

Service *Manual*

MODEL: L-20



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Version 1.0

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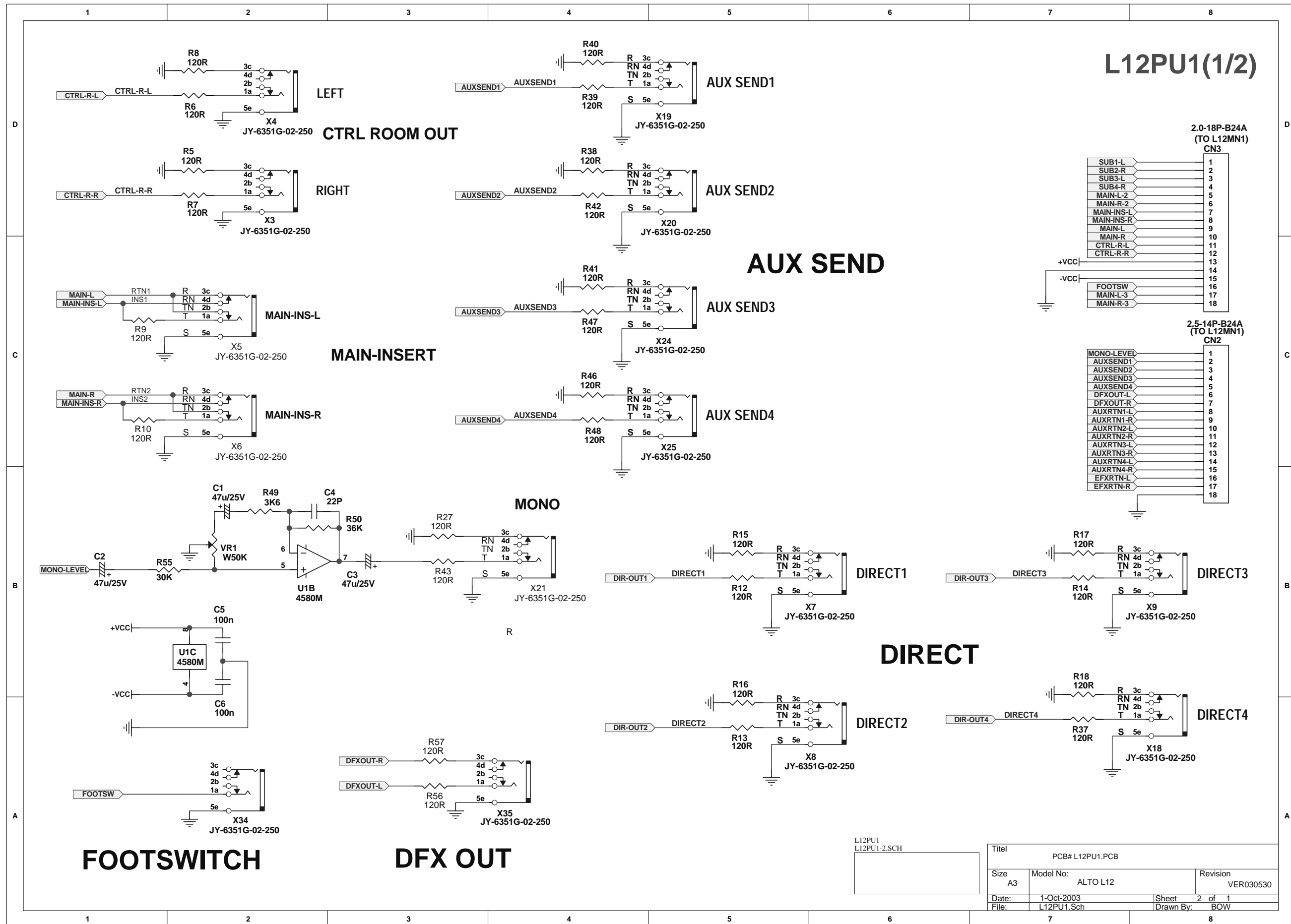
7. BOM

1. SPECIFICATION (L-20)

Mono input channels		
	Microphone input	electronically balanced, discrete input configuration
	Frequency response	10Hz to 55kHz, +/- 3dB
	Distortion (THD & N)	0.005% at +4dBu, 1kHz
	Gain range	0dB to 60dB (MIC)
	SNR (Signal to Noise Ratio)	115dB
	Line input	electronically balanced
	Frequency response	10Hz to 55kHz, +/- 3dB
	Distortion (THD & N)	0.005% at +4dBu, 1kHz
	Sensitivity range	+15dBu to - 45dBu
Stereo input channels		
	Line input	Balanced/unbalanced
	Frequency response	10Hz to 55kHz, +/- 3dB
	Distortion (THD & N)	0.005% at +4dBu, 1kHz
Impedances		
	Microphone input	1.4kOhm
	Channel Insert return	2.5kOhm
	All other inputs	10kOhm or greater
	Tape out	1kOhm
	All other output	120Ohm
Equalization		
	Hi shelving	+/- 15dB @12kHz
	Mid bell (mono)	+/- 15dB @100Hz to 8kHz
	Hi Mid (stereo)	+/- 15dB @ 3kHz
	Mid low (stereo)	+/- 15dB @500Hz
	Low shelving	+/- 15dB @80Hz
	Low Cut filter	75Hz, 18dB/oct.
DSP Section		
	A/D and D/A converters	24 bit
	DSP resolution	24 bit
	Type of effects	Hall, Room, Vocal & Plate REVERBS Mono & Stereo DELAY (max DELAY TIME 650ms) Chorus, Flanger & Reverb MODULATIONS REVERB+DELAY, REVERB+CHORUS, REVERB+FLANGER combinations
	Presets	256
	Controls	16-position PRESET Selector 16-position VARIATION selector PEAK LED MUTE SWITCH with LED indicator
Main Mix Section		
	Noise (Bus noise)	Fader 0 dB, channels muted: - 100dBr (ref.:+4dBu) Fader 0dB, all input channels assigned and set to UNITY gain: - 90dBr (ref.:+4dBu)
	Max output	+22dBu balanced XLR, +22dBu unbalanced, 1/4" jacks
	AUX Returns gain range	-∞ to +15dB
	AUX Sends max out	+22dBu

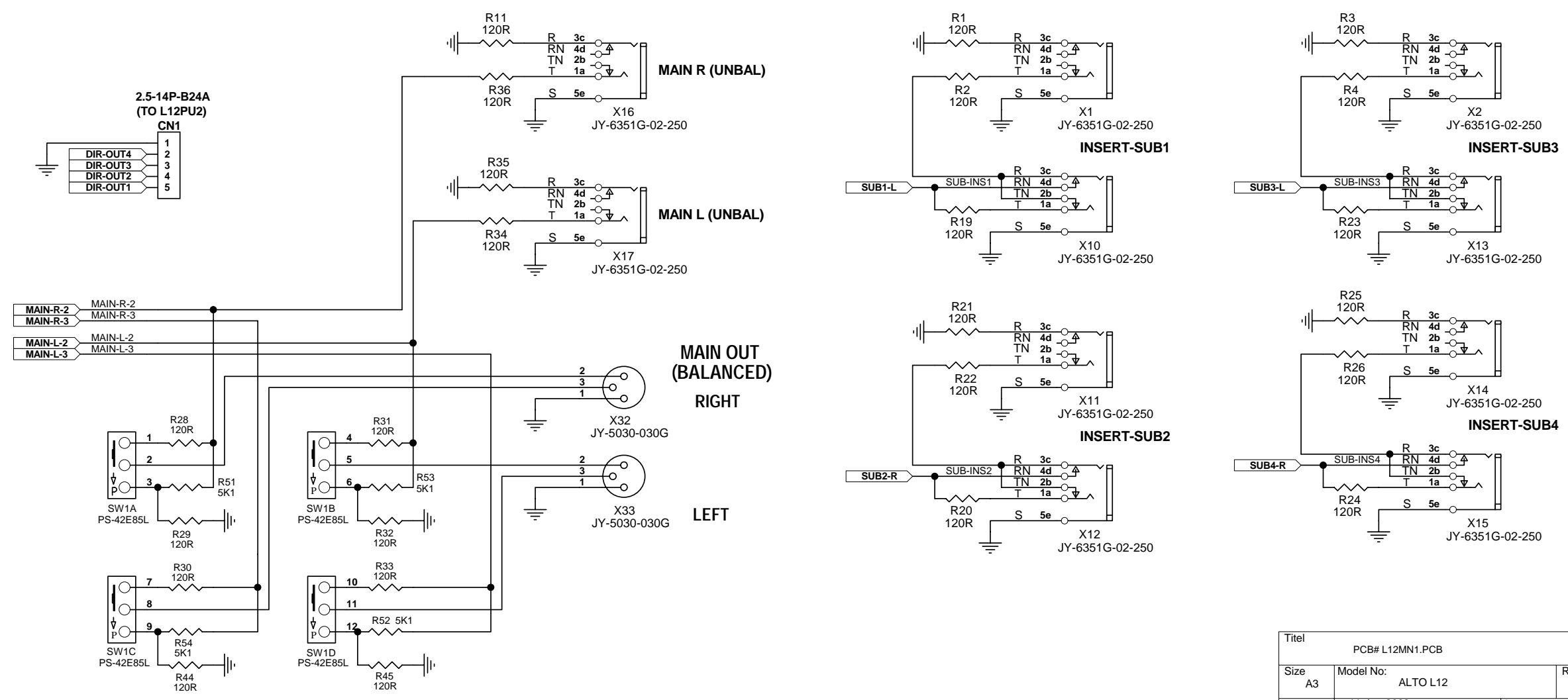
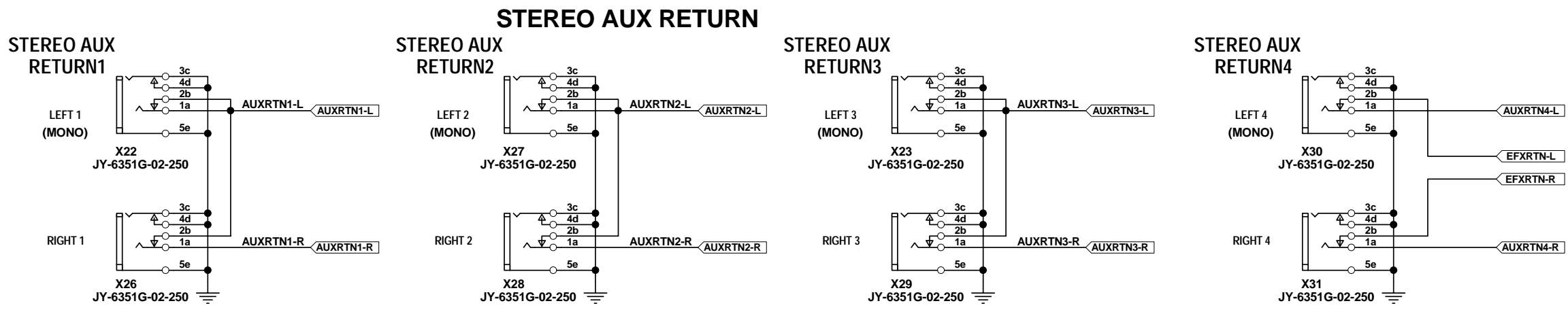
Power supply		
	Main voltage	USA/Canada 100 - 120V~, 60Hz
		Europe 210 - 240V~, 50Hz
		U.K./Australia 240V~, 50Hz
	Power Consumption	70 watts
	Fuse	100 - 120V~ : T800mAL
		210 - 240V~ : T500mAL
	Main connection	Standard IEC receptacle
Physical		
	Dimension (W×D×H)	495mm×630mm×40/117mm
		(19.48"×24.79"×1.55"/4.6")
	Net weight	9.3Kg (20.52lb)

3. Schematic Diagram



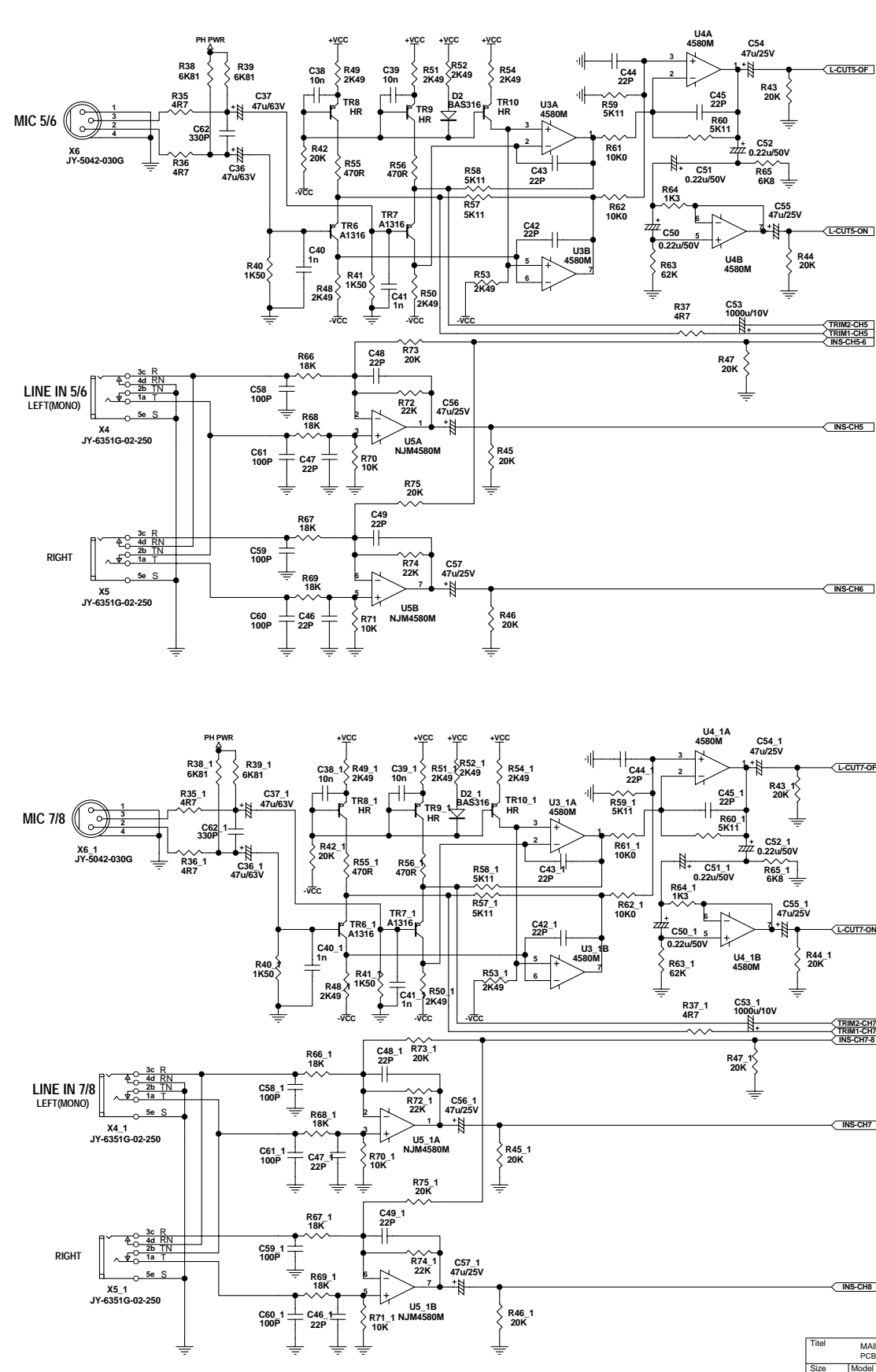
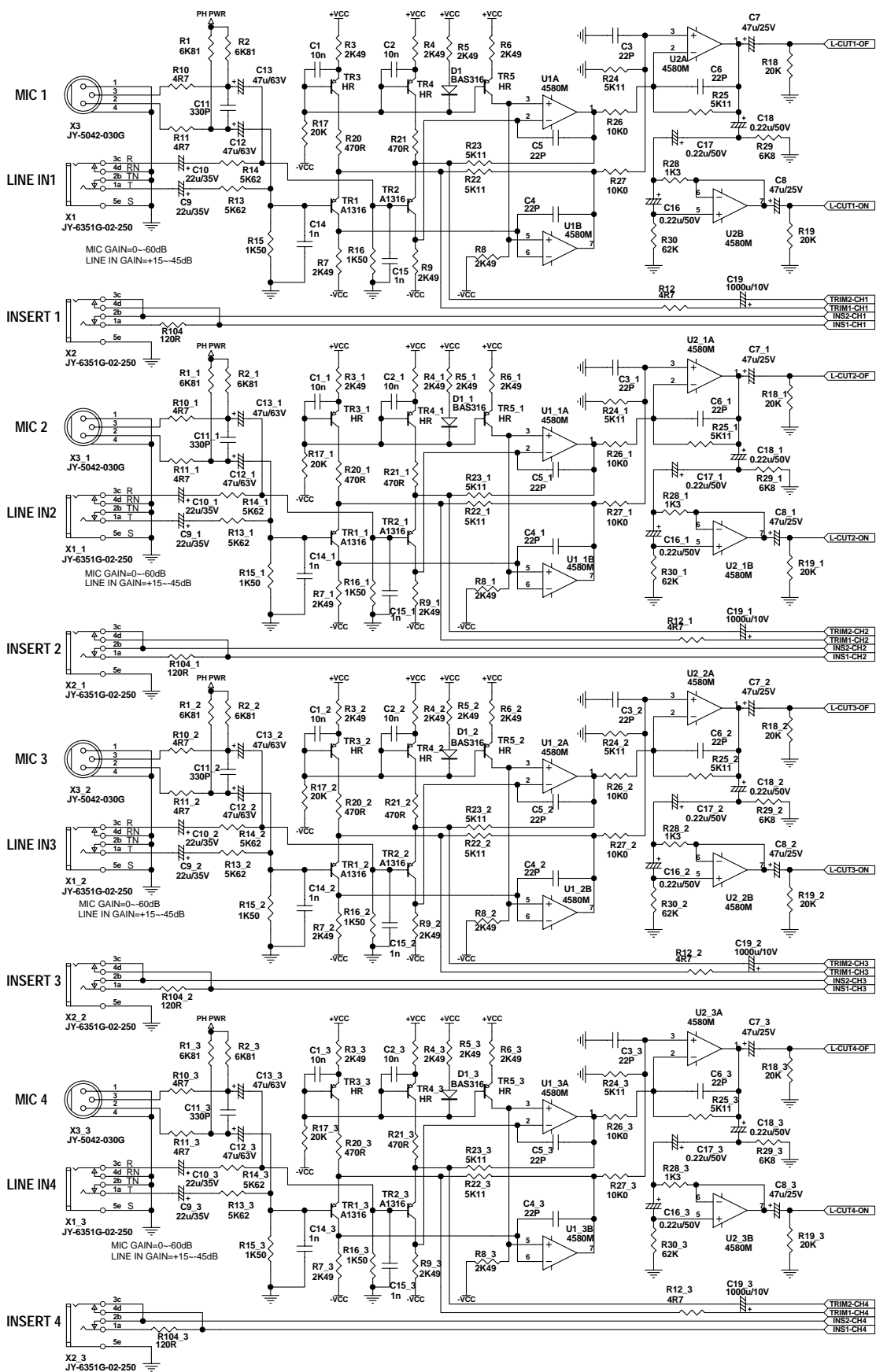
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PCB# L12PU1.PCB		
Size	Model No:	Revision
A3	ALTO L12	VER030530
Date:	1-Oct-2003	Sheet 2 of 1
File:	L12PU1.Sch	Drawn By: BOW

L12PU1-2(2/2)

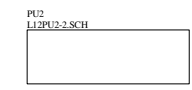


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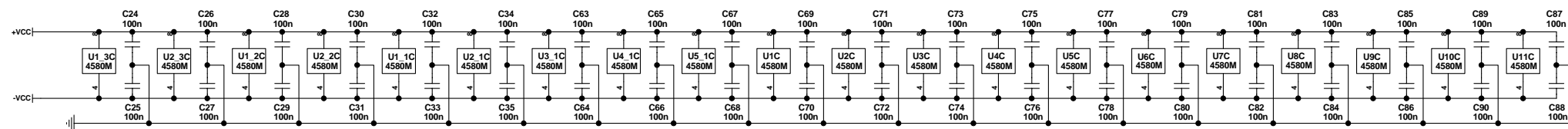
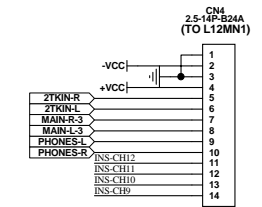
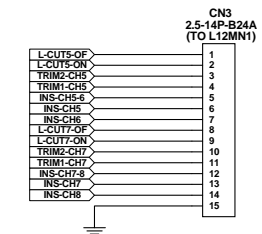
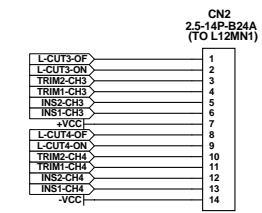
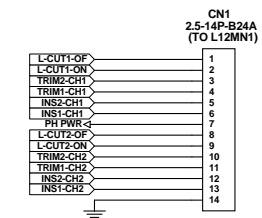
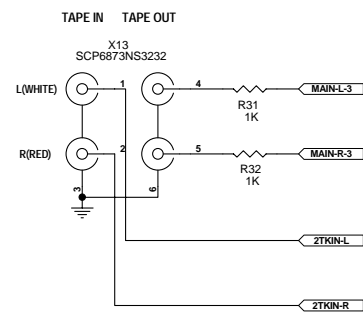
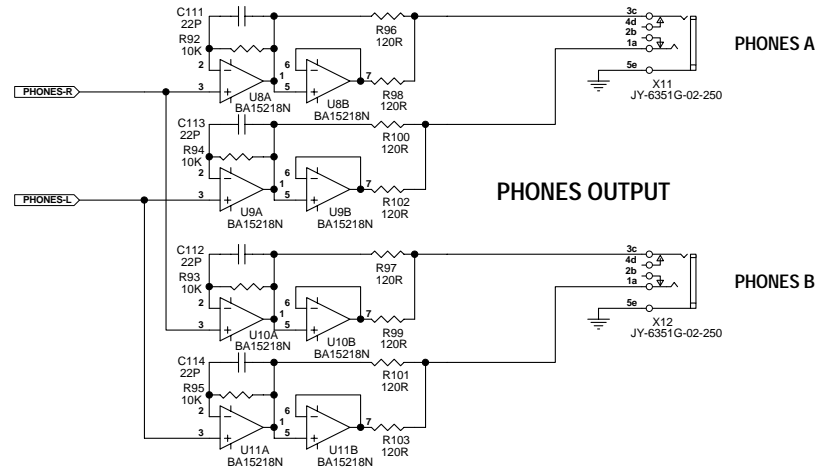
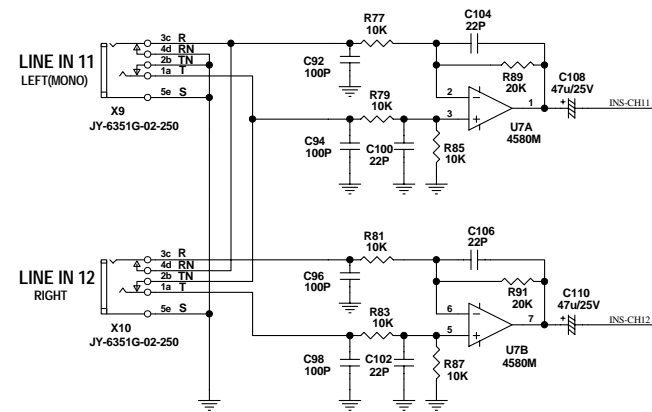
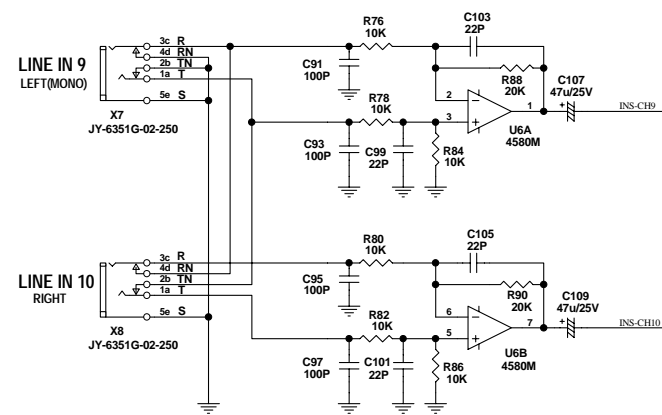
L12PU2



