

Model AMDA-1

AM RF Distribution Amplifier

Guide to Operations

10/03

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WARRANTY AND ASSISTANCE

All Belar products are warranted against defects in materials and workmanship. This warranty applies for one year from the date of delivery, FOB factory or, in the case of certain major components listed in the instruction manual, for the specified period. Belar will repair or replace products which prove to be defective during the warranty period provided that they are returned to Belar prepaid. No other warranty is expressed or implied. Belar is not liable for consequential damages.

For any assistance, contact your Belar Sales Representative or Customer Engineering Service at the Belar factory.

AMDA-1 AM RF Distribution Amplifier

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AMDA-1 AM RF Distribution Amplifier

1 General Information

1-1 General Description

The Belar AMDA-1 is a wide band, unity gain, active AM RF splitter for the distribution of AM signals from an LP-1A active loop antenna to up to twelve AM receivers. Phantom power is supplied by the AMDA-1 to power the amplifier in the LP-1A when required. The unit is contained in an EIA rack-mountable chassis which is 1 rack unit high.

1-2 Specifications

RF Input	50 Ω , BNC Connector
Maximum RF Input Level	1 Vrms (unmodulated carrier)
RF Outputs	(12) 75 Ω , F Connectors
Frequency Response	\pm 0.5 dB, 0.4 to 5 MHz
Unit Gain	0 dB
Phantom Power	+12 Vdc @ 25 mA max.
Dimensions	1 EIA Rack Unit, 1.75"H x 8"D x 19"W
Power Requirements	10 Watts, 100-240 Vac, 50-60 Hz
Shipping Weight	8 lbs (3.6 kg)

2 Unpacking

2-1 Initial Inspection

Check the shipping carton for external damage. If the carton exhibits evidence of abuse in handling (holes, broken corners, etc.) ask the carrier's agent to be present when the unit is unpacked. Carefully unpack the unit and inspect it for physical damage immediately. Bent or broken parts, dents and scratches should be noted. If damage is found, refer to Paragraph 2-2 for the recommended claim procedure. Keep all packing material for proof of claim or for possible future use.

The AMDA-1 is shipped with a Guide to Operations, 4 black rack-mount screws with cup washers and a three-wire line cord.

2-2 Claims

If the unit has been damaged, notify the carrier immediately. File a claim with the carrier or transportation company and advise Belar of such action to arrange the repair or replacement of the unit without waiting for a claim to be settled with the carrier.

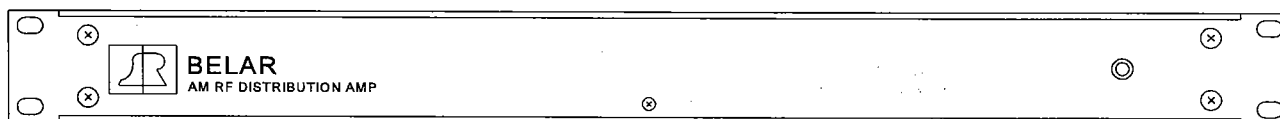
AMDA-1 AM RF Distribution Amplifier

2-3 Repacking for Shipment

If the unit is to be returned to Belar, attach a tag to it showing owner and owner's address. A description of the service required should be included on the tag. The original shipping carton and packaging materials should be used for reshipment. If they are not available or reusable, Belar can provide a replacement box and packaging at a nominal cost. Alternatively, the unit should be repackaged in the following manner:

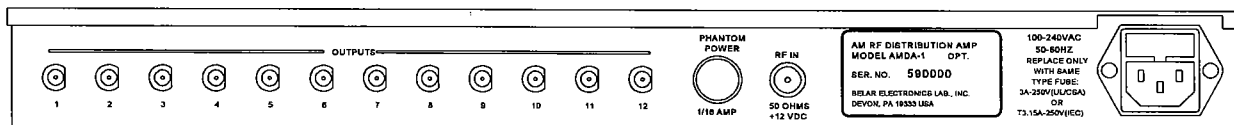
- a) Use a double-walled carton with a minimum test strength of 275 pounds.
- b) Use heavy paper or sheets of cardboard to protect all surfaces.
- c) Use at least 4 inches of tightly packed, industry approved, shock absorbing material such as extra firm polyurethane foam or rubberized hair. **Newspaper is not sufficient for cushioning material!**
- d) Use heavy duty shipping tape to secure the outside of the carton.
- e) Use large **FRAGILE** labels on each surface.
- f) Return the unit, freight prepaid. Be sure to insure the unit for full value.

3 Front Panel



The red Power On Indicator is illuminated when the AMDA-1 is connected to the ac power line. There are no other controls or indicators on the front panel.

4 Rear Panel



RF Input 50 Ω , unbalanced, BNC Connector, 1.0 Vrms unmodulated carrier maximum.

Phantom Power Fuse 1/16 Amp. The maximum continuous current should not exceed 25 mA.

RF Outputs (1 thru 12) 75 Ω , unbalanced, F Connector, same level as input.

AMDA-1 AM RF Distribution Amplifier

5 Installation and Setup

When using the AMDA-1 with an LP-1 or LP-1A loop antenna, refer to the instructions shipped with the antenna before proceeding with the installation.

The AMDA-1 is designed to be mounted in a standard 19-inch rack. The unit can be operated from an 100 to 240 Vac single phase, 50-60 Hz power source, with no user adjustments. The power fuse should be a 3A-250V (UL/CSA) or T3.15A-250V (IEC) fuse only. A spare power fuse is stored in the removable fuse compartment.

The AMDA-1 is normally shipped with the Phantom Power Jumper (P1) in the "ON" position. If the phantom power will not be used, move the jumper to the "OFF" position (See the *A1 Board Connections* drawing at the rear of this manual).

Make the rear panel connections as follows:

RF INPUT Connect the coaxial cable from the LP-1A antenna here. Make sure that there are no short circuits in this line since this will cause the phantom power fuse (F2) to blow when power is applied to the AMDA-1 if the phantom power jumper (P1) on the A1 board is in the "ON" position.

RF OUTPUTS Connect a coaxial cable to each receiver from each of these outputs. Unused RF outputs may be left unterminated since each output is isolated by an amplifier stage.

Connect the three wire grounded line cord provided, or, if a substitute line cord is used, be sure that the ground lead is connected to "G" on the line cord receptacle.

AMDA-1 AM RF Distribution Amplifier

6 Diagrams, Schematics and Parts Lists

Replaceable Parts. This page contains information for ordering replaceable parts for the unit. The tables that follow list the parts in alphanumeric order by reference designation and provide a description of the part with the Belar part number.

