marantz®

Service Manual

Ver. 1

NETWORK AUDIO PLAYER

NA6006

- For purposes of improvement, specifications and design are subject to change without notice.
- Please use this service manual when referring to the operating instructions without fail.
- Some illustrations used in this service manual are slightly different from the actual product.

Click here!

On-line service parts list

http://dmedia.dmglobal.com/Document/DocumentDetails/24925

ONLINE PARTS LIST (P5)

WEB owner's manual

NA: http://manuals.marantz.com/NA6006/NA/EN/index.php

EU: http://manuals.marantz.com/NA6006/EU/EN/index.php

AP: http://manuals.marantz.com/NA6006/AP/ZH/index.php

JP: http://manuals.marantz.com/NA6006/JP/JA/index.php

Upload is planned for the time of a future press release.

Confidential

BEFORE SERVICING THIS UNIT

SAFETY PRECAUTIONS

NOTE FOR SCHEMATIC DIAGRAM

HANDLING THE SEMICONDUCTOR AND OPTICS

ONLINE PARTS LIST

SERIAL NUMBER

POST-SERVICE PRECAUTIONS

SAFETY PRECAUTIONS

The following items should be checked for continued protection of the customer and the service technician.

Leakage current check

Before returning the set to the customer, be sure to carry out either (1) a leakage current check or (2) a line to chassis resistance check. If the leakage current exceeds 0.5 milliamps, or if the resistance from chassis to either side of the power cord is less than 460 kohms, the set is defective.
Be sure to test for leakage current with the AC plug in both polarities, in addition, when the set's power is in each state (on, off and standby mode), if applicable.

CAUTION **Please heed the following cautions and instructions during servicing and inspection.**

◎ Heed the cautions!

Cautions which are delicate in particular for servicing are labeled on the cabinets, the parts and the chassis, etc. Be sure to heed these cautions and the cautions described in the handling instructions.

◎ Cautions concerning electric shock!

(1) An AC voltage is impressed on this set, so if you touch internal metal parts when the set is energized, you may get an electric shock. Avoid getting an electric shock, by using an isolating transformer and wearing gloves when servicing while the set is energized, or by unplugging the power cord when replacing parts, for example.
(2) There are high voltage parts inside. Handle with extra care when the set is energized.

◎ Caution concerning disassembly and assembly!

Through great care is taken when parts were manufactured from sheet metal, there may be burrs on the edges of parts. The burrs could cause injury if fingers are moved across them in some rare cases. Wear gloves to protect your hands.

◎ Use only designated parts!

The set's parts have specific safety properties (fire resistance, voltage resistance, etc.). Be sure to use parts which have the same properties for replacement. The burrs have the same properties. In particular, for the important safety parts that are indicated by the ⚠ mark on schematic diagrams and parts lists, be sure to use the designated parts.

◎ Be sure to mount parts and arrange the wires as they were originally placed!

For safety seasons, some parts use tapes, tubes or other insulating materials, and some parts are mounted away from the surface of printed circuit boards. Care should also be taken with the positions of the wires by arranging them and using clamps to keep them away from heating and high voltage parts, so be sure to set everything back as it was originally placed.

◎ Make a safety check after servicing!

Check that all screws, parts and wires removed or disconnected when servicing have been put back in their original positions, check that no serviced parts have deteriorated the area around. Then make an insulation check on the external metal connectors and between the blades of the power plug. And otherwise check that safety is ensured.
(Insulation check procedure)
Unplug the power cord from the power outlet, disconnect the antenna, plugs, etc., and on the power. Using a 500V insulation resistance tester, check that the insulation resistance value between the inplug and the externally exposed metal parts (antenna terminal, headphones terminal, input terminal, etc.) is 1M Ω or greater. If it is less, the set must be inspected and repaired.

CAUTION **Concerning important safety parts**

Many of the electric and the structural parts used in the set have special safety properties. In most cases these properties are difficult to distinguish by sight, and the use of replacement parts with higher ratings (rated power and withstand voltage) does not necessarily guarantee that safety performance will be preserved. Parts with safety properties are indicated as shown below on the wiring diagrams and the parts list in this service manual. Be sure to replace them with the parts which have the designated part number.

(1) Schematic diagrams Indicated by the ⚠ mark.
(2) Parts lists Indicated by the ⚠ mark.
The use of parts other than the designated parts could cause electric shocks, fires or other dangerous situations.

NOTE FOR SCHEMATIC DIAGRAM

WARNING:
Parts indicated by the ⚠ mark have critical characteristics. Use ONLY replacement parts recommended by the manufacturer.

CAUTION:
Before returning the set to the customer, be sure to carry out either (1) a leakage current check or (2) a line to chassis resistance check. If the leakage current exceeds 0.5 milliamps, or if the resistance from chassis to either side of the power cord is less than 460 kohms, the set is defective.

WARNING:
DO NOT return the set to the customer unless the problem is identified and remedied.

NOTICE:
(1) ALL RESISTANCE VALUES IN OHM. k=1,000 OHM / M=1,000,000 OHM
(2) ALL CAPACITANCE VALUES ARE EXPRESSED IN MICRO FARAD, UNLESS OTHERWISE INDICATED. P INDICATES MICRO-MICRO FARAD. N INDICATES NANO FARAD.
(3) EACH VOLTAGE AND CURRENT ARE MEASURED AT NO SIGNAL INPUT CONDITION.
(4) CIRCUIT AND PARTS ARE SUBJECT TO CHANGE WITHOUT PRIOR NOTICE.

HANDLING THE SEMICONDUCTOR AND OPTICS

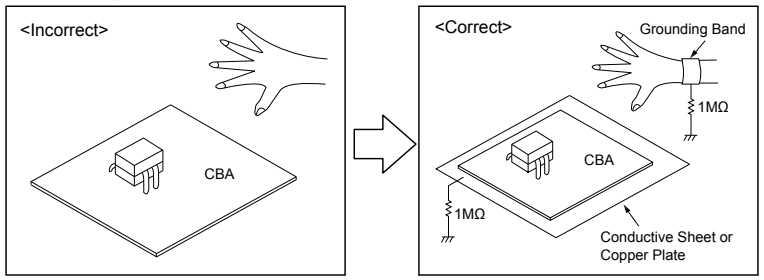
Electrostatic breakdown of the semi-conductors or optical pickup may occur due to a potential difference caused by electrostatic charge during unpacking or repair work.

1. Ground for Human Body

Be sure to wear a grounding band (1 M ohm) that is properly grounded to remove any static electricity that may be charged on the body.

2. Ground for Workbench

Be sure to place a conductive sheet or copper plate with proper grounding (1 M ohm) on the workbench or other surface, where the semi-conductors are to be placed. Because the static electricity charge on clothing will not escape through the body grounding band, be careful to avoid contacting semi-conductors with your clothing

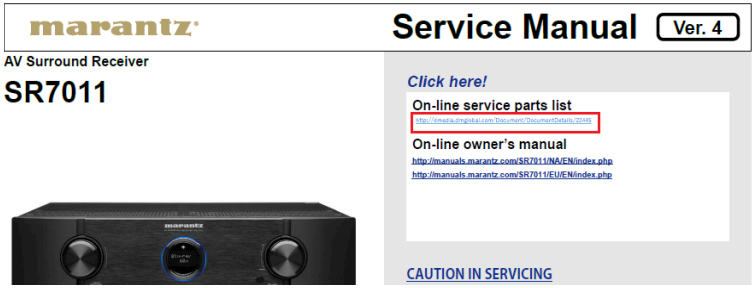


ONLINE PARTS LIST

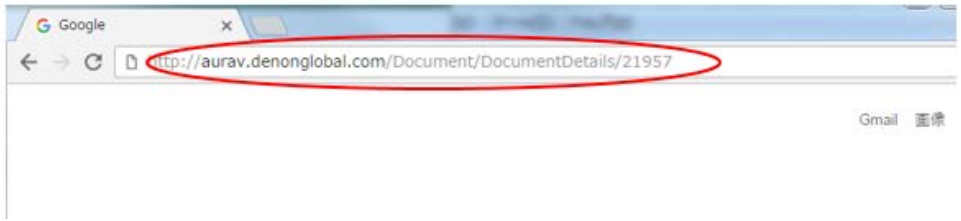
Accessing the Parts List

(1) Access from the Service Manual

・ Click the URL link on the cover of the service manual.
Examples of display



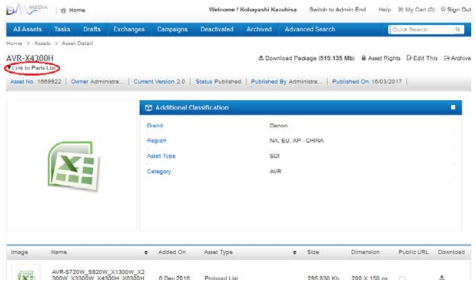
NOTE : If the web browser does not open automatically, copy the URL and paste it into the address bar of the web browser and then press Enter.



(2) Accessing the Part List from the Model Asset Screen.

・ Display Model Asset from New SDI.

・ Click the section displayed as ▼ Link to Part Lists under the model name.



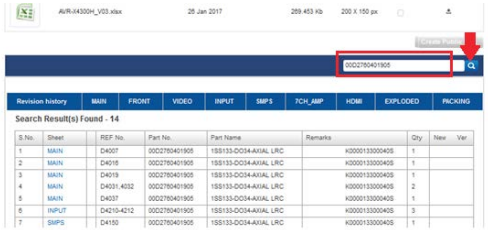
NOTE : If the ▼ Link to Parts List section is not displayed, download the parts table from the Asset list.

Searching Part Numbers or Ref. Numbers

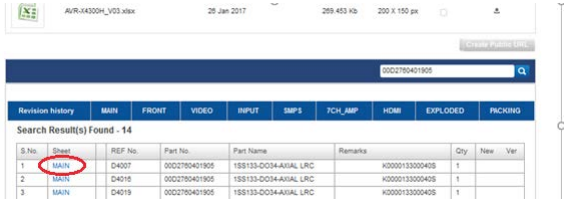
You can search a Parts List for part numbers or Ref. numbers.

(1) Enter the part number or Ref. number in the search window of the Parts List, and press the search button.

(2) The search results are displayed.
The name of the sheet in which the search part is used and the part's line are displayed.



(3) Next, click the "**Sheet**" section of the search results.



NOTE FOR PARTS LIST

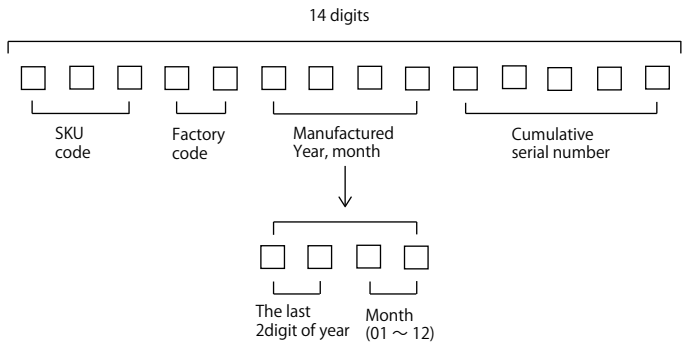
1. Parts indicated by "**nsp**" on this table cannot be supplied.
2. When ordering a part, make a clear distinction between "1" and "I" (i) to avoid mis-supplying.
3. A part ordered without specifying its part number can not be supplied.
4. Part indicated by "**@**" mark is not illustrated in the exploded and packaging view.

WARNING: Parts indicated by the ⚠ mark have critical characteristics. Use ONLY replacement parts recommended by the manufacturer.

SERIAL NUMBER

Serial Number Organization

The 14-digit serial number that contains the code of the manufacturing plant and the manufacturing date.



