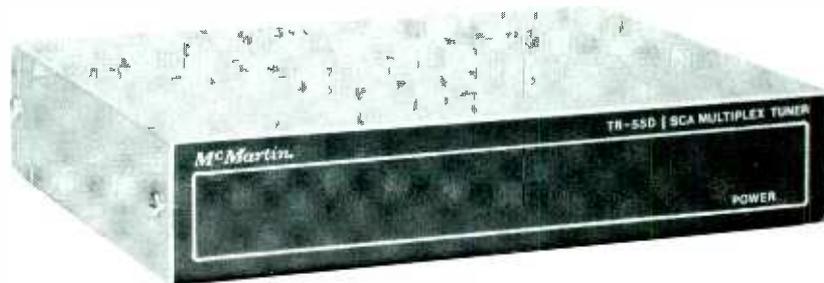


## FM/SCA TUNER

## TR-55D



**NEW PTD (Precise Tracking Decoder)**

**NEW INTEGRATED CIRCUIT SCA DEMODULATOR**

**IMPROVED MAIN/SCA SQUELCH**

**SELECTIVITY CAN BE TAILORED TO PARTICULAR REQUIREMENTS**

**60 dB ALTERNATE CHANNEL REJECTION**

**50 dB LINEAR AGC**

**IMPROVED SENSITIVITY**

**HIGH RELIABILITY**

The TR-55D is a fixed frequency, crystal controlled superheterodyne receiver feeding a newly designed McMartin PTD (Precise Tracking Decoder). The PTD will "lock-on" and accurately recover the composite main and SCA signals identical to those originally transmitted.

The front end of the TR-55D is crystal controlled and utilizes a diode protected dual gate D-MOS field effect RF amplifier with a noise figure of 1.5 dB or better at 100 MHz. This device is capable of 55 dB linear gain reduction versus typical 30-35 dB in earlier MOS FET type circuits resulting in an overall dynamic range of over 100 dB. The input and output impedances remain constant, preventing any detuning of the high "Q" RF circuits. Three high "Q" tuned circuits and a dual gate MOS-FET mixer greatly enhances the dynamic range over conventional bipolar mixers.

An entirely new IF system has been designed eliminating the multisection 10.7 MHz IF band-pass filter. Since crosstalk and selectivity are effected by the characteristics of earlier design L-C filters, the TR-55D now provides better selectivity to reject unwanted signals from alternate channels, and crosstalk has been improved considerably.

The complete sub-channel system is incorporated in a specially designed monolithic chip, which provides 60 dB of limiting and a special demodulator permitting exceptionally good AM rejection and signal-to-noise ratio.

A specially designed mute circuit is incorporated to provide noise free muting regardless of the time constant of the SCA generator in the transmitter. The mute circuit can also be adjusted to mute when the signal to noise deteriorates below the desired level. SCA muting is derived from a dual sensing circuit which senses the wide band noise of the main channel rather than the RF input level and the absence and presence of the SCA carrier.

The sub-channel audio output is available at the rear chassis phono jack at a level of 1 volt. A built-in isolation transformer has been incorporated to provide a balanced 600 ohm output. This eliminates the need of an optional output transformer.

The number of components have been greatly reduced due to the use of the new main channel IF system and the single integrated circuit for the complete SCA and audio system; less components means greater reliability.

The internal circuitry is designed to operate at approximately 13 volts DC. This voltage is derived from the internally mounted 120V AC high reluctance transformer and bridge rectifier configuration. A three-pronged AC cord is used to insure that the TR-55D tuner is properly grounded.

Power is available for driving an external RF amplifier, the SPA-2A, by simply relocating the antenna solderless input lead on the PC board from terminal "A" to "B". A rack panel is available for rack mounting the TR-55D tuner.

OCT/81

## SPECIFICATIONS

### MAIN CHANNEL

Antenna Input	50/72 $\Omega$ unbalanced
Range	88-108 MHz
Sensitivity	1 $\mu$ V for 30 dB quieting 3 $\mu$ V for 50 dB quieting
Dynamic Range	Typically 100 dB
Selectivity	60 dB alternate channel
Complete Limiting	1.5 $\mu$ V
Capture Ratio	Better than 1.5 dB
Distortion	Less than 0.2%
AM Rejection	Typically 60 dB or greater
AGC Range (typical)	55 dB
Audio Output	0.5 V RMS, 100 K $\Omega$ unbalanced

### SUBCHANNEL

Frequency	67 kHz (others available on special order)
Deviation	$\pm$ 6 kHz deviation standard
Quieting Sensitivity	3.5 $\mu$ V/30 dB quieting
De-emphasis	Modified 150 $\mu$ s standard 75 $\mu$ s available by clipping out capacitor C-37. NOTE: To reduce telemetry interference, simply remove capacitor C-35.

Crosstalk	Typically 60 dB below average mono or stereo programming
Distortion	0.5% at 400 Hz 1% or less 50-5,000 Hz
Hum and Noise	65 dB or greater below 100% modulation (400 Hz)
Audio Output	Unbalanced 1.2 V at 400 Hz $\pm$ 2 dBm 600 balance at 400 Hz

Audio Response (30-6000 Hz)	$\pm$ 4 dB
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POWER REQUIRED . . . . . 105-130 VAC, 60 Hz, 3 W

DIMENSIONS . . . . . height . . . . . 1 7/8" (4.76 cm)  
width . . . . . 10 1/8" (25.72 cm)  
depth . . . . . 6 1/4" (15.88 cm)

