



HARRIS

AM-FM, TV
Broadcast Equipment
Accessories Catalog
82-V

FOREWORD

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

In this new catalog we have listed thousands of items required by the broadcaster in the areas of audio, R.F. and video. We hope that this 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.

The Broadcast Division is one of 26 divisions of Harris Corporation, a world leader in communications and information processing systems and equipment. With sales in excess of one and one-half billion dollars, Harris is one of the 500 largest corporations in the United States.

The items listed in this publication have been carefully selected to represent the finest accessories assortment from every equipment category. We are confident the "82-V" catalog will prove useful to you. Your patronage is welcome and appreciated.



TABLE OF CONTENTS

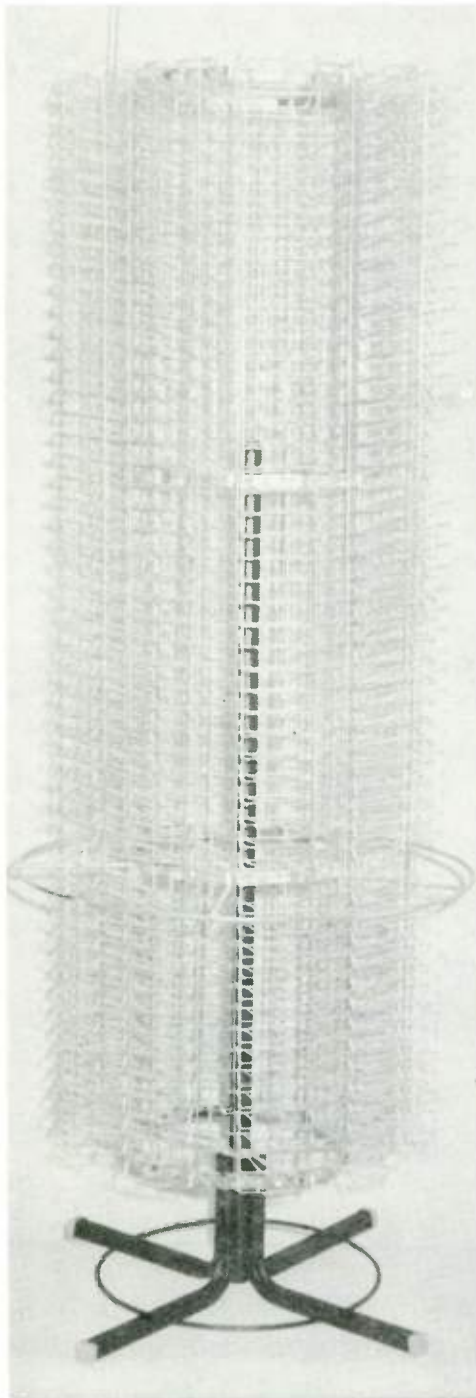
Abco Wire and Metal Products	2	Lenco, Inc	91-96
Acoustic Research	3	Lightning Elimination Associates	97, 98
ADC Products	4	Listec TV Equipment Corp	188-193
Allied Tower	179	Luxo Lamp Corp	26
Altronic Research Corp	5, 6	Marti Electronics, Inc	101-104
AMP Special Industries	9	Mic Mix Audio Products, Inc	105
Ampex Corp.	7, 8	Microtrak Corp	106-108
Ampro Scully	10, 11	Microtran Co., Inc	109
Andrew Corp	12-14	3M	99, 100
Anixter Mark	15	3M Company - Scotch	147, 148
Aphex	16	Moseley Associates, Inc	110-114
Asaca	17, 18	Myat, Inc	115-117
Atlas Sound	19	O'Connor Engineering Labs, Inc	118-120
Atlas Tower	179	Orban	121
Audio Connectors	20	Otari	122, 123
Audiolab Electronics	21	Panasonic (Technics)	164
Audio-Technica	22	Phasemaster	124
Auditronics, Inc	23-26	Phelps Dodge	125-127
Belar Electronics Lab Inc	27	Porta-Pattern	128, 129
Belden	28	Potomac Instruments	130-132
Berkey Colortran	163	Quickset	133, 134
Bird Electronics Corp	29-31	R-Columbia	135
Walter S. Brewer Co, Inc	163	Revox (Studer Revox)	161, 162
Cablewave Systems	32-34	Rohde & Schwarz	136, 137
Cinema Products	35	RTS Systems	138-140
Cine 60	36	Ruslang Corp	141-144
Conrac	37, 38	Scala Electronic Corp	145
Crown International, Inc	39, 40	Scientific Atlanta	146
Dale	41	Scotch (3M)	147, 148
DBX Inc	42	Sennheiser Electronic Corp	149-151
Decca Austin	41	Seth-Thomas	152
Delta	43-46	Shure	153-156
Dielectric	47-49	Southeast	157
Dynair Electronics, Inc	50, 51	Spindler & Sauppe	158, 159
Dynatech Data Systems	52	Stanton	160
Electro Impulse Lab, Inc	53, 54	Strand Century	163
Electro-Voice	55-58	Studer Revox America, Inc	161, 162
ESE	59	TFT (Time and Frequency Technology)	173-178
Eventide Clockworks, Inc	60, 61	Talley Industries Co. (Seth Thomas)	152
Fidelipac	62-65	Technics	164
Flexo	2	Tektronix, Inc	169-172
Frezzolini Electronics	66, 67	Telecommunications Industries, Ltd.	128, 129
General Electric	68	Teledyne Acoustic Research	3
Gentner Engineering	69	Telescript	165
Harris Corp	70, 71	Telex	166-168
Hitachi	72-75	Trompeter Electronics, Inc	180
Hughey-Phillips Co	76	Unarco-Rohn	179
Innovative Television Equipment (ITE)	82	UREI	181
International Tapetronics (ITC)	83-87	Utah Scientific	182-185
ISI	77-81	Valley People	186, 187
JBL	88, 89	Vinten	188-193
Kay Industries	124	Westclox	152
Kings Electronics	9	O.C. White Co.	194
Kinoton	90	World Tower	179
Kliegl	163		
Kline Iron & Steel Co., Inc	179		

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).

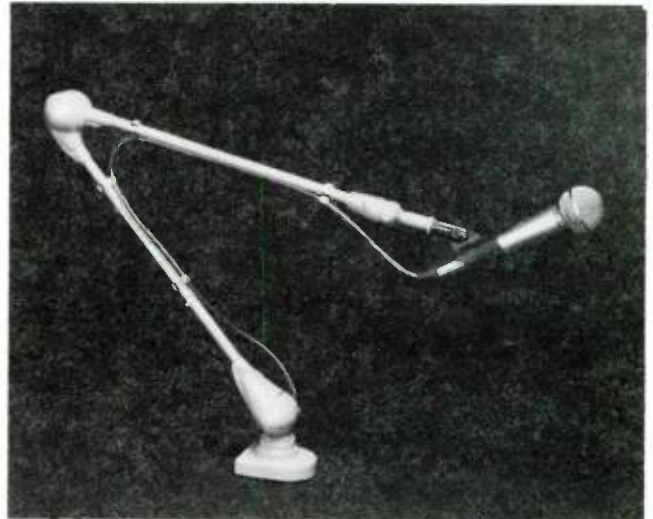
Order Number 730-1493-000

Price \$62.00



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



AR9

- 4-way system
- 2-12" woofers
- 8" cone lower midrange
- 1 1/2" liquid cooled dome upper midrange
- 3/4" liquid cooled dome tweeter
- Three—3 position control switches
- Oiled walnut veneer cabinet

AR9 \$900.00
 Pair 1800.00

AR18

- 2-way system
- 8" woofer
- 1 1/4" pressure tweeter
- Walnut grained vinyl veneer cabinet
- Sold only in pairs

AR18 \$90.00
 Pair 180.00

AR28

- 2-way system
- 8" woofer
- 1" dome tweeter
- Walnut grained vinyl veneer cabinet
- Sold only in pairs

AR28 \$125.00
 Pair 250.00

AR38

- 2-way system
- 10" woofer
- 1 1/4" pressure tweeter
- Walnut grained vinyl veneer cabinet

AR38 \$150.00
 Pair 300.00

AR91

- 3-way system
- 1—12" woofer
- 1 1/2" liquid cooled dome midrange
- 3/4" liquid cooled dome tweeter
- Two—3 position control switches
- Oiled walnut veneer cabinet

AR91 \$425.00
 Pair 850.00

AR92

- 3-way system
- One—10" woofer
- 1 1/2" liquid cooled dome midrange
- 3/4" liquid cooled dome tweeter
- Two—3 position control switches
- Walnut grained vinyl veneer cabinet

AR92 \$325.00
 Pair 650.00



AR91



AR92



AR93



AR94

AR93

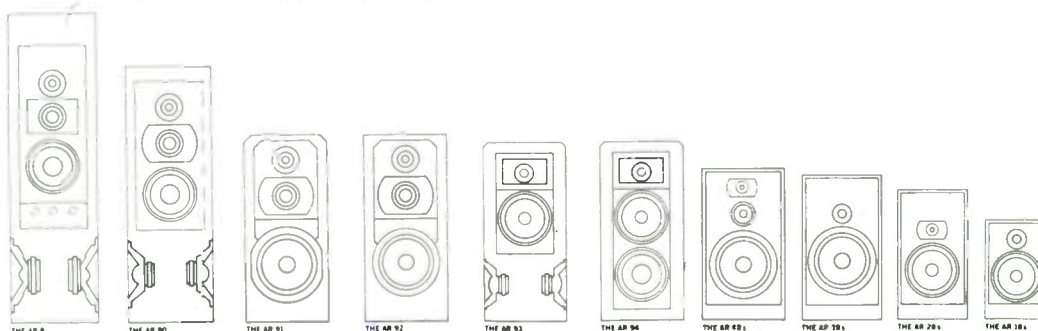
- 3-way system with 4 drive units
- Two—8" acoustic suspension woofers
- 8" midrange
- 1 1/4" liquid cooled tweeter
- Black acoustically transparent cloth over high density particle board

AR93 \$260.00
 Pair 520.00

AR94

- 3-way system with 3 drive units
- One—8" woofer
- One—8" midrange
- 1 1/4" liquid cooled tweeter
- Black acoustically transparent cloth over high density particle board

AR94 \$220.00
 Pair 440.00





ADC Products

A DIVISION OF MAGNETIC CONTROLS COMPANY

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.
				PJ-36		PJ-396				
SINGLE ROW	26	19"	1-3/4"	PJ-36A (WE 230B)		PJ-396A			Reinforcing Strip Only	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-340	PJ-390			PJ-901	Double designation strips. Includes brackets for flush rack mounting.
				PJ-30A (WE 230A)	PJ-340A	PJ-390A		PJ-292	PJ-290	
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.

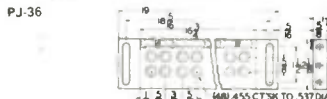
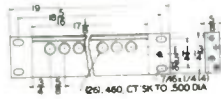
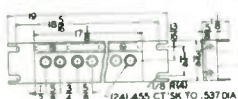
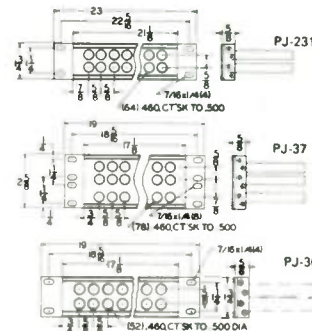
Long Frame Jack Panels [Less Jacks]

Long Frame Jack Panels [With Jacks]

PJ-30	\$29.70	PJ-290	191.00
PJ-30A	29.15	PJ-292	171.00
PJ-31	38.50	PJ-340	132.00
PJ-33	37.40	PJ-341	135.00
PJ-36	29.15	PJ-343	89.00
PJ-36A	29.15	PJ-390	165.00
PJ-37	42.10	PJ-390A	165.00
PJ-231A	67.65	PJ-390W	165.00
		PJ-391	176.00
		PJ-393	132.00
		PJ-396	102.00

Designation Strips

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. [11.89 mm]	A	PJ-203	JJ-016	303 A	
	3	PJ-238 W 531 in. [13.49 mm]	A	PJ-238	JJ-027	238 A	PJ-238 W 531 in. [13.49 mm]
	3	687 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 726 in. [18.44 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. [15.06 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	PJ-339 W
	3	578 in. [14.68 mm]					
	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

TWO CONDUCTOR

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			

Long Frame Patch Cords

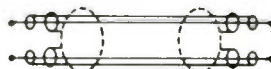
PJ-11	\$35.45
PJ-12	36.75
PJ-13	38.00
PJ-14	39.00
PJ-16	41.25
PJ-71	22.25
PJ-72	23.43
PJ-73	24.37
PJ-74	25.30
PJ-76	27.15
PJ-81	21.75
PJ-82	22.90
PJ-83	23.75
PJ-84	24.65
PJ-86	26.40
PJ-92	46.75
PJ-96	51.70
PJ-172	43.45
PJ-174	45.90
PJ-176	48.40
PJ-182	46.75
PJ-184	49.20
PJ-186	51.70
PJ-311	22.82
PJ-312	23.75
PJ-313	24.64
PJ-314	25.52
PJ-316	27.06
PJ-412	45.54
PJ-414	47.85
PJ-416	50.16
PJ-472	24.20
PJ-474	25.74
PJ-476	27.28

THREE CONDUCTOR - SHIELDED



SINGLE PLUGS

LENGTH	ADC NO. W/PJ-2 PLUGS	ADC NO. W/PJ-051R PLUGS	ADC NO. W/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



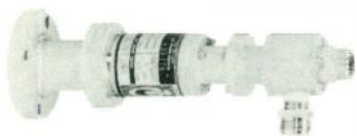
DOUBLE PLUGS

LENGTH	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

ALTRONIC

RESEARCH CORPORATION

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 requirement at 5 KW is 10 lbs. psi.

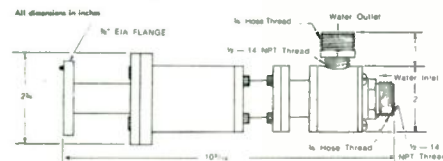
Radio frequency power is dissipated in a film-type cylindrical resistor. The resistor is contained in a patented enclosure that provides an almost reflection-free termination.

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 \$445.00



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.

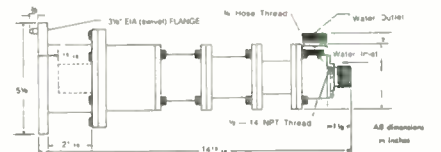
Impedance: 50 ohms nominal. **Max Power Rating:** 15 KW continuous. **Frequency Range:** 60 Hz to 2 Ghz. **Max. VSWR:** 1.10 to 1 Ghz; 1.15 to 1.5 Ghz, and; 1.2 to 2 Ghz. **Cooling Method:** Ordinary tap or distilled water in open or closed systems. **Max. Output Water Temp:** 90° C. **Max Operating 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" x 3 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 \$600.00

5715R, 15 KW, 1-5/8" flangeless, 50 ohm \$585.00

5715, 15 KW, with 3-1/8" flange, 50 ohm \$600.00

5715R, 15 KW, 3-1/8" flangeless, 50 ohm \$585.00



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.

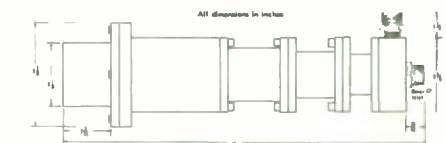
These ruggedly constructed dummy loads require no field adjustments. All units undergo complete testing before delivery. Resistor elements may be replaced in the field in a matter of minutes. There is no need to send the unit back to the factory.

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" x 4 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 \$1075.00

5725R, 25 KW, 3-1/8" flangeless, 50 ohm \$1050.00



ALTRONIC

RESEARCH CORPORATION

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 \$1375.00
5750F, 50 KW, 3-1/8" flangeless, 50 ohm \$1350.00



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 \$1775.00
5780 80 KW, with 6-1/8" flange, 50 ohm \$1800.00
5750, 50 KW, with 6-1/8" EIA flange, 50 ohm \$1425.00
7580A, 80 KW, with 6-1/8" flange, 75 ohm \$1800.00



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 \$70.00
HR-15 for model 5715, 15 KW (See Note 2) \$81.00
HR-25 for model 5725, 25 KW (See Note 2) \$83.00
HR-50 for model 5750, 50 KW (See Note 2) \$150.00
HR-80 for model 5780, 80 KW (See Note 2) \$150.00
HR-37 for model 7580, 80 KW (See Note 2) \$83.00

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 \$25.00)

AMPEX

PROFESSIONAL AUDIO RECORDERS

ATR-100 One, Two and Four Track Audio Recorder

- Ideal for use in mastering, mixdown, duplication, post-production and broadcast applications • A superior audio recorder offering transparent recording and playback fidelity • Superb operating ease
- Fast and gentle tape handling • Easy-to-read LED status indicators are provided for function, mode and channel information • Features simplified: removable, calculator-like matrix-display control panel
- Accommodates any reel size from 2 to 14 inches without the need for tension readjustment • Newly designed composite ferrite/metal record heads combine the best materials for consistently high performance and long operating life. Up to 20 cue points may be programmed using the optional Multi-Point-Search-to-Cue accessory
- PURC™ (Record Insert Controller) is standard for noiseless insert recording.

ATR-100 System Pricing and Mounting Options

4010405	ATR-101, Single Channel, ¼" Tape Width* System	\$5,900.00
4010406	ATR-102, Two Channel, ¼" Tape Width* System	7,200.00
4010408	ATR-102S, European Stereo, ¼" Tape Width* System	7,200.00
4010407	ATR-104, Four Channel, ½" Tape Width* System	9,400.00
4010409	ATR-102 2 channel ½" Tape Width* System	8,200.00

Mounting Options:

4010258-AE	Cabinet 1 or 2 Channel	\$500.00
4010258-AF	Cabinet 4 Channel	500.00
4020426-02	Roll-around pedestal*	400.00
4010252-01	Rack Mount—fixed	150.00
4010253-01	Rack Mount—slides	340.00
4010259-01	Portable Case	800.00

ATR-700 One and Two Track Audio Recorder

NEW VERSATILITY

- 3 record/reproduce formats (3-head configuration): full track (1 channel), 2-track (2 channel), ¼-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 10½", 7" and 5" reels.
- Switchable reel size (tension) selector.
- Tape lifter defeat lever (cue control).
- Edit button for dump edit in play mode.



ATR-100



ATR-700

- Rapid-response electronic motion sensing.
- 3 mounting configurations.
- Fully removable, electronically-controlled transport.
- Professional XLR input/output connectors.
- 4-digit tape counter with rewind-stop memory.

Speed IN/S	Heads (Tracks)	Mounting	Catalog Number	Price
ATR-700-1, Single Channel, Full Track				
7½ — 15	Full	Table-Top	4010271	\$1995.00
ATR-700-2, Two Channel (½ Track Stereo)				
3¾ — 7½	Two	Table-Top	4010272	1995.00
7½ — 15	Two	Table-Top	4010273	1995.00

Prices and Specifications Subject to Change Without Notice.

World Radio History

 HARRIS

AMPEX

PROFESSIONAL AUDIO RECORDERS

ATR-800

One, Two, and Four Track Audio Tape Recorder

THE NEW INTERNATIONAL BROADCAST PERFORMER...WITH MORE STANDARD FEATURES THAN ANY OTHER RECORDER IN ITS CLASS.

- Designed as a world machine to meet stringent international broadcasting and recording standards
- 3 speeds: 7.5, 15, and 30 in./sec. Field convertible to 3.75, 7.5, and 15 in./sec.
- Extra wide head assembly makes editing easy
- Edit modes include dump edit and hands-on-reel
- Quick change head assemblies for easy format conversions in the field
- Fully closed loop servoes
- Microprocessor controlled for safe, gentle, foolproof tape handling
- Converts between NAB and IEC setup at the flip of a switch
- Universal power supply
- Phase Compensated Record Equalization
- Continuously variable shuttle
- Variable speed operation allows recording/playback up to +/-10% of nominal speed
- Recessed controls
- Switchable transport controls accommodate right or left handed operating and editing procedures
- 10 1/2 inch and EIA reel capacity; handles 30 cm (11.8 inch) DIN hubs
- Ceramic tape guides offer years of service
- Built-in cue amplifier
- Electronic tape timer
- Single point search-to-cue
- PURC™ Pick Up Record Capability for noiseless insert recording
- No fans
- Switchable ANSI VU/EBU Peak metering ballistics
- Stereo/Mono level switching
- Rack mountable

Options and Accessories

- Console
- Pedestal
- Neopilot tone playback kit
- Microphone pre-amp
- Tape marker
- Tape cutter
- Tape velocity indicator kit
- Remote control
- Running time meters
- Dolby*/dbx** interface kit
- Splicing blocks
- DIN hubs
- Fourth position head stacks
- Spares kits
- Extender card kit

VERSION	CATALOG #	PRICE
---------	-----------	-------

Systems

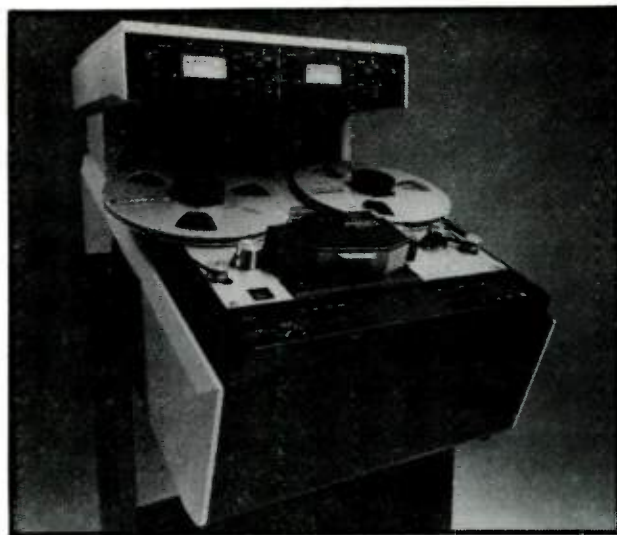
ATR 800-1 UL/CSA — 1/4", full track, rack mount	4010385-010	\$5195.00
ATR 800-1 VDE — 1/4", full track, rack mount	4010423-000	5195.00
ATR 800-2 UL/CSA — 1/4", two track, rack mount	4010386-000	5450.00
ATR 800-2 VDE — 1/4", two track, rack mount	4010424-000	5450.00
ATR 800-2 E/S — 1/4", stereo, rack mount	4010387-000	5450.00
ATR 800-4 UL/CSA — 1/2", four track, rack mount	4010388-000	7145.00
ATR 800-4 VDE — 1/2", four track, rack mount	4010425-000	7145.00

Mounting Options

Console, 1 or 2 channel	4010341-AA	\$495.00
Console, 4 channel	4010341-AB	545.00
Roll-around pedestal	4020485-020	395.00

Spares

Mono signal module	4020487-010	\$1177.00
Two channel signal module	4020489-010	1790.00
"A" level spares kit	1386141-010	
"B" level spares kit	1386142-010	Contact
"C" level spares kit	1386143-010	RWC



ATR 800

ATR-800 Specifications

INPUTS

- Balanced, Floating Input Impedance: 10 K Ohms
- Maximum input level: +36 dBm
- Microphone: Balanced, 600/150 Ohms, -70 dBm to -20 dBm for reference level

OUTPUTS

- Balanced, Floating Output Impedance: Less than 30 Ohms, 30 Hz to 15 KHz
- Maximum output level: +28 dBu into 600 Ohms *OdBu = 0.775v
- Headphone: 600 Ohms or higher

FREQUENCY RESPONSE

Speed	+/- .75 dB	Within +/- 2 dB
30 in/sec	100 Hz-20 KHz	50 Hz-24 KHz
15 in/sec	100 Hz-15 KHz	30 Hz-20 KHz
7.5 in/sec	100 Hz-10 KHz	30 Hz-15 KHz

SIGNAL-TO-NOISE RATIO

NAB EQUALIZATION:

Tape Speed	Track Format	30-18 KHz Unweighted	ANSI "A" Weighted
30 in/sec (AES)	Full	76 dB	80 dB
30 in/sec (AES)	Two and four	71 dB	75 dB
30 in/sec (AES)	Stereo	72 dB	76 dB
15 in/sec	Full	75 dB	79 dB
15 in/sec	Two and four	70 dB	74 dB
15 in/sec	Stereo	71 dB	75 dB
7.5 in/sec	Full	74 dB	78 dB
7.5 in/sec	Two and four	69 dB	73 dB
7.5 in/sec	Stereo	70 dB	74 dB

Measured with respect to 1040 nWb/m when using Ampex 456 tape or direct equivalent.

DISTORTION

- Even Order Distortion at 1 KHz: Less than 0.2% at a recorded flux level of 1040 nWb/m using Ampex 456 tape or equivalent at 500 Hz
- Third Harmonic Distortion at 1 KHz: Less than 0.3% at a recorded flux level of 370 nWb/m using Ampex 456 tape or equivalent
- SMPTE Intermodulation Distortion: Less than 1% at a recorded flux level of 370 nWb/m using Ampex 456 tape or equivalent

RECORD/REPRODUCE CROSSTALK

- Two and Four track: -60 dB at 1 KHz; -50 dB, 100 Hz -12 KHz
- Stereo: -55 dB at 1 KHz; -45 dB, 100 Hz - 12 KHz

REWIND TIME

- Fast wind: Less than 80 sec for 2400 ft. reel

WOW AND FLUTTER

Speed	ANSI S4.3/ DIN 45507	ANSI/DIN Peak
	Peak Weighted	Unweighted
7.5 in/sec	.06%	.12%
15 in/sec	.05%	.10%
30 in/sec	.04%	.08%

ELECTRONIC TAPE TIMER

Tape driven, reads in hours, minutes and seconds

Total weight: 2 channel — 210 lbs. (95.5 kg) 4 channel — 235 lbs. (107 kg); Transport — 103 lbs. (47 kg); I/O Module — 20 lbs. (9 kg); Console, 2 channel — 43 lbs. (19.5 kg); Console, 4 channel — 48 lbs. (22 kg); Pedestal — 44 lbs. (20 kg)

VERSION	CATALOG #	PRICE
---------	-----------	-------

Accessories

Microphone pre-amp kit	4010379-010	\$65.00
Tape marker	4010416-010	48.00
Tape cutter kit	4010417-010	145.00
Tape velocity indicator PWA	4051131-010	81.00
Remote control assembly	4010418-010	371.00
Running time meter, 60 Hz	4010419-010	42.00
Running time meter, 50 Hz	4010420-010	42.00
Noise reduction switching interface kit	4010428-010	16.00
Splicing block, 1/4"	4220348-010	33.00
Splicing block, 1/2"	4220349-010	88.00
DIN hub adaptor kit	4030374-010	390.00
Extender card kit (4 cards)	4010421-010	148.00
NAB reel olddown, 1/4"	809-137	15.00
NAB reel holddown, 1/2"	809-347	17.00

Head Assemblies

Mono, 4" head assembly	4020465-010	\$895.00
Two track, 1/4" head assembly	4020460-010	958.00
Stereo, 1/4" head assembly	4020466-010	998.00
Four track, 1/2" head assembly	4020461-010	1198.00



CRIMP TYPE COAXIAL CONNECTORS

CABLE TYPE	CONNECTOR TYPE	CONNECTOR NUMBER	100-LOT UNIT PRICE	CRIMP TOOL NUMBER	CRIMP TOOL UNIT PRICE	CRIMP DIE NUMBER	CRIMP DIE UNIT PRICE
RG-59	UHF	2-330830-6	\$4.65	69710	\$300.00	220036-1	\$185.00
RG-59	BNC	331350	\$2.50	69477-1	\$185.00	Integral	—
8281	UHF	2-330830-2	\$4.65	69710	\$300.00	220037-1	\$185.00
8281	BNC	4-331350-0	\$2.95	220043-1	\$260.00	Integral	—



BNC/RG59



UHF/RG59



**CRIMP
TOOL**



PART NO. 69710

KINGS ELECTRONICS

CRIMP TYPE TRIAX CONNECTORS



TRI-LOC PLUGS



JACKS

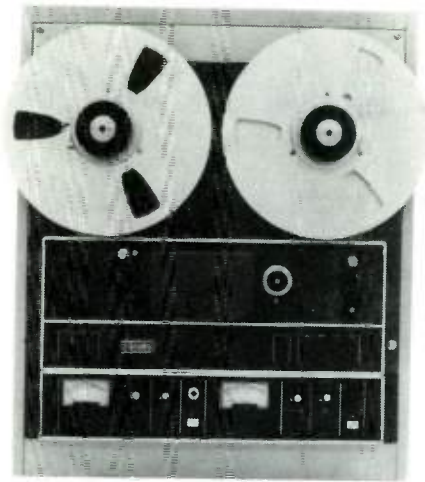
TRI-LOC CABLE SPECIFICATION CHART

CABLE	CABLE GROUP	NOMINAL CABLE DIMENSIONS						KINGS PART NO	DESCRIP- TION	FIG NO.	CRIMP DIE NO.	DIELEC- TRIC TRIM JIGS	JACKET TRIM JIGS
		CENTER CONDUCTOR O.D.	CORE O.D.	INNER BRAID O.D.	INNER JACKET O.D.	OUTER BRAID O.D.	OUTER JACKET O.D.						
BELDEN 9232 BIW 10070-C-G14	740	14 AWG STRANDED 074	312 FOAM PE	342	392 PE	422	520 NEOP	KP8010-740-400	PLUG	1	KTH-2041	KTD-304	KTJ-300
								KP8010-740-401	JACK	2			
								KP8020-740-400	JACK	2			
BELDEN 8233	700	14 AWG SOLID 064	285 FOAM PE	315	365 PE	395	475 P.E	KP8010-700-400	PLUG	1	KTH-2040	KTD-300	KTJ-300
								KP8010-700-401	JACK	2			
								KP8020-700-400	JACK	2			
BELDEN 9267 BIW 10069-C-G20	730	20 AWG SOLID 032	146	176	216 PE	250	360 NEOP	KP8010-730-400	PLUG	1	KTH-2002	KTD-303	KTJ-303
								KP8010-730-401	JACK	2			
								KP8020-730-400	JACK	2			
BELDEN 8232	760	20 AWG SOLID 032	± 004 143 FOAM PE	176	± 005 226 PE	256	± 007 315 P.E	KP8010-760-400	PLUG	1	KTH-2002	KTD-303	KTJ-303
			KP8010-760-401		JACK		2						
			KP8020-760-400		JACK		2						
FELTEN AND GUILLEAUME 2-1 LS-10S	770	STRANDED 087	± 004 382 FOAM PE	418	± 008 456	± 008 490	± 008 567	KP8010-770-400	PLUG	1	KTH-2104	KTD-307	KTJ-300
			KP8010-770-401		JACK	2							
			KP8020-770-400		JACK	2							

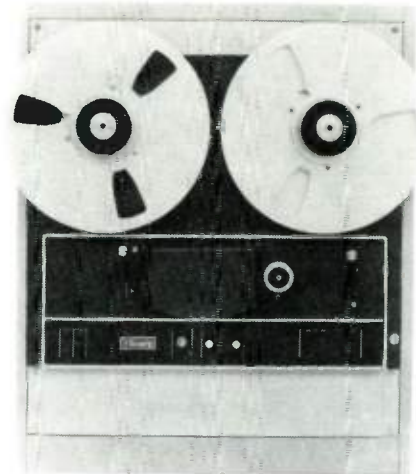
Note: TRI-LOC Connectors are available to terminate conventional coaxial cables such as RG-59/U and Belden 8281. Consult factory for information.

Note: Use CRIMP TOOL No. KTH-1000
Note: Part numbers ending in 400 indicate plugs with Safety Tip
Part numbers ending in 401, without Safety Tip

Price: All Connectors listed above — \$120.00 each.



250



255

RECORDER/REPRODUCERS

250 Recorder/Reproducer

The new 250 Series will meet your quality, reliability, and operational needs in a professional, compact, moderately priced 10.5" (26.67 cm) broadcast recorder/reproducer.

For rack mounting in your studio, or case mounting for field recording, the Scully 250 will take on all assignments. You can plug in mic preamps for direct news, sports, and other portable recording requirements... and in the studio the 250 will complement your audio system requiring only 19 1/4" (48.9 cm) rack height.

The Scully 250 features low-noise dependable electronics with sync control provided for adding a track to alternate channel, and input/playback monitor/VU selectors. Equalization is switched with speed control. Adjustments and maintenance are made easy by a pull-out drawer providing top access to equalization and bias controls. The transport has all touch-button control TTL logic with protective motion sensing circuits which prevent tape break or spill when operating from fast mode to play. Automatic tape lifter defeat is actuated by depressing fast mode button on transport or remote control. XLR input and output connectors are standard.

Configurations include full or half track mono; two or quarter track stereo. All models have two-speed Hysteresis Synchronous direct drive Capstan motors. Unmounted weight about 45 lbs. (20.4 kg). Made in U.S.A.

SERIES 250 RECORDER/REPRODUCER 1/4" (6.35mm) Tape Width 10.5" (26.67 cm) Reels for Rack Mounting

250-FT	Full Track, Mono	\$2,620.00
250-1	Half Track, Mono	2,620.00
250-2	Two Track, Stereo	2,745.00
250-24	Quarter Track, Stereo	2,745.00

Two Speeds — Specify 7.5-15 in/s (19.05-38.1 cm/s) or 3.75-7.5 in/s (9.52-19.05 cm/s when ordering).

255 Professional Tape Reproducer

The Scully 255 is a competitively priced tape reproducer designed for continuous operation in automation systems and other playback requirements. It is extremely rugged, employs trouble-free TTL control logic, low noise plug-in electronics and a precision milled heavy cast deck plate... built with typical Scully craftsmanship that makes the 255 stand out above other broadcast playback units.

The 255 features all touch-button control logic with protective motion sensing circuits to prevent tape break or spill when operating from fast mode to play. Automatic tape lifter defeat is actuated by depressing fast mode button on transport or remote control. Set-up adjustments and easy maintenance are accomplished by pull-off front dress panel which permits access to equalizers. XLR output connectors are employed to make the Scully 255 compatible to broadcast standards.

Basically developed as a 7.5 in/s (19.05 cm/s)* two track, two channel system, the 255 is also available in all standard mono and stereo configurations. Made in U.S.A.

*3.75 in/s (9.52 cm/s) speed available on request at no extra charge.

SERIES 255 REPRODUCER ONLY 10.5" (26.67 cm) Reels for Rack Mounting

255-FT	Full Track, Mono	\$1,525.00
255-1	Half Track, Mono	1,525.00
255-2	Two Track, Stereo	1,595.00
255-24	Quarter Track, Stereo	1,595.00

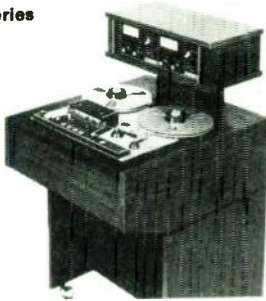
Single Speed — 7.5 in/s (19.05 cm/s) Standard; 3.75 in/s (9.52 cm/s) available on request.

ACCESSORIES/OPTIONS

202993-01	Microphone Preamp (plug-in) (Recorder only)	\$115.00	202987-02	Remote Control (Recorder 250 Series)	121.00
202994-01	Bridging Input Transformer (plug-in) (Recorder only)	40.00	202987-01	Remote Control (Reproducer 255 Series)	121.00
202986-01	25 Hz Tone Sensor (Reproducer only)	152.00	203002-01	Portable Case	305.00
203017-03	Balanced Output Transformers (Recorder 250 Series)	32.00	203038-01	50 or 60 Hz — 117V (specify requirement)	no extra charge
203017-02	Balanced Output Transformers (Reproducer 255 Series)	32.00	203038-02	50 or 60 Hz — 220 Volt (specify requirement)	no extra charge
			203171-01	Extender Board (Reproducer 255 Series)	25.00

AMPRO Scully

280B Series



284B-8 Series



285B Reproducer

280B SERIES

1/4" (6.35mm) or 1/2" (12.7mm) tape, up to 11.5" (29.21cm) reels.

Features: Functionally-illuminated transport controls, motion-direction sensing, dynamic braking, and now a new constant tape tension control for improved tape handling are incorporated in the 280B Series Recorder/Reproducer. Scully offers an optional DC capstan-servo drive with variable pitch control. Two advantages are gained, in addition to servo control: the ability to adjust pitch up or down to a desired level; and the more positive tape drive at all speeds afforded by the larger capstan and pinch roller in the servo system.

All this adds up to a standard in broadcast and studio recording where smooth, positive tape handling, low-noise electronics, and control convenience provide truly professional results.

The 280B is available in full or half track mono; 2 or quarter track stereo in 1/4" (6.35mm) models, or 4-track (quad stereo) in 1/2" (6.35mm) or 1/2" (12.7mm) tape width models. Options/Accessories: DC capstan servo system w/pitch control, VARI-SYNC accessory, console mount, remote transport control.

284B-8 SERIES

1" (25.4mm) tape, up to 14" (35.56cm) reels.

Scully's Master Recorder/Reproducer is available in an eight channel version using the popular low noise 280B electronics. These 284B-8's use 1" (25.4mm) tape for maximum eight-channel separation and quality; up to 14" (35.56cm) tape reels to provide a realistic supply of tape for program-length recording and post-production. The 284B-8 has motion-direction sensing, dynamic braking, and automatic start-torque boost for smooth, positive tape shuttling; uses Scully's new constant tension system for added tape handling precision in the PLAY/RECORD modes. Scully DC capstan servo drives are standard on all units, as is the variable pitch control. Any two specified adjacent speed-pairs will be present when the machine is ordered. Equalization is automatically switched with speed control. A sturdy console cabinet is included as standard equipment. These features make the Scully 284B-8 the most desirable eight-track system in its price range. Accessories: VARI-SYNC Accessory, remote transport control.

285B REPRODUCER

1/4" (6.35mm) tape, up to 11.5" (29.21cm) reels.

The Scully 285B Reproducer is a professional quality playback or editing system for broadcast or studio applications, as automated tape players, quality control monitors, broadcast control room reproducers, or music library reproducers. The 285B electronics include 600 ohm line output and 8 ohm (3 watt) speaker output for cueing, editing and monitoring. Speaker gain control is on the front panel.

Transport features found in the 280B Series are standard, such as motion-direction sensing logic, functionally-illuminated pushbuttons, edit control, and dynamic braking. Rack-mount units occupy only 15.75" (400mm) of vertical space—electronics are mounted behind the transport deck plate. Electronic set-up adjustments are accessible by removing the head cover. A monitor headset jack is mounted on transport panel for convenience. Configurations include: full-track mono, two or quarter-track stereo. Accessories: slope-front console, remote control.

Specify Model No., Speeds, Equalization, AC or Servo Drive, Line Frequency and Voltage when ordering.

RECORDING INSTRUMENTS

RECORDER/REPRODUCERS (with Motion Direction Sensing)

280B SERIES (10.5" Reels for Rack Mounting)

Tape Width	A.C. Drive Mtr. (see note A)	Servo Drive Mtr. (see note B)
280B-FT— Monophonic, full track, .25"	\$3990.00	\$4350.00
280B-1— Monophonic, half track, .25"	\$3990.00	\$4350.00
280B-2— Stereo 2 track, 2 channel, .25"	\$5025.00	\$5385.00
280B-4— Quad 4 track, 4 channel, .50"	\$7015.00	\$7500.00
280B-24— Stereo qtr. track, 2 channel, .25"	\$5075.00	\$5440.00
280B-44— Quad 4 track, 4 channel, .25"	\$7134.00	\$7620.00

284B-8 (Console Mounted 14" Reels)

284B-8—8 track, 8 channel complete with D.C. servo and console, 1.00" \$13,915.00

VARIABLE SPEED ACCESSORY with L.E.D. display — see brochure.

For console mount part no. 201664-01 \$1325.00
 For remote mounting part no. 201664-02 \$1325.00

D.C. SERVO CAPSTAN MOTOR KITS—consisting of motor, electronics, crystal, all necessary hardware and instructions.

Kit No. 201446-01— for .25" tape width transports, console mounted	\$1325.00
Kit No. 201446-02— for .50" tape width transports, console mounted	\$1325.00
Kit No. 201446-03— for .25" tape width transports, for rack mounting	\$1325.00
Kit No. 201446-04— for .50" tape width transports, for rack mounting	\$1325.00

270 SERIES Reproducers (14" Reels for Rack Mounting)

270— Monophonic, full track, .25"	\$4325.00
270-1— Monophonic, half track, bi-directional, .25"	\$4485.00
270-2— Stereo 2 track, 2 channel, .25"	\$4870.00
270-44— Stereo qtr. track, 2 channel, bi-directional, .25"	\$5345.00

285B SERIES (10.5" Reels for Rack Mounting)

285B-FT Mono full track, .25"	\$3383.00
285B-2— Stereo 2 track, 2 channel, .25"	\$3505.00
285B-24— Stereo qtr. track, 2 channel, .25"	\$3505.00

INTERNATIONAL OPTIONS:

—50 Hz and/or 230 volt operation . . . specify when required on any of above products.

270 Series modified for 220/240V with unregulated autotransformer, Add.	\$105.00
284B-8 Series modified for 220/240V with unregulated autotransformer, Add.	\$150.00

All models except 270 and 284B-8 have multi-volt transformers.

Customers MUST specify line voltage for proper factory setting.

NOTE A: Price includes A.C. hysteresis capstan motor 3.75-7.5 or 7.5-15 ips 50 or 60 Hertz 117V (3.75 ips not available in .50" A.C. models)

NOTE B: Price includes D.C. servo capstan motor 3.75-7.5 or 7.5-15, or 15-30 in/sec. 50/60 Hertz 117V

CONSOLE MOUNTS

Professional User Price

285B— Mono or Stereo, 201931-01	\$425.00
280B— Mono or Stereo (280B-FT, -1, -2, -24), 200600-03	\$480.00
280B-4— Quad 4 channel (280B-4, 280B-44), 200600-04	\$555.00

Refer to local sales offices for prices on consoles for discontinued models)

REMOTE CONTROLS

280B SERIES— Standard Remote Control in Box, 200925-01	\$230.00
— Standard Remote Control— Rack Mount, 200925-02	\$200.00
280B/284B SERIES— Deluxe Remote w/lit Buttons, in box, 200925-03 (See note C)	\$230.00
— Deluxe Remote w/lit Buttons, Panel Mount, 200925-04 (See note C)	\$200.00

EQUALIZERS (for Field Conversion, Plug-in type, one per channel)

280B/284B SERIES— NAB 3.75—7.5 ips Rec/Rep, 200605-01	\$47.00
— NAB 7.5—15 ips Rec/Rep, 200605-02	\$47.00
— IEC 7.5—15 ips Rec/Rep, 200605-03	\$47.00
— NAB 15 AES 30 ips Rec/Rep, 200605-04	\$47.00
— IEC 15 AES 30 ips Rec/Rep, 200605-05	\$47.00

MAINTENANCE MANUALS (One supplied with each Recorder/Reproducer)

280B/285B SERIES— Recorder/Reproducer 1-4 Channel, 200612-01	\$32.00
284B-8— Recorder/Reproducer 8 Channel, 201666-01	\$32.00
280/275 SERIES— 1 to 4 Channel, 00502000	\$32.00
270 SERIES— Reproducer, 000501000-01	\$32.00

NOTE C: Remote Controls w/illuminated buttons are only for new recorders or those with "L" or "S" prefix in serial number.

Prices and specifications subject to change without notice

World Radio History





ANDREW

BROADCAST TRANSMISSION LINE

ORDER NO.

	Andrew 7/8" Coax and Hardware	
618-0148-000	Andrew HJ5-50, 7/8", 50 ohm Jacketed Helix	\$4.54/ft.
620-0192-000	Andrew 75AR, 7/8" 50 ohm flange, 50 ohm	74.00
620-0195-000	Andrew 75AN Type N female	55.00
620-0436-000	Andrew 75AW, Type N plug	55.00
620-0054-000	Andrew 1060 90 D. Elbow	106.00
620-0388-000	Andrew 75AG, 7/8" EIA Flange/Gas Barrier, 50 ohm	106.00
620-0019-000	Andrew 1260A, 7/8" EIA Gas Barrier, 50 ohm	108.00
620-0303-000	Andrew 19256B, Hoisting Kit for 7/8" helix	31.00
620-0304-000	Andrew 11662-2 Insulated Hanger for 7/8" helix	14.00
620-0372-000	Andrew 40993A-5 Grounding Kit for 7/8" jacketed	16.80
620-1507-000	Andrew 42396-5 Hanger Kit of 10 Non-Insulated Hangers for 7/8" helix	34.00
620-0268-000	Andrew 75AT 7/8" Air End Terminal	128.00
	Andrew 1-5/8" Coax and Hardware	
618-0198-000	Andrew HJ7-50A, 1-5/8", 50 ohm Jacketed Helix	9.80/ft.
620-0351-000	Andrew 87R, 1-5/8" EIA Flange, 50 ohm	148.00
620-0385-000	Andrew 87G, 1-5/8" EIA Flange/Gas Barrier, 50 ohm	174.00
620-0145-000	Andrew 1261B, 1-5/8" EIA Gas Barrier, 50 ohm	152.00
620-0089-000	Andrew 1860A Reducer, 1-5/8" EIA, 50 ohm	124.00
620-0055-000	Andrew 1061, 1-5/8" 90 D. EIA Miter Elbow	160.00
620-0221-000	Andrew 24312A Hoisting Kit for 1-5/8" Helix	38.00
620-0426-000	Andrew 33948-3 Insulated Hanger, 1-5/8"	25.00
620-0625-000	Andrew 42396-2 Hanger Kit of 10 Non-Insulated Hangers for 1-5/8" Helix	34.00
620-0078-000	Andrew 13550 Round member Hanger Adaptor, for tower legs up to 3" diameter — required w/33948-3	13.00
620-0079-000	Andrew 13555A Angular Member Hanger Adaptor, for angle member towers — required w/33948-3	13.50
620-0373-000	Andrew 40993A-2 Grounding Kit for 1-5/8" Jacketed Helix	16.80
	Andrew 3" Coax and Hardware	
618-0170-000	Andrew HJ8-50B, 3", 50 ohm Jacketed Helix	18.80/ft.
620-0312-000	Andrew 78ARM, 3-1/8" EIA Flange, 50 ohm, male	255.00
620-0420-000	Andrew 78ARF, 3-1/8" EIA Flange, 50 ohm, female (does not include inner connector)	250.00
620-0376-000	Andrew 78AGM, 3-1/8" EIA Flange/Gas Barrier, male, 50 ohm	275.00
620-0435-000	Andrew 78AS Reducer/Connector	310.00
620-0421-000	Andrew 78AGF, 3-1/8" EIA Flange/Gas Barrier, 50 ohm female (does not include inner connector)	270.00
620-0021-000	Andrew 1262B, 3-1/8" EIA Gas Barrier, 50 ohm (captive male inner connector)	308.00
620-0090-000	Andrew 1861 Reducer, 3" to 1-5/8" EIA, 50 ohm, (captive male inner connector)	172.00
620-0056-000	Andrew 1062, 3-1/8" EIA, 90 Degree Miter Elbow	280.00
620-0017-000	Andrew 15093A Inner Connector for 3" Helix	52.00
620-0341-000	Andrew 26985A Hoisting Kit for 3" Helix	60.00
620-0425-000	Andrew 33948-2 Insulated Hanger, 3"	42.00
620-0078-000	Andrew 13550 Round Member Hanger Adapter for tower legs up to 3" diameter — required with 33948-2	13.00
620-0079-000	Andrew 13555A Angular Member Hanger Adapter required with 33948-2	13.50
620-0375-000	Andrew 40993A-11 Grounding Kit for 3" Jacketed Helix	26.00
	NOTE: Female flanged end fittings do not include inner connectors. When 3" helix 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	16.00
620-0468-000	31670-2 (2" - 3" leg member) Kit of 10 Round Member Hanger Adaptors	18.00
620-1506-000	Andrew 31766-11 Hanger Kit of 10 Non-Insulated Hangers for 3" Helix	48.00



ANDREW

BROADCAST TRANSMISSION LINE

ORDER NO.	Andrew 4" Coax and Hardware	
618-0338-000	Andrew HJ11-50, 4", 50 ohm Jacketed Heliax	\$20.60/ft.
620-1067-000	Andrew 81RF, 3-1/8" EIA Flange Connector, female (does not include inner connector)	400.00
620-1068-000	Andrew 81GF, 3-1/8" EIA Flange Connector, female, including gas barrier (does not include inner connector)	420.00
620-0017-000	Andrew 15093A, Coated Inner Connector for above 3-1/8" EIA flange	52.00
620-1069-000	Andrew 81Z Splice	430.00
620-0056-000	Andrew 1062, 90 D. 3-1/8" EIA Miter Elbow	280.00
620-0090-000	Andrew 1861, Reducer, 3-1/8" EIA to 1-5/8" EIA	172.00
620-1070-000	Andrew 31766-10 Hanger Kit, (10 hangers) for 4" heliax	53.00
620-1071-000	Andrew 31768A Angle Member Hanger Adapter Kit, 10 adapters to mount hangers to towers	44.00
620-1072-000	Andrew 41108A-1 Round Member Tower Adapters, includes 10 adapters for 3" to 4" diameter tower members	110.00
620-1073-000	Andrew 34759 Hoisting Grips for 4" Heliax	72.00
620-1074-000	Andrew 40993A-10 Grounding Kit for 4" Heliax	26.00
620-1075-000	Andrew 33948-4 Insulated Hangers for 4" Heliax	50.00
620-0079-000	Andrew 13555A Angle Adapter for Insulated Hanger	13.50
620-0078-000	Andrew 13550 Round Member Adapter for Insulated Hangers for tower legs up to 3" diameter	13.00
	Andrew-LDF Form Dielectric Cable-1/2"	
618-0466-000	Andrew LDF4-50, 1/2", 50 ohm Jacketed Foam Heliax	1.48/ft.
620-1512-000	Andrew L44N N Jack (Female) mates with UG-21, for use with 1/2" LDF heliax	18.00
620-1513-000	Andrew L44P UHF Plug (male) mates with SO-239A for use with 1/2" LDF heliax	15.80
620-1514-000	Andrew L44R 7/8" EIA Flange, not pressure tight, includes inner connector for use with 1/2" LDF heliax	65.00
620-1686-000	Andrew L44T End Connector for LDF4-50 1/2" 50 ohm, jacketed foam heliax	65.00
620-1515-000	Andrew L44U UHF Jack (Female) mates with PL-259A for use with 1/2" LDF heliax	15.80
620-1516-000	Andrew L44W N Plug (Male) mates with UG-23 for use with 1/2" LDF heliax	18.00
620-1517-000	Andrew L44Z Splice for use with 1/2" LDF heliax	65.00
	Andrew-LDF Foam Dielectric Cable-7/8"	
618-0467-000	Andrew LDF5-50, 7/8", 50 ohm Jacketed Foam Heliax	3.86/ft.
620-1519-000	Andrew L45N N Jack (Female) mates with UG-21, for use with 7/8" LDF Heliax	45.00
620-1520-000	Andrew L45P UHF Plug (Male) mates with SO-239A for use with 7/8" LDF Heliax	42.00
620-1521-000	Andrew L45R 7/8" EIA Flange, not pressure tight, includes Inner Connector	68.00
620-1522-000	Andrew L45U UHF Jack (Female) mates with PL259A for use with 7/8" LDF heliax	42.00
620-1523-000	Andrew L45W N Plug (Male) mates with UG-23 for use with 7/8" LDF heliax	45.00
620-1524-000	Andrew L45Z Splice for use with 7/8" LDF heliax	72.00
620-1600-000	Andrew L45T End Terminal for LDF5-50 (for strap type connection)	80.00



ANDREW

BROADCAST TRANSMISSION LINE

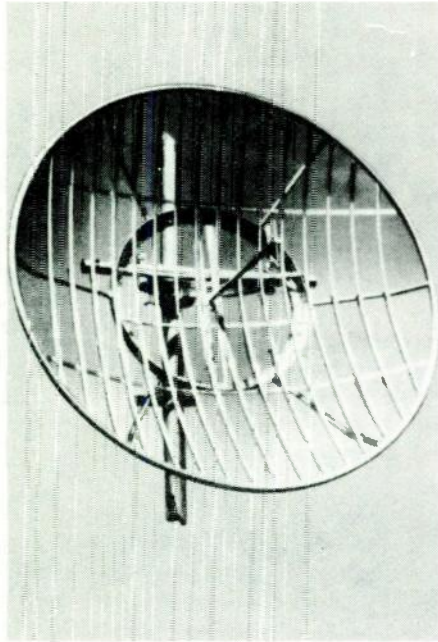
ORDER NO.	Andrew	
618-0203-000	Andrew LDF2-50, 3/8" foam heliax	\$ 1.12/ft.
618-0224-000	Andrew FHJ-1-50, 1/4" foam heliax	.80/ft.
620-1584-000	Andrew 43211 Hanger Kit, consisting of ten (10) stainless steel clamps for 1/2" heliax	30.00
620-0298-000	Andrew 44AP, UHF plug (male) for 1/2" foam heliax	17.50
620-0302-000	Andrew 44AW type N Plug (male) for 1/2" foam heliax	19.30
620-0301-000	Andrew 44AU UHF jack (female) for 1/2" foam heliax	17.50
620-0368-000	Andrew 44AN type N jack (female) for 1/2" foam heliax	19.30
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	47.00
620-0317-000	Andrew 45AU UHF jack for 7/8" foam heliax, 50 ohm	47.00
620-0344-000	Andrew 45AW type N plug for 7/8" foam heliax, 50 ohm	50.00
620-0343-000	Andrew 45AN type N jack for 7/8" foam heliax	50.00
618-0193-000	Andrew FHJ7-50, 1-5/8" 50 ohm jacketed foam heliax	9.10/ft.
620-0346-000	Andrew LDF7-50, 1-5/8" 50 ohm jacketed foam heliax	183.00

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	1580.00
620-1431-000	Andrew 1930B Automatic Dehydrator 0.2 cu. ft./min. (5.4 liters/min) dry air output 120V, 60 Hz, 400 watts	1100.00
620-1432-000	Andrew 1933C spare parts kit for Type 1930B Dehydrator	46.00
620-1433-000	Andrew 40525A Manual Dehydrator 0.9 cu. ft./min. (25 liters/min) dry air output 120V, 60 Hz, 275 watts	500.00
620-1464-000	Andrew 40525A-3 Manual Dehydrator, same as above except 240V, 50 Hz	590.00
620-1449-000	Andrew 210 Replacement Desiccant for Type 40525 Dehydrator — 2 required	12.50
620-0132-000	Andrew 878A dry air hand pump	260.00
620-0131-000	Andrew 858C nitrogen tank fittings	190.00
620-0076-000	Andrew 3500A pressure gauge	8.50
620-0449-000	Andrew 3028 pipe tee	1.40
620-0109-000	Andrew 3017 gas inlet valve	1.80
620-0111-000	Andrew 12395-1 wraplock kit	36.00

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	
4'	P-948GR-M1	\$662.00	P-948GR-M2	\$812.00	
6'	P-972GR-M1	912.00	P-972GR-M2	1006.00	
8'	P-996GR-M1	1489.00	P-996GR-M2	1604.00	
10'	P-9120GR-M1	2144.00	P-9120GR-M2	2291.00	
12'			P-9144GR-M2	3728.00	
15'			P-9180GR-M2	9462.00	

For Heated Grid Antennas Add "/HC" After Model Number. Add The Following To Price:

4'	\$596.00
6'	700.00
8'	969.00
10'	1025.00
12'	1299.00
15'	1685.00

890 - 960 MHz Non-Pressurized*

4'	P-948GRN-M1	\$662.00	P-948GRN-M2	\$812.00
6'	P-972GRN-M1	912.00	P-972GRN-M2	1006.00
8'	P-996GRN-M1	1489.00	P-996GRN-M2	1604.00
10'	P-9120GRN-M1	2144.00	P-9120GRN-M2	2291.00
12'			P-9144GRN-M2	3728.00
15'			P-9180GRN-M2	9462.00

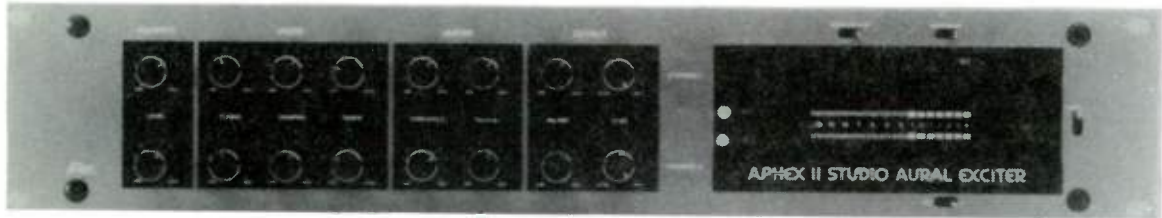
Connectors:

Pressurized: 7/8" EIA
Non-Pressurized: Type "N" Female

Low VSWR Application — \$110 additional.



APHEX II A New Generation of Aural Excitement



Studio
Aural Exciter



Broadcast
Aural Exciter

The Aphex Aural Exciter has become a standard in the music industry and has been used for years on thousands of albums, movies, broadcast productions, commercials and concerts. The Aural Exciter is now accepted as a unique method to achieve clarity, definition and dimensionality in reproduction of sound. The program material literally "opens up", possessing more detail and intelligibility, as well as greater apparent frequency and dynamic range.

- Improved intelligibility and clarity
- Improved presence
- Enhanced stereo imaging
- No listener fatigue
- Restored natural quality to processed signals
- Enhances all types of program material
- Flexibility for varied program needs
- Easily interfaced with any system
- Complete mono compatibility

The Aphex Aural Exciter achieves these effects by creating a signal composed of frequency dependent phase shift, amplitude dependent harmonics, and mixing this signal with the original.

Aphex II Broadcast Aural Exciter and Studio Aural Exciter are identical in size, specifications, operation and price. The Broadcast model is RF Proof and secures controls behind front panel.

Mono
Stereo

\$2350.00
2950.00

Specifications

Audio Path (Side Chain disabled)

- Frequency Response: 15Hz to 50 kHz +0, .2dB
- THD: .05% at Max. Rated Input/Output
- I.M. Distortion: .05% at Max. Rated Input/Output

General

- Maximum Input/Output Level: Internal Jumper Selectable: +21 dBm, +24dBm, +27dBm, Special (User Definable Resistor Values for Special Interfaces)
- Meter Reference: Internal Jumper Selectable: 0V.U = 0dBm, +dBm, +8dBm, Special (User Definable)
- Input Impedance: Selectable: 600 or Bridging; 40k Balanced; 60K Unbalanced
- Output Impedance: 50 Balanced Floating or Unbalanced
- Input Circuit: Standard: Transformerless Balanced True Instrumentation Circuit; Optional: Jensen 11-P-9 Input Transformer
- Output Noise: Better than 110dB below Max. Rated Input Output
- Crosstalk: Better than 80dB
- Output Circuit: Standard: Jensen 123 AL Nickel Transformer; Optional: Balanced Transformerless Output Circuit
- Side Chain Access: Nominal +21dBv Max. Level Single Ended Input/Output
- Indicators: Dual VTF Meter with Selectable Peak Vu Characteristic; (2) Red/Green Ax Drive Indicator LEDs; (2) Limiter LEDs; (2) Peak Indicator LEDs (indicates 2dB below clipping); (3) Meter Input Select Indicator LEDs: Input, Ax Return, Output; Meter Mode Select Indicator LEDs: Peak, Vu
- Power Requirements: 100-240 VAC 50-60Hz, 12 Watts
- Size: 3 1/2" x 19" Weight: 19 lbs.



VIDEO NOISE METER

925C
Video Noise
Meter



\$12,200.00

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.

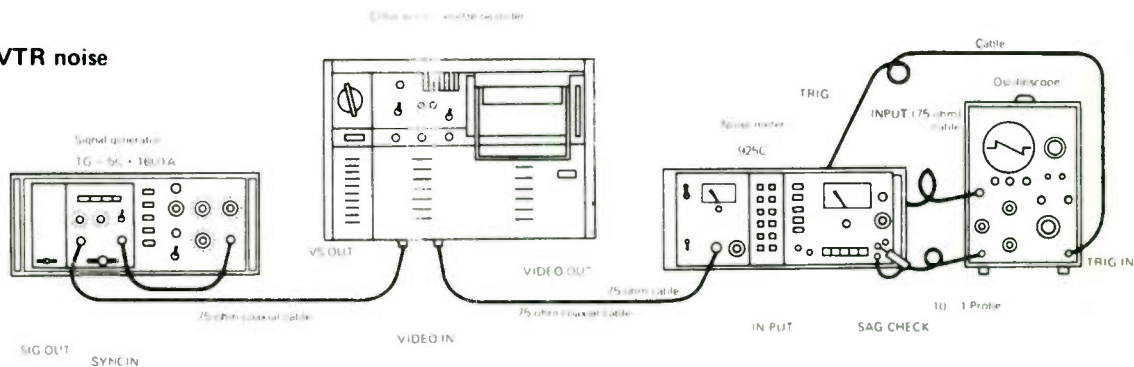
Chroma noise can be split into AM (amplitude modulation) and PM (phase modulation) components which can be measured separately.

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: $f = 0.245 \mu\text{s}$ filter at CCIR 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 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 μF) 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: ≥ 3 sigma at full scale; Frequency response: ≤ 0.5 dB at measurement band; Errors: ≤ 0.5 dB at -20 to -60 dB; ≤ 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: 10-1/3-0.5 (Two scale at upward and down ward); dB: $+3$ to -12 ; Range switch: $-20/-30/-40/-50/-60$ 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 chroma 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: Attenuation: ≥ -20 dB (Internal or External)
Sync selection: Internal sync; External sync; Composite sync pulse input: 1 Vp-p to 4 Vp-p
Input impedance: High impedance, bridge connection
Input and output connector: BNC type, unbalanced
Power supply: AC 100/115/200/230V $\pm 10\%$, 50/60 Hz, approx. 50 VA 430(W) \times 149(H) \times 335(D) mm, (inch) 16.9 \times 5.9 \times 13.1 approx. 15 kg
Accessories Supplied: Coaxial cables (BNC, 3C2V) 2; Extension printed board for P.C.B. 1; M-BNC plug 1
Optional: L 150 Rack mounting adaptor





ENVELOPE DELAY MEASURING SET

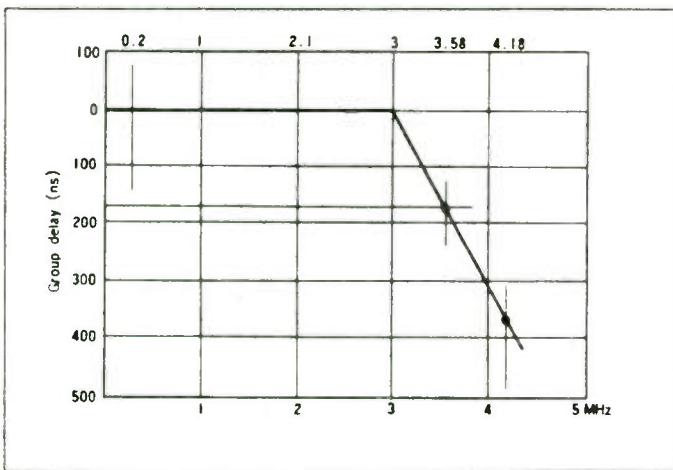
201-1

Envelope Delay
Measuring Set

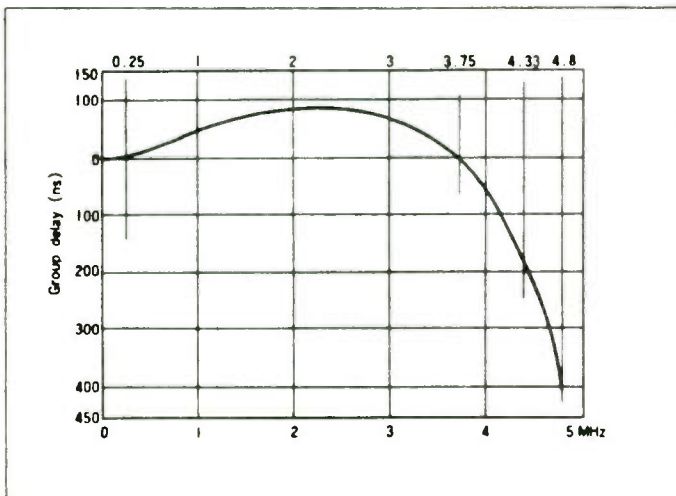


The 201-1 is expressly designed for measuring the envelope delay incurred in equipment used in the transmission and reception of color television signals.

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.

\$7,750.00

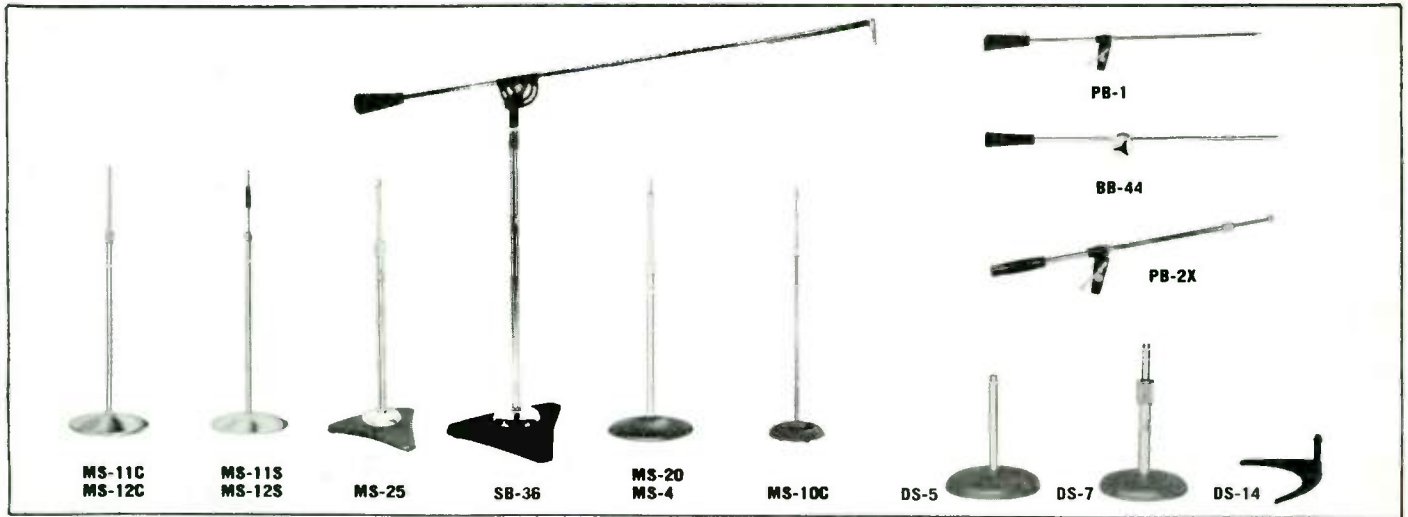
SPECIFICATIONS

• 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	$< \pm 3\%$
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 $< \pm 10\%$
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, $< 5 \times 10^{-4}$
Split frequency	20 kHz, $< 5 \times 10^{-4}$
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 \sim 10 μ s
Accuracy	$< \pm 10$ ns (at input level variation of within 6 dB)
Measuring input level	0.1 Vp-p to 1.1 Vp-p
Noise	$< \pm 10$ ns (at without sync signals)
Vertical display calibrated signal	100 ns $\pm 3\%$
• 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 $\pm 10\%$, 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.

ATLAS SOUND

MICROPHONE STANDS AND ACCESSORIES



FLOOR STANDS

MS-10C	"Leader" Microphone stand	\$ 30.00
MS-11C	General Purpose Low-Profile Stand; Chrome Base	35.70
MS-12C	General Purpose Low-Profile Stand; Gloamed Black Base	30.00
MS-4	Special Height Stand; 25" to 65" H., 3-Section Tube	44.15
MS-11S	Touch-Control Studio Stand; Chrome Base	74.60
MS-12S	Touch-Control Studio Stand; Gloamed Black Base	69.15
MS-20	Heavy Duty Stand; Low Contour, Gloamed Black Base	46.65
MS-25	Professional Stand; Heavy Triangular Base	82.20

PORTA-SERIES TELESCOPIC FLOOR STANDS AND BOOM ATTACHMENTS

PS-C	General Purpose Porta-Stand; 35" to 63" H., Black Base	\$ 44.15
PS-C3	Special Height Stand; 26" to 66" H., 3-Section Tube	50.85
PS-S	Touch-Control Stage Stand; 38" to 62" H., Heavy Base	94.30
PB-1	Microphone Boom Arm; 31" Long	26.40
PB-1X	Microphone Boom with Extension; 31" to 47" L.	34.15
PB-2X	Microphone Boom with Extension; 21" to 37" L.	31.25

TELESCOPIC + FIXED HEIGHT LOUDSPEAKER STANDS/EQUIPMENT STANDS

SS-40	Loudspeaker/Equipment Stand, to 48" H. (CSS-100) 1 3/8" Tube Dia. Wt. 12	80.40
SS-40X	Variable Height, Loudspeaker/Equipment Stand 48" to 81" H.; 1" Dia. Upper Tube. Wt. 16	105.40
SS-70	Heavy Duty Loudspeaker/Equipment Stand to 55" H.; 1 3/8" Tube Dia. Wt. 14	102.65
SS-70X	Heavy Duty Variable Height Loudspeaker/Equipment Stand 55" to 100" H. (SS-2); 1" Dia. Upper Tube. Wt. 22	123.45

*Top Adaptors Not Included: Ordered Separately

BOOM STANDS

SB-36	General Purpose Boom Stand	\$191.40
SB-36W	Stage Boom Stand, Mobile; 50" to 74" H., 62" L. Boom	220.85
SB-100W	Studio Boom, Mobile; 340° Microphone-Direction Control, 62" to 92" H., 110" L. Boom	625.00

DESK STANDS

DS-1	Executive Stand; Carrara Marble Base, White	\$ 19.15
DS-2	Vibration-Isolating Stand; 4" H., Metal Base, Black	21.95
DS-4	Lightweight Stand; 4" H., Phenolic Base, Beige	7.35
DS-5	General Purpose Stand; 4" H., Metal Base, Black	10.40
DS-7	Adjustable Height Stand; 8" to 13" H., Metal Base, Black	15.30
DS-14	Contemporary Stand; 3" H., Metal Base, Black	11.55
TS-8	Adjustable Height Banquet stand; 14" to 26" H., Chrome	29.15

STAND ACCESSORIES

BB-44	Contemporary Boom Arm, 31" Long	\$ 20.70
GN-6	Gooseneck; 338" I.D., 6" Long	5.55
GNS-6	"Slimline" Gooseneck; 212" I.D., 6" Long	5.55
GN-13	Gooseneck; 338" I.D., 13" Long	7.90
GNS-13	"Slimline" Gooseneck; 212" I.D., 13" Long	7.90
GN-19	Gooseneck; 338" I.D., 19" Long	10.85
TM-1	Twin Microphone Mount	15.30
VM-1	Shock Mount Accessory	18.05

SPECIAL PURPOSE ACCESSORIES

AD-11	Flange; 5/8" -27 F	\$ 2.65
AD-12	Flange; 5/8" -27 M	2.90
AD-16	Small Horn Microphone Stand Adaptor	9.45
AD-17	Small Horn Adaptor; 1/2" Pipe F	5.55
BC-1	Bracket Clamp	12.20
EB-20	Extension Tube Assembly; 20" L.	8.45
FS-1	Foot Switch; Microphone Control	30.95
TB-58X	Extension Tube; 5/8" Dia. x 31" L.	6.80
TB-78X	Extension Tube; 7/8" Dia. x 31" L.	8.20
US-2	Multi-Purpose Microphone Support	26.80

CONVENIENCE-PACKAGED ACCESSORIES

CH-1B	Cable Hanger	\$ 9.60
CO-1B	Connect-On Microphone Swivel	12.35
LO-2B	Lock-On Accessory	10.70
SO-1B	Snap-On Accessory	9.05
SW-1B	Gyro-Microphone Swivel	14.45

CONVENIENCE-PACKAGED ADAPTORS

AD-1B	5/8" -27 F to 1/2" Pipe M	\$ 3.20
AD-2B	1/8" Pipe F to 5/8" -27 M	2.80
AD-3B	1/8" Pipe F to 5/8" -27 F	3.05
AD-4B	3/4" Long, 5/8" -27 M Thread	2.20
AD-5B	Coupling; 5/8" -27 F to 5/8" F	2.80
AD-6B	Coupling; 7/8" -27 F to 7/8" F	4.60
AD-7B	3" Long Tube; 5/8" -27 M Thread	3.20
AD-8B	6" Long Tube; 5/8" -27 M Thread	3.20
AD-9B	7/8" -27 F to 5/8" -27 F	3.45
AD-10B	5/8" -24 F to 5/8" -27 F	4.45
AD-13B	7/8" -27 M to 5/8" -27 F	3.45
AD-14B	90° Angle Tube; 5/8" -27 M & F	5.85
AD-15B	"Feed-Thru"; 5/8" -27 M & F	6.25
AD-18B	Heavy Duty Flange; 5/8" -27 F	5.85
AD-19B	45° Angle Tube; 5/8" -27 M & F	5.55

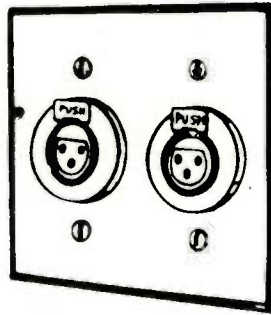
CONVENIENCE-PACKAGED REPLACEMENT KITS

PB-K	Boom Arm Swivel Assembly	\$16.65
MSC-K	Repair Parts Kit for 7/8" Dia. Tube Assembly	8.05
MS-20K	Repair Parts Kit for MS-20 & MS-25	16.65

AUDIO CONNECTORS — PROFESSIONAL TYPE



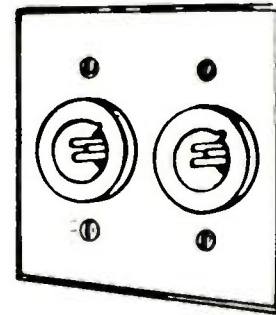
XLR-3-35



XLR-3-35-2G



XLR-3-36



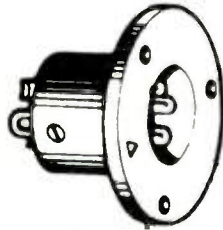
XLR-3-36-2G



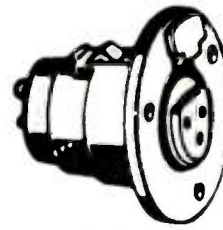
XLR-3-12C



XLR-3-11C



XLR-3-14



XLR-3-13

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

AUDIOLAB ELECTRONICS

TD-1B Tape Degausser

(With Automatic Overheat Thermal Protection)

- Erases audio, video, computer, data tape, magnetic films, cart-ridges and cassettes.
- For tapes up to 3/4 inch.
- Accommodates up to 10 1/2 inch NAB reels.
- Provides a wide focused magnetic field to assure complete erasure.
- Positive results every time with a simple two pass operation for broadcast NAB audio cartridges.
- Transient protection to prevent permanent tape damage.
- Operate light flashes indicating auto-shutoff by thermo protector, resets automatically
- 115 and 220 volt, 50-60 Hz models available.

SPECIFICATIONS

Power Requirements: TD-1B 115 volts AC +/- 10% 50-60 Hz. TD-1BF 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-2A Tape Degausser

- Erases video 1 inch format with SMPTE time code.
- 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.

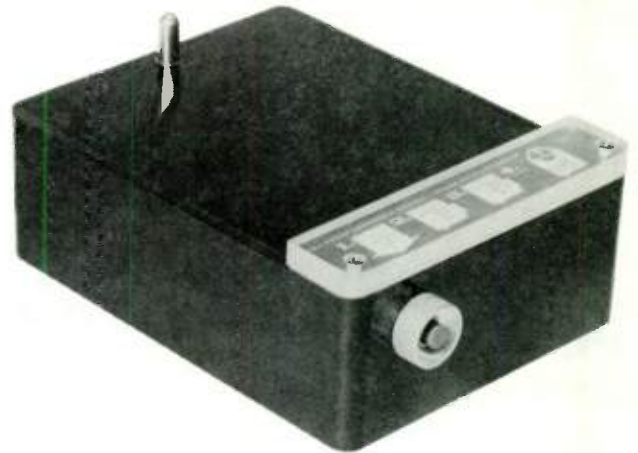
TD-3A Tape Degausser

- 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.

TAPE DEGAUSSERS



TD-1B (115V 50-60 Hz) \$98.00
 TD-1BF (230V 50-60 Hz) 105.00



Erases audio, video, computer, and cartridge tape.

TD2A (117V 50-60 Hz) \$675.00
 TD-2AF (230V 50-60 Hz) 710.00



Erases audio, video, computer, and cartridge tape.

TD-3A (117V 50-60 Hz) \$495.00
 TD-3AF (230V 50-60 Hz) 512.00



audio-technica®

PHONO CARTRIDGES AND TONEARMS

"The Professionals" from Audio-Technica

Specifications

ATP-1 Cartridge	\$ 45.00
ATP-2 Cartridge	60.00
ATP-3 Cartridge	80.00
ATP-N1 Replacement Stylus for ATP-1	25.00
ATP-N2 Replacement Stylus for ATP-2	35.00
ATP-N3 Replacement Stylus for ATP-2	50.00
Audio Technica AT 1005 Tone Arm	150.00
Audio Technica ATS Shell for AT 1005	8.00
Audio Technica AT-L2 Hydraulic Arm Lift for AT 1005	19.00



Easy to cue

Individually hand-tuned

Full One Year Warranty

SPECIFICATIONS

	ATP-1	ATP-2	ATP-3
Frequency Response	20 to 20,000 Hz	15 to 22,000 Hz	15 to 25,000 Hz
Tracking Force	3 to 5 grams	3 to 5 grams	2 to 3 grams
Channel Separation	21 dB minimum	23 dB minimum	23 dB minimum
at 1 kHz	16 dB minimum	17 dB minimum	17 dB minimum
at 10 kHz	1.5 dB	1.5 dB	1.5 dB
Channel Balance	5.3 mV	5.3 mV	5.3 mV
Output at 5cm/sec	0.6-mil*	0.4 x 0.7-mil	0.3 x 0.7-mil
Stylus	Spherical Diamond	Elliptical Diamond	Nude Elliptical Diamond
Vertical Tracking Angle*	20°	20°	20°
Load Impedance	47,000 Ohms	47,000 Ohms	47,000 Ohms
Cartridge Inductance	600 mH	600 mH	600 mH
DC Resistance	500 Ohms	500 Ohms	500 Ohms
Mounting	Standard 1/2-inch centers		
Cartridge Weight	7.2 Grams	7.2 Grams	7.2 Grams
Replacement Stylus	ATP-N1	ATP-N2	ATP-N3
	Red/White	Blue/White	Bronze/White



AT-S

*New DIN/IEC Standards.

Audio-Technica Dual Magnet cartridges are protected by U.S. Patent Nos.: 3,720,796; and 3,761,647

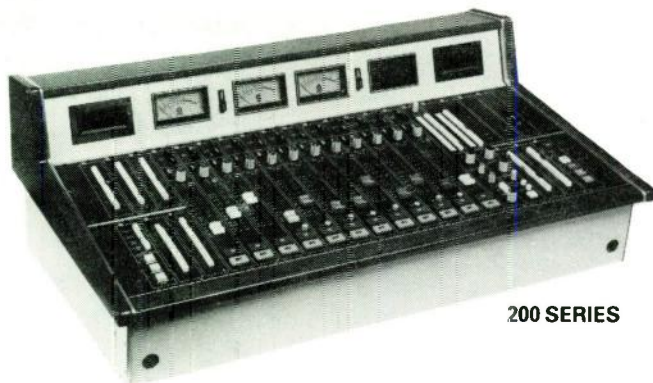
AT1005 II

Precision-crafted tone arm for optimum performance at moderate cost. Includes static balance adjustment, tracking force calibrated to 0.5 gram, anti-skating and stylus overhand adjustments. Lightweight shell locks instantly in place. Simplified mounting.



AT1005 II

ON/AIR BROADCAST MIXING CONSOLE



200 SERIES

Performance Specifications 200 Series On-Air Console

Mono Microphone Input Two input sources, switch selected with each 200 MIS module, Source Impedance: 150 ohms nominal, transformer coupled, Common Mode Rejection: Greater than 80 dB at 60 Hz, Input Impedance: Greater than 10 times source impedance, Preamp Gain: Adjustable; 55 dB maximum, 31 dB minimum

Stereo High Level Line Input Two input sources, switch selected with each 200 SLI module, Source Impedance: 600 ohms nominal, Common Mode Rejection: Greater than 50 dB at 60 Hz, Input Impedance: Nominal 15K ohms minimum, active balanced, Gain: Adjustable by variable balanced pad; 0 to -20 dB

Stereo Program, Audition and Mono Outputs Balanced, transformer coupled outputs standard; transformerless balanced outputs available optionally, Load Impedance: 600 ohms nominal, Output Level: +8 dBm nominal, +30 dBm maximum, Clipping Level: +32 dBm

Stereo Control Room and Studio Monitor Outputs Load Impedance: 600 ohms nominal, balanced transformerless, Output Level: 0 dBm nominal, +24 dBm maximum

Stereo Headphone Output Load Impedance: 8 ohms or greater, Output Level: 2 watts maximum per channel

Cue Output Load Impedance: 8 ohms or greater, Output Level: 4 watts to built in cue speaker

Frequency Response Any mic or line input to any program, audition or monitor output; +/-0.5 dB, 20 Hz to 20 kHz at +8 dBm output level

Signal To Noise Ratio Any mic input to any program or audition output, -50 dBv in, +8 dBm out, nominal gain settings, unweighted 20 Hz to 20 kHz bandwidth: 78 dB, Any line input to any program or audition output, +4 dBm in, +8 dBm out, nominal gain settings, unweighted 20 Hz to 20 kHz bandwidth: 83 dB

Distortion (THD) Mic in to any program or audition output, +24 dBm out, nominal gain settings: Less than 0.1% from 40 Hz to 20 kHz, Typically less than 0.04% 100 Hz to 7 kHz, Line in to any program or audition output, +24 dBm out, nominal gain settings, Less than 0.1% from 30 Hz to 20 kHz, Typically less than 0.03% 100 Hz to 20 kHz

Distortion (IM) Mic in to any program or audition output, +24 dBm out, nominal gain settings, SMPTE: Less than 0.05%, Line in to any program or audition output, +24 dBm out, nominal gain settings, SMPTE: Less than 0.05%

Crosstalk Any mic or line input to any program or audition output, 30 Hz to 15 kHz, At least 70 dB below +8 dBm output

Internal Headroom Minimum of 30 dB with nominal gain settings

Major Features:

- VCA Input Level Control
- Equalized Headphone Module
- 2-way Communications from both studios to control room
- Precision Adjustable Stereo Line Padding
- +30 dBm Output Capability
- Comprehensive and easy to use logic system
- Active Transformerless stereo inputs
- On-Card Power Regulation
- One Year Warranty

Options:

- Personality Equalizer Module—Allows each DJ to have a customized EQ adjusted specifically for that individual voice
- Telephone Interface Module—Provides for termination and assignment of incoming phone lines, with side tone null, AGC, noise filter, optional connection to external delay devices, and other features
- Noise Gate/Compressor—Special application module for processing signals from locations with noisy backgrounds or with wide level variations
- Stereo Line Input Selector—Allows any of eight stereo line sources to be assigned to a single stereo line input
- Digital Clock
- Digital Timer
- Analog Peak Meters
- Transformerless Program and Audition outputs

Description

The 200 Series is available in three basic configurations— the 6 input position Model 206, the 12 input position Model 212, and the 18 input

position Model 218. Together they cover a range of needs from newsroom applications to the largest multi-studio installation. A totally modular concept allows the user to buy only the equipment and options needed at the present time, while allowing for simple future expansion.

Signal level for all input positions (mono and stereo) is controlled by field tested and proven VCA (Voltage Controlled Amplifier) technology. The fader is outside the signal path and varies only a DC control voltage to the VCA—thus eliminating noise from dirty or worn faders. The use of VCAs also allows precise tracking of the stereo left and right channels—within ¼ dB over a 90 dB range of attenuation.

A Penny and Giles conductive plastic linear motion fader is used to control the VCA to further ensure no problems arise in this critical point of the signal path. These faders are widely recognized for outstanding quality and may be obtained throughout the world. These faders are equipped with an "off" position switch which may be used for any one of several applications. Depending on user preference, the switch can be used to turn the module on and off, to control external devices, or for cueing.

Microphone inputs use high quality Jensen transformers featuring low distortion, wide bandwidth and excellent common-mode rejection.

Input modules are turned on and off by CMOS logic controlled with Honeywell Hall-effect switches, thus providing extremely high reliability and long operating life (five million cycles typical).

Stereo line input modules are actively balanced, featuring unique circuitry which provides superior common mode rejection. Both "A" and "B" stereo inputs have a variable balanced pad for gain trimming a wide range of source levels, and may be used to trim the left and right channels for perfect balance.

A comprehensive and easy to use logic system provides a number of benefits to both on-air and technical personnel; foremost among these benefits is an integral two-way communications system linking the control room with both Studio A and Studio B. This enables studio personnel to communicate directly with the control room using the studio mics and monitor speakers. When the studio intercom button is pushed, the studio mic signal is assigned directly to the console's cue output.

The control room may reply to the studio through a standard studio monitor talkback circuit.

Other studio switching facilities include mic module on and off, cough, and line module on and off. A tally light may also be connected. All switching circuits carry DC control voltages only; no audio ever leaves the console for these functions.

The console's stereo line input modules may be set up to turn on with the start of an external device such as a tape machine, or an external device can be wired to start with module turn-on.

The stereo headphone monitor section includes a high and low band equalizer which may be switched in or out of the circuit. Signal source selection from the Control Room Monitor or Cue bus is provided in any combination, split between the two earphones. The two watt power output assures plenty of level for eight ohm headphones.

Program, audition and mono outputs are transformer isolated and will deliver an output signal of +30 dBm. This output capability provides the broadcaster with enough headroom to cover virtually any situation. Under normal operating conditions, with nominal gain settings, an internal operating headroom of 30 dB is assured. Control room and studio monitor outputs are actively balanced and transformerless, with a maximum output level of +24 dBm.

Careful design has eliminated nearly all hand wiring, thus lowering the cost and further extending the high reliability of the 200 Series. Console installation has been greatly simplified through the use of solderless, locking and strain relieved connectors which mount directly to the mother board. Both the meter panel and the module/mother board assembly flip up inside the console shell eliminating the need to work on the console from below. All termination wiring and maintenance may be done while seated at the operator's position.

Complete cueing, talkback and control room monitoring is provided. All of the 200 Series consoles are delivered to interface fully with two separate studios, and contain a two-way intercom function which allows communications from each studio to the control room, using the control room and studio mics.

Each module in the console has its own voltage regulator with current limiting, yielding excellent isolation, low crosstalk and rejection of spurious signals. Troublesome sensing lines are avoided, and the resulting simplification of the power supply brings added reliability.

Offering both mono and stereo outputs, the 200 Series is the natural selection for those stations that foresee the move to stereo in the future, but wish to upgrade their equipment now.



auditronics, inc.

200 SERIES

ON/AIR BROADCAST MIXING CONSOLE

INPUT MODULES



Model 200 MIS Microphone Input Module
Two selector switches allow either of two separate mic inputs to be chosen for the module's input. Pushing both simultaneously will turn the module off.

Assignment switches send the module's input signal to the desired output bus, either program or audition, or both simultaneously.

A pan control, which may be switched into or out of the signal path, is provided on the module, and functions simultaneously on both the Program and Audition outputs.

The input level control on the Model 200 MIS is unique in that it uses VCA (Voltage Controlled Amplifier) technology, an exclusive feature of the 200 Series. Routing the audio signal through the VCA requires that the input fader vary only a DC voltage, which controls the gain of the VCA — no audio ever passes through the fader. By eliminating the fader from the signal path, all possibility of noise from worn or dirty pots is completely removed, and reliability and long life are greatly enhanced. Through the use of the VCA, signal level at the input level control point can be boosted as well as cut, which is why the fader scale extends beyond the 0 attenuation point.

Cue switches may be ordered on the faders, and can be wired for either of two applications. Pulling the fader into the cue position can either send the module input to the cue speaker or turn the channel off. A third user definable switch option may be added. The Model 200 MIS includes connections for on and off, cough and tally light switching from both Studio A and B.

The module on/off switches are Hall-effect type with no physical contacts to wear or corrode.



Model 200 SLI Stereo Line Input Module
Input selector switches allow either of two stereo pairs to be chosen for the module's input. Pushing both buttons at once will turn the module off.

Assignment switches send the module's input signal to the desired output bus, either program or audition, or both simultaneously.

A mode selector switch enables the console's operator to choose whether the input signals are applied to the selected output as stereo or summed mono, or whether the right only or left only input signal will be sent to the stereo outputs.

Inputs to the Model 200 SLI are actively balanced and transformerless, and the same VCA circuitry is incorporated in the module as in the Model 200 MIS. The same cue switch options are available with the 200 SLI as with the 200 MIS model.

For those who do not require cueing faders, a separate cue switch is included in the module. A screwdriver adjustable precision pad is present in each channel of both the module's A and B inputs for exact level matching. Module on and off switching may be located in either Studio A or Studio B, and bi-directional control connections can be used to activate an external device with module turn on or off, or, in the opposite mode, activate the module with the turn on or off of an external device. An optional digital timer may be controlled in either case.

High quality Hall-effect switches are used on the module for on/off functions, avoiding the problem of worn or dirty contacts.



Model 200 CSM Module (Optional) Communications/Studio Monitor Module

An eight station interlocked MONITOR SELECTOR SWITCH allows the console operator to select the source for the studio A and B monitor speakers. The first three switches are connected within the console while stations 4-8 are user assignable. All inputs are balanced bridging and paralleled with those located in the CRM.

A MUTE LED is provided for both studios, and illuminates whenever the studio speakers are muted by the logic system. This takes place whenever any studio mic is live for on-air use or for intercom use. A speaker on/off switch can also mute the studio speakers for each studio. Separate studio A and B level controls vary the signal being sent to the monitor speakers.

In the intercom section of the module, a level control is provided to vary the amount of control room mic being sent to the studios. Engaging the studio A and/or studio B pushbuttons determines which studio will receive talkback from the control room mic. Engagement of these switches automatically allows talkback from the studio to the control room if studio mics are connected to the CRM module (see CRM description). Pressing the TALK button connects the control room mic into the talkback/intercom system. This also causes the control room speakers to mute or dim, as selected on the CRM module.

The CSM module has provisions for parallel studio A and studio B talkback-to-control room switches to be located in the studios. It is recommended that they be of the momentary-on type.

Studio A and studio B on-air light logic outputs are also included in the module.

MONITOR MODULES



Model 200 CRM Control Room Monitor Module

The cue level control varies the amount of signal sent to the cue speaker located in the meter panel. The cue speaker is enabled whenever a cue fader is put into the cue position, or when the studio-to-control room intercom talkback is in use.

An eight station interlocked MONITOR SELECT SWITCH allows the console operator to select the source for the control room speakers. The first three switches are connected within the console, while stations 4-8 are user assignable. All inputs are balanced bridging and paralleled with those in the CSM.

A mute LED illuminates whenever the control room speakers have been muted by the logic system. This takes place when the con-

trol room mic is switched on, when the intercom talk switch is depressed, or when the on/off switch located next to the LED is in the up position.

The CRM level control varies the signal sent to the control room speakers.

A dim circuit combines the left and right monitor signal and sends them to the left speaker only, and the amount of dimming is adjustable by a front panel trimmer. The dim circuit is activated when the cue function or the studio-to-control room intercom function is being used. The dim circuit is muted when the control room mic is in use. The stereo headphone module offers 2 bands of equalization which may be switched into or out of the headphone circuit. A 2 button switch allows the operator to select the cue program or the

control room monitor program. Depressing both buttons sends a summed monitor program to the right channel earphone and the cue program to the left channel earphone. A headphone level control completes this portion of the module.

User assignable internal connections allow a microphone input from the A studio and the B studio to be used for intercom purposes. The mic, as selected on the CSM, is assigned to the cue speaker while in the intercom mode. A control room on-air light logic output is also included in the module, and is activated by the logic system whenever any control room mic module is turned on.

OUTPUT AND OPTIONAL MODULES



Model 200 SLO Stereo Line Output Module

Providing a +30 dBm output capability, two Model 200-SLO modules are used to drive the console's program and audition outputs. Two front panel adjustable gain trims may be used for precise channel-to-channel level matching.



Model 200 MLO Mono Line Output Module

The Model 200-MLO sums the switch selected stereo signals (either program or audition) into a mono output, and is capable of delivering an output of up to +30 dBm. The module also features a front panel adjustable gain trim.



Model 200 TC Timer Control Module (Optional)

The 200-TC features four switches in the top of the module which choose the timer control source. REMOTE S/S allows control from a user installed remote location. When the INPUT ON/OFF switch is depressed, the timer is subject to control by any line input module wired for this function. In addition, the operator may choose from either RESET ON START or RESET ON STOP timer modes. The START, STOP and RESET buttons on the lower half of the module are active at all times and will override the remote and module timer control circuits.



Model 200 TRC Tape Remote Control (Optional)

The 200-TRC is available with five high-quality pushbutton switches, with all switch leads terminated in a single connector on the rear of the module.



Model 200 PEQ Personality Equalizer Module (Optional)

The Model 200 PEQ Personality Equalizer Module is a five band equalizer designed for voice band equalization, and it may be wired to any microphone input in the 200 Series console. The module features an IN/OUT switch and an interchangeable plug-in equalization module, the 200 EQP. Any number of 200 EQPs can be purchased, and each may be adjusted for the voice characteristics of any particular individual. Each announcer on staff can have a personalized console EQ, which can be changed instantly by exchanging EQP modules. The equalizer is simply adjusted with a small screwdriver and an extender board. When no EQP is present, the overall module response reverts to flat response, unity gain. Band centers are at 200, 400, 700, 1500 and 2500 Hz with +/- 9 dB of boost and cut. The 200 PEQ may be used in conjunction with the Model 200 VC Voice Controller, but it is not compatible with the Model 200 SLI Stereo Line Input.



Model 200 LS8 Eight Station Line Selector Module (Optional)

The LS8 has been designed to be wired to either the A or B input of a Model SLI Stereo Line Input Module. The eight station selector switch allows any one of up to eight line level sources to be selected for input to the SLI.



