

# OPERATING AND SERVICE MANUAL

**MODEL**

700A

**PART NO.**

1001061-502

**SERIAL NO.**

4 6 6 4

FORM 144 REV 0378

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MODEL 700A

CAUTION NOTE:

IMPROVED PERFORMANCE CAN BE OBTAINED IF THE AMPLIFIER OUTPUT IMPEDANCE TAP IS SELECTED TO MINIMIZE REFLECTED POWER AS INDICATED ON THE PANEL METER. NORMALLY THIS WILL MATCH THE OUTPUT IMPEDANCE AND THE AMPLIFIER WILL RUN COOLER AND PROVIDE MORE OUTPUT VOLTAGE FOR THE SAME AMOUNT OF DRIVE.

DO NOT SWITCH THE IMPEDANCE TAP WITH POWER APPLIED TO THE LOAD. REMOVE DRIVE TO THE AMPLIFIER BEFORE SWITCHING.

ENGINEERING DEPARTMENT  
AMPLIFIER RESEARCH

## SECTION I

### GENERAL INFORMATION

#### 1.1 General Description

The Model 700A Power Amplifier is a self-contained high power unit designed primarily for severe industrial applications.

The Model 700A Amplifier is completely solid state. It is protected against damage which might be caused by excessive VSWR, high instantaneous line voltage, excessive output power or over-temperature operation. A built-in time delay and zero-crossing turn-on reduce current inrush to prolong component life. Power supply regulation is used to remove noise and output fluctuations. A directional wattmeter and front panel selector switch provide convenient measurement of forward power from the amplifier and reverse power reflected by the load. Cooling is provided by self-contained fans. All sub-assemblies are plug-in for easy maintenance and repair.

#### 1.2 POWER SUPPLIES

This unit has a self-contained 115 VAC, 50/60 Hz regulated power supply. The power consumption is a nominal 1500 watts @ 700 watts output. Primary fusing is provided. Delayed zero-crossing turn on circuitry is used to avoid high in-rush currents.

#### 1.3 SPECIFICATIONS

Refer to Amplifier Research Data Sheet on next page for detailed specifications.



ULTRASONIC POWER AMPLIFIER  
700 WATTS, 10-250 KHz  
MODEL 700A

The Model 700A Power Amplifier is completely solid state and contains no mechanical circuit breakers or relays. Even its over-temperature sensor is a solid state device. Designed for severe industrial applications, the Model 700A Amplifier is protected from damage which might be caused by excessive VSWR, high instantaneous line current, excessive output power or over-temperature operation. A built-in time delay and zero-crossing turn-on reduce current inrush to prolong component life. Power Supply voltage regulation is used to remove noise and output fluctuations. A directional wattmeter and front panel selector switch provide convenient measurement of the forward power from the amplifier and reverse power reflected by the load. A non-linear meter scale allows extremely sensitive tuning of the load simply by adjusting for minimum reflected power.

The Model 700A cooling is provided by self-contained fans. Air is drawn in through filtered inlets to protect the circuitry from exposure to excessively dirty environments which may be encountered in industrial applications. All sub-assemblies are plug-in and can be readily removed for maintenance and repair.

The Model 700A may be purchased initially for low power requirements and when additional power is required another Model 700A and a hybrid power combiner may be used to provide performance equivalent to our Model 1400A.

The Model 700A is complete with a built-in 115 VAC power supply, regulators, power meter and protection circuitry. It is normally supplied in a handsome bench top cabinet with rack mounting available as an option.

160 SCHOOL HOUSE ROAD  
SOUDERTON, PA. 18964

PHONE: 215-723-8181

REV 0379

## SECTION II

### OPERATING INSTRUCTIONS

#### 2.1 GENERAL

Operation of the Model 700A Power Amplifier is simple and straight forward. The input signal is fed to the jack marked INPUT and the amplifier output is taken from the jack marked OUTPUT. Both input and output jacks are standard type BNC. The unit is turned on by activating the power switch marked OFF, ON. In the event of a malfunction protection is provided by internal shutdown circuits, and also by fusing located at the rear of the unit. A polarized three (3) wire AC power cord is also included with the unit to provide cabinet and chassis grounding to the power mains. A front panel power meter calibrated in watts is provided to enable the operator to measure the power actually delivered to the load. A switch is included to enable the selection of either forward or reflected power. A front panel attenuator control sets the output level.

#### CAUTION

THE MODEL 700A AMPLIFIER IS NOT CRITICAL IN REGARDS TO SOURCE AND LOAD VSWR AND WILL REMAIN UNCONDITIONALLY STABLE WITH ANY MAGNITUDE AND PHASE OF SOURCE AND LOAD WSWR. IT ALSO HAS BEEN DESIGNED TO WITHSTAND, WITHOUT DAMAGE, RF INPUT POWER UP TO TWENTY (20) TIMES ITS RATED INPUT OF 1 mW: HOWEVER, SIGNAL LEVELS HIGHER THAN 20 mW OR TRANSIENTS WITH HIGH PEAK VOLTAGES CAN DAMAGE THE AMPLIFIER. ALSO, ACCIDENTAL CONNECTION OF THE 700A OUTPUT TO THE INPUT CAUSES OSCILLATIONS WHICH WILL PERMANENTLY DAMAGE THE INPUT TRANSISTOR.

## 2.2 AMPLIFIER OPERATION

Figure 2.1 shows the Model 700A Amplifier in pictorial form.

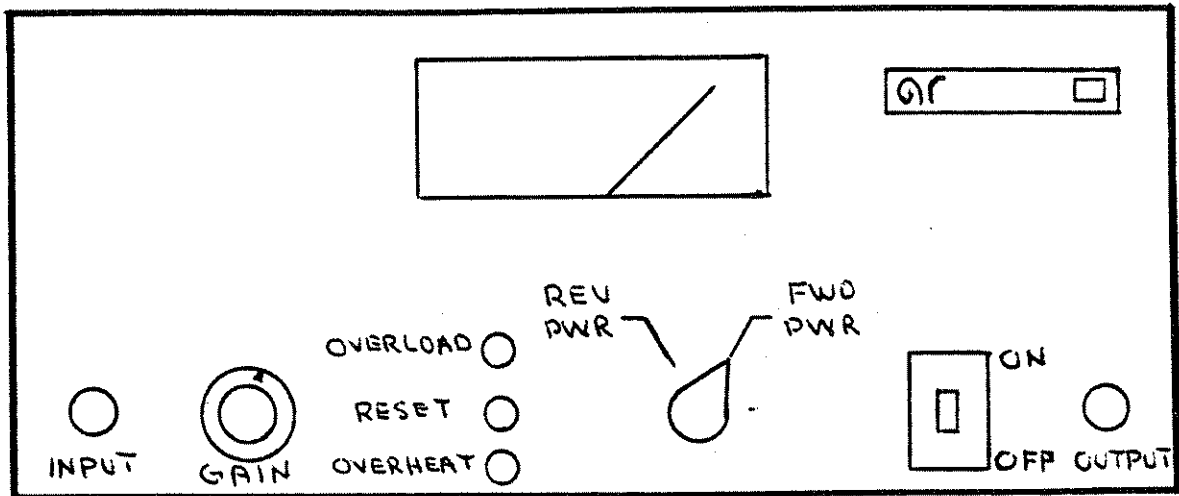


Figure 2.1  
Amplifier Operation

### Turn On Sequence:

1. Connect input signal to INPUT connector.
2. Connect load to OUTPUT connector.
3. Set GAIN control fully counter clockwise.
4. Activate power switch to ON position. A red indicator light mounted within the switch will light when power is applied.
5. Monitor output power (FWD) and adjust gain for desired level.

## SECTION III

### THEORY OF OPERATION

#### 3.1 INTRODUCTION

Refer to Block Diagram on the following page. The Model 700A incorporates a low level section which consists of an integrated circuit pre-amplifier followed by a gain control and a single transistor stage which in turn drives a push-pull stage.

The output of the low level stage is fed to a four way power splitter. The four identical outputs of the power splitter are fed to 2 pairs of push-pull stages. The outputs of these stages are combined in the final combiner and routed to the output connector.

Input and output matching networks are utilized to provide optimum power transfer to and from the amplifier with a 50 ohm source and load impedance respectively. Interstage coupling is accomplished by using broadband ferrite transformers that provide the essential overall flat frequency response.

The self-contained power supply employs a full wave rectifier, transistor error sensing amplifier and series pass transistors to provide regulated output voltages. It also utilizes delayed, zero-crossing turn on to avoid high inrush currents.



3.1 INTRODUCTION (continued)

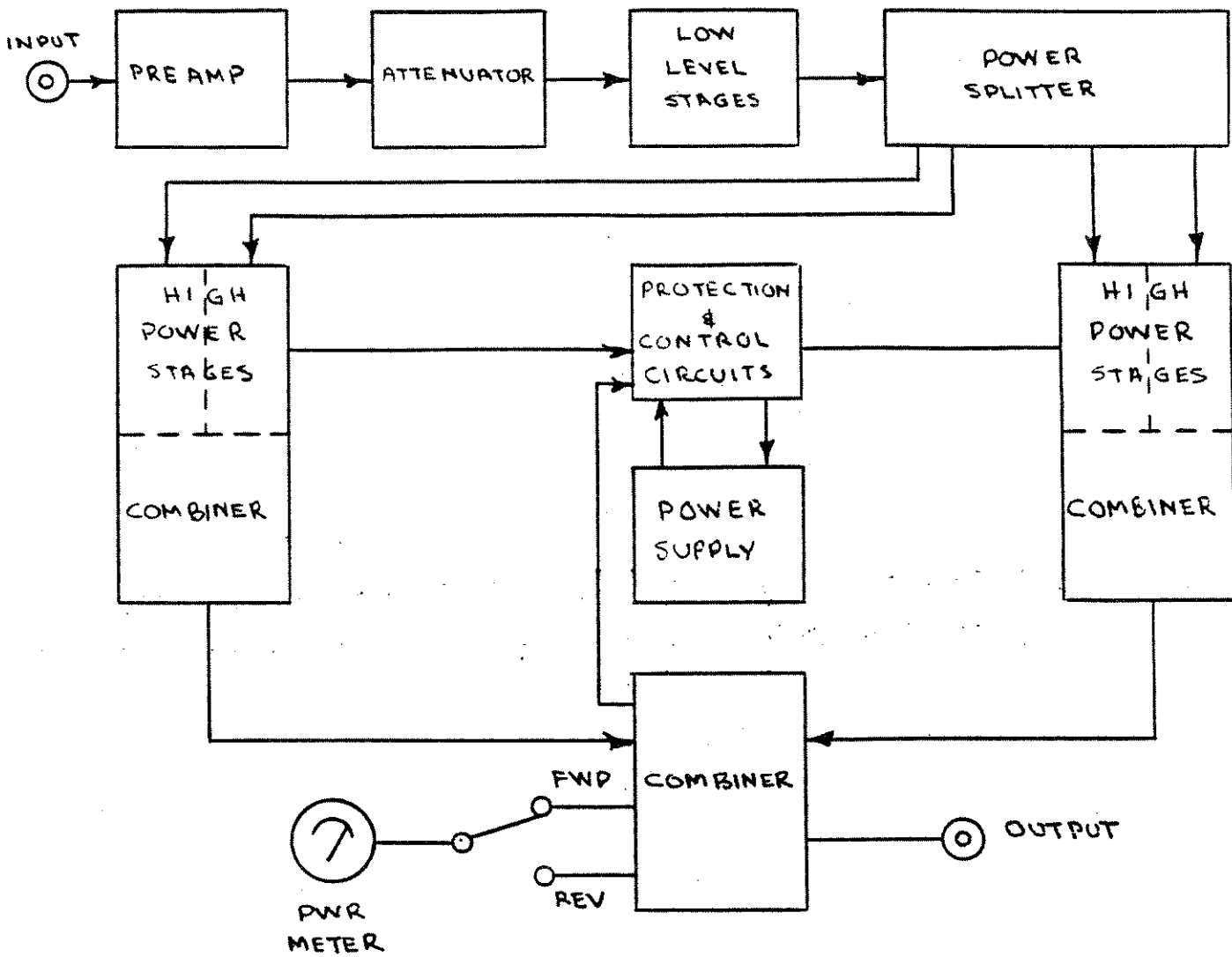


FIGURE 3.1  
BLOCK DIAGRAM  
MODEL 700A

### 3.2 AMPLIFIER SECTION

Refer to Schematic Diagram Nos. 1001059, 1000837, 1001054, 1000845.

