RPT-25

TRANSMITTER

Ser # 994 Freq 455.99

MARTI Electronics, Inc.

MARTI ELECTRONICS, INC
P.O. Box 661
1501 N. Main Street
Cleburne, Texas 76031

RPT-25

TRANSMITTER

Ser # 994 Freq 455-99

WARRANTY:

Except as otherwise provided in this section, the equipment described herein is sold under the following guarantee:

Marti agrees to repair or replace within a one (1) year period and without charge, any equipment or parts which are defective as to workmanship or material and which are returned to Marti at its factory, transportation prepaid and properly insured, provided:

(a) Notice of the claimed defect is given Marti within one (1) year from date appearing on invoice and goods are returned in accordance with Marti instructions.

(b) Equipment, accessories, tubes and batteries not manufactured by Marti are subject to only such adjustments as Marti may obtain from the supplier thereof.

(c) Equipment or accessories shall not be deemed to be defective if, after examination by Marti or its appointed representative, the equipment evidences damage from moisture, improper handling, installation or operation.

(d) In the event that Marti is required to demonstrate equipment capability either as to specifications or defects in parts or workmanship and where it is found that the equipment meets specifications, Marti shall be entitled to collect all reasonable expenses from the Buyer including but not limited to, travel, per diem living expenses and hourly wage rates which have been established by Marti and which are in effect at the time.

Marti further guarantees that any radio transmitter described herein will deliver specified radio frequency power output at the antenna lead when connected to a suitable load, but such guarantee shall not be construed as a guarantee of any definite coverage or range of said apparatus. The guarantee of these paragraphs is void if equipment is altered or repaired by others than Marti or its authorized service Representative, or unless specifically authorized in writing by Marti. No other warranties, expressed or implied, shall be applicable to any equipment sold hereunder, and the foregoing shall constitute the Buyer's sole right and remedy under the agreements contained in this paragraph. In no event shall Marti have any liability for consequential damages, or for loss, damage or expense directly or indirectly arising from the use of the products, or any inability to use them either separately or in combination with other equipment or materials, or from any other cause.

RPT-25
REMOTE PICK UP TRANSMITTER

MARTI ELECTRONICS
Cleburne, Texas

S P E C I F I C A T I O N S

Application	Broadcast Remote Pick Up.
Frequency	450.001 - 455.95 MHz.
Crystal Multiplication	36.
Frequency Stability	Portable/Mobile: ± .0005% -30°C to +50°C. Two (2) minutes are required after application of stand-by power for the transmitter to be in tolerance when operated portable-mobile at temperatures below -10°C. Base Station: ± .00025% -30°C to +50°C two (2) minutes after initial application of stand-by power.
Dual Frequency Operation	Selectable dual frequency operation available at extra cost.
Spurious Emission	Spurious radiation attenuated more than 60 DB below carrier level.
RF Output	Maximum 25 watts, nominal 20 watts into 50 ohms.
VSWR Protection	High VSWR will not damage transmitter.
RF Connector	UG-58A/U.
Temperature Range	-20°C to +45°C.
Modulation	Model / Deviation / Emission: RPT-25P — 1.5 KHz. — 10F3; RPT-25N2 — 5 KHz. — 25F3; RPT-25R — 9 KHz. — 50F3; RPT-25S — 22.5 KHz. — 100F3
Audio Inputs	Four inputs are provided with individual mixing gain controls. Three of the inputs are for microphones (one push-to-talk) and one input accepts balanced 600 ohm line.
Audio Input Level	Microphone input level can be from -70 DB to -45 DB. Line input level can be from -20 DBM to +4 DBM.
Audio Input Impedance	Will accept microphones from 150 to 600 ohms. Line input 600 ohms balanced.
Audio Connectors	Input No. 1 (XLR-4-31). Input Nos. 2, 3, and 4 (XLR-3-31).
Power Requirements	115/230 volts AC, 50/60 Hz., 155 watts transmitting, 30 watts standby. 13.6 volts DC negative ground. 7 amp. transmitting, 0.5 amp. standby.
Modulation Control	Marti CA-40 Compressor/Limiter Module. Selector switch for measuring audio level, compressor gain reduction, RF output, etc.
Weight	20 lbs. net, 26 lbs. gross.
Dimensions	6½" high by 15" wide by 12" deep.

NOTES: (1) Measured through 4 KHz. low pass audio filter.
(2) Pre-selector recommended when receiver is located near UHF transmitter.
(3) The extremely good selectivity of this receiver results in some reduction of audio response and increased distortion. Ever increasing use of UHF frequencies demands this selectivity in modern receivers.

SECTION I
GENERAL

1.1 Marti Model RPT-25 and RPT-40 Solid State Transmitters are designed to operate in the Remote Pickup Broadcast service as defined in Part 74, Subpart D, of the FCC Rules and Regulations. The suffix letter of the transmitter indicates the FCC frequency group it is designed to operate on. These are as follow:

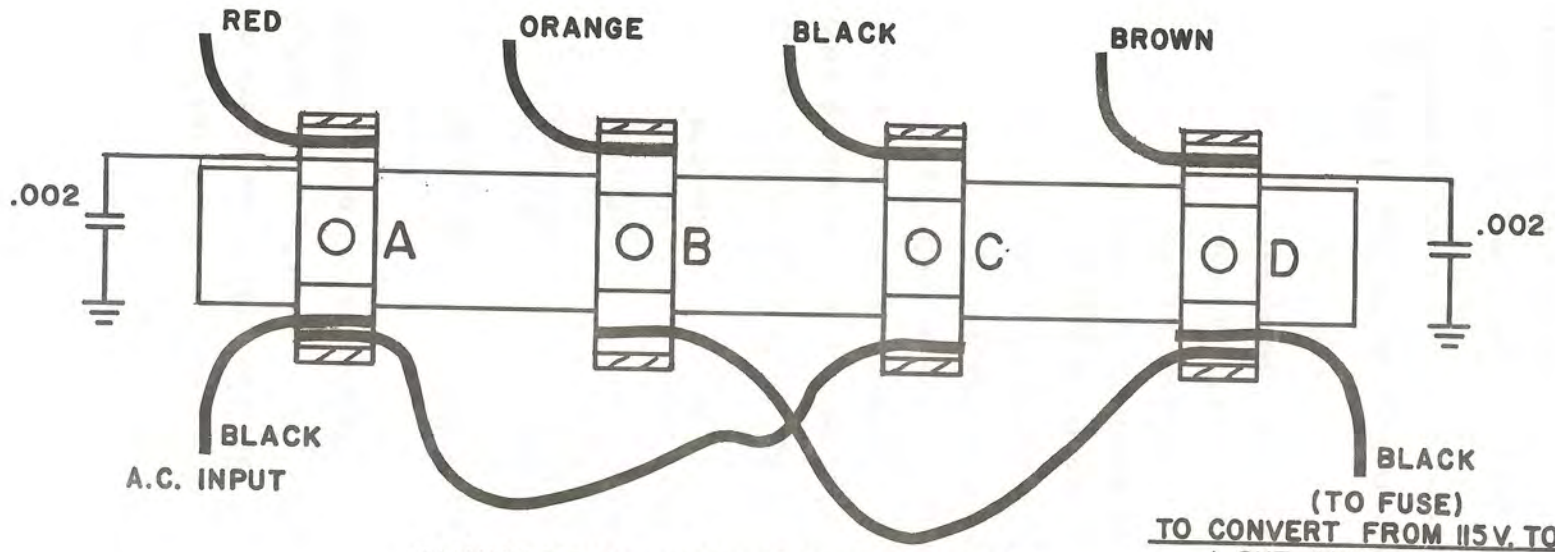
MODEL NO.	FREQUENCY MHz.	BANDWIDTH KHz.	COMPANION RECEIVER
RPT-25P	450.01-455.95	10	R-30/450
RPT-25N2	450.01-455.95	25	R-30/450
RPT-25R	450.01-455.95	50	R-50/450
RPT-25S	450.01-455.95	100	R-100/450
RPT-40K	152.87-161.76	30	R-30/150
RPT-40L	166.25-170.15	25	R-30/150

These transmitters when used with the recommended companion receiver, provide a remote broadcast link having audio quality not approached by conventional voice communication radio equipment.

NOTE: These Marti Transmitters can be used with older tube-type Marti Receivers by positioning a special "Response" switch provided on the top side of the transmitter chassis. This "Response" switch is normally factory set to "DFM" position for use with New Solid State Receivers by placing this switch in "PH" position, the RPT-25 will operate with the MR-100/450 and the RPT-40 will operate with the MR-30/150 Receiver. The "Response" switch is accessible by removing the transmitter top cover.

The RPT-25 and RPT-40 transmitters operate from both 115/230 volt, 50-60 Hz. AC commerical power and 11 to 14 volt battery (Negative ground) supply.

Four audio input channels are provided with individual mixing gain controls. A meter and selector switch are provided for monitoring and adjusting various transmitter stages as well as audio VU level and audio gain reduction. The solid state audio processing technique pioneered and proven by Marti Electronics in hundreds of remote pickup broadcast transmitters has been applied to these models, resulting in the highest quality possible, consistant with transmission bandwidth and other factors.

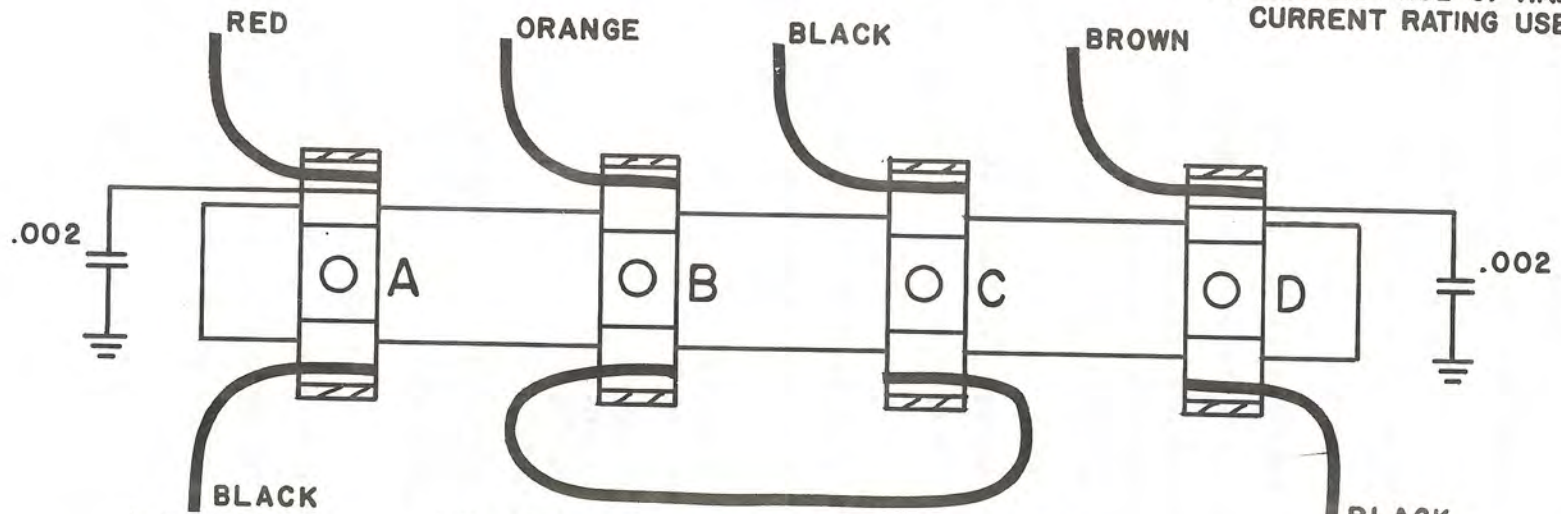


CONNECTION FOR 115V. OPERATION

TO CONVERT FROM 115 V. TO 230 V.:

1. CUT JUMPER FROM A TO C.
2. CUT JUMPER FROM B TO D.
3. CONNECT JUMPER TO B AND C.
4. INSTALL FUSE OF HALF THE CURRENT RATING USED FOR 115 V.

R-SERIES RECEIVERS



CONNECTION FOR 230 V. OPERATION

DWG. NO. 700-110-2	MARTI *Electronics, Inc.*	115 V. / 230 V. CONVERSION FOR R-SERIES RECEIVERS

SECTION II
INSTALLATION

2.1 UNPACKING AND INSPECTING

This equipment was packed and delivered to the carrier with utmost care. Do not accept shipment from carrier which evidences damage or shortage until the carrier's agent endorses a statement of the irregularity on the face of the carrier's receipt. Without documentary evidence, a claim cannot be filed.

Unpack equipment immediately upon receipt and thoroughly inspect for concealed damage. If damage is discovered, cease further unpacking and request immediate inspection by local agent of carrier. A written report of the agent's findings, with his signature is necessary to support claim.

Check your shipment against the shipping papers for possible shortage Do not discard any packing material until all items are accounted for. Small items are thrown away with packing material.

2.2 PLACEMENT OF EQUIPMENT

Install rack-mounted equipment in a well-ventilated, well grounded and shielded rack cabinet. Do not locate solid state equipment in a rack above tube-type equipment which produces high temperatures.

Problems can also be avoided by locating this unit away from other equipment which has transformers that produce strong magnetic fields. These fields can induce hum and noise into the Marti Equipment thus reducing performance. Also, strong radio frequency fields should be avoided where possible.

SECTION II

INSTALLATION CONTINUED:

2.3 Mobile Installation of RPT-25 and RPT-40

A typical automative installation is shown on drawing 700-017-1. The transmitter is located in the trunk compartment and is remotely controlled by the Marti TPS-TC-1 control unit located near the driver.

CAUTION:

This equipment is for use in 12.6 volt negative ground vehicles only. Reverse polarity will instantly destroy transistors. The step-by-step procedure for automative installations is as follows:

2.3.1 Mount the TPS-TC-1 control unit to the automobile control console at a point convenient to the operator. The two angle mounting brackets may be used as attached to the control box for shipping or turned outward, depending on available mounting space. Mount the two brackets to the selected mounting surface by drilling two 5/32 inch diameter holes spaced either 5 inches or 7 inches apart, depending upon method selected. Mount the two angle brackets using two of the No. 10 x 3/4 inch metal tapping screws supplied with the TPS-TC-1 control kit. Attach the control box to the bracket using the two Hex-Head No. 10 x ½ inch screws supplied.

2.3.2 Attach the mounting rack part No. 700-136 to transmitter using the quick-release fasteners. Place the transmitter in the trunk compartment at a place where it is easily installed and removed. Note that space is required at each end of the transmitter for operation of the rack fasteners. Also provide space at the rear of the transmitter for air circulation around the heat sink and attachment of the power, antenna and receiver connectors. When the proper location is determined, note the location of the transmitter mounting rack. Release the rack fastener, remove the transmitter without shifting the correct location of the rack and mark the location of the three screw holes in the trunk floor. Before drilling or punching these holes, lift the carpet or mat and determine that the hole locations will not damage any part of the vehicle. If in the clear, drill the three 5/32 inch diameter holes and attach the rack using three No. 10 x 3/4 inch metal tapping screws.

2.3.2 Mount the Littlefuse Circuit Breaker (15 amp rating) within 10 inches of the positive terminal of the battery. The negative terminal of the battery must connect to the chassis or frame of the vehicle.

2.3.4 Install cables between connectors in trunk compartment and control box and between trunk and circuit breaker as shown on drawing 700-017-1. Separate audio and power cables by at least 3 feet.

INSTALLATION CONTINUED:

2.3.5 Connect the red-White No. 16 wire from TPS-TC-1 box to the "Accessory" switch of the vehicle.

2.3.6. Connect Black No. 10 wire from power in trunk to a good electrical (Bright Metal) ground at vehicle chassis.

2.3.7 Fasten the transmitter to the rack in the trunk and connect the XL-4-12C four-pin micrphone plug on the audio cable to input No.1 of the RPT-25 or RPT-40 transmitters.

2.3.8 Install the mobile antenna and connect to antenna connector J1 on back of transmitter.

NOTE:

ALWAYS MAKE SURE ANTENNA IS CONNECTED BEFORE POWER IS APPLIED TO TRANSMITTER.

2.3.9 Connect the Cannon GK-923-C-½ plug on the remote control cable to the mating DC power receptacle on back of transmitter.

2.3.10 If two-way operation is desired install model FR-2527A VHF/UHF mobile receiver at the desired place under the vehicle dash, then install the connecting coax cable from receiver to J3 (Receiver) jack located on back of transmitter. Note that the "BNC" connector end of cable goes to the receiver. Both power and antenna are supplied to the receiver through the cable.

2.3.11 Connect the short red No. 10 wire from the Littlefuse circuit breaker to the Positive terminal of the 12 volt vehicle battery.

2.3.12 Plug microphone into the 4-pin microphone connector on the TPS-TC-1 control unit. The installation is now ready for testing. Refer to Operating Instructions in Section III.

2.4 Connecting Equipment for Stationery Remote Broadcast

Remote Pickup broadcasts from sporting events etc. occurring from a stadium, coliseum, gymnasium or auditorium involve several aspects of equipment location.
The transmitter normally is located near the announcer or engineer to permit access to the gain controls, monitoring jack, and metering. Availability of 115 volt AC power is an important consideration in locating the transmitter. For 115 volt AC operation, use the special AC adapter cable supplied with your transmitter. The cannon 9-pin connector plugs into the DC power connector on the back of the RPT-25 and RPT-40 transmitter.

CAUTION:

ALWAYS MAKE THIS CONNECTION BEFORE PLUGGING INTO 115 VOLT AC OUTLET.

CAUTION:

TO PREVENT ELECTRICAL SHOCK, THE ROUND PIN OF THE STANDARD AC PLUG MUST BE CONNECTED TO A PROPERLY GROUNDED ELECTRICAL OUTLET.

Some stations are equipped with a Remote Pickup base station for transmission of cues, orders and instructions to the remote unit.

INSTALLATION CONTINUED:

In such cases a VHF or UHF receiver such as the Model FR-2527A is connected to J3 receiver jack by means of the coax cable supplied. This special cable supplies both power and antenna to the receiver.