Ordering Information. To order a replacement part from Belar, address the order or inquiry to Belar and supply the following information:

- a. Model number and serial number of unit.
- b. Description of part, *including the reference designation and location.*

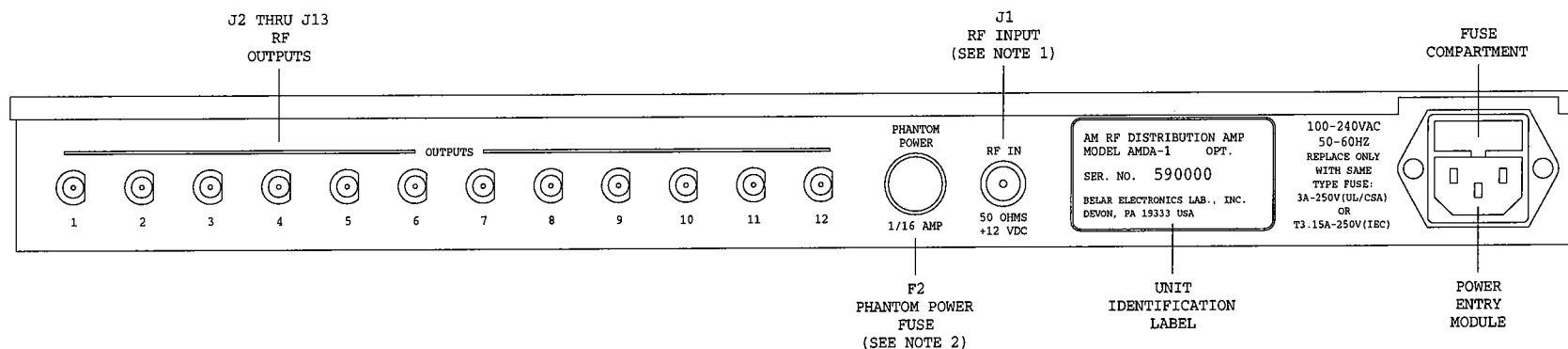
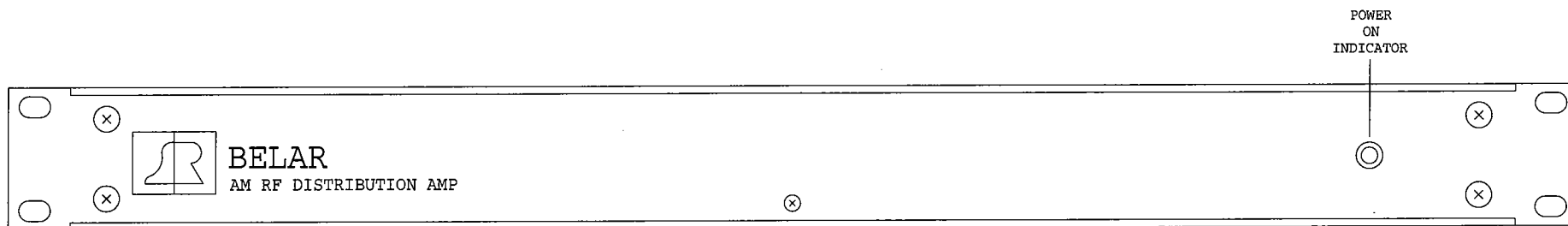
Orders may also be taken over the telephone. Parts orders can be put on your VISA, MasterCard, or American Express card, or we can ship them COD.

REFERENCE DESIGNATORS

A	= assembly	J	= jack	S	= switch
BR	= diode bridge	L	= inductor	T	= transformer
C	= capacitor	M	= meter	TB	= terminal block
CR	= diode or LED	P	= plug	U	= integrated circuit
DS	= display or lamp	Q	= transistor	W	= cable
F	= fuse	R	= resistor	X	= socket
FL	= filter	RL	= relay	Y	= crystal
HDR	= header connector	RN	= resistor network		

ABBREVIATIONS

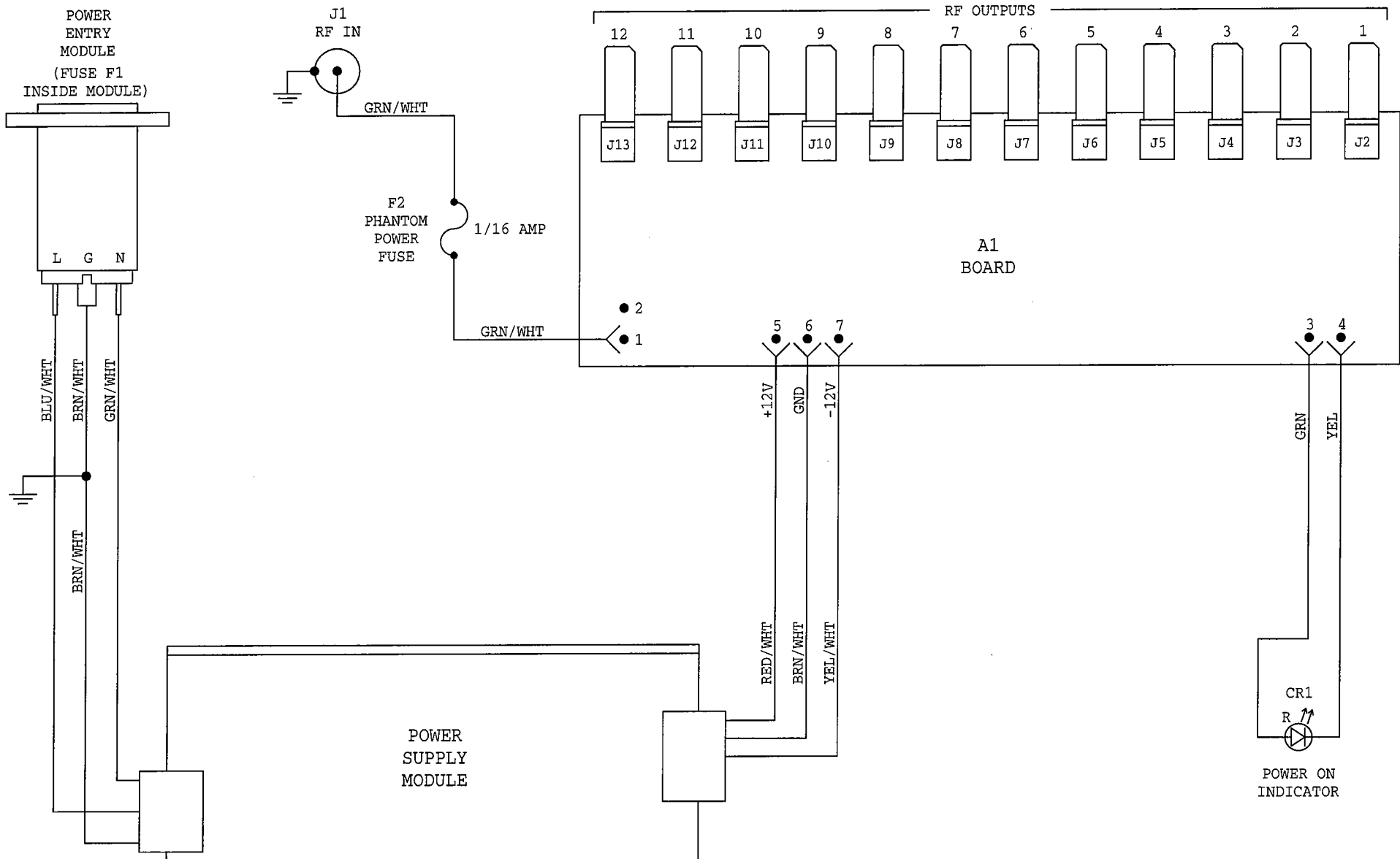
ADC	= analog-to-digital converter	PIV	= peak inverse voltage
BCD	= binary coded decimal	POLY	= polystyrene
CER	= ceramic	PORC	= porcelain
COMP	= composition	POT	= potentiometer
CONN	= connector	SEMICON	= semiconductor
DAC	= digital-to-analog convertor	SI	= silicon
DPM	= digital panel meter	TANT	= tantalum
ELEC	= electrolytic	μ F	= microfarads
GE	= germanium	V	= volt
IC	= integrated circuit	VAR	= variable
k	= kilo = 1,000	VDCW	= dc working volts
M	= meg = 1,000,000	W	= watts
MOD	= modulation	WW	= wirewound
MY	= Mylar		
PC	= printed circuit		
pF	= picofarads		



