

# Service Manual

Model: **CONTROL30**

15+15 BAND DIGITAL EQUALIZER



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

Version: 1.1

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## 1. SPECIFICATION (CONTROL30)

### Analog Input section

Inputs: Analog variable gain, 2 XLR-F electronically balanced  
Input Impedance: 44 kOhms  
Max. input Level: 15 dBu (4.4V RMS)  
Sensitivity: -22 dBu (63mV RMS)

### Analog Output section

Outputs: Analog variable gain, 2 XLR-M electronically balanced  
Output Impedance <150 Ohms  
Max. output level: 17 dBu on 600 Ohms (5.5V RMS)

### Digital / Analog Interface

Amplitude Response: 20 Hz - 20 kHz + 0.2 / - 2.5 dB  
Signal to Noise Ratio 90 dB (A wtg. / 20 Hz-20kHz)  
THD+N 0.03 % @ 1kHz -6 dB (VU-meter level)  
Group Delay 700 us  
Sampling Frequency 46.875 kHz  
Conversion 1 bit Sigma-Delta

### Digital

Processor Speed: 12 MIPS  
DSP Resolution: 24x32bits  
Control: Microprocessor

### MIDI Section

Connections: Input/Output/Thru  
Sockets 5-poles DIN (female)  
Mode Photocoupled

### Power Supply

Connector type: 3-pole IEC, grounded  
Type: Servo controlled, stabilized  
Mains supply: 115V or 230V 50/60 Hz  
Power Rating: 9 W

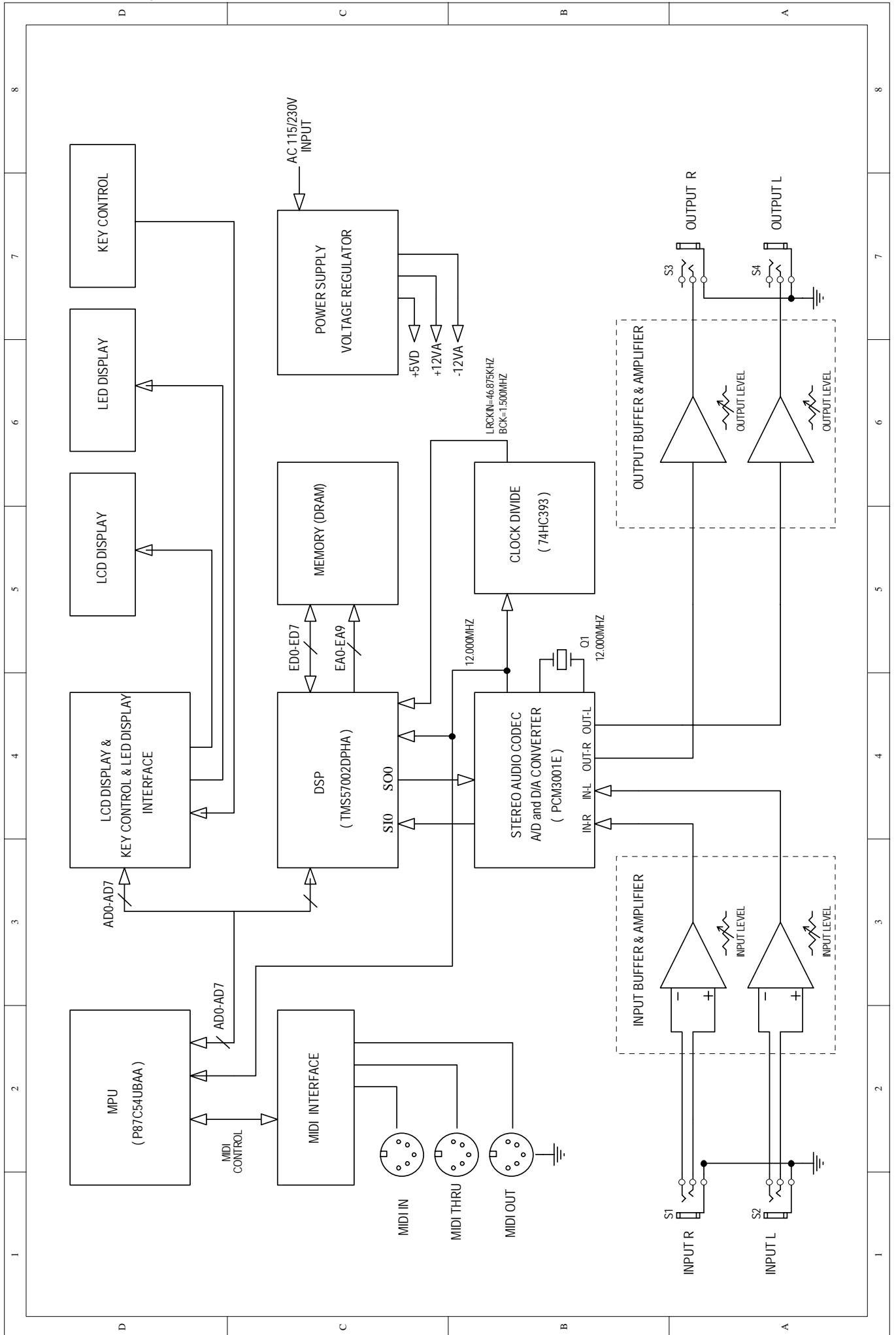
### User Interface

numeric LCD Display: 2x20 characters  
Keyboard: 7 user keys / 5 LEDs  
VU meter: 2x6 LEDs

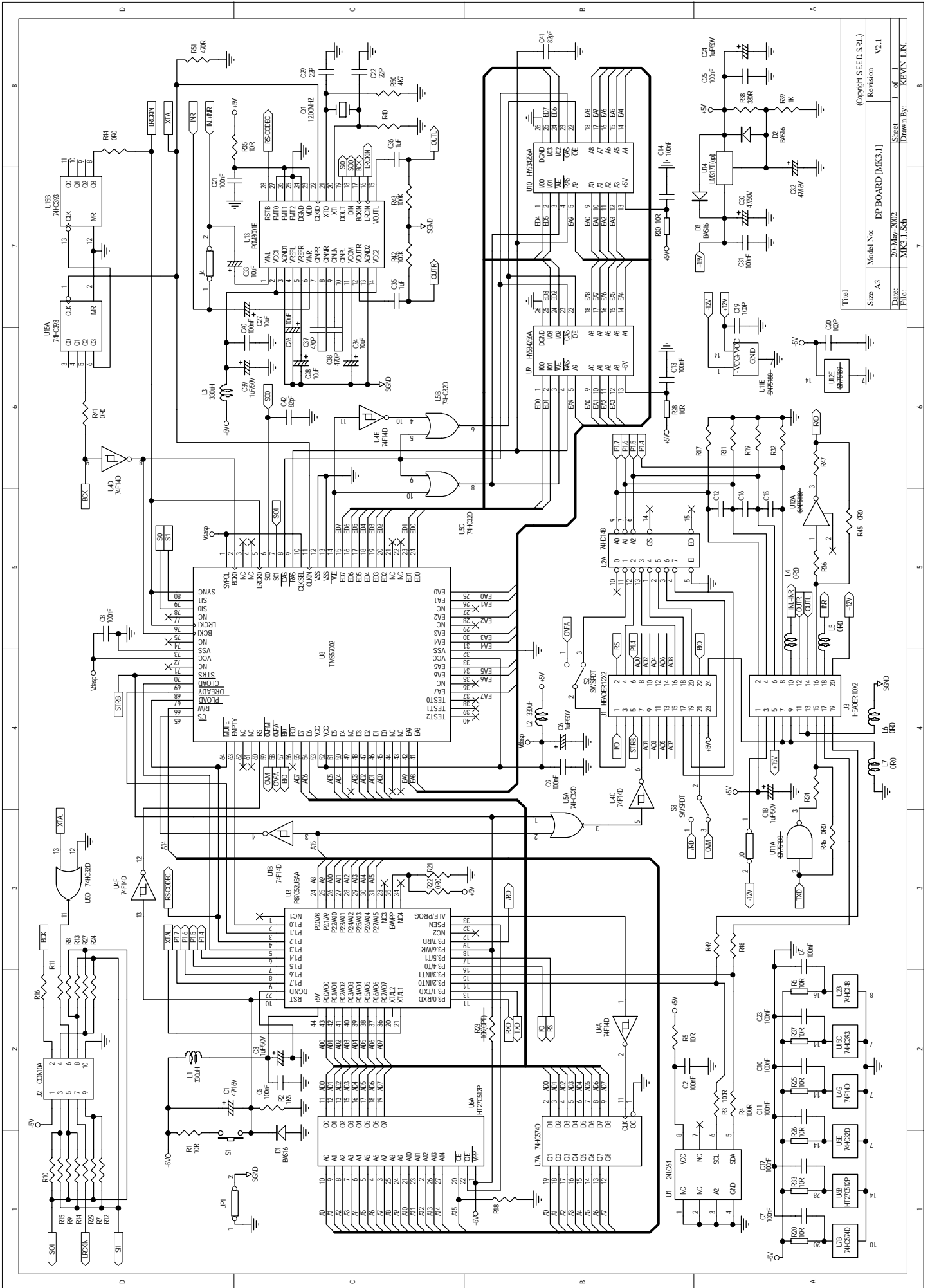
### Physical

Size: Standard 19" rack mounting  
Dimensions (W/H/D): 483mm 44mm 232.5mm (19.32" 1.76" 9.3")  
Net Weight: 3.8Kg

## 2. Block Diagram

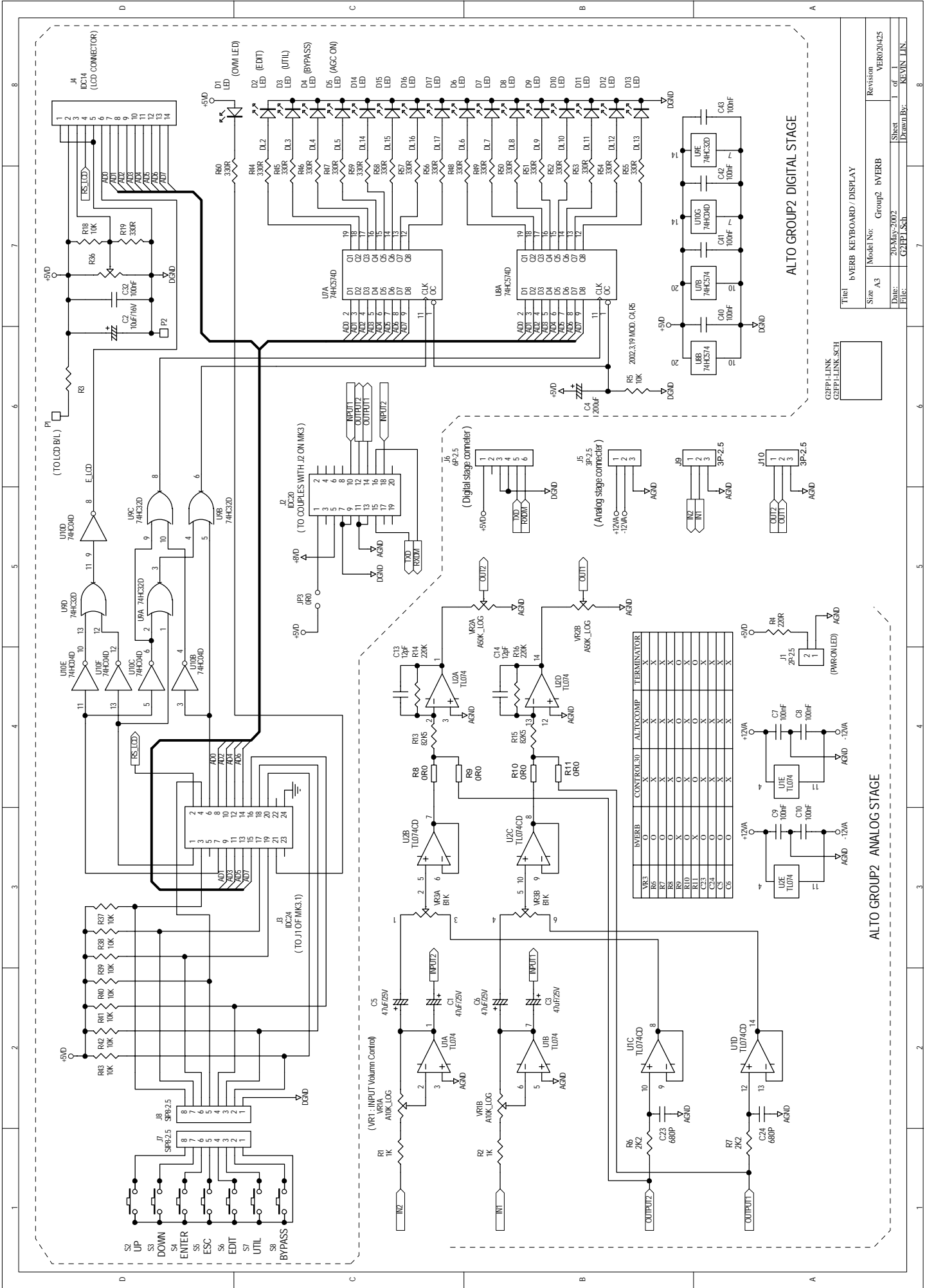


# 3. Schematic Diagram



Model No:	DP BOARD [MK3.1]
Revision	V2.1
Date:	20-May-2002
File:	MK3.1.Sch
Sheet	1 of 1
Drawn By:	KEVIN LIN

