

Service Manual

Model: FLEX plus

SOUND ENHANCEMENT PROCESSOR



www.altoproaudio.com

Version: 1.1

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1.Specification

SPECIFICATIONS

AUDIO INPUT

Connectors	XLR and 1/4" jack
Type	RF filtered , servo balanced input
Impedance	50k ohms balanced, 25k ohms unbalanced
Max . input Level	+21dBu balanced and unbalanced
CMRR	typ. 40dB, >55 dB @1k hz

AUDIO OUTPUT

Connectors	XLR and 1/4" jack
Type	Electronically servo-balanced output stage (optional transformer-balanced).Automatic level correction for unbalanced use(6 dB)
Impedance	60 ohms balanced, 30 ohms unbalanced
Max . output Level	+22dBu, +20 dBm balanced and unbalanced

SYSTEM SPECIFICATIONS

Bandwidth	20 hz to 30k hz,,+0/-0.5 dB
Frequency Response	0.35 hz to 200k hz,+0/-3dB
Noise	>-110 dBu,unweighted,22 hz to 30k hz
THD	0.002% typ. @ +4 dBu,1k hz, Gain 1 0.002 % typ. @ +20 dBu,1k hz, Gain 1
IMD	0.01 % typ.SMPTE
Crosstalk	<-100 dB , 22HZ to 22k hz

BASS PROCESSOR

Type	"Dual Mode" Bass Processor
Low Mix	variable (0 to 6)

MULTIBAND PROCESSOR

Type	"Natural Sonic" processor with VSP (Variable Sound Processing)
NR Sensitivity	variable (0 to 6)
Tune	variable (1 to 8k hz)
Process	variable (Enhancer to Exciter)
High Mix	variable (0 to 6)

SURROUND SECTION

Surround variable (0 to 6)

FUNCTION SWITCHES AND CONTROLS

Shift	Switches the frequency of the Bass Processor between “Low” and “Ultra –Low”
Mode	Switches the bass sound from “Soft” to “Tight”
Auto NR	Activates the noise reduction system
In/Out	Activates the relay controlled hard-bypass
Solo	Monitors the pure effect signal (Solo funtion)
Surround	Activates the surround processor

INDICATORS

Effect	13 LED meter indicates the effect
Function switch	LED indiactor for each function switch
Input Level	4 element LED

POWER SUPPLY

AC 95-120 Vac / 60 hz	Fuse: 500mA(slow blow)
AC 210-240 Vac / 50 hz	Fuse: 315mA(slow blow)

POWER CONSUMPTION

11W

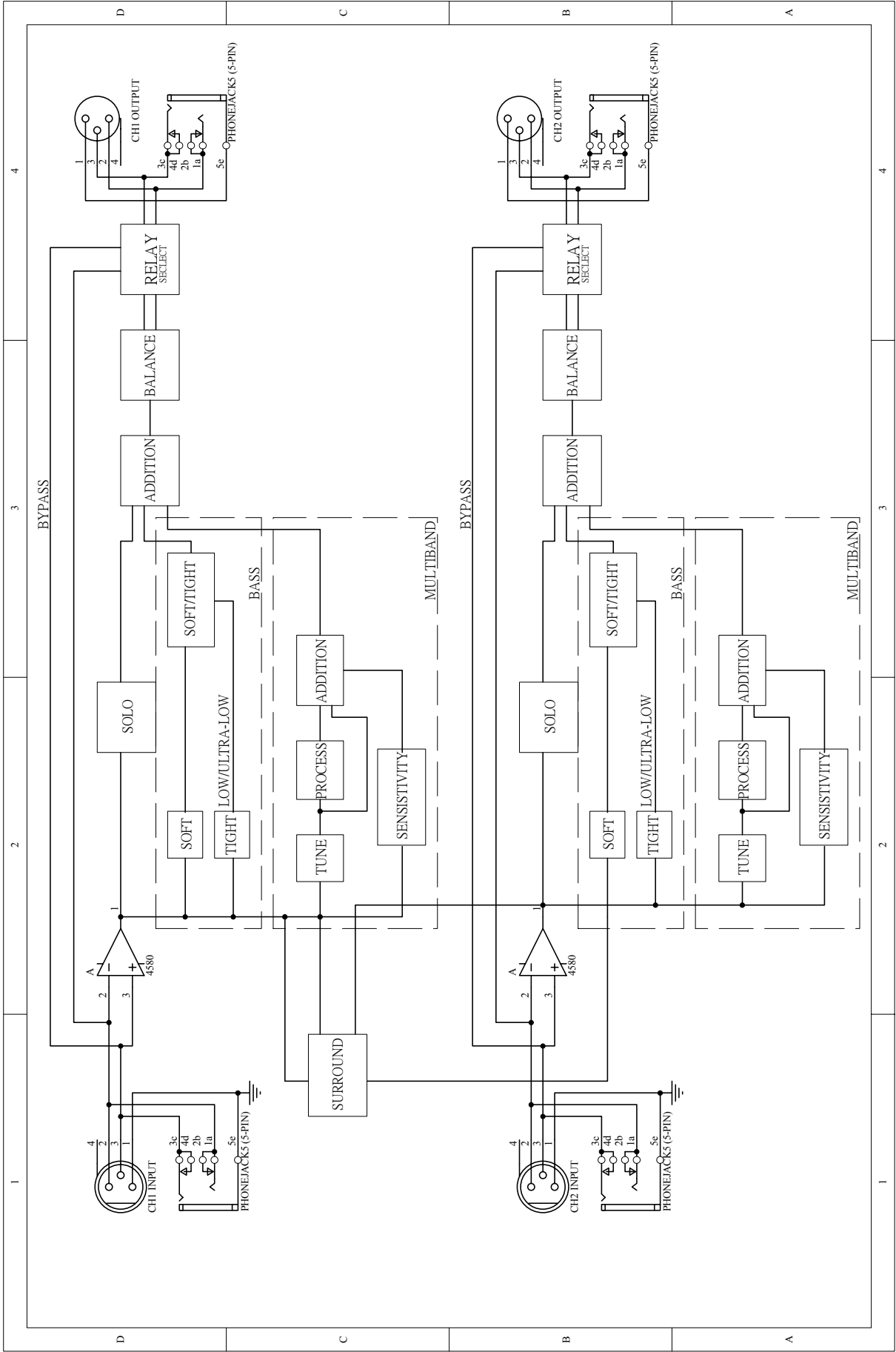
DIMENSIONS

483(W)×194.5(D) ×44(H)mm (19” ×7.7” ×1.7”)