FINISH . . . . . McMartin blue and gray

### SHIPPING

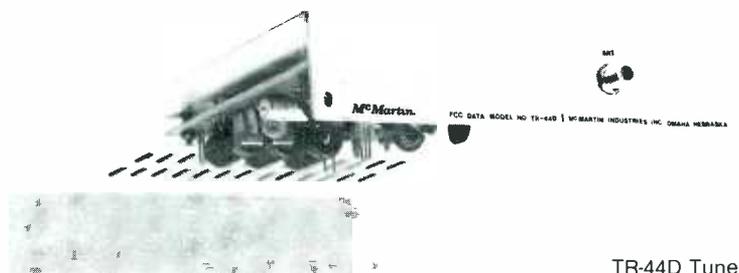
WEIGHT . . . . . 2 (.91 Kg) pounds

### ORDERING INFORMATION

Model	Description	Product Code
TR-55D	FM/SCA Tuner	20-01-030
TR-44D	Tuner Top	20-01-032
MRP-8	Rack Adaptor	30-02-032

### TUNER TOP

### TR-44D



TR-44D Tuner Top

The TR-44D tuner top is designed to convert the McMartin MS-752 into high power receiver / amplifiers by simply replacing the original amplifier cover with the TR-44D tuner top. The TR-44D receiver is powered from the internal power supply of the amplifiers.

The TR-44D tuner top utilizes the identical PC board and circuitry used in the TR-55D tuner. An adjustable resistor is used to provide the correct voltage to the tuner PC board.

The tuner tops are provided with a single Molex type connector to the power supply which is standard in the current series of McMartin amplifiers. An optional clip type connector is available for installation without soldering in older units already in the field.

The audio output of the tuner is also fed to the amplifier program input via a Molex connector, thus field installation can be simply made without a soldering iron.

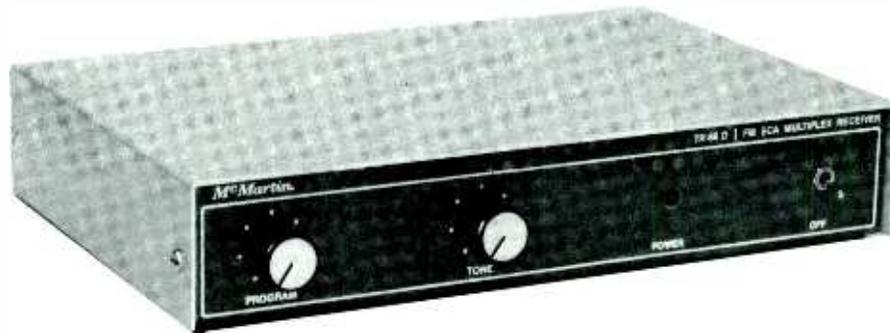
The tuner cover contains an "F" type antenna connector prewired ready to accept a coaxial cable. A connecting cable is supplied, complete with Molex connectors for connection to the proper amplifier. An instruction sheet is supplied with each unit.

The TR-44D tuner top is used on the McMartin MS-252 and 752 series amplifiers.

The electrical specifications of the TR-44D are identical to the TR-55D.

## FM-SCA MULTIPLEX RECEIVER

TR-66D



### NEW INTEGRATED CIRCUIT SCA DEMODULATOR

### TONE CONTROL

### NEW PTD (Precise Tracking Decoder)

The TR-66D is a fixed frequency, crystal controlled superheterodyne receiver feeding a newly designed McMartin PTD (Precise Tracking Decoder). The new TR-66D has many new improvements in circuit design—it presents a major advancement in receiver design.

The TR-66D utilizes a new concept in receiver design providing space age technology in which the receiver actually tracks the modulated signal from the FM transmitter. The PTD will "lock-on" and accurately recover the composite main and SCA signals identical to those originally transmitted. No multisection filters are used to disturb the original phase relationship of the transmitted signals. This system also tracks the original signal and reduces the effects of multipath.

The front end of the TR-66D is crystal controlled and utilizes a diode protected dual gate D-MOS field effect RF amplifier with a noise figure of 1.5dB or better at 100MHz. This device is capable of 55dB linear gain reduction versus typical 30-35dB in earlier MOS-FET type circuits resulting in an over-all dynamic range of over 100dB. The input and output impedances remains constant preventing any detuning of the high "Q" RF circuits. Three high "Q" tuned circuits and a dual gate MOS-FET mixer greatly enhances the dynamic range over conventional bi-polar mixers.

An entirely new IF system has been designed eliminating the multisection 10.7 MHz IF band-pass filter. The system has been encapsulated within a specially designed hybrid chip. Since crosstalk and selectivity are effected by the characteristics of earlier design L-C filters,

### 5 WATT AUDIO AMPLIFIER

### 50dB LINEAR AGC

### IMPROVED SENSITIVITY

the TR-66D now provides better selectivity to reject unwanted signals from alternate channels, and crosstalk has been improved considerably.

Provisions are available for the simple addition of a low cost filter to greatly increase the selectivity of the TR-66D receiver in difficult areas at the expense of slightly increased crosstalk.

The complete sub-channel system is incorporated in a specially designed monolithic chip, which provides 60dB of limiting and a special demodulator permitting exceptionally good AM rejection and signal-to-noise ratio.

A specially designed mute circuit is incorporated in the chip to provide noise free muting regardless of the time constant of the SCA generator in the transmitter. The mute circuit can also be adjusted to mute when the signal to noise deteriorates below the desired level. SCA muting is derived from a dual sensing circuit which senses the wide band noise of the main channel rather than the RF input level and the absence and presence of the SCA carrier.

The sub-channel audio output is available at the rear chassis phono jack at a level of 1 volt. A built-in isolation transformer has been incorporated to provide a balanced 600 ohm output. In earlier receivers this required the optional MT-7 transformer.

The audio amplifier section utilizes two integrated circuits connected in a balance configuration to distribute heat uniformly over two output devices rather than one.

