

# Service Manual

**Model: S16**(16-CHANNEL MIXING CONSOLE)



[www.altoproaudio.com](http://www.altoproaudio.com)

Version: 1.1

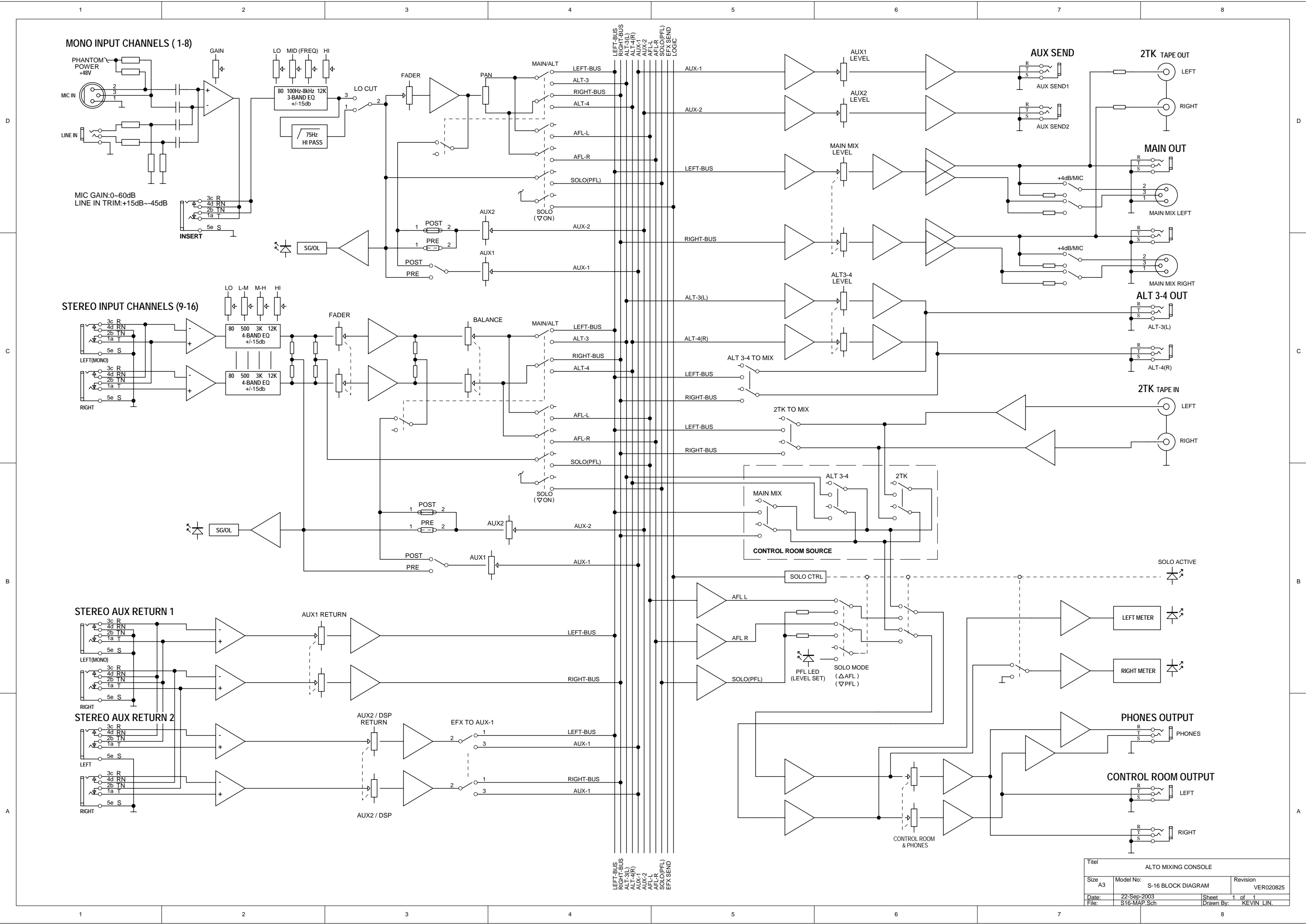
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## 1. SPECIFICATION (S-16)

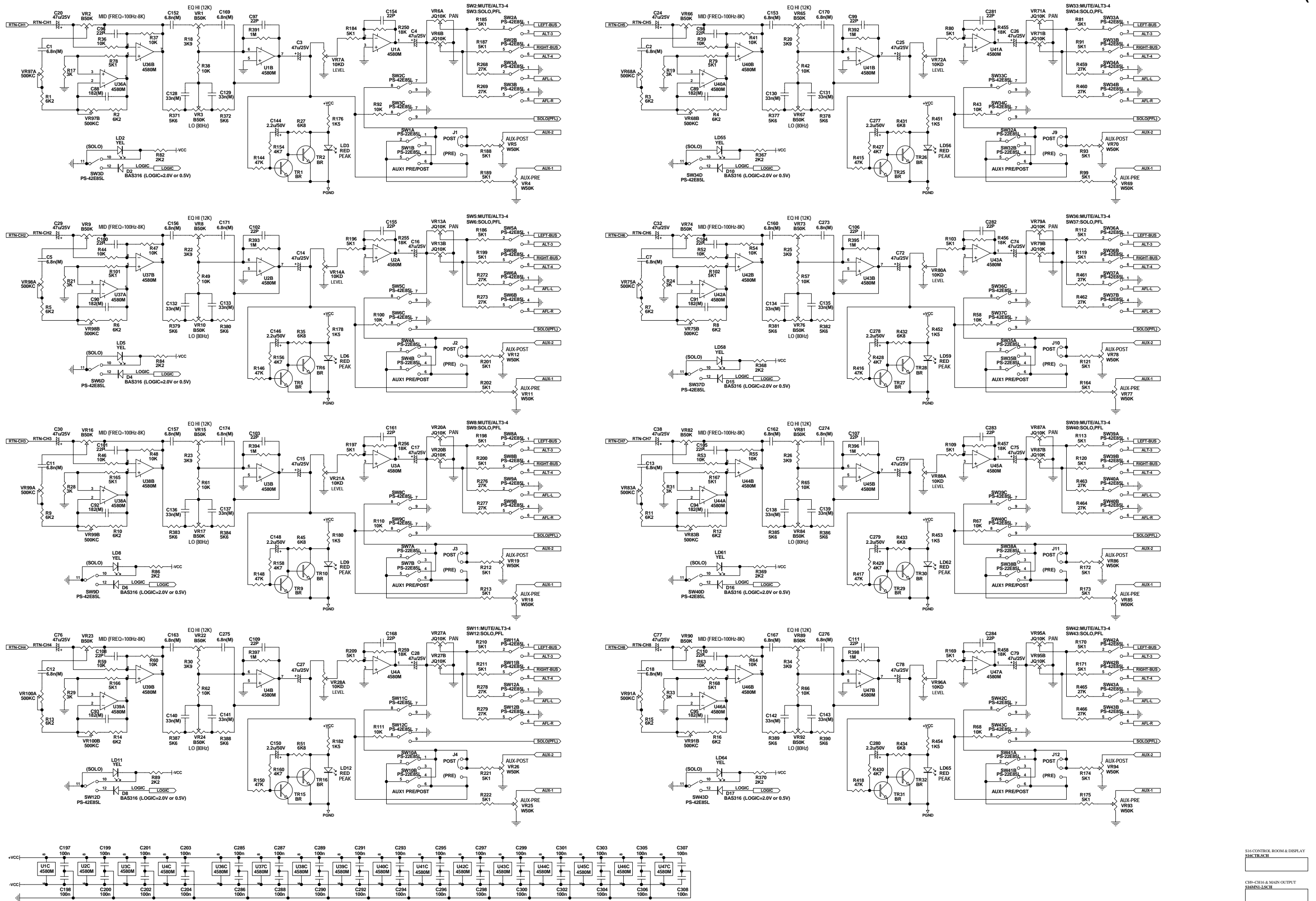
<b>Mono input channels</b>		
	Microphone input	electronically balanced, discrete input configuration
	Frequency response	10Hz to 55kHz, +/-3dB
	Distortion (THD&N)	0.005% at +4dBu, 1kHz
	Gain range	0dB to 60dB(MIC),
	SNR (Signal Noise Rated)	115dB
	Line input	electronically balanced
	Frequency response	10Hz to 55kHz, +/-3dB
	Distortion (THD&N)	0.005% at +4dBu, 1kHz
	Sensitivity range	+15dBu to -45dBu
<b>Stereo input channels</b>		
	Line input	unbalanced
	Frequency response	10Hz to 55kHz, +/-3dB
	Distortion (THD&N)	0.005% at +4dBu, 1kHz
<b>Impedances</b>		
	Microphone input	1.4Kohm.
	Channel Insert return	2.5Kohm.
	All other inputs	10Kohm or greater.
	Tape out	1Kohm.
	All other output	120ohm.
<b>Equalization</b>		
	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.
<b>Main Mix Section</b>		
	Noise (Bus noise)	Fader 0 dB, channels muted:-100.0dBr (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 Return gain range	-∞ to +15dB
	AUX Send max out	+22dBu
<b>Power supply</b>		
	Main voltage	USA/Canada100-120V~, 60Hz Europe210-240V~, 50Hz U.K./Australia240V~, 50Hz
	Power Consumption	35watts
	Fuse	100-120V~ : T500mAL 200-240V~ : T250mAL
	Main connection	Standard IEC receptacle
<b>Physical</b>		
	Dimension (WXDXH)	408mmX370mmX28/80mm (16"x14.6"x0.8"/3.1")
	Net weight	5.2Kg (11.464 lb)

# 2. Block Diagram



Title			ALTO MIXING CONSOLE		
Size	Model No.	Revision			
A3	S-16 BLOCK DIAGRAM	VER020825			
Date:	22-Sep-2003	Sheet	1 of 1		
File:	S16-MAP.Sch	Drawn By:	KEVIN LIN.		

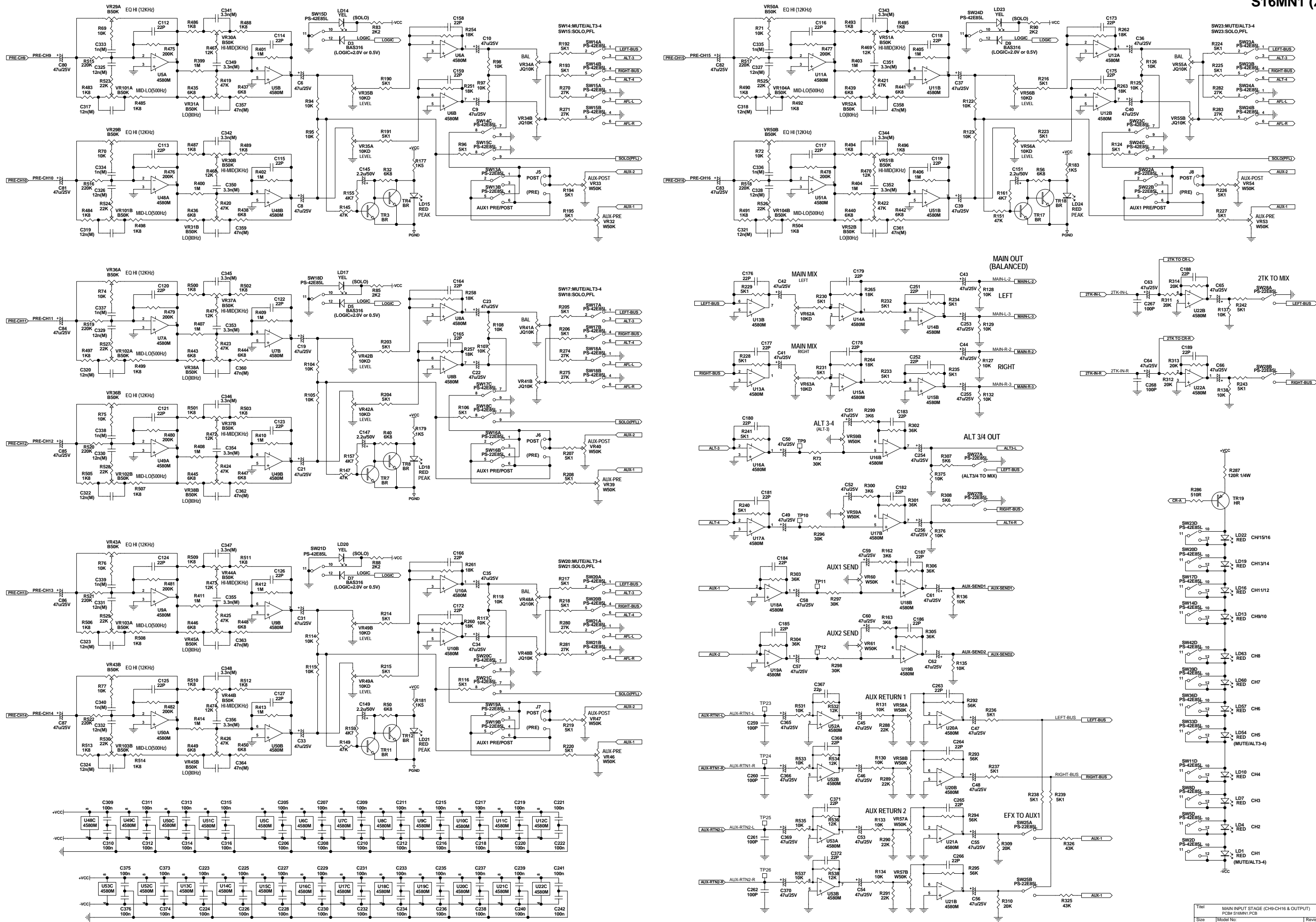
### 3. Schematic Diagram



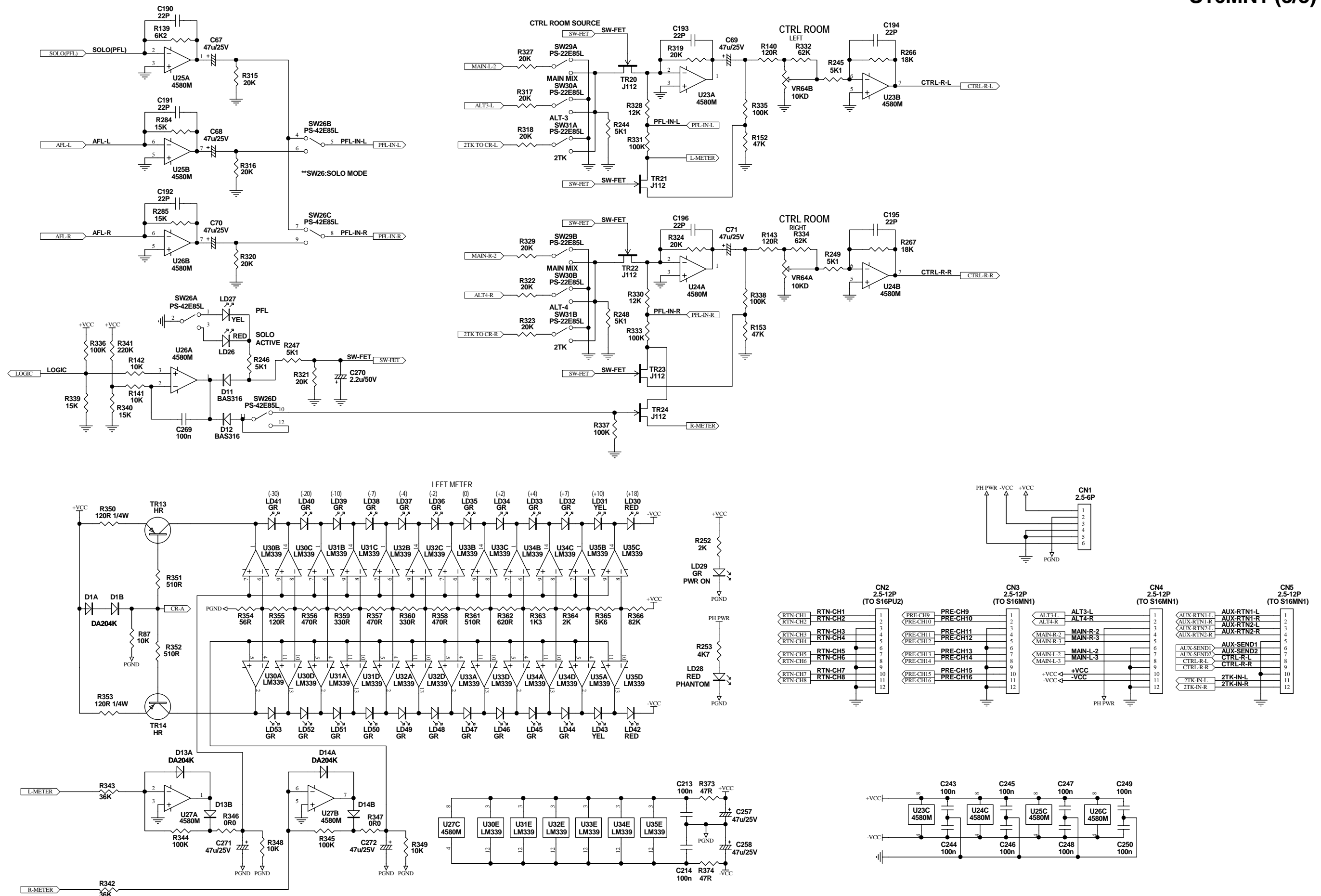
S16 CONTROL ROOM & DISPLAY  
S16CTR\_SCH1

