

KC-110

STEREO KEYBOARD AMPLIFIER

SERVICE NOTES

Issued by RJA

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Revise Information

July 1, 2010

p. 19

Added a part.



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Roland

17058653E0

CC-KWS

Cautionary Notes

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

No User Data

This product cannot save user data. Backing up user data during servicing is not required.

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.

Updating the System

Updating the system is accomplished by replacing the Main Board.

Specifications

KC-110: BATTERY POWERED STEREO KEYBOARD AMPLIFIER

Rated Power Output

15 W + 15 W (when using the AC adaptor)
10 W + 10 W (when using the Alkaline batteries)

Nominal Input Level (@1 kHz)

CH1 (MIC/LINE): -50 – -20 dBu
CH2, 3 (LINE): -20 dBu
AUX IN: -10 dBu

Nominal Output Level (@1 kHz)

LINE OUT: -10 dBu

* 0 dBu = 0.775 Vrms

Speakers

16 cm (6.5 inches) x 2
Tweeter x 2

Controls

<CHANNEL CONTROL>

CH1
VOLUME Knob
CH2
VOLUME Knob
CH3
VOLUME Knob

<MASTER CONTROL>

AUX IN
LEVEL Knob
EFFECT Knob
EQUALIZER
LOW Knob
HIGH Knob
VOLUME Knob
POWER Switch

Indicators

POWER

Connectors

CH1 Input Jacks (XLR type, 1/4" phone type)
CH2 Input Jacks L/MONO, R (1/4" phone type)
CH3 Input Jacks L/MONO, R (1/4" phone type)
AUX IN Jacks (RCA phono type, Stereo miniature phone type)
LINE OUT Jacks L/MONO, R (1/4" phone type)
PHONES Jack (Stereo 1/4" phone type)
FOOT SW Jack (1/4" phone type)
DC IN Jack

Power Supply

AC Adaptor (included, DC 13 V),
Dry battery LR6 (AA) type (alkaline) x 8, or
Rechargeable battery HR6 (AA) type (nickel metal hydride) x 8

Current Draw

550 mA

Expected battery life under continuous use:

Alkaline: about 7 hours
Nickel-metal hydride: about 8 hours

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

Dimensions

420 (W) x 244 (D) x 320 (H) mm
16-9/16 (W) x 9-5/8 (D) x 12-5/8 (H) inches

Weight (excluding batteries)

7.3 kg / 16 lbs 2 oz

Accessories

Owner's Manual (#5100010644)
AC Adaptor (#5100010587)
AC Cord (#5100009482, #5100012740, #5100009486, #5100009483, #5100009484, #5100009485)

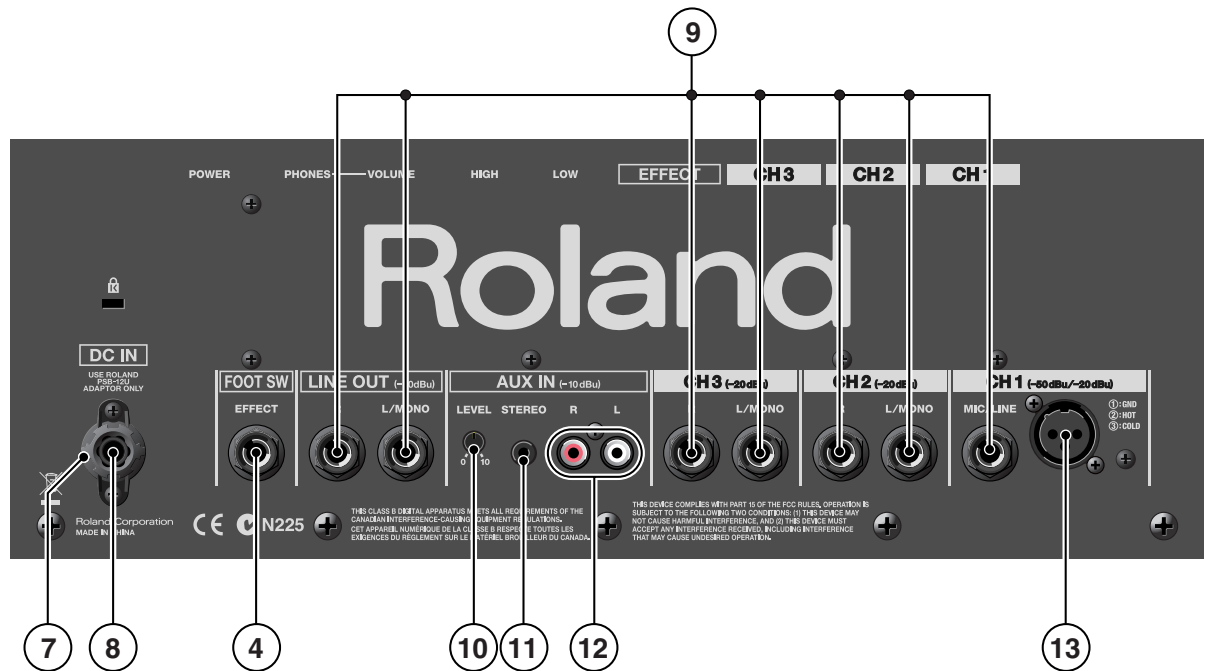
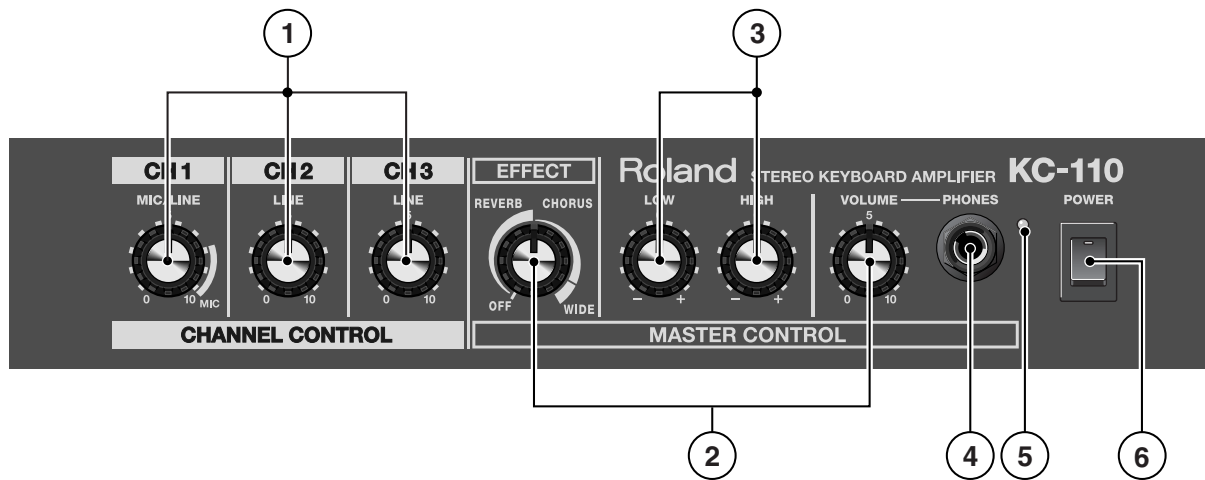
Options

Foot Switch (BOSS FS-5U)
Speaker Stand (ST-A95)

* 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.

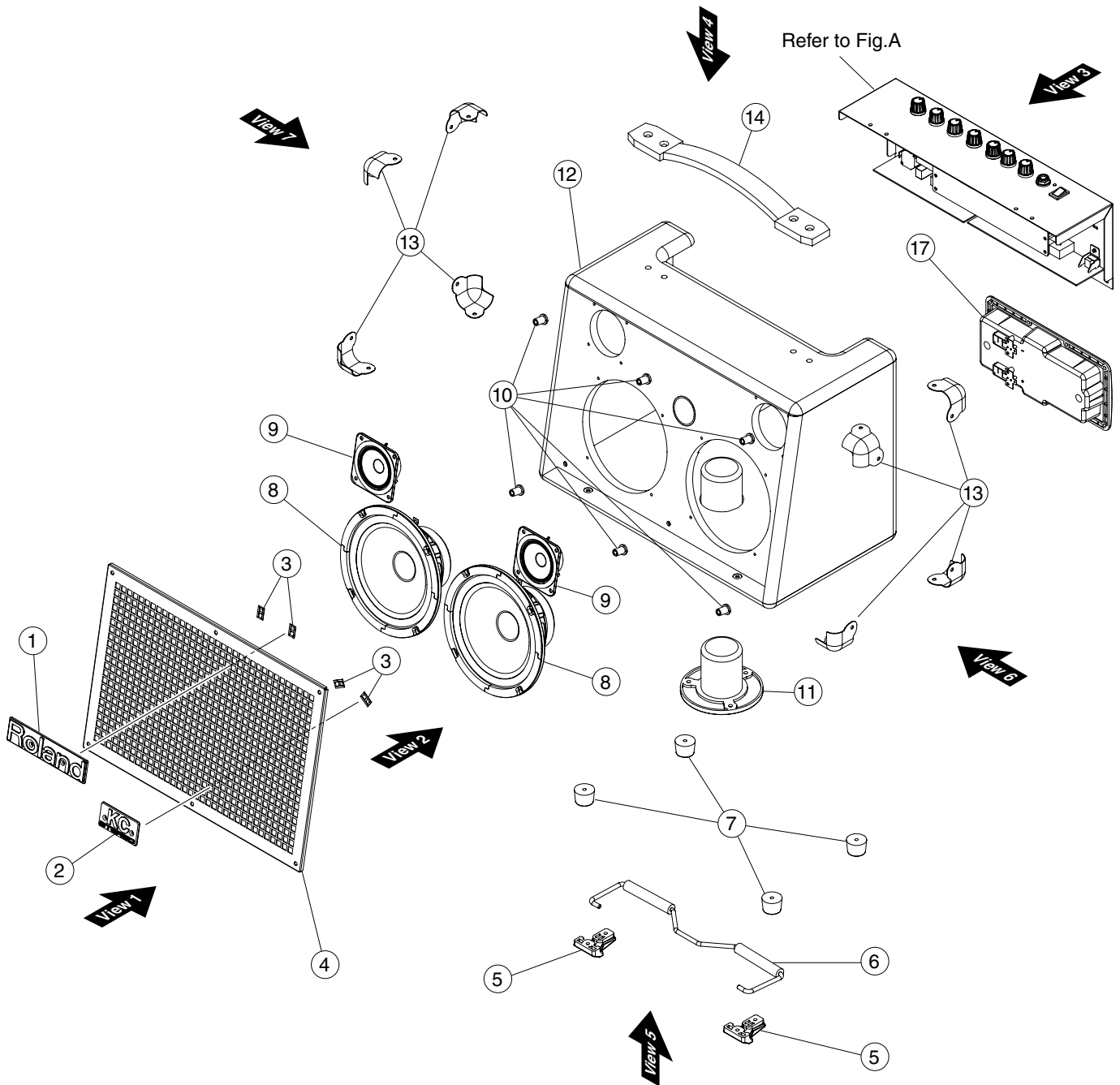
Location of Controls



Location of Controls Parts List

No.	Part Code	Part Name	Description	Q'ty
1	04344212	KNOB	GOLD(#SD000598)	3
	5100007828	ROTARY POTENTIOMENTER	RV142BF-20E1-15AW-1B100K	3
		<i>* This unit includes the following parts.</i>		
	*****	VR NUT M9		3
	*****	VR WASHER M9		3
2	04344212	KNOB	GOLD(#SD000598)	2
	5100007862	ROTARY POTENTIOMENTER	RV110F-20E1-15AW-0B10K	2
		<i>* This unit includes the following parts.</i>		
	*****	VR NUT M9		2
	*****	VR WASHER M9		2
3	04344212	KNOB	GOLD(#SD000598)	2
	5100007827	ROTARY POTENTIOMENTER	RV110F-20E1-15AW-0B10K-0C	2
		<i>* This unit includes the following parts.</i>		
	*****	VR NUT M9		2
	*****	VR WASHER M9		2
4	13449252	6.5MM JACK	YKB21-5006 (STEREO W/SW)	2
	5100004356	JACK NUT		2
5	03349978	LED(RED)	L-34HDSL-FPB	1
6	02897801	SEESAW SWITCH	SDDJE13200 94V-0	1
	5100010579	WIRING	192-AP011-W4	1
7	5100010457	DC PLUG SUPPORTER		1
8	03562412	DC JACK	HEC3900-010110	1
	5100009659	DC JACK HOLDER		1
	5100010540	EVA PACKING	FOR DC JACK HOLDER A	1
9	13449146	6.5MM JACK	YKB21-5012 (W/SW)	7
	5100004356	JACK NUT		7
10	5100007731	ROTARY POTENTIOMETER	R1131GOXH1B203TG0027	1
11	05019512	3.5MM JACK	203-HTJ03509ABT	1
12	5100007830	CONNECTOR	KM04048A-01	1
13	03459223	XLR CONNECTOR	JY-5033A	1
	5100011617	EVA PACKING	40X25X1T W/ADH	1

Exploded View (All)



Disassembly Procedure

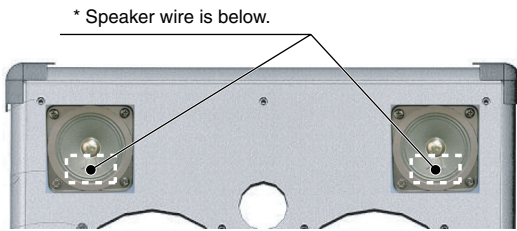
When detaching the chassis (Fig. A), follow the procedure below.

