broadcast

McMartin®

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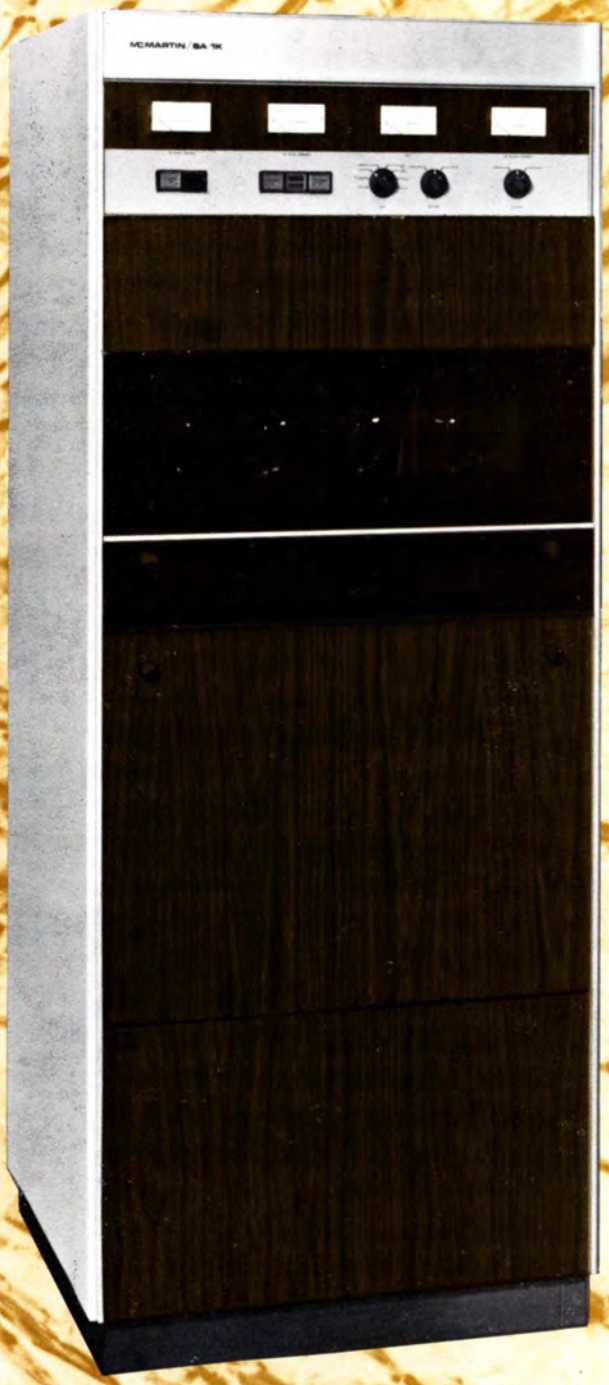
McMartin Industries Inc • 4500 South 76th Street • Omaha, Nebraska 68127 • Phone (402) 331-2000

McMartin®

1000/500/250 watt AM TRANSMITTER BA-1K



excellent performance specifications for that crisp, clean sound
unique accessibility both front and rear
125% positive peak capability
power driven vacuum variable tuning/loading controls
1200 watts output with pushbutton Hi-Lo power operation
full remote control/metering capability
built-in dummy load
totally solid state except for four 4-500A tubes
that provide rugged, reliable, economic operation

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DESCRIPTION

The BA-1K delivers outstanding performance and reliability. It sounds clean and crisp...and it stays on the air. Initial investment is reasonable. Operating and maintenance costs, low.

We can't do anything about your programming to attract and hold an audience, but the BA-1K makes your programming sound great ... and by selection of quality components and application of conservative design details, the BA-1K delivers reliability.

The BA-1K satisfies technical demands for ease of initial installation, tune-up and maintenance. Access to subassemblies and components is outstanding. By opening the hinge-down front panel, all solid-state low level AF and RF stages and the low-voltage control power supply are easily inspected and adjusted.

The blower assembly is mounted on the inner surface of the hinged rear door for 'out-in-the-open' maintenance.

The RF power amplifier, and the modulator stages each use a pair of highly-reliable, moderately priced 4-500A tubes. During operation these tubes are visible through the cabinet front observation window.

The RF power amplifier output consists of a tuning/matching full pi-T network. Plate tuning is by means of a motor-driven vacuum capacitor. Output loading is adjusted by a motor-driven slug located concentrically in the output T-network inductor. The shunt capacitor in the output T-section, in conjunction with an adjustable tap on the input inductor of the T, permits precise adjustment for maximum second harmonic attenuation.

The BA-1K incorporates a built-in dummy load.

The modulator stage uses a high-quality, oil-filled modulation transformer, capacity-coupled to a modulation reactor to isolate RF power amplifier plate current from the modulation transformer secondary winding.

The RF exciter and AF driver stages are completely solid-state. The crystal oscillator operates in the 2160 to 4320 kiloHertz range. The operating frequency range of 540 to 1600 kHz is established by division of the crystal frequency by four for the range from 540 to 1080 kHz and by two, to cover the 1090 to 1600 kHz range.

The AF driver stages operating Class A are of solid-state design up to the grids of the 4-500A AB1 modulator tubes. Resistor-capacitor feedback networks give approximately 10 dB of feedback compensation.

The BA-1K is fully metered. Individual, eye-level 4½" panel meters display PA plate current and voltage, RF line current, plus a nine-position multimeter for measurement of secondary operating parameters.

The BA-1K may be operated by remote control. All mechanical drives for plate tuning and output loading as well as on/off/power change switching are terminated for ready interconnection to standard remote control systems.

The BA-1K has 1200-watt output capability, leaving a more-than adequate power reserve. This permits smooth 125% positive peak modulation and reflects the truly conservative design factors which contribute to BA-1K reliability.

The BA-1K is handsomely-styled in an extremely rugged steel cabinet. Removable side panels give ready access to wiring harnesses. Those within the cabinet are housed in protective channelling.

The BA-1K - a pleasure to own - a pleasure to maintain - a pleasure to listen to!

SPECIFICATIONS

FREQUENCY RANGE	540 to 1600 kiloHertz (supplied on one specified frequency)
POWER OUTPUT	1000/500/250 watts. May be operated at any two specified power levels. Pushbutton power change standard. Maximum output capability: 1200 watts
OUTPUT IMPEDANCE	50 ohms unbalanced. Other impedances available on special order
FREQUENCY STABILITY	±5 Hertz over ambient temperature range
CARRIER SHIFT	3% maximum
NOISE LEVEL	60 dB or greater below 100% modulation @ 1000 Hertz
MODULATION CAPABILITY	100% negative peaks 125% positive peaks
AF FREQUENCY RESPONSE	±1.0 dB, 50-10000 Hz 1-kw output 100% modulation
AF HARMONIC DISTORTION	2.5% or less, 50-10000 Hz 1-kw output, 100% modulation Sine wave input
AUDIO INPUT IMPEDANCE	150/600 ohms, balanced
AUDIO INPUT LEVEL	+10, ± 2, dBm
POWER SOURCE	208/230 Vac, 50/60 Hz, single phase
POWER CONSUMPTION	4500 watts (1200 watts output, 100% modulation)
AMBIENT TEMPERATURE RANGE	-20 to +45 degrees Celsuis
ALTITUDE	up to 7500 feet AMSL
DIMENSIONS	70.5" h x 25.75" d x 28.25" w (179 cm x 65.4 cm x 71.8 cm)

ORDERING INFORMATION

MODEL BA-1K	1000/500/250 watt transmitter (Specify operating frequency and power levels desired)
SC-AM	Spare Vacuum Crystal
STA-1K	100% Spare Tube Kit (4 Type 4-500A)
SSC-1K	100% Spare Semiconductor Kit
SR-1K	Filament Voltage Regulator
RCS-1	Remote Control Solenoid Kit

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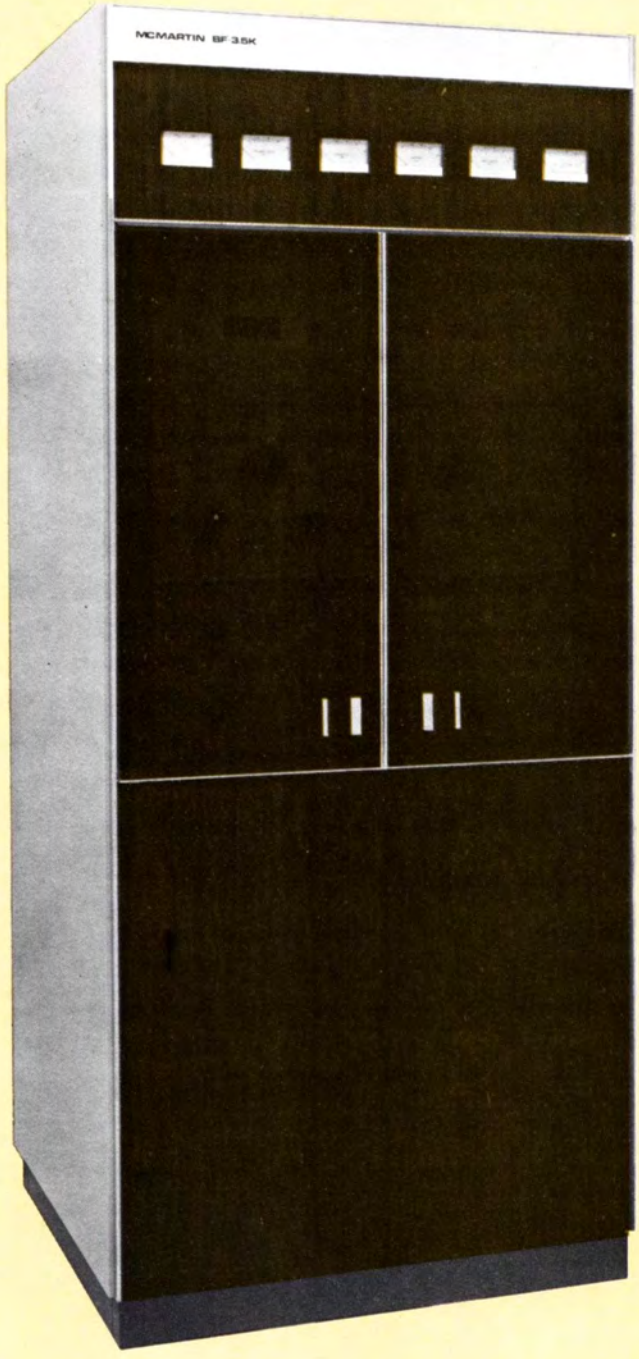
2,000 - 3,500 watt FM TRANSMITTER BF-3.5K



McMartin®

DESCRIPTION

The McMartin BF-3.5K FM Broadcast Transmitter is an extremely stable, high performance unit meticulously designed for many years of reliable service.

The BF-3.5K design is simple and straightforward. It uses only two tube types. To provide the stability and bandwidth characteristics, essential to modern broadcast fidelity requirements, the BF-3.5K power amplifier stage employs a type 3CX3000A7 high mu, zero-bias power triode operating in grounded-grid Class C mode. The need for control grid bias, and screen voltage power supplies is eliminated. No neutralization is required.

Excellent plate efficiencies, in excess of 70% across the entire 88 to 108 MHz range and at power output levels from 2,000 to 3,500 watts, result in an extremely conservative transmitter.

The intermediate power amplifier stage uses a pair of rugged radial beam power triodes, 4CX250B's, operated in parallel. The BF-3.5K power output is adjusted by motor-driven control of screen voltage applied to the IPA stage.

The solid state McMartin B-910 FM exciter portion of the BF-3.5K, with its plug in modular design and stereo/SCA generator options, insures the finest, most stable and reliable operation available to today's FM broadcaster.

The BF-3.5K includes as standard equipment, many features available in competitive models only as add-ons. Automatic recycling, with a memory-type LED fault indicator, forward-reverse reflectometer, plus full remote-control capability are built into the BF-3.5K.

A quiet, centrifugal blower maintains positive air pressure through the compartmentized IPA and PA stages, and is supplemented by a cabinet exhaust fan. This air system greatly reduces thermal aging of components.

The BF-3.5K satisfies the management, program and technical personnel of today's FM broadcast station. Reasonable initial and operating cost, a high quality sound, trouble-free operating and ease of maintenance are but a few of the design objectives met by the newest — and best — FM broadcast transmitter you can buy!

The electronic integrity is supplemented by rugged mechanical design in a style which is strikingly attractive.

The powerfully proud BF-3.5K is a pleasure to own . . . a pleasure to maintain . . . a pleasure to listen to . . . another step in the **growing** McMartin broadcast product line!

SPECIFICATIONS

OPERATING RANGE	88 to 108 MegaHertz
RF POWER OUTPUT	3,500 watts maximum
RF OUTPUT IMPEDANCE	50 ohms (Termination Andrew #4861A ungassed field coupling)
CENTER FREQUENCY STABILITY	±500 Hz
MODULATION CAPABILITY	±150 kHz
AUDIO INPUT IMPEDANCE	600 ohms, balanced
AUDIO INPUT LEVEL	+10, ±2, dBm
AUDIO FREQUENCY RESPONSE	±0.75 dB, 30-15000 Hz (Std. FCC 75 usec preemphasis)
TOTAL HARMONIC DISTORTION	0.3% or less, 30-15,000 Hz, 100% mod.
FM NOISE	65 dB below 100% modulation (400 Hz)
AM NOISE	55 dB below carrier level
POWER REQUIRED	208/230/240 Vac, 50/60 Hz, single phase — or — 208/230/240 Vac, 3-phase
POWER CONSUMPTION (Approx.)	2000 watt output, 4500 watts 2500 watt output, 5400 watts 3000 watt output, 6200 watts 3500 watt output, 7100 watts
OPERATING TEMPERATURE	0° to 50° Celsius
ALTITUDE	7,500 feet above mean sea level
DIMENSIONS	34½" (87.6 cm) width 85" (219.9 cm) height 31" (78.7 cm) depth 30" (76.2 cm) rear door swing
WEIGHT	1,030 pounds
FINISH	McMartin beige w/wood-grain trim

STEREO OPERATION (with B-110 Stereo Assembly)

AUDIO INPUT IMPEDANCE	600 ohms balanced, each channel
AUDIO INPUT LEVEL	+10, ±2, dBm
AUDIO FREQUENCY RESPONSE	±0.75 dB, 30-15000 Hz, Std FCC 75 usec, deemphasis, each channel
TOTAL HARMONIC DISTORTION	0.5% or less, 30-15000 Hz
STEREO SEPARATION	35 dB or greater, 50-15000 Hz
FM NOISE	60 dB or greater below 100% modulation
PILOT STABILITY	±1.0 Hertz over rated temperature range
SUBCARRIER SUPPRESSION	55 dB or greater
CROSSTALK (L+R to L−R, L−R to L+R)	42 dB or greater below 90% modulation

SCA OPERATION (with B-113 SCA Generator Module)

AUDIO INPUT IMPEDANCE	600 ohms, balanced
AUDIO INPUT LEVEL	+10, ±2, dBm
CARRIER FREQUENCY	41 or 67 kHz standard (others available on request)
CARRIER STABILITY	±500 Hz
MODULATION CAPABILITY	±7.5 kHz
PREEMPHASIS	150 usec standard, 50 or 75 usec available on request
FREQUENCY RESPONSE	±1.5 dB, 50-5000 Hz
CROSSTALK (main to sub, sub to main)	60 dB or lower
DISTORTION (50-5000 Hz)	0.75% or less with LP output filter 2.5% or less with BP output filter
S/N NOISE	60 dB or greater

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McMartin®

10 watt FM exciter transmitter B-910 series

Direct FM Modulation
Unique Phase-Lock AFC Provides ±500 Hz Stability
Plug-In Modular Design
Outstanding Performance
Full Metering
Off-Frequency Operation Impossible with unique Fail-Safe, Positive Action Alarm Circuit
Remote Control Provisions
Available As Exciter/Or 10-Watt Transmitter
Available Monaural Or Stereo – With or Without SCA
Optimum Filtering For Stereo/SCA Combinations

GENERAL DESCRIPTION

The B-910/B-910T 10-watt Exciter/Transmitter is designed to function either as an exciter for a higher power FM broadcast transmitter or, as a Model B-910T, as a 10-watt FM broadcast transmitter. The B-910 and the B-910T differ only in that the B-910T incorporates a low-pass output filter and is housed in an attractive matching cabinet.

The B-910 is fully type accepted by the FCC for use as a monaural exciter, or when it includes a plug-in B-110 Stereo Generator, and/or a plug-in B-113 SCA Generator, for stereophonic and/or SCA broadcasting. The B-910 FM Exciter is available in models for monaural, with one or two SCA channels; or for stereo, with or without an SCA channel. The B-910 additionally will directly accept a composite stereo signal for applications where the stereo generator is located at the studio.

The B-910 incorporates, as standard in its design, a unique phase-locked direct FM modulator. This provides for ultra-stable and precise frequency control, offering frequency stability not previously available in an FM Exciter/10-watt FM Transmitter.

All circuitry for the B-910/B-910T FM Exciter/Transmitter, with the exception of heavy power supply components, is housed on front accessible plug-in modules, with a module extender provided. Front panel metering of necessary operating parameters is provided. Monitoring and full remote control provisions are included in the B-910/B-910T.

The B-910/B-910T has been designed to provide the cleanest, crispest, most usable FM main channel signal, and when so equipped, multiplex stereo and SCA subchannel signals. Particular care is taken in providing optimum filtering in B-910 units equipped with Stereo and/or SCA Generators.

The B-110 Stereo Generator is equipped with 15 kHz input filters and a 53 kHz low-pass output filter to assure that there is no interference with a 67 kHz SCA channel.

67 kHz B-113 SCA Generators are provided with optimum filtering depending on whether they are used with monaural or stereo exciters. When utilized with a monaural exciter, a 7.5 kHz band pass input filter is used; and a 90 kHz low pass output filter is used (this assures lowest distortion SCA and main channel reception). This filter combination assures the cleanest monaural and SCA signals, with objectionable interference and "birdies" totally eliminated. When a 67 kHz SCA Generator is used with an exciter equipped with a B-110 Stereo Generator, the SCA generator's output filter is a 67 kHz bandpass filter, thus assuring that no interference with the stereo (L-R) signal will occur.

41 kHz B-113 SCA Generators are equipped with 7.5 kHz input filters and a 60 kHz low pass output filter, which assures total non-interference with the main channel and the 67 kHz SCA.

B-113 SCA Generators are factory equipped for ±6 kHz deviation with the 7.5 kHz input filter. For ±4 kHz SCA deviation requirement a 5 kHz input filter is optionally available.

This care in providing optimum filtering is just another example of the quality and care that comes with a B-910/B-910T, assuring clean signals with no possible sub-channel to main channel interference.

PHASE-LOCK DIRECT FM MODULATOR

The heart of the B-910/B-910T is the Direct FM modulator, with a unique phase-lock AFC circuit providing ±500 Hz frequency stability. The frequency-modulated oscillator itself, as shown on the block functional of the B-910/B-910T, utilizes a free running oscillator at ½ of the operating frequency. This frequency is modulated by both the main and all sub-channel audio signals (stereo and/or SCA), and is then doubled to the operating frequency. This on-carrier frequency signal is then digitally divided, and compared in the reference oscillator with a similarly divided signal from a highly stable temperature controlled crystal oscillator at 1/10 of the operating frequency. The AFC voltage to the Frequency Modulated Oscillator (FMO) is derived from a phase comparator that compares the two signals at 1/10,000 of operating frequency (a frequency, dependent on carrier frequency, between 8.8 kHz and 10.8 kHz). Any phase difference detected between the two signals represents a frequency difference between the two signals, and consequently an off-frequency condition of the FMO. A correction voltage is then derived, which serves as an AFC voltage to maintain the FMO at its precise frequency.

Front panel indication is provided to show if loss of the phaselock condition occurs, with provision for connection of external aural alarms and/or a remote indication. In the unlikely chance of failure of the digital dividing circuitry, which would cause a loss of signal to the phase comparator, provision is made for manually controlling operating frequency.

To assure that the B-910/B-910T cannot operate beyond FCC permitted frequency tolerances, an additional phase-lock comparator is utilized in a "carrier-loss" circuit. This circuit, in the further unlikely event that the operating frequency goes 100 kHz beyond the operating frequency will cause a loss of B+ to the RF amplifier and turn off the RF output.

B-910T 10-WATT FM TRANSMITTER

The B-910T 10-watt FM Transmitter is available for low-power non-commercial Educational FM stations and also for use as an STL (Studio to Transmitter Link) or Relay Transmitter in those areas where the 88 MHz to 108 MHz band is available for such use. The B-910T 10-watt FM Transmitter consists of a B-910 FM Exciter equipped with a harmonic filter and is available housed in an attractive dustproof matching cabinet (rack mount B-910T units are also available). It is fully type accepted by the FCC for use as a 10-watt FM transmitter.

EASE OF OPERATION AND MAINTENANCE

The B-910/B-910T is designed for simple and easy operation with operational controls held to a minimum.

Full front panel metering is provided to allow monitoring of operating voltages, total modulation and other parameters.

Tuning the B-910/B-910T is a very easy procedure and is accomplished in seconds utilizing the front panel meter to give an indication of a phase-lock condition between the frequency modulated oscillator and the reference oscillator. Once phase-lock is achieved, no further frequency tuning is required or necessary.

Front accessible plug-in modules are used for all operating circuitry with a hinged protective front cover and a module extender provided.

e McMartin "Full Choice" line

B-910/B-910T COMPLETE WITH STEREO AND SCA GENERATORS
(Front cover opened showing Plug-In Modules and Simplified Controls)

B-110 STEREO GENERATOR

The optional B-110 Stereo Generator operates in the B-910/B-910T in conjunction with a B-111 Stereo Audio Amplifier, and provides for the generation of the 19 kHz pilot and the composite stereo signals (L+R and L−R). The stereo generator utilizes a switching mode oscillator employing a temperature stabilized crystal at four times the 19 kHz pilot frequency (76 kHz). This 76 kHz signal is digitally divided to derive the 19 kHz pilot and the 38 kHz square wave signal used to alternately switch between the left and right channel audio signals. Circuitry is precisely designed to assure that 38 kHz subcarrier suppression is 55 dB below the modulated signal. The use of the square wave switching mode eliminates the need for troublesome carrier balance adjustments. This simplifies adjustment, and additionally provides for excellent stereo separation (35 dB through the entire exciter or transmitter). A 53 kHz low-pass filter is employed to assure that no objectionable harmonic content of the 19 kHz pilot exists. This assures that no interference will occur with a 67 kHz SCA channel.

Adjustments for the B-110 Stereo Generator are held to minimum with only Pilot Level and Pilot Phase (for setting proper timing of the pilot and L-R signal) provided on the front panel.

Local and remote stereo/mono mode switching is provided for, with front panel indication provided when in stereo operation, with provision for connection of a remote indicator.

B-113 SCA GENERATOR

The B-113 SCA Generator is optionally available to provide for a 67 kHz subchannel in an exciter equipped with a stereo generator. In a monaural exciter either a 67 kHz and/or a 41 kHz SCA Generator are optionally available (other frequencies 20-75 kHz are available on special order).

The B-113 is an ultrastable SCA generator utilizing direct FM modulation providing for a subcarrier frequency accuracy of ±500 Hz. Manual or automatic SCA muting is provided and the mute circuitry is adjustable, both as to modulation level, and delay time which is continuously adjustable ½ to 8 secs.

