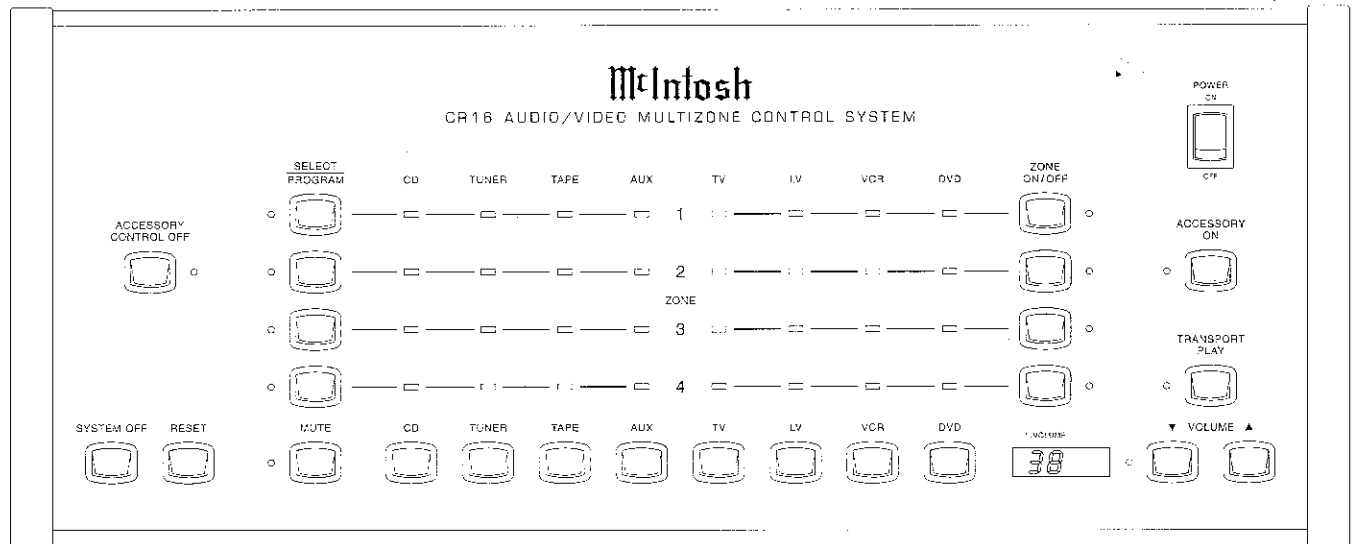


CR16

AUDIO/VIDEO MULTIZONE CONTROL SYSTEM



CONTENTS

Performance Specifications	2	Data I/O Schematic and PCB	21 - 28
Notes	2	Output Schematic and PCB	29 - 36
Rear Panel	3	Interface Schematic and PCB	37 - 40
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McIntosh®

SERVICE MANUAL

PERFORMANCE SPECIFICATIONS

Frequency Response

+0, -0.5dB from 20Hz to 20,000Hz

Total Harmonic Distortion

0.01% maximum from 20Hz to 20,000Hz, all channels at rated output

Signal To Noise Ratio (A Weighted)

90dB below rated output

Rated Output Voltage

1.25V

Maximum Output Voltage

6V from 20Hz to 20,000Hz

Sensitivity

All inputs, 0.25V for 1.25V rated output

Input Impedance

22k ohms

Maximum Input Signal

8V

Voltage Gain

Input to Variable Outputs 14dB

Input to Fixed (Balanced) Outputs 0dB

Tone Controls

Bass and Treble 12dB boost or cut (Level controls at center detent)

Power Requirements

120 Volts, 50/60Hz at 35 watts

Dimensions

17-1/2 inches (44.5cm) Wide, 7-1/16 inches (17.9cm) High, 14-1/2 inches (36.8cm) Deep

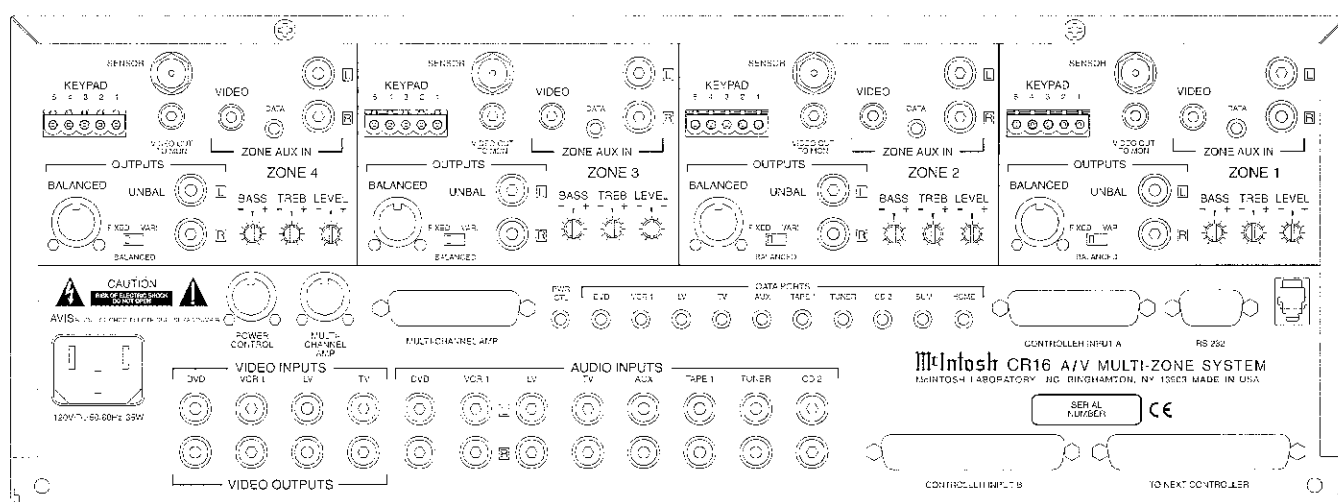
Weight

27.2 pounds (12.2 kg) net, 39.5 pounds (18 kg) in shipping carton

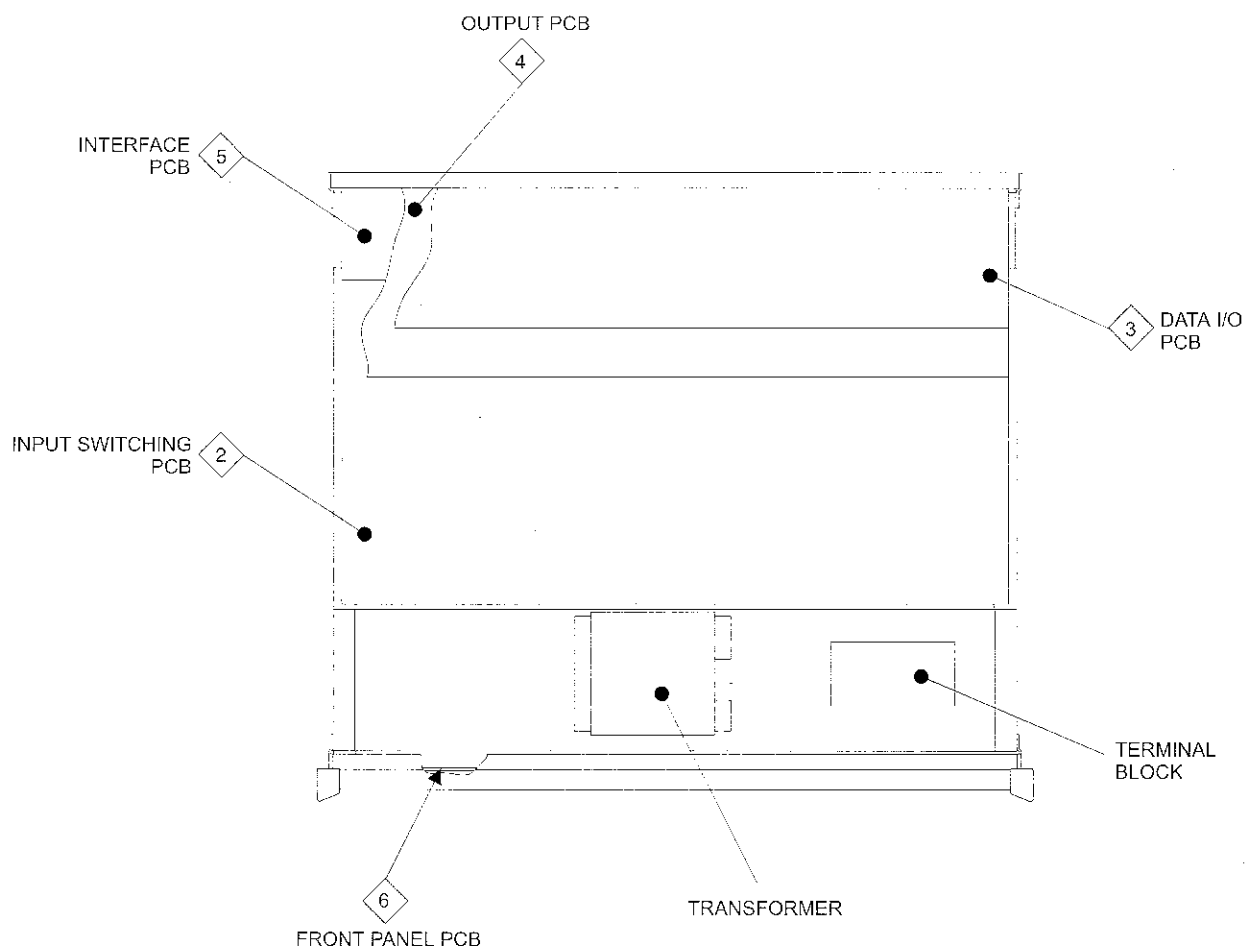
NOTES

1. The heavy notes on the schematic denote the primary signal path.
2. Unless otherwise noted, all voltages indicated on the schematics are measured under the following conditions:
 - a. AC input at 120 volts, 50/60Hz.
 - b. All voltages are +/-10% with respect to ground. A high impedance (10 megaohm) voltmeter must be used.
3. Unless otherwise specified:
 - a. Resistor values are in ohms.
 - b. Capacitor values are microfarads (uF).
 - c. Inductor values are in microhenries (uH).
4. On PC board drawings, Square pad indicates:
 - a. Polarized Capacitors - Positive
 - b. Diodes - Cathode
 - c. Others - Pin 1
5. **WARNING**
Parts marked with the symbol  have critical characteristics. Use only replacement parts recommended by the manufacturer.
6. Use McIntosh Remote Control Model HRL042 with the CR16.