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			VER030530
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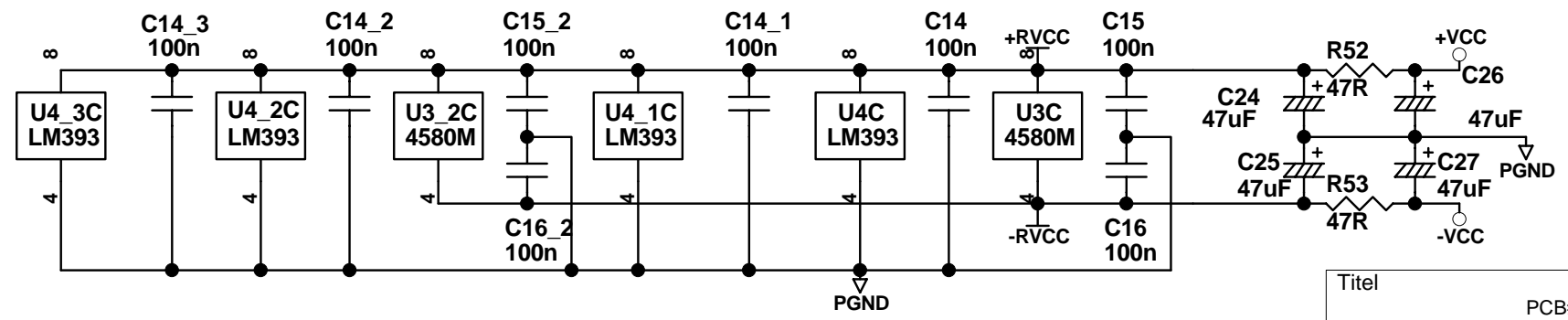
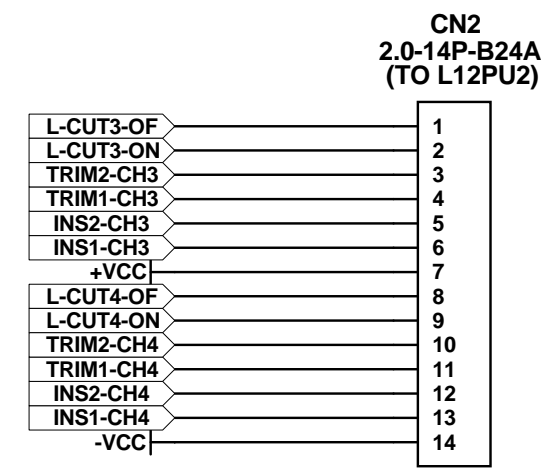
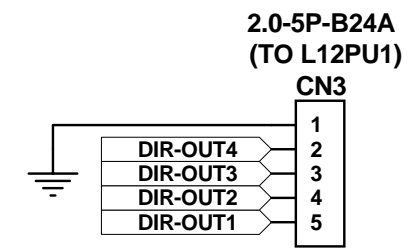
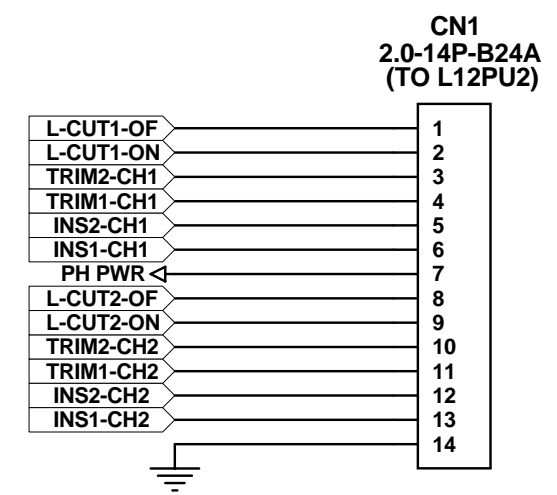
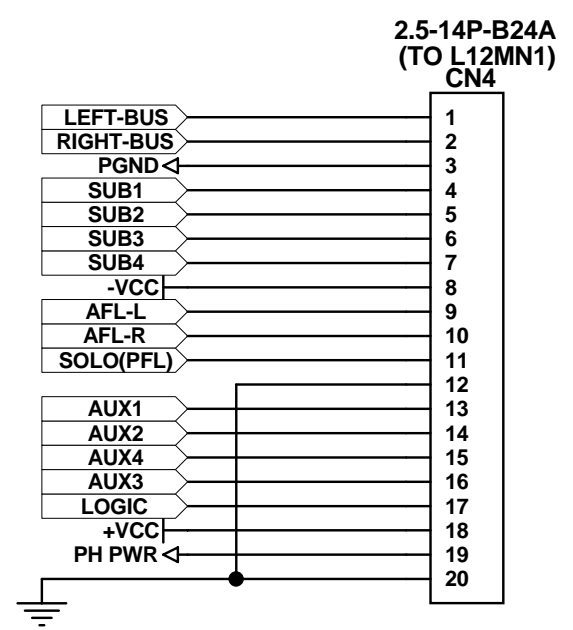
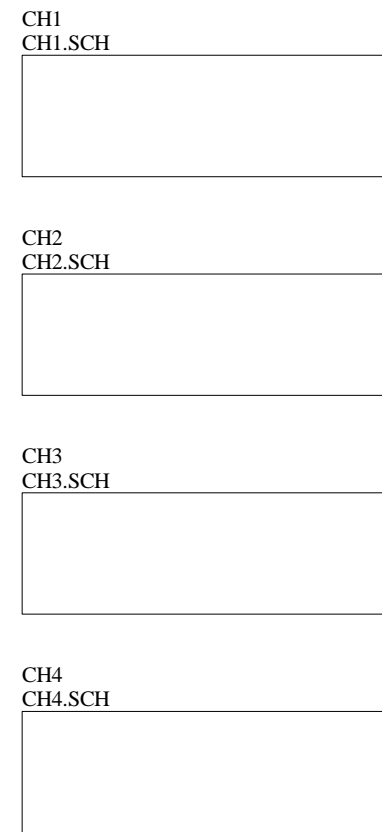


L12PU2-2



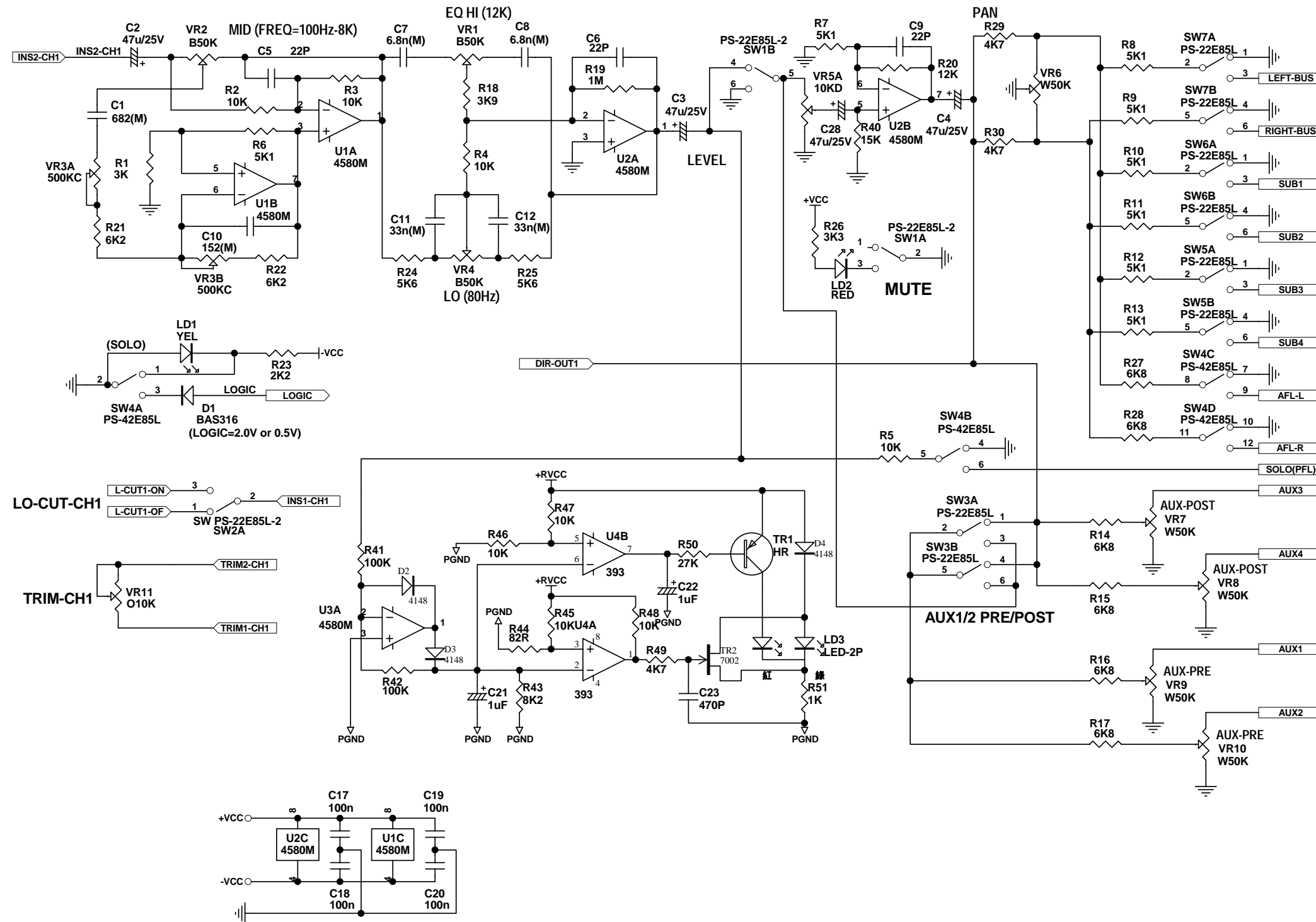
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L12MN2(1/5)



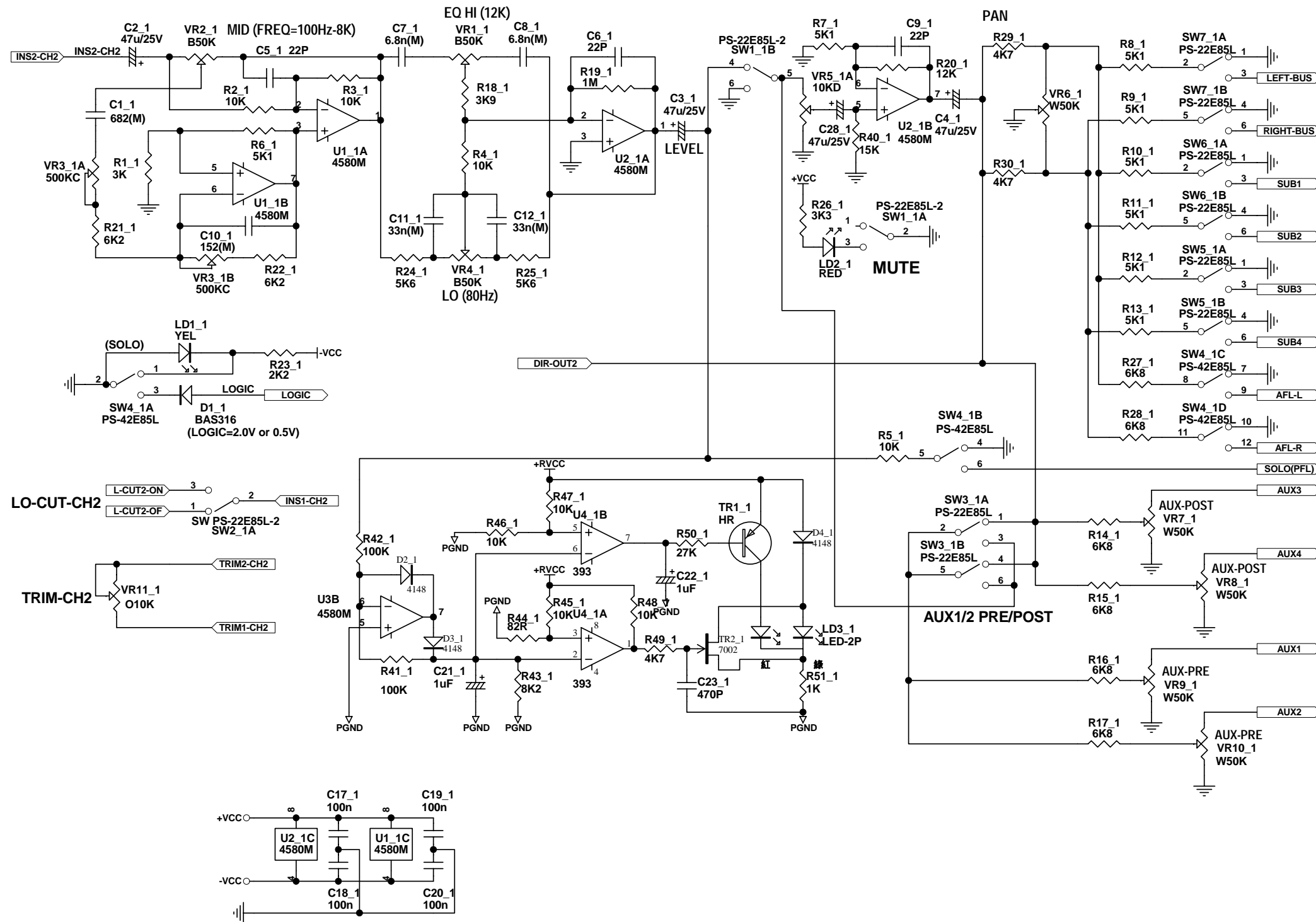
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A4	ALTO L12	VER030530	
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L12MN2-CH1(2/5)



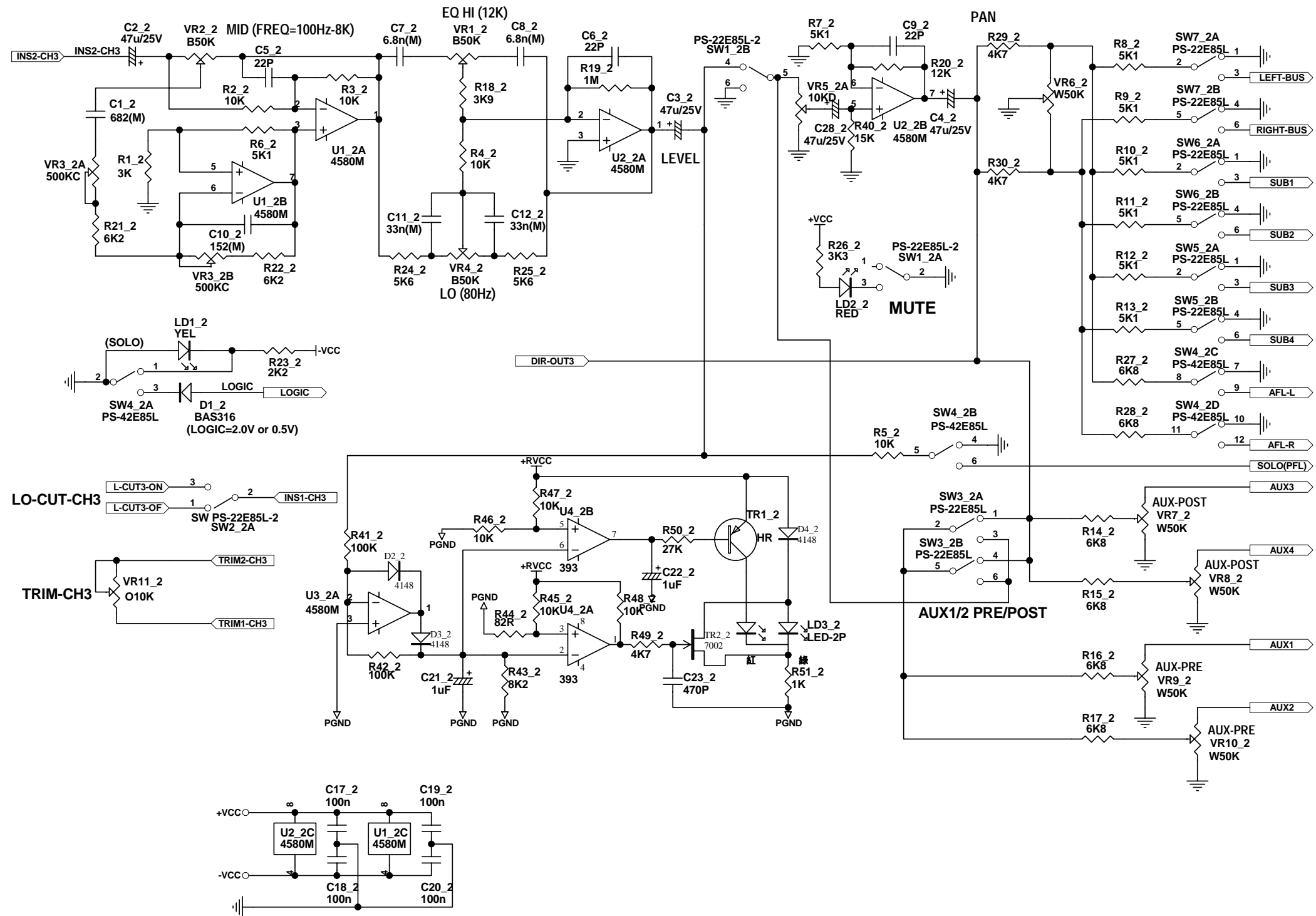
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Size	Model No:	Revision			
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File:	CH1.Sch	Drawn By:	BOW		

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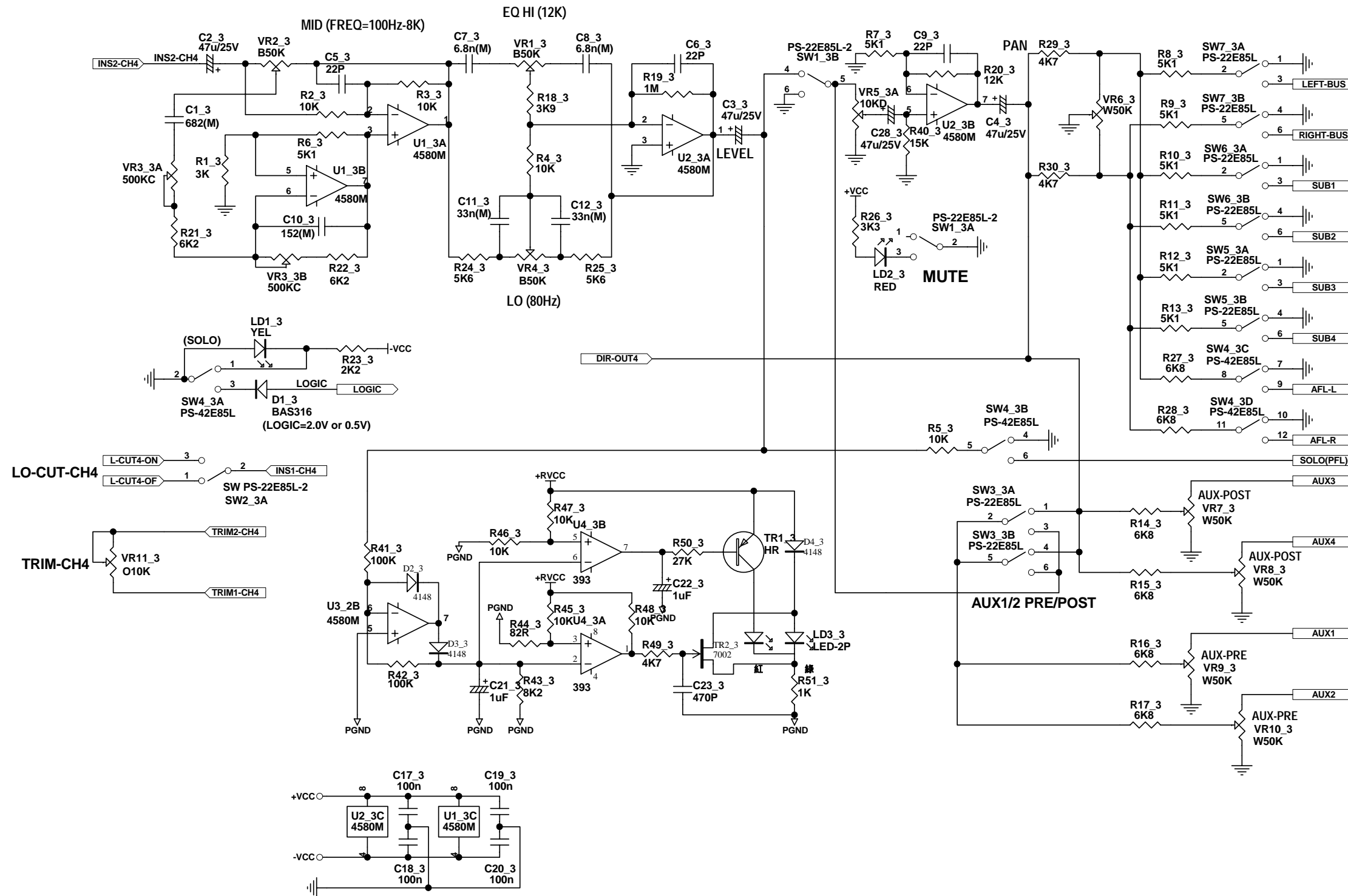
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L12MN2CH3(4/5)



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Size	Model No:	Revision
A3	ALTO L12	VER030712
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File:	CH3.Sch	Drawn By: BOW

L12MN2CH4(5/5)



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Size	Model No:	Revision
A3	ALTO L12	VER030712
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File:	CH4.Sch	Drawn By: BOW

L12MN1

L12STEREO
L12STEREO.SCH

L12STEREO2
L12STEREO2.SCH

OTHER
OTHER.SCH

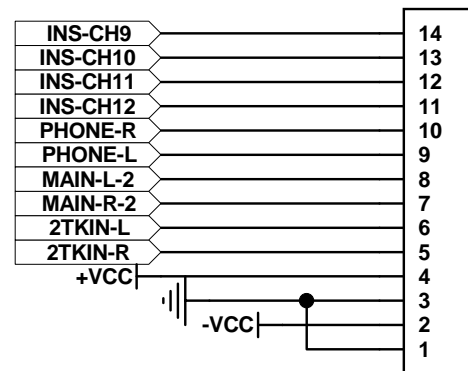
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AUXRTN.SCH

AUXSEND
AUXSEND.SCH

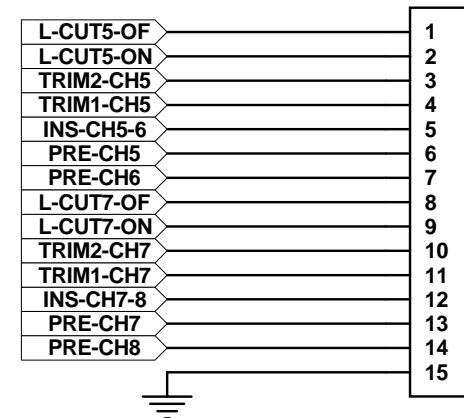
CTRMETER
CTRMETER.SCH

L12DSP
L12DSP.SCH

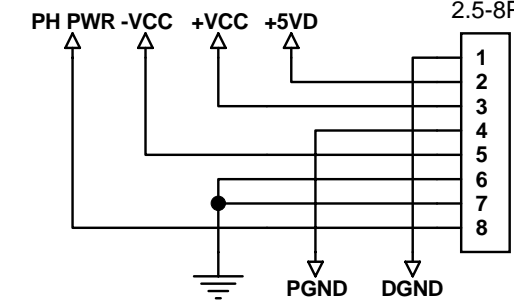
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(TO L12PU2-CH9-12)



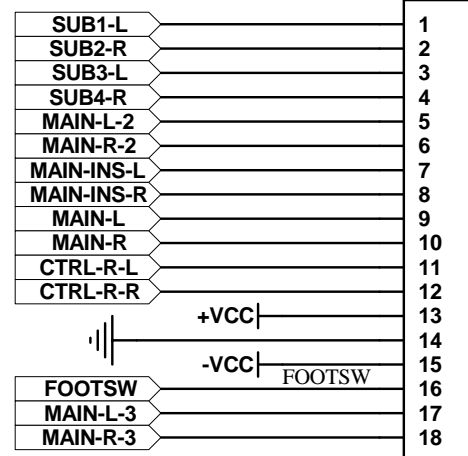
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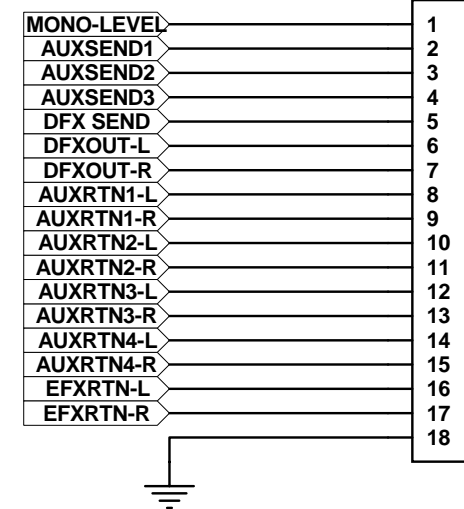
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2.5-8P



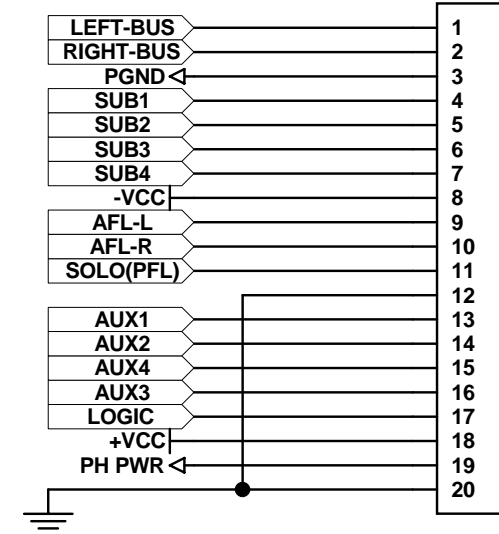
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(TO L12PU1)



CN3
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(TO L12PU1)

