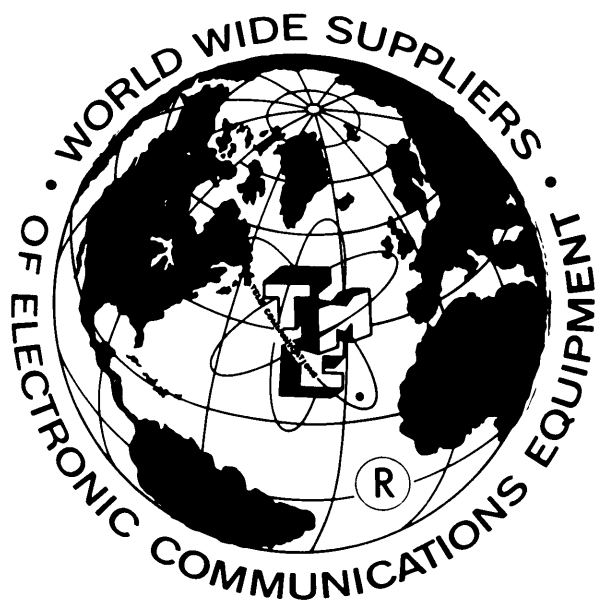


**TECHNICAL MANUAL
FOR
THIRTY-TWO OUTPUT
LOW FREQUENCY ANTENNA MULTICOUPLER
MODEL LMC-32**



THE TECHNICAL MATERIEL CORPORATION
MAMARONECK, N.Y. **OTTAWA, CANADA**

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IN 8034

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SECTION 1

GENERAL DESCRIPTION

1-1 FUNCTIONAL DESCRIPTION

(1) The Thirty-Two Output Low Frequency Antenna Multicoupler, Model LMC-32 (Figure 1-1) is a broadband coupling unit, used for coupling one to thirty-two low frequency communications receivers to one common antenna. The multicoupler will provide a nominal 2db gain from the antenna to any receiver, with a wide dynamic range and low noise characteristic over the frequency range from 10KHz to 2MHz. The equipment has been designed to provide excellent isolation from receiver to receiver and from each receiver to the antenna. The Multicoupler is a solid state, transistor-type design.

(2) The multicoupler consists of one input preamplifier, thirty-two output buffer amplifiers and a regulated power supply. The input preamplifier is connected to the thirty-two output amplifiers through an RF distribution line.

(3) The input and output characteristic impedance is 75 ohms, with a VSWR better than 1.5 to 1. Isolation is maintained to a minimum of -40db between each receiver terminal, and -55db from each receiver terminal to the antenna input.

1-2 PHYSICAL DESCRIPTION

(1) The LMC-32 is designed for mounting in a standard 19-inch rack. The operating controls are located on the front panel. The input connector, thirty-two output connectors and power supply socket are mounted on the rear panel. The amplifiers and power supply regulator are mounted on printed circuit boards which are in turn bolted to the coupler chassis.

(2) A list of semiconductors used in the LMC-32 are listed in Table 1-1.

Table 1-1 SEMICONDUCTOR AND INTEGRATED CIRCUIT COMPLEMENT, LMC-32

REFERENCE SYMBOL	TYPE	FUNCTION
Power Supply & Regulator		
1Z1	NW10005	Rectifier Bridge
1A1CR1	1N758A	Bias Regulator
1A1CR2	1N456A	Bias Regulator
1A1CR3	1N456A	Bias Regulator
1A1Q1	TX10001	Current Regulator
1A1Q2	2N5086	Voltage Regulator
1Q1	2N3055	Voltage Regulator
Preamplifier (75 ohm)		
1A2CR1	1N456A	Bias Regulator
1A2CR2	1N456A	Bias Regulator
1A2Q1	2N3866	Buffer
1A2Q2	2N5160	Current Amplifier
1A2Q3	2N3866	Current Amplifier

Table 1-1 SEMICONDUCTOR AND INTEGRATED CIRCUIT COMPLEMENT, LMC -32 (Cont'd)

REFERENCE SYMBOL	TYPE	FUNCTION
Four 8 Output Circuits		
1A3Q11 to 1A3Q81	All 2N3866	Buffer Amplifiers
1A4Q11 to 1A4Q81	All 2N3866	Buffer Amplifiers
1A5Q11 to 1A5Q81	All 2N3866	Buffer Amplifiers
1A6Q11 to 1A6Q81	All 2N3866	Buffer Amplifiers

1-3 TECHNICAL SPECIFICATIONS

Number of Outputs:	32
Frequency Range:	10KHz to 2MHz
Input and Output Impedance:	75 ohms with a VSWR better than 1.5:1
Insertion Gain:	2dB \pm 0.5dB
Desensitization:	100 uv signal is compressed by 3dB maximum when a 7v peak-to-peak signal between 10KHz and 2MHz is applied simultaneously.
Noise Figure:	12dB max. 10KHz to 100KHz 9db max. 100KHz to 2MHz
Intermodulation:	With any two 0.5v RMS (referred to 75 ohms) signals applied at the antenna input, second and third order products are better than 65dB below 0.5v RMS (referred to 75 ohms).
Isolation:	-40dB, minimum, output-to-output -55dB, minimum, output-to-input.
Line Filters:	-40dB minimum attenuation between 10KHz to 150 MHz.
Power Supply:	115 vac \pm 10% 48/62 Hz; power consumption approximately 100 watts
Dimensions:	Width 19 inches. Height 3 1/2 inches. Depth 16 inches.
Weight:	17 pounds approximately.
MTBF:	20,000 hours as per RADC reliability handbook.

1-3 TECHNICAL SPECIFICATIONS (Cont'd)

Temperature Range: Class 4 military requirements
 Operating: 0° to + 50°C
 Non-operating: -62° to + 75°C

Humidity: Operational up to 95%

Table 1-2 LOOSE ITEMS SUPPLIED, LMC-32

NAME	DESIGNATION	FUNCTION	QUANTITY
Power Cable Assy.	CA10505	Connections to power connector 1J34	1
Technical Manual	1N8034	Instructions for operation and maintenance of LMC-32	1



Figure 1-1 Thirty-Two Output Antenna Multicoupler Model LMC-32

SECTION 2

INSTALLATION

2-1 INITIAL INSPECTION

(1) Every LMC-32 undergoes thorough testing and calibration at the factory before being shipped. Upon receipt of the unit, check the packing case and its contents for possible damage. Unpack the equipment carefully to reduce the risk of damage and to avoid losing any parts shipped as loose items. Refer to Table 1-2 for a list of the loose items.

(2) With respect to equipment damage for which the carrier is liable, TMC (Canada) Limited will assist in describing methods of repair as well as furnishing of replacement parts.

2-2 ELECTRICAL INSTALLATION

(1) The LMC-32 operates from a 115 vac, 48 to 62 Hz power source. The input is protected by two one ampere fuses, one on each side of the line.

(2) The following external connections must be made to the LMC-32 after it has been installed in a rack;

(a) Antenna. The antenna cable, fitted with a BNC connector, is connected to the ANTENNA INPUT jack 1J1 on the rear panel of the LMC-32.

(b) Power. Connect primary power to the unit by plugging the supplied power cable assembly into POWER INPUT connector 1J34 on the rear panel ensuring that the keyway on the plug lines up with the key at the top of 1J34.

(c) Outputs. Connect the outputs to the associated receivers via the BNC connectors on the rear panel.

(3) The LMC-32 equipment should be located in such a way that sufficient clearance is obtained at the rear of the unit for making connections to the BNC connectors. The front panel controls should also be within easy reach of an operator. The solid state design of the LMC-32 reduces heat problems allowing the installation of several (maximum of 5) LMC-32's one above the other in the same rack.

NOTE

For stacking of more than 5 units consult the manufacturer for forced air cooling requirements.

2-3 PERFORMANCE CHECK

(1) When appropriate power connections have been made to the LMC-32, turn POWER switch 1S1 to the ON position. The POWER lamp 1DS1 will light, indicating that the LMC-32 is ready for use.