1. Detach the Front Grille (No. 4).
2. Detach the speakers and disconnect the speaker wires.
 - * The speaker wires are short. Be careful not to use undue force.
3. Detach the handle (No. 14).
4. Detach the chassis.

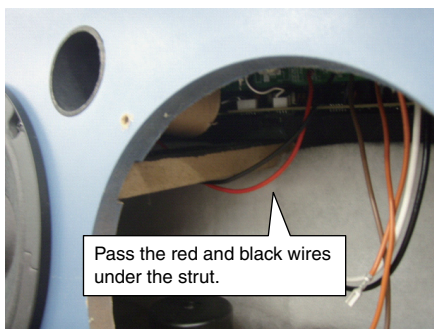
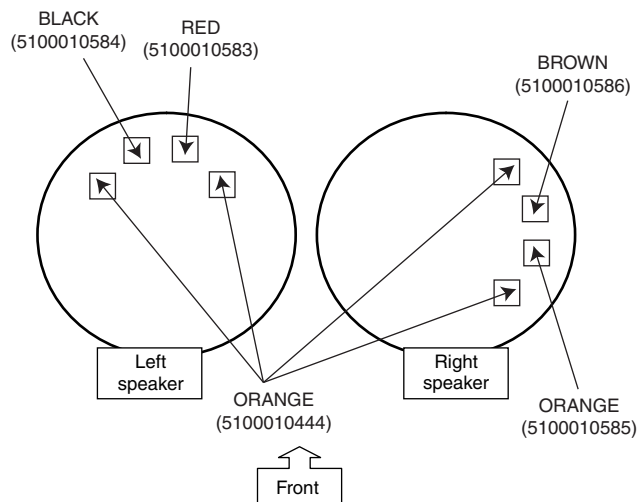
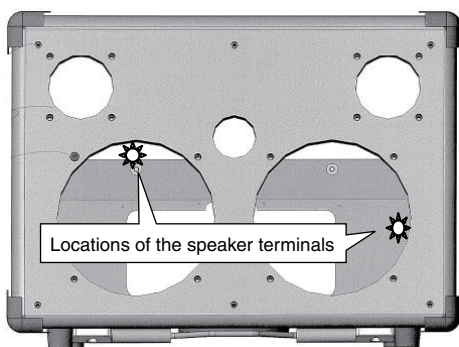
Exploded View (All) Parts List

No.	Part Code	Part Name	Description	Q'ty
	5100010561	FRONT GRILLE ASSY		1
	* This unit includes the following parts.			
1	*****	ROLAND BADGE		1
	*****	ROLAND BADGE CUSHION		1
2	*****	KC STEREO BADGE		1
	*****	KC STEREO BADGE CUSHION		1
3	*****	SPEED NUT F M3		4
4	*****	FRONT GRILLE		1
	*****	SCREW 3X10	OVAL MACHINE BZC	4
8	5100010999	SPEAKER	W6504-012 A	2
9	5100011000	SPEAKER	TC2604-012 A	2
10	5100010870	GRILLE SPACER		6
	5100009316	CABINET ASSY		1
	* This unit includes the following parts.			
5	5100009863	STAND HOLDER	40484-518 (#SD001007)	2
6	5100009860	STAND	08203-016 (#SD001169)	1
7	5100006069	RUBBER FOOT	D25XT18 40484-512(#SD001005)	4
11	5100009845	STAND ADAPTOR (TOP HAT)	49A-10179 (#17055020)	1
12	*****	CABINET		1
13	5100005655	CORNER PROTECTOR	08343-513 (#SD000628)	8
14	22310207	HANDLE (H40)	231-207 W/ESCUCHEON (2 HOLES)	1
17	5100010563	BATTERY CASE ASSY		1

Tweeter Unit Mounting Angle

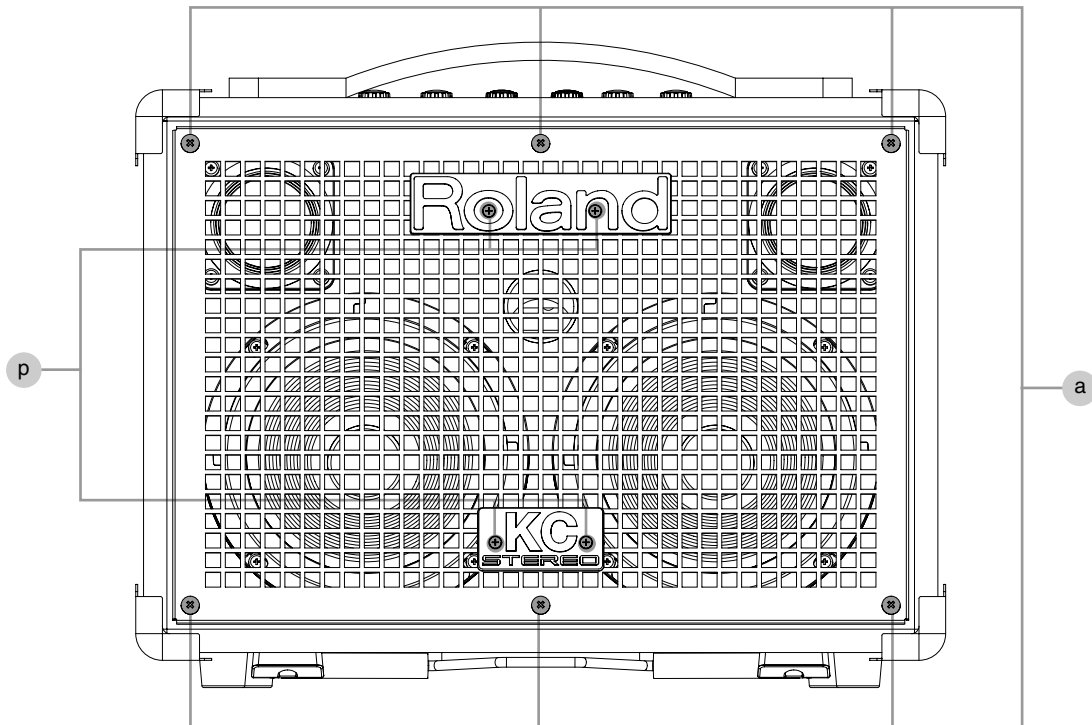


Speaker Unit Mounting Angle

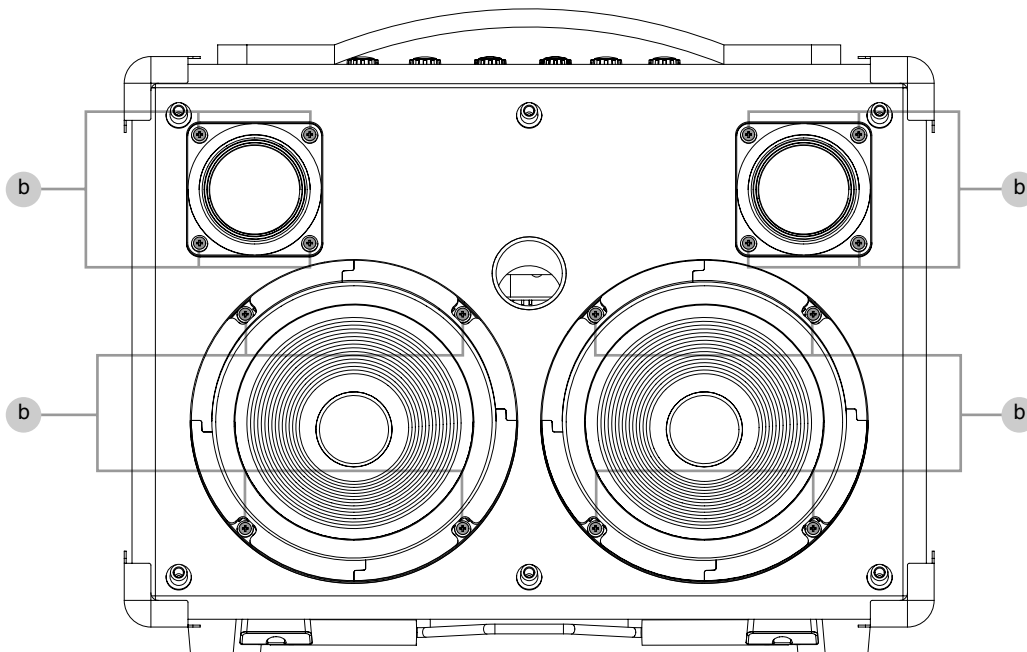


Plane View (1)

View 1



View 2



Plane View (1) Parts List

View 1

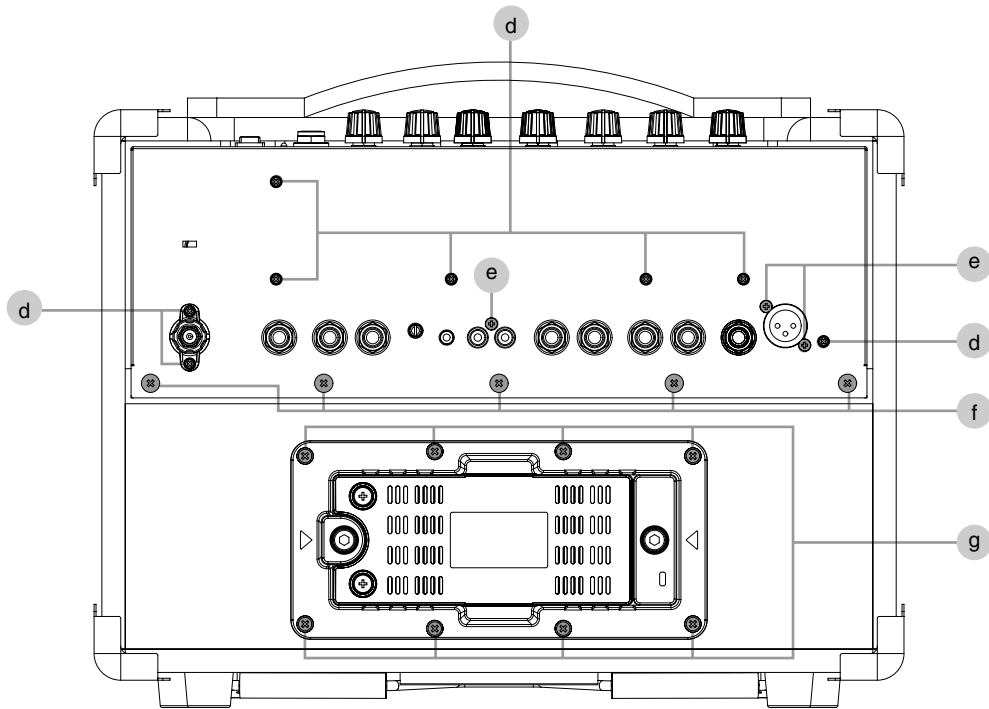
No.	Part Code	Part Name	Description	Q'ty
a	40010701	SCREW 4X35	TRUSS TAPPING A FE BZC	6
p	40230789	SCREW 3X10	OVAL MACHINE BZC	4

View 2

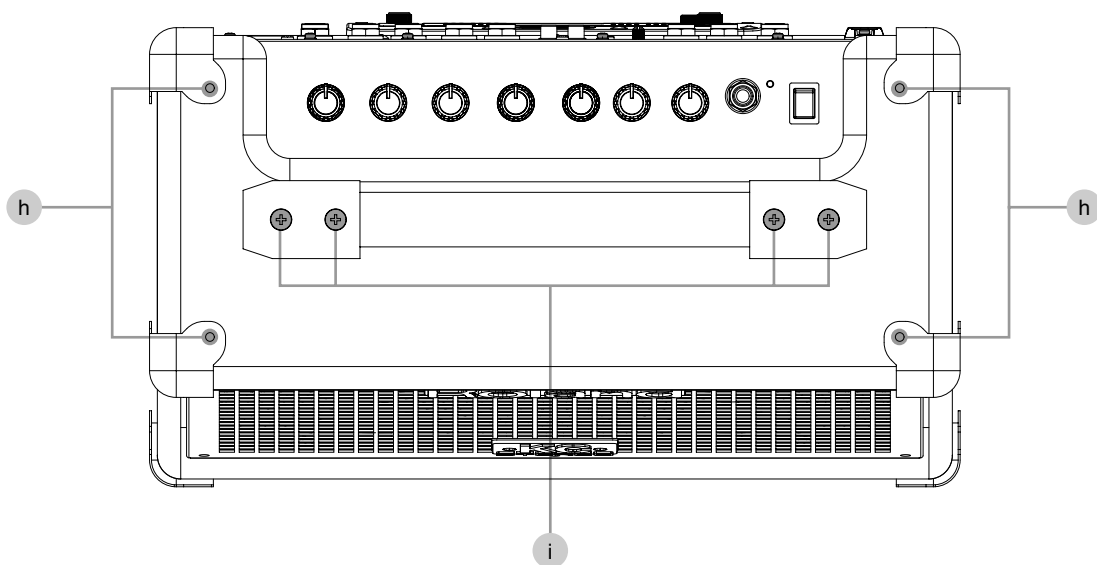
No.	Part Code	Part Name	Description	Q'ty
b	40019023	SCREW 4X20	BINDING TAPPING A BZC	16

Plane View (2)

