SP-404SX LINEAR WAVE SAMPLER

SERVICE NOTES
Issued by RJA

Table of Contents

Revise Information

Jun. 30, 2010	p. 15, p. 17	Corrected an error.
Feb. 28, 2013	p. 17	Corrected errors.
Dec. 10, 2015	p. 15, p. 18	Added descriptions.
Apr. 12, 2017	p. 2	Deleted the circuit diagrams for Main Board.

Cautionary Notes

Before beginning the procedure, please read through this document. The matters described may differ according to the model.

Back Up User Data!

User data may be lost during the course of the procedure. Refer to "**Data Backup and Restore Operations**" (p. 12) in the Service Notes and save the data. After completing the procedure, restore the backed-up data to the product.

Part Replacement

When replacing components near the power-supply circuit or a heat-generating circuit (such as a circuit provided with a heat sink or including a cement resistor), carry out the procedure according to the instructions with respect to the part number, direction, and attachment position (mounting so as to leave an air gap between the component and the circuit board, etc.).

Parts List

A component whose part code is ******** will not be supplied as a service part because one of the following reasons applies.

- Because it is supplied as an assembled part (under a different part code).
- Because a number of circuit boards are grouped together and supplied as a single circuit board (under a different part code).
- Because supply is prohibited due to copyright restrictions.
- Because reissuance is restricted.
- Because the part is made to order (at current market price).
- Because it is carried in electronic data on the Roland web site.
- Because it is a package or an accessory irrelevant to the function maintenance of the main body.
- Because it can be replaced with an article on the market. (battery or etc.)

Circuit Diagram

In the circuit diagram, "NIU" is an abbreviation for "Not in Use," and "UnPop" is an abbreviation for "Unpopulated." They both mean non-mounted components. The circuit board and circuit board diagram show silk-screened indications, but no components are mounted.

There are cases that the circuit diagrams are omitted. This omission will happen to the highly integrated digital circuit boards (e.g. Main Board etc) that are virtually impossible to repair nor analyze.

Specifications

SP-404SX: Sampler

Maximum Polyphony

12 voices

Recordable Data

Samples: 120 (12 samples x 10 banks) (stored on SD card)
Patterns: 120 (12 patterns x 10 banks) (stored on SD card)

Sampling Time (Total Time for All Samples)

The maximum sampling time (size) for a single sample is approximately 180 minutes in stereo (2 GB).
The following table shows the approximate total sampling time of the samples that can be stored on one SD card.

Card capacity	Stereo (mono)	Card capacity	Stereo (mono)
1 GB	Approx. 90 min. (180 min.)	8 GB	Approx. 720 min. (24 hours)
2 GB	Approx. 180 min. (360 min.)	16GB	Approx. 24 hours (48 hours)
4 GB	Approx. 360 min. (720 min.)	32 GB	Approx. 48 hours (96 hours)

* *Since the 1 GB SD card included with the SP-404SX contains preload data, the available sampling time will be less than the time above.*

Data Format

16-bit Linear (.wav/aiff)

Sampling Frequency

44.1 kHz

Pattern Sequencer

Maximum recordable notes: Approx. 16,000 notes
Resolution: 96 ticks per quarter note
Pattern Length: 1–99 measures
Recording method: Realtime Loop Recording (with shuffle quantize function)

Effects

29 types

Pads

12 + SubPad x 1

Controllers

Control Knob x 3

Display

7 segments, 3 characters (LED)

Onboard Mic

Mono x 1

Connectors

LINE IN jacks (L, R) (RCA phono type)
LINE OUT jacks (L, R) (RCA phono type)
Headphones (PHONES) jack (Stereo 1/4 inch phone type)
MIC IN jack (1/4 inch phone type)
MIDI IN connector
DC IN jack
SD card slot

Power Supply

DC 9 V
(Ni-MH AA SIZE Rechargeable Battery x 6,
Alkaline AA SIZE Dry Battery x 6 or AC Adaptor)

* *Batteries sold separately*

Battery Life for Continuous Use

Ni-MH Rechargeable batteries: approximately 5 hours
Alkaline dry batteries: approximately 4 hours

* *These figures will vary depending on the actual conditions of use.*

Current Draw

450 mA

Dimensions

177.6 (W) x 256.7 (D) x 72.1 (H) mm
7 (W) x 10-1/8 (D) x 2-7/8 (H) inches

Weight

1.2 kg / 2 lbs 11 oz (excluding batteries)

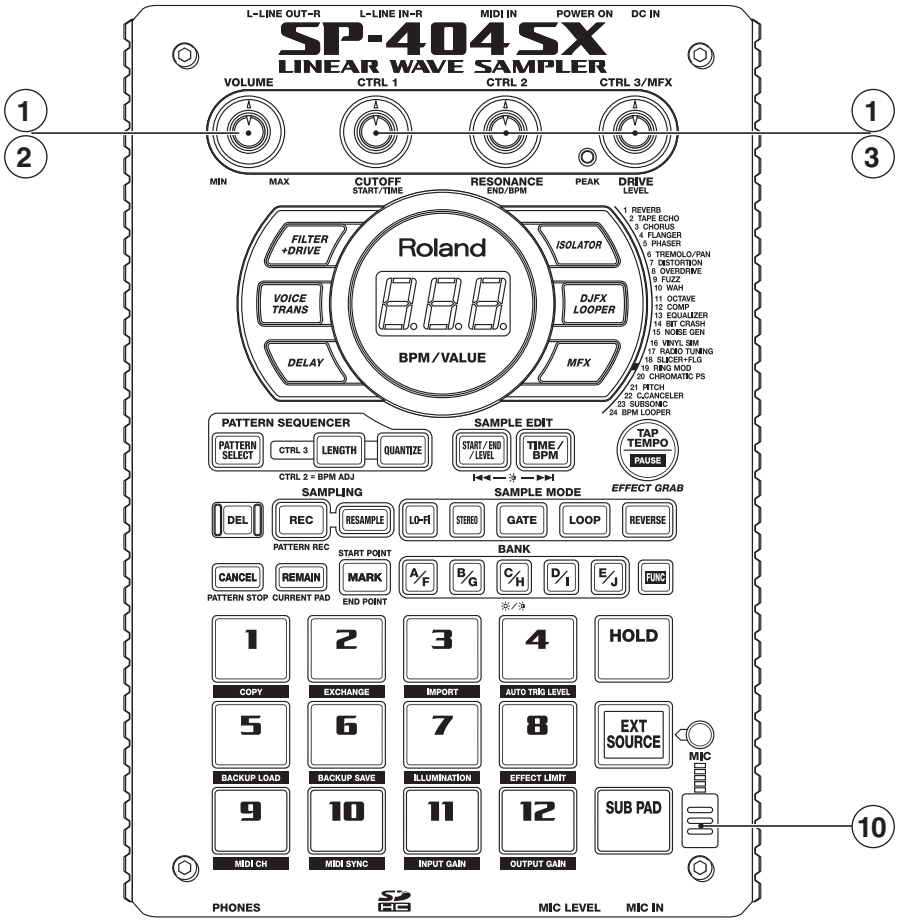
Accessories

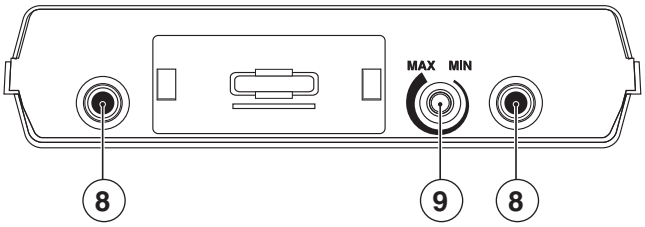
SD card (1GB) (#********)
SP-404SX UTILITY CD-ROM (#5100008941)
AC Adaptor PSB-1U (#04236101)
AC Cord (#5100012293, #02562456, #01903356, #03785590)
Owner's Manual (#5100008948)

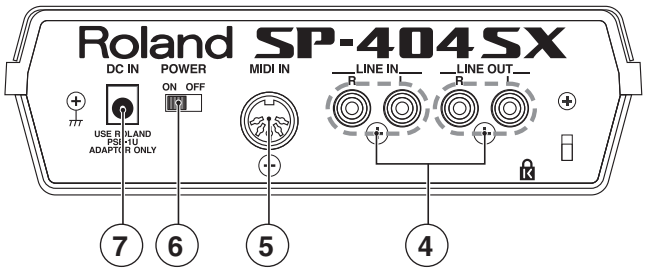
* *Printed matters will not be supplied after the end of the production. Then, download the electronic file from the Roland web site.*