Model 200 VC Voice Controller Module (Optional)

The Model 200 VC is a stereo signal processing device comprised of a noise gate and a compressor limiter, with each section operating totally independently. The Model 200 VC can be used with both the Model 200 MIS Microphone Input Module and the Model 200 SLI Stereo Line Input Module, and may be used in tandem with the Model 200 PEQ on microphone inputs. In addition to the front panel controls, circuit board mounted trimming pots enable adjustment of attack and release times for both portions of the module, as well as a range adjust for the noise gate and a ratio adjust for the compressor (the latter adjustment is chosen by the VAR position on the front panel toggle switch).



Model 200 SRC Studio Remote Control (Optional)

The Model 200 SRC Studio Remote Control consists of four high-quality momentary switches mounted on a

metal plate with an engraved title for each button. The switch plate is designed to be mounted in a user-provided enclosure located in the studio, where the four switches may be used to control the various logic functions of a 200 Series input module.



ON/AIR BROADCAST MIXING CONSOLE

200 SERIES

STOCK NO.		PRICE
	200 Series Modular Consoles include the following basic modules:	
	2 200-SLO Stereo Line Output Modules	
	1 200-MLO Mono Line Output Module	
	1 200-CRM Control Room Monitor Module	
	Up to 13 200-B7 7" Blank Panels if required	
	NOTE: A crate charge must be included per the last items listed below	
	Order by selecting the Main Frame and plug-in modules listed below:	
740-0544-000	206-MF 6-Input Position Main Frame Contains 3 VU Meters (Mono and Switched Stereo), Cue Amplifier and Speaker. There is no space for the optional Clock and Timer	\$ 4615.00
740-0545-000	212-MF 12-Input Position Main Frame Contains 3 VU Meters (Mono and Switched Stereo), Cue Amplifier and Speaker. The optional Clock and Timer may be added	5170.00
740-0546-000	218-MF 18-Input Position Main Frame Contains 5 VU Meters (Mono and 2 pairs of Stereo), Cue Amplifier and Speaker. The optional Clock and Timer may be added	6110.00
740-0547-000	224-MF 24-Input Position Main Frame Contains 5 VU Meters (Mono and 2 pairs of Stereo), Cue Amplifier and Speaker. The optional Clock and Timer may be added	6610.00
740-0548-000	200-CSM Communications/Studio Monitor Module	490.00
740-0549-000	200-SLI Stereo Line Input Module	640.00
740-0550-000	200-MIS Mono Microphone Input Module	640.00
740-0551-000	200-LS8 Stereo Line Selector-8-Station (7")	250.00
740-0552-000	201-PEQ Personality Equalizer (7") Contains 1 201-EQP Plug-In Equalizer Card	340.00
740-0553-000	201-EQP Plug-In Equalizer Card (additional unit)	100.00
740-0554-000	200-TEL Telephone Interface Module (7")	On request
740-0555-000	200-DT Digital Timer (not for 206-MF Main Frame) Includes 200-TC Timer Control Module (7")	450.00
740-0556-000	200-DC Digital Clock (not for 206-FM Main Frame)	325.00
740-0557-000	200-VC Voice Controller Module (7")	450.00
740-0558-000	200-TRC 5-Button Tape Remote Control Module (7")	200.00
740-0559-000	200-B7 Blank Panel - 7" (all supplied/Main Frame)	15.00
740-0560-000	200-B14 Blank Input Position Modules - 14"	22.00
740-0563-000	200-CRM Control Room Monitor Module Supplied with Main Frame (1)	500.00
740-0564-000	200-SLO Stereo Line Output Module Supplied with Main Frame (2)	275.00
740-0565-000	200-MLO Mono Line Output Module Supplied with Main Frame (1)	200.00
740-0566-000	200-SRC Studio Remote Control	On request
740-0567-000	200-TC Digital Timer Control Module Supplied with 200-DT Digital Timer (1)	On request
740-0561-000	Crate Charge (for 206, 212, 218 Main Frames)	30.00
740-0562-000	Crate Charge (for 224 Main Frame only)	50.00



DISTRIBUTION AMP

Model 1000

Uncompromised quality and high reliability mark the Model 1000 Audio Distribution Amplifier as a product specifically engineered for the exacting demands of professional broadcasting. Each ruggedly constructed mainframe is capable of holding up to ten Model 1000-DA6 1 x 6 distribution amplifier cards, and the separate Model PS-60 power supply is capable of driving up to four mainframes (40 cards). For superior performance and reliability, each amplifier card carries its own voltage regulator, and the simplified power supply further furthers trouble-free operation. Unlike some other designs, each output in the Model 1000 is totally isolated through its own individual amplifier, offering the highest degree of reliability.

The Model 1000 features quick, solderless installation through the use of quick-connect screw terminals on the rear of the mainframe; the three power terminals are mounted on a standard barrier strip. A large blank back panel is provided should the user wish to install jacks, and an access opening in each side of the mainframe allows neat and easy entrance of cable bundles. A choice of grounding schemes is available for every input and output of the Model 1000; either a hard ground or a capacitively coupled RF ground may be chosen as the individual circuit requires.

The Model 1000 not only meets the performance requirements set by professionals who demand the utmost of their equipment, it surpasses them, completely fulfilling the need for a high quality, reliable package.



1000-DA6 — One Input/Six Output Amplifier Card	\$180.00
1000-MF — Mainframe/Card Rack, Ten Card Capacity	675.00
PS-60 — Power Supply	450.00

Complete Systems (six card minimum)

Each system includes one mainframe, amplifier cards as shown and Power Supply

DA-1000 with six cards	\$2205.00
DA-1000 with eight cards	2565.00
DA-1000 with ten cards	2925.00



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.

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.

LM-1— Multipurpose arm; 3 lb. maximum weight; 41" extension; Color; Gray \$28.00

LM-2— Multipurpose Arm; 3 lbs. maximum weight; 26" extension; Color; Gray \$28.00

KM-1— Multipurpose, heavyduty K-arm; 3½ lbs. maximum weight; 41" extension; Color; Oyster \$53.00



Mounting Brackets



A—\$4.00



B—\$4.00



C—\$4.00

LM-1 and LM-2 are balanced for 1 lb., KM-1 is balanced for 3 lbs. unless otherwise specified.



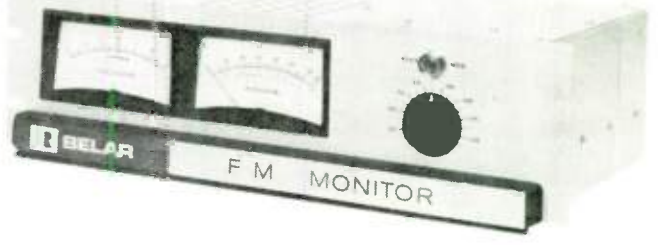
BELAR ELECTRONICS LABORATORY, INC.

Stereo Frequency and Modulation Monitor



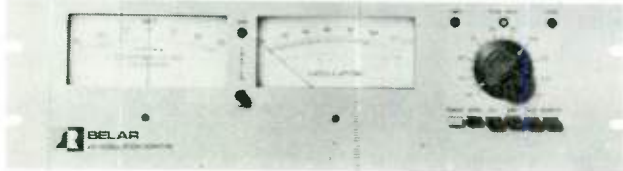
The Belar FM monitors were designed as a totally integrated, solid state system to enable the broadcaster to fulfill his monitoring equipment requirements as the need arises. The Belar FMS-1 Stereo Frequency and Modulation Monitor, when added to the FMM-1 FM Frequency and Modulation Monitor, provides 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 refer 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. 3-240.

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	..... \$1650.00
(FCC Type Approval No. 3-129)	
FMS-1 Stereo Frequency and Modulation Monitor	..... \$1500.00
(FCC Type Approval No. 3-146)	
SCM-1 SCA Frequency and Modulation Monitor	..... \$1500.00
(FCC Type Approval No. 3-162)	
RFA-1 FM RF Amplifier	..... \$ 550.00
MP-1 Remote Meter Panel for FMM-1	..... \$ 195.00
MP-2 Remote Meter Panel for FMS-1	..... \$ 195.00
MP-3 Remote Meter Panel for SCM-1	..... \$ 195.00
MJ-10 Yagi Antenna, 10 Element, used with RFA-1	..... \$ 85.00

TV EQUIPMENT

TVM-1 TV Modulation Monitor	..... \$1750.00
(FCC Type Approval No. 3-181)	
TVM-2 TV Frequency Monitor (VHF)	..... \$2000.00
TVM-3 TV Frequency Monitor (UHF)	..... \$2200.00
RFA-3 TV RF Amplifier	..... \$ 675.00
MP-4 Remote Meter Panel for TVM-1	..... \$ 145.00

AM EQUIPMENT

AMM-2A AM Modulation Monitor	..... \$ 950.00
(FCC Type Approval No. 3-240)	
AMM-3 AM Modulation Monitor	..... \$1400.00
(FCC Type Approval No. 3-231)	
AMM-4 AM Frequency Monitor	..... \$ 950.00
OPTIONS 01 Relay Card	..... \$ 175.00
RFA-2 AM RF Amplifier	..... \$ 595.00
MP-6A Remote Meter Panel for AMM-2A	..... \$ 225.00
MP-7 Remote Meter Panel for AMM-3	..... \$ 225.00
LP-1 Shielded Loop Antenna	..... \$ 225.00
LP-1A Shielded Loop Antenna with	
built-in pre-amplifier for RFA-2	..... \$ 275.00
OPTION 01 Power Supply for Loop Antenna	..... \$ 60.00

MISCELLANEOUS EQUIPMENT

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



MICROPHONE CABLES





- 250-0059-000 8410 Belden single conductor shielded, black rubber jacket \$.60/ft.
- 250-0036-000 8412 Belden, 2-conductor stranded 20 AWG braided shield cotton heavy rubber jacket \$.64/ft.
- 253-0024-000 8428 Belden neoprene jacketed heavy duty mic cable. 2-conductor 18 AWG braided shield \$.84/ft.



TWO CONDUCTOR SHIELDED CABLES



- 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 \$.28/ft.
\$234.00
- 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 \$.20/ft.
\$136.00
- 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 \$.21/ft.
\$158.00

Description	Trade & UL Type Number	AWG (Stranding) Dia. in mm Nom. D.C.R.	Nominal O.D.		Shield Coverage Nom. D.C.R.	Nom. Imp. (ohms)	Nom. Vel. of Prop.	Nominal Capacitance		Nominal Attenuation				
			Inch	mm				pF/ft.	pF/m	KHz or MHz	db/100 ft.	db/100 m		
PRECISION VIDEO CABLE 	8281	20 (Solid) [1.81] bare copper	.304	7.72	96.4% 1.06 Ω/M 3.5 Ω/km	75	66%	21	69	10 kHz	.06	.2	500' \$197.85 1000' 395.70	
		9.9 Ω/M* 32.5 Ω/km								100 kHz	.08	.3		
<i>Conductor, polyethylene insulated, tinned copper double braid shield, black polyethylene jacket. Nom. Core O.D. .200" (5.08 mm).</i>											1 MHz	.25	.8	
											4.5 MHz	.45	1.5	
											10 MHz	.78	2.6	
											100 MHz	2.70	8.9	

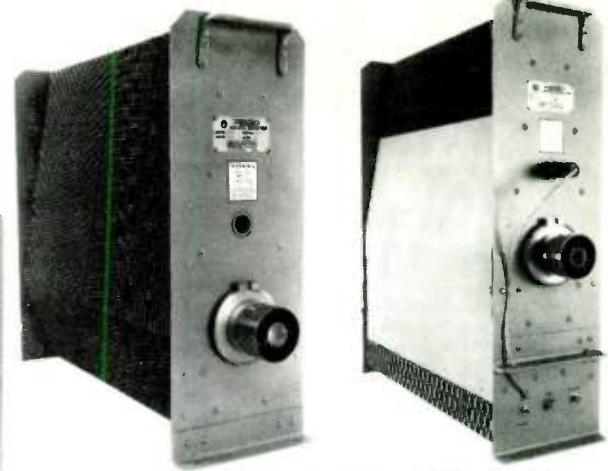
Description	Trade & UL Style Number	RG No	AWG (Stranding) [Dia. in mm] Nom D.C.R.	Insulation Nominal Core O.D.		No. of Shields and Material Nom D.C.R.	Nominal O.D.		Nom Imp (ohms)	Nom Vel of Prop.	Nominal Capacitance		Nominal Attenuation			
				Inch	mm		Inch	mm			pF/ft	pF/m	MHz	db/100 ft	db/100 m	
COAXIAL VIDEO CABLE 	8241	59/U JAN-C-17A	22 (Solid) [1.64] bare copper covered steel	.146	3.71	1 bare copper 2.7 Ω/M* 8.9 Ω/km	.242	6.15	73	66%	21.0	68.9	100	3.4	11.2	100' \$16.05 500' 51.10 1000' 100.00
			55 Ω/M* 180.5 Ω/km										200	4.9	16.1	
<i>Underwriters Laboratories, Inc. Listed (Style 1354)</i>													400	7.1	23.3	

Description	Trade & UL Style Number	RG No	AWG (Stranding) [Dia. in mm] Nom. D.C.R.	Insulation Nominal Core O.D.		No. of Shields and Material Nom. D.C.R.	Nominal O.D.		Nom Imp (ohms)	Nom Vel of Prop.	Nominal Capacitance		Nominal Attenuation			
				Inch	mm		Inch	mm			pF/ft.	pF/m	MHz	db/100 ft.	db/100 m	
Triaxial 	9232  1641	11/U Type Double Shield	14 (19x26½) [1.63] bare copper	.312	7.93	2 bare copper 1.55 Ω/M* 5.1 Ω/km Outer 1.65 Ω/M* 5.4 Ω/km	.520	13.2	75	78%	17.3	56.8	50	1.0	3.3	100' \$105.00 500' 525.00 1000' 1050.00 5000' 5250.00
			2.4 Ω/M* 7.9 Ω/km										100	1.5	4.9	
<i>100% SWEEP TESTED Underwriters Laboratories Inc. Listed. (Style 1641)</i>													200	2.2	7.2	
													300	2.8	9.2	
													400	3.3	10.8	

BIRD ELECTRONIC CORPORATION

New Econoload High-Power TERMALINE® RF Loads

50 ohms nominal
 With Field-Replaceable Resistors!
 10kW, 20kW, 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.



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.

MODEL	CONNECTOR	POWER	PRICE
8833-3000	QC-LC(F)	1kW	\$515.00
8860	QC LC(F)	1500W	640.00
8861	1 5/8 Unfl	1500W	655.00
8862	1 5/8 EIA FI	1500W	670.00
8863	3 1/8 Unfl	1500W	710.00
8864	3 1/8 EIA FI	1500W	725.00
8890-300	QC-LC(F)	2 1/2 kW	705.00
8890-008	Thermoswitch		64.00
8891-300		2 1/2 kW	790.00
8892-300		2 1/2 kW	735.00
8895-300	1 5/8 Unfl/50 ohm (Recessed Ctr. Cond)	2 1/2 kW	775.00
8896-300	3 1/8 Unfl/51.5 ohm	2 1/2 kW	775.00
8897-300	3 1/8 Unfl/50 ohm (Flush Ctr. Cond)	2 1/2 kW	775.00
8898-300	3 1/8 Unfl/50 ohm (Recessed Ctr. Cond)	2 1/2 kW	790.00
BA-300	115-.230 Blower (8890, 91, 92, 95, 96, 97, 98-300)		350.00
8921	QC-LC(F)	5kW	1710.00
8922	1 5/8 EIA Flg	5kW	1735.00
8926	3 1/8 EIA Flg	5kW	1790.00
8927	3 1/8 Unfl	5kW	1775.00
8931-115	QC-LC(F)	10kW	2335.00
8931-230	QC-LC(F)	10kW	2375.00
8932-115	1 5/8 EIA Flg	10kW	2365.00
8932-230	1 5/8 EIA Flg	10kW	2400.00
8936-115	3 1/8 EIA Flg	10kW	2300.00
8936-230	3 1/8 EIA Flg	10kW	2425.00
8937-115	3 1/8 Unfl	10kW	2370.00
8937-230	3 1/8 Unfl	10kW	2515.00

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.

MODULOAD® RF Calorimeter Load Systems

MODEL	CONNECTOR	POWER	PRICE
8631-601	3 1/8 EIA FL	10kW	\$6045.00
8631-602	3 1/8 EIA FI	10kW	6080.00
8635-601	1 5/8 EIA FI	10kW	6045.00
8635-602	1 5/8 EIA FI	10kW	6080.00
8638-601	3 1/8 Unfl	10kW	6045.00
8638-602	3 1/8 Unfl	10kW	6080.00
8645-601	3 1/8 EIA FI	25kW	7705.00
8645-602	3 1/8 EIA FI	25kW	7740.00
8646-601	3 1/8 Unfl	25kW	7705.00
8646-602	3 1/8 Unfl	25kW	7740.00
8655-601	3 1/8 EIA FI	50kW	9720.00
8655-602	3 1/8 EIA FI	50kW	9755.00
8656-601	3 1/8 Unfl	50kW	9720.00
8656-602	3 1/8 Unfl	50kW	9755.00

Above models' coolant is 100% water. For Glycol use, replace "0" in model number with "3" (e.g. 8635-601 becomes 8635-631). Same Price.

LINE VOLTAGE SUFFIX: 601 115V 60Hz
 -602 230V 50 Hz

MODULOAD® Self-Cooled Load Systems

MODEL	CONNECTOR	POWER	PRICE
8631-115	3 1/8 EIA FI	10kW	\$3065.00
8631-230	3 1/8 EIA FI	10kW	3100.00
8635-115	1 5/8 EIA FI	10kW	3065.00
8635-230	1 5/8 EIA FI	10kW	3100.00
8638-115	3 1/8 Unfl	10kW	3065.00
8638-230	3 1/8 Unfl	10kW	3100.00
8645-115	3 1/8 EIA FI	25kW	4725.00
8645-230	3 1/8 EIA FI	25kW	4760.00
8646-115	3 1/8 Unfl	25kW	4725.00
8646-230	3 1/8 Unfl	25kW	4760.00
8655-115	3 1/8 EIA FI	50kW	6740.00
8655-230	3 1/8 EIA FI	50kW	6775.00
8656-115	3 1/8 Unfl	50kW	6740.00
8656-230	3 1/8 Unfl	50kW	6775.00
8690-060	6 1/8 EIA FI 230V 60Hz	80kW	11,630.00
8690-050	6 1/8 EIA FI 230V 50Hz	80kW	11,630.00

LINE VOLTAGE SUFFIX: -115 115V 60 Hz
 -230: 230V 50 Hz
 (except 80kW units)

Wall-Mounting Brackets

6770-120	10kW	\$150.00
6770-125	20kW, 30kW, 40kW, 50kW	150.00
6770-130	80kW	150.00

50 Ohm Line Sections 15.5 Ohm or 75 Ohm Line Sections Available on Special Order

PART NO.	ELEMENT SOCKETS	CONNECTOR	PRICE
4230-006-1	One	QC*	\$59.00
4230-053	Two	QC*	93.00
4230-059	One, w/Bracket	QC*	61.00
4501-000	One	7/8 FI	137.00
4502-000	Two	7/8 FI	177.00
4522-002	Two, panel mfg.	QC	128.00
4600-000	One	3-1/8 FI	235.00
4610-000	Two	3-1/8 FI	289.00
4712-000	One	1-5/8 FI	187.00
4715-000	Two	1-5/8 FI	209.00
4720-000	One	1 5/8 Unfl	209.00
4723-000	Two	1 5/8 Unfl	235.00
4802-000	Two	3-1/8 Unfl	209.00
4805-000	One	3-1/8 Unfl	155.00
4902-000	One	6 1/8 FI	669.00
4905-000	Two	6 1/8 FI	685.00
4907-000	One	6-1/8 Unfl	695.00
4909-000	Two	6-1/8 Unfl	725.00
4910-000	One	9 FI	1nq.

*QC connectors not included.



6770-105-1 Dolly With Load and 4805 Wattmeter

Water Cooled, Air Dielectric

MODEL	CONNECTORS	POWER	PRICE
8710	N/M or F	1kW	\$320.00
8711	C/M or F	1kW	350.00
8713	7/8 EIA FI/50 ohm	1kW	375.00
8720	1 5/8 EIA FI/50 ohm	5kW	560.00
8730	1 5/8 EIA FI Econoload	10kW	640.00
8730-677	Above with dolly*	10kW	1250.00
8731	3 1/8 EIA FI Econoload	10kW	670.00
8731-677	Above with dolly*	10kW	1290.00
8738	3 1/8 Unfl Econoload	10kW	670.00
8738-677	Above with dolly*	10kW	1320.00
8745	3 1/8 EIA FI Econoload	20kW	1015.00
8745-677	Above with dolly*	20kW	1635.00
8746	3 1/8 Unfl Econoload	20kW	1015.00
8746-677	Above with dolly*	20kW	1665.00
8755	3 1/8 EIA FI Econoload	30kW	1390.00
8755-677	Above with dolly*	30kW	2000.00
8756	3 1/8 Unfl Econoload	30kW	1390.00
8756-677	Above with dolly*	30kW	2035.00
8765	3 1/8 EIA FI Econoload	40kW	1580.00
8765-677	Above with dolly*	40kW	2200.00
8766	3 1/8 Unfl Econoload	40kW	1580.00
8766-677	Above with dolly*	40kW	2225.00
8775	3 1/8 EIA FI Econoload	50kW	1765.00
8775-677	Above with dolly*	50kW	2385.00
8776	3 1/8 Unfl Econoload	50kW	1765.00
8776-677	Above with dolly*	50kW	2415.00
8790	6 1/8 EIA FI Econoload	80kW	2400.00
8790-677	Above with dolly*	80kW	3085.00
8791	6 1/8 Unfl Econoload	80kW	2400.00
8791-677	Above with dolly*	80kW	3125.00

*Dolly assembly includes Water Flow Switch, Control Box and Coupling Kit

Control Box Assembly

8750 100 For all Econoloads \$190.00

Replacement Resistors — Econoloads

8731-021	10kW	\$175.00
8755-027-3	30kW	295.00
8755-027-4	40kW	350.00
8755-027-5	50kW	355.00
8755-029-2	20kW	235.00
8790-035	Two req'd.	355.00

Water Flow Switch — Econoloads

5-898-2	20kW	\$85.00
5-898-3	30kW	85.00
5-898-4	40kW, 50kW	85.00
5-898-6	10kW	85.00
5-898-7	80kW	85.00

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 Fig	Single	5/10/25	1-5/8A	6¾" (171mm)	3 lbs (1¼ kg)
4715-200	2-1000	¼-25	EIA Fig	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 Fig	Single	15/30/60	1-5/8B	6¾" (171mm)	3 lbs (1¼ kg)
4715-300	50-250	0.3-6	EIA Fig	Double	15/30/60	1-5/8B	6¾" (171mm)	3¼ lbs (1.4 kg)

3-1/8" LINE 50 ohms nominal

Model No.	Frequ. Range MHz	Power Range kW	Fig/Unfig	No. of Sockets	Scale Divisions	Element Table	Overall Length	Weight
460	2-1000	1-100	EIA Fig	Single	5/10/25	3-1/8A	7-1/32" (179mm)	7 lbs (3 kg)
4610-200	2-1000	1-100	EIA Fig	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 Fig	Single	15/30/60	3-1/8B	7-1/32" (179mm)	7 lbs (3 kg)
4610-300	50-250	1½-30	EIA Fig	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

Model No.	Frequ. Range MHz	Power Range kW	Fig/Unfig	No. of Sockets	Scale Divisions	Element Table	Overall Length	Weight
4902	2-1000	2½-250	EIA Fig	Single	5/10/25	6-1/8A	10-7/32" (260mm)	21 lbs (9½ kg)
4905-200	2-1000	2½-250	EIA Fig	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 Fig	Single	15/30/60	6-1/8B	10-7/32" (260mm)	12½ lbs (5¾ kg)
4905-300	50-250	3-60	EIA Fig	Double	15/30/60	6-1/8B	10-7/32" (260mm)	12¼ 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

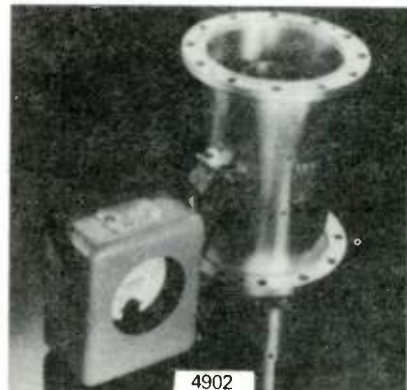
TABLE 3-1/8B STANDARD ELEMENTS [CATALOG NUMBERS]*

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.



4902

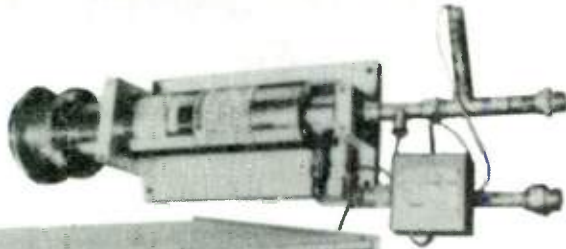
METER: 4½" meter, shock mounted in aluminum carrying case with 10' (3m) shielded meter cable(s). Dimensions: (WxHxD) 5-9/16" x 6-1/2" x 3-3/8" (141 x 165 x 85).

Single Socket: straight connection.

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

MODEL	CONNECTORS	PRICE	4715-200	4715-300	4720	4723-200	4802-200	4802-300	4805	4805-037	4902	4902-037	4905-200	4905-300	4907	4909-200	4902-080	4907-080	+ H-Series	
460	50 Ω 3/8" EIA Fig	\$425.00	50 Ω 1 1/8" EIA Fig	50 Ω 1 1/8" EIA Fig	50 Ω 1 1/8" Unfig	50 Ω 1 1/8" Unfig	50 Ω 3/8" Unfig	50 Ω 3/8" Unfig	50 Ω 3/8" Unfig	50 Ω 3/8" Unfig	50 Ω 6 1/8" EIA Fig	50 Ω 6 1/8" EIA Fig	50 Ω 6 1/8" EIA Fig	50 Ω 6 1/8" EIA Fig	50 Ω 6 1/8" Unfig	50 Ω 6 1/8" Unfig	50 Ω 6 1/8" EIA Fig	50 Ω 6 1/8" EIA Fig	Elements for all high-power	
	Elements (460) Table 3¼A	70	Elements (4715-200) Table 1¼A	Elements (4715-300) Table 1¼B	Elements (4720) Table 1¼A	Elements (4723-200) Table 1¼A	Elements (4802-200) Table 3¼A	Elements (4802-300) Table 3¼B	Elements (4805) Table 3¼A	Elements (4805-037) Table 3¼B	Elements (4902) Table 6¼A	Elements (4902-037) Table 6¼B	Elements (4905-200) Table 6¼A	Elements (4905-300) Table 6¼B	Elements (4907) Table 6¼A	Elements (4909-200) Table 6¼A	Elements (4902-080) Table 6¼C	Elements (4907-080) Table 6¼C	Wattmeters above	
480	51.5 Ω 3/8" Unfig	340.00																		
4600-037	50 Ω 3/8" EIA Fig	440.00																		
	Elements (4600-037) Table 3¼B	70																		
4610-200	50 Ω 3/8" EIA Fig	530.00																		
	Elements (4610-200) Table 3¼A	70																		
4610-300	50 Ω 3/8" EIA Fig	540.00																		
	Elements (4610-300) Table 3¼B	70																		
4712	50 Ω 1¼A	375.00																		
	Elements (4712) Table 1¼A	70																		
4712-037	50 Ω 1¼ EIA Fig	390.00																		
	Elements (4712-037) Table 1¼B	70																		

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).

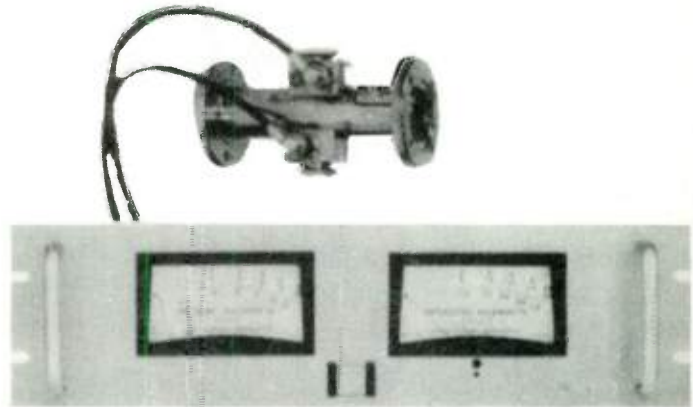
Modulating an AM carrier 100% with a pure single tone will increase the calorimeter reading by 50%, measuring the average power contained in the sidebands in addition to the carrier. In other words, the model 6080 digital readout always indicates the heating power dissipated in the load resistor. The 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)	\$2515.00
6080-230 (less TERMALINE® water-cooled load)	2515.00

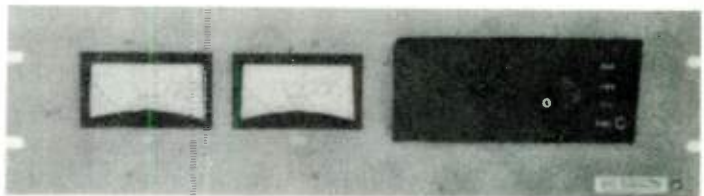


Transmitter Protection: WATTCHER® RF Power Monitor/Alarm

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	PART NO.	LENGTH	OUTPUT CONNECTOR	PRICE
3127 for rigid lines	\$800.00	3170-058 1	14 in.	BNC M	\$16.00
3128 for cables	800.00	3170-058 2	15'	BNC M	21.00
		3170-058 3	25'	BNC M	24.00
		3171-010	25'	BNC M 6 1/8 lines only	36.00
DC Cables for 3127, 3128	18.00	3170-058 4	40'	BNC M	32.00
4220 097-10 25' meter cable	25.00	3170-058 5	50'	BNC M	34.00
4220 077-1 25' cable for 6-1/8 lines only	25.00				85.00
3170 High Speed RF Monitoring System	900.00				
3171 High Speed RF Mon. Sys. (rigid lines)	900.00				
Elements for 3171	170.00				

DC Cables for either 3170, 3171

1H-Series Elements for 3171

COAXIAL CABLE AND CONNECTORS

AIR DIELECTRIC WELLFLEX — CABLE AND CONNECTORS

STOCK NO.		PRICE
618-0319-000	7/8" 50 ohm, Jacketed Wellflex, air	\$ 4.10
620-1141-000	7/8" N-Male Plug	54.00
620-1140-000	7/8" N-Female Receptacle	54.00
620-1143-000	7/8" UHF Female Receptacle	54.00
620-0967-000	7/8" End Terminal	110.00
620-1139-000	7/8" Splice	70.00
620-1142-000	7/8" LC-Male Plug	130.00
620-0969-000	7/8" EIA Flange (Gas Barrier)	100.00
620-0970-000	7/8" EIA Flange (Gas Pass)	68.00
620-1403-000	7/8" N-Female Receptacle, LO VSWR	158.00
620-1400-000	7/8" EIA Flange (Gas Barrier) LO VSWR	161.70
618-0320-000	1-5/8", 50 ohm, Jacketed Wellflex, air	9.00
620-1377-000	1-5/8" N-Male Plug	136.00
620-1378-000	1-5/8" N-Female Receptacle	136.00
620-0968-000	1-5/8" End Terminal	206.00
620-1149-000	1-5/8" Splice	194.00
620-1150-000	1-5/8" LC-Female Receptacle	194.00
620-1147-000	1-5/8" Connector 7/8" EIA Flange (Gas Barrier)	170.00
620-1146-000	1-5/8" Connector, 7/8" EIA Flange (Gas Pass)	166.00
620-0973-000	1-5/8" EIA Flange (Gas Barrier)	150.00
620-0974-000	1-5/8" EIA Flange (Gas Pass)	144.00
620-1404-000	1-5/8" N-Female Receptacle, LO VSWR	253.00
620-1401-000	1-5/8" Connector, 7/8" EIA Flange (Gas Barrier), LO VSWR	340.00
620-1402-000	1-5/8" Connector, 7/8" Flange (Gas Pass), LO VSWR	328.00
618-0321-000	3", 50 ohm, Jacketed Wellflex, air	17.00
620-1153-000	3" Cable Splice	312.00
620-0975-000	3-1/8" EIA Flange Female (Gas Pass)	254.00
620-0976-000	3-1/8" EIA Flange Female (Gas Barrier)	266.00
620-0977-000	3-1/8" EIA Anchor Inner Connector	44.00

FOAM DIELECTRIC WELLFLEX — CABLE AND CONNECTORS

618-0316-000	3/8", 50 ohm, Jacketed Wellflex, Foam	1.10
618-0317-000	1/2", 50 ohm, Jacketed Wellflex, Foam	1.34
620-0952-000	3/8" N-Male Plug	24.50
620-0955-000	3/8" N-Female Receptacle	24.50
620-0958-000	3/8" UHF-Male Plug	27.00
620-0961-000	3/8" UHF-Female Receptacle	27.00
620-1382-000	3/8" TNC-Male Plug	39.00
620-0964-000	3/8" End Terminal	60.50
620-1385-000	3/8" Cable Splice	58.50
620-0953-000	1/2" N-Male Plug	27.50
620-0956-000	1/2" N-Female Receptacle	27.50
620-0959-000	1/2" UHF-Male Plug	27.50
620-0962-000	1/2" UHF-Female Receptacle	27.50
620-0965-000	1/2" End Terminal	67.00

Cablewave Systems

COAXIAL CABLE AND CONNECTORS

FOAM DIELECTRIC WELLFLEX — CABLE AND CONNECTORS

STOCK NO.		PRICE
620-1386-000	1/2" Cable Splice	\$ 59.00
620-0971-000	1/2" Connector, 7/8" EIA Flange (Gas Barrier)	73.00
618-0318-000	7/8", 50 ohm, Jacketed Wellflex, Foam	3.46
620-0954-000	7/8" N-Male Plug	42.00
620-0957-000	7/8" N-Female Receptacle	42.00
620-0960-000	7/8" UHF-Male Plug	44.00
620-0963-000	7/8" UHF-Female Receptacle	44.00
620-0966-000	7/8" End Terminal	76.00
620-1387-000	7/8" Cable Splice	76.00
620-0972-000	7/8" Connector, 7/8" EIA Flange (Gas Barrier)	70.50
618-0353-000	1-5/8", 50 ohm, Jacketed Wellflex, Foam	8.16
620-1376-000	1-5/8" N-Male Plug	134.00
620-1128-000	1-5/8" N-Female Receptacle	134.00
620-1384-000	1-5/8" End Terminal	174.00
620-1388-000	1-5/8" Cable Splice	166.00
620-1396-000	1-5/8" Connector, 7/8" EIA Flange (Gas Barrier)	168.00

ACCESSORIES FOR WELLFLEX CABLE

620-0978-000	Stainless Steel Strapping Kit — Consists of 100' of 1/2" strap, fastener buckles and tightening tool	29.00
620-1406-000	Non-Insulated Hanger Kit (10 pcs/kit) for 1/2" cable requires Angle or Round Member Adapters below	31.44 /kit
620-0979-000	Same except for 7/8" Cable	34.50 /kit
620-0980-000	Same except for 1-5/8" Cable	34.50 /kit
620-0981-000	Same except for 3" Cable	41.20 /kit
620-1371-000	Insulated Hanger for 1/2" Cable — Requires Angle or Round Member Adaptors below	14.60
620-1372-000	Same except for 7/8" Cable	17.00
620-0994-000	Same except for 1-5/8" Cable	20.10
620-0995-000	Same except for 3" Cable	40.00
620-0982-000	Angle Member Adapter Kit (10 pcs/kit) for Non-Insulated and Insulated Hangers 1/2" and 7/8"	40.00 /kit
620-0983-000	Same except for Non-Insulated Hangers 1-5/8" and 3"	46.00 /kit
620-0984-000	Same except for Insulated Hangers 1-5/8" and 3"	77.50 /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.	18.00 /kit
620-0986-000	Same except 2" to 3" Member	20.00 /kit
620-0987-000	Same except 3" to 4" Member	20.00 /kit
620-0988-000	Same except 4" to 5" Member	20.00 /kit
620-0989-000	Same except 5" to 6" Member	20.00 /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	26.40
620-1410-000	Same except for 7/8" Cable	36.00
620-0996-000	Same except for 1-5/8" Cable	36.00
620-0997-000	Same except for 3" Cable	55.00

COAXIAL CABLE AND CONNECTORS

FOAM DIELECTRIC WELLFLEX — CABLE AND CONNECTORS

STOCK NO.		PRICE
620-1411-000	Grounding Kit for 1/2" Cable	\$10.75
620-0988-000	Same except 7/8" Cable	10.75
620-0999-000	Same except 1-5/8" Cable	13.25
620-1000-000	Same except 3" Cable	16.00
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.	29.00
620-1418-000	Wall/Roof Feed-Thru for 3/8" Cable	26.50
620-1419-000	Same except for 1/2" Cable	28.75
620-1420-000	Same except for 7/8" Cable	31.00
620-1421-000	Same except for 1-5/8" Cable	42.00
620-1422-000	Same except for 3" Cable	62.00
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)	244.90
618-0323-000	Rigid Line, 20', 3-1/8", 50 ohm with EIA Flanges (1-318-50)	428.00
620-1131-000	Reducer, Tape Type, 1-5/8" EIA to 7/8" EIA, 50 ohm (17-158-50)	101.90
620-1132-000	Reducer, Taper Type, 3-1/8" EIA to 1-5/8" EIA, 50 ohm (17-318-50)	145.00
620-1005-000	Gas Barrier, 50 ohm, 7/8" EIA (7-78-50)	78.00
620-1006-000	Same except 1-5/8" EIA (7-158-50)	120.00
620-1007-000	Same except 3" EIA (7-318-50)	209.60
620-1001-000	Miter Elbow, 90 D., 50 ohm, 1-5/8" EIA (4-158-50)	112.20
620-1002-000	Same except 3-1/8" EIA (4-318-50)	194.00

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	182.00
620-1109-000*	Cablewave, Automatic Dehydrator 1.3 SCFM with low pressure alarm, 115V, 60Hz.	1254.00

cinema products



STEDIACAM

The unique Steadicam system introduces a new era in handheld professional video/film camera operation, revolutionizing video and film production methods all over the world.

Because with Steadicam, the handheld moving camera finally comes into its own—recording dolly-smooth, jitter-free, handheld moving shots with a steadiness of image never before achieved on the screen.

Steadicam closely approximates the steadiness with which the human eye "views" the scene. Because, unlike any other handheld camera stabilizing system, Steadicam permits the camera to move with the operator as if it were an extension of his own body and part of his internal "servo-system", constantly adjusting and correcting for body motions, whether walking or running.

A Breakthrough in Handheld Camera Operation

Designed to provide total mobility and portability while recording extremely steady and smooth shots, Steadicam allows the camera operator a freedom of movement totally unknown until now.

Released from the constraints of dollies, tracks, and heavy camera platforms, camera and operator are now free to go anywhere without restrictions... recording new kinds of moving shots previously considered impossible, capturing action scenes with a new sense of realism and fluidity—in sweeping continuous takes!

Amazing Maneuverability

Steadicam's sophisticated engineering allows the camera to move and glide freely in all directions—panning and tilting in any number of angles—while the camera operator easily guides and controls the position of the camera with a gentle movement of his hand. The camera seems to be free-floating, as if suspended in mid-air, yet, it is completely balanced at all times.

Steadicam permits the camera operator to boom up or down nearly 3 feet, pan a full 360° and tilt up or down to 60°—all this while the operator is himself in motion. Furthermore, running or walking, the Steadicam operator can accelerate and decelerate more accurately than possible in dolly operation.

Filtering out low as well as high frequency vibration, Steadicam (with its high shock absorption capability) turns virtually any vehicle—car, boat, or aircraft—into a perfect "instant" camera platform. For example, filming in a helicopter (with proper wind screening), Steadicam delivers steady shots which are superior to any that may be achieved with conventional helicopter mounts.

THE ACADEMY OF MOTION PICTURE ARTS AND SCIENCES HAS GRANTED GARRETT BROWN AND THE ENGINEERING STAFF OF CINEMA PRODUCTS, UNDER THE DIRECTION OF JOHN JURGENS, A CLASS I TECHNICAL AWARD FOR THE INVENTION AND DEVELOPMENT OF STEDIACAM. IT IS THE FIRST CLASS I TECHNICAL AWARD OSCAR TO BE GRANTED BY THE ACADEMY IN TEN YEARS.

5C100. Steadicam (Universal Model II) for Cinema Products MNC-81A video camera. **\$26,000.00**

5C202. Steadicam (Universal Model II) for Cinema Products MNC-71CP video camera. **\$26,000.00**

5C203. Steadicam (Universal Model II) for RCA TK-76 video camera. **\$26,000.00**

5C204. Steadicam (Universal Model II) for Ikegami HL-77 video camera. **\$26,500.00**

5C110. Steadicam (Universal Model II) for Ikegami HL-79A video camera. **\$26,500.00**

5C205. Steadicam (Universal Model II) for Philips LDK-14 video camera. **\$26,500.00**

5C132. Steadicam (Universal Model II) for Hitachi SK-80 video camera. **\$26,500.00**

Prices and Specifications Subject to Change Without Notice.

Worldradio History

 **HARRIS**

CINE 60



CINE 60 Sun-Gun Light

Cine 60's Sun-Gun is a unique battery powered light used by TV camera men and documentary film makers all over the world as a "fill" light outdoors, a "key" or "fill" light indoors. For 30 Volt 150, 250, 350 watt and 12 Volt, 100 watt tungsten-halogen lamps. Features: Soft, Wide Angle Focusing Light ideal as a camera mounted light in head-on situations. At 10 ft. Flood Position throws a 14 ft. wide beam flat from edge to edge, free of hot spots, filament patterns, or halos. Lets camera man achieve better picture quality, balancing "fill" light to ambient light, and eliminating harsh facial shadows. A heat-insulated knob on back is used to focus, sliding in and out and locking at any point from maximum to minimum beam width. Built-In Swing-Away Dichroic Filter, 3400°K indoor color temperature or 5500°K color temperature with the turn of a knob.

SGK-9704PS	30V. 7AH STANDARD POWERPAK SUN-GUN KIT. 40 minute life. Wt. 23 lbs.	1,204.00
SGK-9704FC	30V. -7AH 2 HR. FAST CHARGE POWERPAK SUN-GUN KIT. 40 minute life. With 9400 Fast Charger. Wt. 26 lbs.	1,472.00



The 30V. Sun-Gun Kit consists of: The Cine 60 Sun-Gun Head, Cat. No. 6201A, Tungsten-Halogen Lamp, 30V. 250 Watts. Cat. No. 6209; Swing-Away Dichroic Filter. Cat. No. 6202; 30V. SG Powerbelt or Powerpak, Standard or Fast Charge, Overnite Charger; Carrying Case, Cat. No. 6207. Pictured: 30V. 4AH Fast Charge Powerpak Sun-Gun Kit with 1 Hour Fast Charger.

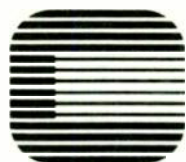
Cat. No. SGK-9104FC

SGK-6304PS	30V. -4AH STANDARD POWERBELT SUN-GUN KIT. 25 minute life. Wt. 21 lbs.	\$ 880.00
SGK-8304PS	30V. -4AH FAST CHARGE POWERBELT SUN-GUN KIT. 25 minute life. With 9400 Fast Charger. Wt. 24 lbs.	1,158.00
SGK-7004	30V. -7AH STANDARD POWERBELT SUN-GUN KIT. 40 minute life.	1,179.00
SGK-7004FC	SAME AS SGK-7004 except with Fast Charge Powerbelt and Fast Charger.	1,465.00
SGK-9104PS	30V. -4AH STANDARD POWERPAK SUN-GUN KIT. 25 minute life. Wt. 21 lbs.	906.00
SGK-9104FC	30V. -4AH FAST CHARGE POWERPAK SUN-GUN KIT. 25 minute life. With 9400 Fast Charger. Wt. 24 lbs.	1,187.00

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.



CONRAC

MONOCHROME MONITORS

DZB SERIES:

15-inch Monochrome

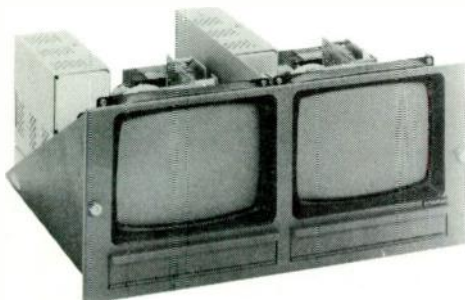
A professional monochrome monitor designed for VTR over-console mounting. Front panel selector switch allows two matched video inputs to be viewed for picture comparison.



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

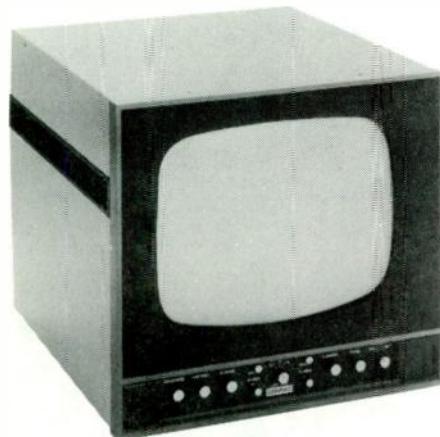
A cost effective, 650-line resolution monochrome display for industrial, data processing, and educational installations. Meets all EIA RS-170 specifications. Horizontal AFC is optimized to meet the requirements of industrial tape recorders. Chassis, rack or cabinet models available. A dual 9-inch model 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.



OZB Series Broadcast Monochrome

15" CRT	
DZB15/N	1835
DZB15/RS	1825
DZB15/C	1875
DZB15/Y	1995
ACCESSORIES*	
M3	250
M4	280
M5	145

SNA Series Monochrome

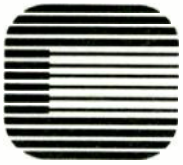
9" CRT			
SNA9/N	930	OPTIONS MODEL SNA	75
SNA9/C	1020	Yoke Rotation, 90° or 180°	
SNA9/RBL	1060	Separate Horizontal and Vertical Drive	85
SNA9/RBR	1060	Tally Light	85
SNA9/RC	1080	Non-Synchronous Operation	
SNA9/RXL	1080	9", 17", 23" (Std on 14")	110
SNA9/RXR	1080	Dynamic Focus 14"	130
SNA9/RKL	1080	Back Porch Clamp	150
SNA9/RKR	1080	Square Raster 9", 14" (Std. on 17" & 23")	150
SNA9/R	1895	Normal to Underscan	
14" CRT		Switchable	150
SNA14/NC	1030	20 MHz Video Amplifier	205
SNA14/NR	1080	Differential Input	205
SNA14/R	1140	High Line Rates as available	240
SNA14/C	1150	Pulse Cross (Not available on 23")	240
SNA14/RS	1280	Video Reverse (Switchable)	250
17" CRT		Dual Channel Video Input	280
WITH DYNAMIC FOCUS			
SNA17/N	\$1200	ACCESSORIES*	
SNA17/R	1290	SNA 17"	
SNA17/RS	1385	M3	250
SNA17/C	1385	M6	235
SNA17/Y	1385	M7	175
23" CRT		SNA 23"	
WITH DYNAMIC FOCUS		M8	285
SNA23/C	1485	M9	185
SNA23/Y	1485		

ENA Series Monochrome

9" CRT		
ENA9/N	515	
ENA9/C	595	
ENA9/RBL	605	
ENA9/RBR	605	
ENA9/RKL	635	
ENA9/RKR	635	
ENA9/R	1080	
12" CRT		
ENA12/N	545	
ENA12/C	670	
ENA12/R	680	
OPTIONS MODEL ENA		
External Sync Input (Switchable)	55	
Laminate Anti-glare CRT Panel	55	
Non-synchronous Shielding	110	
Differential Input	140	

QQA Series High Resolution Monochrome

16" CRT			
QQA16/N	2780	OPTIONS MODEL QQA	
QQA16/C	2975	Video Reverse (Switchable)	\$ 170
QQA16/Y	2985	Separate Horizontal and Vertical Drive	190
QQA16/RS	3045	Dual Video Input A/B	215
17" CRT		600 μsec vertical retrace option	75
QQA17/N	2885	ACCESSORIES*	
QQA17/C	3155	M3	250
QQA17/Y	3155	M4	280
QQA17/RS	3230	M5	145
21" CRT		M8	295
QQA21/N	3390	M9	185
QQA21/C	3685		
QQA21/Y	3685		
QQA21/RS	3745		



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.



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.



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.



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 alpha-numeric display applications.

6100 Series Broadcast Color

19" CRT		
NTSC		
6122N19		\$7115
6122RS19		7310
6122C19		7420
6122Y19		7480
NTSC WITH COMB FILTER		
6142N19		8685
6142RS19		8875
6142C19		8985
6142Y19		9025
PAL B EUROPEAN		
6123N19		7230
6123RS19		7420
6123C19		7530
6123Y19		7570
ACCESSORIES*		
M3		250
M4		280
M5		145

5700 Series Broadcast Color

13" CRT			
NTSC			
5722N13	5130	5733N13	5690
5722RS13	5260	5733RS13	5825
5722C13	5280	5733C13	5865
5722Y13	5320	5733Y13	5905
NTSC WITH COMB FILTER			
5742N13	6190	5724N13	5260
5742RS13	6310	5724RS13	5390
5742C13	6350	5724C13	5420
5742Y13	6380	5724Y13	5450
NTSC WITH VECTOR OUTPUT AND VECTOR OUTPUT			
5732N13	5580	5734N13	5690
5732RS13	5690	5734RS13	5825
5732C13	5745	5734C13	5865
5732Y13	5775	5734Y13	5905
NTSC WITH COMB FILTER AND VECTOR OUTPUT			
5752N13	6645	5725N13	55280
5752RS13	6755	5725RS13	5380
5752C13	6805	5725C13	5420
5752Y13	6835	5725Y13	5450
PAL B EUROPEAN			
5723N13	5260	M3	250
5723RS13	5380	M4	280
5723C13	5420	M5	145
5723Y13	5450		

5300 Series Broadcast Color

19" CRT			
NTSC			
5322N19	4195	5325N19	4370
5322RS19	4280	5325RS19	4450
5322C19	4370	5325C19	4540
5322Y19	4390	5325Y19	4560
PAL B EUROPEAN			
5323N19	4370	M3	250
5323RS19	4450	M4	280
5323C19	4540	M5	145
5323Y19	4560		
PAL M BRAZILIAN			
5324N19	4370		
5324RS19	4450		
5324C19	4540		
5324Y19	4560		

5200 Series Broadcast/Industrial Color

19" CRT			25" CRT	
NTSC			NTSC	
5222N19	3430	5222C25		4690
5222RS19	3510	5222Y25		4710
5222C19	3605	PAL B EUROPEAN		
5222Y19	3625	5223C25		\$4740
PAL B EUROPEAN			5223Y25	4760
PAL M BRAZILIAN			ACCESSORIES*	
5223N19	3470	M3		250
5223RS19	3565	M4		280
5223C19	3645	M5		145
5223Y19	3665	M8		295
PAL M BRAZILIAN			M9	185
5224N19	3470			
5224RS19	3565			
5224C19	3645			
5224Y19	3665			
SECAM 50				
5225N19	3440			
5225RS19	3520			
5225C19	3615			
5225Y19	3635			



D-75 Power Amplifier

The Crown D-75 power amplifier, requiring only 1 3/4" (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
\$489.00

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
\$699.00
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.

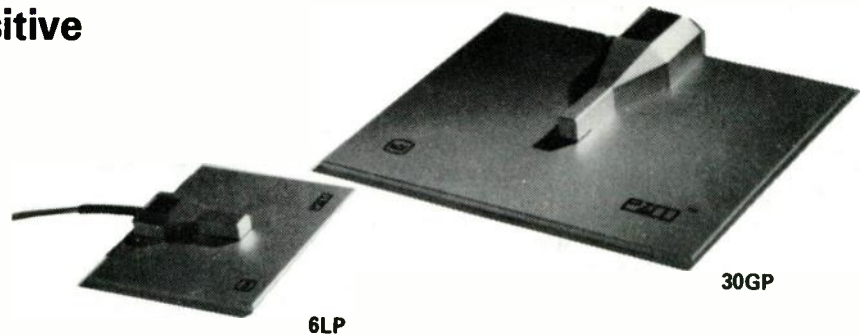


DC-300A
\$1099.00
HMB-7 optional handle kit
\$20.00



PRESSURE ZONE MICROPHONES

Highly Sensitive



PZM-30GP

The Crown PZM, or pressure-zone microphone, works on a new principle of sound detection, utilizing the pressure zone at an acoustic boundary to eliminate distortion problems common to other microphones.

The active element in a PZMicrophone is a pressure calibrated electret capsule, mounted so it faces the boundary and lies within the pressure zone. All incoming sound is received indirectly, free of distortion caused by phase interference.

The Model 30GP is a general purpose version of the PZM, and includes the transducer in a cantilever mounting and SLR connector mounted on a 5" x 6" (127 x 152mm) plate. The 30GP is available in gold or black.

The 30GP should be mounted on a larger flat surface for best results, preferably 4' x 4' (1.3 x 1.3m) or larger. A table, podium, wall or floor will work well. This type of mounting expands the effective boundary layer available for the transmission of sound to the microphone and improves frequency response.

The sound pickup pattern of the PZM is hemispheric, and sound sources moving on the surface of a sphere surrounding the PZM will cause no alteration in the quality of the sound. Should a cardioid pattern be desired, a foam template can be placed behind the transducer to limit very effectively the sensitivity from one direction.

The external power supply required for operation is included with the 30GP, which can be active (Crown PA-18) or transformer (Crown PX-18).

PZM-6LP

The Crown PZM, Model 6LP also employs the Pressure Recording Process™ as the basis for its design. It offers the same improvement in sound quality as other PZM models, resulting from the lack of phase interference within the pressure zone in which the microphone operates.

The Model 6LP is designed for minimum visibility, with a 2½" x 3" (51 x 76mm) plate, and the cantilever/transducer assembly mounted on the plate without the XLR connector of the GP30 Model. The XLR connector appears at the end of several feet of cable. The 6LP requires either the Crown PX-18 (transformer) or PA-18 (active) power supply. Each supply may be used either with battery or phantom power. This version of the PZMicrophone has been engineered for use in conference rooms, in television, broadcasting, filmmaking or videotaping. Its very small size makes it easy to hide from a camera, and conference members soon learn to ignore its presence.

Like all PZMicrophones, the 6LP has a hemispheric pick-up pattern, and is unaffected by movement of the sound source around it.

The 6LP has already been selected by a state court for use on the bench. As with all PZMicrophones, low frequency performance can be enhanced by placing the microphone on a larger surface. A table-top up to two meters square works very well.

Power Supply Furnished

Price

RM Series — Recess Mount

PZM-20RMG (Gold)	Built-in transformer phantom power only	\$349.00
------------------	--	----------

LV Series — Clip on

PZM-2LV (Plate)	PX-TLB	\$349.00
PZM-3LV (Tie Bar)	PX-TLB	349.00
As above with . . .	PX-TL	319.00

GP Series — General Purpose

PZM-30GPG (Gold)	PX-18B or PA-18B	\$349.00
PZM-30GPB (Black)	PX-18B or PA-18B	349.00
As above with . . .	PX-T	319.00

LP Series — Low Profile

PZM-6LPG (Gold)	PX-18B or PA-18B	\$349.00
PZM-6LPB (Black)	PX-18B or PA-18B	349.00
As above with . . .	PX-T	319.00

31 Series — Close Miking

PZM-31S (Silver)	PX-18B or PA-18B	\$349.00
As above with...	PX-T	319.00

Power Supply Description:

PX-18B	transformer, battery or phantom powered
PA-18B	active, battery or phantom powered
PX-T	transformer, phantom power only for use with all PZM microphones except LV + RM Series. PX-T is available separately at \$95.00 retail. Dealer cost: \$63.65; (cost 30 days cash — \$59.83).
PX-TL	transformer, phantom power only, for use with LV Series only
PX-TLB	transformer, battery or phantom power, for use with LV Series only



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.

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		

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)

SPA-100 \$43.00

SPA-200 \$43.00

SPA-400 \$73.00



DECCA AUSTIN

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

Specifications subject to change without notice.
For prices and additional information contact your
Harris District Sales Manager or the Harris Quincy Sales Office.

World Radio History



dbx

NOISE REDUCTION SYSTEMS

142 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.

142 \$ 900.00

148 NOISE REDUCTION SYSTEM

The dbx Model 148 is an eight-channel playback-only Type II 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 headroom 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

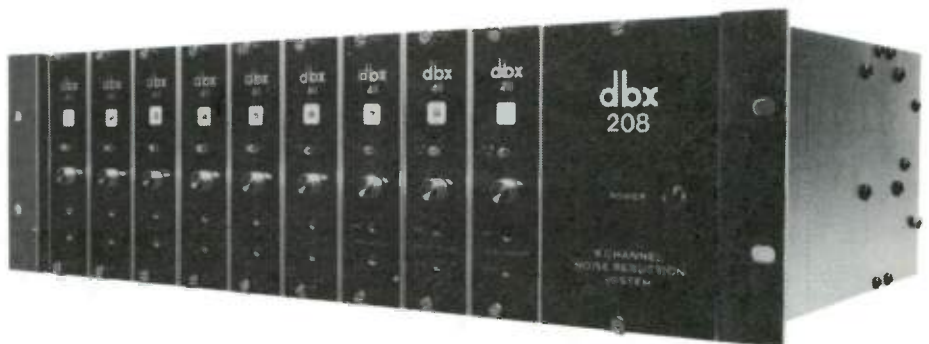
recording a live source, and prevents the noise build-up normally encountered in transferring information from one recorded medium to another. It does not remove noise of the mixing board.

148 \$ 3,275.00

208 PROFESSIONAL TAPE NOISE REDUCTION SYSTEM

The dbx system provides in excess of 30 dB of noise reduction and 10 dB of headroom improvement over the entire audible frequency range (20Hz to 20kHz). A tape made with the dbx system has full dynamic range and no audible noise. It is virtually indistinguishable from the original live source (the only noise heard, if any, is that which is present in the input signal, and the residual noise of the recording console).

The dbx 208 consists of eight noise reduction modules, each containing independent record and playback electronics, mounted in a 5 1/2" standard rack panel, with a ninth (spare) module occupying a dummy slot for instant availability. Simultaneous record/playback capability permits the noise reduced, decoded program to be played through the monitors while recording is in progress.



Signal cables are supplied with 27-pin gold connectors, mating to the 208 system, and XLR-3 connectors on the other end. Inputs can be fed from any balanced or unbalanced source up to 5k ohms. Outputs are unbalanced and will drive any line or load including standard 600-ohm lines and equipment. Screwdriver-adjustable record and

play level controls are accessible at the front panel for convenient balancing of system levels.

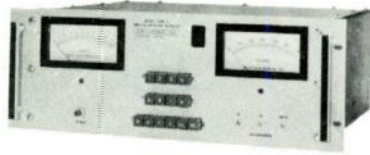
Panel controls include power on-off switch, noise reduction or bypass switches on each channel, and LED function indicators.

208 \$ 4,000.00

DELTA ELECTRONICS

BROADCAST PRODUCTS

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 \$3230.00
- For Each Input Above Two Add \$ 130.00
- SH-1 Sample and Hold Option for Extremely High Modulation Conditions \$ 365.00
- AAMH-1 Hardwire Remote Control Unit \$1750.00
- ARI-1 Alternate Reference Input \$ 220.00
- RF-1 Rejection Filters \$ 550.00

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 \$5030.00 8 Towers \$6575.00
- 3 Towers 5120.00 9 Towers 6660.00
- 4 Towers 5205.00 10 Towers 6750.00
- 5 Towers 5290.00 11 Towers 6830.00
- 6 Towers 5375.00 12 Towers 6915.00
- 7 Towers 6490.00
- RF-1 Rejection Filters \$ 550.00
- SH-1 Sample and Hold Option for Extremely High Modulation Conditions \$ 365.00
- ARI Alternate Reference Input \$ 220.00

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.

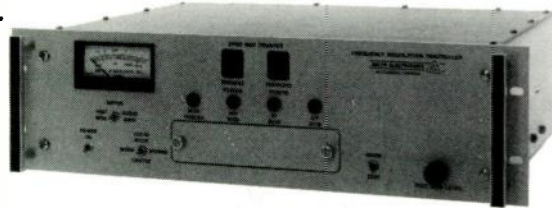
- DAMR-1/DAML-1 Remote Control System
- 2 to 6 Towers \$4990.00 7 to 12 Towers \$5460.00
- LPD-1 Line Protection Device \$170.00

DELTA ELECTRONICS

BROADCAST PRODUCTS

MODEL FMC-1

Frequency Modulation Controller



The Model FMC-1 Frequency Modulation Controller provides automatic control of the modulation levels of an FM broadcast transmitter or audio channel of a TV transmitter. The FMC-1 provides a closed loop system around the transmitter which allows the broadcast engineer to maintain modulation at the desired level despite variations in the audio level from different program sources and other system variances. Through gain is controlled by a digital attenuator maintaining true transparency at all gain settings. No clipping or compression is used.

By using a closed loop approach, the FMC-1 allows modulation levels to be maintained independent of audio program levels, output level variations of the stereo generator or other exciter/transmitter variations which may affect the audio baseband level.

FEATURES:

- Automatically controls the modulation level of an FM or Aural television transmitter to prevent excessive or undesirably low modulation
- Uses an input sample from the audio or composite output of modulation monitor
- interfaces monaural or stereo composite signal with 600 ohm balanced input and output circuits
- Provides A +/- 8 dB window of adjustment of stereo, audio or composite
- Front panel meter indicates audio operating gain of system, and test modulation percentage
- Two one-digit counters with overflow indicators separately display over modulation peaks for present and previous one minute count period
- Recessed front panel controls provide adjustment of four modulation control levels and the audio level adjustment rates
- Test mode checks operation of controller and facilitates parameter adjustment
- Proof of performance tests may be conducted with unit in circuit
- Reverts to hardwire through mode on power or circuit failure.

FMC-1S — Single Channel	\$3195.00
FMC-1D — Dual Channel	\$495.00

MODEL LPD-1

Line Protective Device

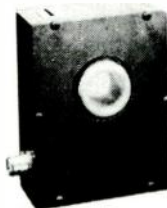
The Delta Electronics LPD-1 Line Protective Device is designed to protect Delta Electronics remote control equipment or other similar equipment from unusual telephone line surges of all causes. The LPD-1 is connected between the telephone line and the modem input/output terminals of the remote control 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)	\$170.00
--	-----------------

MODELS TCT-1, TCT-2 and TCT-3

Toroidal Current Transformers

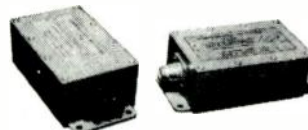


The TCT-1, TCT-2 and TCT-3 are precision toroidal current transformers designed primarily for obtaining sampling voltages for phase and magnitude measurements on broadcast arrays. The units are housed in rectangular aluminum shield enclosures with a 1 1/4" teflon lined pass hole through which the current 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	\$280.00
High Voltage (HV) Model	475.00
TCT-2 Toroidal Current Transformer	
0.25V/amp	280.00
High Voltage (HV) Model	475.00
TCT-3 Toroidal Current Transformer	
1.00V/amp	280.00
High Voltage (HV) Model	475.00

MODEL TCTR-1A



The TCTR-1A 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-1A 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.

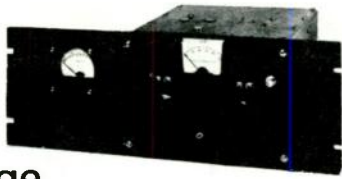
The TCTR-1A case is 5.250 inches long by 2.625 inches wide by 1.687 inches high. Mounting holes, 0.187 in diameter, are located on centers 4.750 inches by 1.750 inches.

TCTR-1A Compensated Rectifier Circuit	\$250.00
--	-----------------

DELTA ELECTRONICS

BROADCAST PRODUCTS

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-1 Common Point Impedance Bridge, 5kW \$1590.00
- CPB-1A Common Point Impedance Bridge, 50kW \$1890.00

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-1 Operating Impedance Bridge (Specify lead length
12" or 18") \$1540.00
- Extended R and X Ranges \$425.00
- Permits reading resistance to 1000 ohms.
- Reactance to 900 ohms. Includes recalibration.

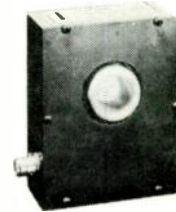
MODEL RG-3 Receiver/ Generator



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 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.

- TCA-N-EX Single Scale Remote Output,
Meter Scales 5, 10 and 20 amps \$425.00
- Meter Scales 40 and 80 amps \$460.00
- TCA-N-EXR Single Scale Remote Output and On/Off Relay
Meter Scales 5, 10 and 20 amps \$475.00
- Meter Scales 40 and 80 amps \$505.00
- TCA-N/N-EXR Dual Scale Remote Output and High-Off-Low Relays
Meter Scales 5/10, 10/20 and 20/40 amps \$610.00
- Meter Scales 40/80 amps \$650.00

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 \$2100.00
- TC-1 Transport Case for OIB-1 \$245.00
- D51-3-1 12" Replacement Leads for OIB-1 or OIB-3 \$95.00
- D51-3-2 18" Replacement Leads for OIB-1 or OIB-3
(Changing lead length requires recalibration) \$95.00
- Recalibration Clearing and recalibration of OIB-1,
OIB-3 and CPB-1/1A \$215.00
- Repair labor and parts additional.
- Return authorization not required.

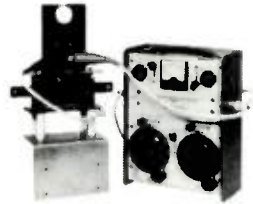
OIB-1 or OIB-3. The unique patented circuit of the Delta impedance bridges places the high-level output (two watts) directly in parallel with the interfering signals on the antenna. The generator is attenuated by the measuring network in other bridges before competing in the interfering signals.

- RG-3 Receiver/Generator with Improved Type PSA-1
Power Supply, AC and DC Supply Operation \$4560.00
- (Batteries for DC sold separately)
- D51-8-4 Set of 2 Coaxial Cables for RG-3 \$55.00
- D05-72 Set of ten rechargeable nickel-cadmium batteries ... \$205.00
- PSA-1 Factory modification of RG-1 to install new Type
PSA-1 Power Supply (less batteries) \$395.00
- FMK-PSA-1 Field Modification Kit for Field Conversion
of RG-1 to RG-1B, Delta Part Number D44-3
(less batteries) \$340.00
- D05-40 Battery Pack (Replacement for Model RG-1) \$250.00

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 the 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 \$155.00
- BP-50 Bridge Plug \$75.00
- MP-308 Meter Plug \$75.00

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 over-modulation bursts for both present and previous one minute periods.

- AMC-1 Amplitude Modulation Controller \$3495.00
- With ATS Option \$3870.00

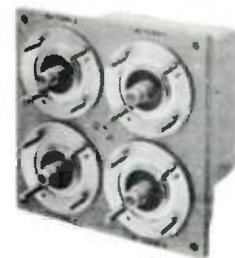
TRANSMISSION LINE SWITCHES



Model 6740B/6742B
3-1/8" Coaxial Transfer Switch



Model 33630A
Coaxial Switch Control Panel



Model 6730E/6732E
1-5/8" 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 \$1375.00
- 6732E Coaxial Transfer Switch 1-5/8", 220/240V, 50/60 Hz \$1485.00
- 6740B Coaxial Transfer Switch 3-1/8", 120V, 50/60 Hz \$3600.00
- 6742B Coaxial Transfer Switch 3-1/8", 220/240V, 50/60 Hz \$3700.00
- 33630A Control Panel for any Transfer Switch \$450.00

CONNECTOR ADAPTERS

- D81-13 Large UHF to BNC Female \$37.50
- D81-59 BNC Male to GR \$42.50
- D81-76-1 BNA Female to N Male \$16.00
- D81-76-2 BNC Male to N Female \$26.50
- D81-77 Large UHF to N Female \$37.00
- D81-100 N Male to UHF Female \$16.00

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 115VAC, 60HZ, relay control voltage 12VDC.	\$1747.00
583-0052-000	Same as above except power source and control voltage 115VAC, 60 HZ	1747.00
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	2468.00
583-0041-000	Same as above, except power source and control voltage 115VAC, 60 HZ	2468.00
583-0036-0XX	Dielectric Communications Coaxial Switch, 4 pole, motorized, 50 ohm, 6-1/8" flange, high power version, VHF or UHF.	7998.00
583-0038-000	Dielectric Communications, Coaxial Switch, 50 ohms, 3-1/8" flange, high power version, VHF or UHF.	3278.00
620-1435-000	Dielectric Communication Control Panel for use with motorized switches.	457.00

TRANSMISSION LINE

618-0357-000	20', 50 ohm, 3-1/8" with EIA flange	567.00
618-0358-000	Same as above except sexless	615.00
618-0359-000	20' 50 ohm, 4-1/16" with EIA flange	950.00
618-0360-000	Same as above except sexless	1020.00
618-0361-000	20' 50 ohm, 6-1/8" with EIA flange	1567.00
618-0362-000	Same as above except sexless	1688.00
618-0363-000	20' 50 ohm, 9-3/16" with EIA flange	3020.00
618-0364-000	20' 75 ohm, 6-1/8" with EIA flange	1393.00
618-0365-000	Same as above except sexless	1448.00
618-0366-000	20' 75 ohm, 8-3/16" with EIA flange	2537.00
618-0367-000	20' 75 ohm, 9-3/16" with EIA flange	2950.00
620-1174-000	90 D. elbow, 50 ohm, 3-1/8" with EIA flange	284.00
620-1175-000	Same as above except sexless	306.00
620-1185-000	Same as above, unequal legs with EIA flange	334.00
620-1186-000	Same as above, unequal legs, sexless	360.00
620-1176-000	90 D. elbow, 50 ohm, 4-1/16" with EIA flange	417.00
620-1177-000	Same as above except sexless	449.00
620-1187-000	Same as above, unequal legs with EIA flange	480.00
620-1188-000	Same as above, unequal legs, sexless	517.00
620-1178-000	90 D. elbow, 50 ohm, 6-1/8" with EIA flange	748.00
620-1179-000	Same as above except sexless	838.00
620-1189-000	Same as above, unequal legs, with EIA flange	850.00
620-1190-000	Same as above, unequal legs, sexless	886.00
620-1180-000	90 D. elbow, 50 ohm, 9-3/16" with EIA flange	1894.00
620-1195-000	Same as above except unequal legs	2150.00
620-1181-000	90 D. elbow, 75 ohm, 6-1/8" with EIA flange	680.00
620-1182-000	Same as above except sexless	700.00
620-1192-000	Same as above, unequal legs with EIA flange	775.00
620-1183-000	Same as above, unequal legs, sexless	848.00
620-1194-000	90 D. elbow, 75 ohm, 8-3/16" with EIA flange	1659.00
620-1184-000	90 D. elbow, 75 ohm, 9-3/16" with EIA flange	1804.00
620-1191-000	Same as above, except unequal legs	2030.00
620-1196-000	Gas Barrier, 50 ohm, 3-1/8" with EIA flange	246.00
620-1197-000	Same as above except sexless	282.00
620-1198-000	Same as above, 4-1/16" with EIA flange	469.00
620-1199-000	Same as above, 4-1/6", sexless	505.00
620-1200-000	Same as above, 6-1/8" with EIA flange	1194.00
620-1201-000	Same as above, 6-1/8", sexless	1378.00
620-1202-000	Same as above, 9-3/16" with EIA flange	2596.00

DIELECTRIC COMMUNICATIONS

TRANSMISSION LINE

STOCK NO.		PRICE
620-1203-000	Gas Barrier, 75 ohm, 6-1/8" with EIA flange	\$ 739.00
620-1204-000	Same as above except sexless	749.00
620-1205-000	Same as above 8-3/16" with EIA flange	2174.00
620-1206-000	Same as above 9-3/16" with EIA flange	2491.00
620-1214-000	"O" Ring, 3-1/8" for EIA flange	2.00
620-1215-000	Same as above for sexless flange	5.00
620-1216-000	Same as above except 4-1/16" for EIA flange	5.00
620-1217-000	Same as above, 4-1/16" for sexless flange	5.00
620-1221-000	Same as above except 6-1/8" for EIA flange	5.00
620-1222-000	Same as above, 6-1/8" for sexless flange	5.00
620-1223-000	Same as above, except 8-3/16" for EIA flange	9.00
620-1220-000	Same as above, except 9-3/16" for EIA flange	10.00
620-1218-000	Flange Hardware Kit, EIA, 3-1/8"	8.00
620-1225-000	Same as above except 4-1/16"	12.50
620-1227-000	Same as above except 6-1/8"	20.00
620-1230-000	Same as above except 8-3/16"	37.00
620-1229-000	Same as above except 9-3/16"	41.00
620-1224-000	Flange Hardware Kit, sexless, 3-1/8"	45.00
620-1226-000	Same as above except 4-1/16"	63.00
620-1228-000	Same as above except 6-1/8"	82.00
620-1219-000	Field Flange, EIA, 3-1/8"	74.00
620-1232-000	Same except 4-1/16"	106.00
620-1234-000	Same except 6-1/8"	113.00
620-1237-000	Same except 8-3/16"	290.00
620-1236-000	Same except 9-3/16"	357.00
620-1231-000	Field Flange, sexless, 3-1/8"	79.00
620-1233-000	Same except 4-1/16"	114.00
620-1235-000	Same except 6-1/8"	218.00
620-1238-000	Fixed Flange, EIA 3-1/8"	54.00
620-1240-000	Same except 4-1/16"	72.00
620-1242-000	Same except 6-1/8"	94.00
620-1245-000	Same except 8-3/16"	229.00
620-1244-000	Same except 9-3/16"	251.00
620-1239-000	Fixed Flange, sexless, 3-1/8"	32.00
620-1241-000	Same except 4-1/16"	72.00
620-1243-000	Same except 6-1/8"	128.00
620-1246-000	Swivel Flange, EIA, 3-1/8"	42.00
620-1247-000	Same except 4-1/16"	115.00
620-1248-000	Same except 6-1/8"	148.00
620-1250-000	Same except 8-3/16"	438.00
620-1249-000	Same except 9-3/16"	457.00
620-1207-000	Anchor Connector, 50 ohm, 3-1/8"	47.00
620-1208-000	Same except 4-1/16"	94.00
620-1209-000	Same except 6-1/8"	194.00
620-1210-000	Same except 9-3/16"	397.00
620-1211-000	Anchor Connector, 75 ohm, 6-1/8"	126.00
620-1212-000	Same except 8-3/16"	280.00
620-1213-000	Same except 9-3/16"	354.00

DIELECTRIC COMMUNICATIONS

TRANSMISSION LINE

STOCK NO.		PRICE
620-1251-000	Spring Hanger, 3-1/8"	\$ 69.00
620-1252-000	Same except 4-1/16"	104.00
620-1253-000	Same except 6-1/8" with 2 mounting holes use for runs over 600 ft.	180.00
620-1682-000	Same except 6-1/8" with one mounting hole. DO NOT use for runs over 600 ft.	181.00
620-1255-000	Same except 8-3/16"	299.00
620-1254-000	Same except 9-3/16"	322.00
620-1256-000	Fixed Hanger, 3-1/8"	53.00
620-1257-000	Same except 4-1/16"	202.00
620-1258-000	Same except 6-1/8"	234.00
620-1260-000	Same except 8-3/16"	474.00
620-1259-000	Same except 9-3/16"	474.00
620-1261-000	Roller Assembly, 3-1/8"	51.50
620-1262-000	Same except 4-1/8"	67.50
620-1263-000	Same except 6-1/8"	136.00
620-1265-000	Same except 8-3/16"	237.00
620-1264-000	Same except 9-3/16"	237.00
620-1266-000	Horizontal Anchor, single, 3-1/8"	199.00
620-1267-000	Same except 4-1/16"	233.00
620-1268-000	Same except 6-1/8"	250.00
620-1270-000	Same except 8-3/16"	297.00
620-1269-000	Same except 9-3/16"	272.00
620-1271-000	Horizontal Anchor, dual, 3-1/8"	386.00
620-1272-000	Same except 4-1/16"	407.00
620-1273-000	Same except 6-1/8"	470.00
620-1275-000	Same except 8-3/16"	614.00
620-1274-000	Same except 9-3/16"	669.00
620-1276-000	Lateral Brace, 3-1/8"	36.00
620-1277-000	Same except 4-1/16"	31.00
620-1278-000	Same except 6-1/8"	36.00
620-1280-000	Same except 8-3/16"	38.00
620-1279-000	Same except 9-3/16"	38.00
620-1281-000	Horizontal Spring Hanger, single, 3-1/8"	74.00
620-1282-000	Same except 4-1/16"	138.00
620-1283-000	Same except 6-1/8"	166.00
620-1285-000	Same except 8-3/16"	245.00
620-1284-000	Same except 9-3/16"	229.00
620-1286-000	Horizontal Spring Hanger, dual, 3-1/8"	176.00
620-1287-000	Same except 4-1/16"	276.00
620-1288-000	Same except 6-1/8"	287.00
620-1290-000	Same except 8-3/16"	583.00
620-1289-000	Same except 9-3/16"	583.00
620-1291-000	Gas Inlet Kit	54.00

SOLID-STATE SWITCHING EQUIPMENT



SVA-101B



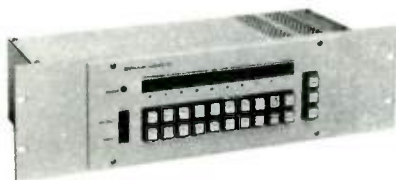
SVA-102B



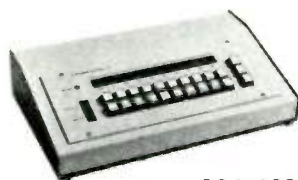
SAA-111A



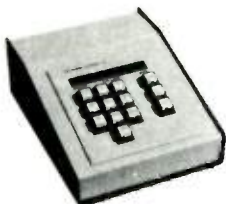
SAA-112A



SCA-120A



SCA-122A



SCA-131A

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

Video Switcher

SVA-100B. Self-contained, for local control. 10 inputs, 10 dual outputs with tally and regulated power supply. **3875.00**

Video Switcher

SVA-101B. Same as SVA-100B but for remote control operation only. Control by single coaxial comm line. Requires remote control options. **3675.00**

Video Switcher

SVA-102B. Same as SVA-101B but for slave control only. Controlled from switcher control bus only. (Model CC-1130A Control Bus Jumper Cable Assembly not included). Tally not provided. **3245.00**

Audio Switcher

SAA-110A. Self-contained, for local control. 10 input by 10 output with tally and regulated power supply. **3225.00**

Audio Switcher

SAA-111A. Same as SAA-110A but for remote control operation only. Control by single coaxial comm line. Requires remote control panel(s) options. **3025.00**

Audio Switcher

SAA-112A. 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. **2595.00**

Master Remote Control Panel

SCA-120A. Rack mounting. For remotely controlling all 10 outputs of video and/or audio switchers. **695.00**

Master Remote Control Panel

SCA-122A. Desk top use. Same as SCA-120A except for housing. **695.00**

Single Bus Remote Control Panel

SCA-130A. Rack mounting. For remotely controlling 1 output of video and/or audio switchers. **500.00**

Single Bus Remote Control Panel

SCA-131A. Desk top use. Same as SCA-130A except for housing. **500.00**

Basic Master Control Panel

CP-1100A. For conversion for local control and/or local status operation of existing SVA-101B or SAA-111A. **300.00**

Blank Panel

BP-1109A. For video or audio switcher assembly for conversion for remote or slave control operation of SVA-100A, SVA-100B or SAA-110A. **100.00**

Switcher Control Bus Cable Assembly

CC-1130A. Switcher Control Bus Jumper Cable Assembly for control of slave matrices, Models SVA-102B and/or SAA-112A. 24 inches (61 cm) in length. **100.00**

Rack Mounting Chassis/Power Supply

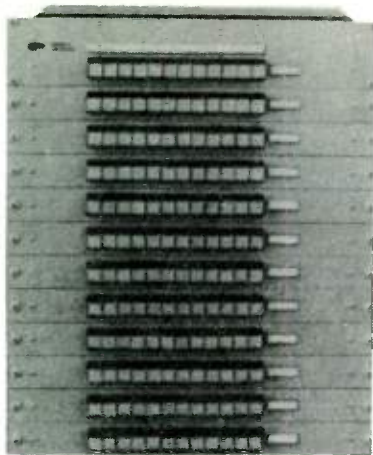
MB-1120A. Rack-mounting chassis with power supply for housing CP-1100A. For conversion of existing remote master control to rack-mount configuration. **395.00**

Desk Top Chassis with Power Supply

MB-1121A. Desk-top chassis with power supply for housing CP-1100A. For conversion of existing master control to remote desk-top configuration. **395.00**

Termination

TC-260A. 75 ohm BNC Termination Plug for terminating looping video inputs. **6.00**



VSX-12X12A

DYNAIR Series-X Switchers function as 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. The input expansion option allows switchers to be expanded to 60 inputs.

Each output channel consists of a horizontal row of interlocking mechanical pushbuttons with each pushbutton representing an input. A depressed pushbutton is illuminated to indicate a switch closure. The tally option provides a contact per input which closes when any output selects the input.

- XD-6A** — Output Expansion Unit, 6 input, for expanding VSX-6X1A up to 12 outputs. One XD-6A required per output. 1 3/4 x 19 inches (4.45 x 48.26 cm) **\$300.00**
- XD-12A** — Output Expansion Unit, 12 input, for expanding VSX-12X1A up to 12 outputs. One XD-12A required per output. 1 3/4 x 19 inches (4.45 x 48.26 cm) **\$400.00**
- TA-6A** — Audio Input Termination Assembly **\$20.00**
- AI-6A** — Audio Input Bridging Amplifier Plug-in Assembly for field conversion of video only units to audio-follow-video operation **\$150.00**
- AO-6A** — Audio Output Amplifier Plug-in Assembly for field conversion of video only units to audio-follow-video operation **\$95.00**
- SI-6A** — Sync-Mixing Input Amplifier Plug-in Assembly for field conversion of switchers to sync-mixing operation. Provides high-impedance sync input circuitry **\$100.00**
- SO-6A** — Sync-Mixing Output Amplifier Plug-in Assembly for field conversion of switchers to sync mixing operation **\$100.00**
- TL-6A** — Six-Input Tally Harness Assembly for field retrofit of switchers for remote tally from each output bus **\$50.00**
- TL-12A** — Twelve-Input Tally Harness Assembly for field retrofit of switchers for remote tally from each output bus **\$75.00**
- EX-6A** — Input Expansion Kit for expanding system inputs by adding additional six or twelve-input switchers **\$195.00**
- TC-260A** — 75-ohm BNC Termination Plug for terminating looping video or sync inputs **\$6.00**
- CC-X** — Input Expansion Cable Assembly for use with EX-6A Expansion Kit **\$80.00**
- CJ-5101A** — Video Jumper Cable **\$8.00**
- CJ-3081A** — Audio Jumper Cable **\$6.00**

Model No.	Basic Price	Optional Features (additional cost)			
		-S (audio)	-M (sync mixing)	-T (tally) *	-I (input expansion) *

6-Input Switchers

VSX-6X1A	\$ 775.00	\$ 245.00	\$ 200.00	\$ 35.00	\$ 195.00
VSX-6X2A	1075.00	340.00	300.00	70.00	390.00
VSX-6X3A	1375.00	435.00	400.00	105.00	585.00
VSX-6X4A	1675.00	530.00	500.00	140.00	780.00
VSX-6X5A	1975.00	625.00	600.00	175.00	975.00
VSX-6X6A	2275.00	720.00	700.00	210.00	1170.00
VSX-6X7A	2575.00	815.00	800.00	245.00	1365.00
VSX-6X8A	2875.00	910.00	900.00	280.00	1560.00
VSX-6X9A	3175.00	1005.00	1000.00	315.00	1755.00
VSX-6X10A	3475.00	1100.00	1100.00	350.00	1950.00
VSX-6X11A	3775.00	1195.00	1200.00	385.00	2145.00
VSX-6X12A	4075.00	1290.00	1300.00	420.00	2340.00
XD-6A	300.00	95.00	100.00	35.00	195.00

12-Input Switchers

VSX-12X1A	1050.00	395.00	200.00	50.00	195.00
VSX-12X2A	1450.00	490.00	300.00	100.00	390.00
VSX-12X3A	1850.00	585.00	400.00	150.00	585.00
VSX-12X4A	2250.00	680.00	500.00	200.00	780.00
VSX-12X5A	2650.00	775.00	600.00	250.00	975.00
VSX-12X6A	3050.00	870.00	700.00	300.00	1170.00
VSX-12X7A	3450.00	965.00	800.00	350.00	1365.00
VSX-12X8A	3850.00	1060.00	900.00	400.00	1560.00
VSX-12X9A	4250.00	1155.00	1000.00	450.00	1755.00
VSX-12X10A	4650.00	1250.00	1100.00	500.00	1950.00
VSX-12X11A	5050.00	1345.00	1200.00	550.00	2145.00
VSX-12X12A	5450.00	1440.00	1300.00	600.00	2340.00
XD-12A	400.00	95.00	100.00	50.00	195.00

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



COAXIAL PATCHFIELDS AND ACCESSORIES

The system consists of a high density patchfield that incorporates 22 circuits in a standard 19 inch wide rack panel—either 1 3/4 or 3 1/2 inches high. Each circuit is connected to a patented COTERM® 22T jack which provides normal-thru connection without the use of patch cords or looping plugs. Patch cords may be inserted to break the normal-thru signal path and program cross connections. Sources that are patched out are automatically terminated within the jacks. Test probes may be used to enter the jack to sample the signal without interruption of the live circuit.

The Dynatech Coaxial Patching/Switching System provides normal-thru connections and self-termination within the jacks, as well as cross patching and non-interrupting on-line monitoring of live circuits.

COTERM® 22T
(Normal-Thru, Self-Terminating) \$34.00

The COTERM 22T is a reliable, normal-thru switching and line terminating jack designed for rugged use and trouble-free service. It is available in 75 ohm impedance or optionally in 50 ohm impedance. It accepts standard BNC connectors on its rear terminals.

COJAX® 22B
(Normal-Thru) \$30.00

The COJAX 22B is identical to the COTERM 22T in dimensions, quality and serviceability. It is a normal-thru switching jack without the internal self-termination feature.

COPATCH® 2-2A
(Normally Terminating) \$34.00

The COPATCH 2-2A is a self-terminating jack without the normal-thru feature. It provides patchfield appearance of two standby source circuits. 75 or 50 ohm impedance.

COPATCH® 2-2
(Non-Terminating, Non-Normalling) \$30.00

The COPATCH 2-2 has neither the normal-thru or self-termination features. It provides two inputs to test equipment, trunk lines or other equipment.

All Coaxial Jacks may be interchanged for use in mixed patchfields.

COAXIAL PANELS

Panels are available in metal or phenolic either 1 3/4 or 3 1/2 inches high for standard rack mounting. Coterm, Cojax or Copatch jacks may be mounted interchangeably on all panels—each panel holds 22 jacks across the 19 inch width. 4 standard panels are available, consult factory for other sizes.

- Model 105-113-22 Metal 1 3/4" high x 19" wide \$44.00
- Model 105-114-22 Phenolic 1 3/4" high x 19" wide 62.00
- Model 105-115-22 Metal 3 1/2" high x 19" wide 50.00
- Model 105-112-22 Phenolic 3 1/2" high x 19" wide 70.00

COAXIAL PATCH CORDS

Model 105-057 — Standard Patch Cord constructed with soldered center pin and crimped sleeve shield connections to meet the highest standards of reliability. Standard lengths of 2, 3, and 4 feet, other available on special order.

PATCH CORDS, (Specify Length—2, 3 and 4 feet standard)
Model 105-057 — (Length in feet) \$22.00
(Patch plugs on both ends)

Model 105-057-BNC—(Length in feet) \$22.00
(Patch plug on one end, male BNC on opposite end)

VIDEO COAXIAL CABLE, (specify length) Model 10S—112 MM—
(length in feet) (MM = BNC male connectors on both ends) 22.00

COAXIAL TEST PROBES

TEST PROBES, (Specify Length—6 feet standard)
Model 105-5—(Length) \$22.00

(Test probe tip on one end, standard patch plug on opposite end)

Model 105-5A—(Length) \$22.00
(Test probe tip on one end, BNC male connector on opposite end)

Model 105-5B—(Length) \$22.00
(Test probe tip on one end, UHF male connector on opposite end)

COAXIAL PLUGS

Model 105-13—Dummy plug for opening normal-thru connections. \$11.00

Model 105-14—Terminating plug for use with Cojax or Copatch 2-2 to terminate source in proper impedance. \$16.00



ELECTRO IMPULSE LABORATORY, INC.

RF COAXIAL LOADS



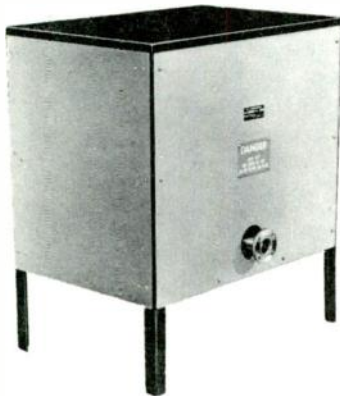
CPTC-5K [TO 30 MHz] **DACT-5KFM** [TO 110 MHz] **5000-7500 WATTS**

• Dry, convection cooled • Frequency: DC-30 MHz (CPTC-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.

World Radio History

HARRIS



ELECTRO IMPULSE LABORATORY, INC.

