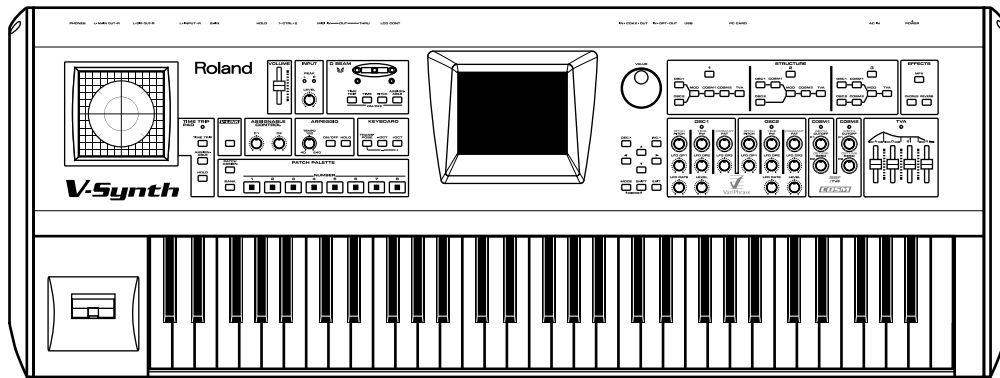


V-Synth

SERVICE NOTES Issued by RJA

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SPECIFICATIONS

V-Synth: Synthesizer Keyboard

Keyboard

61 keys (with velocity and channel aftertouch)

Sound Generator Configuration

Oscillator (envelope x 4 + LFO x 1) x 2

Modulator x 1

OSM (envelope x 2 + LFO x 1) x 2

TVA (envelope x 1 + LFO x 1) x 1

Methods by Which Oscillators Produce Sound

Analog Modeling, PCM / VariPhrase (Preset waveforms + Sampling waveforms), External Input

Modulator

4 types + MIX

COSM

15 types + THRU

Zones (Splits)

16

Parts

16

Maximum Polyphony

24 voices

(Varies depending on the load placed on the sound generator.)

Internal Memory

Project: 1

Patches: 512

Waves: 999

Wave memory (RAM): 50 M bytes

(When the unit ships from the factory, 30 M bytes of this is taken up by the preset waves.)

Sample storage memory (FLASH): 10 M bytes

External Storage Device

PC CARD slot

(Can be used Microdrive, SmartMedia or CompactFlash with PC card adapter.)

Effects

MFX (Multi-effects): 41 sets

Chorus: 8 sets

Reverb: 10 sets

System EQ

4 bands

Sampling Frequency

Internal: 44.1 kHz

Digital Audio IN/OUT: 96, 48, 44.1 kHz

Signal Processing

Internal processing

Sound generating section: 32 bits (floating point)

Effects section: 24 bits (fixed point)

DA Conversion: 24 bits

AD Conversion: 24 bits

Nominal Output Level

MAIN OUT: +4 dBu

DIRECT OUT: +4 dBu

Nominal Input Level

INPUT (LINE): -20 dBu

INPUT (MIC): -46 dBu

Arpeggiator

Patterns: User programmable (support use of control change messages)

Motifs: 8 types

Tempo: 20 to 250 BPM

Display

Graphic 320 x 240 dot backlit LCD with touch screen

Controllers

Pitch Bend/Modulation Lever

Time Trip Pad

D Beam Controller (Twin beam)

Assignable Control Knobs (C1, C2)

Connectors

Headphones Jack

Main Output Jacks (L/MONO, R) (1/4 inch phone type)

Direct Output Jacks (L, R) (1/4 inch phone type)

Input Jacks (L, R) (1/4 inch phone type, Equipped with line/mic gain switch)

Hold Pedal Jack

Control Pedal Jacks (1, 2) (assignable)

MIDI Connectors (IN, OUT, THRU)

USB Connector

Digital Audio Interface (24 bits, S/P DIF)

COAXIAL (IN, OUT)

OPTICAL (IN, OUT)

AC Inlet

Power Supply

AC 117 V, AC 230 V, AC 240 V

Power Consumption

16 W

Dimensions

1,056 (W) x 398 (D) x 111 (H) mm

41-5/8 (W) x 15-11/16 (D) x 4-3/8 (H) inches

Weight

13.1 kg / 28 lbs 15 oz

Accessories

Owner's Manual JAPANESE(#72014989)

ENGLISH(#72232512)

CD-ROM (Driver):(#03129034)

PC CARD Protector:(#03120712)

Power Cable 120V:(#00894378)

240VA:(#23495124)

240VE:(#00907001)

Options

Keyboard Stand: KS-12

Pedal Switch: DP-2/6/8

Foot Switch: BOSS FS-5U, BOSS FV-300L

Expression Pedal: EV-5

Microphone: DR-20

(0 dBu = 0.775 V rms)

* In the interest of product improvement, the specifications and/or appearance of this unit are subject to change without prior notice.

LOCATION OF CONTROLS PARTS LIST

[PARTS]

NO	PARTCODE	PART NAME	DESCRIPTION	Q'TY
1	01783956	N S-KEYTOP	MD4H	2
2	03126856	D S-KEYTOP	SX2H-B CLR	12
3,27	03126867	D S-KEYTOP	SX1H-B CLR	13
4	03126878	D S-KEYTOP	SX1H-B BLK	9
5	03126889	D S-KEYTOP	SX2H-B BLK	1
6	03125589	M R-KNOB	MF-ELA BLK/LCG	24
7	01561578	J S-KNOB S BLK/LCG		5
8	22485303	D R-KNOB(ALPHA-DIAL)	L BLK 248-303	1
9	03121112	DISPLAY ESCT		1
10	02895601	PAD ESCT		1
11	02895623	TWIN D-BEAM CONTROLLER ESCT		1
12	71905023	PB-H0203	BENDER TURBOLESS	1
13	72230178	LCD ASSY		1
14	72230189	XY-PAD ASSY		1
15	00569278	LGR4609-7100	6.5MM JACK	10
16	13429274	YKF51-5041	MIDI SOCKET	1
17	00458801	YKC21-3044 0/0	PIN JACK (ORG)PIN X 2	1
18	02565401	GP1FA501RZ	OPTICAL CONNECTOR RX	1
19	02565390	GP1FA501TZ	OPTICAL CONNECTOR TX	1
20	02781101	YKF45-0020	USB CONNECTOR	1
21	02896278	JC21EJ-FRM20	CARD CONECTR	1
22	02675701	WIRING ASSY	WIRING W3 (AC INLET+GND)	1
23	32490595	P S-KEY	MX BLK	1
24	02676878	EVUE20E15B14	9M/M ROTARY POTENTIOMETER	1
25	03121034	SLD-22-456A	SLIDE SWITCH	1

[LED]

NO	PARTCODE	PART NAME	DESCRIPTION	Q'TY
1~3	02125167	LED (YELLOW)	SLI-343DCT32W	48
26~28	03122112	LED	SLR-343BBT3F	4

[SWITCH]

NO	PARTCODE	PART NAME	DESCRIPTION	Q'TY
23	01676512	PUSH SWITCH	SDKLA1-B POWER SW	1
ALL	01340290	TACT SWITCH	EVQ11A H=5.0 ALL TACT SWITCH	29

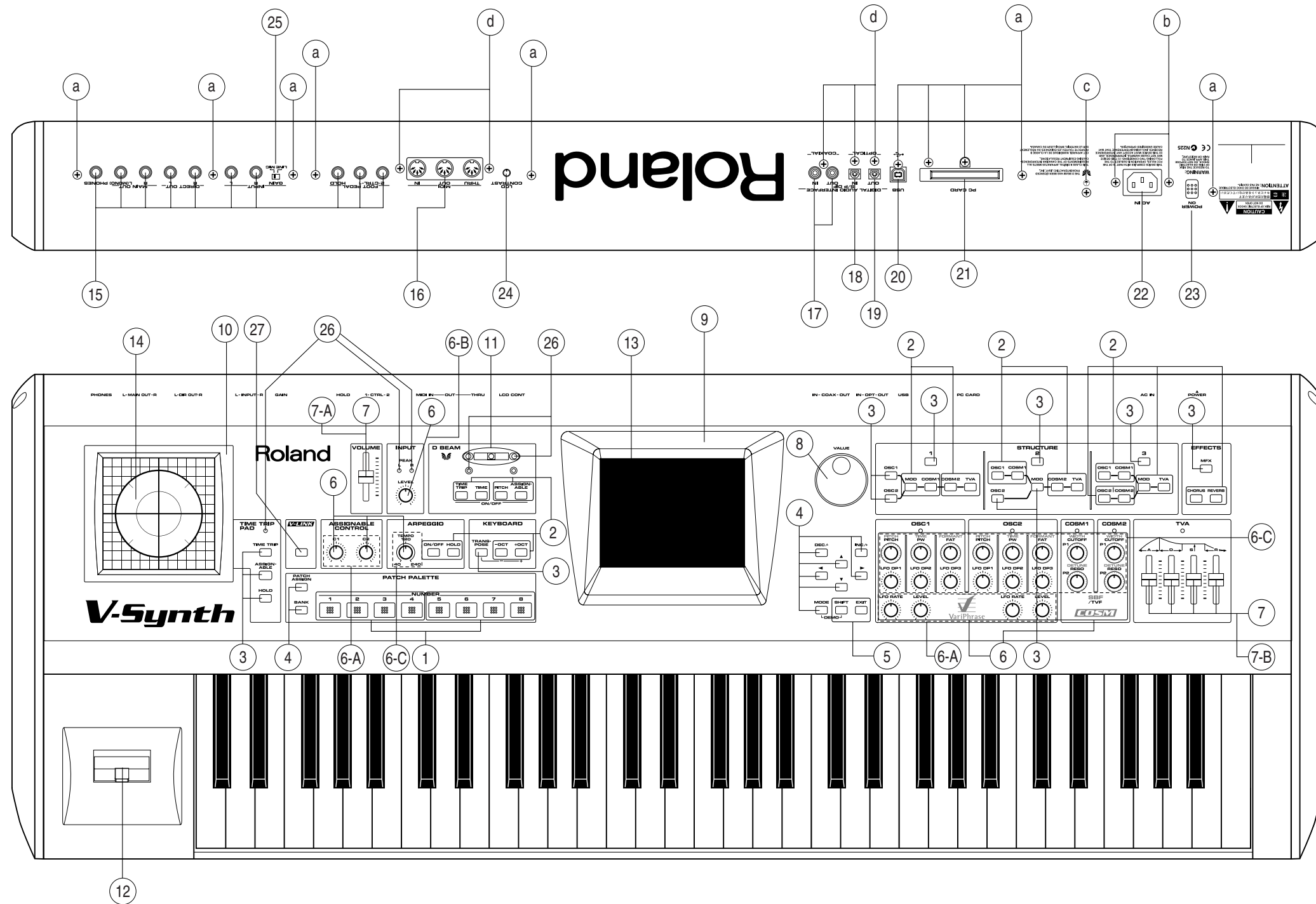
[POTENTIOMETER or ENCODER]

NO	PARTCODE	PART NAME	DESCRIPTION	Q'TY
6-A	02891878	9M/M ROTARY POTENTIOMETER	RK09D1130 10KB	6
6-B	03122090	12M/M ROTARY POTENTIOMETER	EVJ Y15 F01 A15	1
6-C	03122145	9M/M ROTARY POTENTIOMETER	RK09D1130C3W	17
7-A	03122089	30M/M SLIDE POTENTIOMETER	EWA NJO C15 B14	1
7-B	03122123	30M/M SLIDE POTENTIOMETER	EWA NKE C15 B14	4
8	03122134	ROTARY ENCODER	EC12E2420802	1

[SCREWS]

NO	PARTCODE	PART NAME	DESCRIPTION	Q'TY
a	40011490	SCREW M3X6	PAN MACHINE W/SW BZC	10
b	40011123	SCREW 4X8	BINDING TAPTITE B BZC	2
c	40010334	SCREW 4X8	BINDING BZC	1
d	40011312	SCREW 3X8	BINDING TAPTITE P BZC	5

LOCATION OF CONTROLS



XPLODED VIEW PARTS LIST

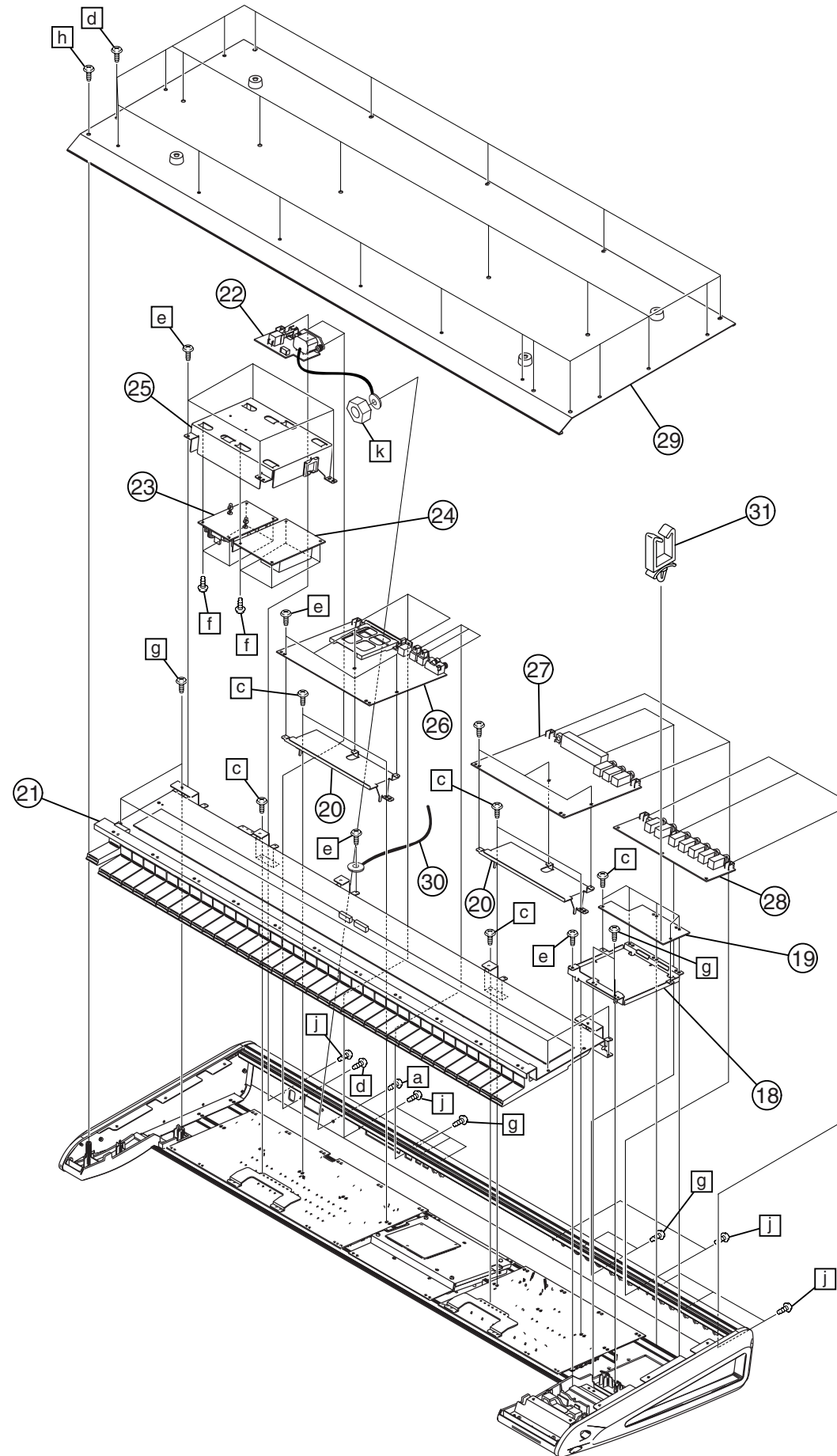
EXPLODED VIEW

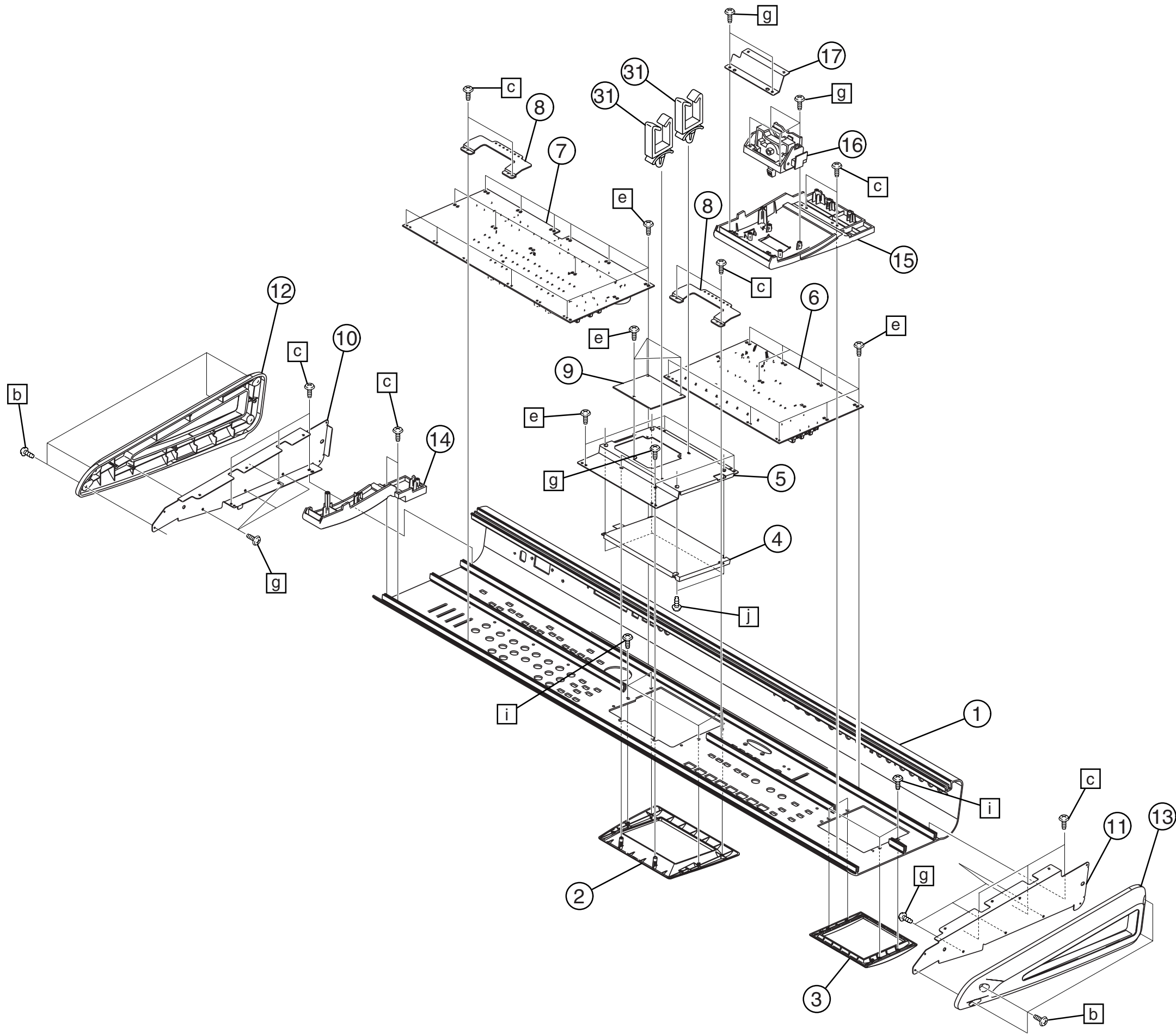
[Parts]

NO.	PART CODE	PART NAME	DESCRIPTION	Q.TY
1	02784778	TOP PANEL		1
2	03121112	DISPLAY ESCT		1
3	02895601	PAD ESCT		1
4	72230178	LCD ASSY		1
5	03120690	DISPLAY HOLDER		1
6	72230089	PANEL-L KEYTOP ASSY		1
7	72230101	PANEL-R KEYTOP ASSY		1
8	02674034	PANEL HOLDER		2
9	72230145	LCD BOARD ASSY		1
10	02673967	SIDE HOLDER R		1
11	02673956	SIDE HOLDER L		1
12	03126545	SIDE COVER R		1
13	03126534	SIDE COVER L		1
14	03126556	END BLOCK		1
15	03126567	BENDER PANEL		1
16	71905023	PB-H0203	BENDER TUR-BOLESS BENDER	1
17	02673945	STAY		1
18	72230189	XY-PAD ASSY		1
19	72230167	PAD BOARD ASSY		1
20	03120689	PWB HOLDER		2
21	72232478	KEYBOARD ASSY	SK-961-J	1
22	72230134	INLET BOARD ASSY		1
23	01785823	A1DU2L3B034	SWITCHING REGULATOR	1
24	72230156	INVERTER BOARD ASSY		1
25	02674001	PWR SPLY HOLDER		1
26	72015023	MAIN TOTAL ASSY		1
27	72230067	SUB BOARD ASSY		1
28	72230078	JACK BOARD ASSY		1
29	03120723	BOTTOM COVER		1
30	40342856	COATING CLIP	CP-1S	2
31	01905445	CORD BUSHING	WS-1NS	3

[Screws]

NO.	PART CODE	PART NAME	DESCRIPTION	Q.TY
a	40010334	SCREW 4X8	BINDING BZC	1
b	40454045	SCREW 3X8	FLAT TAPTITEB NI FLANGE SOCKET	8
c	40011067	SCREW 3X8	BINDING TAPTITE B FE ZC	22
d	40011123	SCREW 4X8	BINDING TAPTITE B BZC	27
e	40011056	SCREW 3X6	BINDING TAPTITE B ZC	44
f	40239734	SCREW 3X6	VWH B-TIGHT ZC	8
g	40011312	SCREW 3X8	BINDING TAPTITE P BZC	29
h	40012501	SCREW M4X12	BINDING TAPTITE P FE BZC	1
I	40012790	SCREW 3X8	FLAT TAPTITE P BZC	8
j	40011490	SCREW M3X6	PAN MACHINE W/SW BZC	14
k	40011745	HEX NUT M4	SPRING NUT FE ZC	1





PARTS LIST

SAFETY PRECAUTIONS:

The parts marked Δ have safety-related characteristics. Use only listed parts for replacement.

CONSIDERATION ON PARTS ORDRING

When ordering any parts listed in the parts list, please specify the following items in the order sheet.

QTY	PART NUMBER	DESCRIPTION	MODEL NUMBER
Ex. 10	22575241	Sharp Key	C-20/50
15	2247017300	Knob (orange)	DAC-15D

Failure to completely fill the above items with correct number and description will result in delayed or even undelivered replacement.

NOTE: The parts marked # are new. (initial parts)

CASING

#	03120723	BOTTOM COVER	1
#	03126601	POT DUST COVER B	1
#	03126590	POT DUST COVER A	1
#	03126545	SIDE COVER R	1
#	03126534	SIDE COVER L	1
#	02895601	PAD ESCT	1
#	03121112	DISPLAY ESCT	1
#	02895612	CARD ESCT	1
#	03126556	END BLOCK	1
#	03126567	BENDER PANEL	1
#	02784778	TOP PANEL	1

CHASSIS

#	03120690	DISPLAY HOLDER	1
#	03120689	PWB HOLDER	2
	02674034	PANEL HOLDER	2
	02673956	SIDE HOLDER L	1
	02673967	SIDE HOLDER R	1
	02674001	PWR SPLY HOLDER	1

KNOB, BUTTON

	32490595	P S-KEY	MX BLK	1
	22485303	D R-KNOB(ALPHA-DIAL)	L BLK 248-303	1
#	03125589	M R-KNOB	MF-ELA BLK/LCG	24
	01561578	J S-KNOB S BLK/LCG		5

SWITCH

#	03121034	SLD-22-456A	SLIDE SWITCH	SW1 on Jack Board	1
	01340290	EVQ11A H=5.0	TACT SWITCH	SW22,SW10,SW6,SW7,SW19,SW21,SW3,S W8,SW9,SW20,SW15,SW12,SW13,SW5,SW 14,SW4,SW16,SW17,SW11,SW1,SW18,SW2, SW23 on Panel-L board, SW14,SW27,SW25,SW24,SW23,SW22,SW21 ,SW20,SW19,SW18,SW17,SW29,SW15,SW2 8,SW13,SW12,SW11,SW10,SW9,SW8,SW7,S W6,SW5,SW4,SW3,SW2,SW1,SW16,SW31,S W32,SW33,SW30,SW26 on Panel-R Board	+3 3
Δ	01676512	SDKLA1-B	PUSH SWITCH	SW2 on Inlet Board	1

JACK, EXT TERMINAL

	00458801	YKC21-3044 0/0	PIN JACK (ORG)PIN X 2	JK502 on Main board	1
#	02896278	JC21EJ-FRM20	CARD CONECTR		1
	02781101	YKF45-0020	USB CONNECTOR	JK501 on Main board	1
	13429274	YKF51-5041	MIDI SOCKET	JK1 on Sub board	1
	00569278	LGR4609-7100	6.5MM JACK	JK1,JK3,JK4,JK5,JK6,JK7,JK2 on Jack Board ,JK2,JK4,JK3 on Sub board	3 +7

DISPLAY UNIT

Δ #	72230178	LCD ASSY			1
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NOTE: Replacement LCD ASSY should be made on a unit base.

POWER SUPPLY UNIT

Δ	01785823	A1DU2L3B034	SWITCHING REGULATOR		1
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NOTE: Replacement A1DU2L3B034 should be made on a unit base.

BENDER UNIT					
	71905023	PB-H0203	BENDER TURBOLESS		1
	NOTE: Replacement PB-H0203 should be made on a unit base.				
SPEAKER, BUZZER					
	15299147	PKM22EP-2001	BUZZER	SP1 on Sub board	1
KEYBOARD ASSY					
#	72232478	KEYBOARD ASSY	SK-961-J		1
	NOTE: See 'KEYBOARD PARTS LIST' for details.				
PCB ASSY					
#	72015023	MAIN TOTAL ASSY			1
	NOTE: 'MAIN TOTAL ASSY' includes the following parts.				
	12199584	GROUNDING TERMINAL	M1698	TER2,TER1,TER3 on Jack Board,TER501 on Main board ,TER2,TER1 on Sub board ,TER4 on Inlet Board	1
#	40455878	SCREW M2X8	PAN MACHINE W/SW+PW ZC		4
#	72230067	SUB BOARD ASSY			1
	NOTE: 'SUB BOARD ASSY' includes the following parts.				
	12199584	GROUNDING TERMINAL	M1698	TER2,TER1,TER3 on Jack Board,TER501 on Main board ,TER2,TER1 on Sub board ,TER4 on Inlet Board	2
#	72230078	JACK BOARD ASSY			1
	NOTE: 'JACK BOARD ASSY' includes the following parts.				
	12199584	GROUNDING TERMINAL	M1698	TER2,TER1,TER3 on Jack Board,TER501 on Main board ,TER2,TER1 on Sub board ,TER4 on Inlet Board	3
#	72230089	PANEL-L KEYTOP ASSY			1
	NOTE: 'PANEL-L KEYTOP ASSY' includes the following parts.				
#	02895623	TWIN D-BEAM CONTROLLER			1
		ESCT			
#	03126878	D S-KEYTOP	SX1H-B BLK		2
#	03126856	D S-KEYTOP	SX2H-B CLR		4
#	03126867	D S-KEYTOP	SX1H-B CLR		5
	01783956	N S-KEYTOP	MD4H		2
	12169406	LED SPACER			3
#	03233245	LED SPACER	LH-5S-8.7		2
#	72230101	PANEL-R KEYTOP ASSY			1
	NOTE: 'PANEL-R KEYTOP ASSY' includes the following parts.				
#	03126878	D S-KEYTOP	SX1H-B BLK		7
#	03126856	D S-KEYTOP	SX2H-B CLR		8
#	03126867	D S-KEYTOP	SX1H-B CLR		8
#	03126889	D S-KEYTOP	SX2H-B BLK		1
	02123012	ENCODER HOLDER			1
	12169406	LED SPACER			5
△ #	72230134	INLET BOARD ASSY			1
	NOTE: 'INLET BOARD ASSY' includes the following parts.				
△	02675701	WIRING ASSY	WIRING W3(AC INLET+GND)	JK8 on Inlet Board	1
△	02678478	WIRING	WIRING W1	CN26 on Inlet Board	1
△	12199584	GROUNDING TERMINAL	M1698	TER2,TER1,TER3 on Jack Board,TER501 on Main board ,TER2,TER1 on Sub board ,TER4 on Inlet Board	1
△ #	72230145	LCD BOARD ASSY			1
△ #	72230156	INVERTER BOARD ASSY			1
	NOTE: 'INVERTER BOARD ASSY' includes the following parts.				
	40342856	COATING CLIP	CP-1S		2
#	72230167	PAD BOARD ASSY			1
IC					
#	02900678	HD6417297BP267	IC (32BIT CPU)	IC6 on Main board	1
#	02900978	M66291GP	IC (USB CONTROLLER)	IC502 on Main board	1
	02568478	M66273FP	LCD-DRIVER	IC501 on Main board	1
	02231767	RA0A-101 (TC223C080AF-101)	IC (DSP)	IC22 on Main board	1
	02782778	TC200E06 (PPC)	IC (I/F)	IC20 on Main board	1
	02453389	LC32V4265T-25	IC (DRAM)	IC24 on Main board	1

