

RC-30

DUAL TRACK LOOPER

SERVICE NOTES

Issued by RJA

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CC-KWS

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 **Connecting to Your Computer via USB** (p. 14) in the owner's manual and save the data. After completing the procedure, restore the backed-up data to the product.

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, "UnPop" is an abbreviation for "Unpopulated." This means non-mounted components. The circuit board and circuit board diagram show silk-screened indications, but no components are mounted.

Specifications

RC-30: Loop Station

Nominal Input Level

MIC IN:	-40 dBu (variable)
INST IN:	-20 dBu
AUX IN:	-10 dBu

Input Impedance

MIC IN:	4 kΩ
INST IN:	1 MΩ
AUX IN:	22 kΩ

Nominal Output Level

-20 dBu

Output Impedance

1 kΩ

Recommended Load Impedance

10 kΩ or larger

Recording/Playback

Maximum Recording Time:	Approximately 3 hours
Maximum Phrase Memory:	99 phrases
Number of tracks:	2
Data Format:	WAV (44.1 kHz, 16-bit linear, stereo)

Rhythm Type

Hi-Hat, Kick & Hi-Hat, Rock 1, Rock 2, Pop, Funk, Shuffle, R & B, Latin, Percussion

Effect Type

BEND DOWN, STEP PHASER, SWEEP FILTER, TEMPO DELAY, Lo-Fi

USB Interface

USB 2.0/1.1 mass storage device class

Controls

REC/PLAY/OVERDUB pedal switch
 STOP/TAP TEMPO pedal switch
 MIC INPUT LEVEL knob
 MEMORY DOWN button
 MEMORY UP button
 MEMORY WRITE button
 MEMORY DELETE button
 RHYTHM OUTPUT LEVEL knob
 RHYTHM ON/OFF button
 RHYTHM TYPE button
 RHYTHM TAP TEMPO button
 TRACK 1 slider
 TRACK 1 SELECT button
 TRACK 2 slider
 TRACK 2 SELECT button
 LOOP FX ON/OFF
 LOOP FX TYPE button
 PHANTOM switch

Indicators

POWER indicator
REC, PLAY (DUB) indicator
PEAK indicator
TRACK 1 STATUS indicator
TRACK 2 STATUS indicator
BEND DOWN indicator
STEP PHASER indicator
SWEEP FILTER indicator
TEMPO DELAY indicator
Lo-Fi indicator

Display

7 segments, 2 characters (LED)

Connectors

MIC IN Jack: XLR type (balanced/phantom power: DC 48 V, 10 mA)
INST IN Jack (L/MONO, R): 1/4" phone type
AUX IN Jack: Stereo miniature phone type
OUTPUT Jack (L/MONO, R): 1/4" phone type
FOOT SW Jack: 1/4" TRS phone type
USB Connector
DC IN Jack (DC 9 V)

Power Supply

DC 9 V: Alkaline (AA, LR6) or Carbon-zinc battery (AA, R6) x 6
AC Adaptor (PSA series: sold separately)

* Rechargeable Ni-MH batteries cannot be used.

Current Draw

Maximum 195 mA (DC 9 V)

* Expected battery life under continuous use:
Alkaline battery (AA, LR6): Approx. 7.5 hours
Carbon-zinc battery (AA, R6): Approx. 1.5 hours
These figures will vary depending on the actual conditions of use.

Dimensions

173 (W) x 158 (D) x 57 (H) mm
6-13/16 (W) x 6-1/4 (D) x 2-1/4 (H) inches

Weight

1.2 kg / 2 lbs 11 oz (including batteries)

Accessories

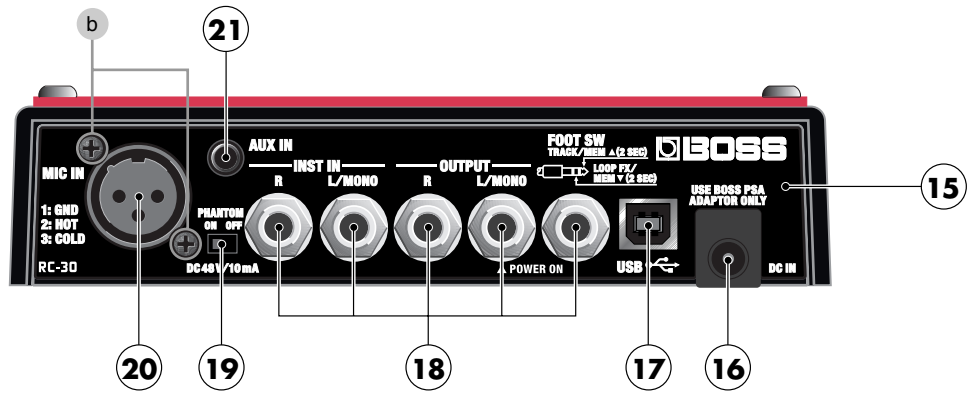
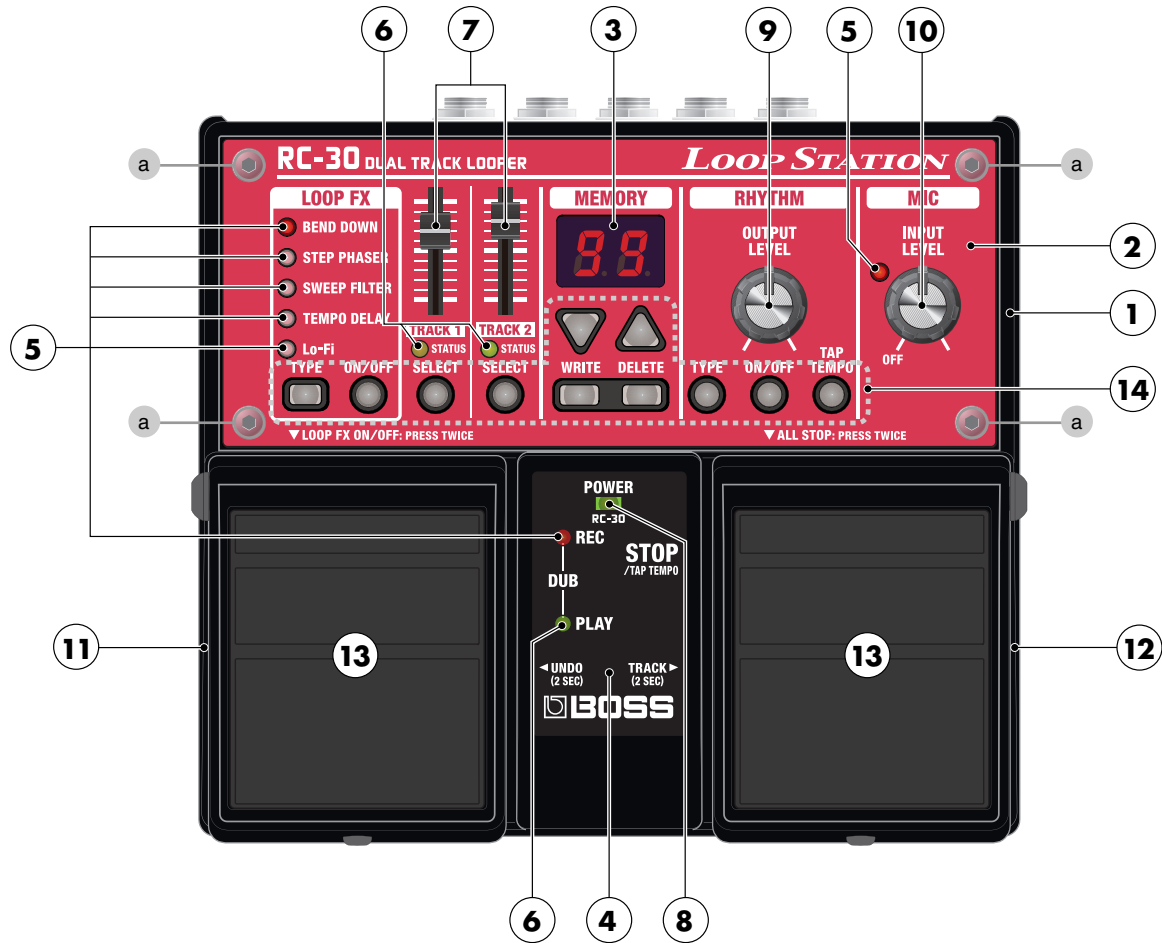
Owner's Manual (#5100018913)
Leaflet ("USING THE UNIT SAFELY," "IMPORTANT NOTES," and
"Information") (#*****)
Alkaline battery (AA, LR6) x 6 (#*****)

Options (sold separately)

AC Adaptor (PSA series)
Foot Switch (FS-5U, FS-6)

- * $0 \text{ dBu} = 0.775 \text{ Vrms}$
- * 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.