CH1-CH16 & MAIN OUTPUT  
S16MN1\_SCH1

Title	MAIN INPUT STAGE PCB# S16MN1.PCB		
Size	A1	Model No:	ALTO S-16
Date:	2003/02/25	Sheet:	1 of 3
Drawn By:	S16MN1_Sch	Drawn By:	KEVIN LIN
Revision	VER021028		

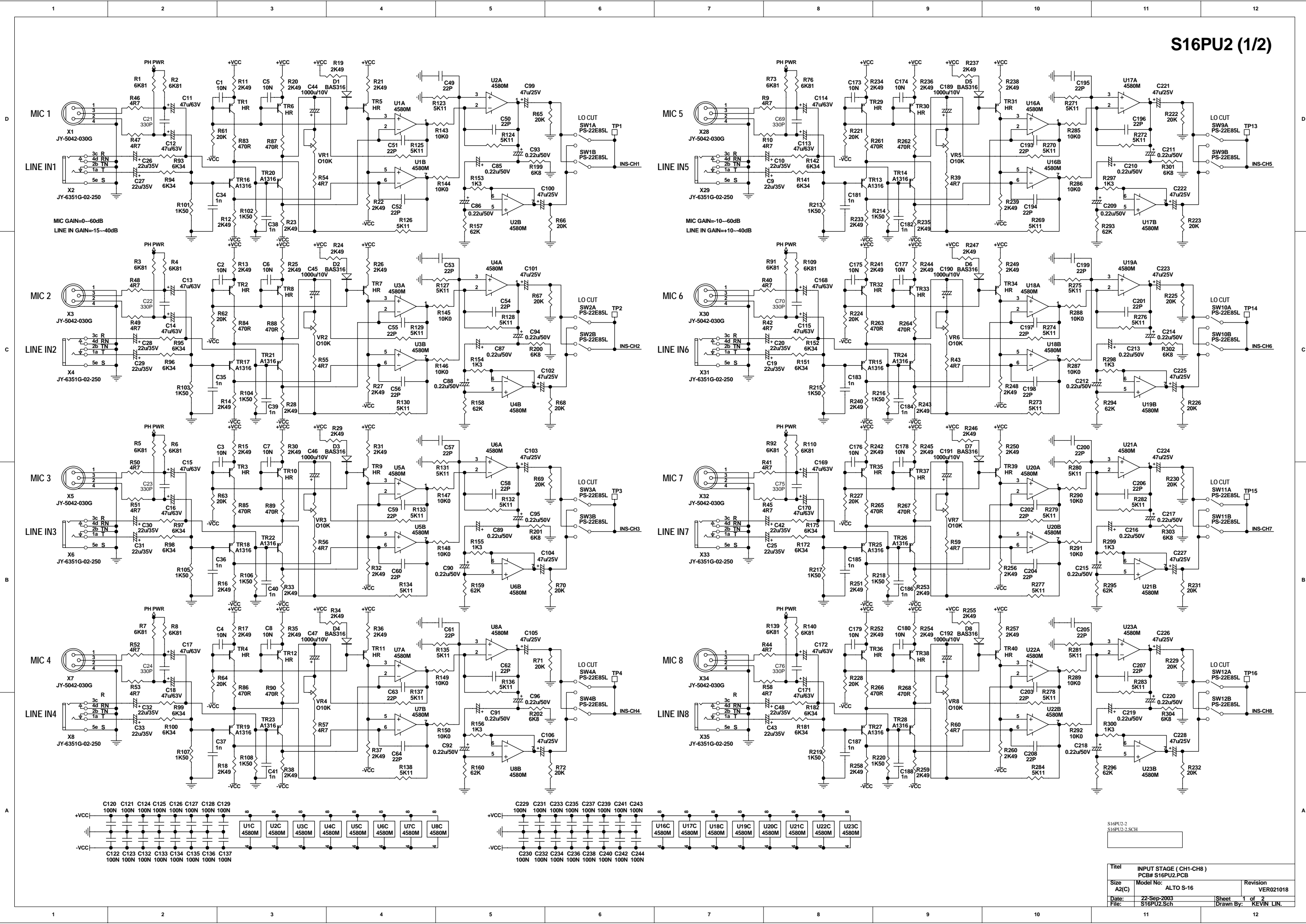


Time	MAIN INPUT STAGE (CH9-CH16 & OUTPUT)
Size	Model No: ALTO S-16
Date:	22-SEP-2003
File:	S16MN1-2.Sch
Revision	VER021028
Sheet	2 of 3
Drawn By:	KEVIN LIN



Title		
CONTROL ROOM STAGE		
Size	Model No:	Revision
A2	ALTO S-12	VER021028
Date:	22-Sep-2003	Sheet 3 of 3
File:	S16CTR.Sch	Drawn By: KEVIN LIN

S16PU2 (1/2)

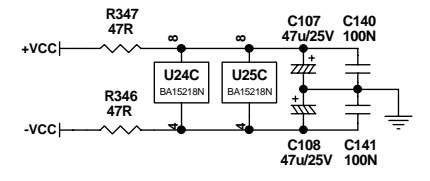
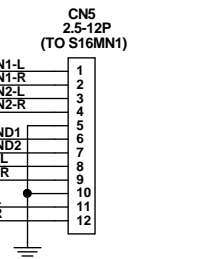
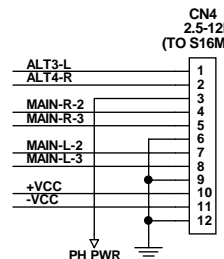
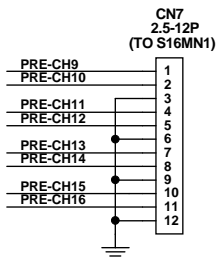
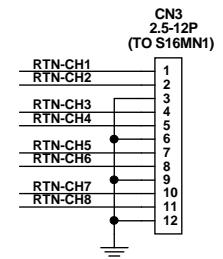
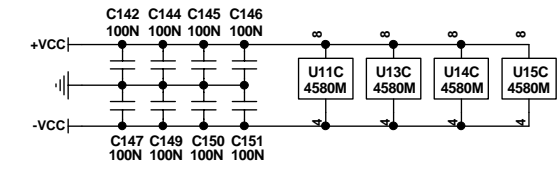
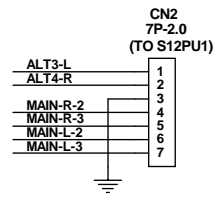
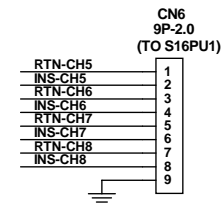
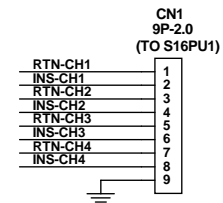
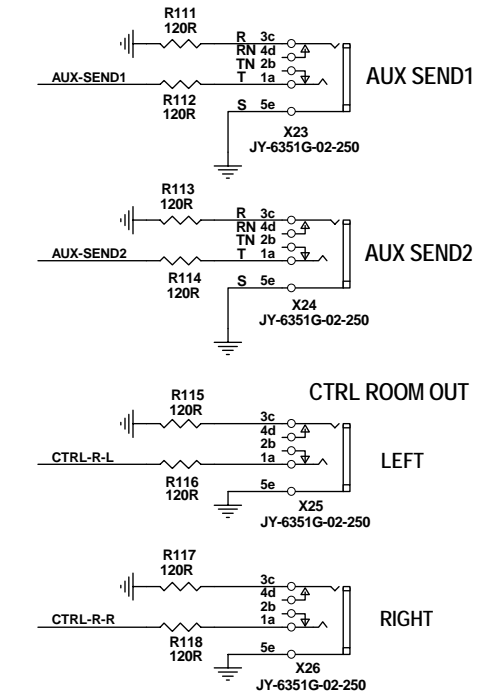
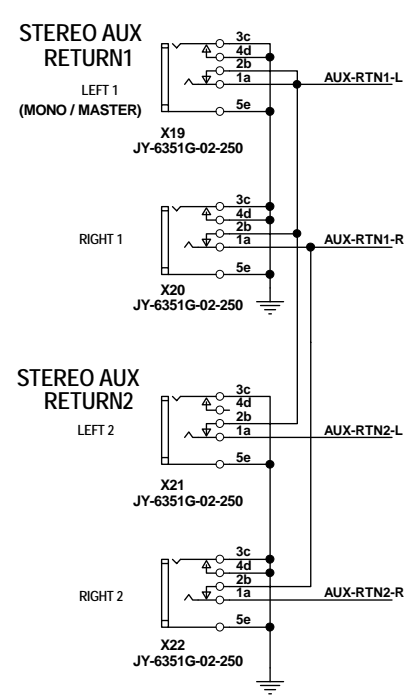
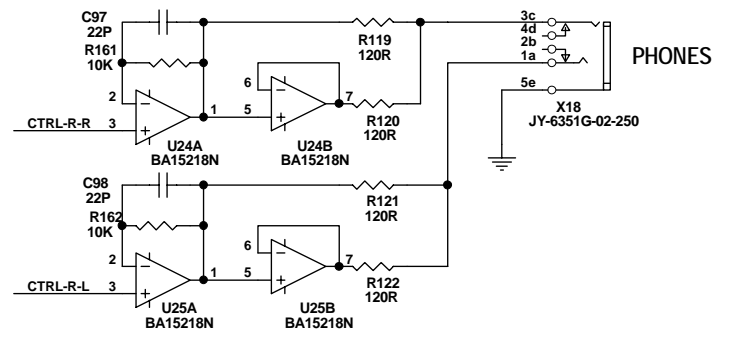
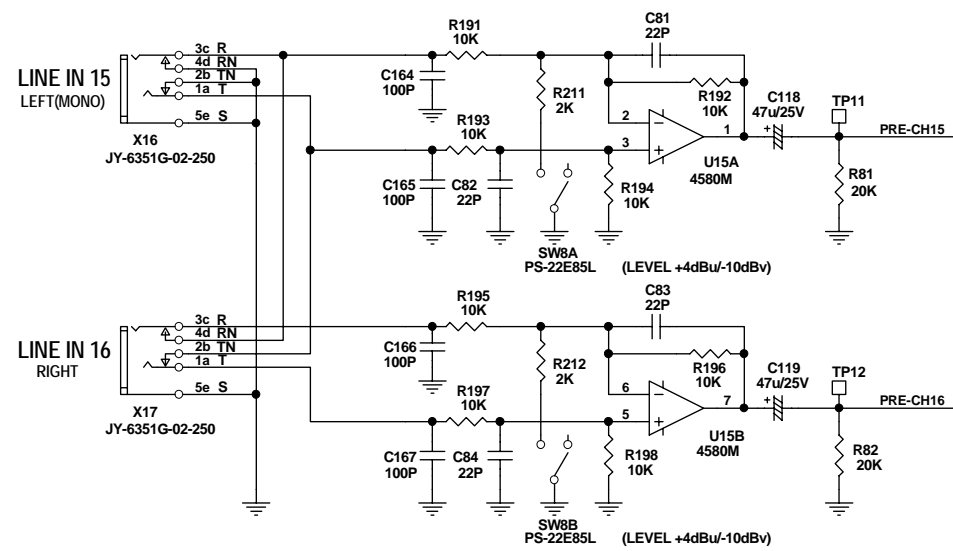
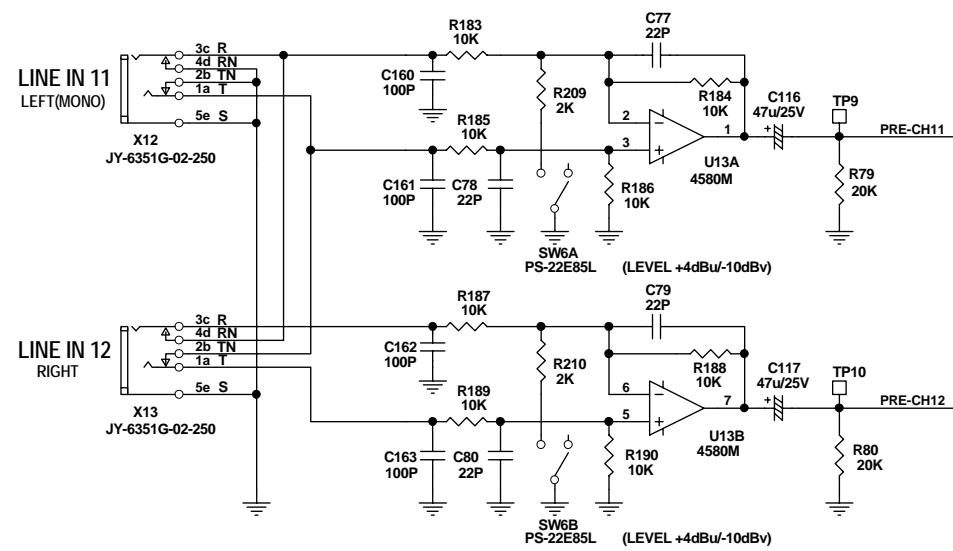
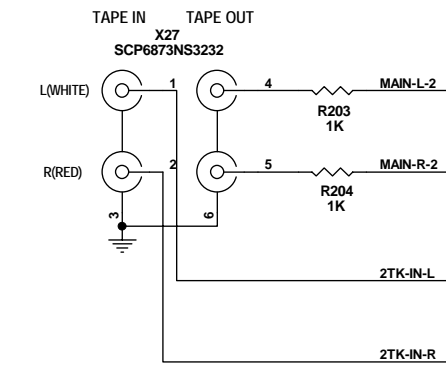
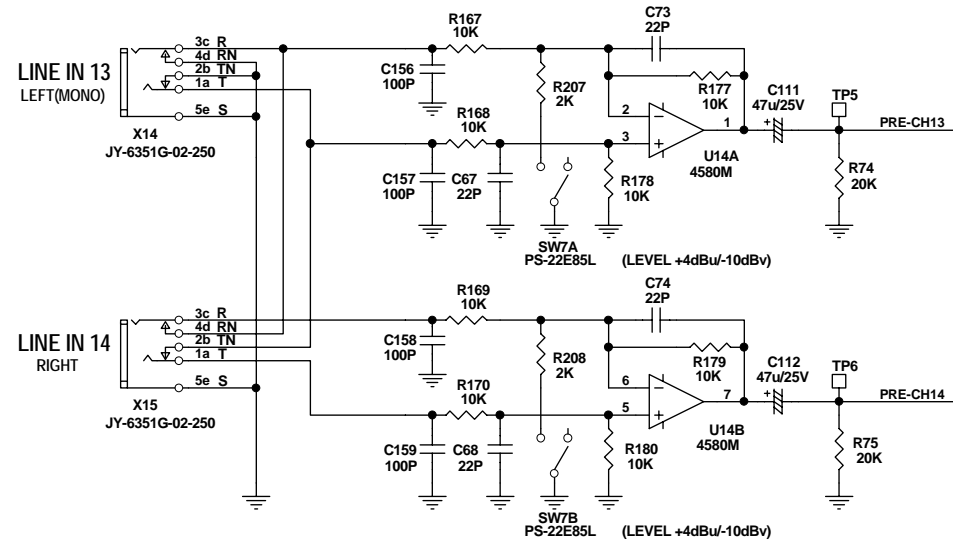
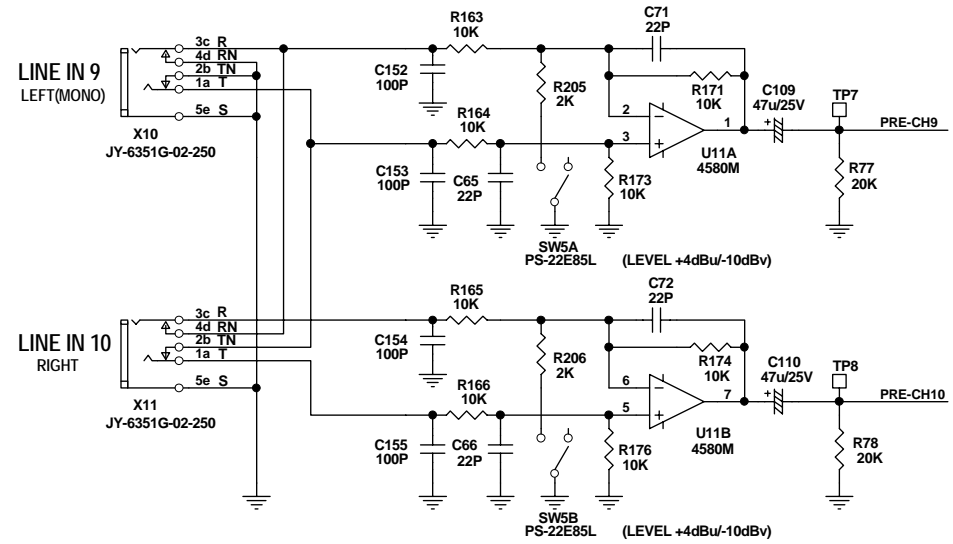


S16PU2-3  
S16PU2-3.SCH

Title		INPUT STAGE ( CH1-CH8 )	
Model No:		PCB# S16PU2.PCB	
Size	A2(C)	Revision	VER021018
Date:	22-Sep-2003	Sheet	1 of 2
File:	S16PU2.Sch	Drawn By:	KEVIN LIN.