Copyright SEED SRL

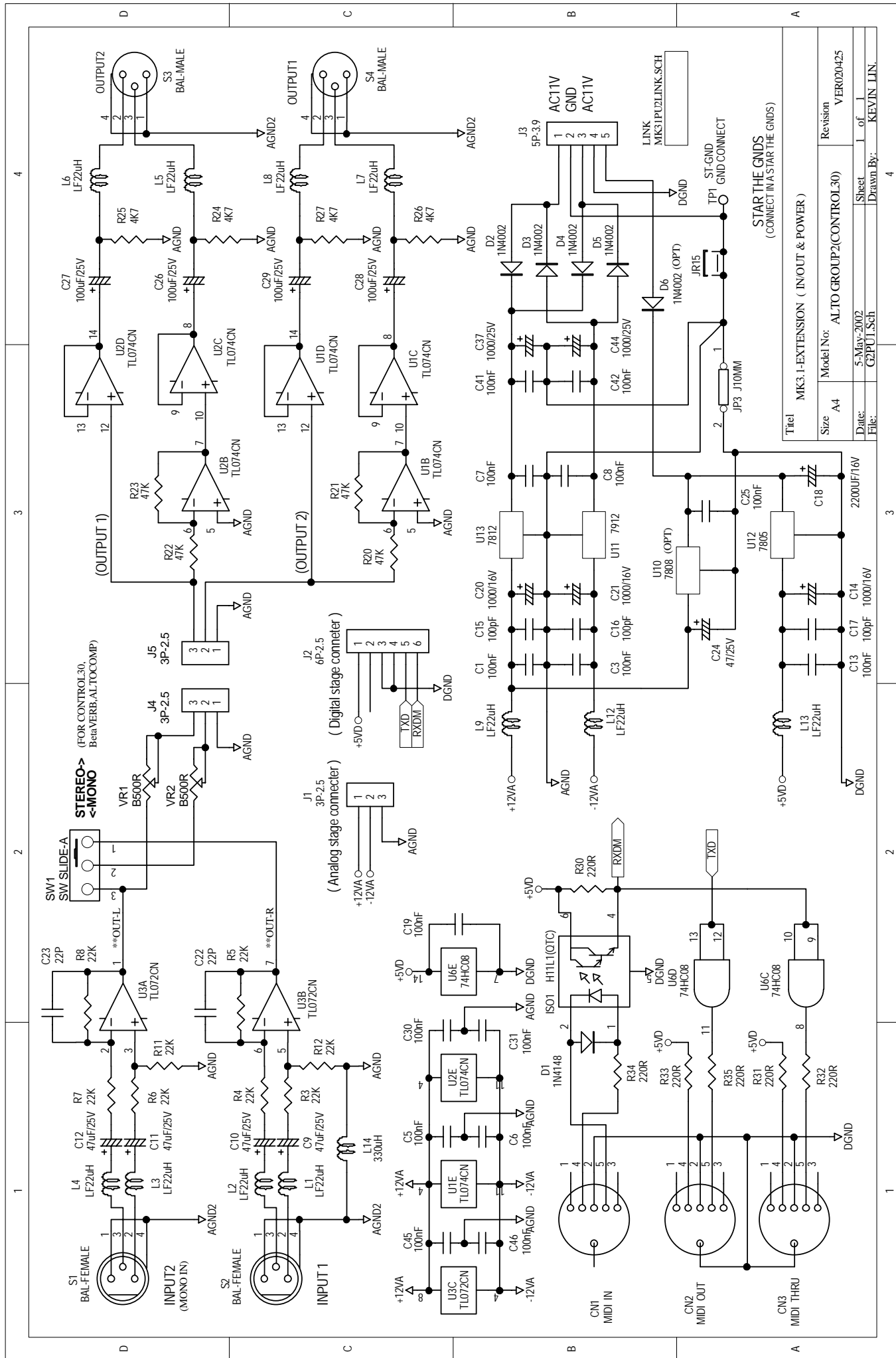


Title: IVERB KEYBOARD / DISPLAY  
Model No: Group2 IVERB  
Revision: VER020425  
Date: 20-May-2002  
File: GZFP1.SCH

Sheet 1 of 1  
Drawn By: KEVIN LIN

### ALTO GROUP2 ANALOG STAGE

### ALTO GROUP2 DIGITAL STAGE

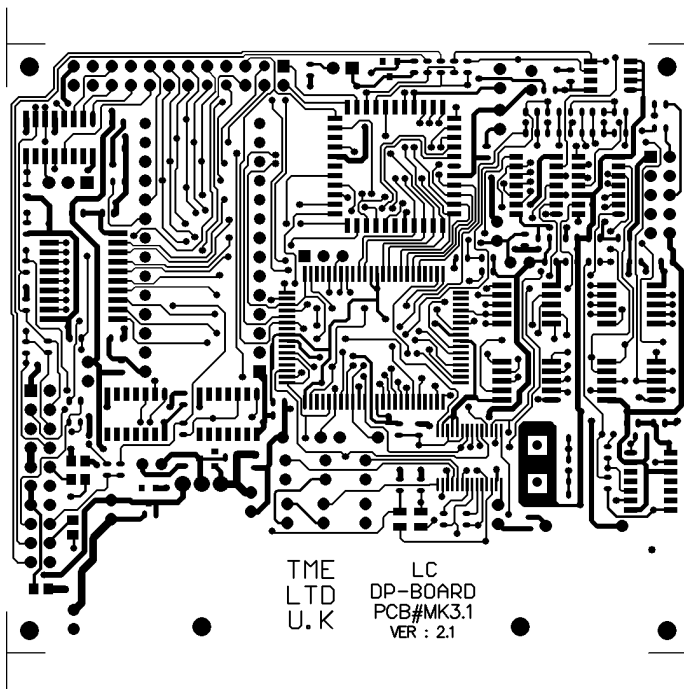


Sheet	1	of	1
File:	G2PUI_Sch		
Date:	5_Mars-2002		
Model No:	ALTO GROUP2(CONTROL30)		
Size	A4		
Revision	VER020425		

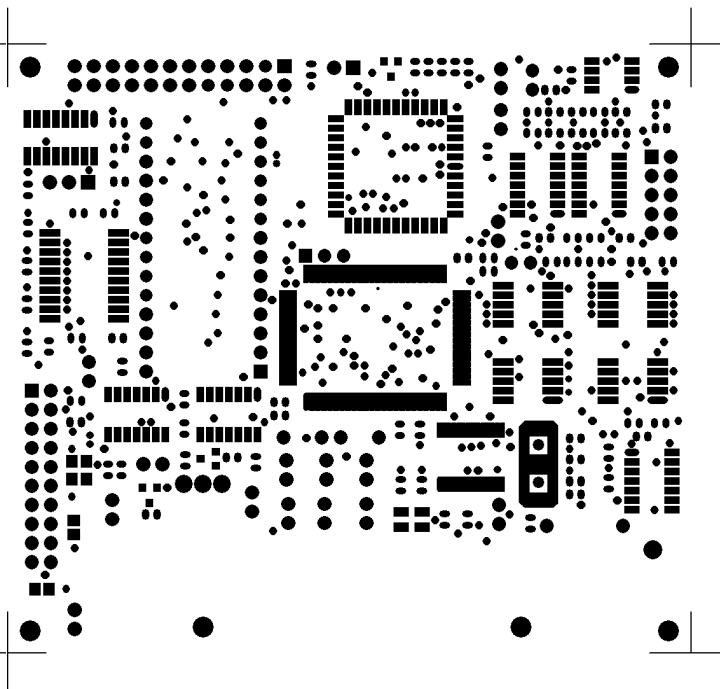
Title MK3.1-EXTENSION ( IN/OUT & POWER )  
 STAR THE GNDS  
 (CONNECT IN A STAR THE GNDS)