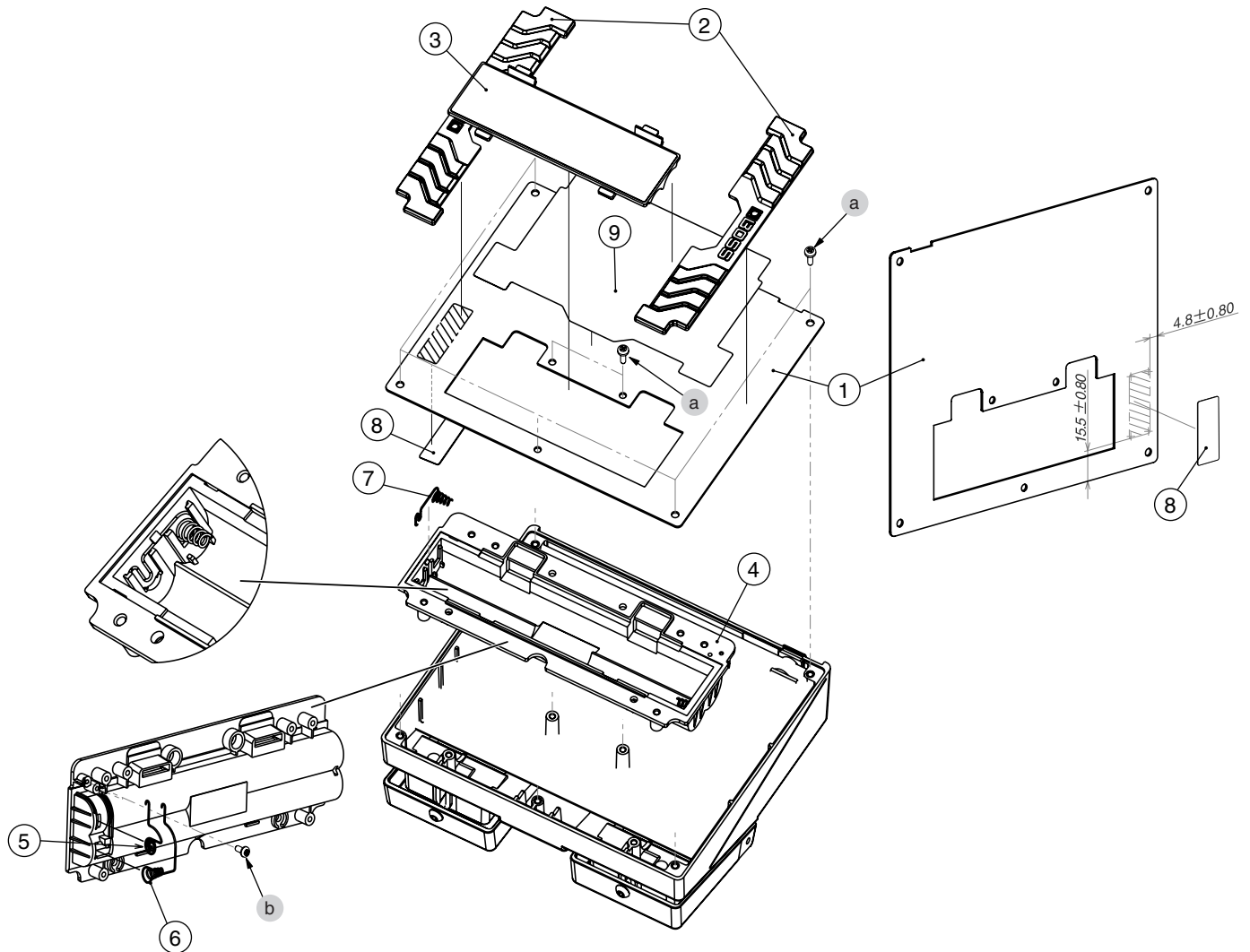
Location of Controls



Location of Controls Parts List

No.	Part Code	Part Name	Description	Q'ty
1	5100018735	CASE		1
2	5100018736	PANEL		1
3	5100018740	7SEG COVER		1
	5100021083	LED	SA39-11SURKWA-3.3	2
4	5100018737	LED PANEL		1
5	15029281	LED (RED)	GL-3PR8	7
6	03349989	LED (GREEN)	L-34GDSL-FPB	3
7	F2477102R0	S-KNOB		2
	5100018742	POT DUST COVER		1
	5100019563	SLIDE POTENTIOMETER	RA2043F-20-10C1-B50K-C	2
8	F5029126R0	LED	L-113GDT-F01(GREEN)	1
9	03344934	R-KNOB	(G2477122/75D522N0R0)	1
	40128923	HEX NUT M7		1
	5100001448	POTENTIOMETER (F3279802R0)	RD901F-40-125F-B50K-00D	1
10	03344934	R-KNOB	(G2477122/75D522N0R0)	1
	40128923	HEX NUT M7		1
	5100018308	ROTARY POTENTIOMETER	RD901F-40-125F-A50K-00DQ8	1
11	75D422T1R0	PEDAL L		1
12	75D422T0R0	PEDAL R		1
13	5100008055	PEDAL PLATE	62X53 (G2357116R0)	2
14	5100018741	RUBBER SW		1
15	5100018738	REAR PANEL		1
16	F3449415R0	JACK	KM02009BB	1
17	5100007092	USB CONNECTOR	UBR24-4K5J00(F3439908R0)	1
18	5100002907	6.5MM JACK	HTJ-064-22H	5
	5100008086	INT TOOTH WASHER 9.5X12.5X0.5	NI RTC (H5039205R0)	5
	5100003926	PLAIN WASHER 9X13.5X0.5T	NI (H5039158R0)	5
	5100003918	JACK NUT M9X12X2	NI RTC (H5039510R0)	5
19	5100011813	SWITCH (F3159712R0)	SV69010F-0202-6V-NP-001	1
20	03459223	XLR CONNECTOR	JY-5033A	1
21	13449440R0	3.5MM JACK	HSJ0857-016210	1
a	5100008244	SCREW M4X8 (H5029855R0)	HEXAGON BUTTON HEAD FE NI	4
b	40012489	SCREW 2.6X10	BINDING TAPTITE P FE BZC	2

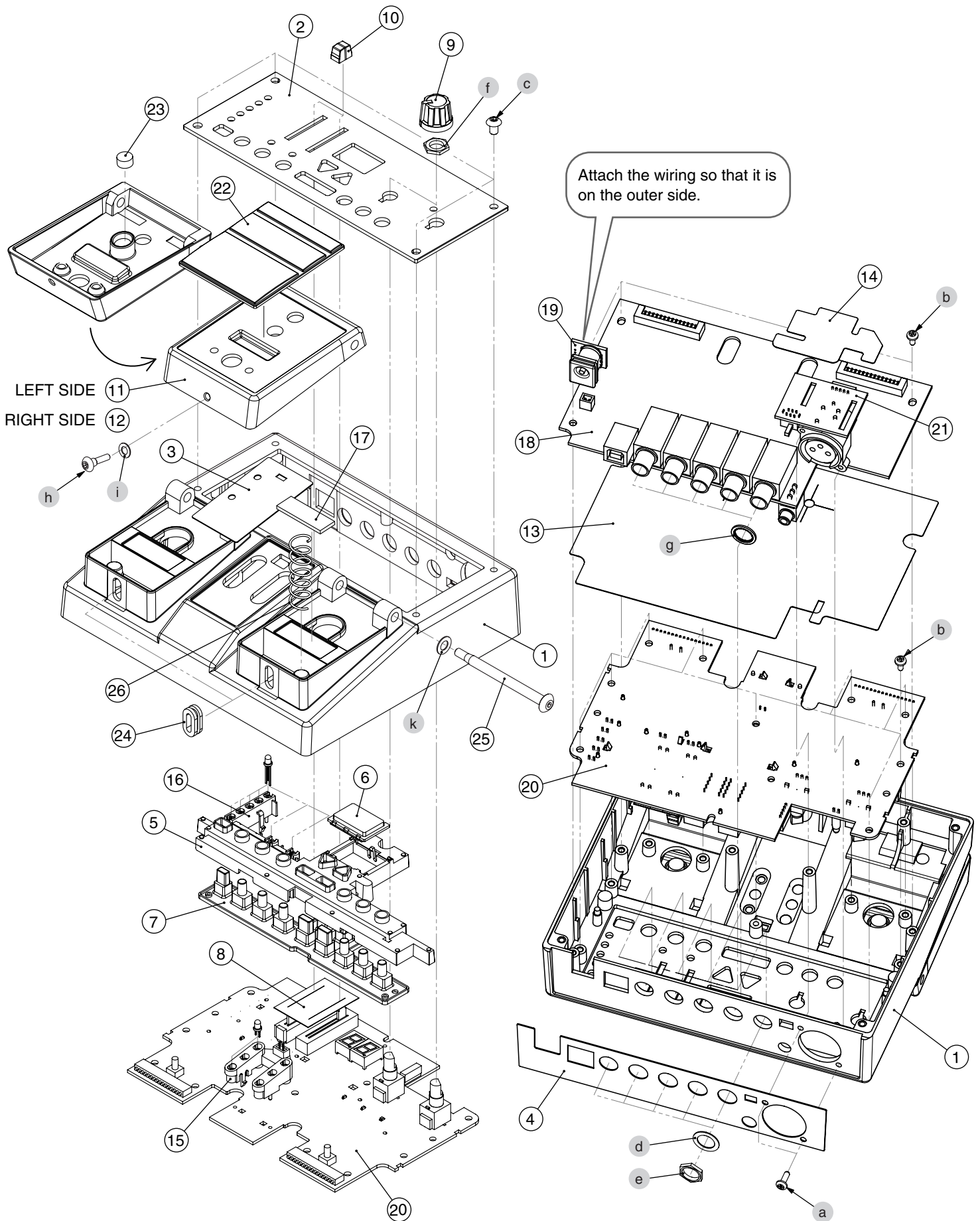
Exploded View (1)



Exploded View (1) Parts List

No.	Part Code	Part Name	Description	Q'ty
1	5100008053	BOTTOM COVER	(75D422E0R0)	1
2	5100008052	BOTTOM FOOT	(G2357118R0)	2
3	5100008056	BATTERY COVER	(G2017621R0)	1
4	5100008058	TWIN BATTERY CASE V6	(G2017620R0)	1
5	5100008059	BATTERY TERMINAL (+)	(G2177308R0)	1
6	5100008061	BATTERY TERMINAL (-)	(G2177309R1)	1
7	5100008060	BATTERY TERMINAL (+/-)	(G2177307R1)	1
8	5100008057	BATTERY INSULATING SHEET	(G2257130R0)	1
9	5100018870	BOTTOM LABEL		1
a	5100008245	SCREW 3X8 (H5019115R0)	PAN TAPPING B1 BZC	7
b	5100008243	SCREW 2.6X5 (H5019430R0)	BINDING HEAD TAPTITE P FEZC	2

Exploded View (2)



Exploded View (2) Parts List

Parts

No.	Part Code	Part Name	Description	Q'ty
1	5100018735	CASE		1
2	5100018736	PANEL		1
3	5100018737	LED PANEL		1
4	5100018738	REAR PANEL		1
5	5100018739	ESCUTCHEON		1
6	5100018740	7SEG COVER		1
7	5100018741	RUBBER SW		1
8	5100018742	POT DUST COVER		1
9	03344934	R-KNOB	(G2477122/75D522N0R0)	2
10	F2477102R0	S-KNOB		2
11	75D422T1R0	PEDAL L		1
12	75D422T0R0	PEDAL R		1
13	5100018744	INSULATING SHEET CENTER		1
14	5100018745	INSULATING SHEET BOTTOM		1
15	5100007817	LED GUIDE	(G2197126R0)	1
16	5100018743	LED SPACER		1
17	04560601	CUSHION	R (G2357111)	2
	5100017360	JACK SHEET ASSY		
		* This unit includes the following parts.		
18	*****	JACK BOARD		1
19	*****	DC JACK BOARD		1
	5100017361	PANEL SHEET ASSY		
		* This unit includes the following parts.		
20	*****	PANEL BOARD		1
21	*****	XLR BOARD		1
22	5100008055	PEDAL PLATE	62X53 (G2357116R0)	2
23	5100008054	PEDAL FOOT	(G2357115R0)	2
24	5100007505	PEDAL GUIDE BUSH	(22157702R0)	2
25	5100008237	PEDAL SHAFT	(H5029851R0)	2
26	5100007504	COIL SPRING	(22177109R0)	2

Screws

No.	Part Code	Part Name	Description	Q'ty
a	40012489	SCREW 2.6X10	BINDING TAPTITE P FE BZC	2
b	5100008242	SCREW 3X6 (H5019110R0)	PAN TAPPING B1 ZC	13
c	5100008244	SCREW M4X8 (H5029855R0)	HEXAGON BUTTON HEAD FE NI	4
d	5100003926	PLAIN WASHER 9X13.5X0.5T	NI (H5039158R0)	5
e	5100003918	JACK NUT M9X12X2	NI RTC (H5039510R0)	5
f	40128923	HEX NUT M7		2
g	5100008086	INT TOOTH WASHER 9.5X12.5X0.5	NI RTC (H5039205R0)	5
h	5100008241	BTN M4D3 BOLT BZC	(H5029852R0)	2
i	5100008291	RESIN WASHER	4.1X7.5X0.5 BK (H5039413R0)	2
k	5100008293	RESIN WASHER	5.1X9.5X0.5 BK (H5039414R0)	2