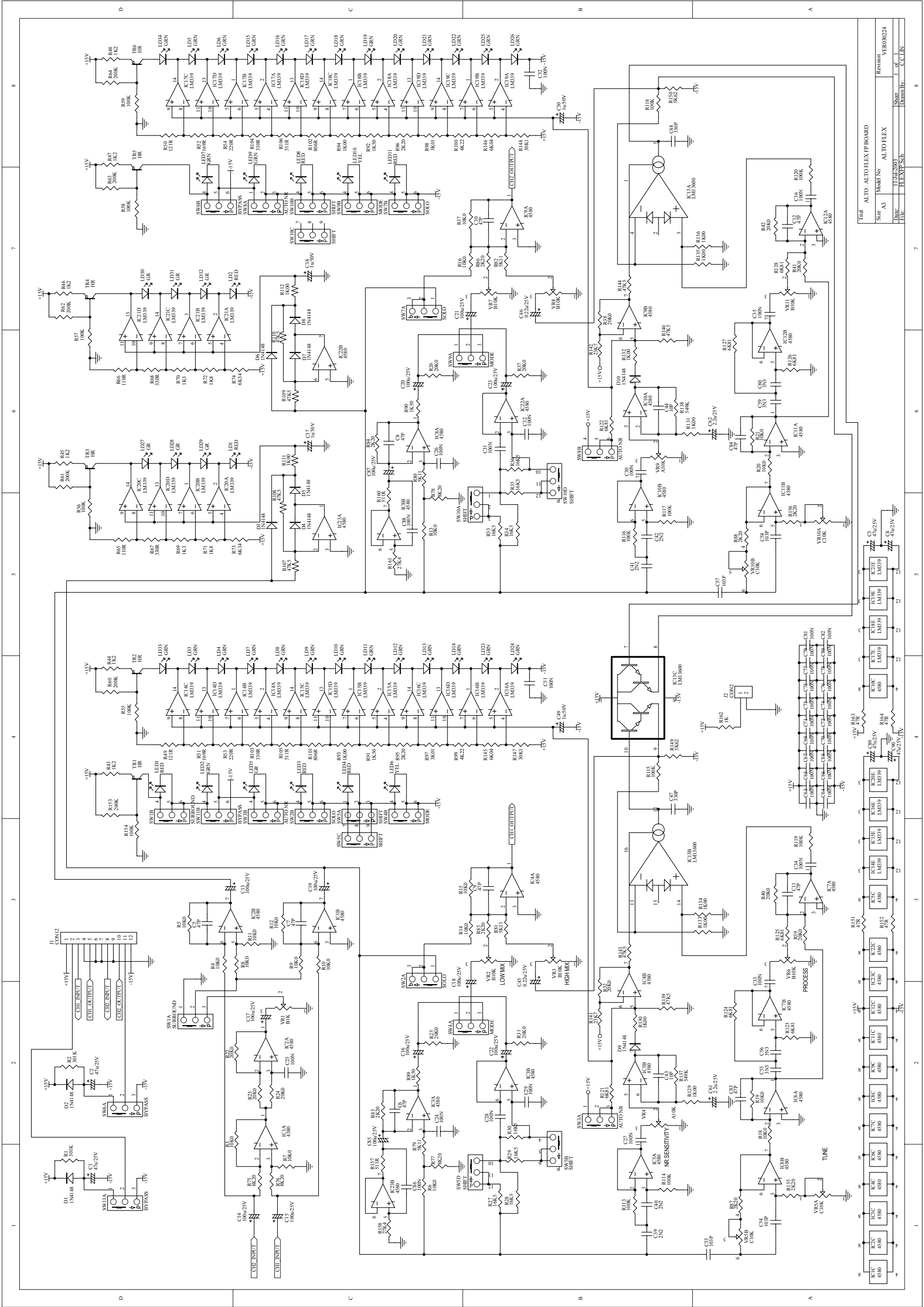
WEIGHT

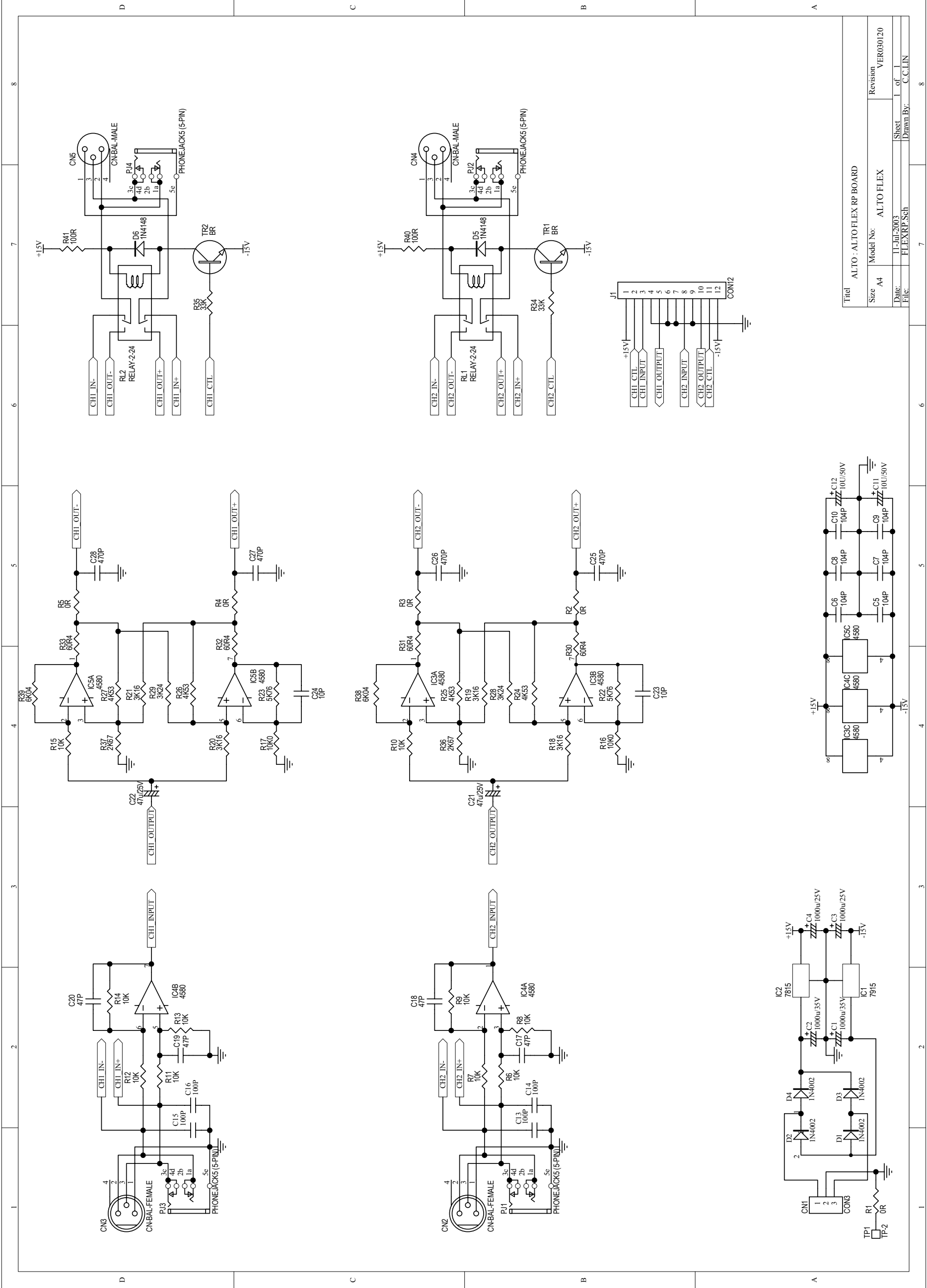
3.4KG

2.Block Diagram

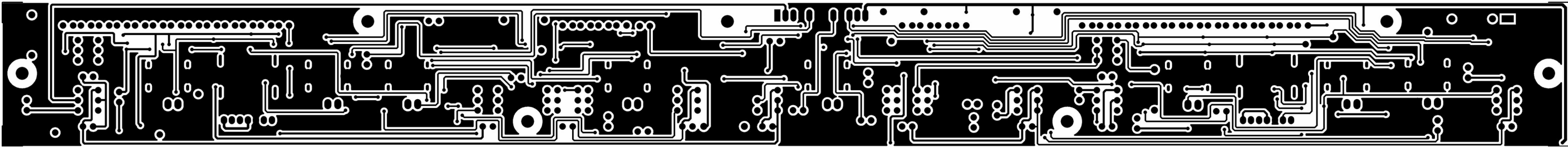


3.Schematic Diagram

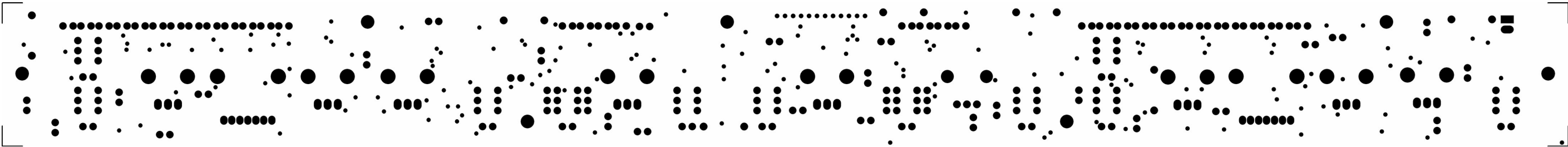




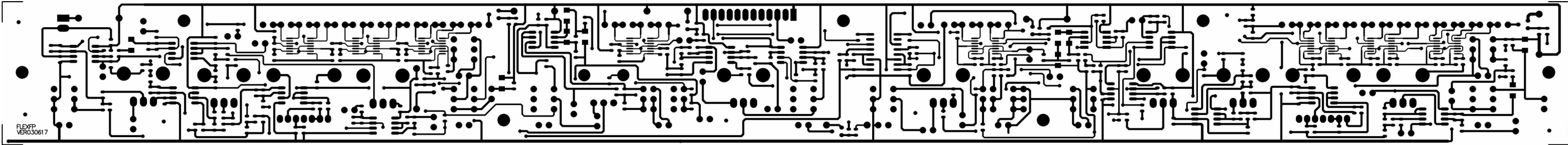
4.Printed Circuit Board



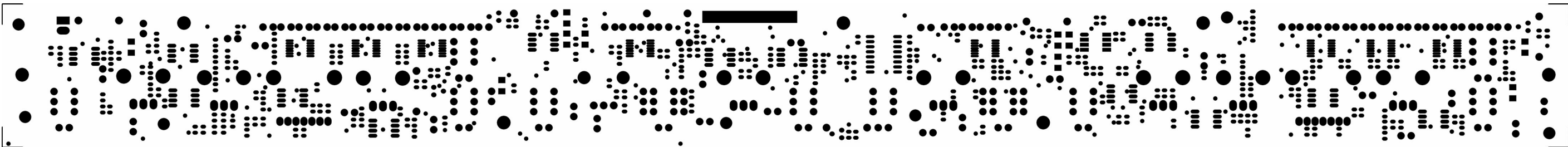
PCB : FLEXFP Top Layer



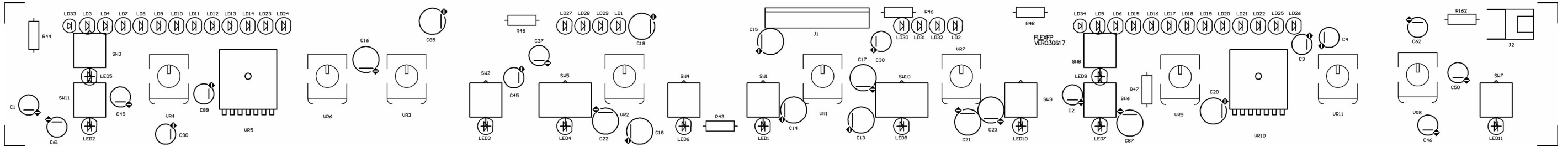
PCB : FLEXFP Top Solder Mask



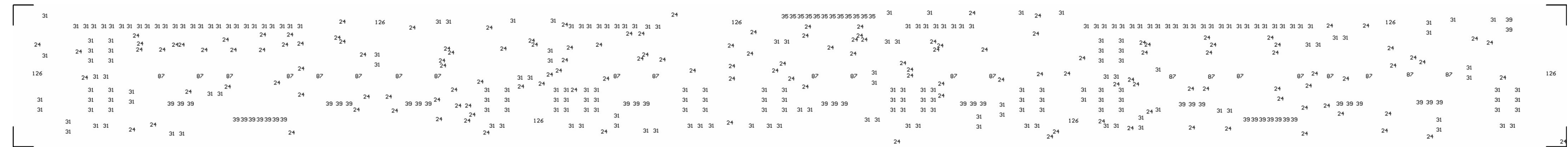
PCB : FLEXFP Bottom Layer



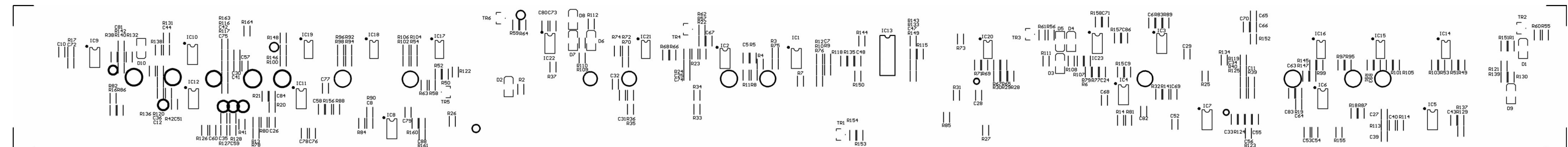
PCB : FLEXFP Bottom Solder Mask



PCB : FLEXFP Top Overlay

