

# SERVICE MANUAL



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# KORG

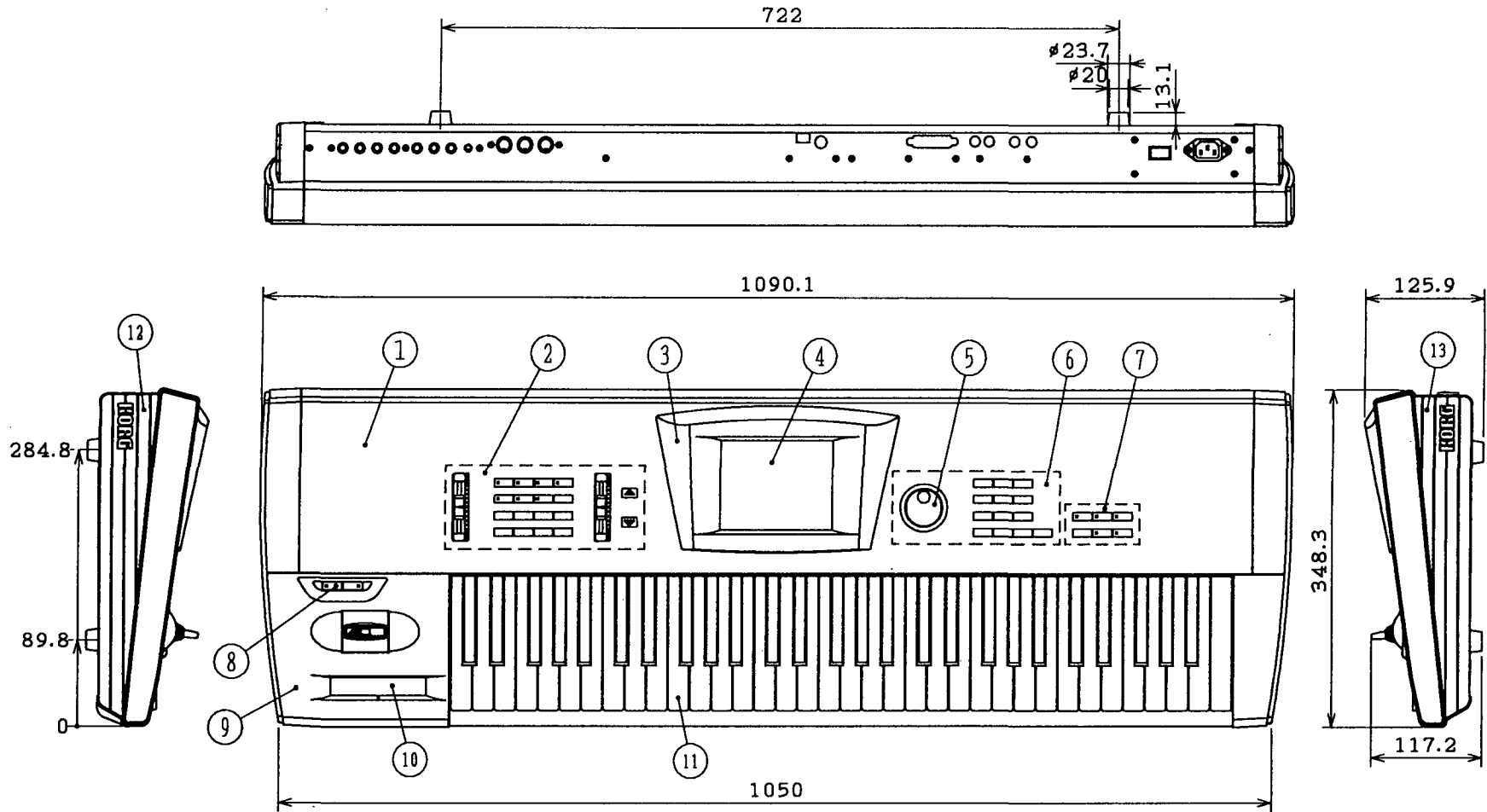
# 1. SPECIFICATIONS

Tone generator	:	16 to 32 voice (32 oscillators)	
Keyboard	:	61 keys with aftertouch sensitivity FS-61	(Trinity, Trinity Plus)
			(Trinity Pro)
		76 keys with aftertouch sensitivity FS-E76	(Trinity Pro)
Tone generation method	:	TG92	
		32 voices, 48kHz sampling, 4 times over sampling	
		DF93	
		48kHz sampling, 32 x 2 multi mode filter with resonance	
Waveform memory	:	32Mbit Mask ROM x 6 (24Mbyte)	
		375 MULTI sounds	
		258 DRUM sounds	
Quantization	:	16bit	
Programs	:	256 programs for PCM (Trinity)	
		256 programs for PCM & 64 programs for Solo	(Trinity Plus, Trinity Pro)
Combinations	:	256 combinations	
Effectors	:	DSP MN19412A x 3	
		100 insert effects	
		14 master effects (Send - Return)	
Sequencer memory	:	500kB (approx. 80,000 events)	
		20 songs maximum	
		100 patterns / 1 song (99 measures maximum / 1 pattern)	
		16 MIDI event tracks & master track for Tempo	
		(999 measures maximum / 1 track)	
		basic resolution ?/192	
		tempo 40 to 240	
Outputs	:	1/L/MONO, 2/R, 3, 4	
		Output impedance 1k $\Omega$ (MONO : 500 $\Omega$ )	
		Maximum output level approx. 15dBu	
		Residual noise -85dBu or less	
		Headphones	
		Output impedance 33 $\Omega$	
		Maximum output level approx. -3dBu (when load 33 $\Omega$ )	
		Residual noise -90dBu or less	
Inputs	:	Assignable Pedal, Assignable Switch, Sustain	
MIDI	:	IN, OUT, THRU	
Indicators	:	LCD with touch panel	
		indicator section ; 320 x 240 dots with backlight	
		touch panel section ; analog touch panel	
		operating force 10g to 150g	
Controllers	:	Ribbon controller, Joystick	
Floppy disk drive	:	3.5inch 2DD/2HD disk drive 720KB/1.44MB MS-DOS format	
Dimensions	:	1,090.1 x 348.3 x 125.9mm	(Trinity, Trinity Plus)
(W x D x H)		1,297.1 x 348.3 x 125.9mm	(Trinity Pro)
Weight	:	14.05kg	(Trinity)
		14.25kg	(Trinity Plus)
		17.05kg	(Trinity Pro)
Power consumption	:	22W	

Options : Hard disk recorder  
48kHz sampling frequency, 16bit resolution, 4 tracks  
Analog IN(L&R), Digital IN/OUT(S/P DIF), SCSI port  
SCSI  
Sample playback / FLASH ROM  
8Mbyte FLASH ROM board for PCM memory  
128kbyte SRAM for Program, Combi & Drum kit memory  
DIGITAL I/F  
8ch OPTICAL output, WORD clock input  
Solo Synth (Trinity Plus & Trinity Pro are included)  
DSP TMS57002BPHA x 3  
Monophonic, 2 oscillators(MAX) + sub oscillator  
+ noise generator, 6 effects

FOR TRINITY/plus

2. FULL VIEW



FOR TRINITY / TRINITY plus

NO.	PART NAME/IDENTIFICATION	PART CODE
1	X-311 PANEL KOC-C10164	641041241
2	X-311/2/3 KNOB BLOCK L	646052700
3	X-311/312 LCD HOOD	646052900
4	TOUCH PANEL LCD KGJ-01S-3	313003400
5	X-311-3 ENCODER KNOB E40363-2	620026701
6	X-311/2/3 KNOB BLOCK R	646052701
7	X-311/2/3 KNOB BLOCK R (SMALL)	646053200
8	X-311/2/3 CONTROL KNOB ASSY	620027100
9	X-311 JS PANEL KOC-E10118	646053100
10	X-311/2/3 X-Z SENSOR	415002600
11	KEYBOARD FS-61 KG2	420004800
12	X-311/312 SIDE PLATE L E10116	646052800
13	X-311/312 SIDE PLATE R E10117	646052801

W=1090.1mm

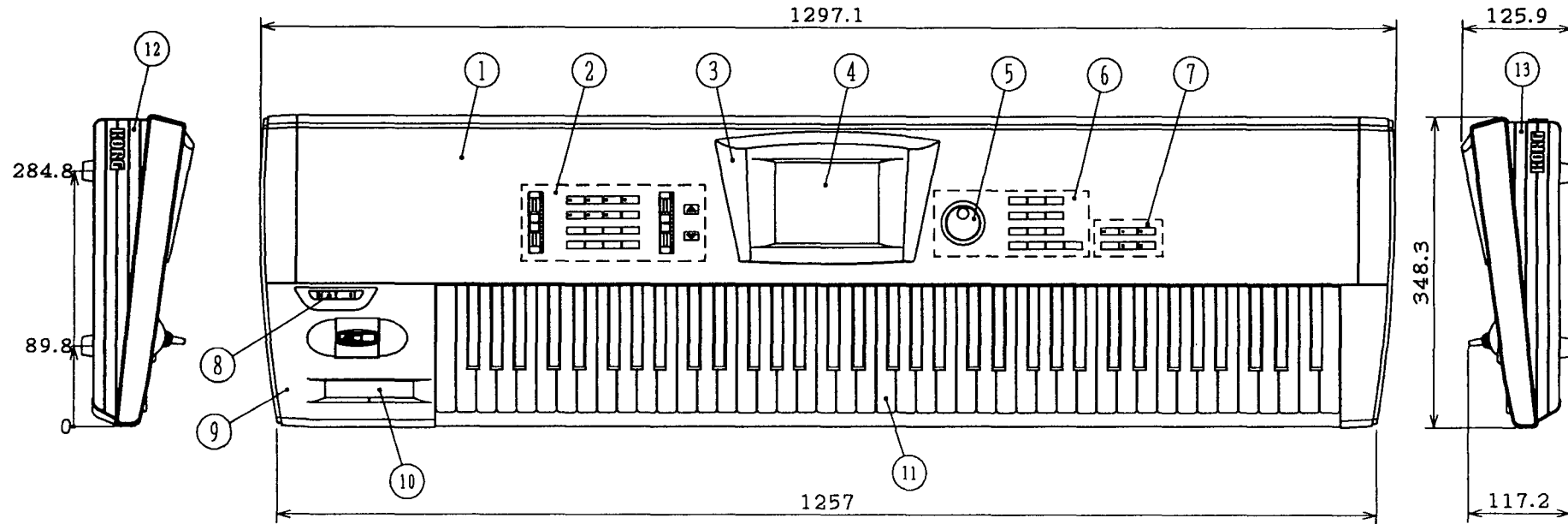
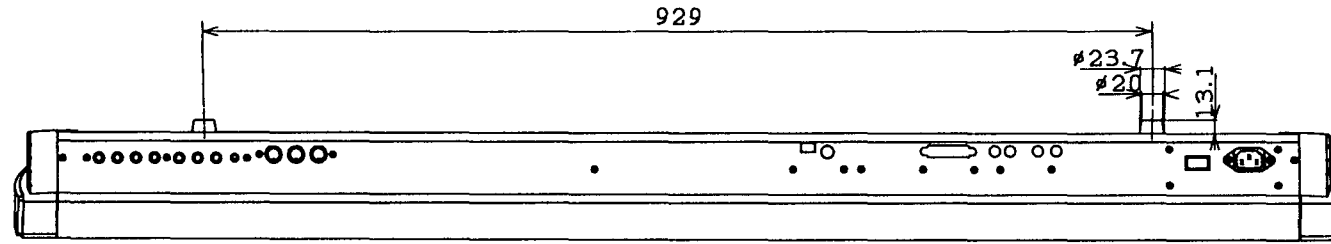
D=348.3mm

H=125.9mm

Weight=14.05kg (TRINITY)

Weight=14.25kg (TRINITY plus)

# FOR TRINITY pro



**FOR TRINITY pro**

NO.	PART NAME/IDENTIFICATION	PART CODE
1	X-312 PANEL	KOC-C10165 641041242
2	X-311/2/3 KNOB BLOCK L	646052700
3	X-311/312 LCD HOOD	646052900
4	TOUCH PANEL LCD KGJ-01S-3	313003400
5	X-311-3 ENCODER KNOB E40363-2	620026701
6	X-311/2/3 KNOB BLOCK R	646052701
7	X-311/2/3 KNOB BLOCK R (SMALL)	646053200
8	X-311/2/3 CONTROL KNOB ASSY	620027100
9	X-311 JS PANEL	KOC-E10118 646053100
10	X-311/2/3 X-Z SENSOR	415002600
11	KEYBOARD FS-E76	420004500
12	X-311/312 SIDE PLATE L	E10116 646052800
13	X-311/312 SIDE PLATE R	E10117 646052801

W=1297.1 mm

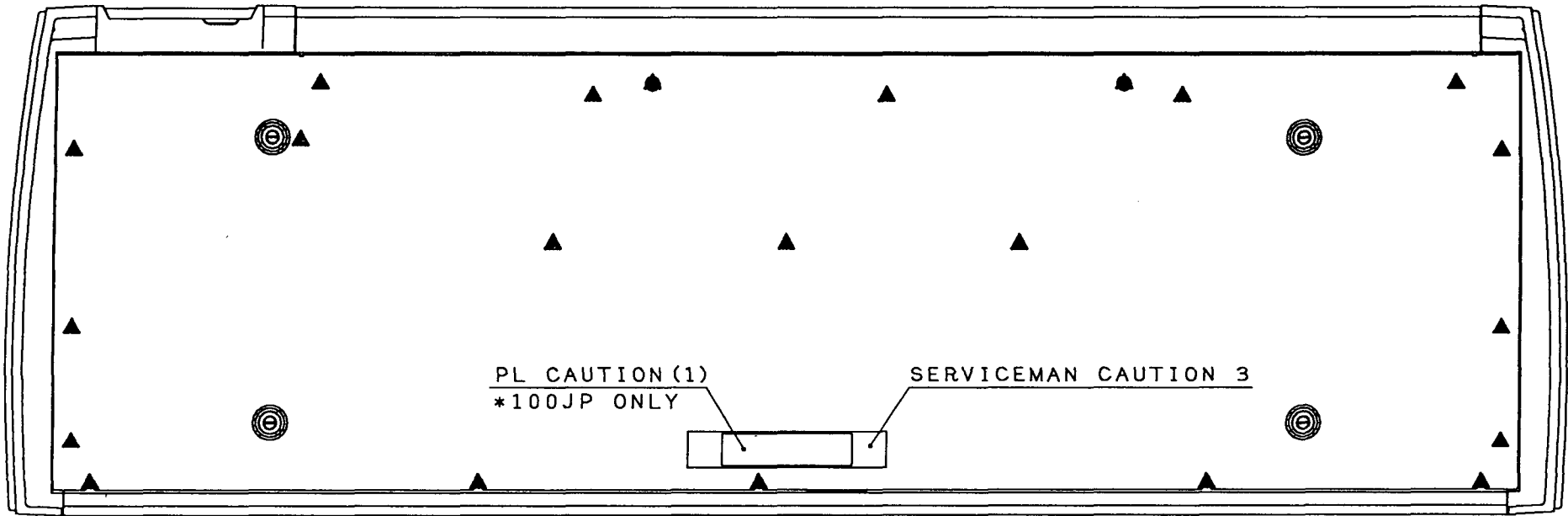
D=348.3 mm

H=125.9 mm

Weight=17.05 kg

# LOWER CASE

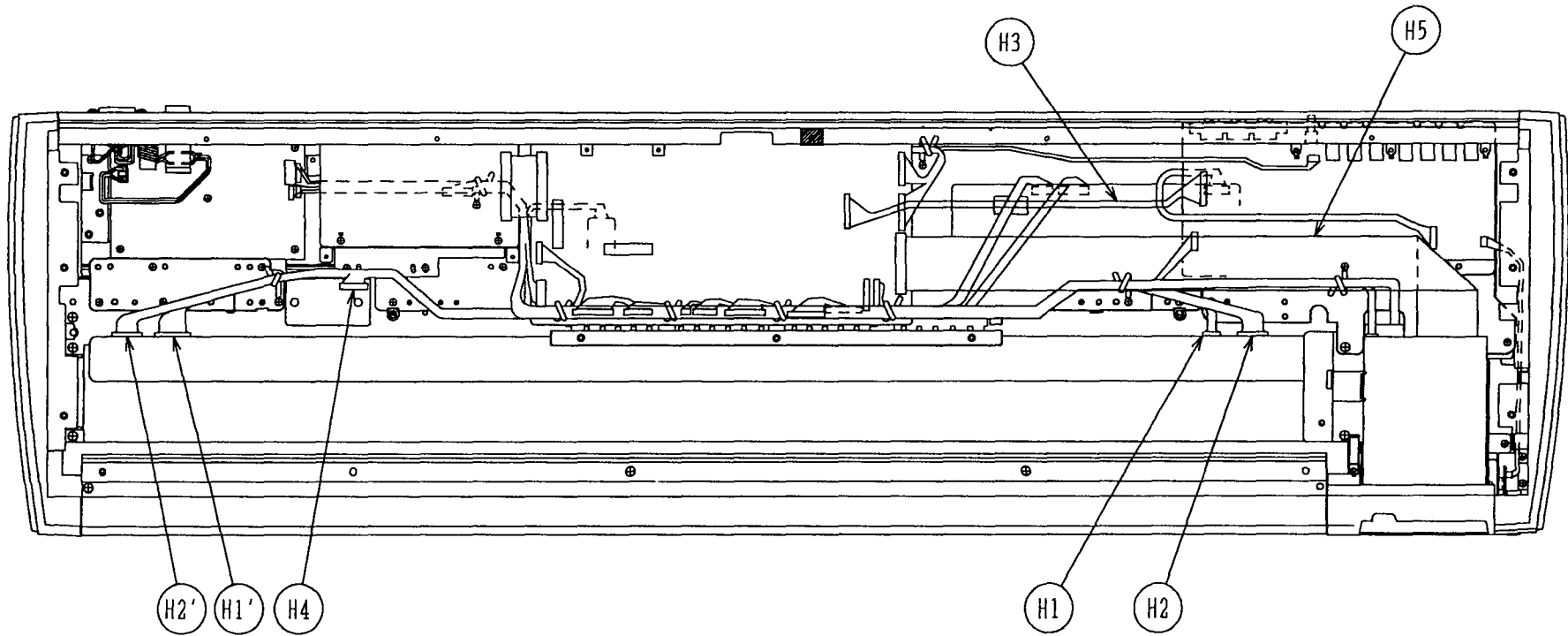
# 3. DISASSEMBLY



5

▲	BT B BZMC 4x8	20(25)	( )=TRINITY pro
MARK	SCREW	QYT	

# UPPER CASE ASS'Y(1/5) FOR TRINITY pro

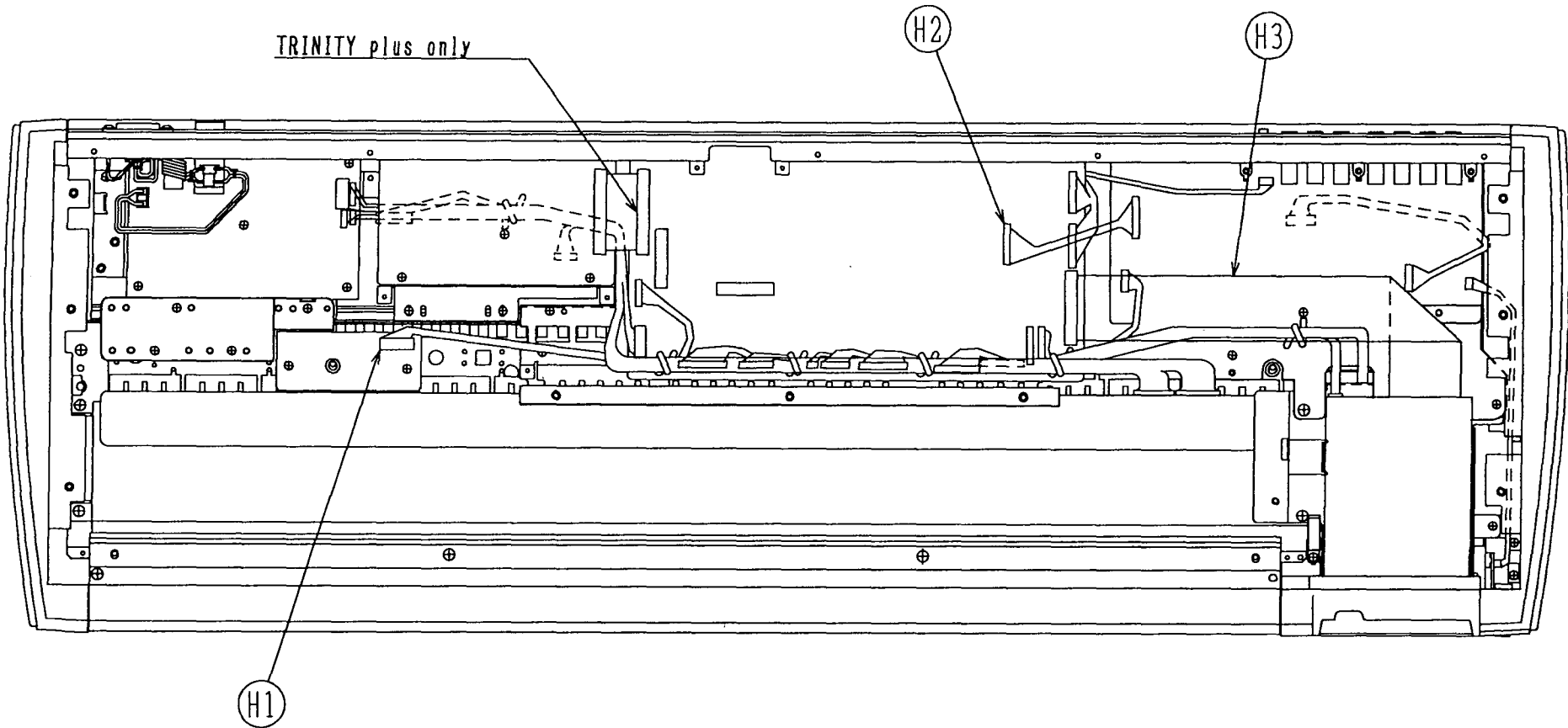


## HARNESS CONNECTIONS

MARK	HARNESS No. HNS-****	COLOR
H1	2208	BL,RED
H1'	2208	PRP,RED
H2	2209	GRY,RED
H2'	2209	GRY,RED
H3	2215	BL,ORG
H4	2200	ORG,BRN
H5	2218	—

**UPPER CASE ASS'Y(1/5)  
FOR TRINITY/plus**

7

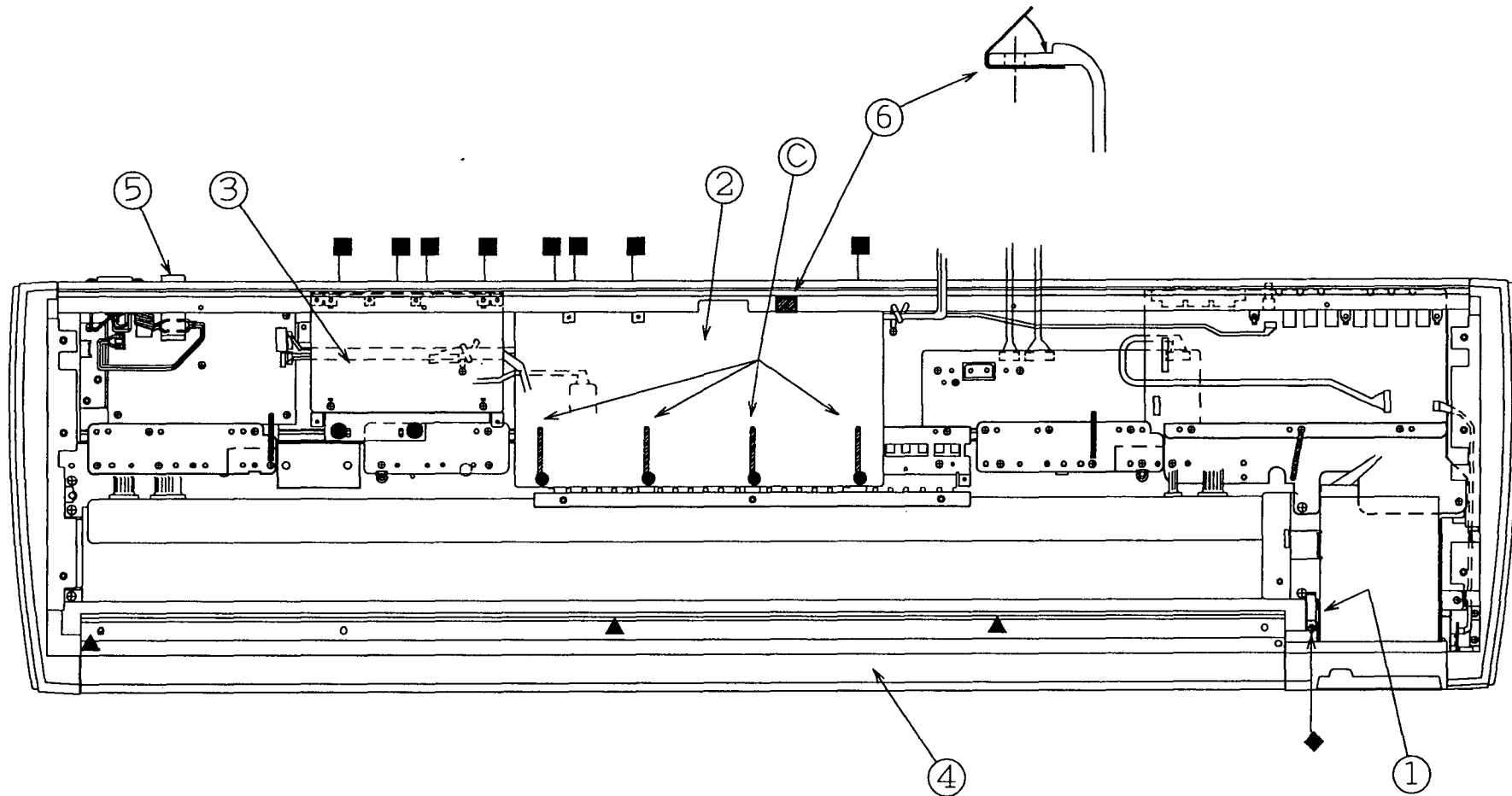


HARNESS CONNECTIONS

MARK	HARNESS No.	HNS-	COLOR
H1	2179		ORG, BRN
H2	2194		BL, ORG
H3	2199		



# UPPER CASE ASS'Y(2/5) FOR TRINITY pro



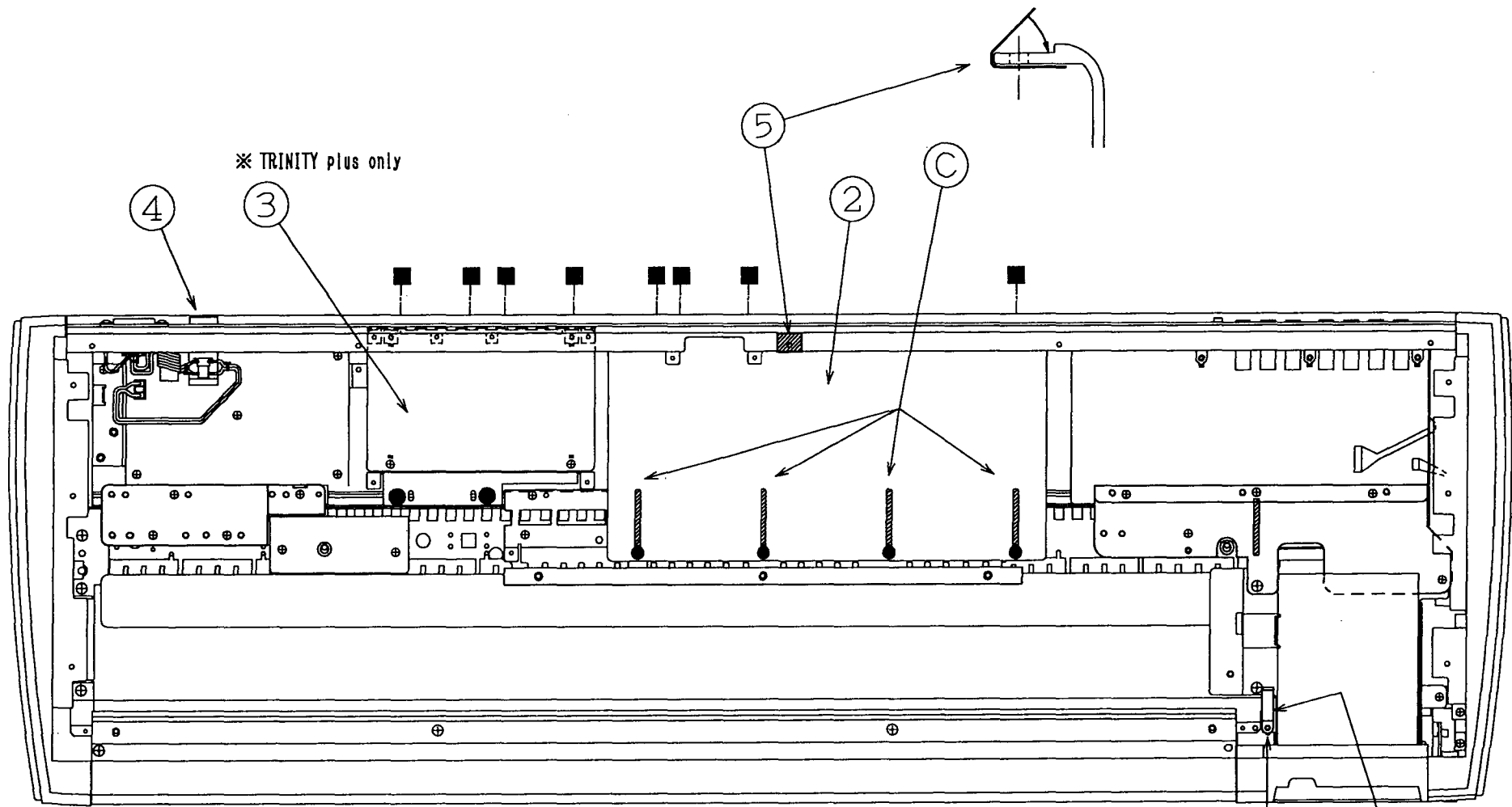
8

- No. PART NAME  
 1 GND SPRING A  
 2 P.C.BOARD KLM-1820  
 3 KLM-1839 ASSY (W/CHASSIS)  
 4 FRONT BAR  
 5 POWER SW. KNOB  
 6 VIBRATION ABSORBER TAPE  
 C SPIRAL CLIP CS-4

◆	CT	B	BZMC	3X8	1
■	BT	B	BZMC	3X8	8
●	BT	B	ZMC	3X8	6
MARK			SCREWS		QTY

# UPPER CASE ASS'Y(2/5) FOR TRINITY/plus

6



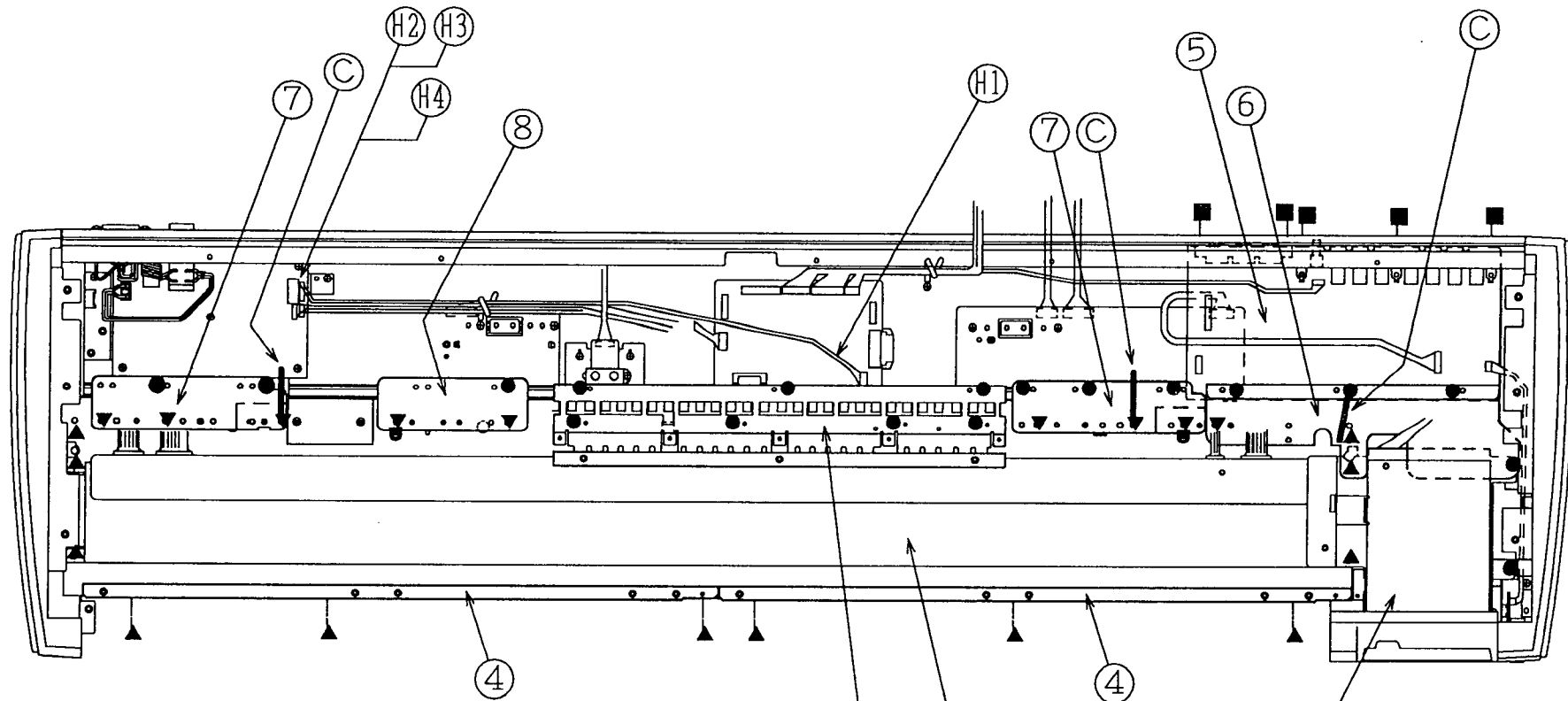
※ TRINITY plus only

※ ( ): TRINITY plus

- No. PART NAME
- 1 GND SPRING A
- 2 P.C. BOARD KLM-1820
- 3 KLM-1839 ASSY (W/CHASSIS)
- 4 POWER SW. KNOB
- 5 VIBRATION ABSORBER TAPE
- C SPIRAL CLIP CS-4