The input signal is fed from the front panel input connector to the integrated circuit pre-amp A2U1. The output of A2U1 is fed to emitter follower A2Q2 which provides the power and impedance transformation to drive the front panel gain control and the low level stages. The low level amplifier stages (Schematic 1000837) consists of Q1 which is fed through impedance matching transformer T1. The output of Q1 drives the push-pull amplifier stage consisting of T2, Q2, Q3, and T3.

The signal is then fed to the four way splitter consisting of T5, T6, and T7. This provides four identical output signals.

The four identical signals are then fed to two pairs of push-pull amplifier stages (Schematic 1001054). The inputs are transformer coupled to Q1, Q2, and Q3, Q4. Feedback is provided by RC networks from collector to base. Forward bias is provided by two resistors and a diode. This is used to lower crossover distortion. The outputs of each pair are combined in T5. The two outputs are then combined again in the final combiner (Schematic 1000845). This final combining takes place in T1 and T2. This combined signal then goes to the output connector. Integral to the final combiner is a detector circuit which is designed to produce DC voltages proportional to the forward and reflected power. These voltages are selected by the front panel switch and displayed as forward or reverse power (watts) on the power meter. This circuit also supplies forward and reverse overpower shutdown signals to the protective circuitry. The amplifier for the power meter (U2) is located on the turn on circuit board (A2).

### 3.3 TURN ON AND PROTECTIVE LOGIC CIRCUITRY

Refer to Schematic No. 1001050 and 1001052.

When the power ON switch is activated, +Vcc is applied to the logic circuitry. A2C11 charges through A2R8 until the voltage on A2C11 exceeds the zener voltage on A2VR1 at which time A2Q4 turns on. This provides a signal to the primary AC relay located on the power supply sub-assembly which in turn applies AC power to the high voltage power supply. The time constant of A2R8 and A2R11 provides a delayed turn on which prevents high inrush currents.

### 3.3 TURN ON AND PROTECTIVE LOGIC CIRCUITY (Continued)

In case of an excess of reflected power, a signal is sent from the final combiner sub-assembly to A1Q3 of the protective circuit sub-assembly. The conduction of A1Q3 turns on A1Q7 which turns on A1Q6. A1Q7 and A1Q6 then act as a latch, remaining in the on condition until reset by the front panel "reset" control. A1Q6 applies a signal to A2Q1 turning off the signal emitter follower A2Q2, and to A2Q3 which turns off A2Q4 removing the turn on signal to the high voltage supply, shutting off the high voltages to the power amplifier stages. The overload indicator lamp is also turned on. Forward power shutdown operation and overcurrent shutdown operation are similar. The forward power shutdown signal originates in the final combiner. The overcurrent shutdown signal originates in U1 of the power supply.

There are temperature sensors located on the power supply sub-assembly and the two final amplifier assemblies. In case of an over-temperature condition a signal is set to A1U1 turning one of the transistors on. Any one of these transistors turning on will turn on A1Q2 which then turns on A1Q1. A1Q1 and A1Q2 again act as a latch, remaining on until reset by the front panel "reset" control. The over temperature lamp is also turned on. A1Q1 again applies a signal to A2Q2 and A2Q3 which operate the same as above. There is also a cover interlock, which prevents turning on the unit with the cover off. The cover interlock signal is supplied from A1R19 through A1Q2 directly to the shutdown circuit.

### 3.4 POWER SUPPLY

Refer to Schematic Diagrams 1001059 and 1000833.

When the power on switch is activated, 115 VAC power is applied to the low voltage supply (VR1) which supplies the turn on and protective circuitry. It is also applied, at a reduced level through R10 to the bridge rectifier CR1. After the time delay has expired, a signal is sent to K1, a zero-crossing turn on relay, applying full power to CR1. The rectifier current is filtered by C1, then passes through the current limiting resistors, Q3 through Q8, and then to the output. The voltage drop across R2 and R3 is sensed by U1 through R4, R5, and VR4. The trip point of U1 is set by adjusting R5 to turn on X1 with the desired current flowing through R2 and R3. Q1 and VR1 sense any changes in the output. If the voltage increases Q1 turns on harder decreasing the bias to Q2. This lowers the current through the series pass transistors, lowering the output voltage to its original level.

### 3.4 POWER SUPPLY (Continued)

A decrease in output voltage has the opposite effect, thus regulating the output to the voltage set by R12. This voltage (140V) supplies the final amplifier.

Zener diodes are used to drop the 140 volt supply to 60 volts which is used in the driver amplifier.

## SECTION IV MAINTENANCE

### 4.1 GENERAL MAINTENANCE INFORMATION

The Model 700A should require little maintenance. It is built with etched circuit wiring and solid state devices which should ensure long, trouble-free life. In addition it contains circuitry to protect it against excess forward or reflected power, overcurrent, and over-temperature conditions.

However, should trouble occur special care must be taken in servicing, to avoid damage to the devices or the etched circuit boards.

Since the components are soldered in place, substitution of components should not be resorted to unless there is some indication that they are faulty. In addition, take care when troubleshooting not to short voltages across the amplifier. Small bias changes may ruin the amplifier due to excessive dissipation or transients.

Components within the Amplifier Research instruments are conservatively operated to provide maximum instrument reliability. In spite of this, parts within an instrument may fail. Usually, the instrument must be immediately repaired with a minimum of "down time". A systematic approach can greatly simplify and thereby speed up the repair.

However, due to the importance of the amplifier's alignment, it is recommended that when failure is caused by breakdown of any of the components in the signal circuits, the amplifier be returned to the factory for part replacement and amplifier realignment. Shipping instructions are as follows: ship PREPAID via United Parcel Service to Amplifier Research Corporation, 160 School House Road, Souderton, PA 18964.

### 4.2 COVER AND SUB-ASSEMBLY REMOVAL

To remove the top cover take out the screws located in the top and rear flange of the cover. Lift rear of cover and slide out from under front panel flange.

## 4.2 COVER AND SUB-ASSEMBLY REMOVAL (Continued)

To remove the Amplifier and power supply sub-assemblies disconnect all connectors and remove the 6 mounting screws for each assembly from the bottom of the unit.

Logic ards can be removed by taking out the mounting screws located in the upper corners of the card and gently pulling the cards from their connectors.

CAUTION: When removing mounting screws do not drop the card separating spacers into the unit.

## 4.3 AIR FILTER SERVICE

Both outer side panels should be removed periodically and the air filters located behind them cleaned or replaced periodically.

CAUTION: Failure to properly service air filters can cause overheating and shorten life of the Amplifier.

## 4.4 TROUBLESHOOTING

A good way to start troubleshooting is to check the supply voltages. First check for +12V at A1VR1. If it is low or missing, check the line fuse, VR1 and associated circuitry on the A2 board. If it is present next check for 140 volts on the regulated power supply module. If it is missing check for a turn-on signal at K1-3. If the signal is missing check through the logic circuitry, also checking that none of the protective shutdown conditions exist, and that the cover interlock switch is energized or bypassed. If the turn on signal is present check the power supply from CR1 through to the output.

If all the voltages are present, apply a signal to the input and attempt to trace it through the signal path until it disappears. Then check the individual components in that stage.

#### 4.5 SERVICING ETCHED CIRCUIT BOARDS

When soldering leads, use a hot forty (40) watt or smaller iron. Apply heat sparingly to the leads, not to the printed wiring on the board. Before installing new parts clean holes to receive new part without forcing. Have new leads tinned to receive solder quickly with a minimum of heat and without residue.





## SECTION V

### REPLACEABLE PARTS

#### 5.1 INTRODUCTION

This section contains information to ordering replacement parts. The following parts list show the parts in alphanumeric order of their reference designators and indicate the description; and, together with any applicable notes, provide the following:

- a. Description of the part.
- b. Manufacturer's part number.
- c. Typical manufacturer of the part.

Miscellaneous parts are listed at the end of the parts list.

#### 5.2 ORDERING INFORMATION

To obtain replacement parts, address order to Amplifier Research, 160 School House Road, Souderton, PA 18964. Identify and include instrument model and serial numbers.

#### 5.3 NONLISTED PARTS

To obtain a part that is not listed, include:

- a. Instrument model number.
- b. Instrument serial number.
- c. Description of the part.
- d. Function and location of the part.

#### 5.4 REFERENCE DESIGNATIONS

A = assembly  
B = fan  
BT = battery  
C = capacitor  
CB = circuit breaker  
CR = diode  
DS = lamp  
E = terminal  
F = fuse  
IC = integrated circuit  
J = jack  
K = relay  
L = inductor  
M = meter  
P = plug  
Q = transistor, semiconductor  
R = resistor, potentiometer  
RT = temperature sensing element  
S = switch  
T = transformer  
TB = terminal block  
TP = test point  
U = integrated circuit  
V = vacuum tube, neon bulb, photocell, etc.  
VR = zener diode  
W = wire, cable  
X = socket

#### 5.5 PARTS LISTS

See the following sheets for Parts Lists.

DESCRIPTIVE INFORMATION		SUPPORT DOCUMENTS	
FREQUENCY	10-250 KHz	TEST DATA SHEET	1001044
POWER OUT	700W LINEAR	TEST PROCEDURE	1001903
PRIMARY POWER	115 VAC	ENVELOPE DWG	-
COOLING	INTERNAL FANS	SALES DATA SHEET	INFORMAL
PACKAGE	17" LAB 7" PANEL	MANUAL CLASS	I (SEE REVERSE SIDE)
OPTIONS INCLUDED		REMARKS	

MATERIAL PULL INFORMATION										MANUAL INFO						
ASSY LEVEL								DESCRIPTION	QTY	ASSEMBLY NUMBER	S	P L	A S	S C	SCHEMATIC	
1	2	3	4	5	6	7	8								NUMBER	S
X								AMPLIFIER ASSY	1	PL1001061-502		X				
	X							LOGIC ASSY A1	1	PL1001053-501	C	X	X	1001052	B	
	X							LOGIC ASSY A2	1	PL1001056-501	C	X	X	1001050	B	
	X							PWR CMBNR. DIR DET	1	PL1000852-502	B	X	X	1000845	A	
	X							HVPS ASSY	1	PL1000835-502	B	X	X	1000833	B	
		X						REGULATOR ASSY	1	PL1000834-501	B	X		1000833	B	
	X							AMPLIFIER MODULE ASSY	1	PL1000891-503		X				
		X						RF BRD ASSY, FINAL	2	PL1001058-501	B	X	X	1001054	B	
		X						RF BRD ASSY, LOLVL	1	PL1000838-503	B	X	X	1000837	B	
	X							HSG & INTFC ASSY	1	PL1001060-503		X	X	1001059	C	
		X						ATTENUATOR ASSY	1	PL1001092-501		X				
		X						TRANSFORMER ASSY	1	PL1001122-501						