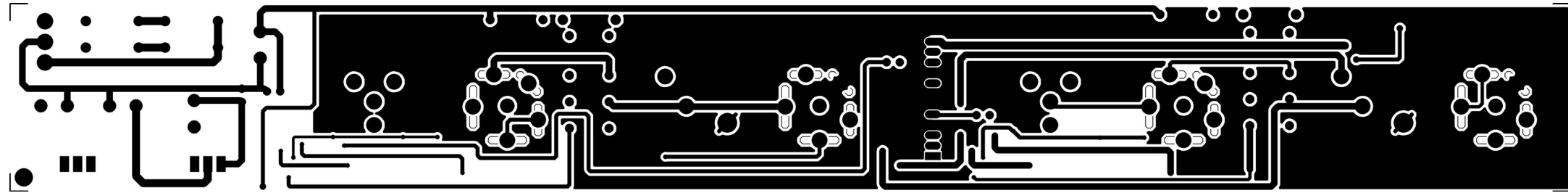


PCB : FLEXFP Drill Drawing Plots

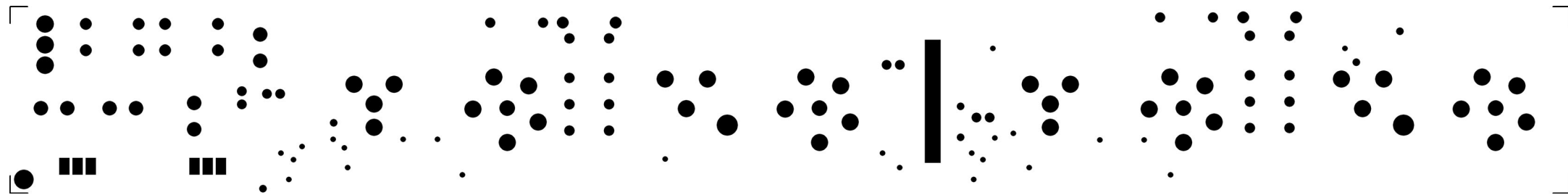


PCB : FLEXFP Bottom Overlay

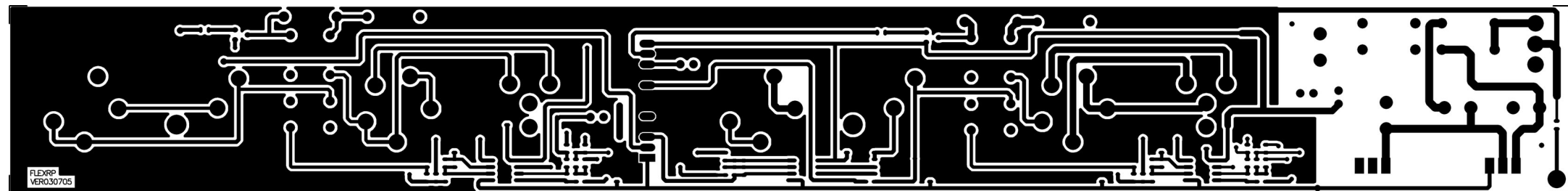
Tool	Hole Size	Hole Count Plated	Tool Travel
T1	24mil (0.6096mm)	147	57.64 Inch (1464.03 mm)
T2	31mil (0.7874mm)	236	56.87 Inch (1444.38 mm)
T3	35mil (0.889mm)	12	13.58 Inch (345.03 mm)
T4	39mil (0.9906mm)	43	20.65 Inch (524.55 mm)
T5	87mil (2.2098mm)	22	19.71 Inch (500.53 mm)
T6	35mil (0.889mm)	12	NPTH 13.58 Inch (345.03 mm)
T7	126mil (3.2004mm)	7	NPTH 21.91 Inch (556.60 mm)
Totals		479	203.94 Inch (5180.14 mm)