2.4.1 AUDIO INPUTS

The RPT-25 and RPT-40 transmitters provide four inputs and four independent mixing gain controls. Input No. 1 is for push-to-talk microphone operation, and is wired for the Marti MCD-70 microphone. The correct connector to plug into input no. 1 is Cannon type XLP-4-12C.

Input No. 1 Connections are:
Pin 1 - Cable Shield (Ground)
Pin 2 - Microphone Signal (Ground)
Pin 3 - Microphone Signal
Pin 4 - Push-to-talk switch circuit (returns through shield ground)

The Transmit switch on the transmitter control panel parallels the push-to-talk switch in AC powered operation, eliminating the need to hold down the microphone switch for long transmissions. Inputs 2 and 3 are microphone inputs.* The correct connector to plug into inputs 2 and 3 is Cannon type XL-3-12.

Input 2 and 3 connections are:
Pin 1 - Cable Shield (Ground)
Pin 2 - Microphone signal (Ground)
Pin 3 - Microphone signal

* Input 3 is a microphone level input on standard RPT-25 and RPT-40 transmitters which are equipped with the MA-3 module containing three 150 ohm input microphone pre-amplifier. On special order, type MA-2/B module may be substituted, which converts input 3 into a line level 600 ohm balanced input. Connections for input 3 then become the same as input 4.

Input 4 is a 600 ohm balanced line input. The correct connector to plug into input 4 is Cannon type XL-3-12.

Input 4 Connections are:
Pin 1 - Cable Shield (Ground)
Pin 2 - 600 ohm balanced line
Pin 3 - 600 ohm balanced line
(Input level -20 to +4 DBM)

INSTALLATION CONTINUED:

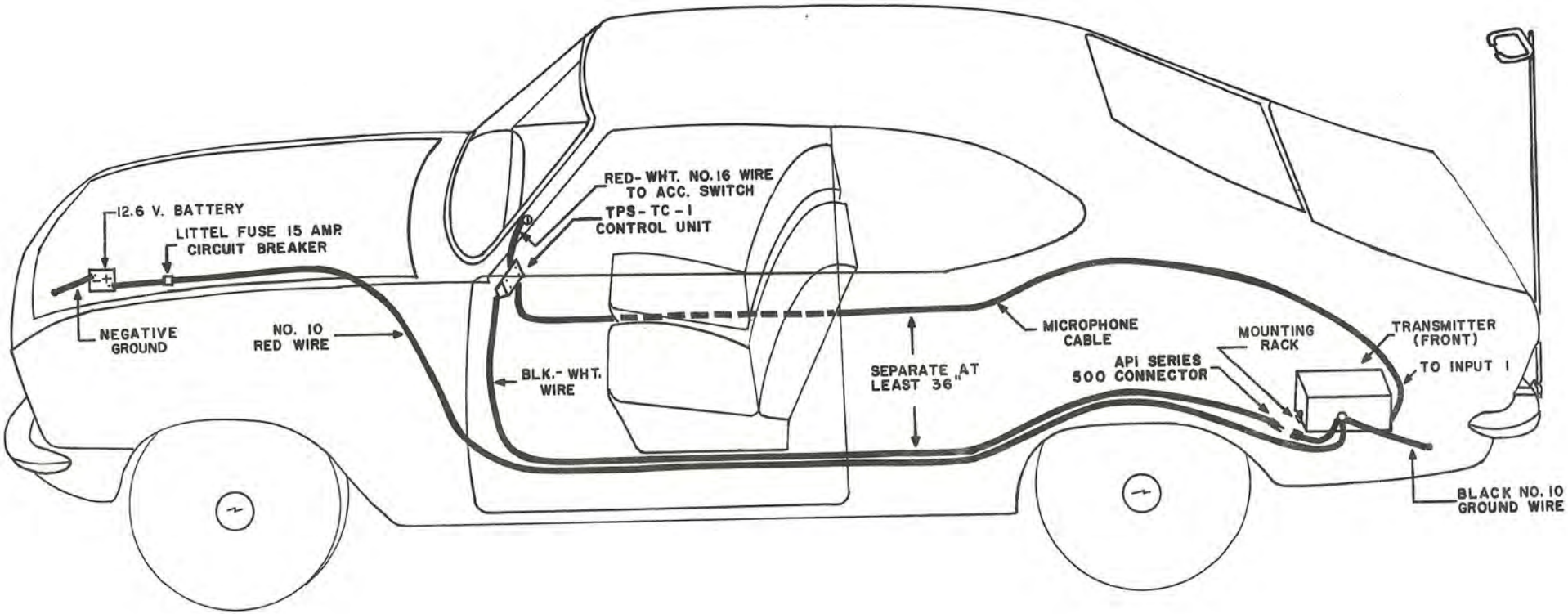
2.4.2 Monitor Jack

Compressed audio from all inputs can be monitored at the monitor jack. Use a standard single circuit phone plug with headphones having an inpedance of 600 ohms or higher. Audio at the monitor jack is unbalanced and resistance limited to prevent loading of the modulator circuit.

2.4.3 Remote Antenna Installation:

The success of a remote pickup broadcast depends to a large extent upon the location of the remote antenna. For short distance transmission an indoor antenna designed for the transmitter frequency and mounted on a standard 5/8 inch microphone stand will be sufficient. For such operation the Marti PA-1 may be used with the RPT-40 transmitter and the Marti YC-450 or YC-455 with the RPT-25 transmitter. Locate indoor antennas away from objects which may effect the radiation of the antenna. Do not allow personnel to come near to or touch antenna while transmitting. The PA-1 antenna is non-directional but the YC-450 and YC-455 are extremely directional and must be pointed at receiving antenna. All remote antennas must be polarized the same as the receiving antennas.

For transmissions over distance greater than 10 miles, it is necessary to obtain greater remote antenna height and antenna gain (directivity). Temporary antenna installation can be quickly made in many cases by use of a telescoping TV antenna tower. The average distance that can be expected from the Marti RPT-40 transmitter with various remote and receiving antennas is listed on the following page:



DWG 700-017-1	MARTI *Electronics, Inc.*	AUTOMOTIVE INSTALLATION

AVERAGE COVERAGE OF MARTI ELECTRONICS REMOTE PICKUP TRANSMITTERS OVER FLAT TERRAIN

RECEIVING ANTENNA HEIGHT	ANTENNA COMBINATIONS		COVERAGE IN MILES
	Receiving	Transmitting	
* 75 FT.	5 element Yagi	Single Ring	9
** 150 FT.	5 element Yagi	Single Ring	13
* 75 FT.	Stacked 5 element Yagi's	Single Ring	11
** 150 FT.	Stacked 5 element Yagi's	Single Ring	15
* 75 FT.	5 element Yagi	5 element Yagi	14
** 150 FT.	5 element Yagi	5 element Yagi	18
* 75 FT.	Stacked 5 element Yagi's	5 element Yagi	16
** 150 FT.	Stacked 5 element Yagi's	5 element Yagi	20
** 150 FT.	RA-4 Antenna	Single Ring	12
*** 300 FT.	RA-4 Antenna	Single Ring	14
** 150 FT.	RA-4 Antenna	5 element Yagi	16
*** 300 FT.	RA-4 Antenna	5 element Yagi	20

CODE:

* Measurement based on length of RG-8U transmission line not to exceed 80 feet.

** Measurement based on length of ½" FHJ4 transmission line not to exceed 200 feet.

*** Measurement based on length of 7/8" FHJ5 transmission line not to exceed 350 feet.

NOTE: The RA-4 Antenna is not recommended on tower heights of less than 150 feet in height.

The above measurements are based on a TRANSMITTING ANTENNA HEIGHT of 6 feet above surrounding objects. An increase in height of the TRANSMITTING ANTENNA to 30 feet will increase the coverage by approximately 50%. DON'T USE RG-5 8U; THERE IS TOO MUCH LOSS.

The ring antennas are non-directional within + or - 3 db. The Yagi antennas are uni-directional. The gain of the single ring antenna is unity. The gain of a YC-Series Yagi antenna is 9.0db. The gain of Stacked YC-Series Yagi Antennas is 12.0 db. When using Yagi antennas for receiving, we recommend a standard TV Type Rotator.

SECTION III

OPERATING INSTRUCTIONS

3.1 CONTROL AND CONNECTOR FUNCTIONS

The Control Knobs numbered 1 through 4 are gain control and each independently controls the level from an input on the left side of the transmitter having the same number. The controls are mixing, which permits any combination of inputs to be active.

The standard RPT-25 and RPT-40 transmitters are supplied with three microphone inputs and one balanced line input. Inputs 1, 2, and 3 are microphone inputs and input 4 is in the balanced line input. Input 3 can also be converted into a balanced line input as explained in section 2.4.1. Balanced line inputs are used for cartridge tape machine inputs or other devices having a 600 ohm line level output.

The rotary switch selects various circuits to be measured on the panel meter. The meaning of the various meter selections will be covered later in this section.

The rocker switch on the extreme right hand side of the control panel is the power switch for 115 volt AC operation. In OFF position all power inside the transmitter is OFF. In Standby position the audio section of the transmitter is active, permitting the audio inputs, gain and associated equipment to be checked out without transmitting a signal. The Monitor Jack is active in Standby operation. When the power switch is placed in Transmit Position the transmitter will deliver power to the antenna.

CAUTION:

Always make sure the antenna is connected to the transmitter (J1) before switching to Transmit.

Continued:

Connectors on the back of the transmitter are as follows:

J1 - Connect to transmitting antenna.

J2 - Connect to R-30/150 or R-50/450 receiver for transmit squelching when using as a base station receiver.

J3 - Connect to FR-2527A remote receiver (Optional) using special cable supplied with receiver. This one cable supplies both power and antenna to the receiver.

J4 - Frequency test jack for measurement of transmitter frequency.

F1 - Fuse type 3AG "Slo-Blo" 2½ amp. This fuse protects transmitter in AC operations.

F2 - Fuse type 3AG 8 amp. This fuse protects transmitter in DC operation.

3.2 MOBILE OPERATION:

Assuming the mobile installation to be made as per section 2.3, proceed as follows:

3.2.1 Securely fasten the transmitter in the mobile mounting rack using the two rotating fasteners.

3.2.2 Connect antenna, power, (and receiver) cables at back of transmitter.

CAUTION:

The antenna must always be connected before the transmitter is operated.

3.2.3 Pre-set gain control #1 to the correct position. The correct gain setting is determined by adjustment for about 5 to 7 VU of gain reduction (meter position No. 1) when talking at a normal level and istance from the microphone (in channel 1 input). The normal position for the gain reduction indicator is approximately 0 VU. When full modulation of the transmitter is reached, the meter will deflect to the left (as much as -20 VU) indicating the amoung of automatic gain reduction necessary to maintain 100% modulation.

Continued:

3.2.4 It is advisable to start the vehicle engine before beginning of transmission, since the transmitter will draw about 6 or 7 amps from the battery. The transmitter draws very little current in "Stand By", however, remember that the TPS-TC-1 control unit is connected to the accessory switch of the vehicle, and this switch must be ON before the transmitter will operate.

3.2.5 The final two steps to mobile transmission is to turn on the STAND BY switch of the control unit. At temperatures below -10°C (+14°F) it is necessary to turn on the stand by switch two minutes prior to an anticipated transmission, in order for the frequency to be within tolerance. Finally, with the microphone plugged into the connector on the bottom side of the control unit, press the "Talk" button on the microphone to transmit. For long transmissions, the "Transmit" switch on the control unit can be placed to "ON" position, eliminating the need to hold the microphone button depressed. The two lamps on the control unit visually indicate the stand by and transmit status of the transmitter.

3.3 Stationary Remote Operation

For remote operations from 115 volt AC power, proceed as follows:

3.3.1 Locate transmitter, if possible, where the operator/announcer can reach the controls, where power is available, and where the minimum length of antenna coax cable is required.

3.3.2 First connect the antenna to J1 of the transmitter.

CAUTION:

Always make sure the antenna is connected before transmitting.

3.3.3 Connect the AC power adapter cable to the 9 pin DC power connector on the back of the transmitter.

CAUTION:

Always connect the AC power adapter cable to the transmitter before plugging into 115 V. power.

CONTINUED:

3.3.4 Plug AC power cable into 115 volt AC power receptacle. Make sure the receptacle is the new approved grounding type which matches the plug supplied with the RPT-25 or RPT-40. Do not attempt to defeat this grounding feature- it is important to your safety. If extension cables are used make sure both ends have the grounding (round prong) feature. If personnel operating this equipment will be standing on soil or touching metal objects which are earth grounded, special precautions regarding operation of this or any 115 volt AC appliances must be observed.

3.3.5 Connect microphone (8) to the desired input, place transmitter power switch in Stand By. The meter should indicate approximately 0 VU in position 1 of the meter switch. Set the microphone gain with the appropriate knob fo about 5 to 7 VU of gain reduction as indicated by a deflection of the VU meter to the left. The audio can be monitored by a head phone (600 ohms or greater) plugged into the Monitor Jack. The transmitter will be modulated the maximum amount when any amount of gain reduction is indicated on the meter. High gain settings are very large amounts of gain reduction can produce undesirable effects. Monitoring will aid in determining of correct gain settings. Position No. 2 of the meter switch is a conventional audio VU meter. (The higher the reading - the more the audio). The reading should peak at about 0 VU for 100% modulation.

3.5.6 After the audio has been checked out and levels set, the power switch can be set to Transmit. Positions 8 through 9 on the RPT-40 and Positions 8 through 10 on the RPT-25 indicate the conditions of various circuits of the transmitter. The normal value of these various readings are indicated in the test report sheet included with this transmitter.

CONTINUED:

It is helpful to refer to these meter reading to determine if the transmitter is operating normally. Position 8 is relative power output, and verifies that the transmitter is delivering power. Always make sure the antenna is connected to the transmitter before switching to transmit.

3.3.7 TEST METER FUNCTIONS

RPT-40 & RPT-25	TRANSMITTER TEST METER
POSITION 1.	GAIN REDUCTION
POSITION 2.	AUDIO LEVEL (VU)
POSITION 3.	RF DRIVE TO TRIPLER Q1
POSITION 4.	RF DRIVE TO DOUBLER Q2
POSITION 5.	RF DRIVE TO DOUBLER Q3
POSITION 6.	RF DRIVE TO BUFFER Q4
POSITION 7.	POWER AMP. IC
POSITION 8.	RELETIVE RF OUTPUT
POSITION 9.	POWER SUPPLY B+
POSITION 10.	RF DRIVE TO TRIPLER Q1 (RPT-25 ONLY)

METER POSITIONS 3, 4, 5, 6 - REFER TO DRAWING 800-019-3

METER POSITION 7 - REFER TO DRAWING 800-047

METER POSITION 10 - REFER TO DRAWING 800-050

SECTION V

5.1 TOOLS FOR ALIGNMENT OF RPT SERIES

1. Model #43 Bird Wattmeter with impedance of 50 ohms.
2. Bird 1 Watt Element 100-250 MHz.
3. Bird 50 Watt Element 100-250 MHz.
4. Model #8135 Bird 150 Watt, 50 Ohm Coaxial Resistor.
5. GC 8727 Tuning Tool.
6. GC 5009 Tuning Tool.
7. Screwdriver
8. 3/16 Nut Driver
9. Hewlett Packard Distortion Analyzer Model #333A.
10. Hewlett Packard Oscillator Model #204C
11. Hewlett Packard Attenuator Set.
12. Hewlett Packard Frequency Counter Model #5327C.
13. Connecting Cables.

5.2 RPT-25 RF ADJUSTMENTS

5.2.1 Adjust on ER-12/7 module for 13.2 V DC output. Measured from ground to Pin #9 of relay (RY-1). (Under chassis)

5.2.2 Place Test Meter into Position #3. Tune L4 of the DFM-1D for a Maximum Reading. Refer to Figure 5-3 for coil location.

5.2.3 Tune L101 on Multiplier Board fo Minimum in Test Meter #3. Place Test Meter to Position #4 and tune L202 for Maximum. After reading is obtained, tune L101 and L102 for Maximum Reading in Test Meter Position #4. Refer to Figure 5-1 for coil location.

5.2.4 Tune L103 for Minimum in Test Meter Position #4. Put Test Meter to #5 and tune L104 for Maximum. After reading is obtained tune L103 and L104 for Maximum Reading in Test Meter Position #5.

5.2.5 Place Test Meter to Position #6. Tune L105 and L106 for Peak Readings.

5.2.6 Insert a 50 ohm Dummy Antenna with a Watt Meter into output of Multiplier Box. Adjust C39 and C40 for Maximum Power Output. This should be 300 to 500 milliwatts. (150 MHz one watt element). Refer to Figure 5-1 for C39 and C40 locations.

5.2.7 Connect Multiplier Box to Tripler and Buffer Stage. Connect 50 ohm Dummy and Watt Meter to output of Tripler and Buffer Stage. (450 MHz element)

5.2.8 Tune C1 of Tripler and Buffer Stage for Maximum Reading in Position #10 of Test Meter. See Figure 5-2A for locations.

5.2.9 Tune C2 for Maximum Reading in Position #10 of Test Meter.

5.2.10 Tune C7 for Minimum Reading in Position #10 of Test Meter.

5.2.11 Tune C8 for Maximum Reading in Position #10 of Test Meter.

5.2.12 Tune C9 for Minimum Reading in Position #10 of Test Meter.

5.2.13 Tune C10 for Maximum Reading in Position #10 of Test Meter.

5.2.14 You should have some power indication on Watt Meter. Repeat steps 8 through 13 until a 10 watts or better reading is obtained.

5.2.15 Adjust efficiency POT (R8) located on left side of Main Frame of transmitter for 5 watts output. (R8 is located on top side of chassis).

5.2.16 Connect output of Tripler and Buffer Stage to the input of the RF Power Amplifier Box. Connect a 50 ohm Dummy Load and Watt Meter to output of transmitter.

5.2 RPT-25 RF ADJUSTMENTS (cont'd)

5.2.17 Place Test Meter into Position #7. Adjust C1 on RF Power Amplifier Box for Maximum Reading.

5.2.18 Adjust C10 of RF Power Amplifier Box for Maximum Reading in Position #7 of Test Meter. (Capacitor should be 1/3 of maximum setting). See Figure 5-2B.