FORM 109 REV0378



DATE	R	DATE	R
28 Mar 78	-	8 JUN 79	B
26 Dec 78	A		

MASTER LIST



QUANTITY REQUIRED		ITEM OR SYMBOL	PART NO.	DESCRIPTION	VALUE	TOL	RATING	SPECIFICATION OR VENDOR
508	509							
		1 Q8	TIP 35C	TRANSISTOR				TI
		1 Q7	TIP 35C	TRANSISTOR				TI
		1 Q6	TIP 35C	TRANSISTOR				TI
		1 Q5	TIP 35C	TRANSISTOR				TI
		1 Q4	TIP 35C	TRANSISTOR				TI
		1 Q3	TIP 35C	TRANSISTOR				TI
		1 Q2	TIP 35C	TRANSISTOR				TJ
		1 Q1	TIP 51	TRANSISTOR				TZ
		1 CR1	1N5061	DIODE				ANY
		1 C6	B11-00025U0103M	CAP, FXD, CERAMIC	.01uF		500V	ERIE
		1 C5	TVA-1437	CAP, FXD, ELEC	4uF		200V	SPRAGUE
		1 C4	B11-000X5R0472K	CAP, FXD, CERAMIC	4700pF		500V	ERIE
		1 C3	5GAP10	CAP, FXD, CERAMIC	0.1uF		500V	SPRAGUE
		1 C2	TVA 1305.5	CAP, FXD,	20uF		50V	SPRAGUE
		- C1	-	-				SPECIFICATION OR VENDOR

**AMPLIFIER RESEARCH**  
 APPROVED E.E. \_\_\_\_\_ DATE \_\_\_\_\_ APPROVED M.E. \_\_\_\_\_ DATE \_\_\_\_\_  
 TITLE REGULATOR ASSY  
 HNS  
 ORIGINATOR DWJ/RLH DATE 25 Nov 76  
 DWG. NO. PL1000834  
 SHEET 2 OF REV F

QUANTITY REQUIRED		508	507	506	505	504	503	502	501	ITEM OR SYMBOL	PART NO.	DESCRIPTION	VALUE	TOL	RATING	SPECIFICATION OR VENDOR	
										1	R15	TYPE BWH	RES, FXD, WW	0.27-Ω		3W	
										1	R14		RES, FXD, COMP	1.0K	5%	1/4W	
										1	R13	4658	RES, FXD, WW	15K		5W	OHMITE
										1	R12	URO1R102B	RES, VAR	1.0K		1/4W	
										1	R11		RES, FXD, COMP	6.8K	5%	1/4W	
										1	R10	NOT USED					
										1	R9	4642	RES, FXD, WW	5K		5W	OHMITE
										1	R8		RES, FXD, COMP	1.0K	5%	2W	
										-	R7	NOT USED					
										-	R6	NOT USED					
										1	R5	URO1R101B	RES, VAR	100-Ω		1/4W	CTS
										1	R4		RES, FXD, COMP	22-Ω	5%	1/4W	
										1	R3	1802A	RES, FXD, WW	1.0-Ω		20W	OHMITE
										1	R2	1802A	RES, FXD, WW	1.0-Ω		20W	OHMITE
										-	R1						

APPROVED E.E. \_\_\_\_\_ DATE \_\_\_\_\_ APPROVED M.E. \_\_\_\_\_ DATE \_\_\_\_\_  
 ORIGINATOR *DJL/Rob* DATE 25 Mar 76  
 TITLE REGULATOR ASSY DWG. NO. 2-1000834  
 HVPS SHEET 3 OF REV C





ECN

A 12 R 76  
 B 26 JUL 76  
 C 12 Nov 76  
 D 9 SEP 77  
 E 3 MAR 78  
 F 18 APR 78  
 G 29 AUG 78  
 H 8 JUN 79  
 J 1 JUN 83

SCHEMATIC

1000833

REF. REF.

MODEL 700A, 850, 851  
 MODEL 796

3  
 2  
 1  
 SHEET  
 REV.

509 508 507 506 505 504 503 502 501  
 QUANTITY REQUIRED

VALUE TOL RATING SPECIFICATION OR VENDOR

DESCRIPTION

PART NO.

ITEM OR SYMBOL

ORIGINATOR DW ROTH DATE 25 MAR 76

DATE

APPROVED M.E.

DATE

APPROVED E.E.

DWG. NO. PL1000835

TITLE HVPS ASSY.

SHEET 1 OF 3 REV J





QUANTITY REQUIRED		ITEM OR SYMBOL	PART NO.	DESCRIPTION	VALUE	TOL	RATING	SPECIFICATION OR VENDOR
1	1	YR3	IN3324	ZENER DIODE				
1	1	VR2	IN3324	ZENER DIODE				
1	1	RT1	TS3-75	SENSOR, THERMAL				MULTI-STATE
-	1	R10	1543	RES, FXD, WW	4.0K		8W	OHMITE
1	1	R25	0200C	RES, FXD, WW	25-Ω		25W	OHMITE
1	1	R24	0200C	RES, FXD, WW	25-Ω		25W	OHMITE
1	1	R23	0200C	RES, FXD, WW	25-Ω		25W	OHMITE
-	1	R22		RES, FXD, COMP	1.0-Ω	5%	1/2W	
1	1	R21		RES, FXD, COMP	1.2K	5%	1W	
-	1	R1	4549	RES, FXD, WW	5.0-Ω		5W	OHMITE
1	1		03-09-2151	CONN SHELL	15 PIN			WALDOM
12	12	P1	02-09-2118	CONTACT, MALE				WALDOM
-	-		02-09-1118	CONTACT, FEMALE				WALDOM
-	1	K2	D04A	RELAY, SOLID STATE			4A	DUNGLASS RANDALL
1	1	K1	SA10094125	RELAY, SOLID STATE			25A	ELECTROL
-	1	EG	1417	TERMINAL				USECO
1	1	CRI	SKB-25/04	DIODE BRIDGE				SEMI-KRON
-	1	C7	MMW6W1	CAP, FXD, PAPER	10.0μF		600V	CDE
1	1	C1	91C150CF52	CAP, FXD, ELEC	5000μF		150V	STM
508	508							
509	509							
500	500							
501	501							
502	502							
503	503							
504	504							
505	505							
506	506							
507	507							
508	508							

Select from list of prices  
At terminal per Del. Price

ORIGINATOR DWB/eth DATE 25 Mar 86  
 DWG. NO. PL1000835  
 SHEET 2 OF REV J

APPROVED DATE APPROVED DATE  
 E.E. M.E.  
 TITLE HVPS ASSY



ITEM OR SYMBOL	QUANTITY REQUIRED										PART NO.	DESCRIPTION	VALUE	TOL	FRATING	SPECIFICATION OR VENDOR	
	509	508	507	506	505	504	503	502	501								
25																	
24																	
23																	
22																	
21																	
20																	
19																	
18																	
17																	
16																	
15																	
14																	
13																	
12	2	2									1/4 ID	SOLDER LUG	(for VR2 & VR3)				
11	1	1									3/2 DIA	HOSE CLAMP					
10	1	1									1/4 DIA	CABLE CLAMP					
9																	
8																	
7																	
6																	
5																	
4																	RR
3	1	1									1000 824 - 101	CHASSIS					
2											1000 834 - 501	REGULATOR ASSY					RR
1	1	1															

APPROVED E.E.	DATE	APPROVED M.E.	DATE	ORIGINATOR DW R0th	DATE 25 Mar 76
TITLE HNPS ASSY			DWG. NO. PL1000835		
			SHEET 3 OF REV H		





509	508	507	506	505	504	503	502	501	ITEM OR SYMBOL	PART NO:	DESCRIPTION	VALUE	TOL	RATING	SPECIFICATION OR VENDOR
									C13	NOT USED					
									C12	DD601	CAP, FxD, CERAMIC	600PF		1KV	CENTRALAB
									C11	C281AB/ AIM	CAP, FxD, MYLAR	1.0 $\mu$ F		250V	MEPCO-ELECTRA
									C10	C281AB/ AIM	CAP, FxD, MYLAR	1.0 $\mu$ F		250V	MEPCO-ELECTRA
									C9	NOT USED					
									C8	19C253 (125 LD20)	CAP, FxD, CERAMIC	.002 $\mu$ F		1KV	SPRAGUE
									C7	VPI2BY333K	CAP, FxD CER	.033 $\mu$ F		1KV	VITRAMON
									C6	19C253 (125 LD20)	CAP, FxD, CERAMIC	.002 $\mu$ F		1KV	SPRAGUE
									C5	C281AB/A120K	CAP, FxD, MYLAR	0.12 $\mu$ F		250V	
									C4	C281AB/ AIM	CAP, FxD, MYLAR	1.0 $\mu$ F		250V	
									C3	TVA-1437	CAP, FxD, ELEC	4.0 $\mu$ F		200V	
									C2	TVA-1437	CAP, FxD, ELEC	4.0 $\mu$ F		200V	
									C1	NOT USED					

APPROVED  DATE \_\_\_\_\_ APPROVED  DATE 25 MAR 76  
 E.E. M.E.

ORIGINATOR DW/2074 DATE 25 MAR 76

TITLE RF BOARD ASSY LOW LEVEL DWG. NO. PL1000838

SHEET 2 OF REV J




509	508	507	506	505	504	503	502	501	ITEM OR SYMBOL	PART NO.	DESCRIPTION	VALUE	TOL RATING	SPECIFICATION OR VENDOR
										1000801-101	PC BOARD			R
									T7	1000643-626	FERRITE CORE			R
									T6	1000643-626	FERRITE CORE			R
									T5	1000643-626	FERRITE CORE			R
									T4	. NOT USED				
									T3	1000643-625	FERRITE CORE			R
									T2	1000643-625	FERRITE CORE			R
									T1	1000643-626	FERRITE CORE			R

ORIGINATOR DW Roth DATE 25 Mar 76  
 DWG. NO. PL1000838  
 SHEET 3 OF REV D

APPROVED \_\_\_\_\_ DATE \_\_\_\_\_ APPROVED \_\_\_\_\_ DATE \_\_\_\_\_  
 E.E. M.E.  
 TITLE RF BOARD ASSY  
 LOW LEVEL



509	508	507	506	505	504	503	502	501	ITEM OR SYMBOL	PART NO.	DESCRIPTION	VALUE	TOL	RATING	SPECIFICATION OR VENDOR
									RIS		RES, FXD, COMP	18- $\Omega$	5%	1W	
									RIA		RES, FXD, COMP	100- $\Omega$	5%	1/2W	
									R13	1532	RES, FXD, WW	1.0K	-	8W	OHMITE
									R12	1532	RES, FXD, WWJ	1.0K	-	8W	OHMITE
									R11	NOT USED					
									R10	1504	RES, FXD, WW	5.0- $\Omega$	-	8W	OHMITE
									R9	1504	RES, FXD, WW	5.0- $\Omega$	-	8W	OHMITE
									R8	1532	RES, FXD, WWJ	1.0K	-	8W	OHMITE
									R7	1711	RES, FXD, WW	12- $\Omega$	-	12W	OHMITE
									R6	1532	RES, FXD, WWJ	1.0K	-	8W	OHMITE
									R5	1516	RES, FXD, WW	100- $\Omega$	-	8W	OHMITE
									R4	NOT USED					
									R3	NOT USED					
									R2	NOT USED					
									R1	NOT USED					



APPROVED E.E.

TITLE RF BOARD ASSY

LOW LEVEL

APPROVED M.E.

