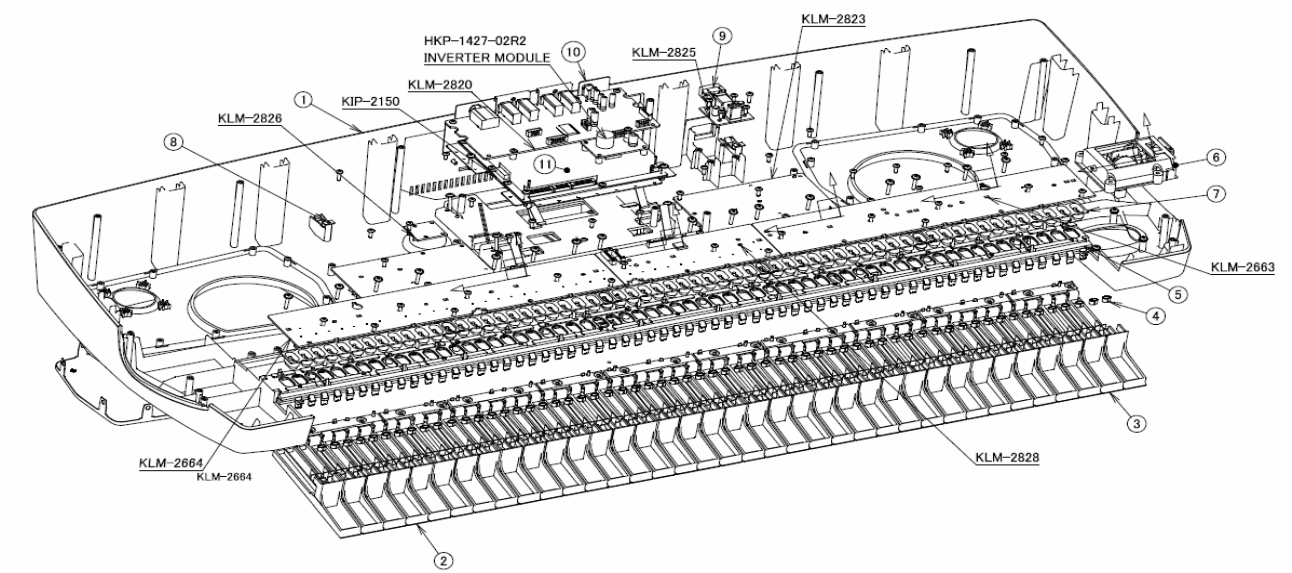
KORG Pa500
SERVICE MANUAL

TABLE OF CONTENTS

KORG

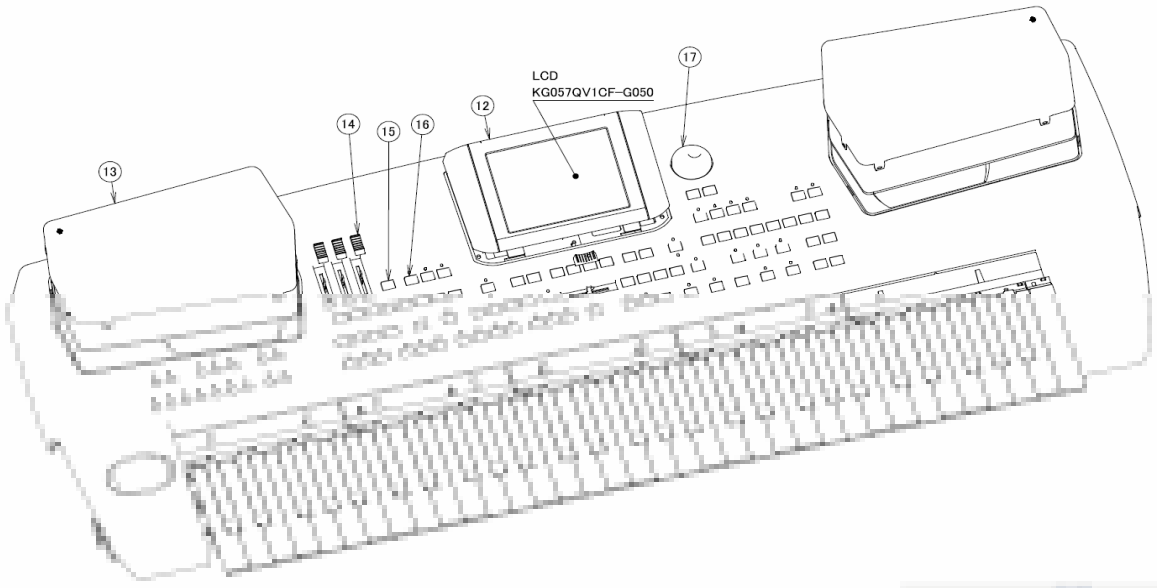
Issued:Nov.15, 2007
Ver1.0

Pa500 ASSEMBLE DRAW UPPER DRAW

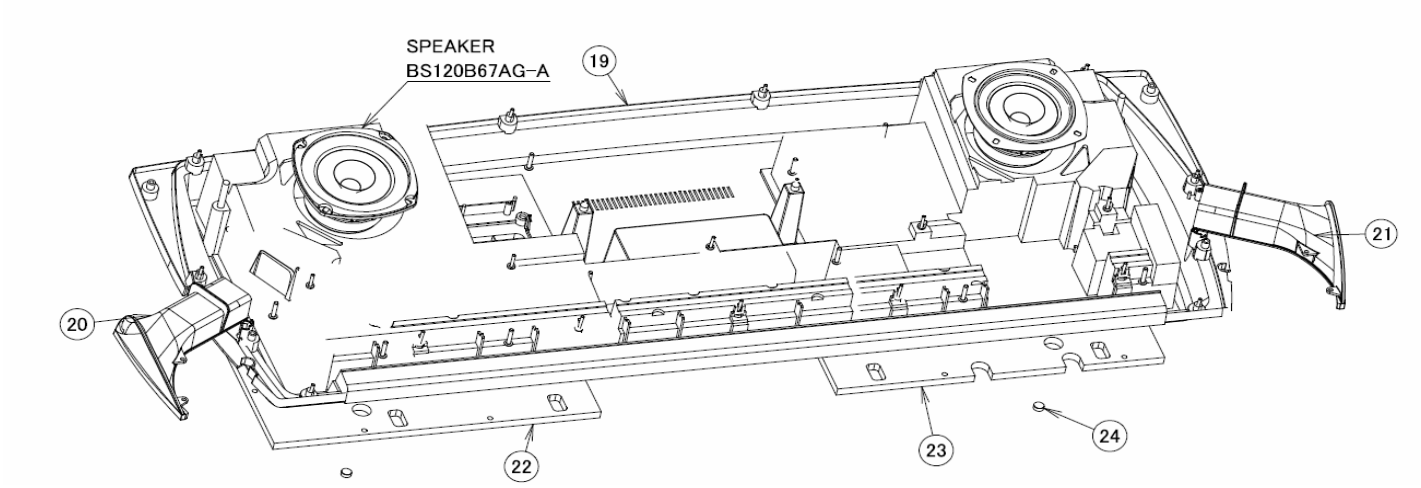


Screw information

Part Cord	PART NAME	NOTE
510700503509	BT B 3BC 3 X 6	for metal chassis to PCB
510700503563	SCREW BT B 3BC 3X10	for UPPER CASE
510700503574	BT FEW 3BBC 3 X 16	for KEY BORAD
510700503512	SCREW BT B NIC 3 X 8	for rear side UPPER CASE

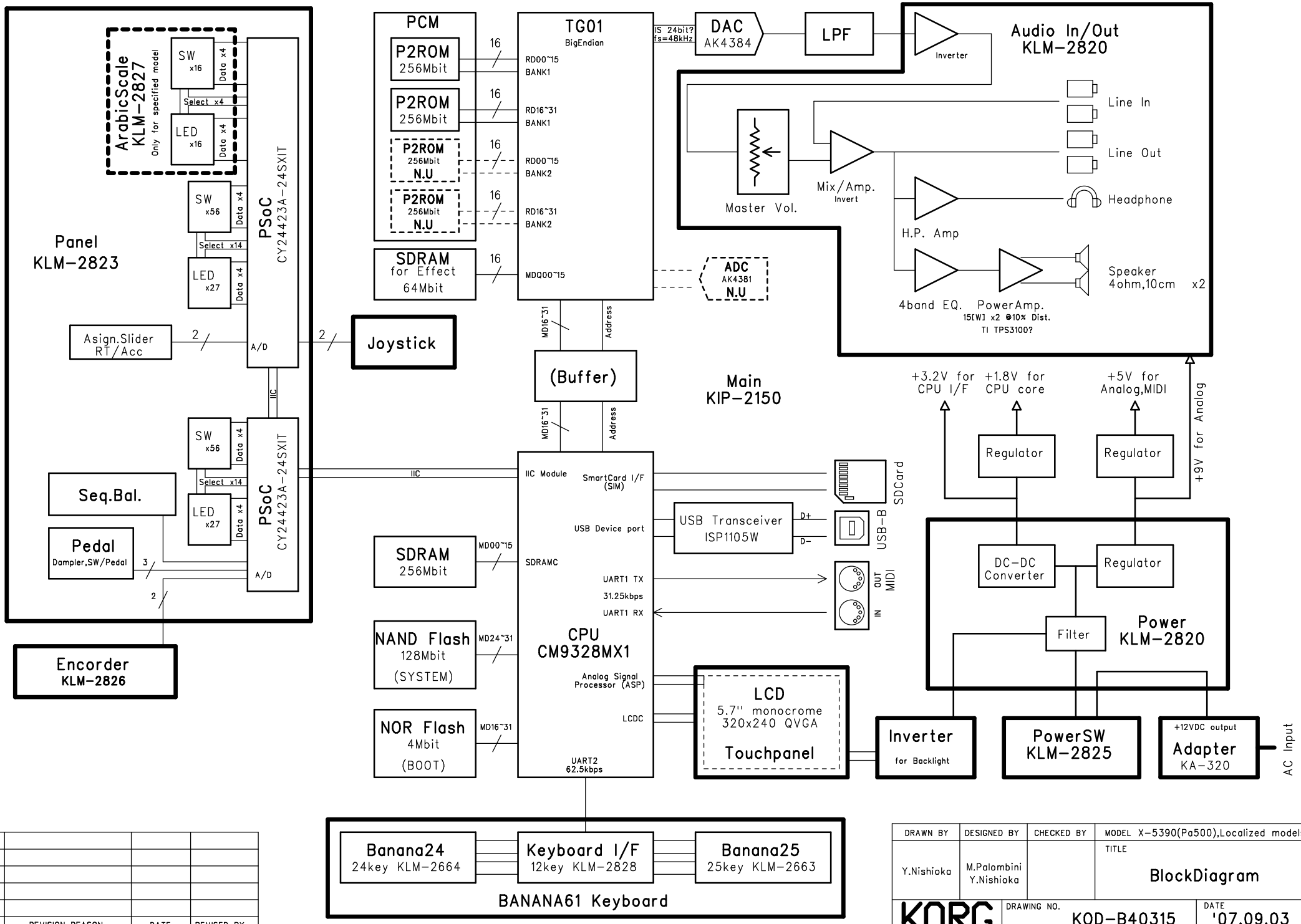


Pa500 ASSEMBLE DRAW BOTTOM SIDE DRAW



Part Cord	PART NAME	NOTE
510700503613	BT FEW 3BC 3 X 20	for bottom board
510700503614	BT B 3BBC 4X20	for UPPER side & BOTTOM side