RF COAXIAL LOADS

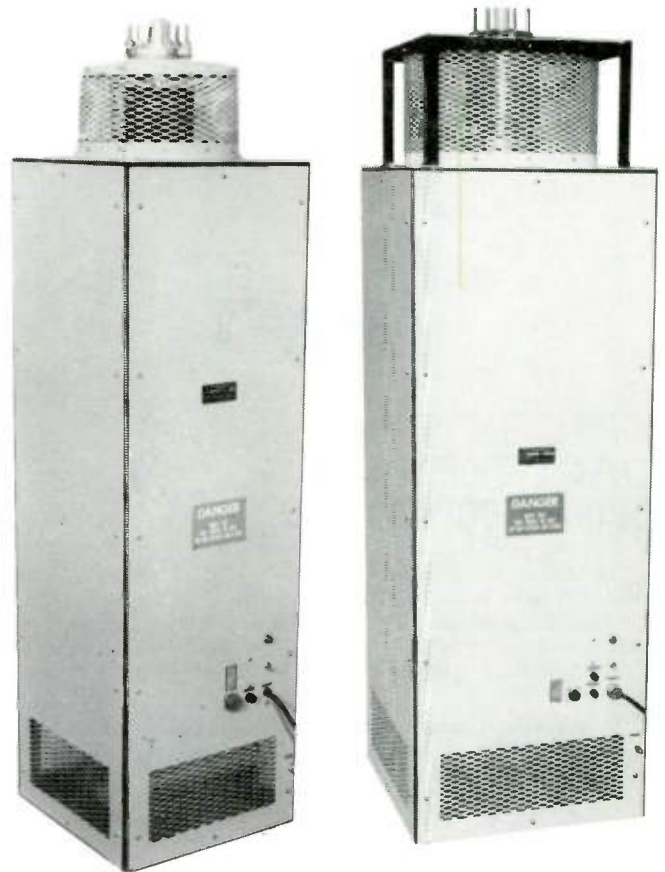
**DPTC-25KFM
25KW***

- 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-25KFM

DPTC-50KFM



**DACT-253
25KW**

- Dry, convection 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	891 Page	Average Power (Watts)	Price	Std ¹	CONNECTORS	Alternate ²	Extra Cost ³
CPTN-500	7	500/750	\$ 325.00	N	BNC,C		
CPTN-1500	7	1500/2000	600.00	LC *	N	1% \$25	
CPTN-3000	7	2500/3000	685.00	LC *	N	1% \$25	
CPTC-5K	8	5000	990.00	LC *		1% \$25	
DACT-5KFM	8	5000/7500	1395.00	1%	3%		
DACT-7.5KFM		7500	1450.00	1%	3%		
**DACT-14	8	10,000/12,000	1700.00	1%			
DPTC-10KFM	9	10,000/12,000	1750.00	3%	1%		
**DPTU-153	9	15,000	2400.00	1%		3% \$100	
**DACT-153	9	15,000	2450.00	1%		3% \$100	
CPTC-15K	9	15,000	4500.00	1%	3%		
DPTC-25KFM	10	25,000	3575.00	3%	1%		
**DACT-253	10	25,000	5750.00	3%	1%		
CPTC-25K	10	25,000	5000.00	3%	1%		
CPTC-30K	10	40,000	5400.00	3%			
**DPTU-50K	—	Use DPTC-50KFM					
DPTC-50KFM	11	55,000	5100.00	3%		6% \$250	
CPTC-50K	12	50,000	11,000.00	3%		6% \$250	
DPTC-65KFM	12	65,000	6500.00	3%		6% \$250	
CPTC-80K	13	80,000	Inquire	3%		6% \$250	
**DPTU-75K	12	80,000	7250.00	3%	3% UNFL	6% \$250	
**DPTC-75K	12	80,000	7950.00	5%		3% \$100	

* Also accepts other mfgs, changeable connectors

** Voltage divider type power meter (for DC-2 MHz only) optional - \$695.00 additional

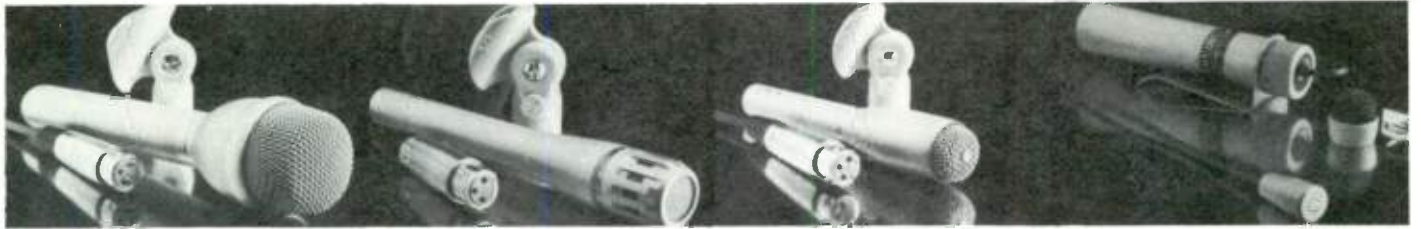
¹ Supplied as standard when no other specified

² Supplied if specified, no extra charge

³ Supplied at extra cost when specified

Many other connector types available





RE50 \$146.50
Shockproof Dynamic Omnidirectional
 Frequency Response: 80-13,000 Hz
 Impedance: 150 ohms
 Output: -55 dB

CS15P \$263.00
Phantom Powered Single-D Condenser Cardioid
 Frequency Response: 40-18,000 Hz
 Impedance: 150 ohms
 Output: -45 dB

DO54 \$146.00
Dynamic Omnidirectional
 Frequency Response: 50-18,000 Hz
 Impedance: 150 ohms
 Output: 58 dB

CO90 \$145.00 **CO90E** \$98.00
CO90P \$176.50
Miniature Condenser Omnidirectionals
 Frequency Response: 40-15,000 Hz
 Impedance: 150 ohms
 Output: -57 dB

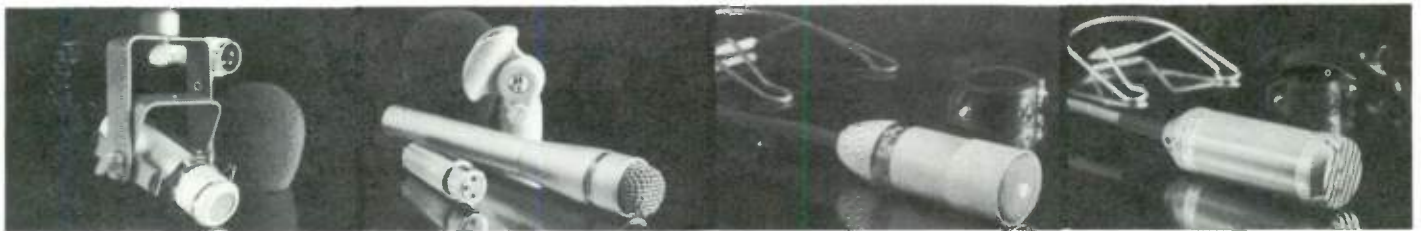


635A \$92.00
Dynamic Omnidirectional
 Frequency Response: 80-13,000 Hz
 Impedance: 150 ohms
 Output: -55 dB

DS35 \$150.00
Single-D Dynamic Cardioid
 Frequency Response: 60-17,000 Hz
 Impedance: 150 ohms
 Output: -60 dB

DO56 \$125.00
Shock-Mounted Dynamic Omnidirectional
DO56L [Long Case] \$141.00
 Frequency Response: 80-18,000 Hz
 Impedance: 150 ohms
 Output: -61 dB

CO85A \$191.00
Condenser Omnidirectional
 Frequency Response: 70-16,000 Hz
 Impedance: 150 ohms
 Output: -56 dB

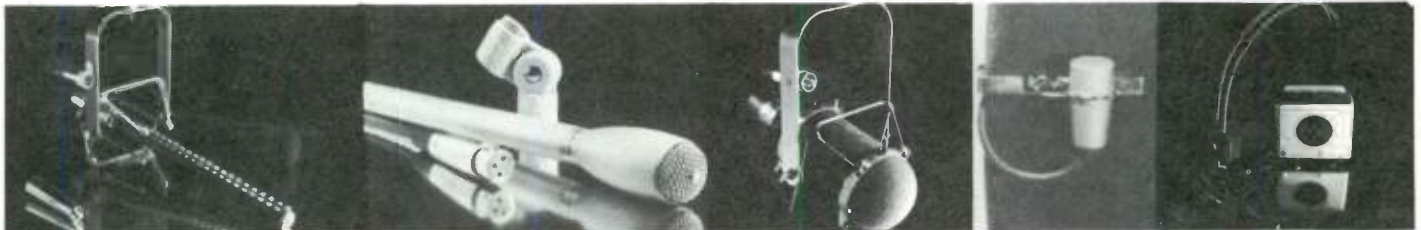


CH15S \$507.80
Condenser Single-D Hyper-cardioid
 Frequency Response: 55-13,500 Hz
 Impedance: 150 ohms
 Output: -40 dB

CO15P \$283.25
Phantom Powered Condenser Omnidirectional
 Frequency Response: 20-20,000 Hz
 Impedance: 150 ohms
 Output: -45 dB

649B \$132.00
Miniature Dynamic Omnidirectional
 Frequency Response: 80-10,000 Hz
 Impedance: 150 ohms
 Output: -61 dB

RE85 \$139.75
Shock-Mounted Miniature Dynamic Omnidirectional
 Frequency Response: 90-10,000 Hz
 Impedance: 150 ohms
 Output: -61 dB



CL42S \$660.00
Cardiline® Condenser Unidirectional
 Frequency Response: 90-12,000 Hz
 Impedance: 150 ohms
 Output: -45 dB

RE55 \$259.00
Dynamic Omnidirectional
 Frequency Response: 40-20,000 Hz
 Impedance: 150 ohms
 Output: -57 dB

667A \$498.75
Programmable-Response Dynamic Variable-D® Cardioid
 Frequency Response: 40-10,000 Hz
 Impedance: 50, 150, 250 ohms, selectable
 Output: 51 dB on 250 and 150 ohms

CO94 \$225.00
High-Performance Miniature Condenser Omnidirectional

RE51 \$217.00
Headband Mount Miniature Dynamic Omnidirectional
 Frequency Response: 60-10,000 Hz
 Impedance: 50-250 ohms
 Output: -54 dB



Electro-Voice®

GENERAL PURPOSE MICROPHONES



1777A

1777A \$149.20

**Phantom Powerable
Condenser Cardioid**
Response: 50-20,000 Hz
Impedance: 150 ohms
Output: 50 dB with phantom

660 \$99.95

660A \$99.95

**Dual-Impedance
Dynamic Super-Cardioid**
Response: 90-13,000 Hz
Impedance: 150 ohms/Hi-Z, selectable
Output, Lo-Z: -56 dB
Hi-Z: -55.5 dB



660



630

630 \$95.00

**Dual-Impedance
Dynamic Omnidirectional**
Response: 60-11,000 Hz
Impedance: 150 ohms/Hi-Z, selectable
Output: -55 dB

647CLS \$99.95

647CH \$95.00

647CL \$92.00

**Miniature Dynamic
Omnidirectional**
Response: 60-10,000 Hz
Impedance: 150 ohms
Output: -60 dB



647CLS



1776A

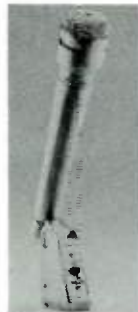
1776A \$123.95

1776AP \$130.95

Condenser Cardioid
Response: 50-20,000 Hz
Impedance: 150 ohms
Output: -50 dB with phantom

664A \$107.90

Dynamic Super-Cardioid
Response: 90-13,000 Hz
Impedance: 150 ohms/Hi-Z, selectable
Output, Hi-Z: -56 dB
Lo-Z: -55.5 dB



664A



967ME

967ME \$209.50

**Miniature Dynamic
Headset**
Response: 300-4,300 Hz
Impedance: Matches 100 ohm output
and 500 ohm carbon input
Output: -40 dB

644 \$210.00

**Dual-Impedance
Dynamic Dardiline™**
Response: 90-10,000 Hz
Impedance: 150 ohms/Hi-Z, selectable
Output: -53 dB



644



671BL

671BH \$97.00

671BL \$95.00

Dynamic Cardioid
Response: 60-14,000 Hz
Impedance: 150 ohms
Output: 57 dB

631B \$83.25

**Dual-Impedance
Dynamic Omnidirectional**
Response: 80-13,000 Hz
Impedance: 150 ohms/Hi-Z, selectable
Output: -56 dB



631B



607L

607L \$71.55

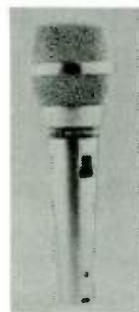
**Noise-Cancelling
Differential Dynamic Cardioid**
Response: 300-3,800 Hz
Impedance: 150 ohms
Output: -57 dB

602FL \$64.75

**Noise-Cancelling
Dynamic Hand-Held**
Response: 200-5,000 Hz
Impedance: 150 ohms
Output: -60 dB



602FL



681

681 \$130.00

**Dual-Impedance
Dynamic Cardioid**
Response: 60-15,000 Hz
Impedance: 150 ohms/Hi-Z selectable
Output, Lo-Z: -59.5 dB
Hi-Z: -61 dB

600EL \$54.75

600EH \$54.75

Dynamic Hand-Held
Response: 100-7,000 Hz
Impedance: 150 ohms
Output: -55 dB



600EL



625ST

625ST \$150.00

**Noise-Cancelling
Dynamic Handset**
Impedance: 150 ohms
Output: -60 dB

622L \$83.00

**Noise-Cancelling
Dynamic Cardioid**
Response: 200-4,000 Hz
Impedance: 150 ohms
Output: -57 dB



622L



627C

627C \$83.25

**Dual-Impedance
Dynamic Cardioid**
Response: 60-13,000 Hz
Impedance: 150 ohms/Hi-Z selectable
Output: -58 dB

634BL \$44.75

634BSRL \$54.00

Dynamic Omnidirectional
Response: 70-10,000 Hz
Impedance: 150 ohms
Output: -57 dB



634BSRL

621H \$77.70

621L \$77.70

Dynamic Omnidirectional
Response: 70-10,000 Hz
Impedance: 150 ohms
Output: -57 dB



621L



Electro-Voice®

PROFESSIONAL LOUDSPEAKER/ MONITOR SYSTEMS

Sentry IVB Professional Loudspeaker System

The Electro-Voice Sentry IVB incorporates many new and innovative design ideas which represent a significant advance in state-of-the-art speaker design. The 3-way, all horn loaded system offers absolute minimum distortion through all frequencies while providing unequalled efficiency and uniformity over the entire frequency range. With high power handling capacity, extremely uniform and wide dispersion, and linear frequency response, the Sentry IVB offers versatility for applications in not only studio monitoring, but in high level sound reinforcement, high level playback systems, etc.

\$1045.00

Sentry® III Series II Professional Monitor System

The Electro-Voice Model Sentry® III Series II is one of a generation of monitor loudspeaker systems resulting from creative engineering and critical listening by Electro-Voice product engineers and product managers. The Sentry III Series II is a direct descendant of the Sentry III and Sentry IVB, utilizing the well known and respected ST350A sectoral tweeter and SM120 sectoral mid-range horn. The vented low-frequency section, utilizing Thiele - Small vented enclosure technology, permits high efficiency and excellent low end performance in a moderate sized enclosure.

\$1349.00

Sentry 100A Professional Monitor

The Electro-Voice Sentry® 100 monitor speaker system is the direct result of "human engineering" with the broadcast/recording studio engineer in mind. Our product engineers' no-nonsense design efforts have culminated in a system that speaks to the needs of professionals with specific requirements: high efficiency with extended low-frequency response, high power capacity across the entire frequency range, uniform frequency response and dispersion, and all in a compact, no-frills package.

\$220.00

SEQ Equalizer

The optional SEQ equalizer extends the low-frequency 3-dB-down point of the Sentry V from 45 Hz to 32 Hz, the Sentry III from 40 Hz to 28 Hz. Such extended low-frequency response is uncommon in the studio but is nonetheless useful where a true indication of low frequency program and noise is desired.

\$110.00

Sentry IVB Components

HSFA—high frequency sub assembly with crossover.

\$430.00

SPECIFICATIONS

Frequency Response:

50 to 18,000 Hz

EIA Sensitivity (on axis measurements):

52 dB

Sound Pressure Level (4' on axis, 50 W):

117 dB

Impedance:

8 ohms nominal

Power Handling Capacity:

50 W

Finish:

Utility Black

Size:

70.5 cm (27 3/4") w. x 52.3 cm

(20 3/4") d. x 129 cm

(50 3/4") h. - in normal configuration

Weight:

67 Kg (148 pounds)

Frequency Response:

40 to 18,000 Hz

Normal Mode

Sound Pressure Level at 1 Meter, 50 Watts, 300-2,000 Hz

Average:

114 dB

EIA Sensitivity Rating (on axis measurements):

47 dB

Long-Term Average Power-Handling Capacity:

40 to 10 kHz

50 watts

Nominal Impedance

8 ohms

Size

Cabinet:

87.6 cm (34.50") high

72.4 cm (28.50") wide

52 cm (20.50") deep

Pedestal:

3.8 cm (1.50") high

Weight:

70.8 kg (156 lbs)

SPECIFICATIONS

Frequency Response:

45 to 18,000 Hz

EIA Sensitivity (on axis measurements):

41.8 dB

Sound Pressure Level (1 Meter, 1 W):

91 dB

Impedance:

6 ohms nominal

Power Handling Capacity:

30 W

Size:

30.5 cm (12.00") wide

28.2 cm (11.125") deep

43.8 cm (17.25") high

Weight:

12.7 Kg (28 lb.)

Total Harmonic Distortion: Less than .01%, 1 V RMS input, 20-20,000 Hz

Intermodulation Distortion: .005%, 1.5 V RMS equivalent sine wave input

Maximum Input Signal: 7 V RMS sine wave, midband

Noise Output: 80 dB below 200 mV, 20-20,000 Hz bandwidth

Controls: High Frequency Slope (Power Off, 0 dB, -3 dB, -6 dB at 10,000 Hz); Tape-Source

Power Requirement: 110/120 V, 50/60 Hz, 3 watts

AC Accessory Outlet: 200 watts, unswitched

Dimensions: 5.1 cm (2") high; 20.3 (8") wide; 17.8 (8") deep

LFSA—low frequency sub assembly

\$725.00



Electro-Voice



MICROPHONE ACCESSORIES

301	1" Clamp, black (670)	\$ 7.80	423A	Desk Stand, 5/8" — 27 threaded 5" riser	15.50
301A	1" Clamp, gray	7.80	428	Touch-to-Talk Stand DPDT, 5/8" — 27 thread	46.00
304A	Shock mount for SE15B	34.05	456	Single Carrying Case (Universal: fits all variations of 626, 627, 631, 660, 661, 664, 670, 671, 672)	17.75
307	Shock mount for 3/4" dia. microphones	45.15	502C	Matching Transformer, Lo to Hi-Z, inline	30.00
309	Shock mount for RE20 and SE15B	61.35	502CP	Matching Transformer, Lo to Hi-Z, w/plug	30.00
310	3/4" Clamp, black (635A, 649B, DO54, DS35, PE15A, RE10, RE11, RE15, RE16, RE55)	7.80	506A	Adaptor (converts 1776A to phantom powerable)	17.25
310A	3/4" Clamp, gray (same applications as 310)	7.80	513A	100 Hz Cutoff Filter	91.95
312	3/4" Snap-out Clamp, black (same applcs. as 310)	7.80	520	15' Cable — 1/4" Phone Plug, equipment end with Professional 3-Pin Connectors, microphone end	27.50
312A	3/4" Snap-out Clamp, gray (same applcs. as 310)	7.80	521	25' Professional Cable, with Professional 3-Pin Connectors, both ends	31.50
312B	3/4" Snap-out Clamp, beige (DO56, RE18)	7.80	523	4.5 V Alkaline battery — 1776 (12 per box)	35.00
313A	Shock mount for 3/4" diameter microphone	26.40	524A	Windscreen (664)	14.15
314	Windscreen (RE10, RE15)	14.55	541	25' professional cable A3F mike end	24.50
314E	Windscreen (635A)	7.80	542	25' professional cable A3F and A3M connectors	28.00
315A	Windscreen (foam — CH15E, CO15E, CS15E)	7.80	543	25' professional cable with switch connector mike end	37.00
317	Windscreen for CH15S (requires 304A)	16.95	544	50' professional cable A3F and A3M connectors	43.50
335A	Windscreen (630, 634)	17.25	AC24M	Remote AC power supply for condenser microphones	114.50
337	Windscreen (626, 627)	8.50	AC24S	Expander Module (cannot be used without AC24M)	97.50
340	Security Clamp — 3/4" dia. mikes	17.40	BS9	9 volt battery supply for the SE15B and PE15A	66.90
342	Stud Mount Adapter w/on-off switch	33.50	CA10	10 dB attenuator for use between mike capsule and electronics	35.70
343	Windscreen (CL42E, DL42)	33.45	CO9PM	Power module for CO85A, CO90	69.60
351	Windscreen (DO56), Popfilter (RE18)	7.80	CO9R	Replacement cable assembly for CO90/CO90E	30.17
355A	Windscreen (RE55, DO54, 654A, 655C)	7.80	512	CO85A and CO90 Connector Adaptor Kit	37.65
358	Stand Clamp, tapered (660, 671)	7.80	522	Extension cable for CO94	25.00
360	Windscreen (660, 661, 664)	14.15	28065	Bulk Acoustifoam 36" x 72" x 1/4"	22.70
368	Windscreen for 667A, 668, 307, 309	110.00			
376	Windscreen (DS35), Popfilter (RE11, RE16)	12.00			
380	10 dB Attenuator	32.25			
381	Switch/Connector Cable 15'	33.50			
390	Dual microphone tie clasp (CO90, CO90P, CO94)	6.00			
400	Desk Stand, for all stud or clamp-type mikes	17.70			
411	Stage Mike Mount	16.20			
422	Desk Stand, clamp-type mike (CS15, DO54, DO56, DS35, PE15A, RE10, RE11, RE15, RE16, RE18, RE50, RE55, 340, 635A, and 649B)	19.35			



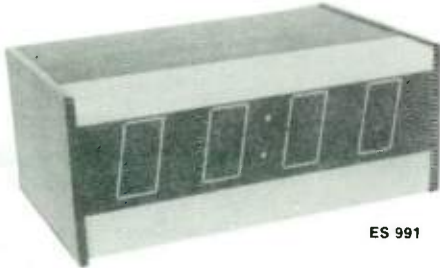
HARRIS

Prices and Specifications Subject to Change Without Notice.

World Radio History



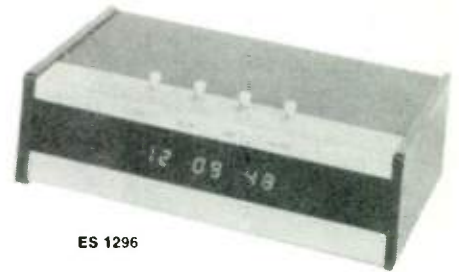
ES 142



ES 991



ES 192/194



ES 1296



ES 160

CLOCK-THERMOMETER

ES 142/144 Digital Clock Thermometer

ES 142 (12 hr.) and ES 144 (24 hr.) are solid state digital clock/thermometers. Six digits of time (hours, minutes, seconds) and 3 digits of temperature (-50° to +150°F or -45°C to +66°C) in gas discharge displays .55" high. Temperature sensor on 25 foot cable included.

Dimensions: 2½" High x 10" Wide x 6" Deep. **\$300.00**

ES 240/241

ES 240 DIGITAL THERMOMETER is calibrated for °F and °C. Displays are planar gas discharge, .55" high.

Dimensions: 2½" High x 8" Wide x 6" Deep **\$195.00**

ES 241 DIGITAL THERMOMETER is calibrated for °F and °C, alternating between the two every four seconds. Displays are planar gas discharge, .55" high **\$236.00**

TAPE TIMERS

Presetable Tape Timers ES 1296

For Off-Air taping, or operating tape recorders when nobody is there, ESE has created ES 1296. A six digit, twelve hour clock with LED displays and a programmable, 300 watt, 117V AC outlet on the rear.

There are four pushbutton controls (Fast, Slow, Set and Reset) and a four position selector switch. The Fast and Slow controls are used to set time of day and recorder start time. When setting the recorder start time, the Set control is used in addition to the Fast and Slow controls, to set the time to the nearest minute. A rear-mounted four position switch is used to pre-set the start time as far ahead as 96 hours.

Once the rear outlet is activated, it will remain on for 66 minutes.

The Record Duration option allows the user to select one of four time intervals for recording. These four time intervals are either 16, 33, 66 and 138 minutes, or 33, 66, 138 and 250 minutes.

An additional option is Sequential Turn-on, for those machines that require Power, Play and Record in sequence. A Manual Override Switch can be provided as an option, so that the user may operate his machine at any time without disconnecting from the ES 1296. **\$195.00**

ES 1372

Similar to the ES 1296, except that the ES 1372 has two timed AC outlets. AC power is applied to outlet "1" at the alarm time and day selected and remains on for 138 minutes and 53 seconds. AC power is applied to outlet "2" 60 minutes after power has been applied to outlet "1" and remains on for 78 minutes and 53 seconds. All other specifications of the ES 1296 apply. **\$280.00**

MASTER CLOCKS

ESE Masters provide a means of keeping all time displays in the system in agreement, through the use of a Serial Time Code. Only one pair of wires is needed to distribute the time code to all remote serial input displays.

An ESE Master Clock System can operate digital displays, clocks with sweep second hands, printers and, in addition, tell your computer what time it is.

Twelve hours of standby battery operation is standard in ES 160, 160/1 and 190.

MASTER CLOCKS

ES 160 Mounted in a 5¼" relay rack panel and chassis, displays six digits of time information on .3" LED displays, in 12 hour format.

ES 160 has three second per month accuracy. Its standard output is serial BCD. CMOS compatible, and can drive ES 161, 166, 171, 991 or 993 Remote Displays without buffering. All inputs and outputs are through rear-mounted connectors.

Dimensions: 5¼" High x 19" Wide x 15" Deep **\$1050.00**

ES 160/1 One second per month version of ES 160 **\$1225.00**

ES 190 The ultimate in accuracy! Similar to ES 160, with special circuits for receiving and decoding a 1000 Hz tone at the start of each minute. The decoder output resets the seconds' counters in the clock each minute except the first minute of every hour. These tones are transmitted by radio Station WWV, with an oscillator accuracy of ±1 part in 10¹¹. ES 190 has an antenna and internal WWV receiver with audio-output. Displays are .3" red LED's. Serial output drives ES 161, 166, 171, 991 and 993 Remote Displays.

Dimensions: 5¼" High x 19" Wide x 15" Deep **\$1225.00**

ES 192/194 The most economical Masters, ES 192 (12 Hr) and ES 194 (24 Hr) are constructed using ES 112 or ES 124 digital clocks and adding the ES 167 Serial time Code Generator to provide the output needed to drive Remote Serial Displays ES 161, 166, 171, 991 and 993. Displays are .6" incandescent type.

Dimensions: 2½" High x 8" Wide x 6" Deep. **\$325.00**

ES 196 TIME AND TEMPERATURE MASTER Basically the same as ES 192, but with gas discharge displays, panel mounting and separate serial BCD outputs for time and temperature. Displays 12 hour °F format.

Dimensions: 3½" High x 19" Wide x 8" Deep **\$766.00**

ACCESSORIES

ES 161 REMOTE DIGITAL DISPLAY Decodes serial time data and displays six digits of time on .55" Gas Discharge Displays, in either 12 or 24 hour format.

Dimensions: 8" Wide x 2½" High x 6" Deep.

\$165.00

ES 162 IMPULSE DRIVER Plugs into the ES 160 chassis, can drive 20 Impulse Clocks. Designed so that, if power fails, impulse always comes on with the same polarity when power is restored.

\$200.00

ES 164 REMOTE DIGITAL IMPULSE DISPLAY Similar to the ES 161 except that the ES 164 derives its count command from the ES 162 Impulse driver, or any impulse clock drive circuits already installed.

Dimensions: 8" Wide x 2½" High x 6" Deep. **\$244.00**

ES 166 JUMBO 1" CLOCK DISPLAY Features six digits of one inch gas discharge displays in 12 or 24 hour format. Receives serial time code input from any ESE Master Clock or ES 167.

Dimensions: 10½" Wide x 4½" High x 6½" Deep **\$254.00**

ES 167 SERIAL TIME CODE GENERATOR An integral part of ES 160, 190, 192/194 and 196 Master Clocks, this unit can be added to many other ESE products, including ES 112, 124, 182, 184, 992, 994, 750, 751, 753, 754 and all 780 Series Time Programmers. Drives ES 161, 166, 171, 991 or 993 Remote Displays **\$146.00**

ES 169 TEMPERATURE SLAVE Receives serial code from ES 196, displays it on .55" Gas Discharge Displays.

Dimensions: 8" Wide x 2½" High x 6" Deep. **\$146.00**

ES 171 CONSOLE MOUNT REMOTE DISPLAY Receives the serial time code generated by any ESE Master Clock, or any ESE product containing the ES 167 serial time code generator, and displays it on bright red .3" LED's.

Dimensions: 2¼" High x 4½" Wide x 4" Deep **\$158.00**

ES 1548 CONSOLE MOUNT TEMPERATURE DISPLAY in the same case as ES 171, receives the serial code from ES 196 and displays it on bright red .3" LED's.

Dimensions: 2¼" High x 4½" Wide x 4" Deep **\$158.00**

IMPULSE CLOCK When a sweep second hand is desired, specify the 3201.003 "Extra Flat" Impulse Clock. It has a 12 inch dial protected by a glass cover and metal bezel and is approximately one inch thick. As many as twenty impulse clocks can be driven by a Master Clock which has ES 162 as an accessory. **\$170.00**

ES 991 4 DIGIT SERIAL INPUT SLAVE Decodes serial time data and displays four digits of time on large 2" gas discharge displays.

Dimensions: 10½" Wide x 4½" High x 6½" Deep, Desk Top Case **\$325.00**

ES 993 6 DIGIT SERIAL INPUT SLAVE Features four digits of 2" high gas discharge displays, and two digits (Seconds) of 1" gas discharge displays. Receives serial time code input from any ESE Master Clock or ES 167.

Dimensions: 5" High x 12" Wide x 3" Deep (Wall Mount) **\$449.00**

Eventide

CLOCKWORKS, INC.

AUDIO PROCESSING

BROADCAST DIGITAL DELAY LINE

The Digital Broadcast Delay that breaks Murphy's Law, no tape loops that snap, no moving parts that "go wrong". Designed specifically for the broadcast industry, this RAM based digital delay line offers delay up to 6.4 seconds. A DUMP button cancels the objectionable program and, if desired, cuts off the caller. Auxiliary relay contacts may be used to control the telephone and/or a cartridge machine. The unique "catch up" feature allows the program to continue in real time, without the necessity for filling the delay period with a jingle or announcement. This feature does not introduce wow, and is virtually undetectable in operation. When not used as an editing delay, the BD955 delay line may be used as a production tool. The front panel switches allow setting of delay from 6.5 milliseconds to the unit's maximum delay which is useful for many musical effects. 15 KHz. 6.4 sec \$6700.00

OTHER PRICES ON REQUEST

TIMESQUEEZE SYSTEM

This newly introduced system allows broadcasters, commercial producers and film makers to alter the running time of commercials and programs without editing or deletion of material. The Timesqueeze System consists of three units: the Eventide H949 Harmonizer®, the new PTC945 Precision Tape Controller and a micro-computer with Eventide software (shown here is the Hewlett-Packard 85). The system interfaces with the user's 1" video recorder, audio tape machine or film projector. This system maintains correct audio pitch even while running time is varied. The Timesqueeze System uses the IEEE-488 standard interface so that compatible computers can be used. The addition of the computer automates all speed and pitch ratio computations. \$8,500.00

HARMONIZER®

DIGITAL SPECIAL EFFECTS FOR BROADCAST AUDIO PRODUCTION

The H949 Harmonizer® is a combination digital delay line, pitch changer, and all-around special effects unit. The Harmonizer, when used with a tape recorder, is capable of shortening or lengthening a piece of program material to fit a given time slot while maintaining normal pitch. The pitch change feature offers one octave up and two octaves down continuously variable with a four-digit readout for precise ratio. In the delay mode, there are two outputs, each with up to 400 milliseconds. Long delay permits simulated reverb. Time reversal and other distinctive effects are available on this versatile unit. The frequency response at any delay (unity pitch ratio) is 20 Hz to 15 kHz +/- 1 dB. \$3,500.00

SP2016

PROGRAMMABLE EFFECTS PROCESSOR

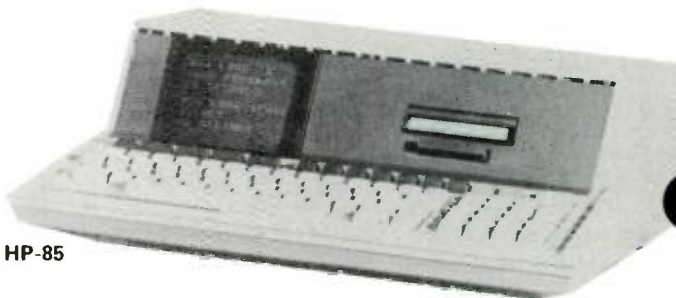
This totally programmable digital effects processor can perform most every audio effect via plug-in software modules. These include: reverb, a wide variety of superb quality reverb effects with user control of all parameters; Digiplex™ echo, a digital version of multiple-head tape echo; chorus effects, to generate dozens of multiple voices, each variable in time, amplitude, and space; delay, to 3.2 seconds; selective band delay, to separate the signal into several bands, each independently adjustable for delay (to 3.2 sec.) and amplitude; flanging and phasing, of unprecedented quality. New effects will be released periodically and available individually or by subscription. Non-volatile user presets store user-set parameters. Software development system is available for user creation of new and unique effects. Self-test mode confirms proper operation. Full stereo operation. Frequency response 16kHz +/- 1 dB. (Some programs have 8kHz bandwidth.) Dynamic range 86 dB. 3½" H x 19"W x 14"D \$8,995.00



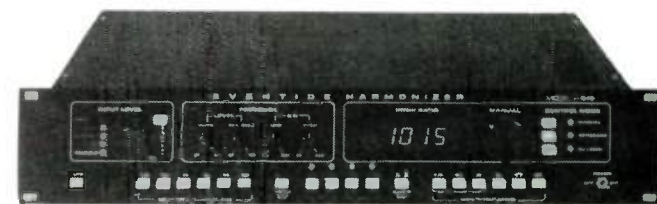
BD955



PTC 945



HP-85



H 949



SP2016

Eventide

CLOCKWORKS, INC.

SIGNAL PROCESSOR/REVERB

SP2016 Programmable Effects Processor (stereo in/out)\$8995.00

Option:

(01) 230 volts, 50/60 Hz—no charge

HARMONIZER® PITCH CHANGE/SPECIAL EFFECTS DEVICES

H949 Harmonizer (included LU618 de-glitch card)\$3500

Options:

(11) 230 volts, 50/60 Hz—no charge

(10) For unit without de-glitch circuitry **deduct \$540.00**

(09) Remote card (must be factory installed), GPIB compatible **\$640.00**

(08) LU618 de-glitch card **\$740.00**

(Must be factory installed in serial numbers below A949-1606) **installation charge \$55.00**

H910 Harmonizer\$1500.00

Options:

(01) 230 volts, 50/60 Hz—no charge

(02) Balanced in/out transformer coupling (Must be factory installed) **\$100.00**

HK940 Keyboard for H949 Harmonizer and H910 Harmonizer

Options:

(05) Mono—controls one Harmonizer\$600.00

(06) Poly—controls up to three units\$700.00

Note: When ordering, please indicate the Harmonizer with which it is to be used.

HM80 Harmonizer\$775.00

Option:

(01) 230 volt version **\$800.00**

TIME COMPRESSION/EXPANSION SYSTEMS

Computerized Timesqueeze™ System

(Includes: H949, PTC945, and H-P 85)\$7985

Less Harmonizer (for present owners of H949s with de-glitch circuitry)\$4900.00

PTC945 only\$1000.00

Software for H-P 85\$400.00

Stereo System

(Includes the above plus RD780 Monsternat and additional H949)\$12,649.00

Timesqueeze Junior System

(Includes: H949 and PTC960)\$5000.00

PTC960 Only (consult factory before ordering)\$1500.00

Note: When ordering Timesqueeze Junior, please indicate specific recorder(s)

DIGITAL AUDIO DELAY LINES

BD955 Broadcast Digital Delay Line

15kHz units: 1.6 sec.\$3350.00

3.2 sec.4300.00

6.4 sec.6700.00

7.5kHz units: 1.6 sec.\$2700.00

3.2 sec.3350.00

6.4 sec.4300.00

Stereo interconnect (plus cost of two units)\$150.00

1745 Digital Delay Line (320 ms, two outputs)\$4100.00

Options:

(01) 230 volts, 50/60 Hz—no charge

(02) Two outputs, 160 ms **\$3800.00**

(03) Extra output **\$550.00**

(05) Balancing transformer (one required for each output or pitch change module) **\$25.00**

1745M Digital Delay Line (continued)

(07) Balancing Transformer, input **\$15.00**

PET is a trademark of Commodore Business systems, TRS-80 of Radio Shack, and Apple of Apple Computer

(08) Pitch Change Module (variable pitch change or delay) **\$850.00**

(09) Remote Control Card, GPIB compatible **\$550.00**

Note: Sound reinforcement configurations available—request separate price sheet. The 1745 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.

JJ193 Digital Audio Delay Line (510 ms, four outputs)

.....\$1195.00

Options:

(01) 230 volts, 50/60 Hz—no charge

(02) Four outputs, 1.022 seconds delay **\$200.00**

(04) Four outputs, 2.046 seconds delay **\$600.00**

CD254 Digital Audio Delay Line (254 ms, two outputs)

similar to JJ193 with internal controls only\$895.00

MISCELLANEOUS SIGNAL PROCESSING AND SPECIAL EFFECTS

FL201 Instant Flanger®700.00

Options:

(01) 230 volts, 50/60 Hz—no charge

(02) Stereo interconnect (with two units)—no charge

(03) Balanced in/out transformer coupling (three transformers) **\$50.00**

(04) Feedback control added to front panel **\$25.00**

BPC101 Phaser Card\$233.00

Note: This card exchanges with the SDC1 plug-in card from the Instant Flanger and turns the unit into an Instant Phaser. The Instant Flanger may be ordered with either the SDC1 or the BPC101 at a cost of \$700.00, or with both cards at a cost of \$933.00. Other options as listed above.

2830 Omnipressor®\$700.00

Options:

(01) 230 volts, 50/60 Hz—no charge

(03) Balanced in/out transformer coupling **\$40.00**

RD780 Monsternat® (mono/stereo matrix unit) ..\$649.00

Note: Unit is available in two configurations: record/play (two channels record, two channels play) or play/play (four channels play). Two channels = one stereo pair. Quantity discounts available.

SPECTRUM ANALYZERS

THS224 For use with Commodore PET computer

(Specify 8, 16, or 32 K PET, and version of ROM) ...\$595.00

VTU02 For use with Radio Shack TRS-80 Model I computer

.....\$595.00

AIB232 For use with Apple II or Apple II Plus computer

.....\$545.00

SPECSYSTEM Software Package II for use with AIB232

.....\$199.00

COMPUTER PRODUCTS AND PERIPHERALS

Hewlett-Packard Model 85 personal/professional computer

with ROM drawer, 1/0 ROM and IEEE-488 interface module **\$3485.00**

Memory Board for Hewlett-Packard 9845B/C/T Computer

WMAZ-4 (512K or extra memory)4500.00

WMAZ-4 (2) (256K or extra memory)\$3250.00

WMAZ-4 (1) (128K of extra memory)\$1750.00

Programmer's Utility Package ROM for WMAZ-4 and WMAZ-4(2)\$700.00

Memory Board for Hewlett-Packard 9826 Computer

WKBP-4 (256K of extra memory)\$1475.00

Memory Boards for Commodore PET 8K computer

32K of extra memory—half-price closeout at\$307.50

Subject to availability.





FIDELIPAC®



Master Cart II (NAB Type AA)

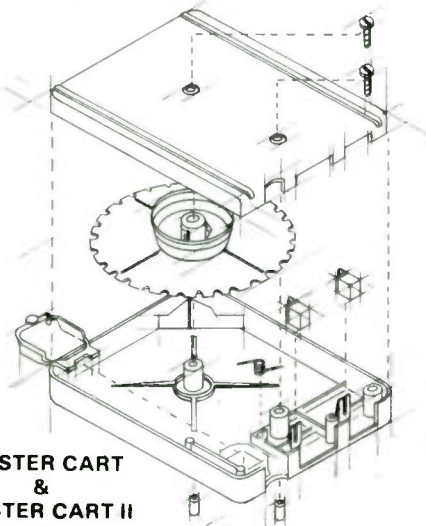
- Superior performance in any tape machine
- Extremely low friction tape path for minimum wow and flutter and longest tape life
- New front corner post for precise tape alignment and excellent stereo phase stability
- Factory loaded with Fidelipac's exclusive HOT TAPE™, for up to 8dB more output than standard tapes



Model 300 (NAB Type A)

- Low price and high performance
- Quality controlled construction
- Low-friction pressure pads extend tape life
- Tape braking on the reel
- Brass reel post.

The Model 300 Broadcast Audio Cartridge provides performance at a price that is within the budget of all radio and TV broadcasters. Its endurance under severe operating conditions in everyday studio operations is surprising...frequently lasting over five years with only replacement of worn tape and pressure pads. Performance and price...the major reasons the Model 300 from Fidelipac is the Standard of the Broadcast Industry.



MASTER CART
&
MASTER CART II

PROFESSIONAL TAPE CARTRIDGES

PART NUMBER	LENGTH IN FEET	TIME AT 7½ IPS	SINGLE ORDER			
			1-99	100-299	300-599	600+
MASTER CART & MASTER CART II (NAB TYPE AA)						
380-C	Empty		4.28	3.67	3.42	3.20
380-13	13	20 Second	4.73	4.16	3.76	3.44
380-25	25	40 Second	4.83	4.27	3.84	3.52
380-44	44	70 Second	4.97	4.39	3.96	3.61
380-57	57	90 Second	5.10	4.50	4.07	3.70
380-63	63	100 Second	5.19	4.59	4.13	3.75
380-88	88	140 Second	5.34	4.73	4.27	3.88
380-94	94	2½ Minute	5.43	4.82	4.35	3.93
380-113	113	3 Minute	5.59	4.96	4.47	4.04
380-132	132	3½ Minute	5.72	5.10	4.59	4.13
380-150	150	4 Minute	5.87	5.24	4.72	4.22
380-169	169	4½ Minute	6.03	5.38	4.84	4.31
380-188	188	5 Minute	6.18	5.52	4.96	4.42
380-207	207	5½ Minute	6.33	5.68	5.10	4.52
380-282	282	7½ Minute	6.73	6.01	5.42	4.80
380-300	300	8 Minute	6.89	6.16	5.54	4.94
380-375	375	10 Minute	7.30	6.53	5.88	5.21
380-394	394	10½ Minute	7.47	6.70	6.03	5.33
300 (NAB TYPE A)						
140-C	Empty		3.89	3.38	3.12	2.89
140-13	13	20 Second	4.38	3.64	3.38	3.20
140-25	25	40 Second	4.48	3.72	3.46	3.28
140-44	44	70 Second	4.61	3.84	3.54	3.37
140-57	57	90 Second	4.72	3.92	3.62	3.43
140-63	63	100 Second	4.82	3.99	3.68	3.50
140-88	88	140 Second	4.96	4.13	3.80	3.61
140-94	94	2½ Minute	5.04	4.19	3.86	3.66
140-113	113	3 Minute	5.19	4.31	3.97	3.76
140-132	132	3½ Minute	5.33	4.44	4.07	3.85
140-150	150	4 Minute	5.48	4.55	4.16	3.96
140-169	169	4½ Minute	5.62	4.67	4.28	4.05
140-188	188	5 Minute	5.79	4.77	4.38	4.15
140-207	207	5½ Minute	5.95	4.89	4.50	4.26
140-282	282	7½ Minute	6.37	5.25	4.82	4.56
140-300	300	8 Minute	6.51	5.36	4.93	4.65
140-375	375	10 Minute	6.95	5.72	5.23	4.96
140-394	394	10½ Minute	7.11	5.85	5.36	5.07
350 (NAB TYPE A)						
350-C	Empty		4.24	3.80	3.38	3.02
350-25	25	40 Second	5.66	5.11	4.50	3.98
350-44	44	70 Second	5.76	5.19	4.59	4.07
350-57	57	90 Second	5.84	5.28	4.66	4.12
350-63	63	100 Second	5.88	5.31	4.68	4.14
350-94	94	2½ Minute	6.06	5.47	4.84	4.28
350-113	113	3 Minute	6.18	5.58	4.93	4.36
350-132	132	3½ Minute	6.29	5.66	5.01	4.42
350-150	150	4 Minute	6.40	5.76	5.10	4.50
350-169	169	4½ Minute	6.51	5.85	5.17	4.58
350-188	188	5 Minute	6.63	5.95	5.26	4.65
350-207	207	5½ Minute	6.73	6.05	5.34	4.73
350-282	282	7½ Minute	7.13	6.38	5.67	5.00
350-300	300	8 Minute	7.22	6.48	5.72	5.07
350-375	375	10 Minute	7.60	6.81	6.03	5.33
350-394	394	10½ Minute	7.72	6.91	6.12	5.41
600 (NAB TYPE B)						
149-C	Empty		6.87	5.45	5.08	4.71
149-38	38	1 Minute	7.56	6.70	6.49	6.31
149-563	563	15 Minute	13.36	10.67	9.88	9.27
149-600	600	16 Minute	13.80	10.98	10.10	9.50
149-750	750	20 Minute	14.86	11.77	10.79	10.15
1200 (NAB TYPE C)						
150-CP	Empty With Pads		9.93	8.45	7.89	7.37
150-C	Empty Less Pads		9.44	7.96	7.40	6.88
150-1052	1052	28 Minute	20.52	16.69	15.49	14.42
150-1125	1125	30 Minute	21.35	17.37	16.15	14.99
150-1163	1163	31 Minute	22.04	17.94	16.68	15.48
150-1200	1200	32 Minute	22.73	18.51	17.20	15.97
150-1350	1350	36 Minute	23.98	19.53	18.17	16.86
150-1425	1425	38 Minute	24.88	20.28	18.86	17.52
150-1500	1500	40 Minute	25.81	21.05	19.57	18.17

FOR CARTRIDGES LOADED WITH HOT TAPE ADD H TO PART NUMBER AND INCREASE COST BY 15%

HARRIS

Prices and specifications subject to change without notice

World Radio History

Master Cart II - The Next Generation

New Master Cart II™



- Superior performance in any tape machine.
- Extremely low friction tape path for minimum wow and flutter and longest tape life.
- New front corner post for precise tape alignment and excellent stereo phase stability
- Factory loaded with Fidelipac's exclusive HOT TAPE®, for up to 8dB more output than standard tapes.

Master Cart II™ (NAB Type AA)

All Cartridges Loaded with Fidelipac TAS-500 Series H.O.T. Tape™

Part Number	Length In Feet	Time At 7½ IPS	1-99	100-199
550-E*		—	—	—
500-C	Empty	—	\$ 4.28	\$ 3.67
550-13	13	20 Second	4.73	4.16
550-25	25	40 Second	4.83	4.27
550-44	44	70 Second	4.97	4.39
550-57	57	90 Second	5.10	4.50
550-63	63	100 Second	5.19	4.59
550-88	88	140 Second	5.34	4.73
550-94	94	2½ Minute	5.43	4.82
550-113	113	3 Minute	5.59	4.96
550-132	132	3½ Minute	5.72	5.10
550-150	150	4 Minute	5.87	5.24
550-169	169	4½ Minute	6.03	5.38
550-188	188	5 Minute	6.18	5.52
550-207	207	5½ Minute	6.33	5.68
550-282	282	7½ Minute	6.73	6.01
550-300	300	8 Minute	6.89	6.16
550-375	375	10 Minute	7.30	6.53
550-394	394	10½ Minute	7.47	6.70

NOTE: For cartridges loaded with STANDARD TAPE, add 15% per cartridge and add-ST to part number

Master Cart II™ Parts

Part Number	Description	Standard Package	1-99	100-299
551	Clear Top	300	\$ 1.96	\$ 1.80
552	Reel Assembly w/Bearing	24	1.90	1.81
554	Cartridge Base w/Inserts	24	2.81	2.68
555	Brake Actuator	24	.56	.53
9-610	Brake Spring	24	.28	.25
9-612*	Screw. Top (2 Used)	100*	—	.13
556	Corner Post, Front	24	.46	.43
378	Corner Post, Rear	24	.46	.43
557*	Pressure Pad (2 Used)	180*	—	.31



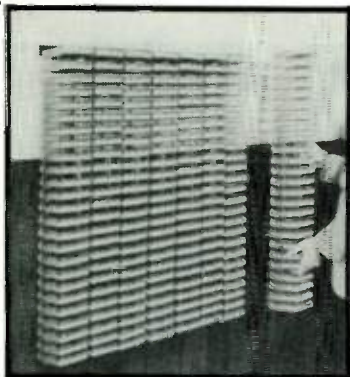
FIDELIPAC®

CARTRIDGE STORAGE RACKS

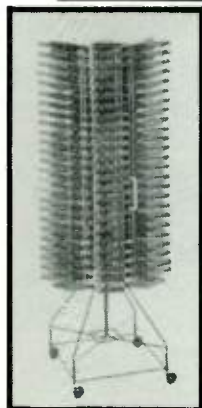
Wall-Mount or Mobile Racks

Fidelipac has built unique versatility into the WR-25 Wall-Mount Cartridge Rack. The modular design of the basic WR-25 is a single 25 cartridge rack that mounts either on a wall (using the mounting bracket included) or as one of eight racks that form the MR-200 Mobile Cartridge Rack. Program Directors and studio engineers recognize the value of a rack with such versatility. Fully loaded, the WR-25 rack removes easily from the wall bracket and transfers to an MRB-1 carousel rack base. The sturdy MRB-1 supports up to eight wall racks. Its large diameter ball type carpet casters assure easy mobility.

WR-25 • 37" H x 9 1/2" W • Shipping Weight: 4.2 lb • Shipping Volume: 0.6 cu. ft.
MRB-1 • Shipping Weight: 16 lb • Shipping Volume: 6.2 cu. ft.



WR-25



MR-200



TR-96

Table-Top Cartridge Racks

Fidelipac Table-Top Cartridge Racks are available in two sizes. Each offers the same versatile features as the mobile rack, MR-200. Each 12 cartridge bank is an integral unit that mounts on a revolving center support.

Model TR-48

Storage for 48 cartridges. Four separate removable racks store 12 cartridges each. Outside diameter when fully loaded is 15"; height is 20". Racks are chrome plated welded steel. Base is black japanned steel.

• Shipping Weight: 11 lb • Shipping Volume: 1.84 cu. ft.

Model TR-96

Storage for 96 cartridges. 8 separate removable racks store 12 cartridges each. Outside diameter when fully loaded is 20", height 20". Racks are chrome plated welded steel. Base is black japanned steel.

• Shipping Weight: 23.2 lb • Shipping Volume: 4.63 cu. ft.

WR-25	Wall Rack — Holds 25	\$ 23.40
MRB-1	Mobile Rack Base — Holds 8 WR-25 Racks	53.00
MR-200	Mobile Cartridge Rack — Holds 200	240.00
TR-48	Table Top Cartridge Rack — Holds 48	67.10
TR-96	Table Top Cartridge Rack — Holds 96	115.20

DELAY CARTRIDGES, TAPE AND LABELS

Hot Tape — 6dB More Output

Now, cartridge tape quality equal to that of the finest professional reel-to-reel mastering tapes... **HOT TAPE** — High Output Transfer Tape — available exclusively to order in all Fidelipac 300, 350, 600, 1200 and Master Cart Models.

Fidelipac Inspected and Certified Lubricated Cartridge Tape

TAS-434	4200 ft. 10" hub lubricated tape (bulk packed)	\$ 9.00
TAS-436	2100 ft. 7" reel lubricated tape (individually boxed)	5.75
TAS-437	4200 ft. 10" hub lubricated tape (individually boxed)	10.20

Fidelipac High Performance Lubricated Tape — HOT TAPE

TAS-500	4200 ft. 10" hub (bulk packed)	12.60
TAS-501	2100 ft. 7" reel (individually boxed)	6.90
TAS-502	4200 ft. 10" hub (individually boxed)	13.80

Program Delay Cartridges

Fidelipac Program Delay Cartridges are a sure way to protect your listeners and your station from the airing of undesirable talk-show information while retaining a "live" sound. Four long-life program delay cartridges are available for use with cartridge tape machines equipped with delay head configurations. These delay cartridges, available in 8 and 10 second versions (at 7 1/2 ips) have precision tape lengths, curved pressure pads and a specially lubricated reel hub. The Model 600 Delay Cartridge contains three pressure pads while the Model 300 contains two pressure pads.

Delay Cartridges

140-5DL	Model 300, 8 seconds, Curved Pressure Pads and Special Reel Lubrication	\$7.70
140-6DL	Model 300, 10 seconds, as described above	7.70
149-5DL	Model 600, 8 seconds, Curved Pressure Pads and Special Reel Lubrication	9.60
149-6DL	Model 600, 10 seconds, as described above	9.60

Cartridge Labels (Part No. 403)

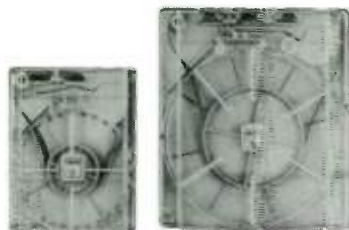
Available in six distinctive colors, Fidelipac Cartridge Labels provide an attractive method for identifying prerecorded cartridge tape information. These self-adhesive labels hold securely to the cartridge but remove easily without liquids or chemicals even after a year of use. No unsightly adhesive remains. A typewriter, pen or pencil can be used as the marking instrument. Net weight: 2.6 lb. per 250 sheets

Cartridge Labels — 10 Labels per Sheet

403-Blue		Std. Pkg.	403-Yellow	Std. Pkg.
403-Red	1 to 99 Sheets	10 .25	403-Orange	300 to 499 Sheets 10 .22
403-Green	100 to 299 Sheets	10 .24	403-Black	500 plus Sheets 10 .20

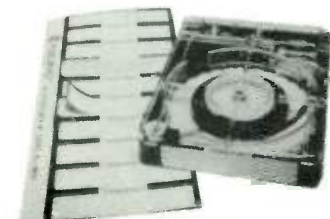


H.O.T. TAPE



300

600





FIDELIPAC®

CARTRIDGE MACHINE ALIGNMENT EQUIPMENT

Model 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.



390

Cartridge Machine Precision Alignment Equipment

390	Wow and Flutter Meter	\$398.00
401	Cartridge Equipment Test System — Mono	535.00
402	Cartridge Equipment Test System — Stereo	535.00
450	Alignment Cartridge — Monophonic	48.30
451	Alignment Cartridge — Stereophonic	48.30
452	Wow and Flutter Cartridge — 3150 Hz	33.00
455	Fast Sweep Cartridge — Monophonic	40.60
456	Fast Sweep Cartridge — Stereophonic	40.60
457	Cue Tone Test Cartridge	44.70
326	Height Gage	25.90
328	Head Insertion Gage	7.00
387	Right Angle Zenith Gage	30.80



395

CARTRIDGE MAINTENANCE AND TAPE ITEMS

Model 395 Blank-It Bulk Eraser

THE MULTI FORMAT MAGNETIC TAPE ERASER FOR:

• NAB cartridges • 8 track cartridges • 1/4" to 1" reel-to-reel audio tape • 8, 16 or 35mm magnetic film • Audio cassettes • Video cassettes — VHS or Beta • Computer tape • Dictation Cassettes.

• 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 Maintenance and Tape Items

395	Blank-It, Bulk Eraser, Hand Held (110 volt)	\$59.95
395-2	Blank-It, Bulk Eraser, Hand Held (220 volt)	64.50
TAS-431	Splicing Tape — 7/32" wide x 100' long roll (2400 1/2" splices)	9.50
406	Professional Splicing Block, for 1/4" Tape	16.30
310	Professional Splicing Kit — 1/4" Tape	20.15



340

STUDIO WARNING LIGHTS

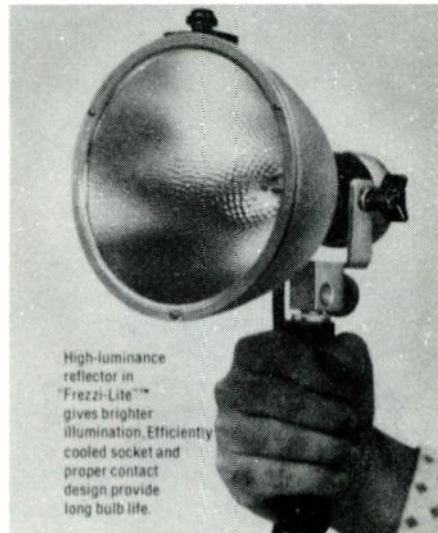
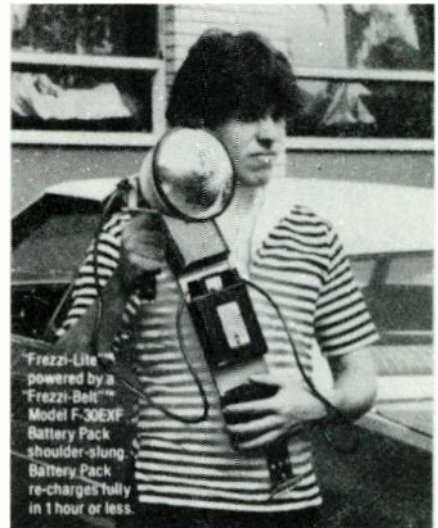
World Standard Studio Warning Lights (Part No. 340)

Your broadcast or recording studio will really be "off-limits" when Fidelipac Studio Warning Lights are lit. Their brilliant red lettering on jet black background can be seen even in the brightest ambient light conditions. With a faceplate of unbreakable plexiglass, the light includes lamps and mounting hardware.

340	ON AIR	\$43.15
340-S	ON AIR in French, German, Greek, Japanese, Polish, Russian, Spanish or Swedish (Specify when ordering)	43.15
340-REC	RECORDING	43.15
340-REC-S	GRABANDO (RECORDING in Spanish)	43.15

"Frezzi-Lite"
100w, 150w, 250w, 350w.

Operate with true one-hand control of "on-off" lightswitch and focusing thumbwheel. Small: 6.8 inches (172.7mm) without dichroic filter, 8 inches (203.2mm) with dichroic filter, 8 inches (203.2mm) with dichroic filter, front-to-back; 5.7 inches (145mm) reflector diameter. Lightweight: 14 ounces (400g). Optional easily-removable/attachable "swing-away" dichroic filter. Standard tungsten-halogen 3400° K bulbs. Beam Angles: 20° spot, 40° flood. Lighthead tilts up or down as necessary, locks tightly and holds angle. Permanently attached 5 foot (1.52m) long power cable terminates in standard plug connector.



Frezzolini® Model Number	Description	List Price (U.S.A.)
PORTABLE LIGHTING UNITS		
FL-250	Lighthead with 30 volt DC 250-watt Model FBV lamp, handle, power cable with plug. (Lighthead accepts 150 or 350-watt lamps — see below).	\$195.00
FL-100	Lighthead with 11.5 volt DC 100-watt Model FAV lamp, handle, power cable with plug.	\$195.00
ACCESSORIES		
FLEP-101	Extension Pole	\$ 60.00
FLDF-101	Dichroic Filter (swing-away)	\$ 85.00
FLS-101	Scrim (swing-away)	\$ 40.00
FLCM-101	¼-20 Video Camera Mount Stud	\$ 8.50
FLCM-102	Dove-Tail Film (ciné) Camera Mount	\$ 45.00
FLLS-101	Lightstand	\$ 67.75
FLH-100	Replacement Handle	\$ 19.50
LAMPS		
FAV	100 watts/11.5 volts DC	\$ 29.94
FBT	150 watts/30 volts DC	\$ 32.64
FBV	250 watts/30 volts DC	\$ 35.45
FBW	350 watts/30 volts DC	\$ 38.57
(Power for FL-250) 30 VOLT DC "FREZZI"™ PORTABLE BATTERY PACKS		
800NC	Free-standing, hand-carried or shoulder-slung. 4AH output capacity. Includes internal battery charger (8 hours).	\$625.00
F-30-EC	"Frezzi-Belt"™ battery pack. 4AH output capacity. Includes internal battery charger (14 hours).	\$450.00
F-30-EXF	"Frezzi-Belt"™ battery pack. 4AH output capacity. Re-charges in 1 hour or less with "Frezzi-Fast"™ Charger (see below).	\$585.00
(Power for FL-100) 12 VOLT DC "FREZZI"™ PORTABLE BATTERY PACK		
FBP-12-4L	Clips on your own belt or camera. 4AH output capacity. Lightweight. Re-charges in 1 hour or less with "Frezzi-Fast"™ Charger, or 14 hours or less with "Frezzi"™ Trickle Charger (see below).	\$290.00
"FREZZI"™ CHARGERS FOR (above) BATTERY PACKS		
BC-30 "Frezzi-Fast"™ Charger	Fully charges 30 volt "Frezzi-Belt"™ Model F30-EXF Battery Pack (above) in 1 hour or less. Requires 120 volt, 60hz AC input.	\$395.00
BC-77 "Frezzi-Fast"™ Charger	Fully charges 12 volt Model FBP-12-4L Battery Pack (above) in 1 hour or less. Requires 120 volt, 60 hz AC input.	\$395.00
FTC-12 "Frezzi"™ Trickle Charger	Fully charges 12 volt Model FBP-12-4L Battery Pack (above) in 14 hours or less. Requires 120 volt, 60hz AC input.	\$ 60.00

General: The new line of Frezzolini Multiple Battery Chargers were specifically designed to charge eight (8) VTR Battery Packs in twelve hours with the capability to fast charge an additional five (5) 12-14.4 VDC at 2, 4 or 6 AH Battery Packs simultaneously in less than one (1) hour. All charging stations have the capability of charging at 100, 120, 220 or 240 VAC 49-61 Hz.

Price of Multiple VTR Battery Charging Station:	From \$595.00
Price of Multiple Fast Charge Battery Charging Station:	From 1595.00
Price of Combination VTR/Fast Charge Battery Station:	From 2090.00


**FREZZOLINI® NICKEL CADMIUM BATTERY &
CHARGER ABBREVIATED PRICE SCHEDULE**
Two (2) AMP-HR "On-Board" Batteries

Model:	
BP-122 (12V)	\$195.00
BP-142 (14.4V)	245.00

Four (4) AMP-HR "On-Board" Batteries

Model:	
BP-12 (12V)	\$285.00
BP-14 (14.4V)	315.00
BP-77 (+7-7)	325.00
FBP-12-4B (12V)*	290.00
FBP-12-4L (12V)*	290.00
FBP-14-4E (14.4)*	315.00

*May Also Be Worn On Belt

Four (4) AMP-HR Power Belts

Model:	
FBP-12-4B (12V)	\$290.00
FBP-12-4L (12V)	290.00
FBP-14-4E (14.4)	315.00
F-24-EXF (plus/minus 12V)	535.00
F-30-EC (30V)	450.00
F-30-EXFA	535.00

Six (6) AMP-HR Power Belts

Model:	
F-12-EXF (12V)	\$440.00
F-14-EXF (14.4V)	470.00

Trickle Charger For (2) AMP-HR Batteries

Model:	
FTC-12-2 (12V)	\$60.00
FTC-14-2 (14.4V)	60.00

Trickle Chargers For (4) AMP-HR Batteries

Model:	
FTC-12 (12V)	\$60.00
FTC-14 (14.2V)	60.00

Camera Mounting Brackets for "On-Board" Batteries

Model:	
FCG-103 Bracket for FBP-12-4B, FBP-12-4L and FBP-14-4E	\$85.00


Two (2) AMP-HR "In-Board" Batteries

Model:	
FBP-20 (12V)	\$195.00
FBP-44 (12V)	195.00
FBP-60 (12V)	195.00

Four (4) AMP-HR "In-Board" Batteries

Model:	
FBP-90 (12V)	\$220.00
FBP-90FC (Fast Charge)	240.00

Four (4) AMP-HR Battery Packs

Model:	
FBP-12V-4AH (12V)	\$245.00
HL-33-NC (plus/minus 14.4V)	675.00
800NC (30V)	625.00

Six (6) AMP-HR Battery Packs

Model:	
HL-33/35 NCF (plus/minus 12V)	\$865.00
900-NC (30V)	850.00
900-NCT (plus/minus 14.4V)	850.00

Leather Belt For:

FBP-12-4B, FBP-12-4L, FBP-14-4E Model FLBB-101	\$22.00
---	---------

Fast Chargers for (4) & (6) AMP-HR Batteries

BC-77U (12 & 13.2V) Universal	\$395.00
BC-77UB (12, 13.2, & 14V) Universal AC Inputs	395.00
BC30C (30V) 120/240VAC Only	395.00

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 INDUCTROL 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)

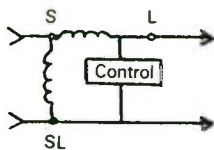
472-1122-000	50	104	20-3/8	24-1/4	28	230	280	\$ 5,825.00
472-1119-000	75	156	20-3/8	24-1/4	28	300	350	\$ 6,330.00
472-1123-000	100	208	47-3/4	24-1/4	28	550	600	\$11,764.00
472-1124-000	150	312	47-3/4	24-1/4	28	690	740	\$14,441.00
472-1125-000	225	468	47-3/4	24-1/4	28	950	1000	\$18,453.00
472-1126-000	250	520	Dimensions on Request					\$19,070.00
472-1127-000	333	693						\$21,114.00

STANDARD DESIGN, THREE-PHASE, DRY-TYPE, TYPE AIRT [60 HERTZ]

10% Raise and Lower

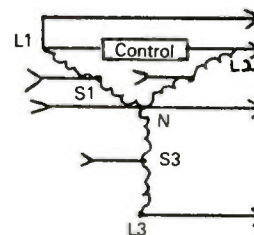
480Y/277, 4-WIRE (Connection Sketch 2)

472-1128-000	150	180	47-3/4	24-1/4	28	740	810	\$14,137.00
472-1129-000	225	270	47-3/4	24-1/4	28	950	1000	\$17,156.00
472-1130-000	300	360	57-3/8	22-7/8	44-1/4	1075	1175	\$18,769.00
472-1131-000	500	600	57-3/8	22-7/8	44-1/4	1165	1265	\$23,336.00
472-1132-000	750	900	57-3/8	22-7/8	44-1/4	1420	1520	\$26,705.00
472-1133-000	1000	1200	69-1/4	28-7/8	52-1/2	1900	2000	\$33,064.00



Connection Sketch 1

NOTE: Call Harris if the type of voltage regulator you require is not listed here.



Connection Sketch 2

Gentner Engineering Company, Inc.

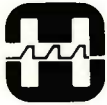
PRE-WIRED AUDIO PATCH PANELS

Gentner Pre-Wired Audio Patch Panels provide a convenient, but inexpensive way of quickly adding audio patch facilities to your existing or new facilities. Workmanship is high quality with all cables numbered. Jacks are ADC; cable is Belden 8451 or equivalent and terminals are Christmas Tree Blocks Type PJ-660-6 or Punch Blocks type 66B3-50 Split Terminals. Normals are either cross connected at the Patch Panel or wired to the terminal block. Unless otherwise specified, cable bundles will be five (5) feet in length and will emerge from the left side of the patch panel as viewed from the rear.

LEGEND

Tip-Sleeve	= T-S	Punch Block	= Punch
Tip-Ring-Sleeve	= T-R-S	Normals Wired at Patch Panel	= No
Christmas Tree Block	= X-MAS	Normals Brought to Term. Block	= Yes

Harris Order #	Gentner P/N	No. Rows	No. Jacks	Patch Panel #	Jack Type	Term Block	Normals Wired	Price
612-1044-000	DR-TR-X	2	48	PJ-341	T-S	X-MAS	No	\$ 429.00
612-1045-000	DR-TR-P	2	48	PJ-341	T-S	Punch	No	419.00
612-1046-000	DR-TR-XN	2	48	PJ-341	T-S	X-MAS	Yes	549.00
612-1047-000	DR-TR-PN	2	48	PJ-341	T-S	Punch	Yes	539.00
612-1048-000	DR-TRS-X	2	48	PJ-391	T-R-S	X-MAS	No	499.00
612-1049-000	DR-TRS-P	2	48	PJ-391	T-R-S	Punch	No	489.00
612-1050-000	DR-TRS-XN	2	48	PJ-391	T-R-S	X-MAS	Yes	599.00
612-1051-000	DR-TRS-PN	2	48	PJ-391	T-R-S	Punch	Yes	589.00
612-1052-000	SR-TR-X	1	24	PJ-343	T-S	X-MAS	No	285.00
612-1053-000	SR-TR-P	1	24	PJ-343	T-S	Punch	No	275.00
612-1054-000	SR-TR-XN	1	24	PJ-343	T-S	X-MAS	Yes	379.00
612-1055-000	SR-TR-PN	1	24	PJ-343	T-S	Punch	Yes	374.00
612-1056-000	SR-TRS-X	1	24	PJ-393	T-R-S	X-MAS	No	385.00
612-1057-000	SR-TRS-P	1	24	PJ-393	T-S	Punch	No	375.00
612-1058-000	SR-TRS-XN	1	24	PJ-393	T-R-S	X-MAS	Yes	479.00
612-1059-000	SR-TRS-PN	1	24	PJ-393	T-R-S	Punch	Yes	469.00



HARRIS

RF-7800 SERIES HIGH BAND VHF-FM PORTA-PHONES

Portables
406-420,
450-470 MHz
2 and 5
Watts



High Performance
Compact, Powerful, Versatile
Touch-Tone Pad
Tone-Coded Squelch
Wide-Spaced Receiver
Remote Speaker Microphone

RF-7800 SERIES UHF-FM PORTA-PHONES

Harris "Porta-Phone" radios are durable, sensitive, powerful, and so small they fit in your hand. Perfect for all your personal two-way communications needs, the VHF-FM "Porta-Phone" has as much as 5 watts of transmit power and 1 watt of receiver audio. Let a Harris "Porta-Phone" show you what instant, effortless communication is all about. Portable communications by Harris means convenience and dependability in the Harris "Safe Buy" tradition.

Portables
146-174 MHz
2 and 5
Watts

Product Data (VHF Models)

Model Number	FCC Data	Power Output	Number of Channels	FCC Parts Numbers
RF-7810	RF-2810	2 Watts	1-2	Parts 21, 89, 91, 93
RF-7820	RF-2821A	2 Watts	1-6	Parts 21, 89, 91, 93
RF-7840	RF-2821A	2 Watts	1-6	Parts 21, 89, 91, 92
RF-7822	RF-2821A	5 Watts	1-6	Parts 21, 89, 91, 93
RF-7842	RF-2821A	5 Watts	1-6	Parts 21, 89, 91, 93
RF-2820IS-7820	RF-2821A	1.5 Watts	1-6	Parts 21, 89, 91, 93
RF-2840IS-7840	RF-2821A	1.5 Watts	1-6	Parts 21, 89, 91, 93

Product Data (UHF Models)

Order Number	FCC Data	Power Output	Number of Channels	FCC Parts Numbers
RF-7816	RF-2828	††2 Watts	1-4	Parts 21, 89, 91, 93 and Parts 83, 95 for 450-470 MHz
RF-7828	RF-2828A	††2 Watts	1-4	Parts 21, 89, 91, 93 and Parts 83, 95 for 450-470 MHz
RF-7829	RF-2829	5 Watts	1-4	Parts 21, 89, 91, 93 and Parts 83, 95 for 450-470 MHz
RF-2828IS-7828	RF-2828A	1.5 Watts	1-4	Parts 21, 89, 91, 93 and Parts 83, 95 for 450-470 MHz
RF-7848	RF-2828A	††2 Watts	1-4	Parts 21, 89, 91, 93 and Parts 83, 95 for 450-470 MHz
RF-2848IS-7848	RF-2828A	1.5 Watts	1-4	Parts 21, 89, 91, 93 and Parts 83, 95 for 450-470 MHz
RF-7849	RF-2829	5 Watts	1-4	Parts 21, 89, 91, 93 and Parts 83, 95 for 450-470 MHz

†† Also available in the range of 406-420 MHz (for Export or Government Sales only).

 HARRIS

Prices and Specifications Subject to Change Without Notice.



ALPHA 2000 SERIES UHF/VHF MOBILE TELEPHONES

The Alpha 2000 Series Mobile Telephone has been engineered for exceptional performance and optimum flexibility. Planned for non-obsolescence, Alpha will work in any channel spacing plan—including future channels as they become available.

The Alpha full duplex mobile radio represents a major advancement in UHF/VHF radio technology. Dual integrated synthesizers provide up to 128-channel capability with total flexibility in channel assignment. Transmit and receive frequencies are controlled independently to insure universal application. UHF and VHF commonality, modular design, rugged construction, reliable operation and uncompromised performance specifications put the Alpha radio far ahead of other mobile telephone transceivers.

- Total Frequency Flexibility
- Dual Integrated Synthesizers
- Programmable to 128 Channels
- Modular Design, Rugged Construction
- LSI Circuitry for High Reliability
- 0.35 SINAD Sensitivity
- 150 to 174 MHz, 25 to 50 Watts VHF
- 450 to 512 MHz, 15 to 30 Watts UHF
- UHF/VHF Design Commonality



RF-1550 VHF-FM MOBILE RADIO

Mobiles 148 to 174 MHz 100 and 70 watts

Harris Mobile Radios add communications dependability, performance and operator convenience to your new or existing FM two-way radio system. Reliable design and versatile features make the Harris value improved product line your best communications buy.

Features

- All Solid-State Design
- Compact, Contemporary Styling
- Dash or Trunk Mount
- Adjustable Power Output
- Wide-Spaced Channel Capability
- Mobile/Base Station Interchangeability
- Positive/Negative Ground
- Low Battery Drain

All Solid-State Design. You can rely on Harris mobile radios to perform consistently well, even under the toughest operating conditions. The small, contemporary styled case is easy to mount and is rugged enough to take the abuse of your toughest job. The advanced, all solid-state design of Harris mobile radios increases effective transmitter output, adds greater sensitivity to the receiver and extends the operating life of the radio. Harris solid-state design means instant-on communications and no power slump. You get continuous full power output. The Harris mobile radio generates less heat, extending radio life expectancy. State-of-the-art F.E.T. front end and a selective crystal filter stop interference, giving you top receiver performance. This means you will receive crisp, clear messages with a full 5 watts of audio power.





1" VIDEO TAPE RECORDER

HR-100 PORTABLE 1-INCH HELICAL VTR

The Hitachi HR-100 is a portable video tape recorder designed in accordance with the SMPTE Type C Standard. In addition to tape interchangeability with the table model HR-200, the HR-100 offers interchangeability with other 1-inch, C-standard helical video tape recorders. While it is simple to operate, the HR-100 delivers all the required functions for professional use. Its small size, light weight and rugged construction provide excellent reliability, and it is ideal for ENG and EFP application.

• A Portable VTR, Meeting SMPTE Type C Standard

The HR-100 is completely interchangeable with the table model HR-200. Tapes recorded by the HR-100 can be reproduced by other 1-inch C-standard tape recorders.

• Small in Size, Light in Weight

The tape transport of uniblock construction, the housing of one-piece construction and printed circuit board holder combine to make the HR-100 sturdy, small in size, and light in weight.

• Low Power Consumption

Switching-type motor drive amplifiers for the drum, capstan and reels are provided for improved efficiency. In addition, switching regulators and the extensive use of C-MOS ICs help to reduce power consumption.

• Excellent Environmental Characteristics

- No parts except the heads contact the magnetic surface of the tape—sharply reducing the possibility of dropouts.
- Small overall wrap angle in the tape path for smooth tape movements.
- A digital servo circuit which is resistant to temperature and aging.
- An FM modulator with an AFC circuit.

SPECIFICATIONS

Recording tracks — (a) Video: 1 channel. (b) Audio: 3 channels (The third audio track is used for time code signal recording). (c) Control: 1 channel.

Fast forward and rewind time — Less than 4 minutes

Servo Lockup time — 3 seconds (from standby mode).

Ambient temperature and humidity — (a) Temperature: 0 to 45°C (32 to 113°F). (b) Humidity: 10 to 90%.

Power requirements — (a) Built-in battery: 12V nickel cadmium battery, 6 AH. (b) External DC power supply: 12V DC. (c) AC adaptor: 120/240V AC, 50/60 Hz.

Dimensions and weight — (a) Dimensions: 15.4(W) x 14.6(H) x 7.5(D) in. (b) Weight: Approximately 41.9 lb (with tape and battery).

Video characteristics — (a) Frequency response: + /- 0.5 dB, 30 Hz to 4.2 MHz; -3 dB at 4.7 MHz. (b) Signal-to-noise ratio: More than 48 dB. (c) Differential gain, differential phase: Less than 4%, 4°. (d) Waveform distortion: Less than 1% (K-factor for SIN² 2T pulse). (e) Moire: Less than -40 dB.

Audio characteristics — (a) Frequency response: + /- 2 dB, 50 Hz to 15 kHz. (b) Distortion: Less than 1% (at 1,000 Hz operating recording level). (c) Signal-to-noise ratio: More than 56 dB (at 1,000 Hz peak recording level). (d) Wow and flutter: Less than 0.1% rms.

• Automatic Assemble-Edit Function

The HR-100 has a built-in automatic assemble-edit function which automatically rewinds the tape at the end of recording, and gives it a correct backspace. This feature permits complete assemble-editing merely by repeated REC button operation at the camera.

• 60-Minute Operation from Built-in Battery

The HR-100 can operate on a nickel cadmium battery (12V, 6AH) for over 60 minutes. Battery operation allows for complete mobility in field production. The HR-100 also operates on an external DC power supply.

• Video Confidence

Video signals can be simultaneously monitored during recording so that you can ascertain that you are actually recording the signals you want.

• Built-in Time Code Generator

Built-in SMPTE time code generator permits to record hours, minutes, seconds and the number of frames established previously.

HR-100. Portable Model Type "C" Recorder. Portable Battery operated Recorder conforms to all SMPTE Type "C" standards. Features Video Confidence Head, Sync Head, Built-in Time Code Generator, Back Space Editor and Digital Servo System. . . . **\$34,500**

Including: Take-up Reel, Operation/Service Manuals, Set of Extender Cards.

Accessories:

TC-200B. Time Base Corrector Features*	18,900
AP-10. AC Adaptor	500
BT-10. 1 hour Plug-in Battery Pack	500
BC-10. 1 hour Quick Charger	500
BC-10/2. 1 hour dual quick charger	850
BV-10. Battery unit (1 or 2 Batteries addit'l)	1200
CP-11. Color playback stabilizer	2300
RB-10. Remote control unit	500
WC-10. Winter heating cover	490
SPK-10. Spare Parts Kit	1150
AL-21. Alignment Tape	500
HH-21. Video Head Chip Hight	360
SVM-HR-100. Service Manual (Spare)	60
VH-10. Spare Video Head Assembly	600
CL-10. Carrying Case	317
10H Window, drop-out compensation velocity error corrector, service manual, extender cards.	

1" VIDEO TAPE RECORDER



HR-200B

HR-200B Studio System

HR-200B 1-Inch Helical VTR

- High-performance conforming to broadcast standards
- In accordance with the SMPTE Type C Standard
- Rugged construction and excellent reliability
- Ease of maintenance and service

The HR-200B design concept makes it superior professional video tape recorder which features greater durability and easy operation.

The HR-200B provides the economy of helical scan, the editing ease of film and the advantages of quadruplex.

Features

- Picture quality of broadcast standards: High-quality high band recording and reproducing systems are featured.

- Tape interchangeability: The HR-200B is completely interchangeable with 1-inch helical video tape recorders which meet the SMPTE Type C Standard.

- Rugged construction and greater reliability: The precision-cast tape transport and control block are rugged, accurate and simple in construction. Consequently, the HR-200B is highly reliable and capable of withstanding rough operating conditions.

- Improved operation with non-contact drum: since there is no contact between the video head and the tape during standby, fast forward and rewind, the lives of the heads and the tape are extended and many other operational advantages are involved.

Minimum dropouts: All parts along the tape path, except the heads, do not contact with the magnetic surface of the tape. As a result, the possibility of dropouts is reduced to a minimum.

- Easy tape loading by movable guide: An important condition to realize easy tape loading in Type C video tape recorders is acquired by the adoption of a movable guidepost.

- Steady tape travel by air tape guide: The air tape guides at tape entrance and exit assure steady tape travel in spite of humidity and other environmental variations. Additionally, the time necessary to get 50X-speed is reduced in shuttle mode.

- DC motors with excellent response: The drum, capstan, reels, etc. are all driven by DC motors, which combine with the air-guide effect to assure high efficiency and quick start. In the shuttle mode, the tape reaches 50 times the normal speed within only 10 seconds.

- Front-access circuit boards: Most of the circuit boards can be accessed from the front for easy maintenance and adjustments. The controls which require no daily adjustment are mounted on the circuit boards. This makes a main control panel very simple.

- Easy replacement of heads: The video heads can be replaced together with the upper drum without need for adjustments and soldering.

- Video and audio confidence: Video and audio signals can be simultaneously monitored during recording so that you can ascertain that you are actually recording the signals you want. Also, optimum recording current and bias current can easily be set.

- Various controls by built-in microcomputer: Tape timer function, electronic editing function, automatic tape drive to starting position, etc. are processed by the built-in microcomputer for maximum ease of operation. In addition, the automatic editing functions can easily be expanded by the addition of an external editing console.

HR-200B Studio Model Recorder/Reproducer
 Conforms to SMPTE Type "C" Standards
 Includes Standard Video and Audio Confidence Heads, "Pro" Tape Path, Jog/Shuttle Control, Less Monitoring
\$44,200.00

TC-200B Optional Accessories
 Digital Time Base Corrector
 Features 10H window, Dropout Compensation, Velocity Error Corrector, Service Manuals, Extender Cards
\$18,900.00

TR-20 Time Code Reader **\$1,450.00**

TG-20 **990.00**

CP-20 Color Playback Stabilizer **2700.00**

RB-20 Remote Control Unit with Combination Jog/Shuttle, LED Display, Edit Control, Standby and Power Switch **4850.00**

HR-200B Studio Systems

HR-200B1 Studio System-1 Studio Model Recorder/Reproducer
 Conforms to SMPTE Type "C" Standards; Excludes Console and SL-20. Standard Features Include Video and Audio Confidence Heads, "Pro" Tape Path, Jog/Shuttle Control, Less Monitors
\$63,100.00

Includes
 HR-200B.....Transport
 TC-200B.....Digital TBC
 Take-up Reel and Set of Extender Cards
 Operations/Service Manual

HR-200B2 Studio System-2 Studio Model Recorder/Reproducer
 Conforms to SMPTE Type "C" Standards Excludes Console. Standard features are Video and Audio Confidence Heads, "Pro" Tape Path, Slow Motion, Jog/Shuttle Control, Less Monitors.
\$70,600.00

Includes
 HR-200B.....Transport
 TC-200B.....Digital TBC
 SL-20.....Slow Motion
 Take-up Reel and Set of Extender Cards
 Operations/Service Manual

HR-200B3 Studio Console System-3 Studio Console System Model Recorder/Reproducer
 Conforms to SMPTE Type "C" Standards Includes Standard Console Excludes SL-20
\$69,500.00

Includes
 HR-200B.....Transport
 TC-200B.....Digital TBC
 CN-200B.....Studio Console
 Take-up Reel
 Operations/Service Manual

HR-200B4 Studio Console System-4 Studio Console System Model Recorder/Reproducer
 Conforms to SMPTE Type "C" Standards Includes Standard Console, Video and Audio Confidence Heads, "Pro" Tape Path, Slow Motion, Jog/Shuttle Control and Monitoring Bridge, Less Monitors
\$77,000.00

Includes
 HR-200B.....Transport
 TC-200B.....Digital TBC
 CN-200B.....Studio Console
 SL-20.....Slow Motion
 Take-up Reel
 Operations/Service Manual



1" VIDEO TAPE RECORDER

HR-210 1-INCH HELICAL VTR

Broadcast 1" VTR designed for mastering and post production houses and high-end industrial applications

Features

- Retracting entrance guide system greatly reduces tape loading difficulties
- Air support tape guide system prevents the tape from contact with the heads
- No-contact head drum extends the usable life of tape and heads, effectively preventing head clogging
- "PRO" tape path serves to reduce tape dropouts ("PRO" Protective Reverse Oxide)
- Adjustment-free head replacement no need for any special gauges, soldering or adjustments
- Optional HST (Head Scan Tracking) system for variable speed playback from 1/4 to 1-1/2X play speed.
- Both video and audio confidence
- Protection cover for tape transport
- Built-in cable compensator
- Optional dual tape timer
- Accurate and easy-to-operate editing system
 - Color framing
 - Cue shift
 - Split edit
 - Insert/assemble editing
- Autochroma standard
- Deviation marker for accurate and easy modulation setting
- Built-in color processor (option)
- Common head for PB/REC
- Video sync heads standard
- Audio spot erase
- Optional 4th audio track (EBU Type "C")
- Fully servo-controlled tape tension system with direct drive DC reel motors
- Reel brake release button (foot switch is option)
- Tape speed override for editing or network delay sync
- Spot reel capability with no switch operation
- Remote control of TBC (TC-200B) on the VTR operation panel
- Shuttle/Jog combination knob
- Tape transport light to make tape threading made easier in a darkened room
- Front access circuit modules for easy maintenance and adjustment
- Rugged tape transport of a precision aluminum alloy casting

HR-210

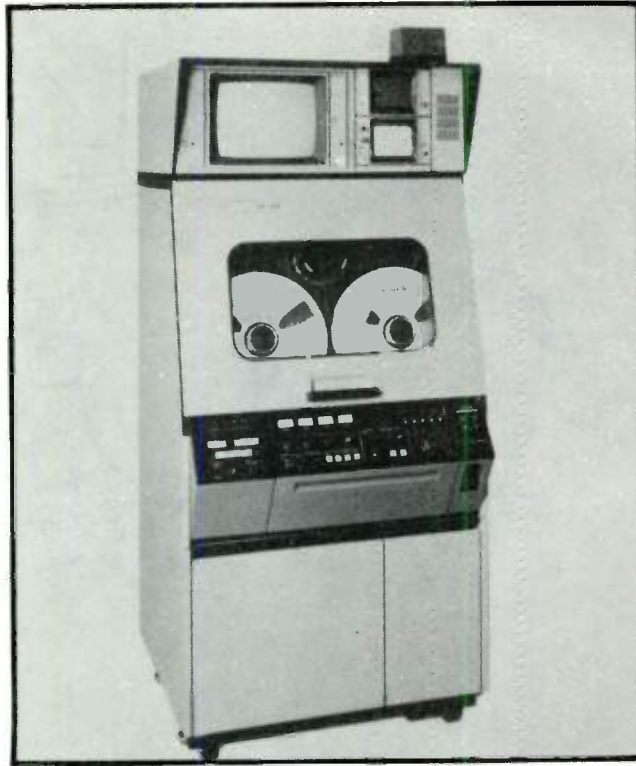
\$80,400.00

Hitachi Production Console (HPC) System. Studio Console System Model Recorder/Reproducer Conforms to SMPTE Type "C" Standards. Standard Features are Slow Motion, Video and Audio confidence, Edit Frame Shift, Full TBC Controls on Console, Three Selectable Remote Control Parts and Monitoring Bridge, Less Monitors

Includes:

HR-200B Transport
 TC-200B Digital TBC
 CN-210 Production Console
 SL-20 Slow Motion
 Take-up Reel and Set of Extender Cards Operations/Service Manual





HR-300 HST System

TYPE "C" VIDEO TAPE RECORDER

HR-300 Three Hour Type "C" VTR

Designed for 3 hours of continuous record and playback, the HR-300 extends the Hitachi VTR line and opens new opportunities in videocassette duplication, delayed network feeds and film to tape transfer, to name just a few.

Based on a new transport design to handle the rigors of larger 3 hour reels, it employs all of Hitachi's exclusive features including:

- Retracting Guide
- "PRO" Tape Path
- Non-Contact Drum
- Audio and Video Confidence
- Slow-Motion ¼ Rev-2X FWD

The HR-300 is not merely a specialty VTR, but rather, a full production and editing machine capable of all editing functions, allowing inserts, assemblies and split edits. Additionally, slow-motion, front access electronics and full transport cover are provided.

Various reel sizes from 14" to 5" plastic spot reels may be used with no modifications, adding to the HR-300's versatility.

HR-300 HST System

Three hour studio model recorder/reproducer, conforms to SMPTE type "C" standards. Features HST, precision retracting guide system, non-contact air drum, sync head, jog/shuttle control, on-board editor, front access electronics and color framing. Console features; audio monitoring, video test switching and interconnect cables. **\$95,000.00**

System Configuration

- HR-300 3 hour type "C" VTR
- TC-200 Digital Time Base Corrector
- CN-300 HR-300 console with monitoring bridge, less monitors
- HST Slow-Motion ¼ Rev — 2X FWD

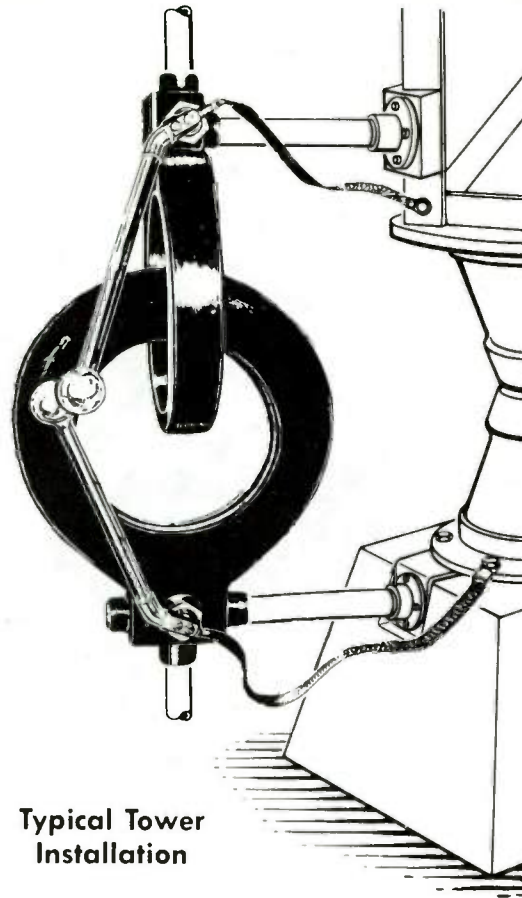
Take-up reel, operations/service manual, set of extender cards.

HR-300 System w/o HST

\$87,500.00

System Configuration

- HR-300 3 hour type "C" VTR
- TC-200 Digital Time Base Corrector
- CN-300 HR-300 console with monitoring bridge, less monitors, take-up reel, operations/service manual, set of extender cards.



Typical Tower
Installation

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

STOCK NO.		PRICE
710-0058-000	Hughey & Phillips LC-700ASF-2 Photo-Cell and Beacon Flasher. Single circuit for one tower	\$ 385.00
710-0115-000	Hughey & Phillips Model BF-60SF-1 Beacon Flasher, SPST, 2800 w, 117V, 60 Hz, outdoor housing, 3/4" conduit tap	172.00
710-0116-000	Hughey & Phillips Model BF-60SF-2 Beacon Flasher SPST, 2800 w, 117V, 60 Hz, indoor housing, 3/4" K.O.	152.00
710-0117-000	Hughey & Phillips Model BF-64SF-1 Beacon Flasher, two circuit, 2800 w, 117V, 60 Hz, outdoor housing, 3/4" conduit tap	227.00
710-0118-000	Hughey & Phillips Model BF-64SF-2 Beacon Flasher, two circuit, 2800 w, 117V, 60 Hz, indoor housing, 3/4" K.O.	205.00
710-0104-000	T1-2017 Hughey Phillips Ring Transformer, 1750 watts, with gap	1805.00
710-0066-000	T1-2035 Hughey Phillips Ring Transformer, 3500 watts, with gap	2098.00
710-0065-000	T1-2070 Hughey Phillips Ring Transformer, 750 watts, 230 VAC, with gap	1625.00

NOTE: Above ring-type transformers are rated for 60 Hz. For 50 Hz use reduce rating 10-15%



VIDEO PRODUCTION SWITCHER

200 SERIES FEATURES:

The 200 Series is an advanced, state-of-the art production switching system, offering one, two or three PolyKey Effects (PKE) Systems.

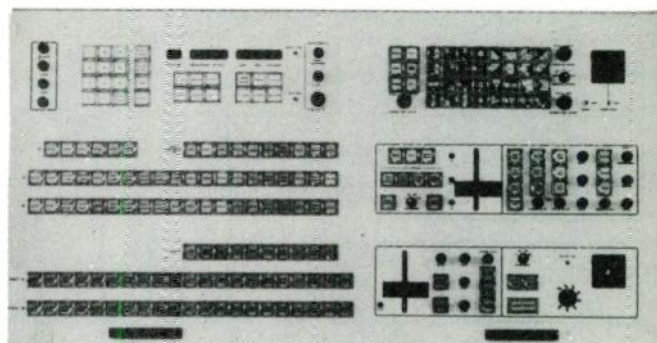
Each PKE has a 4 level processor with the following features:

- 4 input busses
- Manual or auto transitions
- Video key plus title key over/under
- Black/white/color border edging
- Chroma key standard
- Rotary and spin wipes

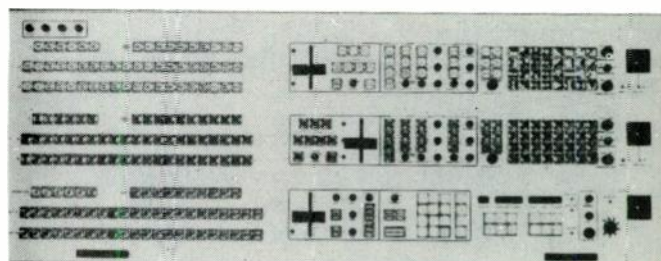
Every 200 Series switcher also has a Downstream Transition Unit which includes:

- "Flip-flop" mixer with cut bar
- Fade-to-black with pulse processing
- DSK with border edging and color
- Pointer Generator

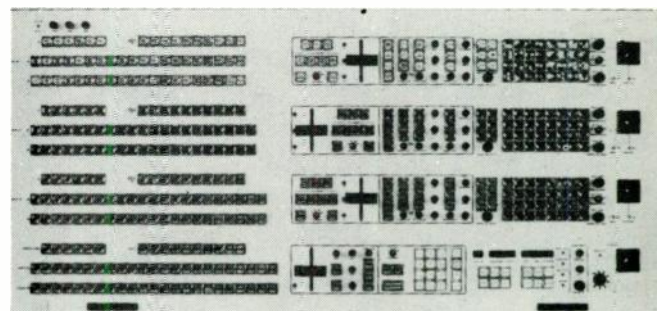
DEL	DESCRIPTION	PRICE
1	Video Production Switcher Video Production Switcher — 7 busses; 29 primary inputs including black burst/colorizer; 10 key inputs; 6 input RGB chroma keyer; one PolyKey mix/effects system/flip-flop mixer with auto transition and cut bar; downstream key edger; quad split generator; pointer generator; master fade to black; pulse processing; 15 m control cable; technical manual	\$51,500.00
3	Parallel editor interface	\$2000.00
6	Audio Follow Video with audio breakaway	4000.00
	Automated Production Effects (APE)	18,500.00
	Additional Cable	25.00/ft.
2	Video Production Switcher Video Production Switcher — 11 busses; 29 primary inputs including black burst/colorizer; 10 key inputs; two 6 input RGB chroma keyers; two PolyKey mix/effects systems; flip-flop mixer with auto transition and cut bar; downstream key edger; quad split generator; master fade to black; pulse processing; 15 m control cable; technical manual	\$76,800.00
3	Parallel Editor Interface	\$2000.00
6	Audio Follow Video with audio breakaway	4000.00
	Automated Production Effects (APE)	23,800.00
	Additional Cable	25.00/ft.
3	Video Production Switcher Video Production Switcher — 15 busses; 29 primary inputs including black burst/colorizer; 10 key inputs; three 6 input RGB chroma keyers; three PolyKey mix effects systems/flip-flop mixer with auto transition and cut bar; downstream key edger; quad split generator; master fade to black; pulse processing; 15 m control cable technical manual	\$102,000.00
3	Parallel Editor Interface	\$2000.00
6	Audio Follow Video with audio breakaway	4000.00
	Automated Production Effects (APE)	29,800.00
	Additional Cable	25.00/ft.
Edifex	Video Production Switcher Video Production Switcher — 4 busses; 10 primary and key inputs; black burst/colorizer/one PolyKey Effects system; master fade to black; RGB or NTSC encoded chroma keyer; quad split; 50' control cable; technical manual; 19" control panel	\$26,750.00
6	Parallel Editor Interface	\$2000.00
	Audio Follow Video with audio breakaway	4000.00
	Automated Production Effects (APE)	18,500.00
	Additional Cable	25.00/ft.



200-1



200-2



200-3





VIDEO PRODUCTION SWITCHER

Our PolyKey System has changed switching by adding more production capabilities with easier operation. We didn't revamp an old idea, we advanced the state-of-the-art in television production artistry, with the PolyKey Concept. Every 200 Series switcher is built around it.

The PolyKey Concept began with the realization that today's most exciting production effects are produced using the key mode. Even digital effects units interface through the external key input. Add title and graphics keys, video keys, and effects transitions behind chroma keys, and it's soon evident that to limit keying means limiting production capability.

PKE AMPLIFIER

The unique PKE amplifier is the heart of every 200 Series Switcher. The following are some of its STANDARD features:

- Independent multi-pattern generator and positioner
- 4 input busses
- Internal quad split and chroma key
- Title key over/under
- Video key
- Black/white/color edging of title and video key
- Frame rate auto transitions
- 3 way modulator with freeze
- Normal/normal-reverse/reverse pattern direction
- Rotary and spin wipes

DOWNSTREAM TRANSITION UNIT

Our Downstream Transition Unit keeps the production flowing smoothly with the following standard features:

- A "flip-flop" mixer automatically transfers program/preset sources.
- A "cut bar" and auto mix position keep "flip-flop" transitions smooth and exact in any situation.
- A built-in downstream keyer with outline, drop shadow, and border edging and colorizer (fed from a 10 input key bus) allow the insertion of titles and graphics over program material.
- The fade-to-black module also incorporates a new pulse processing system to eliminate the picture shift at the end of the transition. Less than perfect timing is then corrected by the ISI 200. The pulse processor also has outputs available to lock external sources such as character generators.
- Standard in every Downstream Transition Unit is an 8 position pointer generator with "joystick" positioner. This popular feature is widely used in weather reporting and instructional productions.

The PKE unit is divided into four main areas:

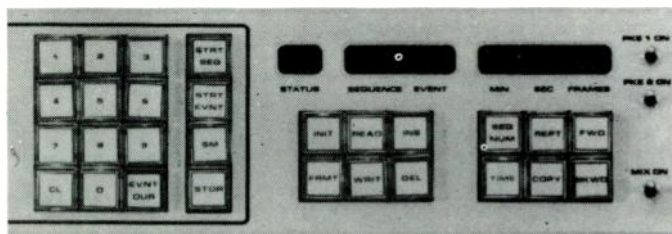
- 1) Input busses — A, B, C, D
- 2) Transition modes
- 3) Keying functions
- 4) Wipe effects

- 8 Position Pointer Generator
- 30° Input Phase Adjustment
- Master Fade-to-Black
- Preview Monitor Input Selector
- Pulse Processing

Dimensions

200-1	16.250 x 32.625 x 6 (control head) 28 x 19 x 13 (electronics)
200-2	17.00 x 45.875 x 6 (control head) 35 x 19 x 13 (electronics)
200-3	21.50 x 48.875 x 6 (control head) 42 x 19 x 13 (electronics)

AUTOMATED PRODUCTION EFFECTS UNIT (A.P.E.)