DWG. NO. PL1000838

SHEET 4 OF REV D

ORIGINATOR D1112014

DATE 25 Mar 76

509	508	507	506	505	504	503	502	501	ITEM OR SYMBOL	PART NO.	DESCRIPTION	VALUE	TOL	RATING	SPECIFICATION OR VENDOR
									R21		RES, FXD, COMP	470- $\Omega$	5%	2W	
									R20		RES, FXD, COMP	4.7K	5%	1/4W	
									R19		RES, FXD, COMP	33- $\Omega$	5%	2W	
									R18		RES, FXD, COMP	24- $\Omega$	5%	2W	
									R17		RES, FXD, COMP	24- $\Omega$	5%	2W	
									R16		RES, FXD, COMP	12- $\Omega$	5%	2W	

**AMPLIFIER RESEARCH**  
 APPROVED E.E. \_\_\_\_\_ DATE \_\_\_\_\_ APPROVED M.E. \_\_\_\_\_ DATE \_\_\_\_\_  
 ORIGINATOR DJL/RLH DATE 25 May 76  
 TITLE RF BOARD ASSY  
 DWG. NO. PL1000838  
 SHEET 5 OF REV E  
 LOW LEVEL

Item No.	Date	Qty 503	Qty 504	Qty 505	Qty 506	Qty 507	Qty 508	Qty 509	Item Symbol	Part No.	Description	Value	Tol	Rating	Specification or Vendor
A	12 Apr 76								Q3	2N6497	TRANSISTOR				MOTOROLA
B	26 Jul 76	1	1	1	1	1	1		Q2	2N6497	TRANSISTOR				MOTOROLA
C	12 Nov 76	1	1	1	1	1	1		Q1	2N6497	TRANSISTOR				MOTOROLA
D	23 Nov 77	2	2	2	2	2	2		TS1	TS3-75	THERMAL SENSOR				MULTI-STATE
E	3 Mar 78	2	2	2	2	2	2		J1	33-774	CONN. COAX				GCELECTRONICS
F	9 FEB 82								19						
									18						THERMALLOY
		3	3	3	3	3	3		17	4778A	INSULATOR				
		9	9	9	9	9	9		16	02-09-2118	PIN, MALE				
		1	1	1	1	1	1		15	03-09-2151	CONN SHELL, FEMALE (CABLE LENGTH 6 1/2")			15PIN	WALDOM
									14						
									13						
		1	1	1	1	1	1		12	3/16 DIA	CABLE CLAMP				
									11						
		AR	AR	AR	AR	AR	AR		10	AWG 22	SHIELDED WIRE				
									9						
									8						
									7						
		1	-	-	-	-	-		6	1000838-503	RF BOARD ASSY, LO LEVEL				
		2	-	-	-	-	-		5	1001058-501	RF BOARD ASSY, FINAL				
		-	1	-	-	-	-		4	1000838-502	RF BOARD ASSY LO LEVEL				
		2	2	2	2	2	2		3	1000807-101	SPACER BAR				
		-	-	-	-	-	-		2	1000838-501	RF BOARD ASSY LO LEVEL				
		-	-	-	-	-	-		1	1000840-501	RF BOARD ASSY FINAL				

QUANTITY REQUIRED 851

700A 850 796

APPROVED E.E. DATE APPROVED M.E. DATE

ORIGINATOR DWR, JR DATE 1 Apr 76

TITLE MODULE ASSY DWG. NO. PL1000841

POWER AMPLIFIER SHEET 1 OF 1 REV F









QUANTITY REQUIRED			ITEM OR SYMBOL	PART NO.	DESCRIPTION	VALUE	TOL	RATING	SPECIFICATION OR VENDOR
509	508	507							
							(MTG LI)		
							SPACER		
							PC BOARD		
							RES, FXD, COMP	51 Ω	5% 1/2 W
							RES, FXD, COMP	51 Ω	5% 1/2 W
							FERRITE CORE		RR
							FERRITE CORE		RR
							FERRITE CORE		RR
							FERRITE CORE		RR
							RES, FXD, WW	3 Ω	20W OHMITE
							RES, FXD, COMP	100 Ω	5% 1/2 W
							RES, FXD, COMP	100 Ω	5% 1/2 W
							RES, VAR	25 K	5% 1/4 W CTS
							RES, VAR	25 K	5% 1/4 W CTS
							RES, FXD, COMP	100 Ω	5% 1/2 W
							RES, FXD, COMP	100 Ω	5% 1/2 W
							RES, FXD, WW	25 Ω	20W OHMITE
							RES, FXD, WW	25 Ω	20W OHMITE
							ITEM OR SYMBOL	VALUE	TOL RATING SPECIFICATION OR VENDOR

1/4 Hex #6 x 1/4

1000858-101

1000 643- 625  
1000 643- 625  
1000 643- 625  
1000 643- 625

1802C

U201R253B  
U201R253B

1805  
1805

QUANTITY REQUIRED

ORIGINATOR DWP/jk DATE  
DWG. NO. PL1000852  
SHEET 3 OF REV 9

APPROVED E.E. DATE APPROVED M.E. DATE  
TITLE POWER COMB & DIRECTNL DETECTR



509	508	507	506	505	504	503	502	501	ITEM OR SYMBOL	PART NO.	DESCRIPTION	VALUE	TOL	RATING	SPECIFICATION OR VENDOR					
								1	837											
								1		GDIN056P500PA	ATTENUATOR	50Ω			ALLEN BRADLE					
								2												
								3		RK07	RES, FXD, COMP	51Ω	5%	1/4W	ANY					
								4												
								5		1/4" 10	LUG, GND									
								6												
								7												
								8												
								9												
								10												

ORIGINATOR P.R.W. DATE 19 Oct 77  
 DWG. NO. PL1001042  
 SHEET 1 OF 1 REV A

APPROVED E.E. \_\_\_\_\_ DATE \_\_\_\_\_ APPROVED M.E. \_\_\_\_\_ DATE \_\_\_\_\_  
 TITLE ATTENUATOR ASSY

QUANTITY REQUIRED



A		17 APR 78		1001052					SCHEMATIC DIAGRAM					R	
509	508	507	506	505	504	503	502	501	ITEM OR SYMBOL	PART NO.	DESCRIPTION	VALUE	TOL	RATING	SPECIFICATION OR VENDOR
QUANTITY REQUIRED															
									700A	SHEET	KEY				
										1	B				
										2	A				
										3	-				
										4	-				
										5	B				
										6	-				

APPROVED E.E.		DATE	APPROVED M.E.	DATE	ORIGINATOR	P.R.W.	DATE
TITLE				LOGIC BOARD ASSY, AI	16 Nov 77		
DWG. NO.		PL1001053			SHEET 1 OF 6 REV B		





509	508	507	506	505	504	503	502	501	ITEM OR SYMBOL	PART NO.	DESCRIPTION	VALUE	TOL	RATING	SPECIFICATION OR VENDOR
									R5	RC07	RES, FXD, COMP	3.3K	5%	$\frac{1}{4}$ W	ANY
									R4	RC07	RES, FXD, COMP	3.3K	5%	$\frac{1}{4}$ W	ANY
									R3	RC07	RES, FXD, COMP	3.3K	5%	$\frac{1}{4}$ W	ANY
									R2	RC07	RES, FXD, COMP	3.3K	5%	$\frac{1}{4}$ W	ANY
									R1	RC07	RES, FXD, COMP	3.3K	5%	$\frac{1}{4}$ W	ANY
									Q7	2N3906	TRANSISTOR				ANY
									Q6	2N3904	TRANSISTOR				ANY
									Q5	2N3904	TRANSISTOR				ANY
									Q4	2N3904	TRANSISTOR				ANY
									Q3	2N3904	TRANSISTOR				ANY
									Q2	2N3906	TRANSISTOR				ANY
									Q1	2N3904	TRANSISTOR				ANY

<b>AMPLIFIER RESEARCH</b>		APPROVED DATE	APPROVED DATE	ORIGINATOR	DATE
		E.E.	M.E.	P.R.W.	16 Nov 71
TITLE LOGIC BOARD ASSY, AI				DWG. NO. PL1001053	
			SHEET 3 OF	REV	





				QUANTITY REQUIRED																	
509	508	507	506	505	504	503	502	501	ITEM OR SYMBOL	PART NO.	DESCRIPTION	VALUE	TOL	RATING	SPECIFICATION OR VENDOR						
									R33	RC07	RES, FXD, COMP	470Ω	5%	1/4W	ANY						
									R32	RC07	RES, FXD, COMP	1.8K	5%	1/4W	ANY						
									R31	RC07	RES, FXD, COMP	3.3K	5%	1/4W	ANY						
									R30	RC07	RES, FXD, COMP	470Ω	5%	1/4W	ANY						
									R29	U201R503B	RES, VAR, COMP	50K	20%	1/4W	CTS						
									R28	RC07	RES, FXD, COMP	4.7K	5%	1/4W	ANY						
									R27	RC07	RES, FXD, COMP	10K	5%	1/4W	ANY						
									R26	RC07	RES, FXD, COMP	470Ω	5%	1/4W	ANY						
									R25	U201R503B	RES, VAR, COMP	50K	20%	1/4W	CTS						
									R24	RC07	RES, FXD, COMP	2.2K	5%	1/4W	ANY						
									R23	RC07	RES, FXD, COMP	3.3K	5%	1/4W	ANY						
									R22	RC07	RES, FXD, COMP	1.0K	5%	1/4W	ANY						
									R21	RC07	RES, FXD, COMP	680Ω	5%	1/4W	ANY						

**AMPLIFIER RESEARCH**

APPROVED E.E. \_\_\_\_\_ DATE \_\_\_\_\_ APPROVED M.E. \_\_\_\_\_ DATE \_\_\_\_\_

ORIGINATOR P.R.W. DATE 16 Nov 77

TITLE LOGIC BOARD ASSY, A1 DWG. NO. PL1001053

SHEET 5 OF REV B



509	508	507	506	505	504	503	502	501	ITEM OR SYMBOL	PART NO.	DESCRIPTION	VALUE	TOL	RATING	SPECIFICATION OR VENDOR	
																QUANTITY REQUIRED
									5							
									4							
									3							
									2							
									1	100820-101	PC BOARD					AR
									1	C93-16-02	SOCKET, IC, 16 PIN, DIP					TI
									1	VR2 IN5230	DIODE, ZENER	4.7V			.5A	ANY
									1	VR1 IN5230	DIODE, ZENER	4.7V			.5A	ANY
									1	VI CA3081	IC, XSTR ARRAY, 16 LEAD, DIP					RCA

**AMPLIFIER RESEARCH**

APPROVED E.E.	DATE	APPROVED M.E.	DATE	ORIGINATOR	P.R.W.	DATE
						16 Nov 77
TITLE LOGIC BOARD ASSY, AI				DWG. NO.	PL1001053	
				SHEET 6	OF	REV -

DATE		QUANTITY REQUIRED					REF	REF	ITEM OR SYMBOL	PART NO.	DESCRIPTION	VALUE	TOL	RATING	SPECIFICATION OR VENDOR											
A	B	C	D					501	502	503	504	505	506	507	508	509										
3	MAY 78																									
17	APR 78																									
5	FEB 79																									
13	NOV 80																									

ORIGINATOR P.R.W.    DATE 22 Nov 77  
 DWG. NO. PL1001056  
 SHEET 1 OF 5    REV D

APPROVED E.E. \_\_\_\_\_    DATE \_\_\_\_\_    APPROVED M.E. \_\_\_\_\_    DATE \_\_\_\_\_  
 TITLE LOGIC BOARD ASSY, A2



MODEL 700A3    MODEL 700A

1001050

AR

SCHEMATIC DIAGRAM

REF

REF

ITEM OR SYMBOL

PART NO.