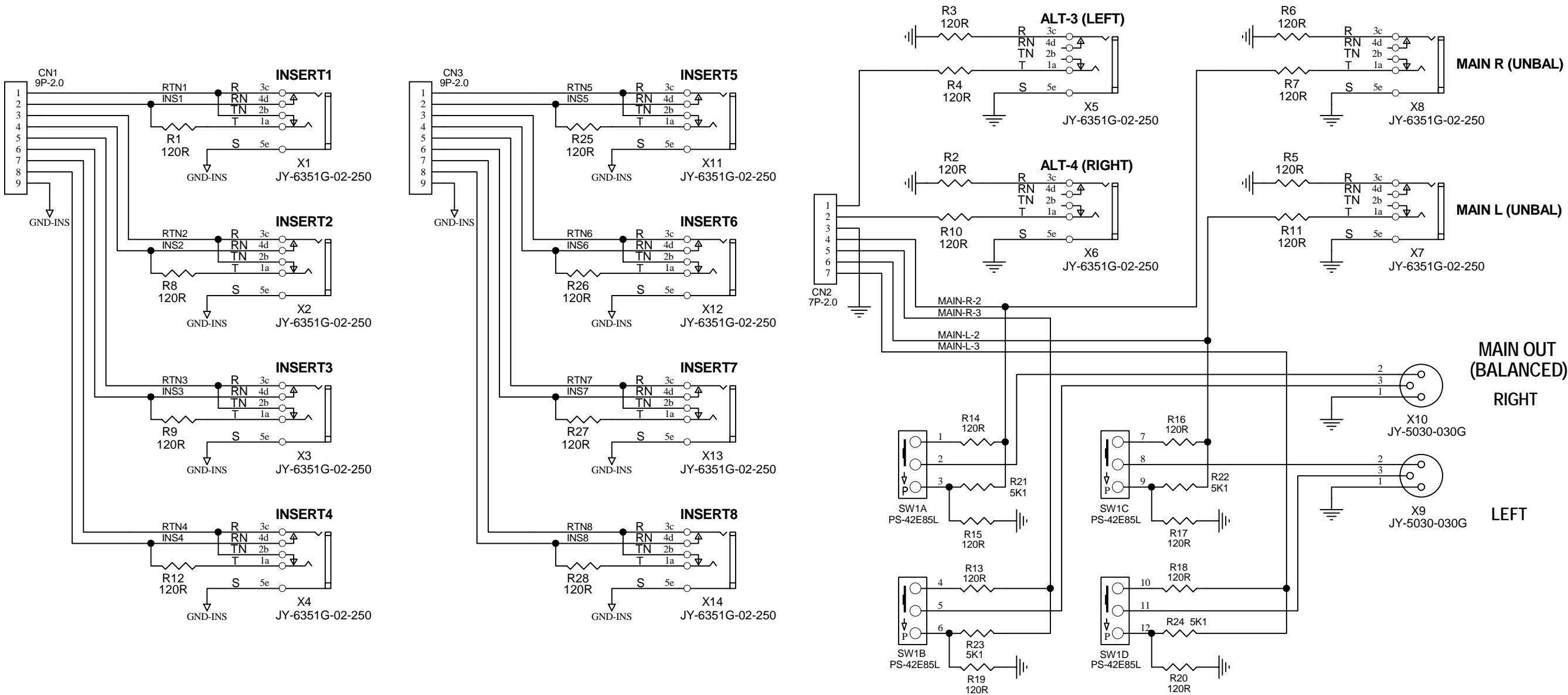


# S16PU2 (2/2)



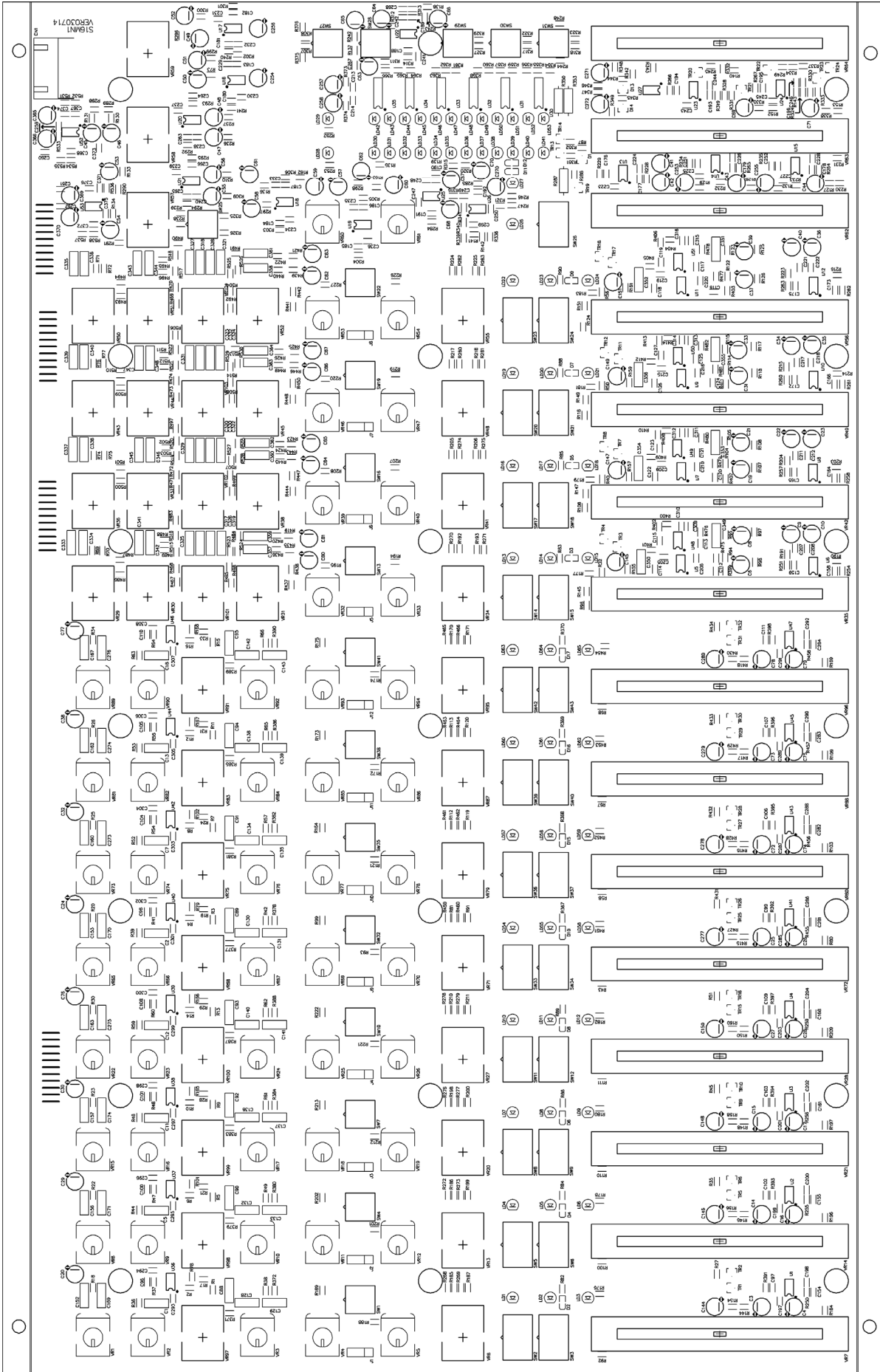
Titel INPUT STAGE STEREO		
PCB# S16PU2.PCB		
Size A2	Model No: ALTO S-16	Revision VER021018
Date: 22-Sep-2003	Sheet 2 of 2	Drawn By: KEVIN LIN.
File: S16PU2-2.Sch		

# S16PU1

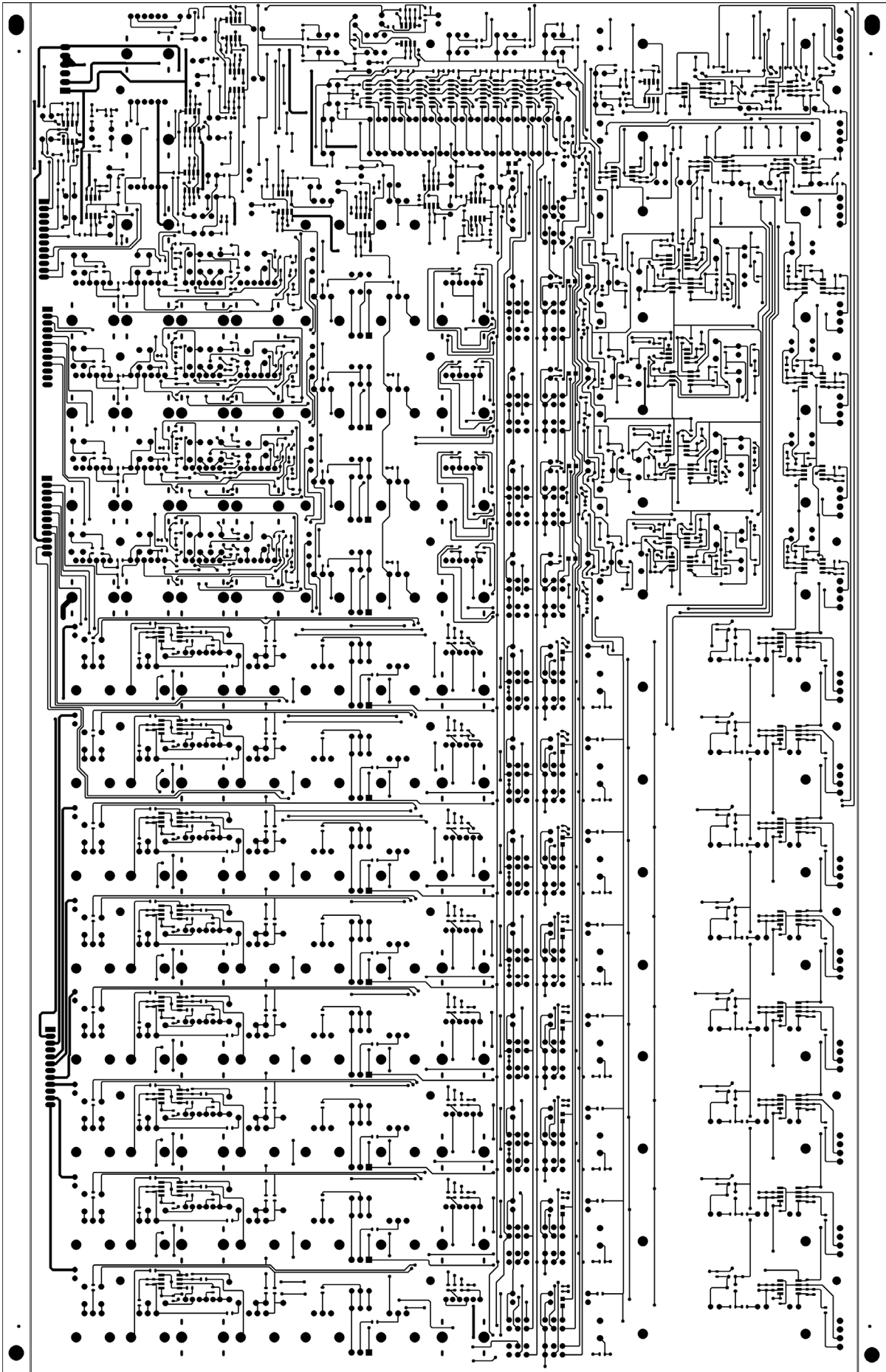


Titel		
OUTPUT STAGE (INSERT & MAIN OUTPUT)		
PCB# S16PU1.PCB		
Size	Model No:	Revision
A3	ALTO S-16	VER021018
Date:	22-Sep-2003	Sheet 1 of 1
File:	S16PU1.Sch	Drawn By: KEVIN LIN.