*continued*

DEC/77

*TR-66D continued*

The integrated circuits are protected with thermal cut out and will shut down if the temperature exceeds a safe upper limit. They will return to operation after temperature is reduced. The power supply also limits the output dissipation and protects the output IC's if system is overloaded.

The number of components has been greatly reduced due to the use of the hybrid main channel IF system and the single integrated circuit for the complete SCA and audio system; fewer less components means greater reliability.

The internal circuitry is designed to operate at approxi-

mately 22 volts DC. This voltage is derived from the internally mounted 120V AC high reluctance transformer and bridge rectifier configuration. A three-pronged AC cord is used to insure that the TR-66D receiver is properly grounded.

Power is available for driving an external RF amplifier, the SPA-2A, by simply relocating the antenna solderless input lead on the PC board from terminal "A" to "B". A rack mount is available for rack mounting the TR-66D receiver.

From McMartin, the pioneer in SCA, comes the latest reliable, stable and precision FM/SCA receiver, the TR-66D.

## SPECIFICATIONS

### MAIN CHANNEL

Antenna Input .....	.50/72 ohms unbalanced
Range .....	88-108 MHz
Sensitivity .....	1.0 microvolt for 30dB quieting 3.0 microvolt for 50 dB quieting
Dynamic Range .....	Typically 100 dB
Selectivity .....	.50 dB alternate channel (standard) can be tailored to 65 dB with slight increase in crosstalk.
Complete Limiting .....	1.5 microvolts
Capture Ratio .....	Better than 1.5 dB
Distortion .....	Less than 0.2%
AM Rejection .....	Typically 60 dB or greater
AGC Range (typical) .....	55 dB
Audio Output .....	.01 volts (rms), 100K ohms unbalanced
<b>SUBCHANNEL</b>	
Frequency .....	.67 kHz (others available on special order)
Deviation .....	±6 kHz deviation standard
Quieting sensitivity .....	3.5 microvolts/30 dB quieting

De-emphasis .....	Modified 150 microsecond standard 75 microsecond available.
Crosstalk .....	Typically 60 dB below average mono or stereo programming
Distortion .....	0.5% at 400 Hz 1% or less 50-5000 Hz
Hum and Noise .....	.60 dB or greater below 100% modulation (400Hz)
Audio Output .....	Unbalanced 1.0 volts at 400 Hz +2 dBm 600 balance at 400 Hz

### AUDIO AMPLIFIER

Power Output .....	.56 watts music power 4 watts (rms)
Outputs .....	.8 ohm, 25 and 70 volt line
Tone Control .....	10dB bass cut at 50Hz
Hum and Noise .....	.65dB or greater below full output

POWER REQUIRED .....	120 V ac, 60Hz 15 watts UL approved transformer
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DIMENSIONS .....	1 7/8" (4.76 cm) height 10 1/8" (25.72 cm) width 7 3/4" (19.69 cm) depth
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FINISH .....	McMartin blue and gray
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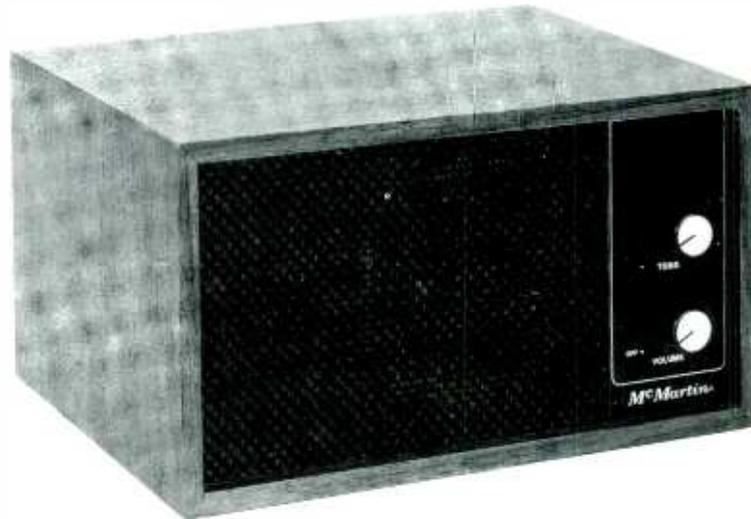
SHIPPING WEIGHT .....	3 pounds
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### ORDERING INFORMATION

TR-66D .....	FM/SCA Multiplex Receiver	20-01-004
MRP-8 .....	Rack Adaptor	30-02-032

## FM/SCA EDUCATIONAL RECEIVER

TR-E5B



The McMartin TR-E5B is designed especially for FM/SCA reception of radio reading service programming for the visually handicapped, but is an excellent choice for any SCA application where an attractive, high quality tabletop receiver is desired.

**EASY OPERATION** Ease of operation and convenience to the listener were the prime considerations in designing the TR-E5B. There are only two controls. One is a combined on/off switch and volume control; the other is a tone control.

**BUILT-IN LOUDSPEAKER AND AMPLIFIER** A large permanent magnet loudspeaker is provided for a rich full tone. The built-in amplifier provides volume adequate for individual and group listening.

**MAIN CHANNEL/SCA CHANNEL SELECTION** Since SCA programming is broadcast as a sub-channel along with an FM broadcasting station's regular programs, the TR-E5B has a rear panel switch which allows the user to change between main channel and SCA programs.

**AUXILIARY JACK** An auxiliary miniature phone jack is provided for connecting the receiver to other sound systems or recording equipment.

**EXTERNAL ANTENNA CONNECTION** Terminals are provided to allow the connection of an outside antenna in fringe reception areas, or for connecting to a master antenna system.