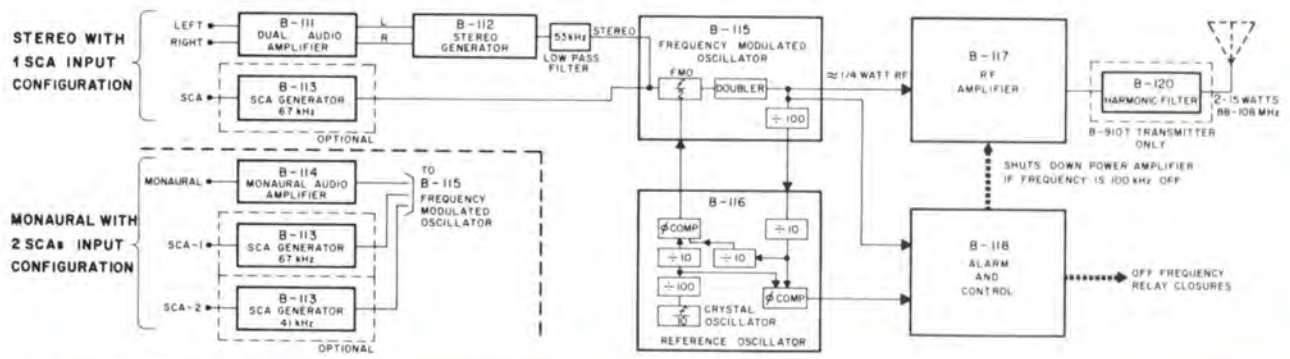
Unique to the B-113 is the ability to remotely disable the automatic mute. This circuit provides a ready means of obtaining the necessary signal when making measurements at the studio requiring an unmodulated SCA subcarrier.

B-113 SCA Generators are factory equipped for ±6 kHz deviation with a 7.5 kHz input filter. For ±4 kHz SCA deviation requirement a 5 kHz input filter is optionally available.

The B-113 also has provision to allow the SCA subcarrier to be switched on and off locally and remotely.

STANDARD SCA FILTER COMBINATIONS			
SCA	INPUT FILTER 4 kHz · DEVIATION · 6kHz		OUTPUT FILTER
41 kHz	5 kHz	7.5 kHz	60 kHz LP
67 kHz monaural	5 kHz	7.5 kHz	90 kHz LP
67 kHz stereo	5 kHz	7.5 kHz	67 kHz BP

System Block Diagram of B-910/B-910T FM Exciter/10 Watt FM Transmitter



SPECIFICATIONS

B-910T 10-WATT FM TRANSMITTER

PERFORMANCE:		
TYPE OF EMISSION		F3/F9
FREQUENCY RANGE		88-108 MHz
RF POWER OUTPUT		B-910 Exciter 2-15 watts continuously adjustable. B-910T 10-watt transmitter; 10 watts nominal
RF OUTPUT IMPEDANCE (Type BNC connector)		50 ohms, unbalanced
CARRIER FREQUENCY STABILITY		±500 Hz over rated temperature range
FREQUENCY DEVIATION FOR 100% MODULATION		±75 kHz
MODULATION CAPABILITY		±150 kHz
METHOD OF MODULATION		Direct FM
AUDIO INPUT IMPEDANCE		600 ohms balanced
AUDIO INPUT LEVEL		+10, ±2, dBm
AUDIO FREQUENCY RESPONSE		±0.5 dB 30-15,000 Hz
PRE-EMPHASIS NETWORK TIME CONSTANT		75 μ sec pre-emphasis, 50 μ sec avail
TOTAL HARMONIC DISTORTION		less than 0.3%, 30-15,000 Hz
FM NOISE		68 dB or greater below 100% modulation at 400 Hz
AM NOISE		65 dB below carrier level
ELECTRICAL:		
POWER REQUIRED		100-135 (200-270) VAC 50/60 Hz
POWER CONSUMPTION (With Stereo and SCA Generator)		50 watts
AMBIENT TEMPERATURE		−20° to 50° C (−4° to 122° F)
MECHANICAL:		
DIMENSIONS	Rack Mount	10½" (26.7cm) High 19" (48.3cm) Wide 17¾" (45.1cm) Deep
	in B-122 cabinet	11¾" (29.8cm) High 20" (50.8cm) Wide 18" (45.7cm) Deep
WEIGHT	Rack Mount	25 lbs. (11.3kg) *shipping weight* 30 lbs. (13.6kg)
	in B-122 Cabinet	30 lbs. (13.6kg) *shipping weight* 35 lbs. (15.9kg)
FINISH		McMartin beige with wood grain trim front access panel

B-110 STEREO GENERATOR

PERFORMANCE:	
PILOT CARRIER STABILITY	19 kHz ±1 Hz over rated temperature range
SUBCARRIER SUPRESSION	−55 dB or greater
AUDIO INPUT IMPEDANCE (Left and right channels into B-111 Stereo Audio Amplifier)	600 ohms balanced
AUDIO INPUT LEVEL (Left and right channels into B-111 Stereo Audio Amplifier)	+10, ±2, dBm
AUDIO FREQUENCY RESPONSE	±0.5 dB 30-15,000 Hz
PRE-EMPHASIS NETWORK TIME CONSTANT	75 μ sec pre-emphasis, 50 μ sec avail
TOTAL HARMONIC DISTORTION	0.5% or less, 30-15,000 Hz
STEREO SEPARATION (50-15,000 Hz)	39 dB or greater through B-112 module 35 dB or greater through B-910/B-910T
CROSSTALK (main channel to sub channel and sub channel to main channel 30-15,000 Hz)	47 dB or greater, less 15 kHz LP filters; 50 dB (30-5,000 Hz); 45 dB (5-10 kHz); 40 dB (10-15 kHz); with filters.
FM NOISE	65 dB or greater below 100% modulation
REMOTE CAPABILITY	pilot on/off, pilot on indication
FILTERING PROVIDED	15 kHz input, 53 kHz low pass output

B-113 SCA GENERATOR

PERFORMANCE:	
TYPE OF MODULATION	Direct FM
CARRIER FREQUENCY	67 kHz and 41 kHz standard (20 kHz to 75 kHz available)
FREQUENCY STABILITY	±500 Hz over rated temperature range
AUDIO INPUT IMPEDANCE	600 ohms balanced
AUDIO INPUT LEVEL	+10, ±2, dBm
AUDIO FREQUENCY RESPONSE	±1.5 dB, 50-5,000 Hz
TOTAL HARMONIC DISTORTION	less than 0.6% at 400 Hz (B-113 only) less than 0.75% 50-5,000 Hz (through B-910/B-910T Monaural 67 kHz SCA) less than 2.5% 50-5,000 Hz (through B-910/B-910T Stereo 67 kHz SCA)
CROSSTALK (main channel to SCA and SCA to main channel)	60 dB or greater below normal program levels
MODULATION CAPABILITY	±7.5 kHz
PRE-EMPHASIS NETWORK TIME CONSTANT	150 μ sec standard, 75 μ sec or 50 μ sec available
AUTOMATIC MUTE	Adjustable to any level between 100% and 3% modulation
MUTE DELAY	0.5 sec to 8 sec (continuously adjustable)
FM NOISE	60 dB below 100% modulation (±6 kHz deviation) 150 μ sec de-emphasis
REMOTE CAPABILITY	SCA-on/off, Auto-Mute on/off
FILTERING PROVIDED:	
Monaural Exciter	7.5 kHz input, 90 kHz low pass output
Stereo Exciter	5 kHz input, 67 kHz band pass output
41 kHz units with Monaural Exciter	7.5 kHz input, 60 kHz low pass output

(Other filter combinations are available.)

All specifications for monaural, stereo and SCA operation are for the entire B-910/B-910T system and not just through a single part of the system.

ORDERING INFORMATION

B-910/910T FM Exciter units are available in the following configuration as original purchase options:

Monaural Operation: B-910 Monaural FM Exciter (specify main channel frequency)

SCA Operation: B-910 Monaural FM Exciter with single B-113 SCA Generator (specify main channel and SCA Frequencies)
B-910 Monaural FM Exciter with two B-113 SCA Generators (specify main channel and SCA Frequencies)

Stereo Operation: B-910 FM Exciter with B-110 Stereo Generator Assembly (specify main channel frequency)

Stereo/SCA Operation: B-910 FM Exciter with B-110 Stereo and B-113 SCA Generator (specify main channel and SCA frequencies)

10-Watt FM Transmitter: B-910T 10-Watt FM Transmitter (in B-122 cabinet)
B-910T 10-Watt FM Transmitter (rack mount)

All B-910/B-910T monaural units may be field converted to stereo operation by adding B-110 Stereo Generator Assembly.

Add-On Options:

B-110 Stereo Generator Assembly Includes:
B-111 Stereo Audio Amplifier (replaces B-114 Monaural Audio Amplifier)
B-112 Stereo Generator

B-113 SCA Generator
(specify frequency 41 kHz and 67 kHz standard)
(other frequencies 20-75 kHz available)

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McMartin®

STEREO GENERATOR B-110R

BUILT-IN 15 KHZ LP FILTERS
SEPARATION—39 dB OR GREATER

3½" RACK MOUNT
SWITCHING METHOD SIGNAL GENERATION

DESCRIPTION

The B-110R is a completely self-contained, rack-mount unit capable of generating a high-quality stereo composite signal. It is intended primarily for stereophonic mode broadcasting where the composite stereo signal originates at a studio location and aural STL equipment is used for relaying the program material to a remote transmitter site.

The B-110R includes local mono/stereo operating mode switching with provision for remote control.

Each channel includes built-in 15 kiloHertz low pass filtering.

Separate dual-audio and stereo generator plug-in modules are accessible from the front of the unit through a hinge-down panel.

SPECIFICATIONS

FREQUENCY RESPONSE	±0.5 dB, 30-15000 Hz
HARMONIC DISTORTION	0.5% or less, 30-15000 Hz
SEPARATION	39 dB or greater, 30-15000 Hz
CROSSTALK	50 dB, 30-15000 Hz 45 dB, 5-10 kHz 40 dB, 10-15 kHz
FM S/N RATIO	65 dB or greater
PREEMPHASIS	75 microseconds
PILOT STABILITY	±1.0 Hz over rated temperature range
19 KHZ SUPPRESSION	55 dB min.
AF INPUT IMPEDANCE	600 ohms, balanced (each channel)
AF INPUT LEVEL	+10, ±2 dBm
OUTPUT IMPEDANCE	600 ohms, unbalanced
OUTPUT LEVEL	0-2.5 volts, P/P
POWER REQUIRED	115/230 VAC, 50/60 Hz
OPERATING TEMPERATURE	−20° to 50° C
DIMENSIONS	EIA standard rack mount 19" (48.3 cm) wide 3½" (8.9 cm) high 15½" (39.4 cm) deep

MAR/75

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McMartin®

SCA GENERATOR B-113R

AUTOMATIC MUTING
VARIABLE MUTE DELAY

RACK MOUNT, SELF-CONTAINED
INTEGRAL INPUT/OUTPUT FILTERS

DESCRIPTION

The B-113R SCA Generator is a completely self-contained unit designed for the generation of high quality subchannel information for use in FM broadcast SCA applications.

The B-113 is available with input/output filter combinations to insure optimum compatibility with either monaural or stereophonic main channel operation.

Electronic muting, adjustable to respond to levels from 3 to 100% modulation and muting delay from ½ to 5 seconds are featured.

Local/remote switching is provided with front panel level control.

The B-113R is designed for rack mounting with access to the generator plug-in module by means of a hinge-down front panel.

SPECIFICATIONS

CARRIER FREQUENCY ..... 41 or 67 kHz standard, other frequencies on special order

CARRIER STABILITY ..... ±500 Hz

AF RESPONSE ..... ±1.5 dB, 50-5000 Hz

DISTORTION ..... 0.75% maximum, 50-5000 Hz (LP output filter)
2.5% maximum, 50-5000 Hz (BP output filter)

AF INPUT LEVEL ..... +10, ±2 dBm

AF INPUT IMPEDANCE ..... 600 ohms, balanced

OUTPUT LEVEL ..... 0-10V P/P, adjustable

PREEMPHASIS ..... 150 microseconds (50 or 75 microseconds special order)

MODULATION CAPABILITY ..... ±12% of subchannel carrier frequency

S/N RATIO ..... 60 dB or greater

MUTE DELAY ..... 0.5 to 5.0 seconds

OPERATING TEMPERATURE ..... −20° to +50°C

POWER REQUIRED ..... 115/230 Vac, 50/60 Hz

DIMENSIONS ..... EIA standard rack mount
19" (48.3 cm) wide
3½" (8.9 cm) high
15½" (39.4 cm) deep

ORDERING INFORMATION

MODEL	INPUT FILTER	OUTPUT FILTER	MAIN CHANNEL MODE
B-113R/5/41	5 kHz LP	41 kHz LP	Mono
B-113R/7/41	7.5 kHz LP	41 kHz LP	Mono
B-113R/5/67	5 kHz LP	67 kHz LP	Mono
B-113R/7/67	7.5 kHz LP	67 kHz LP	Mono
B-113R/5/67B	5 kHz LP	67 kHz BP	Stereo

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McMartin®

five mixer audio control console B-500 series

compact design ideal for production and small on-air studios as well as mobile units

excellent performance specifications

plug-in modular design

input modules available for:
microphone, RIAA phono, and balanced high-level

standard configuration one microphone, four balanced high level inputs
other input combinations by simple plug-in module substitution

two preselect inputs per mixer

four watt rms monitor amplifier

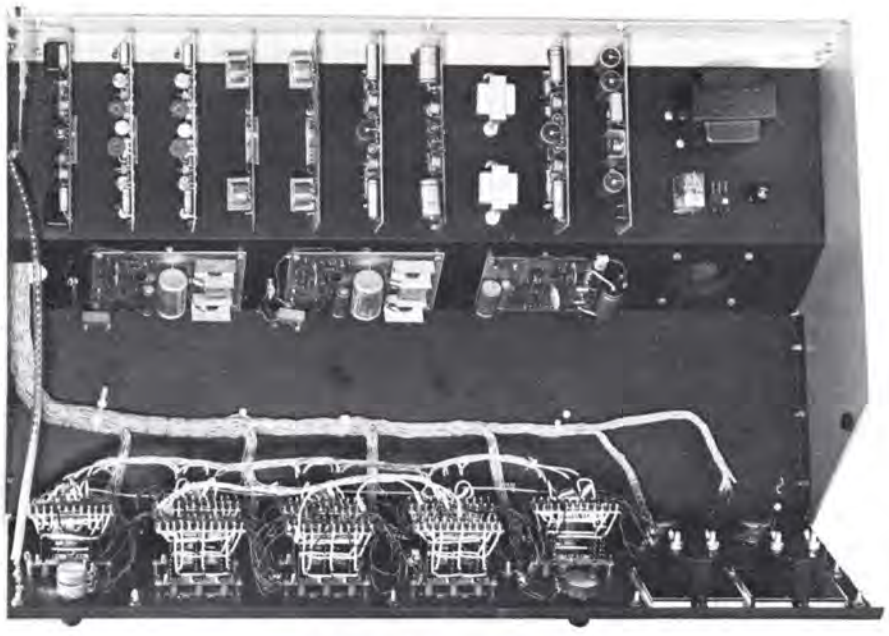
cue on all mixers

built-in cue-amplifier and speaker

speaker muting for one studio, muting for second studio optional

attractively styled

functional, large, well located controls



OPEN VIEW/B-502 stereo console

DESCRIPTION

The McMartin B-500 series five-mixer audio consoles have been designed to provide for audio mixing and control for production and broadcasting application. Two models in the B-500 series are available, the B-501 monaural console, and the B-502 stereo console.

B-500 series consoles provide five mixing channels, with switch selection of two inputs per mixer (a total of 10 inputs are provided). Each mixer output may be switched to the program or the audition busses of the console. Each mixer is provided with a detented counter-clockwise cue switch, to allow aural monitoring of any input channel by means of an integral 2-watt cue amplifier and built-in cue speaker. A front panel cue gain control is provided.

The five mixers are precision molded composition triple wiper attenuators which will typically operate for over 5 million operations without mechanical or electrical degradation. These potentimeters are guaranteed by McMartin for five years. B-500 series five mixer consoles are available with step attenuators on special order.

Plug-in modules are used in the program and audition channels of the B-500 consoles. Input cards are available for microphone and RIAA equalized phono preamplification and for balanced high level inputs.

The use of these plug-in cards permits the user to tailor the console to his specific operating requirement. The standard models are supplied with one microphone preamplifier and four balanced high level input modules. Numerous other combinations are available as original purchase options or may be changed in the field at any time simply by unplugging one card, and plugging in the desired type input card.

Plug-in phono preamps, utilizing the consoles well-regulated and ripple-free power supply and requiring no external packaging, are considerably more economical than the separate outboard type. The phono preamplifier printed circuit board will accommodate a user-installed scratch filter.

The microphone preamplifiers accept low impedance balanced microphones of 150 ohm or 250 ohm impedance.

Balanced high level input cards are factory wired to accept 600 ohm balanced line inputs. Additional transformer taps accommodate 150 ohm or 50 ohm balanced inputs.

Each console is provided with a speaker muting/warning light relay for one location that operates in conjunction with the A input of mixer #1. Switching of that input to either the audition or the program bus will activate the relay. A prewired socket accepts an optional second relay for an additional location. It is connected to operate in conjunction with the B input of mixer #1. Spare contacts are available on all channel lever key switches, and on input select pushbuttons to allow extension of the muting/warning light relay control wiring to any or all other mixing channels.

All wiring connections to B-500 consoles are by means of rear panel mounted barrier type screw terminal strips. Space and cutouts are provided to allow field installation of two XLR-3 microphone connectors.

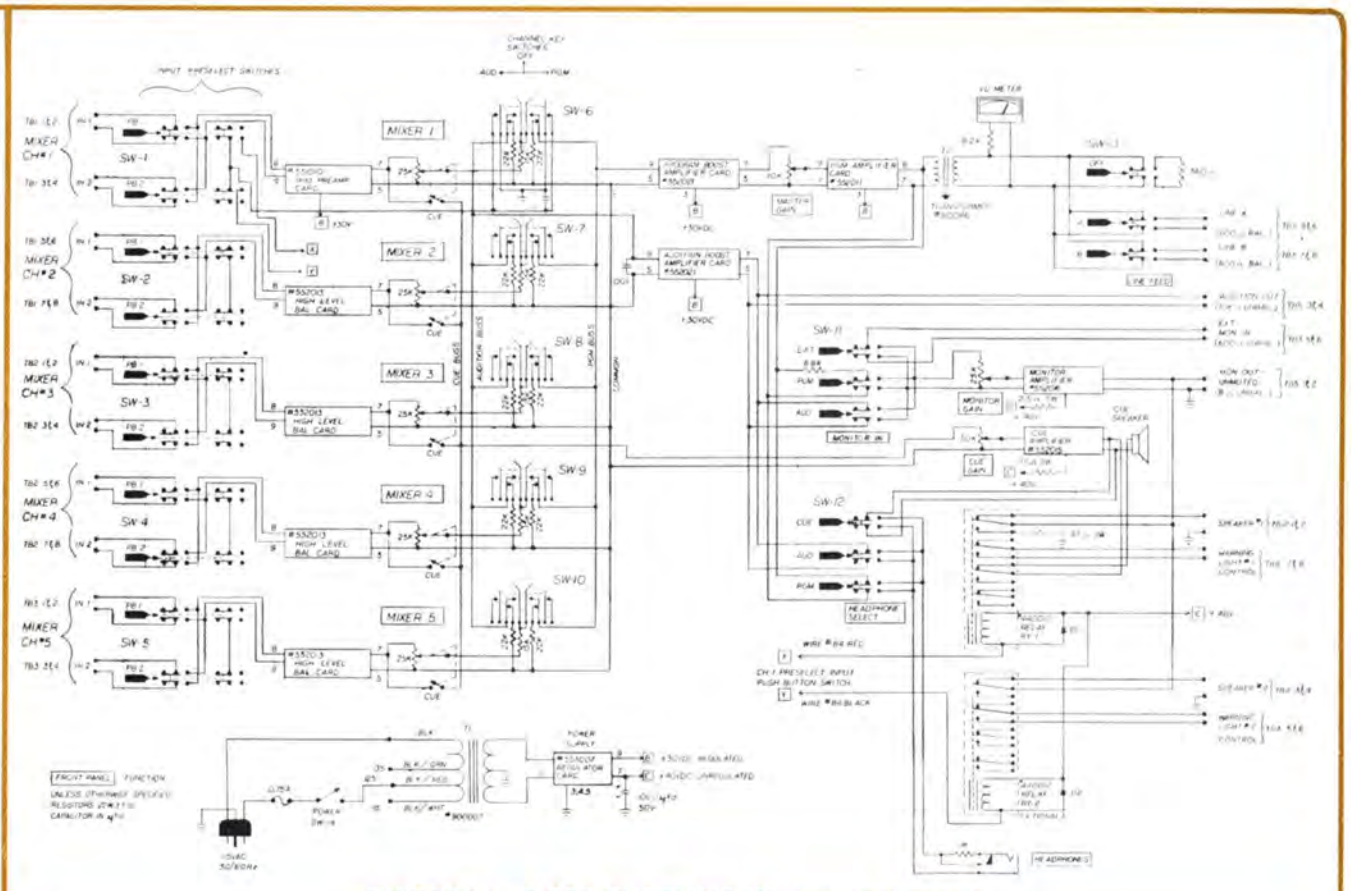
Convenient headphone jacks for monitoring are provided on both models, with front panel switch selection of the program, audition or cue busses.

The console outputs may be switched to two output lines or to an internal terminating load.

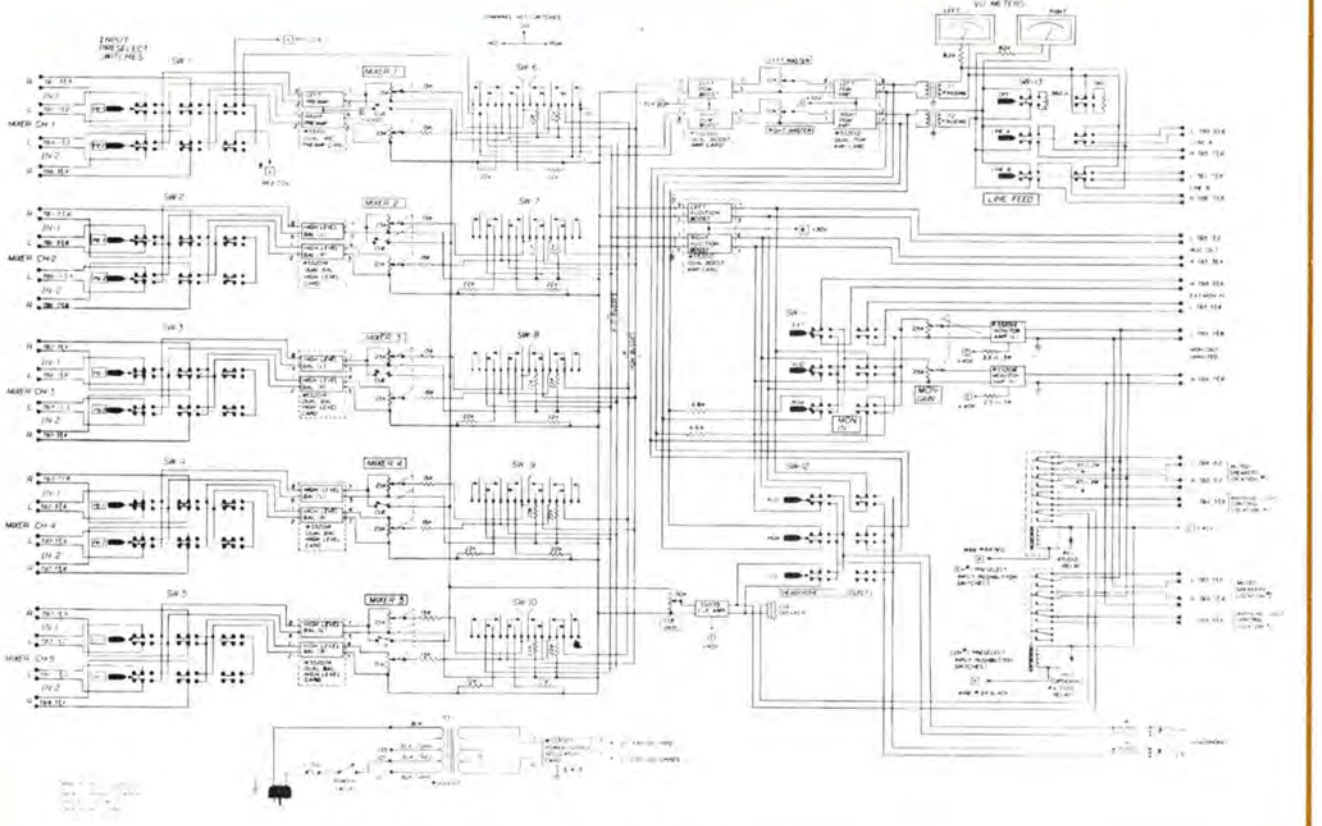
Program outputs are for 600 ohm balanced lines, and are at a +8 dBm output level. Audition output levels, available to feed recording equipment, are 1.5V rms and can feed unbalanced 2.5K ohm loads.

