Rack Mount for Tek 528 on Right Side | 795.00 |
| PMM-918 Rack Mount for Tek 528 on Left Side | 795.00 |

12" VIDEO MONITORS

| | |
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| PMM-920 Chassis Only | \$725.00 |
| PMM-921 Cabinet | 799.00 |
| PMM-922 Rack Mount | 815.00 |

15" VIDEO MONITORS

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|----------------------------|----------|
| PMM-930 Chassis Only | \$760.00 |
| PMM-931 Cabinet | 840.00 |
| PMM-932 Rack Mount | 850.00 |

19" VIDEO MONITORS

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|----------------------------|----------|
| PMM-940 Chassis Only | \$840.00 |
| PMM-941 Cabinet Only | 935.00 |
| PMM-942 Rack Mount | 910.00 |

23" VIDEO MONITORS

| | |
|-----------------------|----------|
| PMM-950 Cabinet | \$950.00 |
|-----------------------|----------|

MONITOR OPTIONS

| | |
|---|---------|
| PMM-001 Module Extender Set (HV module and standard module) | \$40.00 |
| PMM-002 15" Monitor Ceiling Mounting Kit | 75.00 |
| PMM-003 19" Monitor Ceiling Mounting Kit | 75.00 |
| PMM-004 23" Monitor Ceiling Mounting Kit | 75.00 |
| PMM - 005 Pulse Cross | 75.00 |
| PMM - 006 Underscan | 75.00 |

Prices and Specifications Subject to Change Without Notice.

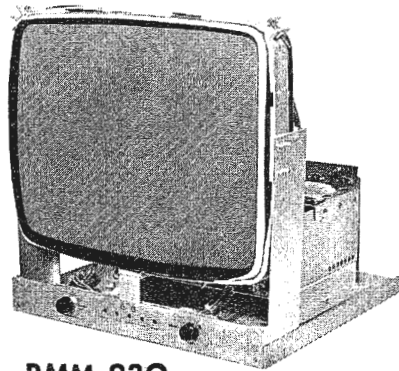




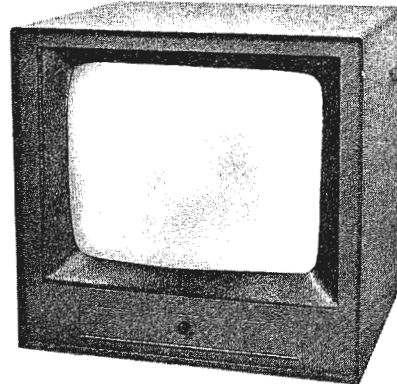
LENCO, INC., ELECTRONICS DIVISION

Professional Quality PMM-900 Series

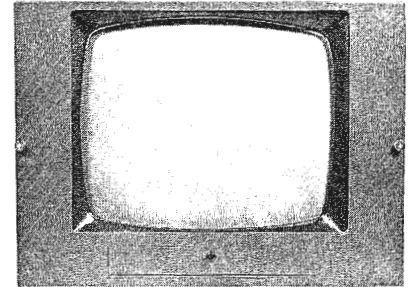
15" MONOCHROME VIDEO MONITOR Monochrome Monitors



PMM-930



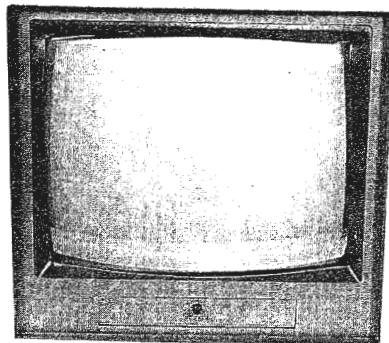
PMM-931



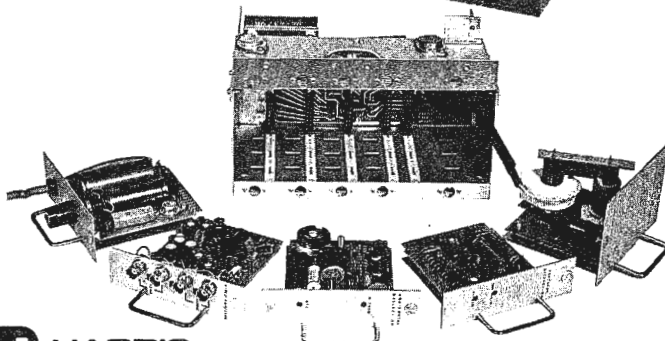
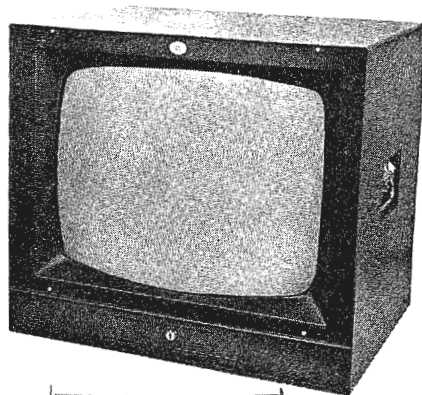
PMM-932

19" MONOCHROME VIDEO MONITOR

MODEL
PMM-941



23" MONOCHROME VIDEO MONITOR



SPECIFICATIONS

VIDEO INPUT:

Level 0.25 volts p-p to 2.5 volts p-p, negative sync
Impedance Bridging (loop-through) or 75 Ohm \pm 5% terminated
Connectors 2 BNC female, UG1094/U

SYNC INPUT:

Level 1.0 to 8.0 volts p-p
Impedance bridging, loop-through
Connectors 2, BNC female, UG1094/U

PERFORMANCE:

Frequency Response -1.25 dB at 15 MHz & -3 dB at 20 MHz
Differential Gain Less than 5% with 50 volts of kinescope drive
Linearity Less than 2% of raster height
Resolution 900 Lines Center, 750 Lines Corner
Interlace Better than 90%
Raster Size Regulation Less than 1% 0% to 100% APL
Vertical Retrace Less than 1000 uS
Horizontal Retrace Less than 10uS
DC Restoration Switchable, Zero or 100% Back Porch Clamp
Discernable Grey Scale 11 sections minimum
System Standards 525/60 EIA, 625/50 CCIR. Exceeds RS-170 Specifications.

POWER REQUIREMENTS:

Power 75 Watts
Voltage 120/240 volts AC at 50/60 Hz
Regulation Input voltage, 105 to 130 volts, AC, 210 to 260 volts AC

CONTROLS

Front Panel (under hinged cover) On-Off, H-Hold, V-Hold, Height, Contrast, Brightness, Vertical Lin, Focus, Underscan, Pulse Cross
Rear Panel Horz Lin, Horz AFC, Vert Top Lin, Horz Freq, 120 VDC Adj, 24 VDC Adj

ENVIRONMENTAL:

Temperature 0° to 50° ambient
Humidity 5% to 90%

OPTIONS:

Kinescopes Etched anti-glare laminated safety shields
Pulse Cross Delay Displays sync signals in raster for analysis
Pulse input Separate horizontal and vertical pulse input replacing composite sync.

SAFETY:

X-Radiation Complies with the HEW safety rules (42CFR Part 78, applicable at time of manufacture)
Underwriters Lab This monitor has been designed to meet or exceed U/L and CSA (Canadian Standards Association) engineering standards and requirements.

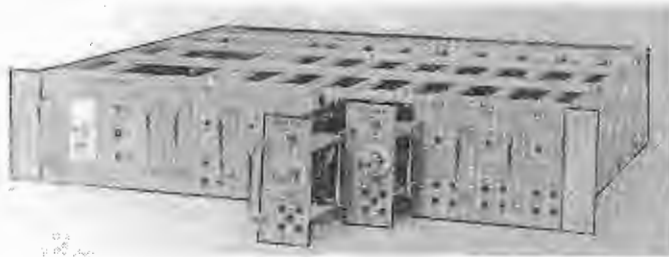
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LENCO, INC., ELECTRONICS DIVISION

Modular Distribution Amplifier - Video, Pulse & Subcarrier



Lenco provides the most flexible family of distribution amplifiers available anywhere. The building block concept is used to provide for maximum flexibility and economy. You buy a basic video amplifier module and add "piggy back" boards to provide features such as: differential input, equalization, high gain and clamping. The pulse "D.A." is totally regenerative with its output fixed at 4 volts P.P. and width fixed equal to the incoming pulse at its 50% point. If delay is desired, add a "piggy back" delay board.

Each distribution amplifier has its own on board regulator which eliminates power supply crosstalk.

The PFM-100, eight module frame, houses a PPS-100 power supply and any combination of eight D.A.'s **\$385.00**

PPS-100 Power supply for PFM-100 frame **\$150.00**

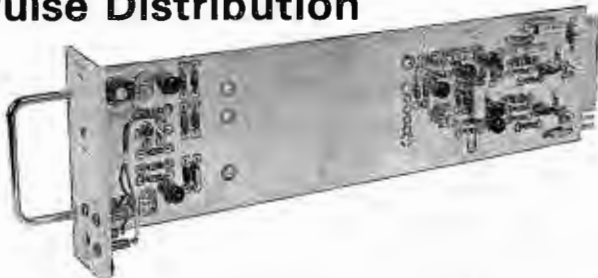
The PSF-200, four module frame, has a built in power supply, and will house any combination of four D.A.'s. **\$400.00**

PFM-001 100 Series Blank Panel—Single Width **\$33.00**

PFM-002 100 Series Blank Panel—Double Width **\$38.50**

PFM-010 100 Series Extender Board **\$42.50**

Pulse Distribution



PPA-110 Regenerative Pulse Distribution Amplifier **\$155.00**

The PPA-110 is a basic regenerative pulse D.A. which can be adapted to a pulse delay D.A. with the addition of an accessory plug-in circuit board. The PPA-110 is useful for any type of pulse distribution requirement.



PPA-111 Regenerative Pulse Delay Distribution Amplifier **\$240.00**

The PPA-111 is a PPA-110 Pulse Distribution Amplifier with the addition of a pulse delay circuit board. One control adjusts the total delay of both leading and trailing edges of the output pulse for maximum ease of adjustment. Minimum delay is 100 nanoseconds and maximum delay is 5.0 microseconds all with only one control. This amplifier can be strapped to provide two undelayed outputs and two delayed outputs. All other specifications are the same as the basic PPA-110 amplifier.



1137A Pulse Delay "piggy back" board **\$85.00**
When plugged into a PPA-110, will delay two outputs, or all four outputs up to 5.0 microseconds.

SPECIFICATIONS

- Input Impedance: Greater than 60K ohms
- Output: Four, 75 ohm source terminated
- Input Level: 1.0 V.P.P. minimum, 8.0 V.P.P. maximum
- Output Level: 4.0 V.P.P. \pm 5%
- Output Pulse Width: Equal to the width of the input pulse at the 50% amplitude point.
- Isolation between Outputs: Greater than 40 db
- Tilt and Overshoots Less than 1.0%
- Rise and Fall Time: 100 N Sec. \pm 20%
- Delay: 100 N Sec.
- Hum and Noise: Greater than -60 db
- Temperature: 0° C to 50° C ambient
- Test Points: Input, Output, + 12 V, - 7.4 V
- Front Panel Controls: None
- Internal Controls: None

Subcarrier Distribution



PSA-120

PSA-120 Subcarrier Distribution Amplifier **\$275.00**

The PSA-120 is, in effect, two cascaded subcarrier DAs with each having two 75 ohm outputs. Subcarrier is totally regenerated so that the purity of the output signal is not affected by the input wave-shape. A goniometer is used to provide continuous phase control of all four outputs. The phase of the second set of outputs is adjustable, relative to the goniometer, by internal 90° steps and a veneer front panel control.

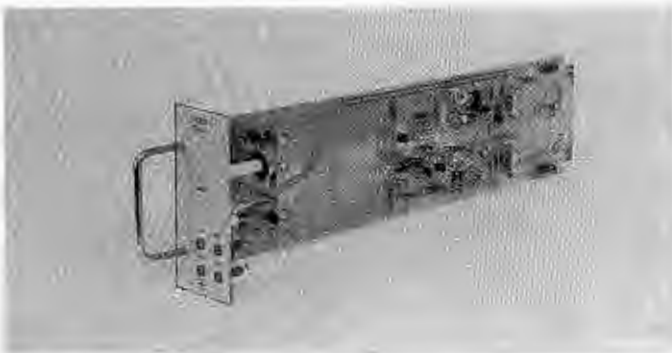


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LENCO, INC., ELECTRONICS DIVISION

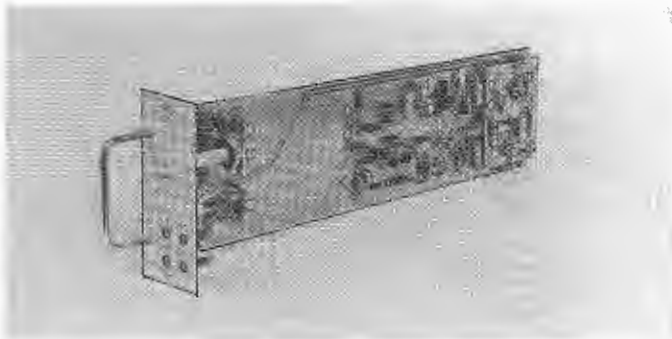
Video Distribution



PVA-100 Basic Video Distribution Amplifier \$175.00
 The PVA-100 is a basic video distribution amplifier which can be adapted for expanded use. The PVA-100 specifications are common to all Lenco video distribution amplifiers.

SPECIFICATIONS

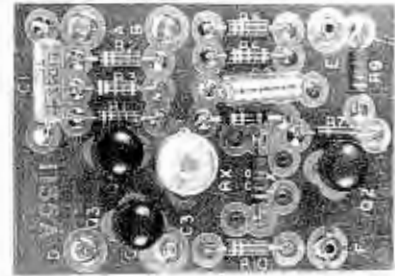
- Input Impedance: Greater than 50K ohms, Less than 15 pf
- Output: Four, 75 ohms source terminated
- Input Level: 0.5 to 2.0 volts P.P. (Comp. or Non-Comp.)
- Output Level: 0.5 to 2.0 volts P.P. (Comp. or Non-Comp.)
- Isolation between Outputs: . . . Greater than 40 db at 3.58 MHz
- Gain: ± 6 db
- Frequency Response: ± 0.1 db to 8.0 MHz
 — 0.5 db at 15 MHz
- Tilt and Overshoots Less than 1.0%
- Differential Gain: 0.1%, 10-90% APL 1.0 V.P.P. output
- Differential Phase: 0.1°, 10-90% APL 1.0 V.P.P. output
- Hum and Noise: Greater than -60 db at 1.0 volt input and output
- Temperature: 0° C to 50° C ambient
- Test Points: Input, Output, + 12V, - 12 V
- Front Panel Controls: Gain ± 6 dB
- Internal Controls: Frequency response, Output DC offset



PVA-101 Video Distribution Amplifier with Differential Input Board in Place \$215.00

The PVA-101 is a PVA-100 Video D.A. with the addition of a differential input circuit board.

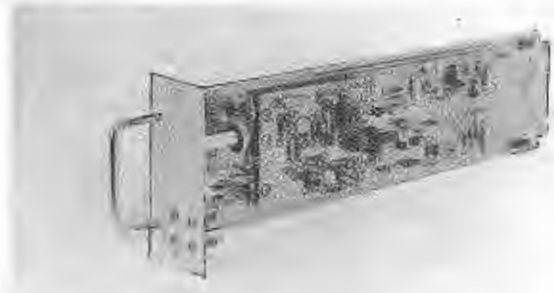
Features: Differential input, greater than 60 dB hum rejection; High gain, up to 20 dB additional gain; Equalization, up to 200 foot of coax. Input Level: 0.05 V.P.P. to 2.0 V.P.P. Gain: Up to 26 dB (internally preset). Internal Controls: Frequency response, equalization, DC offset.



1135A Differential Input "piggy back" board \$40.00
 When plugged into a PVA-100 D.A., will provide greater than 60 dB hum rejection, up to 20 dB additional gain, or equalization for up to 2000 feet of RG-11.



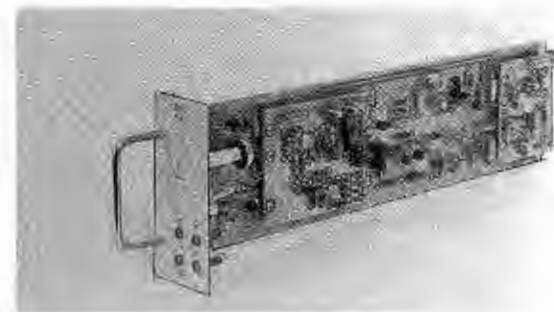
1135B Breezeway Clamp "piggy back" board \$50.00
 When plugged into a PVA-100 D.A., provides restoration of the low frequency by clamping the breezeway to a fixed potential, thereby eliminating any vertical tilt.



PVA-102 Video Distribution Amplifier with Breezeway Clamp Board in Place \$225.00

The PVA-102 is a PVA-100 Video Distribution Amplifier with a breezeway clamp circuit board installed. The clamp circuit is extremely noise immune and restores the low frequency component of the video signal by establishing the breezeway and back porch at a fixed potential.

Color burst is not affected in either amplitude or phase. All specifications for the PVA-102 are the same as the basic PVA-100.



PVA-103 Video Distribution Amplifier with Differential Input & Breezeway Clamp Board in Place \$265.00

The PVA-103 is a PVA-100 Video Distribution Amplifier with a breezeway clamp circuit board and D.A. input circuit board installed.

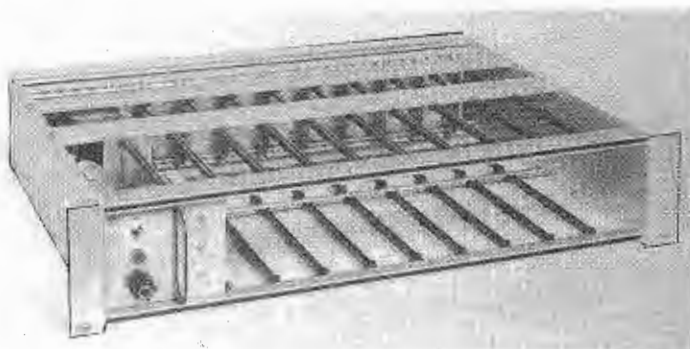
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LENCO, INC., ELECTRONICS DIVISION

The 300 System



PFM-300 Frame and Power Supply \$475.00

Description: The Model PFM-300 Frame is unlike any other system frame developed. Its unique engineering concept allows the PFM-300 to house any nine 300 System modules, in almost any system configuration, and in any frame position, without modification. This unique universal concept means that the PFM-300 is not dedicated to the original application, but can be added to, or changed to any other system configuration whenever it is desired. The PFM-300 Frame is the heart of the 300 System and consists of a constant voltage transformer, the PPS-302 Power Supply, nine cells with connectors mounted on a 30 buss "mother" board and 72 BNC connectors mounted on the rear panel.

The constant voltage transformer supplies the PPS-302 Power Supply with 30 VAC \pm 1% from any line voltage between 70 VAC to 150 VAC. The PPS-302 then feeds the power busses in the frame DC voltages of \pm 15 and + 8 VDC. The individual system modules protect and regulate these voltages to \pm 12 and + 5 VCD. The wide range of input voltages, an exclusive feature of Lenco, alleviates any concern about line surges, low input levels, or line "hits". Ideal for remote applications where power line levels are uncertain. The power cord is wired into the frame to prevent loss of the cord or the possibility of broken connectors.

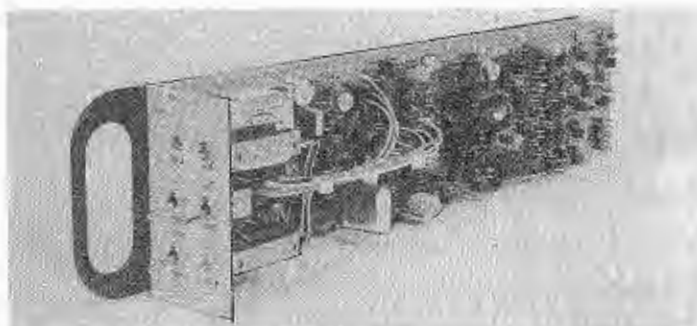
Another unique feature of the PFM-300 is that any module, placed in any position in the frame, is automatically fed the correct drives and/or signals. This is true for any additions or changes made at a later date. Frame rewiring or external looping of signals are almost never required.

The BNC connectors on the rear panel are mounted on an etched printed circuit board. This design concept allows for positive control of ground continuity and input isolation within each individual cell and also assures total isolation of grounds between cells. This prevents any chance of crosstalk or ground loops within the 300 System.

Height: 3 1/2" (8.89 cm). Width: 19" (48.25 cm). Depth : 14" (35.56 cm). Weight: 11.25 lbs. (5.0625 kg).

ACCESSORIES:

- PPS-302 Spare Power Supply for PFM-300 Frame \$75.00**
- PBL-305 300 Series Blank Panel — Single Width 25.00**
- PBL-306 300 Series Blank Panel — Double Width 30.00**
- PEX-308 300 Series Extender Board 50.00**
- PEX-309 300 Series Extender for Double Width Units 75.00**



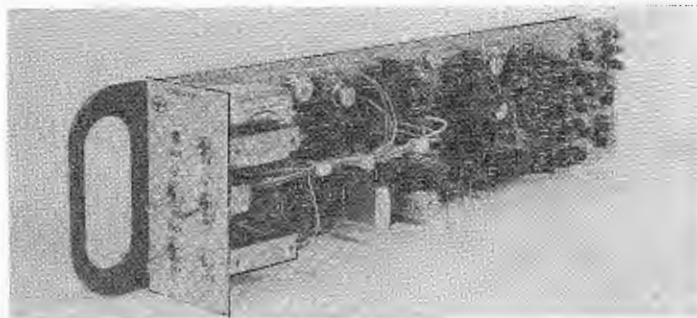
PSG-310 Digital Color Sync Generator \$995.00

Description: The PSG-310 Digital Color Sync Generator exemplifies the latest in design techniques of digital engineering. The unique circuits allow us to offer an ultra-stable and trouble free generator, with exclusive features not normally found in broadcast quality equipment.

A temperature compensated crystal oscillator, operating at 14.318180 MHz provides the stable master frequency source from which all pulses and subcarrier are derived. Using digital dividing techniques, Subcarrier, as well as the Sync, Blanking, Horizontal and Vertical drive pulses, are produced virtually jitter free. All pulse widths and levels are fixed per EIA standards and cannot change. There are only three internal adjustments in the generator, subcarrier amplitude, lock range and vertical phase, which are set at the factory and seldom, if ever, require adjustment.

The Genlock circuit has a unique noise immunity circuit which makes the generator highly insensitive to noise or extreme changes in input levels. The incoming video is sensed by an extremely fast video presence detector, processed, and locks the generator automatically to the 50% point of the sync pulse. Genlock is accomplished within one second.

Other exclusive features include a clamped video feed, a field ident pulse is available if burst flag is not required, continuous adjustment of horizontal phase, instead of in 70 nS steps, vertical phase adjustable to two lines advance to compensate for enhancers, and three voltage regulators with current overload devices for power buss and module protection.



PSG-311 Digital Color Sync Generator \$945.00

Description: The PSG-311 Digital Color Sync Generator incorporates the same unique design techniques that are found in the PSG-310 Sync Generator. The only exception is in the Genlock circuitry. The PSG-311 was engineered to operate with helical VTRs

or other equipment that supplies unstable time base signals. The genlock circuit has been designed so that it will lock to either a helical RS-330 signal or a standard RS-170 signal. Not only will the genlock circuit follow any unstable time base signal, it will ignore the fact that information is missing during the head dropout period of a helical VTR. Unlike other helical genlock Sync Generators, the PSG-311 does not require a coherent burst input to achieve lock. The ultra-stable master frequency source from which all drives and subcarrier are derived is a temperature compensated crystal oscillator, operating at a frequency of 14.318180 MHz. Using digital dividing techniques, subcarrier and all drive pulses are generated virtually jitter free. There are only two internal adjustments, subcarrier amplitude and vertical phase. All pulse widths and levels are fixed within EIA standards and cannot be changed.

The PSG-311 offers exclusive features such as a strapping option to provide a frame ident pulse instead of burst flag, continuous adjustment of horizontal phase, instead of in 70 nS steps, and vertical phase that is adjustable from two and one-half lines delay to two and one-half lines advance, to compensate for in line enhancer delays.

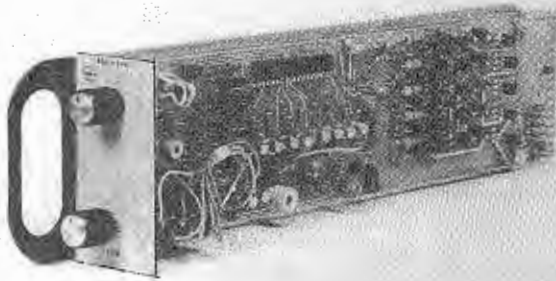
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LENCO, INC., ELECTRONICS DIVISION

The 300 System



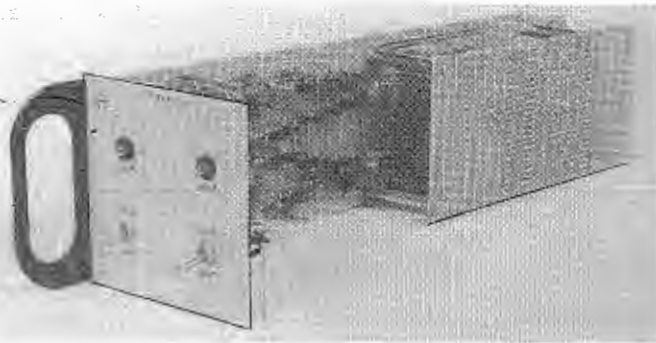
Features: Single Control System Timing / Provides System Flexibility / Jitter Free Pulse Distribution / Cost Saving Advantages.

PGS-315 Sync Generator Substitute \$465.00

Description: The PGS-315 Sync Generator Substitute module is a valuable member of the overall 300 System concept. It has the primary function of replacing the PSG-310 or PSG-311 Sync Generators when external drive sources are available to the PFM-300 Frame. The PGS-315 accepts Sync, Blanking, H-Drive, V-Drive and Subcarrier from an external source, processes these signals and distributes them to the proper busses in the frame. The identical digital delay circuits, as described in the PSD-340 System Delay Module, are also in the PGS-315 module, providing the system timing capabilities for the frame. Because the PGS-315 is not a generator, although in this application it is performing the same function, the pulses supplied to the frame are absolutely jitter free and can be perfectly timed.

The PGS-315 is identical to the PSD-340 System Delay Module, with the exception of the external connections. It has the ability to simultaneously delay the Sync, Blanking, H-Drive, V-Drive and Burst Flag up to 1.5 μ S with only one control knob. Burst Flag is generated and timed with respect to output sync and will follow sync as the composite delay control is adjusted. The burst position and width are adjustable, should system applications require it.

Subcarrier phasing is controlled by using a "push-pull" type switch and potentiometer combination, allowing over 180 degrees of phase adjustment on each position of the switch.



Features: Automatic or Manual Operation / Fail Safe Sensing Circuits / Complete Solid State Switching / Accepts External Generators / Senses All Inputs / LED Status Indicators.

PCO-317 Automatic Sync Changeover Switch \$495.00

Description: The PCO-317 Automatic Sync Changeover Switch is a remarkable state of the art device designed to instantly recognize the failure of any synchronizing signals and immediately switch to an alternate source. Signal sensing circuits monitor each input for the level and timing of the sync, blanking, horizontal drive, vertical drive, burst flag, and subcarrier signals. Upon loss of the primary generator, the PCO-317 will supply the frame busses with the alternate source only if their signals are acceptable to the changeover module's parameters. It will not switch to a faulty generator.

The signals are switched by a diode gate, then fed to the frame and output connectors by an output amplifier to insure proper level and impedance. Solid state switching eliminates any possibility of relay "chatter", bounce, or dirty contacts as found in most relay type equipment. The digital sensing circuits are so accurate that the loss of any one pulse or the appearance of a non-coherent signal will either demand a switch or prevent one.

The PCO-317 has front panel switches to choose either automatic or manual control and to designate which generator is the primary source. The module is so designed that if both sources are lost, or if there is a loss of power, the module will revert to the designated primary source. Tri-state LED indicators indicate the condition of the two generators. The green light indicates that the generator is in service, while the red light indicates a failed source. When the secondary generator shows no light, it is indicating that the source is good and is in a standby condition, ready for service. A minor frame modification is required with the PCO-317, as well as external inputs from the second generator.



Features: RS-189-A, NTSC Standards / Alignment Test Signal / Composite Video Delay / Filtered I & Q Bandwidths / 75% or 100% Chroma Switch / Full Field Black Reference.

PCB-320 Encoded Color Bar Generator \$825.00

Description: The PCB-320 Encoded Color Bar Generator is a precision Test signal generator engineered to conform to the EIA-RS-189-A and NTSC specifications. Reflecting the progressive concept of the 300 System, the PCB-320 includes the new SMPTE Alignment Color Bar Test Signal with chroma and black set signals. The encoder is a true NTSC standard as evidenced by the precise filtering of the I and Q channels shown by the waveform.

One of the exclusive features of the PCB-320 is the single control composite video delay circuit which, for the first time, allows system timing of test signals. Composite delay up to 1.5 μ S is achieved, using the same techniques found in the PSD-340 System Delay module.

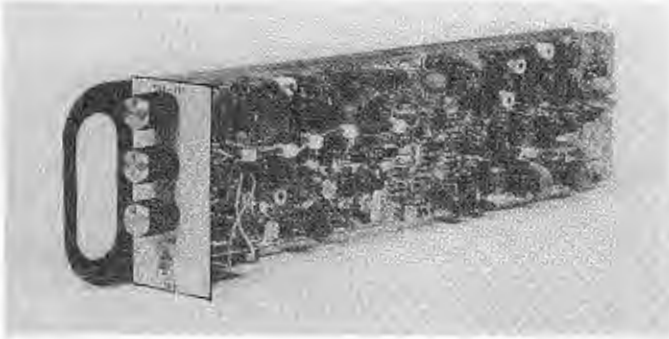


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LENCO, INC., ELECTRONICS DIVISION

The 300 System



Features: Two Independent Generators / Composite System Delay / Optional Non-Composite Outputs / Two outputs Per Generator / Front Panel Color Control / Clamped Outputs.

PBB-321 Black Burst/Background Generator \$575.00

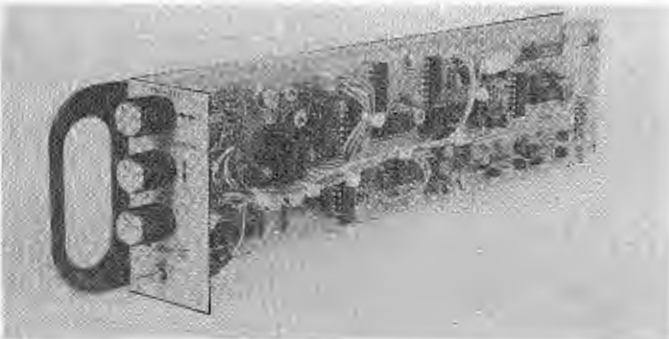
Description: The PBB-321 Black Burst and Color Background Generator is essentially two independent signal generators combined into one inexpensive compact module. The combination of these two signals in one module is another 300 System exclusive and, since both signals are normally required in a switcher and/or special effects system, again illustrates the advanced engineering concepts found in Lenco's 300 System.

The Black Burst section of the PBB-321 provides a "Color Black" video signal composed of composite sync, set-up, and color burst. This signal is used as the black input to switching systems, or may be used as a signal source to genlock remote sync generators to "House" sync.

The Color Background section produces a solid field of color and, when connected to the input of a special effects generator or video insert keyer, provides color backgrounds for titles and other inserts. A standard feature of all 300 System generators is a composite delay which provides for delaying the output signal up to 1.5 μ S to assist in system timing.

Each generator has two clamped outputs with the option of either composite or non-composite signals. Burst phase is adjustable a full 360° by internal quadrant selector and front panel fine phase control. Front panel controls are also provided for luminance, hue, and chroma.

All required input signals to the PBB-321 are supplied by the PFM-300 Frame.



Features: Two Independent Generators / Composite System Delay Circuit / Optional Non-Composite Outputs / Exclusive Linearity Test Signal / Digital Safe Title Signal / Horizontal & Vertical Adjustments.

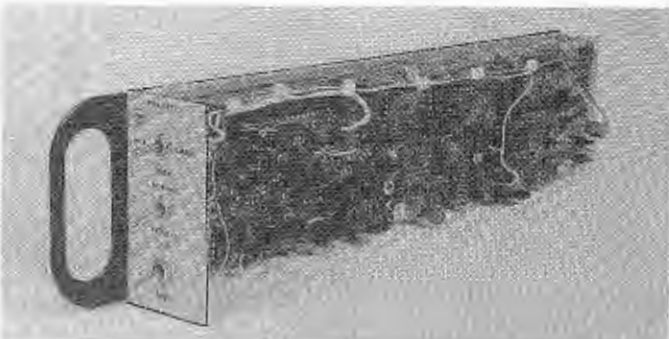
PBD-322 Bar Dot/Visual Reference Generator \$650.00

Description: The PBD-322 Bar Dot/Visual Reference Generator is one of the 300 System's most technically advanced signal generators. It is two separate and independent generators providing the standard dot grading signals, and a new linearity test signal, including a "safe title" signal.

The Bar Dot Generator digitally produces EIA standard horizontal and vertical bars, cross hatch, and dot signals used in the testing for convergence of color monitors and camera sweep circuits. Horizontal and vertical position controls, plus pattern selection, are located on the front panel.

The Visual Reference Generator is a new exclusive production and technical aid, composed of digitally derived diagonal lines from corner to corner of picture blanking. It is the most severe test for linearity that can be performed on any monitor or CRT. The crossed diagonal lines identify the absolute electrical center of picture, no matter where it appears on the CRT. The other exclusive feature of the Visual Reference Generator is an adjustable rectangular shaped box that can be used to identify the "safe title" area or the usable area of the television screen. The output of the Visual Reference Generator section can be supplied as a non-composite signal and superimposed on the camera viewfinder to provide the camera safe viewing area and instant center of picture.

A single control "Composite Delay" feature provides for perfect system timing. The outputs of each generator section can be strapped for non-composite operation if desired. All required input signals and power are supplied by the PFM-300 Frame.



Features: EIA Multiburst Generator / Ultra-Stable Levels / Composite System Delay / 12 MHz Line Rate Sweep / Markers Every 2 MHz / Full or Reduced Amplitude.

PMB-323 Multiburst/Sweep Generator \$875.00

Description: The PMB-323 Multiburst and Sweep Generator is a combination of two precision test signal generators which are required for overall system frequency response measurements. A front panel switch provides for selection of either the Multiburst Signal, the Sweep Signal, or both (on alternate lines). Other switches allow for the selection of full or reduced amplitude and burst on-off. The Multiburst frequencies are preset to EIA standards but burst frequencies can be adjusted to 10 MHz if required. Stability of both amplitude and frequency is assured by a precision function generator operating within a feedback loop. The burst levels are fixed and cannot change as are the sync and setup levels. The Sweep Generator provides a linear sweep at a horizontal rate from 0.5 MHz to approximately 12 MHz with overall flatness of 0.2 dB. Fixed markers are provided at 2.0 MHz intervals.

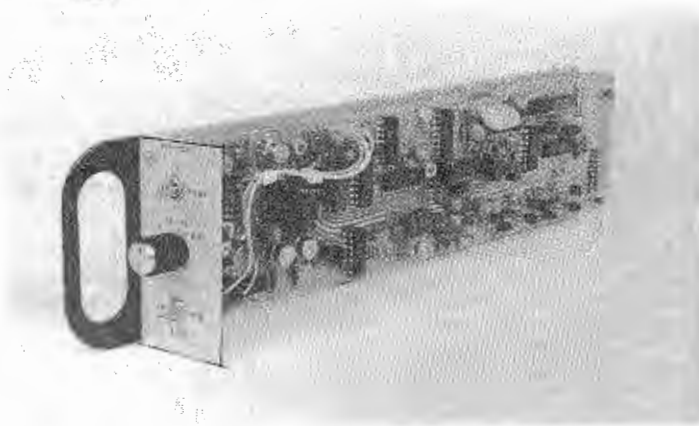
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The 300 System



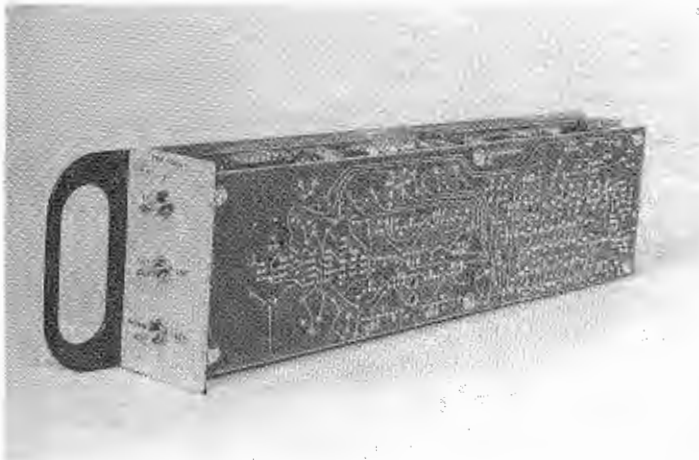
PSS-324 Stairstep/Ramp Generator\$485.00

Description: The PSS-324 Stairstep/Ramp Generator provides a precision test signal for measuring differential phase and gain, luminance linearity, and burst phase error of a video system. An exclusive negative ramp signal is provided for the testing of differential phase and gain in the burst region. Strict conformity to the standards of IEEE 206 is adhered to, as well as a true video bounce test that conforms to standard APL definitions.

Front panel switches provide the choice between 5 or 10 step staircase, ramp signal, and APL levels of 10%, 50%, 90%, or bounce. A front panel switch is also provided for burst on-off and subcarrier on-off. Internal options include subcarrier in or out of phase with burst at either 20 or 40 IEEE units and standard or negative ramp signals.

A composite system delay circuit for system timing is included as well as two composite or non-composite outputs.

Features: Complies with IEEE 206 Standards/ Optional Non-Composite Outputs / Composite System Delay / Exclusive Negative Ramp / True APL Bounce Test / Phase-Locked Subcarrier.



PPB-325 SIN² Pulse Window Generator\$825.00

Description: The Lenco Model PPB-325 Sin² Pulse Window Generator is another in the series of fine, precision, state of the art signal generators. Unique engineering and packaging techniques have provided the following nine precision test signals in a one module width plug-in unit: Modulated 12.5T & 20T, T, 2T, or T/2 pulses, window or bar signals and the exclusive "pluge" pulse. The PPB-325, with a combination of front panel switches and internal strapping options, can provide almost any combination of the nine signals. This feature was designed to allow the user to determine the proper test signals which are best suited for his particular system application.

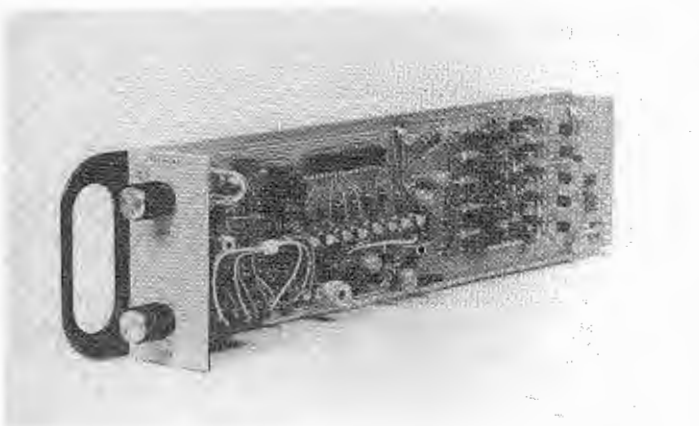
The unique and exclusive Pluge pulse (picture line-up generator) is provided to adjust for monitor black level reference. The ± 2.5 IRE unit pulse at blanking should be used to assure proper monitor brightness and contrast adjustments.

The modulation of the 12.5T and the 20T pulses is phase locked to the input subcarrier and shifted in phase at the vertical rate. Pulse shaping of the T, 2T, and the T/2 pulses is derived by the use of 7 pole Thompson filters. This type of filter, commonly found in high quality precision test equipment, assures flat delay over a wide band-pass providing pulses with symmetrical and smooth responses with a minimum of overshoot, closely approximating a true Sin² pulse.

An exclusive feature of the PPB-325 is the "Line Alternate Switch". Lenco is providing this feature to allow the pulses to be placed under the window signal on alternate lines for instant system evaluation, using any existing waveform monitor.

Composite video delay, standard in all the 300 System test signal generators, is provided to allow up to 1.5 μ s delay for system timing, along with the strapping option of composite or non-composite output signals.

Features: Nine Different Test Signals / Exclusive Pluge Pulse / 7 Pole Thompson Filters / Alternate Line Pulse Selector / Composite System Delay / Composite or Non-Composite Outputs



PSD-340 System Delay Module\$465.00

Description: The PSD System Delay Module has completely changed the traditional system timing techniques as they are now used. This unique system concept obsoletes the use of pulse and subcarrier distribution amplifiers, as well as excessive cable or other external delay devices used in system timing. The PSD-340 will supply all drive signals to any video source, including subcarrier, with the unique capability of timing these signals to your system requirements. This jitter free device can be compared with having an individual genlock sync generator driving each camera, switcher, VTR, etc.

The PSD-340 receives sync, blanking, H and V drive plus subcarrier from the PFM Frame. The signals are then converted into digital information and sent to a unique digital delay circuit. This circuit has the ability to simultaneously delay the sync, burst flag, blanking, h and v drive pulses up to 1.5 μ s, with only one control knob. The pulses are then converted back to analog signals, processed, and distributed to the proper output connectors on the frame. During the TTL logic sequence, the burst flag is generated and timed with respect to output sync. The burst position and width can be adjusted by internal controls to match system requirements.

The subcarrier is controlled by a unique phasing circuit, using a zero cross technique. Phasing is accomplished by using a "push-pull" switch and potentiometer combination. Over 180° of phase adjustment can be achieved on each position of the switch.

Features: Eliminates System Timing Problems / Replaces External Delay Devices / Provides System Flexibility / Single Control System Timing / Obsoletes Pulse D.A.s / Obsoletes Subcarrier D.A.s.

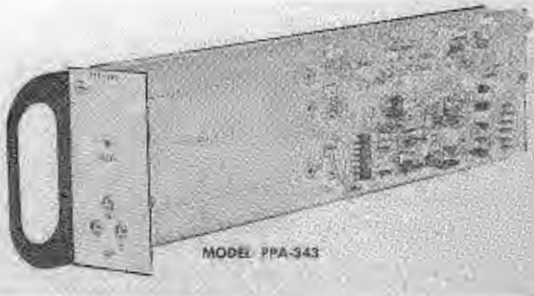


Prices and Specifications Subject to Change Without Notice.



LENCO, INC., ELECTRONICS DIVISION

The 300 System



Features: Regenerates Pulses / Input Noise Immunity / Optional Delay Assembly / Six Source Terminated Outputs / Sin² Waveshaping / Internal or External Input.

PPA-343 Pulse Distribution Amplifier \$240.00

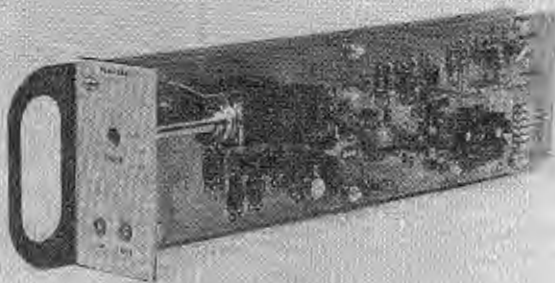
Description: The PPA-343 Pulse Distribution Amplifier is an important module in the overall concept of the 300 System. Although the PSD-340 System Delay Module is the modern method of pulse distribution and system timing, there are still many applications where the standard methods of individual pulse distribution are required.

The PPA-343 is a precision device and represents the latest in the art of regenerative pulse amplifiers. Using the incoming pulse for timing only, the logic circuitry samples the 50% point to determine its width. The PPA-343 then regenerates a matching pulse that is clean, distortion free, and conforms exactly to the input pulse parameters. This method allows the PPA-343 to be impervious to input level changes, noise, or degraded input pulses.

An optional pulse delay assembly may be added to the module to provide a pulse delay of up to 5 microseconds. A strapping option on the module allows the choice of delaying either three or all six of the outputs.

The PPA-343 has two identical and independent output amplifiers, each feeding three outputs. The output levels are fixed at 4 volts p-p. A unique input strapping option allows the module the choice of any of the five pulses to be fed internally from the PFM-300 Frame. This eliminates the need for external cables to feed the input of the unit. Should the frame be used as a distribution frame only, looping high impedance external inputs are also provided.

Option 1 Pulse Delay Assembly for PPA-343 (1137A) \$85.00



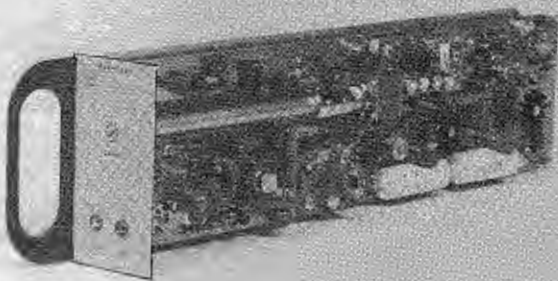
Features: Regenerated Subcarrier / Full 360° Phase Adjustment / Low Harmonic Distortion / Internal Input Option / Six Source Terminated Outputs / Excellent Stability.

PSA-346 Subcarrier Distribution Amplifier \$275.00

Description: The PSA-346 Subcarrier Distribution Amplifier was designed to supplement the versatile 300 System's unique concept and incorporates the same state of the art design techniques found in all of the 300 System modules. The PSA-346 is a precision, ultra-stable, regenerative subcarrier amplifier whose advanced circuitry provides a pure, distortion free 3.58 MHz sine wave.

The PSA-346 uses a zero cross timing technique in its design which provides a superior output signal with virtually no harmonic distortion and excellent stability. The advantage of this technique is that the amplifier becomes impervious to input noise, distortion, or level change. The PSA-346 offers six source terminated outputs whose phase is controlled by one front panel adjustment. This one control provides a full 360° of phase adjustment with a smooth, high resolution vernier potentiometer. The output levels are fixed at two volts peak to peak, but the PSA-346 does provide an internal adjustment which will vary the output level as much as ± 3 dB if required.

The PSA-346 also provides an internal strapping option which will allow the module to receive an input signal directly from the PFM-300 Frame. This, of course, eliminates the necessity of external cabling to the amplifier. Should the subcarrier signal to be distributed come from another source other than the PFM-300 Frame, high impedance looping input connectors are available.



Features: Differential Input Provided / 15 MHz Band Width / Low Distortion / Six Outputs / Automatic DC Offset Control / Versatile Options.

PVA-350 Video Distribution Amplifier \$250.00

Description: The PVA-350 Video Distribution Amplifier reflects a new concept in engineering techniques, bringing to the 300 System a versatile state of the art video amplifier with outstanding performance characteristics.

The PVA-350 is flat to 15 MHz, has a unique automatic DC offset control, and offers low noise, excellent stability, and virtually no distortion. A differential amplifier on the input is standard in the PVA-350, and provides 70 dB of common mode rejection.

The versatility of the PVA-350 is illustrated by its choice of optional assemblies. Any or all of the optional assemblies can be attached to the amplifier without adding or removing straps or wire connections. The Option 1 Clamp Assembly is a feedback type clamp which is impervious to noise or extreme input level variations. It will maintain its clamp even when used with helical VTRs or other equipment which presents unstable time base signals. Up to 35 dB of clamping can be achieved.

The Option 2 Equalizer Assembly is a unity gain device providing up to 10.5 dB of equalization at 10 MHz. Exclusive variable adjustments for the low, mid and high frequency range will match any individual cable characteristic. No additional components are ever required.

The Option 3 Sync Add Assembly is designed to provide sync adding capabilities to the PVA-350 when required. Sync signals are automatically supplied to the PVA-350 from the PFM-300 Frame. Proper levels are maintained by a level control on the assembly.

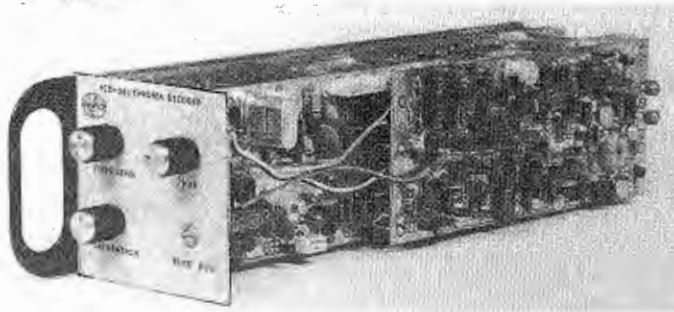
- Option 1 Feedback Clamp Assembly \$75.00**
- Option 2 Cable Equalizer Assembly 65.00**
- Option 3 Sync Adding Assembly 35.00**

Prices and Specifications Subject to Change Without Notice.





LENCO, INC., ELECTRONICS DIVISION



PCD-363 NTSC Chroma Decoder \$1795.00

Features: 10 MHz Luminance Bandwidth / Comb Filter Separation / Optional Non-Composite Outputs / Superior Quality Decoding / Internal Genlock Sync Generator / Clamped, DC Coupled Outputs

The PCD-363 Chroma Decoder exemplifies the unique engineering concept of the 300 System. A full combed filtered Chroma Decoder, with a full Genlock sync generator can now be supplied in a two module width plug-in device. Four PCD-363 Chroma Decoders can be mounted in one PFM-300 Frame, each operating independently from each other. The PCD-363 Chroma Decoder is especially valuable for color kine recording, large screen display, chroma

keying, or other uses where RGB signals are required from a composite NTSC color source.

The Input to the PCD-363 can either be standard NTSC RS-170 video or from any helical tape machine or other source which may show an unstable time base error. The internal genlock sync generator has a subcarrier lock in range of ± 150 Hz and shows a pulse jitter of less than 5 nS. Regenerated blanking and sync widths are fixed and can not change or be misadjusted. The genlock circuit has a unique noise immunity circuit which makes the generator highly insensitive to noise or extreme changes of video input levels.

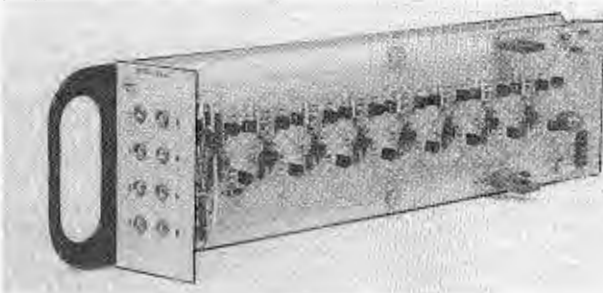
The PCD-363, utilizing a two line comb filter separation technique, removes the chrominance from the luminance effectively without detectable distortion of the luminance channel. Thus, the PCD-363 is able to offer a luminance bandpass of at least 10 MHz. The wide luminance bandwidth and the superior transit response results in an extremely clean and noise free video signal. Color crawl is all but eliminated by the comb filter. The unique independent preset phase and color difference gain controls are provided to permit compensation for the various phosphor characteristics of differenc CRTs. The quality and the resolution of the decoded output signals of the PCD-363 is far superior to any other decoding device yet offered.

A regenerated composite sync output is provided along with the composite or noncomposite RGB signals. An optional second set of RGB outputs are also available on request.

VVD-354 Video Delay Amplifier (not shown) \$ 725.00

PRC-360 Video Processing Amplifier (not shown) \$1350.00

PRC361 Video Processing Amplifier w/Sync Generator (not shown) \$2250.00



Features: Eight Individual Amplifiers / Unique Routing Amplifier / 8 MHz Bandwidth / Unlimited System Applications / Pulse, Video or Subcarrier Distribution / Unity Gain.

PFO-364 Universal Amplifier \$295.00

Description: The PFO-364 Universal Amplifier is by far one of the most unique and versatile modules in the 300 System. The PFO-364 consists of eight separate and independent distribution amplifiers

each having one input and one output with unity gain. Each amplifier can supply either subcarrier, drive pulses, or video signals as system applications require.

The design concept of the PFO-364 was that, no matter how carefully any system is designed, the need for "one more output" always arises. With the use of the PFO-364 there is no need to revert to the use of an extra standard type pulse or video D.A. with three to five outputs that are not needed. The PFO-364 can provide that one extra output...eight times.

Referring to the system concept of the PFM-300 Frame, there are sixteen possible signals in the frame available to the inputs of the PFO-364 unit. The number and type of signals, of course, depend on the number and types of units that are mounted in the frame. On the PFO-364 card there is a strapping option that allows the selection of any one of the sixteen signal sources to any, or all, of the inputs of the eight amplifiers.

Each amplifier cell is a unity gain, DC coupled device with a high impedance input and a source terminated 75 ohm output. The 8 MHz band width and unity gain features make the PFO-364 a truly universal pulse, video, or subcarrier routing amplifier. A high degree of isolation between the individual amplifier cells has been engineered in the unit to make crosstalk virtually non-existent.



MODEL VNM-428

Features: Fast, Easy to Use / Reliable / Built-in Calibration / Accuracy to ± 0.5 dB / CCIR-EIA Standards / Portable, Compact

VNM-428 Video Noise Meter \$1550.00

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

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

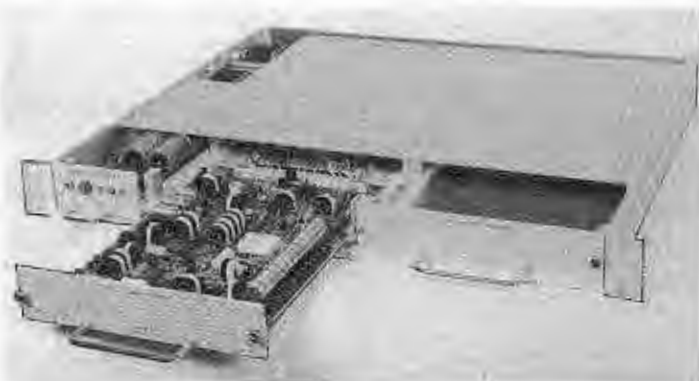
The Model VNM-428 employs the tangential noise measurement technique and overcomes the problems traditionally associated with the oscilloscope measurement of Gaussian noise in video waveforms. A variable and calibrated square wave is added to the waveform under test which results in the display appearing as two identical waveforms, one on top of the other, at a distance equal to the amplitude of the square wave. The VNM-428 measurement technique allows the noise on a signal to be compared with itself; thus, as the square wave is reduced, displaying a single trace, the square wave becomes equal to twice the RMS noise voltage of the signal. The amplitude of the square wave is measured, converted to a logarithmic potential (referenced to the peak-to-peak signal) and displayed on the digital panel meter as the signal-to-noise in decibels.



Prices and Specifications Subject to Change Without Notice.



LENCO, INC., ELECTRONICS DIVISION



Features: Four Channel Operation / Exceptional Long Term Stability / In-Service Access / Horizontal Aperture Correction / Internal Color Bar Generator / Non-Interacting Controls

CEC-822 NTSC Color Encoder — Four Channel Combination PFM-802 and CEC-812\$1465.00

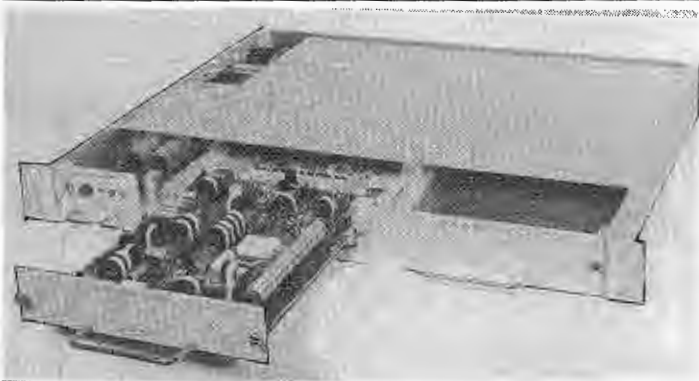
The CEC-822 was designed to meet the growing requirements for a high quality, stable, and trouble free four channel color encoder as a replacement for the older type encoders used in cameras and film chains. The CEC-822 is designed so that two CEC-812 Encoders will mount in one 1 1/4" rack frame operating independently with a common power supply.

The CEC-822 produces an encoded video signal that meets all applicable EIA and NTSC standards. The CEC-822 has its own color bar generator for alignment of all parameters, including burst phase amplitude, I/Q quadrature and gain, chrominance to luminance ratio, and sync set-up. Horizontal aperture correction is also provided, using the "contours out of green" technique. The green tie switch, which is used for white and black balance, can also be used for monochrome operation in the event of a failure of either the red or blue tube of the camera.

The frequency response of the luminance channel is effectively flat to 7 MHz and down 3 dB at 10 MHz and provides aperture correction (boost) up to 10 dB at 2.9 MHz. Aperture correction is level dependent to provide enhancement proportional to the luminance level. An optional subcarrier (3.58 MHz) notch filter permits the user to reduce moire effects in the luminance channel by as much as 12 dB. System chrominance phasing can be adjusted through a full 360° and burst position, width, phase and amplitude are all independently adjustable.

Extensive care has been taken in the design of the CEC-822 Encoder to prevent any instability due to temperature variances or power supply crosstalk. Complementary symmetry, using transistor array integrated circuits, are used whenever temperature differentials could cause non-linearity between transistors. This technique is employed to insure minimum drift either with temperature or line voltage variations or component aging. Power supply crosstalk is minimized by isolating the negative and positive power supplies into five separate supplies each. The end result of these various stability techniques is an encoder that will maintain its specifications over an extended duration.

- CEC-812 NTSC Color Encoder w/Color Bar Generator (RGBY)\$ 995.00**
- PFM-802 Dual Encoder Frame w/Power Supply for CEC-812470.00**



CEC-811 NTSC Color Encoder — Combination CEC-810 and PFM-801\$1355.00

The CEC-811 consists of a CEC-810 encoder and a PFM-801 rack frame. The CEC-811 is a stand alone encoder for use with any three tube color camera or RGB device. There are provisions in the encoder frame for a second CEC-810 encoder which would be totally independent. Inputs to the encoder frame are: red, blue and green video, sync, blanking, and subcarrier.

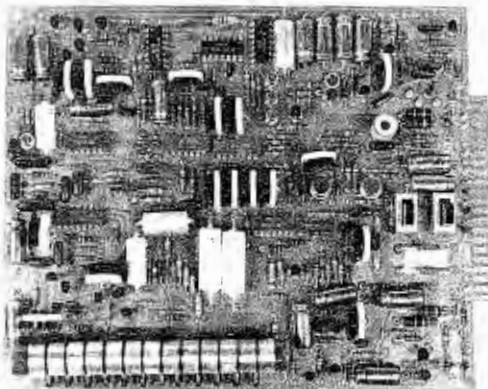
Description: The CEC-810 is a complete NTSC color encoder with a built in bar generator. Stability is maintained by the generous use of multiple transistor "IC" which insure matched characteristics. A green tie switch is provided to simplify balancing or allow for monochrome operation. Horizontal aperture correction is also provided, using the "contours out of green" technique. A level dependance control is provided in the aperture correction circuit to improve the signal to noise in the black region.

System chrominance phasing can be adjusted through a full 360° and burst position, width, phase and amplitude are all independently adjustable. A 3.58 MHz notch filter is provided with an adjustable depth of from 1 to 12 dB.

Two CEC-810s can be housed in a PFM-801 mounting frame which provides the power supplies and necessary interconnections, or the encoder can be plugged into an IVC 90 or 150 camera. The CEC-810 is a direct replacement for the R-Y, B-Y encoder shipped as standard equipment by IVC. If the CEC-810 encoder is used with the CSG-720 sync generator, an IVC 90 or 150 camera can be made completely self contained for remote operation.

ACCESSORIES:

- PFM-801 Frame mount and power supply, with provision for two CEC-810s\$460.00**
- CSG-720 Color sync generator for IVC Model 90 or 150 cameras 350.00**
- CXO- 815 3.58 Subcarrier Oscillator Assembly (for use where external subcarrier is not available) 175.00**



CEC-810 NTSC Color Encoder (for camera mounting)\$ 895.00

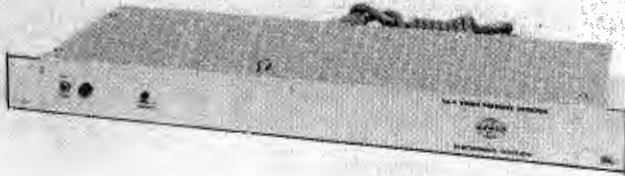
Features: Replaces R-Y, B-Y Encoders / Horizontal Aperture Correction / Non-Interacting Controls / Internal NTSC Color Bars / 360° Chrominance Phasing / Temperature Stabilized.

Prices and Specifications Subject to Change Without Notice.





LENCO, INC., ELECTRONICS DIVISION



MODEL VP-1

Model VP-1 Video Presence Detector \$450.00

The VP-1 is a device which will sample the signal on its "A" input and determine if true video is present. Loss of video or signal degradation beyond preset limits will cause the sensor circuit to activate a relay and connect the "B" input through to the output. When the "A" signal returns, the VP-1 will switch back to the "A" input. A set of form "C" contacts are provided for external equipment control or alarm. This device finds application where it is desired to control remote equipment with the presence of video. Transmission systems will also find use for this device to protect against the loss of a video signal.



MODEL CSL-710

Model CSL-710 Color Sync Generator with Gen-lock . . \$985.00

The CSL-710 is a digital color sync generator with gen-lock. It will gen-lock to either a standard video signal or a helical VTR. Internal circuitry automatically compensates for video and chroma level variations. Automatic circuitry is also provided to select the proper operating mode to make the CSL-710 virtually fool proof. All pulse amplitudes and width are fixed at E.I.A. values. The CSL-710 provides two isolated outputs for each pulse, a looping video input and front panel adjustments for phasing, subcarrier, horizontal and vertical timing.



HARRIS
COMMUNICATION AND
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**One Source For
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THE BROADCAST PRODUCTS DIVISION OF THE HARRIS CORPORATION IS DEDICATED TO SERVING THE REQUIREMENTS OF THE BROADCAST INDUSTRY. IF YOU HAVE PARTS OR EQUIPMENT REQUIREMENTS NOT INCLUDED IN THIS CATALOG — CONTACT YOUR HARRIS DISTRICT SALES MANAGER OR THE HARRIS QUINCY SALES OFFICE.



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LUXO LAMP CORPORATION

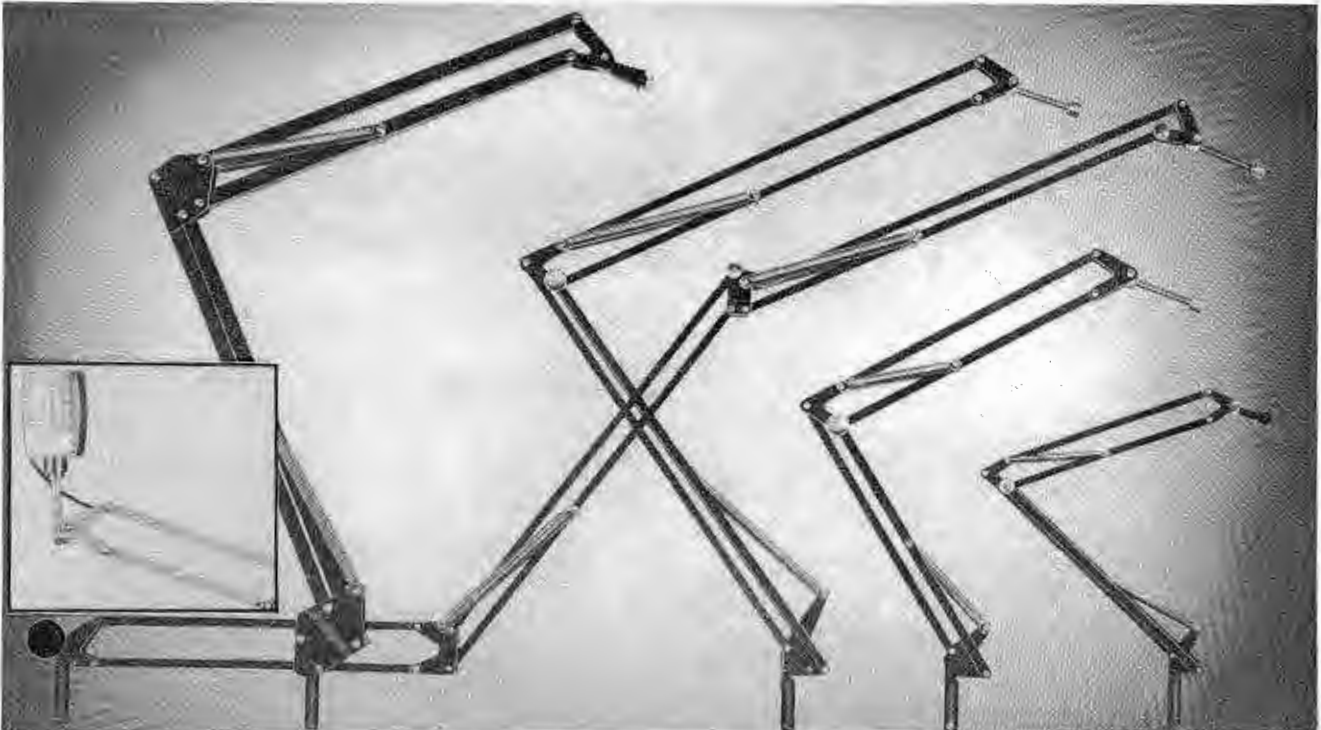
The Luxo Multipurpose Arms

The Luxo Multipurpose Arms put what you want where you want it. They move easily with the lightest touch and yet the precision spring balanced Arms will keep it in position without drifting.

Covering a broad range of applications, Luxo Arms are used to support scientific instrumentation as well as audio microphones. They have been integrated into laboratory equipment, medical instruments and engineering devices.

Luxo Arms are balanced for a range of weights from one source to six pounds and with maximum reaches from 21 inches to almost 5 feet.

From the light weight, sensitive Lil Arm to the heavy duty H-1, Luxo Multipurpose Arms are designed and built to give long life and trouble free service. The range of applications for the Luxo Multipurpose Arms is limited only by your needs and your imagination.



Specifications

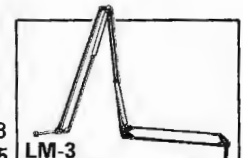
Lil Arm

Extension: 21 inches
 Weight Range: 1 to 8 ounces
 Color Selection: Black or White
 Recommended Mounts: AL or BL brackets are for Lil Arm only.
\$19.95



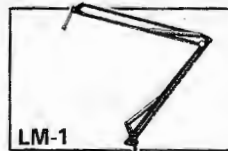
LM-3

Extension: 56 inches
 Weight Range: 1 ounce to 2 1/2 pounds
 Color Selection: Oyster
 Recommended Mounts: B (Note: The LM-3 Arm usually requires wall mounting.)
\$34.95



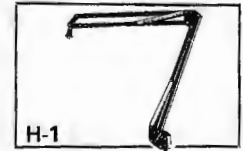
LM-1

Extension: 41 inches
 Weight Range: 1 ounce to 3 pounds
 Color Selection: Grey, Tan, Oyster or Black
 Recommended Mounts: A, B, or C
\$27.95



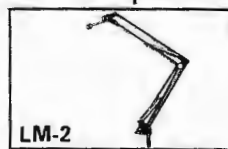
H-1

Extension: 40 inches
 Weight Range: 3 to 6 pounds
 Color Selection: Oyster
 Recommended Mounts: C or SP-5
\$49.95








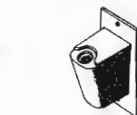
LM-2

Extension: 26 inches
 Weight Range: 1 ounce to 3 pounds
 Color Selection: Grey
 Recommended Mounts: A, B or C
\$27.95

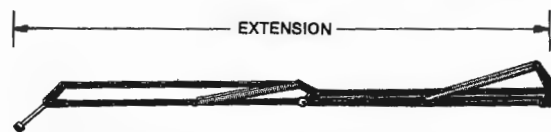


Mounting Brackets

 A — \$3.95
 B — \$3.95
 C — \$3.95
 or
 AL — \$4.45
 BL — \$4.45



SP5
 Price on Request



Prices and specifications subject to change without notice



MARTI Electronics, Inc.

Broadcast Quality Remote Pickup Equipment

450-470 MHz • Solid State

150-172 MHz • Solid State

★ FCC TYPE ACCEPTED ★ Broadcast Quality Compressor Limiter ★ 115 V. AC or 13 V. DC Operation ★ Four Mixing Inputs ★ Continuous Duty Broadcast Service ★ Modular Construction ★ Quartz Crystal Filter in Receiver ★ Continuous Subaudible Tone Encoding (Optional)



RPT-1



RPT-40



RR-50 RECEIVER

TRANSMITTERS

- RPT-40 40 watt, solid-state, complete with crystal & tuned to 150 MHz. \$1175.00
- RPT-40-2 Dual Frequency, 40 watt, solid-state, complete with crystals & tuned to 150 MHz band, maximum frequency separation 0.5 MHz. 1280.00
- RPT-25 25 watt, solid-state, complete with crystal & tuned to 450 MHz. 1325.00
- RPT-25-2 Dual Frequency, 25 watt, solid-state, complete with crystals & tuned to 450 MHz band, maximum frequency separation 1.5 MHz. 1430.00
- RPT-1/150 1 watt, solid-state, complete with crystal & tuned to 150 MHz. 645.00
- RPT-1/150-2 Dual Frequency, 1 watt, solid-state, complete with crystals & tuned to 150 MHz band, maximum frequency separation 0.5 MHz. 675.00
- RPT-1/450 0.7 watt, solid-state, complete with crystal & tuned to 450 MHz. 645.00
- RPT-1/450-2 Dual Frequency, 0.7 watt, solid-state, complete with crystals & tuned to 450 MHz band, maximum frequency separation 1.5 MHz. 675.00

TRANSMITTER ACCESSORIES

- TPS-TC-1 Mobile Control Assemblage, required for 12 VDC operation for RPT-40 and RPT-25 transmitters. \$75.00
- ENC-1 27 HZ encoder for transmitters listed above. Specify transmitter model number. 42.00
- APS-28/14 Airborne Power Supply, 28-14 VDC, for RPT-40 & RPT-25. 98.00
- MCD-70 Cardioid dynamic microphone with push to talk switch. 70.00
- XT-1A Hi-Accuracy crystal for RPT-1 Transmitter 17.95
- DFM-1D Modulator with crystal, completely proofed. ... 135.00

BASE STATION

- Mark 70W Telemote Remote Control with Broadcast Quality Line termination units. \$315.00
- RPT-40 40 watt, solid-state Transmitter, complete with crystal & tuned to the 150 MHz. band, FCC Type Accepted to meet Base Station Specifications. Complete with RMH-2 Shelf, 585-005 Base Station RF Cable and 585-007 Base Station Mute Cable. 1202.00
- RPT-25 25 watt, solid-state Transmitter, complete with crystal & tuned to the 450 MHz. band, FCC Type Accepted to meet Base Station Specifications. Complete with RMH-2 Rack Shelf, 585-006 Base Station RF Cable and 585-007 Base Station Mute Cable. 1354.00

RECEIVERS

- R-30/150 Solid-state, complete with crystal & tuned to 150 MHz, for use with RPT-40 and RPT-1/150 Series transmitters. \$695.00
- R-30/150-2 Dual Frequency, solid-state, complete with crystals & tuned to 150 MHz band, for use with RPT-40 & RPT-1/150 transmitters. 735.00
- R-50/450 Solid-state, complete with crystal & tuned to 450 MHz, for use with RPT-25 and RPT-1/450 Series transmitters. 875.00
- R-50/450-2 Dual Frequency, solid-state, complete with crystals & tuned to 450 MHz band, for use with RPT-25 & RPT-1/450 transmitters. 915.00
- R-100/450 Solid-state, complete with crystal and tuned to 450.925 or 455.925 MHz. Group S (100 KHz) channels. For use with RPT-25S. 875.00

Group S Specifications:

- Response: ± 1 DB from 30 to 15,000 KHz.
- Distortion: Less than 1%
- Noise: -58 DB or better

- RR-30/150 Solid-state, Portable - Mobile Repeat Receiver complete with crystal & tuned to 150 MHz with de-code circuitry and high-pass filter to eliminate encoding tone. Operates of 12 VDC or 120 VAC. 695.00
- RR-50/450 Solid-state, Portable - Mobile Repeat Receiver complete with crystal & tuned to 450 MHz with de-code circuitry and high-pass filter to eliminate encoding tone. Operates of 12 VDC or 120 VAC. 875.00

RECEIVER ACCESSORIES

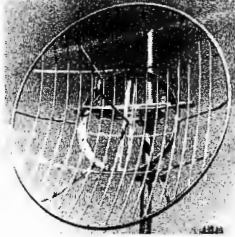
- 585-001 Interconnect cable between RR-30/150 and RR-50/450 Series Receivers and RPT-40 and RPT-25 Series Transmitters when used with TPS-TC-1 control assemblage as Unattended Automatic Mobile Relay. ... \$15.00
- MRA-150 RF Preamp, solid-state, 10 db gain, 150-170 MHz complete with 120 VAC Power Supply. .. 150.00
- MRA-450 RF Preamp, solid-state, 10 db gain, 450-460 MHz complete with 120 VAC Power Supply. ... 150.00
- XR-1A Hi-accuracy crystal for any Marti Manufactured Receiver. 17.95
- O-1A Oven for Hi-Accuracy crystal for XR-1A Crystals. 15.00
- DFR-1A Dual frequency kit for any model Marti Receiver less crystal, must be installed at factory 40.00

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MARTI Electronics, Inc.

AURAL STUDIO-TRANSMITTER LINK



STL-8 Transmitter • All Solid State • Direct FM Modulator • Modular Construction • Test Meter Built In • Proven Reliability in hundreds of installations • Unsurpassed for Dual Channel Stereo STL, Single Channel AM STL or Inter City Relay.

Specifications — Stereo

Stereo Cross Talk -65 DB
Noise -65 DB or less
Response + /-0.5 DB 30-15000 Hz.
Distortion Less than 0.5%



TYPICAL ANTENNA AND TRANSMISSION LINE PACKAGES

Package "AA" — Maximum Path Length, Monaural, 17 Mi. — Stereo, 15 Mi. \$1090.00
(2) 4' Parabolic Antennas, c/w Mounting Brackets.
(2) Male Type N Connectors for LDF4-50 1/2" Foam HELIAX.
(2) Female Type N Connectors for LDF-50 1/2" Foam HELIAX.
(2) PG-3B 3 foot Jumper Cables.
(2) K-1 Grounding and Weatherproofing Kits.
() feet of LDF4-50 1/2" Foam HELIAX at \$1.12 per foot.
..... \$

Package "BB" — Maximum Path Length, Monaural, 20 Mi. — Stereo, 18 Mi. \$1554.00
(2) 6' Parabolic Antennas, c/w Mounting Brackets.
(4) Male Type N Connectors for LDF5-50 7/8" Foam HELIAX.
(4) PG-3B 3 foot Jumper Cables.
(2) K-1 Grounding and Weatherproofing Kits.
() feet of LDF5-50 7/8" Foam HELIAX at \$2.94 per foot.
..... \$

STL PACKAGES

Package "A" — AM and/or FM MONAURAL \$2440.00
(1) STL-8 Transmitter, c/w crystal and tuned.
(1) R-200/950 Receiver, c/w crystals and tuned.