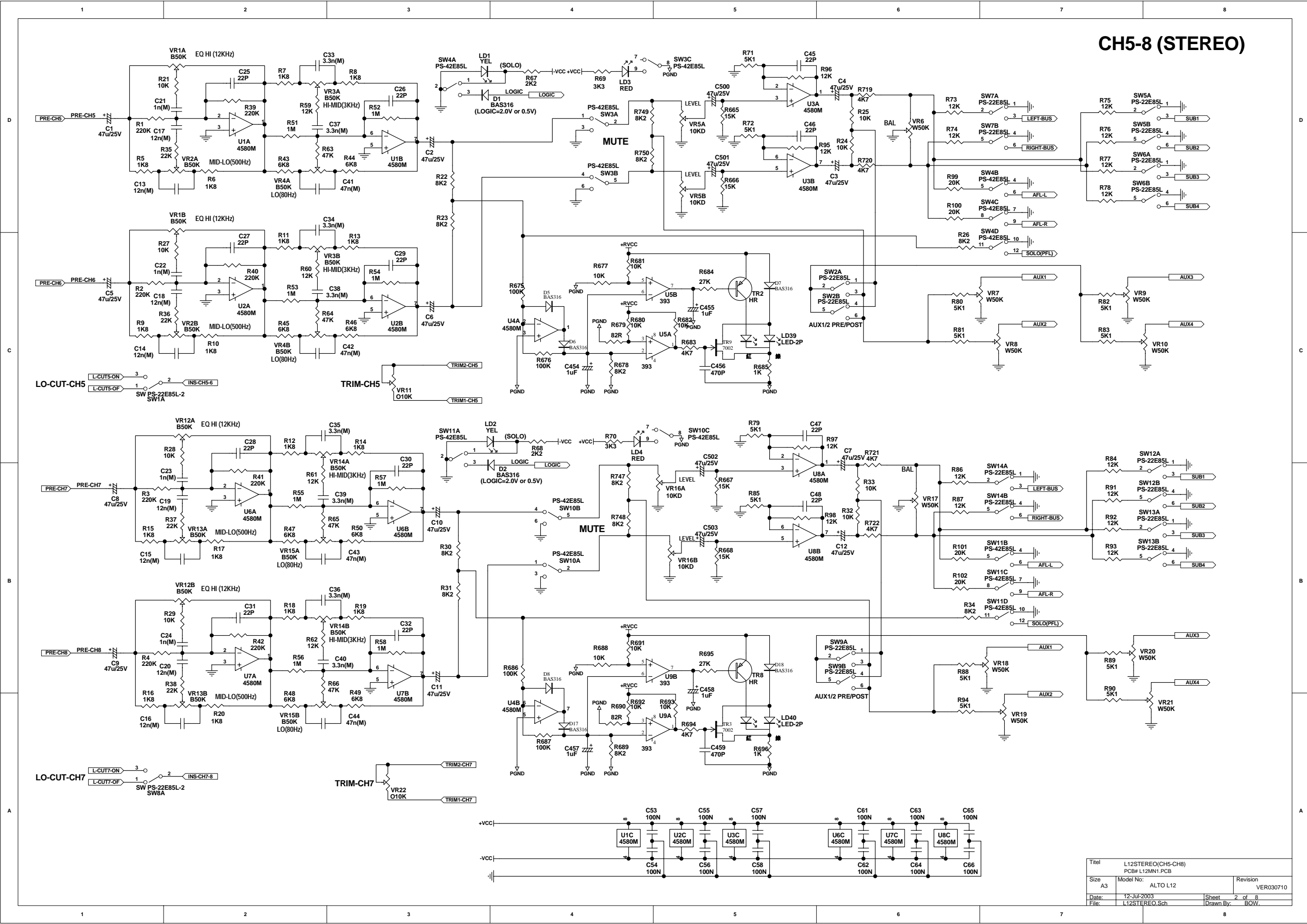


2.0-20P-B24A
(TO L12MN2)
CN7



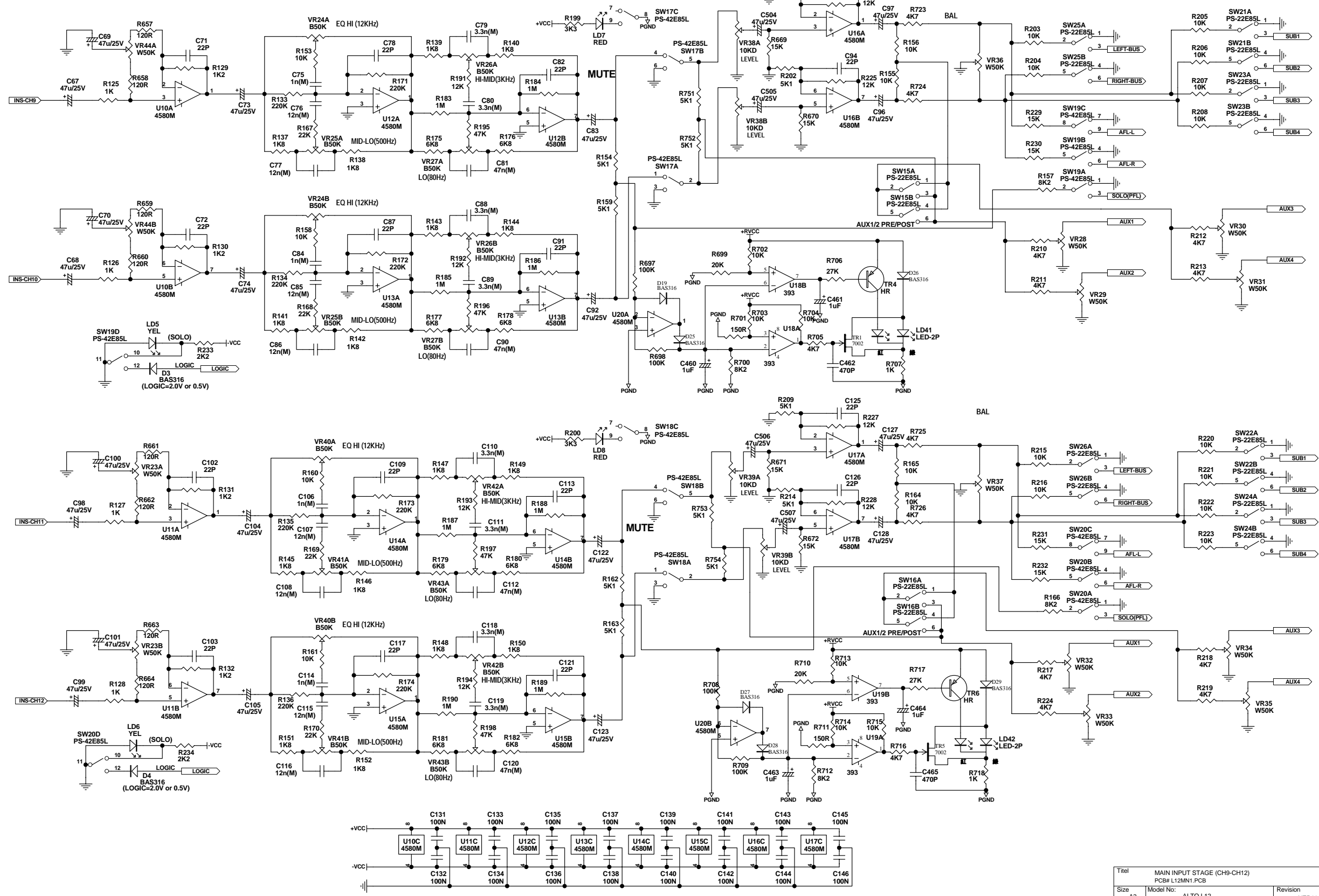
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Size	A4	Model No:	ALTO L12
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Date:	18-Jun-2003	Sheet	1 of 8
File:	L12MN1.Sch	Drawn By:	BOW.

CH5-8 (STEREO)



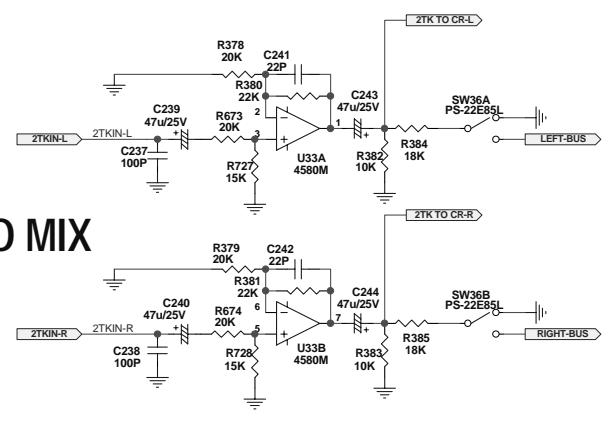
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Size	Model No:	Revision
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CH9-12 (STEREO)

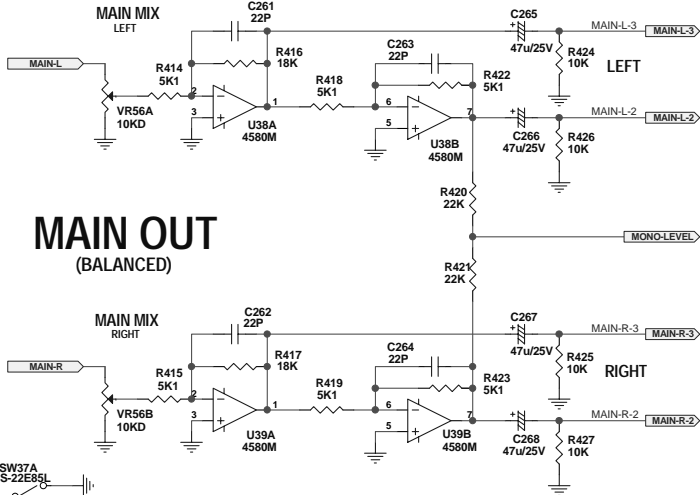


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Size	Model No:	Revision
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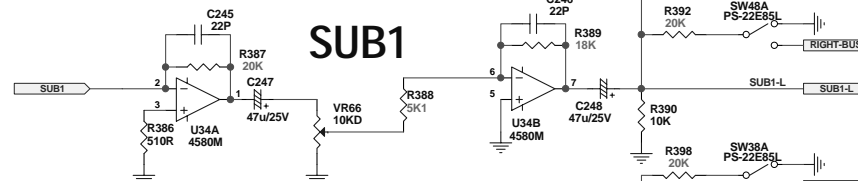
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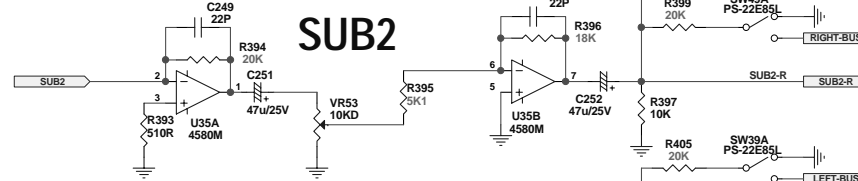
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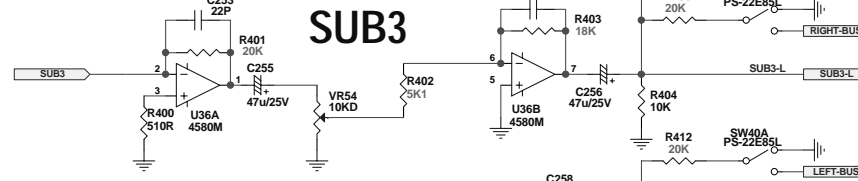
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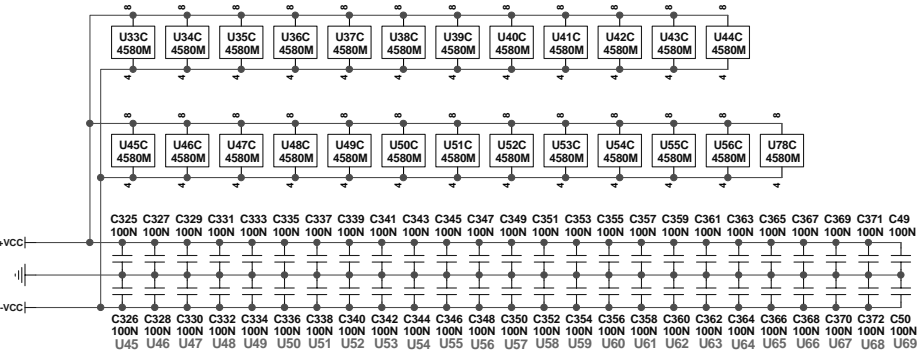
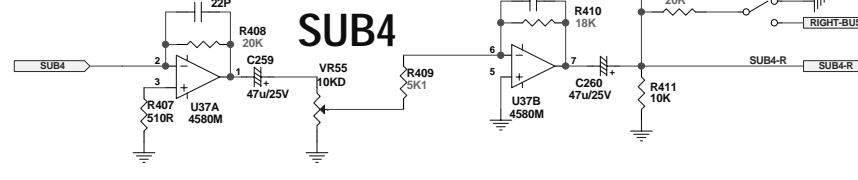
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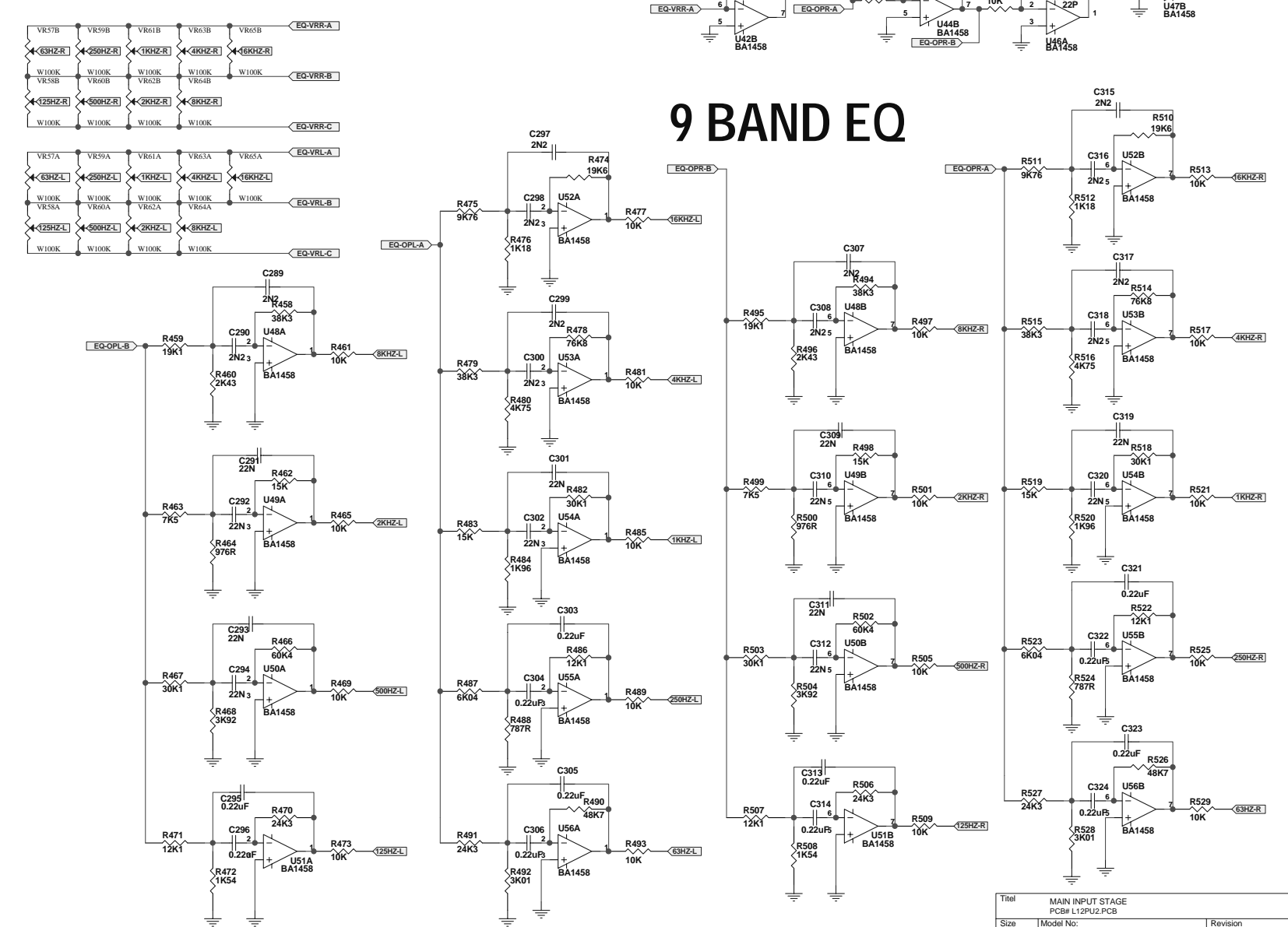
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SUB4

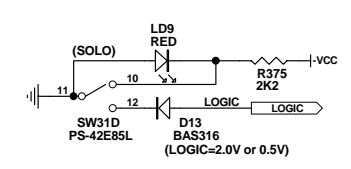
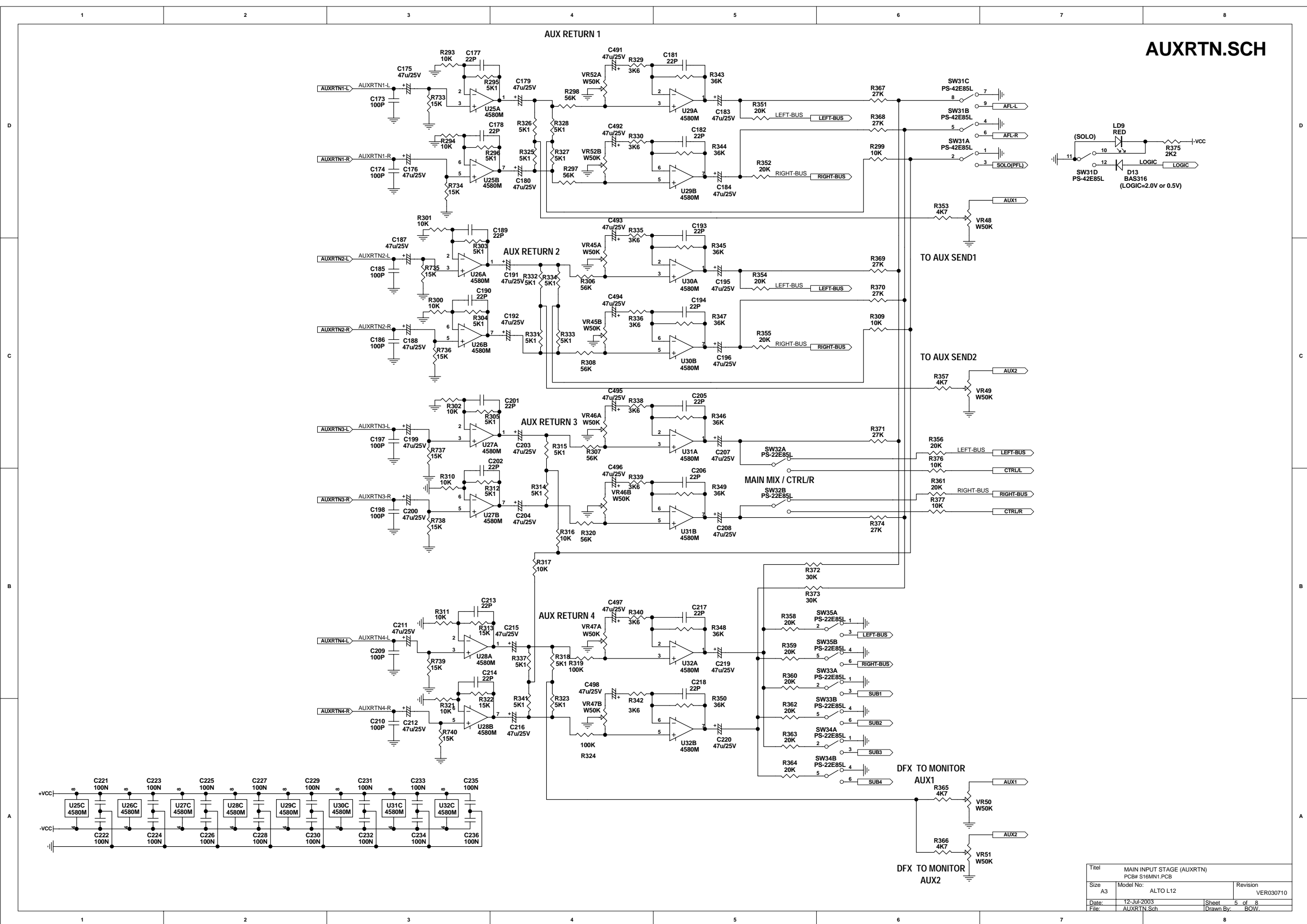


9 BAND EQ



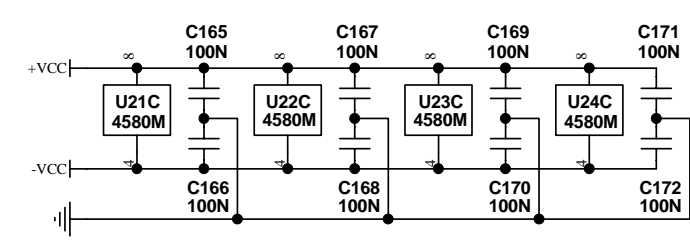
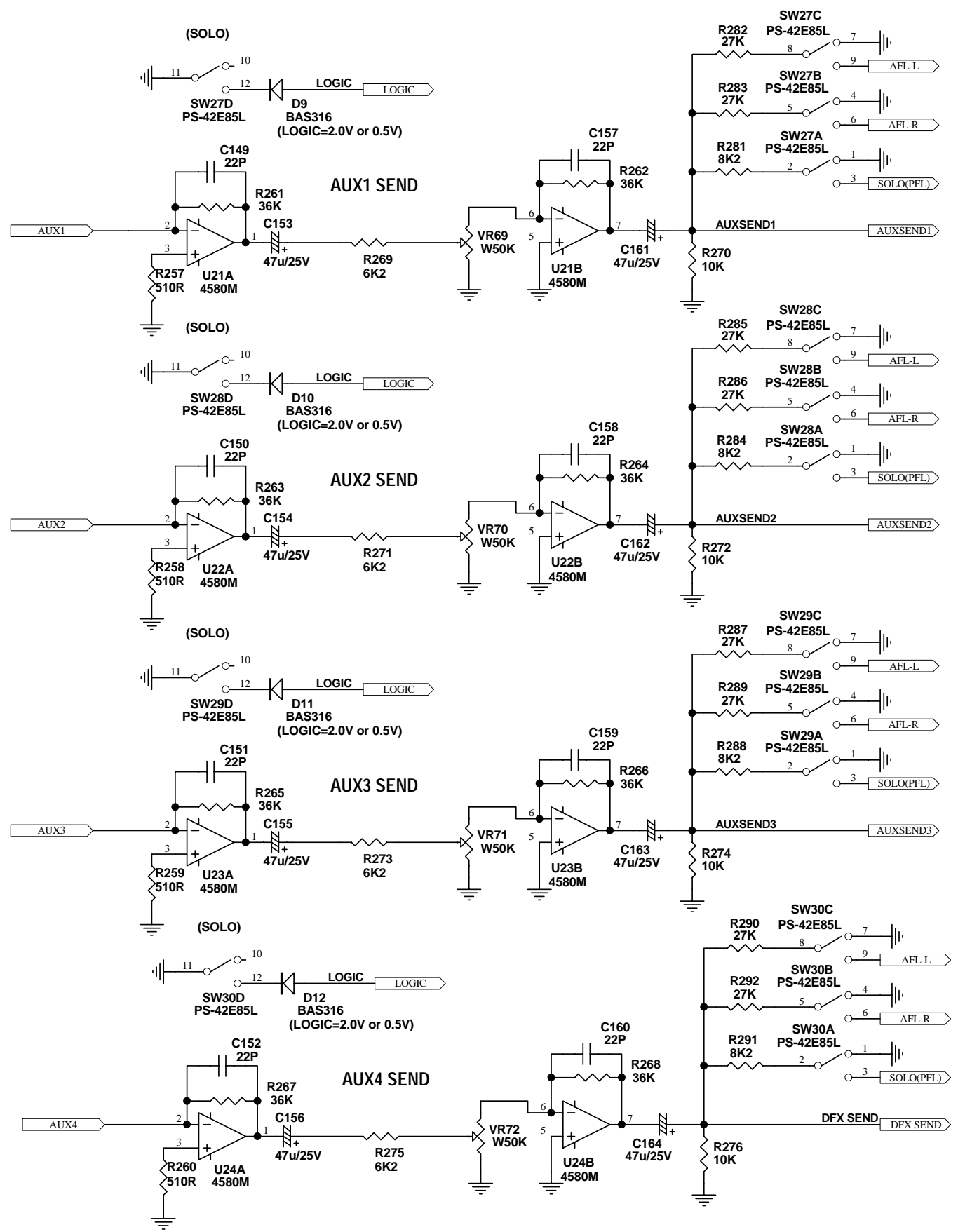
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Size		PCSB L12P2.PCB	
Model No.	ALTO LM12	Revision	VER030710
Date:	1-Oct-2003	Sheet	4 of 8
File:	OTHER.Sch	Drawn By:	BOW

AUXRTN.SCH



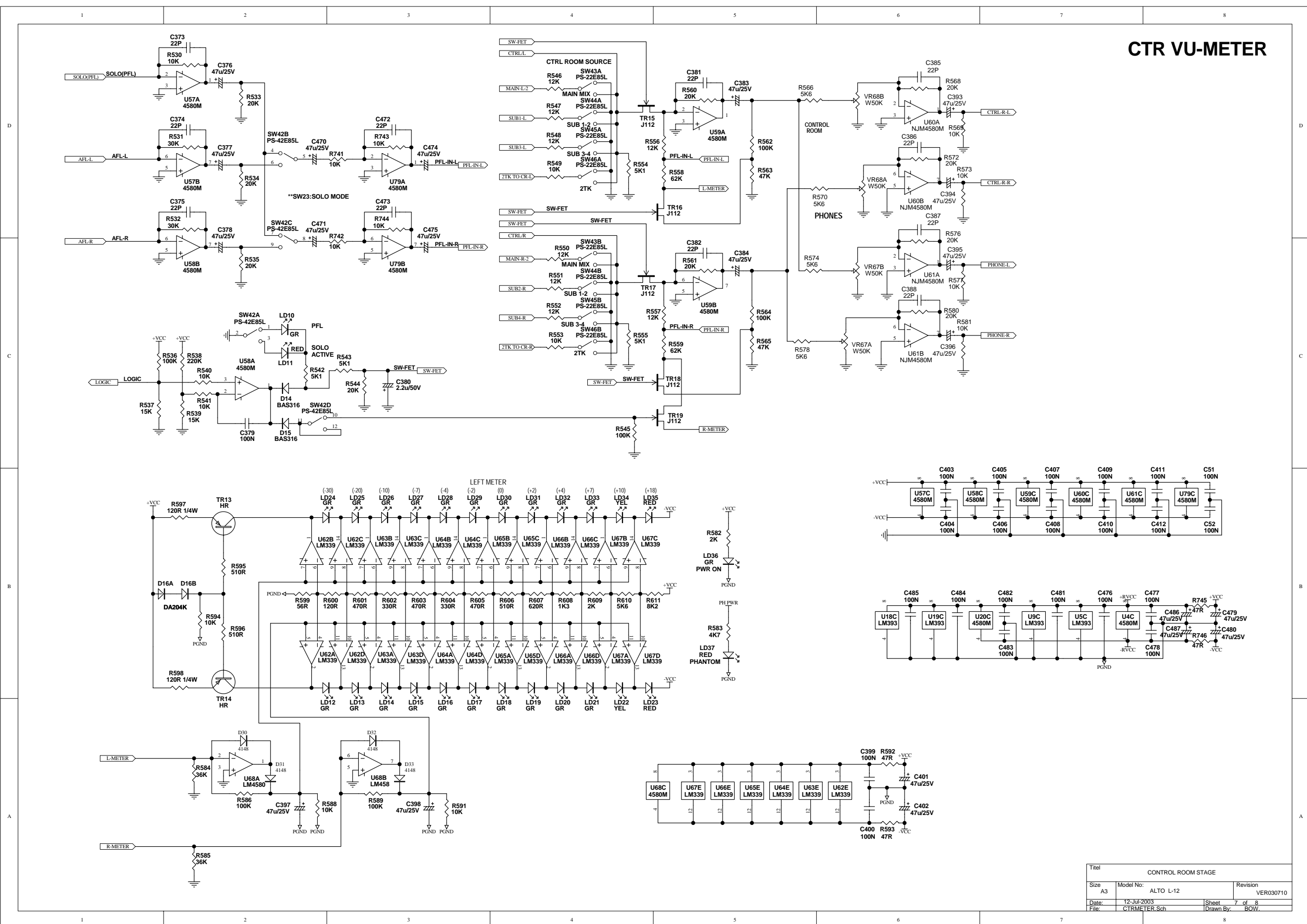
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File:	AUXRTN.Sch	Drawn By:	BOW		