B-500 series consoles represent the ultimate in flexibility, in a compact and attractive cabinet. They reflect the extensive, professional-quality, audio experience of McMartin in the design and manufacture of broadcast audio consoles.

"Full Choice" line



FUNCTIONAL BLOCK DIAGRAM/B-501 monaural console



FUNCTIONAL BLOCK DIAGRAM/B-502 stereo console

SPECIFICATIONS

PROGRAM CHANNEL(S)

Frequency Response	±0.5 dB, 30-15,000 Hz
Harmonic Distortion	0.5% or less, 30-15,000 Hz @ +18 dBm output
S/N Ratio	72 dB or greater below +18 dBm output with -50 dBm signal fed to microphone input
Crosstalk	
B501 Monaural (audition to program)	below noise level
B-502 Stereo (left channel to right channel to audition channel)	below noise level
Overall Gain	100 ±2 dB
Output Level	+8 dBm for 0 VU meter reading +18 dBm capability
Input Levels	
Microphone channels	-60 dBm nominal, -34 dBm maximum
RIAA phono channels (optional)	input sensitivity 1 millivolt rms at 1 kHz 100 millivolts maximum
High level channels	-15 dBm nominal, +10 dBm maximum
Input Impedances	
Microphone channels	150/250 ohms balanced
RIAA phono channels	47,000 ohms unbalanced
High level	50/150/600 ohms balanced
Output Impedances	600 ohms balanced
Frequency Response	
RIAA Phono (optional)	±1 dB of RIAA Curve 20-20,000 Hz

AUDITION CHANNEL(S)

Output Impedance	2,500 ohms unbalanced
Level	1.5 volts rms

MONITOR CHANNEL(S)

Frequency Response	1.0 dB, 30-15,000 Hz
Harmonic Distortion	1.0% or less, 30-15,000 Hz @ 4 watts rms output
S/N	60 dB below 4 watts rms output (through program input)
Output Level	4 watts rms continuous; 8 watts normal program content
Output Impedance	4-16 ohms unbalanced

TERMINATIONS	Barrier screw terminals on rear; space and cutouts to mount two XLR-3 microphone connectors, McMartin Part Number 173003
Power Required	115/125/135 VAC 50/60 Hz (230 VAC on special order) B-501 40 watts, B-502 50 watts
DIMENSIONS	16"(40.6 cm) deep 7" (17.8 cm) high 27" (68.6 cm) wide
WEIGHT	64 lbs. Shipping Weight 67 lbs.
FINISH	McMartin beige with matte black in mixer control area, wood grain end panels

ORDERING INFORMATION:

B-501	5 Mixer Monaural Audio Console (one mic, four hi-bal input cards standard)
B-502	5 Mixer Stereophonic Audio Console (One dual mic, four dual hi-bal input cards standard)
Plug-in Input Cards for B-501:	
5MP1	Plug-in Microphone Preamplifier
5EP1	Plug-in RIAA Phono Preamplifier
5BH1	Plug-in Balanced High Level Input Card
Plug-in Input Cards for B-502:	
5MP2	Plug-in Dual Microphone Preamplifier
5EP2	Plug-in Dual RIAA Phono Preamplifier
5BH2	Plug-in Dual Balanced High Level Input Card
5RY1	Speaker Muting Relay

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McMartin®

FIVE MIXER AUDIO CENTRAL CONTROL UNIT — ACCU-FIVE

FULL PROGRAM, MONITOR & CUE FACILITIES
ACCOMMODATES UP TO 13 MICROPHONE INPUTS
HIGH/LOW LEVEL INPUT SWITCHING ON 3 CHANNELS
ALL INPUTS TRANSFORMER ISOLATED
COMPLETELY SILICON SOLID STATE
CUE/TALKBACK CAPABILITY

DESCRIPTION

The McMartin "Accu-Five" five channel mini-console is completely self-contained in a 3½-inch rack-mount unit.

Mixers 1 and 2 are designed to control low level microphone inputs with panel selection of two sources per channel. Loudspeaker muting associated with channel switching for these two mixers is provided.

Mixers 3 and 4 may accommodate either microphone or high level (as from tape devices, turntables, etc.) inputs by means of rear chassis switching. Mixer 5 accommodates five similar type inputs through pre-select pushbutton selection.

All input sources may be previewed by cue bus switching for each channel without disturbing the mixer control positions. A panel mounted cue speaker is driven by the internal cue amplifier. The latter also performs a second function. It serves as a talkback amplifier, permitting communication between the control room and studio. Provision is made for headphone monitoring of program or cue material. When the latter function is used, the cue speaker is muted.

The "Accu-Five", in spite of its compactness, retains truly professional operating parameters. Program output capability is +18dBm with ±1.0dB response and 0.5% or lower harmonic distortion, 30-15000Hz.

The monitor amplifier delivers 4.0 watts rms into an 8-ohm load with ±1.5dB response and 1.0% or less THD at full output, 50-15000Hz.

XL type microphone connectors are used for one each of the two microphone-level inputs to Mixers 1 & 2. All remaining input and output connections are made to screw-type terminals on the rear of the unit.

An illuminated VU meter calibrated for zero-VU deflection when +8dBm appears at the program channel output terminals, permits visual monitoring of the program material.

The "Accu-Five" is ideally suited for broadcast remote or production applications, educational broadcast or training purposes or as the audio complement to closed circuit TV operations.

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SPECIFICATIONS

PROGRAM CHANNEL

Frequency response: ±1.0dB, 30-15,000 Hz

Harmonic distortion: 0.5% or less, 30-15,000Hz @ +18 dBm output and −50dBm signal to any low-level input

S/N ratio: 60dB below +8dBm output produced by −50dBm signal to any low-level input

Overall gain: 100, ±2dB

Input impedances: Low level mode: 150-ohms, balanced
High level mode; 600-ohms, balanced

Input levels: Low level mode: −60dBm nom; −35dBm max.
High level mode: −20dBm nom; +5dBm max.

Output: 600-ohms balanced (transformer isolated) +8dBm nom; +18dBm max.

CROSSTALK (Cue to Program Channels): Below system noise

MONITOR CHANNEL:

Frequency response: ±1.5dB, 50-15,000 Hz

Harmonic distortion: 1.0% or less, 50-15,000 Hz @ full output

Output level: 4 watts, rms

Output impedance: 8 ohms, unbalanced

GENERAL:

Power requirements: 115/230V AC, 50/60 Hz, 30 watts

Dimensions: (W) EIA Standard 19" rack mount, (H) 3½", (D) 10" overall

Weight: 12 pounds

Finish: McMartin Beige

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McMartin

"8" MIXER AUDIO CONTROL CONSOLES

monaural B-801
stereo B-802
dual mono B-803
dual stereo B-802-S1
stereo mono B-802-S2

DESCRIPTION

Featuring plug-in modular design of all amplifiers and input channel devices for complete operational flexibility, the new McMartin audio consoles provide pushbutton selection of twenty-seven input sources controllable through eight mixing channels.

Standard models are the B-801 monaural, the B-803 dual-channel mono, the B-802 stereo, the B-802-S1 dual-channel stereo and the B-802-S2 stereo/mono "simulcast" version. All models are housed in identical cabinetry.

In their standard configurations, the first three mixing channels are equipped with low-level microphone preamplifiers. Mixers #4 through #7 accommodate high-level unbalanced input sources and Mixer #8 is a high level balanced input for network, auxiliary and four remote line input application. The B-802 models are equipped with module complement to deliver full stereo capability in both the program and monitor channels, throughout the entire console system.

All eight mixing channel module connectors are prewired to permit use of microphone or high level modules in any of the input channels. Spare switch contacts have been incorporated to permit extension of speaker muting and warning light control logic to all eight inputs.

High-quality step-type attenuators with cue switches are used in all mixing channels. Complete cueing of all eight mixer inputs, with built-in panel speaker, is provided.

Monitor amplifier modules provide 8-watt rms output level for studio and house monitor speakers.

All models are equipped with selective intercom between the operating position and each of three studios or four remote lines plus a general paging location.

All solid-state devices are operated at conservative ratings and only highest grade components are used. Close attention has been paid to human engineering design with switches and controls positioned for logical, error-free operation.

The B-800 Series is handsomely styled and completely self-contained. With the interconnection of power source and external device cabling, these consoles are ready to deliver many years of highly-professional, reliable service.

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FRONT VIEW/B-802 stereo console

SPECIFICATIONS

PROGRAM CHANNEL(S)

FREQUENCY RESPONSE: ±0.5 dB, 20 to 20,000 Hertz

TOTAL HARMONIC DISTORTION 0.5% or less, 20 to 20,000 Hz @ +18 dBm output with −50 dBm signal fed to any low level input

S/N RATIO: 74 dB or greater below +18 dBm output. −50 dBm input to any low level input. Master and channel mixers adjusted for equal attenuation, totaling 34 dB

OVERALL GAIN 102, ±2, dBm

OUTPUT LEVEL +8 dBm nominal. +24 dBm maximum capability

INPUT LEVELS Channels 1—3: −60 dBm nom., −30 dBm max. Channels 4—7: −15 dBm nom., +10 dBm max.

INPUT IMPEDANCES Channels 1—3: 150 ohms balanced. (50/600 ohms by strapping). Channels 4—7: 600 ohms unbalanced. (150 ohms by strapping). Channel 8: 600 ohms balanced (150 ohms by strapping).

LINE OUTPUT SWITCHING B-801: Line 1, Line 2 and terminated OFF positions.
B-802: Stereo (separate L and R outputs), Mono (L+R feeding Line 1) and terminated OFF positions.
B-803: Channel A to Line 1/Channel B to Line 2, Reversal, and terminated OFF positions.

AUDITION BUSS OUTPUT(S) B-801, B-802, B-802/S2: −10 dBm, 10K ohms, unbalanced. B-803: None.
B-802/S1: +8 dBm nominal, +24 dBm maximum.

CROSSTALK B 801, below noise level (audition to program)
B-802, below noise level (L to R to audition)
B-803, below noise level (Channel A to Channel B)

MONITOR CHANNEL(S)

FREQUENCY RESPONSE: ±0.5 dB, 20 to 20,000 Hertz

TOTAL HARMONIC DISTORTION 0.75% or less, 20 to 20,000 Hz @ 8 watts rms output

S/N RATIO: 70 dB below 8 watts (with ±18 dBm at program line output(s).

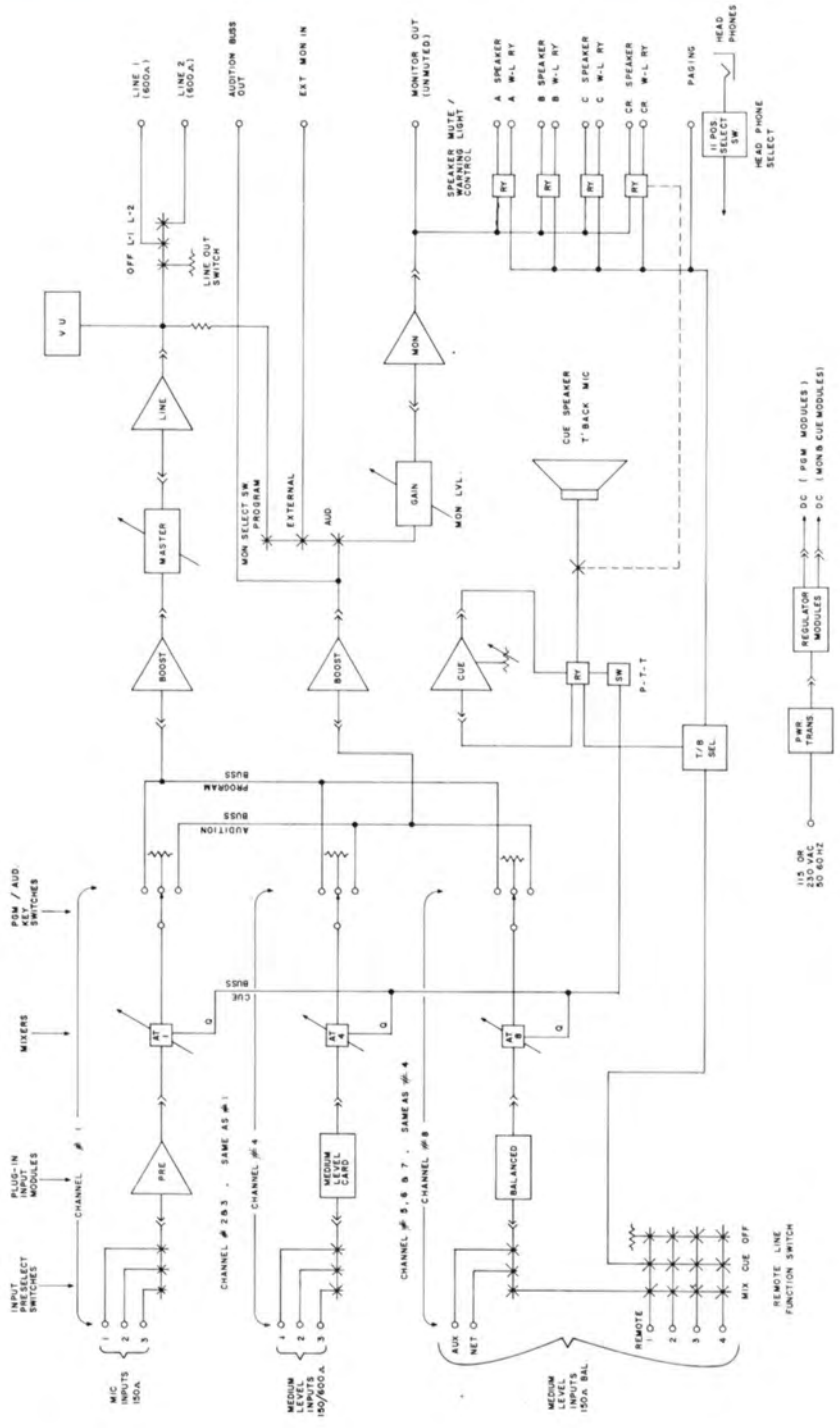
OUTPUT LEVEL 8 watts rms

OUTPUT IMPEDANCE 8 to 16 ohms, unbalanced

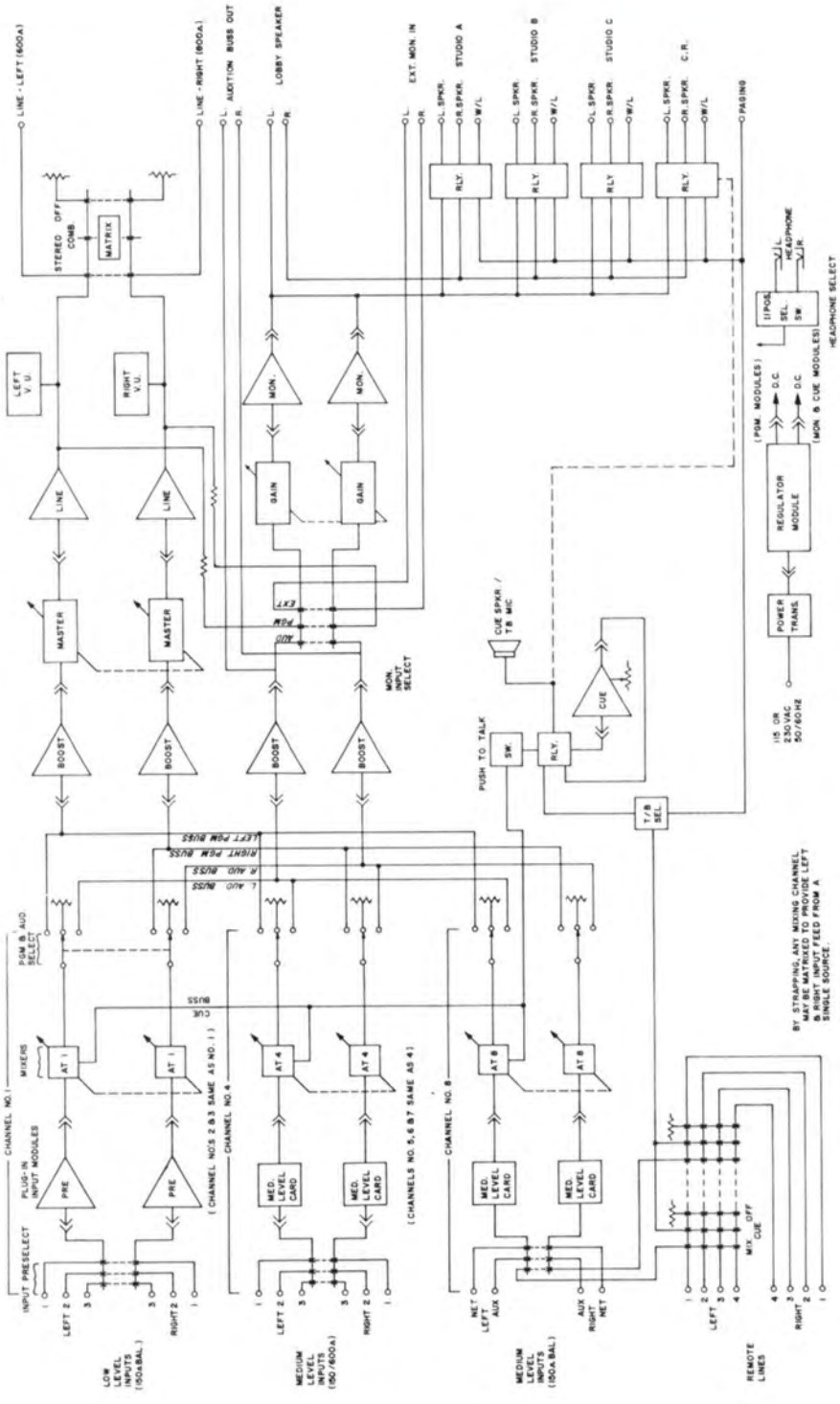
POWER REQUIRED
B-801 65 watts
B-802 100 watts
B-803 80 watts

DIMENSIONS: 44⅞" wide, 18¼" deep, 9¾" high

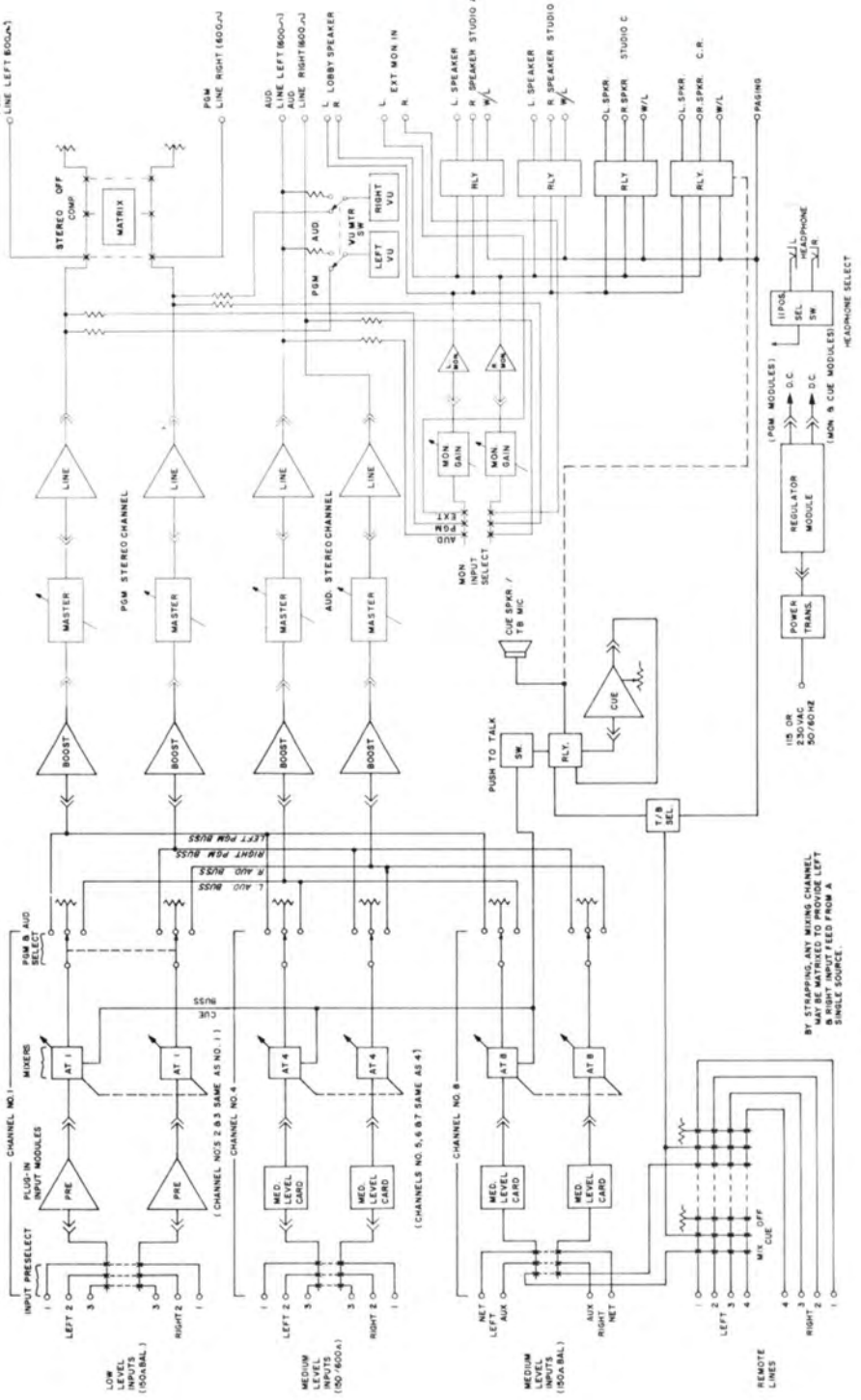
FINISH Cabinet: Beige with wood trim end panels. Front Panel: Upper control area — beige, lower control area — black.