**HEADPHONE JACK FOR PRIVATE LISTENING** A standard (1/4") headphone jack is provided for connection of low impedance headphones. The loudspeaker is automatically muted when headphones are plugged in.

The TR-E5B is housed in an attractive simulated wood grain cabinet. Its electronic circuits are the result of years of experience and research in FM/SCA technology. The TR-E5B is rugged, stylish, reasonably priced, and an excellent performer. It is another example of the high quality engineering and construction that have made McMartin Industries the world's largest manufacturer of FM/SCA equipment.

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## SPECIFICATIONS

### MAIN CHANNEL

Range .....	Single frequency in range of 88-108MHz, crystal controlled
RF input .....	Telescopic antenna, Provision for external 50/75 ohm unbalanced antenna
Sensitivity .....	1.2 microvolts for 30db quieting
Selectivity .....	45db rejection of alternate channel

### SUBCHANNEL

Frequency .....	.67KHz, $\pm$ 6KHz deviation. Other frequencies available on special order
Sensitivity .....	4.5 microvolts/30db quieting
Selectivity .....	Two-section bandpass filter and phase-locked loop
Deemphasis .....	Modified 150 microseconds, 75 microsecond available by simply clipping out capacitor C-39
Crosstalk .....	Stereo to SCA or main to SCA: 50db or greater below a 400Hz reference tone.

POWER SOURCE ..... 117/125 VAC, 50/60Hz

DIMENSIONS ..... 5½" (13.97cm) Height  
9½" (24.13cm) Width  
8" (20.32cm) Depth

FINISH ..... Walnut finish wood cabinet

SHIPPING WEIGHT ..... 6 pounds

### INTERNAL AUDIO SYSTEM

Frequency Response .....	Tailored to the internal 5 inch speaker system
Tone Control .....	0-10db low frequency roll off at 50Hz. <b>Note:</b> Does not affect auxiliary output jack.
Output .....	1 watt, 100-4500Hz
Distortion .....	0.5% (400Hz) typical; less than 2.0% $\pm$ 6KHz deviation, 100-4500Hz at 1 watt
Hum & Noise .....	55db below 1 watt at 400Hz

### AUXILIARY OUTPUT JACK

SCA Channel Frequency Response .....  $\pm$ 3.0db, 50-6000Hz modified 150 microseconds deemphasis

Main Channel Frequency Response .....  $\pm$ 3.0db 50-15,000Hz

Output Level (Main or SCA) ..... 500 millivolts into 50K-ohm load

Hum & Noise ..... SCA typically greater than 55db below 1 volt

HEADPHONE JACK ..... 8 ohm impedance and 1 watt output response same as internal audio system.

### ORDERING INFORMATION

MODEL NO.	DESCRIPTION	PRODUCT CODE
TR-E5B .....	FM/SCA Receiver, crystal controlled	40-02-007

*McMartin.*

FM/SCA  
educational  
receiver

# TR-E6B



Long the world leader in the design and manufacture of sophisticated FM subchannel receivers for industrial applications, McMartin Industries presents the most modern, expertly engineered receiver for large-volume, personalized users of specialized FM subchannel programs.

Intended primarily for the visually-handicapped, or special educational groups the McMartin Model TR-E6B Receiver affords reliable, stable and economical reception of the special programming transmitted over the subchannel of an FM broadcast station.

The TR-E6B operation is simple, with only two front-panel operating controls. One is a combination on-off switch and volume control. The other is a tone control adjustment for optimum, noise free listening.

The TR-E6B uses a telescoping whip antenna which may be oriented for best reception. For convenience in fringe-area locations, terminals are provided for attaching an outside, directional FM antenna.

Intelligibility is enhanced by a self-contained loudspeaker. Auxiliary recording equipment may be attached to the TR-E6B through a rear-panel output jack. This permits, by tape-recording, the retention of material of special interest, or delayed playback of programs at a more convenient time. An earphone jack permits use of headphones which when used mute the TR-E6B loudspeaker.

A rear panel switch is used to select either a main (MN) or sub-channel (MX) program.

To assure maximum protection against electrical shock to the user, the TR-E6B is powered from a sealed, shockproof transformer which plugs directly into a standard wall receptacle. The power cord interconnecting this sealed unit and the receiver carries a voltage which is much too low to present any hazard to the TR-E6B user.

The well-styled TR-E6B cabinet is of durable plastic in attractive, modern styling.

## SPECIFICATIONS

<b>OPERATING FREQUENCY</b> .....	Crystal controlled, factory tuned to a specific channel in the range of 88 to 108 MHz	<b>AUDIO OUTPUT (speaker)</b>	
<b>SENSITIVITY</b> .....	.5 microvolts for 30 dB quieting in subchannel	<b>Power</b> .....	100-4000 1.0 watt, rms
<b>CROSSTALK</b> .....	Main to subchannel, at least 48 dB below a 400 Hz reference tone	<b>Frequency response</b> .....	±3 dB, 150 microsecond mod. de-emphasis curve, 100 to 4500 Hz
<b>HUM &amp; NOISE</b> .....	.55 dB or greater below full modulation of subcarrier	<b>AUXILIARY AUDIO OUTPUT (phono jack)</b>	
<b>ANTENNA</b> .....	Telescopic whip antenna. (Terminals provided for optional external FM antenna)	<b>Level</b> .....	.500 millivolts, rms @ 400 Hz
<b>DISTORTION</b> .....	Less than 2.0%, 100 to 4,500 Hz, at 1 watt output	<b>Frequency response</b> .....	±3 dB, 150 microsecond mod. de-emphasis curve, 100 to 4000 Hz
		<b>DIMENSIONS:</b> .....	3¾" (9.5 cm) high 11¾" (29.8 cm) wide 9" (22.9 cm) deep

MAY/77

# McMartin

75 WATT AMPLIFIER

MS-752



**BUILT IN MUTING/TONE CONTROLS**

**4 & 8 OHM UNBALANCED/25V AND 70.7V BALANCED OUTPUTS**

**BASIC POWER AMPLIFIER — WITH OPTIONAL DUAL-MIXER INPUTS**

**OPTIONAL TR-44D, TUNER TOP, FOR FM/SCA RECEIVER CONVERSION.**

The McMartin MS-752, 75-watt unit consists of a basic power amplifier, expandable by the use of plug-in modules, to provide a wide variety of optional input functions ranging from low-impedance microphone and equalized phono preamplifiers to specialized chime/siren effects (see accessory listing). Any combination of two input modules can be accommodated.