AUXSEND



Titel		MAIN INPUT STAGE (AUXSEND) PCB# L12MN1.PCB	
Size	A3	Model No:	ALTO L12
		Revision	VER020530
Date:	18-Jun-2003	Sheet	6 of 8
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CTR VU-METER

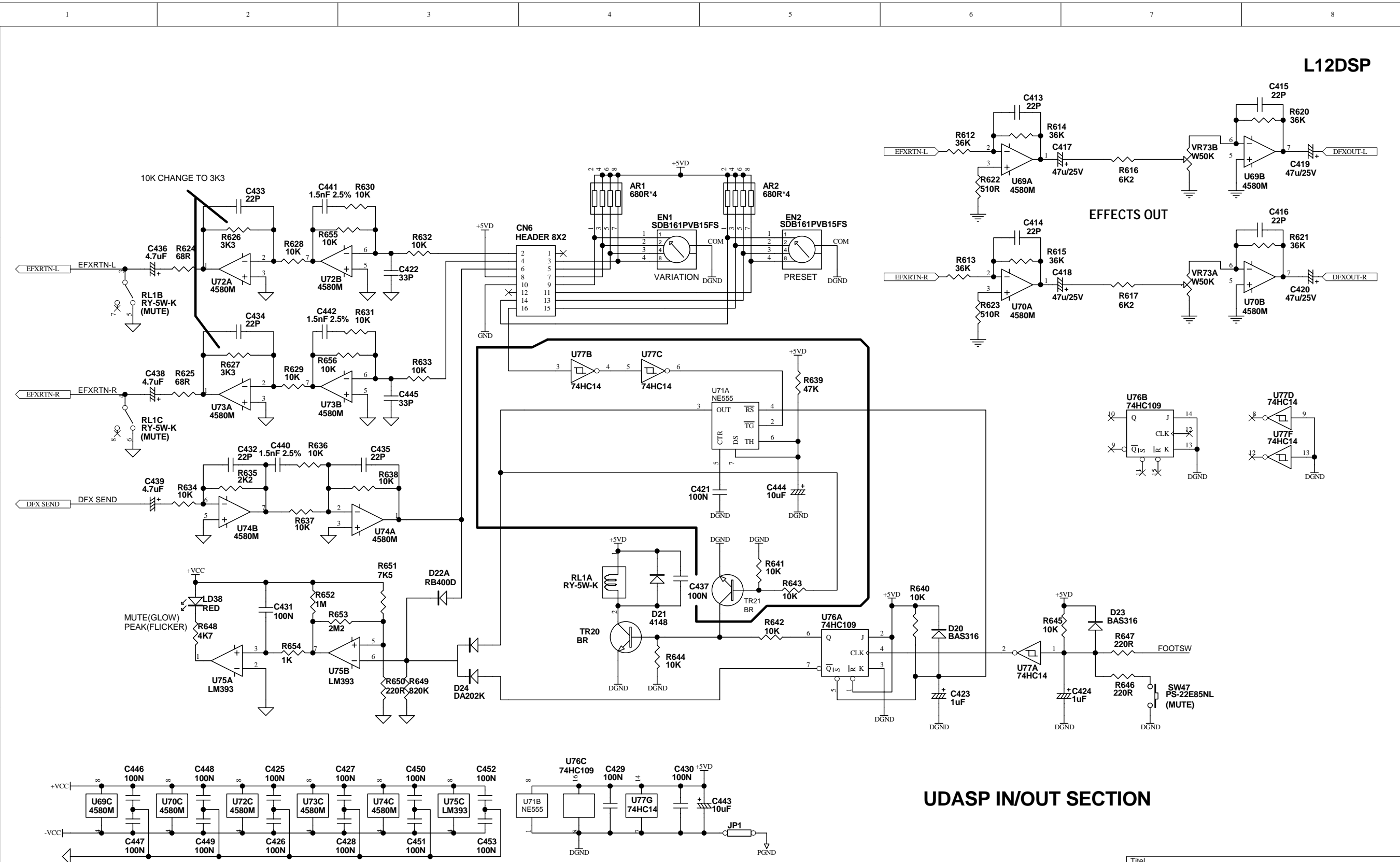


Title			CONTROL ROOM STAGE
Size	Model No:	Revision	
A3	ALTO L-12	VER030710	
Date:	12-Jul-2003	Sheet	7 of 8
File:	CTRMETER.Sch	Drawn By:	BOW

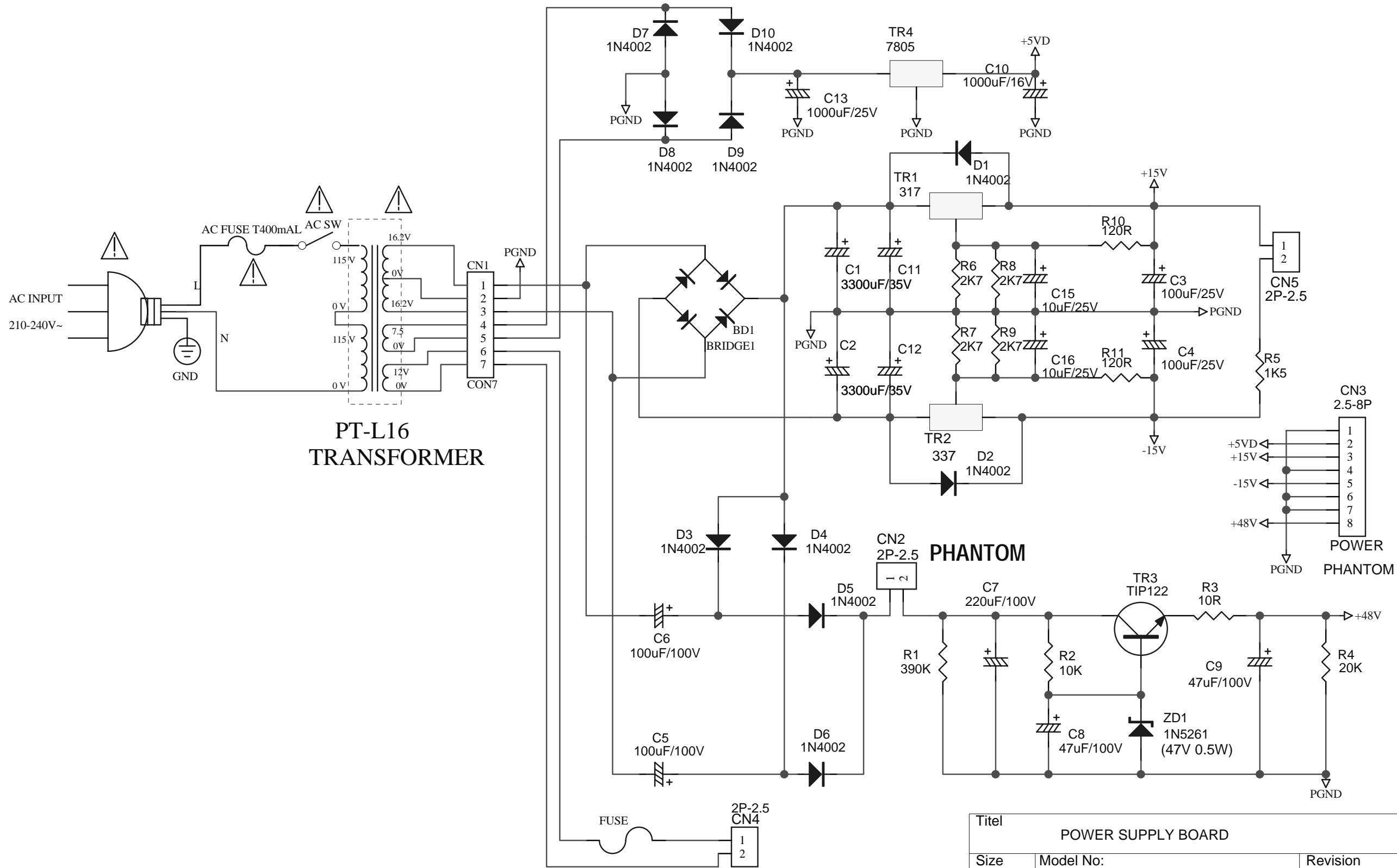
L12DSP

EFFECTS OUT

UDASP IN/OUT SECTION



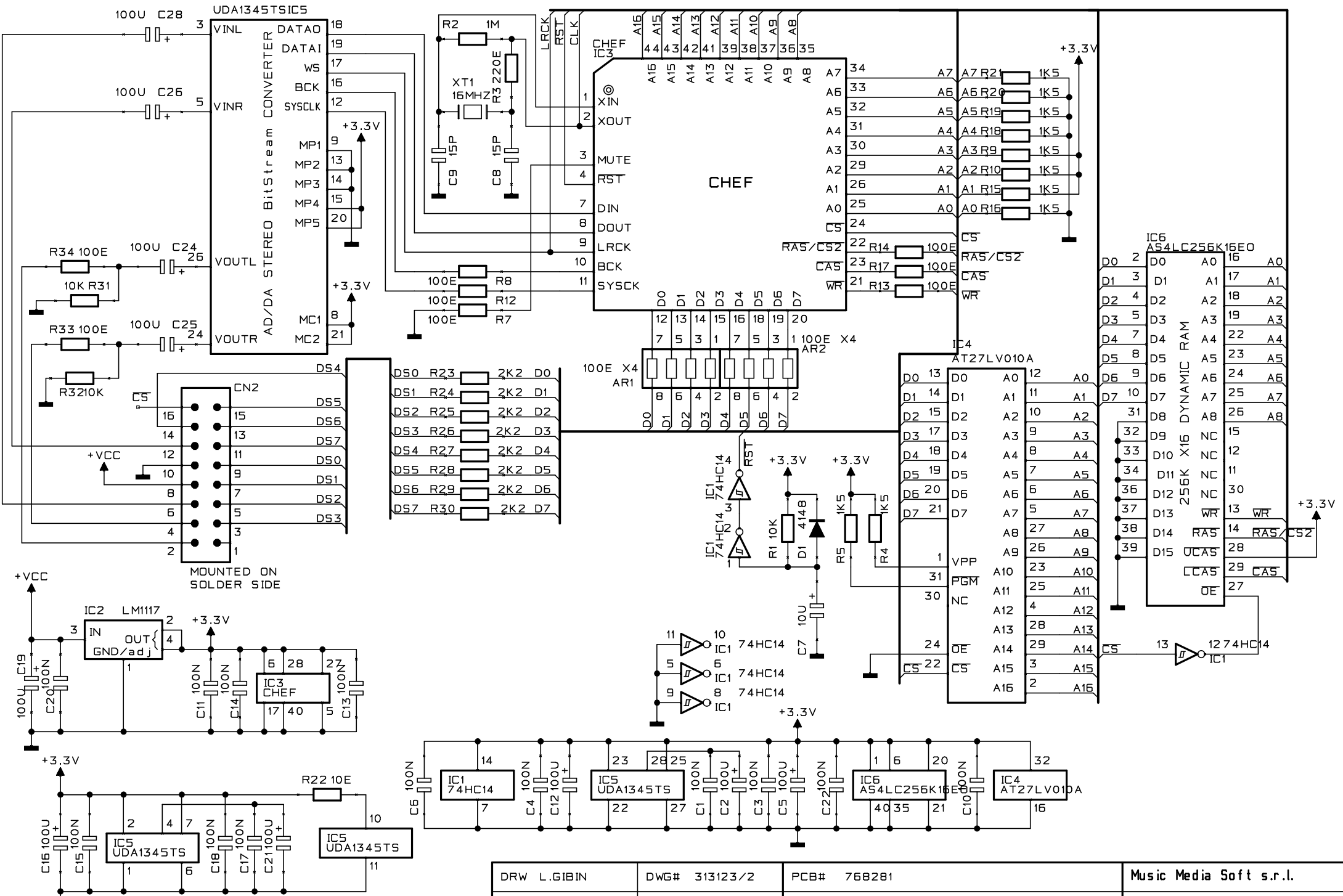
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A3	ALTO L-12	VER030424			
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**PT-L16
TRANSFORMER**

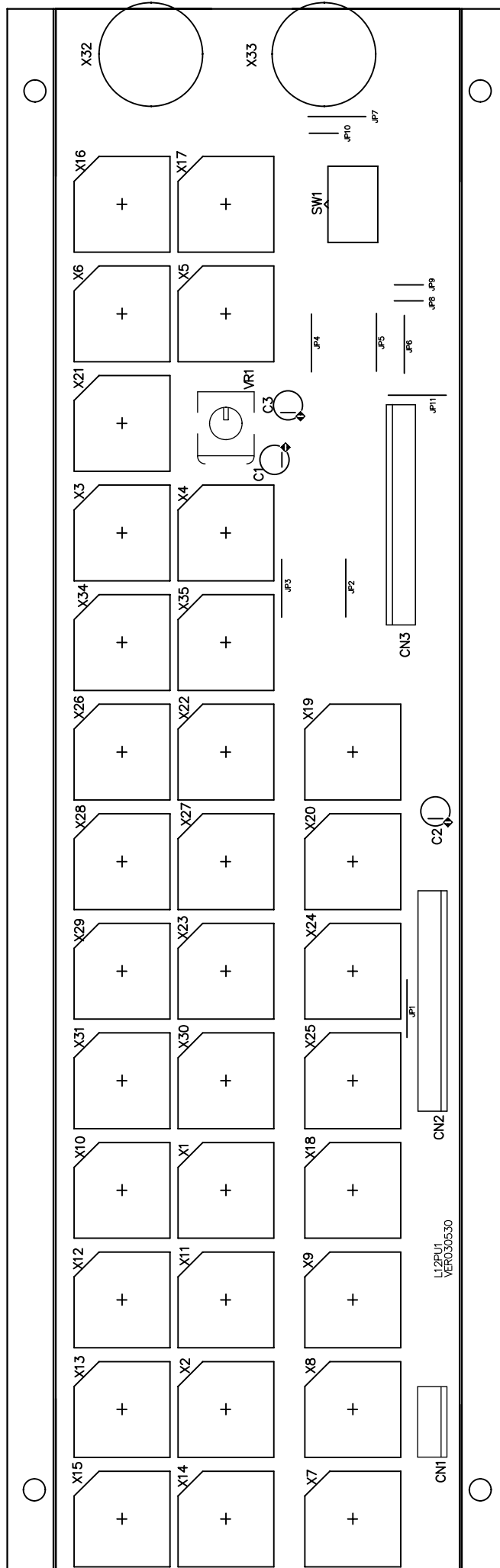
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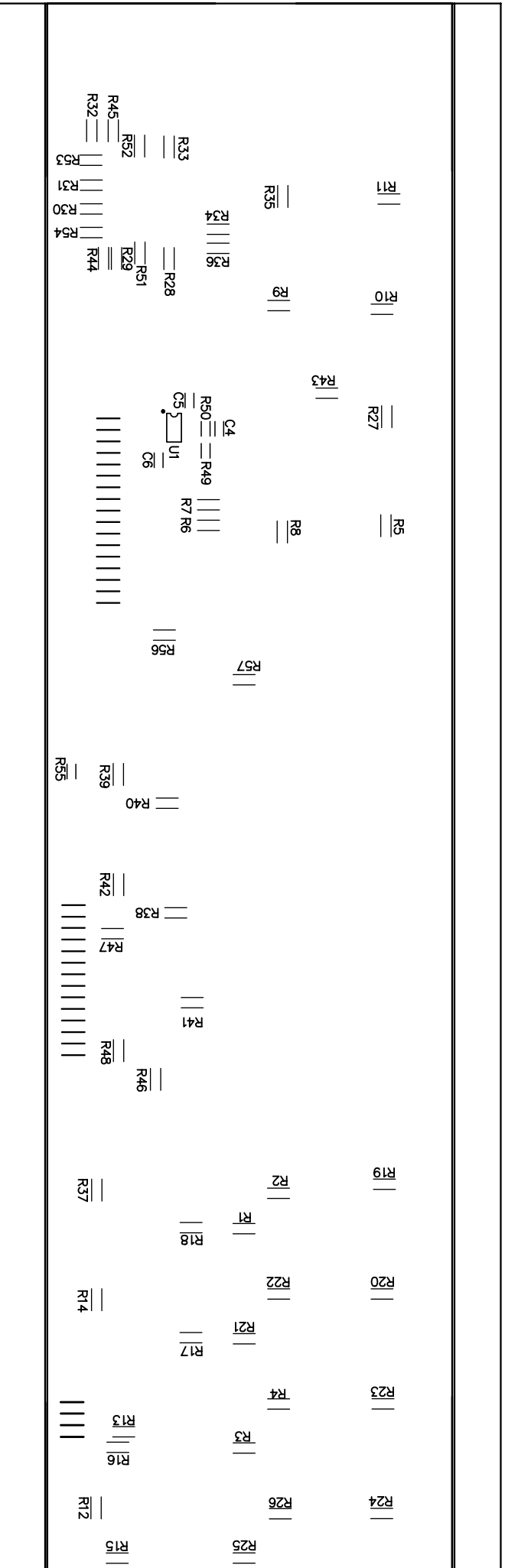
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POWER SUPPLY BOARD		
Size	Model No:	Revision
A4	L-12	VER030521
Date:	1-Oct-2003	Sheet 1 of 1
File:	L12PWR-NEW.Sch	Drawn By: Xian

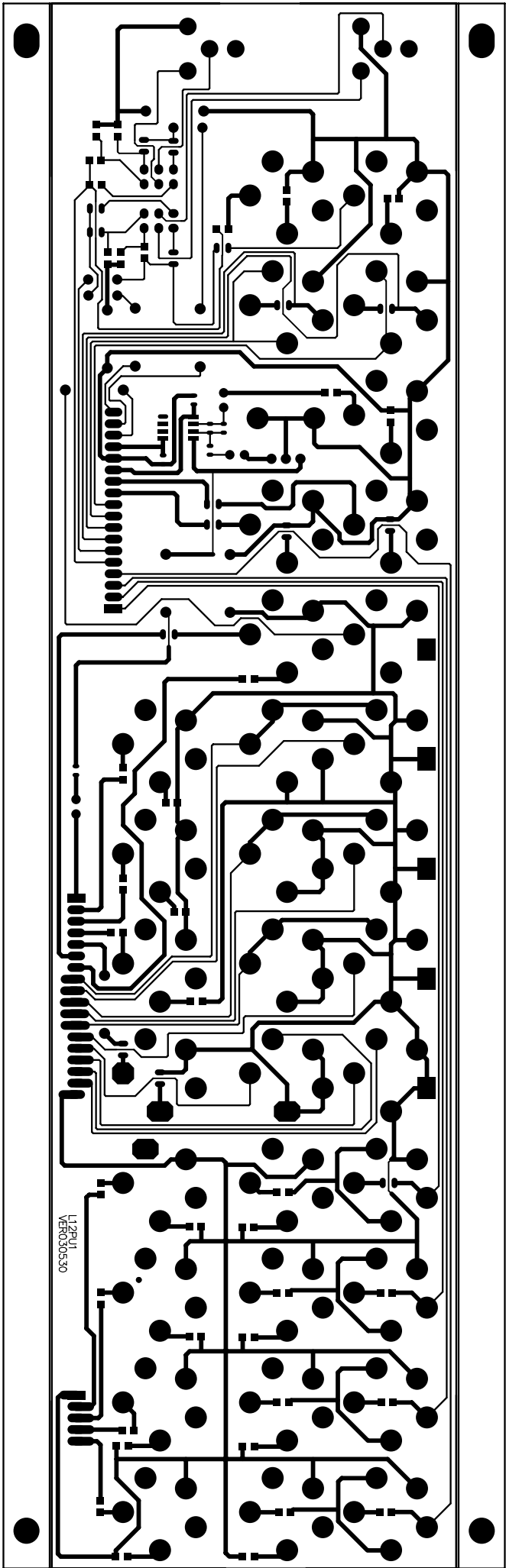


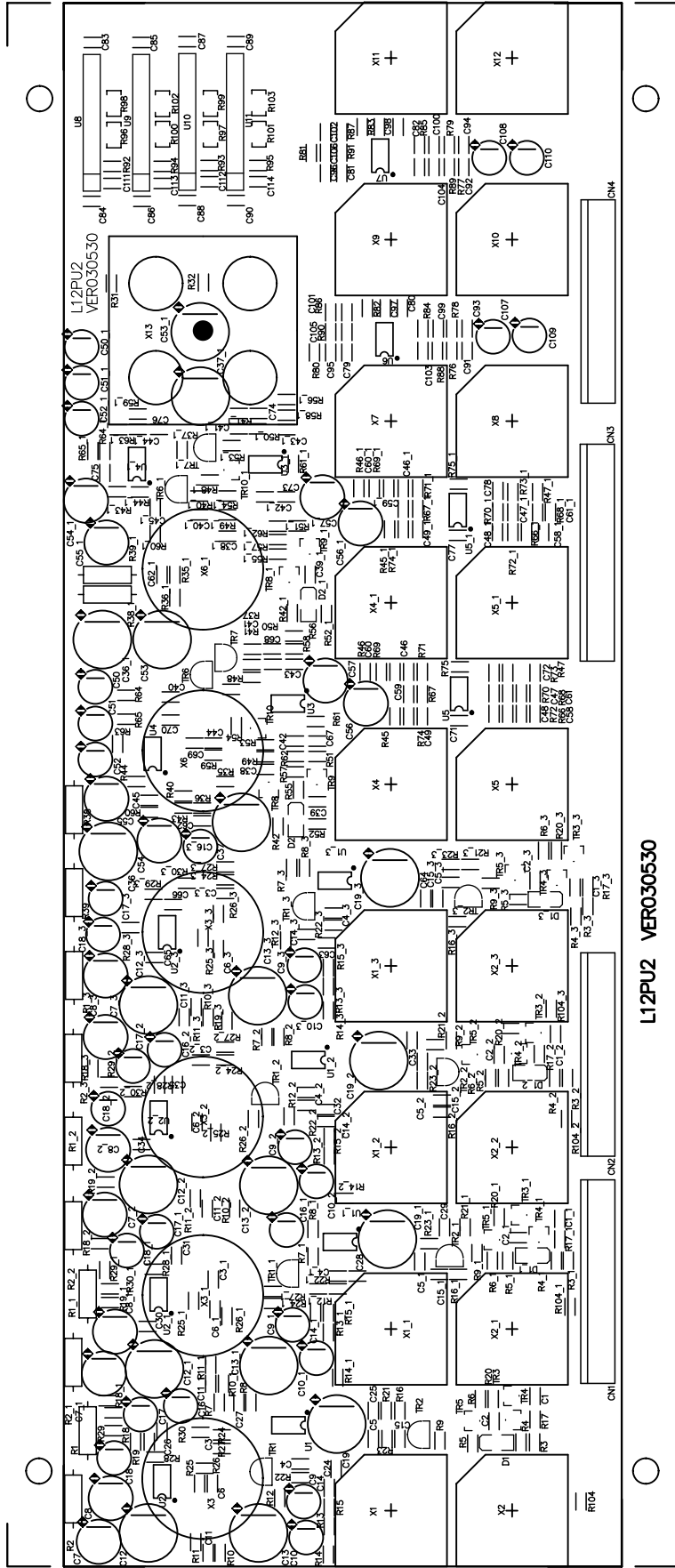
DRW L.GIBIN	DWG# 313123/2	PCB# 768281	Music Media Soft s.r.l. ALL RIGHTS ARE RESERVED. NO COPIES OR REPRODUCE THIS DOCUMENT WITHOUT WRITTEN CONSENT BY MMS.
CKD L.GIBIN	DATE 23/12/02	SCHEMATIC DIAGRAM	
APP.	REV. B	CHEF EFX-E Digital Effect Board	