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

Location of Controls

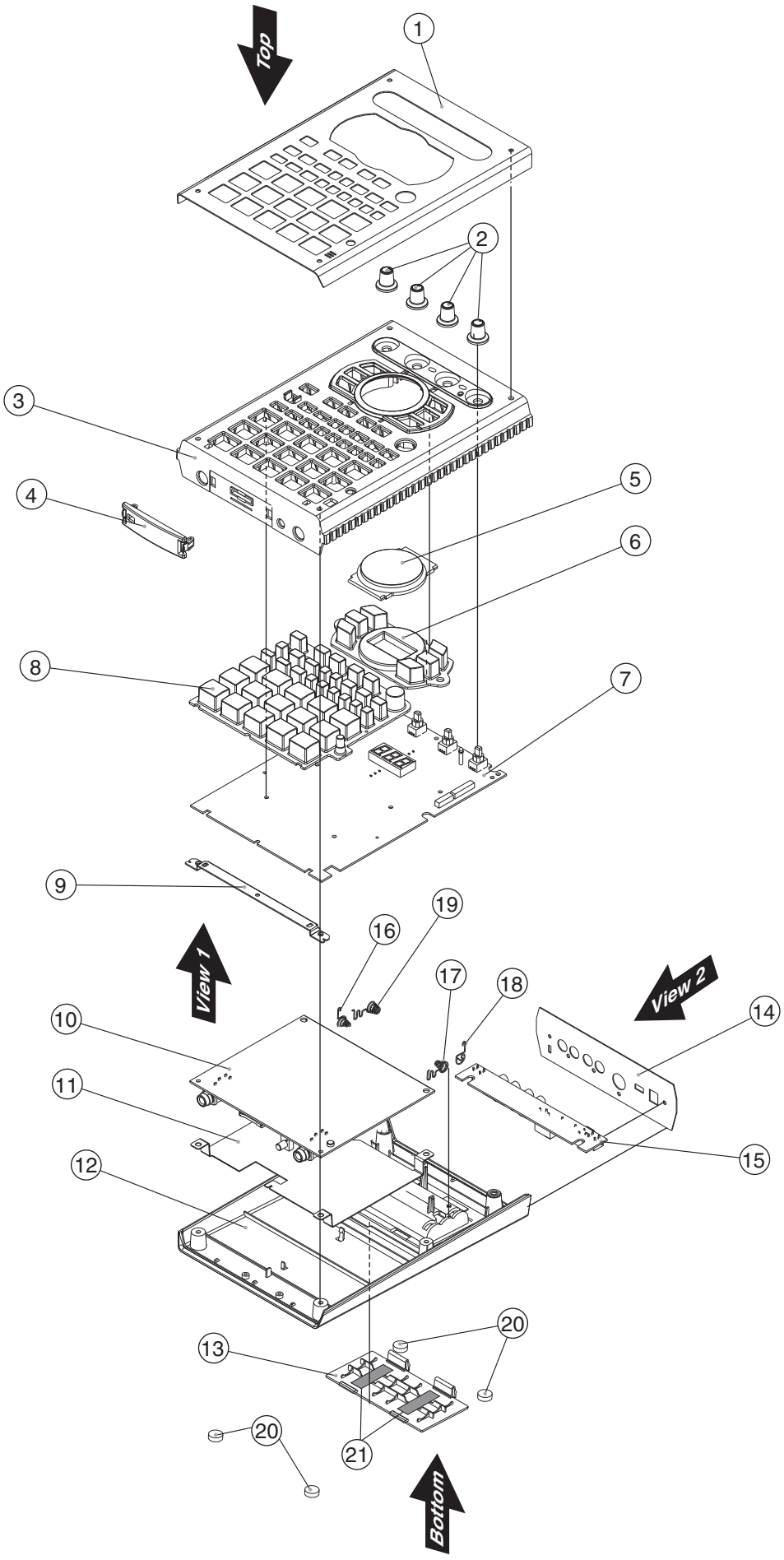






No.	Part Code	Part Name	Description	Q'ty
1	03565234	J R-KNOB	SF-ELA BLK/SLV	4
2	04011745	ROTARY POTENTIOMETER	RK09K12C0A8H	1
3	03679256	ROTARY POTENTIOMETER	RK09D1130C5B	3
4	01899801	RCA(PIN) JACK	YKC21-3834N	2
5	01566445	DIN CONNECTOR	YKF51-5067	1
6	02671312	SLIDE SWITCH	SLG-22-465	1
7	13449711	AC ADAPTOR JACK	HEC0470-01-630	1
8	13449275	6.5MM JACK	YKB21-5074	2
9	13279884	POTENTIOMETER	RK09K1110A0J 10KB	1
10	03679190	MIC	WM-64PNT	1

Exploded View



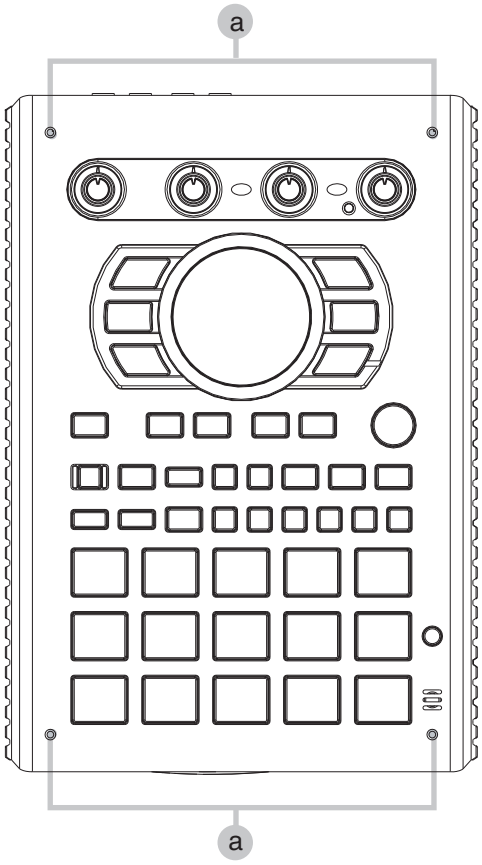
Exploded View Parts List

No.	Part Code	Part Name	Description	Q'ty
1	5100006876	TOP PANEL		1
2	03565234	J R-KNOB	SF-ELA BLK/SLV	4
3	5100006870	TOP CASE		1
4	5100006873	SD COVER		1
5	04679101	DISPLAY COVER		1
6	5100008495	RUBBER SW EFFECT		1
	5100007188	PANEL SHEET ASSY		1
	* *This unit includes the following parts.*			
7	********	PANEL BOARD		1
15	********	JACK BOARD		1
8	5100006879	RUBBER SW PAD		1
9	03908978	PWB HOLDER MAIN		1
10	5100007184	MAIN BOARD ASSY		1
11	5100009219	SHIELD PLATE		1
12	03908945	BOTTOM CASE		1
13	03908901	BATTERY COVER		1
14	5100006877	REAR PANEL		1
16	5100006883	BATTERY TERMINAL	-	1
17	5100006884	BATTERY TERMINAL	+-	1
18	03908912	BATTERY TERMINAL	+	1
19	5100006885	BATTERY TERMINAL	PM	1
20	00340690	FOOT ZULEN (CUSHION)	XCK040 12MM	4
21	40672389	BATTERY CUSHION		2

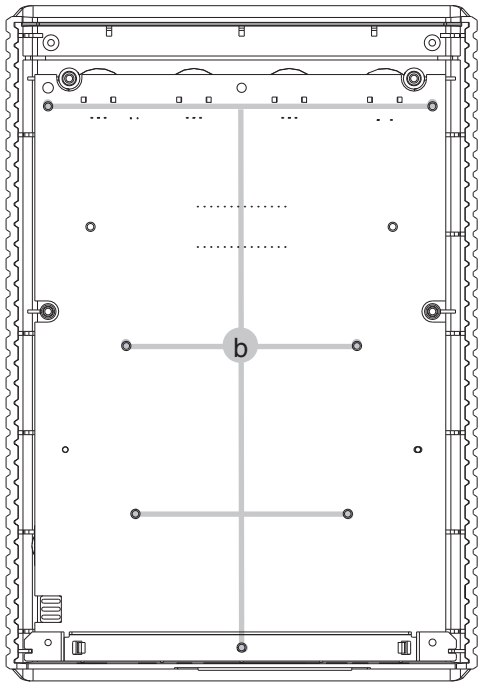
* *When ordering No. 13, order No. 21 as well.*