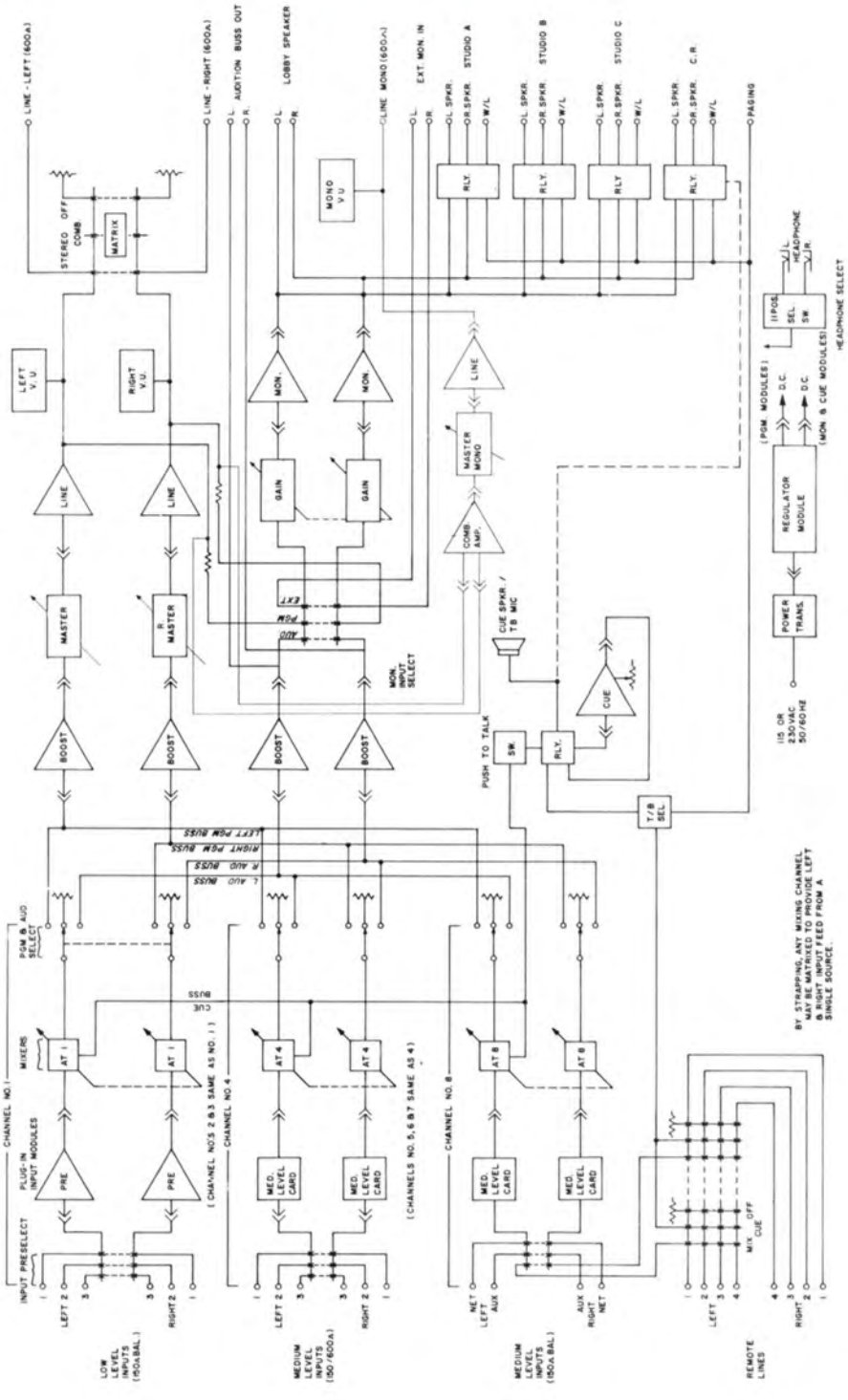
FUNCTIONAL BLOCK DIAGRAM/B-801 monaural console



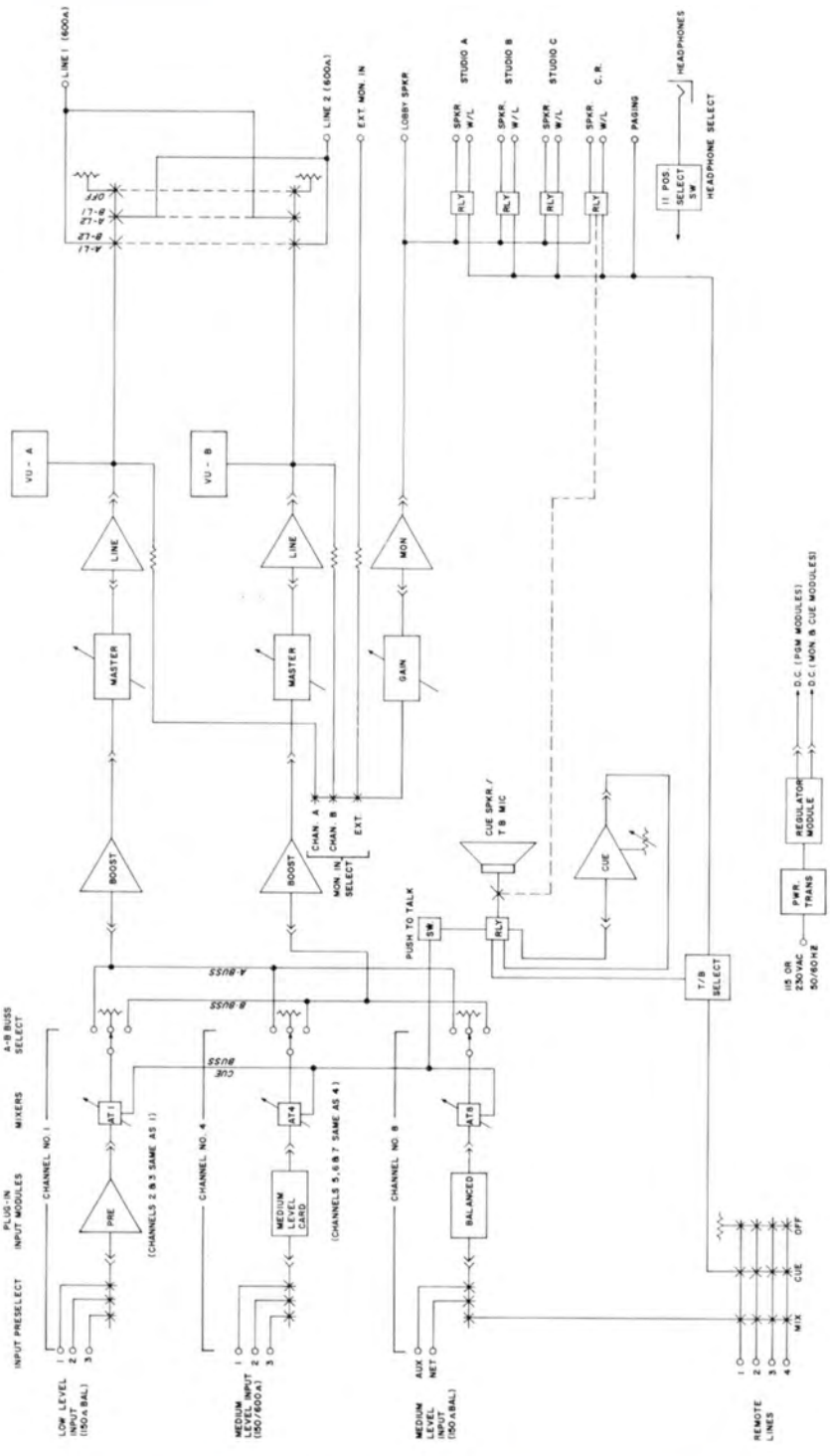
FUNCTIONAL BLOCK DIAGRAM/B-802 stereo console



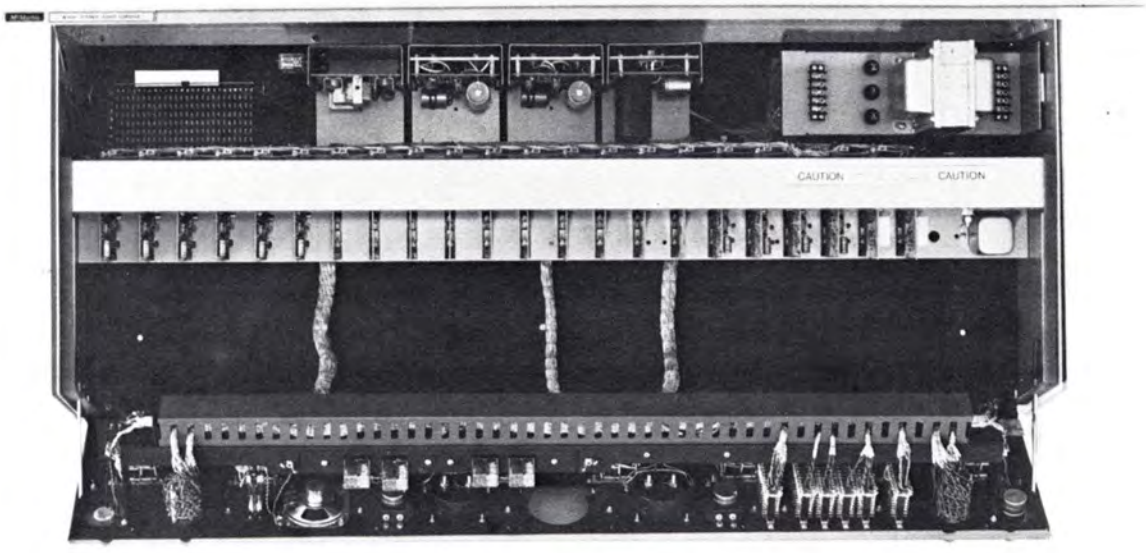
FUNCTIONAL BLOCK DIAGRAM/B-802-S1 dual stereo console



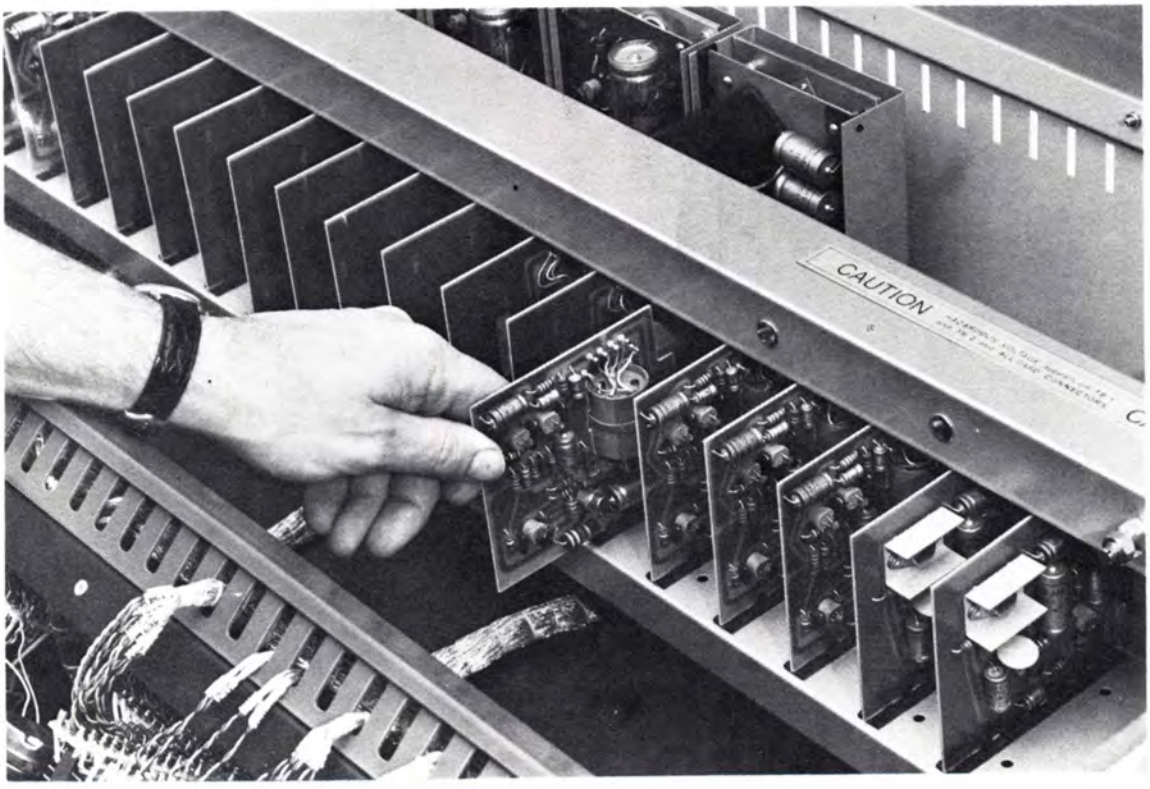
FUNCTIONAL BLOCK DIAGRAM/B-802-S2 stereo/monaural



FUNCTIONAL BLOCK DIAGRAM/B-803 dual channel console



OPEN VIEW/B-802 stereo console



TYPICAL PLUG-IN CAPABILITY/B-800 series

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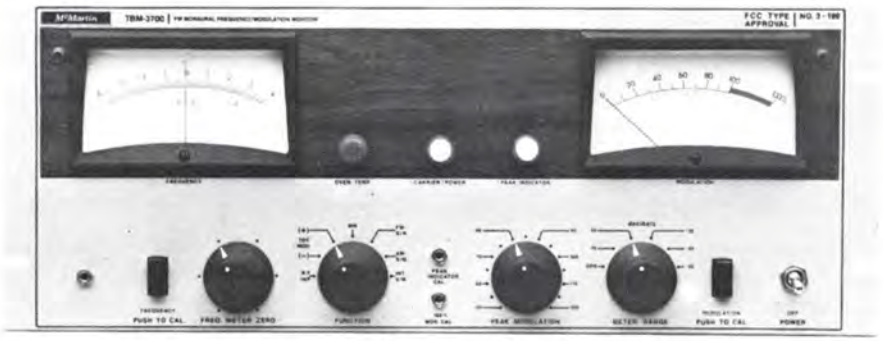
FM FREQUENCY/MODULATION MONITOR — TBM-3700



DIRECT READING AM & FM S/N
REAR ACCESS PLUG-IN CARDS
REMOTE METERING AVAILABLE

INDEPENDENT FREQUENCY/MODULATION SECTIONS
BUILT-IN FREQUENCY/MODULATION CALIBRATION
STEREO/SCA ADD-ON CAPABILITY

DESCRIPTION

The McMartin TBM-3700 combines the frequency deviation and modulation percentage functions in a single rack mount unit.

The TBM-3700 uses silicon solid-state semiconductors. Most circuits are mounted on plug-in, glass epoxy base printed circuit boards accessible from the rear.

The frequency deviation and modulation monitoring functions are independent of each other. Frequency measurements and calibration switching may be performed without interruption of the modulation monitoring or audio feed to house monitor systems. Audio output is automatically muted when RF feed to the TBM-3700 is not present.

The TBM-3700 incorporates circuitry permitting precise calibration of the modulation percentage meter and measurement of inherent internal FM noise of the monitor (typically —75 dB below 100% modulation). Direct reading of AM and FM signal-to-noise ratios is also featured.

Provision is made for remote metering of both frequency deviation and modulation percentage. Accessory kits for this purpose are available.

Two isolated composite signal outputs are provided for driving the McMartin TBM-2200 Stereo Modulation Monitor and/or TBM-2000A SCA Frequency/Modulation Monitor.

The TBM-3700 conforms in all respects with FCC Rules (Approval #3-190).

FEB./'74

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SPECIFICATIONS

OPERATING RANGE ..... 88-108 MHz

INPUT ..... 50 ohms, unbal. 0.1 to 1.0 W. level

OUTPUTS:

Audio monitoring — 600 ohms balanced; +2dBm (100% modulation-400Hz) Distortion: less than 0.5% (50-15,000 Hz)

Distortion measurement — 10K ohms impedance, unbalanced; 5 volts (100% modulation @ 400 Hz) Distortion: 0.25% (30-15,000 Hz) SNR: 66dB below 100% modulation @ 400 Hz

Composite output — Two rear chassis BNC connectors—300 ohms unbalanced; 1.0 volt peak-to-peak ±0.2dB (50-100,000 Hz)

MODULATION METER:

Main channel position — Accuracy, ±0.5dB; Freq. Response: ±0.5dB (30-15,000 Hz)

Total modulation position — Accuracy, ±0.5dB; Freq. Response: ±0.5dB (30-75,000 Hz)

Range — ±75 kHz deviation, 100% modulation; ±100 kHz deviation, 133% modulation (full scale)

FREQUENCY METER:

Scale — ±4kHz, 100Hz increments

Accuracy — Better than ±500 Hz

REMOTE METERING:

Modulation — up to 2,500 ohms external loop resistance may be accommodated. Requires RM-37-T accessory plug-in card and RM-37-R remote meter panel kit

Frequency — can accommodate up to 3,000 ohms external loop resistance. Remote meter panel kit available

CARRIER ALARM — Monitor automatically mutes at preset muting control level. Rear panel terminals available for external alarm interconnection

POWER REQUIRED ..... 105-125 VAC, 50/60 Hz, 45W

AMBIENT TEMPERATURE RANGE ..... 10° to 50° C

DIMENSIONS ..... 19" width (EIA) standard rack mount) 7" height, 13" depth

FINISH ..... Beige with wood grain trim

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STEREO MODULATION/FREQUENCY MONITOR TBM-2200A

PLUG-IN MODULAR DESIGN
19 kHz FREQUENCY METERING
19-38 kHz PHASING ADJUSTMENT

LEFT AND RIGHT MODULATION METERS
FULL REMOTE METERING OPTIONS
INTERNAL 19 kHz CALIBRATION

DESCRIPTION

The McMartin TBM-2200A solid state stereo modulation and frequency monitor is designed to operate in conjunction with McMartin base band monitors, TBM-3700, TBM-4000A, TBM-3500A, or TBM-3500B, to provide all stereo monitoring requirements. Three meters are used for simultaneously monitoring the left and right stereo channels and the center frequency deviation of the 19 kHz pilot carrier. The right and left meters are also used as audio voltmeters, which serve a secondary function of measuring separation between right and left channels, crosstalk between main and subchannels, 38 kHz carrier suppression and stereo S/N of each channel.

The various meter functions are incorporated in one switch. Functions read on the left meter are as follows: Calibrate level, pilot injection level, operate, L+R, 19-38 kHz phasing, 38 kHz suppression and stereo signal-to-noise ratio. L-R information is read on the right meter. When the function switch is in the stereo S/N position, the audio is automatically de-emphasized.

A precise 19 kHz signal and additional circuitry are used to accurately calibrate the 19 kHz pilot injection measuring circuits. This allows daily verification of the accuracy of the monitor and frequency of the 19 kHz pilot.

The metering circuits used in the TBM-2200A are peak-indicating devices capable of accurately measuring composite signals. The meter driving circuits are designed to go into saturation slightly above full scale deflection to protect the meters against severe overload.

An indicator light displays the presence of the 19 kHz pilot carrier. A phasing control, located on the front panel allows adjustments of the 19 and 38 kHz circuits for exact phase coincidence.

A switched front panel termination permits viewing of the pilot carrier, L+R and L-R signals. All critical circuits are on plug-in cards, removable from the rear of the chassis for ease of servicing. The power supply design includes short circuit protection. A squelch circuit disables the 19 kHz frequency metering in the absence of the pilot carrier.

The TBM-2200A has complete facilities for optional remote monitoring of the 19 kHz pilot carrier level, left and right stereo modulation and frequency deviation of the pilot carrier.

MAR/'74

The FCC type approval number is 3-201.

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SPECIFICATIONS

COMPOSITE INPUT
- **Impedance:** 5K ohms
- **Sensitivity:** 0.9 to 1.5 volts peak to peak

OUTPUTS (left and right)

AUDIO OUTPUT FOR MONITORING CIRCUITS
- **Source impedance:** 600 ohms balanced
- **Level:** +2 dBm at 100 percent modulation at 400 Hz
- **Distortion:** Less than 0.5 percent (50-15,000 Hz)

AUDIO OUTPUT FOR DISTORTION MEASUREMENT
- **Impedance:** 10K ohms or greater
- **Level:** 5 volts at 100 percent at 400 Hz
- **Frequency response:** ±0.5 dB, 30-15,000 Hz

DISTORTION
- **STEREO:** 0.35 percent, 30-15,000 Hz
- **STEREO NOISE LEVEL:** —66 dB below 100 percent modulation at 400 Hz

COMPOSITE OUTPUT
- **SOURCE IMPEDANCE:** 1000 ohms
- **LEVEL:** 0.3 volts rms
- **FREQUENCY RESPONSE:** ±0.2 dB, 50-75,000 Hz

PILOT INJECTION CIRCUIT
- **ACCURACY:** ±0.5 percent
- **METER INDICATION:** 6-12 percent (pilot injection scale)
- **INDICATOR:** Pilot lamp (operates at 5 percent or greater injection level)

INTERNAL PILOT CALIBRATE
- **ACCURACY:** ±0.5 percent

MODULATION METERS (left or right)
- **ACCURACY:** ±0.5 dB
- **FREQUENCY RESPONSE:** ±0.5 dB, 30-15,000 Hz

SEPARATION
- **LEFT and RIGHT CHANNELS:** —45 dB or better (50 to 10,000 Hz); —40 dB or better (10,000-15,000 Hz)

NOTE: Separation can be measured internally down to 70 dB

MEASUREMENT OF SUPPRESSED 38 kHz CARRIER
- **MODULATED 100% WITH FREQUENCIES ABOVE 5 kHz:** Better than 50 dB
- **NO MODULATION:** Better than 60 dB

CROSSTALK
- **MAIN INTO STEREO SUB CHANNEL:** 50 dB or better
- **STEREO SUBCHANNEL INTO MAIN CHANNEL:** 50 dB or better
- **67 kHz INTO MAIN OR STEREO CHANNEL:** 66 dB or better

PILOT CARRIER FREQUENCY METER
- **DEVIATION RANGE:** ±2.5 Hz
- **ACCURACY:** ±0.25 Hz

REMOTE MONITORING FACILITIES
- **MODULATION:** Optional RM-22 T/R kit available. Left and right meter may be remotely monitored with 2500 ohm external loop resistance. Remote meters are completely independent of internal meters.
- **PILOT CARRIER FREQUENCY:** Frequency deviation may be remotely monitored with 2500 ohms external loop resistance.

POWER REQUIRED: 105-125 volts AC

AMBIENT TEMPERATURE RANGE: 10-50 degrees C

DIMENSIONS:
- (w) 19" (EIA Standard rack mount)
- (h) 7"
- (d) 13" overall

WEIGHT: 15 lbs.

FINISH: McMartin beige with wood grain trim

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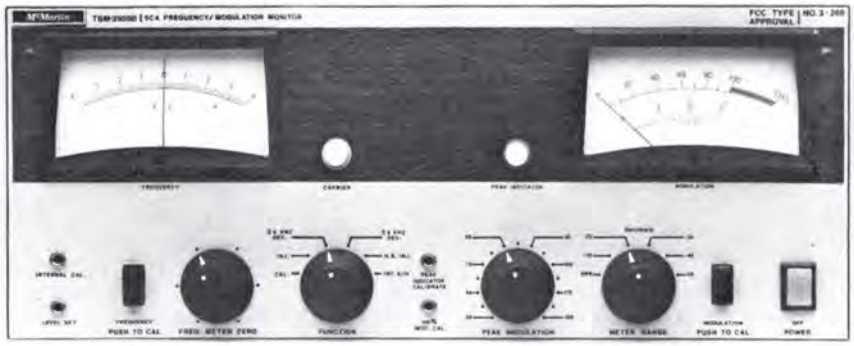
SCA FREQUENCY/MODULATION MONITOR TBM-2000B



INTERNAL CALIBRATION
MODULAR PLUG-IN CARD DESIGN

REMOTE METERING OPTION
CARRIER-OFF MUTING

DESCRIPTION

The McMartin TBM-2000B silicon solid-state SCA monitor, in conjunction with the McMartin TBM-3700, TBM-3500B, TBM-3500A, TBM-4000A or TBM-4500A monitors, will monitor all the characteristics of the SCA transmission. The TBM-2000B features the measurement of injection level, modulation, frequency of the SCA carrier, SCA FM signal-to-noise, and crosstalk.

