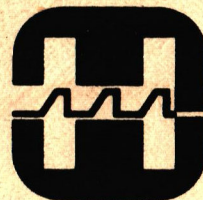


**TECHNICAL
MANUAL**



ME-1

**MODULATION
ENHANCER**



HARRIS
COMMUNICATIONS AND
INFORMATION HANDLING

ME-1 MODULATION ENHANCER

TECHNICAL CHARACTERISTICS ELECTRICAL

Power Consumption:	10 Watts
Primary Power Input:	117V 60 Hz
Audio Distortion:	Dependent on enhancing level
Noise:	65 dB down from +10 dBm output
Frequency Response:	\pm .5 dB from 20 Hz to 20 kHz
Compression Ratio:	4 dB to 1 dB (4 x 1)
Audio Input and Output:	600/600 ohm
Input Level:	Requires 16 dBm input for +10 dBm to transmitter
Controls:	1 negative peak adjust 1 positive peak adjust
4 Push Button Controls:	1 disables and calibrates 3 1 dB step attenuation
Lamps:	1 green power lamp 1 negative peak enhancing 1 positive peak enhancing

TECHNICAL CHARACTERISTICS MECHANICAL

Dimension:	Width 19 inches (48 cm) Depth 4 inches (10 cm) Height 3.5 inches (8.9 cm)
Weight:	3 lbs. (1.4 kg) unpacked
Mounting:	19 inch rack mounting (4) #10 holes
Color:	Beige gray

Harris Corporation
Gates Broadcast Equipment Division
Quincy, Illinois 62301

January 23, 1975

888-1620-001

SAFETY NOTICE

WARNING: THE CURRENTS AND VOLTAGES IN THIS EQUIPMENT ARE DANGEROUS AND UNDER CERTAIN CONDITIONS, COULD BE FATAL.

This manual is intended as general guidance for trained and qualified installation, operating, maintenance and service personnel who are familiar with and aware of the dangers inherent to handling potentially hazardous electrical and/or electronic circuits. It is not intended to contain a complete statement of all safety precautions which should be observed by personnel in using this or other electronic equipment.

THE INSTALLATION, OPERATION, MAINTENANCE AND SERVICING OF THIS EQUIPMENT INVOLVES RISKS TO BOTH PERSONNEL AND EQUIPMENT, AND MUST BE PERFORMED ONLY BY PROPERLY TRAINED AND EXPERIENCED PERSONNEL EXERCISING DUE CARE. PERSONNEL MUST FAMILIARIZE THEMSELVES WITH SAFETY REQUIREMENTS, SAFE HANDLING AND OPERATING PRACTICE, AND RELATED FIRST-AID PROCEDURES (E.G., FOR ELECTRICAL BURNS AND ELECTRICAL SHOCK).

HARRIS CORPORATION Broadcast Equipment Division shall not be responsible for injury or damage resulting from improper installation, operation, maintenance or servicing, or from the use of improperly trained or inexperienced personnel in the performance of such tasks, or from the failure of persons engaged in such tasks to exercise due care.

As with all electronic equipment, care should be taken to avoid electrical shock in all circuits where substantial currents or voltages may be present, either through design or short circuit. Caution should also be observed in lifting and hoisting equipment, especially regarding large structures, during installation.

LIABILITY LIMITATION

The procedures outlined in this Manual are based on the information available at the time of publication and should permit the specified use with minimum risk. However, the manufacturer cannot assume liability with respect to technical application of the contents and shall, under no circumstances, be responsible for damage or injury (whether to person or property) resulting from its use.

The manufacturer is specifically not liable for any damage or injury arising out of failure to follow the instructions in this Manual or failure to exercise due care and caution during installation, operation, maintenance and service of this equipment.

CAUTIONARY NOTICE

Always disconnect power before opening covers, doors, enclosures, gates, panels or shields. Always use grounding sticks and short out high voltage points before servicing. Never make internal adjustments, perform maintenance or service when alone or when tired.

Never remove, short-circuit or tamper with interlock switches on access covers, doors, enclosures, gates, panels or shields. Keep away from live circuits, know your equipment and don't take chances. Proper training of experienced personnel and observing the above guidelines will help assure safe and continued operation of this equipment.

ME-1

The Harris Modulation Enhancer is designed to enhance the modulation of an MW-series AM transmitter. Because of the increased output power it causes and the transient response required from the transmitter, it is recommended that it not be used with any transmitter except for the Harris MW-series. It can cause component failure and overmodulation in a transmitter which has not been designed for this type of heavy processing.

The ME-1 is basically an adjustable clipper which has been designed to clip in such a fashion as to reduce the "fuzzy" sound usually associated with a clipper, but, square enough not to add a large amount of distortion to the average program level.