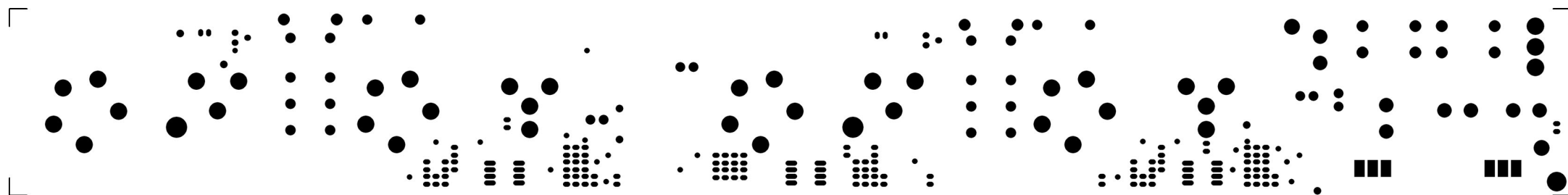
PCB : FLEXRP Top Layer



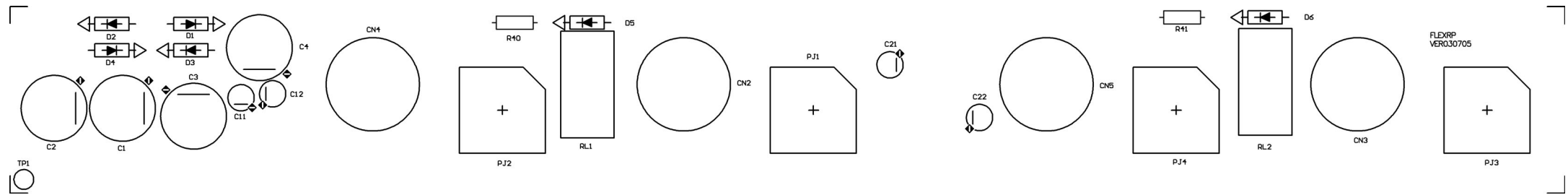
PCB : FLEXRP Top Solder Mask



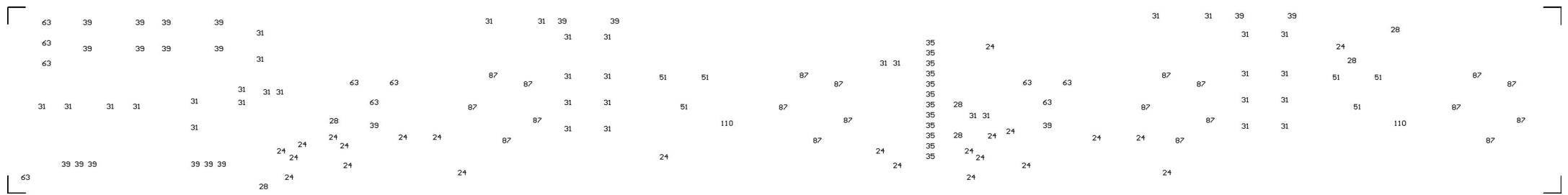
PCB : FLEXRP Bottom Layer



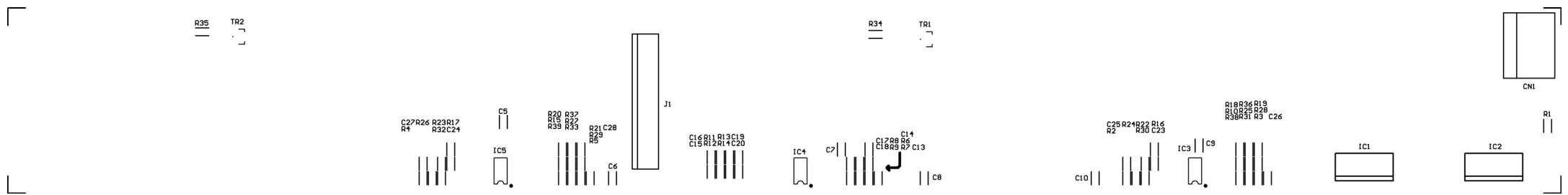
PCB : FLEXRP Bottom Solder Mask



PCB : FLEXRP Top Overlay



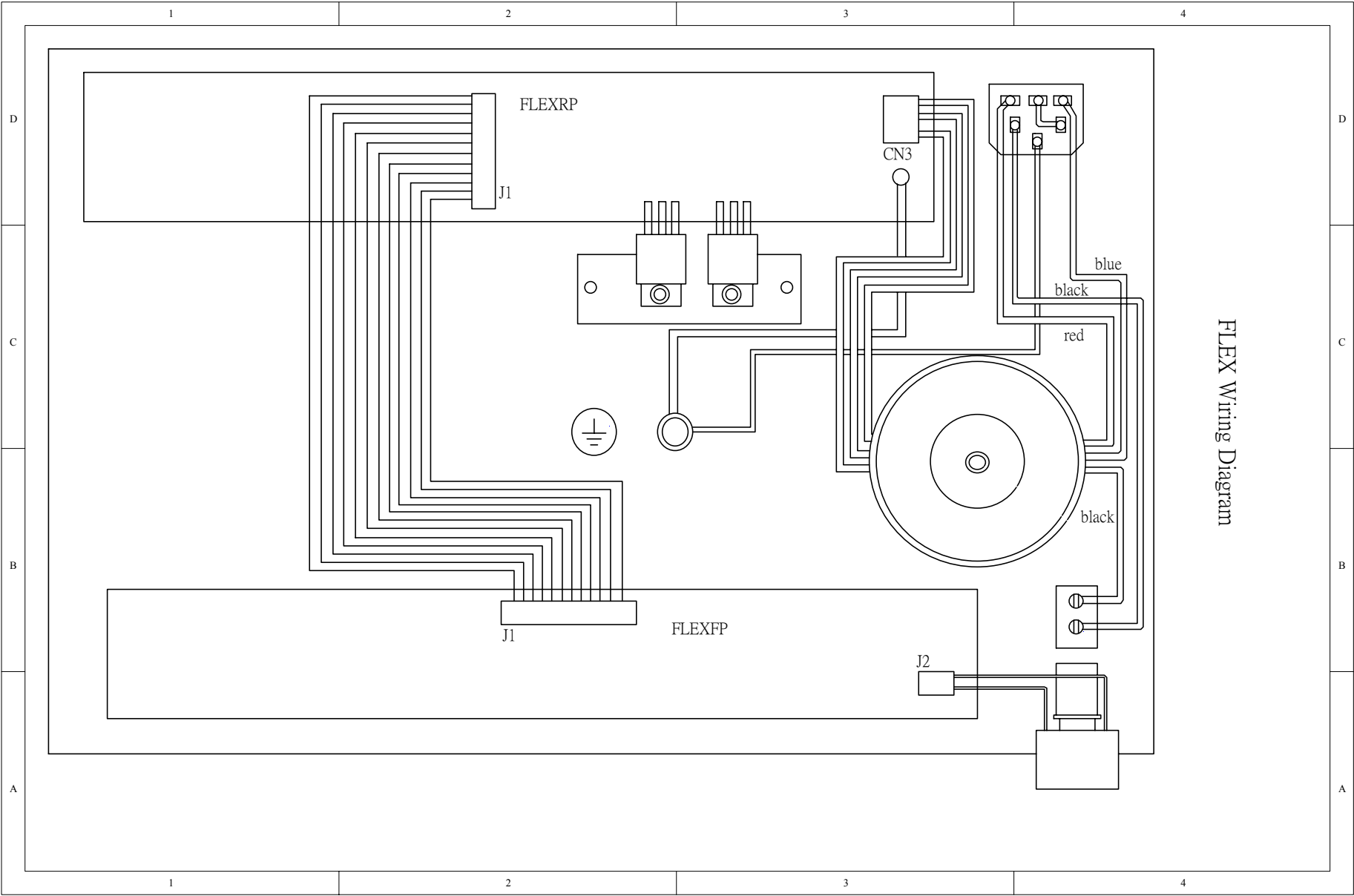
PCB : FLEXRP Drill Drawing Plots



PCB : FLEXRP Bottom Overlay

Tool	Hole Size	Hole Count Plated	Tool Travel
T1	24mil (0.6096mm)	24	18.73 Inch (475.85 mm)
T2	28mil (0.7112mm)	6	16.63 Inch (422.46 mm)
T3	31mil (0.7874mm)	36	20.11 Inch (510.77 mm)
T4	35mil (0.889mm)	12	13.18 Inch (334.72 mm)
T5	39mil (0.9906mm)	20	20.75 Inch (527.12 mm)
T6	51mil (1.2954mm)	6	16.66 Inch (423.27 mm)
T7	63mil (1.6002mm)	10	15.22 Inch (386.61 mm)
T8	87mil (2.2098mm)	20	20.51 Inch (520.84 mm)
T9	110mil (2.794mm)	2	16.04 Inch (407.31 mm)
Totals		136	157.83 Inch (4008.95 mm)

5.Wiring Diagram



7.Electrical Parts List

SEKAKU ELECTRON INDUSTRY CO.,LTD

IEBO_P02

Multi-Level BOM Structure Listing

IEBO_P02

Report No.: IEBO_P02
Prepared by 020039[顏東賢]

Date 2003/08/11
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Item No. PF01288
DESCRIPTION: ALTO FLEX
ALTO FLEX ALTO 230V

Version

UNIT: PCS
Date: 2003/07/18

Version	Item No	Loss %	Ver.	Unit	Cardinal	Effective Date
Component Remark	Item Descri				Usage Rate @:Phantom Layer	Attrition Rate
-0001-----	MA03327 panel			PCS	1.0000 1	2003/07/18 N
-0001-----	ALTO FLEX				0.00 %	
-0001-----	MA03447 panel			PCS	1.0000 1	2002/05/11 N
-0001-----	ALTO FLEX				0.00 %	
-0001-----	MA03323 panel			PCS	1.0000 1	2003/07/22 N
-0001-----	ALTO FLEX				0.00 %	
-0001-----	MA03324 panel			PCS	1.0000 1	2003/07/22 N
-0001-----	ALTO FLEX				0.00 %	
-0001-----	MI01279 panel			PCS	1.0000 1	2003/07/22 N
-0002-----	44.2*17.5*483				0.00 %	
-0002-----	MI00901 front board			PCS	1.0000 1	2003/07/18 N
-0001-----	ALTO FLEX				0.00 %	
-0001-----	MJ00061 Zn-plated board			PCS	1.0000 138	2003/03/05 N
-0002-----	1*2135*1220 20.45kg			KG	0.00 %	
-0002-----	ME00035 iron pillar			PCS	7.0000 1	2003/03/05 N
-0003-----	hexagon6.35*M3*6				0.00 %	
-0003-----	MB02269 rear board			PCS	1.0000 1	2003/07/18 N
-0001-----	ALTO FLEX				0.00 %	
-0001-----	MB02267 rear board			PCS	1.0000 1	2002/05/11 N
-0001-----	ALTO FLEX				0.00 %	
-0001-----	MB02266 rear board			PCS	1.0000 1	2002/05/11 N
-0001-----	ALTO FLEX				0.00 %	
-0001-----	MJ00058 iron board			PCS	1.0000 98	2002/05/11 N
-0004-----	1*2135*1220 20.45kg			KG	0.00 %	
-0004-----	MC00209 top cover			PCS	1.0000 1	2003/07/18 N
-0001-----	CLE2.0				0.00 %	
-0001-----	MC00207 top cover			PCS	1.0000 1	2003/01/20 N
-0001-----	CLE2.0				0.00 %	
-0001-----	MC00208 top cover			PCS	1.0000 1	2002/04/14 N
-0001-----	CLE2.0				0.00 %	
-0001-----	MJ00059 iron board			PCS	1.0000 24	2002/04/14 N
-0005-----	1.2*2135*1220 24.54kg			KG	0.00 %	
-0005-----	MB00522 bottom board			PCS	1.0000 1	2003/07/18 N
-0001-----	CLE2.0				0.00 %	
-0001-----	MB00520 bottom board			PCS	1.0000 1	2003/01/15 N
-0001-----	CLE2.0				0.00 %	
-0001-----	MB00521 bottom board			PCS	1.0000 1	2002/04/15 N
-0001-----	CLE2.0				0.00 %	
-0001-----	MJ00059 iron board			PCS	1.0000 24	2002/04/15 N
-0002-----	1.2*2135*1220 24.54kg			KG	0.00 %	
-0002-----	ME00001 screw			PCS	7.0000 1	2002/10/29 N
-0003-----	M4*10*0.7PH				0.00 %	
-0003-----	MI01357 fixed board			PCS	1.0000 1	2002/10/29 N
-0003-----	CLE2.0				0.00 %	

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DESCRIPTION: ALTO FLEX
ALTO FLEX ALTO 230V

