USER MANUAL

MODEL MDA-100

Mixing Distribution Amplifier

RTS™

9350-7104-00 Rev D 6/00

SAFETY SUMMARY

POWER SOURCE

This equipment is designed to operate from an AC power source as described in the electrical specifications.

GROUNDING

The chassis of this product is grounded through the grounding pin of the line cord. To avoid electrical shock, with the power off, plug the line cord into a properly wired receptacle before making any input or output connections with other devices. Use only the line cord specified for your unit. Ensure that the line cord is in good condition and free of kinks.

CAUTION:

A protective ground connection through the grounding conductor of the line cord is essential for safe operation.

FUSING

This product is fitted with a fuse. To avoid fire hazard, check that the fuse has a suitable voltage and current rating for the power requirements listed in the specifications and shown on the schematic diagram.

SECTION 1 DESCRIPTION AND SPECIFICATIONS

1.1 DESCRIPTION

The MDA-100 Mixing and Distribution Amplifier contains an 8 x 1 summing amplifier (mixer) and a 1 x 8 distribution amplifier in a case that is 1 rack unit high. The MDA-100 is useful, for example, in camera control (CCU), where multiple camera operators have to talk and listen to one master control location. In this application, audio from each camera (up to eight) is fed to one of the summing amplifier inputs of the MDA-100. All eight audio inputs are summed and fed to the master controller input. The return audio path from the master controller back to the individual cameras is accomplished using the distribution amplifier, which takes the single audio output from the master controller and distributes it to each of the eight camera outputs.

The gain of each summing amplifier input may be individually adjusted by a trimmer on the front panel of the MDA-100. There is also an output adjustment trimmer located inside the MDA-100 to adjust the final output level of the summing amplifier. The summing amplifier output is a 60-ohm voltage source.

The distribution amplifier has a separate output level trimmer for each output. These trimmers are located on the front panel. All the outputs are 60-ohm voltage sources. The input impedance may be set for bridging (20 kohms), 150 ohms, or 600 ohms, selected by rear panel jumpers.

The MDA-100 fits into a standard 19" (483 mm) equipment rack. The power entry module is an IEC approved type, which contains a line voltage switch, a line filter, a fuse holder, and a line cord socket connector. The line voltage switch may be set for either 105/125 Vac, 50/60 Hz, or 210/250 Vac, 50/60 Hz supply voltages. The MDA-100 features a torroidal-transformer power supply for low-noise operation.