SKU Code of this Unit

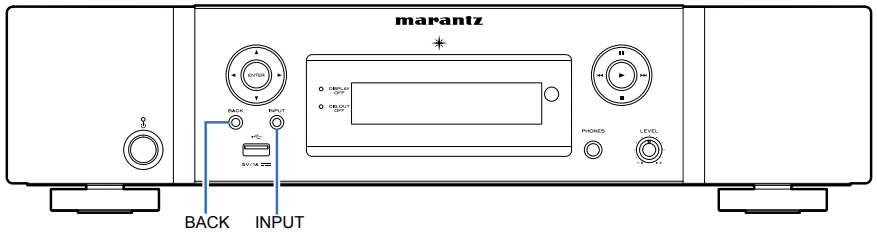
Product SKU	SKU Code
NA6006/N1B	BBH
NA6006/FN	BBL
NA6006/K1B	BBM
NA6006/N1SG	BBJ
NA6006/U1B	BBK

Initializing this Unit

Make sure to initialize this unit after replacing the microcomputer or any peripheral equipment, or the PCB.

1. Press the power operation button to turn off the power, and remove the AC plug from the socket.
2. Insert the AC plug while pressing buttons "**INPUT**" and "**BACK**" together, and wait for more than 3 seconds.
3. Release buttons "**INPUT**" and "**BACK**" when the power indicator turns green.
4. All lights on the display illuminate for 2 seconds.
5. All lights on the display turn off for 2 seconds.
6. The Power indicators illuminate in orange for 4 seconds during this time.
7. "**Factory Reset**" is shown on the display for 5 seconds.
   The settings for the Installer Setup is also initialized.
   Network function settings are not initialized.

NOTE：
- If the unit fails to enter the service mode in step 7, repeat the procedure from step 1.
- Initializing the device restores the customized settings to the factory settings. Write down your settings in advance and reconfigure the settings after initialization.



Use network initialization mode to initialize the network related settings.

1. Press the power operation button to turn off the power, and remove the AC plug from the socket.
2. Insert the AC plug while pressing button "**POWER**", and wait for more than 3 seconds.
3. Release button "**POWER**" when the power indicator turns green.
4. Once "Special model" is displayed, press "**CURSOR ▼**", select "**Initialize**" then press the "**Enter**" button.
5. All lights on the display turn off for 5 seconds.
6. "**Initialized**" appears for 5 seconds in the display.
   - All settings, including network function settings, are initialized.
7. "**Initialized**" is displayed and the power turns off 90 seconds later.
   (The network device is started and initialized during this time.)