REAR PANEL

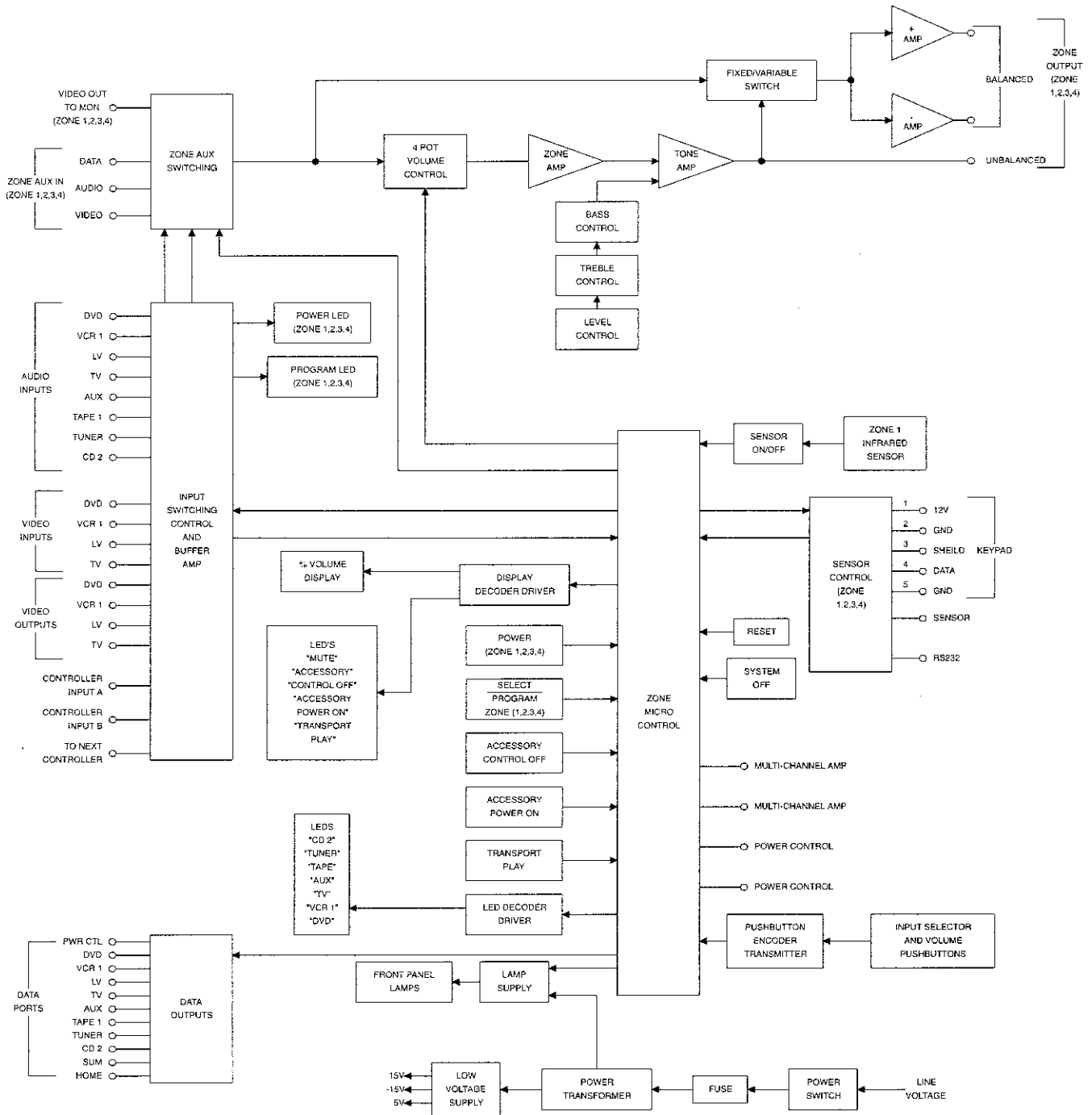


SECTION LOCATION

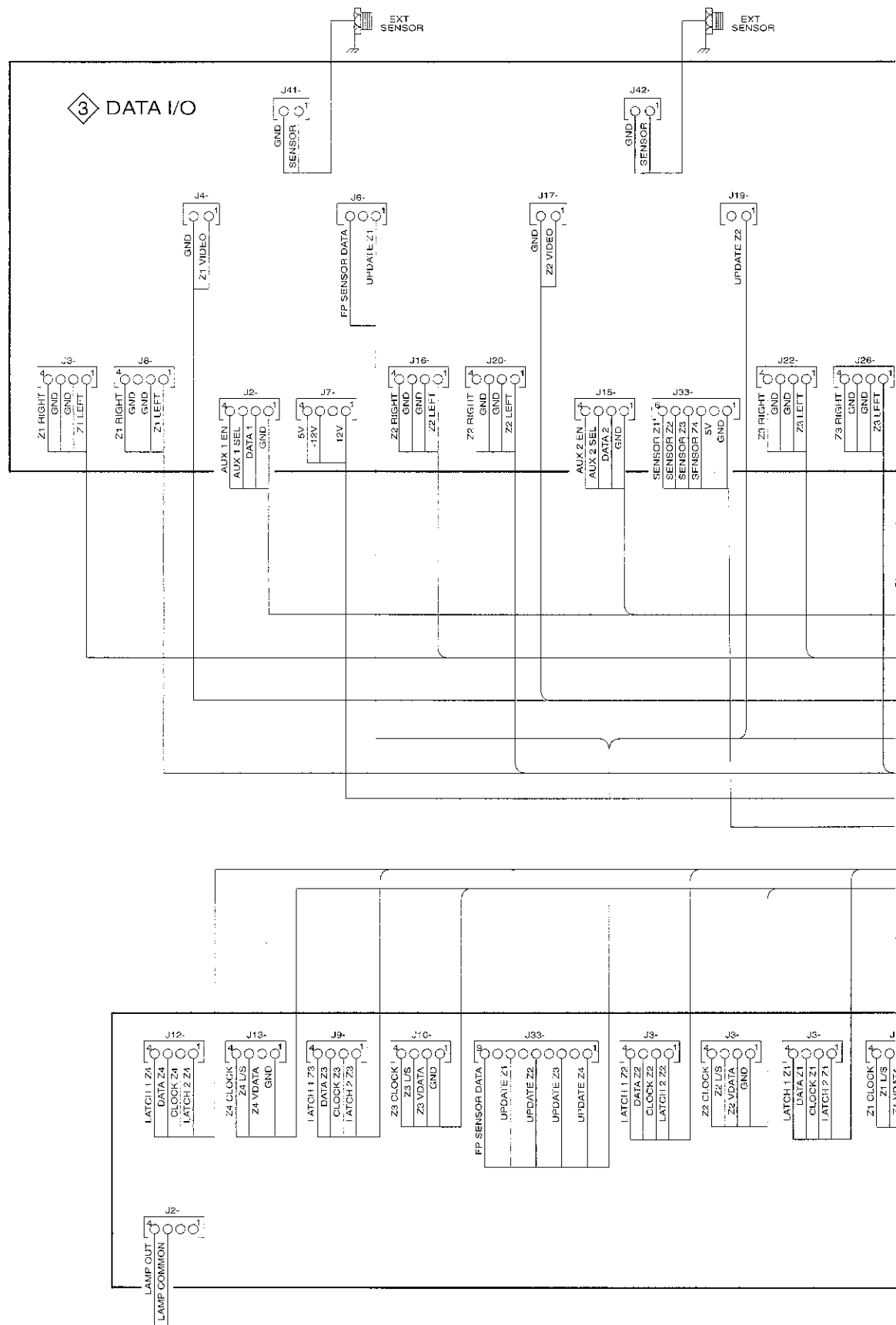


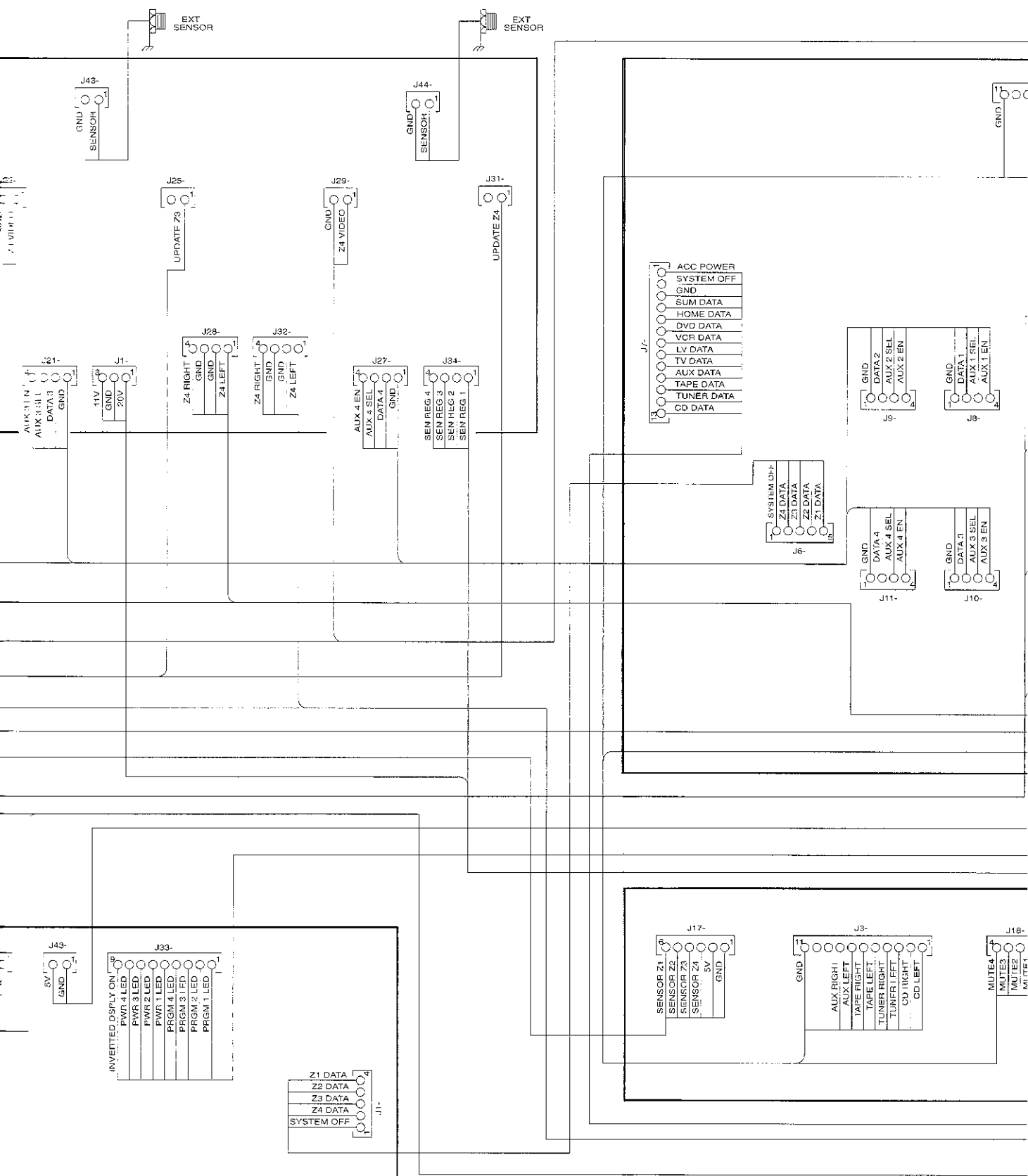
TOP VIEW WITH COVER REMOVED

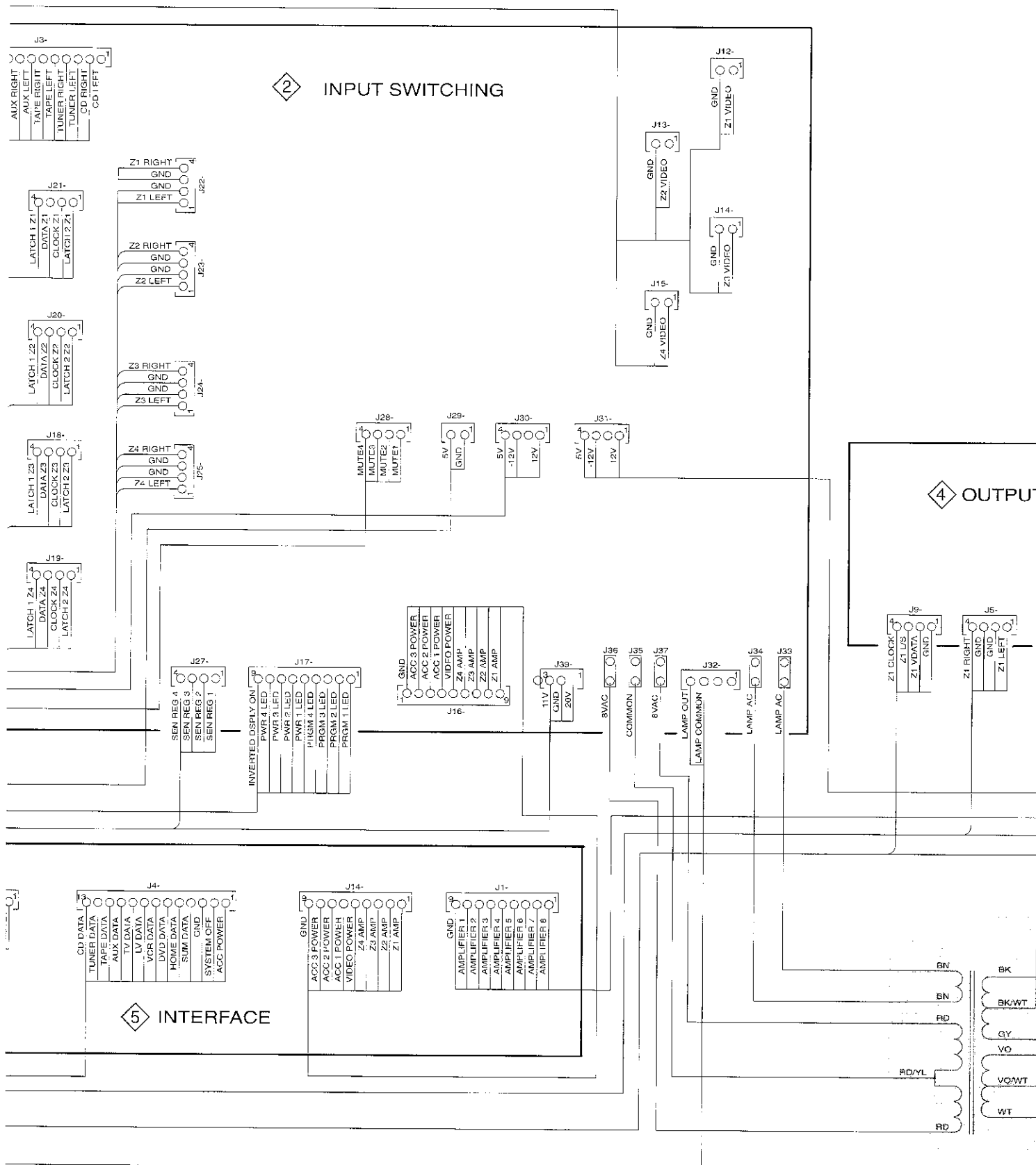
BLOCK DIAGRAM

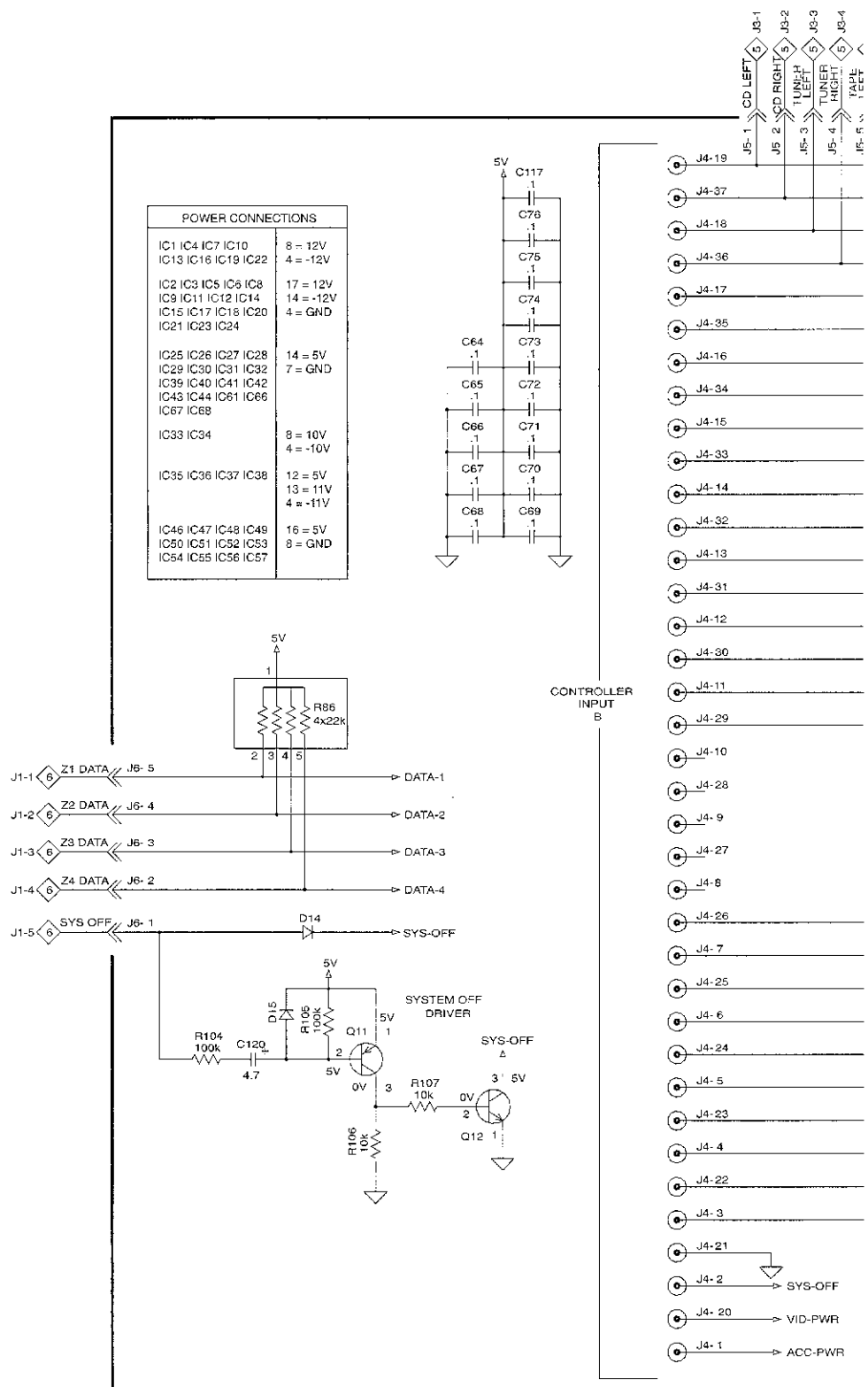


INTERCONNECT