NOTE 1: THE PHANTOM POWER (+12VDC) IS PRESENT ON THE RF INPUT (J1), WHEN THE PHANTOM POWER JUMPER (P1) IS IN THE "ON" POSITION.

NOTE 2: PRIOR TO SERIAL NUMBER 590018, THE PHANTOM POWER FUSE (F2) WAS LOCATED IN AN INTERNAL CHASSIS MOUNT FUSEHOLDER.

AMDA-1 FRONT & REAR VIEW
BELAR ELECTRONICS



NOTE: BEGINNING SERIAL NUMBER 590018, THE PHANTOM POWER FUSE (F2) LOCATION CHANGED FROM AN INTERNAL CHASSIS MOUNT FUSEHOLDER TO A REAR PANEL MOUNT FUSEHOLDER.

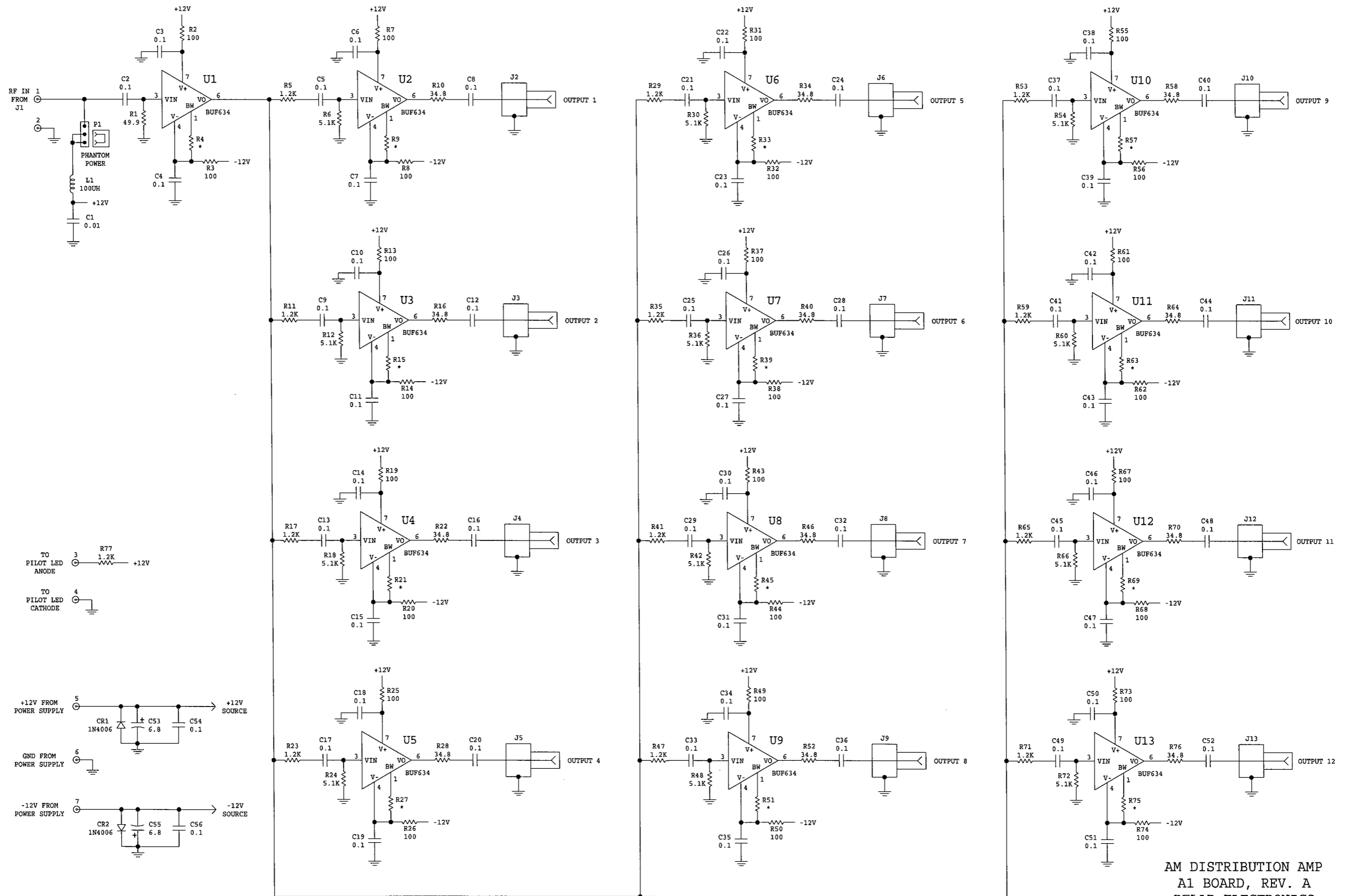
AMDA-1
 CHASSIS WIRING
 BELAR ELECTRONICS
 3-5-99

AMDA-1 PARTS LISTS

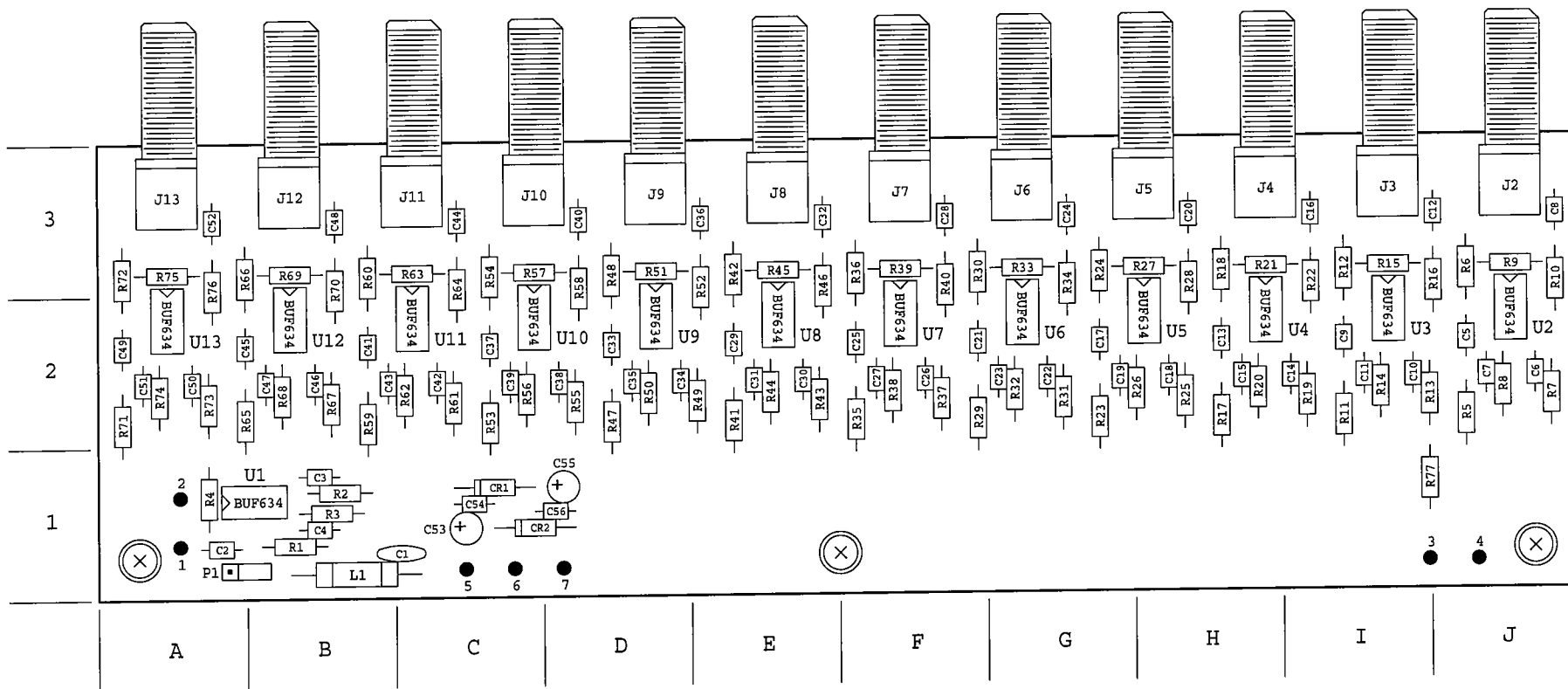
MAIN CHASSIS

Reference Designation	Description	Part Number
--	POWER SUPPLY MODULE: 12V, 15W	4005-0018A