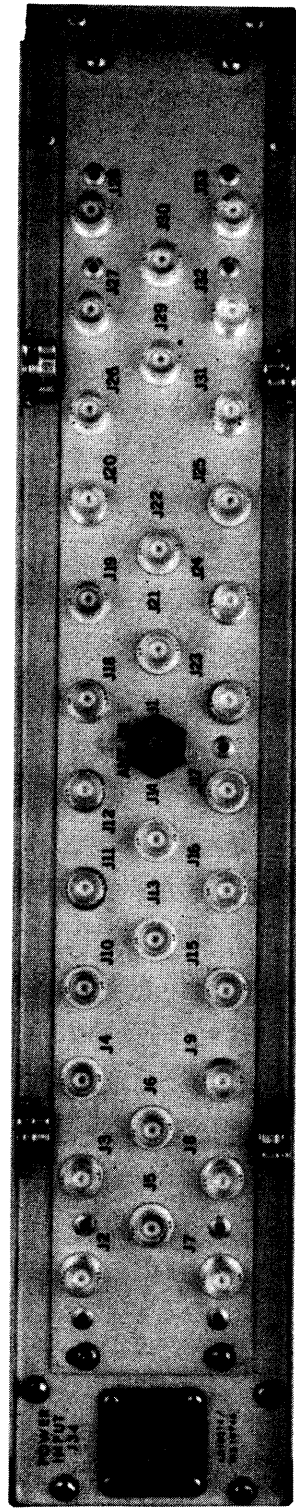


Figure 2-1 Rear Panel Connections, LMC-32

SECTION 3

OPERATION

3-1 GENERAL

(1) Controls. Table 3-1 contains a list of the operating controls and indicators that are located on the front panel of the LMC-32.

(2) Procedures. After connecting the antenna, receivers and power supply, and turning on the POWER switch, no operating procedures are required for the LMC-32. The unit is now fully operational without further adjustment.

Table 3-1 CONTROLS AND INDICATORS, LMC-32

ITEM	DESCRIPTION
Power ON/OFF switch 1S1	Controls primary power to LMC-32
POWER Lamp 1DS1	Lights when primary power is connected to the LMC-32 and switch 1S1 is turned on.
FUSE holder/indicators for 1F1 and 1F2	Failure of a fuse is indicated by illumination of its fuse holder.
SPARE fuses	Two spare fuses are contained in spare fuseholders located on the front panel.

SECTION 4

PRINCIPLES OF OPERATION

4-1 GENERAL

(1) The Thirty-Two Output Low Frequency Antenna Multicoupler is a broadband antenna distribution system, designed to couple one low frequency antenna to the antenna inputs of up to thirty-two low frequency communications receivers.

(2) Both the input and output impedance of the LMC-32 coupler are nominally 75 ohms, with a voltage standing-wave ratio characteristic better than 1.5 to 1 over the frequency range of 10KHz to 2MHz.

(3) The LMC-32 coupler provides a nominal insertion gain of 2 decibels from the antenna input to each connected receiver. The coupler is designed to ensure minimum noise generation, and to provide a high degree of intermodulation rejection and isolation between the connected receivers. The rejection and isolation figures for this equipment are stated in Paragraph 1-4.

(4) The LMC-32 multicoupler consists of three major sections, as shown in Figure 4-1 System Block Diagram, LMC-32, and as described in the following paragraphs. These sections consist of the preamplifier assembly (1A2), the output buffer assemblies (1A3, 1A4, 1A5 and 1A6) and the regulated power supply (1A1).

4-2 PREAMPLIFIER

(1) The preamplifier shown in Figure 5-3, with schematic diagram Figure 7-3, is mounted on a printed circuit board designated 1A2. It is a low-noise, wide band amplifier having a 75 ohm input impedance and a nominal voltage gain of 8.5 db.

(2) The input to the amplifier is RC coupled through 1A2R1, 1A2C1. This input drives a grounded-emitter buffer amplifier 1A2Q1.

The buffer amplifier is followed by a parallel amplifier 1A2Q2, 1A2Q3, which provides minimum intermodulation of higher order products. Negative feedback is accomplished through 1A2R8, 1A2C11, with a bootstrap connection through 1A2C10. Temperature compensation is obtained with diodes 1A2CR1, 1A2CR2 in the bias circuit consisting of 1A2R4, 1A2R5 and 1A2R6. 1A2R7 and 1A2C12 provide bias for the buffer amplifier 1A2Q1.

(3) Power for the preamplifier is obtained from the -28vdc regulated power supply 1A1. This dc voltage is heavily decoupled through 1A2C7, 1A2C6, 1A2L1, 1A2C13, 1A2C5, 1A2C2, 1A2C14 and 1A2C3 to prevent distortion from the rectified power supply.

4-3 OUTPUT BUFFER AMPLIFIER

(1) The RF distribution line parallel-feeds four identical buffer amplifier assemblies, 1A3, 1A4, 1A5 and 1A6, as shown in Figure 7-4. Each amplifier assembly consists of eight emitter-follower amplifiers, with an output impedance of 75 ohms and an attenuation of 6.5 db. Therefore, the overall nominal multicoupler insertion gain from the antenna to each output is + 2db.

(2) The input from the RF distribution line is RC-coupled through 1A3C11, 1A3R11, to the base of the emitter follower 1A3Q11. Bias is obtained with 1A3R12, 1A3R13. The output from the emitter follower is applied to the output terminal through a matched 75ohm load circuit consisting of 1A3R15, 1A3C13.

(3) The -28vdc power is obtained from the regulated power supply 1A1 and is filtered through 1A3C1, 1A3C2 and 1A3L11 to the decoupling capacitor 1A3C12 and load compensator 1A3L12 to the 2N3866 transistor via 1A3R14

4-4 POWER SUPPLY AND REGULATOR

(1) The components comprising the power supply are all chassis mounted except for the regulator circuit which is mounted on printed circuit assembly 1A1. The latter is described in 4-4, paragraphs (3) and (4).

(2) Primary power is supplied through two ac line RF filters (1FL1 and 1FL2) to the ON/OFF switch 1S1. When 1S1 is in the ON position, power is supplied through the two fuses 1F1 and 1F2 to the power transformer 1T1, and also to the front panel indicator lamp 1DS1. The secondary of transformer 1T1 produces 29 vac which is rectified by bridge rectifier 1Z1, and filtered by capacitor 1C1.

(3) The regulator board and transistor 1Q1 provide the voltage and current regulation required for the -29v supply. All components in this section, with the exception of transistor 1Q1, are mounted on printed circuit assembly 1A1. Potentiometer 1A1R7 is used to set up the initial -28 v required by the LMC-32 (see 5-5, Adjustments).

(4) Transistor 1A1Q1 and diodes 1A1CR1, 1A1CR2, 1A1CR3 form a voltage reference circuit (sensitive to temperature and load changes) which in turn control Darlington-connected transistors 1A1Q2 and 1Q1, providing the necessary voltage and current regulation for the power supply, including short-circuit protection

(5) The -29vac output from pin 6 of the regulator board is filtered through 1L1 and 1C1 which are chassis mounted, and thence fed to the circuit boards.