4. Printed Circuit Board

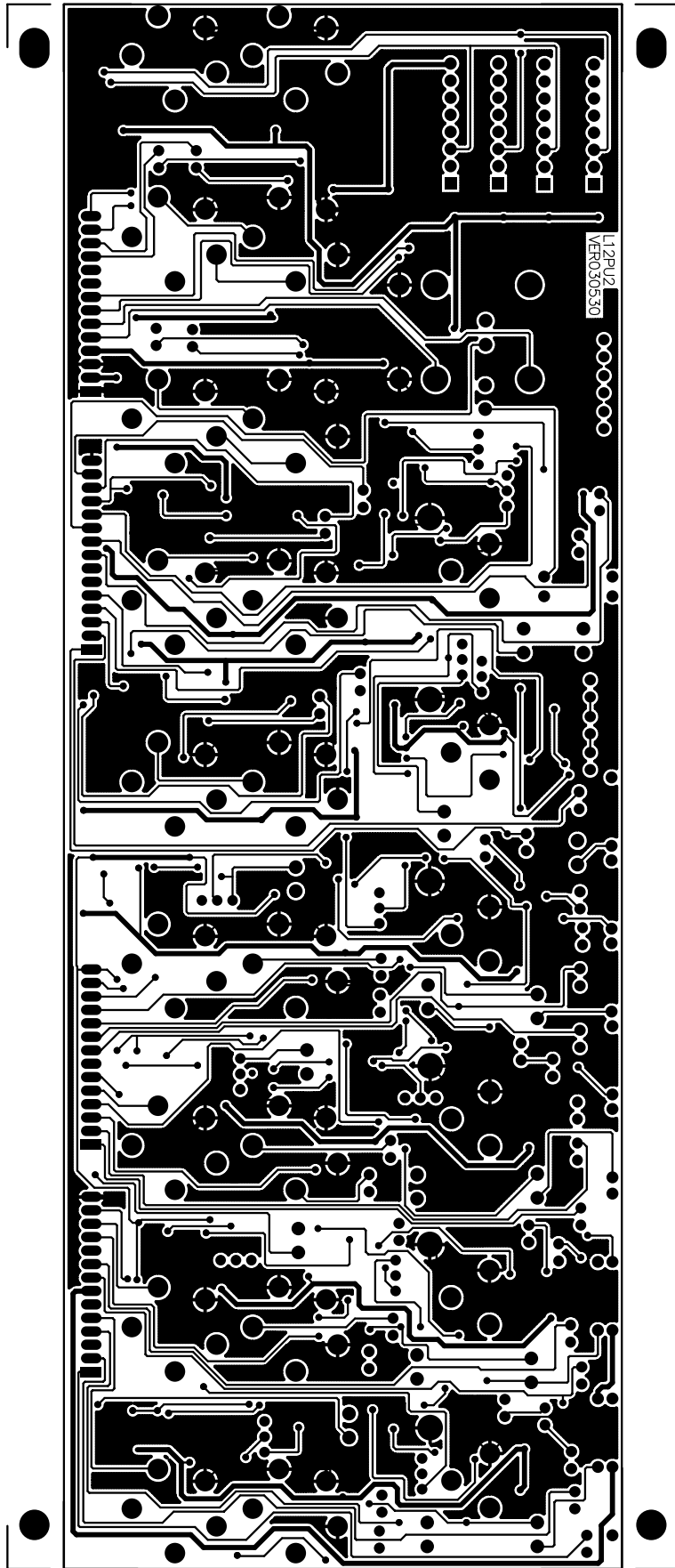


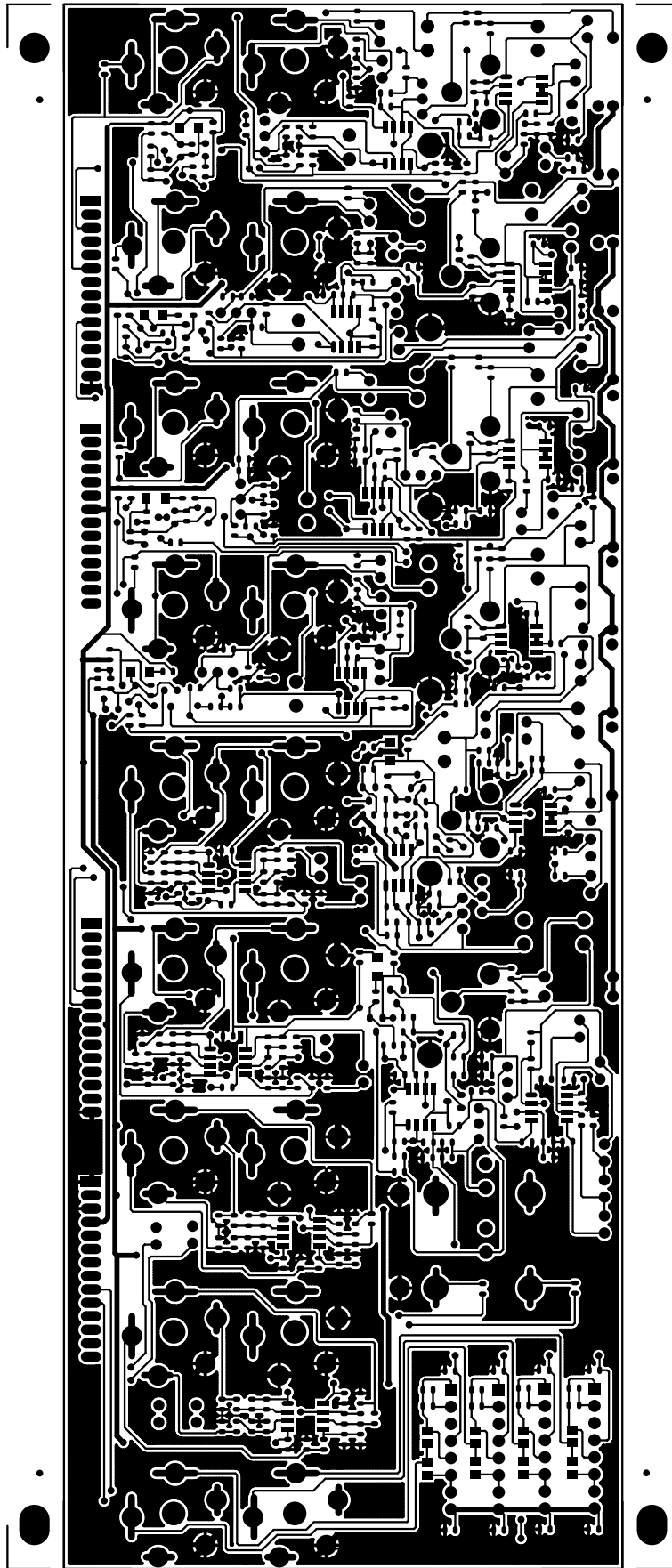


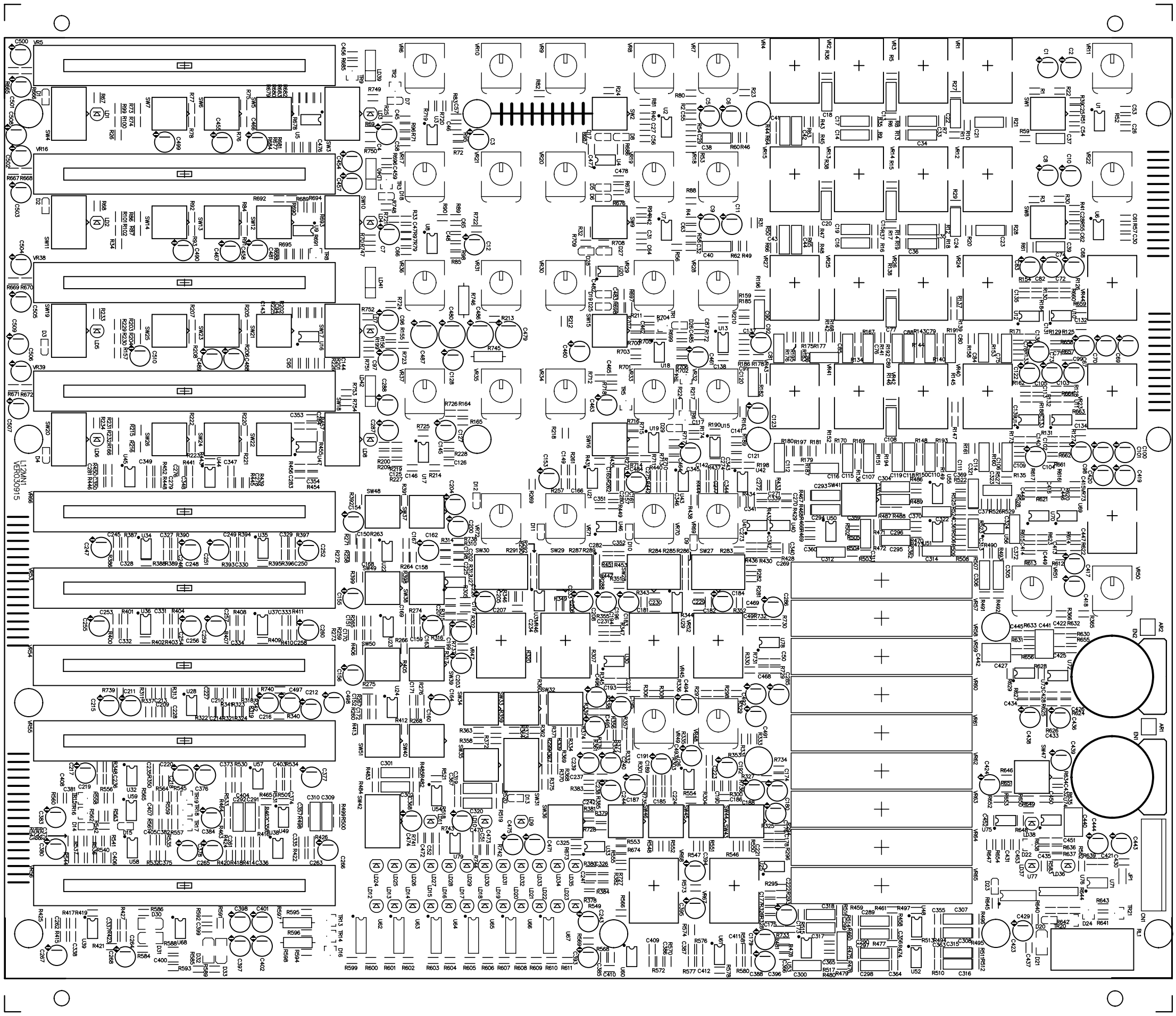


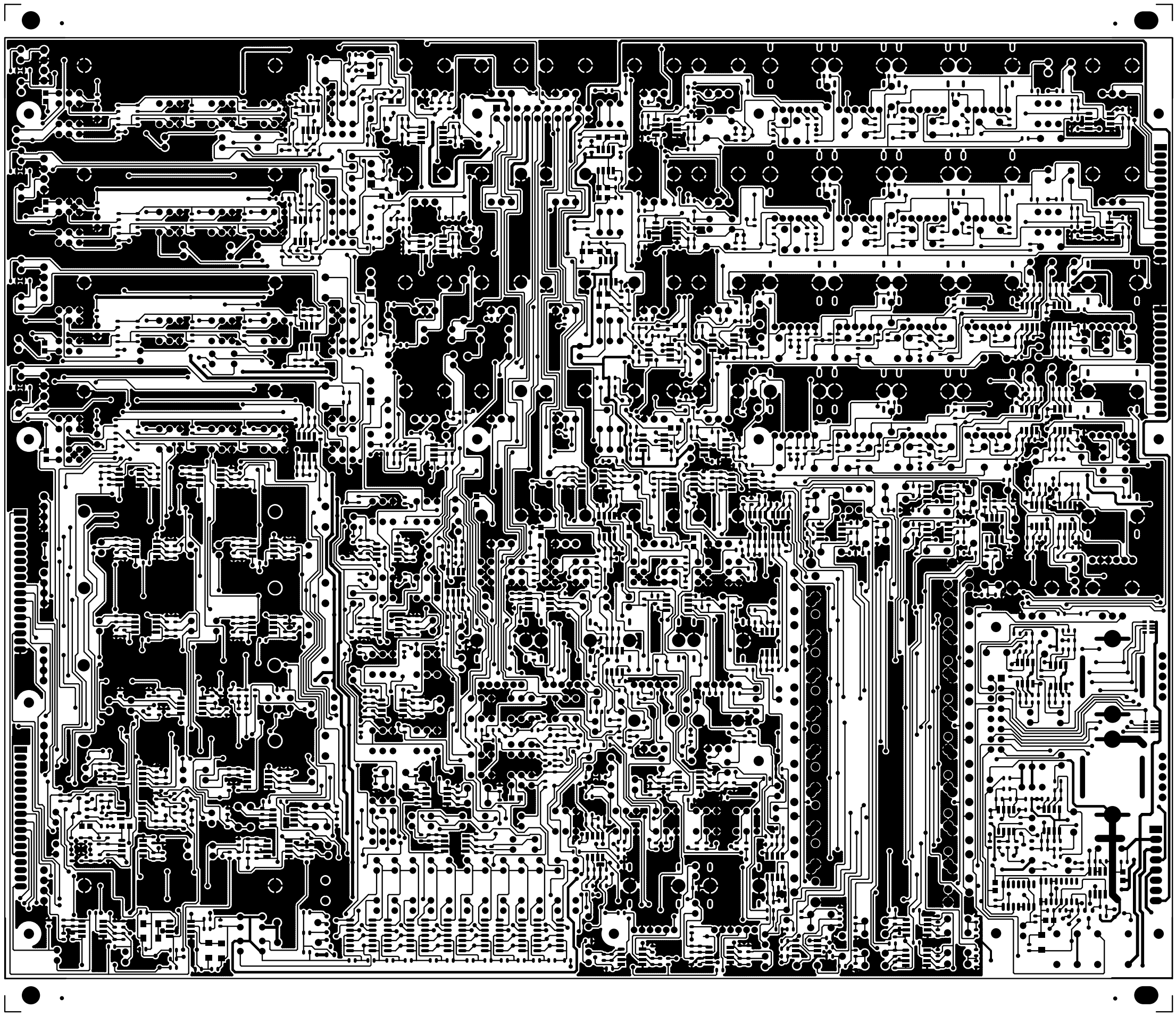


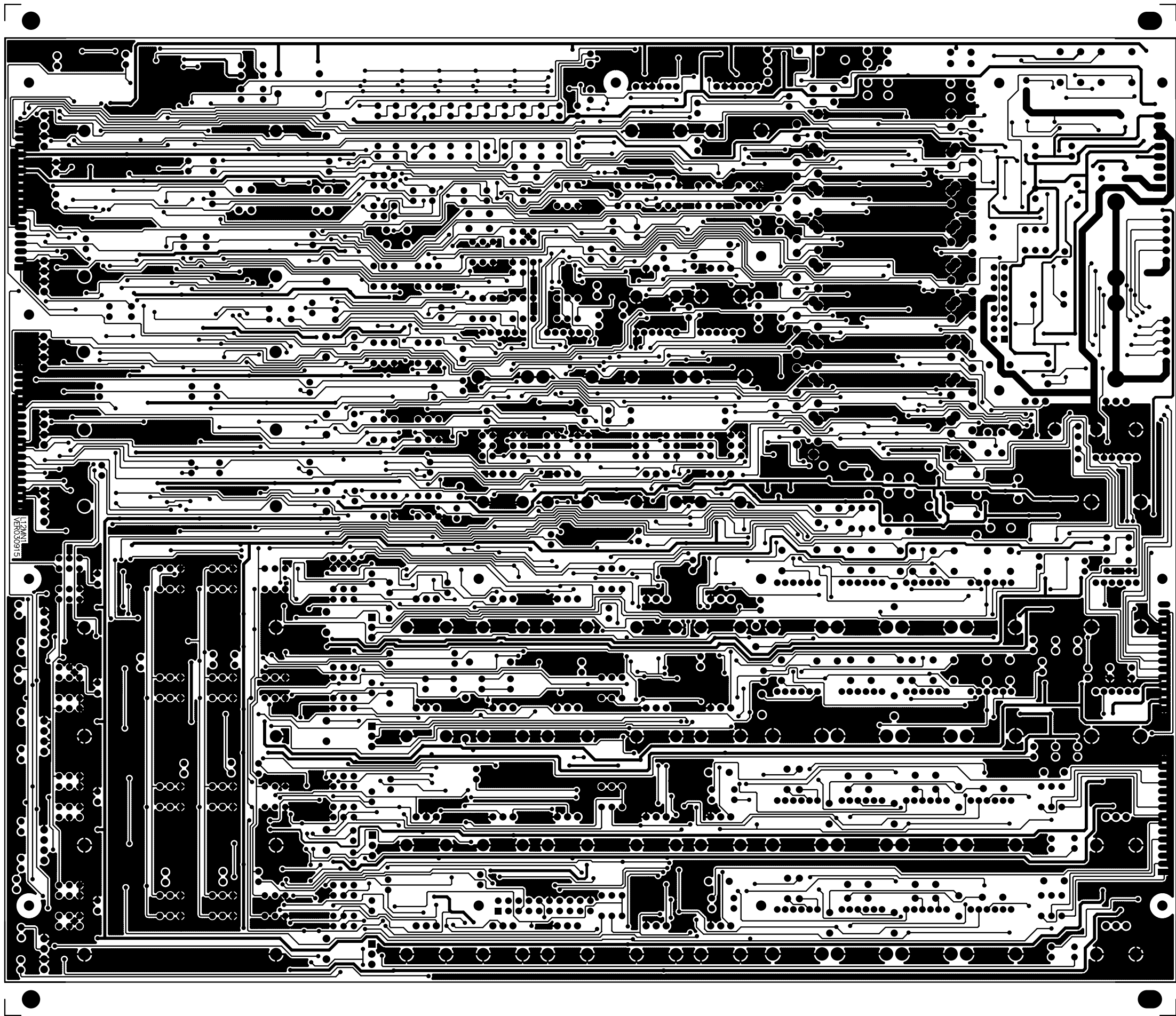
L12PU2 VERO30530

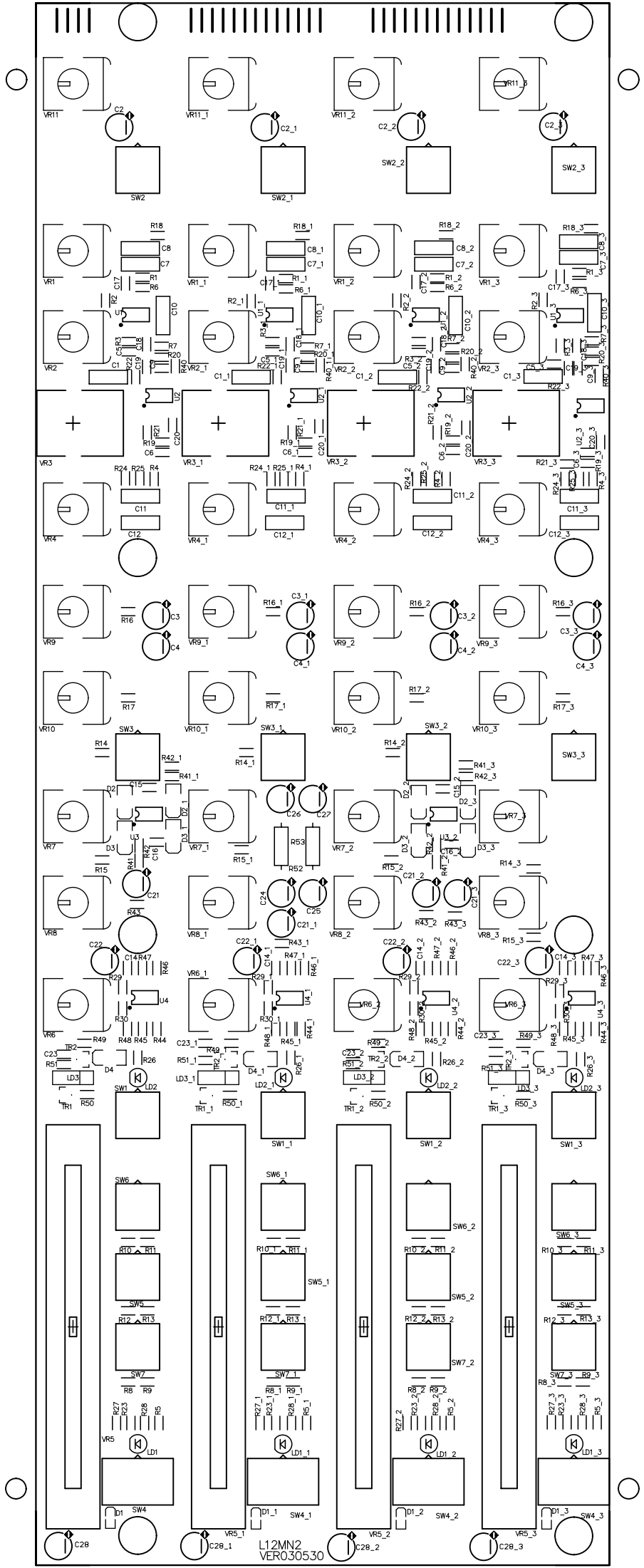




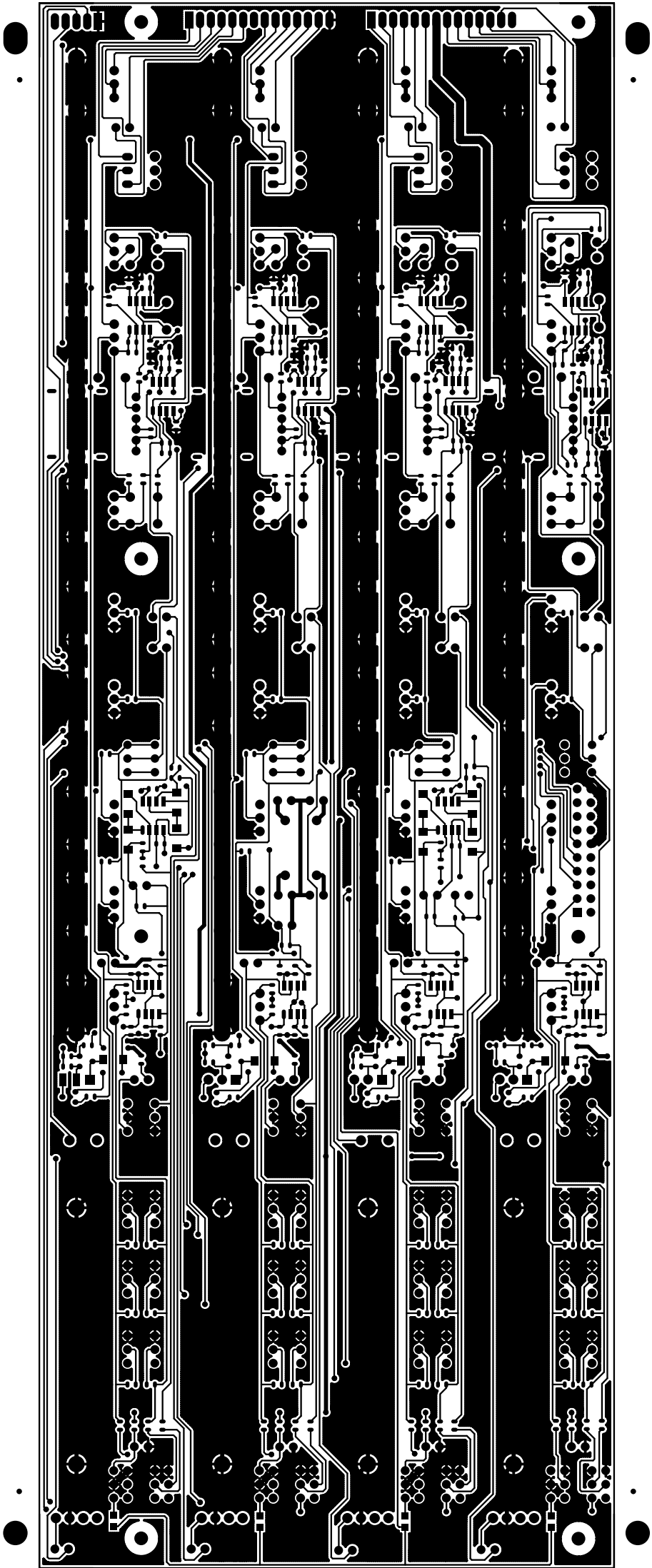


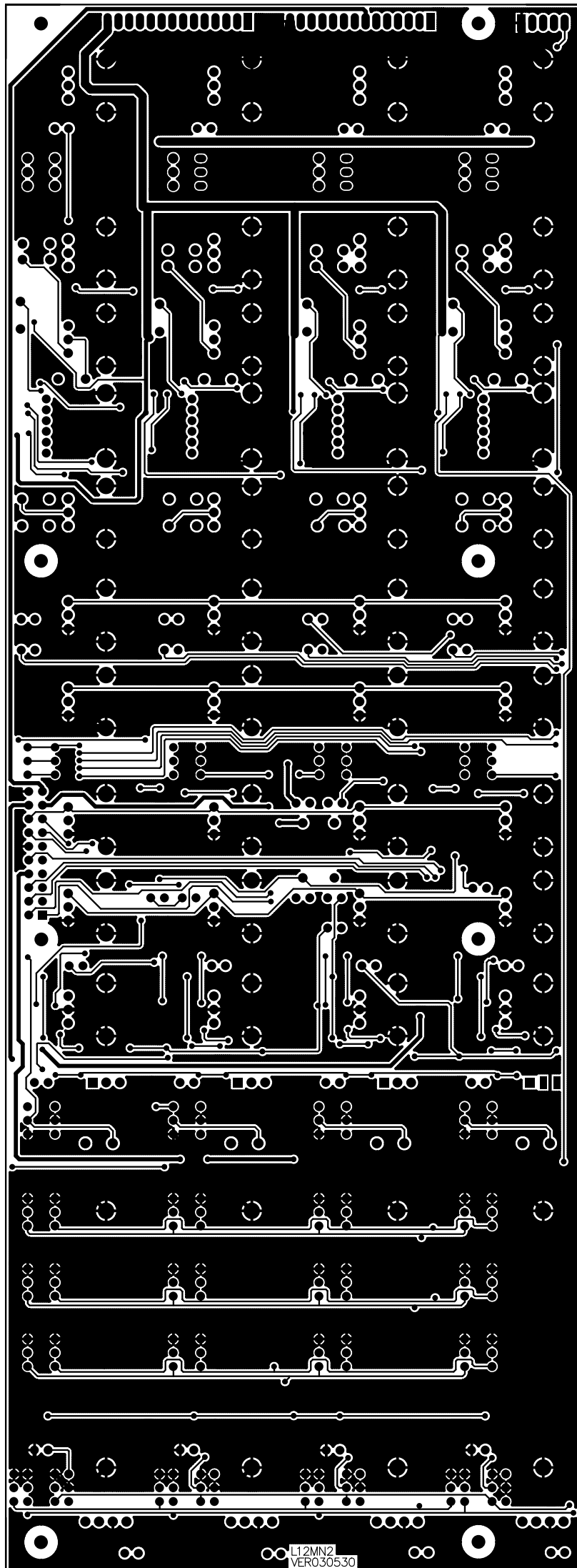




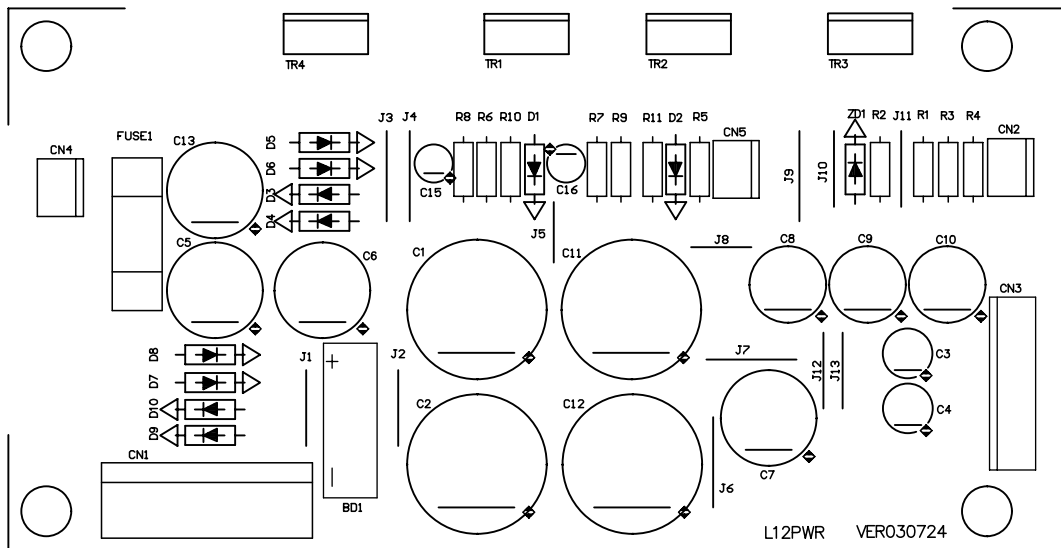


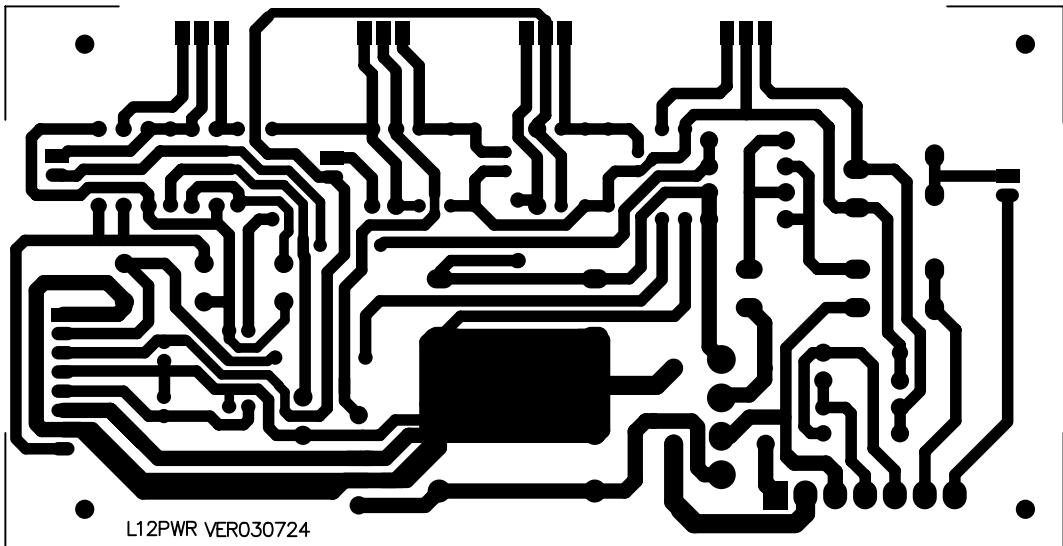
L12MN2
VERO30530



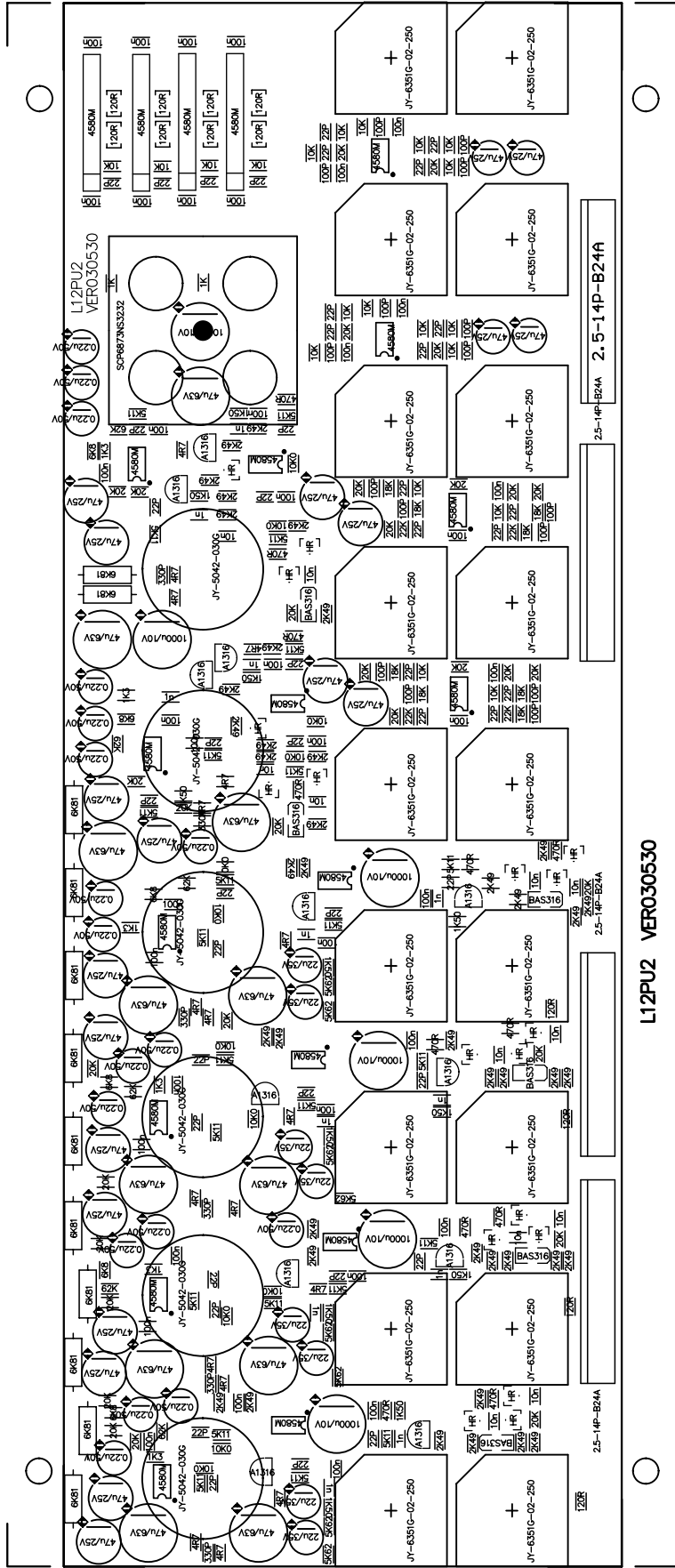


L12MN2
VER030530





L12PWR VER030724

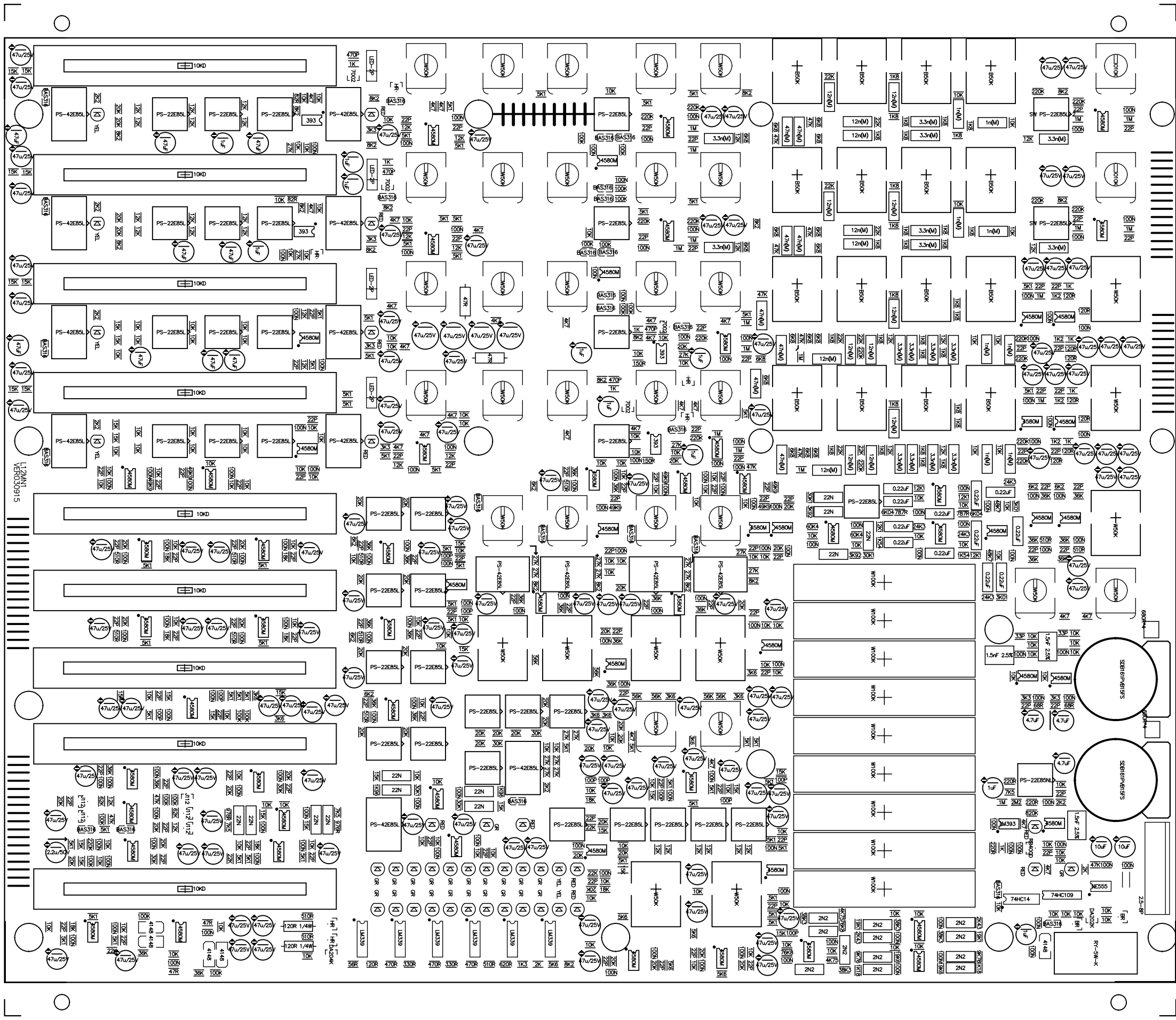


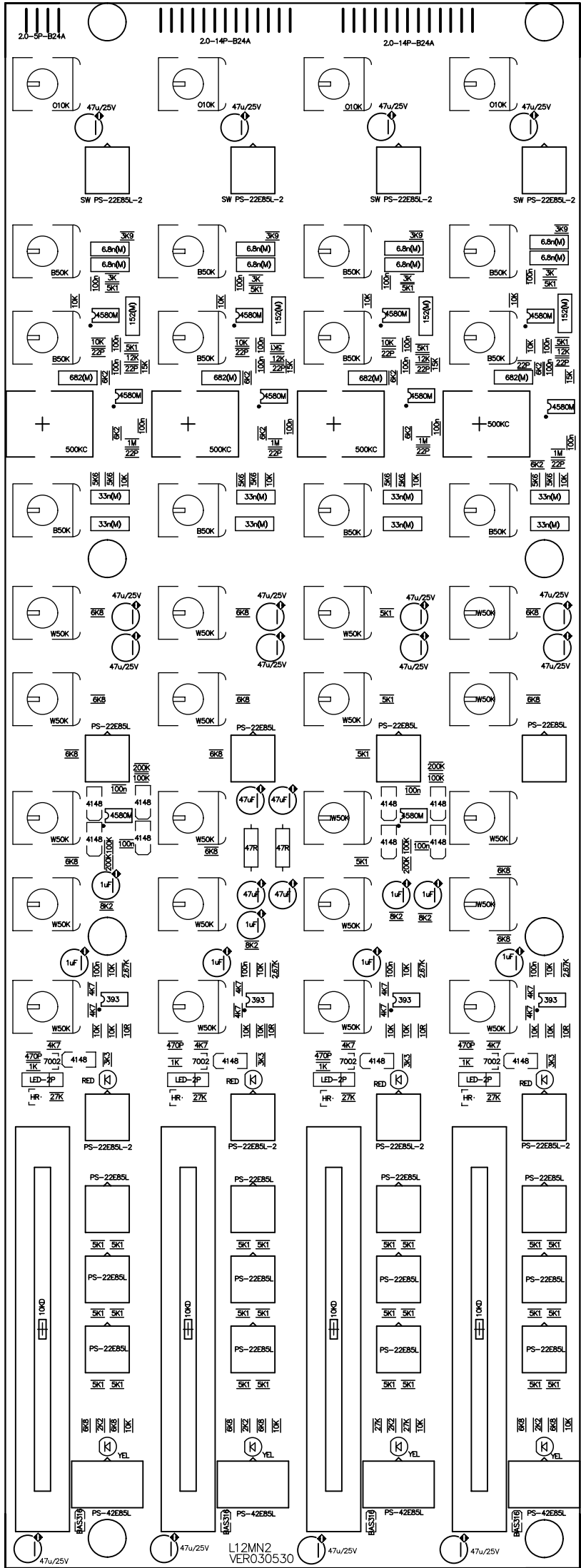
L12PU2 VERO30530

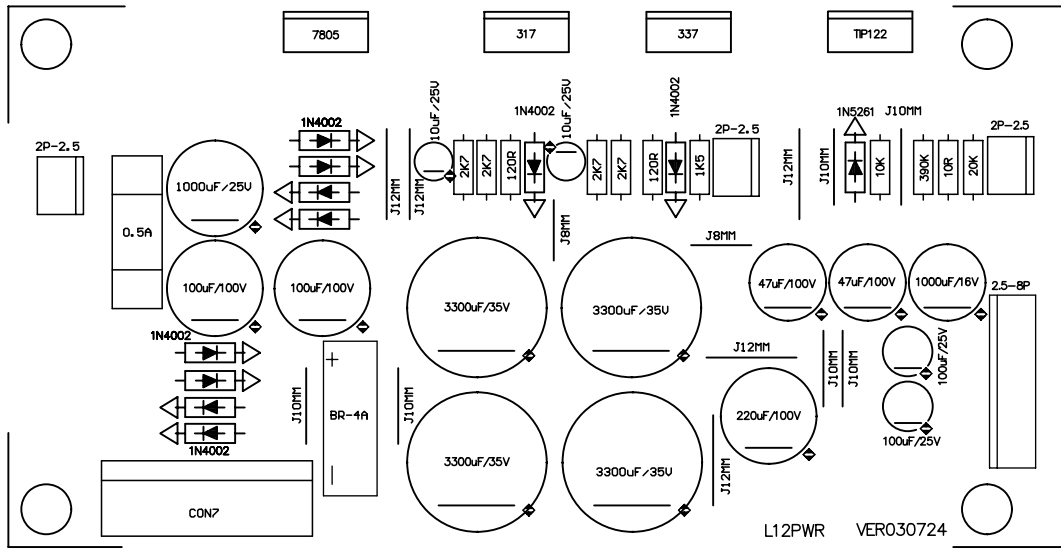
2.5-14P-B24A

2.5-14P-B24A

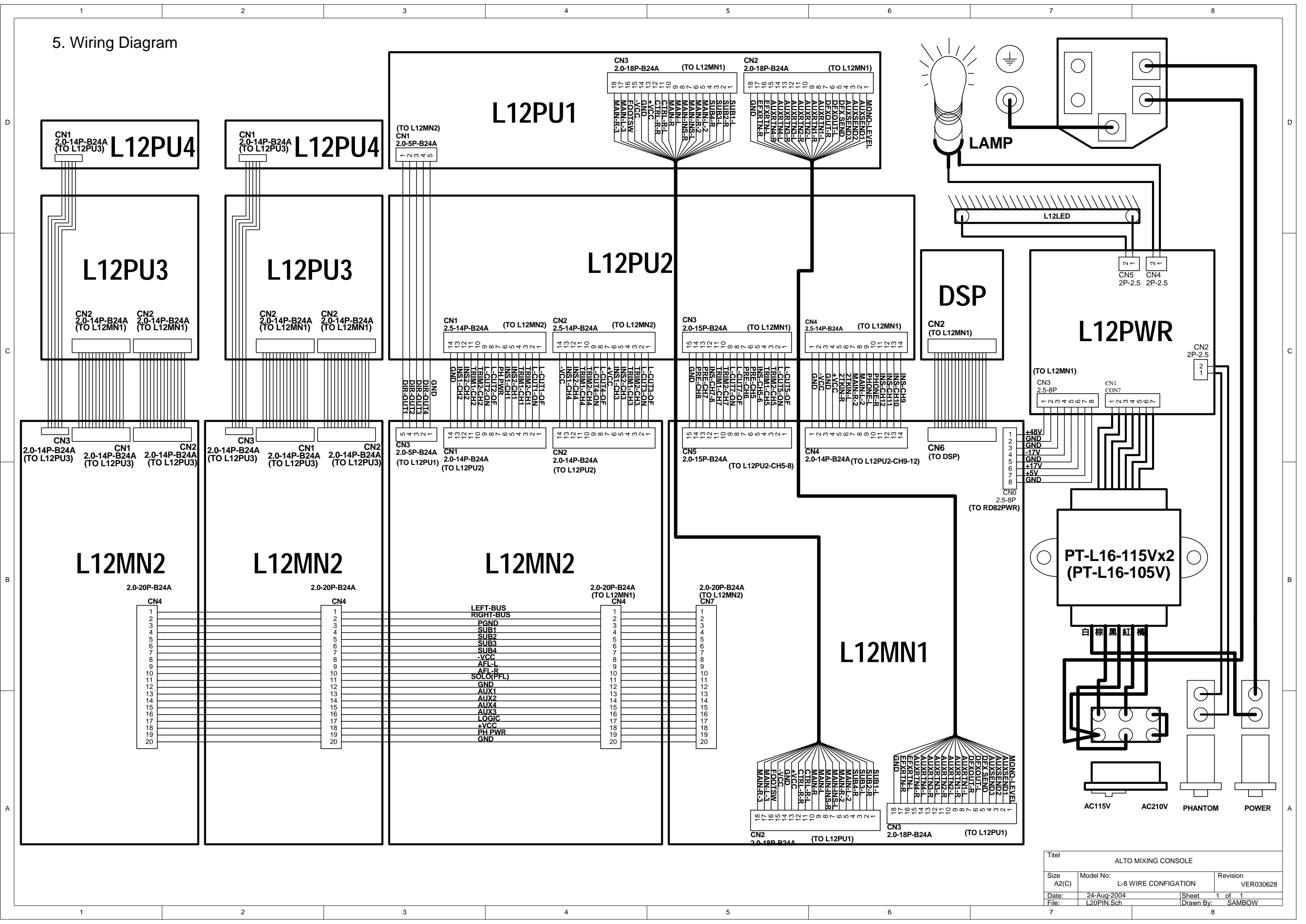
2.5-14P-B24A







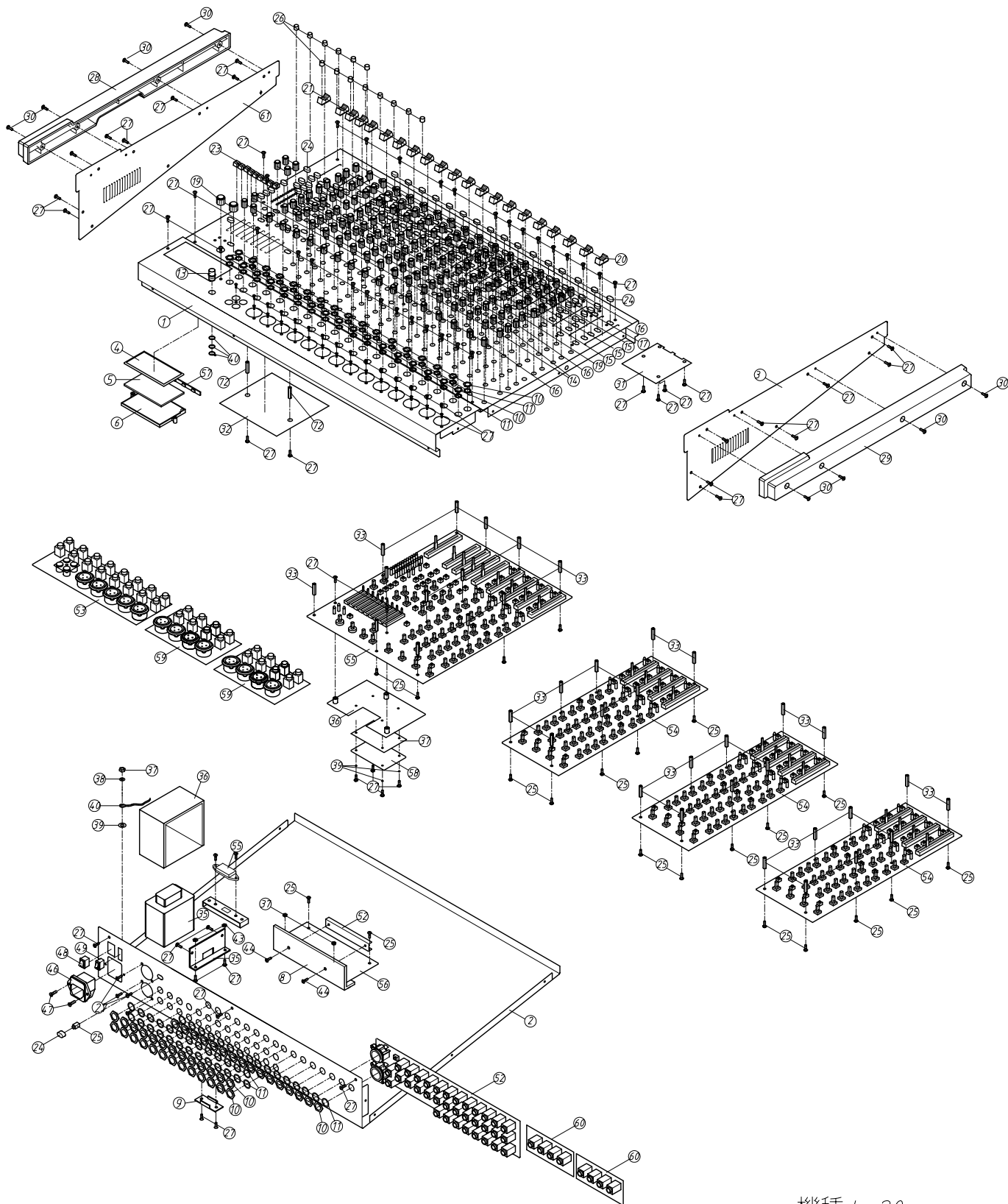
5. Wiring Diagram



Title			ALTO MIXING CONSOLE		
Size	Model No:	Revision		VER030628	
A2(C)	L-8 WIRE CONFIGURATION				
Date:	24-Aug-2004	Sheet	1 of 1		
File:	L20PIN.Sch	Drawn By:	SAMBOW		

8. Exploded Views

SEKAKU



機種:L-20
圖號:L20-00
日期:2004/09/01

Sekaku Technical Group, Ltd
Jingheng Electron Industry Co., Ltd

Model : L-20

Date: 2004/9/1

Sl. No	Part No.	Description	Specification	Qty	Material	Remarks	Sl. No	Part No.	Description	Specification	Qty	Material	Remarks
1	MA03900	ZC-panel	L-20	1			28	NI02548	Handle-ABS	401*31*25mm left black	1		
2	MB03632	ZC-chassis	L-20 ALTO 127V_V1.0	1			29	NI02547	Handle-ABS	401*31*25mm right black	1		
3	MJ01159	ZB-side board	L-20 right	1			30	MG00027	Black-plated screw	M3*12	8		
4	NI02638	ZC-Acrylic-transparent	L-12 (3t*97.5*49mm)	1			31	ND00244	Dust cover	0.35t*572*100mm black 2016B	1		
5	NI02640	ZC-Acrylic-transparent	L-12 (3t*91.5*56mm)	1			32	ND00247	Dust cover	0.35t*112.5*56.5mm black 2016B	1		
6	MJ01225	ZD-partition-L12-011	L-12 1.2t*100.5*74.5	1			33	MG00304	Copper pillar	M3*14*0.5PH flat	37		
7	NI02620	ZD-insulation board-L8-04	1*86.5*53 L-8	1			34	MG00020	Black-plated screw	M3*8	4		