CR1	LED: RED	1910-0001
--	POWER ENTRY MODULE: 6EGG1-1	0360-0021
F1	FUSE: GMA-3A 250V(UL/CSA) or T3.15A-250V(IEC)	2110-0009
--	FUSE HOLDER: CHASSIS MOUNT	(note 1) 2110-0010
--	FUSE HOLDER: PANEL MOUNT	(note 2) 2110-0003
F2	FUSE: AGC-1/16A 250V	2110-0011
J1	JACK: BNC	0360-0005
--	LINE CORD (115 Vac line voltage)	8120-0002
--	LINE CORD (230 Vac line voltage)	8120-0004

note 1: Used prior to serial number 590018.
 note 2: Used beginning serial number 590018.



* NOTE: R9,15,21,27,33,39,45,51,57,63,69, AND R75 ARE ONLY USED FOR SPECIAL APPLICATIONS.

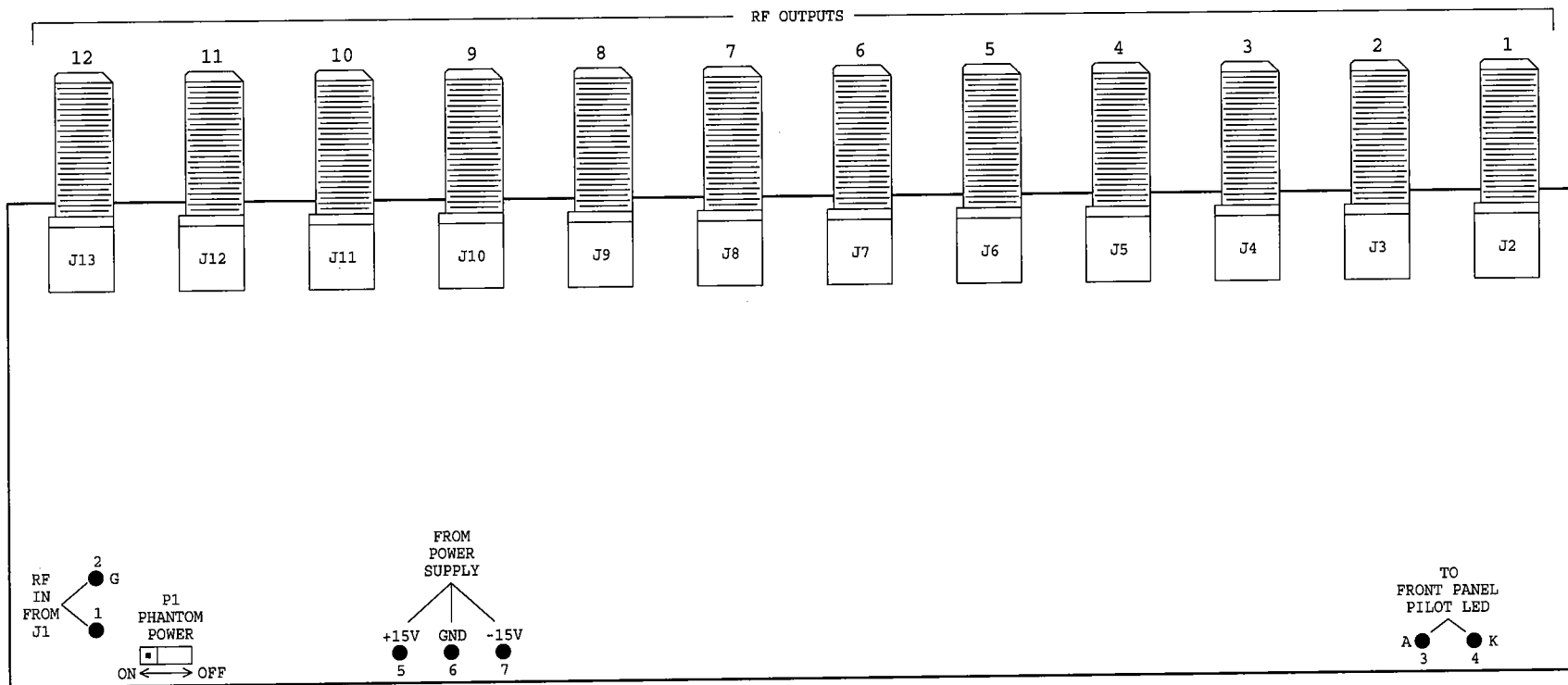


AMDA-1
 AM RF DISTRIBUTION AMP
 A1 BOARD
 REV. A
 COMPONENT LAYOUT
 BELAR ELECTRONICS
 (used beginning serial number 590074)