ELECTRICAL

SCHEMATIC DIAGRAMS

PRINTED CIRCUIT BOARDS

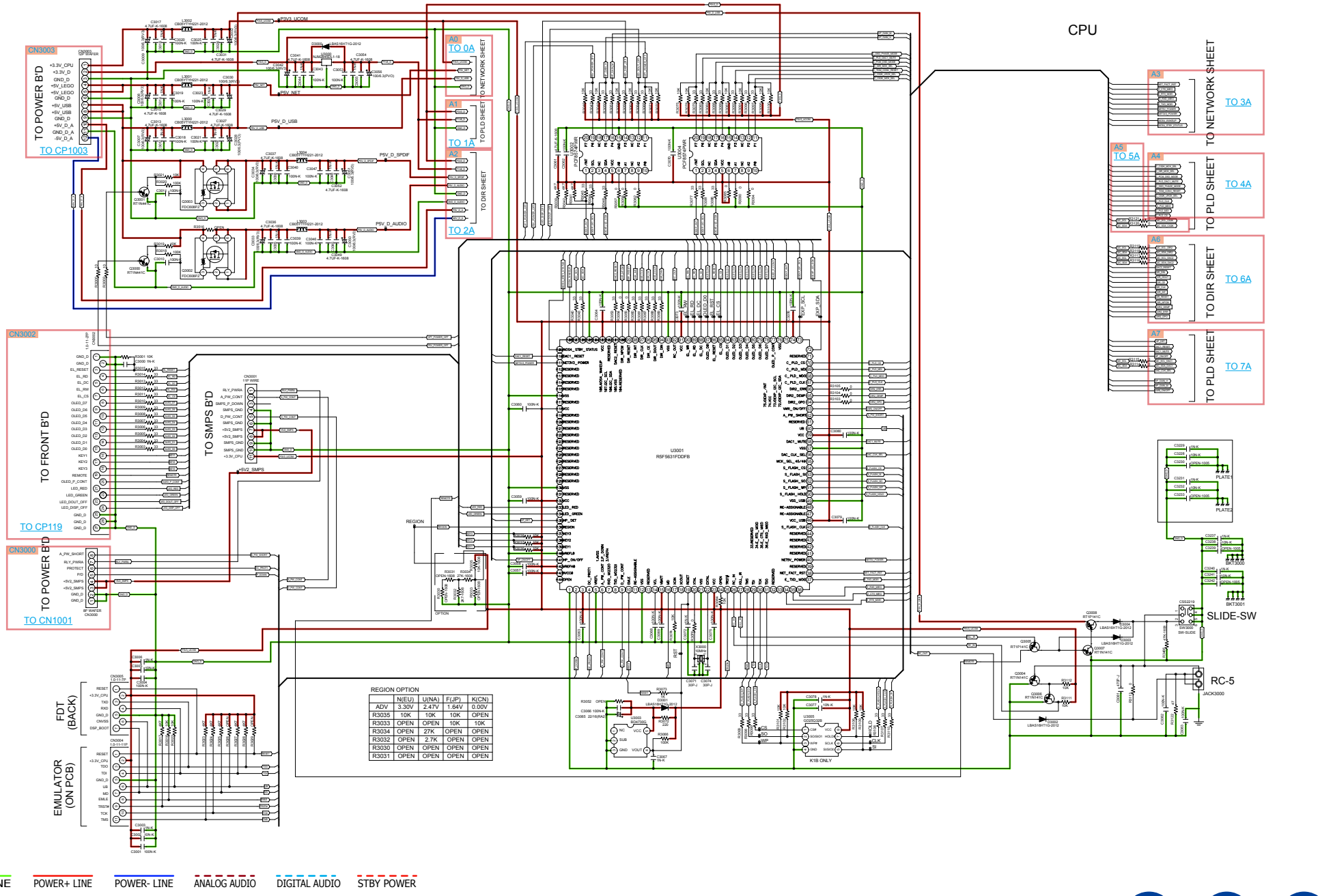
BLOCK DIAGRAM

POWER DIAGRAM

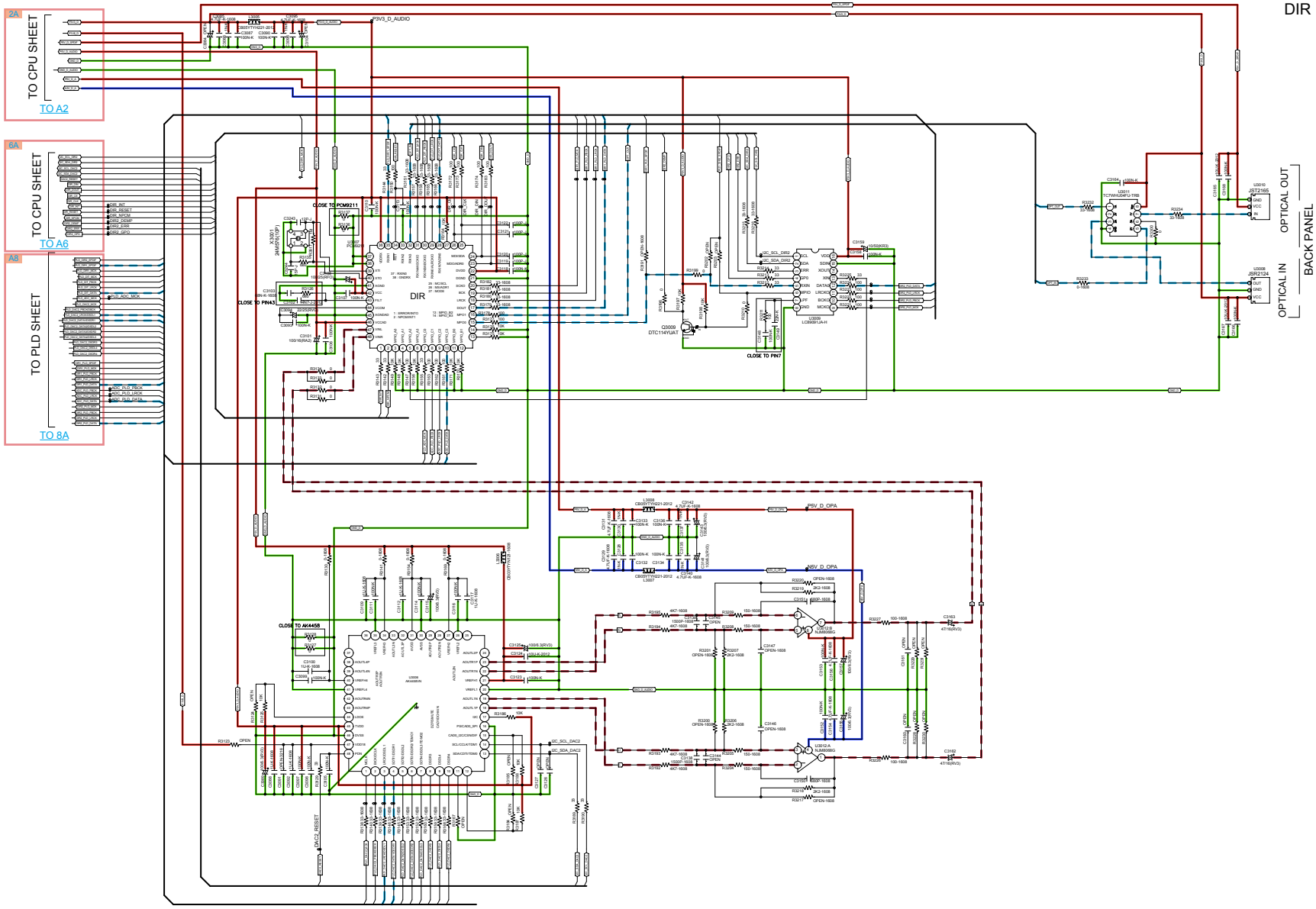
WIRING DIAGRAM

SEMICONDUCTORS

SCH01 CPU

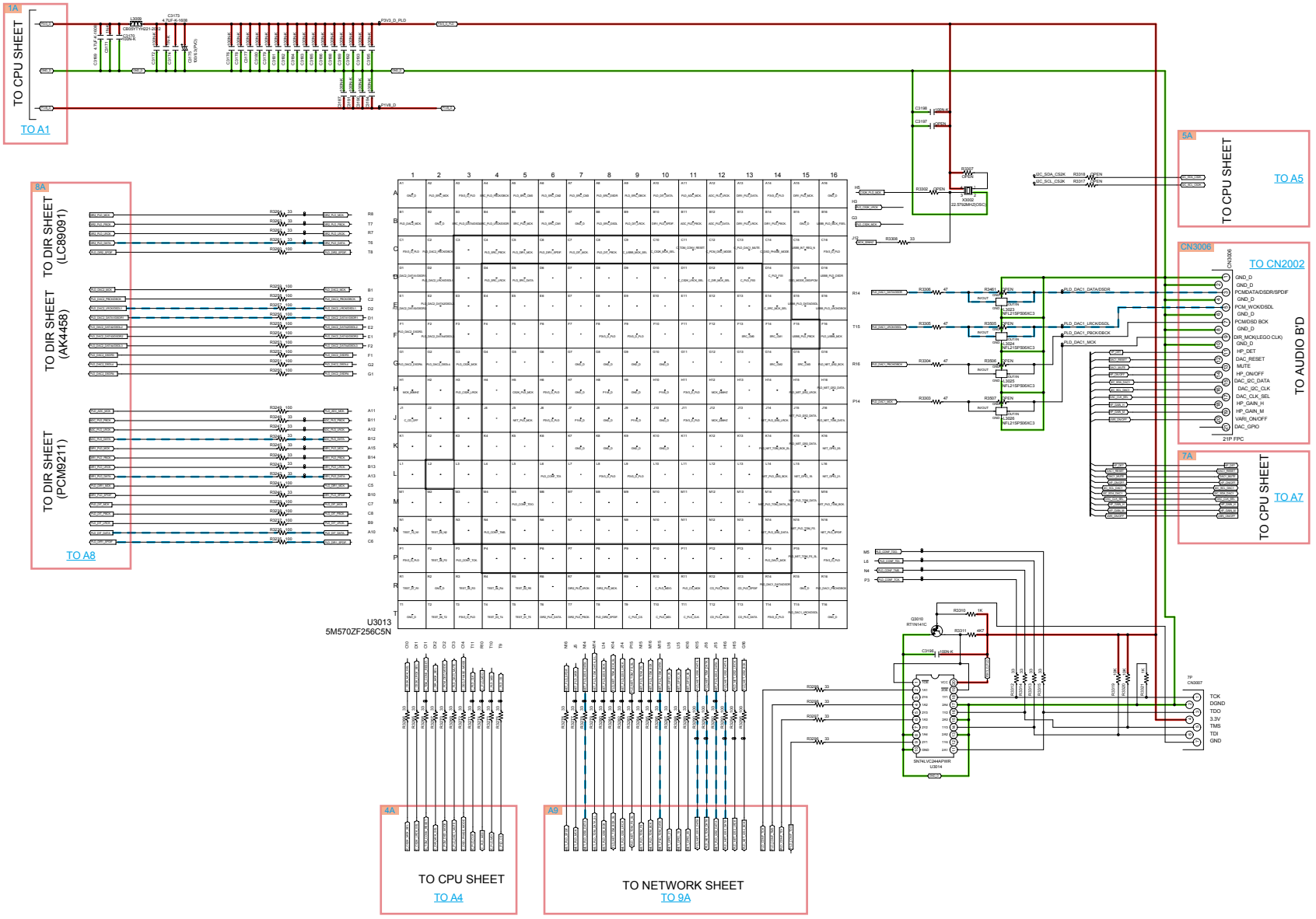


	N(EU)	U(NA)	F(JP)	K(CN)
ADV	3.30V	2.47V	1.64V	0.00V
R3035	10K	10K	10K	OPEN
R3033	OPEN	OPEN	10K	10K
R3034	OPEN	27K	OPEN	OPEN
R3032	OPEN	2.7K	OPEN	OPEN
R3030	OPEN	OPEN	OPEN	OPEN
R3031	OPEN	OPEN	OPEN	OPEN