No	Part Cord	PART NAME	NOTE
1	510646508002	X-5390 UPPER CASE E10252-1	Standerd Pa500
	-	X-539A UPPER CASE E10252-2	
	-	X-539B UPPER CASE E10252-3	
	-	X-539C UPPER CASE E10252-4	
	-	X-539D UPPER CASE E10252-5	
	-	X-539E UPPER CASE E10252-6	
	-	X-539F UPPER CASE E10252-7	
2	510646502086	KEY ASSY 13(M) KOC-H30306-1	
3	510646502085	KEY ASSY 12(M) KOC-H30305-1	
4	510500505001	KEY GUIDE RUBBER QMGG055AA	
5	510500505501	KB FELT 1 KOC-F41281-1	
6	510649500502	PA50 JS ASSY 11PA050JS10	
7	510500504503	RUBBER BOTTON 13 KOC-E30438	
8	510640508028	X-5390 SH SPRING C41536	
9	510646502122	X-952 PWS KNOB (CH) E40726	
10	510640508031	X-5390 LOWER CHASSIS C30753	
11	510640508030	X-5390 UPPER CHASSIS C30752	
12	510646502119	X-5390 LCD HOOD E30475	
13	510802500534	X-5390 SP NET C30754	
14	510646502049	X-2100 SLIDER KNOB E40578-2	
15	510646508501	5390 SQUARE SW NL DG E40720-1	collor:Dark GRAY
	510646508502	5390 SQUARE SW NL LG E40720-2	collor:Light GRAY
16	510646508503	5390 SQUARE SW LED DG E40721-1	collor:Dark GRAY
	510646508504	5390 SQUARE SW LED LG E40721-2	collor:Light GRAY
	510646508505	5390 SQUARE SW LED RD E40721-3	collor:RED
17	510646502123	X-610 ENCODER KNOB(CH) E40727 -1 GRAY	
18	510646508001	X-5390 BOTTOM CASE E20294	
19	510646502120	X-5390 BASS PORT assy L E30476-1	
20	510646502121	X-5390 BASS PORT assy R E30476-2	
21	510645500005	X-5390 BOTTOM BOARD L D30312	
22	510645500006	X-5390 BOTTOM BOARD R D30313	
23	510802500533	X-5390 FOOT RUBBER E40723	



MARK	REVISION REASON	DATE	REVISED BY
△			
△			
△			
△			
△			

DRAWN BY	DESIGNED BY	CHECKED BY	MODEL X-5390(Pa500),Localized models
Y.Nishioka	M.Palombini Y.Nishioka		TITLE BlockDiagram

KORG

DRAWING NO. KOD-B40315

DATE '07.09.03

SD_MMC

DISPLAY

LCD

T.P.

TO KEYB IF

P. UPPLY

TO OUTPUT BOARD

PANEL BOARD

DA DEFINIRE PINOUT

BIG ENDIAN

64Mbit SDRAM

BOOT MEMORY (NOR FLASH)

SYSTEM MEMORY (NAND)

J-TAG

MEMO_0

MUTE3V

AMP_MUTE

HP_INSERT

1x128bit:
R111OFF
R106 OFF
R107 ON
R113 ON

1x256bit:
R106 ON
R111 ON
R107 OFF
R113 OFF

mettere a passo 5mm
con piazzole tipo strip

Boot at CS0 (D31:16)
MA15=0 -> DMA TC01
EBC (bit11)=1 PER CS4

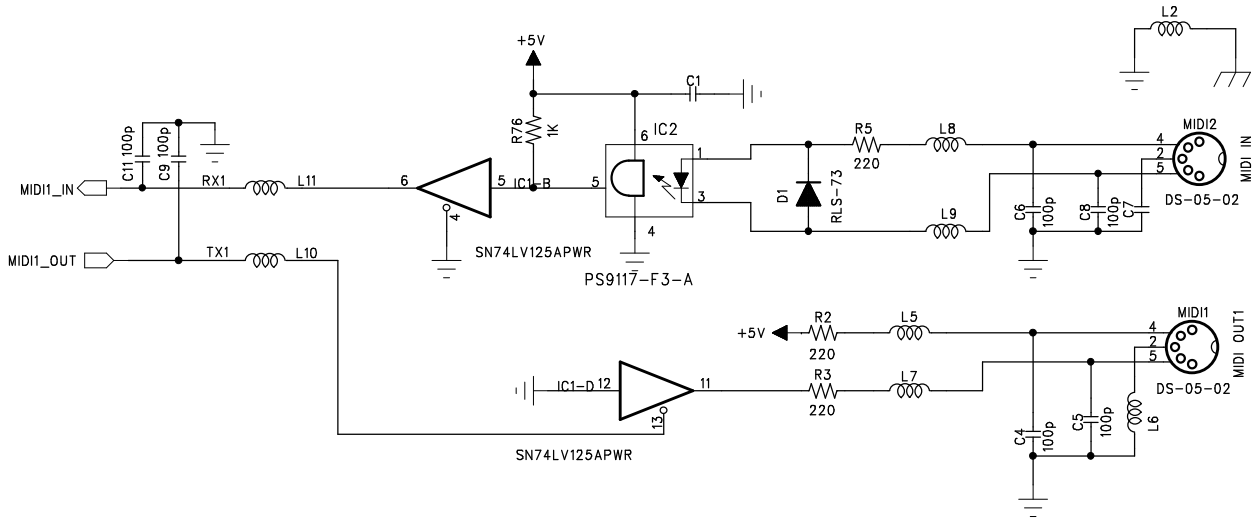
No valu RA is 47ohm
D5~9 : RLS-73
Novalue C is 0.1uF
Novalue L is BLM18BD102SN1D

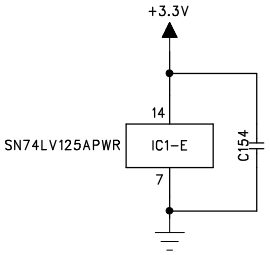
VERIFICA PACKAGEREGOLATORE

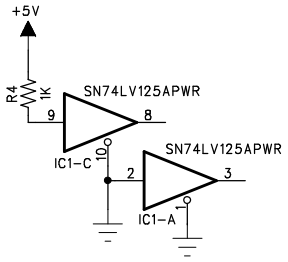
POSIZIONARE ALLINEATI A PASSO 2,54
CON PIAZZOLE TIPO CONN STRIP

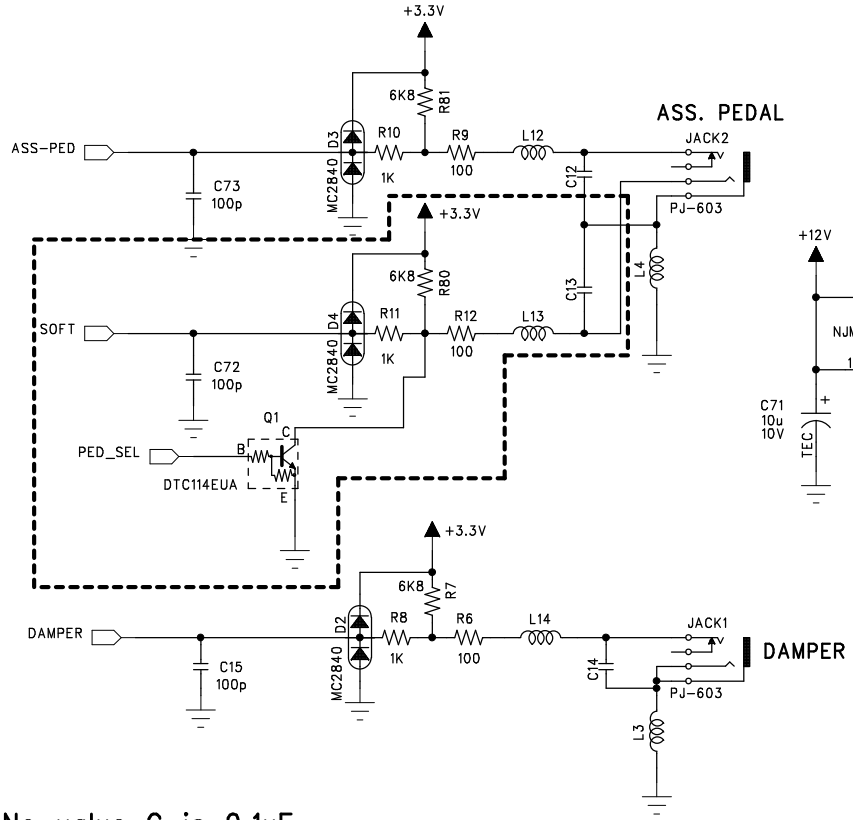
DRAWN NO.	KOD-A30752	KORG	
DRAWN	DATE	TITLE	KIP-2150 Circuit diagram
M.Palombini Y.Nishioka	2007/09/04		
		SIZE	SHEET 1 OF 2 SHEETS

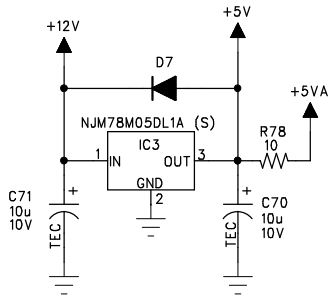
REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:



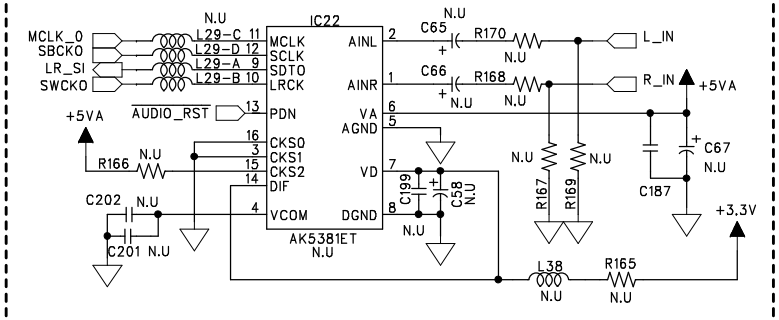








SLAVE, TTL, HPF ON, I2S 24 BIT



No value C is 0.1uF
Novalue L is BLM18BD102SN1D

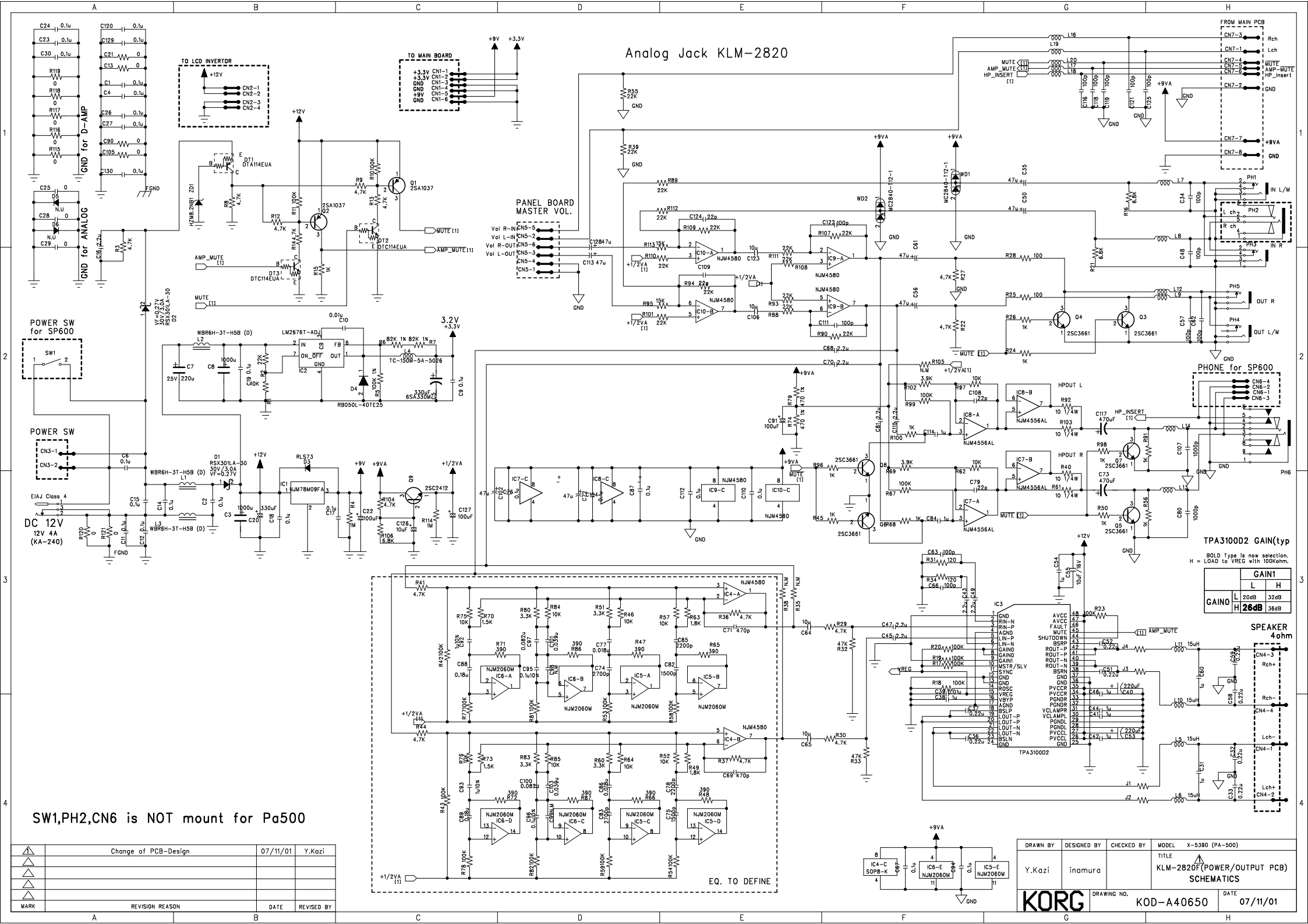
DRAWN: M.Palombini Y.Nishioka	DATED: 2007/09/04	
CHECKED:	DATED:	
QUALITY CONTROL:	DATED:	
RELEASED:	DATED:	