For simplicity of operation, the various metering functions are incorporated in one switch. The functions read on the right meter as follows: Set level-cal., injection level, ±6 kHz deviation, ±4 kHz deviation, narrow band injection, and internal signal-to-noise of the monitor. In addition, the TBM-2000B features push-button calibration of the frequency meter, injection level, and modulation meter.

The modulation meter is a peak indicating device capable of measuring true peak value. The meter is also used as an audio voltmeter to measure the FM signal-to-noise of the sub-channel, main to sub-channel crosstalk, crosstalk between two sub-channels and the inherent FM S/N of the monitor. When the meter range switch is in the 'operate' position, the meter ballistics conform to the FCC requirement.

A crystal reference oscillator is used to calibrate the frequency meter. This oscillator and additional circuitry are used to accurately calibrate the modulation meter and the internal calibrate system. The internal FM noise of the TBM-2000B is typically 70 dB below 100% modulation.

The frequency meter is automatically protected against severe overload. A carrier light indicates presence of the sub-channel. The audio is automatically muted and the frequency meter de-activated in the absence of the subcarrier. The mute threshold is adjustable.

The TBM-2000B has complete facilities for remote monitoring of the modulation, carrier frequency deviation, peak modulation indicator and sub-carrier presence indicator.

Two rear-chassis composite output terminations are available for viewing the wide band output.

A relay is activated when the SCA carrier is muted or falls below a predetermined level. One pair of relay closures are available on the rear chassis for operation of an external signal system for indication of carrier 'On' or 'Off' condition.

All critical circuits have double regulation for added stability. All solid state devices are operated far below their rated voltage for greater reliability.

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The FCC type approval number is 3-200.

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SPECIFICATIONS

OPERATING RANGE: 67 kHz standard (26, 41, 42 and 65 kHz frequencies optional)

MODULATION RANGE: ±6 kHz deviation—100 percent modulation
±4 kHz deviation—100 percent modulation
Selection is made by front panel function switch

COMPOSITE INPUT

- **Impedance:** 2000 ohms
- **Level adjustable by front panel level set:** 0.3 volts rms or greater

MODULATION METER

- **Accuracy:** ±0.5 dB
- **Frequency response:** 30 - 7500 Hz ±1 dB (67 kHz)
  30 - 5000 Hz ±1 dB (41 kHz)

PEAK FLASHER INDICATOR: Peak light adjustable to read modulation peaks from 50 to 120 percent. Responds to modulation peaks of 0.1 millisecond duration and remains on for 2 to 4 seconds as required by the FCC.

INTERNAL MODULATION CALIBRATION ACCURACY: ±2%

SCA FREQUENCY METER

- **Deviation range:** ±4000 Hz, center zero
- **Accuracy:** Better than ±50 Hz at 67 kHz
- **Stability:** Maintained by crystal with 0.005 percent tolerance

SCA INJECTION CIRCUIT

- **Accuracy:** ±0.5 percent
- **Meter indication:** 0-15 percent in 1 percent increments
  0-30 percent in 1 percent increments
- **Internal injection calibrator accuracy:** ±0.5 percent

OUTPUTS—SCA SUB-CHANNEL

AUDIO OUTPUT FOR MONITORING CIRCUITS

- **Source impedance:** 600 ohms balanced
- **Level:** +2 dBm at ±6 kHz deviation (100 percent modulation −400 Hz)
- **Distortion:** Less than 1 percent (400 Hz)

AUDIO OUTPUT FOR DISTORTION MEASUREMENTS

- **Impedance:** 10K ohms or greater
- **Level:** 4 volts at ±6 kHz deviation (100 percent modulation −400 Hz)
- **Frequency response:** 30-7500 Hz ±1 dB (67 kHz)
- **Distortion:** 1.0 percent, or less −400 Hz
- **Noise level:** 66 dB or greater below ±6 kHz deviation (100 percent modulation −400 Hz)

CROSSTALK (front panel range control measures down to −70 dB)

- **Main channel (30-15000 Hz) into SCA sub-channel:** 66 dB or better
- **Stereo (23-53 kHz) into SCA sub-channel (67 kHz):** 55 dB or better
- **SCA-1 channel into SCA-2 channel:** 66 dB or better

POWER REQUIRED: 105-125 volts AC, 50/60 Hz 35 watts

FUSE: 0.5 amp slo-blo

AMBIENT TEMPERATURE RANGE: 10-50° C

DIMENSIONS: (w) 19" (EIA standard rack mount)
(h) 7"
(d) 13" overall

WEIGHT: 20 pounds

FINISH: McMartin beige with wood grain trim

REMOTE MONITORING FACILITIES

- **Modulation:** (optional) RM-37 T/R kit available. Modulation may be remotely monitored with 2,500 ohm external loop resistance plus remote meter resistance. Remote meter is completely independent of internal meter
- **Frequency:** Subcarrier frequency may be remotely monitored with remote line resistance up to 3,000 ohms
- **Peak flasher:** Termination provided for remote peak flasher installation
- **Subcarrier presence indicator:** Termination provided of relay closure for remote "Subcarrier On" indicator or external carrier failure alarm devices

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FM MODULATION MONITOR TBM-3500B

DIRECT READING AM & FM S/N
MODULAR PLUG-IN CONSTRUCTION
OPTIONAL PLUG-IN LOW LEVEL INPUT
FCC TYPE APPROVAL #3-219

INTERNAL CALIBRATION
CARRIER FAILURE ALARM
REMOTE METERING AVAILABLE

DESCRIPTION

The McMartin TBM-3500B monitors the modulation of main-channel FM broadcast stations, and when used with a) the TBM-2200A, all parameters of stereophonic transmission; and/or b) the TBM-2000B, all parameters of SCA multiplex operation.

The TBM-3500B permits metering of total positive and negative modulation and measurement of FM and AM signal-to-noise ratios as low as -70 dB. A peak flasher independent of meter switching indicates the highest positive or negative peak encountered. Threshold is adjustable from 50% to 120%.

The meter functions as a semi-peak reading voltmeter for modulation. When used to read AM or FM noise the meter is damped to improve readability in the presence of noise. Meter positions are provided to read the inherent internal noise (typically -75 dB below 100% modulation) of the monitor and internal calibration. When reading AM, FM or internal noise 75 microsecond de-emphasis is automatically inserted into the measuring circuit.

With the optional plug-in LL-35B low level input card installed the TBM-3500B will operate with RF signals as low as 350 microvolts. This permits operation from an antenna-derived input signal in most situations and eliminates the need for an external RF amplifier.

Should RF input be interrupted or fall below a preset level, a front panel carrier presence lamp is extinguished, audio output is automatically muted, and a carrier-off relay operates. External alarm devices may be activated by the latter.

The optional Model RM-35B provides for rack-mount remote modulation metering and peak flasher indication. Up to 2,500 ohms of loop and meter resistance can be accommodated in the remote meter circuit.

High impedance audio output for connection of external distortion measurement equipment, and a 600-ohm balanced output for audio monitoring are rear-chassis terminated.

Designed for rack mounting, the TBM-3500B is attractively styled in McMartin beige with wood grain trim.

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SPECIFICATIONS

OPERATING RANGE ..... 88-108 MHz

MODULATION RANGE ..... 75 kHz deviation-100% modulation
100 kHz deviation-133% modulation

RF INPUT (standard)
- **Impedance** ..... 50 ohms unbalanced
- **Sensitivity** ..... 0.1 to 1 watt

RF INPUT
(with optional LL-35B low level input card)
- **Impedance** ..... 50 ohms unbalanced
- **Sensitivity** ..... 350 microvolts minimum

OUTPUTS
- **Audio output for monitoring circuits**
  - **Source Impedance** ..... 600 ohms balanced
  - **Level** ..... ±2 dBm at 100% modulation at 400 Hz
  - **Distortion** ..... less than 0.5%, 50 to 15,000 Hz
- **Audio output for distortion measurement**
  - **Impedance** ..... 10K ohms or greater
  - **Level** ..... 5 volts at 100% modulation at 400 Hz
  - **Frequency response** ..... ±0.5 dB, 30-15,000 Hz
- **Distortion**
  - **Monaural** ..... 0.2%, 30 to 15,000 Hz
  - **Noise level** ..... -75 dB below 100% modulation at 400 Hz
- **Composite Output (2)**
  - **Source Impedance** ..... 300 ohms
  - **Level** ..... Approximately 1.0 volt peak-to-peak
  - **Frequency response** ..... ±0.2 dB, 30 to 100,000 Hz 3 dB down at 180 kHz

75 microsecond deemphasis or flat response selectable for measurement purposes.

PEAK FLASHER
(Peak Flasher Meets FCC Requirements) ..... Peak light adjustable to read positive and negative peaks from 50% to 120% modulation

MODULATION METER
(Ballistics meet FCC Requirements)
- **Main Channel Position**
  - **Accuracy** ..... ±0.5 dB
  - **Frequency response** ..... ±0.25 dB, 30 to 15,000 Hz at 100% modulation
- **Total Modulation** (+) or (-) Positions
  - **Accuracy** ..... ±0.5 dB
  - **Frequency response** ..... ±0.25 dB, 30 to 75,000 Hz

INTERNAL CALIBRATION
- **Accuracy** ..... 2% of 100% modulation

REMOTE FACILITIES MODULATION ..... RM-35 meter panel optionally available. Modulation may be remotely monitored with 2,500 ohm external loop resistance plus remote meter resistance. Remote meter is completely independent of internal meter.

PEAK INDICATOR ..... The peak light may be remotely monitored.

ALARM INDICATOR AND MUTE ..... Relay contact closures are available on the rear terminals when the RF carrier fails or falls below a preset value. Audio output from the monitor is muted.

POWER REQUIREMENTS ..... 105 to 125 volts AC, 50/60 Hz, 35 watts

AMBIENT TEMPERATURE RANGE ..... 10° to 50° C (50° F to 122° F)

DIMENSIONS ..... 19"(48.2 cm) wide x 5¼"(13.3 cm) high x 13"(33 cm) deep

WEIGHT ..... 20 pounds Shipping weight 23 pounds

FINISH ..... McMartin beige with wood grain trim

ORDERING INFORMATION:

TBM-3500B ..... FM Modulation Monitor
LL-35B ..... Low Level Input Card
RM-35B ..... Remote Modulation Meter Panel

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SOLID STATE RF AMPLIFIER **TBM 2500-C series**

TBM-2500-C: FM BAND
TBM-2500-CL: TV-CH 2-6
TBM-2500-CH: TV-CH 7-13

FULLY METERED
ULTRASTABLE OPERATION
AGC LEVEL CONTROL

DESCRIPTION

The TBM-2500-C, -CL and -CH are designed to amplify off-air signals in the FM and VHF-TV frequency ranges to a level suitable for driving FCC Type-Approved frequency and modulation monitoring equipment located at sites remote from the transmitter.
Utilizing essentially identical circuitry, the three models perform this function with minimum degradation of the transmitted signal and its sidebands.
Excellent passband and skirt selectivity characteristics of a special IF filter insure optimum response to the desired signal and rejection of interfering signals.
A sum and difference oscillator injection technique is used so that a zero operating-frequency error results.
The models incorporate AGC circuitry to maintain constant output signal with input signal variations over a 45 dB range. This, in conjunction with excellent limiter action, minimizes signal amplitude variations resulting from propagation effects or "flutter" generated by signal reflections caused by passing aircraft.
Metering of injection voltage, AGC bus voltage, RF drive and RF output is provided.
0.5 watts output (0.2 for the TBM-2500-CH) is developed with a 500-microvolt input signal, with complete limiting.
Although designed for specific use with the complete McMartin line of FM and VHF-TV FCC Type Approved monitoring equipment, the TBM-2500-C series RF amplifier will drive any of the current monitors regardless of manufacture.

SPECIFICATIONS

OPERATING RANGES:	
TBM-2500-C	88-108 MHz
TBM-2500-CL	TV Channels 2-6
TBM-2500-CH	TV Channels 7-13
SELECTIVITY:	290 kHz @ 3 dB points 60 dB down at 800 kHz
SENSITIVITY:	
TBM-2500-C	500 microvolts at antenna input produces 0.5 watts output and full limiting
TBM-2500-CL	Same as TBM-2500-C
TBM-2500-CH	500 microvolts at antenna input produces 0.2 watts output and full limiting
LEVEL, Input Overload	100,000 microvolts
LEVEL, Maximum Output	
TBM-2500-C	0.5 watts
TBM-2500-CL	0.5 watts
TBM-2500-CH	0.2 watts
IMPEDANCES:	
Input	50 ohms, unbalanced (BNC connector)
Output	50 ohms, unbalanced (BNC connector)
AGC RANGE:	45 dB
POWER REQUIRED	115/230 VAC, 50/60 Hz, 15 watts
DIMENSIONS:	19 (W) x 5¼" (H) x 10 (D)
WEIGHT:	10 pounds
CONTROLS, FRONT PANEL:	Power on/off; output level; Metering, (1)OSC; (2)AGC; (3)Drive; (4)Output

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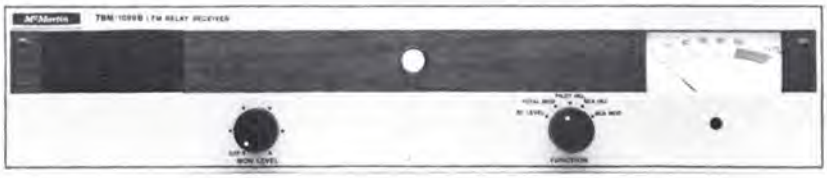
FM RELAY RECEIVERS **TBM-1000B series**



MODELS FOR FM, VHF-TV & STL SERVICE
IMPROVED FRONT-END SELECTIVITY
STEREO/SCA PLUG-IN OPTIONS

SILICON SOLID STATE
FULLY METERED
PANEL-MOUNTED SPEAKER

DESCRIPTION:

Incorporating the latest state-of-the-art devices and design techniques, this new generation of FM Relay Receivers supersedes the performance-proved TBM-1000A Series.

A full family of models include the TBM-1000B for single-channel FM broadcast band operation, 88 to 108 MHz; the TBM-1003A for Channel 2 through 13, VHF-TV aural service; the TBM-1001B for 150 MHz operation; and the TBM-1005A for switch-selectable, 5-channel reception in the 88-108 MHz range.

The new TBM-1000B Series incorporates improved front-end selectivity. The RF amplifier uses a dual-gate, diode-protected MOSFET with delayed AGC operation over a 45 dB range.

A carrier-actuated relay, with SPST contact closures terminated on the rear chassis, is standard equipment.

The new TBM-1000B Series receiver can provide stereo and/or SCA outputs by simple insertion of optional plug-in cards. Two cards may be accommodated. The STE-1 stereo card provides +8 dBm, 600-ohm balanced audio output of left-and-right-channel information. The SCA-2 card delivers +8 dBm, 600-ohm balanced audio ouput. Design is such that, with no internal wiring changes, combinations of card options may be used to provide stereo only, stereo plus 67 kHz SCA, a single 67 or 41 kHz SCA, or simultaneous 67 kHz and 41 kHz SCA outputs.

Front panel switch selection permits metering of RF levels down to 2 or 3 microvolts input; peak modulation metering—and when the STE-1 and/or SCA-2 cards are used, full-scale metering of 19 kHz pilot carrier and SCA injection levels.

Loudspeaker monitoring of main channel audio (mono or L+R stereo) and SCA audio is provided.

IF selectivity for the standard model is nominally 280 kHz at the 3dB points and at the 50 dB rejection point is typically ±475 kHz. For applications requiring additional selectivity, an optional narrow-band plug-in filter, the NB-1, is available. By adding the NB-1, the IF bandwidth at the 3dB points is nominally 230 kHz, with typical bandwidth characteristics of ±225 kHz at the 50dB rejection point.

Adjustable squelch control of both main and SCA channel signals is provided.

The TBM-1005A, five-channel model, features front panel selection of up to five frequencies in the 88-108 MHz range. All RF circuitry switching and tracking is performed using varactor tuning techniques. No switch contacts are used in RF circuits and lead lengths involved in conventional RF switching methods are eliminated. Each channel frequency may be peaked by adjustment of a single trimmer-type potentiometer.

The TBM-1000B Series Receivers are rack-mounted and styled in beige with wood-grain trim.

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SPECIFICATIONS

MAIN CHANNEL

FREQUENCY RANGES:
- TBM-1000B: 88-108MHz single crystal controlled frequency
- TBM-1001B: 150 MHz band
- TBM-1003A: VHF-TV channels 3-13 (aural carriers)
- TBM-1005A: 88-108 MHz (any five frequencies)

SENSITIVITY: (for 30dB quieting)
- TBM-1000B: 1.5 microvolts
- TBM-1001B: 3.0 microvolts
- TBM-1003A: 1.5 microvolts (CH 2-6); 5.0 microvolts (CH-7-13)
- TBM-1005A: 1.5 microvolts

SELECTIVITY: Standard, ±140 kHz @ 3dB point; ±475 kHz @ 50 dB point. With optional NB-1 plug-in filter: ±115 kHz @ 3dB point, ±225 kHz @ 50 dB point.

DE-EMPHASIS: 75 microseconds (±1.0dB)

ANTENNA INPUT IMPEDANCE: 50 ohms unbalanced (BNC connector)

PROGRAM AUDIO OUTPUT: Monaural (or left and right channels with the optional STE-1 card).

- **Level:** +8 dBm (min) @ 100% modulation, 400 Hz
- **Load impedance:** 600 ohms, balanced
- **Harmonic distortion:** 0.75% or less (50-15000 Hz) standard model; 1.0% or less (50-15000 Hz) with NB-1 optional filter.
- **Frequency response:** ±1.0 dB (20-15000 Hz)
- **S/N ratio:** 65 dB or greater below 100% modulation, 400 Hz.

COMPOSITE OUTPUT: (with 10% injection level)

- **Level:** 2.5 volts, peak-to-peak, max, (adjustable)
- **Impedance:** 5,000 ohms
- **Frequency response:** ±1.0 dB (20-75,000 Hz)

SUBCHANNEL: (with optional SCA-2 card)

OPERATING FREQUENCIES: 41 or 67 kHz (other frequencies available on special order with possible change in specifications).

DEVIATION: ±6 kHz equals 100% modulation

SENSITIVITY: 7.5 microvolts for 30 dB quieting

S/N RATIO: 60 dB below 100% modulation, 400 Hz (at injection levels of 15% and 10% for 41 or 67 kHz subcarriers, respectively).

DE-EMPHASIS: 150 microseconds

SELECTIVITY: ±8 kHz @ 3 dB points

AUDIO OUTPUT(S): (two SCA-2 cards may be accommodated)

- **Level:** +8 dBm (min) @ 100% modulation, 400 Hz
- **Load impedance:** 600 ohms, balanced
- **Harmonic distortion:** 67 kHz SCA, 1.0% or less (30-7500 Hz) +6 kHz deviation. 41 kHz SCA, 2.0% or less (30-5000 Hz) ±4 kHz deviation.
- **Frequency response:** 67 kHz SCA ± 1.5 dB (30-7,500 Hz). 41 kHz SCA ±1.5 dB (30-5,000 Hz)

GENERAL

POWER REQUIREMENTS: 120/240 VAC, 50/60 Hz, 25 watts

AMBIENT TEMPERATURE: 10-50°C

DIMENSIONS: (w) 19" EIA standard rack mount, (h) 3½", (d) 12" overall behind panel

PLUG IN ACCESSORIES:

- **STE-1:** Stereo demodulator card
- **SCA-2:** SCA demodulator card (specify frequency)
- **NB-1:** Narrow band filter

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AM MODULATION MONITOR — TBM-8500B

FCC TYPE APPROVAL #3-211

INTERNAL CALIBRATION

THUMBWHEEL SETTABLE PEAK FLASHERS FOR BOTH POSITIVE & NEGATIVE PEAKS

MONITORS 125% POSITIVE PEAK MODULATION

DIRECT READING AM S/N RATIO

REAR ACCESS PLUG-IN CARDS

REMOTE METERING CAPABILITY

SWITCHABLE AF/RF SCOPE OUTPUT

DESCRIPTION

The McMartin TBM-8500B is designed to accurately monitor the percentage of modulation, both positive and negative, of an AM broadcast transmitter as well as indicate carrier shift. The TBM-8500B also provides means to directly measure the AM signal-to-noise ratio.

A built in modulation calibrator allows front panel calibration of the monitor.

The TBM-8500B uses the latest techniques in solid-state circuitry and utilizes rear accessible plug-in grade G-10 glass epoxy etched circuit boards for ease in accessiblity and maintenance.

The TBM-8500B features large, easy to read, 4½" meters for percentage of modulation and for carrier level indication. Separate peak flashers for simultaneous positive and negative modulation indication are adjustable by means of digital thumbwheel switches. The positive peak flasher can be set for any value of modulation between 50% and 129%, and the negative peak flasher for any value of modulation between 50% and 100%, both in 1% increments.

The modulation percentage meter functions as a semi-peak reading voltmeter. A switch provides monitoring of either positive or negative modulation. The modulation meter is switch-selectable to allow direct measurement of AM signal-to-noise ratios as low as −70 dB. In this function the meter is appropriately damped to improve readability in the presence of noise. RF input level and carrier shift are continuously monitored by the front panel carrier level meter.

Front panel terminations include a headphone jack for monitoring the recovered audio, and an oscilloscope output that is switchable between the input RF and the recovered audio.

The rear panel provides termination for balanced 600 ohm recovered audio signal for monitoring, and a high impedance audio output for connection of external distortion measuring equipment.

A carrier failure alarm circuit is provided in the TBM-8500B with relay contacts provided for connection of external alarm devices.

Terminations are provided for remoting both the negative and the positive peak flashers. Modulation percentage may be monitored at a remote location by addition of the optional Model RM-85B 5¼" rack mount remote meter panel.

The TBM-8500B is a 7" rack mount unit and is attractively finished in McMartin beige with a complementary wood grain.

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SPECIFICATIONS

RF FREQUENCY RANGE ..... 540 to 1,600 kiloHertz

RF INPUT
- **Sensitivity** ..... 3 to 10 volts rms
- **Impedance** ..... 50 ohms unbalanced

OUTPUTS:

AUDIO OUTPUT FOR MONITORING
- **Source impedance** ..... 600 ohms balanced
- **Minimum level** ..... ±4 dBm (100% modulation at 1kHz)
- **Frequency response** ..... ±0.5 dB (30 to 10,000 Hz)
- **Distortion** ..... 0.3% (30 to 10,000 Hz)

AUDIO OUTPUT FOR DISTORTION MEASUREMENTS
- **Impedance** ..... 10K ohms minimum
- **Minimum level** ..... 6 to 7 volts rms (100% modulation at 1 kHz)
- **Frequency response** ..... ±0.5 dB (30 to 10,000 Hz)
- **Distortion** ..... 0.3% (30 to 10,000 Hz)

HEADPHONE OUTPUT
- **Impedance** ..... 22K ohms
- **Minimum level** ..... 3.0 volts rms
- **Frequency response** ..... ±0.5 dB (30 to 10,000 Hz)

OSCILLOSCOPE OUTPUT (Switchable between input RF and audio output)
- **Impedance** ..... greater than 100K ohms
- **Level** ..... 5 volts p-p nominal
- **Termination** ..... BNC

PEAK FLASHERS
- **Accuracy** ..... ±2% of full scale (30 to 10,000 Hz)
- **Range** ..... Adjustable in 1% increments
  Positive Peaks 50% to 129%
  Negative Peaks 50% to 100%

MODULATION METER (ballistics meet FCC requirements)
- **Size** ..... 4½"
- **Accuracy** ..... ±2% for 100% modulation ±4% full scale at any other percentage of modulation
- **Frequency response** ..... ±0.5 dB (30 to 10,000 Hz)
- **Scale** ..... 0-100% Negative
  0-125% Positive Peaks
  0-130% Full Scale

CARRIER LEVEL METER
- **Size** ..... 4½"
- **Scale** ..... Zero center, ±5% carrier shift indication in 1% increments

REMOTE PROVISIONS
- **Peak flashers & modulation meter** ..... directly remotable (up to 3700 ohms external loop resistance may be accommodated)

CARRIER FAIL ALARM ..... Normally open and normally closed contacts available on rear panel

POWER REQUIRED ..... 105 to 125 Vac 50/60 Hz 45 watts

AMBIENT TEMPERATURE ..... 0° C to 50° C (32° to 122° F)

MECHANICAL DIMENSIONS ..... 19" (48.3cm) wide x 7" (17.8cm) high x 11" (27.9cm) deep

WEIGHT ..... 22½ lbs.