8	MI00584	Heat sink-AL type	4*40*20*140 L-12	1			35	TC00229	Constant power transformer	PT-L16_127V	1		
9	MI01765	ZB-switch protection cover	L-12	1			36	MI00919	ZD-separation cover-L16-04	L-16 0.3t*70.6*66.6*58	1		
10	ME00060	MIC jack screw nut-HC00125 accessory	Hexagon JY-6351G-02-250	1			37	ME00016	Colour nut	4mm	6		
11	MF00061	T-MIC jack washer-HC00125	Circle JY-6351G-02-250	75			38	MF00038	Spring washer	4* 7*1t	6		
12	MG00061	Black-plated screw	M3*10	35			39	MF00018	Colour washer	4* 10*1t	6		
13	HC00206	BNC jack	WJ-7031(28*12.7)	1			40	MF00048	Washer	4* 8*0.5t	1		
14	NI02083	Plastic Knob	10.5*18mm double colour (outer grey 8C 072C inner blue)	52			41	NC00151	NC00151	0.2t*116*22 L-12	1		
15	NI02081	Plastic Knob	10.5*18mm double colour (outer grey 8C inner white)	58			42	MI01762	ZD-fixed bracket-L12-08	1.2t*112*12*5 L-12	1		
16	NI02082	Plastic Knob	10.5*18mm double colour (outer grey 8C inner black)	28			43	ME00015	Colour screw	3mm	2		
17	NI02633	Plastic Knob	10.5*18mm double colour (outer grey 8C 222C inner red)	21			44	MG00170	Zn-screw-pill	M3*14	2		
18	NI02084	Plastic Knob	10.5*18mm double colour (outer black, inner grey 8C)	17			45	HI00120	Slide SW	L21-22A solder wiring	1		
19	NI02386	Plastic Knob	14*13mm double colour(outer grey 8C 072C inner blue)	2			46	HC00008	AC inlet	3515 A TYPE(RF-2004-C-4.8)	1		
20	NI01166	Fader	6*7*8 COOL GREY 8U	9			47	MG00042	Black-plated screw	M3*10	4		
21	NI02309	Fader-ABS	24*11.5*11(outer grey 8C inner black)	16			48	HI00026	Power SW	Power SW	1		
22	NI02352	Fader-ABS	24*11.5*11(outer red 187C inner black)	1			49	HI00171	Power SW	R612KKAT0F1	1		
23	NI02353	Fader-ABS	24*11.5*11(outer blue 282C inner white)	4			50	HA00841	Power cord, America3P	LT-202+18A*3C(SVT) 6FT+LT-501	1		
24	NI01863	Button	5.5*W10*7.5 black	106			51	NI02519	Adhesive foot cushion	15.9*8.0mm(RF-006)	4		
25	NI01862	Button handle	5.5*5.5*14.5	1			52	HK03982	K-PCB	P-L12PU1-DIP	1		
26	NI02377	Button-ABS	5.5*7.5mm (inner 3.3*3.3mm) black	30			53	HK03984	K-PCB	P-L12PU2-DIP	1		
27	MG00041	Black-plated screw	M3*6	101			54	HK03991	K-PCB	P-L12MN2-DIP	3		