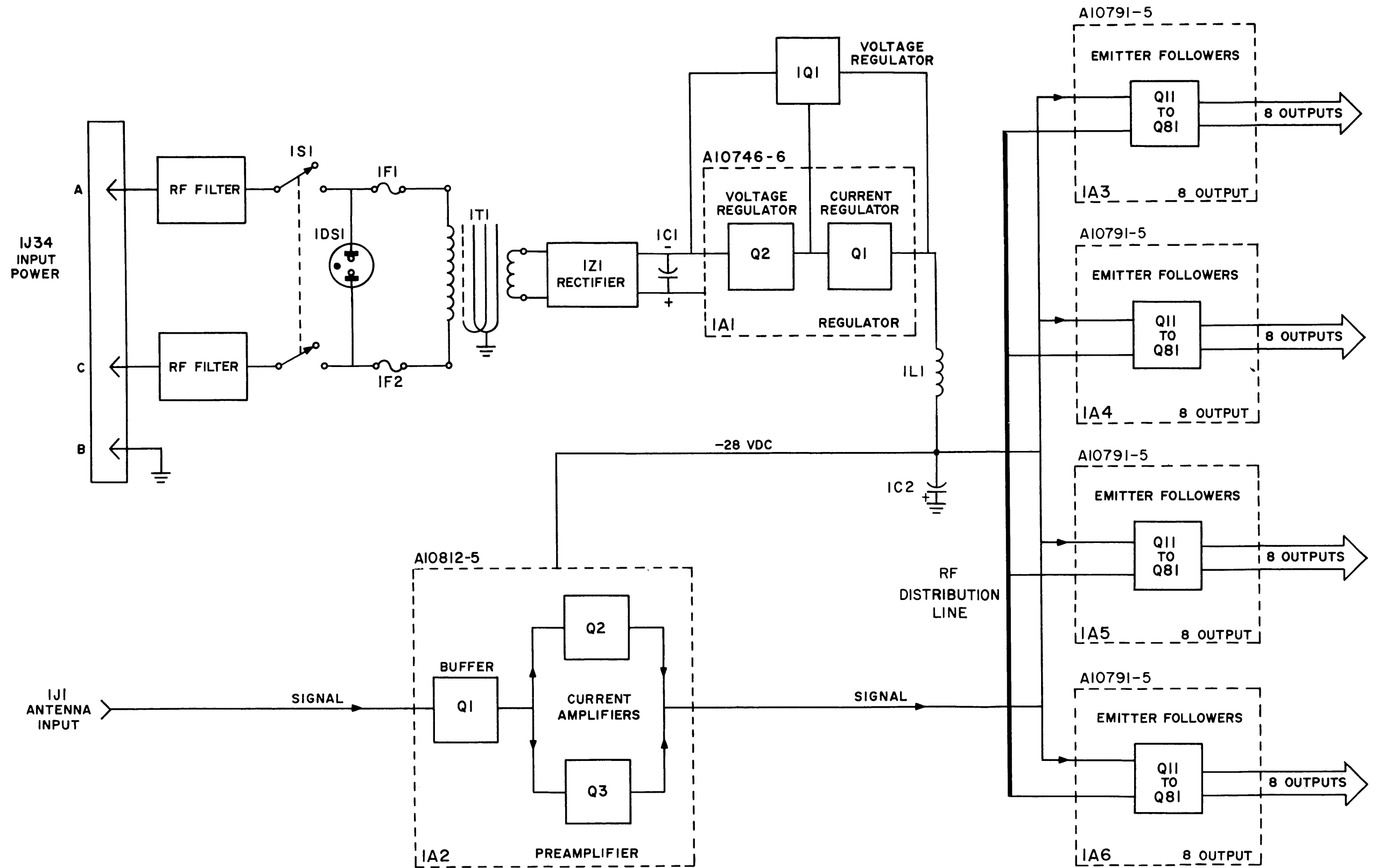


Figure 4-1 System Block Diagram LMC-32

SECTION 5

MAINTENANCE

5-1 GENERAL

(1) This section describes preventive maintenance, trouble-shooting and repair procedures for the LMC-32. The following equipment is suggested in order to perform these procedures properly:

(a) RF Signal Generator, Hewlett Packard Model 651B or equivalent.

(b) Oscilloscope, Tektronix Model 545, or equivalent.

(c) Standard volt-ohmmeter.

(2) For aid in the location of components, refer to figures 5-1 to 5-4 inclusive.

5-2 PREVENTIVE MAINTENANCE

(1) Preventive maintenance for the LMC-32 consists of routine functions such as visual inspection and cleaning. Periodic cleaning is recommended as dust may build up on components, reducing the efficiency of the coupler unit and possibly causing circuit failure. To facilitate cleaning the unit, use a

vacuum cleaner or a low-pressure filtered compressed air supply.

(2) A simple visual check of the unit when it is opened up for servicing or cleaning will often reveal potential trouble and hence reduce downtime due to component failure. Signs of trouble may be found in discoloration, warped printed circuit boards and damaged wiring or cables. Any deteriorating component should be replaced immediately. All hardware should be checked for tightness during preventive maintenance inspections.

5-3 TROUBLESHOOTING

(1) During operation of the LMC-32, the following failure symptoms may be observed:

1. No signal output from one or all of the receivers.
2. Weak or noisy signals at one or all of the receiver outputs.

(2) The primary objective of the troubleshooting procedure is to localize the fault to a particular section of the coupler unit. Table 5-1 provides a guide to location and correction of the possible failures.

Table 5-1 TROUBLESHOOTING PROCEDURES

SYMPTOM	POSSIBLE CAUSE	REMEDIAL ACTION
1. No signal output at one or more receivers	(a) Receiver failure (one output only). (b) Interconnection, coupler to receiver (one output only). (c) Power supply failure in the coupler (all outputs)	(a) Refer to receiver manual. (b) Check the rf cable between coupler and receiver. (c) If POWER ON lamp 1DS1 is not illuminated, check for power input failure or de-

Table 5-1 TROUBLESHOOTING PROCEDURES (Cont'd)

SYMPTOM	POSSIBLE CAUSE	REMEDIAL ACTION
<p>2. Weak or noisy signals to ALL receivers.</p>	<p>(d) Output buffer amplifier failure (one output only).</p> <p>(e) Failure of input preamplifier (all outputs failed).</p> <p>(a) Antenna fault</p> <p>(b) Faulty preamplifier.</p>	<p>fective input filters 1FL1, 1FL2. If POWER ON lamp is on, check indicating-type fuses 1F1, 1F2 and replace with spare if necessary. If both fuses are intact, proceed to check transformer 1T1, bridge rectifier 1Z1 and the voltage regulator 1A1. -28vdc should be available at terminal 6 of the regulation board.</p> <p>(d) If dc voltage is present at the output of the regulator and at the output buffer amplifier, possible failure of a component in the output amplifier is indicated. Removal, testing and repair of the module 1A3, 1A4, 1A5 or 1A6 will be necessary.</p> <p>(e) If dc voltage is present at the output of the regulator and at the preamplifier, possible failure of a component in the preamplifier or failure in the input antenna circuit is indicated. For repair of the preamplifier, removal and testing of the module 1A2 will be necessary.</p> <p>(a) Connect the antenna lead-in directly to the antenna input of a receiver. If the symptom persists, check for a fault in the antenna system.</p> <p>(b) If the cause is not attributable to the antenna, possible failure of a component in the preamplifier is indicated. Removal, testing and repair of module 1A2 will be necessary.</p>

5-1 TROUBLESHOOTING PROCEDURES (Cont'd)

SYMPTOM	POSSIBLE CAUSE	REMEDIAL ACTION
<p>3. Weak or noisy signals in ONE receiver.</p>	<p>(a) Receiver noise.</p> <p>(b) Interconnection, coupler to receiver.</p> <p>(c) Faulty output buffer amplifier.</p>	<p>(a) Refer to receiver manual.</p> <p>(b) Check the rf cable between the coupler and receiver.</p> <p>(c) Connect the receiver to another output terminal of the same module (1A3, 1A4, 1A5 or 1A6). If the symptom persists, the probable cause will be found in the power supply circuit of the module. If the symptom is no longer present, the fault will be found in the directly associated buffer amplifier circuit or output connection. Removal, testing and repair of the module will be necessary if the fault is not located in the output connection.</p>

5-4 REPAIR

(1) Repair work generally consists of the replacement of the defective component. The following cautions should be observed:

(a) Ensure replacement of a component with an exact duplicate. This is particularly important in the amplifier modules.

(b) Place any new component in the same location as the part it replaces. The dressing of wire runs should not be altered.