FINISH ..... McMartin beige with wood grain trim

ORDERING INFORMATION

TBM-8500B ..... AM Modulation Monitor

RM-85B ..... Remote Metering Panel (5¼" Rack Mount)

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AM RF AMPLIFIER

RF-85B

MINIMUM ENVELOPE DISTORTION

AUTOMATIC GAIN CONTROL

REMOTE/LOCAL POWER CHANGE SWITCHING

1.0 MILLIVOLT SENSITIVITY

CARRIER FAILURE ALARM

MOD/FREQ MONITOR OUTPUT

DESCRIPTION

The McMartin Model RF-85B AM RF amplifier is intended for off-air operation of FCC Type Approved AM modulation/frequency monitors.

Special attention has been placed on amplifying the incoming signal with minimum disturbance of the modulation envelope. This includes consideration of providing adequate reserve amplification to accommodate signals with positive modulation peaks in excess of 100%.

The RF-85B uses Class A amplification through the modulation monitor drive circuitry. The frequency monitor output is heavily limited to strip the modulation and produces an approximately square wave output.

The AGC is effective over a 30 dB input signal range and maintains the output level within 0.5 dB for this wide variation in input level.

A high-low panel switch, remotable through an external contact closure, accommodates dual power situations. The RF-85B is equipped with a carrier-failure relay which operates on carrier interruptions of one second or longer duration. The relay contacts are terminated for connection of external visual or aural alerting devices.

SPECIFICATIONS

FREQUENCY RANGE: ..... 540-1600 kHz

INPUT SENSITIVITY: ..... 1.0 millivolts, minimum

INPUT IMPEDANCE: ..... 50 ohms unbalanced, nominal

SELECTIVITY: ..... down 1.0 dB or less, ±10 kHz
down 40.0 dB or greater, ±40 kHz

S/N RATIO: ..... 50 dB or greater below 100% modulation (with 1.0 millivolt input signal)

AGC RANGE: ..... 30 dB variation in input level produces less than 0.5 dB output level change

OUTPUTS

Modulation Monitor: ...0 to 0.5 watts, unmodulated carrier, 50 ohms

Frequency Monitor: ...5 volts, peak-to-peak, square wave, 1K-ohm

TEMPERATURE RANGE: ..... 0° to 50° Celsius

REAR CHASSIS TERMINATIONS: .....
1. Input (BNC)
2. Mod. Mon. out (BNC)
3. Freq. Mon. out (BNC)
4. Carrier failure alarm
5. Remote power level switching

POWER REQUIRED: ..... 117 Vac, 50/60 Hz

DIMENSIONS: ..... EIA standard rack,
19" (48.3 cm) width
5¼" (13.3 cm) height
10" (25.5 cm) depth

WEIGHT: ..... 10 pounds

FINISH: ..... McMartin Beige with woodgrain trim

MAR/75

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AM / FM BROADCAST RECEIVERS

AMR-1
FMR-1

FMR-1 shown

DESCRIPTION

The McMartin AMR-1 and FMR-1 are low cost, high performance, single channel AM or FM broadcast receivers for use primarily as the companion AM or FM receiver with the McMartin EBS-1 carrier-break, 1000 Hz, or the EBS-2, two-tone Emergency Broadcast Systems monitors, or as reliable off-air sources for house monitoring systems.

The AMR-1 contains a monolithic silicon integrated circuit from which the RF amplifier, mixer, low-drift tunable oscillator, 455 kHz IF amplifier, and AGC detector are constructed.

The RF amplifier stage of the FMR-1 uses a dual-gate, diode-protected MOSFET in conjunction with four high-Q tuned circuits, resulting in minimum cross-modulation and overload effects. AGC over a 30 dB range is applied to the input MOSFET device.

The FMR-1 is crystal-controlled. Selectivity is established by a 4-pole 10.7 MHz IF filter. A monolithic silicon IC, featuring three stages of amplification/limiting; a doubly-balanced quadrature detector; delayed AGC voltage output; and audio preamplification is used.

Each model delivers rear chassis termination of both +8dBM, 600 balanced, and 1.0 volt unbalanced audio output.

The latter is the audio drive signal for the EBS-1 or EBS-2 monitor. Both the AMR-1 and FMR-1 circuitry include a carrier-off relay closure to activate carrier-off sensing circuitry of the EBS-1 or to operate external alarm devices.

The AMR-1 or FMR-1 occupy 1¾" of vertical space. An illuminated front panel power switch is provided.

FEB/75

SPECIFICATIONS

	AMR-1	FMR-1
FREQUENCY RANGE (specify operating frequency)	540-1620 kHz	88-108 MHz
ANTENNA INPUT (BNC type conn.)	50/75 ohms	75 ohms
SENSITIVITY	2.0 μV/30 dB quieting	30 μV/20 dB S/N @ 30% mod.
SELECTIVITY	3 dB point: 280 kHz 50 dB point: 950 kHz	6 dB point: ±10 kHz
HARMONIC DISTORTION	0.75% or less	3.0% or less @ 90% mod.
S/N RATIO	60 dB below 100% mod. w/full limiting	45 dB below 100% mod. w/10 mV input
AF RESPONSE	±1.0 dB, 30-15000 Hz	±1.0 dB, 50-5000 Hz; ±3.0 dB 5-10 kHz
AUDIO OUTPUTS	+8 dBM, 600 ohms bal., and 1.0 V, 600 ohms unbal.	
POWER REQUIRED	115 Vac, 50/60 Hz, 6 watts	
DIMENSIONS	19" (48.3 cm) width 1¾" (4.45 cm) height 6" (12.7 cm) depth	
REAR CHASSIS TERMINATIONS	Antenna (BNC); Balance audio out; unbal. audio out; Relay contacts (n.o.)	
FINISH	McMartin beige with woodgrain trim	

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McMartin®

EBS TWO-TONE MONITOR

EBS-2

RELIABLE DIGITAL LOGIC DESIGN

MULTIPLE RECEIVER INPUTS

STRAIGHT-FORWARD OPERATION

MONITORS NEW 2-TONE EBS SYSTEM

CARRIER FAILURE ALARM CIRCUITRY

REMOTE RESET CAPABILITY

DESCRIPTION

The McMartin Model EBS-2, EBS Monitor satisfies the need for a reliable, trouble-free method of monitoring the new two-tone Emergency Broadcast Service (EBS). In use, its operation is simple and readily understood by non-technical personnel.

The EBS-2 requires an audio input level of 100 millivolts. It is designed primarily for use with the McMartin FMR-1 (FM) or AMR-1 (AM) fixed frequency receivers. Since the EBS-2 contains its own power supply, it may be used with other receiving equipment which can provide proper audio output level. Two EBS receivers may be connected simultaneously to the EBS-2 audio input.

By using digital logic design requiring two simultaneous tones, the EBS-2 responds only to the two designated EBS tones of precise frequency tolerances. For example, the transmitted audio tone frequencies are 853 and 960 Hertz, plus or minus 0.5 Hertz.

When the proper tones are transmitted and received on the AMR-1 or FMR-1 the EBS-2 decodes the information and automatically switches the transmitted EBS message to its loudspeaker output. The EBS-2 has three front-panel pushbutton switches. Interlocked LISTEN/OPERATE switches and a momentary RESET switch. When the OPERATE switch is depressed, the EBS-2 is in its normal, muted, operating condition.

Depressing the LISTEN button by-passes the automatic speaker muting for checking purposes. After an EBS transmission has been received, depressing the RESET momentary switch restores the unit to its normal operating condition.

Audio output level from the loudspeaker is preset by an internal control to avoid loss of speaker output due to tampering or inadvertent misadjustment. Provision is made for the connection of external alarm devices and for remote reset of the EBS-2.

SPECIFICATIONS

AUDIO	
TONE CONDITION	
Frequency lock range	853, ±25 Hz; 960, ±25 Hz
Input audio level	100 millivolts, minimum
Response Time	8-12 seconds
FRONT PANEL CONTROLS	Interlocked LISTEN/OPERATE; Momentary RESET; Power on/off, illuminated.
REAR CONNECTIONS	Rear chassis screw terminals (1) audio input #1 (2) audio input #2 (3) alarm relay closure (4) remote reset
POWER REQUIRED	115 Vac, 50/60 Hz, 6 watts
DIMENSIONS	EIA standard rack 19" (48.3 cm) width 3½" (8.9 cm) height 6" (12.7 cm) depth
FRONT PANEL FINISH	McMartin beige with woodgrain trim

FEB/75

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McMartin®

PRECISION TWO-TONE EBS GENERATOR

TG2/EBS

MANUAL OR AUTO TIMING
INDEPENDENT TONE LEVEL CONTROLS
CRYSTAL-DERIVED TONE BASE
REMOTE START

DESCRIPTION

The McMartin Model TG-2/EBS Precision Two Tone EBS Generator meets the exacting FCC requirements to produce the Two-Tone Attention Signal for the new Emergency Broadcast System (EBS) which becomes effective for all AM, FM and TV stations on January 15, 1976.

The regulations specify the two tone frequencies as 853 and 960, ±0.5, Hertz. This stability is provided in the TG-2/EBS by digital logic division from a highly-stable crystal oscillator. The derived audio tones are filtered and combined, with individual internal level controls to produce a +8 dBm, balanced 600-ohm output for feeding the two-tone information through normal program channels.

The individual tone level controls permit presetting of the output level to meet the 40%, ±5% modulation requirement of the new rules.

The TG-2/EBS also incorporates an automatic duration timing device. The two tones may be initiated either by manual operation of a front panel CONTINUOUS OUTPUT pushbutton, or may be preset by a TIMED OUTPUT pushbutton switch with automatic transmission of 22 seconds duration by operation of a momentary-action front panel START pushbutton. The latter operation may also be initiated remotely. A front panel LED indicator shows the presence of tones.

The TG-2/EBS includes a self-contained power supply and regulator. It is finished in beige with woodgrain trim.

SPECIFICATIONS

OUTPUT FREQUENCIES: ..... 853 and 960 Hertz

FREQUENCY STABILITY: ..... ±0.4 Hertz

OUTPUT LEVEL: ..... +8 dBm max, combined signals (each tone level independently adjustable)

OUTPUT IMPEDANCE: ..... 600 ohms, balanced

TIMED OUTPUT DURATION: ..... 22.5, ±1.0, seconds

DIMENSIONS: ..... EIA Standard rack mount
19" (48.3cm) width
3½" (8.9cm) height
7½" (19.1cm) depth

FINISH: ..... McMartin beige with woodgrain trim

FEB/75

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TRANSISTOR AMPLIFIERS, 10-15 watts

LT-80C/108C

10-15 WATTS RMS POWER OUTPUT
LOW PROFILE 3½" HIGH
BALANCED LOW Z MICROPHONE INPUT
MICROPHONE/PROGRAM INPUTS

BUILT-IN ELECTRONIC MUTING (LT-80C)
ELECTRONIC SHORT CIRCUIT PROTECTION
ALL SILICON DESIGN
SINGLE/DUAL RACK MOUNT OPTIONS

DESCRIPTION

The LT-80C and 108C are conservatively rated wide power-bandwidth 10-15 watt rms audio amplifiers. They are designed for system sound applications requiring one microphone and one program source. As many as twenty speakers (tapped ½ watt) may be driven from the 25 or 70.7 volt balanced output, or a single four-ohm speaker system may be driven to a full 15 watts rms from the unbalanced output.

The microphone input is standard balanced low impedance 50/150 ohms with −60 dBm input sensitivity and 30 dB dynamic range. A three pin XL male connector is provided for microphone termination on the LT-80C. Screw terminal input connection is provided on the 108C.

The LT-80C features a fully electronic page mute system. Actuation of a simple single pole, single-throw switch closure at the microphone location automatically mutes the program channel and energizes the microphone channel for paging purposes. This switching operation is completely free of clicks and pops.

The program channel input is unbalanced 25K ohms with 300 millivolt sensitivity. An optional plug-in transformer card, Model MT-3, provides for balanced bridging or 600-ohm matching input with a sensitivity of −10 dBm. Input termination is either screw terminals or pin connector for the unbalanced inputs, and screw terminals for balanced input.

A 20 dB treble-cut tone control is provided for high-end roll off of the program channel. The microphone input is wired for 10 dB bass roll off for crisp voice quality and may be field modified for flat response. On the LT-80C, the tone control is on the front panel and in the 108C is a front access, recessed screwdriver adjusted control. An optional gain limit control may be field installed to limit the range of the front panel controls.

Screw terminal output termination allows for connection of unbalanced loads from 4 to 16 ohms. Balanced 25 volt (62.5 ohm) and 70.7 volt (500 ohm) outputs are also provided. Continuous short circuit operation of any output will not damage transistors or the power supply.

Attractive, low profile packaging, with the capability of single or dual-unit optional rack mounts, make the LT-80C and 108C even more flexible in application.

OCT./'73

McMartin

SPECIFICATIONS

POWER OUTPUT:.....10 watts rms—16 ohms unbalanced; 25/70.7 volt balanced line
.....12.5 watts rms—8 ohms unbalanced
.....15 watts rms—4 ohms unbalanced

FREQUENCY RESPONSE:.....±1 dB, 50-15,000 Hz

DISTORTION:.....1% or less, 50-20,000 Hz at 12.5W output

HUM & NOISE:
MIC:.....60 dB below 10 watts output
PGM:.....70 dB below 10 watts output

OUTPUTS:.....4/8/16 ohms unbalanced; 25/70.7 volt balanced line

PROGRAM/LINE INPUT:.....25K-ohm unbalanced, 600 ohms balanced with optional MT-3 plug-in card

PROGRAM/LINE SENSITIVITY:.....300 millivolts, 25K ohm unbalanced input.
−10 dBm (balanced 10K ohm bridging with MT-3 plug-in card.)
0 dBm (balanced 600-ohm matching with MT-3 plug-in card.)

OPERATING TEMPERATURE:.....to 150°F (66°C)

OVERLOAD PROTECTION:.....Solid state protection circuit samples output stage current and disables input signal during excessive loading condition

POWER REQUIRED:.....115 Vac, 50/60 Hz, 30 watts (Primary taps for 105 and 125 Vac)

MIC INPUT:.....150 ohms balanced

	LT-80C	108C
MIC TERMINATION:	....XL Connector	.Screw terminals
MUTING:	.....Electronic muting of microphone and program circuits	.....None
RESPONSE EQUALIZATION:	.....Front panel treble cut tone control (−20dB at 20kHz)	.....Front panel screwdriver adjustment treble cut tone control (−20dB at 20kHz) .....Microphone bass cut(−10dB at 50Hz). Flat response possible by change of one capacitor.
DIMENSIONS:	.....8½"W x 7¼"D x 3½"H (21.6 cm W x 18.4 cm D x 8.9 cm H)	
FINISH:	.....McMartin Blue and gray	
SHIPPING WEIGHT:	.....4 pounds (1.81 kg)	

OPTIONAL ACCESSORIES:

MT-3.....Plug-in program channel matching/bridging line input card

MRP-3.....Single unit rack mounting kit 3½" x 19" EIA standard rack (8.8 cm H x 48.3 cm W)

MRP-4..... Dual unit rack mounting kit (two units may be rack mounted, side by side) 3½" x 19" EIA standard rack (8.8 cm H x 48.3 cm W)

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McMartin

25 WATT UNIVERSAL AMPLIFIER LT-252B

ONE LOW-Z MIC INPUT
ONE LOW-Z MIC/MAG PHONO INPUT

ONE HI-Z UNBALANCED PROGRAM INPUT
CONVERTIBLE TO LOW-Z BALANCED

TONE COMPENSATION

DESK MOUNT

EXCELLENT PERFORMANCE

DESCRIPTION

The McMartin LT-252B is a 25-watt rms silicon solid state amplifier designed for multiple input applications. It is completely self-contained and housed in an attractive cabinet suitable for desk top use.

The LT-252B accommodates two 150-ohm balanced microphone inputs through XLR type connectors and a medium level 25K ohm unbalanced program input. One of the microphone inputs may be converted to RIAA equalized magnetic phono service by simple insertion of the EPK-1 plug-in equalized phono kit. The program input can accommodate medium level, 600 ohm matching or 10K ohm bridging signal sources by addition of the optional plug-in MT-3 module.

Front panel tone compensation controls permit ±15 dB treble and bass boost or cut.

The LT-252B is designed to feed 25- or 70.7-volt balanced; or 4- or 8-ohm unbalanced loads. Where applicable, direct coupled 4-ohm loads by-passing the output transformer provide ±1.0 dB frequency response from 50 to 20,000 Hertz.

The LT-252B is conservatively designed to provide highly-reliable continuous service.

SEPT/74

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SPECIFICATIONS

POWER OUTPUT ..... 25 Watts rms
35 Watts music
50 Watts peak

FREQUENCY RESPONSE

Microphone inputs ..... ±2.0 dB, 200-20,000 Hz, with 10 dB controlled low frequency roll-off. Convertible to ±2 dB response, 40-20,000 Hz.

Program input ..... ±1.0 dB, 50-10,000 Hz; ±1.0 dB, 50-20,000 Hz with 4-Ohm direct-coupled output.

Tone controls ..... Treble: ±15 dB @ 15,000 Hz.
Bass: ±15 dB @ 50 Hz.

DISTORTION ..... Less than 1.0%, 50-10,000 Hz @ 25 W rms output and below

HUM AND NOISE

Microphone inputs ..... 60 dB or greater below RPO with 3.0 millivolt reference input signal

Program input ..... 70 dB or greater below RPO

INPUT SENSITIVITY

Microphone inputs ..... −60 dBm

Program input ..... 0.4 volts unbalanced. With optional MT-3 plug-in card: 0 dBm, 600 ohms matching; or −10 dBm, 10K ohms bridging.

INPUTS

Microphone ..... Two (2) 150 ohms balanced. One (1) input convertible to 47K ohm unbalanced RIAA equalized phono input (with optional EPK-1 Kit).

Program ..... One (1), 25K ohm unbalanced. Convertible to 600 ohm balanced matching, or 10K ohm balanced bridging (with optional MT-3 card).

OUTPUTS ..... 25- and 70.7-volts balanced; 4 or 8 ohms unbalanced. Unbalanced 4 ohm direct coupled output available on terminal strip.

CONTROLS ..... Two microphone gain; one program gain; one bass boost/cut; one treble boost/cut; illuminated power switch.

OPERATING TEMPERATURE ..... Full performance specifications to 150° F. (65° C.).

POWER REQUIRED ... 105-115/115-125 Vac, 50/60 Hz, 75W

DIMENSIONS ..... 3.5" (8.9 cm) high
12" (30.5 cm) wide
8.75" (22.3 cm) deep

WEIGHT ..... 7.5 lbs. Shipping weight, 10 lbs.

FINISH ..... Panel, McMartin beige with leather grain trim.
Cabinet, color — bronze metallic.

ORDERING INFORMATION

LT-252B ..... 25 watt rms universal amplifier

ACCESSORIES

MT-3 ..... Plug-in 600 ohm/10K ohm transformer card

EPK-1 ..... Plug-in RIAA phono kit

ARCHITECTS' & ENGINEERS' SPECIFICATIONS

The amplifier shall be a McMartin LT-252B, or approved equal. It shall be of all silicon, solid state design and be capable of 25 watts rms, 35 watts music or 50 watts peak power output. Only amplifiers meeting all three wattage ratings will be accepted. The amplifier shall have a 1.0% or less total harmonic distortion when operated at rated power output level, or below. Frequency response through the microphone inputs shall be ±2.0 dB or less over the range of 200 to 20,000 Hertz with provision by simple field alteration of extending the frequency range to cover 40 to 20,000 Hertz. One of the microphone channels, shall by installation of a simple plug-in adaptor, be converted to operation as an RIAA-equalized magnetic phono preamplifier. The frequency response of the program input channel shall be within ±1.0dB over the spectrum from 50 to 10,000 Hertz. The hum and noise level shall be 60 dB or greater below rated power output produced by a 3.0 millivolt reference input signal through either of the microphone channels. The hum and noise through the program input channel shall be 70dB or greater below the rated power output level. The amplifier shall permit ± 15 dB boost/cut at 15,000 Hz and 50 Hz by means of treble/bass front panel controls respectively. The amplifier shall have outputs of 4- and 8-ohms unbalanced and 25- and 70.7-volts balanced configuration. Rear panel termination of a 4-ohm direct coupled output shall be provided.

The amplifier front panel shall be finished in McMartin beige with leather grain trim, self-contained in an aluminum enclosure of bronze metallic finish, suitable for desk top use.

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McMartin

25 WATT POWER AMPLIFIER LT-250C

LESS THAN 1% DISTORTION • 40 - 20,000 Hz FULL POWER FREQUENCY RESPONSE
CURRENT SENSING OVERLOAD PROTECTION • BALANCED 70.7 & 25 VOLT OUTPUTS
BASS CUT SWITCH FOR HORN SPEAKER USE • UNBALANCED 4, 8, & 16 OHM OUTPUTS

DESCRIPTION

The LT-250C is a 25 watt rms silicon solid-state transistorized amplifier designed for low distortion output over a full power bandwidth of 40-20,000 Hz. The low frequency response of the amplifier can be extended to 20 Hz when operated with the field convertible direct coupled output.

This basic amplifier utilizes plug-connected circuit board construction, with power transistors and power supply components mounted and placed for maximum accessibility. Computer grade capacitors, conservatively-rated transformers and heat sinks contribute to maximum performance and reliability.

The LT-250C accommodates either an unbalanced high impedance or a 600 ohm balanced program input. The balanced input utilizes a transformer, factory wired for 600 ohms matching. It is easily field modified for 10K ohms bridging without additional components.

The front panel program gain control may be transferred to the rear panel where that location is preferred.

The LT-250C amplifier features an overload protection, fast-acting current-limiting electronic circuit that automatically disables amplifier drive should a potentially harmful overload occur.

The LT-250C amplifier has 70.7 V and 25 V balanced outputs, plus 4, 8, and 16 ohm unbalanced outputs. Input and output connections are on convenient screw terminals.

The amplifier output may be directly coupled to an 8 ohm load. When so operated, the low-end frequency response is extended to 20 Hz.

A rear-panel mounted bass cut switch tailors the amplifier response (14 dB down at 100Hz) in installations where horn speakers are utilized.

The LT-250C, styled in McMartin beige with complementary leather grain accent, is designed for direct mounting in a 19" rack. An attractive desk top cabinet is available.

LT-250C — continuing the excellence in solid-state amplifiers pioneered by McMartin Industries.