Package "B" — AM and/or FM MONAURAL WITH "HOT STANDBY" \$5180.00
(2) STL-8 Transmitters, c/w crystals and tuned.
(2) R-200/950 Receiver, c/w crystals and tuned.
(1) ASO-8A Transmitter Switcher.
(1) ASO-200A Receiver Switcher.

Package "C" — FM STEREO \$4495.00
(2) STL-8 Transmitters, c/w crystals and tuned.
(2) R-200/950 Receivers, c/w crystals and tuned.
(1) HRC-8 Transmitter Combiner.
(1) MTS-1 Receiver Combiner.

Package "D" — FM STEREO WITH "HOT STANDBY" \$9675.00
(4) STL-8 Transmitters, c/w crystals and tuned.
(4) R-200/950 Receivers, c/w crystals and tuned.
(2) HRC-8 Transmitter Combiners.
(2) MTS-1 Receiver Combiners.
(1) ASO-8A Transmitter Switcher.
(1) ASO-200A Receiver Switcher.

ACCESSORIES

ASO-8A Automatic Switchover Unit for "hot standby" switching between two STL-8 Series transmitters. 120/240 VAC. Rack mount. 3 1/2" x 19" \$360.00

CLA-40A Compressor/Limiter Amplifier. 120/240 VAC. Rack Mount, 3 1/2" x 19" \$475.00

ASO-200A Automatic Switchover Unit for "hot standby" switching between two R-200/950 Series receivers. 120/240 VAC. Rack mount. 3 1/2" x 19" \$325.00

SCG-8H Sub-Carrier Generator, solid-state, tuned to 39 or 67 KHz. 120/240 VAC. Complete with Mute Module. 3 1/2" x 19" Horizontal Rack construction. \$445.00

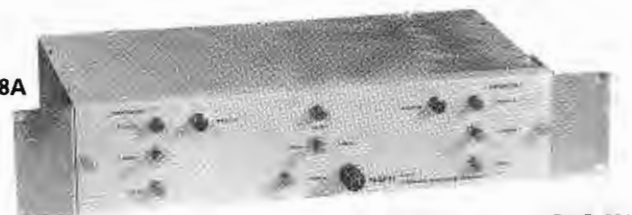
SCR-8H Sub-Carrier Receiver, solid-state, tuned to 39 KHz. 120/240 VAC. 3 1/2" x 19" Horizontal Rack construction \$375.00

PGM-20A Program Amplifier. 120/240 VAC. 3 1/2" x 19" Rack mount. \$225.00

MA-10 Monitor Amplifier. 120/240 VAC. 3 1/2" x 19" Rack mount. Complete with Speaker Muting Relay. \$186.00

MRA-950 RF Preamplifier. 120 VAC \$205.00

ASO-8A



SCG-8H



MRA-950



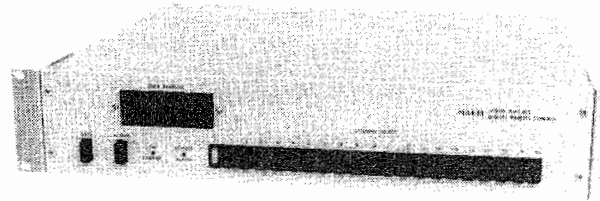
Prices and specifications subject to change without notice



MARTI Electronics, Inc.

RMC-20 DIGITAL REMOTE CONTROL

Features: Fully digital command telemetry (FSK) • Single push-button channel select • Telemetry accuracy 0.1% for directional antenna monitoring. RMC-20S does not require operator to calibrate each time data taken • Channel capacity 5, 10, 15 or 20 channels • 10 amp 120 VAC 5 amp 240 VAC UL recognized relays • Test meters built-in for setting levels and test • Quartz clock synchronized • Radio link or wire line operation • Large digital LED readout at both studio and remote unit • Decimal point location can be selected for each channel.



Specifications

| | | | | | |
|---|---|---|---|--|--|
| Type | Digital command and telemetry using internal FSK modems. | Command Output | Relay closure with all contacts isolated and floating. Contact ratings are 220 volts AC, 5 amps or 120 volts AC 10 amps. | Input/Output Impedances | put resistance 100K ohms isolated and floating. 600 ohms balanced and isolated. Also 5K ohms unbalanced BNC input to RMC-20T transmitter unit. BNC output from RMC-20S for commands into STL transmitter. |
| Channel Capacity | Basic 5-channel system expandable to 10, 15, or 20 channels. Each channel provides one data readout and two commands. | Telemetry Accuracy | 0.1 percent. | Fail-Safe Contacts | Factory adjusted transmitter Fail-Safe delay. 15-30 seconds. Contact rating 10 amps/120 VAC or 5 amps/220 VAC. |
| Command and Telemetry Frequencies (Must Be Specified on Order) | Command: Wire Line — 2350-2450 Hz. STL — 21-22 KHz. Telemetry: Simplex Wire Line — 925-975 Hz. SCA — 925-975 Hz. SCA — Sub-Audible 24-26 Hz. AM — Sub-Audible 24-26 Hz. TSL — 925-975 Hz. | Telemetry Update | Command and data information are continuously updated. Proportional control is provided by observing the digital readout while commands are given. | Ambient Operating Temperature Range | —10 to +50 deg. C. |
| Line Requirements | 600-ohm voice grade 2-wire bi-directional circuit. Maximum loss 30 DB each direction. | Decimal Point At RMC-20S Digital Readout | The decimal point can be turned off or placed between any two digits for each data channel by means of a four position programming plug provided at each channel select switch. | Power Requirements | 115 VAC, 50/60 Hz. single phase. |
| | | Telemetry Input Requirements | 1 volt DC will produce full scale (999) display. Convenient scaling of data is provided by overranging the display (2 volts DC for 1999). In- | Dimensions and Weights | RMC-20S Studio Unit. 3½" high x 19" wide x 14" deep 18 lbs. RMC-20T Transmitter Unit 3½" high x 19" wide x 14" deep 21 lbs. RY-5T Channel Control Unit 3½" high x 19" wide x 7" deep 3½ lbs. |

Model RMC-20 Type A

Fully Digital Remote Control/Telemetry System for Voice Frequency Line Communication (Half-Duplex schedule 3002 Bi-directional circuit, 30 DB maximum attenuation at 950 Hz and 2400 Hz).

| | |
|-------------------------|-----------|
| 5 Channel System | \$2645.00 |
| 10 Channel System | \$2945.00 |
| 15 Channel System | \$3245.00 |
| 20 Channel System | \$3545.00 |

Model RMC-20 Type B

Fully Digital Remote Control/Telemetry System for control over STL-8 Link and High Speed Telemetry (1 sec. readout time) over 67 KHz. FM SCA, voice line or TSL. SCA is only while logging. Precludes use of SCA for background music. Two BNC cables included.

| | |
|-------------------------|-----------|
| 5 Channel System | \$2645.00 |
| 10 Channel System | \$2945.00 |
| 15 Channel System | \$3245.00 |
| 20 Channel System | \$3545.00 |

Model RMC-20 Type C

Fully Digital Remote Control/Telemetry System for control over STL-8 Link and Subaudible Telemetry over AM carrier or 67 KHz FM SCA with or without background music. Requires about 6 secs. for readout (about 10 sec. with status). Includes two BNC cables,

Model 800-105 Subaudible Insertion Board, and LA-20/HPF-50 amplifier-filter module (exchange for LA-20 amp. module in R-200 Receiver or SCR-8 Subcarrier Receiver). Order number 360-010 HPF filter below for use with STL or subcarrier Receiver not having LA-20 module.

| | |
|-------------------------|-----------|
| 5 Channel System | \$2725.00 |
| 10 Channel System | \$3025.00 |
| 15 Channel System | \$3325.00 |
| 20 Channel System | \$3625.00 |

ACCESSORIES

RY4-H3 Relay Interface Unit

Contains relays and power supply necessary for remote control of Gates/Harris H and H3 Series Transmitters by RMC-20 Remote Control. 3½" x 19" rack mounted. \$103.31

RY7-H3 Relay Interface Unit

Contains relays and power supply necessary for remote control of Gates/Harris H and H3 Series Transmitters by RMC-2AX Remote Control. 3½" x 19" rack mounted. \$120.00

TL-1S Tower Light Current Monitor

Current transformer, rectifier, pot, opto-isolator and filtering for developing a metering input into remote control system. Also provides high-low status output. \$ 56.45



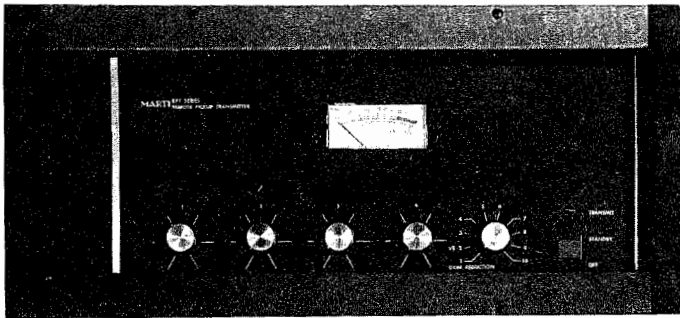
Prices and specifications subject to change without notice

MARTI Electronics, Inc.

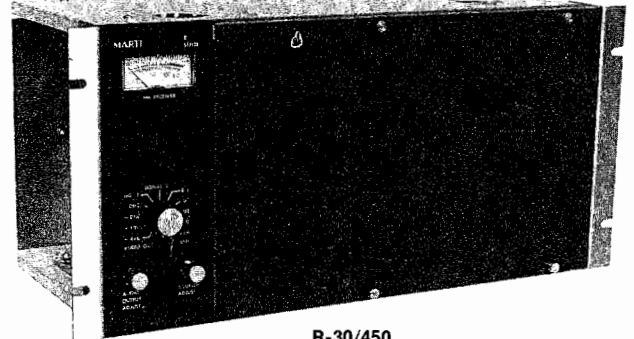
MARTI TSL-25/450 Transmitter-Studio Link

SYSTEM FEATURES

- ★ FCC Type Accepted 25-Watt Transmitter for 10F3 Emission
- ★ Modulation Control by Built-In Compressor-Limiter
- ★ Continuous Duty Operation
- ★ Subaudible and Voice Band Operation (20-3000 Hz. Response)
- ★ 115/230 V. AC or 13.6 V. DC Operation of Transmitter
- ★ FCC Certified Receiver with 90 DB Spurious Rejection
- ★ Carrier Operated Relay in Receiver



RPT-25 Rack mount



R-30/450

The Marti TSL-25/450 TRANSMITTER-STUDIO LINK is a narrow Band point-to-point data/communication channel consisting of the FCC type accepted RPT-25P 25 Watt transmitter and FCC certified R-30/450 receiver with a directional antenna system. This system operates in the FCC Frequency group P channels (450.01-455.99 Mhz.) designated for signalling, tone and operational communications as authorized in Part 74, Subpart D, 74.402 (a)(7) of the FCC Rules and Regulations. A system frequency response of 20 Hz. to 3000 Hz. permits transmission of subaudible as well as voice band information.

SYSTEM SPECIFICATIONS

- Frequency** Group P (10.F3) Channels 450.01, 450.02, 450.98, 450.99, 455.01, 455.02, 455.98, 455.99 Mhz.
- Audio Response** +2 db 20 Hz. to 3000 Hz.
- Distortion** Less than 2% THD.
- Noise** 38 db below 100% Modulation.

SPECIFICATIONS RPT-25P

- Crystal Multiplication** 36.
- Frequency Stability** ± .00025% -30 deg. C. to +50 deg.C.
- Spurious Emission** Spurious radiation attenuated more than 60 DB below carrier level.
- RF Output** Maximum 25 watts, nominal 20 watts into 50 ohms.
- RF Connector** UG-58A/U.
- Operating Temp. Range** -20 deg. C. to +45 deg. C.
- Modulation** 1.5 KHz Deviation, 10F3/Emission
- Audio Inputs** Four inputs are provided with individual mixing gain controls. Three of the inputs are for microphones (one-push-to-talk) and one input accepts balanced 600 ohm line.
- Audio Input Level** Microphone input level can be from -70 DB to -45 DB. Line input level can be from -20 DBM to +4 DBM.
- Audio Input Impedance** Will accept microphones from 150 to 600 ohms. Line input 600 ohms balanced.

- Audio Connectors** Input No. 1 (XLR-4-31). Inputs Nos. 2, 3, and 4 (XLR-3-31).
- Power Requirements** 115/230 volts AC, 50/60 Hz. 155 watts transmitting, 30 watts standby. 13.6 volts DC negative ground. 7 amp. transmitting, 0.5 amp. standby.
- Modulation Control** Marti CA-40 Compressor/Limiter Module. Selector switch for measuring audio level, compressor gain reduction, RF output, etc.
- Weight** 20 lbs. net, 26 lbs. gross.
- Dimensions** 6-1/4" high x 15" wide x 12" deep

SPECIFICATIONS R-30/450

- Sensitivity** 1 microvolt for 20 DB quieting. Eight tuned RF circuits. FET RF amplifiers for low cross mod.
- Input Impedance** 50 ohms. UG-58A/U Connector.
- Frequency Stability** ± .0005% -30 deg. C. to +50 deg. C.

- Spurious Response** At least -90 DB (Better than -100 DB with optional pre-selector).
- Audio Output** Balanced 600 ohms. + 4 DBM.
- Squelch** Adjustable squelch provides audio muting, plus auxiliary contacts for external signal circuit.
- RF Filtering** Extensive RF filtering and shielding for use in high RF fields.
- Power Requirements** 115/230 VAC, 50/60 Hz, 30 watts
- AC Power Supply** Precision, electronically regulated integrated circuit, with current limiting. Plug-in module.
- Metering** Precision tau-band meter with front panel test selector switch. Tests signal strength, discriminator zero, power supply, audio level.
- Solid State Devices** 19 transistors, 23 diodes, 3 IC's
- Dimensions** 8-3/4" high x 19" wide x 8-1/4" deep
- Weight** 16 lbs. net, 20 lbs. gross.

PACKAGE NUMBER 20 — TSL SYSTEM

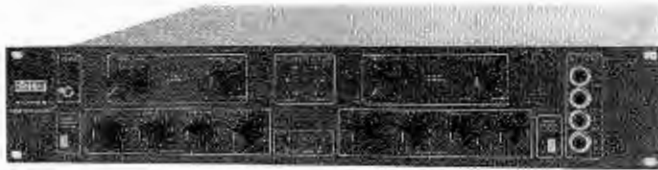
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| (1) RPT-25-P 25 watt solid-state transmitter, complete with crystal and tuned to the 450 MHz. band. 0.00025% Frequency Tolerance. | \$1325.00 | (2) L44W Connectors for LDF4-50 Foam Heliax. | \$18.00 ea. | 36.00 |
| (1) RMH-2 Rack Shelf for Mounting RPT-25 in Standard Rack. | 20.00 | (2) PG-3B 3 foot Jumper Cables. | \$12.00 ea. | 24.00 |
| (1) R-30/450 solid-state receiver, complete with crystal and tuned to the 450 MHz. band, for use with the RPT-25-P for TSL System. | 875.00 | (2) K-1 Grounding and Weatherproofing Kits. | \$ 8.00 ea. | 16.00 |
| (2) DB-436 Yagi Antenna, 6 element, 10 db gain, for use on 450-460 MHz. band. (Horizontal polarization recommended). | \$92.00 ea. | Equipment sub-total | | \$2516.00 |
| (2) L44N Connectors for LDF4-50 Foam Heliax. | \$18.00 ea. | (1) Automatic Station Identifier Model 1400 (optional) | | 314.00 |
| | 36.00 | Equipment total | | \$2830.00 |
| | | LDF4-50 1/2" Foam Heliax transmission line for above system | \$1.12 per ft. | |

Prices and specifications subject to change without notice





XL-305 Master-Room Reverberation Chamber



Dimensions
3 1/2 x 19 x 11

Weight
9.8 pounds

XL-305 \$1195.00
XL-305T \$1320.00
Transformer Input/Output

XL-305 is the very first reverb to offer the natural sound performance of a live studio chamber or the qualities of a plate in a compact rack mount package. XL-305 is a product of MICMIX, designer of the original Master-Room and developer of Natural Sound Ambience in artificial reverberation chambers.

In addition to unprecedented smoothness and the complete absence of any undesirable effects or coloration (even on the sharpest of transient material), XL-305 features exceptional stereo enhancement of the reverberant field, including full stereo imaging of a monaural signal. It includes reverberation/dry signal mixing controls, LED peak signal indicators and a four-band peak/dip EQ on each channel. Both input level and output gain are front panel adjustable, with auxiliary front panel input/output connections and monaural mix switching of reverberation inputs or outputs.

A new Sound Chamber design has been incorporated into the XL-305 which is self-contained within the 3 1/2 inch rack enclosure. Retaining the inherent qualities of Master-Room's superb performance characteristics, this design will readily withstand the rigors of heavy road usage without special handling or lockdown. Isolated from acoustic feedback and mechanical shock or vibration, the XL-305 can be mounted in virtually any location or position without affecting performance.

XL-305 is truly the ultimate in compact reverberation chambers.

MODEL 265 Dynaflanger

For DYNAMIC Control of Effects



MODEL 265
\$895.00

Capable of a wide variety of audio enhancement effects, ranging from subtle accents to dramatic resonances, Dynaflanger adds new dimensions to previous concepts of 'flanging'. Effects are now precise and repeatable because the program material itself controls the result, automatically and with complete user control of parameters.

Dynaflanger features the unique capability to dynamically control effects in response to frequency or amplitude variations in the material being processed. Doubling, for example, can now be done with pitch dynamics rather than fixed pitch or time, and hard flanging can be directly related to instantaneous signal frequency or peak amplitude for maximum effect, all automatically and in accordance with the user's desires.

Dynaflanger's can be exceptionally effective when used in pairs for stereo imaging that can move in and out as well as from side to side, or for Dynamic Cross Flanging which is one of the most pronounced effects available.

MODEL 27 Master Audio Meter

Master Audio Meter is a precision performance instrument designed for everyday use in recording, disc mastering, film and broadcast applications.

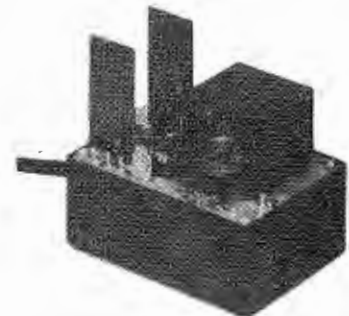
Basically a stereo instrument with front panel switch selection for display of either PEAK or RMS (vu) levels on the two channels, MASTER AUDIO METER is also capable of indicating both of these values simultaneously on a monaural signal by means of an internal conversion jumper furnished with each unit.

Left channel indications are green and right channel are yellow for below-zero levels, with red indicators used for zero and above. When converted to the combination readout, the rms is displayed in green and peak in yellow. Indicator power bus is isolated for variable voltage brightness control.



MODEL 27-00/27-01
\$595.00

**Makes Precision Audio A Reality
WITH DIGITAL ACCURACY
AND ANALOG SMOOTHNESS**



MODEL 27P
Optional Power Supply
\$85.00



Prices and specifications subject to change without notice

MICRO-TRAK CORPORATION

Series "L" Broadcast Studio Furniture

Micro-Trak's Series L Studio Furniture is a complete system of cabinets, racks, tables, and equipment cabinets color keyed and designed for both beauty and functional efficiency in the modern broadcast studio.

The approximately twelve pieces that are available mix and match in different ways to allow you to build almost any conceivable layout. There are single and double turntable cabinets, straight and corner console tables, equipment racks, and other useful and attractive accessories.

Our Series L Furniture is the result of years of engineering evaluation as to the requirements of an efficient studio installation and the problems faced in studio construction. Evolution of the design has brought us to the point of even having replaceable panels to take care of the ever present possibility of damage.

The Series L Turntable cabinet is constructed from the highest grade three quarter inch thick, forty two pound density particle board, covered with genuine Formica Brand laminates. Formica, as you probably already know is heat and stain resistant, and is easily cleaned — a natural for the savage environment of the typical broadcast studio.

The standard colors for the Series L System is Summer Pecan laminate on the vertical surfaces, and Adobe Gold laminate tops. This pleasing combination adds to the beauty of any decor and sets a tempo current to the demands of today's studio. If your taste in color differs from ours, for a minimal extra charge you may choose from any of the one hundred or so others that are available.

SERIES L SINGLE BAY CABINET

Size: 22" wide x 22" deep x 27" high.

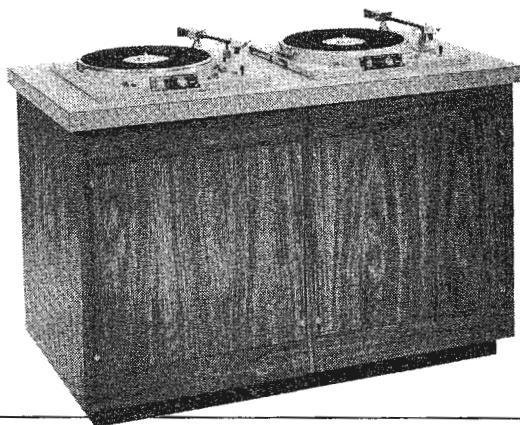
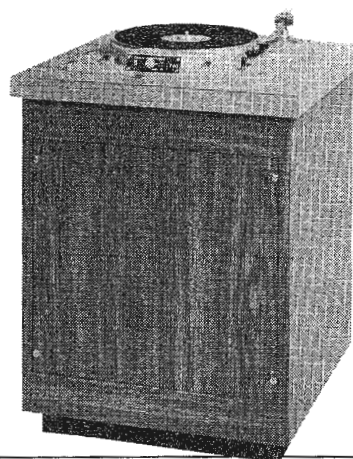
Finish: "Summer Pecan" wood grain formica on vertical surfaces. "Adobe Gold" formica on cabinet top. (Special colors available on order at extra cost).

Construction: Panels fabricated from high density particle board $\frac{3}{4}$ " thick (front and rear closure panels 5/8" thick) with formica uniformly bonded.

Panel Space: 17 $\frac{1}{2}$ inch high opening front and rear to accommodate standard 19 inch EIA style equipment panels on steel mounting rails.

Weight: 81 pounds. Includes complete cabinet with wood grained closure panels for front and rear openings.

Order: Series L Single Bay Cabinet, Part No. 77300.



SERIES L DOUBLE BAY CABINET

Size: 41 $\frac{3}{4}$ " wide x 22" deep x 27" high.

Finish: "Summer Pecan" wood grain formica on vertical surfaces. "Adobe Gold" formica on cabinet top. (Special colors available on order at extra cost).

Construction: Panels fabricated from high density particle board $\frac{3}{4}$ " thick (front and rear closure panels 5/8" thick) with formica uniformly bonded.

Panel Space: 17 $\frac{1}{2}$ high openings front and rear to accommodate standard 19 inch EIA style equipment panels on steel mounting rails.

Weight: 142 pounds. Includes complete cabinet with wood grained closure panels for front and rear openings.

Order: Series L Double Bay Cabinet, Part No. 77301.

SERIES L CONSOLE TABLE SURFACES

Size: 80x24, 80x30, 80x36.

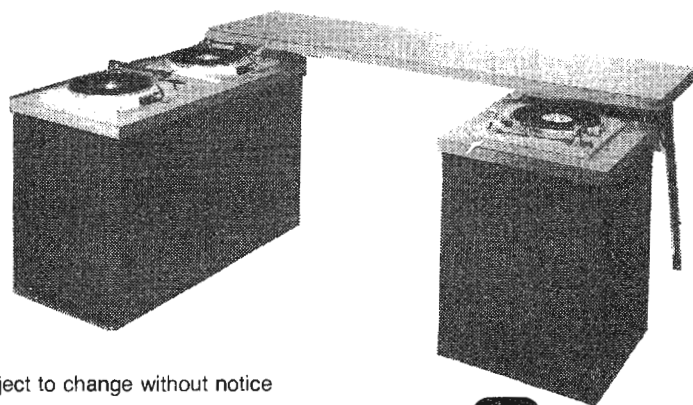
Finish: Adobe Gold Formica to match cabinet tops.

Mounting: Mounts on single or double bay cabinet tops with optional spacer blocks or on separate bright metal legs. May be leg mounted at one end and cabinet mounted at opposite end.

Height Mounted: 29 inches.

Weight: 75 pounds without legs.

Order: 80x24 — 77331, 80x30 — 77381, 80x36 — 77382.



Prices and specifications subject to change without notice



MICRO-TRAK CORPORATION

Series "L" Broadcast Studio Furniture



HI-STYLE CONSOLE TABLES

Sizes: 80x24, 80x30, 80x36

Finish: Table surface adobe gold formica to match cabinet tops. Legs and chasity shield pecan formica to match cabinet vertical surfaces.

Weight: 125 pounds

Order: 80x24 — 77378, 80x30 — 77383, 80x36 — 77384.

SERIES L CORNER CONSOLE TABLE

Size: 48" square cut off at front for operator and at rear for corner clearance.

Finish: Adobe gold formica to match cabinet tops. (Other colors available on special order).

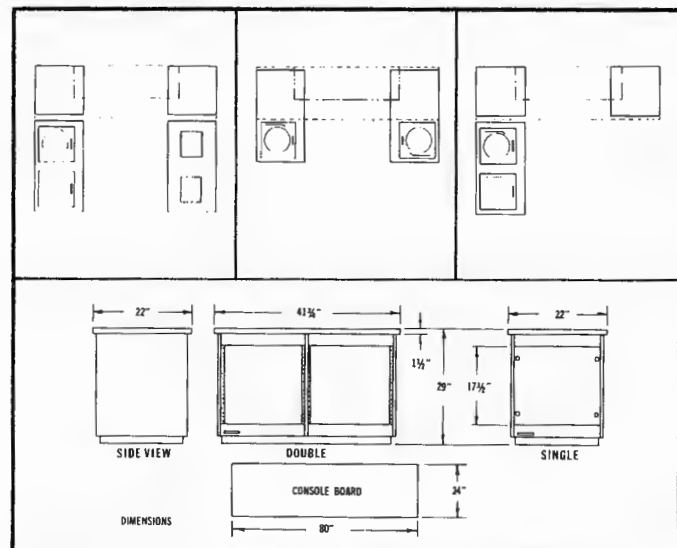
Height Mounted: 27 inches.

Weight: 90 pounds without legs.

Console Area: Will hold console 45" long x 18" deep. (Slightly longer if narrower).

Mounting: Will mount either directly on Series L Cabinet or on separate bright metal legs.

Order: Series L Corner Console Table, Part No. 77350.



SERIES "L" STUDIO FURNITURE

| | |
|--|----------|
| 77300 000 Cabinet TT L Single Bay | \$199.50 |
| 77301 000 Cabinet TT L Double Bay | \$299.50 |
| 77331 000 Straight Console Table 24x80 | \$130.00 |
| 77350 000 Corner Console Table LCBC | \$165.00 |
| 77378 000 Hy-Dtyle Console Table 24x80 | \$189.00 |
| 77381 000 30x80 Console Table Top | \$154.00 |
| 77382 000 36x80 Console Table Top | \$182.00 |
| 77383 000 30x80 Hy-Style Console Table | \$230.00 |
| 77384 000 36x80 Hy-Style Console Table | \$260.00 |

ACCESSORIES

| | |
|---|---------|
| 77313 Bright Metal Leg (for use on straight or corner console tables) | \$21.45 |
| 77314 Spacer Block (for use mounting straight console table on cabinets) | \$ 4.85 |
| 77352 Roll Around Base — Double Bay (cabinet base with casters to allow turntable cabinet to be rolled around in theater or studio) | \$58.50 |
| 77351 Roll Around Base — Single Bay (same purpose as double bay above for single cabinet) | \$42.50 |
| 77328 Hardware Kit-HW-1 (extra 25 "J" nuts and panel mtg. screws) | \$ 3.75 |
| 77345 Cable Trough — 6 feet (slotted type for mounting under console table) | \$18.70 |

MODEL L-72 LAZY SUSAN RACK

The Model L-72 Lazy Susan Cartridge Tape Rack shown at the left is Micro-Trak's answer for an attractive and durable tape rack at a reasonable price. Designed to compliment the Series L studio furniture line, the L-72 provides a small, but substantial rotary tape rack for use at the console. Only 10 1/2 inches square and 22 inches high, the L-72 packs in 72 of the most used spots for easy access by your DJs.

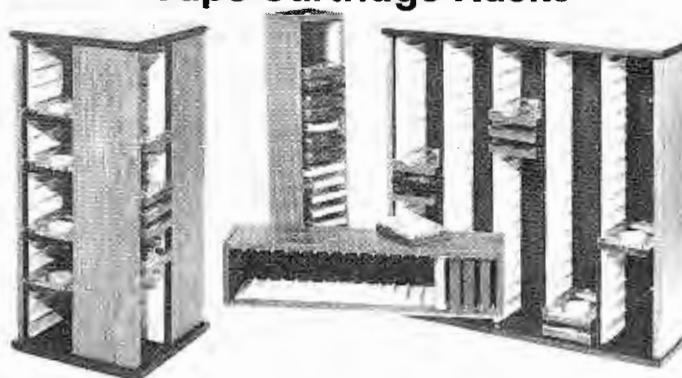
MODEL L-90 WALL OR CONSOLE RACK

The most useful member of the Series L Cartridge Rack group is the Model L-90. The L-90 can be used as a wall mounted unit, stacked from floor to ceiling, mounted on the inside and outside of a closet door, or as a stand alone unit at the console. Also with addition of simple 2x4 supports the L-90 can be mounted over the top of your turntables.

MODEL L-18 TAPE CARTRIDGE TRACK

The Model L-18 is the newest member of the Micro-Trak group of Series L audio tape cartridge racks. The L-18, a smaller unit than either the L-72 or L-90 holding 18 tape cartridges, can be used either at the console, or wall mounted.

Tape Cartridge Racks



TAPE RACKS

| | |
|--|---------|
| 79001 000 Tape Cart Rack L-72 Lazy Susan | \$59.50 |
| 79015 000 Tape Cart Rack L-90 Wall Mount | \$59.50 |
| 79027 000 Tape Cart Rack Model L-18 | \$19.95 |

Prices and specifications subject to change without notice



The S Line Studio Furniture

THE "S" LINE CONSOLE DESKS

Size: 80" wide (203 cm) x 30" deep (76.2 cm) x 30" high (76.2 cm).

Finish: Natural Oak wood grain formica on all surfaces. (Special colors available on order at extra cost).

Construction: Panels fabricated from high density particle board of 1-1/8 inch thick. Front and rear closure panels 5/8 inch thick.

Mounting Space: The "S" Console Desks are designed to allow mounting of conventional broadcast turntables and either side of the center of the unit. In addition the under pedestal type table allows 17 1/2 inch high openings front and rear to accommodate the standard 19 inch EIA style equipment panels on steel mounting rails. Center panels are also removable for internal mounting of static equipment.

Weight: Pedestal type unit, 250 pounds (113 kg). Unit with legs only, 150 pounds (68 kg).



Order: "S" Line Operating Desk with Pedestal, Part Number 82408-001. "S" Line Operating Desk with legs only, Part Number 82408-002.



"S" LINE SINGLE BAY CABINET

Size: 23" wide (58.4 cm) x 23" deep (58.4 cm) x 27" high (68.5 cm).

Finish: Natural Oak wood grain formica on all surfaces. (Special colors available on order at extra cost).

Construction: Panels fabricated from high density particle board 1 1/4 inch thick sides and top. Closure panel from 5/8 inch thick high density particle board.

Panel Space: Seventeen and one half inch high openings from the rear to accommodate standard 19 inch EIA style equipment panels on steel mounting rails.

Weight: 100 pounds (45.3 kg).

Order: "S" Line Single Bay Cabinet, Part Number 82404-001.

"S" LINE DOUBLE BAY CABINET

Size: 43 (109.2 cm) wide x 23" (58.4 cm) deep x 27" (68.5 cm) high.

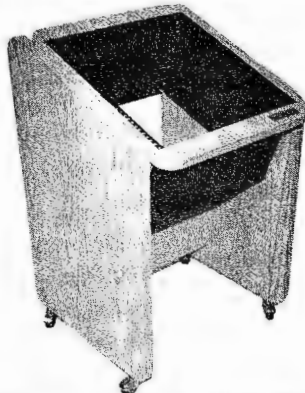
Finish: Natural Oak wood grain formica all surfaces. (Special colors available on order at extra cost).

Construction: Panels fabricated from high density particle board 1 1/4 inch thick sides and top. Closure panels from 5/8 inch thick high density particle board.

Panel Space: Seventeen and one half inch high openings from the rear to accommodate standard 19 inch EIA style equipment panels on steel mounting rails.

Weight: 140 pounds (63.5 kg).

Order: "S" Line Double Bay Cabinet, Part Number 82405-001.



THE "S" REEL TO REEL TAPE CABINET

Size: 23" wide (58.4 cm) x 26 1/2" deep (67.3 cm) x 29" high (73.6 cm) at the front by 38" (96.5 cm) at the rear.

Finish: Natural Oak wood grain formica on all surfaces. Front and rear machine enclosure panels textured black on steel. (Special colors available on order at extra cost).

Construction: Panels fabricated from high density particle board 1-1/8 inch thick. Front and rear machine enclosure sixteen gauge steel.

Panel Space: 21 inch high standard 19 inch EIA mounting for tape machines or other rack mounted equipment on steel mounting rails.

Weight: 85 pounds (38.5 kg).

Order: The "S" Line Reel to Reel Tape Cabinet, Part Number 82422-001.

ACCESSORIES FOR "S" LINE EQUIPMENT

Caster Set: To convert double or single bay cabinet to roll around unit. Order Part Number 82422 \$31.50

Hardware Kit: Extra hardware for mounting panel mounted equipment. Order Part Number 77328 \$ 3.75

Cable Trough: Six feet slotted type for mounting under console table. Order Part Number 77345 \$18.70

SERIES "S" STUDIO FURNITURE

| | |
|---|----------|
| 82404 001 "S" Single Cabinet | \$225.00 |
| 82405 001 "S" Double Cabinet | \$325.00 |
| 82408 001 "S" Desk W/Pedestal 30 x 80 | \$550.00 |
| 82408 002 "S" Desk W/Legs 30 x 80 | \$299.50 |
| 82422 001 "S" Reel to Reel Cabinet | \$325.00 |

Prices and specifications subject to change without notice



MICRO-TRAK CORPORATION

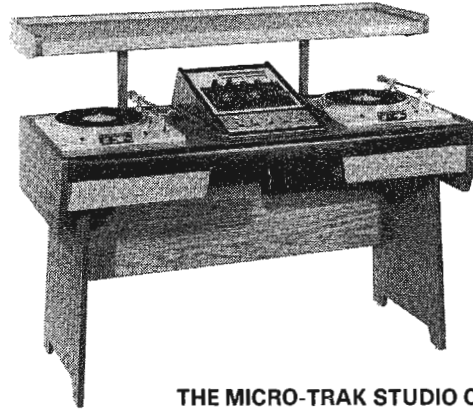
SYSTEM D STUDIO COMPACT

You may select one of Micro-Trak's audio consoles for your Studio Compact. The Model 6444 and 6445 are Broadcast stereo units, the 6454 and 6455 are Broadcast Monaural units, and the 6440 is the Disco stereo unit. Each of these consoles provide four mixing channels with provision for seven inputs. Two turntables, two microphones, one primary, the other a selectable auxiliary input, and three selectable high level auxiliary inputs. Console specifications available on request. The turntables are Micro-Trak's model 740s. The Tone Arms are two of Micro-Trak's Model 303. The Magnetic Cartridge is the Stanton Model 500AL. A special cardioid dynamic type microphone. Self windscreening, this mike is highly resistant to the feedback sometimes experienced with non-directional types, in addition it offers dynamic reliability and high performance.

Size: 55 3/4 inches (1416 mm) long x 25 inches (635 mm) deep x 38 inches (965 mm) high to top of turret.

Weight: 150 lbs. (68 Kilograms).

Finish: Cortena pecan wood grain Formica brand laminate on all table surfaces. Pad: high grade leather grained vinyl. Vinyl bumper all exposed edges.



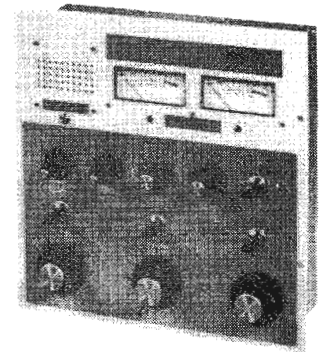
THE MICRO-TRAK STUDIO COMPACT
shown equipped with an accessory equipment shelf

Accessories: The following are available at extra cost. Shelf: 15 inches deep full width for tape cartridge, reel to reel tape machines and etc. Part No. 80130 Remote start panels for turntables, tape machines.

THE STUDIO COMPACT SYSTEM D AUDIO CONTROL CENTER

Micro-Trak's "Studio Compact" Audio Control Center is an outstanding studio 'on air' or production tool. A complete four channel audio front end filled with Micro-Trak's professional audio gear and your choice of one of three different audio control consoles. You may select a broadcast stereo console, a broadcast mono console, or the disco console. The Studio compact shown above is equipped with the accessory equipment shelf.

The "Studio Compact" is fabricated from high strength materials covered with a woodgrain formica laminate, assembled into a rugged, rigid structure. All turntable connections are internally wired from the console and XLR connectors are provided on the rear apron for microphones, auxiliary inputs and outputs. A padded arm rest for operator comfort, the layout for high speed, precise DJ operation, along with Micro-Trak quality and durability are other key features.



**THE MODEL 6444
CONTROL CONSOLE**
one of several available in the
Studio Compact

SYSTEM D PORTABLE COMPACT

The System D Portable Compact can be fitted with any of the five Broadcast or discotheque consoles currently available. The 6444 is four channel, and the 6445 is five channel, both stereo for Broadcast operation. The 6454 is four channel, the 6455 is five channel, both monaural. The 6440 is four channel stereo especially designed for discotheque. The turntables are Micro-Trak's reliable Model 740. The Tone Arms are two of Micro-Trak's Model 303. The Magnetic Cartridge is the Stanton Model 500-AL. A special cardioid dynamic type microphone. Self windscreening, this mike is highly resistant to the feedback sometimes experienced with non directional types, in addition it offers dynamic reliability, and high performance.

Size: Set up for operation: 55 3/4 inches (1416 mm) long x 25 inches (635 mm) deep x 38 inches (965.2 mm) high to top of console turret. Folded for travel: 55 3/4 inches (1446 mm) long x 25 inches (635 mm) deep x 16 inches (406.4 mm) high to top of turret.

Weight: 138 lbs. (63.5 Kilograms).



Finish: Cortena pecan wood grain Formica brand laminate on all table surfaces. Turret: thermoformed ABS material. Pad: high grade leather grained vinyl. Vinyl bumper all exposed edges.

SYSTEM "D" STUDIO COMPACT

| | |
|--|-----------|
| 80273 001 Studio Compact with 6440 Console | \$2095.00 |
| 80273 002 Studio Compact with 6444 Console | 2195.00 |
| 80273 003 Studio Compact with 6445 Console | 2295.00 |
| 80273 004 Studio Compact with 6454 Console | 2045.00 |
| 80273 005 Studio Compact with 6455 Console | 2145.00 |
| 80273 006 Studio Compact Housing Only | 469.00 |

SYSTEM "D" PORTABLE COMPACT

| | |
|--|-----------|
| 80272 001 Portable Compact with 6440 Console | \$2195.00 |
| 80272 002 Portable Compact with 6444 Console | 2295.00 |
| 80272 003 Portable Compact with 6445 Console | 2395.00 |
| 80272 004 Portable Compact with 6454 Console | 2145.00 |
| 80272 005 Portable Compact with 6455 Console | 2245.00 |
| 80272 006 Portable Compact Housing Only | 549.00 |

SYSTEM "D" ACCESSORIES

| | |
|--|----------|
| 80130 000 Shelf — 15 Inch for Compacts | \$ 75.00 |
| 80296 000 Typewriter Return Only | 106.95 |

Prices and specifications subject to change without notice



MICRO-TRAK CORPORATION

Professional Tone Arms

"Micro-Trak" — A term especially created to properly name the finest professional tone arm series ever designed.

With tracking capabilities as low as 1/10 of a gram, resonance below 10 Hz, and the greatest possible reliability; what other product could be considered by the professional user?

MICRO-TRAK® SPECIFICATIONS

303 12" Professional Tone Arm

Dimensions: 12 1/2" overall (317.5 mm). 8-5/16" spindle to pivot (211.1 mm). 2-7/8" from pivot to back of arm (73 mm).

Weight: 1 pound (.454 kg).

Overhang: 0.682" spindle center to stylus.

Resonance: Less than 10 Hz 1/2 gram at 30x10-6 CM/DYNE Compliance.

Tracking Error: 3.0 in radius 0° 0', 3.75 in radius 1° 28', 4.75 in radius 0° 0', 5.5 in radius 2° 0'.

Minimum Tracking Force: 1/10 gram.

306 16" Professional Tone Arm

Dimensions: 14-5/8" overall (37.15 cm). 8-5/16" spindle to pivot (21.11 cm). 3" from pivot to back of arm (7.6 cm).

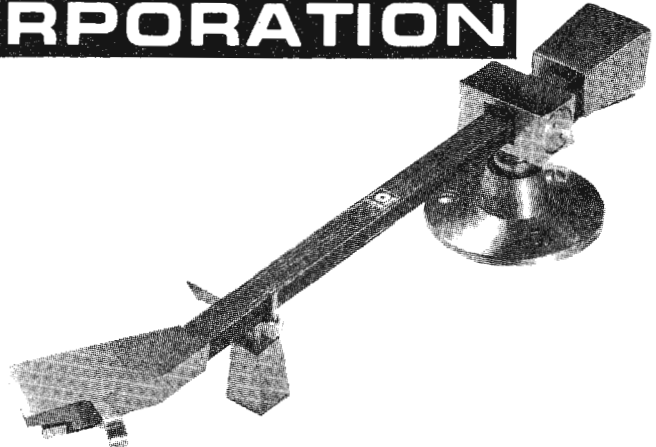
Weight: 1.25 pounds.

Overhang: 0.5333" spindle center to stylus (13.5 mm).

Resonance: Less than 10 Hz 1/2 gram at 30x10-6.

Tracking Error: 3.0 in radius 0° 0', 3.75 in radius 0° 53', 4.75 in radius 0° 0', 5.5 in radius 1° 15'.

Minimum Tracking Force: 1/10 gram.



TONE ARMS

| | |
|------------------------------------|----------|
| 75900 000 Tone Arm Model 303 | \$ 99.50 |
| 75971 000 Tone Arm Model 306 | \$109.50 |

TONE ARM ACCESSORIES

| | |
|---|----------|
| 75051 000 Viscous Fluid | \$ 8.00 |
| 75743 000 Slide Only for 206 | \$ 5.10 |
| 75792 000 Slide Kit for 206 | \$ 9.20 |
| 75908 000 Anti-Skate Fluid, .5 Tube Pack | \$ 6.75 |
| 75932 000 Spare Head for 303 | \$ 17.75 |
| 75942 000 Spare Head for 306 | \$ 17.75 |
| 75961 000 Weight Kit for 303/306/206 Tone Arm | \$ 4.00 |
| 79222 000 Replacement Arm Body, 303 | \$ 33.85 |
| 79223 000 Replacement Arm Body, 306 | \$ 37.00 |
| 79755 000 Tone Arm Retainer — Rubber | \$.55 |
| 79758 000 Tone Arm Base for Technics SP10 | \$ 7.35 |

The Sport and Sport II

A BROADCAST CONSOLE FOR THE SPORTSCASTER

Here at last, the answer to a sportscasters dream . . . Micro-Trak's "SPORT." A professional quality, sports console with all the features that your man in the field requires. Two input channels, one for the announcer, the other for a tape cart machine allow mixing of commercials right at the ballpark. A third input for the announcer's spotter lets him feed information to the announcer headset; all part of the basic unit. Monitor, cue, and an external monitor input are selected to the announcer head-phone at the flick of a switch. A vu meter to keep an eye on levels, and even an "On the Air" LED to let you know that your line switch is open. We've tried to think of everything that would make it easy for sports coverage.

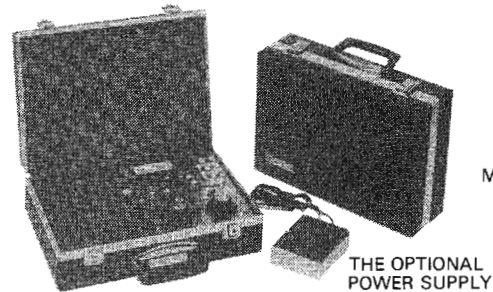
The "SPORT" is packaged in an attractive, self contained carrying case, durably vinyl covered. Open the cover, connect your telephone line, turn on the switch and you have approximately 55 hours of battery powered operation. No extras to buy, the "SPORT" is totally self contained. Just add a microphone for the announcer, a second for the spotter, an announcer headset, and you've got another of Micro-Trak's super quality Tools of the Trade.

FEATURES

- Self contained in attractive vinyl covered case.
- Inputs for announcer and spotter.
- Two headphone outputs for announcer, monitor-cue and spotter.
- Input for tape cart machine allows announcer to run commercials.
- +8 dbm nominal output to drive telephone line.
- Micro-Trak "Tools of the Trade" quality and performance.
- Matching case available for accessories.

SPECIFICATIONS

Inputs: The Sport: Microphone: Two, one mixes to program buss, second feeds headphone amplifier only. Auxiliary: One, allows for input of tape machine for commercials etc. External Monitor: One, allows input of off air monitor radio, etc. Sport II: Microphones: Three, 1. Channel one, primary. 2. Channel two, switch selectable. 3. Spotter, to headset only. Auxiliary: One, shares channel two with microphone via selector switch. External Monitor: One, allows input of off air monitor, etc.



THE SPORT

THE CASE MATCHING

THE OPTIONAL POWER SUPPLY

Input Levels: Microphone: 2mv internally adjustable (announcer) 200 ohm balanced. Aux.: -20 dbm to +10 dbm internally adjustable. 10k ohm unbalanced. Spotter Microphone: 2mv nom. 500 ohm unbalanced. Ext. Mon.: -20 dbm 10k ohms unbalanced.

Outputs: Program: One, balanced, transformer isolated, 600 ohm. Headphone: Two, one dedicated to spotter circuit, second switch selectable to program monitor, cue, or external monitor. Both outputs connected to one jack to allow connection to individual sides of a standard stereo headset, 600-6000 ohms.

Output Levels: +8 dbm nominal, +15 dbm max.

Power: Battery: Sixteen manganese alkaline "C" cells. (Provides for over fifty hours of operation. Zinc Carbon may be used for shorter scheduled life.) 115 vac: Optional 115 VAC 50-60 Hz. supply available.

Case: Durable Vinyl covered attache style case. Cover opens to provide Log-Program holder.

Size: 13.75 inches (34.92 cm) x 9.50 (21.37 cm) x 4.00 (10.16 cm).

Weight: With batteries 8.0 lbs. (3.62 kg).

Options: 115 VAC power supply, matching accessory case.

SPORTS REMOTE CONSOLES

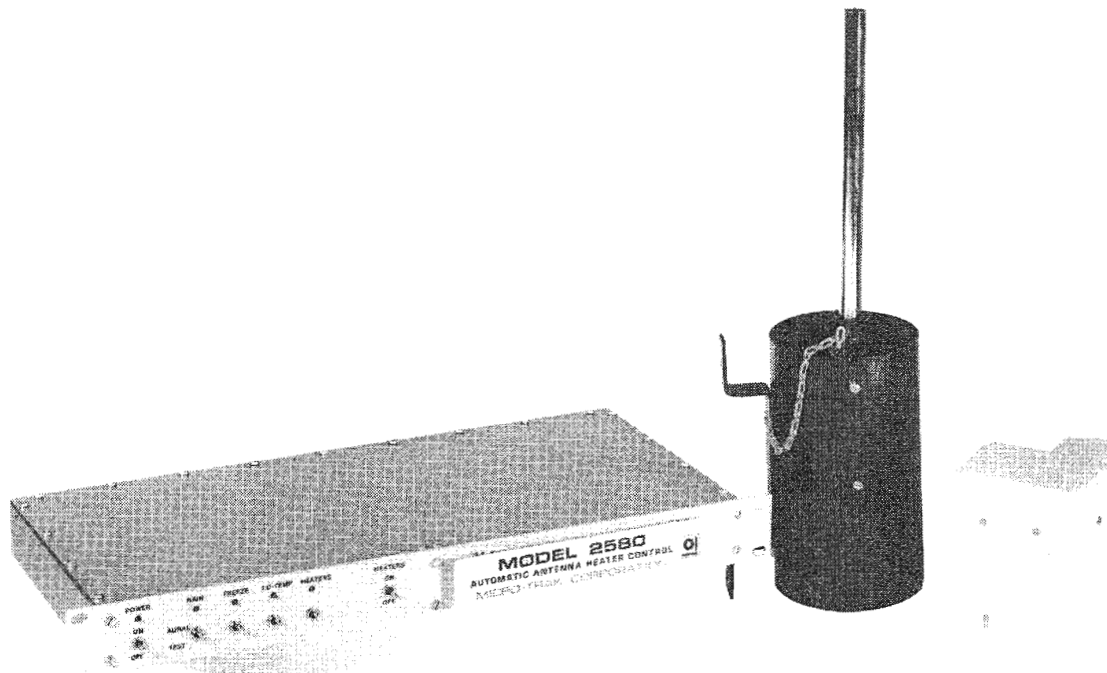
| | |
|---|----------|
| 81921-001 Sport I Sports Console (2 Input/2 Channel) . . . | \$239.95 |
| 81921-002 Sport II Sports Console (3 Input/2 Channel) . . . | \$269.95 |
| 81918-000 A.C. Power Supply for Sport I and II | \$ 39.95 |
| 81932-001 Sport 1x3 Headphone Extender | \$144.50 |
| 81900-000 Sport Accessory Case 9x13x4 | \$ 26.95 |
| 81933-000 Sport Accessory Case 18x12x5 | \$ 49.50 |

Prices and specifications subject to change without notice



MICRO-TRAK CORPORATION

Automatic Antenna Heater Control System



MODEL 2580 AUTOMATIC ANTENNA HEATER CONTROL SYSTEM

The Model 2580 Automatic Antenna Heater Control System is a device which senses ambient atmospheric conditions and controls power to the element heaters in F.M., Television, and other electrically heated antenna arrays. In addition the 2580 provides audio and visual indication of the system status.

As the system is totally automatic, icing due to oversight on the part of the station operator is completely eliminated, and off air time resulting from ice becomes a non-existent problem.

Operational costs are also reduced by the 2580 Control. As the unit continually senses atmospheric conditions; freezing temperatures and precipitation, which are both necessary to cause icing, are the only combination which will cause the heaters to operate. A low temperature limit is also set which keeps the range of heater usage compatible with precipitation which will cause antenna icing. This means that the power consumed by the heaters is minimized, and the life of the heating elements is extended by a large percentage resulting in lower electric bills, and much longer periods between heater element replacement.

SYSTEM COMPONENTS

The 2580 System consists of three basic components. The 2580-CU Control Unit, the 2580-TT Temperature Sensing Unit and the 2580-PD Precipitation Detector.

The control unit is mounted in a convenient location near the transmitter control desk. The mounting is designed to fit in a standard 19-inch console rack, requiring only 1 3/4 inches of vertical space. Interconnections are barrier strip terminal boards, and high reliability connectors.

The 2580-TT Temperature Sensor is designed to mount at or near the antenna location on the top of its supporting tower. Two simple strap clamps, or wrap-locks are all that are necessary for installation.

The 2580-PD Precipitation Detector may be mounted either on the tower, or on the transmitter building. As this unit requires cleaning

about twice a year, the location may be selected by the station engineer to simplify this process. In either case mounting is simple thru the use of clamps or wrap-lock to the tower, or on a television receiving antenna type mounting on the transmitter building. The precipitation detector should not be mounted within 25 feet of a chimney.

Interconnecting cables are not included in the basic system, due to the variety of different station facilities that must be accommodated. Cable lengths must be specified at the time of order and they will be fabricated to suit the installation. A cable is required for each of the two sensor units. In order to insure proper operation of the 2580 System, cables will be fabricated and sealed by Micro-Trak and fully tested prior to shipment.

The basic 2580 System is a complete operational package, but some users may require the following optional accessories for "total" installation.

The 2580-RP Remote Display Panel: A panel with function lamps for mounting at a location away from the 2580 Control Unit. Can be added at any time to a 2580 System equipped with a remote output circuit.

The Model 2580-CA Calibration Box: A calibration standard for the thermistor probe circuitry. Allows recalibration of unit to nominal center temperatures.

- Micro-Trak Model 2580 Antenna Heater Control System (Basic system with thermal, precipitation, less interconnecting cables) \$625.00
- * NOTE: 1 Precip cable and 1 Thermal cable, as listed below, is required for each system.
 - * 81418-001 50' Precip Probe Cable Assy. \$ 29.50
 - * 81418-002 100' Precip Probe Cable Assy. \$ 48.00
 - * 81418-003 250' Precip Probe Cable Assy. \$105.00
 - * 81418-004 500' Precip Probe Cable Assy. \$198.00
 - * 81418-011 50' Thermal Probe Cable Assy. \$ 29.50
 - * 81418-012 100' Thermal Probe Cable Assy. \$ 48.00
 - * 81418-013 250' Thermal Probe Cable Assy. \$105.00
 - * 81418-014 500' Thermal Probe Cable Assy. \$198.00



Prices and specifications subject to change without notice



MAGNETIC TAPE ERASERS and ACCESSORIES

Tape Head Demagnetizer For Tape Recording Heads

Neutralizes residual permanent (DC) Magnetism in recording head. Heavy duty AC electro-magnet with extended pole piece for easy access. Clears up noise and harmonic distortion caused by magnetized heads.



MODEL HD-40M
\$7.99

- Insures high frequency response
- Reduces hum at tape head
- Special finish on pole piece prevents marring heads
- Rating: 117 volts AC, 1 amp
- Finish: High impact molded
- Size: 4" long x 1 1/4" diameter
- Weight: 7 ozs.
- Removes magnetism
- Reduces noise level
- Reduces harmonic distortion
- Improves signal to noise ratio

Heavy Duty Bulk Tape Eraser

MODEL HD-11M
\$49.50



For bulk erasure of up to 1/2" magnetic tape and sound film. Ideal for cassettes, cartridges, and reel diameters from 3 1/4"-10 1/2". High intensity magnetic field restores audio, video and computer tapes to like new condition without rewinding.

- Erasure 65-90 dB below saturation
- Standard 5/16" spindle
- Epoxy molded for ruggedness and longer duty cycle
- 117V. 50/60 Hz., 5 amps
- Size: 7" x 3 1/2" x 3 3/4" H
- Weight: 9 lbs.

Magnetic Tape Editing Pen



MODEL HD-35M
\$47.50

For erasing small areas of sound and video from magnetic tape or film. Syllables, program material and errors may be removed. Press to operate switch.

- 115V. 50/60 Hz at 10 watts
- Active tip area 1/4" D.
- Size: 5/8" D. x 8" L.
- Weight: 6 oz.

Industrial Audio/Video/Computer Bulk Tape Eraser



MODEL HD-20
\$102.50

For bulk erasure of magnetic tape up to 1" wide and magnetic sound film up to 35mm. Ideal for cassettes, cartridges, and reel diameters from 3 1/4"-10 1/2". Designed and constructed for heavy industrial use.

- Fuse and pilot light
- 117V. 50/60 Hz, 10 amps
- Size: 8" x 6" x 4" H.
- Weight: 15 lbs.
- Erasure 65-90 dB below saturation
- Standard 5/16" spindles

Magnetic Tape Eraser

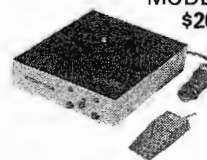


MODEL HD-15
\$14.50

A compact tape demagnetizer. Erases recorded signals and noise without rewinding. For cassettes, cartridges and reels. Restores tape and sound film to like new condition. Removes background noise below level of new tapes or sound film.

- Demagnetizes heads and guide posts, tools, watches, metal objects, etc.
- Tape Range: 1/4 and 1/2 inch
- Film Range: 8, 16 and 35mm
- 117V. 50/60 Hz, 4 amps
- High impact plastic case
- Size: 4-3/8"L x 2-1/2"W x 4-3/8"H.
- Weight: 2 1/2 lbs.
- 8' cord with molded plug
- Universal unit for any reel size

Professional Audio/Video/Computer Bulk Tape Eraser



MODEL HD-25
\$262.50

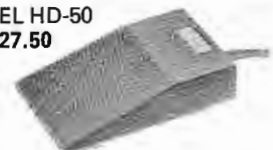
For bulk erasure of magnetic tapes up to 2" wide on reels up to 17" diameter and magnetic sound film up to 35mm. For cassettes, cartridges and reels. Designed and constructed for heavy duty professional use. Double fuses and pilot lights for safety.

- 6 foot, 3-conductor line cord
- 115V. 50/60 Hz, 20 amps
- Size: 14" x 12" x 4" H
- Weight: 33 lbs.
- Erasure 65-90 dB below saturation
- Standard 5/16" spindle

Foot Switch for Bulk Tape Erasers

Permits hands free operation of Models HD-25 and HD-20. Faster and better control of demagnetizing. Momentary switch prevents burn outs. Plug-in connection — no wiring required. UL approved. 8' 3-conductor cord. 20 Amp switch. Low smooth styling with skid-proof base. Black wrinkle finish over aluminum casting. Size: 5 1/2" x 3 3/4" x 1 1/4"H. Weight: 2 lbs.

MODEL HD-50
\$27.50



Adapter Hub for NAB 10 1/2" Reels

Permits use of NAB reels with erasers having 5/16" diameter standard spindle. (Not illustrated).

MODEL HD-11-AD Weight: 1/2 lb. \$4.25

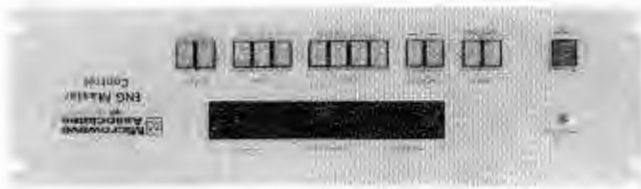
Prices and specifications subject to change without notice





Microwave Associates

A **MA**COM COMPANY



ENG MASTER CONTROL

The ENG Master Control system provides remote control with status read back for Electronic News Gathering (ENG) antenna systems as well as the associated ENG Receiver.

The Microwave Command System consists of an ENG Master Control unit which is located at the studio control point and a remote processing unit, the ENG Slave Control, at the receive antenna site. These units are interconnected typically via dedicated telephone lines (Type 3002). The control terminal includes all system controls and indicators. The remote processor includes contact closures and interfaces with the appropriate local control unit of the antenna and Receiver if so equipped.



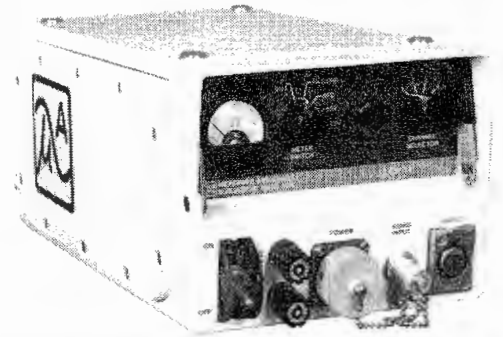
MA-2P PORTABLE 2 GHz ENG RECEIVER

The MA-2P is designed as a companion receiver for both the MA-2CP and MA-2EP ENG transmitters. Its full frequency agility and two audio program channels make it ideal for short term multiple hop ENG transmission. In addition, the MA-2P can also serve as a camera to news vehicle link receiver or be used for emergency restoration. Its lightweight yet rugged portable design is geared for use in the new small size news vans and news cars or may be quickly set up on a tripod, ENG cart or even mast mounted behind the antenna.

MA-7EP PORTABLE MICROWAVE SYSTEM

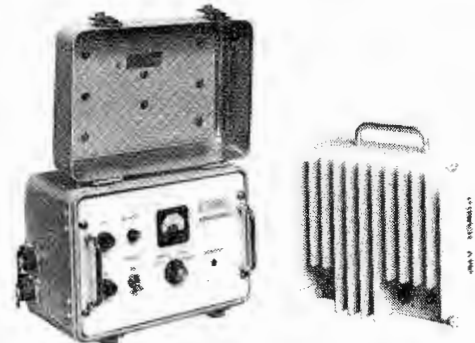
6.875 TO 7.725 GHz

The MA-7EP portable microwave system is designed for video fixed/portable or vehicular broadcasts and FDM message service. A choice of options and control units makes the MA-7EP system ideally suited to television electronic news gathering (ENG), STL/TSL restoration or message transmission. The weatherproof transmitting and receiving units are designed for mast or tower mounting at the antenna location to eliminate feed line losses. A separate control unit provides full system operation and includes all input and output connectors, diagnostic alarms and off-air monitoring capability.



MA-2CP PORTABLE ENG TRANSMITTER 2 GHz BAND

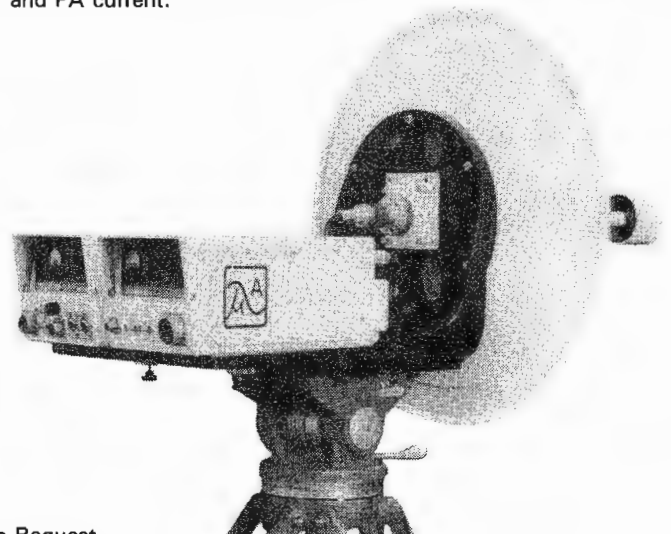
The MA-2CP is an ENG microwave Transmitter designed specifically for use in the new small-sized news vans and ENG cars. This 18 pound, lightweight radio provides a 2W minimum output across the 2 GHz band. Completely self-contained, the unit combines weatherized construction with unique operating features geared especially to ENG field requirements. The MA-2CP incorporates state-of-the-art circuit innovation with proven design techniques for long term dependability.



PA-200 POWER AMPLIFIER 2 GHz BROADCAST BAND

The PA-200 is a solid-state microwave amplifier designed to increase the power output of a MA-2CP or any 1.5 to 2W Transmitter to 15W. The amplifier substantially increases the 2 GHz operating range of small sized news vehicles.

The PA-200 provides broadband performance across the 2 GHz band and includes high VSWR output protection. A front panel meter indicates RF output level, input drive level, supply voltage, and PA current.



Prices on Request

Prices and specifications subject to change without notice





Microwave Associates

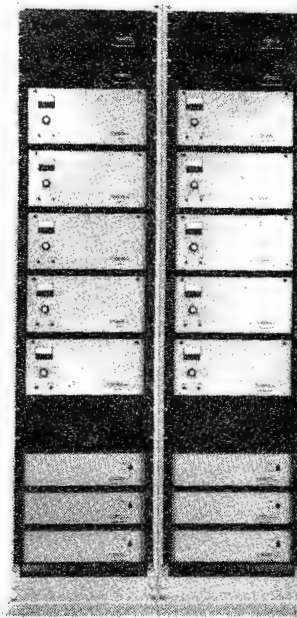
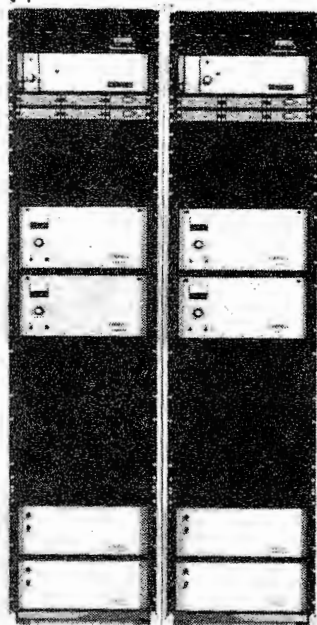
A **MA**COM COMPANY

MA-2G TOTAL SOLID-STATE REMODULATING MICROWAVE RADIO SYSTEM

The MA-2G is ideally suited for studio-Transmitter links. When the reverse Transmitter is included, it is duplexed by an RF combiner, to a common antenna and coaxial feed line system. For medium range (up to 30 miles or 48,27 km) and for long hop application beyond 30 miles, the relatively low absorption of 2 GHz favors its use for reliable STL service. The same feature also favors use of the MA-2G in geographical areas of high annual precipitation. The MA-2G high power output and sensitive Receiver give the broadcaster a maximum fade margin for reliable year round performance and extended range. Consequently, smaller dish size may be used where local ordinances or economic considerations dictate.

Microwave Associates MA-2G series microwave relay equipment is a total solid-state, frequency-modulated, wideband remodulating microwave radio system. The basic equipment operates in the band of 1.7 to 2.66 GHz.

The MA-2G system has the capability of handling a color television channel with four external audio or data subcarriers above the video information or up to 1200 frequency-division-multiplex (FDM) channels with alarms and a service channel to permit service-engineer communications between stations or up to 288 pulse-code-modulated (PCM) channels with external audio or data subcarriers above the baseband.

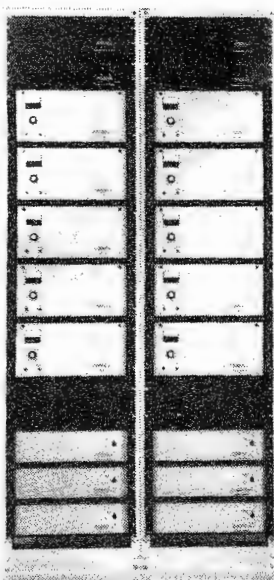
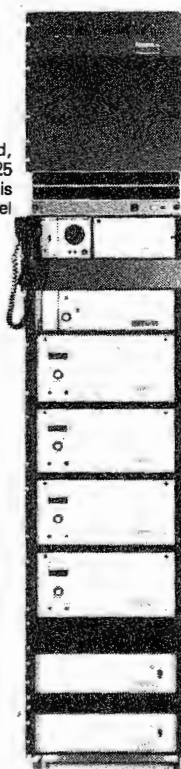


MA-12G ALL SOLID-STATE REMODULATING MICROWAVE RELAY 10.7 TO 13.25 GHz

MA-12G is a modern fully solid-state microwave relay system, designed for use in the 10.7 to 13.25 GHz band. The MA-12G equipment features low differential phase and gain as well as flat base-band frequency response. It is ideally suited for multi-channel, multi-hop applications. Both the high power output Transmitter and the low noise figure Receiver allow the system designer to provide long reliable paths, while maintaining antenna system costs at low levels. The radio system is designed for conventional 30 MHz and 20 MHz channel spacing as well as narrow band 12.5 MHz operation which requires dual-polarized antennas. Transmitters and receivers are independent assemblies and are designed so that they may be maintained without disrupting parallel channels.

MA-6GW SERIES TOTAL SOLID-STATE REMODULATING MICROWAVE RADIO SYSTEM

The MA-6GW Series microwave relay equipment is a wideband, frequency-modulated system, which operates in the 5.925 to 7.125 GHz band. It produces a power output of approximately 5W. This system has the capability of handling a color television channel with four external audio or data subcarriers above the video.

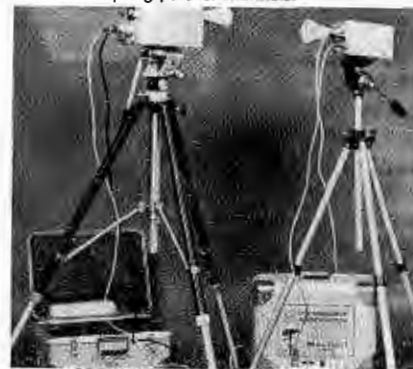


MA-6G SOLID-STATE REMODULATING MICROWAVE RADIO SYSTEM

The MA-6G is a total solid-state remodulating microwave system for wideband message or video application in the 5.924 to 7.125 GHz band.

Prices
on
Request

Prices and specifications subject to change without notice



MA-13CP ULTRA-PORTABLE ENG MICROWAVE LINK

The MA-13CP ENG microwave system provides the broadcaster with an extremely versatile bantam weight FM microwave system for indoor or outdoor television relay coverage. A light weight portable TV color camera, connected to the battery-powered seven-pound MA-13CP relay Transmitter, is "on air" within a few minutes at city hall, stadiums, parade routes, shopping centers or other locations.

The combination of a miniature portable TV camera and MA-13CP "live" microwave relay eliminates the processing dead time of conventional film camera coverage. Active relay to the studio by mobile microwave repeater puts fast breaking news on air or on video tape for playback whenever required. "Window" microwave adds a new dimension in electronic news gathering for fast news and sports television reporting with full FM advantage and high quality audio program channel.

The sensitive MA-13CP Receiver is usually positioned at a mobile van or roof mounted. Horn antennas provide considerable gain while following a relatively wide beam width. This eases path alignment between Transmitter and Receiver locations.



MOSELEY ASSOCIATES, INC.

A FLOW GENERAL COMPANY

Aural Studio-Transmitter Link and Associated Equipment (950 MHz, 450 MHz, 300 MHz, 220 MHz and 150 MHz)

MODELS PCL-505 and PCL-505/C AURAL STUDIO-TRANSMITTER LINKS

The Model PCL-505 Studio-Transmitter Link provides a high-quality audio channel between a broadcast studio and a remote transmitter site. Alternatively, the PCL-505 provides for studio-to-studio, intercity, network, and similar program audio feeds. As the acknowledged leader in the aural STL field, the Moseley Associates PCL-505 provides the unique combination of basic time-proven techniques with the most modern solid-state devices and circuitry. Designed for continuous service, the PCL-505 operates in accordance with the requirements of the Federal Communications Commission as well as licensing bodies of most other countries.

MODEL PCL-101 AURAL STUDIO-TRANSMITTER LINK

Designed for continuous service, the Model PCL-101 Aural Studio-Transmitter Link (STL) provides high-quality audio performance for the modern broadcast station. All solid-state circuitry and advanced techniques enable excellent performance of the PCL-101. Now, an STL system is available for use in either the 150 MHz, 220 MHz, 300 MHz, 450 MHz, or 950 MHz aural studio-transmitter link bands. The PCL-101 can replace leased telephone or other circuits for relaying program audio to a remotely located broadcast transmitter. The PCL-101 STL represents a modest investment for quality service. The PCL-101 STL can be operated with or without pre-emphasis or de-emphasis.

| | |
|---|-----------|
| PCL-505 STL — ALL SOLID-STATE Transmitter and Receiver with self-contained power supplies, crystals, and tested on operating frequency. Versions available for all commonly used bands from 148 MHz to 960 MHz.* | \$4125.00 |
| PCL-505/C COMPOSITE STL — ALL SOLID-STATE Transmitter and Receiver with self-contained power supplies, crystals, and tested on operating frequency. Transmits composite stereo waveform over single STL. Versions available for all commonly used bands from 148 MHz to 960 MHz.* | \$4525.00 |
| PCL-101 STL (148-174 MHz, 215-240 MHz, 300-330 MHz, 450-470 MHz, 890-960 MHz; other frequencies on special order) — ALL SOLID-STATE Transmitter and Receiver with self-contained power supplies, crystals, and tested on operating frequency.* | |
| 148-174 MHz and 215-240 MHz | \$2595.00 |
| 300-330 MHz and 450-470 MHz | \$2895.00 |
| 890-960 MHz | \$3495.00 |
| OPTIONAL CRYSTAL I.F. FILTER ASSEMBLY, for PCL-101 Receiver. Available only for 148-470 MHz. | \$215.00 |
| CRYSTAL SET For Moseley Associates STL's, consists of frequency-determining crystals, includes one transmitter crystal and one receiver crystal.* | |
| PCL-505 and PCL-505/C | \$65.00 |
| PCL-101 | \$60.00 |
| CRYSTAL OVEN Transmitter Crystal Oven for PCL-505, PCL-505/C. | \$30.00 |
| TPT-2 TRANSFER PANEL TRANSMITTER, provides automatic change-over to standby STL transmitter, carrier operated. For use with PCL-101, PCL-505, or PCL-505/C. Specify model of Moseley STL. | \$495.00 |
| TPR-2 TRANSFER PANEL RECEIVER, provides automatic changeover to standby STL receiver, carrier operated. Use with PD-1000 Power Divider. For use with PCL-101, PCL-505 and PCL-505/C. Specify model of Moseley STL. | \$395.00 |
| ECP-5 STL Extension Control Panel, provides carrier control and metering of relative RF power output and AFC for PCL-505 and PCL-505/C. Relative RF power out only for PCL-101. | \$195.00 |



PCL-505 Transmitter



PCL-505 Receiver

Provides STL, intercity and similar continuous duty service



PCL-101 Transmitter



PCL-101 Receiver

| | |
|--|----------|
| PR-450U ANTENNA, Scala Paralector (19.64 dB1 gain at 950 MHz), for 300 MHz to 960 MHz, with Type N female termination, universal mounting for horizontal or vertical polarization, fully anodized, for STL.* | \$380.00 |
| MF-960 ANTENNA, Scala Miniflector (16.14 dB1 gain at 950 MHz), for 940-960 MHz, with Type N female termination, universal mounting for horizontal or vertical polarization, fully anodized, for STL. Not recommended for congested areas.* | \$200.00 |
| ICU-1 ISOCOUPLER, (940-960 MHz), facilitates mounting STL antenna on ungrounded AM tower.* | \$225.00 |
| ICU-2 ISOCOUPLER, (450-470 MHz), facilitates mounting STL antenna on ungrounded AM tower.* | \$225.00 |
| ICU-3 ISOCOUPLER (150-172 MHz), facilitates mounting STL antenna on ungrounded AM tower.* | \$225.00 |
| PD-1000 POWER DIVIDER. Amtex Microwave 10 MHz-1000 MHz, Broadband, in phase two-way with N type female connectors. Facilitates coupling two STL or RPL() receivers to common antenna. Supplied with two 3' RG-8/U pigtail assemblies. | \$205.00 |

COAXIAL TRANSMISSION LINE AND CONNECTOR KITS

| | |
|---|----------------|
| LDF4-50 HELIAX*** Low-loss Coaxial Transmission Line, 1/2", foam dielectric, 50 ohm, jacketed. | Per Ft. \$1.12 |
| KTL-6 CONNECTOR KIT, for LDF4-50, includes two Type N connectors (female connectors normally supplied) and two 3' RG-8/U pigtail assemblies. ONE KIT REQUIRED FOR EACH ANTENNA. | \$65.00 |
| LDF5-50 HELIAX*** Low-loss Coaxial Transmission Line, 7/8" foam dielectric, 50 ohm, jacketed. | Per Ft. \$2.94 |
| KTL-7 CONNECTOR KIT, for LDF5-50, includes two Type N connectors (female connectors normally supplied) and two 3' RG-8/U pigtail assemblies. ONE KIT REQUIRED FOR EACH ANTENNA. | \$102.00 |
| RG-8/U 3' Pigtail Assembly, Type N male connector on each end. | \$18.50 |



Prices and specifications subject to change without notice

MOSELEY ASSOCIATES, INC.