A.P.E. PANEL

The A.P.E. (Automated Production Effects) is an event storage and retrieval automation system which is optional.

200 Series Specifications (Model 200-3):

Inputs	video 75 ohms bridging
Return Loss	greater than 40 dB (T pulse)
Pulse	75 ohms bridging
Return Loss	greater than 40 dB (T pulse)
Input Level Video	1 vpp composite
Pulse	2-8 vpp
Subcarrier	1-4 vpp
Outputs	(2) outputs 75 ohms source terminated
Output Level	1vpp composite
Response	relative 1 mHz, + /-0.1 dB, DC to 8 mHz, + 0.1 to -2 dB
Switching Time	approximately 1 microsecond (vertical interval)
Differential Phase	less than 1.5° 3.58 or 4.43 mHz (10-90% APL)

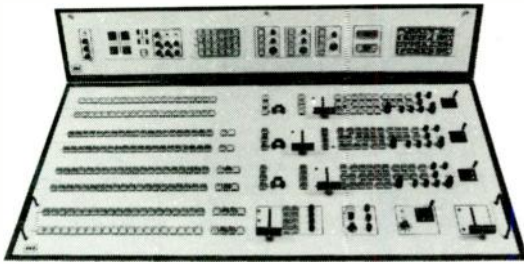
Our A.P.E. (Automated Production Effects) unit is an easy to operate event storage and retrieval system which allows the director to concentrate on creativity instead of switcher operation. It's easy because all events are learned by manually executing control panel functions, then storing the switcher setup in the A.P.E. memory.

By defining points where switcher setup changes, and programming transition rates, complicated production sequences may be learned and repeated or stored for later use. Our A.P.E. can remember 60 events in its hardware memory and 3840 events in disk storage.

Events represent a single setup for the entire switcher which may include as many as 15 busses and the complete setup of 4 M/E or mix units.

Our A.P.E. can execute transitions with a smooth flow that's not humanly possible. For instance, try moving a circle pattern with the positioner control while expanding the size of the circle. It's virtually impossible to execute that movement smoothly, but, thanks to our A.P.E.'s microprocessor brain it can perform this simple move flawlessly on 3 mix/effects units simultaneously.

Differential Gain	less than 1.5% 10-90% APL
K Factor	less than 1% (T pulse)
Chrominance/Luminance Delay	less than 10 ns
Delay Inequality Chrominance/ Luminance	less than 0.1 dB
Crosstalk (worst case)	greater than -52 dB at 3.58 mHz; -50 dB at 4.43 mHz
Signal to Noise Ratio	greater than 58 dB pp signal/ RMS noise to 5 mHz
Path Length Accuracy	less than 1.5° (3.58 or 4.43 mHz)
Tilt (Line or Field Rate)	less than 1%
Temperature Range	0-50°C
Tally Relay Contacts	2 A-30 v
Power Input	10 v or 20 v, 50-60 Hz + /-10%
Control Cable .....	.400' maximum



• 1208
Control
Panel

VIDEO PRODUCTION SWITCHER

1200 Series

Features:

ISI's 1200 Series is available with one, two or three Mix/Effects Amplifiers and all include a downstream keyer with border edging and color.

Each M/E is a two level processor, allowing a mix, wipe or key plus an additional title key with color and border edging.

Features:

- Each 1200 Series Video Production Switcher has at least one 1250 M/E Amplifier, which affords the user an enormous amount of creative flexibility by providing the following standard features:
- Pushbutton and assign effects system with LED readout of selected pattern
- "A" and "B" blanking indicators
- Individual M/E colorizer; manual fader operation or auto transition rate; selectable and variable hard, soft, and bordered edges with color; wipe direction selector
- Mix, Key, Wipe, Mix Key, Wipe Key, plus ISI's special Fade Through Black mode (using synchronous or non-synchronous sources)
- Mix or Wipe to preset pattern limits or mask key
- Electronic spotlight with variable 0-100% video level attenuation
- 4 x 2 key source switcher; key fill selector
- Mask key, key invert, and matte key, pull to preview, key preview function
- Dual or "tandem" keying with a primary key (luminance or chroma) followed by a secondary downstream key with outline, shadow, or border and color
- Edging of primary key video for special effects
- Sine wave, square wave or sawtooth modulation with frequency, amplitude, and freeze controls
- Pattern rotate allowing wipe direction and angle to be changed
- Joystick positioner and positioning of multiple repeat patterns to change pattern size
- These features, and their layout, make each 1250 M/E System both flexible and easy to use. Multiple M/E systems arranged in "cascade" fashion, coupled with available mix keyers and options, make the 1200 series the ideal choice where state-of-the-art production switchers are required.

Note: Numerous options are available with any 1200 series system and with appropriate 501/505 Rack Frame/Power Supply may be added to most other ISI Production or Master Control Switchers. These options may also be added to other non-ISI equipment depending upon the specifications of that equipment.

1201 — Video Production Switcher — 12 inputs including black and color background; 4 busses; one Mix-Effects system; one Mix Keyer, 25' control cable; technical manual **\$16,500.00**

Options:

659-1C — Quad Split with 6 x 4 Pushbutton Input
Selector with Colorized Border **\$3250.00**
660-4 — RGB Chroma Keyer with 4 Input Selector **1680.00**
666-C — Downstream Key Edger with Colorizer **2075.00**
1240-4 — NTSC Encoded Chroma Keyer with
4 input selector **2635.00**
1242-4 — RGB Chroma Keyer with Shadow and
4 input selector **2075.00**
1280 — Rotary Wipe Generator **1795.00**
2065-1 — Digital Pointer Generator **1050.00**
Additional Cable **25.00/ft.**

1204 — Video Production Switcher — 20 inputs including color black and color background, 4 busses; one Mix/Effects system; Program/Preset Mixer, Downstream Keyer with edging, 50' control cable; technical manual **\$27,400.00**

Options:

659-1C — Quad Split with 6 x 4 Pushbutton Input
Selector with Colorized Border **\$3250.00**
660-4 — RGB Chroma Keyer with 4 Input Selector **1680.00**
666-C — Downstream Key Edger with Colorizer **2075.00**
1240-4 — NTSC Encoded Chroma Keyer with
4 input selector **2635.00**
1242-4 — RGB Chroma Keyer with Shadow and
4 input selector **2075.00**
1276 — Audio Follow Video Interface Package **4000.00**
1280 — Rotary Wipe Generator **1795.00**
2065-1 — Digital Pointer Generator **1050.00**
Automated Production Effects (APE) **18,500.00**
Additional Cable **25.00/ft.**

1206 — Video Production Switcher — 20 inputs including color black and color background; 6 busses; two Mix/Effects systems, Program/Preset Mixer, Downstream Keyer with edging, 50' control cable; technical manual **\$44,750.00**

Options:

659-1C — Quad Split with 6 x 4 Pushbutton Input Selector with
Colorized Border **\$3250.00**
660-6 — RGB Chroma Keyer with 6 Input Selector **1680.00**
666-C — Key Edger with Colorizer **2075.00**
1240-4 — NTSC Encoded Chroma Keyer with
4 input selector **2635.00**
1242-4 — RGB Chroma Keyer with Shadow **1400.00**
1276 — Audio Follow Video Interface Package **4000.00**
1280 — Rotary Wipe Generator (per M/E) **1795.00**
2065-1 — Digital Pointer Generator **1050.00**
Automated Production Effects (APE) **23,800.00**
Additional Cable **25.00/ft.**

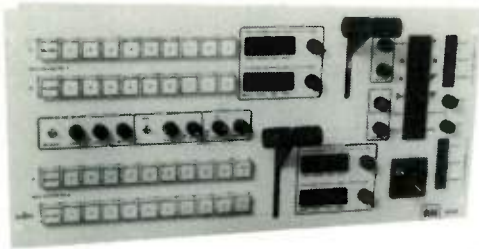
1208 — Video Production Switcher — 20 inputs including color black and color background; 8 busses; three Mix/Effects systems, Program/Preset Mixer, Downstream Keyer with edging, 50' control cable; technical manual **\$59,750.00**

Options:

659-2C — Quad Split with 10 x 4 Thumbwheel Input
Selector. "Take" Pushbutton LED Quadrant Read-
out with Colorized Border **\$4710.00**
660-4 — RGB Chroma Keyer with 4 Input Selector **1680.00**
666-C — Key Edger with Colorizer **2075.00**
1240-4 — NTSC Encoded Chroma Keyer with
4 input selector **2635.00**
1242-4 — RGB Chroma Keyer with Shadow and
4 input selector **2075.00**
1276 — Audio Follow Video Interface Package **4000.00**
1280 — Rotary Wipe Generator (per M/E) **1795.00**
2065-1 — Digital Pointer Generator **1050.00**
Automated Production Effects (APE) **29,800.00**
Additional Cable **25.00/ft.**



VIDEO PRODUCTION SWITCHER



Model 902

Specifications:

Inputs	ten (10) synchronous inputs including black burst
Input Phase Adjustment	+/-10°
Input Level:	
Video	1 vpp composite
Pulse	.4 vpp +6 dB
Subcarrier	.2 vpp +6 dB
Outputs	program 2-75 ohms; preview 2-75 ohms; M/E1 "A" 1-75 ohms; M/E1 "B" 1-75 ohms; M/E2 "A" 1-75 ohm
Output Level	1 vpp composite
Key Inputs	three input for M/E1; three input for M/E2
Crosstalk (worst case)	greater than -53 dB at 3.58 MHz
Differential Gain	1.5%
Differential Phase	1.5°
Hum and Noise	60 dB below 1 vpp
Frequency Response	8 MHz +0.25 dB
Tilt (Line or Field Rate)	less than 1%
Fader Linearity	better than 1%
Video and Pulse Connectors	BNC
Buttons	momentary contact pushbuttons with indicator lamps
Temperature Range	0-50°C
Tally Relay Contacts	"C" connection on all inputs
Dimensions	.8" x 19" x 2 3/4" (control panel) 7" x 19" x 13" (electronics)
Control Cable	25'
Power Required	120 vac +/- 10% 50-60 Hz 100 watts

Features:

- Rack mount control head with separate 7-inch electronics package
- Ten (10) clamped and phase adjustable inputs including black burst/colorizer
- Momentary contact pushbuttons with indicator lamps
- Full tally on all inputs
- Separate preview and program output switching busses
- Two (2) Mix/Effects systems utilizing ISI's exclusive Shared Pattern Generator
- True reentry effects system
- Pattern Generator includes seven (7) basic patterns plus Rotate position enabling hundreds of standard and special wipes to be created
- Mix/Effects functions include mix, wipe, key mix/wipe and mix or wipe key
- Electronic spotlight, pattern modulator, and "joystick" positioner
- Adjustable hard, soft, and bordered edges, and preset pattern limit
- Professional full-size faders
- Three input key selector, matte key and key invert is standard on each M/E
- 25' control cable
- Technical manual

Description:

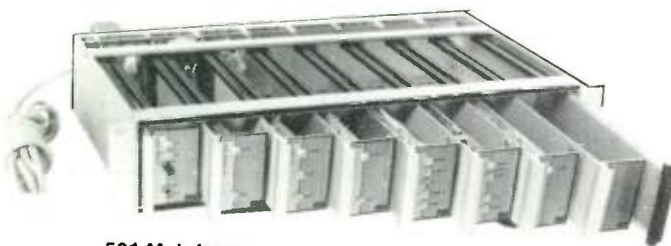
- With almost 300 Model 902 Video Production Switchers installed and field proven, the 902 has gained remarkable acceptance in the two years since its introduction. This switcher features two (2) Mix/Effects Systems utilizing ISI's exclusive Shared Pattern Generator, multiple keying functions, and extreme flexibility due to the separate preview and program output switching busses.
- Added features, all standard on the 902, such as electronic spotlight, modulator, positioner, and preset pattern limit, plus the ability to do hard, soft, or bordered wipes make the 902 ideal for any small or medium size studio or remote production facility.
- As with all ISI products, the 902 carries a full two year warranty on all parts and labor.

\$6,950.00

Options:

660 — RGB Chroma Keyer (prewired)	\$1010.00
666 — Downstream Key Edger (prewired)	1680.00
908 — Audio Follow Video Package	3500.00
920 — Editor Interface	3200.00
1240 — Encoded Chroma Keyer (prewired)	2240.00
2031 — Matrix Wipe Generator	2230.00
2065-1 — Digital Pointer Generator	1050.00
Additional Cable	10.00/ft.

TERMINAL/PROCESSING EQUIPMENT

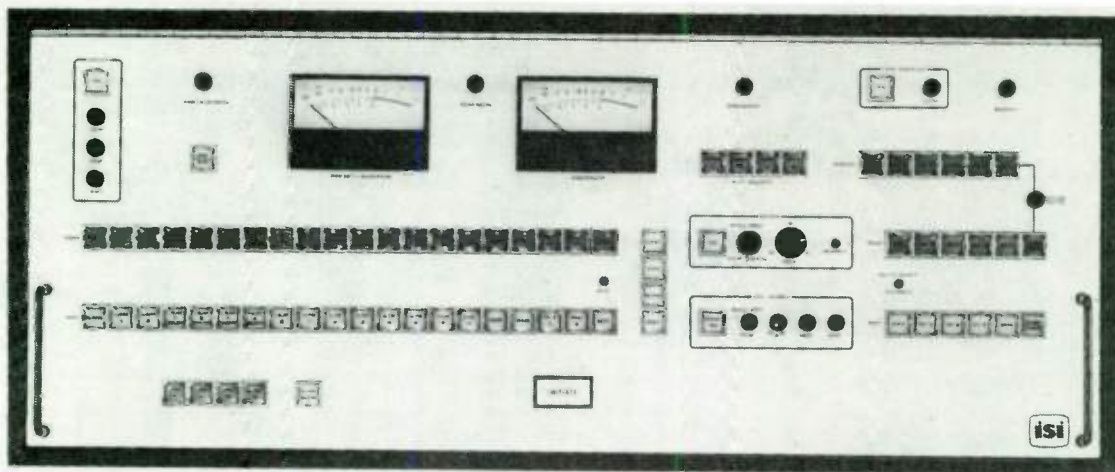


501 Mainframe

500 — Blank Cover Plate	\$30.00
501 — Rack Frame	180.00
503 — Extender Card	40.00
505 — Power Supply	180.00
508 — Power Supply 220 Volt	180.00
513-4 — Video DA-4 Output	280.00
513-6 — Video DA-6 Output	290.00
515 — Differential Input Video DA	350.00
516-4 — Video Equalizing Amplifier with Differential Input (4 Output)	380.00
516-6 — Video Equalizing Amplifier with Differential Input (6 Output)	390.00

517 — Video Clamp DA	365.00
519 — Pulse DA	275.00
520 — Video Delay DA	425.00
521 — Pulse Delay DA	375.00
522 — Quad Pulse Delay DA	445.00
525 — Subcarrier DA	365.00
527 — Dual Subcarrier DA	415.00
529 — Color Black Generator	505.00
550-1 — Video Processing Amplifier	2450.00
550-2 — Dual Video Processing Amplifier	4500.00
554 — Remote Gain AGC Amplifier (for 550)	505.00
556 — Pulse Output Card (for 550)	365.00
557 — White Stretch Module (for 550)	470.00
558 — Sync Generator	590.00
559 — Color Sync Generator with Gen Lock	1240.00
560 — Color Bar Generator	750.00
700 — Blank Cover Plate	30.00
705 — Power Supply (Audio)	180.00
708 — Power Supply (Audio) 220 Volt	180.00
706 — Remote Gain Control	180.00
707-4 — Audio DA-4 Output	320.00
707-6 — Audio DA-6 Output	335.00
720 — 5 Watt Monitor Amplifier - Max 2 per power supply	265.00

MASTER CONTROL SWITCHER



Model 821

Features:

- Twenty (20) inputs with full tally
- Colorizer
- Program and preset busses
- BCD control
- Audio/Video mixer with auto transitions
- Four (4) audio breakaways
- Audio over/under with adjustable video
- Program and preset audio VU meters
- Built-in pre-roll system
- Downstream keyer with edging, 4 input selector and colorizer
- Control panel prewired for following options:
 - Chroma Keyer
 - Time Display
 - Booth Mic Pre-amp
- 50' control cable
- Technical manual

Description:

- ISI's Model 821 Master Control Switcher offers a state-of-the-art means for switching control room signals in television stations, sophisticated cable systems, or other program origination sources.
- The 821 allows the air/program switcher to mix between sources at one of three automatic rates or 'take' a new source instantaneously. Audio follows the video through the mix or cut except when an audio breakaway source is selected. When this occurs new audio (from an audio cart, for example) is substituted for the audio on the selected video source. If breakaway and over/under are both selected, the new audio is mixed with the audio from the video source and may be predominant (over) or background (under). The audio breakaway always returns to the AFV position after the mix.
- A Downstream Keyer with edging allows title keying over the program output of the 821. It includes a four input selector and colorizer.
- Pre-roll circuitry for VTR's, film islands, and other machine sources, is built into the 821. With the addition of the appropriate optional machine decoder modules and buffers, machine pre-roll is activated by engaging the initiate button. The mix takes place after the pre-programmed pre-roll has been completed.
- Other options include a program monitor time display which provides a pre-roll and elapsed time counter and a real-time clock display. An RGB or NTSC Chroma Keyer with 4 inputs selector allows "News Break" inserts without tying up a production switcher. A booth mic pre-amp, full stereo audio operation, and microprocessor automation package, are available options.
- The 821 carries ISI's full two year warranty and board exchange program.

821 Master Control Switcher

\$25,225.00

Options:

660-4	RGB Chroma Keyer with 4 Input Selector	\$1,680.00
710	Booth Microphone Preamp Control	400.00
870	Stereo Audio	8000.00
883	Video Tape Machine Control	510.00
884	Film Island Machine Control	675.00
1240	NTSC Encoded Chroma Keyer	2240.00
	Additional Cable	20.00/ft.

Video Specifications:

Inputs	75 ohm terminating or bridging (customer option)
Outputs	two (2), 75 ohm source terminated
Crosstalk (worst case)	better than -52 dB at 3.58 or 4.43 mHz
Differential Phase	better than 9.5° (10-90% APL)
Differential Gain	better than 0.5%
Input Return Loss	35 dB minimum
Output Return Loss	35 dB minimum
Signal to Noise Ratio	better than 60 dB to 5 mHz
Frequency Response	DC to 8 mHz +/- 0.25 dB
Tilt (Line or Field Rate)	better than 1%
Differential Delay	+/- 1.5° at 3.58 or 4.43 mHz
K Factor	1% or better (T pulse)
Temperature Range	0-50°C
Connectors	BNC
Power	120 vac +/- 10% 60 Hz

Audio Specifications:

Inputs	0 dBm, + 15 dBm maximum balanced bridging
Outputs	2-600 ohms balanced 15 dBm maximum
Harmonic Distortion	less than 0.25%, 20 Hz-20 kHz at 0 dBm output
Frequency Response	+/- 1 dB, 10 Hz-30kHz
Crosstalk	better than -65 dB
Signal to Noise Ratio	better than -68 dBm down below +0 dBm 20 Hz-20kHz
Input to Output Gain	unity +/- 2 dB
Connectors	post
Power	120 vac +/- 10% 60 Hz
Dimensions	11 5/8" x 30" (control panel) 12 1/4" x 30 3/8" x 6" (cutout for pan) 19" x 21" x 13" (track electronics)



INNOVATIVE TELEVISION EQUIPMENT



ITE-T10



ITE-H2



ITE-D3



ITE-P6

Tripods/Trolleys

		Load Capacity	Price
ITE-T1B	Wood Tripod — Ball Level — M	25 lbs.	\$395.00
ITE-T2A	Tripod		305.00
ITE-T4	Wood Tripod — Ball Level — M	50 lbs.	690.00
ITE-T5A	Trolley — Elevation	60 lbs.	415.00
ITE-T6A	Tripod — Elevation	60 lbs.	395.00
ITE-T7	Tripod — Ball Level — M	60 lbs.	825.00
ITE-T8	Tripod — ENG with Spider and Ball Level — M		725.00
ITE-T9	Tripod — Mini 19" LG — Ball Level	50 lbs.	625.00
ITE-T10	Tripod — Elevation	140 lbs.	650.00
ITE-T12	Tripod — ENG with Spider — Ball Level	50 lbs.	635.00
ITE-T13	Tripod — Elevation — EFP with Spider	70 lbs.	795.00
ITE-T15	Tripod — Lightweight for H11 and H12 Head		165.00
ITE-T20	Tripod — Elevation, Counterbalance Head		170.00
ITE-TC20	Tripod/Head Cart		160.00
ITE-MT1	Tripod — With Foot Pads and Ball Feet	250 lbs.	850.00
ITE-MT1S	Tripod — Microwave — Heavy Duty — Spikes		895.00

Dollies

		Load Capacity	Price
ITE-D3	Dolly	110 lbs.	\$425.00
ITE-D3G	Dolly — With Cable Guards		475.00
ITE-D3M	Dolly — For T4, T7 and T8		465.00
ITE-D5	Dolly — For T1B, T2, T4, T7, T8, T12, and T13	60 lbs.	280.00
ITE-D6	Dolly	60 lbs.	185.00
ITE-D6G	Dolly — With Cable Guards		250.00
ITE-D7	Dolly — With Cable Guards	250 lbs.	725.00
ITE-D7	Dolly — With Cable Guards	250 lbs.	725.00
ITE-D7M	Dolly — For T4, T7, and T8		765.00
ITE-D20	Dolly — For T15 and T20 Tripods only	35 lbs.	95.00

Pedestals

		Load Capacity	Price
ITE-P2	Pedestal — Pneumatic CB studio		\$6500.00
ITE-P3A	Pedestal — Elevation — With Cable Guards		1150.00
ITE-P4	Pedestal — Counterbalance Studio	140 lbs.	3995.00
ITE-P5	Pedestal — Counterbalance Studio	265 lbs.	4795.00
ITE-P6	Pedestal — Counterbalance Studio	120 lbs.	3550.00
ITE-P7A	Pedestal — Elevation — With Cable Guards		1295.00

Mounting Heads

		Load Capacity	Price
ITE-H1	Torsion Head	30 lbs.	\$185.00
ITE-H2	Cam Head	130 lbs.	1095.00
ITE-H3	Cam Head	250 lbs.	2225.00
ITE-H4	Torsion Head	40 lbs.	225.00
ITE-H4D	Torsion Head with Dual Handles	40 lbs.	295.00
ITE-H5	Hydro Head — Counterbalanced	50 lbs.	1895.00
ITE-H6	Hydrocam Head with Dual Handles	120 lbs.	2395.00
ITE-H7	Torsion Head with Dual Handles	60 lbs.	850.00
ITE-H8	Microwave Head	250 lbs.	750.00
ITE-H8C	Microwave Head with Handle		830.00
ITE-H9	Hydro-Head — Counterbalanced	30 lbs.	1145.00
ITE-H9P	Hydro Head — Counterbalanced — Philips		1180.00
ITE-H10	Hydro Head — Adjustable Counterbalance	40 lbs.	1475.00
ITE-H11	Fluid Head — "Eight" — M	10 lbs.	335.00
ITE-H12	Fluid Head — "F" — M	20 lbs.	695.00
ITE-H13	Fluid Head — "Pro" — M	30 lbs.	925.00
ITE-H14	Fluid Head — "Pro" — M	30 lbs.	995.00
ITE-H15	Fluid Head — M	40 lbs.	1150.00
ITE-H16	Hydro Head — Adj. Counterbalance — M		1950.00

Accessories

		Price
ITE-WA	Wedge Adaptor — H2	\$180.00
ITE-WA5	Wedge Adaptor — H5	225.00
ITE-WP	Wedge Plate	125.00
ITE-RH	Right Hand Zoom Handle for H2	75.00
ITE-RH3	Right Hand Zoom Handle for H3	125.00
ITE-RH5/9	Right Hand Zoom Handle for H5 and H9	100.00
ITE-RH9P	Right Hand Zoom Handle for H9P — Philips	115.00
ITE-RHM	Right Hand Handle for H13, H14, H15 and H16	65.00
ITE-H79P	Adaptor — for H9 and H10 to P4 and P6 Pedestals	150.00
ITE-H25T	Adaptor — For H2 & H5 to T6, T10, T13 & P7	95.00
ITE-H9TCB	Adaptor — H9 to T4, T7, T8 and T12	140.00
ITE-MHT	Adaptor — M Heads to T2A, T5, T6, T10 & T13	80.00
ITE-HH6	Hi Hat — 6"	135.00
ITE-CW	Counterweight Set (40 lbs.) for P4/P5	185.00
ITE-TS	Tripod Spreader (for ITE/Miller-type tripods)	235.00
ITE-TK	Adaptor — RCA TK-44, 45 and 46	225.00
ITE-RFPM	Rubber Foot Pad Set — M Tripods	85.00
ITE-RFPI	Rubber Foot Pad Set — For T2A, T6, T12 and T13	95.00
ITE-CB1	Claw Ball Assy. — For T1B Tripod	70.00
ITE-CB3	Claw Ball Assy. — For T4, T7, T8 and T12	125.00
ITE-QR	Quick Release Adaptor Assy.	155.00
ITE-QRP	Quick Release Adaptor — Plate	35.00
ITE-EXT	Extender Plate — For Balance of Studio/ENG Camera	45.00
ITE-H2TH	Telescopic Handle for H2 and H6	135.00
ITE-H3TH	Telescopic Handle for H3	165.00
ITE-H25CB3	Adaptor — H5 to T4, T7 and T12 Tripods	235.00
ITE-RH4K	Kit — Right Hand Handle Conversion for H4	95.00
ITE-SPS	Spike Set (3 ea.) — For T2A, T6, T10, T12 and T13	40.00
ITE-CTH	Shipping Case — For T1B, T4, T6, T7, T10, T12 and T13 Tripod with H9, H10, H11, H12, H13, H14, H15 and H16 Head	324.50
ITE-CD2	Shipping Case — For D5, D6 and D7 Dolly	247.50
ITE-CH2	Shipping Case — For H2, H5, H6, H9, and H10 Pan/Tilt Head with Handles and Accessories	291.50

PREMIUM SERIES

SP Series Reproducer

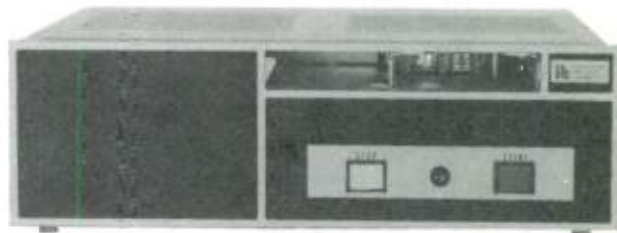
SP Series Reproducers accept the NAB "AA", and "BB" size cartridges. Two machines can be mounted side by side in a 19" rack mount assembly for maximum space savings.



SP Series Reproducer

WP Series Reproducer

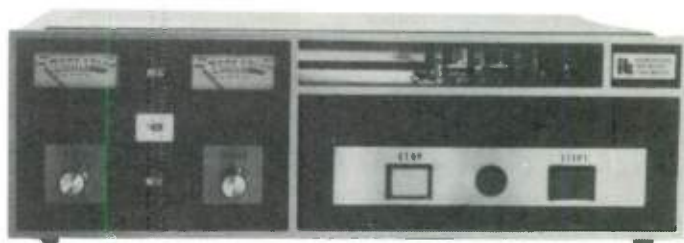
WP Series Reproducers accept the NAB "AA", "BB" and "CC" size cartridges, and have provision for accepting recording amplifier electronics for ready conversion to recorder/reproducer operation.



WP Series Reproducer

RP Series Recorder/Reproducer

RP Series Recorder/Reproducers accept the NAB "AA", "BB" and "CC" size cartridges in a compact machine for desk or rack mounting. RPD Series Profanity Delay Recorder/Reproducers are also available in a mono unit, with a 3rd head and two separate playback systems that include amplifier and VU Meter.



RP Series Recorder/Reproducer

3D Series Reproducer

WRA Series Recording Amplifier

The 3D Series provides three reproducers in the space typically occupied by two machines, with independent operation of the three decks. Two machines can be mounted side by side in a 19" rack mount assembly for optimum cost and space savings.

Add the WRA Series Recording Amplifier, connected to the bottom deck of the 3D machine, to make it function as a complete recorder/reproducer.

3D Series Reproducer



WRA Series Recording Amplifier



TAPE CARTRIDGE EQUIPMENT

PREMIUM SERIES SPECIFICATIONS

SP, WP, RP, RPD, 3D, and WRA Series Cartridge Equipment

POWER:**SP, WP, & RP SERIES:**

117 volts, 60 Hz, 77 watts typical.

3D & WRA SERIES:

117 volts, 60 Hz, 144 watts typical.

TAPE SPEED:

7½ inches per second. Direct drive hysteresis synchronous motor with electrolyzed shaft and instrument-type permanently lubricated ball bearings.

WOW & FLUTTER:

0.2% or less, NAB weighted using a prerecorded tape with a flutter content not exceeding 0.025% NAB weighted.

TIMING ACCURACY:

0.1% or better.

AUDIO OUTPUT IMPEDANCE:

600 ohms balanced. May be strapped for 150 ohms.

AUDIO OUTPUT LEVEL:

+18 dBm maximum before clipping. Normal operating range:* -10 to +8 dBm. External audio pads required for lower levels to prevent deterioration of signal-to-noise ratio.

AMPLIFIER DISTORTION:

0.5% THD or less. In accordance with 1975 NAB standard.

SYSTEM DISTORTION:

2.0% THD or less — record to playback at 0 VU recording level.*

NOISE:

50 dB or better from 1 kHz at 0 VU recording level.*

CROSS TALK BETWEEN CHANNELS:

50 dB or better at 1 kHz.

FREQUENCY RESPONSE:

±2 dB 315 to 15,000 Hz; +3, -2 dB 50 to 315 Hz record to playback at -10 VU recording level.*

EQUALIZATION:

NAB (1964 Standard). High frequency equalization controls included in reproducer and recording amplifier.

HEAD CONFIGURATION:

NAB. Two tracks for monophonic, three tracks for stereophonic. Separate record and reproducer heads permit monitoring while recording.

CUE SIGNALS:

NAB. Primary (stop) Cue, 1 kHz, standard; automatically applied at start of recording (may also be defeated and applied at user's discretion). Secondary Cue 150 Hz, and Tertiary Cue, 8 kHz, optional; may be applied during recording process or during playback. Individually adjustable oscillator for each tone. Reproducer utilizes adjustable tuned circuit detector for each tone and furnishes relay contact closure for external control.

AUDIO INPUT IMPEDANCE:

600 ohm balanced terminating standard. 15K ohm balanced bridging may be selected by jumpers.

AUDIO INPUT LEVEL:

-20 to 0 dBm; accepts higher level by changing input pad.

METERING:

Taut-band movement with "A" scale. Internal meter switch allows selection for metering the following: Program Bias, Peak Recording Level, Normal Recording Level, Program Play, Cue Play, and Cue Bias.

BIAS OSCILLATOR:

Push-pull, 82 kHz; individual gates and level controls for program (separate left and right in stereophonic units) and cue.

TAPE CAPACITY:**SP & 3D SERIES:**

NAB size AA and BB cartridges. 2 seconds to 16 minutes with 1 mil lubricated tape at 7½ IPS.

WP & RP SERIES:

NAB size AA, BB, and CC cartridges. 2 seconds to 31 minutes with 1 mil lubricated tape at 7½ IPS.

START TIME:

100 ms with minimum solenoid air damping.

STOP TIME:

100 ms with minimum solenoid air damping.

AMBIENT OPERATING TEMPERATURE RANGE:

50°F. to 131°F.; 10°C to 55°C.

REMOTE CONTROL:

All indicators and switch controls except meter switch and power indicator. Also provides cue track audio input and output for logging applications.

EXTERNAL CONNECTORS:

Latching type. Mating connectors furnished.

MOUNTING:

Table top mounting standard. Rack mounting adaptors optional. Machines require following vertical space for rack mounting and proper ventilation:

SP, WP, RP & WRA SERIES: 7 inches**3D SERIES:** 12.25 inches

DIMENSIONS:	Width	Depth	Height - Add for Feet
SP Series:	8.5 in.	11.0 in.	5.25 in. .375 in.
WP & RP Series:	17.5 in.	11.0 in.	5.25 in. .375 in.
3D Series:	8.5 in.	12.875 in.	10.5 in. .625 in.
WRA Series:	8.5 in.	11.0 in.	5.25 in. .375 in.

WEIGHT:

SP Series:	23 pounds	3D Series	41 pounds
WP Series	28 pounds	WRA Series	12 pounds
RP Series	39 pounds		

*All measurements made using Capitol Q17 tape or equivalent, and referenced to 1 kHz recorded at 160 nWb/m in accordance with 1975 NAB standard.

Specifications subject to change without notice.

STOCK NUMBER**PRICE**

730-2053-000	SP-0003 Mono Playback, NAB A, AA, B, BB size carts, 1000/150/8000 Hz cue tones, cue sensing per NAB Standard, 115V/60 Hz	\$1200.00
730-2129-000	SP-0003 — same as above for 240V/50 Hz	1320.00
730-2030-000	SP-0004 Stereo Playback, NAB A, AA, B, BB size carts, 1000/150/8000 Hz cue tones, cue sensing per NAB Standard, 115V/60 Hz	1360.00
730-2130-000	SP-0004 — same as above for 240V/50 Hz	1480.00
730-2054-000	SR-0001 Rack Mount Kit for one SP Machine, 19" wide by 7" high (4 rack increments)	35.00
730-2123-000	DR-0003 Rack Mount Kit for two SP Machines, 19" wide by 7" high (4 rack increments)	28.50



TAPE CARTRIDGE EQUIPMENT

PREMIUM SERIES SPECIFICATIONS

STOCK NUMBER		PRICE
730-1974-000	WP-0003 Mono Playback, NAB A, AA, B, BB, C, CC size carts, 1000/150/8000 Hz cue tones, cue sensing per NAB Standard, 115V/60 Hz	\$1365.00
730-2131-000	WP-0003 — same as above for 240V/50 Hz	1485.00
730-2056-000	WP-0004 Stereo Playback, NAB A, AA, B, BB, C, CC size carts, 1000/150/8000 Hz cue tones, cue sensing per NAB Standard, 115V/60 Hz	1525.00
730-2132-000	WP-0004 — same as above for 240V/50 Hz	1645.00
730-1929-000	NR-0002 Rack Mount Kit for one WP Machine, 19" wide by 7" high (4 rack increments)	15.00
730-1985-000	RP-0003 Mono Record/Playback, NAB A, AA, B, BB, C, CC size carts, 1000/150/8000 Hz cue tones, cue sensing per NAB Standard, 115V/60 Hz	2155.00
730-2133-000	RP-0003 — same as above for 240V/50 Hz	2275.00
730-1975-000	RP-0004 Stereo Record/Playback, NAB A, AA, B, BB, C, CC size carts, 1000/150/8000 Hz cue tones, cue sensing per NAB Standard, 115V/60 Hz	2550.00
730-2134-000	RP-0004 — same as above for 240V/50 Hz	2670.00
730-1929-000	NR-0002 Rack Mount Kit for one RP Machine, 19" wide by 7" high (4 rack increments)	15.00
730-2103-000	3D-0003 Mono 3-Deck Playback, NAB A, AA, B, BB size carts, 1000/150/8000 Hz cue tones, cue sensing per NAB Standard, bottom deck convertible to record/playback operation with external WRA Recording Amplifier, 115V/60 Hz	2745.00
730-2135-000	3D-0003 — same as above for 240V/50 Hz	2865.00
730-2104-000	3D-0004 Stereo 3-Deck Playback, NAB A, AA, B, BB size carts, 1000/150/8000 Hz cue tones, cue sensing per NAB Standard, bottom deck convertible to record/playback operation with external WRA Recording Amplifier, 115V/60 Hz	3225.00
730-2136-000	3D-0004 — same as above for 240V/50 Hz	3345.00
730-2124-000	SR-0004 Rack Mount Kit for one 3D Machine, 19" wide by 12.25" high (7 rack increments)	60.00
730-2125-000	SA-0014 Rack Mount Kit for two 3D Machines, 19" wide by 12.25" high (7 rack increments)	70.00
730-2121-000	WRA-0003 Mono Recording Amplifier, 1000/150/8000 Hz cue tones, includes interconnecting cable and record head for 3D lower deck, 115V/60 Hz	1015.00
730-2139-000	WRA-0003 — same as above for 240V/50 Hz	1015.00
730-2122-000	WRA-0004 Stereo Recording Amplifier, 1000/150/8000 Hz cue tones, includes interconnecting cable and record head for 3D lower deck, 115V/60 Hz	1250.00
730-2140-000	WRA-0004 — same as above for 240V/50 Hz	1250.00
730-2054-000	SR-0001 Rack Mount Kit for one WRA Unit 19" wide by 7" high (4 rack increments)	35.00
730-2123-000	DR-0003 Rack Mount Kit for two WRA Units 19" wide by 7" high (4 rack increments)	28.50
730-2126-000	SA-0028 Rack Mount Kit for one 3D Machine and one WRA Recording Amplifier, 19" wide by 12.25" high (7 rack increments)	170.00
730-2127-000	MP-0009 Audio Mixing Circuit for three outputs of 3D or other cart machines, 3:1 mono resistive combiner with 9.5 dB loss, two required for stereo machines	30.00
730-2128-000	AS-0001 Audio Switcher, 3:1 relay switcher for stereo or mono 3D or other cart machines	175.00
730-1928-000	RPD-0013 Mono Profanity Delay Record/Playback, NAB A, AA, B, BB, C, CC size carts, 1000/150/8000 Hz cue tones, cue sensing per NAB Standard, 115V/60 Hz	2550.00
730-2141-000	RPD-0013 — same as above for 240V/50 Hz	2670.00

Prices and Specifications Subject to Change Without Notice.

AUDIO RECORDER/REPRODUCER

770 SERIES

2 Year warranty on parts and factory labor

Designed for Broadcasters!

Broadcasters have expressed a need for reel-to-reel equipment that is (1) thoroughly professional in performance and operating flexibility, (2) rugged and reliable enough to run 24 hours a day, (3) engineered to need only a minimum of maintenance and (4) moderately priced.

This equipment is now a reality in the 770 Series. The overall objective was to provide a professional reel-to-reel which would be competitive in price with "semi-professional" or "consumer" machines. All efforts have been channeled into constructing the 770 as a durable, reliable, practical machine. The result is the lowest possible selling price on an open reel unit that can withstand the stress of continuous broadcast operation.

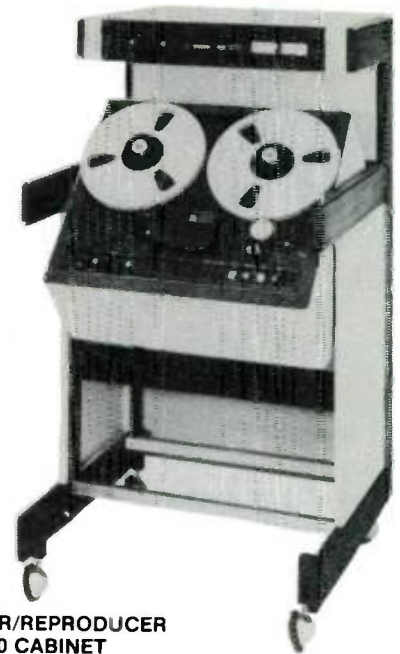
Improvements Abound!

The 770 has been designed to be problem free and reliable. All areas subject to wear, operator use and abuse, and other problem causing circumstances have been researched and given special attention. Reliability and performance are enhanced by:

- **Disc Brakes**—Provide positive, reliable braking
- **Cast Stainless Steel Turntables**—Allow for stable, non-slip positioning of tape reels with locating pins that are virtually indestructible
- **Heavy-Duty Pushbutton Switches**—Smooth actuation and rugged mounting arrangement will provide long, trouble free life
- **D.C. Servo Capstan Motor**—Servo design reduces wow and flutter and minimizes heat dissipation
- **Specially Designed Relays**—Designed to protect against arcing and contact wear
- **Serviceability**—Separates the pros from the consumer-types. All mechanical and electromechanical assemblies are easily accessible and simple to adjust. Electronics are convenient to service utilizing motherboard, daughterboard construction
- ½ inch tooling plate aluminum deck for stability
- Individual reel drive motors with permanently lubricated ball bearings
- Precision fixed tape guides
- Built-in foil sensing
- Micro-adjust head assemblies
- Flip-top head cover
- Self-aligning polyurethane pressure roller
- Handles both large (10½") and small (7") reels
- Front panel headphone monitor
- Capable of fully remote operation
- 600 ohm output
- Rack Mountable
- Console Cabinet (optional)
- 25 Hz Detector (optional)

Recorder Features:

- Balanced input and output transformers
- Motion sensing
- Meter switching
- PRS (Play, Record Synchronization)



**770 RECORDER/REPRODUCER
IN 864-0014-010 CABINET**

770 Series 10½ Inch Recorder/Reproducers

	110 Volt 60 Hz
855-7714 Full Track Monophonic, 3¼ - 7½ IPS	\$2730.00
855-7715 Full Track Monophonic, 7½ - 15 IPS	2730.00
855-7724 ½ Track Monophonic, 3¼ - 7½ IPS	2730.00
855-7725 ½ Track Monophonic, 7½ - 15 IPS	2730.00
855-7734 ½ Track Stereophonic, 3¼ - 7½ IPS	3085.00
855-7735 ½ Track Stereophonic, 7½ - 15 IPS	3085.00
855-7744 ¼ Track Stereophonic, 3¼ - 7½ IPS	3425.00
855-7745 ¼ Track Stereophonic, 7½ - 15 IPS	3425.00

770 Series 10½ Inch Reproducers

	110 Volt 60 Hz
856-7714 Full Track Monophonic, 3¼ - 7½ IPS	\$1650.00
856-7715 Full Track Monophonic, 7½ - 15 IPS	1650.00
856-7724 ½ Track Monophonic, 3¼ - 7½ IPS	1650.00
856-7725 ½ Track Monophonic, 7½ - 15 IPS	1650.00
856-7734 ½ Track Stereophonic, 3¼ - 7½ IPS	1650.00
856-7735 ½ Track Stereophonic, 7½ - 15 IPS	1650.00
856-7744 ¼ Track Stereophonic, 3¼ - 7½ IPS	1650.00
856-7745 ¼ Track Stereophonic, 7½ - 15 IPS	1650.00

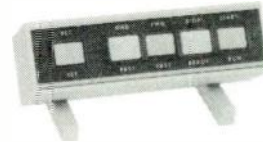
770 Series Accessories

833-0018-200 25 Hz Cue Detector	\$165.00
864-0014-010 Console Cabinet	650.00
864-0015-000 Add-On Stacking Kit	75.00
281-0014-012 1¾ Inches Filler Panel	12.50
833-0013-370 Remote Control for 770 Reproducer	260.00
833-0013-380 Remote Control for 770 Recorder/Reproducer	275.00
830-0022-021 Alignment Gauge	21.00
831-0075-003 Reproducer Test Extender	26.50
831-0119-003 Recorder Test Extender	28.75
878-0069-000 AT-0002 Audio Output Transformers	40.00

AUDIO RECORDER/REPRODUCERS



855 Monophonic with Optional Remote Control



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 10½ 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 3¾-7½ or 7½-15 IPS.

A prime example of the integrity built into the 850 Series is the aluminum tool and jig plate deck. This ½ 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.

850 SERIES

850 Series 10½ Inch Recorder/Reproducers

855-0001	Full Track Monophonic, 7½-15 IPS	\$4385.00
855-0002	Full Track Monophonic, 3¾-7½ IPS	4385.00
855-0003	½ Track Monophonic, 7½-15 IPS	4385.00
855-0004	½ Track Monophonic, 3¾-7½ IPS	4385.00
855-0005	½ Track Stereophonic (Two Channel), 7½-15 IPS	5240.00
855-0006	½ Track Stereophonic (Two Channel), 3¾-7½ IPS	5240.00
855-0007	¼ Track Stereophonic (Two Channel), 7½-15 IPS	5435.00
855-0008	¼ Track Stereophonic (Two Channel), 3¾-7½ IPS	5435.00

850 Series 10½ Inch Reproducers

856-0001	Full Track Monophonic, 7½-15 IPS	\$3520.00
856-0002	Full Track Monophonic, 3¾-7½ IPS	3520.00
856-0003	½ Track Monophonic, 7½-15 IPS	3520.00
856-0004	½ Track Monophonic, 3¾-7½ IPS	3520.00
826-0005	½ Track Stereophonic (Two Channel), 7½-15 IPS	3885.00
856-0006	½ Track Stereophonic (Two Channel), 3¾-7½ IPS	3885.00
856-0007	¼ Track Stereophonic (Two Channel), 7½-15 IPS	4070.00
856-0008	¼ Track Stereophonic (Two Channel), 3¾-7½ IPS	4070.00

Special Accessories for 850 Reel-to-Reel Equipment

832-0232-000	Micro Mark Tape Editing Marker	\$ 75.00
864-0014-000	Console Cabinet	650.00
864-0015-000	Add-On Stacking Kit	75.00
281-0014-012	1¾ Inches Filler Panel	12.50
833-0013-350	Remote Control for 850 Reproducer	260.00
833-0013-360	Remote Control for 850 Recorder/Reproducer	275.00
831-0054-013	25 Hz Cue Detector	130.00
878-0032-000	Test Extender Kit	70.00

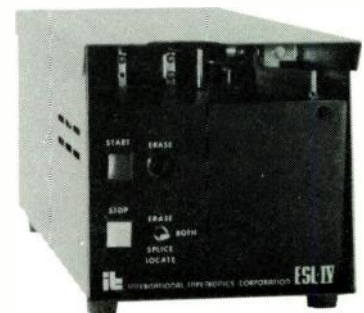
ESL-IV SERIES

ESL-IV Cartridge Tape Eraser/ Splice Locator

Combines cartridge erasing and splice locating in a single, automatic operation.

Eraser/Splice Locator accepts the NAB "A" size cartridge.
Table top mounting, 117v/60 Hz AC.

\$720.00





PROFESSIONAL SERIES

MODEL 4301B BROADCAST MONITOR

Accurate, smooth reproduction 45 to 15,000 Hz, ± 3 dB

88 dB SPL at 1 meter with a 1-watt input

Components: 200 mm (8 in) low frequency loudspeaker, 36 mm (1.4 in) high frequency direct radiator

Balance control located behind the removable grille

Oiled walnut enclosure

\$213.00



Model 4312 Control Monitor

Smooth, powerful, wide-range response within a compact enclosure

Components: 300 mm (12 in), long excursion, low frequency loudspeaker

130 mm (5 in) midrange loudspeaker; 36 mm (1.4 in) high frequency direct radiator

Mirror-imaged for better stereo imaging

90° dispersion allows vertical or horizontal placement

If ordered singly specify left or right

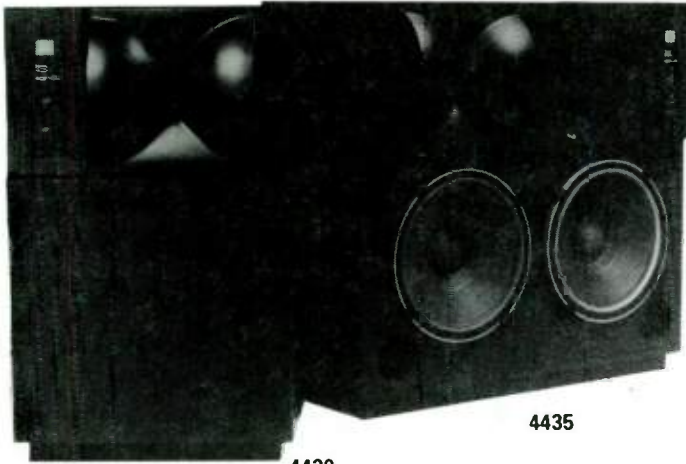
\$378.00

Model	Frequency Response (* 3 dB)	Power Capacity (Continuous Sine Wave)	Nominal Impedance	Sensitivity 1 W, 1m (3.3 ft.)	Crossover Frequencies	Enclosure Volume	Exterior Dimensions (Height x Width x Depth)	Net Weight
4301B	45Hz-15KHz	15 W	8 Ω	88 dB SPL	2500 Hz	28 L 1 ft ³	(mm) 483 x 292 x 306 (inches) 19 x 11½ x 12¼	16 Kg 16 lb.
4312	45Hz-15Hz	80 W	8 Ω	91 dB SPL	1.5 KHz	40L 1.5 ft ³	(mm) 597 x 362 x 298 (inches) 23½ x 14¼ x 11¼	21 Kg 45 lb.
4411	45Hz-18KHz	150 W	8 Ω	90 dB SPL	1 KHz 4 KHz	40L 1.5 ft ³	(mm) 597 x 362 x 327 (inches) 23¼ x 14½ x 12¾	24 Kg 52 lb.
4430	35Hz-16KHz	300 W	8 Ω	93 dB SPL	1 KHz	0.14 m ³ 5 ft ³	(mm) 908 x 556 x 400 (inches) 35¾ x 21¾ x 15¾	*79.5 Kg *175 lb.
4435	30Hz-16KHz	375 W	8 Ω	96 dB SPL	100 HZ 1 Kz	0.28 m ³ 10 ft ³	(mm) 908 x 965 x 435 (inches) 35¾ x 38 x 17¼	*114 Kg *250 lb.

* Shipping Wt.

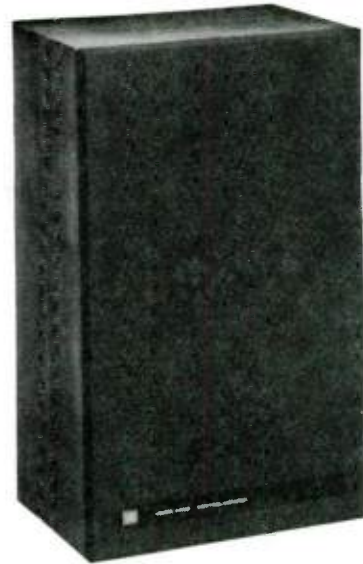
JBL

STUDIO MONITORS

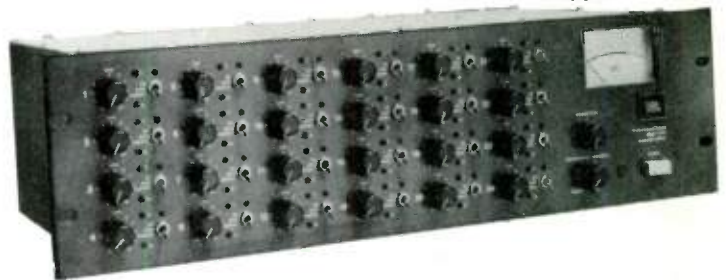


4430

4435



4411



7510

Model 7510 Automatic Microphone Mixer

- Program-actuated inputs • Automatic control of output level
- Automatic background noise discrimination • Expandable to 24 input channels • 15 dBm output at less than 0.2% THD

The JBL 7510 is a compact microphone mixer that provides up to 24 program-actuated input channels. Output level is automatically adjusted to provide a constant feedback margin regardless of how many microphones are active. Each input channel can be switched to a continuously actuated mode, an automatic, program-actuated mode, or an automatic override mode.

All of the 7510's functions are automatic. It requires no attention, no manual gain riding, once it has been adjusted, freeing the sound technician for other concerns.

Specialized Applications

The 7510 is an ideal mixer for any situation requiring multiple microphones with differing demands on each. For instance, in a meeting room, the chairperson's microphone can be set on Priority mode, allowing him or her to override any other speaker. In a house of worship, it will prevent excess ambient noise (which causes the sound to have a "hollow" quality) from getting into the sound system.

The 7510 can also be used as a very fast, high-quality noise gate. This has particular application in the recording studio, where it can improve the clarity from closely placed, multi-mic setups, and in concert sound reinforcement, where it can increase the overall system gain before feedback.

7510	Automatic Microphone Mixer, 4-Channel	\$1599.00
7510-01	Expansion Module, 4-Channel	636.00

JBL 4411 Control Monitor

The 4411 is a three-way system with the drivers arranged in a close cluster to permit close-in monitoring. Mirror imaging improves the stereo perspective. The mid and high frequency level controls are raised for convenience in making instant level adjustments, and the controls are calibrated to provide settings for both a flat direct-field pressure response and a rising axial response that produces a flatter power response. The low frequency driver loading is optimized for flat response when placed away from room surfaces. A rising bass response can be chosen by placing the monitors in proximity to a wall. The large port not only provides the proper loading, it maintains the low frequency dynamic range with its high volume velocity air-movement capabilities.

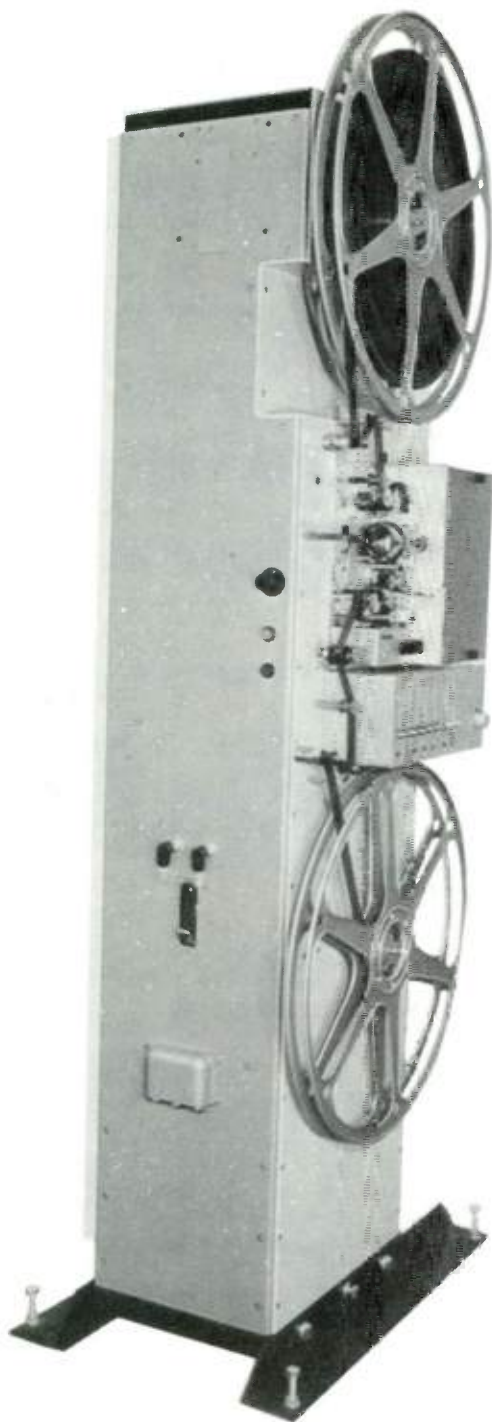
\$498.00

Models 4430 and 4435 Bi-Radial Studio Monitors

The practical benefits of the Bi-Radial monitors include stable stereo imaging that remains fixed over a wide range of horizontal positions, the result of unusually smooth off-axis response. The design allows considerable latitude in physical placement. The wide vertical response, identical to the horizontal, includes both standing and seated listeners within the coverage angle, even in proximity to the monitors.

4430	\$1098.00
4435	\$1500.00

Kinoton



ACCESSORIES

Dichroic Filter	\$265.00
Heat Filter	135.00
Still Frame	1215.00
Sound Drum Accelerator	670.00
Aperture Cleaner (air)	200.00
Conivel Panel Mounted on Projector	400.00
Proximity Sensor for Auto Stop	200.00
Torque Meters Upper and Lower Film Reels	3000.00
Rewind film on Machine	1600.00
TV Lens with Adjustable Iris —	
75, 80, 105, 110 mm	Price by Quotation
TV Lens without Iris —	
50 to 100 mm	Price by Quotation

16mm PROJECTOR

FP 18

The FP 18 basic Projector was developed for use in all situations where the quality of picture and sound demanded for 16mm film projection exceeds the capabilities of smaller equipment intended for the consumer market. The projector has been designed for heavy duty service in motion picture theatres, studios, TV stations and general purpose auditoria. It requires virtually no maintenance.

• Professional standard • High Precision picture stability • Uniform picture illumination • Extremely straight-forward installation • Remote control of all functions • 5000 ft. Film Spools • Weight compensating frictions • Scanning of optical and magnetic sound tracks • Additional equipment for 16mm perfortape • Special version for studio and television applications

Precision Projection and Film Protection The projector's extremely high picture stability (the vertical and horizontal deviation is less than 0.19%) is achieved by the unique Philips grooved disc mechanism. High light intensities are further enhanced by the curved film gate. The intermittent mechanism which has been specially developed for 16mm film, combined with the rotating disc-shaped shutter, results in a light efficiency of 72% and a very high light flux.

Optimal Sound Quality The optical sound head is identical to that used in professional 35mm and 70mm equipment. A rotating sound drum machined to the highest standards of precision and provided with a pressure roller guarantees that 'wow' and 'flutter' remain less than 0.2%. A lever automatically shifts the sound head to the correct position for scanning magnetic sound tracks if required.

Various Versions and Assemblies The FP 18 Projector can be equipped in the factory, or by the user after delivery with a wide range of supplementary facilities to incorporate the following operational features: • Reproducing optically recorded sound tracks • Reproducing optically and magnetically recorded sound tracks • Asynchronous or synchronous motors (110 volt, 60 Hz; 220 volt, 50 Hz) • Interlock or Rotosyn motors • Anamorphic lens holder, solenoid controlled if required • Remote control of focus and framing • Bracket for other makes of lamphouses • Two 24 volt 250 watt halogen lamps color temperature approximately 3300° K, ensuring a picture illumination with a uniformity in excess of 90% • 500 watt Xenon lamphouse • 700 watt to 1600 watt Xenon lamphouse • Built-in Xenon rectifier 500 watt to 1000 watt without amplifier • Exciter lamp rectifier, pre-amplifier and line amplifier as above, but additionally with output amplifier • Additional 16mm perfortape equipment • Special version for studio and television purposes

Code No.	Description	Price
0010 180 00000	Projector FP 18 rack mounting with pedestal feet film run mechanism 16 mm compl. forward and reverse running optical sound device with solar cell and exciter lamp picture change-over relay spool shafts 1500 m. plug-in pushbutton panel	\$ 12,235.00
0010 181 00000	Projector FP 18 as above with magnetic sound head	12,815.00
	WITH MOTOR	
0010 ... 3 ...	synchronous 100/250 V, 50Hz, 24p/s	590.00
0010 ... 4 ...	synchronous 100/250 V, 50Hz, 25 p/s	590.00
0010 ... 5 ...	synchronous 100/250 V, 60Hz, 24 p/s	600.00
0010 ... 8 ...	synchronous 100/250 V, 60 Hz and seilsyn motor	2,284.00
0010 ... 1 ...	holder for anamorphic lens	295.00
0010 ... 2 ...	holder for anamorphic lens motorized	720.00
0010 ... 1 ...	with remote focusing device	472.00
0010 ... 2 ...	with remote focusing and remote framing device	1,080.00
0010 ... 1 ...	with lamphouse support	560.00
0010 ... 2 ...	with halogen lamphouse with transformer, automatic change of lamps and 2 halogen lamps, 24V, 250 W	2,400.00
0010 ... 3 ...	with xenon lamphouse 500 W	2,080.00
0010 ... 4 ...	with xenon lamphouse 500 W and built-in power supply	4,635.00
0010 ... 5 ...	with xenon lamphouse 700/1600 W dichroic mirror	3,420.00
0010 ... 6 ...	with xenon lamphouse 700/1600 W dichroic mirror and built-in power supply	6,048.00
0010 ... 0 ...	WITHOUT AMPLIFIERS	
0010 ... 1 ...	with built-in preamplifiers optical and magnetic sound and non-sync. and exciter lamp power supply, line amplifier 8 dB	1,200.00
0010 ... 2 ...	with built-in preamplifiers optical and magnetic sound and non-sync. and exciter lamp power supply, power amplifier 50 W	1,675.00
0080 818 31400	magnetic recording head, built-in	731.00
0080 818 31410	amplifier set for recording	1,111.00

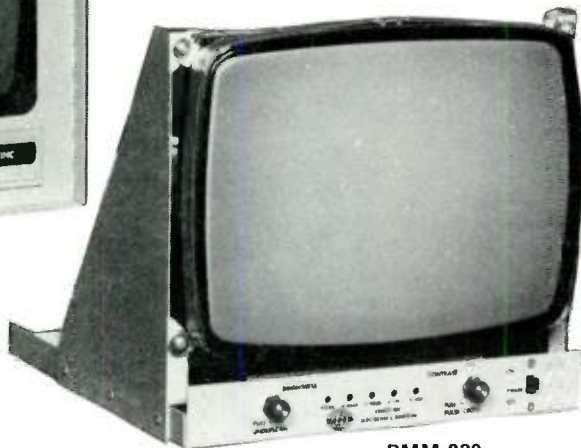


LENCO, INC., ELECTRONICS DIVISION

VIDEO MONITORS



PMM-911



PMM-920



PMM-942

Professional Quality

PMM-900 Series

Monochrome Monitors

FEATURES:

- Professional Quality
- Modular Construction
- Cross Pulse Option
- 900 Line Resolution
- Underscan 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 CCIR scan rates.

9" VIDEO MONITORS

PMM-910 Chassis Only	\$775.00
PMM-911 Cabinet	825.00
PMM-912 Dual 9" units, Rack Mount	1575.00
PMM-913 Rack Mount, Right Side Blank	880.00
PMM-914 Rack Mount, Left Side Blank	880.00
PMM-915 Rack Mount for TEK 529 or 1480 Right Side	880.00
PMM-916 Rack Mount for TEK 529 or 1480 Left Side	880.00
PMM-917 Rack Mount for Tek 528 on Right Side	900.00
PMM-918 Rack Mount for Tek 528 on Left Side	900.00

12" VIDEO MONITORS

PMM-920 Chassis Only	\$825.00
PMM-925 Cabinet Slimline	905.00

15" VIDEO MONITORS

PMM-930 Chassis Only	\$850.00
PMM-931 Cabinet	925.00
PMM-932 Rack Mount	995.00

19" VIDEO MONITORS

PMM-940 Chassis Only	\$980.00
PMM-942 Rack Mount	1155.00
PMM-945 Cabinet Slimline	1200.00

MONITOR OPTIONS

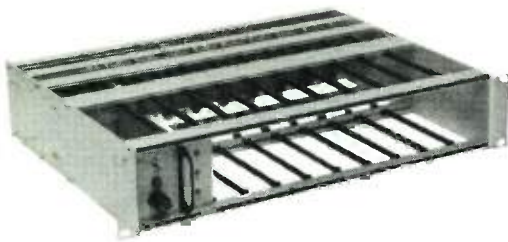
PMM-001 Module Extender Set (HV module and standard module)	\$45.00
PMM-002 15" Monitor Ceiling Mounting Kit	85.00
PMM-003 19" Monitor Ceiling Mounting Kit	85.00
PMM-004 Rack Mounting Kit for PMM-925	50.00
PMM-005 Pulse Cross	195.00
PMM-006 Underscan	125.00
PMM-007 Crosstalk Shield Kit for PMM-912 Monitors	50.00
PMM-009 Rack mounting kit for PMM-945	70.00

MONITOR REPLACEMENT MODULES

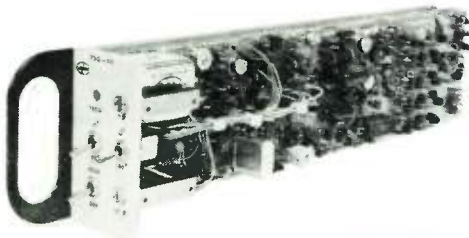
PMM-901 Power Supply/Regulator	\$145.00
PMM-902 Video/ Sync Amplifier	165.00
PMM-903 Vertical Deflection	150.00
PMM-904 Horizontal Deflection	145.00
PMM-905 High Voltage Supply	165.00
PMM-906 Vertical Deflection w/ Pulse Cross	225.00



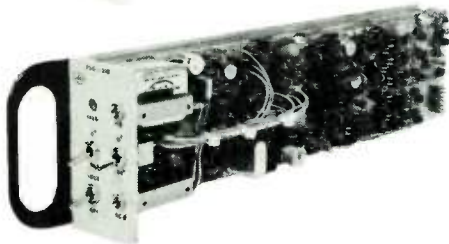
LENCO, INC., ELECTRONICS DIVISION



PFM-300



PSG-310



PSG-311

PFM-300—300 System frame and Power Supply \$675.00
PFM-301—300 System Master Sync Generator Frame, e/w Dual Power Supplies. For PSG-312 only \$1295.00

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.

ACCESSORIES:

PPS-302—Spare Power Supply for PFM-300 Frame \$100.00
PBL-305—300 Series Blank Panel—Single Width \$ 8.00
PBL-306—300 Series Blank Panel—Double Width \$10.00
PEX-308—300 Series Extender Board \$38.00
PEX-309—300 Series Extender for Double Width Units \$78.00

PSG-310 DIGITAL COLOR SYNC GENERATOR W/RS-170 GENLOCK \$1095.00

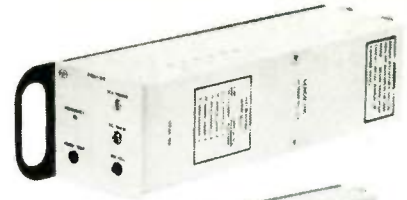
The PSG-310 Digital Color Sync Generator exemplifies the latest in design techniques of digital engineering. The unique circuit allows us to offer an ultra-stable and trouble free generator, with exclusive features not normally found in broadcast quality equipment.

OPTION 1: Variable Blanking Width Assembly \$130.00

PSG-311 DIGITAL COLOR SYNC GENERATOR \$1095.00

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 VTR's or other equipment that supplies unstable time base signals.

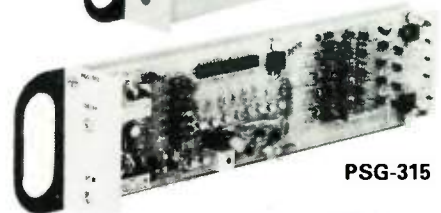
TERMINAL EQUIPMENT



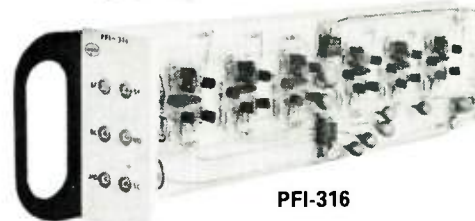
PMG-312



PFT-314



PSG-315



PFI-316

PMG-312 MASTER SYNC GENERATOR \$2500.00

The PMG-312 is a professional Master Color Sync Generator designed to meet the most demanding specifications for performance and stability. The design criterion was to provide a high quality master color sync generator that includes all the features desired by the discerning engineer. Utilization of the latest state of the art techniques are incorporated in the PMG-312.

PFT-314 FRAME TIMING MODULE \$975.00

The PFT-314 basically has the same system responsibility as its sister unit, the PGS-315 Generator Substitute unit. That is, its primary function is to receive an external signal and supply the PFM-300 Frame mother board with all the six drive signals. The PFT-314 has major differences: The input signal is a Composite Reference Signal (CRS) instead of individual drive signals; provides a complete set of output signals for use external to the frame; has advance timing capabilities instead of just delay, and subcarrier is phase locked to H Sync.

PGS-315 SYNC GENERATOR SUBSTITUTE \$525.00

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.

PFI-316 FRAME INTERFACE \$300.00

The PFI-316 Frame Interface module is a unique and inexpensive way of allowing an external generator to supply signals to the PFM-300 Frame. It has the primary function of replacing the PSG-310 or PSG-311 when external drive pulses are available to the PFM-300 Frame. The PFI-316 accepts SYNC, BLANKING, H-DRIVE, V-DRIVE, SUBCARRIER, and BURST FLAG from an external source for proper distribution to the mother board busses in the frame. There are no delay circuits in the PFI-316. Its function is simply to apply the proper level and impedance of each signal to the Frame.



LENCO, INC., ELECTRONICS DIVISION

TERMINAL EQUIPMENT



PCO-317



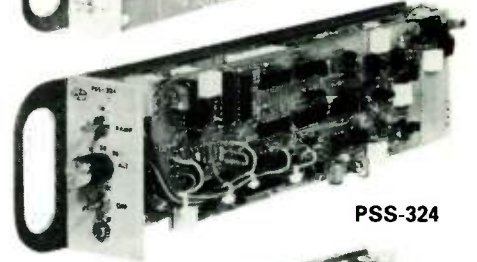
PBB-321



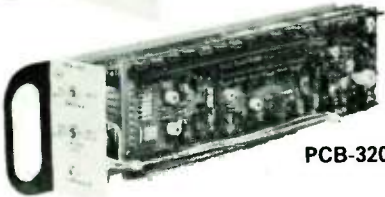
PPB-325



PBD-322



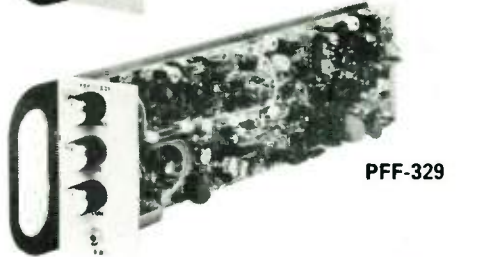
PSS-324



PCB-320



PMB-323



PFF-329

The 300 System (continued)

PCO-317 AUTOMATIC SYNC CHANGEOVER SWITCH \$575.00

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.

PCO-318—Automatic Sync Generator Changeover w/Black Burst (for PFM-301 frame only) (not shown) **\$850.00**

Option 1 Black Burst Generator, (for PCO-318 only). **\$200.00**
Option 2 Remote Control for PCO-318 **175.00**

PCB-320 ENCODED COLOR BAR GENERATOR \$995.00

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.

PBB-321 BLACK BURST GENERATOR \$595.00

The Lenco PBB-321 Black Burst Generator is a precision professional broadcast quality Black Burst Generator that provides a "Color Black" video signal composed of composite sync, set-up and color burst. This signal is used as the black reference input to switching systems, cameras or may be used as a signal source to genlock remote sync generators to "House" sync.

PBD-322 BAR DOT/VISUAL REFERENCE GENERATOR \$875.00

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.

PMB-323 MULTIBURST/SWEEP GENERATOR \$995.00

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.

PSS-324 STAIRSTEP/RAMP GENERATOR \$925.00

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 feature of the generator is a negative signal for all combinations of test signals. This is a very important function 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.

PPB-325 SIN² PULSE WINDOW GENERATOR \$1095.00

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 and 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.

PFF-329 BLACK BURST/BACKGROUND GENERATOR \$650.00

The Black Burst section of the PFF-329 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.

Prices and Specifications Subject to Change Without Notice.

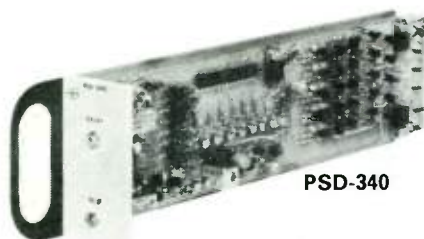
World Radio History

 HARRIS



LENCO, INC., ELECTRONICS DIVISION

TERMINAL EQUIPMENT



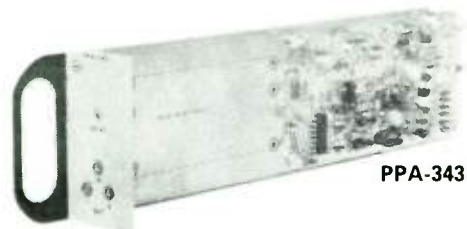
PSD-340



PSA-346



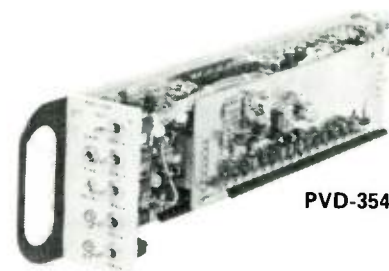
PVA-350



PPA-343



PST-341



PVD-354

The 300 System (continued)

PSD-340 SYSTEM DELAY MODULE

\$550.00

The PSD-340 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.

PST-341 SYSTEM TIMING MODULE

W/OPTIONAL BLACK BURST OUTPUT

\$975.00

The PST-341 System Timing Module is a new generation of system timing equipment added to the "300 SYSTEM". It not only has delay, but advance as well. The PST-341 requires the Composite Reference Signal (CRS), from the PMG-312 Master Sync Generator via the PFM-300 Frame mother board. This Composite Reference Signal supplies Master Sync Generator timing information to the PST-341 for the purpose of system distribution and timing.

PBT-342 BLACK BURST TIMING

\$995.00

The PBT-342 Blackburst Timing Module not only has delay, but advance as well. The PBT-342 requires the Composite Reference Signal (CRS) from the PMG-312 Master Sync Generator via the PFM-300 Frame mother board. This Composite Reference Signal supplies Master Sync Generator timing information to the PBT-342 for the purpose of system distribution and timing of blackburst required devices.

PPA-343 PULSE DISTRIBUTION AMPLIFIER

\$275.00

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.

OPTION 1: Pulse Delay Assembly for PPA-343

\$125.00

PSA-346 SUBCARRIER DISTRIBUTION AMPLIFIER

\$395.00

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.

PVA-350 VIDEO DISTRIBUTION AMPLIFIER

\$290.00

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.

OPTION 1: Feedback Clamp Assembly

\$110.00

OPTION 2: Cable Equalizer Assembly

\$85.00

OPTION 3: Sync Adding Assembly

\$50.00

PVD-354 VARIABLE DELAY VIDEO AMPLIFIER

\$950.00

The PVD-354 Variable Delay Amplifier is a precision device that has widespread system applications when quality and accuracy of video timing is desired. Most passive video display devices have a very sharp frequency roll-off above 5 MHz and show an insertion loss of about 6 dB. This requires the use of a video distribution amplifier with enough gain to bring the signal up to normal. The PVD-354, however, is a wideband device that has no insertion loss, and will provide up to 537 μ S of equalized video delay, with infinite resolution of delay setting. An option to the PVD-354 is a plug-in board that will provide a maximum of 1.051 μ S of video delay.

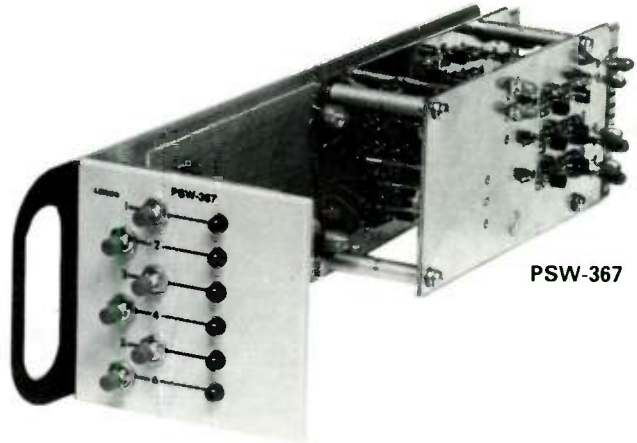


LENGO, INC., ELECTRONICS DIVISION

TERMINAL EQUIPMENT



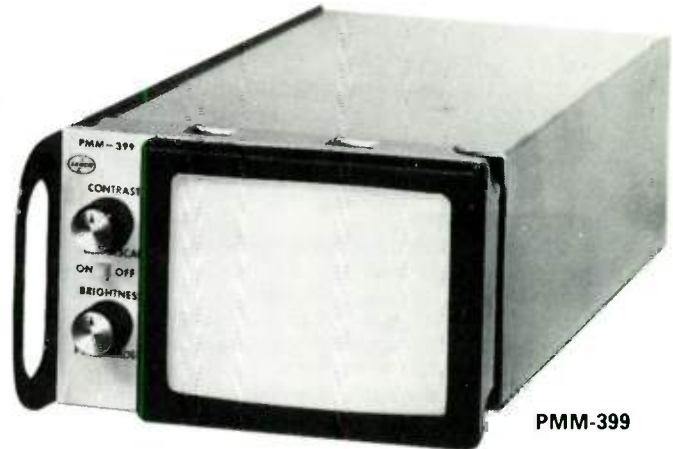
PCD-363



PSW-367



PFO-364



PMM-399

THE 300 SYSTEM (continued)

PCD-363 NTSC CHROMA DECODER \$2085.00

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 line recording, large screen display, chroma keying, or other uses where RGB signals are required from a composite NTSC color source.

PFO-364 UNIVERSAL AMPLIFIER \$350.00

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.

PSW-365 PROCESSOR AMPLIFIER W/SYNC GENERATOR \$1875.00

The PSW-365 Processor Amplifier is a high quality, precision, self contained processing device that is as completely unique in its method of operation as it is in its size. The outstanding features of the PSW-365 testify to the superior engineering and packaging techniques found throughout the 300 System.

PSW-367 6 x 1 TEST SET SWITCHER \$525.00

The PSW-367 6 x 1 Test Switcher was designed to provide a unique and economical method of selecting the various output signals from the test signal generators that may be installed in the PFM-300 Frame. In addition to the six test module signals, provisions have been included to allow the PSW-367 to switch to either the "Gen-lock Video" or one other external video source. The PSW-367 will switch during the vertical interval and the LED display will constantly monitor the switch status.

PMM-399 4" ENGINEERING VIDEO MONITOR \$650.00

Lenco has introduced a new concept in video monitoring. An addition to the "300 System" making it the industry's most sensible system. The PMM-399 is a high quality monochrome monitor using a 4" screen for engineering evaluation of the video signal. It offers high resolution performance that makes it ideal for camera and tape monitoring over a wide range of applications. In mobil van or permanent studio applications, the PMM-399 provides an economical, yet high quality monitoring system for broadcast, industrial and educational production system engineers.



LENCO, INC., ELECTRONICS DIVISION

TERMINAL EQUIPMENT



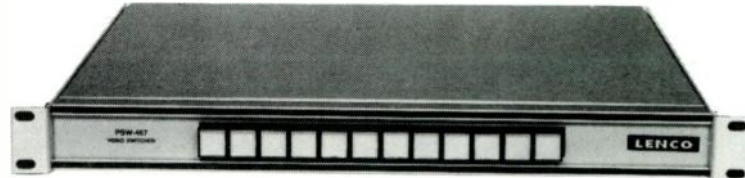
VNM-428



PCE-462



PVS-430



PSW-467

THE 400 SERIES

PGL-413 GENLOCK UNIT

\$2500.00

The PGL-413 is a self-contained genlock unit designed to lock two non-synchronous video signals. This genlock unit provides a wide range of applications such as: genlocking video signals from two mobile trucks, timing and phasing systems, and converting VTR playback to RS-170A requirements.

VNM-428 VIDEO NOISE METER

\$1900.00

The Lenco Model VNM-428 Video Noise Meter is a patented device which utilizes a unique and different principle of operation than any other instrument now in use.

Little attention has been directed to noise measurements until recent years. In today's highly competitive television industry, noise performance has become one of the most significant parameters considered when evaluating visual performance.

PVS-430 VIDEOSCOPE

\$3125.00

The Lenco PVS-430 VIDEOSCOPE provides the first graphic method for certifying the correct SC/H Phase relationship. The PVS-430 VIDEOSCOPE will very accurately measure the SC/H Phase relationship of any video source. It also compares horizontal and subcarrier phase at the switcher output for precise and accurate system timing. In an editing system the VIDEOSCOPE can be used to determine the correct SC/H at time of recording.

PCE-462 NTSC COLOR ENCODER W/COLOR BAR GENERATOR

\$2500.00

The PCE-462 is a compact stable encoder, designed to meet or exceed the most demanding of professional broadcast and teleproduction requirements. It produces an NTSC/EIA color signal from either a three (RGB) or four (RGBY) video source. The fourth of luminance channel input is an optional plug-in circuit board. A precision RS-189 full or split field color bar generator is provided to simplify system set-up and maintain levels without constant re-adjustment. The PCE-462 features differential input amplifiers and video clamping to eliminate low frequency noise and color errors.

PCE-4621 PLUG-IN LUMINANCE CHANNEL FOR PCE-462

\$275.00

PAF-467 AUDIO FOLLOW BRIDGING SWITCHER

\$835.00

The PAF-467 is a 12 x 1 Audio Follow Switcher designed as a companion to the PSW-467 Video Switcher. The PAF-467 was engineered to exacting broadcast specifications with the emphasis on quality and versatility. A major influence to the design of the switcher, and particularly the multiple remote capabilities, was the growing demand for two or more audio switchers operated from one video switcher. Applications such as switching video, audio, and SMPTE time code at the same time, or stereo audio and SMPTE time code are only a few examples of the versatility of the 467 system. One PSW-467 video switcher can control ten or more PAF-467 audio switchers should system requirements dictate.

PSR-467 REMOTE CONTROL

\$535.00

The PSR-467 Remote Control is a self-contained rack mounted unit that, because of the digital technique used, can be located at least 1000 feet away from the switcher location. It requires no external power source as it receives its power from the PSW-467 Video Switcher.

PSR-4673 REMOTE CONTROL P.C. BOARD ASSEMBLY

\$170.00

PSW-467 VERTICAL INTERVAL BRIDGING SWITCHER

\$1230.00

The PSW-467 is a 12 input, dual output vertical interval bridging switcher designed to efficiently and economically route or delegate video signals. Applications include VTR source selection, monitor input selection, distribution of classroom video, special effects key switching, or general patching. The PSW-467 switcher is capable of remote control using the associated PSR-467, and audio follow using the PAF-467 unit.

The PSW-467 was engineered with a loop-thru input of extremely high impedance and low capacitance that has a negligible loading effect on the input signal allowing the "stacking" of many switchers together providing a routing switcher that is versatile, expandable, and most important, economical.

PSW468

12 x 1 V.I. VIDEO SWITCHER WITHOUT PUSHBUTTONS \$1000.00

PDM-470 DEMODULATOR

\$1250.00

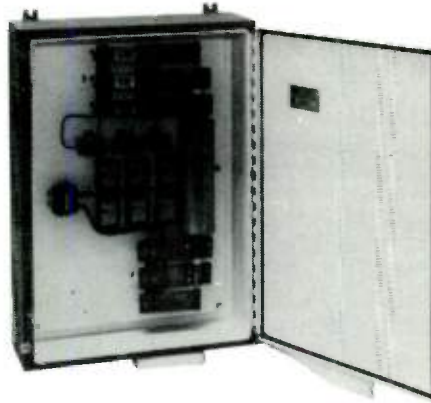
The PDM-470 Demodulator was designed specifically for the convenience of RF to video interface. The unit is not intended for precision transmitter measurements, but engineered for remote trucks, maintenance shops, transmitter sites, and studio control rooms where just a good picture is required. When the PDM-470 is combined with Lenco's PGL-413 Genlock unit, any RF television signal not only can be converted to the RS-170A standards, but will lock to the house sync system as well.



Lightning Elimination Associates, Inc.

SURGE ELIMINATORS

Surge Eliminators are multi-stage, series-hybrid devices. Normally passive in the circuit, the SE will detect, intercept, and dissipate the power surges that result from lightning strikes or machine-made disturbances.



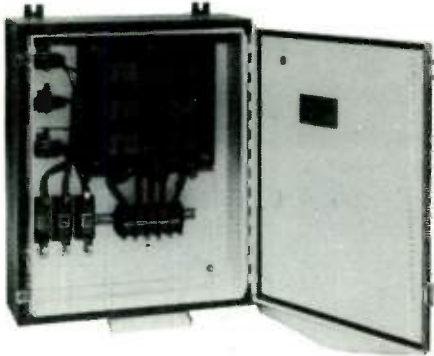
Heavy Duty, High-Current Applications

These Surge Eliminators will protect facilities that use hundreds-to-thousands of amperes of current. Normally, the components for this type of service are very heavy and bulky. However, LEA developed a triaxial choke that accomplishes the required functions with less than one-tenth the weight. These units intercept surge currents, cancel common mode disturbances, and outperform any other surge protector on the market. These units can be ordered with or without the NEMA-12 enclosure, and can be mounted in any position.



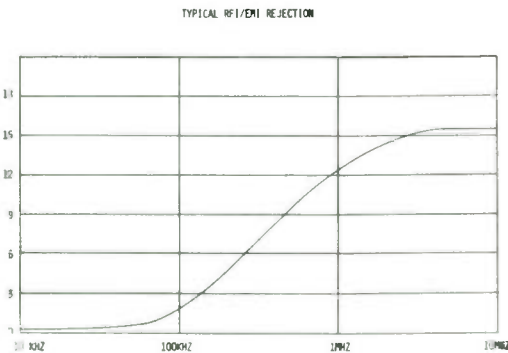
Light Duty, Plug-In Protectors

These will protect any equipment that can be plugged into a grounded receptacle, in locations (such as suburban areas) where they will not be exposed to the full force of the lightning strike. They are packaged in a hammertone metal NEMA-12 weatherproof enclosure that measures 8 x 6 x 4 inches, and may be ordered with one, two, or four receptacles. The plug-in protectors can be mounted in any position, and are indicated by the "S" suffix in the Selection Guide.

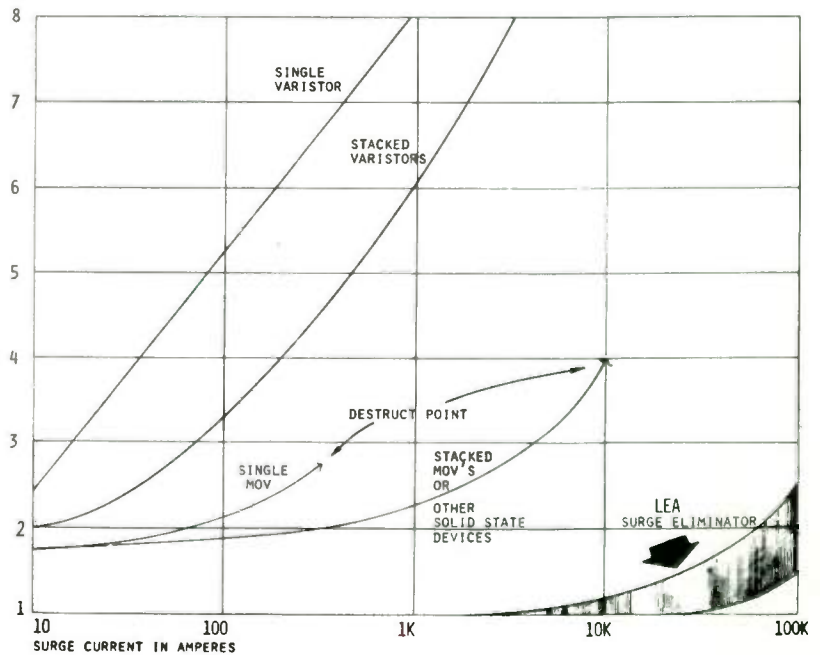


Heavy Duty, Medium-Current Applications

These will protect facilities from power surges caused by nearby lightning strikes to the power line, or by public utility switching or load changing. These units handle more surge energy than any other protector on the market, and yet provide tighter voltage control. To accommodate any type of service entrance, these units can be ordered with or without the NEMA-12 enclosure, and can be mounted in any position.



CLAMPING RATIO CHARACTERISTICS



Prices and Specifications Subject to Change Without Notice.

World Radio History





Lightning Elimination Associates, Inc.

SURGE ELIMINATORS

Surge Handling Capacity (per phase)

Load Current (Amps)	Max. Surge Current (Amps)	Energy Dissipated Internally (Joules)	Total System Energy Dissipated
1-20	25,000	1000	Varies from 10 to 1,000
30-60	60,000	2750	times more than internal
100-400	120,000	5800	capacity, depending on
600-4000	120,000	8800	SE model and ground characteristics.

- Response Time
- Clamping Ratio
- Maximum Reverse Leakage
- Useful Frequency Range
- Power Line Voltages
- Power Line Currents
- Temperature Range
- EMI Rejection
- Dimensions

- <5 Nanoseconds
- Refer to Curve
- 0.1 Milliampere RMS
- D.C. to 1000 HZ
- 110 Volts to 4160 Volts RMS*
- 1 Ampere to 4000 Amperes*
- 40°C. to + 85°C. (-40°F to 185°F)
- BI-Directional, Refer to Curve
- Refer to Selection Guide

*Other Values Available on Special Order

Selection Guide

FULL LOAD AMPERES	MODEL NO.	PRICE*	ENCLOSURE SIZE IN INCHES		
			H	W	D
110 Volts through 480 Volts RMS, Single Phase, Grounded Neutral					
10	SE- (**)-10BF	\$ 79.95	5 7/8 x 3 1/16"	2 1/4	
10	SE- (**)-10BFS	89.95	5 7/8 x 3 1/16"	2 1/4	
15	SE- (**)-15	358.00	8 x 10 x 4		
20	SE- (**)-20S	395.00	8 x 10 x 6		
30	SE- (**)-30	385.00	8 x 10 x 6		
60	SE- (**)-60	927.00	30 x 24 x 8		
100	SE- (**)-100	1338.00	30 x 24 x 8		
150	SE- (**)-150	1778.00	30 x 24 x 8		
200	SE- (**)-200	2173.00	30 x 24 x 8		
300	SE- (**)-300	2768.00	30 x 24 x 8		
Split Phase, Normally 120/240 Volts RMS, Three Wire					
30	SE- (**)-30	793.00	24 x 16 x 6 3/8		
60	SE- (**)-60	1558.00	30 x 24 x 8		
100	SE- (**)-100	2007.00	30 x 24 x 8		
150	SE- (**)-150	2611.00	36 x 24 x 8		
200	SE- (**)-200	3297.00	36 x 24 x 8		
300	SE- (**)-300	3647.00	36 x 24 x 8		
400	SE- (**)-400	4213.00	42 x 30 x 10		
208 Volts through 480 Volts RMS, Three Phase, Specify Wye or Delta					
30	SE- (**)-30	1205.00	24 x 16 x 6 3/8		
60	SE- (**)-60	1838.00	30 x 24 x 8		
100	SE- (**)-100	2684.00	30 x 24 x 8		
150	SE- (**)-150	3358.00	36 x 24 x 8		
200	SE- (**)-200	3965.00	42 x 30 x 10		
300	SE- (**)-300	4691.00	42 x 30 x 10		
400	SE- (**)-400	5890.00	42 x 30 x 10		
600	SE- (**)-600	7293.00	42 x 30 x 10		
1000	SE- (**)-1000	8503.00	48 x 30 x 12		
1500	SE- (**)-1500	9722.00	60 x 36 x 12		
2000	SE- (**)-2000	10,933.00	60 x 36 x 12		
600 Volts through 1100 Volts RMS, Three Phase, Specify Wye or Delta					
30	SE- (**)-30	2959.00	24 x 16 x 6 3/8		
60	SE- (**)-60	3531.00	30 x 24 x 8		
100	SE- (**)-100	3918.00	30 x 24 x 8		
150	SE- (**)-150	4451.00	36 x 24 x 8		
1200 Volts through 2500 Volts RMS, Three Phase, Specify Wye or Delta					
30	SE- (**)-30	3625.00	24 x 16 x 6 3/8		
60	SE- (**)-60	4252.00	30 x 24 x 8		
100	SE- (**)-100	4867.00	30 x 24 x 8		
150	SE- (**)-150	5706.00	36 x 24 x 8		

Harris Transmitter	LEA Surge Eliminator
FM-100K	SE-115-10BFS
FM-1K	SE-120/240-30 Single Phase
FM-2.5K	SE-120/240-30 Single Phase
FM-5K	SE-208-30 Three Phase
	or SE-240-30 Three Phase
FM-10K	SE-208-60 Three Phase
	or SE-240-60 Three Phase
FM-25K	SE-208-150 Three Phase
	or SE-240-150 Three Phase
	SE-360-100 Three Phase
MW-1-A	or SE-415-100 Three Phase
	SE-208-15 Single Phase
MW-5-A	or SE-260-15 Single Phase
	SE-208-60 Three Phase
	or SE-230-60 Three Phase
MW-10	or SE-380-30 Three Phase
	SE-200-100 Three Phase
	or SE-500-60 Three Phase
MW-50-A	or SE-350-60 Three Phase
	SE-430-60 Three Phase
	or SE-480-150 Three Phase
	or SE-380-200 Three Phase

*Prices are subject to change without notice.
 *Insert the actual line-to-line voltage required.
 Prices do not include installation.

Please note that the first number in our SE Model number is the line-to-line voltage. When ordering the actual line-to-line voltage should be specified. The second number is the rated full load line current.

On three phase units specify WYE or DELTA and where grounded or floating.

3M



D-3016



D-2500



D-2000

VIDEO CHARACTER GENERATORS

Model D-3016 Character Generator

The Model D-3016 is a self-standing, multi-page video character generator featuring a high resolution character display and two video channel outputs. It is designed for operation in professional television systems that require a quality titling/captioning capability.

The Model D-3016 is a complete titling facility. All necessary features are built into the unit, eliminating the requirement for add-on or plug-in options. This "complete" system concept, plus the use of only high-quality materials makes the D-3016 an inherently reliable device—a most important consideration for television use.

Two font styles are available for the Model D-3016; Video Gothic and Helvetica Semi-Bold. All are available in uppercase style, with matching lower-case characters. The Models D-3016 can accommodate — at one time — either two different upper-case font styles or a matching upper and lower case font.

Other features are Vertical Roll (3 speeds), Horizontal Crawl (3 speeds), Word Flash, Automatic Centering on a line-by-line basis, edge key output, and three-position Crawl/Title selection. Also low speed and high speed data input/output.

80-9430-1197-5. D-3016 Character Generator
(Specify one upper/lower case font or two upper case fonts below) \$7750.00

ACCESSORIES

80-9430-1017-5. D-3003 Audio Interface 600.00

Datafont Selections

80-9430-1212-2. Video Gothic Upper Case 650.00

80-9430-1214-8. Helvetica Bold Upper Case 650.00

80-9430-1213-0. Video Gothic Lower Case¹ 650.00

80-9430-1215-5. Helvetica Bold Lower Case¹ 650.00

80-9430-1220-5. Instruction Manual (one supplied) 50.00

¹Lower case includes math symbols and foreign language characters.

Model D-2500 Video Character Generator

The D-2500 is a multi-page Video Character Generator that features a high resolution graphic arts character display. It is designed for operating in professional television systems that require the highest quality in titling and captioning.

The D-2500 features a broadcast quality video mixer, 3 speed roll and crawl; three full font styles; internal 4-page 40-line random access memory; two character sizes; automatic centering; word flash; and 3 position 1 or 2 line title mode.