COMPANY: KORG

TITLE: KIP-2150 Circuit diagram

CODE:	SIZE:	DRAWING NO:	REV:
		KOD-A40649	

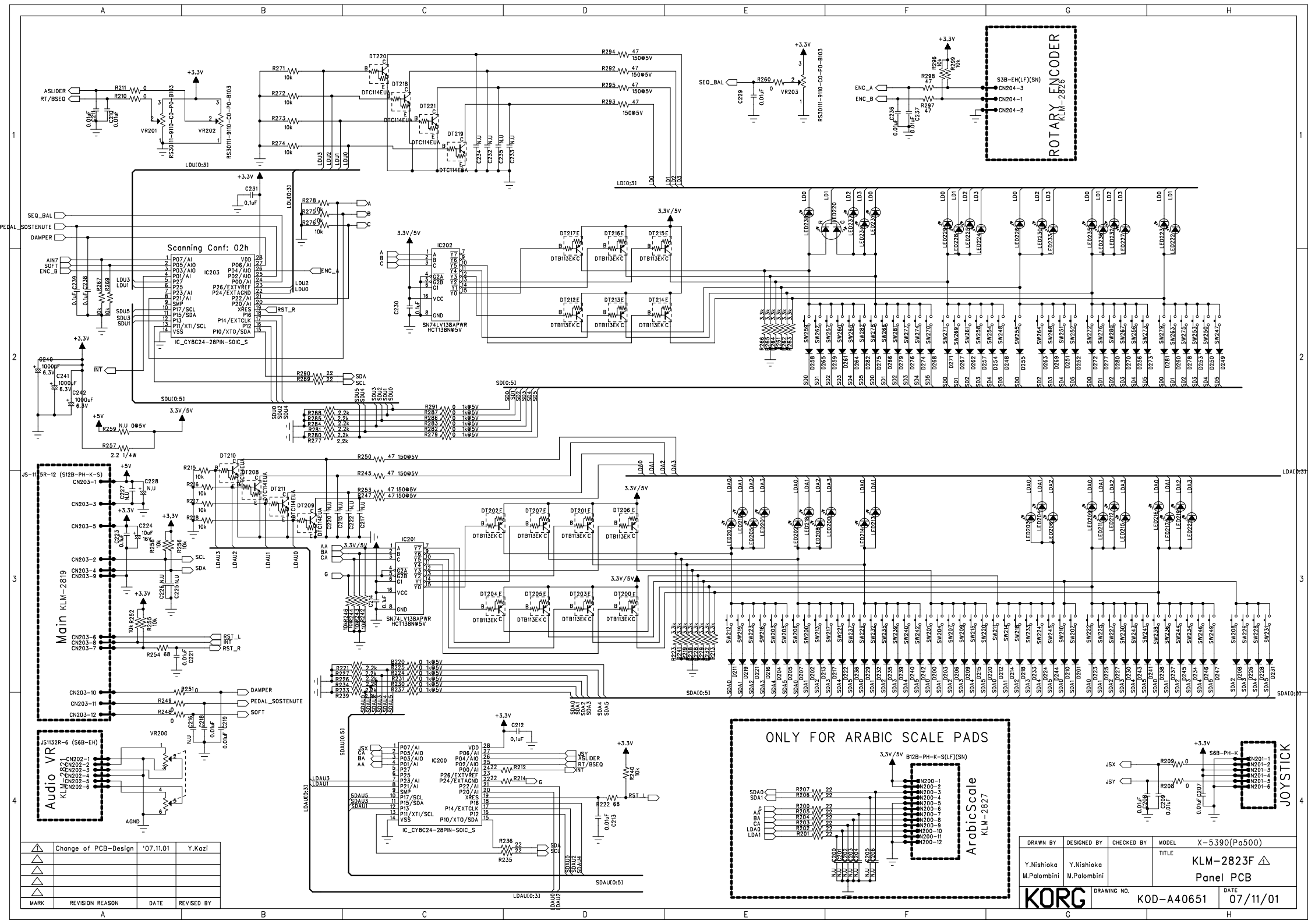
SCALE: <Scale> SHEET: 2 OF 2



MARK	REVISION REASON	DATE	REVISED BY
1	Change of PCB-Design	07/11/01	Y.Kazi

DRAWN BY	DESIGNED BY	CHECKED BY	MODEL X-5390 (PA-500)
Y.Kazi	inamura		TITLE 1 KLM-2820F(POWER/OUTPUT PCB) SCHEMATICS

KORG | DRAWING NO. KOD-A40650 | DATE 07/11/01



MARK	REVISION REASON	DATE	REVISED BY
1	Change of PCB-Design	'07.11.01	Y.Kazi
2			
3			
4			
5			

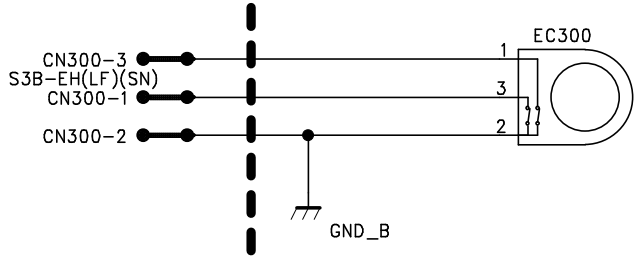
DRAWN BY	DESIGNED BY	CHECKED BY	MODEL
Y.Nishioka M.Palombini	Y.Nishioka M.Palombini		X-5390(Pa500)

TITLE: KLM-2823F ⚠ Panel PCB

KORG | DRAWING NO. KOD-A40651 | DATE 07/11/01

ROTARY ENCODER

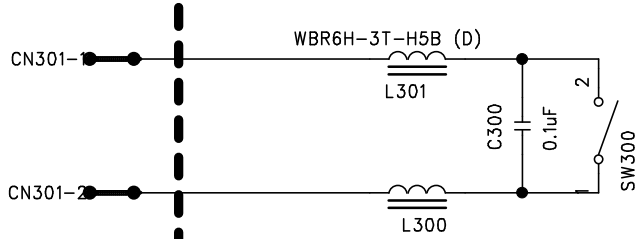
KLM-2826F △1



POWER SWITCH

KLM-2825F △1

DC 12V 12V 4A
KA-320



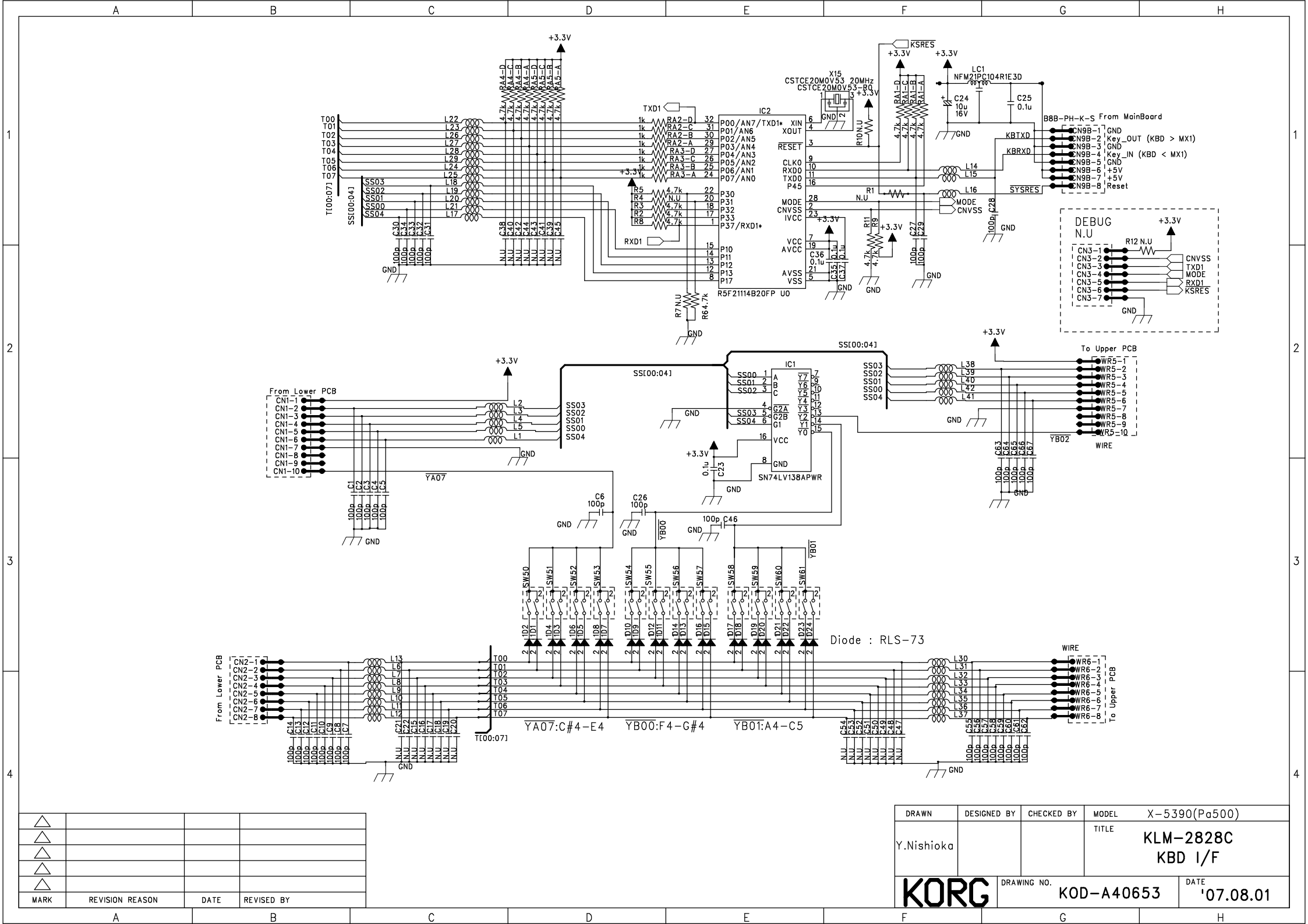
MARK	REVISION REASON	DATE	REVISED BY
△1	Change of PCB-Design	07/11/01	Y.Kazi
△			
△			
△			
△			

DRAWN BY	DESIGNED BY	CHECKED BY	MODEL X-5390(Pa500)
Y.Nishioka	Y. Nishioka		TITLE KLM-2825F/2826F △1 PowerSW/Encorder PCB