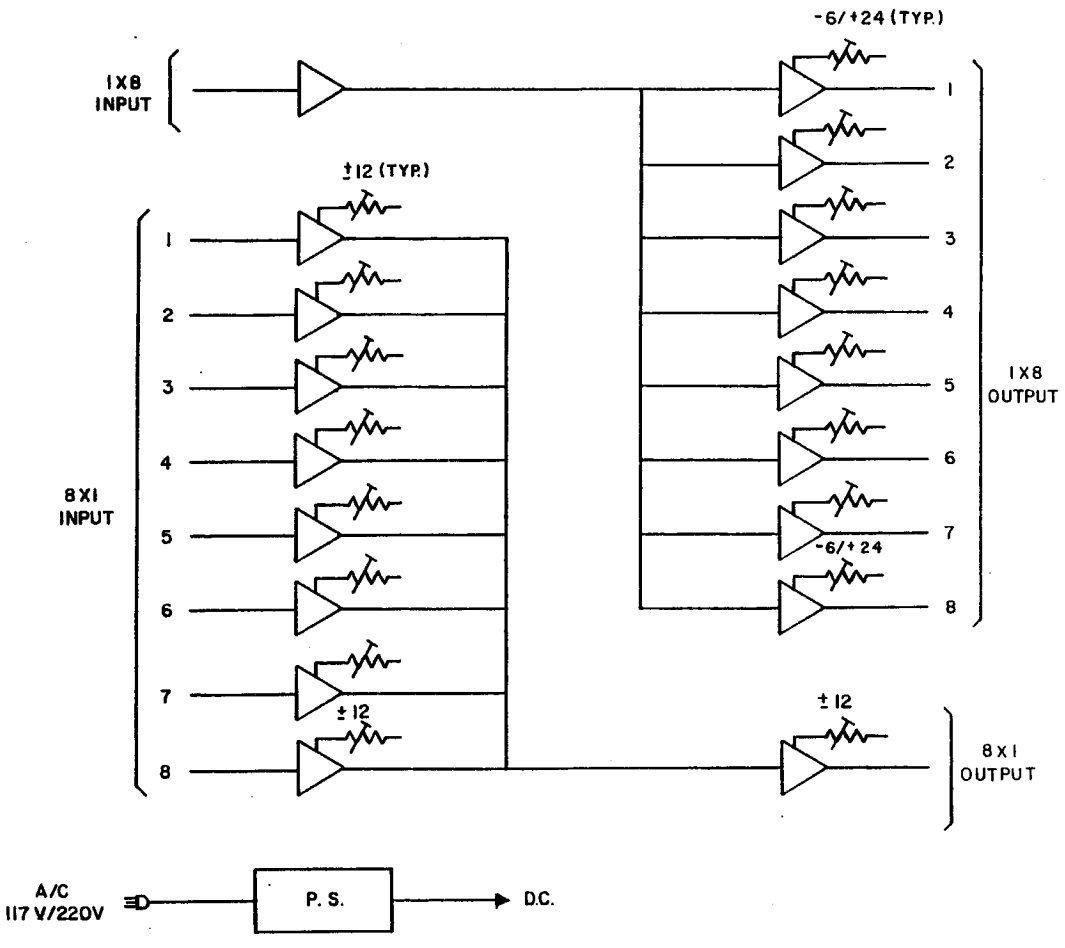


Figure 1. Functional Diagram
MDA-100 Mixing Distribution Amplifier

SECTION 2 INSTALLATION

2.1 UNPACKING

Unpack the MDA-100 and verify that you have received the following:

(1) MDA-100 Mixing Distribution Amplifier

(1) Molex Connector Kit

(1) AC Line Cord

(1) Instruction Manual

NOTE

It is important that all articles be thoroughly inspected immediately upon receipt. Any damage discovered should be cause for a damage claim against the carrier.

2.2 PREPARATION

The MDA-100 fits in 19" (483 mm) wide standard equipment racks, consoles and turrets. Prepare the equipment rack for installation of the MDA-100, and locate a suitable power source.

2.3 POWER CONNECTION

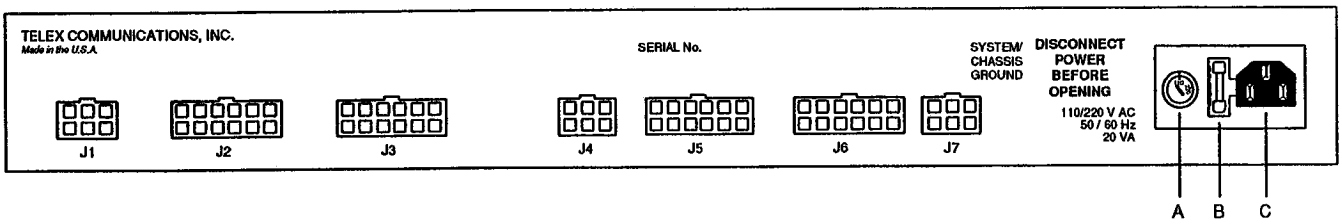
Before plugging in the power cord, verify that the voltage selector switch is set to the correct voltage. Use a flat-blade screwdriver to align the white dot with 110 or 220, depending on your supply voltage. Plug the power cord into the MDA-100 and an AC outlet.