Plain View

Top



View 1



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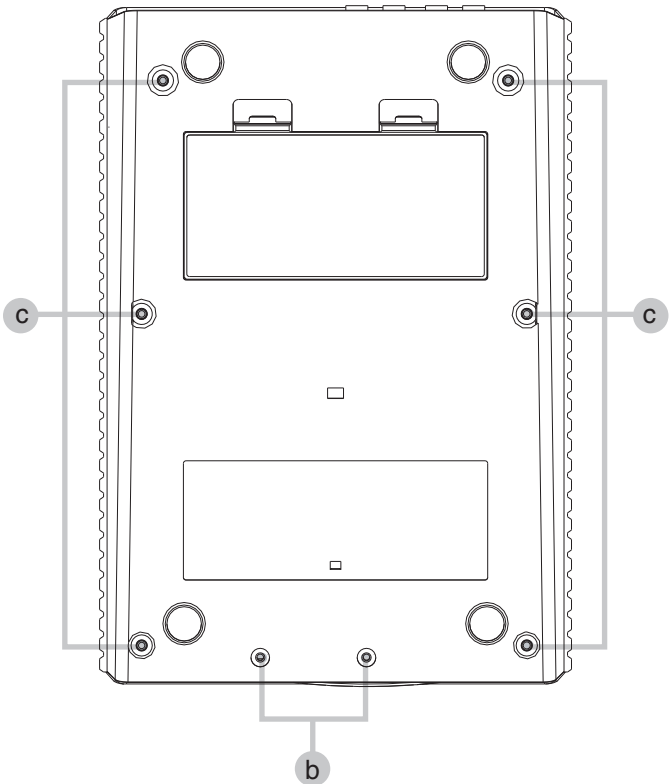
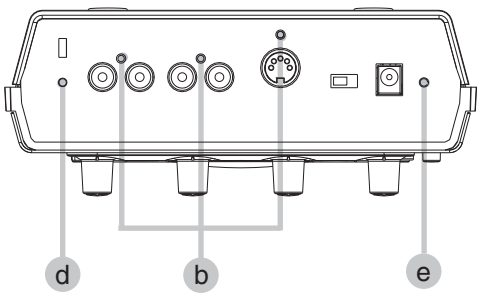


View 2



Plain View Parts List

No.	Part Code	Part Name	Description	Q'ty
a	02126156	SCREW M3X10	HEX SOCKET HEAD CAP TAPTITE P	4
b	40011312	SCREW 3X8	BINDING TAPTITE P BZC	12
c	40011112	SCREW 3X10	BINDING TAPTITE B BZC	6
d	40011490	SCREW M3X6	PAN MACHINE W/SW BZC	1
e	40230590	SCREW M3X10	BINDING MACHINE NI	1

Parts List

Safety Precautions:
The parts marked ⚠ have safety-related characteristics. Use only listed parts for replacement.

Due to one or more of the following reasons,
parts with parts code ******** cannot be supplied as service parts.

- Part supplied only as a component in a complete assembly
- Copyright does not permit the part to be supplied
- Part is sold commercially

Note: The parts marked # are new. (initial parts) The description "Q'ty" means a necessary number of the parts per one product.

CASING

#	5100006870	TOP CASE		1
#	5100006876	TOP PANEL		1
#	5100006877	REAR PANEL		1
	03908945	BOTTOM CASE		1
	04679101	DISPLAY COVER		1
#	5100006873	SD COVER		1
	03908901	BATTERY COVER		1

CHASSIS

	03908978	PWB HOLDER MAIN		1
#	5100009219	SHIELD PLATE		1

KNOB, BUTTON

	03565234	J R-KNOB	SF-ELA BLK/SLV	4
#	5100008495	RUBBER SW EFFECT		1
#	5100006879	RUBBER SW PAD		1

SWITCH

	02671312	SLIDE SWITCH	SLG-22-465	1

JACK, EXT TERMINAL

	01566445	DIN CONNECTOR	YKF51-5067	1
	01899801	RCA (PIN) JACK	YKC21-3834N	2
	13449275	6.5MM JACK	YKB21-5074	2
	13449711	AC ADAPTOR JACK	HEC0470-01-630	1

PWB ASSY

#	5100007184	MAIN BOARD ASSY		1
#	5100007188	PANEL SHEET ASSY		1
	* *This unit includes the following parts.*			
#	********	PANEL BOARD		1
#	********	JACK BOARD		1

DIODE

	01904112	LED (RED)	SLR-342VCT32 N.P.Q RANK	1
	04676401	LED	BA56-11EWA	1

POTENTIOMETER

	03679256	ROTARY POTENTIOMETER	RK09D1130C5B	3
	13279884	POTENTIOMETER	RK09K1110A0J 10KB	1
	04011745	ROTARY POTENTIOMETER	RK09K12C0A8H	1

WIRING, CABLE

#	5100009117	WIRING	W1	1
	02343223	WIRING	6X100-P2.0-PHR-PHR-F	1
	02344012	WIRING	12X150-P2.0-PHR-PHR-F	1
#	5100008919	BAN CARD	20624 FWR-P=1.00-K1-18-100	1
#	5100008922	BAN CARD	20624 FWR-P=1.00-K1-22-100	1

SCREWS

	40011490	SCREW M3X6	PAN MACHINE W/SW BZC	1
	40230590	SCREW M3X10	BINDING MACHINE NI	1
	02126156	SCREW M3X10	HEX SOCKET HEAD CAP TAPTITE P	4
	40011312	SCREW 3X8	BINDING TAPTITE P FE BZC	12
	40011112	SCREW 3X10	BINDING TAPTITE B BZC	2

MISCELLANEOUS

	03679190	MIC	WM-64PNT	1
	03908912	BATTERY TERMINAL	+	1
#	5100006883	BATTERY TERMINAL	-	1
#	5100006884	BATTERY TERMINAL	+-	1
#	5100006885	BATTERY TERMINAL	PM	1
	40672389	BATTERY CUSHION		2
	00340690	FOOT ZULEN (CUSHION)	XCK040 12MM	4
	04010601	LED SPACER	LH-3-12	1
	12199584	GROUNDING TERMINAL	M1698	2

ACCESSORIES (Standard)

#	5100008948	OWNER'S MANUAL	ENGLISH	1
#	5100008944	OWNER'S MANUAL	JAPANESE	1
#	5100008941	CD-ROM	ENGLISH/JAPANESE V1.00	1
⚠	04236101	AC ADAPTOR WITHOUT AC CORD	PSB-1U(S) UNIVERSAL	1
⚠	01903334	AC CORD SET PSE	100V 1.0M FOR PSB-1U	1
⚠	5100012293	AC CORD SET	117VBL 1.0M FOR PSB	1
⚠	02562456	AC CORD SET	120V 1.0M (NON POLAR)	1
⚠	01903356	AC CORD SET	230V 1.0M FOR PSB	1
⚠	03785590	AC CORD SET	SC-078-NA05 240VA	1
⚠	00905234	EURO CONVERTER PLUG	ECP01-5A	1

Verifying the Version Numbers

Refer to **1. VERSION** under Test Mode (p. 16).

Formatting an SD Card

To enable a commercially available SD card to be used on the SP-404SX, it must be formatted on the unit.

Item Required

- SD card you want to format

NOTE

The SD card included with the product (the customer-owned SD card that is in your care) contains the customer's setting data, and formatting the SD card erases all such data. If necessary, make a backup of the data beforehand. (Refer to **Data Backup and Restore Operations** (p. 12).)

Procedure

1. Insert the SD card you want to format into the SP-404SX.
2. Hold down the [CANCEL] button and press the [REMAIN] button.
   The [BANK] buttons flash and the message **FNt** appears on the 7-segment LED display.
3. Press any one of the [BANK] buttons.
   The [BANK] buttons stop flashing and stay lighted, and the [DEL] button flashes.
   * *To cancel formatting, press the [CANCEL] button.*
4. Press the [DEL] button.
   * *The [DEL] button lights up and formatting is executed.*

   While formatting is in progress, a dot on the 7-segment LED display flashes.
   When the flashing stops, formatting has finished.
   * *Be very sure never to switch off the power while the dot is flashing. Doing so may damage the SD card and make it unusable.*
   * *Never modify or delete and files or folders created when the SD card was formatted. Doing so may cause the SP-404SX to fail to recognize the SD card.*

Data Backup and Restore Operations

User data and setting values on the SP-404SX are saved at one or more of the following destinations, depending on the data type. Backup and restore operations for each of these must be performed as required.

- SD card
- Main board
- Both SD card and main board

Parameter Saved Only on the Main Board

The parameter shown below is saved only on the Main Board. When servicing or replacing the Main Board, note down the value of this setting on paper, and restore the noted value to the unit after servicing.

Parameter	Setting value	Page where covered in the owner's manual
Type of battery used	AL, ni	P. 6

* *For information on the meaning of the setting value, refer to the owner's manual.*

Parameters Saved on Both the SD Card and the Main Board

The five types of parameters shown below are saved both on the SD card and on the Main Board.

If the customer has used the unit with the SD card installed in it, the same values for the respective parameters are saved on the SD card and on the Main Board, but if the unit has been used with no SD card installed, the values saved on the SD card and on the Main Board might differ.

In such cases, in addition to backing up the SD card (as described earlier), also note down on paper the setting values that are saved on the Main Board, and restore the written-down values after servicing or replacing the Main Board.