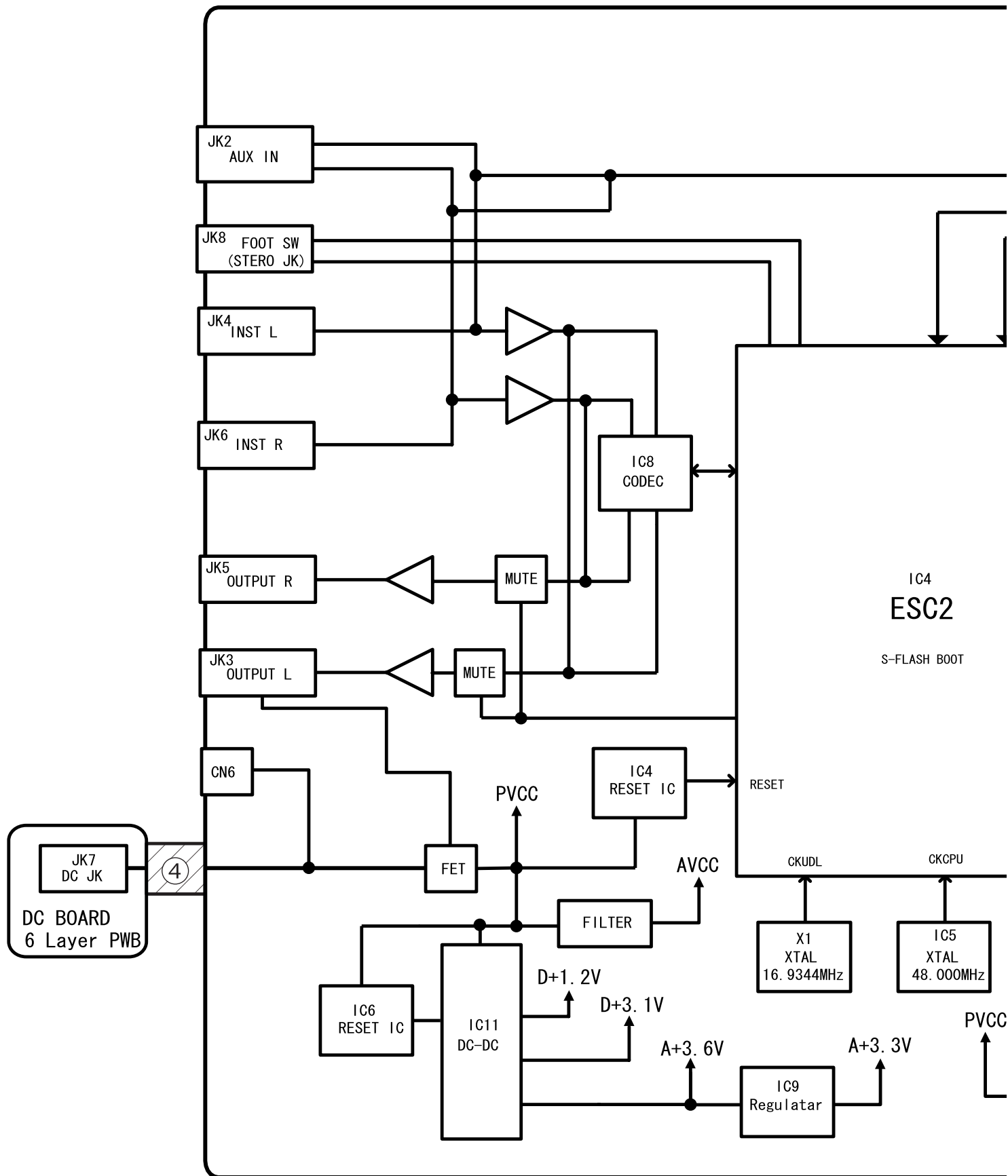
Disassembly Procedure

Disassemble in the sequence of **Exploded View (1)** (p. 6), then **Exploded View (2)** (p. 8).

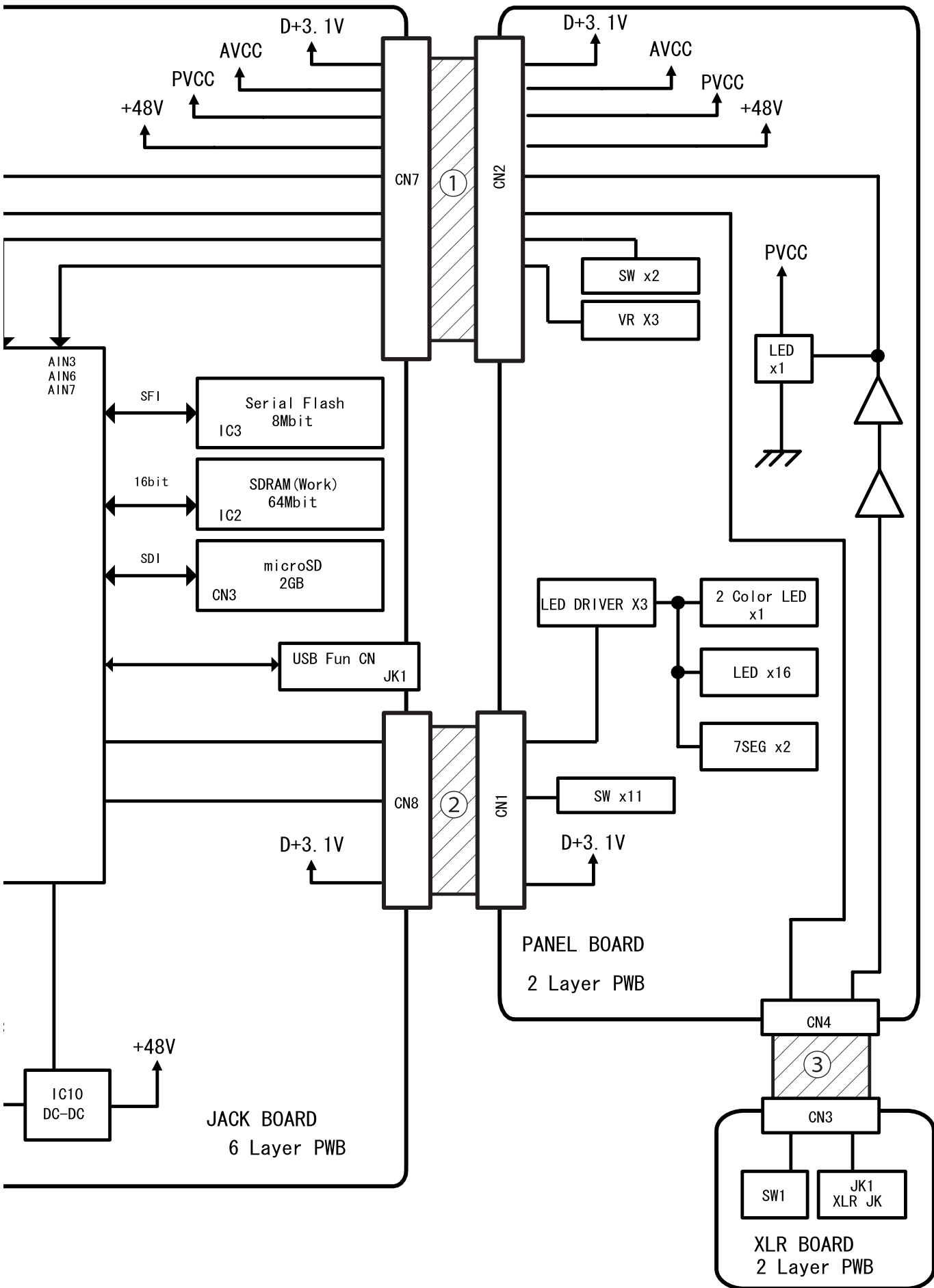
* When replacing the LED on the Panel Board (No. 20), it is not necessary to remove the Escutcheon (No. 5).

* When the 7-segment Cover (No. 6) has been removed, then 7-segment LED display can be changed while the Panel Board remains installed on the Case (No. 1).

Wiring Diagram/Block Diagram



No.	Part Code	Part Name	Description	Q'ty
1	5100019608	WIRING	W2 (MAIN)	1
2	5100019608	WIRING	W2 (MAIN)	1
3	5100018920	WIRING	W1 (MIC)	1
4	5100010465	WIRING	3P L=53X6X6MM P=2.0	1



Parts List

Safety Precautions:
The parts marked Δ 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				
#	5100018735	CASE		1
#	5100018737	LED PANEL		1
#	5100018736	PANEL		1
#	5100018740	7SEG COVER		1
#	5100018739	ESCUTCHEON		1
	75D422T1R0	PEDAL L		1
	75D422T0R0	PEDAL R		1
#	5100018738	REAR PANEL		1
	5100008053	BOTTOM COVER	(75D422E0R0)	1
	5100008058	TWIN BATTERY CASE V6	(G2017620R0)	1
	5100008056	BATTERY COVER	(G2017621R0)	1
KNOB, BUTTON				
	03344934	R-KNOB	(G2477122/75D522N0R0)	2
	F2477102R0	S-KNOB		2
#	5100018741	RUBBER SW		1
SWITCH				
	5100011813	SWITCH (F3159712R0)	SV69010F-0202-6V-NP-001	1
	13129778	TACT SWITCH	SKQKAHD010	2
JACK, EXT TERMINAL				
	13449440R0	3.5MM JACK	HSJ0857-016210	1
#	5100002907	6.5MM JACK	HTJ-064-22H	5
	F3449415R0	JACK	KM02009BB	1
	5100007092	USB CONNECTOR	UBR24-4K5J00(F3439908R0)	1
	03459223	XLR CONNECTOR	JY-5033A	1
PWB ASSY				
#	5100017360	JACK SHEET ASSY		1
		* This unit includes the following parts.		
#	*****	JACK BOARD		1
#	*****	DC JACK BOARD		1
#	5100017361	PANEL SHEET ASSY		1
		* This unit includes the following parts.		
#	*****	PANEL BOARD		1
#	*****	XLR BOARD		1
DIODE				
	03349989	LED (GREEN)	L-34GDSL-FPB	3
	15029281	LED (RED)	GL-3PR8	7
	5100007408	LED (F5339532R0)	19-226SURS YGC/S530-A3/E2/TR8	1
	5100007410	LED (F5339534R0)	19-21/R6C-AL2N1VY/3T	5
#	5100021083	LED	SA39-11SURKWA-3.3	2
	F5029126R0	LED	L-113GDT-F01(GREEN)	1
POTENTIOMETER				
	5100001448	POTENTIOMETER (F3279802R0)	RD901F-40-125F-B50K-00D	1
#	5100018308	ROTARY POTENTIOMETER	RD901F-40-125F-A50K-00DQ8	1
#	5100019563	SLIDE POTENTIOMETER	RA2043F-20-10C1-B50K-C	2
WIRING, CABLE				
	5100010465	WIRING	3P L=53X6X6MM P=2.0	1
	5100007871	WIRING	L=80MM 2P (G3487163R0)	1
#	5100018920	WIRING	W1 (MIC)	1
#	5100019608	WIRING	W2 (MAIN)	2