A FLOW GENERAL COMPANY

Solid-State Multiplex Equipment for Stereo, SCA, and STL Applications

MODEL SCG-9 STEREO GENERATOR

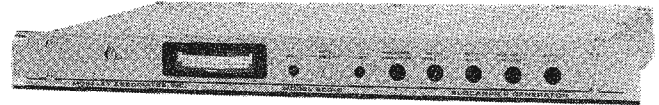
The Model SCG-9 Stereo Generator provides a composite stereo signal of the highest quality. Although this all solid-state generator is intended primarily as a companion to the Moseley Associates composite STL (a single link for stereo), it may be used with most direct FM excitors. The SCG-9 easily meets the requirements of Section 73.322 of the FCC Rules and Regulations. A minimum of adjustments and rigid manufacturing tolerances promise excellent quality and dependable performance.

MODEL SCG-8 SUBCARRIER GENERATOR MODEL SCD-8 SUBCARRIER DEMODULATOR

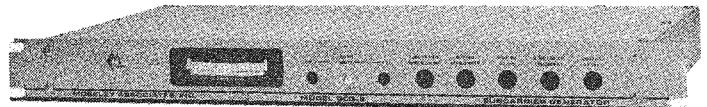
Series "8" Subcarrier System forms a revolutionary FM system providing superior performance. The Series "8" System consists of the Model SCG-8 Subcarrier Generator and Model SCD-8 Subcarrier Demodulator. These units may be individually used to meet specific requirements such as SCA service on an FM broadcast transmitter, or telemetry service. This system is ideally suited to aural studio-transmitter link (STL) service. Providing a means of establishing a secondary program channel, the Series "8" System enables multiplexing SCA program audio, provides for remote pickup link audio, or serves as an intercom on an STL. Command information from a remote control system can also be conveyed by the SCG-8 and SCD-8.



Model SCG-9 Stereo Generator



Model SCD-8 Subcarrier Demodulator



Model SCG-8 Subcarrier Generator

| | |
|--|-----------|
| SCG-9 FM STEREO GENERATOR, includes power supply and peak-reading deviation meter. | \$1495.00 |
| SCG-8 SUBCARRIER GENERATOR, with automatic muting and front-panel peak-deviation meter, including self-contained power supply. Available for operation in the 26 kHz to 185 kHz spectrum. Specify operating frequency when ordering. | \$795.00 |
| SCD-8 SUBCARRIER DEMODULATOR, with automatic muting and front-panel peak-deviation meter, including self-contained power supply. Available for operation in the 26 kHz to 185 kHz spectrum. Specify operating frequency when ordering. | \$795.00 |

EMERGENCY POWER GENERATORS

HARRIS HAS WORLDWIDE SYSTEM EXPERIENCE IN SATISFYING THE EMERGENCY POWER REQUIREMENTS FOR BROADCASTING PLANTS. ELECTRIC GENERATORS IN NUMEROUS SIZES AND VOLTAGES, DRIVEN BY GASOLINE, LP GAS AND DIESEL FUEL AND WITH MANUAL OR AUTOMATIC CHANGEVER ARE AVAILABLE FROM HARRIS.

CONTACT YOUR HARRIS DISTRICT SALES MANAGER OR THE HARRIS QUINCY SALES OFFICE AND WE WILL QUOTE THE EMERGENCY POWER EQUIPMENT TAILORED TO MEET YOUR SPECIFIC REQUIREMENTS.

Prices and specifications subject to change without notice



MOSELEY ASSOCIATES, INC.

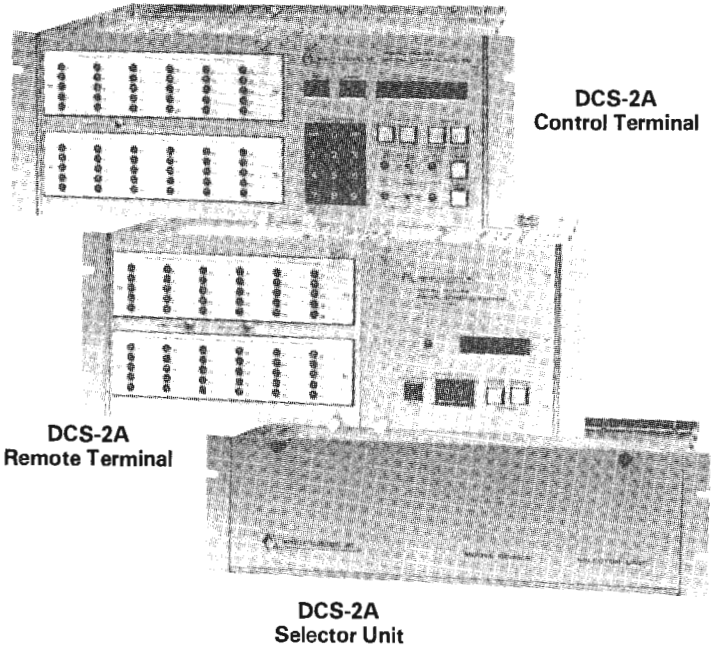
A FLOW GENERAL COMPANY

Digital Transmitter Remote Control and Logging Equipment

MODEL DCS-2A DIGITAL CONTROL SYSTEM

With the capability of facilitating truly automated operation, the Moseley Associates Model DCS-2A Digital Control System utilizes the latest state-of-the-art digital techniques and allows computer-assisted operation. Designed to permit field expansion of all capabilities, the DCS-2A enables accurate operation of a remotely-located plant or multiple plants such as broadcast transmitting facilities. The system enables the remote execution of a command and the telemetering of analog and status parameters while requiring only the most basic interconnecting facilities.

Three levels of system operation are available with the DCS-2A. Level One provides the basic system which gives a fully operational manual system providing command capability as well as the telemetering of analog and status parameters. The second level permits computer-assisted operation of the DCS-2A. This level involves the addition of a minicomputer and includes simultaneous multiparameter displays via a cathode-ray tube (CRT) display terminal, and other operating aids. Software permits upper and lower tolerance checking of all analog parameters, multiple-level status alerting, and automatic parameter logging. Of special importance is that the addition of the DCS-2A Computer Option does not affect operation of the basic system. As a computer-assisted system, should a failure occur in any of the equipment constituting the Computer Option, the basic DCS-2A system will continue to function properly. The third and final level involves the addition of software to the DCS-2A Computer Option to allow totally automated operation of the remotely-located facility.



MODEL DCS-2A DIGITAL CONTROL SYSTEM WITH COMPANION AUTOMATIC LOGGING EQUIPMENT AND COMPUTER OPTION

SINGLE TRANSMITTER SITE OPERATION

DCS-2A DIGITAL CONTROL SYSTEM, to provide 30 telemetry/command channels and 30 status channels to a single transmitter site, (can be expanded to a total of 90 telemetry/command channels and 60 status channels with 30-Channel Status Subsystem and Selector Unit shown below), includes:

- 1 Control Terminal — Single Site
- 1 Remote Terminal
- 1 Selector Unit

\$16,950.00

30-CHANNEL STATUS SUBSYSTEM, for expansion of single-site DCS-2A to a total of 60 status channels. Functions only with DCS-2A. \$1495.00

SELECTOR UNIT — DCS-2A, for expansion of DCS-2A telemetry/command channels. For 60 channels, add one (1) Selector Unit; for 90 channels, add two (2) Selector Units. \$2750.00

DUAL TRANSMITTER SITE OPERATION

DCS-2A DUAL-SITE DIGITAL CONTROL SYSTEM, to provide 30 telemetry/command channels and 30 status channels to each of two transmitter sites, (can be expanded to a total of 90 telemetry/command channels and 60 status channels to each transmitter site with DUAL-SITE 30-CHANNEL STATUS SUBSYSTEM and Selector Unit shown below), includes:

- 1 Control Terminal — Dual Site
- 2 Remote Terminal
- 2 Selector Unit

\$27,950.00

SELECTOR UNIT — DCS-2A, for expansion of DCS-2A telemetry/command channels to each transmitter site. For dual-site system desiring expansion to 60 telemetry/command channels to both sites, use a total of two (2) Selector Units. For expansion to 90 channels to both sites, use a total of four (4) Selector Units. \$2750.00

DUAL-SITE 30-CHANNEL STATUS SUBSYSTEM, for expansion of a dual-site DCS-2A to a total of 60 status channels to one transmitter site. For expansion to a total of 60 status channels to both transmitter sites, use this item and the 30-Channel Status Subsystem listed below. Functions only with DCS-2A. Includes Status Expansion Chassis. \$2495.00

30-CHANNEL STATUS SUBSYSTEM, for expansion of second transmitter site to a total of 60 status channels. Use only with Dual-Site 30-Channel Status Subsystem shown above. Functions only with DCS-2A. Model TAU-3 Tolerance Alarm Unit available for DCS-2A Status Subsystem. Refer to Remote Control and Logging Accessories. \$1495.00

PARAMETER LOGGING

PLU-2 PARAMETER LOGGING UNIT, for use with DCS-2A Remote or Control Terminals, records up to 20 telemetry channels, includes Data Receiver, Programmer Main Frame and Printer. Can be positioned at either transmitter site or remote control point (studio). Will function with either Single Transmitter Site or Dual Transmitter Site DCS-2A. One (1) Programmer Module required for each channel to be logged by the PLU-2. \$7250.00

PLU-2 PROGRAMMER MODULE, for use with PLU-2 Parameter Logging Unit. One (1) Programmer Module required for each channel to be logged by the PLU-2. \$165.00

COMPUTER OPTION

COMPUTER OPTION — SINGLE SITE, for single Transmitter Site DCS-2A Digital Control System, provides computer-assisted operation. Option includes standard single-site software to provide display, tolerance, and automatic parameter logging functions as outlined in DCS-2A product bulletin, includes:

- 1 Central Processing Unit with 16K memory
- 1 Cathode-Ray Tube (CRT) Display and Control Terminal
- 1 Data Printer
- 1 DRU-1 Data Recorder Interface Unit

\$28,750.00

COMPUTER OPTION — DUAL SITE, for Dual-site DCS-2A Digital Control System, provides computer-assisted operation. Option includes standard dual-site software to provide display, tolerance, and automatic parameter logging functions as outlined in DCS-2A product bulletin, includes:

- 1 Central Processing Unit with 16K memory
- 1 Cathode-Ray Tube (CRT) Display and Control Terminal
- 1 Data Printer
- 1 DRU-1 Data Recorder Interface Unit

\$29,950.00

DRU-1 DATA RECORDER INTERFACE UNIT, provides rapid (1750 baud) program storage or loading for the central processing unit of the Model DCS-2A Computer Option. For use with user-supplied audio tape machine. \$2250.00

NOTE: Equipment in Computer Options shown above is manufactured by firms in the computer industry. Warranties, and other services provided by computer industry manufacturers differ from those common to the broadcasting industry. For further information on these warranties and services, please contact our Marketing Department.

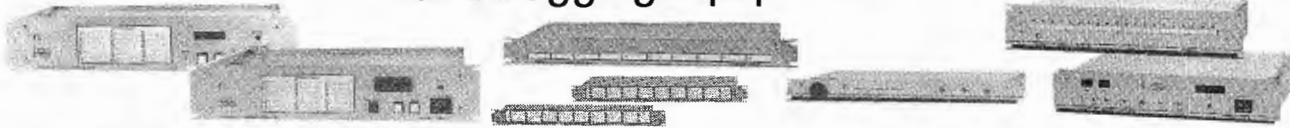


Prices and specifications subject to change without notice

MOSELEY ASSOCIATES, INC.

A FLOW GENERAL COMPANY

Digital Transmitter Remote Control and Logging Equipment



MODEL DRS-1A DIGITAL REMOTE SYSTEM

DRS-1AW

Only a single voice-grade telephone circuit is required for operation of the DRS-1AW. Frequency-shift keyed (FSK) audio tones are utilized for command and telemetry information.

DRS-1AR

For wireless service, the DRS-1AR is designed to function with Moseley Aural STL equipment. Control information is transmitted to the Remote Terminal via an FM subcarrier multiplexed on the STL. A control FM subcarrier generator and demodulator are standard in the DRS-1AR.

MODEL DRS-1A DIGITAL REMOTE SYSTEM MODEL DLS-1 DIGITAL LOGGING SYSTEM

DRS-1AW DIGITAL REMOTE SYSTEM, for operation over single voice-grade telephone line or equivalent interconnecting circuits, to provide 10 telemetry/command channels. DRS-1A can be expanded to a total of 20 or 30 telemetry/command channels by addition of Selector Units shown below. Includes:

1 Control Terminal
1 Remote Terminal
1 Selector Unit \$4250.00

DRS-1AR DIGITAL REMOTE SYSTEM, for wireless operation, with audible telemetry, to provide 10 telemetry/command channels, with control subcarrier generator and demodulator, for use with Moseley STL. Advise STL model and subcarrier frequency when ordering. DRS-1A can be expanded to a total of 20 or 30 telemetry channels by addition of Selector Units shown below. Includes:

1 Control Terminal, with control subcarrier generator (frequency to be specified)
1 Remote Terminal, with control subcarrier demodulator (frequency to be specified)
1 Selector Unit \$4550.00

SELECTOR UNIT — DRS-1A, for expansion of DRS-1A to a total of 20 or 30 telemetry/command channels. For 20 channels, add one (1) Selector Unit; for 30 channels, add two (2) Selector Units. Specify if unit for Channels 11 thru 20 or 21 thru 30. Each: \$775.00

DIGITAL STATUS SUBSYSTEM, functions with basic DRS-1A Digital Remote System operating on telephone or equivalent interconnecting circuits, provides 24 channels, includes:

1 Status Panel-Control Terminal
1 Status Panel-Remote Terminal \$1050.00

TELEMETRY SUBCARRIER (SCA) GENERATOR MODULE, for use with DRS-1A Digital Remote System for telemetry return only. For TV applications, specify 39 kHz; for FM, 67 kHz. Other frequencies 26 kHz to 185 kHz on special order. Mounts within DRS-1A Remote Terminal. Specify for use with DRS-1A. \$165.00

TELEMETRY SUBCARRIER DETECTOR MODULE, for use with DRS-1A Digital Remote System for telemetry return only. For TV applications, specify 39 kHz; for FM, 67 kHz. Other frequencies 26 kHz to 185 kHz on special order. Mounts within DRS-1A Control Terminal. Specify for use with DRS-1A. \$165.00

DLS-1 DIGITAL LOGGING SYSTEM, records up to 20 parameters, includes Sampling Terminal, Sampling Interface and Printing Terminal. Operates as independent system or in conjunction with DRS-1A. \$7995.00

Model TAU-3 Tolerance Alarm Unit available for DRS-1A Status Subsystem and DLS-1 Digital Logging System. Refer to Remote Control and Logging Accessories.

REMOTE CONTROL AND LOGGING ACCESSORIES

FSU-1 FAIL-SAFE UNIT, for use with DCS-2A Digital Control System and DRS-1A Digital Remote System, provides full compliance with FCC Rules and Regulations for TV telemetry fail-safe operation. For parallel transmitter configuration, two FSU-1 Fail-Safe Units required. \$595.00

TAU-3 TOLERANCE ALARM UNIT Main Frame, will accommodate up to eight plug-in comparator modules. For use with DLS-1 Digital Logging System, DRS-1A Status Subsystem, or DCS-2A Status Subsystem(s). \$295.00

PLUG-IN COMPARATOR MODULE for TAU-3 Tolerance Alarm Unit Main Frame. \$135.00

STATUS SUBSYSTEM

The Status Subsystem provides 24 status/alarm, or go/no-go type indications. It functions as an integral part of the DRS-1AW or DRS-1AR.

MODEL DLS-1 DIGITAL LOGGING SYSTEM

Operating parameters are recorded dependably and accurately by the Model DLS-1 Digital Logging System. This logging system operates independently or in conjunction with the companion DRS-1A Digital Remote System.

AMU-1 ANTENNA MONITOR INTERFACE UNIT, for interface of remote control and automatic logging systems to an AM antenna monitor.

For up to: 4 towers \$1495.00
8 towers \$1895.00
12 towers \$2295.00

MIU-2 Metering Insertion Unit, enables mixing of subaudible metering signal with program audio. For AM broadcast and FM SCA operation. \$375.00

DCA-2 DC Amplifier, isolated input. Provides low-level telemetry amplification and power-to-linear conversion. One required for each logarithmic power output parameter to be digitally telemetered or logged. \$475.00

TLK-2 Tower Light Sampling Kit. \$95.00

LVK-3 Line Voltage Sampling Kit (120 VAC to 440 VAC, 50-60 Hz). \$90.00

PVK-1A Plate Voltage Sampling Kit, for plate voltages thru 3kV. Specify normal operating plate voltage. \$85.00

PVK-1B Plate Voltage Sampling Kit, for plate voltages 3kV thru 10kV. Specify normal operating plate voltage. \$85.00

PVK-2 Plate Voltage Sampling Kit, for plate voltages 10kV thru 20kV. Specify normal operating plate voltage. \$95.00

MBB-1 Universal Plate Circuit (Ipp or Ebb) Sampling Kit. Used when sampling points are either above or below ground potential. (Requires external shunt or series resistor. Resistor not supplied). \$135.00

RFK-1 AM RF Transmission Line Voltage Sampling Kit. \$75.00

RFK-2 FM RF Transmission Line Voltage Sampling Kit, for 3-1/8" line. \$75.00

RFK-3 FM RF Transmission Line Voltage Sampling Kit, for 1-5/8" line. \$75.00

TSK-3A Temperature Sensing Kit, remoteable sensor. Includes power supply for operation from 120/240 VAC, 50-60 Hz. \$145.00

MMA-1 MODULATION MONITOR ADAPTER. Adapts audio output to analog remote control telemetry. \$175.00

RMK-1 Reversible Motor Kit with adjustable clutch. \$165.00

MPP-1 Motorized Potentiometer Panel, provides remote control of three potentiometers. Specify value of potentiometers desired. Two-watt carbon potentiometers included. \$325.00

CIP-1 Control Interface Panel, provides for use of slave or repeating relays with Moseley Associates Remote Control Systems. Accepts up to seven (7) relays. Relays not included. \$95.00

DCP-1 DC Power Supply, 24 VDC, 1A into 7 parallel terminals. For use with CIP-1 Control Interface Panel, rack mount; 120/240 VAC, 50-60 Hz input. \$195.00

DCP-2 Two DC Power Supplies in common rack mount, 24 VDC, 2A into 14 (2 x 7) parallel terminals. For use with CIP-1 Control Interface Panel; 120/240 VAC, 50-60 Hz input. \$295.00

Type 5480DC Relay, DPDT, momentary closure, coil for 24 VDC. \$15.25

Type 5480AC Relay, DPDT, momentary closure, coil for 120 VAC. \$16.50

Type 5481DC Relay, SPDT, magnetic latching, coil for 24 VDC. \$19.50

Type 5481AC Relay, SPDT, magnetic latching, coil for 120 VAC. \$22.50

Type 5478 Relative Power Monitor, for evaluating the transmission line system associated with low-powered transmitters operating in the 80 MHz to 960 MHz spectrum. Type 5478 for 80-500 MHz; Type 5478A for 500-960 MHz spectrum. Specify Type 5478 or Type 5478A when ordering. \$165.00

FM TELEMETRY RECEIVER — McMartin TR-55 SCA Receiver. For use with Moseley Model TRC-15AR analog and all digital remote control systems. For earlier subaudible systems, contact Marketing Department. Recovers 67 kHz SCA; wall mount. Specify exact FM broadcast operating frequency (88-108 MHz) when ordering. \$135.00

Prices and specifications subject to change without notice



MOSELEY ASSOCIATES, INC.

A FLOW GENERAL COMPANY

MODEL TCS-1 TELECONTROL SYSTEM

Fully independent command and status reporting capability is provided by the Model TCS-1 Telecontrol System. Applications for the TCS-1 include command and status (tally-back) from broadcast transmitters, electronic news-gathering or similar antenna systems, microwave transmitters and receivers, remotely-located television cameras, or industrial applications. Consisting of a Command Terminal and Remote Terminal, the TCS-1 provides eight command and eight status functions. The TCS-1 is designed such that two systems may be combined on a single interconnecting path to provide a total of 16 command and 16 status functions. Operation is normally from AC power sources, but the TCS-1 may be optionally ordered for all common DC power sources.

TCS-1 TELECONTROL SYSTEM, provides eight independent command and eight status functions. Expandable to a total of 16 command and 16 status functions by addition of second TCS-1 or TCS-2 system on common 3 kHz interconnect. Consists of Command Terminal and Remote Terminal.

\$1850.00

INDEPENDENT COMMAND AND STATUS



COMMAND TERMINAL. Command input switches are to the right on the front panel and status LED displays to the left.



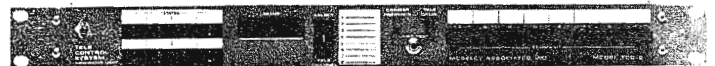
REMOTE TERMINAL. LED displays provided to indicate activated command channels as well as status channel condition.

MODEL TCS-2 TELECONTROL SYSTEM

Fully independent command, status reporting and telemetry capability is provided by the Model TCS-2 Telecontrol System. Applications for the TCS-2 include command, status (tally-back) and telemetry of broadcast transmitters, electronic news gathering systems or industrial applications. Telemetry and fail-safe capabilities enable full compliance with FCC Rules and Regulations for AM and FM broadcast transmitter remote control. Consisting of a Command Terminal and Remote Terminal, the TCS-2 provides eight command, eight status and eight telemetry functions. A Remote Terminal digital telemetry display affords one-man calibration. The TCS-2 is designed for two systems to be combined on a single innerconnect path to provide a total of 16 command, 16 status and 16 telemetry functions. Also, a mixture of TCS-2 and TCS-1 Systems can be operated over a single interconnect path. The TCS-2 and TCS-1 Systems are similar in design, are compatible, and should both be considered in configuring your system.

TCS-2 TELECONTROL SYSTEM, provides eight independent command, status and digital telemetry functions. FCC acceptable for AM and FM broadcast transmitter remote control. Digital telemetry provides one-man calibration. Expandable by stacking two TCS-2 systems, or mixture with TCS-1 on common 3 kHz interconnect circuit. \$2495.00

INDEPENDENT COMMAND, STATUS AND TELEMTRY



COMMAND UNIT. Command input switches are to the right, telemetry channel selector/display center, status LED displays to the left.



REMOTE UNIT. Command and status activity LED indicators are to the left, telemetry channel selector/display center, telemetry calibration to the right.

NEW

MODEL TCS-2M TELECONTROL SYSTEM

The Model TCS-2M Telecontrol System is a member of the Moseley Associates Inc. family of telecontrol system. The Models TCS-1 and TCS-2 Telecontrol Systems are oriented to single site general industrial service, communications monitoring service, earth station remote control, and broadcast service. The Model TCS-2M system was designed by Moseley Associates to be used by a major oil corporation as a microwave monitoring system in the Gulf of Mexico. The specifications of the TCS-2M are based upon those of the Model TCS-2 Telecontrol System.

This system provides multisite capability with up to 99 sites being accommodated. Each remote site accepts 16 status (go/no go) inputs, 8 analog telemetry inputs, and has the capability of issuing 8 individual control commands. Power conservation at the remote offshore platforms is a must; for that reason, all front-panel indicators and displays are normally off, with a momentary switch provided to key illumination, when required.

The TCS-2M system is of the interrogation type. The Master Terminal makes possible the observation of the entire system and the issuing of appropriate commands, either manually from the front panel, or by means of user CPU terminal equipment. One or more Master Terminals can be accommodated on the system in an "active" or "passive" mode.

\$2495.00

NEW

MODEL SCM-1 SUBCARRIER MAIN FRAME

The Model SCM-1 Subcarrier Main Frame is designed to so equip Moseley Associates remote control systems otherwise non-equipped with internal subcarrier modules. Specifically, the Model TCS-1 and other Telecontrol Systems are not packaged for internal subcarrier module mounting to conserve physical space and power supply capacity. The SCM-1 allows one subcarrier generator and one subcarrier demodulator (or any combination thereof) to be mounted adjacent to, or physically removed from the remote control panels. Such subcarrier equipment may be utilized on Moseley Associates Aural Studio-Transmitter Links, various video STL's aural shelves, or FM/TV aural broadcast transmitters.

Physical 19" rack mounting, AC primary power supply and Input/Output ports are provided by the SCM-1 "Main Frame" itself. Subcarrier generator and demodulator modules from existing Moseley Associates remote control equipment with internal subcarrier capability are utilized, in a "bolt-in" approach, to complete the SCM-1. Test points and adjustments are internal. For complete, front-panel metering and adjustment requirements, the Models SCG-8 Subcarrier Generator and SCD-8 Subcarrier Demodulator should be considered.

SCM-1
Subcarrier Generator (26-185 kHz)
Subcarrier Demodulator (26-185 kHz)

\$365.00
\$165.00
\$165.00

Prices and specifications subject to change without notice



MOSELEY ASSOCIATES, INC.

A FLOW GENERAL COMPANY

Solid-State Analog Transmitter Remote Control Equipment



MODEL TRC-15A REMOTE CONTROL SYSTEM

For Wire and Wireless Remote Control

With 15 metering channels and 30 individual control functions, the all solid-state Model TRC-15A Remote Control System has sufficient versatility to fulfill current requirements and future needs. Flexibility and adaptability are easily obtained with the TRC-15A. Two versions of the TRC-15A Remote Control System are available. These are Models TRC-15AW and TRC-15AR. The only interconnection requirement of the TRC-15AW is any duplex, voice-grade circuit. True wireless remote control can be accomplished with the TRC-15AR. Control subcarrier equipment is standard in this version for multiplexing control information on a Moseley Aural Studio-Transmitter Link. Field conversion to either configuration is possible without rewiring . . . simply exchange the appropriate modules.

The circuitry of the TRC-15A is of modular construction, using carefully chosen combinations of integrated circuits and discrete components. The system is noiseless in operation. . . employing no stepper relay. Binary numbers generated by the front-panel push-button assembly of the Studio Unit are encoded to command channel selection. The use of individual relays in the Transmitter Unit makes system operation noiseless.

Unique cabinetry provides full access to all circuitry in the TRC-15A. All active circuitry in the Studio Unit is housed in a slide-out drawer assembly. A similar slide-out drawer and swing-away door are used in the Transmitter Unit. See the photographs to the right. Front-panel pulls simplify access. All applicable solid-state devices are socketed.

Several features of the TRC-15A are of special interest. Channel selection is simplified by the use of push buttons on the Studio Unit. Optional external meters for display of any selected channel are simply connected to the appropriate barrier terminals. Four external meters may be used with the TRC-15A. Long-life, light-emitting diodes (LED) are used as visual indicating devices on the TRC-15A. Indicators are provided on the Transmitter Unit to show the selected channel. Auxiliary power supply voltages are available from the rear apron of the Transmitter Unit to power Moseley telemetry accessories.

- TRC-15AW WIRE REMOTE CONTROL SYSTEM, SOLID-STATE, 15-channel, 1 meter, for use on single AC pair. \$2195.00
- TRC-15AR RADIO (STL) REMOTE CONTROL SYSTEM, SOLID-STATE, 15-channel, 1 meter, with control subcarrier generator and detector, for use with Moseley STL. Advise STL model and subcarrier frequency when ordering. \$2495.00
- TELEMETRY SCA GENERATOR MODULE, for use with TRC-15A Remote Control System for telemetry return only, frequency 67 kHz. Other frequencies 6 kHz to 185 kHz on special order. Specify for use with TRC-15A. \$165.00
- 1077-() REMOTE METER PANEL, for use with Moseley analog remote control systems. Select desired meter scales from Technical Notes 220. Available in one, two or three-meter configurations.
- | | |
|--------------------------|----------|
| 1077-1 One-Meter Panel | \$ 90.00 |
| 1077-2 Two-Meter Panel | \$115.00 |
| 1077-3 Three-Meter Panel | \$145.00 |

Prices and specifications subject to change without notice



MOSELEY ASSOCIATES, INC.

A FLOW GENERAL COMPANY

Remote Pickup Equipment — All Solid-State

(160 MHz and 450 MHz — 215 MHz and 300 MHz on special order)

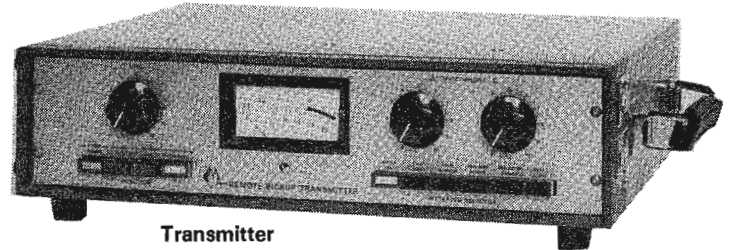
REMOTE PICKUP LINKS and RF POWER AMPLIFIERS FOR MOBILE, PORTABLE, and OUTSIDE BROADCAST SERVICE

Model RPL-3 for 148-174 MHz/Model RPL-4 for 450-470 MHz

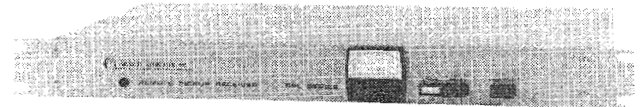
Compactness and portability characterize the Moseley Associates Models RPL-3 and RPL-4 Remote Pickup Links. The transmitter weighs a mere 16 pounds, and is only 4 inches high — including three-channel audio mixing. The companion receiver occupies only 1¾ inches of rack space.

Two full-time microphone input channels and one high-level line input channel are provided by the audio portion of the RL-3/RPL-4 Transmitter. All input connectors are conveniently located near the front panel of the transmitter. Each microphone preamplifier has its own input transformer, eliminating ground loops and enhancing signal-to-noise ratio. A newly designed peak audio limiter is included in the transmitter to prevent overmodulation. Attack time of the limiter is one millisecond, with release time of 700 milliseconds. Unique circuitry reduces distortion at even the lowest audio frequencies. The limiter has a typical control range greater than 25 dB, relieving the operator from constant varying of audio levels with the changing audio levels associated with remote broadcasts.

Full metering of all important parameters is provided on the transmitter. For monitoring audio levels, a peak audio position is provided. Also, forward power, reflected power, final current, RF drive, and power supply voltage may be observed. Selection is accomplished by unique, color-keyed, front-panel push buttons.

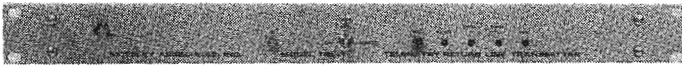
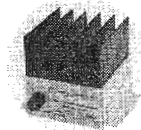


Transmitter



Receiver

Models AMP-3 and
AMP-4 RF Power
Amplifiers



NEW

MODEL TRL-1 TELEMETRY RETURN LINK

The TRL-1 Telemetry Return Link is intended to provide telemetry, control and operational communications associated with FCC-licensed AM, FM, non-commercial FM, TV, international (short wave) broadcast stations and eligible network entities. Operation is per FCC Part 74, Subpart D, Remote Pickup Broadcast Stations, Group P [74.402 (a) (7)]. Such service meets the demands of digital remote control wireless operation and other operational communications where STL or broadcast carrier service is not utilized.

- RPL-3A REMOTE PICKUP LINK, ALL SOLID STATE Transmitter with internal AC and DC power supplies and ALL SOLID-STATE Receiver with internal AC power supply, for operation in the 148-174 MHz band. Tuned and tested on operating frequency. Includes crystals for one frequency.* For 25F3 and 30F3 channels; FCC Groups K1, K2, L and M. \$2575.00
- RPL-4A REMOTE PICKUP LINK, ALL SOLID-STATE Transmitter with internal AC and DC power supplies and ALL SOLID-STATE Receiver with internal AC power supply, for operation in the 450-470 MHz band. Tuned and tested on operating frequency. Includes crystals for one frequency.* For 25F3 channels; FCC Group N2. \$2875.00
- RPL-4B REMOTE PICKUP LINK, ALL SOLID-STATE Transmitter with internal AC and DC power supplies and ALL SOLID-STATE Receiver with internal AC power supply, for operation in the 450-470 MHz band. Custom modification for RPL-4B allowing 15 kHz audio response, add \$150.00. Tuned and tested on operating frequency. Includes crystals for one frequency.* For 50F3 and 100F3 channels; FCC Groups N1, R and S. \$2875.00

A nominal one-watt power output together with directional high-gain antennas, efficient coaxial transmission line and line-of-sight clearance can typically provide service over 30 or more miles. An optional MCW identifier and battery backup combine to signal (and survive) loss of AC power. An audio limiting device is provided as an integral part of the transmitter to prevent overmodulation.

As with other RPL channels, operation is assigned on a common "shared" basis with area licensees. Due to the potential high demand for all RPL service, it is most important that local licensees coordinate such spectrum activity. The FCC encourages the use of high gain, directional antenna systems to aid in this organization. Price on Request.

- OPTIONAL CARRIER-OPERATED SQUELCH RELAY, for RPL-3A, RPL-4A or RPL-4B Receiver. This option to be specified at time of order. \$50.00
- CRYSTAL SET for RPL-3A, RPL-4A and RPL-4B Remote Pickup Links. Second frequency or spare; consists of frequency-determining crystals including one transmitter crystal and one receiver crystal. Specify exact operating frequency when ordering. \$60.00
- AMP-()A RF POWER AMPLIFIER, for use with Remote Pickup Link Transmitter. FCC type accepted with above transmitters.
- AMP-3A for 150-170 MHz, 13.5 VDC operation \$325.00
 - AMP-3A/AC Rack Mounted with AC Power Supply \$795.00
 - AMP-4A for 450-470 MHz, 13.5 VDC operation \$395.00
 - AMP-4A/AC Rack Mounted with AC Power Supply \$865.00
- ICU-3 ISOCOUPLER (for 150-172 MHz), facilitates mounting remote pickup antenna on ungrounded AM tower.* \$225.00
- ICU-2 ISOCOUPLER (for 450-470 MHz), facilitates mounting remote pickup antenna on ungrounded AM tower.* \$225.00

* Specify operating frequency when ordering. Special order frequencies available. Contact our Marketing Department for assistance in selection of antennas and transmission line.

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Prices and specifications subject to change without notice

NATIONAL ELECTROLAB LTD.

MODEL RFA-5

AM RF AMPLIFIER

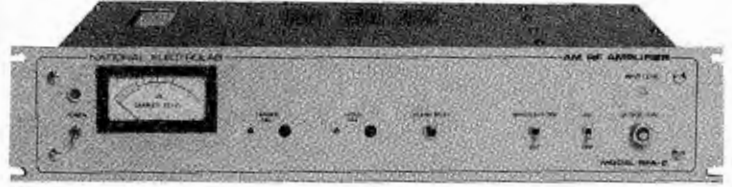
For AM Broadcast Monitoring Applications

The RFA-5 AM RF Amplifier is designed to operate frequency and modulation monitors at a location remote from the transmitter, typically at the studio. When driven by a local antenna with an RF signal as low as 0.6 mv, the RFA-5 will drive most contemporary AM monitoring equipment, as well as providing a low-level output for an oscilloscope, and a clipped/limited output for a standard frequency counter.

A signal-strength meter is provided for ease of setup and for monitoring received signal levels. The switchable AGC circuit keeps all outputs constant for received signal variations of over 30dB. Finally, optional alarm and audio packages allow the user to custom tailor the RFA-5 to his own individual requirements.

The RFA-5 continues the high standards of excellence established by the previous model RFA-4. The design is proven and reliable. The RFA-5 is a TRF amplifier — no oscillator, mixer or IF stages are used. The off-air signal is directly amplified with minimum distortion. Four double-tuned selective stages in the RF preamplifier, together with a MOS-FET front-end provide outstanding performance in frequency congested areas.

Conservatively rated components throughout the amplifier make the RFA-5 a reliable and stable performer — a versatile and useful addition to any AM broadcast station.



Features

- Reliable, trouble free operation
- Signal strength meter for easy set-up
- 30 dB AGC range
- Three RF outputs for monitors, frequency counter and oscilloscope
- Broad RF passband with high selectivity
- Optional 600 ohm balanced audio output and carrier/audio-fail alarms

Options

Audio Option

This option provides a low distortion, 600 ohm balanced audio output, and a switchable 10 kHz whistle filter. Audio output specifications are:

Output Impedance: 600 ohm nominal, balanced

Level: 0 dB into 600 ohm at 50% modulation

Response relative to 1 kHz:

With whistle filter

OUT: +/- 1 dB, 30 Hz to 10 kHz

-3 dB, 10 Hz and 11 kHz

IN: -30 dB at 10 kHz

Distortion: 0.4% at 70% modulation

1% at 95% modulation

Hum and Noise: -55 dB relative to 100% modulation

Whistle Filter: Switchable by front panel switch or by rear-panel terminals for remote control

Alarm Option

The Alarm Option provides both Carrier-Fail and Audio-Fail alarms. Front panel LED lights provide separate visual indication of alarm conditions. Both alarms share a common "Sonalert" audible alarm which can be muted by a front panel push-button or remotely by rear-panel terminals.

Alarms may be remotely extended by rear panel alarm relay contacts which provide a pulsing action and solid transfer (NO and NC contacts provided in both cases).

Carrier and Audio Fail alarms are both adjustable from the front panel. The Alarm is delayed approx. 20 seconds for carrier failure, and approx. 40 seconds for audio failure; the actual delay times depend upon set point and nature of failure.

Accessories

Type LA-1 Loop Antenna: Simple 3-foot diameter 2-turn shielded flexible loop.

Ordering Information

1. Specify RFA-5 AM RF Amplifier
2. Specify station operating frequency and call letters
3. Specify desired options and accessories

RFA-5 Amplifier, Basic Unit

Price

Standard features include:

- a) A.G.C. amplifier with signal strength meter;
- b) 10 volt RF carrier output for Modulation Monitor;
- c) 1 volt RF carrier output for Oscilloscope Monitor;
- d) Clipped RF carrier output for Frequency Monitor or Counter

\$750.00

Options

1. **Audio Option:** Includes 600 ohm balanced transformer output and switchable 10 kHz whistle filter.

- a) Installed at time of RFA order 75.00
- b) Kit suitable for field installation by an experienced technician 100.00
- c) Factory retrofit 100.00

2. **Alarm Option:** Includes: Audio-fail and carrier-fail monitor; initiates an alarm at user-adjustable front panel set point.

- a) Installed at time of RFA order 125.00
- b) Kit suitable for field installation by an experienced technician 150.00
- c) Factory retrofit 150.00

Accessories

Loop Antenna, LA-1; Basic 3 foot diameter 2-turn shielded antenna is suggested for strong signal areas. In low signal level areas, a larger outside antenna may be necessary for adequate quiet signal

25.00

Replacement Circuit Boards

- Power amplifier board; 150.00
- Tuned amplifier board (tune-up included) 220.00
- Low Voltage Power Supply 35.00
- *No credit for old Boards.
- Retune existing RFA-5 or 4 to new frequency 150.00

Instruction Manual

All units supplied with one Instruction and Maintenance Manual — Extra copy

20.00

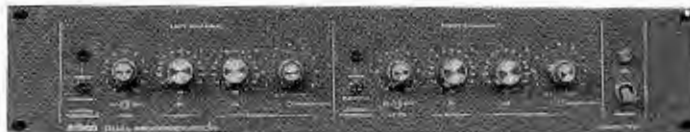
Prices and specifications subject to change without notice



urban professional audio products

MODEL 111B Spring Reverb

The 111B offers two channels of reverb in a single package that combines both electronics and spring delay lines, we have succeeded in creating a reverb that combines full Orban quality and reliability with significant advances in cost-effectiveness. It's the only choice for anyone needing two channels of fully professional reverb.



111B Spring Reverberation (dual channel)\$749.00

MODEL 245E Stereo Synthesizer

The Orban Stereo Synthesizer has been designed to take any mono signal and create lifelike pseudo-stereo. Unlike many other techniques, the patented Orban stereo synthesis technique causes no change in spectral balance, does not blur the transient definition, and adds not the slightest audible noise or distortion to the mono original. The stereo output sums back to the original mono for total mono/stereo compatibility. And the simple controls adjust in seconds to create an optimum stereo effect from any mono original.



245E Stereo Synthesizer\$349.00

MODEL 516EC Dynamic Sibilance Controller

The Orban Dynamic Sibilance Controller model 516EC is designed to provide the de-essing function only with quality commensurate with the highest-quality contemporary studio electronics. It offers optimized attack and release times, strikingly good noise and distortion characteristics, simple operation, and unusual economy. Because of its technically advanced solid state/IC design, it features high reliability and excellent long-term stability as well.

The basic de-ess function is provided by a limiter with a frequency-selective 18 dB/octave filter in the side-chain. The threshold of limiting, instead of being fixed, is forced to track the average input level to the de-esser.

In this way, no gain reduction occurs on vocal components containing predominantly low frequency energy, yet sibilants (containing predominantly high frequency energy) cause gain reduction if they exceed a certain fraction of the average vocal level. This fraction is controlled by the front-panel THRESHOLD control. The amount of de-essing is therefore constant whether the voice is loud or soft. In practice, the input range for constant de-essing is about 15 dB.

The Orban DSC controls sibilance by reducing the gain of the entire program. Attack and recovery times are chosen so that no pumping is audible. Certain competitive units operate by introducing a program-controlled lowpass filter. The difficulty with this approach is that excessive sibilance is often accompanied on the original track by excessive intermodulation distortion, causing low-frequency "grit." By lowpass filtering the track, the remaining low frequency distortion products can become distressingly audible. In contrast to this approach, the Orban DSC reduces the level of the distortion products as much as it reduces the sibilance.



516EC Dynamic Sibilance Controller (3 channels)\$629.00

MODEL 526A Dynamic Sibilance Controller

The Orban 526A Dynamic Sibilance Controller is an improved single-channel version of our well-known three-channel model 516EC. And it includes balanced, floating, RF-suppressed inputs and outputs making interface with standard Broadcast consoles especially easy. It is equipped with mike and line-level inputs.



526A Dynamic Sibilance Controller (single channel)\$399.00

- 622A Parametric Equalizer (single channel) \$479.00
- 622B Parametric Equalizer (dual channel) \$749.00
- 672A Graphic Parametric Equalizer \$499.00
- 01 Option for 622 and 672: Balanced output transformer
(order one/channel) \$ 14.00



Prices and specifications subject to change without notice

OTARI

PROFESSIONAL RECORDERS

MX-5050-B Broadcast Recorder

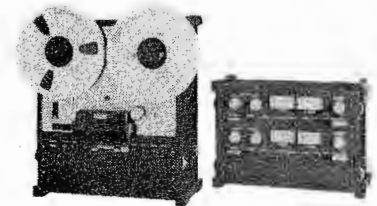
Otari's new MX-5050-B continues the proud heritage of the MX-5050 Series, a recorder now extensively used by television and radio broadcasters worldwide. The new version has all the proven features of the earlier pace setter, including front adjustable bias and record EQ, built-in test oscillator, edit and cue, splicing block, motion sensing, selective reproduce, and adds many new features all its own: ultra reliable TTL switching, noise free inserts, three speeds in field-selectable pairs of 15/7½ or 7½/3¾ ips, 24 dBm headroom with 28 dBm output into 600 ohms, dc capstan servo with +/-7% speed control (to match program length to a time slot), peak reading LED plus standard full sized VU meters, return to zero memory, and LED function indicators, among others.

Add these features to a 66 dB S/N ratio and a frequency response from 30 to 22,000 Hz +/- 2 dB at 15 ips and you have a machine that competes with those costing thousands of dollars more.



MARK II Two and Four Channel Professional Recorders

- Second generation professional recorder.
- Two versions: Two-channel quarter inch, four channel half inch.
- Plug-in head assemblies.
- All MX-5050 features plus:
- Separate transport and electronics for convenient table to console for floor console.
- Dc capstan servo standard with +/-7% pitch control.
- Completely accessible front and rear electronics adjustments.
- Motion-sense transport logic.
- Record punch-in and punch-out without clicks or pops.



MARK II-4

The Mark II is available in two versions: a two channel with quarter-inch tape and a four channel with half-inch tape. In addition, the two channel version has an extra reproduce head for quarter-track stereo tapes.

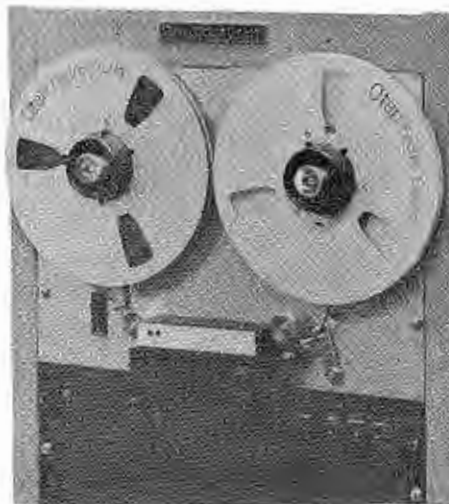
The main features and benefits are shown above. Also, consider the following: smooth tape handling, professional outputs (600 ohm balanced) and connectors (XLR's), fixed output position at standard operating level of +4 dBm or -10 dBm (rear panel selectable), splicing block on head cover (two channel version), and new, easier to operate reel hold down knobs. Options include, balanced-line input transformers, remote control, table top console, and floor console.



MARK II-2

ARS-1000 Automated Radio Station Reproducer

Widely used in leading automation systems. Specifically designed to meet their stringent requirements for highest audio performance, long term reliability and around-the-clock operation. Basically, the ARS-1000 is a work horse two-channel stereo reproducer with two tape speeds (7½ and 3¾ ips) and the following features: heavy duty 19-inch top plate, head mounted pre-amp to minimize hum, RFI and yield superior S/N, special long-life polyurethane pinch roller tire, friction reducing ball bearings, heavy duty motor and brake assemblies, and gold plated PCB connectors. It's easy to maintain with its plug-in PCB's and mother board configuration, easy-access flip-up head cover, and front adjustable output level and head azimuth (to minimize stereo phasing errors). Its operating features include remotable Play and Stop, a ready light to indicate proper tape threading, head lifters for fast modes, a cue control for audible monitoring, and optional 25 Hz cue tone sensor. All connections are brought out to a single 25 pin Cinch connector.

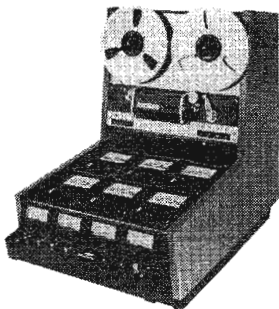


Prices and specifications subject to change without notice



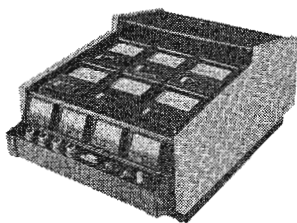
OTARI

DP-4050 Professional 8:1 In-Cassette Duplicator System



The Otari DP-4050 In-Cassette Duplicator System brings true professional quality and reliability to the production of cassette copies. Ruggedness and simplicity of operation with the DP-4050 is assured through the use of a transport originally designed for the stringent requirements of computer peripheral systems where data integrity both in terms of accurate signal handling and minimum down time from mechanical failures are of prime importance. Each cassette transport is an individual plug-in unit with its own dc Hall-effect motor and capstan servo drive amplifier so that the failure of one does not knock out the entire system.

DP-4050-CCF Professional 8:1 In-Cassette Duplicator System



The DP-4050-CCF is a cassette-master version of Otari's popular DP-4050 series in-cassette duplicator. It incorporates all of the many advanced features of the DP-4050 OCF open reel version, including the same rugged mechanical design, ease of operation, long-life ferrite heads, and an 8:1 duplicating speed ratio. This speed ratio allows five C-30 copies to be made in less than two minutes, or five C-60's in less than four minutes. All tracks are copied in one pass so that the cassettes don't have to be turned over to copy the other side.

PROFESSIONAL RECORDERS

| CATALOG NUMBER | DESCRIPTION | PRICE |
|----------------|--|-----------|
| MX-5050-BF | One-channel full-track recorder/reproducer with two-channel half-track reproduce capability. Dc capstan servo. Three speeds in speed pairs of 15/7½ or 7½/3¾ ips, field selectable, 600 ohm balanced output. Vinyl covered wood cabinet. | \$1995.00 |
| MX-5050-B | Two-channel half-track recorder/reproducer with quarter-track reproduce capability. Dc capstan servo. Three speeds in speed pairs of 15/7½ or 7½/3¾ ips, field selectable. 600 ohm balanced output. Vinyl covered wood cabinet. | \$1945.00 |
| MX-5050-QXD | Four-channel, quarter-track, quarter-inch tape recorder/reproducer. 15/7½ ips. Dc capstan-servo system. 600 ohm unbalanced output. Two black vinyl covered wood cabinets. | \$2845.00 |
| MX-5050-8D | Eight-channel, half-inch tape recorder/reproducer. 15/7½ ips. 600 ohm unbalanced output. Two vinyl covered wood cabinets. | \$4895.00 |
| Mark II-2 | Two-channel, quarter-inch tape recorder/reproducer. 15/7½ ips. Dc capstan-servo system. 600 ohm balanced output. Table top console. | \$2445.00 |
| Mark II-4 | Four-channel, half-inch tape recorder/reproducer. 15/7½ ips. Dc capstan-servo system. 600 ohm balanced output. Two vinyl covered wood cabinets. | \$3595.00 |
| ARS-1000-DC | Two speed (7½/3¾ ips), two-channel reproducer. 25 Hz sensor. Variable time delay. 19-inch rack mounting. For automation systems and other reproduce-only applications. | \$1365.00 |
| DP-4050-OCF | 8:1 in-cassette duplicator. Open reel master (for 7½ or 3¾ ips originals) with six cassette slaves. | \$6995.00 |
| DP-4050-CCF | 8:1 in-cassette duplicator with cassette master and five slaves. | \$5595.00 |

ACCESSORIES

| | | |
|---------|---|-----------|
| P2-B | Rugged portable vinyl covered black case for MX-5050-B with reinforced corners and snap-on front and rear covers. | \$ 190.00 |
| TZ-307 | Front and back covers (four total) for QXHD. | \$ 160.00 |
| TZ-306 | | |
| TZ-307 | Covers as above for 8D model. | \$ 190.00 |
| TZ-301 | | |
| RK-2B | Rack mounting adapter permits easy mounting in . . . MX-5050-B: \$ | 35.00 |
| RK-2M | standard 19-inch rack. Mark II-2: \$ | 36.00 |
| RK-4 | Mark II-4 and QX: \$ | 50.00 |
| RK-8 | 8D: \$ | 60.00 |
| CSL-B | Wood floor console for B and BF with casters for convenient horizontal operation. | \$ 330.00 |
| CSL-48 | Wood floor console with casters for MX-5050-QXD and 8D. Slanted-top tape deck mounting with electronics below plus 7-inch blank space for noise reduction unit (includes rack mounting kit). Specify 4- or 8-channel. | \$ 350.00 |
| CR-705A | Remote Control (as above) for MX-5050-B, QXHD, 8D and Mark II. | \$ 110.00 |
| IPT | Input transformer, balanced 600 ohm, external mounting plug-in type. | \$ 25.00 |
| IPT-B | Input transformer, balanced 600 ohm, for MX-5050-B. Internal mounting, hard-wired type. | \$ 12.00 |
| IPT-HW | Input transformer, balanced 600 ohm, for MX-5050-QXD, 8D, and Mark II. Internal mounting, hard-wired type. | \$ 43.00 |
| OPT | Balanced 600 ohm output transformer for QXD and 8D. (Balanced 600 ohm output is standard on other models.) | \$ 33.00 |
| ADP-CBL | Set of 10-foot input/output cables for two-channels: two input XLR male to RCA phono, and two output XLR female to RCA phono. | \$ 20.00 |
| TW-670 | Reel hold down knobs, ¼ inch, each. | \$ 11.00 |
| TW-671 | Reel hold down knobs, ½ inch, each. | \$ 15.00 |
| Manual | Extra manual (one supplied with recorder). Please specify model. \$ | 22.00 |



Prices and specifications subject to change without notice

Phasemaster® KAY INDUSTRIES, INC.

PHASEMASTER ROTARY PHASE CONVERTERS "T" SERIES FOR TRANSMITTER APPLICATIONS

Rotary Phase Converter for AM/FM Radio Transmitters

The Phasemaster T-Series Rotary Phase Converter is specially designed and engineered for use with all types of radio transmitters for the conversion of single-phase power to 3-phase in locations which are not served by 3-phase lines. Phasemaster is particularly suitable for application in situations where the high cost of installing utility supplied 3-phase power is prohibitive from an economic standpoint. A Phasemaster T-Series Rotary Phase Converter can be installed for a small fraction of the cost of installing utility supplied 3-phase power. Phasemaster is low in initial cost, high in performance, and has a proven service record of more than ten years in commercial broadcast installations throughout North America. Phasemaster has been sized and tested for compatibility with most makes and ratings of commercial transmitters.

Performance

The Phasemaster T-Series Rotary Phase Converter incorporates many superior performance features:

- Voltage produced through Phasemaster is regulated within a range of 2-5% of the primary electrical supply.
- Output wave forms and phasing are nearly identical to utility supplied 3-phase.
- The converter has the ability to buffer line transients.
- Protects against the effects of modulation peaks in AM transmitters.
- Contains integral lightning protection for operating reliability.
- Systems are available to accommodate dual power output ratings.
- Designed to operate on a continuous 24 hour basis.
- Operating cost savings are realized through lower kilowatt hour usage.

Construction

Phasemaster is built with high quality materials and components to meticulous manufacturing standards. An extra large wiring panel for accessibility and ease in making connections is provided. Phasemaster has no relays, switches, governors or other service prone parts.

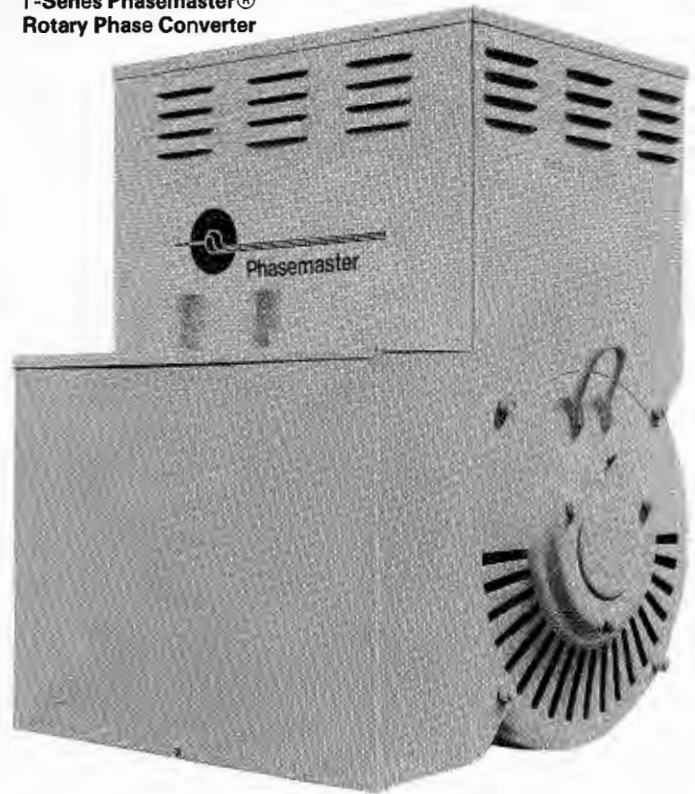
Applications

Phasemaster T-Series Rotary Phase Converters are available in a range of sizes for AM/FM transmitters rated from 1 to 50 kW.

Additional information is available, including a list of stations using Phasemaster Converters.

Phasemaster® is manufactured under U.S. Patents 3349316, 3387202, 3609430, Canadian Patent 786933 and Patents Pending.

T-Series Phasemaster®
Rotary Phase Converter



| Model | Voltage | Shipping Weight | Price |
|------------|---------|-----------------|-----------|
| T-1300-A2 | 230* | 165 | \$1042.00 |
| T-2000-A2 | 230* | 215 | 1285.00 |
| T-2500-A2 | 230* | 270 | 1529.00 |
| T-4000-A2 | 230* | 420 | 1884.00 |
| T-5000-A2 | 230* | 480 | 2358.00 |
| T-7500-A2 | 230* | 577 | 2666.00 |
| T-8000-A2 | 230* | 751 | 3495.00 |
| T-10000-A2 | 230* | 873 | 4123.00 |
| T-12000-A2 | 230* | 970 | 4650.00 |

*Available in 460 volt no additional charge

Transmitter designs vary between manufacturers. For proper sizing of Phasemaster the following information is required:

- Manufacturer
- Model Number
- AM or FM
- KW Rating
- Operating Elevation
- 100% current draw in amps per 3 phase leg for FM transmitters
- Average modulation and 100% modulation for AM transmitters

Prices and specifications subject to change without notice





RIGID TRANSMISSION LINE

Rigid Line Components

| STOCK NO. | DESCRIPTION | PRICE |
|--------------|---|----------|
| 618-0516-000 | 1-5/8" 50 Ohm line assembly 20 ft. length, flanges both ends | \$179.00 |
| 618-0519-000 | 1-5/8" 50 Ohm line assembly 19-3/4 ft. length, flanges both ends | 203.00 |
| 618-0518-000 | 1-5/8" 50 Ohm line assembly 19-1/2 ft. length, flanges both ends | 203.00 |
| 618-0525-000 | 1-5/8" 50 Ohm line assembly 20 ft. length, no flanges | 140.00 |
| 618-0524-000 | 1-5/8" 50 Ohm line assembly 19-3/4 ft. length, no flanges | 140.00 |
| 618-0523-000 | 1-5/8" 50 Ohm line assembly 19-1/2 ft. length, no flanges | 140.00 |
| 618-0522-000 | 1-5/8" 50 Ohm line assembly 20 ft. length, flange one end | 194.00 |
| 618-0521-000 | 1-5/8" 50 Ohm line assembly 19-3/4 ft. length, flange one end | 194.00 |
| 618-0520-000 | 1-5/8" 50 Ohm line assembly, 19-1/2 ft. length, flange one end | 194.00 |
| 618-0526-000 | 1-5/8" 50 Ohm flexible line assembly 10" length | 206.00 |
| 620-1760-000 | 1-5/8" 50 Ohm 3-1/2" dia. fixed flange includes silver solder ring insert | 10.00 |
| 620-1728-000 | 1-5/8" 50 Ohm adapter assembly flanged to unflanged line, clamp type | 16.00 |
| 620-1729-000 | 1-5/8" 50 Ohm anchor insulator connector, finished with prodelube | 16.00 |
| 620-0232-000 | 1-5/8" 50 Ohm "O" ring gasket | 67.00 |
| 620-1730-000 | 1-5/8" 50 Ohm inner conductor connector, silver plated, spring loaded | 13.00 |
| 620-0233-000 | 1-5/8" 50 Ohm 4 piece Hardware set | 3.00 |
| 620-1742-000 | 1-5/8" 50 Ohm coupling assembly | 26.00 |
| 620-1761-000 | 1-5/8" 50 Ohm flange, swivel silver solder | 17.00 |
| 620-1728-000 | 1-5/8" 50 Ohm adapter w/anchor insulator | 16.00 |
| 620-1748-000 | 1-5/8" 50 Ohm elbow, miter, 90 D., swivel flanges, male - female | 38.00 |
| 620-1719-000 | 1-5/8" 50 Ohm gas barrier with Port | 72.00 |
| 620-1712-000 | 1-5/8" 50 Ohm adapter to N series female | 63.00 |
| 620-1711-000 | 1-5/8" 50 Ohm adapter to LC female | 83.00 |
| 620-1131-000 | 1-5/8" 50 Ohm reducer, tapes to 7/8" flanged line | 50.00 |
| 620-1701-000 | 1-5/8" supporting hardware hanger fixed, single line | 15.00 |
| 620-1703-000 | 1-5/8" supporting hardware hanger, spring, single line | 19.00 |
| 620-1766-000 | 1-5/8" supporting hardware anchor plate | 21.00 |
| 620-1723-000 | 1-5/8" supporting hardware brace, lateral | 16.00 |
| 620-1702-000 | 1-5/8" supporting hardware hanger, slip type, flange mount | 10.00 |
| 618-0540-000 | 3-1/8" 50 Ohm line assembly 20 ft. rigid line, flanged both ends | 308.00 |
| 618-0539-000 | 3-1/8" 50 Ohm line assembly 19-3/4 ft. rigid line, flanged both ends | 312.00 |
| 618-0538-000 | 3-1/8" 50 Ohm line assembly 19-1/2 ft. rigid line, flanged both ends | 312.00 |



RIGID TRANSMISSION LINE

Rigid Line Components

| STOCK NO. | DESCRIPTION | PRICE |
|--------------|---|--------|
| 618-0546-000 | 3-1/8" 50 Ohm line assembly 20 ft. rigid line, no flanges | 220.00 |
| 618-0545-000 | 3-1/8" 50 Ohm line assembly 19-3/4 ft. rigid line, no flanges | 220.00 |
| 618-0544-000 | 3-1/8" 50 Ohm line assembly 19-1/2 ft. rigid line, no flanges | 220.00 |
| 618-0543-000 | 3-1/8" 50 Ohm line assembly 20 ft. rigid line, flange one end | 294.00 |
| 618-0542-000 | 3-1/8" 50 Ohm line assembly 19-3/4 ft. rigid line, flange one end | 294.00 |
| 618-0541-000 | 3-1/8" 50 Ohm line assembly 19-1/2 ft. rigid line, flange one end | 294.00 |
| 618-0547-000 | 3-1/8" 50 Ohm line assembly 10" flexible line | 358.00 |
| 620-1634-000 | Flange Fixed 3-1/8" accessory | 19.00 |
| 620-1732-000 | Anchor Insulator connector assembly 3-1/8" accessory | 26.00 |
| 620-1731-000 | Anchor Insulator connector assembly with prodelube 3-1/8" accessory | 26.00 |
| 620-1743-000 | Straight coupling 3-1/8" accessory No inner conductor | 48.00 |
| 620-0270-000 | "O" ring gasket 3-1/8" accessory | 1.12 |
| 620-1733-000 | Connector inner conductor 3-1/8" accessory | 18.00 |
| 620-0908-000 | Hardware set 3-1/8" accessory | 4.00 |
| 620-1762-000 | Flange, swivel silver solder 3-1/8" accessory | 28.00 |
| 620-1710-000 | Adapter, flange 3-1/8" accessory | 36.00 |
| 620-1749-000 | Elbow, miter, 45 D., swivel flanges 3-1/8" accessory | 118.00 |
| 620-1750-000 | Elbow, miter, 90 D., no flanges 3-1/8" accessory | 78.00 |
| 620-0213-000 | Elbow, miter, 90 D., swivel flanges, male - female 3-1/8" accessory | 118.00 |
| 620-1720-000 | Gas barrier with port 3-1/8" accessory | 117.00 |
| 620-1726-000 | Adapter to N female 3-1/8" accessory | 152.00 |
| 620-1155-000 | Reducer, taper, to 1-5/8" EIA flange 3-1/8" accessory | 90.00 |
| 620-1505-000 | Reducer, flange to 1-5/8" EIA 3-1/8" accessory | 96.00 |
| 620-1704-000 | Hanger, fixed, single line 3-1/8" supportive hardware | 25.00 |
| 620-1706-000 | Hanger, spring, single line 3-1/8" supportive hardware | 34.00 |
| 620-1767-000 | Anchor plate 3-1/8" supportive hardware | 46.00 |
| 620-1724-000 | Brace, lateral 3-1/8" supportive hardware | 18.00 |
| 620-1705-000 | Hanger, slip type flange mount 3-1/8" supportive hardware | 19.00 |
| 620-1707-000 | Hanger, slip type, stud mount 3-1/8" supportive hardware | 12.00 |
| 618-0559-000 | 6-1/8" 50 Ohm line 20" rigid line, flange both ends | 851.00 |
| 618-0558-000 | 6-1/8" 50 Ohm line 19-3/4" rigid line flange both ends | 949.00 |

Prices and specifications subject to change without notice

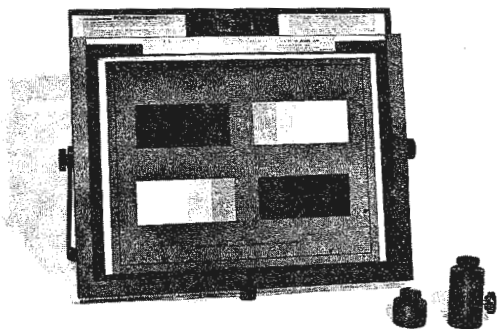




RIGID TRANSMISSION LINE

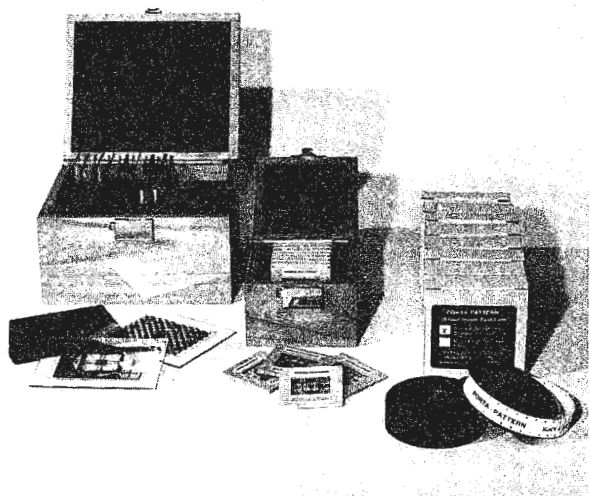
Rigid Line Components

| STOCK NO. | DESCRIPTION | PRICE |
|--------------|---|--------|
| 618-0557-000 | 6-1/8" 50 Ohm line 19-1/2" rigid line flange both ends | 949.00 |
| 618-0565-000 | 6-1/8" 50 Ohm line 20" rigid line no flanges | 680.00 |
| 618-0564-000 | 6-1/8" 50 Ohm line 19-3/4" rigid line no flanges | 680.00 |
| 618-0563-000 | 6-1/8" 50 Ohm line 19-1/2" rigid line no flanges | 680.00 |
| 618-0562-000 | 6-1/8" 50 Ohm line 20" rigid line, flange one end | 926.00 |
| 618-0561-000 | 6-1/8" 50 Ohm line 19-3/4" rigid line flange one end | 926.00 |
| 618-0560-000 | 6-1/8" 50 Ohm line 19-1/2" rigid line flanges one end | 926.00 |
| 620-1645-000 | Flange, Fixed 6-1/8" accessory | 40.00 |
| 620-1734-000 | Anchor insulator-connector assembly 6-1/8" accessory | 101.00 |
| 620-1744-0-0 | Straight coupling 6-1/8" accessory | 168.00 |
| 620-1331-000 | "O" ring gasket 6-1/8" accessory | 2.69 |
| 620-1668-000 | Hardware set 6-1/8" accessory | 8.00 |
| 620-1428-000 | Flange swivel silver solder 6-1/8" accessory | 54.00 |
| 620-1752-000 | Elbow, miter 45 D., swivel flanges 6-1/8" accessory | 353.00 |
| 620-1751-000 | Elbow, miter, 90 D., swivel flanges, male - female 6-1/8" accessory | 353.00 |
| 620-1775-000 | Reducer, taper to 3-1/8" EIA 6-1/8" accessory | 258.00 |
| 618-0568-000 | 6-1/8" 75 Ohm line 20 ft. rigid line, flanges both ends | 829.00 |
| 618-0567-000 | 6-1/8" 75 Ohm line 19-3/4" rigid line flange both ends | 929.00 |
| 618-0566-000 | 6-1/8" 75 Ohm line 19-1/2" rigid line flange both ends | 929.00 |
| 618-0574-000 | 6-1/8" 75 Ohm line 20" rigid line no flanges | 660.00 |
| 618-0573-000 | 7-1/8" 75 Ohm line 19-3/4" rigid line no flanges | 660.00 |
| 618-0572-000 | 6-1/8" 75 Ohm line 19-1/2" rigid line no flanges | 660.00 |
| 618-0571-000 | 6-1/8" 75 Ohm line 20" rigid line flange one end | 906.00 |
| 618-0570-000 | 6-1/8" 75 Ohm line 19-3/4" rigid line flange one end | 906.00 |
| 618-0569-000 | 6-1/8" 75 Ohm line 19-1/2" rigid line flange one end | 906.00 |
| 620-1735-000 | Anchor insulator 75 Ohm connector assembly 6-1/8" accessory | 101.00 |
| 620-1721-000 | Gas barrier w/port 6-1/8" accessory 75 Ohm | 358.00 |
| 620-1708-000 | Hanger, Fixed 6-1/8" supporting hardware | 45.00 |
| 620-1768-000 | Anchor plate 6-1/8" supportive hardware | 76.00 |
| 620-1725-000 | Brace, lateral 6-1/8" supportive hardware | 31.00 |
| 620-1709-000 | Hanger spring 6-1/8" supportive hardware | 56.00 |



TEST CHART SYSTEM

- End the test pattern problem in studio or field with completely portable 9" x 12" charts.
- Designed for self-standing or mounting on standard microphone or light stand.
- Spirit level is an integral part of unit design for horizontal alignment accuracy.
- Lightweight aluminum extrusion chart holder with three feet and alignment controls.
- Each chart framed and recessed on high-impact acrylic plastic to assure protection from abrasion and water damage.
- Each set contains one each standard resolution, registration, linearity and logarithmic reflectance chart.
- Highest quality reproduction for complete accuracy.
- Plastic chart holders color-coded for ease in location of each chart in holder.
- Charts placed in holder in order of usage. After usage, reverse front chart and all chart surfaces are protected.

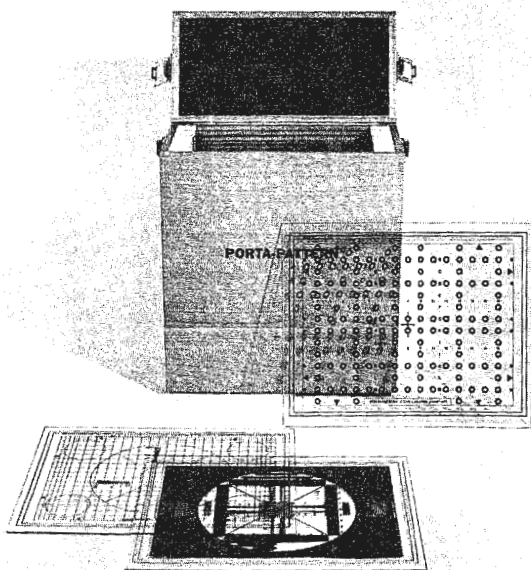


TEST SLIDES & SLIDE SYSTEMS

- Highest quality microphotographic reproductions of the industry standard PORTA-PATTERN Test Charts for use in set-up and maintenance of black & white and color telecine cameras.
- Available in 2" x 2" glass protected format for use with slide projectors and in 3 1/4" x 4" Emulsioned Acrylic (except color slides) for use in the field lens position of large-image telecine systems.
- 2" x 2" slides supplied in approved pin registration television mounts with anti-Newton ring optical glass.
- All geometric patterns available in standard positive image or negative image providing lower A.P.L.
- Advanced state-of-the-art photographic chemistry achieves extreme fine-grain and ultra-high resolving power with high longevity during normal usage.
- Dimensional stability 1/10 of one percent assured. Maximum and minimum densities chosen to maintain highest possible acuity.

16mm ALIGNMENT & REFERENCE FILMS

- Black and White universal test film for operational checking of projector optical resolution and geometry, film transport jitter and weave and traveling ghosts.
- Color Flesh Tone film provides subjective color reference for set-up and matching of Color Telecine Systems.
- Bursts placed in center and all edges of Chess Board Alignment Film provide for measurement of optical resolution of projector lenses.
- Black and White alignment film allows for simple determination of horizontal and vertical travel of projector by comparison of film pattern with electronically generated grating pattern.
- Black and White Chess Board chart step printed on high-resolution motion picture stock. Pin registration frame-by-frame printing assures image stability of 1/10 of one percent.



8"x10" ILLUMINATOR TRANSPARENCIES

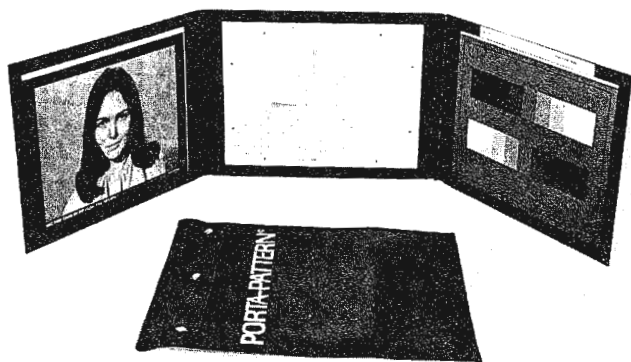
- Advanced state-of-the-art technology using emulsioned high-impact acrylic plastic.
- Images are direct reading to camera. No glass or plastic between lens and image to cause distortion or light loss.
- Elimination of "sandwich" type transparency prevents buckling of image surface or moisture collection.
- All plastic construction prevents danger and high cost of breakage under normal operating conditions.
- Dimensional stability and resolving power in excess of .0100 of 1%.
- Neither image emulsion nor plastic base subject to heat distortion or damage under usual operating conditions.
- Highest quality photographic reproductions on advanced photographic emulsions insures ultra-high resolution and density control.
- All patterns available in either positive or negative format.
- Porta-Pattern® 8 x 10 Transparencies include two rectangles precisely located outside the active image area to assist in proper camera tube scan size.
- To achieve proper tube scan over scan the target and set the target edge to coincide with the corners of either the 30mm or the 1 inch rectangle, depending on the tube type used.
- Set the scan size to exactly coincide with the arrows inside the pattern edges both horizontally and vertically.

IMPORTANT INFORMATION

These emulsioned Acrylic Transparencies must be cleaned with commercial film cleaner ONLY. We recommend using only "Kodak Film Cleaner," "Edwal Anti-Stat Film Cleaner" or "Anchor Film-Clean." DO NOT, under any circumstances, attempt to clean with water, glass cleaner, ammonia or any other solution. USE OF ANYTHING OTHER THAN THE ABOVE RECOMMENDED FILM CLEANERS WILL PERMANENTLY DAMAGE THE IMAGE AND VOID ALL WARRANTIES!