7. BOM

L-20 parts list

No.	Parts No.	Description	Specification	Remarks
1	MA03900	panel	L20	
2	MA03899	panel	L20	
3	MA03898	panel	L-20_V1.2	
4	MJ01186	hot gradual zinc	1.0t*2135*1220mm	
5	MB03654	rear board	L-20MKII ALTO_V1.0	
6	MB03533	rear board	L-20MK II	
7	MB03534	bottom board	L-20MK II_V1.0	
8	MJ00058	iron board	1*2135*1220 20.45kg	
9	ME00001	screw pillar	M4*10*0.7PH	
10	ME00040	iron pillar	hexagon6.35*M3*10.1	
11	ME00099	screw pillar	M3*16*0.5PH	
12	ME00119	screw pillar	M4*9*0.7PH	
13	MJ01159	side board	L20 right	
14	MJ01158	side board	L-20 right 1.0t*400*115	
15	MJ00058	iron board	1*2135*1220 20.45kg	
16	NI02638	lacid plastic panel	L-12 (3t*97.5*49mm)	
17	NI02639	lacid plastic panel	L-12 (3t*97.5*49mm)	
18	NI02640	lacid plastic panel	L-12 (3t*91.5*56mm)	
19	NI02641	lacid plastic panel	L-12 (3t*91.5*56mm)	
20	MJ01225	partitions	L-12 1.2t*100.5*74.5	
21	MJ00063	Zn-plated board	1.2*2135*1220 24.54kg	
22	ME00041	iron pillar	hexagon6.35*M3*6	
23	NI02620	insulation board	1*86.5*53 L-8	
24	NC00010	insulator	0.65M*60M*1t	
25	MI00584	heat-sink	4*40*20*140 L-12	
26	MI01765	switch cover	L-12	
27	MI01766	switch cover	L-12 1.2t*61.5*19.5*4	
28	MJ00059	iron board	1.2*2135*1220 24.54kg	
29	ME00060	nut	JY-6351G-02-250	
30	MF00061	washer	JY-6351G-02-250	
31	MG00061	screw	M3*10	
32	HC00206	BNC jack	WJ-7031(28*12.7)	
33	HA01638	row-wire connector wiring	2P 280	
34	HA02455	wire	20Pfema*4 280mm UL2651 28AWG PH1.27mm	
35	NI02642	fixed plate	L-12 (6.8*110*63.3 white)	
36	NI02083	knob	φ 10.5*18mm	
37	NI02081	knob	φ 10.5*18mm	
38	NI02082	knob	φ 10.5*18mm	
39	NI02633	knob	φ 10.5*18	
40	NI02084	knob	φ 10.5*18mm	

No.	Parts No.	Description	Specification	Remarks
41	NI02386	konb	φ 14*13mm	
42	NI01166	slide key	6*7*8 COOL GRAY 8U	
43	NI02309	knob	24*11.5*11	
44	NI02352	knob	24*11.5*11	
45	NI02353	knob	24*11.5*11	
46	NI01863	key	φ 5.5*W10*7.5	
47	NI01862	key	5.5*5.5*14.5	
48	NI02377	knob	φ 5.5*7.5mm(内3.3*3.3mm)	
49	MG00041	screw	M3*6	
50	NI02548	handle	401*31*25mm	
51	NI02547	handle	401*31*25mm	
52	MG00027	screw	M3*12	
53	ND00244	non wonen	0.35t*572*100mm black	
54	ND00247	non wonen	0.35t*100*50(2016B)_V1.1	
55	MG00304	copper pillar	M3*14*0.5PH	
56	MG00020	screw	M3*8	
57	NI00863	insulate bean	TO220B	
58	TC00236	transformer	PT-L16_230V	
59	ME00016	nut	4m/m	
60	MF00038	washer	φ 4* φ 7*1t	
61	MF00018	washer	φ 4* φ 10*1t	
62	MF00048	washer	φ 4* φ 8*0.5t	
63	NC00151	insulation	0.2t*116*22 L-12	
64	MI01762	fixed bracket	1.2t*112*12*5 L-12	
65	MJ00063	Zn-plated board	1.2*2135*1220 24.54kg	
66	ME00015	nut	3m/m	
67	HA02337	wire	16P-16P PH1.27 105mm	
68	MG00170	screw	M3*14	
69	HI00120	slide switch	L21-22A	
70	HC00008	AC socket	3515 A TYPE(RF-2004-C-4.8)	
71	HD00012	glass tube fuse	500mA 250V φ 5.2*20mm CSA/S/UL/VDE	
72	HA01835	P.V.C single wave wired UL1617	80 brown	
73	HA01174	signle terminal wiring CF:W146	80 green/yellow	
74	MG00042	screw	M3*10	
75	HI00026	power switch	RA12KKATOF 2P	
76	HI00171	power switch	R612KKATOF1	
77	NI00252	sleeve	φ 4*20mm	
78	NI00248	sleeve	φ 4*1000mm	
79	NI00268	sleeve	φ 6*20mm	
80	NI00266	sleeve	φ 6*1000mm	

No.	Parts No.	Description	Specification	Remarks
81	HA02657	wire	8P-8P 360mm UL1007 20AWG	
82	HA00861	power cord Europe 3P	LT-312+LT-501	
83	NI00218	cable tie-black	ALT-102SB	
84	NI02519	knob	φ 15.9*8.0mm(RF-006)	
85	NF00061	assurance card	ALTO	
86	NF01494	instruction	L-20 ALTO_V1.3	
87	NH00149	paper	889*640mm	
88	NB02230	colour box	L-20 ALTO	
89	NB02469	box	L-20	
90	HJ00006	desiccant	30g	
91	NA00136	PE bag	0.05t*820*540mm	
92	NE05004	label	ALTO	
93	NH00334	cone paper	0.040*1m	
94	NE11468	label	L-20 ALTO	
95	NH00012	bond paper	0.04*1M	
96	NI00014	membrane	0.035*1M	
97	HK03982	PC board	P-L12PU1-DIP	
98	HC00125	MIC jack	JY-6351G-02-250	X1,X2,X3,X4,X5,X6,X7,X8,X9,X10,X11,X12,X13,X14,X15,
99	HA01925	jumper wire	10mm	JP1,,JP2,JP3,JP4,,JP5,JP6,,JP7,JP11
100	HA02249	wire	φ 0.6	
101	HC00525	row-wire header(male)	18P 2.0mm 180°	CN2,CN3
102	HC00256	row-wire header(male)	5P 2.0mm 180°	CN1
103	CB00175	electrolytic capacitor	47uF/25V SLL φ 5*11mm	C1,C2,C3
104	HA01919	jumper wire	5mm	JP8,JP9,JP10
105	HA02249	wire	φ 0.6	
106	HC00392	XLR MIC jack	JY-5030-030G 180°	X32,X33
107	HI00237	push-button switch	2stage 12P PS-13422R(SELF-LOCK)	SW1
108	RC00359	potentiometer	W50KΩ RD09F113A224-50K4BT(SAS1);30F-C	VR1
109	HK03983	PC board	P-L12PU1-SMD	
110	HB00955	PCB	L12PU1_VER031206	
111	CI00075	SMD ceramic capacitor 0603	0.1uF/50V Y5V +80,-20%	C5,C6
112	RD00007	SMD fixed resistor 1/8W	120Ω ±5% 0805	R1,R2,R3,R4,R5,R6,R7,R8,R9,R10,R11, R12,R13,R14,R15,
113	CI00051	SMD ceramic capacitor 0603	22PF/50V NPO ±5%	C4
114	RD00107	SMD fixed resistor 1/10W	30KΩ ±5% 0603	R55
115	RD00353	SMD fixed resistor 1/10W	36KΩ ±5% 0603	R50
116	RD00352	SMD fixed resistor 1/10W	3.6KΩ ±5% 0603	R49
117	SG00122	SMD integrated circuit	NJM4580M-TE3	U1
118	RD00440	SMD fixed resistor 1/8W	5.1KΩ ±5% 0805	R51,R52,R53,R54
119	AE00221	tin	SJ-617	
120	AC00002	tin	63/37%	
121	HK03984	PC board	P-L12PU2-DIP	
122	CB00003	electrolytic capacitor	0.22uF/50V φ 5*11mm	C16,C16-1,C16-2,C17,C17-1,C17-2,C17-3,C16-3,C18,C18-1,
123	CB00074	electrolytic capacitor	1000uF/10V φ 8*11mm	C19,C19-1,C19-2,C19-3,C53,C53-1

No.	Parts No.	Description	Specification	Remarks
124	HC00321	row-wire header(male)	14P 2.0mm 180°	CN1,CN2,CN4
125	HC00524	row-wire header(male)	15P 2.0mm 180°	CN3
126	CB00029	electrolytic capacitor	22uF/35V ϕ 5*11mm	C9,C9-1,C9-2,C9-3,C10-1,C10, C10-2,C10-3
127	CB00175	electrolytic capacitor	47uF/25V SLL ϕ 5*11mm	C107,C108,C109,C110,C7, C7-1,C7-2, C7-3,C8,C8-1,C8-2, C12,C12-1,C12-2,C12-3, C13,C13-1,C13-2, C13-3,C36,C36-1, R1,R1-1,R1-2,R1-3,R2,R2-1,R2-2, R2-3,R38,R38-1,R39, TR1,TR1-1,TR1-2,TR1-3,TR2,TR2-1, TR2-2,TR2-3,TR6,TR6-1, X3,X3-1,X3-2,X3-3,X6,X6-1
128	CB00042	electrolytic capacitor	47uF/63V 105°C LZ ϕ 8*11mm	X1,X1-1,X1-2,X1-3,X2,X2-1,X2-2, X2-3,X4,X4-1,X5,X5-1, U8,U9,U10,U11
129	RA00505	precise resistor 1/4W	6.81K Ω M type	
130	SB00175	transistor	2SA970-BL(TE2;T)	
131	HC00126	XLR MIC jack	JY-5042-030G female plug 180°	
132	HC00125	MIC jack	JY-6351G-02-250	
133	SD00007	integrated circuit	BA15218N (M5218L substitute)	
134	HC00403	RCA jack	SCP6873NS3232T2 4P	X13
135	HK03985	PC board	P-L12PU2-SMD	
136	HB00956	PCB	L12PU2_VER030530	
137	CI00059	SMD ceramic capacitor 0603	100PF/50V NPO \pm 5%	C58,C58-1,C59,C59-1,C60, C60-1,C61,C61-1,C91,C92,C93, C24,C25,C26,C27,C28, C29,C30,C31,C32,C33,C34,C35,C63, R70,R70-1,R71,R71-1,R76,R77, R78,R79,R80,R81,R82,R83, R26,R26-1,R26-2,R26-3,R27, R27-1,R27-2,R27-3,R61,R61-1, C1,C1-1,C1-2,C1-3, C2,C2-1,C2-2, C2-3,C38,C38-1,C39, R104,R104-1,R104-2,R104-3
138	CI00075	SMD ceramic capacitor 0603	0.1uF/50V Y5V +80,-20%	
139	RD00101	SMD fixed resistor 1/10W	10K Ω \pm 5% 0603	
140	RD00214	SMD precise resistor 1/10W	10.0K Ω \pm 1% 0603	
141	CI00071	SMD ceramic capacitor 0603	0.01uF/50V X7R \pm 10%	
142	RD00069	SMD fixed resistor 1/10W	120 Ω \pm 5% 0603	
143	RD00007	SMD fixed resistor 1/8W	120 Ω \pm 5% 0805	R96,R97,R98,R99,R100,R101,R102,R103
144	RD00104	SMD fixed resistor 1/10W	18K Ω \pm 5% 0603	R66,R66-1,R67,R67-1,R68,R68-1,R69,R69-1
145	RD00083	SMD fixed resistor 1/10W	1.0K Ω \pm 5% 0603	R31,R32
146	RD00351	SMD fixed resistor 1/10W	1.3K Ω \pm 5% 0603	R28,R28-1,R28-2,R28-3,R64,R64-1
147	RD00201	SMD precise resistor 1/10W	1.50K Ω \pm 1% 0603	
148	CI00065	SMD ceramic capacitor 0603	0.001uF/50V X7R \pm 10%	R15,R15-1,R15-2,R15-3,R16,R16-1, R16-2,R16-3,R40,R40-1, C14,C14-1,C14-2,C14-3,C15,C15-1, C15-2,C15-3,C40,C40-1, R17,R17-1,R17-2,R17-3,R18,R18-1, R18-2,R18-3,R19,R19-1, C3,C3-1,C3-2,C3-3,C4,C4-1,C4-2,C4-3, C5,C5-1,C5-2,C5-3, R3,R3-1,R3-2,R3-3,R4,R4-1,R4-2,R4-3, R5,R5-1,R5-2,R5-3, C11,C11-1,C11-2,C11-3,C62,C62-1
149	RD00306	SMD fixed resistor 1/10W	20K Ω \pm 5% 0603	
150	CI00051	SMD ceramic capacitor 0603	22PF/50V NPO \pm 5%	
151	RD00204	SMD precise resistor 1/10W	2.49K Ω \pm 1% 0603	
152	CI00062	SMD ceramic capacitor 0603	330PF/50V NPO \pm 5%	
153	RD00105	SMD fixed resistor 1/10W	22K Ω \pm 5% 0603	R72,R72-1,R74,R74-1
154	SG00122	SMD integrated circuit	NJM4580M-TE3	U1,U1-1,U1-2,U1-3,U2,U2-1,U2-2, U2-3,U3,U3-1,U4,U4-1, R20,R20-1,R20-2,R20-3,R21,R21-1,R21-2, R21-3,R55,R55-1, R10,R10-1,R10-2,R10-3,R11,R11-1,R11-2, R11-3,R12,R12-1, R22,R22-1,R22-2,R22-3,R23,R23-1,R23-2,R23-3, R24,R24-1, R13,R13-1,R13-2,R13-3,R14,R14-1,R14-2,R14-3
155	RD00078	SMD fixed resistor 1/10W	470 Ω \pm 5% 0603	
156	RD00355	SMD fixed resistor 1/10W	4.7 Ω \pm 5% 0603	
157	RD00210	SMD precise resistor 1/10W	5.11K Ω \pm 1% 0603	
158	RD00365	SMD precise resistor 1/10W	5.62K Ω \pm 1% 0603	
159	RD00113	SMD fixed resistor 1/10W	62K Ω \pm 5% 0603	R30,R30-1,R30-2,R30-3,R63,R63-1
160	RD00097	SMD fixed resistor 1/10W	6.8K Ω \pm 5% 0603	R29,R29-1,R29-2,R29-3,R65,R65-1
161	SE00028	diode	BAS316,115	D1,D1-1,D1-2,D1-3,D2,D2-1
162	SF00053	transistor	MMBT3906(SOT-23)/(PHI)	TR8,TR8-1,TR9,TR9-1,TR10-1,TR3, TR3-1,TR3-2,TR3-3,TR4,
163	AE00221	tin	SJ-617	
164	AC00002	tin	63/37%	

No.	Parts No.	Description	Specification	Remarks
165	HK03991	PC board	P-L12MN2-DIP	
166	RA00174	fixed resistor 1/4W	47Ω M type	R52,R53
167	CB00009	electrolytic capacitor	1uF/50V φ 4*7mm	C21,C21-1,C21-2,C21-3,C22,C22-1,C22-2,C22-3
168	CB00175	electrolytic capacitor	47uF/25V SLL φ 5*11mm	C2,C2-1,C2-2,C2-3,C3,C3-1,C3-2,C3-3, C4,C4-1,C4-2,C4-3,
169	CF00023	metal-film capacitor MSC	0.033uF/63V 5% CASE01	C11,C11-1,C11-2,C11-3,C12,C12-1,C12-2,C12-3
170	CF00003	metal-film capacitor MSC	0.0015uF/100V 5% CASE01	C10,C10-1,C10-2,C10-3
171	CF00012	metal-film capacitor MSC	0.0068uF/100V 5% CASE01	C7,C7-1,C7-2,C7-3,C8,C8-1,C8-2,C8-3, C1,C1-1,C1-2,C1-3
172	HI00236	push-button switch	2-stage 6P PS-9226A(SELF-LOCK)	SW3,SW3-1,SW3-2,SW3-3,SW5,SW5-1, SW5-2,SW5-3,SW6,SW6-1,
173	HI00237	push-button switch	2stage 12P PS-13422R(SELF-LOCK)	SW4,SW4-1,SW4-2,SW4-3
174	RC00284	potentiometer	D10KΩ RF6011YP600F-10KD(SAS1)	VR5,VR5-1,VR5-2,VR5-3
175	RC00356	potentiometer	Z10KΩ RD09F1130042-10KZ(SAS1);30F	VR11,VR11-1,VR11-2,VR11-3
176	RC00358	potentiometer	B50KΩ-RD09F113A223- 50K2BT(SAS1);30F-C	VR1,VR1-1,VR1-2,VR1-3,VR2,VR2-1, VR2-2,VR2-3,VR4,VR4-1,
177	RC00359	potentiometer	W50KΩ RD09F113A224- 50K4BT(SAS1);30F-C	VR6,VR6-1,VR6-2,VR6-3,VR7,VR7-1, VR7-2,VR7-3,VR8,VR8-1,
178	RC00366	potentiometer	C500KΩ RD12L123A43D- 500K15C*2(SAS1)30F-C	VR3,VR3-1,VR3-2,VR3-3
179	SA00054	L.E.D high intensity	3m/m round(yellow)long foot 26	LD1,LD1-1,LD1-2,LD1-3
180	SA00053	L.E.D high intensity	3m/m round(red)long foot 26mm	LD2,LD2-1,LD2-2,LD2-3
181	SA00051	L.E.D	3 φ orange,green BOG303b	LD3,LD3-1,LD3-2,LD3-3
182	NI01782	LED spacer support	LEDS-11 11mm	LD1,LD1-1,LD1-2,LD1-3,LD2,LD2-1,LD2-2,LD2-3
183	NI02588	led	LED3*11 11mm	LD3,LD3-1,LD3-2,LD3-3
184	HA02446	wire	14P(male)-14P(female) 60mm UL1007 28AWG	CN1,CN2
185	HA01564	row-wire connector wiring	5P(male)-5P(female) 180	CN3
186	HC00154	row pin (single)#2200	2.54 180° 2*10P(gold-plated) 6/11.6mm	CN4
187	HK03999	PC board	P-L12MN2-SMD	
188	HB00959	PCB	L12MN2_VER030530	
189	RD00067	SMD fixed resistor 1/10W	82Ω ±5% 0603	R44,R44-1,R44-2,R44-3
190	RD00083	SMD fixed resistor 1/10W	1.0KΩ ±5% 0603	R51,R51-1,R51-2,R51-3
191	RD00088	SMD fixed resistor 1/10W	2.2KΩ ±5% 0603	R23,R23-1,R23-2,R23-3
192	RD00090	SMD fixed resistor 1/10W	3.0KΩ ±5% 0603	R1,R1-1,R1-2,R1-3
193	RD00091	SMD fixed resistor 1/10W	3.3KΩ ±5% 0603	R26,R26-1,R26-2,R26-3
194	RD00092	SMD fixed resistor 1/10W	3.9KΩ ±5% 0603	R18,R18-1,R18-2,R18-3
195	RD00093	SMD fixed resistor 1/10W	4.7KΩ ±5% 0603	R29,R29-1,R29-2,R29-3,R30,R30-1, R30-2,R30-3,R49,R49-1,
196	RD00094	SMD fixed resistor 1/10W	5.1KΩ ±5% 0603	R6,R6-1,R6-2,R6-3,R7,R7-1,R7-2,R7-3, R8,R8-1,R8-2,R8-3,
197	RD00095	SMD fixed resistor 1/10W	5.6KΩ ±5% 0603	R24,R24-1,R24-2,R25,R25-1,R25-2,R25-3,R24-3
198	RD00096	SMD fixed resistor 1/10W	6.2KΩ ±5% 0603	R21,R21-1,R21-2,R21-3,R22,R22-1,R22-2,R22-3
199	RD00097	SMD fixed resistor 1/10W	6.8KΩ ±5% 0603	R14,R14-1,R14-3,R15,R15-3,R16,R16-3 ,R15-1,R16-1,R17,
200	RD00099	SMD fixed resistor 1/10W	8.2KΩ ±5% 0603	R43,R43-1,R43-2,R43-3
201	RD00101	SMD fixed resistor 1/10W	10KΩ ±5% 0603	R2,R2-1,R2-2,R2-3,R3,R3-1,R3-2,R3-3,R4, R4-1,R4-2,R4-3,
202	RD00102	SMD fixed resistor 1/10W	12KΩ ±5% 0603	R20,R20-1,R20-2,R20-3
203	RD00103	SMD fixed resistor 1/10W	15KΩ ±5% 0603	R40,R40-1,R40-2,R40-3
204	RD00106	SMD fixed resistor 1/10W	27KΩ ±5% 0603	R50,R50-1,R50-2,R50-3
205	RD00116	SMD fixed resistor 1/10W	100KΩ ±5% 0603	R42,R42-1,R42-2,R42-3,R41,R41-1,R41-2,R41-3
206	RD00125	SMD fixed resistor 1/10W	1.0MΩ ±5% 0603	R19,R19-1,R19-2,R19-3
207	CI00051	SMD ceramic capacitor 0603	22PF/50V NPO ±5%	C5,C5-1,C5-2,C5-3,C6,C6-1,C6-2,C6-3, C9,C9-1,C9-3,C9-2

No.	Parts No.	Description	Specification	Remarks
208	CI00063	SMD ceramic capacitor 0603	470PF/50V NPO ±5%	C23,C23-1,C23-2,C23-3
209	CI00075	SMD ceramic capacitor 0603	0.1uF/50V Y5V +80,-20%	C14,C14-1,C14-2,C14-3,C15,C15-2,C16,C16-2,C17,C17-1,U4,U4-1,U4-2,U4-3
210	SG00306	SMD integrated circuit	LM393DR(TI)/(MEXICO)	
211	SE00011	SMD rectifier diode	RLS4148 0.5A (LL-34)	D2,D2-1,D2-2,D2-3,D3,D3-1,D3-2,D3-3,D4,D4-1,D4-2,D4-3
212	SG00122	SMD integrated circuit	NJM4580M-TE3	U1,U1-1,U1-2,U1-3,U2,U2-1,U2-2,U2-3,U3,U3-2
213	SF00038	SMD field effect transistor	RK7002(ROHM)	TR2,TR2-1,TR2-2,TR2-3
214	SE00028	diode	BAS316,115	D1,D1-1,D1-2,D1-3
215	SF00053	transistor	MMBT3906(SOT-23)/(PHI)	TR1,TR1-1,TR1-2,TR1-3
216	AE00221	tin	SJ-617	
217	AC00002	tin	63/37%	
218	HK04012	PC board	P-L12MN1-DIP	
219	CF00003	metal-film capacitor MSC	0.0015uF/100V 5% CASE01	C440,C441,C442
220	RC00285	potentiometer	D10KΩ RF60112P600G-10KD*2(SAS1)	VR5,VR16,VR38,VR39,VR56
221	RC00284	potentiometer	D10KΩ RF6011YP600F-10KD(SAS1)	VR53,VR54,VR55,VR66
222	CB00024	electrolytic capacitor	10uF/16V φ 4*7mm	C443,C444
223	RA00185	fixed resistor 1/4W	120 Ω M type	R597,R598
224	CF00054	metal-film capacitor MSC	0.012uF/63V ±5% CASE01	C13,C14,C15,C16,C17,C18,C19,C20,C76,C77,C85,C86,C107,C21,C22,C23,C24,C75,C84,106,C114
225	CF00001	metal-film capacitor MSC	0.001uF/63V 5% CASE01	
226	CF00038	metal-film capacitor MSC	0.22uF/63V 5% CASE02	C295,C296,C303,C304,C305,C306,C313,C314,C321,C322,C423,C424,C454,C455,C458,C460,C461,C463,C464,C457
227	CB00009	electrolytic capacitor	1uF/50V φ 4*7mm	C380
228	CB00011	electrolytic capacitor	2.2uF/50V φ 5*11mm	
229	CF00022	metal-film capacitor MSC	0.022uF/100V 5% CASE01	C291,C292,C293,C294,C301,C302,C309,C310,C311,C312,C289,C290,C297,C298,C299,C300,C307,C308,C315,C316,C33,C34,C35,C36,C37,C38,C39,C40,C79,C80,C88,C89,C110,C436,C438,C439
230	CF00005	metal-film capacitor MSC	0.0022uF/63V 5% CASE01	
231	CF00006	metal-film capacitor MSC	0.0033uF/100V 5% CASE01	
232	CB00018	electrolytic capacitor	4.7uF/25V φ 4*7mm	
233	RA00174	fixed resistor 1/4W	47 Ω M type	R745,R746
234	CF00025	metal-film capacitor MSC	0.047uF/63V 5% CASE01	C41,C42,C43,C44,C81,C90,C112,C120
235	CB00175	electrolytic capacitor	47uF/25V SLL φ 5*11mm	C1,C2,C3,C4,C5,C6,C7,C8,C9,C10,C11,C12,C67,C68,C69,VR57,VR58,VR59,VR60,VR61,VR62,VR63,VR64,VR65
236	RC00315	potentiometer	W100KΩ RA3022-202-15DA-W100K-C	SW2,SW5,SW6,SW7,SW9,SW12,SW13,SW14,SW15,SW16,SW21,SW47
237	HI00236	push-button switch	2-stage 6P PS-9226A(SELF-LOCK)	
238	HI00238	push-button switch	2 stage 6P PS-9226A(NON-LOCK)	
239	HI00237	push-button switch	2stage 12P PS-13422R(SELF-LOCK)	SW4,SW11,SW19,SW20,SW27,SW28,SW29,SW30,SW31,SW42,SW3,RL1
240	HI00161	relay	RY-5W-K,5V	
241	HI00195	rotary encode	SDB161PVB15.5F-1-4-16-16PC	EN1,EN2
242	RC00360	potentiometer	B50KΩ RD12L12CA23A-50K3BT*2(SAS1);30F-C	VR1,VR2,VR3,VR4,VR12,VR13,VR14,VR15,VR24,VR25,VR26,VR6,VR7,VR8,VR9,VR10,VR17,VR18,VR19,VR20,VR21,VR28,
243	RC00359	potentiometer	W50KΩ RD09F113A224-50K4BT(SAS1);30F-C	VR23,VR44,VR45,VR46,VR47,VR52,VR67,VR68,VR73
244	RC00361	potentiometer	W50KΩ RD12L12CA60B-50K4BT*2(SAS1);30F-C	
245	RC00356	potentiometer	Z10KΩ RD09F1130042-10KZ(SAS1);30F	VR11,VR22
246	SA00051	L.E.D	3 φ orange, green BOG303b	LD39,LD40,LD41,LD42
247	NI02588	led	LED3*11 11mm	
248	SA00053	L.E.D high intensity	3m/m round(red)long foot 26mm	LD3,LD4,LD7,LD8,LD9,LD11,LD23,LD35,LD37,LD38
249	SA00054	L.E.D high intensity	3m/m round(yellow)long foot 26	LD1,LD2,LD5,LD6,LD22,LD34
250	SA00052	L.E.D high intensity	3m/m round(green)long foot 26	LD12,LD13,LD14,LD15,LD16,LD17,LD18,LD19,LD20,LD21,