IC					
#	03235312	K4S561632 D-TC75	IC (DRAM)	IC3,IC7 on Main board	2
	02232367	HN58X2432FPI	IC (EEPROM)	IC11 on Main board	1
	*****	LH28F320BFE-PTBL80	IC (FLASH MEMORY)	IC21 on Main board	1
	*****	NAND K9F5608U0B	IC (FLASH MEMORY)	IC509 on Main	1
	02234167	AK4393-VF-E2	IC (DAC)	IC546 on Main board	1
	01679990	AK4524VF-E2	IC (AD/DA)	IC542 on Main board	1
	01348101	TTL TC7SET32FU(Te85L)	IC (CMOS)	IC551 on Main board	1
#	03015223	TC74LCX74FT(EL)	IC (CMOS)	IC2 on Main board	1
	01121834	TC7W74FU TE12L	IC	IC537 on Main board	1
	01121845	TC7W04FU TE12L	IC (CMOS)	IC534 on Main board	1
	01349590	TC7WU04FU(Te12L)	IC (CMOS)	IC13,IC536 on Main board	2
	01569689	TC7W32FU(Te12L)	IC (CMOS)	IC504 on Main board	1
	15259706T0	TC74HCU04AF(EL)	IC (HS-CMOS)	IC532 on Main board	1
	01348912	TC75H08FU(Te85L)	IC (CMOS)	IC23,IC507 on Main board	2
	01348945	TC75H32FU(Te85L)	IC (CMOS)	IC32 on Main board	1
	01455312	TC7WH74FU	IC (CMOS)	IC548 on Main board	1
	01675023	TC74VHC139FT(EL)	IC (CMOS)	IC25 on Main board	1
	01783523	TC74VHCT245AFT(EL)	IC (CMOS)	IC531,IC538,IC503 on Main board	3
	01890367	TC74VHC175FT(EL)	IC (CMOS)	IC512 on Main board	1
	02129334	TC7WH08FU(Te12L)	IC (CMOS)	IC14,IC524 on Main board	2
	02451912	HD74LV00ATELL	IC (CMOS)	IC26,IC27,IC550 on Main board	3
	02675656	HD74LV11ATELL	IC (CMOS)	IC505 on Main board	1
	02675667	HD74LV21ATELL	IC (CMOS)	IC15 on Main board	1
	02675689	HD74LV245ATELL	IC (CMOS)	IC8,IC1,IC539,IC9,IC4,IC5,IC525,IC527,IC10,IC533,IC526,IC523,IC522,IC520,IC12,IC519,IC18,IC16,IC17 on Main board	19
#	03015234	HD74LV32ATELL	IC (CMOS)	IC521,IC515,IC28 on Main board	3
	03015389	TC74VHC153FT(EL)	IC (CMOS)	IC535 on Main board	1
#	03120834	TC74VHCT00AFT(EL)	IC (CMOS)	IC529 on Main board	1
#	03120856	TC74VHC273AFT(EL)	IC (CMOS)	IC517 on Main board	1
	02897690	OP275GS	IC (BIPOLAR OP)	IC545 on Main board	1
	15289117	NJM5532MD-TE1	IC (OP AMP)	IC543,IC541 on Main board	2
	00344390	TA7805F(Te16L)	IC (REGULATOR)	IC540,IC544 on Main board	2
#	02900734	XC6365A333MR	IC (DC/DC)	IC506 on Main board	1
#	02900745	XC6365B103MR	IC (DC/DC)	IC19 on Main board	1
	02236978	CS8420-CS	IC (DIGITAL I/F CODEC)	IC530 on Main board	1
#	03120878	AAT4650IHS-T1	IC	IC549 on Main board	1
	15199937	M51953BFP-600C	IC (RESET)	IC508 on Main board	1
	02565390	GP1FA501TZ TX	IC (OPTICAL CONNECTOR)	CN508 on Main board	1
	02565401	GP1FA501RZ RX	IC (OPTICAL CONNECTOR)	CN507 on Main board	1
#	03127267	HD6433061G45FP	IC (16BIT CPU)	IC2 on Sub board	1
	00129278	SSC1080F0B	IC	IC5 on Sub board	1
	02893945	HD74LV05AFPEL	IC (CMOS)	IC19 on Sub board	1
#	03120990	HD74LV4051AFPEL	IC (CMOS)	IC11 on Sub board	1
#	03121001	HD74LV4053AFPEL	IC (CMOS)	IC12 on Sub board	1
	00232634	TC7W74F(Te12L)	IC	IC6 on Sub board	1
	15249121	TC7W04F(Te12L)	IC (CMOS)	IC13 on Sub board	1
	15259704H0	HD74HC138FPEL	IC (HS-CMOS)	IC15,IC16 on Sub board	2
	15259708T0	TC74HC08AF(EL)	IC	IC14 on Sub board	1
	15289128	BA10324AF	IC (OP AMP)	IC18 on Sub board	1
	15289151	NJM2904M-TE3	IC (OP AMP)	IC5,IC8 on Panel-L board ,IC7,IC10 on Sub board	2 +2
	00458312	NJM2360M	IC (REGULATOR)	IC20 on Sub board	1
	02900545	PC410LKNIP	IC (PHOTO COUPLER)	IC17 on Sub board	1
	15189248	M5216P	IC (BIPOLAR OP AMP)	IC1 on Jack Board	1
	15189266	NE-5532AN	IC (BIPOLAR OP AMP)	IC2 on Jack Board ,IC7,IC6 on Panel-L board	1 +2
	01016678	TC7W241FU(Te12L)	IC (CMOS)	IC4 on Panel-L board	1
	02017034	TC7W53FU(Te12L)	IC (CMOS)	IC3 on Panel-L board	1
	15289105	UPC4570G2-E2	IC (BIPOLAR OP AMP)	IC1,IC2 on Panel-L board	2
	01896056	HD74HC4051P	IC (CMOS)	IC1,IC2,IC3 on Panel-R Board	3
	15189249	BA10324A	IC (OP AMP)	IC4 on Panel-R Board	1
	15189185	M5223AL-600Y	IC (OP AMP)	IC3 on Pad Board,IC6 on Lcd Board	1 +1

TRANSISTOR

#	02900778	PW MOSFET XP132A1275SR	TRANSISTOR	Q1,Q501 on Main board	2
	01121278	2SA1576A T106 QRS	TRANSISTOR	Q504 on Main board	1
	00239812	DTC114EUT106	TRANSISTOR	Q505,Q506,Q509 on Main board	3
				,Q23,Q19,Q18,Q17,Q16,Q15,Q14,Q13,Q12 on Sub board	+9
	01121289	2SC4081 T106 QRS	TRANSISTOR	Q2,Q1 on Panel-L board ,Q25,Q1,Q2,Q3 on Sub board	4 +2
	00239801	DTA114EU T-106	TRANSISTOR	Q20 on Sub board	1
	01783612	RN2426(Te85L)	TRANSISTOR	Q26,Q6,Q7,Q8,Q9,Q11,Q27,Q10 on Sub board	8
	15129152	2SC2878-A(TPE2)	TRANSISTOR	Q5,Q3,Q6,Q7,Q8,Q2 on Jack Board	6
	15139124	2SK363-GR(TPE2)	TRANSISTOR	Q4,Q1 on Jack Board	2
	00562012	2SC3265-Y(Te85R)	TRANSISTOR	Q4,Q3 on Panel-L board	2
	15129151	2SC1815-GR(TPE2)	TRANSISTOR	Q30 on Lcd Board	1

TRANSISTOR					
15129184	RN1207-TPE4	DIGITAL TRANSISTOR	Q9,Q10 on Pad Board,Q25,Q24 on Lcd Board	2	+2
15129215	RN2207-TPE4	DIGITAL TRANSISTOR	Q7,Q8 on Pad Board,Q23,Q22 on Lcd Board	2	+2
DIODE					
01019534	1SS355 TE-17	SWITCHING DIODE	D505 on Main board	1	
01780045	RB051L-40	SCHOTTKY DIODE	D501,D1 on Main board	2	
01017512	RB411D T146	SCHOTTKY DIODE	D3 on Sub board	1	
01897189	MA147-(TX)	ARRAY DIODE	DA2,DA1,DA6,DA5,DA4,DA3 on Sub board	6	
01565678	RD5.1M-T2B	ZENER DIODE	D2,D1 on Sub board	2	
01342778	TPS706	DIODE PHOTO	D1 on Panel-L board	1	
15339130	MA142WK-(TX)	ARRAY DIODE	DA17,DA24,DA3,DA5,DA23,DA19,DA18,DA6,DA16,DA7,DA8,DA9,DA10,DA11,DA15,DA12,DA14,DA13 on Panel-L board	18	
01342789	TLN105B	LED	LED28,LED27 on Panel-L board	2	
00785856	SLR-342VR3F	LED	LED26,LED25 on Panel-L board	2	
02125167	SLI-343DCT32W	LED (YELOW)	LED5,LED15,LED1,LED7,LED8,LED9,LED10,LED11,LED12,LED13,LED2,LED4,LED14,LED3,LED16,LED17,LED18,LED19,LED20,LED6 on Panel-L board,LED2,LED10,LED7,LED6,LED5,LED3,LED14,LED1,LED26,LED4,LED13,LED15,LED17,LED18,LED19,LED20,LED21,LED22,LED23,LED25,LED27,LED11,LED12,LED9 on Panel-R Board	48	
03122112	SLR-343BBT3F	LED	LED22,LED23,LED24,LED21 on Panel-L board	4	
03016901	SLR-342DU3F	LED	LED29,LED28,LED24,LED16,LED8 on Panel-R Board	5	
15019126	1SS133 T-77	SWITCHING DIODE	D1,D2,D3,D4,D5,D6 on Jack Board ,D19,D26,D18,D17,D21,D22,D23,D1,D25,D16,D27,D28,D29,D30,D31,D32,D33,D24,D6,D2,D3,D20,D5,D15,D7,D8,D9,D10,D11,D12,D13,D14,D4 on Panel-R Board ,D16,D10,D11,D12,D13,D15,D17,D14 on Pad Board,D36,D31,D32,D35,D37,D38,D34,D33 on Lcd Board	55	
01561301	1GWJ42 TPB2	SCHOTTKY DIODE	D5 on Panel-L board	1	
RESISTOR					
00120289	RR1220P-104-D 100K OHM (CHIP)	MTL.FILM RESISTOR	R608,R594 on Main board	2	
00348767	RR1220P-471-D 470 OHM (CHIP)	MTL.FILM RESISTOR	R604,R592 on Main board	2	
00451534	RR1220P-563D 56K(D)	RESISTOR (METAL FILM)	R591,R602 on Main board	2	
00564212	RR1220P-332-D 3.3KOHM (CHIP)	MTL.FILM RESISTOR	R642,R619,R613,R615,R621,R626,R640,R628 on Main board	8	
00564256	RR1220P-682-D 6.8K OHM (CHIP)	MTL.FILM RESISTOR	R598,R590 on Main board,R49,R39 on Panel-L board	2	+2
00566867	RPC05T 100 J	MTL.FILM RESISTOR	R4,R5,R2,R1 on Main board	4	
00566912	RPC05T 220 J	MTL.FILM RESISTOR	R170,R667,R149,R165,R166,R167,R93,R169,R91,R548,R550,R552,R553,R558,R650,R666,R168,R61,R20,R25,R26,R40,R51,R94,R60,R22,R62,R65,R67,R87,R88,R89,R90,R59 on Main board,R69,R68,R31,R30 on Panel-L board	34	+4
00566923	RPC05T 270 J	MTL.FILM RESISTOR	R504,R503 on Main board	2	
00566934	RPC05T 330 J	MTL.FILM RESISTOR	R29,R75,R57,R56,R55,R54,R47,R39,R38,R31,R135 on Main board ,R155,R158,R156,R154,R153,R151,R150,R149,R157 on Sub board	11	+9
00566967	RPC05T 470 J	MTL.FILM RESISTOR	R108,R103,R107,R106,R104,R78,R76,R74,R73,R72,R48,R27,R587,R77 on Main board	14	
00567001	RPC05T 750 J	MTL.FILM RESISTOR	R585,R573 on Main board	2	
00567023	RPC05T 101 J	MTL.FILM RESISTOR	R3 on Main board,R66,R67,R65,R64,R47,R33,R32,R6 on Panel-L board ,R79,R43,R102 on Sub board	1	+3
00567067	RPC05T 221 J	MTL.FILM RESISTOR	R561,R560,R66 on Main board,R18 on Panel-L board ,R85,R84,R83,R86 on Sub board	3	+4
00567112	RPC05T 471 J	MTL.FILM RESISTOR	R588 on Main board ,R19,R46,R92,R82,R64,R56,R25,R24,R23,R22 ,R20,R15,R99,R21 on Sub board	1	+1
00567134	RPC05T 681 J	MTL.FILM RESISTOR	R510 on Main board	1	
00567178	RPC05T 152 J	MTL.FILM RESISTOR	R505 on Main board	1	
00567189	RPC05T 182 J	MTL.FILM RESISTOR	R579,R520 on Main board	2	
00567190	RPC05T 222 J	MTL.FILM RESISTOR	R526 on Main board,R14 on Panel-L board ,R47,R58,R66,R75,R107 on Sub board	1	+5
00567245	RPC05T 472 J	MTL.FILM RESISTOR	R96,R42,R201,R79,R85,R81,R84,R83,R41,R98,R102,R200,R516,R86 on Main board ,R106,R142 on Sub board	14	+2

RESISTOR

	00567289	RPC05T 103 J	MTL.FILM RESISTOR	R147,R137,R127,R125,R124,R122,R162,R164, ,R171,R176,R506,R196,R502,R120,R52,R507, R513,R514,R515,R517,R522,R662,R46,R35,R 34,R24,R19,R11,R501,R559,R58,R43,R119,R 49,R50,R53, R63,R68,R69,R70,R71,R92,R105,R10,R567,R 580,R581,R645,R661,R195,R566 on Main board,R9 on Panel-L board ,R87,R93,R6,R62,R5,R4,R1,R54,R32,R145,R1 03 on Sub board	51 +1 1 +1
	00567378	RPC05T 473 J	MTL.FILM RESISTOR	R571 on Main board ,R61 on Sub board	1 +1
	00567412	RPC05T 104 J	MTL.FILM RESISTOR	R557,R670,R669,R665,R664,R556,R663,R648 ,R565,R564 on Main board,R60,R59,R62 on Panel-L board ,R49,R53,R77,R88,R94 on Sub board	10 +5 +3
	00567456	RPC05T 224 J	MTL.FILM RESISTOR	R647 on Main board ,R41 on Sub board	1 +1
	00567478	RPC05T 334 J	MTL.FILM RESISTOR	R646 on Main board	1
	00567556	RPC05T 105 J	MTL.FILM RESISTOR	R586,R508,R64 on Main board,R25,R15,R10,R24 on Panel-L board	3 +4
	00897245	RR1220P-222-D 2.2K (D)	MTL.FILM RESISTOR	R623,R643,R630,R617,R616,R611,R622,R637 on Main board	8
#	03015401	RR0816P-823-D	MTL.FILM RESISTOR	R172 on Main board	1
#	03015423	RR0816R-154-D	MTL.FILM RESISTOR	R173 on Main board	1
	15399301	RPC10T 0R0 J	MTL.FILM RESISTOR	R624,R595,R597 on Main board	3
	15419705	RR1220P-561-D	MTL.FILM RESISTOR	R641,R618,R614,R612,R625,R627,R639,R620 on Main board	8
	15419715	RR1220R-105-D	MTL.FILM RESISTOR	R593,R606 on Main board,R54,R42 on Pan- el-L board	2 +2
	01011856	RPC05T 0R0 J	MTL.FILM RESISTOR	R177,R140,R141,R142,R152,R156,R157,R159 ,R160,R161,R175,R509,R511,R512,L523,R56 9,R570,R574,R163,R45,R575,R6,R8,R12,R14, R18,R28,R139,R44,R133,R109,R110,R111,R1 12,R113,R116,R117,R118,R126,R33,R576, R582,R583,R584,R589,R609,C615,C644,R649 ,R131 on Main board,R73,R70,R72 on Panel- L board ,R126,R148,R147,R146,R144,R143,R141,R14 0,R122 ,R125,R139,R127,R128,R129,R130,R131,R13 7,R136,R135,R134,R133,R132,R124,R2,R26, R10,R123,R7,R28,R33,R34,R36,R38,R80,R81, R90,R95,R96,R115,R116,R117,R118,R119,R1 20,R121,R8,R91 on Sub board	50 +4 7 +3
	02456878	EXB2HV220JV	RESISTOR-ARRAY	RA22,RA18,RA11,RA24,RA7,RA25,RA2,R A27,RA29,RA517,RA23,RA40,RA513,RA51 8,RA511,RA509,RA28,RA42,RA31,RA39,R A36,RA35,RA37,RA507,RA33 on Main board	25
	02457723	EXB2HVR000V	RESISTOR-ARRAY	RA60 on Main board	1
	02678534	EXB2HV103V	RESISTOR-ARRAY	RA16,RA512,RA508,RA45,RA44,RA38,RA3 4,RA30,RA13,RA10,RA9,RA4,RA3,RA1,RA 32 on Main board	15
	02781623	EXB2HV101JV	RESISTOR-ARRAY	RA522 on Main board	1
	02904445	R-ARRAY EXB2HV330JV	RESISTOR-ARRAY	RA15,RA19,RA8,RA5,RA58,RA50,RA12,R A49,RA501,RA17,RA14 on Main board	11
#	02904601	R-ARRAY EXB2HV104JV	RESISTOR-ARRAY	RA515 on Main board	1
#	03015278	R-ARRAY EXB28V220JX	RESISTOR-ARRAY	RA527,RA523,RA21,RA61 on Main board	4
	03015289	R-ARRAY EXB28V103JX	RESISTOR-ARRAY	RA52,RA46,RA47,RA41,RA43,RA51,RA48, RA53,RA55,RA56,RA57,RA520,RA26,RA52 1 on Main board	14
#	03015290	R-ARRAY EXB28V104JX	RESISTOR-ARRAY	RA524 on Main board	1
	03015301	R-ARRAY EXB28V330JX	RESISTOR-ARRAY	RA526,RA59 on Main board	2
	00567156	RPC05T 102 J	MTL.FILM RESISTOR	R12,R13 on Panel-L board ,R3,R9,R42,R44,R97,R101,R111 on Sub board	7 +2
	00567034	RPC05T 121 J	MTL.FILM RESISTOR	R76 on Sub board	1
	00567056	RPC05T 181 J	MTL.FILM RESISTOR	R108 on Sub board	1
	00567078	RPC05T 271 J	MTL.FILM RESISTOR	R104,R89,R78 on Sub board	3
	00567201	RPC05T 272 J	MTL.FILM RESISTOR	R48 on Sub board	1
	00567290	RPC05T 123 J	MTL.FILM RESISTOR	R16 on Panel-L board ,R50 on Sub board	1 +1
	00567312	RPC05T 183 J	MTL.FILM RESISTOR	R109 on Sub board	1
	00567334	RPC05T 273 J	MTL.FILM RESISTOR	R45 on Sub board	1
	00567345	RPC05T 333 J	MTL.FILM RESISTOR	R52,R114,R63,R60,R57,R55 on Sub board	6
	00567390	RPC05T 683 J	MTL.FILM RESISTOR	R58 on Panel-L board ,R65 on Sub board	1 +1
	00567401	RPC05T 823 J	MTL.FILM RESISTOR	R51 on Sub board	1
	00567423	RPC05T 124 J	MTL.FILM RESISTOR	R59 on Sub board	1
	02232389	RPC05T 1R0 J	MTL.FILM RESISTOR	R105,R152 on Sub board	2
	00566990	RPC05T 680 J	MTL.FILM RESISTOR	R73,R70,R67,R72,R74,R71 on Sub board	6
	00566890	RPC05T 150 J	MTL.FILM RESISTOR	R68,R69 on Sub board	2
	00126134	EXB-A10E103J	RESISTOR ARRAY	RA14,RA5,RA9,RA16,RA7,RA19 on Sub board	6
	01906678	MNR14 EOAB J 103	RESISTOR-ARRY	RA1,RA12,RA15 on Sub board	3

RESISTOR					
	01906667	MNR14 EOAB J 100	RESISTOR-ARRY	RA17,RA2,RA4,RA3,RA6,RA18,RA23,RA24 on Sub board	8
#	13749817T0	SR25TRE 682 J	CARBON RESISTOR	R24,R18,R11,R3 on Jack Board	4
	13749851T0	CARBON RESISTOR SR25TRE 184 J	CARBON RESISTOR	R21,R7 on Jack Board	2
	13749807T0	SR25TRE 272 J	CARBON RESISTOR	R17,R10,R23,R29,R6,R2 on Jack Board	6
	13749203T0	1/2W 47 OHM	CARBON RESISTOR	R4,R5,R19,R20 on Jack Board	4
	13749773T0	SR25TRE 101 J	CARBON RESISTOR	R35,R14 on Jack Board ,R4,R6,R2,R1,R5,R3 on Panel-R Board ,R22,R19 on Pad Board,R125,R128 on Lcd Board	+6 +2 +2
	13749785T0	SR25TRE 331 J	CARBON RESISTOR	R27,R37,R43,R47 on Jack Board	4
	13749793T0	SR25TRE 681 J 680 OHM 1/4W	CARBON RESISTOR	R26,R46,R42,R36 on Jack Board	4
	13749797T0	SR25TRE 102 J	CARBON RESISTOR	R13,R22,R34,R8 on Jack Board	4
	13749809T0	SR25TRE 332 J 1/6W	CARBON RESISTOR	R45,R41,R49,R31 on Jack Board	4
	13749821T0	SR25TRE 103 J	CARBON RESISTOR	R30,R48,R44,R40 on Jack Board	4 +2
	13749829T0	SR25TRE 223 J	CARBON RESISTOR	R16,R51,R50,R38,R15,R39 on Jack Board	6
	13749839T0	SR25TRE 563 J	CARBON RESISTOR	R32,R9 on Jack Board	2
	13749869T0	SR25TRE 105 J	CARBON RESISTOR	R1,R28 on Jack Board	2
	03012990	MCR50 JZH J 2R2	CARBON RESISTOR	R29,R27,R23 on Panel-L board	3
	00566989	RPC05T 560 J	MTL.FILM RESISTOR	R71 on Panel-L board	1
	00567389	RPC05T 563 J	MTL.FILM RESISTOR	R8 on Panel-L board	1
	00567089	RPC05T 331 J	MTL.FILM RESISTOR	R17 on Panel-L board	1
	00567212	RPC05T 332 J	MTL.FILM RESISTOR	R19,R2 on Panel-L board	2
	00567234	RPC05T 392 J	MTL.FILM RESISTOR	R21,R22,R26,R28,R63 on Panel-L board	5
	00567256	RPC05T 562 J	MTL.FILM RESISTOR	R20 on Panel-L board	1
	00567267	RPC05T 682 J	MTL.FILM RESISTOR	R11 on Panel-L board	1
	00904701	RR1220P-302-D 3KOHM (D-RANK)	MTL.FILM RESISTOR	R57,R45 on Panel-L board	2
	15419728	RR1220P-562-D 5.6K	MTL.FILM RESISTOR	R41,R50 on Panel-L board	2
	13749767T0	SR25TRE 560J	CARBON RESISTOR	R7,R8 on Panel-R Board	2
	13749791T0	SR25TRE 561 J	CARBON RESISTOR	R24,R25 on Pad Board,R140 on Lcd Board	1 +2
	13749813T0	SR25TRE 472 J	CARBON RESISTOR	R142 on Lcd Board	1
	13749845T0	SR25TRE 104 J 1/4W	CARBON RESISTOR	R126,R129 on Lcd Board	2
	15229941	10KD-5	THERMISTOR RESISTOR	R141 on Lcd Board	1
	13749853T0	SR25TRE 224 J 1/3W 1/4W	CARBON RESISTOR	R23,R20 on Pad Board	2
POTENTIOMETER					
	02676878	EVUE20E15B14	9M/M ROTARY POTENTIOMETER	VR1 on Sub board	1
	02891878	RK09D1130 10KB	9M/M ROTARY POTENTIOMETER	VR3,VR2 on Panel-L board,VR16,VR15,VR8,VR7 on Panel-R Board	2 +4
#	03122145	RK09D1130C3W	9M/M ROTARY POTENTIOMETER	VR1 on Panel-L board,VR19,VR3,VR20,VR18,VR17,VR2,VR14,VR12,VR11,VR10,VR9,VR4,VR13,VR5,VR1,VR6 on Panel-R Board	1 +16
#	03122090	EVJ Y15 F01 A15	12M/M ROTARY POTENTIOMETER	VR5 on Panel-L board	1
#	03122089	EWA NJO C15 B14	30M/M SLIDE POTENTIOMETER	VR4 on Panel-L board	1
#	03122123	EWA NKE C15 B14	30M/M SLIDE POTENTIOMETER	VR21,VR22,VR24,VR23 on Panel-R Board	4
CAPACITOR					
	00567823	GRM39B102K50PT	CERAMIC CAPACITOR	C662,C663,C69 on Main board	3
	00567945	GRM39B103K50PT	CERAMIC CAPACITOR	C583,C573,C575,C572 on Main board	4
	00567978	GRM39F104Z25PT	CERAMIC CAPACITOR	C532,C511,C512,C555,C513,C522,C525,C528,C554,C552,C534,C551,C510,C549,C544,C533,C122,C543,C540,C553,C142,C132,C133,C13,C12,C11,C135,C136,C138,C505,C140,C509,C502,C124,C5,C556,C503,C504,C127,C123,C506,C507,C139,C670,C600,C574,C634,C620,C635,C636,C641,C557,C643,C598,C671,C672,C673,C682,C683,C690,C691,C692,C43,C121,C642,C570,C558,C559,C10,C562,C563,C565,C566,C602,C569,C597,C571,C9,C579,C581,C589,C590,C591,C594,C595,C596,C568,C48,C37,C60,C39,C40,C41,C22,C14,C44,C47,C36,C49,C50,C51,C52,C53,C54,C55,C57,C58,C46,C19,C25,C26,C27,C28,C29,C21,C20,C38,C31,C35,C18,C17,C16,C32,C33,C15,C45,C120,C34,C30,C109,C98,C99,C100,C101,C102,C103,C104,C97,C106,C111,C110,C62,C112,C42,C114,C115,C116,C117,C118,C119,C105,C79,C113,C66,C67,C70,C71,C72,C96,C78,C81,C82,C83,C90,C91,C64,C92,C63,C93,C94,C95,C73 on Main board	172
	01349312	GRM39F105Z10PT	CERAMIC CAPACITOR	C535,C653,C689,C688 on Main board	4
	01672412	GRM39CH150J50PT	CERAMIC CAPACITOR	C592,C593,C520,C519 on Main board	4

CAPACITOR

	01675167	GRM39CH100D50PT	CERAMIC CAPACITOR	C587,C585,C576,C586 on Main board	4
	01675190	GRM39CH220J50PT	CERAMIC CAPACITOR	C560,C75,C561 on Main board	3
	01675201	GRM39CH270J50PT	CERAMIC CAPACITOR	C76 on Main board	1
	01675234	GRM39CH470J50PT	CERAMIC CAPACITOR	C86,C84,C85 on Main board	3
	01675312	GRM39CH221J50PT	CERAMIC CAPACITOR	C141 on Main board	1
	01898423	ECHU1H222JX5	POLYEST. CAPACITOR	C609,C606 on Main board	2
	01898434	ECHU1H101JX5	POLYEST. CAPACITOR	C616,C632,C629,C625,C639,C617,C613,C607,C601,C619 on Main board	10
	01906612	ECHU1H122JX5	POLYEST. CAPACITOR	C618,C614,C626,C633 on Main board	4
#	03120901	ECHU1C822JX5	POLYEST. CAPACITOR	C577 on Main board	1
	01900834	RA2-16V101M-T2	CHEMICAL CAPACITOR	C12,C33,C16,C19,C23,C29 on Jack Board,C627,C630,C527,C524 on Main board,C44,C67,C66,C51,C49,C45,C43,C38,C36,C30,C29,C47 on Panel-L board	4 +6 +1 2
	01909690	RA2-16V471MC-T2	CHEMICAL CAPACITOR	C526 on Main board ,C114,C126,C121 on Sub board	1 +3
	02344990	RV2-50V4R7M-R	CHEMICAL CAPACITOR	C647 on Main board	1
	02345101	RV2-16V100M-R	CHEMICAL CAPACITOR	C501,C134,C545,C584,C61 on Main board	5
	02345134	RV2-16V470M-R	CHEMICAL CAPACITOR	C608,C605 on Main board	2
	02345145	RV2-16V101M-R	CHEMICAL CAPACITOR	C107,C89,C1,C108,C125,C564,C508,C536 on Main board	8
#	03015378	RV-25V221MG10-R	CHEMICAL CAPACITOR	C646,C548,C645 on Main board	3
	02897278	SKF-0J106MZ4-RP	TANTALUM CAPACITOR	C7,C664,C3,C2,C622,C59,C624,C637,C656,C640,C612,C56,C65,C68,C567,C604,C610,C655,C8 on Main board	19
#	02904434	SK8-0J476MZ4-RA	TANTALUM CAPACITOR	C24,C23 on Main board	2
#	03015345	SK2-1A476MZ4-RD0	TANTALUM CAPACITOR	C88,C87 on Main board	2
#	03015356	SK5-1A157MZ4-RD0	TANTALUM CAPACITOR	C530,C529 on Main board	2
#	03015367	SKF-1C474MZ4-RP	TANTALUM CAPACITOR	C580 on Main board	1
	01674701	ECJ1VF1E104Z 0.1UF/16VK	CERAMIC CAPACITOR	C63,C65,C64,C52,C50,C12,C48,C5,C15,C17,C26,C27,C11,C8,C3,C46,C16 on Panel-L board ,C113,C79,C80,C89,C106,C108,C109,C112,C117,C118,C75,C111,C72,C71,C70,C63,C61,C59,C119,C25,C57,C10,C5,C4,C3,C44,C26 on Sub board	27 +1 7
	01674334	ECUV1H101JCV	CERAMIC CAPACITOR	C103,C97,C96,C98,C99,C100,C102,C104,C105,C128,C101,C94,C95,C91,C90,C88,C87,C86,C85,C84,C83,C40,C129,C93,C92 on Sub board	25
	01674212	ECUV1H220JCV	CERAMIC CAPACITOR	C21,C22 on Sub board	2
	01674434	ECUV1H561JCV	CERAMIC CAPACITOR	C122 on Sub board	1
	01674612	ECJ1VB1H103K	CERAMIC CAPACITOR	C68,C73,C67,C60,C18,C17,C16,C14,C13,C12,C11,C7,C2,C15,C74 on Sub board	15
	01674712	ECJ1VF1A105Z	CERAMIC CAPACITOR	C58 on Sub board	1
	01674190	ECUV1H150JCV	CERAMIC CAPACITOR	C50,C27,C32,C49,C48,C47,C28,C29,C30,C31,C51,C41,C45,C52,C43,C33,C42,C46,C39,C38,C37,C36,C35,C34 on Sub board	24
	01902867	RA2-25V101M-T2	CHEMICAL CAPACITOR	C125,C127,C9,C64,C76,C77,C78 on Sub board	7
#	03121023	RA2-35V220MC-T2	CHEMICAL CAPACITOR	C120 on Sub board	1
	13519534	DD104-63B102K50 50VK 1000PF	CERAMIC CAPACITOR	C3,C10,C18,C20,C24,C13 on Jack Board	6
	13519641	DD308-959F104Z50	CERAMIC CAPACITOR	C40,C30,C41,C32,C38,C34,C28 on Jack Board ,C20,C24,C23,C21,C19,C25,C22,C26,C27,C28,C29,C18,C31,C7,C32,C33,C30,C2,C11,C1,C17,C3,C10,C12,C13,C14,C15,C16 on Panel-R Board ,C44,C43 on Inverter Board ,C20,C23 on Pad Board,C103,C106 on Lcd Board	7 +2 8 +2 +2 +2
	13519661	DD104-989SL150J50	CERAMIC CAPACITOR	C14,C4 on Jack Board	2
	13519671	DD104-989SL101J50 100PF 50VK	CERAMIC CAPACITOR	C9,C2,C11,C5 on Jack Board ,C101,C102 on Lcd Board	4 +2
	01893656	ROS-16V101M-T2	CHEMICAL CAPACITOR	C15,C6 on Jack Board	2
	01454889	RA2-16V470MT2 470UF/16V	CHEMICAL CAPACITOR	C27,C31,C36,C35 on Jack Board	4
	02014890	RA2-16V221MT2	CHEMICAL CAPACITOR	C8,C1 on Jack Board	2
	00568456	ECJ1VF1C474Z	CERAMIC CAPACITOR	C2 on Panel-L board	1
	01674167	ECUV1H100DCV	CERAMIC CAPACITOR	C33,C40 on Panel-L board	2
	01674234	ECUV1H330JCV	CERAMIC CAPACITOR	C1 on Panel-L board	1
	01674389	ECUV1H221JCV	CERAMIC CAPACITOR	C10 on Panel-L board	1
	01674556	ECJ1VB1H472K	CERAMIC CAPACITOR	C4,C7 on Panel-L board	2
	01674667	ECJ1VF1H333Z	CERAMIC CAPACITOR	C62 on Panel-L board	1
	02129534	ECJ1VB1H102K	CERAMIC CAPACITOR	C9 on Panel-L board	1
#	03121590	RC3-6V221M-T2	CHEMICAL CAPACITOR	C20,C21,C22 on Panel-L board	3
#	03121612	RC3-25V-220M-T2	CHEMICAL CAPACITOR	C25,C14,C18,C23,C13,C24onPanel-Lboard	6
#	03121623	RC3-25V100M-T2	CHEMICAL CAPACITOR	C9,C8 on Panel-R Board	2
	01900823	RA2-16V100M-T2	CHEMICAL CAPACITOR	C21,C22 on Pad Board,C104,C105 on Lcd Board	2 +2
	02014923	RA2-35V470MT2	CHEMICAL CAPACITOR	C113 on Lcd Board	1
	01902590	RA2-6V101MC-T2	CHEMICAL CAPACITOR	C42 on Inverter Board	1