5.2.19 Adjust C11 and C12 for Maximum Reading in Position #7 of Test Meter. This should give some power out.

5.2.20 Increase R8 full clockwise and retune C1, C2, C7, C8, C9, and C10 (of Tripler and Buffer Stage), C1, C10, C11, and C12 (of RF Power Amplifier Box) for Maximum Power Output.

5.2.21 Adjust R8 for 25 watts power output.

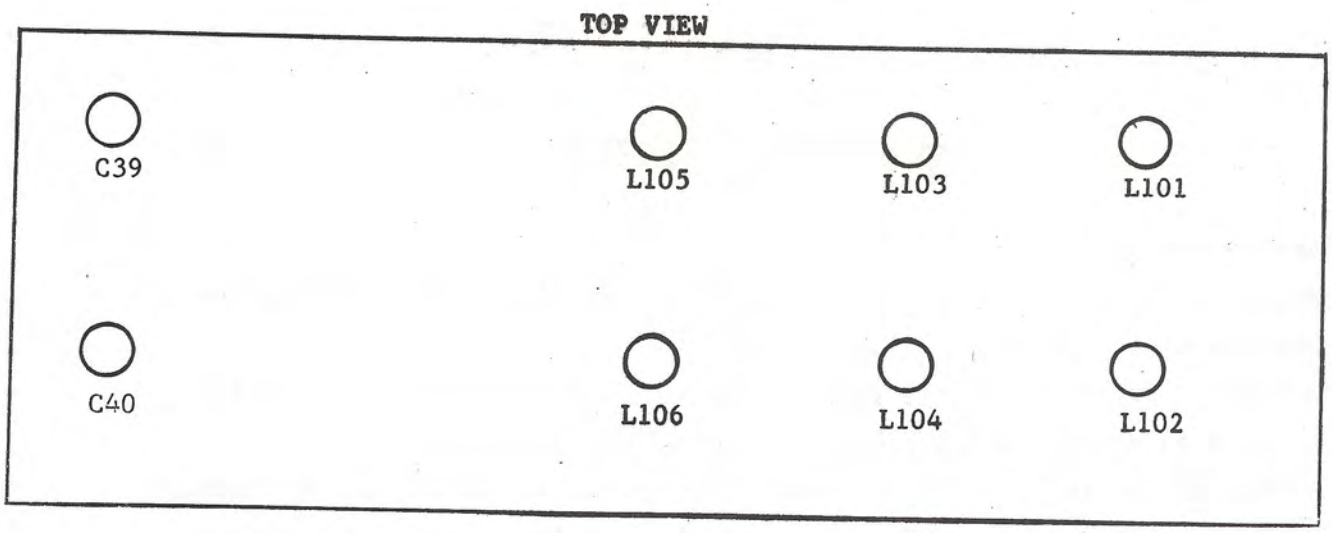


FIGURE 5-1 MULTIPLIER BOX

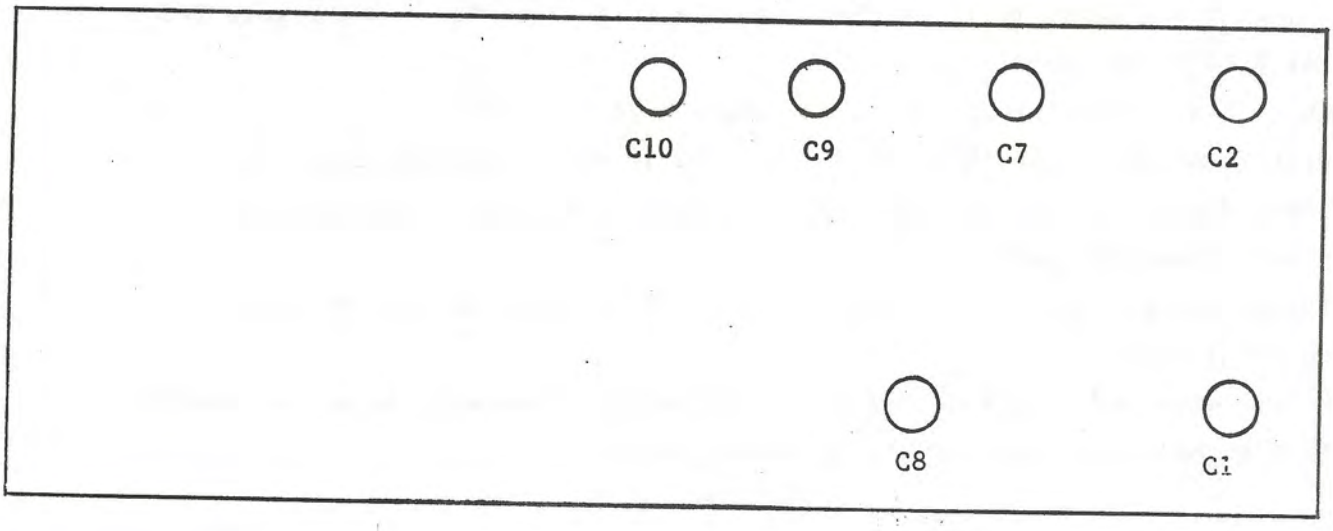


FIGURE 5-2A TRIPLER AND BUFFER SECTION

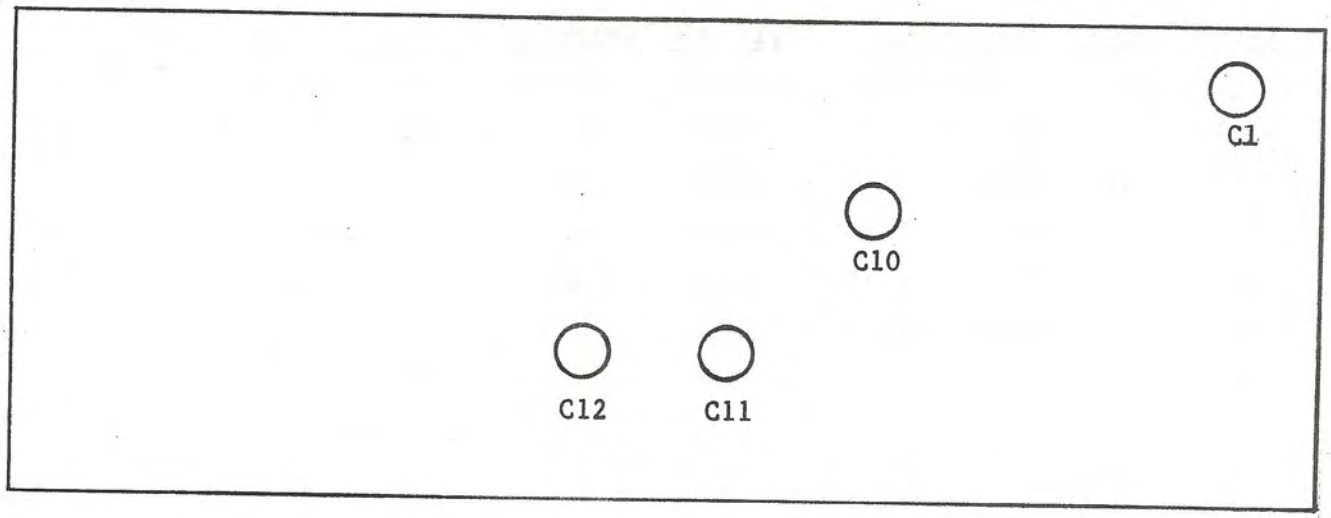


FIGURE 5-2B RF POWER AMPLIFIER BOX

5.3 DFM-1D MODULE ADJUSTMENTS

5.3.1 Set up CA-40-5.

5.3.2 Adjust R4 for 4.8 V DC across C3 on VTVM. See Figure 5-3 for location of adjustments.

5.3.3 Adjust L1 for proper final frequency, output, measured at J4. (J4 is located on rear of transmitter below the large heat sink.)

5.3.4 Adjust R2 for the correct deviation for transmitter model no. by feeding 2500 Hz. test tone (+2 DBM) into input #4 with Gain Control Pot #4 set for 5 DB gain reduction. Refer to chart below for the deviation corresponding to your transmitter type accepted model number.

5.3.5 Adjust Limit Level (R11) on PLF-75 module full clockwise. See Figure 5-5 for PLF-75 component locations.

5.3.6 Check distortion through receiver, without 10.7 IF Filter.

5.3.7 Distortion should be 1% or less. If not, adjust R4 on DFM-1D module. Lower distortion may be clockwise or counter-clockwise. Adjust L1 for proper final frequency.

5.3.8 Repeat steps 6 and 7 until distortion is 1% or below and transmitter is on frequency.

5.3.9 Place cover and insulation on module and adjust frequency to proper reading through hole in top of module by adjusting L2.

FCC TYPE ACCEPTED TRANSMITTERS

TYPE ACCEPTED MODEL NO.	POWER WATTS	FCC FREQ. GROUP	FREQ. (MHz.)	% FREQ. TOLERANCE	TYPE EMISSION	BANDWIDTH KHz.	DEV. KHz.
RPT-25P	25	P	450.01-455.95	.00025	10F3	10	1.5
RPT-25R	25	N1	450.01-455.95	.00025	50F3	50	9
RPT-25N2	25	N2	450.01-455.95	.00025	25F3	25	4
RPT-25R	25	R	450.01-455.95	.00025	50F3	50	9
RPT-25S	25	S	450.01-455.95	.00025	100F3	100	22.5
RPT-40K	40	K	152.87-161.76	.0005	30F3	30	5
RPT-40L	40	L	166.26-170.15	.0005	25F3	25	4

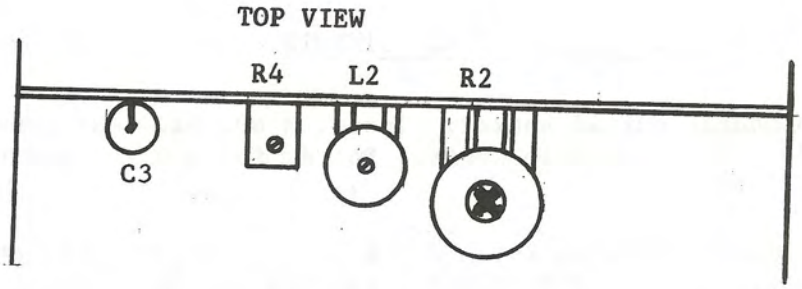


FIGURE 5-3 DFM-1D

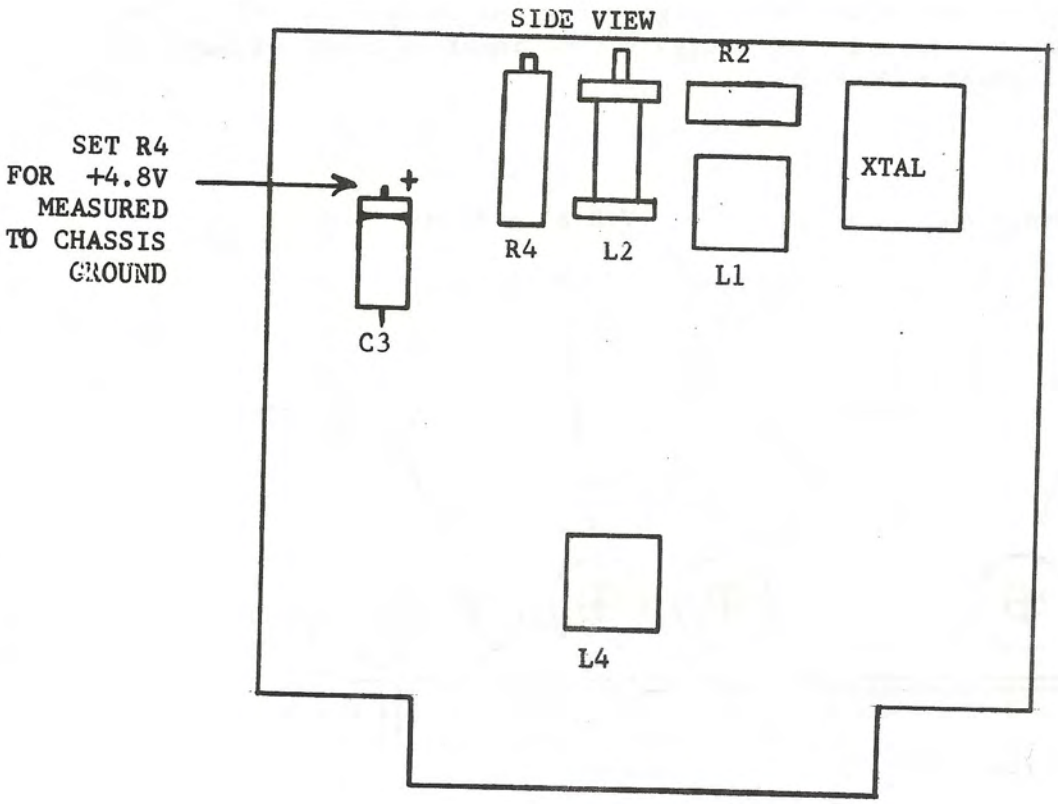


FIGURE 5-3 DFM-1D

5.4 CA-40-5 ADJUSTMENTS

5.4.1 Pull CA-40-5 module out of socket. Insert a 400 Hz. test tone at +10 db into input #4. Increase Gain Control Pot #4 for a 0 VU reading in Test Meter Position #2.

5.4.2 Plug CA-40-5 module into socket. Set all four control pots on CA-40-5 full counter-clockwise. Adjust Meter Calibration (R21) for 0 VU reading in Position #1 of Test Meter. See Figure 5-4 for pot locations.

5.4.3 Put Test Meter in Position #2 and adjust VVR Bias Adjust (R17) for -6 VU on Test Meter.

5.4.4 Repeat steps 2 and 3 until 0 VU reading in Position #1 and -6 VU reading in Position #2 are obtained simultaneously.

5.4.5 Increase 400 Hz. test tone level by advancing Gain Control Pot #4 to one o'clock.

5.4.6 Adjust Compression Threshold (R2) for a +2 VU reading in Position #2 of Test Meter.

5.4.7 Adjust F.E.T. Adjust (R20) for a slight movement in Position #1 of Test Meter. (It may be necessary to decrease tone input by means of Gain Control Pot #4 to observe movement).

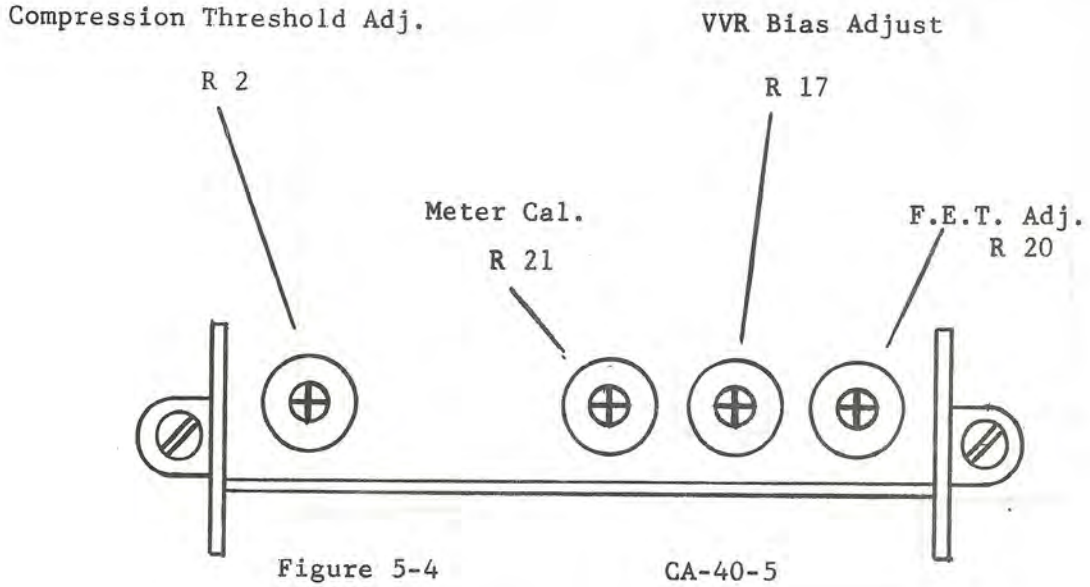


Figure 5-4 CA-40-5

5.5 PLF-75 ADJUSTMENTS

5.5.1 Check distortion of a 400 Hz. test tone at +10 db inserted into input #4 with Gain Control Pot #4 set at one o'clock. (Distortion should be 1% or less).

5.5.2 Adjust Limit Level (R11) to add .2% distortion to the 400 Hz. tone. See Figure 5-5 for locations.

5.5.3 Check response by adjusting Gain Control Pot #4 for approximately .5 db compression, in Position #1 of Test Meter; of a 400 Hz. test tone at +10 db.