KORG

DRAWING NO. KOD-A40652

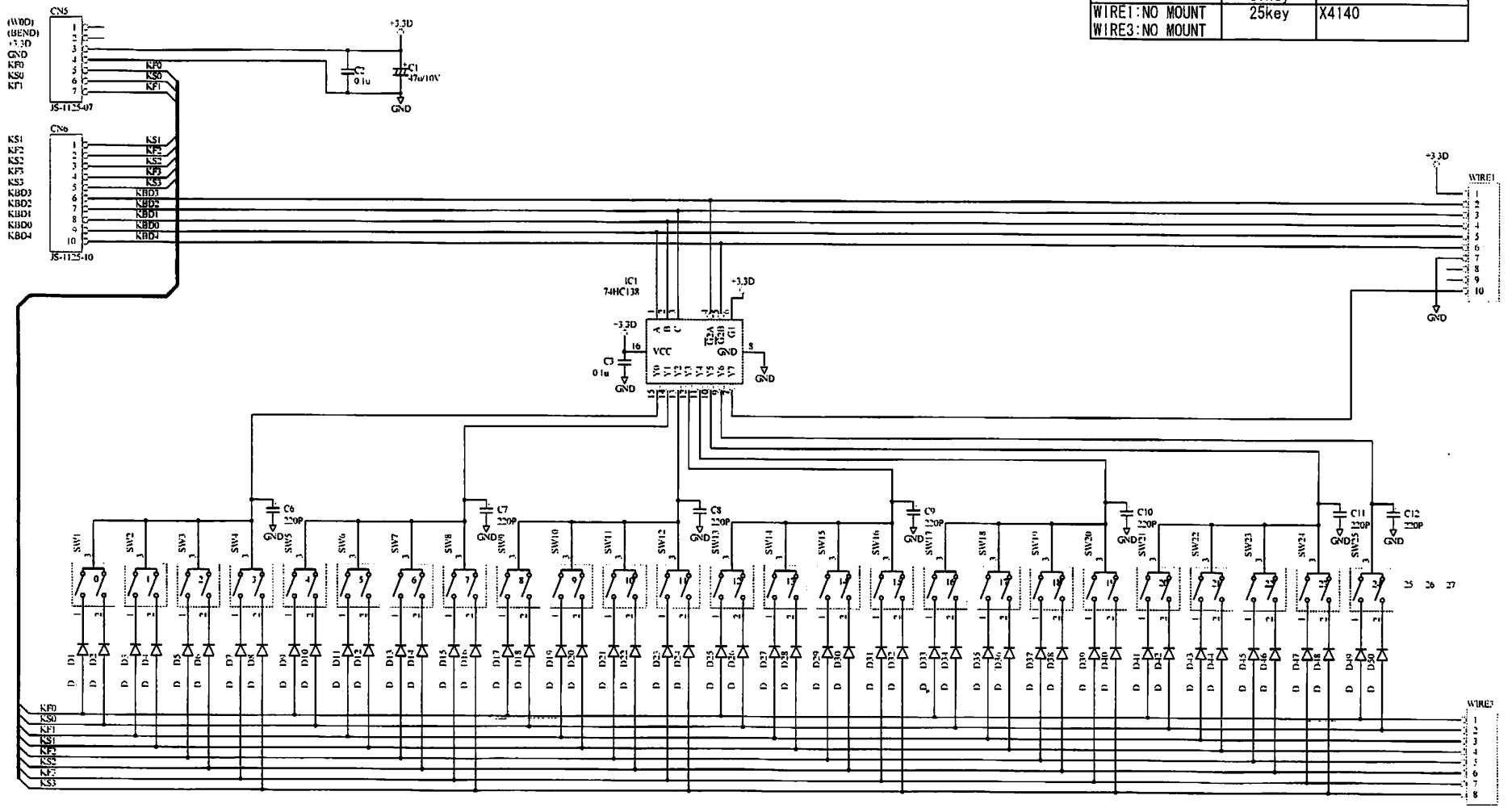
DATE 07/11/01



MARK	REVISION REASON	DATE	REVISED BY
△			
△			
△			
△			
△			

DRAWN	DESIGNED BY	CHECKED BY	MODEL	X-5390(Pa500)
Y.Nishioka			TITLE	KLM-2828C KBD I/F
KORG	DRAWING NO.	KOD-A40653	DATE	'07.08.01

WIRE1.WIRE3	MODEL TYPE	MODEL NAME
WIRE1:HNS-3631 WIRE3:HNS-3632	61key 49key 37key	X4130
WIRE1:NO MOUNT WIRE3:NO MOUNT	25key	X4140

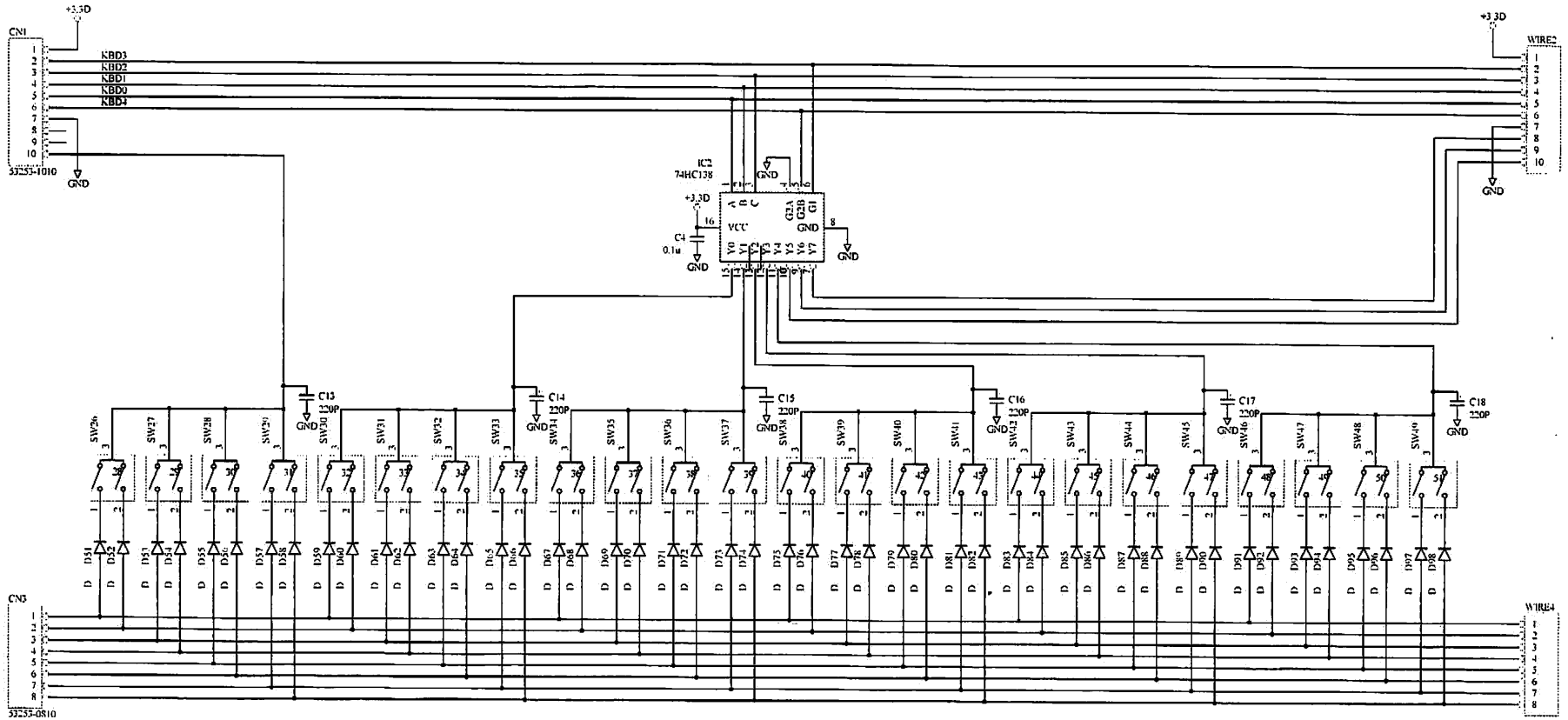


All Diodes : 1SS133

発行
2006.02.23
株コルク

Title	KLM-2663 Circuit Diagram	
Size A3	Number KOD-A30702	Revision
Date	6-Jan-2005	Sheet of
File	E:\USER DESIGN\BANANA\Banana\KB Ba	

WIRE2, WIRE4	MODEL TYPE	MODEL NAME
WIRE2:HNS-3631 WIRE4:HNS-3632	61key	X4130
WIRE2:NO MOUNT WIRE4:NO MOUNT	49key	



All Diodes : 1SS133

発行
2006 02 23
(株)コルク

武田
2006 02 23
(株)コルク

Title	KLM-2664 Circuit Diagram	
Size: A3	Number: KOD-A30703	Revision
Date: 6-Jan-2005	Sheet of	
File: E:\USER DESIGN\BANANA Banana\KB-Ba...		

How to enter the TEST MODE

<<Start the TEST MODE>>

Pressing the [STYLE PLAY] and the [MEDIA], turn the power on, and continue to pressing until the service menu is displayed. Confirm that big noise is not heard when power on.
After the service menu is displayed, press the [PAD 2] to start the TEST MODE.

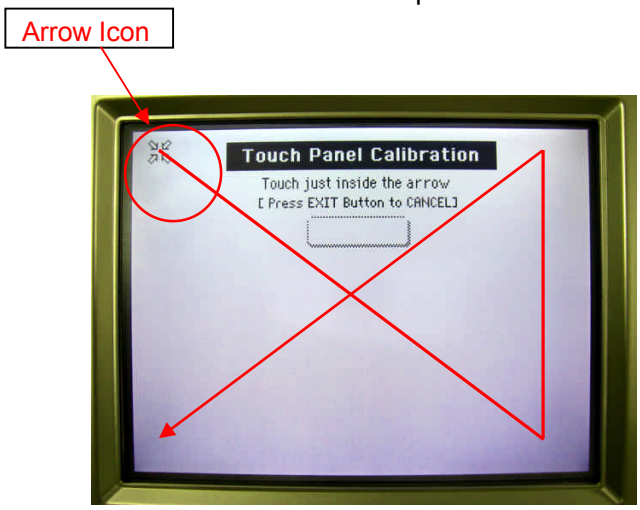
When the service menu is displayed, you can adjust the contrast of the LCD, by pressing the [MENUE], and rotating the [TEMPO/VALUE] encoder.

TEST MODE DISPLAY

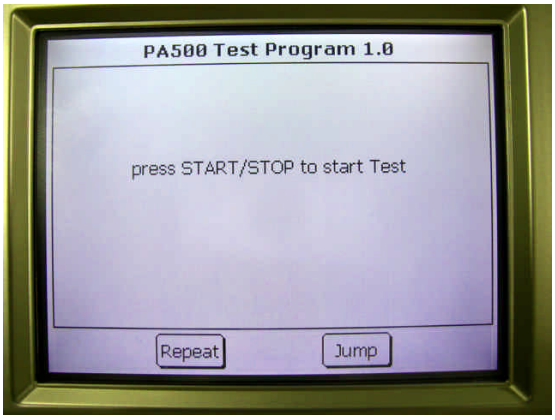
When the service menu is displayed, you can adjust the contrast of the LCD, by pressing the [MENUE], and rotating the [TEMPO/VALUE] encoder.

<<LCD CALIBRATION>>

This calibration is for the touch panel. At the left side top in the LCD the icon of arrow is displayed.



TOUCH PANEL CALIBRATION



START of TEST MODE

After you touch the arrow icon, the arrow mark moves top-left -> bottom –right ->top-right -> bottom-left. Touch each arrow. When you touch the bottom-left arrow, [save] is displayed in the LCD, then touch it. The data of calibration is saved and the display becomes START of TEST MODE. Confirm that SD card is not inserted, push the [JUMP] switch. Test menu is displayed.