2.4 FUSE REPLACEMENT

The fuse holder (Figure 2-2) is designed for one active fuse, with provision for holding a spare. It also has a safety interlock to prevent fuse removal while the power cord is plugged into the MDA-100.

To remove the fuse :

1. Unplug the power cord from the MDA-100.
2. Using a small screwdriver, pry out the fuse holder.
3. Replace the fuse only with the same type and rating.
4. Slide the fuse holder back into place and reinstall the power cord.

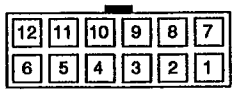


J1 Summing amplifier output
J2 Summing amplifier inputs 5-8
J3 Summing amplifier inputs 1-4
J4 Distribution amplifier input termination select
J5 Distribution amplifier outputs 5-8
J6 Distribution amplifier outputs 1-4
J7 System/Chassis ground
A Voltage selector switch
B Fuse and fuse holder
C Line cord receptacle

Figure 2-1. Rear Panel Layout
MDA-100 Distribution Amplifier

2.5.5 J5 CONNECTOR

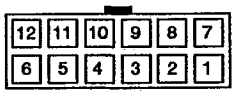
Distribution Amp Outputs 5-8



Pin	Function
1	+ Output No. 5
7	- Output No. 5
2	Shield No. 5
3	+ Output No. 6
9	- Output No. 6
5	Shield No. 6
4	+ Output No. 7
10	- Output No. 7
8	Shield No. 7
6	+ Output No. 8
12	- Output No. 8
11	Shield No. 8

2.5.6 J6 CONNECTOR

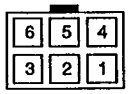
Distribution Amp Outputs 1-4



Pin	Function
1	+ Output No. 1
7	- Output No. 1
2	Shield No. 1
3	+ Output No. 2
9	- Output No. 2
5	Shield No. 2
4	+ Output No. 3
10	- Output No. 3
8	Shield No. 3
6	+ Output No. 4
12	- Output No. 4
11	Shield No. 4

2.5.7 J7 CONNECTOR

Chassis And Audio Grounds



Pin	Function
1	Chassis ground
2	Chassis ground
4	Chassis ground
3	Audio common.
5	Audio common.
6	Audio common.

Note

As supplied, the MDA-100 chassis ground is connected to earth ground through the line cord, and the audio ground is isolated from earth ground.

Your installation may require that the audio ground be connected to some other reference than earth ground. In this case, connect your ground reference to pins 3, 5 and 6 of J7.

If separate audio and chassis grounds are not required, the chassis and audio ground pins of J7 may be interconnected for safety. Connect pin 1 to pin 3, pin 2 to pin 5, and pin 4 to pin 6.

2.6 AUDIO LEVEL SETTINGS

2.6.1 Summing Amplifier

1. Activate all audio devices connected to the MDA-100.
2. While monitoring the summing amp output, adjust the INPUT LEVEL trimmers on the front panel of the MDA-100 as required to equalize the summing amplifier input levels.
3. If the summing amplifier output level is too high or low for your requirements, remove the top cover of the MDA-100 and adjust the OUTPUT LEVEL trimmer (located on the circuit board near J1).

2.6.2 Distribution Amplifier

Adjust the OUTPUT LEVEL trimmers on the front panel of the MDA-100 as required to supply a satisfactory signal level at each output destination.

SECTION 3: PARTS LISTS

3.1 HOW TO OBTAIN PARTS

Parts may be obtained directly from Telex Communications, Inc.:

Telex Communications, Inc.
12000 Portland Avenue South,
Burnsville, MN 55337 U.S.A.
Telephone: (877) 863-4169
Fax: (800) 323-0498