The MS-752 amplifier can also be converted to a FM/SCA receiver by replacing the present top cover with the optional McMartin Tuner Top, the TR-44D. This new tuner utilizes the newly designed McMartin PTD (Precise Tracking Decoder), a concept of space age technology in which the tuner actually tracks the modulated signal from the FM transmitter. The PTD will "lock-on" and accurately recover the composite signal identical to those originally transmitted.

The basic amplifier includes as standard features a high-impedance auxiliary input directly to the power amplifier, a 25K-ohm unbalanced program line-level input (convertible to 15K-ohm balanced bridging operation with the optional MT-2 transformer);  $\pm 15$  dB treble/bass control of the program

input channel and electronic muting circuitry for use when the optional microphone preamplifier modules are used.

The MS-752 provides full 75-watt rms output to loads varying from 4 to 8 ohms unbalanced to 25-volt or 70.7-volt balanced lines.

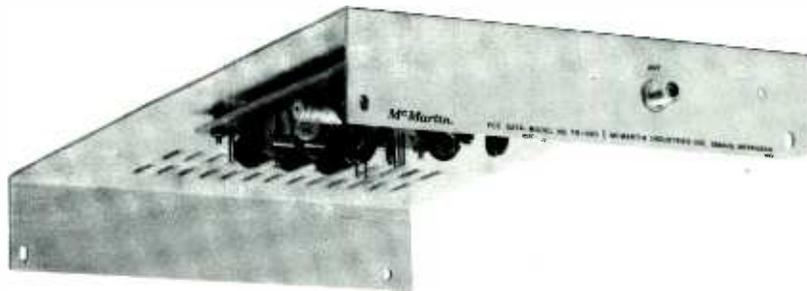
Short-circuit and overload protection are designed into the MS-752. The line-level input includes a screwdriver-adjust internal gain limit control and the tone compensation controls are also of this type to prevent tampering by non-technical personnel after installation adjustments have been made. The MS-752 performance characteristics are excellent with less than 1.0% total harmonic distortion at full 75-watt sine wave output and  $\pm 1.0$  dB frequency response from 50 to 15,000 Hertz through the program channel input. An unswitched auxiliary power receptacle is provided for powering external accessory equipment. The inputs and outputs appear on rear-chassis screw-type terminal strips.

The MS-752 is finished in McMartin blue and silver gray and may be readily rack-mounted with the accessory MRP-5 Rack Adaptor Kit.

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McMartin Industries Inc ■ 4500 South 76th Street ■ Omaha, Nebraska 68127 ■ (402) 331-2000 ■ Telex 484485

PRINTED IN U.S.A.



optional TR-44D, Tuner Top

## SPECIFICATIONS

<b>POWER OUTPUT</b> .....	.....75 watts, rms 105 watts, music 150 watts, peak
<b>DISTORTION</b> .....	.....Less than 1.0% at 75 watts, rms output; 50 to 15,000 Hz
<b>OUTPUT REGULATION</b> .....	.....2.0 dB or less
<b>FREQUENCY RESPONSE</b>	
Program Input .....	.....±1.0 dB, 40-15,000 Hz
Microphone Input (with optional MSA-1 module) .....	±2.0 dB, 50-15,000 Hz (flat response) -12.0 dB @ 50 Hz (equalized for speech)
Auxiliary Input .....	.....±1.0 dB, 40-15,000 Hz
<b>tone CONTROLS</b>	
(Program Channel) .....	.....Bass: ±15 dB @ 50 Hz Treble: ±15 dB @ 15,000 Hz
<b>HUM &amp; NOISE LEVEL</b> (below +49 dBm Output):	
Program or Auxiliary Inputs .....	.....-75 dB
Microphone Input (with optional MSA-1 module) .....	.....-55 dB
<b>INPUTS</b>	
Program .....	.....25K-ohm unbalanced; 15K-ohm balanced bridging w/optional MT-2 transformer.
Auxiliary .....	.....40K-ohm unbalanced (phono jack termination).
Optional (Two) .....	.....See Accessory List for optional plug-in modules.
<b>OVERALL GAIN</b>	
Program Input (with MT-2 transformer) .....	.....60 dB
Auxiliary Input .....	.....60 dB
Microphone (with MSA-1 module) .....	.....112 dB

<b>OUTPUTS</b> .....	.....4 & 8 ohms unbalanced; 25-volts & 70.7 volts, balanced.
<b>MUTING</b> .....	.....Electronic channel switching. Normally, microphone channel "off", program channel "on". Grounding mute terminal turns microphone channel "on" and program channel, "off".
<b>CONTROLS/ INDICATORS</b>	
Front .....	.....Program volume Microphone (one or two optional) Power on/off (illuminated)
Rear .....	.....Bass, treble, and program gain limit (screwdriver adjustable).
<b>POWER REQUIREMENTS</b> .....	.....105/115, 115/125 Vac (primary taps) 60 Hz. 150 watts @ RPO; 25 watts idling; 200 watts, short circuited output.
<b>WEIGHT</b> .....	.....13 pounds
<b>DIMENSIONS</b> .....	.....14" (35.6 cm) wide 3½" (8.9 cm) height 9¼" (23.5 cm) deep