No.	Parts No.	Description	Specification	Remarks
251	NI01782	LED spacer support	LEDS-11 11mm	
252	HC00499	row pin (single)#2200	2.54 180°2*8P 6/11.6mm	CN6
253	HC00072	row-wire header(male)	8P 2.5mm 90°	CN1
254	HA02446	wire	14P(male)-14P(female) 60mm UL1007 28AWG	CN4
255	HA02445	wire	15P(male)-15P(female) 60mm UL1007 28AWG	CN5
256	HA02444	wire	18P(male)-18P(female) 640mm UL1007 28AWG	CN2,CN3
257	HC00154	row pin (single)#2200	2.54 180° 2*10P(gold-plated) 6/11.6mm	CN7
258	HK04013	PC board	P-L12MN1-SMD	
259	HB00960	PCB	L12MN1_VER031020	
260	RD00441	SMD precise resistor 1/10W	787 Ω ±1% 0603	R488,R524
261	RD00442	SMD precise resistor 1/10W	976 Ω ±1% 0603	R464,R500
262	RD00405	SMD precise resistor 1/10W	1.18K Ω ±1% 0603	R476,R512
263	RD00443	SMD precise resistor 1/10W	1.54K Ω ±1% 0603	R472,R508
264	RD00444	SMD precise resistor 1/10W	1.96K Ω ±1% 0603	R484,R520
265	RD00445	SMD precise resistor 1/10W	2.43K Ω ±1% 0603	R460,R496
266	RD00385	SMD precise resistor 1/10W	3.01K Ω ±1% 0603	R492,R528
267	RD00207	SMD precise resistor 1/10W	3.92K Ω ±1% 0603	R468,R504
268	RD00386	SMD precise resistor 1/10W	4.75K Ω ±1% 0603	R480,R516
269	RD00300	SMD precise resistor 1/10W	6.04K Ω ±1% 0603	R487,R523
270	RD00446	SMD precise resistor 1/10W	9.76K Ω ±1% 0603	R475,R511
271	RD00301	SMD precise resistor 1/10W	12.1K Ω ±1% 0603	R471,R486,R507,R522
272	RD00420	SMD precise resistor 1/10W	19.1K Ω ±1% 0602	R459,R495
273	RD00447	SMD precise resistor 1/10W	19.6K Ω ±1% 0603	R474,R510
274	RD00448	SMD precise resistor 1/10W	24.3K Ω ±1% 0603	R470,R491,R506,R527
275	RD00266	SMD precise resistor 1/10W	30.1K Ω ±1% 0603	R467,R482,R503,R518
276	RD00449	SMD precise resistor 1/10W	38.3K Ω ±1% 0603	R458,R479,R494,R515
277	RD00450	SMD precise resistor 1/10W	48.7K Ω ±1% 0603	R490,R526
278	RD00223	SMD precise resistor 1/10W	49.9K Ω ±1% 0603	R432,R433,R440,R441,R448,R449
279	RD00264	SMD precise resistor 1/10W	60.4K Ω ±1% 0603	R466,R502
280	RD00451	SMD precise resistor 1/10W	76.8K Ω ±1% 0603	R478,R514
281	RD00065	SMD fixed resistor 1/10W	47 Ω ±5% 0603	R592,R593
282	RD00346	SMD fixed resistor 1/10W	56 Ω ±5% 0603	R599
283	RD00066	SMD fixed resistor 1/10W	68 Ω ±5% 0603	R624,R625
284	RD00069	SMD fixed resistor 1/10W	120 Ω ±5% 0603	R600,R657,R658,R659,R660,R661,R662, R663,R664
285	RD00073	SMD fixed resistor 1/10W	220 Ω ±5% 0603	R646,R647,R650
286	RD00076	SMD fixed resistor 1/10W	330 Ω ±5% 0603	R602,R604
287	RD00078	SMD fixed resistor 1/10W	470 Ω ±5% 0603	R601,R603,R605
288	RD00347	SMD fixed resistor 1/10W	510 Ω ±5% 0603	R257,R258,R259,R260,R386,R393,R400, R407,R595,R596, R607
289	RD00348	SMD fixed resistor 1/10W	620 Ω ±5% 0603	
290	RD00083	SMD fixed resistor 1/10W	1.0K Ω ±5% 0603	R125,R126,R127,R128,R654,R685,R696, R707,R718
291	RD00084	SMD fixed resistor 1/10W	1.2K Ω ±5% 0603	R129,R130,R131,R132
292	RD00351	SMD fixed resistor 1/10W	1.3K Ω ±5% 0603	R608
293	RD00086	SMD fixed resistor 1/10W	1.8K Ω ±5% 0603	R5,R6,R7,R8,R9,R10,R11,R12,R13, R14,R15,R16,R17,R18,

No.	Parts No.	Description	Specification	Remarks
294	RD00087	SMD fixed resistor 1/10W	2.0KΩ ±5% 0603	R582,R609
295	RD00088	SMD fixed resistor 1/10W	2.2KΩ ±5% 0603	R67,R68,R233,R234,R375,R635
296	RD00091	SMD fixed resistor 1/10W	3.3KΩ ±5% 0603	R69,R70,R199,R200,R626,R627
297	RD00352	SMD fixed resistor 1/10W	3.6KΩ ±5% 0603	R329,R330,R335,R336,R338,R339
298	RD00093	SMD fixed resistor 1/10W	4.7KΩ ±5% 0603	R210,R211,R212,R213,R217,R218 ,R219,R224,R583,R648,
299	RD00094	SMD fixed resistor 1/10W	5.1KΩ ±5% 0603	R79,R80,R81,R82,R83,R85,R88,R89, R90,R94,R154,R159,
300	RD00095	SMD fixed resistor 1/10W	5.6KΩ ±5% 0603	R566,R570,R574,R578,R610
301	RD00096	SMD fixed resistor 1/10W	6.2KΩ ±5% 0603	R269,R271,R273,R275,R616,R617
302	RD00097	SMD fixed resistor 1/10W	6.8KΩ ±5% 0603	R43,R44,R46,R45,R47,R48,R49,R50, R175,R176,R177,R178,
303	RD00098	SMD fixed resistor 1/10W	7.5KΩ ±5% 0603	R463,R499,R651
304	RD00099	SMD fixed resistor 1/10W	8.2KΩ ±5% 0603	R22,R23,R30,R31,R611,R678,R689,R700, R712,R747,R748,
305	RD00101	SMD fixed resistor 1/10W	10KΩ ±5% 0603	R21,R24,R25,R27,R28,R29,R32,R33, R153,R155,R156,R158,
306	RD00102	SMD fixed resistor 1/10W	12KΩ ±5% 0603	R59,R60,R61,R62,R73,R74,R75,R76, R77,R78,R84,R86,R87,
307	RD00103	SMD fixed resistor 1/10W	15KΩ ±5% 0603	R462,R483,R498,R519,R537,R539,R665, R666,R667,R668,
308	RD00104	SMD fixed resistor 1/10W	18KΩ ±5% 0603	R389,R396,R403,R410,R416,R417,R384,R385
309	RD00306	SMD fixed resistor 1/10W	20KΩ ±5% 0603	R351,R352,R354,R355,R356,R358, R359,R360,R361,R362,
310	RD00105	SMD fixed resistor 1/10W	22KΩ ±5% 0603	R35,R36,R37,R38,R167,R168,R380, R381,R420,R421,R170,
311	RD00106	SMD fixed resistor 1/10W	27KΩ ±5% 0603	R367,R368,R369,R370,R371,R374,R695, R706,R717,R684,
312	RD00107	SMD fixed resistor 1/10W	30KΩ ±5% 0603	R531,R532,R372,R373
313	RD00353	SMD fixed resistor 1/10W	36KΩ ±5% 0603	R261,R262,R263,R264,R265,R266,R267, R268,R584,R585,
314	RD00111	SMD fixed resistor 1/10W	47KΩ ±5% 0603	R63,R64,R65,R66,R195,R196,R197,R198, R563,R565,R639
315	RD00112	SMD fixed resistor 1/10W	56KΩ ±5% 0603	R297,R298,R306,R307,R308,R320
316	RD00113	SMD fixed resistor 1/10W	62KΩ ±5% 0603	R558,R559
317	RD00116	SMD fixed resistor 1/10W	100KΩ ±5% 0603	R536,R545,R562,R564,R586,R589, R676,R687,R698,R709,
318	RD00119	SMD fixed resistor 1/10W	220KΩ ±5% 0603	R39,R40,R41,R42,R171,R172,R173, R174,R1,R2,R3,R4,R133,
319	RD00124	SMD fixed resistor 1/10W	820KΩ ±5% 0603	R649
320	RD00125	SMD fixed resistor 1/10W	1.0MΩ ±5% 0603	R51,R52,R53,R54,R55,R56,R57, R58,R183,R184,R185,R186,
321	RD00126	SMD fixed resistor 1/10W	2.2MΩ ±5% 0603	R653
322	RE00011	resistor	680Ω *4 ±5% 8P 0603	AR1,AR2
323	CI00059	SMD ceramic capacitor 0603	100PF/50V NPO ±5%	C173,C174,C185,C186,C197,C198, C209,C210,C237,C238
324	CI00075	SMD ceramic capacitor 0603	0.1uF/50V Y5V +80,-20%	C379,C421,C425,C426,C427,C428, C429,C430,C431,C437,
325	CI00051	SMD ceramic capacitor 0603	22PF/50V NPO ±5%	C25,C26,C27,C28,C29,C30,C31,C32, C45,C46,C47,C48,C71,
326	CI00053	SMD ceramic capacitor 0603	33PF/50V NPO ±5%	C422,C445
327	CI00063	SMD ceramic capacitor 0603	470PF/50V NPO ±5%	C456,C459,C462,C465
328	SF00038	SMD field effect transistor	RK7002(ROHM)	TR1,TR3,TR5,TR9
329	SG00164	SMD integrated circuit	74HC109D	U76
330	SG00068	SMD integrated circuit	74HC14DT(SO-14)/(PHI)	U77
331	SE00028	diode	BAS316,115	D1,D2,D3,D4,D5,D6,D7,D8,D9,D10,D11,D12, D13,D14,D15,
332	SF00056	transistor	MMBT3904(SOT-23)/(PHI)	TR20,TR21
333	SE00009	SMD rectifier diode	DAN202K/T-146	D24
334	SF00053	transistor	MMBT3906(SOT-23)/(PHI)	TR2,TR4,TR6,TR8,TR13,TR14
335	SF00039	SMD field effect transistor	MMBFJ112(SOT-23)/(FAIRCHILD)	TR15,TR16,TR17,TR18,TR19

No.	Parts No.	Description	Specification	Remarks
336	SG00032	SMD integrated circuit	LM339DR/(TI)	U62,U63,U64,U65,U66,U67
337	SG00306	SMD integrated circuit	LM393DR(TI)/(MEXICO)	U75,U5,U9,U18,U19
338	SG00094	SMD integrated circuit	NE555DT/(ST)	U71
339	SE00007	SMD rectifier diode	RB400D(D3A)	D22
340	SG00122	SMD integrated circuit	NJM4580M-TE3	U1,U2,U3,U4,U6,U7,U10,U8,U11,U12,U13, U14,U15,U16,U17, D21,D30,D31,D32,D33
341	SE00011	SMD rectifier diode	RLS4148 0.5A (LL-34)	D16
342	SE00008	SMD rectifier diode	DA204K/T-146	D16
343	RD00067	SMD fixed resistor 1/10W	82Ω ±5% 0603	R679,R690
344	RD00070	SMD fixed resistor 1/10W	150Ω ±5% 0603	R701,R711
345	HA02399	wire	245mm black L3R3	
346	HA01731	P.V.C single wave wire UL1617	280 brown	
347	HK04324	PC board	P-L16PWR	
348	HB01303	PCB	L SERIES PWR_VER040525	
349	CB00170	electrolytic capacitor	1000uF/100V φ 18*35.5mm	C4
350	CB00052	electrolytic capacitor	100uF/100V φ 13*21mm	C15
351	CB00047	electrolytic capacitor	100uF/25V φ 6*11mm	C11,C12
352	RA00141	fixed resistor 1/2W	10KΩ M type	R11
353	CH00033	multilayer ceramic capacitor	0.1uF/50V +80%-10% Y5V	C7,C8,C9,C10
354	CB00025	electrolytic capacitor	10uF/50V φ 6*7mm	C5,C6
355	RA00332	fixed resistor 1/8W	120Ω M type	R5,R6
356	RA00791	fixed resistor 1/8W	180Ω M type	R7
357	RA00249	fixed resistor 1/4W	18KΩ M type	R8
358	RA00135	fixed resistor 1/2W	1.5kΩ M type	R10
359	SA00094	rectifier diode	1N4002/100V	D1,D2,D3,D4,D5,D6,D7,D8, D9,D10,D11,D12,D13,D14,D15, CN3
360	HC00082	row-wire header(male)	8P 2.5mm 180°	CN3
361	RA00250	fixed resistor 1/4W	20KΩ M type	R9
362	RA00364	fixed resistor 1/8W	2.2KΩ M type	R1,R2
363	HC00076	row-wire header(male)	2P 2.5mm 180°	CN2,CN4
364	HC00181	row-wire header(male)	7P 3.96mm 180°	CN1
365	SD00032	integrated circuit	LM317T	TR1,TR2
366	SD00033	integrated circuit	LM337SP(1.5A)(TO-220)	TR3
367	RA00371	fixed resistor 1/8W	3.3KΩ M type	R3,R4
368	CB00142	electrolytic capacitor	4.7uF/63V φ 5*11mm	C14
369	CB00175	electrolytic capacitor	47uF/25V SLL φ 5*11mm	C13
370	HC00063	FUSE holder	JEF-501 (5.2mm)	FUSE1
371	HD00012	glass tube fuse	500mA 250V φ 5.2*20mm CSA/S/UL/VDE	CB00083
372	CB00083	electrolytic capacitor	3300uF/35V φ 16*32mm	C1,C2,C3
373	SD00074	integrated circuit	L7805CV(TO-220)(ST)	TR4
374	SA00005	bridge rectifier	4A/400V RS405	BD1
375	HC00324	terminal	6.5m/m (PC250)	TP1,TP2
376	HK04001	PC board	P-L12LED-SMD	
377	HB00975	PCB	L12LED(1*30)_VRE030711	

No.	Parts No.	Description	Specification	Remarks
378	SE00004	SMD L.E.D	yellow 67-21UYC/S530-A2/TR8 1210	LED1,LED2,LED3,LED4,LED5
379	HK01524	PC board	P-313123-DIP(L-12)	
380	SC00004	quartz crystalloid	16.00MHZ LP-3.5S(HC-49US)	XT1
381	HC00499	row pin (single)#2200	2.54 180°2*8P 6/11.6mm	CN2
382	SG00193	SMD integrated circuit	AT27LV010A-90JC/L-8	IC4
383	SG00139	SMD integrated circuit	AT27LV010A-90JC	
384	HK04041	PC board	P-313123-AI(L-8)	
385	HK03894	PC board	P-313123-SMD(L-8)	
386	HB00895	PCB	313123/2(1*6)	
387	CI00049	SMD ceramic capacitor 0603	15PF/50V NPO ±5%	C8,C9
388	CI00075	SMD ceramic capacitor 0603	0.1uF/50V Y5V +80,-20%	C17,C15,C18,C6,C10,C22,C20,C13,C14, C1,C3,C4,C11
389	RD00061	SMD fixed resistor 1/10W	10Ω ±5% 0603	R22
390	RD00068	SMD fixed resistor 1/10W	100Ω ±5% 0603	R12,R14,R7,R8,R34,R17, R13,R33
391	RD00073	SMD fixed resistor 1/10W	220Ω ±5% 0603	R3
392	RD00085	SMD fixed resistor 1/10W	1.5KΩ ±5% 0603	
393	RD00088	SMD fixed resistor 1/10W	2.2KΩ ±5% 0603	R28,R27,R23,R24,R29,R30,R25,R26
394	RD00101	SMD fixed resistor 1/10W	10KΩ ±5% 0603	R32,R31,R1
395	RD00125	SMD fixed resistor 1/10W	1.0MΩ ±5% 0603	R2
396	RE00006	SMDrow resistor1/16W	100Ω*4 ±5% 8P 0603	AR1,AR2
397	SE00011	SMD rectifier diode	RLS4148 0.5A (LL-34)	D1
398	SG00068	SMD integrated circuit	74HC14DT(SO-14)/(PHI)	IC1
399	SG00138	SMD integrated circuit	AS4LC256K16EO-60JC	IC6
400	SG00166	SMD integrated circuit	TY-2 ALTO(GMCODE:105022)	IC3
401	SG00147	SMD integrated circuit	CHEF DSP(GMCODE:105022)	
402	SG00037	SMD integrated circuit	LD1117DT33C(TO-252)	IC2
403	HC00233	IC socket (SMD)	PLCC32 (D03-32T.A.4)	IC4
404	SG00016	SMD integrated circuit	UDA1345TS (Philips)	IC5
405	CB00165	electrolytic capacitor	10uF/16V φ 4*5mm	C7
406	CB00166	electrolytic capacitor	100uF/16V φ 6*5mm	C19,C12,C5,C24,C16,C21,C25, C26,C28,C2
407	NE11475	label	L-8	
408	NH00035	bond paper	0.06*1M	
409	NI00017	membrane	0.055*1M	
410	HK01563	PC board	P-L12PU3-DIP	
411	RA00505	precise resistor 1/4W	6.81KΩ M type	R1,R1-1,R1-2,R1-3,R2,R2-1,R2-2,R2-3
412	CB00003	electrolytic capacitor	0.22uF/50V φ 5*11mm	C16,C16-1,C16-2,C16-3,C17,C17-1, C17-2,C17-3,C18,C18-1,
413	CB00029	electrolytic capacitor	22uF/35V φ 5*11mm	C9,C9-1,C9-2,C9-3,C10,C10-1,C10-2,C10-3
414	CB00175	electrolytic capacitor	47uF/25V SLL φ 5*11mm	C7,C7-1,C7-2,C7-3,C8,C8-1,C8-2,C8-3
415	CB00042	electrolytic capacitor	47uF/63V 105°C LZ φ 8*11mm	C12,C12-1,C12-2,C12-3,C13,C13-1, C13-2,C13-3
416	CB00074	electrolytic capacitor	1000uF/10V φ 8*11mm	C19,C19-1,C19-2,C19-3
417	SB00175	transistor	2SA970-BL(TE2;T)	TR1,TR1-1,TR1-2,TR1-3,TR2,TR2-1, TR2-2,TR2-3
418	HC00321	row-wire header(male)	14P 2.0mm 180°	CN1,CN2
419	HC00126	XLR MIC jack	JY-5042-030G female plug 180°	X3,X3-1,X3-2,X3-3

No.	Parts No.	Description	Specification	Remarks
420	HC00125	MIC jack	JY-6351G-02-250	X1,X1-1,X1-2,X1-3,X2,X2-1,X2-2,X2-3
421	HK01564	PC board	P-L12PU3-SMD	HB00958
422	HB00958	PCB	L12PU3_VER030606	
423	CI00051	SMD ceramic capacitor 0603	22PF/50V NPO ±5%	C3,C3-1,C3-2,C3-3,C4-1,C4-2,C4-3, C5-1,C5-2,C5-3,C6, C11,C11-1,C11-2,C11-3
424	CI00062	SMD ceramic capacitor 0603	330PF/50V NPO ±5%	
425	CI00065	SMD ceramic capacitor 0603	0.001uF/50V X7R ±10%	C14,C14-1,C14-2,C14-3,C15,C15-1, C15-2,C15-3
426	CI00071	SMD ceramic capacitor 0603	0.01uF/50V X7R ±10%	C1,C1-1,C1-2,C1-3,C2,C2-1,C2-2, C2-3
427	CI00075	SMD ceramic capacitor 0603	0.1uF/50V Y5V +80,-20%	C24,C25,C26,C27,C28,C29,C30, C31,C32,C33,C34,C35,C63, R26,R26-1,R26-2,R26-3,R27,R27-1, R27-2,R27-3
428	RD00214	SMD precise resistor 1/10W	10.0KΩ ±1% 0603	R10,R10-1,R10-2,R10-3,R11,R11-1, R11-2,R11-3,R12,R12-1, R104,R104-1,R104-2,R104-3
429	RD00355	SMD fixed resistor 1/10W	4.7Ω ±5% 0603	
430	RD00069	SMD fixed resistor 1/10W	120Ω ±5% 0603	
431	RD00078	SMD fixed resistor 1/10W	470Ω ±5% 0603	R20,R20-1,R20-2,R20-3,R21,R21-1, R21-2,R21-3
432	RD00351	SMD fixed resistor 1/10W	1.3KΩ ±5% 0603	R28,R28-1,R28-2,R28-3
433	RD00201	SMD precise resistor 1/10W	1.50KΩ ±1% 0603	R15,R15-1,R15-2,R15-3,R16,R16-1, R16-2,R16-3
434	RD00204	SMD precise resistor 1/10W	2.49KΩ ±1% 0603	R3,R3-1,R3-2,R3-3,R4,R4-1,R4-2, R4-3,R5,R5-1,R5-2,R5-3, R22,R22-1,R22-2,R22-3,R23,R23-1, R23-2,R23-3,R24,R24-1, R13,R13-1,R13-2,R13-3,R14,R14-1, R14-2,R14-3
435	RD00210	SMD precise resistor 1/10W	5.11KΩ ±1% 0603	R29,R29-1,R29-2,R29-3
436	RD00365	SMD precise resistor 1/10W	5.62KΩ ±1% 0603	
437	RD00097	SMD fixed resistor 1/10W	6.8KΩ ±5% 0603	
438	RD00306	SMD fixed resistor 1/10W	20KΩ ±5% 0603	R17,R17-1,R17-2,R17-3,R18,R18-1, R18-2,R18-3,R19,R19-1, R30,R30-1,R30-2,R30-3
439	RD00113	SMD fixed resistor 1/10W	62KΩ ±5% 0603	
440	SE00028	diode	BAS316,115	D1,D1-1,D1-2,D1-3
441	SF00053	transistor	MMBT3906(SOT-23)/(PHI)	TR3,TR3-1,TR3-2,TR3-3,TR4,TR4-1, TR4-2,TR4-3,TR5,TR5-1, U1,U1-1,U1-2,U1-3,U2,U2-1,U2-2, U2-3
442	SG00122	SMD integrated circuit	NJM4580M-TE3	C4,C5
443	CI00055	SMD ceramic capacitor 0603	47PF/50V NPO ±5%	
444	HK01576	PC board	P-L12PU4-DIP	
445	HC00125	MIC jack	JY-6351G-02-250	X1,X2,X3,X4
446	HC00256	row-wire header(male)	5P 2.0mm 180°	CN1
447	HK01565	PC board	P-L12PU4-SMD	
448	HB00961	PCB	L12PU4(1*6)_VER030530	
449	RD00007	SMD fixed resistor 1/8W	120Ω ±5% 0805	R1,R2,R3,R4,R5,R6,R7,R8
450	MJ01235	side board	L-12 left	
451	MJ01236	side board	L-20 left 1.0t*400*115	
452	MJ00058	iron board	1*2135*1220 20.45kg	
453	NE02717	label	MADE IN CHINA	
454	NH00038	paper	0.115*1M	
455	NI00028	membrane	0.110*1M	
456	MJ00808	power clip	WL3-32T	
457	NC00080	wood washer	φ 3.17* φ 8.2*1	
458	NC00014	insulator	0.65M*60M*1t	
459	NA00137	clip-chain bag	5*7	
460	MG00104	screw	M4*10	

No.	Parts No.	Description	Specification	Remarks
461	MI01843	fixed bracket	L-16	
462	MI01844	fixed bracket	L-16 2.0t*15*50*100	
463	MJ01154	iron board	2.0t*1850*950mm 27.6kg	
464	NB02473	cushion	L-12;16;20series contrary	
465	NB02474	cushion	L-12;16;20series right	
466	MG00322	copper pillar	ϕ 3.5* ϕ 6*10	
467	MG00363	copper pillar	M3*14*0.5PH	
468	NI02833	caushion	0.5t*15.5*72.5 L-16	
469	NI00375	film	45*60.5*0.5mm	
470	NI01825	spacer	0.5* ϕ 3.3* ϕ 8.3 a VERB	
471	NI00375	film	45*60.5*0.5mm	
472	HA00827	wire	210mm brown L5R5	
473	HA01798	wire	250 black	
474	HA03125	wire	260mm UL1015 22AWG yellow	
475	MI02246	separating shade	L-16_V1.0	
476	MI02353	separating shade	L-16_V1.1	
477	MJ00090	iron board	0.3*200*3000 1.431kg	
478	NA00279	clip-chain bag	0.04t*100*150mm_V1.0	
479	AD00012	twin adhesive	90*120mm_V1.0	