SCREWS				
	5100008243	SCREW 2.6X5 (H5019430R0)	BINDING HEAD TAPTITE P FEZC	2
	40012489	SCREW 2.6X10	BINDING TAPTITE P FE BZC	2
	5100008242	SCREW 3X6 (H5019110R0)	PAN TAPPING B1 ZC	13
	5100008245	SCREW 3X8 (H5019115R0)	PAN TAPPING B1 BZC	7
	5100008241	BTN M4D3 BOLT BZC	(H5029852R0)	2
	5100008244	SCREW M4X8 (H5029855R0)	HEXAGON BUTTON HEAD FE NI	4
	40128923	HEX NUT M7		2
	5100003918	JACK NUT M9X12X2	NI RTC (H5039510R0)	5
	5100008291	RESIN WASHER	4.1X7.5X0.5 BK (H5039413R0)	2
	5100008293	RESIN WASHER	5.1X9.5X0.5 BK (H5039414R0)	2
	5100008086	INT TOOTH WASHER 9.5X12.5X0.5	NI RTC (H5039205R0)	5
	5100003926	PLAIN WASHER 9X13.5X0.5T	NI (H5039158R0)	5
MISCELLANEOUS				
	5100008055	PEDAL PLATE	62X53 (G2357116R0)	2
	5100008237	PEDAL SHAFT	(H5029851R0)	2
	5100008052	BOTTOM FOOT	(G2357118R0)	2
	5100008059	BATTERY TERMINAL (+)	(G2177308R0)	1
	5100008061	BATTERY TERMINAL (-)	(G2177309R1)	1
	5100008060	BATTERY TERMINAL (+/-)	(G2177307R1)	1
#	5100018870	BOTTOM LABEL		1
	5100007504	COIL SPRING	(22177109R0)	2
	5100008057	BATTERY INSULATING SHEET	(G2257130R0)	1
#	5100018745	INSULATING SHEET BOTTOM		1
#	5100018744	INSULATING SHEET CENTER		1
	5100007817	LED GUIDE	(G2197126R0)	1
	5100003409	LED SPACER	LEDS-8S	1
#	5100018743	LED SPACER		1
	5100008054	PEDAL FOOT	(G2357115R0)	2
	5100007505	PEDAL GUIDE BUSH	(22157702R0)	2
	04560601	CUSHION	R (G2357111)	2
#	5100018742	POT DUST COVER		1
ACCESSORIES (Standard)				
#	5100018912	OWNER'S MANUAL	JAPANESE	1
#	5100018913	OWNER'S MANUAL	ENGLISH	1

Verifying the Version

The Test Mode is used to verify the version. Refer to **1. Version Check** (p. 15).

Data Backup and Restore Operations

The data shown below is stored on the microSD card on the Main Board, and can be backed up on a computer. Go to the owner's manual and refer to **Connecting to Your Computer via USB** (p. 14), and carry out the backup and restore operations.

- WAV data
- RHYTHM pattern data
- RHYTHM ON/OFF data
- Beat data
- STOP MODE setting data

This data is not initialized when a factory reset is executed.

* *The microSD card cannot be removed.*

Virus Check

Before performing the backup, carry out a virus check on the microSD card. If it has been infected by a virus, format it after obtaining permission from the end user. For the formatting procedure, go to the owner's manual and refer to **Formatting the Internal Memory** (p. 17).

* *Formatting the microSD card deletes the customer's data.*

Making Written Notes

The data shown below cannot be backed up or restored. If any values differ from their initial values (factory-default values) shown below, refer to the owner's manual (p. 8 and 17) and note them down on paper.

- Last selected phrase memory number (initial value: **1**)
- Sleep mode setting (initial value: on)
- Recording -> overdubbing -> playback selection-sequence setting (initial value: **rd**)

This data is initialized when a factory reset is executed.

Performing a Factory Reset

Executing a factory reset uses **Factory Reset** in the Test Mode. Note, however, that executing only a factory reset is not possible.

Formatting the microSD Card

When formatting the microSD card on the Main Board is necessary, go to the owner's manual and refer to **Formatting the Internal Memory** (p. 17).

* *Formatting the microSD card deletes the customer's data. If necessary, make a backup.*

Updating the System

Items Required

- Computer (running Windows)
- USB cable
- AC adaptor (PSA-series device)
- Update program (obtained via Service Net)

Procedure

* *Be very sure never to switch off the power to the unit while the update is in progress.*

1. Import the update program into the computer.
2. Connect the AC adaptor (PSA-series device).
3. Turn all controls all the way counterclockwise.
4. Hold down **TAP TEMPO** and **WRITE** and insert a plug into the **OUTPUT L/MONO** jack.

When the power comes on and USB UPDATER starts, the message **UP** appears on the 7-segment LED display.

* *Continue to hold down **TAP TEMPO** and **WRITE** until **UP** appears.*

5. Connect the USB cable.
The message **UP.** appears on the 7-segment LED display.
* *No dedicated driver is required. Detection finishes automatically.*
6. Copy the update program to the folder containing the **ROLAND** folder on the **BOSS_RC-30** drive detected on the computer (a folder at the same level as the **ROLAND** folder).
7. Terminate the USB connection correctly, according to the proper operation procedure for the computer.
8. Detach the USB cable from the RC-30.
The message **U.P** appears on the 7-segment LED display.
9. Press **WRITE**.
The message **_ _** appears on the 7-segment LED display.
10. Press **WRITE** again.
The update operation starts.
When the update finishes, the message **OK** appears on the 7-segment LED display.
11. Detach the plug from the **OUTPUT L/MONO** jack.
The power is switched off.

Test Mode

Items Required

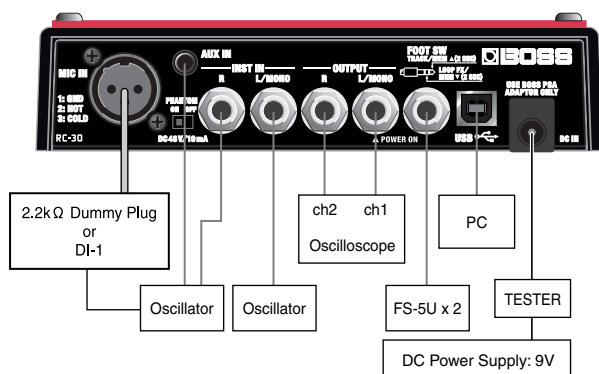
- Noise meters x 2
- Oscilloscope x 1
- AC adaptor (PSA series device) x 1
- Signal generators x 2
- Stabilized power supply or battery set at 5.8 V
- Testers x 2
- 47-k Ω dummy plugs (1/4-inch phone type) x 2
- FS-5 x 2
- Computer (running Windows) x 1
- USB cable x 1
- DI-1 x 1
- 2.2-k Ω load plug (XLR; 2.2-k Ω connected between hot and ground and between cold and ground), or 1-k Ω load plug

Entering the Test Mode

The Test Modes are of the following two types.

- Mode for executing all tests
 - Mode for executing audio and subsequent tests
- * In either mode, selecting and executing a specific test item is not possible. Skipping test items is also not possible.

1. Referring to the following figure, connect the measuring equipment to the connectors other than the **OUTPUT L/MONO** jack.



2. Adjust the **TRACK 1** and **TRACK 2** sliders and the **RHYTHM OUTPUT LEVEL** control to minimum.
3. Hold down the buttons indicated below and insert a plug into the **OUTPUT L/MONO** jack.
 - Mode for executing all tests: **TAP TEMPO** and ▼
 - Mode for executing **7. DA Test (A1)** (p. 16) and subsequent tests: **TAP TEMPO** and ▲

When the power comes on and the Test Mode starts correctly, a reading like the one shown below appears on the 7-segment LED display.

- Mode for executing all tests: Version (REC LED illuminated)
- Mode for executing **7. DA Test (A1)** (p. 16) and subsequent tests: A1

* Continue to hold down **TAP TEMPO** and ▼ (or ▲) until one of the displays just described appears. This takes approximately 2 seconds after the power is switched on.

Quitting the Test Mode

Disconnect the plug from the **OUTPUT L/MONO** jack.

Selecting or Skipping Test Items

Selecting and executing a specific test item is not possible. Skipping test items is also not possible.

Meanings of Error Codes

Error code	Problem location	
E1	Serial flash	IC3
E2	SDRAM	IC2
E3	MicroSD	CN3
E4	USB	JK1
E5	DSP	IC1
Er	Incorrect switch pressed	

1. Version Check

1. Refer to **Entering the Test Mode** (p. 15) and enter the mode for executing all tests.
The **REC** LED lights up, and the version of the unit's program appears on the 7-segment LED display.
2. Depress the left pedal.
The **REC** LED goes dark and the **PLAY** LED lights up, and the version of USB UPDATER appears on the 7-segment LED display.
3. Depress the left pedal to advance to the next test item.

2. Current Consumption Test and PHANTOM POWER Test

1. Verify that all LEDs and the 7-segment LED display are illuminated. Verify that the **TAP TEMPO** LED lights up red.
2. Set the **PHANTOM** switch to **ON**.
3. Verify that at the **MIC IN** connector, the voltage between the 1-2 pins and between the 1-3 pins is **44 to 52 V** for each pair.
4. Connect the 2.2-k Ω (or 1-k Ω) load plug (XLR) to the **MIC IN** connector.
5. Verify that current consumption is not more than **160 mA** (or **170 mA**).
6. Set the **PHANTOM** switch to **OFF** and verify that the **TAP TEMPO** LED turns green.
7. Depress the left pedal to advance to the next test item.

3. LED & SW Check

1. Verify that all LEDs and the 7-segment LED display are dark.
2. Press each button in the sequence shown in the table below, and verify that the corresponding LED lights up.

Button	Illuminated LED
1 LOOP FX TYPE	BEND DOWN STEP PHASER SWEEP FILTER TEMPO DELAY Lo-Fi
2 LOOP FX ON/OFF	LOOP FX ON/OFF
3 TRACK 1 SELECT	TRACK 1 SELECT
4 TRACK 2 SELECT	TRACK 2 SELECT
5 WRITE	TRACK 1 STATUS
6 DELETE	TRACK 2 STATUS
7 RHYTHM TYPE	RHYTHM TYPE
8 RHYTHM ON/OFF	RHYTHM ON/OFF
9 RHYTHM TAP TEMPO	RHYTHM TAP TEMPO (red)
10 ▲	REC
11 ▼	PLAY
12 Left pedal	7-segment LED display

* Pressing **LOOP FX TYPE** once makes the corresponding LEDs described above light up in sequence, one at a time.

* Depressing the left pedal once makes the two digits of the 7-segment LED display light up one segment at a time.

3. Finally, depress the right pedal to advance to the next test item.

4. VR Test

1. Verify that **10** is shown on the 7-segment LED display.
2. Slowly move the **TRACK 1** slider from minimum to maximum, and verify that the reading on the 7-segment LED display changes as shown below.
10 -> 11 -> 12 -> 13 -> 14 -> 15 -> 16 -> 17 -> 18

* When the slider is at center, **14** is displayed.

When the values from **MIN** to **MAX** have been detected correctly, execution automatically advances to the next VR (potentiometer) test.

3. Verify that **20** is shown on the 7-segment LED display.
4. Slowly move the **TRACK 2** slider from minimum to maximum, and verify that the reading on the 7-segment LED display changes as shown below.
20 -> 21 -> 22 -> 23 -> 24 -> 25 -> 26 -> 27 -> 28

* When the slider is at center, **24** is displayed.