◆	CT	B	BZMC	3X8	1
■	BT	B	BZMC	3X8	8 (4)
●	BT	B	ZMC	3X8	4 (6)
MARK	SCREWS				QTY

# UPPER CASE ASS'Y(3/5) FOR TRINITY pro



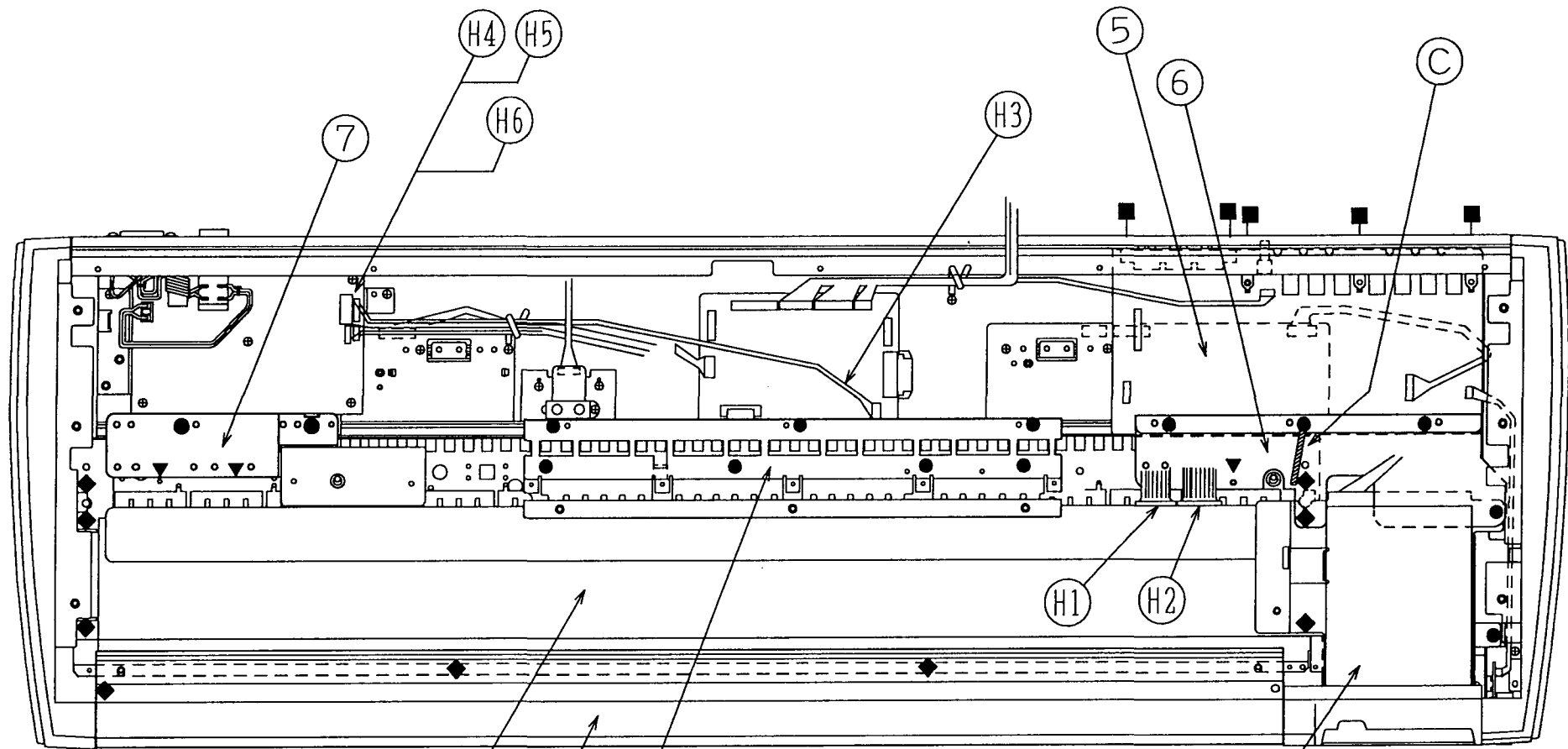
10

- No. PART NAME  
 1 KEYBOARD FS-76  
 2 KBR ANGLE  
 3 FDD ASSY  
 4 FRONT BAR  
 5 P.C. BOARD KLM-1825  
 6 JACK SHIELD SHEET  
 7 KBD SHIELD SHEET1  
 8 KBD SHIELD SHEET2  
 C SPIRAL CLIP CS-4

MARK	HARNESS No. HNS-****	COLOR
H1	2204	GRN, BRN
H2	2180	YLW, BRN
H3	2202	GRN, BRN
H4	2203	BL, BRN

▼	CT	B	BZMC	3X8	9
▲	BT	B	ZMC	4X8	12
■	BT	B	BZMC	3X8	5
●	BT	B	ZMC	3X8	18
MARK	SCREWS				QTY

# UPPER CASE ASS'Y(3/5) FOR TRINITY/plus



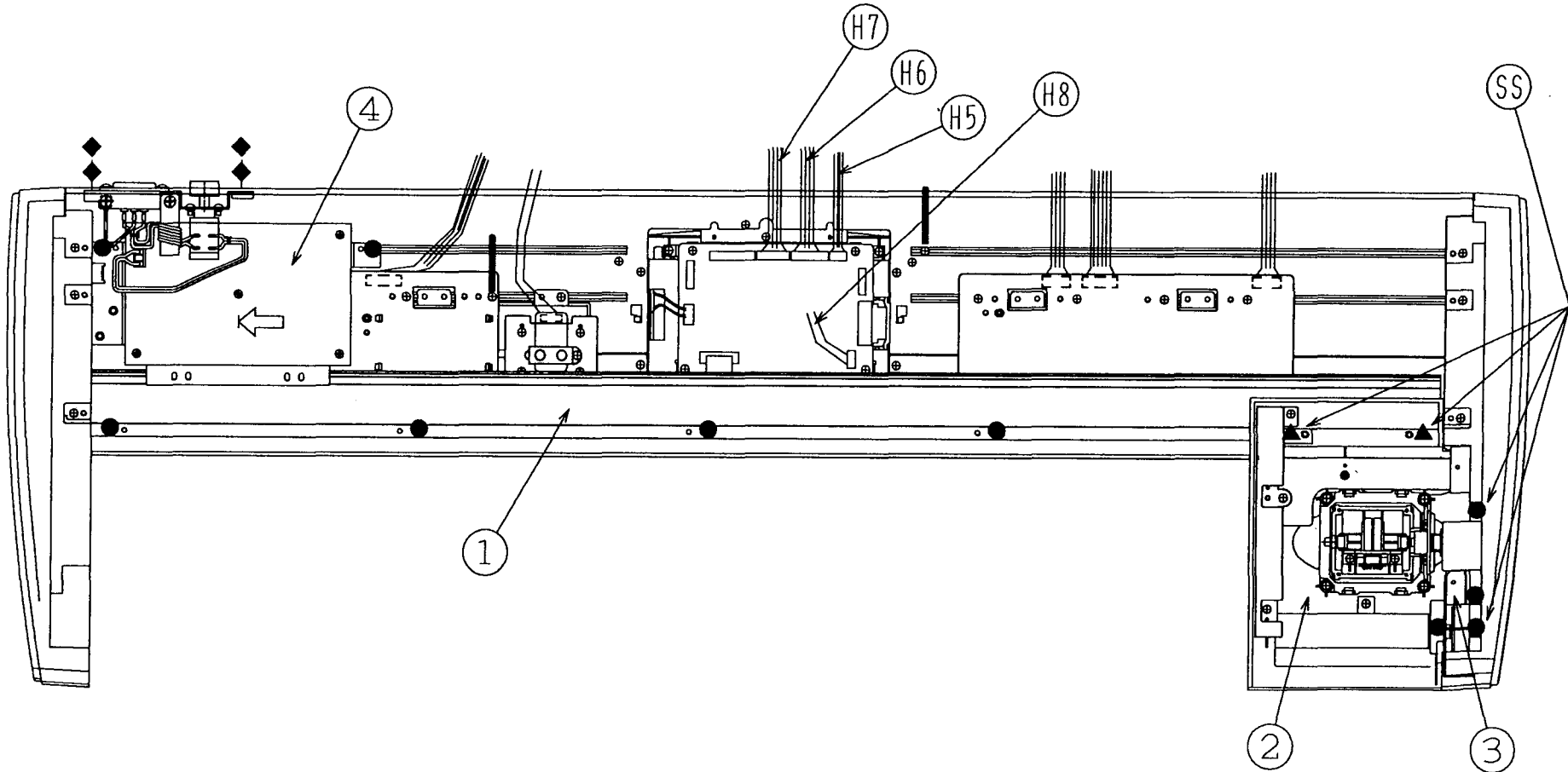
11

- |     |                    |
|-----|--------------------|
| No. | PART NAME          |
| 1   | KEYBOARD FS-61     |
| 2   | KBR ANGLE          |
| 3   | FDD ASSY           |
| 4   | FRONT BAR          |
| 5   | P.C.BOARD KLM-1825 |
| 6   | JACK SHIELD SHEET  |
| 7   | KBD SHIELD SHEET1  |
| C   | SPIRAL CLIP CS-4   |

MARK	HARNESS No. HNS-****	COLOR
H1	2187	GRN,RED
H2	2188	GRY,RED
H3	2183	GRN,BRN
H4	2180	YLW,BRN
H5	2181	GRN,BRN
H6	2182	BL,BRN

▼	CT	B	BZMC	3X8	3
◆	BT	B	ZMC	4X8	9
■	BT	B	BZMC	3X8	5
●	BT	B	ZMC	3X8	14
MARK	SCREWS				QTY

# UPPER CASE ASS'Y(4/5)



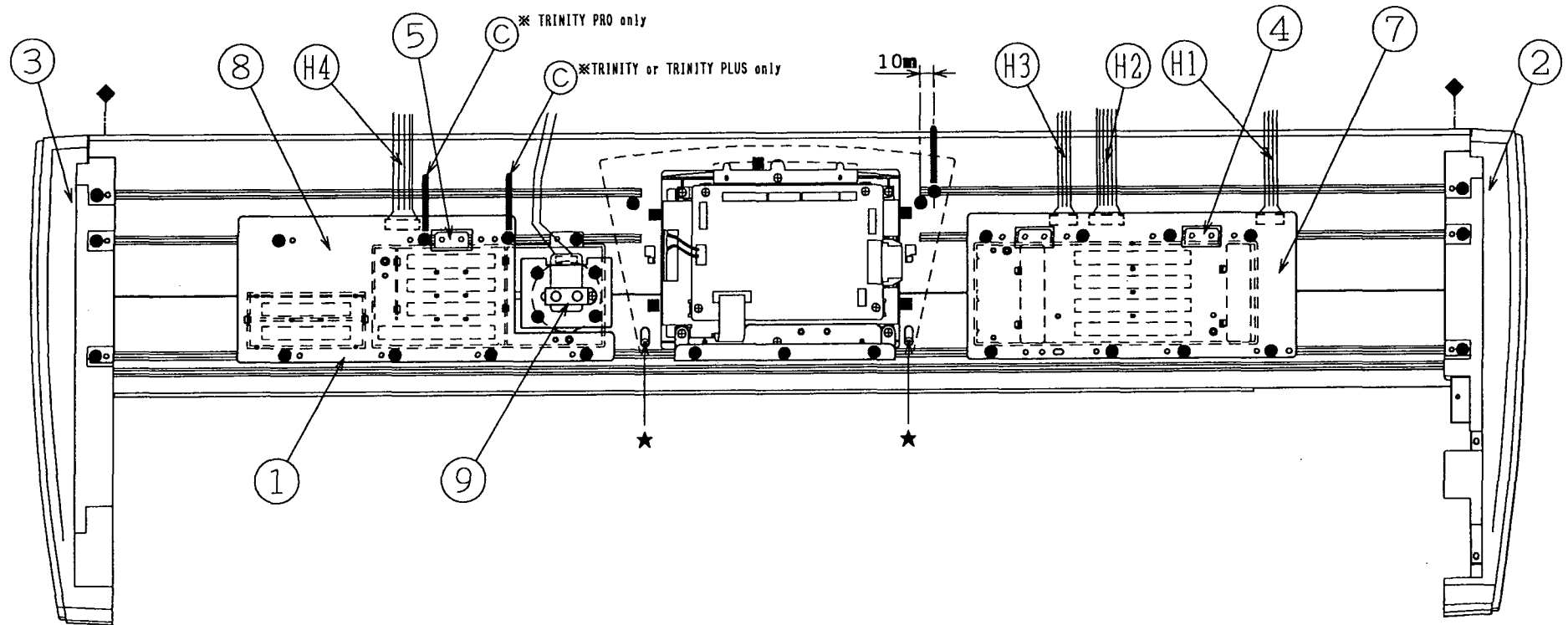
- No. PART NAME
- 1 SUPORT RAIL
  - 2 JS PANEL ASSY
  - 3 HEADPHONE P.C.B ASSY
  - 4 POWER SUPPLY UNIT ASSY

MARK	HARNESS No. HNS-		COLOR
	X-311,311S	X-312	
H5	2186	2207	ORG,GRN
H6	2185	2206	YLW,GRN
H7	2184	2205	PRP,GRN
H8	2183	2204	BRN,GRN

※ ( ): TRINITY plus

◆	BT	B	BZMC	3X8	4
▲	BT	B	ZMC	3X12	2
●	BT	B	ZMC	3X8	10(11)
MARK	SCREWS				QTY

# UPPER CASE ASS'Y(5/5)



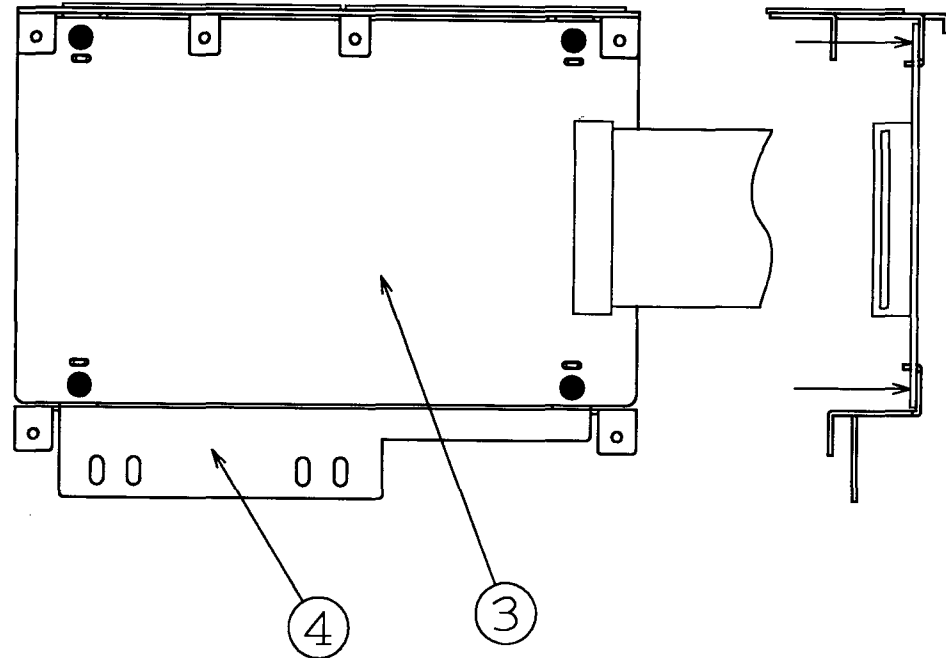
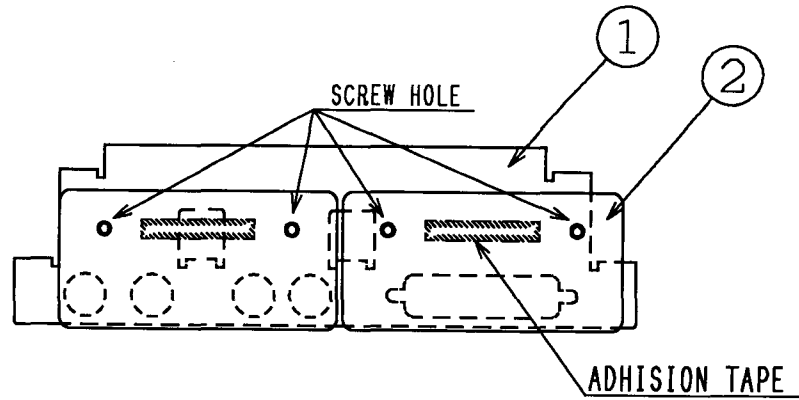
- No. PART NAME
- 1 LCD ASSY
  - 2 SIDE PANEL ASSY L
  - 3 SIDE PANEL ASSY R
  - 4 KNOB BLOCK L
  - 5 KNOB BLOCK R
  - 6 KNOB BLOCK R-SMALL
  - 7 P.C.BOARD KLM-1821
  - 8 P.C.BOARD KLM-1822
  - 9 ROTARY ENCODER ASSY

MARK	HARNESS No. HNS-		COLOR
	X-311,311S	X-312	
H1	2195	2195	WHT,BLK
H2	2191	2212	RED,ORG
H3	2192	2213	YLW,ORG
H4	2190	2211	BRN,ORG

※ ( ): TRINITY plus

★	PS-605 + WM BZMC 4 + BT B ZMC 3X8	2
◆	BT B BZMC 3X8	2
■	BT B ZMC 3X6	5
●	BT B ZMC 3X8	32
MARK	SCREWS	QTY

# OPTION BOARD ASS'Y FOR TRINITY plus/pro

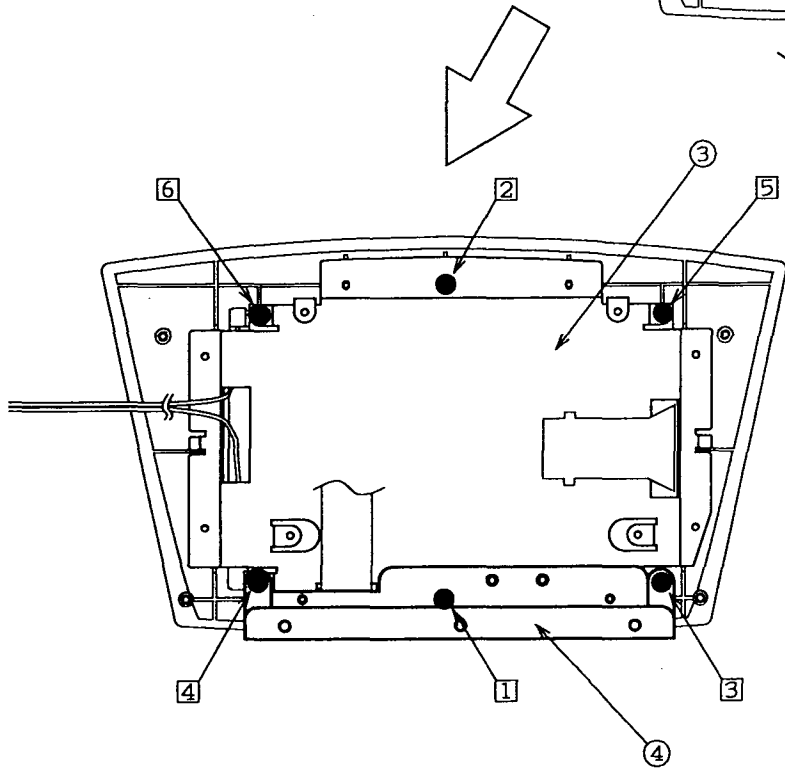
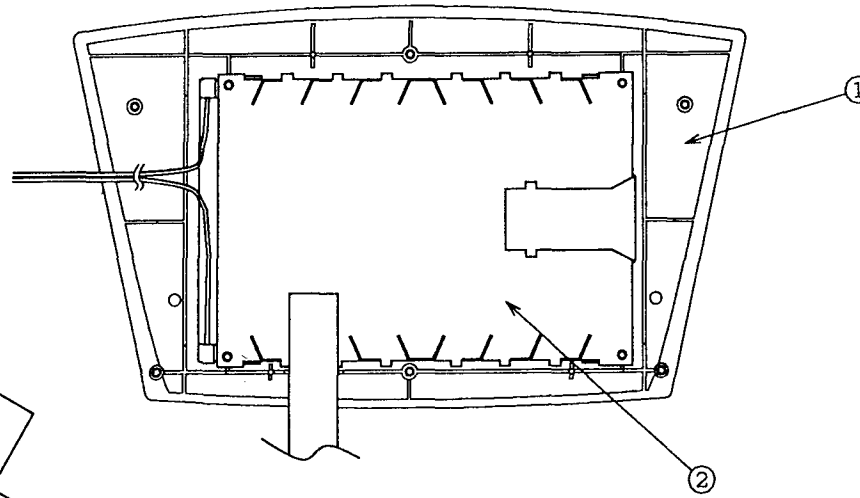


- No. PART NAME
- 1 P.C.BOARD METAL FITTING B
  - 2 OPTION COVER
  - 3 P.C.BOARD KLM-1639
  - 4 P.C.BOARD METAL FITTING A

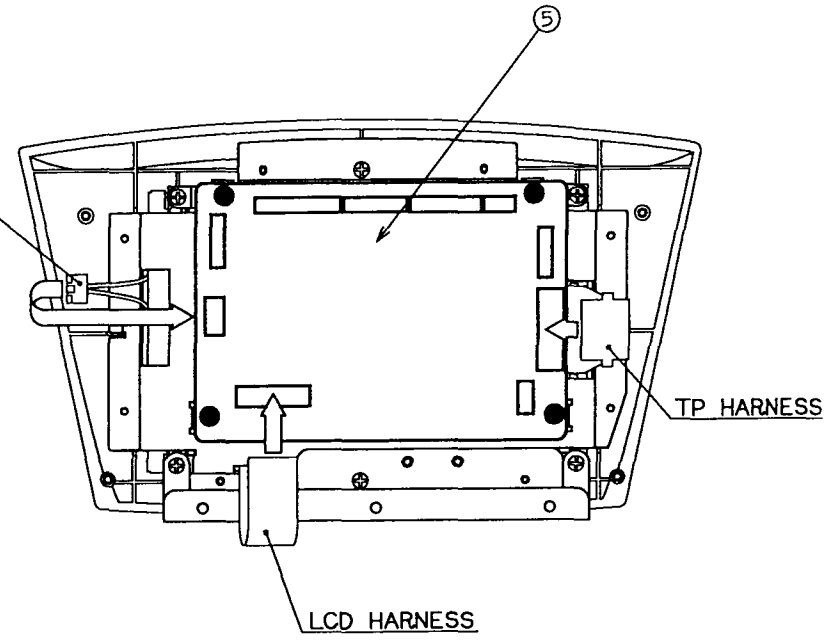
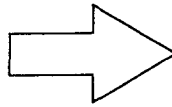
●	BT B	ZMC 3x8	4
MARK	SCREWS		QTY

# LCD HOOD ASS'Y

- No. PART NAME  
 1 LCD HOOD  
 2 LCD  
 3 LCD CHASSIS  
 4 LCD SHIELD SHEET  
 5 INVERTER P. C. BOARD



BACKLIGHT HARNESS

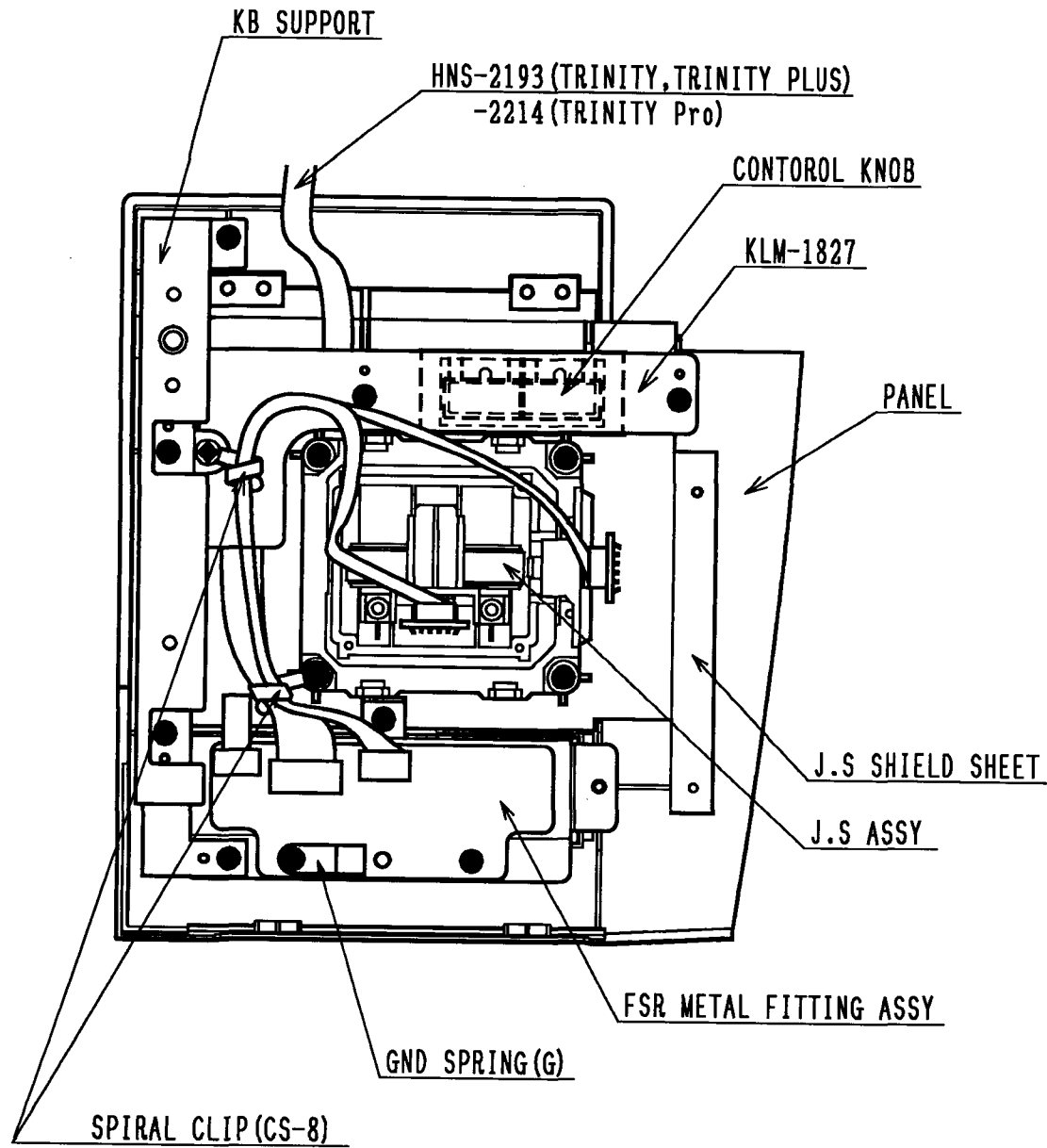


"N" indicates the sequence for fitting of screws

●	BT	B	ZMC 3X8	10
MARK	SCREWS			QTY



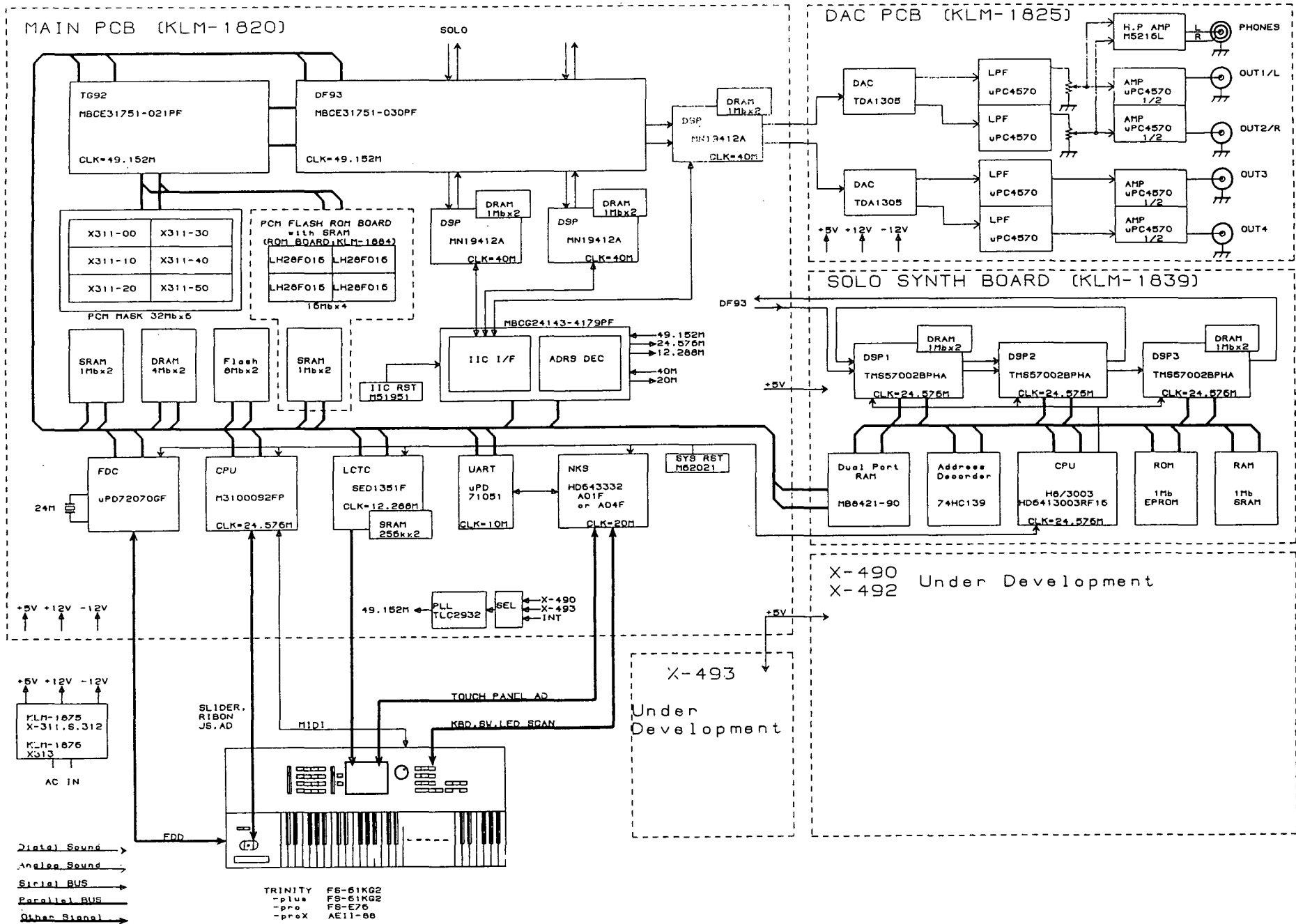
# JOYSTICK PANEL ASS'Y



16

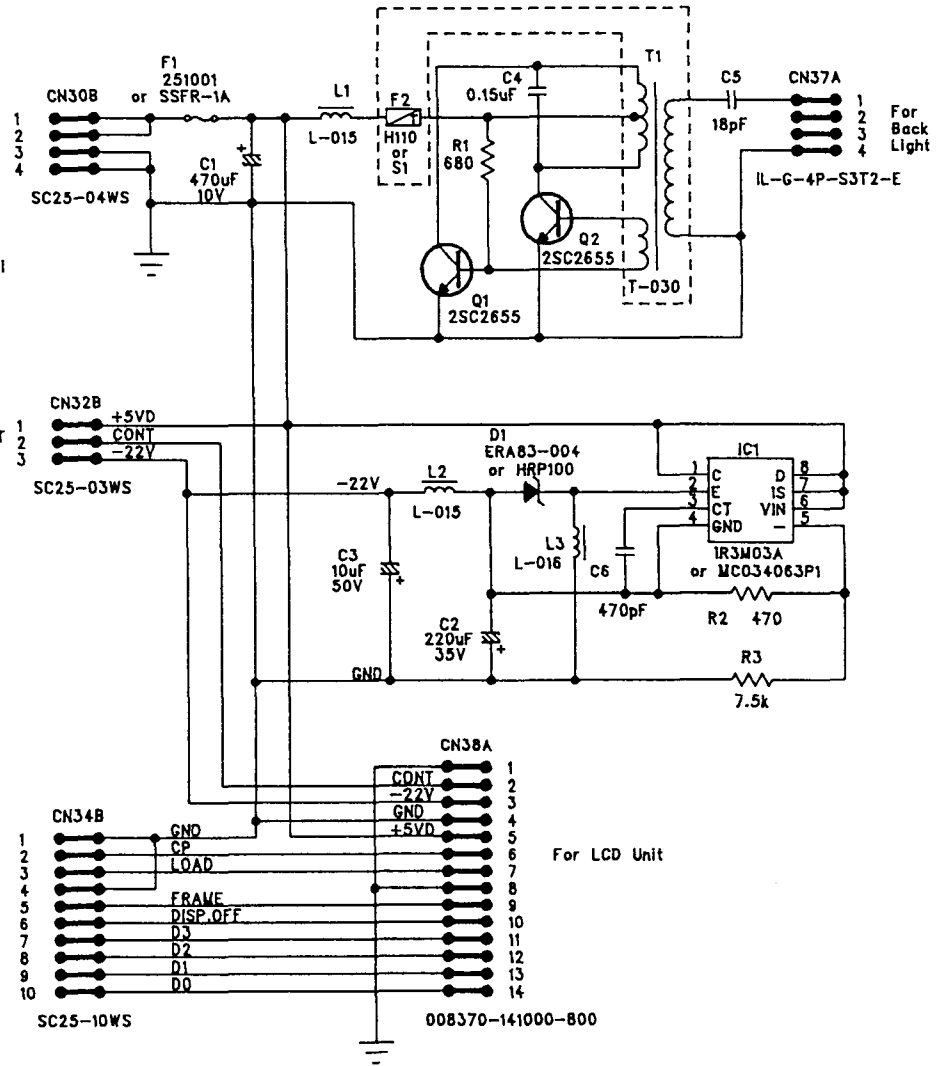
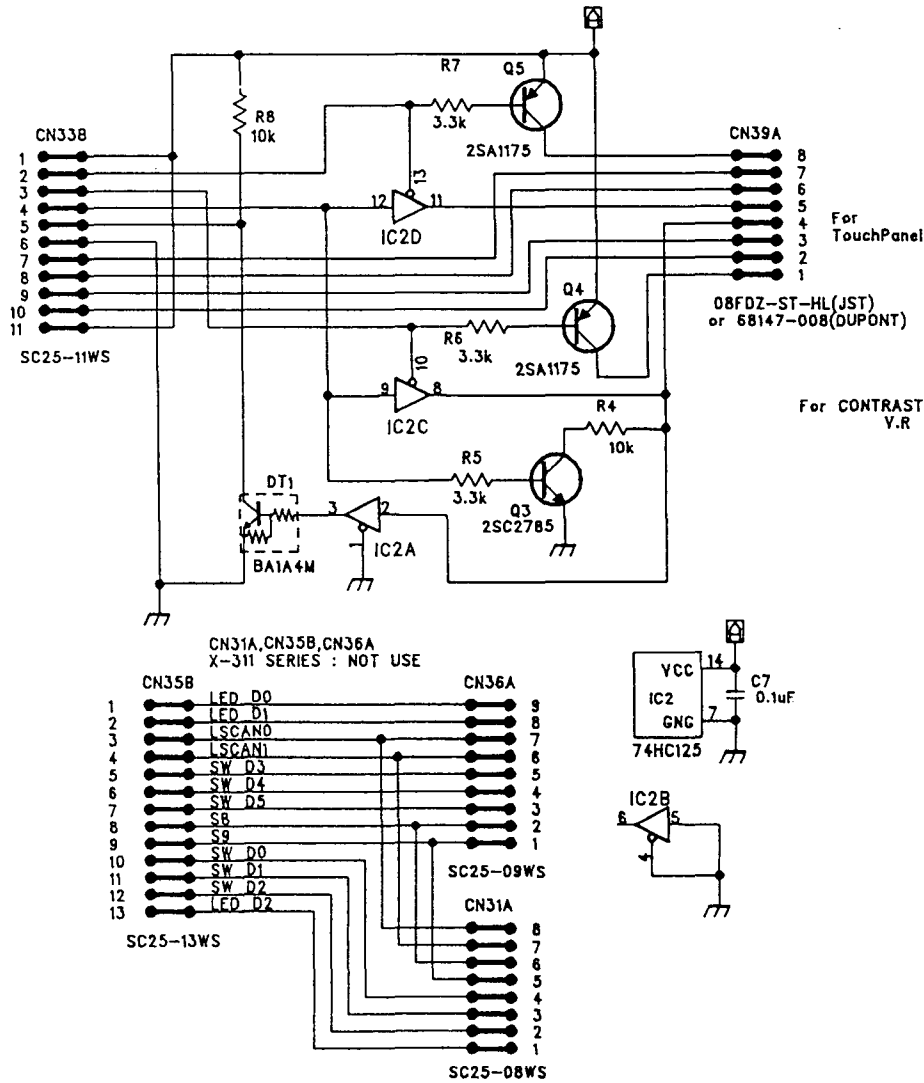
◆	BT	B	ZMC	3X10	1
●	BT	B	ZMC	3X8	13
MARK	SCREWS				QTY