PORTA-PATTERN®

TELECOMMUNICATIONS INDUSTRIES LIMITED



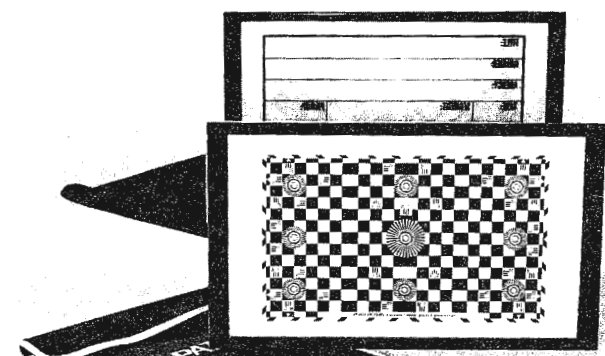
PORTA-PATTERN® ELECTRONIC FIELD PRODUCTION 3 CHART SYSTEM

In order to provide a greater range of available test patterns in a package better adapted to the portability of EFP camera systems, PORTA-PATTERN has developed a Three-Chart System which will accept ANY combination of three charts presently available in the PORTA-PATTERN catalogue. This system, when closed, takes up no more space than a single PORTA-PATTERN Test Chart.

The system consists of three plastic frames, similar to those used for all individual PORTA-PATTERN Charts, hinged end-to-end with a unique system which allows the plastic frames to be folded upon themselves, thus providing complete surface protection for all three charts.

The entire system is held closed by a 'Velcro' closure system, and an expanded vinyl-coated nylon case is included to provide a complete, three chart system in a package less than 15" high, 18" wide and 1½" thick.

Since there are currently over 150 combinations of PORTA-PATTERN charts which can make up the system to each customer's requirements, it is imperative that your Purchase Order include the enclosed layout sheet, showing which Test Chart you wish in each of the three positions.



PORTA-PATTERN® ELECTRONIC CINEMATOGRAPHY CHART SYSTEM

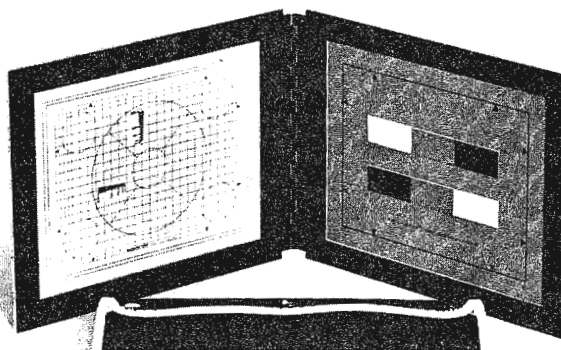
The PORTA-PATTERN Electronic Cinematography Slate/Alignment System has been designed to fulfill the growing requirements of the use of electronic cameras in the 1.66 or 1.85 to 1 aspect ratio.

The system consists of a single piece of yellow acrylic, 11¾" x 19½", with a specially designed production slate silk-screened on one side. The slate is designed to be used with readily available grease pencils, and will withstand thousands of erasures.

A custom designed Chess Board Chart is mounted on the reverse side. This chart provides all of the required geometry and focus information, including corner, edge and center focus stars, multi-burst information and linearity and registration parameters to provide quick camera checking and touch-up while in production. The chart is recessed on the plastic to prevent damage to the surface, and is sprayed to prevent moisture damage.

The system is provided with an expanded vinyl nylon coated storage case to protect it when not in use. The case contains compartments for grease pencil storage.

This system has been designed and packaged to provide the maximum amount of information and functions in the minimum of space and weight.



PORTA-PATTERN® ENG 2 CHART SYSTEM

The PORTA-PATTERN ENG/EFP Chart System has been designed to provide basic alignment, registration, color balance and auto-white balance information for fast Electronic News Gathering or Field Camera set-up.

The system consists of a Registration Chart and specially designed Color Balance Chart, mounted on durable white acrylic plastic. The two plastic frames are hinged together, and the charts are folded face-to-face when not in use. Black 'Velcro' provides a light and dirt seal when the system is closed, and the white plastic has a non-reflective surface for auto-white balance use.

The Registration Chart is the standard PORTA-PATTERN Registration Chart in the 6.3" x 8.4" format, with the recommended target scan information surrounding the chart. The Color Balance Chart, in the same format, contains logarithmic grey scale information to set black level, gain, gamma and black and white clip (60% white, 13.4% gamma crossover and 3% black on a standard 12% background).

The ENG-EFP Two Chart System is supplied with an expanded vinyl nylon coated storage case to protect the unit during transit and while on location.

Test Chart Systems and Accessories

| | | |
|---------|---|----------|
| #001-10 | Test Chart System with NO adapters | \$270.00 |
| #001-11 | Test Chart System with microphone stand adapter | \$280.00 |
| #001-12 | Test Chart System with light stand adapter | \$295.00 |
| #001-13 | Test Chart System with mic and light stand adapters | \$315.00 |
| #001-15 | Microphone stand adapter | \$ 28.00 |
| #001-16 | Light stand adapter | \$ 30.00 |
| #001-17 | Aluminum frame assembly, complete W/O adapters | \$135.00 |
| #001-50 | Dual system carrying case | \$ 62.50 |
| #001-24 | Resolution Chart | \$ 65.00 |
| #001-25 | Linearity (Ball) Chart | \$ 65.00 |
| #001-26 | Registration Chart | \$ 65.00 |
| #001-27 | Nine-Step Log Chip Chart | \$ 95.00 |
| #001-28 | Production Slate | \$ 55.00 |
| #001-29 | Blank plastic chart frame | \$ 45.00 |
| #001-31 | Color Bar Chart | \$110.00 |
| #001-32 | Multi-Burst Chart, 8MHz | \$ 65.00 |
| #001-33 | Window Chart | \$ 65.00 |
| #001-34 | Chess Board Chart | \$ 65.00 |
| #001-35 | Reverse Registration Chart | \$ 65.00 |
| #001-36 | BBC #61P Flesh Tone Reference Chart | \$130.00 |
| #001-37 | Pulse Bar Camera Chart | \$150.00 |
| #001-38 | CCIR Linearity (Ball) Chart (Grass Valley) | \$ 65.00 |
| #001-39 | Auto-Registration Chart (Farnseh) | \$ 65.00 |
| #001-40 | Lens Focus Chart | \$ 65.00 |
| #001-41 | Depth of Modulation Chart (Amperex) | \$ 65.00 |
| #001-42 | Line Resolution Chart (CEI) | \$ 65.00 |

Test Slides and Transparencies

| | 2x2 | | 3¼x4 | |
|---------------------------------------|----------|----------|----------|----------|
| Test Slide System, Positive, 8 Slides | #002-10P | \$155.00 | #003-10P | \$275.00 |
| Test Slide System, Negative, 8 Slides | #002-10N | \$155.00 | #003-10N | \$275.00 |
| Hardwood Slide Case, 10 Slides | #002-20 | \$ 45.00 | #003-20 | \$ 55.00 |
| Resolution Slide, Positive | #002-24P | \$ 15.00 | #003-24P | \$ 25.00 |
| Resolution Slide, Negative | #002-24N | \$ 15.00 | #003-24N | \$ 25.00 |
| Linearity (Ball) Slide, Positive | #002-25P | \$ 15.00 | #003-25P | \$25.00 |
| Linearity (Ball) Slide, Negative | #002-25N | \$ 15.00 | #003-25N | \$ 25.00 |
| Registration Slide, Positive | #002-26P | \$ 15.00 | #003-26P | \$ 25.00 |
| Registration Slide, Negative | #002-26N | \$ 15.00 | #003-26N | \$ 25.00 |
| Nine-Step Log Grey Scale Slide | #002-27 | \$ 95.00 | #003-27 | \$150.00 |
| Color Flesh Tone Slide | #002-30 | \$ 45.00 | #003-30 | \$ 75.00 |
| Color Bar Slide | #002-31 | \$ 45.00 | #003-31 | \$ 75.00 |
| Multi-Burst Slide, 4MHz, Positive | #002-32P | \$ 15.00 | #003-32P | \$ 25.00 |
| Multi-Burst Slide, 4 MHz, Negative | #002-32N | \$ 15.00 | #003-32N | \$ 25.00 |
| Window Slide | #002-33 | \$ 15.00 | #003-33 | \$ 25.00 |
| Chess Board Slide, Positive | #002-34P | \$ 15.00 | #003-34P | \$ 25.00 |
| Chess Board Slide, Negative | #002-34N | \$ 15.00 | #003-34N | \$ 25.00 |
| CCIR Linearity (Ball) Slide, Positive | #002-38P | \$ 15.00 | #003-38P | \$ 25.00 |
| CCIR Linearity (Ball) Slide, Negative | #002-38N | \$ 15.00 | #003-38N | \$ 25.00 |
| Depth of Modulation Slide, Positive | #002-41P | \$ 15.00 | #003-41P | \$ 25.00 |
| Depth of Modulation Slide, Negative | #002-41N | \$ 15.00 | #003-41N | \$ 25.00 |



Prices and specifications subject to change without notice

POTOMAC INSTRUMENTS

ANTENNA MONITORS and ANCILLARY EQUIPMENT

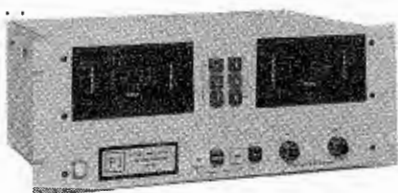
AM-19 (204)

- Accurate
- Field proven reliability
- Push button operation
- Remote monitoring
- Up to 12 towers, DA-3



AM-19D (210)

- AM-19 (204) features plus...
- Numeric readout
- Phase resolution 0.1°
- Ratio resolution 0.1%
- Modular construction
- Ratios to 199.9%



The AM-19 (204) is the current model of the industry's most widely used solid state antenna monitor. It provides direct meter readout of phase angle and loop current ratio. Tower selection is accomplished with push buttons on the front panel or by external contact closure in remote operation. Directional antenna arrays of from 2 to 12 towers with DA-1, DA-2 or DA-3 patterns may be monitored with this instrument.

Compatible with virtually every type of wire or wireless remote control system, the AM-19 (204) requires no external line interface equipment. Analog or digital remote metering panels are available for studio readout and may be added at any future date.

The AM-19D (210) is identical to the AM-19 (204) except for the digital panel meters and associated circuitry. Four digit LED numeric displays provide resolution of 1/10 of one degree (phase angle) and 1/10 of one percent (current ratio). The digital readout feature of this instrument virtually eliminates operator error related to meter interpretation. Remote switching and readout are accomplished as in the AM-19 (204).

Inherently stable circuit design, modular construction, simplicity of operation and moderate cost make the AM-19D (210) the truly optimum monitor for directional stations utilizing lessor grade operators.

REMOTE METERING PANELS

PMA-19



- Current deviation mode
- Ultimate precision
- Up to 12 towers, DA-3

The PMA-19 Precision Monitor Adaptor is used in conjunction with either of the above monitors. This unit is required, for the most part, in very critical arrays. The current deviation mode provides a third measured parameter which displays directly the deviation of the current ratio from the licensed ratio.

RMP-19D (210)



RMP-19D [210]

This instrument provides remote LED numeric readout of phase and current ratio and may be used in conjunction with any type 19 monitor. A third "auxiliary" input is available (on special order) which may be used to provide numeric display of any normalized parameter. Display input is selected by front panel push buttons or remote contact closure.

RMP-19 (204)



RMP-19 [204]

This panel contains meters which duplicate those of the AM-19 (204) for direct display of phase angle and current ratio. A switching relay is provided to conserve the required number of remote control channels.

REMOTE METERING

F.C.C. rules require the use of a type approved remote indicating device for phase and amplitude if the station is operated by remote control. The two panels shown at right are designed for this purpose and are compatible with wire and wireless studio-transmitter links.

ANCILLARY EQUIPMENT (antenna monitors)

| | | |
|-------------------|---|-----------|
| RMP-19 (204) | Analog Remote Metering Panel | \$ 260.00 |
| RMP-19D (210) - 2 | Digital Remote Metering Panel, 2 input | \$ 995.00 |
| RMP-19D (210) - 3 | Digital Remote Metering Panel, 3 input | \$1095.00 |
| RSA-19 | Remote Switching Adaptor for interface to Remote Control System | \$ 455.00 |
| ECP-19 | Extension Control Panel. May be used with RMP-19 (204) or RMP-19D (210) | \$ 325.00 |

ANTENNA MONITORS

| NO. OF TOWERS | MODEL | | |
|---------------|--------------|---------------|-----------|
| | *AM-19 (204) | *AM-19D (210) | *PM-19 |
| 2 | \$1860.00 | \$2460.00 | \$5010.00 |
| 3 | 1940.00 | 2540.00 | 5640.00 |
| 4 | 2030.00 | 2630.00 | 6280.00 |
| 5 | 2110.00 | 2710.00 | 6910.00 |
| 6 | 2195.00 | 2795.00 | 7545.00 |
| 7 | 2280.00 | 2880.00 | 8180.00 |
| 8 | 2365.00 | 2965.00 | 8815.00 |
| 9 | 2450.00 | 3050.00 | 9450.00 |
| 10 | 3350.00 | 3950.00 | 10900.00 |
| 11 | 3440.00 | 4040.00 | 11540.00 |
| 12 | 3520.00 | 4120.00 | 12170.00 |

*Prices shown are for single (DA-1) for dual (DA-2) patterns. For three patterns (DA-3) monitors add \$100.00.

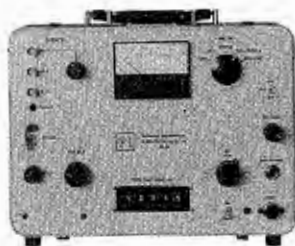
When ordering specify: Number of towers in the antenna array, Number of patterns employed, Reference tower number for each pattern and sampling line impedance.

Prices and specifications subject to change without notice



POTOMAC INSTRUMENTS

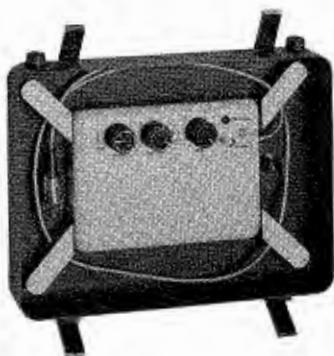
Frequency Synthesizer and Coherent Detector



The Model SD-31 Synthesizer-Detector is a high-output signal generator of precisely known frequency combined with a sensitive, selective detector for RF bridge measurements of AM antenna impedance. Packaged in a single light-weight battery-powered unit, the SD-31 complements bridges such as the General Radio 1606, 916, and the Delta OIB-1.

A frequency synthesizer determines the generator frequency, which can be adjusted in 0.5 KHz steps by means of a front-panel switch from 100.0 KHz to 1999.5 KHz. Frequency accuracy is the same as that of the internal crystal reference oscillator. A front panel fine-frequency control varies the frequency up to +/-0.01 percent. The generator can drive a wide range of load impedance at levels up to 20 volts RMS. It also has a variable low-level output suitable for driving a counter or for receiver frequency calibration.

RX-31 Receiver Option



The RX-31 is designed specifically as an RF interface between an impedance bridge and the SD-31 Coherent Detector. Conveniently mounted in the protective cover of the SD-31, the RX-31 is a single conversion super heterodyne receiver which derives its local oscillator signal and power supply voltage from the SD-31. Receiver circuitry is packaged in an aperture-free, drawn aluminum enclosure which provides excellent RF shielding. IF selectivity is provided by active bandpass filters which limit receiver bandwidth to 100 Hz.

RF FILTER

Manually tuned in 3 bands: 0.1-0.3 MHz
0.3-0.8 MHz
0.8-2.0 MHz

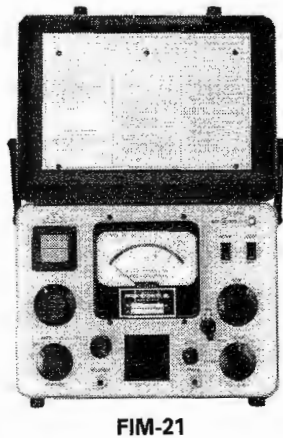
SD-31/RX-31 ACCESSORIES

| | | |
|----------------|--|----------|
| HS-11 | Headset | \$ 25.00 |
| GR Adaptor | Adapts general radio type 874 connector to BNC jack | \$ 10.00 |
| U.H.F. Adaptor | Adapts large UHF jack to BNC jack (for Delta OIB1) | \$ 15.00 |
| Test Cable | RG223 Double shielded coaxial cable cut to five foot length with UG88 (BNC male) connectors on both ends | \$ 9.50 |
| MCC-31 | Deluxe wood carrying case | \$ 85.00 |

R.F. GENERATOR/DETECTOR

| | | |
|-------|---|-----------|
| SD-31 | High output R.F. Frequency Synthesizer covering 100 KHz to 1999.5 MHz in 500 Hz steps | \$1200.00 |
| RX-31 | Companion receiver for SD-31 R.F. bridge measurements . | \$ 300.00 |

Field Strength Meters



The Models FIM-21, FIM-22, and FIM-41 represent a new generation of precision instruments for direct measurement of electromagnetic fields in the 200 kHz to 5.0 MHz frequency spectrum. These units are intended for portable field use and include a laboratory quality receiver, integral shielded loop antenna, precision attenuator, internal calibration source, and voltage regulated battery power supply.

- Accurate — direct reading — volts or dB. • 45 MHz to 225 MHz — continuous tuning. • Peak or averaging detector (switch selectable). • Wide or narrow IF bandwidth (switch selectable). • 20 dB or 60 dB meter range (switch selectable). • AM or FM Demodulator (switch selectable). • Calibrated dipole antenna, mounted on case for near-ground measurements or removable for TASO measurements. • 140 dB measurement range (1 uV to 10 V). • 4 1/2-Inch, mirrored scale, tautband meter. • Front panel speaker. • Recorder output. • Rugged, portable package. • Calibrated signal generator, 45 MHz to 225 MHz. • Battery or external power. • Use as signal source/selective voltmeter for insertion loss measurements of filters, etc. • Measures FM harmonics to -80 dB.

FIELD STRENGTH METERS

| | | |
|--------|--|-----------|
| FIM-21 | Covers AM Broadcast Spectrum only (535 to 1605 KHz). Utilizes 6 "D" batteries (not included) | \$1450.00 |
| FIM-22 | Covers 200 to 550 KHz frequency spectrum. Utilizes 6 "D" batteries (not included) | \$1950.00 |
| FIM-41 | Covers 540 KHz to 5 MHz frequency spectrum in two bands. Utilizes 6 "D" batteries (not included) | \$1950.00 |
| FIM-71 | Covers 45 to 225 MHz frequency spectrum. Utilizes 10 "D" batteries (not included) | \$2750.00 |

FIELD STRENGTH METER ACCESSORIES

| | | |
|--------|---|----------|
| HS-11 | Headset for all models | \$ 25.00 |
| MCC-21 | Deluxe wood carrying case for FIM-21, FIM-22, FIM-41 | \$ 85.00 |
| MCC-71 | Deluxe wood carrying case for FIM-71 | \$ 85.00 |
| Unipod | Telescoping stand for FIM-21, FIM-22, FIM-41 | \$ 25.00 |
| ANT-71 | Antenna elements and balun (spare) for FIM-71 | \$175.00 |
| AC-71 | 117 VAC adaptor for FIM-71 | \$ 15.00 |
| RO-71 | Phone plug with internal potentiometer for adjustable record output | \$ 25.00 |

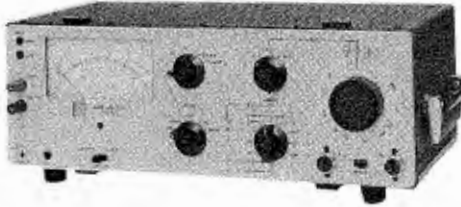


Prices and specifications subject to change without notice

POTOMAC INSTRUMENTS

AUDIO INSTRUMENTATION

AA-51 Audio Analyzer



The AA-51 Audio Analyzer is an AUTOMATIC multi-purpose test instrument designed to accurately measure total harmonic distortion, intermodulation distortion, wow and flutter, frequency response, signal-to-noise ratio, RMS voltage level, stereo phasing, and a differential gain (ratio) of signals in the audio frequency spectrum. There are no "Set Level" or "Balance" controls. Input signals between 0.1 V RMS and 50 V RMS are automatically leveled to the proper reference for distortion measurements. Out-of-range lights are provided for indicating that input levels are within the usable 40 dB range.

For total harmonic distortion measurements, automatic nulling is accomplished via internal feedback circuitry. The operator merely coarse-tunes the input frequency, switches the function switch to THD and reads the meter. Accurate harmonic distortion measurements at various discrete frequencies and different power levels can be made much faster than with conventional distortion analyzers.

Intermodulation distortion measurements are performed with equal simplicity. Utilizing the SMPTE Standard intermodulation signal provided by the AG-51 generator, the AA-51 displays percent IM for input levels between 0.1 V RMS and 50 V RMS. Again, measurements are automatic — no level or balance adjustments are required. With the function switch in the IM position, variations in intermodulation distortion may be observed over a wide dynamic

range — automatically. This feature makes the AA-51 a very useful test instrument for troubleshooting audio systems.

Signal + Noise/Noise ratio measurements are made with the function switch in the "NOISE" position. In this mode, the voltmeter bandwidth is restricted to 20 kHz. S+N/N measurements are accomplished by reading the difference in audio output level between reference signal corresponding to 100% modulation and the residual noise of an unmodulated signal.

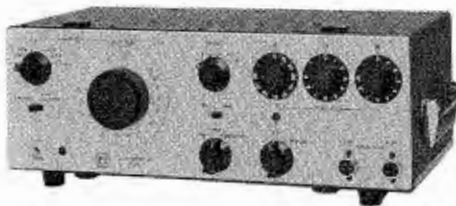
Accurate frequency response measurements are facilitated by a wideband voltmeter which exhibits a flat response (+/-0.1 dB) from 20 Hz to 200 kHz. Input level range is from 1 mV to 100 V full scale. The average responding meter is calibrated to the RMS value of a sine wave.

Incidental frequency modulation termed "Wow and Flutter" is usually associated with record and playback equipment such as tape decks, cart machines and turntables. The AA-51 measures weighted peak flutter as specified by IEEE standard 193. Wow and flutter measurements are automatic. Test signals may be derived from a prerecorded standard test tape or record or from the 3.15 kHz signal provided by the AG-51.

Stereo signals and mono signals derived from a stereo source are often degraded by phase errors and differential gain variation between LEFT and RIGHT channels of a given audio system. The AA-51 contains both Phase and Ratio measuring circuitry which enables the operator to evaluate these characteristics quickly and accurately throughout the complete audio spectrum and over a wide dynamic range. Phase angle is displayed with a zero center scale indication and full scale sensitivity of either +/-54 degrees or +/-180 degrees as determined by a front panel switch. The ratio meter is also a zero center scale device with +/-6 dB full scale deflection.

The Phase and Ratio measurement features of the AA-51 are particularly useful for line equalization measurements, azimuth alignment of stereo tape heads, and troubleshooting of audio consoles, amplifiers and networks.

AG-51 Audio Generator



Tilt Stand Provided But Not Shown

The AG-51 Audio Generator contains a low distortion 20 Hz to 200 kHz sine wave generator, an SMPTE standard intermodulation signal generator and a fixed frequency sine wave generator at 3.15

kHz for wow and flutter tests. Signal outputs are simultaneously available at levels of up to +18 dBm (equivalent sine wave power for complex signals) at separate LEFT and RIGHT output connectors. Outputs may be switch selected for LEFT only, RIGHT only, LEFT and RIGHT in phase (L+R), and LEFT and RIGHT in phase opposition (L-R). Front panel switches enable the operator to select fully balanced or unbalanced outputs at impedance levels of 150 ohms or 600 ohms. A dynamic range of 99.9 dB in 0.1 dB steps utilizing a combination of 10 dB, 1.0 dB and 0.1 dB precision attenuators is provided. Attenuator dials display output level directly in dBm in the 150 ohm source impedance configuration. Automatic output leveling circuitry with a built-in self-test feature provides a constant output level thereby eliminating the need for output metering.

AUDIO INSTRUMENTATION

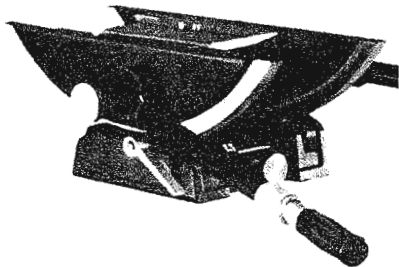
| | | | |
|-------|---|-------|---|
| AA-51 | Automatic Audio Analyzer: RFI shielded, stereo inputs, 117 VAC (230 VAC option)\$1495.00 Total Harmonic Distortion Meter: 0.1% to 100%, 20 Hz to 20 KHz, automatic set level and balanceIncluded Intermodulation Distortion Meter: 0.1% to 100%, 60 Hz and 7 KHz composite (other frequencies optional), automatic set level included AC Voltmeter: 5 Hz to 500 KHz, 1 mV to 100 VIncluded S + N/N Meter: 20 Hz to 20 KHzIncluded Phase Meter: +/- 180 degrees, 20 Hz to 20 KHzIncluded Wow and Flutter Meter: 0.01% to 1% peak weighted, automatic set levelIncluded Ratio Meter: +/- 6 dB, 20 Hz to 20 KHzIncluded | AG-51 | Audio Generator: RFI shielded, transformerless stereo outputs, balanced and unbalanced, 600 ohms and 150 ohms, automatic signal leveling with self test feature. 117 VAC (230 VAC option)\$950.00 Stereo Matrix Switch: L, R, L + R, L - RIncluded Precision Attenuators: 10 dB, 1.0 dB, 0.1 dB stepsIncluded Low Distortion Sine Wave Generator: 20 Hz to 200 KHzIncluded Composite Intermodulation Test Generator: 60 Hz and 7 KHz at 4:1 (other frequencies optional)Included 3.15 KHz SMPTE Wow and Flutter Frequency StandardIncluded |
| | | AT-51 | Audio Test System: Includes AA-51 Analyzer and AG-51 Generator at single purchase price\$2295.00 |

Prices and specifications subject to change without notice



QuickSet

HEADS



HERCULES AND GIBRALTAR CRADLE HEADS
#4-52451-8 and #4-62454-0 **\$850.00**

Load Capacity . 150 lbs. (68.2 kg)
Tilt Angle 70° up, 40° down
Pan Rotation . . . 360°
Dimensions . . . 18" × 11¼" × 6¼"
(45.7 × 28.6 × 15.9 cm)
Weight 25 lbs. (11.4 kg)

The Hercules and Gibraltar Cradle Heads differ only in the size of the mounting studs.

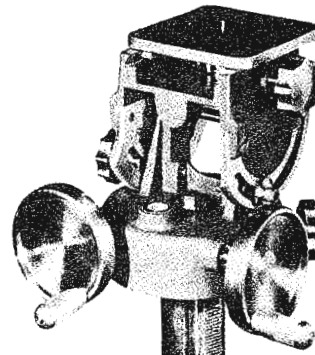
For remote and studio applications. Use with Hercules or Gibraltar tripods for remote. Use with mobile or counterbalance pedestals for studio work.



HERCULES CAM HEAD
#4-52330-4 **\$715.00**

Load Capacity . 140 lbs. (63.6 kg)
Tilt Angle Up to 50° up & down
Pan Rotation . . . 360°
Dimensions . . . 8½" × 9½" × 9½"
(21.6 × 24.1 × 24.1 cm)
Weight 25½ lbs. (11.6 kg)

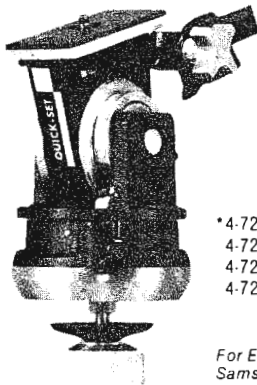
Specify type of camera, lens, and teleprompter for Cam designation.



HERCULES GEARED HEAD
#4-52211-6 **\$395.00**

Load Capacity . 15-50 lbs. (6.8-22.7 kg)*
Tilt Angle 45° up, 90° down
Pan Rotation . . . 360°
Dimensions . . . 7" × 6" × 6¾"
(17.8 × 15.2 × 17.1 cm)
Weight 7 lbs. (3.2 kg)

*Choice of counterbalance spring.

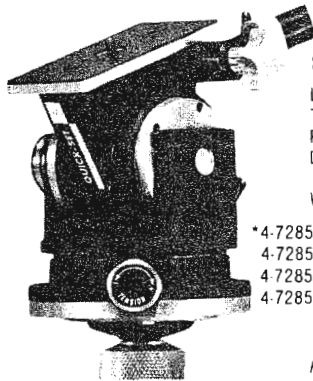


SAMSON MINI FLUID HEAD*

Load Capacity 20 lbs. (9.1 kg)
Tilt Angle ± 90°
Pan Rotation 360°
Dimensions 4" × 5" × 6"
(10.2 × 12.7 × 15.2 cm)
Weight 4.5 lbs. (2.0 kg)

- *4-72800-2 Mini Fluid Head with Pro Jr. Base **\$470.00**
- 4-72801-0 Mini Fluid Head with Ball Base **470.00**
- 4-72802-8 Mini Fluid Head with Samson Column Base **470.00**
- 4-72803-6 Mini Fluid Head w/Pro Jr. Base **470.00**
No 3/8" Stud
(For use with 4-70150-4 Tripod)

For ENG, E.F.P. and Cine applications. Use with any Samson tripod, pedestal or column.

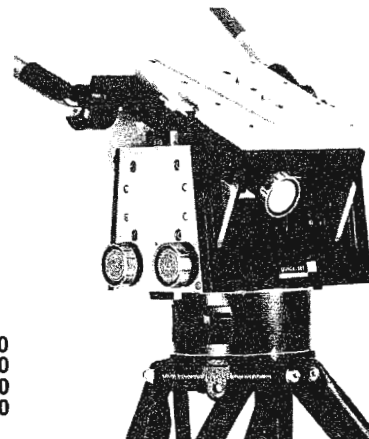


SAMSON JUNIOR FLUID HEAD*

Load Capacity 30 lbs. (13.6 kg)
Tilt Angle ± 85°
Pan Rotation 360°
Dimensions 4" × 6" × 6"
(10.2 × 15.2 × 15.2 cm)
Weight 7.0 lbs. (3.2 kg)

- *4-72850-7 Jr. Fluid Head with Pro Jr. Base **\$595.00**
- 4-72851-5 Jr. Fluid Head with Ball Base **595.00**
- 4-72852-3 Jr. Fluid Head w/Samson Column Base **595.00**
- 4-72853-1 Jr. Fluid Head w/Pro Jr. Base **595.00**
No 3/8" Stud
(For use with 4-70150-4 Tripod)

For ENG, E.F.P. and Cine applications. Use with any Samson tripod, pedestal or column.

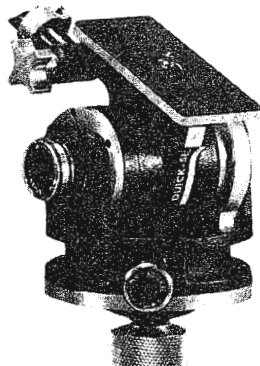


GIBRALTAR CAM HEAD
#4-62302-1 **\$1420.00**

Load Capacity . 375 lbs. (170.5 kg)
Tilt Angle ± 50° up & down
Pan Rotation . . . 360°
Dimensions . . . 13" × 11" × 10"
(33 × 28 × 25 cm)
Weight 46 lbs. (20.9 kg)

Specify type of camera, lens, and teleprompter for Cam designation.

For remote and studio applications. Use with Gibraltar Field Tripod for remote work. Use with counterbalance pedestal for studio work.

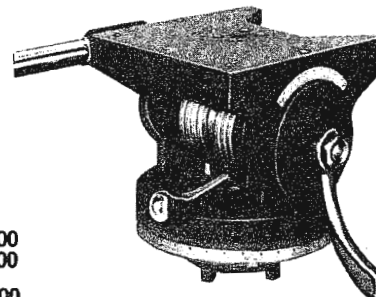


HERCULES HYDRO FLUID HEAD*

Load Capacity . . . 50 lbs. (22.7 kg)
Tilt Angle ± 80°
Pan Rotation . . . 360°
Dimensions 6" × 5" × 6"
(15.2 × 12.7 × 15.2 cm)
Weight 8.5 lbs. (3.9 kg)

- *4-52810-3 Hydro Fluid Head with Pro Jr. Base **\$850.00**
- 4-52811-1 Hydro Fluid Head with Ball Base **850.00**
- 4-52812-9 Hydro Fluid Head with Samson Column Base **850.00**
- 4-52813-7 Hydro Fluid Head w/Pro Jr. Base **850.00**
No 3/8" Stud
(For use with 4-70150-4 Tripod)

For ENG, E.F.P. and Cine applications. Use with any Samson tripod, pedestal or column.



GIBRALTAR MICROWAVE RELAY TILT HEAD
#4-62050-6 **\$460.00**

Load Capacity . 1,000 inch - pounds
Fore on Tilt Axis
Tilt Angle 30° up, 38° down
Pan Rotation . . . 360°
Dimensions . . . 6½" × 6½" × 7"
(16.5 × 16.5 × 17.8 cm)
Weight 30 lbs. (13.6 kg)

Calibrations: Azimuth in 1° (0°-360°)
Elevation in 1° (± 45°)

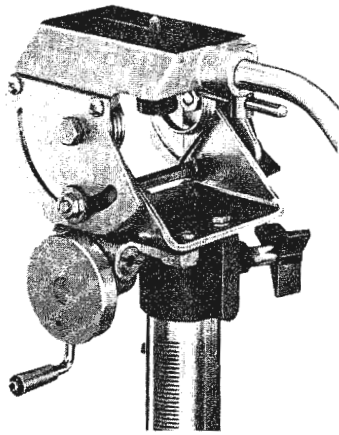
For microwave relay application. Use with Gibraltar field tripod.

Prices and specifications subject to change without notice



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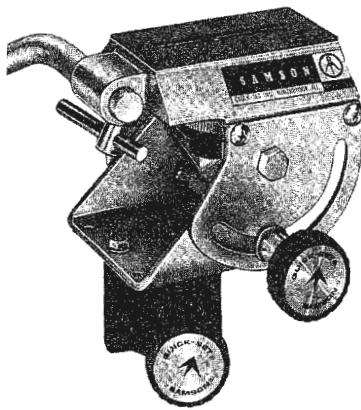
HEADS



SAMSON GEARED MOVIE HEAD
#4-72612-1 **\$155.00**

Load Capacity . . . 15-25 lbs. (6.8-11.4 kg)
Tilt Angle 45° up, 90° down
Pan Rotation . . . 360°
Dimensions . . . 6" x 6½" x 7½"
(15.2 x 16.5 x 19 cm)
Weight 2 lbs. (1 kg)

For 8mm or 16mm motion picture applications. Use with any Samson tripod, pedestal or column.



SAMSON FRICTION HEAD*

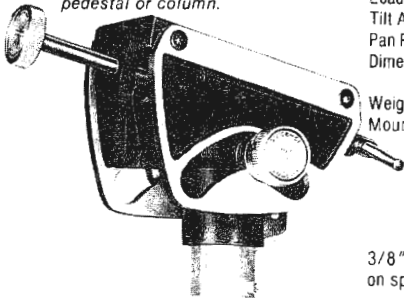
Load Capacity . . . 25-35 lbs. (11.4-15.9 kg)
Tilt Angle 45° up, 90° down
Pan Rotation . . . 360°
Dimensions . . . 5½" x 6½" x 6½"
(14.1 x 16.6 x 16.6 cm)
Weight 2½ lbs. (1 kg)

*4-72011-6 Standard Counterbalance Spring (25 lb. cap.) **\$90.00**
4-72013-2 Heavy Duty Counterbalance Spring (35 lb. cap.) **\$100.00**

3/8" x 16 mounting screw available on special order.

For studio and remote applications. Use with any Samson tripod, pedestal or column.

For studio and remote applications. Use with any Samson tripod, pedestal or column.

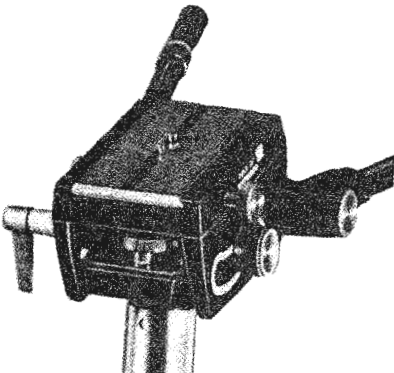


SAMSON CAM HEAD
#4-72300-3 **\$290.00**

Load Capacity . . . 40 lbs. (18.1 kg)
Tilt Angle 30° up, 40° down
Pan Rotation . . . 360°
Dimensions . . . 8½" x 6½" x 4½"
(21.6 x 16.6 x 11.5 cm)
Weight 5 lbs. (2.3 kg)

Mountings . . . 1/4" x 20 Camera Screw. Adjustable Fore & Aft 3½" (8.9 cm) Mounting surface 3½" x 6" (8.9 x 15.2 cm)

3/8" x 16 mounting screw available on special order.

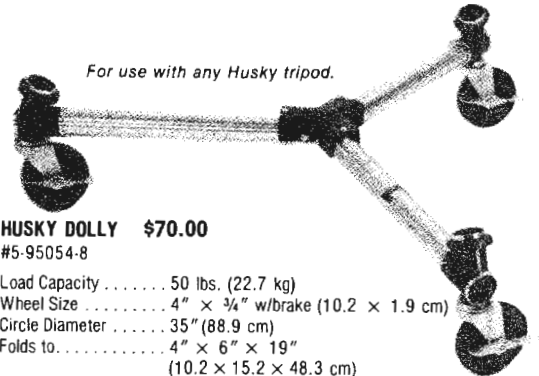


HERCULES CAM HEAD
#4-52304-9 **\$510.00**

Load Capacity . . . 80 lbs. (36.3 kg)
Tilt Angle 35° up, 45° down
Pan Rotation . . . 360°
Dimensions . . . 5" x 9" x 10"
(12.7 x 22.9 x 25.4 cm)
Weight 21 lbs. (9.5 kg)

For studio and remote applications. Use with Hercules tripod and dolly for remote, Hercules and Gibraltar pedestals for studio work.

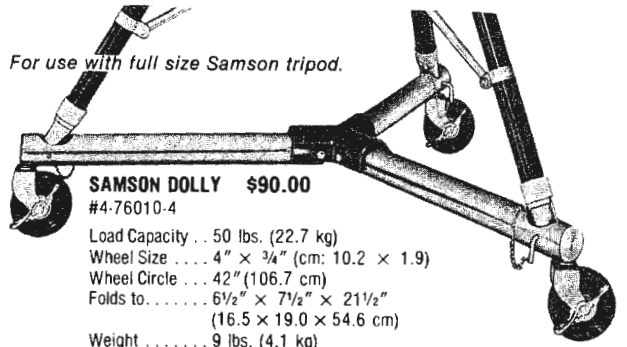
DOLLIES



For use with any Husky tripod.

HUSKY DOLLY **\$70.00**
#5-95054-8

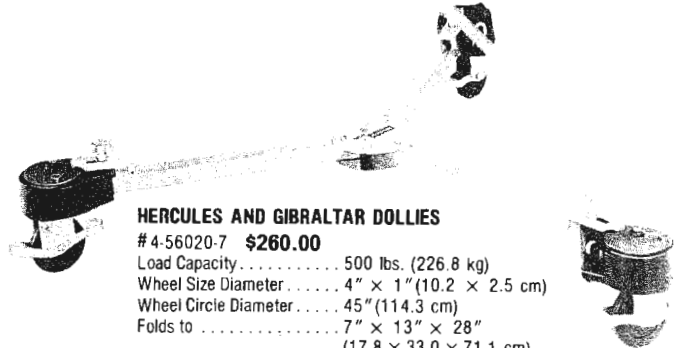
Load Capacity 50 lbs. (22.7 kg)
Wheel Size 4" x ¾" w/brake (10.2 x 1.9 cm)
Circle Diameter 35" (88.9 cm)
Folds to 4" x 6" x 19"
(10.2 x 15.2 x 48.3 cm)
Weight 8 lbs. (3.6 kg)



For use with full size Samson tripod.

SAMSON DOLLY **\$90.00**
#4-76010-4

Load Capacity . . . 50 lbs. (22.7 kg)
Wheel Size 4" x ¾" (cm: 10.2 x 1.9)
Wheel Circle . . . 42" (106.7 cm)
Folds to 6½" x 7½" x 21½"
(16.5 x 19.0 x 54.6 cm)
Weight 9 lbs. (4.1 kg)



HERCULES AND GIBRALTAR DOLLIES
#4-56020-7 **\$260.00**

Load Capacity 500 lbs. (226.8 kg)
Wheel Size Diameter 4" x 1" (10.2 x 2.5 cm)
Wheel Circle Diameter 45" (114.3 cm)
Folds to 7" x 13" x 28"
(17.8 x 33.0 x 71.1 cm)
Weight 17 lbs. (7.7 kg)

The same dolly w/4" wheels is available in a 3/4 size version under #4-56100-7. **\$260.00**

#4-56450-6 w/Cable Guards **\$560.00**

Load Capacity 500 lbs. (226.8 kg)
Wheel Size Diameter 8" x 1½" (20.3 x 3.8 cm)
Wheel Circle Diameter 45" (114.3 cm)
Folds to 11" x 13" x 28"
(27.9 x 33.0 x 71.1 cm)
Weight 41 lbs. (18.6 kg)

The same dolly w/8" wheels is available in a 3/4 size version under #4-56160-1. **\$560.00**

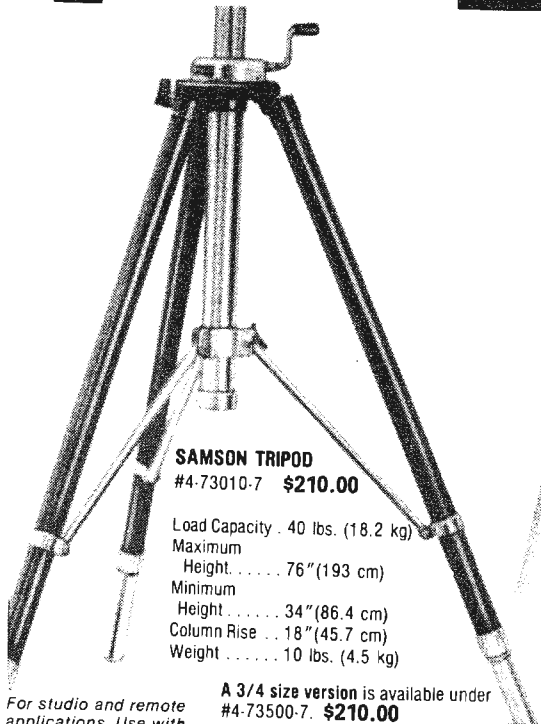


Prices and specifications subject to change without notice



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TRIPODS



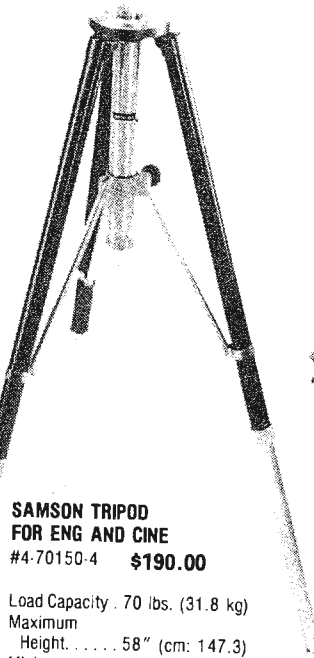
SAMSON TRIPOD
#4-73010-7 **\$210.00**

Load Capacity . 40 lbs. (18.2 kg)
Maximum
Height 76" (193 cm)
Minimum
Height 34" (86.4 cm)
Column Rise . . 18" (45.7 cm)
Weight 10 lbs. (4.5 kg)

For studio and remote applications. Use with any Samson panhead and dolly.

A 3/4 size version is available under #4-73500-7. \$210.00

Maximum
Height 55" (139.7 cm)
Minimum
Height 21" (53.3 cm)



SAMSON TRIPOD FOR ENG AND CINE
#4-70150-4 **\$190.00**

Load Capacity . 70 lbs. (31.8 kg)
Maximum
Height 58" (cm: 147.3)
Minimum
Height 32" (cm: 81.3)
Weight 9 lbs. (4.1 kg)

For ENG, E.F.P. and Cine applications. Use with fluid heads for studio or remote. Add Samson dolly for mobility.



GIBRALTAR HEAVY DUTY FIELD/STUDIO TRIPOD **\$560.00**
#4-60450-0

Load Capacity . 400 lbs. (181.8 kg)
Maximum
Height 42 1/2" (108 cm)
Minimum
Height 25 3/8" (64.8 cm)
Weight 24 lbs. (10.9 kg)

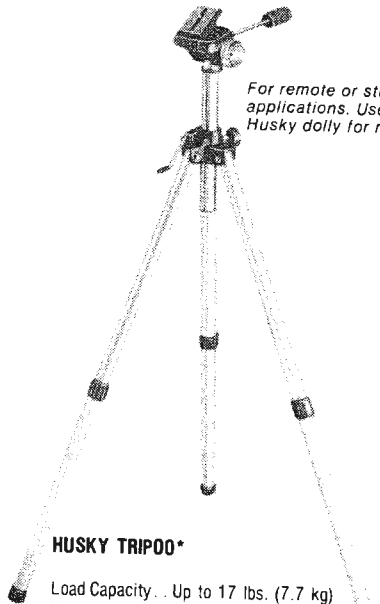
For studio and remote applications. Use with any Gibraltar panhead.



SAMSON TROLLEY
#4-74810-9 **\$250.00**

Load Capacity . 40 lbs. (18.2 kg)
Maximum
Height 54" (137.2 cm)
Minimum
Height 36" (91.4 cm)
Column Rise . . 18" (45.7 cm)
Weight 13 lbs. (5.9 kg)
Wheel Circle . . 34" (86.4 cm)

For studio applications. Use with any Samson panhead.



HUSKY TRIPOD*

Load Capacity . . Up to 17 lbs. (7.7 kg)
Height
Extended 57" 72" (144.8-182.9 cm)
Height
Telescoped . . . 23" 31" (58.4-78.7 cm)
(Dependent on model)
Column Rise . . . 16" (40.6 cm)
Tilt Angle 60° up, 90° down
Pan Rotation . . . 360°
Weight 7 lbs. (3.2 kg)

*5-95534-9 - 2-section legs **\$145.00**
5-95542-2 - 3-section legs **\$155.00**
5-95549-7 - 4-section legs **\$165.00**

All have anti-drop columns and counter-balanced heads included.



HERCULES TRIPOD WITH ELEVATOR **\$455.00**
#4-53021-8

Load Capacity . 150 lbs. (68.2 kg)
Maximum
Height 73" (185.4 cm)
Minimum
Height 33" (83.8 cm)
Column Rise . . 18" (45.7 cm)
Weight 19 lbs. (8.6 kg)

For studio or remote application. Use with any Hercules panhead. Dolly provides mobility.

A 3/4 size version is available under #4-53220-6. \$445.00

Maximum
Height 55" (139.7 cm)
Minimum
Height 26" (66.0 cm)



GIBRALTAR TRIPOD WITH ELEVATOR **\$830.00**
#4-63020-8

Load Capacity . 200 lbs. (90.7 kg)
Maximum
Height 85" (215.9 cm)
Minimum
Height 42" (106.7 cm)
Weight 42 lbs. (19.1 kg)

A 3/4 size version is available under #4-63120-6. \$815.00

Maximum
Height 65" (165.1 cm)
Minimum
Height 30" (76.2 cm)

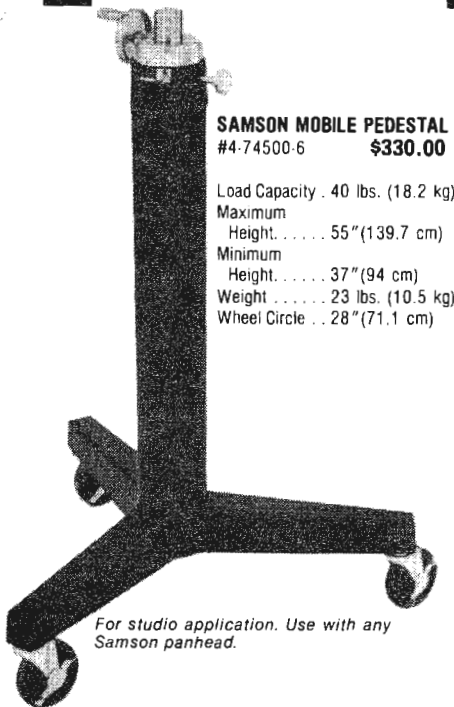
For studio and remote applications. Use with any Gibraltar panhead.

Prices and specifications subject to change without notice



QuickSet

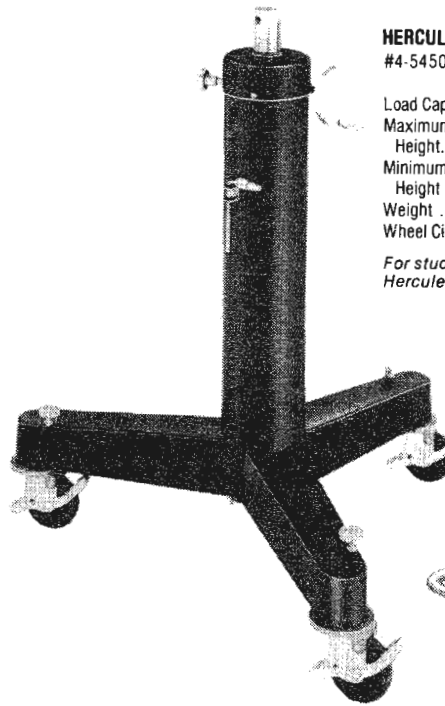
PEDESTALS



SAMSON MOBILE PEDESTAL
#4-74500-6 **\$330.00**

Load Capacity . 40 lbs. (18.2 kg)
Maximum
Height 55" (139.7 cm)
Minimum
Height 37" (94 cm)
Weight 23 lbs. (10.5 kg)
Wheel Circle . . 28" (71.1 cm)

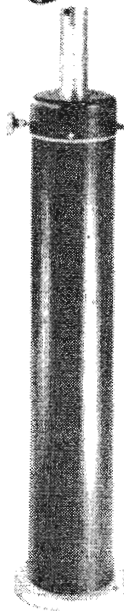
For studio application. Use with any Samson panhead.



HERCULES MOBILE PEDESTAL
#4-54504-2 **\$595.00**

Load Capacity . 80 lbs. (36.4 kg)
Maximum
Height 56" (142.3 cm)
Minimum
Height 38" (96.5 cm)
Weight 35 lbs. (15.9 kg)
Wheel Circle . . 34" (86.4 cm)

For studio application. Use with any Hercules panhead.



SAMSON STATIONARY PEDESTAL
#4-78100-1 **\$235.00**

Load Capacity 25 lbs. (11.4 kg)
Maximum Height . . . 48" (121.9 cm)
Minimum Height . . . 30" (76.2 cm)
Weight 10 lbs. (4.5 kg)

HERCULES STATIONARY PEDESTAL **\$385.00**
#4-58001-5

Load Capacity 80 lbs. (36.4 kg)
Maximum Height . . . 50" (127.0 cm)
Minimum Height . . . 32" (81.3 cm)
Weight 12 lbs. (5.5 kg)

GIBALTAR STATIONARY PEDESTAL **\$590.00**
#4-68000-5

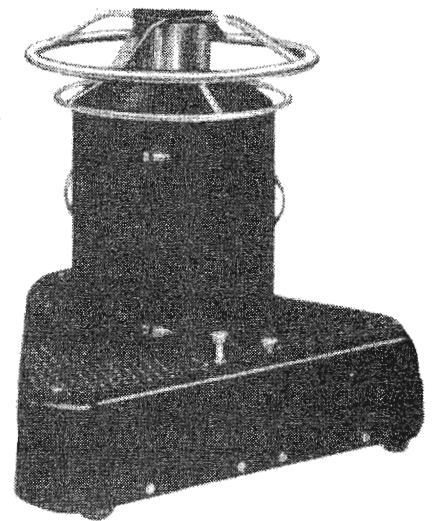
Load Capacity 200 lbs. (90.7 kg)
Maximum Height . . . 52" (132.1 cm)
Minimum Height . . . 32" (81.3 cm)
Weight 20 lbs. (9.1 kg)

For fixed locations. Use with any panhead from respective category.

GIBALTAR COUNTERBALANCE PEDESTAL
#4-64860-6 **\$3425.00**

Load Capacity . . 260 lbs. (118.2 kg)
Maximum
Height 57" (144.8 cm)
Minimum
Height 36" (91.4 cm)
Doorway Width . 38 1/2" (97.8 cm)
Steering
Wheel Dia. 30" (76.2 cm)
Weight 596 lbs. (270.9 kg)

For studio application. Use with Gibraltar Cam or Cradle Heads.



GIBALTAR COUNTERBALANCE PEDESTAL
#4-64850-7 **\$2460.00**

Load Capacity . . 150 lbs. (68.2 kg)
Maximum
Height 54" (137.2 cm)
Minimum
Height 36" (91.4 cm)
Doorway Width . 32" (81.3 cm)
Steering
Wheel Dia. 24" (60.9 cm)
Weight 250 lbs. (113.6 kg)

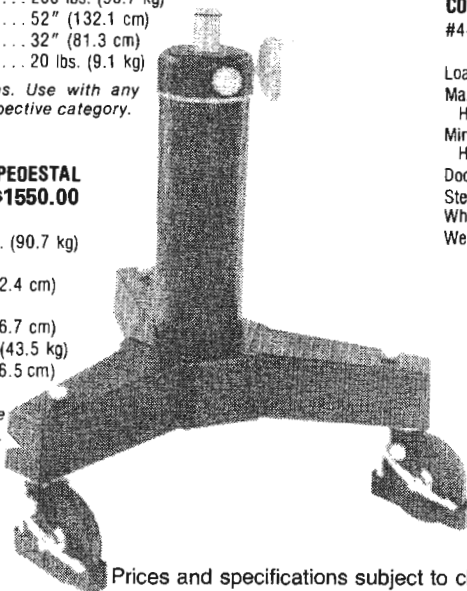


For studio application. Use with Hercules Cam Heads or Gibraltar Cradle Head.

GIBALTAR MOBILE PEDESTAL
#4-64500-8 **\$1550.00**

Load Capacity . 200 lbs. (90.7 kg)
Maximum
Height 60" (152.4 cm)
Minimum
Height 42" (106.7 cm)
Weight 96 lbs. (43.5 kg)
Wheel Circle . . 38" (96.5 cm)

For studio application. Use with any Gibraltar panhead.



Prices and specifications subject to change without notice



ROBINS® INDUSTRIES Corp.

BULK TAPE ERASERS

VIDEOCASSETTE BULK ERASER

Erase all video and audio signals from any videocassette configuration with the Robins universal VIDEOCASSETTE Bulk Eraser. Assures clean signal-free videocassettes in seconds. Easy to use. Erases to below normal erase head level. Saves wear and tear on costly video unit internal erase mechanism. Preserves confidentiality. Also ideal for audio cassettes, reel-to-reel and cartridge tape. Built in momentary switch operation: 110-120 Volts A.C., 5.4 amps Size: 5" x 5" x 3 1/2". Shipping Weight: 4 lbs. Individually cartoned.

- 24-001 Video Cassette Bulk Eraser.....\$53.00
- 24-016 New Universal Bulk Tape Eraser, UL Listed. Erases unwanted recordings from Cassettes, Cartridges, Reel-to-Reel Tape and Magnetic Striped Film. Handle has momentary contact trigger switch. Erases tapes by moving unit over the reel or tape housing. Background noise levels are erased to below normal erase head level. Operation: 117 volt, 5 amps. 50-60Hz. A.C. Size: 4" x 2 1/2" x 4 1/2". Wt. 2 lbs. Individually boxed.....\$30.00
- 24-017 Universal Bulk Tape Eraser, UL Listed. Erases unwanted recordings from Cassettes, Cartridges, Reel to Reel Tape and Magnetic Striped Film. Handle has momentary contact switch. Erases tapes by moving unit over the reel or tape housing. Background noise levels are erased to below normal erase head level. Operation: 110-120 volt A.C. Size: 4" x 2 1/2" x 4 1/2". Wt. 2 lbs. individually cartoned. C.S.A. certified unit available for Canada.....\$26.00
- 24-018 Professional Quality UL Listed Bulk Tape Eraser. Erases entire Cassette, Cartridge or reel of tape in seconds. Removes recorded and unwanted signals. Reduces background noise levels of tape from 3 to 6 db below normal erase head level. For reels up to 10 1/2" diameter, tapes to 1/2" wide. Size: 5 1/4" x 6 3/4" x 3 3/4". Operation 110-120 volts 5 amps, 50-60 Hz. A.C. Wt. 9 lb. Individually cartoned.....\$95.00
- 24-022 Audio/Video Bulk Tape Eraser, UL Listed. Industrial grade unit erases 1" wide tape on reels up to 10 1/2" diameter. Features overheat warning light and automatic cut-off, fused circuits, heavy duty switch and power cord. Specs. — Duty cycle: 2 min. on, 15 min. off. Power: 10 amps. 117 V. 50-60 Hz. A.C. Size 7 1/2" x 5 1/2" x 3 3/4". Weight: 17 lbs. NOTE: Erasure of helical scan video tape is limited to 3/4" max. width...\$210.00
- 24-026 Heavy Duty Bulk Tape Eraser. Erases audio and video tape up to 1" wide on reels up to 17" diameter. Features built-in blower cooling system overheat warning light and automatic cut-off, fused circuits, heavy duty switches. Specs. — Duty cycle: 15 min. on, 30 min. off. Power: 20 amps 117 V. 50-60 Hz. A.C. Size: 12" x 14" x 3 3/4". Weight: 38 lbs. NOTE: Erasure of helical scan video tape is limited to 3/4" max.....\$440.00

TAPE HEAD DEMAGS

- 25-011 Universal Head Demagnetizer UL Listed interchangeable tips permit use with most Reel-to-Reel, Cassette and Cartridge Equipment, with switch. 110-120V 50/60 Hz. (CSA certified unit available for Canada).....\$14.00
- 25-013 Economy Head Demagnetizer, UL Listed. Features plastic shielded probe. 110-120V. 50-60 Hz. (CSA unit available for Canada).....\$9.00
- 25-015 Deluxe Head Demag, UL Listed, same as 25-013 except with switch.....\$12.25
- 23-034 1/4" Tape Splicing Patches.....\$1.40

CASSETTE HEAD DEMAGS

- 36-008 Cassette Head Demag and Cleaner, cordless unit operates with home and auto cassette Player/Recorders. Features rotary magnet and non-abrasive head cleaning tape. Includes plastic storage canister. (Patent No. 3,958,273).....\$4.50

LEADER SPLICING AND CUEING TAPES

Color Coded Leader Tapes

- 19-015 Pack of five 2 1/2" reels, 100 ft. each of 1/4" 1.5 mil. in 5 colors: Red, Blue, Green, Yellow and White. Ideal for Color Coding.....\$5.85
- 19-020 Clear Leader Tape, 1/4 in. x 100 ft. 2 1/2" reel used on recorders having automatic photo electric sensing or shut-off devices.....\$1.50
- 19-036 White Leader Tape. 1/4 in. x 100 ft. 2 1/2" reel.....\$1.50

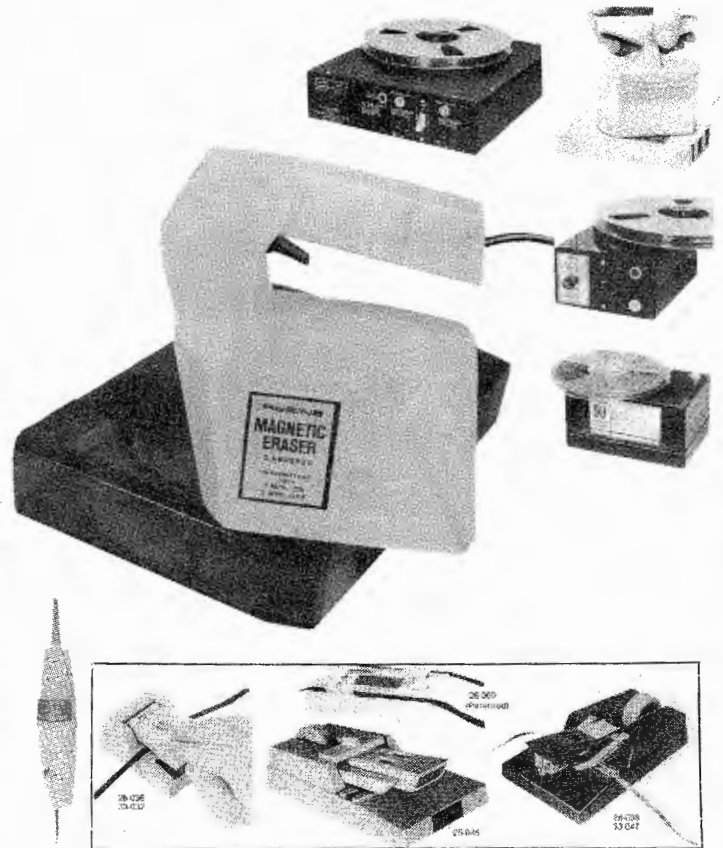
Splicing Tape On Rolls

Specifically made for splicing recording tapes. Mylar base with special formula adhesive. Tackiness, thickness, strength, and cold flow are carefully controlled to produce secure, clean splices.

- 23-016 Splicing Tape 3/8" x 300'.....\$4.85
- 23-018 Splicing Tape 1/4" x 100' Replaces R23006.....\$1.00
- 23-030 Splicing Tape 3/8" x 100' Replaces R23009.....\$1.25
- 23-033 Splicing Tape 1/2" x 100' Replaces R23012.....\$1.45

Universal Tape Splicer

- 26-030 Universal Splicer. Low cost splicer for both 1/4" and cassette tapes. Blade included. Uses standard splicing tape.....\$4.50



SPLICING PATCHES

Pre-cut single splices with easily removed backing for convenient use

- 23-034 1/4" Tape Splicing patches for R26036 and other Splicers, Pk/75.....\$1.40
- 23-053 1/2" VTR Tape Splicing Patches Pk/60.....\$2.75
- 23-035 100 Splicing Patches for R33032 and other Cassette Tape Splicers.....\$1.40

CUEING TAPES

- 23-225 Aluminum Foil Sensing and Cueing tape for use with tape recorders having automatic stop and reverse controls and other electronic sensing devices. Self stick 1/4" x 1/4" Pk/50.....\$1.75

TAPE SPLICERS

- 26-048 1/4" Audio/Visual Tape Splicer.....\$160.00
- 26-051 1/2" Audio/Visual Tape Splicer.....\$160.00
- 26-052 Replacement Cutter Pads for 26-051 Splicer.....\$3.00
- 26-054 1" Audio/Visual Tape Splicer.....\$160.00
- 26-055 Replacement Cutter Pads for 26-054 Splicer.....\$3.00
- 26-057 Replacement Blades for 26-048, 26-051, 26-054, 26-081 Pk/2.....\$6.40
- 26-059 Cutter Pads for 26-048 Splicer.....\$3.00
- 26-081 3/4" Audio/Visual Tape Splicer.....\$160.00
- 26-082 Replacement Pad for 26-081.....\$3.00
- 26-036 1/4" Tape Splicer, "CUT-N-SPLICE" Economy model.....\$5.50
- 26-032 Same as above except for Cassette Tapes. Supplied with 33-035 Splicing Patches. No angle control.....\$5.40

NEW "GIBSON GIRL"® TAPE SPLICERS For reel-to-reel, cassettes and 8 track tapes. Precision made metal parts on a rugged plastic base. Operates on the famous "Gibson Girl" principal which produces slight trim cuts on the edges of the spliced tape to prevent adhesive from contacting critical parts. Knob has cut and trim positions. A blade adjustment is provided to maintain lifetime accuracy. Patent No. 2778420.

- 26-037 Replacement Kit for 26-038 contains blade assembly and cutting pad.....\$2.50
- 26-038 "Gibson Girl" 1/4" Tape Splicer (Reel-to-Reel).....\$10.50

DELUXE "GIBSON GIRL"® Stereo Tape Splicer Splice 4-track stereo tapes without sacrificing program material on the outer tracks. Cuts tape diagonally and trims minute 'Gibson Girl' waists on sides of splices to prevent adhesive from contacting critical parts of recorder. Operating level indicates "Cut" and "Trim" positions for ease of operation. Tape guide secures tape. Easy threading tape dispenser has roll of 1/2" x 100' Splicing Tape. Blade Center adjustment is provided to assure lifetime accuracy. U.S. Patents No. 3,346,437 and 196,154.

- 26-045 1/4" Tape Splicer, Deluxe, Stereo.....\$15.50
- 26-047 Replacement Kit for 26-045 Tape Splicer. Contains cutter cartridge and 2 cutter pads.....\$3.30



Prices and specifications subject to change without notice



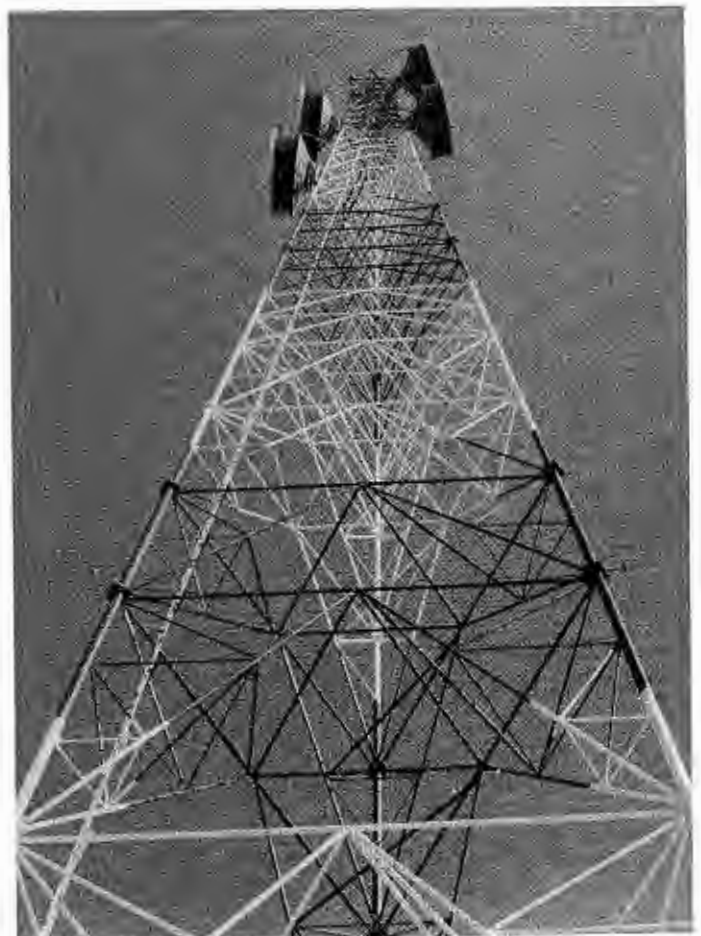
Unarco-Rohn

Division of Unarco Industries, Inc.

TOWERS

TOWERS FOR:

- MICROWAVE TRANSMISSION
- RADIO AND TV BROADCASTING
- STL



For prices and additional information contact your
Harris District Sales Manager or the Harris Quincy Sales Office.



SCALA ELECTRONIC CORPORATION

Communication Antenna

| MODEL | DESCRIPTION | FREQUENCY | HORIZONTAL | VERTICAL |
|----------|--|----------------------------|----------------------|------------------------|
| CA5-150 | Five-Element Ruggedized Yagi (9 DB Gain)** | 150-170 MHZ 72-76 MHZ | \$125.00 \$175.00 | \$155.00 \$225.00 |
| 2CA5-150 | Two Five-Element CA5-150 Yagis Includes Harness and Hardware** | 150-170 MHZ 72-76 MHZ | \$300.00 \$390.00 | \$365.00 \$440.00 |
| CA5-450 | Five-Element Ruggedized Yagi (10 DB Gain) Mount Allows H or V Polarization | 450-470 MHZ 406-420 MHZ | | \$125.00 \$125.00 |
| 2CA5-450 | Two Five-Element CA5-450 Yagis Mounts Allow H or V Polarization | 450-470 MHZ 406-420 MHZ | | \$300.00 \$300.00 |
| RA5-450 | Five-Element Yagi in Heavy Fiberglass Radome (10 DB Gain) | 450-470 MHZ 406-420 MHZ | | \$350.00 \$350.00 |
| CA7-460 | Seven-Element Broadband Yagi (10 DB Gain 450-470 or 406-420) | 450-470 MHZ 406-420 MHZ | | \$135.00 \$135.00 |
| CA5-950 | Five-Element Ruggedized Yagi (10 DB Gain) | 550-1000 MHZ | | \$125.00 |
| PR-450/U | Paraflector (50 or 75 Ohms) | 350-1000 MHZ | | \$380.00 |
| MF-960 | Miniflector (14 DB Gain) | 940-960 MHZ | | \$200.00 |
| OG-4 | Omni-Directional Gain Antenna (4 DB Gain) | 150-170 MHZ | | \$215.00* |
| OG-6 | Omni-Directional Gain Antenna (6 DB Gain) | 450-470 MHZ 406-420 MHZ | | \$215.00* \$215.00* |

* Downtilt Available, Add \$50.00
** Available with UHF Connector

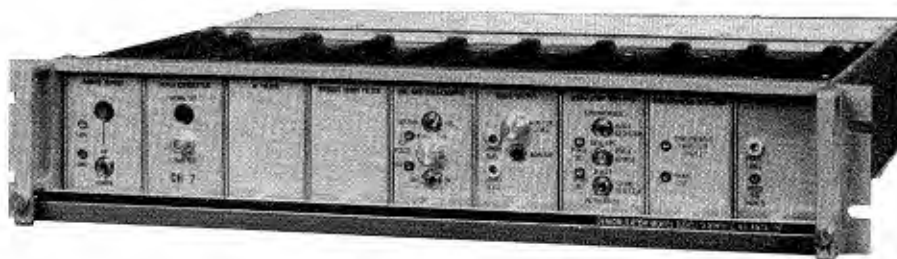
NOTE: All antennas normally supplied with type N connectors. For frequencies not listed, add to nearest frequency: 25% for 2 or less, 20% for 3-9, and 10% for 10 or more. When ordering, specify model, frequency, polarization, and connector. All above models are 50 ohms, except PR-450/U which is available in 50 or 75 ohms.



Prices and specifications subject to change without notice

Scientific Atlanta

TELEVISION DEMODULATOR



MODEL 6250 Television Demodulator

The Model 6250 Television Demodulator provides precision demodulation of any transmitted television signal. The envelope delay provided closely matches that of the average home television receiver. This permits use with transmitters which have been predistorted to compensate for this delay. An integral zero chopper enables measuring the depth of modulation of the transmitted signal. In addition, a programming option allows the zero chop command to originate from external equipment for use in systems in which the picture parameters are automatically adjusted for optimum reception on the receiver. The demodulator is equipped with an envelope detector for the video, and may be ordered with an optional synchronous detector. With the synchronous detector, capability is provided on the front panel to rapidly switch between envelope and synchronous detectors for comparative studies.

The synchronous video detector is free from quadrature distortion that is found in all vestigial sideband envelope detectors. Quadrature distortion is a source of unsymmetrical ringing and smear, and cross talk between video sideband components.

The detected signals from both synchronous and envelope detectors are degraded, but in different ways, when there is incidental phase modulation on the received signal. For certain kinds of residual frequency modulation encountered on some broadcast signals, the envelope detector will still provide an acceptable video signal when the synchronous detector will not. Being able to select either type of video detector greatly enhances the diagnostic and operational capabilities of the demodulator.

If the synchronous detector is supplied, two options are available in the sound detector. The source for the 4.5 MHz aural subcarrier can be switched between either a direct mixer, using the phase-lock synchronous oscillator and audio IF signal, or an intercarrier detector using composite video and sound IF signals. Under normal conditions, the direct mixer provides a superior signal-to-noise ratio. The direct or intercarrier option is selected by a switch on the front panel.

The sound demodulator utilizes an extremely linear quadrature detector. A balanced audio output is provided without the use of an output transformer, by utilizing two power operational amplifiers. These features enable the demodulator to deliver a very low-distortion signal with unusually wide frequency response, almost without regard

to external load resistance. Use of the power operational amplifiers permits audio de-emphasis to be placed in the feedback loop, providing strict adherence to the standard de-emphasis curve regardless of control setting.

A loop-through is provided to permit the addition of the aural subcarrier to one of the video outputs, for transmission of the sound signal at a frequency above the spectrum occupied by the video signal in microwave installations. The frequency of the aural subcarrier is 4.5 MHz.

Each circuit module is completely enclosed and is accessible from the front panel of the unit, which occupies only 3 1/2 inches of vertical rack space. Modular construction facilitates rapid repair of malfunctions by simply removing one module and plugging another module in. This may be done from the front of the unit without removing it from the rack. Interconnections between modules are accessible in a rear compartment of the demodulator, where any RF cabling necessary may be disconnected to permit the demodulator chassis to be used as a test fixture. A module extender is available to facilitate repair.

Specifications

Except as noted, specifications apply to both synchronous and envelope detectors, and to both direct and intercarrier sound detection. These specifications apply to demodulators using single channel input converters, and may not apply when tunable input converters are used. Input levels refer to 75 ohm input impedance. Multiply by 0.8 for 50 ohm input impedance.