View 3



View 4



Plane View (2) Parts List

View 3

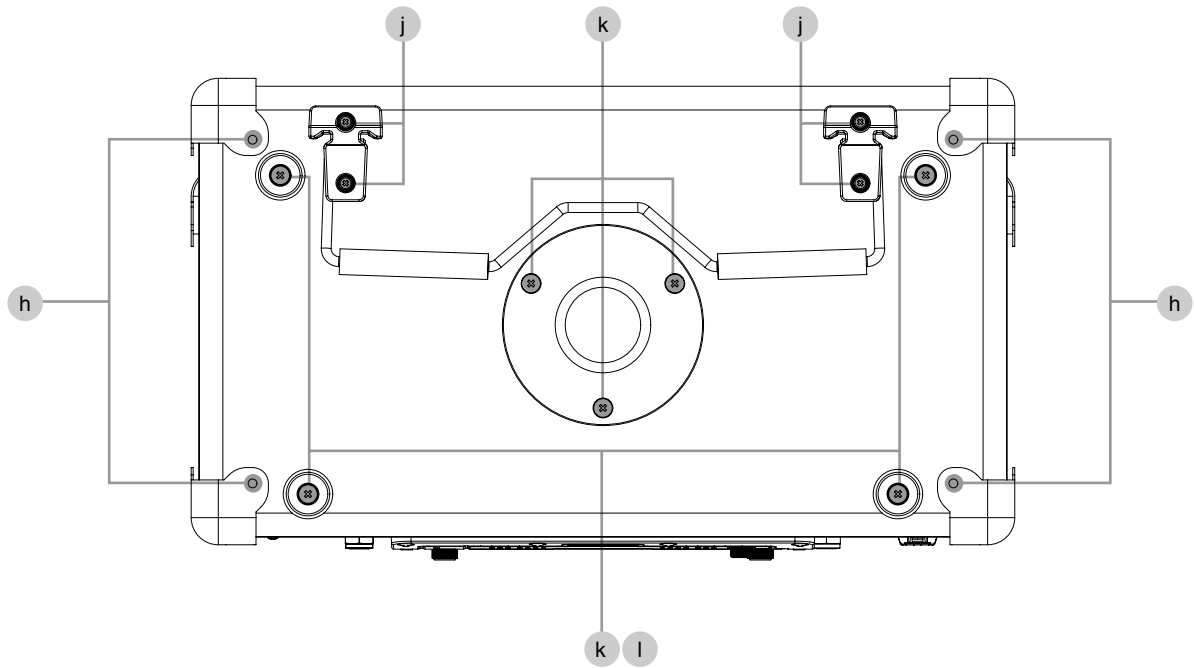
No.	Part Code	Part Name	Description	Q'ty
d	40237101	SCREW M3X8	PAN MACHINE W/SW+SMALL PW BZC	8
e	40011312	SCREW 3X8	BINDING TAPTITE P FE BZC	3
f	40010689	SCREW 4X25	TRUSS TAPPING A FE BZC	5
g	5100005098	SCREW 3X16	TRUSS TAPPING A BZC	8

View 4

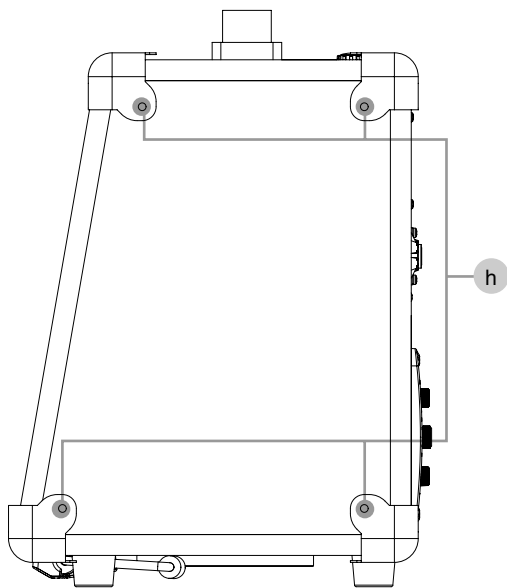
No.	Part Code	Part Name	Description	Q'ty
h	40564578	SCREW 3.5X14	TRUSS TAPTITE A1 BZC	4
i	40564601	SCREW M5X35	OVALHEAD MACHINE BZC	4

Plane View (3)

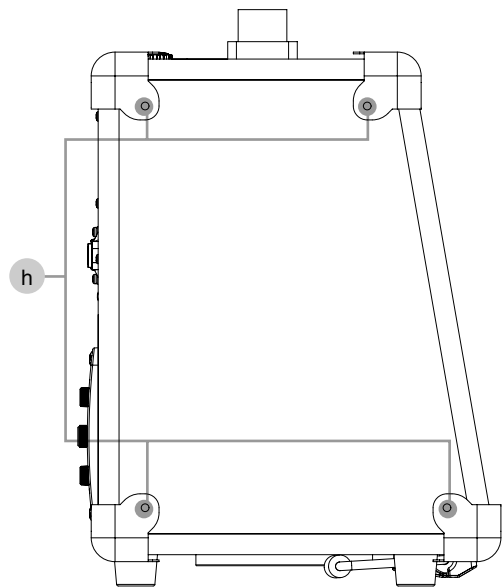
View 5



View 6



View 7



Plane View (3) Parts List

View 5

No.	Part Code	Part Name	Description	Q'ty
h	40564578	SCREW 3.5X14	TRUSS TAPTITE A1 BZC	4
j	40128012	SCREW M4X16	PAN MACHINE W/SW+PW BZC	4
k	40010678	SCREW 4X20	TRUSS TAPPING A FE BZC	7
l	5100005100	WASHER	FLAT 4.2X10X0.5 BZC	4

View 6

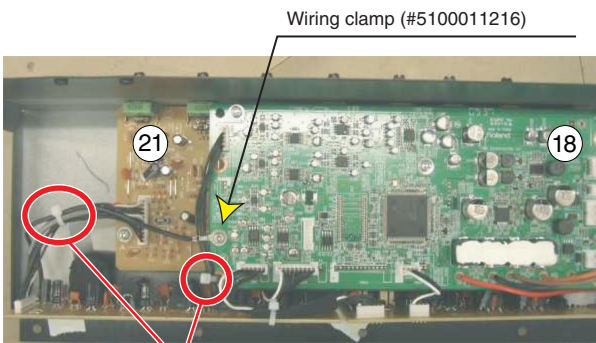
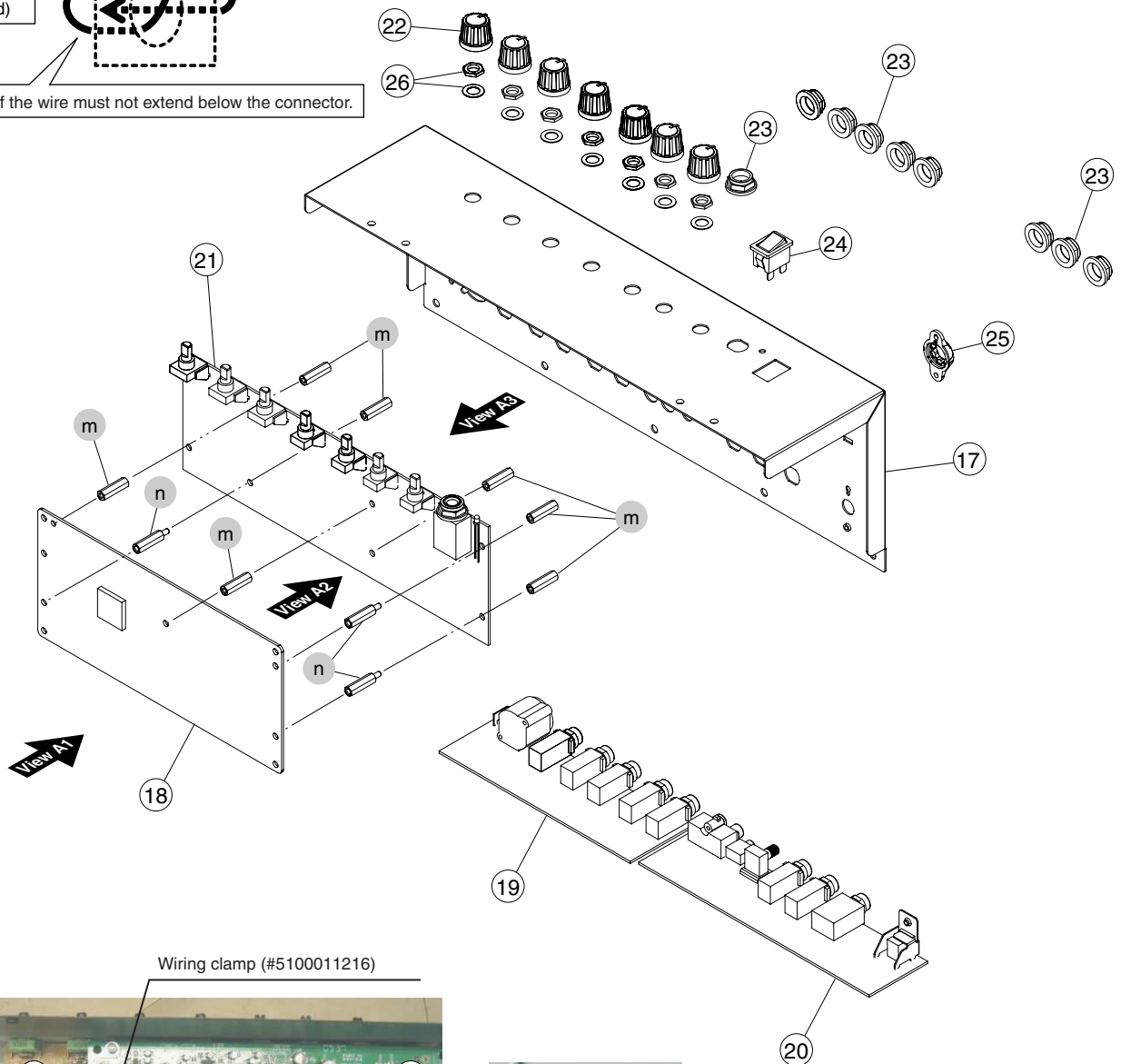
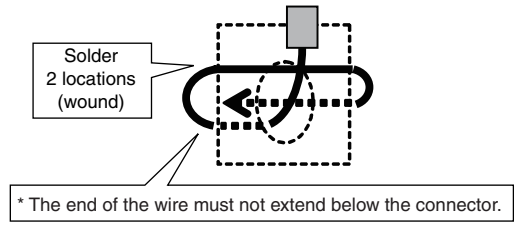
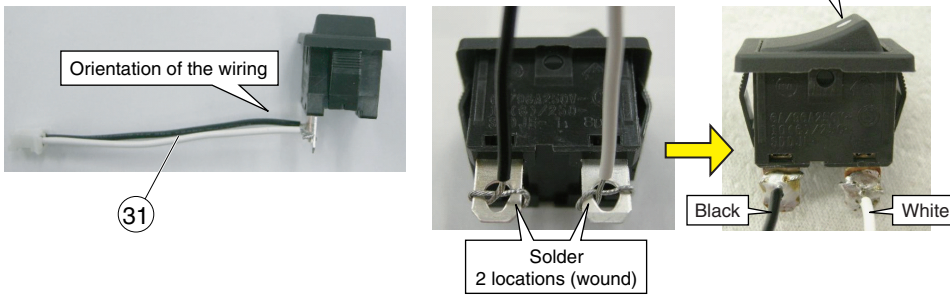
No.	Part Code	Part Name	Description	Q'ty
h	40564578	SCREW 3.5X14	TRUSS TAPTITE A1 BZC	4

View 7

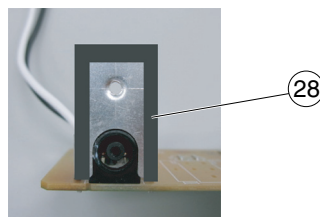
No.	Part Code	Part Name	Description	Q'ty
h	40564578	SCREW 3.5X14	TRUSS TAPTITE A1 BZC	4

Exploded View (Fig.A)

24 Wind the Wiring (#5100010579) around the power switch and solder.



27 Secure the wiring in place using a clamp.



20 Affix EVA Packing (#5100010540) onto the DC Jack Holder.

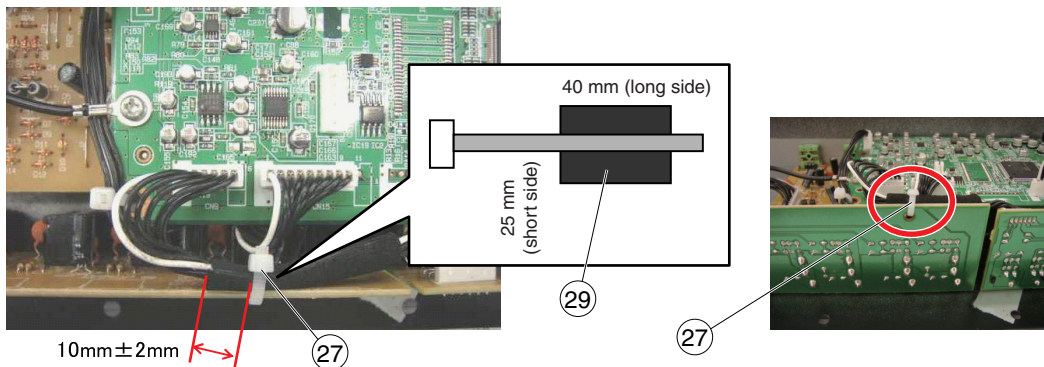
Exploded View (Fig.A) Parts List

No.	Part Code	Part Name	Description	Q'ty
17	5100010484	CHASSIS		1
18	5100009371	MAIN PWB BOARD ASSY		1
	5100009324	PANEL PWB SHEET ASSY		1
	* This unit includes the following parts.			
19	*****	JACK-A BOARD		1
20	*****	JACK-B BOARD		1
21	*****	PANEL BOARD	includes Nuts and Washers (No.26)	1
26	*****	Nut		7
	*****	Washer		7
22	04344212	KNOB	GOLD(#SD000598)	7
23	5100004356	JACK NUT		9
24	02897801	SEESAW SWITCH	SDDJE13200 94V-0	1
25	5100010457	DC PLUG SUPPORTER		1
27	5100005099	LOCKING CABLE TIE	120X2.5X1T DAIHWA	5
28	5100010540	EVA PACKING	FOR DC JACK HOLDER A	1
29	5100011617	EVA PACKING	40X25X1T W / ADH	2
30	5100011022	EVA PACKING	110X15X1T W / ADH	1
31	5100010579	WIRING	192-AP011-W4	1
m	5100011021	STANDOFF	M3-L6-H20 (311-BG436LF)	7
n	5100010873	BOSS NUT	M3-L5.5-H20-A8-B6-N3 DAIHWA	3