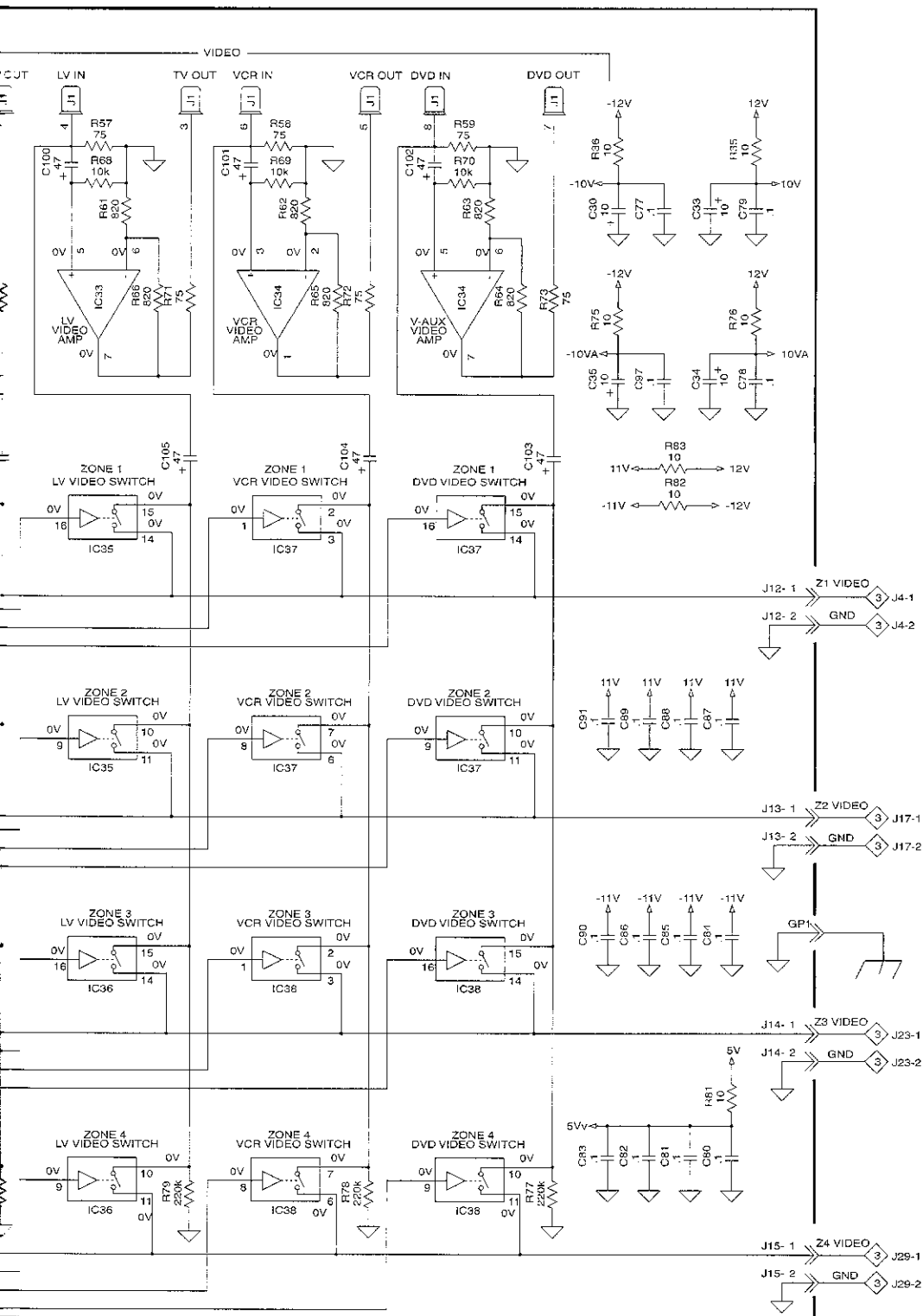


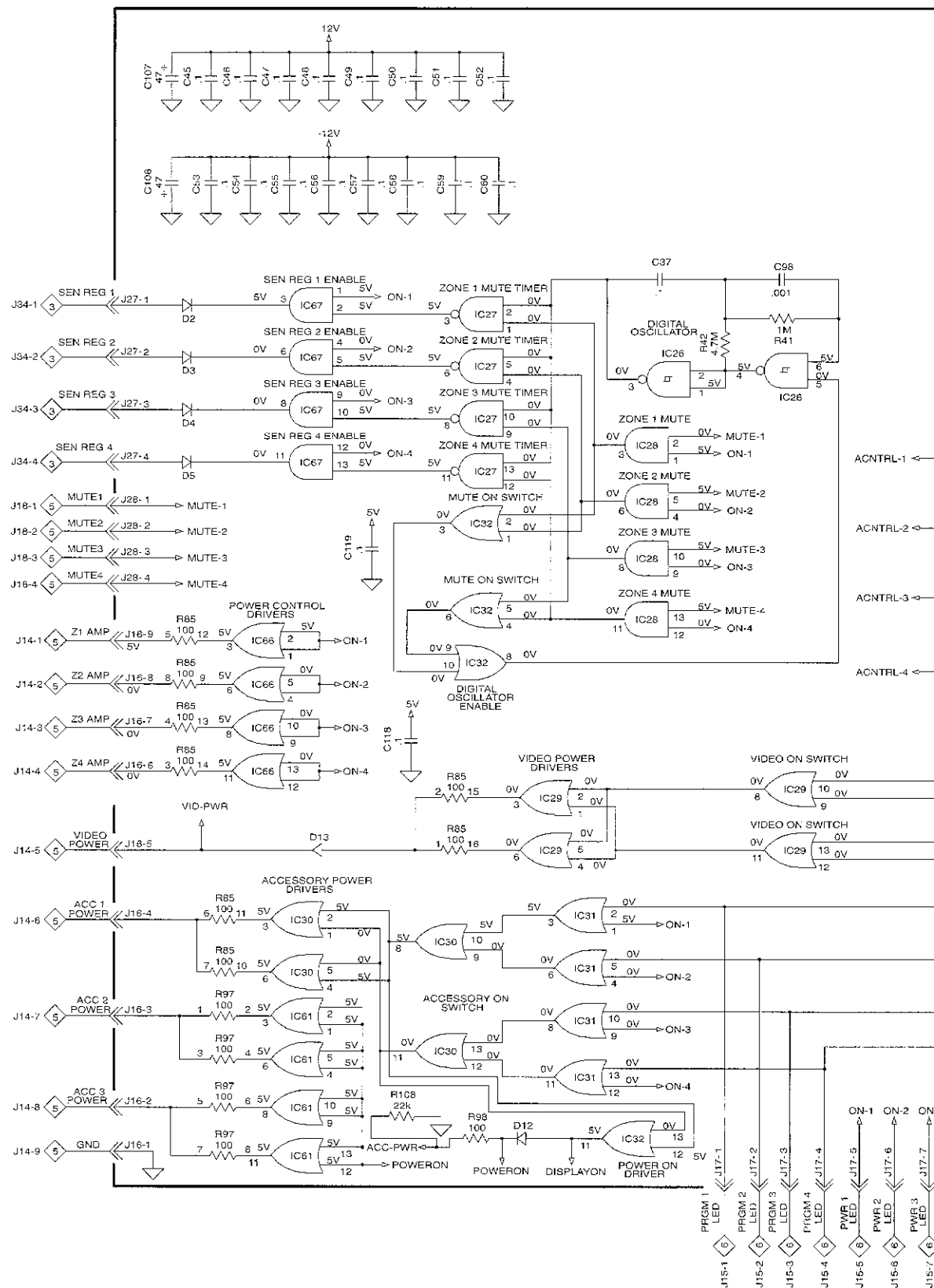


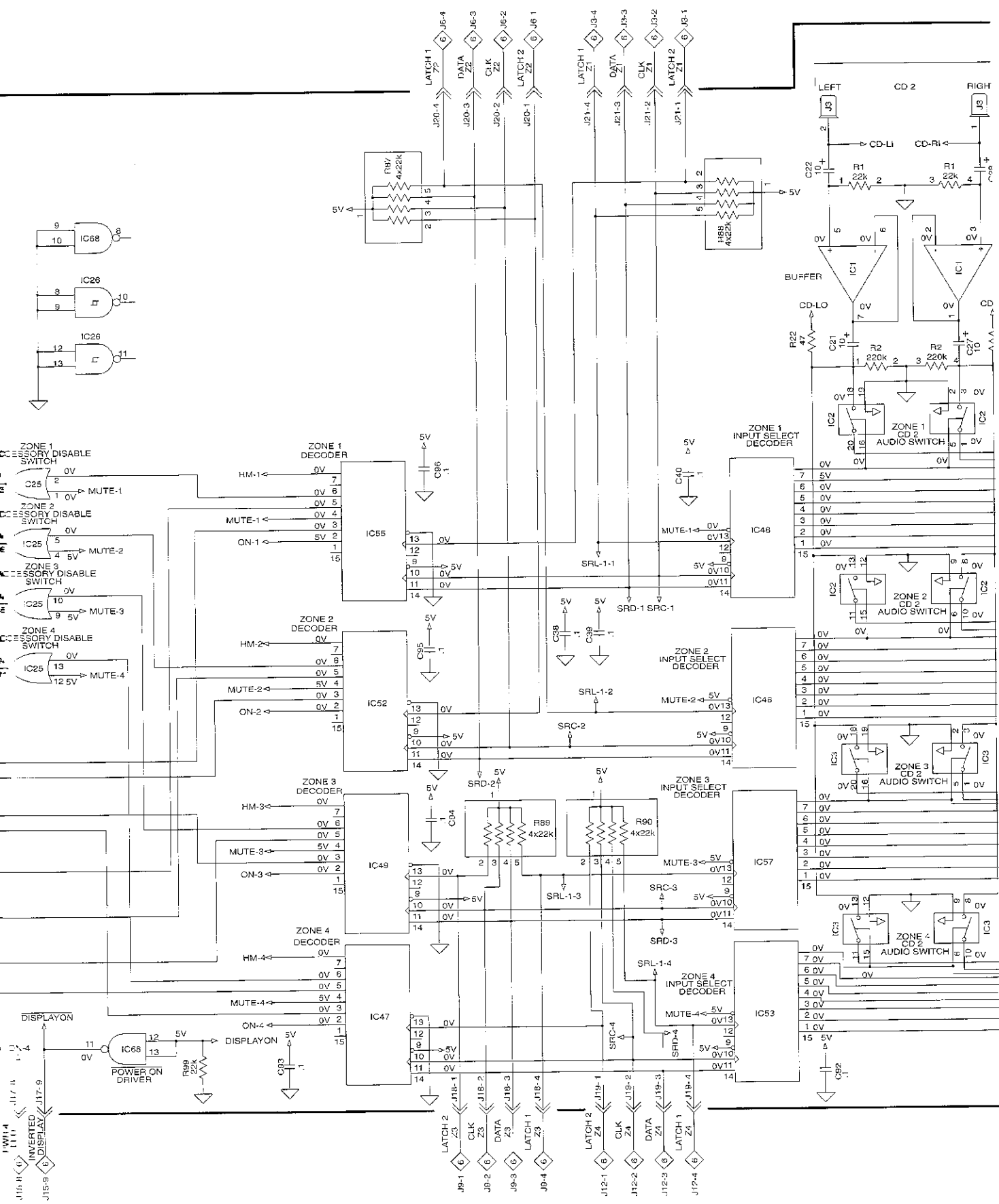




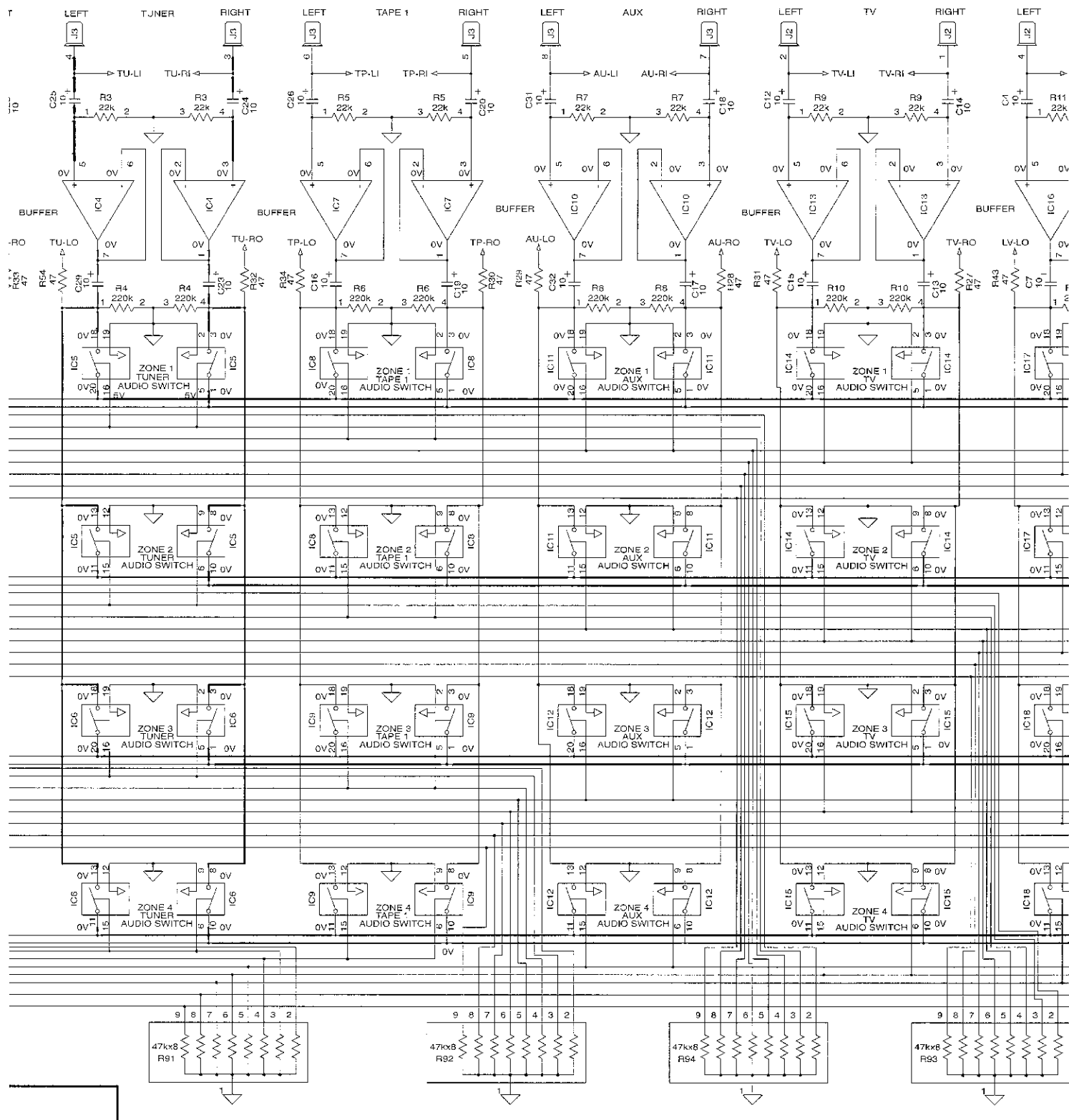


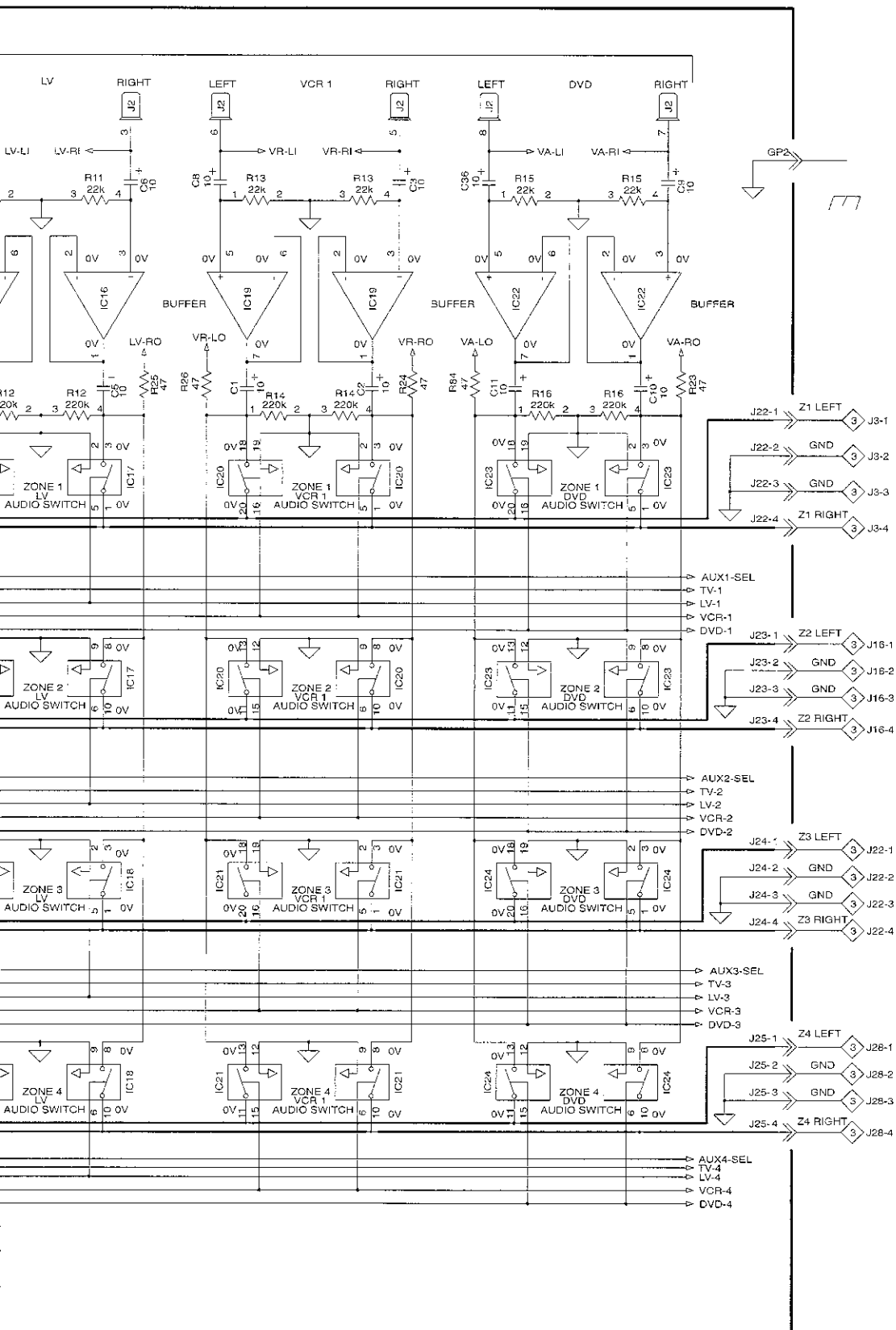


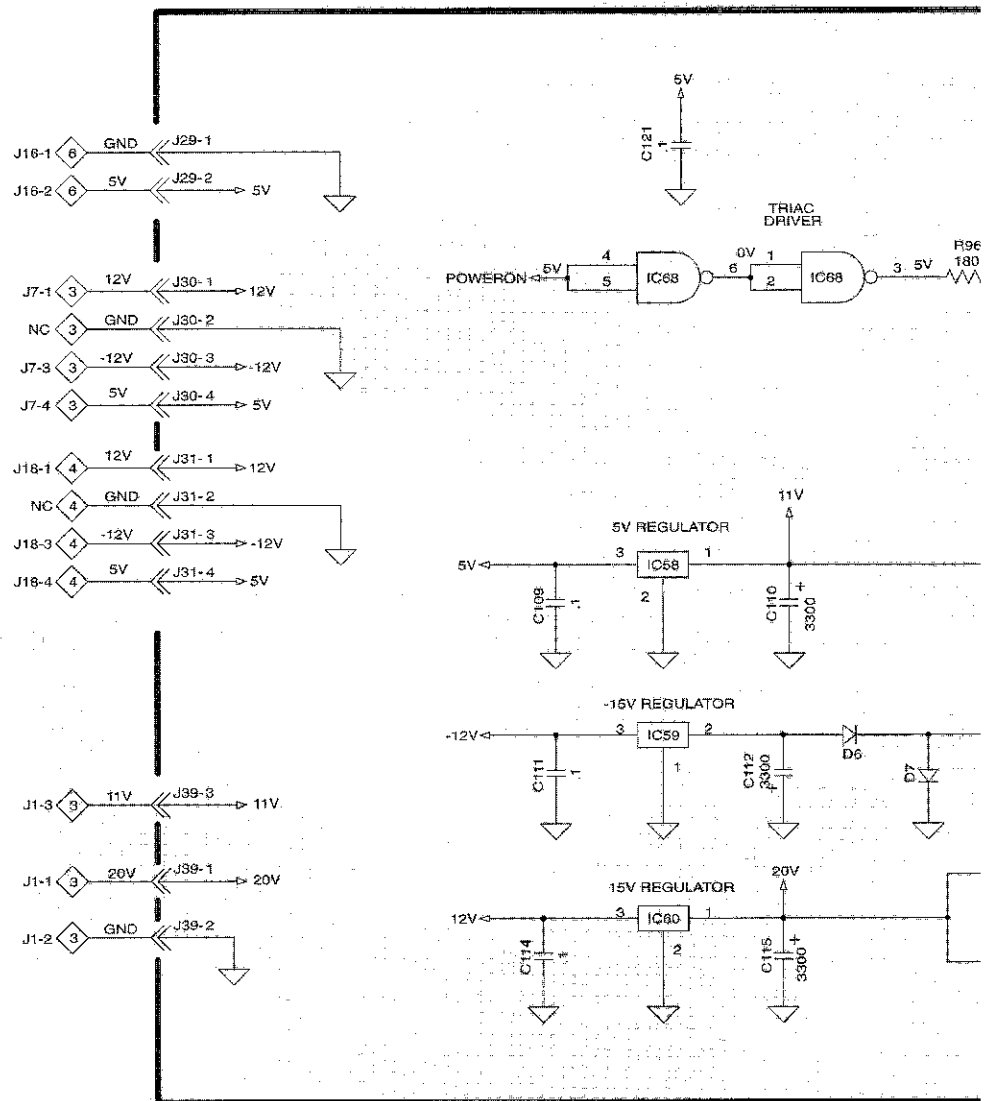


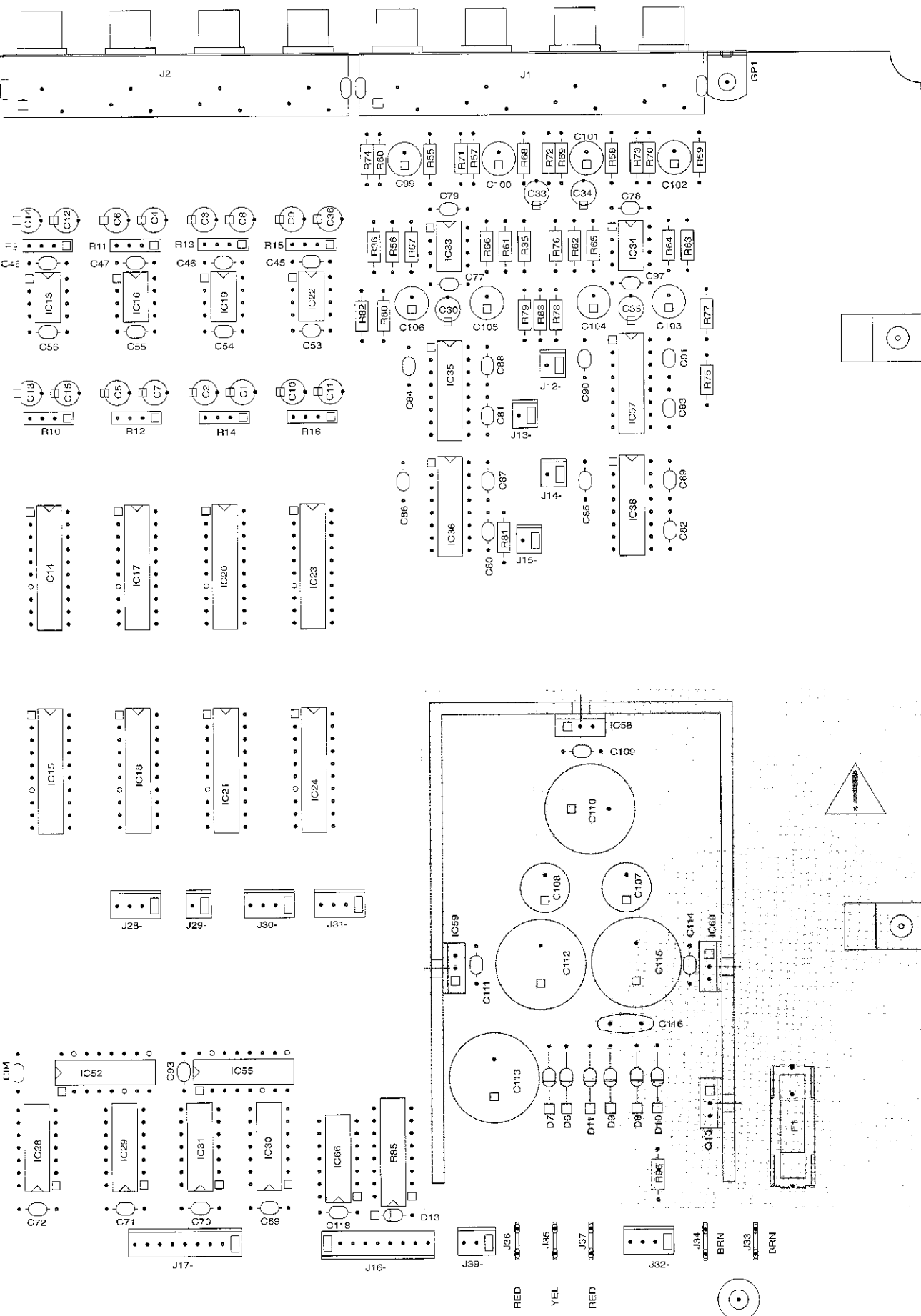


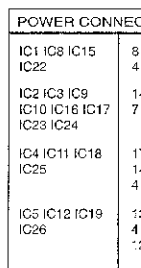