The Model D-2500 is a complete titling facility. All necessary features are built into the unit, eliminating the requirement for add-on or plug-in options. This "complete" system concept, plus the use of only high-quality materials makes the D-2500 an inherently reliable device—a most important consideration for television use.

Two font styles are available for the Model D-2500. Video Gothic and Helvetica Bold. All are available in upper-case style, with matching lower-case characters. The Model D-2500 can accommodate — at one time — either two different upper-case font styles or a matching upper and lower case font.

80-9430-1447-4. Model D-2500 Character Generator \$6200.00

ACCESSORIES/OPTIONS

80-9430-1017-5. Audio Interface 600.00

DATAFONT SELECTIONS

80-9430-1212-2. Video Gothic Upper Case¹ 650.00

80-9430-1214-8. Helvetica Bold Upper Case¹ 650.00

80-9430-1213-0. Video Gothic Lower Case² 650.00

80-9430-1215-5. Helvetica Bold Lower Case² 650.00

Instruction Manual (one supplied with each unit) 50.00

¹One font included in base price. Please specify selection.

²Lower case includes math symbols and foreign language characters.

Model D-2000 Video Character Generator

The Model D-2000 is a multi-page Video Character Generator featuring a high resolution character display. It is designed for operation in most television systems that require a professional quality titling and captioning capability.

The Model D-2000 features both a broadcast quality video mixer and audio interface. Besides its many built-in features, a number of options are available for the Model D-2000.

The Model D-2000 utilizes the same high-resolution font styles as the D-3016.

80-9430-1070-4. Model D-2000 Video Titler
(110V) NTSC Standards \$3990.00

DATAFONT SELECTIONS

80-9430-1212-2. Video Gothic Upper Case¹ 650.00

80-9430-1214-8. Helvetica Bold Upper Case¹ 650.00

ACCESSORIES/OPTIONS

80-9430-1075-3. D-2010 Edge Option 410.00

80-9430-1073-8. D-2020 Auto Center 415.00

80-9430-1074-6. D-2030 RS-232 I/O³ 250.00

80-9430-1085-2. D-2041 Lower Case Font -
Video Gothic² 740.00

80-9430-1223-9. D-2042 Lower Case Font -
Helvetica Bold² 740.00

80-9430-1078-7. D-2050 Extender Card 100.00

80-9430-1076-1. Instruction Manual
(one supplied with each D-2000) 50.00

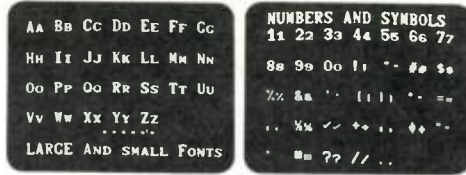
¹One font included in basic price. Please specify selection.

²Lower Case includes math symbols and foreign language characters.

³D-2030 required for operation with D-4500.



Piper Roman
(a serif type face)



Upper Case Set

Video Gothic

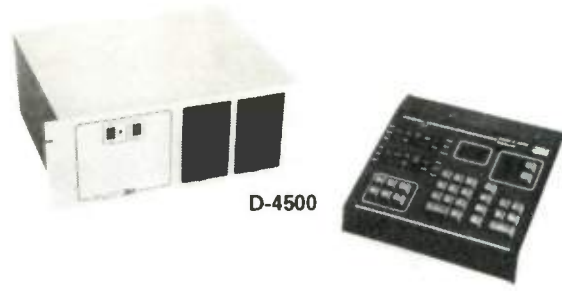
(Similar to Helvetica Bold, but a slimmer character style)



Upper Case Set

Lower case set identical to Helvetica Bold except for copyright symbol.

Typical Displays



D-4500

Helvetica Bold

(A bold san serif typeface)



Upper Case Set



Lower Case Set

**CHARACTER GENERATOR
DISC MEMORY**

Model D-4500 Mini-Floppy Disc Memory

3M Video Products D4500 is a microprocessor based mini-floppy storage device designed to be used with 3M's D2000, D2500 and D3016 character generators. A single disc system may store up to as many as 400 pages of text. Using the subtitle title mode of operation, as many as 4,000 individual lines of titling may be achieved. The D4500 has the capacity of a second disc drive (optional) which allows the operator access to as many as 800 pages or 8,000 lines. When two drives are available it is possible to copy the entire contents of a diskette to another diskette, thus obtaining a "backup" copy of important information. Each diskette can store any one of four types of data: static information, dynamic information [roll, crawl, animation (with D-3016)], subtitles or special programmed instructions.

The D4500 provides a unique program mode which allows the operator the capability of "stacking" sequential or random addresses of stored data. The playback speed and the time interval that each page of information is displayed may also be predetermined.

Using the subtitle mode, titles from one line to ten lines in length may be read from the disc sequentially or randomly. These titles may be played back at rates from one character to 800 characters per second. The titles are normally, justified to the bottom line of a display, but the titles may be offset or moved by the operator.

The D4500 also features a roll mode; a crawl mode; and an adjustable animation playback mode when used with the D3016 character generator.

80-9430-1613-1. D-4500 Disk Storage \$4995.00
Includes:

- 81-6118-0135-8. 1 each D-4500 Disk Housing with Drive
- 80-9430-1628-9. 2 each D-4500 Diskettes
- 80-9430-1614-9. 1 each D-4500 Keyboard Controller
(includes 25' interconnecting cable)
- 80-9430-1617-2. 1 each D-4500 Instruction Manual

ACCESSORIES/OPTIONS:

80-9430-1615-6. D-4500 Optional 2nd Remote Keyboard	\$1750.00
80-9430-1490-4. D-4500 Disc Drive Transport	1500.00
80-9430-1615-6. D-4500 Remote Keyboard	1750.00
80-9430-1616-4. D-4500 Diagnostics	210.00
80-9430-1628-9. D-4500 Diskettes	24.50
* Remote Cable—25'	130.00
* 50'	200.00
80-9430-1617-2. Instruction Manual	50.00

*Stock number not available at this time.

Note: When ordering the D-4500 to interface with previously purchased character generator, type of character generator and the serial number must be specified.

VIDEO TYPE SELECTIONS

**Video Type Selections
for Datavision Character Generators**

Three different video type faces are available for Datavision Character Generators Model D-2000, D-2500 and D-3016. They are: Helvetica Bold, Piper Roman, and Video Gothic. All three styles are available in two set configurations:

1. Upper case alpha characters, numbers, and symbols (64 characters in all).
2. Lower case matching alpha characters and selected math symbols and foreign alpha characters with accent marks (64 characters in all).

A full two-set compliment of Helvetica Bold is shown below. Since the Piper Roman and Video Gothic sets are identical, only the upper case configuration is presented. All photos are actual off-monitor representations.

Character sizes for all type faces are:

Regular Caps	28 scan lines
Small Caps	20 scan lines
Lower Case	Vary 18-28 scan lines



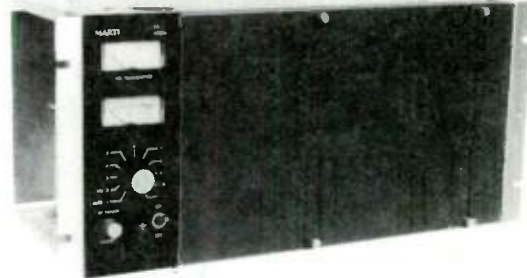
MARTI Electronics, Inc.

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. \$1280.00
(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 \$1.36 per foot.
..... \$

Package "BB" — Maximum Path Length, Monaural, 20 Mi. — Stereo, 18 Mi. \$1994.00
(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 \$3.54 per foot.
..... \$

STL PACKAGES

Package "A" — AM and/or FM MONAURAL \$2580.00
(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" \$5635.00
(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.

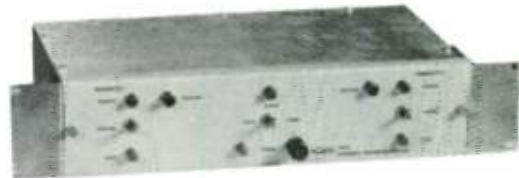
Package "C" — FM STEREO \$4765.00
(2) STL-8 Transmitters, c/w crystals and tuned.
(2) R-200/950 Receivers, c/w crystals and tuned.
(1) HRC-8 Transmitter Combiner.
(1) MTS-1 Receiver Combiner.

Package "D" — FM STEREO WITH "HOT STANDBY" ... \$1935.00
(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" \$415.00
CLA-40A Compressor/Limiter Amplifier. 120/240 VAC. Rack Mount, 3 1/2" x 19" \$495.00
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" \$375.00
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 \$475.00
SCR-8H Sub-Carrier Receiver, solid-state, tuned to 39 KHz. 120/240 VAC. 3 1/2" x 19" Horizontal Rack construction \$395.00
PGM-20A Program Amplifier. 120/240 VAC. 3 1/2" x 19" Rack mount \$240.00
MA-10 Monitor Amplifier. 120/240 VAC. 3 1/2" x 19" Rack mount. Complete with Speaker Muting Relay \$198.00
MRA-950 RF Preampifier. 120 VAC \$220.00

ASO-8A



SCG-8H

MRA-950

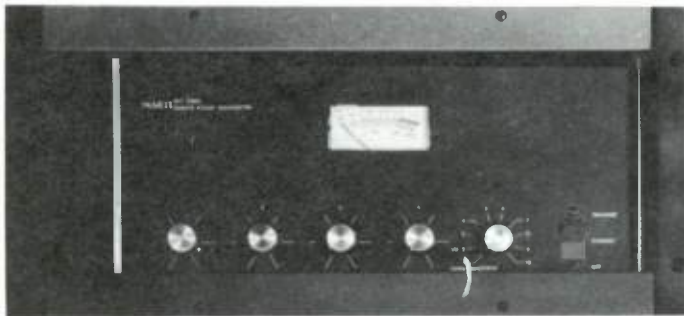


MARTI Electronics, Inc.

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

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.

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.

PACKAGE NUMBER 20 — TSL SYSTEM

(1) RPT-25-P 25 watt solid-state transmitter, complete with crystal and tuned to the 450 MHz. band. 0.00025% Frequency Tolerance.	\$1405.00	(2) PG-3B 3 foot Jumper Cables.	\$12.00 ea.	24.00
(1) RMH-2 Rack Shelf for Mounting RPT-25 in Standard Rack.	20.00	(2) K-1 Grounding and Weatherproofing Kits.	\$ 8.00 ea.	16.00
(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.	925.00	Equipment sub-total.		\$2724.00
(2) DB-436 Yagi Antenna, 6 element, 10 db gain, for use on 450-460 MHz. band. (Horizontal polarization recommended).	262.00	(1) Automatic Station Identifier Model 1400 (optional)		330.00
(4) L44N Connectors for LDF4-50 Foam Heliax.	72.00	Equipment total.		\$3054.00
		LDF4-50 1/2" Foam Heliax transmission line for above system	\$1.36 per ft.	



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.	\$1250.00
RPT-40-2 Dual Frequency, 40 watt, solid-state, complete with crystals & tuned to 150 MHz band, maximum frequency separation 0.5 MHz.	1360.00
RPT-25 25 watt, solid-state, complete with crystal & tuned to 450 MHz.	1405.00
RPT-25-2 Dual Frequency, 25 watt, solid-state, complete with crystals & tuned to 450 MHz band, maximum frequency separation 1.5 MHz.	1515.00
RPT-1/150 1 watt, solid-state, complete with crystal & tuned to 150 MHz.	685.00
RPT-1/150-2 Dual Frequency, 1 watt, solid-state, complete with crystals & tuned to 150 MHz band, maximum frequency separation 0.5 MHz.	715.00
RPT-1/450 0.7 watt, solid-state, complete with crystal & tuned to 450 MHz.	685.00
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.	715.00

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.	45.00
APS-28/14 Airborne Power Supply, 28-14 VDC, for RPT-40 & RPT-25.	105.00
MCD-70 Cardioid dynamic microphone with push to talk switch.	75.00
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.	345.00
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.	1282.00
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.	1439.00

RECEIVERS

R-30/150 Solid-state, complete with crystal & tuned to 150 MHz, for use with RPT-40 and RPT-1/150 Series transmitters.	735.00
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.	775.00
R-50/450 Solid-state, complete with crystal & tuned to 450 MHz, for use with RPT-25 and RPT-1/450 Series transmitters.	925.00
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.	965.00
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.	925.00

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.	735.00
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.	925.00

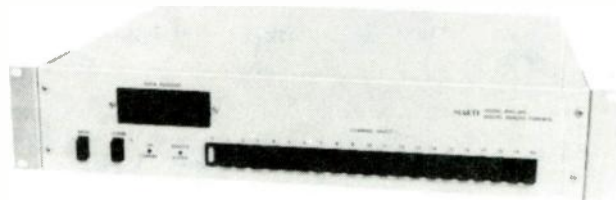
RECEIVER ACCESSORIES

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 Preamplifier, solid-state, 10 db gain, 150-170 MHz complete with 120 VAC Power Supply.	160.00
MRA-450 RF Preamplifier, solid-state, 10 db gain, 450-460 MHz complete with 120 VAC Power Supply.	160.00
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.	50.00

MARTI Electronics, Inc.

RMC-15 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 15 Type A Fully Digital Remote Control/Telemetry System for Voice Frequency Line Communications (Half-Duplex schedule 3002 Bi-directional circuit, 20 dB maximum attenuation at 950 Hz and 2400 Hz desired) \$3245.00

Model RMC 15 Type B Fully Digital Remote Control/Telemetry System for control over STL-8 Link and High Speed Telemetry over FM SCA, Voice Line, or TSL. Precludes SCA for background music. SCA is used only while logging. Two BNC cables included \$3245.00

Model RMC 15 Type C Fully Digital Remote Control/Telemetry System for control over STL-8 Line and Subaudible Telemetry over AM carrier or FM SCA with or without background music. Requires less than 5 seconds for readout. 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 PGM-20A below for use with STL or Subcarrier Receiver not having an LA-20 module \$3325.00

Model RMC 15 Type D Fully Digital Remote Control/Telemetry System for use with Sub-Carrier Control. Compatible with Composite Systems, uses link manufacturer's sub-carrier generator and receiver. High Speed Telemetry over FM SCA, Voice Line, or TSL. Precludes SCA for background music. SCA is used only while logging. Two BNC cables included \$3260.00

Model RMC 15 Type E Fully Digital Remote Control/Telemetry for use with Sub-Carrier Control. Compatible with Composite Systems, uses link manufacturer's sub-carrier generator and receiver. Subaudible Telemetry over FM SCA with or without background music. Requires less than 5 seconds for readout. 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 CLA-40 Limiter Amplifier, or PGM-20 Program Amplifier). Order PGM-20A below for use with STL or Subcarrier Receiver not having an LA-20 module \$3340.00

Model RMC 15 BCD/TI Allows direct input of BCD TTL to Transmitter Unit of RMC-15 System for transmission to Studio. Does not compromise normal function of system. Uses external enabling line for operation. Maximum Value of digits is "1999". \$200.00

Model RMG 30 Accessory Units The addition of these units, one at the studio site and one at the transmitter site, increase the channel capacity of the system from 15 of the basic RMC 15 to a total of 30 channels **Per set \$1000.00**

Model RMC 15 Command Translator Unit This unit converts commands from one frequency range to another making multihop mixed-mode control feasible **\$870.00**

KY3S Relay Buffer Internal board for the RMC 15S Studio Unit which delivers dry contact output for the Alarm and Two Status Circuits **\$30.00**

Universal Modem Programming Boards Plug-in boards used in conversion of RMC 15 Control or Telemetry Frequencies. Set includes one for the conversion of the mod and one for the demod. Specify Type of system, and whether control or telemetry **Per set \$100.00**

TL-1S Tower Light Current Monitor Current Transformer, rectifier, pot opto-isolator and filtering for developing a metering input into remote control systems **\$60.00**

DA-1 DC Amplifier Maximum voltage gain of ten (10) for increasing DC level of voltage sample for input into remote control metering input. Contains gain and DC offset adjustment pots. Internal dual polarity regulated power supply operates from 115VAC, 10W **\$155.00**

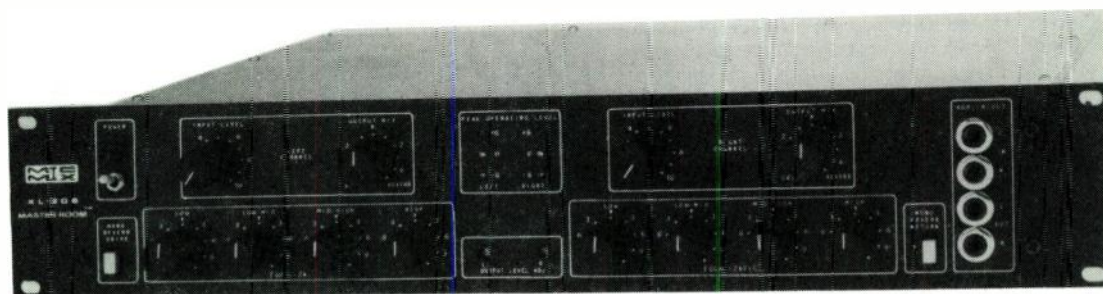
TA-66 Tuned Amplifier 66 KHz Amplifier for relay points in a multi-hop control link. Re-establishes injection levels at each site **\$100.00**

RY4-H3A Relay Interface Unit Contains relays and power supply necessary for remote control of Gates/Harris H and H3 Series Transmitters by RMC 15 Remote Control. 3½" x 19" rack mounted **\$110.00**

PGM-20A Program Amplifier with LA-20/HPF-50 For use ahead of transmitter modulator or sub-carrier generator if used with equipment not having a LA-20 module. Provides clean channel for Sub-audible Telemetry over AM carrier or FM SCA. 3½" x 19" rack mounted **\$240.00**

MIX MICMIX Audio
Products, Inc.

XL-305 Master-Room Reverberation Chamber



Dimensions
3 1/2 x 19 x 11

Weight
9.8 pounds

XL-305 \$1,650.00
XL-305T \$1,800.00
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,

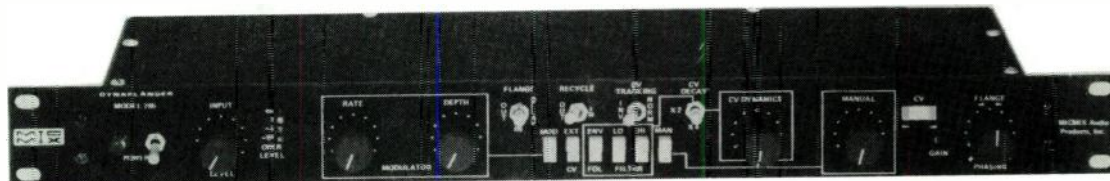
with auxiliary front panel input/output connections and monaural mix switching of reverberation inputs or outputs.

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
\$950.00

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.

MICRO-TRAK

TONE ARMS

Micro-Trak Tonearms Model 303 and 306

Micro-Trak — the name was created to define the most widely used tone arm in broadcast history. Tracking capabilities to a tenth of a gram, resonance below 10 Hz, high compliance, rugged, dependable strength offered by an impregnated wood body and super smooth performance with jewel bearings make the 303 and 306 Tone Arms the best buy for the broadcaster today. 30,000 broadcast and professional users demonstrate how their rugged simplicity of design can give you the best possible performance. Specify Micro-Trak 303 12" and 306 16" Professional Tone Arms for your studio.



Tone Arms		
75900-000	Tone Arm Model 303	\$114.50
75971-000	Tone Arm Model 306	139.50
Tone Arm Accessories		
75989-000	Service Kit for Model 303 Tone Arms	\$199.50

AUDIO DISTRIBUTION AMPS

Distribution Amplifiers

- Model 7116A
- Model 7213A
- Model 7216A

Mono and Stereo D.A. for Broadcast Applications

Micro-Trak's distribution amplifiers are high quality, balanced, transformer isolated units offering the broadcaster high performance and reliability. Packaged in configurations of to provide extra versatility, the group of 1 x 6, 2 x 3, and 2 x 6 (wired as two 1 x 6s) units offer the proper breakout for your installation. The Model 7116, 1 x 6, and the Model 7213, 2 x 3 are in small compact cases for mounting inside a cabinet. The Model 7216 (2 x 6) is a panel mounted unit designed for 19 inch rack mounting. High quality audio transformers are used to allow broadcast audio fidelity throughout. Carbide black textured finishes over steel and aluminum case materials provide good looking easy to maintain units which are well shielded and simple to service.

Distribution Amplifiers

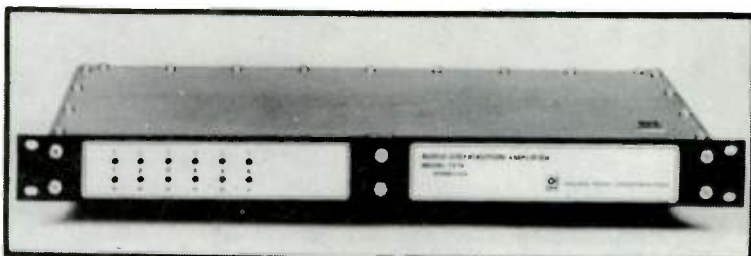
82300-001	Model 7116-A Distribution Amplifier 1x6 with individual level controls	\$239.50
82300-002	Model 7213-A Distribution Amplifier 2x3 with individual level controls	269.50
82313-000	Model 7216-A Distribution Amplifier 2x6 with individual level controls	449.50
82330-001	Rack Mount adapter for 7116 & 7213 (3 1/2" high)	39.50



7116



7213



7216

MICRO-TRAK

AUDIO CONTROL CENTERS

System D Audio Control Centers

Features

• Compact size. • Highly portable. • Beautifully finished. • Van mountable. • Low cost. • Console of your choice. • XLR Rear panel terminations. • Completely wired and tested. • Ready to go.

Micro-Trak's D Systems are outstanding units for broadcast remotes, broadcast production or for the disco on the go. The "Compacts" are constructed of high strength materials that will stand up to hard use and stay both beautiful and functional.

You can fill the Compact with four or five channel consoles either mono or stereo. A special disco mixer fits that need. The D Systems come to you completely wired, tested, and ready to use, out of the box.

Why not specify a D System, either Portable or Studio, for your next requirement.

Build Your Own, D System Components

80272-006 "D" Portable Desk (Only)	\$ 629.00
80273-006 "D" Studio Desk (Only)	529.00
80362-000 "D" Rear Panel & Harness for Stereo Consoles	189.50
80365-000 "D" Rear Panel & Harness for Mono Consoles	149.50
80130-000 Shelf & Brackets — for Compacts & Ditty Desk	106.50
80123-000 Console Mounting Turret — "D" Consoles	96.25
80296-000 Typewriter Return Only	124.50

System D Studio Compact

80273-003 System D Studio Compact with 6445 Console	\$3395.00
80273-005 System D Studio Compact with 6455 Console	3225.00
80273-001 System D Studio Compact with 6440 Console	3295.00
80273-008 System D Studio Compact with 6509-RS Console	3695.00
80273-009 System D Studio Compact with 6509-LS Console	4250.00
80273-010 System D Studio Compact with 6509-RM Console	3595.00
80273-011 System D Studio Compact with 6509-LM Console	4150.00

System D Portable Compact

80272-003 System D Portable Compact with 6445 Console	\$3495.00
80272-005 System D Portable Compact with 6455 Console	3325.00
80272-001 System D Portable Compact with 6440 Console	3395.00
80272-008 System D Portable Compact w/6509-RS Console	3825.00
80272-009 System D Portable Compact w/6509-LS Console	4395.00
80272-010 System D Portable Compact w/6509-RM Console	3750.00
80272-011 System D Portable Compact w/6509-LM Console	4295.00

The Ditty Desk

The Ditty Desk is a new low cost audio production or remote broadcast package. It's designed to do powerful production or be on location at the latest happening in your station's area.

The Ditty Desk comes equipped with high quality Micro-Trak consoles, turntables, and tone arms. An XLR termination panel allows quick connect and disconnect for cart machines, reel to reel tape, cassette, and other audio inputs. The formica covered housing is built to last and be beautiful for many years. The polished chrome legs are adjustable up and down to let you operate at just the right height for you, sitting or standing.

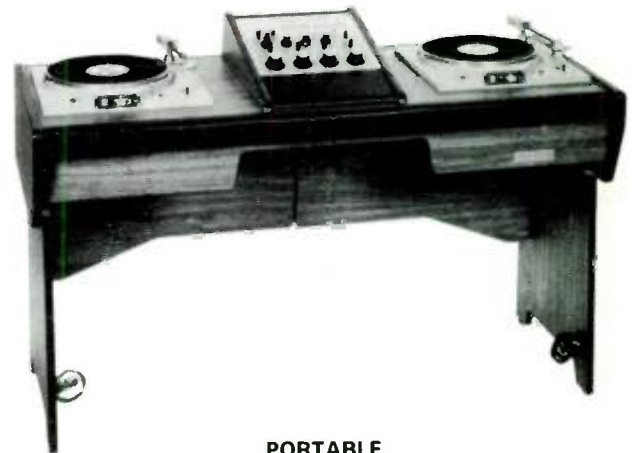
You can buy a five channel stereo, or five channel mono unit. What you'll get is the 6445B Stereo Console, or the 6455 Mono Console. Both proven performers.

Ditty Desk — Economy Audio Systems

83000-003 Stereo Ditty Desk w/6445 5 Channel Console	\$2950.00
83000-005 Mono Ditty Desk with 6455 5 Channel Console	2795.00
83000-001 Ditty Desk with 6440 Console	2850.00
83000-006 Ditty Desk Only — No Cutouts	349.00
80230-000 Shelf & Brackets — For Compacts & Ditty Desk	106.50



STUDIO
Shown with optional shelf and remote control panel



PORTABLE



DITTY DESK

MICRO-TRAK

Sportscaster Broadcast Console

Designed for the sportscaster on the go any of the SPORTS will make remotes easy. Built in a travel case with battery or AC power, select the one you need.

Sport II

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, and an announcer headset.

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.
- Matching case available for accessories.

Sport III Portable Sports Console

The "SPORT III" is the newest addition to Micro-Trak's Sports Portable Console line. This two channel console incorporates many features found desirable by sports broadcast personnel.

- Talkback for set up.
- Built in AC supply.
- Low cost batteries.
- Telephone dial option.
- Three headphone outputs.

The SPORT III has full talkback capability using a hybrid transformer at the output. It has three headphone outputs, one each for two announcers and a spotter. It has a switch selectable auxiliary input so that spots can be run directly from the ballpark. It has a dial option to allow use of regular telephone lines. It has both AC and battery power supplies built in, and automatic switchover in case of power loss. The Sport III's best feature is its low cost.

The SPORT III is attractively packaged in a self contained carrying case. Open the cover, connect the telephone line, plug in the AC if available, turn to battery operation if not. Plug in a microphone, or sportscaster headset and it's paly by play time.

Sport IV Portable Console

With Telephone Dial Option

The new "SPORT IV" is the latest Micro-Trak Sports/Remote Portable Console. This innovative four channel console has all the features found desirable for sports and other remote broadcasts.

- Hybrid Talkback for set up.
- Built in AC supply.
- Low cost batteries.
- Telephone dial option.
- Three headphone outputs.

The SPORT IV has four mixing microphone inputs, and full talkback capability using a hybrid transformer at the output. It has a fifth microphone input that feeds one side of the headphones only for an action spotter. It has three headphone jacks, for use by the announcers and action spotter. Channel four has a switch selectable auxiliary input so that pre-recorded interviews can be run from cassette tape or carts can be aired directly from the stadium or other remote location. The electronic rotary dial option allows use of regular telephone lines and lowers the cost of your long distance games.

Both AC and battery power supplies are built in, and switching is automatic in case of power loss.

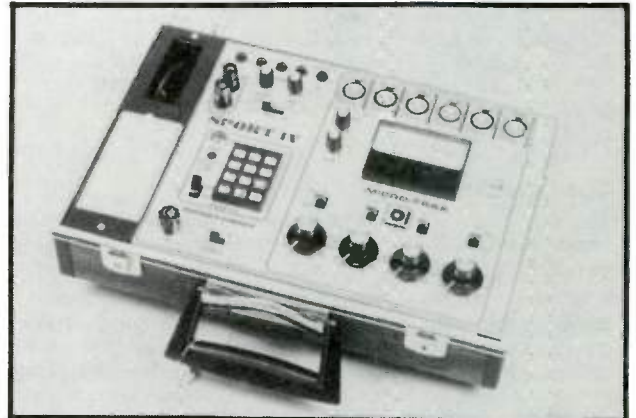
REMOTE AUDIO CONSOLES



Sport II



Sport III Shown with telephone dial option



Sport IV

Sports Remote Consoles

81921-002	Sport II Sports Console (3 input/2 channel)	\$299.50
81950-001	Sport III Console (2 channel less dial)	529.50
81950-002	Sport III Console (2 channel with dial)	629.00
81944-001	Sport IV Console (4 channel less dial)	679.00
81944-002	Sport IV Console (4 channel with dial option)	779.00

Sports Console Accessories

81956-001	Dial Option for Sport III or IV Console	\$124.95
81918-000	A.C. Power Supply for Sport I & II	49.95
81932-001	Sport 1 x 3 Headphone Extender	159.50
81900-000	Sport Accessory Case 9 x 14 x 4	59.95
81933-000	Sport Accessory Case 18 x 12 x 5	74.50



MICROTRAN company, inc.

MAGNETIC TAPE ERASERS and ACCESSORIES

Tape Head Demagnetizer For Tape Recording Heads

Neutralizes residual permanent (DC) Magnetism in recording head. Heavy duty AC electromagnet 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 1/4" 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
\$385.00

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 1/4" 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

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)

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.

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-505A/C Composite STL — For High-Density RF Applications. All Solid-State PCL-505/C Transmitter and PCL-505A/C Receiver with self-contained power supplies, crystals, and tested on operating frequency. Transmits composite stereo waveform over single STL. Available in 890-960 Mhz spectrum. Contact Marketing Department for information on other frequencies.* \$6195.00

PCL-505A/C All Solid-State Receiver Only, with self-contained power supply, crystal and tested on operating frequency. \$4350.00

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.* \$2500.00

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.* \$5695.00

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 \$4550.00
300-330 MHz and 450-470 MHz 4750.00
890-960 MHz 4850.00

Optional Crystal I.F. Filter Assembly, for PCL-101 Receiver. Available only for 148-470 MHz versions. \$325.00

Crystal Set for Moseley Associates STLs, consists of frequency-determining crystals, includes one transmitter crystal and one receiver crystal.*

PCL-101 \$75.00
PCL-505, PCL-505/C, and PCL-505A/C 75.00
PCL-606 and PCL-606/C 75.00

Crystal Oven Transmitter Crystal Oven for PCL-606, PCL-606/C, PCL-505, PCL-505/C, and PCL-505A/C \$35.00



PCL-505 Transmitter



PCL-505 Receiver

Provides STL, intercity and similar continuous duty service



PCL-101 Transmitter



PCL-101 Receiver

TPT-2 Transfer Panel Transmitter, provides automatic changeover to standby STL transmitter, carrier operated. For use with PCL-101, PCL-505, PCL-505/C, PCL-505A/C, PCL-606, or PCL-606/C. Specify Model of Moseley STL \$725.00

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, PCL-505/C, and PCL-505A/C. Specify model of Moseley STL \$525.00

ECP-5 STL Extension Control Panel, provides carrier control and metering of relative RF power output and AFC for PCL-505, PC-505/C, PCL-505A/C, PCL-606, and PCL-606/C. Relative RF power out only for PCL-101 \$265.00

PR-4500 Antenna, Scala Paralector (19.64 dBi 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.* \$450.00

MF-960 Antenna, Scala Miniflector (16.14 dBi gain at 950 MHz), for 940-960 MHz, with Type N female termination, universal mounting for horizontal and vertical polarization, fully anodized, for STL. Not recommended for congested areas.* \$275.00

ICU-1C Isocoupler, (940-960 MHz), facilitates mounting STL antenna on ungrounded AM tower \$275.00

ICU-2C Isocoupler, (450-470 MHz), facilitates mounting STL antenna on ungrounded AM tower \$275.00

ICU-3C Isocoupler, (150-172 MHz), facilitates mounting STL antenna on ungrounded AM tower \$275.00

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. \$235.00

*Specify operating frequency when ordering

MOSELEY ASSOCIATES, INC.

A FLOW GENERAL COMPANY

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 multi-plexing 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.

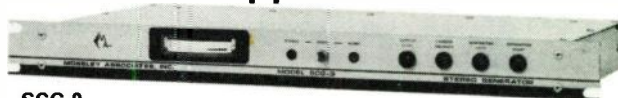
SCM-1 — Subcarrier Main Frame. Accommodates two subcarrier modules. System includes one generator or demodulator module. Specify generator or demodulator, subcarrier frequency (26-185 kHz) and STL model when ordering for utility/control/telemetry service.

\$725.00

SCG-9A — FM Stereo Generator, includes power supply and peak-reading deviation meter

\$1695.00

Solid-State Multiplex Equipment for Stereo, SCA, and STL Applications



SCG-9



SCG-8



SCD-8

SCD-8 — Subcarrier Demodulator, with automatic muting and front-panel peak-deviation meter, including self-contained power supply. Available for operation at a specific frequency in the 26 kHz to 185 kHz spectrum. Specify operating frequency when ordering.

\$995.00

SCG-8 — Subcarrier Generator, with automatic muting and front panel peak-deviation meter, including self-contained power supply. Available for operation at a specific frequency in the 26 kHz to 185 kHz spectrum. Specify operating frequency when ordering

\$975.00

Additional Subcarrier Generator for SCM-1 (26-185 kHz)

\$225.00

Additional Subcarrier Demodulator for SCM-1 (26-185 kHz)

\$225.00

Aural Studio-Transmitter Link and Associated Equipment

(950 MHz, 450 MHz, 300 MHz and 150 MHz)

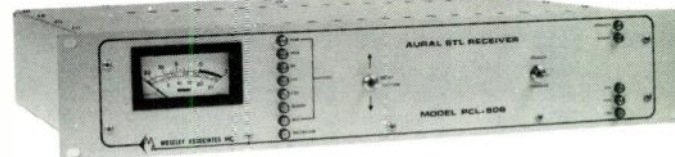
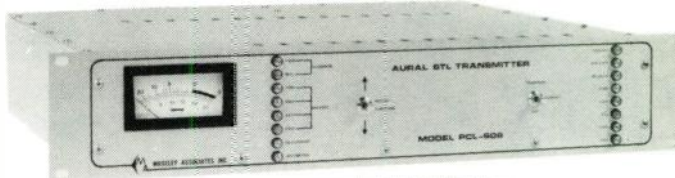
The Models PCL-606 and PCL-606/C Studio-Transmitter Links provide broadcasters and industrial users alike with the highest quality program interconnect currently available in equipment of this type.

Designed for monaural audio service, the PCL-606 can be used in a dual configuration for stereo service. The PCL-606/C, composite stereo version, conveys composite stereo waveform with virtually no degradation.

PCL-606/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*

\$7295.00

MODELS PCL-606 and PCL-606/C



PCL-606 — 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*

\$7095.00

TYPICAL ANTENNAS, COAXIAL TRANSMISSION LINE AND CONNECTOR KITS

CA5-15H — Antenna, Scala five-element Yagi, horizontally polarized. 9 dBd gain, 140-230 MHz.*

\$150.00

OG-4 — Antenna, Scala omni-directional collinear array, 4 dBd gain, 150-170 MHz.*

\$240.00

CA5-450 — Antenna, Scala five-element Yagi, H or V polarization, 10 dBd gain, 230-500 MHz.*

\$150.00

OG-6 — Antenna, Scala omni-directional collinear array, 6 dBd gain, 450-470 MHz.*

\$240.00

PR-450U — Antenna, Scala Paraflector, H or V polarization, 15 dBd gain, 450-470 MHz.*

\$450.00

ICU-3C — Isocoupler (for 150-172 MHz), facilitates mounting remote pickup antenna on ungrounded AM tower.*

\$275.00

ICU-2C — Isocoupler (for 450-470 MHz), facilitates mounting remote pickup antenna on ungrounded AM tower.*

\$275.00

LDF4-50 — Heliax*** Low-loss Coaxial Transmission Line, 1/2", foam dielectric, 50 ohm, jacketed. (2.4 dB/100 ft. at 950 MHz, 1.5 dB at 450 MHz)

Per Ft. **\$1.48**

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

\$89.00

LDF5-50 — Heliax*** Low-loss Coaxial Transmission Line, 7/8" foam dielectric, 50 ohm, jacketed. (1.4 dB/100 ft. at 950 MHz, 0.85 dB at 450 MHz)

Per Ft. **\$3.86**

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

\$146.00

RG-8/U — 3' Pigtail Assembly, Type N male connector on each end

\$25.00

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

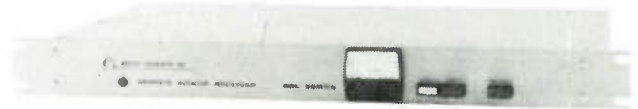
Compactness and portability characterize the Moseley Associates Models RPL-3 and RPL-4 Remote Pickup Links. The transmitter weighs a mere 16 pounds, and is only 4 inches high — including three-channel audio mixing. The companion receiver occupies only 1 3/4 inches of rack space.

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-150 and
AMP-450 RF Power
Amplifiers



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. \$5295.00
- 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. \$5350.00
- 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. \$5350.00
- Custom modification for RPL-4B allowing 15 kHz audio response. \$175.00

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.

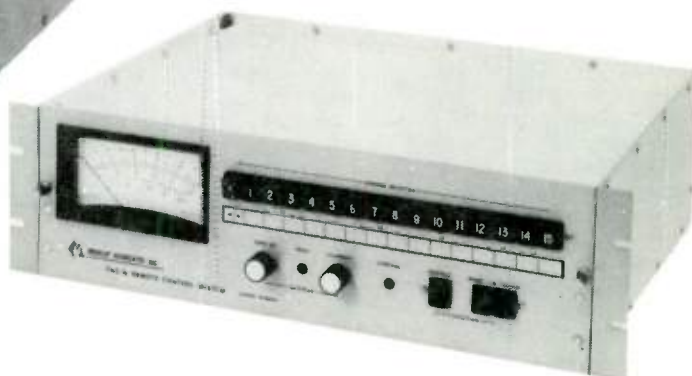
- OPTIONAL CARRIER-OPERATED SQUELCH RELAY, for RPL-3A, RPL-4A or RPL-4B Receiver. This option to be specified at time of order. \$50.00
 - CRYSTAL SET for RPL-3A, RPL-4A and RPL-4B Remote Pickup Links. Second frequency or spare; consists of frequency-determining crystals including one transmitter crystal and one receiver crystal. Specify exact operating frequency when ordering. \$75.00
 - AMP-()A RF POWER AMPLIFIER, for use with Remote Pickup Link Transmitter. FCC type accepted with above transmitters.
 - AMP-150 for 150-170 MHz, 13.5 VDC operation \$450.00
 - AMP-150-R Rack Mounted with AC Power Supply 1275.00
 - AMP-450 for 450-470 MHz, 13.5 VDC operation 595.00
 - AMP-450-R Rack Mounted with AC Power Supply 1475.00
 - ICU-3 ISOCOUPLER (for 150-172 MHz), facilitates mounting remote pickup antenna on ungrounded AM tower.* \$275.00
 - ICU-2 ISOCOUPLER (for 450-470 MHz), facilitates mounting remote pickup antenna on ungrounded AM tower.* \$275.00
- * Specify operating frequency when ordering. Special order frequencies available. Contact our Marketing Department for assistance in selection of antennas and transmission line.

***® Trademark Andrew Corporation

MOSELEY ASSOCIATES, INC.

A FLOW GENERAL COMPANY

SOLID-STATE ANALOG TRANSMITTER REMOTE CONTROL EQUIPMENT



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. 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. \$3995.00

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. \$4395.00

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. \$215.00

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	205.00
1077-2	Two-Meter Panel	215.00
1077-3	Three-Meter Panel	225.00

TELEMETRY RETURN LINK — FOR "TSL" OR UTILITY SERVICE (450-470 MHz, other frequencies on special order)

TRL-1 — Telemetry return link, all solid-state Transmitter and receiver. Tuned and tested on operating frequency.* Nominal one watt transmitter output. Receiver designed specifically for narrowband service. For 10F2/10F3 channels; FCC Group P. \$2995.00

Optional MCW Identifier Module — Installs internally to TRL-1 Transmitter. Nominally ID's transmitter every 20 minutes. Specify call letters/ID when ordering. \$275.00

Optional Battery Pack — Installs internally to transmitter. Provides approximately 20 minutes transmitter backup. Keys MCW ID's continuously for simple power fail alarm. \$120.00

*Specify operating frequency when ordering.

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.

\$2695.00

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-2A TELECONTROL SYSTEM

Full independent command, status reporting and telemetry capability is provided by the Model TCS-2A Telecontrol System. Applications for the TCS-2A 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-2A provides eight command, eight status and eight telemetry functions. A Remote Terminal digital telemetry display affords one-man calibration. The TCS-2A 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-2A and TCS-1 Systems can be operated over a single interconnect path. The TCS-2A and TCS-1 Systems are similar in design, are compatible, and should both be considered in configuring your system.

TCS 2A 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-2A systems, or mixture with TCS-1 on common 3 kHz interconnect circuit.

\$3975.00

INDEPENDENT COMMAND, STATUS AND TELEMETRY



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.

REMOTE CONTROL AND LOGGING ACCESSORIES

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 \$1675.00
8 towers 2125.00
12 towers 2575.00

CIP-1 — Control Interface Panel, provides for use of slave or repeating relays with Moseley Associates Remote Control Systems. Accepts up to seven relays. Relays not included. \$150.00

Type 5480DC — Relay, DPDT, momentary closure, coil for 24 VDC. 25.00

Type 5480AC — Relay, DPDT, momentary closure, coil for 120 VAC 27.50

Type 5481DC — Relay, SPDT, magnetic latching, coil for 24 VDC \$30.00

Type 5481AC — Relay, SPDT, magnetic latching, coil for 120 VAC \$32.50

DCA-2 — DC Amplifier, Isolated Input. Provides low-level telemetry amplification and power-to-linear conversion. \$635.00

DCP-1 — DC Power Supply, 24 VDC, 1A into seven parallel terminals. For use with CIP-1 Control Interface Panel, rack mount; 120/240 VAC, 50-60 Hz input. 295.00

DCP-1 — With 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. \$475.00

FSU-1 — Fail-Safe Unit, for use with DCS-2A Digital Control 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. \$950.00

LVK-3 — Line Voltage Sampling Kit (120 VAC to 400 VAC, 50-60 Hz). \$125.00

MBB-1 — Universal Plate Circuit (1 μ or Ebb) Sampling Kit. Used when sampling points are either above or below ground potential. (Requires external shunt or series resistor. Resistor not supplied.) \$225.00

MIU-2 — Metering Insertion Unit, enables mixing of subaudible metering signal with program audio. For AM broadcast and FM SCA operation. \$725.00

MMA-1 — Modulation Monitor Adaptor. Adapts audio output to analog remote control telemetry. \$325.00

MPP-1 — Motorized Potentiometer Panel, provides remote control of three potentiometers. Specify value of potentiometer desired. Two-watt carbon potentiometers included. \$725.00

PVK-1A — Plate Voltage Sampling Kit, for plate voltages thru 3kv. Specify normal operating plate voltage. 110.00

PVK-1B — Plate Voltage Sampling Kit, for plate voltage 3kv thru 10 kv. Specify normal operating plate voltage. 110.00

PVK-2 — Plate Voltage Sampling Kit, for plate voltage 10kv thru 20kv. Specify normal operating plate voltage. \$155.00

RFK-1 — AM RF Transmission Line Voltage Sampling Kit. \$145.00

RFK-2 — FM RF Transmission Line Voltage Sampling Kit, for 3-1/8" line. \$145.00

RFK-3 — FM RF Transmission Line Voltage Sampling Kit, for 1-5/8" line. \$145.00

RMK-1 — Reversible Motor Kit with adjustable clutch. \$245.00

TAU-3 — Tolerance Alarm Unit Main Frame, will accommodate up to eight plug-in comparator modules. For use with early Moseley automatic logging systems or DCS-2A Status Subsystem(s). \$350.00

Plug-In Comparator Module for TAU-3 Tolerance Alarm Unit Main Frame. \$175.00

TLK-2 — Tower Light Sampling Kit \$125.00

TSK-3A — Temperature Sensing Kit, remoteable sensor. Includes power supply for operation from 120/240 VAC, 50-60 Hz. \$195.00

STOCK NO.		PRICE
1 5/8" 50 Ohm Transmission Line and Components		
618-0368-000	201-001 1 5/8" 50 ohm line assy 20 ft. lengths flanged both ends	\$ 270.00
618-0305-000	201-004 1 5/8" 50 ohm line assy 20 ft. lengths no flanges	200.00
618-0375-000	201-1 5/8" 50 ohm line assy 20 ft. lengths flanged one end	250.00
620-0229-000	201-008 Flange Fixed, 3 1/2" dia. for silver brazing	17.00
620-1298-000	201-009 Flange, swivel 3 1/2" dia. for silver brazing	24.00
620-0573-000	201-010 Anchor insulator-connector assy, silver plated, spring loaded	24.00
620-1295-000	201-010ML Anchor insulator connector lubed assy	28.00
620-0232-000	201-011 1 5/8" 50 ohm, "O" Ring gasket, flanges	1.60
620-0233-000	201-012 Hardware set for 1 5/8" flanges. Consist of 4 each stainless steel bolts, nuts and lockwashers 5/16"	9.20
620-1297-000	201-013 Adaptor assy, flange swivel to unflanged line, soft solder type, pressurized. No anchor insulator connector, "O" ring or hardware	32.00
620-0276-000	201-014 Adaptor assy, flanged to unflanged line unpressurized, clamp type, for indoor use, includes hardware	41.00
620-1296-000	201-015 Cover plate, brass with 1/8" IPS gas inlet port and plug, no hardware	On request
620-0662-000	201-017 Coupling, clamp type includes spec, anchor connector	46.00
620-0646-000	201-018 Coupling, straight clamp force, unpressurized, includes 2 tube clamps. No inner conductor connector	20.00
620-0694-000	Inner conductor connector, silver plated, spring loaded	20.00
620-0228-000	201-020 Elbow assy, miter 90° female reinforced, swivel flanged, includes one anchor insulator "O" ring and hardware	115.00
620-1903-000	201-021 Elbow 90°	125.00
620-1904-000	201-025 Elbow assy, miter, 90°, female reinforced, no flanges, equal legs, inner conductor each leg cutback 7/16" from face of outer conductor	55.00
620-631-000	201-025L Elbow 90° unflanged	65.00
620-1300-000	201-030 Elbow assy, miter 45° female - swivel flange. Includes anchor insulator connectors. "O" ring and hardware	115.00
620-1299-000	201-040 Tee assy, reinforced, swivel flanges on all three legs. 2 3/8" center lines, anchor insulators on all legs. "O" ring and hardware	On request
620-0231-000	201-050 Gas barrier with "O" ring and 2" long hardware. Incorporates 1/8" IPS gas inlet port	135.00
620-0930-000	201-060 Adaptor EIA flange to type N female. Includes removable anchor insulator "O" ring and hardware. Incorporates 1/8" IPS port	125.00
620-0272-000	201-064 Reducer, taper type 1 5/8" to 7/8" 50 ohm, fixed flanges, includes one 7/8" anchor insulator connector assy. "O" ring and hardware	100.00
620-1092-000	201-080 End seal assy, flanged with gas inlet port. Includes "O" ring and hardware	125.00
618-0376-000	201-075-10 Flexible line assy, 10" long, 6" long, EIA swivel flanged. Accommodates vibration up to ±15° flexibility	500.00
618-0377-000	Flexible section. 201-075-18	15.00
618-1301-000	201-0138-3 Manual transfer patch panel, 3 pole, one 180° connector. Includes 3 anchor connectors. Screwdriver mounted on panel. Not pressurized	660.00
3 3/8" 50 Ohm Transmission Line		
618-0378-000	301-001 Line assy, 20 ft. exact length, flanged both ends. Includes anchor insulator-connector assy. "O" ring and hardware	470.00
618-0228-000	301-004 Line assy, 20 ft. exact length, no flange, hardware or connector	340.00
618-0385-000	301-006 Line assy, 20 ft. length flanged one end, includes anchor insulator-connector assy. "O" ring and hardware	420.00
618-0234-000	3 3/8" 50 Ohm transmission line, unflanged 6 ft.	102.00
618-0304-000	3 3/8" 50 Ohm transmission line, unflanged 10 ft.	170.00
618-0312-000	3 3/8" 50 Ohm transmission line, unflanged 13 ft.	221.00
3 3/8" 50 Ohm Rigid Line Components		
620-0637-000	301-008 Flange, brass, fixed 3 3/16" dia. for silver brazing. Includes silver solder ring insert	28.00
620-0684-000	301-009 Flange, brass, swivel 5 3/16" dia. with inner ring for silver brazing, includes silver solder ring insert	41.00
620-0544-000	301-010 Anchor insulator-connector assy, spring loaded, silver plated. Will be supplied with protective cap	38.00
620-0822-000	301-010ML Anchor Insulator Connector lubed	41.00
620-0270-000	301-011 "O" ring gasket for 3 3/8" flanges	2.20
620-0908-000	301-012 Hardware set for 3 3/8" flanges, consists of 6 each stainless steel bolts, nuts and lockwashers	11.50

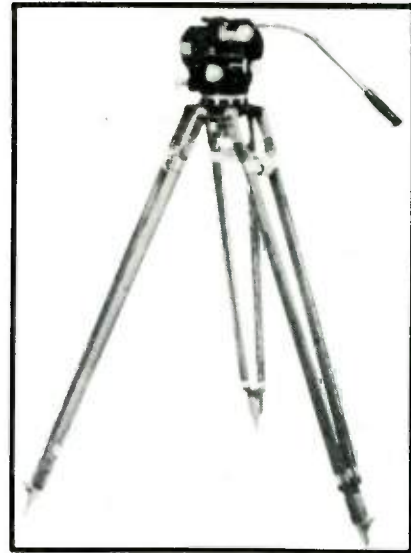
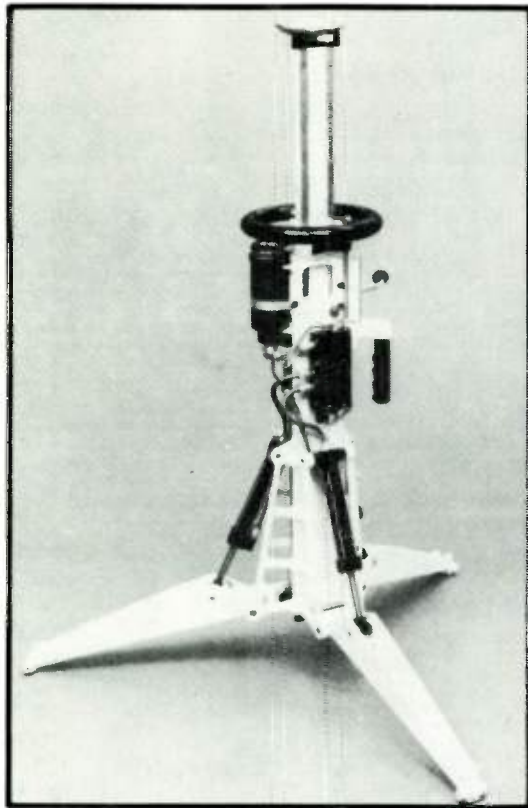
STOCK NO.		PRICE
3 1/8" 50 Ohm Rigid Line Components (Continued)		
620-0161-000	301-013 Adaptor assy, flanged to unflanged line, soft solder, type pressurized. No anchor insulator-connector. "O" ring or hardware	\$ 47.00
620-0498-000	301-014 Adaptor assy, flanged to unflanged line, unpressurized clamp, type for indoor use, includes hardware	54.00
620-1314-000	301-015 Cover plate, brass with 1/8" IPS gas inlet port and plug. No hardware	On request
620-0581-000	301-017 Coupling assy, straight, clamp type, unpressurized, includes special type inner conductor-connector assy	70.00
620-0499-000	301-018 Coupling, straight, no stop, clamp type, unpressurized. Includes 2 tube clamps. No inner conductor-connector. Does not increase O.C. length	32.00
620-0918-000	301-019 Inner conductor connector only, silver plated, spring loaded. Usually used with Catalog Number 301-018	28.00
620-1893-000	301-021 Elbow assy. 90°, same as 020 except 021 has captivated inner conductor	195.00
620-0632-000	301-025 Elbow assy, miter 90° female, reinforced, no flanges, equal legs. Inner conductor cutback 1 1/16" from face of outer conductor	110.00
620-0630-000	301-030 Elbow assy, miter 45° female reinforced, swivel flanged. Includes anchor insulator-connector, "O" ring and hardware	200.00
620-1316-000	301-040 Tee assy, reinforced, swivel flanges on all three legs. 3 3/16" center lines, anchor insulator all legs, includes "O" ring and hardware	On request
620-0271-000	301-050 Gas barrier, with "O" ring gasket and 2 1/4" long hardware. Incorporated 1/8" IPS gas inlet port	200.00
620-0636-000	301-060 Taper 3 3/8" 50 ohm to type "N" female. Includes anchor insulator assy, "O" ring and hardware	210.00
620-0360-000	301-064 Taper 3 3/8" 50 ohm to 1 5/8" 50 ohm, 1 5/8" anchor insulator connector, "O" ring and hardware furnished	160.00
620-0214-000	301-078 Adaptor, male to male unsupported inner conductor. Fixed EIA flanges. One "O" ring and hardware set supplied. No anchor insulator included.	235.00
620-1318-000	301-080 End seal assy, flanged with gas inlet port, includes "O" ring gasket and hardware	300.00
618-0386-000	301-075-10 Flexible line assy, 10" long, 18" long, EIA swivel flanged. Accommodates vibration up to ±15° flexibility	620.00
618-0387-000	301-082 Transition - 3 3/8" 50 ohm to 3 3/8" -51 5 ohms	620.00
612-0549-0xx	301-138-7 Manual transfer patch panel assy 7 pole, three 180° connectors includes 7 anchor connectors, screwdriver mounted on panel. Not pressurized	1700.00
6 1/8" 50 Ohm Rigid Transmission Line and Components		
618-0389-000	601-001 Line assy 20 ft. exact length, flanged both ends. Includes anchor insulator connector assy, "O" ring and hardware	1400.00
618-0229-000	601-004 Line assy, length to be specified, no flanges, hardware or connector	58.00/ft.
618-0396-000	601-006 Line assy, 20' length, flanged one end. Includes anchor insulator connector assy, "O" ring and hardware	1420.00
620-0638-000	601-008 Flange, fixed, for silver brazing, includes silver solder ring insert	65.00
620-0905-000	601-009 Flange, swivel, for silver brazing includes silver solder ring insert	100.00
620-0586-000	601-010 Anchor insulator-connector assy, spring loaded, silver plated	150.00
620-1330-000	601-010ML Anchor insulator-connector, lubed	155.00
620-1331-000	601-011 "O" ring gasket for 6 1/8" flanges	4.25
620-0713-000	601-012 Hardware set for 6 1/8" flanges. Consists of 12 each stainless steel bolts, nuts and lockwashers, 3/8" - 16" x 1 3/4" lg.	16.00
620-1333-000	601-013 Adaptor assy, fixed flange to unflanged line, soft solder type, pressurized. No anchor insulator-connector "O" ring or hardware	130.00
620-0602-000	601-014 Adaptor assy, flanged to unflanged line unpressurized clamp type, for indoor use, includes hardware	170.00
620-0601-000	601-018 Coupling straight clamp type, unpressurized. Includes 2 tube clamps. No inner conductor connector. Does not increase lg. O.C.	182.00
620-1332-000	601-019 Inner conductor connector only, silver plated, spring loaded. Usually used with Catalog Number 601-018	76.00
620-0634-000	601-020 Elbow, miter 90° reinforced, female-female swivel flanged 5 1/2" center line. Includes one removable anchor insulator-connector "O" ring and hardware	700.00
620-1313-0xx	301-084 Transition 6 1/8" - 75- 6 1/8" - 50, Specify channel	825.00
620-1336-000	601-021 Elbow assy, miter 90° female-female, reinforced, swivel flanged. Includes one removable anchor-insulator-connector "O" ring and hardware, same as 020 except has captivated inner conductor	750.00

MYAT, INC.

TRANSMISSION EQUIPMENT

STOCK NO.		PRICE
6 1/8" 50 Ohm Rigid Transmission Line and Components (Continued)		
620-1335-000	601-030 Elbow, miter, 45° female-female, swivel flanged. Includes one removable anchor insulator connector. "O" ring and hardware	\$ 700.00
620-1334-000	601-040 Tee assembly	On request
620-1337-000	601-050 Gas barrier, with "O" ring gasket and 2 1/4" long hardware. Incorporates 1/8" IPS gas inlet	750.00
620-0635-000	601-064 Reducer assy, taper type 6 1/8" to 3 1/8" 50 ohm pressurized, fixed flanged. Includes one 3 1/8" anchor insulator. "O" ring and hardware	350.00
620-0916-0xx	601-084 Transformer 6 1/8" 75 ohm to 6 1/8" 50 ohm flanged line. Includes anchor insulator-connectors each end, "O" rings and hardware. Specify channel	850.00
618-0313-000	6 1/8" 50 Ohm transmission line, unflanged 7 ft.	406.00
618-0345-000	6 1/8" 50 Ohm transmission line, unflanged 14 ft.	812.00
618-0354-000	6 1/8" 50 Ohm transmission line, unflanged 6 ft.	348.00
618-0448-000	6 1/8" 50 Ohm transmission line, unflanged 4 ft.	232.00
618-0453-000	6 1/8" 50 Ohm transmission line, unflanged 10 ft.	580.00
620-0614-000	Reducer, 6 1/8" 50 ohm - 3 1/8" 50 ohm	430.00
6 1/8" 75 Ohm Rigid Transmission Line and Components		
618-0398-000	701-001 Line assy, 20 ft. exact length, flanged both ends. Includes anchor insulator-connector, assy, "O" ring and hardware	1300.00
618-0403-000	701-004 Line assy, 20 ft. section, no flanges hardware or connector	1100.00
618-0406-000	701-006 Line assy, length 20 ft., flanged one end	1295.00
620-0638-000	701-008 Flange fixed, same as 601-008	65.00
620-0905-000	701-009 Flange, swivel	100.00
620-1339-000	701-010 Anchor insulator-connector assy, spring loaded, silver plated with plastic head	145.00
620-0801-000	701-010ML Anchor, insulator-connector lubed	150.00
620-1331-000	701-011 "O" Ring	4.25
620-0713-000	701-012 Hardware set	16.00
620-1341-000	701-019 Inner conductor connector	76.00
620-0743-000	701-020 Elbow, miter 90° reinforced, female-female, swivel flanged. Includes one removable anchor insulator, connector, "O" ring and hardware	675.00
620-0812-000	701-021 Elby assy, miter 90°, female-female, reinforced, swivel flanged. Includes one removable anchor, insulator-connector, "O" ring and hardware. Same as 020 except 021 has captivated inner conductor	750.00
620-1342-000	701-050 Gas barrier, with "O" ring and 2 1/4" long hardware. Incorporates 1/8" IPS gas inlet, plugged	725.00
620-0916-0xx	701-084 Transition 6 1/8 - 75 - 6 1/8 - 50. Specify channel	850.00
Vertical Run		
620-0216-000	Fixed Hanger, Myat #301-042-1 - 3"	43.00
620-1320-000	Spring Hanger, Myat #301-042-3 - 3"	78.00
Horizontal Run		
620-1322-000	Lateral Brace, Myat #301-042-8 - 3"	60.00
620-1327-000	Spring Hanger, Myat #301-042-17 - 3"	On request
Vertical Run		
620-1319-000	Fixed Hanger, Dual, Myat #301-042-2 - 3"	41.00
620-1329-000	Spring Hanger, Dual, Myat #301-042-24 - 3"	77.00
620-1328-000	Spring Hanger, Dual, Myat #301-042-18 - 3"	On request
620-1321-000	Horizontal Anchor, Myat #301-042-5 - 3"	56.00
620-0935-000	Fixed Hanger, Myat #701-042-1 - 6"	50.00
620-1350-000	Spring Hanger, Myat #701-042-3 - 6"	110.00
Horizontal Run		
620-1346-000	Lateral Brace, Myat #701-042-8-6"	63.00
620-1348-000	Spring Hanger, Myat #701-042-17 - 6"	210.00
620-1345-000	Horizontal Anchor, Myat #701-042-5 - 6"	110.00

HYDRO-PED CLAW BALL TRIPODS

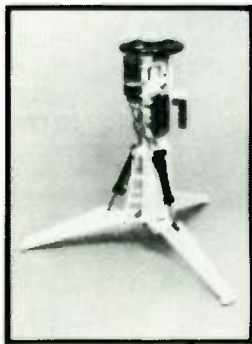


Claw Ball Tripods

(price does not include Ball)

For use with Models C, 20, 30, and 50

Regular Claw Ball Tripod (39" to 67").....	345.00
Baby Claw Ball Tripod (18" to 26")	345.00
Claw Ball Hi Hat (5½")	105.00
Claw Ball Tripod Top Casting only (replacement)	120.00



Hydro-ped Model 102-B **\$3950.00**
Including the following standard accessories.

Pro Jr Top Plate

Factory Order Options

Add the following amount when substituted for the above standard accessories.

Mitchell Top Plate **N/C**

Accessories

Pro Jr Top Plate for Hydro-ped	115.00
Mitchell Top Plate for Hydro-ped	115.00
Set of Wheels for Hydro-ped (2 fixed, 1 castor)	280.00
Set of Wheels for Hydro-ped (3 castors)	280.00



Super Claw Ball Tripods

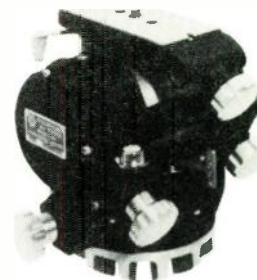
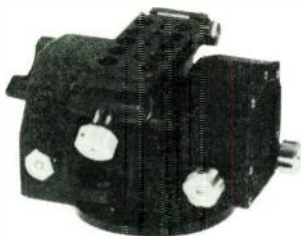
(price does not include Ball)

For use with Models 100 and 150

Standard Super Claw Ball Tripod (50" to 79")	545.00
Regular Super Claw Ball Tripod (46" to 66")	545.00
Sawed off Super Claw Ball Tripod (37" to 57")	545.00
Baby Super Claw Ball Tripod (26½" to 34½")	545.00
Super Claw Ball Hi-Hat (6")	155.00
Super Claw Ball Tripod Top Casting only (replacement)	160.00



FLUID CAMERA HEADS



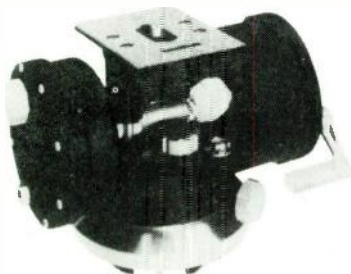
Model 30 **\$995.00**
Including the following standard accessories.

Standard Handle (1/2" diameter, 10" length)
Quick Release Camera Platform (with Removable Lisand type Camera Mounting Plate)
Flat Base
Adjustable Counterbalance Spring with Adjustment Wrench

Factory Order Options

Add the following amount when substituted for the above standard accessories.

Adjustable Balance Quick Release Camera Platform (with removable Cine 60 Type Camera Mounting Plate, for use with one or two handles - extra handle not included) **55.00**
Adjustable Balance Quick Release Camera Platform (with removable Lisand Type Camera Mounting Plate, for use with one or two handles - extra handle not included) **55.00**
Pro Jr Flat Base **55.00**
Claw Ball Base **55.00**
Arri 16 Ball Base **55.00**
Arri 35 Ball Base **70.00**



Model 100-C **\$2750.00**
Including the following standard accessories.

Standard Handle (5/8" diameter, 15" length)
Fixed Camera Platform
Mitchell Base with tiedown assembly
500 Inch-Pound Counterbalance Spring

Factory Order Options

Add the following amount when substituted for the above standard accessories.

Extended Handle for Video (3/4" diameter, 26" length) . . . **70.00**
Adjustable Balance Quick Release Camera Platform (Side-Mount) (with removable Camera Mounting Plate, for use with one or two handles - extra handle not included) **375.00**
Pro Jr Base **N/C**
Arri 35 Ball Base **N/C**
Super Claw Ball Base **75.00**
300 Inch-Pound Counterbalance Spring **40.00**
700 Inch-Pound Counterbalance Spring **65.00**

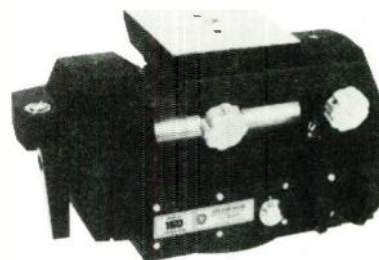
Model 50-D **\$1895.00**
Including the following standard accessories.

Standard Handle (1/2" diameter, 15" length)
O'CONNOR Quick Release Camera Platform (with Removable Camera Mounting Plate)
Pro Jr Base with tiedown assembly
150 Inch-Pound Counterbalance Spring

Factory Order Options

Add the following amount when substituted for the above standard accessories.

Fixed Camera Platform **N/C**
Adjustable Balance Quick Release Camera Platform (with removable Cine 60 Type Camera Mounting Plate, for use with one or two handles - extra handle not included) **65.00**
Adjustable Balance Release Camera Platform (with removable Lisand Type Camera Mounting Plate, for use with one or two handles - extra handle not included) **65.00**
Pro Jr/Flat Base **N/C**
Claw Ball Base **N/C**
Arri 16 Ball Base **N/C**
Arri 35 Ball Base **15.00**
Mitchell Base **30.00**
100 Inch-Pound Counterbalance Spring **25.00**
200 Inch-Pound Counterbalance Spring **60.00**



Model 150 **\$4950.00**
Including the following standard accessories.

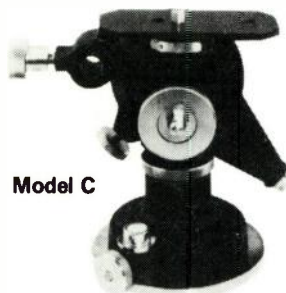
Standard Handle (5/8" diameter, 15" length)
Adjustable Balance Quick Release Camera Platform, for use with one or two handles (extra handle not included)
Mitchell Base with tiedown assembly
1000 Inch-Pound Counterbalance Spring

Factory Order Options

Add the following amount when substituted for the above standard accessories.

Extended Handle for Video (3/4" diameter, 26" length) . . . **70.00**
1500 Inch-Pound Counterbalance Spring **90.00**

FLUID CAMERA HEADS AND ACCESSORIES



Model C

Model C \$795.00

Including the following standard accessories

- Standard Handle (1/2" diameter, 10" length)
- Fixed Camera Platform with 3/8"-16 camera tiedown screw
- Pro Jr Base with tiedown assembly
- 50 Inch-Pound Counterbalance Spring

Factory Order Options

Add the following amount when substituted for the above standard accessories.

- Adjustable Spread Double Handle for Video (2 each 1/2" diameter, 16" length) \$155.00
- Narrow (1" width) Fixed Camera Platform with 1/4"-20 camera tiedown screw 40.00
- Arri 16 Ball Base N/C
- Claw Ball Base with tiedown assembly N/C

Accessories

Handles

- Standard Handle for Models C or 30 (1/2" diameter, 10" length) \$ 65.00
- Adjustable Spread Video Double Handle for Model C (2 each 1/2" diameter, 16" length) 220.00
- Standard Handle for Model 50 (1/2" diameter, 15" length) 75.00
- Standard Handle for Model 100 (5/8" diameter, 15" length) 90.00
- Extended Handle for Video for Models 100 or 150 (3/4" diameter, 16" length) 160.00

Camera Mounting Plates

(replacements)

- Lisand Type for Models 30 or 50 \$ 20.00
- Cine 60 Type for Models 30 or 50 25.00
- O'CONNOR Type for Model 50 25.00

Adapters

(from base of fluid head to top casting of tripod)

- Pro Jr to Arri 16 for Models C, 20, 30 or 50 \$ 85.00
- Pro Jr to Claw Ball for Models C, 20, 30 or 50 110.00
- Pro Jr to Mitchell for Models 50 or 100 120.00
- Mitchell to Super Calw Ball for Models 100 or 150 190.00
- Super Claw Ball to Mitchell for Models 100 or 150 315.00

Tiedown Assemblies

(replacements) for

- Pro Jr Base, or Pro Jr to Arri 16 Adapter \$ 25.00
- Claw Ball Base 40.00
- Pro Jr to Claw Ball Adapter 40.00
- Pro Jr to Mitchell Adapter 30.00
- Pro Jr/Flat Base 25.00
- Arri 35 Ball Base 25.00
- Mitchell Base 30.00
- Pro Jr to Mitchell Adapter 30.00

- Super Claw Ball Base 45.00
- Mitchell to Super Claw Ball Adapter 45.00

Cases

- Model C \$230.00
- Model 30 230.00
- Model 50 245.00
- Model 100 270.00
- Model 150 315.00
- Regular Claw Ball Tripod 140.00
- Baby Claw Ball Tripod 130.00
- Standard and Regular Super Claw Ball Tripods 215.00
- Baby Super Claw Ball Tripod 215.00
- Hydro-ped only 415.00
- Hydro-ped with either Model 30 or 50 435.00

Bases

(with tiedown assemblies)

- Flat Base for Model 30 \$ 55.00
- Pro Jr Base for Model C 115.00
- Pro Jr Base for Models 30 or 50 110.00
- Pro Jr/Flat Base for Models 30 or 50 110.00
- Pro Jr Base for Model 100 140.00
- Arri 16 Ball Base for Model C 115.00
- Arri 16 Ball Base for Models 30 or 50 115.00
- Claw Ball Base for Model C 115.00
- Claw Ball Base for Models 30 or 50 110.00
- Arri 35 Ball Base for Models 30 or 50 125.00
- Arri 35 Ball Base for Model 100 140.00
- Mitchell Base for Model 50 140.00
- Mitchell Base for Model 100 140.00
- Mitchell Base for Model 150 140.00
- Super Claw Ball Base for Model 100 215.00

Camera Platforms

- Quick Release Camera Platform for Model 30 (with Removable Lisand type Camera Mounting Plate) \$235.00
- Adjustable Balance Quick Release Camera Platform for Model 30 (with removable Cine 60 Type Camera Mounting Plate for use with one or two handles - extra handle not included) 285.00
- Adjustable Balance Quick Release Camera Platform for Model 30 (with removable Lisand Type Camera Mounting Plate, for use with one or two handles - extra handle not included) 285.00
- O'CONNOR Quick Release Camera Platform for Model 50 (with Removable Camera Mounting Plate) 220.00
- Fixed Camera Platform for Model 50 220.00
- Adjustable Balance Quick Release Camera Platform for Model 50 (with removable Cine 60 Type Camera Mounting Plate, for use with one or two handles - extra handle not included) 285.00
- Adjustable Balance Quick Release Camera Platform for Model 50 (with removable Lisand Type Camera Mounting Plate, for use with one or two handles - extra handle not included) 285.00
- Fixed Camera Platform for Model 100 250.00
- Adjustable Sidemount Platform for M-100, for use with one or two handles \$625.00
- Adjustable Balance Quick Release Camera Platform, for use with one or two handles for Model 150 (extra handle not included) 625.00

orban

PROFESSIONAL AUDIO PRODUCTS

111B/1 Spring Reverberation (2 Channel)

Dual-channel spring reverb with six springs/channel for smoothness and natural sound. "Floating threshold" limiter attenuates "spring twang" and protects against overload. Shelving bass and quasi-parametric midrange EQ. Unbalance input accepts line-level or semi-pro (medium level) gear. Transformer-balanced main output; unbalance "mixed" output allows use "in-line" without external mixers. Compact, rugged, and reliable. **\$849.00**

245E Stereo Synthesizer

Creates a seductive pseudo-stereo effect from mono original. Left and right channels sum back to original mono for total compatibility in disc cutting and FM stereo broadcast. Doesn't affect the frequency balance of the mono original. Easy to use; only three operating controls. Unbalance line-level input and outputs. **\$399.00**

418A Stereo Compressor/Limiter

Famous OPTIMOD-FM circuitry adapted for production and recording applications. Exceptionally smooth sound with adjustable program-controlled release time. Separate high frequency limiter with four selectable breakpoints from 25 to 75us. Simple, easy-to-use stereo ganged controls. Accurate stereo tracking. Balanced line-level inputs; unbalanced outputs. Ideal for processing complex program material in cassette duplication, broadcast production, and recording studios. **\$849.00**

424 Gated Compressor/Limiter/D-Esser

Production AGC device which achieves high average loudness without undesirable artifacts. Separate Compressor/Limiter and De-Esser control loops, with program-controlled parameters. Defeatable gate with adjustable threshold freeze gain. Adjustable attack-time, release time, and compression ratio. Independent De-Esser similar to the 526A De-Esser. Low distortion Operation. 25 dB gain reduction. Better than 25 dB de-ess gain reduction in addition to 25 dB compressor/limiter gain reduction. True peak-reading output level meter... True peak-reading gain reduction meter. Selectable linear or exponential release time characteristics. Rugged all metal 19" rack-mount package. Available in mono stereo (channels independent or strappable). Extensive RFI suppression. Balanced inputs and outputs and 115/230V, 50/60 Hz power supply standard. **424A \$899.00**
422A (Mono) \$569.00

516EC Dynamic Sibilance Controller (3 Channel)

Three-channel de-esser with unbalance line-level inputs and outputs. Ideal for simultaneous de-essing of several voices in cinema, recording, or broadcast. Easy to adjust with single THRESHOLD control. De-essing constant over 15 dB input range. De-essing defeatable without clicks or pops. Outstandingly quiet and clean. **\$719.00**

526A Dynamic Sibilance Controller (1 Channel)

Effective de-essing without audible "action". De-essing constant over 15 dB input level range. Easy to set up and use—only two operating controls (GAIN and THRESHOLD). Fully balanced transformer-coupled input and output with mic/line switching on input. Can be inserted and removed from circuit without clicks or pops. Convenient LED level and de-essing indicators. **\$469.00**

622B Parametric Equalizer

A two channel parametric equalizer for use where continuous, non-interacting control over center frequency, bandwidth, and amount of peak boost or cut is desired. Four peaking bands per channel with "constant-Q" curves providing notching capability; individual channel and band in/out switches; GAIN control; overload lamp. Line-level balanced input and unbalanced output. Output can be balanced by addition of optional transformer.

622A 1 Channel **\$509.00**
622B 2 Channel **\$799.00**

ACCESSORIES

*RET-5 Balanced output transformer. Order one per output **\$16.00**

672A Mono Graphic Parametric Equalizer

A single channel quasi-parametric equalizer with continuous control over center frequency, bandwidth, and amount of peak or dip. Convenient graphic-style EQ controls provide reciprocal EQ in eight bands. Additional 12 dB/octave highpass and lowpass filters tune continuously over 100:1 frequency range. Additional lowpass output permits use as equalizer cascaded with electronic crossover. GAIN control; overload lamp; IN/OUT switches for equalizer and each filter. Line-level balanced input; unbalance outputs can be balanced with optional transformer(s). **\$629.00**

ACCESSORIES

*RET-6 Balanced output transformer. Order one per output **\$16.00**

674 Stereo Graphic Parametric Equalizer (with HP/LP Filters, Barrier Strip Terminals)

A two-channel version of the 672A. Controls are configured to facilitate accurate, easy adjustment of both channels simultaneously when equalizing stereophonic program. Each channel identical to the 672A, including all controls and overload output, with the exception that the electronic crossover outputs are arranged as "MAIN/LOWPASS" and "HIGHPASS" to provide further protection against accidental tweeter burnout should IN/OUT switches be incorrectly operated. **\$1179.00**

ACCESSORIES

ACC-3 Plexiglass security cover for filter section controls **\$ 9.00**
***RET-7** Balanced output transformers (2) for main outputs **\$32.00**
***RET-8** Balanced output transformers (4) for both outputs **\$64.00**
***RET-9** 2 ckt phone jacks for inputs and main outputs **\$10.00**
***RET-10** 2 ckt phone jacks for inputs and all outputs **\$13.00**
***RET-11** XLR-type connectors for inputs and main outputs **\$24.00**
***RET-12** XLR-type connectors for inputs and all outputs **\$30.00**



111B/1



245E



418A



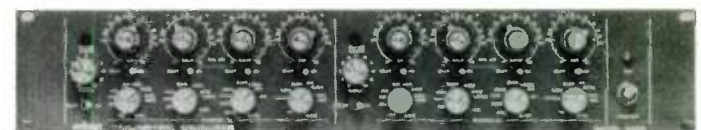
424A



516EC



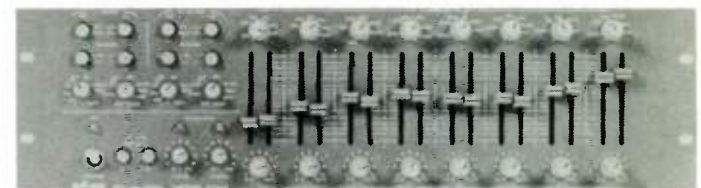
526A



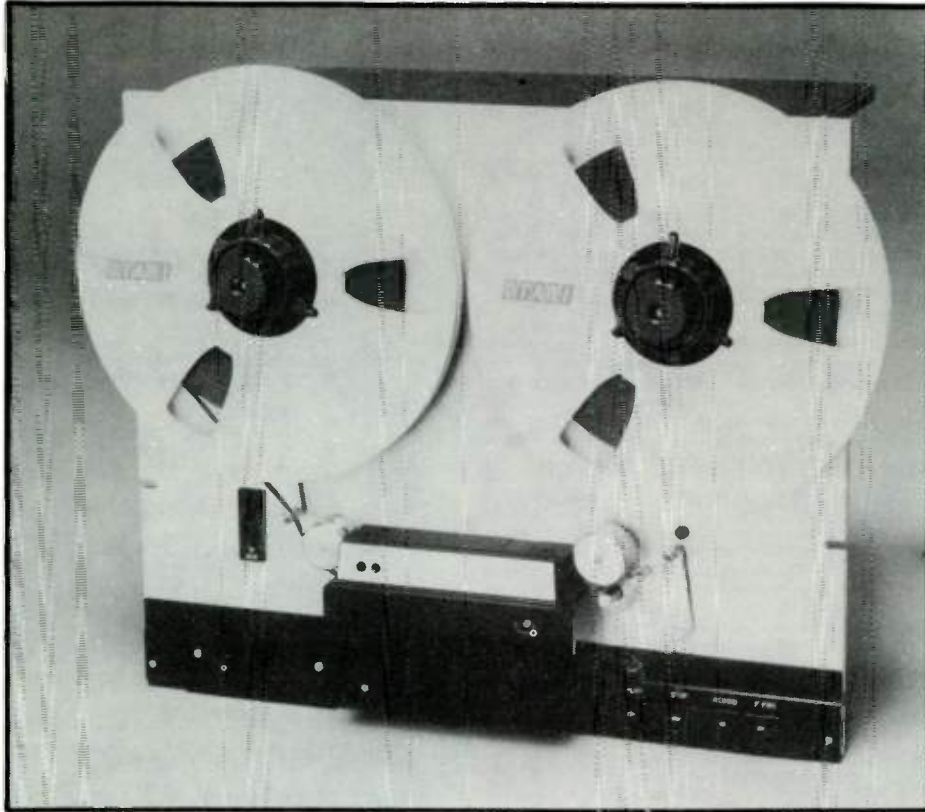
622B



672A



674

OTARI

PROFESSIONAL AUDIO RECORDERS

ARS-1000 Automated Radio Station Reproducer

- Widely used in leading automation systems.
- Two speeds — 7½ and 3¾ ips, front selectable.
- Adjustable front panel cue control.
- Recessed front adjustable output level and head azimuth, with flip-up head cover.
- Plug-in professional grade PC boards and relays.
- IC preamp in head assembly improves S/N.
- Simple operation plus remotable Play and Stop.
- Ready light indicates proper tape threading.
- Special long-life polyurethane pinch roller and ball bearings.
- Ruggedly designed for long term reliability under continuous operating conditions.
- Full one-year warranty on all parts (except heads) and labor.
- 25 Hz sensor optionally available.

Otari's ARS-1000 is a widely used two-speed reproduce only tape machine specifically designed to meet the unique needs of the automated radio broadcaster. This machine is engineered for heavy duty continuous operation, with special emphasis placed on long term reliability, simple operation, consistent performance, and ease of maintenance.

Take reliability, for example. The ARS-1000 is a rugged machine that has been subjected to thousands of hours of life tests to determine its mean-time-between-failure. Selection of components reflects this heavy emphasis on reliability. Consider the rugged motors and brake assemblies, the gold plated PCB connectors, or the special long life pinch roller assembly with polyurethane tire and friction-reducing ball bearings.

 **HARRIS**

Ease of maintenance is assured with plug-in PCB's and mother board configuration, an easy-access head-cover, plus front adjustable output level and head azimuth (the latter to minimize stereo phasing errors).

Operational ease is provided by simple interlocked controls and a straight line tape threading path plus flip-up head cover. A front panel Ready light indicates, even from a distance, that tape is threaded properly and the machine is ready for the next command. For increased head life, tape lifters are used in the fast modes, but can be defeated by a front panel Cue control for an audible monitoring signal.

The electronics are also of advanced design. Headroom is an excellent + 19 dBm. Outputs are 600 ohm unbalanced; 0 VU is + 4 dBm. Noise is minimized by use of an IC head preamp mounted directly above the head assembly. Transformer voltage controlled torque motors are used with external, fully adjustable band brakes. Brakes are completely fail safe in case of power failure.

Specifications

Reel Size: 7 inch plastic or 10½ inch, EIA or NAB.

Heads: Hard Permalloy metal head with two half track head stacks and front adjustable azimuth. Integral IC head preamp has front accessible level controls.

Flutter and Wow: (Measured per NAB weighted).

Tape Speed: 7½ ips, less than 0.06%; 3¾ ips, less than 0.15%.

Motors: Three total. Two-speed hysteresis synchronous capstan, and two induction reel motors. Front accessible oil wick for capstan bearing.

Frequency Response: 7½ ips (at -10 VU): 50 to 18,000 Hz + /- 2 dB
30 to 20,000 Hz + /- 3 dB
3¾ ips (at -10 VU): 50 to 12,000 Hz + /- 2 dB
30 to 15,000 Hz + /- 3 dB

Distortion: Less than 1% at 1000 Hz at 185 nWb/m.

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. **\$1,595.00**

ARS-1000-DS Identical to ARS 1000-DC except without 25 Hz sensor. **\$1,535.00**

Prices and specifications subject to change without notice

World Radio History



PROFESSIONAL AUDIO RECORDERS

MX-5050-B Broadcast Recorder

Otari's MX-5050-B continues the proud heritage of the MX-5050 Series, a recorder now extensively used by television and radio broadcasters worldwide.

- Dc Capstan Servo: +/-7% Speed Control: Dc capstan servo system provides exceptionally stable tape speeds, plus ability to vary both record and reproduce speeds by +/-7% of nominal.
- Adjustable Cue Control: Helps locate selections by defeating head lifters in fast forward or rewind to allow you to hear an audible signal. Adjustable feature varies the signal volume to prevent overloading of earphones or monitors.
- Built-in Splicing Block: As a real production convenience, a precision-aligned and indexed splicing block is mounted right on the head cover. Cover is hinged and lifts for easy access to heads.
- Selection Locator Memory: Return to zero memory recues machine to zero setting, a real time saver.
- Three Speeds: Three speed operation in speed pairs of 15/7 1/2 or 7 1/2/3 3/4 ips are internally switchable on PC board inside the back cover. Equalization is automatically changed at the same time.
- Edit Control: Indispensable for production work, allows you to rock the reels back and forth or to spill tape at right of transport. Deactivates take-up motor and end-of-tape lever.
- Selective Reproduce: Another important production feature for over-dubbing, selective reproduce allows a new track to be laid down next to previously recorded tracks in perfect time synchronization.
- Front Adjustable Bias and Record EQ
- Plug-in, Rugged Permalloy Heads
- Extra Reproduce Head
- Flashing Ready Light: This provides a visual indication, easily seen even from a distance, of the record-safe mode which helps to prevent accidental erasure.
- Noise Free Punch-in and Punch-out
- Motion Sensing Control Logic
- Peak Reading LED's
- Fixed Output Level
- Built-in Test Oscillator
- +4 or -10 dBm Output
- Remote Control Connector: All transport operating controls (Record, Play, Stop, Rewind, and Fast Forward) are brought out to this connector for selection by an optional remote control unit.
- NAB/IEC EQ: Both NAB and IEC equalization circuitry are included and are selected by this switch.
- Choice of Three Record Levels: To maximize performance with different tapes, the MX-5050-B includes three separate calibrated record levels in nWb/m: 185 (original standard), 250 (for high-output low-noise tapes), 320 (the IEC and DIN standard).
- Microphone Attenuator: For added versatility when using microphone preamps or high output mics, this switch provides a 20 dB pad.
- XLR Connectors, Slanted Panel: All input and output connectors are three-pin XLR, mounted on a slanted panel so the machine can be operated horizontally.

5050BQ-Series II 1/4" Four-Channel Recorders

- 15 and 7 1/2 ips tape speeds • Motion sensing control logic • Selective reproduce
- Variable speed DC capstan servo • Easily accessible electronics adjustments
- Built-in test and cue oscillator • Plug-in head assembly

- Proprietary microprocessor to govern transport logic • Electronic real-time counter with LED display • Automatic monitor switching • Selectable 20dB microphone input attenuator • Selectable track headphone monitoring • Peak reading indicators on each channel • Separate mic/line mixing on each channel • Compact, integrated electronics design

MX-5050-B	Two-channel half-track recorder/reproducer with quarter-track reproduce capability. DC-servo capstan. Three speeds in speed pairs of 15/7 1/2 or 7 1/2/3 3/4 ips, field selectable. 600 ohm balanced output. Vinyl covered wood cabinet.	\$2295.00
MX-5050B 1/4 track	Two-channel, quarter-track recorder/reproducer with half-track reproduce capability, otherwise identical to the MX-5050-B	2295.00
MX-5050-BF	One-channel full-track recorder/reproducer with two channel half-track reproduce capability. Otherwise identical to MX-5050-B	2350.00
MX-5050BQ-II	Four-channel, quarter-track, quarter-inch tape recorder/reproducer. 15/7 1/2 ips. DC-servo capstan system. +4 or -10 levels, microprocessor control	2995.00
MX-5050-MKIII-8	Eight-channel, half-inch tape recorder/reproducer. 15/7 1/2 ips. +4 or -10 levels, microprocessor control, optional remote	5295.00

Accessories

FC-2B	2-piece flight case for the MX-5050-B, MX-5050-B, and BQII rugged case for protection of the recorder in transportation. Foam-lined, pullover case. Blue only	\$280.00
RK-2B	Rack mounting adapter permits easy mounting in standard 19" rack	MX-5050-B: \$ 50.00 & BQII: \$ 50.00 Mark II-2: \$ 65.00 Mark II-4: \$ 65.00
RK-2M		
RK-4		
CSL-B	Wood floor console for B, BF, and BQII with casters for convenient horizontal operation	\$375.00
CB-102 (CR-705A)	Remote control for MX-5050-B, BQII, MKII series and MKIII-4	\$140.00
CB-110	Remote session controller for MKIII-8. Includes transport controls, channel switching/monitoring, tape timer readout, and memory return.	\$650.00
IPT-B	Input transformer, balanced 10 K ohm, for MX-5050-B. Internal mounting, hard-wired type	\$ 17.00
IPT-HW	Input transformer, balanced 600 ohm, for MX-5050-QXD, 8D, and Mark II. Internal mounting, hard-wired type	\$ 50.00
OPT	Balanced 600 ohm, output transformer for QXD, 8D, and Mark II-4. (Balanced 600 ohm output is standard on other models.)	\$ 35.00
ADP-CBL	Set of 10-foot input/output cables for two-channels: two input XLR male to RCA phono, and two XLR female to RCA phono	\$ 27.00
TW-670	Reel hold down knobs, 1/4" each.	\$ 18.00
TW-671	Reel hold down knobs, 1/2" each	\$ 25.00
Operation Manual	Extra manual (one supplied with recorder). Please specify model.	\$ 25.00
Service Manual	Please specify model.	\$ 25.00

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.

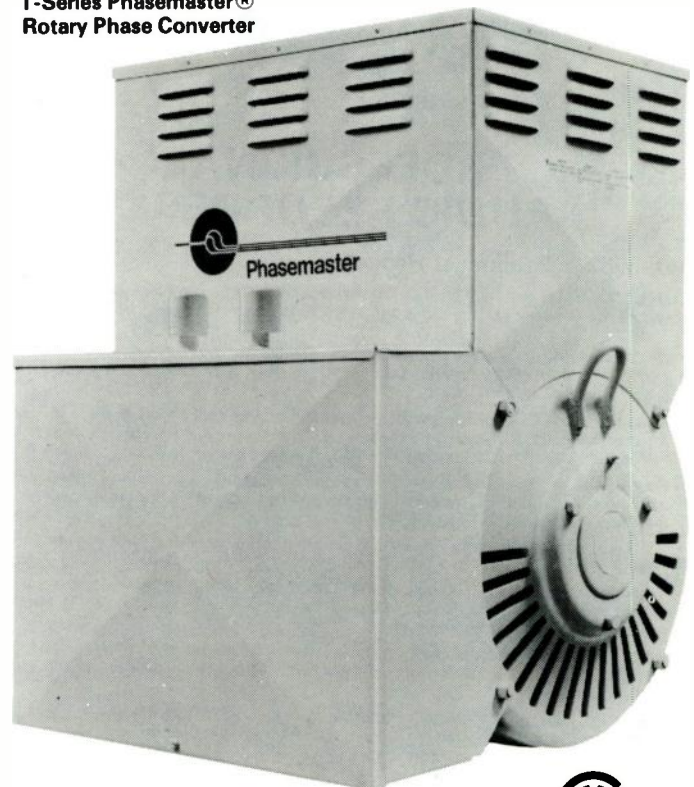
Additional information is available, including a list of stations using Phasemaster Converters.

Phasemaster® is manufactured under U.S. Patents 3349316, 3387202, 3609430, Canadian Patent 786933 and Patents Pending.