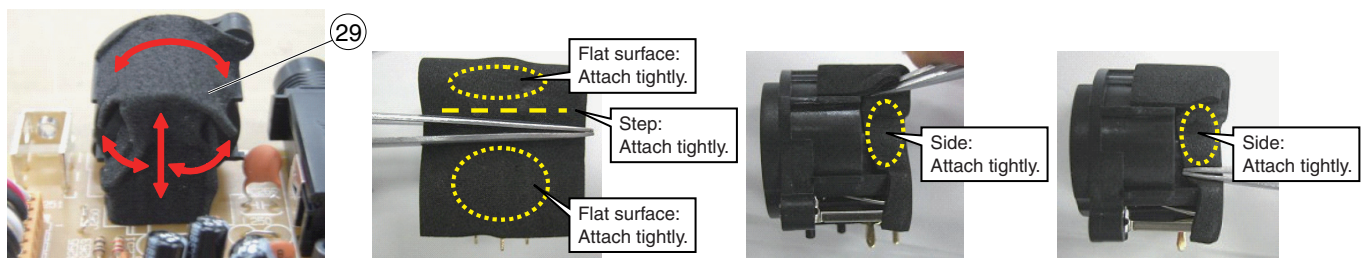
Application Sites for EVA Packing Cushions

19 Jack-A Board

As shown in the figure, affix the EVA Packing (#5100011617) and secure it in place using clamps.

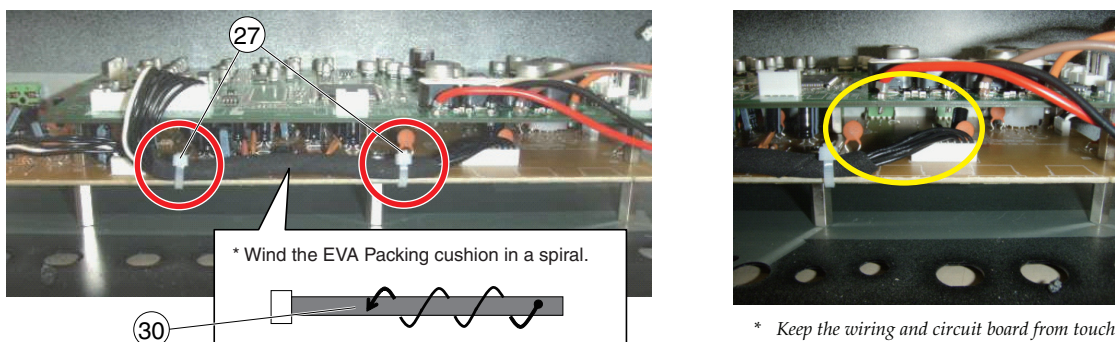


Tightly attach the EVA Packing (#5100011617) onto the XLR Connector on the Jack-A Board.



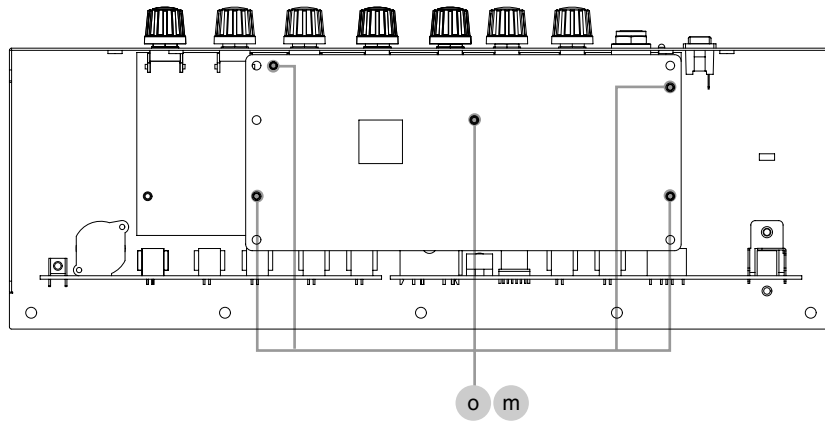
21 Panel Board

As shown in the figure, affix the EVA Packing (#5100011022) and secure it in place using clamps.

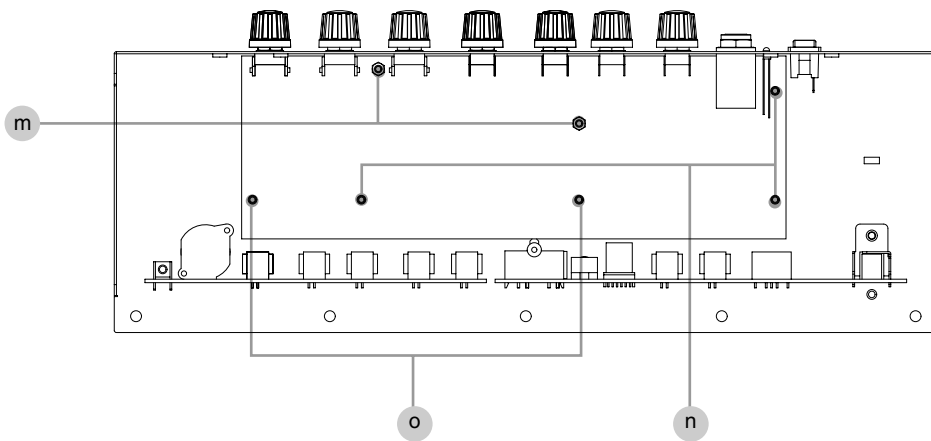


Plane View (Fig.A)

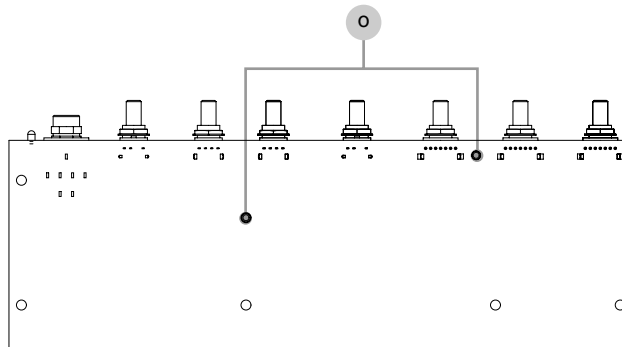
View A1



View A2



View A3



Plane View (Fig.A) Parts List

View A1

No.	Part Code	Part Name	Description	Q'ty
o	40012867	SCREW M3X8	PAN MACHINE W/SW+PW ZC	5
m	5100011021	STANDOFF	M3-L6-H20 (311-BG436LF)	5

View A2

No.	Part Code	Part Name	Description	Q'ty
o	40012867	SCREW M3X8	PAN MACHINE W/SW+PW ZC	2
m	5100011021	STANDOFF	M3-L6-H20 (311-BG436LF)	2
n	5100010873	BOSS NUT	M3-L5.5-H20-A8-B6-N3 DAIHWA	3

View A3

No.	Part Code	Part Name	Description	Q'ty
o	40012867	SCREW M3X8	PAN MACHINE W/SW+PW ZC	2

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				
#	510009316	CABINET ASSY		1
	510009860	STAND	08203-016 (#SD001169)	1
#	5100010561	FRONT GRILLE ASSY		1
#	5100010563	BATTERY CASE ASSY		1
CHASSIS				
#	5100010484	CHASSIS		1
KNOB, BUTTON				
	04344212	KNOB	GOLD(#SD000598)	7
SWITCH				
	02897801	SEESAW SWITCH	SDDJE13200 94V-0	1
JACK, EXT TERMINAL				
	03459223	XLR CONNECTOR	JY-5033A	1
#	03562412	DC JACK	HEC3900-010110	1
	05019512	3.5MM JACK	203-HTJ03509ABT	1
	13449146	6.5MM JACK	YKB21-5012 (W/SW)	7
	13449252	6.5MM JACK	YKB21-5006 (STEREO W/SW)	2
	5100007830	CONNECTOR	KM04048A-01	1
SPEAKER, BUZZER				
#	Δ 5100010999	SPEAKER	W6504-012 A	2
#	Δ 5100011000	SPEAKER	TC2604-012 A	2
PWB ASSY				
#	510009371	MAIN PWB BOARD ASSY		1
#	510009324	PANEL PWB SHEET ASSY		1
		<i>* This unit includes the following parts.</i>		
#	*****	PANEL BOARD		1
#	*****	JACK-A BOARD		1
#	*****	JACK-B BOARD		1
DIODE				
	03349978	LED(RED)	L-34HDSL-FPB	1
POTENTIOMETER				
	5100007731	ROTARY POTENTIOMETER	R1131GOXH1B203TG0027	1
#	5100007827	ROTARY POTENTIOMETER	RV110F-20E1-15AW-0B10K-0C	2
#	5100007828	ROTARY POTENTIOMETER	RV142BF-20E1-15AW-1B100K	3
#	5100007862	ROTARY POTENTIOMETER	RV110F-20E1-15AW-0B10K	2
FUSE, FUSE HOLDER				
#	Δ 5100011069	FUSE	MET 0.250	1
#	Δ 5100011086	FUSE	MET 002	1
#	Δ 5100011065	FUSE	MET 3.150	1
WIRING, CABLE				
#	5100010579	WIRING	192-AP011-W4	1
#	5100010583	WIRING	196-AP011-W8	1
#	5100010584	WIRING	196-AP011-W9	1
#	5100010585	WIRING	196-AP011-W10	1
#	5100010586	WIRING	196-AP011-W11	1
#	5100010642	WIRING	192-AP012-W18	1
#	5100010444	WIRING	196-AP009-W22	4
#	5100011216	WIRING	196-AP012-W19	1

SCREWS

	40012867	SCREW M3X8	PAN MACHINE W/SW+PW ZC	9
	40237101	SCREW M3X8	PAN MACHINE W/SW+SMALL PW BZC	8
	40128012	SCREW M4X16	PAN MACHINE W/SW+PW BZC	4
	40564601	SCREW M5X35	OVALHEAD MACHINE BZC	4
	5100005098	SCREW 3X16	TRUSS TAPPING A BZC	8
	40230789	SCREW 3X10	OVAL MACHINE BZC	4
	40011312	SCREW 3X8	BINDING TAPTITE P FE BZC	3
	40564578	SCREW 3.5X14	TRUSS TAPTITE A1 BZC	16
#	40019023	SCREW 4X20	BINDING TAPPING A BZC	16
	40010678	SCREW 4X20	TRUSS TAPPING A FE BZC	7
	40010689	SCREW 4X25	TRUSS TAPPING A FE BZC	5
	40010701	SCREW 4X35	TRUSS TAPPING A FE BZC	6
#	5100004356	JACK NUT		9
	5100005100	WASHER	FLAT 4.2X10X0.5 BZC	4
#	5100010873	BOSS NUT	M3-L5.5-H20-A8-B6-N3 DAIHWA	3
#	5100011021	STANDOFF	M3-L6-H20 (311-BG436LF)	7

MISCELLANEOUS

	04892501	TERMINAL	JH-8M3-T	1
	22310207	HANDLE (H40)	231-207 W/ESCUCHEON (2 HOLES)	1
	5100005099	LOCKING CABLE TIE	120X2.5X1T DAIHWA	5
	5100005655	CORNER PROTECTOR	08343-513 (#SD000628)	8
	5100006069	RUBBER FOOT	D25XT18 40484-512(#SD001005)	4
#	5100009659	DC JACK HOLDER		1
	5100009845	STAND ADAPTOR (TOP HAT)	49A-10179 (#17055020)	1
	5100009863	STAND HOLDER	40484-518 (#SD001007)	2
#	5100010457	DC PLUG SUPPORTER		1
#	5100010870	GRILLE SPACER		6
#	5100010540	EVA PACKING	FOR DC JACK HOLDER A	1
#	5100011617	EVA PACKING	40X25X1T W/ADH	2
#	5100011022	EVA PACKING	110X15X1T W/ADH	1
			FOR WIRNG	

ACCESSORIES (Standard)

#	△	5100010587	AC ADAPTOR	PSB-12U	1
	△	5100009481	AC CORD	181-AP009-J 100V 1.0M	1
#	△	5100010491	AC CORD	181-AP009-T 115VTW 1.0M	1
	△	5100009482	AC CORD	181-AP009-UC 117V 1.0M	1
	△	5100012740	AC CORD	181-AP009-BL 117VBL 1.0M	1
	△	5100009486	AC CORD	181-AP009-CN 220VCN 1.0M	1
#	△	5100012016	AC CORD	181-AP009-K 220VK 1.0M	1
	△	5100009483	AC CORD	181-AP009-G 230V EU 1.0M	1
	△	5100009484	AC CORD	181-AP009-B 230VE	1
	△	5100009485	AC CORD	181-AP009-A 240VA 1.0M	1
#		5100010643	OWNER'S MANUAL	JAPANESE	1
#		5100010644	OWNER'S MANUAL	MULTILANGUAGE	1

Verifying the Version Number

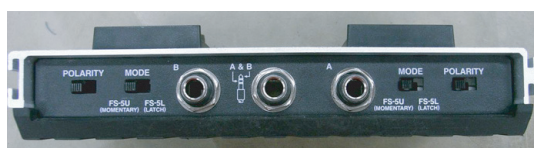
Items Required

- Foot switch (BOSS FS-5U) x 1
 - 1/4-inch monaural phone cable x 1
 - AC adaptor (PSB-12U)
 - Alkaline battery (or nickel hydrogen [NIH] battery) x 8
- * Set the **POLARITY** switch and the **MODE** switch on the foot switch as shown below. This causes the circuit to be open while the foot switch is depressed.