5.5.4 Lower input level of 400 Hz. tone 10 db; put compressor out of compression, and check response.

5.5.5 Adjust L2 for -1.5 db response at 7 KHz on RPT-40 and -1.5 db response at 15 KHz on RPT-25.

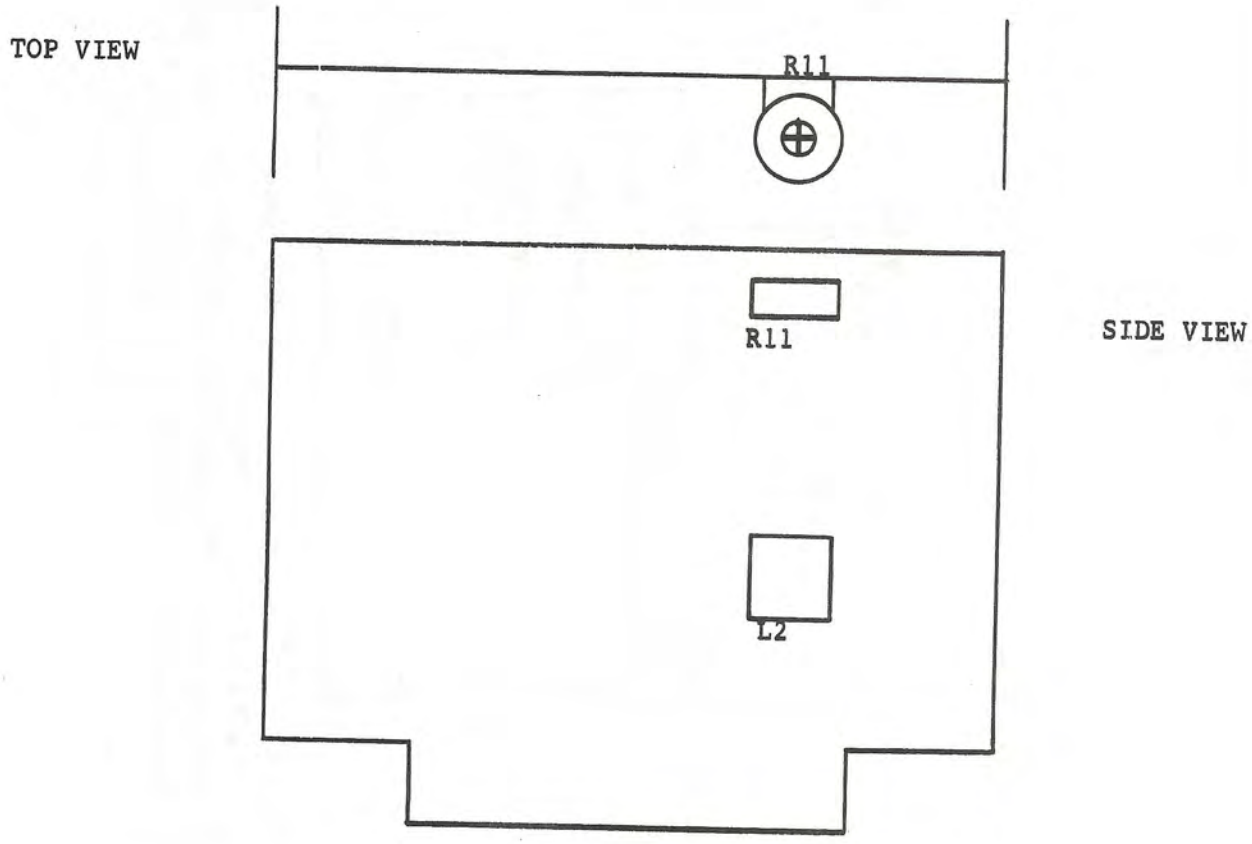
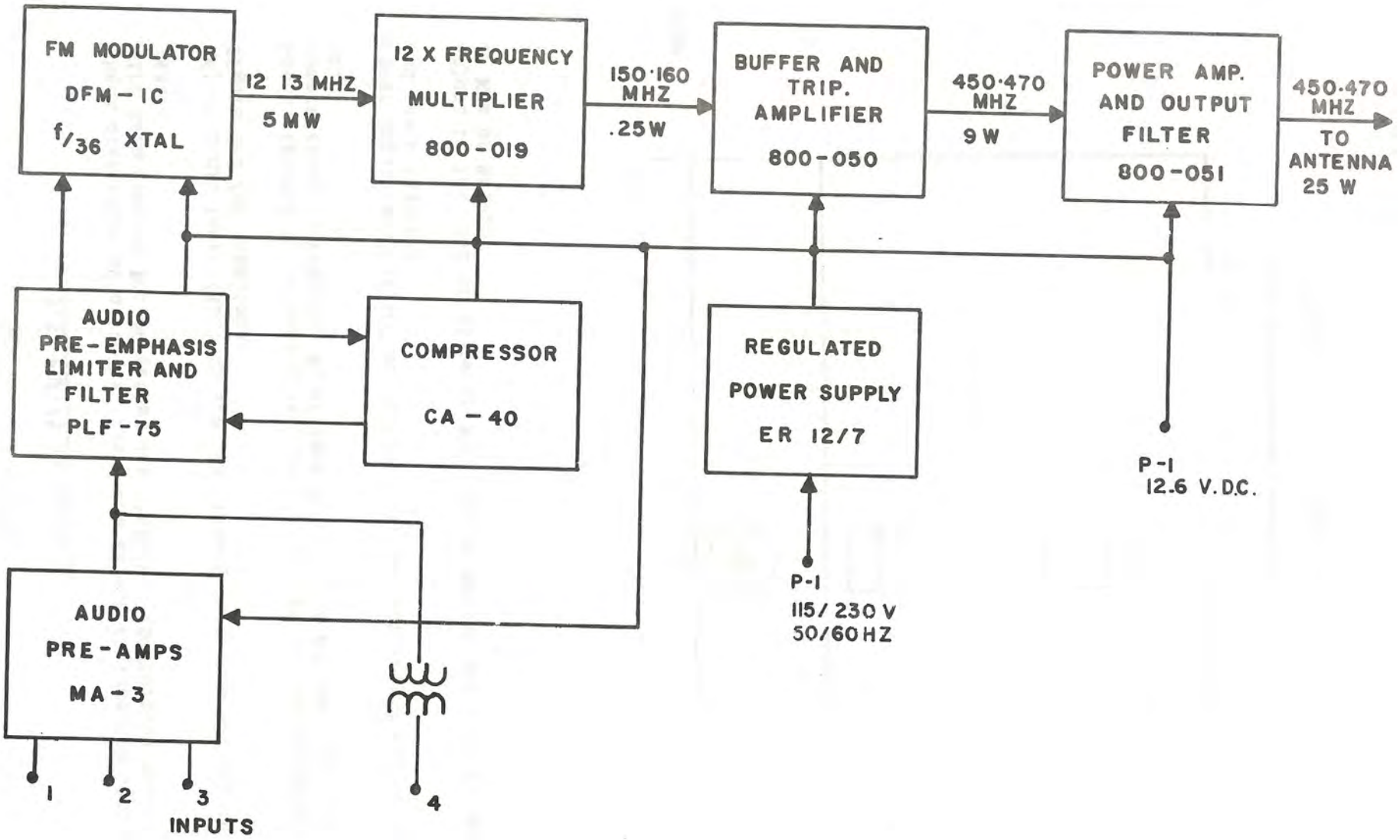
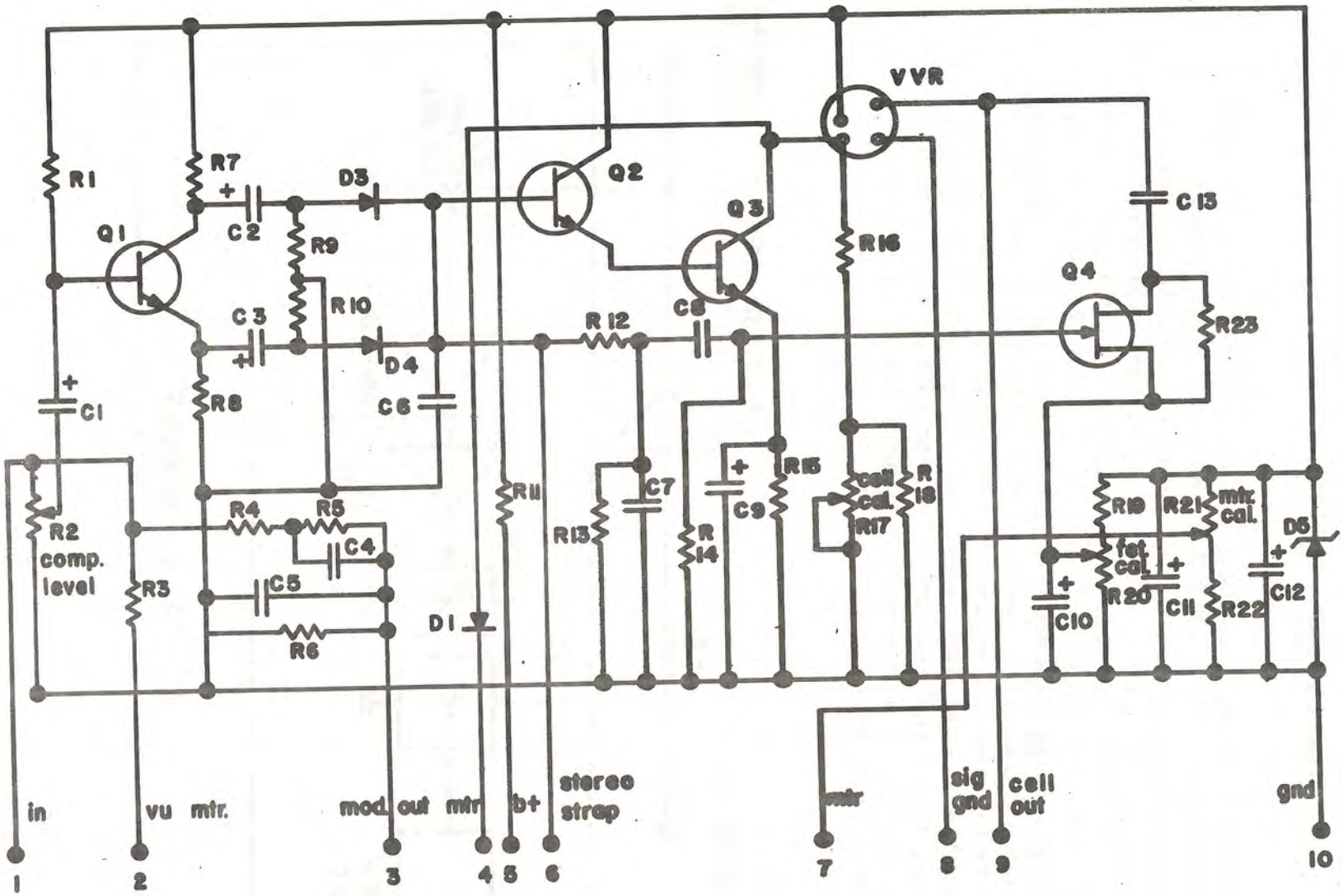


FIGURE 5-5 PLF-75



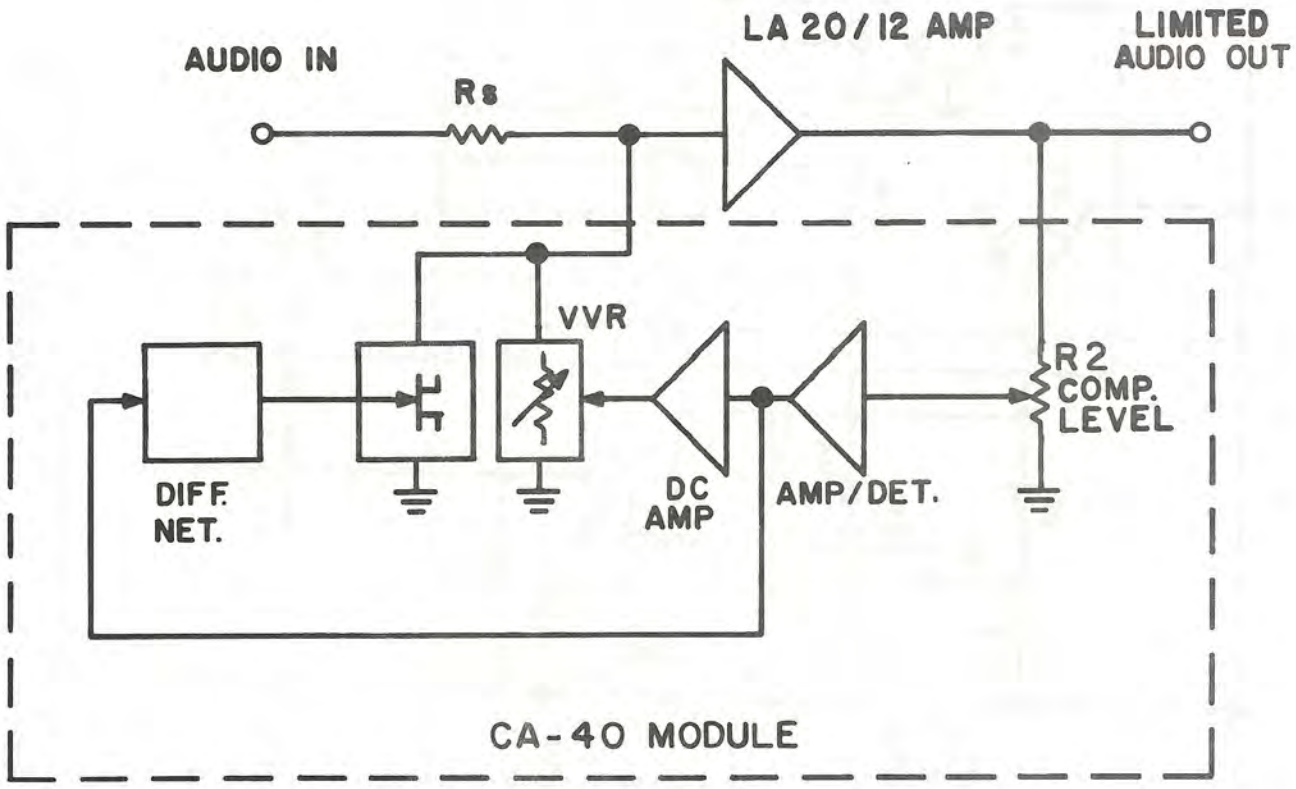
DWG. 700-134-7	MARTI *Electronics, Inc.*	RPT-25 BLOCK DIAGRAM



DWG. 800 · 016 · 1	MARTI Electronics, Inc.	COMPRESSOR AMP. CA-40

THEORY OF OPERATION OF THE MARTI CA-40 SOLID STATE COMPRESSOR/LIMITER MODULE

The Marti CA-40 compressor/limiter unit operates on the variable audio attenuator principle. A full wave audio detector provides a voltage proportional to audio peak level which controls a voltage variable resistor (VVR) average level attenuator. This VVR device has a very large dynamic operating range, adds no audio distortion but has a comparatively slow attack time. For instantaneous control of short rise time audio waveforms, the control voltage is differentiated and applied to the gate of a field effect transistor. This device is connected in parallel with the VVR, and serves as an extremely fast attenuator, operating only on short rise time waveforms, thus complimenting the slower VVR device. The result is a compressor with a 40 db dynamic range and a limiter with microseconds attack time.

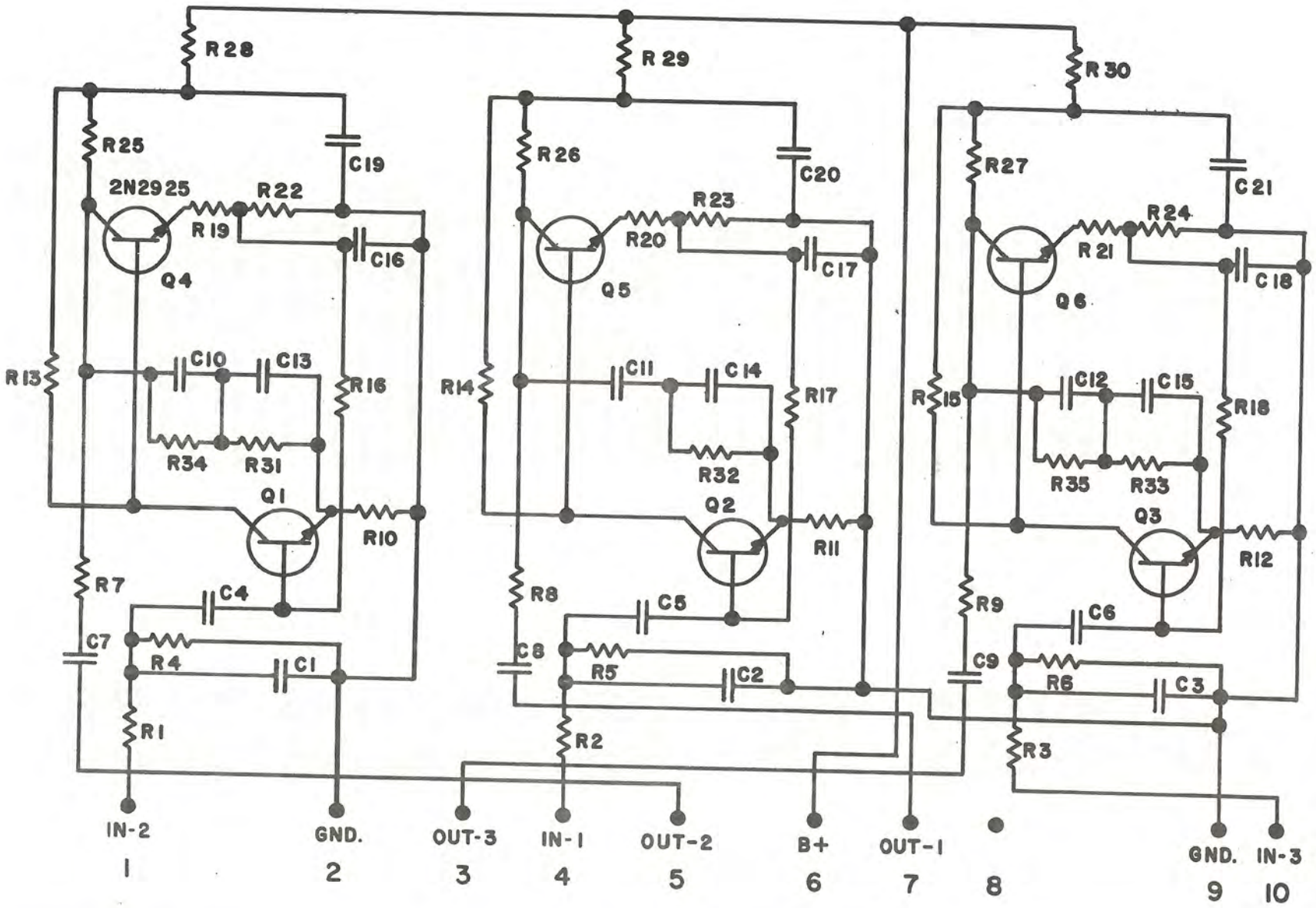


PARTS LIST
LIMITER AMPLIFIER MODULE
MODEL NO. CA-40

ITEM	PART NO.	DESCRIPTION
C1	219-080	Capacitor, 8 uf, 40V
C2	219-080	Capacitor, 8 uf, 40V
C3	219-080	Capacitor, 8 uf, 40V
C4	219-223	Capacitor, .022 uf, 33V 5%
C5	235-254	Capacitor, .25 uf, 200V 5%
C6	217-104	Capacitor, .01 uf, 25V +80-20
C7	226-020	Capacitor, 2.2 uf, 100V 10%
C8	215-333	Capacitor, .033 uf, 33V 5%
C9	219-200	Capacitor, 20 uf, 16V
C10	219-200	Capacitor, 20 uf, 16V
C11	219-121	Capacitor, 125 uf, 16V
C12	219-121	Capacitor, 125 uf, 16V
C13	219-200	Capacitor, 16V
D1	414-007	Diode 1N4007
D2	410-914	Diode 1N914 or 1N4148
D4	410-914	Diode 1N914 or 1N4148
D5	410-110	Diode SZ11.0A Zener 5%
Q1	422-925	Transistor, 2N3391
Q2	425-306	Transistor, 2N5306
Q3	450-001	Transistor, MPS1761
Q4	420-340	Transistor, 2N5245
R1	105-106	Resistor, 1 megohm ½W 5%
R2	100-522	Potentiometer, 5K ohms, ½W (IRC) 30%
R3	105-222	Resistor, 2.2K ohms, ½W 5%
R4	105-470	Resistor, 47 ohms, ½W 5%
R5	105-182	Resistor, 1.8K ohms, ½W 5%
R6	105-682	Resistor, 6.8K ohms, ½W 5%
R7	105-272	Resistor, 2.7K ohms, ½W 5%
R8	105-272	Resistor, 2.7K ohms, ½W 5%
R9	105-184	Resistor, 180K ohms, ½W 5%
R10	105-184	Resistor, 180K ohms, ½W 5%
R11	115-820	Resistor, 82 ohms, 1W 5%
R12	105-473	Resistor, 47K ohms, ½W 5%
R13	105-156	Resistor, 15 Megohm, ½W 5% (Omit on Var. tc)
R14	105-474	Resistor, 470K ohms, ½W 5%
R15	105-150	Resistor, 15 ohms, ½W 5%
R16	105-821	Resistor, 820 ohms, ¼W 5%
R17	105-501	Potentiometer, 500 ohms, ½W (Mallory) 30%
R18	105-272	Resistor, 2.7K ohms, ½W 5%
R19	105-682	Resistor, 6.8K ohms, ½W 5%
R20	100-522	Potentiometer, 5K ohm, ½W IRC 30%