<<TEST MENUE>>

Touch one item to check.

item	Check
[Nand]	Internal: Check of NAND
[TGL]	Internal: Check of TGL, PCM ROM
[Usb Device]	Internal: Check of USB
[MMC/SD Card]	Internal: Check of SD Card
[Midi Loop]	Internal: Check of MIDI Loop
[Touch Panel]	Check of Touch Panel
[Panel Buttons]	Check of switches and LEDs
[Sliders]	Check of A/D mute
[Audio Output]	Check of Maximum Output and frequency response
[Audio Input]	Check of Line input
[Distortion]	Check of distortion
[Noise]	Check of noise level
[Keyboard]	Check of keyboard
[Speakers]	Check of speakers

When you start from an item before MIDI Loop, please connect MIDI IN and MIDI OUT by a MIDI cable.

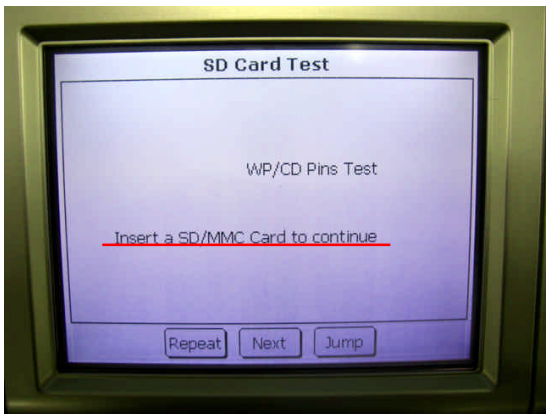
<<Internal Check: NAND - MIDI Loop>>

When you touch the icon of the internal check, Pa500 execute the internal check automatically. When some error is detected Pa500 displays the error item in the LCD.

After following display is appeared, insert the SD card. When the SD card is inserted before the SD Card Check, it is NG. After following display is appeared, insert the SD card then Pa500 begins internal check. When all items of the internal check are OK, the check proceeds to the check of the touch panel automatically.

The USB check is always NG, so touch the [Next] icon to skip the check.

１：NAND CHECK
２：TGL CHECK
３：USB CHECK
４：SD CARD CHECK
５：MIDI CHECK



Display of request of SD Card insertion

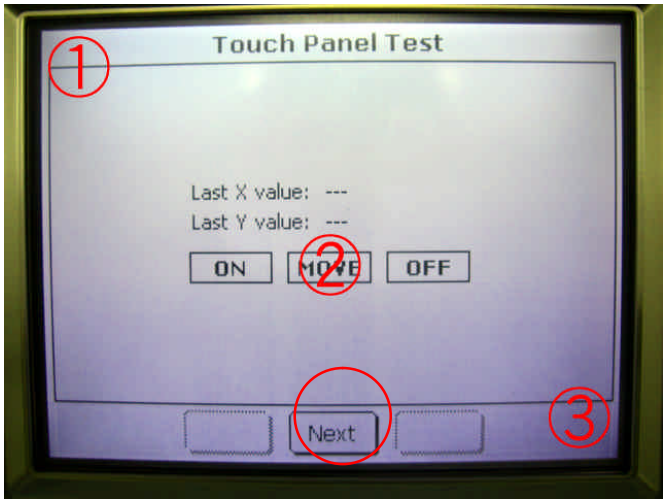
Do not use the card which is used in the SD card Check for other purpose.

<<Check of Touch Panel>>

After the internal check passed, the check proceeds to the check of the touch panel automatically. Touch the ①・②・③ (see next page) points in the display and confirm following items.

*The values of **[LCD X value], [LCD Y value]** when you touch the 3 points is not “0” or “256”.
*The value of **[LCD X value]** becomes bigger by the order of ①->②->③.
* The value of **[LCD Y value]** becomes smaller by the order of ①->②->③.
*When you touch the LCD, the mark appears at the [MOVE] icon.
*When you remove your finger from the LCD, the mark appears at the [OFF] icon.

When you touch the LCD, the mark appears for a while at the **[ON]** icon, but soon it move to the **[MOVE]** icon. Confirm the **[MOVE]** and the **[OFF]** icons.
After confirmed them, rotate the [TEMPO/VALUE] encoder to the top-center position, then touch the **[Next]** icon.



Display of the touch panel check

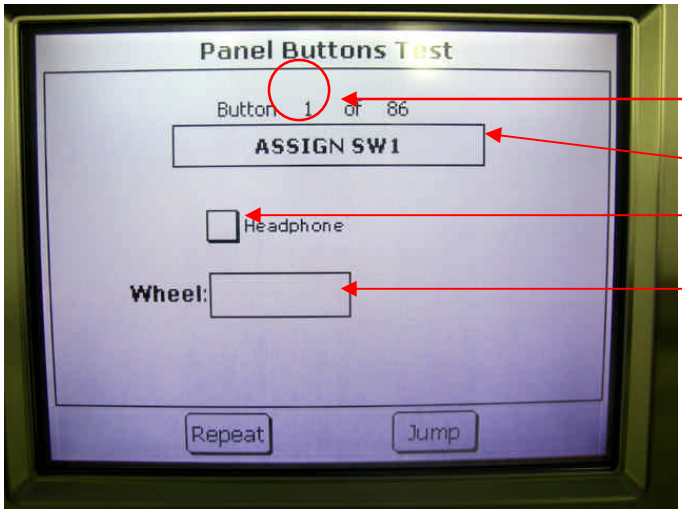
<<Check of Switch, Encoder, Headphones>>

Touch the [Next] icon to proceed to the check of switches, encoder, headphones.
The display of next page appeared, confirm that the [√] mark is not with the [Headphone] icon.
Then insert the headphone plug to the headphone jack. Confirm that the [√] mark is with the [Headphone] icon.

Next, rotate the encoder for one around clockwise, confirm that the value of [Wheel:] icon becomes “24(+). Then rotate the encoder for one around counter clockwise and confirm that the value of the [Wheel:] icon becomes “0(-).

Next check is switches. All LEDs turned on, confirm that there is not the unevenness of brightness. The switch which is checked is displayed in the LCD. The order is in the following table. Confirm that the LED which is checked turned ON, and press the switch to proceed to the next.
At the time confirm that the check proceeds to next, sound is heard, the color is right, normal click feeling. Before pressing the last [TRANSPOSE] switch set the {VOLUME} slider to the maximum position.

<<Switch, Encoder, Headphones: Display>>



Order

Next switch to press

Check Mark

Encoder value

Clockwise(+)

Counter clockwise:(-)

	LCD	Switch	LED
1	ASSIGN SW1	[ASSIGNABLE SWITCH]	All LEDs light
2	ACCOMP.	[ACCOMP.]	[ACCOMP.]
3	MEMORY	[MEMORY]	[MEMORY]
4	MANUAL BASS	[MANUAL BASS]	[MANUAL BASS]
5	EXIT	[EXIT]	All LEDs light
6	MENU	[MENU]	All LEDs light
7	STYLE PLAY	[STYLE PLAY]	[STYLE PLAY]
8	SONG PLAY	[SONG PLAY]	[SONG PLAY]
9	SEQUENCER	[SEQUENCER]	[SEQUENCER]
10	SOUND	[SOUND]	[SOUND]
11	GLOBAL	[GLOBAL]	All LEDs light
12	MEDIA	[MEDIA]	All LEDs light
13	8/16BEAT	Dark Gray[8/16BEAT]	[8/16BEAT]
14	POP	Dark Gray [POP]	[POP]
15	BALLAD	Dark Gray [BALLAD]	[BALLAD]
16	BALLROOM	Dark Gray [BALLROOM]	[BALLROOM]
17	DANCE	Dark Gray [DANCE]	[DANCE]
18	ROCK	Dark Gray [ROCK]	[ROCK]
19	FUNK&SOUL	Dark Gray [FUNK&SOUL]	[FUNK&SOUL]
20	JAZZ	Dark Gray [JAZZ]	[JAZZ]
21	STYLE SELECT 1	Dark Gray[STYLE SELECT]	[STYLE SELECT] Upper

	LCD	Switch	LED
22	STYLE SELECT 2	Dark Gray [STYLE SELECT]	[STYLE SELECT] Lower
23	RECORD	Dark Gray [RECORD]	All LEDs light
24	TRACK SELECT	Dark Gray [TRACK SELECT]	All LEDs light
25	STS 1	Dark Gray [1]	All LEDs light
26	STS 2	Dark Gray [2]	All LEDs light
27	STS 3	Dark Gray [3]	All LEDs light
28	STS 4	Dark Gray [4]	All LEDs light
29	HELP	Dark Gray [HELP]	All LEDs light
30	SHIFT	Dark Gray [SHIFT]	All LEDs light
31	SOUND SELECT 1	D.G.[PERFORMANCESELECT]	[PERFORMANCE SELECT]Up
32	SOUND SELECT 2	D.G.[PERFORMANCESELECT]	[PERFORMANCE SELECT]Lo
33	PIANO	Dark Gray [PIANO]	[PIANO]
34	E.PIANO	Dark Gray [E.PIANO]	[E.PIANO]
35	ACCORDION	Dark Gray [ACCORDION]	[ACCORDION]
36	ORGAN	Dark Gray [ORGAN]	[ORGAN]
37	GUITAR	Dark Gray [GUITAR]	[GUITAR]
38	STRINGS & VOC.	D.G. [STRINGS & VOC.]	[STRINGS & VOC.]
39	TRUMPET	Dark Gray [TRUMPET]	[TRUMPET]
40	BRASS	Dark Gray [BRASS]	[BRASS]
41	PAD 1	[PAD 1]	All LEDs light
42	PAD 2	[PAD 2]	All LEDs light
43	PAD 3	[PAD 3]	All LEDs light
44	PAD 4	[PAD 4]	All LEDs light
45	STOP	[STOP]	All LEDs light
46	SINGLE TOUCH	[SINGLE TOUCH]	[SINGLE TOUCH]
47	SEQ1: SELECT	[SEQ1: SONG SELECT]	All LEDs light
48	SEQ1: REW	[SEQ1: <<]	All LEDs light
49	SEQ1: FFWD	[SEQ1: >>]	All LEDs light
50	SEQ1: PAUSE	[SEQ1: |<]	全点灯
51	SEQ1: PLAY	[SEQ1: |> □]	[SEQ1: |> □]
52	SEQ2: SELECT	[SEQ2: SONG SELECT]	All LEDs light
53	SEQ2: REW	[SEQ2: <<]	All LEDs light
54	SEQ2: FFWD	[SEQ2: >>]	All LEDs light

*Switches without color description are all light gray switches. D.G. means dark gray.

	LCD	Switch	LED
55	SEQ2: PAUSE	[SEQ2: |<]	All LEDs light
56	SEQ2: PLAY	[SEQ2: |> □]	[SEQ2: |> □]
57	STYLE CHANGE	[STYLE CHANGE]	[STYLE CHANGE]
58	PERFORMANCE SELECT	[PERFORMANCE]	[PERFORMANCE]
59	SOUND SELECT	[SOUND]	[SOUND]
60	UPPER OCTAVE -	[UPPER OCTAVE -]	All LEDs light
61	UPPER OCTAVE +	[UPPER OCTAVE +]	All LEDs light
62	INTRO 1	[INTRO 1]	[INTRO 1]
63	INTRO 2	[INTRO 2]	[INTRO 2]
64	COUNT IN	[INTRO 3/COUNT IN]	[INTRO 3/COUNT IN]
65	ENDING 1	[ENDING 1]	[ENDING 1]
66	ENDING 2	[ENDING 2]	[ENDING 2]
67	ENDING 3	[ENDING 3]	[ENDING 3]
68	VARIATION 1	[VARIATION 1]	[VARIATION 1]
69	VARIATION 2	[VARIATION 2]	[VARIATION 2]
70	VARIATION 3	[VARIATION 3]	[VARIATION 3]
71	VARIATION 4	[VARIATION 4]	[VARIATION 4]
72	FILL 1	[FILL 1]	[FILL 1]
73	FILL 2	[FILL 2]	[FILL 2]
74	BREAK	[FILL 3/BREAK]	[FILL 3/BREAK]
75	START/STOP 1	RED[START/STOP]	[START/STOP] RED
76	START/STOP 2	RED[START/STOP]	[START/STOP] GREEN
77	SYNC START	[SYNCHRO START]	[SYNCHRO START]
78	SYNC STOP	[SYNCHRO STOP]	[SYNCHRO STOP]
79	TAP TEMPO	[TAP TEMPO RESET]	All LEDs light
80	TEMPO LOCK	[TEMPO LOCK]	[TEMPO LOCK]
81	FADE IN/OUT	[FADE IN/OUT]	[FADE IN/OUT]
82	SONGBOOK	[SONGBOOK]	All LEDs light
83	ENSEMBLE	[ENSEMBLE]	[ENSEMBLE]
84	SPLIT	[SPLIT]	[SPLIT]
**85	TRANSPOSE b	[TRANSPOSE b]	All LEDs light
86	TRANSPOSE #	[TRANSPOSE #]	All LEDs light

*Switches without color description are all light gray switches. D.G. means dark gray.