# 4. BLOCK DIAGRAM

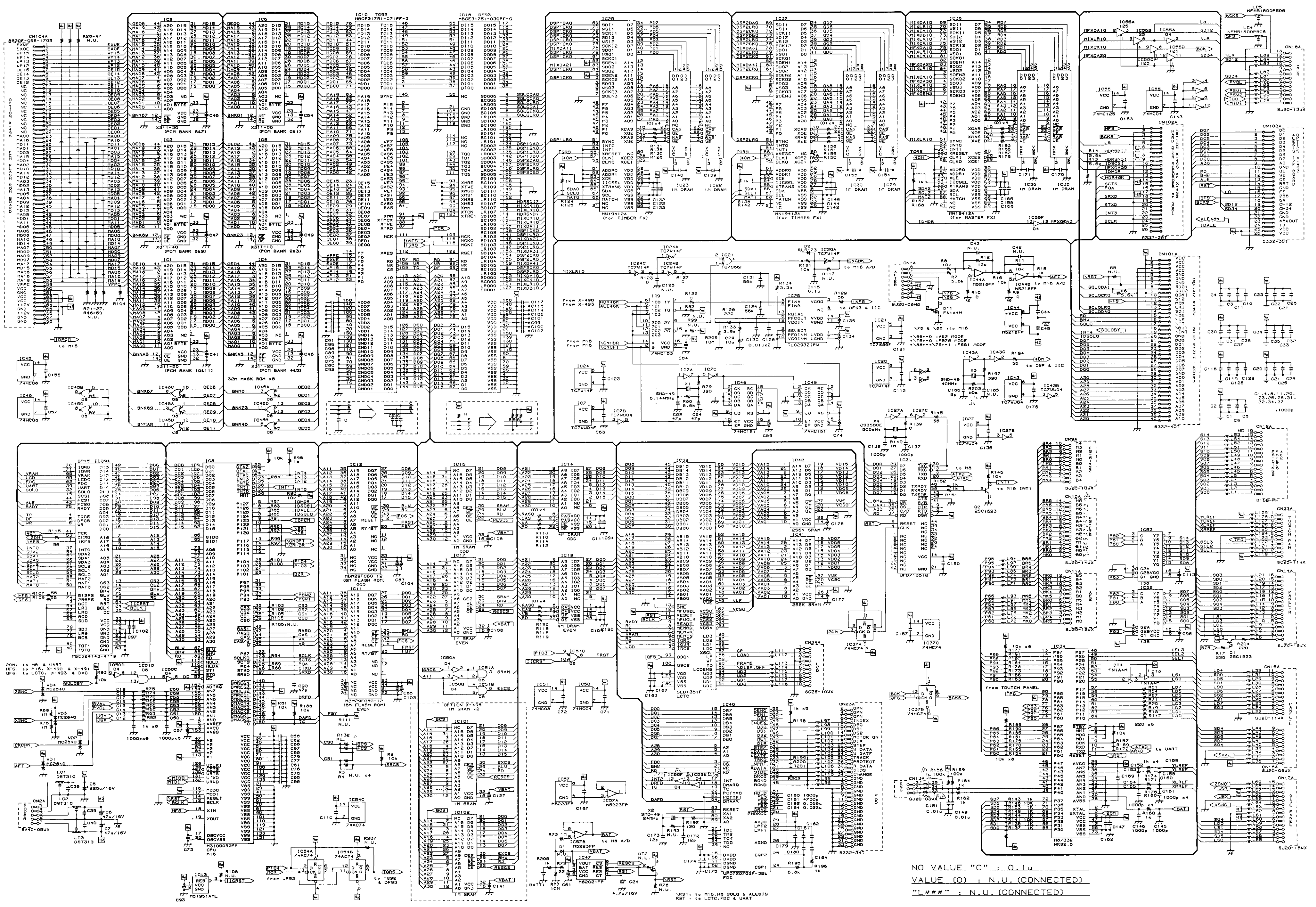


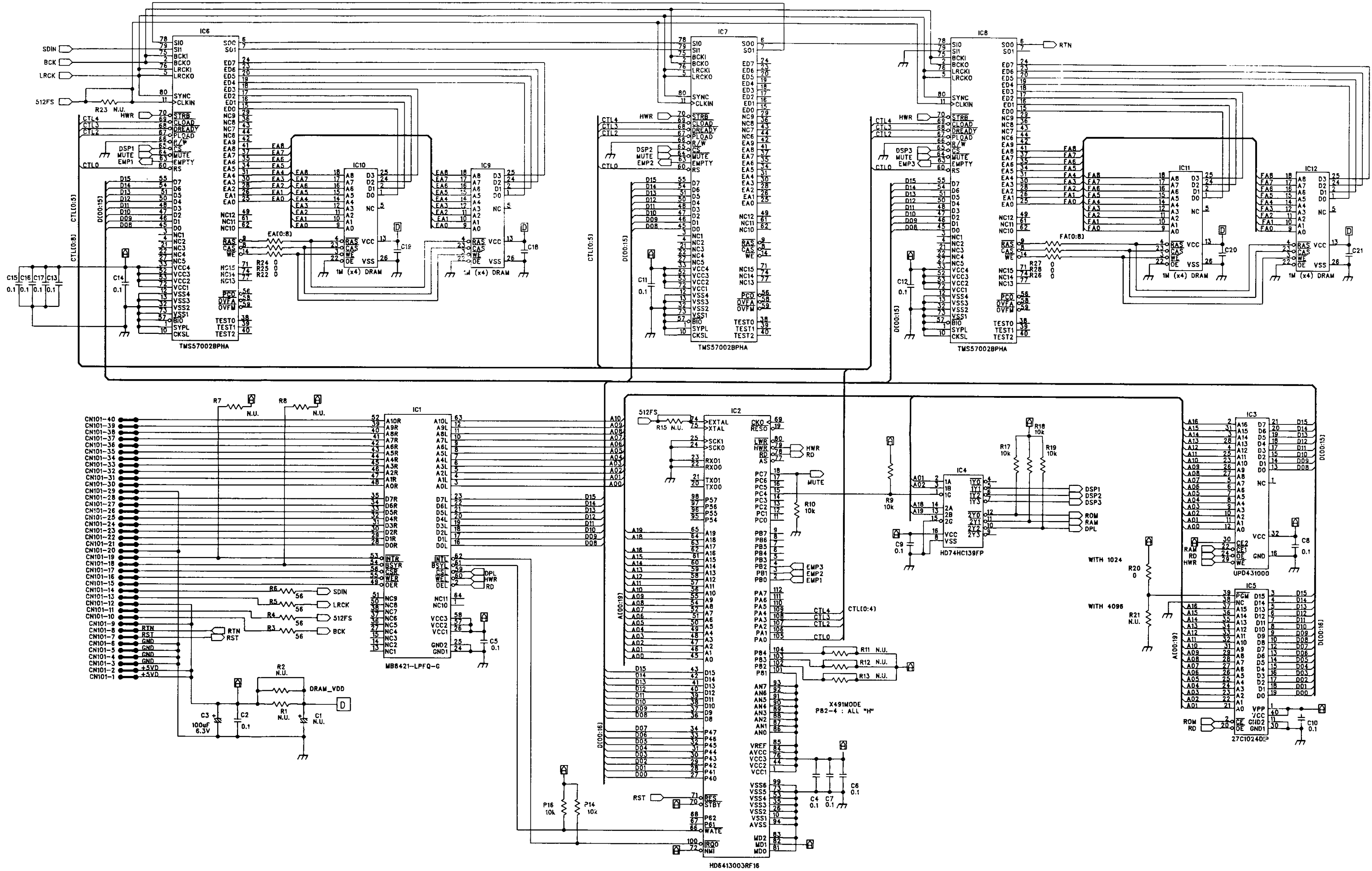
# KLM-1755

## 5. CIRCUIT DIAGRAMS



KLM-1820



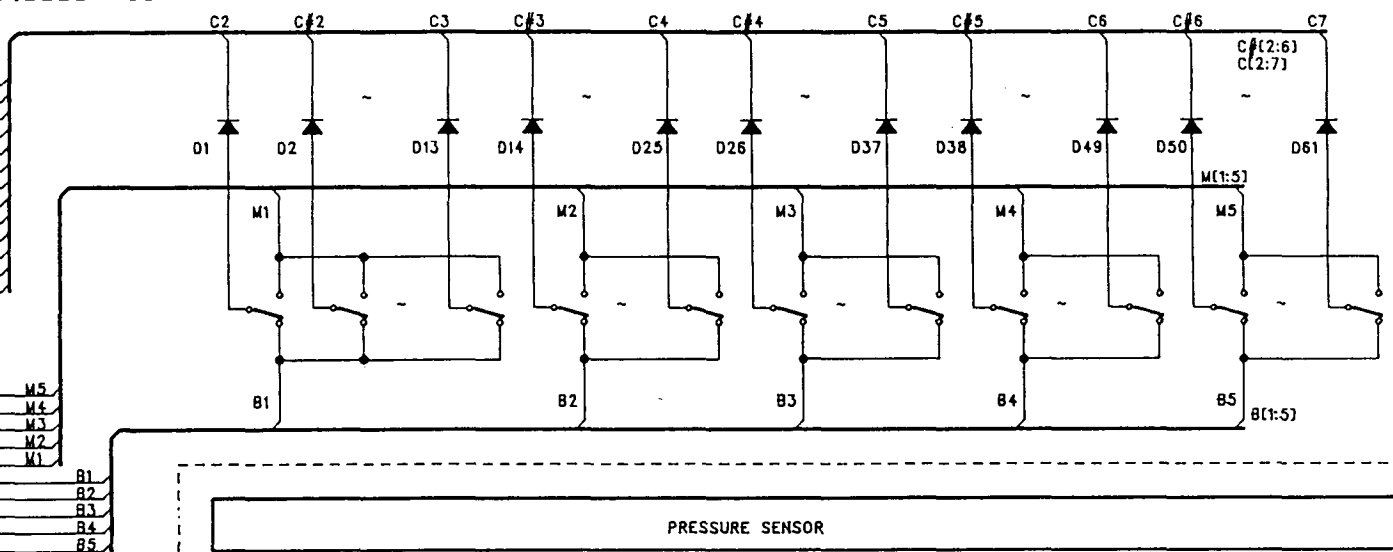
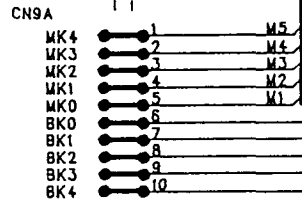
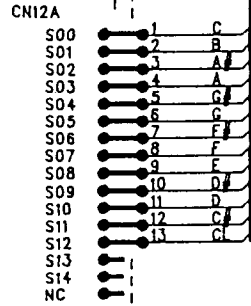


FOR TRINITY/plus

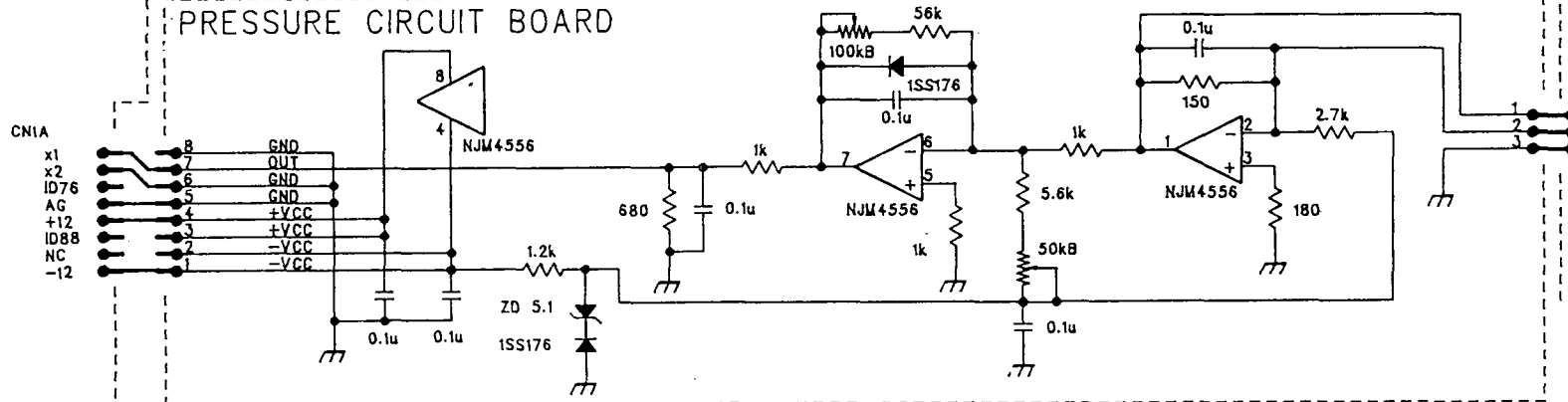
# KEYBOARD/AFTERTOUCH

MAIN PCB  
KLM-1820

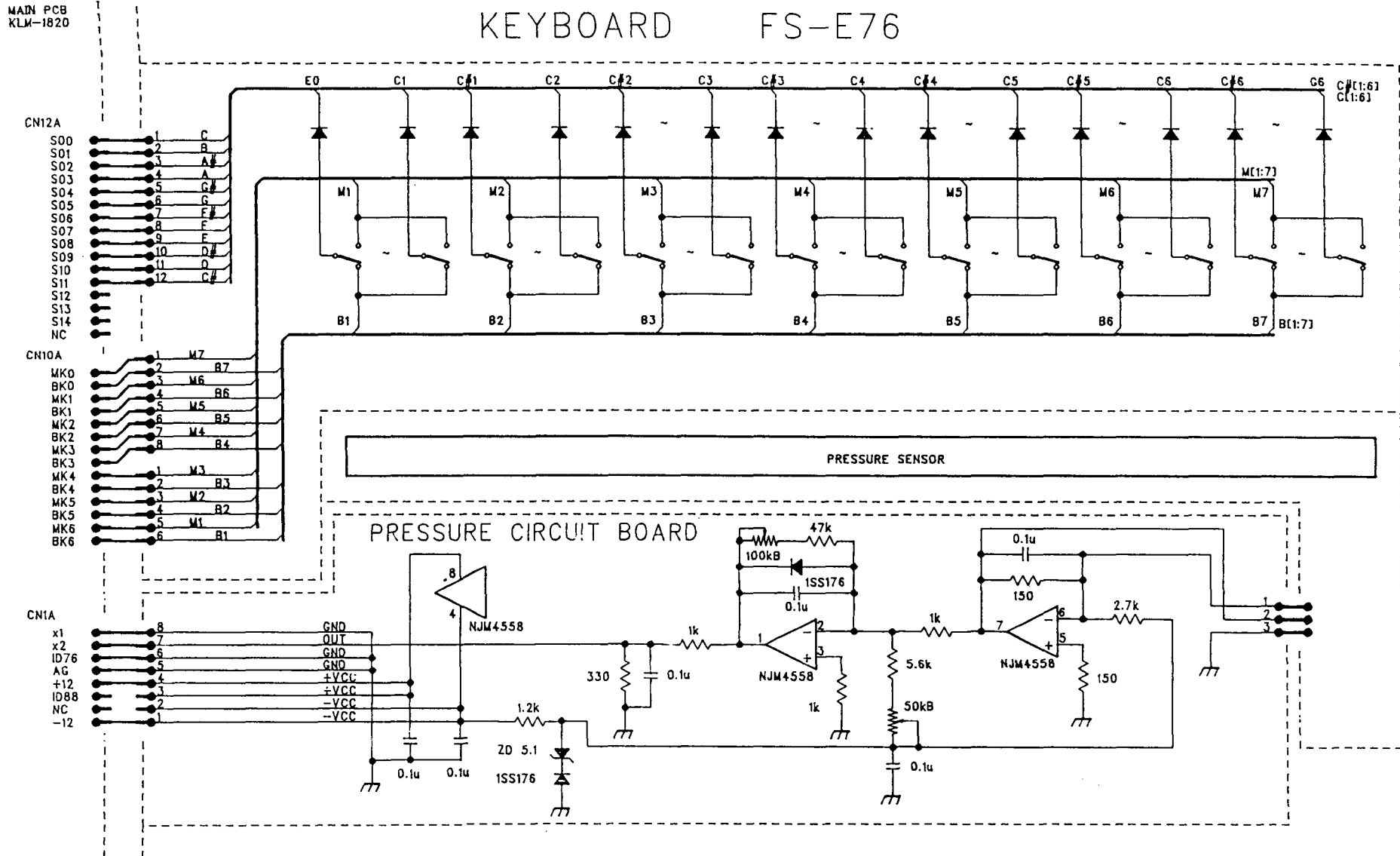
KEYBOARD FS-61KG2



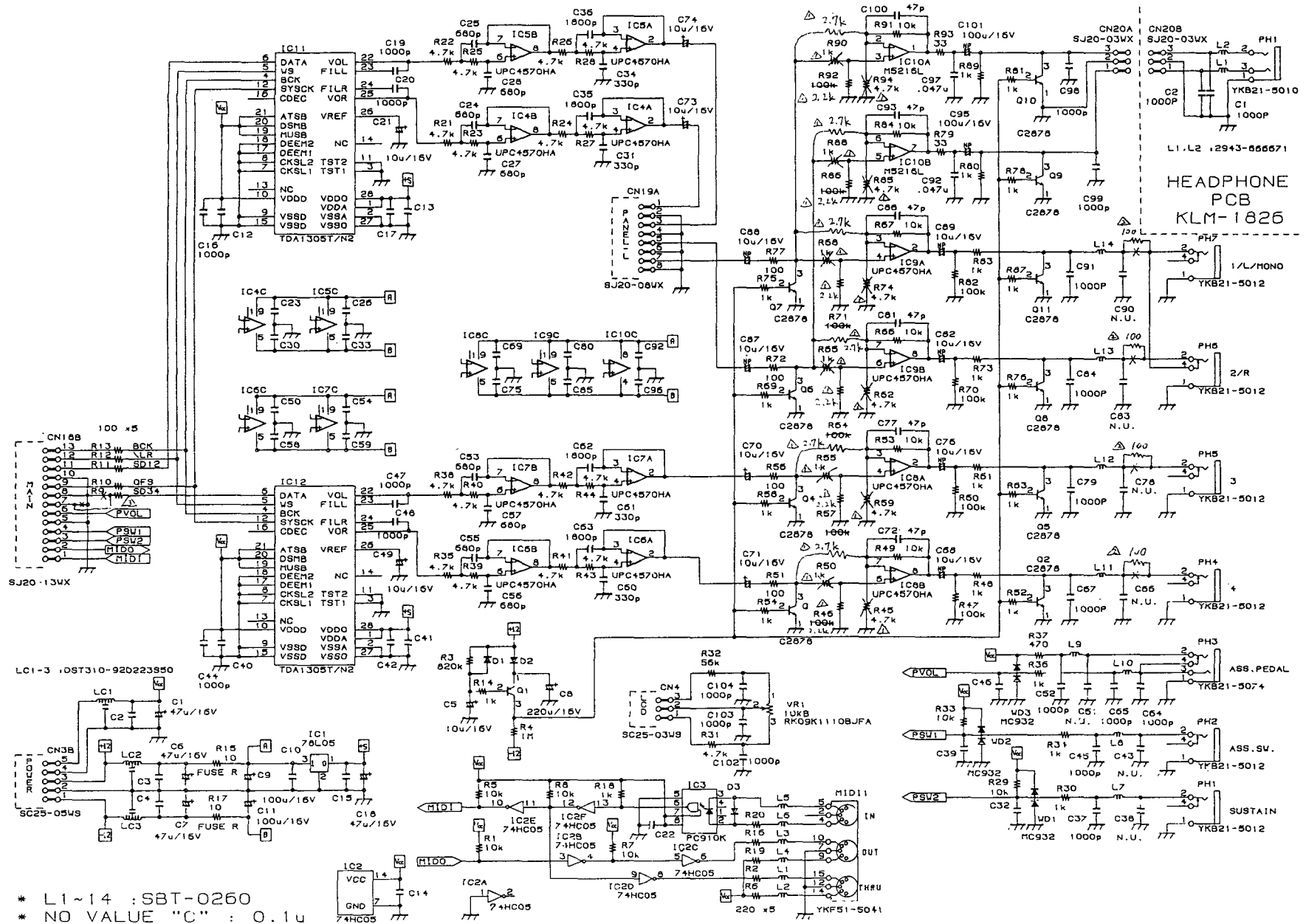
## PRESSURE CIRCUIT BOARD



# KEYBOARD/AFTERTOUCH



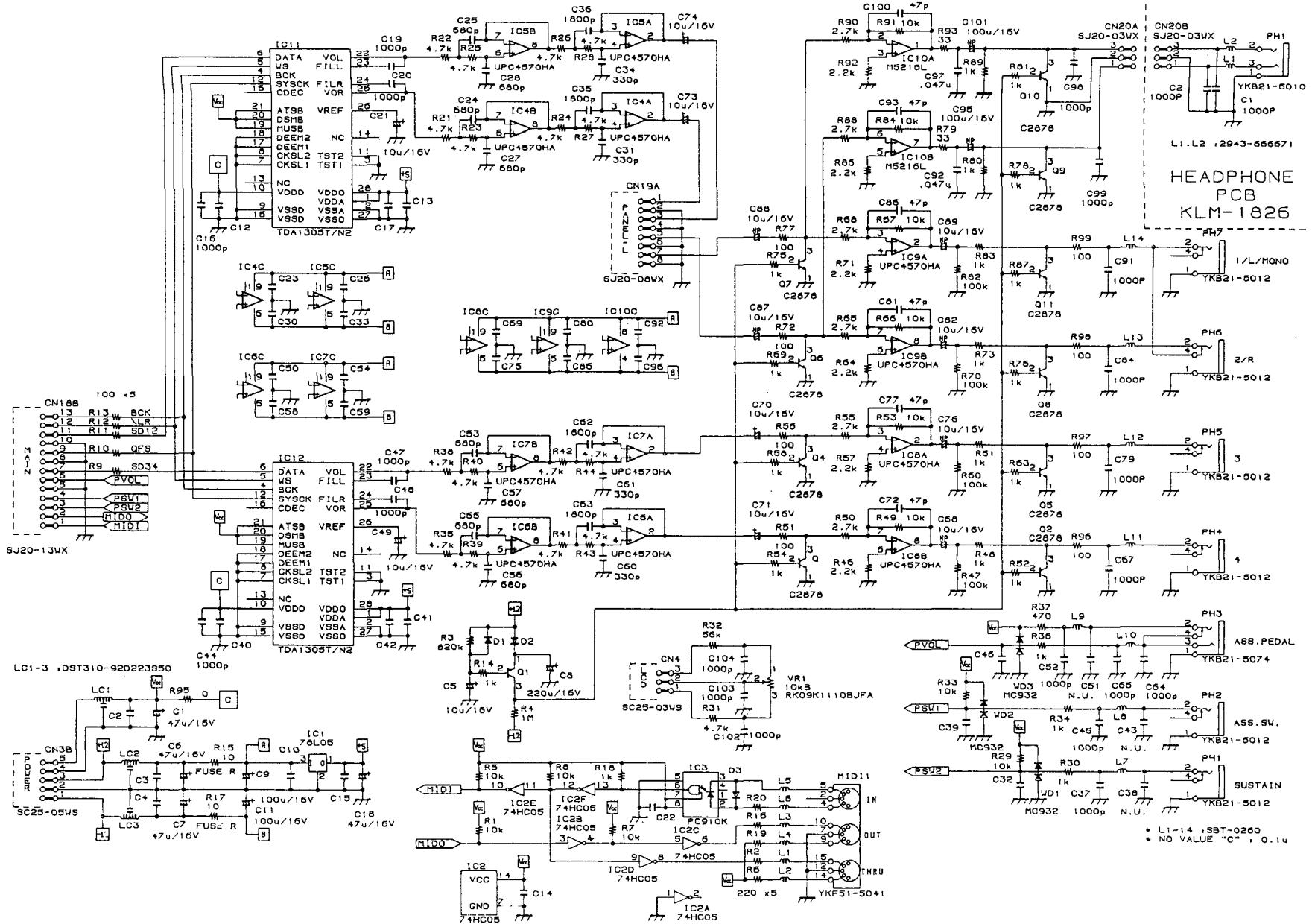
# KLM-1825/26(FOR OLD PRODUCT)