AMDA-1 A1 BOARD
 REV. A
 PART LOCATIONS
 (used beginning serial number 590074)

<u>Desig/Loc</u>	<u>Desig/Loc</u>	<u>Desig/Loc</u>	<u>Desig/Loc</u>	<u>Desig/Loc</u>	<u>Desig/Loc</u>	<u>Desig/Loc</u>	<u>Desig/Loc</u>	<u>Desig/Loc</u>	<u>Desig/Loc</u>	<u>Desig/Loc</u>	
C1	C1	C31	E2	J2	J3	R14	I2	R44	E2	R74	A2
C2	A1	C32	E3	J3	I3	R15*	I3	R45*	E3	R75*	A3
C3	B1	C33	D2	J4	H3	R16	J3	R46	E3	R76	A3
C4	B1	C34	D2	J5	H3	R17	H2	R47	D2	R77	I1
C5	J2	C35	D2	J6	G3	R18	H3	R48	D3		
C6	J2	C36	E3	J7	F3	R19	I2	R49	E2	U1	B1
C7	J2	C37	C2	J8	E3	R20	H2	R50	D2	U2	J2
C8	J3	C38	D2	J9	D3	R21*	H3	R51*	D3	U3	I2
C9	I2	C39	C2	J10	C3	R22	I3	R52	E3	U4	H2
C10	I2	C40	D3	J11	C3	R23	G2	R53	C2	U5	H2
C11	I2	C41	B2	J12	B3	R24	G3	R54	C3	U6	G2
C12	J3	C42	C2	J13	A3	R25	H2	R55	D2	U7	F2
C13	H2	C43	B2			R26	H2	R56	C2	U8	E2
C14	I2	C44	C3	L1	B1	R27*	H3	R57*	C3	U9	D2
C15	H2	C45	A2			R28	H3	R58	D3	U10	C2
C16	I3	C46	B2	P1	A1	R29	F2	R59	B2	U11	C2
C17	G2	C47	B2			R30	F3	R60	B3	U12	B2
C18	H2	C48	B3	R1	B1	R31	G2	R61	C2	U13	A2
C19	G2	C49	A2	R2	B1	R32	G2	R62	C2		
C20	H3	C50	A2	R3	B1	R33*	G3	R63*	C3	<u>pins</u>	
C21	F2	C51	A2	R4*	A1	R34	G3	R64	C3	1	A1
C22	G2	C52	A3	R5	J2	R35	F2	R65	A2	2	A1
C23	G2	C53	C1	R6	J3	R36	F3	R66	A3	3	I1
C24	G3	C54	C1	R7	J2	R37	F2	R67	B2	4	J1
C25	F2	C55	D1	R8	J2	R38	F2	R68	B2	5	C1
C26	F2	C56	D1	R9*	J3	R39*	F3	R69*	B3	6	C1
C27	F2			R10	J3	R40	F3	R70	B3	7	D1
C28	F3	CR1	C1	R11	I2	R41	E2	R71	A2		
C29	E2	CR2	C1	R12	I3	R42	E3	R72	A3		
C30	E2			R13	I2	R43	E2	R73	A2		

*Note: These resistors are only installed for special applications.



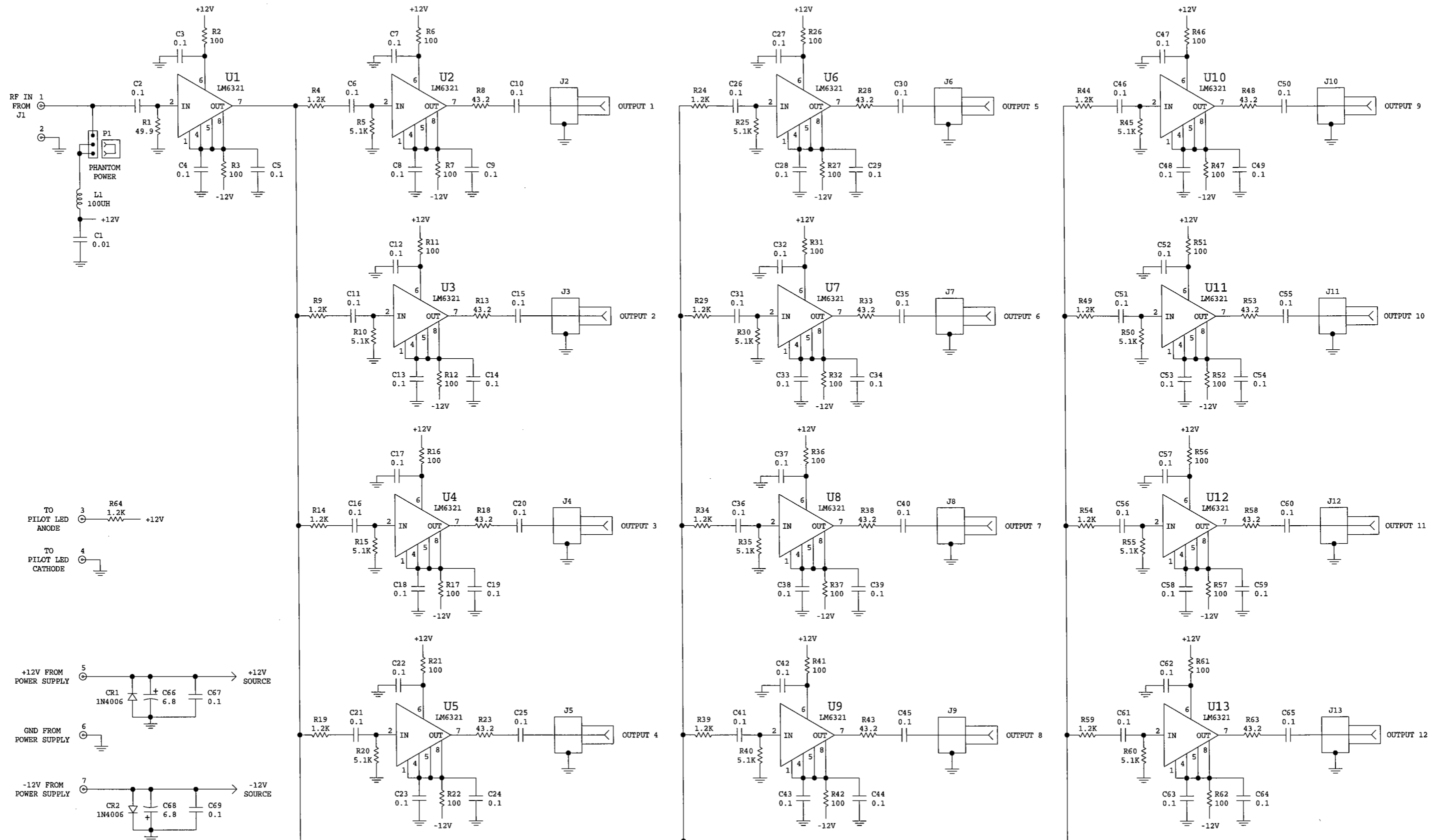
AMDA-1
AM RF DISTRIBUTION AMP
A1 BOARD
CONNECTIONS
BELAR ELECTRONICS
(covers all versions)