Overall Sensitivity

.1 mV (minimum input for 1v p-p video output)

Input Frequency

Any standard VHF or UHF TV channel

Input Level Dynamic Range

.1mV to 32.8mV (-20 dBmV to +30 dBmV), VHF

.1mV to 17.5mV (-20 dBmV to +25 dBmV), UHF

Input Impedance and VSWR

50 or 75 ohms (specify), VSWR less than 1.35:1 over channel of interest, over entire dynamic range of input

Noise Figure (at maximum gain)

6 dB Low Band

7 dB High Band

9 dB UHF

Image Rejection

60 dB VHF

50 dB UHF

IF Rejection

60 dB

IF Frequencies

Video - 45.75 MHz and Audio - 41.25 MHz

IF Frequency Response

Follows standard Nyquist response

Adjacent Channel Rejection

60 dB

Video Amplitude Frequency Response

0.0 - 4.18 MHz ± 5 dB

Envelope Delay

Complement of standard transmitter group delay

pre-correction

0.0 - 3 MHz ± 40 ns

3.58 MHz + 170 ± 20 ns

Differential Gain

$\pm 2\%$ (synchronous detector)

$\pm 2.5\%$ (envelope detector)

Sound Output Levels

Audio

+11.5 dBm max across 600 ohms

Aural Subcarrier

0.2V p-p max across 37.5 ohms

Above levels adjustable down to 0

Audio Frequency Response

± 0.5 dB, 30 Hz - 15 kHz with de-emphasis

De-Emphasis Time Constant

75 μ sec

Audio Harmonic Distortion

1% max at any frequency, maximum deviation and output level

Audio Monitor

Standard phone jack with level control - will drive most headphones

Differential Phase

$\pm 0.5^\circ$ (synchronous detector)

$\pm 1^\circ$ (envelope detector)

Chromance-to-Luminance Crosstalk

3% (envelope detector)

Unmeasurable (synchronous detector)

Above values are percentage of blanking-to-white-level luminance shift as chrominance signal varies from 0 to 100 IRE units. 87.5% modulation depth

Zero Chop Position, Length

Start time adjustable from 3 - 6 lines after vertical sync

pulse, width adjustable 1 - 3 lines

Video Output Level

Variable 0 - 1.5V p-p at each of two outputs

Video Output Impedance

75 ohms (30 dB min return loss)

Squelch

On-delayed approximately 10 seconds. Off-instantaneous; adjustable threshold

Operating Temperature Range

+20 to +120°F

Input Voltage

100 to 130V ac, 50 to 60 Hz

+24V dc nominal standby battery with optional built-in automatic switchover

-24V dc nominal battery operation with optional dc converter module

Input Power

30 watt maximum

Weight

25 pounds

Mounting

8.9 cm (3 1/2")H x 48.3 cm (19")W x

49.5 cm (19 1/2")D

(Standard rack mount spacing; rack slides optional)

NOTE: Specify Channel

| | | |
|--|-------|-----------|
| Model 6250-SD (Synchronous Detector) VHF | | \$2660.00 |
| Model 6250-ED (Envelope Detector) VHF | | \$1700.00 |
| Model 6250-SD UHF | | \$2885.00 |
| Model 6250-ED UHF | | \$1905.00 |

Prices and specifications subject to change without notice





AV Series Sound Recording Tape

The AV Series are low noise heavy duty open reel tapes designed for the rigorous use of instructional applications.

| Catalog Number | Reel Size | Reels Per Carton | 1-5 | 6-11 | 12 - 143 | 144 - 575 |
|----------------|-----------|------------------|--------|--------|----------|-----------|
| 176-¼-600 | 5" | 12 | \$4.49 | \$3.59 | \$3.37 | \$3.15 |
| 176-¼-1200 | 7" | 12 | 7.00 | 5.60 | 5.25 | 4.90 |
| 177-¼-900 | 5" | 12 | 5.66 | 4.53 | 4.25 | 3.96 |
| 177-¼-1800 | 7" | 12 | 9.16 | 7.32 | 6.87 | 6.41 |
| 178-¼-1200 | 5" | 12 | 8.93 | 7.14 | 6.70 | 6.24 |
| 178-¼-2400 | 7" | 12 | 15.39 | 12.32 | 11.54 | 10.77 |
| 179-¼-1800 | 5" | 12 | 10.91 | 8.72 | 8.18 | 7.63 |
| 179-¼-3600 | 7" | 12 | 18.66 | 14.92 | 13.99 | 13.08 |

Pro Pack Series

| | |
|---------|----------|
| No. 176 | 1.5 mil. |
| No. 177 | 1.0 mil. |
| No. 178 | 0.5 mil. |
| No. 179 | 0.5 mil. |
| No. 206 | 1.5 mil. |
| No. 207 | 1.0 mil. |
| No. 208 | 1.5 mil. |
| No. 209 | 1.0 mil. |
| No. 250 | 1.5 mil. |

Professional Quality, low noise oxide for heavy duty mastering recording applications. Using standard radiobroadcaster bias.

| Catalog Number | Reel Size | Reels Per Carton | 1-5 | 6-11 | 12 + |
|----------------|-----------|------------------|---------|---------|---------|
| 176-¼-2500-RN | 10½" | 12 | \$15.97 | \$12.78 | \$11.18 |
| 176-¼-2500-RPS | 10½" | 12 | 15.97 | 12.78 | 11.18 |
| 176-¼-2500-H | HUB | 12 | 11.61 | 9.29 | 8.13 |
| 177-¼-3600-RN | 10½" | 12 | 21.17 | 16.94 | 14.82 |
| 177-¼-3600-RPS | 10½" | 12 | 21.17 | 16.94 | 14.82 |
| 177-¼-3600-H | HUB | 12 | 16.79 | 13.43 | 11.76 |
| 178-¼-4800-RPS | 10½" | 12 | 34.81 | 27.85 | 24.37 |

206 - 207 — FOR CRITICAL MUSIC MASTERING. High Output/Low Noise open reel tapes designed for critical music mastering.

| Catalog Number | Reel Size | Reels Per Carton | 1-5 | 6-11 | 12 + |
|----------------|-----------|------------------|--------|--------|--------|
| 206-¼-1200 | 7" | 12 | \$7.48 | \$5.98 | \$5.24 |
| 206-¼-2500-RN | 10½" | 12 | 18.43 | 14.74 | 12.90 |
| 206-¼-2500-H | HUB | 12 | 13.97 | 11.18 | 9.78 |
| 207-¼-1700 | 7" | 12 | 9.90 | 7.92 | 6.93 |
| 207-¼-3600-RN | 10½" | 12 | 25.96 | 20.77 | 18.17 |
| 207-¼-3600-H | HUB | 12 | 21.51 | 17.21 | 15.06 |

208 - 209 — FOR CRITICAL VOICE AND GENERAL MUSIC MASTERING. Low Print/Low Noise open reel tapes designed for critical voice and general music mastering.

| Catalog Number | Reel Size | Reels Per Carton | 1-5 | 6-11 | 12 + |
|----------------|-----------|------------------|--------|--------|--------|
| 208-¼-600 | 5" | 12 | \$4.38 | \$3.50 | \$3.06 |
| 208-¼-1200 | 7" | 12 | 7.48 | 5.98 | 5.24 |
| 208-¼-2500-RN | 10½" | 12 | 18.43 | 14.74 | 12.90 |
| 208-¼-2500-H | HUB | 12 | 13.97 | 11.48 | 9.78 |
| 209-¼-900 | 5" | 12 | 6.06 | 4.58 | 4.24 |
| 209-¼-1800 | 7" | 12 | 9.90 | 7.92 | 6.93 |
| 209-¼-3600-RN | 10½" | 12 | 25.96 | 20.77 | 18.17 |
| 209-¼-3600-H | HUB | 12 | 21.51 | 17.21 | 15.06 |

250 — FOR CRITICAL STUDIO MASTERING. Premium quality tape for critical studio mastering.

| Catalog Number | Reel Size | Reels Per Carton | 1-5 | 6-11 | 12 + |
|----------------|-----------|------------------|--------|--------|--------|
| 250-¼-1200 | 7" | 12 | \$8.11 | \$6.49 | \$5.68 |
| 250-¼-2500-RN | 10½" | 12 | 21.69 | 17.35 | 15.18 |
| 250-¼-2500-H | HUB | 12 | 16.39 | 13.11 | 11.47 |

295 and # 296 RECORDING TAPE FOR SLOW SPEED — (Logging and Background Music) applications.

| Catalog Number | Reel Size | Reels Per Ctn. | 24 + | 144 + | 288 + | 576 + |
|----------------|-----------|----------------|---------|---------|---------|---------|
| 295-¼-3600 | ¼"x7" | 12 | \$10.26 | \$ 9.47 | \$ 8.71 | \$ 7.93 |
| 295-¼-7200-RPS | ¼"x10½" | 12 | 28.41 | 26.84 | 25.26 | 23.68 |
| 295-¼-7200RN | ¼"x10½" | 12 | 29.99 | 28.32 | 26.84 | 25.26 |
| 296-¼-2400 | ¼"x7" | 12 | 9.47 | 8.07 | 7.49 | 6.64 |
| 296-¼-3600-RPS | ¼"x10½" | 12 | 15.78 | 15.00 | 14.21 | 13.03 |
| 296-¼-3600-RN | ¼"x10½" | 12 | 17.36 | 16.56 | 15.78 | 14.61 |
| 296-¼-4800-RPS | ¼"x10½" | 12 | 20.91 | 19.35 | 18.31 | 17.04 |
| 296-½-3600-RN | ½"x10½" | 10 | 30.78 | 29.18 | 27.27 | 26.03 |
| 296-1-3600-RN | 1"x10½" | 5 | 48.94 | 47.34 | 45.38 | 43.41 |

NOTE: H — Plastic Hub - All "H" items are packed in intermediate sleeve boxes. 5 inch reel packages utilize a 3 spoke reel. 7 inch packages utilize a two hole trapezoid reel.

RN - A 10½" three spoke aluminum flange reel with plastic hub.

RPS - A 10½" plastic reel with 15/16" EIA center hole.

Prices and Specifications Subject to Change Without Notice.



Sound Recording Tape

AV CASSETTES are professional quality low noise cassettes designed for the rigorous use of instructional applications.

STANDARD PACK: A Standard Pack consists of 20 cassettes of identical length per carton; each cassette is individually packaged in a clear plastic storage box.

| Catalog Number | Per Carton | Price | | | |
|-------------------|------------|--------|--------|--------|--------|
| | | 1-79 | 80 + | 600 + | 1200 + |
| AVC 20 Std. Pack | 20 | \$1.45 | \$1.07 | \$.99 | \$.92 |
| AVC 30 Std. Pack | 20 | 1.53 | 1.11 | 1.04 | .99 |
| AVC 45 Std. Pack | 20 | 1.86 | 1.34 | 1.30 | 1.20 |
| AVC 60 Std. Pack | 20 | 2.01 | 1.46 | 1.39 | 1.31 |
| AVC 90 Std. Pack | 20 | 2.87 | 2.07 | 2.01 | 1.95 |
| AVC 120 Std. Pack | 20 | 4.26 | 3.10 | 2.97 | 2.93 |

FILE SYSTEM: A complete AVC File System Unit (Master Carton) consists of 96 cassettes of identical length, packed 24 cassettes to an individual drawer, with four drawers packed in the storage cabinet. Each drawer contains index, write-on labels and a catalog sheet. Each AV cassette is individually packed in a clear plastic storage box.

| Catalog Number | Per Carton | Price | | | |
|----------------|------------|--------|----------|-----------|------------|
| | | 1-95 | 96 Units | 576 Units | 1152 Units |
| AVC-20 FILE | 96 | \$1.49 | \$1.13 | \$1.05 | \$.97 |
| AVC-30 FILE | 96 | 1.57 | 1.17 | 1.13 | 1.05 |
| AVC-45 FILE | 96 | 1.91 | 1.40 | 1.36 | 1.26 |
| AVC-60 FILE | 96 | 2.06 | 1.52 | 1.45 | 1.37 |
| AVC-90 FILE | 96 | 2.92 | 2.13 | 2.07 | 2.01 |

STUDIO MASTER CASSETTES

| Catalog Number | Per Carton | Price | | | |
|----------------|------------|--------|--------|--------|--------|
| | | 1-99 | 100 + | 250 + | 1000 + |
| AVM-30 | 40 | \$1.80 | \$1.33 | \$1.26 | \$1.20 |
| AVM-60 | 40 | 2.28 | 1.71 | 1.61 | 1.54 |
| AVM-90 | 40 | 2.97 | 2.48 | 2.35 | 2.24 |

IR CASSETTES: Instant Record Cassettes are leaderless professional quality low noise cassettes designed for instant recording applications such as dictating, interviewing, conference recording, surveillance and information logging.

IRC — IRC cassettes are packed 20 per carton.

| Catalog Number | Per Carton | Price | | | |
|----------------|------------|------------|--------|--------|--------|
| | | 1-99 | 100 + | 250 + | 1000 + |
| IRC-30 BOXED | 20 | \$1.50 | \$1.35 | \$1.20 | |
| IRC-60 BOXED | 20 | 1.80 | 1.62 | 1.44 | |
| IRC-90 BOXED | 20 | 2.50 | 2.25 | 2.00 | |
| | | List Price | 250 + | 1000 + | |
| IRC-30 BULK | 250 | \$1.34 | \$.92 | \$.87 | |
| IRC-60 BULK | 250 | 1.78 | 1.27 | 1.19 | |
| IRC-90 BULK | 250 | 2.67 | 1.89 | 1.83 | |

BULK CASSETTES: These Professional Quality Cassettes are preferred by duplicators. Each with Posi-Trak Back Treatment. Supplied in Clear Shells and do not come in plastic storage boxes. HC - Bulk Boxes may be purchased as accessory. SBC 10, 20, 30, 45 and 60 are indicated by white leader; SBC-90, blue and SBC-120, pink. Packaged 250 in Master Carton and 25 on each tray.

| Catalog Number | Per Tray | Master Carton | Price | | |
|----------------|----------|---------------|--------|--------|--------|
| | | | 1-249 | 250 + | 1000 + |
| SBC-10 | 25 | 250 | \$1.11 | \$.79 | \$.73 |
| SBC-20 | 25 | 250 | 1.23 | .87 | .80 |
| SBC-30 | 25 | 250 | 1.34 | .92 | .87 |
| SBC-45 | 25 | 250 | 1.67 | 1.18 | 1.08 |
| SBC-60 | 25 | 250 | 1.78 | 1.27 | 1.19 |
| SBC-90 | 25 | 250 | 2.67 | 1.89 | 1.83 |
| SBC-120 | 25 | 250 | 4.12 | 2.85 | 2.81 |

ACCESSORY:

| | | | |
|-------------------------------|--------|--------|--|
| Bulk | Carton | Each | |
| One piece Clear Styrene Boxes | 250 | \$.14 | |

Prices and specifications subject to change without notice

ACCESSORY ITEMS

SPLICING TAPE

| CATALOG NUMBER | SIZE | PER CTN. | Price | |
|----------------|-------------|----------|--------|--------|
| | | | 1-11 | 12+ |
| 41-1/2-12.5 | 1/2" x 150" | 48 | \$.98 | \$.89 |
| 41-7/32-66 | 7/32" x 66" | 48 | 1.87 | 1.70 |
| 41-1/2-66 | 1/2" x 66" | 48 | 2.07 | 1.88 |
| 41-3/4-66 | 3/4" x 66" | 48 | 2.40 | 2.16 |

No. 41-1/2-12.5 is packaged on a core in a plastic bag, without a dispenser.

SPLICING TAPE

| | | | | |
|-------------|-------------|----|--------|--------|
| 620-7/32-66 | 7/32" x 66" | 12 | \$3.95 | \$3.59 |
| 620-1/2-66 | 1/2" x 66" | 12 | 5.34 | 4.85 |

No. 620 Splicing Tape may be used to splice all "Scotch" Brand Recording Tapes. Always use No. 620 when splicing tapes with "POSI-TRAK" backing.

SPLICING KIT

| | | | | |
|--------------|--|----|--------|--------|
| SK-7/32-12.5 | | 48 | \$1.97 | \$1.79 |
|--------------|--|----|--------|--------|

SK Splicing Kit includes a splicing block and 12.5 feet of polyester Splicing Tape on dispenser.

ALUMINIZED SENSING TAPE

| | | | | |
|----------|--------------|----|--------|--------|
| 51-7/32S | 7/32" x 150" | 12 | \$1.77 | \$1.61 |
|----------|--------------|----|--------|--------|

HEAD CLEANER CASSETTE

| | | | | |
|--------|--|----|--------|--------|
| S-C-HC | | 24 | \$1.71 | \$1.55 |
|--------|--|----|--------|--------|

LEADER AND TIMING TAPE

| CATALOG NUMBER | COLOR | LENGTH | PER CTN. | Price | |
|----------------|--------|--------|----------|---------|---------|
| | | | | 1-11 | 12+ |
| 61W-1/4-100 | WHITE | 100' | 12 | \$ 1.84 | \$ 1.74 |
| 61Y-1/4-100 | YELLOW | 100' | 12 | 1.84 | 1.74 |

When ordering specify correct catalog number for color desired.

EMPTY SELF-THREADING REEL

| CATALOG NUMBER | SIZE | PER CTN. | Price | |
|----------------|------|----------|--------|--------|
| | | | 1-11 | 12+ |
| PRST-7 | 7" | 12 | \$2.66 | \$2.42 |

Each reel comes with plastic collar and labels

EMPTY REEL IN PAPER BOX

| | | | | |
|-------------------|---------|----|--------|--------|
| RB-1/4-5 | 5" | 12 | \$.98 | \$.89 |
| RB-1/4-7 | 7" | 12 | 1.57 | 1.43 |
| RB-1/4-10 1/2M | 10-1/2" | 12 | 9.89 | 8.99 |
| RB-1/4-7M | 7" | 10 | 4.94 | 4.49 |
| RB-1/4-10 1/2-RPS | 10-1/2" | 12 | 6.13 | 5.57 |

EMPTY PAPER BOXES

| | | | | |
|--------------|---------|----|--------|--------|
| B-1/4-5 | 5" | 48 | \$.58 | \$.53 |
| B-1/4-7 | 7" | 48 | .78 | .71 |
| B-1/4-10 1/2 | 10-1/2" | 12 | 1.67 | 1.52 |

ALUMINIZED SENSING TABS

| | | | | |
|-------------|--------------|----|------|------|
| SST-7/32-18 | 7/32" x 3/4" | 20 | 1.18 | 1.07 |
|-------------|--------------|----|------|------|

CASSETTE EDIT AND REPAIR KIT

| | | | | |
|----------------|--|----|--------|--------|
| ERK-130 Carded | | 20 | \$2.96 | \$2.69 |
|----------------|--|----|--------|--------|





SENNHEISER ELECTRONIC CORPORATION

Dynamic Microphones

STUDIO MICROPHONE MD 211 U

Omnidirectional pickup pattern.
Insensitive to handling noise.
No distortion even at highest sound pressure levels.
No proximity effect at close miking.
Outstanding frequency response.
Quick release clip.

MD 211U Dynamic Microphone
with low Z cable \$327.00
with high Z cable 356.00

Recommended Accessories
Applicable: Directly Indirectly
(-U) only for model -U

Windscreens: MZW 30*, MZW 201*
Desk and Floor Stands: MZT 105*,
MZS 142*, MZS 144*, MZS 210*
Bar/Boom: MZS 235*, MZS 211*
Amplifier: VV 200 T
Goose necks: MZH 142*
Desk Clamp/Adapter: MZT 237*,
MZA 406*



SOLOIST MICROPHONE MD 416 U

Frequency range: 50 . . . 15,000 Hz.
Cardioid directional pattern allows high volume before feedback occurs.
Double housing with shockmounted element.
Built-in pop filter.
Exceptionally free of handling noise.
Quick release stand adapter.
Can be connected to any musical instrument amplifier.

MD 416 U Dynamic Microphone
with low Z cable \$276.00
with high Z cable 305.00

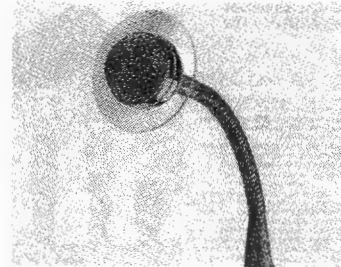
CONFERENCE MICROPHONE MD 418

Frequency range: 200 . . . 10,000 Hz.
Super cardioid pattern.
Rejection of handling noise.
High quality recording and playback.
Rugged and reliable.

MD 418 U Dynamic Microphone \$173.00

Recommended Accessories:
Applicable: Directly, (-U) only for model -U

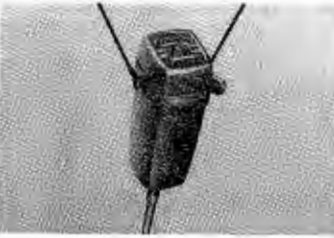
Windscreens: MZW411*
Desk and Floor Stands: MZT 441*,
MZS 142*, MZS 144*, MZS 210*
Bar/Boom: MZS 235*, MZS 211*
Desk clamp/Adapter: MZT 237*,
MZA 406*



LAVALIER MICROPHONE MD 214 U-3

Frequency range: 60 . . . 15,000 Hz.
Mostly omnidirectional, the response is especially shaped to read flat in lavalier position. Double internally suspended housing prevents pickup of mechanical noise.

MD 214 U-3 Dynamic Microphone \$290.00



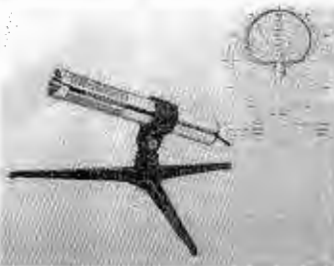
SUPER CARDIOID DYNAMIC MICROPHONE MD 402 LM

Frequency range: 80 . . . 12,500 Hz.
Super cardioid characteristic with 20 dB rejection at 120 degrees. Complete with desk stand but also ideal as hand-held microphone. Matches inputs of most hi-fi reel-to-reel and cassette tape recorders.

MD 402 LM Dynamic Microphone \$70.50

Recommended Accessories:

Applicable: Directly
Windscreens: MZW 30* (grey, red, yellow, green, blue)
Desk and Floor Stands: MZS 142*,
MZS 144*, MZS 210*
Bar/Boom: MZS 235*, MZS 211*
Desk Clamp: MZT 237*



STUDIO CARDIOID MICROPHONE MD 421 U

Frequency Range: 30 . . . 17,000 Hz.
Cardioid pattern reduces danger of acoustical feedback.
Reduced handling noise and no overload at extremely high volume.
5-step variable bass control (MD 421 N, MD 421-U-4).
Quick release clip.

MD 421 U Dynamic Microphone
with low Z cable \$300.00
with high Z cable 329.00

Recommended Accessories:
Applicable: Directly Indirectly

(-2) only for model -2
Windscreens: MZW 22*, MZW 421*
Desk and Floor Stands: MZT 421*,
MZS 142*, MZS 144*, MZS 210*
Boom: MZS 235*, MZS 211*
Mounts: MZT 237*

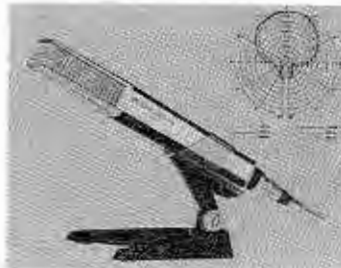
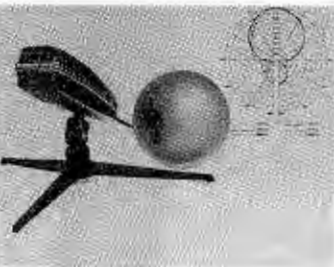
SUPER CARDIOID DYNAMIC MICROPHONE MD 412 LM

Frequency range: 50 . . . 12,500 Hz.
Super cardioid characteristic with 20dB rejection at 120 degrees. Built in switch for speech/music. Complete with desk stand. Matches inputs of most hi-fi reel-to-reel and cassette tape recorders.

MD 412 LM Dynamic Microphone \$103.00

Recommended Accessories:

Applicable: Directly
Desk and Floor Stands: MZS 142*,
MZS 144*, MZS 210*
Bar/Boom: MZS 235*, MZS 211*
Desk Clamp: MZT 237*



DIRECTIONAL STUDIO MICROPHONE MD 441

Frequency range: 30 . . . 20,000 Hz.
Super cardioid pattern defies feedback.
Shockmounted capsule prevents handling noises.
Highest SPL without distortion.
Ten different switchable response curves.
Built-in pop filter.
Quick release clip.

MD 441 U Dynamic Microphone
with low Z cable \$418.00
with high Z cable 447.00

Recommended Accessories:
Applicable: Directly Indirectly (-U) only for model -2 (-U) only for model -U

Windscreens: MZW 441*
Desk and Floor Stands: MZT 441*,
MZS 142*, MZS 144*, MZS 210*
Boom: MZS 235*, MZS 211*
Mounts: MZT 237*

ACCESSORIES:

| | | | | | |
|---------|-------------------------|---------|---------|------------|-------|
| MZA 406 | Universal Quick Release | \$10.15 | MZT 421 | Desk Stand | 23.00 |
| MZS 142 | Floor Stand | 45.50 | MZT 441 | Desk Stand | 23.00 |
| MZS 144 | Floor Stand | 44.50 | MZW 22 | Windscreen | 38.00 |
| MZS 210 | Floor Stand | 111.00 | MZW 30 | Windscreen | 10.15 |
| MZS 211 | Boom | 26.50 | MZW 201 | Windscreen | 15.30 |
| MZS 235 | Bracket | 10.00 | MZW 411 | Windscreen | 11.50 |
| MZT 105 | Desk Stand | 26.50 | MZW 421 | Windscreen | 17.25 |
| MZT 237 | Table Clamp | 7.50 | MZW 441 | Windscreen | 21.00 |

Prices and specifications subject to change without notice



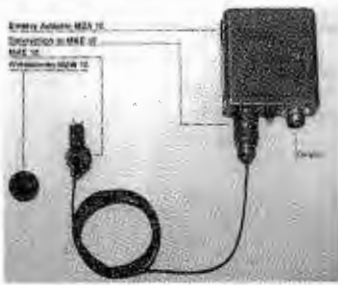


SENNHEISER ELECTRONIC CORPORATION

Condenser Microphones

TIE CLIP MICROPHONE MKE 10

Frequency Range: 50 . . . 20,000 Hz.
Omnidirectional pickup pattern.
Inconspicuous and comfortable.
Outstanding acoustical quality.
Connects directly to Mikroport Transmitters.
Can be used in conventional manner with power supply MZA 10.
MKE 10 Condenser Microphone \$146.00
MZA 10 Battery Adapter 94.50

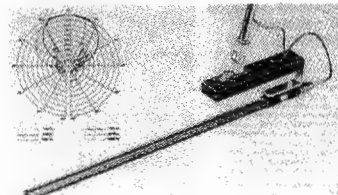


STUDIO MICROPHONE MKH 106 TU

For AB powering (DIN 45 595)
Frequency response: 20 . . . 20,000 Hz.
Omnidirectional.
Insensitive to handling noise.
Very high S/N ratio.

MKH 106 TU Condenser Microphone \$510.00

Recommended Accessories:
Applicable: •Directly, □Indirectly,
(-U) only for model -U
Windscreens: MZW 30*, MZW 201*
Desk and Floor Stands: MZT 105*,
MZT 441□, MZS 142□
MZS 144□, MZS 210□
Bar/Boom: MZS 235□, MZS 211□
Adaptor-Amplifier: KAT 15-2U*
Desk Clamp and Adaptor: MZA 406*,
MZG 415□, MQZ 415*, MZS 415*
Power Supplies: MZN 16 T-U□
Battery Adaptor: MZA 15 U*
Roll-Off Filter: MZF 15 U



Battery Adapter MZA 10

Connection to MKE 10

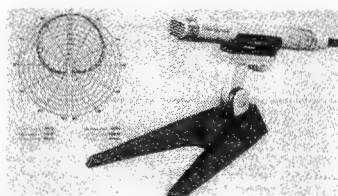
MKE 10

DIRECTIONAL STUDIO MICROPHONE MKH 406 TU

For AB powering (DIN 45 595)
Frequency response: 40 . . . 20,000 Hz.
Cardioid Pattern.
High signal-to-noise ratio.
High SPL range.
Withstands adverse climatic conditions.
Little vibrational pickup.

MKH 406 TU Condenser Microphone \$598.00

Recommended Accessories:
Applicable: •Directly, □Indirectly,
(-U) only for model -U
Windscreens: MZW 30*, MZW 201*
Desk and floor stands: MZT 105*,
MZT 441□, MZS 142□, MZS 144□,
MZS 210□
Bar/Boom: MZS 235□, MZS 211□
Desk Clamp and Adaptor: MZA 406*,
MZG 415□, MQZ 415*, MZS 415*
Power supplies: MZN 16 T-U□ (-U)
Battery Adaptor: MZA 15 U*
Roll-Off Filter: MZF 15 U*



ACCESSORIES:

| | | |
|-----------|-------------------------|----------|
| K 1 | Powering Module | \$112.00 |
| KAT 15-2U | Cable Amplifier | 174.00 |
| MZA 10 | Battery Adapter | 94.50 |
| MZA 15 U | Battery Adapter | 91.00 |
| MZA 406 | Universal Quick Release | 11.50 |
| MZB 415 | Fish Pole | 284.00 |
| MZF 15 U | Filter | 121.00 |
| MZG 415 | Swivel Adapter | 26.00 |
| MZN 16 TU | AC-Powered Supply | 261.00 |
| MZP 815 | Pistol Grip | 72.50 |
| MQZ 415 | Quick Release Clip | 18.00 |
| MZS 142 | Floor Stand | 52.00 |
| MZS 144 | Floor Stand | 52.50 |
| MZS 210 | Floor Stand | 125.00 |
| MZS 211 | Boom | 29.00 |
| MZS 235 | Bracket | 11.50 |
| MZS 415 | Shockmount | 52.00 |
| MZS 805 | Shockmount | 122.00 |
| MZS 815 | Shockmount | 119.00 |
| MZT 105 | Desk Stand | 28.00 |
| MZT 441 | Desk Stand | 27.00 |
| MZW 30 | Windscreen | 11.50 |
| MZW 201 | Windscreen | 17.50 |
| MZW 415 | Windscreen | 24.50 |
| MZW 804 | Windscreen | 170.00 |
| MZW 815 | Windscreen | 49.00 |

Prices and specifications subject to change without notice

STUDIO DIRECTIONAL MICROPHONE MKH 416 TU

For AB-powering (DIN 45 595).
Frequency response: 40 . . . 20,000 Hz.
Directional characteristic: Supercardioid/Club shape.
Exceptionally insensitive for acoustical feedback.
Small proximity effect.
Reliable, even and difficult climatic conditions.
For high sound pressure level.
Built-in pop filter.

MKH 416 TU Condenser Microphone \$637.00

Recommended Accessories:
Applicable: •Directly, □Indirectly,
(-U) only for model -U
Windscreens: MZW 415*
Desk and Floor Stands: MZT 441□,
MZS 142□, MZS 144□, MZS 210□
Bar/Boom: MZS 235□, MZS 211□
Adaptor-Amplifier: KAT 15-2U
Desk and Clamp and Adaptor: MZG 415□,
MQZ 415*, MZS 415*, MZB 415□
Power Supplies: MZN 16 T-U
Battery Adaptor: MZA 15 U*
Roll-Off Filter: MZF 15 U

HIGHLY DIRECTIONAL "SHOTGUN" MICROPHONE MKH 816 T

For AB powering (DIN 45 595).
Frequency response: 40 . . . 20,000 Hz.
Directional characteristic: club-shaped.
Especially insensitive for acoustical feedback.
High S/N ratio.
For unusual large recording distance.

MKH 816 TU Condenser Microphone \$842.00

Recommended Accessories:
Applicable: •Directly, □Indirectly,
(-U) only for model -U
Windscreens: MZW 815*, MZW 804□
Desk and Floor Stands: MZS 144□,
MZS 210□
Bar/Boom: MZS 211□
Adaptor-Amplifier: KAT 15-2*
Desk Clamp and Adaptor: MZS 815*,
MZP 815□, MZB 415□
Power Supply: MZN 16 T-U□
Battery Adaptor: MZA 15 U*
Roll-Off Filter: MZF 15 U*

NEW HEADPHONES

HD-420
Frequency Range: 18 Hz to 20 KHz
Impedance: 600 ohms per channel
Harmonic Distortion: Less than 1%
Weight: 4 ounces
Cable: 10 foot cable and stereo phone plug
Price \$84.80

HD-430
Frequency Range: 16 Hz to 20 KHz
Impedance: 600 ohms per channel
Harmonic Distortion: Less than 0.5%
Weight: 7 ounces
Cable: 10 foot cable and stereo phone plug.
Price \$119.00

Stereo Headphones



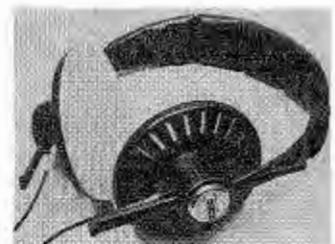
STEREO HEADPHONE HD 400

Frequency Response: 20...18,000 Hz.
Dynamic transducers with 600 impedance.
Featherweight.
Less than 3 oz.
Heavy-duty steel connecting cord.
\$43.80



HI-FI STEREO "OPEN-AIRE"[®] HEADPHONE HD 414-13

Frequency Response: 20...20,000 Hz.
Dynamic transducers, impedance each: 2000
Extremely light, 4.8 oz. only.
Matches with all Hi-Fi amplifiers.
Special durable cable.
\$74.80



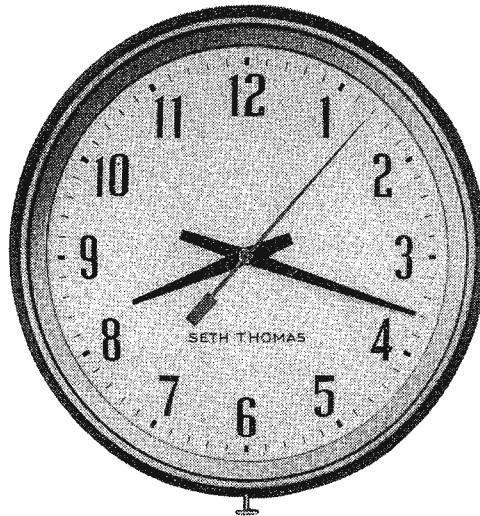
HI-FI STEREO "OPEN-AIRE"[®] HEADPHONE HD 424-13

Frequency Response: 16...20,000 Hz.
Dynamic transducers.
Impedance each driver: 2000
Comfortable, rugged but light.
Special durable cable.
\$108.80

ACCESSORIES

EC-3 Ear Cushion for HD-400 \$3.00 pr.
HC-3 Cable for HD-400 \$10.20
EC-1 Ear Cushion for HD-414 \$4.75 pr.
HZR-26 Volume Control Cable for HD-414/HD-424 \$21.00
EC-2 Ear Cushion for HD-424 \$4.75 pr.





MANAGER-12
Metal Case
No. 610, No. 611

MODEL 610 MANAGER-12
Electric — Bronze

\$28.25

MODEL 611 MANAGER-12
Electric — Chrome

\$31.65

MODEL 615
Transistor — Chrome

\$38.35

The History of Seth Thomas is one of enduring timepieces which have shown their dependability wherever used. The name SETH THOMAS holds a unique position in the clock industry for it has been associated with the business longer than any other in America.

| STYLE | SIZE | FINISH ON STEEL CASES | ELECTRIC MOVEMENT | BATTERY-POWERED TRANSISTOR MOVEMENT |
|-------------------|---|-----------------------|-------------------|-------------------------------------|
| MANAGER-12 | Diam. 14 ¼", Depth 2 ¾", Dial 12" | Bronze | No. 610 | |
| | | Chrome | No. 611 | *No. 615 |

*Runs one full year on a regular "C" size flashlight battery.

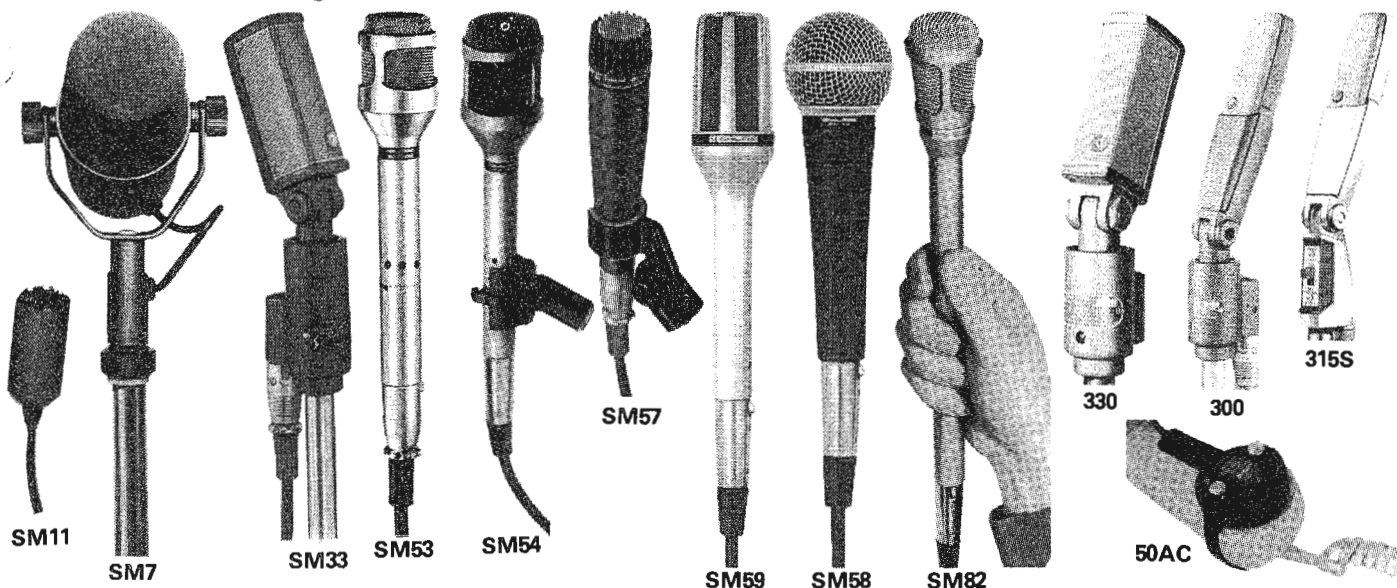


One Source For All Your Broadcast Equipment Needs

THE BROADCAST PRODUCTS DIVISION OF THE HARRIS CORPORATION IS DEDICATED TO SERVING THE REQUIREMENTS OF THE BROADCAST INDUSTRY. IF YOU HAVE PARTS OR EQUIPMENT REQUIREMENTS NOT INCLUDED IN THIS CATALOG — CONTACT YOUR HARRIS DISTRICT SALES MANAGER OR THE HARRIS QUINCY SALES OFFICE.



Prices and specifications subject to change without notice



Model SM7: A dynamic microphone with a very smooth, flat, wide-range frequency response; cardioid polar pattern, uniform with frequency and symmetrical about the axis; internal "air suspension" shock isolation; highly effective pop filter; extremely good rejection of electro-magnetic hum due to a built-in hum rejection system; bass roll-off and mid-range emphasis. The Model SM7 was field-designed to be the finest dynamic microphone available for music recording and reproduction.

Model SM7 \$335.40

Model SM10: Unidirectional, dynamic, head-worn microphone \$87.60

Model SM11: The Shure Model SM11 is a miniature dynamic lavalier microphone designed for use in television broadcasting (on-camera), sound reinforcement, in certain radio and motion picture applications, and similar uses where a small, professional-quality, versatile microphone is required. Flat, natural response, tailored for lavalier use: 50 to 15,000 Hz.

Model SM11 \$66.60

Model SM12: Unidirectional, dynamic, head-worn microphone, with receiver. \$117.00

Model SM33: A compact and rugged unidirectional ribbon microphone combining wide range response and a supercardioid directional pattern. The performance characteristics are ideal for studio use in broadcasting and recording and for critical sound reinforcement applications. Built-in shock mount for quiet operation. Slotted Response Selector Switch. Frequency response: 40 to 15,000 Hz.

Model SM33 \$219.00

Models SM53 and SM54 are designed for professional applications requiring the ultimate in sound quality and control. Broad, smooth frequency response: provides clean, natural reproduction of both voice and music. Cardioid directional pattern; Integral

acoustic "pop" filter on the SM54. Mechanical noise isolation. Type: Dynamic. Frequency Response: 70 to 16,000 Hz

Model SM53 \$223.80

Model SM54 \$237.00

Studio Gradient Model 300 is a bidirectional microphone for recording, broadcast and sound reinforcement which provides sound pickup at the front and rear of the microphone, but greatly reduces pickup at the sides. Features: Voice-Music switch, vibration-isolation unit mounted in live rubber, multi-impedance switch. Frequency response: 40 to 15,000Hz.

Model 300 \$150.60

Gradient Model 315S: Microphone feature frequency response of 50 to 12,000 Hz that reproduces voice and music in a clear, natural tonal quality. Bidirectional "Figure 8" pickup pattern.

Model 315S \$95.40

Uni-Ron® Unidirectional Model 330: Highly recommended for motion-picture, TV, radio and professional recording studios; patented "Uniphase" system; the true super-cardioid pickup pattern; a ribbon transducer provides extended smooth response of 30 - 15,000 Hz; multi-impedance switch; lifetime swivel; vibration-isolation unit mounted in live rubber.

Model 330 \$123.00

Model SM82 hand-held, self-contained, unidirectional, condenser microphone containing its own line level amplifier, peak limiter, and battery. It is designed to provide a line level output for use in a variety of broadcasting situations, and in sound reinforcement or recording applications where a line level microphone with a built-in limiter is required. Frequency Response: 40 to 15,000 Hz. Output Impedance: 250 ohms actual (designed for use with 600-ohm or greater loads)

Model SM82 \$215.40

Model SM57 is a slender dynamic microphone built to provide wide range reproduc-

tion of music and voice. It features an exceptionally uniform and effective unidirectional pickup pattern. Bright, clean sound. Cartridge shock-mounted for quiet operation. Frequency response: 40 to 15,000 Hz

Model SM57 \$108.00

Model SM58 is a rugged unidirectional dynamic microphone; self-contained spherical filter to control explosive breath sounds and wind noise; unusually effective cardioid pickup pattern to minimize background noise and undesirable effects of studio and location acoustics. Rear and side rejection uniform to very low frequencies and completely symmetrical about microphone axis; bright, clean sound; cartridge shock-mounted for protection and quiet operation; wind and "pop" filter readily removable for cleaning or replacement. Frequency response: 50 to 15,000 Hz

Model SM58 \$138.00

Model SM59 cardioid dynamic microphone. Essentially flat, wide response. 50 to 15,000 Hz. Patented Mechano-pneumatic shock mount system. Built in "pop" filter, and hum-bucking coil. Durable construction. Ideal for speech, vocal and instrument pick-up, for broadcast, recording and sound reinforcement uses.

Model SM59 \$144.00

Model SM60: Omnidirectional, dynamic, frequency response 45-15,000 Hz. Excellent wide range, natural sound quality ... \$71.40

Model 50AC Telephone Acoustic Coupler, designed to acoustically couple recorded information into a telephone transmitter. May also be used in real-time broadcast applications. May also be used as a tape recorder microphone; its frequency response approximates that of a telephone. Is easily attached and removed from a telephone handset. The Model 50AC consists of a dynamic transducer cartridge in a small, lightweight molded rubber and plastic case. Frequency Response: 300 to 3,000 Hz.

Model 50AC \$31.20

Prices and specifications subject to change without notice





MICROPHONE STANDS FOR EVERY APPLICATION

MODEL A12: Mounting flange. **\$1.95**

MODEL A27L: Fits Models 275, 575. **\$2.25**

MODEL A34L: Fits Models 415, 420, 430. **\$4.05**

MODEL A45. Designed for microphones incorporating an isolation assembly such as Models 330, 546, 556, and all others using an A25B Swivel Adapter. Satin Aluminum finish. **\$11.85**

MODEL A45B. Same as A45, but Black finish. **\$11.85**

MODEL A47. Designed for microphones with connectors such as Models 55S, 545S, 565S, etc. or nearly all microphones with a standard 5/8"—27 thread. **\$11.85**

MODEL A51L: Plastic. Fits Models 570 and 571. **\$7.50**

MODEL A54L: Fits Model 545L. **\$4.80**

MODEL A57L: Rubber. Fits Models 570 and 571. **\$4.80**

MODEL G12: 304 mm (12-inch) flexible gooseneck. **\$3.90**

MODEL G18: 457 mm (18-inch) flexible gooseneck. **\$4.80**

MODEL G12-CN: 304 mm (12-inch) flexible gooseneck with professional FEMALE three-pin audio connector.* **\$8.10**

MODEL G18-CN: 457 mm (18-inch) flexible gooseneck with professional FEMALE three-pin audio connector.* **\$8.55**

MODEL G6A: 152 mm (6-inch) flexible gooseneck (side vent). **\$3.75**

MODEL G12A: 304 mm (12-inch) flexible gooseneck (side vent). **\$4.05**

MODEL G18A: 457 mm (18-inch) flexible gooseneck (side vent). **\$5.10**

MODEL S33B MODERN DESK STAND. Black finish. For use with Microphone Models 330, 415, 430, 533, 545, 546, 548, 556S, 566, 571, 576, 578, 579, 580, 585 and 588. **\$15.75**

MODEL S37A MODERN DESK STAND. Non-reflective, textured gray finish. For use with all microphones with swivel connector assemblies, or microphones with swivel adapters. **\$8.25**

MODEL S38B ROUND STAND. Black finish. For use with Models 245, 275, 415, 430, 515, 533, 545, 546, 548, 565, 566, 575, 579, 580, 585, and 588 series. **\$4.80**

MODEL S39A VIBRATION-ISOLATION STAND. For all applications where vibration is a problem. Fits all Shure microphones. **\$24.60**

MODEL CO-1 STAND ADAPTER. Screw-type clamp with 5/8"—27 Male thread for mounting second microphone on microphone stand, table or desk top. Adjustable 360° swivel aids horizontal positioning. **\$8.10**

MODEL S40A DESK STAND. Similar to S37A Stand with push-to-talk switch included. Fits microphones with 5/8"—27 thread connectors. Includes provisions for optional "in use" light. Shielded 2.1 m (seven-foot), four-conductor cable may be wired to any standard microphone connector. **\$24.90**

S55P LOW-PROFILE MICROPHONE STAND **\$24.60**

DUAL MICROPHONE MOUNTS: Designed for mounting two microphones, one above the other. Minimum visual obstruction.

SWIVEL ADAPTERS. MODEL A25B. (Black) To be used with Models 415, 430, 515, 516EQ, 545, 548, 565, 580, 585, and 588 microphones—for use with standard desk or floor stand. **\$6.15**

MODEL A25M. Designed for use with Shure Models 545, 545SD, and 545L microphones. **\$11.85**

MODEL A26M. Designed for use with microphones listed above when using A2WS Windscreens, and "ball-type" Models 565, 565SD, 548, 548SD, 588, 515 Series, and other Shure microphones with tapered handles. **\$11.85**

ISOLATION MOUNTS. MODEL A55M ISOLATION MOUNT. A breakthrough in noise isolation. Reduces mechanical and vibration noises by more than 20 dB. Swivels 180°, standard 5/8"—27 female thread fits all Shure desk and floor stands. Fits all UNIDYNE® and UNISPHERE® microphones, except those models with built-in switches or built-in swivel mounts. (Not recommended for microphones with On-Off switches in the handle.) Size: 95 mm (3 3/4 inches) H x 38 mm (1 1/2 inches) D x 51 mm (2 inches) Diam **\$21.90**

MODEL A57D. Snap-in Locking Swivel Adapter for Models 570, 576, 578, 579SB, and 589S. 19 mm (3/4 inches) diameter microphones—for use with standard desk or floor stand. **\$6.15**

MODEL A61WS. Controls wind noise and "pop." For use on all Shure "ball-type" microphones, such as the Unisphere models. Write to Shure Marketing Services and request AL 483 for additional information. **\$3.45**

MODEL A75A. Stand adapter for the Model 575 microphone. **\$4.80**

MICROPHONE SWITCH. MODEL A88A. Provides momentary press-to-talk On-Off switching capability, or locks in On position.

LOW-IMPEDANCE TO MEDIUM-IMPEDANCE LINE MATCHING TRANSFORMER. A97A LINE MATCHING TRANSFORMER: High quality transformer designed to properly match low-impedance (150 ohm to 600 ohm) microphone outputs to medium-impedance (1 kilohm to 10 kilohm) inputs, such as those frequently used in cassette recorders. Low-impedance connector—three-pin MALE professional audio connector*. Medium-impedance connector—Amphenol MC1M type connector**. **\$18.45**

A95 SERIES: LOW-IMPEDANCE TO HIGH-IMPEDANCE LINE MATCHING TRANSFORMERS (PLUG-IN TYPES).

| Model | Low-Impedance Connector (three-pin professional audio*) | High-Impedance Connector |
|-------|--|---|
| A95A | \$18.45 MALE | MC1M** |
| A95F | \$21.00 FEMALE | MC1M** |
| A95P | \$20.10 MALE | 1/4 inch phone plug |
| A95FP | \$22.95 FEMALE | 1/4 inch phone plug |
| A95D | \$20.10 MALE | 1/4 inch phone jack |
| A95FD | \$22.80 FEMALE | 1/4 inch phone jack |
| A95U | \$20.10 MALE | 1/4 inch phone plug and 1/4 inch phone jack |
| A95UF | \$22.95 FEMALE | 1/4 inch phone plug and 1/4 inch phone jack |

Comfortable grip bar minimizes hand and finger fatigue. Long-life leaf switch with silver contacts. Easily attaches to Shure microphones with 3-pin MC3 type connector, such as Models 55S and 540. **\$12.75**

MICROPHONE WINDSCREENS. MODEL A2WS. Designed to effectively minimize wind noise in outdoor locations and control explosive breath sounds in any location. For Models 544, 545, 545SD, 545S, 545L, 546, 571, 576, 578 and 578S. **\$6.15**

MODEL MS-10C FLOOR STAND. Quickly and easily adjusts from 889 mm (35 inches) to 1.6 m (64 inches) high. Positive ring lock maintains desired height. Standard 5/8"—27 thread accepts any threaded Shure microphone, mount or swivel adapter. Also accepts Model BB-44 Baby Boom described below. Chromeplated. Weighted 254 mm (10 inches) base for stability. **\$18.45**

MODEL BB-44 BABY BOOM. 787 mm (31 inches) adjustable boom arm. Fits Model MS-10C Floor Stand above. Standard 5/8"—27 thread accepts any threaded Shure microphone, mount or swivel adapter. **\$16.50**

A15A MICROPHONE ATTENUATOR: Prevents input overload in applications where very strong signals are applied to a microphone input. Inserts a 15 dB loss. **\$21.90**

A15PR PHASE REVERSER: Reverses the phase of a balanced line without modification of equipment. **\$21.90**

A15HP HIGH PASS FILTER: Provides a low frequency cut-off to reduce unwanted low frequency noises. **\$21.90**

A15LP LOW PASS FILTER: Provides a high frequency cut-off to reduce objectionable high frequency noises. **\$21.90**

A15PA PRESENCE ADAPTER: Adds "presence" to vocals or instruments in recording, broadcasting, and P.A. applications. **\$21.90**

A15RS RESPONSE SHAPER: Provides sibilance filtering in recording, broadcasting, and P.A. applications. **\$21.90**

A15LA LINE INPUT ADAPTER: Converts balanced low impedance microphone input to bridging line level input. **\$21.90**

A15BT BRIDGING TRANSFORMER: Matches balanced or unbalanced devices of different impedances. (33 kilohm primary, and 600 or 7,500 ohm secondary.) **\$21.90**

A15TG TONE GENERATOR: Produces a continuous 700 Hz signal capable of driving low impedance balanced lines, and is extremely useful in setting up **\$28.50**

Tone Arms



SME Series II Improved "The Best Pickup Arm in the World"

The ultimate in independent tone arms — now redesigned for significantly superior performance. The Shure-SME Series II Improved combines the flawless craftsmanship and unmatched precision of its predecessor (the SME Series II) with design improvements that reduce tone arm/cartridge system mass and friction to significantly lower levels.

Ultra-low friction pivot points, with high-precision, protected ball and knife-edge bearings; arm deflects either vertically or horizontally with less than .020 gram force applied at stylus tip. Very low overall mass, with heavier elements positioned near the arm fulcrum. Low distortion geometry.



M232 Professional Tone Arm

High quality, rugged, simple arm for tracking at 1 1/2 grams or higher. Full range of adjustments for static and dynamic balance, cartridge overhang, arm height, etc. Direct reading tracking force scale. Twist-to-lock head accommodates any stereo or mono cartridge. A real "workhorse" that takes abuse. Simple mounting through a single hole from the top of the table; plug-in cable. Model M232 is for 12" turntables; Model M236 for 16" turntables.

- 3009 Series II SME 12" Tone Arm, fixed shell \$162.00
- 3009/S2 SME 12" Tone Arm, removable shell \$174.00
- M-232 12" Tone Arm \$ 47.50

Stereo Dynetic® Cartridges



V-15 Type III Super-Track "Plus" Cartridges

A singular achievement in phono cartridge design — and the worthy successor to the world-acclaimed V-15 Type II Improved. A totally new laminated magnetic core structure and an exquisitely designed stylus

assembly which reduces effective stylus tip mass by 25% produced these significantly improved performance characteristics: (1) higher-than-ever trackability at forces that are lower than ever (3/4 to 1 1/4 grams); (2) an astonishingly flat frequency response with no noticeable emphasis or de-emphasis at any frequency; (3) an extended dynamic range even beyond that of the V-15 Type II Improved; and (4) all without a reduction in output level.



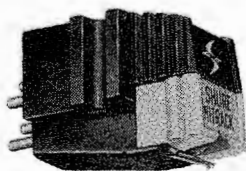
M44 SERIES A Broadcast Standard

They feature exceptionally good sound, unusual uniformity and stand up best under hard usage. Wide choice of models, including spherical or elliptical styli; light or heavy tracking; special 78 rpm stylus is available.

M44-7: Similar to the M44C, but with a lower tracking force range of 1 1/2 to 3 grams. The lighter tracking force minimizes record wear, and is recommended for arms permitting less than 3 grams tracking force, and when heaviest feel is not required.

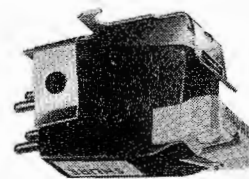
SC35C Professional Studio Cartridge

The first phono cartridge designed specifically for broadcast studio applications — actually improves on-the-air playback quality of all recorded material, including stereo and monophonic LP's, 45's, and matrix four-channel. The SC35C uses an entirely new stylus assembly that is rigid enough to withstand the punishment of continuous back-cuing, yet compliant enough to offer excellent mid- and high-frequency reproduction. Frequency response is extremely flat (+/- 1 dB) up to 15,000 Hz, with a smooth roll-off up to 20,000 Hz to minimize high frequency "splatter" in FM broadcasts caused by high frequency pre-emphasis.



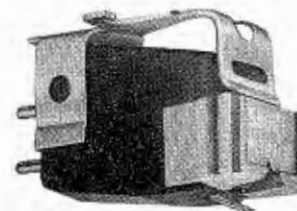
DELUXE SERIES Model M91ED Hi-Track Cartridge

With Nude-Mounted Diamond Stylus Tip. Optimized design parameters in the stylus assembly give the M91ED superb high frequency trackability and overall performance. Nude-mounted diamond stylus tip for reduced stylus tip mass. Smooth peak-free response makes a definite improvement in sound quality, particularly in FM and FM Stereo operations. Model N91ED Biradial (Elliptical) Stylus is the replacement stylus.



Model M93E Hi-Track Cartridge

For moderate trackability in the 1 1/2 to 3 gram tracking force range. Very rugged and well-designed for back-cuing and robust operation. Trackability at 2 grams (in cm/sec peak recorded velocity): 18 cm/sec at 400 Hz; 25 cm/sec at 1,000 Hz; 24 cm/sec at 5,000 Hz; 14 cm/sec at 10,000 Hz. Model N93E Biradial (Elliptical) Stylus is the replacement stylus.



MODELS M75-6S and M75CS Hi-Track Cartridges

Model M75-6S is identical in performance to the Model M93E above, but uses a spherical stylus. Model M75CS also uses a spherical stylus, and reaches the performance levels of Models M93E at 3 to 5 grams tracking force. The M75-6S reaches this performance level at 1 1/2 to 3 grams tracking force. Model N75-6 Spherical Stylus is the replacement stylus for Model M75-6S. Model N75C Spherical Stylus is the replacement stylus for Model M75CS.

Shure Transcription Cartridges

- V-15 Type III Stereo Phone Cartridge with elliptical stylus \$95.00
- VN35E Elliptical Replacement Stylus for V-15 Cartridge \$34.00
- M91ED Stereo Phono Cartridge with elliptical stylus \$66.95
- N91ED Elliptical Replacement Stylus for M91ED Cartridge \$28.50

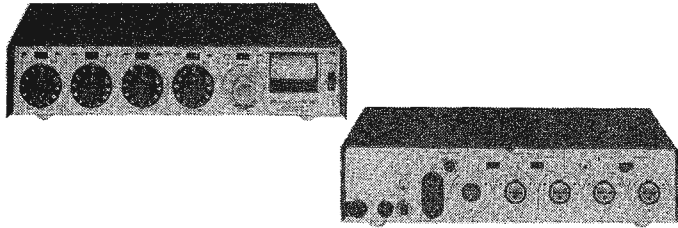
Shure Stereo Cartridge

- SC35C Professional stereo cartridge \$27.75
- SS35C Replacement stylus for SC35C \$ 9.25
- SS78E Optional stylus for SC35C for use with 78 RPM — Disk only \$14.50
- M44-7 stereo dynetic cartridge w/.0007 diamond stylus \$31.95
- N-44-7 replacement stylus .0007 diamond \$11.70
- M-93-E Hi-track Elliptical cartridge 1 1/2 to 3 grams tracking \$51.50
- N-93-E Elliptical replacement stylus \$21.80
- M-75-6 Hi-track spherical stylus cartridge for 1 1/2 to 3 grams tracking \$38.50
- N-75-6 replacement stylus \$13.10

Prices and specifications subject to change without notice



Microphone Mixers

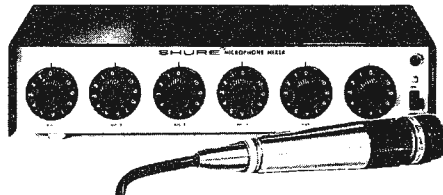


MODEL M67 PROFESSIONAL MICROPHONE MIXER

The M67 features balanced 600 ohm line and microphone level outputs; an illuminated VU meter calibrated for +4 and +10 dBm out; extremely low noise and RF susceptibility; wide, flat frequency response; two-level headphone monitor jack. AC or battery operation (see battery pack and other accessories on following page). Noiseless automatic switchover to battery if AC line fails. \$256.20

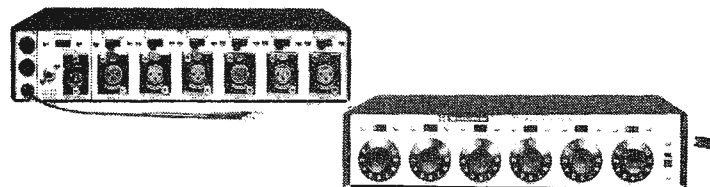
A 68 R Rack Panel Kit \$ 13.65

MODEL M68 & M68FC MICROPHONE MIXERS



M68 & M68FC Microphone Inputs. The backs of the M68 and M68FC Mixers have four Cannon-type inputs. Model M68 has MALE Cannon XLR-3-14 input connectors (uses XLR-3-11C type mate). Model M68FC has FEMALE Cannon XLR-3-13 type (uses XLR-3-12C type mate). Each input accepts a dynamic or ribbon microphone (not recommended for crystal or ceramic microphones), either high or low impedance (balanced or unbalanced). Input impedance for each microphone is selected by a slide switch so that microphone types and impedances can be mixed. A fifth input, labeled "AUX," is high level and accepts a tape recorder or tuner signal. When used in conjunction with the A68P Phono Pre-Amp accessory, these mixers also accept a magnetic or ceramic phonograph signal.

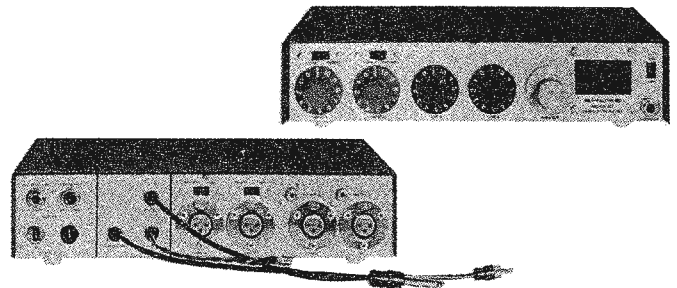
M68 \$139.20
M68FC \$150.00



MODEL M677 ACCESSORY MIXER

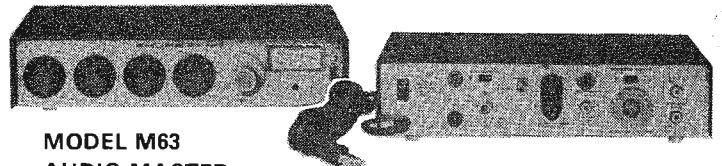
A transistorized, six input accessory mixer designed for use with Shure M67, M68, M63 or SE30. When used with either M67 or M68, it provides a low-cost and convenient means of adding six additional input channels (10 total). When used with M63, provides a six channel mixer with extremely flexible equalization, a 600-ohm output, a VU meter and a headphone monitor. With SE30, it converts the three-input mixer system to a nine-input system. Obtains power from associated Shure Miser or Battery Power Supply (A67B). Dimensions: 69.9mm H x 289mm W x 178mm D (2 3/4" x 11-3/8" x 7") Weight: 17 kg. (3 3/4 lbs.)

MODEL M677 — Requires 30 V.D.C. from Units such as M67 or M68 Series Mixers.
List Price \$398.00 User Net \$238.80



MODEL M675 BROADCAST PRODUCTION MASTER

Use the M675 with a Shure M67 as a production studio console with four microphone inputs, plus four line inputs (two switchable for magnetic phono), cuing and monitoring; as a complete audio console for both in-studio and remote assignments; as a complete CATV or CCTV (audio) console; or as a stand-by console. Extremely low in noise and RF susceptibility, with wide frequency response. Four inputs, each with its own individual gain control and its own switchable "Cue" mode; two line inputs are convertible to magnetic phono inputs (RIAA equalization) through front-panel slide switches, and the other two line inputs are switchable between high impedance bridging and 600 ohm terminating line inputs. Four monitoring facilities: (1) an internal speaker built into the front panel for cue and program monitor (automatic program ducking when any channel is placed in the "Cue" position), (2) a rear-panel eight-ohm speaker output jack with the same material as the internal speaker, and with provision for external muting; (3) a front-panel headphone jack that provides an automatic muting of the internal (or external) speaker output for headphone cueing and monitoring; and (4) a rear-panel headphone jack which monitors program material *only*. Brackets for stacking with either the M67 or M63 are included. A built-in battery compartment holds the six 9V batteries for powering both the M67 and M675. The M67 AC power supply serves as an alternate power source. \$244.80



MODEL M63 AUDIO MASTER

A new concept in economical total control of audio response. Can be used in production and transfer studios to equalize sound systems, correct room acoustics, produce special sound effects, reduce stand or stage noise, and for tape recording and duplication. Has two high-level inputs and five output provisions for the greatest response control and flexibility available. Effective, continuously variable high-pass and low-pass 6 db-per-octave filters, plus separate bass and treble (boost and cut) controls, can be combined for virtually unlimited response characteristics. Output VU meter. Five outputs: high impedance, high level, high impedance mic level, 600-ohm balanced line, and headphone. Two high-level high impedance inputs controlled by single input attenuator accept signal from virtually any high level source. For 108-132 Volts A.C., 50-60 Hz. \$162.60

Accessories

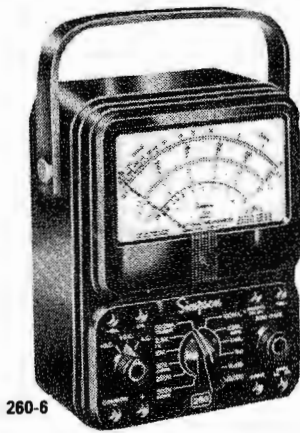
- AC60 ATTACHE CARRYING CASE — Handsome slimline vinyl leatherette attache case holds mixer, microphones, cables. 85.7mm x 467mm x 295mm (3-3/8" x 18-3/8" x 11-5/8"). Fits M62V, M63, M67, M675, M610, M615, M677, M688 or M68 Series \$38.10
- A68S STACKING Kit — Enables you to conveniently interconnect and stack 2 Units — with 2 M68's you get 8 microphone inputs and 1 Auxiliary input. With 2 kits you can stack three Units — say 2 M68's and 1 M63. A single master volume control handles the entire matrix. Includes brackets, interconnecting cable. Fits M62V, M63, M677, M67 and M68 Series and M688. \$ 4.95
- A67H HANDLE/TILT STAND — Serves as handy carrying handle, or provides a locking tilt of 20° for greater control visibility and ease of operation. Fits M62V LEVEL-LOC®, M63 AUDIO MASTER®, M67 and M68 Series Mixers, M677, M675 and M688 \$20.85
- A68R-AL RACK PANEL KIT — Same as Model A68R (above), except aluminum finish \$13.6.
- A68R-BL RACK PANEL KIT — Same as Model A68R (above), except black finish \$13.65

Prices and specifications subject to change without notice

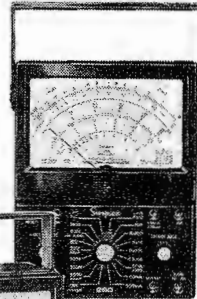


Simpson®

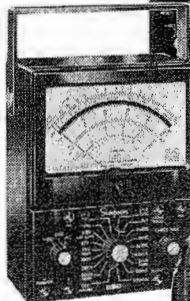
Volt-Ohm-Milliammeters



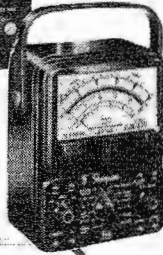
260-6RT



260-6XLP



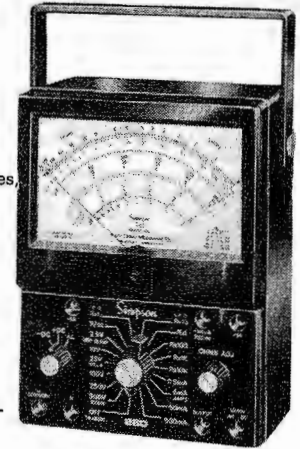
260-6XLM



260-6M



260-6P



260-6XL

X for Extra Ranges,
Extra Features
L for Low-Power
Ohms Ranges

- Fast, accurate measurement of 27 popular ranges
- Direct dial reading of Amp-Clamp ranges
- Rugged taut-band movement, varistor protected
- External access battery and fuse compartment
- Only 2 batteries, both supplied
- Clip-type fuse holder and extra fuse
- Optional 5 kV probe
- Multi-purpose, color-coded test leads with combination probe and screw-on alligator clips

This famous instrument is recognized everywhere as the world's most outstanding VOM. A product of years of development and refinement, its capacity includes measurement of AC and DC volts, DC current, resistance and dB in 27 ranges, with outstanding versatility and accuracy.

A full line of accessories including probes, cases, and Add-A-Testers extend the usefulness of this outstanding instrument. Uses 2 batteries . . . one 9 V NEDA 1604 and one 1.5 V "D" cell NEDA 13F . . . both supplied along with test leads and instruction manual.

| | |
|--|----------|
| 260-6, Catalog No. 12167 | \$ 95.00 |
| 260-6M with mirror scale, Catalog No. 12168 | \$ 98.00 |
| 260-6RT in roll top case, Catalog No. 12169 | \$106.00 |
| 260-6MRT with mirror scale and in roll top case, Catalog No. 12170 | \$110.00 |

Equally Popular, Versatile Circuit Overload-Protected

Reset pushbutton releases when overload occurs. Will not reset until overload condition is eliminated.

| | |
|--|----------|
| 260-6P, Catalog No. 12171 | \$141.00 |
| 260-6PM with mirror scale, Catalog No. 12175 | \$145.00 |
| 260-6PRT in roll top case, Catalog No. 12172 | \$153.00 |

Model 270-4 Extra-High Accuracy Volt-Ohm-Milliammeter

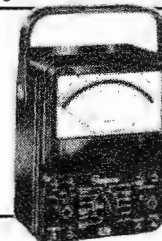
- Excellent repeatability
- Greater accuracy over a wide temperature range
- DC V accuracy: $\pm 1-1.25\%$ F.S.*
- AC V accuracy: $\pm 1-2\%$ F.S.*
- Resistance accuracy: $\pm 1-1\%$ of arc*

Model 270-4 includes all of the popular features of the world-famous 260-6M including a mirrored scale and knife-edge pointer, varistor-protected self-shielding taut-band movement, external-access battery compartment and Adjust-A-Vue handle.

In addition, special calibration circuits and components are combined with Simpson's regular strict manufacturing controls. The result is an instrument with proven dependability and ruggedness, plus the higher accuracy necessary for production and laboratory applications.

Complete with batteries, test leads and manual.

| | |
|--|----------|
| Model 270-4, Catalog No. 12209 | \$118.00 |
| Model 270-4RT in roll-top protective case. Catalog No. 12210 | \$129.00 |



260® Family Accessories expand the versatility of your Simpson 260, 255, 260 or 270 VOM

| | |
|---|---------|
| Model 150 Amp-Clamp Adapter, Cat. No. 00532 | \$35.65 |
| 40 kV DC Probe for Series 3, 4, 5, 6, Cat. No. 00168 | \$31.30 |
| 10 kV AC Probe, Cat. No. 00036 | \$31.35 |
| 5 kV DC Probe, Cat. No. 00795 | \$10.80 |
| 5 kV AC Probe, Cat. No. 00794 | \$10.80 |
| Low-Power Ohms Probe, Cat. No. 00735 | \$39.50 |
| Extra Test Probe Leads with Screw-on Clips, Cat. No. 00115 | \$ 7.05 |
| Extra Probe Tip Leads, Cat. No. 07538 | \$ 6.10 |
| Alligator Clip Leads, Cat. No. 07500 | \$ 5.75 |
| Roll-Top Case, Cat. No. 00248 | \$20.45 |
| L Leatherette Utility Case with extra storage space, Cat. No. 00549 | \$31.10 |
| Molded Top Hinged Case, Cat. No. 00812 | \$27.55 |
| L Leatherette Ever-Redy Hard Case, drop front, Cat. No. 00805 | \$27.50 |
| Vinyl Sheath Case, Catalog No. 01818 | \$22.50 |
| Molded Snap-On Front Dust Cover, Catalog No. 02163 | \$ 2.43 |



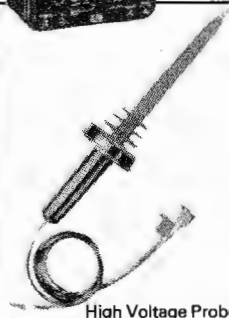
Model 150 Amp-Clamp® Adapter



Low-Power Ohms Probe



Ever-Redy Case



High Voltage Probe
10 kV AC
10 kV DC
40 kV DC

Prices and specifications subject to change without notice



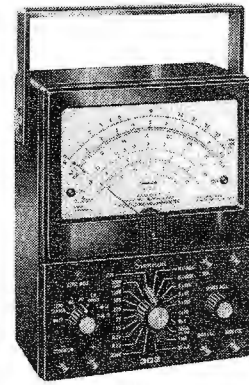


Electronic Volt-Ohm-Milliammeters

Model 303-3XL Solid-State FET VOM

A versatile, portable multimeter for field and factory electronic servicing as well as design and components testing. High input impedance, high sensitivity and drift-free performance. Other features include:

- High impact shock resistant case
- Conventional and low-power ohms selection
- Simplified, easy-reading dial permits making nearly all measurements on the same scale
- Switch-selectable zero center scale for nulling
- Automatic LED "polarity" and "power on" indicator lights
- Single self-contained rechargeable, nickel-cadmium "D" cell (G.E. type GC3 or equiv.) provides up to 20 hours of continuous operation, or VOM can be AC line operated with AC charger/adapter supplied



Model 303-3XL complete with probe, test leads, battery, AC charger/adapter and operator's manual.

| | |
|---|-----------------|
| 120 VAC, Catalog No. 12250 | \$237.00 |
| 230 VAC, Catalog No. 12251 | \$237.00 |
| 40 kV High-Voltage Probe, Catalog No. 00432 | \$ 39.70 |
| RF Probe, Catalog No. 00433 | \$ 31.95 |
| Isolation Probe, Catalog No. 00182 | \$ 27.55 |
| AC Charger/Adapter for 120 VAC, Cata. No. 12248 | \$ 25.00 |
| AC Charger/Adapter for 230 VAC, Cat. No. 12249 | \$ 25.00 |

New Compact Portable DMM

New Model 461 Digital Multimeter

- Price includes nickel-cadmium batteries, AC charger/adapter, test leads and instruction manual
- 8 full hours of continuous battery operation . . . a full day's work without interruption
- Large bright red 0.3" LED display
- Automatic zero and polarity
- Reliable overload-protected LSI circuitry
- High energy fusing system
- +/-0.25% DC V accuracy
- 10 megohms input impedance
- 26 pushbutton selected ranges
- Resolves 100 uV, 0.1 ohm, 100 nA
- Folding bench stand
- Only 2" x 5.6" x 4.6", 1 1/2 lb. with batteries
- Newly designed test leads have screw-on alligator clips and recessed insulated jacks

Simpson's New DMM offers full size performance in a compact portable instrument. For factory production line, laboratory, bench and field service. You get a full day's work on a single charge of the batteries without interruptions. A single LSI chip contains all A/D conversion circuitry, providing greater reliability in a compact package.



Model 461 Digital Multimeter

| | |
|---------------------------------------|-----------------|
| For 120 V AC, Catalog No. 12136 | \$161.00 |
| For 230 VAC, Catalog No. 12137 | \$161.00 |

Accessories

| | |
|---|----------------|
| RF Probe, Catalog No. 00748 | \$31.95 |
| 40 kV High Voltage Probe, Catalog No. 00749 | \$39.70 |
| AC Amp-Clamp Adapter Model 153, Cata. No. 12138 | \$35.00 |
| Carrying Case, Catalog No. 00747 | \$23.65 |
| Extra 120 VAC Adapter, Catalog No. 00745 | \$ 7.10 |
| Extra 230 VAC Adapter, Catalog No. 00746 | \$ 7.10 |
| Extra Test Leads, Catalog No. 00042 | \$ 7.10 |

POPULAR 360-2 Portable DMM

- 3 1/2 digit, auto-polarity, 0.43" LED display.
- 29 popular ranges including 2 "low power" ohms ranges.
- Measures AC/DC voltage, current and resistance.
- Calibrated zero-center analog meter for nulling, peaking and scanning trends.
- Analog output provision permits monitoring input signal with chart recorder.
- Exclusive MOS/LSI circuitry provides compactness with high reliability and low power dissipation.
- Conforms to applicable ANSI C39.5-1974 safety requirements.
- Separate battery charger and line cord.

This versatile digital multimeter will satisfy most general test and service requirements. Special features include two ranges of low power ohms for solid-state circuit servicing, a calibrated zero-center analog meter for continuity checks and peaks or nulling. Calibrated analog output interfaces with a chart recorder. The battery charger removes with the line cord to minimize weight for portable use. The traditional case styling is both compact and rugged.

360-2 Digital VOM. Complete with test leads, AC charger/adapter and instruction manual (batteries not included).

| | |
|--------------------------------------|-----------------|
| For 120 VAC, Catalog No. 12286 | \$310.00 |
| For 220 VAC, Catalog No. 12287 | \$310.00 |

Digital Multimeter



Accessories

| | |
|--|----------------|
| Carrying Case, Catalog No. 00816 | \$31.95 |
| 40 kV DC High Voltage Probe, Cat. No. 00432 | \$39.70 |
| RF Probe, Catalog No. 00433 | \$31.95 |
| Model 154 AC Amp-Clamp Adapter, Cat. No. 12222 | \$38.00 |
| Extra 120 VAC Adapter/Charger, Cat. No. 12288 | \$10.6 |
| Extra 240 VAC Adapter/Charger, Cat. No. 12289 | \$10.65 |



Prices and specifications subject to change without notice

Oscilloscopes

SPECIFICATIONS

VERTICAL AMPLIFIER (CH A AND CH B)

Deflection Sensitivity: 5 mV/cm to 10 V/cm calibrated in 1-2-5 sequence in 11 steps; accuracy within $\pm 5\%$; uncalibrated continuous control between steps

Bandwidth

DC Coupled: DC to 15 MHz (-3 dB)
AC Coupled: 2 Hz to 15 MHz (-3 dB)

Rise Time: 24 nsec.