# 4. Printed Circuit Diagram

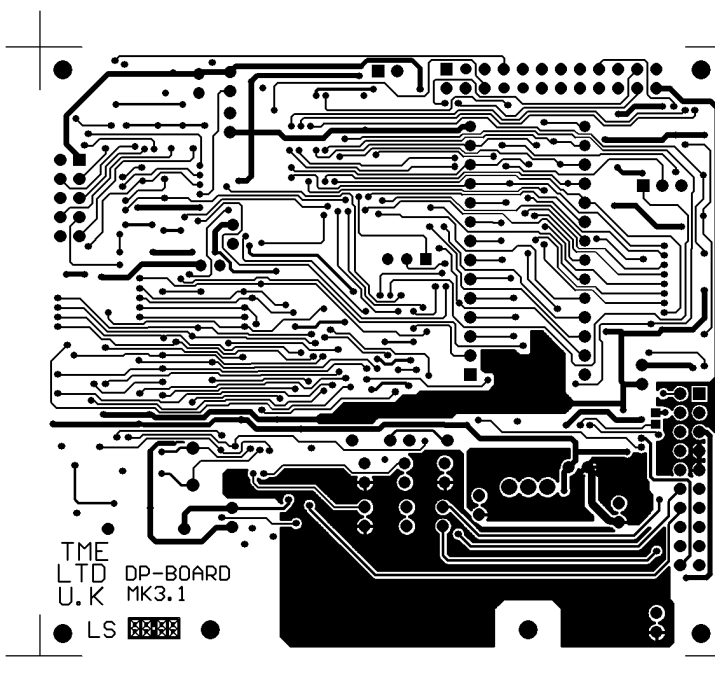
## MK31 PCB LAYOUT



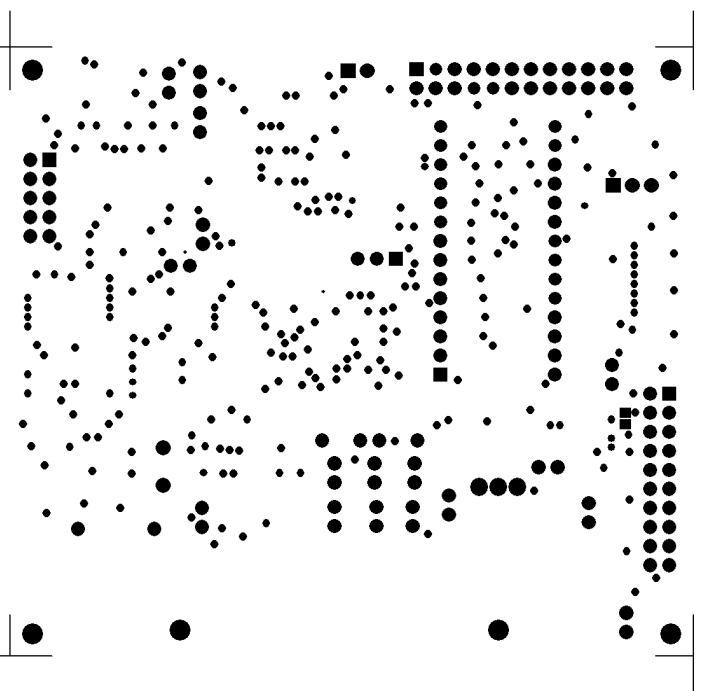
TOP LAYER



TOP SOLDER MASK

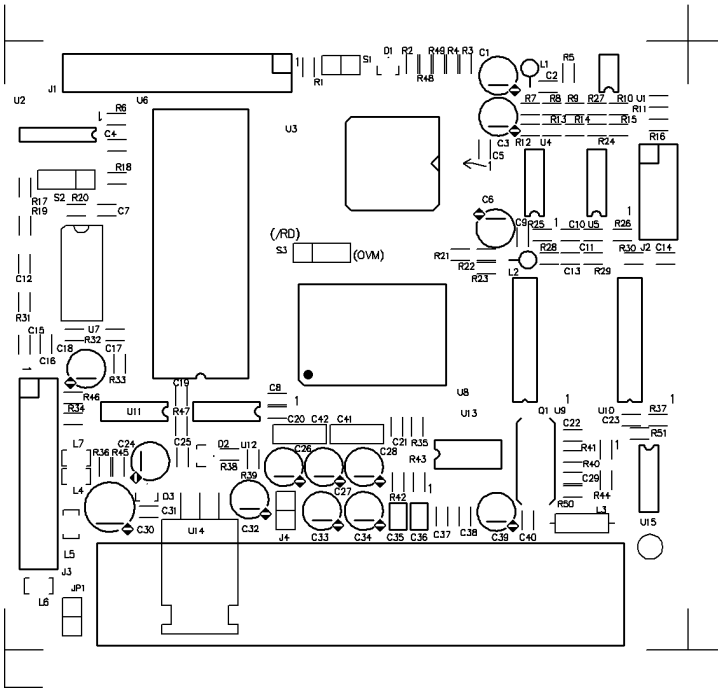


BOTTOM LAYER

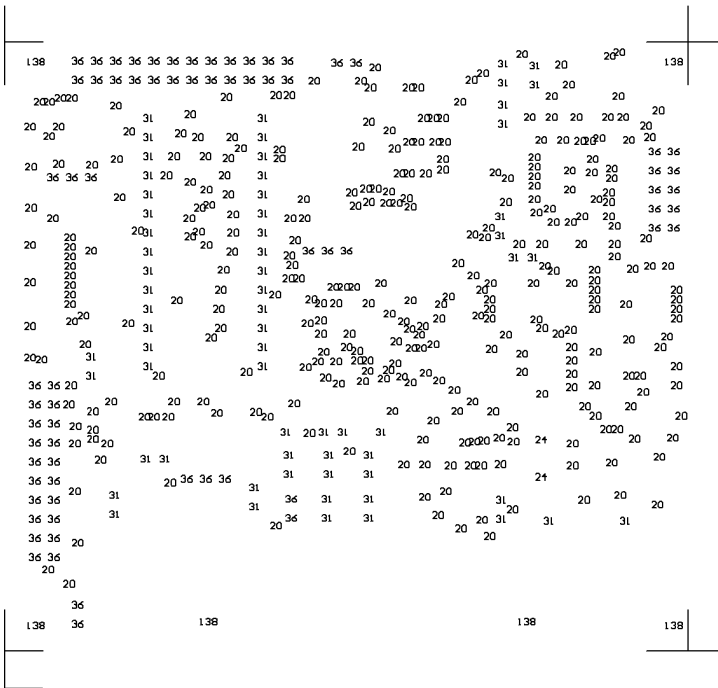


BOTTOM SOLDER MASK





**TOP SILKSCREEN**



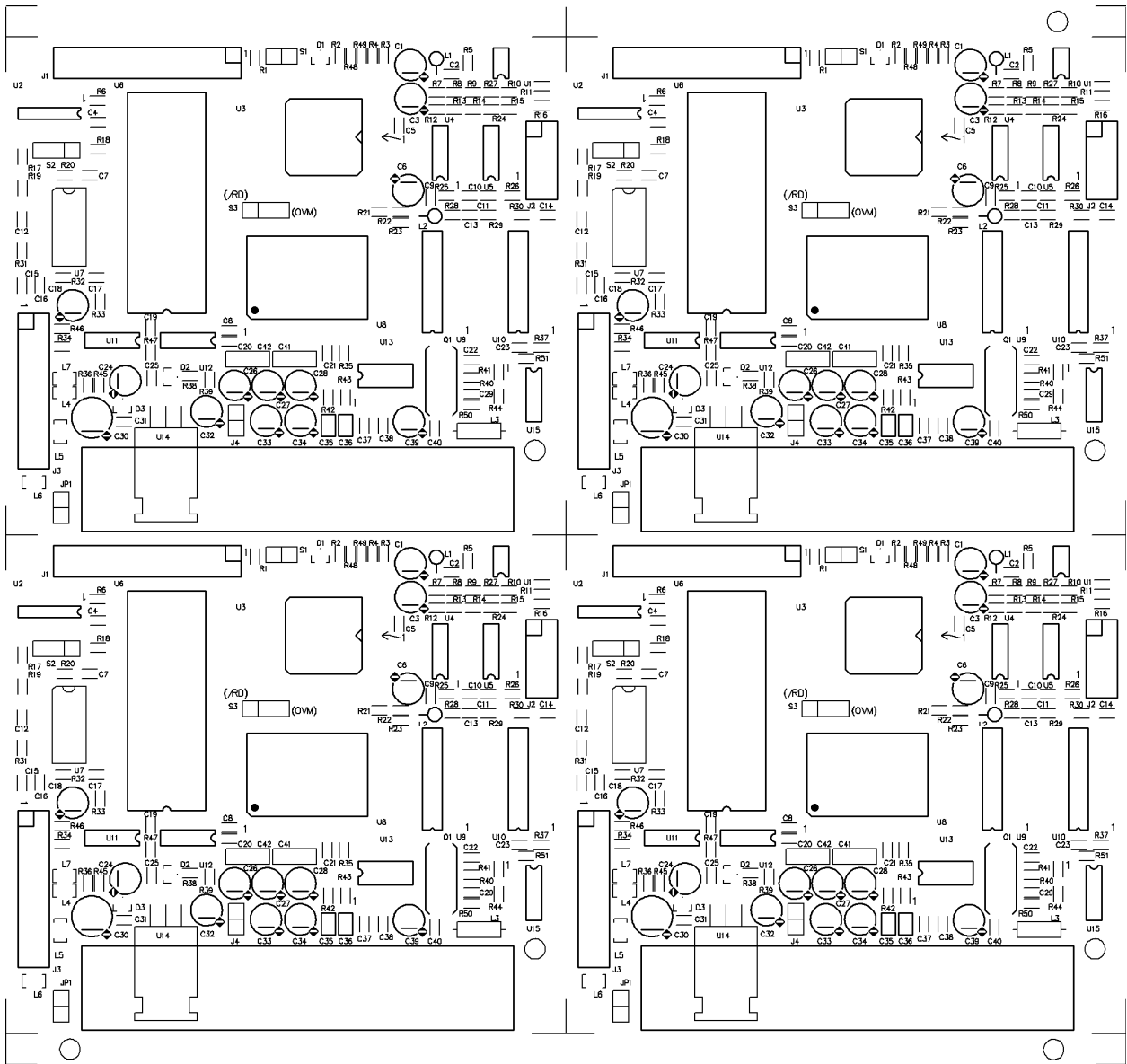
**DRILL DRAWING**

NCDrill File Report For: MK31-EMI.PCB

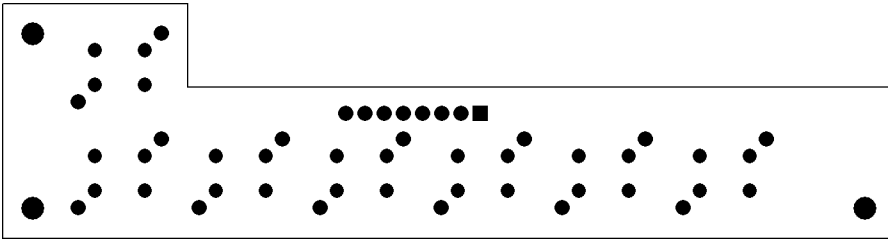
Layer Pair : TopLayer to BottomLayer  
 ASCII File : NCDrillOutput.TXT  
 EIA File : NCDrillOutput.DRL

Tool	Hole Size	Hole Count Plated
T1	20mil (0.50mm)	328
T2	24mil (0.60mm)	2
T3	31mil (0.80mm)	64
T4	36mil (0.90mm)	69
T5	138mil (3.50mm)	6 NPTH
<b>Totals</b>		<b>469</b>

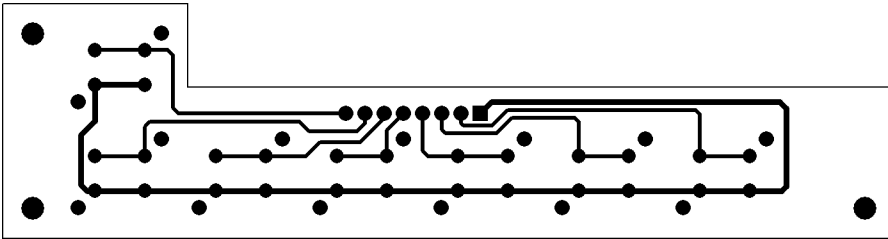
# MK31 排片方式



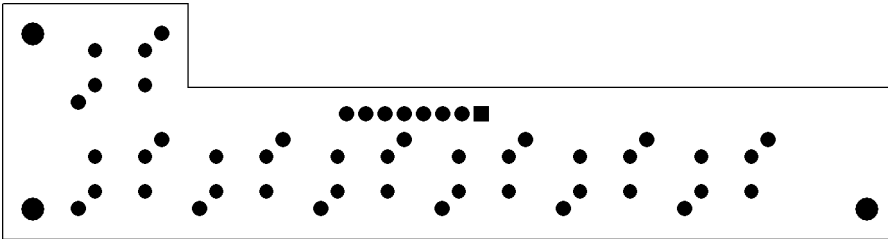
# MK31-FDKB PCB LAYOUT



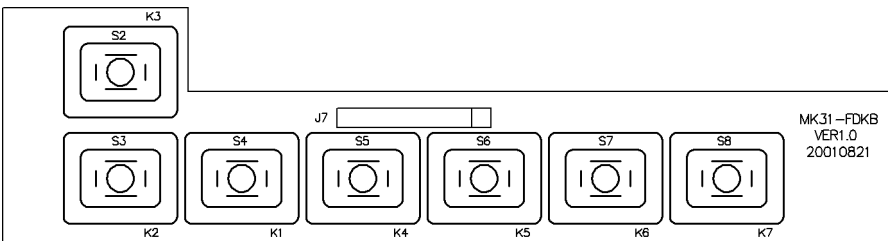
**BOTTOM SOLDER MASK**



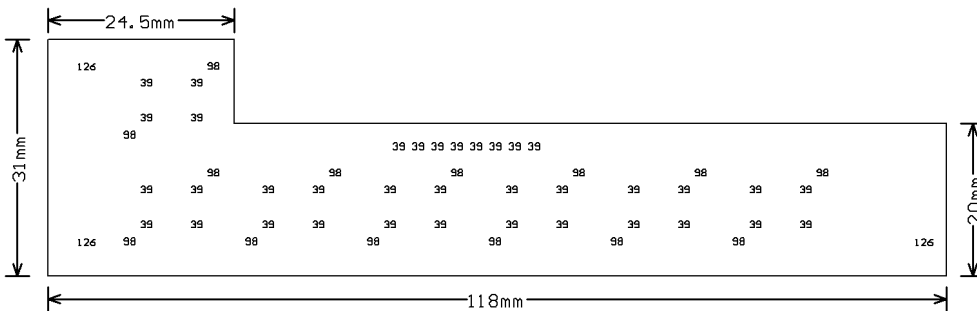
**BOTTOM LAYER**



**TOP LAYER & TOP SOLDER MASK**

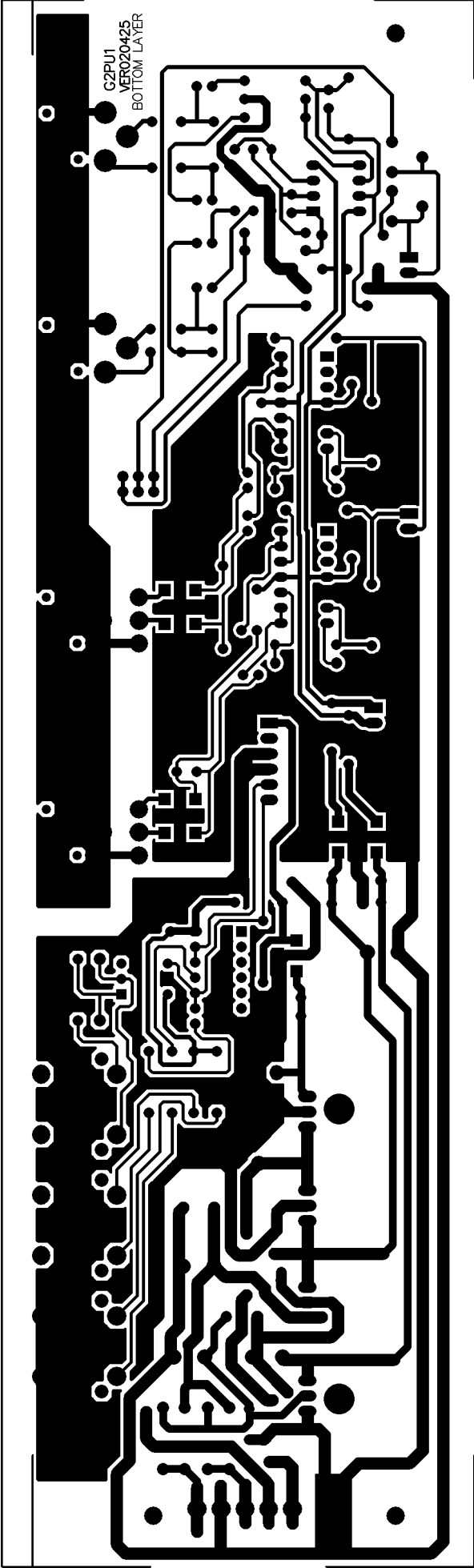


**TOP SILKSCREEN**

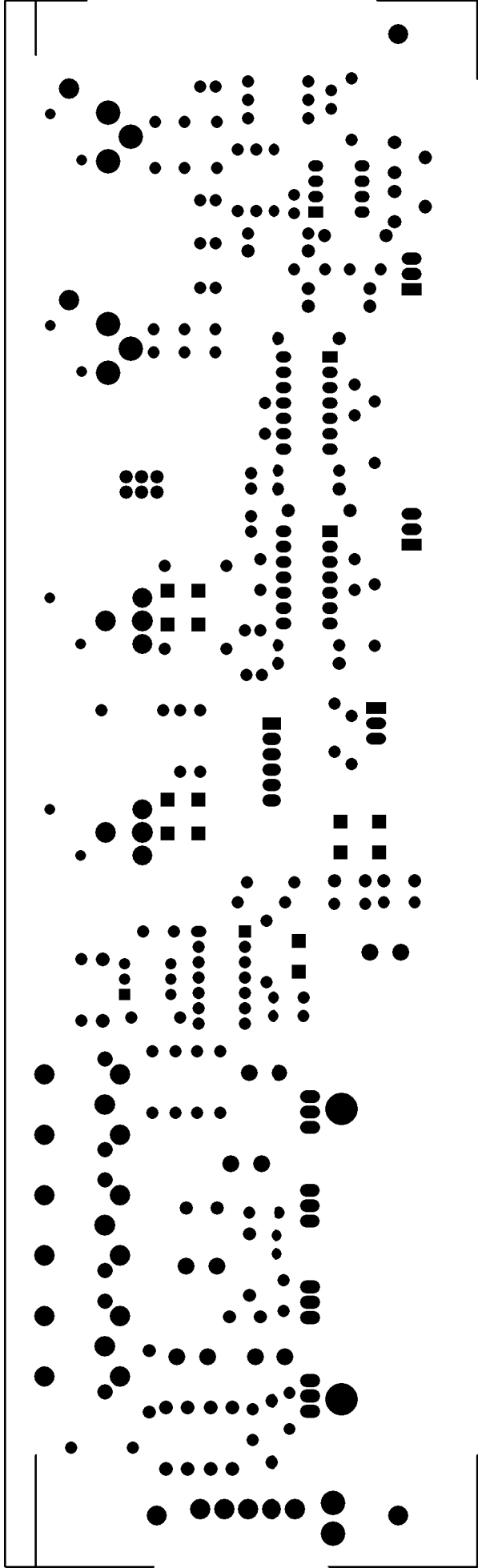


**DRILL DRAWING**

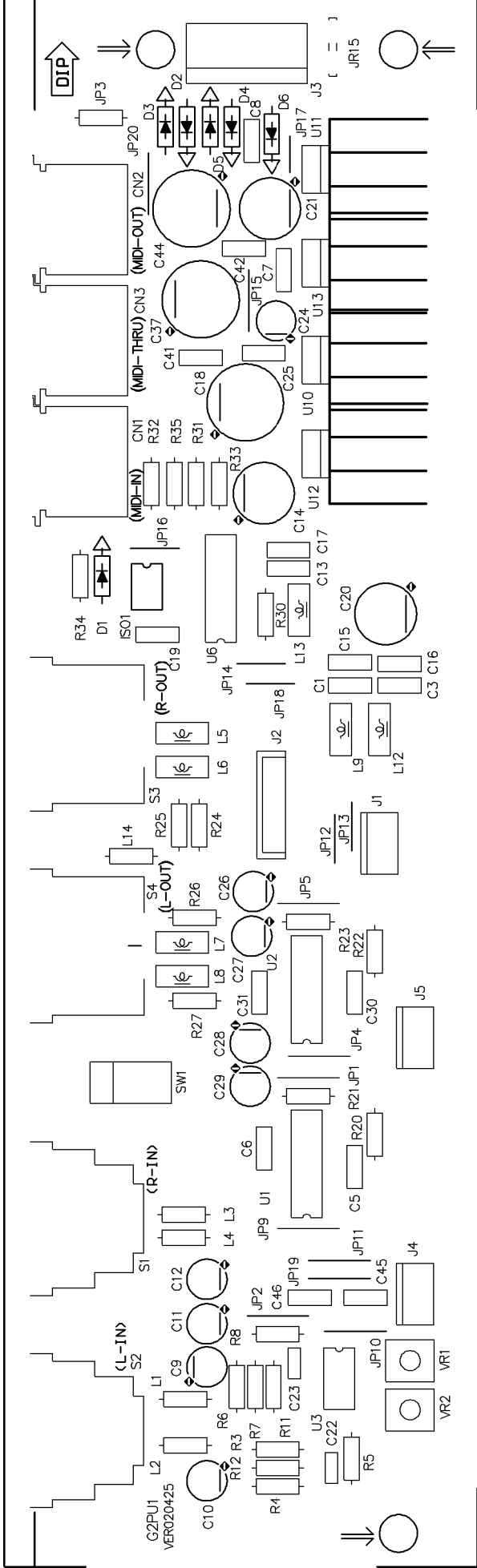
Tool	Hole Size	Hole Count	Plated
T1	39mil (1.00mm)	36	
T2	98mil (2.50mm)	14	NPTH
T3	126mil (3.20mm)	3	NPTH
Totals		53	