FS-5U

If the FS-6 is being used as instead, make the settings shown below.



FS-6

Procedure

1. Connect the foot switch to the **FOOT SW EFFECT** jack.
2. Make the following settings on the main unit.
 - POWER switch: OFF
 - All controls: Minimum
3. While depressing the foot switch, switch on the power. Immediately after powerup, the **POWER LED** lights up.

* Continue to hold down the foot switch.
4. The LED lights up, then flashes once. Within 3 seconds of this, depress the foot switch twice.

The LED flashes rapidly several times, then flashes to indicate the software version.

The **POWER LED** lights up in an intermittent pattern that indicates the software version as shown below.

Version	POWER LED illumination pattern
1.00	One long and no short
1.01	One long and one short
1.02	One long and two short
1.03	One long and three short
:	:
2.00	Two long and no short

5. Switch off the power to the unit.

Test Mode

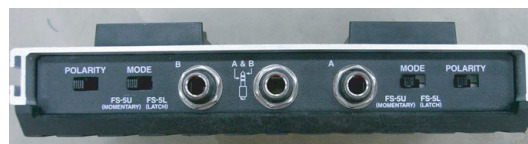
Items Required

- Foot switch (BOSS FS-5U) x 1
 - 1/4-inch monaural phone cable x 1
 - Level meter (used only during signal-level testing)
 - Signal generator (only when inspecting the signal level)
 - AC adaptor (PSB-12U)
 - Alkaline battery (or nickel hydrogen [NIH] battery) x 8
 - Dummy load resistor tool (only during signal-level testing)
 - Resistor (4Ω, 100 W or more)
 - 1/4-inch stereo phone plug with 100Ω (1/2 W or more) load resistor connected between L, R, and GND
 - 1/4-inch phone plug with 47 kΩ load resistor connected between HOT and GND
- * Set the **POLARITY** switch and the **MODE** switch on the foot switch as shown below. This causes the circuit to be open while the foot switch is depressed.



FS-5U

If the FS-6 is being used as instead, make the settings shown below.



FS-6

Entering the Test Mode

Go to **Verifying the Version Number** (p. 20) and carry out steps **1** through **4**. After verifying the version number, depress the foot switch connected to the **FOOT SW EFFECT** jack to enable the first test item, **1. DSP Test**.

Quitting the Test Mode

Switch off the power.

Skipping

Test items cannot be skipped.

1. DSP Test

When the testing starts, the **POWER** LED goes dark.

If the Test Is Passed (OK)

The **POWER** LED lights up, and execution automatically advances to the next test.

If the Test Is Failed (Not OK)

The **POWER** LED flashes rapidly. Execution does not advance to the next test.

2. Switch Test

Carry out operations in the sequence shown below, and check the status of the corresponding LED.

No.	Operation	POWER LED
	(Initial state)	o
1	Disconnect the foot-switch plug from EFFECT.	-
2	Insert the foot-switch plug into EFFECT.	o
3	Insert the 1/4-inch stereo phone plug into PHONES.	-
4	Disconnect the 1/4-inch stereo phone plug from PHONES.	*

o: illuminated, -: dark, *: flashing

When the operations up through No. 4 have been completed, the **POWER** LED flashes.

Depress the foot switch to go on to the next test.

3. Volume Test (1)

When the volume test starts, the **POWER** LED lights up.

Working in the sequence shown below, change the settings of the controls from minimum to intermediate and to maximum and vice versa, and verify that the LEDs light up and the speaker plays sound.

1. CH1 MIC/LINE
2. EFFECT
3. LOW
4. HIGH
5. VOLUME

* When the intermediate value is detected, the **POWER** LED lights up.

The volume level of the speaker sound increases as the control is operated toward the maximum position, and from the intermediate position on, the pitch rises.

When all volume testing has been completed, the **POWER** LED flashes.

This concludes the testing.

4. Signal-level Test (for Reference)

After **3. Volume Test (1)** has been completed, connect the foot switch to the **FOOT SW EFFECT** jack, then depress the foot switch to enter the Signal-level Test mode.

1. When verifying speaker output, connect a 4Ω load resistor to the speaker lines. When verifying headphones output, connect a 1/4-inch stereo phone plug with 100Ω load resistors (x 2) to the **PHONES** jack.
2. Connect a 1/4-inch phone plug with a 47 kΩ load resistor to the **LINE OUT** jack.
3. Connect an oscillator to the **INPUT** or **AUX IN** jack and input the signal described below.

CH1 INPUT MIC (balanced):	-56 dBu, 1 kHz, sine wave
(LINE unbalanced):	-48 dBu, 1 kHz, sine wave
CH2 L/MONO and R:	-25 dBu, 1 kHz, sine wave
CH3 L/MONO and R:	-25 dBu, 1 kHz, sine wave
AUX IN L and R:	-25 dBu, 1 kHz, sine wave

* 0 dBu = 0.775 Vrms

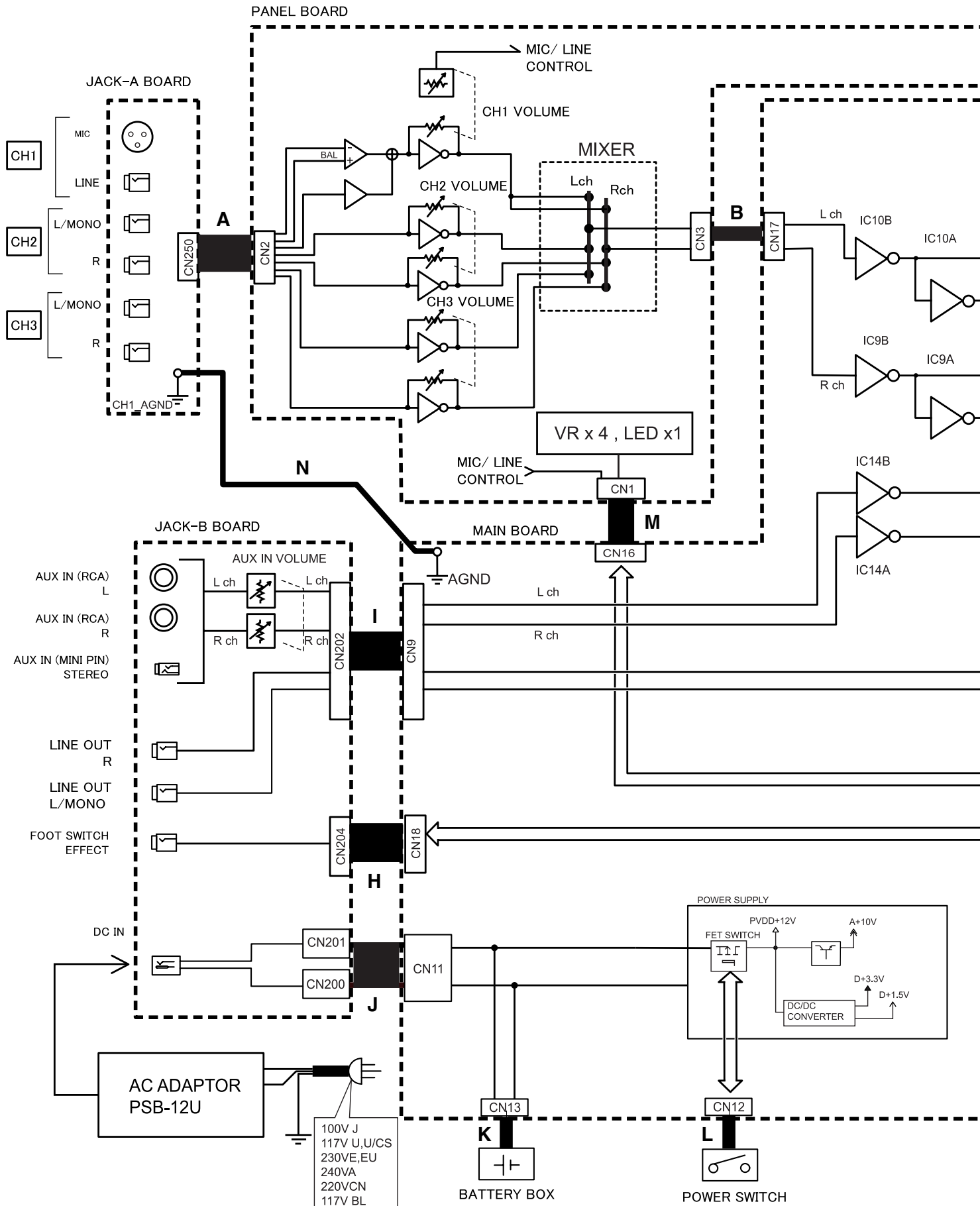
4. Set the panel controls as shown below.

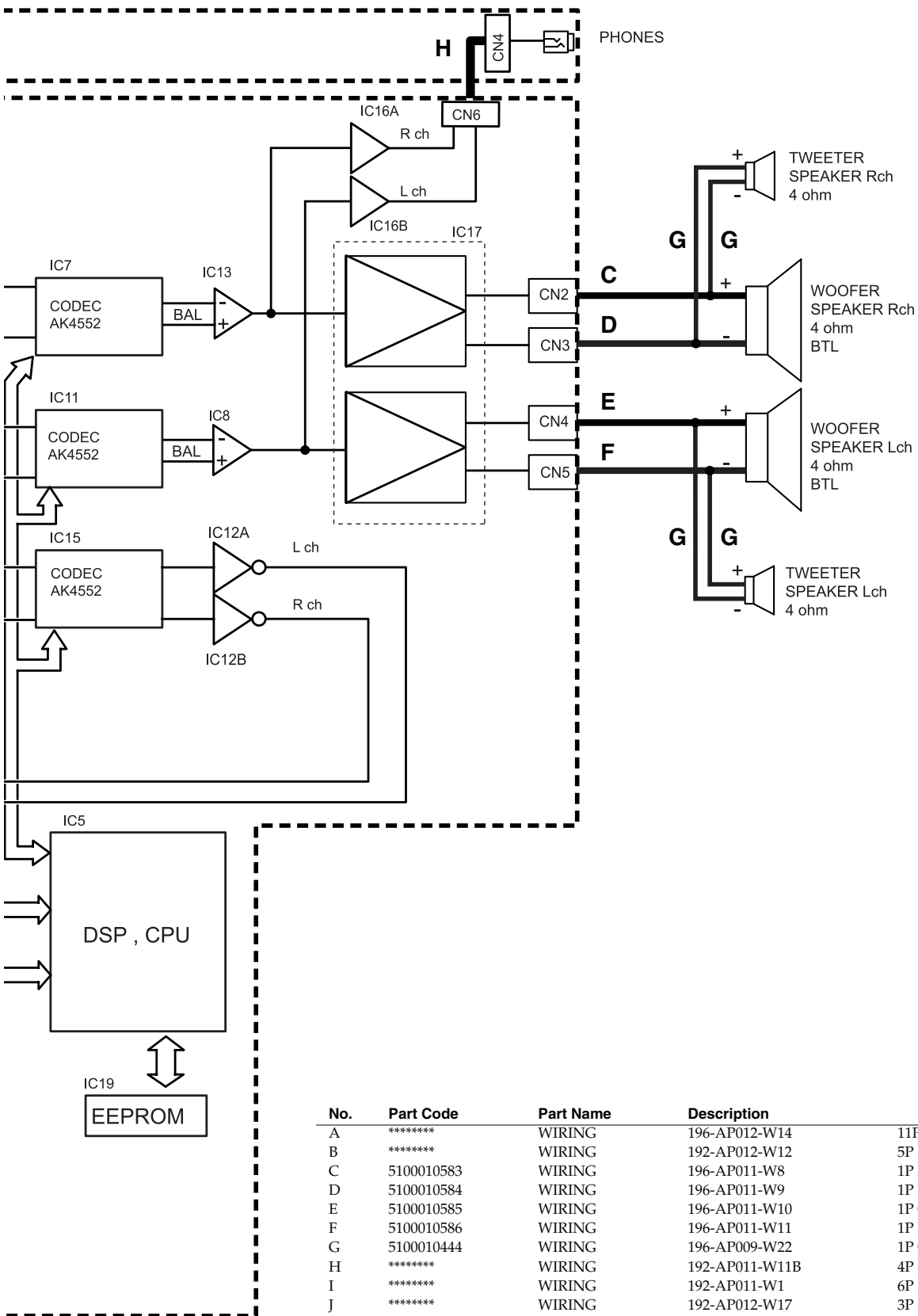
CH1, CH2, and CH3 VOLUME:	Maximum
AUX IN LEVEL:	Maximum
Other controls:	Minimum
5. Verify the values at the measurement points shown in the **Circuit Diagram (Main Board: Analog)** (p. 30).
The allowed range for measured values is ±1.5 dBu.