(c) Observe standard practice when replacing semiconductor components, using a low wattage soldering iron and heat-sink tools.

(d) Avoid damage to the printed wiring when handling or repairing amplifier and regulator modules.

5-5 ADJUSTMENTS

(1) Only one adjustment is required in the LMC-32 antenna multicoupler:

(a) Power Supply Regulator 1A1: a screwdriver-adjustable potentiometer, R7, has been factory-set to provide -28vdc. If the output voltage is found to require adjustment, use an accurate voltmeter and set to -28vdc by clockwise (lowering) or anti-clockwise (raising) rotation of the potentiometer control.

(2) The amplifiers do not require any adjustment, as all components are of fixed values.

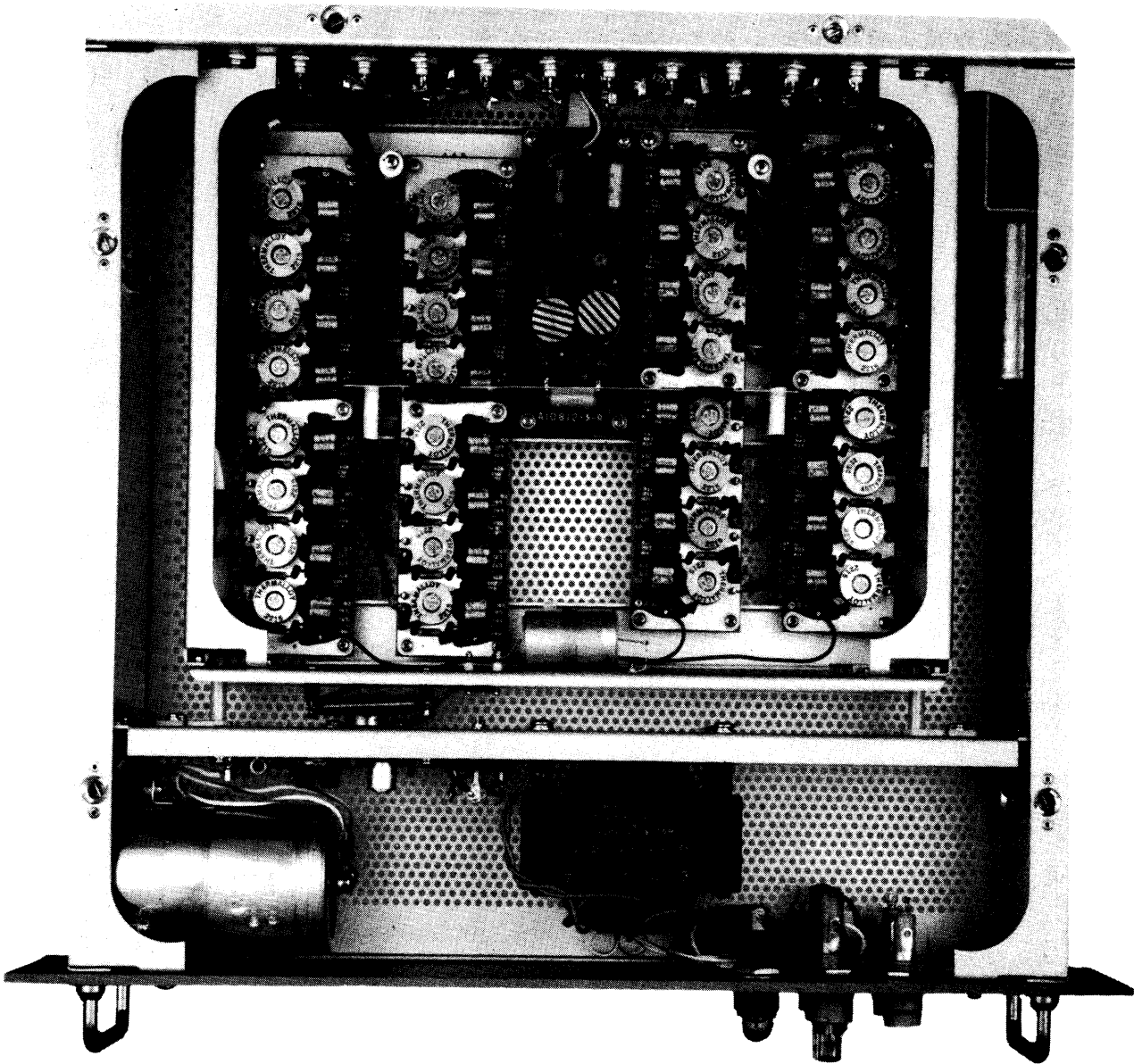


Figure 5-1 Top View, Cover Removed, LMC-32

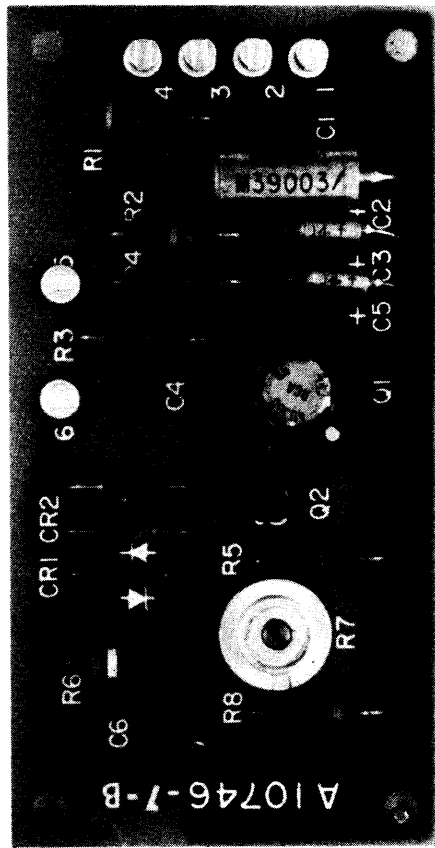


Figure 5-2 Regulator Assembly LA1

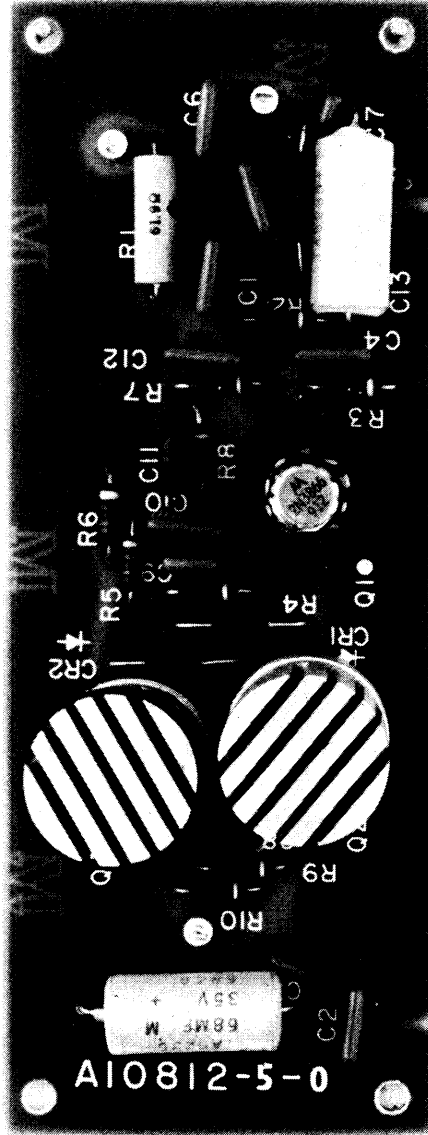


Figure 5-3 Preamplifier Assembly 1A2

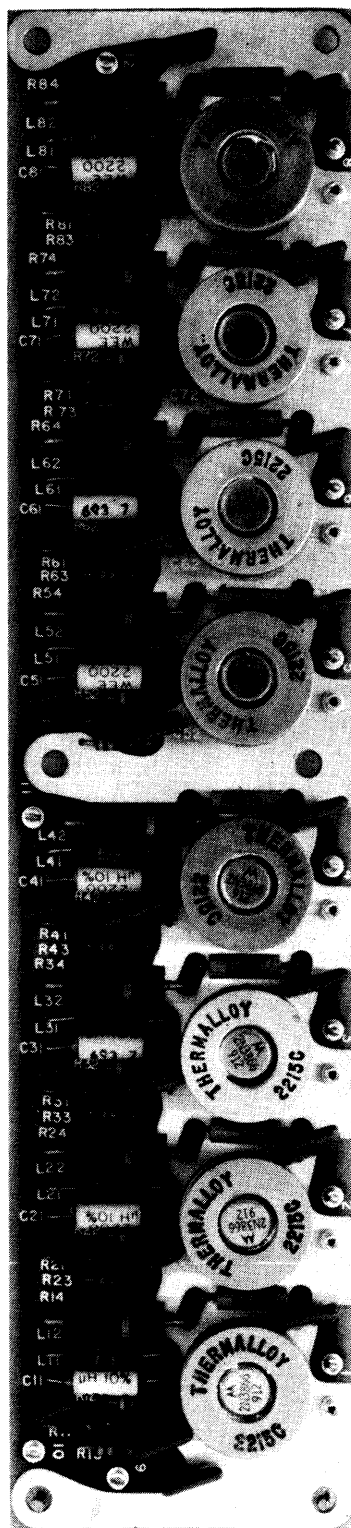


Figure 5-4 8 Output Assembly 1A3 (1A4, 1A5 or 1A6)

SECTION 6

PARTS LIST

6-1 INTRODUCTION

(1) Reference symbols have been assigned to identify all electrical parts. These symbols are marked on the equipment adjacent to the parts that they identify and are included on all drawings, diagrams and parts lists. The letters of a reference symbol indicate the generic group of the part, such as capacitor, resistor, transistor, etc. The numeral identifies parts of the same generic group. Sockets associated with any particular plug-in device, such as a transistor or fuse, are identified by a reference symbol which incorporates the symbol used for that device as well as a prefix symbol.

(2) Prefix symbols have also been assigned to each separate circuit board assembly (1A1, 1A2 etc.).

(3) To expedite delivery when ordering replacement parts, specify the TMC part number and the name and model number of the equipment.

NOTE

- (1) The parts list for 8 Output Assembly 1A3 has been listed in its entirety. Assemblies 1A4, 1A5, and 1A6 are identical; therefore, they have not been listed.

MAIN CHASSIS, FRONT AND REAR PANELS

REF SYMBOL	DESCRIPTION	TMC PART NUMBER
1A1	PRINTED CIRCUIT ASSEMBLY: Regulator	A10746-6
1A2	PRINTED CIRCUIT ASSEMBLY: Preamplifier	A10812-5
1A3	PRINTED CIRCUIT ASSEMBLY: 8 Output	A10791-5