PARTS LIST, continued
LIMITER AMPLIFIER MODULE
MODEL NO. CA-40

ITEM	PART NO.	DESCRIPTION
R21	100-522	Potentiometer, 5K ohm, ½ W. (IRC) 30%
R22	100-152	Resistor, 15K ohms, ½W. 5%
R23	100-184	Resistor, 180K ohms, ½W. 5%
VVR	451-001	Voltage-Variable Resistor
	800-016	Board, P.C.
	700-024	Module Metal Assembly



DWG. 800·010·1	MARTI *Electronics, Inc.*	MIKE PRE-AMP. MA-3

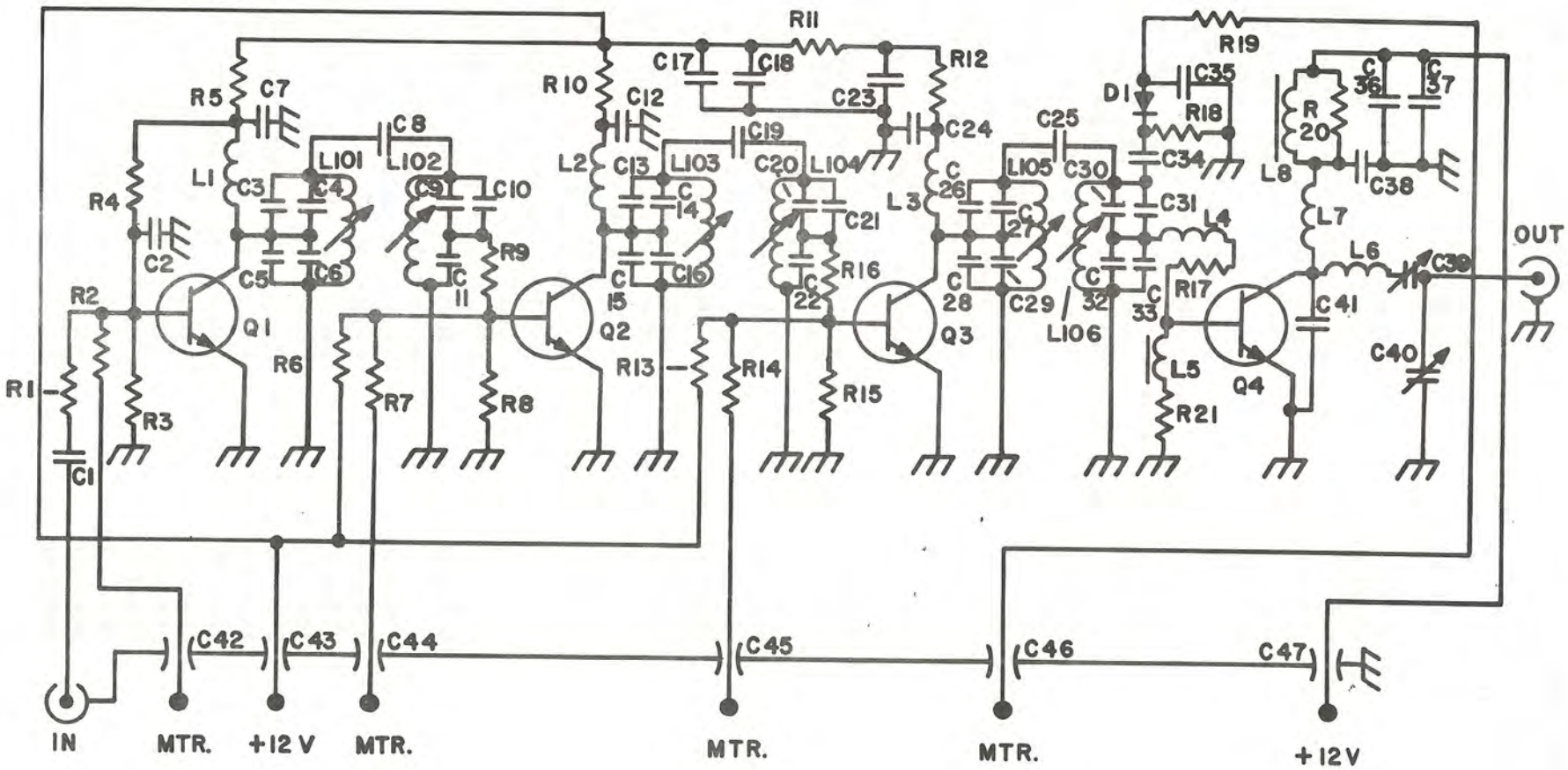
PARTS LIST
MA-3 MIKE PRE-AMPLIFIER

ITEM	PART NO.	DESCRIPTION
C1	268-471	Capacitor, 470 pf
C2	268-471	Capacitor, 470 pf
C3	268-471	Capacitor, 470 pf
C4	219-200	Capacitor, 20 uf 16V
C5	219-200	Capacitor, 20 uf 16V
C6	219-200	Capacitor, 20 uf 16V
C7	219-200	Capacitor, 20 uf 16V
C8	219-200	Capacitor, 20 uf 16V
C9	219-200	Capacitor, 20 uf 16V
C10	219-200	Capacitor, 20 uf 16V
C11	219-200	Capacitor, 20 uf 16V
C12	219-200	Capacitor, 20 uf 16V
C13		Not used
C14		Not used
C15		Not used
C16	219-121	Capacitor, 125 uf 16V
C17	219-121	Capacitor, 125 uf 16V
C18	219-121	Capacitor, 125 uf 16V
C19	219-500	Capacitor, 50 uf 40V
C20	219-500	Capacitor, 50 uf 40V
C21	219-500	Capacitor, 50 uf 40V
Q1	422-925	Transistors, 2N2925
Q2	422-925	Transistors, 2N2925
Q3	422-925	Transistors, 2N2925
Q4	422-925	Transistors, 2N2925
Q5	422-925	Transistors, 2N2925
Q6	422-925	Transistors, 2N2925
R1	105-100	Resistors, 10 ohms ½w 5%
R2	105-100	Resistors, 10 ohms ½w 5%
R3	105-100	Resistors, 10 ohms ½w 5%
R4	105-102	Resistors, 1K ohm ½w 5%
R5	105-102	Resistors, 1K ohm ½w 5%
R6	105-102	Resistors, 1K ohm ½w 5%
R7	105-103	Resistors, 10K ½w 5%
R8	105-103	Resistors, 10K ½w 5%
R9	105-103	Resistors, 10K ½w 5%
R10	105-221	Resistors, 220 ohms ½w 5%
R11	105-221	Resistors, 220 ohms ½w 5%
R12	105-221	Resistors, 220 ohms ½w 5%
R13	105-393	Resistors, 39K ohms ½w 5%
R14	105-393	Resistors, 39K ohms ½w 5%
R15	105-393	Resistors, 39K ohms ½w 5%
R16	105-184	Resistors, 180K ohm ½w 5%
R17	105-184	Resistors, 180K ohm ½w 5%
R18	105-184	Resistors, 180K ohm ½w 5%
R19	105-101	Resistors, 100 ohms ½w 5%
R20	105-101	Resistors, 100 ohms ½w 5%

PARTS LIST

MA-3 MIKE PRE-AMPLIFIER (continued)

ITEM	PART NO.	DESCRIPTION
R21	105-101	Resistor, 100 ohms ½w 5%
R22	105-681	Resistor, 680 ohms ½w 5%
R23	105-681	Resistor, 680 ohms ½w 5%
R24	105-681	Resistor, 680 ohms ½w 5%
R25	105-392	Resistor, 2.9K ohms ½w 5%
R26	105-392	Resistor, 2.9K ohms ½w 5%
R27	105-392	Resistor, 2.9K ohms ½w 5%
R28	105-102	Resistor, 1K ohm ½w 5%
R29	105-102	Resistor, 1K ohm ½w 5%
R30	105-102	Resistor, 1K ohm ½w 5%
R31	105-184	Resistor, 180K ohm ½w 5%
R32	105-184	Resistor, 180K ohm ½w 5%
R33	105-184	Resistor, 180K ohm ½w 5%
R34		Omit on MA-3 Mike pre-amplifier
R35		Omit on MA-3 Mike pre-amplifier
	700-024	Module Metal Assembly
	800-010	Board, P.C. MA-3



G. 800·019·3	MARTI *Electronics, Inc.*	MULTIPLIER BOARD

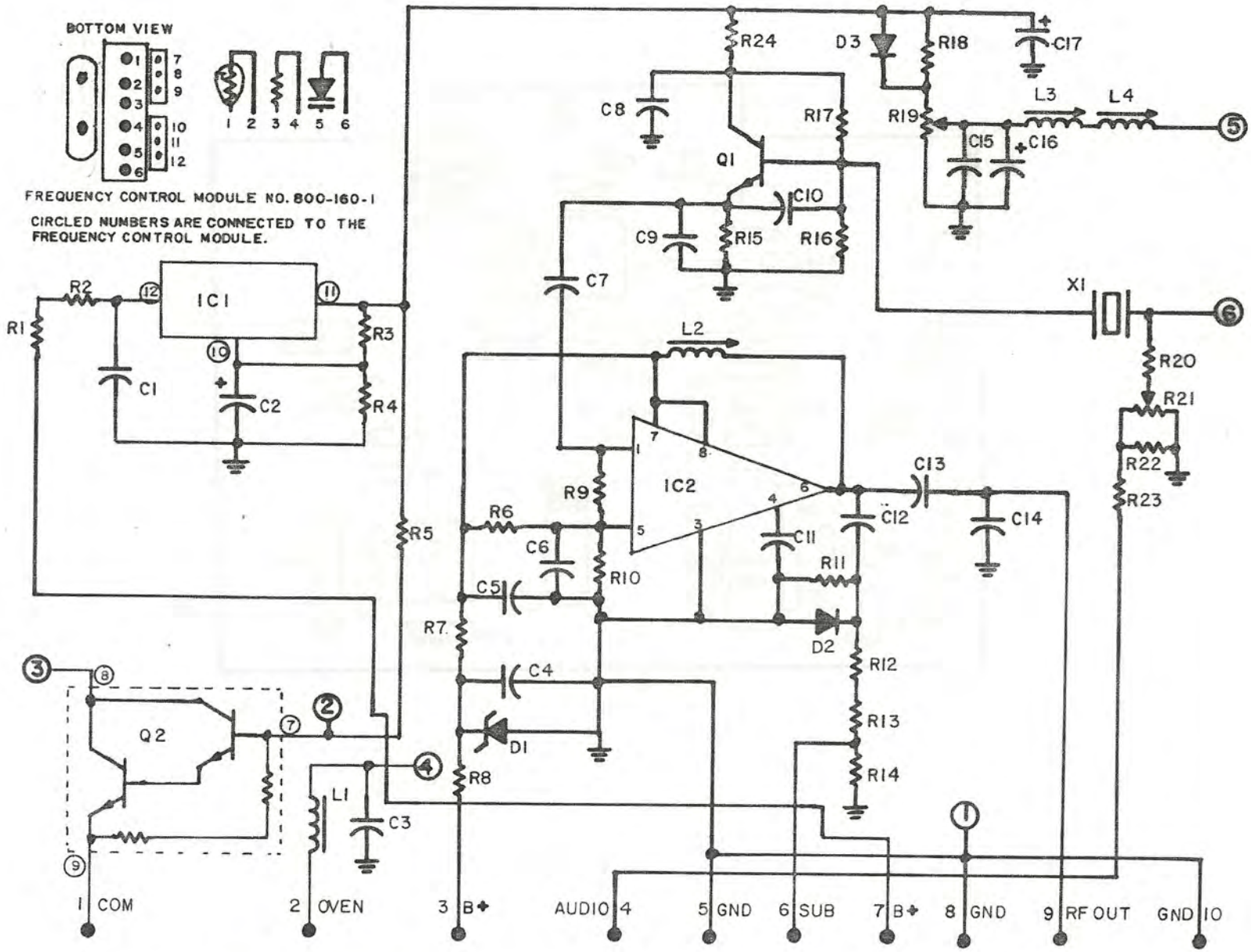
PARTS LIST
MULTIPLIER BOARD
MODEL NO. 800-019 A
150-170 MHz

APPLICABLE TO THE FOLLOWING TRANSMITTERS: STL-8 S/N 1111 & ABOVE, STL-15 S/N 25 & ABOVE, STL-25 S/N 18 & ABOVE, RPT-25 S/N 110 & ABOVE, RPT-40 S/N 178 & ABOVE.

ITEM	PART NO.	DESCRIPTION
C1	256-471	Capacitor, 0.01 uf, Z, 25 V.
C2	255-220	Capacitor, 22 pf, NPO, 500 V. 5%
C3	255-220	Capacitor, 22 pf, NPO, 500 V. 5%
C4	255-220	Capacitor, 22 pf, NPO, 500 V. 5%
C4		Not Used on this Frequency
C5	255-470	Capacitor, 47 pf, N330, 500 V. 5%
C6		Not Used on this Frequency
C7	217-104	Capacitor, 0.01 uf, 25 V. +80-20%
C8	255-010	Capacitor, 1.0 pf, 500 V. 5%
C9	255-180	Capacitor, 18 pf, NPO, 500 V. 5%
C10		Not Used on this Frequency
C11	256-750	Capacitor, 75 pf, J1, 500 V. 10%
C12	268-102	Capacitor, 0.001 uf, Z5U, 500 V.
C13	255-680	Capacitor, 68 pf, N330, 500 V. 5%
C14		Not Used on this Frequency
C15		Not Used on this Frequency
C16	255-470	Capacitor, 47 pf, N330, 500 V. 5%
C17	268-102	Capacitor, 0.001 uf, Z5U, 500 V.
C18		Not Used on this Frequency
C19	255-010	Capacitor, 1.0 pf, 500 V. 5%
C20	255-390	Capacitor, 39 pf, NPO, 500 V.
C21		Not Used on this Frequency
C22	256-680	Capacitor, 68 pf, J1, 500 V. 10%
C23	219-080	Capacitor, 8 uf, 40 V. Electrolytic
C24	268-102	Capacitor, 0.001 uf, Z5U, 500 V.
C25	255-040	Capacitor, 3.9 pf, 500 V. 5%
C26	255-390	Capacitor, 39 pf, NPO, 500 V. 5%
C27		Not Used on this Frequency
C28	255-270	Capacitor, 27 pf, NPO, 500 V. 5%
C29		Not Used on this Frequency
C30		Not Used on this Frequency
C31	255-270	Capacitor, 27 pf, NPO, 500 V. 5%
C32		Not Used on this Frequency
C33	255-390	Capacitor, 39 pf, N750, 500 V. 5%
C34		Not Used on this Frequency
C35	256-471	Capacitor, 470 pf, JL, 500 V. 10%
C36	219-080	Capacitor, 8 uf, 40 V. Electrolytic
C37	217-103	Capacitor, 0.1 uf, 25 V. +80-20%
C38	256-471	Capacitor, 470 of, JL, 500 V. 10%
C39	240-400	Capacitor, 40 pf, Variable
C40	140-400	Capacitor, 40 pf, Variable
C41	255-270	Capacitor, 27 pf, NPO, 500 V. 5%
C42	266-102	Capacitor, Feed-thru, 1000 pf, 500 V.
C43	266-102	Capacitor, Feed-thru, 1000 pf, 500 V.
C44	266-102	Capacitor, Feed-thru, 1000 pf, 500 V.
C45	266-102	Capacitor, Feed-thru, 1000 pf, 500 V.
C46	266-102	Capacitor, Feed-thru, 1000 pf, 500 V.
C47	266-102	Capacitor, Feed-thru, 1000 pf, 500 V.