DESCRIPTION

VALUE

TOL

RATING

SPECIFICATION OR VENDOR

QUANTITY REQUIRED		ITEM OR SYMBOL	PART NO.	DESCRIPTION	VALUE	TOL	RATING	SPECIFICATION OR VENDOR
509	508							
		-	C16	CAP, FXD, CERAMIC	47 PF			ERIE
		-	C15	811-000Z5U0103M	.01 $\mu$ F		500V	ERIE
		-	C14	TVA-1305.5	20 $\mu$ F		50V	SPRAGUE
		1	C13	39D158G040HPO	1500 $\mu$ F		40V	SPRAGUE
		1	C12	811-000Z5U0103M	.01 $\mu$ F		500V	ERIE
		1	C11	TVA-1310	100 $\mu$ F		50V	SPRAGUE
		1	C10	811-000Z5U0103M	.01 $\mu$ F		500V	ERIE
		1	C9	TVA-1305.5	20 $\mu$ F		50V	SPRAGUE
		-	C8	NOT USED				
		-	C7	NOT USED				
		1	C6	TVA-1305.5	20 $\mu$ F		50V	SPRAGUE
		1	C5	176D685X0035HA1	6.8 $\mu$ F		35V	SPRAGUE
		1	C4	5815-000Y5U104M	0.1 $\mu$ F		25V	ERIE
		1	C3	FC150	15 PF			AR
		1	C2	811-000Z5U0103M	.01 $\mu$ F		500V	ERIE
		1	C1	811-000Z5U0103M	.01 $\mu$ F		500V	ERIE

**AMPLIFIER RESEARCH**

APPROVED E.E. \_\_\_\_\_ DATE \_\_\_\_\_ APPROVED M.E. \_\_\_\_\_ DATE \_\_\_\_\_

ORIGINATOR P.R.W. DATE 22 Nov 77

TITLE LOGIC BOARD ASSY, A2 DWG. NO. PL1001056

SHEET 2 OF REV B

509	508	507	506	505	504	503	502	501	QUANTITY REQUIRED					ITEM OR SYMBOL	PART NO.	DESCRIPTION	VALUE	TOL	RATING	SPECIFICATION OR VENDOR
								1	1	1	1	1	1	R1	RC07	RES, FXD, COMP	10K	5%	±W	ANY
								1	1	1	1	1	R2	RC07	RES, FXD, COMP	10K	5%	±W	ANY	
								1	1	1	1	1	R3	RC07	RES, FXD, COMP	68K	5%	±W	ANY	
								1	1	1	1	1	R4	RC07	RES, FXD, COMP	680Ω	5%	±W	ANY	
								1	1	1	1	1	R5	RC07	RES, FXD, COMP	2.2K	5%	±W	AI	
								1	1	1	1	1	Q1	2N3904	TRANSISTOR					ANY
								1	1	1	1	1	Q2	MPS-μ01	TRANSISTOR					MOTOROLA
								1	1	1	1	1	Q3	2N3904	TRANSISTOR					ANY
								1	1	1	1	1	Q4	2N3904	TRANSISTOR					ANY

APPROVED: \_\_\_\_\_ DATE: \_\_\_\_\_ APPROVED: \_\_\_\_\_ DATE: 22 Nov 77  
 M.E. \_\_\_\_\_ P.R.W. \_\_\_\_\_  
 TITLE: LOGIC BOARD ASSY, A2  
 DWG. NO. PL1001056  
 SHEET 3 OF REV C



509	508	507	506	505	504	503	502	501	ITEM OR SYMBOL	PART NO.	DESCRIPTION	VALUE	TOL	RATING	SPECIFICATION OR VENDOR
									R22	RC07	RES, FXD, COMP.	2.2K	5%	1/4W	ANY
									R21	4549	RES, FXD, WW	5Ω	5%	5W	ANY
									R20	RN60D274ZF	RES, FXD, FILM	27.4K	5%	1/4W	ANY
									R19	RC42	RES, FXD, COMP	560Ω	5%	2W	ANY
									R18	1805	RES, FXD, WW	25Ω		20W	OHMITE
									R17	RC07	RES, FXD, COMP	680Ω	5%	1/4W	ANY
									R16	RC07	RES, FXD, COMP	680Ω	5%	1/4W	ANY
									R15	RC32	RES, FXD, COMP	47Ω	5%	1W	ANY
									R14	RC07	RES, FXD, COMP	12K	5%	1/4W	ANY
									R13	RC07	RES, FXD, COMP	680Ω	5%	1/4W	ANY
									R12	RC07	RES, FXD, COMP	10K	5%	1/4W	ANY
									R11	RC07	RES, FXD, COMP	51Ω	5%	1/4W	ANY
									R10	RC07	RES, FXD, COMP	100Ω	5%	1/4W	ANY
									R9	RC07	RES, FXD, COMP	100Ω	5%	1/4W	ANY
									R8	RC07	RES, FXD, COMP	10K	5%	1/4W	ANY
									R7	RC07	RES, FXD, COMP	2.7Ω	5%	1/4W	ANY
									R6	RC07	RES, FXD, COMP	8.2K	5%	1/4W	ANY

<b>AMPLIFIER RESEARCH</b>		APPROVED E.E.	DATE	APPROVED M.E.	DATE	ORIGINATOR P.R.W.	DATE 22 Nov 77
				TITLE LOGIC BOARD ASSY, A2			
				DWG. NO. PL1001056			
				SHEET 4 OF REV B			

QUANTITY REQUIRED										ITEM OR SYMBOL	PART NO.	DESCRIPTION	VALUE	TOL	RATING	SPECIFICATION OR VENDOR	
508	507	506	505	504	503	502	501										
								1	1		362	HEATSINK					HEAT SINKS PLUS
								1	1		1001051-101	PC BOARD					AR
								1	1		8 ICS	SOCKET, IC	8 PIN				CINCH-JONES
								1	1		8 ICS	SOCKET, IC	8 PIN				CINCH-JONES
								1	1		VR2	DIODE, ZENER	15V		1W		ANY
								1	1		VR1	DIODE, ZENER	4.7V		1/2W		ANY
								1	1		UZ	INTEGRATED CKT					RCA
								1	1		UI	INTEGRATED CKT					RCA

APPROVED E.E. DATE APPROVED M.E. DATE  
 ORIGINATOR P.R.W. DATE 22 Nov 77  
 DWG. NO. PL1001056  
 SHEET 5 OF REV  
**AMPLIFIER RESEARCH**  
 TITLE LOGIC BOARD ASSY, AZ



ECN

3

R 78

A

B

C

1001054

SCHEMATIC DIAGRAM

1001054

REF

13 Nov. 80

4 FEB 82

356

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509 508 507 506 505 504 503 502 501

QUANTITY REQUIRED

MODEL 700A

ITEM OR SYMBOL

PART NO.

DESCRIPTION

VALUE

TOL RATING

SPECIFICATION OR VENDOR

Not PART OF MODEL

7

6

5

4

3

2

1

SHT

REV

APPROVED E.E.

DATE

APPROVED M.E.

DATE

ORIGINATOR P.R.W.

DATE 23 Nov 77

TITLE RF BOARD ASSY

DWG. NO. PL1001058

FINAL AMP

SHEET 1 OF 7

REV C



QUANTITY REQUIRED										ITEM OR SYMBOL	PART NO.	DESCRIPTION	VALUE	TOL	RATING	SPECIFICATION OR VENDOR	
509	508	507	506	505	504	503	502	501									
									1	CR2	IN5061	DIODE					ANY
									1	CR1	IN5061	DIODE					ANY
									1	C9	C281AB/AZM2	CAP, FXD, MYLAR	2.2 $\mu$ F			250V	MERCO-ELECTRA
									1	C8	C281AB/AIM	CAP, FXD, MYLAR	1.0 $\mu$ F			250V	MERCO-ELECTRA
									1	C7	C281AB/AIM	CAP, FXD, MYLAR	1.0 $\mu$ F			250V	MERCO-ELECTRA
									1	C6	C281AB/AIM	CAP, FXD, MYLAR	1.0 $\mu$ F			250V	MERCO-ELECTRA
									1	C5	C281AB/AIM	CAP, FXD, MYLAR	1.0 $\mu$ F			250V	MERCO-ELECTRA
									-	C4	NOT USED						
									-	C3	NOT USED						
									-	C2	NOT USED						
									-	C1	NOT USED						

APPROVED E.E. \_\_\_\_\_ DATE \_\_\_\_\_ APPROVED M.E. \_\_\_\_\_ DATE \_\_\_\_\_  
 ORIGINATOR P.R.W. \_\_\_\_\_ DATE 23 Nov 77  
 TITLE RF BOARD ASSY DWG. NO. PL1001058  
 FINAL AMPLIFIER SHEET 2 OF REV -



**AMPLIFIER RESEARCH**

QUANTITY REQUIRED													SPECIFICATION OR VENDOR		
509	508	507	506	505	504	503	502	501	ITEM OR SYMBOL	PART NO.	DESCRIPTION	VALUE	TOL	RATING	DATE
									1	R5	153Z	RES, FXD, WW	1.0K	8W	OHMITE
									-	R4	NOT USED				
									-	R3	NOT USED				
									1	R2	465I	RES, FXD, WW	8.2K	5W	OHMITE
									1	R1	465I	RES, FXD, WW	8.2K	5W	OHMITE
									1	Q4	DTS-409	TRANSISTOR			DELCO
									1	Q3	DTS-409	TRANSISTOR			DELCO
									1	Q2	DTS-409	TRANSISTOR			DELCO
									1	Q1	DTS-409	TRANSISTOR			DELCO
									1	F2	AGC-3	FUSE	3A		ANY
									1	F1	AGC-3	FUSE	3A		ANY

APPROVED E.E.				DATE	APPROVED M.E.	DATE	ORIGINATOR	DATE
TITLE				RF BOARD ASSY			P.R.W.	23 Nov 77
FINAL AMP							DWG. NO.	PL1001058
							SHEET 3	OF REV -



QUANTITY REQUIRED										ITEM OR SYMBOL	PART NO.	DESCRIPTION	VALUE	TOL	RATING	SPECIFICATION OR VENDOR	
509	508	507	506	505	504	503	502	501									
										1	R19	1808	RES, FXD, WW	100Ω		20W	OHMITE
										-	R18	NOT USED					
										-	R17	NOT USED					
										1	R16	4539	RES, FXD, WW	2.4Ω		5W	OHMITE
										1	R15	4539	RES, FXD, WW	2.4Ω		5W	OHMITE
										1	R14	4531	RES, FXD, WW	2.4Ω		5W	OHMITE
										1	R13	4539	RES, FXD, WW	2.4Ω		5W	OHMITE
										1	R12	1532	RES, FXD, WW	1.0K		8W	OHMITE
										1	R11	4651	RES, FXD, WW	8.2K		5W	OHMITE
										1	R10	4651	RES, FXD, WW	8.2K		5W	OHMITE
										1	R9	1532	RES, FXD, WW	1.0K		8W	OHMITE
										1	R8	1532	RES, FXD, WW	1.0K		8W	OHMITE
										-	R7	NOT USED					
										-	R6	NOT USED					

APPROVED E.E. \_\_\_\_\_ DATE \_\_\_\_\_ APPROVED M.E. \_\_\_\_\_ DATE \_\_\_\_\_  
 ORIGINATOR P.R.W. DATE 23 Nov. 7  
 TITLE RF BOARD ASSY DWG. NO. PL1001058  
 FINAL AMP SHEET 4 OF REV A



QUANTITY REQUIRED										VALUE	TOL	RATING	SPECIFICATION OR VENDOR				
509	508	507	506	505	504	503	502	501	ITEM OR SYMBOL					DESCRIPTION	PART NO.	DATE	APPROVED M.E.
									2	XF2	798						ZIERICK
									2	XF1	798						ZIERICK
									1	T5	1000643-625						AR $\triangle$
									1	T4	1000643-625						AR $\triangle$
									1	T3	1000643-625						AR $\triangle$
									1	T2	1000643-626						AR $\triangle$
									1	T1	1000643-626						AR $\triangle$