5. Volume Test (2)

1. Reset the power and start the unit in the normal usage state.
2. Input a signal to **CH2**, turn the **CH2 LINE** control, and verify that the volume level changes normally and that no noise occurs.
3. Carry out verification in the same way for **CH3** as well.

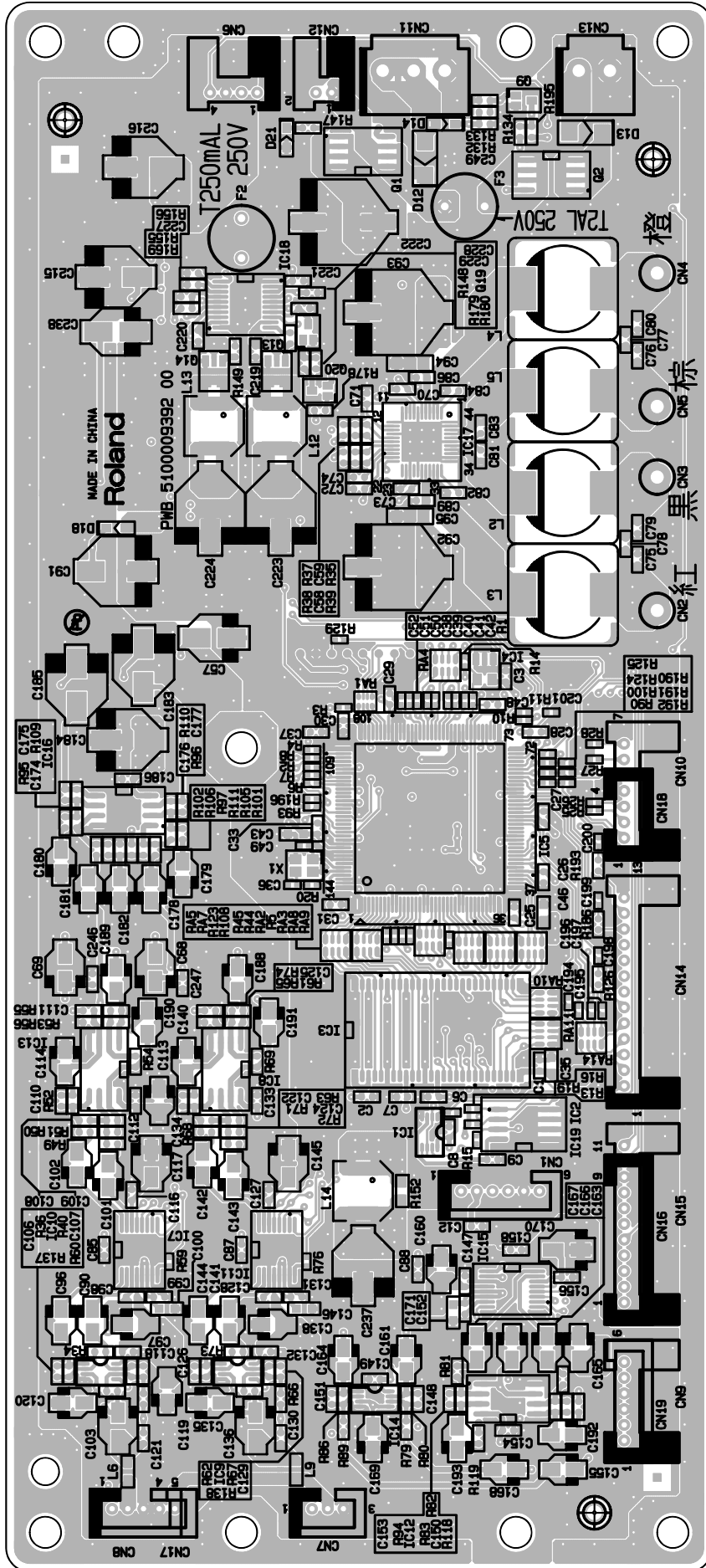
Block Diagram/Wiring Diagram

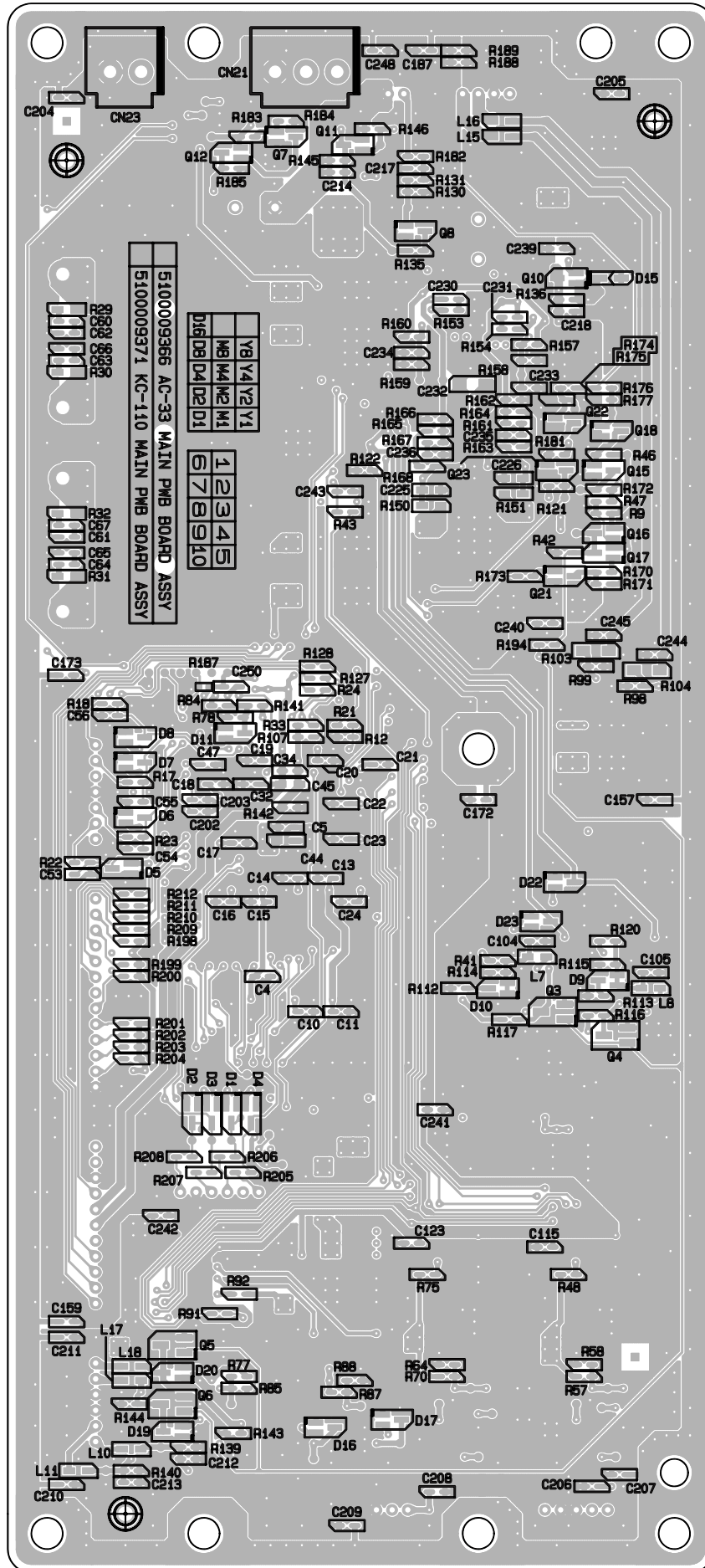




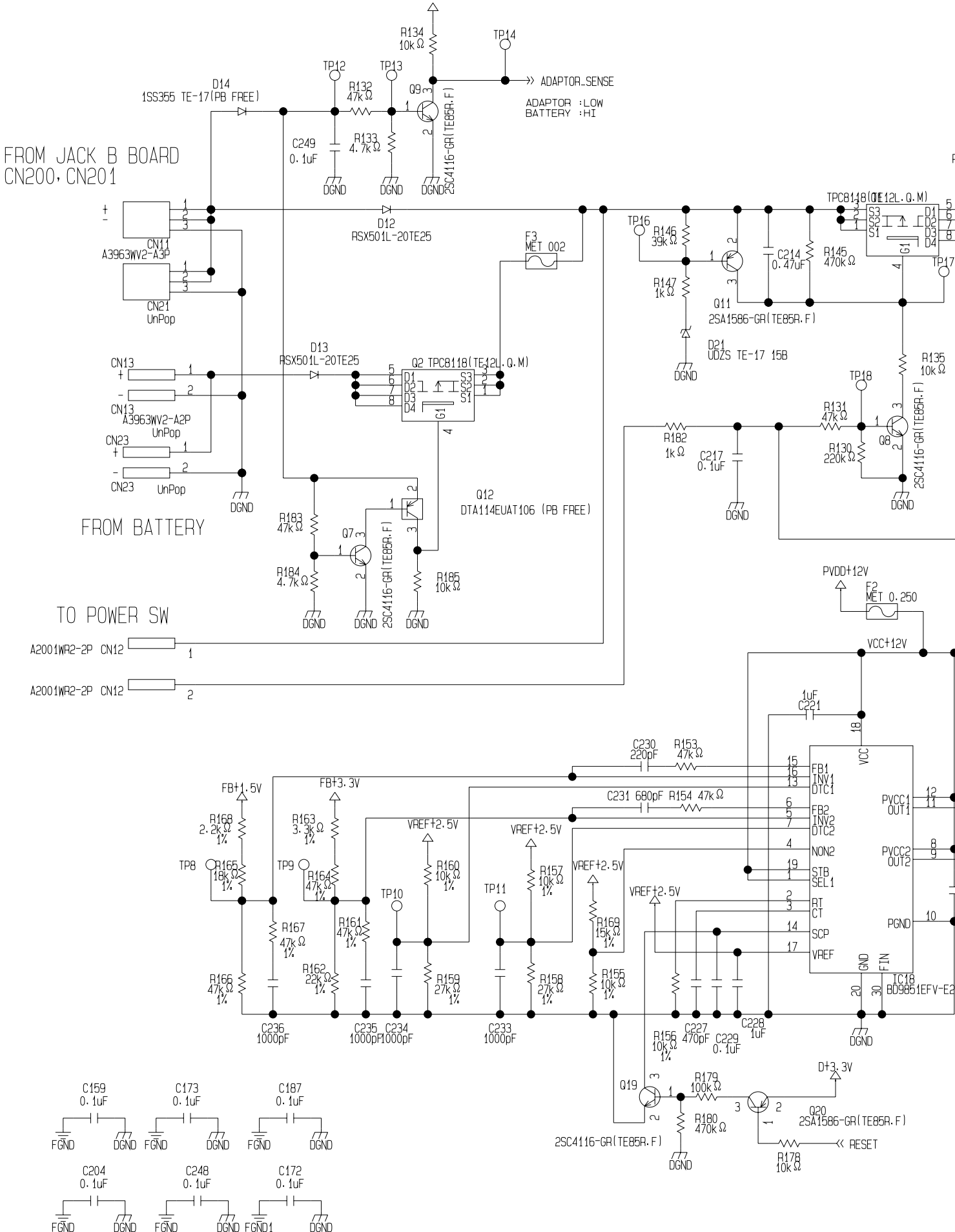
No.	Part Code	Part Name	Description		Q'ty
A	*****	WIRING	196-AP012-W14	11P W/SHIELD	1
B	*****	WIRING	192-AP012-W12	5P	1
C	5100010583	WIRING	196-AP011-W8	1P RED	1
D	5100010584	WIRING	196-AP011-W9	1P BLACK	1
E	5100010585	WIRING	196-AP011-W10	1P ORANGE	1
F	5100010586	WIRING	196-AP011-W11	1P BROWN	1
G	5100010444	WIRING	196-AP009-W22	1P ORANGE	4
H	*****	WIRING	192-AP011-W11B	4P	2
I	*****	WIRING	192-AP011-W1	6P	1
J	*****	WIRING	192-AP012-W17	3P	1
K	5100010642	WIRING	192-AP012-W18	2P	1
L	5100010579	WIRING	192-AP011-W4	2P	1
M	*****	WIRING	192-AP012-W13	9P	1
N	5100011216	WIRING	196-AP012-W19	1P	1