When the values from **MIN** to **MAX** have been detected correctly, execution automatically advances to the next VR (potentiometer) test.

5. Verify that **r0** is shown on the 7-segment LED display.
6. Slowly turn the **RHYTHM OUTPUT LEVEL** control from **MIN** to **MAX**, and verify that the reading on the 7-segment LED display changes as shown below.

r0 -> r1 -> r2 -> r3 -> r4 -> r5 -> r6 -> r7 -> r8

* When the control is at center, **r4** is displayed.

When the values from **MIN** to **MAX** have been detected correctly, execution automatically advances to the next test item.

5. CTL PEDAL Test

1. Verify that **F1** is shown on the 7-segment LED display.
2. Depress the FS-5U connected to the **FOOT SW** jack (tip end). The reading on the 7-segment LED display changes to **F2**.
3. Depress the other FS-5U pedal (ring end). The reading on the 7-segment LED display changes to **FJ**.
4. Detach the plug from the **FOOT SW** jack. When correct detection occurs, execution automatically advances to the next test item.

6. USB Test

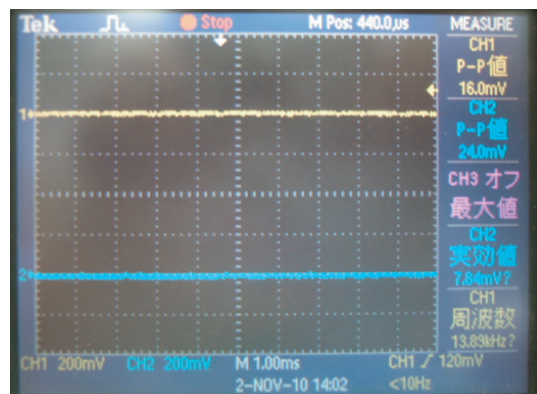
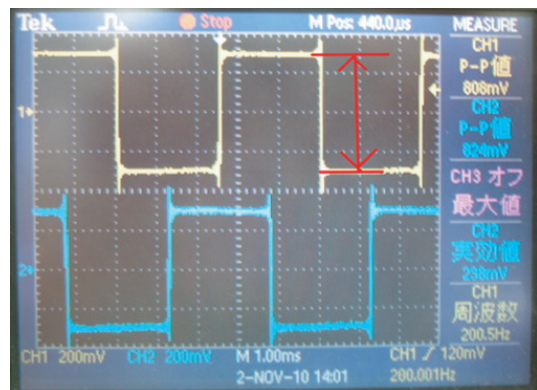
1. Verify that **US** is shown on the 7-segment LED display.
2. Disconnect the USB cable. When correct detection occurs, execution automatically advances to the next test item.

7. DA Test (A1)

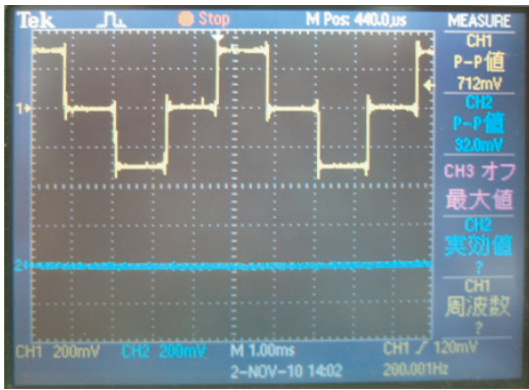
1. Verify that **A1** is shown on the 7-segment LED display.
2. Make the following settings on the oscilloscope.
Channel 1 (**OUTPUT L**): 200 mV/DIV, 1.00 ms/DIV
Channel 2 (**OUTPUT R**): 200 mV/DIV, 1.00 ms/DIV
Coupling: DC

The mute circuit is repeatedly switched on and off automatically.

3. Verify the waveforms on channel 1 and channel 2. Also verify that the peak value is at **700 to 800 mVp-p**.



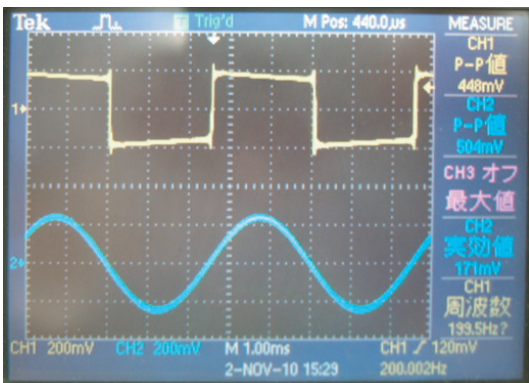
- Disconnect the plug from the **OUTPUT R** jack and verify that the waveform on channel 1 changes.



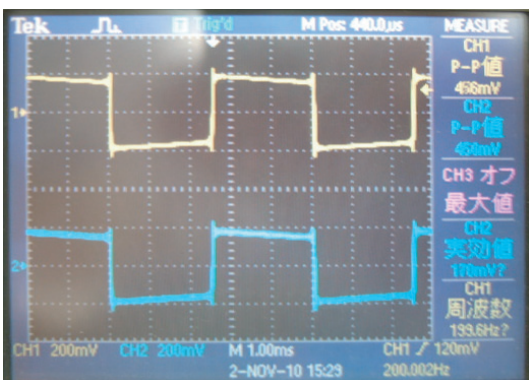
- Depress the left pedal to advance to the next test item.

8. BYPASS Test (A2)

- Verify that **A2** is shown on the 7-segment LED display.
- Make the following settings on the oscilloscope.
 Channel 1 (**OUTPUT L**): 200 mV/DIV, 1.00 ms/DIV
 Channel 2 (**OUTPUT R**): 200 mV/DIV, 1.00 ms/DIV
 Coupling: DC
- Input the following signals to **INST IN L** and **R**.
INST IN L: 200-Hz rectangular wave at 500 mVp-p
INST IN R: 200-Hz sine wave at 500 mVp-p
- Verify the waveforms on channel 1 and channel 2. Also verify that the peak value is at **450 to 550 mVp-p**.

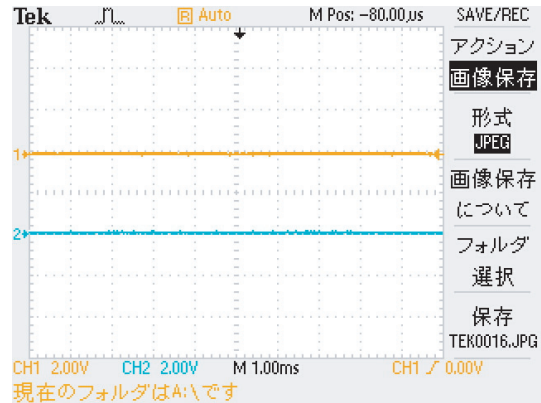


- Disconnect the plug from the **INST IN R** jack and verify that the waveforms on channel 1 and channel 2 change. Verify that the peak value is at **450 to 550 mVp-p**.

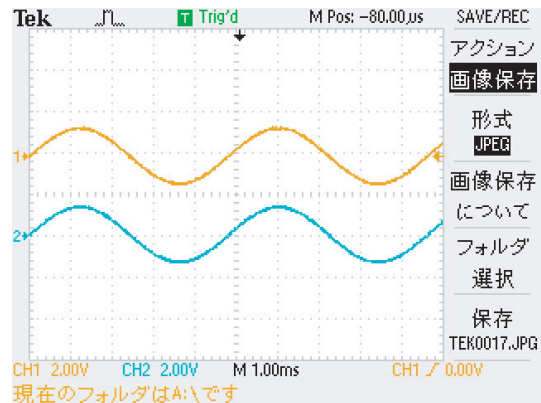


- Disconnect the plugs from the **INST IN L** and **R** jacks.
- Input the following signal to the **MIC IN** connector (using the DI-1).
 200-Hz sine wave at 200 mVp-p

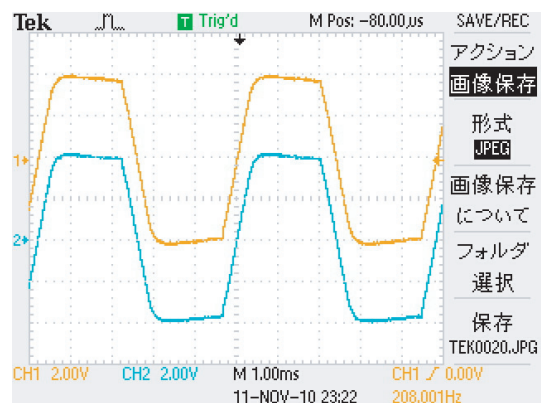
- Make the following settings on the DI-1.
 ATT: 0 dB, Ø: NOR, GND: NOR
- Make the following settings on the oscilloscope.
 Channel 1 (**OUTPUT L**): 2.00 V/DIV, 1.00 ms/DIV
 Channel 2 (**OUTPUT R**): 2.00 V/DIV, 1.00 ms/DIV
 Coupling: DC
- Adjust the **MIC INPUT LEVEL** control to the minimum setting (**OFF**) and verify that no waveform is produced.



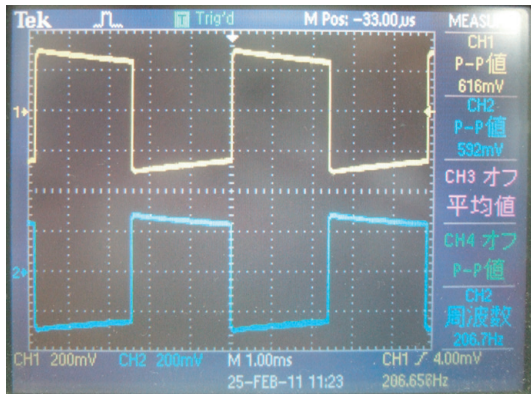
- Adjust the **MIC INPUT LEVEL** control to center and verify that the peak value is at **4.5 to 5.3 Vp-p**.



- Verify that the peak indicator starts to light up when the **MIC INPUT LEVEL** control is near the one o'clock position.
- Adjust the **MIC INPUT LEVEL** control to the maximum setting and verify that the peak value is at **7.8 to 8.5 Vp-p**.



- Disconnect the plugs from the **INST IN L** and **R** jacks.
- Input the following signal to **AUX IN**.
200-Hz rectangular wave at 250 mVp-p (L and R)
- Verify the waveforms on channel 1 and channel 2. Also verify that the peak value is at **550 to 650 mVp-p**.



- Depress the left pedal to advance to the next test item.

9. AD Path Test (A3)

- Verify that **A3** is shown on the 7-segment LED display.
- Input the following signal to **AUX IN**.
200-Hz rectangular wave at 250 mVp-p (L and R)
Testing is executed automatically, and if no problem is found, execution automatically advances to the next test item.
** If the input level (250 mVp-p) is not precise, execution does not advance to the next test.*

10. DA Residual-noise Test (A4)

- Verify that **A4** is shown on the 7-segment LED display.
- Connect the 47-k Ω dummy plugs to the **INST IN L** and **R** jacks.
- Adjust the **MIC INPUT LEVEL** control to the minimum setting.
- Verify that residual noise at **OUTPUT L** and **OUTPUT R** is at the following value.
Not more than **-90 dBm** (JIS A) or not more than **-86 dBm** (DIN audio)
- Depress the left pedal to advance to the next test item.