JUNE/74

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SPECIFICATIONS

POWER OUTPUT ..... 25 watts rms
35 watts music
50 watts peak

FREQUENCY RESPONSE ..... ±1 dB 40-20,000 Hz
±1 dB 20-20,000 Hz direct coupled output

DISTORTION ..... Less than 1% (40-20,000 Hz) at RPO and below

HUM AND NOISE (Program) ..... 85 dB below RPO

PROGRAM INPUT ..... Unbalanced 25K ohms, and balanced 10K ohms bridging or balanced 600 ohms matching

INPUT SENSITIVITY ..... 0.4 volts unbalanced
0 dBm 600 ohms matching
−10 dBm 10K ohms bridging

OUTPUTS ..... Balanced 70.7 volts and 25 volts; Unbalanced 4, 8, and 16 ohms; Unbalanced 8 ohm direct output

CONTROLS ..... Program gain power on/off

POWER REQUIRED ..... 105-115 Vac or 115-125 Vac
50/60 Hz 75 watts

DIMENSIONS ..... 3½" (8.9 cm) high
19" (48.3 cm) wide
5¾" (14.5 cm) deep

WEIGHT ..... 11 lbs. Shipping weight 13 lbs.

OPERATING TEMPERATURE ..... Full performance to 150° F (65° C)

FINISH ..... McMartin beige with leather grain trim

ORDERING INFORMATION

LT-250C ..... 25 watt rms basic amplifier

ACCESSORIES

DTC-1 ..... Desk top cabinet; 3½" (8.9 cm) high
19¼" (48.9 cm) wide
9¼" (23.5 cm) deep

All tests conducted in accordance with EIA Standard SE-101-A where applicable.

ARCHITECTS' & ENGINEERS' SPECIFICATIONS

The amplifier shall be a McMARTIN LT-250C, or approved equal. It shall be of all silicon solid-state construction and capable of 25 watts rms, 35 watts music, 50 watts peak power output. Only amplifiers meeting all three wattage ratings will be accepted. The amplifier shall have less than 1% distortion at rated output and below. The frequency response shall be ±1 dB 40-20,000 Hz with a transformer output, and ±1 dB 20-20,000 Hz with a field strappable direct 8-ohm output. The amplifier noise shall be at least 85 dB below signal at the rated power output. The amplifier shall be designed to operate continuously on line voltages of 105 to 125 Volts, 50/60 Hz over a temperature range of 0° to 150° F. (−18° C to 65° C). The amplifier shall be equipped with a current sensing overload protection circuit that will remove audio drive from the amplifier should an overload or short circuit develop. This protection circuit shall restore the amplifier in one millisecond when the short or overload is removed.

Only amplifiers offering this type of protective circuits shall be acceptable.

The amplifier shall be capable of accepting either a balanced or unbalanced program input without the installation of additional equipment. A transformer shall be permanently installed in the amplifier to accommodate 10K ohm and 600 ohm balanced line inputs, both matching and bridging shall be available. Screw terminals shall be provided for balanced inputs.

The amplifier shall have outputs of 4, 8, and 16 ohms unbalanced, and 70.7 V and 25 V balanced. The balanced circuits shall be capable of being balanced to ground, or floating balanced. A bass cut switch shall be provided that shall attenuate the bass in the output. A 14 dB cut at 100 Hz will be required. Screw type terminals shall be provided for all outputs. A direct coupled 8 ohm output shall be available by strapping the rear panel connector, and the direct coupled output shall provide extended low frequency response down to 20 Hz.

The amplifier shall be equipped with a program gain control, and an illuminated power on/off switch.

The amplifier shall have an unswitched 115 volt 3 wire grounded accessory outlet.

The amplifier shall be McMartin beige with a leather grain trim.

The amplifier shall be capable of being directly mounted in a 19" relay rack, and shall be ☐ supplied with, ☐ capable of being housed in a complementary appearing desk top housing.

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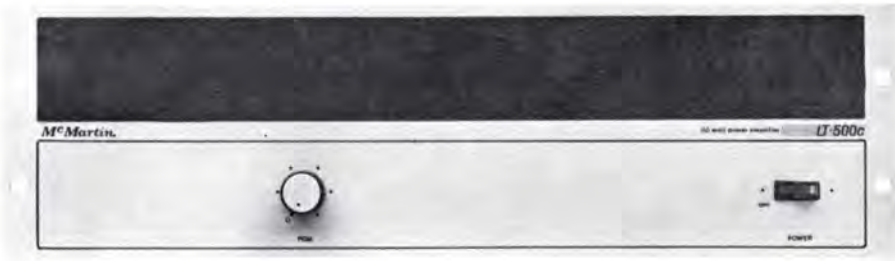
McMartin

50 WATT POWER AMPLIFIER LT-500C



LESS THAN 1% DISTORTION

40 - 20,000 Hz FULL POWER FREQUENCY RESPONSE

UNBALANCED 4, 8, & 16 OHM OUTPUTS

CURRENT SENSING OVERLOAD PROTECTION

BASS CUT SWITCH FOR HORN SPEAKER USE

BALANCED 70.7 & 25 VOLT OUTPUTS

DESCRIPTION

The LT-500C is a 100 watt rms solid-state transistorized amplifier designed for low distortion output over a full power bandwidth of 40-20,000 Hz. The low frequency response of the amplifier can be extended to 20 Hz when operated with the field convertible direct coupled output.

The amplifier utilizes plug-connected printed circuit board construction, with power transistors and power supply components mounted and placed for maximum accessibility. Computer grade capacitors, conservatively-rated transformers and heat sinks contribute to maximum performance and reliability.

The LT-500C accommodates either an unbalanced high impedance or a balanced 600 ohm program input. The balanced input utilizes a transformer, factory wired for 600 ohms matching. It is easily field modified for 10K ohms bridging without additional components.

The front panel program gain control may be transferred to the rear panel where that location is preferred.

The LT-500C amplifier features an overload protection, fast-acting current-limiting electronic circuit that automatically disables amplifier drive should a potentially harmful overload occur. An optional M-GUARD EF-3 electronic fuse is available to supplement the standard current sensing protective circuit. The M-GUARD upon sensing a fault, shuts down the amplifier power supply protecting the output devices in the amplifier. M-GUARD action is instantaneous and rapidly restores the amplifier to operation when the short or overload is removed.

The LT-500C amplifier has 70.7 V and 25 V balanced outputs, plus 4, 8, and 16 ohm unbalanced outputs. Input and output connections are on convenient screw terminals.

The amplifier output may be directly coupled to an 8 ohm load. When so operated, the low-end frequency response is extended to 20 Hz.

A bass cut switch tailors the amplifier response (14 dB down at 100 Hz) in installations where horn speakers are utilized.

The LT-500C amplifier, styled in McMartin beige with complementary leather grain accent, is designed for direct mounting in a 19" rack. An attractive desk top cabinet is available.

LT-500C — continuing the excellence in solid-state amplifiers pioneered by McMartin Industries.

JUNE/'74

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McMartin.

SPECIFICATIONS

POWER OUTPUT	50 watts rms 75 watts music 100 watts peak
FREQUENCY RESPONSE	±1 dB 40-20,000 Hz ±1 dB 20-20,000 Hz direct coupled output
DISTORTION	Less than 1% (40-20,000 Hz) at RPO and below
HUM AND NOISE (Program)	85 dB below RPO
PROGRAM INPUT	Unbalanced 25K ohms and balanced 10K ohms bridging or balanced 600 ohms matching
INPUT SENSITIVITY	0.4 volts unbalanced 0 dBm 600 ohms matching −10 dBm 10K ohms bridging
OUTPUTS	Balanced 70.7 volts and 25 volts unbalanced 4, 8, and 16 ohms. Unbalanced 8 ohm direct output
CONTROLS	Program gain power on/off
POWER REQUIRED	105-115 Vac or 115-125 Vac or 125-135 Vac 50/60 Hz 150 watts
DIMENSIONS	5¼" (13.3 cm) high 19" (48.3 cm) wide 9¼" (23.5 cm) deep
WEIGHT	26 lbs. Shipping weight 28 lbs.
OPERATING TEMPERATURE	Full performance to 150° F (65° C)
FINISH	McMartin beige with leather grain trim

ORDERING INFORMATION

LT-500C	50 watt rms basic amplifier

ACCESSORIES

EF-3	M-GUARD electronic fuse
DTC-2	Desk top cabinet; 5¼" (13.3 cm) high 19¼" (48.9 cm) wide 13½" (34.3 cm) deep

All tests conducted in accordance with EIA Standard SE-101-A where applicable.

ARCHITECTS' & ENGINEERS' SPECIFICATIONS

The amplifier shall be a McMARTIN LT-500C or approved equal. It shall be of all silicon solid-state construction and capable of 50 watts rms, 75 watts music, 100 watts peak. Only amplifiers meeting all these wattage ratings will be accepted. The amplifier shall have distortion less than 1% at rated output and below. The frequency response shall be ±1 dB 40-20,000 Hz with transformer output, and ±1 dB 20-20,000 Hz with field strappable direct output. The amplifier noise shall be at least 85 dB below signal at the rated power output. The amplifier shall be designed to operate continuously on line voltages of 105 to 125 Volts, 50/60 Hz over a temperature range of 0° to 150 F. (18° C to 65° C). The amplifier shall be equipped with a current sensing overload protection circuit that will remove audio drive from the amplifier should an overload or short circuit develop. This protection circuit shall restore the amplifier in one millisecond when the short or overload is removed. The amplifier shall optionally accommodate an all solid-state electronic protection circuit that will shut down the amplifier power supply should an overload or short circuit occur. This optional protective circuit will rapidly restore the amplifier to operation after the short or overload is removed. Only amplifiers offering the capability of both types of protective circuits shall be acceptable.

The amplifier shall be capable of accepting either a balanced or unbalanced program input without the installation of additional equipment. A transformer shall be permanently installed in the amplifier to accommodate 10K ohm and 600 ohm balanced line inputs, both matching and bridging shall be available. Screw terminals shall be provided for balanced inputs.

The amplifier shall have outputs of 4, 8, and 16 ohms unbalanced, and 70.7 V and 25 V balanced. The balanced circuits shall be capable of being balanced to ground, or floating balanced. A bass cut switch shall be provided that shall attenuate the bass in the output. A 14 dB cut at 100 Hz will be required. Screw terminals shall be provided for all outputs. A direct coupled 8 ohm output shall be available by strapping the rear panel connector and the direct coupled output shall provide extended low end frequency response down to 20 Hz.

The amplifier shall be equipped with a program gain control, and an illuminated on/off switch.

The amplifier shall have an unswitched 115 Volt 3 wire grounded accessory outlet.

The amplifier shall be McMartin beige with a leather grain trim.

The amplifier shall be capable of being directly mounted in a 19" relay rack, and shall be ☐ supplied with, ☐ capable of being housed, in a complementary appearing desk top housing.

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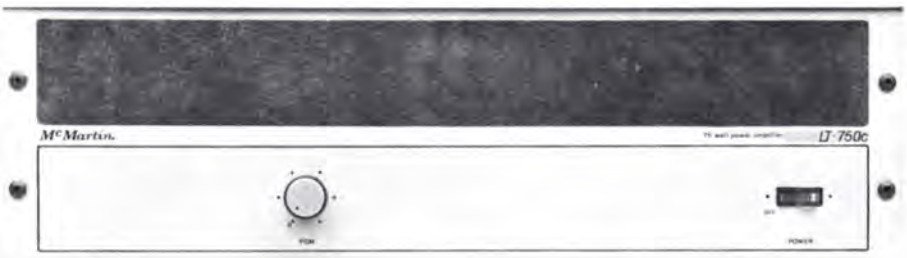
McMartin

75 WATT POWER AMPLIFIER — LT-750C



LESS THAN 1% DISTORTION

40 - 20,000 Hz FULL POWER FREQUENCY RESPONSE

UNBALANCED 4, 8, & 16 OHM OUTPUTS

CURRENT SENSING OVERLOAD PROTECTION

BASS CUT SWITCH FOR HORN SPEAKER USE

BALANCED 70.7 & 25 VOLT OUTPUTS

DESCRIPTION

The LT-750C is a 75 watt rms solid-state transistorized amplifier designed for low distortion output over a full power bandwidth of 40-20,000 Hz. The low frequency response of the amplifier can be extended to 20 Hz when operated with the field convertible direct coupled output.

The amplifier utilizes plug-connected printed circuit board construction, with power transistors and power supply components mounted and placed for maximum accessibility. Computer grade capacitors, conservatively-rated transformers and heat sinks contribute to maximum performance and reliability.

The LT-750C accommodates either an unbalanced high impedance or a balanced 600 ohm program input. The balanced input utilizes a transformer, factory wired for 600 ohms matching. It is easily field modified for 10K ohms bridging without additional components.

The front panel program gain control may be transferred to the rear panel where that location is preferred.

The LT-750C amplifier features an overload protection, fast-acting current-limiting electronic circuit that automatically disables amplifier drive should a potentially harmful overload occur. An optional M-GUARD EF-3 electronic fuse is available to supplement the standard current sensing protective circuit. The M-GUARD upon sensing a fault, shuts down the amplifier power supply protecting the output devices in the amplifier. M-GUARD action is instantaneous and rapidly restores the amplifier to operation when the short or overload is removed.

The LT-750C amplifier has 70.7 V and 25 V balanced outputs, plus 4, 8, and 16 ohm unbalanced outputs. Input and output connections are on convenient screw terminals.

The amplifier output may be directly coupled to an 8 ohm load. When so operated, the low-end frequency response is extended to 20 Hz.

A bass cut switch tailors the amplifier response (14 dB down at 100 Hz) in installations where horn speakers are utilized.

The LT-750C amplifier, styled in McMartin beige with complementary leather grain accent, is designed for direct mounting in a 19″ rack. An attractive desk top cabinet is available.

LT-750C — continuing the excellence in solid-state amplifiers pioneered by McMartin Industries.

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SPECIFICATIONS

POWER OUTPUT	75 watts rms 112 watts music 150 watts peak
FREQUENCY RESPONSE	±1 dB 40-20,000 Hz ±1 dB 20-20,000 Hz direct coupled output
DISTORTION	Less than 1% (40-20,000 Hz) at RPO and below
HUM AND NOISE (Program)	85 dB below RPO
PROGRAM INPUT	Unbalanced 25K ohms and balanced 10K ohms bridging or balanced 600 ohms matching
INPUT SENSITIVITY	0.4 volts unbalanced 0 dBm 600 ohms matching −10 dBm 10K ohms bridging
OUTPUTS	Balanced 70.7 volts and 25 volts unbalanced 4, 8, and 16 ohms. Unbalanced 8 ohm direct output
CONTROLS	Program gain power on/off
POWER REQUIRED	105-115 Vac or 115-125 Vac or 125-135 Vac 50/60 Hz 200 watts
DIMENSIONS	5¼" (13.3 cm) high 19" (48.3 cm) wide 9¼" (23.5 cm) deep
WEIGHT	26 lbs. Shipping weight 28 lbs.
OPERATING TEMPERATURE	Full performance to 150° F (65° C)
FINISH	McMartin beige with leather grain trim

ORDERING INFORMATION

LT-750C	75 watt rms basic amplifier

ACCESSORIES

EF-3	M-GUARD electronic fuse
DTC-2	Desk top cabinet; 5¼" (13.3 cm) high 19¼" (48.9 cm) wide 13½" (34.3 cm) deep

All tests conducted in accordance with EIA Standard SE-101-A where applicable.

ARCHITECTS' & ENGINEERS' SPECIFICATIONS

The amplifier shall be a McMARTIN LT-750C or approved equal. It shall be of all silicon solid-state construction and capable of 75 watts rms, 112 watts music, 150 watts peak. Only amplifiers meeting all these wattage ratings will be accepted. The amplifier shall have distortion less than 1% at rated output and below. The frequency response shall be ±1 dB 40-20,000 Hz with transformer output, and ±1 dB 20-20,000 Hz with field strappable direct output. The amplifier noise shall be at least 85 dB below signal at the rated power output. The amplifier shall be designed to operate continuously on line voltages of 105 to 125 Volts, 50/60 Hz over a temperature range of 0° to 150 F. (−18° C to 65° C). The amplifier shall be equipped with a current sensing overload protection circuit that will remove audio drive from the amplifier should an overload or short circuit develop. This protection circuit shall restore the amplifier in one millisecond when the short or overload is removed. The amplifier shall optionally accommodate an all solid-state electronic protection circuit that will shut down the amplifier power supply should an overload or short circuit occur. This optional protective circuit will rapidly restore the amplifier to operation after the short or overload is removed. Only amplifiers offering the capability of both types of protective circuits shall be acceptable.

The amplifier shall be capable of accepting either a balanced or unbalanced program input without the installation of additional equipment. A transformer shall be permanently installed in the amplifier to accommodate 10K ohm and 600 ohm balanced line inputs, both matching and bridging shall be available. Screw terminals shall be provided for balanced inputs.

The amplifier shall have outputs of 4, 8, and 16 ohms unbalanced, and 70.7 V and 25 V balanced. The balanced circuits shall be capable of being balanced to ground, or floating balanced. A bass cut switch shall be provided that shall attenuate the bass in the output. A 14 dB cut at 100 Hz will be required. Screw terminals shall be provided for all outputs. A direct coupled 8 ohm output shall be available by strapping the rear panel connector and the direct coupled output shall provide extended low end frequency response down to 20 Hz.

The amplifier shall be equipped with a program gain control, and an illuminated on/off switch.

The amplifier shall have an unswitched 115 Volt 3 wire grounded accessory outlet.

The amplifier shall be McMartin beige with a leather grain trim.

The amplifier shall be capable of being directly mounted in a 19" relay rack, and shall be ☐ supplied with, ☐ capable of being housed, in a complementary appearing desk top housing.

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McMartin

100 WATT POWER AMPLIFIER LT-1000C

LESS THAN 1% DISTORTION

40 - 20,000 Hz FULL POWER FREQUENCY RESPONSE

UNBALANCED 4, 8, & 16 OHM OUTPUTS

CURRENT SENSING OVERLOAD PROTECTION

BASS CUT SWITCH FOR HORN SPEAKER USE

BALANCED 70.7 & 25 VOLT OUTPUTS

DESCRIPTION

The LT-1000C is a 100 watt rms solid-state transistorized amplifier designed for low distortion output over a full power bandwidth of 40-20,000 Hz. The low frequency response of the amplifier can be extended to 20 Hz when operated with the field convertible direct coupled output.

The amplifier utilizes plug-connected printed circuit board construction, with power transistors and power supply components mounted and placed for maximum accessibility. Computer grade capacitors, conservatively-rated transformers and heat sinks contribute to maximum performance and reliability.

The LT-1000C accommodates either an unbalanced high impedance or a balanced 600 ohm program input. The balanced input utilizes a transformer, factory wired for 600 ohms matching. It is easily field modified for 10K ohms bridging without additional components.

The front panel program gain control may be transferred to the rear panel where that location is preferred.

The LT-1000C amplifier features an overload protection, fast-acting current-limiting electronic circuit that automatically disables amplifier drive should a potentially harmful overload occur. An optional M-GUARD EF-3 Electronic Fuse is available to supplement the standard current sensing protective circuit. The M-GUARD upon sensing a fault, shuts down the amplifier power supply protecting the output devices in the amplifier. M-GUARD action is instantaneous and rapidly restores the amplifier to operation when the short or overload is removed.

The LT-1000C amplifier has 70.7 V and 25 V balanced outputs, plus 4, 8, and 16 ohm unbalanced outputs. Input and output connections are on convenient screw terminals.

The amplifier output may be directly coupled to a 4 ohm load. When so operated, the low-end frequency response is extended to 20 Hz.

A bass cut switch tailors the amplifier response (14 dB down at 100 Hz) in installations where horn speakers are utilized.

The LT-1000C amplifier, styled in McMartin beige with complementary leather grain accent, is designed for direct mounting in a 19" rack. An attractive desk top cabinet is available.

LT-1000C - continuing the excellence in solid-state amplifiers pioneered by McMartin Industries.

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SPECIFICATIONS

POWER OUTPUT...	.....100 watts rms 150 watts music 200 watts peak
FREQUENCY RESPONSE.....	.....±1 dB 40-20,000 Hz ±1 dB 20-20,000 Hz direct coupled output
DISTORTION.....	..less than 1% (40-20,000 Hz) at RPO and below
HUM and NOISE (Program).....	.....85 dB below RPO
PROGRAM INPUT..	....Unbalanced 25K ohms and balanced 10K ohms bridging or balanced 600 ohms matching
INPUT SENSITIVITY.....	.....0.4 volts unbalanced 0 dBm 600 ohms matching -10 dBm 10K ohms bridging
OUTPUTS.....	.....Balanced 70.7 volts and 25 volts unbalanced 4, 8, and 16 ohms. Unbalanced 4 ohm direct output
CONTROLS.....	.....Program Gain Power on/off
POWER REQUIREMENT.....	..105-115 Vac or 115-125 Vac or 125-135 Vac 50/60 Hz 250 watts
DIMENSIONS.....	.....5¼" (13.3 cm) high 19" (48.3 cm) wide 6¼" (15.9 cm) deep
WEIGHT.....	26 lbs. Shipping weight 28 lbs.
OPERATING TEMPERATURE....	..Full Performance to 150° F (65° C)
FINISH.....	..McMartin Beige with leather grain trim

ORDERING INFORMATION

LT-1000C.....	.100 watt rms Basic Amplifier

ACCESSORIES

EF-3.....	...M-GUARD Electronic Fuse
DTC-2.....	.....Desk Top Cabinet

All tests conducted in accordance with EIA Standard SE-101-A where applicable

ARCHITECTS' & ENGINEERS' SPECIFICATIONS

The amplifier shall be a McMARTIN LT-1000C or approved equal. It shall be of all silicon solid-state construction and capable of 100 watts rms, 150 watts music, 200 watts peak. Only amplifiers meeting all these wattage ratings will be accepted. The amplifier shall have distortion less than 1% at rated output and below. The frequency response shall be ±1 dB 40-20,000 Hz with transformer output, and ±1 dB 20-20,000 Hz with field strappable direct output. The amplifier noise shall be at least 85 dB below signal at the rated power output. The amplifier shall be designed to operate continuously on line voltages of 105 to 125 Volts, 50/60 Hz over a temperature range of 0° to 150 F (-18° C to 65° C). The amplifier shall be equipped with a current sensing overload protection circuit that will remove audio drive from the amplifier should an overload or short circuit develop. This protection circuit shall restore the amplifier in one millisecond when the short or overload is removed. The amplifier shall optionally accommodate an all solid-state electronic protection circuit that will shut down the amplifier power supply should an overload or short circuit occur. This optional protective circuit will rapidly restore the amplifier to operation after the short or overload is removed. Only amplifiers offering the capability of both types of protective circuits shall be acceptable.

The amplifier shall be capable of accepting either a balanced or unbalanced program input without the installation of additional equipment. A transformer shall be permanently installed in the amplifier to accommodate 10K ohm and 600 ohm balanced line inputs, both matching and bridging shall be available. Screw terminals shall be provided for balanced inputs.

The amplifier shall have outputs of 4, 8, and 16 ohms unbalanced, and 70.7 V and 25 V balanced. The balanced circuits shall be capable of being balanced to ground, or floating balanced. A bass cut switch shall be provided that shall attenuate the bass in the output. A 14 dB cut at 100 Hz will be required. Screw terminals shall be provided for all outputs. A direct coupled 4 ohm output shall be available by strapping the rear panel connector and the direct coupled output shall provide extended low end frequency response down to 20 Hz.

The amplifier shall be equipped with a program gain control, and an illuminated on/off switch.

The amplifier shall have an unswitched 115 Volt 3 wire grounded accessory outlet.

The amplifier shall be McMartin beige with a leather grain trim.

The amplifier shall be capable of being directly mounted in a 19" relay rack, and shall be ☐ supplied with, ☐ capable of being housed, in a complementary appearing desk top housing.