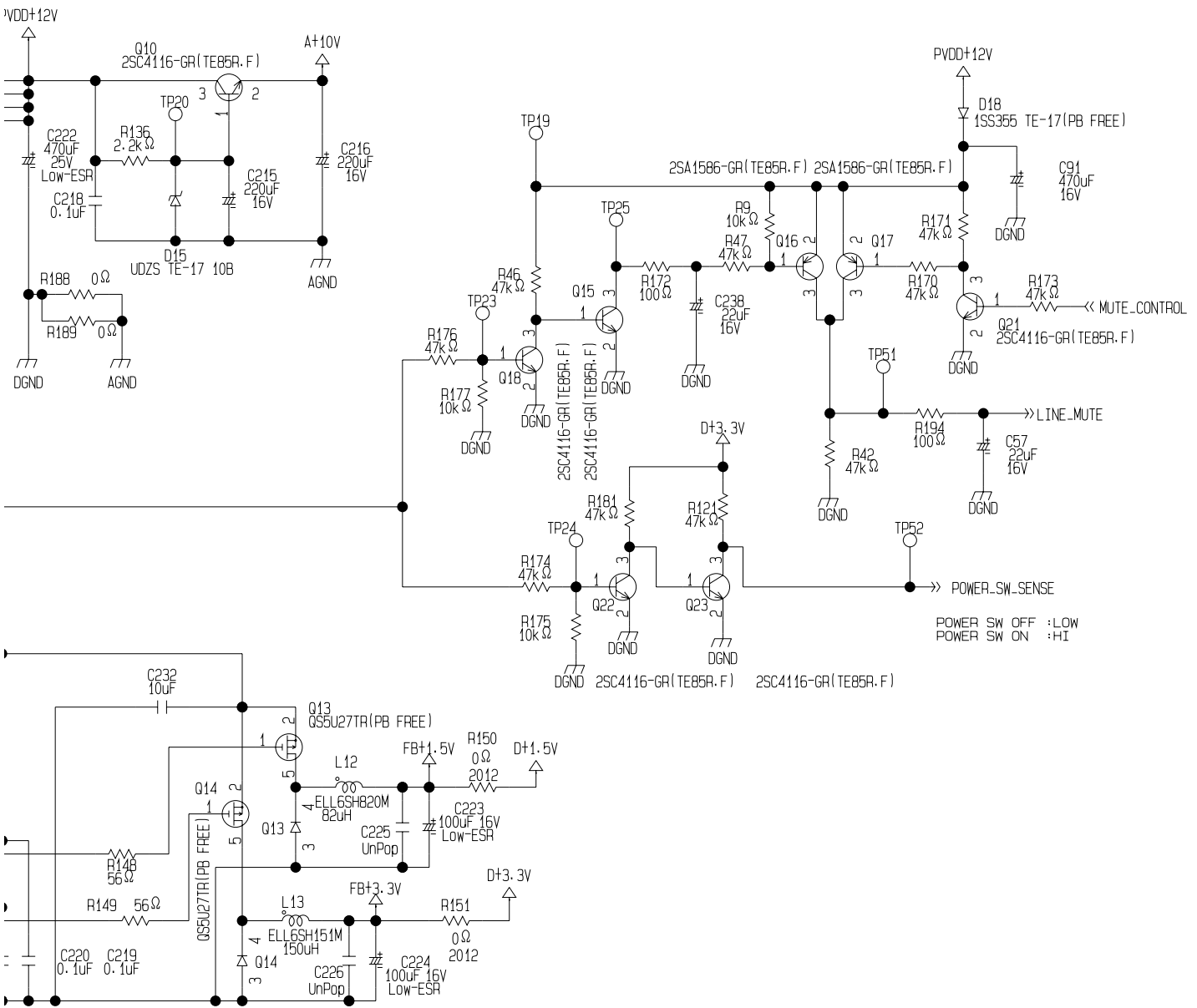
Circuit Board (Main Board)



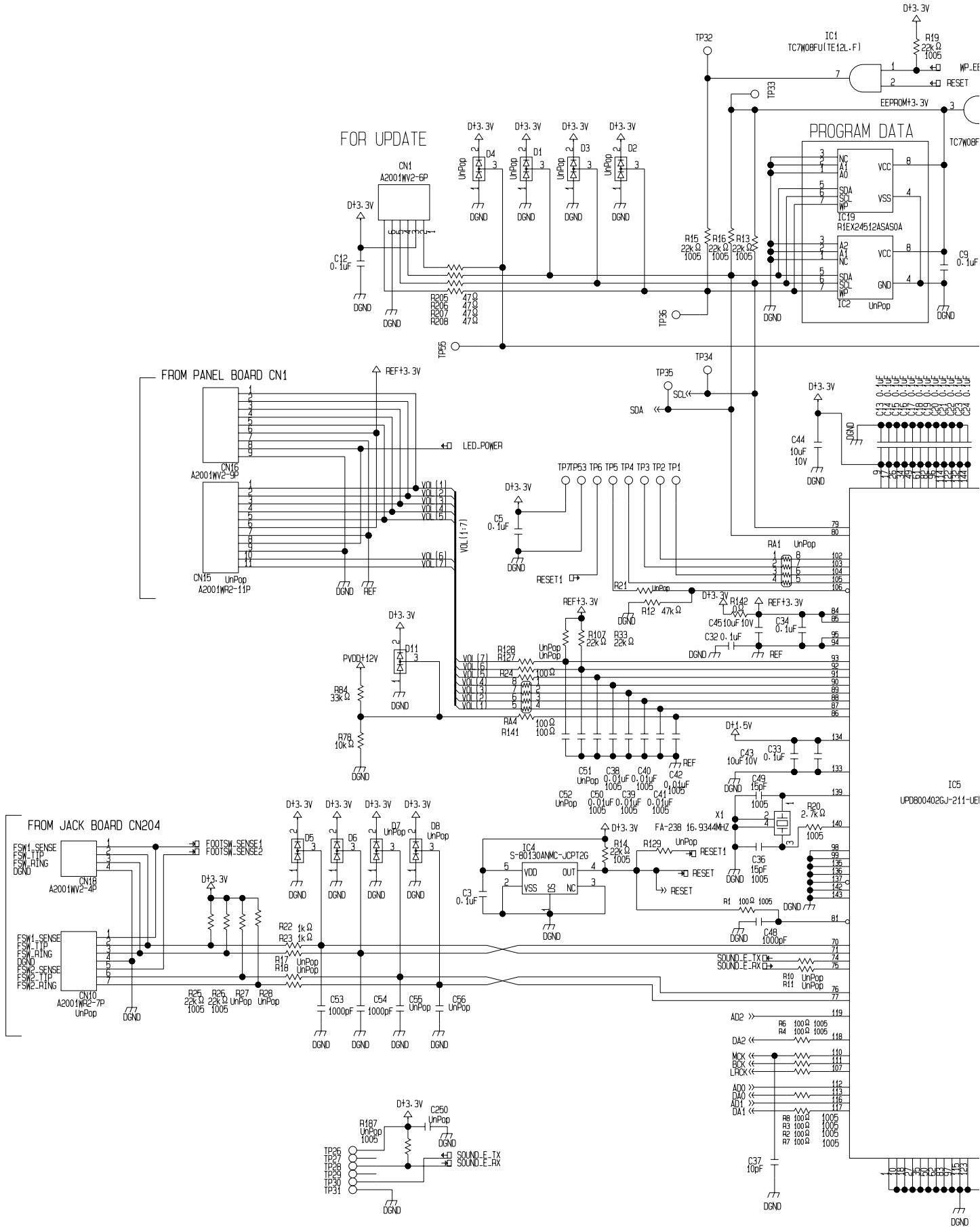


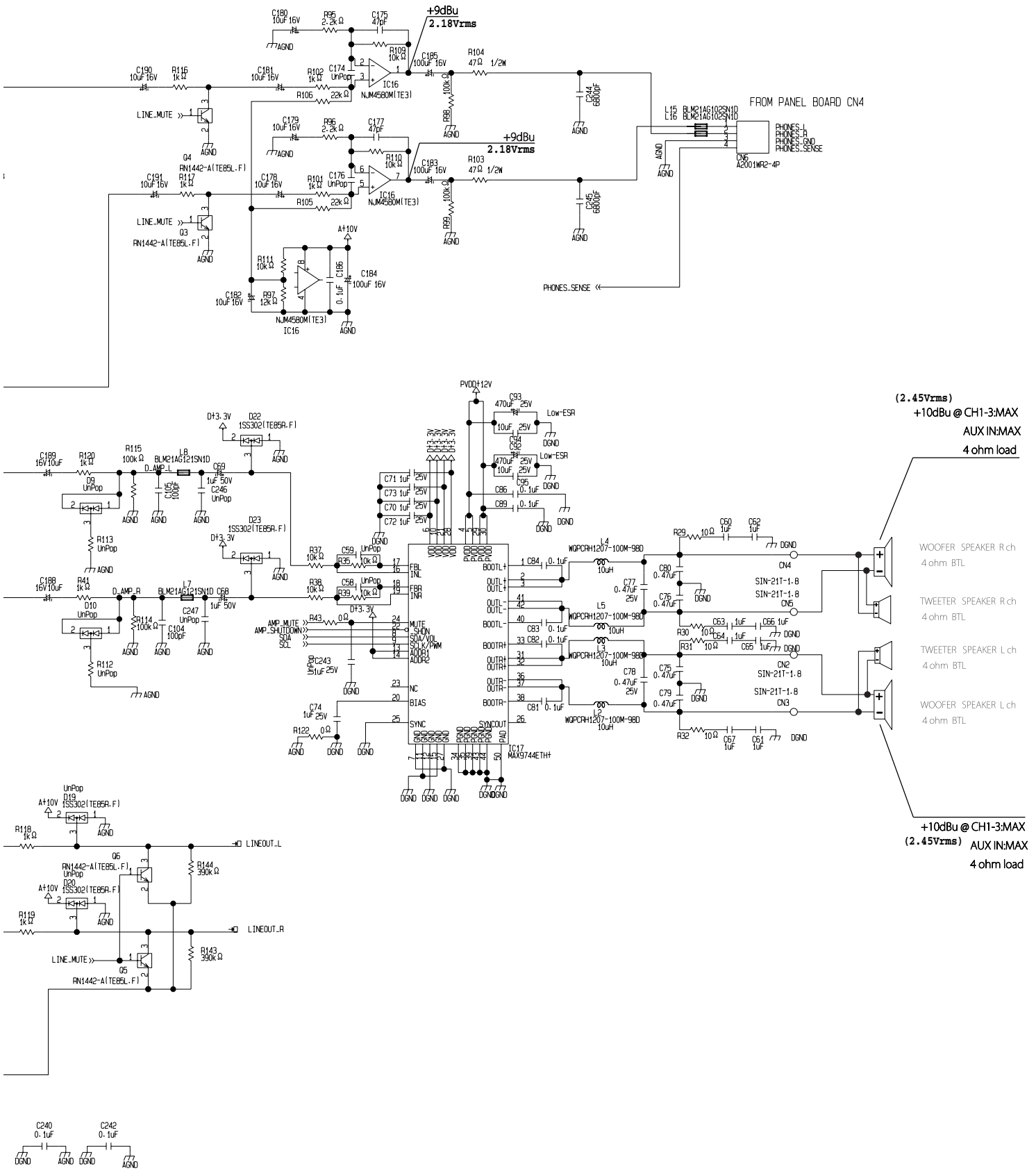
Circuit Diagram (Main Board: Power)





Circuit Diagram (Main Board: Digital)