## ORDERING INFORMATION

MODEL	DESCRIPTION	PRODUCT CODE
<b>MS-752</b> .....	75 watt, transistor, 2 plug-in options	<b>20-04-006</b>
<b>MRP-5</b> .....	Rack Adapter	<b>30-02-025</b>
<b>MT-2</b> .....	Balanced Gridging transformer	<b>20-04-042</b>

## ACCESSORY LIST

<b>MSA-1</b>	150-ohm balanced microphone preamplifier module
<b>MSA-4</b>	Telephone page adaptor (balanced bridging) module
<b>MSA-5A</b>	Electronic chime module
<b>MSA-10</b>	Balanced high level input module
<b>MSA-11</b>	Unbalanced high level input module
<b>MSA-14</b>	Ceramic phono preamplifier module
<b>MSA-15</b>	Equalized phono (magnetic) preamplifier module
<b>MSA-16</b>	40K-ohm unbalanced microphone preamplifier module
<b>MSA-17</b>	Siren (wail and steady tone) module
<b>MSA-18</b>	Siren (warble and steady tone) module
<b>MSA-19</b>	Electronic buzzer module
<b>MT-2</b>	15K-ohm bridging transformer
<b>MRP-5</b>	Rack Mount Adaptor Kit
<b>TR-44D</b>	Tuner Top (FM/SCA)

## MAST MOUNTED RF PREAMPLIFIER

SPA-2A



### NARROW BAND RF AMPLIFIER

### GAIN/LOSS CONTROL

### WEATHERPROOF

The McMartin SPA-2A is a narrow band, mast-mounted weatherproof antenna preamplifier which can be mounted directly at the antenna head thus compensating for the losses occurring in long antenna feed cables. This provides the best possible signal to the input of the receiver in fringe areas.

A combination gain/loss preamplifier can be adjusted to just overcome the cable losses and prevent overload of the receiver, virtually eliminating overload and cross-modulation problems.

DC power is simplexed from any McMartin SCA re-

### FIVE HIGH "Q" TUNED CIRCUITS

### EASY FIELD INSTALLATION

### LOW NOISE DMOS FET AMPLIFIER

ceiver via the coaxial cable to eliminate the need for an external power supply and simplify field wiring.

An optional 120 VAC/13Vdc power supply Model PS-13 is available for installations employing receivers of other manufacturers that do not have 13Vdc available at the antenna output.

This antenna preamplifier is not intended to increase the sensitivity of the receiver but will produce additional front end selectivity and overcome losses in long cables which represents noise.

## SPECIFICATIONS

<b>FREQUENCY RANGE</b> .....	88-108 mHZ
<b>INPUT IMPEDANCE</b> .....	50-72 ohm nominal
<b>OUTPUT IMPEDANCE</b> .....	50 ohm
<b>TERMINATION</b> .....	Type "F" connectors
<b>SELECTIVITY</b> .....	-3 db @ ±200 KHZ -6 db @ ±400 KHZ
<b>GAIN</b> .....	.0 to +12 db
<b>ATTENUATION</b> .....	.0 to -25 db
<b>SUPPLY VOLTAGE</b> .....	+13 Vdc normally obtained from a McMartin receiver through coaxial cable
<b>TEMPERATURE RANGE</b> .....	-20°C to +65°C -4°F to +150°F

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<b>CONTROL</b> .....	Gain/loss adjustable
<b>SIZE</b> .....	.4" (10.16 cm) width 2.25" (5.72 cm) height 2.25" (5.72 cm) depth weatherproof housing.
<b>WEIGHT</b> .....	1.5 lb.
<b>MOUNTING BRACKET</b> .....	U bolt clamp
<b>COLOR</b> .....	McMartin silver grey
<b>ACCESSORIES</b>	
<b>PS-13</b> .....	120 VAC/13 Vdc power supply

## ORDERING INFORMATION

MODEL	DESCRIPTION	PRODUCT CODE
<b>SPA-2A</b> .....	Mast Mounted RF Preamplifier	<b>20-01-511</b>
<b>PS-13</b> .....	AC Power Supply	<b>20-01-024</b>

## 24 VOLT DC POWER SUPPLY

PS-12A



**REGULATED OUTPUT  
SHELF MOUNTING  
VENTILATED HOUSING**

**FULL 3.0 AMP OUTPUT  
RACK MOUNTING (OPTIONAL)**

### DESCRIPTION

The PS-12A is a regulated 24 volt, dc power supply for use with McMartin intercommunication and sound systems. Designed for full-service applications, the PS-12A is supplied for shelf mounting.