INDUCTOR, COIL, FILTER

#	02900923	CDRH4D28-6R8	CHOKE COIL	L1 on Main board	1
#	02900934	CDRH4D28-4R7	CHOKE COIL	L511 on Main board	1

INDUCTOR, COIL, FILTER					
#	02900945	CR75-220KC	CHOKO COIL	L2 on Main board	1
#	02900956	CR75-100KC	CHOKO COIL	L512 on Main board	1
	01909645	EXCML16A270U	FERRITE-BEAD	L505,L501 on Main board	2
	02238212	N2012ZPS121T50	FERRITE-BEAD	L520 on Main board	1
	01783590	BLM11B601SPT	FERRITE-BEAD	L522,L524,L525 on Main board	3
	01349256	BLM11A601SPT	FERRITE-BEAD	L502,L513,L510,L509,L508,L507,L503,L514,L504,L506,L532,L516,L517,L518,L519,L521,L526,L515,L527,L528,L529,L531,L530 on Main board	23
	01672889	SBC3-221-681	CHOKO COIL	L55 on Sub board	1
	00903167	N2012Z601T02 (CHIP)	FERRITE-BEAD	L40,L66,L56,L67,L39,L30,L29,L28,L18,L17,L16,L9,L8,L57,L58 on Sub board	15
	01565578	N1608Z601T01	FERRITE-BEAD	L68 on Sub board	21
	02678467	SS11V-10062	LINE-FILTER COIL	FL1 on Inverter Board	1
CRYSTAL, RESONATOR					
	00901912	MA-406 24.576MHZ TE24	CRYSTAL	X502 on Main board	1
	01340745	MA-406 12MHZ	CRYSTAL	X501 on Main board	1
#	02896234	MA-406 22.1667MHZ	CRYSTAL	X1 on Main board	1
	02672401	SG-8002JC 67.7376MHZ PC	CRYSTAL	X3 on Main board	1
	00894023	MA-406 20.000MHZ TE24	CRYSTAL	X1 on Sub board	1
ENCODER					
#	03122134	EC12E2420802	ROTARY ENCODER	EN1 on Panel-R Board	1
CONNECTOR					
#	02896267	JC21EJ2-BRN20	CONNECTOR	CN506 on Main board	1
	02455412	S8B-PH-SM3-TB	CONNECTOR	CN509,CN511 on Main board	2
#	03120867	S12B-PH-SM3-TB	CONNECTOR	CN512 on Main board	1
	02902823	B12B-PH-SM3-TB	CONNECTOR	CN501 on Main board	1
#	13369757	S7B-XH-A SIDE JST	CONNECTOR	CN502,CN503 on Main board	2
	01908656	18FE-BT-VK-N	CONNECTOR	CN4 on Sub board	1
	01908645	16FE-BT-VK-N	CONNECTOR	CN3 on Sub board	1
	13369504	B8B-PH-K-S JST	CONNECTOR	CN1,CN6 on Panel-L board ,CN9,CN7,CN1 on Sub board ,CN12 on Pad Board	3 +2 +1
	13369541	B10B-PH-K-S JST	CONNECTOR	CN2 on Panel-L board,CN1 on Panel-R Board,CN12,CN10,CN6 on Sub board ,CN22 on Lcd Board	3 +1 +1 +1
	13369562	B15B-PH-K-S JST	CONNECTOR	CN3 on Panel-L board,CN2 on Panel-R Board,CN11,CN14 on Sub board	2 +1 +1
	13369564	B12B-PH-K-S JST	CONNECTOR	CN4 on Panel-L board,CN3 on Panel-R Board,CN13 on Sub board ,CN16 on Lcd Board	1 +1 +1 +1
△	13369567	B4B-PH-K-S JST (4P)	CONNECTOR	CN5 on Sub board	1
	13369592	B7B-XH-A(7P) JST	CONNECTOR	CN8 on Sub board,CN19,CN18 on Inverter Board	1 +2
	13369563	B14B-PH-K-S JST	CONNECTOR	CN1 on Jack Board ,CN5 on Panel-L board	1 +1
	13369566	B6B-PH-K-S JST(6P)	CONNECTOR	CN2 on Jack Board ,CN7 on Panel-L board	1 +1
#	03122156	52030-0410	CONNECTOR	CN23 on Lcd Board	1
	01909601	12FE-BT-VK-N	CONNECTOR	CN17 on Lcd Board	1
△	02673145	B2(4-2.3)B-XH-A	CONNECTOR	CN27 on Inverter Board ,CN29,CN28 on Lcd Board	2 +1
#	03122167	SLP8S-5	CONNECTOR	CN13 on Pad Board	1
WIRING, CABLE					
△	01450512	WIRING POWER		CN26 on Inlet to CN1 on Power Supply Unit	1
	02342056	WIRING	4X400-P2.0-PHR-PHR-F	CN5 on Sub to CN1 on Bender Unit	1
	02343234	WIRING	6X150-P2.0-PHR-PHR-F	CN7 on Panel-L to CN2 on Jack	1
	02343545	WIRING	8X150-P2.0-PHR-PHR-F	CN1 on Panel-L to CN7 on Sub	1
	02343567	WIRING	8X250-P2.0-PHR-PHR-F	CN2 on Pad to CN9 on Sub	1
#	02343601	WIRING	8X450-P2.0-PHR-PHR-F	CN509 on Main to CN1 on Sub	1
	02343612	WIRING	8X500-P2.0-PHR-PHR-F	CN6 on Panel-L to CN511 on Main	1
	02343823	WIRING	10X200-P2.0-PHR-PHR-F	CN2 on Panel-L to CN12 on Sub/CN22 on Lcd to CN6 on Sub	2
	02343856	WIRING	10X350-P2.0-PHR-PHR-F	CN1 on Panel-R to CN10 on Sub	1
#	02344045	WIRING	12X300-P2.0-PHR-PHR-F	CN3 on Panel-R to CN13 on Sub	1
#	02344056	WIRING	12X350-P2.0-PHR-PHR-F	CN501 on Main to CN16 on Lcd	1
#	02344089	WIRING	12X500-P2.0-PHR-PHR-F	CN511 on Main to CN4 on Panel-L	1
#	02344134	WIRING	14X150-P2.0-PHR-PHR-F	CN5 on Panel-L to CN1 on Jack	1
	02344289	WIRING	15X200-P2.0-PHR-PHR-F	CN3 on Panel-L to CN11 on Sub	1
#	02344312	WIRING	15X350-P2.0-PHR-PHR-F	CN2 on Panel-R to CN14 on Sub	1
	02564356	WIRING	7X470-P2.5-XHP-XHP-F	CN503 on Main to CN8 on Sub	1
	02679390	WIRING	7X150-P2.5-XHP-XHP-F	CN502 on Main to CN19 on Inverter	1

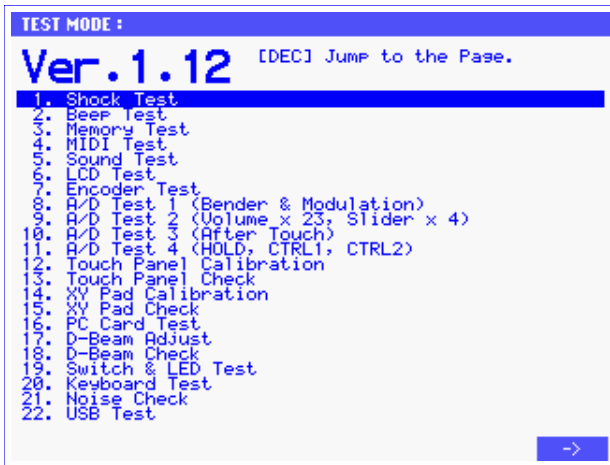
WIRING, CABLE					
△	02679412	WIRING	WIRING W2	CN18 on Inverter to CN2 on Power Suply Unit	1
	02566167	BAN CARD	BNCD-P=1.25-K-18-450	CN4 on Sub to Keyboard Unit	1
#	03121534	BAN CARD	BNCD-P=1.25-K-16-450	CN3 on Sub to Keyboard Unit	1
TRANSFORMER					
	02019478	(7KQ5) 19832A	PULSE TRANS	T501 on Main board	1
△	02457412	DHE1105-5VB	INVERTOR MODULE	MOD1 on Inverter Board	1
PICKUP, SENSOR					
#	72230189	XY-PAD ASSY			1
SCREW					
△	40010334	SCREW 4X8	BINDING BZC		1
	40454045	SCREW 3X8	FLAT TAPTITEB NI FLANGE SOCKET		8
	40011067	SCREW 3X8	BINDING TAPTITE B FE ZC		22
	40011123	SCREW 4X8	BINDING TAPTITE B BZC		27
	40011056	SCREW 3X6	BINDING TAPTITE B ZC		44
	40239734	SCREW 3X6	VWH B-TIGHT ZC		8
	40011312	SCREW 3X8	BINDING TAPTITE P BZC		29
	40012501	SCREW M4X12	BINDING TAPTITE P FE BZC		1
	40012790	SCREW 3X8	FLAT TAPTITE P BZC		8
	40011490	SCREW M3X6	PAN MACHINE W/SW BZC		14
△	40011745	HEX NUT M4	SPRING NUT FE ZC		1
PACKING					
#	03128712	MANUAL PAD			1
#	03128701	CENTER PAD UPPER			1
#	03128690	CENTER PAD LOWER			1
#	03128689	SIDE PAD R			1
#	03128678	SIDE PAD L			1
#	03017845	PACKING CASE			1
MISCELLANEOUS					
	12359139	RUBBER FOOT	FF-018 BLK		4
	40122812	ACETATE TAPE	NITTO NO.5 BLK W15MM 30M		20
	01455523	CORD BUSHING	EDS-1717U		1
	01905445	CORD BUSHING	WS-1NS		3
	02673945	STAY	BENDER		1
	40017356	COATING CLIP	CS-4		1
ACCESSORIES (STANDARD)					
△	02670401	AC CORD SET	100V YA-101/YP-3N/YC-13		1
△	00894378	AC CORD SET	120V SP301+IS14 SJT18/3		1
△	23495124	AC CORD SET	240VA SC-144-JO1 ES303-10HMA		1
△	00907001	AC CORD SET	240VE KP-610 GTTBS-3 KS-31A		1
#	03129034	CD-ROM	DRIVER 1.00		1
#	72014989	OWNER'S MANUAL	JAPANESE		+1
#	72232512	OWNER'S MANUAL	ENGLISH		1
	40232334	WARRANTY CARD	MOCHIKOMI JAPAN ONLY		1
#	03120712	CARD PROTECTOR			1

CHECKING THE VERSION NUMBER

You can use either of the following two methods to check the version number.

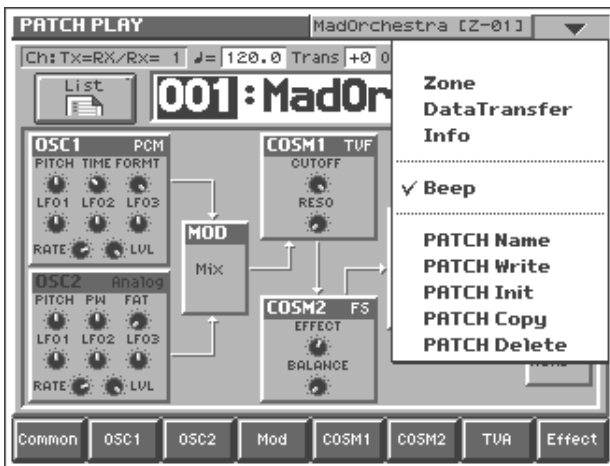
Checking the version number in Test mode

Turn on the power while holding down the three buttons [-OCT] + [+OCT] + [8]. Continue holding down the buttons until you hear the beep. The top screen of Test mode will appear, and the version number will be displayed in the screen.

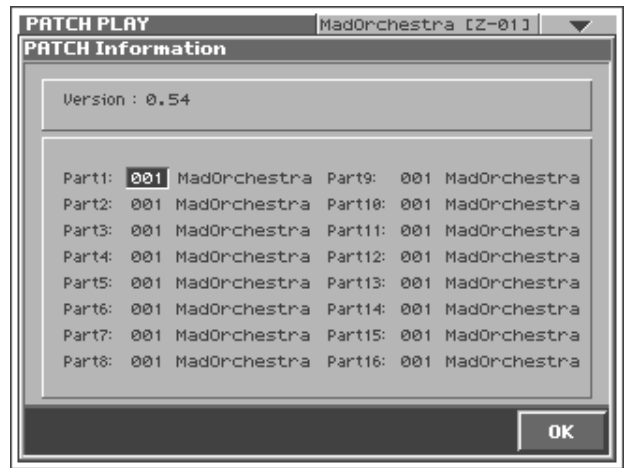


Checking the version number in Patch mode

1. Touch < ▼ > in the upper right of the screen. A pulldown menu will appear.



2. In the pulldown menu, touch <Info>. The PATCH Information window will appear.



Verify the program version in the upper left of the screen.

USERS DATA SAVE AND LOAD

- * The following procedure uses the V-Synth in USB Storage mode. Storage mode is supported by Windows XP/2000/Me. Please check the OS of your computer before you save or load data.
- * Don't, power off on the updating and programs or datas are broken.

Backing up V-Synth patches and wave data (Project)

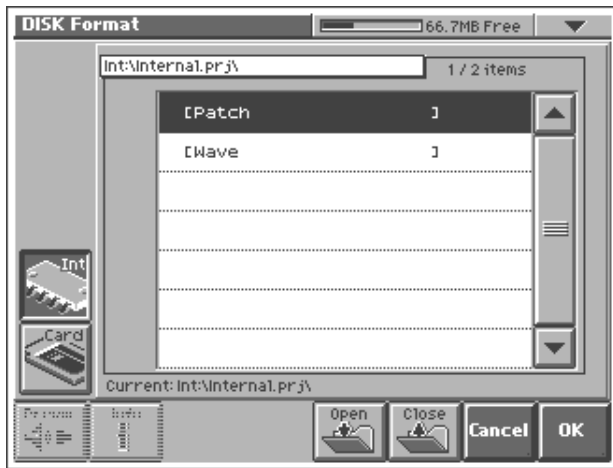
To back up the internal data of the V-Synth, you will use the V-Synth's USB connection in Storage mode to copy all data of the internal disk onto a drive (e.g., hard disk) of your computer.

1. Use a USB cable to connect the V-Synth to your computer as described in "Connecting your computer" (p.91) in the owner's manual. Then in the "USB Storage screen," select "Internal" and the internal memory of the V-Synth will appear on your computer as a drive named "V-SYNTH."
2. On your computer, select all the files and folders within the "V-SYNTH" drive, and copy them onto a drive (e.g., hard disk) of your computer.
3. After copying the data, operate your computer as described in "Disconnecting the USB connection" (p.92) of the owner's "Closing the USB storage screen" and manual, and then disconnect the USB cable from the V-Synth.

Loading backup data into the V-Synth

First initialize (format) the disk to erase all data.

1. Access the DISK UTILITY MENU screen.
2. Touch <Format>. The Disk Format screen will appear.



3. Since we want to format the internal memory, touch <Int>.
4. Touch <OK>.
A warning window like the following will appear.



HINT

If you decide to cancel the procedure, touch <CANCEL>.

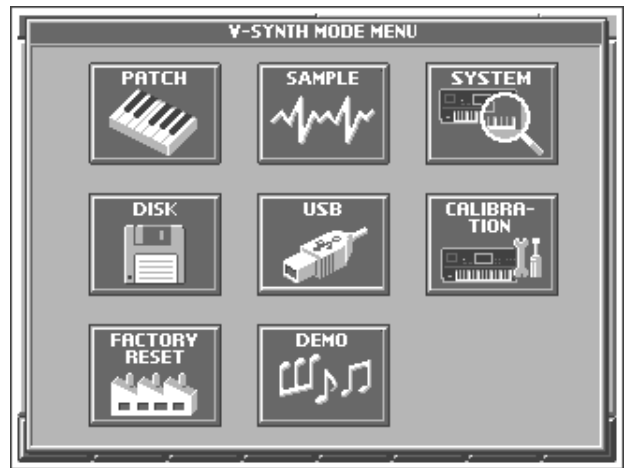
5. Touch <EXECUTE> to execute.
6. Use a USB cable to connect the V-Synth to your computer as described in "Connecting your computer" (p.91) in the owner's manual. Then in the "USB Storage screen," select "Internal" and the internal memory of the V-Synth will appear on your computer as a drive named "V-SYNTH."
7. On your computer, copy all of the backup data from the drive (e.g., hard disk) of your computer into the "V-SYNTH" drive.
8. After copying the data, operate your computer as described in "Disconnecting the USB connection" (p.92) of the owner's "Closing the USB storage screen" and manual, and then disconnect the USB cable from the V-Synth.
9. At this point, the backup data has not been loaded into the work area of the V-Synth, so you will be unable to check whether the process has been performed correctly. Power-off the V-Synth, turn it back on, and use Patch mode etc. to verify that the backup data is loaded correctly.

RESTORING THE FACTORY SETTINGS

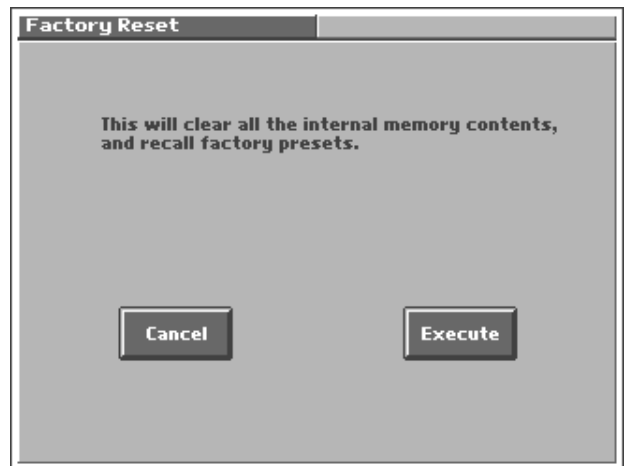
This returns all data in the V-Synth to the factory settings (Factory Reset).

* If data created by the user has already been saved in the V-Synth, all such data will be lost when you execute Factory Reset. Before executing Factory Reset, you must back up the data on your computer.

1. The V-SYNTH MODE MENU window will appear.



2. Touch <FACTORY RESET>.
The Factory Reset screen will appear.



3. Touch <Execute> to execute Factory Reset.
When Factory Reset is completed, the display will indicate "COMPLETED!"

Updating the system

Required items

- PC
- USB CABLE
- UPDATE CD-ROM (#17041297)
- * In order to perform this procedure, the OS of your computer must be Windows XP/2000/Me.

Procedure

- * Don't power off on the updating and programs or datas are broken.
- 1. On the front panel, hold down PATCH PALETTE [NUMBER][1], and power-on the V-Synth.
* Continue pressing NUMBER [1] until "Program Updater" is displayed.
- 2. Press the front panel PATCH PALETTE [NUMBER][2] button. The display will indicate "Update by USB Mass Storage."
- 3. Use a USB cable to connect the V-Synth and your computer.
- 4. Verify that a new removable drive has appeared on the desktop of your computer (in Windows, this will be in My Computer).
- 5. Copy the program ROM file (V-Synth.rom) and the internal image file (V-SynthDiskImage.bin) from the CD-ROM into the drive that appeared.
* If you want to update only the program, copy only "V-Synth.rom"; if you want to update only the WAVE/PATCH data, copy "V-SynthDiskImage.bin".

6. After copying the data, operate your computer as described in "Disconnecting the USB connection" (p.92) of the owner's "Closing the USB storage screen" and manual, and then disconnect the USB cable from the V-Synth.
 7. Press the front panel PATCH PALETTE [NUMBER][8] button.
 8. The display will indicate "Update Internal Disk," and the update will be executed.
 9. When the update has been successfully completed, a beep will sound and the display will indicate "Complete! Please Power Off." Turn off the power of the V-Synth.
- * If the update was not successful, the display will indicate "ERROR!"

If the above steps did not result in a successful update, please check the following two points.

- Are the V-Synth and computer correctly connected by a USB cable?
- Were the correct files copied to the drive that appeared on your computer desktop?

Perform the update procedure from the beginning, paying careful attention to the above points.

- Please exchange the main board Assy when you still can not update correctly.

Test mode

Test items

0: Test Mode Top page (Identifying the version number)

- 1: Shock test
- 2: Beep Check
- 3: Memory Test
- 4: MIDI Test
- 5: Sound Test
- 6: LCD Test
- 7: Encoder Test
- 8: A/D Test1 (Bender & Modulation)
- 9: A/D Test2 (Volume)
- 10: A/D Test3 (After Touch)
- 11: A/D Test4 (HOLD, CTL1, CTL2)
- 12: Touch Panel Calibration
- 13: Touch panel A/D check
- 14: XY-PAD Calibration
- 15: XY-PAD A/D check
- 16: PC-CARD Test
- 17: D-Beam Adjustment
- 18: D-Beam Check
- 19: Switch & LED Test
- 20: Keyboard Test
- 21: Noise Check
- 22: USB Test

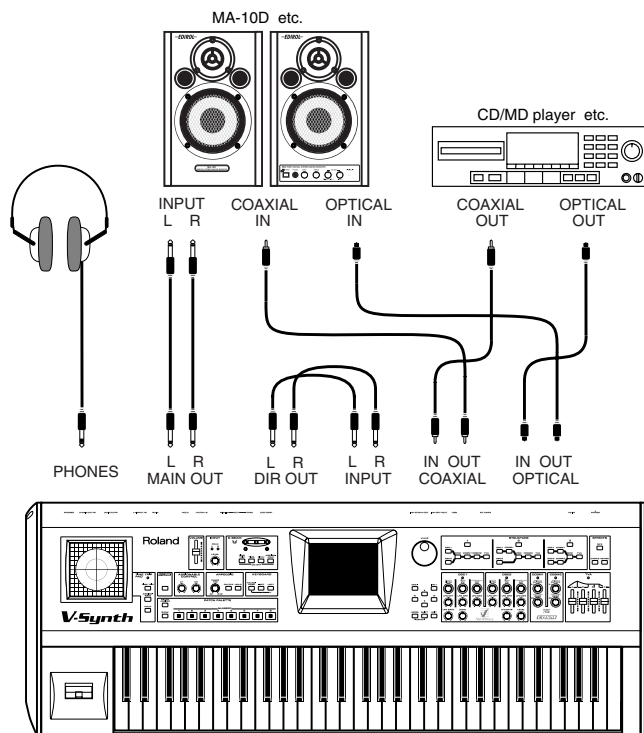
Required items

- PC-CARD (one pc.)
- Computer (OS must be Windows Me or Windows XP Windows 2000)
- Usb Id Set (an application for writing the USB serial number. Same as used for the UM-880.)(#17041153)
- Expression pedals (three pcs.)
- Touch pen (#00900545 / included with PMA-5)
- Headphones
- Oscilloscope
- Noise meter
- MIDI cable (1 pc.)
- Audio cables (4 pcs.)
- Coaxial cables (2 pcs.)

- Optical cable (2 pcs.)
- Speakers
- * Use speakers such as the MA-10D that has analog and digital inputs (optical/coaxial 44.1KHz/48KHz/96KHz)
- A device with digital output (optical/coaxial 44.1KHz/48KHz/96KHz)

Preparations for testing

- If you will be writing the USB serial number in the [22: USB Test] item, copy the entire "Usb Id Set" folder into the hard disk of your computer, and start up the executable file (UsbIdSet.exe) found within this folder.
- Make speaker connections etc. as follows.



Button operations

Entering Test mode

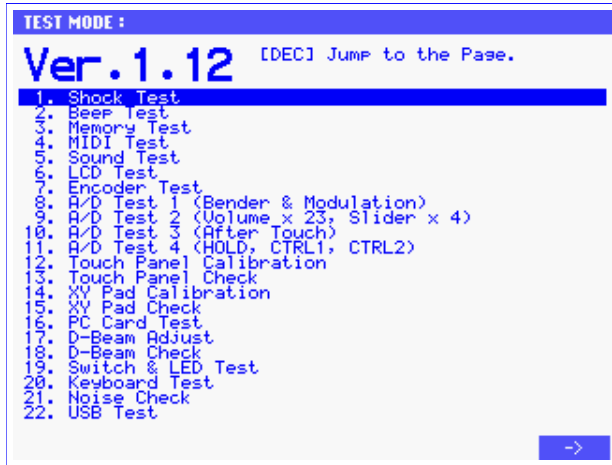
- While holding down the three buttons [-OCT] + [+OCT] + [8], turn on the power. Continue holding down the buttons until you hear the beep. The top screen of test mode will then appear.
 - In the top page, press [▶] to begin from test item 1: Shock test.
 - For test items 8~5 and 7~9 the next test item will begin automatically when each test completes successfully.
 - The top page displays a list of the test items. You can use [▼] / [▲] (or turn VALUE) to move the cursor, and then press [DEC] to directly select a test item.
 - By pressing [SHIFT] + [▶] / [◀] you can forcibly move to the next or previous test item even if the current test has not yet been completed.
 - From each test mode you can press [MODE] to return to the top page.
- * For details on each screen, refer to the test item details below.

Existing test mode

Turn off the power.

Test item details

0: Test Mode Top page (Identifying the version number)



- Verify that Program ROM version.
- If the version is not appropriate, perform the update.
- * For details on the update procedure, refer to "Updating the system."
- Press [►] to proceed to the next text item.

1: Shock Test



- A demo performance will play.
- Listen to the sound, and verify that there is no noise or other problem with the sound.
- Perform the impact test.
- Lift the boay of keyboard side to a higher position(about 3cm) and drop it.
- Checks thes sound (an unusual sound or a sound breaks off).
- The same thing is performed.(right-hand side and left-hand side).
- Connect headphones, and listen to the sound.
- Set the MASTER VOLUME to the minimum, and then the maximum position, and verify that there is no crackling or other abnormality.
- The sound will stop when you press [DEC], and resume when you press [DEC] again.
- Verify that the output is muted while you hold down [INC].
- Press [►] to proceed to the next test item.

Problem	Items to check
No sound	Perform detailed checks in 5. Sound Test.
Not muted	MAIN BOARD Q504,Q505,Q506 JACK BOARD Q2,Q3,Q5,Q6

2: Beep Test

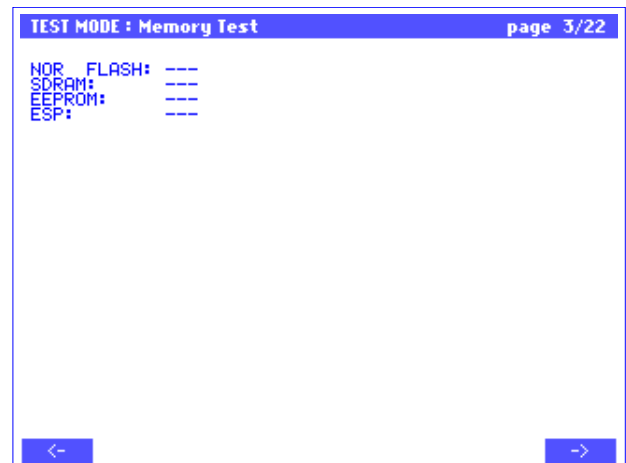


Verify that a beep is sounded from the internal speaker.