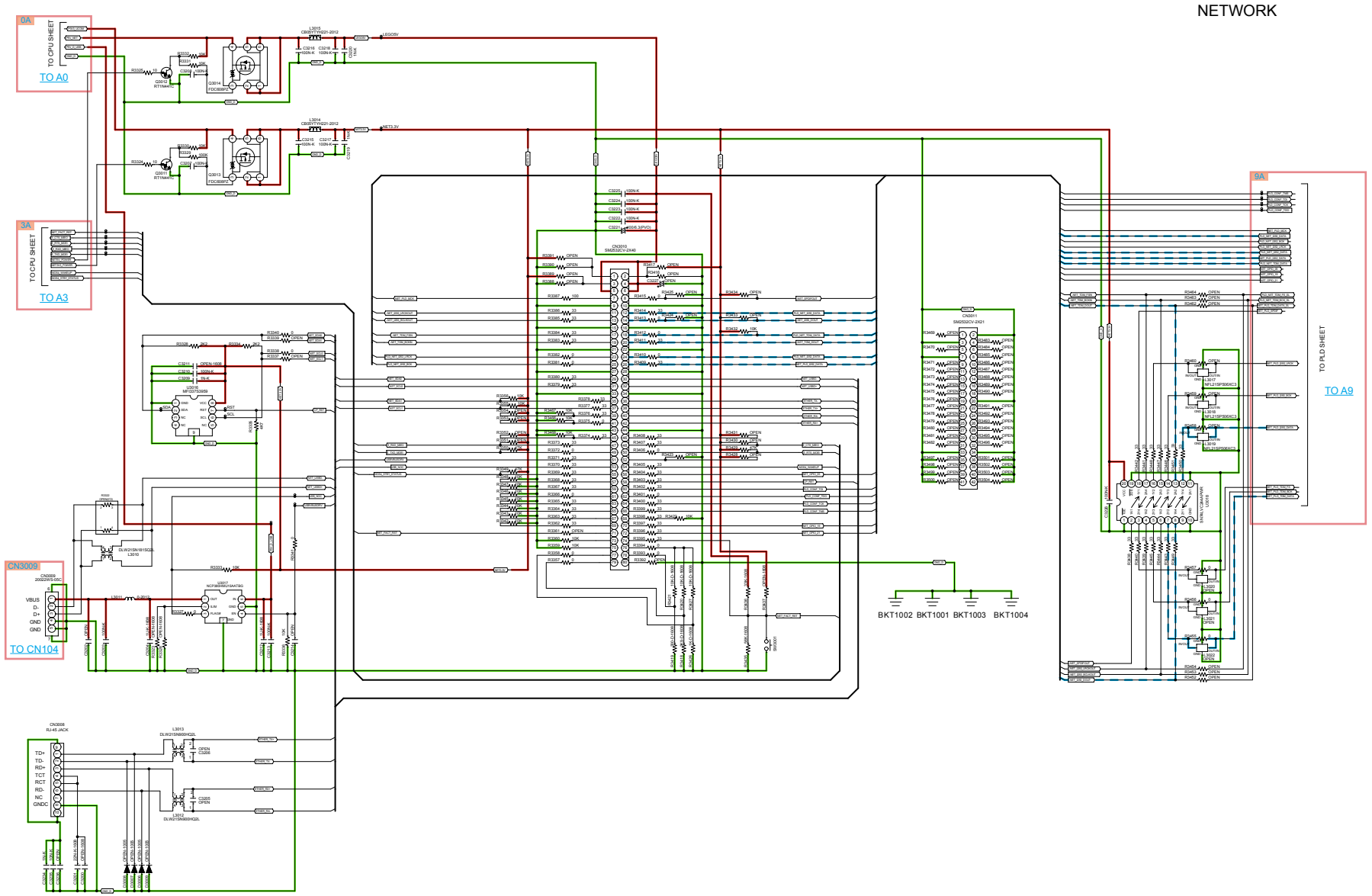
GND LINE POWER+ LINE POWER- LINE ANALOG AUDIO DIGITAL AUDIO STBY POWER

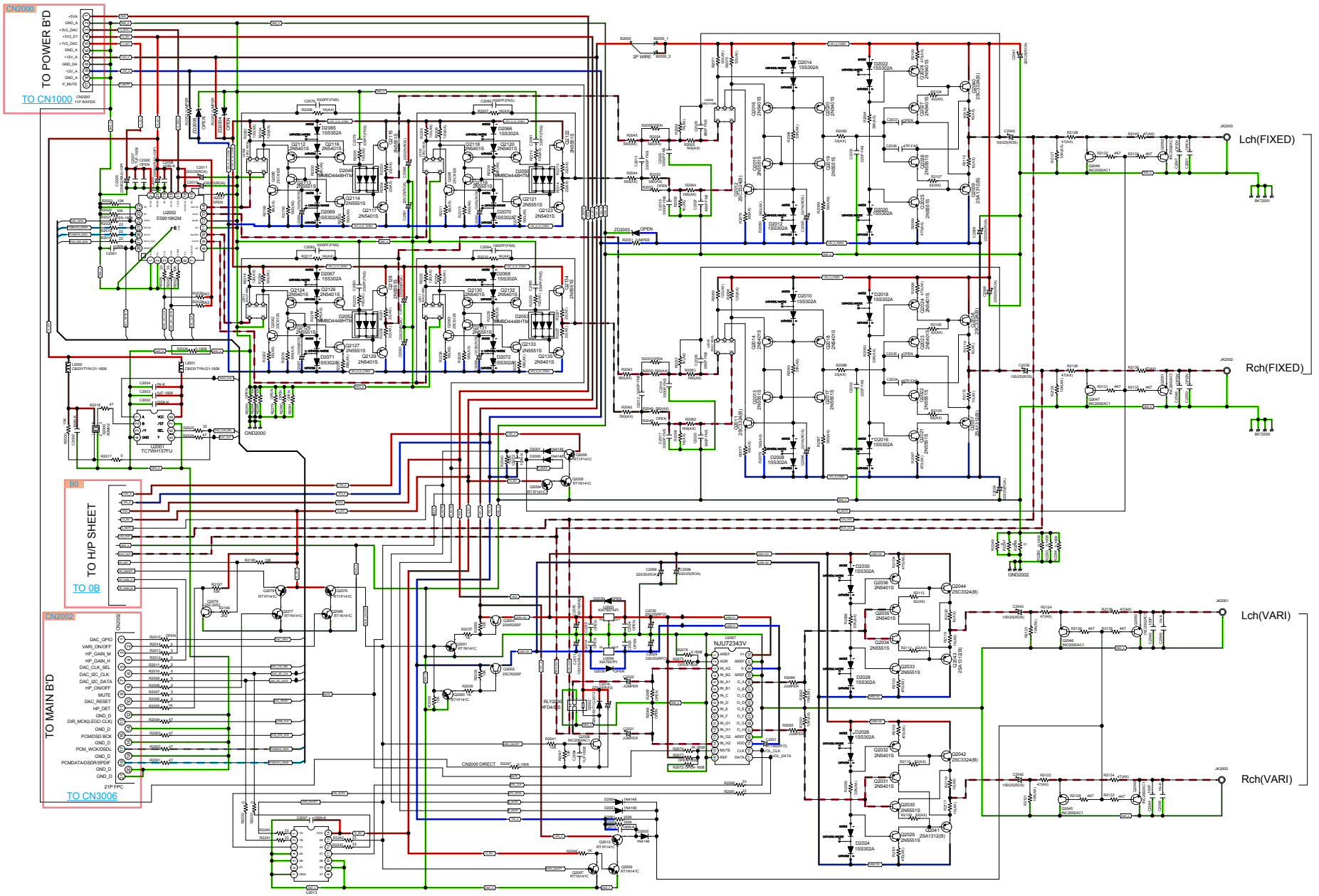
PLD

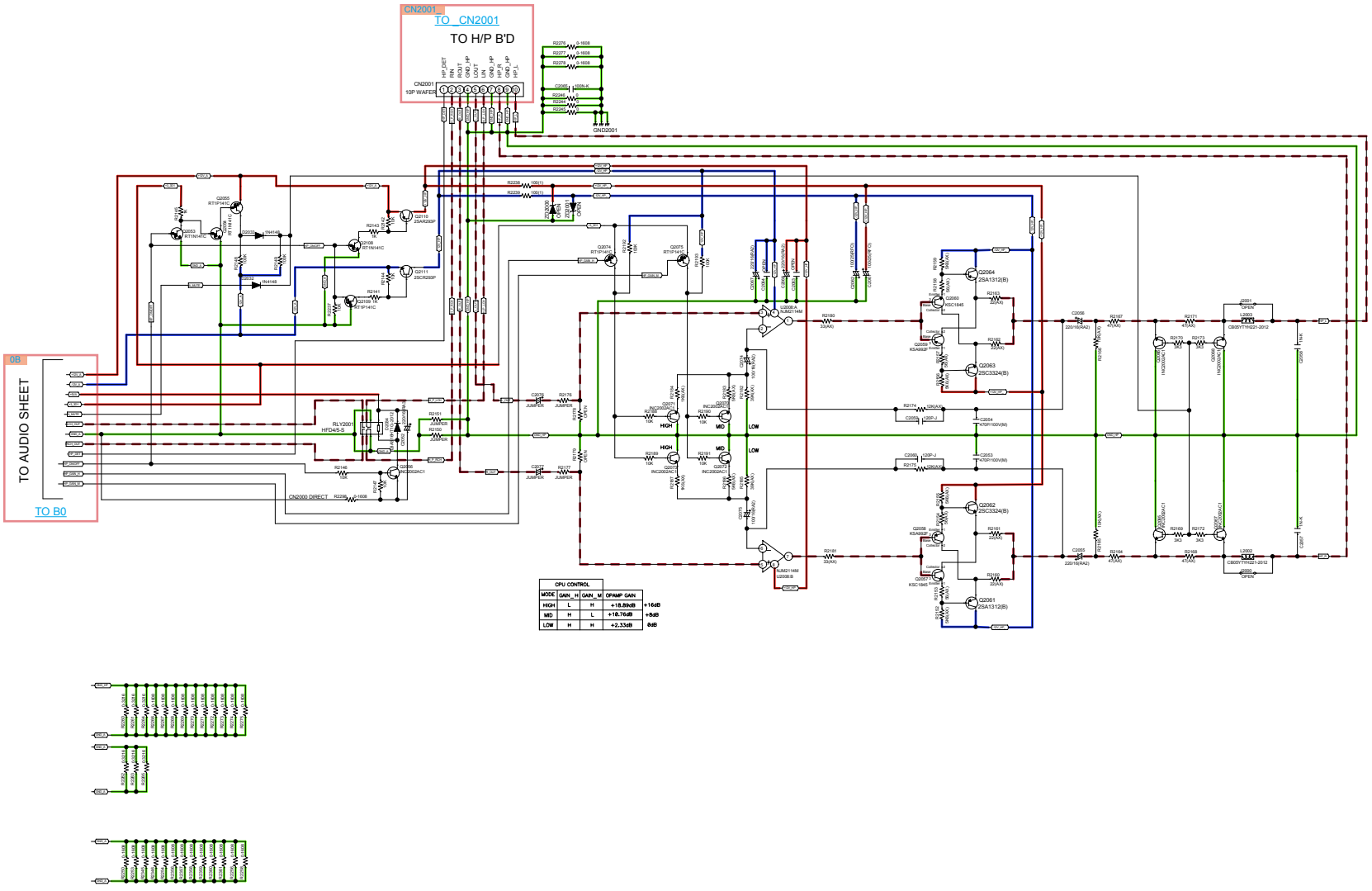


GND LINE POWER+ LINE POWER- LINE ANALOG AUDIO DIGITAL AUDIO STBY POWER

SCH04 NETWORK

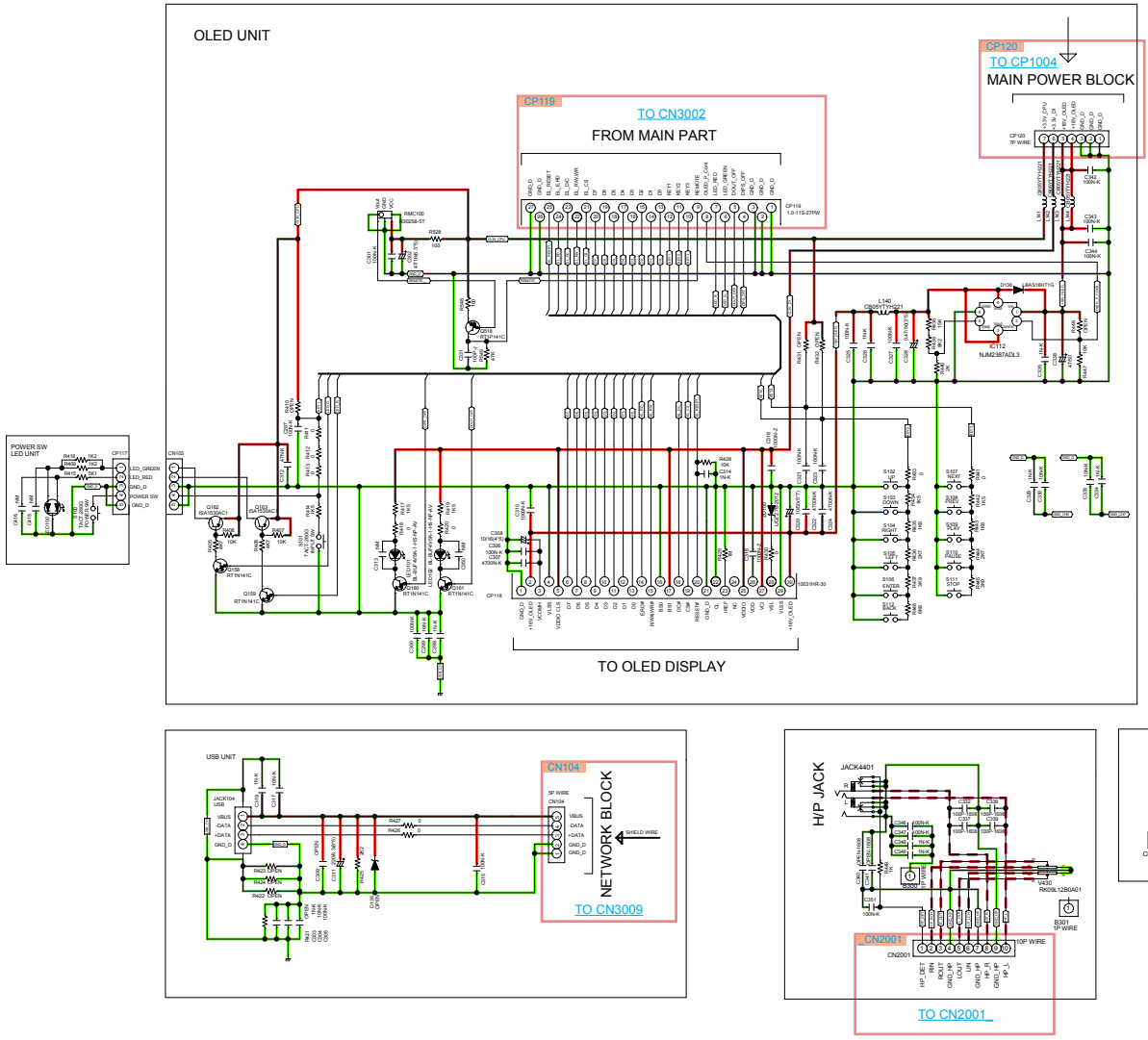



CN2000
TO POWER B'D
TO CN1000
B0
TO H/P SHEET
TO 0B
CN2002
TO MAIN B'D
TO CN3006
Lch(FIXED)
Rch(FIXED)
Lch(VARI)
Rch(VARI)
GND LINE
POWER+ LINE
POWER- LINE
ANALOG AUDIO
DIGITAL AUDIO
STBY POWER