3.2 FINAL ASSEMBLY

Qty.	RTS Part No.	Description
1	8800102668	AC Power Cord, 18GA, 7 Ft
1	8800117313	AC Entry Module with 110/220 Selector Switch
1	8800118232	Connector, 4-Position, .156 Sp, 22GA
1	8800118982	Lug, Quick Disconnect
1	8800121406	Transformer, Power, 20V
8	8800124403	Nut, Kep, #6-32
1	8800129603	Cover, Top
2	8800129630	Panel, Side, MDA-100
1	8800129621	Panel, Rear, MDA-100
1	8800129658	Fuse, 1A, 250V, Fast
2	8800135561	Quick Connect Fem 18-22 Ins Red
3	8800154709	Quick Connect Fem 18-22 Rt Angle Ins
14	8800163129	Screw, Flat Head Machine, #4-40 x 3/16
1	9030721500	Circuit Board Assy, MDA-100

3.3 FRONT PANEL ASSEMBLY

Qty.	RTS Part No.	Description
1	8800129612	Panel, Front, MDA-100
15	50086004	Washer, Lock
15	51845038	Screw, Machine, CR PH, #4-40 x 1/4
4	8800105380	Washer, Lock, Int Tooth, #6
4	8800108706	Screw, Pan Head Machine, #6-32 x 3/8
1	8800109867	Terminal, Fem, 14-16 Non Ins
1	8800119552	Nut, Kep, #10-32
1	8800129658	Fuse, 1A, 250V, Fast
1	8800141037	Terminal Ring, #6
4	8800242945	Screw, Oval Head Machine, #6-32 x 3/8
1	8800300800	Screw, Pan Head Machine, #10-32 x 1-1/2

PARTS LIST ABBREVIATIONS: CD, Ceramic Disk; CF, Carbon Film; CM, Ceramic Monolithic; EL, Electrolytic; MF, Metal Film; Rad, Radial Leads; Tant, Tantalum.

3.4 CONNECTOR KIT

Qty.	RTS Part No.	Description
4	8800101883	Connector Housing, 12-Position Female, Molex 39-01-2120
3	8800102098	Connector Housing, 6-Position Female, Molex 39-01-2060
70	8800147763	Connector Pin, Female, 18-24 GA

3.5 CIRCUIT BOARD ASSY, MDA-100

Qty.	RTS Part No.	Description
17	8800100508	Capacitor, Cer, 22pF, 100V, 2%, NPO
72	8800100562	Capacitor, Cer, 0.1uf, 50V, 20%
18	8800100624	Capacitor, Cer, 1uF, 50V
2	8800139594	Capacitor, Tant, 22uF, 50V, 20%
2	8800118009	Capacitor, EL, Radial, 4,700uF, 50V
17	8800127516	Capacitor, Cer, 100pf, 100V, 2%
4	8800183018	Capacitor, Tant, 22uf, 16V, 20%
4	8800114771	Diode, 1A 400PRV, 1N5060
4	8800102926	Diode 1N5404
1	8800129710	Diode 1N5256
2	8800103907	Heatsink, TO-220
1	8800104737	IC, Regulator, -18V, TO-220V Pkg, 79M18
1	8800104791	IC, Regulator, +18V, TO-220V Pkg, 78M18
10	8800129382	IC, Op-amp, Low Offset, Motorola OP-27GP
18	8800156529	IC, Op-amp, NE5534AN
1	8800105362	LED, Red Super Bright, Stanley SBR-3931
18	8800107137	Resistor, 30 Ohm, 1/2W, 5%
20	8800107235	Resistor, MF, 100K, 1/4W, 1%
10	8800107253	Resistor, MF, 10.0K, 1/4W, 1%
16	8800107333	Resistor, MF, 1.0K, 1/4W, 1%
32	8800107404	Resistor, MF, 20.0K, 1/4W, 1%
9	8800107681	Resistor, MF, 4.99K, 1/4W, 1%
2	8800107761	Resistor, MF, 6.19K Ohm, 1/4W, 1%
8	8800107823	Resistor, MF, 9.76K, 1/4W, 1%
1	8800108056	Resistor, CF, 2.7K, 1/4W, 5%
18	8800129747	Resistor, MF, 300 Ohm, 1/4W, 1%
4	8800136356	Resistor, MF, 30.1K, 1/4W, 1%
2	8800168197	Resistor, MF, 5.9K, 1/4W, 1%
16	8800221272	Trimpot, 100K, Beckman 89PR-100K (front panel trimmers)
3	8800129729	Trimpot, 100K, Beckman 68WR-100K (internal trimmers)
8	8800134456	Trimpot, Multi-turn, 500 ohm, Bourns 3299W-1-501
2	50086004	Washer, Lock
2	51845039	Screw, Machine, CR PH, #4-40 x 3/8
2	52188006	Nut, Hex, #4-40