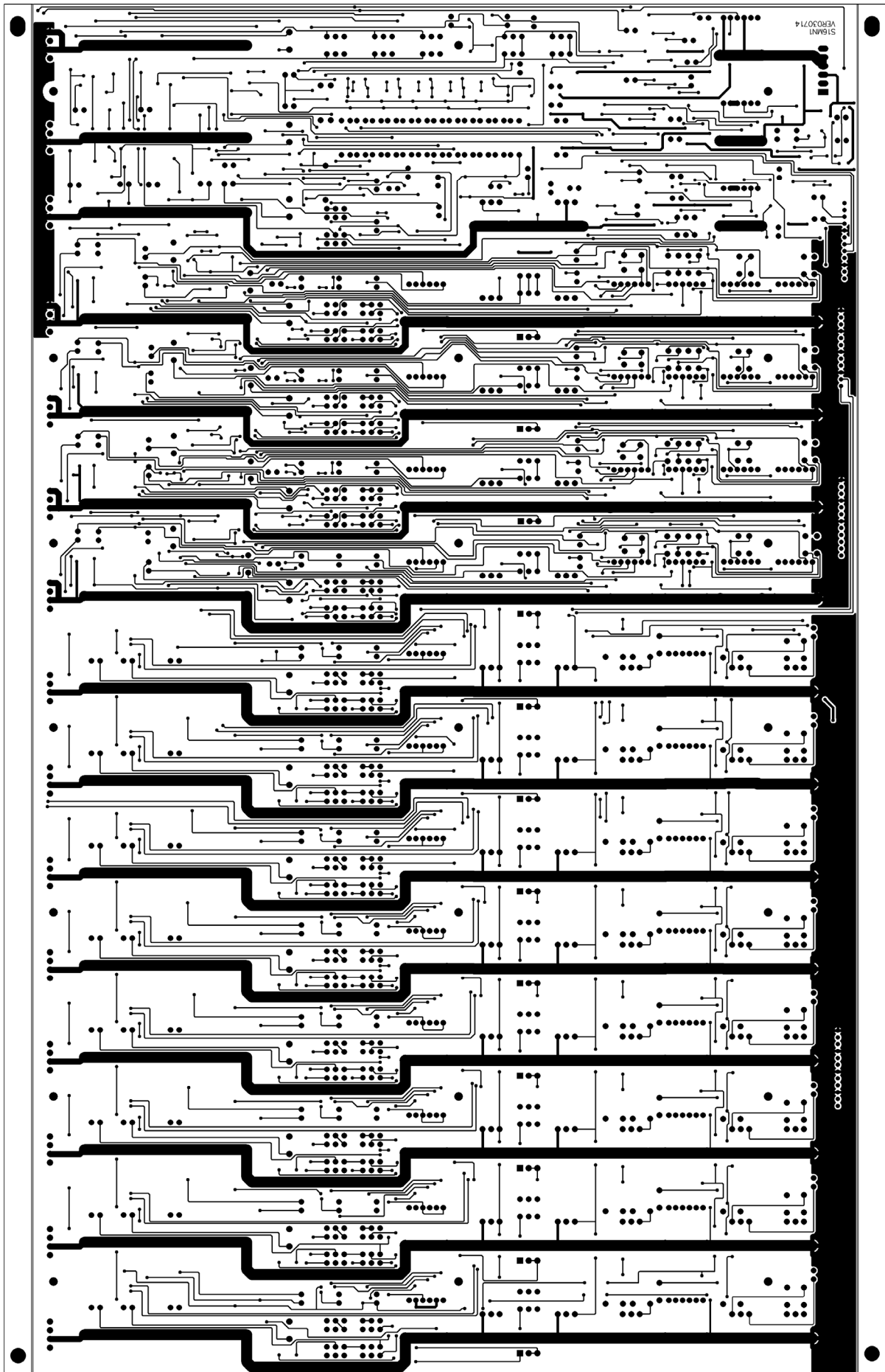
# 4. PRINTED CIRCUIT DIAGRAM



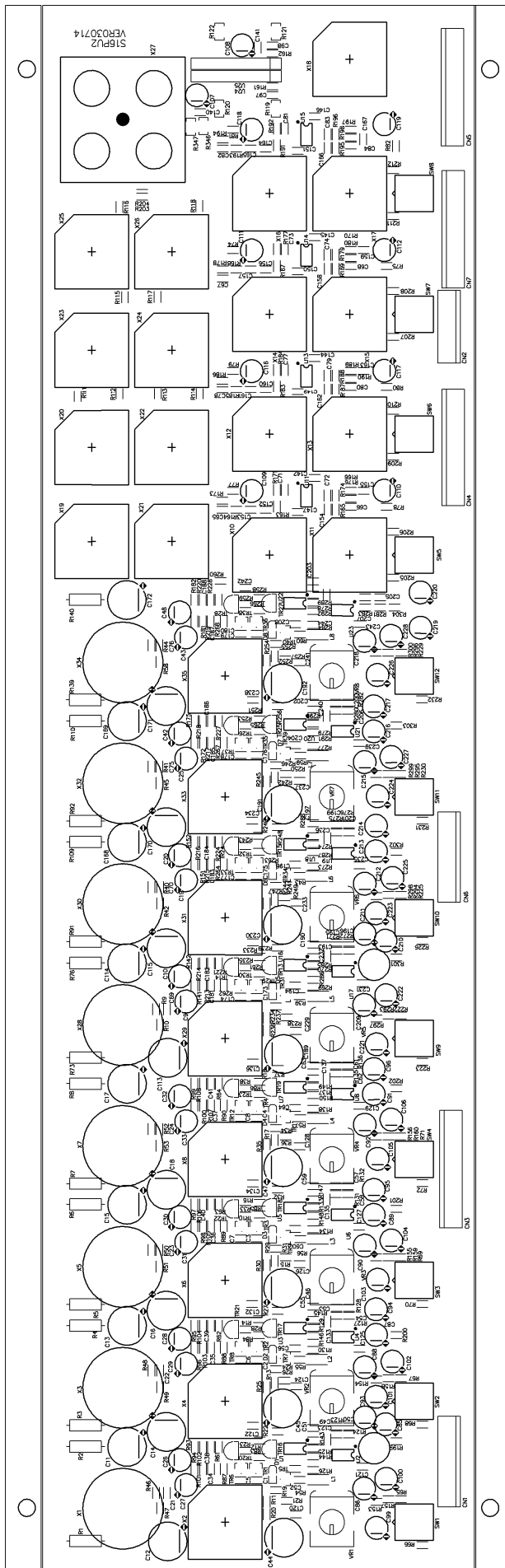
PCB : S16MN1 Top Overlay



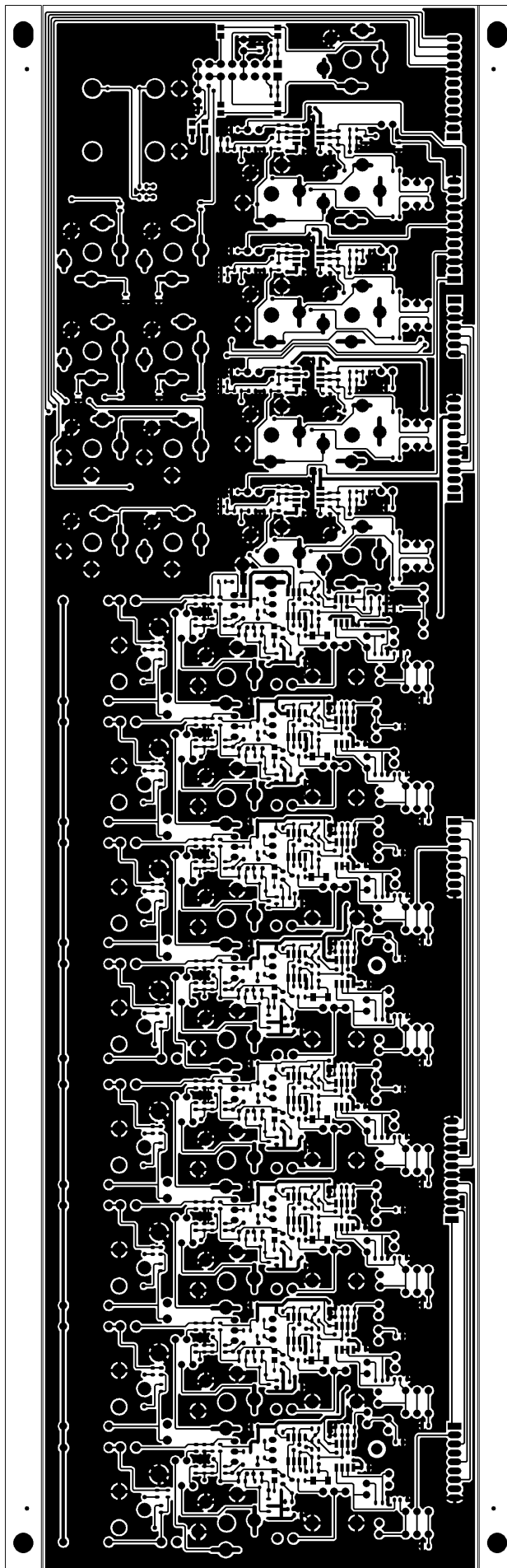
PCB : S16MN1 Top Layer



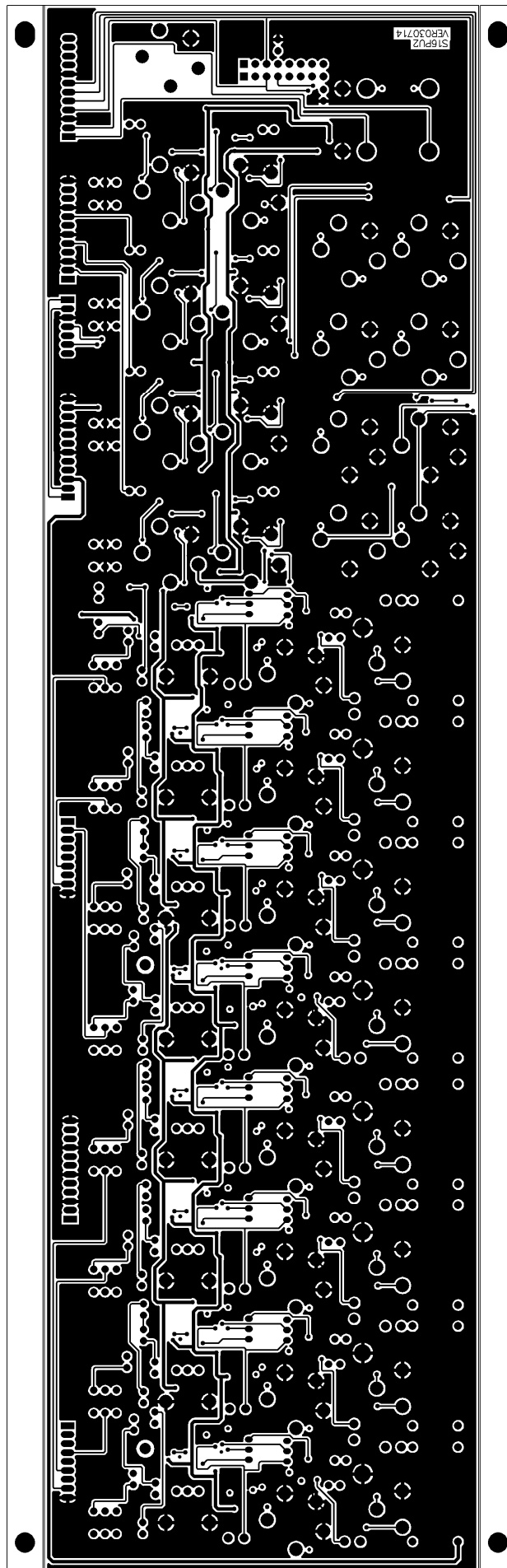
PCB : S16MN1 Bottom Layer



PCB : S16PU2 Top Overlay

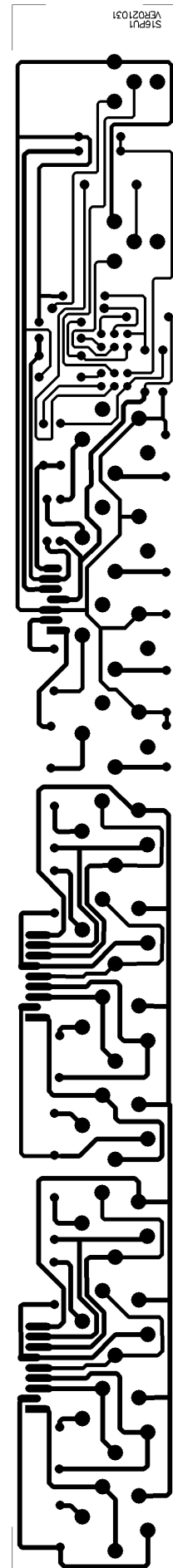
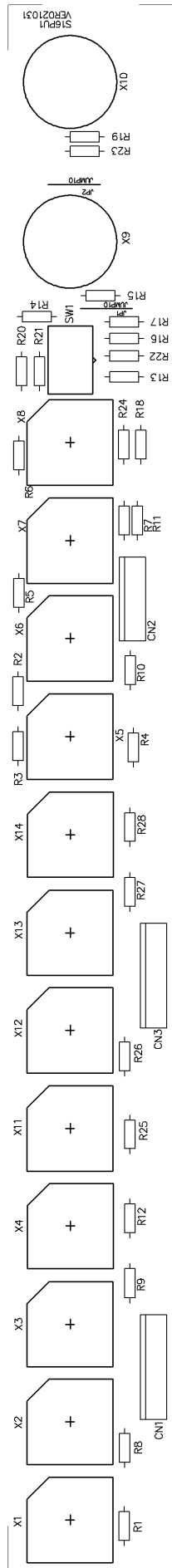


PCB : S16PU2 Top Layer

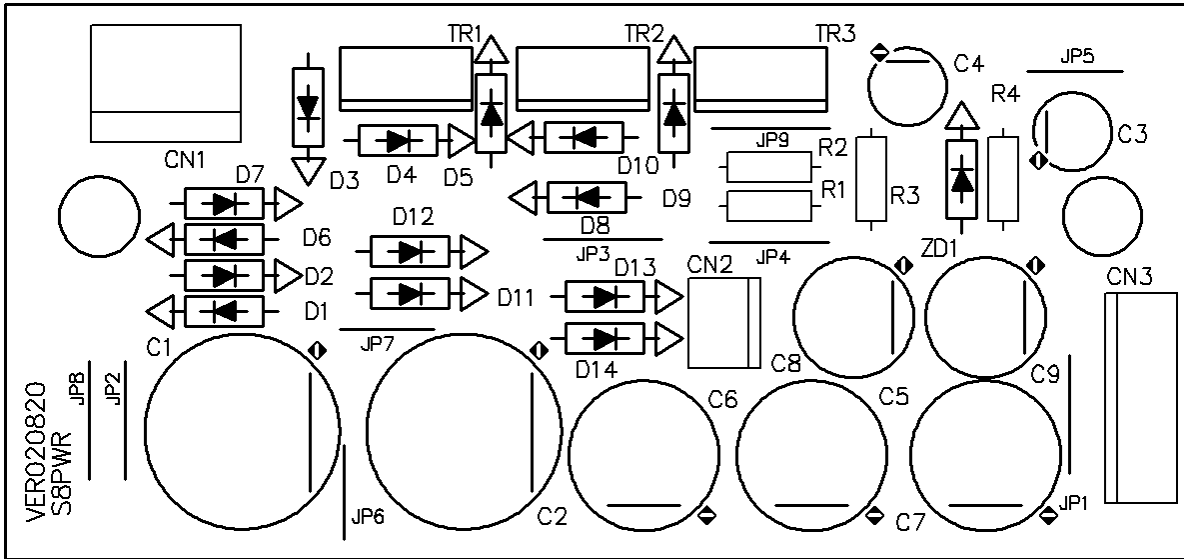


PCB : S16PU2 Bottom Layer

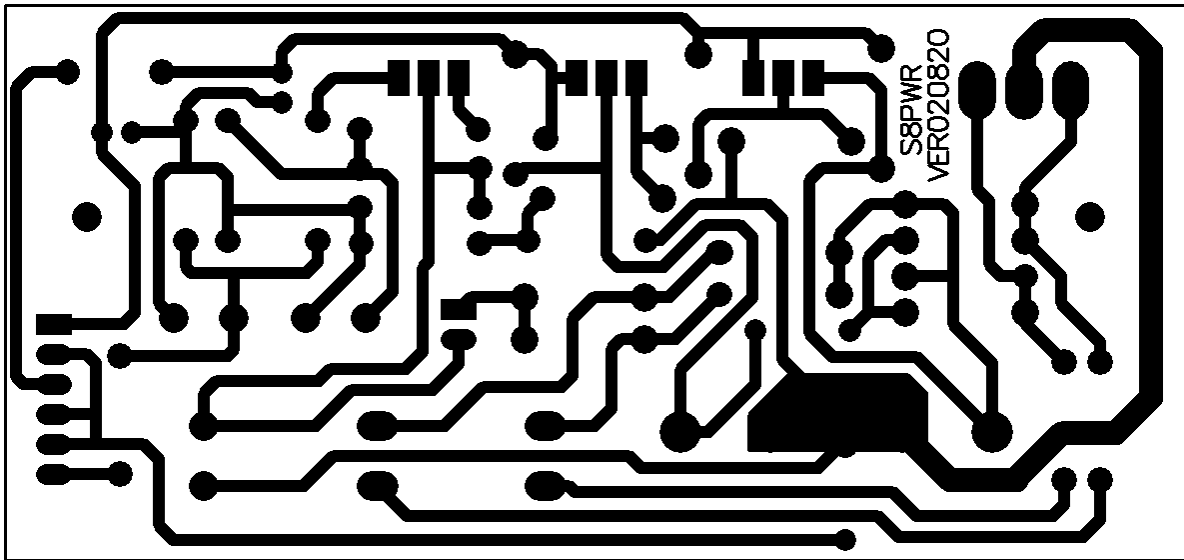




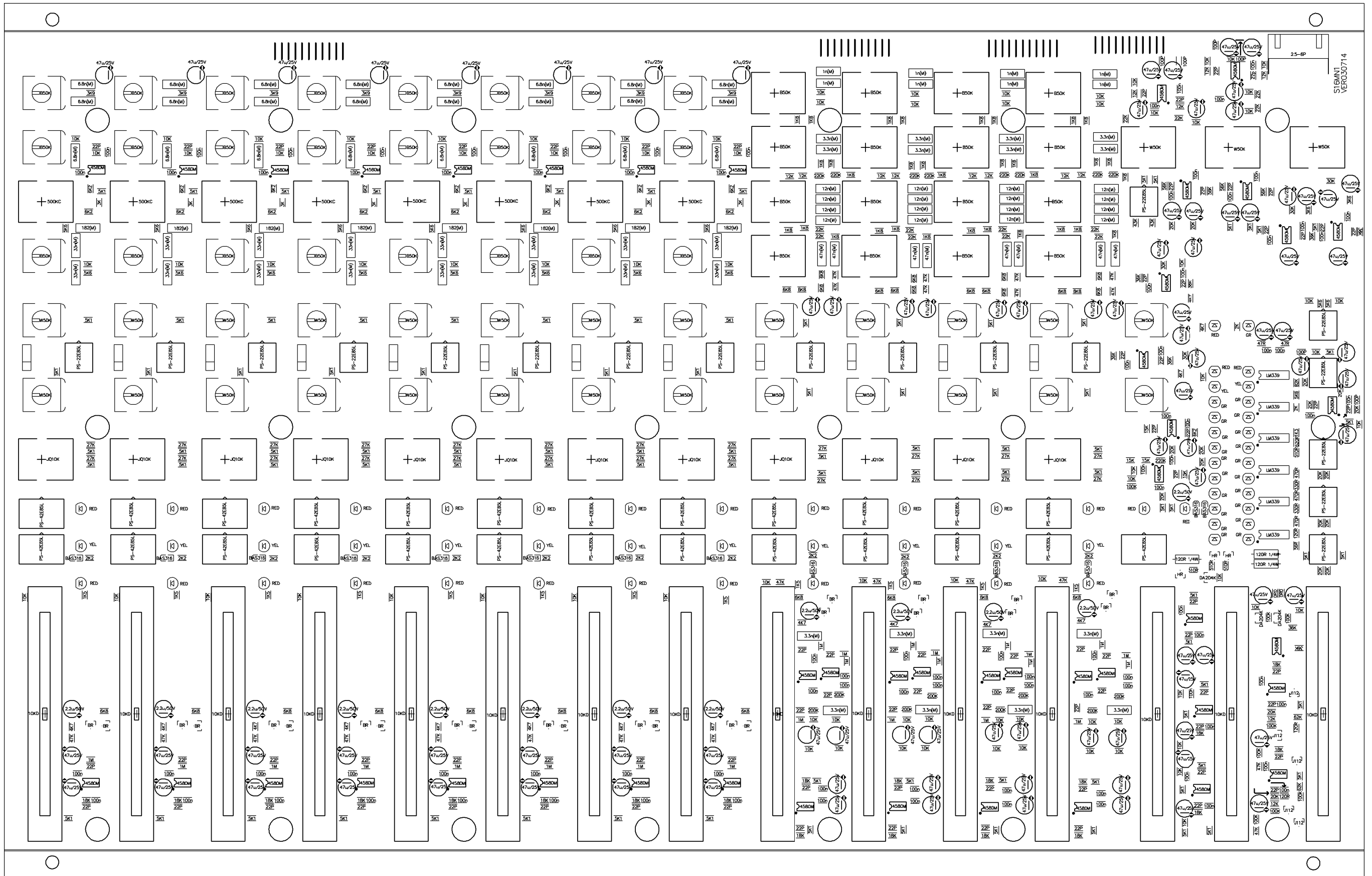
PCB : S16PU1 Top Overlay PCB : S16PU1 Bottom Layer