Parameter	Setting value	Page where covered in the owner's manual
ILLUMINATION	off, r b, b, r, SLP	p. 40
EFFECT LIMIT	L.on, L.of	p. 42
MIDI SYNC	Aut, tnP, off	p. 47
INPUT GAIN	0 dB, -10 dB	p. 39
OUTPUT GAIN	-3 dB, 0 dB, 3 dB, 6 dB, 9 dB, 12 dB	p. 39

* *For information on the meanings of the setting values, refer to the owner's manual.*

* *If an SD card is installed, the setting values on the SD card take precedence. Changing and applying any one of the setting values described above while an SD card is inserted causes all settings on the Main Board at that time to be overwritten with the same values as the settings on the SD card. That is, all setting values are made to match.*

Backing Up, Restoring, and Copying Values on a Customer SD Card

If you have received from the customer the included SD card together with the unit and are making use of the card to carry out testing, back up the values saved on the SD card to a computer, then restore the backed-up values as required. You can also use a different SD card to create a copy.

Items Required

- Computer (running Windows XP)
- SD card reader/writer
- SD card received from the customer

When making a copy, the following is also required

- SD card (blank) of larger capacity than the customer's SD card

Procedure

Backing Up a Customer SD Card onto a Computer

1. Insert the customer SD card into the SD card reader/writer connected to the computer.
2. Copy all files and folders on the SD card in their entirety to the computer's hard drive.

Restoring or Copying Data on the SD Card

3. On the SP-404SX, format the SD card to be returned to the customer. (If you're making a copy, use a blank SD card.)
4. Insert the formatted SD card into the SD card reader/writer connected to the computer.
5. Copy the data saved in step **2** in its entirety to the root directory of the SD card.

Backing Up/Restoring Settings Saved on the Main Board

Making a Written Record of Settings Saved on the Main Board (Backup)

The method used to make a written record of the parameter settings saved on the Main Board is described below.

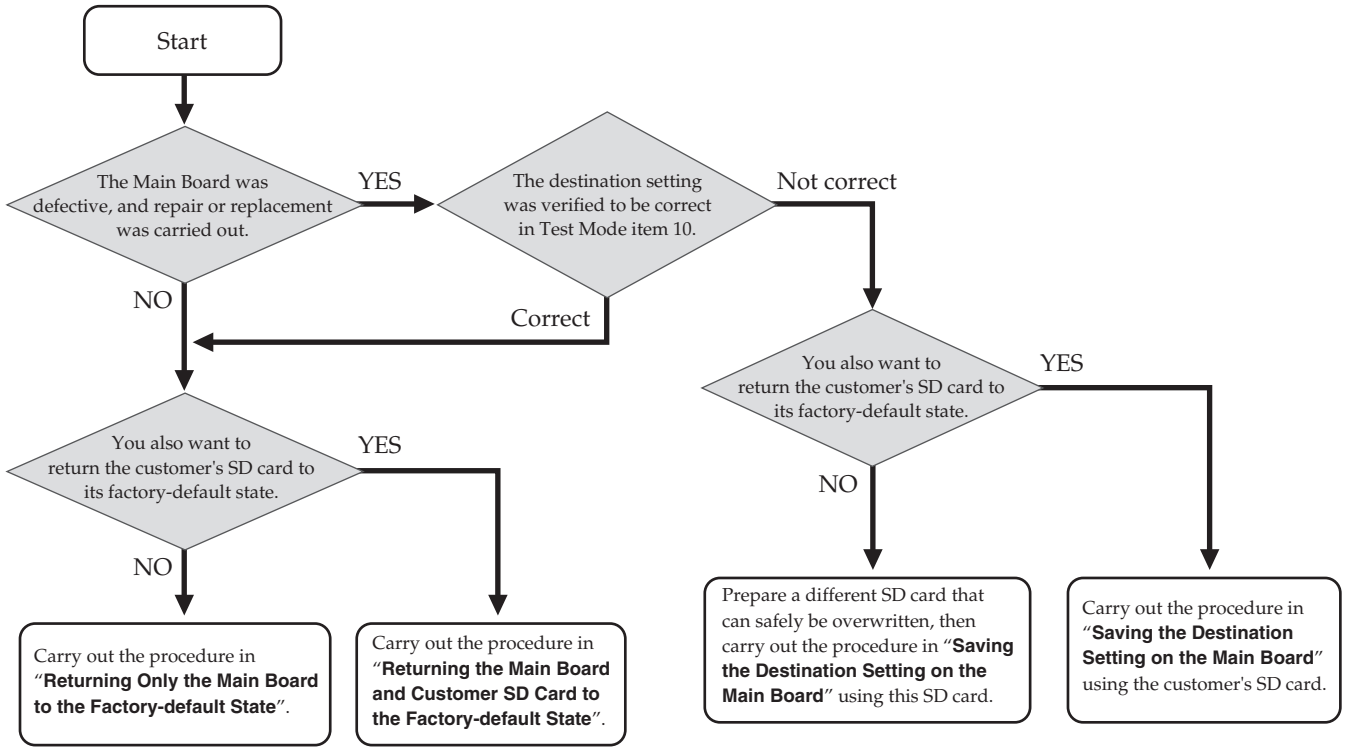
1. Eject the SD card.
2. Hold down [FUNC] and turn on the power switch on the rear panel, and write down the type of battery displayed.
3. Switch the power off, then back on again.
4. Hold down [FUNC] and press [7], then write down the value displayed for the **ILLUMINATION** setting.
5. Hold down [FUNC] and press [8], then write down the value displayed for the **EFFECT LIMIT** setting.
6. Hold down [FUNC] and press [10], then write down the value displayed for the **MIDI SYNC** setting.
7. Hold down [FUNC] and press [11], then write down the value displayed for the **INPUT GAIN** setting.
8. Hold down [FUNC] and press [12], then write down the value displayed for the **OUTPUT GAIN** setting.
9. Switch off the power.

Returning Settings to the Main Board (Restore)

This describes the procedure for restoring setting values written down in the previous section.

1. Eject the SD card.
2. Hold down [FUNC] and turn on the power switch on the rear panel.
3. Turn the [CTRL 3] control to set the battery type.
4. Switch the power off, then back on again.
5. Hold down [FUNC] and press [7].
6. Turn the [CTRL 3] control to set the **ILLUMINATION** value.
7. Hold down [FUNC] and press [8].
8. Turn the [CTRL 3] control to set the **EFFECT LIMIT** value.
9. Hold down [FUNC] and press [10].
10. Turn the [CTRL 3] control to set the **MIDI SYNC** value.
11. Hold down [FUNC] and press [11].
12. Turn the [CTRL 3] control to set the **INPUT GAIN** value.
13. Hold down [FUNC] and press [12].
14. Turn the [CTRL 3] control to set the **OUTPUT GAIN** value.
15. Switch off the power.

Performing a Factory Reset



Returning Only the Main Board to the Factory-default State

1. With no SD card inserted, hold down the [CANCEL], [REMAIN], and [DEL] buttons and switch on the power.
The message **ini** appears on the 7-segment LED display and the [REC] button flashes.

2. Press the [REC] button to execute the factory reset.

* *To quit, switch off the power.*

A dot on the 7-segment LED display flashes. When the flashing stops, the factory reset has finished.

* *Never switch off the power while the dot is flashing. Doing so may result in data corruption.*

3. Switch off the power.

Returning the Main Board and Customer SD Card to the Factory-default State

If for some reason it becomes necessary to return not only the Main Board but also the customer's SD card to the factory-default state, follow the procedure below to accomplish this.
The steps below are also the procedure to use to put a commercially available SD card into the same state as the SD card shipped with the unit from the factory.
Executing this procedure also returns the Main Board to its factory-default state.

NOTE

Returning an SD card received from the customer to its factory defaults causes any data saved on the customer's SD card to be lost. If necessary, make a backup. (Refer to **Data Backup and Restore Operations** (p. 12).)

Items Required

- Computer (running Windows XP)
- SD card reader/writer
- SD card you want to return to the factory-default state (1 GB or larger)
- SP-404SX Utility CD-ROM (#5100008941)

Procedure

Copying Factory-default Data to the SD Card

1. Format the SD card on the SP-404SX. (Refer to **Formatting an SD Card** (p. 12).)

2. Using the computer, copy the **FCTRY** folder on the **SP-404SX Utility CD-ROM** to the root directory of the SD card.

* *The **FCTRY** folder on the **SP-404SX Utility CD-ROM** contains the factory-default data.*

3. Switch off the power.

Executing a Factory Reset for the Main Board and SD Card

4. Insert the SD card from step **2** into the SP-404SX, then hold down the [CANCEL] button and switch on the power.
The message **P.oF** appears on the 7-segment LED display, and the write protection of all banks of samples and patterns is canceled.

5. Switch off the power.

6. Hold down the [CANCEL], [REMAIN], and [DEL] buttons and switch on the power.
The message **ini** appears on the 7-segment LED display and the [REC] button flashes.