** Before you push the [TRANSPOSE #] set the [VOLUME] slider at maximum position.

<<A/D mute Check>>

Move the each slider, joystick, external pedal, the value of A/D corresponding to its moving is displayed in the LCD. Confirm that the value of A/D changes smoothly, and the maximum and the minimum value is with in the reference value.

Confirm that the center value of the joystick X(left-right), Y(up-down) by following two ways.

*After confirmation of the maximum and the minimum value, move the joystick to the center by your hand.

*After confirmation of the maximum and the minimum value, remove your fingers from the joystick.

Damper Pedal:

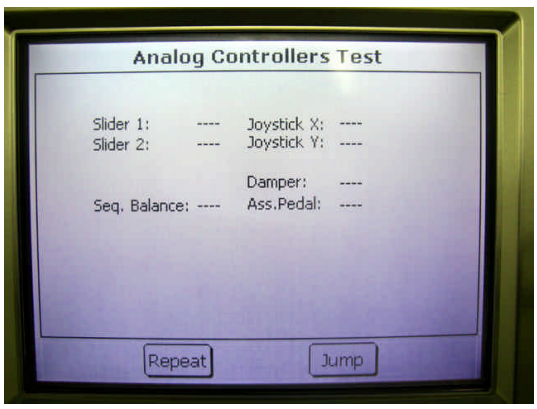
KORG DS-1H Maximum position (step on the pedal) less than 1.8kOhm, Minimum position (return the pedal) 16.7-35.7KOhm

Assignable pedal:

KORG EXP-2 Minimum resistance 100Ohm

Connect the speakers to the [OUTPUT] and confirm that no sound is heard from L and R speakers and headphones.

<<A/D mute Check Display>>



Slider 1: Top-left [BALANCE] Up-down direction

Slider 2: Top-left[ASSIGNABLE SLIDER]

Seq. Balance: Center[BALANCE]left-right direction

Joystick X: left-right direction

Joystick Y: Up-down direction

Damper: Damper Pedal DS-1H

Ass.Pedal: Assignable Pedal EXP-2

Reference value and each status

Item	Reference1 (big value)	Reference2 (small value)
[Slider1:]	Max: more than 990	Min:less than 30
[Slider2:]	Max: more than 990	Min:less than 30
[Seq Balance]	Max: more than 990	Min:less than 30
[JoystickX:] left-right	Right end: more than 976	Left end: less than 32
[JoystickX:] Center from l&r	Center: 400-564	
[JoystickY:] top-bottom	Top: more than900	Bottom: less than 200
[JoystickY:] Center from t & b	Center: 472-640	
[Damper]: DS-1H	Return the pedal:728-860	Step on l:less than 223
[Ass Pedal]: EXP-2	Volume Max: more than 928	Volume Min: less than 86

L&r: left and right t&b: top and bottom

<<Maximum Level, Frequency Response>>

This check is measurement of maximum level and frequency response. Push the [START/STOP] to proceed the check.

[VOLUME] slider: maximum,

Equipment for maximum level : LPF 20kHz, PSOPHO:no ,MODE AC level

Equipment for Freq-Res: LPF: 20KHz, PSOPHO:no ,MODE AC level, PreLPF:OFF(VP-7723B)

Equipment for Freq-Res(Oscillator): +4[dBm] sine-wave 20Hz and 20KHz

	Check	Channel	Reference Level	Notice
1	Maximum level 1K[Hz]	OUTPUT L/MONO	1.5 - 5.5 [dBm]	
2	Maximum level 1K[Hz]	OUTPUT R	1.5 - 5.5 [dBm]	
3	Freq-Res 20[Hz]	OUTPUT L/MONO	1.5 - 5.5 [dBm]	Signal to INPUT L/MONO
4	Freq-Res 20K[Hz]	OUTPUT L/MONO	1.0 - 5.0 [dBm]	Signal to INPUT L/MONO
5	Freq-Res 20[Hz]	OUTPUT R	1.5 - 5.5 [dBm]	Signal to INPUT R
6	Freq-Res 20K[Hz]	OUTPUT R	1.0 - 5.0 [dBm]	Signal to INPUT R
7	Maximum level 1K[Hz]	OUTPUT L	3.0 - 7.0 [dBm]	33 OHM load
8	Maximum level 1K[Hz]	OUTPUT R	3.0 - 7.0 [dBm]	33 OHM load

<<LINE INPUT>>

This is measurement output corresponding to input. Push [START/STOP] to proceed.

[VOLUME] slider: Max,

Equipment: LPF 20z, PSOPHO:no, MODE: AC LEVEL

Oscillator: Sine-wave 1KHz, +4dBm

Measurement and Reference level

Measurement must be done at the same time INPUT LEVEL and Crosstalk of same number.

	Item	Measuring Channel	Reference level	Note
1	LINE INPUT LEVEL	OUTPUT L/MONO	1.5 - 5.5[dBm]	Signal to INPUT L/MONO
2	LINE INPUT LEVEL	OUTPUT R	1.5 - 5.5[dBm]	Signal to INPUT R

<<Distortion>>

This is measurement of distortion. Push the [START/STOP] to proceed the check.

[VOLUME] slider: max,

Equipment: LPF 20KHz, PSOPHO: no, MODE DSTN

Oscillator: Sine-wave 1KHz, +4 dBm for OUTPUTL,R -6dBm for PHONES L,R

For PHONES: 33OHM Load

	Item	Measuring Channel	Reference level	Note
1	DISTORTION	OUTPUT L/MONO	Less than 0.0100[%]	Signal to INPUT L/MONO
2	DISTORTION	OUTPUT R	Less than 0.0100[%]	Signal to INPUT R
3	DISTORTION	PHONES L	Less than 0.1500[%]	Signal to INPUT L/MONO
4	DISTORTION	PHONES R	Less than 0.1500[%]	Signal to INPUT R

<<Noise Level>>

This is measurement of noise. Press the [START/STOP] to proceed the check.

[VOLUME] slider: max,

Equipment: LPF 20KHz, PSOPHO: A MODE AC LEVEL

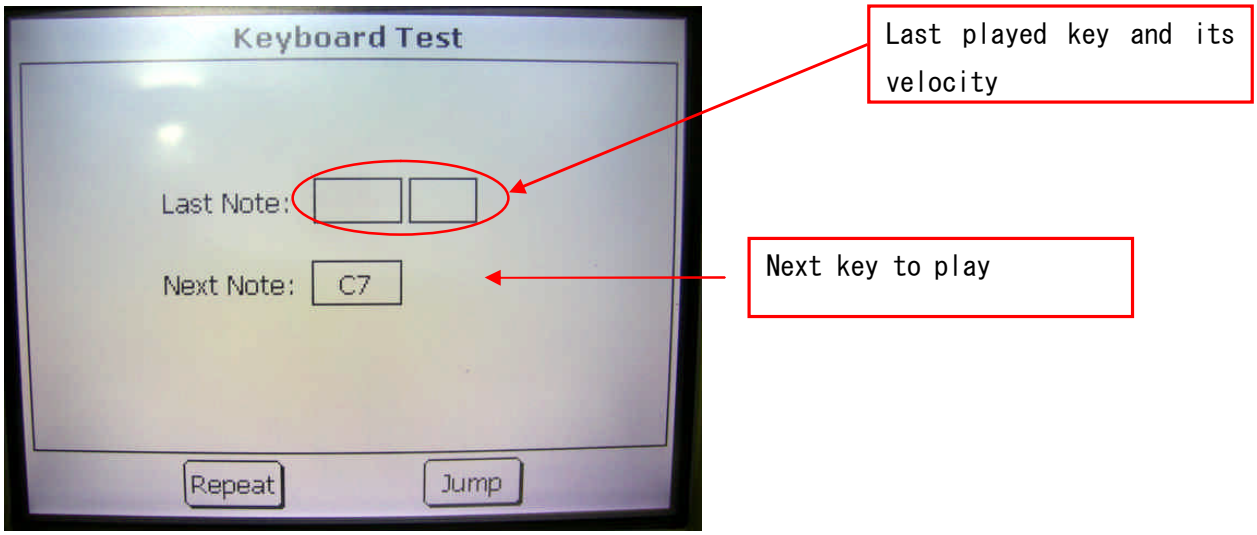
Oscillator: stop output

	Item	Measuring Channel	Reference level	Note
1	Noise Level	OUTPUT L/MONO	Less than -90.00[dBm]	
2	Noise Level	OUTPUT R	Less than -90.00[dBm]	
3	Noise Level	PHONES L	Less than -80.00[dBm]	33 OHM load
4	Noise Level	PHONES R	Less than -80.00[dBm]	33 OHM load

<< Keyboard Test>>

Play from the top key (C7) to the lowest key(C2) at middle strength (velocity 40-86).

When all keys are OK, the check proceeds to the speaker check automatically.



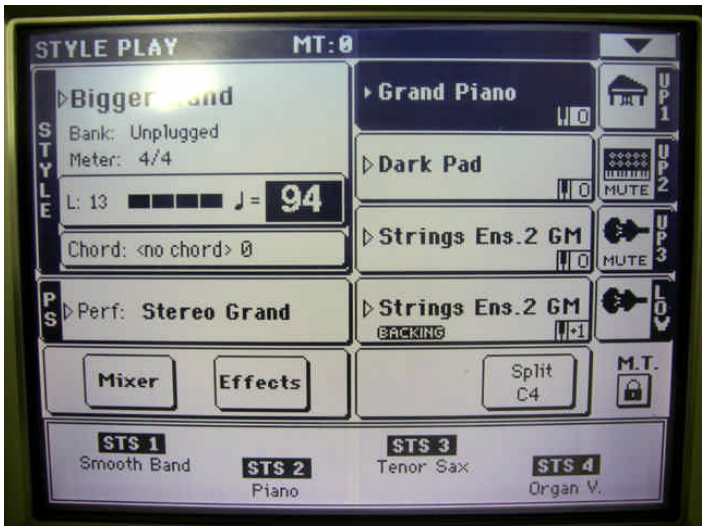
<< Speaker Check >>

Connect some audio source like CD player to the [INPUT]. Confirm that the sound is heard from the speakers. [Left-], [Right-] are displayed in the LCD, confirm that the sound is heard only from one side.

In the 4,th item, above display is appeared, then push the [START/STOP]. Pa500 restarts in the normal product mode.

<< Consumption Current >>

After the restart, display becomes like following. Set the [VOLUME] slider to the maximum position. Confirm that the consumption current is 580 – 640 [mA].



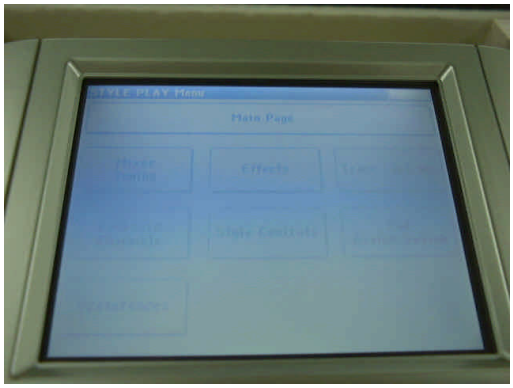
<<LCD Contrast Check>>

Check of the LCD contrast, watch the screen from the 50degree points. See the chart of next page.