<b>AMPLIFIER RESEARCH</b>		APPROVED E.E.	DATE	APPROVED M.E.	DATE	ORIGINATOR	DATE
		TITLE RF BOARD ASSY		DWG. NO. PL1001058		PR.W.	23 Nov 77
		FINAL AMPLIFIER		SHEET 5 OF		REV -	





		QUANTITY REQUIRED													
509	508	507	506	505	504	503	502	501	ITEM OR SYMBOL	PART NO.	DESCRIPTION	VALUE	TOL	RATING	SPECIFICATION OR VENDOR
									F1	ABC-15	FUSE	15A		250V	ANY
									DS4	(PART OF S4)	LIGHT, IND				
									DS3	NOT USED					
									DS2	5082-4853 5082-4707	LED WITH MTG KIT				HP
									DS1	5082-4855 5082-4707	LED WITH MTG KIT				HP
									B2	WS2107FL	FAN, BOXER				IMC
									B1	WS2107FL	FAN, BOXER				IMC

APPROVED E.E.	DATE	APPROVED M.E.	DATE	ORIGINATOR	P.R.V.	DATE	23 Nov 77
TITLE				HOUSING & INTERFACE ASSY			
DWG. NO.				PL1001060			
SHEET				2 OF REV D			





QUANTITY REQUIRED										ITEM OR SYMBOL	PART NO.	DESCRIPTION	VALUE	TOL RATING	SPECIFICATION OR VENDOR
508	509	506	505	504	503	502	501								
										J10	UG-568/U	CONNECTOR, COAX	C		ANY
										J10	UG-625 B/U	CONNECTOR, COAX	BNC		ANY
										J10	UG-2628U	CONNECTOR, COAX	BNC		ANY
										J9	KC-19-288	CONNECTOR, COAX	BNC		KINGS
										J9	UG-625 B/U	CONNECTOR, COAX	BNC		ANY
										J8	NOT USED				
										J7	NOT USED				
										J6	NOT USED				
										J5	02-09-2118	PIN, MALE			WALDOM
										J5	02-09-1118	PIN, FEMALE			WALDOM
										J5	03-09-1151	SHELL, FEMALE			WALDOM
										J4	02-09-2118	PIN, MALE			WALDOM
										J4	02-09-1118	PIN, FEMALE			WALDOM
										J4	03-09-1151	SHELL, FEMALE			WALDOM
										J3	02-09-2118	PIN, MALE			WALDOM
										J3	02-09-1118	PIN, FEMALE			WALDOM
										J3	03-09-1151	SHELL, FEMALE			WALDOM
										J2	143-036-01	CONNECTOR, PC			AMPHENOL
										J1	143-036-01	CONNECTOR, PC			AMPHENOL
															SPECIFICATION OR VENDOR

APPROVED E.E. \_\_\_\_\_ DATE \_\_\_\_\_ APPROVED M.E. \_\_\_\_\_ DATE \_\_\_\_\_  
 ORIGINATOR P.R.W. DATE 23 Nov 77  
 TITLE HOUSING & INTERFACE ASSY DWG. NO. PL1001060  
 SHEET 3 OF REV. G



509	508	507	506	505	504	503	502	501	ITEM OR SYMBOL	PART NO.	DESCRIPTION	VALUE	TOL	RATING	SPECIFICATION OR VENDOR	LI.	FUSE	QUANTITY REQUIRED	
											FUSEHOLDER								
											DIODE, ZENER						ANY		
											VARISTOR						GE		
											TRANSFORMER IMP MATCHING						AR		
											TRANSFORMER IMP MATCHING						AR		
											TRANSFORMER						AR		
											SWITCH, ROTARY						CENTRALAB		
											SWITCH, ROTARY						CENTRALAB		
											SWITCH						CARLING		
											SWITCH, PB						ALCO		
											SWITCH, INTERLOCK						HONEYWELL		
											METER						AR		

APPROVED E.E. \_\_\_\_\_ DATE \_\_\_\_\_  
 APPROVED M.E. \_\_\_\_\_ DATE \_\_\_\_\_  
 ORIGINATOR P.R.W. DATE 23 Nov 77  
 DWG. NO. PL1001060  
 SHEET 4 OF REV F



TITLE HOUSING + INTERFACE ASSY

509	508	507	506	505	504	503	502	501	ITEM OR SYMBOL	PART NO.	DESCRIPTION	VALUE	TOL	RATING	SPECIFICATION OR VENDOR
									25		CABLE, COAX (95J)	FOR OUTPUT CABLE			
						36"			24	R9-210/U					
								AR	23	R9-142 B/U					
									22	1000249-101	NAMEPLATE				AR
									21	1/4 HEX x 6-32 x 2 1/4	SPACER (MTG J3, J4, J5)				
									20	1/4 HEX x 6-32 x 3/4	SPACER (PC BOARD SUPPORT)				
									19	1/4 HEX x 6-32 x 5/8	SPACER (MTG J1 + J2)				
									18	1/4 HEX x 6-32 x 1/2	SPACER (MTG PWR COMBINER & TRANSFORMER)				
									17	1/4 HEX x #6 x 1/2	SPACER (PC BOARD SUPPORT)				
									16	RB-67-1-SK-7-M	KNOB, SKIRTED 8" SHAFT				ROGAN
									15	RB-67-1-P-DG-M	KNOB, POINTER				ROGAN
									14	1523	STRAIN RELIEF				GC
									13	17419	LINE CORD				BELDEN
									12	ED155B	HANDLE				UNIKORP
									11	2182	FOOT, CHASSIS				H.H. SMITH
									10	65-175	GUARD, FINGER				IMC
									9	2005	TERMINAL STRIP				CINCH-JONES
									8	1000832-111-1	PANEL, FRONT				FR
									7	1000832-102-1	PANEL, REAR				FR
									6	1001042-501	ATTENUATOR				AR
									5	1000860-101	PLATE, MTG, COMM.				AR
									4	1000832-301	PLATE, SIDE, INTERNAL				AR
									3	1000832-105	PLATE, MTG, BOTTOM				AR
									2	1000832-119-2	PANEL, REAR				AR
									1	1000832-116-1	PANEL, FRONT				AR

**AMPLIFIER RESEARCH**  
 APPROVED E.E. \_\_\_\_\_ DATE \_\_\_\_\_ APPROVED M.E. \_\_\_\_\_ DATE \_\_\_\_\_  
 ORIGINATOR P.R.W. DATE 23 Nov 77  
 TITLE INTERFACE & HOUSING ASSY DWG. NO. PL1001060  
 SHEET 5 OF REV E

508	507	506	505	504	503	502	501	QUANTITY REQUIRED			ITEM OR SYMBOL	PART NO.	DESCRIPTION	VALUE	TOL RATING	SPECIFICATION OR VENDOR
								700A	700A MS	701D						

700A



TITLE AMPLIFIER ASSY  
MODEL 700A SERIES

DATE

DATE 28 Nov 77

ORIGINATOR P.R.W.  
DWG. NO. PL1001061

SHEET 1 OF 1 REV C

SECTION VI  
SCHEMATICS

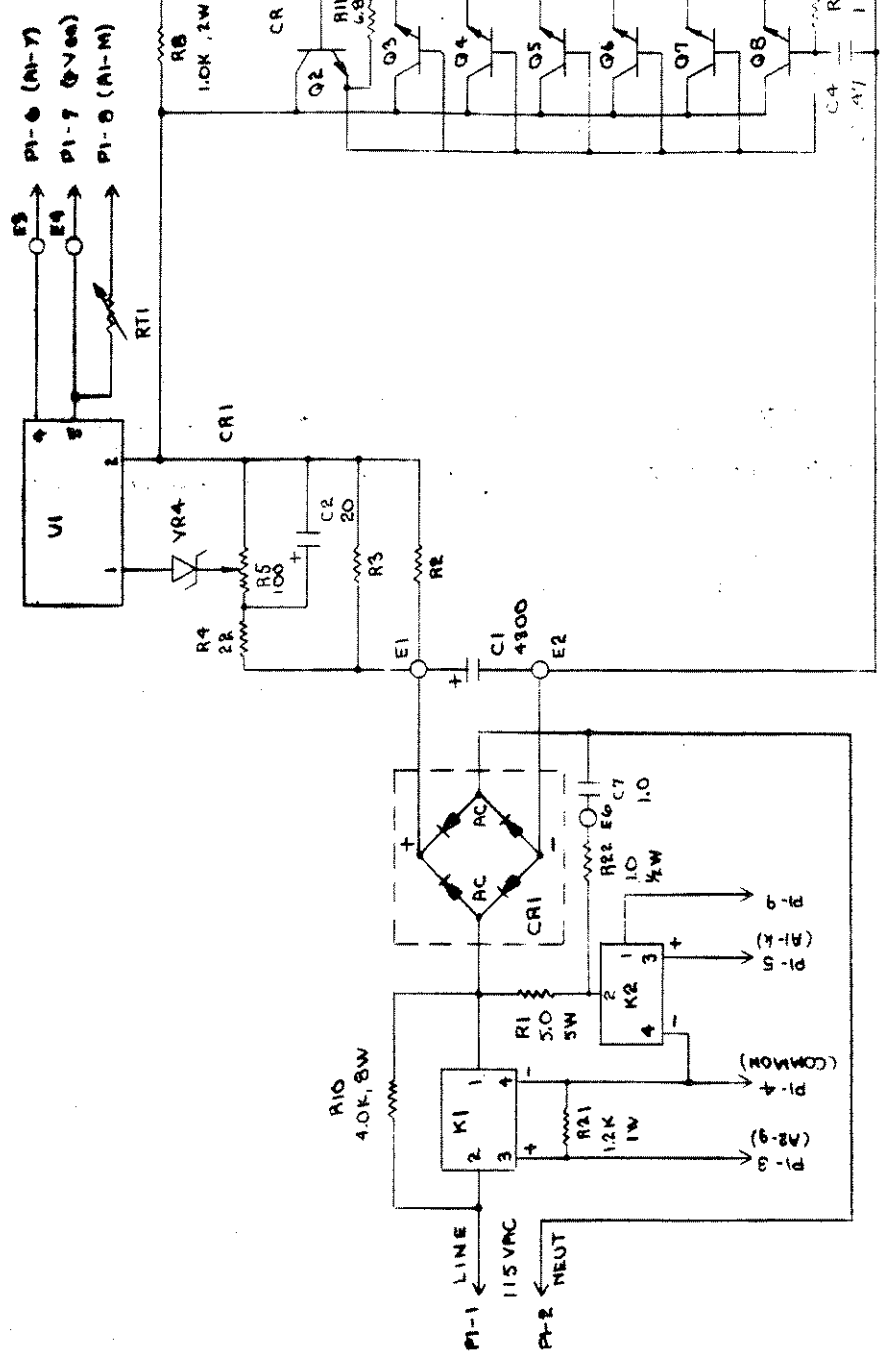
REV	A	B	C	D	E	F	G	H
DATE								
BY								
CHKD								
APP'D								

0 VDC  
X-14

3(1)  
5(1)

M	A	T	L
REV			
DATE			
BY			
CHKD			
APP'D			

DA	9A	33A	12A	95A	10A	4A	20A
REV							
DATE							
BY							
CHKD							
APP'D							



**REFERENCE DESIGNATIONS**

LAST USED	R6, R7
C7	R25
CR1	RT1
K2	VR4
Q5	U1
E6	P1

- NOTES:
- 1.0 UNLESS OTHERWISE SPECIFIED:  
RESISTOR VALUES ARE OHMS  
RESISTOR RATINGS ARE 1/4W  
CAPACITOR VALUES ARE MICROFARADS
  - 2.0 THIS SCHEMATIC MAY REPRESENT MULTIPLE ASSEMBLES. SEE APPROPRIATE PARTS LIST FOR FINAL COMPONENT VALUES.