* *To cancel the factory reset, switch off the power at this time.*

7. Pressing the [REC] button executes the factory reset, and the data corresponding to the destination setting is unarchived onto the SD card.
   A dot on the 7-segment LED display flashes. When the flashing stops, the factory reset has finished.
   * *Never switch off the power while the dot is flashing. Doing so may result in data corruption.*
8. Switch off the power.

Saving the Destination Setting on the Main Board

When the Main Board has been serviced or replaced, after verifying that the destination setting is correct, if necessary, execute the operation described here.
This procedure as well can be used to return the SD card to a factory-default state that corresponds to the destination.

Items Required

- Computer (running Windows XP)
- SD card reader/writer
- SD card that can safely be overwritten
- SP-404SX Utility CD-ROM (#5100008941)

Procedure

1. Format the SD card on the SP-404SX. (Refer to **Formatting an SD Card** (p. 12).)
2. Using the computer, copy the **FCTRY** folder on the **SP-404SX Utility CD-ROM** to the root directory of the SD card.
   * *The **FCTRY** folder on the **SP-404SX Utility CD-ROM** contains the factory-default data.*
3. Switch off the power.
4. Insert the SD card from step **2** into the SP-404SX.
5. Hold down the [VOICE TRANS], [DJFX LOOPER], and [HOLD] buttons and switch on the power.
   The Test Mode is enabled.
6. Hold down the [TAP TEMPO] button and press pad [10].
   The message **PrE** appears on the 7-segment LED display.
7. Press the pad that corresponds to the destination (voltage) you want to set.

Destination (voltage)	Pad
117VU, 117VU/CS, 117VBL	1
230VEU, 230VE, 240VA, 220VCNR, 220VK	2
100V	3

   The pressed pad lights up and the [MIC] button flashes.
8. Press the [MIC] button.
   Unarchiving of the destination data starts. The message **Lod** appears on the 7-segment LED display, and the dot at the rightmost character flashes.
   * *Never switch off the power while the dot is flashing. Doing so may result in data corruption.*
   * *If the message **Sd** appears, reinsert the SD card.*
   * *If the message **Err** appears, switch off the power, then redo the procedure from step **5**.*

   When data unarchiving has finished, the message **CPL** or **ErP** appears and the pad corresponding to the specified destination lights up.
9. Verify that the setting for the correct destination has been made.
10. Switch off the power.

Updating the System

Items Required

- Computer (running Windows XP)
- SD card reader/writer
- SD card (blank; 1 GB or larger)
- SP-404SX Update Data (obtained via Service Net)

Creating the Update-use SD Card

1. Format the SD card on the SP-404SX. (Refer to **Formatting an SD Card** (p. 12).)
2. Insert the formatted SD card into the SD card reader/writer connected to the computer.
3. Copy the update data (**sp404sx_up.bin**) to the root directory of the SD card.
4. Eject the SD card from the SD card reader/writer.

Update Procedure

1. Make sure the power to the SP-404SX is off.
2. Insert the update-use SD card into the SP-404SX.
3. Switch on the power to the SP-404SX.
   The update starts automatically.
   When the display read-out reaches ~~000~~ **Fin**, the update is complete.
4. Switch off the power and eject the update-use SD card.
5. Verify the version numbers as described in **Verifying the Version Numbers** (p. 12).

Corrective Action for a Failed Update

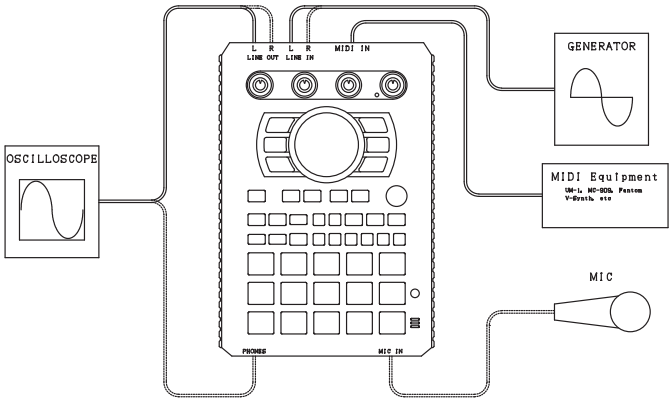
- Switch the power off and back on, then execute the update again.
- If the update still cannot be accomplished correctly, it is likely that the update-use SD card was not created properly. Carry out the procedure to create the update-use SD card again.
- If the update still cannot be accomplished, replace the Main Board.

Test Mode

Items Required

- Signal generator
- Oscilloscope
- Noise meter
- MIDI device for sending Active Sensing messages (UM-1, MC-909, Fantom, V-Synth, or the like)
- Microphone
- MIDI cable
- Audio cables
- SD card (blank; 1 GB or larger)
- Test-mode start-up file: ServTest_SP-404SX.txt (obtained via Service Net)

Connections



* *Connect the MIDI device for sending Active Sensing (FE) messages (UM-1, MC-909, Fantom, V-Synth, or the like) to* ***MIDI IN****. If the Test Mode is entered without making this connection, then at* **2. DEVICE** *(p. 16), an error occurs and pad [7] lights up.*

Preparing the SD Card for Test-mode Use

1. Format the SD card on the SP-404SX. (Refer to **Formatting an SD Card** (p. 12).)
2. Insert the formatted SD card into the SD card reader/writer connected to the computer.
3. Copy the Test-mode start-up file (ServTest_SP-404SX.txt) to the root directory of the SD card.

Entering the Test Mode

1. Make sure the power to the unit is switched off.
2. Adjust the **MIC LEVEL** control to **MIN**.
3. Insert the SD card for Test-mode use into the unit's SD card slot.
4. Switch on the power.
   The Test Mode starts automatically.

Quitting the Test Mode

Switch off the power.

Selecting Test Items

Holding down the [TAP TEMPO] button and pressing a pad from [1] to [11] jumps to the test item corresponding to the number of the pressed pad, even while testing is in progress. For the correspondences between the numbers and the test items, refer to the following section.

Test Items

1. VERSION

Entering the Test Mode displays the version of the application program on the 7-segment LED display.
Pressing [B/G] displays the version of the boot program.
Pressing [A/F] displays the version of the application program.

Pressing the [MIC] button makes execution advance to the next item.

2. DEVICE

Each respective device is tested automatically. The dot at the rightmost character of the 7-segment LED display flashes while testing is in progress.
If a device is found to have a problem, the corresponding pad lights up.

Pad number	Device
1	NOR FLASH
2	SDRAM1
3	SDRAM2
4	SDRAM (WSP)
5	WSP
6	SD CARD
7	MIDI
8	AUDIO DEVICE

Press the [MIC] button to advance to the next item.

* *If a device is found to have a problem, holding down the [TAP TEMPO] button and pressing pad [3] forces execution to advance to the next item.*

3. PHONES

1. Input a **1-kHz sine wave** at **-10 dBu** from the signal generator to the **LINE IN L** connector.
2. Turn the **VOLUME** control all the way clockwise to adjust it to **MAX**.
3. Verify that the output from the left (L) channel of the **PHONES** jack is a **sine wave** at **-3 dBu (±3 dB)**, and that no output comes from the right (R) channel.
4. Input a **1-kHz sine wave** at **-10 dBu** from the signal generator to the **LINE IN R** connector.
5. Verify that the output from the right (R) channel of the **PHONES** jack is a **sine wave** at **-3 dBu (±3 dB)**, and that no output comes from the left (L) channel.
6. Press the [MIC] button to advance to the next item.

4. LINE IN/OUT

1. Input a **1-kHz sine wave** at **-10 dBu** from the signal generator to **LINE IN L**.
2. Verify that the output from the **LINE OUT L** connector is a **sine wave** at **-13 dBu (±3 dB)**.
3. Input a **1-kHz sine wave** at **-10 dBu** from the signal generator to **LINE IN R**.
4. Verify that the output from the **LINE OUT R** connector is a **sine wave** at **-13 dBu (±3 dB)**.
5. Increase the input signal and verify that the **PEAK** indicator lights up.

* *The indicator lights up at about **+5 dBu**.*

6. Press the [MIC] button to advance to the next item.

5. MIC IN (EXTERNAL)

1. Connect an external microphone and input audio, and verify that the signal is output from **PHONES L** and **R** or **LINE OUT L** and **R**.
2. Slowly turn the **MIC LEVEL** control clockwise, and verify that the output level rises.
3. Press the [MIC] button to advance to the next item.

6. MIC IN (INTERNAL)

1. Turn the **VOLUME** control all the way clockwise to adjust it to **MAX**.
2. Input audio into the internal microphone at the bottom right of the top panel, and verify that the signal is output from **PHONES L** and **R** or **LINE OUT L** and **R**.
3. Press the [MIC] button to advance to the next item.