Overshoot: 5% or less

Input Impedance: 1 M Ω , 25 pF

Maximum Input: 500 V (DC + AC peak)

Display Modes: CH A only, CH B only, CH A and B (chopped at 1 msec/cm and slower sweeps, alternated for faster speeds), Add (A + B), CH B invert (A-B)

Chop Frequency: 200 kHz

HORIZONTAL AMPLIFIER

(Input through CH.B)

Bandwidth (at -3 dB)

DC Coupled: DC to 1.5 MHz
AC Coupled: 2 Hz to 1.5 MHz

Input Impedance: 1M Ω shunted by 25 pF

Maximum Input: 500 V (DC + AC peak)

Deflection Sensitivity: 5 mV/cm to 10 V/cm calibrated in 1-2-5 sequence in 11 steps; accuracy within $\pm 5\%$ of full screen deflection; uncalibrated continuous control between steps

CALIBRATION VOLTAGE

0.5 V P-P $\pm 1\%$, square-wave, 1 kHz

HORIZONTAL SWEEP RANGES

Time/cm (20 Ranges): 0.2 usec/cm to 0.5 sec/cm ($\pm 5\%$) calibrated to 1-2-5 sequence in 20 steps; uncalibrated continuous control between steps

- Excellent frequency response with smooth rolloff DC to 12 MHz (-3 dB)
- 19 calibrated sweeps plus TVH, TVV, VITS
- External, internal, and line trigger
- Internal sync separator for TV
- Voltage-calibrated vertical inputs (9 steps)

SPECIFICATIONS

VERTICAL AMPLIFIER

Sensitivity: 10 mV/cm to 5 V/cm calibrated in 1-2-5 sequence in nine steps; accuracy within $\pm 3\%$; uncalibrated continuous control between steps

Bandwidth:

DC coupled: DC to 12 MHz (-3 dB)
AC coupled: 2 Hz to 12 MHz (-3 dB)

Rise Time: 30 nsec.

Input Impedance: 1 M Ω , 35 pF; (15 pF with low capacitance probe)

Maximum Input Voltage: 500 V (DC + AC peak)

Calibration Voltage: .5 V P-P, $\pm 3\%$
Square wave 1 kHz

HORIZONTAL AMPLIFIER:

Sensitivity: 300 mV/cm minimum. Variable gain control provided.

Bandwidth, at -3 dB: DC or 10 Hz to 800 kHz

Input Impedance: 100 k Ω , 50 pF approx.
Maximum Input Voltage: 50 V (DC + AC peak)

SWEEP CIRCUIT:

Time/cm Range: .5 usec/cm to .5 sec/cm in 1-2-5 sequence in 19 calibrated steps; uncalibrated continuous control between steps. Additional range positions for TV-H, TV-V, and VITS.

Line Sweep: Variable controls allow adjustment of phase and amplitude

Simpson®

TV-H: 12.7 usec/cm

TV-V: 3.33 msec/cm

VITS: 0.1 msec/cm

Magnifier: X5 expands the fastest sweep speed, from 0.2 usec/cm to 40 nsec/cm

TRIGGERING

Source: External, CH A, CH B

Mode: Normal and automatic

Coupling: AC

Slope: Positive and negative

Sensitivities:

Internal (CH A or CH B): 0.5 cm p-p from 10 Hz to 10 MHz
1 cm p-p from 3 Hz to 15 MHz

External: 0.5V p-p from 3 Hz to 15 MHz

Auto: 0.5 cm p-p from 50 Hz to 15 MHz

TV Sync: 0.5 cm p-p of deflection

CRT

Type: 130 BHB31

Screen Size: 5" round flat face

Display Area: 8 x 10 cm

Screen Phosphor: P31 blue

ENVIRONMENT

Operating temperature: 0° to +45°C

Vibration: meets EIA spec RS 152B

POWER REQUIREMENTS

AC Voltage: 120 V AC $\pm 10\%$, 220 V AC $\pm 10\%$ or 240 V AC $\pm 10\%$

Frequency: 50 to 60 Hz

Average Power Consumption: 45 VA

Fuse Ratings: 1 ampere 125 V 3 AG: slow-blow (120 V operation)

Weight: 20 lb. (9.0 kg)

Dimensions: 6½" H x 12" W x 16" D
(16.5 x 30.5 x 40.6 cm)

- Exclusive gate output for flyback tests
- Fast 30 nanosecond rise time
- Z-Axis intensity modulation input
- 1 KHz 0.5 V square wave calibrator
- All solid-state circuitry (except CRT)
- Bright blue trace, X5 magnification

TRIGGERING:

Source: External, internal, line
Mode: Normal (adjustable trigger level)

Free (free running or asynchronous)

Coupling: AC

Slope: - or + (of trigger signal waveform)

Sensitivity:

Internal: 0.5 cm P-P from 10 Hz to 5 MHz

TV Sync: 1 cm P-P

External: 1 cm P-P from 2 Hz to 12 MHz

Gate Output: ± 7 V P-P for ringing tests

Z-Axis Input: Input voltage for blanking, 30 V P-P

Color TV Vector: R-Y & B-Y fed into vertical and horizontal inputs. 30° angle reference marks on graticule.

CRT: 5DEP31 round flat face, 8 x 10 cm display, blue filter, low parallax high-contrast graticule.

Operating Temperature: 0° to +40°C

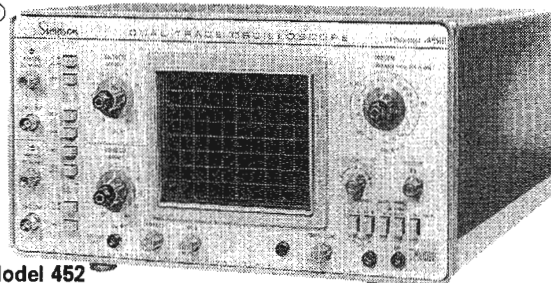
Power Requirements: 120 V AC or 240 V AC ($\pm 10\%$), 50 or 60 Hz, 40 VA

Fuse: 2 Ampere 125 V 3 AG quick acting (120 Volt operation)

Weight: 24 lb.

Size: 10.375" H x 8" W x 16.50" D

Prices and specifications subject to change without notice



Model 452

Dual Trace 15 MHz Triggered Sweep Scope

- Wide bandwidth of DC to 15 MHz (-3 dB)
- Reliable integrated circuitry and all solid-state components (except CRT)
- Triggering—internal and external with three TV sync positions (TVV, TVH, VITS)
- Sweep automatically shifts between Chop and Alternate
- 24 nsec rise time, displays digital pulses or other fast sweeps
- Front-panel X-Y displays using matched vertical amplifiers
- Displays CH A, CH B, A & B, (A + B, A-B)
- 0.5 V P-P 1kHz square wave calibrator
- Voltage-calibrated vert. and horz. inputs
- X5 magnification lets you expand trace

For design, development and service of digital circuitry, communications, audio and TV equipment . . . in lab, shop or in the field. With operator's manual.

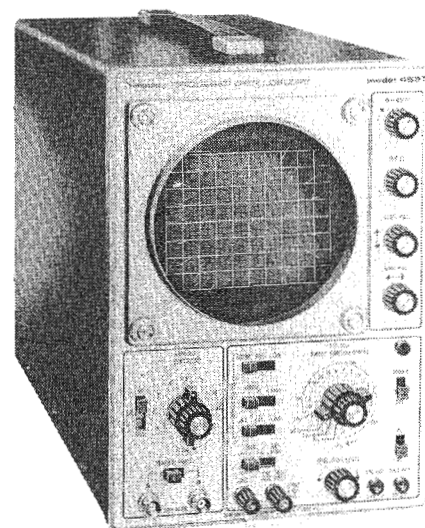
For 120 V AC, Catalog No. 12513 \$795.00

For 220-240 V AC, Catalog No. 12514 795.00

Direct/10 to 1 Probe, #00791 31.25

Protective Cover, Cat. No. 00792 14.60

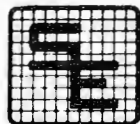
Light Hood, Cat. No. 00793 9.10



Model 455T 12 MHz
Triggered-Sweep 5" Scope

Ideal for audio and communications servicing as well as TV and industrial control applications where triggered sweep is needed. The smooth rolloff provides useable response beyond the 27 MHz CB band. Dual switch-selected inputs permit rapid comparison of separate signals. With shielded input cable, 5' line cord and manual.
For 120 V AC, Catalog No. 12518 \$498.00
For 240 V AC, Catalog No. 12519 498.00
Low-Cap. 10 to 1 Probe, #00791 31.25





**SOUTHEAST
ELECTRONICS**
INC.

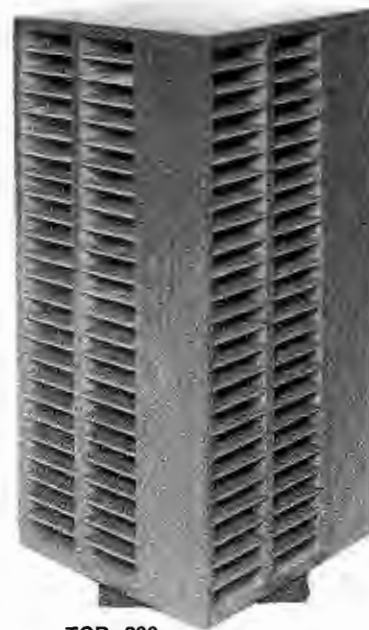
CAROUSEL TAPE CARTRIDGE RACKS

The TCR 72 Revolving Tape Cartridge Rack was such a great success that we have now come out with the newer and larger TCR 200. Now you can carry as many as 200 cartridges at your finger tips in the control room. The ideal tool for the station that is growing. No storage problems, no tape cartridges lying around to be broken or lost. A clean, neat solution to one of the problems of stations using Tape Cartridge Machines. As you grow, move up to the modern generation; move up in style. Both the TCR 72 and the TCR 200 are on a rotating base. Both have a modern scar resistant walnut finish. Both are made for long reliable use with the broadcaster in mind.

- TCR 72**, 22" high, 11" wide, 11" deep.
72 Carts\$45.00
- TCR 200**, 30" high, 16" wide, 16" deep.
200 Carts\$90.00



TCR 72



TCR 200

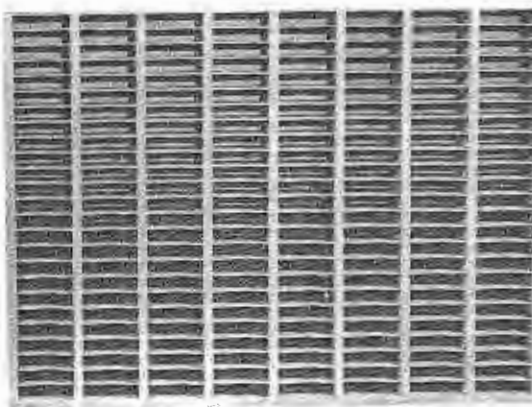
WALL TAPE CARTRIDGE RACKS

The new WCR-100 and WCR-200 wall mounting cartridge racks are built to the same high standard as the TCR-72 and 200 Carousel racks. They have a modern scar resistant walnut finish.

- WCR-100**, 23 3/4" high,
25" wide, 5-3/8" deep.
100 Carts\$65.00
- WCR-200**, 29-3/8" high,
39-5/8" wide, 5-3/8" deep.
200 Carts.\$85.00



WCR-100



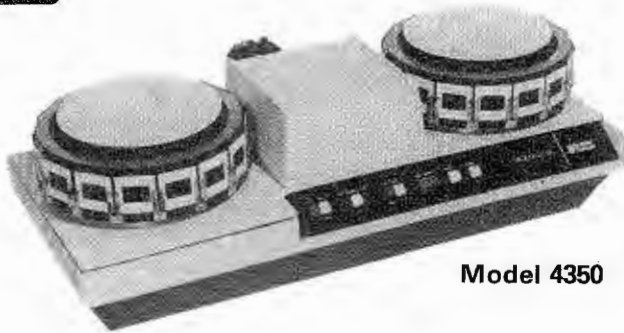
WCR-200



Prices and specifications subject to change without notice



PRODUCER 32 SELECTROSLIDE



Model 4350

FILM CHAIN 2x2 SLIDE PROJECTOR



Model 4351

Sixteen different dissolve rates, left and right crawls, high speed random access, and an easily edited 451-cue electronic memory system are just a few of the exclusive features of Spindler and Sauppé's new Producer 32 Selectroslide Projector, the world's first slide projector to incorporate a microprocessor. The unit is designed to work in a television film chain where it utilizes a single port of the multiplexer, and it is equally applicable to the job of converting slide presentations to motion picture film directly from the projector.

A forty-six button, rack-mounted master controller remotes all projector functions to the control studio. Thirty-three status lights indicate the exact condition of the projector at all times, and a seven-digit readout shows slide tray positions and the number of the upcoming cue. Limited function remote controls may be located in additional studios to make available sequential slide advance and reverse as well as random slide selection. Controls on the projector itself are limited to those related to setup.

Precise timing codes may be used to link together a series of cues to initiate more than one dissolve function. Once loaded, the memory may be advanced or reversed one cue at a time or at a speed of ten cues-per-second, and the slide trays will automatically track to their appropriate position and lamp status for the stopping point. A Restart Button returns the system to Cue #1, automatically bringing both memory and slide trays back to their starting positions.

Each of the two slide trays may be programmed to move forward or backward to any other tray position, and this may be done as either a fast series of conventional slide changes or as a slow crawl. Between screenings, programming data is stored in a cluster on standard recording tape. Subsequently, it is high speed re-entered into memory for re-use. In performance, cues may be called from memory manually by pressing the Cue Button of the controller, or

the presentation may be fully automated from synchronization pulses on one of the channels of the soundtrack tape.

In one-second increments, dissolve rates are available from a Cut of a fraction of a second up to a fifteen-second lap dissolve. Slides may be made to move slowly, either left-to-right or right-to-left, in a crawl that takes approximately six seconds per slide position. It is also possible to fade-in or fade-out a slide at any of sixteen different speeds. Slides may be projected from both trays simultaneously to create superimpositions.

An automated presentation may be interrupted at any time by calling up a slide from the random access section. Maximum selection time is less than two seconds. As the appropriate tray advances to the selected slide, the opposite tray tracks with it to retain correct numerical sequence. Manual controls also include sequential advance and reverse buttons which change slides at the speed of a Cut.

The pair of slide trays on the Producer 32 Projector carry a total capacity of thirty-two slides and may be quickly changed without disturbing a presentation. Lights within the projector make it possible to preview all slides without rotating the trays. The unit uses 1000-hour, tungsten-halogen projection lamps, and the "soft start" dissolve circuitry extends lamp life by a minimum factor of two.

At the heart of the optical system is a precision, cube prism, beam splitter. There are no moving parts. Two etched, aspheric condensing lenses and variable density field flatteners eliminate filament focus and provide evenness of illumination. Available are 7 1/2" and 9" lenses with filter holders for multiplexers, and inverted 3" and 5" projection lenses for uniplexing.

PRICE LIST

P-32 Producer 32 Selectroslide projector (Model 4350), with controller (Model 4351) and mounting plate (Model 6382). Specify cable length at \$2.75 per foot, otherwise 5' controller cable supplied. \$9950.00

ACCESSORIES FOR PRODUCER SELECTROSLIDE PROJECTORS

| MODEL | | |
|-------|---|----------|
| 285 | 3" f3.5 inverted lens, picture size 14 | 232.00 |
| 286 | 5" f3.5 inverted lens, picture size 14 | 410.00 |
| 290 | 7 1/2" f4.0 projection lens, picture size 1-9, with iris and filter holder | 490.00 |
| 291 | 7 1/2" f4.0 projection lens, picture size 6-12, with iris and filter holder | 490.00 |
| 295 | 9" f5.0 projection lens, picture size 1-9, with iris and filter holder | 595.00 |
| 297 | 9" f5.0 projection lens, picture size 8-12, with iris and filter holder | 595.00 |
| 241 | 16-slide magazine, odd numbering | 112.00 |
| 242 | 16-slide magazine, even numbering | 112.00 |
| 816 | Cable, for Producer to controller | ft. 2.75 |

PROJECTED PICTURE SIZES

| PICTURE SIZE | FIELD LENS | PICTURE SIZE |
|--------------|------------|--------------|
| 1 | 4.50" | x 3.375" |
| 2 | 4.44" | x 3.33" |
| 3 | 4.30" | x 3.22" |
| 4 | 4.00" | x 3.00" |
| 5 | 3.75" | x 2.81" |
| 6 | 3.19" | x 2.38" |
| 7 | 2.92" | x 2.19" |
| 8 | 2.70" | x 2.04" |
| 9 | 2.50" | x 1.88" |
| 10 | 2.40" | x 1.80" |
| 11 | 2.16" | x 1.62" |
| 12 | 2.00" | x 1.50" |
| 13 | 1.125" | x 0.844" |
| 14 | 0.50" | x 0.375" |

Prices and specifications subject to change without notice



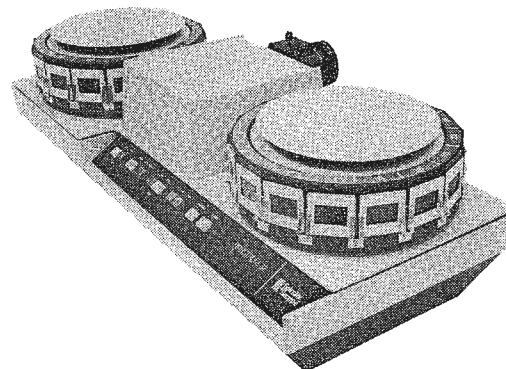


Engineered expressly for color film chains, the Spectrum 32D is equally well suited to black and white television systems. Color, intensity, and polarization are perfectly balanced between the two channels of the projector. Each channel utilizes a 16-slide, quick-change magazine for a total capacity of 32 slides. Preview lights provide soft illumination behind the slides, making it easy to check all of them without rotating the magazines. Both magazines may be rotated by hand for quick cueing. Magazines are precision machined to assure exact picture-to-picture alignment, while a positive detent system guarantees accurate rotational positioning of each frame, whether they are advanced by hand or power driven.

The "heart" of the optical system is a sliding front-surface mirror which moves in a single plane to switch from one projection channel to the other. Since the angle of this mirror remains constant throughout its movement, it is unaffected by manufacturing tolerances and even extreme wear. This mirror never requires readjustment.

SPECTRUM 32 SELECTROSLIDE

COLOR TELEVISION 2x2 SLIDE PROJECTOR



MODEL SLR-TV 48 Slide Sequential Projector

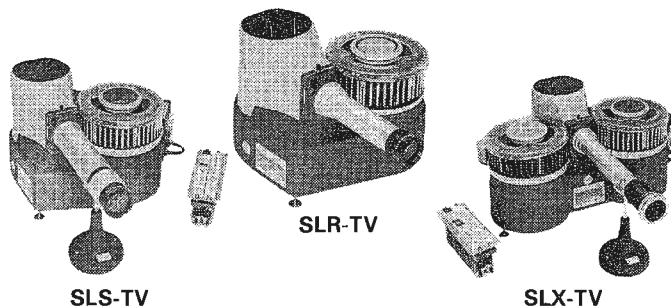
The SLR-TV model can be sequentially operated in either forward or reverse. Slide change time is one second.

MODEL SLS-TV and SLX-TV Random Access Projectors

The model SLS-TV has a capacity of 48 slides, while the SLX-TV carries 96 slides, 48 in each magazine. Magazines need not be keyed when placed on or removed from the projector. Average random access time for both models is 2 1/2 seconds (4.75 sec. maximum) with one second slide change time for sequential operation. A panel mounting illuminated push-button control, with your choice of cable length is provided. Fifteen buttons select the slides randomly; an On button turns the projector on or places it into standby; a sequential button operates the projector sequentially to advance the slides and automatically cancels the last random selection. The model SLX-TV control unit also has an illuminated A/B button for selecting the right or left-hand magazine.

SL SERIES SELECTROSLIDE

TELEVISION 2x2 SLIDE PROJECTORS



| | | |
|--------|--|-----------|
| S-32D | Spectrum 32 Selectroslide projector (Model 4342), with mounting plate (Model 226) | \$5400.00 |
| 322 | Selectroslide projector (Model 4322) | \$1100.00 |
| SLR-TV | Standard Selectroslide projector (Model 4114) | \$1995.00 |
| SLS-TV | Random Access Selectroslide projector (Model 4136), including remote control (Model 814). Specify cable length at \$2.75 per foot | \$3400.00 |
| SLX-TV | Dual Random Access Selectroslide projector (Model 4146), including remote control (Model 815). Specify cable length at \$2.75 per foot | \$4400.00 |

| | | |
|-------|---|-----------|
| 274 | Diaphragm (iris) for 7 1/2" and 9" lenses above | \$ 115.00 |
| 226 | Mounting plate and hardware for most multiplexers, 27 x 12 1/2 x 2" | \$ 110.00 |
| 241 | 16-slide magazine, odd numbering | \$ 112.00 |
| 242 | 16-slide magazine, even numbering | \$ 112.00 |
| 278-1 | Extension tube for projection lenses, 1" long | \$ 36.00 |
| 278-2 | Extension tube for projection lenses, 2" long | \$ 41.00 |

ACCESSORIES FOR SPECTRUM SELECTROSLIDE PROJECTORS:

| | | |
|-----|---|------------|
| 285 | 3" f3.5 inverted lens, picture size 14 | \$ 232.00 |
| 286 | 5" f3.5 inverted lens, picture size 14 | \$ 410.00 |
| 290 | 7 1/2" f4.0 projection lens, picture size 1-9, with iris and filter holder | \$ 490.00 |
| 291 | 7 1/2" f4.0 projection lens, picture size 6-12, with iris and filter holder | \$ 490.00 |
| 295 | 9" f5.0 projection lens, picture size 1-9, with iris and filter holder | \$ 595.00 |
| 297 | 9" f5.0 projection lens, picture size 8-12, with iris and filter holder | \$ 595.00 |
| 241 | 16-slide magazine, odd numbering | \$ 112.00 |
| 242 | 16-slide magazine, even numbering | \$ 112.00 |
| 816 | Cable, for Producer to controller | ft. \$2.75 |

ACCESSORIES FOR TWIN SELECTROSLIDE PROJECTOR:

| | | |
|-------|---|-----------|
| 255 | 3" f3.5 inverted lens, picture size 14 | \$ 165.00 |
| 256 | 5" f3.5 inverted lens, picture size 14 | \$ 276.00 |
| 258 | 7 1/2" f4.0 projection lens, picture size 1-6 | \$ 375.00 |
| 258-1 | 7 1/2" f4.0 projection lens, picture size 8-9 | \$ 411.00 |
| 258-2 | 7 1/2" f4.0 projection lens, picture size 11-12 | \$ 416.00 |
| 263 | 9" f5.0 projection lens, picture size 3-6 | \$ 480.00 |
| 263-1 | 9" f5.0 projection lens, picture size 8-9 | \$ 516.00 |
| 263-2 | 9" f5.0 projection lens, picture size 11-12 | \$ 521.00 |

ACCESSORIES FOR ALL OTHER MODELS:

| | | |
|--------|--|------------|
| 210 | 7 1/2" f4.0 projection lens, slide focus mount, picture size 1-12 | \$ 350.00 |
| 211 | 7 1/2" f4.0 projection lens, picture size 1-6 | \$ 385.00 |
| 211-1 | 7 1/2" f4.0 projection lens, picture size 8-9 | \$ 421.00 |
| 211-2 | 7 1/2" f4.0 projection lens, picture size 11-12 | \$ 426.00 |
| 214 | 9" f5.0 projection lens, slide focus mount, picture size 4-12 | \$ 455.00 |
| 215 | 9" f5.0 projection lens, picture size 3-6 | \$ 539.00 |
| 215-1 | 9" f5.0 projection lens, picture size 8-9 | \$ 575.00 |
| 215-2 | 9" f5.0 projection lens, picture size 11-12 | \$ 580.00 |
| 225 | Lens supporting stand, adjustable | \$ 36.00 |
| 274 | Diaphragm (iris) for 7 1/2" and 9" lenses above | \$ 110.00 |
| 240 | 16-slide magazine, numbered 1-16, for model 322 projector | \$ 112.00 |
| 306TV | 48-slide magazine, with slide holders, for SLR-TV projector | \$ 60.00 |
| 800TV | 48-slide magazine, with holders, for SLS-TV or left-hand on SLX-TV | \$ 85.00 |
| 802TV | 48-slide magazine, with black holders, for right-hand on SLX-TV | \$ 85.00 |
| 309TV | Slide holder, bright finish, for 306TV and 800TV magazines | doz \$6.00 |
| 309RTV | Slide holder, black finish, for 802TV magazine | doz \$6.00 |
| 814 | Random access remote control for SLS-TV, panel mounting, without cable but including cost of wiring and connectors (see 816 below) | \$ 750.00 |
| 815 | Random access remote control for SLX-TV, panel mounting, without cable but including cost of wiring and connectors (see 816 below) | \$ 705.00 |
| 816 | Cable, for 814 and 815 controls | ft. \$2.75 |



PRECISION MAGNETIC TEST TAPES

STANDARD TAPE LABORATORY, INC.

STL Test Tapes are recorded directly from precision generating equipment to provide the most accurate reference possible.

An independent standards laboratory, STL provides a completely objective service, with test tapes available to major manufacturers, governments, and all who need a precision reference tool.

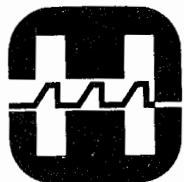
Reproduce Alignment — Contains Azimuth tone, voice announced frequency run and level set tone

| CAT. # | TAPE CONFIG. | SPEED IPS | TRACK CONFIG. | FREQ. RANGE Hz | OP. LEVEL TONE nWb/m | FREQ. RUN LEVEL dB | PRICE |
|--------|--------------|-----------|---------------|----------------|----------------------|--------------------|---------|
| 22 | ¼" Reel | 7-1/2 | Full | 30 - 15000 | 185 | 0 | \$28.00 |
| 3 | ¼" Reel | 15 | Full | 30 - 15000 | 185 | 0 | \$28.00 |
| 22-2 | ¼" Reel | 7-1/2 | 2 | 30 - 15000 | 185 | 0 | \$30.00 |
| 3-2 | ¼" Reel | 15 | 2 | 30 - 15000 | 185 | 0 | \$30.00 |
| 34 | Cartridge* | 7-1/2 | Compatible | 50 - 16000 | 160 | -10 | \$40.00 |
| 34-2 | Cartridge* | 7-1/2 | Stereo | 50 - 16000 | 160 | -10 | \$40.00 |
| 34-1 | Cartridge* | 7-1/2 | Mono | 50 - 16000 | 160 | -10 | \$40.00 |
| 26 | Cassette | 1-7/8 | Full | 50 - 15000 | 160 | -10 | \$55.00 |

Flutter and Speed — A crystal-controlled frequency source recorded at low flutter and accurate speed.

| CAT. # | TAPE CONFIG. | SPEED IPS | TEST FREQUENCY | SPEED ACCURACY | MAX. INHERENT RMS FLUTTER | PRICE |
|--------|--------------|-----------|----------------|----------------|---------------------------|---------|
| 52-3 | ¼" Reel | 7-1/2 | 3150 Hz | .10% | .03% | \$28.00 |
| 53-3 | ¼" Reel | 15 | 3150 Hz | .10% | .03% | \$28.00 |
| 35 | Cartridge* | 7-1/2 | 3150 Hz | .10% | .03% | \$25.00 |
| 29 | Cassette | 1-7/8 | 3150 Hz | .15% | .05% | \$30.00 |

*Please specify Broadcast Cartridge desired — Aristocart, Audiopak A2 or AA3, Fidelipac 350 or Master, or Marathon 300AA. Unless specified, Fidelipac 350 will be supplied.



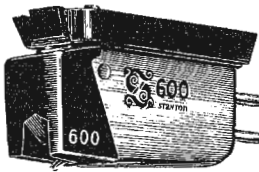
HARRIS
COMMUNICATION AND
INFORMATION PROCESSING

One Source For
All Your Broadcast
Equipment Needs

Prices and specifications subject to change without notice

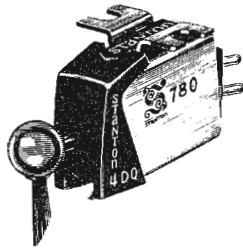


STANTON



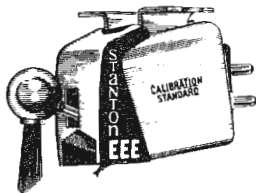
Model 600A—For Use in Demanding Broadcast Applications

Produces pick-ups of outstandingly High Performance. Reduced tip mass provides outstanding frequency response for both on-the-air use and critical record listening. Rugged. In all broadcast usages, the 600A is applicable to those situations that demand a spherical stylus tip—and a cartridge that tracks at 2 to 4 grams.
Stylus Tip: 0.7 mil.
Cartridge weight: 5 grams.



STANTON 780/4DQ CARTRIDGE

Discrete, 4-channel Stylus Design
Revolutionary stylus design concept for discrete playback. 4-channel cartridge. Fulfills all extensive demands for playback of all material recorded on discrete discs. While performing brilliantly, it is very kind to records in terms of wear.



Model 681 EEE—The New Calibration Standard of Excellence in Stereo Sound Reproduction

Improved tracking at all frequencies. Achieves perfectly flat frequency response to beyond 20 Kc. Dramatically reduced tip mass. New nude diamond is an ultra miniaturized stone with only 2/3 the mass of its predecessor. Stylus assembly of greater durability.
Stylus Tip: 0.2 x 0.7 mil Elliptical Diamond
Cartridge Weight*: 5.5 grams.

Model 681EE Critical Listening
For professional listening the 681EE offers the highest audio quality obtainable at the present state of the art. High compliance, low mass and low tracking force assure minimum wear. Built-in "Longhair" brush reduces noise and protects records. Elliptical stylus tip eliminates inner-groove distortion caused by pinch effect.
Stylus Tip: 0.2x0.9 mil Elliptical Diamond
Cartridge Weight: 5.5 grams

Model 681SE Critical Listening and Ruggedness
Recommended for critical listening with medium stylus force. Provides a 0.4 x 0.9 mil elliptical stylus. Excellent frequency response and linearity, even at the inner groove diameters. "Longhair" brush keeps dust away from stylus, protects record grooves and reduces noise.
Stylus Tip: 0.4x0.9 mil Elliptical Diamond
Cartridge Weight: 5.5 grams

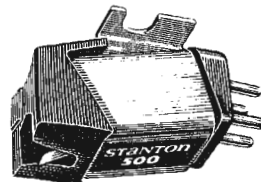
Model 681A The Recording Channel
Indispensable as a calibration standard for recording system checkout. Extreme linearity plus widest and flattest possible response for precise alignment of cutting heads. Factory calibrated frequency response meets the most rigid tolerances. Built-in "Longhair" brush keeps dust from stylus, protects record grooves, reduces noise—without affecting stylus force.
Stylus Tip: 0.7 mil Spherical Diamond
Cartridge Weight: 5.5 grams

Model 600E—For Auditioning and Delicate Transcribing Work

Brilliant performer due to its elliptical stylus tip—and tracking force of only 1½ to 3 grams. Widely used both for transcribing by professionals, and for listening by audiophiles.
Stylus Tip: 0.4 x 0.7 mil Elliptical
Cartridge Weight: 5 grams

Model 600EE—For Use with Extra Light-Tracking Tone Arms

Excellent for critical auditions and record evaluation. Highly polished diamond elliptical tip. Tracks at a light 1 to 2 grams.
Stylus Tip: 0.3 x 0.7 mil Elliptical



Model 500A Heavy-Duty Use
The best for all around broadcast application. It satisfies the most stringent requirements of the control room, from Bach to rock. Frequency response and separation meet or exceed broadcast standards.
Stylus Tip: 0.7 mil Spherical Diamond
Cartridge Weight: 5 grams

Model 500AA Rugged
Renowned for ruggedness. Offers reduced tip mass and tracking force to provide outstanding frequency response for both on-the-air use and auditioning of records.
Stylus Tip: 0.5 mil Spherical Diamond
Cartridge Weight: 5 grams

Model 500AL On-The-Air Use
The workhorse of the broadcast industry. Widely used by disc jockeys. Meets the extremely rugged requirements of on-the-air application. Even under the most adverse handling, 500AL operates trouble-free without sacrificing broadcast quality.
Stylus Tip: 0.7 mil Spherical Diamond
Cartridge Weight: 5 grams

Model 500E
Like the Model 500 AL, ruggedized construction is the major attribute of 500E Cartridge. Its slightly larger radii than the 500EE and tougher armature suspension assures excellent life expectancy. Tracks at narrower range of forces (2-5 grams) than the 500 AL. Ideal for broadcast studio and serious home tape recordists.
Stylus Tip: 0.4x0.9 mil Elliptical Diamond
Cartridge Weight: 5 grams

Model 500EE Critical Auditioning
Low mass, and small tip radii combine to achieve the utmost in performance at low tracking forces. This phonograph cartridge will outperform most frequency and response requirements in broadcast system requirements, and the most critical audiophile requirements.
Stylus Tip: 0.3x0.9 mil Elliptical Diamond
Cartridge Weight: 5 grams

CARTRIDGES

NEW PROFESSIONAL CALIBRATION STANDARD SERIES

| Model | Cartridge Color | Stylus Model | Tracking Force | Price |
|-------|-----------------|--------------|----------------|-------|
| 681S | Silver | D81 | 1 gram ±¼ | 90.00 |

CALIBRATION STANDARD (with "Longhair" Brush*)

| | | | | |
|---------------|--------|-----------------|---------------|-------|
| 681EEE-S TYPE | Silver | D6800EEE-S TYPE | 1 gram ±½ | 69.00 |
| 681EEE | Silver | D6800EEE | ¾ to 1½ grams | 54.00 |
| 681EE | Silver | D6800EE | ¾ to 1½ grams | 46.80 |
| 681SE | Silver | D6800SE | 2 to 4 grams | 43.20 |
| 681A | Silver | D6807A | 1½ to 3 grams | 43.20 |
| 681AMC | Silver | D6872AMC | 3 to 7 grams | 43.20 |

680 STEREO STANDARD SERIES (with "Longhair" Brush)

| | | | | |
|---------|--------|---------|---------------|-------|
| 680EE | Silver | D680 | ¾ to 1½ grams | 28.20 |
| 680EL** | Silver | D6800EL | 2 to 5 grams | 47.00 |

**Includes Extra Stylus

BROADCAST STANDARD

| | | | | |
|-------|------|---------|---------------|-------|
| 500EE | Gold | D5100EE | 1 to 2 grams | 20.00 |
| 500E | Gold | D5100E | 2 to 5 grams | 17.50 |
| 500AA | Gold | D5105AA | 1 to 2½ grams | 17.50 |
| 500A | Gold | D5107A | 2 to 5 grams | 15.00 |
| 500AL | Gold | D5107AL | 3 to 7 grams | 15.00 |

BROADCAST STANDARD (High Performance)

| | | | | |
|-------|------|---------|---------------|-------|
| 600EE | Gold | D6003EE | 1 to 2 grams | 25.96 |
| 600E | Gold | D6004E | 1½ to 3 grams | 23.50 |
| 600A | Gold | D6071A | 2 to 4 grams | 20.97 |

FOUR CHANNEL DISCRETE (with "Longhair" Brush*)

| | | | | |
|---------|--------|------|-----------------|-------|
| 780/4DQ | Silver | 4/DQ | 2 grams nominal | 75.00 |
| 780/Q | Silver | Q | 2 grams nominal | 45.00 |

V-GUARD FOR NEW PROFESSIONAL CALIBRATION STANDARD SERIES

| Model | Radius | Tracking Force | Price |
|-------|--------------|----------------|-------|
| D81 | Stereohedron | 1 gram ±¼ | 45.00 |
| D810 | 1.0 mil | 2 to 5 grams | 27.00 |
| D827 | 2.7 mil | 3 to 7 grams | 27.00 |

681 CALIBRATION SERIES (with "Longhair" Brush)

| | | | |
|-------------------|--------------------------|---------------|-------|
| D6800EEE-(S-type) | Stereohedron | 1 gram ±½ | 34.50 |
| D6800EEE | 0.2 x 0.7 Mil Elliptical | ¾ to 1½ grams | 27.00 |
| D6800EE | 0.2 x 0.7 Mil Elliptical | ¾ to 1½ grams | 23.40 |
| D6800SE | 0.4 x 0.7 Mil Elliptical | 2 to 4 grams | 19.40 |
| O6807A | 0.7 Mil | 1½ to 3 grams | 19.40 |
| D6872AMC | 0.7 Mil | 3 to 7 grams | 19.40 |
| D6810 | 1.0 Mil | 2 to 5 grams | 18.00 |
| D6827 | 2.7 Mil | 2 to 7 grams | 18.00 |

680 SERIES (with "Longhair" Brush)

| | | | |
|----------|--------------------------|---------------|-------|
| D680 | 0.3 x 0.7 Mil Elliptical | ¾ to 1½ grams | 18.75 |
| D6800EL | 0.4 x 0.7 Mil Elliptical | 2 to 5 grams | 18.00 |
| DP6800EL | 0.4 x 0.7 Mil Elliptical | 2 to 5 grams | 48.60 |

500 BROADCAST STANDARD SERIES

| | | | |
|---------|--------------------------|---------------|-------|
| D5100EE | 0.3 x 0.7 Mil Elliptical | 1 to 2 grams | 15.00 |
| D5100E | 0.4 x 0.7 Mil Elliptical | 2 to 5 grams | 12.00 |
| D5105AA | 0.5 Mil | 1 to 2½ grams | 10.80 |
| D5107A | 0.7 Mil | 2 to 5 grams | 7.20 |
| D5107AL | 0.7 Mil | 3 to 7 grams | 7.20 |
| D5110 | 1.0 Mil | 2 to 5 grams | 7.20 |
| D5127 | 2.7 Mil | 3 to 7 grams | 7.20 |

600 BROADCAST STANDARD H.P. SERIES

| | | | |
|---------|--------------------------|---------------|-------|
| D6003EE | 0.3 x 0.7 Mil Elliptical | 1 to 2 grams | 16.50 |
| D6004E | 0.4 x 0.7 Mil Elliptical | 1½ to 3 grams | 15.00 |
| D6071A | 0.7 Mil | 2 to 4 grams | 12.15 |
| D6010 | 1.0 Mil | 2 to 5 grams | 10.80 |
| D6027 | 2.7 Mil | 3 to 7 grams | 10.80 |

780 SERIES (with "Longhair" Brush)

| | | | |
|------|-----------------|--------------|-------|
| 4/DQ | Quadrilateral** | 2 ± ½ grams | 26.50 |
| Q | Quadrilateral** | 2 to ½ grams | 19.80 |

Prices and specifications subject to change without notice





STUDIO LIGHTING SYSTEMS

Strand Century offers a wide selection of complete Television Studio Lighting Packages. Each system is designed to offer the greatest flexibility possible, utilizing the world's finest lighting fixtures made by Ianiro in conjunction with Strand Century's control systems. Each system is complete, including lamps, color frames, accessories and distribution equipment. In addition to these four basic Studio Packages, Strand Century also offers complete custom design and engineering for larger specialized systems, including a complete range of the most advanced memory systems.

| Catalog Number | Description |
|----------------|--|
| 1062 | Studio Lighting Package for a 15' x 20' Studio (300 sq. ft.); 4.5m x 6m (27 sq. m) |
| 1063 | Studio Lighting Package for a 20' x 30' Studio (600 sq. ft.); 6m x 9m (54 sq. m) |
| 1064 | Studio Lighting Package for a 30' x 40' Studio (1200 sq. ft.); 9m x 12m (108 sq. m) |
| 1066 | Studio Lighting Package for a 40' x 60' Studio (2400 sq. ft.); 12m x 18m (216 sq. m) |
| 1003 | Small Studio/Theatre Memory Control System |
| 1004 | Medium Studio/Theatre Memory Control System |
| 1005 | Large Studio/Theatre Memory Control System |

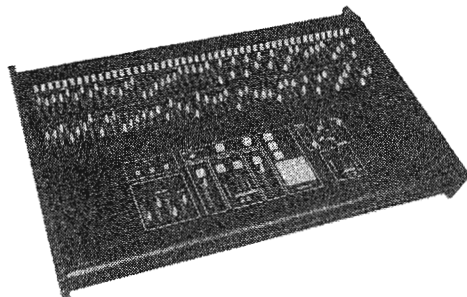
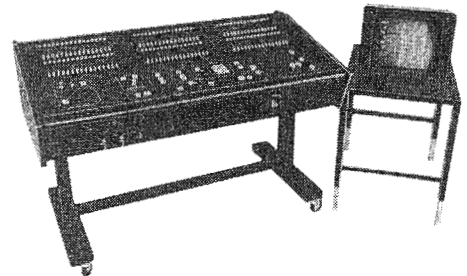
CONTROL CONSOLES

MULTI-Q®

A sophisticated memory lighting control console for as few as 32 channels, with these advanced features:

- a controller per channel and digital keyboard control
- two timed and manual crossfaders

- a split manual dipless crossfader
- cue-insert capability
- recorded fade times
- dynamic CRT display
- library storage
- remote control
- 16 preset back-up facility



MICRO-Q®

Modular 2-scene preset system with memory

- dipless split crossfader — timed or manual
- scene master

- cue insert
- grand master and independent master
- future expansion in groups of 8 controllers (maximum 48 x 2 scenes)
- non dim controls

| Catalog Number | Description |
|----------------|--|
| 8161 | 8-Channel 2-Scene Micro-Q with split dipless crossfader |
| 8162 | 16-Channel 2-Scene Micro-Q with split dipless crossfader |

Options

- stand
- work lights
- touring case

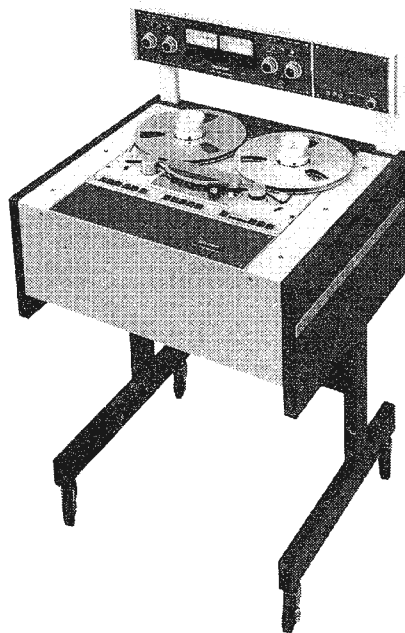
For prices and additional information contact your Harris Sales Manager or the Harris Quincy Sales Office.

Prices and specifications subject to change without notice



STUDER REVOX AMERICA INC.

PROFESSIONAL AUDIO EQUIPMENT



STUDER B67 PROFESSIONAL TAPE RECORDER (1/4")

This compact, efficient machine was especially designed for broadcast studios and outside broadcast vans, as also for television-, film- and disc studios, theatre or scientific institutes. Built-in are electronic counter, tape cutter, PC board for variable capstan speed, plug-over CCIR and NAB equalization.

VU-version with monitor loudspeaker. Available as chassis unit, in universal console or with VU-meter control unit.

Head assembly: mono, mono/stereo (switchable): stereo 0.75 mm track separation and full track erase head; two track 2 mm track separation, overlapping erase head and pilotone.

- B 67-1 full-track, portable \$3910.00
- B67-1 VU as above, portable, with VU-meter panel \$4120.00
- B 67-1 VUK as above, with VU-meter panel above tape deck, but for installation in console \$4258.00
- B 67-1 P full-track, neopilotone, portable \$4570.00
- B67-1 P VUK as above, with VU-meter panel above tape deck, but for installation in console \$5215.00
- B67-0.75 S stereo, 0.75 mm track separation, full-track erasure, switchable to mono operation, portable \$4435.00

- B 67-0.75 S VU as above, portable, with VU-meter panel \$4848.00
- B67-0.75 S VUK as above, with VU-meter panel above tape deck, but for installation in console \$4994.00
- B 67-0.75 stereo, 0.75 track separation, full track erasure, portable \$4330.00
- B 67-0.75 VU as above, portable, with VU-meter panel \$4750.00
- B 67-0.75 VUK as above, with VU-meter panel above tape deck, but for installation in console \$4886.00
- B 67-2/2 stereo/2-track, with 2 mm track separation, with separate erase facilities of track 1 or 2 (overlapping erase head), portable \$4426.00
- B 67-2/2 VU as above, portable, with VU-meter panel \$4850.00
- B 67-2/2 VUK as above, with VU-meter panel above tape deck, but for installation in console \$4491.00
- B 67-2/2 VU sync stereo/2-track as above, however, with sync facilities, portable, with VU-meter panel \$5450.00
- B 67-2/2 VUK sync as above, with VU-meter panel above tape deck, but for installation in console \$5583.00
- B 67 Playback only available upon request in all track configurations

Accessories

- B 67 Consoles "Universal" with castors (special consoles available upon request) \$580.00
- Vari-speed-control kit consisting of:
 - 1.167.780 print for variable speed control +/- 7 semi-tones and 1.167.781 components for external speed control \$299.00
- Vari-speed-control for B67 \$207.50
- Vari-speed-control for B67 \$249.00
- Connection cable to above for B 67, length 10 m \$99.60
- Tool kit B 67 \$996.00
- Rugged transportation case for B 67 \$295.00



REVOX B77 TAPE RECORDER

The Revox B77 Tape Recorder, is a blend of precision engineered mechanical components and sophisticated electronic circuitry. Features include: • 3 direct drive, servo controlled motors (2 spooling motors, 1 capstan motor). • Integrated drive logic with tape motion sensor. • Full remote capabilities. • Tape speeds with variable speed option, 2.5 to 11.0 ips • Reel size, up to 10.5". • Separate headphone volume control. • Double tracking, echo/delay effects. • Infra-red end-of-tape sensor.

| MODEL | DESCRIPTION | SPEEDS | TRACKS | |
|-------------|------------------------------|---------------|--------|-----------|
| 14102/14104 | B77 Std, Cabinet | 3 3/4 - 7 1/2 | 2/4 | \$1499.00 |
| 14302/14304 | B77 Std, Cage w/rack adpt | 3 3/4 - 7 1/2 | 2/4 | 1499.00 |
| 14106 | B77 HS/NAB, Cabinet | 7 1/2 - 15 | 2 | 1499.00 |
| 14306 | B77 HS/NAB, Cage w/rack adpt | 7 1/2 - 15 | 2 | 1499.00 |
| 14122/14124 | B77 Std, w/fact. slide sync | 3 3/4 - 7 1/2 | 2/4 | 1549.00 |

Options B Series

- 34237 B77 Variable Speed Control \$125.00
- 34227 B77, 30' Remote Control Cable \$145.00
- 9077 B77 Operating Manual \$ 5.00
- 9820 B77 Service Manual \$ 25.00
- 61021 B77 Rack Mount Adaptor \$125.00 (Including Metal Cage)

Accessories

- 34007 Operational Dust Cover, B77 \$ 55.00

Reels and Adaptors

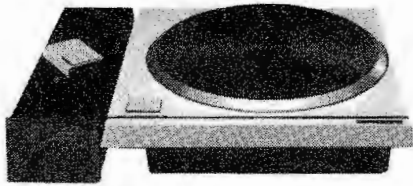
- 44042 Black 10 1/2" NAB Metal Reel \$ 14.85
- 44044 Silver 10 1/2" NAB Metal Reel \$ 14.85
- 44150 Empty 10 1/2" Novodur Reel \$ 7.00
- 44405 Revox Library Case 10 1/2" \$ 8.45
- 45001 Standard NAB Adaptor, Each \$ 15.00
- 45010 Professional NAB Adaptor, Each .. \$ 45.00
- 43092 Revox 621 Tape on NAB Metal Reel 3600' with Library Case, Black Reel \$ 36.00
- 43094 Revox 621 Tape on NAB Metal Reel 3600' with Library Case, Silver Reel \$ 36.00
- 45200 Leader Tape Transparent 1200' \$ 14.50
- 46001 Alignment Tape, 7 1/2 ips \$ 62.50
- 46002 Alignment Tape, 15 ips \$ 62.50
- 46003 Alignment Tape, 3 3/4 ips \$ 62.50

Prices and specifications subject to change without notice



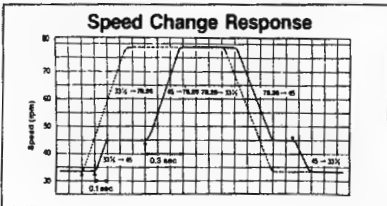
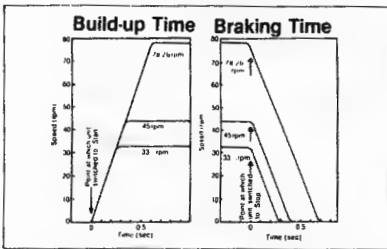
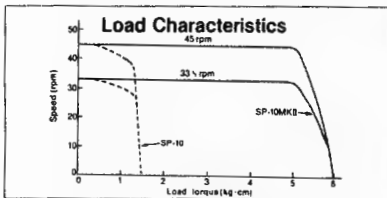
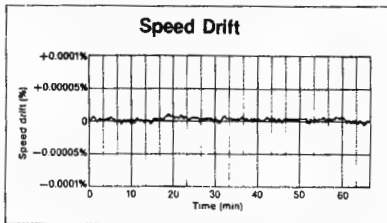
Technics by Panasonic

Professional Series



SP-10MKII

Broadcast Turntable with Quartz Phase-Locked Direct Drive Motor
 Quartz control provides virtually perfect speed accuracy (no more than ±0.002% deviation). Direct drive system uses no belts, idlers or other speed reduction mechanisms, resulting in very low rumble, very low wow and flutter, outstanding reliability of the motor. Elaborate servo system provides enormous torque: start-up time is 0.25 second (25° rotation) from standstill to 33 1/3 rpm. Electromechanical braking system brings platter to dead stop in 0.3 second from 33 1/3 rpm. Heavy (6.4 lb.) platter, rubber-damped both on top and underside to resist vibration. High moment of inertia (130 lb-in²) plus enormous torque result in high immunity to load-caused fluctuation — 0% speed change with up to 4.3 lb-inch load drag. Separately-housed power supply. Quartz-controlled stroboscope for 3 speeds: 33 1/3, 45 and 78.26 rpm. Includes remote control for start/stop.



SP-10MKII\$900.00



SP-15

Quartz-Synthesizer Controlled Direct Drive Turntable
 Quartz control provides virtually perfect speed accuracy, within ±0.002% of perfect speed. Quartz synthesizer pitch adjustment permits up to ±9.9% deviation from standard 33 1/3, 45 and 78.26 rpm speeds, completely under quartz control. Speeds indicated by digital read-out, in 0.1% increments. High torque provides fast start up—0.4 second from standstill to 33 1/3 rpm. 5.9 lb. platter sustains high 130 lb-in² moment of inertia for superb immunity to transient load changes. Will withstand up to 2.2 lb-in load drag without slow-down. Electromechanical braking system stops platter in 0.4 second. Diecast aluminum base with "TNRC" (Technics Non-Resonant Compound) on underside to resist vibration. Platter is rubber-damped on top, underside, and under rim for insulation against vibrations. Pulsed power supply avoids hum induction. Pitch-lock mechanism. Wow and flutter 0.025% WRMS. Rumble -78 dB DIN B.

SP-15\$600.00



SP-25

Quartz Synthesizer Controlled Direct Drive Turntable
 Quartz synthesizer control governs platter speed in 33 1/3 and 45 rpm, and in pitch-altered modes within ±6% of standard speeds. High torque, tolerates up to 1.3 lb · in load drag without slow-down. Electronic braking system stops platter quickly. Platter is rubber-damped on both top and underside to resist vibration. Wow and flutter 0.025% WRMS. Rumble -78 dB DIN B.

SP-25\$400.00



SH-15B2/15B3

Bases for Models SP-15/SP-25
 Specially developed bases for use with SP-15/25 turntables. Each features heavy, acoustically-inert rubber material for outstanding insulation against vibration. Four individual spring-loaded feet, tonearm base and acrylic dust cover are coupled to heavy rubber material to further suppress transmission of vibrations. "B2" base finished in simulated rosewood veneer. "B3" finished in black.
 SH-10B3 (Base for SP-10MKII)\$350.00
 SH-15B2 (Base for SP-15/25)\$250.00
 SH-15B3 (Base for SP-15/25)\$250.00

Prices and specifications subject to change without notice



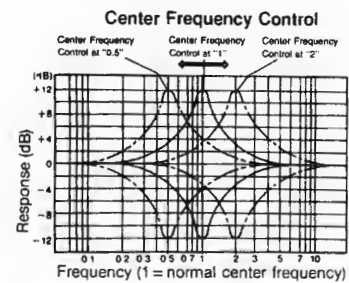
SH-9010

2-Channel Parametric/Graphic Equalizer
 5 slide controls per stereo channel, providing up to 12 dB boost or cut. Adjustable center frequencies for each control within range of ±1.6 octaves. Center frequencies (nominal/adjustable range): 60 Hz (20 ~ 180 Hz), 240 Hz (80 ~ 720 Hz), 1 kHz (333 Hz ~ 3 kHz), 4 kHz (1.3 kHz ~ 12 kHz), 16 kHz (5.3 ~ 48 kHz). Bandwidth of each control adjustable within range of Q = 0.7 (very broad) ~ 7.0 (very narrow).
 SH-9010\$540.00

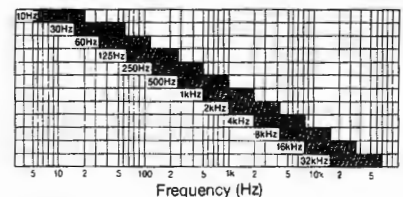


SH-9090P

Single-Channel Parametric/Graphic Equalizer
 12 slide controls, single channel, providing up to 12 dB boost or cut. Adjustable center frequencies over range of ±1 octave. Nominal center frequencies: 10 Hz, 30 Hz, 60 Hz, 125 Hz, 250 Hz, 500 Hz, 1 kHz, 2 kHz, 4 kHz, 8 kHz, 16 kHz, 32 kHz. Total coverage including center frequency adjustment: 5 Hz ~ 64 kHz. Variable Q for each control as described under SH-9010. Has balanced (XLR-type) connectors.



Adjustable Range of Center Frequencies of Each Band



SH-9090P\$999.95



1480 SERIES WAVEFORM MONITORS

- Bright CRT** especially suitable for vertical interval testing
- Advanced measurement modes**
- Amplitude measurement accuracy** approaching 0.2%
- Digital selection of line and field**
- Probe input option**
- 15-line display** for VTR applications

VERTICAL INTERVAL TESTING **MORE ACCURACY, GREATER RESOLUTION**

THE 1480 SERIES OF WAVEFORM MONITORS
There are 1480 Series Monitors for PAL, PAL-M, NTSC, and SECAM. Dual standard units are also available. The differences between the monitors in the series are essentially confined to what lines in the vertical interval are selectable, what filters are selectable in the response mode, and in the field selection modes. Dual-Standard Monitors recognize the signal standard in use automatically and indicate that standard with front panel indicators.

528 WAVEFORM MONITOR

Precise Frequency Response

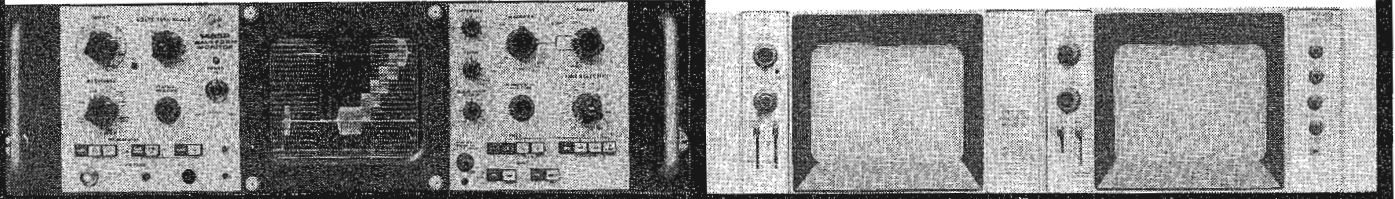
5 in Crt

½ Rack Size

Economical

The 528 Waveform Monitor provides bright, easy-to-read video waveform displays on a 5 inch crt, yet requires only 5¼ inch vertical height and ½ rack width mounting space. This compact instrument is especially well suited for monitoring signals from camera outputs, video system output lines, transmitter video input lines, closed-circuit tv systems, and educational tv systems. A portable version is also available.

Either of two video inputs, selectable from the front panel, may be displayed. The displayed video signal is also provided at a video output jack for viewing on a picture monitor. Calibrated, 1 volt and 4 volt full scale (140 IRE unit) sensitivities are provided for displaying common video and sync signal levels. A variable sensitivity control permits uncalibrated displays from 0.25 volt to 4.0 volts full scale. The built-in 1 volt calibration signal may be switched on to check vertical sensitivity calibration. Flat, IRE, Chroma, and Diff Gain frequency response positions permit observation of various signal characteristics.



WAVEFORM MONITORS

| | | | PRICE |
|-------|----------|---|-------------|
| 528 | | NTSC (525/60) Waveform Monitor | \$1635.00 |
| | Opt 01 | Less Cabinet | sub -20.00 |
| | Opt 02 | With Blue Carrying Case | add 55.00 |
| 1480C | | NTSC Waveform Monitor (Cabinet Version) | 3235.00 |
| | Opt 01 | Probe Input | add 160.00 |
| | Opt 02 | With Blue Carrying Case | add 80.00 |
| | Opt 03 | With Blank CRT | add 0 |
| | Opt 07 | Slow Sweep | add 270.00 |
| 1480R | | NTSC Waveform Monitor (Rackmount Version) | 3235.00 |
| | Opt 01 | Probe Input | add 160.00 |
| | Opt 03 | With Blank CRT | add 0 |
| | Opt 06** | 124 Ohm Balanced Line | add 1105.00 |
| | Opt 07 | Slow Sweep | add 270.00 |

X-Y DISPLAY MONITORS

| | | | PRICE |
|------|--------|---|------------|
| 602 | | Display Monitor | \$1560.00 |
| | Opt 01 | Without Cabinet | sub -25.00 |
| | Opt 02 | Special Graticule: 8X10 CM Outline | add 5.00 |
| | Opt 05 | Special Graticule: Vector Display | add 30.00 |
| | Opt 76 | P7 Phosphor | add 35.00 |
| 604A | | Display Monitor | 1195.00 |
| | Opt 01 | With Internal Scale | add NC |
| | Opt 04 | With Time Base | add 175.00 |
| | Opt 05 | Special Graticule: Vector Display | add 35.00 |
| | Opt 06 | UL Approved: Not available with Opt 23 or Opt 28 | add 75.00 |
| | Opt 09 | UL CMPNT RECOG | add NC |
| | Opt 10 | RMT PRGM CONN | add 30.00 |
| | Opt 21 | Full Diff Input | add 30.00 |
| | Opt 22 | Ext. 5X Gain Rng. | add 20.00 |
| | Opt 23 | With Handle, Feet and Cover: Not available with Opt 06 and Opt 28 | add 50.00 |
| | Opt 28 | With Covers Only: Not available with Opt 06 and Opt 23 | add 40.00 |

520A NTSC VECTORSCOPE

MEASUREMENTS

Luminance Amplitude

Chrominance Phase

Chrominance Amplitude

Differential Gain

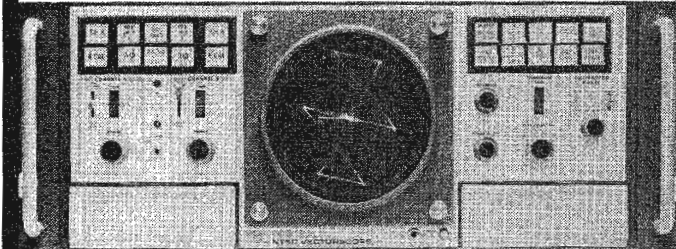
Differential Phase

VECTOR DISPLAYS

The vector presentation graphically displays the relative phase and amplitude of the chrominance signal on polar coordinates.

To identify these coordinates the graticule has points which correspond to the proper phase and amplitude of the primary and complementary colors: R (Red), B (Blue), G (Green), Cy (Cyan), Y_r (Yellow), and M_r (Magenta).

Any errors in the color encoding, video tape recording, or transmission processes which change these phase and/or amplitude relationships cause color errors in the television receiver picture. The polar coordinate type of display such as that obtained on the 520A CRT has proved to be the best method for portraying these errors.



1420 NTSC VECTORSCOPIES

Lower Cost

Half-Rack Width

Two Loop-Through Inputs

Vector Display Only

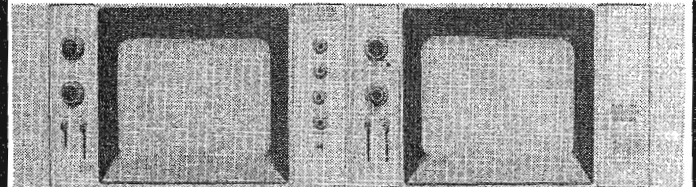
Each 1420 Series Vectorscope is a compact, half rackwidth instrument designed to display vectors of the chrominance and burst components of the composite video signal. This series provides a low-cost way to meet basic vectorscope requirements in CCU's, VTR's, and similar applications. This instrument is particularly well suited for side-by-side rack mounting with the TEKTRONIX 528 Waveform Monitor. The Vectorscope weighs a little over 15 pounds with an optional carrying case.

The internal graticule is designed for the vector display of color bars and burst.

A special graticule feature allows differential gain or phase errors to be determined to reasonable accuracy for many applications—within 2° and 5%.

Higher resolution differential gain and phase measurements should be made with a 520A Series Vectorscope.

Two loop-through inputs accept the signal for display on the CRT or for externally locking the subcarrier regenerator oscillator. A front panel lever switch selects the signal from either of the inputs for phase locking the subcarrier regenerator.



VECTORSCOPIES

| | | | PRICE |
|---------------|--------|-------------------------------|-----------|
| 1420 | | NTSC Vectorscope | \$2445.00 |
| | Opt 01 | Less Cabinet | -20.00 |
| | Opt 02 | With Blue Carrying Case | 55.00 |
| 520A or R520A | | NTSC Vectorscope | 4675.00 |

650A SERIES COLOR PICTURE MONITOR

The 650A Series is designed for use in exacting applications where picture quality is particularly important. Designed for stability and simplicity of convergence, this monitor produces a consistently sharp, geometrically accurate picture. The 12-inch Trinitron Kinescope used is free from many of the moire problems of other designs.

| | PICTURE MONITORS | PRICE |
|---------|--|-----------|
| 650A | NTSC Color Picture Monitor | \$4005.00 |
| 650A-1 | NTSC + RGB Color Picture Monitor | 4195.00 |
| 650HR | NTSC Color Picture Monitor | 4655.00 |
| 650HR-1 | NTSC + RGB Color Picture Monitor | 4840.00 |

All 650A Monitors are shipped with rackmounting hardware. Cabinet version hardware is also included.

670A SERIES COLOR PICTURE MONITOR

The 670A Series is designed for use in exacting applications where picture quality is particularly important. Designed for stability and simplicity of convergence, this monitor produces a sharp, geometrically-accurate picture with consistent color over a period of time. The 17-inch Trinitron Kinescope used is free from many of the more problems of other designs.

| | | PRICE |
|--------|--|-----------|
| 670A | NTSC Color Picture Monitor | \$3785.00 |
| | Opt 02 Vector Option | 170.00 |
| 670A-1 | NTSC + RGB Color Picture Monitor | 3975.00 |
| | Opt 02 Vector Option | 170.00 |

All 670A Monitors are shipped with rackmounting hardware. Cabinet version hardware is also included.

1470 SERIES NTSC GENERATORS

Full Color Sync Generator with Genlock

Locks to Most Helical Scan VTRS

Simple to Operate

Compact and Economical

| | |
|---|---|
| Sync and Timing Signals Comp Sync Comp Blanking Vertical Drive | Horizontal Drive Burst Gate Subcarrier Black Burst |
| Test Signals Black Burst Color Bars Staircase Signals Window | Convergence Pattern Multiburst Red Field Green Field Blue Field |

The 1470 Sync and Test Signal Generator is a compact, economical unit consisting of a full-color, gen-lock sync generator and also provides a full selection of high quality test signals. The 1474 also is a full-color, gen-lock sync generator identical in performance to 1470 but without test signals capability. Among the sync and timing features of the

1470 and 1474 is the ability to color gen-lock to composite video from all normal sources including most helical scan video tape recorders. Only 3.5 inches of rack height is used for the 1470. The 1474 is even more compact at 1.75 inches of rack height. Both generators are shipped ready to bolt into a 19 inch rack.

147A GENERATORS NTSC

147A/149A Features

Vertical Interval Test Signals-Generation, Insertion, and Deletion

Sync and Burst Regeneration

Program Signal Protected

Full-Field Test Signals Separate from VITS Program

Easily Reprogrammed for New Signals

Vertical Interval Reference Signal

147A Unique Features

Noise Test Signal

149A Unique Features

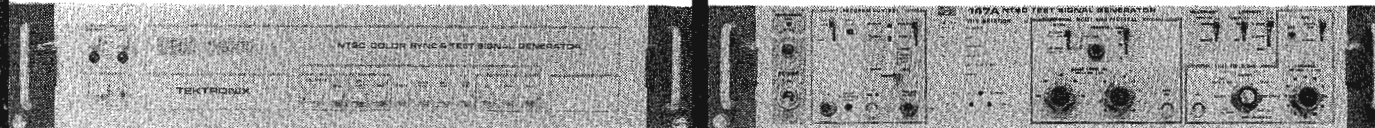
One Unit Source of Signals Required by FCC § 73-676 (f)

For Transmitter Remoting

Color Bars (When Gen-Locked to a Program Signal)

The 147A are NTSC television signal generators that supply all the test signals commonly used for test and measurement of video transmission systems. The signals generated are available as full-field composite-video test signals and as Vertical Interval Test Signals (VITS) which can be inserted on an incoming composite-video signal.

**VERTICAL INTERVAL INSERTION/
DELETION and PROGRAM CONTROL**



GENERATORS

| | | | PRICE |
|----------------|--------|---|-----------|
| 1410C or 1410R | | NTSC Mainframe | \$1135.00 |
| | Opt 01 | 1 Hz Mainframe | 255.00 |
| SPG1 | | NTSC Sync Generator | 1405.00 |
| SPG2 | | NTSC Genlock Sync Generator | 1675.00 |
| SPG3 | | NTSC Timing Signal Generator | 625.00 |
| TSG1 | | NTSC Color Bar Generator | 805.00 |
| TSG2 | | NTSC Convergence Generator | 260.00 |
| TSG3 | | NTSC Linearity Signal Generator | 665.00 |
| TSG4 | | NTSC Black Burst Generator | 260.00 |
| TSG5 | | NTSC Pulse and Bar Generator | 870.00 |
| TSG6 | | NTSC Multiburst and Video Sweep Generator | 1200.00 |
| TSP1 | | NTSC Test Signal Switcher/Convergence | 850.00 |
| 147A or R147A | | NTSC Signal Generator | 5465.00 |
| | Opt 01 | Remote TV XMTR Signal except Color Bar | 0 |
| 1470 | | Color Sync and Test Signal Generator | 3095.00 |
| | Opt 01 | Without Genlock | -250.00 |
| 1474 | | Color Sync Generator | 1555.00 |
| | Opt 01 | Without Genlock | -250.00 |
| 149A or R149A | | NTSC Signal Generator (Remote TV XMTR Signal) | 5790.00 |
| | Opt 01 | International Insertion Test Signals | 0 |

MEASUREMENT SETS

| | | | PRICE |
|------|--------|--|-----------|
| 1430 | | Random Noise Measuring Set (525/60) | \$2665.00 |
| | Opt 01 | Random Noise Measuring Set (625/50) | 50.00 |
| | Opt 02 | CMTT/1048E Weighting Filter | 90.00 |
| 1440 | | Automatic Video Corrector (NTSC) | 3880.00 |
| 1441 | | VIRS Deleter/Insertor | 2270.00 |
| 1450 | | TV Demodulator (Vision IF 45.75 MHz) | 8340.00 |
| | Opt 01 | Vision IF 37.00 MHz | 0 |
| | Opt 02 | Vision IF 38.90 MHz | 0 |
| TDC | | Television Down Converter (Specify Frequency; Channel Number; TV System; and End User Country When Ordering) | 1970.00 |
| 1478 | | Calibrated Chrominance Corrector | 1300.00 |
| 1980 | | Automated Measurement Set (ANSWER) | 19000.00 |

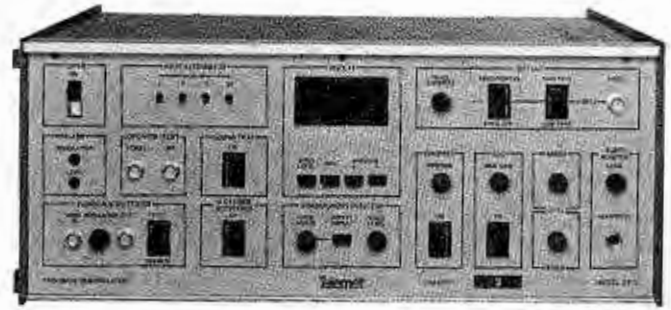


Prices and specifications subject to change without notice

MODEL 3710
Broadcast Demodulator

Broadcast Demodulator Model 3710 is the most comprehensive, precision testing instrument available today for checking video quality of the television broadcast signal; and it has its own built-in tester for self checking calibration.

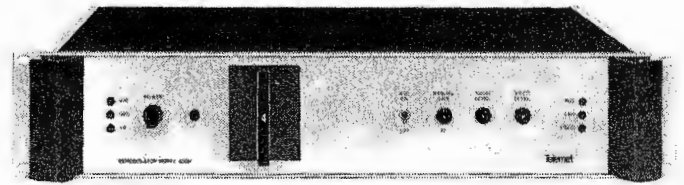
3710-A1 Broadcast Demodulator — VHF — 5mv sensitivity \$6750.00



MODEL 4500
Demodulator

Demodulator 4500 accepts the broadcast signal and converts it to base band without distorting the original picture quality. It houses a plug-in VHF front end module that is selected and ordered separately for the particular VHF channel required. This VHF module is Telemet type D-xx-A1, where xx denotes the VHF channel number (e.g. D-02-A1 for Channel 2). It contains a crystal-controlled oscillator and FET mixer. Also a 2-stage a.g.c. controlled VHF amplifier, using silicon insulated-gate field effect transistors.

- 4500-B1 VHF Demodulator (Off-Air) \$1500.00
- D-xx-A1 VHF Plug-in (Channels 2-13) \$ 475.00
- D-xx-A1 Sub-Band Plug-in (Channels T7-T11) \$ 600.00
- D-xx-A1 Mid-Band Plug-in (Channels A-1) \$ 600.00
- D-xx-A1 Super-Band Plug-in (Channels J-V) \$ 600.00



Option: Demodulator supplied at — 48 VDC \$ 150.00
4500-B2 UHF Demodulator (Off-Air, fixed, tuned, single channel) . . \$2075.00

MODEL 4501
Broadcast Demodulator

Broadcast Demodulator 4501 is for use in the measurement of the characteristics of broadcast television signals, including chrominance-luminance relative gain and delay, K rating, burst amplitude and modulation depth, differential phase and gain, intercarrier frequency stability (using an external counter) and other distortions.

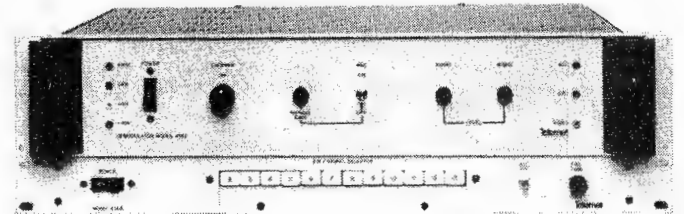
4501-A1 VHF Precision Demodulator (Channel 2-13) 5mv sensitivity \$4295.00



MODEL 4502-B1
All Channel VHF Demodulator

Demodulator 4502-B1 can remotely select any VHF broadcast TV channel with the Telemet pushbutton VHF Channel Selector Model 4505. Although basically designed for test purposes, Demodulator Model 4502-B1 is also a very high quality CATV demodulator which can be used as a back-up unit for any VHF channel of a CATV system.

4502-B1 Variable Tuned Demodulator (Off-Air, Channels 2-13, includes 4505-A1) \$2800.00



MODEL 4503
Demodulator Tester

Demodulator Tester 4503 provides a fast sure method of determining the on-going frequency response of a broadcast TV demodulator.

4503-A1 VHF Precision Demodulator Tester \$ 575.00



MODEL 4504
Synchronous Detector

Synchronous Detector Model 4504 is designed to measure transmitter parameters, especially the incidental phase modulation of the visual carrier. The Model 4504 can be used with the Telemet broadcast test demodulator Model 4501 and other suitable test demodulators.

4504-A1 Synchronous Detector \$1300.00



Prices and specifications subject to change without notice

MODEL 3703
Differential Phase and Gain
Measuring System

The 3703 Differential Phase and Gain Measuring System utilizes the "Kelly test waveform" method to measure the amount of Differential phase and/or gain at the color carrier frequency in systems used in the transmission of color television signals. The systems consists of two independent pieces of solid state portable equipment — the Transmitter and Receiver; the connection between these two units is the system or unit under test. Measurement of minute level dependent changes (Differential Phase and Gain) is simple, unambiguous, accurate, and rapid.

3703-A1 Differential Phase and Gain System (includes Horizontal or Trigger Module)\$5600.00

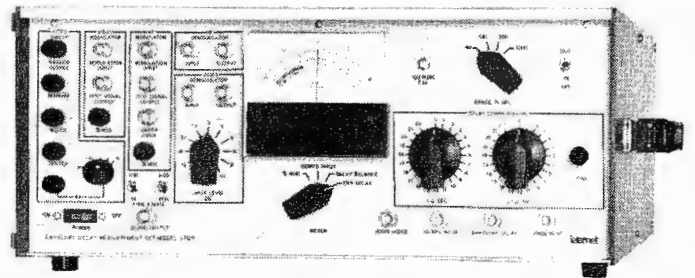


MODEL 3705
Envelope Delay Measurement Set

Envelope Delay Measurement Set Model 3705 measures envelope delay over a wide frequency range. It is expressly designed for measuring the envelope delay incurred in equipment used in the transmission and reception of color television signals.

The Model 3705 uses the split-frequency method proposed by Nyquist and Brand: a relatively low frequency, 20 kHz, called a split-frequency amplitude-modulates a video or RF test frequency and the modulated test signal is applied to the equipment "under test". The split-frequency, is demodulated from the output of the equipment "under test" and compared in phase with the split-frequency before modulation.

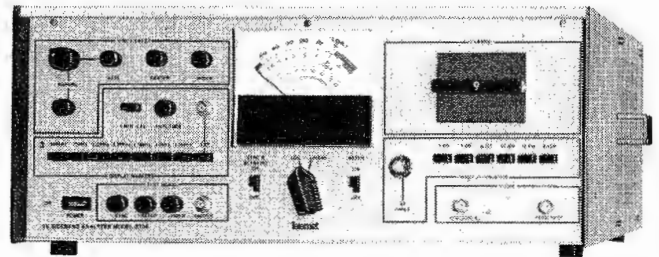
3705-A1 Envelope Delay Test Set w/Internal Sweep Generator . . . \$5400.00



MODEL 3706-A1
Sideband Analyzer

Sideband Analyzer 3706 by direct display permits thorough examination of the entire sideband response of television transmitters and sideband filters. It can also be used for the examination, evaluation, and adjustments of video circuits. Spurious emissions, low level sidebands, and frequency deviations are accurately pin pointed with the use of 7 crystal markers whose frequencies are of the most interest in a television transmitter's VSB passband. Discrete frequency marking is augmented by a 1 MHz crystal comb frequency marker which provides markers at 1 MHz intervals across the swept band on display.