- Press [INC] once, and a high-pitched and a low-pitched beep will each sound once.
- Verify that the beeps are sounded, and then press [►] to proceed to the next text.

Problem	Items to check
Beep is not produced	SUB BOARD SP1,Q22,Q23,IC19

3: Memory Test

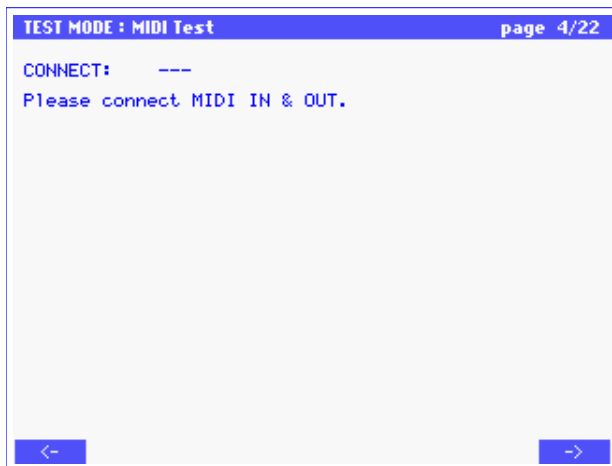


NOR FLASH, SDRAM, EEPROM, and ESP will be checked automatically.

- If all tests are OK, you will automatically proceed to the next test item.

Problem	Items to check
NOR_FLASH NG	MAIN BOARD IC21
SDRAM NG	MAIN BOARD IC3,7
EEPROM NG	MAIN BOARD IC11
ESP NG	MAIN BOARD IC22,IC24

4: MIDI Test



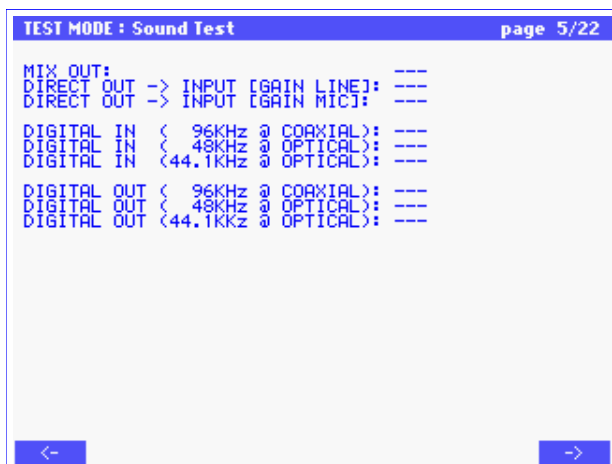
Check MIDI connections.

- Use a MIDI cable to connect the MIDI IN and MIDI OUT.
- If the connection is correct, the display will indicate "CONNECT : OK," and you will automatically proceed to the next test item.

Problem	Items to check
"OK" does not appear	SUB BOARD JK1,IC17,CN1 MAIN BOARD CN509,IC538,IC539,IC18

5: Sound Test (MAIN OUT L,R /DIRECT OUT L,R /COAXIAL/OPTICAL)

* When performing this test, re-check the connections of your speakers, etc.



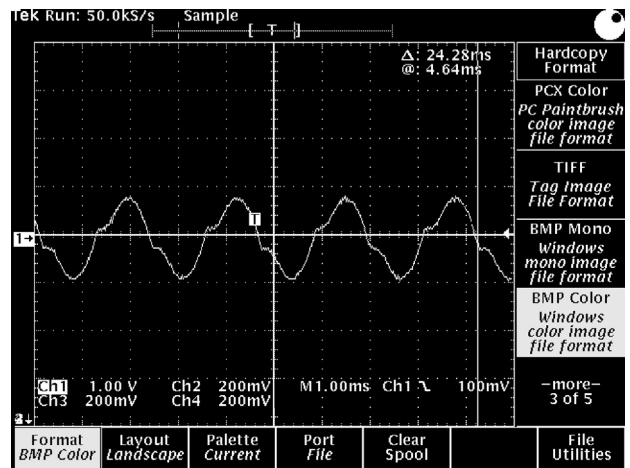
- Set VOLUME and INPUT LEVEL to the maximum setting.

First check the MAIN OUT output.

- Connect the Oscilloscope.
- Press [▶].
- The MAIN OUT -L will output a triangle wave, and the MAIN OUT -R will output a sine wave.
- Check the audio and the waveform.

Next check L MONO.

- Unplug the MAIN OUT -R jack.
- Verify that MAIN OUT -L outputs a signal that combines a sine wave and triangle wave.



- Reinsert the jack, and press [▶] to proceed to the next step.

Check the DIR OUT output and the INPUT (LINE) input.

- Verify that the input GAIN switch is set to the [LINE] position.
- The waveform that is output from DIR OUT L/R will be input to INPUT L/R, and will be output from MAIN OUT L/R.
- A triangle wave will be output from MAIN OUT -L, and a sine wave from MAIN OUT -R.
- Check the audio and the waveform, and then press [▶] to proceed to the next step.

Check the INPUT (MIC) input.

- Verify that the input GAIN switch is set to the [MIC] position.
- MAIN OUT -L will output a triangle wave, and MAIN OUT -R will output a sine wave.
- Turn the [INPUT LEVEL] knob to the minimum position.
- Verify that the sound and waveform diminish, and disappear when you reach the minimum position. Then press [▶] to proceed to the next step.

Check DIGITAL IN 96KHz.

- Input audio from an external device at a sampling rate of 96 kHz to the COAXIAL IN jack.
- The input audio will be output from MAIN OUT -L/R.
- Check the audio and waveform, and press [▶] to proceed to the next step.

Check DIGITAL IN 48KHz.

- Input audio from an external device at a sampling rate of 48 kHz to the OPTICAL IN jack.
- The input audio will be output from MAIN OUT -L/R.
- Check the audio and waveform, and press [▶] to proceed to the next step.

Check DIGITAL IN 44.1KHz.

- Input audio from an external device at a sampling rate of 44.1 kHz to the OPTICAL IN jack.
- The input audio will be output from MAIN OUT -L/R.
- Check the audio and waveform, and press [▶] to proceed to the next step.

Check DIGITAL OUT 96KHz.

- Audio at a sampling rate of 96 kHz will be output from the COAXIAL OUT jack.

* Set your speakers for coaxial input.

- A triangle wave will be output from L, and a sine wave from R.
- Check the audio, and press [▶] to proceed to the next step.

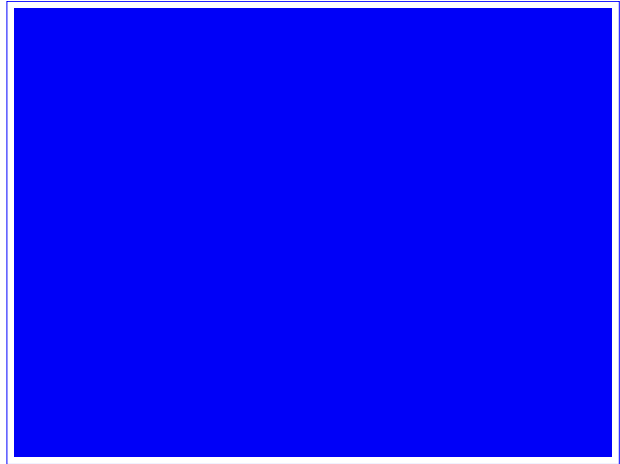
Check DIGITAL OUT 48KHz.

- Audio at a sampling rate of 48 kHz will be output from the OPTICAL OUT jack.
- * *Set your speakers for optical input.*
- A triangle wave will be output from L, and a sine wave from R.
- Check the audio, and press [▶] to proceed to the next step.

Check DIGITAL OUT 44.1KHz .

- Audio at a sampling rate of 44.1 kHz will be output from the OPTICAL OUT jack.
- * *Set your speakers for optical input.*
- A triangle wave will be output from L, and a sine wave from R.
- Check the audio, and press [▶] to proceed to the next step.

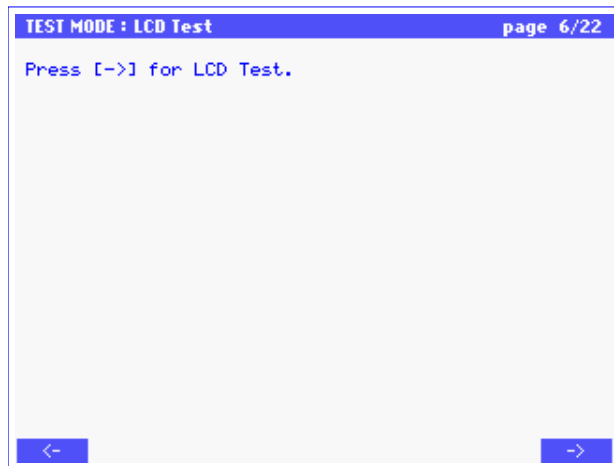
- Verify that the all-pixel-on screen is not missing any pixels, and that the darkness is uniform.



- Press [▶].
- Verify that the all-pixel-off screen has no pixels "stuck on," nor any obvious extraneous display artifacts.

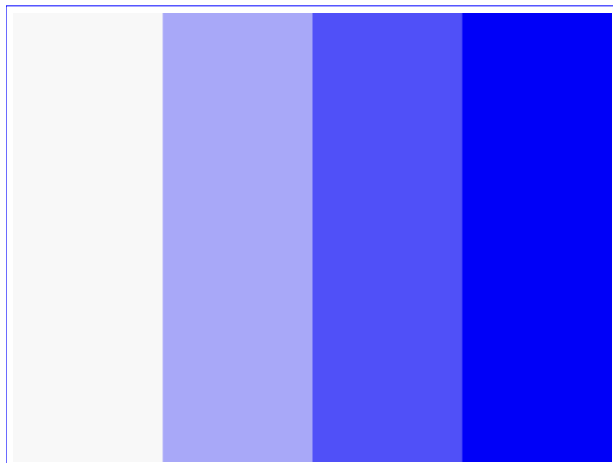
Problem	Items to check
No sound is output for any test	
No sound from MAIN OUT	MAIN BOARD
MAIN OUT L&R NG	MAIN BOARD IC545
MAIN OUT L only NG	MAIN BOARD
MAIN OUT R only NG	MAIN BOARD
DIRECT OUT L&R NG	MAIN BOARD CN512,
DIRECT OUT L only NG	MAIN BOARD
DIRECT OUT R only NG	MAIN BOARD
COAXIAL IN NG	MAIN BOARD JK502
No output from COAXIAL OUT	MAIN BOARD JK502
OPTICAL IN NG	MAIN BOARD CN507
No output from OPTICAL OUT	MAIN BOARD CN508

6:LCD Test

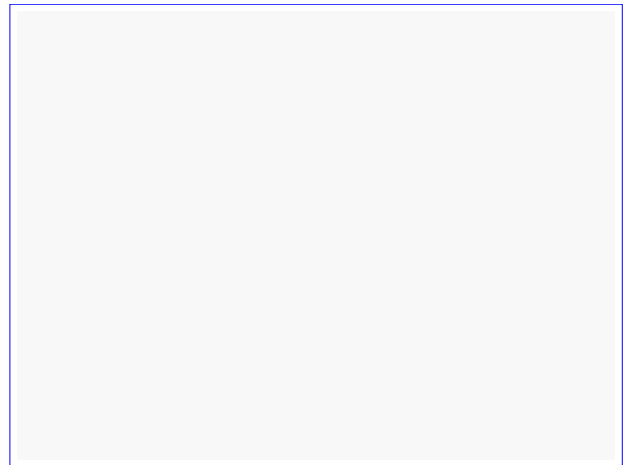


Check the LCD.

- Press [▶].
- A pattern in four-level greyscale will appear in the LCD. Turn the contrast adjustment knob all the way to left and right, and verify that the contrast changes. Then adjust the knob for optimal contrast.



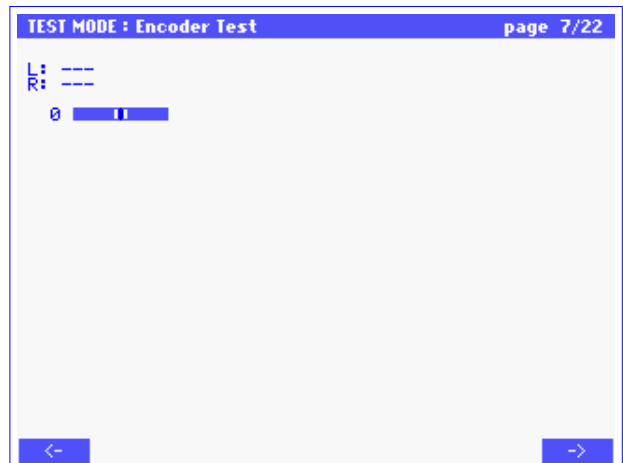
- Press [▶].



- Press [▶] to proceed to the next test item.

Problem	Items to check
Contrast does not change	SUB BOARD VR1A,IC20,Q25 LCD BOARD CN17,Q30
Incorrect display	MAIN BOARD IC501,IC503,CN501 LCD BOARD CN16,CN17

7: Encoder Test



Check the encoder.

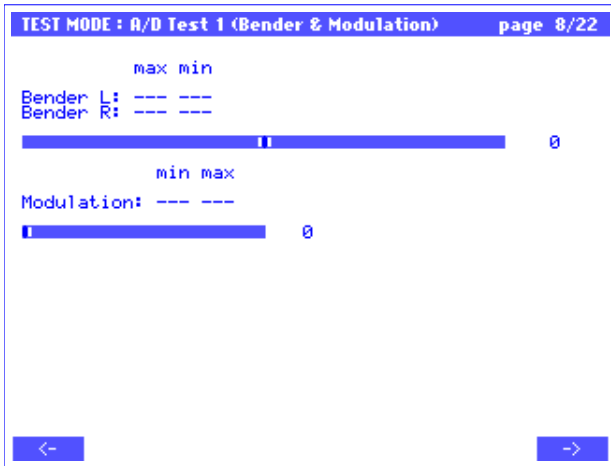
- Turn the encoder clockwise once, and counter-clockwise once. If clockwise rotation produces a value of +24 and counter-clockwise rotation produces a value of -24, the LCD screen will indicate "OK," and

a confirmation tone will be output.

- If both rotations are "OK," you will automatically proceed to the next test item.

Problem	Items to check
"OK" is not displayed	PANEL-R BOARD EN1 SUB BOARD IC2

8: A/D Test1 (Bender & Modulation)

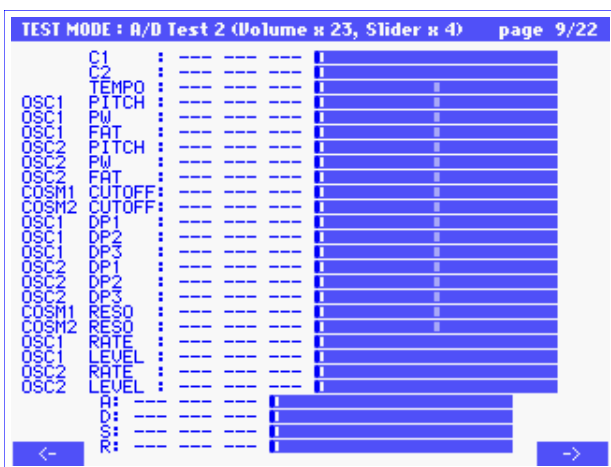


Check the operation of bender and modulation.

- * Make sure that the bender is not tilted when you enter this screen. (The A/D value at the time you enter this screen is read as the electrical center.)
- Move the bender lever all the way to left and right.
- If movement to the far left produces a value of -128, movement to the far right produces +127, and return to the center produces 0, the display will indicate "OK" and a confirmation tone will be output.
- Move the bender lever all the way in the modulation direction.
- If movement to the modulation direction produces a value of 127 and return produces a value of 0, the display will indicate "OK" and a confirmation tone will be output.
- If "OK" is displayed for all tests, you will automatically proceed to the next test item.

Problem	Items to check
"OK" is not displayed	BENDER UNIT SUB BOARD CN5, IC2

9: A/D Test2 (Volume x 23, Slider x 4)



Check the rotary knobs and the sliders.

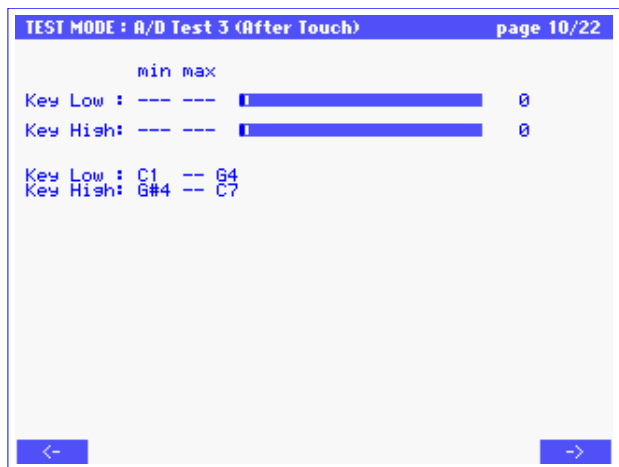
- Check each knob in order from the upper left.
- If a knob has no center detent, turn it "left-right-left." Indications of "OK" will be displayed if far left produces a value of 0, far right produces a value of 127, and all the way back to the far left produces a

value of 0.

- If a knob has a center detent, turn it "left-right-center." Indications of "OK" will be displayed if far left produces a value of 0, far right produces a value of 127, and center (detent) produces a value of 64.
- Check each slider in order from the left. Move each slider in the order of "down-up-down." Indications of "OK" will be displayed if the top position produces a value of 127 and the bottom position produces a value of 0.
- If the order is incorrect, the "OK" indication will not be displayed. A sweep tone will be output during this operation.
- If the "OK" indication appears for all, you will automatically proceed to the next test item.

Problem	Items to check
TEMPO,C1,C2 NG	PANEL-R,L BOARD, each VR, IC1, IC2, IC3, IC4, CN1 SUB BOARD CN10, IC2, IC11

10 A/D Test3 (After Touch)



Check aftertouch operation for the two regions of the keyboard.

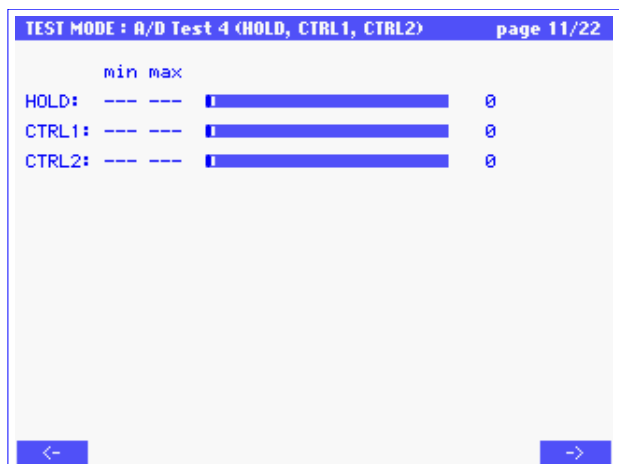
L : Low region C2-G4 (SK-961 PWB LOW ASSY)

H : High region G#4-C7 (SK-961 PWB HI-AFT ASSY)

- In each keyboard region, firmly press down on any key, and then release it.
- Indications of "OK" will be displayed if the maximum value is 127 and the minimum value is 0, and a confirmation tone will be output.
- If "OK" is displayed for each test, you will automatically proceed to the next test item.

Problem	Items to check
No response at all	SUB BOARD IC5
Only the low region is NG	Keyboard unit, SUB BOARD CN3,
Only the high region is NG	Keyboard unit, SUB BOARD CN4,

11: A/D Test4 (HOLD, CTRL1, CTRL2)



Check the operation of the hold pedal jack and the control pedal jacks.

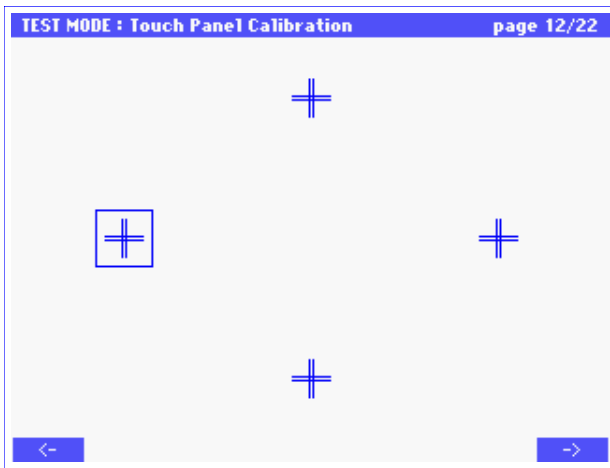
- * Before you begin this test, connect an expression pedal to each pedal jack.
- Advance the expression pedal, and then return it. Verify that the value changes in a range of 0 to 127.
- Indications of "OK" will be displayed if the maximum value is 127 and the minimum value is 0, and a confirmation tone will be output.
- If "OK" is displayed for each test, you will automatically proceed to the next test item.

Problem	Items to check
HOLD NG	SUB BOARD JK4
CTL1 NG	SUB BOARD JK3
CTL2 NG	SUB BOARD JK2

12: Touch Panel Calibration

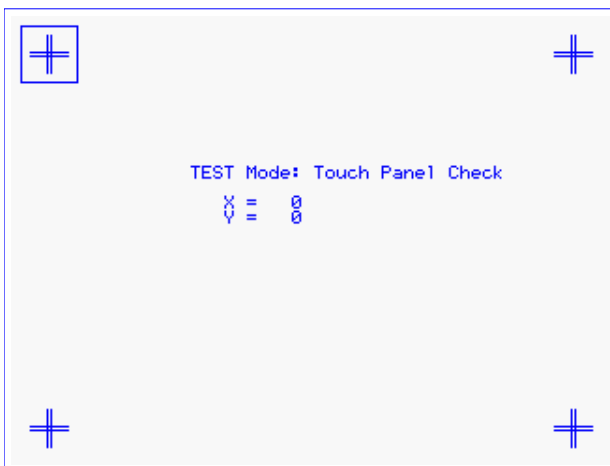
Calibrate the touch panel.

A touch pen is used for calibration.



- Using the touch pen, touch the center of "+" symbol enclosed by the box.
- When the touch has been detected, the box will move to the next point.
- Verify that the V-Synth produces a beep when you touch the screen.
- When you have touched all four points on the screen, calibration will be performed.
- If calibration was successful, the display will indicate "Calibration:OK" and you will automatically proceed to the next test.
- * If calibration was unsuccessful, you will return to the calibration screen.

13: Touch panel A/D check



- Using the touch pen, touch the center of "+" symbol enclosed by the box.
- When the touch has been detected, the box will move to the next point.
- If a problem is detected during this check, you will automatically return to the "Touch Panel Calibration" screen, and calibration will be performed once again.
- When you have touched all four points on the screen and no problems

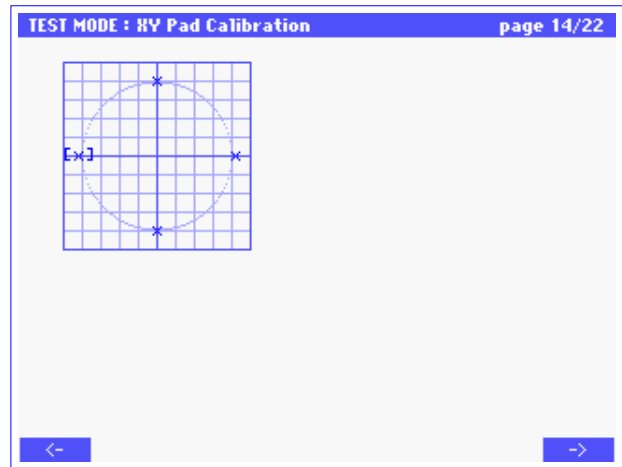
were detected, you will automatically proceed to the next test.

- * If the touched locations could not be detected correctly, you will automatically return to the calibration screen.

14: XY-Pad Calibration

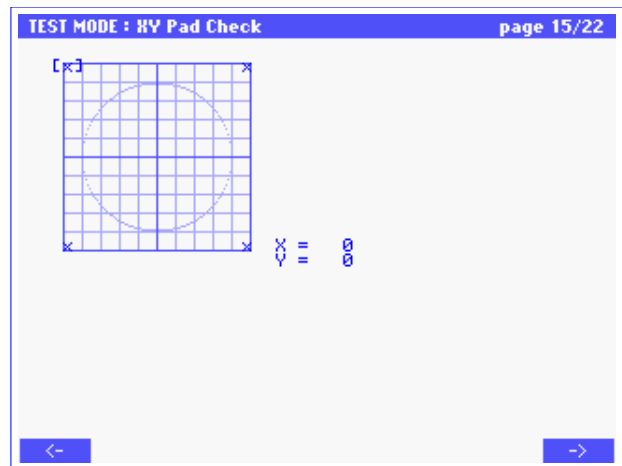
Calibrate the XY-PAD.

- * As for the LCD, a touch pen is used for this calibration operation as well.



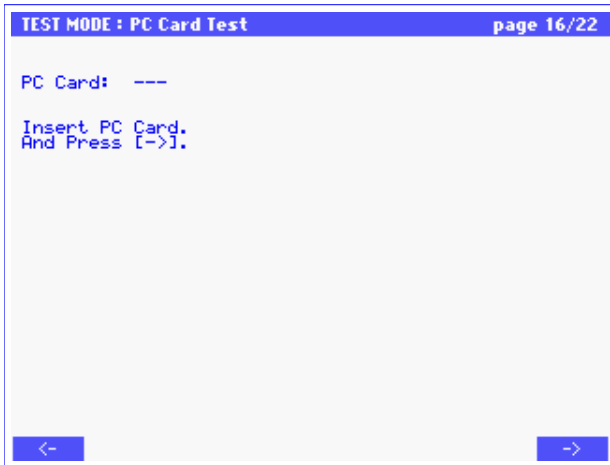
- The LCD will display a graphic of the XY-PAD. On the X-Y-PAD, use the touch pen to touch the location that corresponds to the "x" symbol enclosed by "[]".
- When the touch has been detected, the "[]" in the screen will move to the next point.
- When all four points have been touched, calibration will be performed.
- If calibration was successful, the display will indicate "Calibration:OK," and you will automatically proceed to the next test.
- * If calibration was not successful, you will return to the calibration screen once again.

15: XY-PAD A/D check



- The LCD will display a graphic of the XY-PAD. On the XY-PAD, touch the location that corresponds to the "x" symbol enclosed by "[]".
- When the touch has been detected, the [] will move to the next point.
- When all four points have been touched and no problems have been detected, you will automatically proceed to the next test.
- * If the touched locations could not be detected correctly, you will return to the calibration screen.

16: PC-CARD Test



Check card slot operation.

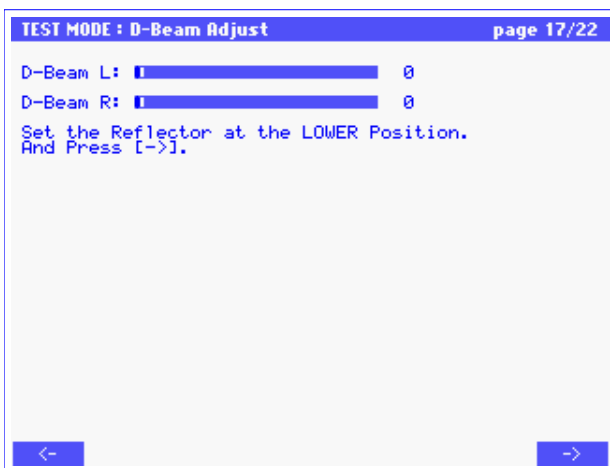
- Insert a PC card into the PC card slot.
- * Use a PC card (formatted by the V-Synth).
- Press [▶]. Write/Read tests will be performed. If they were successful, the display will indicate "OK."
- If the test results were "OK," you will automatically proceed to the next test item.

Problem	Items to check
"OK" is not displayed	MAIN BOARD IC523, 519, 526, 525, 522, 520, 527, CN506

17: D-Beam Adjust

Adjust the D Beam.

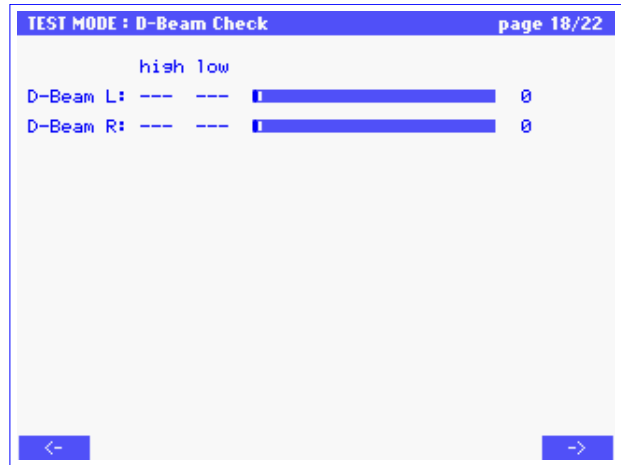
- * This adjustment sets the response range of the D Beam in a range of 40 cm to 10 cm from the chassis, allowing the D Beam to be controlled optimally.



- First, position your hand 10 cm above the D Beam and press [▶]. A distance of 10 cm is approximately the width of four white keys.
- Next, position your hand 40 cm above the D Beam and press [▶]. A distance of 40 cm is approximately the width of seventeen white keys.
- If these two settings are not performed correctly, the NG screen will appear. Press [▶] to return to the setting screen, and perform the settings again.
- When the adjustment is completed, you will automatically proceed to the next test item.