UNIT: PCS
Date: 2003/07/18

Version	Item No	Loss %	Ver.	Unit	Cardinal	Effective Date
Component Remark	Item Descri				Usage Rate	@:Phantom Layer
					Attrition	Rate
└0001-----	MJ00063				1.0000	2002/04/14
	Zn-plated board			PCS	2542	N
	1.2*2135*1220 24.54kg			KG	0.00	%
└0006-----	MJ00123				1.0000	2003/07/18
	heat-sink(white)			PCS	1	N
	65*18*4 SCX-P234				0.00	%
└0001-----	MJ00120				1.0000	2002/12/23
	heat-sink			PCS	1	N
	65*18*4 SCX-P234				0.00	%
└0001-----	MJ00070				1.0000	2002/04/16
	AL board			PCS	1400	N
	4*2440*1220 32.40kg			KG	0.00	%
└0007-----	NE06312				4.0000	2003/07/18
	label			PCS	1	N
	ALTO FLEX				0.00	%
└0001-----	NH00012				1.0000	2003/02/10
	bond paper			M	80	N
	0.04*1M				0.00	%
└0002-----	NI00014				1.0000	2003/02/10
	membrane			M	80	N
	0.035*1M				0.00	%
└0008-----	NE05004				4.0000	2003/07/18
	label			PCS	1	N
	ALTO				0.00	%
└0009-----	NB02075				1.0000	2003/07/18
	box			PCS	1	N
	ALTO FLEX ALTO				0.00	%
└0010-----	NB02088				1.0000	2003/07/18
	box			PCS	4	N
	(1H) ALTO 19"				0.00	%
└0011-----	NF01500				1.0000	2003/07/18
	instruction			PCS	1	N
	ALTO FLEX ALTO				0.00	%
└0012-----	NI02408				11.0000	2003/07/18
	bracket			PCS	1	N
	φ15*2.7mm 白 CONTROL30				0.00	%
└0013-----	TD00118				1.0000	2003/07/18
	transformer			PCS	1	N
	PT-CLE40(include FUSE102)				0.00	%
└0014-----	NI00443				1.0000	2003/07/18
	rubber coil			PCS	1	N
	φ20*φ60*2tB				0.00	%
└0015-----	MG00041				9.0000	2003/07/18
	screw			PCS	1	N
	M3*6				0.00	%
└0016-----	MG00061				8.0000	2003/07/18
	screw			PCS	1	N
	M3*10				0.00	%
└0017-----	MG00045				4.0000	2003/07/18
	screw			PCS	1	N
	M3*7				0.00	%
└0018-----	MG00162				2.0000	2003/07/18
	screw			PCS	1	N
	M3*8				0.00	%
└0019-----	NI00863				2.0000	2003/07/18
	insulate bean			PCS	1	N
	TO220B				0.00	%
└0020-----	MF00037				4.0000	2003/07/18
	washer			PCS	1	N
	φ3*φ5*1t				0.00	%
└0021-----	ME00015				2.0000	2003/07/18
	colour nut			PCS	1	N
	3m/m				0.00	%
└0022-----	NC00005				2.0000	2003/07/18
	silicone insulator			PCS	1	N
	TO-220 square type				0.00	%

Multi-Level BOM Structure Listing

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Item No. PF01288 Version
DESCRIPTION: ALTO FLEX
ALTO FLEX ALTO 230V

UNIT: PCS
Date: 2003/07/18

Version	Item No	Loss %	Ver.	Unit	Cardinal	Effective Date
Component Remark	Item Descri				Usage Rate	@:Phantom Layer
					Attrition	Rate
-0023-----	SD00079 integrated circuit 7915(TO-220)			PCS	1.0000 1 0.00 %	2003/07/18 N
-0024-----	SD00077 integrated circuit 7815(TO-220) IC2			PCS	1.0000 1 0.00 %	2003/07/18 N
-0025-----	MG00042 screw M3*10			PCS	4.0000 1 0.00 %	2003/07/18 N
-0026-----	MG00025 screw M3*6			PCS	13.0000 1 0.00 %	2003/07/18 N
-0027-----	NI00308 key ϕ 15*17			PCS	1.0000 1 0.00 %	2003/07/18 N
-0028-----	NI01159 switch cap ϕ 6*2.5 YELLOW C			PCS	1.0000 1 0.00 %	2003/07/18 N
-0029-----	HI00023 alimentation SW SDDL B 1007U			PCS	1.0000 1 0.00 %	2003/07/18 N
-0030-----	SA00065 L.E.D LG2043 green			PCS	1.0000 1 0.00 %	2003/07/18 N
-0031-----	HA01388 row-wire connector wiring 2P 100			PCS	1.0000 1 0.00 %	2003/07/18 N
-0032-----	NI02085 power switch ϕ 22*9.69			PCS	1.0000 1 0.00 %	2003/07/18 N
-0033-----	@NI00252 sleeve ϕ 4*20mm			PCS	8.0000 1 0.00 %	2003/07/18 N
-0001-----	NI00248 sleeve ϕ 4*1000mm			M	20.0000 1000 0.00 %	2002/06/04 N
-0034-----	NI00240 sleeve ϕ 2.5*10mm			PCS	2.0000 1 0.00 %	2003/07/18 N
-0001-----	NI00239 sleeve ϕ 2.5*1000mm			M	10.0000 1000 0.00 %	2002/06/04 N
-0035-----	NI00362 knob (COOL GRAY 8C/white)			PCS	11.0000 1 0.00 %	2003/07/18 N
-0036-----	NI00896 knob cover ϕ 8.5*4 072C			PCS	11.0000 1 0.00 %	2003/07/18 N
-0037-----	NF00061 assurance card ▲LTO			PCS	1.0000 1 0.00 %	2003/07/18 N
-0038-----	HA01333 single terminal wiring CF:W76 150mm UL1015 18AWG green/yellow			PCS	1.0000 1 0.00 %	2003/07/18 N
-0039-----	NI01178 pass light pillar ϕ 3.1*85			PCS	2.0000 1 0.00 %	2003/07/18 N
-0040-----	NI01156 button ϕ 3*W6*18.3			PCS	11.0000 1 0.00 %	2003/07/18 N
-0041-----	NI01876 LED spacer support 7.6*4.5*184			PCS	1.0000 1 0.00 %	2003/07/18 N

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IEBO_P02

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Date 2003/08/11
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Item No. PF01288 Version
 DESCRIPTION: ALTO FLEX
 ALTO FLEX ALTO 230V

UNIT: PCS
 Date: 2003/07/18

Version	Item No	Loss %	Ver.	Unit	Cardinal	Effective Date
Component Remark	Item Descri				Usage Rate	@:Phantom Layer
					Attrition	Rate
-0042-----	HC00015 AC outlett (S)315-B (AC select)			PCS	1.0000 1 0.00 %	2003/07/18 N
-0043-----	HD00006 fuse TSD 315mA 250V ϕ 5.2*20mm CSA/S/UL/VDE			PCS	1.0000 1 0.00 %	2003/07/18 N
-0044-----	NI00839 knob 5*5*15(3.3*3.3)black			PCS	10.0000 1 0.00 %	2003/07/18 N
-0045-----	MF00061 washer JY-6351G-02-250			PCS	4.0000 1 0.00 %	2003/07/18 N
-0046-----	ME00060 socket nut JY-6351G-02-250			PCS	4.0000 1 0.00 %	2003/07/18 N
-0047-----	HA01835 P.V.C single wave wired UL1617 80 brown			PCS	1.0000 1 0.00 %	2003/07/18 N
-0048-----	HA00078 wire 250mm black L3R3			PCS	1.0000 1 0.00 %	2003/07/18 N
-0049-----	NB02164 barrier X23,34,40			PCS	1.0000 1 0.00 %	2003/07/18 N
-0050-----	NB02163 barrier X23,34,40			PCS	1.0000 1 0.00 %	2003/07/18 N
-0051-----	NI00218 cable tie-black ALT-102SB			PCS	2.0000 1 0.00 %	2003/07/18 N
-0052-----	MF00018 washer ϕ 4* ϕ 10*1t			PCS	2.0000 1 0.00 %	2003/07/18 N
-0053-----	MF00048 washer ϕ 4* ϕ 8*0.5t			PCS	2.0000 1 0.00 %	2003/07/18 N
-0054-----	MF00038 washer ϕ 4* ϕ 7*1t			PCS	2.0000 1 0.00 %	2003/07/18 N
-0055-----	MG00111 screw pill 4*30			PCS	1.0000 1 0.00 %	2003/07/18 N
-0056-----	HJ00006 desiccant 30g			PCS	1.0000 1 0.00 %	2003/07/18 N
-0057-----	NA00123 PE bag 0.04t*580*300mm			PCS KG	1.0000 1 0.00 %	2003/07/18 N
-0058-----	NA00137 clip-chain bag 5*7			PCS	1.0000 1 0.00 %	2003/07/18 N
-0059-----	HA00861 power cord Europe 3P LT-312+LT-501			PCS	1.0000 1 0.00 %	2003/07/18 N
-0060-----	HK04049 PC board P-FLEXFP-DIP			PCS	1.0000 1 0.00 %	2003/07/18 N
-0001-----	HI00163 按壓式SW 2段12P PS-42E85L(3.3x3.3) SW5,SW10			PCS	2.0000 1 0.00 %	2003/07/18 N
-0002-----	HI00162 按壓式SW 2段6P PS-22E8552L(3.3x3.3) SW1,SW2,SW3,SW4,SW6,SW7,SW8,SW9,SW11			PCS	9.0000 1 0.00 %	2003/07/18 N