\* L1~14 : SBT-0260  
 \* NO VALUE "C" : 0.1u

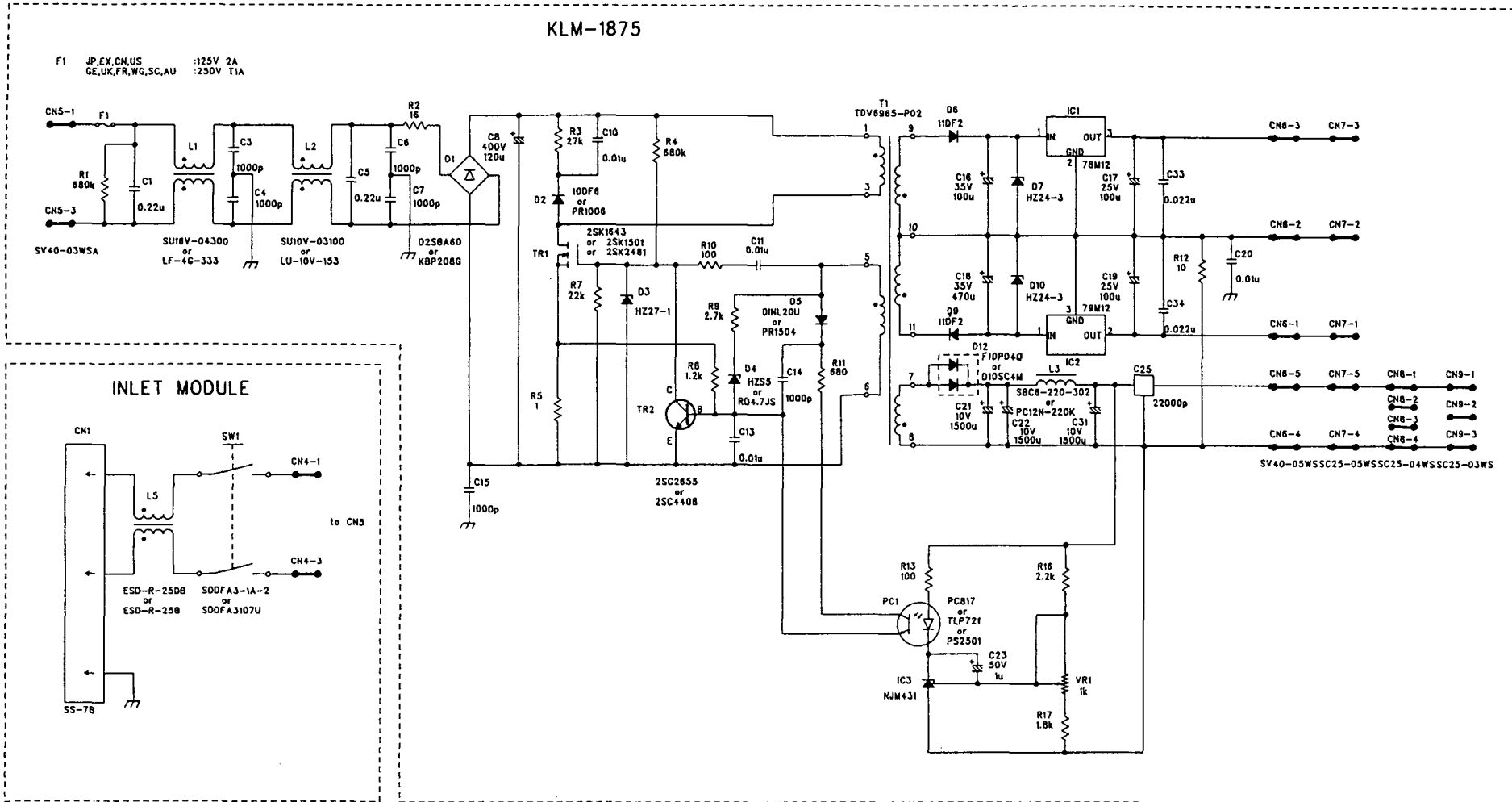


# KLM-1825/26

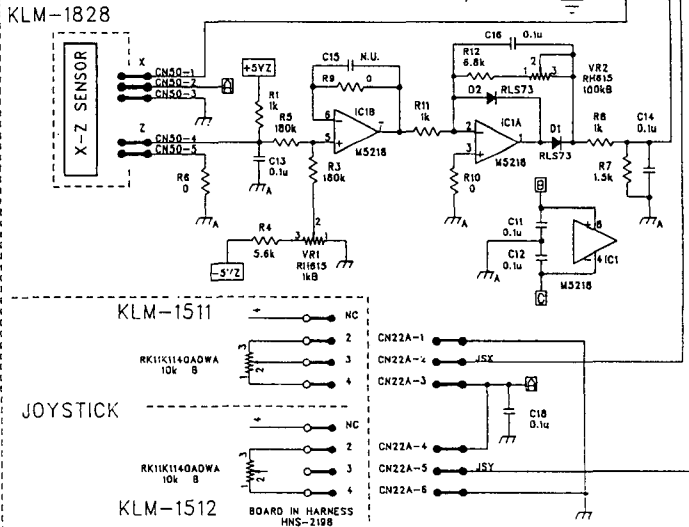
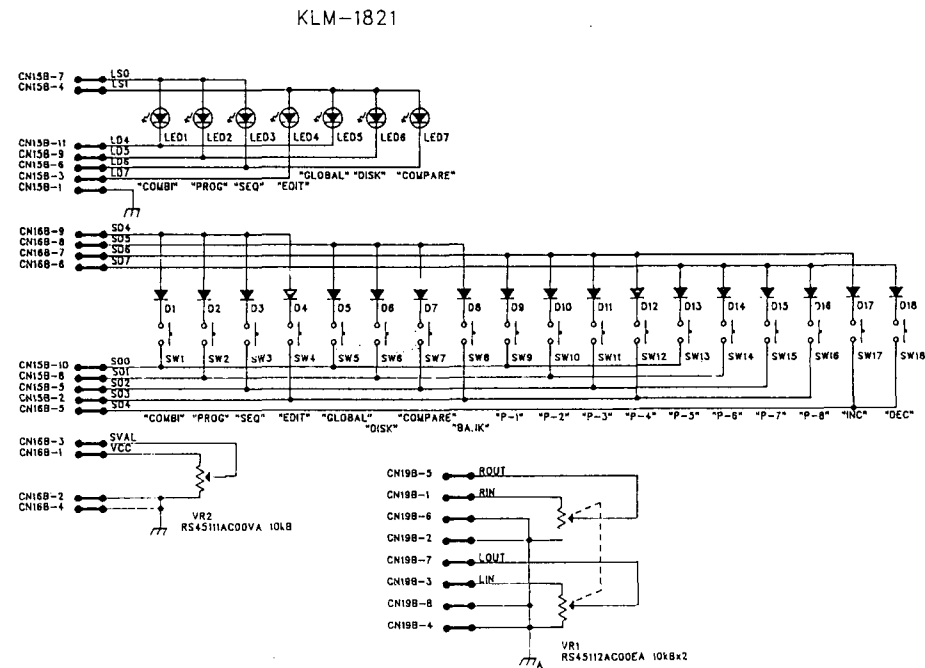
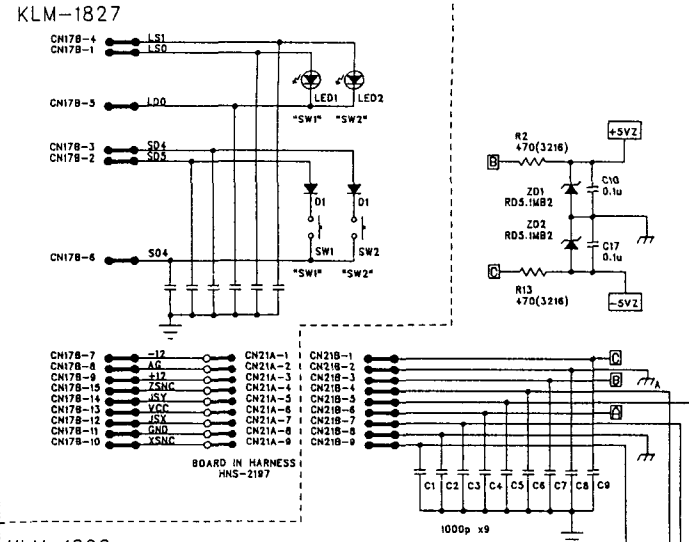
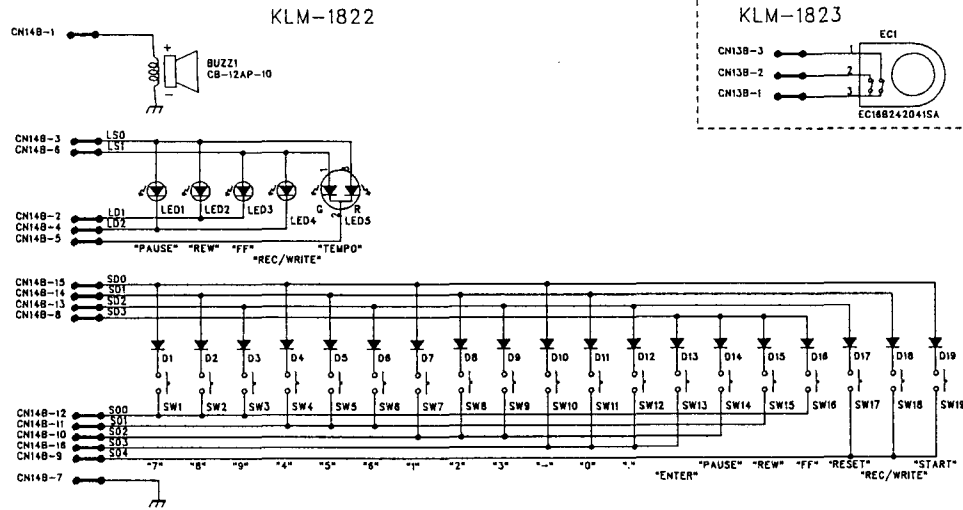


• L1-L14 : 2943-666671  
• NO VALUE "C" : 0.1u

# KLM-1875

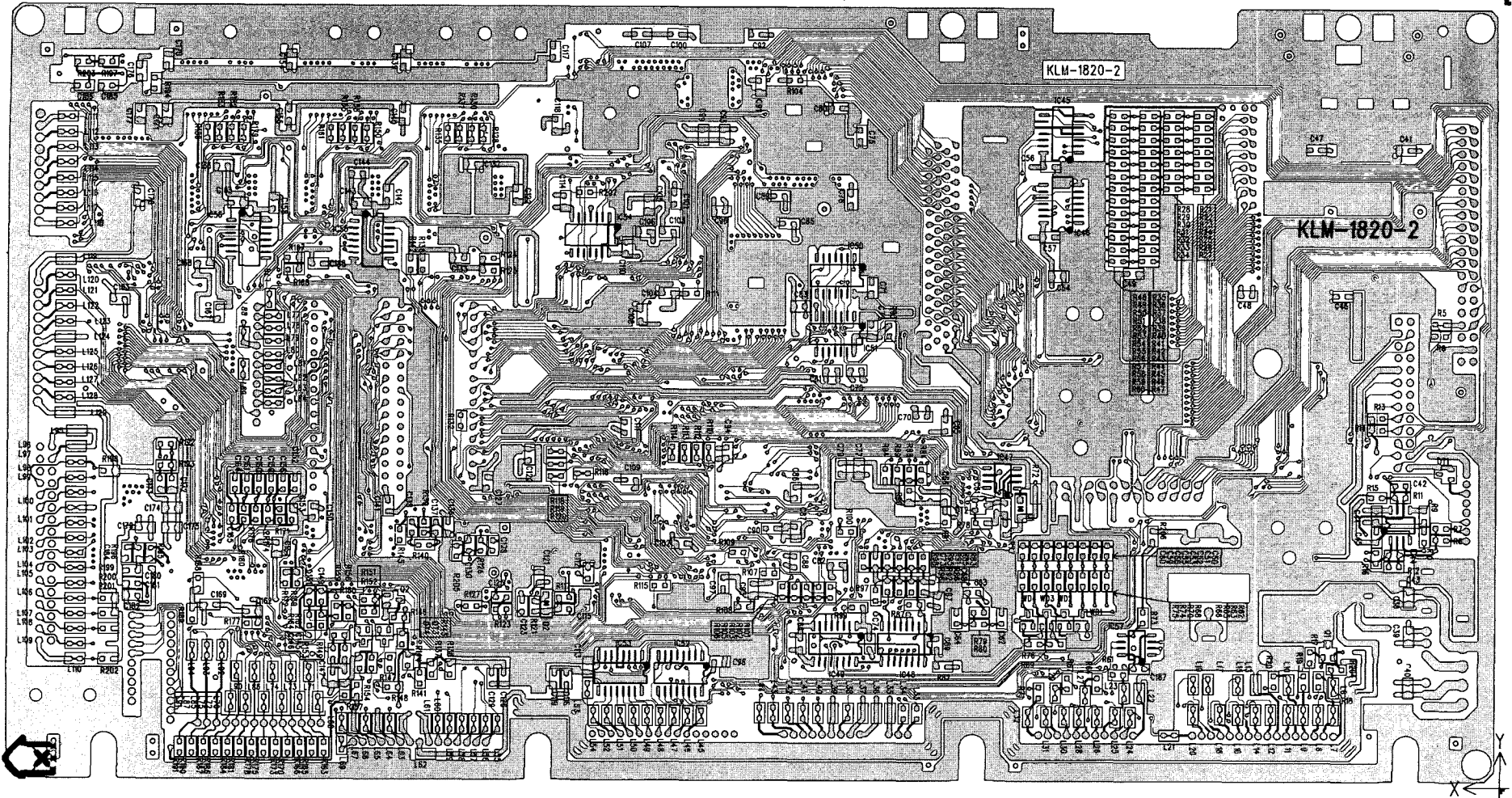


# KLM-1821/22/23/27/28 KLM-1511/12



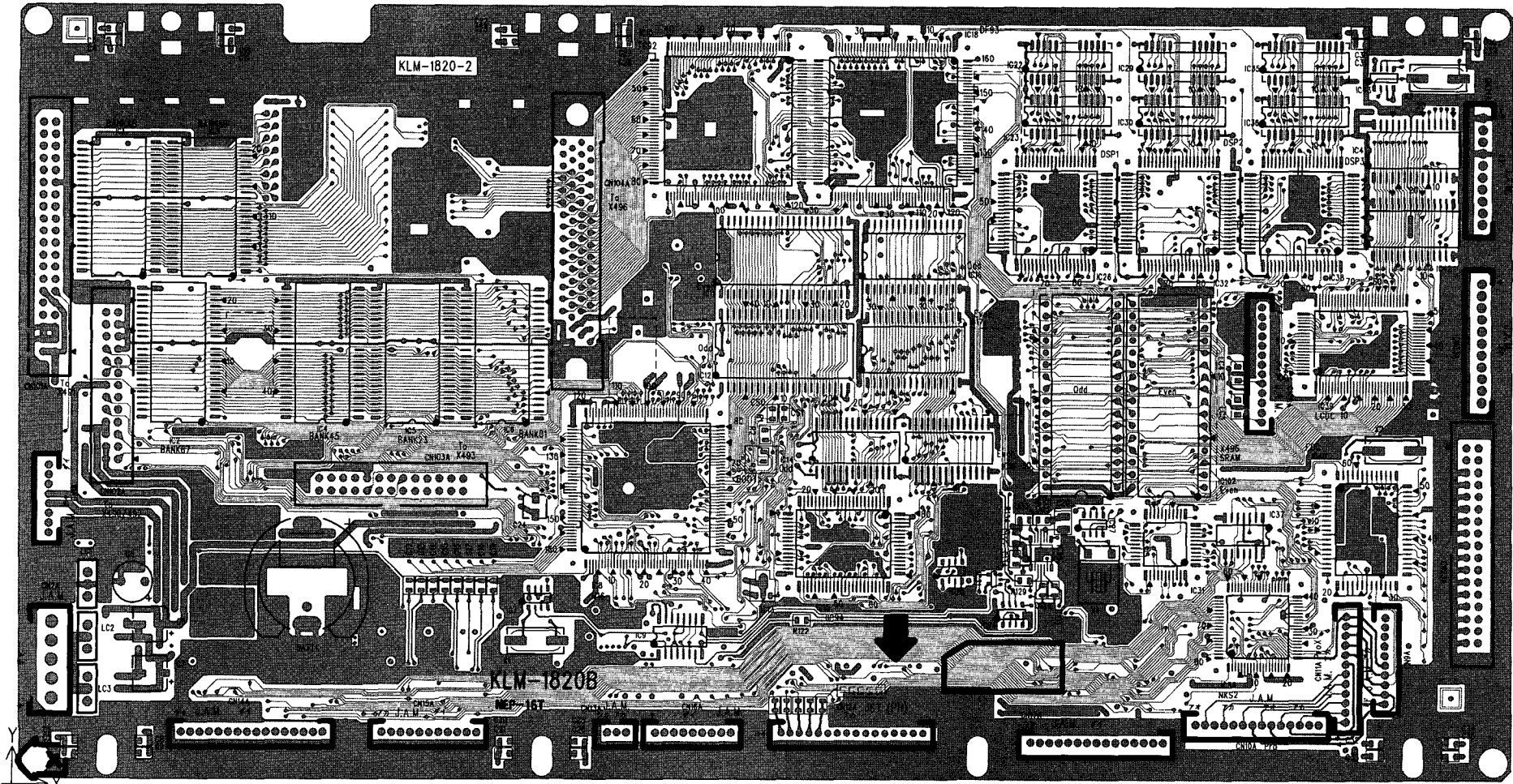
# KLM-1820

## 6. P.C. BOARDS



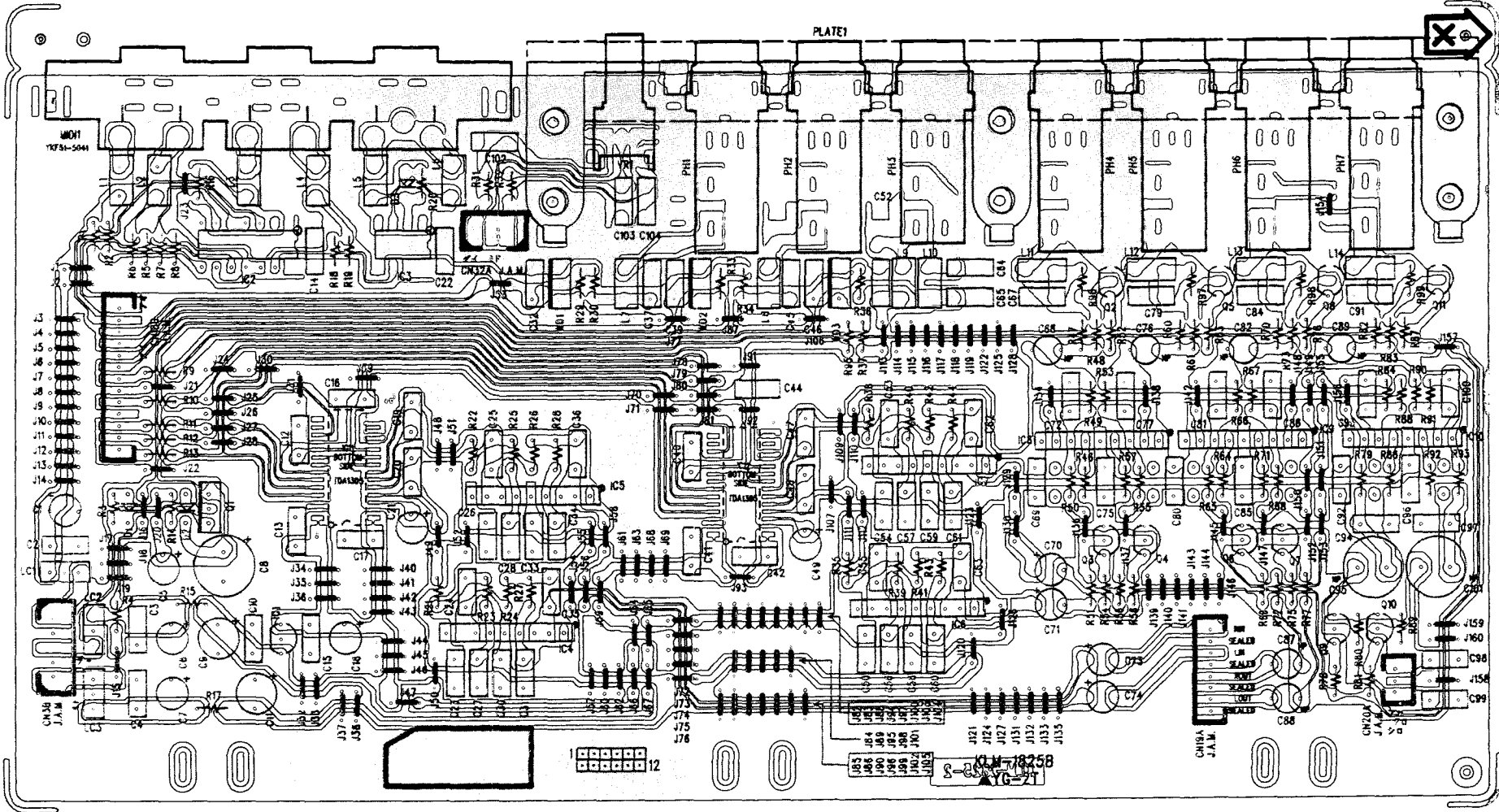
SOLDERING SIDE

KLM-1820



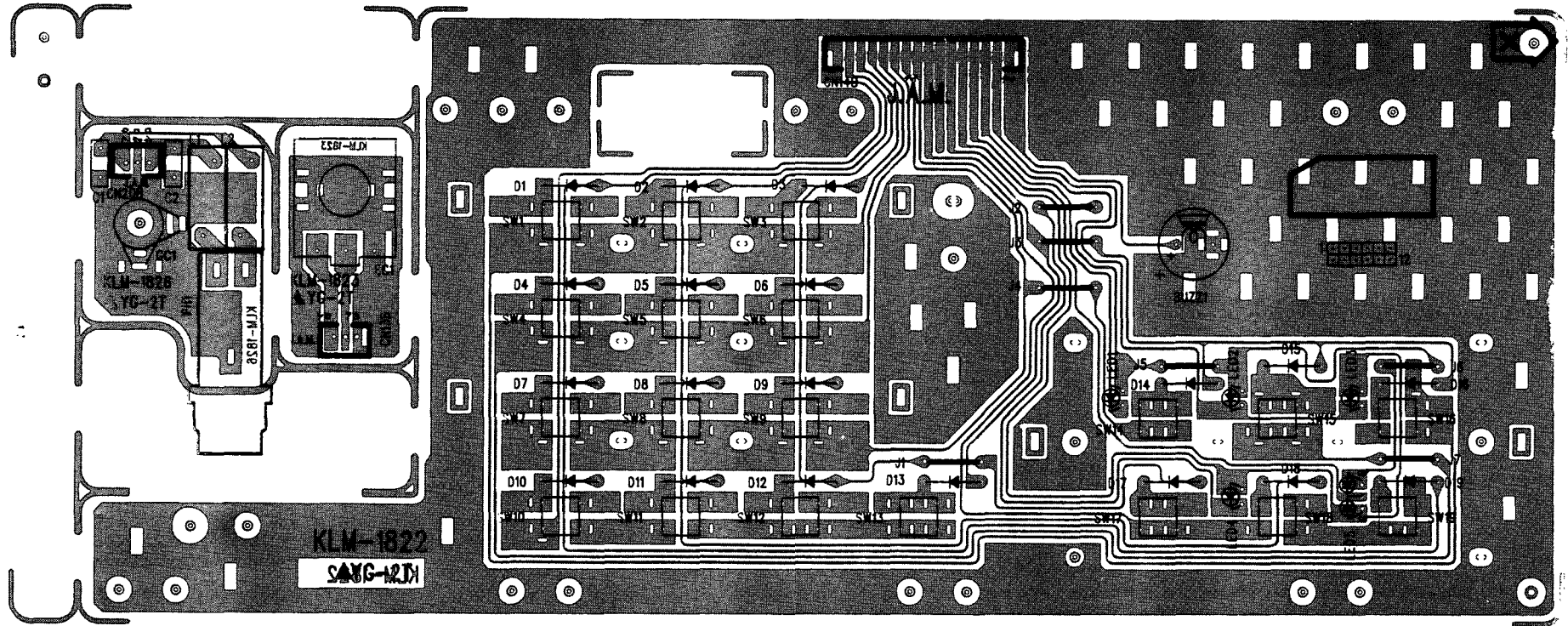
COMPONENT SIDE

# KLM-1825

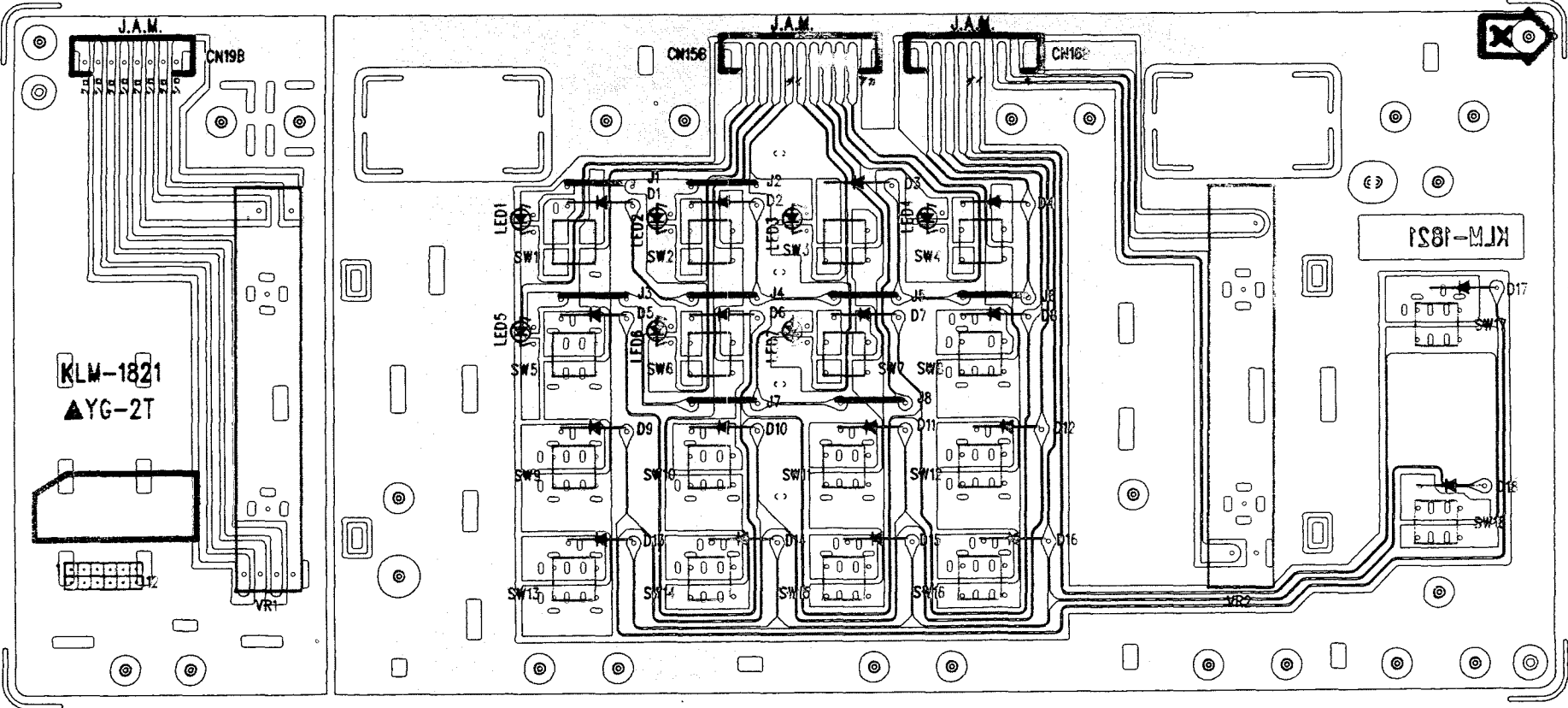




KLM-1822/1823/1826

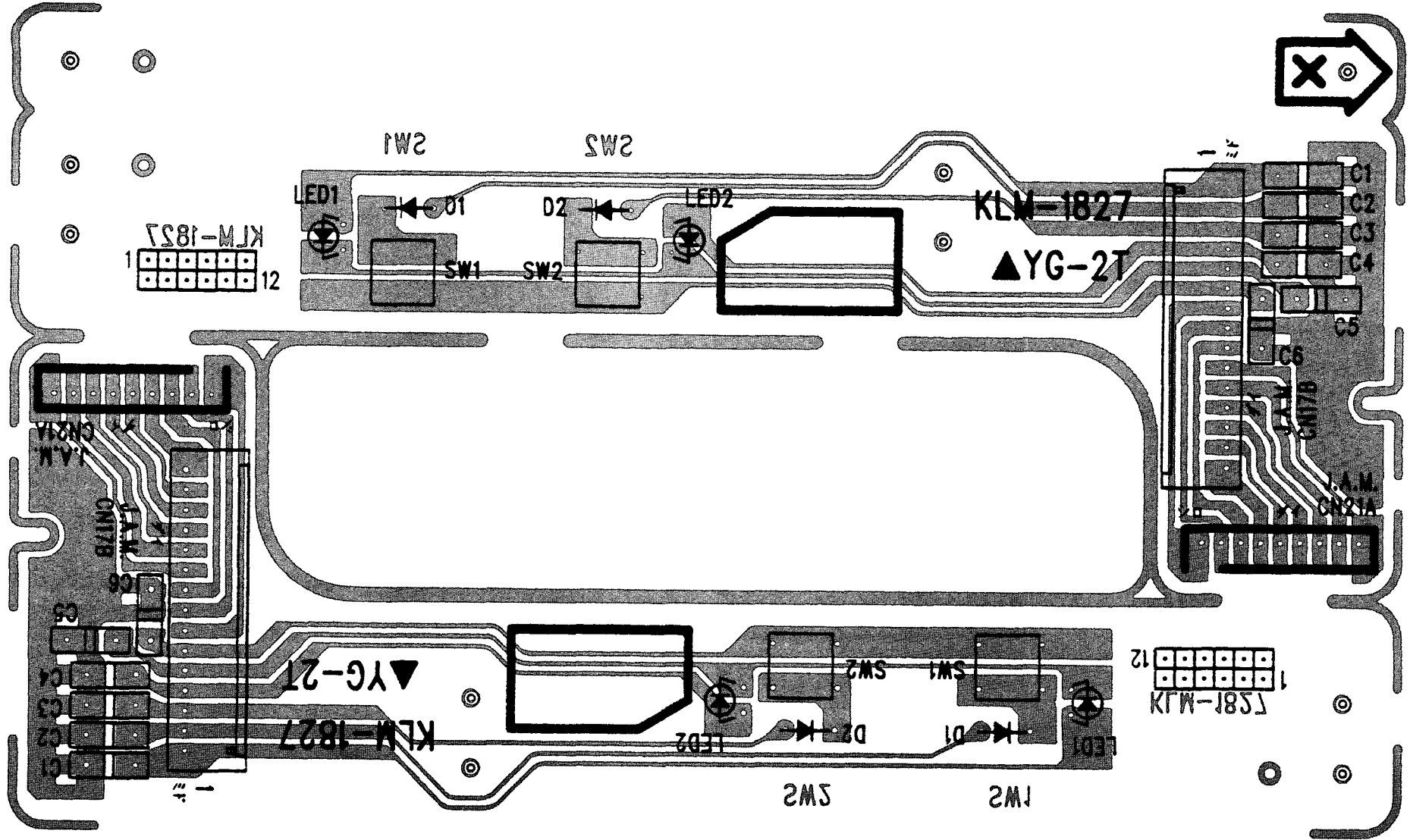


KLM-1821

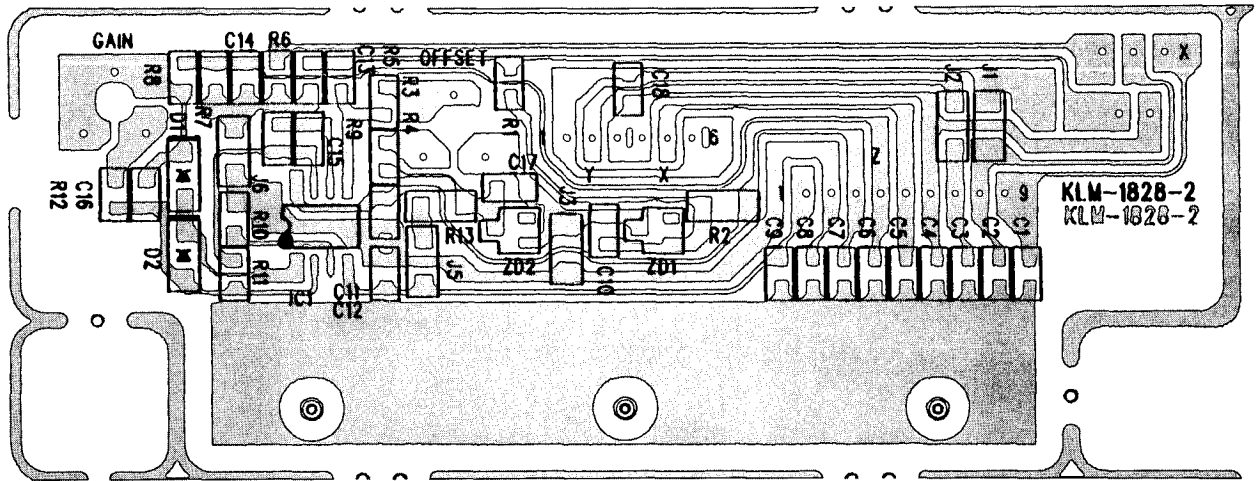




# KLM-1827

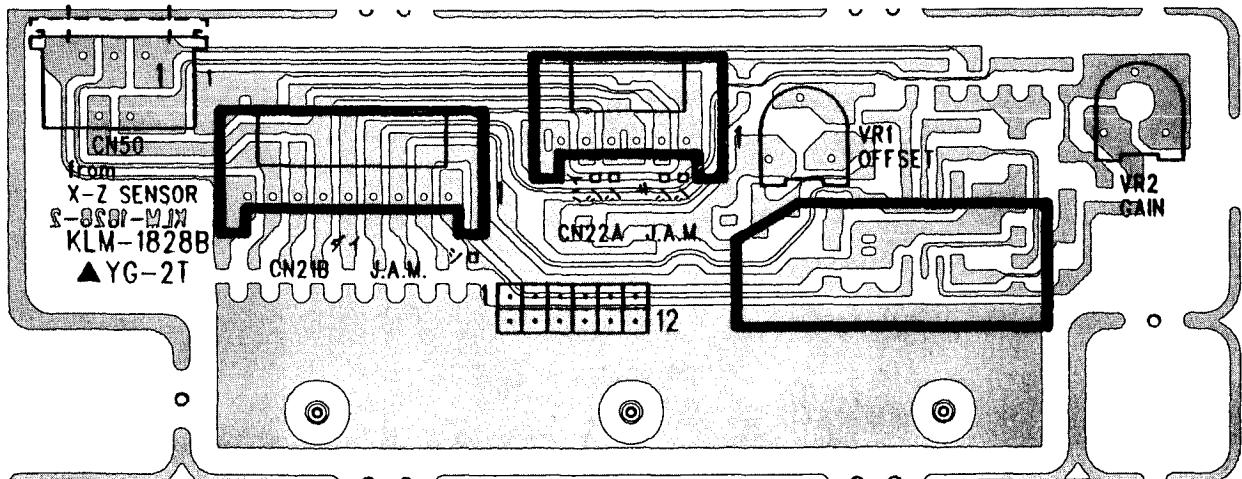


# KLM-1828



SOLDERING SIDE

# KLM-1828



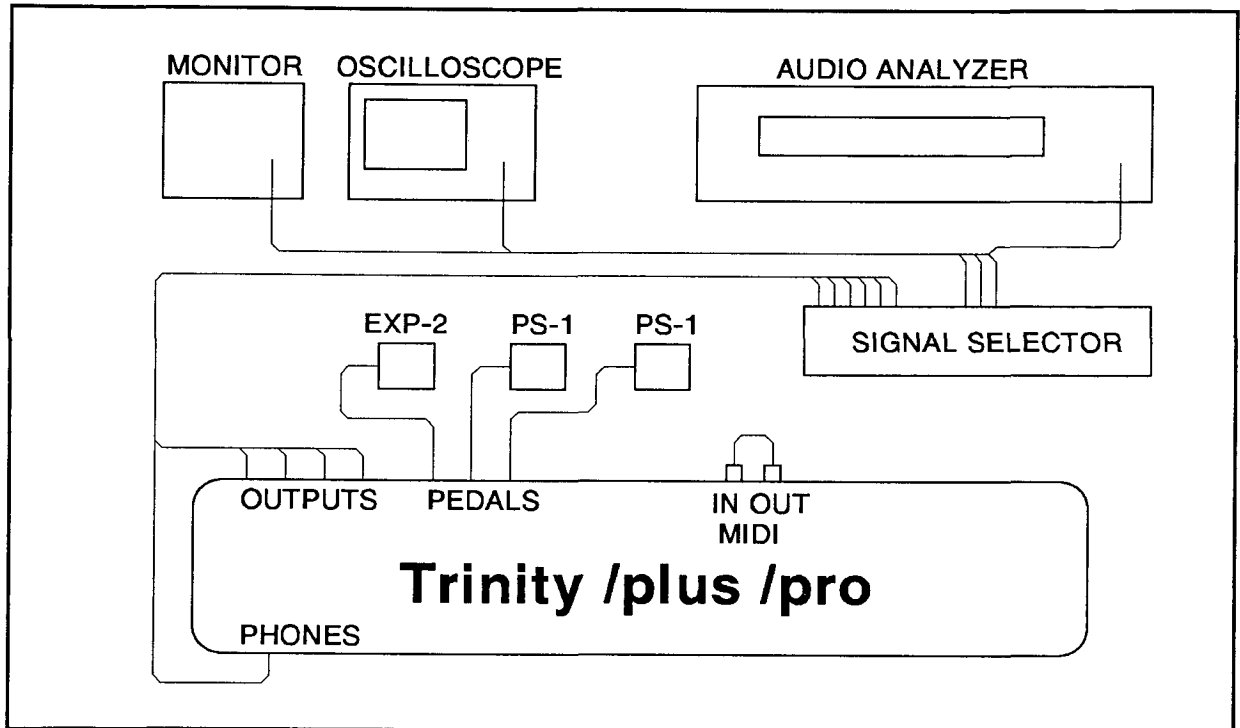
COMPONENT SIDE

# 7. TEST MODE

## ☆ Before entering the test mode

Each Trinity has a test mode for checking various functions. When entering the test mode, the internal data of the Trinity is initialized. Hence, if the Trinity contains any necessary data, save this data to a floppy disk before starting the test. The figure below shows the equipment and settings required for conducting the tests.