1A4	SAME AS 1A3	
1A5	SAME AS 1A3	
1A6	SAME AS 1A3	
1C1	CAPACITOR: Electrolytic, 6800 uf	CE71C682G
1C2	CAPACITOR: Electrolytic, 500 uf	CE10007
1DS1	LAMP: Neon	BI 100-51
1DS2	SAME AS 1DS1	
1F1	FUSE: Slo-blo, 1.0 amp	FU102-1
1F2	SAME AS 1F1	
1FL1	FILTER: RF, line	FI 10001
1FL2	SAME AS 1FL1	
1J1	CONNECTOR: RF, female receptacle	JJ172
1J2	CONNECTOR: BNC, female receptacle	UG625 B/U
1J3	SAME AS 1J2	
1J4	SAME AS 1J2	
1J5	SAME AS 1J2	
1J6	SAME AS 1J2	
1J7	SAME AS 1J2	
1J8	SAME AS 1J2	
1J9	SAME AS 1J2	
1J10	SAME AS 1J2	

MAIN CHASSIS, FRONT AND REAR PANELS (Cont'd).

REF SYMBOL	DESCRIPTION	TMC PART NUMBER
1J11	SAME AS 1J2	
1J12	SAME AS 1J2	
1J13	SAME AS 1J2	
1J14	SAME AS 1J2	
1J15	SAME AS 1J2	
1J16	SAME AS 1J2	
1J17	SAME AS 1J2	
1J18	SAME AS 1J2	
1J19	SAME AS 1J2	
1J20	SAME AS 1J2	
1J21	SAME AS 1J2	
1J22	SAME AS 1J2	
1J23	SAME AS 1J2	
1J24	SAME AS 1J2	
1J25	SAME AS 1J2	
1J26	SAME AS 1J2	
1J27	SAME AS 1J2	
1J28	SAME AS 1J2	
1J29	SAME AS 1J2	
1J30	SAME AS 1J2	
1J31	SAME AS 1J2	
1J32	SAME AS 1J2	
1J33	SAME AS 1J2	
1J34	CONNECTOR: male receptacle	MS3102A-14S-7P

MAIN CHASSIS, FRONT AND REAR PANELS (Cont'd)

REF SYMBOL	DESCRIPTION	TMC PART NUMBER
1L1	INDUCTOR: RF, coil, 16 uh	CL1004-7
1S1	SWITCH: Toggle	ST22K
1T1	TRANSFORMER: Power	TF10049
1Q1	TRANSISTOR: NPN	2N3055
1XQ1	SOCKET: Transistor	TS166-1
1Z1	DIODE NETWORK: rectifier	NW10007

REGULATOR ASSEMBLY 1A1

REF SYMBOL	DESCRIPTION	TMC PART NUMBER
1A1C1	CAPACITOR: Fixed, ceramic, 0.1 uf	CC10015-X5V104M
1A1C2	CAPACITOR: Fixed, tantalum, 6.8 uf	CSR13G685ML
1A1C3	CAPACITOR: Fixed, tantalum, 0.47 uf	CSR13G474ML
1A1C4	CAPACITOR: Fixed, ceramic, 0.01 uf	CC10017-X5V103M
1A1C5	SAME AS 1A1C3	
1A1C6	SAME AS 1A1C1	
1A1CR1	DIODE: Zener	1N758A
1A1CR2	DIODE:	1N456A
1A1CR3	SAME AS 1A1CR2	
1A1R1	RESISTOR: Fixed, composition, 47K, 1/2 w, 5%	RC20GF473J
1A1R2	RESISTOR: Fixed, composition, 68K, 1/2 w, 5%	RC20GF683J
1A1R3	RESISTOR: Fixed, composition, 15 ohms, 1/2w, 5%	RC20GF150J
1A1R4	RESISTOR, Fixed, composition, 560 ohms, 1/2w, 5%	RC20GF561J
1A1R5	RESISTOR: Fixed, composition, 1.2K, 1/2w, 5%	RC20GF122J
1A1R6	RESISTOR: Fixed, composition, 3.9K, 1/2w, 5%	RC20GF392J
1A1R7	RESISTOR: Variable, composition, 1K, linear curve, 1/4 watt.	RV111U102A
1A1R8	RESISTOR: Fixed, composition, 6.8K, 1.2w, 5%	RC20GF682J
1A1Q1	TRANSISTOR: NPN, silicon	TX10001
1A1Q2	TRANSISTOR: PNP, Silicon	2N5086