AUDIO INPUTS



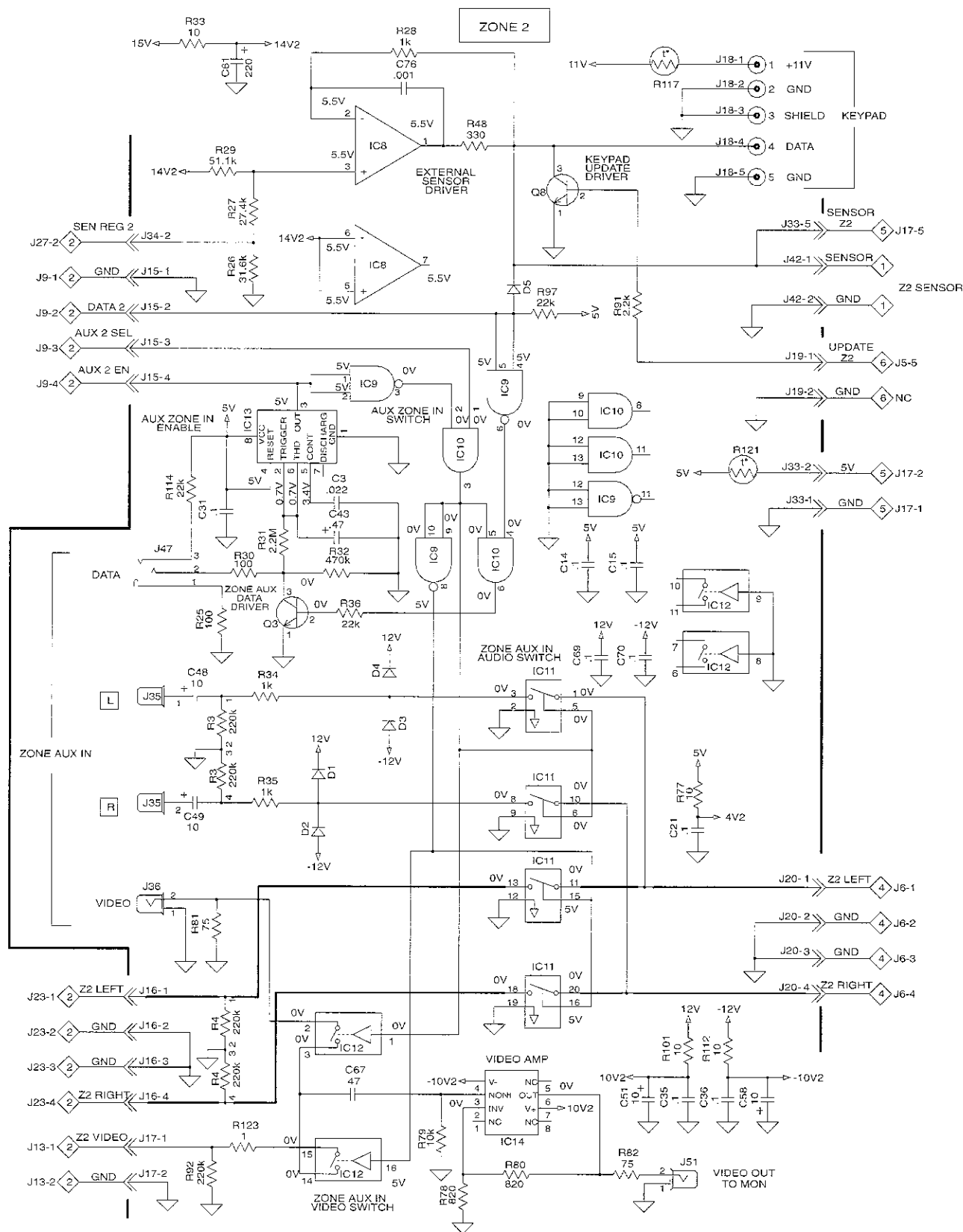


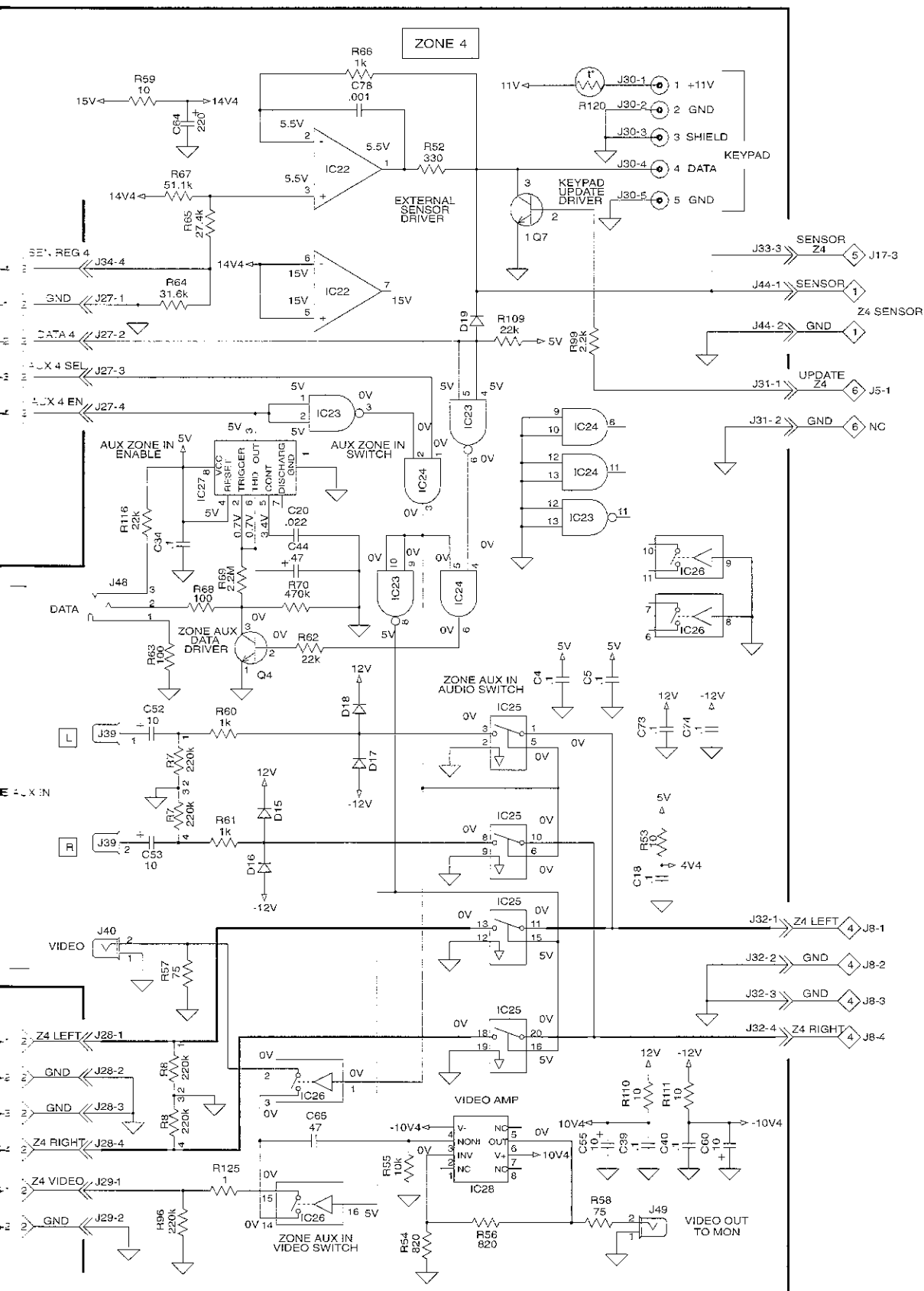


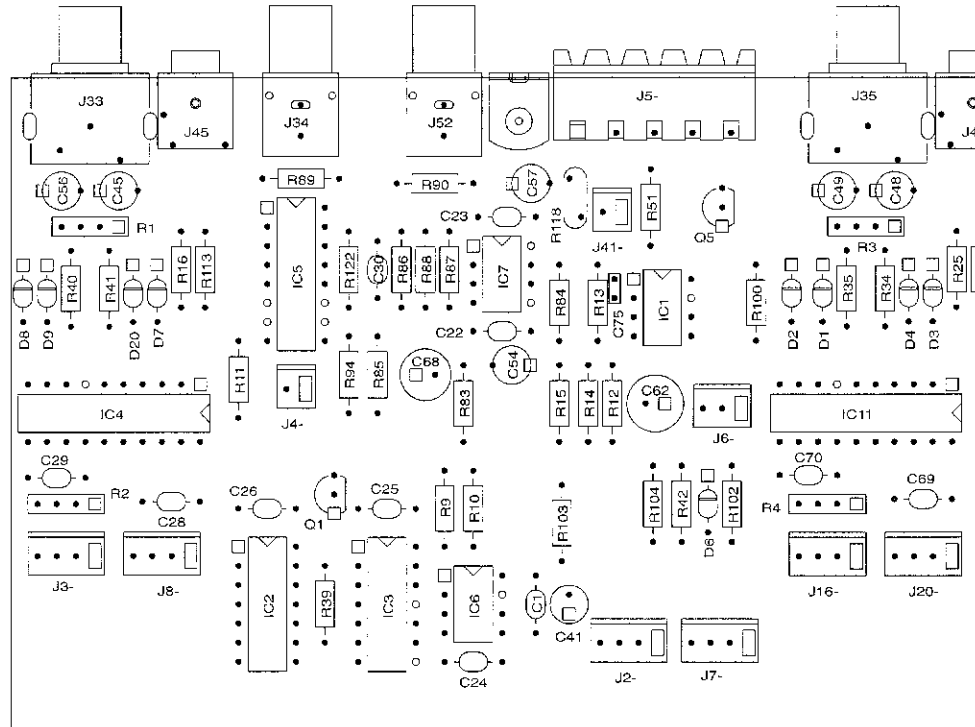


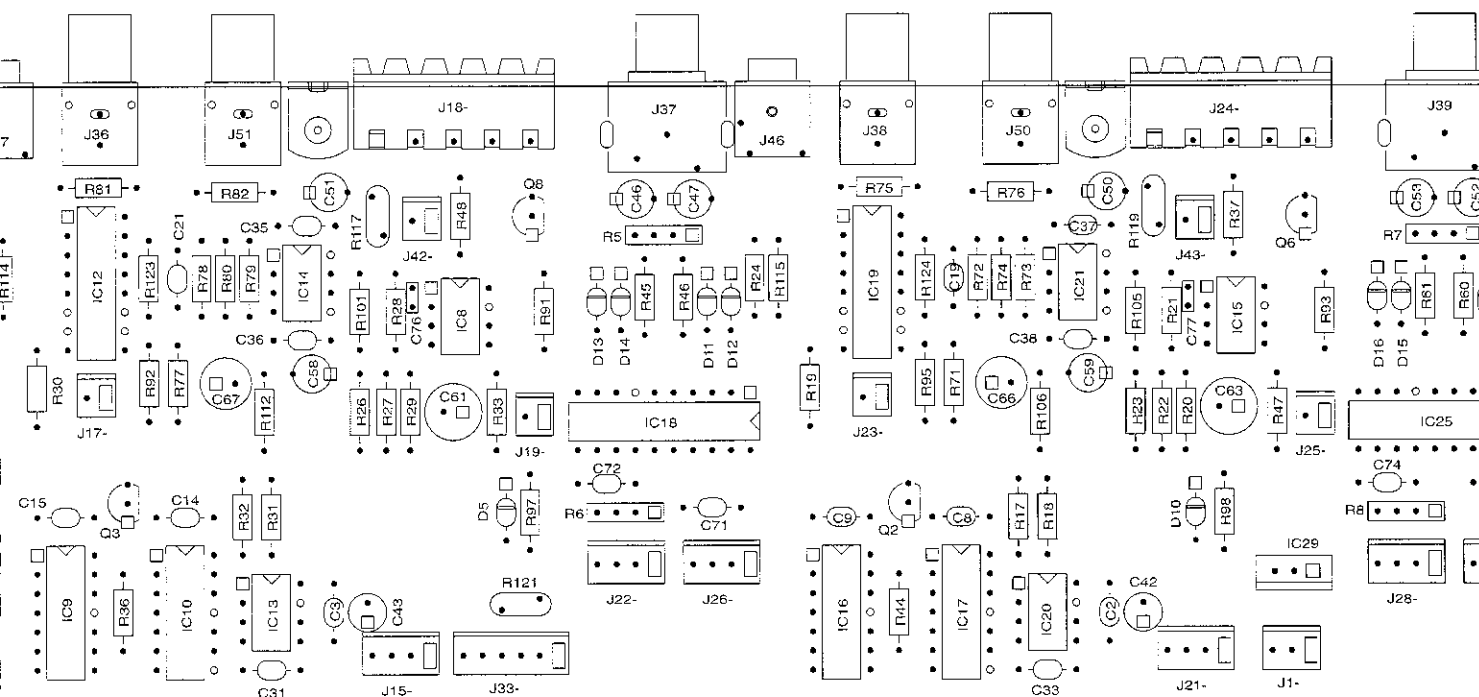


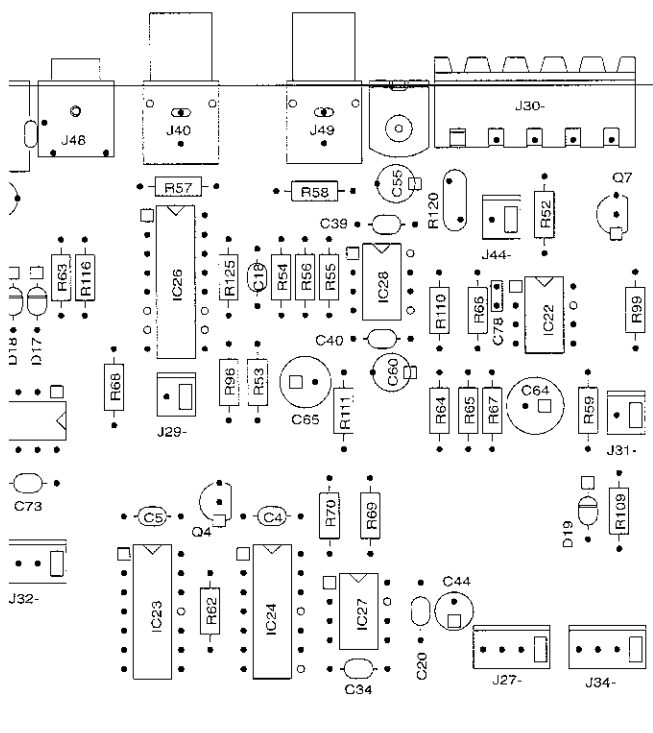
TIONS
 = 14V
 = GND
 = 5V
 = GND
 = 12V
 = -12V
 = GND
 = 10V
 = -10V
 = 4V