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Date 2003/08/11
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Item No. PF01288 Version
DESCRIPTION: ALTO FLEX
ALTO FLEX ALTO 230V

UNIT: PCS
Date: 2003/07/18

Version	Item No	Loss %	Ver.	Unit	Cardinal	Effective Date
Component Remark	Item Descri				Usage Rate	@:Phantom Layer
					Attrition	Rate
-0003-----	RA00215 fixed resistor 1/4W 1.2K Ω M type R43,R44,R45,R46,R47,R48			PCS	6.0000 1 0.00 %	2003/07/18 N
-0004-----	RA00212 fixed resistor 1/4W 1.0K Ω M type R162			PCS	1.0000 1 0.00 %	2003/07/18 N
-0005-----	CB00003 electrotytic capacitor 0.22uF/50V C45,C46			PCS	2.0000 1 0.00 %	2003/07/18 N
-0006-----	CB00006 electrotytic capacitor 1uF/50V ϕ 4*5 C37,C38,C49,C50			PCS	4.0000 1 0.00 %	2003/07/18 N
-0007-----	CB00011 electrolytic capacitor 2.2uF/50V C61,C62			PCS	2.0000 1 0.00 %	2003/07/18 N
-0008-----	CB00018 electrolytic capacitor 4.7uF/25V ϕ 4*7 C1,C2,C3,C4,C89,C90			PCS	6.0000 1 0.00 %	2003/07/18 N
-0009-----	CB00047 electrotytic capacitor 100uF/25V C13,C14,C15,C16,C17,C18,C19,C20,C21,C22,C23,C85,C87			PCS	13.0000 1 0.00 %	2003/07/18 N
-0010-----	SA00071 L.E.D ϕ 3 green LVG2340/A LD3,LD4,LD5,LD6,LD7,LD8,LD9,LD10,LD11,LD12,LD13,LD14, LD15,LD16,LD17,LD18,LD19,LD20,LD21,LD22,LD23,LD24, LD25,LD26,LD27,LD28,LD29,LD30,LD31,LD32,LD33,LD34, LED2,LED5,LED7,LED9			PCS	36.0000 1 0.00 %	2003/07/18 N
-0011-----	SA00072 L.E.D ϕ 3 red LI2340/A LD1,LD2,LED1,LED3,LED4,LED8,LED11			PCS	7.0000 1 0.00 %	2003/07/18 N
-0012-----	SA00073 L.E.D ϕ 3 yellow LVY2340/A LED6,LED10			PCS	2.0000 1 0.00 %	2003/07/18 N
-0013-----	HC00065 row-wire header 2P 2.5mm 90° J2			PCS	1.0000 1 0.00 %	2003/07/18 N
-0014-----	HA02078 wire 12P-12P 220 J1			PCS	1.0000 1 0.00 %	2003/07/18 N
-0015-----	NI01772 LED間隔柱 LED5-7 7mm LED1,LED2,LED3,LED4,LED6,LED7,LED8,LED10,LED11			PCS	9.0000 1 0.00 %	2003/07/18 N

Multi-Level BOM Structure Listing

Report No.: IEBO_P02
Prepared by 020039[顏東賢]

Date 2003/08/11
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Item No. PF01288
DESCRIPTION: ALTO FLEX
ALTO FLEX ALTO 230V

Version

UNIT: PCS
Date: 2003/07/18

Version	Item No	Loss %	Ver.	Unit	Cardinal	Effective Date
Component Remark	Item Descri				Usage Rate	@:Phantom Layer
					Attrition	Rate
-0016-----	NI01831 separating 8.5*4*17 black LED5,LED9			PCS	2.0000 1 0.00 %	2003/07/18 N
-0017-----	NI01781 LED spacer support LEDS-8 8mm LD1,LD2,LD3,LD4,LD5,LD6,LD7,LD8,LD9,LD10,LD11,LD12, LD13,LD14,LD15,LD16,LD17,LD18,LD19,LD20,LD21,LD22, LD23,LD24,LD25,LD26,LD27,LD28,LD29,LD30,LD31,LD32, LD33,LD34			PCS	34.0000 1 0.00 %	2003/07/18 N
-0018-----	RC00214 potentiometer B1KΩ R0911NOB-V1B102FN00-00 VR1			PCS	1.0000 1 0.00 %	2003/07/18 N
-0019-----	RC00208 potentiometer C10KΩ R1411GOA-V1C103FN-00-00 VR5,VR10			PCS	2.0000 1 0.00 %	2003/07/18 N
-0020-----	RC00213 potentiometer B10KΩ 軸長35 R0911NOB-V1B103FN00-00 VR2,VR3,VR4,VR6,VR7,VR8,VR9,VR11			PCS	8.0000 1 0.00 %	2003/07/18 N
-0021-----	HK04048 PC board P-FLEXFP-SMD			PCS	1.0000 1 0.00 %	2003/07/18 N
-0001-----	HB00981 pc board FLEXFP_VER030617			PCS	1.0000 1 0.00 %	2003/07/18 N
-0002-----	RD00298 resistor 47.0Ω ±1% 0603 R151,R152,R163,R164			PCS	4.0000 1 0.00 %	2003/07/18 N
-0003-----	RD00275 resistor 110Ω ±1% 0603 R65,R66			PCS	2.0000 1 0.00 %	2003/07/18 N
-0004-----	RD00360 resistor 121Ω ±1% 0603 R49,R50			PCS	2.0000 1 0.00 %	2003/07/18 N
-0005-----	RD00276 resistor 169Ω ±1% 0603 R51,R52			PCS	2.0000 1 0.00 %	2003/07/18 N
-0006-----	RD00073 SMDfixed resistor 1/10W 220Ω ±5% 0603 R53,R54			PCS	2.0000 1 0.00 %	2003/07/18 N
-0007-----	RD00393 resistor 330Ω ±1% 0603 R67,R68,R103,R104			PCS	4.0000 1 0.00 %	2003/07/18 N

Multi-Level BOM Structure Listing

Report No.: IEBO_P02
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Item No. PF01288 Version
DESCRIPTION: ALTO FLEX
ALTO FLEX ALTO 230V

UNIT: PCS
Date: 2003/07/18

Version	Item No	Loss %	Ver.	Unit	Cardinal	Effective Date
Component Remark	Item Descri				Usage Rate	@:Phantom Layer
					Attrition Rate	Rate
-0008-----	RD00361 resistor 511Ω ±1% 0603 R105,R106,R157,R160			PCS	4.0000 1 0.00 %	2003/07/18 N
-0009-----	RD00281 resistor 806Ω ±1% 0603 R101,R102			PCS	2.0000 1 0.00 %	2003/07/18 N
-0010-----	RD00282 resistor 1.00KΩ ±1% 0603 R93,R94,R111,R112,R129,R130,R131,R132,R133,R134,R135, R136			PCS	12.0000 1 0.00 %	2003/07/18 N
-0011-----	RD00351 resistor 1.3KΩ ±5% 0603 R69,R70			PCS	2.0000 1 0.00 %	2003/07/18 N
-0012-----	RD00201 SMDprecise resistor 1/10W 1.50KΩ ±1% 0603 R89,R90,R91,R92			PCS	4.0000 1 0.00 %	2003/07/18 N
-0013-----	RD00086 SMDfixed resistor 1/10W 1.8KΩ ±5% 0603 R71,R72			PCS	2.0000 1 0.00 %	2003/07/18 N
-0014-----	RD00392 resistor 2.2KΩ ±1% 0603 R83,R84,R85,R86,R87,R88,R95,R96,R155,R156			PCS	10.0000 1 0.00 %	2003/07/18 N
-0015-----	RD00385 resistor 3.01KΩ ±1% 0603 R97,R98			PCS	2.0000 1 0.00 %	2003/07/18 N
-0016-----	RD00397 SMD resistor 4.22KΩ ±1% 0603 R99,R100			PCS	2.0000 1 0.00 %	2003/07/18 N
-0017-----	RD00210 SMDprecise resistor 1/10W 5.11KΩ ±1% 0603 R79,R80,R81,R82			PCS	4.0000 1 0.00 %	2003/07/18 N
-0018-----	RD00365 resistor 5.62KΩ ±1% 0603 R149,R150			PCS	2.0000 1 0.00 %	2003/07/18 N
-0019-----	RD00300 resistor 6.04KΩ ±1% 0603 R145,R146			PCS	2.0000 1 0.00 %	2003/07/18 N
-0020-----	RD00288 resistor 6.81KΩ ±1% 0603 R121,R122,R123,R124,R125,R126,R127,R128			PCS	8.0000 1 0.00 %	2003/07/18 N

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Report No.: IEBO_P02
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Item No. PF01288 Version
DESCRIPTION: ALTO FLEX
ALTO FLEX ALTO 230V