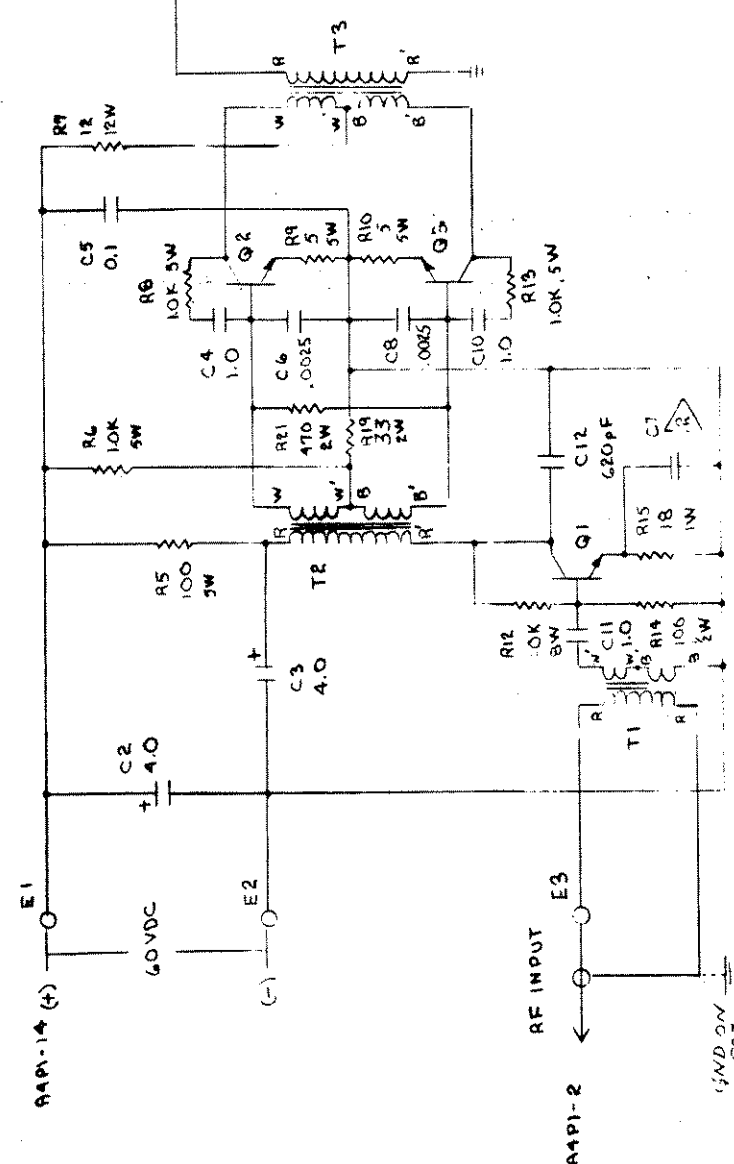
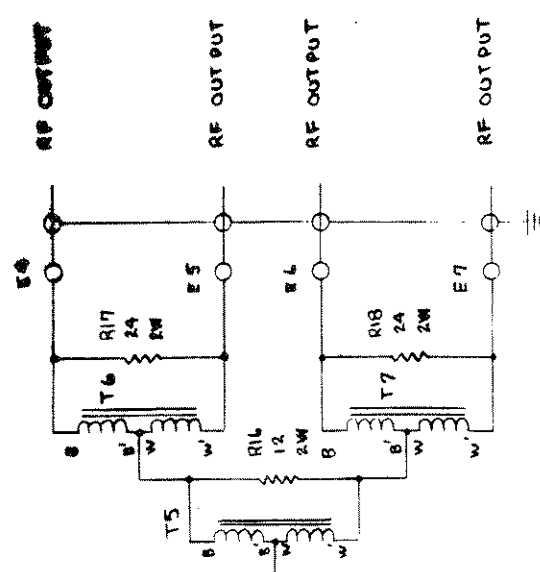
PART NO.		DESCRIPTION	
QTY. REQ'D.		PARTS LIST	
I T E M		DRAWN DUBB-4	
UNLESS OTHERWISE SPECIFIED DO NOT SCALE DRAWING.		DATE 3 May 74	
DIMENSIONS ARE IN INCHES AND DECIMAL PLATING THICKNESS.		DATE	
ALL THREADS ARE UNFINED NATIONAL SERIES, CLASS 2.		DATE	
REMOVE ALL BURRS AND SHARP EDGES.		DATE	
TOLERANCES: ±.010.		DATE	

**SCHEMATIC DIAGRAM**  
**HVPS & REG ASS**

DWG. NO. **1000933**

SHEET 1 OF 1

18 May 61  
17 Jun 61  
8 Sep 61  
4 Dec 61  
3 Jan 62  
18 Apr 62



UNLESS OTHERWISE SPECIFIED DO NOT SCALE DRAWING.

DIMENSIONS ARE IN MILLIMETERS AND INCLUDE PLATING THICKNESS. ALL THREADS ARE UNLESS OTHERWISE SPECIFIED. REMOVE ALL BURRS AND SHARP EDGES. TOLERANCES ± .001.

QTY. REQ. I T E M

PART NO. DESCRIPTION PARTS LIST  
DRAWN DUJ/RLH  
DATE 21 Mar 76  
CHKD

SCHEMATIC DIAG  
LOW LEVEL AMP  
DWG. NO. 1000837-1  
SHEET 1 OF 1

REFERENCE DESIGNATIONS

LAST USED	NOT USED
C12 T7	C1, C9, C13
E7	R1, R2, R3, R4, R11
Q3	R20
R21	T4

NOTES

- 1.0 UNLESS OTHERWISE SPECIFIED 1.0 CAPACITOR VALUES ARE SHOWN IN MICROFARADS
- 1.2 RESISTOR VALUES ARE SHOWN IN OHMS
- 1.3 RESISTOR RATINGS ARE 1/2 WATT

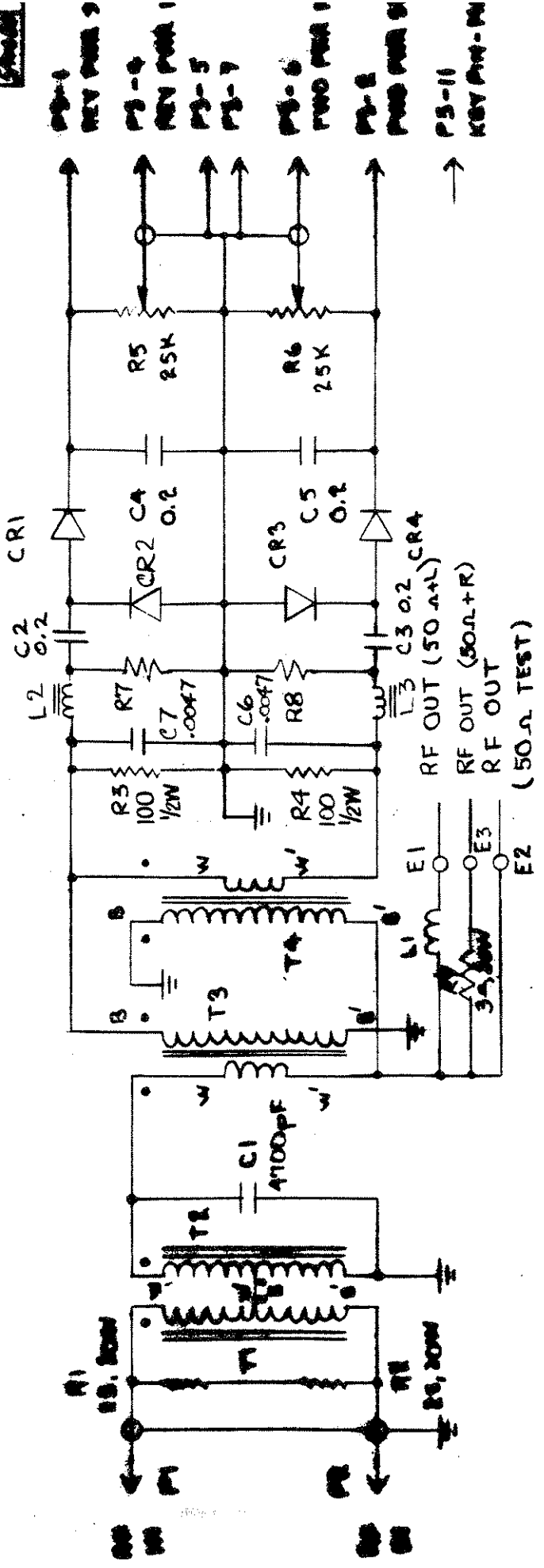
△ 20 SEE APPROPRIATE PARTS LIST FOR COMPONENT VALUES

5ND ON  
-503  
ONLY

A  
B  
C  
D  
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P  
Q  
R  
S  
T  
U  
V  
W  
X  
Y  
Z

DATE	17 Apr 76
DESIGNER	SPM/TB
DATE	5 May 76
DESIGNER	SPM/TB
DATE	5 Jun 76
DESIGNER	SPM/TB



- P3-1 REV PAGE 2
- P3-4 REV PAGE 1
- P3-5
- P3-7
- P3-6 TWO PAGE 1
- P3-8
- P3-11 KEY PIV - PA

**NOTES:**

- 1.0 UNLESS OTHERWISE SPECIFIED:  
RESISTOR VALUES ARE OHMS  
RESISTOR RATINGS ARE 1/4 WATT  
CAPACITOR VALUES ARE MICROFARADS
- 2.0 THIS SCHEMATIC MAY REPRESENT MULTIPLE ASSEMBLIES. SEE APPROPRIATE PARTS LIST FOR FINAL COMPONENT VALUES.

**REFERENCE DESIGNATIONS**

- LAST USED    NOT USED
- C7    P3
  - CR4    R9
  - E3    T4
  - 3

850  
700A  
796

QTY. REQD.		I T E M		PART NO.		DESCRIPTION	
UNLESS OTHERWISE SPECIFIED				DRAWN DW/ROTH			
DO NOT SCALE DRAWING.				DATE 1 Apr 76			
DIMENSIONS ARE IN INCHES AND INCLUDE PLATING THICKNESS.				CHKD			
ALL THREADS ARE UNIFIED NATIONAL SERIES, CLASS 2.				DATE			
REMOVE ALL BURRS AND SHARP EDGES.				MECH			
TOLERANCE : ±.010.				DATE			
PARTS LIST		MARK		M		F	
PARTS LIST		MARK		A		I	
PARTS LIST		MARK		R		N	