Model	Voltage	Shipping Weight	Price
T-1300-A2	230*	165	\$1,310.00
T-2000-A2	230*	215	1,620.00
T-2500-A2	230*	270	1,935.00
T-4000-A2	230*	420	2,380.00
T-5000-A2	230*	480	2,970.00
T-7500-A2	230*	577	3,365.00
T-8000-A2	230*	751	4,400.00
T-10000-A2	230*	873	5,200.00
T-12000-A2	230*	970	5,865.00

*Available in 460 volt no additional charge

T-Series Phasemaster®
Rotary Phase Converter



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

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	\$278.00
618-0519-000	1-5/8" 50 Ohm line assembly 19-3/4 ft. length, flanges both ends	278.00
618-0518-000	1-5/8" 50 Ohm line assembly 19-1/2 ft. length, flanges both ends	278.00
618-0525-000	1-5/8" 50 Ohm line assembly 20 ft. length, no flanges	200.00
618-0524-000	1-5/8" 50 Ohm line assembly 19-3/4 ft. length, no flanges	200.00
618-0523-000	1-5/8" 50 Ohm line assembly 19-1/2 ft. length, no flanges	200.00
618-0522-000	1-5/8" 50 Ohm line assembly 20 ft. length, flange one end	257.00
618-0521-000	1-5/8" 50 Ohm line assembly 19-3/4 ft. length, flange one end	257.00
618-0520-000	1-5/8" 50 Ohm line assembly, 19-1/2 ft. length, flange one end	257.00
618-0526-000	1-5/8" 50 Ohm flexible line assembly 10" length	509.00
620-1760-000	1-5/8" 50 Ohm 3-1/2" dia. fixed flange includes silver solder ring insert	18.00
620-1728-000	1-5/8" 50 Ohm adapter assembly flanged to unflanged line, clamp type	42.00
620-1729-000	1-5/8" 50 Ohm anchor insulator connector, finished with prodelube	26.00
620-0232-000	1-5/8" 50 Ohm "O" ring gasket	1.70
620-1730-000	1-5/8" 50 Ohm inner conductor connector, silver plated, spring loaded	24.00
620-0233-000	1-5/8" 50 Ohm 4 piece Hardware set	9.50
620-1742-000	1-5/8" 50 Ohm coupling assembly	38.00
620-1761-000	1-5/8" 50 Ohm flange, swivel silver solder	25.00
620-1728-000	1-5/8" 50 Ohm adapter w/anchor insulator	24.00
620-1748-000	1-5/8" 50 Ohm elbow, miter, 90 D., swivel flanges, male - female	126.00
620-1719-000	1-5/8" 50 Ohm gas barrier with Port	139.00
620-1712-000	1-5/8" 50 Ohm adapter to N series female	102.00
620-1711-000	1-5/8" 50 Ohm adapter to LC female	133.00
620-1131-000	1-5/8" 50 Ohm reducer, tapes to 7/8" flanged line	100.00
620-1701-000	1-5/8" supporting hardware hanger fixed, single line	40.00
620-1703-000	1-5/8" supporting hardware hanger, spring, single line	36.00
620-1766-000	1-5/8" supporting hardware anchor plate	54.00
620-1723-000	1-5/8" supporting hardware brace, lateral	51.00
620-1702-000	1-5/8" supporting hardware hanger, slip type, flange mount	36.00
618-0540-000	3-1/8" 50 Ohm line assembly 20 ft. rigid line, flanged both ends	489.00
618-0539-000	3-1/8" 50 Ohm line assembly 19-3/4 ft. rigid line, flanged both ends	489.00
618-0538-000	3-1/8" 50 Ohm line assembly 19-1/2 ft. rigid line, flanged both ends	489.00

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	\$368.00
618-0545-000	3-1/8" 50 Ohm line assembly 19-3/4 ft. rigid line, no flanges	368.00
618-0544-000	3-1/8" 50 Ohm line assembly 19-1/2 ft. rigid line, no flanges	368.00
618-0543-000	3-1/8" 50 Ohm line assembly 20 ft. rigid line, flange one end	456.00
618-0542-000	3-1/8" 50 Ohm line assembly 19-3/4 ft. rigid line, flange one end	456.00
618-0541-000	3-1/8" 50 Ohm line assembly 19-1/2 ft. rigid line, flange one end	456.00
618-0547-000	3-1/8" 50 Ohm line assembly 10" flexible line	622.00
620-1634-000	Flange Fixed 3-1/8" accessory	29.00
620-1732-000	Anchor Insulator connector assembly 3-1/8" accessory	38.00
620-1731-000	Anchor Insulator connector assembly with prodolube 3-1/8" accessory	42.00
620-1743-000	Straight coupling 3-1/8" accessory No inner conductor	69.00
620-0270-000	"O" ring gasket 3-1/8" accessory	2.25
620-1733-000	Connector inner conductor 3-1/8" accessory	28.00
620-0908-000	Hardware set 3-1/8" accessory	12.00
620-1762-000	Flange, swivel silver solder 3-1/8" accessory	43.00
620-1710-000	Adapter, flange 3-1/8" accessory	55.00
620-1749-000	Elbow, miter, 45 D., swivel flanges 3-1/8" accessory	222.00
620-1750-000	Elbow, miter, 90 D., no flanges 3-1/8" accessory	116.00
620-0213-000	Elbow, miter, 90 D., swivel flanges, male - female 3-1/8" accessory	222.00
620-1720-000	Gas barrier with port 3-1/8" accessory	213.00
620-1726-000	Adapter to N female 3-1/8" accessory	215.00
620-1155-000	Reducer, taper, to 1-5/8" EIA flange 3-1/8" accessory	164.00
620-1505-000	Reducer, flange to 1-5/8" EIA 3-1/8" accessory	240.00
620-1704-000	Hanger, fixed, single line 3-1/8" supportive hardware	45.00
620-1706-000	Hanger, spring, single line 3-1/8" supportive hardware	65.00
620-1767-000	Anchor plate 3-1/8" supportive hardware	58.00
620-1724-000	Brace, lateral 3-1/8" supportive hardware	61.00
620-1705-000	Hanger, slip type flange mount 3-1/8" supportive hardware	55.00
620-1707-000	Hanger, slip type, stud mount 3-1/8" supportive hardware	21.00
618-0559-000	6-1/8" 50 Ohm line 20' rigid line, flange both ends	1,471.00
618-0558-000	6-1/8" 50 Ohm line 19-3/4' rigid line flange both ends	1,471.00

RIGID TRANSMISSION LINE

Rigid Line Components

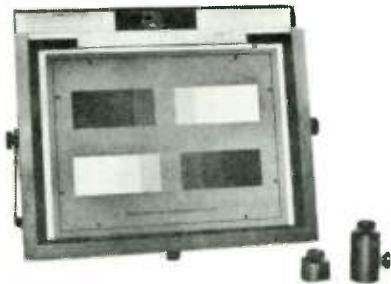
STOCK NO.	DESCRIPTION	PRICE
618-0557-000	6-1/8" 50 Ohm line 19-1/2' rigid line flange both ends	\$1,471.00
618-0565-000	6-1/8" 50 Ohm line 20' rigid line no flanges	1,200.00
618-0564-000	6-1/8" 50 Ohm line 19-3/4' rigid line no flanges	1,200.00
618-0563-000	6-1/8" 50 Ohm line 19-1/2' rigid line no flanges	1,200.00
618-0562-000	6-1/8" 50 Ohm line 20' rigid line, flange one end	1,443.00
618-0561-000	6-1/8" 50 Ohm line 19-3/4' rigid line flange one end	1,443.00
618-0560-000	6-1/8" 50 Ohm line 19-1/2' rigid line flanges one end	1,443.00
620-1645-000	Flange, Fixed 6-1/8" accessory	67.00
620-1734-000	Anchor insulator-connector assembly 6-1/8" accessory	151.00
620-1744-0-0	Straight coupling 6-1/8" accessory	311.00
620-1331-000	"O" ring gasket 6-1/8" accessory	4.50
620-1668-000	Hardware set 6-1/8" accessory	17.00
620-1428-000	Flange swivel silver solder 6-1/8" accessory	105.00
620-1752-000	Elbow, miter 45 D., swivel flanges 6-1/8" accessory	722.00
620-1751-000	Elbow, miter, 90 D., swivel flanges, male - female 6-1/8" accessory	722.00
620-1775-000	Reducer, taper to 3-1/8" EIA 6-1/8" accessory	361.00
618-0568-000	6-1/8" 75 Ohm line 20 ft. rigid line, flanges both ends	1,360.00
618-0567-000	6-1/8" 75 Ohm line 19-3/4' rigid line flange both ends	1,360.00
618-0566-000	6-1/8" 75 Ohm line 19-1/2' rigid line flange both ends	1,495.00
618-0574-000	6-1/8" 75 Ohm line 20' rigid line no flanges	1,160.00
618-0573-000	7-1/8" 75 Ohm line 19-3/4' rigid line no flanges	1,145.00
618-0572-000	6-1/8" 75 Ohm line 19-1/2' rigid line no flanges	1,131.00
618-0571-000	6-1/8" 75 Ohm line 20' rigid line flange one end	1,318.00
618-0570-000	6-1/8" 75 Ohm line 19-3/4' rigid line flange one end	1,460.00
618-0569-000	6-1/8" 75 Ohm line 19-1/2' rigid line flange one end	1,446.00
620-1735-000	Anchor insulator 75 Ohm connector assembly 6-1/8" accessory	151.00
620-1721-000	Gas barrier w/port 6-1/8" accessory 75 Ohm	722.00
620-1708-000	Hanger, Fixed 6-1/8" supporting hardware	52.00
620-1768-000	Anchor plate 6-1/8" supportive hardware	114.00
620-1725-000	Brace, lateral 6-1/8" supportive hardware	64.00
620-1709-000	Hanger spring 6-1/8" supportive hardware	111.00

PORTA-PATTERN®

TELECOMMUNICATIONS INDUSTRIES LIMITED

TELEVISION OPTICAL TEST MEDIA

ELECTRONIC FIELD PRODUCTION 3 CHART SYSTEM



TEST CHART SYSTEM



PORTA-FLECTOR ENG/EFP WHITE BALANCE/REFLECTOR

ENG 2 CHART SYSTEM

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.

#001-10	Four Chart System with NO adapters	\$295.00
#001-11	Four Chart System with microphone stand adapter	\$310.00
#001-12	Four Chart System with light stand adapter	\$320.00
#001-13	Four Chart System with mic and light stand adapters	\$335.00
#001-15	Microphone stand adapter	\$ 33.00
#001-16	Light stand adapter	\$ 36.00
#001-17	Aluminum frame assembly, complete W/O adapters	\$ 170.00
#001-50	Dual system carrying case	\$ 80.00
#001-51	Single Chart Carrying Case	\$ 55.00
#001-24*	Resolution Chart	\$ 70.00
#001-25*	Linearity (Ball) Chart	\$ 70.00
#001-26*	Registration Chart	\$ 70.00
#001-27*	Nine-Step Log Chip Chart	\$100.00
#001-28	Production Slate	\$ 60.00
#001-29	Blank plastic chart frame	\$ 50.00
#001-32	Multi-Burst Chart, 8 MHz	\$ 70.00
#001-33	Window Chart	\$ 70.00
#001-34	Chess Board Chart	\$ 70.00
#001-35	Reverse Registration Chart	\$ 70.00
#001-36	BBC #61P Flesh Tone Reference Chart	\$140.00
#001-37	Pulse Bar Camera Chart	\$160.00
#001-38	CCIR Linearity (Ball) Chart (Grass Valley)	\$ 70.00
#001-39	Auto-Registration Chart (Fernseh)	\$ 70.00
#001-40	Lens Focus Chart	\$ 70.00
#001-41	Depth of Modulation Chart (Amperex)	\$ 70.00
#001-42	Line Resolution Chart (CEI)	\$ 70.00
#001-43	Full-Field Color Bar Chart	\$140.00
#001-44	Eleven-Step Log Chip Chart (Available After June 1982)	\$110.00

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.

#008-10	ENG Portable Two-Chart System, Registration and Color Balance, including Carrying Case	\$185.00
---------	--	----------

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 1 1/2" 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:

#014-10	EFP Three Chart System with three Black and White Geometric Test Patterns, including case	\$205.00
#014-11	EFP Three Chart System with two Black and White Geometric and one Nine-Step Log Chip Chart, including case	\$230.00
#014-12	EFP Three Chart System with one Black and White Geometric, one Log Chip and one of either Color Bar, BBC #61P Flesh Tone or Pulse Bar chart, including case	\$260.00

NOTE: To add Production Slate to rear of center panel of any of the above EFP Three Chart Systems add \$45.00 to List Price shown.

PORTA-FLECTOR™ FIELD LIGHT REFLECTOR/AUTO-WHITE STANDARD

The PORTA-FLECTOR™ has been designed primarily for use by ENG and EFP field crews to provide a lightweight, portable reflector for use on exterior interviews, "stand-uppers", etc. when a small amount of reflected light, especially from below, will provide a more even facial illumination on the on-camera personnef.

Further, the reverse side of this unit will provide camerapersons with a constant, known white matte-finish surface for use with those cameras utilizing an Auto-White Color Balance System.

The unit is manufactured of flexible 0.060 white vinyl, with the Auto-white side being of a dull, matte, non-reflective finish.

The reflector side of the unit is covered with Roscoflex-H™ reflector material, manufactured by Rosco Laboratories, Inc. The reflectance characteristics of this material are strongly directional, and retain much of the characteristics of the original light source.

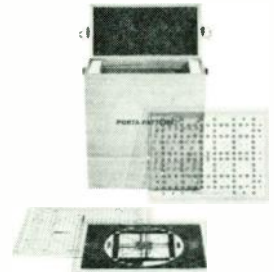
The PORTA-FLECTOR™ is manufactured in two sizes for ease of usage in existing PORTA-PATTERN® Systems. The larger size is manufactured in the same size as all our standard test charts, and will fit in either the aluminum holder of the standard four chart system, or in the case of the EFP Three Chart System.

The smaller unit is designed to be used in conjunction with the PORTA-PATTERN® ENG Two Chart System. Additionally, this smaller unit has been designed to fit in the carrying case of most field-type video tape recorders, between the recorder and the case, thus eliminating the need for additional pieces of loose equipment.

#019-10	PORTA-FLECTOR™ field light reflector/Auto-White Standard, 12" x 15"	\$65.00
#019-11	PORTA-FLECTOR™ as above, 9 1/2" x 12 1/2"	\$55.00



Test Slides and Slide Systems



8" x 10" Illuminator Transparencies



Spherical Transparency Illuminator

TEST SLIDES AND SLIDE SYSTEM

- Highest quality microphotographic reproductions of the industry standard PORTA-PATTERN Test Charts for use in set-up and maintenance of black and 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.

2 INCH X 2 INCH TEST SLIDES

#002-10P*	Test Slide System, Positive, 8 Slides with Hardwood Case	\$ 175.00
#002-10N	Test Slide System, Negative, 8 Slides with Hardwood Case	\$ 175.00
#002-20	Hardwood Slide Case, 10 Slide Capacity	\$ 65.00
#002-24P*	Resolution Slide, Positive	\$ 15.00
#002-24N	Resolution Slide, Negative	\$ 15.00
#002-25P*	Linearity (Ball) Slide, Positive	\$ 15.00
#002-25N	Linearity (Ball) Slide, Negative	\$ 15.00
#002-26P*	Registration Slide, Positive	\$ 15.00
#002-26N	Registration Slide, Negative	\$ 15.00
#002-27	Nine-Step Log Grey Scale Slide	\$ 115.00
#002-32P*	Multi-Burst Slide, 4MHz, Positive	\$ 15.00
#002-32N	Multi-Burst Slide, 4MHz, Negative	\$ 15.00
#002-33*	Window Slide	\$ 15.00
#002-34P*	Chess Board Slide, Positive	\$ 15.00
#002-34N	Chess Board Slide, Negative	\$ 15.00
#002-36	BBC #61P Type Flesh Tone Reference Slide (Available 5/1/80)	\$ 55.00
#002-38P	CCIR Linearity (Ball) Slide, Positive	\$ 15.00
#002-38N	CCIR Linearity (Ball) Slide, Negative	\$ 15.00
#002-41P	Depth of Modulation Slide, Positive	\$ 15.00
#002-41N	Depth of Modulation Slide, Negative	\$ 15.00
#002-43*	Full-Field Color Bar Slide	\$ 55.00

16mm ALIGNMENT AND 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.
- | | | |
|---------|---|-----------|
| #005-10 | Black and White Chess Board Alignment Film, 50 feet | \$ 125.00 |
| #005-12 | BBC #61P Color Flesh Tone Reference Film, 50 feet | \$ 85.00 |
| #005-20 | 35mm B&W Chess Board Aspect Ratio Transfer Alignment Film | |
| 100 Ft. | | \$ 395.00 |

8" X 10" 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.

8" X 10" ILLUMINATOR TRANSPARENCIES

#006-20	Hardwood Transparency Case, 10 Transparencies	\$115.00
#006-24P	Resolution Transparency, Positive	\$145.00
#006-24N	Resolution Transparency, Negative	\$150.00
#006-25P	Linearity (Ball) Transparency, Positive	\$145.00
#006-25N	Linearity (Ball) Transparency, Negative	\$150.00
#006-26P	Registration Transparency, Positive	\$145.00
#006-26N	Registration Transparency, Negative	\$150.00
#006-27	Nine-Step Log Grey Scale Transparency	\$225.00
#006-32N	Multi-Burst Transparency, Negative	\$150.00
#006-32P	Multi-Burst Transparency, Positive	\$145.00
#006-33P	Window Transparency, Positive	\$145.00
#006-33N	Window Transparency, Negative	\$150.00
#006-34P	Chess Board Transparency, Positive	\$145.00
#006-34N	Chess Board Transparency, Negative	\$150.00
#006-36	BBC #61P Type Flesh Tone Reference Transparency	\$175.00
#006-37P	Pulse Bar Camera Transparency, Positive	\$165.00
#006-37N	Pulse Bar Camera Transparency, Negative	\$170.00
#006-38P	CCIR Linearity (Ball) Transparency, Positive	\$145.00
#006-38N	CCIR Linearity (Ball) Transparency, Negative	\$150.00
#006-39P	Auto-Registration Transparency, Positive	\$145.00
#006-39N	Auto-Registration Transparency, Negative	\$150.00
#006-40P	Lens Focus Transparency, Positive	\$145.00
#006-40N	Lens Focus Transparency, Negative	\$150.00
#006-41P	Depth of Modulation Transparency, Positive	\$145.00
#006-41N	Depth of Modulation Transparency, Negative	\$150.00
#006-42P	Line Resolution Transparency, Positive	\$145.00
#006-42N	Line Resolution Transparency, Negative	\$150.00
#006-43	Full-Field Color Bar Transparency	\$175.00

SPHERICAL TRANSPARENCY ILLUMINATOR

The PORTA-PATTERN Spherical Transparency Illuminator provides a laboratory-type test standard in a practical, video-oriented test package. It is a unique approach to 8" x 10" format transparency illumination for testing, set-up and evaluation of color television camera systems.

A wide range of ultra-stable color temperatures and illumination levels is easily achieved by the use of two front panel controls. The modified 20 inch integrating sphere produces a flat illumination field throughout a cone angle of greater than 20 degrees without any additional adjustments.

The light source is a low-voltage, regulated DC-controlled quartz iodine lamp that assures a constant color temperature independent of AC line variations. This light source illuminates the interior of the sphere, which is coated with Eastman White Reflectance Standard 6080 coating.

The illumination level is varied by adjusting the light source position inside the sphere, employing the principle of the Inverse Square Law. A precision lamp position assembly, controlled by a numerically calibrated vernier knob, enables the selection of established illumination levels without the use of a light meter.

Constant color temperature is achieved by the regulated DC power source, which is controlled by a front panel adjustment and is calibrated by an easily read meter.

The PORTA-PATTERN Spherical Transparency Illuminator mounts on any light stand that will accept an 1 1/4" stud. The unit includes a yoke, hood/transparency holder and 10 foot power cord. A fitted dust cover and permanent wall mounting bracket are available as optional accessories.

#010-10	Spherical Transparency Illuminator, including Hood, Yoke and spare lamp, 117 Volt, 60 Hz.	\$2250.00
#010-11	Same as above, 230 Volt, 50 Hz.	\$2250.00
#010-60	Vinyl coated nylon fitted dust cover	\$ 125.00
#010-75	Test Bench Mount	\$ 45.00
#010-99	12 Volt, 50 Watt Replacement Lamp for above	\$ 15.00

POTOMAC INSTRUMENTS

R.F. GENERATOR DETECTOR

SD-31 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 + / - .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 RX31 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 band-pass filter which can limit receiver bandwidth to 100 Hz.

RF FILTER

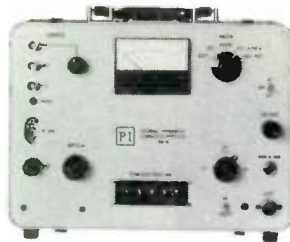
Manually tuned in 3 bands: 0.1-0.3 MHz
0.3-0.8 MHz
0.8-2.0 MHz

FIELD STRENGTH METERS

FIM-21, FIM-22, FIM-41

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 μ V to 10V) • 4 1/2-inch, mirrored scale, tauband meter • Front panel speaker • Recorder output
- Rugged, portable package • Calibrated signal generator, 45 MHz or 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.



R.F. Generator/Detector

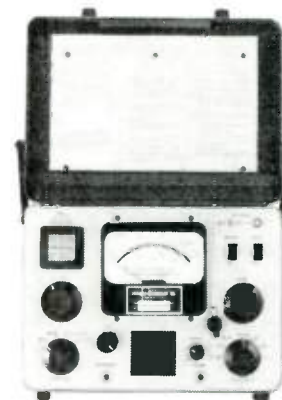
SD-31	High output R. F. Frequency Synthesizer covering 100KHz to 1999.5 MHz in 500 Hz steps.	\$1725.00
RX-31	Companion receiver for SD-31 R. F. bridge measurements.	350.00

SD-31/RX-31 Accessories

HS-11	Headset	\$28.00
GR Adaptor	Adapts general radio type 874 connector to BNC jack	35.00
U.H.F. Adaptor	Adapts large UHF jack to BNC jack (For Delta OIB1)	22.00
FL-31	Two Pole Tuneable Band Pass Filter 0.5 MHz to 1.7 MHz (provides attenuation for strong adjacent channel signals resulting from R. F. Bridge feed through.)	340.00
Test Cable	RG223 Double Shielded Coaxial Cable cut to five foot length with UG88 (BNC male) connectors on both ends.	11.00
MCC-31	Deluxe wood carrying case	105.00



FIM-71



FIM-21

Field Strength Meters

FIM-21	Covers AM Broadcast Spectrum only (535 to 1605 KHz). Utilizes 6 "D" batteries (not included)	\$1750.00
FIM-22	Covers 200 to 550 KHz frequency spectrum. Utilizes 6 "D" batteries (not included)	2350.00
FIM-41	Covers 540 KHz to 5 MHz frequency spectrum in two bands. Utilizes 6 "D" batteries (not included)	2350.00
FIM-71	Covers 45 to 225 MHz frequency spectrum. Utilizes 10 "D" batteries (not included)	3450.00

Field Strength Meter Accessories

HS-11	Headset for all models	\$ 28.00
MCC-21	Deluxe wood carrying case for FIM-21, FIM-22, FIM-41	105.00
MCC-71	Deluxe wood carrying case for FIM-71	110.00
Unipod	Telescoping stand for FIM-21, FIM-22, FIM-41	45.00
ANT-71	Antenna elements and balun (spare) for FIM-71	225.00
AC71	117 VAC adaptor for FIM-71	35.00
RO-71	Phone plug with internal potentiometer for adjustable record output	28.00
BP-71	Rechargeable battery pack for FIM-71	90.00
BC-71	Battery charger for FIM-71	205.00
BK-71	Rechargeable battery kit includes BP-71 and BC-71 for FIM-71	290.00
AE-71	Antenna elements (spare)	16.50

POTOMAC INSTRUMENTS

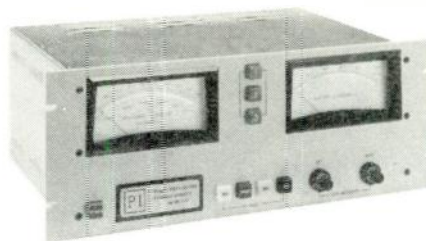
ANTENNA MONITORS

AM-19 (204)

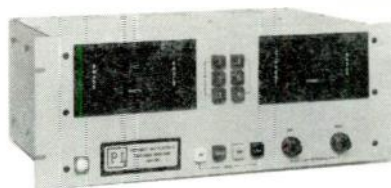
• Accurate • Field proven reliability • Push button operation • Remote monitoring • Up to 12 towers, DA-3

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.

Comparable with virtually every type of 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.



AM-19 (204)



AM-19D (210)

AM-19D (210)

• AM-19D (204) features plus • Numeric readout • Phase resolution 0.1° • Ratio resolution 0.1% • Modular construction • Ratios to 199.9%

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.

Antenna Monitors

No. of Towers	*AM-19 (204)	*AM-19D (210)	*PM-19
2	\$2200.00	\$2900.00	\$5700.00
3	2300.00	3000.00	6300.00
4	2400.00	3100.00	6900.00
5	2500.00	3200.00	7500.00
6	2600.00	3300.00	8100.00
7	3100.00	3800.00	9100.00
8	3200.00	3900.00	9700.00
9	3300.00	4000.00	10,300.00
10	3800.00	4500.00	12,300.00
11	4000.00	4700.00	13,000.00
12	4200.00	4900.00	13,700.00

*Prices shown are for single (DA-1) or 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.

REMOTE METERING PANELS

PMA-19

• Current deviation mode • Ultimate precision • Up to 12 towers, DA-3

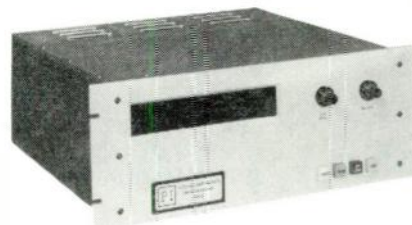
The PMA-19 Precision Monitor Adaptor is used in conjunction with either of the above monitors. This unit is required, for the most part, in very critical arrays. The current deviation mode provides a third measured parameter which displays directly the deviation of the current ratio from the licensed ratio.

RMP-19D (210)

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)

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.



PMA-19



RMP-19D



RMP-19

Ancillary Equipment (Antenna Monitors)

RMP-19(204)	Analog Remote Metering Panel	\$ 275.00
RMP-19D(210)-2	Digital Remote Metering Panel, 2 input	1150.00
RMP-19D(210)-3	Digital Remote Metering Panel, 3 input	1500.00
RSA-19	Remote Switching Adaptor for interface to Remote Control System	525.00
ECP-19	Extension Control Panel. May be used with RMP-19(204) or RMP-19D(210).	350.00

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.

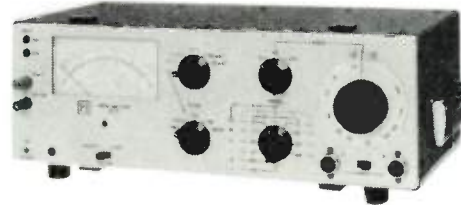
Signal + Noise/Noise ratio measurements are made with the function switch in the "NOISE" position. In this mode, the voltmeter bandwidth is restricted to 20 kHz. S + N/N measurements are accomplished by reading the difference in audio output level between reference signal corresponding to 100% modulation 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.

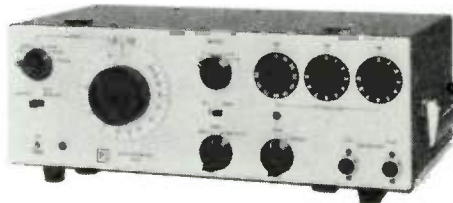
Incidental frequency modulation termed "Wow and Flutter" is usually associated with record and playback equipment such as tape decks, cart machines and turntables. The AA-51 measures weighted peak flutter as specified by IEEE standard 193. Wow and flutter measurements are automatic. Test signals may 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.



AA-51



AG-51

Tilt Stand Provided But Not Shown

AG-51 Audio Generator

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 oppo-

sition (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, 117VAC (230 VAC option)
 Total Harmonic Distortion Meter: 0.1% to 100%, 20 Hz to 20 KHz, automatic set level and balance
 Intermodulation Distortion Meter: 0.1% to 100%, 60 Hz and 7KHz composite (other frequencies optional), automatic set level
 AC Voltmeter: 5 Hz to 500 KHz, 1 mV to 100 V
 S + N/N Meter: 20 Hz to 20KHz
 Phase Meter: +/- 180 degrees, 20 Hz to 20KHz
 Wow and Flutter Meter: 0.01% to 1% peak weighted, automatic set level
 Ratio Meter: +/-6 dB, 20 Hz to 20KHz

\$1875.00
 Included
 optional),
 Included
 Included
 Included
 Included
 Included
 Included

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)
 Stereo Matrix Switch: L,R,L + R,L-R
 Precision Attenuators: 10dB, 1.0 dB, 0.1 dB steps
 Low Distortion Sine Wave Generator: 20 Hz to 200 KHz
 Composite Intermodulation Test Generator: 60 Hz and 7 KHz at 4:1 (other frequencies optional)
 3.15 KHz SMPTE Wow and Flutter Frequency Standard

150 ohms,
 \$1490.00
 Included
 Included
 Included
 Included
 Included

AT-51

Audio Test System: Includes AA-51 Analyzer and AG-51 Generator at single purchase price

\$3195.00

Audio Test Accessories

TC-51 Fiberglass reinforced Transport Case, Houses both AA-51 and AG-51, Dimensions 21" x 19" x 14" 275.00
 DX-51 Low Distortion AM Detector 150.00
 IX-51 Balanced to Unbalanced Audio Transformer with switch selectable line termination of 600 ohms, 150 ohms or open circuit 125.00
 RK-51 19" Rack Mounting Kit for AA-51 or AG-51 25.00

QuickSet

PEDESTALS



SAMSON MOBILE PEDESTAL #4 74500-6 \$450.00

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 \$770.00

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 \$330.00

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 \$520.00 #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 \$785.00 #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 MOBILE PEDESTAL #4-64500-8 \$1925.00

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.



GIBALTAR COUNTERBALANCE PEDESTAL #4-64860-6 \$4500.00

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 \$3225.00

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.

QuickSet

HEADS



SAMSON MINI FLUID HEAD*
 Load Capacity 15 lbs. (6.8 kg)
 Tilt Angle +/- 90°
 Pan Rotation 360°
 Dimensions 4" x 5" x 6"
 (10.2 x 12.7 x 15.2 cm)
 Weight 4.5 lbs. (2.0 kg)

*4-72800-2 Mini Fluid Head with Pro Jr. Base **\$335.00**
 4-72801-0 Mini Fluid Head with Ball Base **335.00**
 4-72802-8 Mini Fluid Head with Samson Column Base **335.00**
 4-72803-6 Mini Fluid Head with Pro Jr. Base - No 3/8" Stud
 (For use with 4-70150-4 Tripod) **335.00**

For ENG, E.F.P. and Cine applications. Use with any Samson tripod, pedestal or column.



SAMSON CAM HEAD
 #4-72300-3 **\$375.00**
 Load Capacity 40 lbs. (18.1 kg)
 Tilt Angle 30° up, 40° down
 Pan Rotation 360°
 Dimensions 8 1/2" x 6 1/2" x 4 1/2"
 (21.6 x 16.6 x 11.5 cm)
 Weight 5 lbs. (2.3 kg)
 Mountings 3/4" x 20 Camera Screw. Adjustable Fore and Aft
 3 1/2" (8.9 cm) Mounting surface
 3 1/2" x 6" (8.9 x 15.2 cm)

3/8" x 16 mounting screw available on special order.

For studio and remote 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" x 6" x 6"
 (10.2 x 15.2 x 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 with Samson Column Base **595.00**
 4-72853-1 Jr. Fluid Head with Pro Jr. Base - No 3/8" Stud
 (For use with 4-70150-4 Tripod) **595.00**

For ENG, E.F.P. and Cine applications. Use with any Samson tripod, pedestal or column.



HERCULES CAM HEAD
 #4-52304-9 **\$655.00**
 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.



HERCULES HYDRO FLUID HEAD*
 Load Capacity 40 lbs. (18.8 kg)
 Tilt Angle +/- 80°
 Pan Rotation 360°
 Dimensions 6" x 5" x 6"
 (15.2 x 12.7 x 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 with Pro Jr. Base - No 3/8" Stud
 (For use with 4-70150-4 Tripod) **1850.00**

For ENG, E.F.P. and Cine applications. Use with any Samson tripod, pedestal or column.



For studio and remote applications. Use with Hercules tripod and dolly for remote, Hercules and Gibraltar pedestals for studio work.

HERCULES CAM HEAD
 #4-52330-4 **\$885.00**
 Load Capacity 140 lbs. (63.3 kg)
 Tilt Angle Up to 50° up and down
 Pan Rotation 360°
 Dimensions 8 1/2" x 9 1/2" x 9 1/2"
 (21.6 x 24.1 x 24.1 cm)
 Weight 25 1/2 lbs. (11.6 kg)

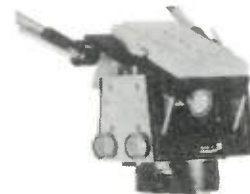
Specify type of camera, lens, and teleprompter for Cam Designation.



SAMSON FRICTION HEAD*
 Load Capacity 25-35 lbs.
 (11.4-15.9 kg)
 Tilt Angle 45° up, 90° down
 Pan Rotation 360°
 Dimensions 5 1/2" x 6 1/2" x 6 1/2"
 (14.1 x 16.6 x 16.6 cm)
 Weight 2 1/2 lbs. (1 kg)

*4-72011-6 Standard Counterbalance Spring (25 lb. cap.) **\$150.00**
 4-72013-2 Heavy Duty Counterbalance Spring (35 lb. cap.) **\$160.00**

3/8" x 16 mounting screw available on special order.
 For Studio and remote applications. Use with any Samson tripod, pedestal or column.



For remote and studio applications. Use with Gibraltar Field Tripod for remote work. Use with counterbalance pedestal for studio work.

GIBRALTAR CAM HEAD
 #4-62302-1 **\$1820.00**
 Load Capacity 375 lbs. (170.5 kg)
 Tilt Angle +/- 50° up and down
 Pan Rotation 360°
 Dimensions 13" x 11" x 10"
 (33 x 28 x 25 cm)
 Weight 46 lbs. (20.9 kg)

Specify type of camera, lens, and teleprompter for Cam designation



GIBRALTAR MICROWAVE RELAY TILT HEAD
 #4-62050-6 **\$585.00**
 Load Capacity 1,000 inch-pounds
 Fore on Tilt Axis
 Tilt Angle 30° up, 38° down
 Pan Rotation 360°
 Dimensions 6 1/2" x 6 1/2" x 7"
 (16.5 x 16.5 x 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.



WIRELESS INTERCOM/BASE STATION

WIRELESS INTERCOM HEADPHONES

MODEL TR-50- FM WIRELESS INTERCOM HEADPHONE- Superb, dependable, and interference free 2-way intercommunication as clear as any wired system and superior to many for distances up to 150 yards! FCC certified and license free. 5 channels allocated for operation. Crystals can be changed externally to change channels. Complete with crystals and accessories for single channel operation...less 9V radio batteries.....\$297.00

MODEL R-50- RECEIVER ONLY HEADPHONE- Double ear, used when only one way wireless communication is desired. i.e. simultaneous language translation, plant tours, rifle range communication, etc.....\$215.00

MODEL R-50/2- SINGLE EAR RECEIVER ONLY HEADPHONE- Same as R-50 above but 1 ear style allowing user to hear the ambients around him.....\$195.00

MODEL T-50/2- TRANSMIT ONLY HEADPHONE- Single ear. Used where wearer does not need or want 2-way communication. Side tone lets user know transmission is taking place.....\$220.00

MODEL T-50/2L- TRANSLATORS TRANSMIT HEADPHONE- Single ear. Specially constructed for translation use. Includes "D" cell long life battery pack (less batts) for continuous operation. LED indicators for "on" and "low" battery indication. Side tone is adjustable and translator can vary volume from full on to off depending on his individual preference.....\$375.00

BASE STATION INTERFACE

MODEL T-50/2B- TX BASE STATION- Interfaces with any camera or wired system. Transmits conversations from wired system on CHA. Consists of transmit half of TR-50 Headphone mounted on a long life "D" cell battery pack. LED's indicate on-off and low battery condition. 600-ohm input, from wired system, is acoustically coupled to a transmitter mic (see photo) VU meter indicates correct level of modulation.....\$399.75

MODEL R-50/2B- RX BASE STATION- Receives signal from a TR-50 wireless headphone transmitting on CHE and mixes same with any "wired" intercom system. 600 ohm output of R-50/2B easily interfaces with mic circuits of wired systems. Same battery pack as TX base station above. Special "carrier sensing" relay circuit disconnects RX base during times of no transmission, eliminating possible feedback.....\$325.00

MODEL TR-50AE- INTERCOM HEADPHONE- TX CHE, RX CHA- For use with RX & TX base stations above. Special relay circuit is incorporated in this headset which corrects distorted side tone that results when ordinary TR-50 is operated CHA & CHE. Note: a pair of TR-50AE headsets cannot duplex operate with one another due to narrow channel separation. However, communication results when used in conjunction with base stations.....\$355.00

SYSTEM 50- COMPLETE WIRELESS INTERFACE FOR WIRED SYSTEMS- Includes 1 each T-50/2B TX base station R-50/2B RX base station, and model TR-50 AE intercom headphone at a system price! Ideal for use in TV, film and recording studios.....\$995.00

WIRELESS INTERCOM ACCESSORIES

MODEL VOX1-VOICE OPERATED TX KIT- Converts any R-Columbia 50 series transmitter for voice activation without dis-assembly. Off board circuitry and separate 9V battery supply is clipped to belt or shirt. Adjustable level control to compensate for background noises. Complete with parts & instructions for converting one TR-50 headphone...\$99.75

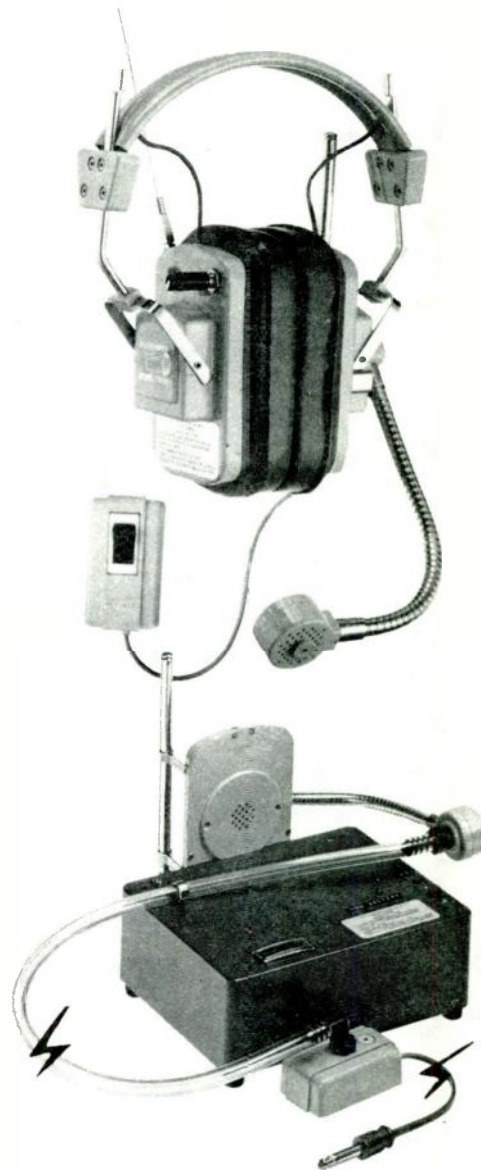
MODEL ET-2- NOISE CANCELLING MICROPHONE- Broadcast quality electret microphone generally used for sports broadcasting work by TV & radio stations. Add to price of unit being specified.....\$89.50

MODEL BT-50-9V BATTERY TESTER- A new kind of battery testing device, i.e., calibrated in approx. hours remaining for TR-50 or T4/1C operation rather than "bad-weak-good" Since TR-50 uses 6V zener to regulate battery supply, a zener circuit is employed in this tester. Any battery delivering less than 6V into a load supply does not register saving 100% of the meter scale for more meaningful testing.....\$23.95

PART NO 17X50B- HEAR CUSHIONS- Insert into one or both sides of a TR-50 headphone in order to hear surrounding conversations as well as intercom. Used by football coaches, producers, directors, etc.....\$10.75

PART NO 49P002/R- RECEIVE CRYSTALS- Specify channels A, B, C, D, or E.....\$10.95

PART NO 49P002/T- TRANSMIT CRYSTALS- Specify channels A thru E.....\$21.75





ROHDE & SCHWARZ

PRECISION TV DEMODULATOR

EKF2/D

VHF: Channels 2-6 (54-88 MHz)
Channels 7-13 (174-216 MHz)
UHF: Channels 14-83 (470-890 MHz)

- Conforms to EIA Standard RS-462
- Unique Two-way Tuning by: Channel Crystal (One Channel) or PLL Synthesizer (Entire Broadcast Range)
- Hi-Level/Lo-Level Input For Signals 20mV - 1.5V
- Switch Selected Functions: Envelope or Synchronous Demodulation; Sound Notch In/Out; Zero Reference Pulse; Gain Control (Manual/Auto)

Description

The EKF2/D precision demodulator is the logical successor to the well known Rohde & Schwarz type AMF, still in use all over the world. Conforming to EIA Standard RS-462, the EKF2/D is the ideal instrument for the monitoring and measuring of video and audio signals from TV transmitters and transposers, both in-line and off-the-air. The EKF2/D incorporates a unique two-way tuning system that allows tuning by channel crystal, for high accuracy applications, and tuning across the entire broadcast range by means of a switch-selected PLL (phase-locked loop) synthesizer. This is accomplished with nothing more than the basic unit . . . no plugs-ins or modifications are necessary, and any channel crystal can be inserted for use across the entire broadcast range.

A zero-reference pulse is available for determination of the degree of modulation of the vision signal. This is either available during each vertical blanking interval, or triggered by an external pulse. Gain control of the IF stage (either automatic or manual) across a range of 30 dB allows flexibility in the use of the output signals.

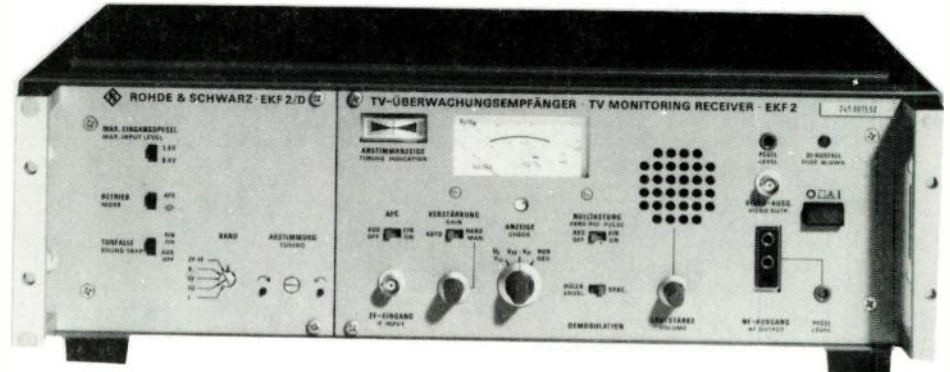
Additionally, a monitoring loudspeaker (with adjustable level and squelch), and recorder output (for recording input voltages) add to the complete features of this precision low-weight, low-power consumption, economically-priced demodulator to create the perfect tool for the broadcast industry.

Applications

The switch selection of demodulation type (synchronous or envelope) and sound notch (in/out) allows all modes for transmitter/transposer measurements of:

VIDEO: • transient response • video-frequency response, phase and group delay
 • chrominance-luminance intermodulation
 • grey-scale distortion

AUDIO: • frequency response • modulation distortion • intercarrier S/N ratio



SPECIFICATIONS

FREQUENCY:

Range: 54-890 MHz (Channels 2-83)

Stability:
 Switch-selectable
 1) channel crystal
 crystal accuracy
 2) PLL-synthesized tuner
 less than or equal to 30 KHz (30 min. warm-up)

IF: 45.75 MHz (video); 41.25 MHz (sound)

INPUTS:	RF		IF
	HI	LO	
Voltage	80mV-	20mV-	5mV-
Operating Range:	1.5V	400mV	100mV
Input Impedance:	50 ohm		
Return Loss:	Chan 2-13: greater than/equal to 26 dB Chan 14-83: greater than/equal to 20 dB		greater than/equal to 20 dB
Connector:	N-Female (rear)		BNC-Female (rear or front)

Gain Control: manual or automatic, 30 dB range
Indication: frequency offset, RF input level, IF voltage, sound carrier deviation

Video Outputs: Number: one isolated output on both front and rear; BNC female

Impedance: 75 ohm, 0dBm plus/minus .5 dB, into 6 ohm (adjustable plus/minus 3 dB)

Return loss: greater than or equal to 20 dB

Level: 1.14 Vpp into 75 ohm adjustable plus/minus 1.5 dB

Audio Outputs:

Location: All outputs in parallel (balanced, floating), phone jack (front), 30-pole male connector (rear)

Impedance: less than or equal to 30 ohm (40 Hz - 10 kHz)

Level: (plus/minus 25 kHz dev. fmod = 400 Hz), 0 dBm plus/minus .5 dB, into 600 ohm (adjustable plus/minus 3 dB)

Other Audio Features: Squelch for noise suppression during carrier absence. Monitoring loudspeaker with adjustable level.

IF Output:

Location: Rear panel (BNC Female)

Impedance: 50 ohm

Return loss: greater than or equal to 20 dB

Output: (level controlled) approx. 200mV RMS

Frequency response: (40-46 MHz) Flat within 1 dB

Other Output:

XY recorder output for recording input voltage

Impedance: 2 kohm (30-way connector at rear)

Level: approx. 5V at 1mV input

Zero Ref. Pulse:

During vertical blanking interval or triggered by external pulse (-1Vpp min. into 75 ohm)

Transmission characteristics: (Video)

Group Delay/Frequency Response: See Fig. 1

Amplitude/Frequency Response: See Fig. 2

Transmission Characteristics: (Sound)

Frequency response: less than or equal to plus/minus 1 dB (75u sec deemphasis)

Harmonic distortion: (plus/minus 25 kHz dev.) less than or equal to 1%

Inter-carrier (frequency = 4.5 MHz), S/N (video modulation 0-4 MHz): greater than or equal to 53 dB, typ 57 dB (rms)

Non-Linear Characteristics:

(10-75% modulation), differential gain: less than or equal to 3% differential phase: less than or equal to plus/minus 2°, S/N ratio: see fig. 3

General Data:

Operating temp. range: 0 to +45°C. Shelf temp. range -20 to 70°C. AC supply 115/125/220/235V. +10/-15% 47 to 63 Hz 40VA

Dimensions: 19" rackmount: 483mm x 132mm x 384mm (seated depth in rack = 305mm), bench-top model: 492mm x 161mm x 392mm

Weight: rackmount: 20 lbs., bench-top: 22 lbs.

Order:

Specify desired channel crystal when ordering.

Model EKF2/D ID#
 rackmount: 288.3919.51
 benchtop: 288.3919.51

PRICE
 \$11,000.00
 (Includes 1 crystal)
 \$11,000.00
 (Includes 1 crystal)



ROHDE & SCHWARZ



EKF 2

Special Features

Switch-selected envelope detection or synchronous detection for avoiding quadrature distortions

Operating in TV Bands I, III and IV/V without requiring separate plug-ins or modifications to the set

Separate inputs for RF and IF

Presetting of any two channel frequencies

Switch-selected AFC circuit with plus/minus IF indication

Switch-selected zero-reference pulse for video-modulation checks
Automatic or manual level control over greater than 30 dB

Two adjustable isolated video outputs

Indication of RF-input voltage, IF voltage and sound-transmitter deviation

AF output with adjustable level

Built-in monitoring loudspeaker

Output for recording of input voltage

The TV Monitoring Receiver EKF 2 checks and monitors TV signals in all TV Bands and at the IF. Typical fields of application are: monitoring of TV transmitters and transposers from a central station; in-situ performance checks of TV transposers; monitoring of TV test assemblies.

This receiver is designed to handle signals complying with standard M.

The receiver section can be continuously tuned through all channels within each of the four switch-selected TV Bands. An AFC circuit can be switched in to stabilize the tuning to the picture-carrier frequency. Any two channel frequencies in the entire operating range can be preset by locking the tuning controls in the corresponding positions. Thus, rapid switchover is possible between two fixed frequencies, e.g. receive and transmit frequencies of a TV transposer. Separate panel meters are provided to indicate the selected channel and the tuning error.

The RF input is followed by an attenuator covering 30 dB. Another input is provided to enable IF signals between 5 and 100 mV to be measured. The RF-input voltages are indicated on a logarithmic scale.

A front panel switch allows the selection of envelope or synchronous demodulation. For the latter the switching-carrier phase is automatically stabilized in a control loop via a phase-sensitive detector.

Two video outputs and one AF output deliver the demodulated video and AF signals with adjustable level for evaluation by colour or black-and-white TV monitors, oscilloscopes, etc. The output levels are kept constant by automatic or manual gain control of the IF stage with input-voltage variations of more than 30 dB. The EKF 2 is equipped with a facility to provide a zero-reference pulse (which can be externally triggered) for checking the vision modulation, and also has a monitoring loudspeaker and a recording output for the input voltages.

Specifications

Frequency range	TV Bands I, III, IV/V and IF
Band I	54-88 MHz, channels 2-6
Band III	174-216 MHz, channels 7-13
Band IV/V	470-836 MHz, channels 14-74
Vision/sound IF	45.75 MHz/41.25 MHz

TV MONITORING RECEIVER

Range selection (switch)	I/III/IV/V/IF
Channel selection	continuous within the selected range, any two channels can be preset
Channel indication	electronic, by meter; setting accuracy: plus/minus 1 channel
Automatic tuning	switch-selected AFC with +/- IF indication
Frequency error after 30 min. warmup	less than 30 KHz
Inputs	RF and IF: BNC female connectors on front and rear panels
Input impedance	50 ohm
Input-voltage range (for correct evaluation)	
RF	250uV - 5 mV (without input attenuator)
with input attenuator	up to 150 mV
IF	5-100 mV
Input-voltage indication	by moving-coil meter with logarithmic scale
Range	100 uV - 10 mV
Error limits	plus/minus 3 dB (plus correction value for tuner)
Input attenuator	3 pushbuttons (3/7/20 dB)
Attenuation	0/3/7/10/20/23/27/30 db
VSWR	
RF input, with greater than or equal to 3-dB input attenuation	typ. 2.5
RF input, with greater than or equal to 10-dB input attenuation	typ. 1.6
IF input	less than 1.2
Noise Figure	
Band I	approx. 9 dB
Band III	approx. 9 dB
Band IV	approx. 11 dB
Band V	approx. 12 dB
Transmission characteristics	
Group delay for 0-3 MHz	IF: less than plus/minus 30 ns; RF: less than plus/minus 50 ns
3.58 MHz	+ 170 ns + 70/-30 ns
Linearity of demodulator characteristic	greater than 95% with modulation between 12% and 70% of the composite colour video signal (CCVS)
Differential phase in video range	max. +/- 2°
Video S/N ratio (rms measurement)	greater than or equal to 50 dB, referred to black-to-white transition with 5-m V input signal
Inter-carrier interference ratio	greater than or equal to 40 dB, weighted according to CCITT
Outputs	
Video outputs	two isolated 75-ohm BNC female connectors (one on front and one on rear panel)
Output voltage	1V _{pp} adjustable by approx. plus/minus 1.5 dB
Level control (IF stages)	manual or automatic, clamped to porch
Control range	greater than 30 dB
Zero-reference pulse	by blanking pulse after each field or by external pulse
External zero-reference pulse (required level)	1 V _{pp} into 75 ohm (min.)
AF output	balanced (floating)
Output level (V _{rms}) for 25 kHz deviation	0 dBm into 600 ohm, adjustable by plus/minus 3 dB
Output impedance	less than or equal to 30 ohm between 40 Hz and 10 kHz
Frequency response	flat within plus/minus 2 dB (deemphasis 75 us)
Distortion	less than or equal to 2% referred to 25 kHz deviation
Indication of frequency deviation	on panel meter (f _{AF} less than or equal to 1 kHz)
Monitoring loudspeaker	volume continuously adjustable
Recorder output (for input voltage)	Z _s = 2 k-ohm, 30-way connector (rear panel) approx. 0.5 V at 1-mV input voltage
Order designation (for Standard M)	TV Monitoring Receiver EKF 2
19" rackmount	287.8017.51 \$7500.00
19" cabinet model	287.8017.52 \$7500.00

RTS Systems

INTERCOM SYSTEM



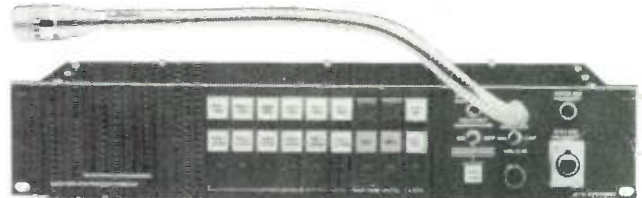
MODEL BP 300L/BP300



MODEL SPK300



MODEL PS-30



MODEL 801 MASTER STATION

"TW" INTERCOM SYSTEM

The "TW" Intercom System is a high performance, closed circuit intercommunications system designed for use in entertainment and industrial operations. Proven performance in a variety of demanding applications has already established it as a standard in the field of communications.

MODEL BP300L/BP300 PORTABLE USER STATIONS (BELT PACKS)

RTS super-rugged belt packs are housed in an attractive light-weight aluminum package with a brushed, anodized finish and a wide belt clip. They feature two-channel operation, a mic On-Off switch, XLR-3 connectors for use with standard mic cables, and a powerful 2-watt headphone amplifier that enables any type of headset to be used; low Z or high Z phones, with dynamic or carbon mic.

Belt pack human engineering features include a built-in mic limiter for controlling levels, and tactile controls for ease of operation. The belt packs are truly portable, but may also be used in semi-portable or fixed applications.

BP300L (with call light)	\$297.00
BP300 (without call light)	252.00

MODEL SPK 300 SPEAKER UNIT USER STATION

RTS portable speaker unit user stations are mounted in sloped front aluminum enclosures with epoxy paint finish. The speaker is activated by the insertion of a desk-stand mic or a hand-held PTT mic. When a headset or handset is used instead of a mic, the speaker is automatically deactivated, allowing conventional operation. A rear mounted sidetone control cancels the mic signal in the speaker so that simultaneous operation of the microphone and speaker is possible.

\$381.00

POWER SUPPLIES

Model PS-8 Power Supply 8 station power supply, portable or rack-mount.	\$378.00
Model PS-30 Power Supply 30 station power supply, rack-mount.	\$984.00
Model PS-60 Power Supply 60 station power supply, rack-mount.	\$1923.00

MODEL 801

The Model 801 Master Station is a multi-functional communications control center. It is designed for use where multi-channel party line intercommunication systems are utilized. It may be used to supplement existing intercom systems, e.g., RTS "TW" System, Clear Com, Daven, RCA, etc., or a number of Master Stations may be employed as a self-contained system.

The 801 is operationally flexible; it offers many salient features as well as simplicity in design and installation. Each unit is completely self-contained—there are no extra modules, central card frame, or processing units.

\$3951.00

MODEL 860 SYSTEM INTERCONNECT

The Model 860 System Interconnect is used to supplement the Model 801 Master Station system. It provides the following capabilities and functions:

- Eight Amphenol 50-pin connectors for point source interconnect to Master Stations
- Connects six intercom channels to RTS "TW" System
- IFB/SA outputs
- IFB/SA keying line outputs (relay contacts)
- Interfacing to external circuits
- Switching and level control for four program inputs to IFB and SA circuits
- Standard rack mount package—3½" x 19" x 14" **\$1200.00**

ADDITIONAL EQUIPMENT

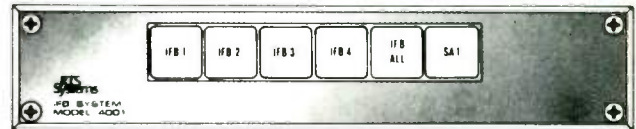
RM300	Rack Mount User Station	\$285.00
RM300L	Rack Mount User Station	342.00
SCR-110	Special Camera User Station	297.00
SPK300L	Speaker Unit User Station	423.00
SPK300	Speaker Unit User Station	381.00
BP320	Portable User Station—Belt Pack	456.00
BP320L	Portable User Station—Belt Pack	498.00
RMS300	Speaker Station (Rack Mount)	522.00
RMS300L	Speaker Station (Rack Mount)	591.00
CM300L	Console Mount User Station	357.00
CM300	Console Mount User Station	297.00
WM300L	Wall Mount User Station	315.00
WMS300L	Wall Mount User Station	384.00
TWI-224	2-Wire to 4-Wire Interface	423.00
TW-5W	Passive Splitter	81.00
CC61	Circuit Card	144.00
CC-40	Circuit Card	180.00
FS-1	Footswitch	30.00



4010



4020



4001

CONTROL STATION MODELS 4001, 4002, 4003 4001M, 4002M, 4003M

The Control Station is designed to mount in a console or equipment rack. It provides a given number of switch functions according to the model number. The 4001 offers IFB 1 thru IFB 4, IFB ALL and SA. The 4002 has IFB 1 thru IFB 8, IFB ALL, SA 1 and SA 2. Model 4003 supplies IFB 1 thru 12, IFB ALL, SA 1, SA 2 and SA 3. Each model number may be ordered with an "M" suffix. This includes a gooseneck microphone attached to the panel. Should an existing microphone be more suitable for operations, a connection on the Control Station microphone preamp circuit board may be used to accept a microphone or line level signal from that microphone.

Each Control Station is connected to the Central Electronics via a model 4025 Splitter and 50 conductor cable with blue ribbon connectors. All the Control Stations converge at the 4025 and a single cable then connects to the 4010. This configuration allows for up to four model 4001 Control Stations to connect to a single Central Electronics unit. If two Central Electronics units are used, the model 4002 may be employed in up to four locations. Three 4010's would require up to four model 4003 Control Stations. Priority of Control Station switch signals is programmable and may be set-up at the time of installation. The system may be used without priority switching if desired.

4001. A four-channel CONTROL PANEL with IFB-1, IFB-2, IFB-3, IFB-4, ALL-CALL and SA. **\$489.00**

4001M. Model 4001 with gooseneck microphone. **654.00**

4002. An eight-channel CONTROL PANEL with IFB-1 thru IFB-18, ALL-CALL, SA1 and SA2. **\$618.00**

4002M. Model 4002 with gooseneck microphone. **783.00**

4003. A twelve-channel CONTROL PANEL with IFB-1 thru IFB-12, ALL-CALL, SA1, SA2, and SA3. **\$756.00**

4003M. Model 4003 with gooseneck microphone. **921.00**

4010. CENTRAL ELECTRONICS for four channels of IFB, providing all switching, level adjustments and program inputs. Eight IFB channels require two 4010's. Twelve IFB channels require three 4010's. **\$1983.00**

4015. CABLE ASSEMBLY. XX Foot, 50-Conductor cable with connectors. To calculate price, multiply the number of feet times **\$1.88** and add **\$30.00** for connectors and assembly.

4020. This USER STATION belt pack is the "talent" position electronics. A minimum of one is required for each channel of IFB. A maximum of three can be used on each channel. **\$297.00**

4025. SPLITTER ASSEMBLY. One-by-four, 50-conductor "Blue Ribbon" connectors. **\$141.00**

SYSTEM DESCRIPTION

This IFB System is a one-way interruptible feedback communications system (a program interrupt system) created especially to meet the critical requirements of the television broadcast industry, as well as other live or recorded media applications. The system is comprised of User Stations, Central Electronics, and Control Panels. A modular approach allows each installation to be configured in a manner which best lends itself to the immediate requirements. Should the production requirements increase in complexity, additional system components may be added on to expand the system capability. A typical system may consist of the following: up to four Control Panels, one Central Electronics unit, four User Stations, and assorted cabling and interconnect units. The maximum standard configuration allows four Control Panels, three Central Electronics, and twelve User Stations.

MODEL 4010 CENTRAL ELECTRONICS

The Central Electronics unit contains all the necessary control functions and electronics to provide the active link between the Control Station and the User Station. It accepts the three program inputs, the four microphone inputs and switch keying signal inputs (from the Control Stations). In addition, it supplies the composite output feeds to the User Station belt packs, the line level audio feeds to the SA amplifier, the relay contacts for monitor muting, and the interconnection to the Control Stations. **\$1983.00**

MODEL 4020 USER STATION

The User Station, a small "belt pack" package, allows the talent to receive the audio signals designated by the Central Electronics and the Control Stations and may be worn by talent, such as newscasters, musicians, sportscasters, etc. Behind the scenes personnel may also find the IFB feeds useful for production coordination and control. Each belt pack contains the necessary electronics to provide a stereo audio signal to the user. **\$297.00**

RTS Systems



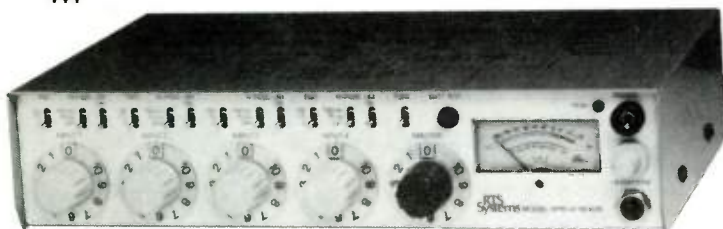
405



410



444



HPM-41

MIXER

HPM-41

The Model HPM-41 microphone mixer is a compact, lightweight unit, designed for professional applications ranging from location film and tape to major recording console input augmentation. A no-compromise design provides high performance electronic circuitry in a functionally efficient, durable package.

INPUT FEATURES

- Four balanced, transformer-isolated input positions with phase reverse switches and high quality Neutrik XLR-type connectors
- Switchable 12 V A-B and 48 V phantom power for condenser microphones
- Selectable pre-transformer pads for reduction of input levels
- Switchable dual-frequency high pass filters to cut rumble, wind noise, and pops
- Switchable limiter on each input prevents overdrive distortion without affecting other channels
- Auxiliary unbalanced line level input

OUTPUT FEATURES

- Balanced (floating) 600-ohm output available on binding posts for TelCo (telephone) feeds
- Balanced (floating) low impedance output on XLR-type connector is switchable between line and microphone level
- Powerful headphone amplifier with front panel volume control and output jack
- Two independent IHF line-level outputs available to feed external equipment such as: video cassettes, audio cassettes, consumer audio gear, etc. **\$996.00**

AMPS/PREAMPS

MODEL 405 PROFESSIONAL 2-CHANNEL PHONO PREAMPLIFIER

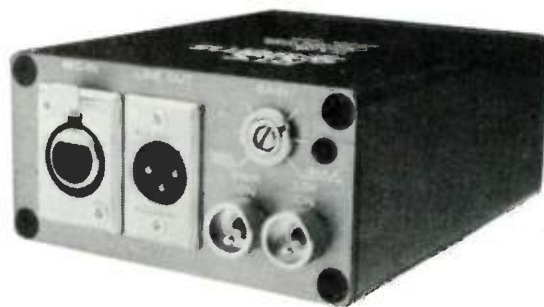
The Model 405 is a high-quality two-channel phono preamplifier designed for professional applications, including disc mastering rooms, broadcast stations and high quality commercial installations. It features adjustable cartridge termination, switchable rumble filter, two selectable sets of level controls and two output formats. **\$378.00**

MODEL 410 10 WATT MONITOR AMPLIFIER

The Model 410 is a self-contained compact 10 watt power amplifier designed to power loudspeakers, headphones or 70-volt loudspeaker distribution systems. Its input is balanced and designed to bridge 600 ohm / +4 dBu program lines. The 410 features a front panel volume control and two separate outputs: a direct amplifier output available on push terminals and/or 1/4-inch phone jack, and an optional transformer isolated output on a barrier strip, for 70-volt distribution. The input connection may be made via a 3-pin XLR type connector and/or 1/4-inch phone jack. **\$288.00**

MODEL 444 DUAL 2-CHANNEL BUFFER AMPLIFIER

The Model 444 is a dual, two-channel buffer amplifier designed to interface professional systems with semi-pro and home high-fidelity equipment. Although components designed for home use offer desirable features for studio applications, interconnections between the two kinds of equipment are complicated by differences in levels, impedances and balanced and unbalanced modes of operation. The 444 corrects these problems while maintaining signal integrity. **\$342.00**



1400

The RTS 1400 is more than a microphone preamplifier; it is a unique and versatile tool. Its well-planned features, rugged construction and excellent specifications make it a professional problem solver, an audio "adapter" with countless applications.

The 1400's gain is continuously variable via a front panel control. At lower gain settings (minimum 23 dB) the 1400 will boost the level from a low-output microphone to drive low-gain mixers at their specified nominal level. At higher gain settings (56 dB maximum), the 1400 has ample gain to boost a mic output to line level. Because the 1400 has a high quality built-in limiter, it can be used to prevent overdrive of individual mic (or line) inputs while maintaining high average levels. These features make it useful in fixed or portable sound reinforcement, location recording, remote broadcasting, and broadcast production.

- Low Noise — 127 dBv E.I.N.
 - Variable Gain 23-56 dB
 - High Output Capability + 16 dBm
 - Limiter
 - Low Distortion .006% typ.
 - Excellent Transient Response
- \$297.00**

RUSLANG CORP.

MODULAR CONTROL STATIONS AND EQUIPMENT RACKS



Ruslang Studio Furniture

448-0718-000

Ruslang Single Pedestal Cabinet. 22" x 24" x 29" high. Open front, removable back. 2" cable holes in base. 21" front rack space with tapped EIA rails. Off white top; walnut base.

\$247.73

448-0717-000

Ruslang Double Pedestal Cabinet. 24" x 42" x 29" high. Open front, removable back. 2" cable holes in base. Two (2) 21" front rack spaces with tapped EIA rails. Off white top; walnut base.

408.75

448-0716-000

Blank panels for front opening. 19" x 21", walnut finish

28.53

448-0715-000

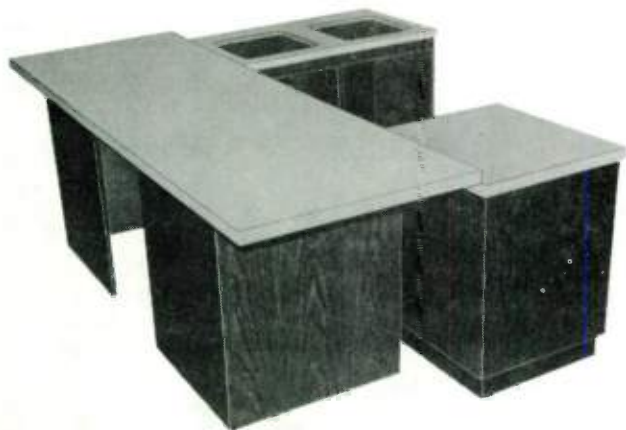
Ruslang Console Table Top. 32" x 96", 1-1/2" thick. Off white finish including Ruslang Console Base Panels for supporting console top. Set of four (4), 24" x 29" high. Walnut finish

Combined Price \$493.40

448-0713-000

Vanity Shield for console base, 12" wide. Walnut finish

12.39



Electronic Equipment Racks

Available in 15 different heights with panel space ranging from 21" to 70" for standard 19" width equipment panels.

21" x 18" deep	\$203.14
to	to
70" x 18" deep	\$295.74
21" x 24" deep	\$208.09
to	to
70" x 24" deep	\$312.05

Attractive, sturdy cabinets finished in woodgrained walnut to match the modular control station furniture are also available in a variety of solid colors and other woodgrained finishes. Back panels are also available. Contact your Harris District Sales Manager for more detail.

**RL 500 Popular Tape Transport Console****448-0712-000**

Ruslang RL500 Tape Console for ITC 850 and ITC 770 Series Record/Playback with 13" deep overbridge for 3½x19" amplifier panel (specify R-R model with order). Walnut finish, complete with casters **\$435.08**

448-0735-000

Ruslang RL500 Tape Console for Otari Mark II-2 Record/Playback with 13" deep overbridge for 4½x19" amplifier panel (specify R-R model with order). Walnut finish, with casters **438.94**

448-0736-000

Ruslang RL500 Tape Console for Scully 280B and other Record/Playback units for a 13" deep overbridge and 5½x19" amplifier panel (specify R-R model with order). Walnut finish, complete with casters **438.94**

**RL600 Tape Transport Console for Decks Which Have Electronics Integrated With Transport****448-0737-000**

Ruslang RL500 Tape Console for MCI JH110B-2 and MCI JH110B-4 and other Record/Playback units for a 13" deep overbridge and 7x19" amplifier panel (specify R-R model with order). Walnut finish, complete with casters **442.80**

448-0738-000

Ruslang RL500 Tape Console for Ampex, MCI, Scully, Tascam, Electro Sound, etc., tape transports up to 19x15¼" with a 16½" deep overbridge and 14x19" panel space (specify R-R model with order). Walnut finish, complete with casters **468.07**

448-0739-000

Ruslang RL600 Tape Console for Otari MX-5050-B Record/Playback with no overbridge (amplifier panel mounts below deck). Walnut finish, complete with casters (specify R-R model with order) **383.93**

NOTE: All Ruslang Tape Consoles include 15° transport tilt down feature, plus tilt up for service.

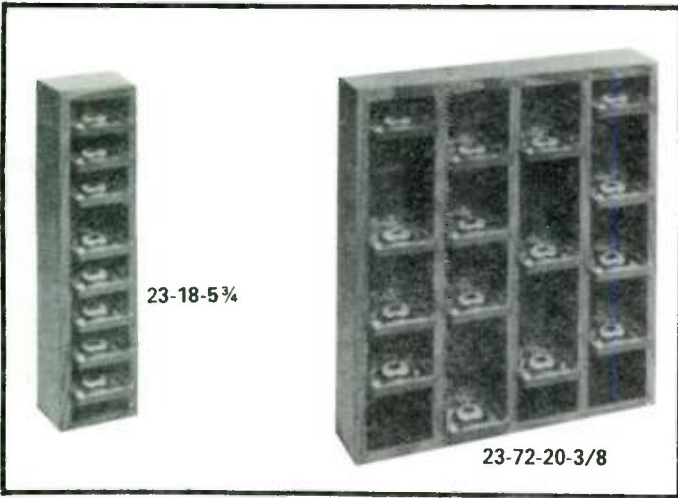
MODULAR CART RACKS

SYSTEM 23

Ruslang's "System 23" is a modular cart rack system made up of 6 basic units holding either 18, 36, 54, 72, 90 or 108 cartridges. These units do not have dust collecting shelves, which can interfere with cart use. Consequently, they are the easiest to clean racks on the market.

The individual units can be bolted together to become free-standing, rotating, four-sided cart racks which hold up to 1,296 cartridges. Other configurations are designed to sit on table tops or be wall mounted.

INDIVIDUAL RACKS FOR WALL OR TABLE MOUNTS



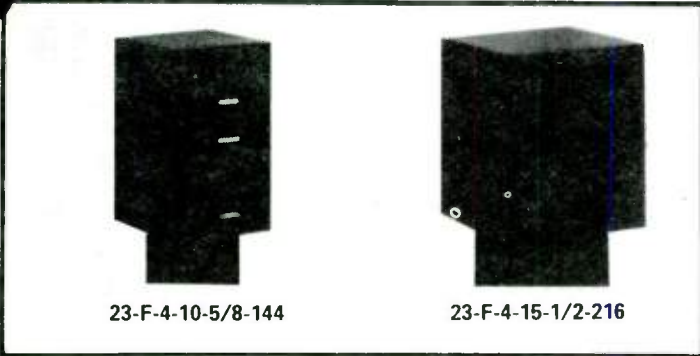
PEDESTAL BASE CART RACKS

NOTE: Pedestal base cart racks fit into 19" standard openings without rack mount rails

PART #: 14-44

PART #: 21-68

FLOOR TYPE LAZY SUSAN RACKS



RACK MOUNT CART RACKS

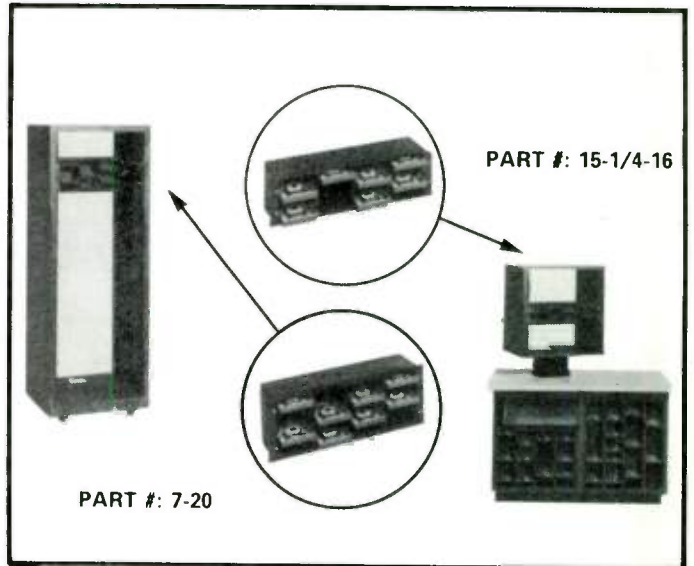
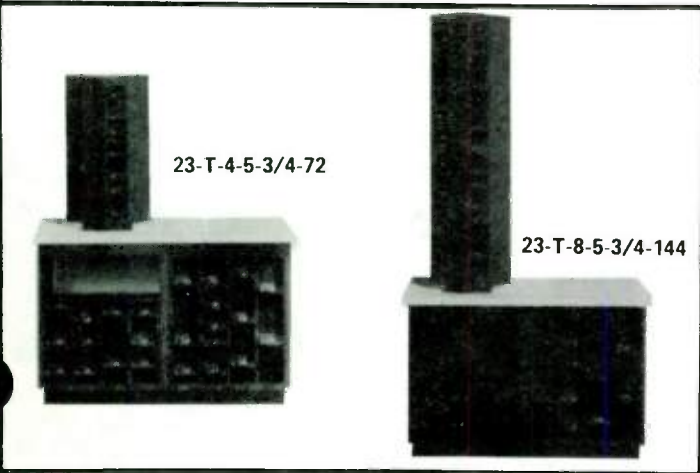


TABLE TOP LAZY SUSAN RACKS



RUSLANG CORP.**RUSLANG SYSTEM 23 MODULAR CART RACKS****TABLE TOP LAZY SUSAN RACKS**

Part Number	Price
23-T-4-5-3/4-72	\$190.06
23-T-8-5-3/4-144	332.91
23-T-4-10-5/8-144	268.47
23-T-8-10-5/8-288	457.53
23-T-4-15-1/2-216	361.59
23-T-8-15-1/2-432	596.84

PEDESTAL BASE CART RACKS

Part Number	Price
14-44	\$71.00
21-68	77.86

RACK MOUNT CART RACKS

Part Number	Price
5-1/4-16	\$47.14
7"-20	49.29

FLOOR TYPE LAZY SUSAN RACKS

Part Number	Price
23-F-4-10-5/8-144	\$279.84
23-F-8-10-5/8-288	468.90
23-F-12-10-5/8-432	657.96
23-F-4-15-1/2-216	373.77
23-F-8-15-1/2-432	609.03
23-F-12-15-1/2-648	844.29

23-F-20-3/8-288	440.67
23-F-8-20-3/8-576	722.13
23-F-12-20-3/8-864	1003.59

23-F-4-25-1/4-360	520.14
23-F-8-25-1/4-720	847.80
23-F-12-25-1/4-1080	1175.46

23-F-4-30-1/8-432	600.41
23-F-8-30-1/8-864	974.33
23-F-12-30-1/8-1296	1348.24

INDIVIDUAL RACKS FOR WALL OR TABLE MOUNTS

PART NUMBER			PRICE	
Height	No. of Carts	Length	Single Pack	Four Pack
23—	18—	5-3/4	\$39.30	\$142.86
23—	36—	10-5/8	51.97	189.06
23—	54—	15-1/2	65.37	235.26
23—	72—	20-3/8	77.67	281.46
23—	90—	25-1/2	90.04	327.66
23—	108—	30-1/8	102.33	373.91

SCALA ELECTRONIC CORPORATION

COMMUNICATIONS AND TELEMETRY ANTENNAS

GP-150	VHF GROUNDPLANE, N or UHF connector* (straight or drooping radials)	108-174 MHz**	\$120.00
OG-4	VHF OMNIDIRECTIONAL GAIN ANTENNA, 4 dbd gain, N or UHF connector* (for electrical downtilt add \$50)	144-174 MHz**	\$240.00
OG-6	UHF OMNIDIRECTIONAL GAIN ANTENNA, 6 dbd gain, N connector (for electrical downtilt, add \$50)	406-500 MHz**	\$240.00
CA5-150H	RUGGEDIZED YAGI, five element, 9 dbd gain, N or UHF connector* H polarization, center-mount	140-230 MHz**	\$150.00
		108-140 MHz**	\$170.00
		72-108 MHz**	\$200.00
CA5-150EB	RUGGEDIZED YAGI, five element, 9 dbd gain, N or UHF connector* H or V polarization, rear-mount	140-230 MHz**	\$155.00
		108-140 MHz**	\$175.00
CA5-150V	RUGGEDIZED YAGI, five element, 9 dbd gain, N or UHF connector* V polarization, with crossarm	140-230 MHz**	\$180.00
		108-140 MHz**	\$220.00
		72-108 MHz**	\$250.00
2CA5-150H	DUAL YAGI ARRAY, 11.5 dbd gain, N or UHF connectors*, H polarization vertical slack, with coax harness	140-230 MHz**	\$330.00
		108-140 MHz**	\$380.00
		72-108 MHz**	\$430.00
2CA5-150V	DUAL YAGI ARRAY, 11.5 dbd gain N or UHF connectors*, V polarization horizontal slack, with crossarm and coax harness	140-230 MHz**	\$400.00
		108-140 MHz**	\$450.00
		72-108 MHz**	\$520.00
CA5-450	RUGGEDIZED YAGI, five-element, 10 dbd gain, N connector, H or V polarization, rear-mount	216-1,000 MHz**	\$150.00
2CA5-450H	DUAL YAGI ARRAY, 12.5 dbd gain, N connectors, H polarization, vertical slack, with coax harness	216-1,000 MHz**	\$340.00
2CA-450V	DUAL YAGI ARRAY, 12.5 dbd gain, N connectors, V polarization, horizontal slack, with crossarm assembly and coax harness	216-1,000 MHz**	\$380.00
CA7-460	BROADBAND RUGGEDIZED UHF YAGI, seven-element, 10 dbd gain, N connector, H or V polarization, rear-mount (Specify frequency range when ordering)	406-420 MHz (BROADBAND)	\$160.00
		450-470 MHz (BROADBAND)	\$160.00
		480-500 MHz (BROADBAND)	\$160.00
2CA7-460H	DUAL YAGI ARRAY, 12.5 dbd gain, broadband, N connectors, H polarization, vertical slack with coax harness (Specify frequency range when ordering)	406-420 MHz (BROADBAND)	\$360.00
		450-470 MHz (BROADBAND)	\$360.00
		480-500 MHz (BROADBAND)	\$360.00
2CA7-460V	DUAL YAGI ARRAY, 12.5 dbd gain, broadband, N connectors, V polarization, horizontal slack with crossarm assembly and coax harness (Specify frequency range when ordering)	406-420 MHz (BROADBAND)	\$400.00
		450-470 MHz (BROADBAND)	\$400.00
		480-500 MHz (BROADBAND)	\$400.00
RA5-450	RADOME-PROTECTED UHF YAGI, 10 dbd gain, N connector, H or V polarization, rear-mount	400-1,000 MHz**	\$350.00
CL-400	RADOME-PROTECTED UHF LOG PERIODIC, 8 dbd gain, broadband, N connector, H or V polarization, rear-mount	400-500 MHz (BROADBAND)	\$350.00
PR-450U	PARAFLECTOR™, half parabolic screen antenna, N connector, H or V polarization 14.5 dbd gain at 413 MHz 15.5 dbd gain at 950 MHz 18.0 dbd gain at 950 MHz	350-1,000 MHz**	\$450.00
PR-450CU	PARAFLECTOR™, (with increased F/B ratio) REPLACEMENT FEED FOR PR-450U OR PR-450CU	350-1,000 MHz**	\$480.00
		350-1,000 MHz**	\$120.00
MF-960	MINIFLECTOR™, 14 dbd gain at 950 MHz, N connector, V polarization	940-960 MHz (BROADBAND)	\$275.00

ORDERING INFORMATION

ON ALL ORDERS PLEASE SPECIFY SCALA MODEL NUMBER, PLUS:

*SPECIFY CONNECTOR TYPE DESIRED

**SPECIFY EXACT OPERATING FREQUENCY OF CHANNEL

***SPECIFY IMPEDANCE DESIRED (50 or 75 OHMS)

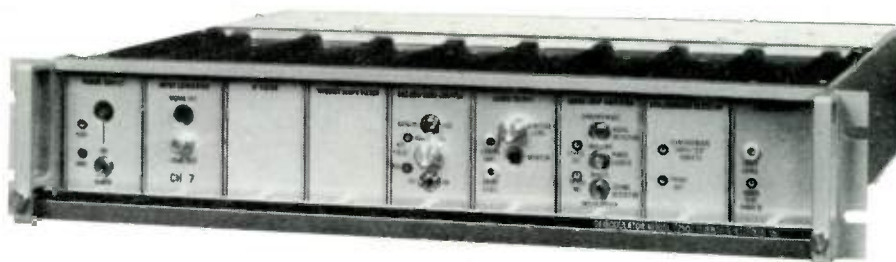
Prices and specifications subject to change without notice

World Radio History



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 pre-distorted 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 3½ 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

80 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)

Chrominance-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 (3½")H x 48.3 cm (19")W x

49.5 cm (19½")D

(Standard rack mount spacing; rack slides optional)

NOTE: Specify Channel

Model 6250-SD (Synchronous Detector) VHF	\$3200.00
Model 6250-ED (Envelope Detector) VHF	2040.00
Model 6250-SD UHF	3430.00
Model 6250-ED UHF	2265.00

Scotch®



MBU-30

Scotch Color Plus A Whole New Level Of Professional Recording

- New level in color signal-to-noise
- New levels of physical handling capability
- Lowest head wear
- Lowest dropout rates in the industry
- Extended stop motion capability
- High Impact cartridge

VIDEO TAPE

U-MATIC 3/4" CASSETTES

UCA

"Scotch" Brand UCA Videocassettes use a specially designed "cobalt energized" High Energy video tape which provides an excellent signal-to-noise ratio and greater RF output. The UCA Series videocassettes are fully compatible with all 3/4-inch U-matic videocassette systems and the permanent oxide lubrication and time proven backside treatment assure low head wear, extended stop motion and maximum tape life.

TYPE	TIME	1-10	10+	200+	500+
UCA-10 C125	10	\$14.51	\$13.62	\$13.06	\$12.72
UCA-20 C125	20	17.50	16.42	15.75	15.34
UCA-30 C125	30	18.88	17.71	16.99	16.55
UCA-40 C125	40	23.13	21.70	20.81	20.28
UCA-60 C125	60	26.59	24.95	23.93	23.31
UCA-75 C125	75	32.76	30.74	29.48	28.73

"Scotch" Brand Mini-U-matic videocassettes are designed for use with such recorders as the Sony VO-3800 and the JVC-CR-4400 portables. Features new COLOR PLUS oxide. An "S" after the playing time (UCA-10S) indicates mini size.

TYPE	TIME	1-10	10+	200+	500+
UCA-10S C124	10	\$14.08	\$13.21	\$12.67	\$12.35
UCA-20S C124	20	16.97	15.92	15.27	14.88
UCA-30S C124	30	25.03	23.49	22.52	21.95

MBU

"Scotch" Master Broadcast U-matic Series (MBU) provides a more rugged, longlife product suitable for repetitive playback and increment recording situations such as field (ENG) recording and editing applications. Other features are the same as the Standard Series UCA Videocassettes except MBU cassettes also feature the new COLOR PLUS oxide.

TYPE	TIME	1-10	10+	200+	500+
MBU-30 C125	30	\$19.85	\$18.63	\$17.87	\$17.41
MBU-45 C125	40	24.63	23.16	22.25	21.70
MBU-55 C124	5	13.94	13.08	12.54	12.22
MBU-18S C124	15	16.96	15.93	15.28	14.89

U-matic Re-loads

These items permit in the field reloading of damaged cassettes. The extra rugged COLOR PLUS MBU Series U-matic tape is supplied in the 15S (for Minis) and 30-minute (std. size) reload kits. The 60-minute reload kits use UCA U-matic tape.

TYPE	TIME	1-10	10+	200+	500+
U-DO-IT 15S	15	\$ 9.33	\$ 8.76	\$ 8.40	\$ 8.19
U-DO-IT 30	30	12.00	11.26	10.80	10.52
U-DO-IT 60	60	17.33	16.26	15.60	15.20

Beta/VHS 1/2" Cassettes

"Scotch" Brand Beta and VHS Format (1/2") videocassettes. These cassettes feature improved color, broadband signal-to-noise, improved RF output, low dropouts, very good stop motion capabilities, good runnability with repeat plays and very low head wear. "Scotch" Beta and VHS Formats are compatible with all 1/2" videocassette recorders and playback units. Both Formats have multiple machine switch speed capabilities.

BETAMAX 1/2" VIDEO CASSETTE

TYPE	TIME	1-10	10+	200+	500+
L-250	30	\$10.49	\$ 9.85	\$ 9.44	\$ 9.20
L-250A	30	11.01	10.33	9.91	9.66
L-500	60	13.30	12.48	11.97	11.66
L-500A	60	13.82	12.97	12.44	12.12
L-750	180	16.81	15.77	15.13	14.74
L-750A	180	17.29	16.23	15.56	15.16

VHS 1/2" VIDEO CASSETTE

TYPE	TIME	1-10	10+	200+	500+
T-30	30	\$12.12	\$11.37	\$10.90	\$10.62
T-30A	30	12.52	11.75	11.27	10.98
T-60	60	14.14	13.27	12.73	12.40
T-60A	60	14.66	13.76	13.20	12.86
T-120	120	18.17	17.06	16.36	15.94
T-120A	120	18.69	17.54	16.82	16.39

1" Open Reel Tape

#479-1" helical video tape is a special application tape that can ONLY be used with "high density" video recorders such as the Bosch-Fernseh, Ampex VPR-1 and 2, Sony BVH-1000 and other machines having similar record/erase capabilities.

OPEN REEL TYPE "C" — 1" TAPE

TYPE	TIME	1-10	10+	200+	500+
479-1-1630-R172B	34	\$ 70.69	\$ 66.29	\$ 61.84	\$ 59.36
479-1-3170-R172B	66	106.48	99.85	93.15	89.42
479-1-4610-R172B	96	160.91	150.90	140.76	135.13
479B-1-1630-R172B	34	70.69	66.29	61.84	59.36
479B-1-3170-R172B	66	106.48	99.85	93.15	89.42
479B-1-4610-R172B	96	160.91	150.90	140.76	135.13
479B-1-1630-R139B	34	59.58	55.86	52.11	50.03
479B-1-3170-R73B	66	89.73	84.13	78.49	75.35

1/2" Open Reel Tape

TYPE	TIME	1-10	10+	200+	500+
361-1/2-845-R130B	20	\$11.11	\$10.41	\$ 9.71	\$ 9.32
361-1/2-1200-R148B	30	15.97	14.97	13.96	13.40
361-1/2-2400-R153B	60	27.07	25.37	23.66	22.72
461-1/2-845-R130B	20	13.97	13.09	12.21	11.72
461-1/2-1200-R148B	30	19.98	18.72	17.46	16.76
461-1/2-2400-R153B	60	33.38	31.28	29.18	28.01

Prices and Specifications Subject to Change Without Notice.

World Radio History

HARRIS

Scotch® 3M

AUDIO OPEN REEL TAPE



206

Catalog Number	Reel Size	RLS. Per Ctn.	Shpg. Wt. (Lbs.)	1-11	12-143	144-575	575 +	
AV LINE—								
176, 177	177-¼-600	5"	12	5	\$ 3.23	\$ 3.00	\$ 2.79	\$ 2.63
178, 179	176-¼-1200	7"	12	9	4.91	4.56	4.24	3.99
	177-¼-900	5"	12	7	4.03	3.75	3.48	3.28
	177-¼-1800	7"	12	15	6.71	6.23	5.80	5.45
	178-¼-2400	7"	12	20	10.58	9.82	9.14	8.59
	179-¼-1800	5"	12	15	7.85	7.29	6.78	6.38
	179-¼-3600	7"	12	25	12.94	12.01	11.17	10.50
SPECIAL PACKAGES								
176, 177, 178	176-¼-2500-H	HUB	12	18.6	10.18	9.45	8.79	8.26
	176-¼-2500-RN	10½"	12	23.7	13.98	12.98	12.08	11.35
	176-¼-2500-RPS	10½"	12	21.4	13.98	12.98	12.08	11.35
	177-¼-3600-H	HUB	12	20.0	14.75	13.70	12.74	11.98
	177-¼-3600-RN	10½"	12	24.6	18.58	17.23	16.03	15.06
	178-¼-4800-RPS	10½"	12	22.0	30.54	28.36	26.37	24.79
206, 207	206-¼-1200	7"	12	9.2	6.68	6.21	5.77	5.43
	206-¼-2500-H	HUB	12	19	12.10	11.24	10.45	9.83
	206-¼-2500-RN	10½"	12	22	16.45	15.27	14.20	13.35
	207-¼-1700	7"	12	9.8	8.82	8.19	7.62	7.16
	207-¼-3660-H	HUB	12	20	18.63	17.30	16.09	15.13
	207-¼-3600-RN	10½"	12	25	23.19	21.54	20.03	18.83
208, 209	208-¼-600	5"	12	5	4.10	3.80	3.54	3.33
	208-¼-1200	7"	12	9	6.68	6.21	5.77	5.43
	208-¼-2500-H	HUB	12	19	12.10	11.24	10.45	9.83
	208-¼-2500-RN	10½"	12	22	16.45	15.27	14.20	13.35
	209-¼-900	5"	12	10	5.45	5.06	4.71	4.43
	209-¼-1800	7"	12	15	8.82	8.19	7.62	7.16
	209-¼-3600-H	HUB	12	20	18.63	17.30	16.09	15.13
	209-¼-3600-RN	10½"	12	25.3	23.19	21.54	20.03	18.83
MUSIC MASTERING TAPES								
226, 227	226-¼-1200	7"	12	—	7.76	7.21	6.70	6.30
250	226-¼-2500-H	HUB	12	—	15.62	14.50	13.49	12.68
	226-¼-2550-RN	10½"	12	—	20.62	19.15	17.81	16.74
	227-¼-1800	7"	12	—	10.26	9.52	8.86	8.33
	227-¼-3600-H	HUB	12	—	24.03	22.32	20.76	19.51
	227-¼-3600-RN	10½"	12	—	29.08	27.00	25.11	23.60
	250-¼-1200	7"	12	9	7.76	7.21	6.70	6.30
	250-¼-2550-H	HUB	12	19	15.62	14.50	13.49	12.68
	250-¼-2500-RN	10½"	12	22	20.62	19.15	17.81	16.74
LUBE TAPE								
158	158-¼-1800	7"	12	9.5	—	8.70	6.28	6.53



SENNHEISER ELECTRONIC CORPORATION



MKE 10



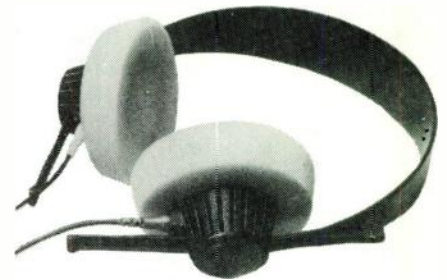
MKH 106



MKH 406



HD 424



HD 414



HD 400

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 **\$159.00**
- MKE 10-3—Tie Clip Micr. Head **\$163.00**
- MKE 10-6—Tie Clip Micr. Head **\$215.00**
- MZA 10 U—Battery Adapter **\$103.00**

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 **\$556.00**

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 □, MZS 235□, MZS 211□
- Bar/Boom: MZS 235□, MZS 211□
- Adaptor-Amplifier: KAT 15-2U*
- Desk Clamp and Adaptor: MZA 406*, MZG 415□, MZQ 415*, MZS 415*
- Power Supplies: MZN 16 TU □
- Battery Adaptor: MZA 15 U*
- Roll-Off Filter: MZF 15 U

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 **\$652.00**
- MKH 406 TFU—Condenser Microphone **\$680.00**
- MKH 406 P48U—Condenser Microphone **\$652.00**

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□, MZQ 415*, MZS 415*
- Power Supplies: MZN 16 T-U□ (-U)
- Battery Adaptor: MZA 15-U*
- Roll-Off Filter: MZF 15-U*

ACCESSORIES

- K1—Powering Module **\$122.00**
- KAT 15-2U—Cable Amplifier **189.00**
- MZA 10—Battery Adaptor **103.00**
- MZA 15 U—Battery Adapter **99.00**
- MZA 406—Universal Quick Release **12.00**
- MZF 15 U—Filter **132.00**
- MZN 16 TU—AC-Powered Supply **284.00**
- MZQ 415—Quick Release Clip **19.50**
- MZS 142—Floor Stand **56.00**
- MZS 144—Floor Stand **57.00**
- MZS 210—Floor Stand **136.00**
- MZS 211—Boom **34.00**
- MZS 415—Shockmount **56.50**
- MZT 105—Desk Stand **30.50**
- MZT 441—Desk Stand **29.00**
- MZW 30—Windscreen **12.50**
- MZW 201—Windscreen **19.00**

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. **\$46.00**

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. **\$79.00**

STEREO HEADPHONE 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 **\$89.00**

HI-FI STEREO "OPEN-AIRE"® HEADPHONE HD 424-13

Frequency Response: 16, 20,000 Hz. Dynamic transducers. Impedance each drive: 2000. Comfortable, rugged but light. Special durable cable. **\$115.00**

STEREO HEADPHONES HD 430

Frequency Range: 16 Hz. to 20 KHz. Impedance: 600 ohms per channel. Harmonic Distortion: Less than 0.5%. Weight: 7 oz. Cable: 10 foot cable and stereo phone plug. **\$126.00**



SENNHEISER
ELECTRONIC CORPORATION



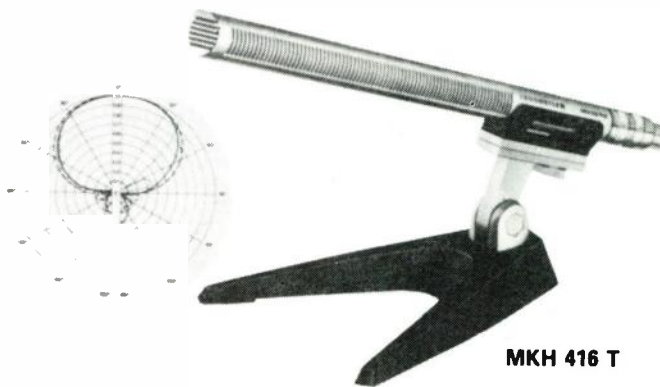
Electret Family



MKH 816 T



MD 441



MKH 416 T

CONDENSER MICROPHONES

Highly Directional "Shotgun" Microphone

MKH 816 T For AB powering (DIN 45 595). Frequency response: 40-20,000Hz. Directional characteristic: club-shaped. Especially insensitive for acoustical feedback. High S/N ratio. For unusual large recording distance, MKH 816 TU condenser microphone **\$918.00**

Recommended Accessories:

- Windscreen: MZW 815 **\$53.00**
- Bar/Boom: MZS 211 **\$34.00**
- Adaptor-Amplifier: KAT 15-2 **\$189.00**
- Desk Clamp: MZS 815 • Shock Mount - MZS 805 **\$130.00/133.00**
- Power Supply: AC MZN 16 T-U **\$284.00**
- Battery Adaptor: BP-2 **\$101.00**

Studio Directional Microphone

MKH 416 TU For AB-powering (DIN 45 595). Frequency response: 40-20,000Hz. Directional characteristic: Supercardioid/Club shape. Exceptionally insensitive for acoustical feedback. Small proximity effect. Reliable, even in difficult climatic conditions. For high sound pressure level. Built-in pop filter. MKH 416 TU condenser microphone. **\$695.00**

Recommended Accessories:

- Windscreen: MZW 415 **\$ 26.50**
- Bar/Boom: MZS 211 **\$ 34.00**
- Adaptor-Amplifier: KAT 15-2U **\$189.00**
- Swivel Adaptor: MZG 415 **\$ 28.00**
- Shockmount: MZS 415 **\$ 56.50**
- Power Supplies: AC MZN 16 T-U **\$284.00**
- Battery Adaptor: BP-2 **\$101.00**
- Roll-Off Filter: MZF 15-U **\$132.00**

Electret Family

- K3U Powering module for electretcondenser microphone system with roll off. **\$162.00**
- ME80 Mini shotgun capsule. **\$190.00**
- ME88 High quality lightweight shotgun with integral windscreen. **\$255.00**
- ME40 Cardioid capsule. **\$123.00**
- ME20 Omni-directional capsule. **\$ 87.00**
- MZW30 Wfoam windscreen. **\$ 12.50**
- MZS802 Telescopic Boom Attachment. **\$ 89.00**
- MKE10/3 Electret lavalier module. **\$163.00**

Directional Studio Microphone MD 441

MD 441 Frequency range: 30-20,000Hz. 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 Dynamic Microphone**
- with low Z cable..... **\$455.00**
- with high Z cable..... **\$487.00**

Recommended Accessories:

- Windscreen: MZW 441 **\$26.00**
- Desk Stands: MZT 441 **\$29.00**

Stereo Headphone

HD 224 X Frequency response: 16-20,000Hz. Dynamic transducer principle. With soft foam pads which cover the entire ear. Suitable for connecting to mono or stereo units. **\$144.00**

HI-FI Stereo "Open-Aire"® Headphone

HD 414-13 Frequency response: 20-20,000Hz. Dynamic transducers, impedance each: 2000. Extremely light, 4.8 oz. only. Matches with all Hi-Fi amplifiers. Special durable cable **\$ 79.00**





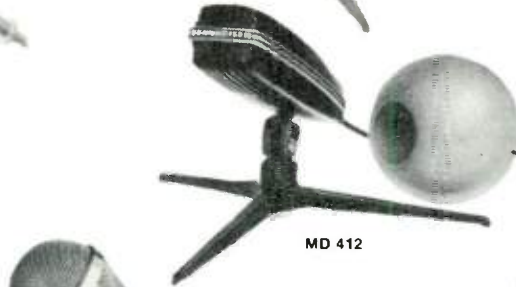
MD 211



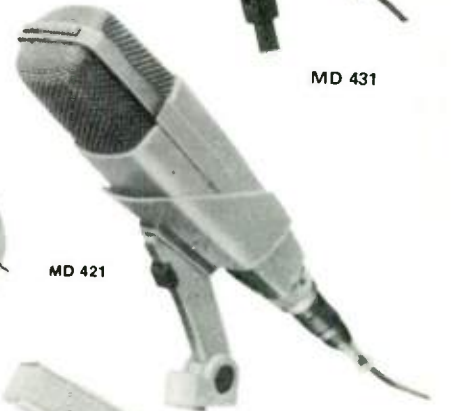
MD 402



MD 431



MD 412



MD 421



MD 416



MD 441

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 **\$356.00**
with high Z cable **\$388.00**

Recommended Accessories

Applicable: •Directly □ Indirectly (-U) only for model-U
Windscreens: MZW 30•, MZW 201•
Desk and Floor Stands: MZT 105•, MZS 142•, MZS 210•
Bar/Boom: MZS 235•, MZS 211•
Amplifier: VV 200 T □
Goose necks: MZH 142•
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 **\$315.00**

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 **\$76.00**

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•

MD 431 U
Dynamic microphone with MC 22 cable **\$352.00**

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 **\$112.00**

Recommended Accessories

Applicable: •Directly
Desk and Floor Stands: MZS 142•, MZS 144•, MZS 210•
Bar/Boom: MZS 235•, MZS 211•
Desk Clamp: MZT 237•

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 **\$300.00**
with high Z cable **\$332.00**

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 **\$327.00**
with high Z cable **\$358.00**

MD 908/908U

The MD 908/908U are gooseneck directional microphones. Both feature outstanding directional characteristics and a wide frequency response for PA and talkback systems. Wide frequency response, outstanding directional characteristics, multi-purpose use, great flexibility due to 180° Hinge (MD 908U), silent on/off switch (MD 908U).