18: D-Beam Check

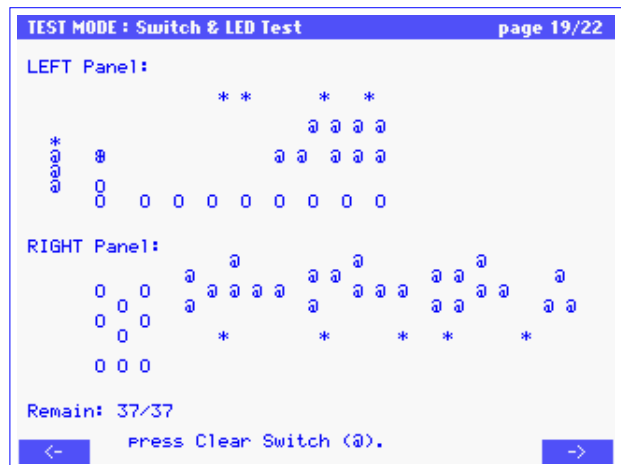
Check the results of the adjustment that was performed in item 17.



- Position your hand above the D Beam, and raise or lower it in a range of 10 cm to 40 cm.
- "OK" results will be displayed if a maximum value reaches 127 (10 cm above the D Beam) and the minimum value reaches 0 (40 cm above the D Beam), and a confirmation tone will be output.
- If "OK" is displayed for both points, you will automatically proceed to the next test item.

Problem	Items to check
No response at all	SUB BOARD CN7 PANEL-L BOARD CN1,D1,LED27,LED28
Responds, but no "OK" result	PANEL-L BOARD IC1,IC2,IC3,IC4,IC5, peripheral R,C,D

19: Switch & LED TEST



Check the switches and LEDs.

Check the milky-white switches and LEDs.

- (left side of panel)[(D BEAM) TIME TRIP] [(D BEAM) TIME] [(D BEAM) PITCH] [(D BEAM) ASSIGNABLE] [V-LINK] [TIME TRIP] [ASSIGNABLE] [HOLD] [(ARPEGGIO) ON/OFF] [(ARPEGGIO) HOLD] [TRANSCOPE] [-OCT] [+OCT]
- (right side of panel)[(STRUCTURE) 1] [OSC1] [OSC2] [MOD] [COSM1] [COSM2] [TVA], [(STRUCTURE) 2] [OSC1] [OSC2] [COSM1] [MOD] [COSM2] [TVA], [(STRUCTURE) 3] [OSC1] [OSC2] [COSM1] [COSM2] [MOD] [TVA], [M-FX] [CHORUS] [REVERB]
- The LED will blink for approximately one second and then go dark.
- The switches will be shown in the screen as [@]. When a switch is pressed, the [@] will change to [.]
- * V-LINK=the [@] and [*] over lap.

- The lower left of the screen indicates the number of switches yet to be checked.
- When the switches have been pressed correctly, you will automatically proceed to the next test item.

Check the Blue LEDs.

- The four Blue LEDs will blink. Each time you press [►], each LED will blink for approximately one second and then go dark.
- After the LED go dark, the [*] will change to [.]
- The lower left of the screen indicates the number of LEDs yet to be checked.
- When all four LEDs are dark, you will automatically proceed to the next test item.

Check the red LEDs.

- The two red LEDs will blink. Each time you press [►], each LED will blink for approximately one second and then go dark.
- After the LED go dark, the [*] will change to [.]
- The lower left of the screen indicates the number of LEDs yet to be checked.
- When both LEDs are dark, you will automatically proceed to the next test item.

Check the orange LEDs.

- The five orange LEDs will blink. Each time you press [►], each LED will blink for approximately one second and then go dark.
- After the LED go dark, the [*] will change to [.]
- The lower left of the screen indicates the number of LEDs yet to be checked.
- When all five LEDs are dark, you will automatically proceed to the next test item.

Check the large black switches and LEDs.

- (left side of the panel PATCH PALETTE)[1] [2] [3] [4] [5] [6] [7] [8]
- The switches will be shown in the screen as [O]. When a switch is pressed, the [O] will change to [.]
- The lower left of the screen indicates the number of switches yet to be checked.
- When the switches have been pressed correctly, you will automatically proceed to the next test item.

Check the small black switches.

(left side of the panel) [PATCH ASSIGN] [BANK]

(right side of the panel) [DEC/-] [▲] [INC/+] [◀] [▼] [▶] [MODE] [SHIFT] [EXIT]

- The sys will be shown in the screen as [O]. When a switch is pressed, the [O] will change to [.]
- The lower left of the screen indicates the number of switches yet to be checked.
- When the switches have been pressed correctly, you will automatically proceed to the next test item.

* As you press the switches consecutively, an upward scale will be sounded.

* Pressing multiple switches simultaneously produces an invalid result.

Problem	Items to check
LED does not light or go dark	SUB BOARD CN11~14, Q6~19, Q26, Q27 PANEL L BOARD LED, SW, Diode, CN PANEL R BOARD LED, SW, Diode, CN

20: Keyboard Test (sounding check / velocity check)



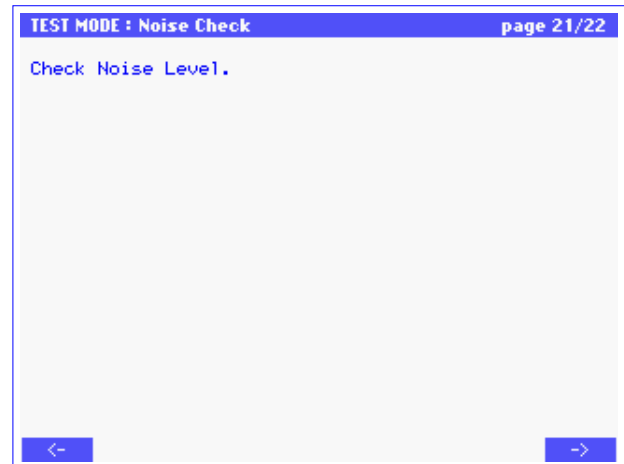
- Performing a sounding check and velocity check. Play the keyboard to check the keys.
- The LCD screen will indicate the note number and velocity value of the key you press.
- Verify that the volume changes according to the force with which you play the key.
- Press [►] to switch from a decay-type sound to a sustain-type sound.
- Press [►] to proceed to the next test item.

Problem	Items to check
Does not sound correctly	Keyboard, keyboard connector SUB BOARD CN3, CN4

21: Noise Check

Use a noise meter to measure the residual noise.

- Set the input filter of noise meter to JIS-A.
- Verify that the noise is less than -89 dBm.

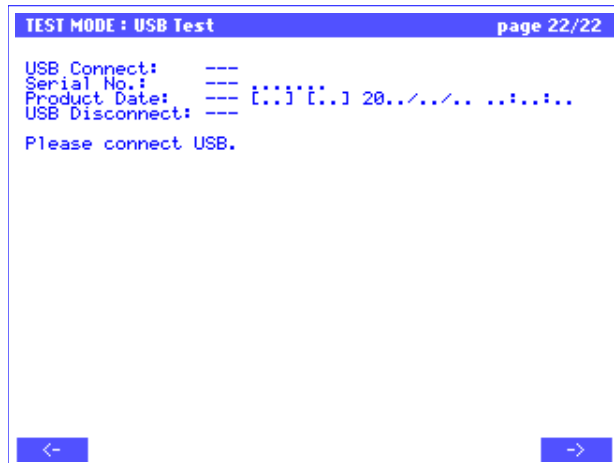


- Press [►] to proceed to the next test item.

22: USB Test

1. Checking the USB MIDI mode connection

- * Install the USB MIDI driver in your computer beforehand as described in page 96 "Transferring MIDI data to/from your computer."



Verify that data can be exchanged in USB MIDI mode between the V-Synth and your PC.

- Use a USB cable to connect the V-Synth and computer.
- When you do so, data will automatically be exchanged between the V-Synth and the PC, and the screen of the V-Synth will indicate "CONNECT : OK."

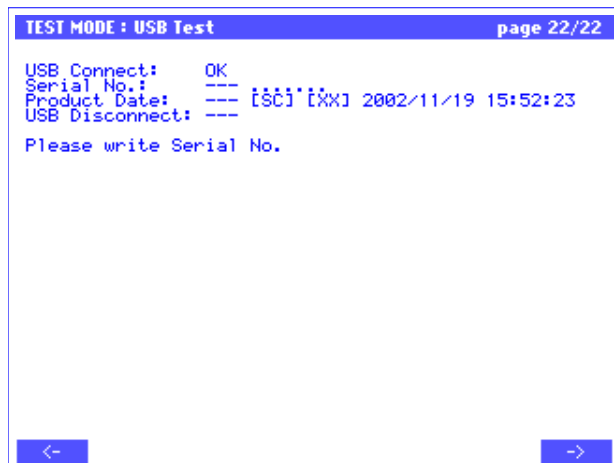
Problem	Items to check
USB CONNECT: OK is not displayed	MAIN BOARD JK501, IC502

2. USB Storage Mode checking mode

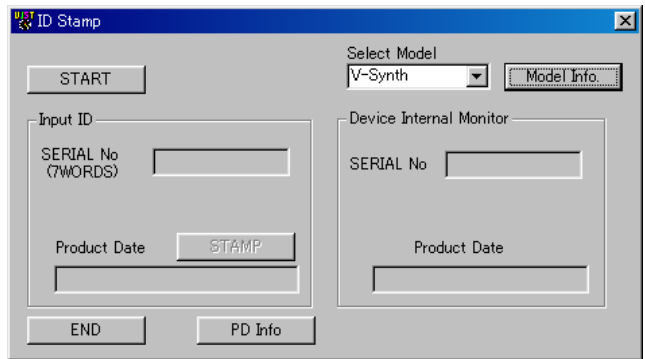
Check this item by performing "Saving and loading data"

3. If you replace the main board assembly

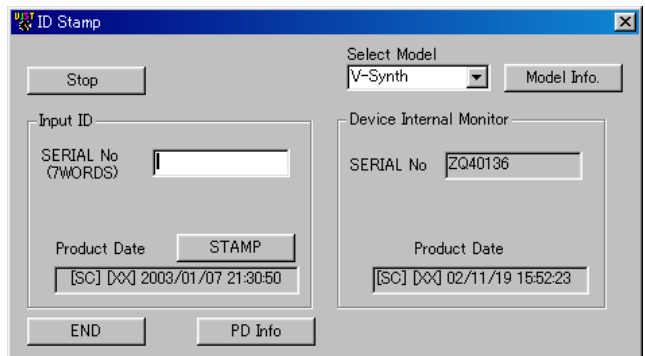
If the main board assembly is replaced when the V-Synth is serviced at a service station, you must write the USB ID number into the main board assembly, as well as performing the test items described above.



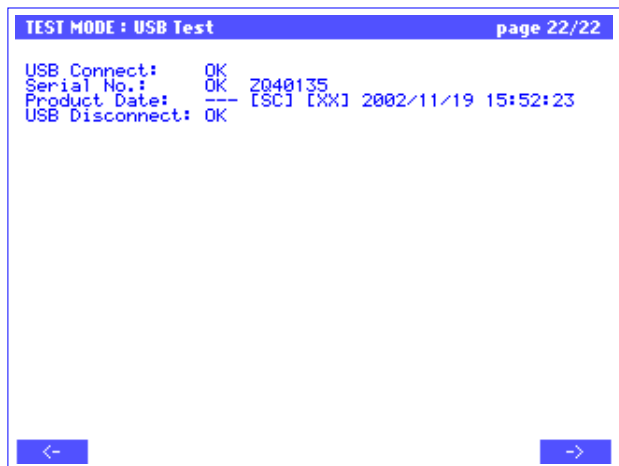
- * A PC is used for this test. Start up "UsblSet.exe" before you continue.



- Here we will write the serial number.
- (On your computer) In the Select Model field, choose V-Synth, and press the START button.
- Input the serial number of the product into the [Input ID] field [SERIAL No], and press the Enter key of your computer.



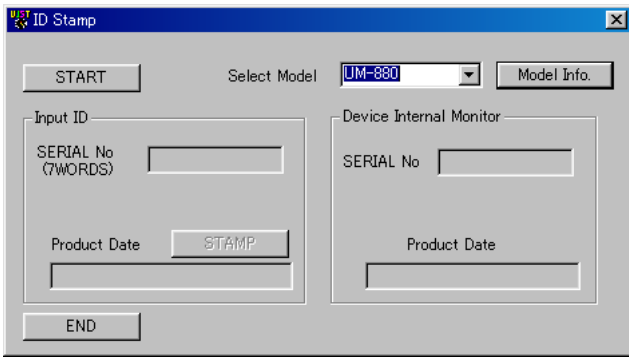
- The serial number will be displayed in the V-Synth screen. Verify that the correct number was written.
- Disconnect the USB cable. Verify that the V-Synth screen indicates "DISCONNECT : OK."



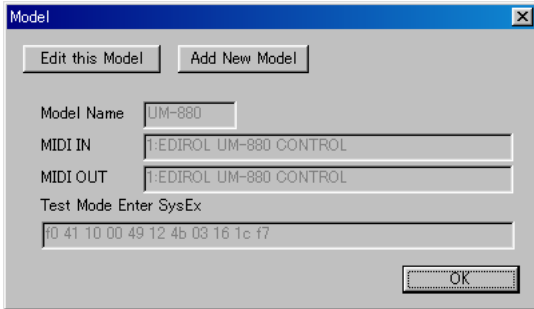
- If "OK" is displayed for all items, the V-Synth screen will indicate "COMPLETE."

- * Before the "UsblSet.exe" program used with the LIM-880 can be used to write the USB ID of the V-Synth, you must add the V-Synth's ID as shown below

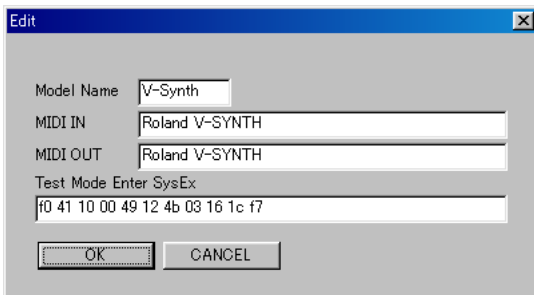
1. Start up the application.



2. Click [Model Info.].
3. A window will appear.



4. Click [Add New Model].
5. A window will appear.



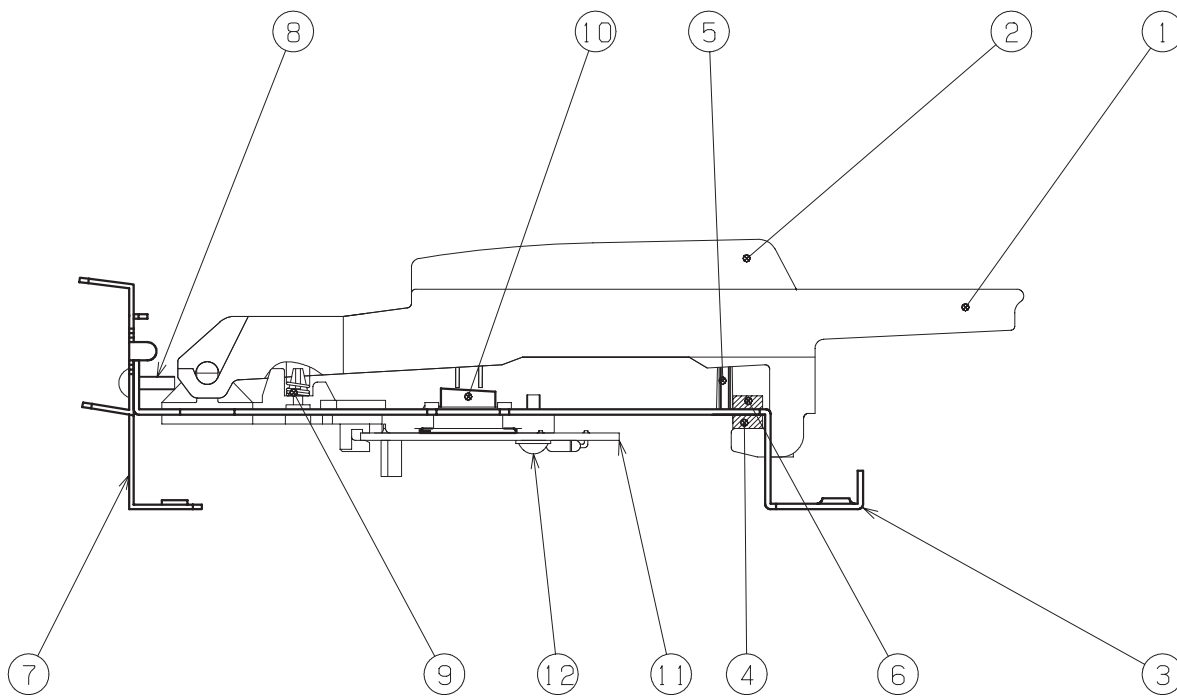
Input the following items into the appropriate fields.

Model Name	V-Synth
MIDI IN	Roland V-SYNTH
MIDI OUT	Roland V-SYNTH
Test Mode Enter SysEx	f0 41 10 00 49 12 4b 03 16 1c f7

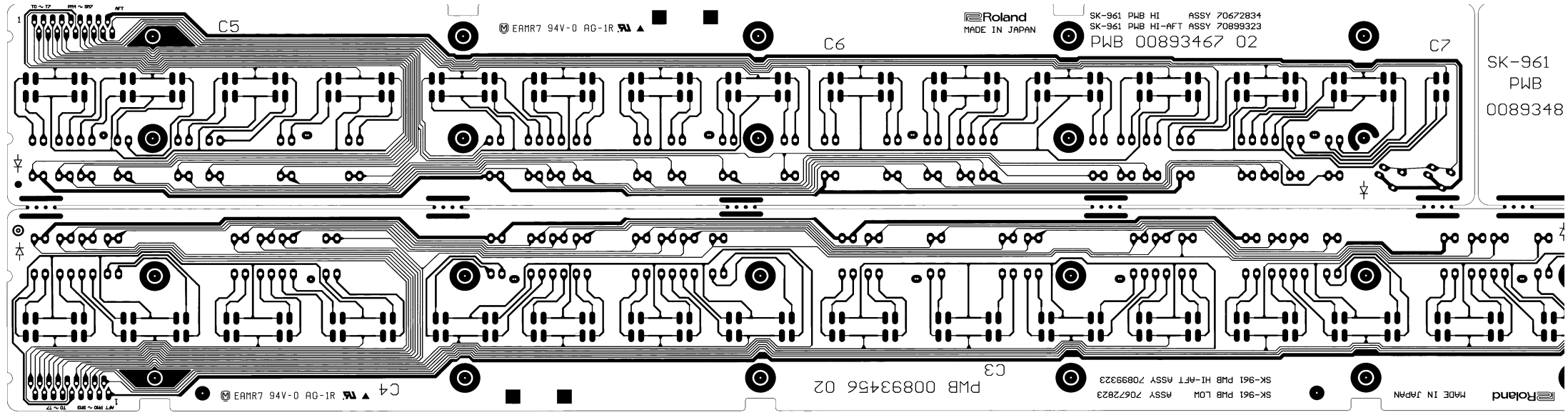
6. Press OK.

KEYBOARD PARTS LIST

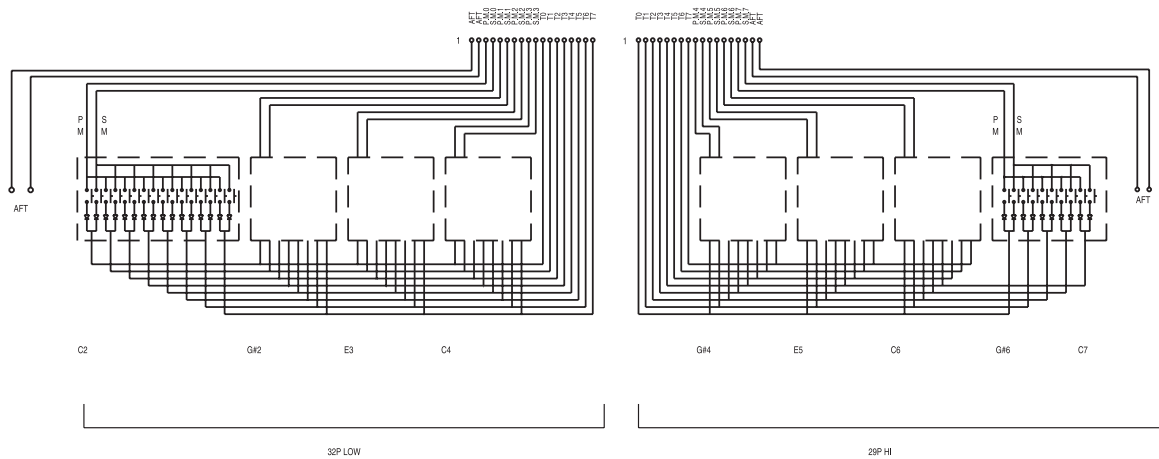
NO	PART CODE	PART NAME	DESCRIPTION	Q'TY
1	00893723W0	NATURAL KEY C/F	SK-9 (W/WEIGHT)	10
	00893734W0	NATURAL KEY E/B	SK-9 (W/WEIGHT)	10
	00893756W0	NATURAL KEY D	SK-9 (W/WEIGHT)	5
	00893767W0	NATURAL KEY G	SK-9 (W/WEIGHT)	5
	00893745W0	NATURAL KEY A	SK-9 (W/WEIGHT)	5
	00893778W0	NATURAL KEY C'/F'	SK-9 (W/WEIGHT)	1
2	00893790W0	SHARP KEY	SK-9 (W/WEIGHT)	25
	72232823	CHASSIS 61P-J ASSY	SK-9	1
'CHASSIS 61P-J ASSY' includes the following parts.				
3	01127212	SK-9 CHASSIS 61P-C		1
4	00893701	CUSHION	SK-9 61P	1
5	01122023	SK-9 GUIDE		61
6	01127223	AFTERTOUCH	SK-961	1
7	02674012	KBD HOLDER	SK-9	3
	03120734	KBD HOLDER		2
8	40011067	SCREW 3X8	BINDING TAPTITE B FE ZC	10
9	01231534	SPRING-WT2	SK-9	61
10	00893823	RUBBER SWITCH	12P	4
10	00893834	RUBBER SWITCH	13P	1
11	70672823	PWB LOW ASSY	SK-961	1
11	70899323	CONTACT BOARD ASSY	SK961PWB HI AFT ASSY	1
12	40233545	SCREW	VWH TAPTIGHT B 3X10MM ZC	13



KEYBOARD CIRCUIT BOARD



KEYBOARD CIRCUIT DIAGRAM



KEYBOARD DISASSEMBLY

<Attaching the RUBBER SWITCHES and PCB>

To fasten the SK-9 PWB, be sure to use 3*10mm BINDING VWH (PART No.40233545).

1. Turn the chassis over as shown in fig.1. Next, place 4 pieces of RUBBER SWITCH 12P in turn, on the chassis from the left end (the bass side of keyboard), aligning them with the long holes provided on the chassis.

At this point, be sure that the air-escape grooves of each RUBBER SWITCH are positioned at the respective air-escape grooves on the chassis. (See fig.2)

Then on the right side (the high note area), place RUBBER SWITCH 13P in the same way.

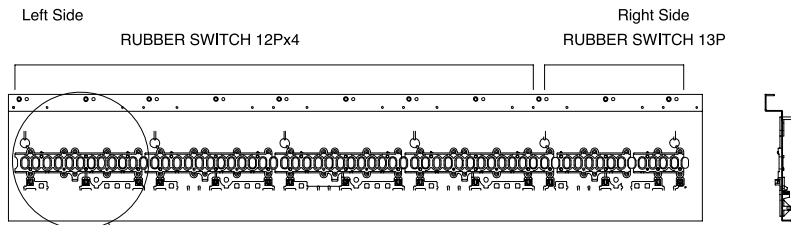


Fig.1

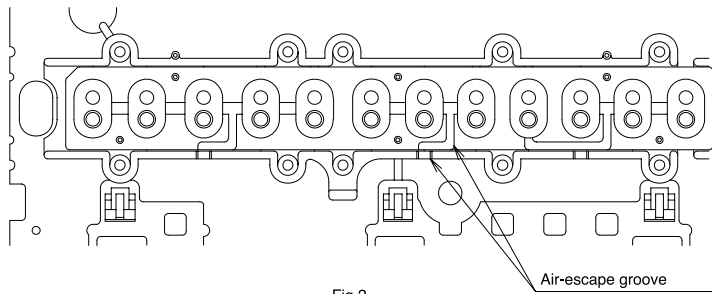


Fig.2

2. Aligning the cutouts in the PWB with the lugs on the chassis, put one side of the PCB into the chassis hooks. Place the PCB on the Chassis so that the chassis positioning pins fit into the positioning holes. (See fig.3) At this point, the chassis positioning reference pin should first be fitted into the hole. There are two PCBs, LOW and HI, as shown in fig.4. The Chassis positioning reference pins are located near the connector each of the LOW and HI PCBs.

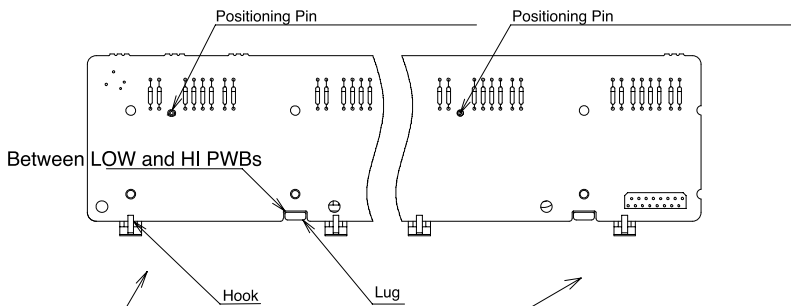


Fig.3

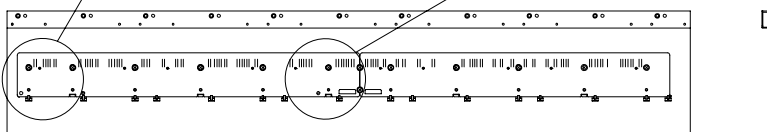


Fig.4

- Then, using the screws, fasten the LOW and HI PCBs to the chassis from the center of the keyboard, that is, from the LOW PCB as shown in fig.5. While you are screwing down the PCB, it may float from the chassis. To avoid this, after screwing in the PCB at the center of the keyboard, screw down opposite end, before screwing in other areas in the middle of the PCB. (See fig.5) In addition, the PCBs may be warped by soldering, etc. It is recommended that each PCB be fastened with screws while holding down the middle of the PCB lightly. Finally, screw down the adjacent area between the LOW and HI PCBs.

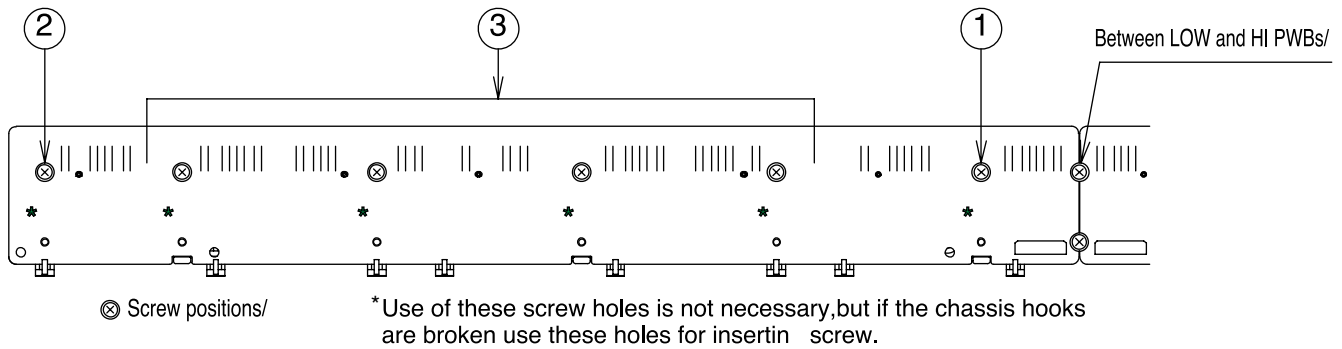


Fig.5

Note) When using an electric screwdriver, be careful of the torque. If excessive force is applied, the PCB may break or chip. (Suitable torque: 8kgf-cm)

<Key removal>

Hold the tip of the key, put pliers into the bearing side, and spread out. (Refer to fig.6)

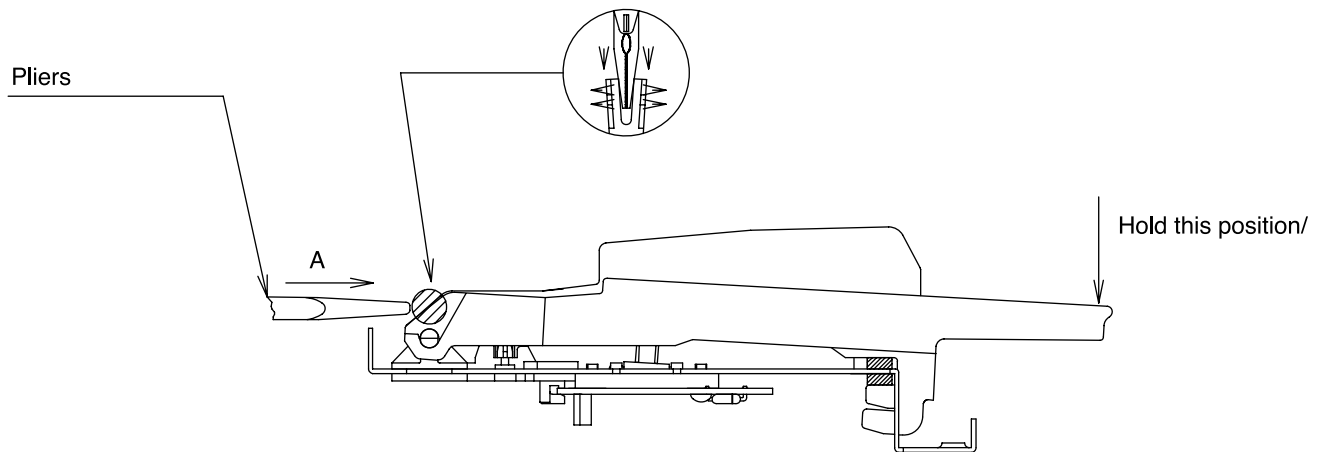


Fig.6

<Key installation>

Place a spring on the chassis. Next, place a key (see fig.7) and press the bearing side.