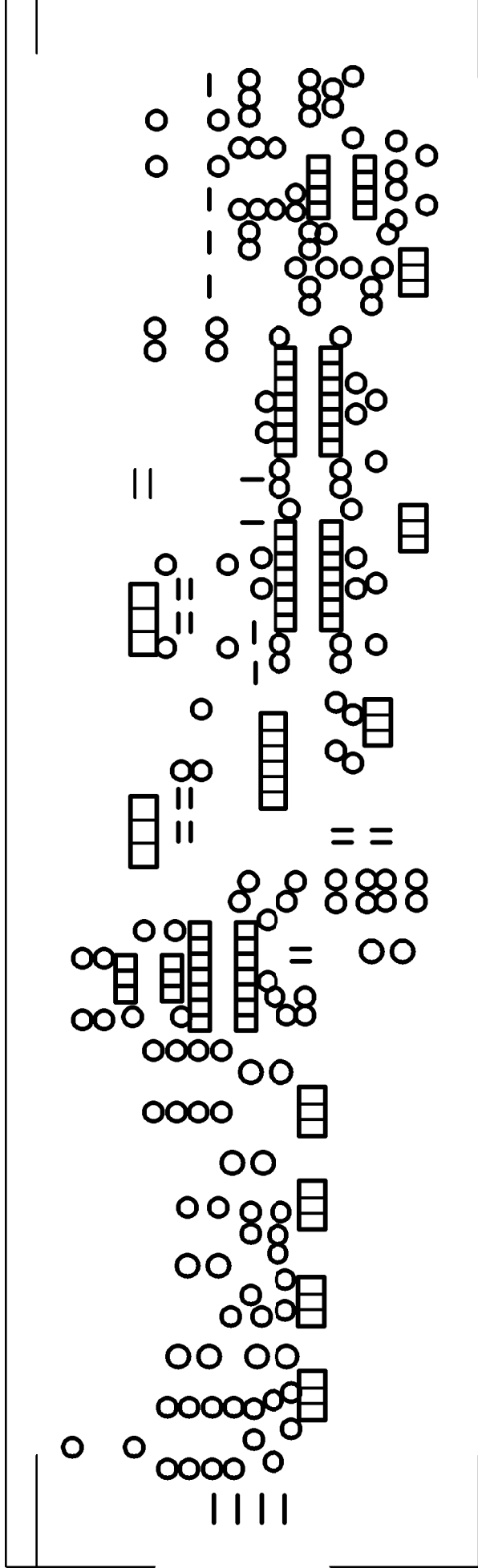
G2PU1 Solder Side



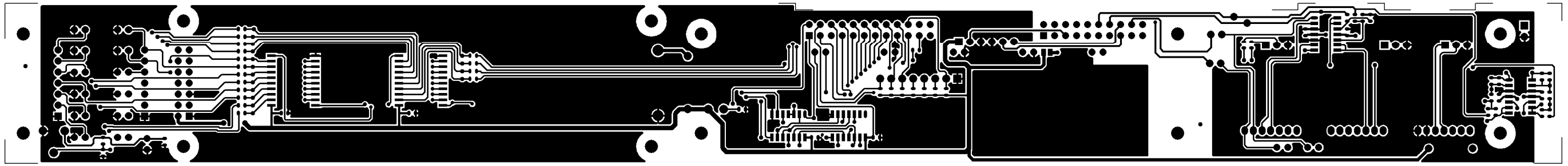
G2PU1 BottomSolderMask



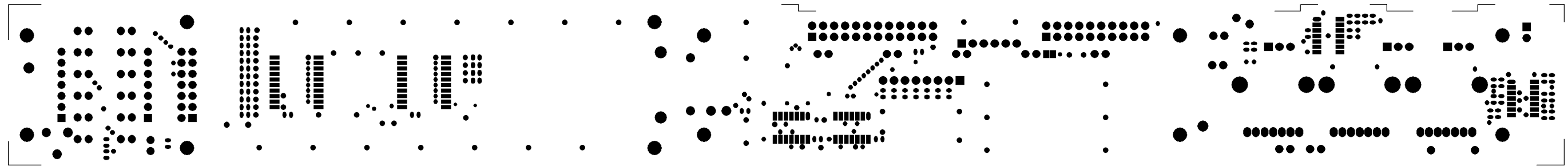
G2PU1 Top silkscreen



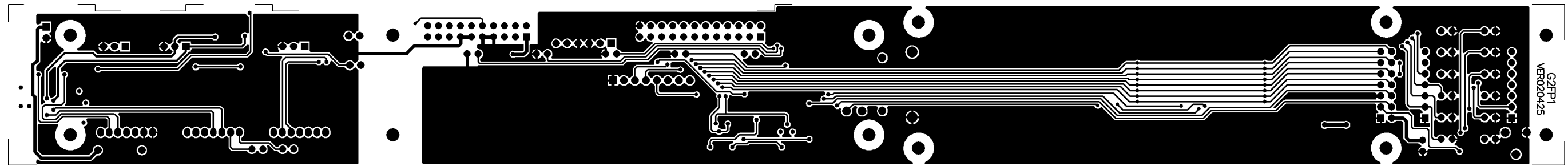
G2PU1 Bottom silkscreen



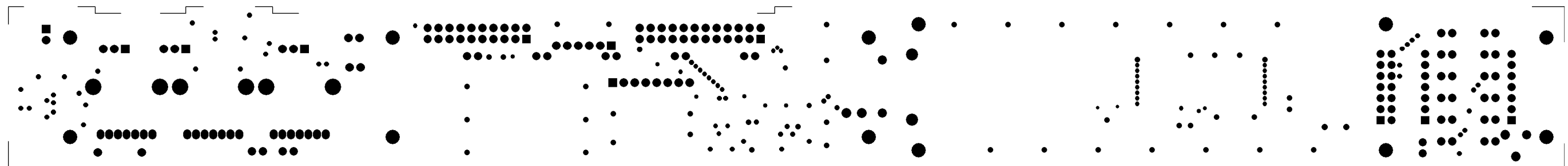
Top Layer



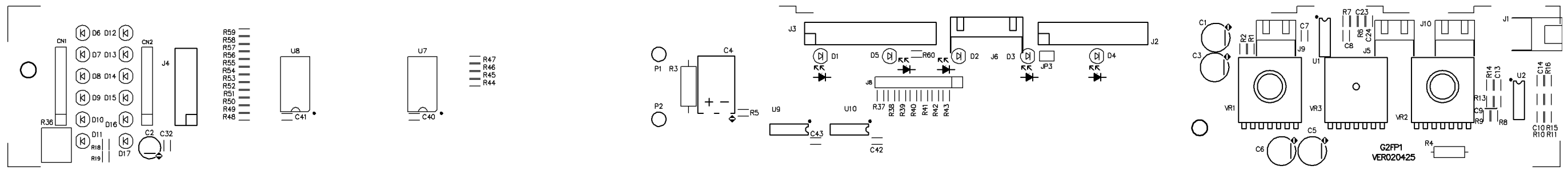
Top Solder Mask



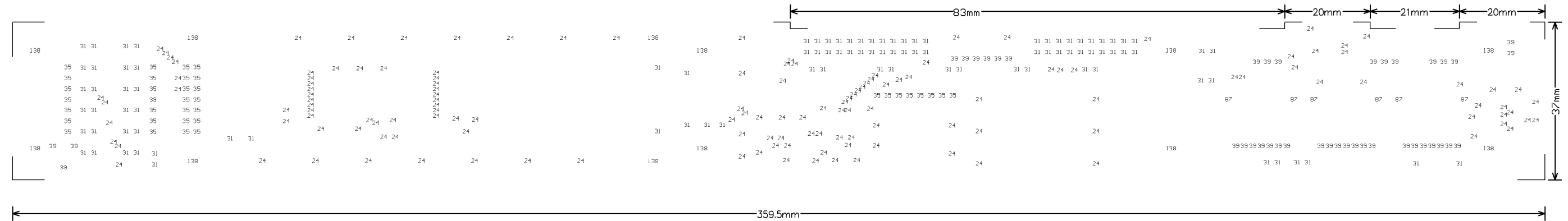
Bottom Layer



Bottom Solder



Top Overlay

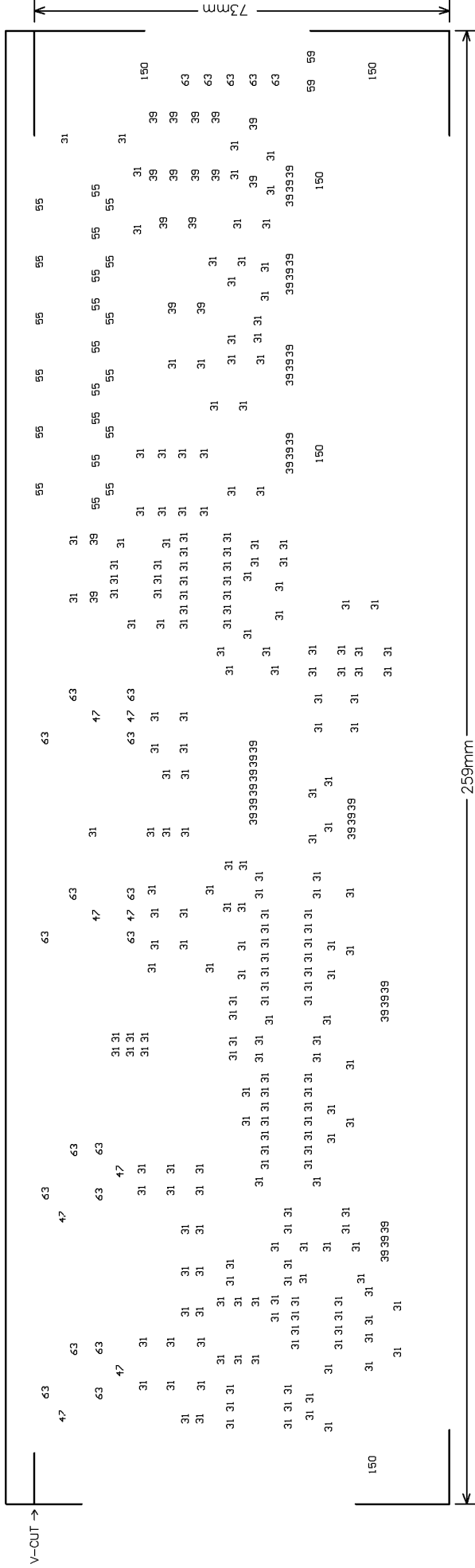


Drill Drawing

NCDrill File Report For: G2FP1.PCB 13-May-2002

Layer Pair : TopLayer to BottomLayer  
 ASCII File : NCDrillOutput.TXT  
 EIA File : NCDrillOutput.DRL

Tool	Hole Size	Hole Count Plated
T1	24mil (0.60mm)	145
T2	31mil (0.80mm)	98
T3	35mil (0.90mm)	35
T4	39mil (1.00mm)	42
T5	87mil (2.20mm)	6
T6	118mil (3.00mm)	3
T7	138mil (3.50mm)	12 NPTH
<b>Totals</b>		<b>341</b>