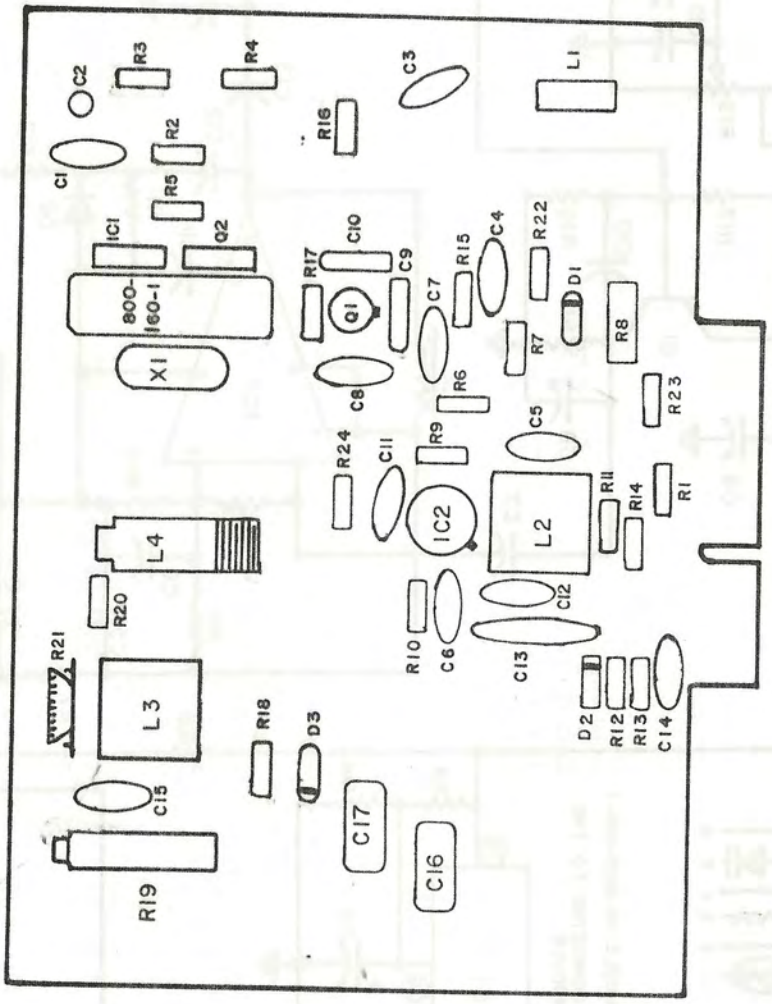
PARTS LIST
MULTIPLIER BOARD (page 2)
MODEL NO. 800-019A

ITEM	PART NO.	DESCRIPTION
D1	412-494	Diode, S-579
L1	330-012	Choke, 18 uh
L2	330-006	Choke, 3.9 uh
L3	330-007	Choke, 1 uh
L4	350-070	Coil, Marti
L5	350-071	Choke, Toroid Marti
L6	350-072	Coil, Marti
L7	350-073	Coil, Marti
L8	350-074	Choke, Toroid Marti
L9	330-012	Choke, 18 uh
L101	350-023	Inductor, Variable Marti
L102	350-023	Inductor, Variable Marti
L103	350-022	Inductor, Variable Marti
L104	350-022	Inductor, Variable Marti
L105	350-024	Inductor, Variable Marti
L106	350-024	Inductor, Variable Marti
Q1	440-245	Transistor, 2N4252 or MRF 502
Q2	440-245	Transistor, 2N4252 or MRF 502
Q3	424-427	Transistor, RF Power
Q4	424-427	Transistor, RF Power
R1	145-331	Resistor, 330 ohm ¼ W 5%
R2	145-103	Resistor, 10K ¼ W 5%
R3	145-222	Resistor, 2.2K ohm ¼ W 5%
R4		Not used on this frequency
R5	105-330	Resistor, 330 ohm ½ W 5%
R6		Not used on this frequency
R7	145-153	Resistor, 15K ohm ¼ W 5%
R8	145-272	Resistor, 2.7K ohm ¼ W 5%
R9	105-030	Resistor, 3.3 ohm ½ W 5%
R10	105-680	Resistor, 68 ohm ½ W 5%
R11	105-030	Resistor, 3.3 ohm ½ W 5%
R12	105-150	Resistor, 15 ohm ½ W 5%
R13		Not used on this frequency
R14	145-103	Resistor, 10K ohm ¼ W 5%
R15	145-102	Resistor, 1K ohm ¼ W 5%
R16	145-030	Resistor, 3.3 ohm ¼ W 5%
R17	145-030	Resistor, 3.3 ohm ¼ W 5%
R18	145-472	Resistor, 4.7 ohm ¼ W 5%
R19	145-683	Resistor, 68K ohm ¼ W 5%
R20	105-150	Resistor, 15 ohm ½ W 5%
R21	105-150	Resistor, 15 ohm ½ W 5%



MARTI Electronics, Inc. PO BOX 661 CLEBURNE, TX 76031	DRAWING NO. 800-018-5	REV.	DATE 6-3-81	APPROVED DWG	USED ON RPT & STL	TITLE DFM-1D1 DIRECT FM MODULATOR

910-004

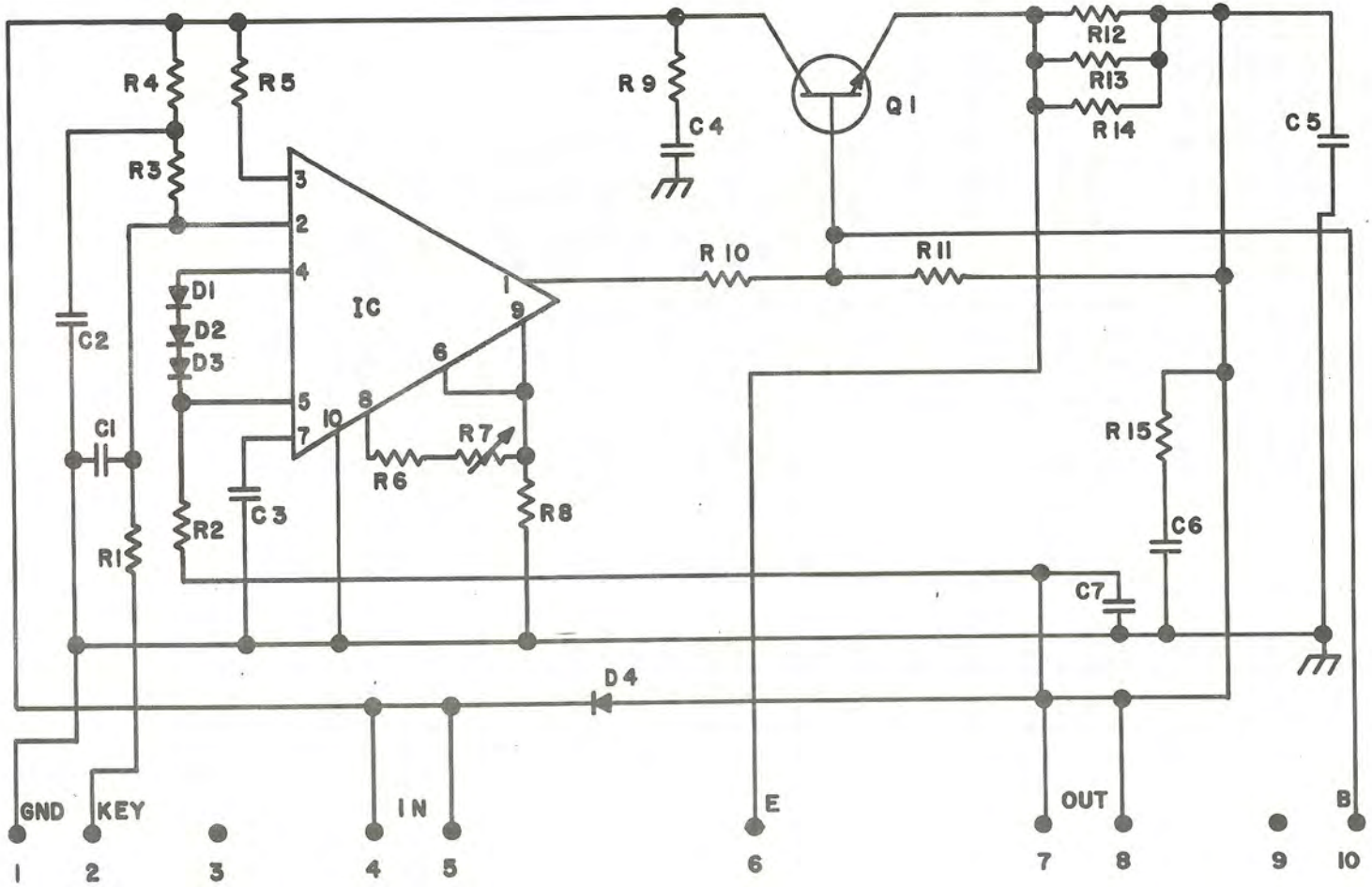


PARTS LIST
DFM-1D1
800-018-5

REF.	MARTI P/N	DESCRIPTION
C1	217-104	Capacitor, .01 uf 25V 20% Disc.
C2	299-470	Capacitor, 4.7 uf 16V 10% Tantalum
C3	217-104	Capacitor, .01 uf 25V 20% Disc.
C4	217-104	Capacitor, .01 uf 25V 20% Disc.
C5	217-104	Capacitor, .01 uf 25V 20% Disc.
C6	217-104	Capacitor, .01 uf 25V 20% Disc.
C7	256-750	Capacitor, 75 pf 500V 5% Disc.
C8	217-104	Capacitor, .01 uf 25V 20% Disc.
C9	255-161	Capacitor, 160 pf 5% MICA
C10	255-271	Capacitor, 270 pf 5% MICA
C11	217-104	Capacitor, .01 uf 25V 20% Disc.
C12	255-100	Capacitor, 10 pf 500V 5% Disc.
C13	255-680	Capacitor, 68 pf 500V 5% Disc.
C14	255-270	Capacitor, 27 pf 500V 5% Disc.
C15	217-104	Capacitor, .01 uf 25V 20% Disc.
C16	219-080	Capacitor, 10 uf 63V Electrolytic
C17	219-080	Capacitor, 10 uf 63V Electrolytic
D1	410-110	Diode, Zener 11V 1W
D2	414-007	Diode, 1N4007
D3	410-914	Diode, 1N4148
IC1	400-317	Integrated Circuit, 1.5 AMP Regulator
IC2	406-010-1	Integrated Circuit, CA3028A
L1	330-012	Choke 18 uh
L2	350-025	Coil, Variable 1.5-3uh
L3	350-030	Coil, Variable 3-7uh
L4	350-041	Coil, Variable
Q1	440-245	Transistor, RF Silicon
Q2	450-110	Transistor, Power Darlington
R1	145-030	Resistor, 3.3 ohm 1/4W 5%
R2	145-030	Resistor, 3.3 ohm 1/4W 5%
R3	145-241-1	Resistor, 240 ohm 1/4W 2% Corning C4
R4	145-122-1	Resistor, 1200 ohm 1/4W 2% Corning C4
R5	145-182-1	Resistor, 1800 ohm 1/4W 2% Corning C4
R6	145-332	Resistor, 3.3K ohm 1/4W 5%
R7	145-300	Resistor, 30 ohm 1/4W 5%
R8	105-151	Resistor, 150 ohm 1/2W 5%
R9	145-102	Resistor, 1K ohm 1/4W 5%
R10	145-272	Resistor, 2.7K ohm 1/4W 5%
R11	145-153	Resistor, 15K ohm 1/4W 5%
R12	145-683	Resistor, 68K ohm 1/4W 5%

PARTS LIST
DFM-1D1
800-018-5

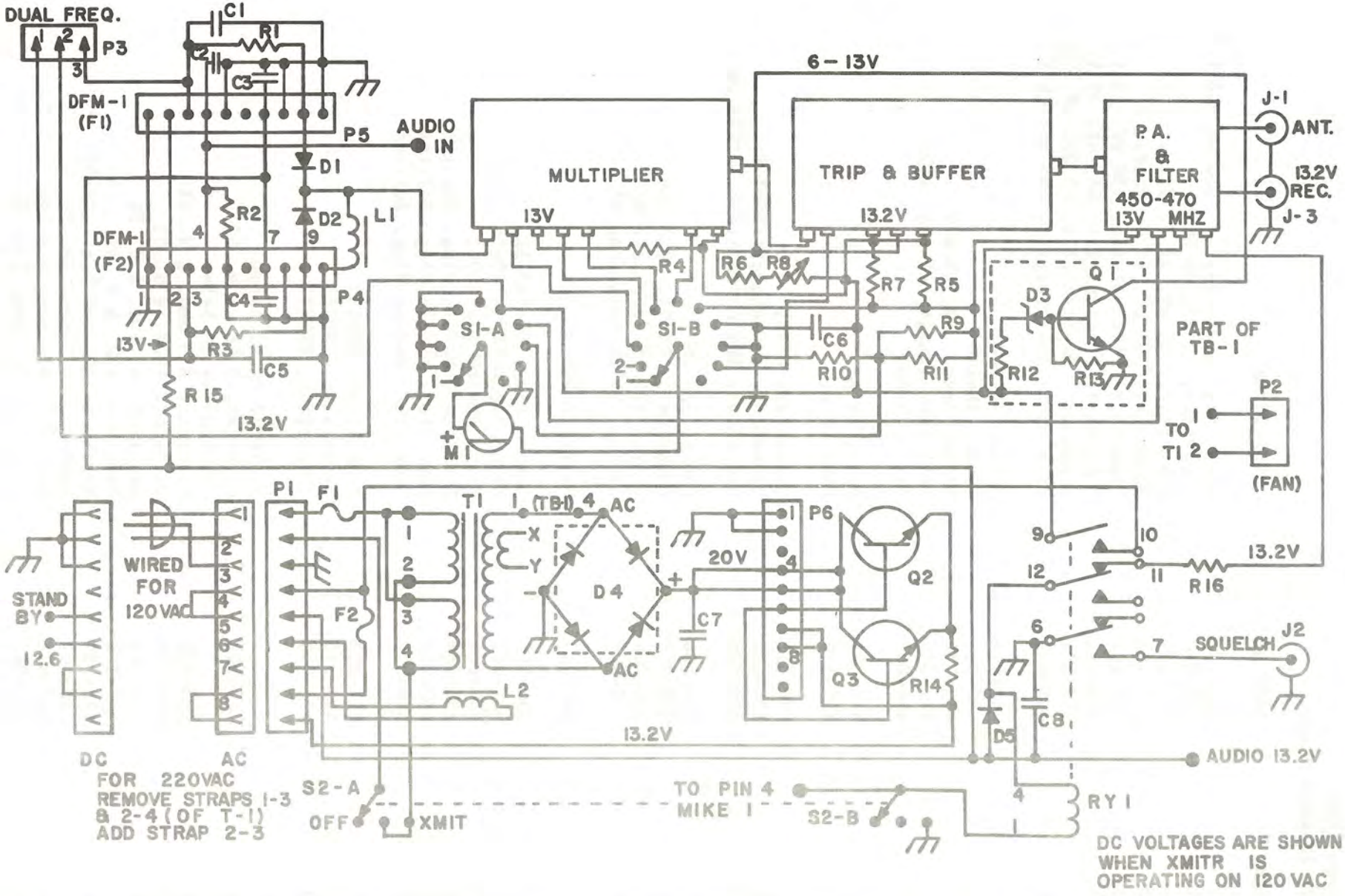
REF.	MARTI P/N	DESCRIPTION
R13	145-223	Resistor, 22K ohm 1/4W 5%
R14	145-102	Resistor, 1K ohm 1/4W 5%
R15	145-102-1	Resistor, 1K ohm 1/4W 5% Corning
R16	145-272-1	Resistor, 2.7K ohm 1/4W 5% Corning
R17	145-123-1	Resistor, 12K ohm 1/4W 5% Corning
R18	145-121-1	Resistor, 120 ohm 1/4W 5% Corning
R19	100-202	Pot, 2K ohm 20 Turn
R20	145-473	Resistor, 47K ohm 1/4W 5%
R21	100-104-1	Pot, 100K ohm
R22	145-223	Resistor, 22K ohm 1/4W 5%
R23	145-102	Resistor, 1K ohm 1/4W 5%
R24	145-030	Resistor, 3.3 ohm 1/4W 5%



DWG. 800 · 020 · 1	MARTI *Electronics, Inc.*	POWER SUPPLY ER 12 /

PARTS LIST
ER 12/7
POWER SUPPLY MODULE

ITEM	PART NO.	DESCRIPTION
C1	217-104	Capacitor, .01 uf 25V 20% Disc.
C2	219-080	Capacitor, 10 uf 63V Electrolytic
C3	226-104	Capacitor, 0.1 uf 100V 10% Mylar
C4	226-104	Capacitor, 0.1 uf 100V 10% Mylar
C5	217-103	Capacitor, 0.1 uf 25V +80-20% Disc.
C6	217-103	Capacitor, 0.1 uf 25V +80-20% Disc.
C7	219-121	Capacitor, 150 uf 25V Electrolytic
D1	412-494	Diode, S-579
D2	410-914	Diode, 1N914 or 1N4148
D3	410-914	Diode, 1N914 or 1N4148
D4	413-193	Diode, 1N3193
IC	401-461	Integrated Circuit MC1461G
Q1	425-297	Transistor, TIP-31 A-C or 2N5297
R1	105-100	Resistor, 10 ohm ½W 5%
R2	105-100	Resistor, 10 ohm ½W 5%
R3	105-562	Resistor, 5.6K ½W 5%
R4	105-103	Resistor, 10K ½W 5%
R5	115-030	Resistor, 3.3 ohm ½W 5%
R6	105-183	Resistor, 18K ½W 5%
R7	100-522	Potentiometer, 5K Type MTC
R8	105-682	Resistor, 6.8K ½W 5%
R9	115-030	Resistor, 3.3 ohm 1W 5%
R10	105-030	Resistor, 3.3 ohm ½W 5%
R11	105-471	Resistor, 470 ohm ½W 5%
R12	115-470	Resistor, 47 ohm 1W 5%
R13		Not used
R14		Not used
R15	115-030	Resistor, 3.3 ohm 1W 5%
	520-022	Heat Radiator for IC
	800-0202	Board, P.C.