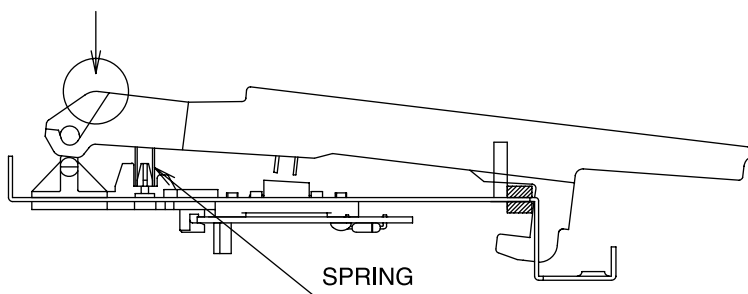
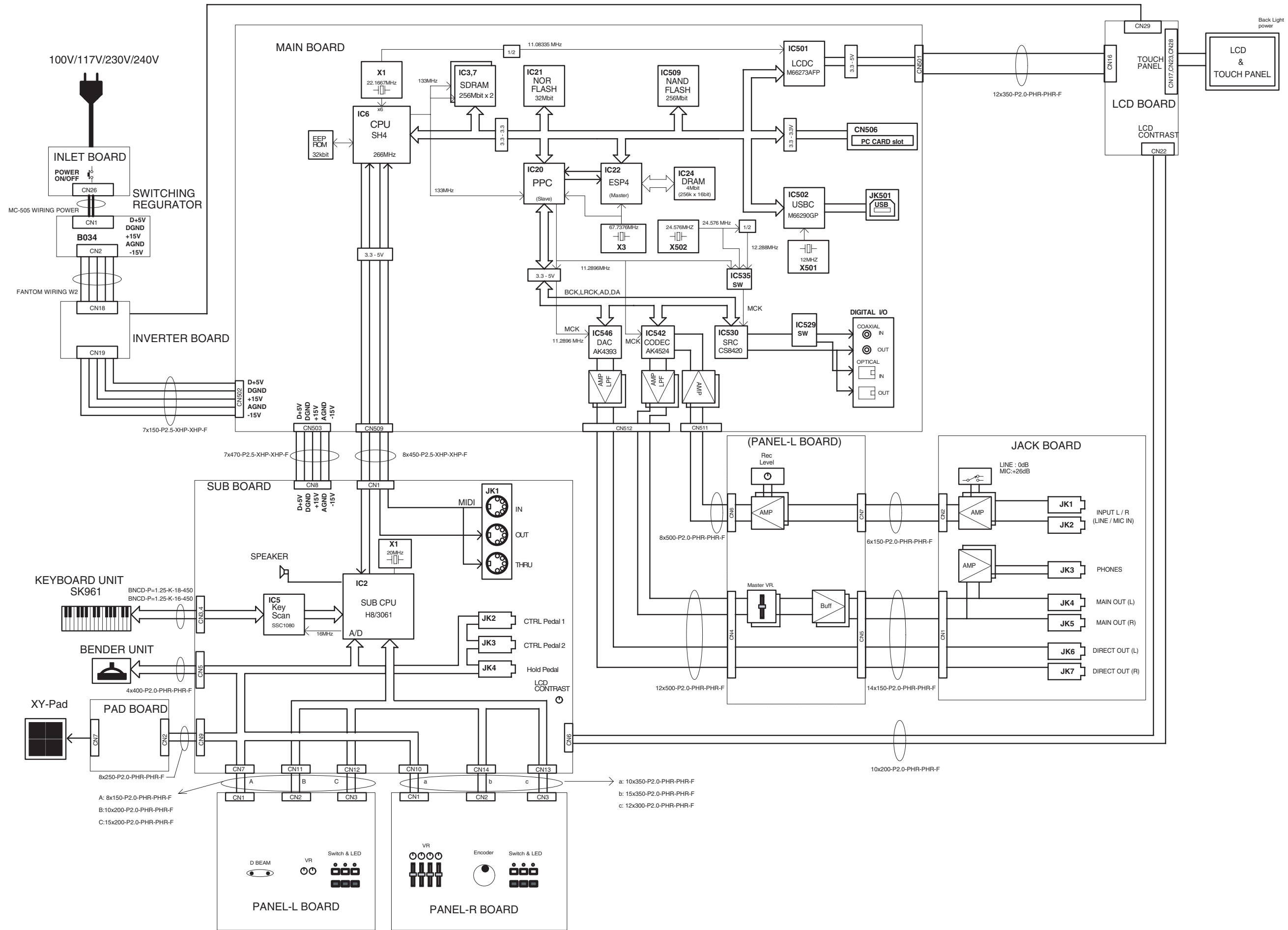
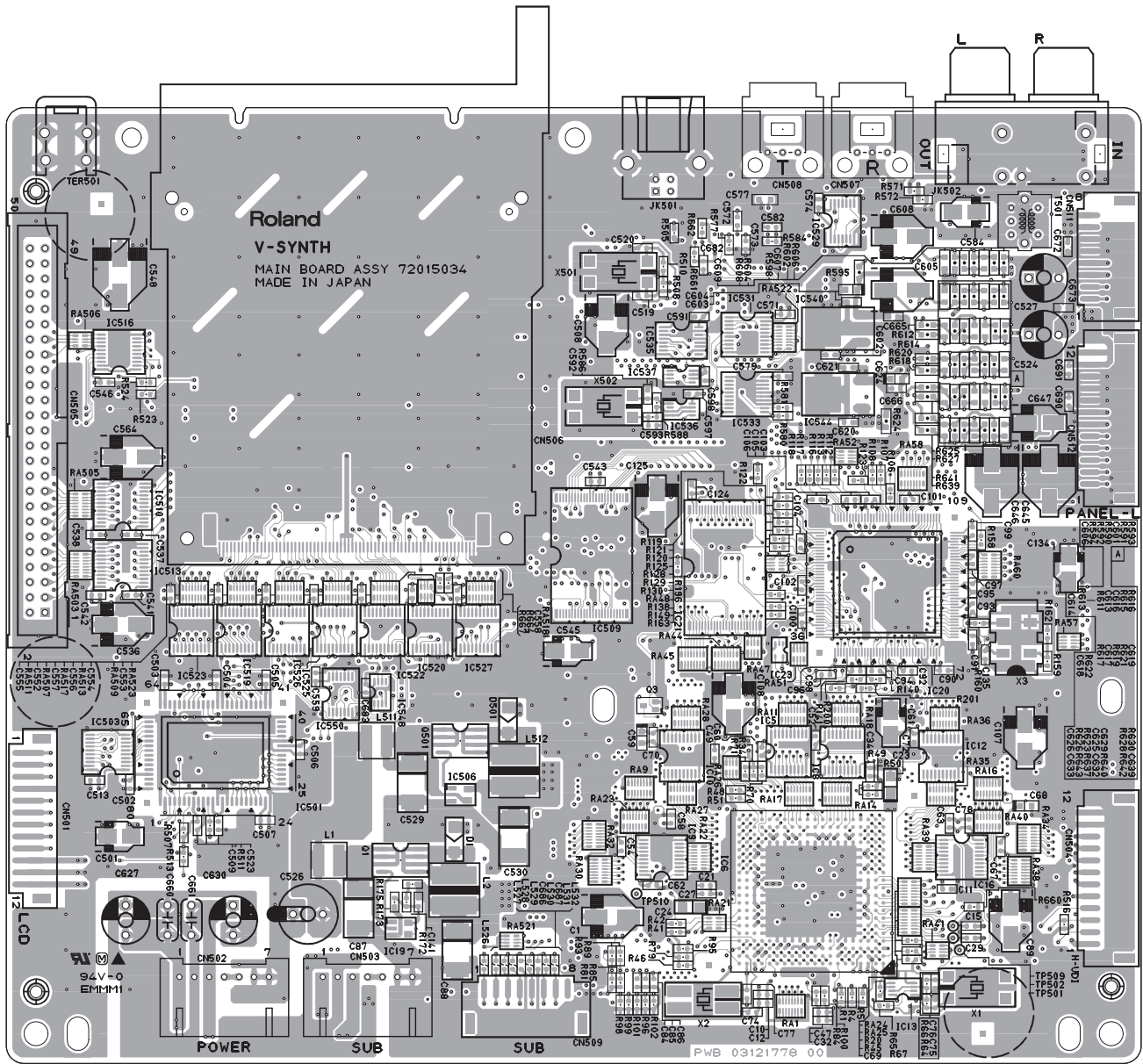


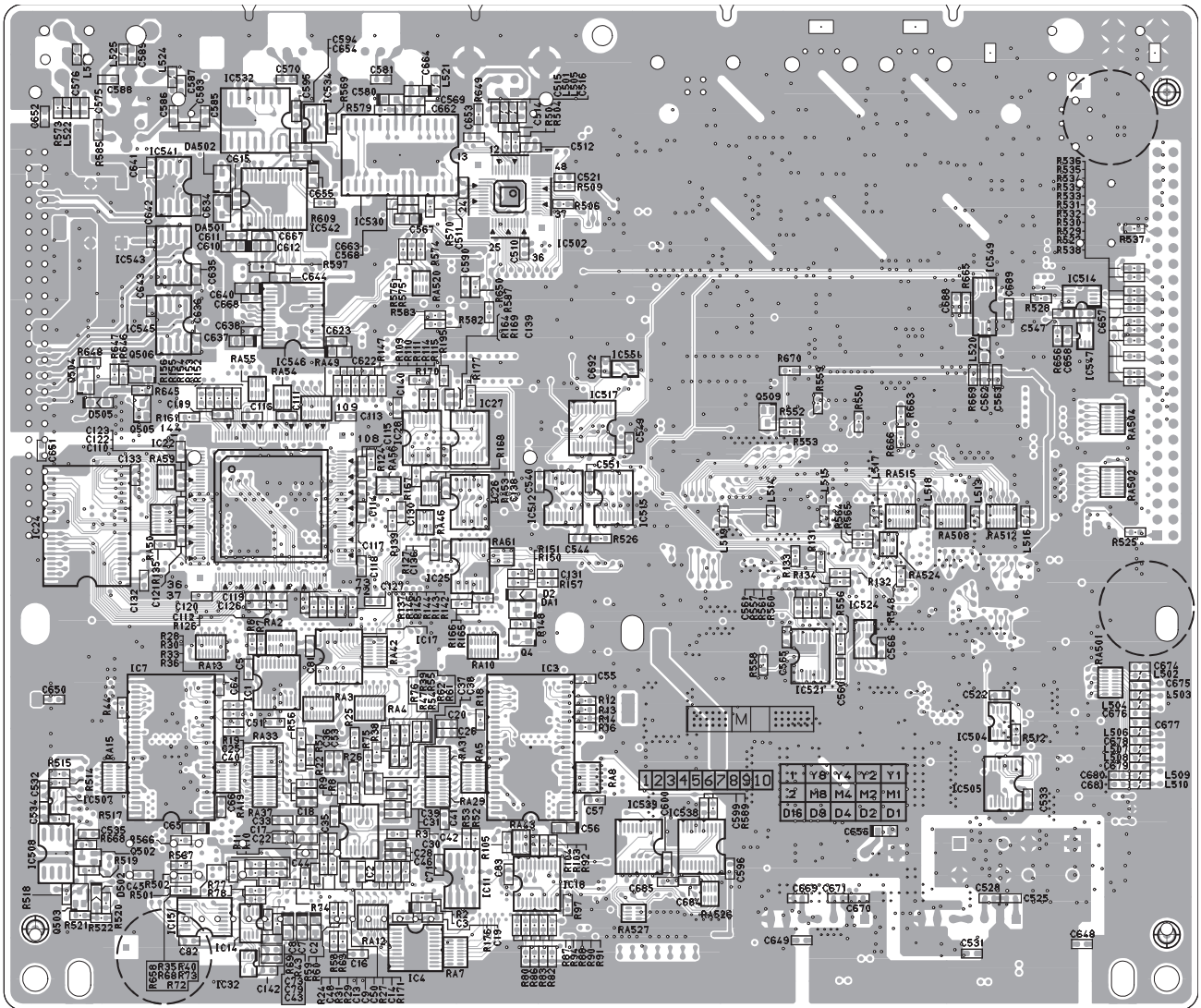
Fig.7

BLOCK DIAGRAM



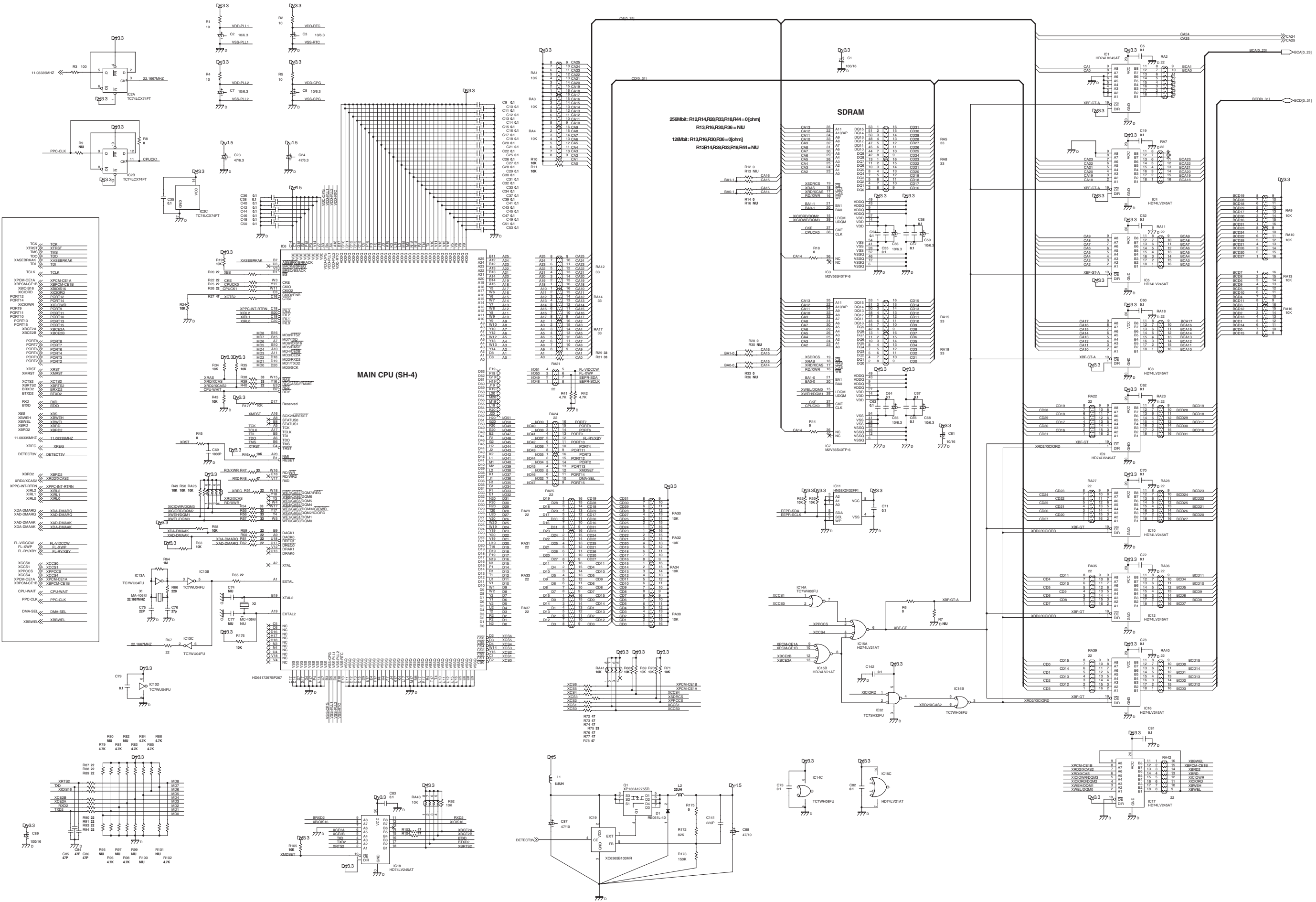
CIRCUIT BOARD(MAIN)



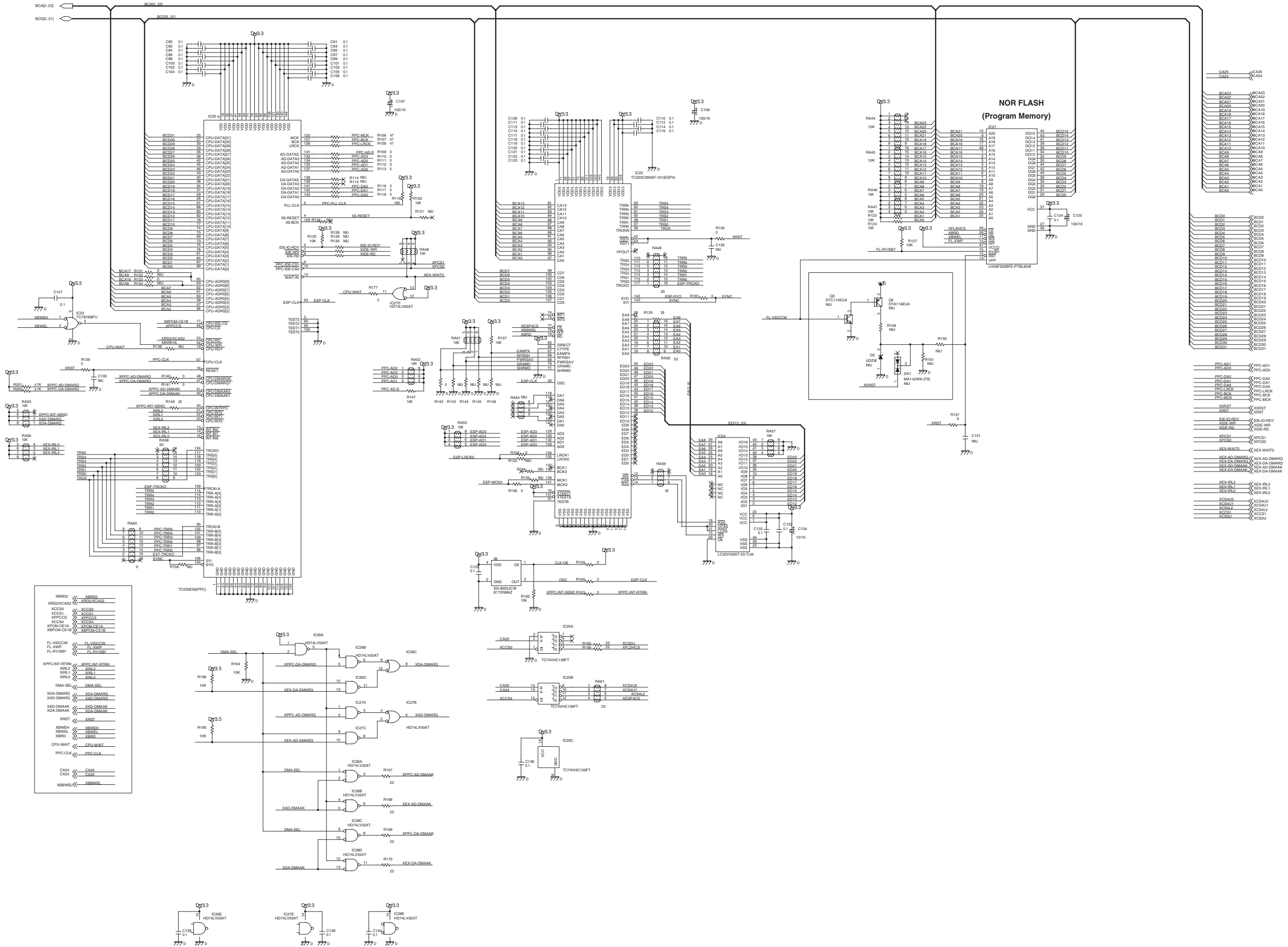


scale=0.9

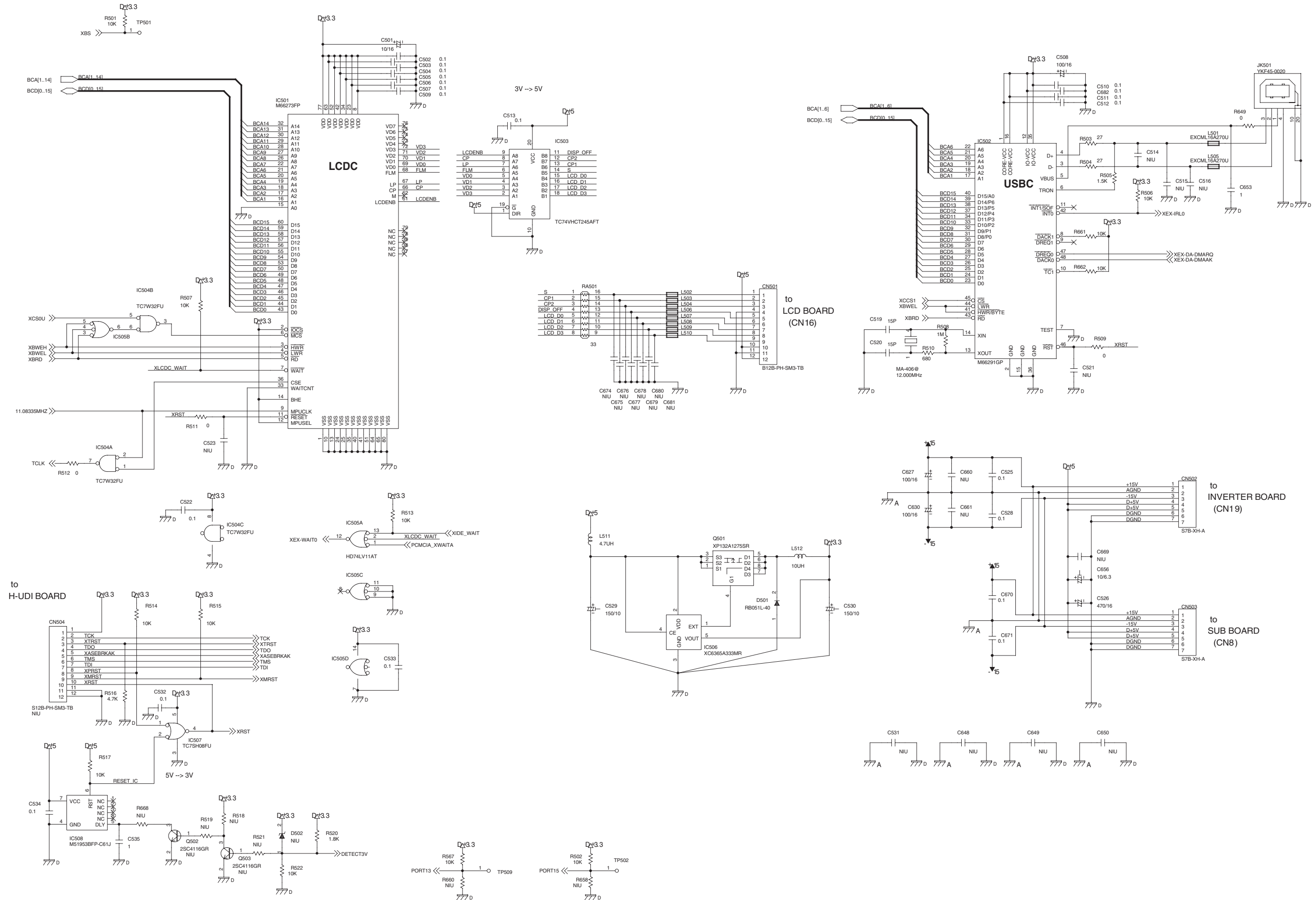
CIRCUIT DIAGRAM(MIAN 1)



CIRCUIT DIAGRAM(MIAN 2)

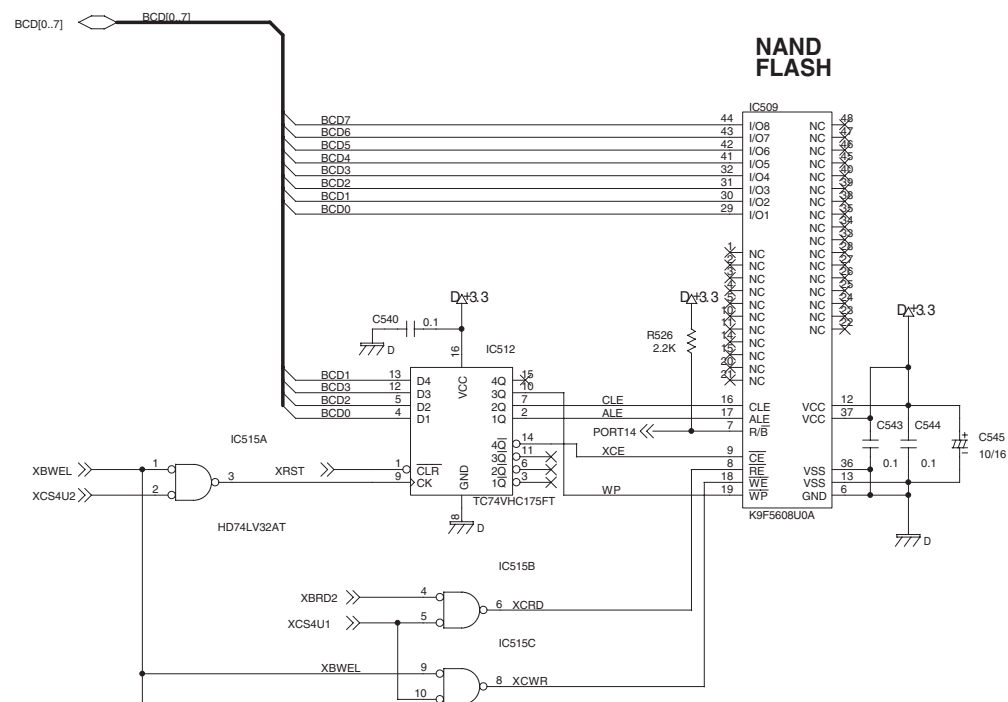


CIRCUIT DIAGRAM(MIAN 3)

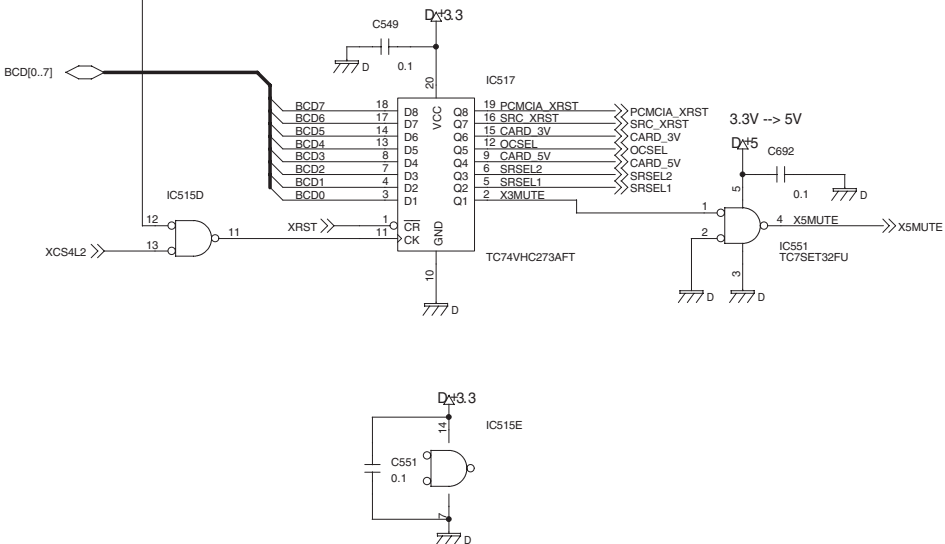


CIRCUIT DIAGRAM(MIAN 4)

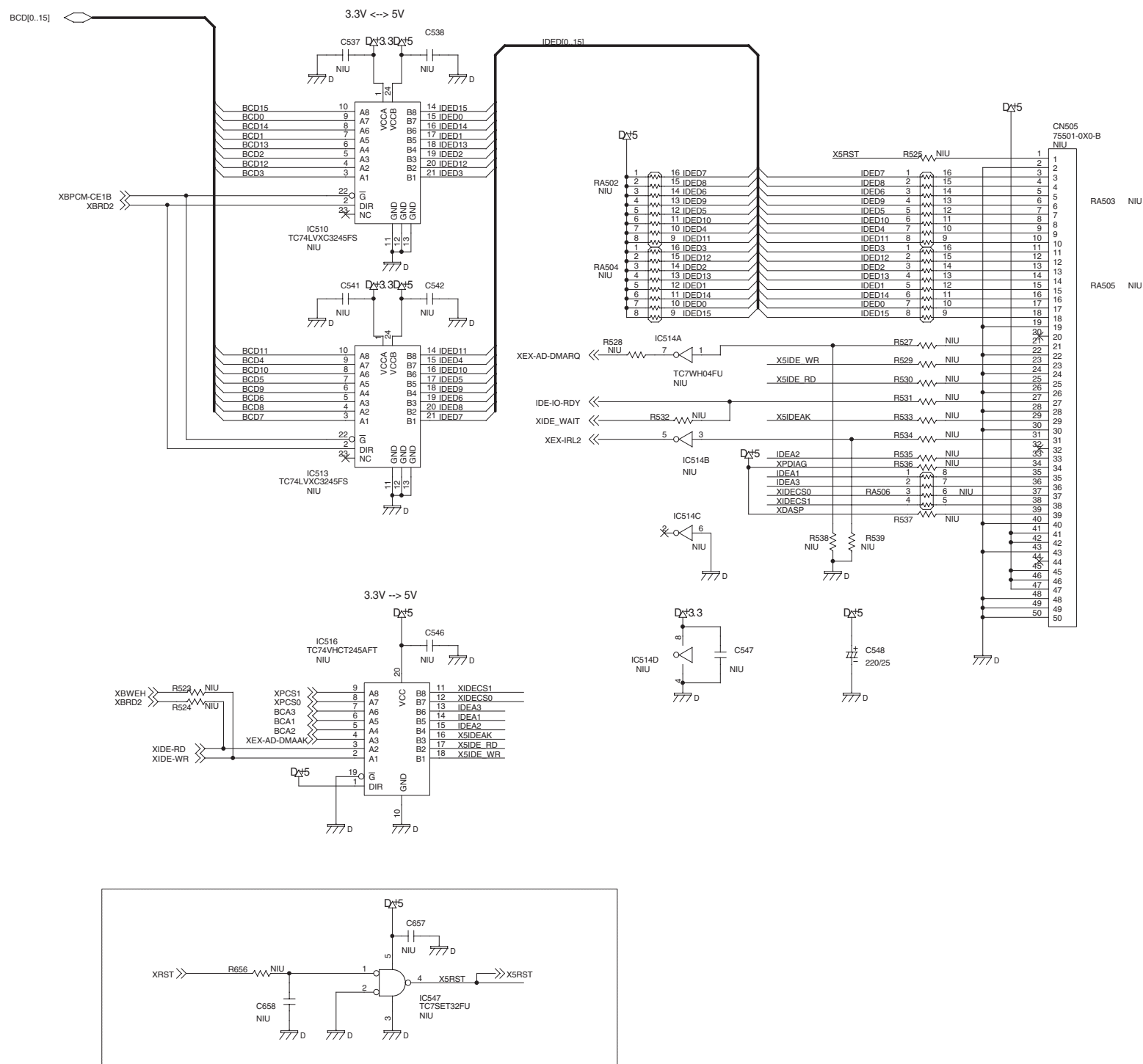
NAND FLASH (WAVE MEMORY)