When adjusted properly to the station's format the ME-1 will reduce the small peaks which have little power, but, are holding the average level down and allow the larger and powerful levels of the audio signal to modulate the transmitter at the maximum limit.

ADJUSTMENT:

The ME-1 must be placed between the limiter and the transmitter with no transformers or other circuitry, with the exception of an adjustable pad at the input of the ME-1, if desired.

Connect the input and output audio, input (from limiter) to Terminal 1 and 2 and the output (to transmitter) at terminal 4 and 5 with both the input and output audio shields at terminal 3.

Press the Calibrate button. Turn on the transmitter and modulate with typical music. An AGC and limiter, preferably Harris units, should be used - both in the fastest position, limiter set for 125% positive modulation. To further increase loudness, install a 750 K, $\frac{1}{2}$ W resistor in an RCA phono plug and insert in jack in back of Harris limiter. This further increases the limiter release time. Do not use more than 5 dB limiting if this modification is done or distortion will not be tolerable and excess pumping will occur. Do not install this modification if ME-1 is not used.

Operate AGC at center scale and limiter set for 5 dB of limiting. Adjust the limiter to modulate the transmitter in a usual fashion. Check that the positive peaks or highest peaks are going in the positive direction at the transmitter output. If not, reverse the input wires on terminal 1 and 2 to cause the transmitter to modulate more in the positive direction than the negative direction.

Press the 1 dB button on the ME-1. Adjust the negative control on ME-1 while watching the mod monitor and determine which peak (positive or negative) the negative control of ME-1 is adjusting. If it is adjusting the positive peak, reverse the controls by reversing the wires at terminals 1 and 2 and the output wires at terminals 4 and 5. Do not reverse input to output, only the wires at terminals 1 and 2 (1 to 2 and 2 to 1) then the output wires (4 to 5 and 5 to 4).

Adjust the positive and negative controls on ME-1 so the positive and negative peaks are as high as possible without overmodulating.

Only a listening test will determine how much Enhancing is desired. The more enhancing (3 dB max.) the louder the signal. Remember to adjust the transmitter for max. legal modulation using the limiter output control with ME-1 in calibrate position, then switch in desired enhancing (1, 2, or 3 dB) and adjust positive and negative control of ME-1 for max. modulation.

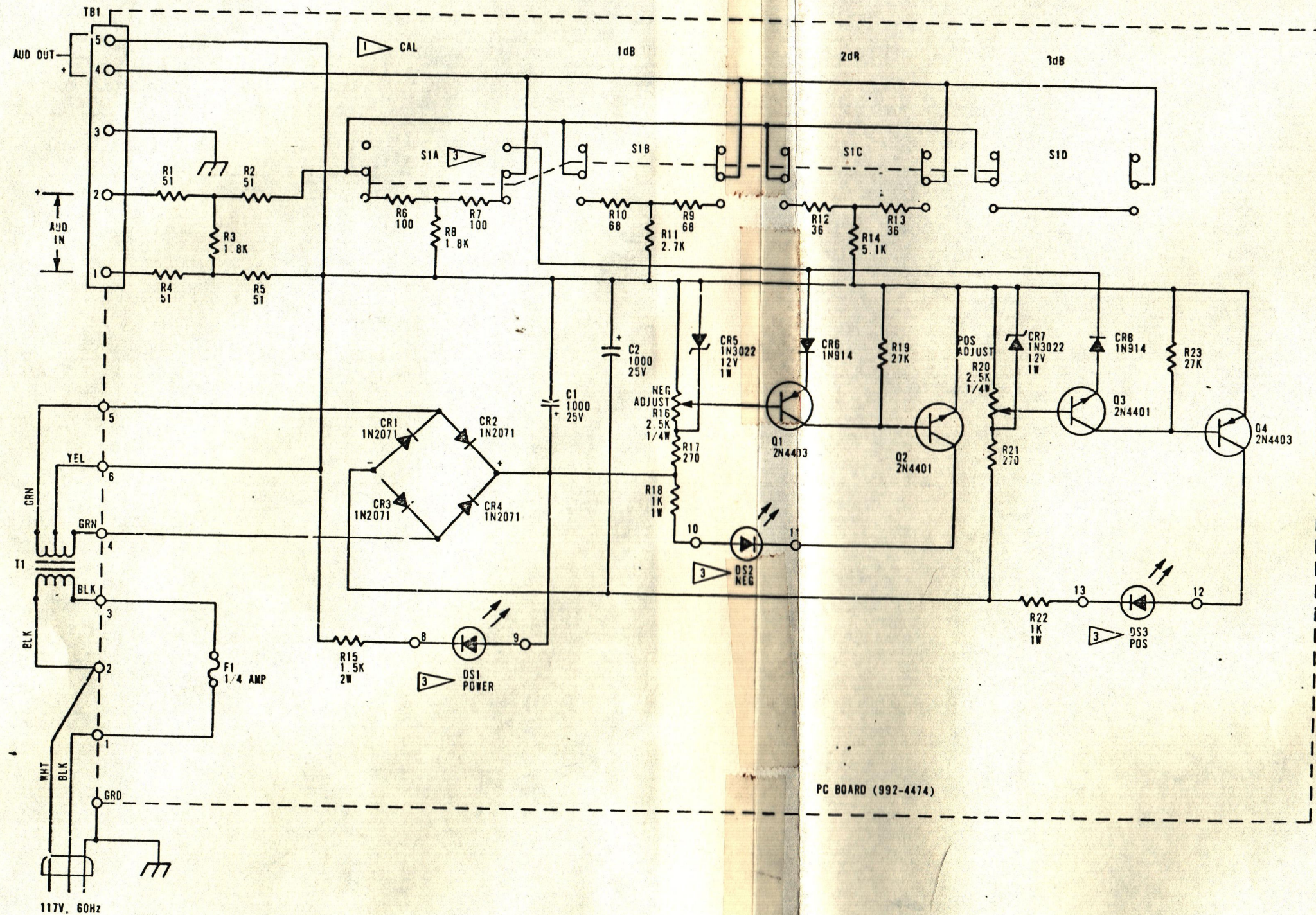
Enhancing should not be increased beyond the point which will cause an average Power Supply current of greater than .65 amps in the MW-5 or 4 amps in the MW-50.