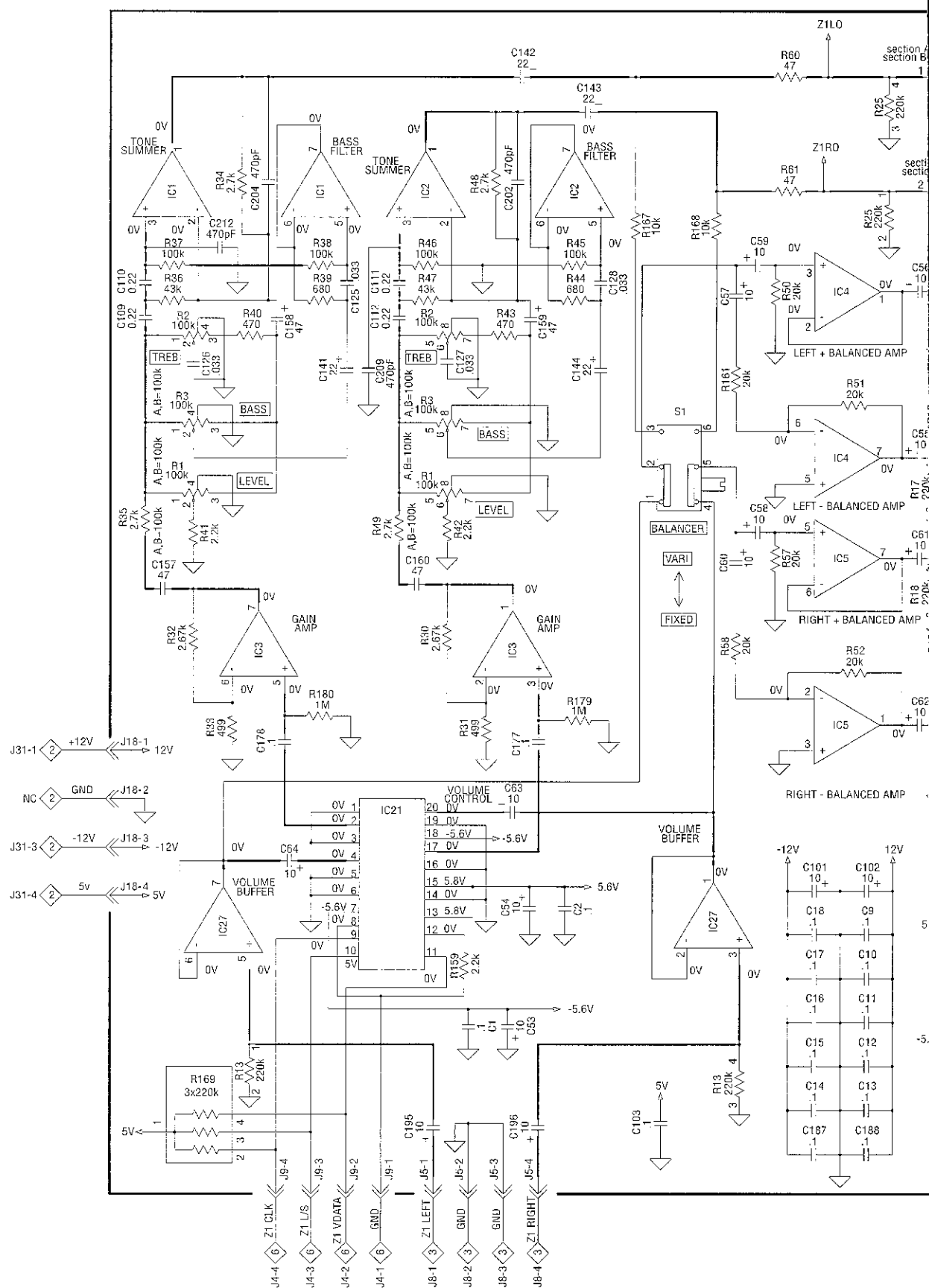


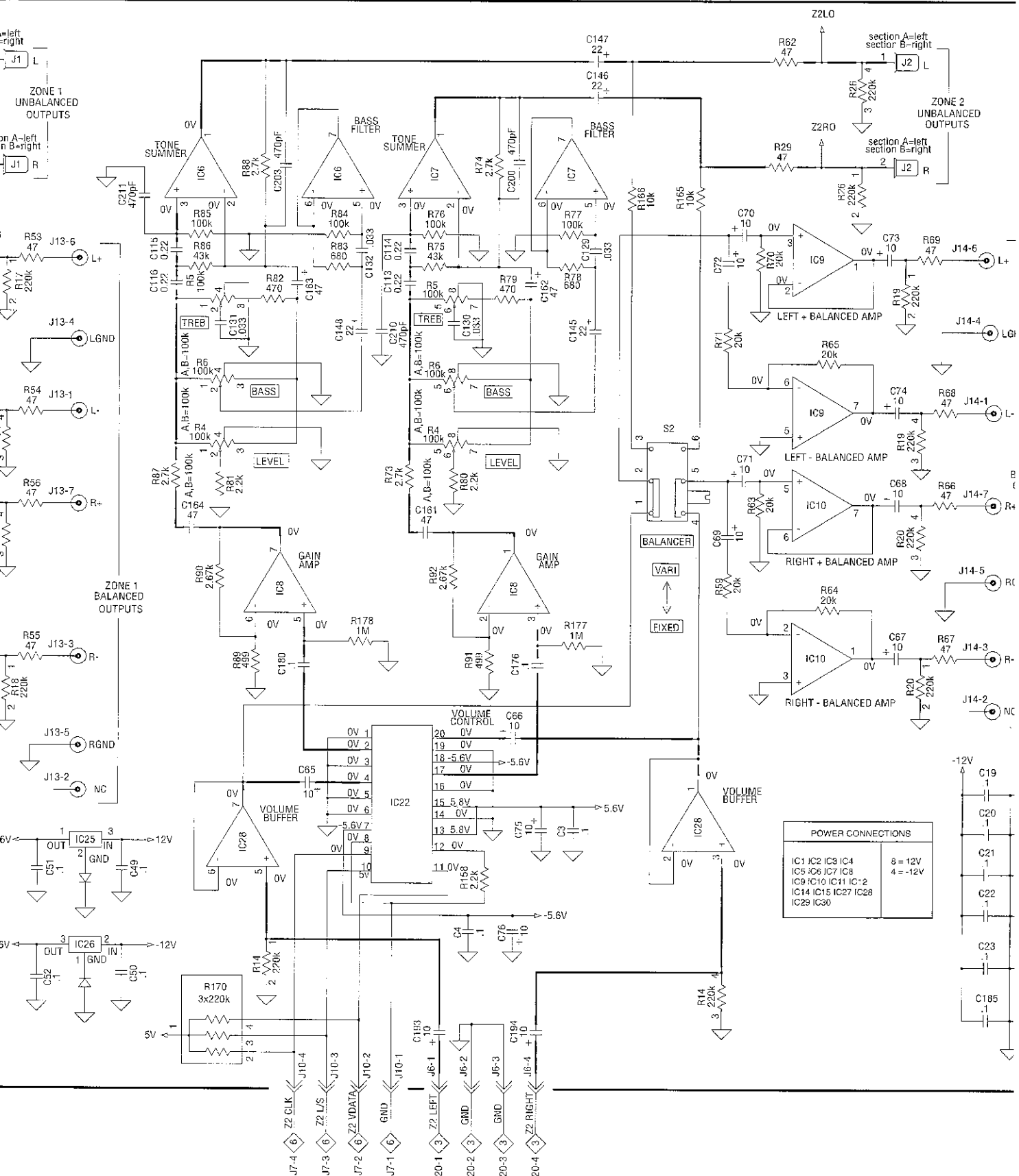


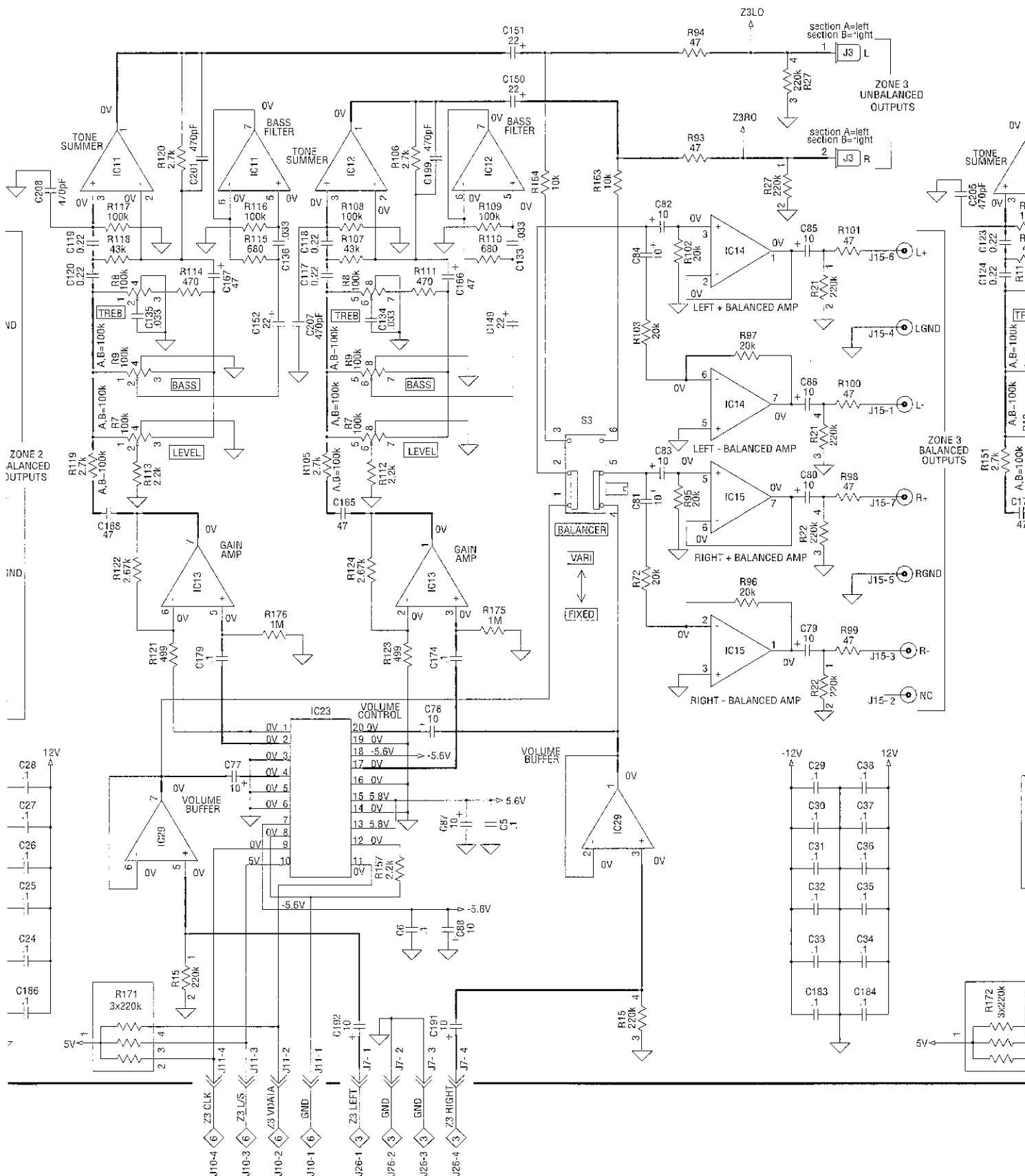


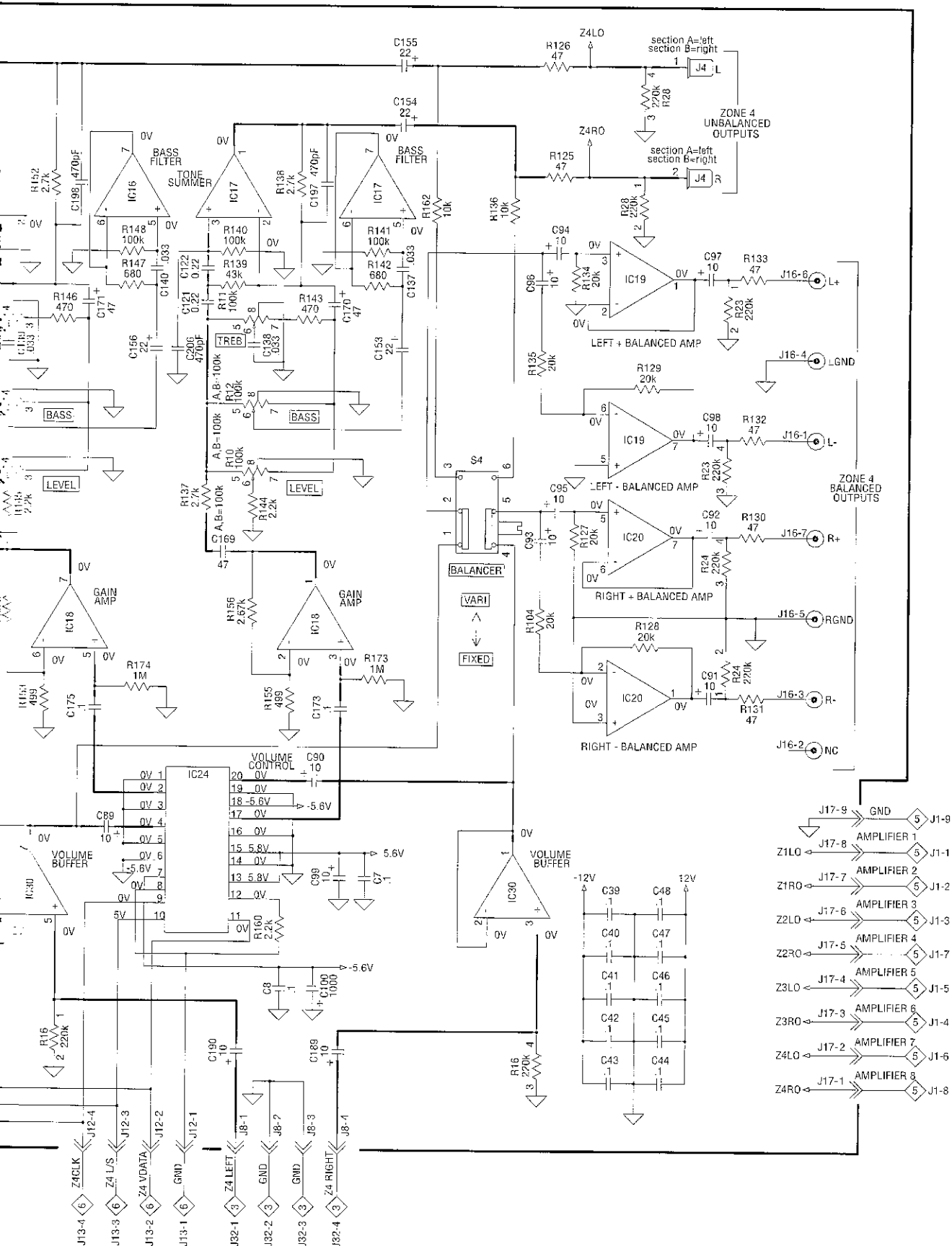






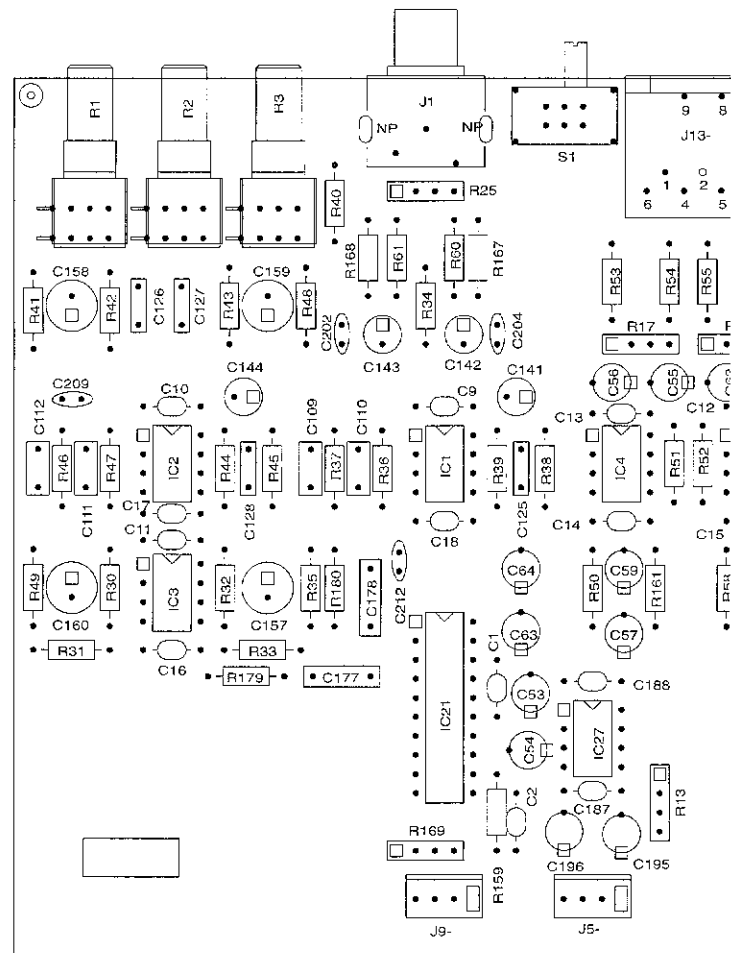


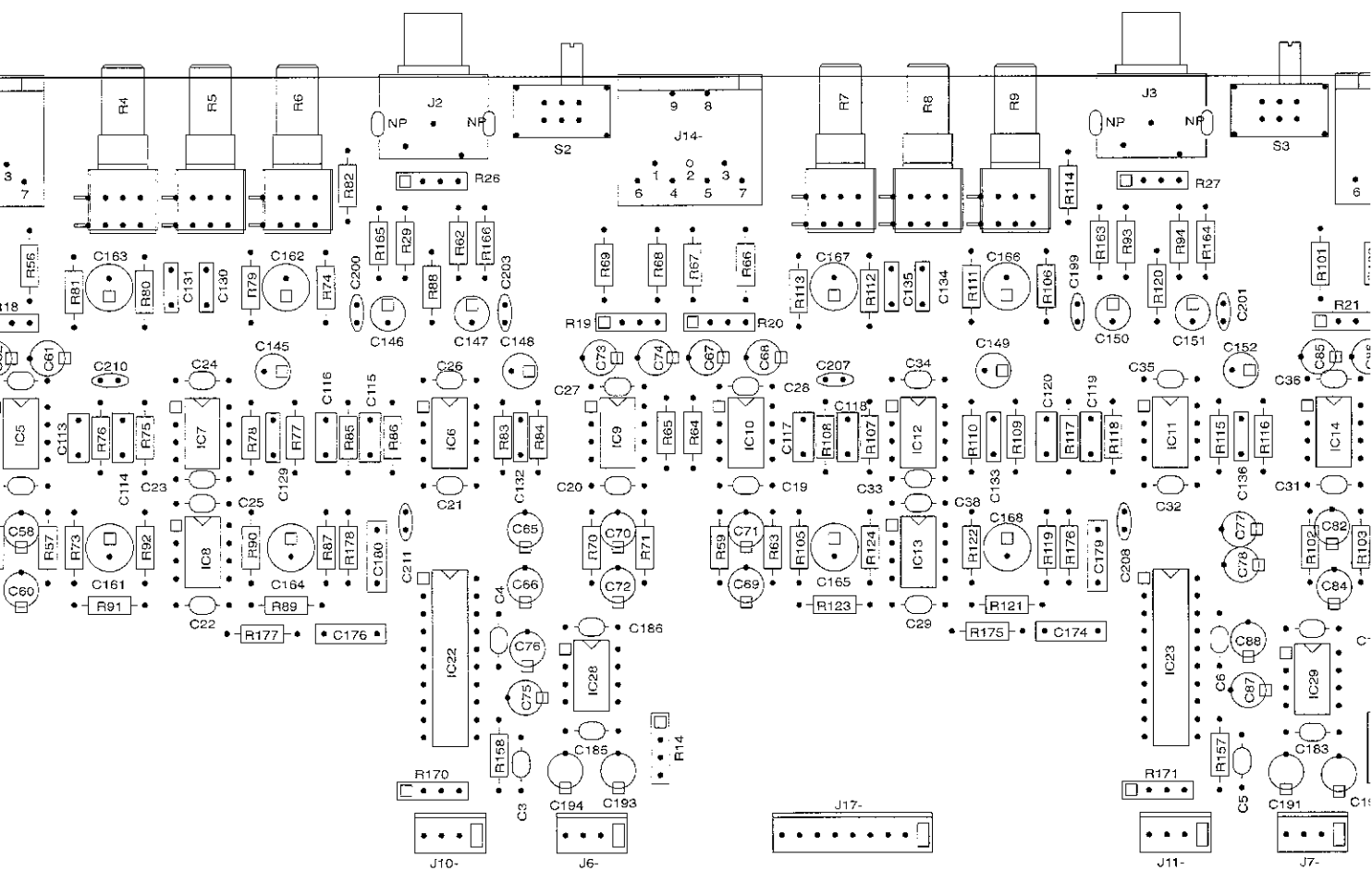


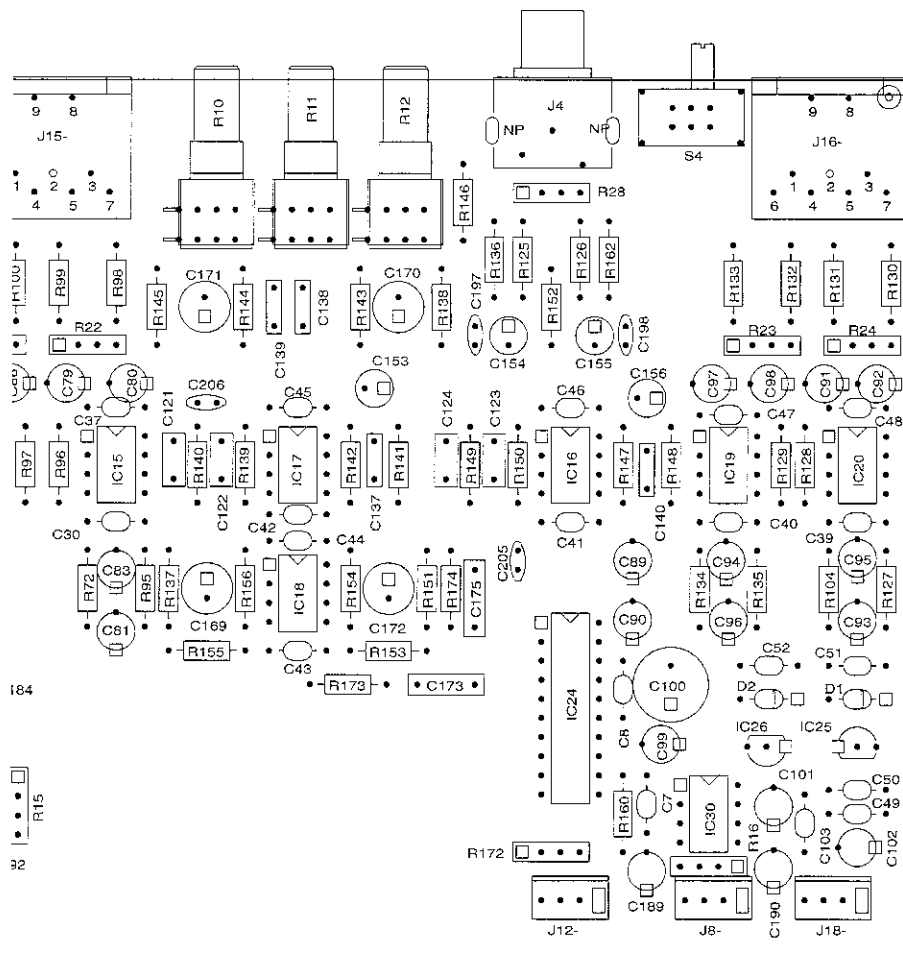


4

DATA I/O 049452

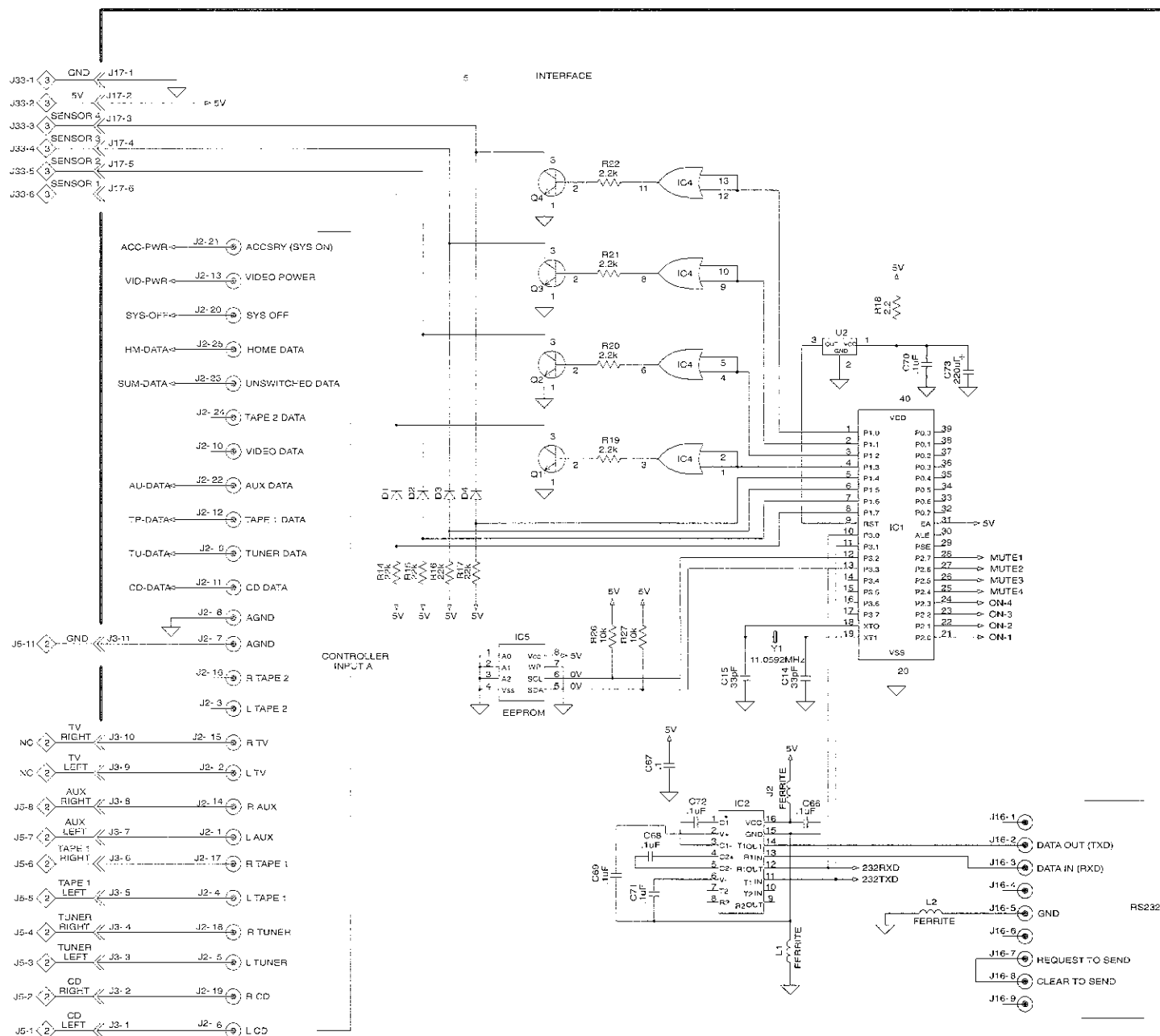


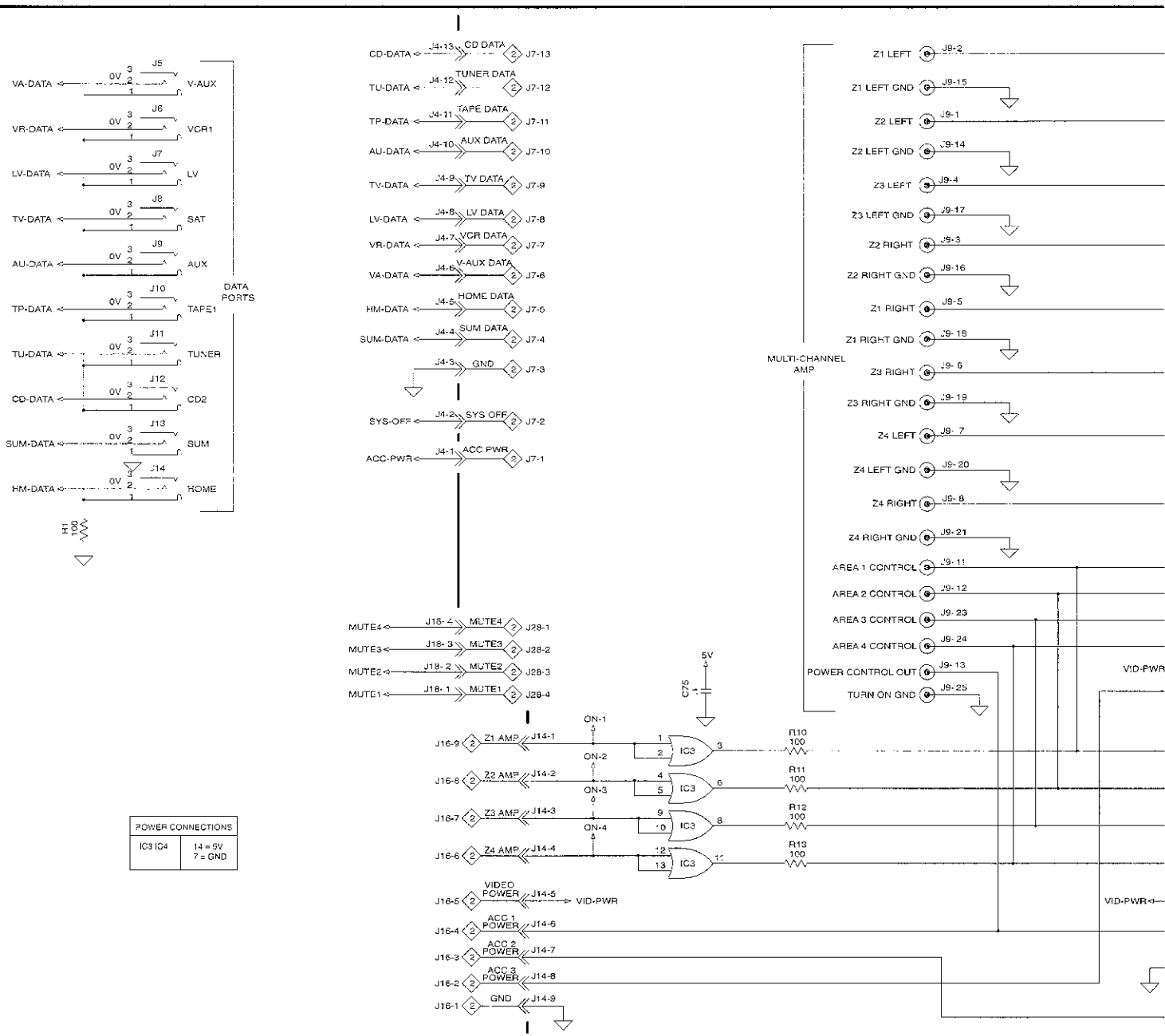


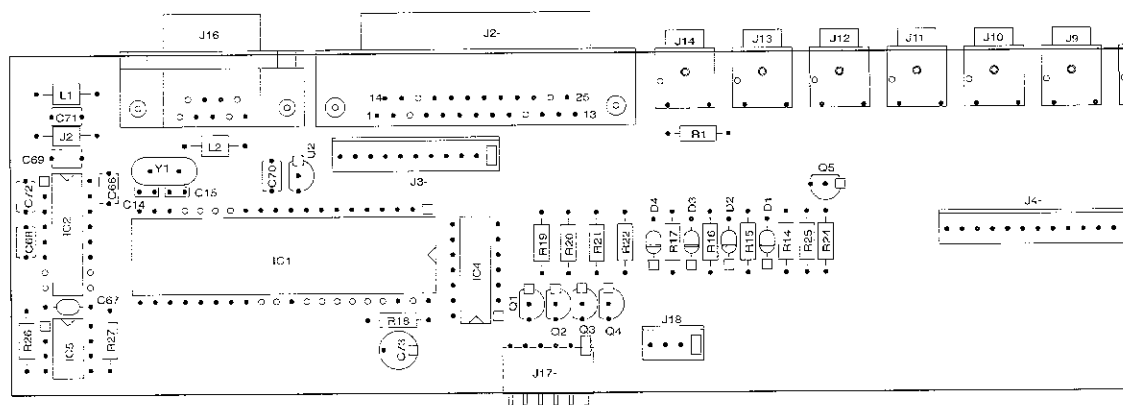
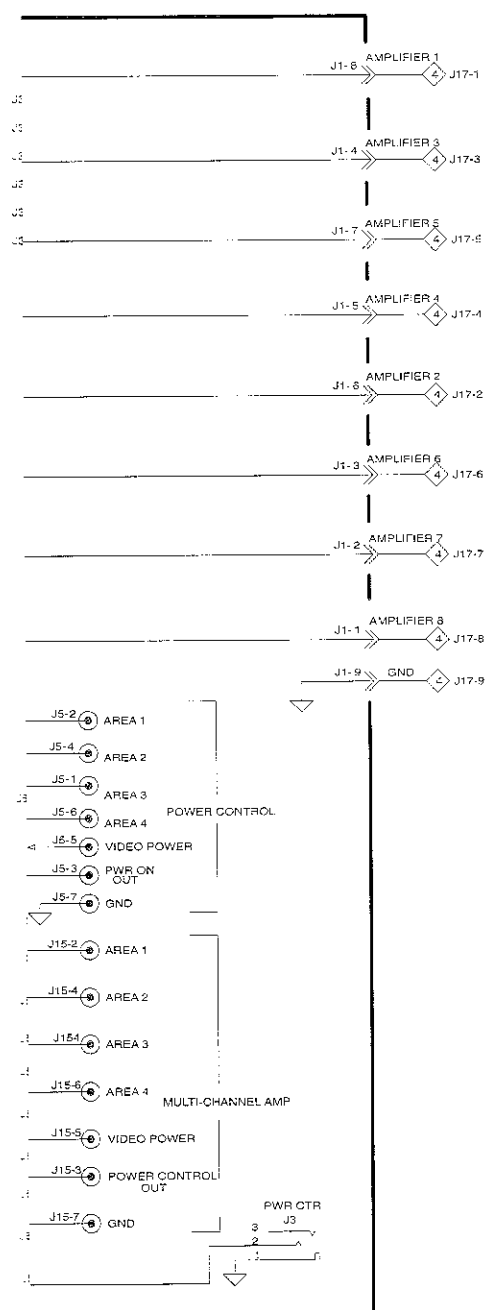