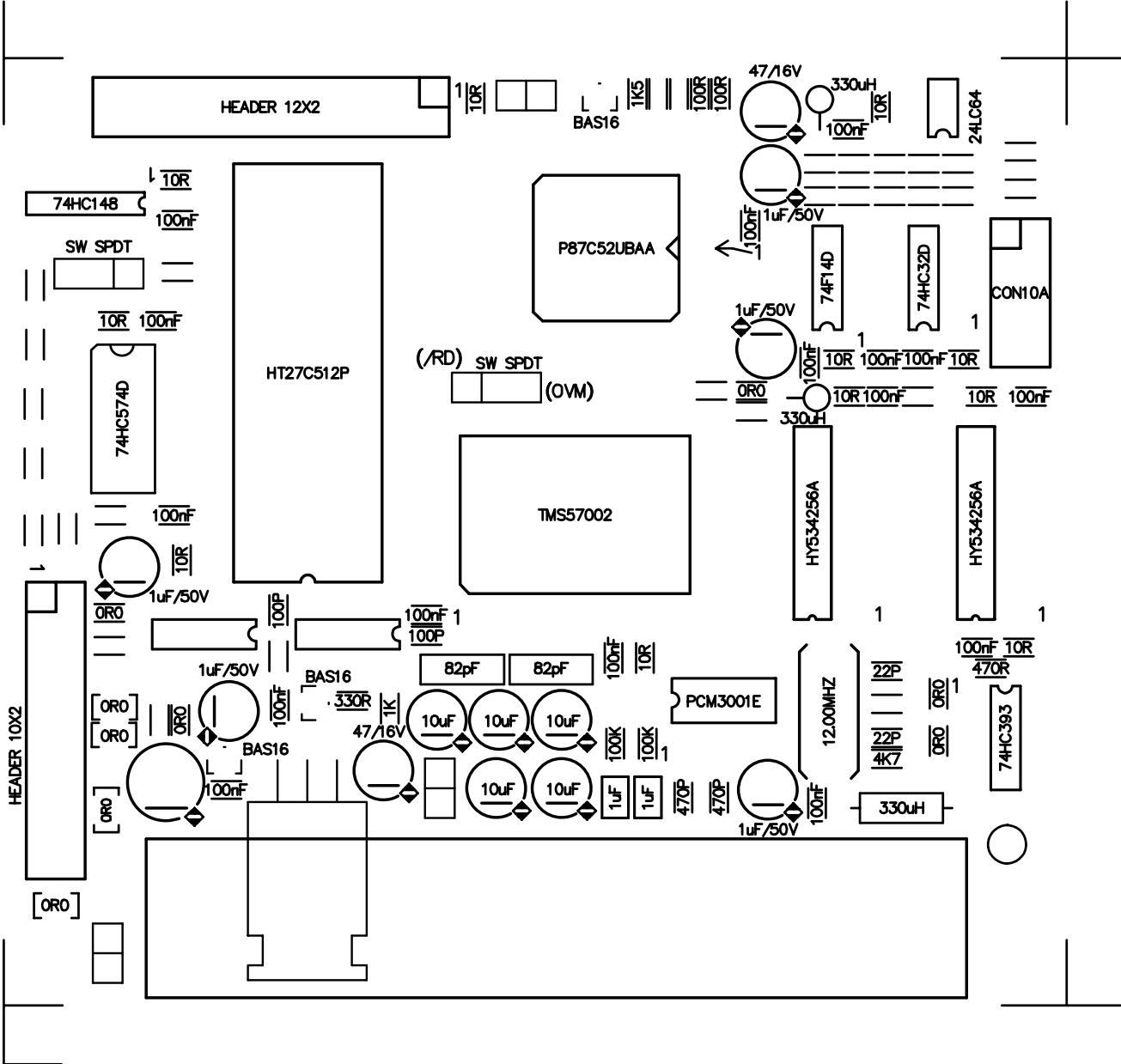


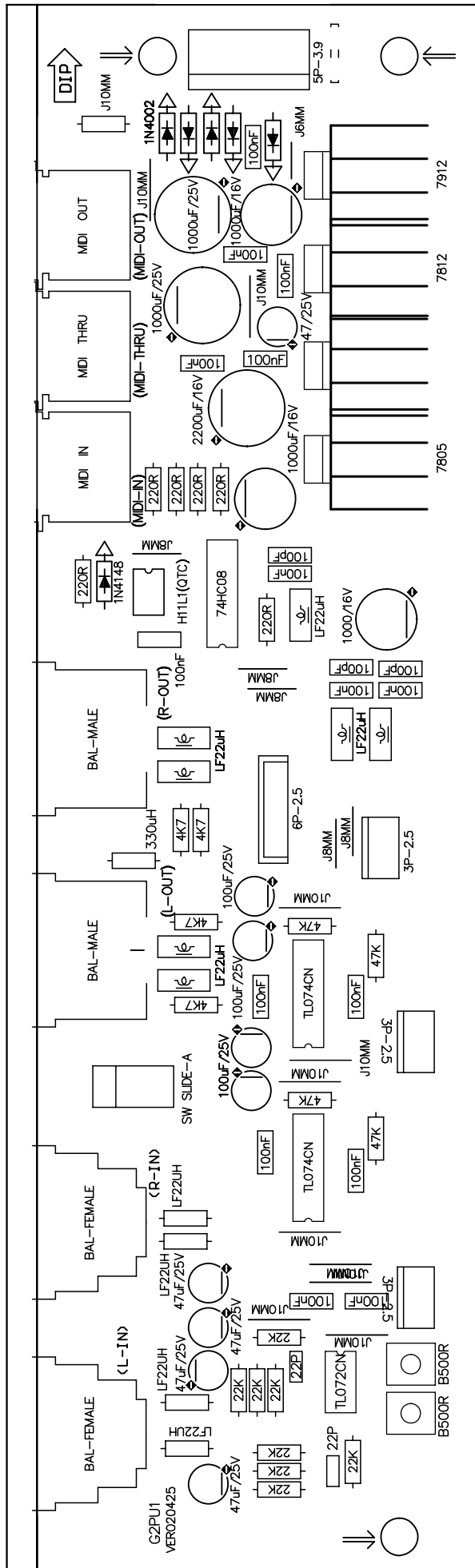
-----  
 NCDrill File Report For: G2PU1.PCB 5-May-2002  
 -----

Layer Pair : TopLayer to BottomLayer  
 ASCII File : NCDrillOutput.TXT  
 EIA File : NCDrillOutput.DRL

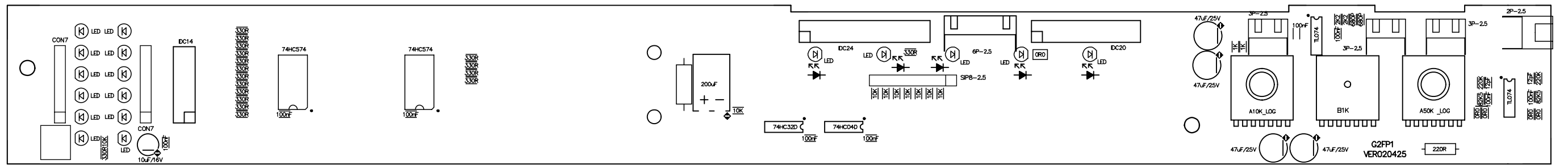
Tool	Hole Size	Hole Count Plated
T1	31mil (0.80mm)	240
T2	39mil (1.00mm)	43
T3	47mil (1.20mm)	8
T4	55mil (1.40mm)	21
T5	59mil (1.50mm)	2
T6	63mil (1.60mm)	21
T7	150mil (3.80mm)	5
Totals		340





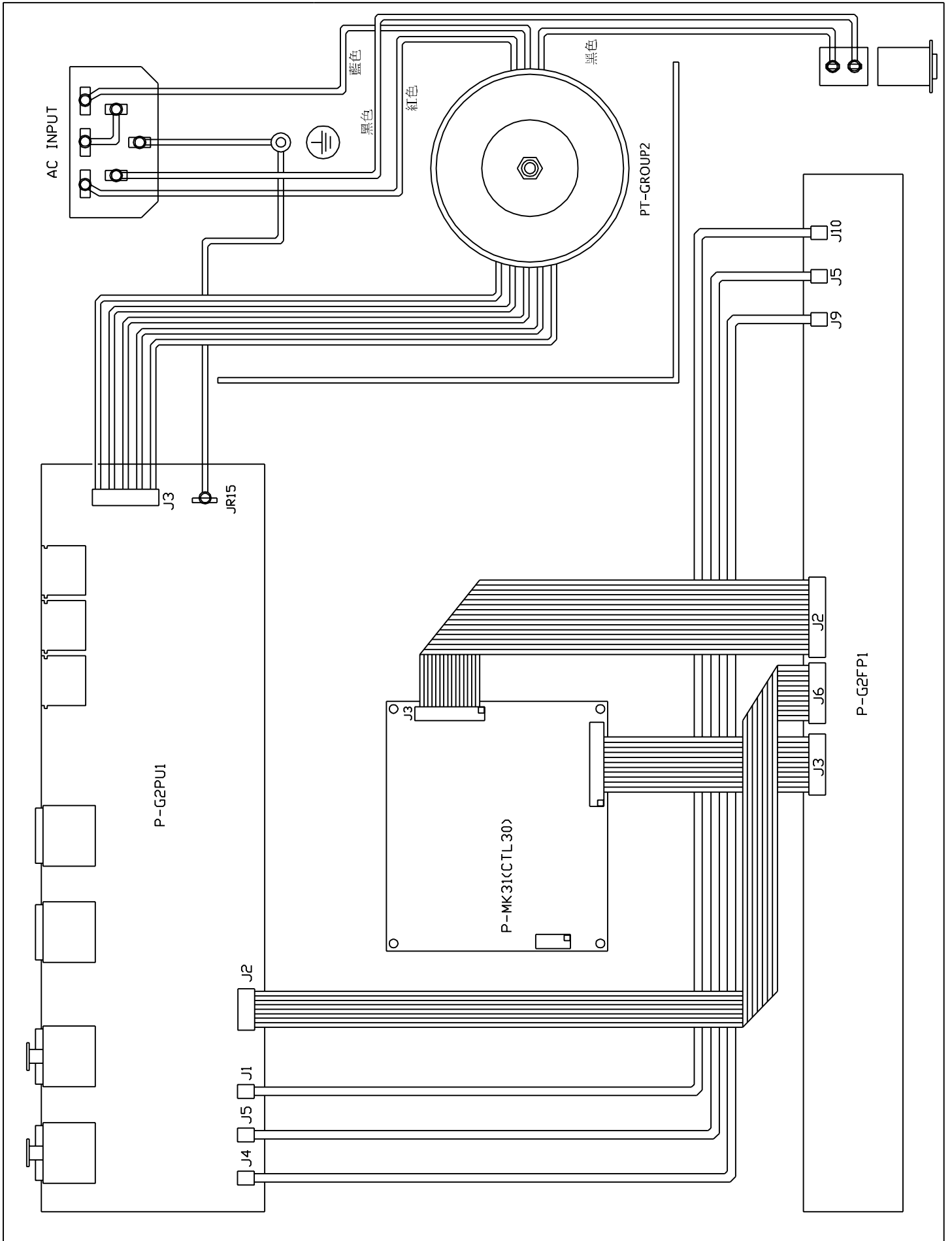


G2PU1 Top silk screen



# CONTROL30 WIRING DIAGRAM

(BETAVERB,ALTOCOMP,TERMINATOR共用)



## Self test procedure for G2 systems

With this procedure it is possible to test:

- All LEDs excluded Process Overflow
- EEPROM
- DSP memory
- Keys
- LCD Display
- MIDI Connections

### MAIN TEST

To enter SYSTEM TEST switch ON the device keeping pressed the ESC key for some seconds: then the display will show

System Test: XXXX XX  
Press a key to check

The front panel LEDs (except process Overflow) will light in sequence. To check the Process Overflow LED feed an analog input signal to the device and raise the input volume until saturation happens.

XXXX XX will alternate the following readings:

EEPR OK/NO (OK means the EEPROM works correctly)  
MDSP OK/NO (OK means the DSP memory works correctly)

During the test, it is possible to check the keyboard: pressing a key the LCD will show the key name.

### MIDI TEST

Connect a 5-pole dual male MIDI cable between MIDI IN and MIDI OUT sockets; the display will show:

System Test : MIDI XX  
Keyboard locked

XX will be OK in the case MIDI test is passed, NO if there is a MIDI malfunction.

# Test Procedures for CONTROL30,TERMINATOR,ALTOCOMP

## Amplitude response test

### On PC:

-Load file: **control30\_amplitude** (APWin File menu / Open / Test)

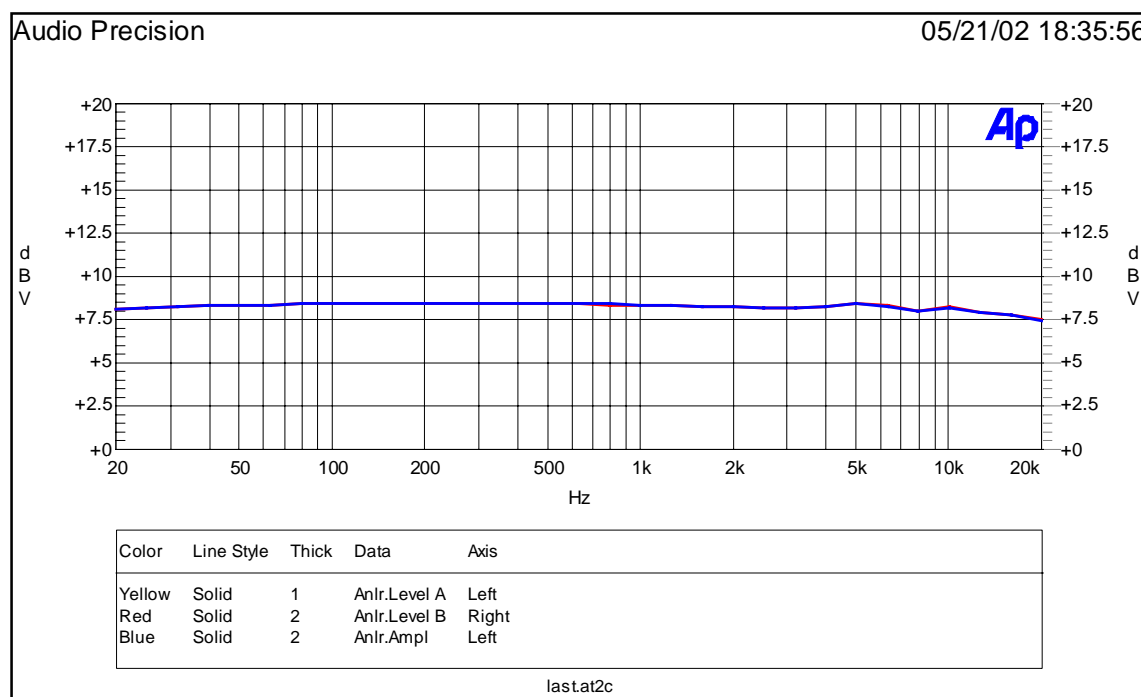
### Test Connections:

- Output A of Audio Precision System Two → input 1 of the device under test.
- Output B of Audio Precision System Two → input 2 of the device under test.
- Output 1 of the device under test → A input of Audio Precision System Two.
- Output 2 of the device under test → B input of Audio Precision System Two.