AMDA-1 A1 BOARD REV. A
 (used beginning serial number 590074)

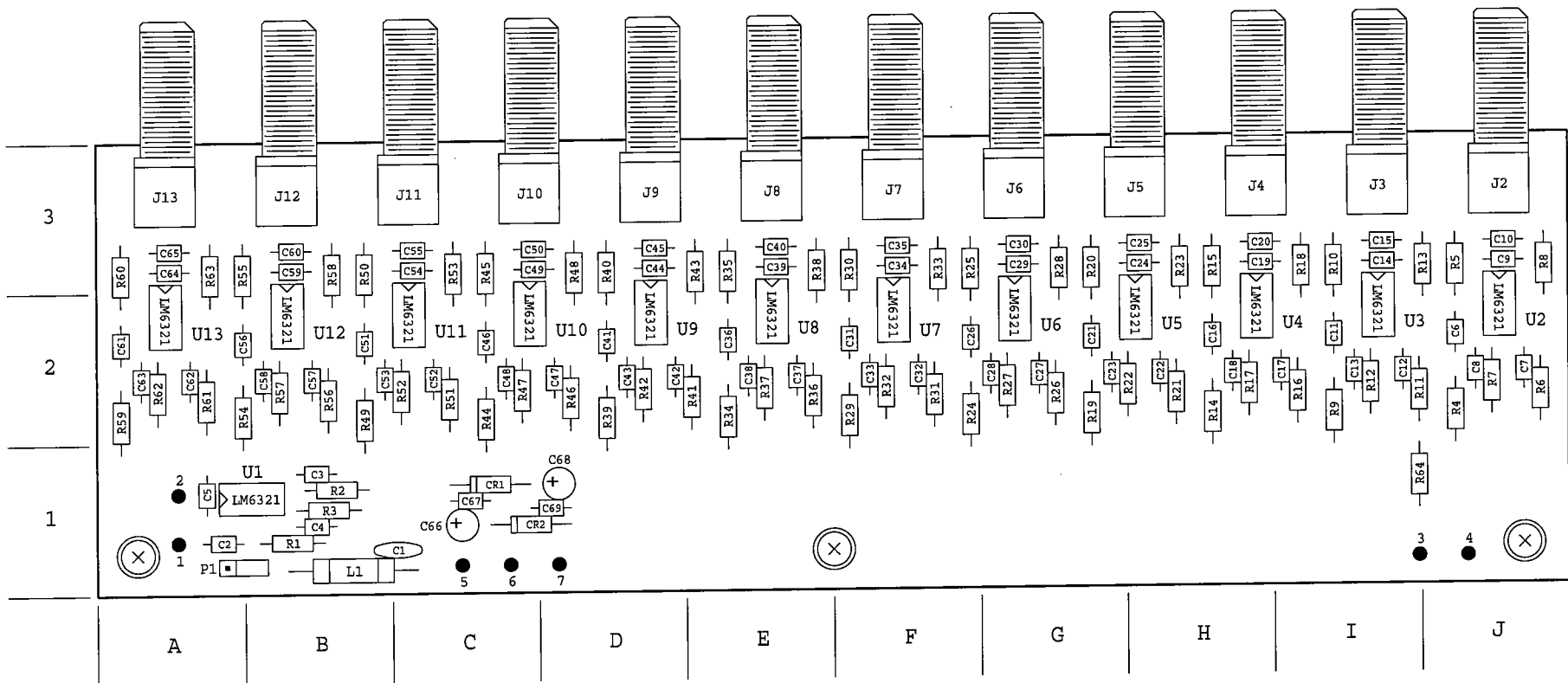
Reference Designation	Description	Part Number
C1	C: FIXED CERAMIC 0.01uF 100V	0151-0003
C2 thru C52	C: FIXED CERAMIC 0.1uF 50V	0151-0006
C53	C: FIXED TANT 6.8uF 25V	0185-0002
C54	C: FIXED CERAMIC 0.1uF 50V	0151-0006
C55	C: FIXED TANT 6.8uF 25V	0185-0002
C56	C: FIXED CERAMIC 0.1uF 50V	0151-0006
CR1,CR2	DIODE: 1N4006	1900-0016
J2 thru J13	CONNECTOR: "F", PC MOUNT	0360-0055
L1	CHOKER: 100uH	9140-0005
P1	PLUG: 3 PIN, PC MOUNT	0365-0030
--	JUMPER: 2 PIN (USED WITH P1)	0365-0028
R1	R: METAL FILM 49.9 1%	0721-49R9
R2,R3	R: METAL FILM 100 2% 1/4W	0751-1012
R4	R: special applications only	
R5	R: METAL FILM 1.2k 2% 1/4W	0751-1222
R6	R: METAL FILM 5.1k 2% 1/4W	0751-5122
R7,R8	R: METAL FILM 100 2% 1/4W	0751-1012
R9	R: special applications only	
R10	R: METAL FILM 34.8 1%	0721-34R8
R11	R: METAL FILM 1.2k 2% 1/4W	0751-1222
R12	R: METAL FILM 5.1k 2% 1/4W	0751-5122
R13,R14	R: METAL FILM 100 2% 1/4W	0751-1012
R15	R: special applications only	
R16	R: METAL FILM 34.8 1%	0721-34R8
R17	R: METAL FILM 1.2k 2% 1/4W	0751-1222
R18	R: METAL FILM 5.1k 2% 1/4W	0751-5122
R19,R20	R: METAL FILM 100 2% 1/4W	0751-1012
R21	R: special applications only	
R22	R: METAL FILM 34.8 1%	0721-34R8
R23	R: METAL FILM 1.2k 2% 1/4W	0751-1222
R24	R: METAL FILM 5.1k 2% 1/4W	0751-5122
R25,R26	R: METAL FILM 100 2% 1/4W	0751-1012
R27	R: special applications only	
R28	R: METAL FILM 34.8 1%	0721-34R8
R29	R: METAL FILM 1.2k 2% 1/4W	0751-1222
R30	R: METAL FILM 5.1k 2% 1/4W	0751-5122
R31,R32	R: METAL FILM 100 2% 1/4W	0751-1012
R33	R: special applications only	
R34	R: METAL FILM 34.8 1%	0721-34R8
R35	R: METAL FILM 1.2k 2% 1/4W	0751-1222
R36	R: METAL FILM 5.1k 2% 1/4W	0751-5122
R37,R38	R: METAL FILM 100 2% 1/4W	0751-1012
R39	R: special applications only	
R40	R: METAL FILM 34.8 1%	0721-34R8

AMDA-1 A1 BOARD REV. A cont.
(used beginning serial number 590074)