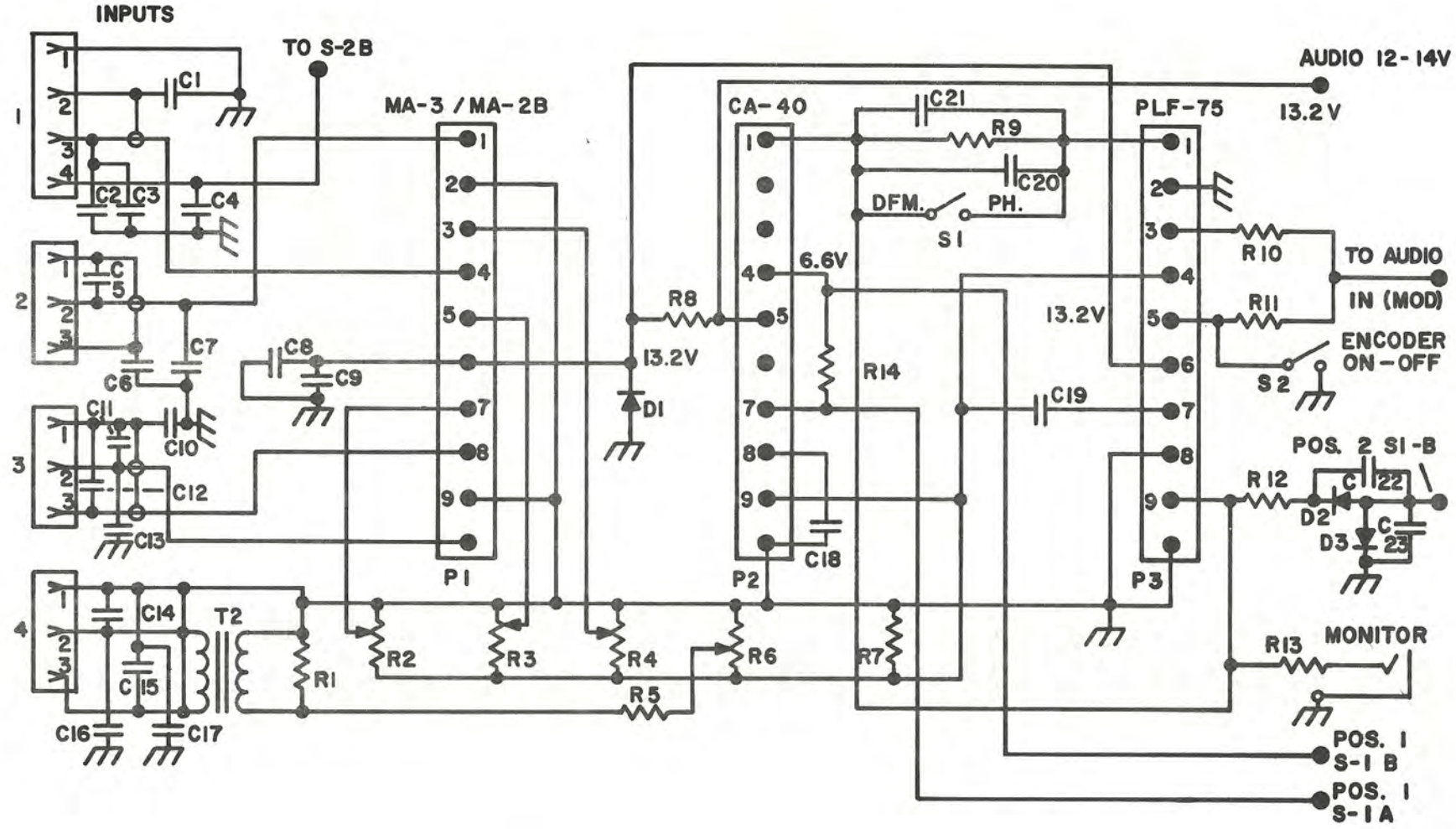
DWG 700-134-4	MARTI Electronics, Inc.	RPT-25 RF MAIN FRAME

PARTS LIST
RPT RF MAIN FRAME

ITEM	PART NO.	DESCRIPTION
C1	219-121	Capacitor, Electrolytic, 150 uf, 25 V.
C2	255-220	Capacitor, 22 pf, 5% Disc.
C3	217-104	Capacitor, .01 uf, 25 V. Disc.
C4	217-104	Capacitor, .01 uf, 25 V. Disc.
C5	219-121	Capacitor, Electrolytic, 150 uf, 25 V.
C6	219-641	Capacitor, Electrolytic, 680 uf, 16 V.
C7	219-602	Capacitor, Electrolytic, 13,000 uf, 25 V.
C8	219-641	Capacitor, Electrolytic, 680 uf, 16 V.
D1	410-914	Diode, 1N4148
D2	410-914	Diode, 1N4148
D3	410-150	Diode, Zener, SZ, 15.0 V.
D4	410-020	Rectifier Bridge, 25 amp, 100V.
D5	414-007	Diode, 1N4007
F1	510-026	Fuse, 2½ A.
F2	510-136	Fuse, 8 A.
J1	550-015	Connector, UG625
J2	550-022	Connector, Switchcraft 3505 F
J3	550-026	Connector, Switchcraft #11 Little Jack
L1	330-004	Choke, 100 uh
L2	330-013	Choke Coil, CT574, .035 ohm
L3	330-004	Choke, 100 uh (replaces R1)
L4	330-004	Choke, 100 uh (replaces R3)
M1	030-019	Meter, 0-200 uA
P1	550-008	Cannon Plug, GK-923-SL
P2	550-002	Plug, Amplok 480-149-1
P3	550-002	Plug, Amplok 480-149-1
P4	550-059	Connector, Module Plug, Sullins
P5	550-059	Connector, Module Plug, Sullins
P6	550-059	Connector, Module Plug, Sullins
Q1	423-053	Transistor, 2N3053
Q2	423-055	Transistor, 2N3055
Q3	423-055	Transistor, 2N3055
R1		Replaced by L3 below
R2	145-562	Resistor, 5.6K, ¼ W. 5%
R3		Replaced by L4 below
R4	105-030	Resistor, 3.3 Ohm, ½ W. 5%
R5	145-105	Resistor, 100K, ¼ W. 5%
R6	115-101	Resistor, 47 ohm, 2 W. 5%
R7	145-223	Resistor, 22K, ¼ W. 5%
R8	120-251	Resistor, 300 ohm Pot., WN-301
R9	115-001	Resistor, 0.1 ohm1 1W. 5%
R10	145-471	Resistor, 470 ohm, ¼ W. 5%
R11	115-001	Resistor, 0.1 ohm, 1 W. 5%
R12	105-101	Resistor, 100 ohm, ½ W. 5%
R13	145-102	Resistor, 1K, ¼ W. 5%

PARTS LIST
RPT RF MAIN FRAME (continued)

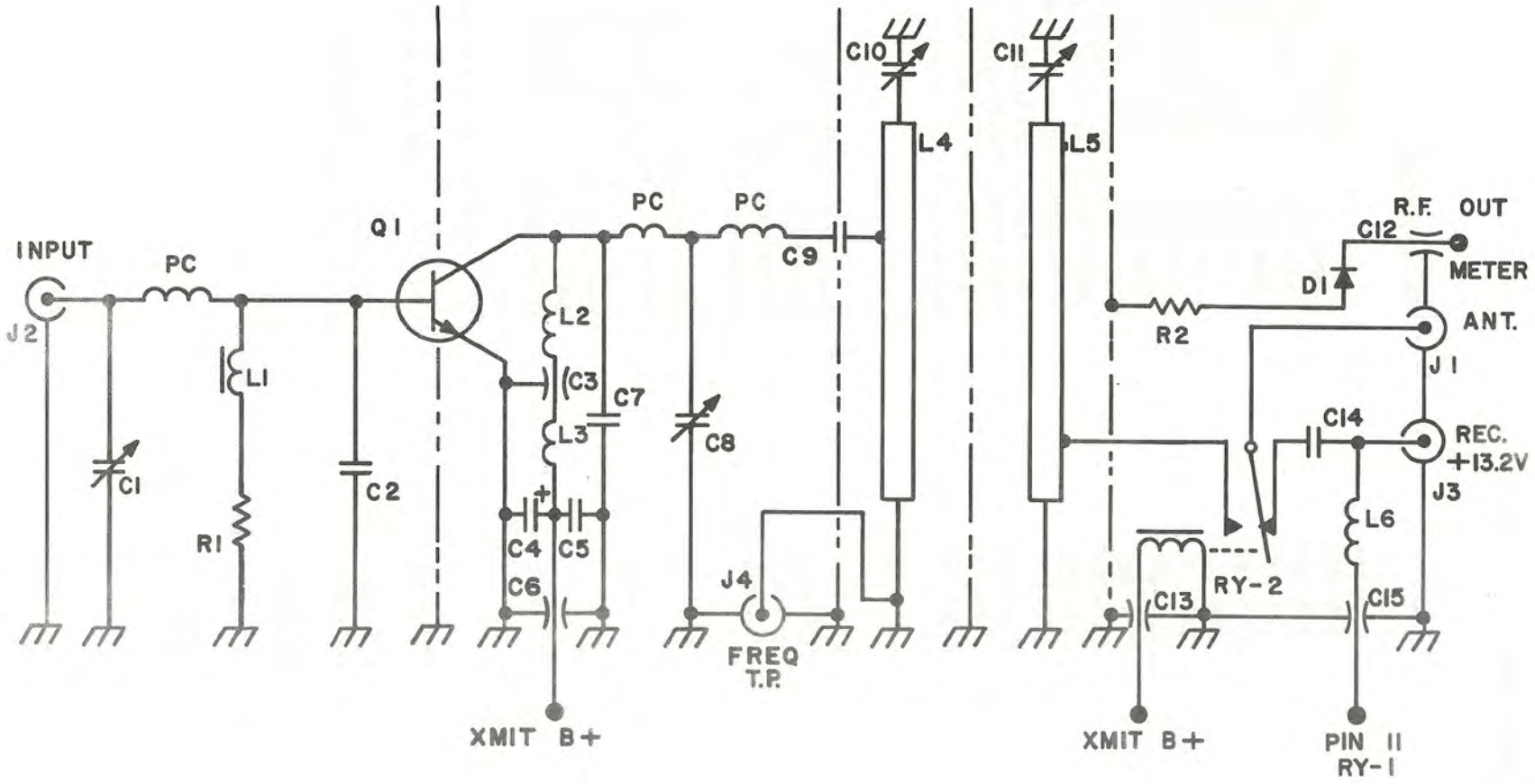
ITEM	PART NO.	DESCRIPTION
R14	115-003	Resistor, 0.3 ohm, 1 W. 5% (6 in parallel)
R15	125-100	Resistor, 10 ohm, 1 W. 5%
R16	115-010	Resistor, 1.0 ohm, 1 W. 5%
RY1	570-015	Relay, R-10-E750-1, 185 ohm, 12 VDC
S1	530-014	Switch, CTS 212-11825-2
S2	530-028	Switch, Carling, T1GG 50-1L-RD-A
T1	320-027	Transformer, P601220



DWG. 700·134·5	MARTI *Electronics, Inc.*	RPT AUDIO MAIN FRAME

PARTS LIST
RPT AUDIO MAIN FRAME

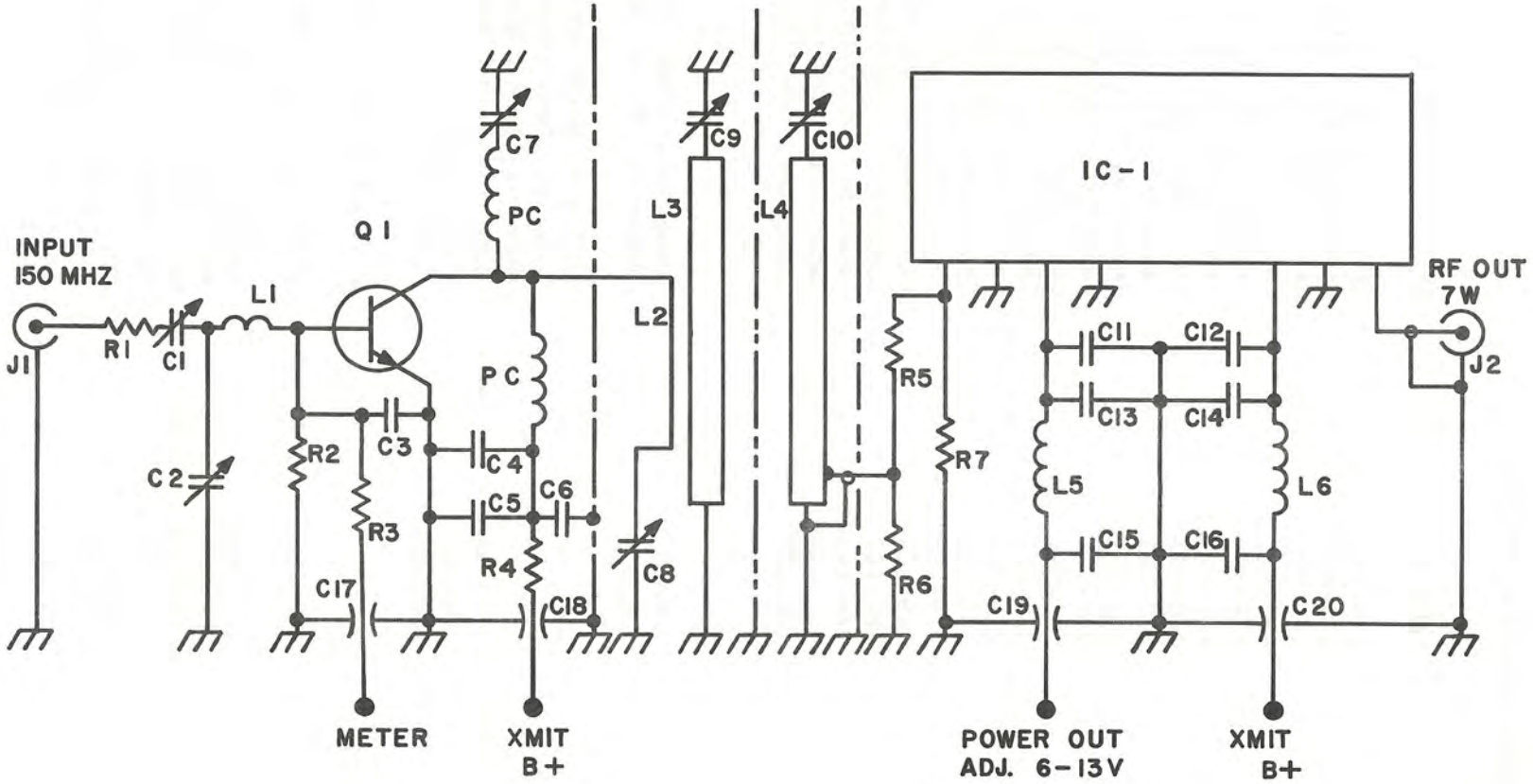
ITEM	PART NO.	DESCRIPTION
C1	236-501	Capacitor, 500 pf, Underwood
C2	236-501	Capacitor, 500 pf, Underwood
C3	254-471	Capacitor, 470 pf, 10% Disc
C4	154-471	Capacitor, 470 pf, 10% Disc
C5	154-471	Capacitor, 470 pf, 10% Disc
C6	236-501	Capacitor, 400 pf, Underwood
C7	236-501	Capacitor, 500 pf, Underwood
C8	268-102	Capacitor, .001 uf, Disc.
C9	219-641	Capacitor, Electrolytic, 680 mf, 16 V.
C10	235-501	Capacitor, 500 pf, Underwood
C11	254-471	Capacitor, 470 of, 10% Disc.
C12	154-471	Capacitor, 470 pf, 10% Disc.
C13	236-501	Capacitor, 500 pf, Underwood
C14	154-471	Capacitor, 470 pf, 10% Disc.
C15	154-471	Capacitor, 470 pf, 10% Disc.
C16	236-501	Capacitor, 500 pf, Underwood
C17	236-501	Capacitor, 500 pf, Underwood
C18		Delete
C19	219-200	Capacitor, Electrolytic, 22 uf, 25 V.
C20	219-200	Capacitor, 0.22 uf, 100 V. Mylar
C21	226-224	Capacitor, 0.22 uf, 100 V. Mylar
C22	254-471	Capacitor, 470 pf, 10% Disc.
C23	254-471	Capacitor, 470 pf, 10% Disc.
D1	414-007	Diode, 1N4007
D2	412-494	Diode, S-579
D3	412-494	Diode, S-579
Input 1	550-029	Connector, XL-4-31
Input 2	550-028	Connector, XL-3-31
P1, 2, 3	550-059	Connector, Module Plug, Sullins
R1	145-392	Resistor, 3.9K, ¼ W. 5%
R2	100-243	Resistor, 25K Audio taper, ½ W. Pot.
R3	100-243	Resistor, 25K Audio taper, ½ W. Pot.
R5	105-283	Resistor, 82K, ½ W. 5%
R6	100-243	Resistor, 25K Audio taper, ½ W. Pot
R7	145-223	Resistor, 22K, ¼ W. 5%
R8	105-030	Resistor, 3.3 ohm, ½ W. 5%
R9	145-473	Resistor, 47K, ¼ W. 5%
R10	145-562	Resistor, 5.6K, ¼ W. 5%
R11	145-223	Resistor, 22K, ¼ W. 5%
R12	105-122	Resistor, 1.2K, ½ W. 5%
R13	145-102	Resistor, 1K, ¼ W. 5%
R14	145-561	Resistor, 560 ohm, ¼ W. 5%
S1	530-001	Switch, Slide, Stackpole
S2	530-001	Switch, Slide, Stackpole
T2	310-009	Transformer, T-903



DWG. 800·051·1	MARTI *Electronics, Inc.*	RPT-25	RF POWER AMP. 450-470 MHZ.