### On the device under test

- Turn on the power switch.
- Set INPUT volume to maximum.
- Set OUTPUT volume to maximum.
- Push BYPASS switch (on the TERMINATOR push the UTIL key then navigate the menu up to SYSTEM BYPASS and hit the ENTER key)

Start the sweep (F9) and control the results (Page3-Graph)



## THD test

### On PC:

-Load file: **control30\_THD** (APWin File menu / Open / Test)

### Test Connections:

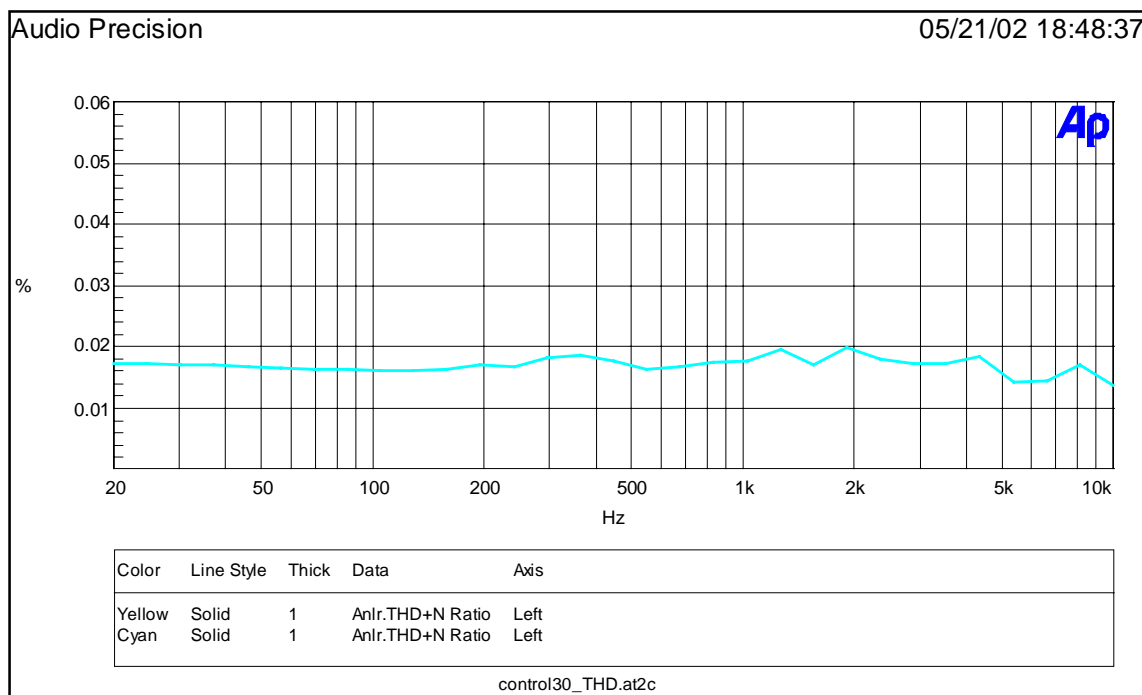
- Output A of Audio Precision System Two → input 1 of the device under test.
- Output B of Audio Precision System Two → input 2 of the device under test.

### On the device under test

- Turn on the power switch.
- Set INPUT volume to maximum.
- Set OUTPUT volume to maximum.
- Push BYPASS switch (on the **TERMINATOR** push the UTIL key then navigate the menu up to SYSTEM BYPASS and hit the ENTER key)

Start the sweep (F9) and control the results (Page3-Graph) in the following conditions:

- Output 1 of the device under test → A input of Audio Precision System Two.
- Output 2 of the device under test → B input of Audio Precision System Two.



## S/N test

### On PC:

-Load file: **control30\_SN** (APWin File menu / Open / Test)

### Test Connections:

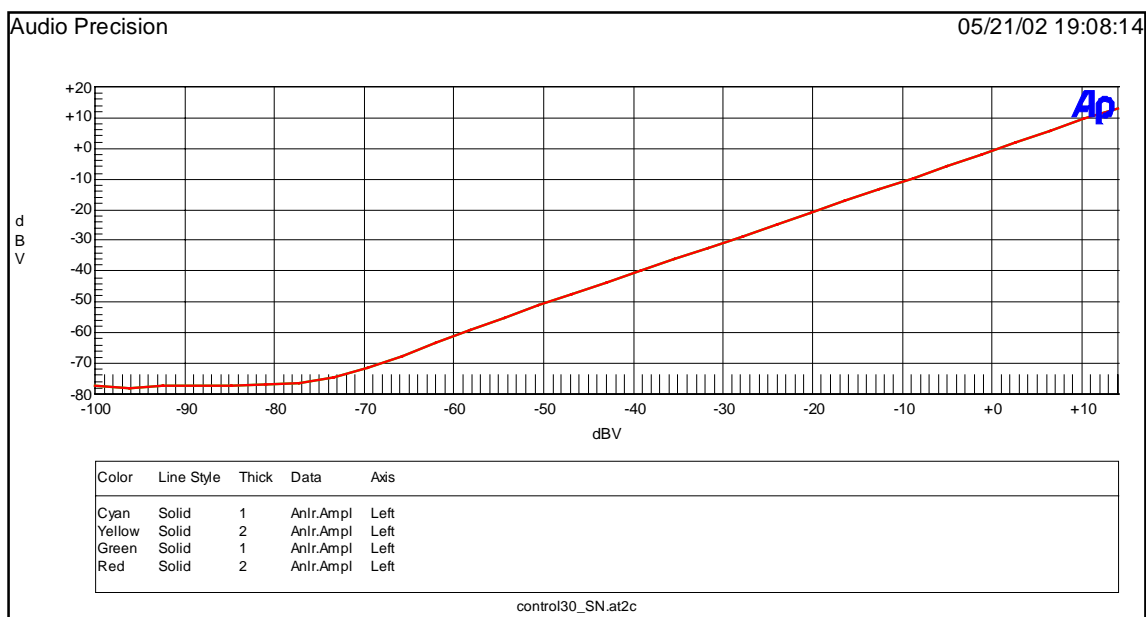
- Output A of Audio Precision System Two** → **input 1 of the device under test.**
- Output B of Audio Precision System Two** → **input 2 of the device under test.**

### On the device under test

- Turn on the power switch.
- Set OUTPUT volume to maximum.
- Push **BYPASS** switch (on the **TERMINATOR** push the **UTIL** key then navigate the menu up to **SYSTEM BYPASS** and hit the **ENTER** key)
- increase the **INPUT** level until the device's outputs clip, and after reduce the **INPUT** level itself until the outputs exit from clipping state.

Start the sweep (F9) and control the results (Page3-Graph) in the following conditions:

- Output 1 of the device under test** → **A input of Audio Precision System Two.**
- Output 2 of the device under test** → **B input of Audio Precision System Two.**





## Dynamics test

### On PC:

-Load file: **control30\_dyn** (APWin File menu / Open / Test)

### Test Connections:

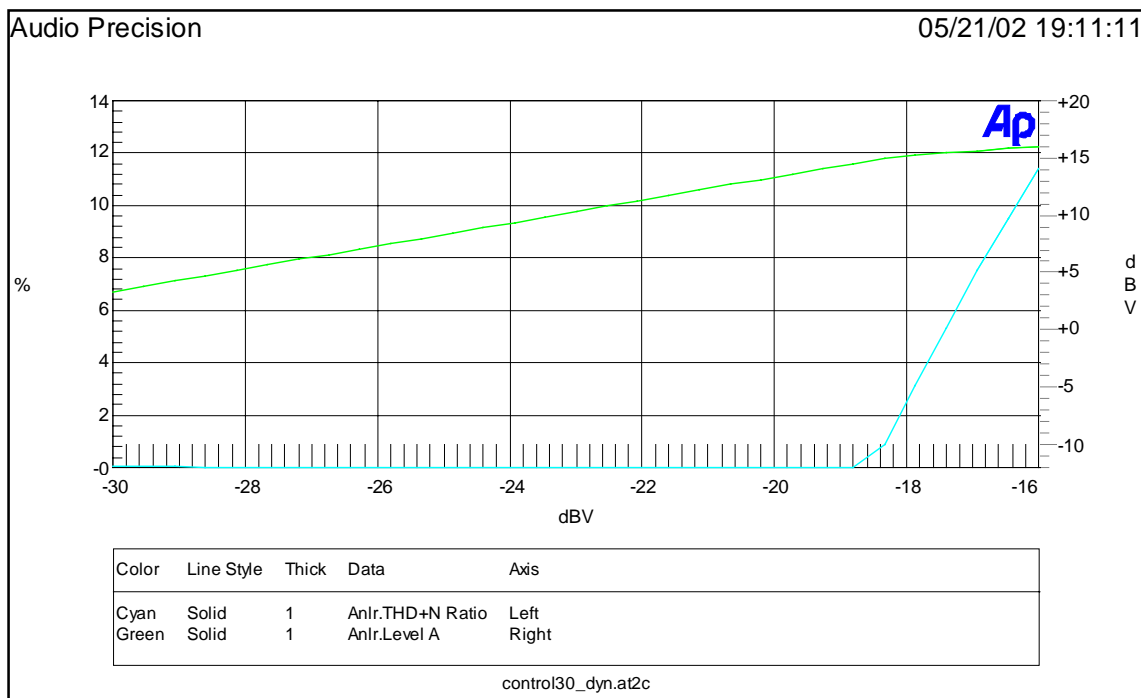
- Output A of Audio Precision System Two → input 1 of the device under test.
- Output B of Audio Precision System Two → input 2 of the device under test.

### On the device under test

- Turn on the power switch.
- Set INPUT volume to maximum.
- Set OUTPUT volume to maximum.
- Push BYPASS switch (on the **TERMINATOR** push the UTIL key then navigate the menu up to SYSTEM BYPASS and hit the ENTER key)

Start the sweep (F9) and control the results (Page3-Graph) in the following conditions:

- Output 1 of the device under test → A input of Audio Precision System Two.
- Output 2 of the device under test → B input of Audio Precision System Two.



## Stability test

### On PC:

-Load file: **control30\_stability** (APWin File menu / Open / Test)

### Test Connections:

- Output A of Audio Precision System Two → input 1 of the device under test.**
- Output B of Audio Precision System Two → input 2 of the device under test.**
- Output 1 of the device under test → A input of Audio Precision System Two.**
- Output 2 of the device under test → B input of Audio Precision System Two.**

### On the device under test

- Turn on the power switch.
- Turn MIX control counterclockwise (DRY).
- Set OUTPUT volume to maximum.
- Set INPUT volume to zero.
- Push BYPASS switch (on the **TERMINATOR** push the UTIL key then navigate the menu up to SYSTEM BYPASS and hit the ENTER key)
- Load **ROOM 1** Preset (Preset #001)

### Test:

Move the input level knob from 0 to maximum 3 times and control the output waveforms: NO PERMANENT SINE WAVEFORMS should be visible. IF PERMANENT WAVEFORMS WITH FREQUENCY > 20kHz should become visible on whatever output channel, THE UNIT IS TO BE INSPECTED.

# **CONTROL30-ALTO-歐洲-230V**

## **Structure Needing Material Detail List**

建檔日: 2002/01/30      修正日: 2002/05/21

<b><u>NO.</u></b>	<b><u>Midprod NO</u></b>	<b><u>Quantity</u></b>	<b><u>Unit</u></b>
1	A-CONTROL30-ALTO-歐規-230V	1.000	PCS
2	A-CONTROL30 底后板組合	1.000	PCS
3	A-CONTROL30 前板組合	1.000	PCS
4	P-MK3.1-SMD (CTL30)	1.000	PCS
5	P-MK3.1-DIP (CTL30)	1.000	PCS
6	P-G2PU1 (CONTROL30)	1.000	PCS
7	P-G2FP1-SMD (CONTROL30)	1.000	PCS
8	P-G2FP1-DIP (CONTROL30)	1.000	PCS
9	P-MK31-FDKB-DIP	1.000	PCS
10	P-MK31-LED-SMD	1.000	PCS
11	P-G2FP1-半成品組合	1.000	PCS

Item No: CONTROL30

specify: AMP

Mid No: A-CONTROL30-ALTO-歐規-230V standard quantity: 1.000

NO	Material No	Item Name	Specific	Quantity	Unit	Ps
	1 MFR397ZZ	panel(white)	CONTROL30 ALTO	1.000	PCS	
<b>MARK:</b>						
	2 MB02195	rear board	bVERB	1.000	PCS	
<b>MARK:</b>						
	3 MTP312ZZ	top cover black	CONTROL30	1.000	PCS	
<b>MARK:</b>						
	4 NMCA46ZZ	lacid plastic panel	CONTROL30 ALTO(142*30mm)	1.000	PCS	
<b>MARK:</b>						
	5 NMBP64	plastic knob double $\phi$ 1	COOL GRAY 8C	2.000	PCS	
<b>MARK:</b>						
	6 NPL272	cover	$\phi$ 8.5*4 blue 072C	2.000	PCS	
<b>MARK:</b>						
	7 NMBA01	power push button	$\phi$ 15*12	1.000	PCS	
<b>MARK:</b>						
	8 NPL286	switch cap	$\phi$ 14.5*10 YELLOW C	1.000	PCS	
<b>MARK:</b>						
	9 NMB022	button	15*12*21 CONTROL 072Cb1u	7.000	PCS	
<b>MARK:</b>						
	10 DL43RG	L.E.D	LG2043 green	1.000	PCS	
<b>MARK:</b>						
	11 HSWA13	alimentation SW	SDDLB 1007U	1.000	PCS	
<b>MARK:</b>						
	12 HCSA16	AC outlett	(S)315-B (AC select)	1.000	PCS	
<b>MARK:</b>						
	13 HDFM000250	fuse	250mA $\phi$ 5*20mm VDE	1.000	PCS	
<b>MARK:</b>						
	14 MWI067	copper pole M3*P0.5	8mm single,length14mm	3.000	PCS	
<b>MARK:</b>						
	15 MSCB13	black-plated screw	cross-head pan head 3*6	13.000	PCS	上蓋7,底板3,前
<b>MARK:</b>						
	16 MSCB38	black plated screw	3*7	4.000	PCS	面板側
<b>MARK:</b>						
	17 MSCB58	black plated screw	iron-board pill 3*10	8.000	PCS	平衡座用
<b>MARK:</b>						
	18 MSCB34	black plated screw	pill 3*6	17.000	PCS	MK31,MK31-PU,
<b>MARK:</b>						
	19 MSCC40	colour screw	pill 4*30	1.000	PCS	環形PT
<b>MARK:</b>						
	20 MSCB35	black plated screw	cross-head pan head 3*10	2.000	PCS	AC座用
<b>MARK:</b>						
	21 MSTC04	colour nut	4m/m	2.000	PCS	PT,地線
<b>MARK:</b>						
	22 MFSC02	washer	$\phi$ 4* $\phi$ 12*1t	1.000	PCS	PT
<b>MARK:</b>						
	23 MFSS04	washer	$\phi$ 4* $\phi$ 7*1t	2.000	PCS	地線,PT
<b>MARK:</b>						
	24 MFST01	washer	$\phi$ 4* $\phi$ 8*0.5t	2.000	PCS	地線
<b>MARK:</b>						
	25 NFSW05ZZ	wood washer	3.17*8.2 black	4.000	PCS	
<b>MARK:</b>						
	26 HLSF126	row-wire connector wirin2P	100m/m	1.000	PCS	
<b>MARK:</b>						