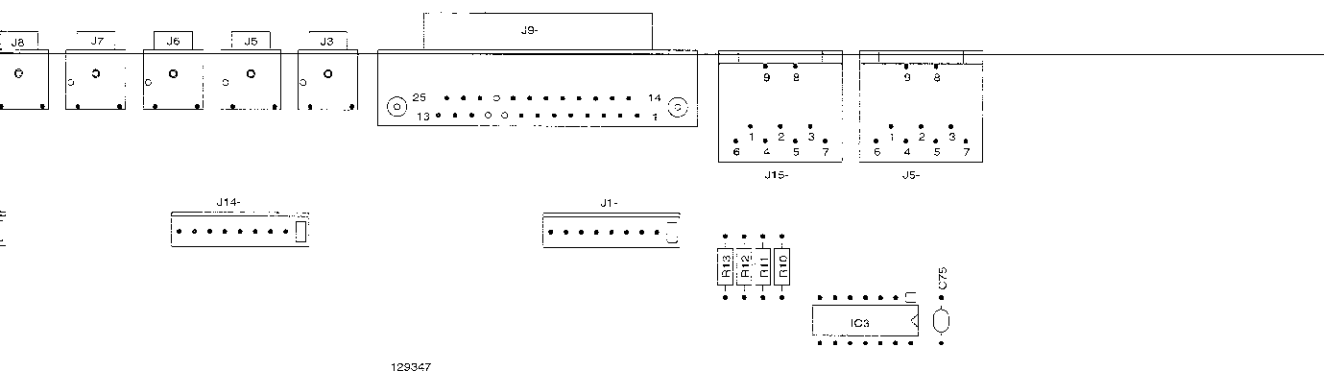
5

INTERFACE 049450

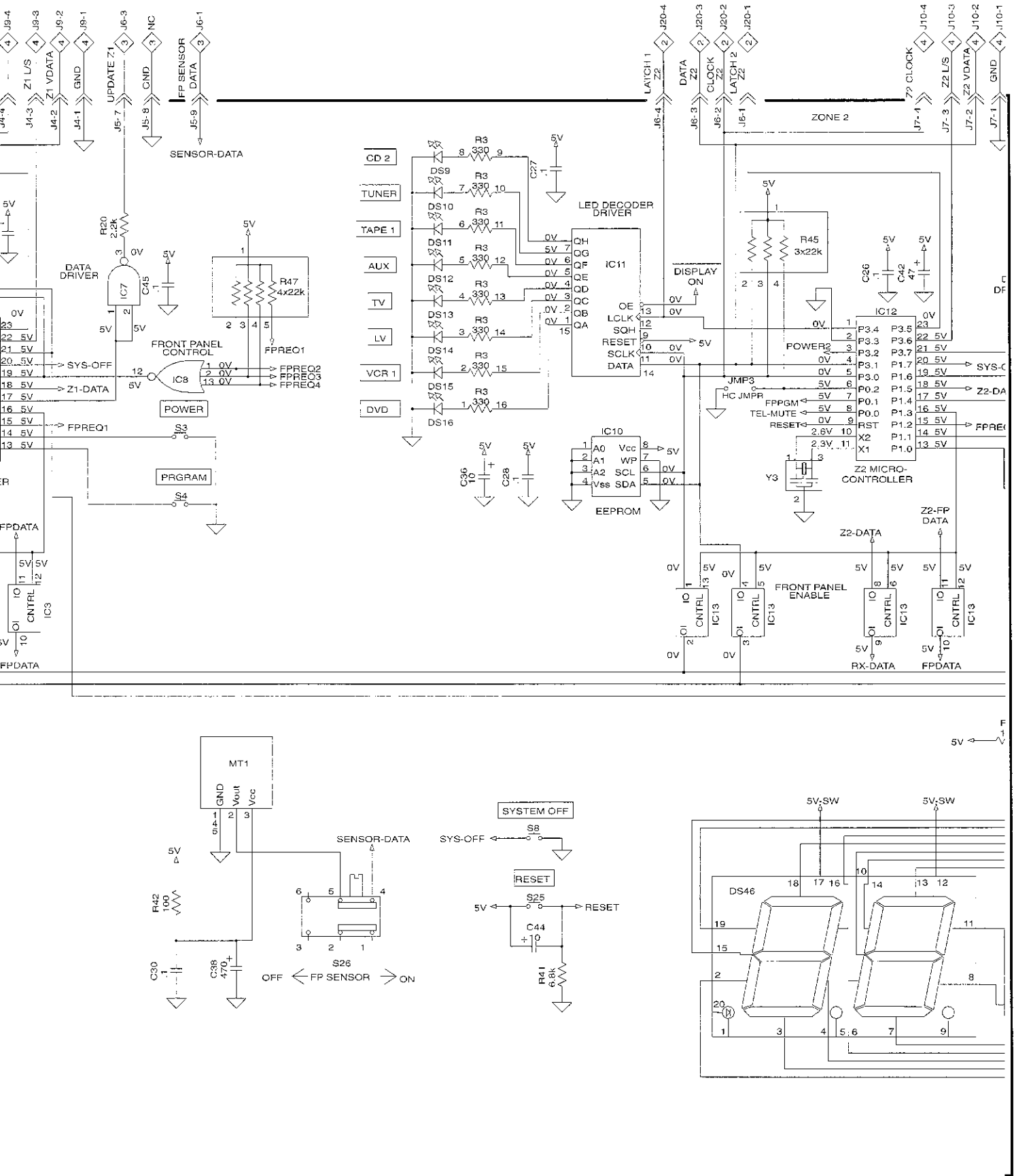


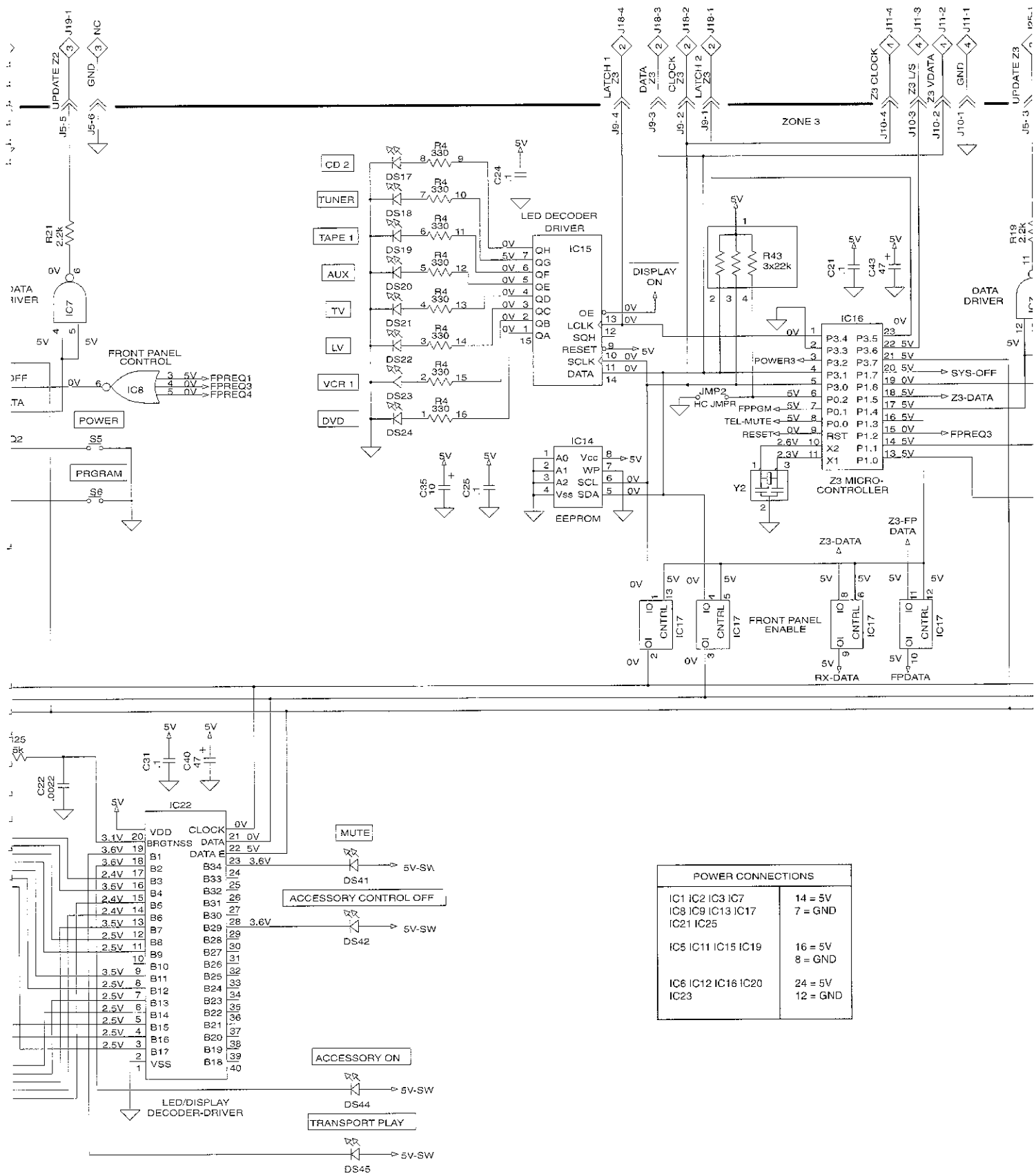






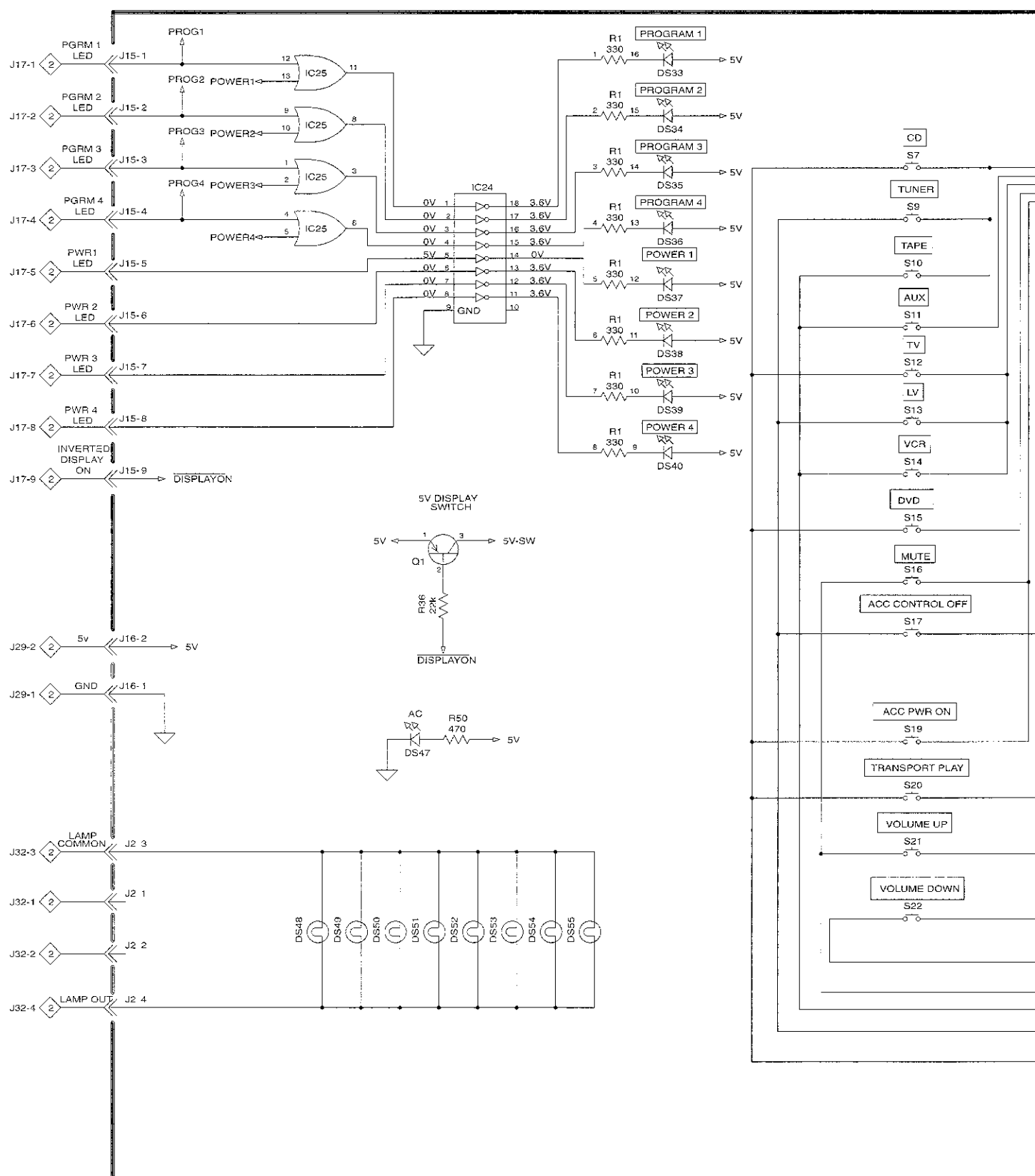


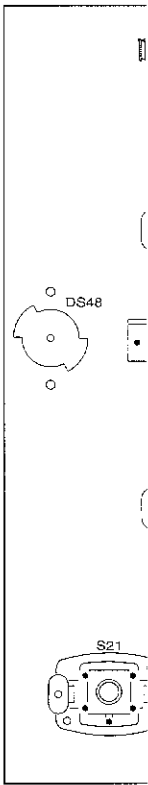




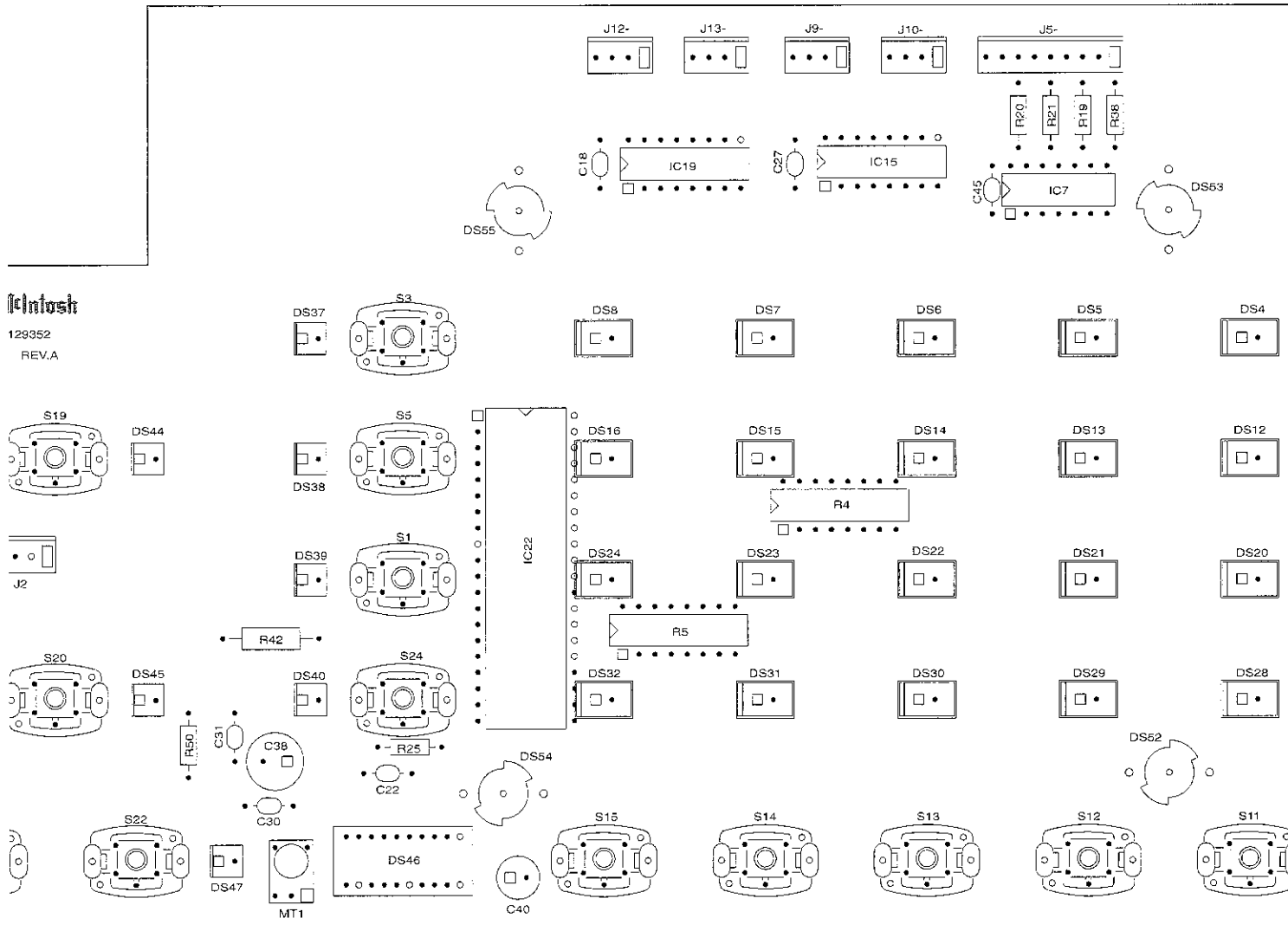
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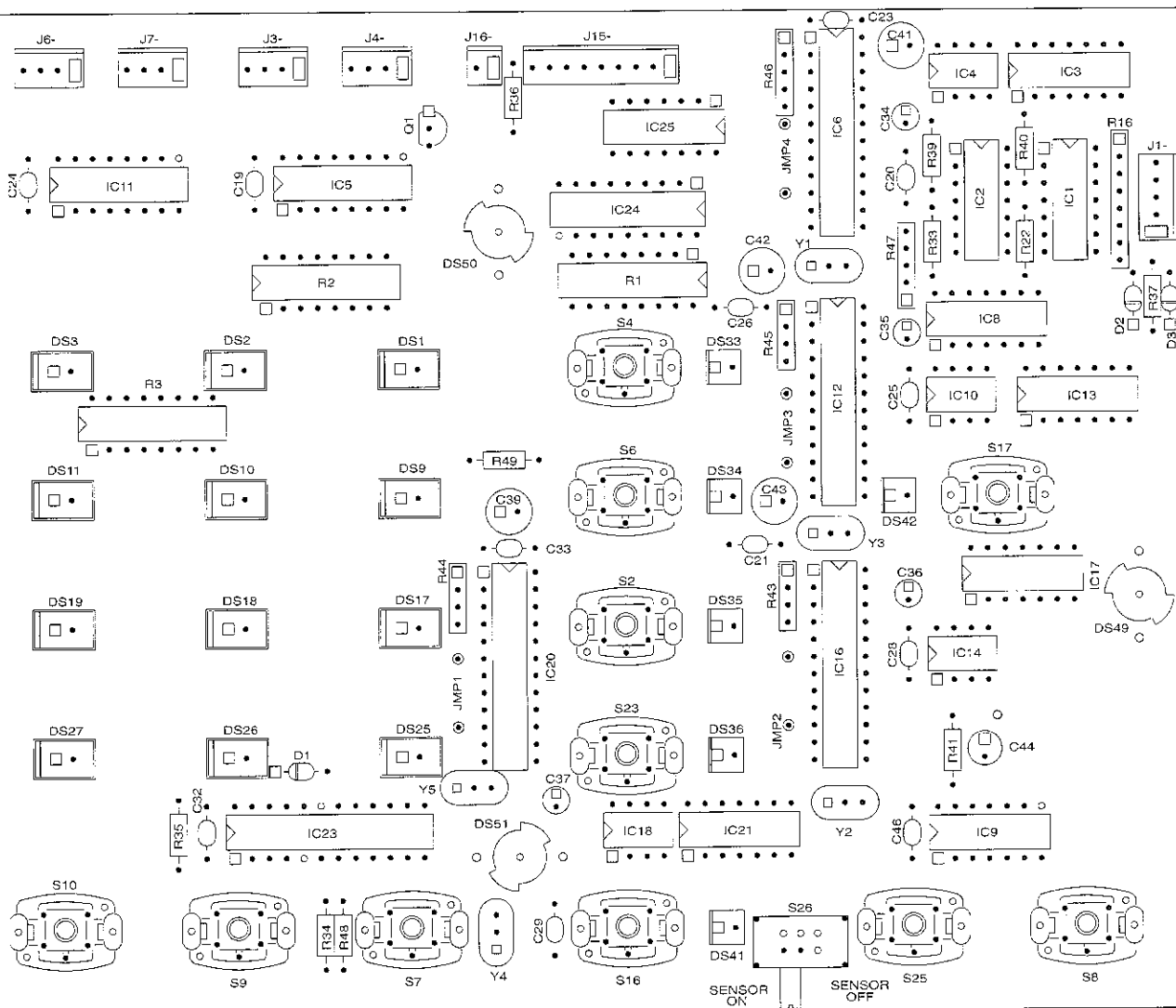
FRONT PANEL 049460 2 OF 2





Intosh
129352
REV.A





PARTS LIST

REF. NO

DESCRIPTION

PART NO

049451 INPUT SWITCHING PCB

C1 C2 C3 C4 C5 C6 C7 C8 C9
C10 C11 C12 C13 C14 C15 C16
C17 C18 C19 C20 C21 C22 C23
C24 C25 C26 C27 C28 C29 C30
C31 C32 C33 C34 C35 C36
C37
C38 C39 C40 C41 C42 C43 C44
C45 C46 C47 C48 C49 C50 C51
C52 C53 C54 C55 C56 C57 C58
C59 C60 C64 C65 C66 C67 C68
C69 C70 C71 C72 C73 C74 C75
C76 C77 C78 C79 C80 C81 C82
C83 C84 C85 C86 C87 C88 C89
C90 C91 C92 C93 C94 C95 C96
C97 C109 C111 C114 C117 C118
C98
C99 C100 C101 C102 C103
C104 C105 C106
C107 C108
C110 C112 C113 C115
C119 C121
C120
C161
D2 D3 D4 D5 D12 D13 D14 D15
D6 D7 D8 D9 D10 D11
F1
F1
GP1 GP2
IC1 IC4 IC7 IC10 IC13 IC16
IC2 IC3 IC5 IC6 IC8 IC9 IC11
IC12 IC14 IC15 IC17 IC18 IC20
IC19 IC22
IC21 IC23 IC24
IC25 IC29 IC30 IC31 IC32 IC40
IC26
IC27 IC39 IC68
IC28 IC42 IC43 IC44 IC67
IC33 IC34
IC35 IC36 IC37 IC38
IC41 IC61 IC66
IC46 IC47 IC48 IC49 IC50 IC51
IC52 IC53 IC54 IC55 IC56 IC57
IC58
IC59
IC60
IC62 IC63 IC64 IC65
J1
J2 J3
J4- J26-
J5-
J6-
J7-
J8- J9- J10- J11- J18- J19- J20-
J12- J13- J14- J15- J29- J32-
J16- J17-
J21- J22- J23- J24- J25- J27- J28-