PREAMPLIFIER ASSEMBLY 1A2

REF SYMBOL	DESCRIPTION	TMC PART NUMBER
1A2C1	CAPACITOR: Fixed, ceramic, 2.2 uf	CC10018
1A2C2	SAME AS 1A2C1	
1A2C3	CAPACITOR: Fixed, ceramic, 0.1 uf	CC10020
1A2C4	SAME AS 1A2C1	
1A2C5	CAPACITOR: Fixed, tantalum, 68 uf	CE10009
1A2C6	SAME AS 1A2C1	
1A2C7	SAME AS 1A2C3	
1A2C8	SAME AS 1A2C3	
1A2C9	CAPACITOR: Fixed, ceramic, 0.47 uf	CC10021
1A2C10	SAME AS 1A2C1	
1A2C11	CAPACITOR: Fixed, mica, 5 pf	CM04ED050J03
1A2C12	SAME AS 1A2C1	
1A2C13	SAME AS 1A2C1	
1A2C14	SAME AS 1A2C5	
1A2CR1	DIODE:	1N456A
1A2CR2	SAME AS 1A2CR1	
1A2R1	RESISTOR: Fixed, deposited film, high stability, 61.9 ohms, 1/4 w, 1%	RN65D61R9F
1A2R2	RESISTOR: Fixed, film, 1K, 1/4 watt, 2%	RL07S102G
1A2R3	RESISTOR: Fixed, film, 51 ohms, 1/4 w, 2%	RL07S510G
1A2R4	RESISTOR: Fixed, film, 68 ohms, 1/4 w, 2%	RL07S680G
1A2R5	RESISTOR: Fixed, film 560 ohms, 1/4 w, 2%	RL07S561G
1A2R6	RESISTOR: Fixed, film, 270 ohms, 1/4 w, 2%	RL07S271G
1A2R7	RESISTOR: Fixed, film, 7.5K, 1/4 w, 2%	RL07S752G

PREAMPLIFIER ASSEMBLY 1A2 (Cont'd)

REF SYMBOL	DESCRIPTION	TMC PART NUMBER
1A2R8	RESISTOR: Fixed, film, 180 ohms, 1/4 w, 2%	RL07S181G
1A2R9	RESISTOR: Fixed, film, 10 ohms, 1/4 w, 2%	RL07S100G
1A2R10	SAME AS 1A2R9	
1A2L1	INDUCTOR: RF, coil, 220 uh	CL275-221
1A2Q1	TRANSISTOR: NPN	2N3866
1A2Q2	TRANSISTOR: PNP	2N5160
1A2Q3	SAME AS 1A2Q1	

8 OUTPUT ASSEMBLY 1A3

REF SYMBOL	DESCRIPTION	TMC PART NUMBER
1A3C1	CAPACITOR; Fixed, mica 2.2 uf	CC10018
1A3C2	SAME AS 1A3C1	
1A3C11	CAPACITOR: Fixed, mica 0.22 uf	CC10019
1A3C12	SAME AS 1A3C1	
1A3C13	SAME AS 1A3C1	
1A3C21	SAME AS 1A3C11	
1A3C22	SAME AS 1A3C1	
1A3C23	SAME AS 1A3C1	
1A3C31	SAME AS 1A3C11	
1A3C32	SAME AS 1A3C1	
1A3C33	SAME AS 1A3C1	
1A3C41	SAME AS 1A3C11	
1A3C42	SAME AS 1A3C1	
1A3C43	SAME AS 1A3C1	
1A3C51	SAME AS 1A3C11	
1A3C52	SAME AS 1A3C1	
1A3C53	SAME AS 1A3C1	
1A3C61	SAME AS 1A3C11	
1A3C62	SAME AS 1A3C1	
1A3C63	SAME AS 1A3C1	
1A3C71	SAME AS 1A3C11	
1A3C72	SAME AS 1A3C1	
1A3C73	SAME AS 1A3C1	
1A3C81	SAME AS 1A3C11	

8 OUTPUT ASSEMBLY 1A3 (Cont'd)

REF SYMBOL	DESCRIPTION	TMC PART NUMBER
1A3C82	SAME AS 1A3C1	
1A3C83	SAME AS 1A3C1	
1A3L11	INDUCTOR: RF coil, 220 uh	CL275-221
1A3L12	INDUCTOR: RF coil, 2200 uh	CL275-222
1A3L21	SAME AS 1A3L11	
1A3L22	SAME AS 1A3L12	
1A3L31	SAME AS 1A3L11	
1A3L32	SAME AS 1A3L12	
1A3L41	SAME AS 1A3L11	
1A3L42	SAME AS 1A3L12	
1A3L51	SAME AS 1A3L11	
1A3L52	SAME AS 1A3L12	
1A3L61	SAME AS 1A3L11	
1A3L62	SAME AS 1A3L12	
1A3L71	SAME AS 1A3L11	
1A3L72	SAME AS 1A3L12	
1A3L81	SAME AS 1A3L11	
1A3L82	SAME AS 1A3L12	
1A3R11	RESISTOR: Fixed, composition, 100 ohms, 1/4w, 5%	RC07GF101J
1A3R12	RESISTOR: Fixed, composition, 4.3K, 1/4 w, 5%	RC07GF432J
1A3R13	RESISTOR: Fixed, composition, 3.3K, 1/4 w, 5%	RC07GF332J
1A3R14	RESISTOR: Fixed, composition, 180 ohms, 1 w, 5%	RC32GF181J
1A3R15	RESISTOR: Fixed, film, 71.5 ohms, 1/4 w, 1%	RN6D71R5F
1A3R21	SAME AS 1A3R11	

8 OUTPUT ASSEMBLY 1A3 (Cont'd)

REF SYMBOL	DESCRIPTION	TMC PART NUMBER
1A3R22	SAME AS 1A3R12	
1A3R23	SAME AS 1A3R13	
1A3R24	SAME AS 1A3R14	
1A3R25	SAME AS 1A3R15	
1A3R31	SAME AS 1A3R11	
1A3R32	SAME AS 1A3R12	
1A3R33	SAME AS 1A3R13	
1A3R34	SAME AS 1A3R14	
1A3R35	SAME AS 1A3R15	
1A3R41	SAME AS 1A3R11	
1A3R42	SAME AS 1A3R12	
1A3R43	SAME AS 1A3R13	
1A3R44	SAME AS 1A3R14	
1A3R45	SAME AS 1A3R15	
1A3R51	SAME AS 1A3R11	
1A3R52	SAME AS 1A3R12	
1A3R53	SAME AS 1A3R13	
1A3R54	SAME AS 1A3R14	
1A3R55	SAME AS 1A3R15	
1A3R61	SAME AS 1A3R11	
1A3R62	SAME AS 1A3R12	
1A3R63	SAME AS 1A3R13	
1A3R64	SAME AS 1A3R14	
1A3R65	SAME AS 1A3R15	

8 OUTPUT ASSEMBLY 1A3 (Cont'd)

REF SYMBOL	DESCRIPTION	TMC PART NUMBER
1A3R71	SAME AS 1A3R11	
1A3R72	SAME AS 1A3R12	
1A3R73	SAME AS 1A3R13	
1A3R74	SAME AS 1A3R14	
1A3R75	SAME AS 1A3R15	
1A3R81	SAME AS 1A3R11	
1A3R82	SAME AS 1A3R12	
1A3R83	SAME AS 1A3R13	
1A3R84	SAME AS 1A3R14	
1A3R85	SAME AS 1A3R15	
1A3Q11	TRANSISTOR: NPN, Silicon	2N3866
1A3Q21	SAME AS 1A3Q11	
1A3Q31	SAME AS 1A3Q11	
1A3Q41	SAME AS 1A3Q11	
1A3Q51	SAME AS 1A3Q11	
1A3Q61	SAME AS 1A3Q11	
1A3Q71	SAME AS 1A3Q11	
1A3Q81	SAME AS 1A3Q11	
<p>NOTE</p> <p>8 Output Assemblies 1A4, 1A5, and 1A6 are identical to Assem- bly 1A3.</p>		