7. SW/LED

1. Verify that the two locations near the **Roland** logo and **BPM/VALUE** above and below the display simultaneously light up in alternating red and blue.
2. Verify that the 7-segment LED display lights up in sequence.
3. Press the buttons whose LEDs light up.
   The [FILTER+DRIVE] button lights up first.
   Pressing the button makes it go dark, and the next button lights up.
   The buttons light up in succession, moving from the upper left of the top panel to the lower right. Pressing the [MIC] button, which is the last one, makes the message **CAn** appear on the 7-segment LED display.
4. Press the [CANCEL] button.
   The message **rEN** appears on the 7-segment LED display.
5. Press the [REMAIN] button.
   Operation automatically advances to the next item.

8. A/D

1. Turn the [CTRL 1] control all the way clockwise, and verify that a message like the one shown below appears on the 7-segment LED display.

2. In the same way, turn the control all the way counterclockwise, and verify that a dot is displayed at the lower right of the **8**.

3. Carry out steps **1** and **2** for the [CTRL 2] and [CTRL 3] controls in the same way.

   When the three controls have been verified to work correctly, execution automatically advances to the next item.

9. MUTE/VOLUME/SD CARD

The message **MUt** appears on the 7-segment LED display, and a sine wave is played.

1. Press the [MIC] button.
2. Verify that the [MIC] button ~~lights up~~ goes dark and the audio is muted.
3. Press the [MIC] button.
4. Verify that the [MIC] button ~~goes dark~~ lights up and the audio is heard again.
   The message **rMV** appears on the 7-segment LED display.

* *When the message **SD** appears, again insert the SD card for Test-mode use.*

5. Eject the SD card for Test-mode use.
6. ~~When the message **SD** appears, again insert the SD card for Test-mode use.~~
   Operation automatically moves to the next item.

10. Residual-noise Measurement/ Destination-setting Verification

The message **PrE** appears on the 7-segment LED display.

This item was originally intended for saving destination data on the Main Board and the SD card included when the unit was shipped from the factory, but here it is used to measure the unit's residual noise and to verify the destination setting saved on the Main Board.
In particular, when servicing or replacing the Main Board, be sure to check the destination-specific setting, and save the destination setting if necessary.

* *For information on the procedure for saving destination data on the Main Board and the SD card, refer to* **Performing a Factory Reset** *(p. 14).*

1. Verify the destination setting.
One of the pads from [1] to [3] flashes to indicate the destination. The relationships between the pads and the destinations are as follows.

Destination (voltage)	Pad
117VU, 117VU/CS, 117VBL	1
230VEU, 230VE, 240VA, 220VCNR, 220VK	2
100V	3

* *If the correct destination has not been set, follow the procedure described in* **Saving the Destination Setting on the Main Board** *(p. 15) to set the correct destination.*

2. Connect the noise meter to **OUTPUT L**.

3. Set the noise meter to **DIN AUDIO**.

4. Verify that noise is **-66 dBu** or less.

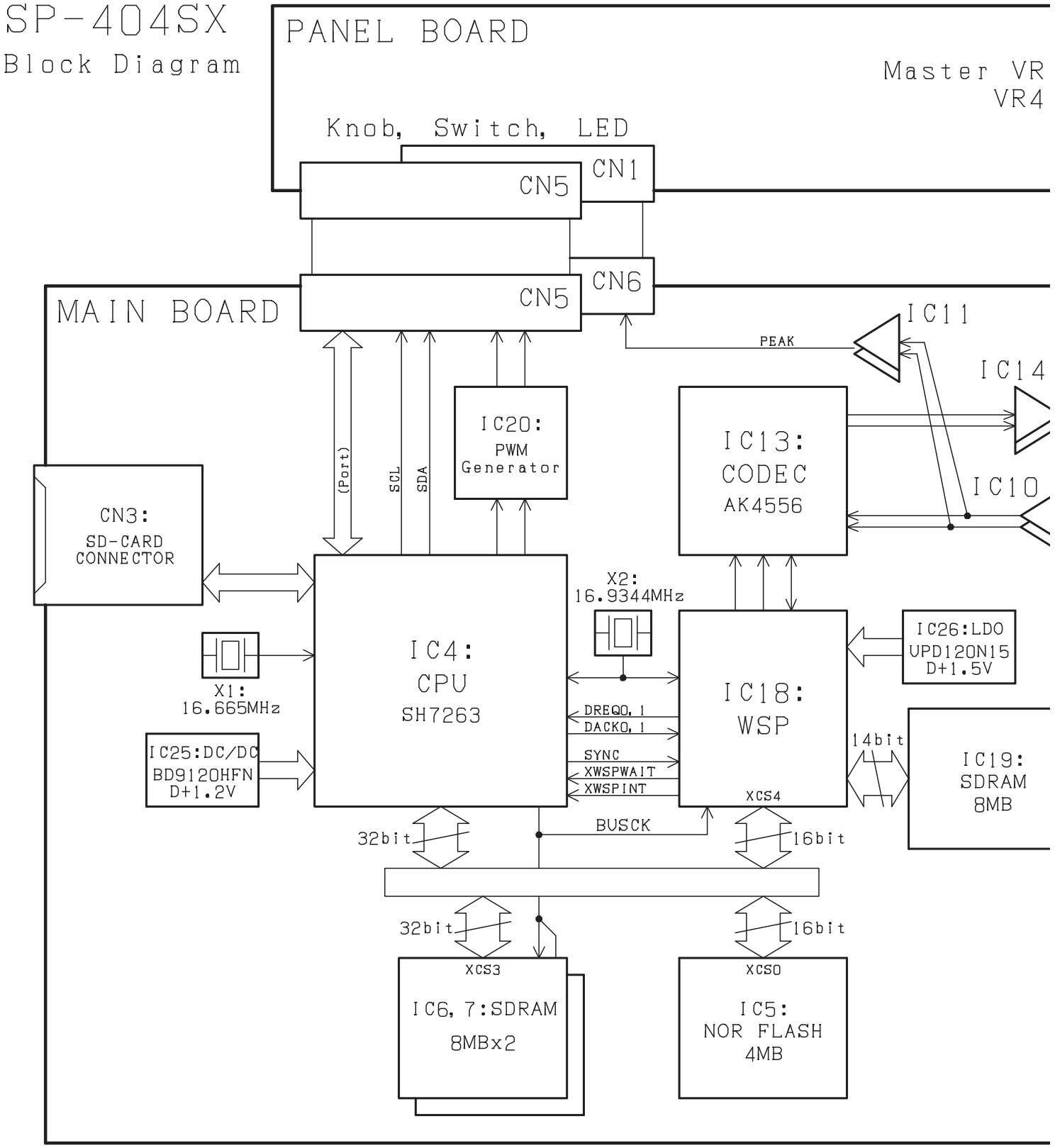
5. In the same way, verify that residual noise at **OUTPUT R** and at **PHONES** is **-66 dBu** or less.

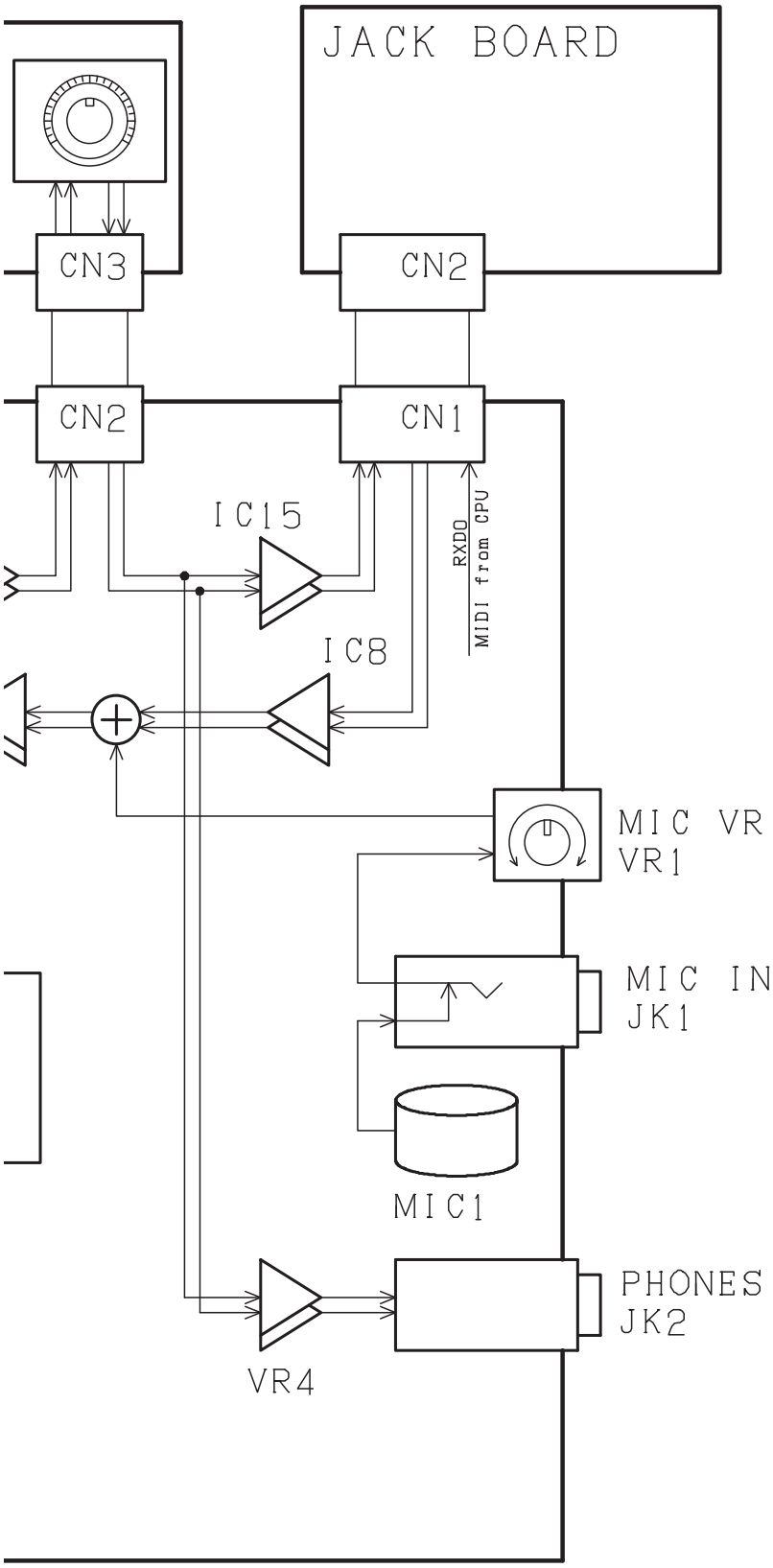
6. Hold down the [TAP TEMPO] button and press pad [11] to advance to the next item.