11. AD Noise and Shock-noise Test (A5)

- Verify that **A5** is shown on the 7-segment LED display.
- Verify that residual noise at **OUTPUT L** and **OUTPUT R** is at the following value.
Not more than **-45 dBm** (JIS A) or not more than **-42 dBm** (DIN audio)
** The value is raised by +40 dB internally by the DSP.*
- Connect a CM-30 or a monitor amplifier to **OUTPUT L** and **OUTPUT R**, and verify that no hum or shock noise is produced.
- Depress the left pedal to advance to the next test item.

12. Factory Reset

- Verify that **FA** is shown on the 7-segment LED display, and that the **RHYTHM ON/OFF** LED is flashing.
- Press **RHYTHM ON/OFF**.
The factory reset is executed, and when it finishes, the message **Et** appears on the 7-segment LED display.
- Disconnect the plug from the **OUTPUT L/MONO** jack.
The power is switched off and the unit exits the Test Mode.

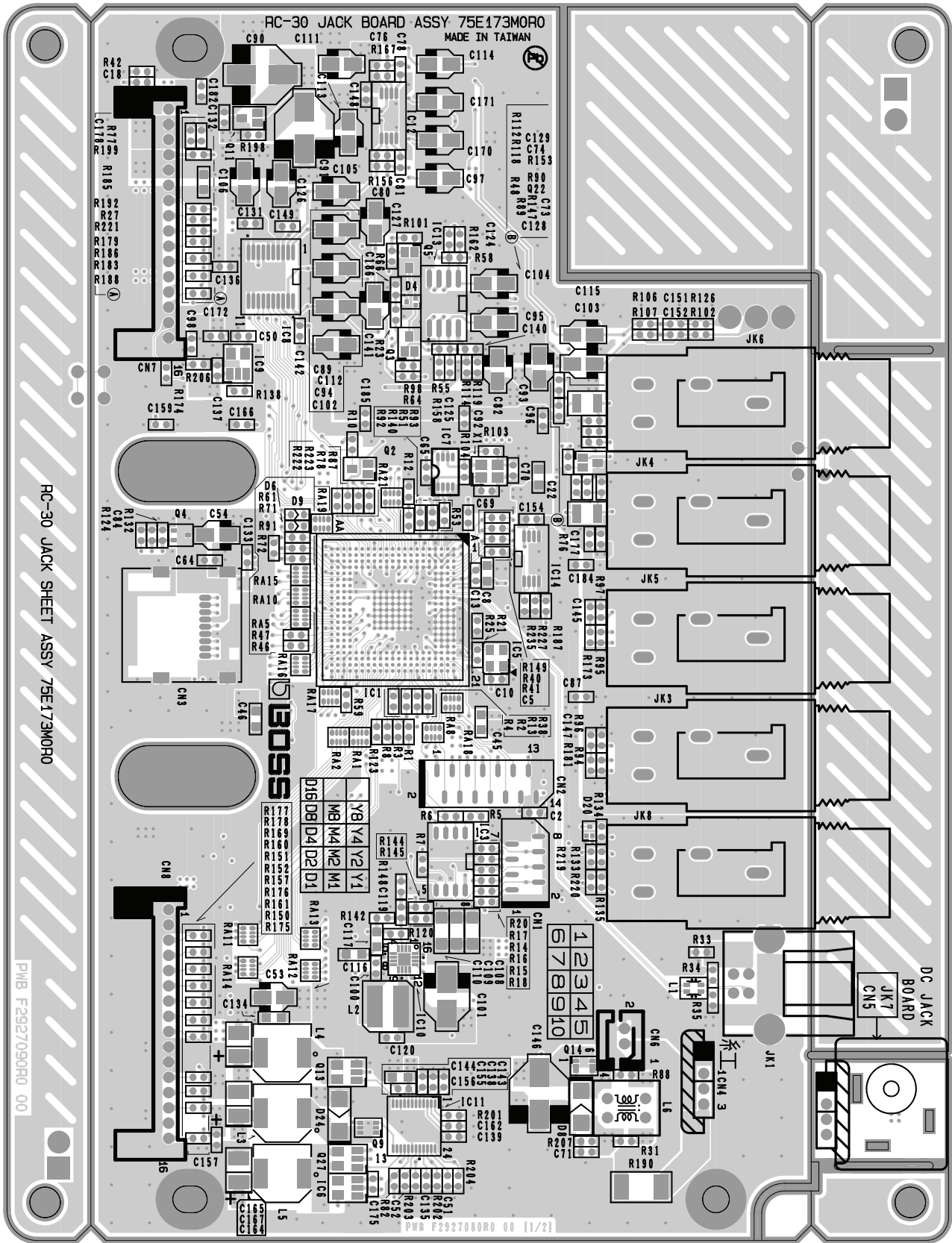
13. Battery Detection Circuit Test

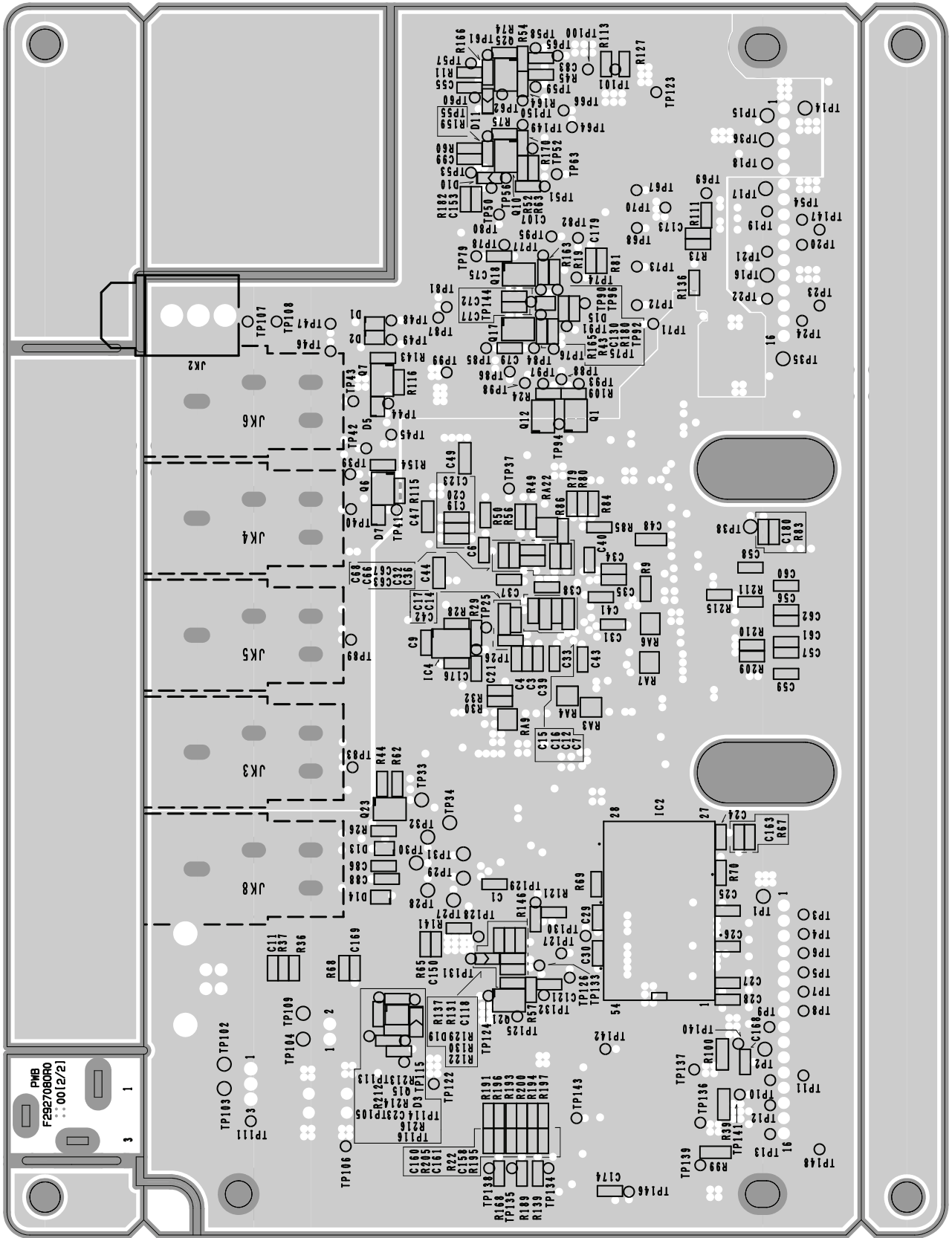
- Connect the stabilized power supply (5.8 V) to the DC jack.
** Alternatively, connect a battery set at 5.8 V to the battery snap. When doing this, connect nothing to the DC jack.*
- Insert a plug into the **OUTPUT L/MONO** jack.
The power comes on.
- Verify that the message **bt** is displayed on the 7-segment LED display.
- Disconnect the plug from the **OUTPUT L/MONO** jack.
The power is switched off.