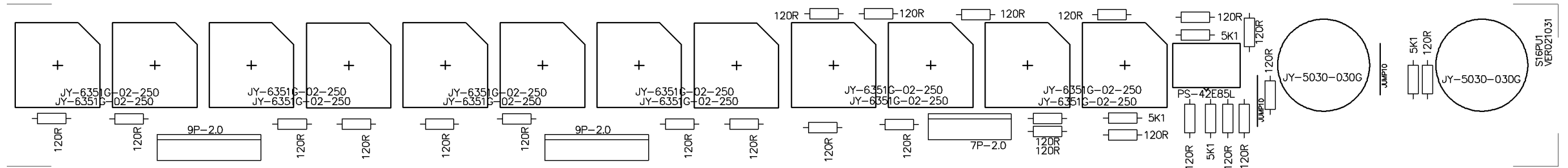
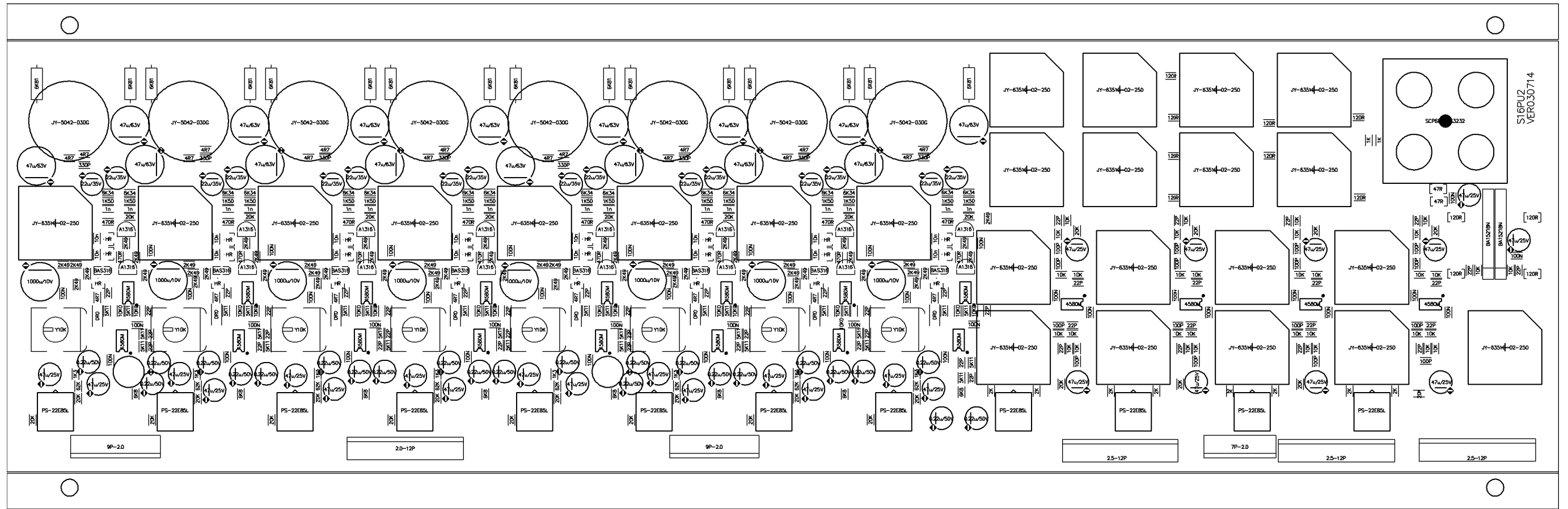
PCB : S8PWR Top Overlay

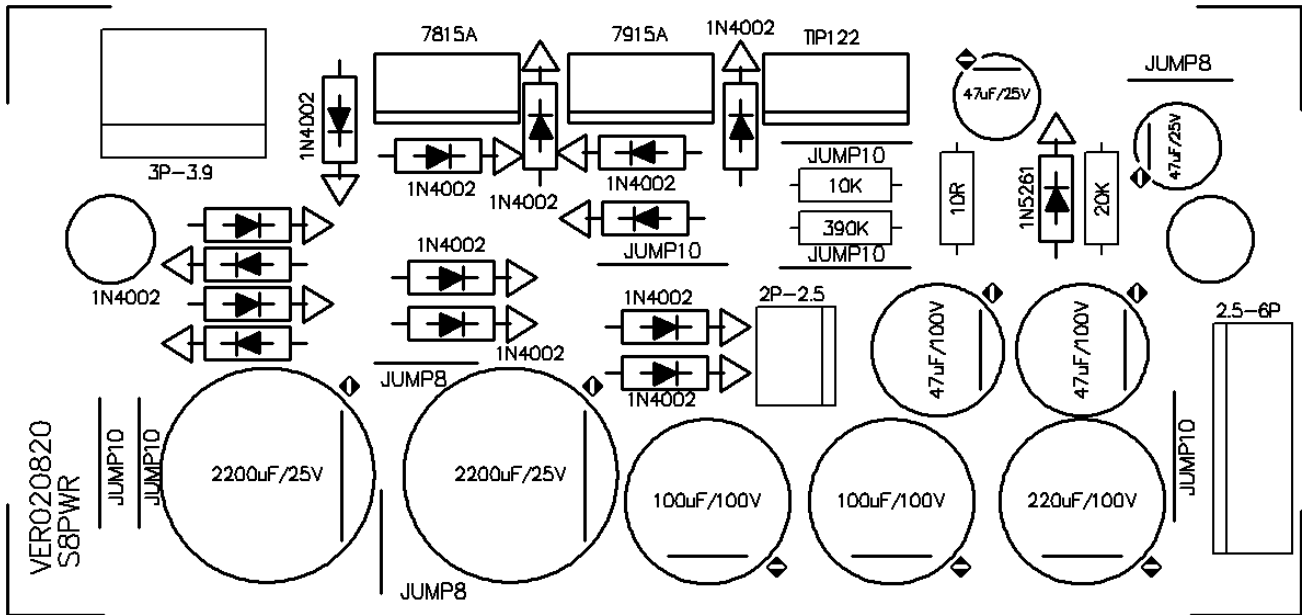


PCB : S8PWR Bottom Layer

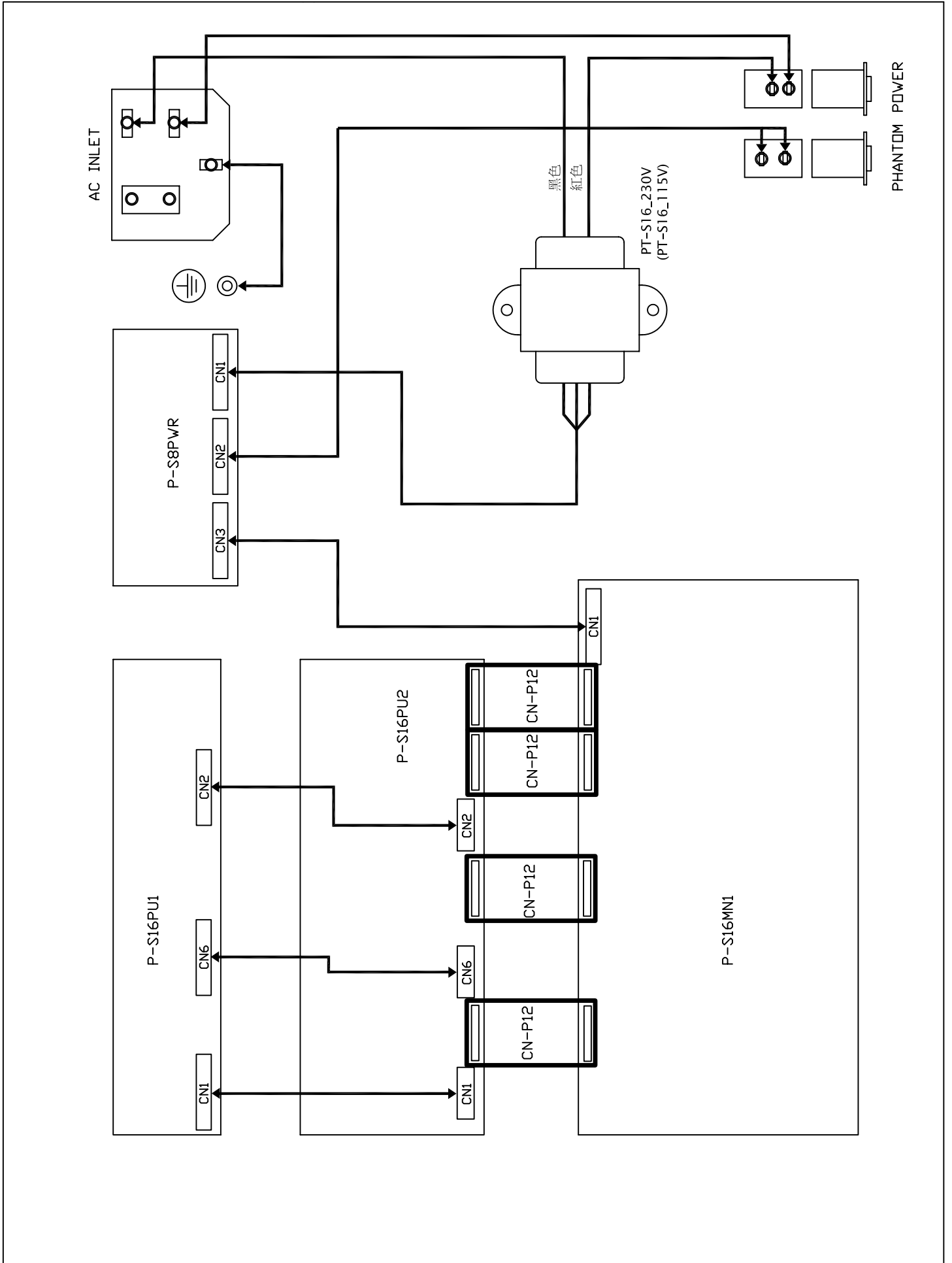


ST6MNT  
VERO30714





# S-16



## 7.Electrical Parts List

SEKAKU ELECTRON INDUSTRY (H.K.) CO.,LTD

IEBO\_P02

IEBO\_P02

## Multi-Level BOM Structure Listing

Report No.: IEBO\_P02 Date: 2003/09/30  
 Prepared by: 000011[YAFEN] Page No.: 1/19  
 Item No.: PF00232 Version UNIT: PCS  
 DESCRIPTION: S-16 Date: 2003/03/17  
 S-16\_ALTO\_230V

Version	Item No	Loss %	Ver.	Unit	Cardinal	Effective Date
Component Remark	Item Description				Usage Rate	@:Phantom Layer
					Attrition Rate	
0001-----	MA03687				1.0000	2003/03/17
	panel			PCS	1	N
	S-16				0.00 %	
0002-----	MB02491				1.0000	2003/03/17
	rear board			PCS	1	N
	S-16				0.00 %	
0003-----	HI00026				1.0000	2003/03/17
	power switch			PCS	1	N
	RA12KKATOF 2P				0.00 %	
0004-----	HI00171				1.0000	2003/03/17
	power switch			PCS	1	N
	R612KKAT0F1				0.00 %	
0005-----	TC00175				1.0000	2003/03/17
	transformer			PCS	1	N
	PT-S16_230V				0.00 %	
0006-----	MJ01027				1.0000	2003/03/17
	heat-sink			PCS	1	N
	S-8				0.00 %	
0007-----	HC00008				1.0000	2003/03/17
	AC outlet			PCS	1	N
	3515 A TYPE(RF-2004-C-4.8)				0.00 %	
0008-----	HD00054				1.0000	2003/03/17
	fuse			PCS	1	N
	250mA 250V 5.2*20mm CSA/S/UL/VDE				0.00 %	
0009-----	MG00304				21.0000	2003/03/17
	copper pole			PCS	1	N
	M3*14*0.5PH				0.00 %	
0010-----	MG00305				2.0000	2003/03/17
	copper pole			PCS	1	N
	M3*24*0.5PH				0.00 %	
0011-----	NI01862				13.0000	2003/03/17
	key			PCS	1	N
	5.5*5.5*14.5				0.00 %	
0012-----	NI01863				44.0000	2003/03/17
	key			PCS	1	N
	5.5*W10*7.5				0.00 %	
0013-----	NI02377				12.0000	2003/03/17
	knob			PCS	1	N
	5.5*7.5mm(内3.3*3.3mm)				0.00 %	
0014-----	NI02083				51.0000	2003/03/17
	plastic knob			PCS	1	N
	10.5*18				0.00 %	
0015-----	NI02081				26.0000	2003/03/17
	plastic knob			PCS	1	N
	10.5*18				0.00 %	

Multi-Level BOM Structure Listing

Report No.: IEBO\_P02 Date: 2003/09/30  
 Prepared by: 000011[YAFEN] Page No.: 2/19  
 Item No.: PF00232 Version: UNIT: PCS  
 DESCRIPTION: S-16 Date: 2003/03/17  
 S-16\_ALTO\_230V

Version	Item No	Loss %	Ver.	Unit	Cardinal Usage Rate	Effective Date @:Phantom Layer
Component Remark	Item Description				Attrition Rate	
0016-----	NI02082 plastic knob 10.5*18			PCS	12.0000 1 0.00 %	2003/03/17 N
0017-----	NI02084 plastic knob 10.5*18			PCS	8.0000 1 0.00 %	2003/03/17 N
0018-----	NI02309 sliding key 24*11.5*11			PCS	12.0000 1 0.00 %	2003/03/17 N
0019-----	NI02352 sliding key 24*11.5*11			PCS	2.0000 1 0.00 %	2003/03/17 N
0020-----	NI02353 sliding key 24*11.5*11			PCS	1.0000 1 0.00 %	2003/03/17 N
0021-----	MG00041 screw M3*6			PCS	62.0000 1 0.00 %	2003/03/17 N
0022-----	MG00042 screw M3*10			PCS	2.0000 1 0.00 %	2003/03/17 N
0023-----	MG00061 screw M3*10			PCS	21.0000 1 0.00 %	2003/03/17 N
0024-----	ME00015 colour nut 3m/m			PCS	3.0000 1 0.00 %	2003/07/28 N
0025-----	ME00016 colour nut 4m/m			PCS	2.0000 1 0.00 %	2003/07/28 N
0026-----	MF00038 spring washer 4* 7*1t			PCS	3.0000 1 0.00 %	2003/04/12 N
0027-----	MF00037 spring washer 3* 5*1t			PCS	5.0000 1 0.00 %	2003/03/17 N
0028-----	MF00030 Ni washer 3* 8*0.8t			PCS	2.0000 1 0.00 %	2003/06/27 N
0029-----	MF00048 washer 4* 8*0.5t			PCS	1.0000 1 0.00 %	2003/03/17 N
0030-----	ME00060 Mic socket nut-HC00125 Appendix hexagon (JY-6351G-02-250)			PCS	37.0000 1 0.00 %	2003/03/17 N



Multi-Level BOM Structure Listing

Report No.: IEBO\_P02 Date: 2003/09/30  
 Prepared by: 000011[YAFEN] Page No.: 3/19  
 Item No.: PF00232 Version UNIT: PCS  
 DESCRIPTION: S-16 Date: 2003/03/17  
 S-16\_ALTO\_230V

Version	Item No	Loss %	Ver.	Unit	Cardinal Usage Rate	Effective Date @:Phantom Layer
Component Remark	Item Description				Attrition Rate	
0031-----	MF00061				37.0000	2003/03/17
	Mic socket washer-HC00125			PCS	1	N
	circle (JY-6351G-02-250)				0.00 %	
0032-----	NI02249				3.0000	2003/03/17
	caushion			PCS	1	N
	TW-1(TO-220)				0.00 %	
0033-----	NC00022				1.0000	2003/03/17
	silicone insulator			PCS	1	N
	0.3t*18*45mm S-8				0.00 %	
0034-----	MG00162				3.0000	2003/03/17
	Ni screw			PCS	1	N
	M3*8				0.00 %	
0035-----	HA01174				1.0000	2003/03/17
	wire CF:W146			PCS	1	N
	80 green/yellow				0.00 %	
0036-----	HA01835				1.0000	2003/03/17
	wire UL1617 22AWG			PCS	1	N
	80 brown				0.00 %	
0037-----	HA01392				1.0000	2003/03/17
	header wiring AF:W130			PCS	1	N
	2P 150				0.00 %	
0038-----	HA02400				1.0000	2003/03/17
	header wiring JST2.5 6P-6P			PCS	1	N
	6P-6P 200mm UL1007 22AWG black/white				0.00 %	
0039-----	HA00861				1.0000	2003/03/17
	power cord Europe 3P			PCS	1	N
	LT-312+0.75*3C(H05VV-F) 6FT+LT-501				0.00 %	
0040-----	NI00218				2.0000	2003/03/17
	cable tie-black			PCS	1	N
	ALT-102SB				0.00 %	
0041-----	ND00233				1.0000	2003/03/17
	non wonen			PCS	1	N
	0.35t*402*79mm				0.00 %	
0042-----	NI00252				7.0000	2003/03/17
	sleeving flame retardant			PCS	1	N
	4*20mm				0.00 %	
0043-----	NI00501				4.0000	2003/03/17
	foot cushion			PCS	1	N
	12.7*9*3t(SF-004)				0.00 %	
0044-----	NA00135				1.0000	2003/03/17
	PE bag			PCS	1	N
	0.05t*610*500mm		KG		0.00 %	
0045-----	NA00127				2.0000	2003/03/17
	PE bag			PCS	1	N
	0.1t*610*200mm		KG		0.00 %	

Multi-Level BOM Structure Listing

Report No.: IEBO\_P02 Date: 2003/09/30  
 Prepared by: 000011[YAFEN] Page No.: 4/19  
 Item No.: PF00232 Version UNIT: PCS  
 DESCRIPTION: S-16 Date: 2003/03/17  
 S-16\_ALTO\_230V