MEMORY MAPPED I/O

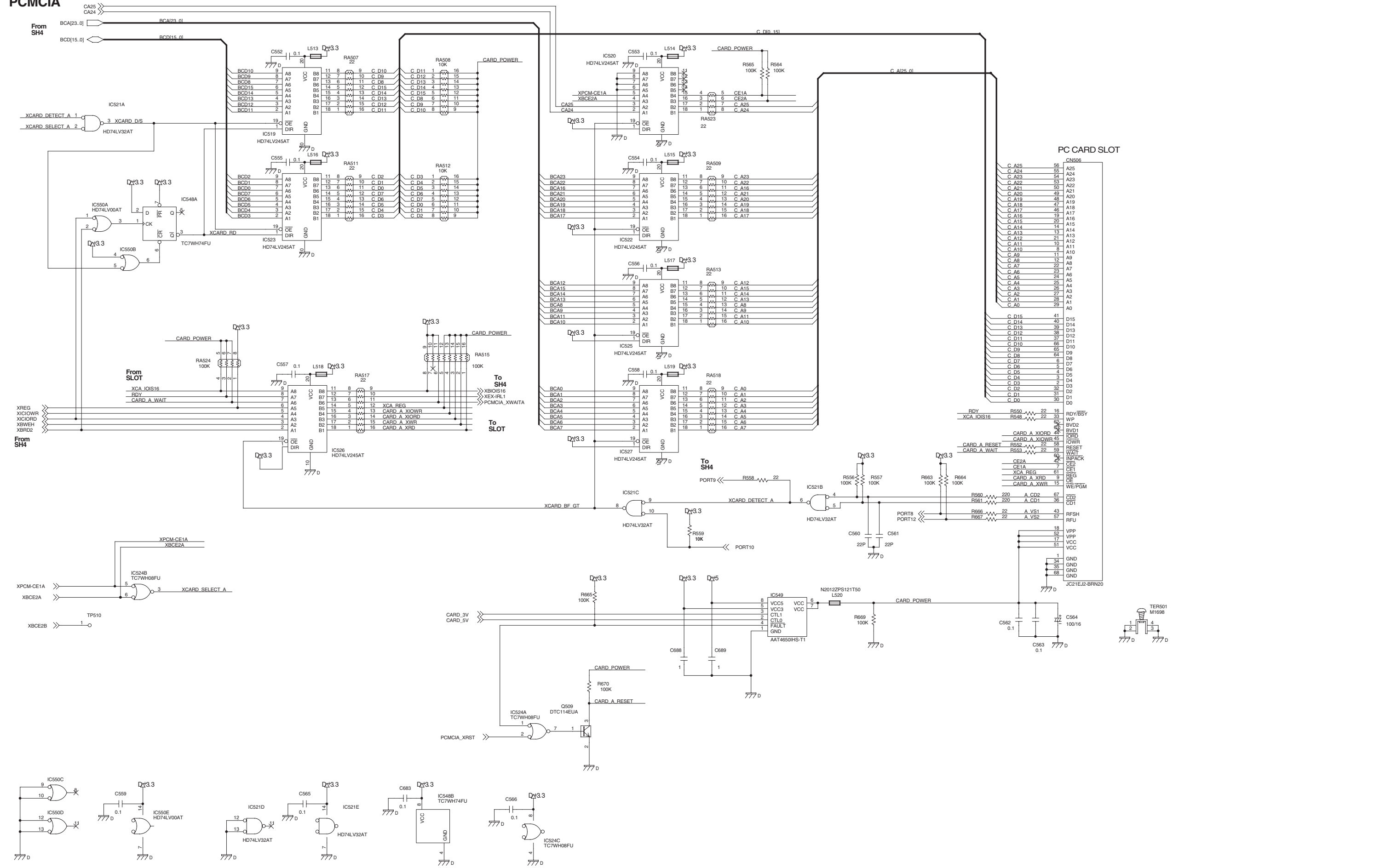


IDE(OPTION)

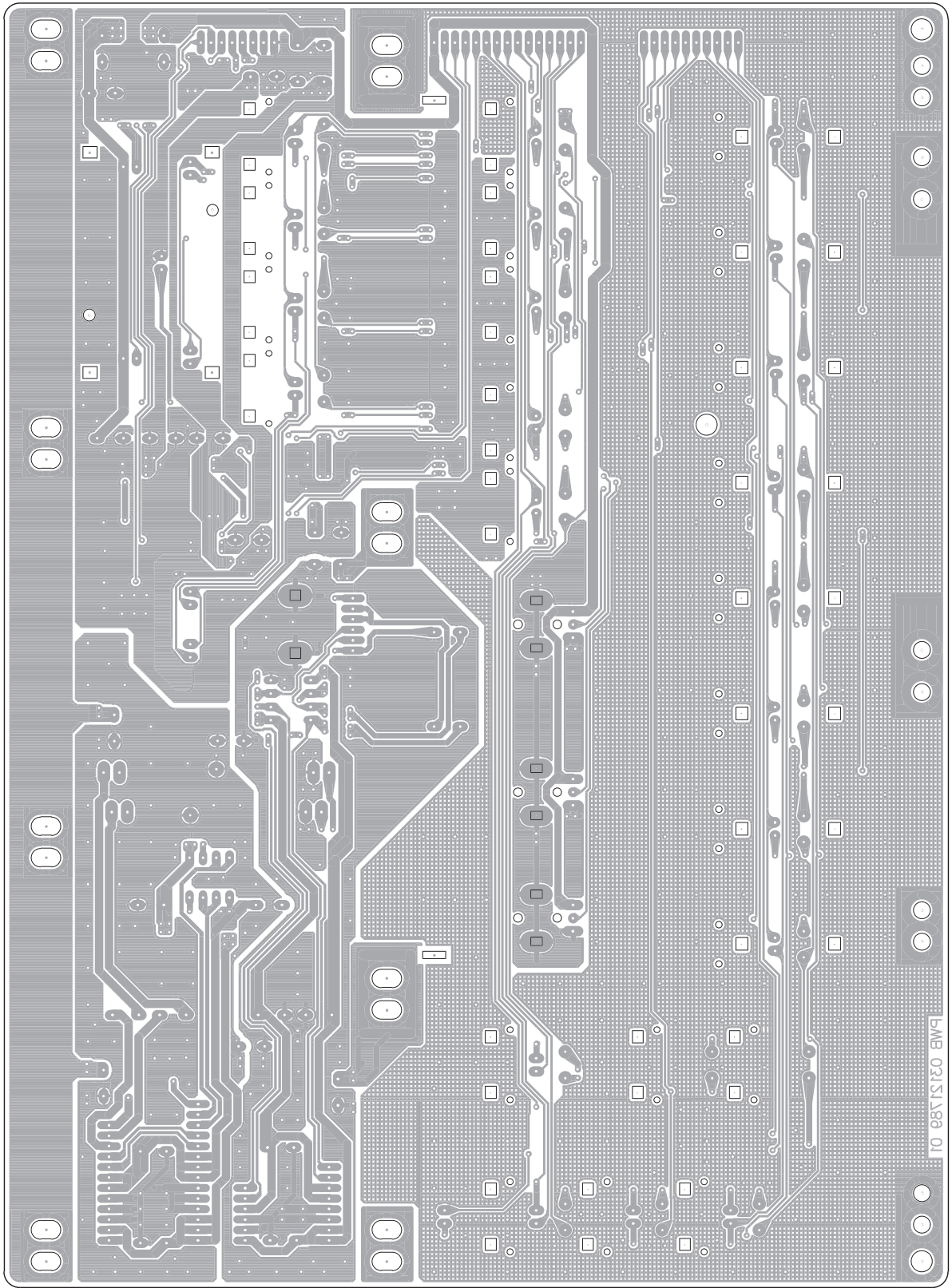


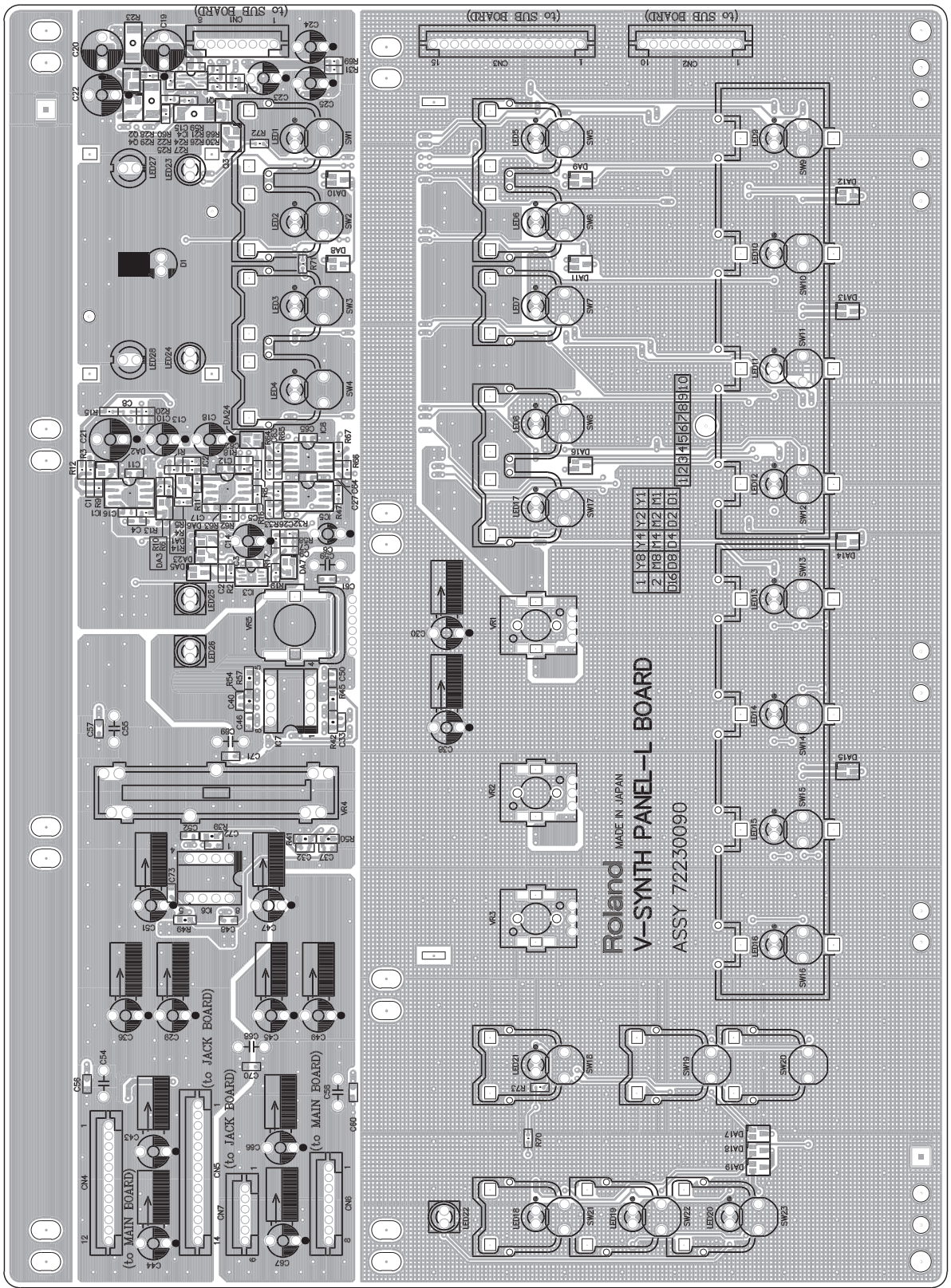
CIRCUIT DIAGRAM(MIAN 5)

PCMCIA

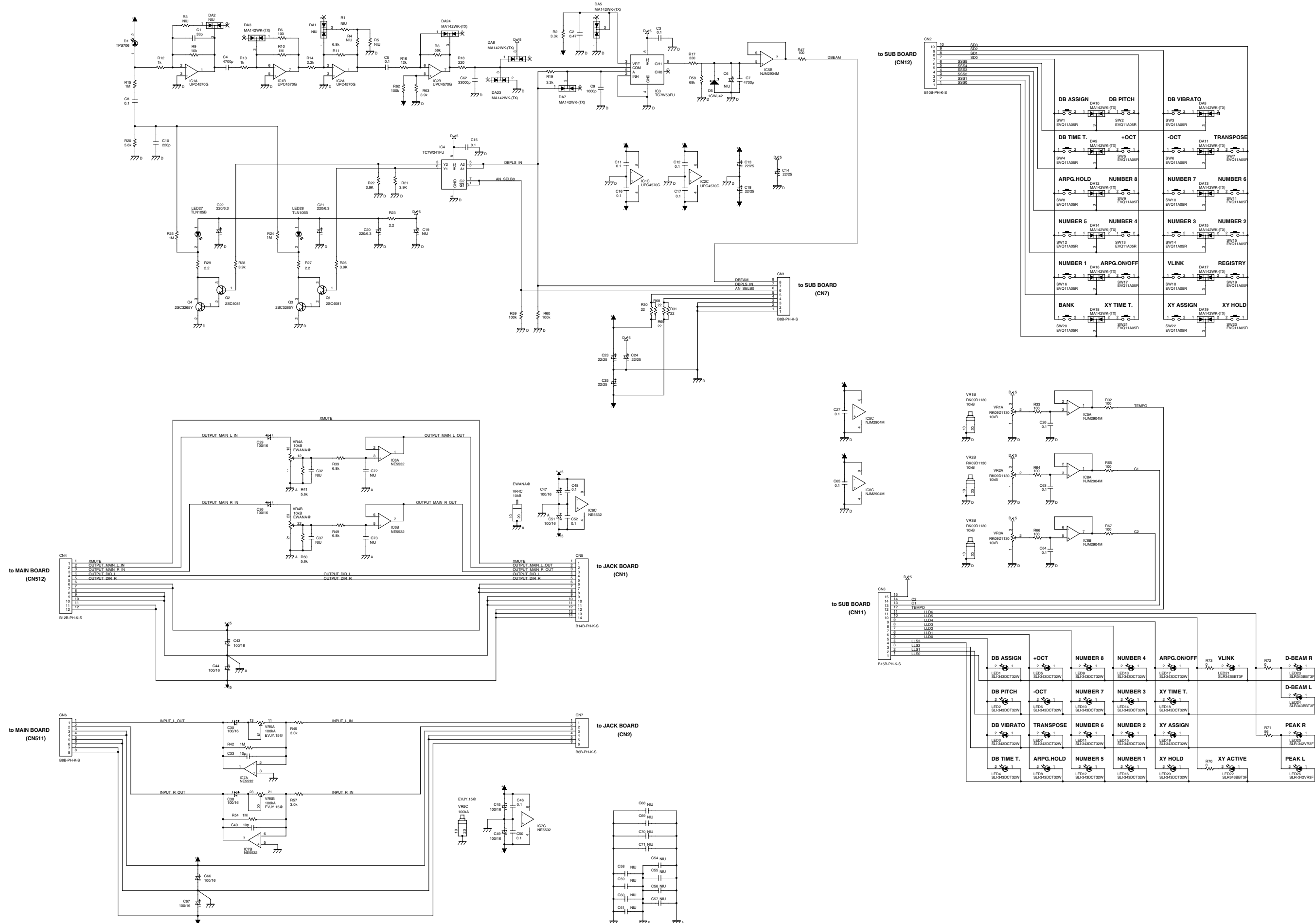


CIRCUIT BOARD(PANEL L)

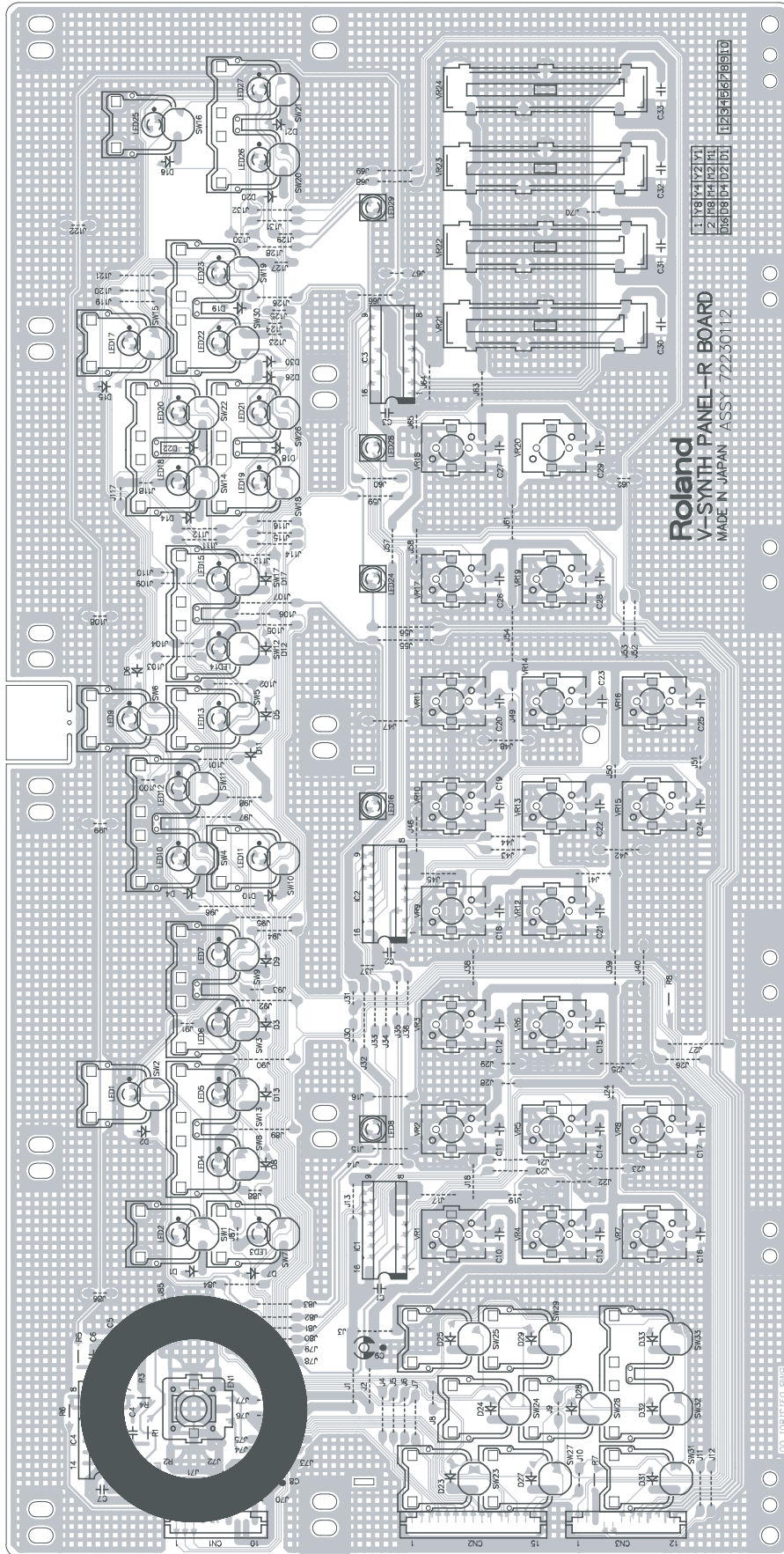




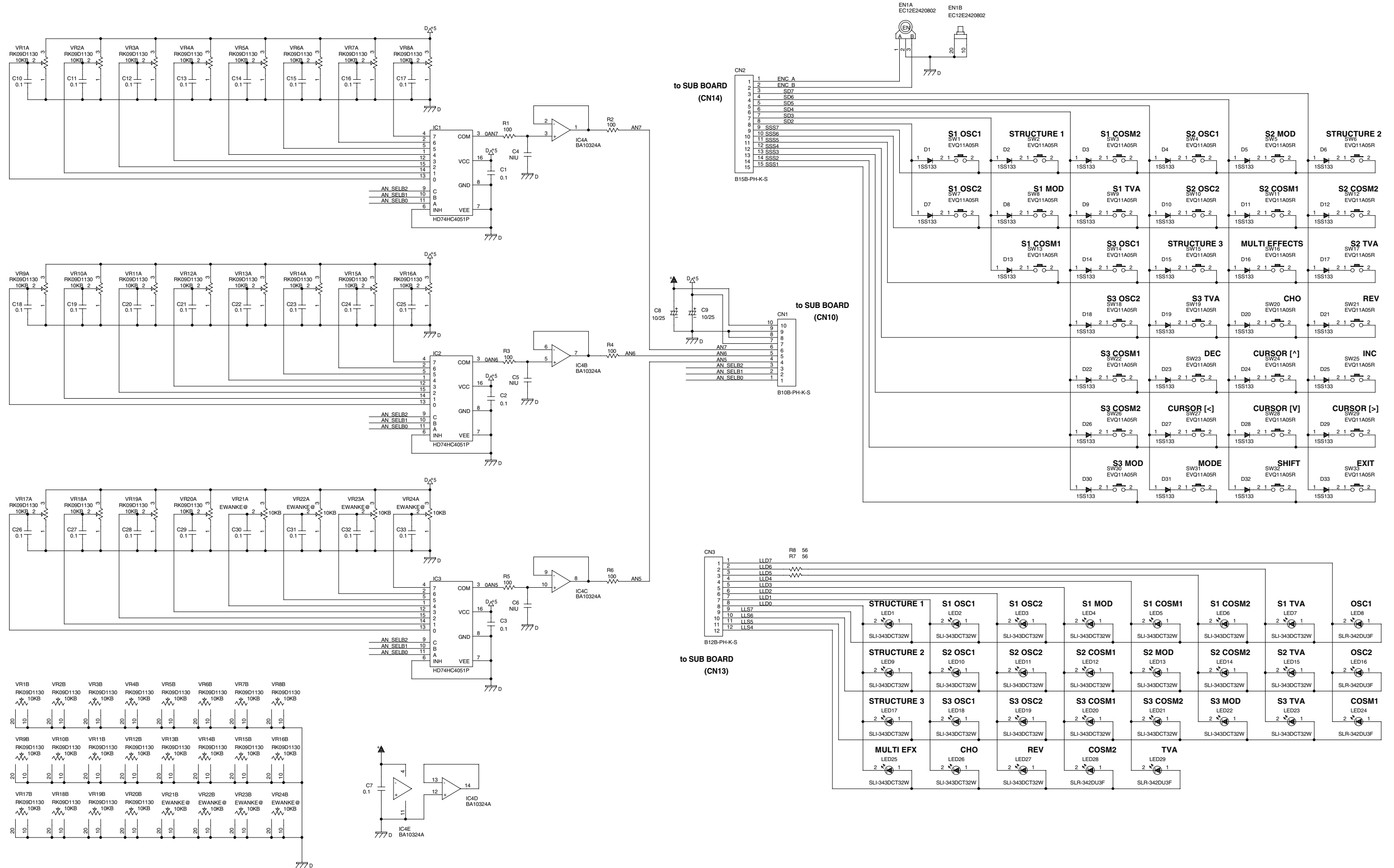
CIRCUIT DIAGRAM(PANEL L)



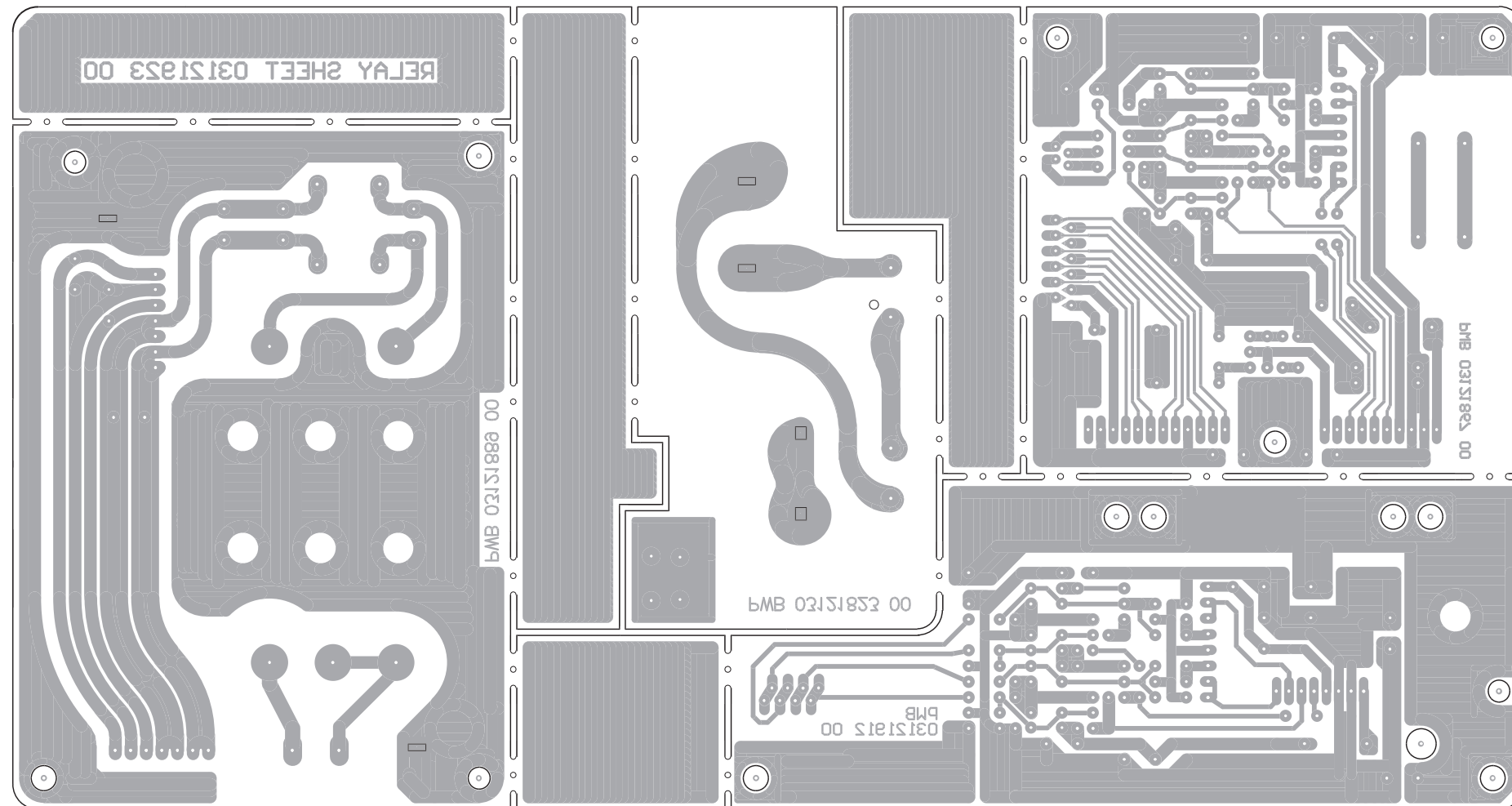
CIRCUIT BOARD(PANEL R)



CIRCUIT DIAGRAM(PANEL R)

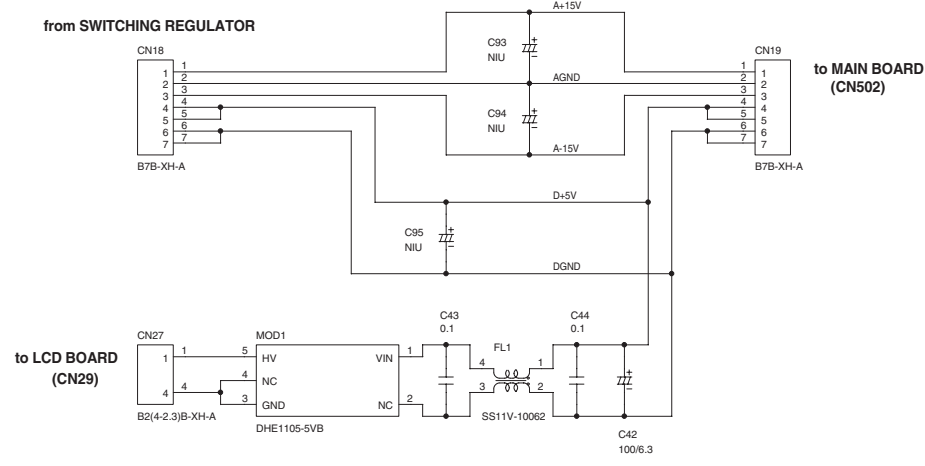


CIRCUIT BOARD(RELAY)