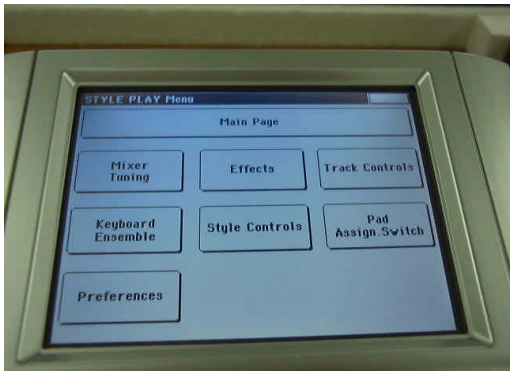
Pressing the [MENUE] rotate the [TEMPO/VALUE] encoder to the clock wise and let brighter.
At the time confirm that the display is brighter than the photo of the “limit of bright direction” .

Next pressing the [MENUE] and rotate the [TEMPO/VALUE} encoder to the counter clockwise direction and let the screen dark. Then watch the LCD and confirm that the screen is darker than the photo of the “limit of dark direction”.

Pressing the [MENUE] rotate the [TEMPO/VALU] encoder to the clock wise direction and adjust the contrast of the LCD to the “STANDARD” photo.

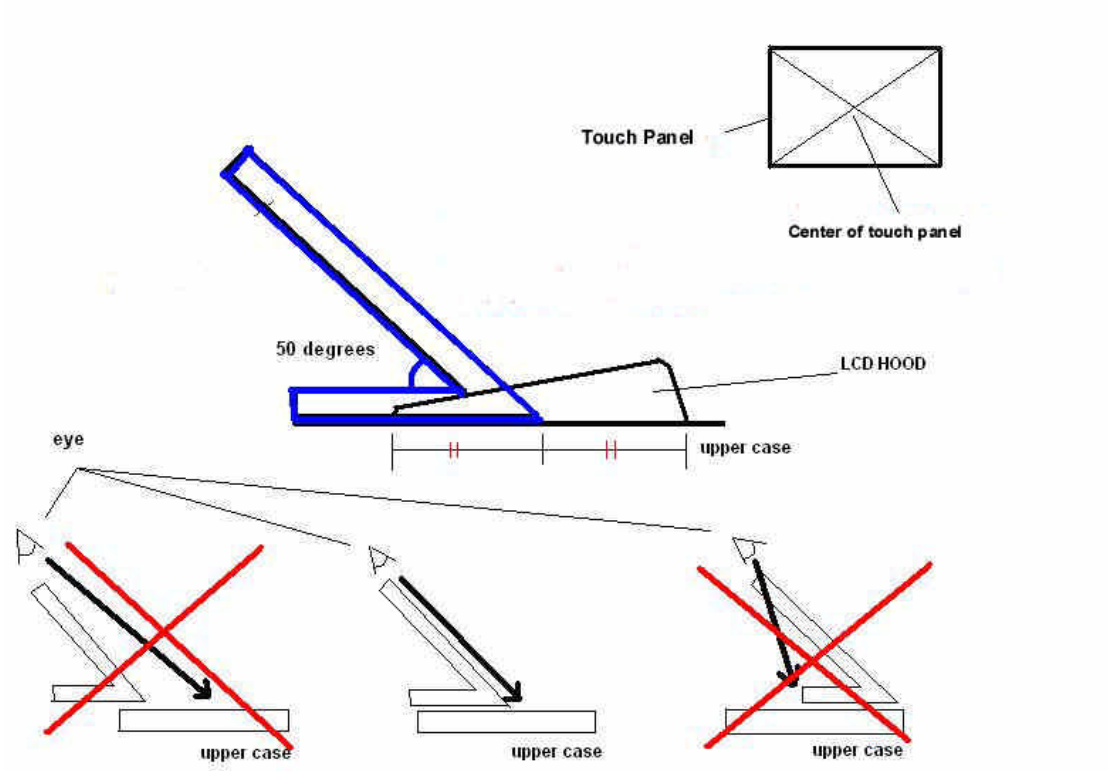


“limit of bright direction”



“STANDARD”

“limit of dark direction”



<<Normal Operation Check>>

Pull out the headphone plug from the [PHONES], push the [START/STOP]. Adjust [BALANCE] slider (located top-left) to the center position of the [RT] and the [ACC SEQ]. In this status play the lower side keyboard by more than 3 fingers, then the style playing begins.

Move the [VOLUME] slider and confirm that the volume changes smoothly.

The check completed. When you take out the SD card, once push then take it out.

<<System Update>>

Pa500 can be constantly updated as new versions of the operating system which are released by Korg. You can download the operating system from www.korgpa.com.
Please, read the instructions supplied with the operating system.

KORG Pa500 Parts List

Part Number	Category	Part Name	Location	Reference	QTY
510300511005	DIGITAL TR	DTC114EUA T106 (S)	KIP-2150	[TOP] Q1	1
510310510502	DOUBLE DIODES	MC2840-T112-1 (S)	KIP-2150	[TOP] D2-4	3
510310511507	DIODE	RLS-73 TE-11 (S)	KIP-2150	[TOP] D5-6 [BOT] D1 D7-9	6
510320511003	OPAMP	NJM4580M-TE1-#ZZZB (S)	KIP-2150	[TOP] IC19	1
510320511009	REGULATOR IC	NJM78L05UA-TE2 (TS)(S)	KIP-2150	[TOP] IC20	1
510320516025	Logic IC	SN74LV14APWR HD74LV14A(S)	KIP-2150	[TOP] IC15	1
510320516029	Logic IC	SN74LV125APWR (S)	KIP-2150	[TOP] IC1	1
510320516083	Logic IC	SN74LVC541APWR	KIP-2150	[TOP] IC5-6	2
510324038010	D/A Converter	AK4384ET-E2	KIP-2150	[TOP] IC21	1
510335510008	CRYSTAL	HC-49US 24.576MHZ SMD (SS)	KIP-2150	[TOP] XT1	1
510345520501	CRYSTAL	MC-306 32.768KHZ 15PF 50PPM	KIP-2150	[TOP] XT3	1
510402511003	EMI/EMC PART	BLM18BD102SN1D (S)	KIP-2150	[TOP] L1-9 L12-14 L17 [BOT] L10-11 L32-33 L35 L42	19
510402511005	EMI/EMC PART	BLM21BD102SN1D (S)	KIP-2150	[TOP] L20-21 L24-25	4
510402511006	Chip INDUCTOR	BLM21PG221SN1D (S)	KIP-2150	[TOP] L18-19 L22-23	4
510450520012	PHONE JACK	PJ-603 (PHONE JACK) (D)	KIP-2150	[TOP] JACK1-2	2
510450520506	DIN JACK	DS-05-02(DIN5P W/OUT SW) (D)	KIP-2150	[TOP] MIDI1-2	2
510474520074	CONNECTOR	JS-1125R-12 (S12B-PH-K-S)	KIP-2150	[TOP] CN7	1
510474520075	CONNECTOR	JS1132R-6 (S6B-EH)	KIP-2150	[TOP] CN10	1
510474527501	USB CONNECTOR	QT-6301-004	KIP-2150	[TOP] CN1	1
510474524004	CONNECTOR	S8B-PH-K / SJ20-08WM (SIDE)(D)	KIP-2150	[TOP] CN8	1
510474527001	FFC CONNECTOR	04FFS-SP-TF(LF)(SN)	KIP-2150	[TOP] CN5	1
500320012320	IC	MB87M4080PB-GE1	KIP-2150	[TOP] IC14	1
500324026017	IC	MC9328MX1DVM20R2	KIP-2150	[TOP] IC13	1
500324006012	SDRAM	V54C365164VEI7(TP)	KIP-2150	[TOP] IC16	1
500324006014	SDRAM	V54C3256164VDI7PC(TP)	KIP-2150	[BOT] IC26	1
500330003700	PHOTO COUPLER	PS9117-F3-A	KIP-2150	[TOP] IC2	1
500320052002	FLASH(NAND)	HY27US08281A-TPCB	KIP-2150	[BOT] IC28	1
500320006072	IC P2ROM	MR27T25603L-DJ2TM03A(X5390H)	KIP-2150	[TOP] IC8	1
500320006073	IC P2ROM	MR27T25603L-DJ3TM03A(X5390L)	KIP-2150	[BOT] IC24	1
500320040125	FLASH(NOR)	MX29LV400TTC-90G (X5390)	KIP-2150	[TOP] IC10	1
510335520019	CRYSTAL	HC-49US/SMD 16MHZ SSM1600000E16F5E	KIP-2150	[TOP] XT2	1
510474526005	CONNECTOR	S11B-PH-K-S(LF)(SN)	KIP-2150	[TOP] CN9	1
510474526006	FFC CONNECTOR	20FLZ-SM2-TB	KIP-2150	[TOP] CN3	1
510402511012	Chip Inductor Network	BLA31AG102SN4D	KIP-2150	[TOP] L26 L40 [BOT] L41	3
510402511013	EMI/EMC PART	NFM21PC105B1C3D	KIP-2150	[TOP] L15-16 L27-28 L39 [BOT] L31 L36-37	8
510320523501	IC	ISP1105W	KIP-2150	[BOT] IC23	1
510474510504	CARD CONNECTOR	AXA263021PKP	KIP-2150	[TOP] SD1	1
510320514038	REGULATOR IC	BA00DD0WHFP-TR	KIP-2150	[TOP] IC18	1
510320514039	RESET IC	BU4327G-TR	KIP-2150	[TOP] IC17	1
510320516093	Logic IC	SN74ALVC08PWR	KIP-2150	[TOP] IC9	1
510320516094	Logic IC	SN74LVC1G02DCKR	KIP-2150	[TOP] IC11	1
510320516095	Logic IC	SN74AHCU04PWR	KIP-2150	[TOP] IC12	1
510320516096	Logic IC	SN74LVC32APWR	KIP-2150	[BOT] IC27	1