## ☆ Standard Setup



- Connect MIDI IN to MIDI OUT with a MIDI cable.
- Insert a formatted 2HD disk (type 1.44Mbytes IBM format) into the disk drive.

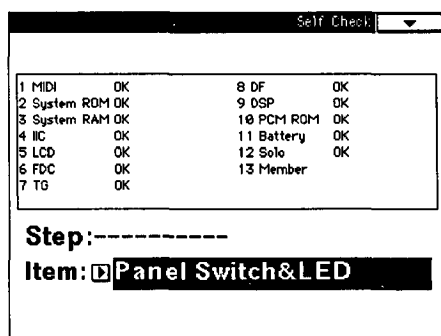
## ★ Entering Test Mode

- Turn the power switch ON while pressing both [5] and [ENTER].
- Internal tests are automatically run inside the unit when the test mode is started.

### Internal test items

- MIDI Check
- System ROM CheckSum
- System RAM Check
- IIC I/F Check
- LCD I/F Check
- FDC I/F Check
- TG I/F Check
- DF I/F Check
- DSP I/F Check
- PCM ROM Verify
- Internal battery Check
- Solo board Check (Trinity plus & pro only)

- When the internal test is completed, each test result is indicated on the LCD screen.
- Confirm that all results are 'OK' and press [START/STOP] to proceed to the external test.



### ★ External test

#### ○ Switch operating specifications

- [START/STOP] : Advances the test step
- [VALUE+] : Advances the test item
- [VALUE-] : Returns the test item

#### ○ External test item 1

<Panel Switch & LED Check> External Test#1

- ※ Set a floppy disk in the FDD before starting the test mode.

#### STEP1 All LED On

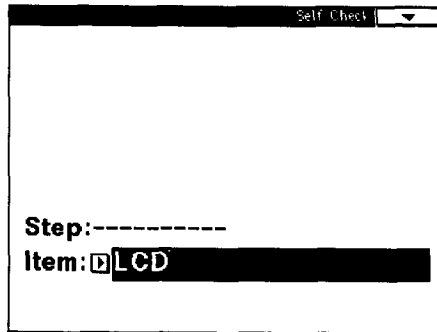
- Confirm that all the LEDs are lit (including the access lamp for the FDD) and press [START/STOP] to proceed to the next step.

#### STEP2 Switch

- Press the switches according to the sequence indicated on the LCD screen.
- Check that the LED of the switch to be pressed next is lit.
- Upon completing the testing of all the switches, proceed to the next test item.

○External test item 2  
<LCD Check>

External Test#2



STEP1 All dots ON

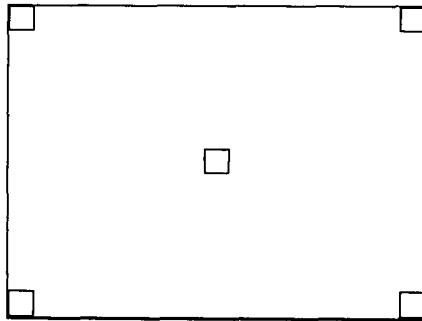
- Press [START/STOP].
- Confirm that all dots of the LCD are lit and press [START/STOP] to proceed to the next step.

STEP2 All dots OFF

- Confirm that the LCD screen is completely blank and press [START/STOP] to proceed to the next step.

STEP3 Touch-panel check

- Confirm that the indication change '□' to '■' when '□' on the LCD screen is pressed.
- Press [START/STOP] to proceed to the next step.

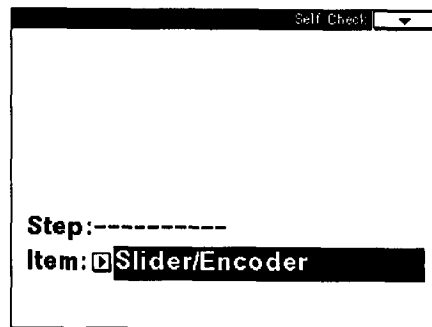


STEP4 Buzzer ON

- Confirm that the buzzer sound is output from the LCD nearby.
- Press [START/STOP] to proceed to the next test item.

○External test item 3  
<Slider/Encoder Check>

External Test#3



**STEP1 Slider/Encoder**

- Press [START/STOP].
- Operate the slider to MIN and then to MAX to check that the minimum value(0) and maximum value(127) are displayed.
- Confirm that 'OK' is displayed upon reach at MAX, CENTER and MIN.
- Turn the rotary encoder and bring the finger hook to the top position and press [START/STOP] to initialize to the position value.
- Turn the rotary encoder clockwise slowly.
- Confirm that 'OK' is displayed upon reach at the counter value '+96'.
- Press [ENTER] and turn the rotary encoder counterclockwise slowly.
- Confirm that 'OK' is displayed upon reach at the counter value '-96'.
- Press [START/STOP] to proceed to the next step.

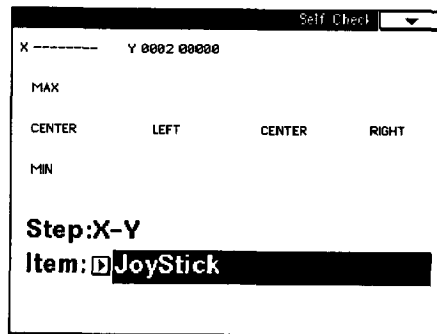
**STEP2 Pedal**

- Operate the pedal to MIN and then to MAX to check that the minimum value(0) and maximum value(127) are displayed.
- Confirm that 'OK' is displayed upon reach at MAX, CENTER and MIN.
- Confirm that the indication change OFF to ON when the Assignable switch is pressed.
- Confirm that the indication change 'OFF' to 'ON' when the Sustain switch is pressed.
- Press [START/STOP] to proceed to the next item.

○External test item 4  
<Joystick Check>

External Test#4

- ※ Make calibration of the joystick in this test.  
When the system software is updated or VR of the joystick is replaced,  
always run this test.



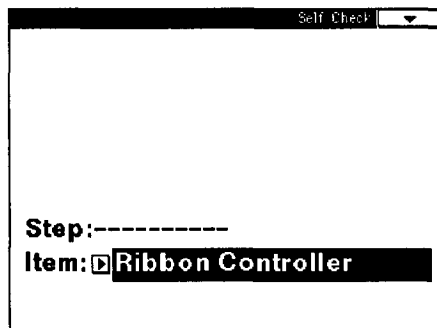
STEP1 X-Y

- Press [START/STOP].
- Operate the joystick to MIN and then to MAX to confirm that the minimum value(0) and maximum value(127) are displayed.
- Confirm that 'OK' is displayed upon reach at MAX, CENTER and MIN.
- Press [START/STOP] to proceed to the next item.

○External test item 5  
<Ribbon controller check>

External Test#5

- ※ Make calibration of the ribbon controller in this test.  
When the system software is updated or X-Z sensor of the ribbon controller  
is replaced, always run this test.



STEP1 X-Z

- Press [START/STOP].
- Press the left hand end of the ribbon controller.
- Confirm that 'OK' is displayed upon reach at MAX, CENTER and MIN.
- Confirm likewise the center and the right hand end.
- Operate the ribbon controller to the left and then to the right to confirm that the minimum value(0) and maximum value(127) are displayed.
- Press [START/STOP] to proceed to the next item.

○External test item 6  
<Keyboard & Aftertouch Check>

External Test#6



STEP1 Keyboard

- Press [START/STOP].
- Press all the keys from the top note downward as indicated on the LCD screen.
- Confirm that the velocity sense is normal.
- Upon completing the pressing of the lowest note, proceed to the next step.

STEP2 Aftertouch

- Press any key and confirm that the value changes smoothly.
- Confirm that 'OK' is displayed upon reach at MAX, CENTER and MIN.
- Press [START/STOP] to proceed to the next item.

○External test item 7  
<DSP Check>

External Test#7

- ※ Measure the MASTER VOLUME in MAX state.  
Measure it with the plug inserted to OUTPUT1/MONO.



STEP1 DSP1

- Press [START/STOP].
- Confirm the DSP1(IC26) test waveform (Fig.1) using an oscilloscope.

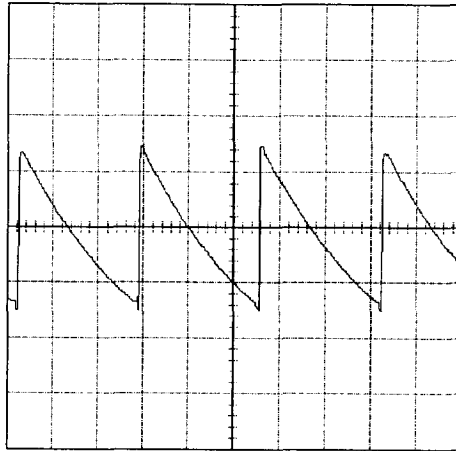
STEP2 DSP2

- Press [START/STOP].
- Confirm the DSP2(IC32) test waveform (Fig.1) using an oscilloscope.



**STEP3 DSP3**

- Press [START/STOP].
- Confirm the DSP3(IC38) test waveform using an oscilloscope.
- Press [START/STOP] to proceed to the next item.

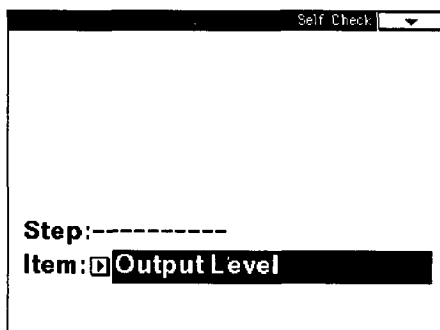


**DSP TEST WAVEFORM**

○External test item 8  
<Output Level Check>

**External Test#8**

- ※ Measure the PHONE-L, PHONE-R under a load of 32 ohms.  
Measure by turning the master volume to MAX.  
Measure both OUTPUT1/MONO, OUTPUT2, OUTPUT3, OUTPUT4, PHONE-L  
and PHONE-R with the plug inserted.

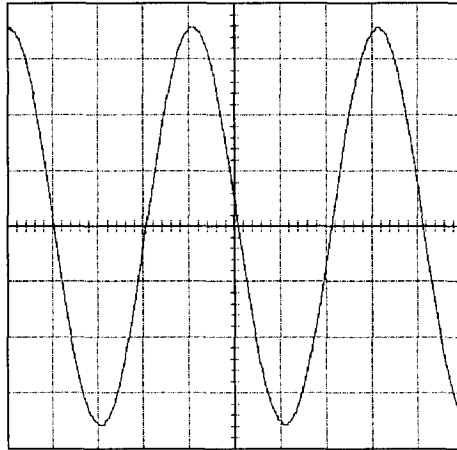


- Press [START/STOP].
- Measure the output level of OUTPUT1/MONO.
- Confirm that it is within the test range indicated in the table below and the output frequency is normal.
- Confirm that the observed waveform is sinusoidal without distortion as shown in Figure.
- Press [START/STOP] and confirm likewise OUTPUT2, OUTPUT3, OUTPUT4, PHONE-L and PHONE-R.

- Output level test range

	Output signal level	Frq.
OUTPUT1	15.00 dBu ~ 18.00 dBu	493 Hz
OUTPUT2	15.00 dBu ~ 18.00 dBu	415 Hz
OUTPUT3	15.00 dBu ~ 18.00 dBu	554 Hz
OUTPUT4	15.00 dBu ~ 18.00 dBu	622 Hz
PHONE-L	3.00 dBu ~ 5.50 dBu	246 Hz
PHONE-R	3.00 dBu ~ 5.50 dBu	207 Hz

- Press [START/STOP] and proceed to the next item.

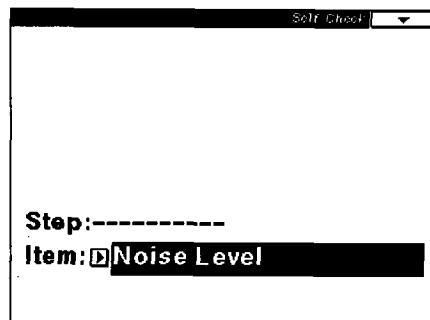


OUTPUT LEVEL TEST WAVEFORM

- External test item 9  
<Noise Level Check>

External Test#9

- ※ Measure the PHONE-L, PHONE-R under a load of 32 ohms.  
Measure by turning the master volume to MAX.  
Measure all OUTPUT1/MONO, OUTPUT2, OUTPUT3, OUTPUT4, PHONE-L  
and PHONE-R with the plug inserted.



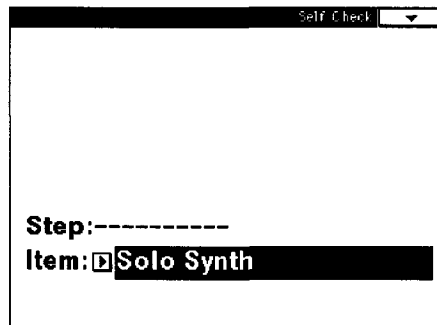
- Measure the noise level of OUTPUT1/MONO.
- Confirm that the level is within the test range as indicated in the table below.
- Confirm that the output waveform level is 0 with an oscilloscope.
- Press [START/STOP] and confirm OUTPUT2, OUTPUT3, OUTPUT4, PHONE-L and PHONE-R likewise.
- Press [START/STOP] and proceed to the next item.

- Noise level test range

	Output signal level
OUTPUT1	less than -85.00 dBu
OUTPUT2	less than -85.00 dBu
OUTPUT3	less than -85.00 dBu
OUTPUT4	less than -85.00 dBu
PHONE-L	less than -90.00 dBu
PHONE-R	less than -90.00 dBu

○External test item 10 (Trinity plus & pro only)  
 <Solo Synth Check> External Test#11

- ※ Measure the MASTER VOLUME in MAX state.  
 Measure it with the plug inserted to OUTPUT1 and 2.



**STEP1 DSP1 Wave**

- Press [START/STOP].
- Confirm the DSP1(IC6) test waveform using an oscilloscope.

**STEP2 DSP2 Wave**

- Press [START/STOP].
- Confirm the DSP2(IC7) test waveform using an oscilloscope.

**STEP3 DSP3 Wave**

- Press [START/STOP].
- Confirm the DSP3(IC8) test waveform using an oscilloscope.
- Press [START/STOP] to proceed to the next item.

**STEP4 DSP1 Prog**

- Press [START/STOP].
- Confirm the DSP1(IC9, IC10) test waveform using an oscilloscope.

**STEP5 DSP3 Prog**

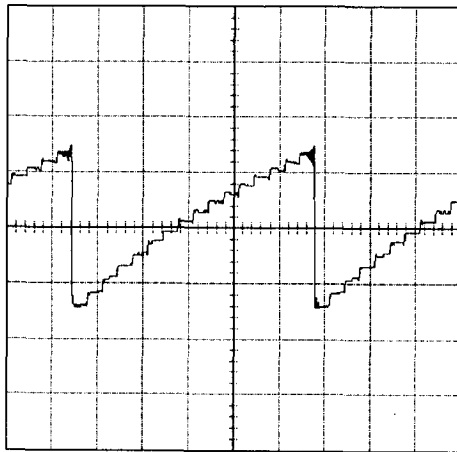
- Press [START/STOP].
- Confirm the DSP3(IC11, IC12) test waveform using an oscilloscope.
- Press [START/STOP] to proceed to the next item.

**STEP6&7 Output L, R**

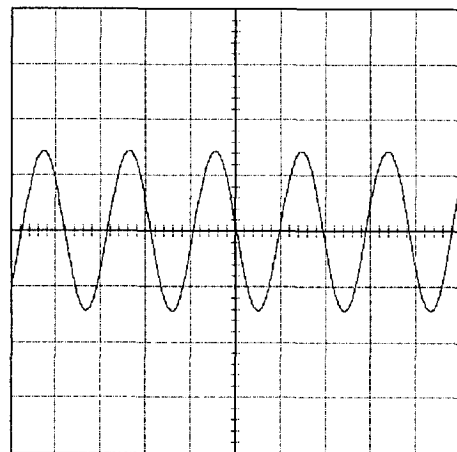
- Press [START/STOP].
- Confirm each output test waveform using an oscilloscope.

**STEP8&9 Noise L, R**

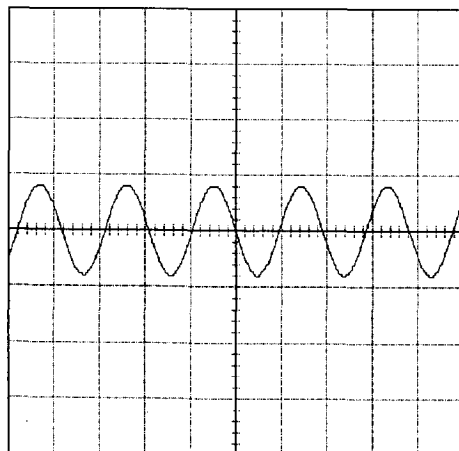
- Press [START/STOP].
- Measure each output noise level using an audio analyzer.
- Press [START/STOP] to proceed to the next item.



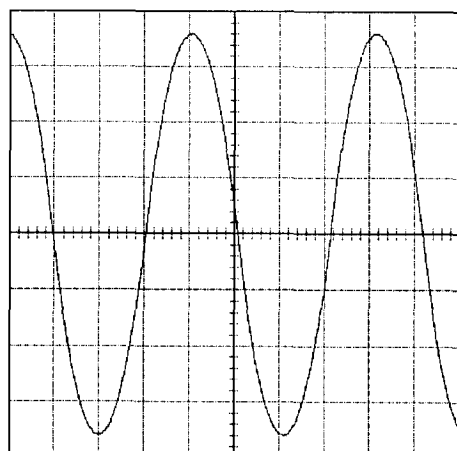
**DSP1-3 TEST WAVEFORM (Wave)**



**DSP1 TEST WAVEFORM (Prog)**



**DSP3 TEST WAVEFORM (Prog)**

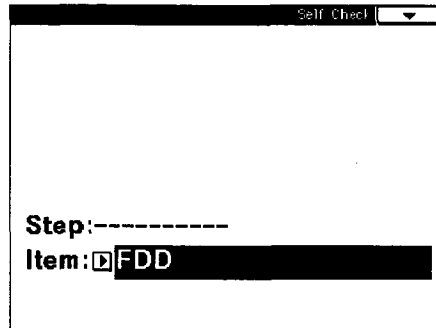


**OUTPUT TEST WAVEFORM (L, R)**

○External test item 11  
<FDD Check & Preload>

External Test#11

- ※ This item is a simplified test for using 2DD disk.  
In case of the full test, press [VALUE+] to proceed to 'External FDD Check'.



STEP1 2DD Tiny

- Press [START/STOP].
- Confirm that 'Please change to 2DD's disk' is displayed on the LCD screen.
- Press the eject button and change the disk 2HD to 2DD formatted by Trinity.
- The 2DD tiny test starts automatically when the disk is set correctly.
- Confirm that 'OK' is displayed on the LCD screen when the FDD test finishes correctly.
- End the test mode by turning the power off.

○External test item 12  
<External FDD Check>

External Test#12



- Select the disk type '2HD' with [REW] or [FF].
- Set the 2HD disk formatted by Trinity and press [START/STOP] to start the test.
- Confirm that 'OK' is displayed on the LCD screen when the FDD test finishes correctly.
- End the test mode by turning the power off.

☆ **How to update the system software**

Each Trinity has an installation mode for updating the system software. When entering the installation mode, the internal data of the Trinity is initialized. Hence, if the Trinity contains any necessary data, save this data into a floppy disk before updating. Also, the joystick and ribbon controller calibration tables are initialized, so adjust each calibration with the test mode after the updating.

1. Turn the power on while pressing [ENTER] and [RESET], then 'please insert boot disk' is displayed on the LCD screen.
2. Insert the System Boot Disk No.1, then the system installation starts automatically.
3. The following messages are displayed on the LCD screen during the installation.

```
'Now loading IPL'  
↓  
'Now loading a SYSINFO2.KRG file'  
↓  
'WARNING!! Don't touch me.'  
↓  
'Now erasing ROM'  
↓  
'Now loading #####.000 file'
```

4. Change the disk to the System Boot Disk No.2 when 'Please change to a No.002 disk' is displayed on the LCD screen.

```
'Now loading #####.001 file'
```

5. The following messages are displayed on the LCD screen when the installation is completed and the system restarts automatically.

```
'Now checking a system's check sum'  
'System load completed'
```

**!!! MOST IMPORTANT!!!**

**YOU MUST NOT SHUT YOUR Trinity DOWN WHILE 'WARNING!! Don't touch me' IS DISPLAYED ON THE LCD SCREEN. IF THE POWER IS KILLED AT THIS TIME, THE SYSTEM WILL NEVER WORK AGAIN.**

If the following error occurs while installing the system, retry all the steps above, including making 2 system disks with different blank disks.

```
'This SYSINFO2.KRG is a false file'  
'File was not found'  
'File type error(Size or Check sum)'  
'This disk isn't the DOS format'  
'Read failed'
```

If you still have errors or problems, please contact with KORG service department.

# 8. REFERENCE DATA

## P.C.BOARDS

KLM-1755	:	INVERTER P.C.BOARD
KLM-1820	:	MAIN P.C.BOARD
KLM-1821	:	PANEL-L P.C.BOARD
KLM-1822	:	PANEL-R P.C.BOARD
KLM-1823	:	ROTARY ENCODER P.C.BOARD
KLM-1826	:	HEADPHONE P.C.BOARD
KLM-1825	:	DAC&JACK P.C.BOARD
KLM-1827	:	SWITCH P.C.BOARD
KLM-1828	:	RIBBON P.C.BOARD

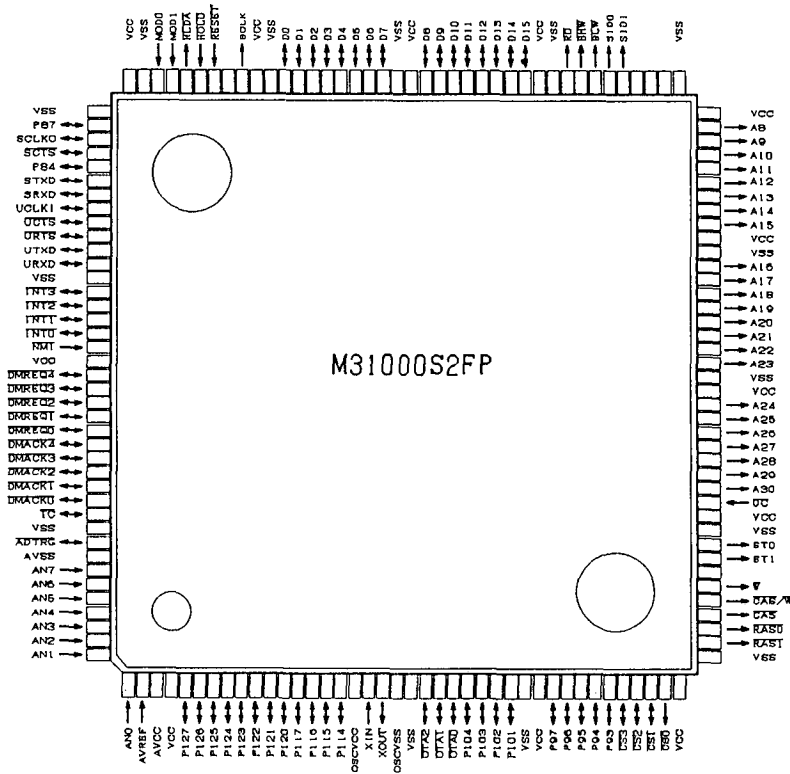
## OPTION BOARDS

KLM-1837	:	HARD DISK RECOER P.C.BOARD
KLM-1838	:	SCSI P.C.BOARD
KLM-1839	:	SOLO SYNTH. P.C.BOARD
※ Trinity	plus	and Trinity pro are installed this one.
KLM-1840	:	ALESIS P.C.BOARD
KLM-1884	:	FLASH ROM P.C.BOARD

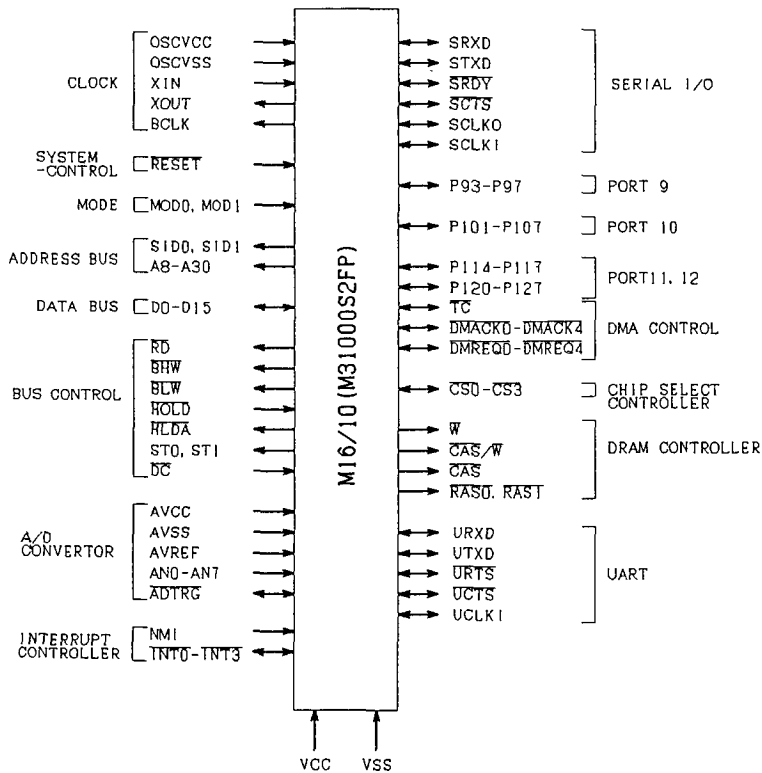
## MAIN ICs

UART	:	UPD71051GB-3B4
FDC	:	UPD72070GF-3B9
IIC	:	MBCG24143-4179PF-G-L
LCTC	:	SED1351F0A
CPU	:	M31000S2FP
PLL	:	TLC2932
DF93	:	MBCE31751-030PF-G
TG92	:	MBCE31751-021PF-G
DSP	:	MN19412A
RESET	:	M62021FP-600C
		M51951AML-600C
NKS2	:	HD6433332A0F
FLASH ROMs	:	MBM29F080A-12PF-FJ
SRAMs	:	UPD43256GU-55L-E2 or M5M5256CFP-55L (256K)
		M5M51008AFP-70L-TT4 or UPD431000AGW-70L-E2
		or UPD431000AGW-85L-E2 (1M)
DRAMs	:	HM514800CJ6 (512K x 8)
		LH64246BK-80 or TC514256AJ-70-EL
		or MB81C4256A-70PJ-G-EF (256K x 4)
WAVE ROMs	:	MX23C3210MC-15 X311-00 (32M MASK ROM)
		MX23C3210MC-15 X311-10 (32M MASK ROM)
		MX23C3210MC-15 X311-20 (32M MASK ROM)
		MX23C3210MC-15 X311-30 (32M MASK ROM)
		MX23C3210MC-15 X311-40 (32M MASK ROM)
		MX23C3210MC-15 X311-50 (32M MASK ROM)

## M3100S2FP (CPU) PIN ASSIGNMENT



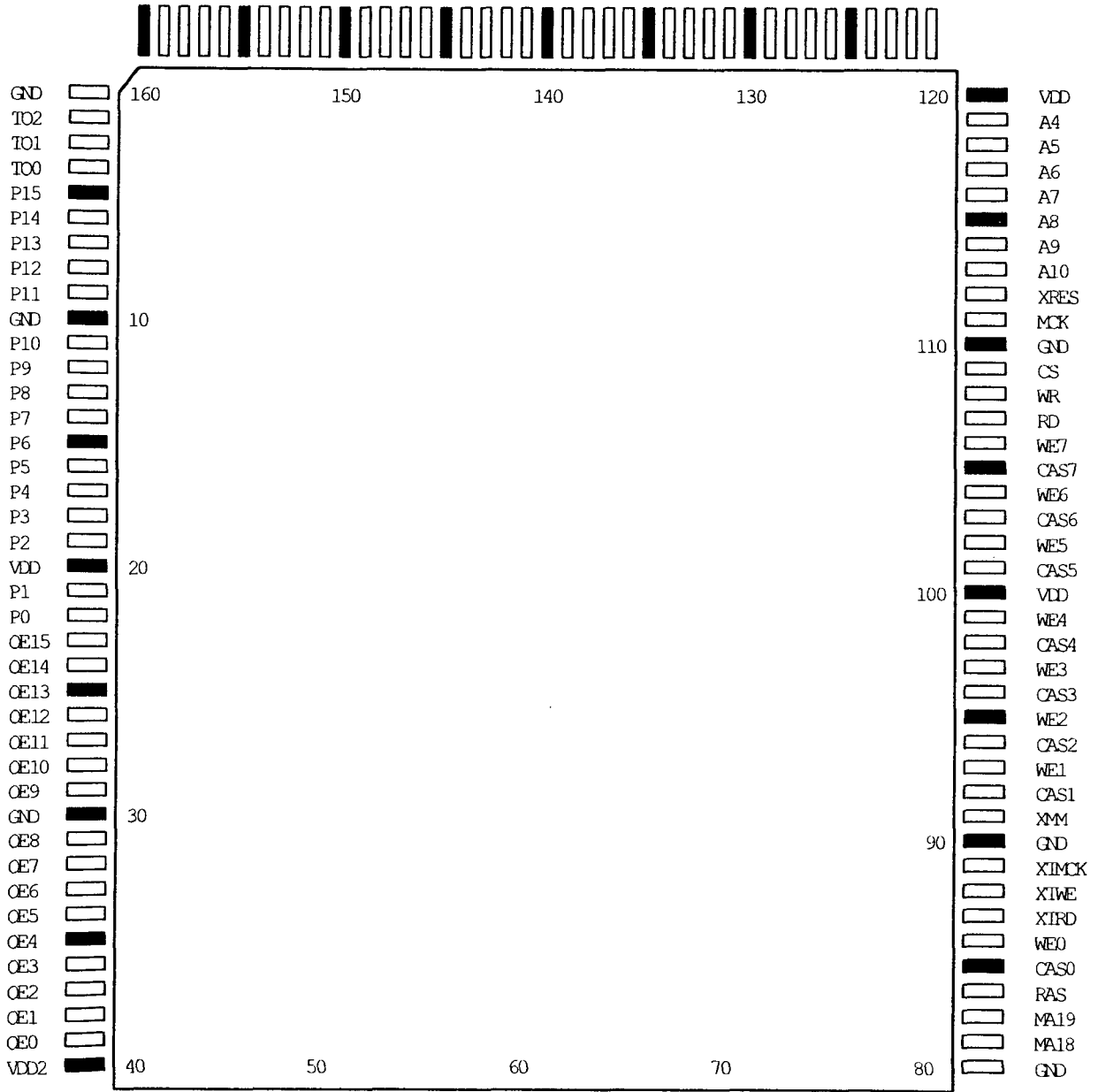
## M3100S2FP (CPU) PIN FUNCTIONS





**MBCE31751-021PF-G (TG92) PIN ASSIGNMENT**

VTTTTTTTTTGTTSDDDDVGGDDDDDDDDGDDDDAAAAG  
 D000000000N0000Y0123DN45678911N11110123N  
 D345678911D1111N DD 01D2345 D  
 01 2345C



GMMMMMMMGMMMMMMMGVMMMMMMMGMMMMMMMV  
 NAADADADANDADADADANDADADADADNADADADADAD  
 D01113142D11132154DD911511668D117097118D  
 61 5 042 3 23 1 04 75



122	A3	I	}	: ADDRESS(11bit)	→ from CPU			
123	A2	I						
124	A1	I						
125	A0	I						
126	D15	B	}	: DATA(16bit)	→ from CPU			
127	D14	B						
128	D13	B						
129	D12	B						
130	GND	-	}	: 0V				
131	D11	B						
132	D10	B						
133	D9	B						
134	D8	B	}	: DATA(16bit)	→ from CPU			
135	D7	B						
136	D6	B						
137	D5	B						
138	D4	B	}	: 0V				
139	GND	-						
140	VDD	-				}	: +5V	
141	D3	B						
142	D2	B						
143	D1	B						
144	D0	B	}	: DATA(16bit)	→ from CPU			
145	SYNC	B						
146	TO15	O						
147	TO14	O						
148	TO13	O	}	: SYNC SIG.	→ NC			
149	TO12	O						
150	GND	-						
151	TO11	O						
152	TO10	O	}	: TG OUT(16bit)	→ to DF93			
153	TO9	O						
154	TO8	O						
155	TO7	O						
156	TO6	O	}	: TG OUT(16bit)	→ to DF93			
157	TO5	O						
158	TO4	O						
159	TO3	O						
160	VDD	-		: +5V				

**MBCE31751-030PF-G (DF93) PIN ASSIGNMENT**

M M NNN SBLXSBL XXXXXX  
 VGCGCG...TVMGDCRITDCRVXMMMMTT V A V  
 DNKNKNC CCOsCNIIICOOODMSSSSWRWRsC1AAAAAAs  
 DDIDOD...5sKD999K000DM3210EERDsS0987654s