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•

DIRECTIONAL STUDIO MICROPHONE MD 441 U

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 **\$455.00**
with high Z cable **\$487.00**

Recommended Accessories

Applicable: •Directly □ Indirectly, (-2) only for model-U (-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 **\$12.00**
MZS 142—Floor Stand **\$56.00**
MZS 144—Floor Stand **\$57.00**
MZS 210—Floor Stand **\$136.00**
MZS 211—Boom **\$34.00**
MZS 235—Bracket **\$12.50**
MZT 105—Desk Stand **\$30.50**
MZT 237—Table Clamp **\$9.00**
MZT 421—Desk Stand **\$29.00**
MZT 441—Desk Stand **\$29.00**
MZW 30—Windscreen **\$12.50**
MZW 201—Windscreen **\$19.00**
MZW 411—Windscreen **\$14.00**
MZW 421—Windscreen **\$22.00**
MZW 441—Windscreen **\$26.00**

MD 908 U

Dynamic microphone with magnetic switch plus MC 24 cable **\$225.00**



STYLE	SIZE	FINISH ON STEEL CASES	ELECTRIC MOVEMENT	PRICE
MANAGER-12	Diam. 14 1/4", Depth 2 3/4", Dial 12"	Bronze	No. 610	\$42.95
		Chrome	No. 611	\$52.95



MANAGER-12

The history of Seth Thomas is one of enduring timepieces which have shown their dependability whenever 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.

WESTCLOX

Westclox Monitor Wall Clocks



46633

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".



46377

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.

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	\$33.08
46377	Monitor 12" Dial [Quartzmatic]	Brown Case, White Dial Full Sweep Second Hand	\$36.75


SHURE®

PROFESSIONAL MICROPHONES



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 \$470.00

Model SM10A: Unidirectional, dynamic, head-worn microphone \$120.00

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 \$90.00

Model SM12A: Unidirectional, dynamic, head-worn microphone, with receiver. \$165.00

Model SM14: Professional head-worn microphone with receivers. Low impedance, unidirectional, dynamic microphone with two integral earphone assemblies. Close talking microphone allows use under noisy conditions. Lightweight and reliable.

Model SM14A \$215.00

Model SM17: A miniature dynamic microphone designed specifically for use with acoustic stringed instruments and other acoustic musical instruments. Omnidirectional pickup pattern and frequency response ideally suited for instrument use.

Model SM17 \$95.00

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 \$205.00

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 \$220.50

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 \$325.50

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 \$300.00
SM54 320.00

Model SM57 is a slender dynamic microphone built to provide wide range reproduction 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 \$136.50

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 \$172.00

Call or write for a complete product guide on Shure microphones and accessories.

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 \$195.00

Model SM63-CN Shure omnidirectional microphone, a small lightweight unit, with appearance handling, and performance features ideally suited to highly professional on-camera or on-stage use.

Model SM63-CN \$120.00

Model SM81: A high-quality, unidirectional condenser microphone designed for professional applications in studio recording, broadcasting and sound reinforcement. Especially applicable in situations requiring extremely low wide frequency response, low noise and distortion characteristics, very low RF susceptibility, and reliable operation over a wide range of temperature and humidity extremes.

Model SM81 \$300.50

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 \$315.00

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 \$42.50

Prices and Specifications Subject to Change Without Notice.

World Radio History


HARRIS



MICROPHONE ACCESSORIES

Stands

BB-44 Baby Boom: 787mm (31") adjustable boom arm. Fits Model MS-10C Floor Stand above. Standard 5/8" -27 thread accepts any threaded Shure microphone, mount or swivel adaptor **\$22.05**

CO-1 Stand Adaptor: 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..... **\$11.10**

MS-10C Floor Stand: Quickly and easily adjusts from 889mm (35") to 1.6m (64") high. Positive ring lock maintains desired height. Standard 5/8" -27 thread accepts any threaded Shure microphone, mount or swivel adaptor. Also accepts Model BB-44 Baby Boom described above. Chromeplated. Weighted 254mm (10") base for stability..... **\$24.60**

S15: Tall mike stand that extends to 14 ft. Standard 5/8" -27 thread for direct mounting. Includes cable clamp for vertical application of wire..... **\$110.40**

S33B Modern Desk Stand: Black finish. For use with Microphone Models 330, 533, 545, 546, 548, 556S, 566, 571, 576, 578, 579, 580, 585 and 588 **\$21.60**

S33P: Desk Stand (Prof. Gray) **\$21.60**

S37A Modern Desk Stand: Non-reflective, textured gray finish. For use with all microphones with swivel connector assemblies, or microphones with swivel adaptors... **\$11.55**

S39A Vibration-Isolation Stand: For all applications where vibration is a problem. Fits all Shure Microphones **\$33.00**

S40A Desk Stand: Similar to S37A Stand with push-to-talk switch included. Fits microphones with 5/8" -27 thread connectors. Includes provision for optional "in use" light. Shielded 2.1m (seven-foot), four-conductor cable may be wired to any standard microphone connector **\$33.00**

S55P Low-Profile Microphone Stand . **\$33.00**

Adaptors

A25B: (black) To be used with Models 515, 516EQ, 545, 565, 580, 585, and 588 microphones—for use with standard desk or floor stand **\$2.90**

A57D: (champagne) Snap-in Locking Swivel Adaptor for Models 570, 576, 578, 579SB, and 589S. 19mm (3/4") diameter microphones—for use with standard desk or floor stand **\$7.45**

A57E: (ebony) Adaptor **\$7.45**

A75A: Stand Adaptor for 275, 575 microphones..... **\$6.75**

Quick Disconnects

A45: Designed for microphones incorporating an isolation assembly such as Models 330, 546, 556, and all others using an A25B Swivel Adaptor. Satin Aluminum finish **\$16.20**

A45B: Same as A45, but black finish . **\$16.20**

A47: Designed for microphones with connectors such as Models 55SH, 545SH, 565SH, etc. or nearly all microphones with a standard 5/8"-27 thread **\$16.20**

Plug-In Modifiers

A15AS Microphone Attenuator: Prevents input overload in applications where very strong signals are applied to a microphone input. Selectable 15, 20, or 25 dB loss. **\$33.60**

A15BT Bridging Transformer: Matches balanced or unbalanced devices of different impedances. (33 kilohm primary and 600 or 7500 ohm secondary) **\$29.40**

A15HP High Pass Filter: Provides a low frequency cut-off to reduce unwanted low frequency noises..... **\$29.40**

A15LA Line Input Adaptor: Converts balanced low impedance microphone input to bridging line level input **\$29.40**

A15LP Low Pass Filter: Provides a high frequency cut-off to reduce objectionable high frequency noises **\$29.40**

A15PA Presence Adaptor: Adds "presence" to vocals or instruments in recording, broadcasting, and P.A. applications..... **\$29.40**

A15PRS Phase Reverser: Reverses the phase of a balanced line without modification of equipment **\$29.40**

A15RS Response Shaper: Provides sibilance filtering in recording, broadcasting, and P.A. applications..... **\$29.40**

A15TG Tone Generator: Produces a continuous 700 Hz signal capable of driving low impedance balanced lines, and is extremely useful in setting up **\$39.00**

A95 Series: Low-Impedance To High-Impedance Line Matching Transformers (Plug In Types). Low-impedance connector is a 3-pin professional audio type designed to mate with Canon XL Series, Switchcraft A3 (Q.G.) Series or equivalent.

A95U: Male 1/4" phone plug or jack . . . **\$22.50**

A95UF: Female 1/4" phone plug or jack **\$27.00**

A97A Low-Impedance to Medium-Impedance 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 **\$24.00**

Goosenecks

A12: Mounting flange **\$2.85**

G6A: 152mm (6") flexible gooseneck (side vent)..... **\$5.25**

G12: 304mm (12") flexible gooseneck . **\$5.40**

G12A: 304mm (12") flexible gooseneck (side vent)..... **\$5.55**

G12-CN: 304mm (12") flexible gooseneck with professional FEMALE three-pin audio connector **\$11.10**

G18: 457mm (18") flexible gooseneck . **\$6.75**

G18A: 457mm (18") flexible gooseneck (side vent)..... **\$7.20**

G18-CN: 457mm (18") flexible gooseneck with professional FEMALE three-pin audio connector **\$11.85**

Lavalier Holders

A27L: Fits Models 275, 575 **\$3.15**

A34L: Lavalier **\$5.55**

A51L: Plastic. Fits Models 570 and 571 **\$10.35**

A54L: Fits Model 545L **\$6.75**

A57L: Rubber. Fits Models 570 and 571 **\$6.75**

Mounts

A25M: Designed for use with Shure Models 545D, 545SD and 545L microphones . **\$16.20**

A26M: Designed for use with microphones listed above when using A2WS Windscreens, and "ball-type" Models 565D, 565SD, 548, 548SD, 588, 515 Series, and other Shure microphones with tapered handles . . . **\$16.20**

A27M: A highly versatile stereo microphone-adaptor designed to place two microphones in a variety of selectable positions. Allows for independent positioning flexibility. Consists of two stacking sections that rotate on their centers for complete angular adjustment **\$26.70**

A18-BV: Surface Mount **\$2.85**

A18-WV: Surface Mount..... **\$2.85**

A55M: 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: 95mm (3 3/4")H x 38mm (1 1/2")D x 51mm (2") Diam **\$29.00**

Wind Screens

A1WS: Windscreens for 515 Series . . . **\$3.90**

A2WS: Designed to effectively minimize wind noise in outdoor locations and control explosive breath sounds in any location. For Models 544, 545D, 545SD, 545SH, 545L, 546, 571, 576 and 578 **\$8.70**

A2WS-BK: Black Windscreen **\$8.70**

A2WS-WH: White Windscreen **\$8.70**

A61WS: Controls wind noise and "pop". For use on all Shure "ball-type" microphones, such as the Unisphere® models **\$4.15**

A61WS-BK: Black Windscreen **\$4.15**

A61WS-BL: Blue Windscreen **\$4.15**

A61WS-BR: Brown Windscreen **\$4.15**

A61WS-GN: Green Windscreen **\$4.15**

A61WS-OR: Orange Windscreen **\$4.15**

A61WS-RD: Red Windscreen **\$4.15**

A61WS-WH: White Windscreen **\$4.15**

A61WS-YL: Yellow Windscreen..... **\$4.15**

A10CH: Cough Button Assembly . . . **\$39.30**

RSR-1: Reactance Rule **\$3.45**

SRC-1: Sound Reinforcement Calculator **\$4.65**



M44 SERIES

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 1½ 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.

M91 Hi-Track Cartridges

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.

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 1½ to 3 grams tracking force.

M232 Professional Tone Arm

High quality, rugged, simple arm for tracking at 1½ 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. M-232 12" Tone Arm \$47.50

V15 Type IV

The ultimate cartridge for the new era in high fidelity. Spectacular trackability across the entire audio spectrum at an ultra-light tracking force. Revolutionary Dynamic Stabilizer overcomes warp effects and neutralizes static electricity. Hyperelliptical stylus configuration dramatically reduces distortion at the source. ¾ to 1¼ grams tracking force.

V 15 Type III—HE

Shure now makes the V15 Type III Series available with a nude-mounted Hyperelliptical diamond stylus tip. Originally designed for Shure's top-of-the-line V15 Type IV cartridge, the Hyperelliptical configuration represents the most significant advance in decades in tip design for stereo sound reproduction.

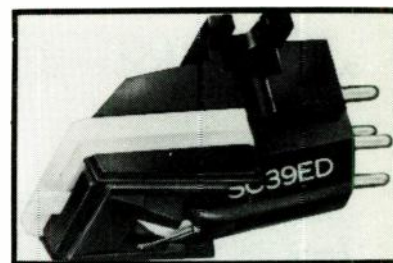
SC35C

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.

SC39 Series

Built to stand up to day-in and day-out professional use in broadcast and recording studio applications. High trackability, low-mass telescoped stylus assembly. Essentially flat frequency response. Special SIDE-GUARD retractile stylus for extra protection against stylus damage. Special positive locking flip-down stylus guard. Low-noise MASAR process stylus tip virtually eliminates noise buildup. SC39ED tracks at ¾ to 1-1/2 grams for minimal record wear. SC39EJ and SC39B track at 1-1/2 to 3 grams for more rugged installations and for when a heavier feel is desired.



SUPER TRACK CARTRIDGES

V15IV	Hyperelliptical	0.75-1.25	\$190.00
V15IV-G	Spherical	0.75-1.25	184.00

BROADCAST CARTRIDGES

SC35C	Spherical	4.0-5.0	42.00
SC39B	Spherical	1.5-3.0	69.50
SC39ED	Elliptical	0.75-1.25	116.00
SC39EJ	Elliptical	1.5-3.0	80.75
M44E	Biradial Elliptical	1.75-4.0	46.25
M44C	Spherical	3.0-5.0	40.00
M44G	Spherical	0.75-1.5	42.00
M44-7	Spherical	1.5-3.0	42.00

HI-TRACK CARTRIDGES

M95HE	Hyperelliptical	0.75-1.5	118.00
M95ED	Elliptical	0.75-1.5	102.00
M95EJ	Elliptical	1.5-3.0	81.50
M95G	Spherical	0.75-1.5	78.00
M91E	Elliptical	0.75-1.5	80.50
M91ED	Elliptical	0.75-1.5	87.00
M75EDII	Elliptical	0.75-1.5	87.00
M75EJII	Elliptical	1.5-3.0	74.00
M75BII	Spherical	1.5-3.0	59.00
M75GII	Spherical	0.75-1.5	65.50

Replacement Styli

Model No.	Replacement for	Price
VN45HE	V15IV	\$68.50
VN4G	V15IVG	64.50
VN35HE	V15III-HE	41.50
SS35C	SC35C	12.50
SS39B	SC39B	17.00
SS39ED	SC39ED	59.00
SS39EJ	SC39EJ	28.00
N44C	M44C	13.00
N44E	M44E	16.25
N44G	M44G	13.25
N44-7	M44-7	13.25
N95HE	M95HE	39.00
N95ED	M95ED	36.50
N95EJ	M95EJ	29.50
N95G	M95	20.00
N91E	M91E	34.00
N91ED	M91ED	35.00
N75ED11	M75ED11	35.00
N75EJ11	M75EJ11	28.50
N75B11	M75B11	21.50
N75G11	M75G11	25.50



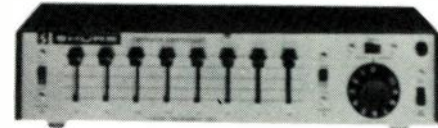
MICROPHONE MIXERS



Model M63



Model M267



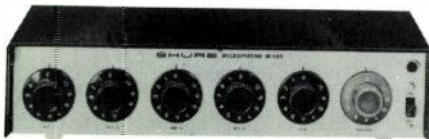
Model M610



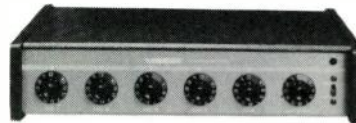
Model M67



Model M64



Model M68



Model M268



Model SE30

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, 50-60 Hz. **\$210.00**

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. Noiseless automatic switchover to battery if AC line fails. **\$345.00**

M68 and M68FC Microphone Mixer

The backs of the M68 and M68FC Mixers have four Canon-type inputs. Model M68 has MALE Canon XLR-3 type input connectors (uses XLR3-11C type mate) Model M68FC has FEMALE Canon XLR-3 type (uses XLR-3-12C type mate). Each input accepts a dynamic or ribbon microphone (not recommended for crystal or ceramic microphone), 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	\$198.00
M68FC	\$198.00
M68FCE 120 or 240V	\$205.00

M267 Professional Mixer NEW

Professional mixer for recording or broadcast use. Four low-impedance balanced inputs switchable to mike or line level; simplex (phantom) power on each input; fast-acting limiter; built-in battery supply; headphone amplifier with level control; illuminated VU meter with LED peak level indicator; low-cut filters and tone oscillator; battery check switch; mix bus jack; mic and line level outputs; master volume control; 120 V ac, 50/60 Hz, 9.5 W; battery power; 11-3/8"W x 7-1/2"W x 7-1/2"D x 2-3/4"H **\$395.00**

A268R Rack Panel Kit **\$21.00**

M268 Microphone Mixer NEW

Five-channel mixer featuring four high/low impedance microphone inputs and one AUX-level input; simplex (phantom) power on each mic input mix bus jack; regulated power supply; 120 V ac, 50/60 Hz, 5 W; 11-3/8"W x 7-1/2"D x 2-3/4"H **\$250.00**

A268R Rack Panel Kit **\$21.00**

Model M610 Feedback Controller

The M610 gives you the basic advantages of room system equalization — but without the high costs involved in elaborate, complex, highly specialized equalization equipment. The M610 Feedback Controller uses eight resonant dip filters, each controlled by a linear-motion potentiometer. Each of these filters, unlike highly selective "notch" or single-frequency filters, acts on a band of frequencies around its center frequency, so that attenuation is smooth and complete. These filters function in the most critical portion of the audio spectrum, with center frequencies of 63, 125, 250, 500, 1,000, 2,000, 4,000, and 8,000 Hz. Each is infinitely variable from "0 attenuation (flat) to a maximum cut of 12 dB. The M610 also features "high end" (above 8 k Hz) and "low end" (below 63 Hz) roll-off switches to control response outside the range of these filters.

Built-in variable amplification allows the user to conveniently increase the overall gain of the system to a level even higher than original level — even though any or all of the filters have been activated! The M610 also may be used to improve sound quality and increase intelligibility by filtering out "problem frequencies" that cause oscillating ("ringing"), boominess and other disruptive resonances in acoustically difficult rooms. **\$214.00**

M64 Series Stereo Preamplifiers

Compact, low distortion, and low noise stereo preamplifiers that provide gain, equalization, and choice of output impedance and levels.

M64 108-132 Volts AC, 50/60 Hz	\$95.00
M64-2E 216-264 Volts AC, 50/60 Hz	\$105.00

Model SE30 Gated Compressor Mixer

High-quality, "hands-free" gain riding compressor in a single, portable unit. Makes output control in remote pickups, talk shows recording, program line compression and professional sound reinforcement smoother, surer and more trouble-free than it's ever been before. Features, such as: feedback-type gain controls that automatically increase the input clipping level as the individual gain controls are turned down; a built-in low-distortion 1 k Hz tone oscillator; three-function VU meter; stereo parallel jack, self-contained battery and AC power supply, with automatic switch-over to battery in case of AC failure; auxiliary meter light source for battery operation; removable AC line cord; disable switches for compressor and Gated Memory that convert the SE30 to a high quality linear mixer.

Model SE30 Mixer	\$675.00
A100B Rack Panel 3-1/2 x 19"	24.00

Accessories

A67B Battery Power Supply for M63, M67, M68, M610. May be used as sole power source. On the M67 it may also be used as standby during AC operations providing noiseless switchover in case of AC failure. **\$31.50**

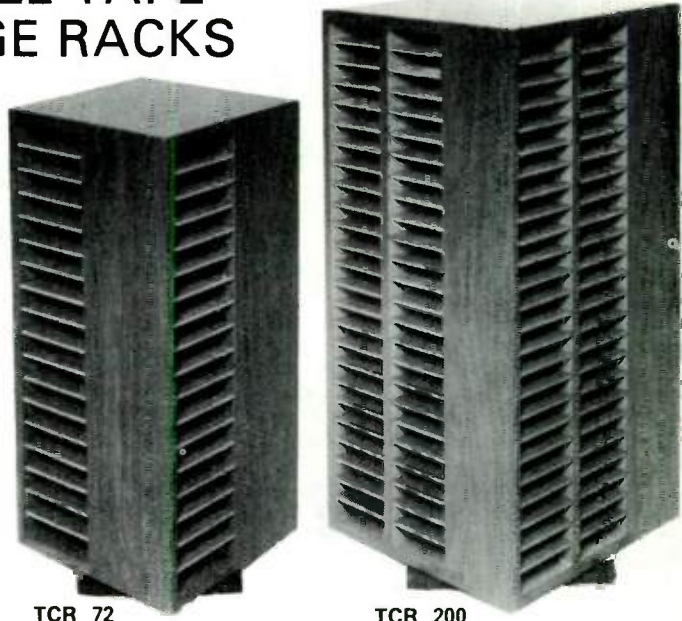




**SOUTHEAST
ELECTRONICS**
INC.

CAROUSEL TAPE CARTRIDGE RACKS

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. 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

TCR 200

- TCR 72**, 22" high, 11" wide, 11" deep.
72 Carts \$105.00
- TCR 200**, 30" high, 16" wide, 16" deep.
200 Carts \$190.00

WALL TAPE CARTRIDGE RACKS

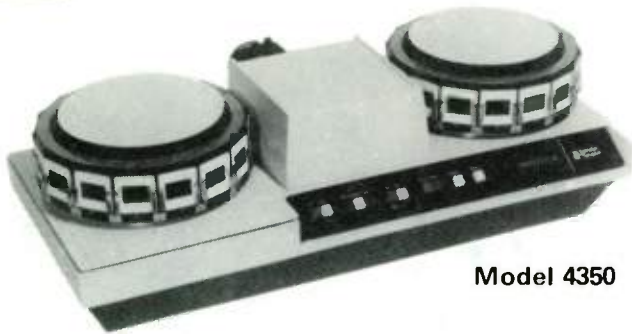
The new WCR-100 and WCR-200 wall mounting cartridge racks are built to the same high standard as the TCR-72 and 200 Carousel racks. They have a modern scar resistant walnut finish.



WCR-100

WCR-200

- WCR-100**, 23 3/4" high,
25" wide, 5-3/8" deep.
100 Carts \$105.00
- WCR-200**, 29-3/8" high,
39-5/8" wide, 5-3/8" deep.
200 Carts. \$190.00



Model 4350

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

SLIDE PROJECTOR

PRODUCER 32 SELECTROSLIDE

FILM CHAIN 2x2 SLIDE PROJECTOR



Model 4351

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 for multiplexers, and inverted 3" and 5" projection lenses for uniplexing.

PRICE LIST

P-32 Producer 32 Selectroslide projector (Model 4350), with 7 1/2" lens (Model 290 or 291), controller (Model 4351), and mounting plate (Model 6382). Specify cable length at \$4.36 per foot, otherwise 5' controller cable supplied **\$15,290.00***

S-32 Spectrum 32 Selectroslide projector (Model 4344) for sequential slide presentation only, (with 7 1/2" lens), and mounting plate (Model 6382) **\$10,450.00**

Model	
241	Slide magazine, 16-slide, odd numbering \$176.00
242	Slide magazine, 16-slide, even numbering 176.00
BCL	Projection lamp, 300 watt, 1000 hour average life 30.00
6344	Remote control panel for S-32D, w/5 ft. cable (additional cable at \$1.40 per foot) 875.00
Following Prices: Request Quote	
285	3" f3.5 inverted lens for uniplexing, picture size 14
286	5" f3.5 inverted lens for uniplexing, picture size 14
290	7 1/2" f4.0 projection lens, picture size 1-9, with iris
291	7 1/2" f4.0 projection lens, picture size 6-12, with iris
295	9" f5.0 projection lens, picture size 1-9, with iris
297	9" f5.0 projection lens, picture size 6-11, with iris

* Projectors with lens sizes other than 7 1/2" must be quoted separately.

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.

World Radio History



SLIDE PROJECTOR

Spectrum 32 Selectroslide Color Television 2X2 Slide Projector

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.

Each projection channel involves only a single mirror surface, minimizing the maintenance requirements, and maximizing color and polarization balance. Polarization is less than one percent. Slide change time is a mere 1/10th of a second, appearing to be instantaneous on a monitor. Slides may be sequentially advanced as fast as one per second. Twin aspheric condensing systems eliminate filament focus and provide even illumination.

A precision focus mount, incorporating a focus lock, permits a wide selection of lenses, including 7 1/2" and 9" for multiplexing, and inverted 3" and 5" lenses for uniplexing. All projection lenses are color corrected, coated and have a diaphragm and holder for neutral density and color correcting filters. Additional filter holders are provided within each projection channel.

The Spectrum 32D comes equipped with two 300 watt, 1000 hour, proximity reflector projection lamps - forty times the rated life of conventional lamps. Light output at full voltage is 340 foot-candles minimum at 3.19x2.35" projected image size. Pushbutton lamp ejectors reduce lamp change time to less than ten seconds. Each lamp is cooled by its own turbine blower. A washable air filter maintains the entire mechanism, including slides and optics, free from dust.

All logic circuitry is solid state. A fail-safe circuit protects against double cycling despite improper slide change commands. Modularly designed mechanical, optical and electronic sub-assemblies may each be removed for servicing without disturbing the film chain alignment.

Remote control circuits provide every possible function available from a sequential projector. **On/Standby**, with tally indicators, remotely turns off lamps and blowers. **Alternate** switches from one projection channel to the other without advancing the out-going slide. **Change Mono** makes it impossible to trigger more than one slide change at a time. **Change Auto** makes it possible to repetitively advance through a series of slides at the maximum rate. **Advance Left** and **Advance Right** make it possible to advance each slide magazine individually. **Hold Left** and **Hold Right** make it possible to hold the slide position of one magazine and repeat a slide alternately with a series of slides from the other magazine. **Projection Tally Left and Right** indicates which projection channel is in use at the moment. Additional terminals are provided for adding individual variable transformers for the two projection lamps, or one for both lamps combined. A built-in AC line circuit breaker as well as regulated power supply are provided. No external low voltage power is required for remote control. Remote connections are made by ribbon connector.

At the projector itself, illuminated pushbuttons make available most of the remote functions with the addition of **Standby/Local/Remote** selector buttons and a button to light the preview lamps.

Finally, with all its versatility, with its legendary history of reliability, with its well earned reputation for ruggedness, the Spectrum 32D Selectroslide remains the choice of those professionals who search out the best with an eye to their budget. Spectrum 32D is the most economical broadcast quality film chain slide projector available today. You can spend more, but you cannot buy a better sequential slide projector. Anywhere.

S-32D Spectrum 32 Selectroslide projector (Model 4344), with mounting plate (Model 226) \$9,500.00

Accessories for Spectrum Selectroslide Projectors

285	3" f3.5 inverted lens, picture size 14	.....	\$240.00
286	5" f3.5 inverted lens, picture size 14	.....	420.00
290	7 1/2" f4.0 projection lens, picture size 1-9, with iris and filter holder	.....	550.00
291	7 1/2" f4.0 projection lens, picture size 6-12, with iris and filter holder	.....	620.00
295	9" f5.0 projection lens, picture size 1-9, with iris and filter holder	.....	620.00
297	9" f5.0 projection lens, picture size 8-12, with iris and filter holder	.....	620.00
241	16-slide magazine, odd numbering	.....	160.00
242	16-slide magazine, even numbering	.....	160.00
816	Cable, for Producer to controller	.....	ft. 3.40

STANTON

CARTRIDGES



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



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 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 C00A 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.

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

NEW PROFESSIONAL LOW IMPEDANCE SERIES

Model	Stylus Model	Tracking Force	Price
980LZS	D98S	¾ to 1½ grams	\$250.00

NEW PROFESSIONAL CALIBRATION STANDARD SERIES

881S	D81S	1 gram ± ¼	179.00
881E	D81E	1 gram ± ¼	158.00
880S	D80S	1 gram ± ¼	147.00
880E	D80E	1 gram ± ¼	126.00

CALIBRATION STANDARD (with "Longhair" Brush*)

681EEE-(S-type)	D6800EEE-(S-type)	1 gram + ½ - ¼	138.00
681EEE	D6800EEE	¾ to 1½ grams	116.00
681EE	D6800EE	¾ to 1½ grams	97.00
681SE	D6800SE	2 to 4 grams	97.00
681A	D6807A	1½ to 3 grams	88.00

680 STEREO STANDARD SERIES (with "Longhair" Brush)

680SL	D6800SL	2 to 5 grams	109.00
680EE	D680	¾ to 1½ grams	76.00
680EL	D6800EL	2 to 5 grams	106.00

*Includes Extra Stylus.

BROADCAST STANDARD

500EE	D5100EE	1 to 2 grams	42.50
500E	D5100E	2 to 5 grams	36.75
500AA	D5105AA	1 to 2½ grams	36.75
500A	D5107A	2 to 5 grams	31.50
500AL	D5107AL	3 to 7 grams	31.50

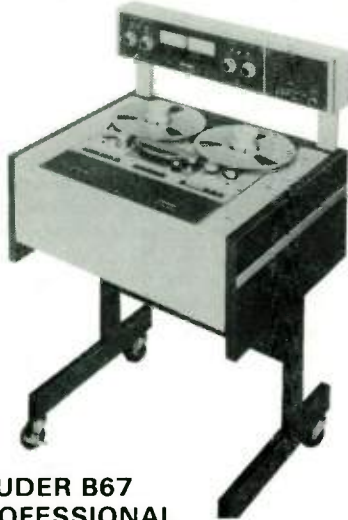
BROADCAST STANDARD (High Performance)

600EE	D6003EE	1 to 2 grams	62.50
600E	D6004E	1½ to 3 grams	56.50
600A	D6071A	2 to 4 grams	51.50

*For broadcast and any professional applications requiring precise cueing the "Longhair" Brush is easily removable without the use of tools.

STUDER REVOX

PROFESSIONAL AUDIO EQUIPMENT



STUDER B67 PROFESSIONAL TAPE RECORDER (1/4")

A compact, efficient machine especially designed for broadcast studios and outside broadcast vans. Also ideally suited for television, film and disc recording studios, theatre applications, and scientific data recording. Standard features include electronic counter, tape cutter, PC board for vari-speed, and jumper plug switchable CCIR/NAB equalization.

VU-version includes monitor loudspeaker. Also available as chassis unit, in universal console, or with VU-meter control unit.

Head assembly options: mono; mono/stereo (switchable); stereo 0.75 mm track separation and full track erase; two-track 2 mm track separation, overlapping erase head and pilotone.

GENERAL REMARKS

- Portable versions to be rack or console mounted (individual consoles available upon request)
- The machines are suitable for both 50 and 60 Hz mains supply
- Equalizations CCIR or NAB are jumper selectable
- Tape speeds 3.75, 7.5 and 15ips or 7.5, 15 and 30ips, please specify
- Electronic tape timer with positive and negative reading in real time
- Tape cutter close to replay head
- NAB adaptors included
- Tape reel dimensions up to 10 1/2"
- All console versions are equipped with monitor speaker in panel above tape transport
- All portable versions have built-in monitor speaker in tape transport

B67-1 full track, portable	\$4250.00
B67-1 VU portable, with VU-meter panel	\$4460.00
B67-1 VUK with VU-meter panel above tape deck, but for installation in console	\$5250.00
B67-1P full-track, neopilotone, portable	\$4950.00
B67-1P VUK with VU-meter panel above tape deck, but for installation in console	\$6280.00
B67-0.75S stereo, 0.75 mm track separation, full-track erasure, switchable to mono operation, portable	\$4800.00
B67-0.75S VU portable, with VU-meter panel	\$5250.00
B67-0.75S VUK with VU-meter panel above tape deck, but for installation in console	\$6050.00
B67-0.75 stereo, 0.75 track separation, full track erasure, portable	\$4690.00
B67-0.75 VU portable with VU-meter panel	\$5150.00
B67-0.75 VUK with VU-meter panel above tape deck, but for installation in console	\$5920.00

- B67-2/2 stereo/2-track, with 2 mm track separation, with separate erase facilities of track 1 or 2 (overlapping erase head), portable \$4800.00
- B67-2/2 VU portable with VU-meter panel \$5250.00
- B67-2/2 VUK with VU-meter panel above tape deck, but for installation in console \$5950.00
- B67-2/2 VU sync stereo/2-track with sync facilities, portable, with VU-meter panel \$5900.00
- B67-2/2 VUK sync with VU-meter panel above tape deck, but for installation in console \$6680.00
- B67 Playback only available upon request in all track configurations

Accessories

- Transport remote control with 30 ft. (10m) connection cable mounted in wooden cabinet \$210.00
- Transport remote control, Studer standard module dimension \$175.00
- Connection cable for above, length 50 ft. (15m) \$110.00
- Varispeed kit for installation in machine including external 10-turn pot and components (without extension cable) \$299.00
- Varispeed kit for installation in machine without external components (VCO only) \$175.00
- Varispeed remote control, installed in wooden cabinet (VCO 1.167.780 must be installed in machine) \$249.00
- Connection cable for above, length 30 ft. (10m) \$99.00
- Varispeed remote control, Studer standard module dimension (VCO 1.167.780) must be installed in machine) \$210.00
- Connection cable for above, length 50 ft. (15m) each \$45.00
- Tool kit B67 \$996.00
- Extender board 64-pin for amplifier section \$225.00
- Rugged transportation case for B67 \$385.00



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	\$1799.00
14302/14304	B77 Std, Cage w/rack adpt	3 3/4-7 1/2	2/4	\$1799.00
14106	B77 HS/NAB, Cabinet	7 1/2-15	2	\$1799.00
14306	B77 HS/NAB, Cage w/rack adpt	7 1/2-15	2	\$1799.00
14122/14124	B77 Std, w/fact. slide sync	3 3/4-7 1/2	2/4	\$1899.00

Options B Series

34237	B77 Variable Speed Control	\$180.00
34227	B77, 30' Remote Control Cable	\$200.00
9865	B77 Operating Manual	7.00
9860	B77 Service Manual	\$36.00
34099	B77 Rack Mount Adaptor (For Cage models)	\$35.00

Accessories

34007	Operational Dust Cover, B77	\$80.00
-------	-----------------------------	---------

Reels and Adaptors

44042	Black 10 1/2" NAB Metal Reel	\$20.00
44044	Silver 10 1/2" NAB Metal Reel	\$20.00
44150	Empty 10 1/2" Novodur Reel	\$9.00
44405	Revox Library Case 10 1/2"	\$14.00
45001	Standard NAB Adaptor, Each	\$19.00
45010	Professional NAB Adaptor, Each	\$65.00
42032	Revox 631 Tape on NAB Metal Reel 3600' with Library Case, Black Reel	\$40.00
42033	Revox 631 Tape on NAB Metal Reel 3600' with Library Case, Silver Reel	\$40.00
45200	Leader Tape Transparent 1200'	\$20.00
46001	Alignment Tape, 7 1/2 ips	\$90.00
46002	Alignment Tape, 15 ips	\$90.00
46003	Alignment Tape, 3 3/4 ips	\$90.00



STUDER REVOX



Telephone HYBRID Board 1.915.760-81

General

The circuit board can also be used in conjunction with existing installations.

0.775V
 1mW at 600 ohms, measured with voice to ASA C 16.5 1942
 Lead 8 dB
 Supply voltage stabilized plus/minus 15 V or -22 V
 Supply current 33 mA or 28 mA

Transmit circuit

Input sensitivity, adjustable + 6 dBu to + 15 dBu
 Input impedance greater than 5kohms
 Input Symmetry greater than 60 dB
 Input balanced and floating
 Bandpass in transmit circuit producing frequency response of a telephone capsule 300 Hz to 3400Hz (-3 dB), 12 dB/oct.
 Transmit level -13 VU at 600 ohms
 Total harmonic distortion less than 1%

Receive circuit

Input level, nominal -13VU at 600 ohms
 Max. input level + 3 VU
 Output sensitivity, adjustable + 6 dBu to + 15 dBu
 Output balanced and floating
 Output impedance less than or equal to 50 ohms
 Load greater than or equal to 200 ohms
 Frequency response:
 bandpass 300 Hz to 3400 Hz (-3 dB), 30 dB/oct.
 Built-in noise generator, level adjustable
 Total harmonic distortion less than 1%
 Limiter on output
 Threshold fixed at approx. + 16 dBu
 Attack time approx. 0.5 msec
 Release time (IEC 268-8) approx. 0.5 sec.

TELEPHONE HYBRID

In order to transmit the conversation between the announcer in the studio and a person being interviewed by telephone, the call has to be connected to the mixing console. The full conversation is transmitted since both voice signals are carried on a normal 2-wire telephone line. However, the voice of the person in the studio is thereby also transmitted in telephone quality (300 Hz to 3400 Hz). The effect of directly mixing in the studio the voice signal is that the good and poor signals are combined. The resulting signal is untrue and distorted.

The quality of transmission can be greatly improved by selectively suppressing the poor signal. This is done with a hybrid circuit, a familiar feature in telephony.

The Studer telephone hybrid permits high-quality transmission of telephone conversations between the announcer in the studio and outside callers. Apart from connecting to the exchange line the device functions completely automatically.

The Studer telephone hybrid ensures maximum attenuation of the studio voice signal in the receiver line. The reason for this very effective attenuation is that the hybrid automatically constitutes a dummy load for the line. This automatic adjustment is performed electronically, the lining being matched as near as possible by capacitance and resistance. The matching process begins as soon as voice modulation occurs.

Hybrid circuit

Input/output balanced and floating
 Test voltage 1 kV
 DC input/output impedance 1500 ohms
 Balancing range R 200 ohms to 2000 ohms
 Balancing range C 0 to 0.1 uF
 Attenuation; measured with:
 sine wave (dummy load) greater than 40 db
 white noise (dummy load) greater than 30 dB
 Attenuation on an exchange line, depending on quality of line (measured with speech) approx. 20 dB
 Symmetry 60 dB
 Matching is controlled by the voice signal in the transmit circuit. Threshold adjustable, Range 0 to -25 dB

Electronic Telephone Hybrid (Cradle)

19" card frame with built-in power supply, wired for two electronic telephone hybrids (cradles) and one relay unit
 Equipped with one electronic telephone hybrid (cradle) \$1340.00
 Equipped with two electronic telephone hybrids (cradles) \$1970.00

Balancing Unit

19" card frame with built-in power supply, wired for three stereo balancing amplifiers.
 Equipped with two stereo balancing amplifiers \$1110.00
 Equipped with three stereo balancing amplifiers \$1450.00

Option:

Plug-in booster amplifier for stereo balancing unit \$21.00

(If the output level of the unbalanced equipment is between 15 and 30 dB below line level, two plug-in booster amplifiers 1.915.905.00 per stereo balancing amplifier are necessary).

STUDIO LIGHTING SYSTEMS

Harris offers a wide selection of Television Studio Lighting equipment engineered and manufactured by these leaders in the studio lighting field.



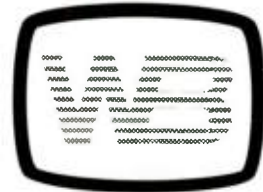
kliegl



**STRAND
CENTURY**



**Berkey
Colortran**



**WALTER S.
BREWER CO., INC.**

- TELEVISION STUDIO LIGHTING PACKAGES
- DISTRIBUTION EQUIPMENT
- DIMMING
- CONTROL CONSOLES
- LIGHTING FIXTURES
- LIGHTING CONTROL SYSTEM
- GRIDS
- CUSTOM DESIGN
- ACCESSORIES

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

Technics PROFESSIONAL SERIES

TURNTABLES



SP-10MKII

Broadcast Turntable with Quartz Phase-Locked Direct Drive Motor

Quartz control provides virtually perfect speed accuracy (no more than $\pm 0.002\%$ 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

\$1100.00



SP-15

Quartz-Synthesizer Controlled Direct Drive Turntable

Quartz control provides virtually perfect speed accuracy, within $\pm 0.002\%$ of perfect speed. Quartz synthesizer pitch adjustment permits up to $\pm 9.9\%$ 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. Electro-mechanical 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

\$700.00



SL-1200MK II

Disco Drive Direct Turntable

- Quartz Direct-Drive Disco Type manual turntable with tone arm • 33-1/3 + 45 rpm
- All quartz-locked variable Slide type Pitch control ($\pm 8\%$) • Quick start-up and quick braking • Wow and flutter 0.025% WRMS
- Pop-up stylus illuminator • Strobe illuminator • Gimbal-suspension tone arm with variable height adjustment • Brushless DC motor • Aluminum diecast cabinet • Anti-resonant visco-elastic main base \$400.00

SH-100

Turntable Accessory

Aluminum Die-Cast, Universal Plug-in head-shell with calibrated overhang Cursor and Gold-plated contacts for Technics tone arms \$20.00

CASSETTE DECK

RS-M95 Cassette Deck

- Quartz-locked 2-motor direct-drive stereo cassette deck with Dolby • Metal tape capability • Front-load vertical drive • 2 color FL (Fluorescent) bar-graph meters with VU and instant-peak modes plus peak-hold function
- HPF (Hot-pressed ferrite) 3-head system
- 4-position separate bias and EQ selectors
- Fine, front-panel bias adjustment
- Memory: (play/rewind/stop) • Micro-processor tape counter plus triple-mode memory • Optional RP-9690-P or RP-070 remote control available • Black Metal Cabinet \$1400.00



SP-25

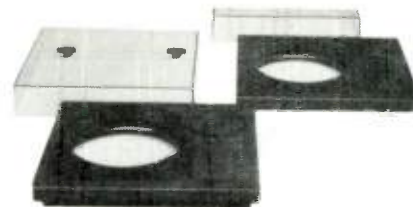
Quartz Synthesizer Controlled Direct Drive Turntable

Quartz synthesizer control governs platter speed in 33-1/3 and 45 rpm, and in pitch-altered modes within $\pm 6\%$ 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) \$380.00

SH-15B2 (Base for SP-15/25) 280.00

SH-15B3 (Base for SP-15/25) 280.00

RS-M85MK II Cassette Deck

- Quartz-locked direct drive stereo cassette deck with Dolby • Metal tape capability • Front-loaded vertical drive • Direct-drive capstan motor plus coreless reel meter • FL (Fluorescent) bar-graph meters with VU and instant-peak modes • Laminated Sendust (SX) head • 3-position separate bias and EQ selectors • Fine, front-panel bias adjustment
- Full electronic autostop • Full IC logic control • Memory rewind and timer recording • Remote control available RP-9690-P or RP-070 • Black Metal Cabinet \$750.00

HARRIS

Telescript, Inc. MONITOR PROMPTING SYSTEMS

MPS® Monitor Prompting Systems
The Lever Principle®

setup • 5 minutes!

15" 1000 LINE LIGHTWEIGHT MONITOR/ PROMPTERS

Now, a Monitor/Prompter that meets the demanding requirements of Engineering, Production and News Departments! Telescript's lightweight, durable housing, recessed side mounted connectors coupled with Electrohome's '81 1000 line resolution Monitors guarantees the TV Industry the ultimate in ADAPTABILITY, READABILITY, RELIABILITY AND TILTABILITY.

HOW IT WORKS:

The CounterBalancing Plate that supports the Monitor and LensView Assembly "sandwiches" between the camera and the head.

By mounting the head forward on the plate, the camera is set rearward thus counterbalancing is achieved.

Counterweights assist lightweight cameras in counterbalancing.

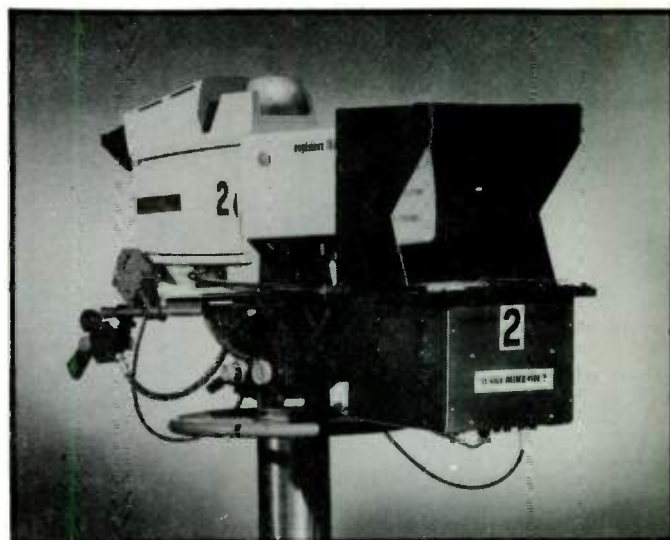
Riser blocks are provided to reposition the camera's lens "up" when necessary.

Works beautifully with 2 lb. to 200 lb. cameras!

SCRIPTS AND TRANSPORT VERSATILITY

Monitor Prompting scripts are typed on a regular typewriter using standard paper. The Transport's vidicon camera scans and enlarges the script which is displayed on the Monitor Prompter. The TELECUE and the TELESCRIPTOR have the capability of transporting Titles and Graphics prepared on material such as art board.

Telescript also offers the TELECUE II which incorporates all the TELECUE features, plus Dimmer controlled Back Illumination for the display of transparencies.



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

TELEX®

PROFESSIONAL COMMUNICATIONS HEADSETS AND STEREO HEADPHONES

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 and STYLE: 6' (1.52m) straight

COLOR: Black and Grey

NOTE: All CS Communications headsets include washable nylon comfort socks
CS-45 \$104.50

Ordering Information

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

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 AND PLUG TYPE: 12' (3.7m) coil cord. Plug 0.25" (6.3mm) 3 conductor.

COLOR: Light tan and green

\$95.00



CS-7 \$77.00

Tele-Fi® \$17.00

CS-78 \$93.50



CS-61 \$104.50

CS-11 \$55.00

CS-75 \$93.50

SPORTSCASTER HEADSET ORDERING INFORMATION

	MODEL	CS-91	LW-1	HEARING PROTECTOR
	Order by Catalog No:	63620-000	63650-000	63700-007
HEADPHONE	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	50-15000 Hz	50-10,000 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.	



LW-1 \$170.00



CS-91 \$165.00



HEARING PROTECTOR \$165.00

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)

*PT-400 DPDT In-Line switch assembly available for user installation on these headsets.

TELEX[®]

WIRELESS MICROPHONE SYSTEM

DYNAMIC HANDHELD MICROPHONES



ELECTRET LAVALIER MICROPHONE WLM-100



Though any quality, low-impedance microphone is suitable for use with the WT-100 transmitter, either the Telex-Turner SE13 or SE14 are recommended. The SE13 is a cardioid dynamic microphone, whereas the SE14 is an omnidirectional dynamic microphone. Both are internally shock mounted to isolate mechanical handling noise. Die cast housings are finished in satin chrome to retain their fine appearance even under the toughest handling. An on/off switch can be locked on to prevent inadvertent switching. Both models are rated at low impedance (150-200 ohms) and have a frequency response of 50-15,000 Hz. A microphone stand adaptor and 20' (6.1m) cable are included so the same microphone can also be used in conventional wired systems.

The WLM-100 electret omnidirectional lavalier microphone is specifically made for this system. It is one of the smallest microphones in the industry, ideal for inconspicuous use in live performance, film or video productions. The WLM-100 is equipped with special anti-noise cordage and LEMO connector. Three mounting clips (a vertical and a horizontal tie clasp, plus a tie tack configuration) are supplied with the WLM-100. The microphone frequency response is 50-15,000 Hz for virtually transparent, professional broadcast quality reproduction. It is only 3/4" (19mm) long with a diameter of 7/16" (11mm) and weighs only 1 oz. (28g) with a 3' (914mm) cord and connector.

WIRELESS MICROPHONE SYSTEM ORDERING INFORMATION PLEASE ORDER BY CATALOG NUMBER

Model	Description	Catalog No.	Price
WT-100 Wireless Transmitter with 4' (1.2m) Mic. cable. Battery not included.			
Standard Frequency Group 1*		63604-XXX	\$ 370.00
Standard Frequency Group 2*		63604-XXX	400.00
Special Frequency Group 3*		63604-XXX	520.00
WLM-100 Electret Lavalier Microphone with mounting clips.		63852-000	120.00
WHM-300 Dynamic Cardioid Transmitter Microphone. Batteries not included.			
Standard Frequency Group 1*		TO BE	425.00
Standard Frequency Group 2*		AVAILABLE	467.50
Special Frequency Group 3*		IN SPRING '81	652.50
FMR-1 FM Receiver with ac power supply **. Includes one 5/8 wave omnidirectional antenna with 25' (7.6m) coax cable and connectors.			
Standard Frequency Group 1*		63673-XXX	770.00
Standard Frequency Group 2*		63673-XXX	800.00
Special Frequency Group 3*		63673-XXX	920.00
Omnidirectional 5/8 Wave Antenna with 25' (7.6m) coax cable and connectors.		63900-000	65.00
Log Periodic Directional Antenna. Includes carrying case. Coax cable not included.		63910-000	220.00
SE13 Dynamic Cardioid Microphone with mic. stand adaptor and 20' (6.1m) cable.		A22013	105.00
SE14 Dynamic Omnidirectional Microphone with mic. stand adaptor and 20' (6.1m) cable.		A22014	99.00
Carrying Case (to hold basic wireless system).		57869-000	140.00
Wall Mount Bracket for 5/8 wave antenna.		63906-000	12.00
Mic. Stand Bracket for 5/8 wave antenna.		63707-000	16.00
Coaxial Antenna Extension Cable, 25' (7.6m) with connectors.		63901-000	18.00
RM-11 Rack mount brackets for single FMR-1 receiver.		94398-000	40.00
RM-12 Rack mount brackets for dual FMR-1 receivers.		92793-001	46.00
Microphone Extension cables with male & female XLR-3 type connectors			
25' (7.6m).		92922-000	34.00
50' (15.2m).		92922-001	50.00
100' (30.4m).		92933-002	80.00
Heavy Duty, Rechargeable nicad battery for WT-100 transmitter.		57835-000	16.00
Heavy Duty, Rechargeable nicad battery for WHM-300 transmitter microphone.		56647-003	ON REQUEST
Battery charger for WHM-300 nicad battery.		63903-000	ON REQUEST
Alkaline battery for WHM-300, 4.5 volt (two required).		35355-074	ON REQUEST

*Specify desired frequency with order:

Standard Frequencies - Group 1: 154.570 (recommended), 151.625, 151.955 MHz
 Group 2: 151.685, 151.745, 151.805, 151.895, 154.515, 154.540, 154.600, 161.670,
 161.700 MHz (Four Week Delivery)

Special Frequencies - Group 3: Any desired frequency in the 150-165 MHz band other than those listed above.
 (Eight Week Delivery Estimated)

**240V ac available - Contact Harris for quotation.

Prices and Specifications Subject to Change Without Notice.

HARRIS

TELEX®



WHM-300 Handheld Transmitter-Microphone

For those who prefer a handheld microphone with integral transmitter, the Telex cardioid dynamic WHM-300 is the ideal selection. Transmitter and compressor circuits are integral to the microphone housing which also serves as the omnidirectional antenna. There are no unsightly antenna protrusions or trailing wires. Though approximately 5 inches (127 mm) longer than a conventional unit such as the SE 13, the microphone retains a slim, elegantly tapered appearance. Both a ball screen and a flat sided screen are supplied with each unit to instantly change the appearance when desired. Power for the WHM-300 is supplied by alkaline, mercury or nicad batteries (optional). Nominal life with an alkaline battery is 24 hours or, with a rechargeable nicad battery, 8 hours. An on/off switch conserves battery power when not in use and prevents RF carrier system noise. A separate audio on/off switch is also provided. The transmitter is single frequency, crystal controlled (see also ordering information) and delivers 15 mW maximum RF power for a line-of-sight distance to 1000 feet (300m). The microphone frequency response is 50-15,000 Hz. The WHM-300 is FCC type accepted under parts 90 and 74.

WHM-300 Electret Hand Mic with Transmitter

Std. Freq. Group 1*	63778-XXX	\$425.00
Std. Freq. Group 2*	63778-XXX	467.50
Special Freq. Group 3*	63778-XXX	552.50

WT-100 Belt-Pack Transmitter

The belt-pack battery-operated transmitter is roughly the size of a package of cigarettes and is easily concealed under clothing. The WT-100 produces an FM signal up to 50 mW at its assigned crystal controlled frequency (see also ordering information). A unique 30 dB compressor circuit provides maximum signal-to-noise ratio and dynamic range and prevents transmission overmodulation. The unit is delivered for use with the Telex WLM-100 lavalier microphone, but the gain is easily adjusted for use with any low impedance microphone. Separate on/off switches for RF and audio serve to shut off the audio when desired and to prevent any system noise when the RF carrier is turned off. The antenna is a simple omnidirectional quarter wave flexible wire. Standard 9 volt alkaline or nicad batteries (optional) operate nominally for 5 hours without replacement. A battery test switch and LED permits checking the battery status at any time.

The standard LEMO connector accepts the Telex WLM-100 electret lavalier microphone. A 4' (1.22m) adapter cable is provided with each unit for instant adaptation of any low impedance microphone with a male XLR type connector. A heavy duty, rechargeable nicad battery is available at extra cost. The WT-100 is FCC type accepted under parts 90 and 74.

WT-100 Wireless Body Transmitter with 4' (1.2m) Mic Cable. Battery not included.

Std. Freq. Group 1*	63604-XXX	\$370.00
Std. Freq. Group 2*	63604-XXX	400.00
Special Freq. Group 3*	63604-XXX	520.00

FMR-1 FM Receiver

The Telex FMR-1 operates as a conventional wireless microphone receiver when only one antenna is installed, and automatically operates as a diversity receiver when two antennas are attached to the UHF type connectors. As discussed earlier, the receiver automatically phase-shifts the combined signal from two antennas for the best

WIRELESS MICROPHONE SYSTEM

SPECIFICATIONS

Overall System:		50 Hz - 15 kHz ± 2 dB
Frequency Response		Better than 80 dB at 100 ft. (30.5m)
Signal to Noise Ratio		Less than 1%
Total Harmonic Distortion		Less than 1%
RF Carrier Frequency		150 - 174 MHz Standard Frequency 154.570 MHz
Frequency Stability		.005% crystal controlled
Modulation		12 kHz deviation F.M. 50 micro-seconds pre-emphasis, compressor/expander system
WT-100 Belt Pack Transmitter		
Controls On/Off; Audio level control - screwdriver adjustable. Battery test switch - LED indicator		
RF Power Out		Microphone On/Off Switch
Modulation		50 mW Maximum
F.C.C.	54F3, 12 kHz deviation 50 micro-seconds pre-emphasis	Type accepted under Parts 90 and 74
Radiated Harmonic and Spurious Emissions		More than 30 dB below carrier
Modulation Limiter		Internal compressor
Antenna		Flexible wire, 1/4-wave - omnidirectional
Battery		9 volt alkaline or nicad. Not included
Operating Temperature Range		4°F to +130°F (-20°C to +55°C)
Audio Input	Low impedance 100-1000 ohm, dynamic or electret condenser - bias	25 miles (400m) line of sight, 60 dB S/N
Operating Range		2 1/2" W x 4" H x 1" D (70mmW x 102mmH x 25mmD)
Dimensions		5.4 oz. (153g) Shipping 25.5 oz. (723g)
Weight		
WHM-300 Handheld Transmitter Microphone		
Controls External on/off, power. External on/off, microphone. Audio level, screwdriver adjustable		
RF Power Out		15 mW Maximum
Modulation	54F3, 12 kHz deviation, 50 micro seconds pre-emphasis	Integral cardioid dynamic. Ball screen and flat sided screen included
Microphone		Type accepted under Parts 90 and 74
F.C.C.		More than 30 dB below carrier
Radiated Harmonic and Spurious Emissions		Integral lower portion of case, omnidirectional
Antenna		9 volt (two 4.5 volt) alkaline, mercury or nicad. Not included
Battery		1000 ft. (300m) line of sight, 100 ft. (30.5m) 60 dB S/N
Operating Temperature Range		4°F to +130°F (-20°C to +55°C)
Temperature Range		Internal compressor
Modulation Limiter		Using Ball screen, 2 1/2" dia x 1 1/2" long (67mm dia x 298mm long)
Size		Using flat sided screen, 1 1/2" dia x 1 1/2" long (44.5mm dia x 298mm long)
FMR-1 Receiver		
RF Sensitivity		Less than 1 microvolt for 12 dB SINAD
Ultimate Quieting		Better than 90 dB
Antenna Input Impedance		50 ohm nominal
Image Rejection		At least 70 dB
Hum and Noise		90 dB unswitched or squelched, typical
Squelch Level		Adjustable - internal
Audio	0 dBm 600 ohm - 50 dBm 200 ohm, selectable, with internal expander	
Power Requirement	120/240 Vac 50-60 Hz 1.5 watts from plug-in power supply furnished with FMR-1 receiver	or - 12 Vdc nominal (negative ground) 100 Ma
Controls Master audio level (internal). Squelch (internal). Signal light - green (front panel). Power On light - red (front panel). Power switch (front panel). Monitor meter - (front panel). Line/Mic switch - 50 dBm 200 ohm (rear panel). 0 dBm 600 ohm (rear panel). Monitor level adjustment (front panel)		
Connectors Audio program output 3 pin Male XLR Type - 50 dBm or 0 dBm switchable. Monitor - unbalanced phone jack. 0 dBm into 600 ohm adjustable (front panel). S.O. 239 antenna jacks - rear. 12Vdc power receptacle (negative ground) - rear. Fuse: 0.2 Amp MDL - rear		
Dimensions		8 1/2" W x 9" D x 3 1/2" H (210mmW x 229mmD x 89mmH)
Weight		5.5 lbs (2.5kg) Shipping 7 lbs (3.2kg)

signal-to-noise ratio (patent applied for). For diversity reception, a minimum distance of 20 feet (6.1m) between antennas is recommended. An integral logarithmic expander circuit inversely corresponds to the compressor in the transmitter and restores the dynamic range of the original audio input up to 90 dB or more.

The FMR-1 is a single frequency, crystal controlled receiver (see also ordering information). Four helical resonators in the RF front end insure high selectivity. Dual conversion with crystal control of both oscillators result in a first I.F. frequency of 4.560 MHz and a second I.F. frequency of 455 kHz. Each I.F. section is filtered by four tuned circuits. Exceptional frequency stability, discriminating selectivity and high sensitivity assure the performance required in professional applications.

A headphone jack and associated volume control allows monitoring of the receiver's 600 ohm output line, which is also indicated by a VU meter. A switch permits inserting a pad to feed conventional low impedance microphone inputs when desired.

The FMR-1 operates on 120 Vac (240 Vac available) or on 12 Vdc. For ac operation, an external, calculator type power supply with ground pin is included. The free standing receiver can also be rack mounted in single or dual configuration using the optional RM-11 or RM-12 brackets.


FMR-1 FM Receiver with 120 Volt AC Power Supply 5/8 wave antenna.

Std. Freq. Group 1*	63673-OXX	\$770.00
Std. Freq. Group 2*	63673-OXX	800.00
Special Freq. Group 3*	63673-OXX	920.00

*Specify desired frequency with order.

Standard Frequencies - Group 1: 154.570 (recommended), 151.625, 151.955 MHz. Group 2: 151.685, 151.745, 151.805, 151.895, 154.515, 154.540, 154.600, 161.670, 161.700 MHz. (Four Week delivery).

Special Frequencies - Group 3: Any desired frequency in the 150-165 MHz band other than those listed above. (Eight Week Delivery Estimated).

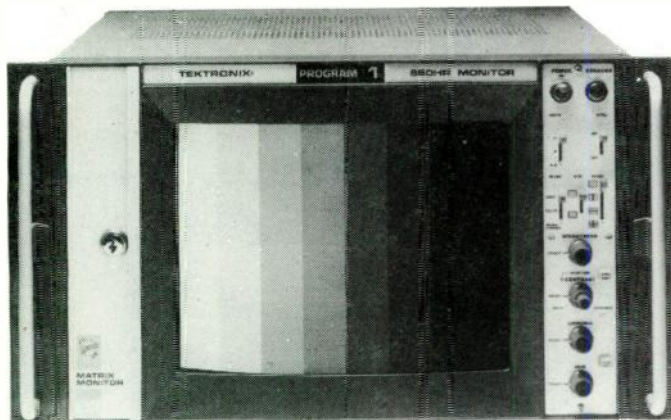
 **HARRIS**

Prices and Specifications Subject to Change Without Notice.

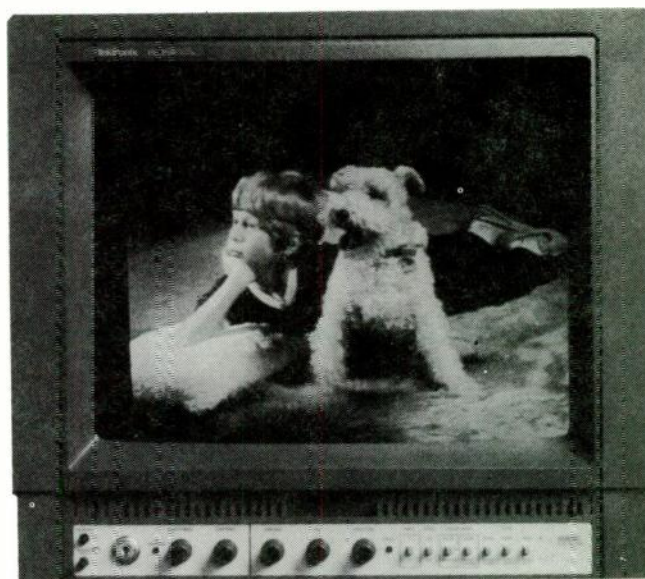
World Radio History

Tektronix®

COLOR PICTURE MONITORS



650HR High Resolution Color Monitor



690SR Color Picture Monitor

650HR COLOR PICTURE MONITORS

- High resolution Trinitron • Variable aperture correction • Precise color tracking over full signal range • Two switchable inputs isolated from ground for hum rejection • External sync switching capability • Differential (A-B) inputs for sync timing and burst phasing adjustments • NTSC, PAL, and Dual Standard versions—RGB inputs optional • Rapid retrace—entire active picture area can be displayed in underscan • Precision decoding—outputs may be used to present vector displays on X-Y oscilloscopes • Unique "blue only" capability for optimizing VTR settings

The Tektronix 650HR Series Color Picture Monitors are designed for exacting applications where picture quality is particularly important. The 650HR offers the features and capabilities of earlier Tektronix 650 Series Color Monitors and adds a high resolution Trinitron CRT and improved decoder. The improved CRT features 50% more phosphor stripes than before, and the decoder gives wider (1.2 MHz) bandwidths for even greater detail.

All 650HR Monitors are shipped with rackmounting hardware. Cabinet version hardware is also included.

650HR-NTSC	\$5350.00
650HR-INTSC+RGB	5545.00
651HR-PAL	5580.00
651HR-1PAL+RGB	5810.00
652HR-PALM	6120.00
652HR-1PALM+RGB	6340.00
653HR-SECAM	6355.00
653HR-1SECAM+RGB	6570.00
655HR-NTSG-PAL	6125.00
655HR-1NTSC+PAL+RGB	6365.00
656GR-SECAM-PAL	6980.00
656HR-1SECAM+PAL+RGB	7190.00

690SR COLOR PICTURE MONITOR

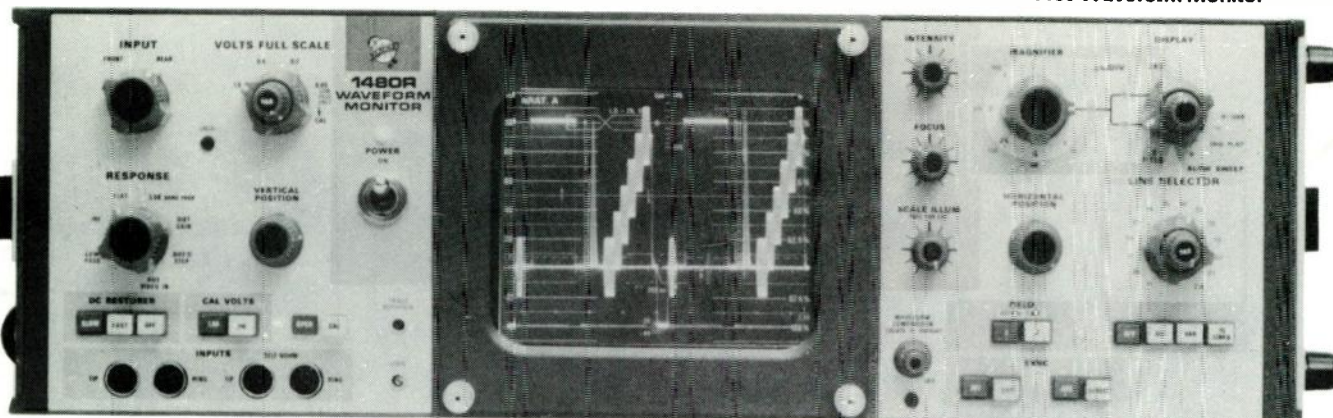
- 19V High Resolution Delta Gun Dot Shadowmask CRT • Precise Convergence within 0.5mm (full screen) — Easy Adjustment in Lockable Drawer • Stabilized Color Balance — Compensates for CRT Aging • Preset Controls — Wide Adjustment Range in Lockable Drawer • UL 478, UL 1244, CSA 556B, IEC 348, IEC 435 (*) • FCC part 15, subpart J — Electromagnetic Interference Control (*) • Rugged Assembly — Resistant to Shock and Vibration

The 690SR. High resolution, precise convergence and stable color make it your best basis for subjective picture evaluation. With the 690SR, there's no doubt your picture is a correct rendition of input signals.

Monitor set-up is simplified. Logical and non-interactive convergence controls make adjustment a simple, straightforward procedure. And maintenance needs are minimal. Modular design makes troubleshooting easy.

Its adaptability makes the 690SR a long-term investment that fits future needs. New modules will become available as needed to meet both your own and changing industry requirements.

690SR	\$7950.00
690SR-01	9050.00



WAVEFORM MONITORS

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

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 vertical amplifier response modes are available, and to the field selection modes. Dual-Standard Monitors automatically recognize the signal standard in use and indicate that standard on the front panel.

- 1480C. NTSC Waveform Monitor — Cabinet Version **\$4840.00**
 - 1480R. NTSC Waveform Monitor — Rackmount Version **4840.00**
 - 1485C. PAL/NTSC Dual Standard Waveform Monitor* **4955.00**
 - 1485R. PAL/NTSC Dual Standard Waveform Monitor* **5325.00**
 - Option 01. 1 Mohm 20 pF Probe Input (probe not included)
Suggested Probe: P6108 10X Probe, 2 m order 010-6108-03,
3 m order 010-6108-05 **245.00**
 - Option 03 With Blank CRT **N/C**
 - Option 04 Tone Wheel Sync (1480C, and 1485C only) **610.00**
 - Option 05 Tone Wheel Sync (1485C only) **610.00**
 - Option 07 Slow Sweep** **405.00**
 - Option 08 SECAM Field Identification
(1481C, 1485C and 1485 only) **275.00**
- *1485C/R meets European Broadcast Union Tech. 3221-E, Guiding Principles for design of Television Waveform Monitors.
**Option 07 satisfies EBU Tech. 3221-E 53.2.2.

OPTIONAL ACCESSORIES

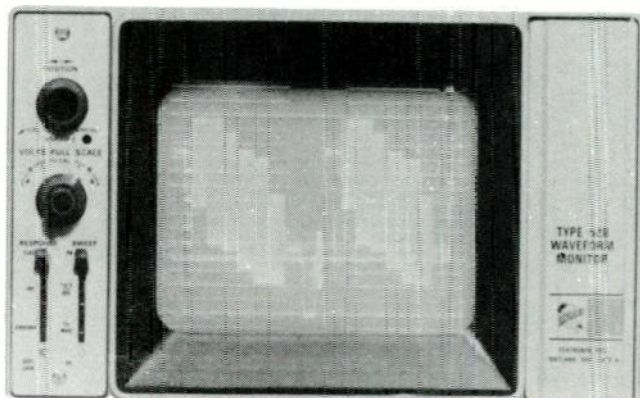
Mounting Cradles—A cradle assembly, with associated bezel, lets you mount the 1480C Waveform Monitor alongside a 9 in. Conrac Picture Monitor in a standard 19 in. rack. A cradle and bezel are also available for mounting two 1480s side-by-side.

For mounting 9 in. SNA-9 Picture Monitor (Requires 8¾ in. rack space).

- 014-0020-00 Cradle Assembly **\$225.00**
- 014-0023-00 Bezel, for mounting 1480C on operator's left **225.00**
- 014-0024-00 Bezel, for mounting 1480C on operator's right **225.00**

For mounting two 1480C Waveform Monitors side-by-side (requires 8¾ in. rack space)

- 014-0020-00 Cradle Assembly **\$225.00**
- 014-0022-00 Bezel **200.00**
- 426-0309-00 1480 Cradle Assembly—
For mounting the 1480R in a WECO backless rack **33.00**



528 Waveform Monitor

528A WAVEFORM MONITOR

- 525/60, 625/50 versions available
- 5 inch CRT
- Half rack size
- Economical

The Tektronix 528 Waveform Monitor provides bright, easy-to-read video waveform displays on a 5 in. CRT, yet requires only 5¼ in. 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 (Option 02). Order Option 03 for 625/50 line systems.

- 528A Waveform Monitor (for 525/60 standards) **\$2175.00**
- Option 01 (as above less cover) **(Less 30.00)**
- Option 02 (with blue protective cabinet) **65.00**
- Option 03 (for 625/50 standards) **N/C**

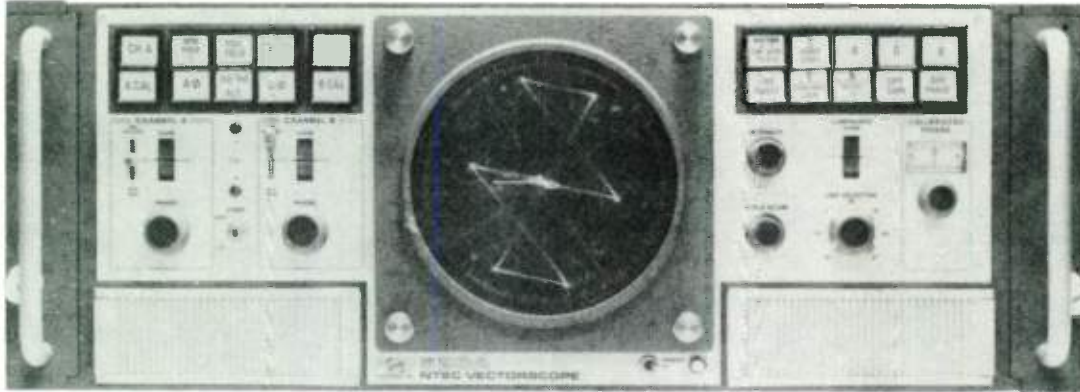
OPTIONAL ACCESSORIES

Mounting Cradles—A cradle assembly, with associated bezel and mounting brackets, allows the 528 Waveform Monitor to be mounted alongside a 9 in. Conrac Picture Monitor, in a standard 19 in. rack. For Mounting 9 in. SNA-9 Picture Monitor (requires 8¾ in. rack space).

- 014-0020-00. Cradle Assembly **\$225.00**
(Also order the appropriate bezel and brackets for mounting.) (Order 528 or 528 Option 03 for use in this cradle. The cover supplied with the instrument is required for cradle mounting).

- 014-0038-00 Bezel and Brackets—
For mounting 528 on operator's left **\$315.00**
- 014-0037-00 Bezel and brackets—
For mounting 528 on operator's right **315.00**
- 016-0116-00 Panel Assembly—
For covering ½ of rack adapter when only one
528 is rackmounted **38.00**

- 016-0115-02 Dual Rackmount Frame **180.00**



R520A Vectorscope

VECTORSCOPIES

1420 NTSC VECTORSCOPIES

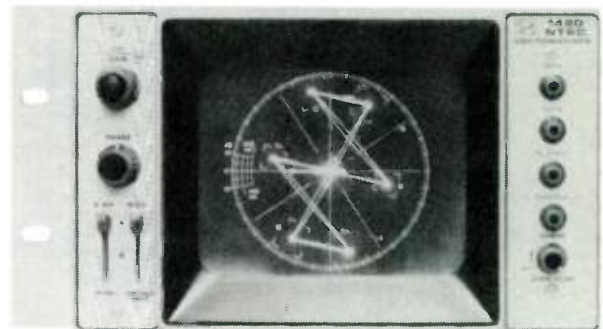
- Low cost • Half rack width • Two loop-through inputs • Vector display only • External subcarrier input • Illuminated internal graticule

Each 1420 Series Vectorscope is a compact, half rack width instrument designed for vector display of the chrominance and burst components of the composite video signal. This series provides a low-cost way to meet basic vectorscope requirements in CCUs, VTRs, and similar applications. The 1420 is particularly well suited for side-by-side rackmounting with the Tektronix 528 Waveform Monitor.

It 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 you to determine gain or phase errors to reasonable accuracy for many applications — within 2°.

1420	NTSC Vectorscope	\$2700.00
OPT 01	Less Cabinet	-30.00
OPT 02	With Blue Carrying Case	+ 65.00
016-0115-02	Dual Rackmount Frame	+ 180.00



1420 Vectorscope

520A (NTSC), VECTORSCOPIES MEASUREMENTS

- Luminance amplitude • Chrominance amplitude and phase • Differential phase • Differential gain

VECTOR DISPLAYS

The vector display shows the relative phase and amplitude of the chrominance signal on polar coordinates. To help identify these coordinates, the graticule has points corresponding to the proper phase and amplitude of the primary and complementary colors: R (Red), B (Blue), G (Green), Cy (Cyan), Y_L (Yellow), and MG (Magenta).

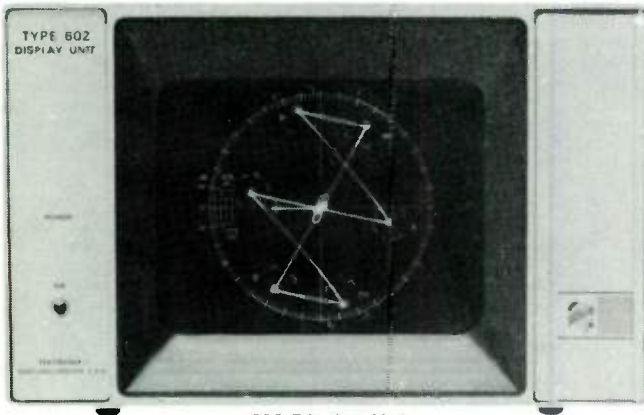
DUAL VECTOR DISPLAYS

In dual-channel operation, successive samples of channels A and B are displayed on a time-shared basis. The switching rate is locked to horizontal sync, and switching transients are blanked. You can conveniently compare input/output signals from video equipment on channel A or B for phase and/or amplitude distortion.

TIME BASE DISPLAYS

The linear time base operates at the line rate. Color signals may be demodulated along any desired axis, I, Q, and R-Y, and displayed at the line rate on a linear time base.

520A NTSC Vectorscope (Cabinet)	\$6675.00
R520A NTSC Vectorscope (Rackmount)	6675.00



602 Display Unit

602	Display Monitor	\$2645.00
OPT 01	Without Cabinet	-20.00
OPT 02	Special Graticule: 8 x 10 CM Outline	+ 50.00
OPT 05	Special Graticule: Vector Display	+ 50.00
OPT 76	P7 Phosphor	+ 35.00

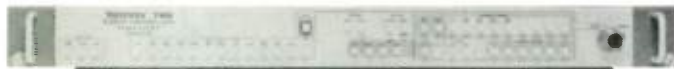
GENERATORS

Tektronix

COMMITTED TO EXCELLENCE



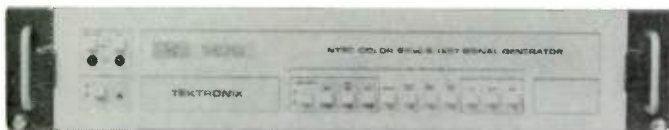
1900 DIGITAL GENERATOR



1900 REMOTE CONTROL UNIT



1410 NTSC TELEVISION GENERATOR



1470 NTSC SIGNAL GENERATOR

1900 SERIES DIGITAL GENERATOR

The 1900 Digital Test Signal Generator and VITS Inserter is designed for state-of-the-art performance testing of NTSC video systems and equipment. Available in three different versions, this generator supports a wide range of transmitter, studio, common carrier, and equipment manufacturing applications. The three 1900 versions available are the Transmitter Test Set, the Studio Test Set, and the NTC 7 Test Set. Each version provides a special test signal complement, and all three offer these unique 1900 features:

- 10-bit digital signal generation increases test signal accuracy and long-term stability.
- PROM memory allows easy signal modification when industry signal formats change.
- SMPTE Color Bars, Sin x/x, and Multipulse signals facilitate the alignment of color monitors and enhance testing of frequency response and group delay.
- FCC or NTC 7 VITS and VIRS meet most testing requirements and provide a reference signal for automatic video correctors.
- Digital signal output allows accurate alignment of D to A converters, while digital signal input allows alignment of A to D converters and facilitates conversion of user generated digital signals to an analog format.
- RS-232-C and ground closure interfaces allow wide-ranging remote control functions and application versatility.

1900 Transmitter Test Set (cabinet model)	\$8720.00
R1900 Transmitter Test Set (rackmount model)	8720.00

1410 NTSC TELEVISION GENERATORS

The 1410 Series of NTSC Sync Pulse and Test Signal Generators offers all the advantages of modularity at prices generally associated with units of single-piece construction. To suit your specific needs, you may choose from a wide selection of sync pulse and test signal generator functions to be combined with the mainframe and color standard of your choice. Should you develop additional test signal requirements in the future, our plug-in card construction insures a quick and easy retrofit for you. Any combination of four test signal generators driven by one sync pulse generator is feasible.

1410 PRICING

1410R NTSC Mainframe	\$1540.00
1410C NTSC Mainframe	1540.00
Opt 01 1 Hz Mainframe	350.00
SPG1 NTSC Sync Generator	2060.00
SPG2 NTSC Genlock Sync Generator	2460.00
TSG1 NTSC Color Bar Generator	1190.00
TSG2 NTSC Convergence Generator	390.00
TSG3 NTSC Linearity Signal Generator	965.00
TSG5 NTSC Pulse and Bar Generator	1275.00
TSG6 NTSC Multiburst and Video Sweep Generator	1765.00
TSP1 NTSC Test Signal Switcher/Convergence Gen	1220.00
TSP1 Opt 01 Without Convergence	Sub-120.00
333-2171-00 One Wide Blank Panel	1.35



R147A NTSC TEST SIGNAL GENERATOR



R149A NTSC TEST SIGNAL GENERATOR



1474 NTSC SYNC GENERATOR

147A/149A NTSC GENERATORS

147A and 149A features: • VITS generation, insertion, and deletion • Sync and burst regeneration • Program signal protected • Full field test signals independently selectable from the VITS program • May be reprogrammed for new signals • Vertical Interval Reference Signal

147A Unique features: • Noise test signal and measurements

149A Unique features: • One unit source of signals required by FCC§73-676(f). for remote transmitter operation • Color bars (when gen-locked to a program signal)

The 147A and 149A are similar 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 Vertical Interval Test Signals (VITS), which may be inserted on an incoming composite video signal.

147A. NTSC Signal Generator	\$8600.00
R147A. NTSC Signal Generator (Rackmount)	8600.00
Opt 01 Remote TV Xmtr. Signal, Except Color Bars	N/C
149A. NTSC Signal Generator	8600.00
R149A. NTSC Signal Generator (Rackmount)	8600.00
Opt 01 International Insertion Test Signals	N/C

1470 SERIES NTSC SYNC GENERATOR

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.

1470/1474 SYNC-PULSE GENERATOR

The sync-pulse functions of the 1470 and 1474, like those of other TEKTRONIX Generators, are of high quality. This generator can operate as a master-sync generator as a unit fully or partially timed from external sources. Color gen-lock capable of locking to helical scan VTR's is a standard feature.

Front-panel pushbutton selection of external synchronization is provided for your convenience. In external mode the 1470 and 1474 automatically locks on composite video (1 V), composite sync (-4 v), or reference subcarrier (2 V). Two front-panel lights indicate subcarrier and/or sync external lock. Lights out indicate a switch to internal standard.

1470 AND 1474

- 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

1470 ONLY

- Test Signals: Black Burst, Color Bars, Staircase Signals, Window, Convergence Pattern, Multiburst, Red Field, Green Field, Blue Field.

1470 PRICING

1470 Color Sync and Test Signal Generator	\$3380.00
Opt 01 Without Genlock	Sub-260.00
1474 Color Sync Generator	1760.00
Opt 01 Without Genlock	Sub-260.00

TFT TIME AND FREQUENCY TECHNOLOGY, INC.

For Television . . .



- MODEL 701 TV Frequency and Aural Modulation Monitor, Rack Mount . . . \$6825.00
- Specify Channel and Offset
- Option 02 Alarm (frequency and modulation) . . . \$480.00
- Option 03 SCA Output . . . \$455.00

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.

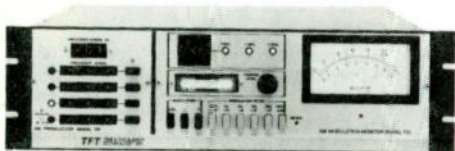
Additional features include an illuminated meter scale, remote meter and flasher outputs, optional SCA output and built-in high accuracy aural modulation calibrator. Sensitivity is 250 uV. FCC type approved.

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 07 CCIR Format . . . \$950.00
- Option 08 Spare Parts Kit . . . \$675.00
- MODEL 702 TV Aural Modulation Monitor, Rack Mount . . . \$3500.00
- Specify Channel and Offset
- Option 02 Alarm (modulation only) . . . \$225.00
- Option 03 SCA Output . . . \$455.00
- Option 05 Spare Parts Kit . . . \$450.00
- Option 06 CCIR Format . . . \$850.00
- MODEL 704 Remote Meter and Peak Flasher Panel . . . \$450.00

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

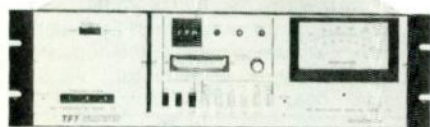
MODEL 753 with 754 Preselector

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 . . . \$1255.00
- Option 03 10 kHz Whistle Filter . . . \$300.00
- Option 04 30 Hz Telemetry Lowpass . . . \$225.00
- Option 05 Absence-of-Modulation Alarm . . . \$250.00
- Option 06 230 VAC . . . \$ 50.00
- Option 07 Spare Parts Kit . . . \$195.00

- *MODEL 754 AM RF Preselector with Frequency Readout . . . \$1735.00
- Option 01 Narrow Band Filter . . . \$425.00
- Option 04 Spare Parts Kit . . . \$250.00
- *MODEL 755 AM RF Preselector (Modulation Only) . . . \$895.00

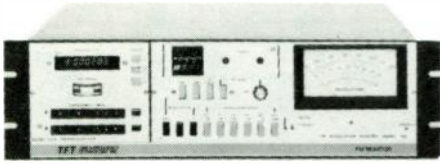
- Option 01 Narrow Band Filter . . . \$425.00
- Option 03 Spare Parts Kit . . . \$150.00
- MODEL 704E Remote Meter and Peak Flashers . . . \$425.00

*Not Field Installable

TFT TIME AND FREQUENCY TECHNOLOGY, INC.

For FM Broadcast . . .

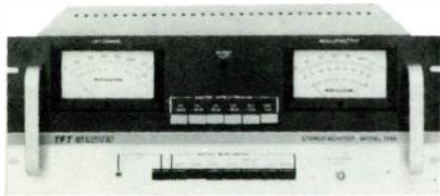
Broadcast Monitors



MODEL 763 with 764 Preselector

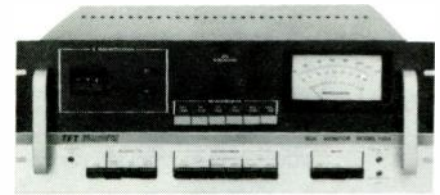
Model 763 provides the same features of FM broadcast monitoring as Model 753 does for AM. In addition, both stereo and SCA monitoring capability can easily be added on. A high sensitivity preselector can also be added to Model 763 to provide fast, accurate off-the-air monitoring of local broadcast stations.

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 (PPL) 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) \$1760.00
- Option 04 Absence-of-Modulation Alarm . . \$250.00
- Option 06 230 VAC \$ 50.00
- Option 07 Spare Parts Kit \$250.00
- *MODEL 764A FM Preselector with Frequency Read-out, Tunable \$1825.00

- Option 03 Spare Parts Kit \$295.00
- *MODEL 765A FM Preselector (Modulation Only), Tunable \$1315.00
- Option 02 Spare Parts Kit \$200.00
- *MODEL785 Single Channel FM Preselector . \$465.00
- MODEL 704F Remote Meter and Peak Flasher Panel \$425.00

- MODEL 724A Stereo Monitor \$1885.00
- Option 01 Spare Parts Kit \$225.00
- MODEL 704C Remote Meter Panel \$500.00
- MODEL 730A SCA Monitor, 67 kHz \$2075.00
- Option 01 SCA Channel (41 kHz) \$210.00
- Option 02 Spare Parts Kit \$195.00
- Option 03 for Direct FSK \$200.00
- Option 04 230 VAC \$50.00
- MODEL 704B Remote Meter Panel \$425.00

*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

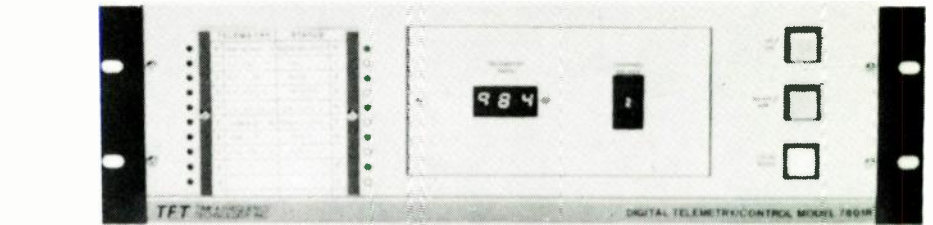
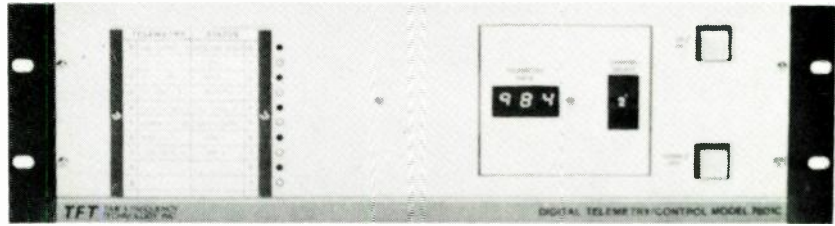
- MODEL 760-1A AM Receiver / Encoder / Decoder \$875.00
- MODEL 760-1B Single Channel FM Receiver/Encoder/Decoder \$875.00

- MODEL 760-1C Dual Channel FM Receiver/Encoder/Decoder \$925.00
- MODEL 760-3 Encoder/Decoder \$660.00

TFT TIME AND FREQUENCY TECHNOLOGY, INC.

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. \$3095.00
- 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) . . \$225.00
- 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) . . \$225.00
- Option 03 Components for Remote Terminal Extender Cable \$ 75.00
- Option 04 Spare Parts Kit. \$375.00
- Option 05 10 channel Status Light 615.00
- MODEL 7601-C Control portion only of 7601 system \$1550.00
- MODEL 7601R Remote portion only of 7601 system \$1860.00

Digital Telemetry/Control and Direct Control/Status Monitoring

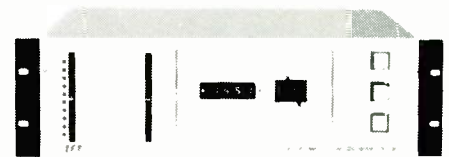
Start with a stand-alone, 10-channel TELEMETRY and RAISE/LOWER system that's price-competitive with less versatile analog systems. Then, if you want, add up to 70 more channels of RAISE/LOWER plus up to 30 channels of direct ON/OFF control and up to 30 channels of STATUS/ALARM monitoring. You can even 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** \$3995.00
- 10 channel RAISE/LOWER Plus 10 channel Telemetry digital remote control system. Expandable by adding Model 7830, 7832, 7620R, 7630R to a 110-channel system
- Option 01 (7100-2610) \$225.00
- 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)
- Option 02 (7100-2620) \$225.00
- Sub-carrier (SCA) Generator; for TV use, specify 39 kHz; for FM, 67 kHz. Other frequencies 26 kHz to 185 kHz available. Mounts with 7610 Control or Remote terminal.
- Option 03 (7100-2650) \$225.00
- BCD parallel data inputs (for the Remote Terminal)
- Option 04 (7100-2730) \$125.00

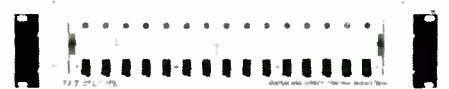
- Parallel BCD Data Output Cable Kit (for 7610C Control Terminal)
- Option 05 (7100-2720) \$75.00
- Components for Remote Terminal Extender Cable
- Option 06 (7100-2740) \$455.00
- Spare Parts Kit
- MODEL 7610-C**
- Control portion only of 7610 system \$2000.00
- MODEL 7610-R**
- Remote portion only of 7610 system \$2400.00
- MODEL 7620-R**
- Channel Expander (10 channels) \$1235.00
- Option 01 (7100-2760)
- Spare Parts Kit \$175.00
- Option 02 (7100-2720)
- Components for Remote Terminal Extender Cable \$75.00
- MODEL 7630R**
- Channel Expander (20 channels) \$1760.00
- Option 01 (7100-2760)
- Spare Parts Kit \$250.00
- Option 02 (7100-2720)
- Components for Remote Terminal Extender Cable \$75.00
- MODEL 7830** \$2485.00
- (Formerly 7615)
- Direct ON/OFF Control and Status monitoring
- Option 01 (7100-3080)
- Spare Parts Kit \$325.00
- Option 02 (7100-3130)
- Momentary Switch Kit \$45.00
- MODEL 7830-C**
- Control portion only of 7830 system \$1240.00
- MODEL 7830-R**
- Remote portion only of 7830 system \$1490.00



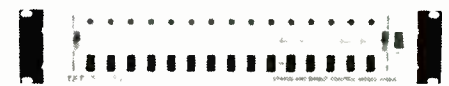
Model 7610-C Control Unit



Model 7610-R Remote Unit



Model 7830-C Status On/Off Control System



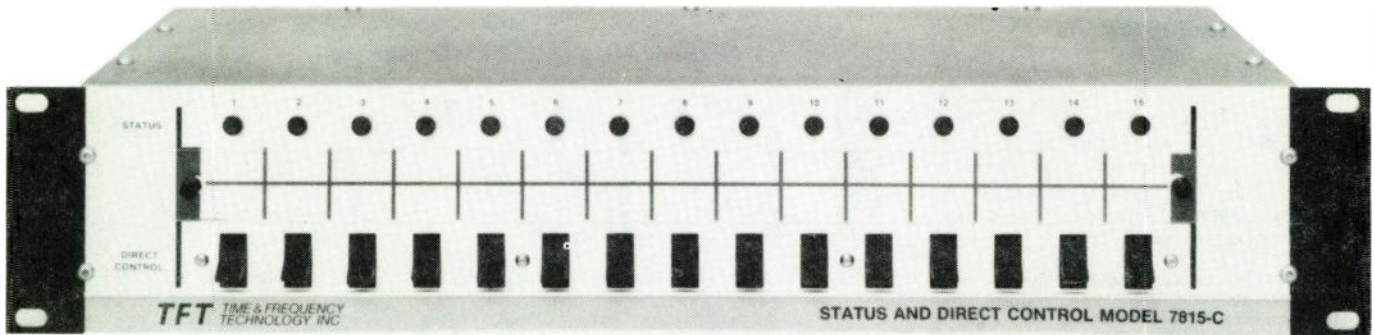
Model 7830-R Status On/Off Remote System

*Not Field Installable

Prices and Specifications Subject to Change Without Notice.



TFT TIME AND FREQUENCY TECHNOLOGY, INC.



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-

taneously 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 7815

Status and Control System with 15 ON/OFF control and 15 status indication channels, consisting of a Control and Remote unit. \$3145.00

Option 01 (7100-3050C) (7100-3060R)
Time Share Capability **Consult Factory**

Option 02 (7100-3100)
Spare Parts Kit \$360.00

Option 03 (7100-3130)
Momentary Switch Kit \$45.00

MODEL 7815-C
Control portion of 7815 system \$1575.00

MODEL 7815-R
Remote portion only of 7815 system \$1885.00

MODEL 7832
32 Channel Status/ Alarm \$2365.00

Option 01 (7100-3150)
Spare Parts Kit \$295.00

MODEL 7832-C
Control portion only of 7832 system \$1185.00

MODEL 7832-R
Remote portion only of 7832 system \$1350.00

MODEL

FSU-01
Fail Safe Unit for TV application

ADS-01
Alternate Data Path Selector

CSA-01
Chopper Amplifier

PLC-01
Power-to-Linear Converter

TLK-01
Tower Light Monitor

LVK-01
Line Voltage Monitor

PVK-01
Plate Voltage Monitor

TSK-01
Temperature Sensing Kit

MBB-01
Isolation amplifier (High Voltage)

REMOTE CONTROL INTERFACING ACCESSORIES

DESCRIPTION

PRICE

To provide full compliance with FCC Rules by monitoring 4 critical parameters: aural plate voltage, aural plate current, aural power and visual power \$795.00

Switch from SCA to phone line when invalid data is detected from either the Control or the Remote terminal. Both local and remote units are included. Single ADS also available \$1075.00

To provide isolation from a floating circuit to a grounded circuit. DC gain is also provided. \$350.00

To linearize power readings from log scale to linear scale. \$450.00

To monitor AC line current \$150.00

To monitor AC line voltage \$150.00

To monitor plate voltage up to 20 kv \$150.00

To monitor temperature of air or components \$195.00

For monitoring voltage and current at 10 kv above ground and translate reading in reference to ground voltage to suit the input of the Remote Terminals \$195.00

TFT TIME AND FREQUENCY TECHNOLOGY, INC.