Part Number	Category	Part Name	Location	Reference	QTY
510C51532150	PCB ASS'Y	KIP-2150 PA500(X-5390)ASS'Y			(1)
510300511024	TRANSISTOR	2SA1037AK T146R	KLM-2820/23/25/26	[TOP] Q1-2	2
510300511504	TRANSISTOR	2SC3661-TB-E (S)	KLM-2820/23/25/26	[TOP] Q3-8	6
510300511018	TRANSISTOR	2SC2412KT146R (S)	KLM-2820/23/25/26	[TOP] Q9	1
510402511003	EMI/EMC PART	BLM18BD102SN1D (S)	KLM-2820/23/25/26	[TOP] L7-9 L12-14 L16-20	11
510474526007	CONNECTOR	B4B-EH-A(LF)(SN)	KLM-2820/23/25/26	[TOP] CN2 CN4	2
510474526008	CONNECTOR	B6B-EH-A(LF)(SN)	KLM-2820/23/25/26	[TOP] CN1 CN5	2
510474526009	CONNECTOR	B8B-PH-K-S(LF)(SN)	KLM-2820/23/25/26	[TOP] CN7	1
510474520002	CONNECTOR	B2P3-VH (D)	KLM-2820/23/25/26	[TOP] CN3 CN301	2
510310520505	SCHOTTKY DIODE	RSX301LA-30-TR	KLM-2820/23/25/26	[TOP] D1-2	2
510450528003	DC JACK	LGP-6531-0800F	KLM-2820/23/25/26	[TOP] DJ1	1
510300511001	DIGITAL TR	DTA114EUA T106 (S)	KLM-2820/23/25/26	[TOP] DT1	1
510300511005	DIGITAL TR	DTC114EUA T106 (S)	KLM-2820/23/25/26	[TOP] DT2-3 DT208-211 DT218-221	10
510310511507	DIODE	RLS-73 TE-11 (S)	KLM-2820/23/25/26	[TOP] D3	1
510402521001	FERRITE BEAD	WBR6H-3T-H5B (D)	KLM-2820/23/25/26	[TOP] L1-3 L300 L301	5
510320511031	REGULATOR IC	NJM78M09FA-#ZZZB	KLM-2820/23/25/26	[TOP] IC1	1
510320511026	OPAMP	NJM4556AL-#ZZZB	KLM-2820/23/25/26	[TOP] IC7-8	2
510450520012	PHONE JACK	PJ-603 (PHONE JACK) (D)	KLM-2820/23/25/26	[TOP] PH1 PH3-5	4
510450520510	PHONE JACK	HJH-9-0265M STEREO	KLM-2820/23/25/26	[TOP] PH6	1
510320524001	IC	LM2676T-ADJ	KLM-2820/23/25/26	[TOP] IC2	1
510402510003	INDUCTOR	TC-150M-5A-5026	KLM-2820/23/25/26	[TOP] L4	1
510310520506	SCHOTTKY DIODE	RB050L-40TE25	KLM-2820/23/25/26	[TOP] D4	1
510320511032	IC	NJM2060M-#ZZZB	KLM-2820/23/25/26	[TOP] IC5-6	2
510320511003	OPAMP	NJM4580M-TE1-#ZZZB (S)	KLM-2820/23/25/26	[TOP] IC4 IC9-10	3
510402510004	INDUCTOR	SMTDR0810-150M-KORG	KLM-2820/23/25/26	[TOP] L5-6 L10-11	4
510320516097	IC	TPA3100D2PHPR	KLM-2820/23/25/26	[TOP] IC3	1
510310510502	DOUBLE DIODES	MC2840-T112-1 (S)	KLM-2820/23/25/26	[TOP] WD1-2	2
510310510002	ZENER DIODE	HZM8.2NB1TL-E	KLM-2820/23/25/26	[TOP] ZD1	1
510474526010	CONNECTOR	S3B-EH(LF)(SN)	KLM-2820/23/25/26	[TOP] CN204 CN300	2
510474520075	CONNECTOR	JS1132R-6 (S6B-EH)	KLM-2820/23/25/26	[TOP] CN202	1
510474524002	CONNECTOR	S6B-PH-K / SJ20-06WM (SIDE)(D)	KLM-2820/23/25/26	[TOP] CN201	1
510474520074	CONNECTOR	JS-1125R-12 (S12B-PH-K-S)	KLM-2820/23/25/26	[TOP] CN203	1
510474526011	CONNECTOR	B12B-PH-K-S(LF)(SN)	KLM-2820/23/25/26	[BOT] CN200	1
510310520501	DIODE	1SS133 T-77 (D)	KLM-2820/23/25/26	[TOP] D200-282	83
510300511016	DIGITAL TR	DTB113EK T146 (S)	KLM-2820/23/25/26	[TOP] DT200-207 DT212-217	14
500324026020	IC	CY8C24423A-24SXIT	KLM-2820/23/25/26	[TOP] IC200 IC203	2
510320516008	Logic IC	SN74LV138APWR	KLM-2820/23/25/26	[TOP] IC201-202	2
510312523501	LED	LTL1CHJETNN	KLM-2820/23/25/26	[TOP] LED200-219 LED221-238	38
510312523502	LED	LTL1BEKVJNN	KLM-2820/23/25/26	[TOP] LED220	1
510374520026	TACT SW	SKRGAED010	KLM-2820/23/25/26	[TOP] SW200-282	83
510360520026	VR	RS3011119A04	KLM-2820/23/25/26	[TOP] VR201-203	3
510360520027		RS3011219A05	KLM-2820/23/25/26	[TOP] VR200	1
510374520007	POWER SW	PSW SDKLA10200 (D)	KLM-2820/23/25/26	[TOP] SW300	1
510370520005	ENCODER	EC12E2420802	KLM-2820/23/25/26	[TOP] EC300	1

Part Number	Category	Part Name	Location	Reference	QTY
510C51532820	PCB ASS'Y	KLM-2820/23/25/26 PA500 ASS'Y			(1)
510219401920	EMI/EMC PART	NFM21PC104R1E3D	KLM-2828	[TOP] LC1	1
510310511507	DIODE	RLS-73 TE-11 (S)	KLM-2828	[TOP] D1-24	24
510320516008	Logic IC	SN74LV138APWR	KLM-2828	[TOP] IC1	1
510402511003	EMI/EMC PART	BLM18BD102SN1D (S)	KLM-2828	[TOP] L1-42	42
510470521050	HARNESS	HNS-3631 (X-4130)	KLM-2828	[TOP] WR5	1
510470521051	HARNESS	HNS-3632 (X-4130)	KLM-2828	[TOP] WR6	1
510474523007	FFC CONNECTOR	RIBBON CABLE CNCTR 52147-0810	KLM-2828	[TOP] CN2	1
510474523008	FFC CONNECTOR	RIBBON CABLE CNCTR 52147-1010	KLM-2828	[TOP] CN1	1
500320004721	CPU	R5F21114B20FP U0	KLM-2828	[TOP] IC2	1
510474526009	Connctor	B8B-PH-K-S (LF) (SN)	KLM-2828	[TOP] CN9B	1
510335520503	CERAMIC RESONATOR	CSTCE20M0V53-R0	KLM-2828	[TOP] X15	1
510C51532828	PCB ASS'Y	KLM-2828 PA500(X-5390)ASS'Y			(1/2)
510310520501	DIODE	1SS133 T-77 (D)	KLM-2663	D1-50	50
510320516052	Logic IC	SN74HC138N	KLM-2663	IC1	1
510C51532663	PCB ASS'Y	KLM-2663 PA500(X-5390)ASS'Y	KLM-2663		(1/2)
510470521050	HARNESS	HNS-3631 (X-4130)	KLM-2663	WIRE1	1
510470521051	HARNESS	HNS-3632 (X-4130)	KLM-2663	WIRE3	1
510310520501	DIODE	1SS133 T-77 (D)	KLM-2664		48
510320516052	Logic IC	SN74HC138N	KLM-2664		1
510C51532664	PCB ASS'Y	KLM-2664 PA500(X-5390)ASS'Y	KLM-2664		(1/2)
510474523007	FFC CONNECTOR	RIBBON CABLE CNCTR 52147-0810	KLM-2664		1
510474523008	FFC CONNECTOR	RIBBON CABLE CNCTR 52147-1010	KLM-2664		1
500313006800	LCD	KG057QV1CF-G050 W/ Touch Panel	ASS'Y		1
510649500502	JOY STICK	PA50 JS ASSY 11PA050JS10	ASS'Y		1
510410522001	SPEAKER	BS120B67AG-A	ASS'Y		2
510405541001	INVERTER module	HKP-1427-02R2	ASS'Y		1
510470523501	HARNESS	HNS-3777 [LCD]	ASS'Y		1
510470523502	HARNESS	HNS-3823 [Main-Jack]	ASS'Y		1
510470523503	HARNESS	HNS-3824 [Main-KBDI/F]	ASS'Y		1
510470523504	HARNESS	HNS-3825 [Main-Panel]	ASS'Y		1
510470523505	HARNESS	HNS-3826 [Jack-Panel(Vol.)]	ASS'Y		1
510470523506	HARNESS	HNS-3827 [Main-Jack(Power)]	ASS'Y		1
510470523507	HARNESS	HNS-3828 [Jack-SP]	ASS'Y		1
510470523508	HARNESS	HNS-3829 [Jack-PowerSW]	ASS'Y		1
510470523509	HARNESS	HNS-3830 [Jack-Inverter]	ASS'Y		1
510470523510	HARNESS	HNS-3831 [Panel-Joystick]	ASS'Y		1
510470523511	HARNESS	HNS-3832 [Panel-Encorder]	ASS'Y		1
510470523512	HARNESS	HNS-3833 [Bonding1]	ASS'Y		2
510470523513	HARNESS	HNS-3849 [Bonding3]	ASS'Y		1
510525520006	FERRITE CORE	K1 T 25.0x12.0x15.0	ASS'Y		3
510646508001	Mechanical	X-5390 BOTTOM CASE E20294	ASS'Y		1
510646508002	Mechanical	X-5390 UPPER CASE E10252-1	ASS'Y		1
510646502119	Mechanical	X-5390 LCD HOOD E30475	ASS'Y		1

Part Number	Category	Part Name	Location	Reference	QTY
510646502120	Mechanical	X-5390 BASS PORT assy L E30476-1	ASS'Y		1
510646502121	Mechanical	X-5390 BASS PORT assy R E30476-2	ASS'Y		1
510646502122	Mechanical	X-952 PWS KNOB (CH) E40726	ASS'Y		1
510646502049	Mechanical	X-2100 SLIDER KNOB E40578-2	ASS'Y		4
510646502123	Mechanical	X-610 ENCODER KNOB(CH) E40727 -1 GRA	ASS'Y		1
510646502085	Mechanical	KEY ASSY 12(M) KOC-H30305-1	ASS'Y		4
510646502086	Mechanical	KEY ASSY 13(M) KOC-H30306-1	ASS'Y		1
510646508501	Mechanical	5390 SQUARE SW NL DG E40720-1	ASS'Y		24
510646508502	Mechanical	5390 SQUARE SW NL LG E40720-2	ASS'Y		22
510646508503	Mechanical	5390 SQUARE SW LED DG E40721-1	ASS'Y		2
510646508504	Mechanical	5390 SQUARE SW LED LG E40721-2	ASS'Y		36
510646508505	Mechanical	5390 SQUARE SW LED RD E40721-3	ASS'Y		1
510802500533	Mechanical	X-5390 FOOT RUBBER E40723	ASS'Y		4
510500504503	Mechanical	RUBBER BOTTON 13 KOC-E30438	ASS'Y		5
510500505001	Mechanical	KEY GUIDE RUBBER QMGG055AA	ASS'Y		61
510640508028	Mechanical	X-5390 SH SPRING C41536	ASS'Y		2
510640508029	Mechanical	X-5390 LCD PLATE C41538	ASS'Y		1
510640508030	Mechanical	X-5390 UPPER CHASSIS C30752	ASS'Y		1
510640508031	Mechanical	X-5390 LOWER CHASSIS C30753	ASS'Y		1
510802500534	Mechanical	X-5390 SP NET C30754	ASS'Y		2
510645500005	Mechanical	X-5390 BOTTOM BOARD L D30312	ASS'Y		1
510645500006	Mechanical	X-5390 BOTTOM BOARD R D30313	ASS'Y		1
510640502501	Mechanical	EARTH SPRING (K) T=0.2 C41167	ASS'Y		2
510802500535	Mechanical	X-5390 SOUND ABSOBER L F41376	ASS'Y		1
510802500536	Mechanical	X-5390 SOUND ABSOBER R F41377	ASS'Y		1
510802500537	Mechanical	X-5390 SP NET FILTTER F41375	ASS'Y		2
510500505524	Mechanical	SW Spacer F41419	ASS'Y		1
510500505501	Mechanical	KB FELT 1 KOC-F41281-1	ASS'Y		2
510500505519	Mechanical	Cushion Tape F41394	ASS'Y		2
510500505525	Mechanical	SP NET TAPE F41418	ASS'Y		21
510500505520	Mechanical	SP Tape F41395	ASS'Y		4
510540500001	Mechanical	CLIP MJE 5403	ASS'Y		9
510649500503		SP250 MUSIC STAND			1
510405540503	AC ADAPTER	KA-320 (12V 3.5A)			1
500600006508	AC CABLE	LY100JPVCTFLY35LY37(JP)		JP	(1)
510540501001		CONVERTER SOCKET YL-212		JP	(1)
510600540005	AC CABLE	UC-953-J01(UL) W/PE-BAG		US,CN,EX	(1)
510600540006	AC CABLE	EC-652-E03(VDE) W/PE-BAG		GE,FR,WG,IT	(1)
500600005800	AC CABLE	SC-111-J01		AU	(1)
510600540007	AC CABLE	KP-610/KS-31AY(BS) W/PE-BAG		UK	(1)