Item No: CONTROL30

specify: AMP

Mid No:  standard quantity: 

NO	Material No	Item Name	Specific	Quantity	Unit	Ps
27	HLSC56	single terminal wiring	C green/yellow 100m/m	1.000	PCS	
<b>MARK:</b>						
28	HLSC163	single terminal wiring	C green/yellow 170m/m	1.000	PCS	
<b>MARK:</b>						
29	HLSF348	row-wire connector	wire in 6P-6P 320mm	1.000	PCS	
<b>MARK:</b>						
30	HA02128	wire	3P-3P 450mm	1.000	PCS	
<b>MARK:</b>						
31	HLSP164	P.V.C wiring	UL1617 AWG22 250mm black	1.000	PCS	
<b>MARK:</b>						
32	HLSP71	P.V.C single wave wired	UL1617 22AWG 80m/m brown	1.000	PCS	
<b>MARK:</b>						
33	HLSA31	power cord	Europe 3P LT-312+LT-501	1.000	PCS	
<b>MARK:</b>						
34	NLXC07	rubber coil	φ 20* φ 60*2tB	1.000	PCS	
<b>MARK:</b>						
35	NMCT16WW0010	sleeving flame retardant	2.5 φ *10m/m	2.000	PCS	
<b>MARK:</b>						
36	NMCT19WW0020	sleeving flame retardant	4 φ *20m/m	8.000	PCS	
<b>MARK:</b>						
37	NMCR01	cable tie(black)	ALT-102SB	3.000	PCS	
<b>MARK:</b>						
38	NPLN92	tie belt fixed bracket	CM-19S	1.000	PCS	
<b>MARK:</b>						
39	NLXM39	self-paste foot pad	(SF-0 12.7*9.0*3.0t	4.000	PCS	
<b>MARK:</b>						
40	NWCP04	lockable bag	5*7	1.000	PCS	
<b>MARK:</b>						
41	NWCP01WW0300*0580	PE bag	30*58cm	1.000	PCS	
<b>MARK:</b>						
42	HEM083	desiccant	30g	1.000		
<b>MARK:</b>						
43	NMLZ779	label	SCL-2020 black/white	1.000		
<b>MARK:</b>						
44	NMCQ-073	assurance book	ALTO	1.000		
<b>MARK:</b>						
45	NMLB1387-05ZZ	label	CONTROL30 ALTO	2.000		貼內箱用
<b>MARK:</b>						
46	PIA1055	paper inner box	ALTO 19"	1.000	PCS	
<b>MARK:</b>						
47	PKMS153	sponge barrier	ALTO 19"	1.000	PCS	
<b>MARK:</b>						
48	PKMS156	barrier	ALTO19"	1.000	PCS	
<b>MARK:</b>						
49	NMCQA-331	instruction	CONTROL30 ALTO	1.000		
<b>MARK:</b>						
50	POA182	paper outer case 4 hole	ALTO 19"	0.250	PCS	
<b>MARK:</b>						
51	TD00103	loop transformer	PT-GROUP2	1.000	PCS	
<b>MARK:</b>						
52	NMLM374ZZ	label	CONTROL30	4.000		
<b>MARK:</b>						

Item No: CONTROL30

specify: AMP

Mid No:  standard quantity: 

<i>NO</i>	<i>Material No</i>	<i>Item Name</i>	<i>Specific</i>	<i>Quantity</i>	<i>Unit</i>	<i>Ps</i>
53	NE05004	label	ALTO	4.000		
<b>MARK:</b>						
54	NMLH31	label	MADE IN P.R.C.	2.000		
<b>MARK:</b>						
55	NA00154	box	ALTO	2.000	PCS	
<b>MARK:</b>						
56	HA02129	wire	3P-3P 450mm	2.000	PCS	
<b>MARK:</b>						
57	NMBA07	power push button		1.000	PCS	
<b>MARK:</b>						

Item No: CONTROL30

specify: AMP

Mid No:  standard quantity: 

<i>NO</i>	<i>Material No</i>	<i>Item Name</i>	<i>Specific</i>	<i>Quantity Unit</i>	<i>Ps</i>
1	MBT325ZZ	bottom pate	CONTROL30	1.000 PCS	
<b>MARK:</b>					
2	MMC014	iron pillar	hexagon 6.35*M3*9.2	3.000 PCS	
<b>MARK:</b>					
3	MMC013	iron pillar	hexagon 6.35*M3*6	4.000 PCS	
<b>MARK:</b>					
4	MSC023	screw pillar	M4*10*0.7PH	1.000 PCS	
<b>MARK:</b>					
5	MSDE36ZZ	barrier board(black)	CONTROL30	1.000 PCS	
<b>MARK:</b>					
6	MAPR80ZZ	L-shape fixed bracket	1.2*28*20*10(CLE2.0)	1.000 PCS	
<b>MARK:</b>					

Item No: CONTROL30

specify: AMP

Mid No:  standard quantity: 

<i>NO</i>	<i>Material No</i>	<i>Item Name</i>	<i>Specific</i>	<i>Quantity Unit</i>	<i>Ps</i>
1	MSDF39ZZ	front board	CONTROL30	1.000 PCS	
<b>MARK:</b>					
2	MMC013	iron pillar	hexagon 6.35*M3*6	8.000 PCS	
<b>MARK:</b>					



Item No: CONTROL30

specify: AMP

Mid No:  standard quantity: 

NO	Material No	Item Name	Specific	Quantity	Unit	Ps
1	NPC385	PCB	MK3.1(1*4)	1.000	PCS	
<b>MARK:</b>						
2	RFCF000	SMD 1/10W fixed resistor	0Ω ±5% 0603	5.000	PCS	
<b>MARK:</b> R 22 41 44 45 46						
3	RFCF010	SMD 1/10W fixed resistor	10Ω ±5% 0603	11.000	PCS	
<b>MARK:</b> R 1 20 25 26 28 30 33 35 37 5 6						
4	RFCF110	SMD 1/10W fixed resistor	100Ω ±5% 0603	2.000	PCS	
<b>MARK:</b> R 3 4						
5	RFCF133	SMD 1/10W fixed resistor	330Ω ±5% 0603	1.000	PCS	
<b>MARK:</b> R 38						
6	RFCF147	SMD 1/10W fixed resistor	470Ω ±5% 0603	1.000	PCS	
<b>MARK:</b> R 51						
7	RFCF210	SMD 1/10W fixed resistor	1.0KΩ ±5% 0603	1.000	PCS	
<b>MARK:</b> R 39						
8	RFCF215	SMD 1/10W fixed resistor	1.5KΩ ±5% 0603	1.000	PCS	
<b>MARK:</b> R 2						
9	RFCF247	SMD 1/10W fixed resistor	4.7KΩ ±5% 0603	1.000	PCS	
<b>MARK:</b> R 50						
10	RFCF410	SMD 1/10W fixed resistor	100KΩ ±5% 0603	2.000	PCS	
<b>MARK:</b> R 42 43						
11	CCE022B	SMD0603 ceramic capacitor	22PF NPO ±5% -50	2.000	PCS	
<b>MARK:</b> C 22 29						
12	CCE110B	SMD0603 ceramic capacitor	100PF NPO ±5% -50	2.000	PCS	
<b>MARK:</b> C 19 20						
13	CCE147B	SMD0603 ceramic capacitor	470PF NPO ±5% -50	2.000	PCS	
<b>MARK:</b> C 37 38						
14	CCE410F	SMD0603 ceramic capacitor	0.1uF Y5V+80 -20%50V	16.000	PCS	
<b>MARK:</b> C 10 11 13 14 17 2 21 23 25 31 4 40 5 7 8 9						
15	CCC510F	SMD0805 ceramic capacitor	1uF/16V Y5V-0805(201	2.000	PCS	
<b>MARK:</b> C 35 36						
16	DRS0004	SMD rectifier diode	BAS16(SOT-23)	3.000	PCS	
<b>MARK:</b> D 1 2 3						
17	SICS305	SMD integratd circuit	PCM3001E	1.000	PCS	
<b>MARK:</b> U 13						
18	HBE004	SMD integrated circuit	SEED TMS57002DPHA	1.000	PCS	
<b>MARK:</b> U 8						
19	HBE005	SMD integrated circuit	SEED MB81C4256A-60	2.000	PCS	
<b>MARK:</b> U 10 9						
20	SICS207	SMD integratd circuit	24LC64I/SN	1.000	PCS	
<b>MARK:</b> U 1						
21	SICS716	SMD integrated circuit	M74HC148M1R	1.000	PCS	
<b>MARK:</b> U 2						
22	SICS717	SMD integrated circuit	SN74HC574DW	1.000	PCS	
<b>MARK:</b> U 7						
23	SICS723	SMD integrated circuit	74F14DT	1.000	PCS	
<b>MARK:</b> U 4						
24	SICS713	SMD integrated circuit	74HC32DT	1.000	PCS	
<b>MARK:</b> U 5						

Item No: CONTROL30

specify: AMP

Mid No:  standard quantity: 

<i>NO</i>	<i>Material No</i>	<i>Item Name</i>	<i>Specific</i>	<i>Quantity</i>	<i>Unit</i>	<i>Ps</i>
25	SICS708	SMD integratd circuit	74HC393DT	1.000	PCS	
<b>MARK:</b>	U 15					
26	HCSS79	IC socket (SMD)	PLCC44 (D03-44T.A.4)	1.000	PCS	
<b>MARK:</b>						
27	RFCE000	SMD 1/10W fixed resistor	0 $\Omega$ $\pm$ 5% 0805	4.000	PCS	
<b>MARK:</b>	L 4 5 6 7					

Item No: CONTROL30

specify: AMP

Mid No:  standard quantity: 

NO	Material No	Item Name	Specific	Quantity	Unit	Ps
1	CC082B-1	ceramic capacitor	82PF NPO	2.000	PCS	
<b>MARK:</b>	C 41 42					
2	CE510S	electrolytic capacitor	1/50V $\psi$ 4*7	5.000	PCS	
<b>MARK:</b>	C 18 24 3 39 6					
3	CE610N	electrolytic capacitor	10/16V $\psi$ 4*7	5.000	PCS	
<b>MARK:</b>	C 26 27 28 33 34					
4	CE647D-2	electrolytic capacitor	47/16V (5 $\psi$ *7mm)	2.000	PCS	
<b>MARK:</b>	C 1 32					
5	SIC213VV	integrated circuit (epro 27C512-70		1.000	PCS	需燒錄程式
<b>MARK:</b>	U 6					
6	SQR12.000	quartz crystalloid 11.05 HC-49/US $\pm$ 20PPM		1.000	PCS	
<b>MARK:</b>	Q 1					
7	MC0049	inductor	330uH (LGA0308-331K)	3.000	PCS	
<b>MARK:</b>	L 1 2 3					
8	HCSP05002	row-pin(double)#2200	2.54 180° 2*12P (gold-pl	1.000	PCS	
<b>MARK:</b>	J 3					
9	HCSP05001	row-pin(double)#2200	2.54 180° 2*10P (gold-pl	1.000	PCS	
<b>MARK:</b>	J 2					
10	HCSP01002	row-pin(single)#1100	2.54 180° 2P (gold-plate	1.000	PCS	
<b>MARK:</b>	J 4					
11	MMCJ17	jumper wire	2.5m/m	2.000	PCS	
<b>MARK:</b>	S 2 3					
12	HCSS56	IC socket	3301-28P 2.54mm	1.000	PCS	
<b>MARK:</b>						
13	NMLH1035ZZ	label	CONTROL30-EP	1.000		標志內容依程
<b>MARK:</b>						
14	NMLH1036ZZ	label	CONTROL30-MI	1.000		標志內容依程
<b>MARK:</b>						
15	SICS802	SMD integratd circuit	P87C52SBAA (UBAA)	1.000	PCS	需燒錄程式
<b>MARK:</b>						

Item No: CONTROL30

specify: AMP

Mid No:  standard quantity: 

NO	Material No	Item Name	Specific	Quantity	Unit	Ps
	1 HB00700	PCB	G2PU1_VER020425	1.000	PCS	
<b>MARK:</b>						
	2 RFB122S	1/4W fixed resistor	220Ω S type	6.000	PCS	
<b>MARK:</b>	R 30 31 32 33 34 35					
	3 RFB247S	1/4W fixed resistor	4.7KΩ S type	4.000	PCS	
<b>MARK:</b>	R 24 25 26 27					
	4 RFB322S	1/4W fixed resistor	22KΩ S type	8.000	PCS	
<b>MARK:</b>	R 11 12 3 4 5 6 7 8					
	5 RFB347S	1/4W fixed resistor	47KΩ S type	4.000	PCS	
<b>MARK:</b>	R 20 21 22 23					
	6 RCB302	carbon trimmer resistor	6FE horizontal EVND8A 50	2.000	PCS	
<b>MARK:</b>	VR 1 2					
	7 CC022B	ceramic capacitor	22PF NPO	2.000	PCS	
<b>MARK:</b>	C 22 23					
	8 CC110C-1	ceramic capacitor	100PF SL	3.000	PCS	
<b>MARK:</b>	C 15 16 17					
	9 CU410A-1	heap-layer capacitor (st	0.1uF 50V Y5V PH5mm	15.000	PCS	
<b>MARK:</b>	C 1 13 16 19 25 3 30 31 41 42 45 5 6 7 8					
	10 CE647E	electrotytic capacitor	47/25V	5.000	PCS	
<b>MARK:</b>	C 10 11 12 24 9					
	11 CE810D	electrolytic capacitor	1000/16V	3.000	PCS	
<b>MARK:</b>	C 14 20 21					
	12 CE810E	electrotytic capacitor	1000/25V	2.000	PCS	
<b>MARK:</b>	C 37 44					
	13 CE822D	electrotytic capacitor	2200/16V	1.000	PCS	
<b>MARK:</b>	C 18					
	14 DR0005	rectifier diode	1N4148 0.5A	1.000	PCS	
<b>MARK:</b>	D 1					
	15 DR001A	rectifier diode	1N4002/100V	5.000	PCS	
<b>MARK:</b>	D 2 3 4 5 6					
	16 SIC002	integrated circuit	TL074CN (S&T)	2.000	PCS	
<b>MARK:</b>	U 1 2					
	17 SIC003	integrated circuit	TL072CN	1.000	PCS	
<b>MARK:</b>	U 3					
	18 SIC705	integrated circuit	7812	1.000	PCS	
<b>MARK:</b>	U 13					
	19 SD00124	integrated circuit	7912	1.000	PCS	
<b>MARK:</b>	U 11					
	20 SIC714	integrated circuit	7805	1.000	PCS	
<b>MARK:</b>	U 12					
	21 SIC727	IC	74HC08N	1.000	PCS	
<b>MARK:</b>	U 6					
	22 SLE006	light-electron transisto	H11L1 (QTC)	1.000	PCS	
<b>MARK:</b>	ISO 1					
	23 HCSW0206	row-wire header	6P 2.5mm 180°	1.000	PCS	
<b>MARK:</b>	J 2					
	24 HCSW0203	row-wire header	JST2.5(S 3P 2.5mm 180°	3.000	PCS	
<b>MARK:</b>	J 1 4 5					