ME-1 MODULATION ENHANCER

PC BOARD PARTS LIST


SYMBOL	DESCRIPTION	HARRIS PART NO.	SYMBOL	DESCRIPTION	HARRIS PART NO.
C1,C2	Cap, 1000 uF 25 volts Qty 2	522 0417 000	R12, R13	Res, 36 ohm 1/2 W Qty 2	540 0014 000
CR1, thru CR4	Diode 1N2071 Qty 4	384 0020 000	R14	Res, 5.1K ohm 1/2 W Qty 1	540 0066 000
CR5, CR7	Zener Diode 1N3022 Qty 2	386 0145 000	R15	Res, 1.5K ohm 2 W Qty 1	540 0615 000
CR6, CR8	Diode 1N914 Qty 2	384 0134 000	R16, R20	Pot, 2.5K ohm 1/4 W Qty 2	550 0390 000
F1	Fuse 1/4 Amp Qty 1	398 0011 000	R17, R21	Res, 270 ohm 1/2 W Qty 2	540 0035 000
Q1,Q4	Transistor 2N4403 Qty 2	380 0126 000	R18, R22	Res, 1K ohm 1W Qty 2	540 0332 000
Q2,Q3	Transistor 2N4401 Qty 2	380 0125 000	R19, R23	Res, 27K ohm 1/2 W Qty 2	540 0083 000
R1,R2, R4,R5	Res, 51 ohm 1/2 W Qty 4	540 0018 000	S1	Switch, 65041K-206 with PC Terminal Switchcraft Qty 1	604 0813 000
R3,R8	Res, 1.8K ohm 1/2 W Qty 2	540 0055 000	CHASSIS PART LIST		
R6,R7	Res, 100 ohm 1/2 W Qty 2	540 0025 000	SYMBOL	DESCRIPTION	HARRIS PART NO.
R9,R10	Res, 68 ohm 1/2 W Qty 2	540 0021 000	T1	Transformer, Essex, P-8395 Qty 1	472 0730 000
R11	Res, 2.7K ohm 1/2 W Qty 1	540 0059 000	DS1	LED, Green SSL-44L2, GE Qty 1	384 0610 000
			DS2, DS3	LED, Red SSL-22L2 Qty 2	384 0611 000

LTR.	DATE	REVISION	DRW	ENG	ECN
A	12/24/74	REDRAWN	2.0		✓
B	2/17/75	DOC. & CERT. CHG'S	2.0	WJ	✓



NOTES:
 2 TERM 2 IS + INPUT FROM LIMITER
 TERM 4 IS + INPUT TO THE TRANSMITTER
 1 SWITCH IS SHOWN IN CAL POSITION

5 ALL CAPACITORS 1 WATT MICROFARADS UNLESS NOTED
 4 ALL RESISTORS 1/2 WATT UNLESS NOTES
 3 COMPONENT MOUNTED ON FRONT PANEL

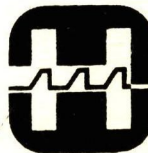
HARRIS 

HARRIS CORPORATION

**SCHEMATIC
 MODULATION ENHANCER**

B COX *E. Lowery* 839 1066 001
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HARRIS



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INFORMATION HANDLING**

HARRIS CORPORATION Broadcast Equipment Division

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