Version	Item No	Loss %	Ver.	Unit	Cardinal	Effective Date
Component Remark	Item Description				Usage Rate	@:Phantom Layer
					Attrition Rate	
0046-----	HJ00006				1.0000	2003/03/17
	desiccant			PCS	1	N
	30g				0.00	%
0047-----	MI00290				1.0000	2003/03/17
	fixed bracket			PCS	1	N
	S-16 right				0.00	%
0048-----	MI00323				1.0000	2003/03/17
	fixed bracket			PCS	1	N
	S-16 left				0.00	%
0049-----	NF00061				1.0000	2003/03/17
	assurance card			PCS	1	N
	ALTO				0.00	%
0050-----	NE05004				4.0000	2003/03/17
	label 30*11mm			PCS	1	N
	ALTO				0.00	%
0051-----	HK03650				1.0000	2003/03/17
	K-PCb			PCS	1	N
	P-S16-MN1-DIP				0.00	%
0001-----	RA00185				3.0000	2003/03/17
	fixed resistor 1/4W			PCS	1	N
	120 M type				0.00	%
	R287 R350 R353					
0002-----	CF00054				16.0000	2003/03/17
	metal-film capacitor MSC			PCS	1	N
	0.012uF/63V ±5% CASE01				0.00	%
	C317 C318 C319 C320 C321 C322 C323 C324 C325 C326 C327 C328 C329 C330					
	C331 C332					
0003-----	CF00023				16.0000	2003/03/17
	metal-film capacitor MSC			PCS	1	N
	0.033uF/63V 5% CASE01				0.00	%
	C128 C129 C130 C131 C132 C133 C134 C135 C136 C137 C138 C139 C140 C141					
	C142 C143					
0004-----	CF00003				8.0000	2003/03/17
	metal-film capacitor MSC			PCS	1	N
	0.0015uF/100V 5% CASE01				0.00	%
	C88 C89 C90 C91 C92 C93 C94 C95					
0005-----	CF00001				8.0000	2003/03/17
	metal-film capacitor MSC			PCS	1	N
	0.001uF/63V 5% CASE01				0.00	%
	C333 C334 C335 C336 C337 C338 C339 C340					
0006-----	CF00052				16.0000	2003/03/17
	metal-film capacitor			PCS	1	N
	0.0033uF/63V 5% CASE01				0.00	%
	C341 C342 C343 C344 C345 C346 C347 C348 C349 C350 C351 C352 C353 C354					
	C355 C356					
0007-----	CF00025				8.0000	2003/03/17

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 Item No.: PF00232 Version UNIT: PCS  
 DESCRIPTION: S-16 Date: 2003/03/17  
 S-16\_ALTO\_230V

Version	Item No	Loss %	Ver.	Unit	Cardinal	Effective Date
Component Remark	Item Description				Usage Rate	@:Phantom Layer
					Attrition Rate	
0008-----	metal-film capacitor MSC 0.047uF/63V 5% CASE01 C357 C358 C359 C360 C361 C362 C363 C364			PCS	1 0.00 %	N
	CF00012				24.0000	2003/03/17
0009-----	metal-film capacitor MSC 0.0068uF/100V 5% CASE01 C1 C2 C5 C7 C11 C12 C13 C18 C152 C153 C156 C157 C160 C162 C163 C167 C169 C170 C171 C174 C273 C274 C275 C276			PCS	1 0.00 %	N
	CB00011				13.0000	2003/03/17
0010-----	electrolytic capacitor 2.2uF/50V 5*11 C144 C145 C146 C147 C148 C149 C150 C151 C270 C277 C278 C279 C280			PCS	1 0.00 %	N
	CB00175				91.0000	2003/06/13
0011-----	electrolytic capacitor 47uF/25V SLL 5*11 C3 C4 C6 C8 C9 C10 C14 C15 C16 C17 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 C50 C51 C52 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 C253 C254 C255 C256 C257 C258 C271 C272 C365 C366 C369 C370 C49			PCS	1 0.00 %	N
	SA00053				28.0000	2003/03/17
0012-----	L.E.D high intensity 3m/m round(red)long foot 26mm LD1 LD3 LD4 LD6 LD7 LD9 LD10 LD12 LD13 LD15 LD16 LD18 LD19 LD21 LD22 LD24 LD26 LD28 LD30 LD42 LD54 LD56 LD57 LD59 LD60 LD62 LD63 LD65			PCS	1 0.00 %	N
	SA00054				14.0000	2003/03/17
0013-----	L.E.D high intensity 3m/m round(yellow)long foot 26mm LD2 LD5 LD8 LD11 LD14 LD17 LD20 LD23 LD31 LD43 LD55 LD58 LD61 LD64			PCS	1 0.00 %	N
	SA00052				22.0000	2003/03/17
0014-----	L.E.D high intensity 3m/m round(green)long foot 26mm LD29 LD32 LD33 LD34 LD35 LD36 LD37 LD38 LD39 LD40 LD41 LD44 LD45 LD46 LD47 LD48 LD49 LD50 LD51 LD52 LD53 LD27			PCS	1 0.00 %	N
	NI01782				64.0000	2003/03/17
0015-----	LED separating pillar LEDS-11 11mm			PCS	1 0.00 %	N
	HI00162				18.0000	2003/03/17
0016-----	push-button switch 2 paragraphs 6P PS-22E8552L(3.3x3.3) SW1 SW4 SW7 SW10 SW13 SW16 SW19 SW22 SW25 SW27 SW28 SW29 SW30 SW31 SW32 SW35 SW38 SW41			PCS	1 0.00 %	N
	HI00163				25.0000	2003/03/17
	push-button switch 2 paragraphs 12P PS-42E85			PCS	1 0.00 %	N

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 Item No.: PF00232 Version: UNIT: PCS  
 DESCRIPTION: S-16 Date: 2003/03/17  
 S-16\_ALTO\_230V

Version	Item No	Loss %	Ver.	Unit	Cardinal	Effective Date
Component Remark	Item Description				Usage Rate	@:Phantom Layer
					Attrition Rate	
0017-----	SW2 SW3 SW5 SW6 SW9 SW11 SW12 SW14 SW15 SW17 SW18 SW20 SW21 SW23 SW24 SW26 SW33 SW34 SW36 SW37 SW39 SW40 SW42 SW43 SW8 HC00070				1.0000	2003/03/17
	row-wire header			PCS	1	N
	6P 2.5mm 90°				0.00 %	
	CN1					
0018-----	HC00261				4.0000	2003/05/31
	row-wire header			PCS	1	N
	12P 2.0mm 180°				0.00 %	
	CN2 CN3 CN4 CN5					
0019-----	RC00259				12.0000	2003/03/17
	potentiometer			PCS	1	N
	J/Q10K RV112BC-40-30A-J/Q10K-0C				0.00 %	
	VR6 VR13 VR20 VR27 VR34 VR41 VR47 VR55 VR71 VR79 VR87 VR95					
0020-----	RC00307				8.0000	2003/03/17
	potentiometer			PCS	1	N
	C500K RV112BC-40-30A-C500K-0C				0.00 %	
	VR68 VR75 VR83 VR91 VR97 VR98 VR99 VR100					
0021-----	RC00284				10.0000	2003/07/16
	potentiometer			PCS	1	N
	D10K RF6011YP600F-10KD(AA)				0.00 %	
	VR7 VR14 VR21 VR28 VR62 VR63 VR72 VR80 VR88 VR96					
0022-----	RC00285				5.0000	2003/07/16
	potentiometer			PCS	1	N
	D10K RF60112P600G-10KD*2(AA)				0.00 %	
	VR35 VR42 VR49 VR56 VR64					
0023-----	RC00236				16.0000	2003/03/17
	potentiometer			PCS	1	N
	B50K RV112BC-40-30A-B50K-0C				0.00 %	
	VR29 VR30 VR31 VR36 VR37 VR38 VR43 VR44 VR45 VR50 VR51 VR52 VR101 VR102 VR103 VR104					
0024-----	RC00237				3.0000	2003/03/17
	potentiometer			PCS	1	N
	W50K RV112BC-40-30A-W50K-0C				0.00 %	
	VR57 VR58 VR59					
0025-----	RC00233				24.0000	2003/03/17
	potentiometer			PCS	1	N
	B50K RV09BC-40-30F-B50K-0C				0.00 %	
	VR1 VR2 VR3 VR8 VR9 VR10 VR15 VR16 VR17 VR22 VR23 VR24 VR65 VR66 VR67 VR73 VR74 VR76 VR81 VR82 VR84 VR89 VR90 VR92					
0026-----	RC00235				26.0000	2003/03/17
	potentiometer			PCS	1	N
	W50K RV09BC-40-30F-W50K-0C				0.00 %	
	VR4 VR5 VR11 VR12 VR18 VR19 VR25 VR26 VR32 VR33 VR39 VR40 VR46 VR47 VR53 VR54 VR60 VR61 VR69 VR70 VR77 VR78 VR85 VR86 VR93 VR94					
0027-----	HK03649				1.0000	2003/03/17

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 Item No.: PF00232 Version UNIT: PCS  
 DESCRIPTION: S-16 Date: 2003/03/17  
 S-16\_ALTO\_230V

Version	Item No	Loss %	Ver.	Unit	Cardinal	Effective Date
Component Remark	Item Description				Usage Rate	@:Phantom Layer
					Attrition Rate	
	K-PCb			PCS	1	N
0001-----	P-S16-MN1-SMD				0.00 %	
	HB00897				1.0000	2003/03/17
	pc board			PCS	1	N
0002-----	S16MN1_VER030714				0.00 %	
	RD00059				2.0000	2003/03/17
	SMD fixed resistor 1/10W			PCS	1	N
	0.0 ±5% 0603				0.00 %	
0003-----	R346 R347					
	RD00065				2.0000	2003/03/17
	SMD fixed resistor 1/10W			PCS	1	N
	47 ±5% 0603				0.00 %	
0004-----	R373 R374					
	RD00346				1.0000	2003/03/17
	SMD fixed resistor 1/10W			PCS	1	N
	56 ±5% 0603				0.00 %	
0005-----	R354					
	RD00069				3.0000	2003/03/17
	SMD fixed resistor 1/10W			PCS	1	N
	120 ±5% 0603				0.00 %	
0006-----	R140 R143 R355					
	RD00076				2.0000	2003/03/17
	SMD fixed resistor 1/10W			PCS	1	N
	330 ±5% 0603				0.00 %	
0007-----	R359 R360					
	RD00078				3.0000	2003/03/17
	SMD fixed resistor 1/10W			PCS	1	N
	470 ±5% 0603				0.00 %	
0008-----	R356 R357 R358					
	RD00347				4.0000	2003/03/17
	SMD fixed resistor 1/10W			PCS	1	N
	510 ±5% 0603				0.00 %	
0009-----	R286 R351 R352 R361					
	RD00348				1.0000	2003/03/17
	SMD fixed resistor 1/10W			PCS	1	N
	620 ±5% 0603				0.00 %	
0010-----	R362					
	RD00351				1.0000	2003/03/17
	SMD fixed resistor 1/10W			PCS	1	N
	1.3K ±5% 0603				0.00 %	
0011-----	R363					
	RD00085				12.0000	2003/03/17
	SMD fixed resistor 1/10W			PCS	1	N
	1.5K ±5% 0603				0.00 %	
0012-----	R176 R177 R178 R179 R180 R181 R182 R183 R451 R452 R453 R454					
	RD00086				32.0000	2003/03/17

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 Item No.: PF00232 Version: UNIT: PCS  
 DESCRIPTION: S-16 Date: 2003/03/17  
 S-16\_ALTO\_230V

Version	Item No	Loss %	Ver.	Unit	Cardinal	Effective Date
Component Remark	Item Description				Usage Rate	@:Phantom Layer
					Attrition Rate	
	SMD fixed resistor 1/10W 1.8K ±5% 0603			PCS	1	N
	R483 R484 R485 R486 R487 R488 R489 R490 R491 R492 R493 R494 R495 R496 R497 R498 R499 R500 R501 R502 R503 R504 R505 R506 R507 R508 R509 R510 R511 R512 R513 R514				0.00 %	
0013-----	RD00087				2.0000	2003/03/17
	SMD fixed resistor 1/10W 2.0K ±5% 0603			PCS	1	N
	R252 R364				0.00 %	
0014-----	RD00088				12.0000	2003/03/17
	SMD fixed resistor 1/10W 2.2K ±5% 0603			PCS	1	N
	R82 R83 R84 R85 R86 R88 R89 R90 R367 R368 R369 R370				0.00 %	
0015-----	RD00090				8.0000	2003/03/17
	SMD fixed resistor 1/10W 3.0K ±5% 0603			PCS	1	N
	R17 R19 R21 R24 R28 R29 R31 R33				0.00 %	
0016-----	RD00352				4.0000	2003/03/25
	SMD fixed resistor 1/10W 3.6K ±5% 0603			PCS	1	N
	R299 R300 R162 R163				0.00 %	
0017-----	RD00092				8.0000	2003/03/17
	SMD fixed resistor 1/10W 3.9K ±5% 0603			PCS	1	N
	R18 R20 R22 R23 R25 R26 R30 R34				0.00 %	
0018-----	RD00094				98.0000	2003/03/25
	SMD fixed resistor 1/10W 5.1K ±5% 0603			PCS	1	N
	R78 R79 R80 R81 R91 R93 R101 R102 R103 R109 R112 R113 R119 R120 R121 R164 R165 R166 R167 R168 R169 R170 R171 R172 R173 R174 R175 R184 R185 R186 R187 R188 R189 R190 R191 R192 R193 R194 R195 R196 R197 R198 R199 R200 R201 R202 R203 R204 R205 R206 R207 R208 R209 R210 R211 R212 R213 R214 R215 R216 R217 R218 R219 R220 R221 R222 R223 R224 R225 R226 R227 R228 R229 R230 R231 R232 R233 R234 R235 R236 R237 R238 R239 R240 R241 R242 R243 R244 R245 R246 R247 R248 R249 R99 R96 R106 R116 R124				0.00 %	
0019-----	RD00095				19.0000	2003/03/17
	SMD fixed resistor 1/10W 5.6K ±5% 0603			PCS	1	N
	R307 R308 R365 R371 R378 R379 R380 R381 R382 R383 R384 R385 R386 R387				0.00 %	
0020-----	RD00096				17.0000	2003/03/17
	SMD fixed resistor 1/10W 6.2K ±5% 0603			PCS	1	N
	R1 R2 R3 R4 R5 R6 R7 R8 R9 R10 R11 R12 R13 R14 R15 R16 R139				0.00 %	
0021-----	RD00097				28.0000	2003/03/17
	SMD fixed resistor 1/10W 6.8K ±5% 0603			PCS	1	N
					0.00 %	

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 DESCRIPTION: S-16 Date: 2003/03/17  
 S-16\_ALTO\_230V

Version	Item No	Loss %	Ver.	Unit	Cardinal	Effective Date
Component Remark	Item Description				Usage Rate	@:Phantom Layer
					Attrition Rate	
0022-----	R27 R32 R35 R40 R50 R51 R56 R431 R432 R433 R434 R435 R436 R437 R438 R439 R440 R441 R442 R443 R444 R445 R446 R447 R448 R449 R450 R45					
	RD00101				79.0000	2003/03/25
	SMD fixed resistor 1/10W			PCS	1	N
	10K ±5% 0603				0.00 %	
0023-----	R36 R37 R38 R39 R41 R42 R43 R44 R46 R47 R48 R49 R52 R53 R54 R55 R57 R58 R59 R60 R61 R62 R63 R64 R65 R66 R67 R68 R69 R70 R71 R72 R74 R75 R76 R77 R87 R92 R94 R95 R97 R98 R100 R104 R105 R107 R108 R110 R111 R114 R115 R117 R118 R122 R123 R125 R126 R127 R128 R129 R130 R131 R132 R133 R134 R135 R136 R137 R138 R141 R142 R348 R349 R375 R376 R531 R533 R535 R537					
	RD00102				14.0000	2003/03/17
	SMD fixed resistor 1/10W			PCS	1	N
	12K ±5% 0603				0.00 %	
0024-----	R328 R330 R467 468 R469 R470 R474 R471 R472 R473 R532 R536 R538					
	RD00103				4.0000	2003/03/17
	SMD fixed resistor 1/10W			PCS	1	N
	15K ±5% 0603				0.00 %	
0025-----	R284 R285 R339 R340					
	RD00104				20.0000	2003/03/17
	SMD fixed resistor 1/10W			PCS	1	N
	18K ±5% 0603				0.00 %	
0026-----	R250 R251 R254 R255 R256 R257 R258 R259 R260 R261 R262 R263 R264 R265 R266 R267 R455 R456 R457 R458					
	RD00306				18.0000	2003/03/17
	SMD fixed resistor 1/10W			PCS	1	N
	20K ±5% 0603				0.00 %	
0027-----	R309 R310 R311 R312 R313 R314 R315 R316 R317 R318 R319 R320 R321 R322 R323 R324 R327 R329					
	RD00105				12.0000	2003/03/17
	SMD fixed resistor 1/10W			PCS	1	N
	22K ±5% 0603				0.00 %	
0028-----	R288 R289 R290 R291 R523 R524 R525 R526 R527 R528 R529 R530					
	RD00106				24.0000	2003/03/17
	SMD fixed resistor 1/10W			PCS	1	N
	27K ±5% 0603				0.00 %	
0029-----	R268 R269 R270 R271 R272 R273 R274 R275 R276 R277 R278 R279 R280 R281 R282 R283 R459 R460 R461 R462 R463 R464 R465 R466					
	RD00107				4.0000	2003/03/17
	SMD fixed resistor 1/10W			PCS	1	N
	30K ±5% 0603				0.00 %	
0030-----	R73 R396 R397 R298					
	RD00353				8.0000	2003/03/17
	SMD fixed resistor 1/10W			PCS	1	N
	36K ±5% 0603				0.00 %	
0031-----	R301 R302 R303 R304 R305 R306 R342 R343					
	RD00110				2.0000	2003/03/17