14. Battery Operation Test

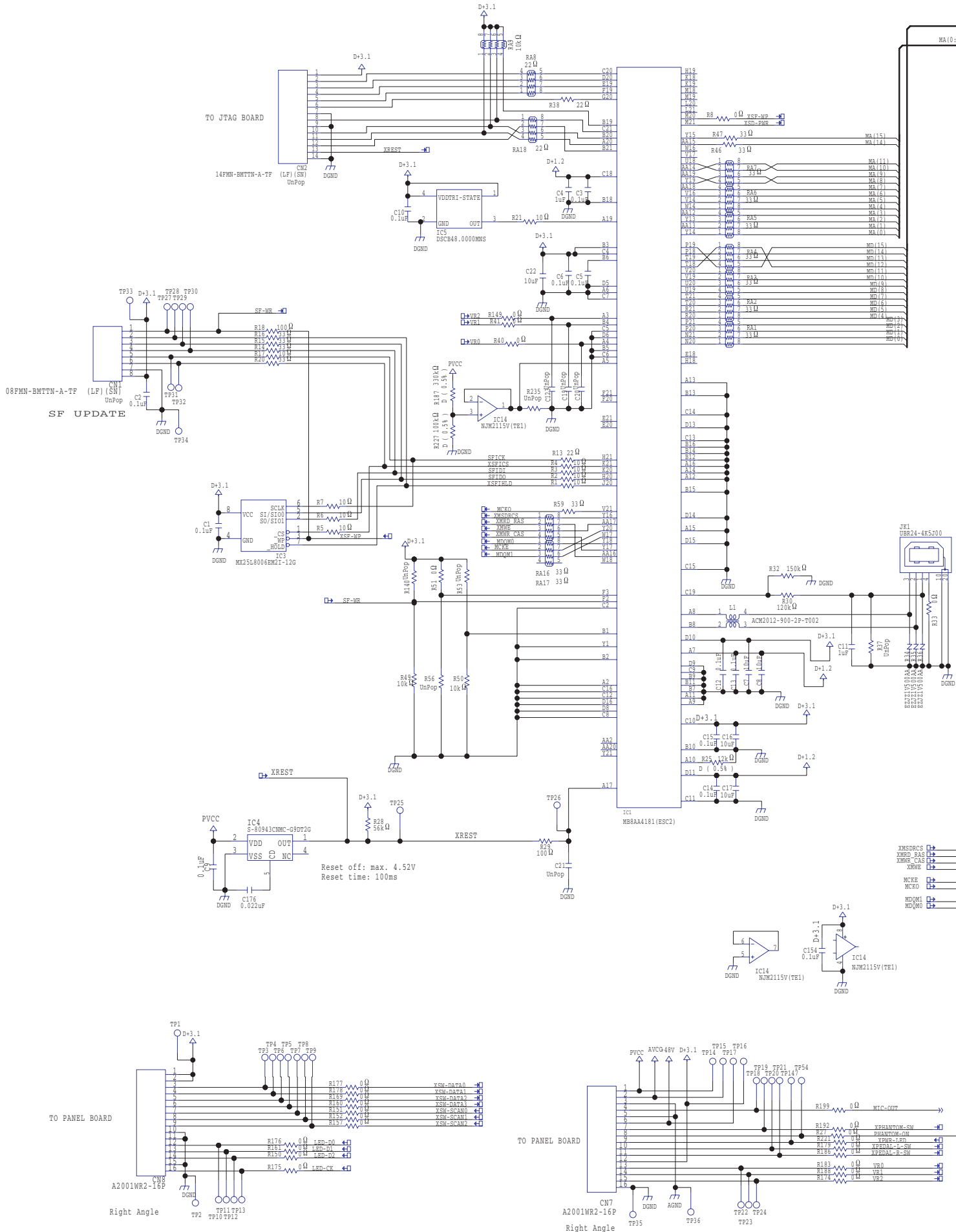
- * This test is not required if a battery was used in the test in the previous section.*
- Insert batteries into the battery case.
** Never connect batteries lower than 5.8 V.*
 - Insert a plug into the **OUTPUT L/MONO** jack, and verify that the unit starts without problem.
 - Disconnect the plug from the **OUTPUT L/MONO** jack.
The power is switched off.

Circuit Board (Jack, DC Jack Board)

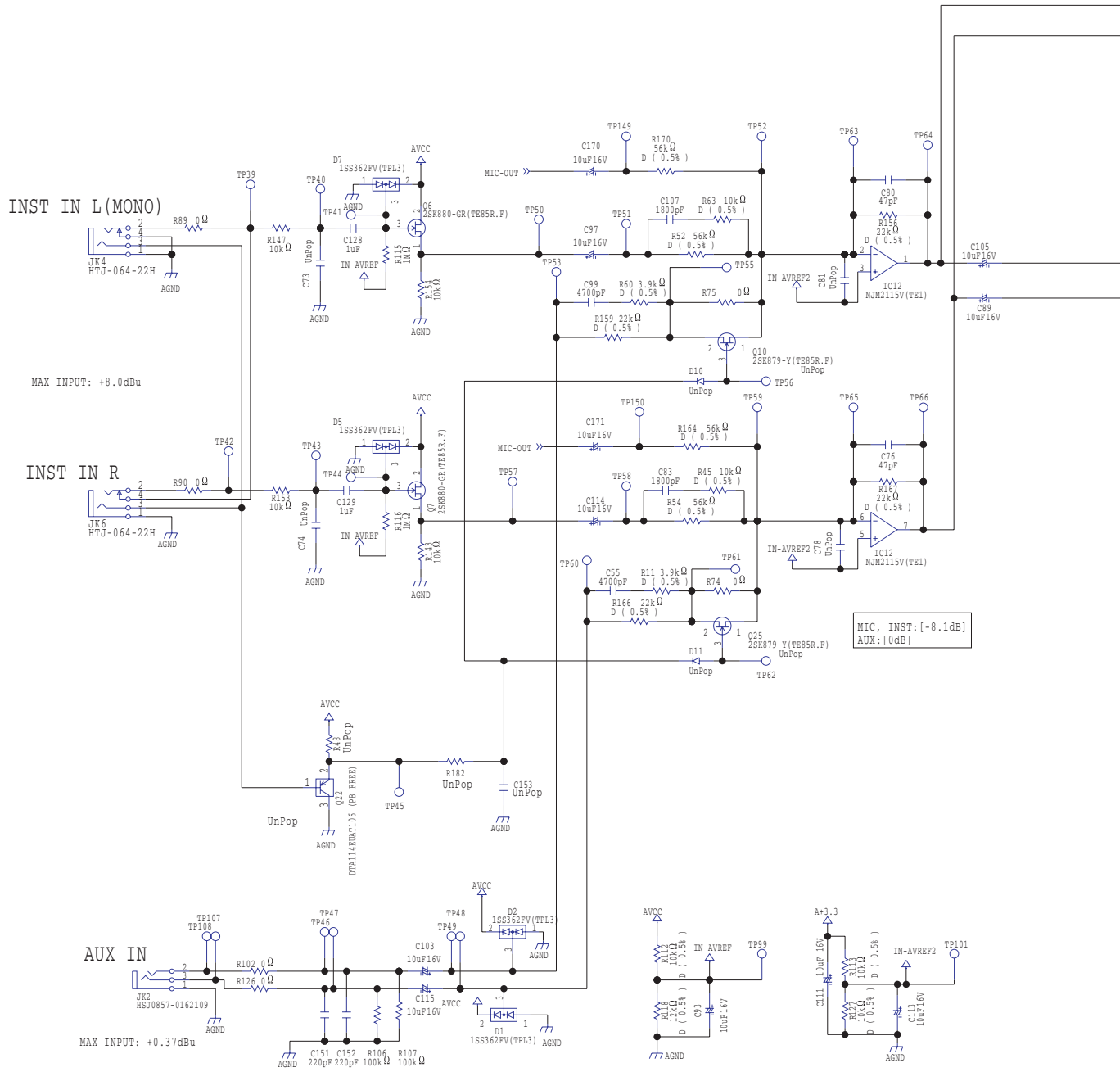


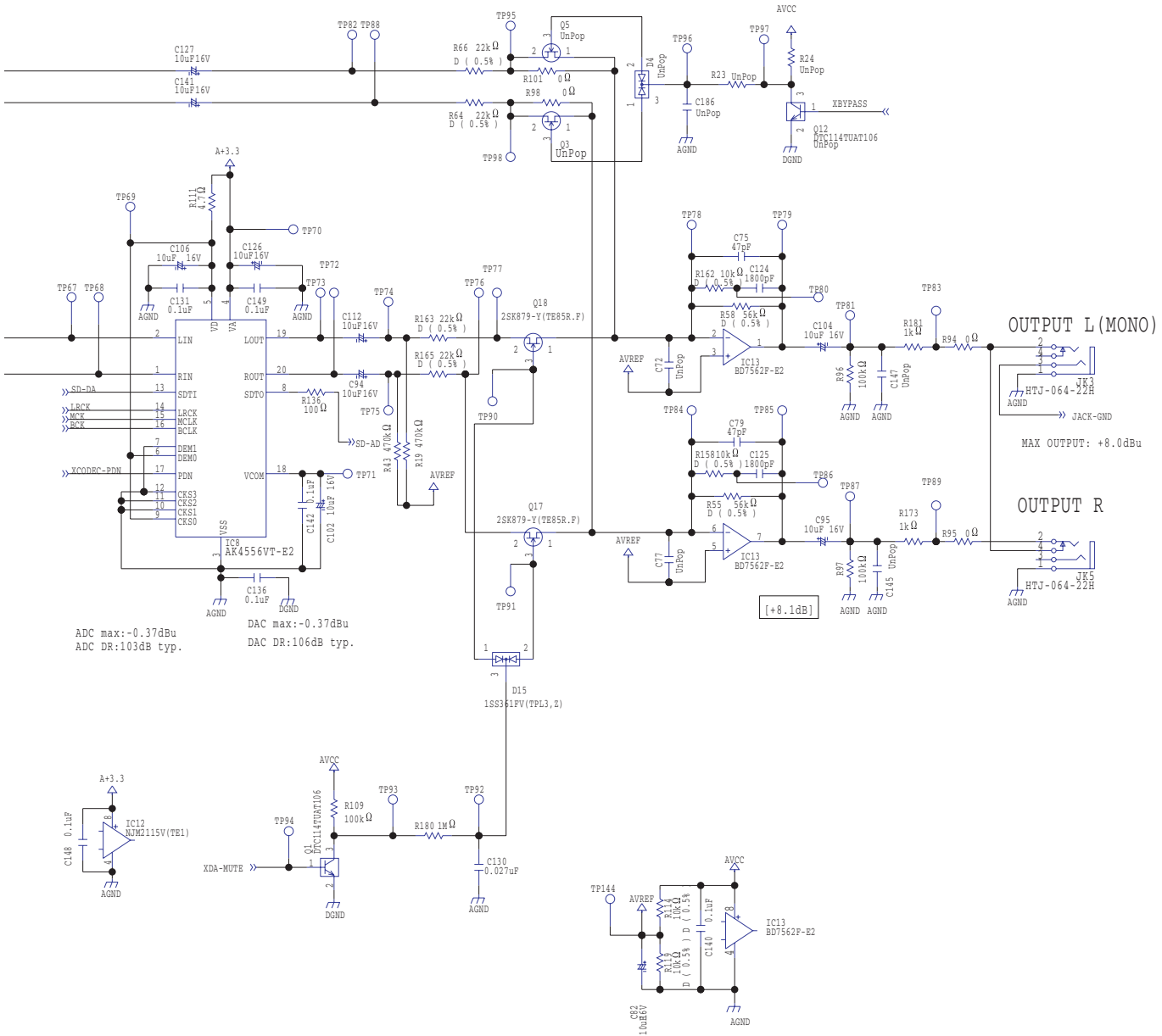


Circuit Diagram (Jack Board: Digital)



Circuit Diagram (Jack Board: Analog)





ADC max: -0.37dBu
ADC DR: 103dB typ.
DAC max: -0.37dBu
DAC DR: 106dB typ.