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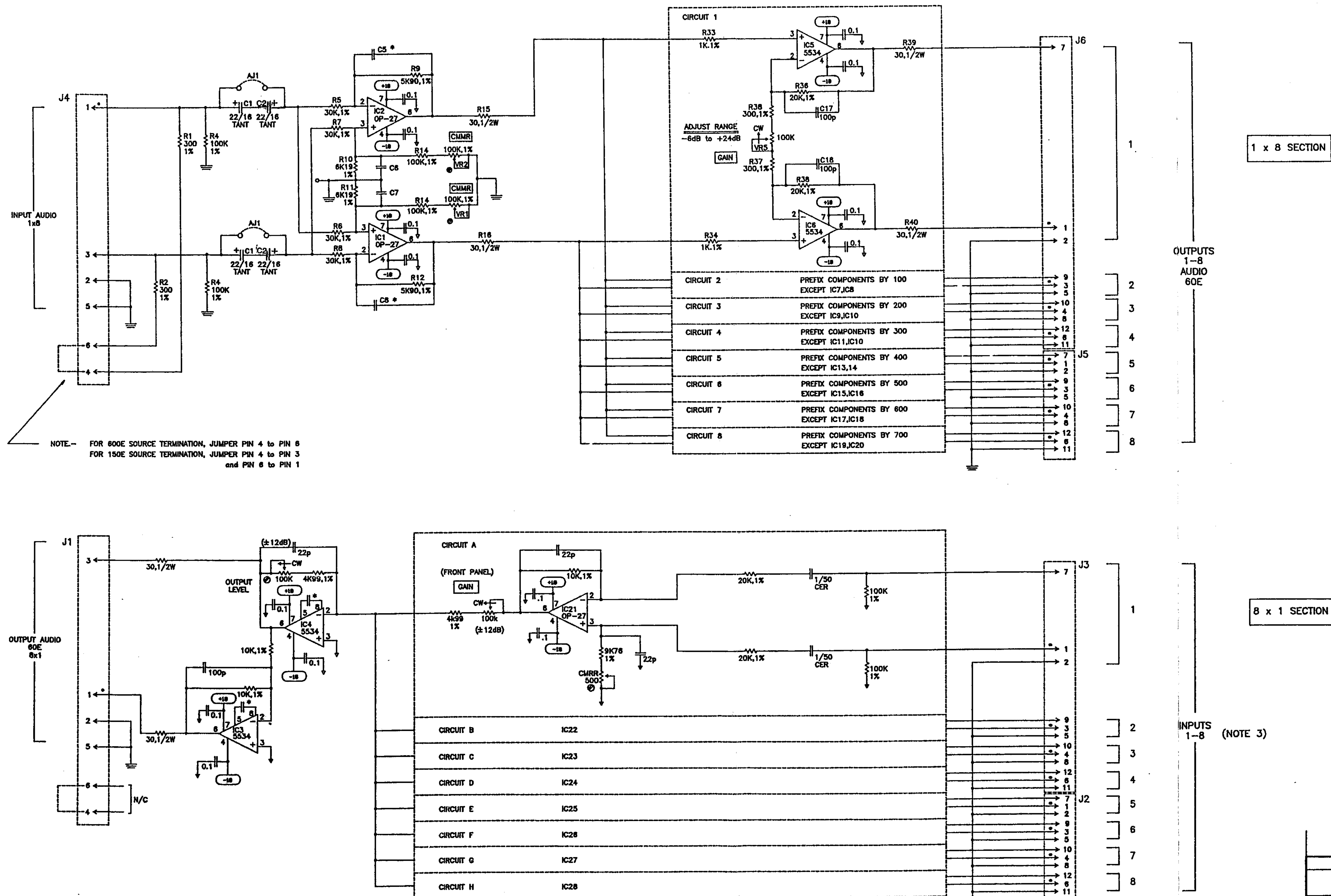
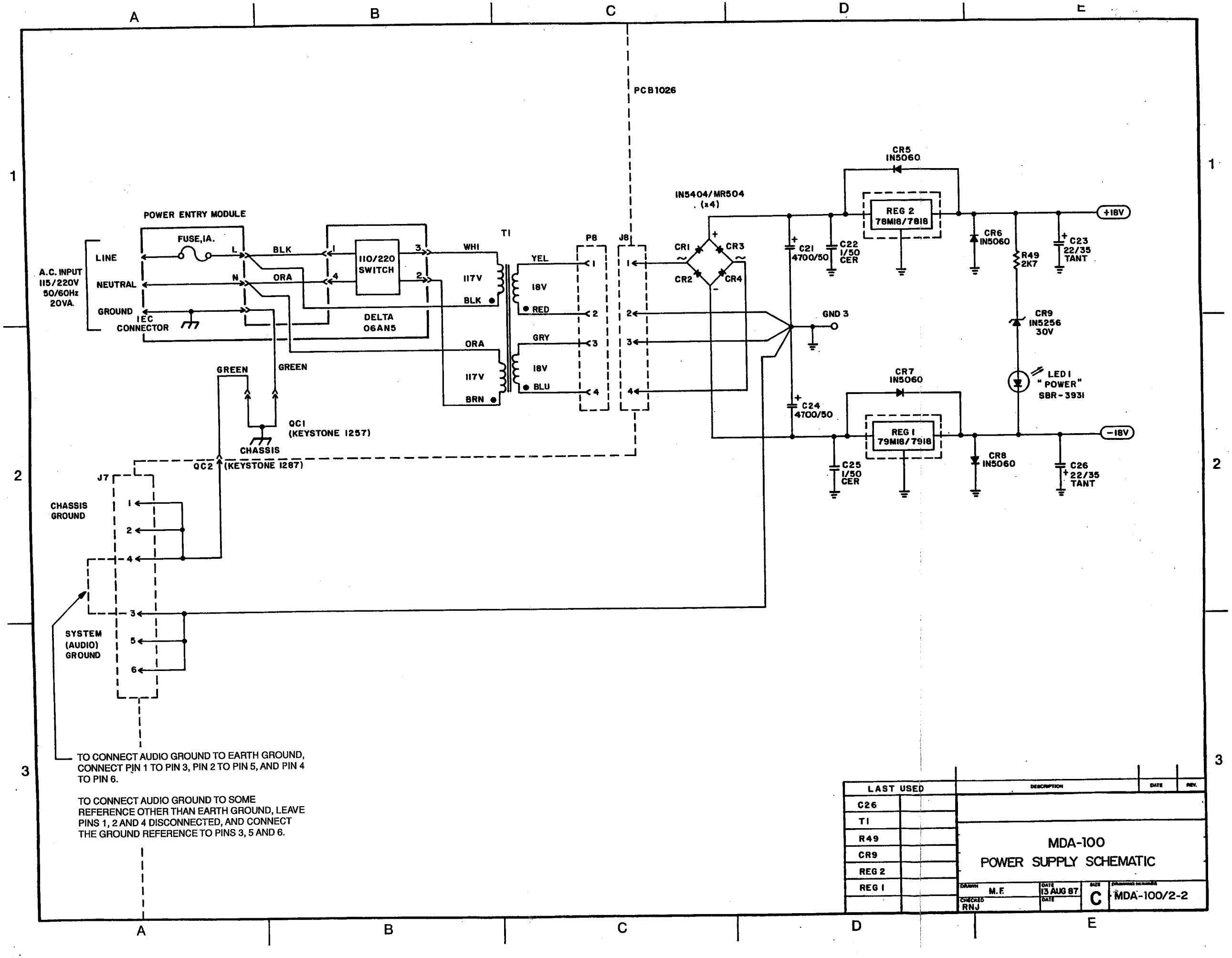