SECTION 7

SCHEMATIC DIAGRAMS

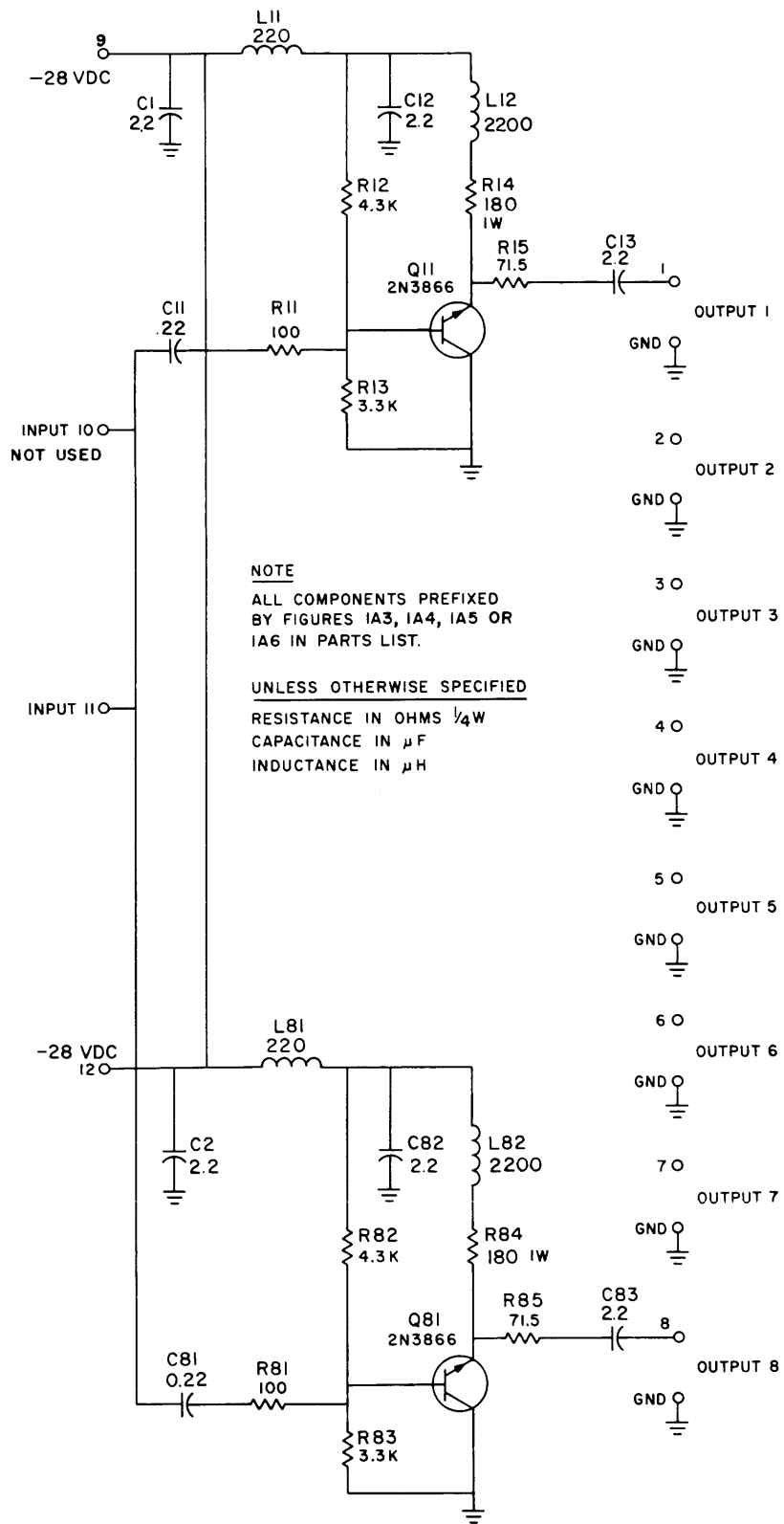
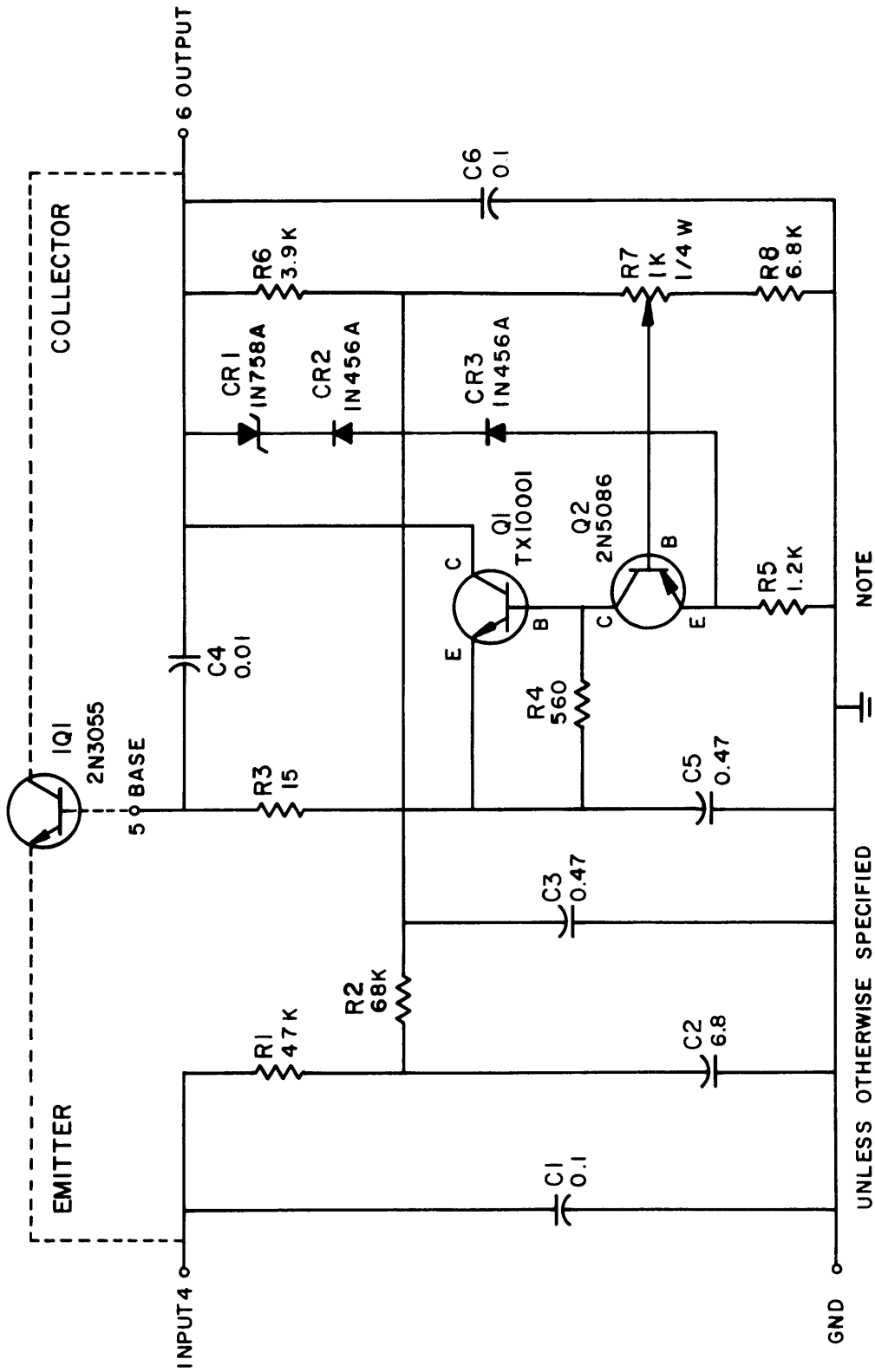
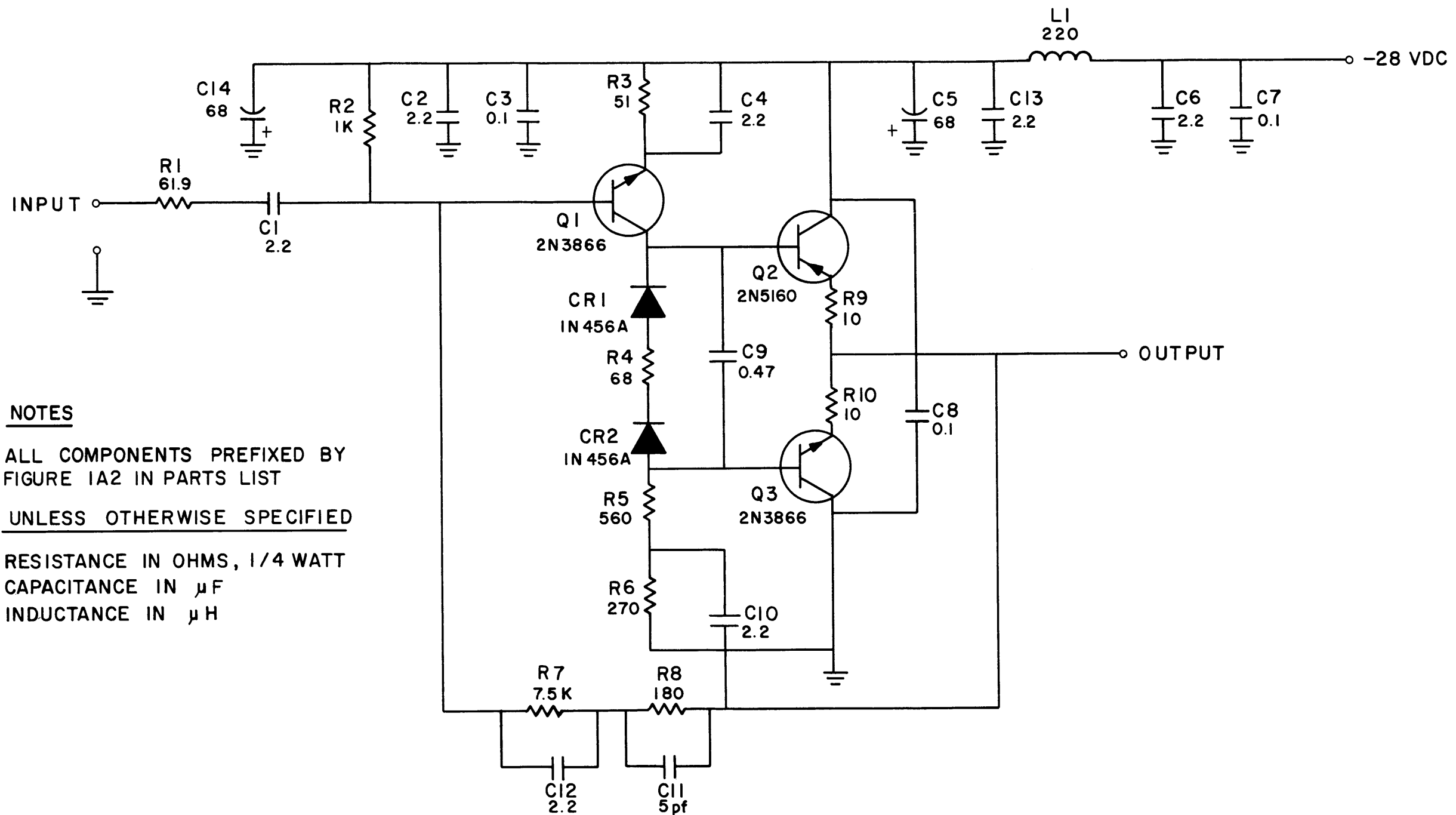