- Vss 121
- RESET 122
- XIRE1 123
- SDI0 124
- ECI0 125
- LRI0 126
- SDO1 127
- TO0 128
- TO1 129
- Vss 130
- SDI1 131
- ECI1 132
- LRI1 133
- SDO2 134
- ECO2 135
- LRO2 136
- SDI2 137
- ECI2 138
- Vss 139
- VDD 140
- LRI2 141
- SDO3 142
- TO2 143
- TO3 144
- SDI3 145
- ECI3 146
- LRI3 147
- SDO4 148
- SDI10 149
- Vss 150
- ECI10 151
- LRI10 152
- SDI4 153
- ECI4 154
- LRI4 155
- SDO5 156
- ECO4 157
- LRO4 158
- SDI5 159
- VDD 160



- 80 VDD
- 79 A3
- 78 A2
- 77 A1
- 76 A0
- 75 D15
- 74 D14
- 73 D13
- 72 D12
- 71 D11
- 70 Vss
- 69 D10
- 68 D9
- 67 D8
- 66 D7
- 65 D6
- 64 D5
- 63 D4
- 62 D3
- 61 D2
- 60 VDD
- 59 Vss
- 58 D1
- 57 D0
- 56 N.C.
- 55 DI15
- 54 DI14
- 53 DI13
- 52 DI12
- 51 DI11
- 50 Vss
- 49 DI10
- 48 DI9
- 47 DI8
- 46 DI7
- 45 DI6
- 44 DI5
- 43 DI4
- 42 DI3
- 41 Vss

1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39  
 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40

V B L S B L S B L V S B L S B L D D D V G D D D D D D D V D D D D D T D D D V  
 s C R D C R D C R s D C R D C R O O O D N O O O O O O O s O O O O O O I I I D  
 s I I O O O I I I s I I I I I I I D D I I I 9 8 7 6 5 s 4 3 2 1 0 4 0 1 2 D  
 5 5 6 6 6 6 6 6 7 7 7 8 8 8 5 4 3 2 1 0

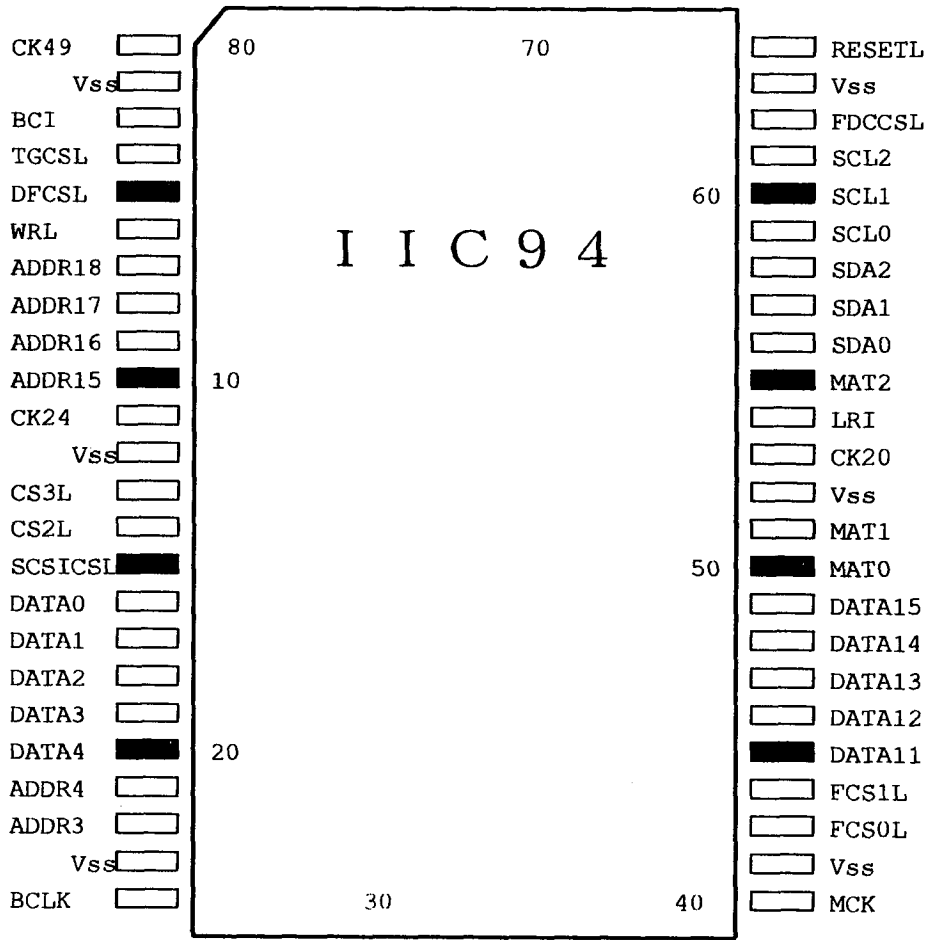
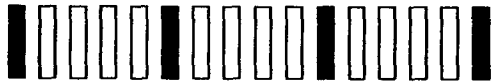
# MBCE31751-030PF-G (DF93) PIN FUNCTIONS

NO.	NAME	I/O							
1	GND	-	: 0V						
2	BCI5	I	: BIT CLOCK	→ from HDREC	61	D2	B		
3	LRI5	I	: LR CLOCK	→ "	62	D3	B		
4	SDO6	O	: SERIAL DATA	→ to MONO SYNTH	63	D4	B		
5	BCO6	O	: BIT CLOCK	→ "	64	D5	B		
6	LRO6	O	: LR CLOCK	→ "	65	D6	B	: DATA (16bit)	→ from CPU
7	SDI6	I	: SERIAL DATA	→ from MONO SYNTH	66	D7	B		
8	BCI6	I	: BIT CLOCK	→ "	67	D8	B		
9	LRI6	I	: LR CLOCK	→ "	68	D9	B		
10	GND	-	: 0V		69	D10	B		
11	SDI7	I	: SERIAL CLOCK	→ from DSP	70	GND	-	: 0V	
12	BCI7	I	: BIT CLOCK	→ "	71	D11	B		
13	LRI7	I	: LR CLOCK	→ "	72	D12	B		
14	SDI8	I	: SERIAL DATA	→ "	73	D13	B	: DATA (16bit)	→ from CPU
15	BCI8	I	: BIT CLOCK	→ "	74	D14	B		
16	LRI8	I	: LR CLOCK	→ "	75	D15	B		
17	DO15	O	: DF OUT (16bit)	→ PARAREL OUT/voice	76	A0	I	: ADDRESS (11bit)	→ from CPU
18	DO14	O							
19	DO13	O							
20	VDD	-	: +5V		77	A1	I		
21	GND	-	: 0V		78	A2	I		
22	DO12	O	: DF OUT (16bit)	→ PARAREL OUT/voice	79	A3	I		
23	DO11	O							
24	DO10	O							
25	DO9	O							
26	DO8	O							
27	DO7	O							
28	DO6	O			80	VDD	-	: +5V	
29	DO5	O			81	GND	-	: 0V	
30	GND	-	: 0V		82	A4	I	: ADDRESS (11bit)	→ from CPU
31	DO4	O							
32	DO3	O							
33	DO2	O	: DF OUT (16bit)	→ PARAREL OUT/voice	83	A5	I		
34	DO1	O							
35	DO0	O							
36	TO4	O	: TEST PIN	→ N.C.	84	A6	I		
37	DI0	I	: PARAREL DATA (16bit)	→ from TG92	85	A7	I		
38	DI1	I							
39	DI2	I							
40	VDD	-			: +5V		86	A8	I
41	GND	-	: 0V		87	A9	I		
42	DI3	I	: PARAREL DATA (16bit)	→ from TG92	88	A10	I		
43	DI4	I							
44	DI5	I							
45	DI6	I							
46	DI7	I							
47	DI8	I							
48	DI9	I							
49	DI10	I			89	CS	I	: CHIP SELECT SIG.	→ from CPU
50	GND	-	: 0V		90	GND	-	: 0V	
51	DI11	I	: PARAREL DATA (16bit)	→ from TG92	91	RD	I	: READ SIG.	→ from CPU
52	DI12	I							
53	DI13	I							
54	DI14	I							
55	DI15	I							
56	N.C.	-			92	WR	I	: WRITE SIG.	→ "
57	DO	B	: DATA (16bit)	→ from CPU	93	XTRE	I	: TEST PIN	→ +5V
58	D1	B	: "	→ "	94	XIWE	I	: "	→ +5V
59	GND	-	: 0V		95	XMS0	I	: "	→ 0V or +5V
60	VDD	-	: +5V		96	XMS1	I	: "	→ "
					97	XMS2	I	: "	→ "
					98	XMS3	I	: "	→ "
					99	XMM	I	: "	→ +5V
					100	VDD	-	: +5V	
					101	LRO0	O	: LR CLOCK	→ to DSP
					102	BCO0	O	: BIT CLOCK	→ "
					103	SDO0	O	: SERIAL DATA	→ "
					104	XTCK	I	: TEST PIN	→ 0V
					105	LRI9	I	: LR CLOCK	→ from DSP
					106	BCI9	I	: BIT CLOCK	→ "
					107	SDI9	I	: SERIAL DATA	→ "
					108	GND	-	: 0V	
					109	MCK	I	: MASTER CLOCK (50MHz)	
					110	GND	-	: 0V	
					111	TO5	O	: TEST PIN	→ N.C.
					112	N.C.	-		
					113	N.C.	-		
					114	N.C.	-	: 0V	
					115	GND	-		
					116	MCKO	O	: BUFFER OUT	→ to TG92-MCK, DF93-MCK
					117	GND	-	: 0V	
					118	MCKI	I	: CLOCK (50MHz)	
					119	GND	-	: 0V	
					120	VDD	-	: +5V	
					121	GND	-	: 0V	

122	RESET	I	: RESET SIG.	
123	XTRE1	I	: TEST PIN	→ +5V
124	SDI0	I	: SERIAL DATA	→ from RAMREC
125	BCI0	I	: BIT CLOCK	→ "
126	LRI0	I	: LR CLOCK	→ "
127	SDO1	O	: SERIAL DATA	→ to DSP
128	TO0	O	: TEST PIN	→ N.C.
129	TO1	O	: TEST PIN	→ N.C.
130	GND	-	: 0V	
131	SDI1	I	: SERIAL DATA	→ from HDREC
132	BCI1	I	: BIT CLOCK	→ "
133	LRI1	I	: LR CLOCK	→ "
134	SDO2	O	: SERIAL DATA	→ to DSP
135	BCO2	O	: BIT CLOCK	→ "
136	LRO2	O	: LR CLOCK	→ "
137	SDI2	I	: SERIAL DATA	→ from HDREC
138	BCI2	I	: BIT CLOCK	→ "
139	GND	-	: 0V	
140	VDD	-	: +5V	
141	LRI2	I	: LR CLOCK	→ from HDREC
142	SDO3	O	: SERIAL DATA	→ to DSP
143	TO2	O	: TEST PIN	→ N.C.
144	TO3	O	: TEST PIN	→ N.C.
145	SDI3	I	: SERIAL DATA	→ from RAMREC
146	BCI3	I	: BIT CLOCK	→ "
147	LRI3	I	: LR CLOCK	→ "
148	SDO4	O	: SERIAL DATA	→ to DSP
149	SDI10	I	: SERIAL DATA	→ from DSP
150	GND	-	: 0V	
151	BCI10	I	: BIT CLOCK	→ from DSP
152	LRI10	I	: LR CLOCK	→ "
153	SDI4	I	: SERIAL DATA	→ from HDREC
154	BCI4	I	: BIT CLOCK	→ "
155	LRI4	I	: LR CLOCK	→ "
156	SDO5	O	: SERIAL DATA	→ to DSP
157	BCO4	O	: BIT CLOCK	→ "
158	LRO4	O	: LR CLOCK	→ "
159	SDI5	I	: SERIAL DATA	→ from HDREC
160	VDD	-	: +5V	

**MBCG24143-4179PF-G-L (IIC) PIN ASSIGNMENT**

T S B L B B C R I I S B L V L  
 E D C R H L K D O O D C R R C  
 S I B B W W 1 L W R O O O A D  
 T L L 2 R D M C  
 1 V L L C C  
 d S S  
 d L L



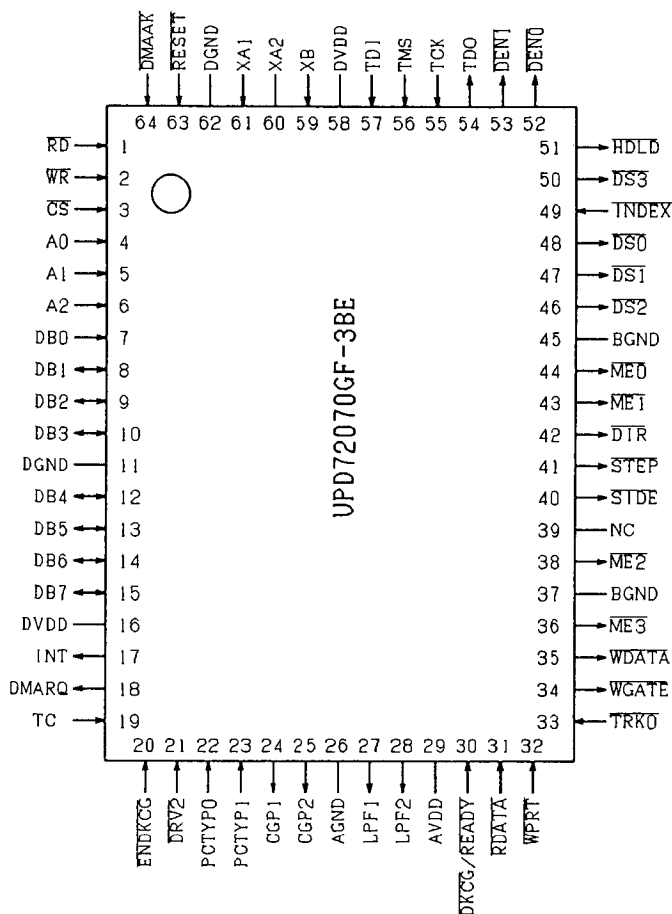
R A A A D D D S V D D D I D U T  
 E D D D A A A O d A A A N C S E  
 A D D D T T T L d T T T T L A S  
 D R R R A A A O A A A O R T  
 Y 2 1 0 5 6 7 C 8 9 1 T 0  
 L S 0 C  
 L S  
 L

## MBCG24143-4179PF-G-L (IIC) PIN FUNCTIONS

NO.	NAME	I/O					
1	CK49	I	: CLOCK IN (49.152MHz)				
2	Vss	-	: 0V				
3	BCI	I	: BIT CLOCK	→ from DF93			
4	TGCSL	O	: TG92 CHIP SELECT SIG.	→ to TG92			
5	DFCSL	O	: DF93 CHIP SELECT SIG.	→ to DF93			
6	WRL	O	: WORD DATA WRITE SIG.				
7	ADDR18	I	: ADDRESS BUS (9bit)	→ from CPU			
8	ADDR17	I					
9	ADDR16	I					
10	ADDR15	I					
11	CK24	O	: CLOCK OUT (24.576MHz)	→ to SOLO, DSPx2, CPU			
12	Vss	-	: 0V				
13	CS3L	I	: M16 CHIP SELECT 3 (peripheral)	→ from CPU			
14	CS2L	I	: M16 CHIP SELECT 2 (TG&DF)	"			
15	SCSICSL	O	: SCSI CHIP SELECT SIG.	→ to SCSI			
16	DATA0	B	: DATA BUS (16bit)	→ from CPU			
17	DATA1	B					
18	DATA2	B					
19	DATA3	B					
20	DATA4	B	:				
21	ADDR4	I	: ADDRESS BUS (9bit)	→ from CPU			
22	ADDR3	I	: "				
23	Vss	-	: 0V				
24	BCLK	I	: M16 SYSTEM CLOCK	→ from CPU			
25	READYL	I	: LCDC & VRAM READY SIG.				
26	ADDR2	I	: ADDRESS BUS (9bit)	→ from CPU			
27	ADDR1	I					
28	ADDR0	I					
29	DATA5	B	: DATA BUS (16bit)	→ from CPU			
30	DATA6	B					
31	DATA7	B					
32	SOLOCSL	O	: "				
33	Vdd	-	: 5V				
34	DATA8	B	: DATA BUS (16bit)	→ from CPU			
35	DATA9	B					
36	DATA10	B					
37	INT0	O	: "	→ to CPU			
38	DCL	O	: M16 DATA COMPLETE SIG.	→ from CPU			
39	USARTCSL	O	: USART CHIP SELECT SIG.	→ to USART			
40	TEST0	I	: TEST PIN	→ 5V			
41	MCK	I	: CLOCK IN (40MHz)				
42	Vss	-	: 0V				
43	FCS0L	O	: FREE CHIP SELECT SIG.0				
44	FCS1L	O	: FREE CHIP SELECT SIG.1				
45	DATA11	B	: DATA (16bit)	→ from CPU			
46	DATA12	B					
47	DATA13	B					
48	DATA14	B					
49	DATA15	B	:				
50	MAT0	I	: ADDRESS MATCH	→ from DSP			
51	MAT1	I	: "	"			
52	Vss	-	: 0V				
53	CK20	O	: CLOCK OUT (20MHz)	→ MKS			
54	LRI	I	: LR CLOCK	→ from DF93			
55	MAT2	I	: ADDRESS MATCH	→ from DSP			
56	SDA0	B	: IIC DATA	→ to DSP			
57	SDA1	B	: "	"			
58	SDA2	B	: "	"			
59	SCL0	O	: IIC CLOCK	"			
60	SCL1	O	: "	"			
61	SCL2	O	: IIC CLOCK	→ to DSP			
62	FDCCSL	O	: FDC CHIP SELECT SIG.	→ to FDC			
63	Vss	-	: 0V				
64	RESETL	I	: SYSTEM RESET				
65	LCDCCSL	O	: LCDC CHIP SELECT SIG.	→ to LCDC			
66	VRAMCSL	O	: VRAM(SRAM) CHIP SELECT SIG.	→ to VRAM(SRAM)			
67	LRO	O	: LR CLOCK	→ to DF93			
68	BCO	O	: BIT CLOCK	"			
69	SDO	O	: SERIAL DATA	"			
70	IORDL	O	: PERIPHERAL I/F READ SIG.				
71	IOWDL	O	: PERIPHERAL I/F WRITE SIG.				
72	RDL	I	: M16 READ SIG.	→ from CPU			
73	Vdd	-	: 5V				
74	CK12	O	: CLOCK OUT (12.288MHz)	→ SCSI, LCDC, extnal			
75	BLWL	I	: M16 WRITE SIG. (low byte)	→ from CPU			
76	BHWL	I	: " (high byte)	→ "			
77	LRB	B	: LR CLOCK	→ to sampling option			
78	BCB	B	: BIT CLOCK	→ "			
79	SDI	I	: SERIAL DATA	→ from sampling option			
80	TEST1	I	: TEST PIN	→ 0V			



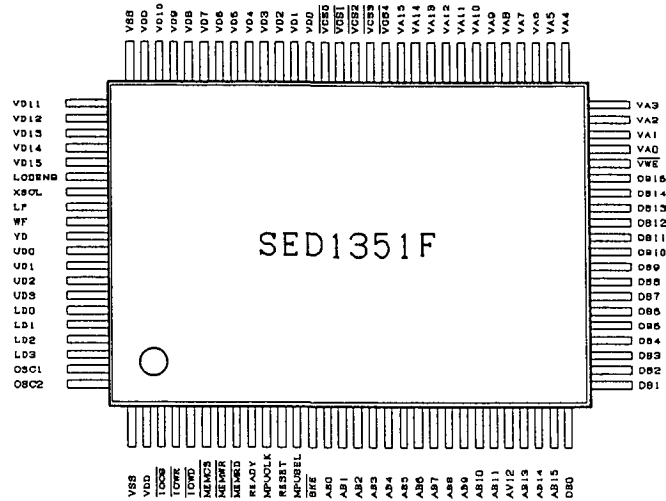
## UPD72070GF-3B9 (FDC) PIN ASSIGNMENT



## UPD72070GF-3B9 (FDC) PIN FUNCTIONS

PIN NAME	I/O	FUNCTION	PIN NAME	I/O	FUNCTION
A0-A2	I	Address	ME3	O	Motor Enable 3
AGNG	---	Analog Ground	LPF1, LPF2	O	Low Pass Filter
AVDD	---	Analog VDD	NC	---	No Connection
BGND	---	Buffer Gound	PCTYP0, PCTYP1	I	PC Type
CGP1, CGP2	O	Charge Pump	RDATA	I	Read Data
CS	I	Chip Select	RD	I	Read
DB0-DB7	I/O	Data Bus	RESET	I	Reset
DGND	---	Digital Ground	SIDE	O	Side
DEN0, DEN1	O	Density	STEP	O	Step
DIR	O	Direction	TC	I	Terminal Count
DKCG/READY	I	Disk Change/Ready	TCK	I	Test Clock Input
DMARQ	O	DAM Request	TDI	I	Test Data Input
DMAAK	I	DMA Acknowledge	TDO	O	Test Data Output
DRV2	I	Drive 2	TMS	I	Test Mode Select
DS0-DS3	O	Drive Select	TRK0	I	Track 0
DVDD	---	Digital VDD	WDATA	O	Write Data
ENDKCG	I	Enable Disk Change	WGATE	O	Write Gate
HDL	O	Head Load	WPRT	I	Write Protect
INDEX	I	Index Pulse	WR	I	Write
INT	O	Interrupt Request	XA1, XA2	I	Crystal A
ME0, ME1	O	Motor Enable	XB	I	Crystal B
ME2	O	Motor Enable 2			

## SED1351F (LCTC) PIN ASSIGNMENT



## SED1351F (LCTC) PIN FUNCTIONS

PIN NAME I/O FUNCTION

### FOR SYSTEM CONTROL

DB0-DB15	I/O	MPU DATA BUS
AB0-AB15	I	MPU ADDRESS BUS
BHE	I	BUS HIGH ENABLE
IOCS	I	CHIP SELECT FOR CONTROL RESISTOR
IOWR	I	WRITE STROBE FOR CONTROL RESISTOR
IORD	I	READ STROBE FOR CONTROL RESISTOR
MEMCS	I	CHIP SELECT FOR VRAM CONTROL
MEMWR	I	WRITE STROBE FOR VRAM CONTROL
MEMRD	I	READ STROBE FOR VRAM CONTROL
READY	O	READY SIGNAL
MPUCLK	I	MPU CLOCK
MPUSEL	I	MPU SELECT (VSS:8BIT/VDD:16BIT)
RESET	I	RESET SIGNAL

### FOR VRAM CONTROL

VD0-VD15	I/O	VRAM DATA BUS
VA0-VA15	O	VRAM ADDRESS BUS
VCS0-VCS4	O	SRAM CHIP SELECT
VWE	O	SRAM WRITE STROBE

### FOR LCD CONTROL

UD0-UD3	O	INDICATION DATA FOR UPPER SCREEN
LD0-LD3	O	INDICATION DATA FOR LOWER SCREEN
XSCL	O	CLOCK FOR DATA TRANSMISSION
LP	O	DATA LATCH PULS
WF	O	FRAME SIGNAL
YD	O	SCANNING LINE START SIGNAL
LCDENB	O	LCD CONTROL SIGNAL

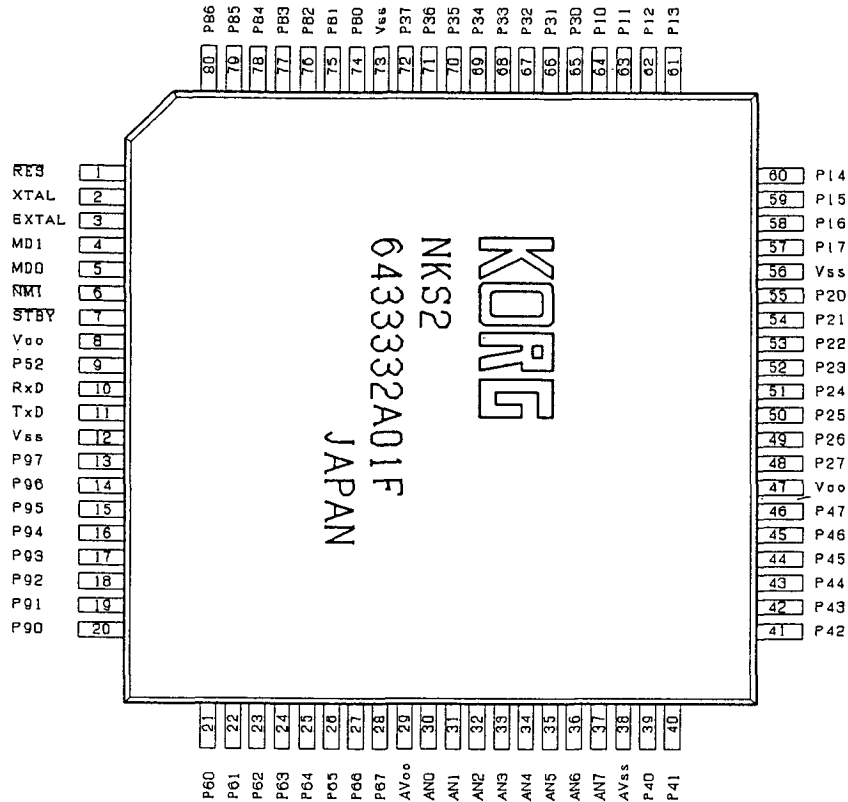
### FOR OSCILLATOR

OSC1	I	INPUT TERMINAL FOR OSC
OSC2	O	OUTPUT TERMINAL FOR OSC

### FOR POWER SUPPLY

VDD	---	+5V
VSS	---	GND

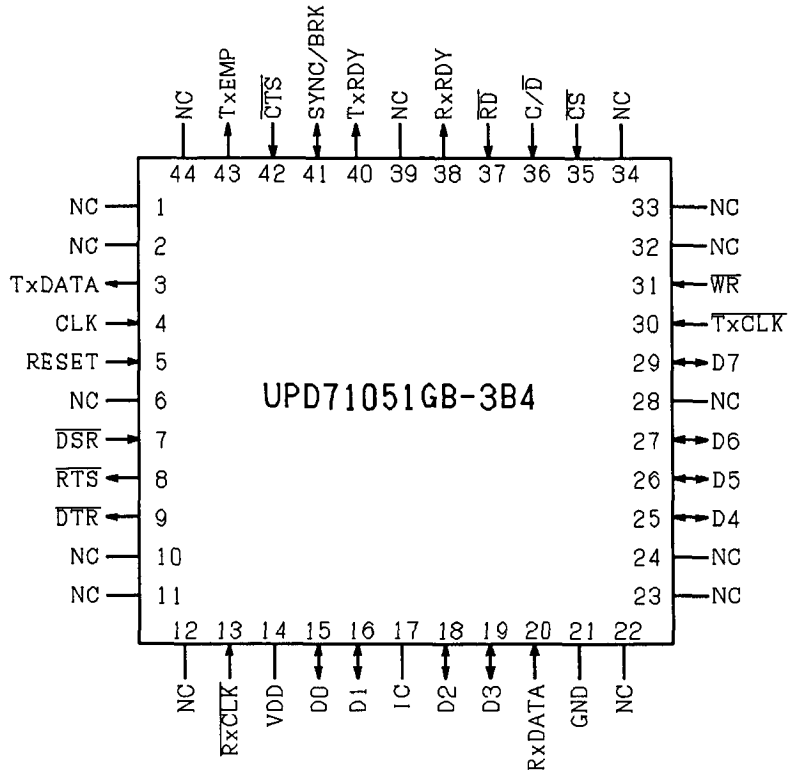
### HD6433332A01F (NKS2) PIN ASSIGNMENT



### HD6433332A01F (NKS2) I/O PORT MAPPING

PORT	FUNCTION	I/O	NOTE
P10-17	LED OUT	O	
P20-23	LED DECODER	O	
P24	A/D SEL 0-7/8-15	O	
P25-27	TOUCH PANEL SEL 1-3	O	
P30-37	SWITCH DATA IN	I	
P40-47	ROTARY ENCODER 1-4	I	
ATXD	SERIAL DATA OUT	O	
ARXD	SERIAL DATA IN	I	
P52	NOT USE	I	SYNC MODE: SCK
P60-67	KEYBOARD DATA IN	I	
AN0-7	A/D IN (8CH)	I	
P80-83	SW & KEYBOARD SEL B0-3	O	
P84	SEND READY	O	
P85	ASYNC/SYNC MODE	I	0:SYNC, 1:ASYNC
P86	TOUCH PANEL GATE	I	
P90	SW & KEYBOARD SEL	O	0:MAKE, SW
P91	SW & KEYBOARD SEL	O	0:BRAKE
P92-97	NOT USE	I	

**UPD71051GB-3B4 (UART) PIN ASSIGNMENT**



# CHECK POINTS

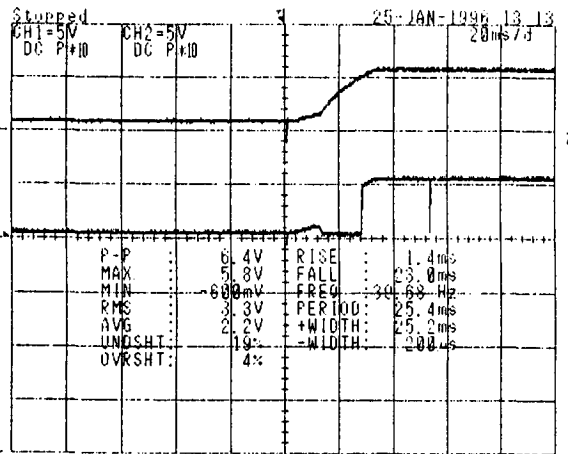
<p><b>1. RESET - CPU/NKS</b></p> <p>From 7pin of IC47 To 114pin of IC8 1pin of IC34</p> <p>signal name : \RST</p> <p>1ch : \RST 2ch : Vcc(+5V)</p>	<p>Stopped 25-JAN-1996 13:07 CH1=5V DC Pk10 CH2=5V DC Pk10 20ms/div</p> <table border="1"> <tr><td>P-P</td><td>5.8V</td><td>RISE</td><td>200µs</td></tr> <tr><td>MAX</td><td>5.6V</td><td>FALL</td><td></td></tr> <tr><td>MIN</td><td>-200mV</td><td>FREQ</td><td></td></tr> <tr><td>RMS</td><td>2.5V</td><td>PERIOD</td><td></td></tr> <tr><td>AVG</td><td>1.2V</td><td>+WIDTH</td><td></td></tr> <tr><td>UNDSHT</td><td>4%</td><td>-WIDTH</td><td></td></tr> <tr><td>OVSHT</td><td>4%</td><td></td><td></td></tr> </table>	P-P	5.8V	RISE	200µs	MAX	5.6V	FALL		MIN	-200mV	FREQ		RMS	2.5V	PERIOD		AVG	1.2V	+WIDTH		UNDSHT	4%	-WIDTH		OVSHT	4%		
P-P	5.8V	RISE	200µs																										
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MIN	-200mV	FREQ																											
RMS	2.5V	PERIOD																											
AVG	1.2V	+WIDTH																											
UNDSHT	4%	-WIDTH																											
OVSHT	4%																												
<p><b>2. RESET - FDC/LCTC/UART</b></p> <p>From 5pin of IC47 To 63pin of IC40 11pin of IC39 5pin of IC42</p> <p>signal name : RST</p> <p>1ch : RST 2ch : Vcc(+5V)</p>	<p>Stopped 25-JAN-1996 13:09 CH1=5V DC Pk10 CH2=5V DC Pk10 20ms/div</p> <table border="1"> <tr><td>P-P</td><td>5.6V</td><td>RISE</td><td>19.2ms</td></tr> <tr><td>MAX</td><td>5.6V</td><td>FALL</td><td>23.8ms</td></tr> <tr><td>MIN</td><td>0mV</td><td>FREQ</td><td></td></tr> <tr><td>RMS</td><td>2.1V</td><td>PERIOD</td><td></td></tr> <tr><td>AVG</td><td>1.0V</td><td>+WIDTH</td><td>36.0ms</td></tr> <tr><td>UNDSHT</td><td>4%</td><td>-WIDTH</td><td></td></tr> <tr><td>OVSHT</td><td>4%</td><td></td><td></td></tr> </table>	P-P	5.6V	RISE	19.2ms	MAX	5.6V	FALL	23.8ms	MIN	0mV	FREQ		RMS	2.1V	PERIOD		AVG	1.0V	+WIDTH	36.0ms	UNDSHT	4%	-WIDTH		OVSHT	4%		
P-P	5.6V	RISE	19.2ms																										
MAX	5.6V	FALL	23.8ms																										
MIN	0mV	FREQ																											
RMS	2.1V	PERIOD																											
AVG	1.0V	+WIDTH	36.0ms																										
UNDSHT	4%	-WIDTH																											
OVSHT	4%																												
<p><b>3. RESET - IIC</b></p> <p>From 3pin of IC13 To 64pin of IC15</p> <p>signal name : IICRST</p> <p>1ch : IICRST 2ch : Vcc(+5V)</p>	<p>Stopped 25-JAN-1996 13:10 CH1=5V DC Pk10 CH2=5V DC Pk10 20ms/div</p> <table border="1"> <tr><td>P-P</td><td>5.6V</td><td>RISE</td><td>400µs</td></tr> <tr><td>MAX</td><td>5.6V</td><td>FALL</td><td></td></tr> <tr><td>MIN</td><td>0mV</td><td>FREQ</td><td></td></tr> <tr><td>RMS</td><td>3.2V</td><td>PERIOD</td><td></td></tr> <tr><td>AVG</td><td>2.0V</td><td>+WIDTH</td><td></td></tr> <tr><td>UNDSHT</td><td>4%</td><td>-WIDTH</td><td></td></tr> <tr><td>OVSHT</td><td>8%</td><td></td><td></td></tr> </table>	P-P	5.6V	RISE	400µs	MAX	5.6V	FALL		MIN	0mV	FREQ		RMS	3.2V	PERIOD		AVG	2.0V	+WIDTH		UNDSHT	4%	-WIDTH		OVSHT	8%		
P-P	5.6V	RISE	400µs																										
MAX	5.6V	FALL																											
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RMS	3.2V	PERIOD																											
AVG	2.0V	+WIDTH																											
UNDSHT	4%	-WIDTH																											
OVSHT	8%																												