3706-A1 TV Transmitter Sideband Analyzer, includes VHF channel element (3708-A)\$5300.00

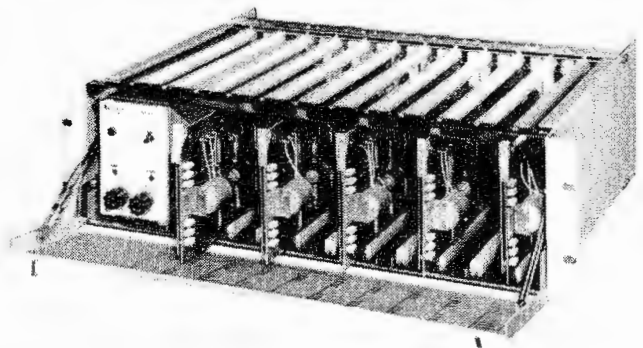


MODEL 6910
Audio DA System

Audio DA System Model 6910 is designed for distribution of audio signals in AM, FM and TV systems. The performance characteristics of the 6910 are in keeping with the high standards of modern audio equipment

Flexibility as to impedances, and expandibility as to the number of single and dual channels available should fill all input and distribution requirements.

6910-A1 Audio D.A. System consisting of:
6001-A1 Frame \$350.00
6101-A1 Power Supply \$350.00
6201-A2 Audio Distribution Amplifier w/terminal board assembly \$325.00
4145-A1 Extender \$ 50.00
7300-B1 Audio Monitor \$750.00



Prices and specifications subject to change without notice



Specifications

CS COMMUNICATIONS SERIES

HEADPHONE/Dynamic, Monaural.

Sensitivity: re: .0002 dynes/cm² @ 1mW input @ 1kHz. 105 dB SPL ± 5 dB.
 Useable Frequency Response: 50-15,000 Hz
 Impedance: 600 ohm
 Plug Type: 0.25" (6.3mm) 2 conductor, Black

MICROPHONE

CARBON/Omnidirectional

Frequency Response: 500-6000 Hz ± 5 dB
 Nominal Output (100 ohm load, 12 VDC)
 Open Circuit: (1V/μB) -58 dB (1.2mV)
 Power Level: (1mW/10μB) -30 dBm
 EIA Rating: -123 dB
 Impedance: 20-50 ohm
 Plug Type: 0.25" (6.3mm) 2 conductor, Red.

DYNAMIC/NOISE CANCELLING

Frequency Response: 100-8000 Hz ± 5 dB
 Nominal Output:
 Open Circuit: (1V/μB) -83 dB (70μV)
 Power Level: (1mW/10μB) -63 dBm
 EIA Rating: -155 dB
 Impedance: 150 ohm
 Plug Type: 0.25" (6.3mm) 2 conductor, Red.

CORD, Length & Style: 6' (1.52m) straight

COLOR: Black and Grey

NOTE: All CS Communications headsets include washable nylon comfort socks.

STEREO 1325 BROADCAST HEADPHONE

DYNAMIC, STEREO OR BINAURAL

Sensitivity: re: .0002 dynes/cm² @ 1mW input @ 1kHz. 105 dB SPL ± 5 dB.
 Useable Frequency Response: 50-15,000 Hz
 Impedance: 600 ohm or 6000 ohm per side—see ordering information.

CORD & PLUG TYPE: 12' (3.7m) coil cord. Plug 0.25" (6.3mm) 3 conductor.

COLOR: Light tan and green.

Ordering Information

| MODEL | CS-7 | CS11 | CS-45* | CS-61* | CS-75* | CS-78* | 1325 | 1325 |
|----------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Order by Cat. No. | 61320-005 | 61320-006 | 61320-007 | 61320-008 | 61320-009 | 61320-010 | 61325-002 | 61325-003 |
| Headphone | Dual Side | Single Side | Dual Side | Dual Side | Single Side | Single Side | Dual/600 ohm | Dual/6000 ohm |
| Microphone | - | - | Carbon | Dynamic | Dynamic | Carbon | - | - |
| Weight Complete Unit | 15 oz. (425g) | 12 oz. (340g) | 18 oz. (510g) | 18 oz. (510g) | 12 oz. (340g) | 12 oz. (340g) | 15 oz. (425g) | 15 oz. (425g) |

*FI-400 DPDT in-Line switch assembly available for user installation on these headsets.

| Model | MONOSET | | TELE-FI | |
|----------------------|-----------|-----------|-----------|-----------|
| | HMV-2 | HMY-2 | HFV-91 | HFY-91 |
| Impedance | 125 | 2000 | 125 | 2000 |
| Order By Catalog No. | 18183-000 | 18184-000 | 18135-003 | 18135-009 |

Professional Communications Headsets & Stereo Headphones

CS-7
\$55.00

CS-11
\$40.00

Tele-Fi®
\$11.00

CS-75
\$65.00

CS-61
\$77.00

CS-78
\$65.00

Monoset®
\$17.50

CS-91
\$120.00

LW-1
\$140.00

HD-4
\$127.50

SPORTSCASTER HEADSET ORDERING INFORMATION

| HEADPHONE | MODEL | CS-91 | LW-1 | HD-4 |
|--|----------------------|------------------|-------------------|----------------------------------|
| | Order by Catalog No. | 63620-000 | 63650-000 | 63700-007 |
| TYPE | | Dynamic/Binaural | Magnetic/Monaural | Dynamic/Monaural |
| SENSITIVITY—re: .0002 dynes/cm ² @ 1mW input @ 1kHz | | 105 dB | 108 dB | 105 dB |
| USABLE FREQUENCY RESPONSE | | 50-15,000 Hz | 100-5000 Hz | 50-12,000 Hz |
| IMPEDANCE | | 6000 ohm @ side | 3000 ohm | 600 ohm |
| PLUG TYPE | | Unterminated | Unterminated | 0.25" (6.3mm) 2 conductor, black |

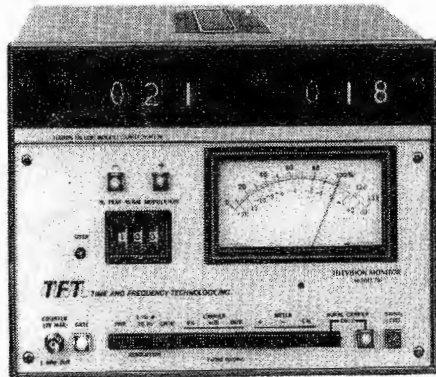
| MICROPHONE | TYPE & PATTERN | Dynamic/Omnidirectional | Electret/Omnidirectional | Electret/Noise Cancelling |
|------------------------|---------------------------|--|--|---|
| | FREQUENCY RESPONSE ± 5 dB | | 50-15,000 Hz | 50-15,000 Hz |
| NOMINAL OUTPUT | | | | |
| Open Circuit (1V/μB) | | -83 dB (70μV) | -72 dB (250μV) | -70 dB (316μV) |
| Power Level (1mW/10μB) | | -61 dBm | -50 dBm | -48 dBm |
| EIA Rating | | -155 dB | -144 dB | -142 dB |
| IMPEDANCE | | 150 ohm | 150 ohm | 150 ohm |
| PLUG TYPE | | Unterminated | Unterminated | 0.25" (6.3mm) 2 conductor, red |
| CORD LENGTH & STYLE | | 6.5' (2m) straight | 9.5' (2.8m) straight | 6.0' (1.8m) straight |
| COLOR | | Black & Grey | Black | Grey |
| WEIGHT — Complete Unit | | 19 oz. (540 g.) | 6.5 oz. (185 g.) | 19 oz. (540 g.) |
| Special Notes | | Push-to-cough non-locking switch, in-line. | Push-to-cough non-locking switch, in-line. 7.0V battery. | Push-Push Talk/cough switch, in-line. 1.2V battery. |

Prices and specifications subject to change without notice



Broadcast Monitors

For Television . . .



MODEL 701 TV Frequency and Aural Modulation Monitor, Rack Mount . . . \$5980.00
Specify Channel and Offset

- Option 02 Alarm (frequency and modulation) . . . \$315.00
- Option 03 SCA Output . . . \$275.00
- Option 04 AGC Meter (visual / aural carrier level) . . . \$250.00

MODEL 701 Frequency and Modulation

The Model 701 is an all-solid-state broadcast monitor optimized for off-the-air or on-site monitoring of all VHF and UHF broadcast transmitters. Digitally settable peak flashers display plus and minus aural modulation peaks simultaneously. Frequency measurement accuracy can be calibrated directly against NBS with a WWV receiver.

Additional features include an illuminated meter scale, remote meter and flasher outputs, optional SCA output and built-in high accuracy aural modulation calibrator. Sensitivity is 250 uV. FCC type approved.

MODEL 702 Aural Modulation

Model 702 is the modulation only version of Model 701. All features including digitally settable peak flashers, built-in modulation calibrator, remote meter and flasher outputs, illuminated meter scale and a 250 uV sensitivity are included. Model 702 is specifically designed for those applications not requiring frequency monitoring. FCC type approved.

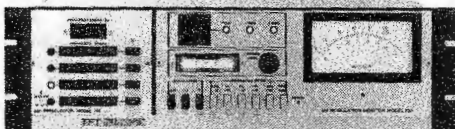
*Option 06 Automatic Logging Output (BCD) . . . \$280.00
*Option 07 CCIR Format . . . \$500.00
Option 08 Spare Parts Kit . . . \$595.00

MODEL 702 TV Aural Modulation Monitor, Rack Mount . . . \$2850.00
Specify Channel and Offset

Option 02 Alarm (modulation only) . . . \$150.00
Option 03 SCA Output . . . \$275.00
Option 04 AGC Meter (visual / aural carrier level) . . . \$250.00
Option 05 Spare Parts Kit . . . \$295.00

MODEL 704 Remote Meter and Peak Flasher Panel . . . \$295.00
MODEL 725D Automatic Logging Adapter (D to A Converters) . . . \$1450.00

For AM Broadcast . . .



- Direct off-the-air operation
- Accuracy better than 1%
- Excellent transient response (no overshoot)
- Fast, accurate competitive comparisons
- Built-in modulation calibrators
- Digitally settable modulation peak flashers

MODEL 753 with 754 Preselector

TFT Model 753 not only makes extremely accurate AM proof-of-performance measurements, but with the Model 753 Preselector addition, it allows you to monitor local competitors at the touch of a button and accurately measure modulation and carrier frequencies. Built-in high accuracy allows you to modulate the transmitter to the maximum legal limits of +125% and -100% in absolute confidence.

As with all TFT broadcast monitors, operation is simple and precise. Just dial in the appropriate frequency, set the carrier level and get instant read-out at the touch of a button. Digitally settable modulation peak flashers are also provided and are activated when modulation exceeds pre-set limits. Key features of the Preselector include frequency synthesized digital tuning, digital readout of frequency error and a unique IF filter design for optimum off-the-air modulation monitoring. Model 753 FCC type approved.



MODEL 755 Preselector

The Model 755 Preselector is essentially the same as the Model 754, without the frequency measurement, and has one set of thumbwheel selectors. With a TCXO timebase option, the Model 755 can be used for carrier frequency monitoring by using an external frequency counter that has an accurate time base.

MODEL 753 AM Modulation Monitor . . . \$1145.00
Option 01 Balanced Audio Output (Standard) . N/C
Option 02 Carrier Power Alarm (does not work with preselector) . . . \$145.00
Option 03 10 kHz Whistle Filter . . . \$145.00
Option 04 30 Hz Telemetry Lowpass . . . \$95.00
Option 05 Absence-of-Modulation Alarm . . \$175.00
Option 06 230 VAC . . . N/C
Option 07 Spare Parts Kit . . . \$140.00

*MODEL 754 AM RF Preselector with Frequency Readout . . . \$1570.00
Option 01 Narrow Band Filter . . . \$275.00
*Option 02 BCD Output . . . \$200.00
*Option 03 Frequency Alarm (+/- 20 Hz) . \$155.00
Option 04 Spare Parts Kit . . . \$180.00

*MODEL 755 AM RF Preselector (Modulation Only) . . . \$850.00

Option 01 Narrow Band Filter . . . \$275.00
Option 02 TCXO Time Base . . . \$250.00
Option 03 Spare Parts Kit . . . \$95.00

MODEL 704E Remote Meter and Peak Flashers . . . \$295.00

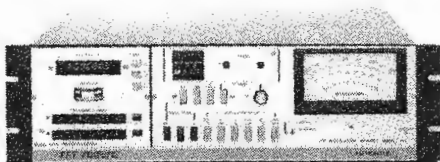
*Not Field Installable



Prices and specifications subject to change without notice

For FM Broadcast . . .

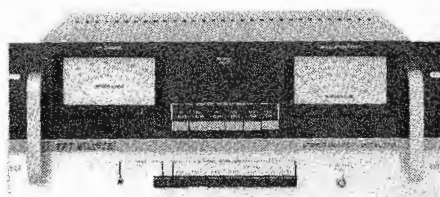
Broadcast Monitors



MODEL 763 with 764 Preselector

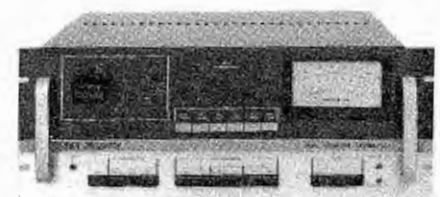
Model 763 provides the same features of FM broadcast monitoring as Model 753 does for AM. In addition, both stereo and SCA monitoring capability can easily be added on. A high sensitivity preselector can also be added to Model 763 to provide fast, accurate off-the-air monitoring of local broadcast stations.

A full complement of modular plug-in options lets you tailor the 763 Monitor to your precise operational needs, building capability as you grow. All controls and calibrations are highly precise and easy to operate. Accuracy is within 1%. FCC type approved.



MODEL 724A Stereo Monitor

The Model 724A is designed for use with Model 763 to provide all stereo monitoring requirements and proof-of-performance measurements. In addition to the latest linear and digital ICs, computer designed filters provide highly accurate separation and crosstalk measurements. With the Model 724A, you can make complete measurements of right channel modulation, left channel modulation, channel separation, crosstalk between main and sub channels, L + R, L-R, 38 kHz carrier suppression and 19 kHz injection level. Superior separation measurements are achieved through the use of a phase-locked-loop (PLL) to regenerate the 38 kHz suppression carrier from the 19 kHz pilot carrier. FCC type approved.



MODEL 730A SCA Monitor

With Model 730A you can make complete and accurate measurements of injection level, modulation, S/N ratio and crosstalks. All measurement modes are selected by convenient front panel pushbuttons and, for added convenience, a 50 dB pushbutton meter attenuator is included. Furthermore, a wideband input is provided which allows you to make unrestricted distortion and frequency response measurements of the base band signal at the transmitter.

Model 730A also offers the user a choice of carrier frequencies for monitoring either the 41 kHz or 67 kHz subcarrier or other specified frequencies. When two subcarrier frequencies are included, selection is made by a front panel pushbutton. FCC type approved.

FM PRODUCTS

MODEL 763 FM Modulation Monitor (Specify Frequency) \$1400.00
 Option 01 Balanced Audio Output (Standard) . N/C
 Option 02 Carrier Power Alarm, +5% -10% (does not work with preselector) \$125.00
 Option 04 Absence-of-Modulation Alarm . . \$175.00
 Option 06 230 VAC N/C
 Option 07 Spare Parts Kit \$195.00
 *MODEL 764A FM Preselector with Frequency Read-out, Tunable \$1650.00

*Option 01 BCD Output \$215.00
 *Option 02 Frequency Alarm (+/-2kHz) . . \$150.00
 Option 03 Spare Parts Kit \$220.00
 *MODEL 765A FM Preselector (Modulation Only), Tunable \$1000.00
 Option 01 TCXO Time Base \$250.00
 Option 02 Spare Parts Kit \$150.00
 *MODEL 785 Single Channel FM Preselector . \$295.00
 MODEL 704F Remote Meter and Peak Flasher Panel \$295.00

MODEL 724A Stereo Monitor \$1690.00
 Option 01 Spare Parts Kit \$175.00
 MODEL 704C Remote Meter Panel \$410.00
 MODEL 730A SCA Monitor, 67 kHz \$1675.00
 Option 01 SCA Channel (41 kHz) \$145.00
 Option 02 Spare Parts Kit \$160.00
 MODEL 704B Remote Meter Panel \$295.00
 *Not Field Installable

For Emergency Broadcast . . .



MODEL 760 EBS System

The Model 760 EBS System is designed for broadcasters to meet parts 73.940, 73.941 and 73.942 of the FCC Rules and Regulations for decoding and encoding the two-tone EBS alert signal. The modular construction of the system provides for maximum versatility and consists of a cabinet assembly, AM or FM receiver, two-tone decoder and two-tone generator. Two or three of these modules can be combined into a cost-effective operational EBS System. FCC type accepted and certified.

EBS PRODUCTS

MODEL 760-1A AM Receiver / Encoder / Decoder \$690.00
 MODEL 760-1B Single Channel FM Receiver/Encoder/Decoder \$690.00
 MODEL 760-1C Dual Channel FM Receiver/Encoder/Decoder \$720.00
 MODEL 760-3 Encoder/Decoder \$520.00
 MODEL 760-2A AM Receiver/Decoder \$475.00
 MODEL 760-5A Single Channel FM Receiver/Decoder \$475.00

MODEL 760-5B Dual Channel FM Receiver/Decoder \$525.00
 MODEL 761-1A AM Receiver / Decoder (Desk Top) \$500.00
 MODEL 761-1B Single Channel FM Receiver / Decoder \$500.00
 MODEL 761-5B Dual Channel FM Receiver/Decoder (Desk Top) \$550.00

AM Receiver Module, Frequency Synthesized \$210.00
 FM Receiver Module, Single Channel, Crystal Controlled \$210.00
 FM Receiver Module, Dual Channel, Crystal Controlled \$260.00
 Two-Tone Generator Module \$255.00
 Two-Tone Decoder Module \$170.00

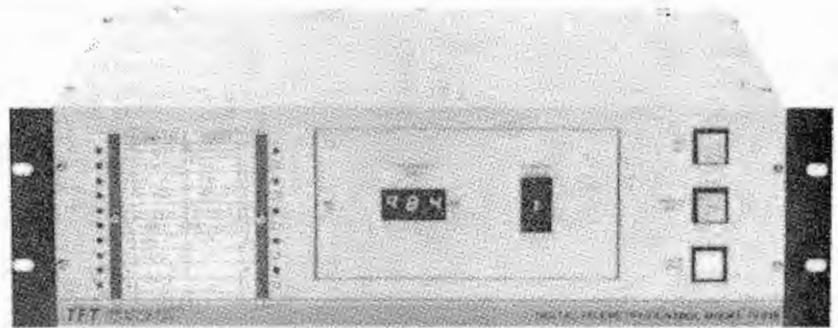
Prices and specifications subject to change without notice



Digital Telemetry/ Control System

The new Model TFT 7601 now makes it possible for any broadcaster to enjoy the accuracy and reliability of full DIGITAL REMOTE CONTROL with a minimum budget. Complete digital command plus telemetry provides up to 10 control functions and 10 telemetry functions with minimum guesswork and operator error.

- MODEL 7601 10-channel Raise and Lower functions plus 10 channels of digital telemetry, consisting of a control terminal and a remote terminal \$2395.00
 - Option 01 Sub-carrier (SCA) Detector, for FM use 67 kHz. Other frequencies from 26 kHz to 185 kHz available. Mounts within 7601 Control or Remote Terminals. (specify frequency) . . \$185.00
 - Option 02 Sub-carrier (SCA) Generator; for FM USE 67 kHz. Other frequencies from 26 kHz to 185 kHz available. Mounts within 7601 Control or Remote Terminal. (Specify frequency) . . \$185.00
 - Option 03 Components for Remote Terminal Extender Cable \$50.00
 - Option 04 Spare Parts Kit \$320.00
 - Option 05 10 channel Status Light \$545.00
- MODEL 7601-C Control portion only of 7601 system \$960.00
- MODEL 7601R Remote portion only of 7601 system \$1290.00

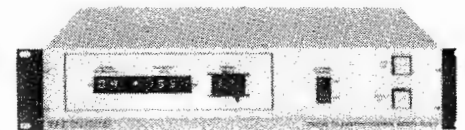


Digital Telemetry/Control and Direct Control/Status Monitoring

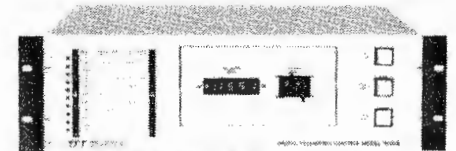
Start with a stand-alone, 10-channel TELEMETRY and RAISE/LOWER system that's price-competitive with less versatile analog systems. Then, if you want, add up to 70 more channels of RAISE/LOWER plus up to 30 channels of direct ON/OFF control and up to 30 channels of STATUS/ALARM monitoring. You can even add a microprocessor-controlled multi-channel data display that gives you a digital readout of 30 simultaneous meter readings. Automatic logging is also available, as is a provision for external control by a computer, an A.T.S. monitor or similar devices. All components, both at the control point and the remote point, fit in a standard 19-inch rack.

- MODEL 7610 10 channel RAISE/LOWER Plus 10 channel Telemetry digital remote control system. Expandable by adding Model 7615, 7620, 7630 to a 110-channel system \$3495.00
 - Option 01 Sub-carrier (SCA) Detector; for TV application, specify 39 kHz, for FM 67 kHz. Other frequencies 26 kHz to 185 kHz available. Mounts within 7610 Control or Remote terminal. (Specify frequency) \$185.00
 - Option 02 Sub-carrier (SCA) Generator; for TV use, specify 39 kHz; for FM, 67 kHz. Other frequencies 26 kHz to 185 kHz available. Mounts within 7610 Control or Remote terminal. (specify frequency) \$185.00
 - Option 03 BCD parallel data inputs (for the Remote Terminal) \$190.00
 - Option 04 Parallel BCD Data Output Cable Kit (for 7610C Control Terminal) \$75.00
 - Option 05 Components for Remote Terminal Extender Cable \$50.00
 - Option 06 Spare Parts Kit \$395.00
- MODEL X-14A Status and Control System having two 4-channel groups of electronically interlocking switches, 6 independent channels \$2695.00
- X-14A Options are the same as X-14 Options.

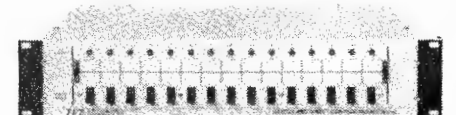
- MODEL 714 Data Channel Line Multiplex consisting of two units \$670.00
- MODEL 7610-C Control portion only of 7610 system \$1375.00
- MODEL 7610-R Remote portion only of 7610 system \$1950.00
- MODEL 7615 Direct ON/OFF Control and Status monitoring \$2075.00
 - Option 01 Spare Parts Kit \$275.00
 - *Option 02 Inverting Status Input \$120.00
 - Option 03 Momentary Switch Kit \$35.00
- MODEL 7615-S 15 Channel Status/Alarm . . \$1170.00
 - Option 01 Spare Parts Kit \$220.00
 - *Option 02 Inverting Status Input \$120.00
- MODEL 7616 Manual Site Selector \$2950.00
- MODEL 7620-R Channel Expander (10 channels)
 - Option 01 Spare Parts Kit \$155.00
 - Option 02 Components for Remote Terminal Extender Cable \$50.00
- MODEL 7630R Channel Expander (20 channels)
 - Option 01 Spare Parts Kit \$1450.00
 - Option 02 Components for Remote Terminal Extender Cable \$220.00
 - Option 03 Channel Scanner Board \$275.00
- MODEL 7640 Telescan System (CPU, CRT, Printer and Scanner) \$17500.00
 - Option 01 CRT Rack Mount \$175.00
 - Option 02 Spare Parts Kit (7640 C and R) . . \$950.00
 - Option 03 Channel Scanner Board \$275.00
- MODEL 7640-R Remote Portion only of 7640 Telescan System \$4215.00
- MODEL 7641 Automatic Sequential Site Selector \$2950.00
- MODEL 7614 Status and Control System having 14 ON/OFF, plus 14 status indications channels, consisting of a Control and Remote unit \$2150.00
 - *Option 01 Full duplex Input and Output of 4 wire interconnection. (Required when using Model 714) N/C
 - Option 04 Spare Parts Kit \$175.00
 - Option 05 Momentary Switch Kit \$35.00
 - *Option 06 Inverting Status Input \$125.00



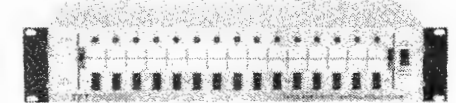
Model 7610-C Control Unit



Model 7610-R Remote Unit



Model 7615-C
Status On/Off Control System

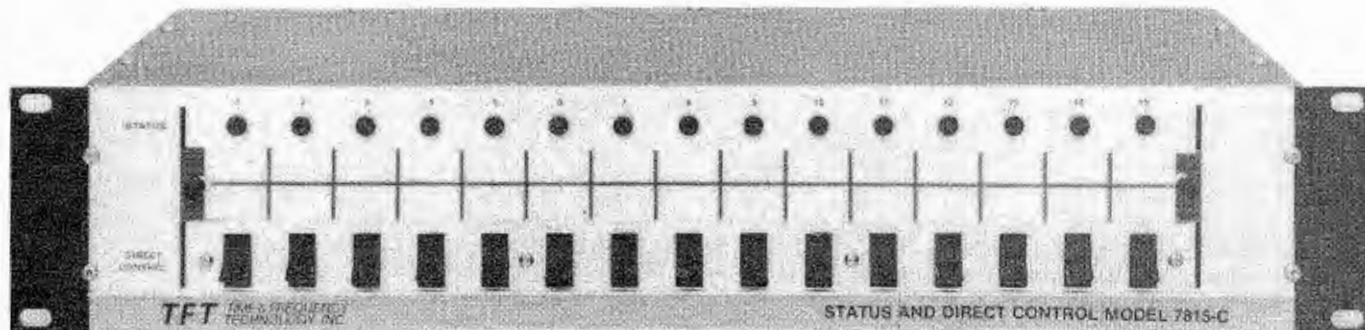


Model 7615-R
Status On/Off Remote System

Prices and specifications subject to change without notice

*Not Field Installable





MODEL 7815 Fully Digital Remote Control and Status Monitoring System

The TFT Model 7815 is a remote control and status monitoring system using digital data transmission techniques. It is intended for the remote control and monitoring of electrical apparatus including broadcast transmitters via a 3 kHz communications link. The system consists of two compact units; one for the control point and one for the remote point. The Control Unit has 15 independent front panel toggle switches for easy control of 15 different ON/OFF functions. A momentary action switch, with inter-locking capability, is available on any one of the 15 positions if specified when ordering. The 7815 also includes 15 Status Channels, each with its own independent LED status indicator. The Remote Unit has the identical number of channels and indicators and also has a Local Control switch for on-site operation. Each toggle switch on the front panel of both Control and Remote Units commands an individual, electronically latched relay. Relay contacts are Form A floating from ground and are rated for AC or DC at 50 watts each. Either a switch closure or a change in logic level at the input of each channel (on the rear panel of the Remote Unit) will trigger the status monitoring circuitry and cause the appropriate LED indicator to turn on. Any ON/OFF combination of up to 15 channels can occur. The 7815 uses FSK data transmission techniques and transmits full duplex (simul-

aneously in both directions) via telephone line. Data modems are also built-in, and both control and status information are updated approximately every 300 milliseconds.

Data integrity is maintained by a unique system of "double scan/compare" logic. In operation, each command digital word is sent twice via the data modem, and both words are compared, bit for bit, in parallel. The output register is then updated only if every bit matches. This virtually eliminates the possibility of error in the control functions. The Model 7815 can be operated without telephone lines by using external subcarrier generators and demodulators for inter-connection. Both the Remote and Control Units of the 7815 System are housed in 3 1/2 inch high rack-mounted enclosures. Barrier strips are provided on the Remote Unit for status input and control output connections.

Accessory Equipment

Model 7830, Channel Expander — By connecting one or two Model 7830's to the Model 7815 the control and status channels may be extended to 30 or 45 each, respectively. The specifications of the Model 7830 are the same as that of the Model 7815. Digital data of the 7830 is transmitted via the UART and FSK modems in the Model 7815.

Model 7616, Manual Site Selector — For manually selecting one of the sixteen sites.

MODEL 7840 Advanced Data Acquisition, Logging and Alarm System

The TFT Model 7840 is a micro-computer based data acquisition, limit alarm and logging system. It can be used to assist the TFT Model 7610 Remote Control system or any other remote control equipment or act as an independent system for data acquisition, status monitoring, logging and alarm. Both telemetry and status functions for up to 60 channels can be selected for monitoring and logging on a Model 43 Printer. A built-in microprocessor and special software package allow you to pre-program up to two levels of upper and lower limits (one set may be used for control) for each parameter being monitored, so that the operator can be instantly alerted when these parameters are exceeded. The additional feature of automatic or call-up logging provides a permanent record. The Model 7840 consists of three major components — the Model 7840 CPU, Model 7841 Scanner, and the Model 43 Printer.

MODEL 7815 Status and Control System with 15 ON/OFF control and 15 status indication channels, consisting of a Control and Remote unit

7815C Control Unit \$1050.00
7815R Remote Unit \$1480.00

Option 01 Electronic Interlock \$545.00
Option 02 Term Share Capability RPQ
Option 03 Spare Parts Kit \$175.00
Option 04 Inverting Status Input \$125.00
Option 05 Momentary Switch Kit \$35.00

MODEL 7830 Channel Expander \$1450.00
Option 01 Spare Parts Kit \$220.00
Option 02 Components for Remote Terminal Extender Cable \$50.00

MODEL 7840 Compuscan System (CPU, Printer and Scanner) \$8300.00
Option 01 Spare Parts Kit (7840C and R) ... \$450.00
Option 02 Channel Scanner Board \$275.00
Option 03 Computation Software Package . \$995.00

REMOTE CONTROL INTERFACING ACCESSORIES

MODEL FSU-01 Fail-Safe Unit for TV application \$520.00
MODEL ADS-01 Alternate Data Path Selector \$965.00
MODEL CSA-01 Chopper Amplifier \$175.00
MODEL PLC-01 Power-to-Linear Converter ... \$295.00
MODEL TLK-01 Tower Light Monitor \$95.00
MODEL LVK-01 Line Voltage Monitor \$80.00
MODEL PVK-01 Plate Voltage Monitor \$95.00
MODEL TSK-01 Temperature Sensing Kit ... \$145.00
MODEL MBB-01 Isolation Amplifier (High Voltage) \$135.00

Prices and specifications subject to change without notice



7700 SERIES STUDIO TRANSMITTER LINK

950 MHz

7700 Series' Outstanding Features

TFT's 7700 Series STL represents the most advanced technology available in studio transmitter links. Several outstanding features include:

HIGH QUALITY SOUND. Ultra-linear phase characteristics of receiver IF filters combined with a low noise RF amplifier provides a 70 dB signal-to-noise ratio. You also get 40 dB stereo separation from 50 Hz to 15 KHz with 50 dB crosstalk between main and sub-channels.

ADJUSTABLE POWER OUTPUT. Adjustable power of up to 12 watts was chosen to meet your exact power requirements. It compensates for degradation over long and difficult transmissions.

FREQUENCY STABILITY. Frequency accuracy and stability are provided by a fully frequency-synthesized transmitter.

SECURITY. We've built security in with a fully redundant receiver and transmitter, both with automatic transfer and alarm.

MODULAR DESIGN. Construction modules designed into the transmitter, receiver, and mainframe contribute to low maintenance costs and ease of field servicing.

Five Different Systems to Choose From:

The 7700 Series STL provides the flexibility of five different systems.

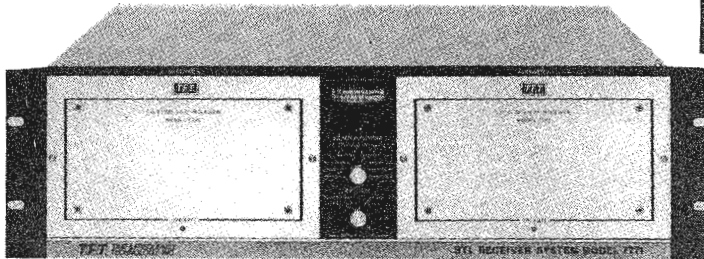
System A — single composite transmitter and receiver.

System B — composite transmitters and receivers with one unit as hot standby, including fault sensing and automatic changeover circuitry (splitter provided).

System C — transmitter and monaural receiver.

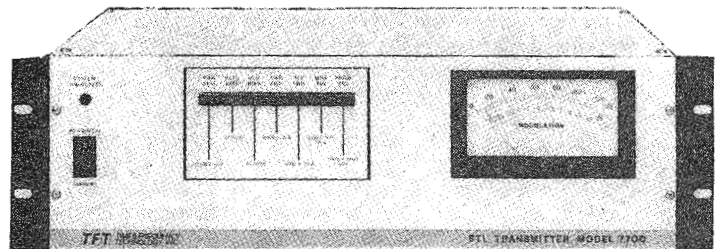
System D — transmitters and monaural receivers with one unit as hot standby, including fault sensing and automatic changeover circuitry.

System E — dual transmitters and monaural receivers for separate left and right channel transmission. Power combiner and splitter are provided.



SERIES 7700 RECEIVER

- **Crystal controlled multiple conversion superheterodyne design.** This provides selectivity, gain and gain stability in the receiver.
- **Low noise RF amplifier.** A high gain, low noise 950 MHz RF amplifier achieves a 60 dB S/N ratio at less than 40 uV.
- **Pulse-counting discriminator.** A unique pulse-counting discriminator circuit provides ultra-linear FM demodulation to achieve low harmonic and intermodulation distortion.
- **Automatic receiver changeover.** Switching to the hot stand-by receiver is done automatically if a failure occurs.
- **Remote operation and status check.** Studio engineers can interrogate the receiver over existing remote control equipment to determine receiver changeover and ascertain which is operational. Receiver switching can also be done by remote command.
- **Wide and narrow bandwidth IF.** Both wide band and narrow band IF are available for either composite or monaural applications.
- **Space-saving design.** Adding a hot stand-by receiver to the system does not require additional rack space. Similarly, the automatic transfer module for the hot stand-by circuitry and components fits conveniently in the receiver mainframe.



SERIES 7700 TRANSMITTER

- **High output power.** The 12-watt output generates more useable signal for long or difficult transmission paths and provides higher fade margins.
- **Adjustable output.** Power can be adjusted from 3 to 12 watts, allowing you to meet your exact requirements.
- **Fully protected.** The output is fully protected against short circuits and high VSWR.
- **Outstanding frequency stability.** Frequency synthesized carrier provides frequency stability of +/-1 ppm/year as well as making it easier to change operating frequencies in the field.
- **Excellent signal-to-noise characteristics.** The 7700 Series transmitter uses a frequency mixing technique and a single frequency doubler, unlike conventional STL transmitters which multiply the modulated signal several times to obtain the output carrier frequency. This results in a 14 dB improvement in S/N ratio over typical consecutive frequency multiplication systems.
- **Handles two additional subcarriers.** Two FM subcarriers can be inserted in addition to the main and stereo channels.
- **No subcarrier beats.** 19 KHz harmonically related subcarrier frequencies were chosen to eliminate subcarrier intermodulation products.

7700 SERIES STUDIO TRANSMITTER LINK 950 MHz

RECEIVER SPECIFICATIONS

Design Approach Superheterodyne, multiple conversion, crystal controlled

Antenna Input 50 Ω, type N female connector

Sensitivity (with de-emphasis networks)

Monaural (Model 7701) less than 2 μV for 20 dB quieting
less than 20 μV for 60 dB signal to noise ratio

Composite (Model 7703) less than 2 μV for 20 dB quieting
less than 40 μV for 60 dB signal to noise ratio

Selectivity

Monaural (Model 7701) 3 dB I.F. B.W. approximately 170 kHz
80 dB I.F. B.W. approximately 1.4 MHz

Composite (Model 7703) 3 dB I.F. B.W. approximately 320 kHz
80 dB I.F. B.W. approximately 2.4 MHz

Image Rejection greater than 60 dB

Line Power 115/230 V, 50-60 Hz, 25 watts

Dimensions (dual receiver and change-over module) 5.25" (13.3 cm) x 19" (48.3 cm) x 13" (33 cm)

DEMODULATED OUTPUTS

| | Useable Bandwidth | Level | Impedance | Balanced or Unbalanced | Type of Connector |
|---------------------|-------------------|------------------|-----------|------------------------|-------------------|
| Monaural Baseband | 30 Hz-15 kHz | +10 dBm | 600 Ω | Balanced | Barrier Strip |
| Monaural Multiplex | 18 kHz-32 kHz | 0.53 VRMS | ≤600 Ω | Unbalanced | BNC |
| Composite Baseband | 30 Hz-75 kHz | 1.23 VRMS (0 VU) | ≤600 Ω | Unbalanced | BNC |
| Composite Multiplex | 110 kHz-240 kHz | 0.53 VRMS | ≤600 Ω | Unbalanced | BNC |

AURAL STUDIO-TRANSMITTER LINK AND ASSOCIATED EQUIPMENT 950 MHz SERIES 7700

SYSTEM A: STL — all solid state composite transmitter and receiver, including self contained power supplies, crystals and tested to operating frequency. \$4750.00

SYSTEM B: STL — all solid state composite transmitter and receiver with "HOT" standby transmitter and receiver with automatic switching, including self contained power supplies, crystals, and tested to operating frequency. \$9500.00

SYSTEM C: STL — all solid state single channel transmitter and receiver including self contained power supplies, crystals, and tested to operating frequency. \$4350.00

SYSTEM D: STL — all solid state single channel transmitter and receiver with HOT standby transmitter and receiver with automatic switching — including self contained power supplies, crystals and tested to operating frequency. \$8850.00

SYSTEM E: STL — all solid state dual single channel transmitters and receivers for separate left and right channel, including self contained power supplies, crystals and tested to operating frequency. \$9000.00

STL ANTENNAS, COAXIAL TRANSMISSION LINE AND CONNECTOR KITS

ANT-450 Scala Paraflector Antenna for 960 MHz, 19.64 dB gain over dipole, type N female connector, universal mounting for vertical or horizontal polarization, fully anodized. \$350.00

ANT-960 Scala Miniflector Antenna for 960 MHz, 16.14 dB gain over dipole, type N female connector, universal mounting for vertical or horizontal polarization, fully anodized. Not recommended for congested areas. \$175.00

COX-01 Heliax* LDF4-50 Transmission Line 1/2" foam Dielectric, 50 ohm jacketed. \$1.12 per foot

KTL-01 Connector Kit — for LDF 4-50 includes two Type "N" connectors (female connectors normally supplied) and two 3' RG-8/U pigtail assemblies. ONE KIT REQUIRED FOR EACH ANTENNA. \$65.00

COX-02 Heliax* LDF5-50 Transmission Line 7/8" air Dielectric 50 ohm jacketed. \$2.94 per foot

KTL-02 Connector Kit — for LDF5-50 includes two type "N" connectors (female connectors normally supplied) and two 3' RG-8/U pigtail assemblies. ONE KIT REQUIRED FOR EACH ANTENNA. \$102.00

*Trademark Andrew Corporation

EQUIPMENT SELECTION CHART FOR TFT 7700 SERIES STUDIO TRANSMITTER LINK

| SYSTEM DESCRIPTION | RECEIVERS | | RECEIVER MAINFRAME MODEL 7771 OPTIONS | | | TRANSMITTER | AUTOMATIC TRANSMITTER CHANGE-OVER MODULE |
|--|------------------------------|-------------------------------|---------------------------------------|----------------|----------------|-------------|--|
| | MODEL 7701 MONAURAL RECEIVER | MODEL 7703 COMPOSITE RECEIVER | WITH OPTION 01 | WITH OPTION 02 | WITH OPTION 03 | MODEL 7700 | MODEL 7770 |
| A SINGLE COMPOSITE | | 1 | | | | 1 | |
| B DUAL COMPOSITE (WITH ONE AS HOT STANDBY) | | 2 | 1 | | | 2 | 1 |
| C SINGLE MONAURAL | 1 | | | | 1 | 1 | |
| D DUAL MONAURAL (WITH ONE AS HOT STANDBY) | 2 | | 1 | | 1 | 2 | 1 |
| E DUAL CHANNEL (IN PARALLEL OPERATION) | 2 | | | 1 | | 2 | |

MODEL DESCRIPTIONS: MODEL 7701 Monaural Receiver with narrow band IF
7703 Composite Receiver with wide band IF
7771 Basic receiver mainframe with metering required with each system
OPTION 01 A relay module for auto switching to hot standby receiver
OPTION 02 A power splitter for parallel operation of dual monaural receivers and transmitters
OPTION 03 A balanced audio output at +10 dBm (monaural only)

MODEL 7700 STL SYSTEM SPECIFICATIONS

Frequency Range 940 - 960 MHz

Baseband Frequency Response (program audio)

Composite ± 0.1 dB from 50 Hz to 60 kHz
± 0.5 dB from 20 Hz to 75 kHz

Monaural ± 0.2 dB from 30 Hz to 15 kHz

Harmonic and Intermodulation Distortion (program audio)

Composite 0.35% from 30 Hz to 60 kHz
0.2% at 1 kHz

Monaural 0.2% at 1 kHz
0.3% from 30 Hz to 15 kHz

Signal to Noise Ratio (75 usec de-emphasis) greater than 70dB

Crosstalk (main to subchannels subchannels to main) greater than 50 dB from 50 Hz to 15 kHz

Stereo Separation (minimum) 45 dB at 1 kHz
40 dB from 50 Hz to 15 kHz

Modulation Capability direct frequency modulation

Composite or monaural baseband ± 48 kHz

Multiplex channel ± 12 kHz

Total system modulation (100%) ± 60 kHz

Operating Temperature -10°C to 50°C

TRANSMITTER SPECIFICATIONS

RF Output Power (adjustable) < 3.5 to 12 watts

Output Connector 50 Ω, type N female connector

Frequency Stability (Aging) ± 1 ppm/year

Frequency Accuracy ± .0001% (0°C to 50°C)
± .0005% (-10°C to 0°C)

Non-Harmonically Related Spurious Signals greater than 65 dB below carrier

Harmonically Related Spurious Signals greater than 65 dB below carrier

AM Noise greater than 70 dB below carrier

Modulation inputs:

Monaural (for ± 48 kHz frequency deviation) 1.24 VRMS

Composite (for ± 48 kHz frequency deviation) 1.24 VRMS

Multiplex (for ± 12 kHz frequency deviation) 0.53 VRMS

Line Power 115/230 V, 50-60 Hz, 70 watts

Dimensions 5.25" (13.3 cm) x 19" (48.3 cm) x 13" (33 cm)



WANG VOICE COMMUNICATIONS, INC.

MODEL 150 Digital Audio Delay

The Model 150 Time Tunnel is not only ideal for radio talk shows, but much more. Due to the Model 150's consistently high level of fidelity and dependability, many stations are using the Model 150 to handle all their program material.

The Model 150 Time Tunnel helps to protect your radio station from damaging legal complaints that may arise from offensive or illegal statements made by "outsiders" on talk shows or similar live broadcasts.

By providing a six-second delay, the Model 150 Time Tunnel also protects the production and broadcasting staff from an inadvertent "slip" or an error in program switching while on the air.



Model 150 Digital Audio Delay \$3200.00 (mono)

The Model 150 has
7.5 kHz bandwidth
1% max. distortion
50 dB Signal/Noise

MODEL TDG-1 Time Delay Generator

DIGITAL AUDIO DELAY SYSTEMS

The Comex Systems' Time Tunnel is a professional broadcast quality six second Audio Delay System designed for Monaural or Stereo Broadcast Delay.

Unlike tape delay equipment the Time Tunnel is virtually maintenance free and will provide continuous high quality reproduction month after month, year after year.

The modular construction assures flexibility and future additions. A Monaural unit is easily converted to Stereo operation simply by plugging in additional modules.



Model TDG-1 Time Delay Generator \$7096.00 (mono) \$13160.00 (stereo)

Model TDG-1
Passband — 50 Hz to 15 kHz
Passband Ripple — +/- 5 dB
Cutoff Frequency — -3 dB at 15 kHz



Prices and specifications subject to change without notice



ACP-100 INDIVIDUAL EQUIPMENT PROTECTOR

8,000 WATTS SUPPRESSION POWER

The ACP-100 provides protection from hazardous transient surge, high voltage or high line condition. Using a patented solid state circuit, the ACP-100 provides complete protection from transient overvoltage occurrence. In operation a multiple stage transient voltage suppressor works in 5 nanoseconds to suppress (clip) overvoltages. After each transient the protector automatically resets to be ready for the next occurrence. If the energy in the transient overvoltage exceeds the power level, the final stage opens an "in line" failsafe switch. The failsafe opens only under the extreme condition. The ACP-100 will suppress most induced surges from lightning, however, it is not designed for direct strike.

Transients, surge spikes, power bumps, over voltages, on power lines, can be hazardous and cause damage.

For example, in minicomputers and data entry devices they cause misregistration and false logic. This misinformation in the program is costly and can be very hazardous. In data devices using integrated circuits, high voltage transients can destroy literally hundreds of dollars worth of circuit components. In numerical control machinery, transients will cause false triggering of several circuits. The result is generally a misindexed program that destroys the product in process, and creates a personal hazard for the operator. Laboratory equipment, test equipment, and medical electronics will show evidence of transients by premature component failure, hazardous shorts, and electrical fire caused by arc over. In radio transmitters, projectors, power supplies, and telephone PBX equipment, transients show themselves as constantly blown fuses, premature component failure and overall damaged equipment.

Most electrical and electronic devices are fused for overcurrent, but not protected from overvoltages. Electric motors, medical electronics, PBX equipment, copying machines, data logging equipment and virtually any other electrical device plugged in, can be permanently damaged from transient-overvoltages.

TECHNICAL DATA

Voltage: 110/120 VAC. Current: .15 Amp (Max). Frequency: 50/60 and 400 Hz. Voltage point: 200 Volts Peak. Maximum surge: 8000 Watts. Transient response: 5 Nanoseconds. Overvoltage response: 5 Seconds. Operating: -20°C to +50°C.



INDIVIDUAL EQUIPMENT PROTECTORS

| | |
|--|-----------|
| ACP-100BW, 120 VAC 15 amp wire-in | \$ 117.00 |
| ACP-100B, 120 VAC 15 amp plug-in | \$ 132.00 |
| ACP-100C, 120VAC 30 amp wire-in | \$ 208.00 |
| ACP-10;CT, 120 VAC 30 amp plug-in (hubble pkg) | \$ 331.00 |
| ACP-100CM, 120 VAC 30 amp wire-in marine sealed | \$ 284.00 |
| ACP-200BW, 240 VAC 15 amp wire-in | \$ 152.00 |
| ACP-100X, 120 VAC (Explosion proof) 30 amp wire-in | \$ 495.00 |

BRANCH SERVICE PROTECTORS

| | |
|---|------------|
| ACP1000-120S, 120 V, Single Phase | \$ 1230.00 |
| ACP1000-120W, 208Y/120 V, 3 Phase, 4-Wire | \$ 1740.00 |
| ACP1000-120T, 240/120 V, Single Phase, 3-Wire | \$ 1560.00 |
| ACP1000-240S, 240 V, Single Phase | \$ 1560.00 |
| ACP1000-240D, 240 V, 3 Phase, 3-Wire | \$ 2280.00 |
| ACP1000-240DST, 240 V, 3 Phase, 4-Wire (CT phase to Gnd.) | \$ 3460.00 |
| ACP1000-480S, 480 V, Single Phase | \$ 3485.00 |
| ACP1000-480D, 480 V, 3 Phase, 3-Wire | \$ 5090.00 |
| ACP1000-277W, 480Y/277 V, 3 Phase, 4-Wire | \$ 5090.00 |

| | |
|--------------------------------------|------------|
| ACP1000-575D, 575 V, 3 Phase, 3-Wire | \$ 5390.00 |
| ACP1000-575W, 575 V, 3 Phase, 4-Wire | \$ 5390.00 |

MAIN SERVICE PROTECTORS

| | |
|---|-------------|
| ACP2000-120S, 120 V, Single Phase | \$ 2875.00 |
| ACP2000-120W, 208Y/120 V, 3 Phase, 4-Wire | \$ 4100.00 |
| ACP2000-120T, 240/120 V, Single Phase, 3-Wire | \$ 3725.00 |
| ACP2000-240D, 240 V, 3 Phase, 3-Wire | \$ 5940.00 |
| ACP2000-240DST, 240 V, 3 Phase, 4-Wire (CT phase to Gnd.) | \$ 7350.00 |
| ACP2000-277W, 480Y/277 V, 3 Phase, 4-Wire | \$ 9610.00 |
| ACP2000-480D, 480 V, 3 Phase, 3-Wire | \$ 9610.00 |
| ACP3000-120S, 120 V, Single Phase | \$ 4610.00 |
| ACP3000-120W, 208Y/120 V, 3 Phase, 4-Wire | \$ 6775.00 |
| ACP3000-120T, 240/120 V, Single Phase, 3-Wire | \$ 6075.00 |
| ACP3000-240D, 240 V, 3 Phase, 3-Wire | \$10,070.00 |
| ACP3000-240DST, 240 V, 3 Phase, 4-Wire (CT phase to Gnd.) | \$15,125.00 |
| ACP3000-277W, 480Y/277 V, 3 Phase, 4-Wire | \$17,810.00 |
| ACP3000-480D, 480 V, 3 Phase, 3-Wire | \$17,810.00 |

Prices and specifications subject to change without notice





ACP SERIES BRANCH/MAIN SERVICE PROTECTORS

- Stops destructive voltages
- Continuous protection
- Full branch safety
- Available in a variety of models to meet your voltage and protection needs

Transector systems ACP series protectors, provide positive protection against — voltage pulses, switching transients, high voltage inductive spikes, electrostatic discharge, induced lightning, and other destructive high energy transient voltages.

Over voltage spikes and surges can cause problems such as, computer and microprocessor mislogic, to total equipment failure and electrical fire, and are the most frequent cause of solid state systems equipment failure and disruption.

The fully automatic, solid state ACP series protectors, utilize a patented, multiple stage energy switching system that responds within 5 nanoseconds, and adds additional protection as required. Each unit is housed in a safety sealed, 14 gauge, welded seam, steel enclosure, with no knockouts, ready for immediate installation.

Technical data: Service frequency — 50/60 and 400 Hz. Response time: 5 nanoseconds. Standby power — 1 watt. Phase/operating temperature — 0°- +85°C.



ACP-1000 35,000 WATTS/PHASE SUPPRESSION POWER

| Voltage | Phase | Part Number | Voltage (V peak) Protection Level | |
|---------|-------|--------------|--------------------------------------|------|
| | | | MIN. | MAX. |
| 120 | 1 | ACP1000-120S | 200 | 300 |
| 120 | 3 | ACP1000-120D | 200 | 300 |
| 120 | 3 | ACP1000-120W | 200 | 300 |
| 120 | Split | ACP1000-120T | 200 | 300 |
| 208 | 1 | ACP1000-208S | 350 | 500 |
| 208 | 3 | ACP1000-208D | 350 | 500 |
| 240 | 1 | ACP1000-240S | 400 | 600 |
| 240 | 3 | ACP1000-240D | 400 | 600 |
| 240 | 3 | ACP1000-240W | 400 | 600 |
| 480 | 1 | ACP1000-480S | 800 | 1000 |
| 480 | 3 | ACP1000-480D | 800 | 1000 |
| 480 | 3 | ACP1000-480W | 800 | 1000 |
| 575 | 3 | ACP1000-575D | 950 | 1200 |
| 575 | 3 | ACP1000-575W | 950 | 1200 |

ACP-2000 100,000 WATTS/PHASE SUPPRESSION POWER

| Voltage | Phase | Part Number | Voltage (V peak) Protection Level | |
|----------|-------|-----------------|--------------------------------------|------|
| | | | MIN. | MAX. |
| 120 | 1 | ACP2000-120S | 200 | 300 |
| 208Y/120 | 3 | ACP2000-120W | 200 | 300 |
| 240/120 | 1 | ACP2000-120T | 200 | 300 |
| 208 | 3 | ACP2000-208D | 350 | 500 |
| 240 | 1 | ACP2000-240S | 400 | 600 |
| 240 | 3 | ACP2000-240D | 400 | 600 |
| 240 | 3 | ACP2000-240W | 400 | 600 |
| 240 | 3 | ACP2000-240DST* | 400 | 600 |
| 480 | 1 | ACP2000-480S | 800 | 1000 |
| 480 | 3 | ACP2000-480D | 800 | 1000 |
| 480Y/277 | 3 | ACP2000-277W | 470 | 700 |
| 575 | 3 | ACP2000-575D | 950 | 1200 |
| 575 | 3 | ACP2000-575W | 950 | 1200 |

ACP-3000 300,000 WATTS/PHASE SUPPRESSION POWER

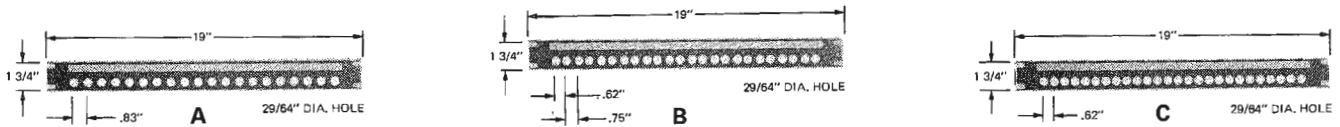
| Voltage | Phase | Part Number | Voltage (V peak) Protection Level | |
|----------|-------|-----------------|--------------------------------------|------|
| | | | MIN. | MAX. |
| 120 | 1 | ACP3000-120S | 200 | 300 |
| 208Y/120 | 3 | ACP3000-120W | 200 | 300 |
| 240/120 | 1 | ACP3000-120T | 200 | 300 |
| 208 | 3 | ACP3000-208D | 350 | 500 |
| 240 | 1 | ACP3000-240S | 400 | 600 |
| 240 | 3 | ACP3000-240D | 400 | 600 |
| 240 | 3 | ACP3000-240W | 400 | 600 |
| 240 | 3 | ACP3000-240DST* | 400 | 600 |
| 480 | 1 | ACP3000-480S | 800 | 1000 |
| 480 | 3 | ACP3000-480D | 800 | 1000 |
| 480Y/277 | 3 | ACP3000-277W | 470 | 700 |
| 575 | 3 | ACP3000-575D | 950 | 1200 |
| 575 | 3 | ACP3000-575W | 950 | 1200 |

*This unit has a center tapped phase to ground. Additional protectors are provided to protect phase to ground.



Prices and specifications subject to change without notice

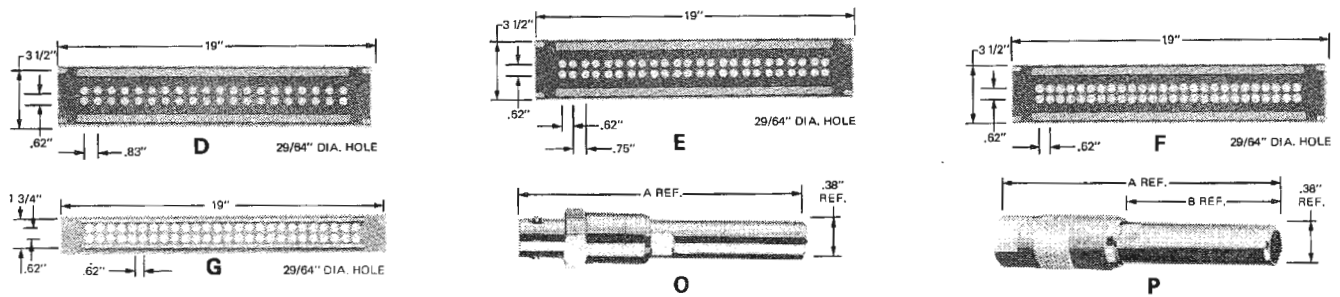
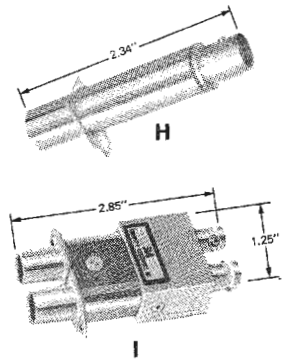
TROMPETER ELECTRONICS INC.



VIDEO PATCH PANELS (BNC JACKS)

| PART # .090" PIN (WE) INSULATED - PANEL - GROUNDED | | PART # .070" PIN (RCA) INSULATED - PANEL - GROUNDED | | JACK NO. | OF RACK * | ROWS | JACKS | SPACE | CIRCUIT | FIG. |
|--|-----------------|---|----------------|----------|-----------|--------|-------|-------|---------|------|
| JSI-20/J3W | JS-20/J3W | JSI-20/J3 | JS-20/J3 | 1 | 20 | 1 1/4" | | | O | A-H |
| JSI-24S/J3W | JS-24S/J3W | JSI-24S/J3 | JS-24S/J3 | 1 | 24 | 1 1/4" | | | O | B-H |
| JSI-26/J3W | JS-26/J3W | JSI-26/J3 | JS-26/J3 | 1 | 26 | 1 1/4" | | | O | C-H |
| JSI-40/J14W | JS-40/J14W | JSI-40/J14 | JS-40/J14 | 2 | 40 | 3 1/2" | | | NTNT | D-I |
| JSI-48/J14W | JS-48/J14W | JSI-48/J14 | JS-48/J14 | 2 | 48 | 3 1/2" | | | NTNT | E-I |
| JSI-52/J14W | JS-52/J14W | JSI-52/J14 | JS-52/J14 | 2 | 52 | 3 1/2" | | | NTNT | F-I |
| JSI-52S/J14W | JS-52S/J14W | JSI-52S/J14 | JS-52S/J14 | 2 | 52 | 1 1/4" | | | NTNT | G-I |
| JSI-40/J14WT-75 | JS-40/J14WT-75 | JSI-40/J14T-75 | JS-40/J14T-75 | 2 | 40 | 3 1/2" | | | NTST | D-I |
| JSI-48/J14WT-75 | JS-48/J14WT-75 | JSI-48/J14T-75 | JS-48/J14T-75 | 2 | 48 | 3 1/2" | | | NTST | E-I |
| JSI-52/J14WT-75 | JS-52/J14WT-75 | JSI-52/J14T-75 | JS-52/J14T-75 | 2 | 52 | 3 1/2" | | | NTST | F-I |
| JSI-52S/J14WT-75 | JS-52S/J14WT-75 | JSI-52S/J14T-75 | JS-52S/J14T-75 | 2 | 52 | 1 1/4" | | | NTST | G-I |

* CIRCUIT LEGEND: O = Open; NTNT = Normal thru Non Term.; NTST = Normal Thru Self Term.



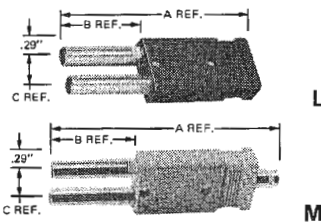
ADAPTER PLUGS AND CABLES

| (WE) .090" PIN | (RCA) .070" PIN | | FIG. |
|-------------------|--------------------|---|------|
| ADW-1 | AD-1 | Adapter - Patch Pnl to BNC Jack | O |
| TPW-75 | TP-75 | Terminated Plug - 75 Ohm | P |
| PCWX-12-75 | PCX-12-75 | 75 Ohm Cable - Patch Pnl to BNC Male Plug 12" | Q |
| PCWX-24-75 | PCX-24-75 | 75 Ohm Cable - Patch Pnl to BNC Male Plug 24" | Q |
| PCWX-36-75 | PCX-36-75 | 75 Ohm Cable - Patch Pnl to BNC Male Plug 36" | Q |
| PCWX-48-75 | PCX-48-75 | 75 Ohm Cable - Patch Pnl to BNC Male Plug 48" | Q |
| PCWX-96-75 | PCX-96-75 | 75 Ohm Cable - Patch Pnl to BNC Male Plug 96" | Q |



LOOPING PLUGS .63" CENT.

| (WE) .090" PIN | (RCA) .070" PIN | | FIG. |
|-------------------|--------------------|-------------------|------|
| LPW-75 | LP-75 | 75 n standard | L |
| LPWA-75 | LPA-75 | 75 n w BNC Jack | M |
| LPWTP-75 | LPTP-75 | 75 n w Test Point | M |

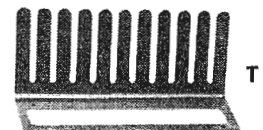


PATCH CORDS FIG. K

| (WE) .090" PIN | (RCA) .070" PIN | LENGTH |
|-------------------|--------------------|--------|
| PCW-12-75 | PC-12-75 | 12" |
| PCW-24-75 | PC-24-75 | 24" |
| PCW-36-75 | PC-36-75 | 36" |
| PCW-48-75 | PC-48-75 | 48" |

ACCESSORIES

| | | FIG. |
|------|--------------------------------|------|
| RT1L | Removal Tool for BNC Plugs 12" | R |
| RT1S | Removal Tool for BNC Plugs 6" | R |
| CH50 | Patch Cord Holder | T |



For prices and additional information contact your Harris District Sales Manager or the Harris Quincy Sales Office.

Prices and specifications subject to change without notice



718/739 STANDARD AND SHORT HEAVY DUTY TRIPOD WITH STABILIZER

Both the Standard and Short Tripods are telescopically extendable to the maximum/minimum heights shown in the specification. They may be used outdoors on uneven ground utilizing the reversible foot units (spikes for outdoor use - rubber feet for indoor use). The Tripods are very quickly set up and have adjustable legs which are held firmly by three knobs. The Stabilizer adds overall rigidity and provides a firm lock when the Tripod is used on sloping or uneven terrain. The Stabilizer is attached to the underside of the head mounting platform and the adjustable arms are secured by screws to the tripod legs.

719 DOLLY WITH WHEEL TRACKING

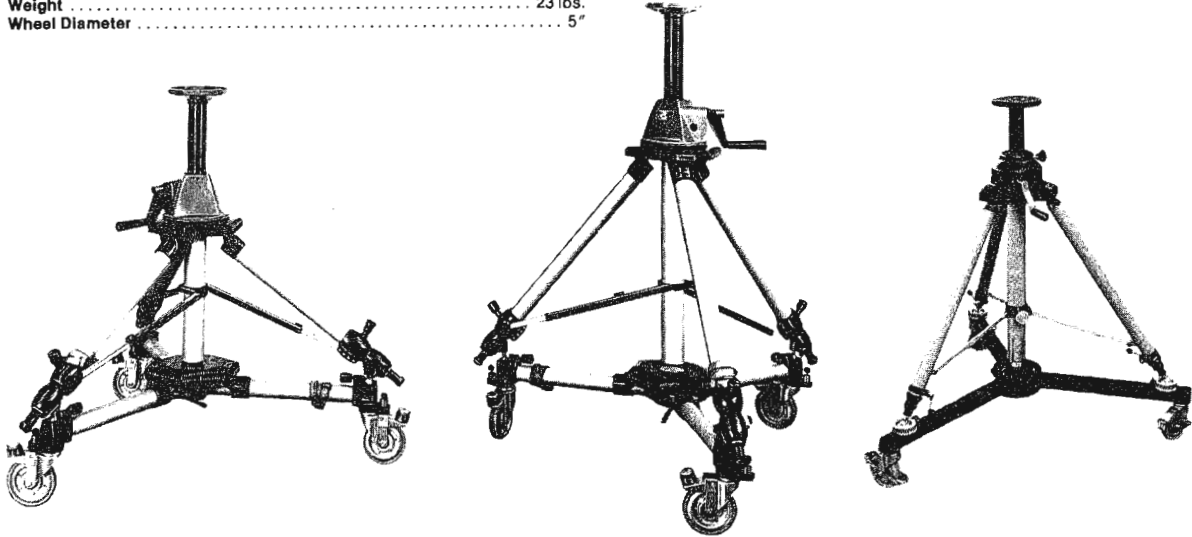
The Dolly for use with 718/739 Tripods above is complete with 5" diameter lockable rubber wheels and features straight-line tracking and an alternate low level cam head mounting face for low camera shots. Wheel tracking is standard.

737 ELEVATION UNIT

Additional height and smooth elevation is provided by the use of this unit. The Elevation Unit is bolted to the tripod head mounting platform and supports the pan and tilt head with camera. It incorporates a solid aluminum hard anodized column and geared rack and pinion movement which gives a non-slip returnable drive. Adjustment by the crank handle is light and secure under full load.

| | |
|----------------------------|-----------|
| 718 STANDARD TRIPOD | \$1150.00 |
| Capacity | 200 lbs. |
| Height Range | 27"-46" |
| Weight | 26 lbs. |
| 739 SHORT TRIPOD | 1125.00 |
| Capacity | 200 lbs. |
| Height Range | 22"-37" |
| Weight | 25 lbs. |
| 719 DOLLY | 980.00 |
| Capacity | 250 lbs. |
| Height Range | 7" |
| Weight | 23 lbs. |
| Wheel Diameter | 5" |

| | |
|--|----------|
| 737 ELEVATION UNIT | \$945.00 |
| <i>(Recommended for use with Short Tripod)</i> | |
| Capacity | 200 lbs. |
| Weight | 20 lbs. |
| Height Range | 7"-23" |
| 699 STANDARD ELEVATION UNIT | 1000.00 |
| Capacity | 200 lbs. |
| Weight | 23 lbs. |
| Height Range | 7"-31" |



3063 COMBINATION LIGHTWEIGHT TRIPOD/ELEVATION UNIT/DOLLY

The 3063 Lightweight Unit consisting of a Tripod (Model 3061), Elevation Unit (Model 3062) and Dolly (Model 3060) was designed to give the advantages of a standard pedestal - height, range and mobility - with portability and low cost. The Tripod is a simple unit of robust construction with single extension tubular legs which are pivot-mounted by clamped steel pins to a platform casting. The legs terminate in self-leveling ball-socket feet. The Elevation Unit has a geared rack and pinion movement offering a height adjustment of 17". The Dolly is comprised of three legs, each self-locking in both the folded and working positions. Each leg is fitted with a socket and retaining screw to accept the tripod. The wheels are chrome, double ballbearing swivel castors with foot brake.

| | |
|---|----------------------------|
| 3063 COMBINATION | \$1350.00 |
| Maximum Height | 72" |
| Minimum Height | 36" |
| Capacity | 110 lbs. |
| 3061 TRIPOD | 560.00 |
| Height Range to Head Mounting Face: | Minimum-24" Maximum-40" |
| Weight | 14 lbs. |
| Capacity | 110 lbs. |
| 3062 ELEVATION UNIT | 475.00 |
| Height Adjustment | 17" |
| Weight | 9 lbs. |
| Capacity | 110 lbs. |

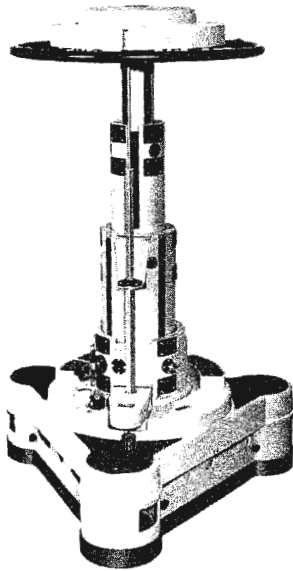
| | |
|--|--------------------------------|
| 3060 DOLLY | \$545.00 |
| Height (to tripod location points) | 7" |
| Leg Radius | 21" |
| | Folded for carrying length-24" |
| Diameter (Rubber wheels-lockable) | 5" |
| Capacity | 130 lbs. |
| Weight | 15 lbs. |

ACCESSORIES

| | |
|---|----------|
| 3055 MITCHELL HI-HAT-with 2 1/2" rise | \$85.00 |
| 1193/A MITCHELL HI-HAT with 4 1/2" rise | \$85.00 |
| 1193/B MITCHELL HI-HAT with 6" rise | \$85.00 |
| 1193/C MITCHELL HI-HAT with 8" rise | \$85.00 |
| 3080 PRO JR. HI-HAT with 2 1/2" rise | \$65.00 |
| 720/3 CARPET SPREADER FEET for 718/739 Tripod | \$65.00 |
| 416/1A FEMALE WEDGE ASSEMBLY with clearance holes for shelf mounting in remote trucks (used with TV cameras employing Male Wedge Plate) | \$340.00 |



Prices and specifications subject to change without notice

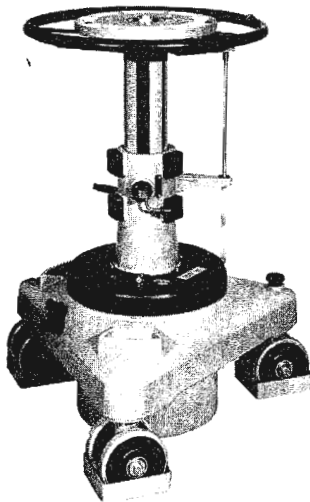


702 FULMAR EXTENDED RANGE PNEUMATIC PEDESTAL

It is doubtful whether this pedestal could ever become obsolete and in a short span of just a few years the FULMAR has become regarded by all types of users as the ultimate production pedestal. Starting from the tremendously strong base, which contains a welded steel annular low pressure tank, the available thrust is applied to the piston of a precision three stage ram assembly which supports the camera mounting platform. This platform also carries a single lifting/steering ring for one handed operation. Special magnesium alloy telescoping tubes, each with four pairs of ballraces, two pairs of which are always adjustable, ensure that absolute rigidity of the pedestal column is maintained. The unsurpassed range of elevation and depression (21"-59") allows shots to be obtained of the studio action without recourse to risers or other types of platforms. In addition, the fluid motion of the pedestal allows a continuity of program that will satisfy the most demanding director. All parts are machined meticulously and the built-in adjustments ensure long life at optimum mechanical efficiency.

702 FULMAR EXTENDED RANGE PNEUMATIC PEDESTAL supplied with single combined lifting steering ring, pedal-operated change over from crab to tricycle steering, adjustable cable guards, dual wheels, 15lb. total trim weights, pressure gauge and wheel cut-outs for visual inspection \$11,850.00

Capacity 350 lbs. at 200 P.S.I.
(typically, 250lbs require 150 P.S.I.)
Weight 330 lbs.
Height Range 21"-58 1/2"
(to Cam Head Mounting Face)
Width at Base Min. 34" - Max. 39"
Construction Magnesium Alloy Castings,
Steel Reservoir
Finish Grey Textured Stove Enamel
with Anti-Corrosion Plating on all Bright Metal



741 TERN PNEUMATIC PEDESTAL

When operating modes do not warrant the purchase of a full production pedestal such as the 702 above, the 741 Tern will provide much more than just adequate performance. Designed as a direct replacement, in terms of operating range, to the original lead counterbalanced pedestals which were standard in the industry at one time, the 741 is only half the weight. This ensures that much less effort is required to move the pedestal over the studio floor which discourages "flat spots". A large annular low pressure tank supports a single stage ram assembly providing a long 21" stroke. The supporting column is carried on three pairs of ballraces, one pair of which is eccentrically mounted. All moving parts in this pedestal, as in the case of the 702, can be adjusted for eventual wear to maintain optimum performance. This engineering approach is standard with all Vinten products. The 741 is supplied complete with trim weights for minor load variation and with gimbolled wheels and adjustable cable guards as standard.

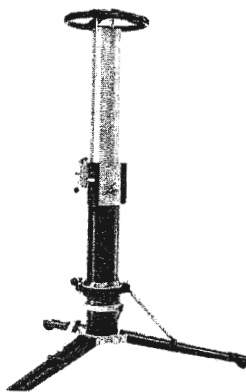
741 TERN PNEUMATIC PEDESTAL supplied with single lifting steering ring, pedal-operated change over from crab to tricycle steering, adjustable cable guards, 7" dual duothane wheels, 20lb. total trim weights. \$5250.00

Capacity 290 lbs. at 230 P.S.I.
(typically, 150 lbs. at 125 P.S.I.)
Weight 250 lbs.
Height Range 33"-54"
(to Cam Head Mounting Face)
Width at Base Min-29 1/2" - Max-36"
Construction Aluminum Alloy Castings,
Steel Reservoir
Finish Grey Textured Stove Enamel
with Anti-Corrosion Plating on all Bright Metal

ACCESSORIES

806/1135 NITROGEN REGULAR with Hose and Adapter to pedestal. Preferred low cost method to charge pedestal where compressed Nitrogen is available, eliminates contamination of steel reservoir and allows fast charge-up time \$165.00

C100 AIR COMPRESSOR, A/C powered and mounted on wheels. Delivers up to maximum 200 P.S.I. Used where storage of Nitrogen Cylinder presents problems. Weight 110 lbs. \$685.00
C200 AIR COMPRESSOR, A/C powered storage type. Will deliver up to 275 P.S.I. Used to pressurize pedestal in studios where compressor noise is not allowed. Weight 225 lbs. \$955.00



56 PortaPed

The recent development of lightweight color cameras to broadcast standards has permitted the production of more sophisticated support equipment. Whereas previously, sheer weight and size ruled out the possibility of combining several functions in one unit, the latest cameras, even when loaded up, can be handled in a variety of new ways. The PortaPed is a combination self-leveling tripod with a built-in pedestal type column that can charge itself up for counterbalancing purposes just by exercising the column. This is accomplished using only the available atmosphere and no external charging apparatus is required. In addition, unlike other units, there are no fluids to leak from the PortaPed. All functions are achieved by traditional mechanical means. The PortaPed is lightweight, easy to set up and folds away neatly. It is also the basis of a number of other interesting Vinten Portable Mountings shown.

56 PortaPed PORTABLE PNEUMATIC PEDESTAL supplied complete with Pro Jr. Top, "THREE WAY" Adjustable legs for both height and direction, lifting ring, carrying handle, column lock and adjustable drag controls. Options include simple Type 71 PortaSkid castoring Dolly or Type 64 TriTrack Crabbing Base. See accessories \$3700.00

Capacity 100 lbs.
Weight 33 lbs.
Height Range (To Pan Head Mounting Face)
Low Level (Legs Horizontal) 27"-45"
High Level (Legs in Tripod Mode) 37"-55"
Leg Radius Low Level-20"
High Level 16"
Elevation Ring Diameter 11"
Maximum Tilt Adjustment 40"
Dimensions (Folded) 27", 11", 11"
Construction Aluminum Alloy, Steel Tank
Finish Black Anodized Grey Textured Stove Enamel
with Anti-Corrosion Plating on all Bright Metal

ACCESSORIES

71 PORTASKID FOLDING DOLLY with 5" diameter wheels \$545.00
15735 PORTAPED CARRYING CASE \$200.00
16520 PORTASKID CARRYING CASE \$100.00
64 TRITRACK CRABBING BASE for PortaPed (described elsewhere) \$3100.00

67 DOLPHIN CRANE ARM (described elsewhere) \$4300.00
72 TRIMOUNT COLUMN to mount Dolphin into TriTrack \$300.00
73 PLATFORM AND SEAT ASSEMBLY for TriTrack \$500.00

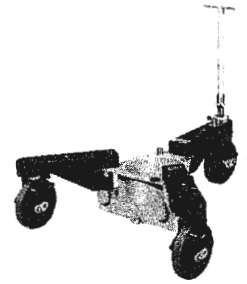
Prices and specifications subject to change without notice



LISTEC TELEVISION EQUIPMENT CORP.