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 Item No.: PF00232 Version UNIT: PCS  
 DESCRIPTION: S-16 Date: 2003/03/17  
 S-16\_ALTO\_230V

Version	Item No	Loss %	Ver.	Unit	Cardinal	Effective Date
Component Remark	Item Description				Usage Rate	@:Phantom Layer
					Attrition Rate	
0032-----	SMD fixed resistor 1/10W 43K ±5% 0603 R325 R326			PCS	1 0.00 %	N
	RD00111				22.0000	2003/03/17
0033-----	SMD fixed resistor 1/10W 47K ±5% 0603 R144 R145 R146 R147 R148 R149 R150 R151 R152 R153 R415 R416 R417 R418 R419 R420 R421 R422 R423 R424 R425 R426			PCS	1 0.00 %	N
	RD00112				4.0000	2003/03/17
0034-----	SMD fixed resistor 1/10W 56K ±5% 0603 R292 R293 R294 R295			PCS	1 0.00 %	N
	RD00113				2.0000	2003/03/17
0035-----	SMD fixed resistor 1/10W 62K ±5% 0603 R332 R334			PCS	1 0.00 %	N
	RD00116				8.0000	2003/03/17
0036-----	SMD fixed resistor 1/10W 100K ±5% 0603 R331 R333 R335 R336 R337 R338 R344 R345			PCS	1 0.00 %	N
	RD00119				17.0000	2003/03/17
0037-----	SMD fixed resistor 1/10W 220K ±5% 0603 R341 R475 R476 R477 R478 R479 R480 R481 R482 R515 R516 R517 R518 R519 R520 R521 R522			PCS	1 0.00 %	N
	RD00125				24.0000	2003/03/17
0038-----	SMD fixed resistor 1/10W 1.0M ±5% 0603 R391 R392 R393 R394 R395 R396 R397 R398 R399 R400 R401 R402 R403 R404 R405 R406 R407 R408 R409 R410 R411 R412 R413 R414			PCS	1 0.00 %	N
	RD00115				1.0000	2003/03/17
0039-----	SMD fixed resistor 1/10W 82K ±5% 0603 R366			PCS	1 0.00 %	N
	CI00051				79.0000	2003/03/17
0040-----	SMD ceramic capacitor 0603 22PF/50V NPO ±5% C96 C97 C98 C99 C100 C101 C102 C103 C104 C105 C106 C107 C108 C109 C110 C111 C112 C113 C114 C115 C116 C117 C118 C119 C120 C121 C122 C123 C124 C125 C126 C127 C154 C155 C158 C159 C161 C164 C165 C166 C168 C172 C173 C175 C176 C177 C178 C179 C180 C181 C182 C183 C184 C185 C186 C187 C188 C189 C190 C191 C192 C193 C194 C195 C196 C251 C252 C263 C264 C265 C266 C281 C282 C283 C284 C367 C368 C371 C372			PCS	1 0.00 %	N
	CI00059				6.0000	2003/03/17
	SMD ceramic capacitor 0603 100PF/50V NPO ±5%			PCS	1 0.00 %	N



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 DESCRIPTION: S-16 Date: 2003/03/17  
 S-16\_ALTO\_230V

Version	Item No	Loss %	Ver.	Unit	Cardinal	Effective Date
Component Remark	Item Description				Usage Rate	@:Phantom Layer
					Attrition Rate	
0041-----	C259 C260 C261 C262 C267 C268 CI00075				91.0000	2003/03/17
	SMD ceramic capacitor 0603			PCS	1	N
	0.1uF/50V Y5V +80,-20%				0.00 %	
	C197 C198 C199 C200 C201 C202 C203 C204 C205 C206 C207 C208 C209 C210 C211 C212 C213 C214 C215 C216 C217 C218 C219 C229 C221 C222 C223 C224 C225 C226 C227 C228 C229 C230 C231 C232 C233 C234 C235 C236 C237 C238 C239 C240 C241 C242 C243 C244 C245 C246 C247 C248 C249 C250 C269 C285 C286 C287 C288 C289 C290 C291 C292 C293 C294 C295 C296 C297 C298 C299 C300 C301 C302 C303 C304 C305 C306 C307 C308 C309 C310 C311 C312 C313 C314 C315 C316 C373 C374 C375 C376					
0042-----	SE00028				14.0000	2003/03/17
	diode			PCS	1	N
	BAS316,115				0.00 %	
	D2 D3 D4 D5 D6 D7 D8 D9 D10 D11 D12 D15 D16 D17					
0043-----	SF00004				3.0000	2003/03/17
	SMD transistor			PCS	1	N
	2SA1036K(R)(MMBT3906LT1)				0.00 %	
	TR13 TR14 TR19					
0044-----	SF00010				24.0000	2003/03/17
	SMD transistor			PCS	1	N
	2SC2412K(R)(MMBT3904LT1)				0.00 %	
	TR1 TR2 TR3 TR4 TR5 TR6 TR7 TR8 TR9 TR10 TR11 TR12 TR15 TR16 TR17 TR18 TR25 TR26 TR27 TR28 TR29 TR30 TR31 TR32					
0045-----	SF00039				5.0000	2003/03/17
	SMD field effect transistor			PCS	1	N
	MMBFJ112/PMBFJ112(SOT-23)				0.00 %	
	TR20 TR21 TR22 TR23 TR24					
0046-----	SE00008				3.0000	2003/03/17
	SMD rectifier diode			PCS	1	N
	DA204K/T-146				0.00 %	
	D1 D13 D14					
0047-----	SG00122				45.0000	2003/03/17
	SMD integrated circuit			PCS	1	N
	NJM4580M-TE3				0.00 %	
	U1 U2 U3 U4 U5 U6 U7 U8 U9 U10 U11 U12 U13 U14 U15 U16 U17 U18 U19 U20 U21 U22 U23 U24 U25 U26 U27 U36 U37 U38 U39 U40 U41 U42 U43 U44 U45 U46 U47 U48 U49 U50 U51 U52 U53					
0048-----	SG00032				6.0000	2003/03/17
	SMD integrated circuit			PCS	1	N
	LM339DR/(TI)				0.00 %	
	U30 U31 U34 U32 U33 U35					
0049-----	RD00093				13.0000	2003/03/25
	SMD fixed resistor 1/10W			PCS	1	N
	4.7K ±5% 0603				0.00 %	
	R154 R155 R156 R157 R158 R159 R160 R161 R253 R427 R428 R429 R430					

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 Item No.: PF00232 Version UNIT: PCS  
 DESCRIPTION: S-16 Date: 2003/03/17  
 S-16\_ALTO\_230V

Version	Item No	Loss %	Ver.	Unit	Cardinal Usage Rate	Effective Date @:Phantom Layer
0052-----	HK03652				1.0000	2003/03/17
	K-PCb			PCS	1	N
	P-S16-PU2-DIP				0.00	%
0001-----	RA00505				16.0000	2003/03/17
	precise resistor 1/4W			PCS	1	N
	6.81K M type				0.00	%
	R1 R2 R3 R4 R5 R6 R7 R8 R73 R76 R91 R92 R109 R110 R139 R140					
0002-----	CB00003				24.0000	2003/03/17
	electrolytic capacitor			PCS	1	N
	0.22uF/50V 5*11mm				0.00	%
	C85 C86 C87 C88 C89 C90 C91 C92 C93 C94 C95 C96 C209 C210 C211 C212 C213 C214 C215 C216 C217 C218 C219 C220					
0003-----	CB00029				16.0000	2003/03/17
	electrolytic capacitor			PCS	1	N
	22uF/35V 5*11mm				0.00	%
	C9 C10 C19 C20 C25 C26 C27 C28 C29 C30 C31 C32 C33 C42 C43 C48					
0004-----	CB00175				26.0000	2003/06/13
	electrolytic capacitor			PCS	1	N
	47uF/25V SLL 5*11mm				0.00	%
	C99 C100 C101 C102 C103 C104 C105 C106 C107 C108 C109 C110 C111 C112 C116 C117 C118 C119 C221 C222 C223 C224 C225 C226 C227 C228					
0005-----	CB00042				16.0000	2003/03/17
	electrolytic capacitor			PCS	1	N
	47uF/63V 105 LZ 8*11mm				0.00	%
	C11 C12 C13 C14 C15 C16 C17 C18 C113 C114 C115 C168 C169 C170 C171 C172					
0006-----	CB00074				8.0000	2003/03/17
	electrolytic capacitor			PCS	1	N
	1000uF/10V 8*11mm				0.00	%
	C44 C45 C46 C7 C189 C190 C191 C192					
0007-----	SB00050				16.0000	2003/03/17
	transistor			PCS	1	N
	2SA1316-GR				0.00	%
	TR12 TR14 TR15 TR16 TR17 TR18 TR19 TR20 TR21 TR22 TR23 TR24 TR25 TR26 TR27 TR28					
0008-----	SD00007				2.0000	2003/03/17
	integrated circuit			PCS	1	N
	BA15218N (M5218L substitute)				0.00	%
	U24 U25					
0009-----	HI00162				12.0000	2003/03/17
	push-button switch			PCS	1	N
	2 paragraphs 6p PS-22E8552L				0.00	%
	SW1 SW2 SW3 SW4 SW5 SW6 SW7 SW8 SW9 SW10 SW11 SW12					
0010-----	HC00126				8.0000	2003/03/17
	MIC jack for balance			PCS	1	N
	JY-5042-030G female plug 180°				0.00	%
	X1 X3 X5 X7 X28 X30 X32 X34					

Multi-Level BOM Structure Listing

Report No.: IEBO\_P02 Date: 2003/09/30  
 Prepared by: 000011[YAFEN] Page No.: 13/19  
 Item No.: PF00232 Version UNIT: PCS  
 DESCRIPTION: S-16 Date: 2003/03/17  
 S-16\_ALTO\_230V

Version	Item No	Loss %	Ver.	Unit	Cardinal Usage Rate	Effective Date @:Phantom Layer
0011-----	HC00125 MIC jack JY-6351G-02-250 X2 X4 X6 X8 X10 X11 X12 X13 X14 X15 X16 X17 X18 X19 X20 X21 X22 X23 X24 X25 X26 X29 X31 X33 X35			PCS	25.0000 1 0.00 %	2003/03/17 N
0012-----	HC00403 RCA socket SCP6873NS3232T2 4P X27			PCS	1.0000 1 0.00 %	2003/03/17 N
0013-----	HA01507 header wiring AF:W268 7P(male)-7P(parent) 140 CN2			PCS	1.0000 1 0.00 %	2003/03/17 N
0014-----	HA01506 header wiring AF:W267 9P(male)-9P(parent) 140 CN1 CN6			PCS	2.0000 1 0.00 %	2003/03/17 N
0015-----	HA01583 header wiring AF:W364 12P-12P 40 CN3 CN4 CN5 CN7			PCS	4.0000 1 0.00 %	2003/05/31 N
0016-----	RC00296 potentiometer O10K RV09BC-40-30F-02C10K VR1 VR2 VR3 VR4 VR5 VR6 VR7 VR8			PCS	8.0000 1 0.00 %	2003/03/17 N
0017-----	HK03651 K-PCb P-S16-PU2-SMD			PCS	1.0000 1 0.00 %	2003/03/17 N
0001-----	HB00896 pc board S16PU2_VER030714			PCS	1.0000 1 0.00 %	2003/03/17 N
0002-----	RD00355 SMD fixed resistor 1/10W 4.7 ±5% 0603 R9 R10 39 R40 R41 R42 R43 R44 R45 R46 R47 R48 R49 R50 R51 R52 R53 R54 R55 R56 R57 R58 R59 R60			PCS	24.0000 1 0.00 %	2003/03/17 N
0003-----	RD00069 SMD fixed resistor 1/10W 120 ±5% 0603 R111 R112 R113 R114 R115 R116 R117 R118			PCS	8.0000 1 0.00 %	2003/03/17 N
0004-----	RD00078 SMD fixed resistor 1/10W 470 ±5% 0603 R83 R84 R85 R86 R87 R88 R89 R90 R261 R262 R263 R264 R265 R266 R267 R268			PCS	16.0000 1 0.00 %	2003/03/17 N
0005-----	RD00083 SMD fixed resistor 1/10W			PCS	2.0000 1 N	2003/03/17

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Report No.: IEBO\_P02 Date: 2003/09/30  
 Prepared by: 000011[YAFEN] Page No.: 14/19  
 Item No.: PF00232 Version UNIT: PCS  
 DESCRIPTION: S-16 Date: 2003/03/17  
 S-16\_ALTO\_230V

Version	Item No	Loss %	Ver.	Unit	Cardinal	Effective Date
Component Remark	Item Description				Usage Rate	@:Phantom Layer
					Attrition Rate	
	1.0K ±5% 0603				0.00 %	
	R203 R204					
0006-----	RD00351				8.0000	2003/03/17
	SMD fixed resistor 1/10W			PCS	1	N
	1.3K ±5% 0603				0.00 %	
	R153 R154 R155 R156 R297 R298 R299 R300					
0007-----	RD00087				8.0000	2003/03/17
	SMD fixed resistor 1/10W			PCS	1	N
	2.0K ±5% 0603				0.00 %	
	R205 R206 R207 R208 R209 R210 R211 R212					
0008-----	RD00097				8.0000	2003/03/17
	SMD fixed resistor 1/10W			PCS	1	N
	6.8K ±5% 0603				0.00 %	
	R199 R200 R201 R202 R301 R302 R303 R304					
0009-----	RD00101				26.0000	2003/07/31
	SMD fixed resistor 1/10W			PCS	1	N
	10K ±5% 0603				0.00 %	
	R161 R162 R163 R164 R165 R166 R167 R168 R169 R170 R173 R176 R178 R180					
	R183 R185 R186 R187 R189 R190 R191 R193 R194 R195 R197 R198					
0010-----	RD00306				32.0000	2003/03/17
	SMD fixed resistor 1/10W			PCS	1	N
	20K ±5% 0603				0.00 %	
	R61 R62 R63 R64 R65 R66 R67 R68 R69 R70 R71 R72 R74 R75 R77 R78 R79					
	R80 R81 R82 R221 R222 R223 R224 R225 R226 R227 R228 R229 R230 R231					
	R232					
0011-----	RD00113				8.0000	2003/03/17
	SMD fixed resistor 1/10W			PCS	1	N
	62K ±5% 0603				0.00 %	
	R157 R158 R159 R160 R293 R294 R295 R296					
0012-----	RD00201				16.0000	2003/03/17
	SMD precise resistor 1/10W			PCS	1	N
	1.50K ±1% 0603				0.00 %	
	R101 R102 R103 R104 R105 R106 R107 R108 R213 R214 R215 R216 R217 R218					
	R219 R220					
0013-----	RD00204				56.0000	2003/03/17
	SMD precise resistor 1/10W			PCS	1	N
	2.49K ±1% 0603				0.00 %	
	R11 R12 R13 R14 R15 R16 R17 R18 R19 R20 R21 R22 R23 R24 R25 R26 R27 R28					
	R29 R30 R31 R32 R33 R34 R35 R36 R37 R38 R233 R234 R235 R236 R237 R238					
	R239 R240 R241 R242 R243 R244 R245 R246 R247 R248 R249 R250 R251 R252					
	R253 R254 R255 R256 R257 R258 R259 R260					
0014-----	RD00210				32.0000	2003/03/17
	SMD precise resistor 1/10W			PCS	1	N
	5.11K ±1% 0603				0.00 %	
	R123 R124 R125 R126 R127 R128 R129 R139 R131 R132 R133 R134 R135 R136					
	R137 R138 R269 R270 R271 R272 R273 R274 R275 R276 R277 R278 R279 R280					

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Report No.: IEBO\_P02 Date: 2003/09/30  
 Prepared by: 000011[YAFEN] Page No.: 15/19  
 Item No.: PF00232 Version: UNIT: PCS  
 DESCRIPTION: S-16 Date: 2003/03/17  
 S-16\_ALTO\_230V