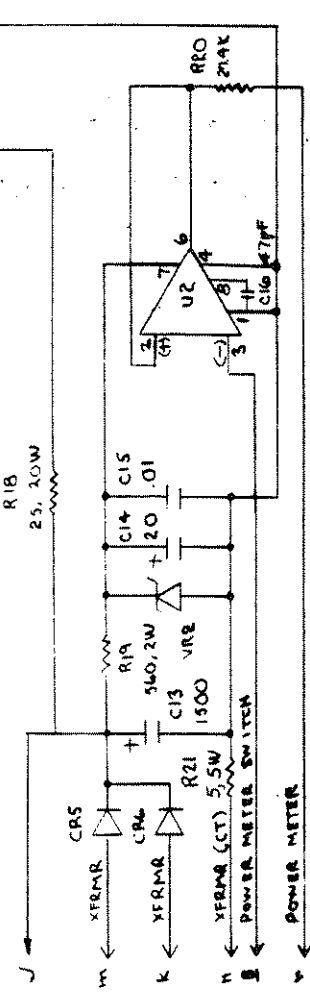
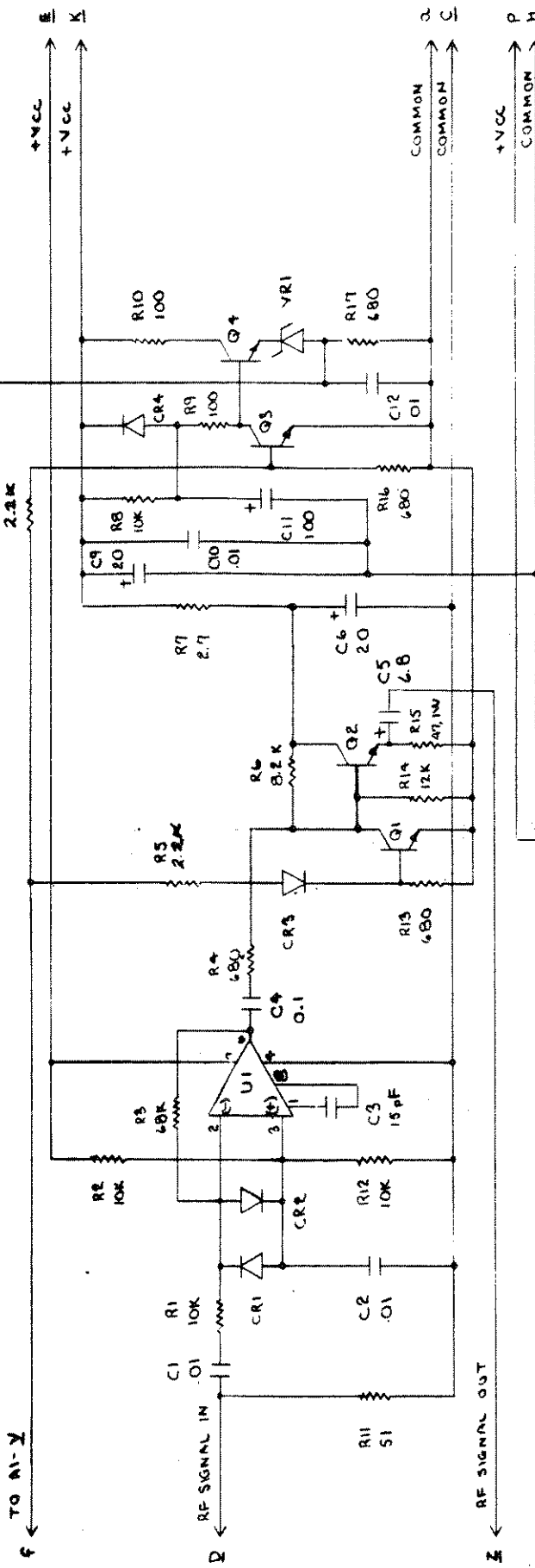
**SCHEMATIC DIAG.**  
**FINAL COMB & DETEC**

DWG. NO.	1000845
SCALE	NONE
DWG. NO.	1000845
SCALE	NONE
DATE	
ELFC	
DATE	

SHEET 1



PRIMARY AC RELAY CONTROL



- NOTES:
- 1.0 UNLESS OTHERWISE SPECIFIED  
RESISTOR VALUES ARE OHMS  
RESISTOR RATINGS ARE W  
CAPACITOR VALUES ARE MICROFARADS
- 2.0 THIS SCHEMATIC MAY REPRESENT MULTIPLE  
ASSEMBLIES. SEE APPROPRIATE PARTS LIST

REFERENCE DESIGNATIONS  
**LAST USED** **NOT USED**

C1, C2	C1, C2
C3, C4	C3, C4
C5, C6	C5, C6
C7, C8	C7, C8
C9, C10	C9, C10
C11, C12	C11, C12
C13, C15	C13, C15
C16	C16

PART NO.		DESCRIPTION	MARK
000014	000014		
15 Nov 77	15 Nov 77		

**AMPLIFIER RESEARCH**

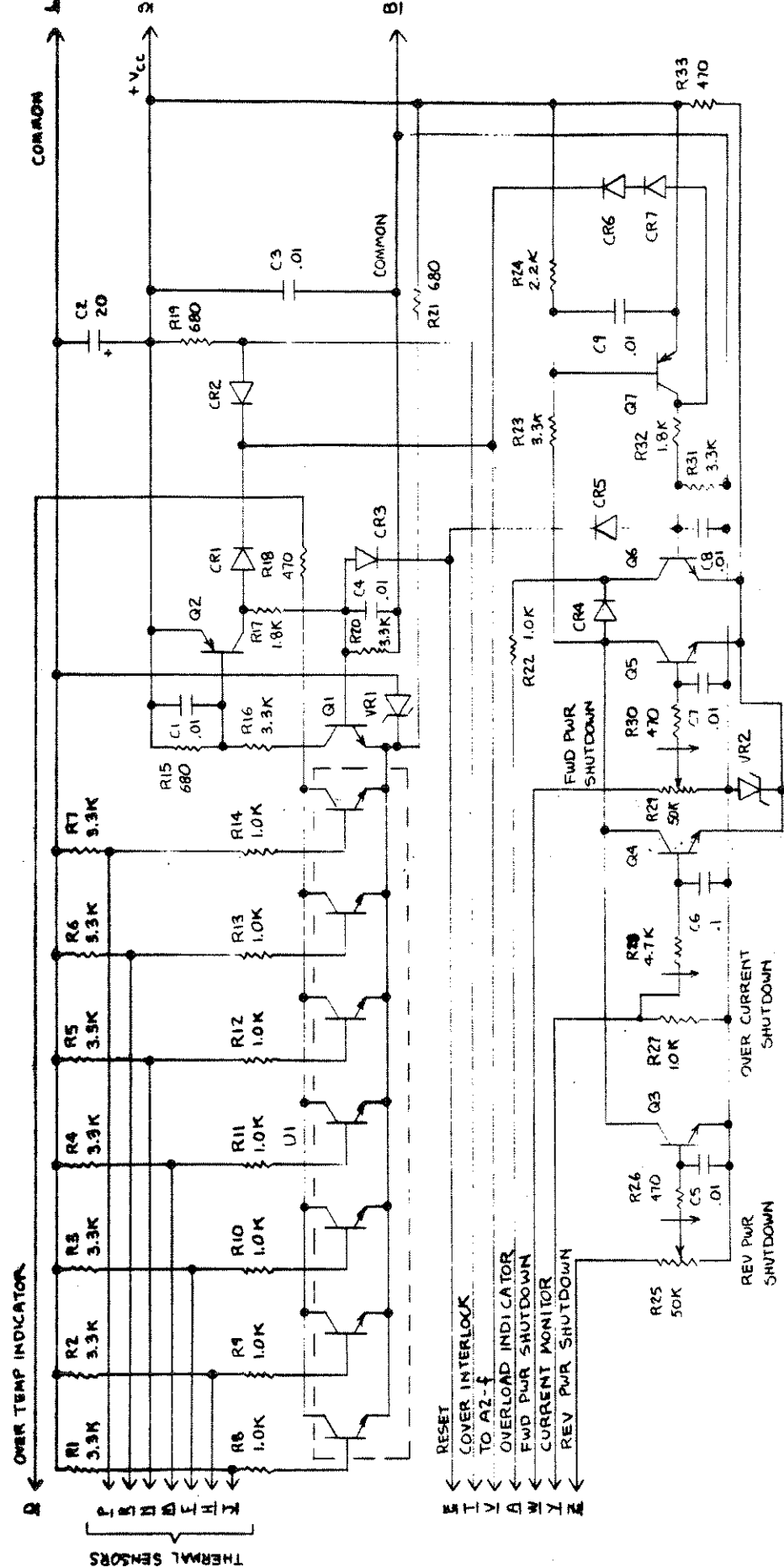
**SCHEMATIC DIAG  
LOGIC BOARD A2**

DWG. NO. 1001050  
SCALE 1/4" = 1"

SHEET 1 OF 1

DATE	REV
3/1/77	A
7/1/77	B

DATE	REV
	A



DATE		REV		DESCRIPTION	PART NO.	PARTS LIST
M	F	A	R			

UNLESS OTHERWISE SPECIFIED DO NOT SCALE DRAWING.

DIMENSIONS ARE IN INCHES AND INCLUDE PLATING THICKNESS.

ALL THREADS ARE UNF AND NATIONAL SERIES, CLASS 2.

REMOVE ALL BURRS AND SHARP EDGES.

TOLERANCE: ± .018.

NOTES:

1.0 UNLESS OTHERWISE SPECIFIED: RESISTOR VALUES ARE OHMS RESISTOR RATINGS ARE 1/4W CAPACITOR VALUES ARE MICROFARADS

2.0 THIS SCHEMATIC MAY REPRESENT MULTIPLE ASSEMBLIES. SEE APPROPRIATE PARTS LIST FOR FINAL COMPONENT VALUES.

AMPLIFIER

SCHEMATIC DIAG

LOGIC A1

SCALE 1:100

DATE 15 Nov 71

DRAWN P.R. WILKINSON

DATE

DATE

DATE





WARRANTIES: LIMITATION OF LIABILITY

Seller warrants (i) that seller has title to the goods sold and (ii) that the goods will be free from defects in material and workmanship for a period of one year from date of shipment shown on Amplifier Research invoice. Seller's sole responsibility in fulfilling these warranties shall be to repair or replace any goods which do not conform to the foregoing warranties or, at seller's option, to give buyer credit for defective goods. Warranty service will be provided only for defective goods which are returned within the warranty period, freight costs prepaid, to Amplifier Research or its designated repair facility.

THERE ARE NO OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS. SELLER SHALL NOT BE RESPONSIBLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING FROM ANY BREACH OF WARRANTY.

No person other than an officer of Amplifier Research Corporation, has any authority to bind seller to any affirmation, representation or warranty except as specifically included in the preceding terms and conditions.

160 SCHOOL HOUSE ROAD  
SOUDERTON, PA. 18964  
PHONE 215-723-8181  
TWX 510-661-6094

REV1081

TEST DATA SHEET

FREQ (KHz)	POWER OUTPUT: 100W RMS		POWER OUTPUT: 300W RMS	
	GAIN (dB)	DISTORTION (%)	GAIN (dB)	DISTORTION (%)
10	61.8	2.2	60.3	5.4
15	62.3	2.2	60.5	7.2
20	62.3	2.2	61.1	7.8
30	62.8	2.2	62.1	6.0
50	63.0	1.8	62.1	6.2
75	63.2	2.0	61.9	7.2
100	63.3	2.7	61.9	8.2
150	63.6	2.9	62.0	8.2
175	63.7	3.0	62.0	8.0
200	64.0	3.4	61.8	7.6
225	64.1	3.4	61.8	7.4
250	64.1	3.4	61.5	7.6

 OPEN & SHORT TEST ✓

 OVERDRIVE SHUTDOWN 500 WATTS RMS

 VSWR SHUTDOWN 200 WATTS RMS

 160 SCHOOL HOUSE ROAD  
 SOUDERTON, PA. 18964

PHONE: 215-723-8181



UNLESS OTHERWISE SPECIFIED DO NOT SCALE DRAWING. DIMENSIONS ARE IN INCHES AND INCLUDE PLATING THICKNESS. ALL THREADS ARE UNIFIED NATIONAL SERIES, CLASS 2. REMOVE ALL BURRS AND SHARP EDGES. TOLERANCE: ±.010.

DATE: \_\_\_\_\_  
 MECH: \_\_\_\_\_  
 DATE: \_\_\_\_\_  
 CHKD: \_\_\_\_\_  
 DATE: 9 MAR 89  
 DRAWN: J. NOGEMBERG

AMPLIFIER RESEARCH  
 INTERCONNECT DIAGRAM  
 HOUSING & INTERFACE

DWG. NO. 1001059  
 SCALE:  $f$   
 SHEET: \_\_\_\_\_ OF \_\_\_\_\_  
 REV. E

TY. RECD.	I	E	M	PART NO.	DESCRIPTION	PARTS LIST							
						M	R	A	L				