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.

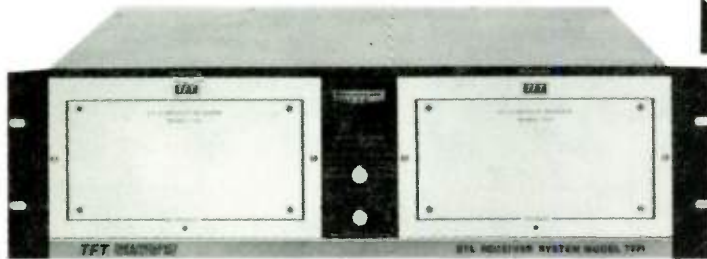
SECURITY. We've built security in with a fully redundant receiver and transmitter, both with automatic transfer and alarm.

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:

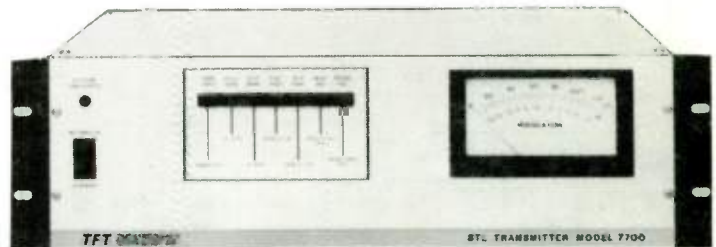
The 7700 Series STL provides the flexibility of five different systems.

- 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.

TFT TIME AND FREQUENCY TECHNOLOGY, INC.

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
 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. . \$5495.00

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. \$12,195.00

SYSTEM C: STL — all solid state single channel transmitter and receiver including self contained power supplies, crystals, and tested to operating frequency. \$5195.00

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. \$11,595.00

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. \$10,395.00

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 0.2% at 1 kHz
 0.35% from 30 Hz to 60 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

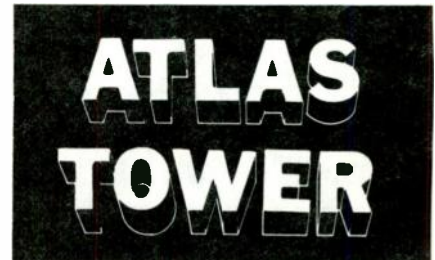
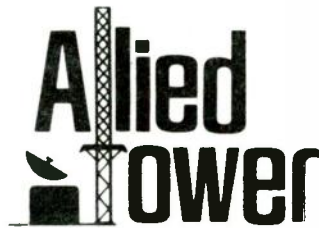
Dimensions 5.25" (13.3 cm) x 19" (48.3 cm) x 13" (33 cm)

TOWERS

SINGLE SOURCE FOR:

- ENGINEERING
- TOWERS
- ERECTION

**AM TOWERS
FM TOWERS
TV TOWERS
MICROWAVE TOWERS**



Kline Iron & Steel Co., Inc.



CONTACT YOUR HARRIS DISTRICT SALES MANAGER OR THE HARRIS QUINCY SALES OFFICE



**One Source For
All Your Broadcast
Equipment Needs**

THE BROADCAST 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.

TROMPETER ELECTRONICS INC.

Standard Coax Patching Systems

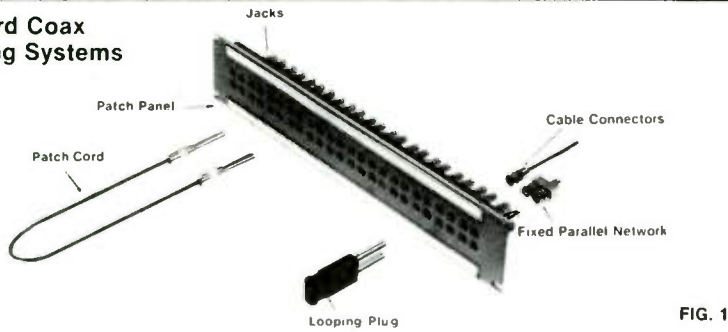
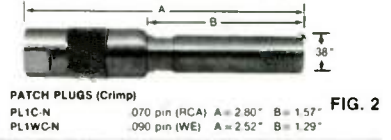
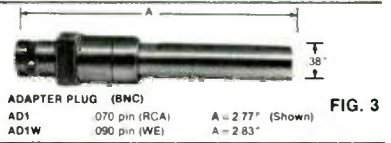


FIG. 1

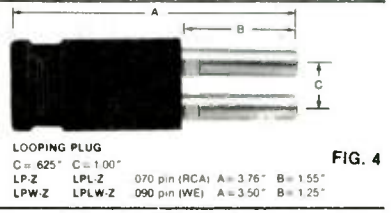
Plugs & Cable Assemblies



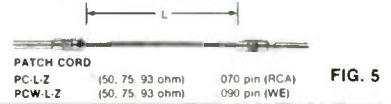
PATCH PLUGS (Crimp)
PL1C-N 070 pin (RCA) A = 2.80" B = 1.57"
PL1WC-N 090 pin (WE) A = 2.52" B = 1.29" **FIG. 2**



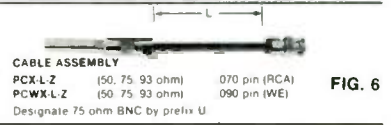
ADAPTER PLUG (BNC)
AD1 070 pin (RCA) A = 2.77" (Shown)
AD1W 090 pin (WE) A = 2.83" **FIG. 3**



LOOPING PLUG
C = .625" C = 1.00"
LP-Z LPL-Z 070 pin (RCA) A = 3.76" B = 1.55"
LPW-Z LPLW-Z 090 pin (WE) A = 3.50" B = 1.25" **FIG. 4**



PATCH CORD
PC-L-Z (50, 75, 93 ohm) 070 pin (RCA)
PCW-L-Z (50, 75, 93 ohm) 090 pin (WE) **FIG. 5**



CABLE ASSEMBLY
PCX-L-Z (50, 75, 93 ohm) 070 pin (RCA)
PCWX-L-Z (50, 75, 93 ohm) 090 pin (WE)
Designate 75 ohm BNC by prefix U **FIG. 6**

Cable Assemblies Ordering Information:

Assembly Model PC-L-Z

Standard Length in inches (6, 12, 18, 24 or 36)

Impedance (Ohms) (50,75,93)

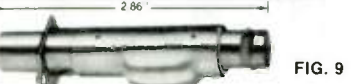
Jacks: Single/Dual



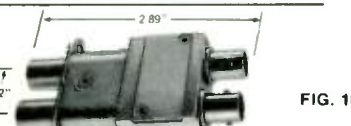
PATCH JACK (Cable entry) J3E-N* 070 pin (RCA)
J3WE-N* 090 pin (WE) **FIG. 7**
Usable whenever cable entry is desired in place of standard connectors



PATCH JACK (BNC) J3 070 pin (RCA)
J3W 090 pin (WE) **FIG. 8**
Rear mates with Trompeter PL20-N series or any standard BNC plug



PATCH JACK (BNC) (Self-terminating) J13-R* 070 pin (RCA)
J13W-R* 090 pin (WE) **FIG. 9**
Rear mates with any BNC plug. Circuit is terminated when patch plug is removed. Signal degradation increases when used above 100 MHz



PATCH JACK (Normal Thru) J14 Series **FIG. 10**



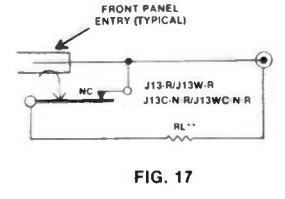
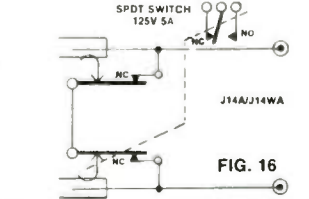
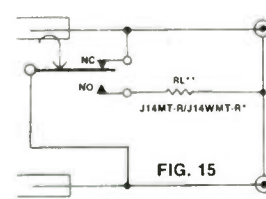
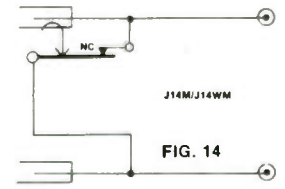
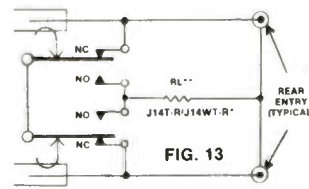
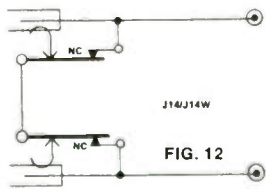
PATCH JACK (Dual) — Wired
J15B (BNC) J15H (TNC) 070 pin (RCA)
J15WB (BNC) J15WH (TNC) 090 pin (WE)
PATCH JACK (Dual) — No Wiring
J15BA (BNC) J15HA (TNC) 070 pin (RCA)
J15WBA (BNC) J15WHA (TNC) 090 pin (WE) **FIG. 11**
REAR ENTRY CABLE J15-N* 070 pin (RCA)
J15W-N* 090 pin (WE)

Introduction:

Trompeter Electronic's standard coax patching systems, shown on this page, provide limitless flexibility to route signals from one place to another. Two basic versions of Standard Coax patching are available. The RCA 50 ohm with a pin size of .070" and the Western Electric (WE) 75 ohm type with a pin size of .090". The two are not interchangeable but can be intermixed on the same panel along with TEI's audio patch jacks and panel lites (not shown).

PART NO.		FUNCTION	REAR ENTRY	PIC FIG.	CIRCUIT FIG.
RCA	WESTERN ELECTRIC				
J3E-N	J3WE-N	Patch Jack - Single	Cable*	7	—
J3	J3W	Patch Jack - Single	BNC Standard TNC Available	8	—
J3D	J3WD	Patch Jack - Single	Solder Pot	Not Shown	—
J13R**	J13WR	Patch Jack - Single — Self Terminating	BNC Standard TNC Available	9	17
J13C-R**	J13WC-R	Patch Jack - Single — Self Terminating	Cable* Crimped	Not Shown	17
J14 Series	J14W Series	Patch Jack - Dual — Self Looping	Dual BNC Standard TNC Available	10	12 thru 16
J15 Series	J15W Series	Patch Jack - Dual — Prewired Parallel or No Wiring	Single — BNC TNC or Cable*	11	—

* Typical Cable — RG 58, 59, 122, 174 and 221
** Substitute Rearmate for R, W, Y's



Patch Panels



PANEL HEIGHT	NO. ROWS	FIG.	PANEL DESIGNATION AND NO. OF SINGLE JACKS ACCOMMODATED														
			12	14	16	20	24S	26	28	32S	36	40S	48S	52S			
1 3/4"	1	18															
	2	19															
3 1/2"	2	20					24L		28A	32A		40	48	52	56		

◀ Will not accept J14 or J15 Dual Jack

Prices and Specifications Subject to Change Without Notice.

Ordering Information:

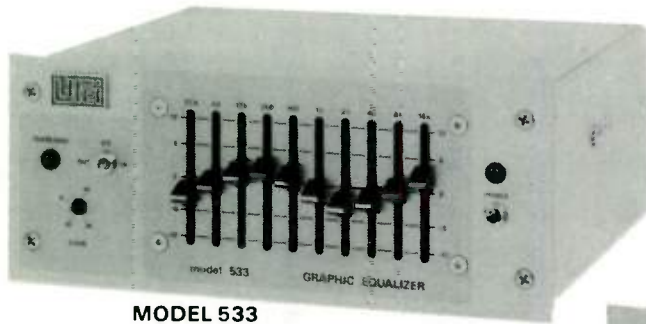
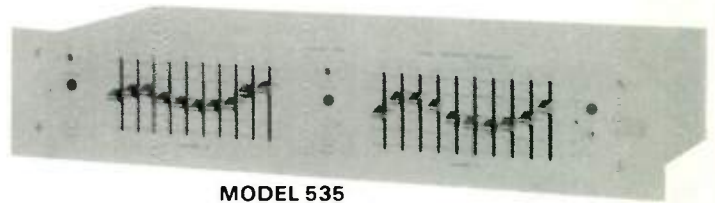
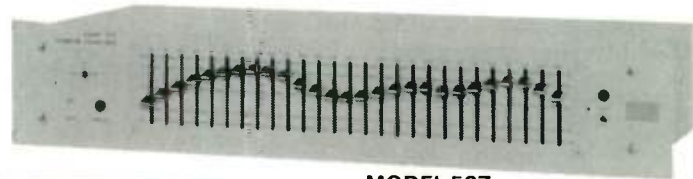
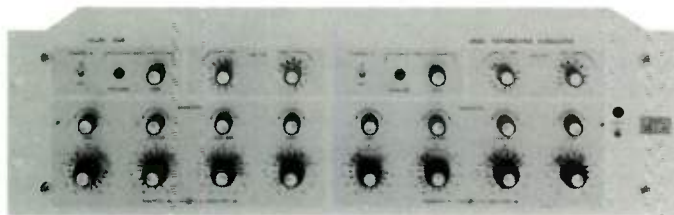
Panel Type JSI - 12 / J3W

Panel Type (JS = Aluminum) (JSI = Insulated)

No. of Jack Holes _____

Jack Type _____

To Order Panels Only, Leave "Jack Type" Blank.


MODEL 533

MODEL 535

MODEL 537

MODEL 546

533 Octave Graphic Equalizer

The 533 Octave Graphic Equalizer is a studio quality product which has wide application in recording, sound reinforcement, radio and TV production, and high fidelity music systems. It is a successor to the popular UREI Model 532 offering 10 filter sections with increased control range, and more output capability.

Model 535 Dual Graphic Equalizer

- Two channels in one compact package
- 10 adjustable equalizers on ISO one-octave center frequencies for each channel
- 12 dB boost or 12 dB attenuation at each center frequency
- Stepless, noiseless, calibrated controls
- Gain variable from - 10 dB to + 20 dB
- State of the art synthesized LC filter circuitry
- Low distortion, lowest noise, minimum phase shift
- Standard rack mounting, only 3½ inches high
- Optional front panel security cover
- Competitively priced
- UREI quality of course

Model 537 1/3 Octave Graphic Equalizer

- 27 adjustable equalizers on ISO 1/3-octave center frequencies
- 12 dB boost or 12 dB attenuation at each center frequency
- Stepless, noiseless controls, precision calibrated
- State-of-the-art active L-C filter circuitry
- Low distortion, lowest noise, minimum phase shift
- Zero insertion loss, up to 20 dB gain
- Standard rack mounting, only 3½ inches high
- Optional front panel security cover
- Competitively priced
- UREI quality of course

Model 546 Dual Parametric Equalizer

- Two independent channels in one package
- Four sections of Parametric Equalization in each channel all continuously variable in Bandwidth, Frequency, and Boost and Cut
- Bypass switches for both channels and each parametric filter section
- Expanded Single Channel mode provides eight sections of parametric equalization
- End cut filters tunable over a wide range for bandwidth restriction
- Large, easy-to-adjust controls
- Multi-point overload detection circuits
- Balanced or unbalanced bridging inputs
- Transformer isolated outputs
- Gain variable over a 30 dB range
- UREI quality, of course

Equalizers and Filters

501	Sub-Sonic Processor	88.00
525	Electronic Crossover	696.00
	SC2 Security cover for 525	36.00
533	Octave Graphic Equalizer (mono)	296.00
	DR-1 Double Rack Mount for two 533's	24.00
	SR-1 Single Rack Mount for one 533	26.00
535	Dual Graphic Equalizer	496.00
	SC1 Security cover for 535	36.00
537	1/3-Octave Graphic Equalizer	846.00
	SC1 Security cover for 537	36.00
539	Room Equalizer	996.00
	SC1 Security cover for 539	36.00
545	Parametric Equalizer	396.00
546	Dual Parametric Equalizer	696.00
	SC4 Security cover for 546	48.00
562	Feedback Suppressor	546.00
	SC3 Security cover for 562	36.00
567	PA Processing System	846.00
	SC2 Security cover for 567	36.00

AVS-1 SERIES ROUTING SWITCHERS:

- Coax Party Line Control with Industry's widest choice of panels
- Refresh Memory with 24-hour memory-save
- Optional dual control cards for "hot standby" redundancy
- Standard BNC video and control connectors
- Single motherboard for fully operational servicing with simple extender card
- Compact—20 x 20 audio and video in 10½-inch panel space
- Industry's best performance specs

Utah Scientific routing switchers are available in two series—Model AVS-1 featuring coax party line controls and 12 matrix configurations in standard sizes up to 150 x 160, and Model CAV-7 Compact Series with inexpensive models up to 50 x 10 or 20 x 20 in size.

The AVS-1 system is available in twelve different packaging configurations and is designed to provide the ultimate in reliability. Neither input fan-out nor secondary combining matrices are required, and 100% "hot standby" backup of control cards and power supplies is available. Redundant cooling fans, redundant party lines, and minimal failure mode design further reduce the likelihood and consequence of failure to a bare minimum.

In addition to video and single or multiple audio levels, Utah Scientific offers Metallic Contact, Tally and Regenerative Time Code switching matrices. The Metallic Contact matrix (model RR-384) provides dual circuit, bi-directional switching of control signals or data. It is primarily used in conjunction with machine

CPD/PL DESKTOP PARTY LINE CONTROL PANEL

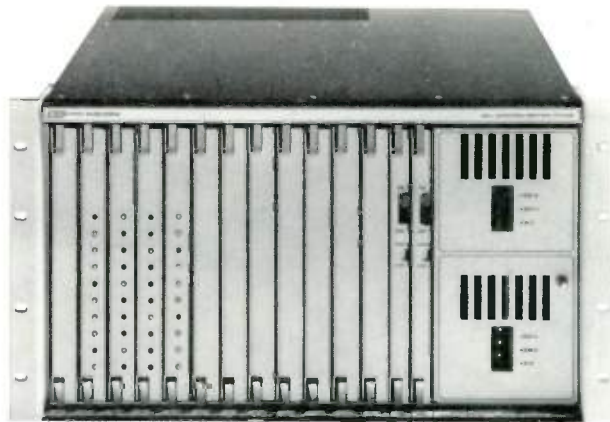
- Battery Powered
- Pull-out Directory
- Single Coax Connection

The CPD/PL is a battery operated desktop controller for executive offices, meeting rooms, etc.

CSP-20/CX-20 BUTTON-PER-SOURCE PANELS

- True A & V stusing
- Expandable
- Single keystroke selection
- Loop-thru coax control connection

The CSP-20 provides button-per-source switching with all source names professionally lettered in the write-in strip. Also provided are audio and video



AVS-1

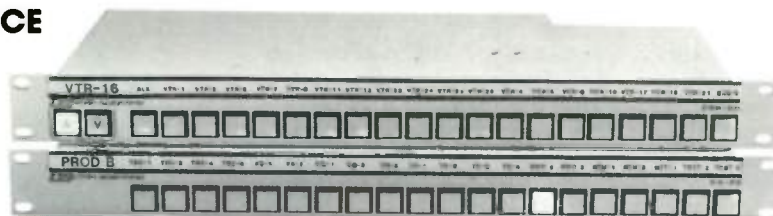
control systems and for switching serial data such as the CMX' I² signal. The Tally matrix (model CT-384) features a variety of strapping options accepting various control signals originating at video or audio destinations to control tally lights for other devices associated with video and/or audio sources.

Time Code matrices provide full regeneration of time code signals to permit multi-generation time code dubbing without degradation. Two models are available, one with fixed 25 μ sec rise time and the other with frequency-dependent rise time providing readable code in faster shuttle modes.

Thirty different party line control panels are available to suite varying user requirements in the control of AVS-1 matrices. They feature simple loop-through coax control connection and provide true matrix status* based on continuous refreshment from the system memory.

*Except CPD/PL

Following are descriptions of some of these panels:



breakaway buttons. CSP-20 is shown with CX-20 twenty-button expander panel.

CSP-100-E GROUP/UNIT SELECTION CONTROL & STATUS PANEL

- Source selection by familiar name
- A/V breakaway
- LED staturing
- Loop-thru coax control connection

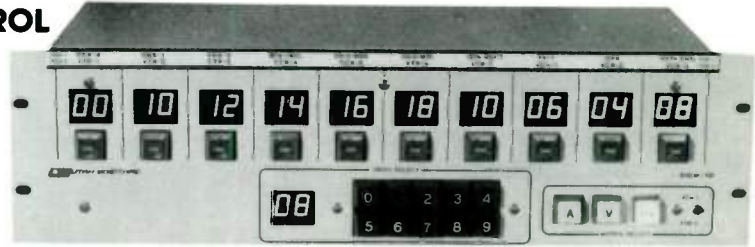
The CSP-100-E is Utah Scientific's most popular panel. It permits addressing sources by their familiar group name and unit number and provides audio and video breakaway.



CSP-10 TEN OR TWENTY-BUS CONTROL AND STATUS PANEL

- Simultaneous staturing of ten busses
- Lower cost per bus
- Optional twenty-bus control at no extra cost
- Loop-thru coax control connection

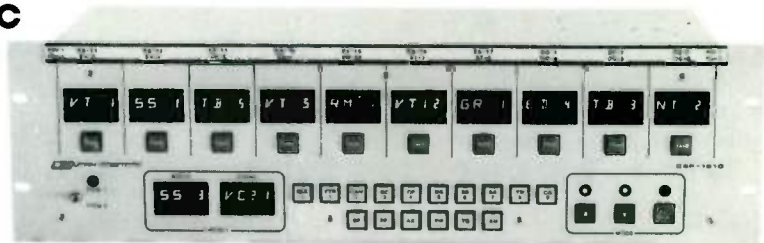
The CSP-10 controls either ten or twenty busses. It provides continuous staturing of ten busses and audio/video breakaway.



CSP-1610 TEN-BUS ALPHANUMERIC CONTROL & STATUS PANEL

- Alphanumeric displays
- 1600 Name/Number combinations
- A/V-split switching
- Optional twenty-bus programming
- Loop-thru coax control connection

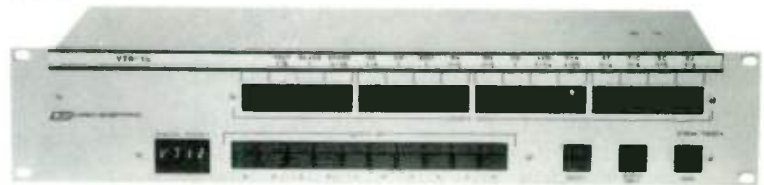
The CSP-1610 alphanumeric ten/twenty-bus controller provides 12 four-character alphanumeric readouts to permit addressing and staturing sources by their familiar names. Sixteen *Name* keys with either one or two keystroke *Unit* identification provides a total of 1600 Name/Number combinations. Separate audio and video preset displays permit both breakaway and A/V-split switching.



CSP-1601 SINGLE-BUS ALPHANUMERIC CONTROL & STATUS PANEL

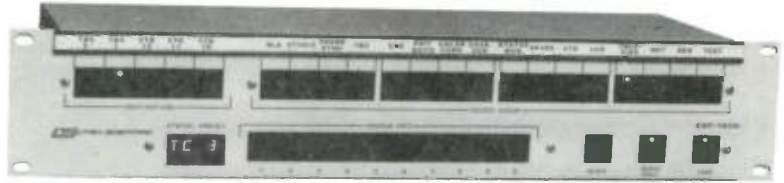
- Alphanumeric display
- Familiar name data entry & staturing
- Minimal keystrokes—1, 2, or 3—data entry
- Loop-thru coax control connection

Separate *name* and *unit* keyboards permit either one, two or three keystroke data entry addressing each source by its familiar name. Single four-character alphanumeric readout doubles as preset and status display. 1600 name/number combinations available.



CSP-1605 FIVE-BUS ALPHANUMERIC CONTROL & STATUS PANEL

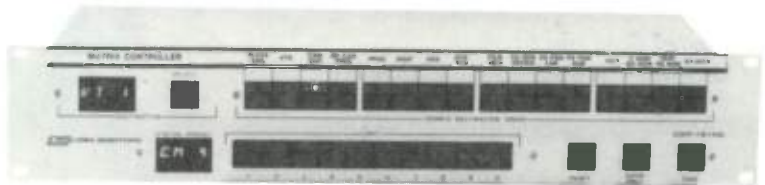
- Less cost per controlled bus
- Automatic statusing
- 1600 name/number combinations
- Loop-thru coax control connection



Five-bus version of CSP-1601. Automatically shows current status of each bus as it is addressed. LED button lamps indicate current bus assignment and current group name.

CSP-16160 FULL MATRIX ALPHANUMERIC CONTROL & STATUS PANEL

- Multiple-bus or full-matrix assignment
- Automatic statusing
- Separate Output and Preset/Status displays
- Loop-thru coax control connection

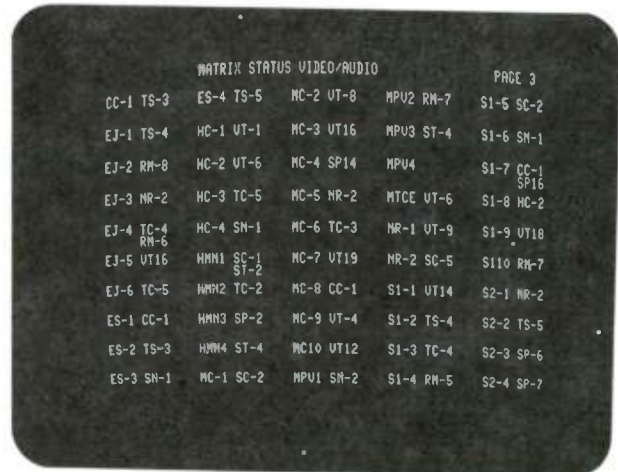


Automatically displays status upon entering destination name. 1600 name/number combinations are separately available for both destinations and sources.

SM-100 FULL MATRIX STATUS MONITOR

- Ten separate status and listings pages
- Remote page selection
- RS-170 or CCIR video output

The SM-100 Status Monitor permits character generator type full matrix statusing. It provides ten separate pages in various formats, with page changing possible from any control panel location.



SD-XX SOURCE DISPLAY

- Mounts on or in production switcher panel
- Custom built as to number or displays, display space and panel finish
- 4-character alphanumeric displays
- Coax party line data connection

SD-XX displays are used where routing switcher output busses provide input expansion of production switchers for audio consoles. They are custom made with up to 32 displays per system. They typically are recessed-mounted between the bottom rows of production switchers or are surface-mounted on production switchers or audio machines. Presently assigned sources are identified by user designated mnemonics—AT14, NT-3, etc.

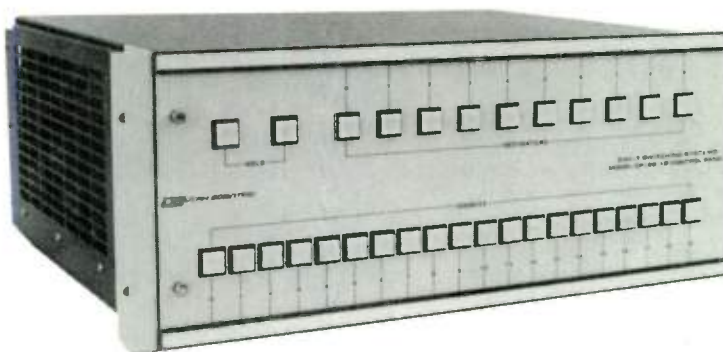


DE-XX DATA ENTRY PANELS

Usually supplied in conjunction with SD-XX display panels. Consists of 16-key touchpad providing 1600 Name/Number combinations, a 4-character alphanumeric preset display and one Take button for each assignable input on production switcher and/or audio board. Custom built to accommodate customer's space and color requirements.

CAV-7 COMPACT SERIES ROUTING SWITCHERS

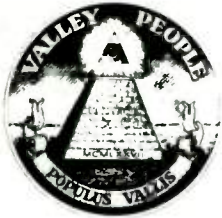
- Broadcast quality at "Patch Panel/DA" prices
- Automatic statusing as busses are selected
- Selectable A/V switching and statusing
- Compact design—20 x 10 AFV in 7" rack space including power supply panel and control
- Refresh memory with 24-hour memory-save



CAV-7

CAV-7 switchers are available in six different configurations offering video-only, audio-only, stereo audio or combined audio and video matrices from 10 x 10 to 20 x 20 or 50 x 10. Basic system control and memory is by means of either a front panel XY controller (pictured) or a similar remote control panel. Individual BCD bus controls are also available. Performance specifications are essentially the same as for AVS-1 switchers. Additional features of the CAV-7 models are the availability of an FSK option permitting long distance control over telephone lines or microwave subcarriers, and party line control via the RF-1 and PL-150 Control and Memory Card.

FOR ASSISTANCE IN SELECTING THE SWITCHING SYSTEM TO FULFILL YOUR REQUIREMENTS PLEASE CONTACT YOUR HARRIS DISTRICT SALES MANAGER OR THE HARRIS QUINCY SALES OFFICE.



Valley People's

MULTI-FUNCTION DYNAMICS PROCESSORS



General Description

The VALLEY PEOPLE DYNA-MITE is a self-contained and self-powered multi-purpose processing device. In all, it is capable of operating in 18 specific modes, including the basic modes of Limiting, Expansion, De-essing, Noise Gating, Ducking, Keying, etc.

In the Limiting mode alone, there are a number of specific derivations, such as Peak Limiting, Linear Integration Limiting, FM Pre-emphasized Limiting and Side Chain Controlled Limiting.

Similar derivations are evident in the other basic operating modes.

The selection of operating modes is straightforward and understandable, as indicated by three front panel switches, each having three positions.

In each operating mode, full parametric control is afforded by four continuously variable controls. Thus, while being easy to operate, DYNA-MITE is capable of satisfying the most critical of demands for performance.

The device is fully metered, with an 8 element LED Gain Reduction Array plus clipping indicator.

Balanced input circuitry capable of +24dBV* is employed to assure compatibility with professional equipment, while the circuitry is structured to interface correctly to low level/high impedance semi-pro components. The output circuit can deliver a full +21dBm into 600 ohm loads or transformers, yet can feed -10dBv lines with excellent noise levels and compatibility.

The circuitry employed represents the highest possible technology, for excellence of performance in any system.

Every effort has been put forth in the packaging of DYNA-MITE, to assure a simple, yet reliable interface: professional type tip/ring/sleeve jacks; 110/220VAC operation; adaptability to rack mounting. Stereo coupling is accomplished by pressing a front panel switch.

Areas of Use

Due to its diverse nature, fully professional performance, portability and cost effectiveness, DYNA-MITE enjoys excellent usability in all areas where audio is processed . . . from semi-pro to super-pro, broadcast and video, sound reinforcement, industrial sound and the performing or recording musician. It offers no excuses, simple sheer performance.

DYNA-MITE #410-1
DYNA-MITE #410-2
DYNA-MITE #410-C
Rack Mount #400-R
Connector #400-EPC

Features

- Multi-Use—Limiting, Expansion, De-Essing, Noise Gating, Ducking, Keying, Effects
- On-Board FM Pre-Emphasis for Broadcast AGC/Limiting
- Linear Integration Detection, Anticipatory Release Computer, EGC VCA . . . for Exceedingly Faithful Dynamic Integrity
- Self-Contained and Powered . . . Converts for Rack Mount
- For the Recording Professional, Broadcast/Video, Sound Reinforcement, Performing Musician, etc.
- Configured Specially to Interface to Semi-Pro Equipment, as well as Pro
- Highly Cost Effective

Specifications

Gain Reduction Range	Variable—60dB Max to 0dB Min
Maximum Input Level	+24dBv
Maximum Output Level	+21dBm - 600 ohms
Static Distortion	.04% THD Maximum @ 1kHz
Dynamic Distortion	Dependent on settings—Anticipatory Release Computation reduces dynamic distortion 10 to 1 over conventional devices
Signal/Noise Ratio	90dB @ +4dBv in and out @ +4dBv Threshold
Frequency Response	+/- 1dB, 10Hz to 50kHz
Slew Rate	13V/μs (150kHz full power bandwidth)
Attack Time (Peak Detection)	50μs/20dB
(Linear Integration Detection)	1 ms to 15 ms, signal dependent
Release Time	Variable, 50ms to 5sec/20dB
Threshold	Variable, -40dBv to +20dBv
Output Gain (Exp/Duck/Gate Modes)	Variable, +/- 15dB
Output Level (Limit/De-ess Modes)	Variable, -15dBv to +15dBv
Limiting Ratio	Infinity:1
Expansion Ratio	1:2
Gating Ratio	1:20
Ducking Ratio (Voice-over)	1:-20
Front Panel Switches (3)	Detector: Avg/Peak/Gate-Duck Detector: Internal/External/DS-FM Mode: Limit/Expand/Out (Bypass)
Front Panel Variable Controls (4)	Threshold Release Time Range (Exp-Gate-Duck) Output Gain/Level
Power Requirement	100 - 130VAC or 200 - 250 VAC 50/60Hz (5 watts)
Packaging	3½" x 8½" x 9" Instrument Case holds 2 channels Rack mount adaptor mounts one or two units in 3½" x 19"
Metering	8 LED Gain Reduction Metering Array 1 LED Overload Monitor
Rear Panel Connectors (4)	Signal Input; Ext Input (Side Chain Input); Signal Output; Control Voltage Out/In
Required Mating Plugs (Not Included)	¼" Diameter, 3 Conductor Commercial or Telephone/Mil. plugs (Examples: Mil. #PJ 051; Switchcraft #482 or equivalent; Switchcraft #260 or equivalent)
Weight	Stereo 3 lb. 4 oz. (1.47 kg.); Mono 2 lb. 12 oz. (1.25 kg.)
Shipping Weight	Stereo 4 lb. 4 oz. (1.93 kg.); Mono 3 lb. 12 oz. (1.28 kg.)

Notes: Ref. 0dBv = 0.775 volts.
Specifications subject to change without notice.

Single Channel DYNA-MITE (mono)	\$320.00
2-Channel DYNA-MITE (stereo)	535.00
Single DYNA-MITE Channel Card (upgrade a mono unit to stereo)	245.00
A Rack Mount "Shelf" for one or two DYNA-MITE units	40.00
External Power Connector for battery or other external power	8.00

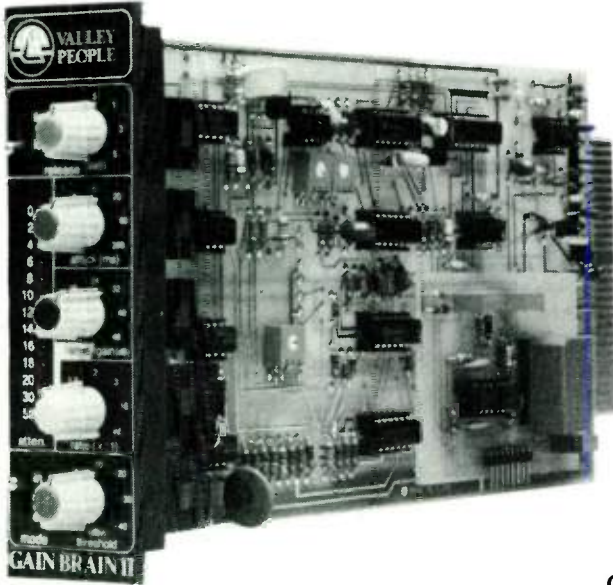
HARRIS

Prices and Specifications Subject to Change Without Notice.



Valley People's

GAIN BRAIN II



Features

- Widely adjustable Limiter/Compressor and Ducker, optimized for production work
- "Intelligent" detector increases dynamic integrity via waveform recognition
- Proprietary Release Strategy discourages pumping, squashing and modulation distortion
- Exclusive Peak Reversion Correction ends low frequency discrimination
- EGC 101 VCA assures very low noise and distortion . . . unparalleled transparency
- The "all purpose" device which is optimized for any purpose. No compromises

GAIN BRAIN II combines the functions of limiter, compressor and ducker, in a small but powerful package. A host of proprietary circuitry advances are employed, yielding a new level of performance, compared with other devices.

GAIN BRAIN II is highly useful in all applications requiring an exacting control over audio levels, concurrent with the preservation of dynamic integrity. A full compliment of front panel controls allows for optimum settings for any type of program material, and for any desired effect. GAIN BRAIN II is not timid. It is capable of anything between remarkable unobtrusiveness in conventional limit/compress applications, and some very audible envelope shaping effects such as impact accentuation on transient material.

TR 804 Processing Package

This 5 1/4" H x 8 1/2" W x 1 1/2" D package mounts and powers up to four GAIN BRAIN II's in a free-standing portable configuration. TR 804 is convertible for standard 19" rack mounting. Rack mounting of eight devices may be accomplished in 5 1/4" of rack space, by adding a TR 804 UP unpowered housing.

GAIN BRAIN II Specifications

Maximum Input Level	+ 27dBv (Electronically Balanced - 50K)
Maximum Output Level	+ 21dBv into 2000Ω or higher (47Ω output impedance)
Frequency Range	5Hz to 100 KHz (3dB)
Audio Slew Rate	13v/μsec (150KHz Full Power Bandwidth)
Distortion (Static) (+ 10dBv input)	.01% Max IMD or 1KHz THD (Dynamic distortion is a function of the Release Time, as in all compressor/limiters)
Signal to Noise Ratio (RMS signal to RMS noise, 20Hz to 20KHz)	112dB (+ 21dBv in and out) 95dB (+ 4dBv in and out) 85dB (- 16dBv in, + 4dBv out) (20dB gain)
Range of Gain Reduction	Over 50dB
Compression/Limiting Threshold	Variable, - 40dBv to + 20dBv
Compression/Limiting Ratio	Variable, 1.3:1 to ∞:1
Interactive Gain Control (Duck) Ratio	1: - 50
Interactive Gain Control (Duck) Range	Active Attenuation Variable, 0dB to - 48dB
Integration Time (Attack)	Variable, 200μsec to 200 msec/20dB
Release Time	Variable, 50msec to 5sec/20dB
Release Shape	Selectable, Linear or Logarithmic
Output Gain	Variable, 0dB to + 48dB (0dB in "Duck" mode)
Gain Reduction Indication	0dB to 50dB, on 13 element LED display
Input Mode Switch	IN (Normal), KEY (Side Chain) or OUT
Stereo Intercouple	Via Rear Connector
External VCA Control Inputs (2)	- 20dB/volt, @ 4.99K Ω
Panel Dimensions	1 1/2" X 5 1/4" (Fits TR 804 Processing Package)
Powering	Bipolar 15v, 100ma
Additional Features	Drive for External VCA or Meter Master "OUT" Buss Unbalanced Input Monitor Output Balanced Side Chain Input (+ 27dBv, 50K)

- GAIN BRAIN II (Model 811)
- TR 804
- TR 805
- CM 801
- TR 800-LRE
- TR-800-SRE
- TR 800-BP
- EXT/2

Limiter/Compressor/Ducker (card only)	\$ 380.00
Processing Rack Enclosure for up to four units (powered)	400.00
Processing Rack Enclosure for up to five units (unpowered)	330.00
Single Channel Card Enclosure	45.00
Long Rack Ear for TR 804 or TR 805	20.00
Short Rack Ear for TR 804 or TR 805	10.00
Single Space Blank Panel for any Series 800 Enclosure	6.00
Extender Card for any Series 800 Processing Device	36.00

Note: When you order a powered or unpowered rack full of cards, you earn a 10% discount. This does not apply to accessories or CM 801.

Prices and Specifications Subject to Change Without Notice.

World Radio History



Vinten

**LISTEC
TELEVISION
EQUIPMENT CORP.**



3702 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.

3702 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, 15 lbs. total trim weights, pressure gauge and wheel cutouts for visual inspection. \$17,300.00

Capacity	350 lbs. at 200 P.S.I. (typically, 250lb.s 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

3741 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 gimbaled wheels and adjustable cable guards as standard.

3741 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, 20 lbs. total trim weights. \$8300.00

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

- 3806-1155 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 \$255.00
- 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. \$695.00



3056/3C 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.

3056 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 \$4600.00

Capacity	120 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. \$850.00
- 15735 PORTAPED CARRYING CASE \$300.00
- 16520 PORTASKID CARRYING CASE \$135.00
- 3064 TRITRACK CRABBING BASE for PortaPed (described elsewhere) \$4800.00
- 3067 DOLPHIN CRANE ARM (described elsewhere) \$6875.00
- 3072 TRIMOUNT COLUMN to mount Dolphin into TriTrack \$385.00
- 3073 PLATFORM AND SEAT ASSEMBLY for TriTrack. \$850.00

Vinten

**LISTEC
TELEVISION
EQUIPMENT CORP.**

3064 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.



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

3064 TriTrack CRABBING DOLLY supplied as fold-up unit with three integrally linked 8" diameter rubber wheels, change over mechanism from crab to tri-cycle steering and folding tiller steering, accepts Type 56 PortaPed above and Dolphin Crane Arm on Trimount \$4800.00

3067 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.

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

3067 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 fitting in TriTrack above. (See accessories) \$6875.00

3754/3743 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.



3754/3743 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
3743 \$32,000.00
3754 \$38,000.00

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



3723 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.

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

3723 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. \$7700.00

ACCESSORIES

3754/3743 KESTREL CRANES
3743 100 12" diameter SOLID RUBBER WHEELS and ADJUSTABLE CABLE GUARDS for studio use. Includes brackets for mounting guards on crane. \$2200.00
3806/1155 NITROGEN REGULATOR AND HOSE with high pressure connection to crane (also used for 723 Low Angle Dolly) \$255.00
3731/3 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 \$115.00



3206/3207 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.

3719 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.

3737 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.

3207 STANDARD TRIPOD	\$1735.00	3737 ELEVATION UNIT	\$1295.00
Capacity	200 lbs.	<i>(Recommended for use with Short Tripod)</i>	
Height Range	27"-46"	Capacity	200 lbs.
Weight	26 lbs.	Weight	20 lbs.
3206 SHORT TRIPOD	\$1650.00	Height Range	7"-23"
Capacity	200 lbs.		
Height Range	22"-37"		
Weight	25 lbs.		
3719 DOLLY	\$1460.00		
Capacity	250 lbs.		
Height Range	7"		
Weight	23 lbs.		
Wheel Diameter	5"		



3063 COMBINATION LIGHTWEIGHT TRIPOD/ELEVATION UNIT/DOLLY

The 3063 Lightweight Unit consisting of a Tripod (Model 3064), 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.

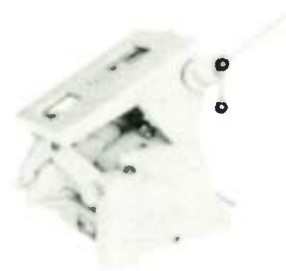
3063 COMBINATION	\$2035.00	ACCESSORIES	
Maximum Height	72"	3055 MITCHELL HI-HAT with 2 1/2" rise	\$135.00
Minimum Height	36"	1193 MITCHELL HI-HAT with 4 1/2" rise	135.00
Capacity	110 lbs.	1193 MITCHELL HI-HAT with 6" rise	135.00
		1193 MITCHELL HI-HAT with 8" rise	135.00
		3080 PRO JR. HI-HAT with 2 1/2" rise	135.00
		3720/3 CARPET SPREADER FEET for 3206 and 3207	
		Tripod	105.00
		3416/1A FEMALE WEDGE ASSEMBLY with clear-	
		ance holes for shelf mounting in remote trucks (used	
		with TV cameras employing Male Wedge Plate)	
		.....	\$475.00

Vinten

**LISTEC
TELEVISION
EQUIPMENT CORP.**

3076 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.



3076 PETREL MARK II LIGHTWEIGHT PAN AND TILT HEAD supplied with appropriate Base (See accessory), Adjustable Pan Bar and clamp, 3/8" Bolt Fixing to Camera. For optional Quick Release Wedge Adaptor — See accessories \$1945.00

Capacity	100 lbs.
Weight	15 lbs.
Center of Gravity Compensation	2"-7 1/2"
Tilt Range	± 40°
Width, Length, Height	6 1/2" x 9" x 7"
Construction	Stainless Steel, Aluminum Alloy Castings
Finish	Grey Textured Stove Enamel with Anti-Corrosion Plating on all Bright Metal



3051 DUNLIN L.F. PAN AND TILT HEAD supplied with appropriate base (See accessories), Adjustable Pan Bar and Clamp, 3/8" Bolt Fixing to Camera. For Quick Release Mini-Wedge — See accessories. \$3400.00

3051 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" x 6 1/2" x 7"
Construction	Stainless Steel, Aluminum Alloy Castings
Finish	Black Stove Enamel with Anti-Corrosion Plating on all Bright Metal

ACCESSORIES

3755/3 ECONOMY MALE/FEMALE WEDGE COMBINATION, for use with smaller TV cameras and above heads \$170.00
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. \$225.00
3716/13 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. . . \$475.00

3052 MALE WEDGE PLATE used with 716/13A. \$135.00
3750/3 MITCHELL BASE, adapts heads to any tripod or pedestal with Mitchell top, includes all standard broadcast designs \$135.00
3081 PRO JR. BASE, adapts heads to any tripod or pedestal with Pro Jr., popular Motion Picture Standard. \$135.00
3745/17 PAN BAR ASSEMBLY for 76 Petrel MARK II Head \$150.00
3745/21 PAN BAR CLAMP 65.00
3051/15 PAN BAR ASSEMBLY for 51 L.F. Head \$150.00

3051/11 PAN BAR CLAMP* \$65.00
 *Pan Bar Assemblies for 76 Petrel MARK II and 51 L.F. Head are interchangeable.
16402 CARRYING CASE for 76 Petrel MARK III Head complete with base and including provision for two sets of pan bars \$300.00
16431 CARRYING CASE for 51 L.F. Head complete with base and including provision for two sets of pan bars \$300.00
5581 MITCHELL TO PRO JR. CONVERTER, converts any tripod with Mitchell top to accept above heads with Pro Jr. Base \$100.00

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 \$3400.00

Vinten | LISTEC TELEVISION EQUIPMENT CORP.

3717 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



3716 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



3716 MARK V CAM HEAD supplied with Mitchell Base, Full-sized Pan Bar and Clamp, 3/8" Bolt Fixing to Camera. For optional Quick Release Wedge Adaptor — See accessories \$2565.00

3717 MARK IIIA CAM HEAD supplied with Mitchell Base, Full-sized Pan Bar and Clamp, 3/8" Bolt Fixing to Camera. For optional Quick Release Wedge Adaptor — See accessories \$3365.00

ACCESSORIES

- 3506/6A FEMALE WEDGE ADAPTER, when combined with 3052 Male Wedge Plate, permits fast disconnect of camera from MARK IIIA Cam Head. \$475.00
- 3716/13 FEMALE WEDGE ADAPTER, when combined with 3052 Male Wedge Plate, permits fast disconnect of camera from MARK V Cam Head. \$475.00
- 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 \$135.00
- 3716/28 PAN BAR CLAMP, used to mount full sized pan bar. \$65.00
- 3308/157 SHORT PAN BAR, short stub usually specified when second pan bar is required for zoom controls. Requires second clamp. \$65.00
- 3308/160 UTILITY PAN BAR, full length bar 28" long, one piece 7/8" diameter throughout. Requires second clamp \$55.00

- 3506/100A 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. \$195.00
- 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 \$635.00
- 3504/1A 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 6" \$725.00
- 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 \$285.00
- 1134/1A IKGAMI HK312 and HITACHI SK100 ADAPTER PLATE complete with Male Wedge Plate \$285.00
- 1047/1A RCA TK 47 SPACER, complete with Male Wedge Plate, provides up to 3" offset in small package \$285.00
- 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 \$300.00
- 18057 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 \$300.00

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.



702 SCRIPT DRIVE UNIT	\$4150.00
DIGIVISION PROMPTER UNITS (up to five per Drive Unit):	
12" Monitor Prompter Unit complete	\$2525.00
17" Monitor Prompter Unit complete	\$2745.00
Optional Carrying Case	\$ 135.00

12" Digivision Monitor Prompting System attached directly to Vinten Cam Head.



Prices and Specifications Subject to Change Without Notice.

Vinten

LISTEC
TELEVISION
EQUIPMENT CORP.

PAN AND TILT HEAD



NEW

VINTEN AVOCET

FLUID SPRING

Model 3199

Price \$2,400.00

CAPACITY: 30 lbs. with 5" Center of Gravity
WEIGHT: 7 ½ lbs.
TILT ANGLE: Plus/Minus 90 Degrees
PAN ANGLE: 360 Degrees

Supplied With

3/8" Bolt Fixing to Camera as Standard. Illustration shows optional, Quick Release Wedge Adaptor.

One each Pan Bar and Pan Bar Clamp

Base of customer's choice

Features

L.F. (Lubricated Friction) Drag in both pan and tilt modes

Separate Pan and Tilt Locks

Whip pan action

O.C. WHITE CO.

ULTRAFLEX-ARMS™

Heavy Duty Mike Boom

ULTRAFLEX MICROPHONE ARMS hold mikes up to 3.25 lbs. and have 5/8 - 27 thread on male mounting stud with 37" arm extension. Arms painted smoke gray with chrome-plated holding springs.

MODEL	PRICE
24100 Clamp Base (opens to 2 1/2")	\$51.38
24200 Wall Base	49.13
24300 Screwdown Base	49.13
51900 Screwdown Base with 12" shaft extension to raise bottom joint of arm	56.63
ADDITIONAL ACCESSORY MOUNTING BASES	
MODEL	PRICE
11460 Clamp Base	\$6.75
11461 Wall Base	6.38
11462 Screwdown Base	6.75



HARRIS

**One Source For
All Your Broadcast
Equipment Needs**

THE BROADCAST 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.

World Radio History

**GENERAL TERMS & CONDITIONS OF SALE
FOR BROADCAST EQUIPMENT AND SERVICES**

DEFINITIONS:

The term "You" as referred to herein means the Purchaser of Harris Corporation, Broadcast Products Division Equipment and Services.

The term "Harris" as referred to herein means Harris Corporation, Broadcast Products Division with offices in Quincy, Illinois.

ACCEPTANCE:

Your order shall be deemed to be accepted by Harris when Harris mails to You its standard acknowledgement form. Harris reserves the right, in its acknowledgement, to change prices and specifications where necessary to reflect Harris' prices and specifications in effect on the date of the acknowledgement. IF THE PRICES OR TERMS OR SPECIFICATIONS HAVE BEEN CHANGED FROM THE PROPOSAL, YOU MAY ELECT TO CANCEL ALL OR PART OF THE ORDER BY WRITTEN NOTIFICATION BY CERTIFIED MAIL TO HARRIS WITHIN A PERIOD OF TEN (10) DAYS AFTER RECEIPT OF THE ORDER ACKNOWLEDGEMENT. In case of such cancellation, Harris will refund to You any advance payment made by You with respect to the specific items cancelled, without interest or penalty. If a written notice is not received from You as provided for above, then changes made by Harris shall be deemed to be accepted by You. The order together with the acknowledgement shall represent the entire contract between the parties, and shall be changed only by written agreement between the parties. The banking by Harris or other disposition of funds paid by You to Harris with the order shall not constitute an acceptance of the order by Harris.

PRICE:

Except as provided for herein, Harris agrees to make no price adjustments after the order is acknowledged and provided that You accept delivery at such time or times that Harris is ready to make a shipment.

If this order provided for deferred payment terms, Harris may increase the rate of finance charge, provided for herein, to its rate of finance charge in effect immediately prior to shipment except that in no event shall such increase exceed one percentage point.

DELAYS IN DELIVERY AT THE REQUEST OF YOUR ORGANIZATION MAY GIVE RISE TO A PRICE ADJUSTMENT BY HARRIS PRIOR TO SHIPMENT. For contingent orders see "Contingent Orders" below.

CONTINGENT ORDERS:

If this order is designated as being a contingent order, You represent that You have pending or will file with the F. C. C. an application for a construction permit. If such application as filed, or as amended, is denied, revoked, or abandoned, upon giving prompt written notice to that effect to Harris, You may cancel the contingent order for all or part of the items ordered. Harris will refund to You the payments made against the items being cancelled or apply the funds to Your account.

If this order is acknowledged as being a contingent order and is accompanied by an advance payment, and if You, by written instruction make the order firm within a six (6) month period after the date of the contingent order, then Harris agrees to make no price adjustments after the contingent order is acknowledged, provided that You accept delivery at such time or times that Harris is ready to make a shipment after the order becomes firm. THE ONLY EXCEPTION TO THIS PRICE PROTECTION PROVISION MAY BE VENDOR END ITEM EQUIPMENT ORDERED WHERE HARRIS HAS RECEIVED A PRICE INCREASE NOTICE FROM A VENDOR SOURCE.

TAXES:

Unless this order specifically indicates that all applicable taxes are included in the price, Harris shall invoice and You agree to pay all required taxes or other like charges as are imposed by Law and required to be collected by Harris with regard to transactions between Seller and Purchaser with specific reference to State and Local Taxes imposed by Law in the various States, Commonwealths and Protectorates of the United States.

If You claim to be exempt from tax, then You must submit to Harris a tax exempt number or certificate. If Harris for any reason is required to pay applicable taxes, You hereby agree to reimburse Harris accordingly.

INSURANCE:

In the event that this order involves deferred payments and when required by Harris to protect its security interest, You agree to furnish to Harris evidence of insurance against fire and extended coverage of perils in an amount equal to the full value of the Equipment, with loss first payable to Harris as its interest may appear.

You agree to maintain such insurance until full payment shall have been made to Harris.

DELIVERY:

If You delay shipment, payments are to be made as though shipment had been made and the Equipment shall be stored by Harris at Your expense. Equipment placed in storage shall be considered Your property. Harris obligations hereunder are subject to delays incident to labor difficulties, fires, casualties, and accidents, acts of the elements, acts of the public enemy, transportation difficulties, acts of the Government in its Sovereign capacity, or other causes beyond Harris' control.

If shipment of any item is delayed by Harris for more than six (6) months beyond the shipping date specified herein, or as amended, either partly may terminate this contract as to any such items by written notice to the other, whereupon Harris shall either (a) issue as a credit to Your account an amount equal to an equitable portion of any payment made by Your organization, of the total contract price, without interest, or (b) Harris shall refund to You an equitable portion thereof without interest.

SHIPPING DATES INDICATED HEREIN AND AS MAY BE SUBSEQUENTLY ACKNOWLEDGED TO YOU ARE APPROXIMATE AND SUBJECT TO AVAILABILITY OF INVENTORY. Harris shall exercise reasonable efforts to comply with Your requested shipping schedule provided that You furnish all information as is necessary to permit Harris to complete the order.

Harris shall have the right to make, and You agree to accept, shipments in more than one lot, and payment for each lot shall be due accordingly.

Shipments will not normally be made until all required Security agreements have been executed and approved by Harris.

FREIGHT CHARGES AND TRANSPORTATION INSURANCE:

Unless otherwise stated on the face hereof all prices and terms are F.O.B. place of shipment and are exclusive of freight charges. Shipping charges to Your destination will be added to the Harris invoice.

As a service to You on prepaid shipments from our facilities, Harris will carry transportation insurance on the equipment while it is in transit within the continental United States. As long as You inspect the received goods in accordance with carriers inspection requirements and report in writing within 4 days to the carrier and to Harris any shortages or damage, this insurance should reasonably protect your investment. Failure to promptly report shortages or damages will negate this insurance and risk of loss or damage will be Your responsibility. We suggest that You arrange Your own transit insurance for maximum protection against loss or damage.

Method of shipment will normally be determined by Your order. In the event that You do not specify a carrier or method of delivery, a carrier will be selected by Harris as a convenience to You.

INSTALLATION AND MAINTENANCE:

Except as stated in the order, You are responsible for the prompt installation and proper maintenance of the Equipment in accordance with Harris' Instruction Books and good Engineering practice. You also shall employ sufficient technically qualified personnel and have available the proper equipment necessary for maintenance. Harris Warranty of Equipment as herein stated is conditioned on such prudent practices.

TITLE AND REMEDIES:

Until full payment of all obligations hereunder (whether represented by notes, open account, judgement, or otherwise), Harris reserves the right to take title to the Equipment. Harris may repossess the Equipment and Harris may in accordance with existing Laws, repossess the Equipment, and exercise such other or different remedies as are provided by Law.

When requested by Harris, we require that You duly execute and deliver to Harris on Harris' standard forms, a security agreement, financial statement, or other appropriate instrument which Harris may require to cover the financed conditions of this transaction. Payment terms of Net Invoice after shipment is a financed condition.

You hereby authorize Harris, or its assignee, where permitted by Law, to sign and file financing statements in order to perfect the security interest of the financing party.

If in the judgement of Harris, either before or after manufacture or shipment of equipment, the financial responsibility of Your organization is such as to indicate inability to pay its obligations as they mature, Harris, upon giving written notice to you may require payment in full or a specified part of the balance of the purchase price within a ten (10) day period after the date of the notice. This provision may apply irrespective of the terms of payment stated in the order or the acknowledgement. Harris shall be under no obligation to deliver equipment until payments are received.

TOWER, ANTENNA AND RELATED SERVICES:

In the event that this contract covers tower and antenna erection work including tower foundations, etc., Harris shall let a subcontract for part or all of the work to an Independent Contractor. You agree to supervise and direct the efforts of such Independent Contractor unless this contract specifically covers supervision by Harris or its representative. Your duties in regard to supervision shall be to assure compliance by the subcontractor with all applicable specifications, restrictions, ordinances, laws and other regulations and to assure that the job is completed to Your satisfaction. You agree to sign acceptance forms presented by the subcontractor at such time as the work is completed or to notify Harris prior to the crew leaving the site if exceptions are noted or the work is not satisfactory. In addition, You agree that all hardware ordered including antennas, microwave dishes, transmission line, connectors, etc. has been coordinated and is on site upon arrival of the tower crew for installation work.

You agree that prior to shipment of tower or antenna as may be covered by this contract and/or for which services at the site are also included in the contract (a) all permits required shall be approved and issued; (b) the site will be level and clear and staked off prior to arrival of a tower crew for tower erection work; (c) the site shall be reachable by access road or other suitable access for heavy equipment; (d) the site for tower foundation and erection work shall not be marshy land, frozen soil, rocky soil, swamp, or otherwise not suitable for a standard commercial tower foundation. You warrant that the proposed site for the foundation work has been inspected by you or your consultant and that soil samples have been taken to establish that the foundation site is suitable for a standard commercial foundation design. If before or after the arrival of the Subcontractor to complete the foundation work, it is discovered that the site and/or soil conditions are not what is normally expected, then any additional costs for the foundation work will be for your account; (e) electrical power is available for construction work and for testing purposes; (f) equipment to off-load the antenna from the carrier's equipment will be available at the site. If any of these conditions are not met, work cannot begin, then the erection crew may have to depart from the site. You agree to pay to Harris, upon receipt of invoice, all extra cost for material or services which are a result of failure or compliance by Your organization with any of the conditions (a) through (f) above or for any other conditions as may be considered unusual or nonstandard or for delays beyond the reasonable control of Harris or its Subcontractors, including delays due to inclement weather.

In the event that this order covers an antenna to be installed on an existing tower, You alone shall be responsible for determining, to Your complete satisfaction, the adequacy of such tower to support the weight and wind loading associated with such an antenna and related hardware and the installation thereof. Harris' sole responsibility shall be to provide to You, when requested, the specifications relative to the specific antenna and related hardware.

SERVICE PARTS LIMITED WARRANTY:

In the event that this order includes replacement service parts, the following warranty period shall apply. Replacement parts, with the exception of tubes, are warranted by Harris for a period of 90 days from the date of shipment. Electron Tubes shall carry the warranty as supplied by the tube manufacturer.

MANUFACTURERS' LIMITED NEW EQUIPMENT WARRANTY:

Harris warrants Equipment of its manufacture against defects in material or workmanship at the time of delivery, that develop under normal use within a period of one year (8 months on moving parts) from the date of shipment. You must give Harris prompt notice of failure and when requested, provide a written report of the nature and probable cause of the failure. Other Manufacturers' and Suppliers' Equipment, if any, including electron tubes, solid state devices, transmission line, antennas, towers, etc., shall carry only such Manufacturers' or Suppliers' warranty.

Harris' sole responsibility for any breach of the above warranty provision with respect to any Equipment or parts not conforming to the warranty or description of Equipment as herein specified, is at its option to (a) repair or replace such Equipment or parts F.O.B. Harris shipping point, upon the return of the failed Equipment, or (b) to refund the purchase price of the failed Equipment or component and provided that such is returned promptly after occurrence of the failure or (b) to accept the return of the Equipment F.O.B. Your point of installation, whereupon Harris shall either (1) issue a credit to Your account 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 You an equitable portion thereof, without interest.

WARRANTY WORK PERFORMED BY HARRIS COVERS PARTS ONLY. Labor and any travel charges incurred will be invoiced to You. Defects or failures caused by Your abuse or misuse or improper maintenance procedures are not covered by this warranty provision.

Harris assumes no responsibility for design characteristics or special Equipment manufactured to specifications supplied by or

on behalf of Your organization and shall not be liable for any expenses whether for repairs, replacements, material, service, labor or otherwise incurred by Your organization. Further, You agree to indemnify Harris for any loss or damage occasioned by a patent and/or trade secret infringement as a result of Harris manufacture of equipment to Your supplied specifications. Modifications to Harris Equipment by Your organization may void this warranty provision unless prior written consent is received from Harris.

NO EQUIPMENT IS TO BE RETURNED TO HARRIS WITHOUT FIRST RECEIVING HARRIS' INSTRUCTIONS REGARDING RETURN PROCEDURE.

EXCEPT AS SET FORTH HEREIN, AND EXCEPT AS TO TITLE, THERE ARE NO WARRANTIES, OR ANY AFFIRMATIONS OF FACT OR PROMISES BY HARRIS, 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.

FACILITY CONTROL EQUIPMENT:

If this order includes Facility Control Equipment which is intended to be used by Your organization to control and/or monitor fire and/or burglar alarm equipment, then it is to be understood and You agree that Harris is not an insurer and that the amount payable to Harris under this order is based upon the value of the item purchased and that there is no relationship to the value of any other property of Your organization or any third party interest. Harris does not guarantee or warrant, including any implied warranty, that the Facility Control Equipment being supplied will avert or detect a fire or any intrusion. Harris shall be exempt from liability for loss or damage due directly or indirectly to occurrences or consequences associated with the use of Harris Facility Control Equipment.

ADDITIONAL PROVISIONS:

This contract shall be governed by the Laws of the State of Illinois.

You agree to indemnify Harris 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 Harris employees.

No person is authorized to give any other warranties or to assume any other liabilities on Harris' behalf, unless made or assumed in writing by Harris and accepted by Harris at its home office.

YOU ARE EXPRESSLY NOTIFIED THAT HARRIS LIABILITY HEREUNDER SHALL NOT INCLUDE LOSSES OF ANTICIPATED PROFITS OR SPECIAL INCIDENTAL OR CONSEQUENTIAL DAMAGES.

If the Equipment specified herein is described as used, it is sold as is and with no warranty. If the contract covers Equipment not owned by Harris at this date, it is sold subject to Harris acquisition of possession and title.

All sales are final and not subject to return of equipment unless so stated herein. Should circumstances necessitate return other than for a valid warranty reason, You hereby acknowledge Harris' policy to charge a minimum 15% handling and restocking fee.

Model, nomenclature and the mechanical and electrical design of Equipment described herein are subject to change without notice.

Each provision of this contract is severable, and in the event that any one or more provisions hereof may be declared invalid by Law, or may be waived by Harris, then the remainder of this agreement shall nevertheless remain in full force and effect.

Except as may be set forth herein, cancellation of this order in whole or in part by You can only be made by specific written approval of Harris and shall be subject to Harris' reasonable cancellation charges.

GENERAL TERMS & CONDITIONS OF SALE FOR BROADCAST EQUIPMENT AND SERVICES

HARRIS

DEFINITIONS:

The term "You" as referred to herein means the Purchaser of Harris Corporation, Broadcast Products Division Equipment and Services.

The term "Harris" as referred to herein means Harris Corporation, Broadcast Products Division with offices in Quincy, Illinois.

ACCEPTANCE:

Your order shall be deemed to be accepted by Harris when Harris mails to You its standard acknowledgement form. Harris reserves the right, in its acknowledgement, to change prices and specifications where necessary to reflect Harris' prices and specifications in effect on the date of the acknowledgement. IF THE PRICES OR TERMS OR SPECIFICATIONS HAVE BEEN CHANGED FROM THE PROPOSAL, YOU MAY ELECT TO CANCEL ALL OR PART OF THE ORDER BY WRITTEN NOTIFICATION BY CERTIFIED MAIL TO HARRIS WITHIN A PERIOD OF TEN (10) DAYS AFTER RECEIPT OF THE ORDER ACKNOWLEDGEMENT. In case of such cancellation, Harris will refund to You any advance payment made by You with respect to the specific items cancelled, without interest or penalty. If a written notice is not received from You as provided for above, then changes made by Harris shall be deemed to be accepted by You. The order together with the acknowledgement shall represent the entire contract between the parties, and shall be changed only by written agreement between the parties. The banking by Harris or other disposition of funds paid by You to Harris with the order shall not constitute an acceptance of the order by Harris.

PRICE:

Except as provided for herein, Harris agrees to make no price adjustments after the order is acknowledged and provided that You accept delivery at such time or times that Harris is ready to make a shipment.

If this order provided for deferred payment terms, Harris may increase the rate of finance charge, provided for herein, to its rate of finance charge in effect immediately prior to shipment except that in no event shall such increase exceed one percentage point.

DELAYS IN DELIVERY AT THE REQUEST OF YOUR ORGANIZATION MAY GIVE RISE TO A PRICE ADJUSTMENT BY HARRIS PRIOR TO SHIPMENT. For contingent orders see "Contingent Orders" below.

CONTINGENT ORDERS:

If this order is designated as being a contingent order, You represent that You have pending or will file with the F.C.C. an application for a construction permit. If such application as filed, or as amended, is denied, revoked, or abandoned, upon giving prompt written notice to that effect to Harris, You may cancel the contingent order for all or part of the items ordered. Harris will refund to You the payments made against the items being cancelled or apply the funds to Your account.

If this order is acknowledged as being a contingent order and is accompanied by an advance payment, and if You, by written instruction make the order firm within a six (6) month period after the date of the contingent order, then Harris agrees to make no price adjustments after the contingent order is acknowledged, provided that You accept delivery at such time or times that Harris is ready to make a shipment after the order becomes firm. THE ONLY EXCEPTION TO THIS PRICE PROTECTION PROVISION MAY BE VENDOR END ITEM EQUIPMENT ORDERED WHERE HARRIS HAS RECEIVED A PRICE INCREASE NOTICE FROM A VENDOR SOURCE.

TAXES:

Unless this order specifically indicates that all applicable taxes are included in the price, Harris shall invoice and You agree to pay all required taxes or other like charges as are imposed by Law and required to be collected by Harris with regard to transactions between Seller and Purchaser with specific reference to State and Local Taxes imposed by Law in the various States, Commonwealths and Protectorates of the United States.

If You claim to be exempt from tax, then You must submit to Harris a tax exempt number or certificate. If Harris for any reason is required to pay applicable taxes, You hereby agree to reimburse Harris accordingly.

INSURANCE:

In the event that this order involves deferred payments and when required by Harris to protect its security interest, You agree to furnish to Harris evidence of insurance against fire and extended coverage of perils in an amount equal to the full value of the Equipment, with loss first payable to Harris as its interest may appear.

You agree to maintain such insurance until full payment shall have been made to Harris.

DELIVERY:

If You delay shipment, payments are to be made as though shipment had been made and the Equipment shall be stored by Harris at Your expense. Equipment placed in storage shall be considered Your property. Harris obligations hereunder are subject to delays incident to labor difficulties, fires, casualties, and accidents; acts of the elements; acts of the public enemy; transportation difficulties; acts of the Government in its Sovereign capacity; or other causes beyond Harris' control.

If shipment of any item is delayed by Harris for more than six (6) months beyond the shipping date specified herein, or as amended, either party may terminate this contract as to any such items by written notice to the other, whereupon Harris shall either (a) issue a credit to Your account an amount equal to an equitable portion of any payment made by Your organization for the total contract price, without interest, or (b) Harris shall refund to You an equitable portion thereof without interest.

SHIPPING DATES INDICATED HEREIN AND AS MAY BE SUBSEQUENTLY ACKNOWLEDGED TO YOU ARE APPROXIMATE AND SUBJECT TO AVAILABILITY OF INVENTORY. Harris shall exercise reasonable efforts to comply with Your requested shipping schedule provided that You furnish all information as is necessary to permit Harris to complete the order.

Harris shall have the right to make, and You agree to accept, shipments in more than one lot, and payment for each lot shall be due accordingly.

Shipments will not normally be made until all required Security agreements have been executed and approved by Harris.

FREIGHT CHARGES AND TRANSPORTATION INSURANCE:

Unless otherwise stated on the face hereof all prices and terms are F.O.B. place of shipment and are exclusive of freight charges. Shipping charges to Your destination will be added to the Harris invoice.

As a service to You on prepaid shipments from our facilities, Harris will carry transportation insurance on the equipment while it is in transit within the continental United States. As long as You inspect the received goods in accordance with carriers inspection requirements and report in writing within 4 days to the carrier and to Harris any shortages or damage, this insurance should reasonably protect your investment. Failure to promptly report shortages or damages will negate this insurance and risk of loss or damage will be Your responsibility. We suggest that You arrange Your own transit insurance for maximum protection against loss or damage.

Method of shipment will normally be determined by Your order. In the event that You do not specify a carrier or method of delivery, a carrier will be selected by Harris as a convenience to You.

INSTALLATION AND MAINTENANCE:

Except as stated in the order, You are responsible for the prompt installation and proper maintenance of the Equipment in accordance with Harris' Instruction Books and good Engineering practice. You also shall employ sufficient technically qualified personnel and have available the proper equipment necessary for maintenance. Harris Warranty of Equipment as herein stated is conditioned on such prudent practices.

TITLE AND REMEDIES:

Until full payment of all obligations hereunder (whether represented by notes, open account, judgement, or otherwise), Harris reserves title to all of the Equipment delivered by reason of nonpayment and Harris may in accordance with existing Laws, repossess the Equipment, and exercise such other or different remedies as are provided by Law.

When requested by Harris, we require that You duly execute and deliver to Harris on Harris' standard forms, a security agreement, financial statement, or other appropriate instrument which Harris may require to cover the financed conditions of this transaction. Payment terms of Net Invoice after shipment is a financed condition.

You hereby authorize Harris, or its assignee, where permitted by Law, to sign and file financing statements in order to perfect the security interest of the financing party.

If in the judgement of Harris, either before or after manufacture or shipment of equipment, the financial responsibility of Your organization is such as to indicate inability to pay its obligations as they mature, Harris, upon giving written notice to you may require payment in full or a specified part of the balance of the purchase price within a ten (10) day period after the date of the notice. This provision may apply irrespective of the terms of payment stated in the order or the acknowledgement. Harris shall be under no obligation to ship equipment until payments are received.

TOWER, ANTENNA AND RELATED SERVICES:

In the event that this contract covers tower and antenna erection work including tower foundations, etc., Harris shall let a sub-contract for part or all of the work to an Independent Contractor. You agree to supervise and direct the efforts of such Independent Contractor unless this contract specifically covers supervision by Harris or its representative. Your duties in regard to supervision shall be to assure compliance by the subcontractor with all applicable specifications, restrictions, ordinances, laws and other regulations and to assure that the job is completed to Your satisfaction. You agree to sign acceptance forms presented by the subcontractor at such time as the work is completed or notify Harris prior to the crew leaving the site if exceptions are noted or the work is not satisfactory. In addition, You agree that all hardware ordered including antennas, microwave dishes, transmission line, connectors, etc. has been coordinated and is on site upon arrival of the tower crew for installation work.

You agree that prior to shipment of tower or antenna as may be covered by this contract and/or for which services at the site are also included in the contract (a) all permits required shall be approved and issued; (b) the site will be level and clear and staked off prior to arrival of a tower crew for tower erection work; (c) the site shall be reachable by access road or other suitable access for heavy equipment; (d) the site for tower foundation and erection work shall not be marshy land, frozen soil, rocky soil, swamp, or otherwise not suitable for a standard commercial tower foundation. You warrant that the proposed site for the foundation work has been inspected by you or your consultant and that soil samples have been taken to establish that the foundation site is suitable for a standard commercial foundation design. If before or after the arrival of the Subcontractor to perform the foundation work, it is discovered that the site and/or soil conditions are not what is normally expected, then any additional costs for the foundation work will be for your account; (e) electrical power is available for construction work and for testing purposes; (f) equipment to off-load the antenna from the carrier's equipment will be available at the site. If any of these conditions are such that work cannot begin, then the erection crew may have to depart from the site. You agree to pay to Harris, upon receipt of invoice, all extra cost for material or services which are a result of failure or compliance by Your organization with any of the conditions (a) through (f) above or for any other conditions as may be considered unusual or nonstandard or for delays beyond the reasonable control of Harris or its Subcontractors, including delays due to inclement weather.

In the event that this order covers an antenna to be installed on an existing tower, you alone shall be responsible for determining, to Your complete satisfaction, the adequacy of such tower to support the weight and wind loading associated with such an antenna and related hardware and the installation thereof. Harris' sole responsibility shall be to provide to You, when requested, the specifications relative to the specific antenna and related hardware.

SERVICE PARTS LIMITED WARRANTY:

In the event that this order includes replacement service parts, the following warranty period shall apply: Replacement parts, with the exception of tubes, are warranted by Harris for a period of 90 days from the date of shipment. Electron Tubes shall carry the warranty as supplied by the tube manufacturer.

MANUFACTURERS' LIMITED NEW EQUIPMENT WARRANTY:

Harris warrants Equipment of its manufacture against defects in material or workmanship at the time of delivery, that develop under normal use within a period of one year (6 months on moving parts) from the date of shipment. You must give Harris prompt notice of failure and when requested, provide a written report of the nature and probable cause of the failure. Other Manufacturers' and Suppliers' Equipment, if any, including electron tubes, solid state devices, transmission line, antennas, towers, etc., shall carry only such Manufacturers' or Suppliers' warranty.

Harris' sole responsibility for any breach of the above warranty provision with respect to any Equipment or parts not conforming to the warranty or description of Equipment as herein specified, is at its option to (a) repair or replace such Equipment or parts F.O.B. Harris shipping point, upon the return thereof, freight prepaid of the failed Equipment or component and provided that such is returned promptly after occurrence of the failure or (b) to accept the return of the Equipment F.O.B. Your point of installation, whereupon Harris shall either: (1) issue a credit to Your account 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 You an equitable portion thereof, without interest.

WARRANTY WORK PERFORMED BY HARRIS COVERS PARTS ONLY. Labor and any travel charges incurred will be invoiced to You. Defects or failures caused by Your abuse or misuse or improper maintenance procedures are not covered by this warranty provision.

Harris assumes no responsibility for design characteristics or for special equipment manufactured to specifications supplied by or

on behalf of Your organization and shall not be liable for any expenses whether for repairs, replacements, material, service, labor or otherwise incurred by Your organization. Further, You agree to indemnify Harris for any loss or damage occasioned by a patent and/or trade secret infringement as a result of Harris manufacture of equipment by You supplied specifications. Modifications to Harris Equipment by Your organization may void this warranty provision unless prior written consent is received from Harris.

NO EQUIPMENT IS TO BE RETURNED TO HARRIS WITHOUT FIRST RECEIVING HARRIS' INSTRUCTIONS REGARDING RETURN PROCEDURE.

EXCEPT AS SET FORTH HEREIN, AND EXCEPT AS TO TITLE, THERE ARE NO WARRANTIES, OR ANY AFFIRMATIONS OF FACT OR PROMISES BY HARRIS, 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.

FACILITY CONTROL EQUIPMENT:

If this order includes Facility Control Equipment which is intended to be used by Your organization to control and/or monitor fire and/or burglar alarm equipment, then it is to be understood and You agree that Harris is not an insurer and that the amount payable to Harris under this order is based upon the value of the item purchased and that there is no relationship to the value of any other property of Your organization or any third party. Harris does not guarantee or warrant, including any implied warranty, that the Facility Control Equipment being supplied will avert or detect a fire or any intrusion. Harris shall be exempt from liability for loss or damage due directly or indirectly to occurrences or consequences associated with the use of Harris Facility Control Equipment.

ADDITIONAL PROVISIONS:

This contract shall be governed by the Laws of the State of Illinois.

You agree to indemnify Harris 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 Harris employees.

No person is authorized to give any other warranties or to assume any other liabilities on Harris' behalf, unless made or assumed in writing by Harris and accepted by Harris at its home office.

YOU ARE EXPRESSLY NOTIFIED THAT HARRIS LIABILITY HEREUNDER SHALL NOT INCLUDE LOSSES OF ANTICIPATED PROFITS OR SPECIAL INCIDENTAL OR CONSEQUENTIAL DAMAGES.

If the Equipment specified herein is described as used, it is sold as is and with no warranty. If the contract covers Equipment not owned by Harris at this date, it is sold subject to Harris acquisition of possession and title.

All sales are final and not subject to return of equipment unless so stated herein. Should circumstances necessitate return other than for a valid warranty reason, You hereby acknowledge Harris' policy to charge a minimum 15% handling and restocking fee.

Model, nomenclature and the mechanical and electrical design of Equipment described herein are subject to change without notice.

Each provision of this contract is severable, and in the event that any one or more provisions hereof may be declared invalid by Law, or may be waived by Harris, then the remainder of this agreement shall nevertheless remain in full force and effect.

Except as may be set forth herein, cancellation of this order in whole or in part by You can only be made by specific written approval of Harris and shall be subject to Harris' reasonable cancellation charges.

INDEX

A

Alloy Wire and Metal Products 2
 Acoustic Research 3
 ADC Products 4
 Adapter Hub, NAB 10 1/2" Reels 109
 Allied Tower 179
 Altronic Research Corp 5, 6
 AM Antenna Accessories 43-47, 97, 130, 131
 AM Dummy Loads/ Load Resistors 5, 6, 29, 38
 AM/FM Monitors 27, 173, 174
 AM Frequency Monitors 27, 173
 AM Modulation Monitors 27, 173
 AMP Special Industries 9
 Ampex Corp 7, 8
 Amplifiers, AM RF 27
 Amplifiers, Audio 140
 Amplifiers, FM RF 27
 Amplifiers, TV RF 27
 Amplifiers, Video 91, 95
 Amplitude Modulation Controller 46
 Ampco Scully 10, 11
 Andrew Corp 12-14
 Anixter Mark 15
 Antenna Meters 45
 Antenna Monitors 45, 131
 Antenna Remote Control 43
 Antenna Towers 179
 Antennas-Communication, Point to Point 15, 145
 Antennas-Parabolic 15
 Antennas-Yagi 145
 Apex 16
 Arms, Turntable Pickup 22, 106, 155
 Asaca 17, 18
 Atlas Sound 19
 Atlas Tower 179
 Audio Accessories 4, 28
 Audio Amplifiers 26, 39, 140
 Audio Consoles 23-25, 107, 108
 Audio Connectors 20
 Audio Delay Equipment 60, 61
 Audio Distortion Analyzer, Harmonic 132
 Audio Distortion Analyzer, Intermodulation 132
 Audio Distribution Amplifiers 26, 106
 Audio Effects Equipment 60, 61, 105, 121
 Audio Equalizer, Active 181
 Audio Equalizer, Graphic 121, 181
 Audio Equalizer, Parametric 121, 181
 Audio Flanger 105
 Audio Generator, Intermod Signal 132
 Audio Generator, Sine Wave 132
 Audio Hookup Wire 28
 Audio Jack Panels 4, 69
 Audio Meter, Peak/RMS 25
 Audio Mixers 107, 108, 156
 Audio Noise Reduction 42
 Audio Patch Cords 4, 69
 Audio Patch Panels 4, 69
 Audio Processors 60, 61, 186, 187
 Audio Remote Amplifiers 108, 156
 Audio Reverberation Equipment 105, 121
 Audio Sibilance Controller 121
 Audio Stereo Synthesizer 121
 Audio Switchers 50, 51, 96, 182-185
 Audio Terminal Blocks 20
 Audiolab Electronics 21
 Audio-Technica 22
 Audio Time Compression 60, 61
 Audiotronics, Inc 23-26
 Aural Exciter 16
 Aural Modulation Monitors 27, 173
 Aural STL 101, 110, 111, 177, 178
 Austin Isolation Transformers 41
 Automatic Dehydrators 14

B

Bar Dot Generator, Video 80, 93
 Base Station, Remote Pickup 103
 Beacon, Flasher 76
 Belar Electronics Lab, Inc 27
 Belden 28
 Berkeley Colortran 163
 Bird Electronics Corp 29-31
 Bird Watcher 31
 Burst Generator, Video 80, 93, 172
 Brewster S. Brewer Co., Inc 163
 Bridges, Common Point Impedance 45
 Bridges, Operating Impedance 45
 Bulk Tape 147, 148
 Bulk Tape Erasers 21, 65, 87, 109

C

Cable, Audio 28
 Cable, Coaxial & Accessories 12-14, 32-34
 Cable Connectors, Audio 20
 Cable Connectors, Coaxial 9, 12-14, 32-34
 Cable, Microphone 28
 Cablewave Systems 32-34
 Calorimeter, Digital, RF 31
 Camera Support Equipment 35, 82
 Camera Test Charts, Films, Slides 118-120, 133, 134, 188-193
 Cartridge Machine Alignment Equipment 65
 Cartridge Racks 2, 64, 143, 144, 157
 Cartridge Tape 62-64
 Cartridge Tape Erasers 21, 65, 87, 109
 Cartridge Tape Splice Locator 87
 Cartridge Tape Splicer 65
 Cartridges, Transcription 22, 155, 160
 Cassettes, Video 147
 Character Generator 99, 100
 Cinema Products 35
 Cine 60 36
 Clocks, Digital 59
 Clocks, Studio 59, 152
 Clocks, Timers 59
 Coax Line Pressurization Equipment 14
 Coaxial Cable & Accessories 12-14, 32-34, 46, 52
 Coaxial Switches 46, 47
 Coaxial Transmission Line, Rigid 34, 47-49, 115-117, 125-127
 Color Bar Generator 80, 93, 96, 172
 Color Picture Monitor 38, 169
 Color Sync Generator 172
 Common Point Impedance Bridge 45
 Connectors, Audio 20
 Connectors, Coaxial 9, 12-14, 32-34, 46
 Conrac 37, 38
 Console Desks 107, 141
 Consoles, Audio 23-25, 107, 108
 Convergence Generator 172
 Crown International, Inc 39, 40
 Crystals, Hi-Accuracy Remote Pickup 103
 Curtis Terminal Boards 20

D

Dale 41
 DBX, Inc 42
 Decca Austin 41
 Dehydrators 14
 Delay Equipment, Audio 60, 61
 Delta Electronics 43-46
 Demagnetizer Editing Pen 109
 Demagnetizer-Degausser, Tape 21, 65, 87, 109
 Demagnetizer, Tape Head 109
 Demodulators, TV 96, 136, 146
 Desks, Console 107, 141, 142
 Consoles, Audio 47-49
 Digital Audio Equipment 60, 61
 Digital Calorimeter, RF 31
 Digital Clocks 59
 Digital Remote Control 175, 176
 Digital Timers 59
 Dollies, Camera 82, 189, 190
 Dummy Loads, AM, FM, TV 5, 6, 29-31, 53, 54
 Dynair Electronics, Inc 50, 51
 Dynatech Data Systems 52

E

Effects Equipment, Audio 60, 61, 105, 121
 Electro Impulse Lab, Inc 53, 54
 Electro-Voice 55-58
 Emergency Broadcast Systems (EBS) 174
 Emergency Power Generators 36
 Engine Generators 36
 Equalizers, Audio 121, 181
 Equalizers, Video 80
 Eraser, Tape 21, 65, 87, 109
 ESE 59
 Eventide Clockworks, Inc 60, 61

F

Fidelipac 62-65
 Field Intensity Meters 130
 Flanger, Audio 105
 Flexo 2
 FM Dummy Loads 5, 6, 29-31, 53, 54
 FM Frequency Monitor 27, 174
 FM Modulation Monitor 27, 174

FM Receiver, EBS 174
 FM RF Amplifier 27
 FM SCA Monitor 27, 174
 FM Transceiver, Communications 70
 FM Transmitter, Communications 71
 Frequency Synthesizer & Coherent Detector 130
 Frezzolini Electronics 66, 67

G

General Electric 68
 Generators, Audio 132
 Generators, Bar Dot 80, 93
 Generators, Black Burst 80, 93, 172
 Generators, Color Bar 80, 93, 96, 172
 Generators, Convergence 172
 Generators, Linearity Signal 172
 Generators, Multi Burst 93, 172
 Generators, Power 36
 Generators, Pulse 93, 172
 Generators, R.F. 45, 130
 Generators, Stairstep/Ramp 93
 Generators, Stereo FM 111
 Generators, Sub Carrier 111
 Generators, Sync 80, 92, 172
 Generators, Timing Signal 92, 172
 Generators, Video Signal 80, 92, 93, 172
 Gentner Engineering 69
 Gibraltar, Heads, Pedestals 133, 134
 Gray Tone Arm 106

H

Harmonizer 60, 61
 Harris Corp 70, 71
 Headphones 134, 149, 166
 Heads, Camera 82, 119, 120, 134, 191-193
 Heliax Coaxial Cable 12-14
 Hercules, Heads, Pedestals 133, 134
 Hitachi 72-75
 Hughey-Phillips Co 76

I

Inductrol Voltage Regulators, GE 68
 Innovative Television Equipment (ITE) 82
 Intercom Systems 135, 138
 Intermodulation Test Equipment 132
 International Tapetronics (ITC) 83-87
 ISI 77-81
 Isolation Transformers, Tower Lighting 41, 76

J

JBL 88, 89
 Jack Strips, Jacks, Audio 4
 Jack Strips, Jacks, Video 52, 180

K

Kay Industries 124
 Kings Electronics 9
 Kinoton 90
 Kliegl 163
 Kline Iron & Steel Co., Inc 168

L

Land Mobile Communications Equipment 70, 71
 Lenco, Inc 91-96
 Lighting Kits 36, 66
 Lightning Elimination Associates 97, 98
 Lights, TV Studio 163
 Lights, Studio Warning 65
 Lights, Tower 76
 Listec TV Equipment Corp 188-193
 Logging, Remote Control 114
 Luxo Lamp Corp 26

M

Marti Electronics, Inc 101-104
 Measurement Sets, TV 18
 Meter, Ammeter, RF 45
 Meter, Field Strength/ Intensity 130
 Meter, Jack 46
 Meter, TV Noise 17, 96
 Mic Mix Audio Products, Inc 105
 Microphone Cable 28

Microphone Connectors	20
Microphones & Accessories	40, 56, 58, 149-151, 153, 154, 167, 168, 194
Microphone Mixers	89, 140, 156
Microphone Stands	2, 19, 26, 58, 149, 154, 194
Microtrak Corp.	106-108
Microtran Co., Inc.	109
3M - Video	99, 100
3M Company - Scotch	147, 148
Mixers, Audio	23-25, 107, 108, 140, 156
Modular Desks, Cabinet	107, 141, 142
Monitor Amplifier	39, 140
Monitor, AM Frequency	27, 173
Monitor, AM Modulation	27, 173
Monitor, FM Frequency	27, 174
Monitor, FM Modulation	27, 174
Monitor, Prompting Systems	192
Monitor, SCA	27, 174
Monitor Speakers	3, 57, 88, 89
Monitor, TV Aural Modulation	27, 173
Monitor, TV Frequency	27, 173
Monitor, TV Picture, Color	38, 169
Monitor, TV Picture, Monochrome	37, 91, 95
Monitor, TV Waveform	170
Moseley Associates, Inc.	110-114
Myat, Inc.	115-117

N

Noise Meter, Video	17, 96
NTSC Encoders	96

O

O'Connor Engineering Labs, Inc.	118-120
Operating Impedance Bridge	45
Orban	121
Otari	122, 123

P

Panasonic (Technics)	164
Patch Cords and Patch Panels, Audio	4, 69
Patch Cords and Patch Panels, Video	52, 180
Phasemaster	124
Phase Analyzer, Audio	132
Phase Monitor, AM	43, 131
Phelps Dodge	125-127
Pickup Arms	22, 106, 155
Pickup Cartridges	22, 155, 160
Porta-Pattern	128, 129
Potomac Instruments	130-132
Power Arrester, Secondary	41
Power Phase Converters	124
Power Terminal Blocks	20
Pressurization Equipment	14
Projectors, Film	90
Projectors, Slide	158, 159
Prompting Systems	165, 192

Q

Quickset	133, 134
----------	----------

R

R-Columbia	135
RF Ammeter Systems	45
RF Amplifier, AM	27
RF Amplifier, FM	27
RF Amplifier, TV	27
RF Communications, Harris Corp.	70, 71
RF Meter Jacks	46
Recorders, Audio Cartridge	83-85
Recorders, Tape Reel-to-Reel	7, 8, 10, 11, 86, 87, 122, 123, 161
Recording Tape, Audio	62, 63, 65, 148
Recording Tape, Video	147
Regulators, Voltage	68
Remote Amplifier Equipment	108
Remote Antenna Meters	45, 131
Remote Control Equipment	43, 103, 104, 112-114
Remote Pickup Equipment	103, 112
Reverberation Equipment	60, 61, 105, 121
Revox (Studer Revox)	161, 162
Rohde & Schwartz	136, 137
Rigid Transmission Line	34, 47-49, 115-117, 125-127
Ring Transformer	41, 76
RTS Systems	138-140
Ruslang Corp.	141-144

S

SCA Modulation Monitor	27, 174
Sampling Transformers, RF	44
Scala Electronic Corp.	145
Scientific Atlanta	146
Secondary Power Arrester	41
Scotch (3M)	147, 148
Sennheiser Electronic Corp.	149-151
Seth-Thomas	152
Shure	153-156
Sibilance Controller	121
Signal Generator, Audio	132
Signal Generator, RF	45, 130
Southeast Electronics, Inc.	157
Speakers, Monitoring	3, 57, 88, 89
Splice Locator	87
Spindler and Sauppe	158, 159
Stainless, Inc.	179
Stairstep/Ramp Generator	93
Stanton	160
Stands, Microphone	2, 19, 26, 58, 149, 154, 194
Steadicam	35
Stereo Generator, FM	111
Stereo Modulation Monitor	27
Stereo Synthesizer	121
Strand Century	163
Studer Revox America, Inc.	161, 162
Studio Clocks	59, 152
Studio Lighting Equipment	163
Studio-Transmitter-Link (STL)	101, 110, 111, 177, 178
Aural	101, 110, 111, 177, 178
Studio Warning Lights	65
Sub-Carrier Distribution Amp, Video	80, 94
Sub-Carrier Generator (SCA)	111
Surge Protectors, Power	41, 97, 98
Surge Protectors, Telephone Line	41
Switches, Coaxial	46, 47
Switches, Meter RF	46
Switchers, Audio	50, 51, 96, 182-185
Switchers, Video	50, 51, 96, 182-185
Switchers, Video Production	77-81
Sync Generator, Video	80, 92, 172
System Delay Module (Video)	94

T

TFT (Time & Frequency Tech.)	173-178
Talley Industries Co. (Seth Thomas)	152
Tape Alignment	65
Tape, Bulk	147, 148
Tape Cartridge Racks	2, 64, 143, 144, 157
Tape Cartridges	62-64
Tape Editing Pen	109
Tape Erasers	21, 65, 87, 109
Tape Head Demagnetizer	109
Tape Reel-to-Reel Recorders	7, 8, 10, 11, 86, 87, 122, 123, 161
Tape Splice Locator	87
Tape, Splicing	65
Tape Splicer, Block	65
Technics	164
Tektronix, Inc.	169-172
Telecommunications Industries, Ltd.	128, 129
Teledyne Acoustic Research	3
Telephone Hybrid	162
Telescript	165
Television Camera Test Equipment	128, 129
Television Demodulators	96, 136, 146
Television Dummy Loads	5, 6, 29-31
Television Monitoring & Test	17, 18, 27, 37, 38, 95, 96, 137, 146, 169-171
Television Picture Monitors	37, 38, 91, 95, 169
Television Projectors, Film	90
Television Projectors, Slide	158, 159
Television Vectorscope	171
Television Waveform Monitors	170
Telex	166-168
Terminal Blocks, Audio & Power	20
Test Charts, TV Camera	128, 129
Time & Frequency Technology	173-178
Tone Arms	22, 106, 155
Tower Lighting & Accessories	76
Towers, AM, FM, TV, Microwave	179
Transceivers	70, 71
Transcription Cartridges	22, 155, 160
Transformers, Isolation, Power	41
Transmission Lines, Coaxial	12-14, 32-34, 47-49, 115-117, 125-127
Transmitters, Communications	71

Transmitters, Mobile Radio	71
Transmitters, Remote Pickup	103, 112
Transmitters, STL Aural	101, 110, 111, 177, 178
Transmitters - Studio - Link (TSL)	102
Tripods, Camera	82, 118, 194
Trompeter Electronics, Inc.	184
Turntables and Bases	164

U

Unarco-Rohn	179
UREI	181
Utah Scientific	182-185
Utility Tower	179

V

Valley People	186, 187
Vectorscopes	171
Video Character Generator	99, 100
Video Distribution Amplifiers	80, 94, 95
Video Film Projectors	90
Video Noise Meter	17, 96
Video Patch Panels / Cords	52, 180
Video Picture Monitors	37, 38, 91, 95, 169
Video Processing Systems	80, 92-95
Video Production Switchers	77-81
Video Slide Projectors	158, 159
Video Switchers	50, 51, 96, 182-185
Video Signal Generators	80, 92, 93, 172
Video Sync Generators	80, 92, 172
Video Tape Recorders	72-75
Video Test Charts, Films, Slide, Transparencies	128, 129
Vinten	188-193
Voltage Regulators	68
Voltage Transient Protectors	41

W

Warning Lights, Studio	65
Westclox	152
O C White Co.	194
Wireless Headphones	135
Wireless Microphones	167, 168
World Tower	179
Wow & Flutter Meter	65

X-Y-Z

Yagi Antennas	145
---------------	-----

PRICES AND SPECIFICATIONS ON ALL ITEMS
INCLUDED IN THIS CATALOG ARE SUBJECT
TO CHANGE WITHOUT NOTICE.

HARRIS CORPORATION BROADCAST DIVISION
P. O. BOX 4290, QUINCY, ILLINOIS 62305-4290 U.S.A. 217/222-8200

Compiled & Published by
BILL DANIELS CO., INC
Shawnee Mission, KS 66201

World Radio History



HARRIS

HARRIS CORPORATION BROADCAST DIVISION
P. O. BOX 4290, QUINCY, ILLINOIS 62305-4290 U.S.A.

BULK RATE
U.S. Postage
PAID
Permit No. 243
Shawnee Msn., Ks.