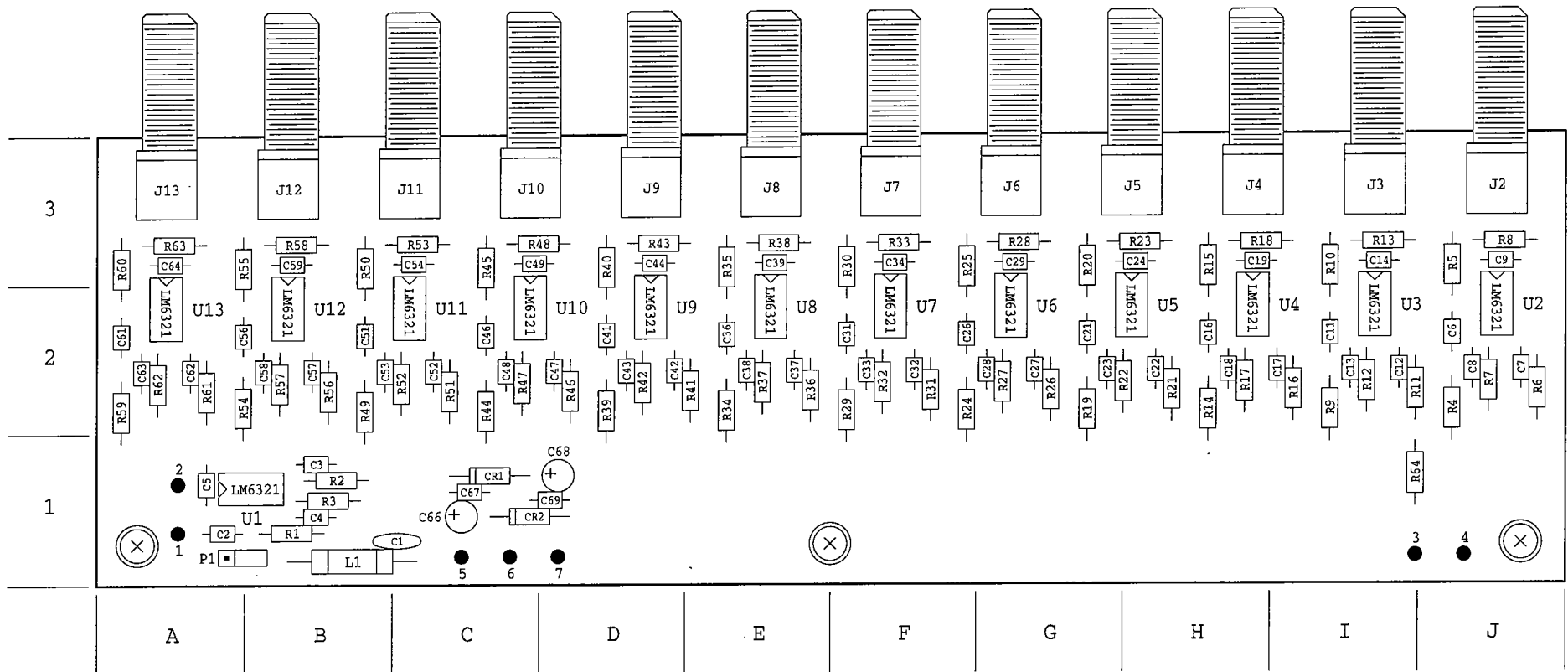
Reference Designation	Description	Part Number
R41	R: METAL FILM 1.2k 2% 1/4W	0751-1222
R42	R: METAL FILM 5.1k 2% 1/4W	0751-5122
R43,R44	R: METAL FILM 100 2% 1/4W	0751-1012
R45	R: special applications only	
R46	R: METAL FILM 34.8 1%	0721-34R8
R47	R: METAL FILM 1.2k 2% 1/4W	0751-1222
R48	R: METAL FILM 5.1k 2% 1/4W	0751-5122
R49,R50	R: METAL FILM 100 2% 1/4W	0751-1012
R51	R: special applications only	
R52	R: METAL FILM 34.8 1%	0721-34R8
R53	R: METAL FILM 1.2k 2% 1/4W	0751-1222
R54	R: METAL FILM 5.1k 2% 1/4W	0751-5122
R55,R56	R: METAL FILM 100 2% 1/4W	0751-1012
R57	R: special applications only	
R58	R: METAL FILM 34.8 1%	0721-34R8
R59	R: METAL FILM 1.2k 2% 1/4W	0751-1222
R60	R: METAL FILM 5.1k 2% 1/4W	0751-5122
R61,R62	R: METAL FILM 100 2% 1/4W	0751-1012
R63	R: special applications only	
R64	R: METAL FILM 34.8 1%	0721-34R8
R65	R: METAL FILM 1.2k 2% 1/4W	0751-1222
R66	R: METAL FILM 5.1k 2% 1/4W	0751-5122
R67,R68	R: METAL FILM 100 2% 1/4W	0751-1012
R69	R: special applications only	
R70	R: METAL FILM 34.8 1%	0721-34R8
R71	R: METAL FILM 1.2k 2% 1/4W	0751-1222
R72	R: METAL FILM 5.1k 2% 1/4W	0751-5122
R73,R74	R: METAL FILM 100 2% 1/4W	0751-1012
R75	R: special applications only	
R76	R: METAL FILM 34.8 1%	0721-34R8
R77	R: METAL FILM 1.2k 2% 1/4W	0751-1222
U1 thru U13	IC: BUF634	1826-0074



AM DISTRIBUTION AMP
 A1 BOARD
 BELAR ELECTRONICS
 10-21-97
 (used before ser/num 590074)



AMDA-1
 AM RF DISTRIBUTION AMP
 A1 BOARD
 COMPONENT LAYOUT
 BELAR ELECTRONICS
 (used from serial number 590025 to 590074)



AMDA-1
 AM RF DISTRIBUTION AMP
 A1 BOARD
 COMPONENT LAYOUT
 BELAR ELECTRONICS
 (used prior to serial number 590025)

NOTE: C10, C15, C20, C25, C30, C35, C40, C45, C50, C55, C60, AND C65 ARE ON PC BOTTOM.