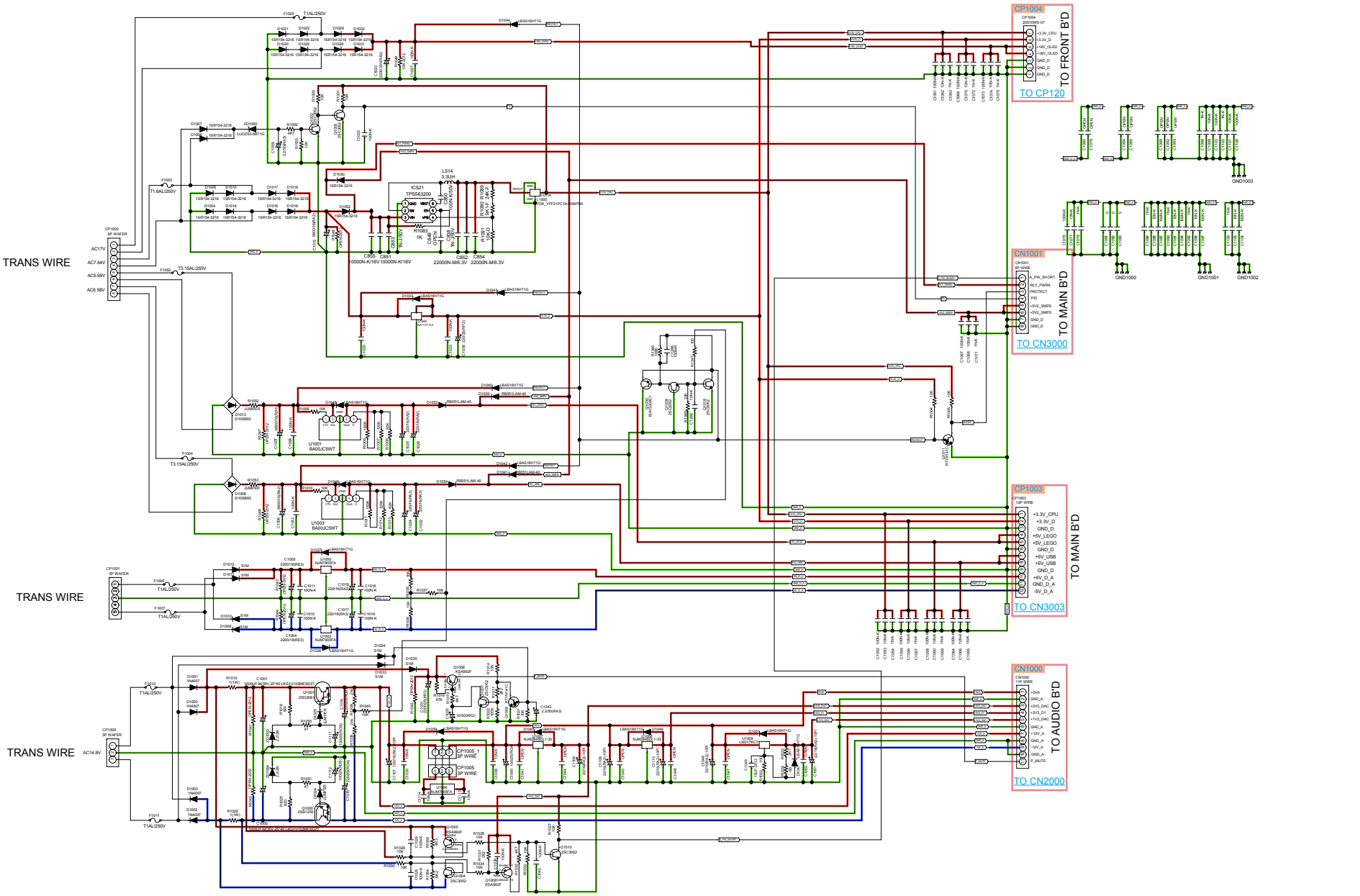


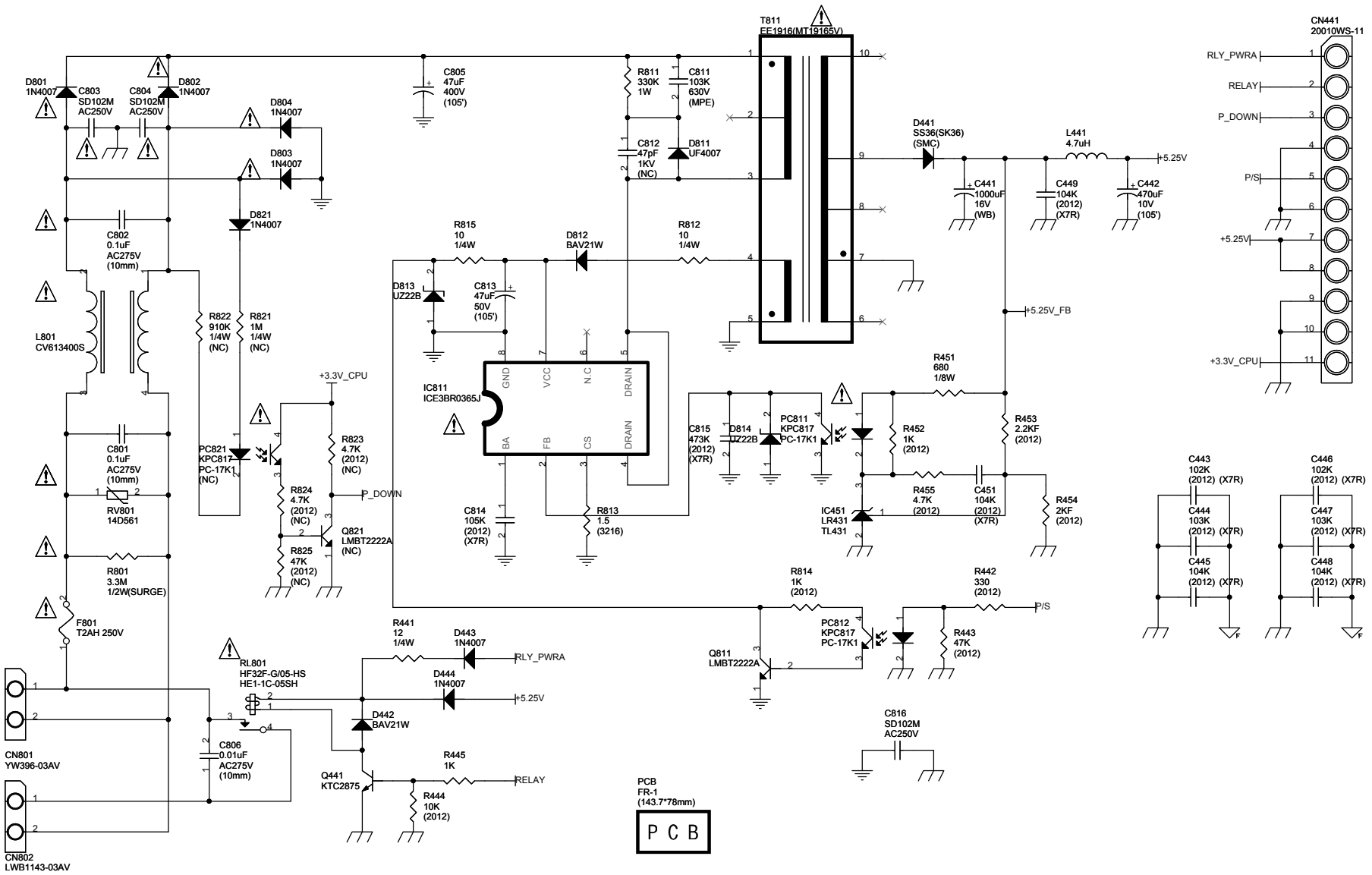
GND LINE POWER+ LINE POWER- LINE ANALOG AUDIO DIGITAL AUDIO STBY POWER

FRONT



GND LINE POWER+ LINE POWER- LINE ANALOG AUDIO DIGITAL AUDIO STBY POWER


TRANS WIRE
TRANS WIRE
TRANS WIRE
CP1004
TO FRONT B'D
TO CP120
CN1001
TO MAIN B'D
TO CN3000
CP1003
TO MAIN B'D
TO CN3003
CN1000
TO AUDIO B'D
TO CN2000
GND LINE
POWER+ LINE
POWER- LINE
ANALOG AUDIO
DIGITAL AUDIO
STBY POWER



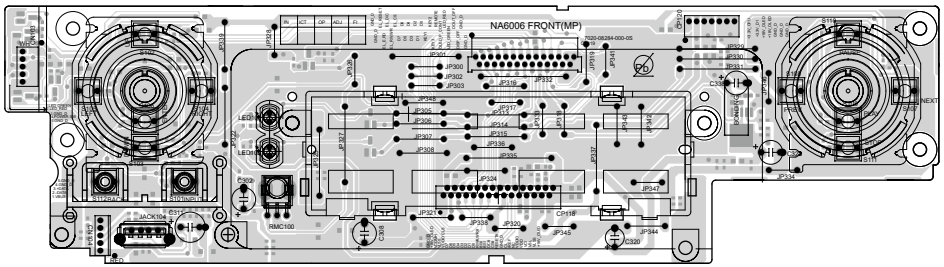
⚠ : To reduce the risk of electric shock, leakage current or resistance measurement shall be carried out before the appliance returned to the customer

PRINTED CIRCUIT BOARDS

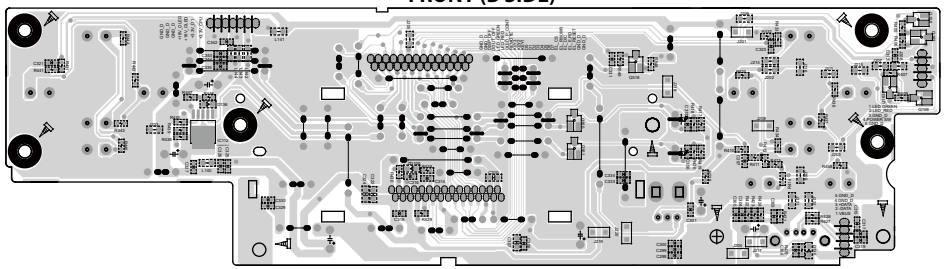
FRONT, HEADPHONE, POWER SW, WI-FI ANT L GUIDE, WI-FI ANT R GUIDE, FFC GUIDE, POWER

Lead-free Solder
When soldering, use the Lead-free Solder (Sn-Ag-Cu).

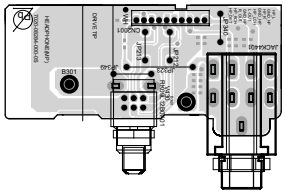
FRONT (A SIDE)



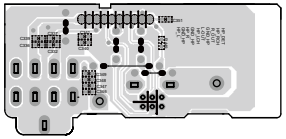
FRONT (B SIDE)



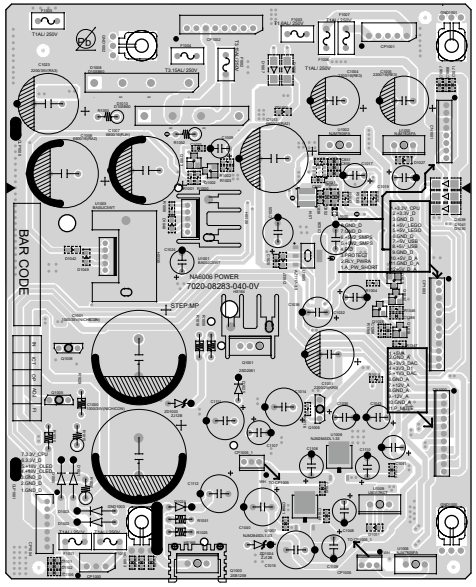
HEADPHONE (A SIDE)



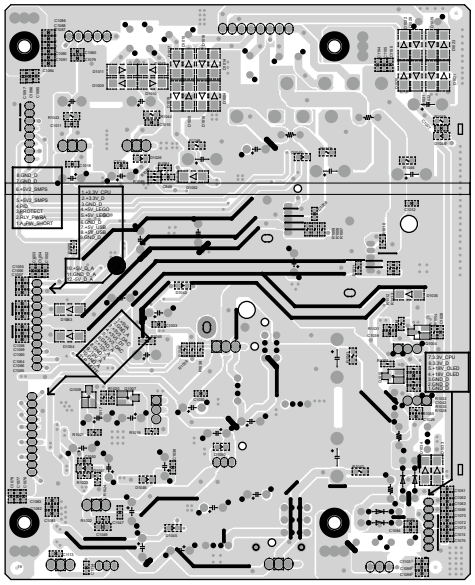
HEADPHONE VOL (B SIDE)



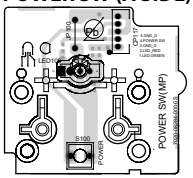
POWER (A SIDE)



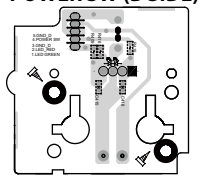
POWER (B SIDE)



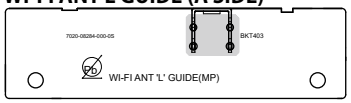
POWER SW (A SIDE)



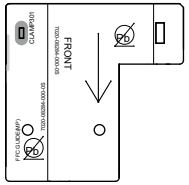
POWER SW (B SIDE)



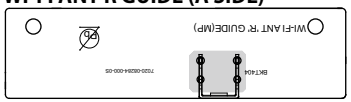
WI-FI ANT L GUIDE (A SIDE)



FFC GUIDE (A SIDE)

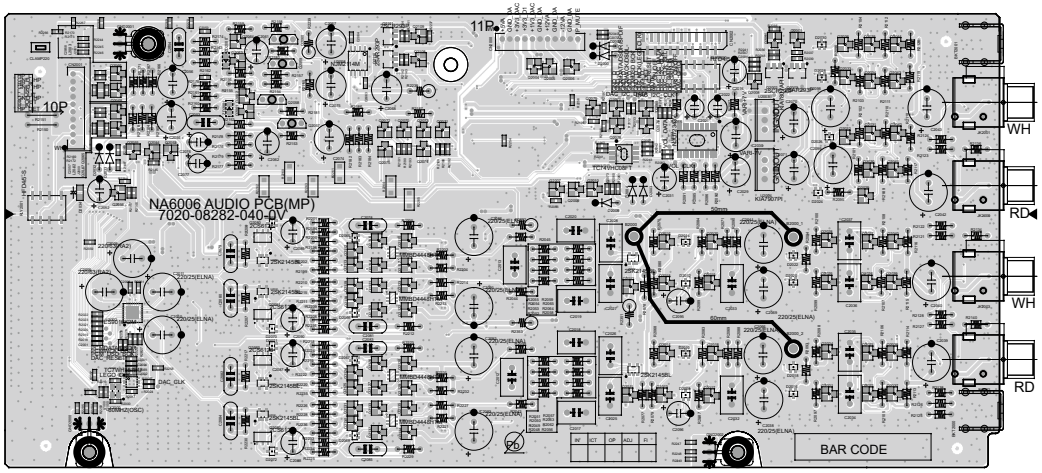


WI-FI ANT R GUIDE (A SIDE)

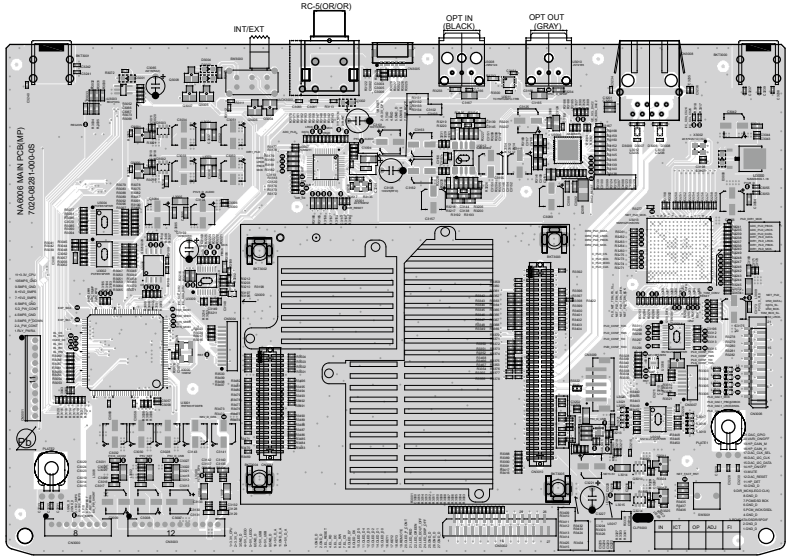


AUDIO, MAIN

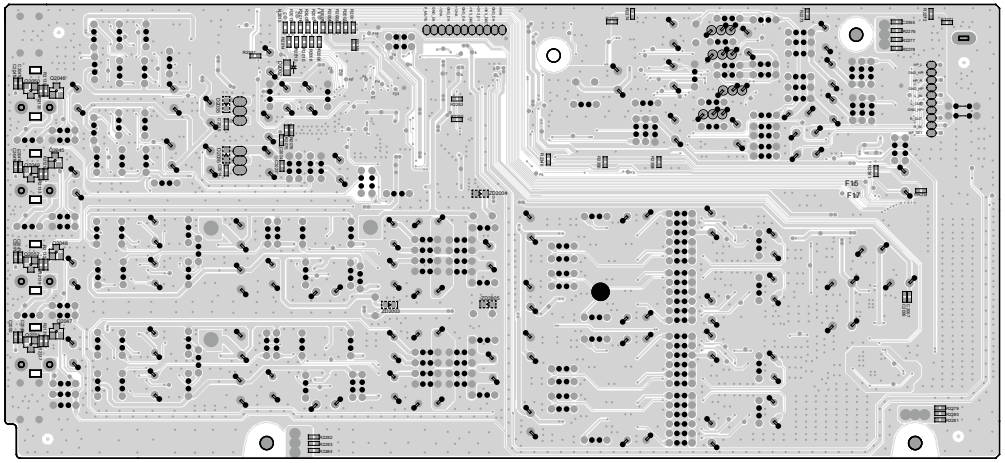
AUDIO (A SIDE)