UNIT: PCS
Date: 2003/07/18

Version	Item No	Loss %	Ver.	Unit	Cardinal	Effective Date
Component Remark	Item Descri				Usage Rate	@:Phantom Layer
					Attrition	Rate
-0021-----	RD00327 resistor 8.20K Ω $\pm$ 1% 0603 R75,R76,R77,R78			PCS	4.0000 1 0.00 %	2003/07/18 N
-0022-----	RD00214 SMDprecise resistor 1/10W 10.0K Ω $\pm$ 1% 0603 R3,R4,R5,R6,R7,R8,R9,R10,R11,R12,R13,R14,R15,R16,R17, R18,R19,R20,R21			PCS	19.0000 1 0.00 %	2003/07/18 N
-0023-----	RD00287 resistor 6.34K Ω $\pm$ 1% 0603 R73,R74			PCS	2.0000 1 0.00 %	2003/07/18 N
-0024-----	RD00368 resistor 16.5K Ω $\pm$ 1% 0603 R27,R28,R29,R30,R33,R34,R35,R36			PCS	8.0000 1 0.00 %	2003/07/18 N
-0025-----	RD00219 SMDprecise resistor 1/10W 20.0K Ω $\pm$ 1% 0603 R22,R23,R24,R25,R26,R31,R32,R37,R38,R39,R40,R41,R42			PCS	13.0000 1 0.00 %	2003/07/18 N
-0026-----	RD00220 SMDprecise resistor 1/10W 23.7K Ω $\pm$ 1% 0603 R141,R142			PCS	2.0000 1 0.00 %	2003/07/18 N
-0027-----	RD00221 SMDprecise resistor 1/10W 27.4K Ω $\pm$ 1% 0603 R158,R161			PCS	2.0000 1 0.00 %	2003/07/18 N
-0028-----	RD00266 SMD 1/10W precise resistor 30.1K Ω $\pm$ 1% 0603 R147,R148			PCS	2.0000 1 0.00 %	2003/07/18 N
-0029-----	RD00290 resistor 47.5K Ω $\pm$ 1% 0603 R107,R108,R109,R110,R139,R140,R143,R144			PCS	8.0000 1 0.00 %	2003/07/18 N
-0030-----	RD00224 SMDprecise resistor 1/10W 100K Ω $\pm$ 1% 0603 R113,R114,R115,R116,R117,R118,R119,R120,R55,R56,R57, R58,R59,R154			PCS	14.0000 1 0.00 %	2003/07/18 N
-0031-----	RD00291 resistor 301K Ω $\pm$ 1% 0603 R1,R2			PCS	2.0000 1 0.00 %	2003/07/18 N
-0032-----	RD00389 resistor 549K Ω $\pm$ 1% 0603 R137,R138			PCS	2.0000 1 0.00 %	2003/07/18 N
-0033-----	RD00318 resistor 200K Ω $\pm$ 1% 0603 R60,R61,R62,R63,R64,R153			PCS	6.0000 1 0.00 %	2003/07/18 N

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Report No.: IEBO_P02
Prepared by 020039[顏東賢]

Date 2003/08/11
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Item No. PF01288 Version
DESCRIPTION: ALTO FLEX
ALTO FLEX ALTO 230V

UNIT: PCS
Date: 2003/07/18

Version	Item No	Loss %	Ver.	Unit	Cardinal	Effective Date
Component Remark	Item Descri				Usage Rate @:Phantom Layer	Attrition Rate
0034-----	CI00047 SMDceramic capacitor0603 10PF/50V NPO ±5% C43,C44			PCS	2.0000 1 0.00 %	2003/07/18 N
0035-----	CI00055 SMDceramic capacitor0603 47PF/50V NPO ±5% C5,C6,C7,C8,C9,C10,C11,C12,C83,C84			PCS	10.0000 1 0.00 %	2003/07/18 N
0036-----	CI00062 SMDceramic capacitor0603 330PF/50V NPO ±5% C47,C48			PCS	2.0000 1 0.00 %	2003/07/18 N
0037-----	CI00067 SMDceramic capacitor0603 0.0022uF/50V X7R ±10% C39,C40,C41,C42			PCS	4.0000 1 0.00 %	2003/07/18 N
0038-----	CI00069 SMDceramic capacitor0603 0.0033uF/25V X7R ±10% C55,C56,C59,C60			PCS	4.0000 1 0.00 %	2003/07/18 N
0039-----	CI00071 SMDceramic capacitor0603 0.01uF/50V X7R ±10% C53,C54,C57,C58			PCS	4.0000 1 0.00 %	2003/07/18 N
0040-----	CI00075 SMDceramic capacitor0603 0.1uF/50V Y5V +80,-20% C24,C25,C26,C27,C28,C29,C30,C31,C32,C33,C34,C35,C36, C51,C52,C63,C64,C65,C67,C68,C69,C70,C71,C72,C73,C74, C75,C76,C77,C78,C79,C80,C81,C82,C86,C88,C66			PCS	37.0000 1 0.00 %	2003/07/18 N
0041-----	SG00122 SMD integrated circuit NJM4580M-TE3 IC1,IC2,IC3,IC4,IC5,IC6,IC7,IC8,IC9,IC10,IC11,IC12, IC22,IC23			PCS	14.0000 1 0.00 %	2003/07/18 N
0042-----	SG00116 SMD積體電路 BA10339FV E2 IC14,IC15,IC16,IC17,IC18,IC19,IC20,IC21			PCS	8.0000 1 0.00 %	2003/07/18 N
0043-----	SF00004 SMD transistor 2SA1036K(R)(MMBT3906LT1) TR1,TR2,TR3,TR4,TR5,TR6			PCS	6.0000 1 0.00 %	2003/07/18 N
0044-----	SG00194 SMD integrated circuit NJM13600M-TE1(JRC) IC13			PCS	1.0000 1 0.00 %	2003/07/18 N
0045-----	SE00011 SMD rectifier diode RLS4148 0.5A (LL-34) D1,D2,D3,D4,D5,D6,D7,D8,D9,D10			PCS	10.0000 1 0.00 %	2003/07/18 N
0061-----	HK04047 PC board P-FLEXRP-DIP			PCS	1.0000 1 0.00 %	2003/07/18 N

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Report No.: IEBO_P02
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Item No. PF01288 Version
DESCRIPTION: ALTO FLEX
ALTO FLEX ALTO 230V

UNIT: PCS
Date: 2003/07/18

Version	Item No	Loss %	Ver.	Unit	Cardinal	Effective Date
Component Remark	Item Descri				Usage Rate	@:Phantom Layer
					Attrition	Rate
0001-----	HC00125 MIC jack JY-6351G-02-250 PJ1,PJ2,PJ3,PJ4			PCS	4.0000 1 0.00 %	2003/07/18 N
0002-----	HC00126 MIC jack for balance JY-5042-030G female plug 180° CN2,CN3			PCS	2.0000 1 0.00 %	2003/07/18 N
0003-----	HC00392 shape male JY-5030-030G 180° CN4,CN5			PCS	2.0000 1 0.00 %	2003/07/18 N
0004-----	HC00261 row-wire header 12P 2.0mm 180° J1			PCS	1.0000 1 0.00 %	2003/07/18 N
0005-----	HC00172 row-wire header 3P 3.96mm 180° CN1			PCS	1.0000 1 0.00 %	2003/07/18 N
0006-----	HA02190 wire 150mm TP1			PCS	1.0000 1 0.00 %	2003/07/18 N
0007-----	HI00013 raley GS-SH-224T 24V RL1,RL2			PCS	2.0000 1 0.00 %	2003/07/18 N
0008-----	SA00094 rectifier diode 1N4002/100V D1,D2,D3,D4			PCS	4.0000 1 0.00 %	2003/07/18 N
0009-----	SA00093 rectifier diode 1N4148 0.5A D5,D6			PCS	2.0000 1 0.00 %	2003/07/18 N
0010-----	RA00184 fixed resistor 1/4W 100Ω M type R40,R41			PCS	2.0000 1 0.00 %	2003/07/18 N
0011-----	CB00025 electrolytic capacitor 10uF/50V φ6.3*7 C11,C12			PCS	2.0000 1 0.00 %	2003/07/18 N
0012-----	CB00039 electrotytic capacitor 47uF/25V C21,C22			PCS	2.0000 1 0.00 %	2003/07/18 N
0013-----	CB00071 electrotytic capacitor 1000uF/25V C3,C4			PCS	2.0000 1 0.00 %	2003/07/18 N

Multi-Level BOM Structure Listing

Report No.: IEBO_P02
Prepared by 020039[顏東賢]

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Item No. PF01288 Version
DESCRIPTION: ALTO FLEX
ALTO FLEX ALTO 230V