CAP ELECT 10UF 50V 06644500
CAP ELECT 10UF 50V 6644500
CAP ELECT 10UF 50V 06644500
CAP ELECT 10UF 50V 06644500
CAP ELECT 10UF 50V 06644500
CAP M POLY .1UF 5% 63VDC 06432500
MONO CAP.1UF, 50V, Z5U 06126800
MONO CAP.1UF, 50V, Z5U 06126800
MONO CAP.1UF, 50V, Z5U 06126800
MONO CAP.1UF, 50V, Z5U 06126800
MONO CAP.1UF, 50V, Z5U 06126800
MONO CAP.1UF, 50V, Z5U 06126800
MONO CAP.1UF, 50V, Z5U 06126800
MONO CAP.1UF, 50V, Z5U 06126800
MONO CAP.1UF, 50V, Z5U 06126800
MON CER 0.001MF 100V NPO 06126200
CAP ELECT 47UF 50V 06621500
CAP ELECT 47UF 50V 06621500
CAP ELECT 47MF 100V 20% 06627800
CAP ELECT 3300UF 35V 06636000
MONO CAP.1UF, 50V, Z5U 06126800
CAP ELECT 4.7UF 10% 35V 06628900
CER CAP.047MF, +80-20%, 50V 06116100
DIODE SILICON 07004700
DIODE RECTIFIER 07013100
FUSE 2A SLO-BLO 5X20 08908900
FUSE HLDR 5X20MM PCB MNT 17815900
CARD MOUNTING BRACKET 00361100
DUAL OPERATIONAL AMP 13326000
SSM2404P QUAD AUDIO SW 13320900
SSM2404P QUAD AUDIO SW 13320900
DUAL OPERATIONAL AMP 13326000
SSM2404P QUAD AUDIO SW 13320900
2 INPUT X 4 13316700
QUAD NAND SCHMITT 13320700
74HC00N NAND 2 INPUT X 4 13316100
IC AND 2 INPUT X 4 13317500
IC 100MA I FEEDBACK AMP 13328600
QUAD SPST SWITCH 13330000
2 INPUT X 4 13316700
IC SHFT REG SER-PAR 13318600
IC SHFT REG SER-PAR 13318600
IC +5V REGULATOR 13310800
MC7912CT -12V REG 13313800
IC REGULATOR +12 VOLT 13311900
LB1720 8 LN DRIVER ARRAY 13318000
PHONO JACK 8 POS YEL, GLD 11765600
PHONO JACK 8P, GLD PLATED 11745500
D SUBMINI CONN 37PIN 11755000
11-POS. MALE CONN. 11727900
MALE CONN 5-PIN 0.1 PST ASSY 11721600
13-POS. CONNECTOR 11729800
4-PIN CONNECTOR 11721500
2-PIN MALE CONNECTOR 11721300
FRICTION LK CONN 9POS MALE 11724400
4-PIN CONNECTOR 11721500

J30- J31-
J33 J34 J35
J39-
Q1 Q2 Q3 Q
Q10
Q11
R1 R3 R5 R
R2 R4 R6 R
R17 R85
R22 R23 R2
R30 R31 R3
R35 R36 R7
R37 R38 R3
R41
R42
R48 R53 R9
R49 R50 R5
R55 R57 R5
R56 R61 R6
R60 R68 R6
R77 R78 R7
R86 R87 R8
R91 R92 R9
R96
R97
R102 R103 I
R104 R105

049452 DAT

C1 C2 C3 C
C4 C5 C8 C
C22 C23 C2
C31 C33 C3
C40 C69 C7
C41 C42 C4
C45 C46 C4
C53 C54 C5
C61 C62 C6
C65 C66 C6
C75 C76 C7
D1 D2 D3 D
D12 D13 D1
IC1 IC8 IC1
IC2 IC9 IC1
IC3 IC10 IC1
IC4 IC11 IC1
IC5 IC12 IC1
IC6 IC13 IC2
IC7 IC14 IC2
IC29
J1- J6-
J2- J3- J7- J
J4- J17- J19
J5- J18- J24
J21- J22- J2
J33-
J33 J35 J37
J34 J36 J38
J41- J42- J4
J45 J46 J47
Q1 Q2 Q3 Q
R1 R2 R3 R
R9 R17 R32
R10 R18 R3

J30- J31-
 J33 J34 J35 J36 J37
 J39-
 Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8 Q12
 Q10
 Q11
 R1 R3 R5 R7 R9 R11 R13 R15
 R2 R4 R6 R8 R10 R12 R14 R16
 R17 R85
 R22 R23 R24 R25 R26 R27 R28 R29
 R30 R31 R32 R33 R34 R43 R54 R84
 R35 R36 R75 R76 R81 R82 R83
 R37 R38 R39 R40 R44 R45 R46 R47
 R41
 R42
 R48 R53 R98
 R49 R50 R51 R52 R99 R100 R101
 R55 R57 R58 R59 R71 R72 R73 R74
 R56 R61 R62 R63 R64 R65 R66 R67
 R60 R68 R69 R70 R106 R107
 R77 R78 R79 R80
 R86 R87 R88 R89 R90
 R91 R92 R93 R94
 R96
 R97
 R102 R103 R108
 R104 R105

049452 DATA I/O PCB

C1 C2 C3 C20
 C4 C5 C8 C9 C14 C15 C18 C19 C21
 C22 C23 C24 C25 C26 C28 C29 C30
 C31 C33 C34 C35 C36 C37 C38 C39
 C40 C69 C70 C71 C72 C73 C74
 C41 C42 C43 C44
 C45 C46 C47 C48 C49 C50 C51 C52
 C53 C54 C55 C56 C57 C58 C59 C60
 C61 C62 C63 C64
 C65 C66 C67 C68
 C75 C76 C77 C78
 D1 D2 D3 D4 D5 D6 D7 D8 D9 D10 D11
 D12 D13 D14 D15 D16 D17 D18 D19 D20
 IC1 IC8 IC15 IC22
 IC2 IC9 IC16 IC23
 IC3 IC10 IC17 IC24
 IC4 IC11 IC18 IC25
 IC5 IC12 IC19 IC26
 IC6 IC13 IC20 IC27
 IC7 IC14 IC21 IC28
 IC29
 J1- J6-
 J2- J3- J7- J8- J15- J16- J20-
 J4- J17- J19- J23- J25- J29- J31-
 J5- J18- J24- J30
 J21- J22- J26- J27- J28- J32- J34-
 J33-
 J33 J35 J37 J39
 J34 J36 J38 J40 J49 J50 J51 J52
 J41- J42- J43- J44-
 J45 J46 J47 J48
 Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8
 R1 R2 R3 R4 R5 R6 R7 R8
 R9 R17 R32 R70
 R10 R18 R31 R69

4-PIN CONNECTOR 11721500
 1/4IN FASTON BLADE 11734200
 MLE CONN 3-POS MTS100 NRML 11721400
 TRANSISTOR NPN 2K/REEL 13222300
 TRIAX, HA, 100V, 2N6070A 13101800
 TRANSISTOR PNP 13222400
 RES NETWORK ISOLATED 2X22K 14436600
 RES NETWORK 2X220K ISO 14426200
 RES NETWORK 8X100 ISO 14427500
 RES CF 47 5% 1/4W 14115200
 RES CF 47 5% 1/4W 14115200
 RES CF 10 5% 1/4W 14113600
 RES CF 22K 5% 1/4W 14108000
 RES CF 1.0M 5% 1/4W 14112000
 RES CF 4.7M 5% 1/4W 14112800
 RES CF 100 5% 1/4W 14102500
 RES CF 22K 5% 1/4W 14108000
 RES CF 75 5% 1/4W 14115700
 RES CF 820 5% 1/4W 14104700
 RES CF 10K 5% 1/4W 14107200
 RES CF 220K 5% 1/4W 14110400
 RES NETWORK 4 X 22K BUS 14423400
 RES NETWORK 9 X 47K BUS 14425000
 RES CF 180 5% 1/4W 14103100
 RES NETWORK 4 X 100 ISO 14425900
 RES CF 22K 5% 1/4W 14108000
 RES CF 100K 5% 1/4W 14109600

CAP, MC, 022MF, 50V, +80-20% 06128100
 MONO CAP.1UF, 50V,Z5U 06126800
 MONO CAP.1UF, 50V,Z5U 06126800
 MONO CAP.1UF, 50V,Z5U 06126800
 MONO CAP.1UF, 50V,Z5U 06126800
 CAP ELECT 0.47UF 50V 20% 06624400
 CAP ELECT 10UF 50V 06644500
 CAP ELECT 10UF 50V 06644500
 CAP ELECT 220UF 16V SH CAN 06633000
 CAP ELECT 47UF 10V BP 06637800
 MON CER 0.001MF 100V NPO 06126200
 DIODE SILICON 07004700
 DIODE SILICON 07004700
 IC OPERATIONAL AMPLIFIER 13318900
 74HC00N NAND 2 INPUT X 4 13316100
 IC AND 2 INPUT X 4 13317500
 SSM2404P QUAD AUDIO SW 13320900
 QUAD SPST SWITCH 13330000
 TIMER 13314100
 IC 100MA VIDEO OP AMP 13328900
 IC REGULATOR 15V 13315400
 ML CONN 3-POS MTS100 NRML 11721400
 4-PIN CONNECTOR 11721500
 2-PIN MALE CONNECTOR 11721300
 HEADER 5 POS RIGHT ANGLE 11767100
 4-PIN CONNECTOR 11721500
 ML CONN 6-POS FRICTION LK 11721800
 PJ261G PHON JACK, GOLD 11743600
 PH JACK YEL GOLD FLASHED 11757200
 2-PIN MALE CONNECTOR 11721300
 MINI JACK 11749400
 TRANSISTOR NPN 2K/REEL 13222300
 RES NETWORK 2X220K ISO 14426200
 RES CF 470K 5% 1/4W 14111200
 RES CF 2.2M 5% 1/4W 14112400

R11 R16 R19 R24 R25 R30 R63 R68
 R12 R20 R29 R67
 R13 R21 R28 R34 R35 R40 R41 R45
 R14 R22 R27 R65
 R15 R23 R26 R64
 R33 R42 R47 R53 R59 R71 R77 R83
 R36 R39 R44 R62 R97 R98 R102
 R37 R48 R51 R52
 R46 R60 R61 R66
 R54 R56 R72 R74 R78 R80 R86 R88
 R55 R73 R79 R87
 R57 R58 R75 R76 R81 R82 R89 R90
 R85 R101 R105 R106 R110 R111 R112
 R91 R93 R99 R100
 R92 R94 R95 R96 R103 R104
 R109 R113 R114 R115 R116
 R117 R118 R119 R120 R121
 R122 R123 R124 R125

049453 OUTPUT PCB

C1 C2 C3 C4 C5 C6 C7 C8 C9 C10
 C11 C12 C13 C14 C15 C16 C17 C18
 C19 C20 C21 C22 C23 C24 C25 C26
 C27 C28 C29 C30 C31 C32 C33 C34
 C35 C36 C37 C38 C39 C40 C41 C42
 C43 C44 C45 C46 C47 C48 C49 C50
 C51 C52 C103 C183 C184 C185 C186
 C53 C54 C55 C56 C57 C58 C59 C60
 C61 C62 C63 C64 C65 C66 C67 C68
 C69 C70 C71 C72 C73 C74 C75 C76
 C77 C78 C79 C80 C81 C82 C83 C84
 C85 C86 C87 C88 C89 C90 C91 C92
 C93 C94 C95 C96 C97 C98 C99 C101
 C100
 C102 C189 C190 C191 C192 C193
 C109 C110 C111 C112 C113 C114
 C115 C116 C117 C118 C119 C120
 C121 C122 C123 C124
 C125 C126 C127 C128 C129 C130
 C131 C132 C133 C134 C135 C136
 C137 C137 C138 C140
 C141 C142 C143 C144 C145 C146
 C147 C148 C149 C150 C151 C152
 C153 C154 C155 C156
 C157 C160 C161 C164 C165 C168
 C158 C159 C162 C163 C166 C167
 C169 C172
 C170 C171
 C173 C174 C175 C176 C177 C178
 C179 C180
 C187 C188
 C194 C195 C196
 C197 C198 C199 C200 C201 C202
 C203 C204 C205 C206 C207 C208
 C209 C210 C211 C212
 D1 D2
 IC1 IC2 IC3 IC4 IC5 IC6 IC7 IC8
 IC9 IC10 IC11 IC12 IC13 IC14 IC15
 IC16 IC17 IC18 IC19 IC20 IC27
 IC21 IC22 IC23 IC24
 IC25
 IC26
 IC28 IC29 IC30
 J1 J2 J3 J4

R11 R16 R19 R24 R25 R30 R63 R68	RES CF 100 5% 1/4W	14102500
R12 R20 R29 R67	RES MF 51.1K 1% 1/4W	14415500
R13 R21 R28 R34 R35 R40 R41 R45	RES CF 1.0K 5% 1/4W	14104900
R14 R22 R27 R65	RES MF 27.4K 1% 1/4W	14414100
R15 R23 R26 R64	RES MF 31.6K 1% 1/4W	14414800
R33 R42 R47 R53 R59 R71 R77 R83 R84	RES CF 10 5% 1/4W	14113600
R36 R39 R44 R62 R97 R98 R102	RES CF 22K 5% 1/4W	14108000
R37 R48 R51 R52	RES CF 330 5% 1/4W	14103700
R46 R60 R61 R66	RES CF 1.0K 5% 1/4W	14104900
R54 R56 R72 R74 R78 R80 R86 R88	RES CF 820 5% 1/4W	14104700
R55 R73 R79 R87	RES CF 10K 5% 1/4W	14107200
R57 R58 R75 R76 R81 R82 R89 R90	RES CF 75 5% 1/4W	14115700
R85 R101 R105 R106 R110 R111 R112	RES CF 10 5% 1/4W	14113600
R91 R93 R99 R100	RES CF 2.2K 5% 1/4W	14105700
R92 R94 R95 R96 R103 R104	RES CF 220K 5% 1/4W	14110400
R109 R113 R114 R115 R116	RES CF 22K 5% 1/4W	14108000
R117 R118 R119 R120 R121	RES POLYSWITCH RXE030	14424000
R122 R123 R124 R125	RES CF 1.0 5% 1/4W	14100100

049453 OUTPUT PCB

C1 C2 C3 C4 C5 C6 C7 C8 C9 C10	MONO CAP .1UF, 50V, Z5U	06126800
C11 C12 C13 C14 C15 C16 C17 C18	MONO CAP .1UF, 50V, Z5U	06126800
C19 C20 C21 C22 C23 C24 C25 C26	MONO CAP .1UF, 50V, Z5U	06126800
C27 C28 C29 C30 C31 C32 C33 C34	MONO CAP .1UF, 50V, Z5U	06126800
C35 C36 C37 C38 C39 C40 C41 C42	MONO CAP .1UF, 50V, Z5U	06126800
C43 C44 C45 C46 C47 C48 C49 C50	MONO CAP .1UF, 50V, Z5U	06126800
C51 C52 C103 C183 C184 C185 C186	MONO CAP .1UF, 50V, Z5U	06126800
C53 C54 C55 C56 C57 C58 C59 C60	CAP ELECT 10UF 50V	06644500
C61 C62 C63 C64 C65 C66 C67 C68	CAP ELECT 10UF 50V	06644500
C69 C70 C71 C72 C73 C74 C75 C76	CAP ELECT 10UF 50V	06644500
C77 C78 C79 C80 C81 C82 C83 C84	CAP ELECT 10UF 50V	06644500
C85 C86 C87 C88 C89 C90 C91 C92	CAP ELECT 10UF 50V	06644500
C93 C94 C95 C96 C97 C98 C99 C101	CAP ELECT 10UF 50V	06644500
C100	CAP ELECT 1000UF 10V 10X12.5	06639200
C102 C189 C190 C191 C192 C193	CAP ELECT 10UF 50V	06644500
C109 C110 C111 C112 C113 C114	CAP M POLY .22UF 5% 63VDC	06432900
C115 C116 C117 C118 C119 C120	CAP M POLY .22UF 5% 63VDC	06432900
C121 C122 C123 C124	CAP M POLY .22UF 5% 63VDC	06432900
C125 C126 C127 C128 C129 C130	CAP M POLY .033UF 5% 63VDC	06431800
C131 C132 C133 C134 C135 C136	CAP M POLY .033UF 5% 63VDC	06431800
C137 C137 C138 C140	CAP M POLY .033UF 5% 63VDC	06431800
C141 C142 C143 C144 C145 C146	CAP ELECT 22UF 50V 20%	06624000
C147 C148 C149 C150 C151 C152	CAP ELECT 22UF 50V 20%	06624000
C153 C154 C155 C156	CAP ELECT 22UF 50V 20%	06624000
C157 C160 C161 C164 C165 C168	CAP ELECT 47UF 10V BP	06637800
C158 C159 C162 C163 C166 C167	CAP ELECT 47UF 50V	06621500
C169 C172	CAP ELECT 47UF 10V BP	06637800
C170 C171	CAP ELECT 47UF 50V	06621500
C173 C174 C175 C176 C177 C178	CAP M POLY .1UF 10% 100VDC	06425400
C179 C180	CAP M POLY .1UF 10% 100VDC	06425400
C187 C188	MONO CAP .1UF, 50V, Z5U	06126800
C194 C195 C196	CAP ELECT 10UF 50V	06644500
C197 C198 C199 C200 C201 C202	DISC CAP 470PF 10% 25F 50V	06120900
C203 C204 C205 C206 C207 C208	DISC CAP 470PF 10% 25F 50V	06120900
C209 C210 C211 C212	DISC CAP 470PF 10% 25F 50V	06120900
D1 D2	DIODE SILICON	07004700
IC1 IC2 IC3 IC4 IC5 IC6 IC7 IC8	DUAL OPERATIONAL AMP	13326000
IC9 IC10 IC11 IC12 IC13 IC14 IC15	DUAL OPERATIONAL AMP	13326000
IC16 IC17 IC18 IC19 IC20 IC27	DUAL OPERATIONAL AMP	13326000
IC21 IC22 IC23 IC24	IC 2CHANNEL AUDIO ATTNTR	13328100
IC25	IC REG +5 VOLT	13309300
IC26	IC REG -5V TO92 100MA	13326900
IC28 IC29 IC30	DUAL OPERATIONAL AMP	13326000
J1 J2 J3 J4	PJ261G PHON JACK, GOLD	11743600

J5- J6- J7- J8- J9- J10- J11- J12- J18-
J13- J14- J15- J16-
J17-
R1 R2 R3 R4 R5 R6 R7 R8 R9 R10
R11 R12
R13 R14 R15 R16 R17 R18 R19
R20 R21 R22 R23 R24 R25 R26
R27 R28
R29 R53 R54 R55 R56 R60 R61 R62
R30 R32 R90 R92 R122 R124 R154
R31 R33 R89 R91 R121 R123 R153
R34 R35 R48 R49 R73 R74 R87 R88
R36 R47 R75 R86 R107 R118 R139
R37 R38 R45 R46 R76 R77 R84 R85
R39 R44 R78 R83 R110 R115 R142
R40 R43 R79 R82 R111 R114 R143
R41 R42 R80 R81 R112 R113 R144
R50 R51 R52 R57 R58 R59 R63 R64
R65 R70 R71 R72 R95 R96 R97 R102
R66 R67 R68 R69 R93 R94 R98 R99
R100 R101 R125 R126 R130 R131
R103 R104 R127 R128 R129 R134
R105 R106 R119 R120 R137 R138
R108 R109 R116 R117 R140 R141
R132 R133
R135 R161
R136 R162 R163 R164 R165 R166
R145 R157 R158 R159 R160
R146
R147
R148 R149
R150
R151 R152
R155
R156
R167 R168
R169 R170 R171 R172
R173 R174 R175 R176 R177 R178
R179 R180
S1 S2 S3 S4

049450 INTERFACE PCB

C14 C15
C66 C68 C69 C70 C71 C72
C67 C75
C73
D1 D2 D3 D4
IC1
IC2
IC3 IC4
IC5
J1- J14-
2-
J3-
J3 J5 J6 J7 J8 J9 J10 J11 J12 J13 J14
J4-
J5- J15-
J9-
J16
J17-
J18
L1 J2 L2
Q1 Q2 Q3 Q4
Q5

4-PIN CONNECTOR 11721500
DIN CONN 7-PIN 11738300
FRICTION LK CONN 9POS MALE 11724400
POT DUAL WITH TAP 13448000
POT DUAL WITH TAP 13448000
RES NETWORK 2X220K ISO 14426200
RES NETWORK 2X220K ISO 14426200
RES NETWORK 2X220K ISO 14426200
RES CF 47 5% 1/4W 14115200
RES MF 2.67K 1% 1/4W 14412100
RES MF 499 1% 1/4W 14408700
RES CF 2.7K 5% 1/4W 14105900
RES CF 43K 5% 1/4W 14108700
RES CF 100K 5% 1/4W 14109600
RES CF 680 5% 1/4W 14104500
RES CF 470 5% 1/4W 14104100
RES CF 2.2K 5% 1/4W 14105700
RES MF 20K 1% 1/4W 14410400
RES MF 20K 1% 1/4W 14410400
RES CF 47 5% 1/4W 14115200
RES CF 47 5% 1/4W 14115200
RES MF 20K 1% 1/4W 14410400
RES CF 2.7K 5% 1/4W 14105900
RES CF 100K 5% 1/4W 14109600
RES CF 47 5% 1/4W 14115200
RES MF 20K 1% 1/4W 14410400
RES MF 10K 1% 1/4W 14405300
RES CF 2.2K 5% 1/4W 14105700
RES CF 470 5% 1/4W 14104100
RES CF 680 5% 1/4W 14104500
RES CF 100K 5% 1/4W 14109600
RES CF 43K 5% 1/4W 14108700
RES CF 2.7K 5% 1/4W 14105900
RES MF 499 1% 1/4W 14408700
RES MF 2.67K 1% 1/4W 14412100
RES MF 10K 1% 1/4W 14405300
RESNET 3 X 220K OHM BUS 14432300
RES CF 1.0M 5% 1/4W 14112000
RES CF 1.0M 5% 1/4W 14112000
SLIDE SWITCH 14805900