Figure 7-1 System Schematic, LMC-32



UNLESS OTHERWISE SPECIFIED
 RESISTANCE IN OHMS 5%, 1/2 W
 CAPACITANCE IN μ F
 INDUCTANCE IN μ h

NOTE
 ALL COMPONENTS PREFIXED
 BY FIGURES IAI IN PARTS LIST



NOTES

ALL COMPONENTS PREFIXED BY
FIGURE 1A2 IN PARTS LIST

UNLESS OTHERWISE SPECIFIED

RESISTANCE IN OHMS, 1/4 WATT
CAPACITANCE IN μF
INDUCTANCE IN μH

Figure 7-3 Preamplifier Schematic (1A2)

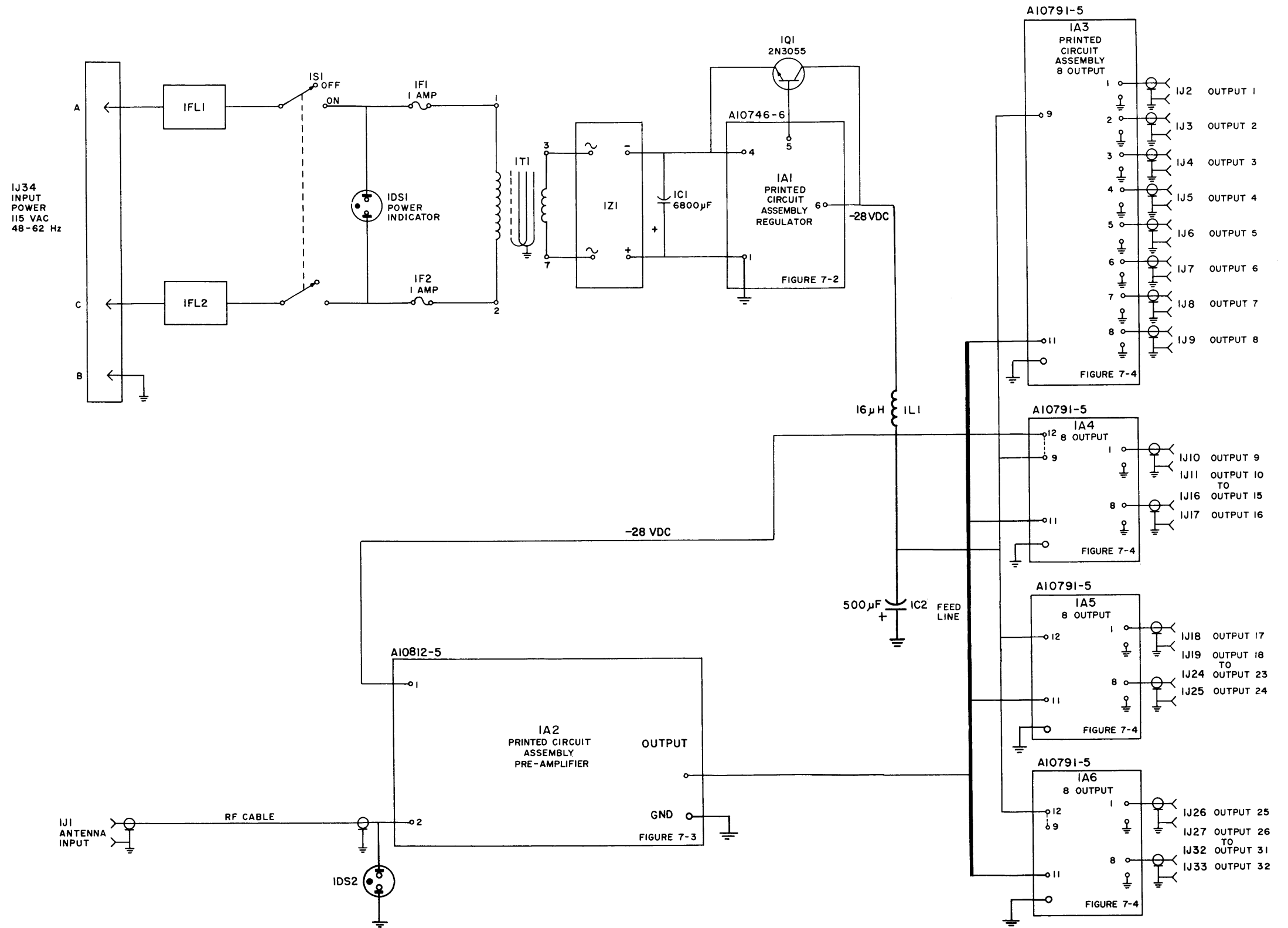


Figure 7-4 8 Output Schematic, (IA3) (IA4) (IA5) (IA6)