Item No: CONTROL30

specify: AMP

Mid No:  standard quantity: 

NO	Material No	Item Name	Specific	Quantity	Unit	Ps
25	HCSR0205	row-wire header	5P 3.96mm 180°	1.000	PCS	
<b>MARK:</b>	J 3					
26	HCSM40	MIC jack for balance	99M-108SP1	2.000	PCS	
<b>MARK:</b>	S 1 2					
27	HCSM41	MIC jack for balance	99M-107SP1-2	2.000	PCS	
<b>MARK:</b>	S 3 4					
28	HCSS66	DIN socket	5PIN(JY-5005)	3.000	PCS	
<b>MARK:</b>	CN 1 2 3					
29	MC0049	inductor	330uH(LGA0308-331K)	1.000	PCS	
<b>MARK:</b>	L 14					
30	C00038	EMI FILTER (filter)	LF-22UH(WAH TAYI)	12.000	PCS	
<b>MARK:</b>	L 1 10 12 13 2 3 4 5 6 7 8 9					
31	MMCJ04	jumper wire	6m/m	1.000	PCS	
<b>MARK:</b>	JP 17					
32	MMCJ06	jumper wire	8m/m	5.000	PCS	
<b>MARK:</b>	JP 12 13 14 16 18					
33	MMCJ09	jumper wire	10m/m	11.000	PCS	
<b>MARK:</b>	JR 1 10 11 15 19 2 20 3 4 5 9					
34	HCTT25	connect terminal	6.5m/m (PCF250)	1.000	PCS	
<b>MARK:</b>	JR 15					
35	MSCN16	Ni screw	pill 3*6 thin tooth P0.	3.000	PCS	
<b>MARK:</b>						
36	MSCB44	black-plated screw	cut-tail pill 3*8	2.000	PCS	鎖散熱片用
<b>MARK:</b>						
37	MFSS03	washer	φ 3* φ 5*1t	3.000	PCS	
<b>MARK:</b>						
38	STR802-T2	silicone insulator	T0-220 square type	3.000		
<b>MARK:</b>						
39	MI00944	heat-sink	CONTROL30	1.000	PCS	
<b>MARK:</b>						
40	HSWE05	swith	SP70300-0202-11F1-N	1.000	PCS	
<b>MARK:</b>	SW 1					
41	NPL029	insulate bean	T0220B	3.000	PCS	
<b>MARK:</b>						

Item No: CONTROL30

specify: AMP

Mid No:  standard quantity: 

NO	Material No	Item Name	Specific	Quantity	Unit	Ps
1	HB00701	PCB	G2FP1_VER020425	1.000	PCS	
<b>MARK:</b>						
2	RFCE000	SMD 1/10W fixed resistor	0Ω ±5% 0805	1.000	PCS	
<b>MARK:</b>	JP 3					
3	RFCE133	SMD 1/10W fixed resistor	330Ω ±5% 0603	18.000	PCS	
<b>MARK:</b>	R 19 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60					
4	RFCE210	SMD 1/10W fixed resistor	1.0KΩ ±5% 0603	2.000	PCS	
<b>MARK:</b>	R 1 2					
5	RFCE310	SMD 1/10W fixed resistor	10KΩ ±5% 0603	9.000	PCS	
<b>MARK:</b>	R 18 37 38 39 40 41 42 43 5					
6	RFCE422	SMD 1/10W fixed resistor	220KΩ ±5% 0603	2.000	PCS	
<b>MARK:</b>	R 14 16					
7	RPCA2825	SMD 1/10W precise resis	82.5KΩ ±1% 0603	2.000	PCS	
<b>MARK:</b>	R 13 15					
8	CCE410F	SMD0603 ceramic capacitor	0.1uF Y5V+80 -20%50V	9.000	PCS	
<b>MARK:</b>	C 10 32 40 41 42 43 7 8 9					
9	SICS003	SMD integrated circuit	TL074CDT	2.000	PCS	
<b>MARK:</b>	U 1 2					
10	SICS705	SMD integrated circuit	74HC04DT	1.000	PCS	
<b>MARK:</b>	U 10					
11	SICS713	SMD integrated circuit	74HC32DT	1.000	PCS	
<b>MARK:</b>	U 9					
12	SICS717	SMD integrated circuit	SN74HC574DW	2.000	PCS	
<b>MARK:</b>	U 7 8					
13	RFCE000	SMD 1/10W fixed resistor	0Ω ±5% 0603	2.000	PCS	
<b>MARK:</b>	R 11 9					

Item No: CONTROL30

specify: AMP

Mid No:  standard quantity: 

NO	Material No	Item Name	Specific	Quantity	Unit	Ps
1	CE610N	electrolytic capacitor	10/16V $\psi$ 4*7	1.000	PCS	
<b>MARK:C</b>	2					
2	CE647E	electrotytic capacitor	47/25V	2.000	PCS	
<b>MARK:C</b>	1 3					
3	CE722D	electrolytic capacitor	220/16V	1.000	PCS	
<b>MARK:C</b>	4					
4	RFB110S	1/4W fixed resistor	100 $\Omega$ S type	1.000	PCS	
<b>MARK:R</b>	4					
5	RVS096	potentiometer	R1411G0A-V1A103FN00-00	1.000	PCS	
<b>MARK:VR</b>	1					
6	RVS097	potentiometer	R1411G0A-V1A503FN00-00	1.000	PCS	
<b>MARK:VR</b>	2					
7	DL37RR	L.E.D high intensity	3m/m round(red) long foot	5.000	PCS	
<b>MARK:D</b>	1 2 3 4 5					
8	HCSI0202	row-wire header	2P 2.5mm 180°	1.000	PCS	
<b>MARK:J</b>	1					
9	HCSW0106	row-wire header	6P 2.5mm/小型 90°	1.000	PCS	
<b>MARK:J</b>	6					
10	HCSW0103	row-wire header	3P 2.5mm 90°	3.000	PCS	
<b>MARK:J</b>	10 5 9					
11	HLSG014	header wiring FL-0464A	20P-20P PH1.27 220mm	1.000	PCS	
<b>MARK:J</b>	2					
12	HLSG015	header wiring FL-0464A	24P-24P PH1.27 120mm	1.000	PCS	
<b>MARK:J</b>	3					
13	HCSP01009	row pin	2.54 180° 8P(gold-plate)	1.000	PCS	
<b>MARK:J</b>	8					
14	HCSP05004	row-pin(double)#2200	2.54 180° 2*7P(gold-pla)	1.000	PCS	
<b>MARK:J</b>	4					
15	HCSP01001	row-pin(dua1)	2.54 180° 10P(gold-plat)	2.000	PCS	
<b>MARK:CN</b>	1 2					
16	NI01793	LED spacer support	LEDS-17 17mm	5.000	PCS	
<b>MARK:</b>						
17	MMCJ01	jump	3m/m	2.000	PCS	
<b>MARK:JP</b>	1 2					

Item No: CONTROL30

specify: AMP

Mid No:  standard quantity: 

<i>NO</i>	<i>Material No</i>	<i>Item Name</i>	<i>Specific</i>	<i>Quantity</i>	<i>Unit</i>	<i>Ps</i>
1	NPC389	PCB	MK31-FDKB (1*6)	1.000	PCS	
<b>MARK:</b>						
2	HSWE09	button swith	6*6*5	7.000	PCS	
<b>MARK:</b>						
3	HCSB04	row-pin header (single)#2.2.54 180°	8P(gold-plate)	1.000	PCS	
<b>MARK:</b>						



Item No: CONTROL30

specify: AMP

Mid No:  standard quantity: 

<i>NO</i>	<i>Material No</i>	<i>Item Name</i>	<i>Specific</i>	<i>Quantity</i>	<i>Unit</i>	<i>Ps</i>
1	NPC388	PCB	MK31-LED (1*15)	1.000	PCS	
<b>MARK:</b>						
2	DLS002AR	SMD1210 L.E.D	67-21SURC/S530-A2/TR8 (re	2.000	PCS	
<b>MARK:</b>						
3	DLS004AY	SMD1210 L.E.D	67-21UYC/S530-A2/TR8 (ye1	2.000	PCS	
<b>MARK:</b>						
4	DLS003AG	SMD1210 L.E.D	67-21SYGC/S530-E1/TR8 (gr	8.000	PCS	
<b>MARK:</b>						

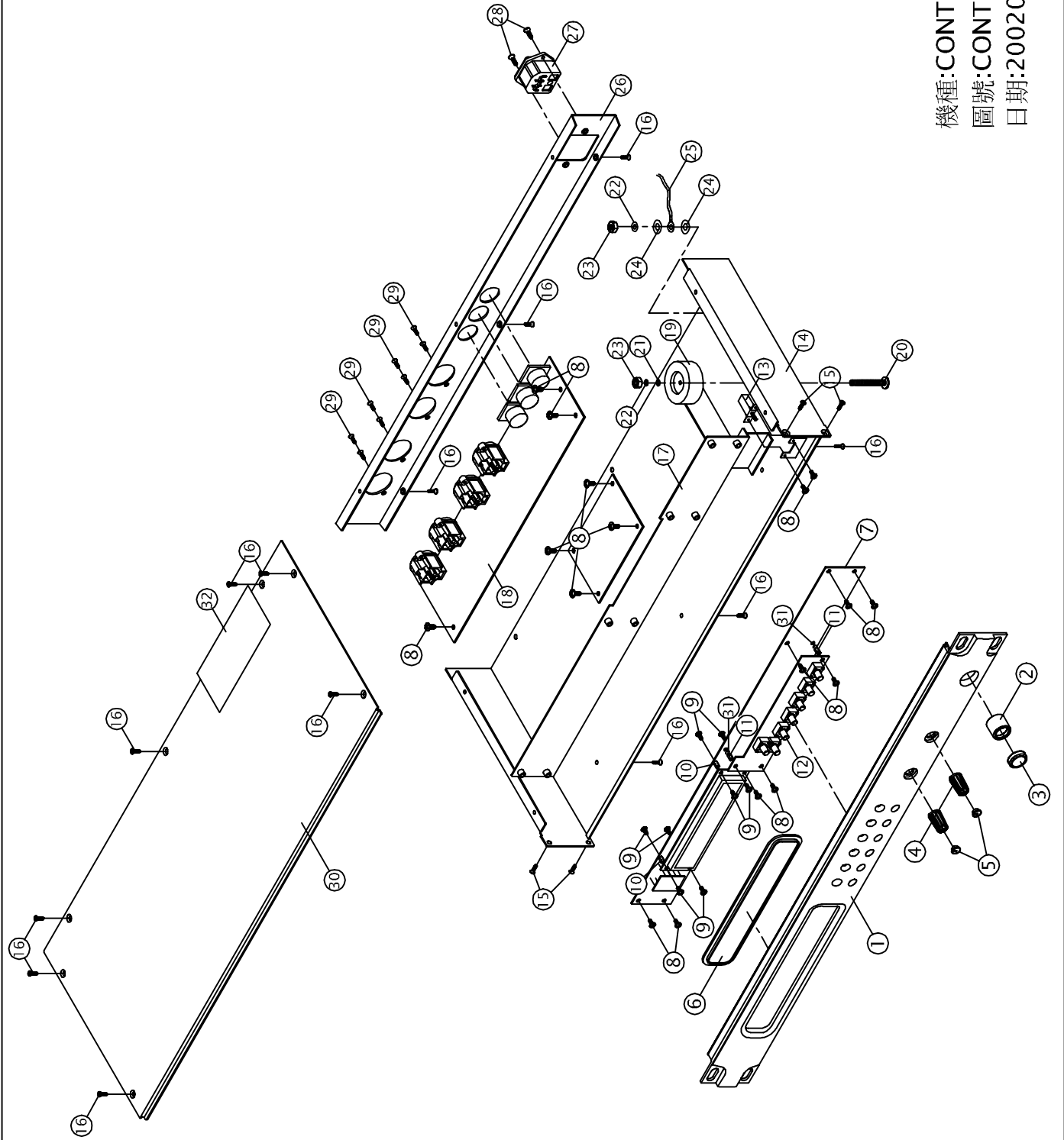
Item No: CONTROL30

specify: AMP

Mid No:  standard quantity: 

<i>NO</i>	<i>Material No</i>	<i>Item Name</i>	<i>Specific</i>	<i>Quantity Unit</i>	<i>Ps</i>
1	MWI012	copper pole M3*P0.5	6m/m dual flat	4.000 PCS	
<b>MARK:</b>					
2	MSCN75	Ni screw	M3*4	8.000 PCS	
<b>MARK:</b>					
3	HE00019	LCD	LMC-SSC2A20DLYY-01	1.000 PCS	
<b>MARK:</b>					

# 8.Exploded Views



機種:CONTROL30  
圖號:CONTROL30-00  
日期:20020131