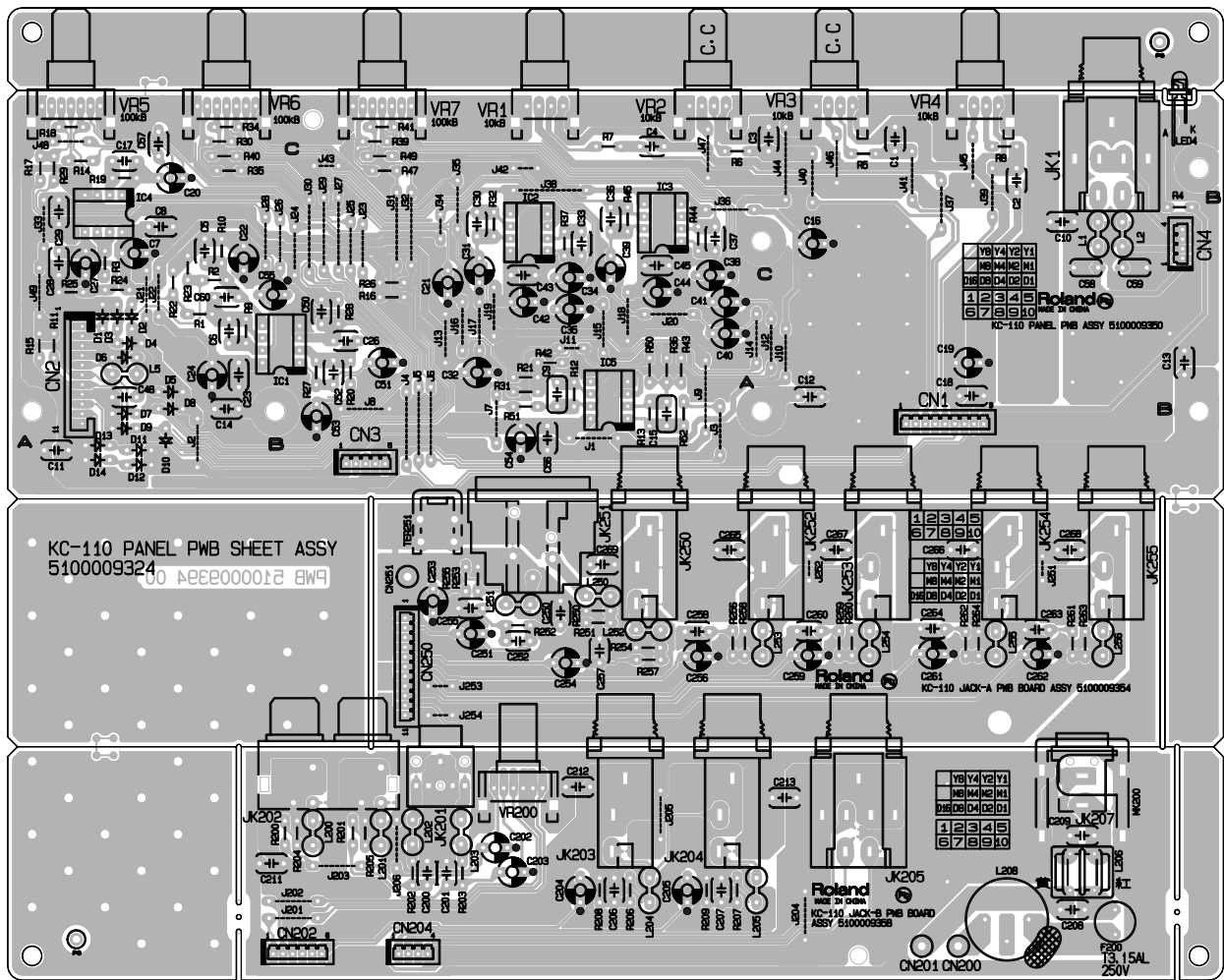


(2.45Vrms)
 +10dBu @ CH1-3:MAX
 AUX IN:MAX
 4 ohm load

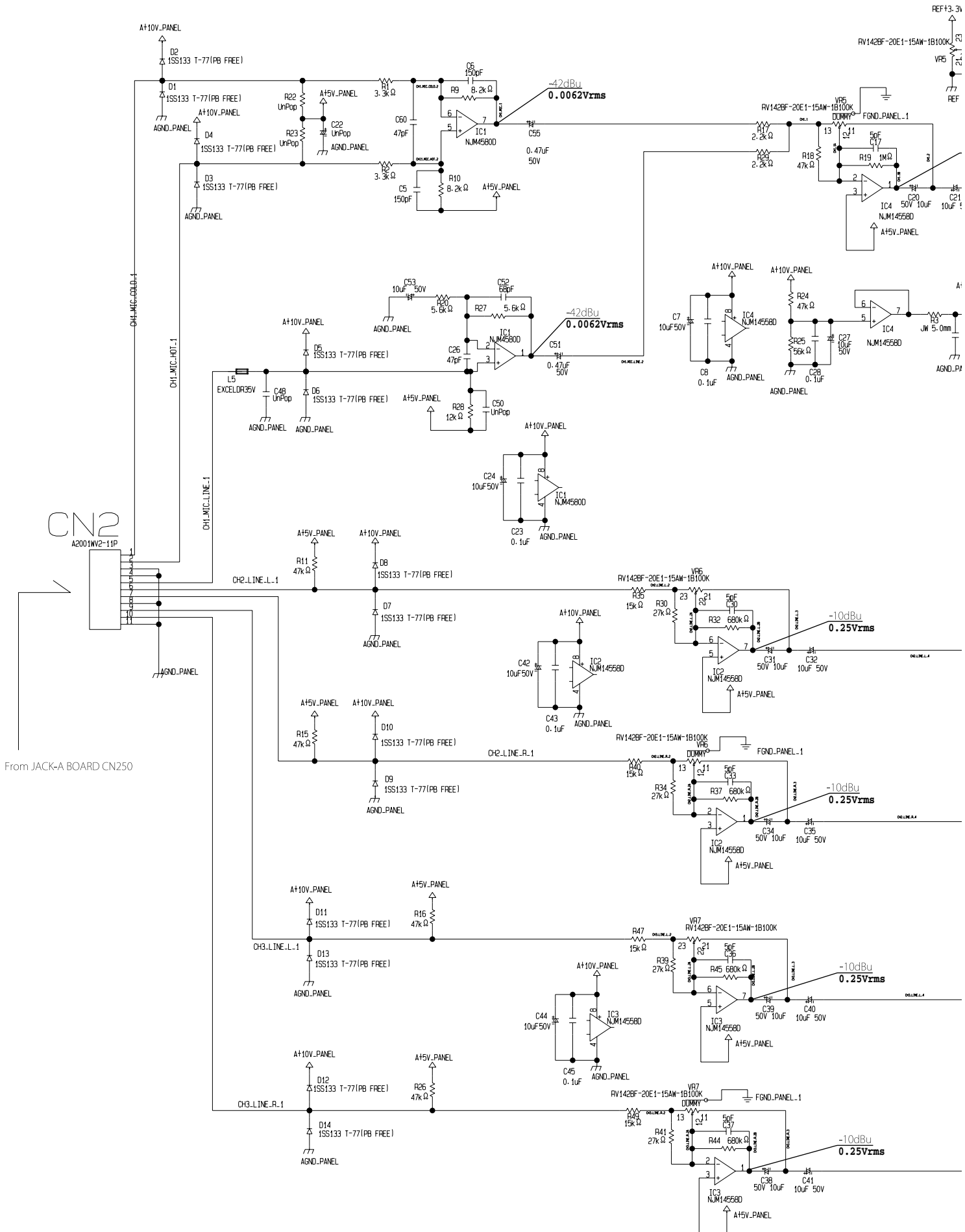
+10dBu @ CH1-3:MAX
 (2.45Vrms) AUX IN:MAX
 4 ohm load

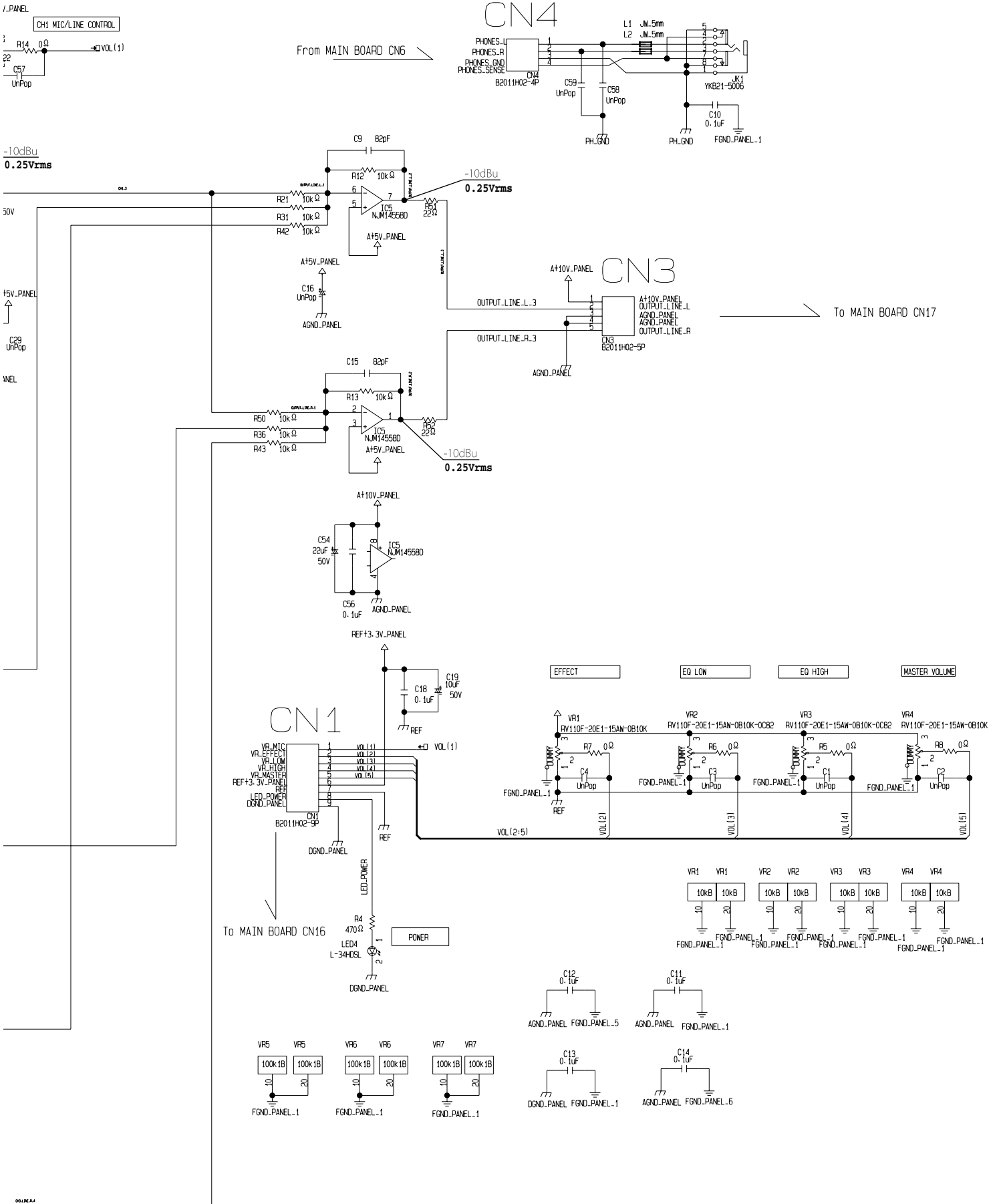
- WOOFER SPEAKER R ch
4 ohm BTL
- TWEETER SPEAKER R ch
4 ohm BTL
- TWEETER SPEAKER L ch
4 ohm BTL
- WOOFER SPEAKER L ch
4 ohm BTL

Circuit Board (Panel, Jack-A, Jack-B Board)

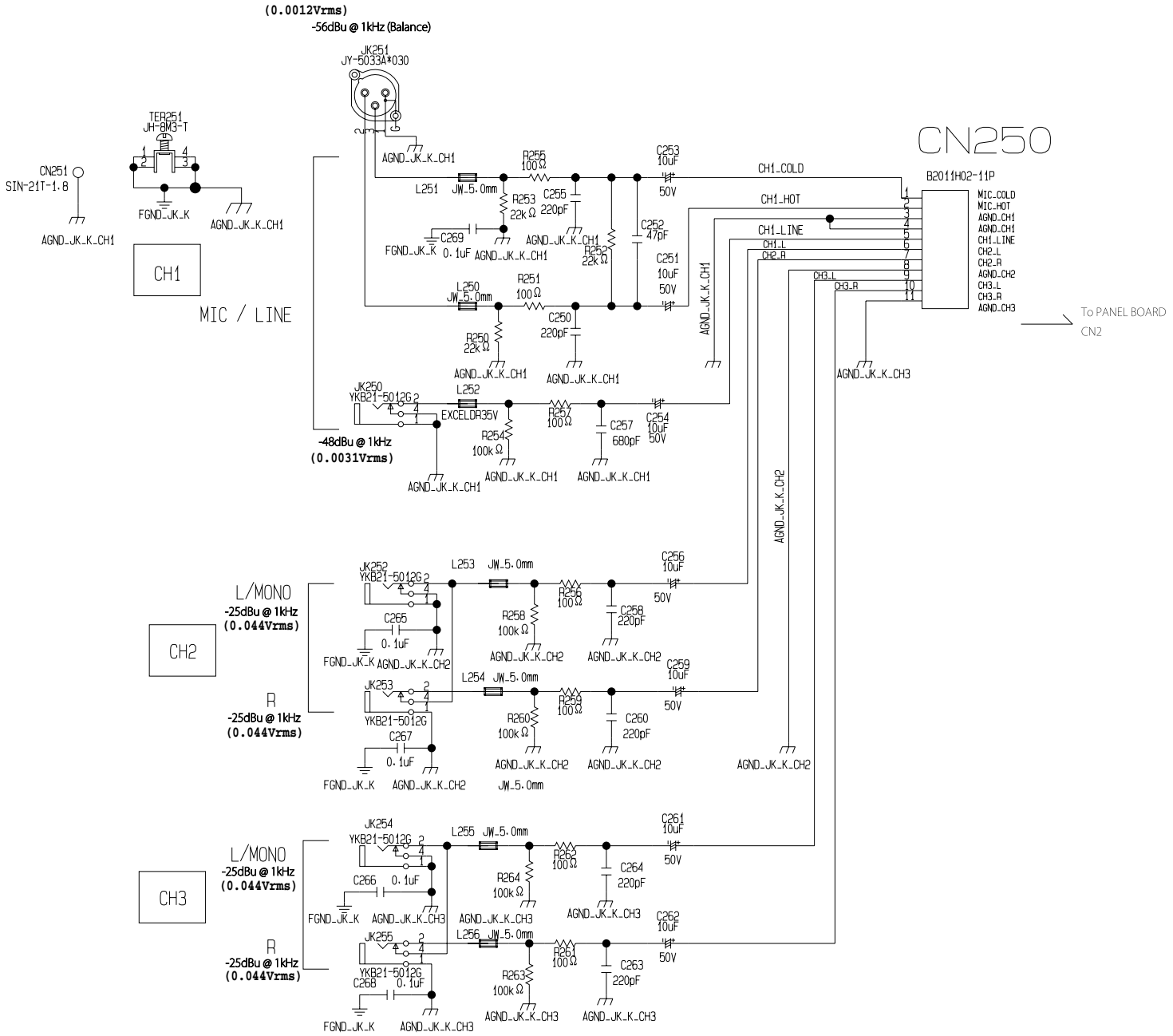


Circuit Diagram (Panel Board)





Circuit Diagram (Jack-A Board)



Circuit Diagram (Jack-B Board)