PARTS LIST
RPT-25 RF POWER AMP.
450-470 MHz

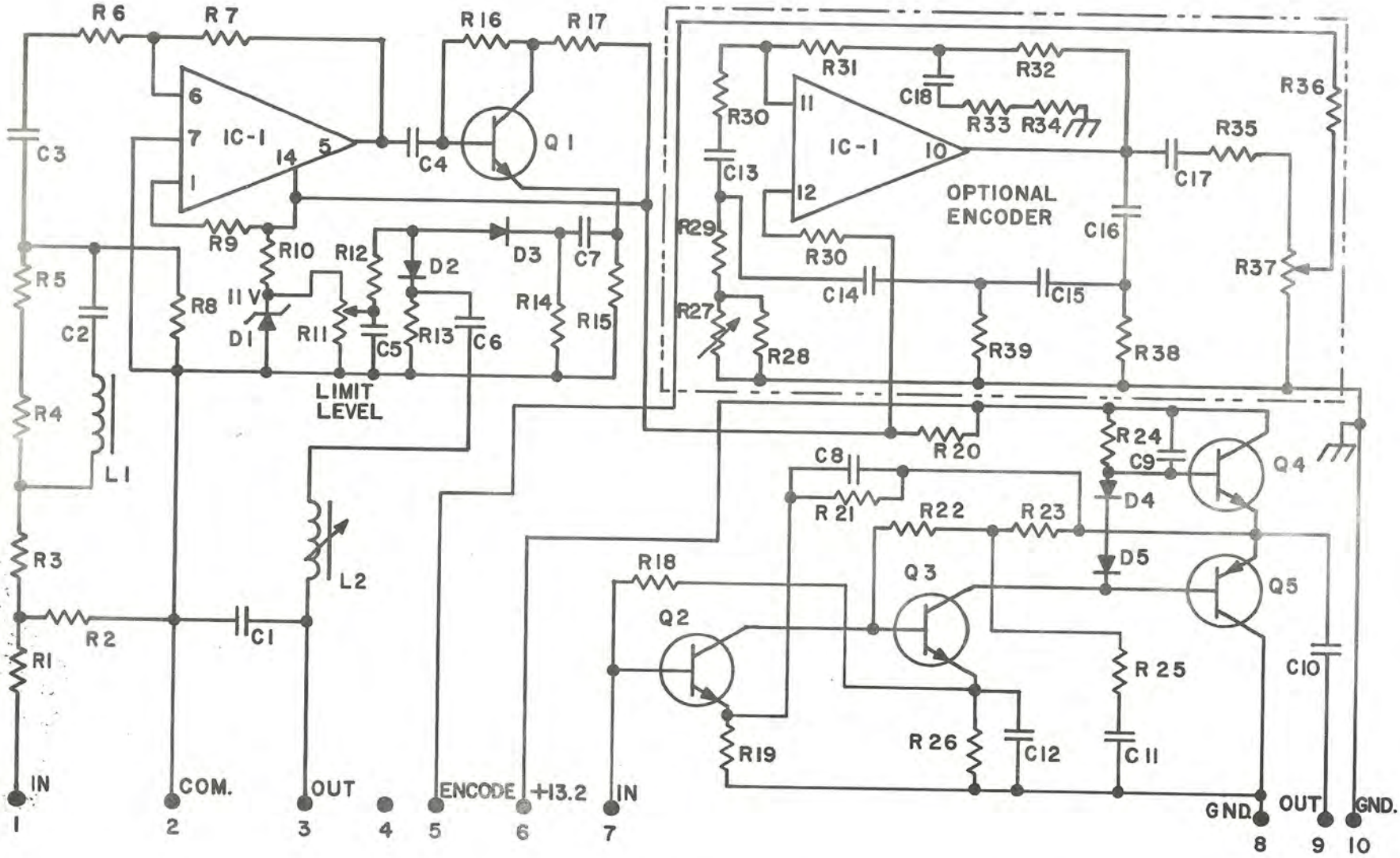
ITEM	PART NO.	DESCRIPTION
C1	230-160	Capacitor, Variable, 1.9 - 15.7 pf
C2	240-330	Capacitor, 33 pf, Underwood
C3	266-102	Capacitor, Feed-thru, 1000 pf
C4	219-080	Capacitor, 10 uf, 63 V. Electrolytic
C5	217-104	Capacitor, .01 uf, 25 V. Disc.
C6	266-102	Capacitor, Feed-thru, 1000 pf
C7	240-330	Capacitor, 33 pf Underwood
C8	210-080	Capacitor, Variable, 2 - 8 pf
C9	256-102	Capacitor, .001 uf, 10% Type JF Solder in
C10	260-808	Capacitor, Johanson, #7295, .8 - 8 pf
C11	260-080	Capacitor, Johanson, #7295, .8 - 8 pf
C12	266-102	Capacitor, Feed-thru, 1000 pf
C13	266-102	Capacitor, Feed-thru, 1000 pf
C14	253-174	Capacitor, 470 pf, Z5U Disc.
C15	266-102	Capacitor, Feed-thru, 1000 pf
D1	410-666	Diode, FDH666
J1	550-037	Connector, UG58 A/U
J2	550-045	Connector, Phone plug
J3	550-022	Connector, Switchcraft 3505F
J4	550-039	Connector, Phone jack
L1	513-016	Core, Ceramic Bead, #56-590-65/4B
L2		Inductor, Marti Special
L3	513-016	Core, Ceramic Bead, #56-590-65-4B
L4		Inductor, Marti Special
L5		Inductor, Marti Special
L6	330-002	Choke, Z460
PC		Printed Circuit Inductor
Q1	443-030	Transistor, RF Power 40 watt
R1	105-030	Resistor, 3.3 Ohm, ½ W. 5%
R2	145-331	Resistor, 330 ohm, ¼ W. 5%
RY-2	570-002	Relay, MC1145



DWG. 800-050	MARTI *Electronics, Inc.*	TRIP AND BUFFER MODULE RPT-25 450-470 MHZ

PARTS LIST
RPT-25 TRIPLER AND BUFFER MODULE
450-470 MHz

ITEM	PART NO.	DESCRIPTION
C1	240-600	Capacitor, Variable, 7-60 pf
C2	240-600	Capacitor, Variable, 7-60 pf
C3	255-100	Capacitor, 10 pf, NPO, 5% Disc.
C4	236-152	Capacitor, 1500 pf, 10%, 100V.
C5	219-080	Capacitor, 10 uf, 63 V. Electrolytic
C6	217-104	Capacitor, .01 uf, 25 V. Disc.
C7	240-600	Capacitor, Variable, 7-60 pf
C8	230-100	Capacitor, Variable
C9	230-100	Capacitor, Variable
C10	230-100	Capacitor, Variable
C11	217-104	Capacitor, .01 uf, 25 V. Disc.
C12	236-152	Capacitor, 1500 pf, 10%, 100 V.
C13	217-104	Capacitor, .01 uf, 25 V. Disc.
C14	236-152	Capacitor, 1500 pf, 10%, 100 V.
C15	219-080	Capacitor, 10 uf, 63 V. Electrolvtic
C16	219-080	Capacitor, 10 uf, 63 V. Electrolytic
C17	266-102	Capacitor, Feed-thru, 1000 pf
C18	266-102	Capacitor, Feed-thru, 1000 pf
C19	266-102	Capacitor, Feed-thru, 1000 pf
C20	266-102	Capacitor, Feed-thru, 1000 pf
IC-1	461-002	Integrated Circuit, RF, 420-470 MHz 13 w :ts
J1	550-039	Connector, Phone Jack
J2	550-039	Connector, Phone Jack
L1		Inductor, Marti Special
L2		Inductor, Marti Special
L3		Inductor, Marti Special
L4		Inductor, Marti Special
L5	330-007	Choke, 1 uh
L6	330-002	Choke, Z-460
P		Printed Circuit Inductor
Q1	440-312	Transistor, RF Power, 3 watts
R1	105-150	Resistor, 15 ohm, ½ W. 5%
R2	145-470	Resistor, 47 ohm, ¼ W. 5%
R3	145-562	Resistor, 5.6K, ¼ W. 5%
R4	105-030	Resistor, 3.3 ohm, ½ W. 5%
R5	145-470	Resistor, 47 ohm, ¼ W. 5%
R6	145-151	Resistor, 150 ohm, ¼ W. 5%
R7	145-221	Resistor, 220 ohm, ¼ W. 5%



DWG. 800 · 049	MARTI Electronics, Inc.	PRE-EMPHASIS, LIMITER-FILTER MODULE PLF-75 (ENCODER OPTIONAL)

PARTS LIST
PLF-75 MODULE

ITEM	PART NO.	DESCRIPTION
C1	215-122	Capacitor, 1200 pf, 33 V. 5% Poly. **PLF-75S**
C1	215-392	Capacitor, 3900 pf, 33 V. 5% Poly. **PLF-75**
C1	215-223	Capacitor, 22,000 pf, 33 V. 5% Poly. **PLF-75P**
C2	215-622	Capacitor, 6200 pf, 33 V. 5% Polystyrene
C3	219-250	Capacitor, 22 uf, 25 V. Electrolytic
C4	219-250	Capacitor, 22 uf, 25 V. Electrolytic
C5	219-250	Capacitor, 22 uf, 25 V. Electrolytic
C6	219-250	Capacitor, 22 uf, 25 V. Electrolytic
C7	219-250	Capacitor, 22 uf, 25 V. Electrolytic
C8	255-470	Capacitor, 47 pf, Type N330 5% Disc.
C9	256-301	Capacitor, 300 pf, JL, 10% Disc.
C10	209-401	Capacitor, 470 uf, 6.3 V. Electrolytic
C11	219-121	Capacitor, 150 uf, 25 V. Electrolytic
C12	209-401	Capacitor, 470 uf, 6.3 V. Electrolytic
C13	226-274	Capacitor, .27 uf, 100 V. 10% Disc.
C14	215-333	Capacitor, 33,000 pf, 33 V. 5% Polystyrene
C15	215-333	Capacitor, 33,000 pf, 33 V. 5% Polystyrene
C16	215-333	Capacitor, 33,000 pf, 33 V. 5% Polystyrene
C17	219-250	Capacitor, 22 uf, 25 V. Electrolytic
C18	226-224	Capacitor, .22 uf, 100 V. 10% Disc.
C19	225-470	Capacitor, 47 pf, Type N330 5% Disc.
C20	255-241	Capacitor, 240 pf, Silver dipped Mica
C21	225-470	Capacitor, 47 pf, Type N330 5% Disc.
D1	410-110	Diode, Zener, 1N4741, 11 V.
D2	410-914	Diode, 1N4148
D3	410-914	Diode, 1N4148
D4	414-007	Diode, 1N4007
D5	414-007	Diode, 1N4007
IC-1	403-900	Integrated Circuit, LM3900
L1	330-009	Choke, 5 mh
L2	350-032	Inductor, Variable, Syscon 387-150M
Q1	423-391	Transistor, 2N3391
Q2	423-391	Transistor, 2N3391
Q3	423-391	Transistor, 2N3391
Q4	450-001	Transistor, SPS1761
Q5	450-002	Transistor, SPS1762
R1	145-221	Resistor, 220 ohm, ½ W. 5%
R2	145-821	Resistor, 820 ohm, ½ W. 5%
R3	145-181	Resistor, 180 ohm, ½ W. 5%
R4	145-103	Resistor, 10K, ½ W. 5%
R5	145-300	Resistor, 30 ohm, ½ W. 5%
R6	145-104	Resistor, 100K, ½ W. 5%
R7	145-105	Resistor, 1m, ½ W. 5%
R8	145-681	Resistor, 680 ohm, ½ W. 5%
R9	145-225	Resistor, 2.2 m, ½ W. 5%
R10	145-151	Resistor, 150 ohm, ½ W. 5%

PARTS LIST
PLF-75 MODULE (continued)

ITEM	PART NO.	DESCRIPTION
R11	100-522	Resistor, 5K POT
R12	145-272	Resistor, 2.7K, ½ W. 5%
R13	145-562	Resistor, 5.6K, ½ W. 5%
R14	145-272	Resistor, 2.7K, ½ W. 5%
R15	145-102	Resistor, 1K, ½ W. 5%
R16	145-105	Resistor, 1m, ½ W. 5%
R17	145-030	Resistor, 3.3 ohm, ½ W. 5%
R18	145-184	Resistor, 180K, ½ W. 5%
R19	145-221	Resistor, 220 ohm, ½ W. 5%
R20	145-030	Resistor, 3.3 ohm, ½ W. 5%
R21	145-184	Resistor, 180K, ½ W. 5%
R22	145-472	Resistor, 4.7K, ½ W. 5%
R23	145-472	Resistor, 4.7K, ½ W. 5%
R24	145-822	Resistor, 8.2K, ½ W. 5%
R25	145-221	Resistor, 220 ohm, ½ W. 5%
R26	145-102	Resistor, 1K, ½ W. 5%
R27	100-105	Resistor, 1m POT
R28	105-393	Resistor, 39K, ½ W. 5%
R29	145-104-1	Resistor, 100K, ½ W. 5% Corning
R30	145-225	Resistor, 2.2m, ½ W. 5%
R31	145-474-1	Resistor, 475K, ½ W. 1% Allen-Bradley
R32	105-364	Resistor, 360K, ½ W. 5%
R33	145-184	Resistor, 180K, ½ W. 5%
R34	145-103	Resistor, 10K, ½ W. 5%
R35	145-562	Resistor, 5.6K, ½ W. 5%
R36	145-102	Resistor, 1K, ½ W. 5%
R37	100-522	Resistor, 5K POT
R38	145-104-1	Resistor, 100K, ½ W. 5% Corning
R39	145-104-1	Resistor, 100K, ½ W. 5% Corning

RPT-25 and R-50/450 Test Reports

CUSTOMER Marcom ADDRESS Scotts Valley California

Transmitter Model No. RPT-25P Serial No. 994 Freq. 455.99 MHz.
Freq. MHz.

Receiver Model No. R-30/450 Serial No. 794/975 Freq. 455.99 MHz.
Freq. MHz.

Response: Overall System
+ - 1.5 DB 30 to 11,000 Hz. ✓

Response made with input level 20 DB below 100% modulation at 400 Hz.

Distortion: Overall System

Less than 2% 30 to 11,000 Hz. ✓

Distortion made at 9.0 KHz. deviation at 100, 400 and 5000 Hz.

Overall Noise in System -41 DB.

Noise measured with reference to 100 % Mod. at 400 Hz. Audio input + 4 VU No. 4 input. The received signal being 100 UV.

TRANSMITTER TEST REPORT

1. 96 Gain Reduction
2. _____ Audio Level (VU)
3. 38 RF Drive to Tripler Q1
4. 26 RF Drive to Doubler Q2
5. 96 RF Drive to Doubler Q3
6. 28 RF Drive to Buffer Q4
7. 65 Power Amp. IC
8. 100 Relative RF Output
9. 122 Power Supply B +
10. 28 RF Drive to Q1 Trip.

VCC & B + 13.2 Volts

Measured Power Output 25 watts.

100% Modulation + - 1.5 KHz. 1000 ~

Frequency Counter HP Model 5383A
SN 716A01381
Deviation Meter
Measurements Model 920S-N540

RECEIVER TEST REPORT

4 VU ✓

10 VU ✓

Disc. ✓

Signal No. 1	Meter Division
1 UV	42
10 UV	77
100 UV	100
Voltage	100
U 2	68
U 3	36
U 4	2

Squelch opens 0.5 UV

Sensitivity for 20 DB S.N.R. 0.5 UV @ 5.0 KHz

Spurious Response checked ✓

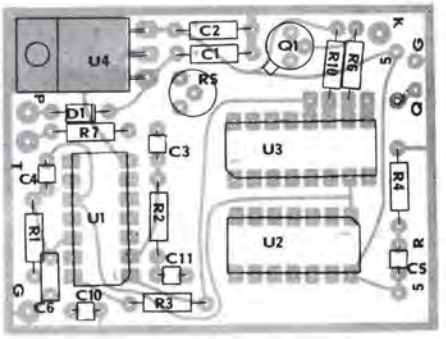
Audio Level Set at +6 DBM

DATE: Sept 23/1981

SIGNATURE: George W. Marti

George W. Marti
Radio Telephone 1st Class P-10-33119
Expiration Date March 17, 1985
M.E. McClanahan
Radio Telephone 1st Class P10-29700
Expiration Date Jan. 16, 1983

AUTOCODE
8116 Glider Avenue
Los Angeles, CA 90045
(213) 645-1892



INSTALLATION OF AUTOCODE CN MODELS WITHOUT TIMER

1. Connect red wire to source of unregulated or regulated power between +8 and +16Vdc at 100mA.
2. Connect black wire to ground.
3. Connect white wire to audio input of transmitter.
4. Find the transmitter key line. This line is pulled to ground by the IDer during identification by saturating the open collector of an NPN transistor. The board has the capability of sinking 100mA and will accept up to 30 volts when unkeyed. If this line drives a relay, be sure it includes a diode clamp to prevent a high voltage transient which could destroy Q1.
5. The ID cycle can be started manually by shorting the pads marked "5" and "R" on the board. Use R5 to set the audio level. Commercial ID requires 30% to 50% modulation. If the audio cannot be adjusted low enough without difficulty, add a 470K resistor in series with the white wire.
6. Attach board to convenient spot inside your equipment. The cooler the location, the better the reliability even though the IDer is designed for any temperature which is likely to exist in your equipment. In peeling the green backing, it will make eventual removal easier if only 1/4 inch of tape is exposed on each side.

USER MODIFICATION

AUDIO FREQUENCY---Audio frequency is controlled by R2.

CODE SPEED---Code speed is controlled by R1.

CALL SIGN---Your identifier has a socket for the memory element. The memory element can be ordered from us for $10.00 and replaced in the field.

MANUAL CONTROL---Manual control of the ID can be had by switch across C5. ID will begin each time the switch is opened and will immediately cease each time it is closed. If automatic TX keying is used (green wire), transmitter will be keyed while switch is closed.

TX KEYING---To connect for CW keying of transmitter, move R6 from U3 pin 10 to U3 pin 9.

LIMITED WARRANTY

AUTOCODE products described in this manual are unconditionally guaranteed for 30 days. If you are not satisfied, your money will be refunded or your account credited upon return of the IDer. Therefore, RESPONSIBILITY FOR DETERMINING COMPATIBILITY WITH PURCHASER'S EQUIPMENT RESTS ENTIRELY WITH THE PURCHASER.

After the 30 days, these products are warranted for a period of one year from date of purchase against defects in material and workmanship. At our option we will repair or replace any AUTOCODE product returned within the one year period.