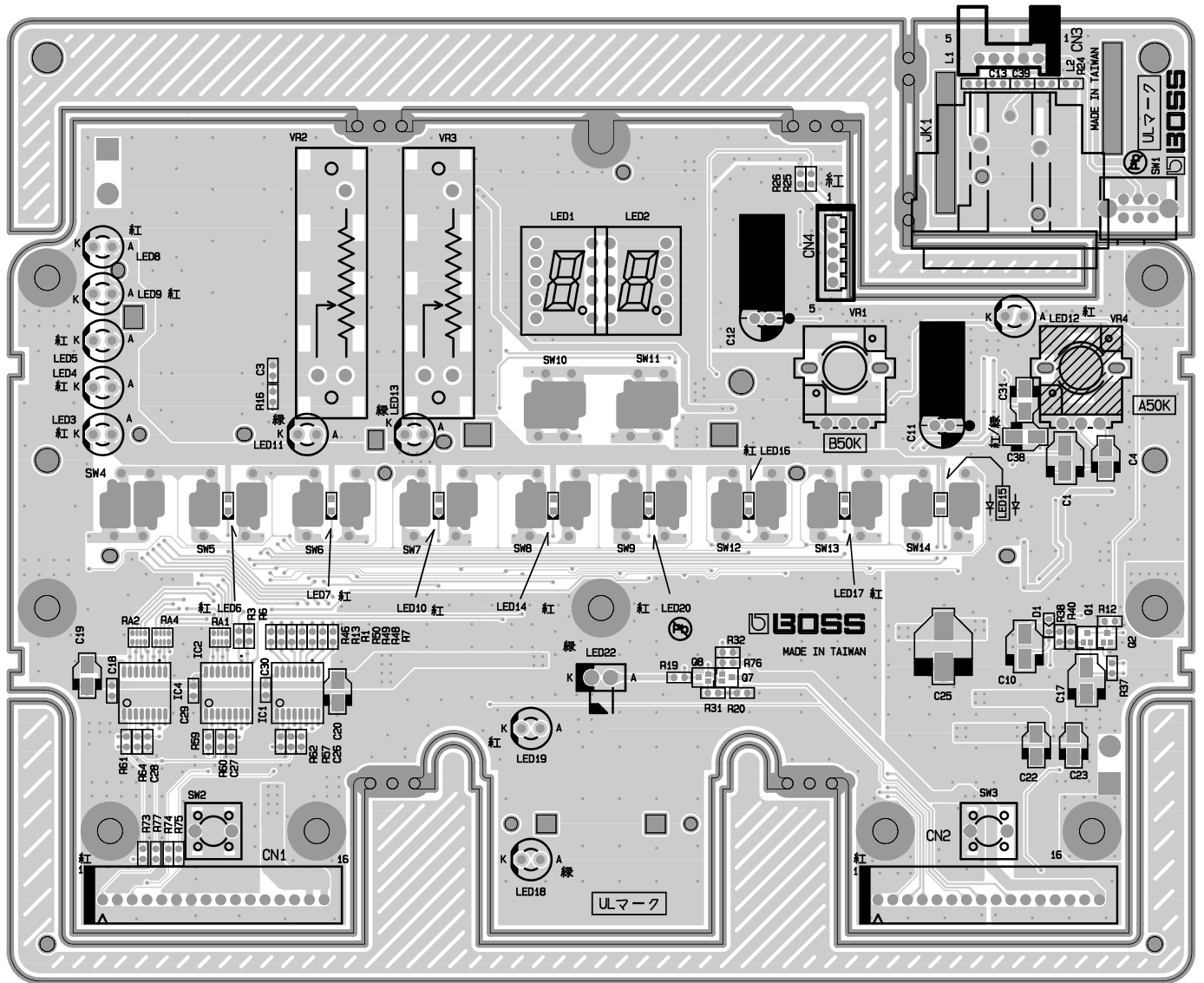
OUTPUT L (MONO)

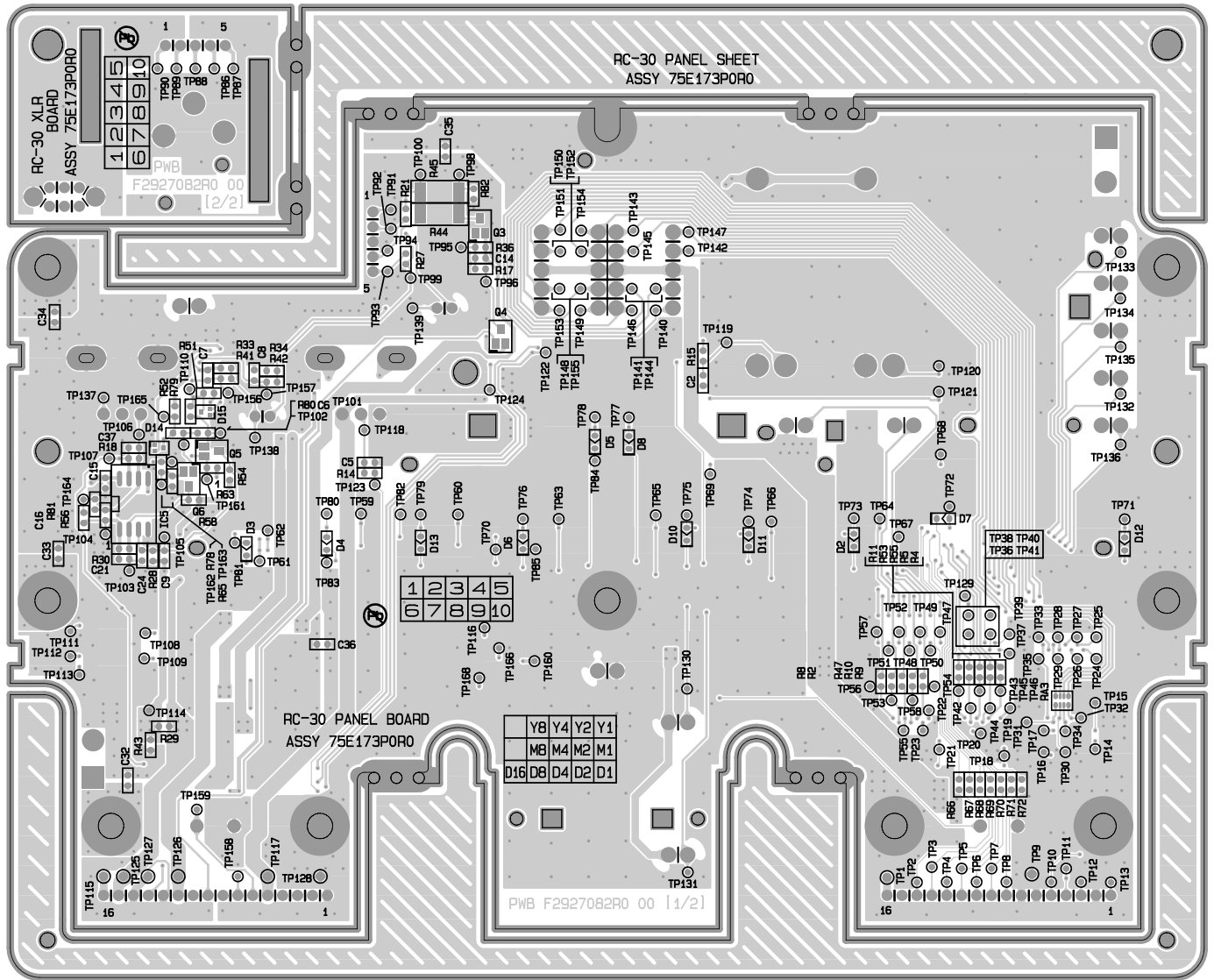
OUTPUT R

JACK-GND

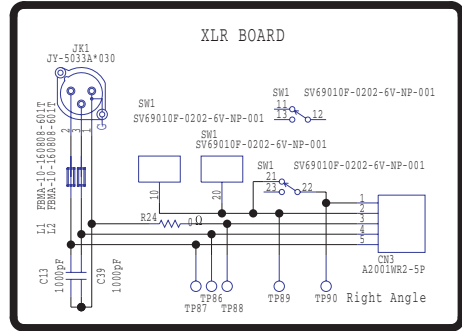
[+8.1dB]

Circuit Board (Panel, XLR Board)

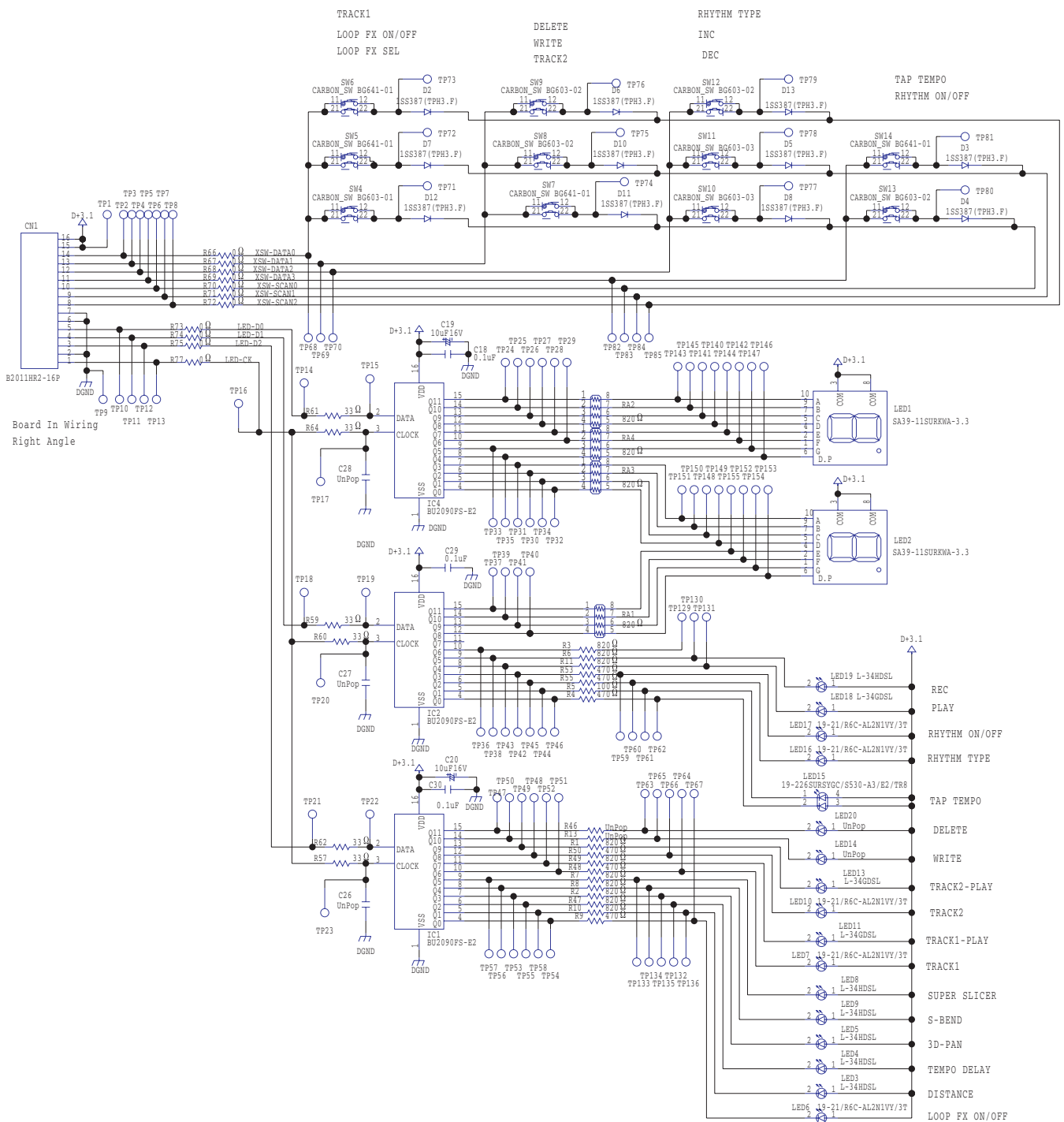




Circuit Diagram (Panel, XLR Board)



Board In Wiring
Straight Angle



Board In Wiring
Right Angle