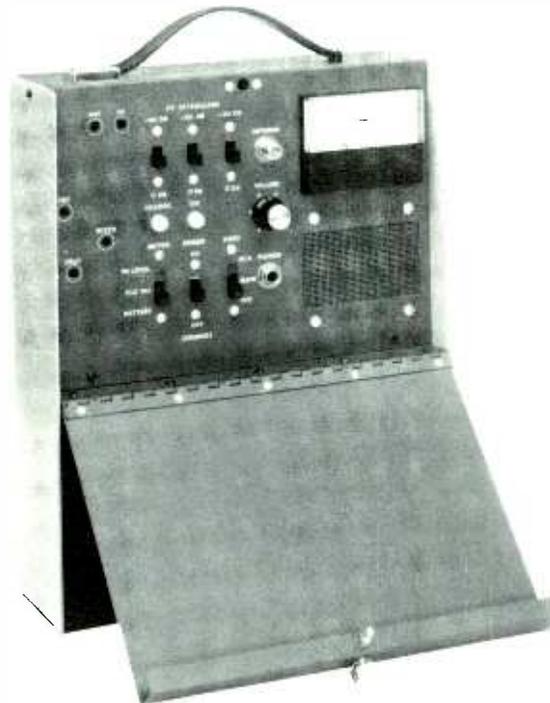
### SPECIFICATIONS

<b>OUTPUT VOLTAGE</b> .....	24 Vdc (nominal) regulated
<b>OUTPUT CURRENT</b> .....	.0 to 3.0 amps
<b>INPUT</b> .....	120 Vac 50/60 Hz
<b>PROTECTION</b> .....	1.0 ampere primary fuse
<b>SIZE</b> .....	8.0"w x 4.0"d x 3¼"h
<b>FINISH</b> .....	Flat black enamel
<b>WEIGHT</b> .....	.10 pounds

JUNE/75

## FM/SCA SIGNAL ANALYZER

TX-200A



**MAIN/SCA CHANNEL SPEAKER OR HEADPHONE MONITORING**  
**RELATIVE FIELD STRENGTH METER**  
**SCA INJECTION LEVEL METERING**

**COMPLETELY PORTABLE**  
**AC POWER SUPPLY/CHARGER OPTIONS**  
**ANTENNA PREAMP POWER SOURCE**

### DESCRIPTION

The McMartin TX-200A is a highly valuable instrument for determining optimum receiving antenna location and orientation for background music installations.

Completely portable, powered by standard D-cell batteries, the TX-200A provides relative field strength readings of the FM station being checked. To minimize front-end overload effects, 60 dB of RF attenuation, in three 20-dB steps, may be inserted with slide switches. Observation of SCA injection level permits antenna orientation for minimum multipath distortion. Metering of the RF signal level, SCA injection level or battery condition is selected by means of a three-position switch. Both main channel and sub-channel audio may be monitored

by a built-in audio amplifier with loudspeaker or headphone output available. The audio amplifier may be switched off to conserve battery power when meter readings are taken.

Front panel access to tuned RF circuits is available for receiver adjustments.

Power is available for mast-mounted antenna pre-amplifiers so that actual conditions may be simulated.

The TX-200A is of rugged construction with hinged front panel to provide protection during transportation and set-up.

The TX-200A is an indispensable SCA installation tool . . . another fine product of McMartin Industries.

MAY/78

## SPECIFICATIONS

### MAIN CHANNEL

**Frequency range:** .....One crystal controlled frequency (specify when ordering) in range or 88-108MHz

**Input impedance:** .....50-72 ohms, nominal

**Sensitivity:** .....1.5 microvolts for 30 dB quieting. Complete limiting @ 3  $\mu$ V. (Total of 60 dB attenuation may be inserted in three 20 dB steps)

**Capture ratio:** .....1.5 dB

**Distortion:** .....Less than 1.0% @ 100% modulation (400 Hz)

**Metering:** .....Relative field strength meter. (0-50, 0-500, 0-5000, 0-50,000  $\mu$ V scales.)

### SUBCHANNEL

**Frequency:** .....41 or 67 kHz standard. 26, 42 or 65 kHz optional. (Specify when ordering.)

**Sensitivity:** .....5.0  $\mu$ V for 30 dB quieting @ 10% injection. 3.0  $\mu$ V for 45 cB @ 20% injection.

**Distortion:** .....Less than 0.8%  $\pm$  6 kHz deviation (400 Hz)

**Crosstalk:** .....-55 dB; Main to SCA, SCA to SCA or stereo to SCA

**Metering:** .....SCA injection level. Scale 0-20%

**POWER SUPPLY:** .....Nine (9) long life alkaline or carbon-zinc type D-cells (not supplied).

**DIMENSIONS:** .....(w) 9 $\frac{1}{2}$ ", (h) 12", (d) 3 $\frac{1}{4}$ "

**WEIGHT:** .....15 pounds, including batteries

**FINISH:** .....McMartin Blue and Gray

### ORDERING INFORMATION

MODEL	DESCRIPTION	PRODUCT CODE
TX-200A	FM/SCA Signal Analyzer	20-01-018

## SPEAKER LINE TEST SET

TX-700



**MEASURES SPEAKER LINE IMPEDANCE**  
**COMPLETELY PORTABLE**  
**ALL SOLID STATE**  
**IMPEDANCE TO WATTAGE CHART**

**CHECKS CONTINUITY**  
**MODERATE COST**  
**25 OR 70.7 VOLT LINES**  
**SIMPLE THREE STEP OPERATION**

### DESCRIPTION

The McMartin TX-700 is a portable test set designed to measure the impedance of balanced speaker lines on 25 volt and 70.7 volt sound systems. The TX-700 is completely portable and self contained with an internal battery source. In addition to measuring speaker line impedance, the TX-700 may also be used to check continuity via an internal speaker and the oscillator/power amplifier, thus eliminating the need for a buzzer box in most instances. The TX-700 consists of a phase shift oscillator, power amplifier and differential comparator. The test frequency from the oscillator is amplified by the power amplifier to drive the speaker line under test. The sinusoidal voltage developed across the unknown speaker line and the voltage developed across an internal calibrated impedance are connected to the two (2) inputs of the comparator. When the calibrated internal impedance is adjusted to equal the unknown speaker line impedance, the differential voltage is zero and the meter returns to mid-scale (zero center). The impedance of the speaker line under test may then be read directly from the range switches.