UNIT: PCS
Date: 2003/07/18

Version	Item No	Loss %	Ver.	Unit	Cardinal	Effective Date
Component Remark	Item Descri				Usage Rate	@:Phantom Layer
					Attrition Rate	Rate
0014-----	CB00073 electrolytic capacitor 1000uF/35V φ 13*20mm C1,C2			PCS	2.0000 1 0.00 %	2003/07/18 N
0015-----	HK04046 PC board P-FLEXRP-SMD			PCS	1.0000 1 0.00 %	2003/07/18 N
0001-----	HB00980 pc board FLEXRP_VER030705			PCS	1.0000 1 0.00 %	2003/07/18 N
0002-----	RD00059 SMDfixed resistor 1/10W 0 Ω $\pm$ 5% 0603 R1,R2,R3,R4,R5			PCS	5.0000 1 0.00 %	2003/07/18 N
0003-----	RD00297 resistor 60.4 Ω $\pm$ 1% 0603 R30,R31,R32,R33			PCS	4.0000 1 0.00 %	2003/07/18 N
0004-----	RD00271 SMD fixed resistor 1/10W 2.67K Ω $\pm$ 1% 0603 R36,R37			PCS	2.0000 1 0.00 %	2003/07/18 N
0005-----	RD00363 resistor 3.16K Ω $\pm$ 1% 0603 R18,R19,R20,R21			PCS	4.0000 1 0.00 %	2003/07/18 N
0006-----	RD00285 resistor 3.24K Ω $\pm$ 1% 0603 R28,R29			PCS	2.0000 1 0.00 %	2003/07/18 N
0007-----	RD00286 resistor 4.53K Ω $\pm$ 1% 0603 R24,R25,R26,R27			PCS	4.0000 1 0.00 %	2003/07/18 N
0008-----	RD00299 resistor 5.76K Ω $\pm$ 1% 0603 R23,R22			PCS	2.0000 1 0.00 %	2003/07/18 N
0009-----	RD00300 resistor 6.04K Ω $\pm$ 1% 0603 R38,R39			PCS	2.0000 1 0.00 %	2003/07/18 N
0010-----	RD00214 SMDprecise resistor 1/10W 10.0K Ω $\pm$ 1% 0603 R6,R7,R8,R9,R10,R11,R12,R13,R14,R15,R16,R17			PCS	12.0000 1 0.00 %	2003/07/18 N
0011-----	RD00108 SMDfixed resistor 1/10W 33K Ω $\pm$ 5% 0603 R34,R35			PCS	2.0000 1 0.00 %	2003/07/18 N
0012-----	CI00047 SMDceramic capacitor0603 10PF/50V NPO $\pm$ 5% C23,C24			PCS	2.0000 1 0.00 %	2003/07/18 N

Report No.: IEBO_P02

Prepared by 020039[顏東賢]

Item No. PF01288

DESCRIPTION: ALTO FLEX

ALTO FLEX ALTO 230V

Version

UNIT: PCS

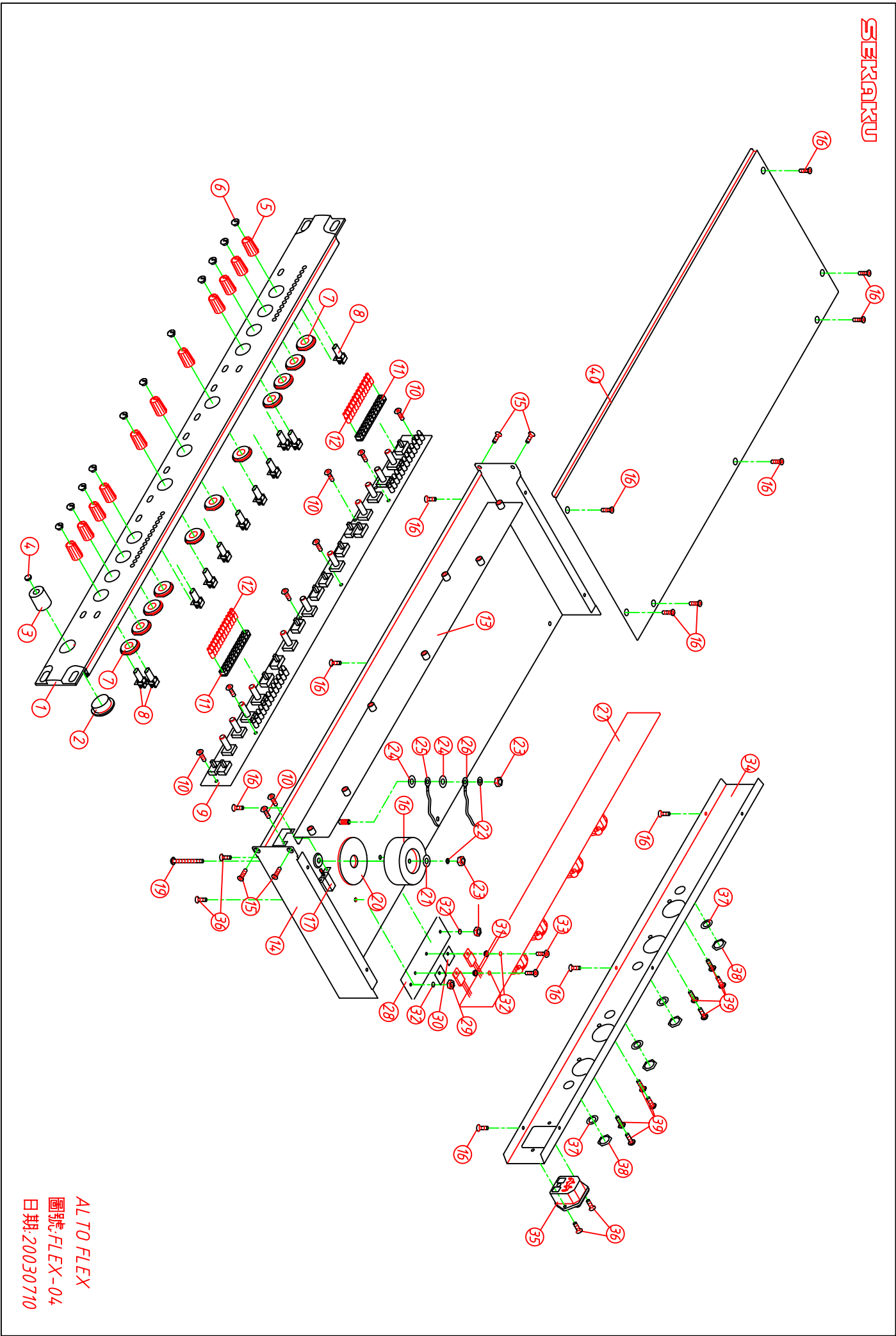
Date: 2003/07/18

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Version	Item No	Loss %	Ver.	Unit	Cardinal	Effective Date
Component Remark	Item Descri				Usage Rate	@:Phantom Layer
					Attrition Rate	Rate
0013-----	CI00055 SMDceramic capacitor0603 47PF/50V NPO ±5% C17,C18,C19,C20			PCS	4.0000 1 0.00	2003/07/18 N %
0014-----	CI00059 SMDceramic capacitor0603 100PF/50V NPO ±5% C13,C14,C15,C16			PCS	4.0000 1 0.00	2003/07/18 N %
0015-----	CI00063 SMDceramic capacitor0603 470PF/50V NPO ±5% C25,C26,C27,C28			PCS	4.0000 1 0.00	2003/07/18 N %
0016-----	CI00075 SMDceramic capacitor0603 0.1uF/50V Y5V +80,-20% C5,C6,C7,C8,C9,C10			PCS	6.0000 1 0.00	2003/07/18 N %
0017-----	SG00122 SMD integrated circuit NJM4580M-TE3 IC3,IC4,IC5			PCS	3.0000 1 0.00	2003/07/18 N %
0018-----	SF00010 SMD transistor 2SC2412K(R)(MMBT3904LT1) TR1,TR2			PCS	2.0000 1 0.00	2003/07/18 N %

8.Exploded Views & Mechanical Parts List



		Mechanical Parts List		
Model No.		ALTO FLEX		
NO	Item No	Item Description		pcs
1	MA03327	panel	ALTO FLEX	1
2	NI02085	power switch	φ 22*9.69	1
3	NI00308	key	φ 15*17	1
4	NI01159	switch cap	φ 6*2.5 YELLOW C	1
5	NI00362	knob	(COOL GRAY 8C/white)	11
6	NI00896	knob cover	φ 8.5*4 072C	11
7	NI02408	bracket	φ 15*2.7mm 白 CONTROL30	11
8	NI01156	button	φ 3*W6*18.3	11
9	HB00981	pc board	FLEXFP_VER030617	1
10	MG00041	screw	M3*6	9
11	NI01876	LED spacer support	7.6*4.5*184	1
12	NI01178	pass light pillar	φ 3.1*85	2
13	MI00901	front board	ALTO FLEX	1
14	MB00522	bottom board	CLE2.0	1
15	MG00045	screw	M3*7	4
16	MG00025	screw	M3*6	13
17	HI00023	alimention SW	SDDL B 1007U	1
18	TD00118	transformer	PT-CLE40(include FUSE102)	1
19	MG00111	screw	pill 4*30	1
20	NI00443	rubber coil	φ 20* φ 60*2tB	1
21	MF00018	washer	φ 4* φ 10*1t	2
22	MF00038	washer	φ 4* φ 7*1t	2
23	ME00016	Colour nut	4m/m	2
24	MF00048	washer	φ 4* φ 8*0.5t	2
25	HA01333	single terminal wiring CF:W76	150mm UL1015 18AWG green/yellow	1
26	HA02190	wire	150mm	1
27	HB00980	pc board	FLEXRP_VER030705	1
28	MJ00123	heat-sink(white)	65*18*4 SCX-P234	1
29	ME00015	colour nut	3m/m	2
30	NC00005	silicone insulator	TO-220 square type	2
31	NI00863	insulate bean	TO220B	2
32	MF00037	washer	φ 3* φ 5*1t	4
33	MG00162	screw	M3*8	2
34	MB02269	rear board	ALTO FLEX	1
35	HC00015	AC outlett	(S)315-B (AC select)	1
36	MG00042	screw	M3*10	4
37	ME00060	socket nut	JY-6351G-02-250	4
38	MF00061	washer	JY-6351G-02-250	4
39	MG00061	screw	M3*10	8
40	MC00209	top cover	CLE2.0	1