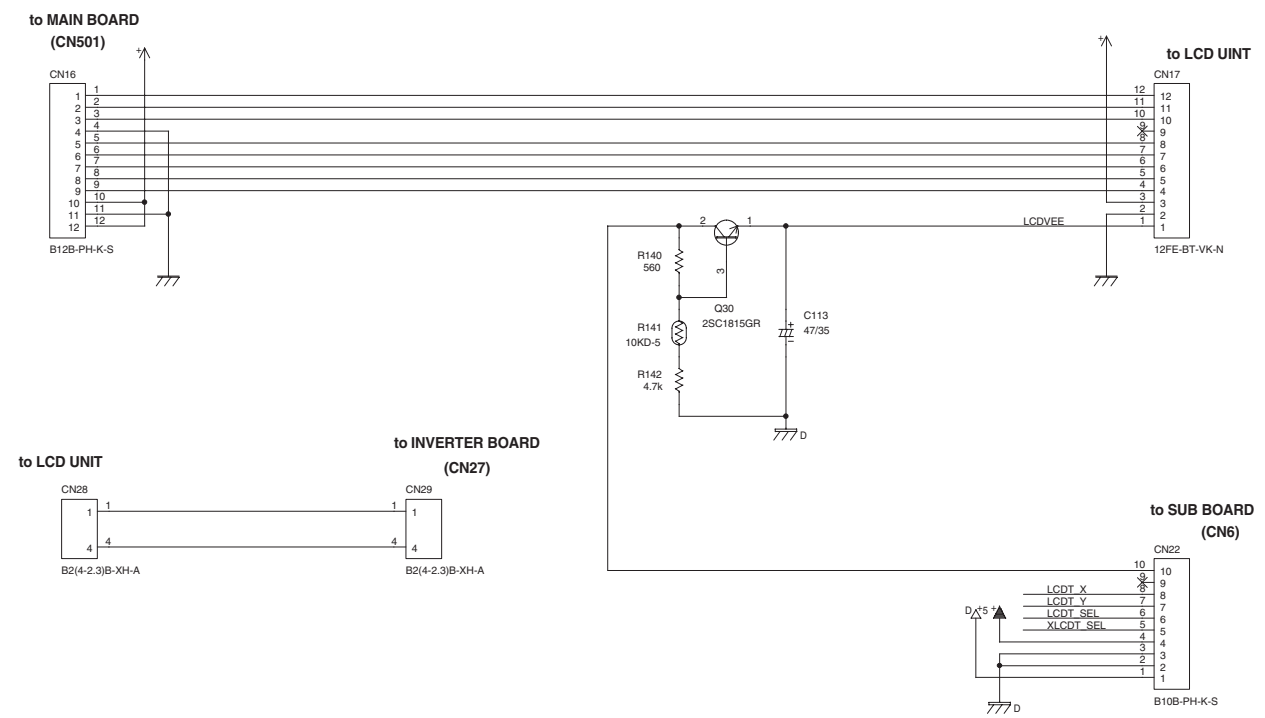


CIRCUIT DIAGRAM(RELAY)

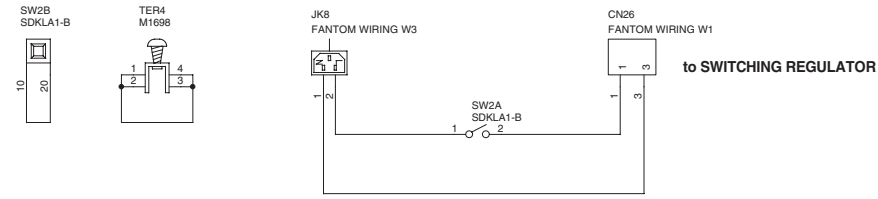
INVERTER BOARD ASSY 72230156



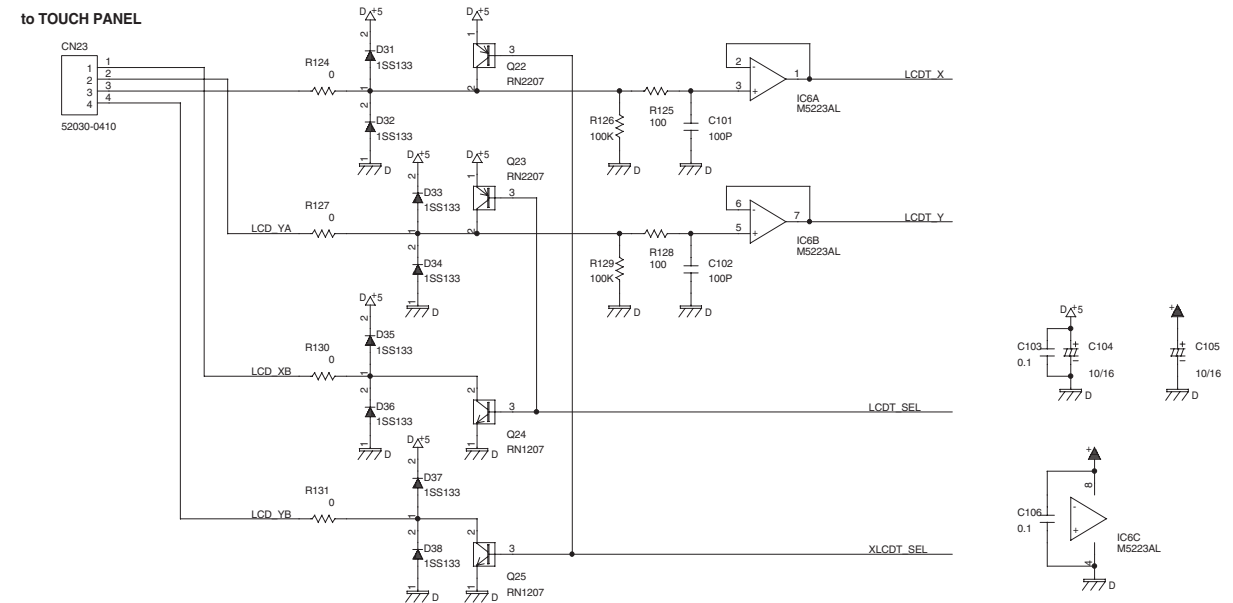
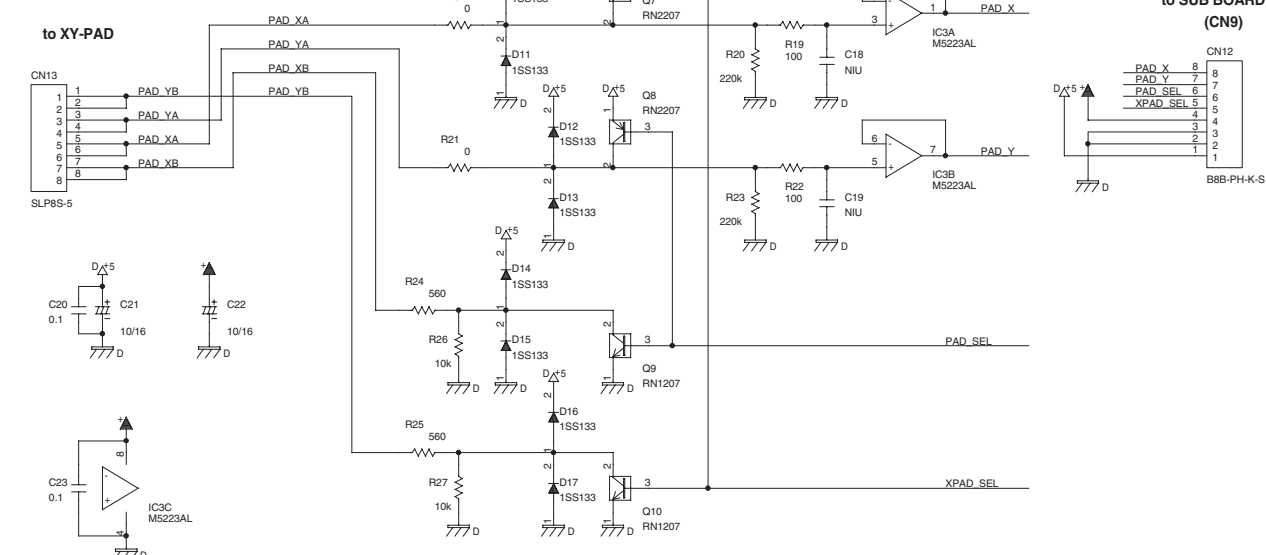
LCD BOARD ASSY 72230145



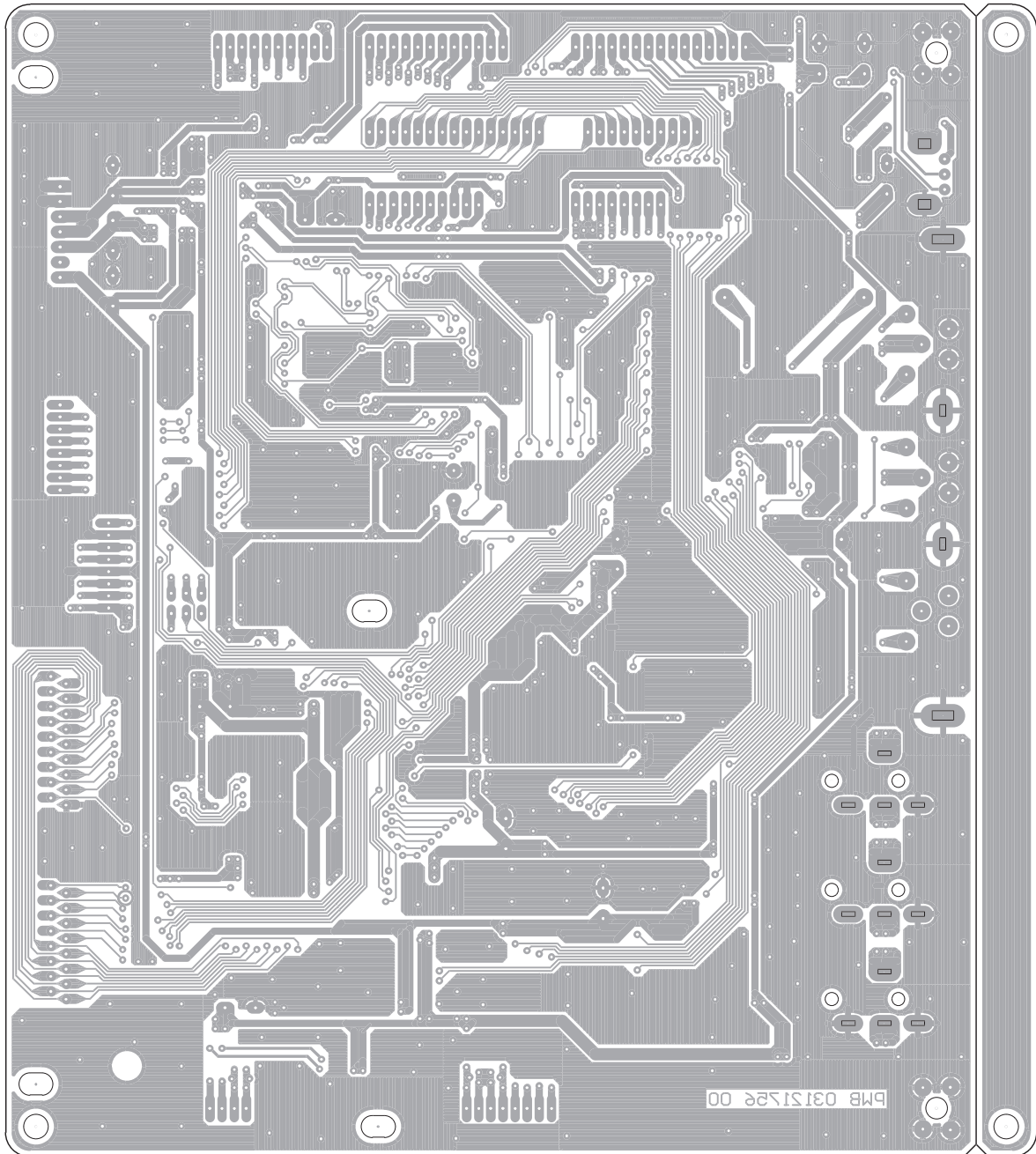
INLET BOARD ASSY 72230134

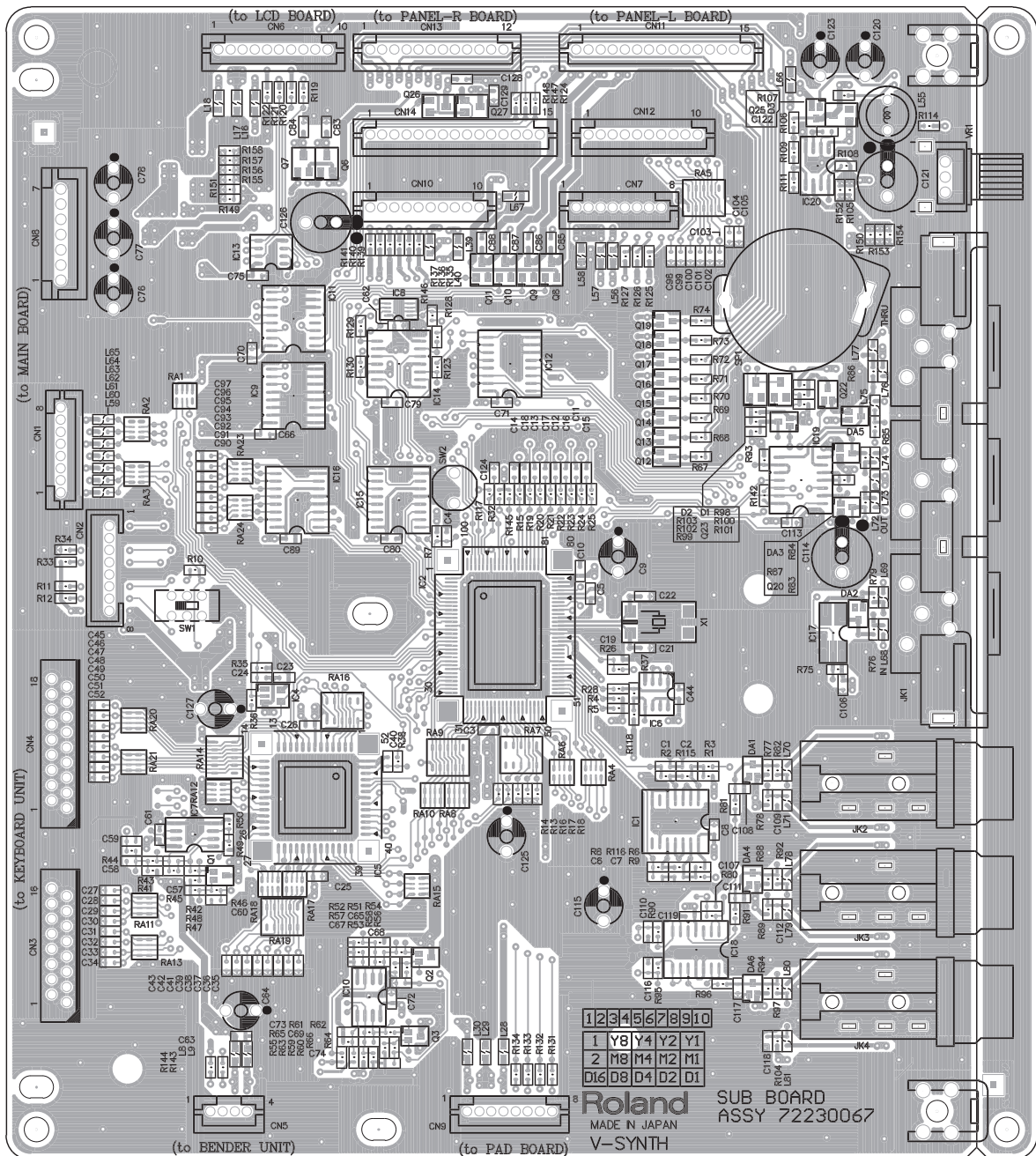


PAD BOARD ASSY 72230167

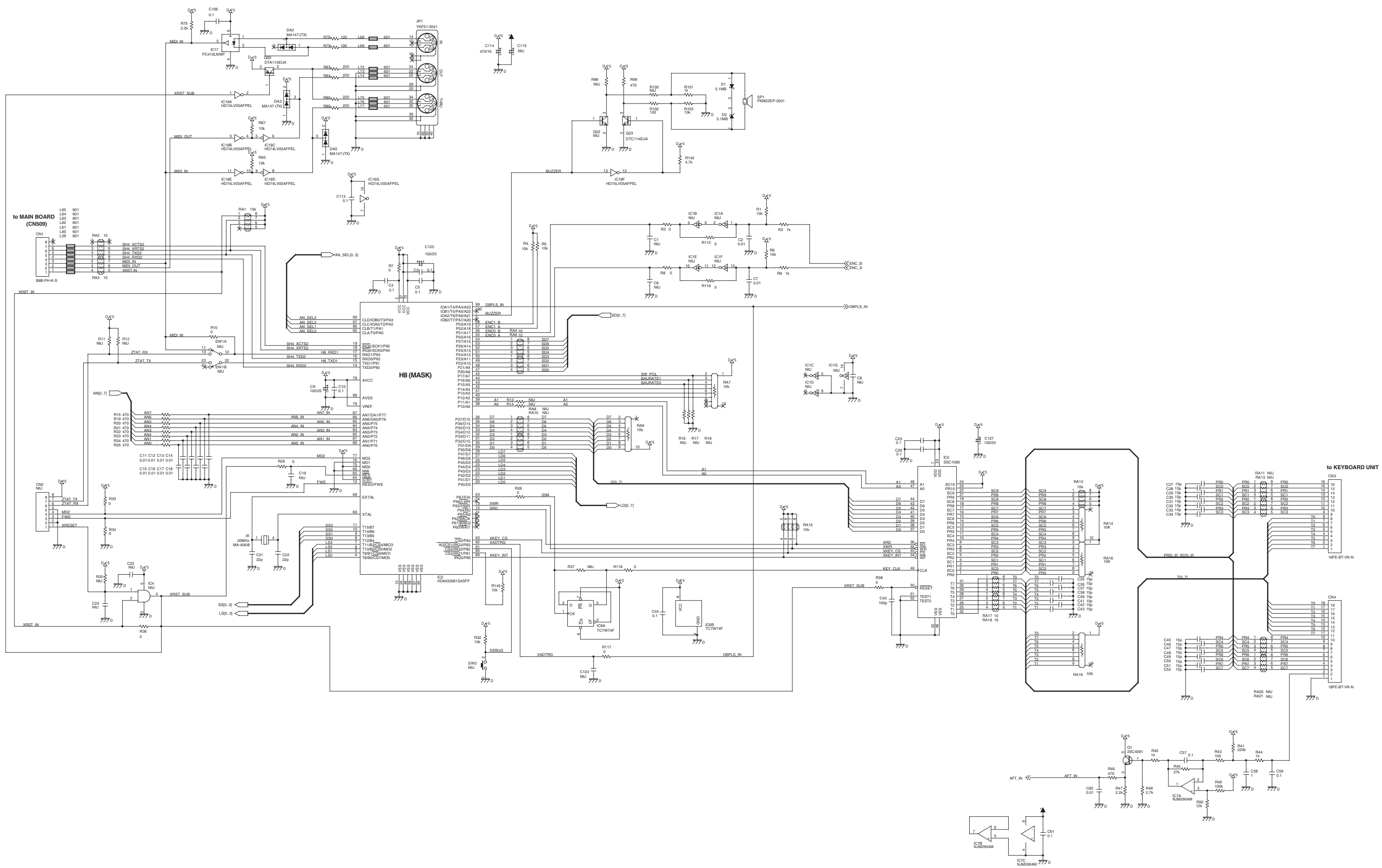


CIRCUIT BOARD(SUB)

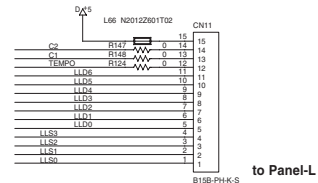
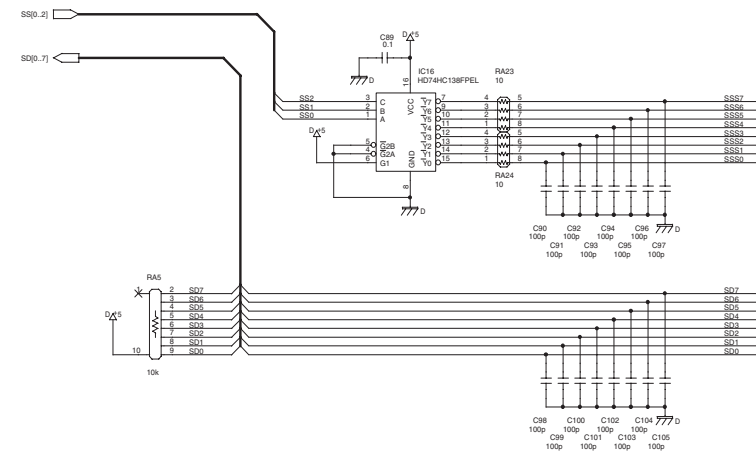
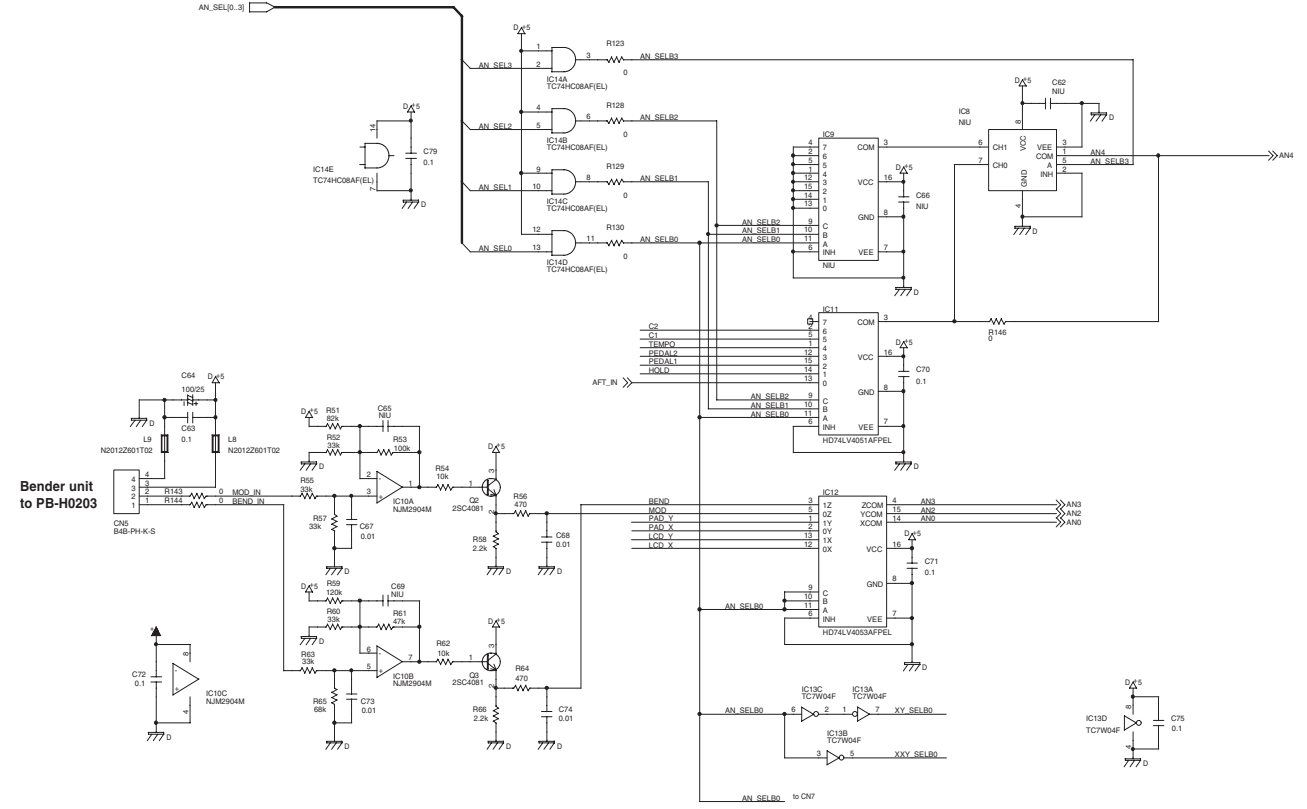
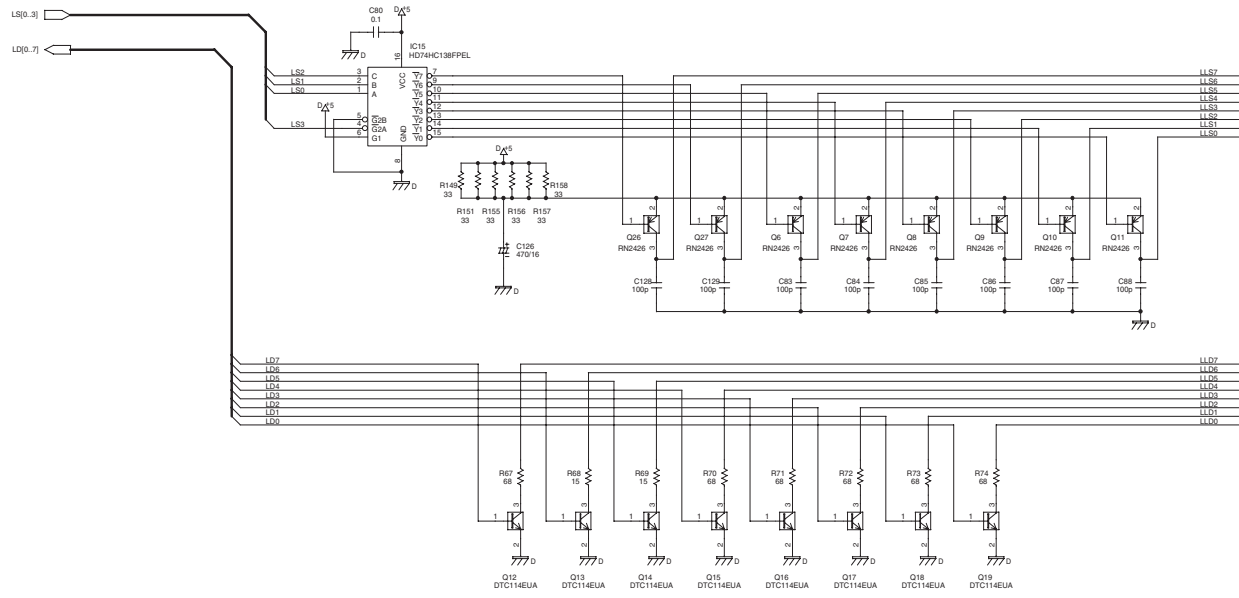




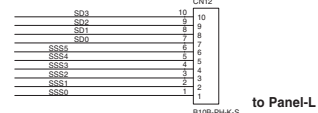
CIRCUIT DIAGRAM(SUB-1)



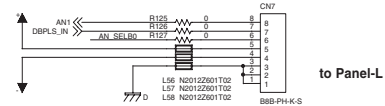
CIRCUIT DIAGRAM(SUB-2)



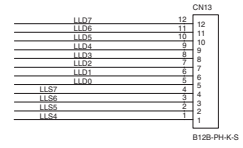
to Panel-L



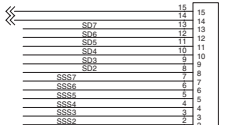
to Panel-L



to Panel-L



to Panel-R



ERROR MESSAGES

ERROR screen: This will appear if you attempt to perform an incorrect operation, or if an operation could not be executed correctly.

ERROR Screens

If an ERROR screen appears, touch <ACCEPT> to erase the message.

Message	Meaning	Action
DISK Disk Full!	The media is full, and no further writing is possible.	Delete unneeded files from the media (p. 88). Alternatively, provide other media that has free space.
DISK File/Folder Name Duplicate!	There is an identically named file or folder.	Assign a different name (p. 89). Alternatively, please write to a folder that does not contain an identically-named file or folder.
DISK File Not Found!	A patch or sample used by the project or patch was not found on disk.	Re-create the project or patch, and save it.
DISK File Read Error!	The data is damaged, and cannot be loaded.	Do not use this file.
DISK File Write Error!	The media is of a format to which the V-Synth cannot write.	Prepare a media that is of a format to which the V-Synth is able to write.
DISK Illegal Format!	Since the format of this file is incorrect, it cannot be loaded.	Do not use this file.
DISK Illegal PCM Wave!\nCannot Load This Wave.	This file uses a type of compression that the V-Synth is unable to read.	Use the device that created the file to convert the data into an 8 bit or 16 bit wave.
DISK Memory Full!	Since the wave memory has become full, the operation was halted.	Delete unneeded samples from the V-Synth. Alternatively, individually import the patches or samples that you want to use.
DISK Path Duplicate!	You are attempting to write to the same hierarchical level.	Change the writing destination.
DISK Path Name Too Long!	The path name is too long.	Shorten the names of each folder (p. 89). Alternatively, move the entire folder to a shallower level of the hierarchy (p. 87). The "path" indicates the hierarchical level at which the file is located. It is given together with the folder name.
DISK PC Card Not Ready!	The PC card is not ready.	Insert another PC card.
DISK Too Many Channels!\nCannot Load This Wave.	This file contains waves for three or more channels, and cannot be loaded into the V-Synth.	Do not use this file.
DISK Unformatted Disk!	This disk cannot be used by the V-Synth.	Format the disk on the V-Synth.
DISK Unknown Disk Error!	A disk error of unknown causes has occurred.	Contact your dealer or a nearby Roland service center for service.
DISK You Cannot Use This Device!	The operation you attempted to execute does not support this media.	Do not select this media for this operation.
ENCODE Encoding Error!	For some reason, encoding is not possible.	Change the encoding type and try again.
ENCODE Memory Full!	Due to insufficient wave memory, encoding is not possible.	Shorten the wave (p. 66), or delete unwanted samples from the V-Synth's memory (p. 60).
IMPORT No Room for Patches!	There are no vacant patches.	Delete unneeded patches from the V-Synth (p. 36).

Message	Meaning	Action
IMPORT No Room for Samples!	There are no vacant samples.	Delete unneeded samples from the V-Synth (p. 60).
SAMPLE EDIT Copy Buffer Not Allocated!	There is not enough wave memory to execute the Copy.	Shorten the range that will be copied (p. 66), or delete unneeded samples from the V-Synth (p. 60).
SAMPLE EDIT Memory Full!	There is not enough wave memory to execute the wave editing operation (Insert, Zero Insert, Region, Paste).	Delete unneeded samples from the V-Synth (p. 60).
SAMPLING Memory Full!	Since the wave memory has become full, the operation was halted.	Delete unneeded samples from the V-Synth (p. 60).