AMDA-1 A1 BOARD
PART LOCATIONS
(used prior to serial number 590074)

<u>Desig/Loc</u>	<u>Desig/Loc</u>	<u>Desig/Loc</u>	<u>Desig/Loc</u>	<u>Desig/Loc</u>	<u>Desig/Loc</u>	<u>Desig/Loc</u>	<u>Desig/Loc</u>	<u>Desig/Loc</u>	<u>Desig/Loc</u>	<u>Desig/Loc</u>	
C1	C1	C31	F2	C61	A2	R1	B1	R31	F2	R61	A2
C2	A1	C32	F2	C62	A2	R2	B1	R32	F2	R62	A2
C3	B1	C33	F2	C63	A2	R3	B1	R33	F3	R63	A3
C4	B1	C34	F3	C64	A3	R4	J2	R34	E2	R64	I1
C5	A1	C35	F3*	C65	A3*	R5	J3	R35	E3		
C6	J2	C36	E2	C66	C1	R6	J2	R36	E2	U1	B1
C7	J2	C37	E2	C67	C1	R7	J2	R37	E2	U2	J2
C8	J2	C38	E2	C68	D1	R8	J3	R38	E3	U3	I2
C9	J3	C39	E3	C69	D1	R9	I2	R39	D2	U4	H2
C10	J3*	C40	E3*			R10	I3	R40	D3	U5	H2
C11	I2	C41	D2	CR1	C1	R11	I2	R41	E2	U6	G2
C12	I2	C42	D2	CR2	C1	R12	I2	R42	D2	U7	F2
C13	I2	C43	D2			R13	J3	R43	E3	U8	E2
C14	I3	C44	D3	J2	J3	R14	H2	R44	C2	U9	D2
C15	I3*	C45	D3*	J3	I3	R15	H3	R45	C3	U10	C2
C16	H2	C46	C2	J4	H3	R16	I2	R46	D2	U11	C2
C17	I2	C47	D2	J5	H3	R17	H2	R47	C2	U12	B2
C18	H2	C48	C2	J6	G3	R18	I3	R48	D3	U13	A2
C19	H3	C49	C3	J7	F3	R19	G2	R49	B2		
C20	H3*	C50	C3*	J8	E3	R20	G3	R50	B3		
C21	G2	C51	B2	J9	D3	R21	H2	R51	C2	<u>pins</u>	
C22	H2	C52	C2	J10	C3	R22	H2	R52	C2	1	A1
C23	G2	C53	B2	J11	C3	R23	H3	R53	C3	2	A1
C24	H3	C54	C3	J12	B3	R24	F2	R54	A2	3	I1
C25	H3*	C55	C3*	J13	A3	R25	F3	R55	A3	4	J1
C26	F2	C56	A2			R26	G2	R56	B2	5	C1
C27	G2	C57	B2	L1	B1	R27	G2	R57	B2	6	C1
C28	G2	C58	B2			R28	G3	R58	B3	7	D1
C29	G3	C59	B3	P1	A1	R29	F2	R59	A2		
C30	G3*	C60	B3*			R30	F3	R60	A3		

*Prior to serial number 590025 these parts were on the pc bottom.

A1 BOARD AMDA-1
 (used prior to serial number 590074)

Reference Designation	Description	Part Number
C1	C: FIXED CERAMIC 0.01uF 100V	0151-0003
C2 thru C65	C: FIXED CERAMIC 0.1uF 50V	0151-0006
C66	C: FIXED TANT 6.8uF 25V	0185-0002
C67	C: FIXED CERAMIC 0.1uF 50V	0151-0006
C68	C: FIXED TANT 6.8uF 25V	0185-0002
C69	C: FIXED CERAMIC 0.1uF 50V	0151-0006
CR1,CR2	DIODE: 1N4006	1900-0016
J2 thru J13	CONNECTOR: "F", PC MOUNT	0360-0055
L1	CHOKER: 100uH	9140-0005
P1	PLUG: 3 PIN, PC MOUNT	0365-0030
--	JUMPER: 2 PIN (USED WITH P1)	0365-0028
R1	R: METAL FILM 49.9 1%	0721-49R9
R2,R3	R: METAL FILM 100 2% 1/4W	0751-1012
R4	R: METAL FILM 1.2k 2% 1/4W	0751-1222
R5	R: METAL FILM 5.1k 2% 1/4W	0751-5122
R6,R7	R: METAL FILM 100 2% 1/4W	0751-1012
R8	R: METAL FILM 43.2 1%	0721-43R2
R9	R: METAL FILM 1.2k 2% 1/4W	0751-1222
R10	R: METAL FILM 5.1k 2% 1/4W	0751-5122
R11,R12	R: METAL FILM 100 2% 1/4W	0751-1012
R13	R: METAL FILM 43.2 1%	0721-43R2
R14	R: METAL FILM 1.2k 2% 1/4W	0751-1222
R15	R: METAL FILM 5.1k 2% 1/4W	0751-5122
R16,R17	R: METAL FILM 100 2% 1/4W	0751-1012
R18	R: METAL FILM 43.2 1%	0721-43R2
R19	R: METAL FILM 1.2k 2% 1/4W	0751-1222
R20	R: METAL FILM 5.1k 2% 1/4W	0751-5122
R21,R22	R: METAL FILM 100 2% 1/4W	0751-1012
R23	R: METAL FILM 43.2 1%	0721-43R2
R24	R: METAL FILM 1.2k 2% 1/4W	0751-1222
R25	R: METAL FILM 5.1k 2% 1/4W	0751-5122
R26,R27	R: METAL FILM 100 2% 1/4W	0751-1012
R28	R: METAL FILM 43.2 1%	0721-43R2
R29	R: METAL FILM 1.2k 2% 1/4W	0751-1222
R30	R: METAL FILM 5.1k 2% 1/4W	0751-5122
R31,R32	R: METAL FILM 100 2% 1/4W	0751-1012
R33	R: METAL FILM 43.2 1%	0721-43R2
R34	R: METAL FILM 1.2k 2% 1/4W	0751-1222
R35	R: METAL FILM 5.1k 2% 1/4W	0751-5122
R36,R37	R: METAL FILM 100 2% 1/4W	0751-1012
R38	R: METAL FILM 43.2 1%	0721-43R2
R39	R: METAL FILM 1.2k 2% 1/4W	0751-1222
R40	R: METAL FILM 5.1k 2% 1/4W	0751-5122
R41,R42	R: METAL FILM 100 2% 1/4W	0751-1012

A1 BOARD AMDA-1 cont.
(used prior to serial number 590074)

Reference Designation	Description	Part Number
R43	R: METAL FILM 43.2 1%	0721-43R2
R44	R: METAL FILM 1.2k 2% 1/4W	0751-1222
R45	R: METAL FILM 5.1k 2% 1/4W	0751-5122
R46,R47	R: METAL FILM 100 2% 1/4W	0751-1012
R48	R: METAL FILM 43.2 1%	0721-43R2
R49	R: METAL FILM 1.2k 2% 1/4W	0751-1222
R50	R: METAL FILM 5.1k 2% 1/4W	0751-5122
R51,R52	R: METAL FILM 100 2% 1/4W	0751-1012
R53	R: METAL FILM 43.2 1%	0721-43R2
R54	R: METAL FILM 1.2k 2% 1/4W	0751-1222
R55	R: METAL FILM 5.1k 2% 1/4W	0751-5122
R56,R57	R: METAL FILM 100 2% 1/4W	0751-1012
R58	R: METAL FILM 43.2 1%	0721-43R2
R59	R: METAL FILM 1.2k 2% 1/4W	0751-1222
R60	R: METAL FILM 5.1k 2% 1/4W	0751-5122
R61,R62	R: METAL FILM 100 2% 1/4W	0751-1012
R63	R: METAL FILM 43.2 1%	0721-43R2
R64	R: METAL FILM 1.2k 2% 1/4W	0751-1222
U1 thru U13	IC: LM6321	1826-0050