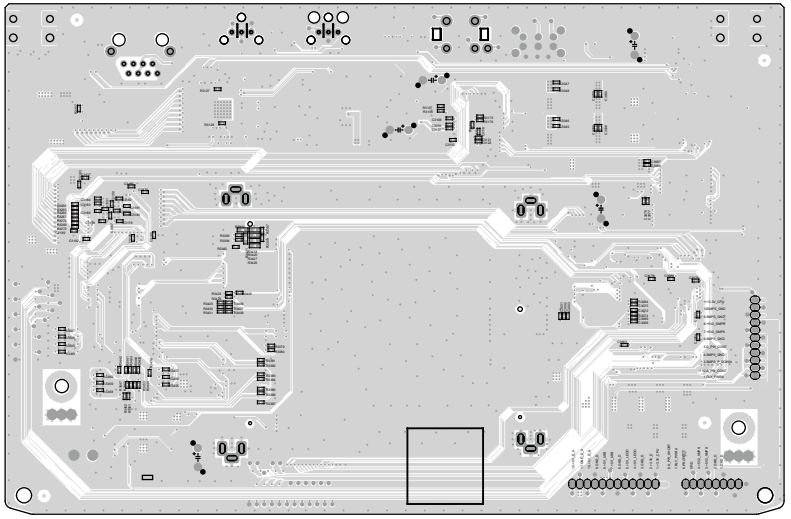
MAIN (A SIDE)



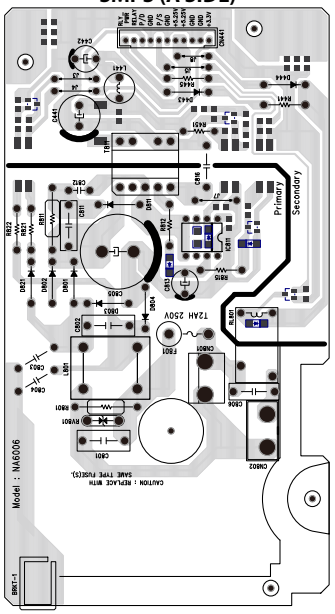
AUDIO (B SIDE)



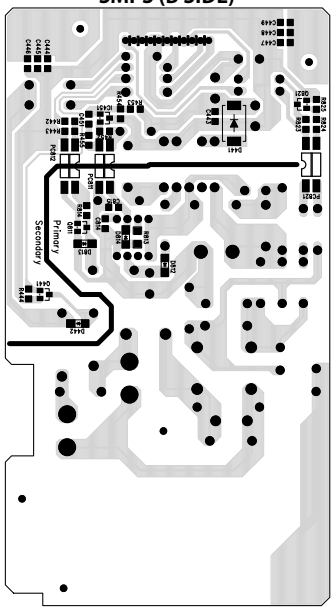
MAIN (B SIDE)



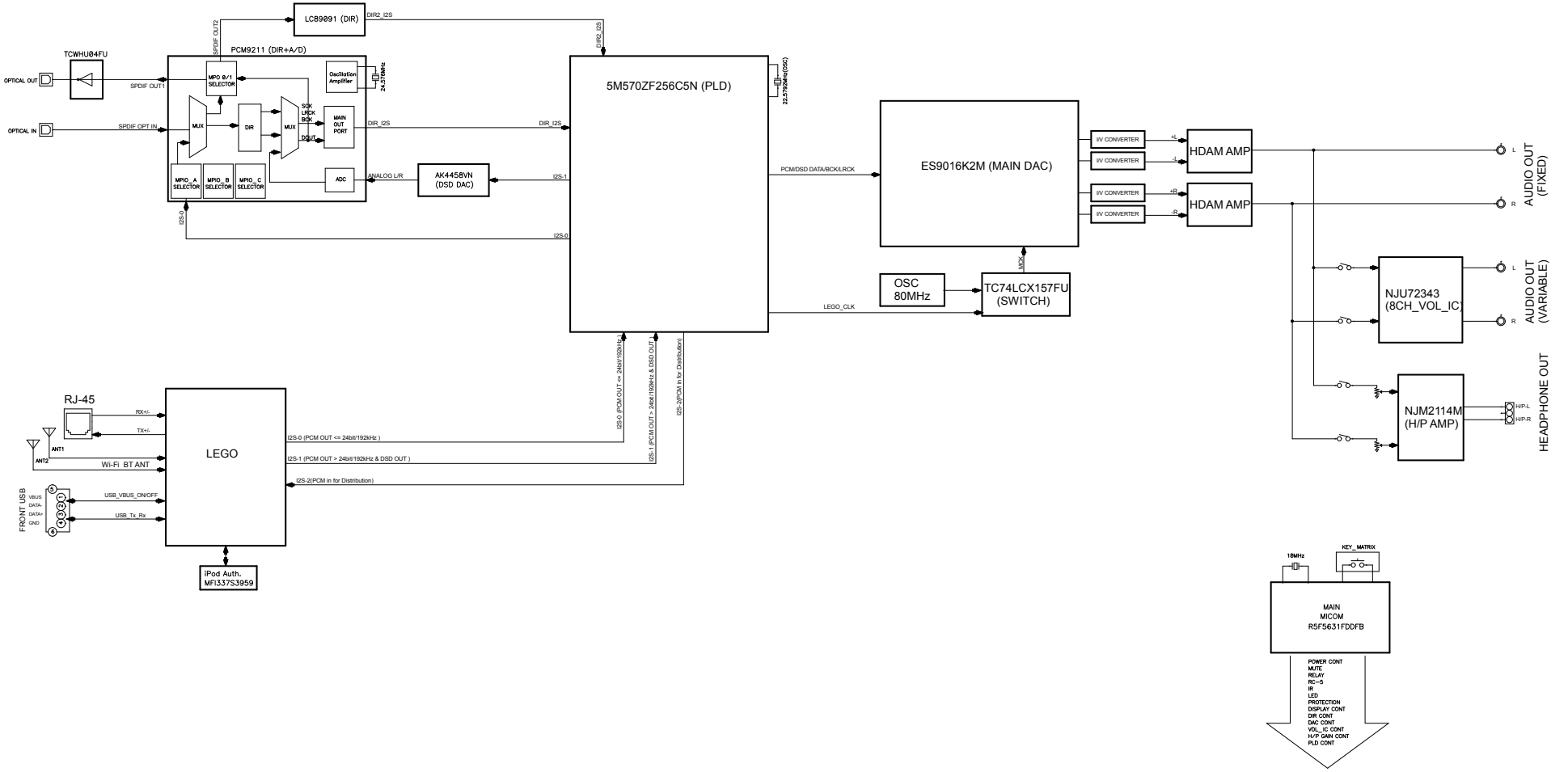
SMPS (A SIDE)



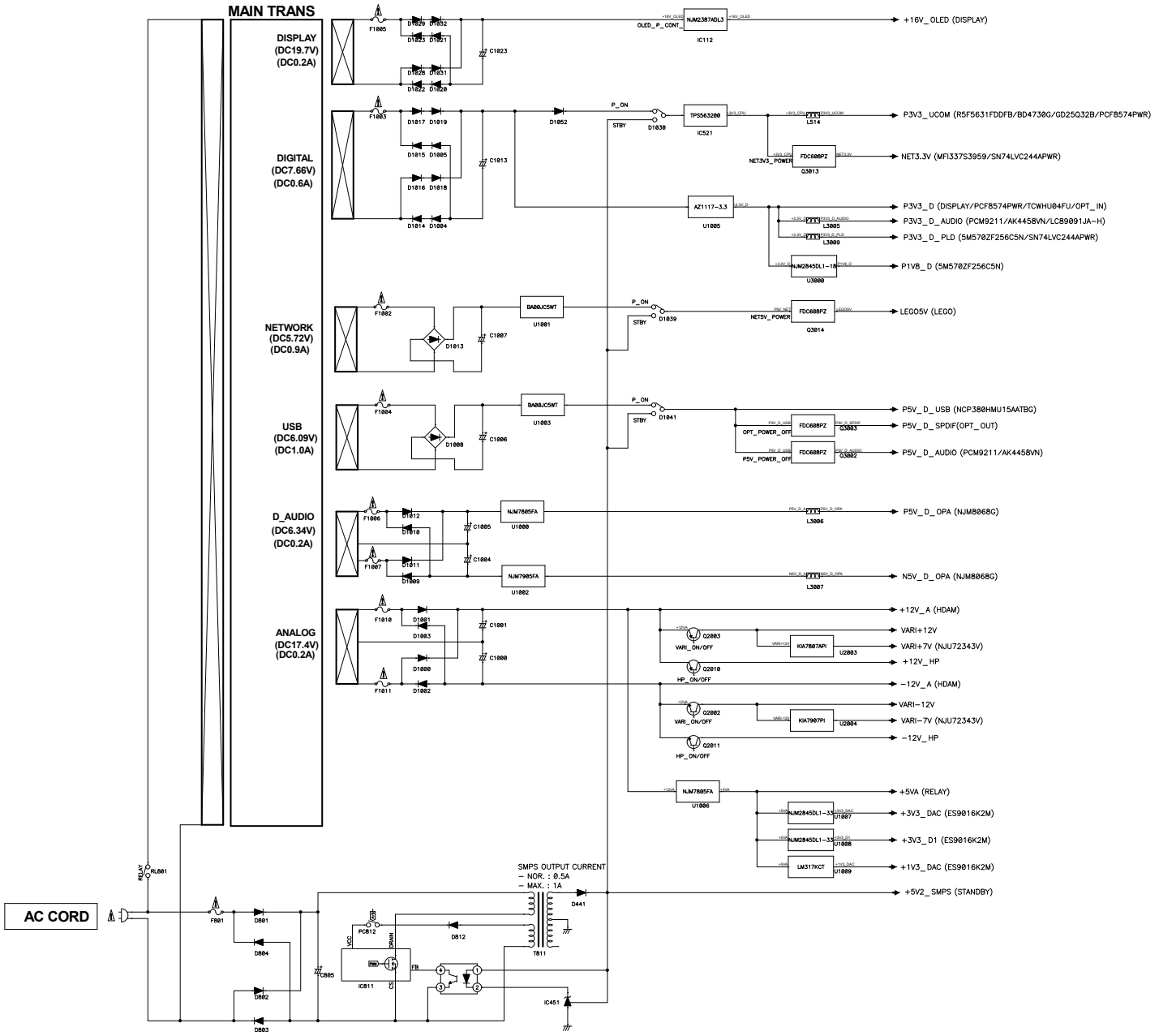
SMPS (B SIDE)