1 x 8 SECTION
INPUT AUDIO 1x8
J4
CIRCUIT 1
ADJUST RANGE -6dB to +24dB
GAIN
CMMR
CIRCUIT 2 PREFIX COMPONENTS BY 100 EXCEPT IC7,IC8
CIRCUIT 3 PREFIX COMPONENTS BY 200 EXCEPT IC9,IC10
CIRCUIT 4 PREFIX COMPONENTS BY 300 EXCEPT IC11,IC10
CIRCUIT 5 PREFIX COMPONENTS BY 400 EXCEPT IC13,14
CIRCUIT 6 PREFIX COMPONENTS BY 500 EXCEPT IC15,IC16
CIRCUIT 7 PREFIX COMPONENTS BY 600 EXCEPT IC17,IC18
CIRCUIT 8 PREFIX COMPONENTS BY 700 EXCEPT IC19,IC20
J6
J5
OUTPUTS 1-8 AUDIO 60E
NOTE.– FOR 600E SOURCE TERMINATION, JUMPER PIN 4 to PIN 6
FOR 150E SOURCE TERMINATION, JUMPER PIN 4 to PIN 3
and PIN 6 to PIN 1
8 x 1 SECTION
OUTPUT AUDIO 60E 8x1
J1
OUTPUT LEVEL
N/C
CIRCUIT A
(FRONT PANEL)
GAIN
CMRR 500
CIRCUIT B IC22
CIRCUIT C IC23
CIRCUIT D IC24
CIRCUIT E IC25
CIRCUIT F IC26
CIRCUIT G IC27
CIRCUIT H IC28
J3
J2
INPUTS 1-8 (NOTE 3)