MONO CAP 33PF 06128500
M CAP .1UF 50V 5% Z50 T&R 06130500
MONO CAP .1UF, 50V, Z5U 06126800
CAP ELECT 220UF 25V 06650700
DIODE SILICON 07004700
CR16 RS232 PRGRMMD MICRO 13342200
IC RS232 LINE DRIVER 13338000
2 INPUT X 4 13316700
IC CMOS EPROM 13324900
FRICTION LK CONN 9POS MALE 11724400
D CONN 25-PIN 11750100
11-POS. MALE CONN. 11727900
MINI JACK 11749400
13-POS. CONNECTOR 11729800
DIN CONN 7-PIN 11738300
25 PIN MALE 11751700
D-SUBCONNECTOR 9-PIN 11750700
MALE CONN 6-POS FRCTN LK 11722300
4-PIN CONNECTOR 11721500
LEADED FERRITE BEADS 07601900
TRANSISTOR NPN 2K/REEL 13222300
TRANSISTOR NPN DAR 13209000

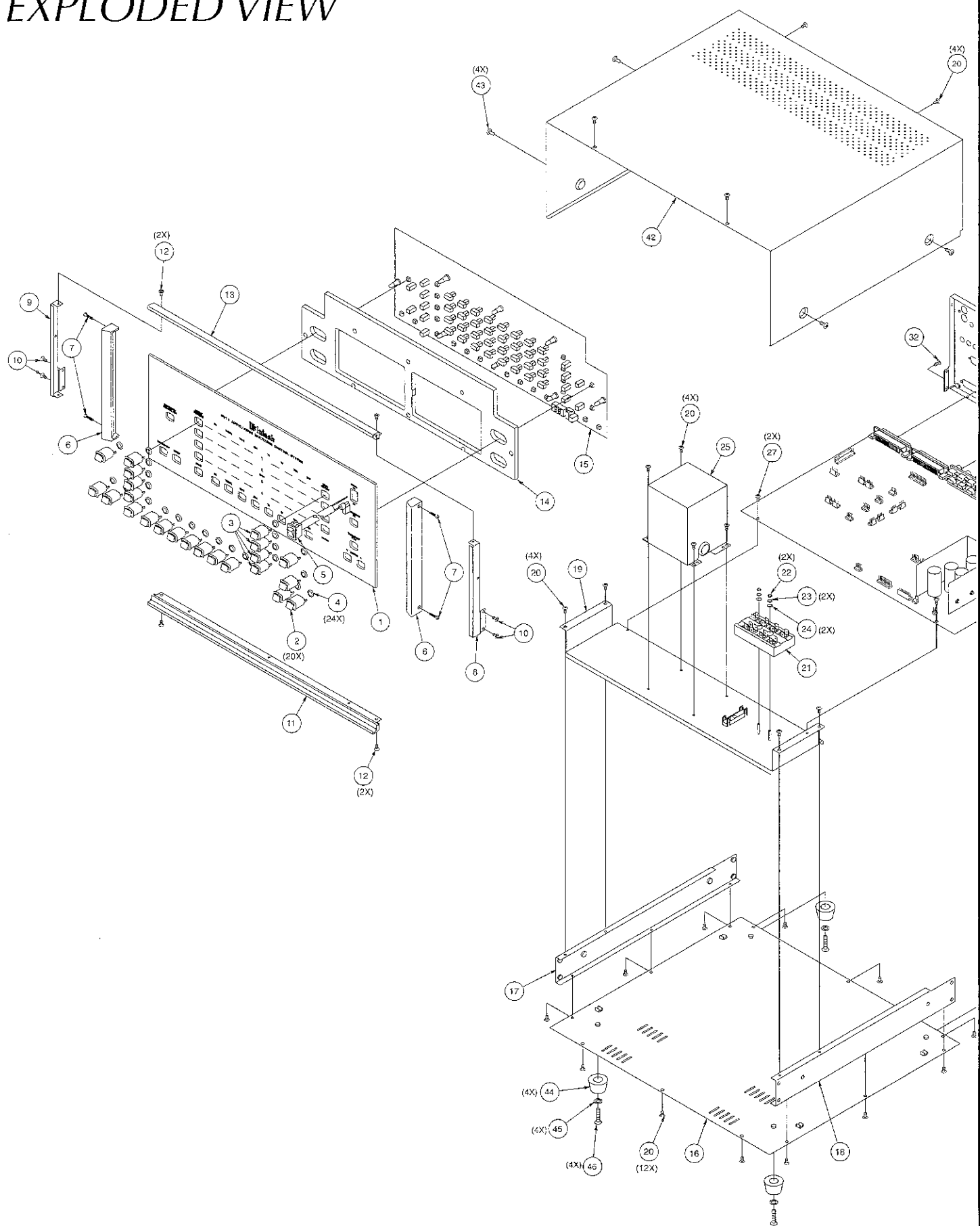
Q6
R1 F
R14 F
R18
R19 F
R24
R25 F
Y1

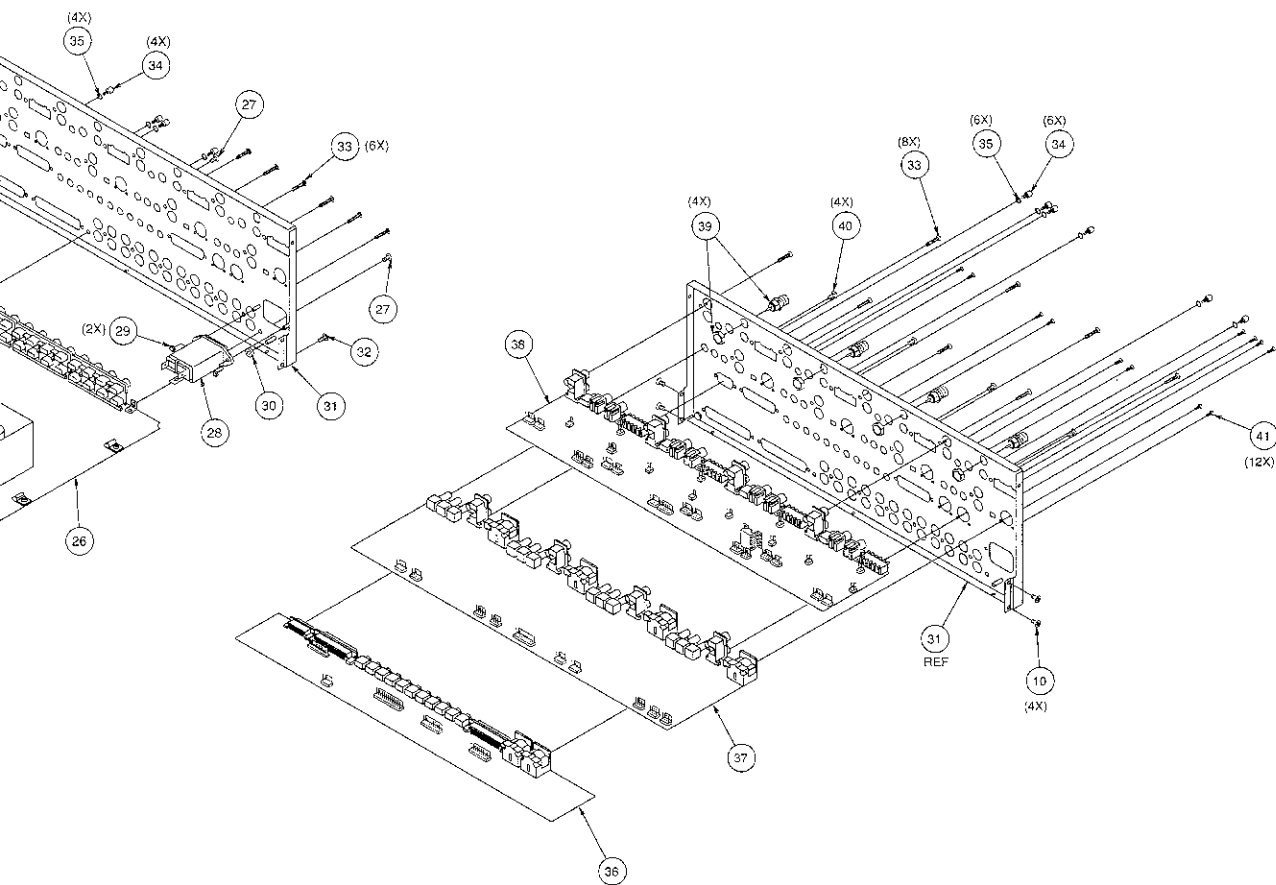
04946

C18 C
C22
C28 C
C34 C
C38
C39 C
C44
D2 D3
DS1 D
DS9 D
DS16 D
DS23 D
DS30 D
DS33 D
DS39 D
DS46
DS46
DS48 D
DS54 D
IC1 IC2
IC2
IC3 IC1
IC4 IC1
IC5 IC1
IC6 IC1
IC7
IC8 IC
IC22
IC23
IC24
J1-
J2 J3-
J5- J15
J16-
MT1
Q1
R1 R2
R16
R19 R2
R22 R3
R25
R34 R3
R36 R-
R37 R
R41
R42
R43 R-
R46 R-
S1 S2
S11 S1
S20 S2
S26
Y1 Y2

11721500	Q6	IC MICROPCSSR RESET POS	13324100
11738300	R1 R10 R11 R12 R13	RES CF 100 5% 1/4W	14102500
11724400	R14 R15 R16 R17	RES CF 22K 5% 1/4W	14108000
13448000	R18	RES CF 2.2 5% 1/4W	14100900
13448000	R19 R20 R21 R22	RES CF 2.2K 5% 1/4W	14105700
14426200	R24	RES CF 100K 5% 1/4W	14109600
14426200	R25 R26 R27	RES CF 10K 5% 1/4W	14107200
14426200	Y1	CRYSTAL 11.0592MHZ	18005100
14115200			
14412100	049460 FRONT PANEL PCB		
14408700	C18 C19 C20 C21 C23 C24 C25 C26 C27	MONO CAP .1UF, 50V, Z5U	06126800
14105900	C22	.0022MF 10% 100V AXIAL	06126600
14108700	C28 C29 C30 C31 C32 C33 C45 C46	MONO CAP .1UF, 50V, Z5U	06126800
14109600	C34 C35 C36 C37	CAP ELECT 10UF 16V (4X5 CS)	06638200
14104500	C38	CAP ELECT 470UF 10V	06632700
14104100	C39 C40 C41 C42 C43	CAP ELECT 47UF 50V	06621500
14105700	C44	CAP ELECT 10UF 50V SNG END	06622100
14410400	D2 D3	DIODE SILICON	07004700
14410400	DS1 DS2 DS3 DS4 DS5 DS6 DS7 DS8	LED AMBER	05813300
14115200	DS9 DS10 DS11 DS12 DS13 DS14 DS15	LED AMBER	05813300
14115200	DS16 DS17 DS18 DS19 DS20 DS21 DS22	LED AMBER	05813300
14410400	DS23 DS24 DS25 DS26 DS27 DS28 DS29	LED AMBER	05813300
14105900	DS30 DS31 DS32	LED AMBER	05813300
14109600	DS33 DS34 DS35 DS36 DS37 DS38	LED SQUARE RED	05810900
14115200	DS39 DS40 DS41 DS42 DS44 DS45 DS47	LED SQUARE RED	05810900
14410400	DS46	LED NUM DISPLAY 2 DIGIT RED	05812900
14405300	DS46	10 PIN CONNECTOR	11765400
14105700	DS48 DS49 DS50 DS51 DS52 DS53	LAMP INCAND 14V 100MA	05815300
14104100	DS54 DS55	LAMP INCAND 14V 100MA	05815300
14104500	IC1 IC25	2 INPUT X 4	13316700
14109600	IC2	IC AND 2 INPUT X 4	13317500
14108700	IC3 IC13 IC17 IC21	QUAD ANALOG SW	13311700
14105900	IC4 IC10 IC14 IC18	IC CMOS EPROM	13324900
14408700	IC5 IC11 IC15 IC19	IC SHFT REG SER-PAR	13318600
14412100	IC6 IC12 IC16 IC20	ZONE CNTRL PRGRM 133292	13342100
14405300	IC7	74HC00N NAND 2 INPUT X 4	13316100
14432300	IC8 IC9	IC	13329100
14112000	IC22	DISPLAY DRIVER 4 DIGIT LED	13326800
14112000	IC23	KEYPAD ENCDR PRGRM 133292	13332900
14805900	IC24	OCTAL DARLINGTON TRANS AR	13325800
	J1-	ML CONN 5-PIN 0.1 POST ASSY	11721600
06128500	J2 J3- J4- J6- J7- J9- J10- J12- J13-	4-PIN CONNECTOR	11721500
06130500	J5- J15-	FRICTION LK CONN 9POS MALE	11724400
06126800	J16-	2-PIN MALE CONNECTOR	11721300
06650700	MT1	IR RECEIVER	12104100
07004700	Q1	TRANSISTOR PNP DARLINGTON	13218200
13342200	R1 R2 R3 R4 R5	RES NETWORK 8X330 ISO	14426300
13338000	R16	RES NETWORK 4X1K ISO	14427600
13316700	R19 R20 R21 R38	RES CF 2.2K 5% 1/4W	14105700
13324900	R22 R33 R39 R40	RES CF 220K 5% 1/4W	14110400
11724400	R25	RES CF 15K 5% 1/4W	14107600
11750100	R34 R35 R48	RES CF 10K 5% 1/4W	14107200
11727900	R36 R49	RES CF 22K 5% 1/4W	14108000
11749400	R37 R50	RES CF 470 5% 1/4W	14104100
11729800	R41	RES CF 6.8K 5% 1/4W	14106800
11738300	R42	RES CF 100 5% 1/2W	14117000
11751700	R43 R44 R45	RES NETWORK 3X22K BUSSED	14425200
11750700	R46 R47	RES NETWORK 4 X 22K BUS	14423400
11722300	S1 S2 S3 S4 S5 S6 S7 S8 S9 S10	TACT SWITCH	15005800
11721500	S11 S12 S13 S14 S15 S16 S17 S19	TACT SWITCH	15005800
07601900	S20 S21 S22 S23 S24 S25	TACT SWITCH	15005800
13222300	S26	SLIDE SWITCH	14805900
13209000	Y1 Y2 Y3 Y4 Y5	CERAM RESON 6.0MHZ W/CAP	18003900

EXPLODED VIEW





EXPLODED VIEW PARTS LIST

Ref. No.	Part No.	Description
1	016428	FRONT PANEL GLASS
2	017517	PUSHBUTTON ASSY BLK
3	017531	PUSHBUTTON ASSY RED
4	078033	O-RING
5	171061	POWER SWITCH
6	018650	END CAP
7	101042	TS 4-40 X 1/2 SLOT FILLISTER
8	004124	EXTRUSION BRACKET RIGHT
9	004125	EXTRUSION BRACKET LEFT
10	101172	TCS 6-32 X 1/4 PHIL FLAT U/C
11	018446	BOTTOM EXTRUSION
12	100147	MS 6-32 X 3/16 PHIL FLAT U/C
13	018411	TOP EXTRUSION
14	017701	PLEXIGLAS
15	049460	FRONT PANEL PCB ASSY
16	005147	BOTTOM COVER
17	004778	LEFT SIDE PANEL
18	004779	RIGHT SIDE PANEL
19	004758	CHASSIS TRAY
20	101054	TS 6-32 X 1/4 PH PAN TAPTITE BLK
21	074091	AC TERMINAL BLOCK
22	102022	MN 4-40 X 3/16 X 1/16
23	104004	LK WASHER 5 X .255 INT STAR
24	104001	FLAT STEEL WASHER 4 X 9/32 X .025
25	049511	TRANSFORMER ASSY
26	049451	INPUT PCB ASSY
27	101160	6-32 X 1/4 PHIL PAN TAPTITE
28	117638	AC RECEPTACLE WITH LINE FILTER
29	102001	KEP NUT 4-40 CADMIUM PLATE
30	102020	MACH NUT: 6-32 SELF-LOCK
31	005112	REAR PANEL
32	100109	6-32 X 5/16 PHIL PAN ZINC
33	101114	SM 4-40 X 1/2 PHIL PAN TYPE A
34	112015	STANDOFF
35	104142	LOCKWASHER 2.5mm INT STAR
36	049450	INTERFACE PCB ASSY
37	049453	OUTPUT PCB ASSY
38	049452	DATA I/O PCB ASSY
39	117369	COAX RECEPTACLE GOLD TYPE F
40	100157	MS 6-32 X 1/4 PHIL PAN ZINC
41	101161	TS 2-32 X 1/4 PHIL PAN TAPTITE
42	004209	TOP COVER
43	100056	8-32 X 3/8 PHIL PAN ZINC
44	017218	PLASTIC FEET-BLACK
45	104080	FLAT WASHER #10 CLEAR ZINC
46	100159	MS 10-32 X 3/4 PH PAN BLK ZINC

NOTES

REPACKING INSTRUCTION

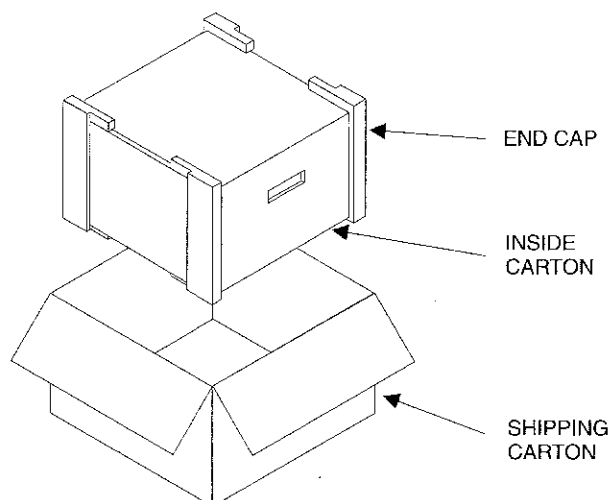
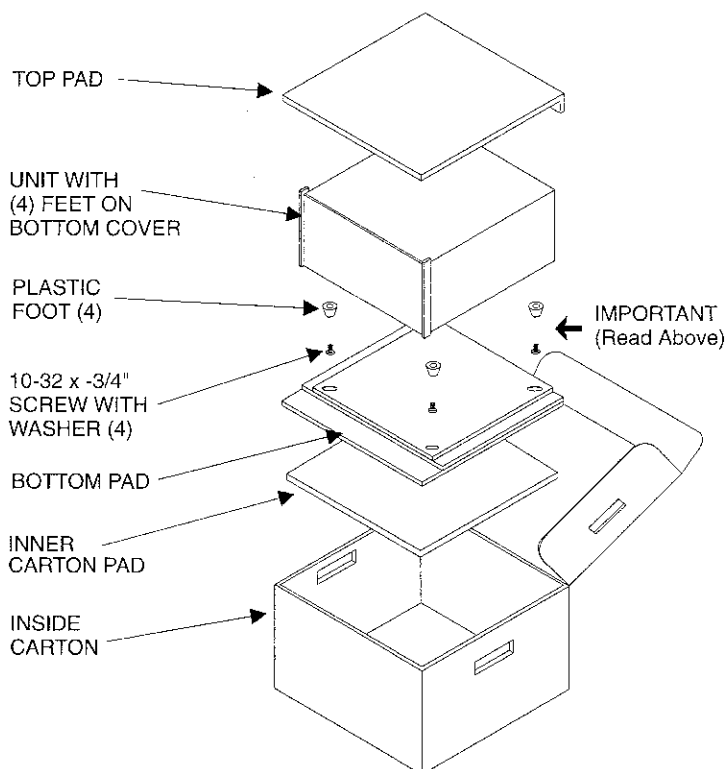
In the event it is necessary to repack the unit for shipment, the unit must be packed exactly as shown below.

IMPORTANT - The four plastic feet must be attached to the bottom of the unit so they will locate in the four holes of the bottom pad. Failure to do this will result in shipping damage.

If a shipping carton or any of the interior parts is needed, please call or write the Customer Service Department of McIntosh Laboratory. Order parts from the accompanying list by part number.

Use the original shipping carton and interior parts only if they are in good serviceable condition.

Qty.	Part No.	Description
1	033762	Shipping carton only
4	033887	End cap
1	033620	Inside carton only
1	033726	Top pad
1	033729	Bottom pad
1	033622	Inner carton pad
4	017218	Plastic foot
4	100159	#10-32 x 3/4" screw
4	104080	#10 Flat washer
1	047920	Shipping carton complete with all the above parts



CR16

AUDIO/VIDEO MULTIZONE CONTROL SYSTEM

SERVICE MANUAL

The continuous improvement of its products is the policy of McIntosh Laboratory Incorporated, who reserve the right to improve design without notice. Because of the constant upgrading of McIntosh products' circuitry and components, the Company cannot insure, and does not warrant, the accuracy of the within schematic material, which is intended for information only.

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