11. COMPLETED/ERP

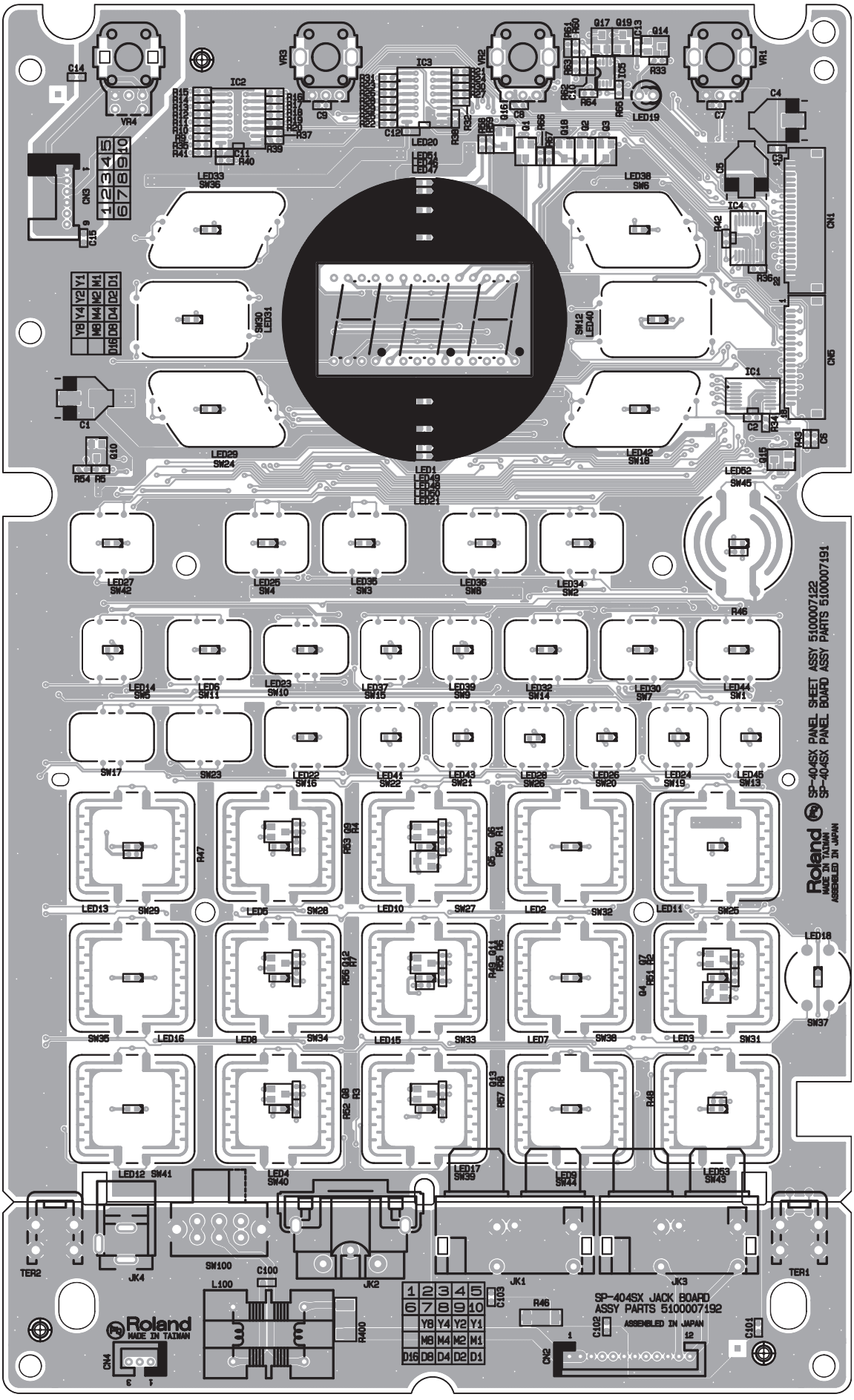
The message **CPL** or **ErP** appears on the 7-segment LED display.
~~Switch off the power.~~
When the message **CPL** appears, switch off the power.
When the message **ErP** appears, press the [MIC] button to switch off the power, and return the [POWER] switch to the OFF position.
This completes the testing.

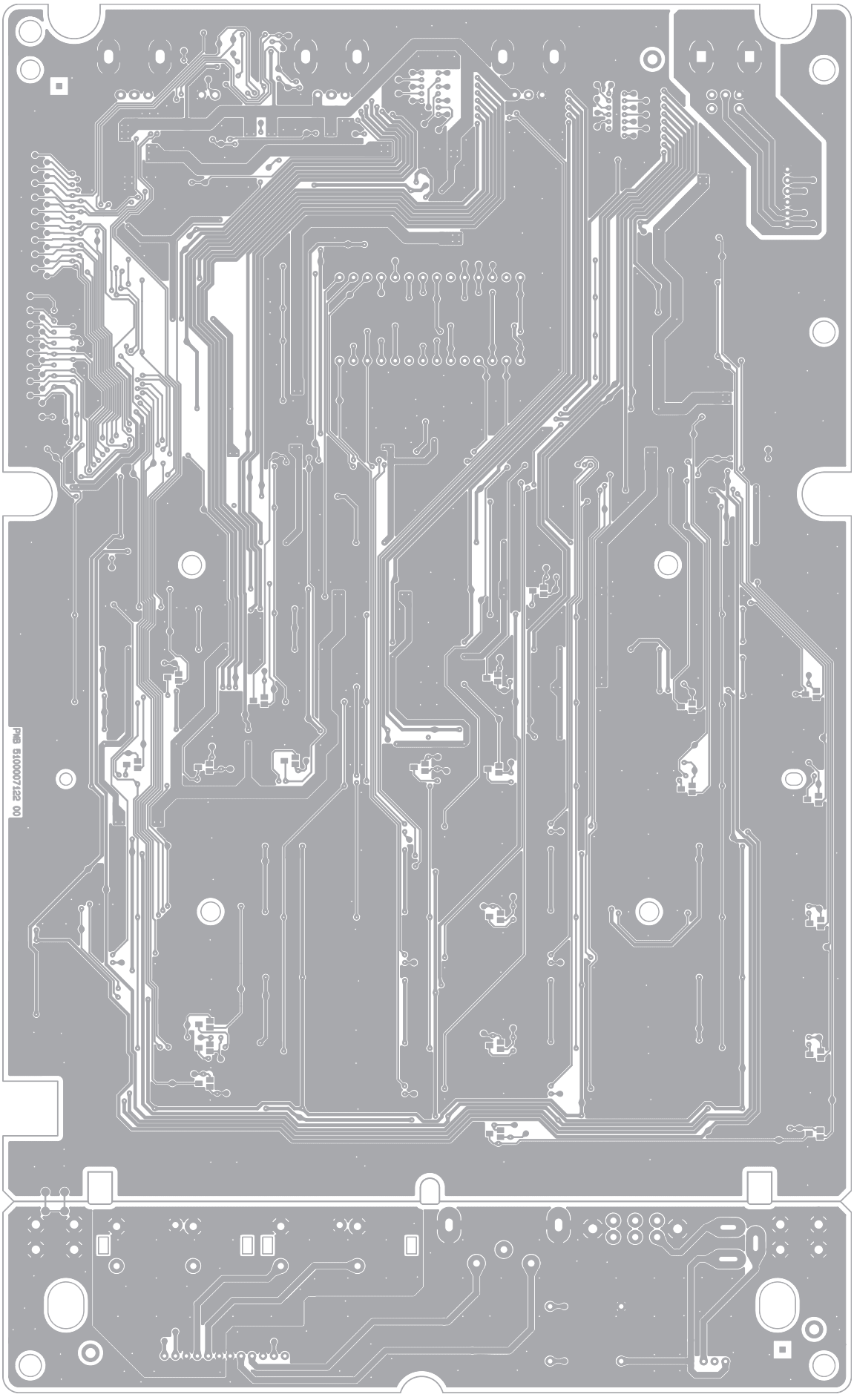
Block Diagram/Wiring Diagram




JACK BOARD
CN3
CN2
CN2
CN1
IC15
RXD0
MIDI from CPU
IC8
MIC VR
VR1
MIC IN
JK1
MIC1
PHONES
JK2
VR4

Circuit Board (Panel Board, Jack Board)