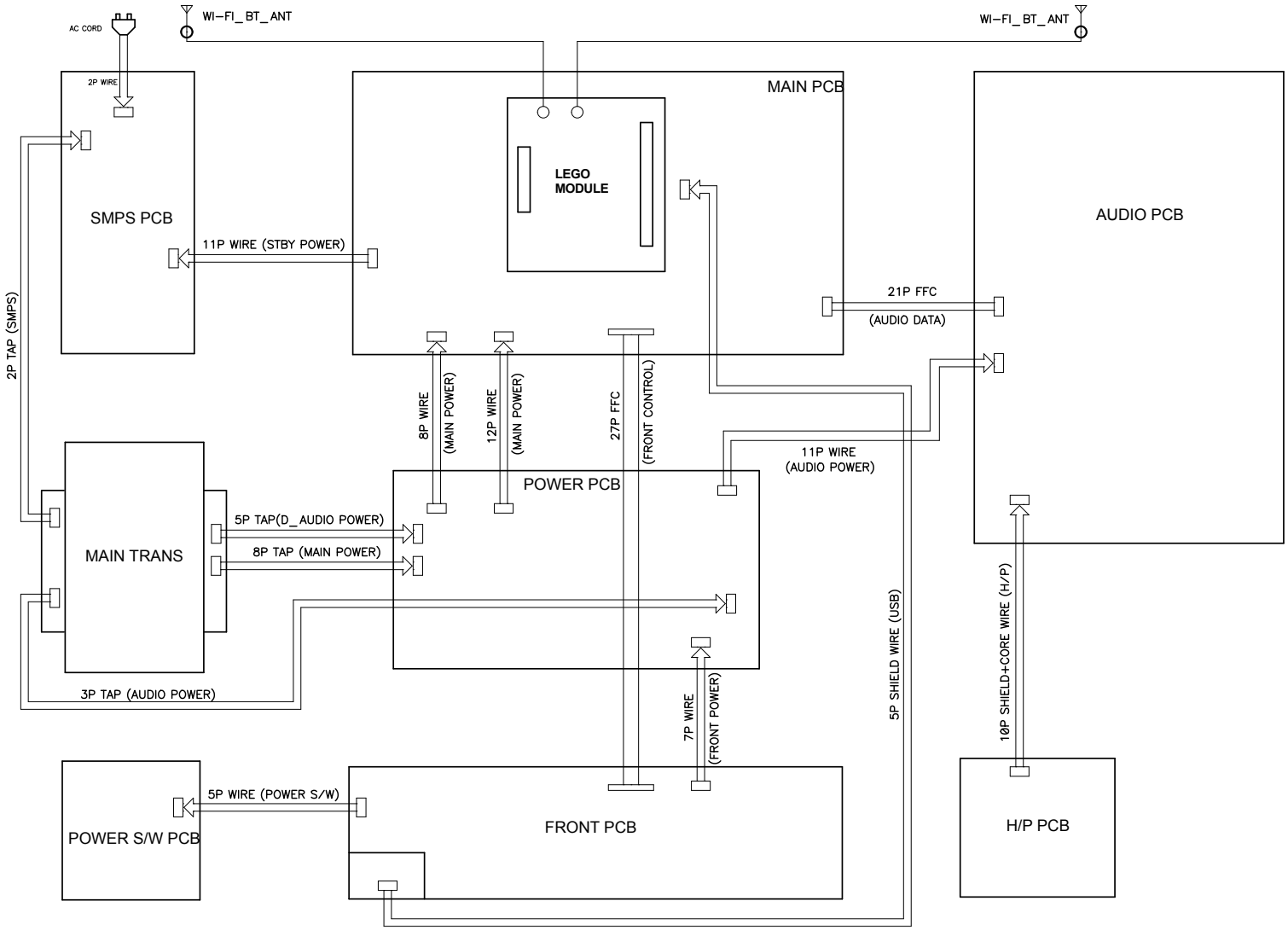
NA6006 AUDIO DIAGRAM



NA6006 VCC DIAGRAM



NA6006 WIRING DIAGRAM

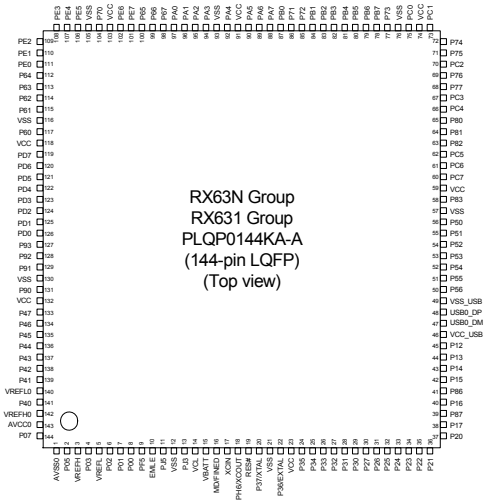


SEMICONDUCTORS

Only major semiconductors are shown, general semiconductors etc. are omitted to list.
The semiconductor which described a detailed drawing in a schematic diagram are omitted to list.

1. IC's

R5F5631FDDFB (DIGITAL : U3001)



MAIN MCU PORT MAP

Pin	Pin Name	Port Name	I/O	MODE SNTB		Function
				Nomal	Net-work	
1	AVSS0	AVSS				Ground Pin
2	P05/IRQ13	P_DOWN	I	I	I	Detect Power Down
3	VREFH	VREFH				Reference Power Supply Pin
4	P03/IRQ11	DC_PROT1	I	I	I	Detect DC Protection (Power Supply Short)
5	VREFL	VREFL				Ground Pin
6	P02/IRQ10/AN020	A_PW_CONT	O	O/L	O/L	Main Trans Power ON/OFF Control (H:ON, L:OFF)
7	P01/RXD6/IRQ9/AN019	RXD_MI2320				External data input port (for AMX/FW update via 232C) :Connector is FFC
8	P00/TXD6/IRQ8/AN018	TXD_MO2321				External data output port (for AMX/FW update via 232C) :Connector is FFC
9	PF5/IRQ4	D_PW_CONT	O	O/L	O/L	SMPS Power ON/OFF Control (H:OFF, L:ON)
10	EMLE	EMLE				E20 Emulator control pin (On chip Emulator is used,this pin should be High. Not used,it should be Low)
11	PJ5	R E _ ASSGNABLE				[Unused] EEPROM "R1EX24128BSAS0I" Control pin
12	VSS	VSS				Ground Pin
13	PJ3	RESERVED				[Unused] EEPROM "R1EX24128BSAS0I" Control pin
14	VCL	VCL				Smoothing Capacitor Connection Pin (0.1uF)
15	VBATT	VBATT				Power supply pin
16	MD/FINED	MD				Pins for setting the operating mode(select the Boot Mode or User Boot Mode,Single Chip Mode)
17	XCIN	XCIN				
18	XCOUT	XCOUT				NC (Open)
19	RES#	RESET				Reset Signal Input Pin
20	XTAL/P37	XTAL				Pins for a crystal resonator (Xin=10MHzx10)
21	VSS	VSS				Ground Pin
22	EXTAL/P36	EXTAL				Pins for a crystal resonator (Xin=10MHzx10)
23	VCC	VCC				Power supply pin.
24	P35(IN)/NMI	OPEN				Input only. Not use. Pull up.
25	TRST#/P34/IRQ4	TRST#				E20 Emulator control pin/When normal operating mode,set to input.
26	P33/TIOCD0/RXD6/RXD0/IRQ3-DS	RC_IN	I	I	I	Remote Input
27	P32/TXD6/TXD0/IRQ2-DS	KILL_IR	O	O	O	Power Off the INT Remote Receiver when EXT Remote Control Mode.
28	TMS/P31/IRQ1-DS	TMS				E20 Emulator control pin/When normal operating mode,set to input.
29	TDI/P30/RXD1/IRQ0-DS	TDI				E20 Emulator control pin/Mitsubishi writter control pin/When normal operating mode,set to input.
30	TCK/FINEC/P27	TCK				E20 Emulator control pin//When normal operating mode,set to input.
31	TDO/P26/TXD1	TDO				E20 Emulator control pin/Mitsubishi writter control pin/When normal operating mode,set to input.
32	P25/RXD3	RESERVED				for other model.
33	P24	RESERVED				for other model.
34	P23/TXD3	E_RTS_MOEI	O	O	O	Ethernet (LEGO) Control Pin
35	P22/SCK0	E_CTS_MIEO	I	I	I	Ethernet (LEGO) Control Pin
36	P21/RXD0/IRQ9	E_RXD_MIEO	O	O	O	Ethernet (LEGO) Control Pin
37	P20/TXD0/IRQ8	E_TXD_MOEI	O	O	O	Ethernet (LEGO) Control Pin
38	P17/TXD3/IRQ7	NET_FACT_RST	O	O/L	O/H	Ethernet (LEGO) Control Pin
39	P87	RESERVED				would not assign a port.

Pin	Pin Name	Port Name	I/O	MODE SNTB		Function
				Nomal	Net-work	
40	P16/TXD1/RXD3/IRQ6	NET5V_POWER	O	O	O	Ethernet Power Supply (NET5V) Control Pin
41	P86	RESERVED				would not assign a port.
42	P15/RXD1/IRQ5	RESERVED				would not assign a port.
43	P14/IRQ4	RESERVED				would not assign a port.
44	P13/TXD2/IRQ3	RESERVED				would not assign a port.
45	P12/RXD2/IRQ2	S_FLASH_CLK	O	O/L	O/L	[K(CN) Region Model Only] GD25Q32-6P, CLK
46	VCC_USB	VCC_USB				Power Supply Pin
47	USB0_DM	RE-ASSIGNABLE				NC (Open)
48	USB0_DP	RE-ASSIGNABLE				NC (Open)
49	VSS_USB	VSS_USB				Ground pin
50	P56	S_FLASH_HOLD	I/O	I	I	[K(CN) Region Model Only] GD25Q32-7P,HOLD# (IO3)
51	P55/IRQ10	S_FLASH_WP	I/O	I	I	[K(CN) Region Model Only] GD25Q32-3P,WP# (IO2)
52	P54	S_FLASH_SO	I/O	I	I	[K(CN) Region Model Only] GD25Q32-2P,SO (IO1)
53	BCLK/P53	S_FLASH_SI	I/O	I	I	[K(CN) Region Model Only] GD25Q32-5P,SI (IO0)
54	P52/RXD2	S_FLASH_CS	O	O/L	O/L	[K(CN) Region Model Only] GD25Q32-1P, CS
55	P51/SCK2	MCK_SEL_45/49	O	O/L	O/L	DAC Input MCK Select (49MHz(H) or 45MHz(L))
56	P50/TXD2	DAC_CLK_SEL	O	O/L	O/L	DAC Input MCK Select (80MHz(H) or 45MHz/49MHz(L))
57	VSS	VSS				Ground Pin
58	P83	DAC1_MUTE	O	O/L	O/L	DAC1 (Fixed Out, Variable Out, H/P Out) Mute Control Pin
59	VCC	VCC				Power Supply Pin.
60	PC7/TXD8/IRQ14	UB				Emulator Connection Pin
61	PC6/RXD8/IRQ13	RESERVED				OPEN
62	PC5	A_PW_SHORT	I	I	I	Detect DC Protection (Audio B'D Power Supply Short) (EVOL_CLK => A_PW_SHORT)
63	P82/TXD10	VARI_ON/OFF	O	O/L	O/L	Power Off the Variable Out Circuit (EVOL_DATA => VARI_ON/OFF)
64	P81/RXD10	DIR2_GPO	I	I	I	DIR2 (LC89091JA) General Purpose Signal Input
65	P80/SCK10	DIR2_DEMP	I	I	I	DIR2 (LC89091JA) De-Emphasis Flag Input
66	PC4	DIR2_ERR	I	I	I	DIR2 (LC89091JA) S/PDIF Unlock Flag Input
67	PC3/TXD5	C_PLD_CLK	O	O/L	O	PLD Control Data Clock Output
68	P77/TXD11	C_PLD_MDO	I	I	I	PLD Control Data Input
69	P76/RXD11	C_PLD_MDI	O	O/L	O	PLD Control Data Output