#### 4. RESET - TG92/DF93/DSPs

From 9pin of IC54  
 To 112pin of IC10  
 122pin of IC18  
 55pin of IC26, 32 and 38

signal name : TGRS

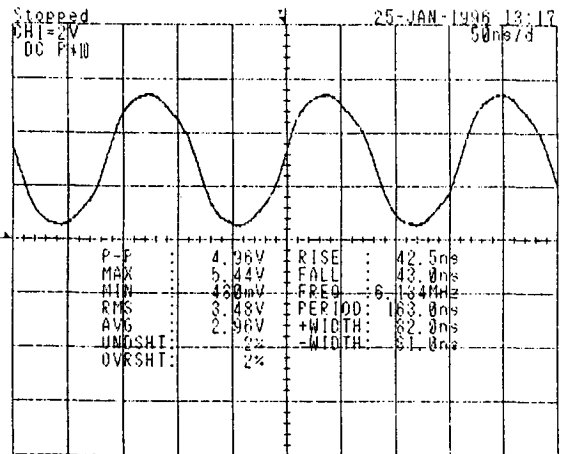
1ch : TGRS  
 2ch : Vcc(+5V)



#### 5. Crystal OSC - Clock generator

From X1(6.144MHz)  
 To 12pin of IC48 and 49

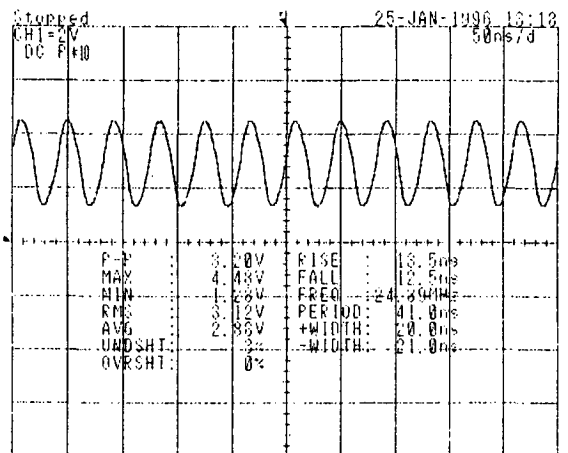
f=6.144MHz



#### 6. Crystal OSC - FDC

From X2(24MHz)  
 To 61 and 60pin of IC40

f=24.00MHz

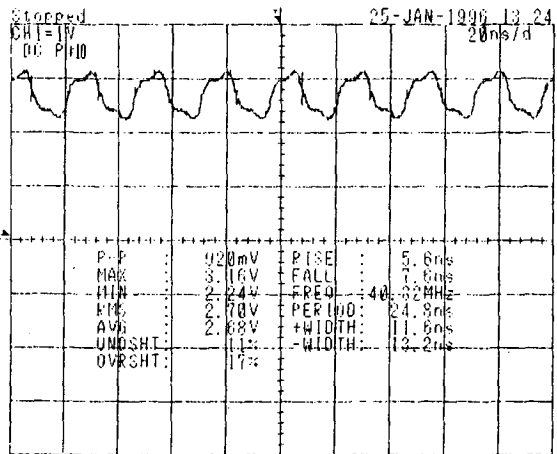


7. Crystal OSC - IIC/DSPs

From X3(40MHz)  
To 41pin of IC15  
57pin of IC26, 32 and 38

f=40.00MHz

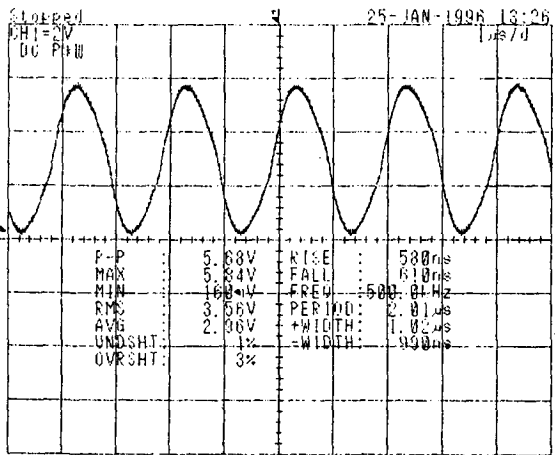
signal name : 40M



8. Crystal OSC - UART

From X4(500kHz)  
To 13 and 30pin of IC31

f=500kHz

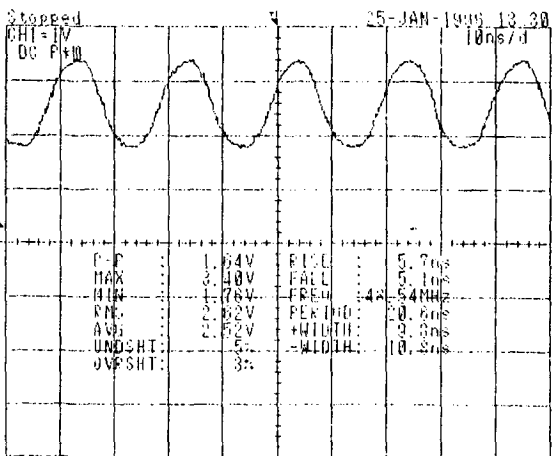


9. Clock generator - DF93/IIC

From 3pin of IC25  
To 118pin of IC18  
1pin of IC15

f=48.00MHz

signal name : IKFS

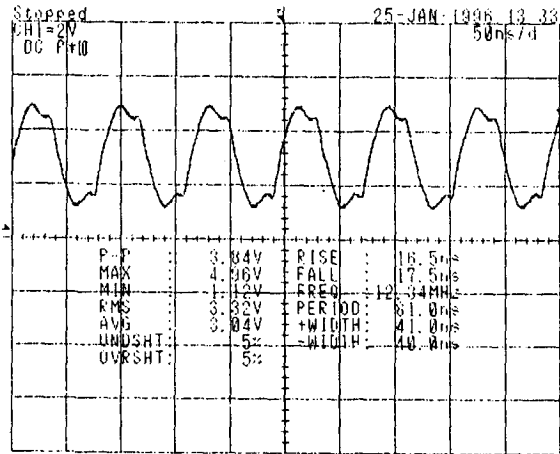


**10. CPU - IIC/LCTC**

From 112pin of IC8  
 To 24pin of IC15  
 10pin of IC39

f=12.00MHz

signal name : BCLK

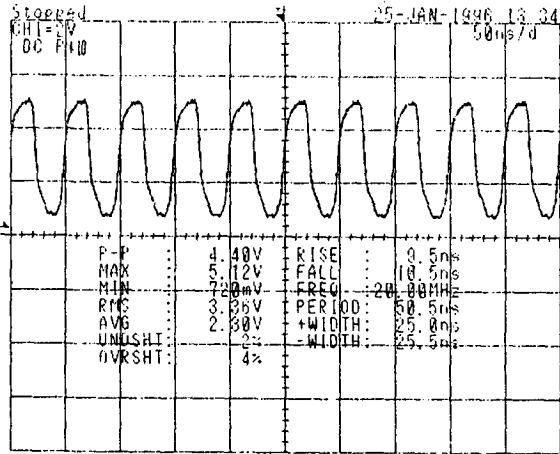


**11. IIC - NKS/UART**

From 53pin of IC15  
 To 3pin of IC34  
 4pin of IC31

f=20.00MHz

signal name : 20M

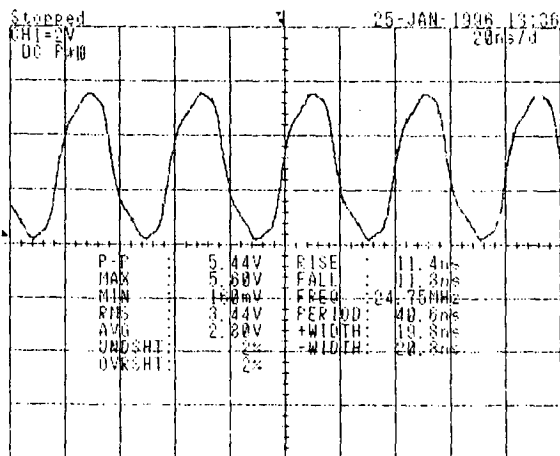


**12. IIC - CPU/Option board(SOLO/HDR)**

From 11pin of IC15  
 To 18pin of IC8  
 1pin of connector CN102A  
 11pin of connector CN101A

f=25.00MHz

signal name : HFS



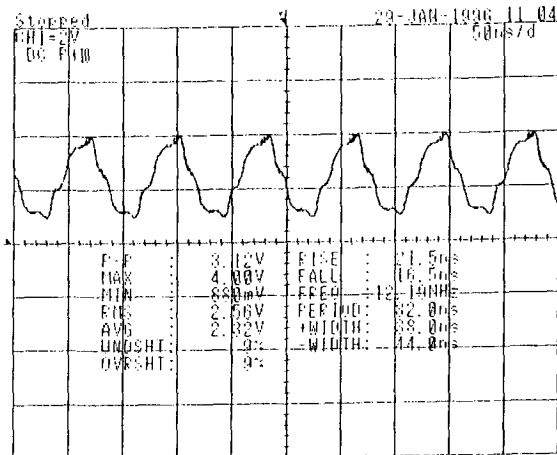


13. IIC - LCTC/Option(DI)/JACK board

From 74pin of IC15  
 To 99pin of IC39  
 17pin of connector CN103A  
 9pin of connector CN18A

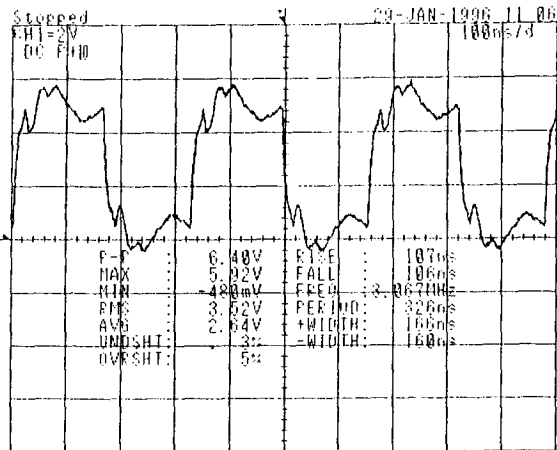
f=12.00MHz

signal name : QFS



14. Clock generator - Option(HDR/DI)  
 /JACK

From 9pin of IC37  
 To 3pin of connector CN102A  
 18pin of connector CN103A  
 13pin of connector CN18A



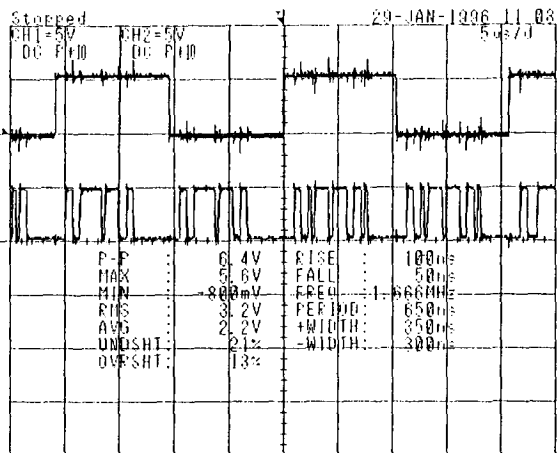
15. DSP - DAC

From 78pin of IC38  
 To 11pin of IC18A

⊗ when DSP test waveform

1ch : SD12

2ch : L/R clock



# 9. MULTI SOUND LIST

MS Name	Bank No.	MS Name	Bank No.	MS Name	Bank No.
0:A.Piano	4	56:Vibraphone LP	6	112:Tenor Sax-Hard	5 6
1:A.Piano-ff. Atk	2 3 4 5 9 10	57:Celesta	6	113:Alto Sax-Soft	5 6
2:E.Grand Piano	0 1 2 8 11	58:Celesta LP	6	114:Alto Sax-Hard	5 6
3:E.P.-FM 1	2 10	59:Glockenspiel	11	115:Soprano Sax-Soft	5 6
4:E.P.-FM 1 LP	2 10	60:Glockenspiel LP	11	116:Soprano Sax-Hard	5 6
5:E.P.-FM 2	2	61:Tubular Bell	6	117:Sax Growl	5
6:E.P.-FM 3	3 11	62:FM Tubular	6 11	118:Sax Ensemble	5
7:E.P.-Dyno Soft	2	63:Slit Drum	6	119:Sax Ensemble LP	5
8:E.P.-Dyno Sft LP	2	64:Slit Drum LP	6	120:French Horn	5
9:E.P.-Dyno Medium	2	65:Balaphone	6	121:Flugel Horn	5
10:E.P.-Dyno Med LP	2	66:Balaphone LP	6	122:Tuba	5
11:E.P.-Dyno Hard	2	67:Guntan	6	123:Trombone-Soft	5 6
12:E.P.-Stage Soft	1 2	68:Guntan LP	6	124:Trombone-Medium	5 6
13:E.P.-Sta Soft LP	1 2	69: Bottle Pop	6	125:Trombone-Hard	5 6
14:E.P.-Stage Hard	2	70: Bottle Pop LP	6	126:Trombone-Muted	5 6
15:E.P.-Sta Hard LP	2	71:FM Pluck	6	127:Trumpet-Soft	5 6
16:E.P.-Wurly	2	72:FM Pluck LP	6	128:Trumpet-Medium	5 6
17:E.P.-Wurly LP	2	73:Steel Drum	6	129:Trumpet-Hard	4 5 6
18:E.P. Pad 1	2 3	74:Steel Drum LP	6	130:Trumpet-Muted	5 6
19:E.P. Pad 1 LP	2 3	75:Gamelan 1	6	131:Piccolo Trumpet	5 6
20:E.P. Pad 2	2	76:Gamelan 1 LP	6	132:Brass Ensemble1	2 3 5
21:E.P. Pad 3	1 2 3	77:Gamelan 2	11	133:Brass Ensemble2	3
22:E.P. Pad 3 LP	1 2 3	78:Finger Cymbal	6 8	134:Brass Ens.-Fall	9
23:Clavinet	0 9 11	79:Finger Cymbal LP	6 8	135:Brass-Pad	3
24:Harpsichord-Sngl	0 3 10 11	80:Tibetan Bell	6	136:Musette	2 4 6 10
25:Harpsichord-Dbl	2	81:Tibetan Bell LP	6	137:Musette LP	0 2 3 10
26:Harpsi-Keyoff	11	82:FM Bell	11	138:Bandoneon	0 3 6 11
27:E.Organ-Perc 1	2	83:Thai Bell	6	139:Accordion	3 6
28:E.Organ-Perc 2	2	84:Thai Bell LP	6	140:Harmonica	3 6
29:E.Organ-Perc 3	2	85:Pot Cover	6	141:Bag Pipe	3
30:E.Organ-2' Perc	2	86:Pot Cover LP	6	142:Voice-Choir	3 6
31:E.Organ-Jazz 1	2	87:FM Solar	6	143:Voice-Pop Huu	1 2 11
32:E.Organ-Jazz 2	2	88:FM Chiff	6	144:Voice-Pop Ah	1 8 11
33:E.Organ-Jazz 3	2	89:Glass Bell	6	145:Voice-Doo	3
34:E.Organ-Vox	2	90:FM Glass Bell	6	146:Voice-Doo LP	3
35:E.Organ-Soft	2	91:Ensemble Bell 1	6	147:Voice Wave 1	3
36:E.Organ-Medium	2	92:Ens.Bell 1 LP	6	148:Voice Wave 2	3
37:E.Organ-Full	2	93:Ensemble Bell 2	6	149:Strings Ens. 1	3 8
38:E.Organ-Dist.	1 2 3 6	94:Flute	6	150:Strings Ens. 2	0 11
39:E.Organ-BX 3	6	95:Piccolo	6	151:Pizzicato Ens.	6 9 11
40:Positive 1	5 6 10	96:Tin Flute	6	152:Violin	3 8
41:Positive 2	0 6	97:Tin Flute LP	0 6	153:Viola	3 8
42:Pipe-Mixture 1	6 11	98:Pan Flute	6	154:Cello&Contrabass	3 8
43:Pipe-Mixture 2	6	99:Shakuhachi	6	155:String Quartet 1	3 8
44:Pipe-Reed	6	100: Bottle	6	156:String Quartet 2	0 3 7 11
45:Pipe-Tuentiana	6	101: Bottleizer	6	157:Pizzicato	1 2
46:Pipe-Full	6	102:Recorder	5 6	158:Kokyu	0 9
47:Kalimba	6	103:Ocarina	5 6	159:Nylon Guitar	1
48:Kalimba-Mute	0 9 11	104:Clarinet	5 6	160:A. Guitar-Finger	1
49:Music Box	6	105:Bass Clarinet	5 6	161:A. Guitar-Pick	0 1 8 9
50:Music Box LP	6	106:Oboe	5 6	162:12 String Guitar	0 9 11
51:Marimba	6	107:English Horn	5 6	163:A.Gtr-Harmonics	1
52:Marimba LP	6	108:Basoon	5 6	164:ParkerGtr-Piezo	0 9 10
53:Xylophone	11	109:Baritone Sax	5 6	165:Clean Gtr 1-Stra	0 9
54:Xylophone LP	11	110:Tenor Sax-Soft	5 6	166:Clean Gtr 2-Stra	1
55:Vibraphone	6	111:Tenor Sax-Medium	5 6	167:Clean Gtr 3-Tele	9

MS Name	Bank No.	MS Name	Bank No.	MS Name	Bank No.
168:Clean Gtr 4-Prkr	9	224:Harp-Harmo LP	7 10	280:Square-MG3	0
169:Clean Gtr-Mute 1	1	225:Harp-Glissando	11	281:Square-JP	0
170:Clean Gtr-Mute 2	1	226:Ukulele	1 7	282:Square-OB	0
171:Funky Gtr 1-Stra	0 9	227:Ukulele LP	0 7	283:Triangle	0
172:Funky Gtr 2-Stra	1	228:Syn Bass-Oct 1	7	284:Triangle-MG3	0
173:Funky Gtr 3-Prkr	1	229:Syn Bass-Oct 2	7	285:Ramp	0
174:Jazz Guitar 1	0 9 10	230:Syn Bass-Reso 1	1 7	286:Ramp-mMG	0
175:Jazz Guitar 2	1	231:Syn Bass-Reso 2	7	287:Parabolic	0 7
176:Pedal Steel Gtr.	0 9	232:Syn Bass-FM 1	7	288:Sine	0
177:E.Gtr-Harmonics	1	233:Syn Bass-FM 1 LP	7		
178:Distorted Guitar	9	234:Syn Bass-FM 2	7		
179:Dist.Gtr-Harmo	1	235:Syn Bass-FM 2 LP	7		
180:Dist.Gtr-Mute	1 7 9 10	236:Syn Bass-FM 3	7 10		
181:Dist.Gtr-Mute LP	0 1 7 9 10	237:Syn Bass-FM 3 LP	0 7 10		
182:Power Chord	0 1 2 7 10	238:Syn Bass-TB	0 7		
183:Fret Noise	1	239:Syn Bass-Stack	7		
184:Amp Noise	10	240:Sync Wave 1	7		
185:A.Bass 1	10	241:Sync Wave 2	7		
186:A.Bass 2	1 10	242:Sync Wave 3	7		
187:A.Bass 2 LP	0 10	243:Sync Wave 4	1 7		
188:Finger Bass 1	1 10 11	244:Detuned-Super	7		
189:Finger Bass 1 LP	0 10 11	245:Detuned-Saw	7		
190:Finger Bass 2	1 10	246:Detuned-PWM	7		
191:Finger Bass 2 LP	0 10	247:Analog Strings 1	7		
192:Pick Bass 1	1 10	248:Analog Strings 2	3 11		
193:Pick Bass 1 LP	0 10	249:Syn-Ethnic	1 7		
194:Pick Bass 2	1 10	250:Syn-Ethnic LP	0 1 7		
195:Pick Bass 2 LP	0 10	251:Syn-Clavitar	7		
196:Pick Bass-Mute	1 2 3 10	252:Syn-Pop	7		
197:Pick Bass-MuteLP	0 2 3 10	253:Syn-Vocalscape	7		
198:SlapBass-Thumb 1	1 10	254:Syn-Air Pad	7		
199:SlapBass-Thum1L	0 10	255:Syn-Air	7		
200:SlapBass-Thumb 2	1 10	256:Syn-Flute Pad	7		
201:SlapBass-Thum2L	0 10	257:Syn-Air Vortex	7		
202:SlapBass-Pull	1 10	258:Syn-Ghostly	7		
203:SlapBass-Mute	10	259:Syn-Sweep 1	7		
204:SlapBass-Mute LP	10	260:Syn-Sweep 2	7		
205:Fretless Bass	1 10	261:Syn-Sweep 3	7		
206:Bass Harmonics	2 10	262:Syn-Sweep 3 LP	7		
207:Bass Harmo LP	2 10	263:Syn-Magic Bell	7		
208:Sitar	3 9 11	264:Syn-Clicker	7		
209:Sitar&Tambura	3 9 11	265:Noise	0		
210:Santur	1 10	266:Noise Spectrum 1	0		
211:Santur LP	0 10	267:Noise Spectrum 2	11		
212:Mandolin	10	268:Saw	0 6 9 11		
213:Mandolin LP	10	269:Saw-mg3c	0		
214:Mandolin-Tremolo	10	270:Saw-mg	0 7		
215:Bouzouki	1 10	271:Saw-Chroma	0		
216:Bouzouki LP	0 10	272:Pulse-2%	0		
217:Banjo	1 6 10	273:Pulse-5%	0		
218:Banjo LP	0 6 10	274:Pulse-8%	0		
219:Shamisen	1 10	275:Pulse-16%	0		
220:Koto	1 9 10	276:Pulse-33%	0		
221:Harp	10	277:Pulse-40%	0		
222:Harp LP	10	278:Square	0		
223:Harp-Harmonics	7 10	279:Square-mMG	0		

DS Name	Bank No.	DS Name	Bank No.	DS Name	Bank No.
0:BD-Dry 1	3	61:Tom-Jazz Floor	8	122:Vocal Cowbell	9
1:BD-Dry 2	0	62:Tom-Brush Hi	3	123:Vocal Woodblock	9
2:BD-Dry 3	0	63:Tom-Brush Floor	8	124:DJ-Scratch 1	9
3:BD-Dry 4	0	64:H.Hat 1-Closed 1	9	125:DJ-Scratch 2	9
4:BD-Soft	0	65:H.Hat 1-Closed 2	11	126:DJ-Scratch 3a	11
5:BD-Soft Room	0	66:H.Hat 1-Foot	11	127:DJ-Scratch 3b	11
6:BD-Jazz 1	10	67:H.Hat 1-FootOpen	11	128:DJ-Scratch 3c	9
7:BD-Jazz 2	10	68:H.Hat 1-Open 1	11	129:DJ-BD Rub	9
8:BD-Pillow	0	69:H.Hat 1-Open 2	11	130:DJ-SD Rub	9
9:BD-Woofers	8	70:H.Hat 2-Closed 1	10	131:DJ-Record Stop	9
10:BD-Mondo Kill	0	71:H.Hat 2-Closed 2	11	132:DJ-Reverse	0
11:BD-Terminator	2	72:H.Hat 2-Foot	11	133:DJ-Old Record	8
12:BD-Tubby	2	73:H.Hat 2-FootOpen	1	134:Zap 1	0
13:BD-Gated	0	74:H.Hat 2-Open 1	2	135:Zap 2	0
14:BD-Tight	0	75:H.Hat 2-Open 2	11	136:Zap 3	0
15:BD-Squash	0	76:Crash Cymbal 1	8	137:Conga Lo-Open	9
16:BD-Dance 1	0	77:Crash Cymbal 2	1	138:Conga Lo-MtSlap	9
17:BD-Dance 2	0	78:Crash Cymbal 3	6	139:Conga Lo-Slap	0
18:BD-Dance 3	0	79:China Cymbal	2	140:Conga Hi-Open	9
19:SD-Dry 1	0	80:Splash Cymbal	0	141:Conga Hi-Mute	0
20:SD-Dry 2	0	81:Cymbal Reverse	1	142:Conga Hi-MtSlap	9
21:SD-Dry 3	0	82:Ride-Edge 1	2	143:Conga Hi-Slap 1	7
22:SD-Full Room	0	83:Ride-Edge 2	1	144:Conga Hi-Slap 2	9
23:SD-Off Center	0	84:Ride-Jazz	0	145:Conga-Heel	9
24:SD-Jazz Ring	0	85:Ride-Cup	2	146:Conga-Toe	11
25:SD-Amb.Piccolo 1	0	86:BD-Orchestral	8	147:Bongo Lo-Open	9
26:SD-Amb.Piccolo 2	11	87:Orch Cym.-Closed	11	148:Bongo Lo-Slap	9
27:SD-Paper	11	88:Orch Cym.-Open	2	149:Bongo Lo-Stick	0
28:SD-Classic Room	11	89:Timpani	1	150:Bongo Hi-Open	9
29:SD-Atomic	11	90:SD-Orch.Roll 1	1	151:Bongo Hi-Slap	9
30:SD-Big Rock	0	91:SD-Orch.Roll 2	11	152:Bongo Hi-Stick 1	9
31:SD-Yowie	2	92:SD-Orchestral	11	153:Bongo Hi-Stick 2	9
32:SD-Processed 1	11	93:Orchestra Hit	1	154:Djembe-Open	9
33:SD-Processed 2	11	94:Pizz Hit	0	155:Djembe-Mute	8
34:SD-Cracker Room	11	95:Band Hit	0	156:Djembe-Slap	10
35:SD-Amb.House	11	96:Finger Snap	9	157:Castanet-Single	9
36:SD-Dance	11	97:Hand Claps	9	158:Castanet-Dble 1	9
37:SD-Rap 1	11	98:88-BD 1 (Rap)	11	159:Castanet-Dble 2	9
38:SD-Rap 2	11	99:88-BD 2 (R&B)	11	160:Guiro-Long	8
39:SD-Noise	11	100:99-BD 1	11	161:Guiro-Short	2
40:SD-Sizzle	11	101:99-BD 2	11	162:Guiro-Tap	9
41:SD-Brush Hit	8	102:99-BD 3	10	163:Maracas-Push	9
42:SD-Brush Tap 1	11	103:88-SD 1 (New)	11	164:Maracas-Pull	9
43:SD-Brush Tap 2	11	104:88-SD 2 (Old)	2	165:Baya-Open	9
44:SD-Brush Swirl	1	105:99-SD 1	11	166:Baya-Ghe	11
45:SD-Reverse	11	106:99-SD 2	9	167:Baya-Mute 1	9
46:Sidestick-Dry	11	107:88-Rimshot	11	168:Baya-Mute 2	9
47:Sidestick-Amb	11	108:88-Claps	11	169:Baya-Mute 3	9
48:Drumstick Hit	11	109:88-HHat Closed	11	170:Baya-Mute 4	9
49:Tom 1-Hi	0	110:88-HHat Open	0	171:Baya-Mute 5	9
50:Tom 1-Low	0	111:99-HHat Closed	11	172:Tabla-Na	2
51:Tom 1-Floor	11	112:99-HHat Open	0	173:Tabla-Open	9
52:Tom 2-Hi	0	113:88-Crash	10	174:Tabla-Tin	0
53:Tom 2-Low	2	114:88-Tom	0	175:Tabla-Mute 1	9
54:Tom 2-Floor	9	115:88-Conga	3	176:Tabla-Mute 2	9
55:Tom 3-Hi	10	116:88-Clave	9	177:Tabla-Mute 3	11
56:Tom 3-Low	1	117:88-Cowbell	0	178:Tabla-Mute 4	9
57:Tom 3-Floor	8	118:88-Maraca	10	179:Taiko-Open	3
58:Tom-Processed	0	119:FM E.Tom	11	180:Taiko-Rim	9
59:Tom-Jazz Hi	8	120:Real E.Tom	0	181:Tszuzumi	9
60:Tom-Jazz Hi Rim	8	121:Vocal SD	9	182:Vibraslap	0

DS Name	Bank No.	DS Name	Bank No.			
183:Claves	9	244:Power Chord	10			
184:Woodblock 1	0	245:Fret Noise	1			
185:Woodblock 2	9	246:Dist.Slide 1	1			
186:Timbale Lo-Open	1	247:Dist.Slide 2	10			
187:Timbale Lo-Mute	9	248:E.Guitar Pick 1	10			
188:Timbale Lo-Rim	2	249:E.Guitar Pick 2	10			
189:Timbale Hi-Edge	0	250:E.Guitar Pick 3	7			
190:Timbale Hi-Rim 1	2	251:E.Guitar Pick 4	10			
191:Timbale Hi-Rim 2	10	252:E.Guitar Pick 5	10			
192:Timbale-Paila	9	253:E.Guitar Pick 6	7			
193:Tambourine-Push	9	254:E.Guitar Pick 7	10			
194:Tambourine-Pull	9	255:Guitar Scratch 1	10			
195:Tambourine-Acc.1	9	256:Guitar Scratch 2	2			
196:Tambourine-Acc.2	0	257:Amp Noise	10			
197:Triangle-Open	9					
198:Triangle-Mute	9					
199:Triangle-Roll	11					
200:Cuica-Lo	9					
201:Cuica-Hi	9					
202:Shaker 1	9					
203:Shaker 2	9					
204:Cabasa-Up	9					
205:Cabasa-Down	9					
206:Cabasa-Tap	9					
207:Caxixi-Hard	9					
208:Caxixi-Soft	9					
209:Agogo Bell	9					
210:Cowbell 1	0					
211:Cowbell 2	0					
212:Chacha Bell	9					
213:Mambo Bell	0					
214:Sleigh Bell	9					
215:Finger Cymbal	6					
216:Marc Tree	7					
217:Bell Tree	1					
218:Flexatone	0					
219:Samba Whistle	0					
220:Chinese Gong	1					
221:Stadium	3					
222:Applause	8					
223:GunShot	0					
224:Telephone Ring	1					
225:Footstep 1	9					
226:Footstep 2	9					
227:Tribe	0					
228:Bird 1	0					
229:Bird 2	9					
230:Space Lore	3					
231:Industry	2					
232:Cyber Drum	1					
233:Swish Terra	5					
234:Xylophone Trem	1					
235:Xylophone Spectr	1					
236:Cricket Spectrum	1					
237:Air Vortex	7					
238:Noise-White	10					
239:Noise-FM Mod	0					
240:Tubular	6					
241:Slit Drum	6					
242:Balaphone	6					
243:Gamelan	6					

**FOR TRINITY**

PART CODE	PART NAME/SPECIFICATION	P.C.BOARD	NOTE	QTY	MARK
001182000	PCB ASSEMBLY KLM-1820	M.PART	MAIN	1	NEW
001182100	PCB ASSEMBLY KLM-1821	M.PART	PANEL-L	1	NEW
001182200	PCB ASSEMBLY KLM-1822/3/6	M.PART	PANEL-R	1	NEW
001182500	PCB ASSEMBLY KLM-1825	M.PART	JACK/DAC	1	NEW
001182700	PCB ASSEMBLY KLM-1827	M.PART	SW	1	NEW
001182800	PCB ASSEMBLY KLM-1828	M.PART	RIBBON	1	NEW
002175500	INVERTER PCB KLM-1755	M.PART		1	NEW
002187500	POWER SUPPLY UNIT KLM-1875	M.PART		1	NEW
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312010900	LED GL3ED8	1822		1	
312013600	LED MOB31CR	1821		7	NEW
		1822		4	
		1827		2	
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313003400	TOUCH PAEL LCD KGJ-01S-3	M.PART		1	NEW
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320001233	IC UPD71051GB-3B4 (44P QFP)	1820	UART	1	
320001242	IC UPC4570HA	1825	OP_AMP	6	
320001533	IC UPD72070GF-3BE	1820	FDC	1	NEW
320002301	IC MN19412A	1820	DSP	3	
320004359	IC HD74HC05P	1825	HC_MOS	1	
320004556	IC HD6433332A01F	1820	NKS2	1	
	or 320004638 IC HD6433332A04F (NKS2.5)				
320009004	IC NJM-78L05A	1825	REGULATOR	1	
320011026	IC M5216L	1825	OP_AMP	1	
320011179	IC M31000S2FP	1820	CPU	1	NEW
320012177	IC MBCE311751-030PF-G	1820	DF93	1	NEW
320012180	IC MBCE31751-021PF-G	1820	TG92	1	NEW
320012184	IC MBCE24143-4179PF-G-L	1820	IIC	1	NEW
320012201	IC MBM29F080-12PF-FJ	1820	FLASH ROM	2	NEW
320014002	IC SED1351F0A	1820	LCTC	1	NEW
320040007	IC MX23C3210MC-15 X311-00	1820	WAVE_ROM	1	NEW
320040008	IC MX23C3210MC-15 X311-10	1820	WAVE_ROM	1	NEW
320040009	IC MX23C3210MC-15 X311-20	1820	WAVE_ROM	1	NEW
320040010	IC MX23C3210MC-15 X311-30	1820	WAVE_ROM	1	NEW
320040011	IC MX23C3210MC-15 X311-40	1820	WAVE_ROM	1	NEW
320040012	IC MX23C3210MC-15 X311-50	1820	WAVE_ROM	1	NEW
324001072	IC UPD43256BGU-55L-E2	1820	S_RAM	2	NEW
324003005	IC TC514256BJ-70 IWEL2	1820	D_RAM	6	NEW
	or 324012012 IC MB81C4256A-70PJ-G-EF				
	or 324013016 IC LH64256BK-80				
324003010	IC TCWU04F TE12L	1820	HC_MOS	3	
324003011	IC TC7S86F (TE85R)	1820	HC_MOS	1	NEW
324003012	IC TC7W14F (TE12L)	1820	HC_MOS	2	NEW
324003013	IC TC74HC161AF (EL)	1820	HC_MOS	2	NEW
	or 324004062 IC HD74HC161FPER				
324004011	IC HD74HC04FPER	1820	HC_MOS	2	
324004012	IC HD74HC08FPER	1820	HC_MOS	3	
324004042	IC HD74HC125FPER	1820	HC_MOS	1	NEW
324004050	IC HD74HC138FPER	1820	HC_MOS	2	
324004057	IC HD74HC153FPER	1820	HC_MOS	1	NEW
324004187	IC HM514800CJ6	1820	D_RAM	2	NEW
324004192	IC HD74AC74FPER	1820	AC_MOS	2	NEW
324011002	IC M5223FP-600C	1820	OP_AMP	1	
324011013	IC M62021FP-600C	1820	RESET	1	
324011016	IC M51951AML-600C	1820	RESET	1	