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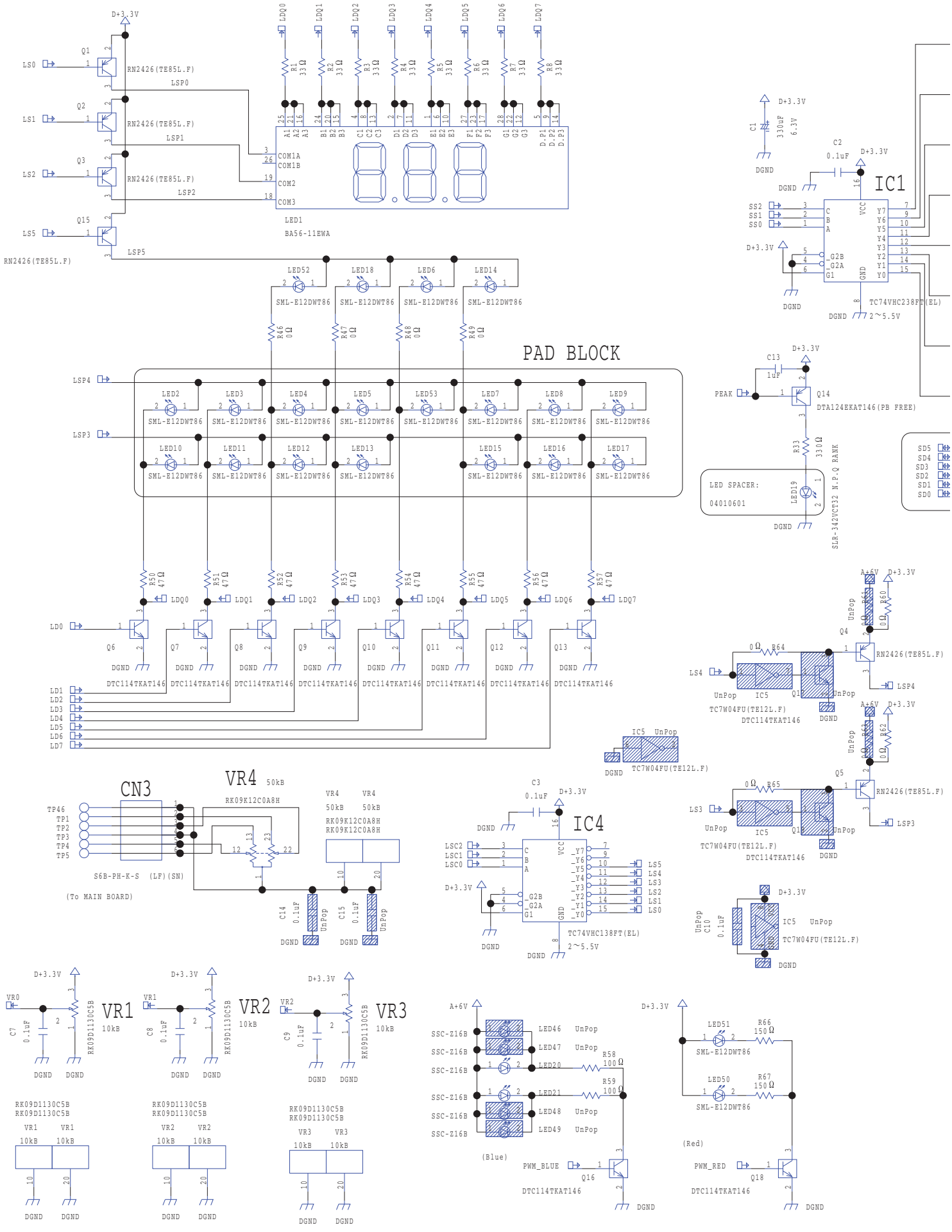
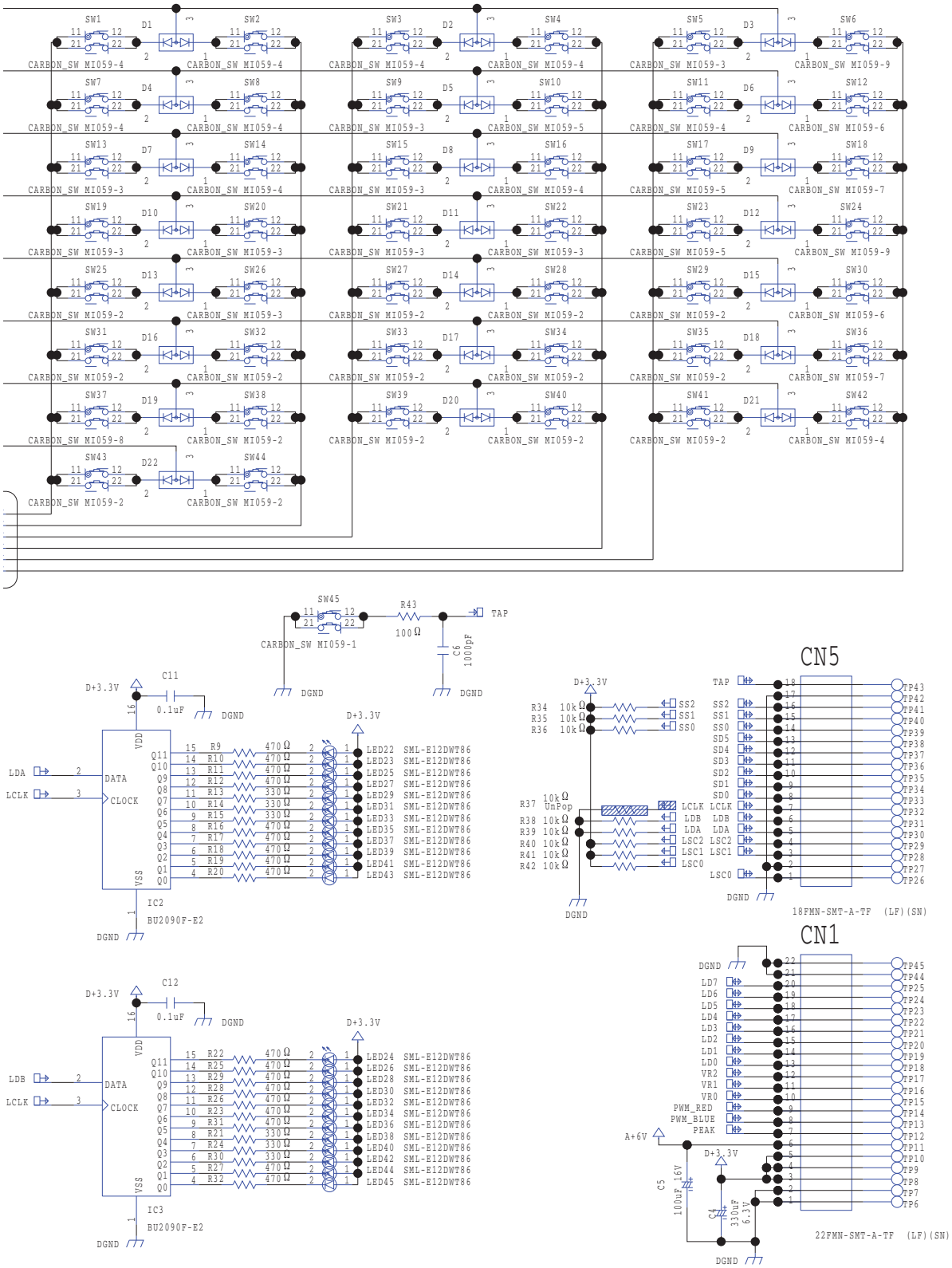
Circuit Diagram (Panel Board)



DIODE: MA3J142DGL(MA142WA-(TX))



Circuit Diagram (Jack Board)