Version	Item No	Loss %	Ver.	Unit	Cardinal	Effective Date
Component Remark	Item Description				Usage Rate	@:Phantom Layer
					Attrition Rate	
0015-----	R281 R282 R283 R284 RD00287				16.0000	2003/03/17
	SMD precise resistor 1/10W			PCS	1	N
	6.34K ±1% 0603				0.00 %	
	R93 R94 R95 R96 R97 R98 R99 R100 R141 R142 R151 R152 R172 R175 R181 R182					
0016-----	RD00214				24.0000	2003/07/31
	SMD precise resistor 1/10W			PCS	1	N
	10.0K ±1% 0603				0.00 %	
	R143 R144 R145 R146 R147 R148 R149 R150 R285 R286 R287 R288 R289 R290 R291 R292 R171 R174 R177 R179 R184 R188 R192 R196					
0017-----	RD00004				2.0000	2003/03/17
	SMD fixed resistor 1/10W			PCS	1	N
	47 ±5% 0805				0.00 %	
	R346 R347					
0018-----	RD00007				4.0000	2003/03/17
	SMD fixed resistor 1/10W			PCS	1	N
	120 ±5% 0805				0.00 %	
	R119 R120 R121 R122					
0019-----	CI00051				50.0000	2003/03/17
	SMD ceramic capacitor 0603			PCS	1	N
	22PF/50V NPO ±5%				0.00 %	
	C49 C50 C51 C52 C53 C54 C55 C56 C57 C58 C59 C60 C61 C62 C63 C64 C65 C66 C67 C68 C71 C72 C73 C74 C77 C78 C79 C80 C81 C82 C83 C84 C97 C98 C193 C194 C195 C196 C197 C198 C199 C201 C202 C203 C204 C205 C206 C207 C208 C200					
0020-----	CI00059				16.0000	2003/03/17
	SMD ceramic capacitor 0603			PCS	1	N
	100PF/50V NPO ±5%				0.00 %	
	C152 C153 C154 C155 C156 C157 C158 C159 C160 C161 C162 C163 C164 C165 C166 C167					
0021-----	CI00062				8.0000	2003/03/17
	SMD ceramic capacitor 0603			PCS	1	N
	330PF/50V NPO ±5 %				0.00 %	
	C21 C22 C23 C24 C69 C70 C75 C76					
0022-----	CI00065				16.0000	2003/03/17
	SMD ceramic capacitor 0603			PCS	1	N
	0.001uF/50V X7R ±10%				0.00 %	
	C34 C35 C36 C37 C38 C39 C40 C41 C181 C182 C183 C184 C185 C186 C187 C188					
0023-----	CI00071				16.0000	2003/03/17
	SMD ceramic capacitor 0603			PCS	1	N
	0.01uF/50V X7R ±10%				0.00 %	
	C1 C2 C3 C4 C5 C6 C7 C8 C173 C174 C175 C176 C177 C178 C179 C180					
0024-----	CI00075				42.0000	2003/03/17
	SMD ceramic capacitor 0603			PCS	1	N
	0.1uF/50V Y5V +80,-20%				0.00 %	

Multi-Level BOM Structure Listing

Report No.: IEBO\_P02 Date: 2003/09/30  
 Prepared by: 000011[YAFEN] Page No.: 16/19  
 Item No.: PF00232 Version UNIT: PCS  
 DESCRIPTION: S-16 Date: 2003/03/17  
 S-16\_ALTO\_230V

Version	Item No	Loss %	Ver.	Unit	Cardinal	Effective Date
Component Remark	Item Description				Usage Rate	@:Phantom Layer
					Attrition Rate	
	C120 C121 C122 C123 C124 C125 C126 C127 C128 C129 C132 C133 C134 C135 C136 C140 C141 C142 C144 C145 C146 C147 C149 C150 C151 C229 C230 C231 C232 C233 C234 C235 C236 C237 C238 C239 C240 C241 C242 C243 C244					
0025-----	SG00122				20.0000	2003/03/17
	SMD integrated circuit			PCS	1	N
	NJM4580M-TE3				0.00 %	
	U1 U2 U3 U4 U5 U6 U7 U8 U11 U13 U14 U15 U16 U17 U18 U19 U20 U21 U22 U23					
0026-----	SE00028				8.0000	2003/03/17
	diode			PCS	1	N
	BAS316,115				0.00 %	
	D1 D2 D3 D4 D5 D6 D7 D8					
0027-----	SF00004				24.0000	2003/03/17
	SMD transistor			PCS	1	N
	2SA1036K(R)(MMBT3906LT1)				0.00 %	
	TR1 TR2 TR3 TR4 TR5 TR6 TR7 TR8 TR9 TR10 TR11 TR12 TR29 TR30 TR31 TR3: TR33 TR34 TR35 TR36 TR37 TR38 TR39 TR40					
0053-----	HK03653				1.0000	2003/03/17
	K-PCb			PCS	1	N
	P-S16-PU1				0.00 %	
0001-----	HB00898				1.0000	2003/03/17
	pc board			PCS	1	N
	S16PU1_VER021031				0.00 %	
0002-----	RA00332				24.0000	2003/03/17
	fixed resistor 1/8W			PCS	1	N
	120 M type				0.00 %	
	R1 R2 R3 R4 R5 R6 R7 R8 R9 R10 R11 R12 R13 R14 R15 R16 R17 R18 R19 R29 R25 R26 R27 R28					
0003-----	RA00376				4.0000	2003/03/17
	fixed resistor 1/8W			PCS	1	N
	5.1K M type				0.00 %	
	R21 R22 R23 R24					
0004-----	HI00163				1.0000	2003/03/17
	push-button switch			PCS	1	N
	2 stage 12P PS-42E85				0.00 %	
	SW1					
0005-----	HA01925				2.0000	2003/03/17
	jumper wire			PCS	1	N
	10mm				0.00 %	
	JP1 JP2					
0006-----	HC00392				2.0000	2003/03/17
	balance MIC jack			PCS	1	N
	JY-5030-030G 180°				0.00 %	
	X9 X10					
0007-----	HC00125				12.0000	2003/03/25
	MIC jack			PCS	1	N
	JY-6351G-02-250				0.00 %	

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 Prepared by: 000011[YAFEN] Page No.: 17/19  
 Item No.: PF00232 Version UNIT: PCS  
 DESCRIPTION: S-16 Date: 2003/03/17  
 S-16\_ALTO\_230V

Version	Item No	Loss %	Ver.	Unit	Cardinal	Effective Date
Component Remark	Item Description				Usage Rate	@:Phantom Layer
	X1 X2 X3 X4 X5 X6 X7 X8 X11 X12 X13 X14				Attrition Rate	
0008-----	HC00252 row-wire header 7P 2.0mm 90° CN2			PCS	1.0000 1 0.00 %	2003/03/17 N
0009-----	HC00260 row wire header 9P 2.0mm 180° CN1 CN3			PCS	2.0000 1 0.00 %	2003/03/17 N
0054-----	HK00929 PC board P-S8PWR			PCS	1.0000 1 0.00 %	2003/03/17 N
0001-----	HB00716 PC board S8PWR_VER020820			PCS	1.0000 1 0.00 %	2002/07/31 N
0002-----	RA00242 fixed resistor 1/4W 10K M type R2			PCS	1.0000 1 0.00 %	2002/07/31 N
0003-----	RA00159 fixed resistor 1/4W 10 Mr type R3			PCS	1.0000 1 0.00 %	2002/07/31 N
0004-----	SA00094 rectifier diode 1N4002/100V D1 D10 D11 D12 D13 D14 D2 D3 D4 D5 D6 D7 D8 D9			PCS	14.0000 1 0.00 %	2002/07/31 N
0005-----	SA00127 zener diode 1/2W 47V 1N5261 ZD1			PCS	1.0000 1 0.00 %	2002/07/31 N
0006-----	RA00250 fixed resistor 1/4W 20K M type R4			PCS	1.0000 1 0.00 %	2002/07/31 N
0007-----	RA00301 fixed resistor 1/4W 390K M type R1			PCS	1.0000 1 0.00 %	2002/07/31 N
0008-----	CB00039 electrolytic capacitor 47uF/25V 5*11mm C3 C4			PCS	2.0000 1 0.00 %	2002/07/31 N
0009-----	CB00043 electrolytic capacitor 47uF/100V 10*12mm			PCS	2.0000 1 0.00 %	2002/07/31 N

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Report No.: IEBO\_P02 Date: 2003/09/30  
 Prepared by: 000011[YAFEN] Page No.: 18/19  
 Item No.: PF00232 Version UNIT: PCS  
 DESCRIPTION: S-16 Date: 2003/03/17  
 S-16\_ALTO\_230V

Version	Item No	Loss %	Ver.	Unit	Cardinal	Effective Date
Component Remark	Item Description				Usage Rate	@:Phantom Layer
					Attrition Rate	
	<b>C8 C9</b>					
0010-----	CB00052				2.0000	2002/07/31
	electrolytic capacitor			PCS	1	N
	100uF/100V 13*20mm				0.00 %	
	<b>C5 C6</b>					
0011-----	CB00061				1.0000	2002/07/31
	electrolytic capacitor			PCS	1	N
	220uF/100V 12*25mm				0.00 %	
	<b>C7</b>					
0012-----	CB00082				2.0000	2002/07/31
	electrolytic capacitor			PCS	1	N
	2200uF/25V 16*20mm				0.00 %	
	<b>C1 C2</b>					
0013-----	SD00077				1.0000	2002/07/31
	integrated circuit			PCS	1	N
	7815(TO-220)				0.00 %	
	<b>TR1</b>					
0014-----	SD00079				1.0000	2002/07/31
	integrated circuit			PCS	1	N
	7915(TO-220)				0.00 %	
	<b>TR2</b>					
0015-----	SB00043				1.0000	2002/07/31
	transistor			PCS	1	Y
	TIP122(ST)				0.00 %	
	<b>TR3</b>					
0016-----	HC00076				1.0000	2002/07/31
	row-wire header			PCS	1	N
	2P 2.5mm 180°				0.00 %	
	<b>CN2</b>					
0017-----	HC00080				1.0000	2002/07/31
	row-wire header			PCS	1	N
	6P 2.5mm 180°				0.00 %	
	<b>CN3</b>					
0018-----	HC00089				1.0000	2002/07/31
	row-wire header			PCS	1	N
	3P 3.9mm 180°				0.00 %	
	<b>CN1</b>					
0019-----	HA01922				3.0000	2002/07/31
	jumper wire			PCS	1	N
	8mm				0.00 %	
	<b>JP5 JP6 JP7</b>					
0020-----	HA01925				6.0000	2002/07/31
	jumper wire			PCS	1	N
	10mm				0.00 %	
	<b>JP1 JP2 JP3 JP4 JP8 JP9</b>					
0055-----	NE11065				4.0000	2003/03/17



Multi-Level BOM Structure Listing

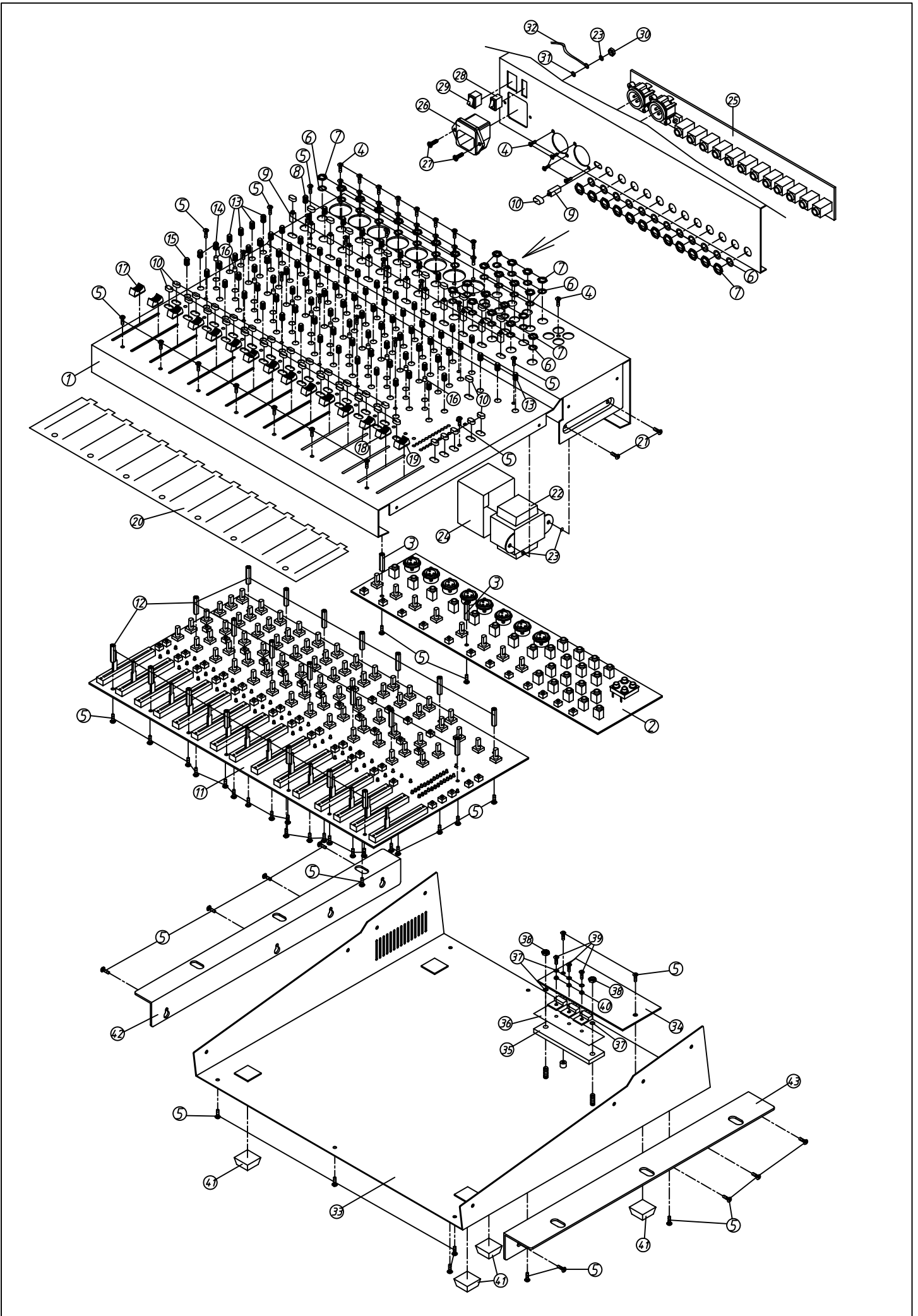
Report No.: IEBO\_P02  
 Prepared by 000011[YAFEN]  
 Item No. PF00232 Version  
 DESCRIPTION: S-16  
 S-16\_ALTO\_230V

Date 2003/09/30  
 Page No.: 19/19

UNIT: PCS  
 Date: 2003/03/17

Version	Item No	Loss %	Ver.	Unit	Cardinal	Effective Date
Component Remark	Item Description				Usage Rate	@:Phantom Layer
					Attrition Rate	
	label 30*11mm			PCS	1	N
	S-16				0.00 %	
0056-----	NB02259				1.0000	2003/03/17
	paper sheet			PCS	1	N
	S-16 left				0.00 %	
0057-----	NB02260				1.0000	2003/03/17
	paper sheet			PCS	1	N
	S-16 right				0.00 %	
0058-----	NB02262				1.0000	2003/03/17
	colour box			PCS	1	N
	S-16				0.00 %	
0059-----	NB02261				1.0000	2003/03/17
	outter carton 2 hole			PCS	2	N
	S-16				0.00 %	
0060-----	NF01275				1.0000	2003/03/17
	instruction-english			PCS	1	N
	S-16 ALTO				0.00 %	
0061-----	MI01733				1.0000	2003/04/12
	separating shade			PCS	1	
	62.5*61*49(S-16)				0.00 %	

# 8. Exploded Views



		Mechanical Parts List		
Model No.		ALTO S-16		
NO	Item No	Item Description		pcs
1	MA03687	panel	S-16	1
2	HK03652	K-PCb	P-S16-PU2-DIP	1
3	MG00305	copper pole	M3*24*0.5PH	2
4	MG00061	screw	M3*10	21
5	MG00041	screw	M3*6	62
6	MF00061	washer	JY-6351G-02-250	37
7	ME00060	socket nut	JY-6351G-02-250	37
8	NI02084	knob	10.5*18	8
9	NI01862	key	5.5*5.5*14.5	13
10	NI01863	key	5.5*W10*7.5	44
11	HK03650	K-PCb	P-S16-MN1-DIP	1
12	MG00304	copper pole	M3*14*0.5PH	15
13	NI02083	knob	10.5*18	51
14	NI02081	knob	10.5*18	26
15	NI02082	knob	10.5*18	12
16	NI02377	knob	5.5*7.5mm(内3.3*3.3mm)	12
17	NI02309	knob	24*11.5*11	12
18	NI02352	knob	24*11.5*11	2
19	NI02353	knob	24*11.5*11	1
20	ND00233	non wonen	0.35t*402*79mm	1
21	MG00102	screw	M4*8	2
22	TC00175	transformer	PT-S16_230V	1
23	MF00038	washer	4* 7*1t	3
24	MI01733	separating shade	62.5*61*49(S-16)	1
25	HK03653	K-PCb	P-S16-PU1	1
26	HC00008	AC outlet	3515 A TYPE(RF-2004-C-4.8)	1
27	MG00042	screw	M3*10	2
28	HI00171	power switch	R612KKATOF1	1
29	HI00026	power switch	RA12KKATOF 2P	1
30	ME00016	colour nut	4m/m	1
31	MF00048	washer	4* 8*0.5t	1
32	HA01174	signle terminal wiring CF:W146	80 green/yellow	1
33	MB02491	rear board	S-16	1
34	HK00929	PC board	P-S8PWR	1
35	MJ01027	heat-sink	S-8	1
36	NC00022	insulation	0.3t*18*45mm S-8	1
37	MF00037	washer	3* 5*1t	5
38	ME00015	colour nut	3m/m	2
39	MG00162	screw	M3*8	3
40	NI02249	caushion	TW-1(T0-220)	3
41	NI00501	foot cushion	12.7*9*3t(SF-004)	4
42	MI00321	fixed support	S-16 left	1
43	MI00285	bracket	S-16	1