PART CODE	PART NAME/SPECIFICATION	P.C.BOARD	NOTE	QTY	MARK
324011017	IC M5218AFP-600C	1820	OP_AMP	1	
		1828		1	
324011022	IC M5M51008AFP-70L-TT4	1820	S_RAM	2	
	or 324001066 IC UPD431000AGW-70L-E2				
324021003	IC TLC2932IPWT-EL	1820	PLL	1	NEW
324038002	IC TDA1305T/N1-T	1825	DAC	2	
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330001400	PHOTO COUPLER PC-910K	1825		1	
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334000500	SB COIL SBT-0260 TF	1825		13	
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335400116	CERAMIC OSC. CSBF500J040-TC01	1820		1	NEW
335400118	CRYSTAL OSC. SMD-49 6.144MHZ	1820		1	NEW
335400119	CRYSTAL OSC. SMD-49 24.000MHZ	1820		1	NEW
335400120	CRYSTAL OSC. SMD-49 40.000MHZ	1820		1	NEW
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350002210	SEMI FIXED VR RH0615C13J8WA	1828		1	
350002410	SEMI FIXED VR RH0615C 15 100K	1828		1	
360024500	VR RK11K1140ADWA 10KB(SPECIAL) 1511	1512		1	NEW
		1512		1	
362007500	VR RK09K1110BJFA-10KB	1825		1	
365008500	SLIDE VR RS45112AC00EA 10KBX2	1821		1	
365008700	SLIDE VR RS45111AC00VA 10KB	1821		1	
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370004500	ROTARY ENCODER EC16B242041SA	1823		1	
-----					
375010500	TOUCH SW EVQ-PAC09K-A	1821		18	
		1822		19	
375010900	CHIP SW EVQPAC07K	1827		2	
-----					
402002800	COIL 2943-666671	1826		2	
-----					
415002600	X-311/2/3 X-Z SENSOR	M.PART		1	NEW
415002800	BUZZER CB-12AP-03	1822		1	NEW
-----					
420004800	KEYBOARD FS-61 KG2	M.PART		1	
-----					
435001300	FDD(2 MODE) EME-216KRAT	M.PART		1	NEW
-----					
454004300	PHONE JACK YKB21-5012	1825		6	
454004400	PHONE JACK YKB21-5010	1826		1	
454009900	PHONE JACK YKB21-5074G	1825		1	
-----					
464002301	FUSE 125V 2A UL CSA	M.PART	100JP	1	
		M.PART	117CN	1	
		M.PART	117EX	1	
		M.PART	117US	1	
464062001	FUSE 250V T1.0A	M.PART	230WG	1	
		M.PART	230FR	1	
		M.PART	230GE	1	
		M.PART	240AU	1	
		M.PART	230UK	1	
		M.PART	230SC	1	
-----					
480001324	IC SOCKET 32P DICF-32CS-E	1820		2	
480010380	DIN JACK YKF51-5041 (3P)	1825		1	

**10. PARTS LIST**

PART CODE	PART NAME/SPECIFICATION	P.C.BOARD	NOTE	Q'TY	MARK
520001900	LITHIUM BATTERY CR2032-HE2	M.PART		1	
600005100	AC CORD KP-610 GTBS-3 KS-31AY	M.PART	230UK	1	
600005300	AC CORD DC-480-J01	M.PART	100JP	1	
600005400	AC CORD EC-652-E03	M.PART	230GE	1	
		M.PART	230FR	1	
		M.PART	230WG	1	
		M.PART	230SC	1	
600005500	AC CORD UC-948-J01	M.PART	117EX	1	
600005700	AC CORD UC-953-J01	M.PART	117US	1	
		M.PART	117CN	1	
600005800	AC CORD SC-111-J01	M.PART	240AU	1	
620024600	X-952 POWER SW KNOB E40304-2	M.PART		1	
620026601	X-311-3 SVR KNOB KOC-E40364-2	M.PART		2	NEW
620026701	X-311-3 ENCODER KNOB E40363-2	M.PART		1	NEW
620027100	X-311-3 CONTROL KNOB ASSY	M.PART		1	NEW
640084600	GROUNDING CONTACT KOC-C40655	1826		1	
640084900	GND SPRING (A) KOC-C40658	M.PART		1	
641041171	X-013 JACK PLATE KOC-C40692	M.PART		1	
641041176	X-323 ENCODER METAL FITTING	M.PART		1	
641041187	X-323 ENCODER SUPPORTER C40975	M.PART		1	
641041227	X-311/312 SIDE CHASSIS L	M.PART		1	NEW
641041228	X-311/312 SIDE CHASSIS R	M.PART		1	NEW
641041229	X-311/312 KB SUPPORT C30455	M.PART		1	NEW
641041230	X-311-3 MAIN PCB METAL FITTING	M.PART		1	NEW
641041231	X-311/312 BNC PCB METAL FITTING	M.PART		1	NEW
641041232	X-311 LOWER CASE KOC-C10170	M.PART		1	NEW
641041234	X-311/312 FDD ANGLE KOC-C20298	M.PART		1	NEW
641041235	X-311 FRONT BAR KOC-C20295	M.PART		1	NEW
641041240	X-311/312 KBR ANGLE KOC-C20299	M.PART		1	NEW
641041241	X-311 PANEL KOC-C10164	M.PART		1	NEW
641041243	X-311 SUPPORT RAIL KOC-C20293	M.PART		1	NEW
641041245	X-311/312 P.JACK METAL FITTING	M.PART		1	NEW
641041246	X-311/2/3 LCD CHASSIS C20300	M.PART		1	NEW
641041254	X-311/312 OPTION COVER C40995	M.PART		3	NEW
641041258	X-311/312 FSR METAL FITTING	M.PART		1	NEW
641041270	X-311/S/312 GND SPRING (H) C41032	1822		1	NEW
641041276	X-311 OPTION COVER (2) C41042	M.PART		1	NEW
644006200	X-011/012 WHEEL SPRING	M.PART		2	
644007400	GND SPRING (G) KOC-C40970	M.PART		1	
646038900	X-011/012 JOYSTICK FRAME	M.PART		1	
646039000	X-011/012 VR PLATE	M.PART		1	
646039100	X-011/012 WHEEL SUPPORT	M.PART		1	
646039200	X-011/012 JOYSTICK LEVER	M.PART		1	
646039301	X-311-3 JS WHEEL KOC-E30148-2	M.PART		1	NEW
646040001	X-311-3 JS COVER KOC-E20134-2	M.PART		1	NEW
646052700	X-311/2/3 KNOB BLOCK L ASSY	M.PART		1	NEW
646052701	X-013/311/2/3 KNOB BLOCK R	M.PART		1	NEW
646052800	X-311/312 SIDE PLATE L E10116	M.PART		1	NEW
646052801	X-311/312 SIDE PLATE R E10117	M.PART		1	NEW
646052900	X-311/312 LCD HOOD KOC-E10115	M.PART		1	NEW
646053000	X-013/311/2 FDD COVER E20156	M.PART		1	NEW
646053100	X-311 JS PANEL KOC-E10118	M.PART		1	NEW
646053200	X-311-3 KNOB BLOCK R (SMALL)	M.PART		1	NEW

## FOR TRINITY PL

PART CODE	PART NAME/SPECIFICATION	P.C.BOARD	NOTE	Q'TY	MARK
001182000	PCB ASSEMBLY KLM-1820	M.PART	MAIN	1	NEW
001182100	PCB ASSEMBLY KLM-1821	M.PART	PANEL-L	1	NEW
001182200	PCB ASSEMBLY KLM-1822/3/6	M.PART	PANEL-R	1	NEW
001182500	PCB ASSEMBLY KLM-1825	M.PART	JACK/DAC	1	NEW
001182700	PCB ASSEMBLY KLM-1827	M.PART	SW	1	NEW
001182800	PCB ASSEMBLY KLM-1828	M.PART	RIBBON	1	NEW
001183900	PCB ASSEMBLY KLM-1839	M.PART	SOLO	1	NEW
002175500	INVERTER PCB KLM-1755	M.PART		1	NEW
002187500	POWER SUPPLY UNIT KLM-1875	M.PART		1	NEW
312010900	LED GL3ED8	1822		1	
312013600	LED MOB31CR	1821		7	NEW
		1822		4	
		1827		2	
313003400	TOUCH PAEL LCD KGI-01S-3	M.PART		1	NEW
320001233	IC UPD71051GB-3B4 (44P QFP)	1820	UART	1	
320001242	IC UPC4570HA	1825	OP_AMP	6	
320001533	IC UPD72070GF-3BE	1820	FDC	1	NEW
320002301	IC MN19412A	1820	DSP	3	
320004359	IC HD74HC05P	1825	HC_MOS	1	
320004556	IC HD6433332A01F	1820	NKS2	1	
	or 320004638 IC HD6433332A04F (NKS2.5)				
320004565	IC HD6413003RF16	1839	CPU	1	NEW
320009004	IC NJM-78L05A	1825	REGULATOR	1	
320011026	IC MS216L	1825	OP_AMP	1	
320011179	IC M31000S2FP	1820	CPU	1	NEW
320012035	IC MB8421-90	1839	DP_RAM	1	
320012177	IC MBCE311751-030PF-G	1820	DF93	1	NEW
320012180	IC MBCE31751-021PF-G	1820	TG92	1	NEW
320012184	IC MBCG24143-4179PF-G-L	1820	IIC	1	NEW
320012201	IC MBM29F080-12PF-FJ	1820	FLASH ROM	2	NEW
320014002	IC SED1351FOA	1820	LCTC	1	NEW
320021144	IC TMS57002BPHA	1839	DSP	3	
320021149	IC TMS27C210A-10JL	1839	EP_ROM	1	
320040007	IC MX23C3210MC-15 X311-00	1820	WAVE_ROM	1	NEW
320040008	IC MX23C3210MC-15 X311-10	1820	WAVE_ROM	1	NEW
320040009	IC MX23C3210MC-15 X311-20	1820	WAVE_ROM	1	NEW
320040010	IC MX23C3210MC-15 X311-30	1820	WAVE_ROM	1	NEW
320040011	IC MX23C3210MC-15 X311-40	1820	WAVE_ROM	1	NEW
320040012	IC MX23C3210MC-15 X311-50	1820	WAVE_ROM	1	NEW
324001072	IC UPD43256BGU-55L-E2	1820	S_RAM	2	NEW
324003005	IC TC514256BJ-70 IWEL2	1820	D_RAM	6	NEW
	or 324012012 IC MB81C4256A-70PJ-G-EF				
	or 324013016 IC LH64256BK-80				
324003010	IC TCWU04F TE12L	1820	HC_MOS	3	NEW
324003011	IC TC7S86F (TE85R)	1820	HC_MOS	1	NEW
324003012	IC TC7W14F (TE12L)	1820	HC_MOS	2	NEW
324003013	IC TC74HC161AF (EL)	1820	HC_MOS	2	NEW
	or 324004062 IC HD74HC161FPER				
324004003	IC HD74HC139FPER	1839	HC_MOS	1	
324004011	IC HD74HC04FPER	1820	HC_MOS	2	
324004012	IC HD74HC08FPER	1820	HC_MOS	3	
324004042	IC HD74HC125FPER	1820	HC_MOS	1	NEW
324004050	IC HD74HC138FPER	1820	HC_MOS	2	
324004057	IC HD74HC153FPER	1820	HC_MOS	1	NEW

PART CODE	PART NAME/SPECIFICATION	P.C.BOARD	NOTE	Q'TY	MARK
324004187	IC HM514800CJ6	1820	D_RAM	2	NEW
324004192	IC HD74AC74FPER	1820	AC_MOS	2	NEW
324011002	IC M5223FP-600C	1820	OP_AMP	1	
324011013	IC M62021FP-600C	1820	RESET	1	
324011016	IC M51951AML-600C	1820	RESET	1	
324011017	IC M5218AFP-600C	1820	OP_AMP	1	
		1828		1	
324011022	IC M5M51008AFP-70L-TT4	1820	S_RAM	2	
		1839		1	
	or 324001066 IC UPD431000AGW-70L-E2				
324012012	IC MB81C4256A-70PJ-G-EF	1839	D_RAM	4	
	or 324003005 IC TCS14256AJ-70				
324021003	IC TLC2932IPWT-EL	1820	PLL	1	NEW
324038002	IC TDA1305T/N1-T	1825	DAC	2	
330001400	PHOTO COUPLER PC-910K	1825		1	
334000500	SB COIL SBT-0260 TF	1825		13	
335400116	CERAMIC OSC. CSBF500J040-TC01	1820		1	NEW
335400118	CRYSTAL OSC. SMD-49 6.144MHZ	1820		1	NEW
335400119	CRYSTAL OSC. SMD-49 24.000MHZ	1820		1	NEW
335400120	CRYSTAL OSC. SMD-49 40.000MHZ	1820		1	NEW
350002210	SEMI FIXED VR RH0615C13J8WA	1828		1	
350002410	SEMI FIXED VR RH0615C 15 100K	1828		1	
360024500	VR RK11K1140ADWA 10KB(SPECIAL)	1511		1	NEW
		1512		1	
362007500	VR RK09K1110BJFA-10KB	1825		1	
365008500	SLIDE VR RS45112AC00EA 10KBX2	1821		1	
365008700	SLIDE VR RS45111AC00VA 10KB	1821		1	
370004500	ROTARY ENCODER EC16B242041SA	1823		1	
375010500	TOUCH SW EVQ-PAC09K-A	1821		18	
		1822		19	
375010900	CHIP SW EVQPAC07K	1827		2	
402002800	COIL 2943-666671	1826		2	
415002600	X-311/2/3 X-Z SENSOR	M.PART		1	NEW
415002800	BUZZER CB-12AP-03	1822		1	NEW
420004800	KEYBOARD FS-61 KG2	M.PART		1	
435001300	FDD(2 MODE) EME-216KRAT	M.PART		1	NEW
454004300	PHONE JACK YKB21-5012	1825		6	
454004400	PHONE JACK YKB21-5010	1826		1	
454009900	PHONE JACK YKB21-5074G	1825		1	
464002301	FUSE 125V 2A UL CSA	M.PART	100JP	1	
		M.PART	117CN	1	
		M.PART	117EX	1	
		M.PART	117US	1	

PART CODE	PART NAME/SPECIFICATION	P.C.BOARD	NOTE	Q'TY	MARK
464062001	FUSE 250V T1.0A	M.PART	230WG	1	
		M.PART	230FR	1	
		M.PART	230GE	1	
		M.PART	240AU	1	
		M.PART	230UK	1	
		M.PART	230SC	1	
480001324	IC SOCKET 32P D1CF-32CS-E	1820		2	
480001403	IC SOCKET 40P D1CF-40CS-E	1839		1	
480010380	DIN JACK YKF51-5041 (3P)	1825		1	
520001900	LITHIUM BATTERY CR2032-HE2	M.PART		1	
600005100	AC CORD KP-610 GTBS-3 KS-31AY	M.PART	230UK	1	
600005300	AC CORD DC-480-J01	M.PART	100JP	1	
600005400	AC CORD EC-652-E03	M.PART	230GE	1	
		M.PART	230FR	1	
		M.PART	230WG	1	
		M.PART	230SC	1	
600005500	AC CORD UC-948-J01	M.PART	117EX	1	
600005700	AC CORD UC-953-J01	M.PART	117US	1	
		M.PART	117CN	1	
600005800	AC CORD SC-111-J01	M.PART	240AU	1	
620024600	X-952 POWER SW KNOB E40304-2	M.PART		1	
620026601	X-311-3 SVR KNOB KOC-E40364-2	M.PART		2	NEW
620026701	X-311-3 ENCODER KNOB E40363-2	M.PART		1	NEW
620027100	X-311-3 CONTROL KNOB ASSY	M.PART		1	NEW
640084600	GROUNDING CONTACT KOC-C40655	1826		1	
640084900	GND SPRING (A) KOC-C40658	M.PART		1	
641041171	X-013 JACK PLATE KOC-C40692	M.PART		1	
641041176	X-323 ENCODER METAL FITTING	M.PART		1	
641041187	X-323 ENCODER SUPPORTER C40975	M.PART		1	
641041227	X-311/312 SIDE CHASSIS L	M.PART		1	NEW
641041228	X-311/312 SIDE CHASSIS R	M.PART		1	NEW
641041229	X-311/312 KB SUPPORT C30455	M.PART		1	NEW
641041230	X-311-3 MAIN PCB METAL FITTING	M.PART		1	NEW
641041231	X-311/312 BNC PCB METAL FITTING	M.PART		1	NEW
641041232	X-311 LOWER CASE KOC-C10170	M.PART		1	NEW
641041234	X-311/312 FDD ANGLE KOC-C20298	M.PART		1	NEW
641041235	X-311 FRONT BAR KOC-C20295	M.PART		1	NEW
641041237	X-311/312 PCB METAL FITTING A	M.PART		1	NEW
641041238	X-311/2/3 PCB METAL FITTING B	M.PART		1	NEW
641041240	X-311/312 KBR ANGLE KOC-C20299	M.PART		1	NEW
641041241	X-311 PANEL KOC-C10164	M.PART		1	NEW
641041243	X-311 SUPPORT RAIL KOC-C20293	M.PART		1	NEW
641041245	X-311/312 P JACK METAL FITTING	M.PART		1	NEW
641041246	X-311/2/3 LCD CHASSIS C20300	M.PART		1	NEW
641041254	X-311/312 OPTION COVER C40995	M.PART		3	NEW
641041258	X-311/312 FSR METAL FITTING	M.PART		1	NEW
641041270	X-311/S/312 GND SPRING (H) C41032	1822		1	NEW
644006200	X-011/012 WHEEL SPRING	M.PART		2	
644007400	GND SPRING (G) KOC-C40970	M.PART		1	



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PART CODE	PART NAME/SPECIFICATION	P.C.BOARD	NOTE	Q'TY	MARK
646038900	X-011/012 JOYSTICK FRAME	M.PART		1	
646039000	X-011/012 VR PLATE	M.PART		1	
646039100	X-011/012 WHEEL SUPPORT	M.PART		1	
646039200	X-011/012 JOYSTICK LEVER	M.PART		1	
646039301	X-311-3 JS WHEEL KOC-E30148-2	M.PART		1	NEW
646040001	X-311-3 JS COVER KOC-E20134-2	M.PART		1	NEW
646052700	X-311/2/3 KNOB BLOCK L ASSY	M.PART		1	NEW
646052701	X-013/311/2/3 KNOB BLOCK R	M.PART		1	NEW
646052800	X-311/312 SIDE PLATE L E10116	M.PART		1	NEW
646052801	X-311/312 SIDE PLATE R E10117	M.PART		1	NEW
646052900	X-311/312 LCD HOOD KOC-E10115	M.PART		1	NEW
646053000	X-013/311/2 FDD COVER E20156	M.PART		1	NEW
646053100	X-311 JS PANEL KOC-E10118	M.PART		1	NEW
646053200	X-311-3 KNOB BLOCK R (SMALL)	M.PART		1	NEW

PART CODE	PART NAME/SPECIFICATION	P.C.BOARD	NOTE	Q'TY	MARK
001182000	PCB ASSEMBLY KLM-1820	M.PART	MAIN	1	NEW
001182100	PCB ASSEMBLY KLM-1821	M.PART	PANEL-L	1	NEW
001182200	PCB ASSEMBLY KLM-1822/3/6	M.PART	PANEL-R	1	NEW
001182500	PCB ASSEMBLY KLM-1825	M.PART	JACK/DAC	1	NEW
001182700	PCB ASSEMBLY KLM-1827	M.PART	SW	1	NEW
001182800	PCB ASSEMBLY KLM-1828	M.PART	RIBBON	1	NEW
001183900	PCB ASSEMBLY KLM-1839	M.PART	SOLO	1	NEW
002175500	INVERTER PCB KLM-1755	M.PART		1	NEW
002187500	POWER SUPPLY UNIT KLM-1875	M.PART		1	NEW
-----					
312010900	LED GL3ED8	1822		1	
312013600	LED MOB31CR	1821		7	NEW
		1822		4	
		1827		2	
-----					
313003400	TOUCH PAEL LCD KGJ-01S-3	M.PART		1	NEW
-----					
320001233	IC UPD71051GB-3B4 (44P QFP)	1820	UART	1	
320001242	IC UPC4570HA	1825	OP_AMP	6	
320001533	IC UPD72070GF-3BE	1820	FDC	1	NEW
320002301	IC MN19412A	1820	DSP	3	
320004359	IC HD74HC05P	1825	HC_MOS	1	
320004556	IC HD6433332A01F	1820	NKS2	1	
	or 320004638 IC HD6433332A04F (NKS2.5)				
320004565	IC HD6413003RF16	1839	CPU	1	
320009004	IC NJM-78L05A	1825	REGULATOR	1	
320011026	IC M5216L	1825	OP_AMP	1	
320011179	IC M31000S2FP	1820	CPU	1	NEW
320012035	IC MB8421-90	1839	DP_RAM	1	
320012177	IC MBCE311751-030PF-G	1820	DF93	1	NEW
320012180	IC MBCE31751-021PF-G	1820	TG92	1	NEW
320012184	IC MBCG24143-4179PF-G-L	1820	IIC	1	NEW
320012201	IC MBM29F080-12PF-FJ	1820	FLASH ROM	2	NEW
320014002	IC SED1351F0A	1820	LCTC	1	NEW
320021144	IC TMS57002BPHA	1839	DSP	3	
320021149	IC TMS27C210A-10JL	1839	EP_ROM	1	
320040007	IC MX23C3210MC-15 X311-00	1820	WAVE_ROM	1	NEW
320040008	IC MX23C3210MC-15 X311-10	1820	WAVE_ROM	1	NEW
320040009	IC MX23C3210MC-15 X311-20	1820	WAVE_ROM	1	NEW
320040010	IC MX23C3210MC-15 X311-30	1820	WAVE_ROM	1	NEW
320040011	IC MX23C3210MC-15 X311-40	1820	WAVE_ROM	1	NEW
320040012	IC MX23C3210MC-15 X311-50	1820	WAVE_ROM	1	NEW
324001072	IC UPD43256BGU-55L-E2	1820	S_RAM	2	NEW
324003005	IC TC514256BI-70 IWEL2	1820	D_RAM	6	NEW
	or 324012012 IC MB81C4256A-70PJ-G-EF				
	or 324013016 IC LH64256BK-80				
324003010	IC TCWU04F TE12L	1820	HC_MOS	3	NEW
324003011	IC TC7S86F (TE85R)	1820	HC_MOS	1	NEW
324003012	IC TC7W14F (TE12L)	1820	HC_MOS	2	NEW
324003013	IC TC74HC161AF (EL)	1820	HC_MOS	2	NEW
	or 324004062 IC HD74HC161FPER				
324004003	IC HD74HC139FPER	1839	HC_MOS	1	
324004011	IC HD74HC04FPER	1820	HC_MOS	2	
324004012	IC HD74HC08FPER	1820	HC_MOS	3	
324004042	IC HD74HC125FPER	1820	HC_MOS	1	NEW
324004050	IC HD74HC138FPER	1820	HC_MOS	2	
324004057	IC HD74HC153FPER	1820	HC_MOS	1	
324004187	IC HM514800CJ6	1820	D_RAM	2	NEW

PART CODE	PART NAME/SPECIFICATION	P.C.BOARD	NOTE	Q'TY	MARK
324004192	IC HD74AC74FPER	1820	AC_MOS	2	NEW
324011002	IC M5223FP-600C	1820	OP_AMP	1	
324011013	IC M62021FP-600C	1820	RESET	1	
324011016	IC M51951AML-600C	1820	RESET	1	
324011017	IC M5218AFP-600C	1820	OP_AMP	1	
		1828		1	
324011022	IC M5M51008AFP-70L-TT4	1820	S_RAM	2	
		1839		1	
	or 324001066 IC UPD431000AGW-70L-E2				
324012012	IC MB81C4256A-70PJ-G-EF	1839	D_RAM	4	
324021003	IC TLC2932IPWT-EL	1820	PLL	1	NEW
324038002	IC TDA1305T/N1-T	1825	DAC	2	
330001400	PHOTO COUPLER PC-910K	1825		1	
334000500	SB COIL SBT-0260 TF	1825		13	
335400116	CERAMIC OSC. CSBF500J040-TC01	1820		1	NEW
335400118	CRYSTAL OSC. SMD-49 6.144MHZ	1820		1	NEW
335400119	CRYSTAL OSC. SMD-49 24.000MHZ	1820		1	NEW
335400120	CRYSTAL OSC. SMD-49 40.000MHZ	1820		1	NEW
350002210	SEMI FIXED VR RH0615C13J8WA	1828		1	
350002410	SEMI FIXED VR RH0615C 15 100K	1828		1	
360024500	VR RK11K1140ADWA 10KB(SPECIAL)	1511		1	NEW
		1512		1	
362007500	VR RK09K1110BJFA-10KB	1825		1	
365008500	SLIDE VR RS45112AC00EA 10KBX2	1821		1	
365008700	SLIDE VR RS45111AC00VA 10KB	1821		1	
370004500	ROTARY ENCODER EC16B242041SA	1823		1	
375010500	TOUCH SW EVQ-PAC09K-A	1821		18	
		1822		19	
375010900	CHIP SW EVQPAC07K	1827		2	
402002800	COIL 2943-666671	1826		2	
415002600	X-311/2/3 X-Z SENSOR	M.PART		1	NEW
415002800	BUZZER CB-12AP-03	1822		1	NEW
420004500	KEYBOARD FS-E76	M.PART		1	
435001300	FDD(2 MODE) EME-216KRAT	M.PART		1	NEW
454004300	PHONE JACK YKB21-5012	1825		6	
454004400	PHONE JACK YKB21-5010	1826		1	
454009900	PHONE JACK YKB21-5074G	1825		1	
464002301	FUSE 125V 2A UL CSA	M.PART	100JP	1	
		M.PART	117CN	1	
		M.PART	117EX	1	
		M.PART	117US	1	

PART CODE	PART NAME/SPECIFICATION	P.C.BOARD	NOTE	Q'TY	MARK
464062001	FUSE 250V T1.0A	M.PART	230WG	1	
		M.PART	230FR	1	
		M.PART	230GE	1	
		M.PART	240AU	1	
		M.PART	230UK	1	
		M.PART	230SC	1	
480001324	IC SOCKET 32P DICF-32CS-E	1820		2	
480001403	IC SOCKET 40P DICF-40CS-E	1839		1	
480010380	DIN JACK YKF51-5041 (3P)	1825		1	
520001900	LITHIUM BATTERY CR2032-HE2	M.PART		1	
600005100	AC CORD KP-610 GTBS-3 KS-31AY	M.PART	230UK	1	
600005300	AC CORD DC-480-J01	M.PART	100JP	1	
600005400	AC CORD EC-652-E03	M.PART	230GE	1	
		M.PART	230FR	1	
		M.PART	230WG	1	
		M.PART	230SC	1	
600005500	AC CORD UC-948-J01	M.PART	117EX	1	
600005700	AC CORD UC-953-J01	M.PART	117US	1	
		M.PART	117CN	1	
600005800	AC CORD SC-111-J01	M.PART	240AU	1	
620024600	X-952 POWER SW KNOB E40304-2	M.PART		1	
620026601	X-311-3 SVR KNOB KOC-E40364-2	M.PART		2	NEW
620026701	X-311-3 ENCODER KNOB E40363-2	M.PART		1	NEW
620027100	X-311-3 CONTROL KNOB ASSY	M.PART		1	NEW
640084600	GROUNDING CONTACT KOC-C40655	1826		1	
640084900	GND SPRING (A) KOC-C40658	M.PART		1	
641041171	X-013 JACK PLATE KOC-C40962	M.PART		1	
641041176	X-323 ENCODER METAL FITTING	M.PART		1	
641041187	X-323 ENCODER SUPPORTER C40975	M.PART		1	
641041227	X-311/312 SIDE CHASSIS L	M.PART		1	NEW
641041228	X-311/312 SIDE CHASSIS R	M.PART		1	NEW
641041229	X-311/312 KB SUPPORT C30455	M.PART		1	NEW
641041230	X-311-3 MAIN PCB METAL FITTING	M.PART		1	NEW
641041231	X-311/312 BNC PCB METAL FITTING	M.PART		1	NEW
641041233	X-312 LOWER CASE KOC-C10171	M.PART		1	NEW
641041234	X-311/312 FDD ANGLE KOC-C20298	M.PART		1	NEW
641041236	X-312 FRONT BAR KOC-C20296	M.PART		1	NEW
641041237	X-311/312 PCB METAL FITTING A	M.PART		1	NEW
641041238	X-311/2/3 PCB METAL FITTING B	M.PART		1	NEW
641041239	X-312 KBF ANGLE KOC-C30465	M.PART		2	NEW
641041240	X-311/312 KBR ANGLE KOC-C20299	M.PART		1	NEW
641041242	X-312 PANEL KOC-C10165	M.PART		1	NEW
641041244	X-312 SUPPORT RAIL KOC-C20294	M.PART		1	NEW
641041245	X-311/312 P.JACK METAL FITTING	M.PART		1	NEW
641041246	X-311/2/3 LCD CHASSIS C20300	M.PART		1	NEW
641041254	X-311/312 OPTION COVER C40995	M.PART		3	NEW
641041258	X-311/312 FSR METAL FITTING	M.PART		1	NEW
641041270	X-311/S/312 GND SPRING (H) C41032	1822		1	NEW
644006200	X-011/012 WHEEL SPRING	M.PART		2	
644007400	GND SPRING (G) KOC-C40970	M.PART		1	

PART CODE	PART NAME/SPECIFICATION	P.C.BOARD	NOTE	Q'TY	MARK
646038900	X-011/012 JOYSTICK FRAME	M.PART		1	
646039000	X-011/012 VR PLATE	M.PART		1	
646039100	X-011/012 WHEEL SUPPORT	M.PART		1	
646039200	X-011/012 JOYSTICK LEVER	M.PART		1	
646039301	X-311-3 JS WHEEL KOC-E30148-2	M.PART		1	NEW
646040001	X-311-3 JS COVER KOC-E20134-2	M.PART		1	NEW
646052700	X-311/2/3 KNOB BLOCK L ASSY	M.PART		1	NEW
646052701	X-013/311/2/3 KNOB BLOCK R	M.PART		1	
646052800	X-311/312 SIDE PLATE L E10116	M.PART		1	NEW
646052801	X-311/312 SIDE PLATE R E10117	M.PART		1	NEW
646052900	X-311/312 LCD HOOD KOC-E10115	M.PART		1	NEW
646053000	X-013/311/2 FDD COVER E20156	M.PART		1	
646053100	X-311 JS PANEL KOC-E10118	M.PART		1	NEW
646053200	X-311-3 KNOB BLOCK R (SMALL)	M.PART		1	NEW

# MEMO

## VAROITUS

Paristo voi räjähtää, jos se on virheellisesti asennettu.  
Vaihda paristo ainoastaan laitevalmistajan suosittelemaan  
tyyppiin. Hävitä käytetty paristo valmistajan ohjeiden  
mukaisesti.

## ADVARSELI

Lithiumbatteri – Eksplosionsfare ved fejlagtig handtering.  
Udskiftning må kun ske med batteri af samme  
fabrikat og type.  
Levér det brugte batteri tilbage til leverand ø ren.

## ADVERSEL

Lithiumbatteri – Eksplosjonsfare.  
Ved utskifting benyttes kun batteri som  
· anbefalt av apparatfabrikanten.  
Brukt batteri returneres apparatleverand ø ren.

## VARNING

Explosionsfara vid felaktigt batteribyte.  
Använd samma batterityp eller en ekvivalent typ som  
rekommenderas av apparatillverkaren.  
Kassera använt batteri enligt fabrikantens instruktion.

## CAUTION

Danger of explosion if battery is incorrectly replaced.  
Replace only with the same or equivalent type  
recommended by the equipment manufacturer  
Discard used batteries according to manufacturer's  
instructions.

# **KORG**

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**KORG INC. 15-12, Shimotakaido 1-chome, Suginami-ku, Tokyo 168**

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