NOTES.
1. * OPTIONAL, NOT INSTALLED
2. ⊘ PRESET TRIM POT
3. TERMINATION INPUT WITH 600E WHERE NOT USED.

MDA-100
AUDIO SCHEMATIC

DRAWN M.F.	DATE 1[illegible]-MAY-[illegible]	D	DRAWING NUMBER MDA-100/2-1
CHECKED P.C.	DATE		



LAST USED	DESCRIPTION	DATE	REV.
C26			
T1			
R49			
CR9			
REG 2			
REG 1			

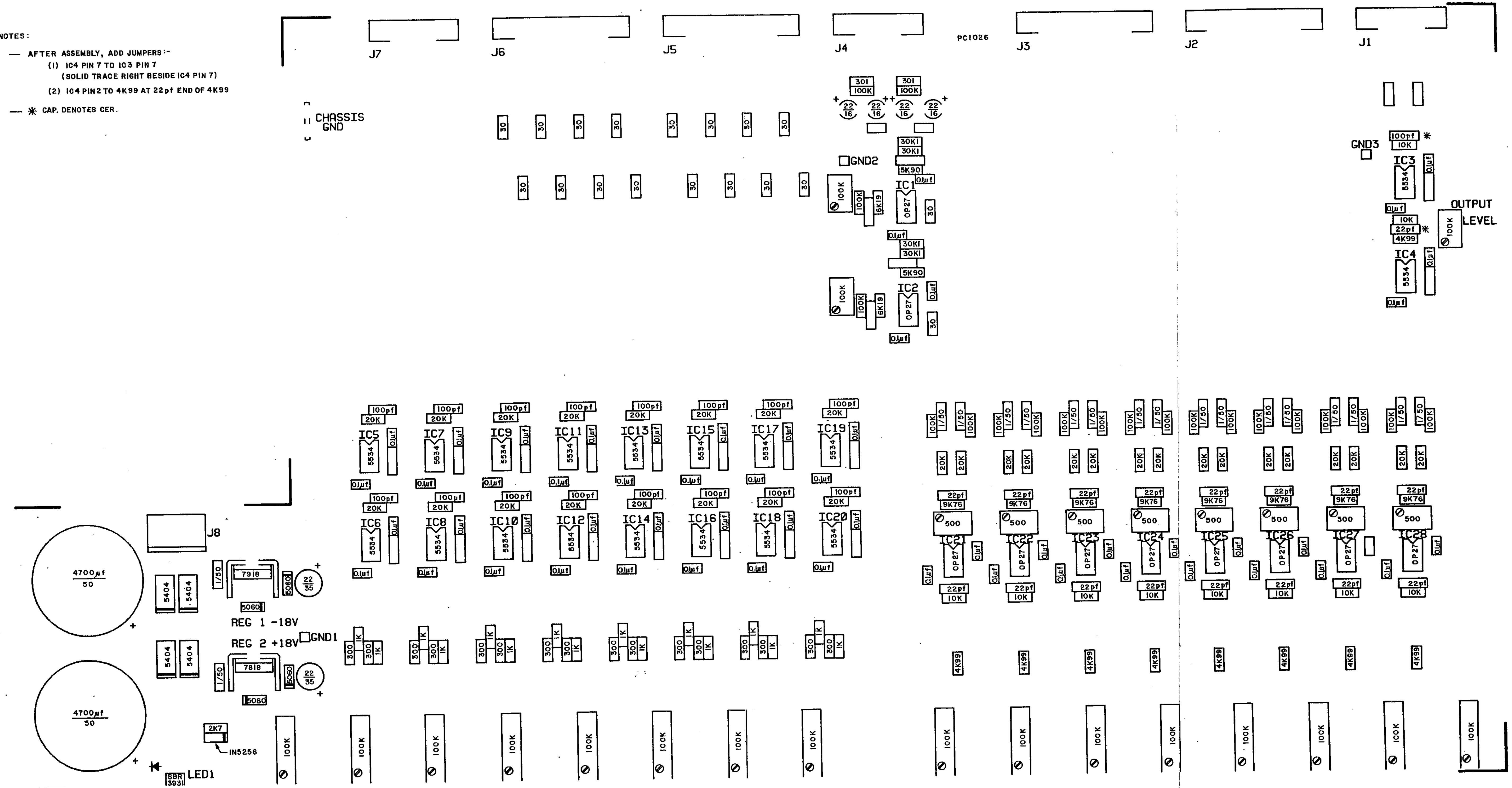
MDA-100
POWER SUPPLY SCHEMATIC

DRAWN	DATE	SIZE	DRAWING NUMBER
M.F.	13 AUG 87	C	MDA-100/2-2
CHECKED RNJ	DATE		

NOTES:

— AFTER ASSEMBLY, ADD JUMPERS:-
(1) IC4 PIN 7 TO IC3 PIN 7
(SOLID TRACE RIGHT BESIDE IC4 PIN 7)
(2) IC4 PIN 2 TO 4K99 AT 22pf END OF 4K99

— ✱ CAP. DENOTES CER.



REDRAWN: COMPONENT LAYOUT AND ASSEMBLY DIAGRAM SPLIT INTO SEPARATE DIAGRAMS. RENUMBERED: DWG. WAS MDA-100/8-1 MB/WY.	APR.90	2

MDA - 100
AUDIO AMPLIFIER
ASSEMBLY DRAWING

M.BUDZIAK	05JUN'89	D	MDA-100/8-2
W.YAU	05JUN'89		