MAY/74

### SPECIFICATIONS

**TEST RANGE** ..... 0-800 ohms

**OUTPUT POWER** ..... 1.0 watt (RMS) maximum

**TEST FREQUENCY** ..... 400 Hz (Nominal)

**NULL INDICATOR** ..... Zero center micro-amp meter

### CONTROLS

**External** ..... Function Switch (Off—Continuity—Z test)  
Zero Potentiometer  
Range Switch (coarse adjustment)  
Z1 Potentiometer (fine adjustment 0-100 ohms)  
Z2 Potentiometer (fine adjustment 100 to 800 ohms)

### CONTROLS

**Internal** ..... Amplifier Input Level (semi-concealed)  
Power Amplifier Bias  
Oscillator Stability

**POWER SOURCE** ..... 22.5 volt battery (Eveready Type 763)

## SCA-PLUS SYSTEM



**BSP-2800** Dual Channel SCA Encoder



**SPL-2800A** Audio Channel Decoding Filter  
**SPH-2800A** Data Channel Decoding Filter



**SPL-2800B** Audio Channel Decoding Filter  
**SPH-2800B** Data Channel Decoding Filter

**TRANSMIT AURAL AND DATA SIGNALS SIMULTANEOUSLY OVER THE SAME FM/SCA CHANNEL**  
**USE ALL EXISTING RECEIVERS AND TRANSMITTING EQUIPMENT**  
**NO CROSSTALK**  
**LOW COST**

The McMartin SCA-Plus system allows an audio signal and a digital data signal to be transmitted *simultaneously* over the *same* SCA subchannel of an FM carrier. For example, a background music service and a business information service (feeding Teletype or computer style terminals) can now make use of the same SCA channel.

SCA-Plus makes use of a band-sharing scheme in which those frequencies containing most of the energy of voice and music broadcasts are allocated for aural information, while the less used frequencies are reserved for transmission of specially encoded digital information.

The SCA-Plus system consists of one headend unit, the BSP-2800 encoder, and four decoding filters, each designed for a specific application. All SCA-Plus components are fully compatible with existing FM excitors, monitors, and tuners. The SCA-Plus units are used in conjunction with existing FM/SCA equipment.

The McMartin *BSP-2800* is used to feed the audio and data signals into the SCA input of an FM transmitter. It contains its own power supply and mounts into a standard 19" equipment rack.

Inputs: Audio signal      Outputs: Composite output  
          Data signal

*Decoding filters* are used in conjunction with standard SCA receivers to separate the desired signal from the composite dual channel SCA signal.

The "SPL" models retrieve the *audio channel* signal, the "SPH" models retrieve the *data channel* signal.

The "A" models are circuit boards designed for internal mounting in an SCA tuner or tuner/amplifier.

The "B" models are each housed in a metal box and contain input/output transformers. They are designed for external connection between the SCA tuner and power amplifier. The "B" model decoding filters allow rapid field conversion to the SCA-Plus system without any modification of existing FM/SCA equipment.

*A word about data communications hardware . . .*

Most aural FM/SCA operators wishing to expand into SCA data communications will probably carry a franchised data service. The franchiser will usually provide the data signal in a format ready to be inserted into a McMartin BSP-2800 Dual Channel SCA Encoder, and will also make available the necessary display hardware.

If you wish to generate your own digital data, McMartin Industries can provide you with information about equipment requirements.

OCT/78

# MCMARTIN

FM/SCA RECEIVERS

Effective May 1, 1979 • DOMESTIC PRICE SCHEDULE

## SCA TUNERS / RECEIVERS

Model	Description	Product Code	Price
TR-55D	Tuner	20-01-003	\$ 97.00
TR-66D	Tuner/Receiver	20-01-004	130.00
TR-E5B	Receiver	40-02-007	75.00
TR-E6B	Receiver	40-02-004	59.00
TR-E7	Portable receiver	40-02-010	84.00
TR-44D	Tuner top - fits on MS-252 and MS-752 amplifiers, MS-500 & MS-1000	20-01-005	85.00

## ACCESSORIES

LT-10B	6-watt amplifier (TR-66A/B/C)	20-01-015	34.00
LT-20A	12.5 watt amplifier	20-01-016	47.00
MSA-1A	Microphone preamp (LO-Z) (TR-66C)	20-04-021	18.00
MSA-2	Tone controls (TR-66C)	20-04-022	13.00
MT-7	Output transformer	20-01-023	15.00
MRP-8	Rack mount kit for TR-55D, TR-66D, and MS-105	30-02-032	20.00

## RELATED EQUIPMENT

MS-105	5-watt amplifier	20-04-011	50.00
SPA-2A	Preamp/Attenuator	20-01-511	42.00
PS-13	Power supply	20-01-024	32.00
TX-200A	Field strength meter	20-01-018	360.00
TX-700	Speaker line test set	20-04-009	144.00
	763 battery	30-03-003	9.00
A-72-SF-3	3 element Yagi-cut to frequency (2 per carton)	20-03-001	18.00 ea
A-72-SF-5	5 element Yagi-cut to frequency	20-03-002	31.00
AS-1	Stacking harness for A-72-SF-5	20-03-003	28.00

## SCA-PLUS PRODUCTS

BSP-2800	Dual channel SCA encoder	10-01-030	495.00
SPH-2800A	Data channel decoding filter board	20-01-010	27.00
SPH-2800B	Data channel decoding filter -- stand alone model	20-01-011	40.00
SPL-2800A	Audio channel decoding filter board	20-01-012	27.00
SPL-2800B	Audio channel decoding filter -- stand alone model	20-01-013	40.00

ALL ORDERS MUST USE PRODUCT CODE NUMBERS  
 ALL PRICES ARE FOB FACTORY AND SUBJECT TO CHANGE WITHOUT NOTICE  
 MINIMUM ORDER \$15.00

**broadcast**

**MC MARTIN**