64 Tri Track CRABBING DOLLY

PortaPed usefulness can be increased, where more mobility and precise studio type movement is contemplated, by the addition of the new TriTrack. Combining the advantages of straight-line tracking or castoring, the TriTrack simulates large studio pedestal performance in a lightweight, fold-up dolly. Equipped with 8" diameter wheels for smooth transit over rough surfaces, the unit can also be fitted with a platform and operator's seat, converting the PortaPed into a miniature dolly complete with counterbalanced camera platform. Note also, the TriTrack continues to track even when partially folded, making transit through narrow spaces an easy shot.

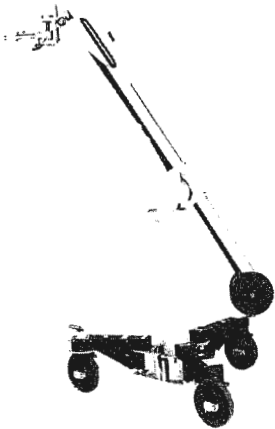


64 TriTrack CRABBING DOLLY supplied as fold-up unit with three integrally linked 8" diameter rubber wheels, change over mechanism from crab to tricycle steering and folding tiller steering, accepts Type 56 PortaPed above and Dolphin Crane Arm on Trimount.... \$3100.00

| | |
|-------------------------|---|
| Capacity | 130 lbs. at center (not including operator over one wheel) |
| Weight | 55 lbs. |
| Width | (Legs fully extended) 34 1/2" |
| Legs Radius | 20" |
| Ground Clearance | 2" |
| Dimensions Folded | 28", 16", 13" |
| Finish | Grey and Black Stove Enamel |

67 DOLPHIN CRANE ARM

Exciting new possibilities are created with the adoption of the DOLPHIN CRANE ARM. This latest Vinten innovation is designed to be used with the TriTrack dolly, though it can also be used with any typical tripod dolly. The crane arm is perfectly counterbalanced for loads up to 50lbs. and provides a stable camera mounting platform in space from 8" to 69" measured from the ground. Directors and cameramen alike will easily perceive that many new possibilities exist for original shots using Vinten Portable Mounting Equipment. Cameras can be positioned precisely and smoothly controlled while the crew is not burdened with the task of setting up heavy equipment.

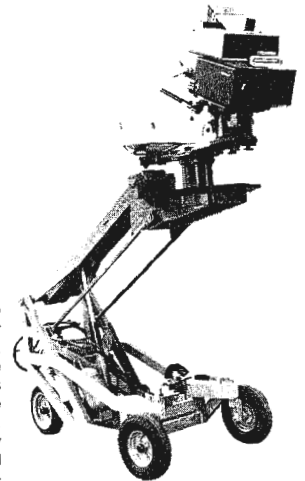


67 DOLPHIN CRANE ARM supplied with weight counterbalanced arm, horizontally maintained camera mounting platform, full 360° panning of crane arm and 90° platform traverse from center line for "over table" shot full control, complete with arm elevation lock and drag controls, Arm Pan Lock and Drag Controls and Camera Platform Lock and Drag Controls. Normally supplied with Trimont Column for litting in TriTrack above. (See accessories page \$4300.00

| | |
|--------------------------|---|
| Capacity | 50 lbs. |
| Length | 80" |
| Arm Maximum Height | 69 1/2" |
| Arm Minimum Height | 8" |
| | (Both assuming arm mounting height of 33") |
| Weight | 51 lbs. |
| | (Excluding balance weights) |
| Balance Weights | Graded |
| | 1 @ 24 lbs. |
| | 1 @ 20 lbs. |
| | 1 @ 12 lbs. |
| | 2 @ 10 lbs. |
| | 1 @ 8 lbs. |
| Construction | Stainless Steel and Lead, Aluminum Alloy |
| Finish | Grey Textured Stove Enamel |

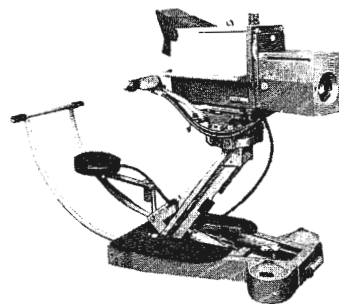
754/743 KESTREL CRANE

Vinten will continue to offer traditional methods of mounting cameras, but is aware of the trend to downsize in the industry. The KESTREL REMOTE CRANE is designed to provide elevation of camera and operator on a crane that can be easily transported. On remotes the standard pneumatic wheels perform well on rough terrain; however, for studio operation, a simple conversion to solid wheels and cable guards will provide maximum stability. The Crane arm is hydraulically counterbalanced and does not need rebalancing unless the load changes. There is no possibility of leaks affecting operation since the nitrogen under pressure is stored in a closed portion of the system. Oil is used as the transmission agent and is hand pumped into the crane according to specific instructions. Two types of jib elevation controls are provided, manual from the rear (tracker's) position or, alternatively, by means of a blimped electric motor driving the hydraulic pump. Speed and direction of movement are controlled from a small operator's pan bar mounted control. In either version the crane is lightweight and easily transportable in the folded configuration.



743/754 KESTREL REMOTE CRANE supplied with hydraulically operated jib arm complete with cameraman's platform and seat assembly. Rotary hydraulic pump is operated by large wheel at rear of crane on 743 Manual Version. For operator convenience 754 is electrically operated and has blimped motor and package S.C.R. speed control box with cameraman's lever control. Both types of cranes supplied with pneumatic tires as standard; optional solid wheels and cable guards for studio use also available. See accessories
743 \$20,000.00
754 \$24,000.00

| | |
|------------------------|--|
| Capacity | 500 lbs. (Cameraman, camera and all accessories) |
| Weight | (approximately) 450 lbs. |
| Length | 8' |
| | (With Jib in lowest position) |
| Operating Height | Measured to Cam Head Mounting Face: Maximum-84" Minimum-30" (each with 7" column spacers provided) |
| Width | 28" Min. (Front wheels folded inside chassis) 41" Max. (Front wheels in operating mode) |
| Construction | Boxed Girder |
| Finish | Grey Textured Stove Enamel |



723 LOW ANGLE DOLLY

In those cases where an exceptionally low-level taking position is required, together with some control of elevation and tracking, the 723 LAD is the answer. Using a true hydraulic counterbalancing system, loads up to a maximum of 350 lbs. can be carried. When balanced correctly, the jib arm floats and can be positioned with light finger pressure. The front wheels of the dolly castor or can be set for a perfect straight track-in. Like the full-sized KESTREL CRANE, the 723 LAD never needs recharging with constant load conditions.

723 LOW ANGLE DOLLY supplied with hydraulically operated jib arm including built-in single stage ram assembly, nitrogen and oil accumulator and manual oil pump. Front wheels castor or can be preset for straight track-in. Complete with camera mounting platform, cameraman's seat and detachable tracker's push bar. Unit complete with front and rear carrying handles... \$4700.00

| | |
|--------------------|---|
| Capacity | (50 lb. minimum) 350 lbs. |
| Weight | 150 lbs. |
| Length | 39" |
| | (Chassis only) 55" with push bar |
| Width | 27" |
| Height Range | From Cam Head mounting platform: Min.-4 1/2" Max.-25 1/2" |
| Construction | Boxed Girder |
| Finish | Grey Textured Stove Enamel |

ACCESSORIES

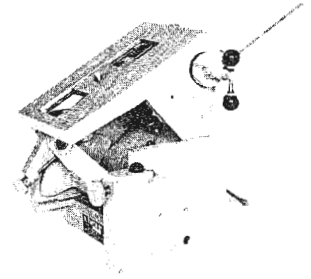
743 and 745 KESTREL CRANES
743/100 12" diameter SOLID RUBBER WHEELS and ADJUSTABLE CABLE GUARDS for studio use. Includes brackets for mounting guards on crane. \$1400.00
806/1155 NITROGEN REGULATOR AND HOSE with high pressure connection to crane (also used for 723 Low Angle Dolly) \$165.00
731/3 OFFSET PAN BAR ADAPTER places pan bar outside of head by 6" for better operating conditions. Used on MARK IIIA and MARK V Cam Head. Requires second clamp \$65.00



Prices and specifications subject to change without notice

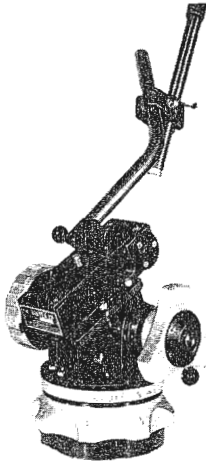
76 PETREL MARK II LIGHTWEIGHT PAN AND TILT HEAD

The Petrel MARK II lightweight Pan and Tilt Head is a development of the original MARK I. This head achieves the highest load capacity to weight ratio of any known design and incorporates a unique built-in adjustable center of gravity compensator. Unlike cam heads, the Petrel MARK II can be adjusted for various vertical load distributions by means of a simple adjusting screw. The capacity of the head (100 lbs.) makes it an ideal choice for the latest intermediate size cameras or whenever a small ENG camera is combined with a multirange field zoom lens. Special lubricated friction pads provide a fluid-like feel to the head, even with light loads. Besides the small wedge adaptor and standard pan bars listed, a modification has been made to allow a normal full-sized male wedge to be employed. This feature also allows the use of standard MARK IIIA and MARK V Pan Bars to be used.



76 PETREL MARK II LIGHTWEIGHT PAN AND TILT HEAD supplied with appropriate Base (See accessory page), Adjustable Pan Bar & clamp, 3/8" Bolt Fixing to Camera. For optional Quick Release Wedge Adaptor-See accessories \$1250.00

| | |
|--------------------------------------|--|
| Capacity | 100 lbs. |
| Weight | 15 lbs. |
| Center of Gravity Compensation | 2"-7 1/4" |
| Tilt Range | ± 40° |
| Width, Length, Height | 6 1/2", 9", 7" |
| Construction | Stainless Steel, Aluminum Alloy Castings |
| Finish | Grey Textured Stove Enamel with Anti-Corrosion Plating on all Bright Metal |



51 DUNLIN L.F. PAN AND TILT HEAD supplied with appropriate base (See accessories page), Adjustable Pan Bar & Clamp, 3/8" Bolt Fixing to Camera. For Quick Release Mini-Wedge-See accessories \$2200.00

51 DUNLIN L.F. PAN AND TILT HEAD

Designed to be used with hand-held TV cameras taken "Off the Shoulder" and put onto rigid mounts for smooth studio type shots, this new lightweight head performs exceptionally well. Smoothly damped to take out any operator jitter, the tilt mechanism incorporates a unique compensating movement so that different loads will not cause the camera to nose dive at maximum tilt. Unlike some heads, this is achieved without having to change springs and the range of adjustment that can be applied is continuously variable from 0 to 325 lb.in. torque. The L.F. (lubricated friction) damping is always in effect and unlike so-called fluid heads, there is no dead spot at rest. A fast breakaway feature allows a rapid pan, even when maximum drag is applied. A special Mini-Wedge combination is available to allow maximum range of adjustment horizontally so that optimum tilt action is achieved.

| | |
|--------------------------------------|--|
| Capacity | 50 lbs. |
| Weight | 11 lbs. |
| Center of Gravity Compensation | Variable from 6 1/2" at 50lb. Load to 21" at 15lb. Load |
| Tilt Range | ± 50° |
| Width, Length, Height | 8 1/2", 6 1/2", 7" |
| Construction | Stainless Steel, Aluminum Alloy Castings |
| Finish | Black Stove Enamel with Anti-Corrosion Plating on all Bright Metal |

ACCESSORIES

755/3 ECONOMY MALE/FEMALE WEDGE COMBINATION, for use with smaller TV cameras and above heads \$100.00
 4075 MINI-WEDGE MALE/FEMALE COMBINATION, permits up to 6" offset, especially useful in balancing large zoom lenses on 51 L.F. Pan and Tilt Head. Has fast disconnect and safety lock included. \$155.00
 718/13A SPECIAL FEMALE WEDGE ADAPTER ASSEMBLY, to accept 3052 Full-sized Male Wedge Plate and 308 Series Pan Bars, mounts only onto 76 Petrel MARK II. Converts head to accept full-sized controls, see MARK IIIA and MARK V above \$315.00

3052 MALE WEDGE PLATE used with 716/13A above \$110.00
 750 MITCHELL BASE, adapts heads to any tripod or pedestal with Mitchell top, includes all standard broadcast designs. \$85.00
 3081 PRO JR. BASE, adapts heads to any tripod or pedestal with Pro Jr., popular Motion Picture Standard \$85.00
 3079 ARRI 35MM BALL BASE ADAPTER, must be used with Pro Jr. Base above, for use on tripods with 75mm cup top. \$90.00
 745/17 PAN BAR ASSEMBLY for 76 Petrel MARK II Head \$90.00

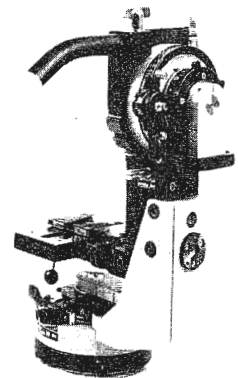
745/21 PAN BAR CLAMP \$45.00
 51/15 PAN BAR ASSEMBLY for 51 L.F. Head. \$90.00
 51/11 PAN BAR CLAMP* \$45.00
 16402 CARRYING CASE for 76 Petrel MARK III Head complete with base and including provision for two sets of pan bars \$165.00
 16431 CARRYING CASE for 51 L.F. Head complete with base and including provision for two sets of pan bars \$165.00
 *Pan Bar Assemblies for 76 Petrel MARK II and 51 L.F. Head are interchangeable.
 5581 MITCHELL TO PRO JR. CONVERTER, converts any tripod with Mitchell top to accept above heads with Pro Jr. Base \$85.00

3078 POST PAN AND TILT HEAD

This new head embodies concepts in design which make it particularly suitable for EFP cameras, especially when equipped with long focal length zoom lenses.

By pivoting the camera about its center of gravity, there is no weight to be compensated for with the result that no springs, cams or other devices are included in the design. This freedom allows tilt angles to be achieved that are limited only by the size of the camera. In addition, the camera mount can be rotated in a vertical plane to ensure that whenever the zoom lens is removed, or the camera side required to be exposed for inspection, there is no need to release the camera from its mounting platform. An additional constructional feature allows a separate camera viewfinder to be mounted on the pan and tilt head; this also permits larger camera lens combinations to be considered. Lubricated Friction (L.F.) Damping is applied in both Pan and Tilt modes and the head may be supplied with a variety of Quick-Release Adaptors.

| | |
|--|---|
| Capacity | 50 lbs. |
| Weight | 20 lbs. |
| Tilt Angle | 360° |
| Pan Angle | 360° |
| Tilt Axis Height Adjustment (measured from head mounting face) | Max. 13 1/2"-Min. 10 1/2" |
| "L" Bracket Platform Adjustment | (measured from head mounting face) Max. 10"-Min. 6 1/4" |
| Maximum Camera Width to "L" Bracket | 6 1/2" |



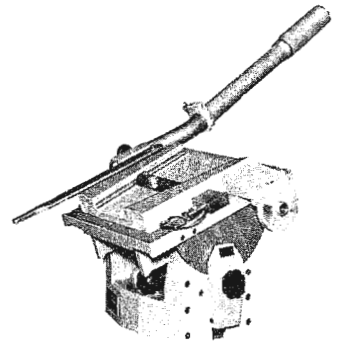
3078 POST PAN AND TILT HEAD supplied with an appropriate base (Mitchell or Pro Jr.) and one full size Pan Bar \$2375.00

Prices and specifications subject to change without notice

717 MARK IIIA CAM HEAD

This most popular and durable design of cam head, the VINTEN MARK IIIA, still rates at the top when maximum performance is desired. No other pan and tilt head comes close in terms of reserve capacity and ability to counterbalance the latest multi-range zoom lenses on remotes or monitor prompting systems in studios. Originally introduced in 1955, there have been a number of refinements incorporated recently, including zero backlash drag controls in both pan and tilt modes. Now available with special wedge extender to balance out extra front heavy loads, the MARK IIIA Cam Head is supplied with accurately machined cams to compensate a range of centers of gravity from 5" to 11".

| | |
|-----------------------------|--|
| Capacity | 400 lbs. |
| Weight | 44 lbs. |
| Cam Sizes | 5"-11" |
| Tilt Range | ± 50° |
| Width, Length, Height | 12", 14", 7" |
| Construction | Stainless Steel, Aluminum & Magnesium Alloy Castings |
| Finish | Grey Textured Stove Enamel with Anti-Corrosion Plating on all Bright Metal |



716 MARK V CAM HEAD supplied with Mitchell Base, Full-sized Pan Bar & Clamp, 3/8" Bolt Fixing to Camera. (For optional Quick Release Wedge Adaptor-See accessories \$1700.00)

716 MARK V CAM HEAD

A scaled down version of the popular MARK IIIA above, the MARK V is about half the weight; yet is rated for a total capacity of 180 lbs. With special low profile cams available, a maximum tilt angle of ±60° can be achieved, while still perfectly counterbalancing the camera. All MARK IIIA accessories are compatible with the lightweight MARK V, which carries on the tradition of classic cam head performance. Pan and Tilt drag controls feature the same zero backlash concept and provide positive action for even the smallest movement.

| | |
|-----------------------------|--|
| Capacity | 180 lbs. |
| Weight | 24 lbs. |
| Cam Sizes | 3"-8" |
| Tilt Range | ± 60° |
| Width, Length, Height | 15", 9", 7" |
| Construction | Stainless Steel, Aluminum & Magnesium Alloy Castings |
| Finish | Grey Textured Stove Enamel with Anti-Corrosion Plating on all Bright Metal |



717 MARK IIIA CAM HEAD supplied with Mitchell Base, Full-sized Pan Bar & Clamp, 3/8" Bolt Fixing to Camera. (For optional Quick Release Wedge Adaptor-See accessories \$2050.00)

ACCESSORIES

- 506/6A FEMALE WEDGE ADAPTER, when combined with 3052 Male Wedge Plate, permits fast disconnect of camera from MARK IIIA Cam Head. \$340.00
- 716/13 FEMALE WEDGE ADAPTER, when combined with 3052 Male Wedge Plate, permits fast disconnect of camera from MARK V Cam Head. \$300.00
- 3052 MALE WEDGE PLATE, used with wedge adapter for fast disconnect. Usually mounted directly onto bottom of camera using 3/8" bolts. Sometimes used with intermediate camera adapter, see below. \$110.00
- 308/7A Full-sized PAN BAR consisting of short stub and outer telescoping sleeve complete with cork handle, requires second clamp 716/28. \$120.00
- 716/28 PAN BAR CLAMP, used to mount either full-sized pan bar 308/7A or other alternatives below. \$45.00
- 308/157 SHORT PAN BAR, short stub of 308/7A, usually specified when second pan bar is required for zoom controls. Requires second clamp. \$45.00

- 308/160 UTILITY PAN BAR, full length bar 28" long, one piece 7/8" diameter throughout. Requires second clamp \$35.00
- 506/100A ZOOM BRACKET, used instead of 308/157 above, permits zoom lens control box to mount directly without the use of chain support clamps; does not require second clamp. \$115.00
- 3069 ADJUSTABLE WEDGE EXTENDER, sandwiches between wedge adapter and Cam Head. Permits up to 8" offset to rear to counterbalance zoom lens and/or prompter package. Continuously variable with worm drive \$375.00
- 3083 QUICK RELEASE ADJUSTABLE WEDGE EXTENDER, utilizes 3069 and is complete with offset Female Wedge Adapter above and Male Wedge below. Mounts onto existing wedge adapter on cam head \$740.00
- 504/3A QUICK RELEASE PLATFORM EXTENSION ASSEMBLY, same type of function as 3083 above, but consists of offset Female Wedge Adapter on fixed plate with Male Wedge Plate below to mount with existing Wedge Adapter on cam head. Adjustable in 1" increments up to 8" \$925.00

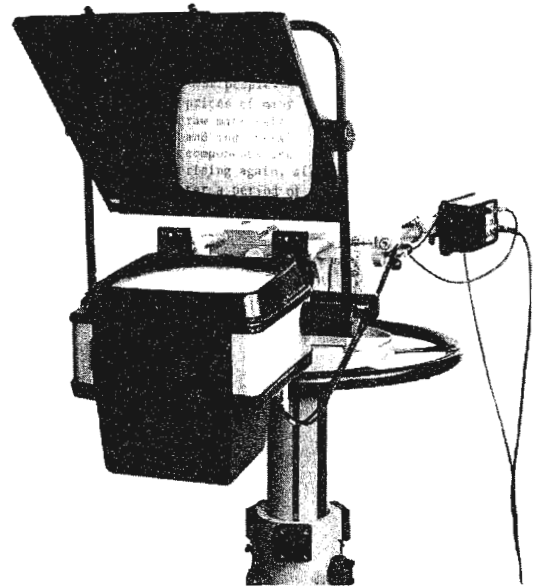
- 1133 UNIVERSAL OFFSET BALANCE PLATE, mounts directly under most TV cameras (see exceptions). Enables camera to be offset relative to cam head when used with zoom lenses on prompting packages. May be fitted with Male Wedge Plate (all types) to engage in Wedge Adapters (all types). Specially drilled for mounting directly between camera and MARK IIIA Cam Head when supplied without Quick Release Wedge Adapter ... \$110.00
- 1133/1A UNIVERSAL OFFSET BALANCE PLATE, above, combined with Male Wedge Plate. Normally supplied for use with RCA TK-44, 45, 46; Norelco PC-60, 70, 72; Thomson 1515, and Fernseh KCU, KCK. Will mount to any camera with unobstructed access to bottom surface and 3/8"-16 tapped holes \$220.00
- 1134/1A IKEGAMI HK312 and HITACHI SK100 ADAPTER PLATE complete with Male Wedge Plate \$220.00
- 1135/1A OFFSET BALANCE PLATE, Norelco PC-100, LDK-5, LDK-25 combined with Male Wedge Plate \$220.00

- 1047 RCA TK-47 SPACER \$110.00
- 1047/1A RCA TK-47 SPACER, complete with Male Wedge Plate, provides up to 3" offset in small package \$220.00
- 1047/2A RCA TK-47 SPACER, complete with adapter for MARK IIIA equipped with 3/8" bolt fixing. \$220.00
- 12312 CARRYING CASE for MARK IIIA Cam Head, bonded case with reinforced corners to network design, carries head complete with Wedge Adapter and Mitchell Base and provision for retaining two sets of pan bars and associated clamps \$200.00
- 16525 CARRYING CASE for MARK V Cam Head, complete with Female Wedge Adapter, Mitchell Base and provision for retaining two sets of pan bars and associated clamps \$200.00

DIGIVISION MONITOR PROMPTING SYSTEMS

The Digivision Prompting System consists of a lightweight, (14 lbs.) *12", professionally engineered, black and white monitor for below the lens positioning, complete with monitor, hood and semitransparent high quality mirror (equivalent to 85% transmission). Both units are encased in a virtually non-destructible lightweight plastic molding. Total weight of the monitor, hood and mirror assembly is only 22 lbs., the lightest in the industry.

The monitor, hood and mirror assembly is attached to the pan and tilt head by means of two adjustable length support rods. There are absolutely no connections necessary to the television camera and all centering and positioning is undertaken using sliding brackets. The attachment of the monitor and hood assembly to the support rods takes less than ten seconds, also by far the fastest assembly to date. In the case of all Vinten cam heads complete with wedge adaptors, there is no other hardware involved. With respect to other makes of cam heads, a sandwich plate is positioned initially between the television camera and cam head. This plate accepts the Digivision support rods and need not be removed if the system is not utilized.



12" Digivision Monitor Prompting System attached directly to Vinten Cam Head.

| | PRICE |
|--|-----------|
| 702 SCRIPT DRIVE UNIT | \$3400.00 |
| DIGIVISION PROMPTER UNITS (up to five per Drive Unit): | |
| 12" Monitor Prompter Unit complete | \$1900.00 |
| 17" Monitor Prompter Unit complete | \$2200.00 |
| Optional Carrying Case | \$ 110.00 |

Prices and specifications subject to change without notice



WALLACH & ASSOCIATES, INC.

SECTIONAL CABINETS FOR TAPES, VIDEO TAPES, CASSETTES OR 8MM SINGLE CONCEPT FILM CONTAINERS

TR-342 cabinet for 3" Tape Boxes or Cassettes. 13-1/8" wide x 9" high x 8-5/8" deep. 6 compartments capacity to 42 reel boxes. Shipping weight 11 lbs. **\$30.00**

TR-542 cabinet for 5" Tape Boxes or 8MM Single Concept Container 13-1/8" wide x 12-5/8" high x 8-5/8" deep. 4 compartments capacity to 42 reel boxes. Shipping weight 11 lbs. **\$33.00**

TR-742 cabinet for 7" Tape Boxes or combination of 5" and 7", also 1/2" Video Tape Boxes 13-1/8" wide x 16-1/2" high x 8-5/8" deep. 4 compartments capacity to 42 reel boxes. Shipping weight 13 lbs. **\$35.25**

TR-1021 cabinet for 10-1/2" Tape Boxes or 1" Video Tape Boxes. 13-1/8" wide x 12-5/8" high x 12" deep. 3 compartments capacity to 21 reel boxes. Shipping weight 14 lbs. **\$30.00**

The above cabinets will stack with sectional Discabinets. Crackle gray or crackle tan finish.

COMBINATION FILMSTRIP AND RECORD CABINET

Designed to meet special needs or users of 35mm sound filmstrips.

An efficient method of keeping your filmstrips and records together. Ideal for churches, schools, universities and sales training programs. Illustration at left shows Discabinet combined with FS-89 Filmstrip Cabinet.

Units fasten together, additional units can be added.

Capacity 90 individual records (your choice 10" or 12" or combination) or 60 LP albums with original jackets, 98 filmstrip cans 35mm. Includes complete Cataloging System consisting of 2 sets gummed consecutive numbers, 270 printed cataloging cards and 1 steel card file box with A-Z index.

DFS-90 shipped with 90 — 12" pockets unless otherwise specified.

Cabinet will hold 60 LP pockets — Crackle Gray or Crackle Tan.

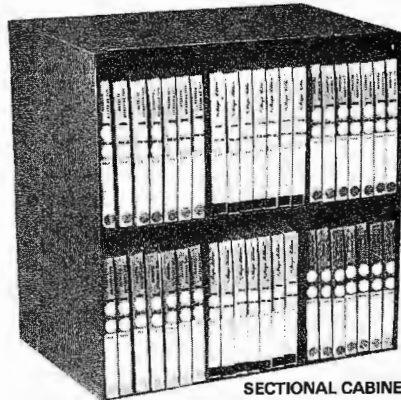
| Stock No. | Wide | High | Deep | Weight | Price |
|-----------|----------------------|------|------|--------|----------|
| DFS-90 | 13-1/8" | 20" | 14" | 44# | \$117.00 |
| DFS-90E | Same without pockets | | | | \$ 75.75 |

BASES FOR SECTIONAL CABINETS



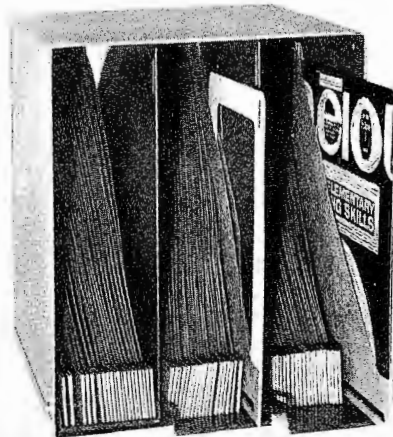
STURDY STEEL BASES FOR CONVENIENT STACKING HEIGHT OR EASY MOBILITY

Prices and specifications subject to change without notice

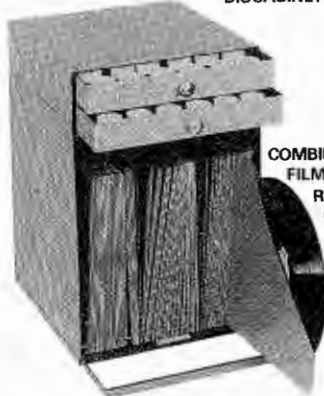


SECTIONAL CABINETS

NOTE: Video Tape and single Concept capacities vary due to width of containers.



DISCABINETS



COMBINATION FILMSTRIP AND RECORD CABINET

DISCABINETS

FOR RECORDS AND TRANSPARENCIES DISCABINET SYSTEM ELIMINATES LOSS OF RECORDS

Locate any record in seconds with this fast efficient system. Records, Albums and Transparencies are protected in storage and extend out for easy removal from the pocket. No lost or misplaced items in this system, as each has its own pocket that is numbered the same as the item.

Heavy duty durable pockets are held in position for the axis rod. In Model LP-12 the pockets slide out on a reinforced slot. In Model C-12 the pockets tip out on a grommeted corner.

Complete cataloging system furnished, including numbering for items and pockets. Can be adapted to any system of classification combined with numbering system.

Will stack with other units of Discabinets, tape cabinets, filmstrip cabinets, slide cabinets, bases and mobile bases, also can be used in Discmobiles, or Mobile A-V Centers.

May Be Purchased With Door and Lock

Now these cabinets are available with door and lock for protection and security. Door can also be added to existing installations. Crackle Gray or Crackle Tan Finish.

DISCABINET PRICE LIST

| Size of Record | Stock No. | Wide | Size of Cabinet High | Deep | Shipping Weight | Pocket Capacity | Price |
|----------------|-----------|---------|----------------------|------|-----------------|-----------------|----------|
| 7" | A-7 | 13 1/8" | 9" | 9" | 15# | 90 | \$ 60.00 |
| 10" | B-10 | 13 1/8" | 12 3/4" | 12" | 22# | 90 | \$ 72.00 |
| 12" | C-12 | 13 1/8" | 15 1/2" | 14" | 30# | 90 | \$ 78.00 |
| 16" | D-16 | 13 1/8" | 20" | 20" | 54# | 90 | \$117.00 |
| LP | LP-12 | 13 1/8" | 15 1/2" | 14" | 30# | 60 | \$ 78.00 |

Same as above without pocket and catalog.

| Size of Record | Stock No. | Wide | Size of Cabinet High | Deep | Shipping Weight | Pocket Capacity | Price |
|----------------|-----------|---------|----------------------|------|-----------------|-----------------|----------|
| 7" | AE-7 | 13 1/8" | 9" | 9" | 9# | 90 | \$ 27.00 |
| 10" | BE-10 | 13 1/8" | 12 3/4" | 12" | 14# | 90 | \$ 33.00 |
| 12" | CE-12 | 13 1/8" | 15 1/2" | 14" | 19# | 90 | \$ 35.25 |
| 16" | DE-16 | 13 1/8" | 20" | 20" | 30# | 90 | \$ 57.00 |
| LP | CE-12 | 13 1/8" | 15 1/2" | 14" | 18# | 60 | \$ 35.25 |

Price

| | |
|-----------------------|----------------|
| 4" Base | |
| 4" H x 13-1/8" x 14" | |
| FB-14 | |
| 14" H x 16" x 19-1/2" | \$42.00 |
| FBC-16 | |
| 2-1/2" casters | |
| 17" H x 16" x 19-1/2" | \$57.00 |
| FBC-18 4" casters | |
| 19" H x 16" x 19-1/2" | \$64.50 |

Crackle Gray or Crackle Tan Finish.



WALLACH & ASSOCIATES, INC.

Combination Disc and Tape Cabinet

This combination cabinet is divided into three (3) compartments. The first compartment holds thirty (30) individual records in Disc-cabinet pockets, your choice of 7", 10", 12" or LP pockets or any combination of sizes. The second compartment holds five (5) record albums or twenty-five (25) records in LP jackets. The third compartment holds twelve (12) tape boxes for 5" and 7" tapes. With this sturdy steel cabinet you receive 30 heavy red wallet pockets and a complete cataloging system; consisting of 2 sets Gummed Consecutive Numbers, 270 printed Cataloging Cards and 1 steel Card File Box with A-Z index.

Cabinets shipped with 30 - 12" pockets unless otherwise specified.

Cabinet will hold 20 LP pockets.

Crackle Gray or Crackle Tan finish.

DC-30, 13-1/8"W x 15-5/8"H x 24"D, Shipping Weight: 25 lbs. \$56.25

DC-30D, Same with door. \$71.25

DC-30DL, Same with door and lock. . \$75.75

Center compartment equipped with pockets add \$18.00

Discmobile

Cabinets can be mounted on top shelf or bottom shelf. Can be equipped with any model of Discabinet, tape cabinet, filmstrip cabinet or combination cabinet.

Crackle gray or crackle tan finish.

Operates on easy to roll 2 1/2" cushion tread swivel casters, two with brakes. 32 lbs.

Dimensions: 20" wide, 13 1/2" deep, 32" high overall.

Sturdy all welded steel construction.

Model PT-3, Table Only \$ 66.00

Model PT-3C, With Cabinet as Shown \$147.00

"Reelmobile"

SPECIFICATIONS: 43 1/2" high x 15" deep x 36" wide. Constructed of heavy gauge steel to provide a sturdy rigid unit which will permit movement without misalignment. Open Type with closed top and closed sides, equipped with FILM SEPARATOR RACKS which are ADJUSTED VERTICALLY on 1" centers (to meet changing requirements). Operates on easy to roll 4" solid molded cushion tread SWIVEL CASTERS (2 with BRAKES). Furnished in Machine Tool Gray or Olive Green baked on enamel.

TYPE RMP-50 Provides top shelf for PROJECTOR and storage space below for 25 600' or 800', and 25 1200' or 1600' 16MM reels and cans. Shipping weight 106 lbs. \$168.00

TYPE RM-77 has a capacity for 25 400', 25 600' or 800' and 25 1200' or 1600' 16MM reels and cans. Shipping weight 115 lbs.

Furnished in Machine Tool Gray or Olive Green. \$187.50

"Reelmobile" Empty (no racks) . . . \$129.00

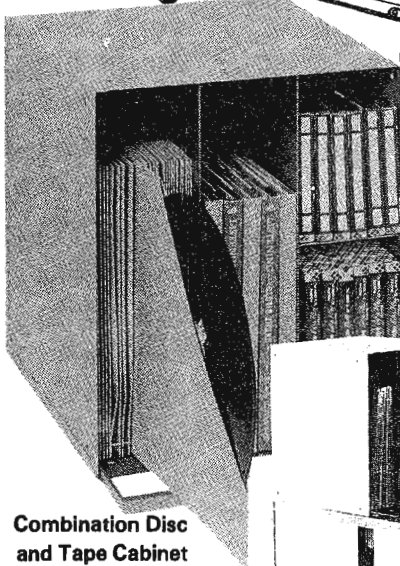
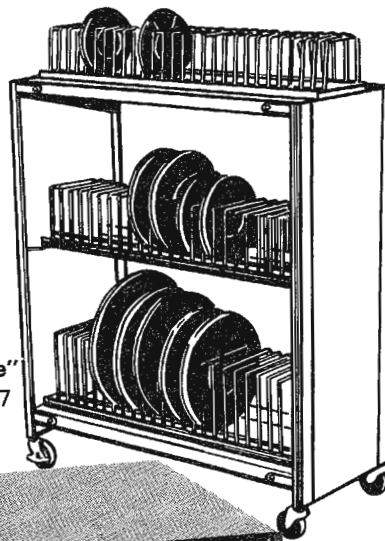
SR-425 Film Separator Rack for 400' \$ 19.05

SR-6825 Film Separator Rack for 600' or 800', 25 \$ 19.80

SR-1625 Film Separator Rack for 1200' or 1600' 25 \$ 21.60

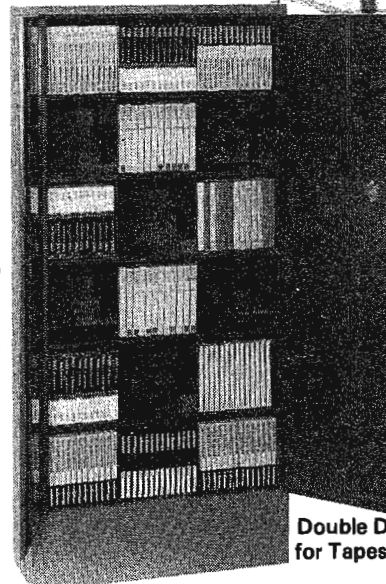
Also available in 30" and 48" widths, prices furnished on request.

"Reelmobile"
TYPE RM77
\$187.50



Combination Disc
and Tape Cabinet

Discmobile



Double Door Cabinets
for Tapes

**Double Door Cabinets for Tapes,
Video Tapes, Cassettes or 8mm Single
Concept Film Containers**

TR-3350 cabinet for 750 3" Tape Boxes, 700 Cassettes or 270 8mm Single Concept Containers, or any combination of the three sizes. Adjustable depth dividers in each compartment provide easy change of sizes. 29" wide x 66" high x 10" deep, 27 compartments. Shipping weight 140 lbs. . . . \$318.00

TR-5384 cabinet for 5" Tape Boxes or 8mm Single Concept Containers, 29" wide x 60" high x 10" deep. 24 Compartments, capacity to 384 reel Boxes. Shipping weight 130 lbs. \$291.00

TR-7288 cabinet for 7" or combination of 5" and 7" Tape Boxes, also 1/2" Video Tape Boxes, 29" wide x 66" high x 10" deep. 18 compartments, capacity to 288 reel boxes. Shipping weight 130 lbs. \$291.00

TR-192 cabinet for 10 1/2" Tape Boxes or 1" Video Tape Boxes, 29" wide x 60" high x 14" deep. 12 compartments, capacity to 192 reel boxes. Shipping weight 160 lbs. \$298.00

VTR-5 cabinet for 3/4" Video Cassettes, 29" wide x 66" high x 10" deep. 15 compartments, capacity to 90 containers. Shipping weight 130 lbs. \$291.00

Crackle gray finish — Chrome lock handle. Crackle tan finish.

Double Door Discabinet Price List

Sturdy steel cabinet with doors and chrome lock handle, 2 keys, 29" wide x 60" high x 15" deep. Complete with pockets, 2 sets numbers, printed cataloging cards (3 per pocket) and steel card file with A-Z index.

Finished in Crackle Gray — For Crackle Tan finish add. **HOLDS**

B-540 540-10" \$528.00

C-540 540-12" \$570.00

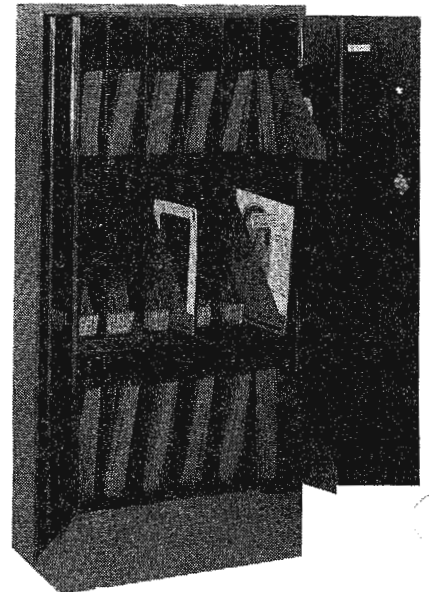
BC-270 . . . 270-10" and 270-12" . . . \$552.00

LP-360 360-LP \$570.00

C-540E Without pockets or cataloging \$327.00

Shipping Weight 250 lbs.

Double Door Discabinet

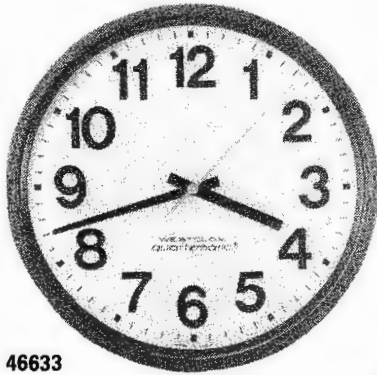


Prices and specifications subject to change without notice

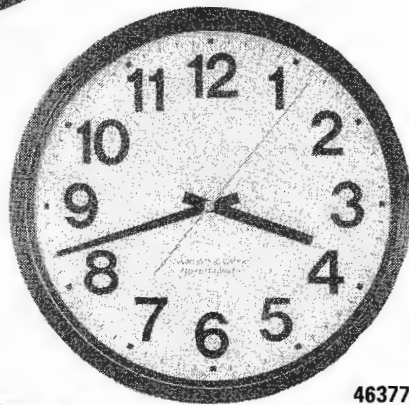


WESTCLOX

Westclox Monitor Wall Clocks



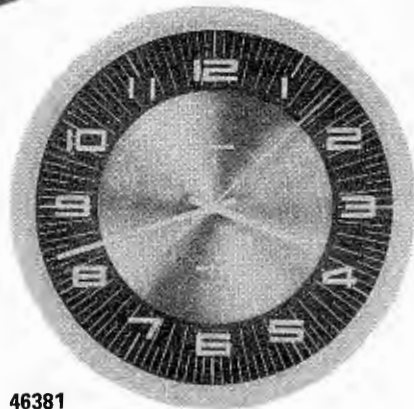
46633



46377



46379



46381

Quartzmatic Monitor

8" Quartzmatic Monitor joins the 12" family of Quartzmatic commercial wall clocks. The 8" monitor features the Westclox exclusive Quartzmatic battery operated movement with an accuracy of plus or minus one minute per year. Sweep second hand. Diameter 9 1/2". Depth 3 1/4".

Quartzmatic Battery Wall Clocks

Quartzmatic Monitor by Westclox is perfect for commercial use with an accuracy within one minute a year.* Place them anywhere. . .no costly installation or unsightly cords. All Quartzmatic Monitor clocks have large, easy-to-read numerals. Protective lens. Full sweep second hand.

8" Dial Monitor Quartzmatic
No. 46633 Brown

12" Dial Monitor Quartzmatic
No. 46377 Brown
No. 46379 Brown, Tan dial
No. 46381 White, Black dial

Quartzmatic Battery Movement

Quartzmatic models feature genuine Westclox quartz crystal battery movements that deliver accuracy within one minute a year.*

*Regulation may be necessary to achieve this accuracy.

| | | | |
|-------|--------------------------------------|--|---------|
| 46633 | Monitor 8" Dial [Quartzmatic] | Brown Case Full Sweep Second Hand | \$36.95 |
| 46377 | Monitor 12" Dial [Quartzmatic] | Brown Case, White Dial Full Sweep Second Hand | \$39.95 |
| 46379 | Monitor 12" Dial [Quartzmatic] | Brown Case, Tan Dial Full Sweep Second Hand | \$39.95 |
| 46381 | Monitor 12" Dial [Quartzmatic] | White Case, Black Dial Full Sweep Second Hand | \$39.95 |

Prices and specifications subject to change without notice



White ANALYZERS AND EQUALIZERS



SERIES 4000 ACTIVE EQUALIZERS:

27 one-third octave bands from 40 Hz through 16 kHz. ± 10 dB control range. 12 dB/octave high-pass filter variable from 20 Hz through 160 Hz. Noise better than -90 dBm. Accessory socket for optional low-level crossover networks. Barrier strip connectors.

- Model 4001: Transformer isolated input, single-ended outputs 780.00
- Model 4002: Single-ended input and outputs. Wood end blocks.
Optional rack mounting. Phono connectors 780.00
- Model 4003: Transformer isolated input and outputs 825.00



SERIES 4100 TWO CHANNEL, OCTAVE BAND, ACTIVE EQUALIZERS:

Each channel features 10 octave bands from 31.5 Hz through 16 kHz. ± 10 dB control range. 12 dB/octave high-pass filter variable from 20 Hz through 160 Hz. LED overload indicator. In addition an accessory socket provides for the insertion of optional low-level crossover networks. An EQ in/out switch is mounted on the front panel.

- Model 4100RM: Rack mounted. Phono Connectors 700.00
- Model 4100RMP: Same as 4100RM. 0.25" phone jack connectors 700.00
- Model 4103: Rack mount. Transformer isolated inputs. Barrier strip connectors. 745.00
- Model 4104: Rack Mount. Transformer isolated inputs and outputs. Barrier strip connectors 790.00



MODEL 151 PINK NOISE GENERATOR:

Compact battery powered digitally generated Pink Noise. 268,000,000 bit word length. Flat 20 Hz through 20 kHz. Microphone or line level output. Rugged — inexpensive 125.00



MODEL 140 SOUND ANALYZER:

27 double-tuned 1/3 octave filters on I.S.O. centers from 40 Hz through 16 kHz. 27 by 10 LED display plus separate dB-SPL and overrange readout. One and two dB scales. Display vernier. Built in pink noise generator. Mic and line level inputs. Sync and log amplifier outputs for remote oscilloscope display. Rugged road case. Meets ANSI S1.11-1971 Class II Specifications. 2700.00



MODEL 200 SIGNAL ANALYZER:

30 triple-tuned filters on 1/3 octave I.S.O. centers from 25 Hz through 20 kHz. Octave band and 1/6 octave plug-in filters are available. 30 by 15 LED display plus separate dB-SPL, overrange, and 2 seven segment readouts. 8 memories. One, two and three dB scales. Processes peak and average simultaneously. 3 time constants. All functions are microprocessor controlled. Long list of plug-in options. 4990.00

AVAILABLE AS OPTIONS:

- One-Sixth Octave Filter Set (Double-Tuned)
- RT-60
- One-Octave Filter Set (Triple-Tuned) Available for System A Only
- Microphone Multiplexer
- Heavy Duty Road Case

PLANNED OPTIONS:

- Tunable Band Limited Noise
- IEEE Data Interface Bus
- ROM Memory NAB, EIA, RIAA and AES Reference Curves

Prices and specifications are subject to change without notice.

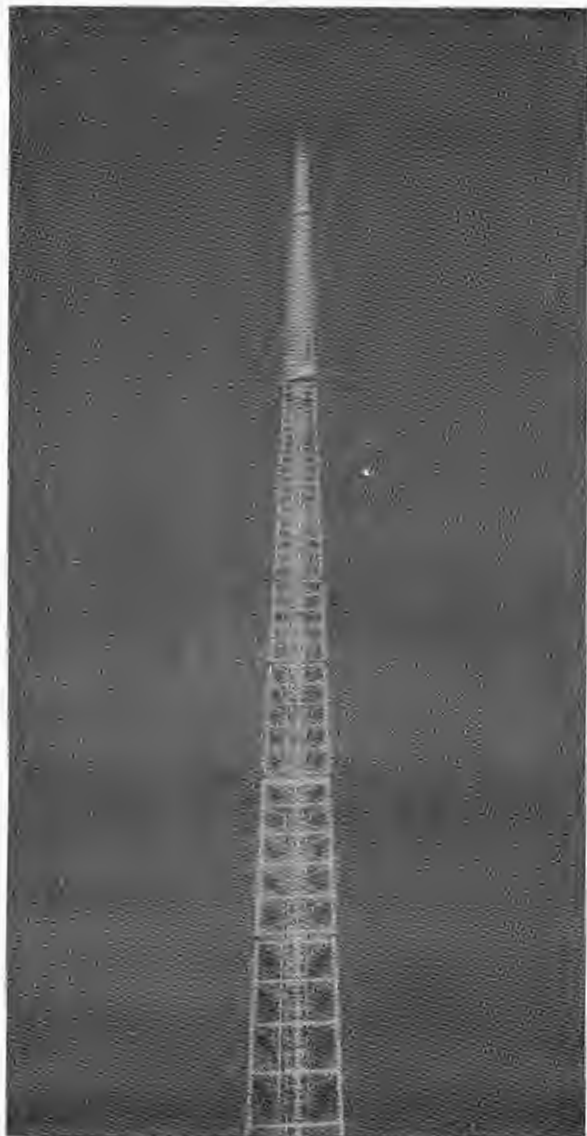
Instruments *White* Incorporated

512/892-0752



WORLD TOWER COMPANY

MANUFACTURING AND INSTALLATION OF
TV, AM, FM AND MICROWAVE RELAY TOWERS



For prices and additional information, contact your Harris District Sales Manager or the Harris Quincy Sales Office.





TERMS AND CONDITIONS

7/26/79

Acceptance:

This proposal, when signed by Purchaser, shall constitute an order by Purchaser which shall be deemed to be accepted by Seller when Seller mails to Purchaser its standard form of acknowledgment. Seller reserves the right, in its acknowledgment, to change prices and specifications herein to Seller's prices and specifications in effect on the date of the acknowledgment. If the prices or specifications in the acknowledgment differ from those herein, Purchaser may cancel this order by a written notice by certified mail to Seller within ten (10) days after receipt of the acknowledgment. In case of such cancellation, Seller shall refund to Purchaser all payments previously made on account of the purchase price, without interest. If a written notice is not received from Purchaser, as above provided, then such changes shall be deemed to be accepted. The order, together with the acknowledgment above mentioned, shall constitute the entire contract between the parties, and shall be changed only by written agreement of the parties. The banking by Seller, or other disposition of funds paid by Purchaser to Seller, shall not constitute acceptance of this order by Seller. The contract shall be governed by the laws of the State of Illinois.

Purchaser acknowledges receipt of a copy of this order as signed by it.

Price:

Seller may adjust the price of any of the equipment covered by this order to Seller's list price in effect immediately prior to shipment, except that in the case of equipment manufactured by Seller, Seller agrees to make no price adjustment if the equipment is shipped within the normal delivery time for the respective items (90 days or six months after Seller's acceptance of a firm order, whichever is applicable), and (a) the order is accompanied by a down payment of at least 25 percent of the total price of the equipment described herein, or (b) this order is designated herein as contingent upon issuance of a construction permit by the Federal Communication Commission and is accompanied by a down payment of at least 5 percent of the total price of the equipment described herein, provided the order is made firm and accompanied by a down payment amount of at least 20 percent within six (6) months after Seller's acceptance of the contingent order. Delays in delivery caused solely by Seller's own actions are excepted. Delays for the convenience or at the request of Purchaser shall not effect Seller's right to adjust prices hereunder. If this order provides for deferred payment terms, Seller may increase the rate of finance charge provided herein to its rate of finance charge in effect immediately prior to shipment, provided, however, that in no event shall such increases exceed one percentage point. No adjustment in price or rate of finance charge shall be made other than as provided herein.

Contingent Orders:

If this order is herein designated as being contingent, Purchaser represents it as pending, or will file with the F.C.C. an application for a construction permit. If such application, as originally filed, or as amended, is denied, revoked, or abandoned, Purchaser, upon giving prompt written notice to that effect to Seller, may cancel this order with respect to any or all items unshipped at the date of Seller's receipt of said notice, whereupon Seller shall refund to Purchaser the payments theretofore made for such cancelled items after deducting charges for special or customer equipment. If a balance remains payable to Seller after deducting the price of such equipment, Purchaser shall pay said balance upon receipt of invoice from Seller.

Taxes:

Purchaser shall pay, or upon receipt of invoice from Seller shall reimburse Seller for, all sales, use, occupation, gross income, excise, and other taxes or charges levied or imposed on Purchaser, or required to be collected by Seller, or imposed on the Equipment or on Seller resulting from this transaction or any part thereof, irrespective of whether included on the face hereof at the time of entry of this order.

Insurance:

Purchaser shall furnish to Seller an insurance policy in such company as Seller shall approve, on the Equipment, against fire and extended coverage perils in an amount equal to the full value of the Equipment, with loss first payable to Seller as its interests may appear. Purchaser will maintain such insurance until full payment shall have been made to Seller, in default of which Seller may obtain the same at Purchaser's expense, for which Purchaser shall promptly reimburse Seller.

Purchaser agrees to indemnify Seller against all claims arising out of or resulting from the erection, operation or use of the Equipment, whether on account of negligence or otherwise, except those asserted by Seller's employees.

Delivery:

If Purchaser delays shipment, payments are to be made as though shipment has been made as specified and the Equipment shall be at Purchaser's risk and shall be stored by Seller at Purchaser's expense.

Seller's obligations hereunder are subject to delays incident to labor difficulties; fires, casualties and accidents, acts of the elements; acts of the public enemy; component failures on test; transportation difficulties; inability to obtain equipment, materials or qualified labor sufficient to timely fill its order, in which latter case Seller may apply or prorate shipments of its products to or among its customers as in its judgment is reasonable in the circumstances; governmental interference or regulations or causes beyond Seller's control.

If shipment of any item is delayed more than one year beyond the shipping date specified herein, by reason of one of the foregoing, either party may terminate this contract as to any such item by written notice to the other, whereupon Seller shall either (a) issue a credit to Purchaser's account hereunder in an amount equal to an equitable portion of the total contract price, without interest, or (b) if the total contract price has been paid, Seller shall refund to Purchaser an equitable portion thereof without interest. If other equipment has been accepted by Seller as part payment and is not available for return to Purchaser, then Seller shall pay to Purchaser the net proceeds received by Seller from its disposition of such equipment.

Installation and Maintenance:

Except as set forth on the face hereof, Purchaser is responsible for the prompt installation, and proper maintenance, of the equipment to Seller's specifications, accepted engineering practice, providing an adequate foundation, employment of sufficient technically qualified personnel and shall furnish any necessary equipment, materials, services, necessary facilities and utilities, and adequate access to the Equipment and installation site. If this contract so provides, Seller will furnish the service of an erection supervisor whose sole responsibility shall be to supervise or check out the installation of Seller's equipment furnished hereunder for the number of days required therefor, at Seller's published field service charge then in effect.

Title and Remedies:

Until full payment of all obligations of Purchaser hereunder (whether represented by notes, open account, judgment, or otherwise), Seller reserves title to all of the Equipment furnished hereunder, or hereafter in connection therewith, whether or not the same is attached to the realty, and the same shall be considered as personal property and subject to the Purchase Money Security Interest of Seller hereby granted by Purchaser.

If Purchaser defaults in paying or performing any of its obligations hereunder, Seller, with or without notice, may treat all amounts owing hereunder by Purchaser to be immediately due and payable and may repossess the equipment and exercise such other or different remedies as are provided by applicable laws.

No remedy herein provided for shall be applicable where not permitted by law. When requested by Seller, Purchaser shall duly acknowledge this contract, and execute, acknowledge, and deliver to Seller in Seller's usual form, a supplement hereto, chattel mortgage, supplemental security agreement, financing statement, or other additional appropriate instrument which Seller may require to constitute the Equipment as the unencumbered security for the obligations of Purchaser hereunder, or to enable Seller to comply with all applicable filing or recording laws.

Purchaser hereby authorizes Seller, or its assignee, where permitted by applicable law, to sign and file financing statements in order to perfect the security interest of Seller hereunder.

If, in the judgment of Seller, either before or after manufacture or shipment of the equipment, the financial responsibility of Purchaser is such as to indicate inability to pay its obligations, including those hereunder, as they mature, Seller, upon giving written notice to Purchaser, may require payment in full or of a specified part of the balance of the purchase price within ten (10) days after the giving of such notice, irrespective of the terms of payment stated herein.

Warranty

In the event that this order includes service parts, the following Warranty period shall apply: Replacement parts, with the exception of tubes, are warranted by Seller for a period of 90 days from date of shipment.

Seller warrants Equipment of Seller's manufacture against defects in material or workmanship at the time of delivery thereof, that develop under normal use within a period of one year (6 months on moving parts) from the date of shipment, of which Purchaser gives Seller prompt written notice. Other manufacturers' and Suppliers' Equipment and services, if any, including electron tubes, solid state devices, transmission line, antennas, towers, related equipment and installation and erection services, shall carry only such manufacturers' or Suppliers' standard warranty, as to which Purchaser hereby agrees to deal with such manufacturer or installation contractor.

Seller's sole responsibility for any breach of the foregoing provision of this contract, with respect to any Equipment or parts not conforming to the warranty or the description herein contained, is at its option, (a) to repair or replace such Equipment or parts, f.o.b. Seller's shipping point, upon the return thereof, freight prepaid, within the period aforesaid, or (b) to accept the return thereof f.o.b. Purchaser's point of installation, whereupon Seller shall either (1) issue a credit to Purchaser's account hereunder in an amount equal to an equitable portion of the total contract price, without interest, or (2) if the total contract price has been paid, refund to Purchaser an equitable portion thereof without interest. If other equipment has been accepted by Seller as part payment and is not available for return to Purchaser, then Seller shall pay to Purchaser the net proceeds received by Seller from its disposition of such equipment.

If the Equipment is described as used, it is sold as is and where is. If the contract covers equipment not owned by Seller at this date, it is sold subject to Seller's acquisition of possession and title.

Seller assumes no responsibility for design characteristics of special equipment manufactured to specifications supplied by or on behalf of Purchaser and shall not be liable for any expenses, whether for repairs, replacements, material, service, labor or otherwise, incurred by Purchaser, or for modifications made by Purchaser to the Equipment without prior written consent to Seller.

EXCEPT AS SET FORTH HEREIN, AND EXCEPT AS TO TITLE, THERE ARE NO WARRANTIES, OR ANY AFFIRMATIONS OF FACT OR PROMISES BY SELLER, WITH REFERENCE TO THE EQUIPMENT, OR TO MERCHANTABILITY, FITNESS FOR A PARTICULAR APPLICATION, SIGNAL COVERAGE, INFRINGEMENT, OR OTHERWISE, WHICH EXTEND BEYOND THE DESCRIPTION OF THE EQUIPMENT ON THE FACE HEREOF.

Damages and Risk of Loss:

Purchaser assumes all responsibility for, and risk of loss of, or damage to, the Equipment upon delivery at Seller's shipping point, notwithstanding the fact that Seller may have selected the carrier.

Purchaser is expressly notified, and hereby agrees, that Seller's liability hereunder shall not include losses of anticipated profits or special incidental or consequential damages.

Tower, Antenna and Related Services:

Tower and antenna erection work, ground system installation, installation of concrete foundations and anchors, and services related thereto and provided for herein, will be performed by an independent contractor.

Seller shall let the contract for erection of any towers and antennas provided for herein to an independent contractor, who shall not be deemed to be an agent of Seller, upon the installer's Terms and Conditions hereto attached, as accepted by Purchaser. Purchaser agrees to supervise and direct such independent contractor in the performance of the work to assure compliance with all applicable specifications, restrictions, ordinances, laws and governmental regulations.

With respect to the erection of the tower, antenna and related services, Purchaser agrees that: (a) prior to shipment of such equipment, Purchaser will have obtained from the Federal Communications Commission, the Federal Aviation Agency, and any other governing bodies having jurisdiction thereof all necessary permits; (b) the site will be level, clear and free from obstructions and debris, and staked off prior to arrival of the tower erection crew; (c) the site shall not consist of marshy land, swamps, dumps, rocky soil, peat or frozen soil, and the soil conditions shall be normal and suitable; (d) suitable electrical power will be available for construction work and for testing; and (e) there shall be suitable access to the site by truck and other vehicles for the hauling of all necessary materials and equipment.

If, either before or after the erection crew has begun the work of erection, it is discovered that any of the conditions specified in (a) through (e) have not been met, then the erection crew foreman, in his discretion, may have the crew, at the expense of the Purchaser, perform such work as may be necessary or appropriate in order that the specified conditions may be brought about, or may delay the beginning of the work, or if already begun may discontinue the work, and, if he considers it impracticable to keep the erection crew on the site, may have the crew depart from the site.

Purchaser agrees to pay to Seller, or its order, upon invoice, all cost of extra material or services required for the performance of work related to the installation of towers, antennas or related equipment, including any extra costs incurred by the contractor by reason of failure of compliance by Purchaser with any of the conditions (a) through (e) above or occasioned by inclement weather, labor difficulties, or excess labor costs resulting from requirements of local unions for extra work or stand-by labor.

Upon certification of the completion of the erection work hereunder by the erection crew foreman, Purchaser shall inspect the work, and, if it is in conformity with the terms and provisions of this contract, shall certify its acceptance by immediately delivering to the erection crew foreman a signed statement to that effect. If Purchaser declines to sign such statement, then Purchaser, before departure of the crew, shall inform Seller in detail by telephone of the reasons for such declination and promptly confirm such reasons in writing. If, before departure of the crew, Purchaser fails so to notify Seller, or if Purchaser fails to make such inspection, the work shall be conclusively deemed to have been accepted by Purchaser.

In the event that this order covers an antenna to be installed on an existing tower, Purchaser alone shall be responsible for determining, to his complete satisfaction, the adequacy of such tower to support the weight and wind loading associated with such antenna and related hardware and the installation thereof. Seller's sole responsibility shall be to provide to Purchaser the specifications relative to such antenna and related hardware.

Miscellaneous:

This order is subject to acceptance by Seller at its home office written herein and thereupon shall constitute the entire contract between the parties which replaces, supersedes and merges all prior discussions, agreements or understandings between the parties and which shall be changed only by written agreement of the parties.

Any or all of Seller's rights or obligations hereunder may be assigned by Seller without notice to Purchaser and may be exercised by an assignee thereof. Purchaser shall not assert against any transferee, either of this contract or of promissory notes, any defense (other than actual payment), setoff, equity, or counterclaim which Purchaser may have or claim against Seller. Purchaser acknowledges that Seller uses varying trade styles and names in those jurisdictions in which it does business.

Model, nomenclature and the mechanical and electrical design of equipment described herein are subject to change without notice.

The remedies of Purchaser, for any breach of any obligations arising hereunder as herein set forth, shall be the sole and exclusive remedies therefor, irrespective of any other remedies otherwise available pursuant to UCC2-719 or otherwise in law or equity.

Each provision of this contract is severable, and in the event that any one or more provisions hereof may be declared invalid, the remainder of this agreement shall nevertheless remain in full force and effect.

Acceptance:

This proposal, when signed by Purchaser, shall constitute an order by Purchaser which shall be deemed to be accepted by Seller when Seller mails to Purchaser its standard form of acknowledgment. Seller reserves the right, in its acknowledgment, to change prices and specifications herein to Seller's prices and specifications in effect on the date of the acknowledgment. If the prices or specifications in the acknowledgment differ from those herein, Purchaser may cancel this order by a written notice by certified mail to Seller within ten (10) days after receipt of the acknowledgment. In case of such cancellation, Seller shall refund to Purchaser all payments previously made on account of the purchase price, without interest. If a written notice is not received from Purchaser, as above provided, then such changes shall be deemed to be accepted. The order, together with the acknowledgment above mentioned, shall constitute the entire contract between the parties, and shall be changed only by written agreement of the parties. The banking by Seller, or other disposition of funds paid by Purchaser to Seller, shall not constitute acceptance of this order by Seller. The contract shall be governed by the laws of the State of Illinois.

Purchaser acknowledges receipt of a copy of this order as signed by it.

Price:

Seller may adjust the price of any of the equipment covered by this order to Seller's list price in effect immediately prior to shipment, except that in the case of equipment manufactured by Seller, Seller agrees to make no price adjustment if the equipment is shipped within the normal delivery time for the respective items (90 days or six months after Seller's acceptance of a firm order, whichever is applicable), and (a) this order is accompanied by a down payment of at least 25 percent of the total price of the equipment described herein, or (b) this order is designated herein as contingent upon issuance of a construction permit by the Federal Communication Commission and is accompanied by a down payment of at least 5 percent of the total price of the equipment described herein, provided the order is made firm and accompanied by a down payment amount of at least 20 percent within six (6) months after Seller's acceptance of the contingent order. Delays in delivery caused solely by Seller's own actions are excepted. Delays for the convenience or at the request of Purchaser shall not affect Seller's right to adjust prices hereunder. If this order provides for deferred payment terms, Seller may increase the rate of finance charge provided herein to its rate of finance charge in effect immediately prior to shipment, provided, however, that in no event shall such increases exceed one percentage point. No adjustment in price or rate of finance charge shall be made other than as provided herein.

Contingent Orders:

If this order is herein designated as being contingent, Purchaser represents it as pending, or will file with the F.C.C. an application for a construction permit. If such application, as originally filed, or as amended, is denied, revoked, or abandoned, Purchaser, upon giving prompt written notice to that effect to Seller, may cancel this order with respect to any or all items unshipped at the date of Seller's receipt of said notice, whereupon Seller shall refund to Purchaser the payments theretofore made for such cancelled items after deducting charges for special or custom-built equipment. If a balance remains payable to Seller after deducting the price of such equipment, Purchaser shall pay said balance upon receipt of invoice from Seller.

Taxes:

Purchaser shall pay, or upon receipt of invoice from Seller shall reimburse Seller for, all sales, use, occupation, gross income, excise, and other taxes or charges levied or imposed on Purchaser, or required to be collected by Seller, or imposed on the Equipment or on Seller resulting from this transaction or any part thereof, irrespective of whether included on the face hereof at the time of entry of this order.

Insurance:

Purchaser shall furnish to Seller an insurance policy in such company as Seller shall approve, on the Equipment, against fire and extended coverage perils in an amount equal to the full value of the Equipment, with loss first payable to Seller as its interests may appear. Purchaser will maintain such insurance until full payment shall have been made to Seller, in default of which Seller may obtain the same at Purchaser's expense, for which Purchaser shall promptly reimburse Seller.

Purchaser agrees to indemnify Seller against all claims arising out of or resulting from the erection, operation or use of the equipment, whether on account of negligence or otherwise, except those asserted by Seller's employees.

Delivery:

If Purchaser delays shipment, payments are to be made as though shipment has been made as specified and the Equipment shall be at Purchaser's risk and shall be stored by Seller at Purchaser's expense.

Seller's obligations hereunder are subject to delays incident to labor difficulties; fires, casualties and accidents, acts of the elements; acts of the public enemy; component failures on test; transportation difficulties; inability to obtain equipment, materials or qualified labor sufficient to timely fill its order, in which latter case Seller may apply or prorate shipments of its products to or among its customers as in its judgment is reasonable in the circumstances; governmental interference or regulations and causes beyond Seller's control.

If shipment of any item is delayed more than one year beyond the shipping date specified herein, by reason of any one of the foregoing, either party may terminate this contract as to any such items by written notice to the other, whereupon Seller shall either (a) issue a credit to Purchaser's account hereunder in an amount equal to an equitable portion of the total contract price, without interest, or (b) if the total contract price has been paid, Seller shall refund to Purchaser an equitable portion thereof without interest. If other equipment has been accepted by Seller as part payment and is not available for return to Purchaser, then Seller shall pay to Purchaser the net proceeds received by Seller from its disposition of such equipment.

Installation and Maintenance:

Except as set forth on the face hereof, Purchaser is responsible for the prompt installation, and proper maintenance, of the equipment to Seller's specifications, and accepted engineering practice, providing an adequate foundation, employment of sufficient technically qualified personnel and shall furnish any necessary equipment, materials, services, necessary facilities and utilities, and adequate access to the Equipment and installation site. If this contract so provides, Seller will furnish the service of an erection supervisor whose sole responsibility shall be to supervise or check out the installation of Seller's equipment furnished hereunder for the number of days required therefor, at Seller's published field service charge then in effect.

Title and Remedies:

Until full payment of all obligations of Purchaser hereunder (whether represented by notes, open account, judgment, or otherwise), Seller reserves title to all of the Equipment furnished hereunder, or hereafter in connection therewith, whether or not the same is attached to the realty, and the same shall be considered as personal property and subject to the Purchase Money Security Interest of Seller hereby granted by Purchaser.

If Purchaser defaults in paying or performing any of its obligations hereunder, Seller, with or without notice, may treat all amounts owing hereunder by Purchaser to be immediately due and payable and may repossess the equipment and exercise such other or different remedies as are provided by applicable law.

No remedy herein provided for shall be applicable where not permitted by law.

When requested by Seller, Purchaser shall duly acknowledge this contract, and execute, acknowledge, and deliver to Seller in Seller's usual form, a supplement hereto, chattel mortgage, supplemental security agreement, financing statement, or other additional appropriate instrument which Seller may require to constitute the Equipment as the unencumbered security for the obligations of Purchaser hereunder, or to enable Seller to comply with all applicable filing or recording laws.

Purchaser hereby authorizes Seller, or its assignee, where permitted by applicable law, to sign and file financing statements in order to perfect the security interest of Seller hereunder.

If, in the judgment of Seller, either before or after manufacture or shipment of the Equipment, the financial responsibility of Purchaser is such as to indicate inability to pay its obligations, including those hereunder, as they mature, Seller, upon giving written notice to Purchaser, may require payment in full or of a specified part of the balance of the purchase price within ten (10) days after the giving of such notice, irrespective of the terms of payment stated herein.

Warranty

In the event that this order includes service parts, the following Warranty period shall apply: Replacement parts, with the exception of tubes, are warranted by Seller for a period of 90 days from date of shipment.

Seller warrants Equipment of Seller's manufacture against defects in material or workmanship at the time of delivery thereof, that develop under normal use within a period of one year (6 months on moving parts) from the date of shipment, of which Purchaser gives Seller prompt written notice. Other manufacturers' and Suppliers' Equipment and services, if any, including electron tubes, solid state devices, transmission line, antennas, towers, related equipment and installation and erection services, shall carry only such manufacturers' or Suppliers' standard warranty, as to which Purchaser hereby agrees to deal with such manufacturer or installation contractor.

Seller's sole responsibility for any breach of the foregoing provision of this contract, with respect to any Equipment or parts not conforming to the warranty or the description herein contained, is at its option, (a) to repair or replace such Equipment or parts, f.o.b. Seller's shipping point, upon the return thereof, freight prepaid, within the period aforesaid, or (b) to accept the return thereof f.o.b. Purchaser's point of installation, whereupon Seller shall either (1) issue a credit to Purchaser's account hereunder in an amount equal to an equitable portion of the total contract price, without interest, or (2) if the total contract price has been paid, refund to Purchaser an equitable portion thereof without interest. If other equipment has been accepted by Seller as part payment and is not available for return to Purchaser, then Seller shall pay to Purchaser the net proceeds received by Seller from its disposition of such equipment.

If the Equipment is described as used, it is sold as is and where is. If the contract covers equipment not owned by Seller at this date, it is sold subject to Seller's acquisition of possession and title.

Seller assumes no responsibility for design characteristics of special equipment manufactured to specifications supplied by or on behalf of Purchaser and shall not be liable for any expenses, whether for repairs, replacements, material, service, labor or otherwise, incurred by Purchaser, or for modifications made by Purchaser to the Equipment without prior written consent to Seller.

EXCEPT AS SET FORTH HEREIN, AND EXCEPT AS TO TITLE, THERE ARE NO WARRANTIES, OR ANY AFFIRMATIONS OF FACT OR PROMISES BY SELLER, WITH REFERENCE TO THE EQUIPMENT, OR TO MERCHANTABILITY, FITNESS FOR A PARTICULAR APPLICATION, SIGNAL COVERAGE, INFRINGEMENT, OR OTHERWISE, WHICH EXTEND BEYOND THE DESCRIPTION OF THE EQUIPMENT ON THE FACE HEREOF.

Damages and Risk of Loss:

Purchaser assumes all responsibility for, and risk of loss of, or damage to, the Equipment upon delivery at Seller's shipping point, notwithstanding the fact that Seller may have selected the carrier.

Purchaser is expressly notified, and hereby agrees, that Seller's liability hereunder shall not include losses of anticipated profits or special incidental or consequential damages.

Tower, Antenna and Related Services:

Tower and antenna erection work, ground system installation, installation of concrete foundations and anchors, and services related thereto and provided for herein, will be performed by an independent contractor.

Seller shall let the contract for erection of any towers and antennas provided for herein to an independent contractor, who shall not be deemed to be an agent of Seller, upon the installer's Terms and Conditions hereto attached, as accepted by Purchaser. Purchaser agrees to supervise and direct such independent contractor in the performance of the work to assure compliance with all applicable specifications, restrictions, ordinances, laws and governmental regulations.

With respect to the erection of the tower, antenna and related services, Purchaser agrees that, (a) prior to shipment of such equipment, Purchaser will have obtained from the Federal Communications Commission, the Federal Aviation Agency, and any other governing bodies having jurisdiction thereof all necessary permits; (b) the site will be level, clear and free from obstructions and debris, and staked off prior to arrival of the tower erection crew; (c) the site shall not consist of marshy land, swamps, dumps, rocky soil, peat or frozen soil; and the soil conditions shall be normal and suitable; (d) suitable electrical power will be available for construction work and for testing; and (e) there shall be suitable access to the site by truck and other vehicles for the hauling of all necessary materials and equipment.

If, either before or after the erection crew has begun the work of erection, it is discovered that any of the conditions specified in (a) through (e) have not been met, then the erection crew foreman, in his discretion, may have the crew, at the expense of the Purchaser, perform such work as may be necessary or appropriate in order that the specified conditions may be brought about, or may delay the beginning of the work, or if already begun may discontinue the work, and, if he considers it impracticable to keep the erection crew on the site, may have the crew depart from the site.

Purchaser agrees to pay to Seller, or its order, upon invoice, all cost of extra material or services required for the performance of work related to the installation of towers, antennas or related equipment, including any extra costs incurred by the contractor by reason of failure of compliance by Purchaser with any of the conditions (a) through (e) above or occasioned by inclement weather, labor difficulties, or excess labor costs resulting from requirements of local unions for extra work or stand-by labor.

Upon certification of the completion of the erection work hereunder by the erection crew foreman, Purchaser shall inspect the work, and, if it is in conformity with the terms and provisions of this contract, shall certify its acceptance by immediately delivering to the erection crew foreman a signed statement to that effect. If Purchaser declines to sign such statement, then Purchaser, before departure of the crew, shall inform Seller in detail by telephone of the reasons for such declination and promptly confirm such reasons in writing. If, before departure of the crew, Purchaser fails so to notify Seller, or if Purchaser fails to make such inspection, the work shall be conclusively deemed to have been accepted by Purchaser.

In the event that this order covers an antenna to be installed on an existing tower, Purchaser alone shall be responsible for determining, to his complete satisfaction, the adequacy of such tower to support the weight and wind loading associated with such antenna and related hardware and the installation thereof. Seller's sole responsibility shall be to provide to Purchaser the specifications relative to such antenna and related hardware.

Miscellaneous:

This order is subject to acceptance by Seller at its home office written herein and thereupon shall constitute the entire contract between the parties which replaces, supercedes and merges all prior discussions, agreements or understandings between the parties and which shall be changed only by written agreement of the parties.

Any or all of Seller's rights or obligations hereunder may be assigned by Seller without notice to Purchaser and may be exercised by an assignee thereof. Purchaser shall not assert against any transferee, either of this contract or of promissory notes, any defense (other than actual payment), setoff, equity, or counterclaim which Purchaser may have or claim against Seller. Purchaser acknowledges that Seller uses varying trade styles and names in those jurisdictions in which it does business.

Model, nomenclature and the mechanical and electrical design of equipment described herein are subject to change without notice.

The remedies of Purchaser, for any breach of any obligations arising hereunder as herein set forth, shall be the sole and exclusive remedies thereto, irrespective of any other remedies otherwise available pursuant to UCC2-719 or otherwise in law or equity.

Each provision of this contract is severable, and in the event that any one or more provisions hereof may be declared invalid, the remainder of this agreement shall nevertheless remain in full force and effect.

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