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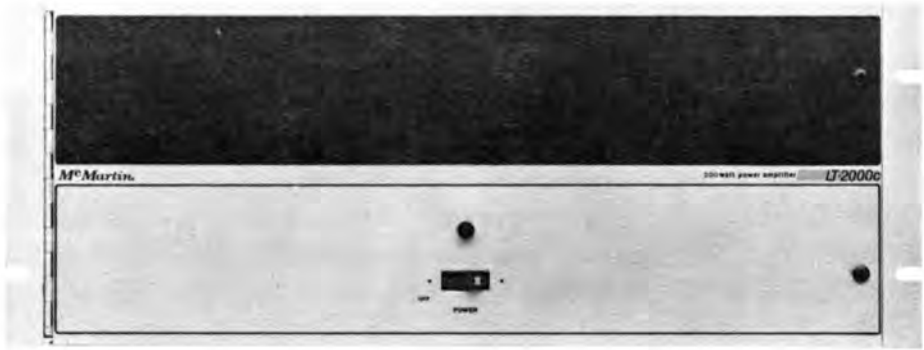
McMartin®

200 WATT POWER AMPLIFIER LT-2000C



200 WATT rms CONTINUOUS RATING
HIGH AND LOW PASS INPUT FILTERS
275 WATT rms ON 33% DUTY CYCLE
HINGED SERVICE PANELS

FAILSAFE PROTECTION
LESS THAN 1.5% DISTORTION
ULTRA COMPACT — 7″ HIGH
ALL SILICON TRANSISTORS

DESCRIPTION

The McMartin LT-2000C is a professional quality power amplifier, rated for continuous 200 watt rms output. The LT-2000C incorporates a number of truly unique features for ultra-reliable, high-power amplification.

Fail-safe system reliability is assured through incorporation of the M•Gard electronic fuse with 5-microsecond response time and automatic electronic reset. Solid state techniques eliminate use of relay closures. M•Gard completely compensates for transient voltages from lightning strikes, switching at full output power and power surges which often disable high-power amplifiers. Separate ac and dc fuses guard against power supply malfunction.

Protection of horn assemblies and elimination of high frequency oscillation is accomplished by the combination low-pass/high-pass filter. Either segment of the filter may be switched in or out as required. With both networks switched in, amplifier response is tailored for the voice range.

Routine servicing is facilitated by swing-out service panels on both the front and rear of the amplifier.

The LT-2000C is supplied with a line input transformer so that balanced bridging or terminating lines may be used on all installations. Computer grade electrolytic capacitors and oversized transformers provide a continuous 200 watts at less than 1.5% distortion from 50 to 10,000 Hertz, with all components operating well within temperature and electrical tolerances. For commercial paging applications where response is limited by the input filter and the duty cycle is less than 33%, the LT-2000C will deliver 275 watts rms from 400 to 4000 Hertz at less than 5% total harmonic distortion.

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SPECIFICATIONS

POWER OUTPUT

Continuous rms	200 watts @ less than 1.5% THD from 50 Hz to 10 kHz
Intermittent rms (33% duty cycle)	275 watts at less than 5% THD
Music*	300 watts
Peak*	400 watts
FREQUENCY RESPONSE (3 dB below RPO)	±1.5 dB from 30-15,000 Hz
GAIN	82 dB
HUM AND NOISE	At least 80 dB below RPO
INPUT SENSITIVITY	250 MV
IM DISTORTION	Less than 1.0% at 150 MW output with 4:1 intermixed 60 Hz and 7 kHz input

FILTER RESPONSE

High pass segment	−2 dB at 4 kHz −6 dB at 10 kHz −15 dB at 20 kHz
Low pass segment	−7 dB at 200 Hz −14 dB at 100 Hz −22 dB at 50 Hz

INPUTS

Unbalanced	10K ohms
Balanced	600 or 10K ohms
REGULATION	Better than 2 dB
OUTPUTS	70.7 and 25 volt CT balanced and 8 ohms unbalanced
CONTROLS	Program gain, power on/off, low filter in/out, high filter in/out
PROTECTION	AC line fuse, slo-blow dc fuse and electronic fuse
SIZE	19" (48.3 cm) wide 7" (17.8 cm) high 11" (27.9 cm) deep
SHIPPING WEIGHT	67 pounds
FINISH	McMartin beige with leather grain trim
POWER REQUIRED	105-135 Vac, 50/60 Hz

POWER INPUT

No signal	45 watts
200 watt output	600 watts

*based on 200 watt rms output

ORDERING INFORMATION

LT-2000C	200 watts rms basic amplifier

ARCHITECTS AND ENGINEERS SPECIFICATIONS

The power amplifier shall be a McMartin model LT-2000C or equal all silicon type solid state amplifier. The power amplifier shall have a continuous power output rating of 200 watts rms at less than 1.5% distortion over the frequency range of 50 Hz to 10 kiloHertz with all components operating within their electrical and temperature standards. Reserve power shall be available to produce 275 watts rms from 400 Hz to 4000 Hertz at less than 5% distortion for use in commercial and industrial paging applications, where the duty cycle is less than 33%. The amplifier shall have a frequency response of 30 to 15,000 Hertz ± 1.5 dB and a power gain of 82 dB at 200 watts rms and input sensitivity of 250 millivolts. Hum and noise shall be at least 80 dB below rated output. Intermodulation distortion at 150 milliwatts with a 60 Hertz and 7 kiloHertz 4 to 1 mixed input shall be less than 1.0%. An input filter shall provide at least 6 dB of attenuation at 10,000 Hertz, 15 dB of attenuation at 20,000 Hertz, 14 dB of attenuation at 100 Hertz and 22 dB of attenuation at 50 Hertz. Input shall be balanced 600 or 10,000 ohms with the line input transformer supplied. Regulation shall be better than 2 dB. Controls for gain, power on-off, low filter in-out, high filter in-out and a power indicator light shall be provided. Power requirements shall be 105 to 135 volts ag 50/60 Hertz single phase and the amplifier shall draw no more than 45 watts with no signal input and 600 watts at 200 watts rms output. Outputs shall be 70.7 and 25 volts balanced center tapped, and 8 ohm unbalanced. Protection shall be ac line fuse, slow blow dc fuse and ultra-rapid electronic fuse. The electronic fuse circuit shall be automatic, shall operate with five microseconds and shall be self-restoring. Shipping weight shall be 67 pounds and the amplifier shall be no larger than 19.0" wide, 7.0" high and 11.0" deep. Finish shall be McMartin beige with leather grain trim. Access to all components shall be available through front and rear swingout service panels.

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350 WATT POWER AMPLIFIER — LT 3500C

350 WATT rms CONTINUOUS RATING
HIGH AND LOW PASS INPUT FILTERS
425 WATT rms ON 33% DUTY CYCLE
HINGED SERVICE PANELS

FAILSAFE PROTECTION
LESS THAN 2% DISTORTION
ULTRA-COMPACT — 7" HIGH
ALL SILICON TRANSISTORS

DESCRIPTION

The McMartin LT-3500C is a professional quality power amplifier rated for continuous 350 watt output. The LT-3500C incorporates a number of truly unique features for ultra-reliable, high-power amplification.

Fail-safe system reliability is assured through incorporation of the M•Gard electronic fuse with five microsecond response time. M•Gard completely compensates for transient voltages from lightning strikes, switching at full output power and power surges which often disable high-power amplifiers. Separate ac and dc fuses guard against power supply malfunction.

Protection of horn assemblies and elimination of high frequency oscillation is accomplished by the combination low-pass/high-pass active filter. Either segment of the filter may be switched in or out as required. With both networks switched in, amplifier response is accurately tailored for the voice range.

Routine servicing is facilitated by swing-out service panels on both the front and rear of the amplifier. The rear panel makes available the electronic fuse, the active low/high pass filter and the output circuitry. The front panel provides access to the driver and the line input transformer.

The LT-3500C is supplied with a line input transformer so that balanced bridging or matching lines may be used in all installations. Computer grade electrolytic capacitors and oversized transformers provide a continuous 350 watts at less than 2% distortion from 50 to 7500 kiloHertz, with all components operating well within temperature and electrical tolerances. For commercial paging applications where response is limited by the active input filter and the duty cycle is less than 33%, the LT-3500C will deliver 425 watts rms from 50 to 7.500 Hertz at less than 5% total harmonic distortion.

JUNE/'74

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SPECIFICATIONS

POWER OUTPUT
Continuous rms ..... 350 watts @ less than 2% THD from 50 to 7500Hz

Intermittent rms (33% duty cycle) ..... 425 watts at less than 5% THD from 50 to 7500Hz

Music (based on 350 watt rms load) ..... 525 watts

Peak based on 350 watt rms load) ..... 700 watts

FREQUENCY RESPONSE (3 dB below RPO) ..... ±1.5 dB from 30-15,000 Hz

GAIN ..... 85 dB

HUM AND NOISE ..... At least 80 dB below RPO

INPUT SENSITIVITY ..... 250 MV

IM DISTORTION ..... Less than 0.5% at 150 MW output with 4:1 intermixed 60 Hz and 7 kHz input

ACTIVE FILTER RESPONSE
High pass segment ..... −1 dB at 4 kHz
−15 dB at 10 kHz
−36 dB at 20 kHz

Low pass segment ..... −1 dB at 200 Hz
−9 dB at 100 Hz
−27 dB at 50 Hz

INPUTS
Unbalanced ..... 25K ohms

Balanced ..... 600 and 10K ohms

REGULATION ..... Better than 2 dB

OUTPUTS ..... 70.7 volt balanced and 25 volt unbalanced

CONTROLS ..... Program gain, power on/off, low filter in/out, hi-filter in/out

INDICATORS ..... Power on, clipping and overload

PROTECTION ..... AC line fuse, slo-blow dc fuse and electronic fuse

SIZE ..... 7" (17.8 cm) high
19" (48.3) wide
11" (27.9 cm) deep

SHIPPING WEIGHT ..... 70 pounds

FINISH ..... McMartin beige with leather grain trim

POWER REQUIRED ..... 105-135 Vac 50/60 Hz

POWER INPUT
no signal ..... 45 watts
350 watt output ..... 800 watts

ORDERING INFORMATION
LT-3500C ..... 350 watt rms basic amplifier

ARCHITECTS AND ENGINEERS SPECIFICATIONS

The power amplifier shall be a McMartin model LT-3500C, or equal, all silicon type solid state amplifier. The power amplifier shall have a continuous power output rating of 350 watts rms at less than 2% distortion over the frequency range of 50 to 7500 Hertz with all components operating within their electrical and temperature standards. Reserve power shall be available to produce 425 watts rms from 50 to 7500 Hertz at less than 5% distortion for use in commercial and industrial paging applications, where the duty cycle is less than 33%. The amplifier shall have a frequency response of 30 to 15,000 Hertz ±1.5 dB and a power gain of 85 dB at 350 watts rms and input sensitivity of 250 milivolts. Hum and noise shall be at least 80 dB below rated output. Intermodulation distortion at 150 miliwatts with a 60 Hertz and 7 kiloHertz 4 to 1 mixed input shall be less than 0.5%. An active input filter shall provide at least 15 dB of attenuation at 10,000 Hertz, 36 dB of attenuation at 20,000 Hertz, 10 dB of attenuation at 100 Hertz and 27 dB of attenuation at 50 Hertz. Input shall be unbalanced 25,000 ohm nominal or balanced 600 and 10,000 ohms with the line input transformer which is to be supplied. Regulation shall be better than 2 dB. Controls for gain, power on-off, low filter in-out, high filter in-out and indicators for power, clipping and overload shall be provided. The overload light shall light at any time the speaker line is shorted or the load is increased to the point where the amplifier is overloaded. The clipping light shall light whenever the input signal amplitude is increased higher than that necessary to provide rated input. Power requirements shall be 105 to 135 volts ac 50/60 Hertz single phase and the amplifier shall draw no more than 45 watts with no signal input and 800 watts at 350 watts rms output. Outputs shall be 70.7 volt balanced and 25 volts unbalanced. Protection shall be ac line fuse, slow blow dc fuse and ultra-rapid electronic fuse. The electronic fuse circuit shall be automatic, shall operate within five microseconds and shall be self-restoring. Shipping weight shall be 70 pounds and the amplifier shall be no larger than 19.0" wide, 7.0" high and 11.0" deep. Finish shall be McMartin beige with leather grain trim. Access to all components shall be available through front and rear swingout service panels.

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McMartin

price schedule

Effective May 1, 1975

BROADCAST EQUIPMENT

AM TRANSMITTING EQUIPMENT

BA-1K	1000/500/250 watt AM transmitter, 220/240 Vac, single-phase, 3-wire	**$6,800.00**
SR-1K	Sola filament regulator for BA-1K	**200.00**
STA-1K	100% spare tubes for BA-1K	**258.00**
SC-AM	Spare Vacuum crystal	**85.00**
PT-1K	Line transformer for 220/240 Vac, single-phase 2-wire BA-1K power	**200.00**

FM TRANSMITTING EQUIPMENT

BF-3.5K	2 - 3.5KW FM transmitter	**11,500.00**
STF-3.5K	Spare tube kit for BF-3.5K	**382.40**
B-910	Exciter, monaural, 10 watt	**2,194.50**
Plug-In Modules		
B-111	DualAudio Amplifier (Used with B-112 stereo generator)	**412.50**
B-112	Stereo generator (includes 53 kHz filter)	**962.50**
B-113	SCA generator	**495.00**
B-114	Mono audio amplifier	**192.50**
B-115	Modulated oscillator	**258.50**
B-116	Reference oscillator	**297.00**
B-117	RF power amplifier	**330.00**
B-118	Alarm and control module	**330.00**
B-119	Power supply regulator	**143.00**
Accessories		
B-120	Harmonic filter	**198.00**
B-121	Module extender	**71.50**
B-122	Cabinet assembly	**198.00**
SCK-910	100% spare semiconductor kit	**310.00**
CRYSTAL	For reference oscillator	**38.50**
CRYSTAL SET	2 crystals, 1 for reference oscillator, 1 for alarm and control module	**55.00**
B-910T	Transmitter, 10 watt, rack mount	**2,392.50**
B-910T	Transmitter, 10 watt with cabinet	**2,590.50**
B-110	Stereo generator assembly, plug in (B-111/B-113 & filter)	**1,375.00**
B-110R	Stereo generator, self-contained, rack mount	**1,475.00**
B-113R	SCA generator, self-contained, rack mount	**595.00**

AUDIO CONSOLES

B-501	5 mixer, monaural, 1 mic, 4 hi-bal	**825.00**
	step attenuator charge	**250.00**
B-502	5 mixer, stereo, 1 mic, 4 hi-bal	**1,155.00**
	step attenuator charge	**400.00**
B-503	5 mixer, dual channel, 1 mic 4 hi-bal	**1,050.00**
	step attenuator charge	**250.00**
Plug-In Cards		
5MP1	Microphone preamplifier (B501/B503)	**27.50**
5MP2	Microphone preamplifier (B-502)	**55.00**
5EP1	RIAA equalized phono preamplifier (B501/B503)	**27.50**
5EP2	Dual RIAA equalized phono preamplifier (B-502)	**55.00**
5BH1	High level balanced input (B501/B-503)	**25.00**
5BH2	Dual high level balanced input (B-502)	**50.00**
5BA1	Booster amplifier (B-501-B-503)	**18.00**
5BA2	Dual booster amplifier (B-502)	**21.00**
5PG1	Program amplifier (B-501)	**20.00**
5PG2	Dual program amplifier (B-502/B-503)	**28.00**
5PS1	Power regulator (All models)	**21.00**
Wired-In Cards		
5QA1	Cue amplifier	**25.00**
5MA1	Monitor amplifier	**28.00**
Accessories		
5RY1	(All models) speaker muting relay	**12.50**
B-801	8 mixer, monaural, 3 mic 4 hi-unbal, 1 hi-bal	**2,585.00**
B-802	8 mixer, stereo, 3 mic, 4 hi-unbal, 1 hi-bal	**3,520.00**

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B-802-S1	8 mixer, dual stereo, 4 channel out	$3,795.00
B-802-S2	8 mixer, stereo, simultaneous monaural out	3,740.00
B-802-S3	8 mixer, dual stereo/simulcast, combines S1 and S2	4,235.00
B-803	8 mixer, dual channel, 3 mic, 4 hi-unbal, 1 hi-bal	2,915.00
Plug-In Cards		
8MP1	Microphone preamplifier	30.00
8EP1	RIAA equalized phono preamplifier	30.00
8BH1	High-level balanced input	25.00
8UH1	High-level unbalanced input	5.00
8BA1	Booster amplifier	30.00
8PG1	Program amplifier	27.50
8MA1	Monitor amplifier	88.00
8QA1	Cue-talkback amplifier	66.00
8PS1	Power supply regulator	44.00
8CA1	Combining amplifier	22.00
Module Extenders		
8XC10	Module extender (10 pin)	4.00
8XC15	Module extender (15 pin)	6.00
ACCU-FIVE	5 channel rack mount mini console	595.00

FM MONITORS

TBM-3700	Frequency and monaural modulation monitor	1,485.00
RM-37T	Remote metering plug in card	65.00
RM-37R	Remote metering rack mount panel	120.00
TBM-2200A	Stereo modulation and pilot frequency adaptor	1,540.00
RM-22T	Remote metering plug in card	92.50
RM-22R	Remote metering rack mount panel	180.00
TBM-2000B	SCA modulation and frequency adaptor	1,402.50
RM-20T	Remote metering plug in card	65.00
RM-20R	Remote metering rack mount panel	120.00
TBM-3500B	Modulation monitor	1,100.00
RM-35BR	Remote metering rack mount panel	100.00
LL-35B	Low level input module	180.00
TBM-2500C	RF amplifier	533.50

FM REBROADCAST RECEIVERS

TBM-1000B	Relay receiver (88-108 MHz)	350.00
TBM-1001B	Relay receiver (150 MHz range)	400.00
TBM-1005A	Five channel relay receiver (88-108 MHz) with one crystal	400.00
	Each additional channel crystal	10.00
TBM-1003A	Aural TV channel 2-13 receiver	400.00
STE-1	Plug in stereo demod card for relay receiver	150.00
SCA-2	Plug in SCA demodulator card	100.00
NB-1	Plug in filter for narrow band operation	30.00

RELATED FM ANTENNAS

A-72-SF-3	3 element yagi antenna-cut to band (2 per carton)	12.35
A-72-SF-5	5 element yagi antenna-cut to band	20.05
AS-1	Stacking harness (for A-72-SF-3/SF-5)	19.05

AM MONITORS

TBM-8500B	Modulation Monitor	975.00
RM-85B	Remote metering rack mount panel	120.00
RF-85B	AM RF Amplifier	533.50

AM/FM MONITOR AND EBS EQUIPMENT

AMR-1	AM monitor receiver, single channel	99.50
FMR-1	FM monitor receiver, single channel	99.50
EBS-1	EBS adaptor for AMR-1/FMR-1 (1000 Hz, carrier break system)	99.50
EBS-2	EBS adaptor for AMR-1/FMR-1 (Two-tone system)	99.50
TG-2/EBS	Precision Two-Tone EBS Generator	325.00

REMOTE PICKUP BROADCAST EQUIPMENT (142-175 MHz)

B-1100T	40 watt transmitter, rack mount	750.00
TBM-1100R	Receiver, rack mount	450.00
CU-1100	Control unit (for battery operation, B-1100T)	35.00
CC-1100	Carrying Case, B-1100T	35.00

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price schedule

Effective May 1, 1975

BROADCAST EQUIPMENT

BROADCAST MONITOR AMPLIFIERS

LT-80C/B	12-Watt Universal Amplifier with one mic, 1 program input	**81.00**
LT-252B/B	25-Watt Universal Amplifier with two mic, 2 program input	**150.00**
LT-250C/B	25-Watt Power Amplifier	**145.00**
LT-500C/B	50-Watt Power Amplifier	**208.00**
LT-750C/B	75-Watt Power Amplifier	**246.00**
LT-1000C/B	100-Watt Power Amplifier	**283.00**
LT-2000C/B	200-Watt Power Amplifier	**402.00**
LT-3500C/B	350-Watt Power Amplifier	**723.00**
MT-3B	Plug-in Balanced/Bridging Transformer	**11.25**

MINIMUM ORDER $15.00

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McMartin Industries Inc. • 4500 South 76th Street • Omaha, Nebraska 68127 • Phone (402) 331-2000

McMARTIN INDUSTRIES, INC.

TERMS AND CONDITIONS OF SALE

1. Prices: McMartin endeavors to keep published price lists current and to advise customers of price changes; however, all prices are subject to change without notice. Published prices apply to United States sales and are based on a cash transaction, F.O.B., Omaha, Nebraska. No applicable federal, state or local taxes are included.

2. Terms of Payment: Terms of payment are cash with order. Orders are accepted from customers with an established credit rating with full payment due within 30 days of shipping date. The prompt payment discount is one percent 10th and 25th, net 30. Payments made beyond the 30-day period are subject to a finance charge of 1-½ percent per month (equivalent to an annual percentage rate of 18 percent). Customers wishing to establish 30-day terms should furnish trade and bank references and current financial information for review by McMartin's Credit Department. Equipment is available through a lease/purchase option plan. Contact McMartin's Sales Department for details.

3. Warranty: McMartin products are warranted to be free from defects and workmanship for a period of one year after shipping date when subjected to normal usage or service. All warranties are void, A) if equipment has been altered or repaired by others without McMartin's specific prior written authorization, or B) if equipment is operated under environmental conditions or circumstances other than those specifically described in McMartin literature or instruction manuals.

   The above warranty does not apply to equipment manufactured by others, and included in McMartin shipments. Said items are subject only to such adjustment as McMartin may obtain from the supplier thereof.

4. Repair or Replacement: If a product fails during the applicable warranty period, repair parts will be furnished free of charge F.O.B. Omaha. On request, and at the discretion of McMartin, the customer may be required to return the defective part or equipment to McMartin, F.O.B., Omaha, Nebraska. Parts or equipment may be returned only with McMartin's prior authorization and must be accompanied by return authorization number issued by McMartin's Customer Service Department. All returned merchandise must be sent freight prepaid and with appropriate insurance coverage. Full details of the circumstances of the failure or malfunction should be included to expedite repair or replacement. Repaired equipment will be shipped to the customer, F.O.B., factory.

5. Out-of-Warranty Service: McMartin's laboratory and technical services are available for the repair and/or recalibration of McMartin products operated beyond the warranty period. Time required for recalibration/repair varies with equipment type and plant load. Contact McMartin's Customer Service Manager for current repair times and recalibration, labor and parts rates. McMartin warrants recalibration and parts utilized in the repair of equipment for a period of 90 days beyond the shipping date of said recalibration or repair. Prior return authorization is required for equipment being returned for recalibration or repair, and a return authorization number must accompany said return. All transportation and insurance charges to and from the factory are to be paid by the customer.
6. Returns: Merchandise produced and shipped in good faith is not returnable for credit. Merchandise may be exchanged if McMartin Industries determines, in its sole discretion, that circumstances warrant such concession. Merchandise for exchange must be of current design and in unopened factory cartons, and is subject to a 20 percent restocking charge, plus a 10 percent retuning charge for products with tuned RF stages.
7. Product Changes: McMartin reserves the right without advance notice to make engineering and production changes including substitution of vendor sources for components which may modify the design or specifications of its products, provided said modification will not materially affect the performance of the product.
8. General:
   A. The preferred shipping method should be specified in your order. When not specified, shipment will be made by a common carrier selected by McMartin. Generally, shipments will be made with transportation charges collect.
   B. Claims for damage incurred in transit must be made by the customer directly with the carrier, except for shipments handled by United Parcel Service (UPS). UPS claims must be filed at the point of origin. In either case, McMartin must be immediately notified of damage details, dates and McMartin invoice numbers involved.
   C. In no event is McMartin liable for consequental damages resulting from late or non-delivery, or malfunction or failure of its products.

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