Pin	Pin Name	Port Name	I/O	MODE SNTB		Function
				Nomal	Net-work	
70	PC2/RXD5	C_PLD_CS	O	O/L	O	PLD Control Data Chip Select
71	P75	RESERVED				OPEN
72	P74	IOEXP_I2C_SDA	I/O	I/O	I/O	I/O Expander I2C SDA
73	PC1	IOEXP_I2C_SCL	I/O	I/O	I/O	I/O Expander I2C SCL
74	VCC	VCC				Power Supply Pin
75	PC0	IOEXP_/INT	I	I	I	I/O Expander INT input
76	VSS	VSS				Ground pin
77	P73	OLED_P_CONT	O	O/L	O	OLED Power Control Pin
78	PB7/TXD9	OLED_D7	O	O/L	I	Data bus for OLED
79	PB6/RXD9	OLED_D6	O	O/L	I	Data bus for OLED
80	PB5	OLED_D5	O	O/L	I	Data bus for OLED
81	PB4	OLED_D4	O	O/L	I	Data bus for OLED
82	PB3	OLED_D3	O	O/L	I	Data bus for OLED
83	PB2	OLED_D2	O	O/L	I	Data bus for OLED
84	PB1/TXD4/TXD6	OLED_D1	O	O/L	I	Data bus for OLED
85	P72	EL_CS	O	O/L	O/L	If logic level "L", Enable communication with OLED.
86	P71	EL_RESET	O	O/L	O/L	OLED RESET Pin. Logic Level "L"=RESET
87	PB0/RXD4/RXD6/IRQ12	OLED_D0	O	O/L	I	Data bus for OLED
88	PA7	EL_DC	O	O/L	O/L	Data/Commando Switch. "H"=Data, "L"=Command
89	PA6	EL_RD	O	O/L	O/L	EL Read
90	PA5	EL_RW	O	O/L	O/L	EL Write
91	VCC	VCC				Power Supply Pin
92	PA4/TXD5/IRQ5-DS	RC_OUT	O	O/L	O/L	NA6006 only, DNP800 is Open.
93	VSS	VSS				Ground Pin
94	PA3/RXD5/IRQ6-DS	DIR_DIN	O	O/L	O/L	DIR (PCM9211) Control Pin
95	PA2/RXD5	DIR_DOUT	I	I	I	DIR (PCM9211) Control Pin
96	PA1/MTIOC0B/IRQ11	DIR_CE	O	O/L	O/L	DIR (PCM9211) Control Pin
97	PA0	DIR_CLK	O	O/L	O/L	DIR (PCM9211) Control Pin
98	P67/IRQ15	DIR_INT	I	I	I	DIR (PCM9211) Control Pin
99	P66	DIR_RESET	O	O/L	O/L	DIR (PCM9211) Control Pin
100	P65	DIR_NPCM	I	I	I	DIR (PCM9211) Control Pin
101	PE7/IRQ7/AN5	DAC2_RESET	O	O/L	O/L	DAC2 (AK4458VN) Reset Pin
102	PE6/IRQ6/AN4	RESERVED				NA6006, DNP800 are open. (no MOS USB and DAC) Pull up.
103	VCC	VCC				Power Supply Pin
104	P70	RESERVED				NA6006, DNP800 are open. (no MOS USB and DAC) Pull up.
105	VSS	VSS				Ground Pin
106	PE5/IRQ5/AN3	I2C_SDA	I/O	I	I	NA6006,DNP800 are no XMOS.
107	PE4/AN2	I2C_SCL	I/O	I	I	NA6006,DNP800 are no XMOS.

Pin	Pin Name	Port Name	I/O	MODE SNTB		Function
				Nomal	Net-work	
108	PE3	AIOS4_ WAKEUP	O	O/L	O/H	Ethernet(LEGO) control pin for Standby(High:Normal,Low:Deep Standby)
109	PE2/RXD12/IRQ7-DS/ AN0	AIOS4_STBY_ STATUS	I/O			Status pin for UART communication with LEGO(L:not-available, H：available)
110	PE1/TXD12	DAC1_RESET	O	O/L	O/L	ES9016K2M Reset
111	PE0	NET3V3_ POWER	O	O/L	O/H	"P3V_UCOM" to "NET3.3V" Power Supply Control
112	P64	RESERVED				NA6006 Open
113	P63	RESERVED				NA6006 Open
114	P62	RESERVED				NA6006 Open
115	P61	RESERVED				NA6006 Open
116	VSS	VSS				Ground Pin
117	P60	RESERVED				NA6006 Open
118	VCC	VCC				Power Supply Pin
119	PD7/IRQ7/AN7	RESERVED				NA6006 Open
120	PD6/IRQ6/AN6	RESERVED				NA6006 Open
121	PD5/IRQ5/AN013	RESERVED				NA6006 Open
122	PD4/IRQ4/AN012	RESERVED				NA6006 Open
123	PD3/IRQ3/AN011	RESERVED				NA6006 Open
124	PD2/IRQ2/AN010	RESERVED				NA6006 Open
125	PD1/IRQ1/AN009	RESERVED				NA6006 Open
126	PD0/TIOCA7/IRQ0/ AN008	RESERVED				NA6006 Open
127	P93/AN017	RESERVED				NA6006 Open
128	P92/RXD7/AN016	RESERVED				NA6006 Open
129	P91/AN015	RESERVED				NA6006 Open
130	VSS	VSS				Ground Pin
131	P90/TXD7/AN014	RESERVED				NA6006 Open
132	VCC	VCC				Power Supply Pin
133	P47/IRQ15-DS/AN007	LED_RED	O	O/L	O/H	RED LED Control
134	P46/IRQ14-DS/AN006	LED_GREEN	O	O/L	O/L	GREEN LED Control
135	P45/IRQ13-DS/AN005	HP_DET	I	I	I	H/P Plug Insert Detection
136	P44/IRQ12-DS/AN004	REGION	I	I	I	Region Discrimination Input
137	P43/IRQ11-DS/AN003	KEY3	I	I	I	Key Control Signal Input Pin (When standby mode, set to inturrupt)
138	P42/IRQ10-DS/AN002	KEY2	I	I	I	Key Control Signal Input Pin (When standby mode, set to inturrupt)
139	P41/IRQ9-DS/AN001	KEY1				Key Control Signal Input Pin (When standby mode, set to inturrupt)
140	VREFL0	VREFL0	I	I	I	Ground Pin
141	P40/IRQ8-DS/AN000	HP_ON/OFF	O	O/L	O/L	H/P Circuit ON/OFF Control
142	VREFH0	VREFH0				Power Supply Pin
143	AVCC0	AVCC0				Power Supply Pin
144	P07/IRQ15	OPEN				OPEN

PCF8574APWR (MAIN : U3002, U3004)

Terminal Function

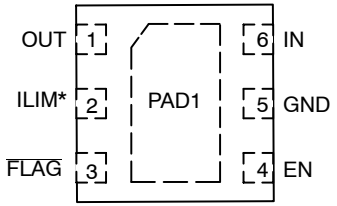
Pin Functions

PIN				TYPE	DESCRIPTION
NAME	RGY	DGV or PW	DW or N		
A[0..2]	6, 7, 9	6, 7, 9	1, 2, 3	I	Address inputs 0 through 2. Connect directly to V_{CC} or ground. Pullup resistors are not needed.
GND	15	15	8	—	Ground
$\overline{INT}$	1	1	13	O	Interrupt output. Connect to V_{CC} through a pullup resistor.
NC	3, 8, 13, 18	3, 8, 13, 18	-	—	Do not connect
P[0..7]	10, 11, 12, 14, 16, 17, 19, 20	10, 11, 12, 14, 16, 17, 19, 20	4, 5, 6, 7, 9, 10, 11, 12	I/O	P-port input/output. Push-pull design structure.
SCL	2	2	14	I	Serial clock line. Connect to V_{CC} through a pullup resistor
SDA	4	4	15	I/O	Serial data line. Connect to V_{CC} through a pullup resistor.
V_{CC}	5	5	16	—	Voltage supply

I/O Expander (U3002,U3004), Open Drain

Addr. Port	Port Name	ND8006 Function name	Hardware PD/PU	I/O	Nor-mal STBY.	Net-work STBY.	Detail of Function
0x38	U1001, P0	CD_OFF	PU (P3V3_UCOM) 4.7kohms	O	O/L	O/L	CD Power Control
0x38	U1001, P1	OPT_POWER_OFF	PU (P3V3_UCOM) 10kohms	O	O/L	O/L	S/PDIF Output Jack Power Control
0x38	U1001, P2	LED_DOUT_OFF	PU (P3V3_UCOM) 10kohms	O	O/L	O/L	Digital Out OFF-mode Indicator LED Control
0x38	U1001, P3	LED_DISP_OFF	PU (P3V3_UCOM) 10kohms	O	O/L	O/L	Display OFF-mode Indicator LED Control
0x38	U1001, P4	HP_GAIN_H	PU (P3V3_UCOM) 10kohms	O	O/L	O/L	Headphone Amp. Gain = High
0x38	U1001, P5	HP_GAIN_M	PU (P3V3_UCOM) 10kohms	O	O/L	O/L	Headphone Amp. Gain = Mid
0x38	U1001, P6	P5V_POWER_OFF	PU (P3V3_UCOM) 10kohms	O	O/L	O/L	"P5V_D_AUDIO" Power Control
0x38	U1001, P7	RSV	PU (P3V3_UCOM) 10kohms	O	O/L	O/L	[Unused] Line Out Gain Control (DSD/PCM)
0x39	U1003, P0	C_USBB_MCK_SEL	PU (P3V3_UCOM) 10kohms	O	O/L	O/L	To CPLD, USBB MCK 24MHz(H) or 22MHz(L) Select
0x39	U1003, P1	C_CS2K_MCK_SEL	PU (P3V3_UCOM) 10kohms	O	O/L	O/L	To CPLD, CS2000-CP MCK 24MHz(H) or 22MHz(L) Select
0x39	U1003, P2	C_CS2K_LRCK_SEL	PU (P3V3_UCOM) 10kohms	O	O/L	O/L	To CPLD, CS2000-CP LRCK Control
0x39	U1003, P3	C_TDM_CONV_ RESET	PU (P3V3_UCOM) 10kohms	O	O/L	O/L	To CPLD, TDM2PCM/DSD Converter Reset(L) or Un-Reset(H) Control
0x39	U1003, P4	C_DIR_MCK_SEL	PU (P3V3_UCOM) 10kohms	O	O/L	O/L	To CPLD, PCM9211 ADC MCK 24MHz(H) or 22MHz(L) Select
0x39	U1003, P5	C_PCM_DSD_ MODE	PU (P3V3_UCOM) 10kohms	O	O/L	O/L	To CPLD, Main Selector PCM(H) or DSD(L) Select
0x39	U1003, P6	C_PLD_DAC1_ MUTE	PU (P3V3_UCOM) 10kohms	O	O/L	O/L	To CPLD, ES9016K2M Digital Mute(L) or Un-Mute(H) Select
0x39	U1003, P7	C_DSD_PHASE_ MODE	PU (P3V3_UCOM) 10kohms	O	O/L	O/L	To CPLD, ES9016K2M DSD Data Phase Mode(H) or Normal Mode(L) Select
0x3A	U1006, P0	C_PLD_FS0	PU (P3V3_UCOM) 10kohms	O	O/H	O/H	[Unused] To CPLD, Fs Control 0
0x3A	U1006, P1	C_PLD_FS1	PU (P3V3_UCOM) 10kohms	O	O/H	O/H	[Unused] To CPLD, Fs Control 1
0x3A	U1006, P2	C_DAC1_MCK_SEL	PU (P3V3_UCOM) 10kohms	O	O/H	O/H	[Unused] To CPLD, ES9016K2M MCK Control
0x3A	U1006, P3	C_SRC_MCK_SEL	PU (P3V3_UCOM) 10kohms	O	O/H	O/H	[Unused] To CPLD, AK4137 MCK Control
0x3A	U1006, P4	SRC_CM0	PU (P3V3_UCOM) 10kohms	O	O/H	O/H	[Unused] To CPLD, AK4137 Multiplication Control 0
0x3A	U1006, P5	SRC_CM1	PU (P3V3_UCOM) 10kohms	O	O/H	O/H	[Unused] To CPLD, AK4137 Multiplication Control 1
0x3A	U1006, P6	SRC_CM2	PU (P3V3_UCOM) 10kohms	O	O/H	O/H	[Unused] To CPLD, AK4137 Multiplication Control 2
0x3A	U1006, P7	SRC_CM3	PU (P3V3_UCOM) 10kohms	O	O/H	O/H	[Unused] To CPLD, AK4137 Multiplication Control 3

NCP380 (MAIN : U3017)



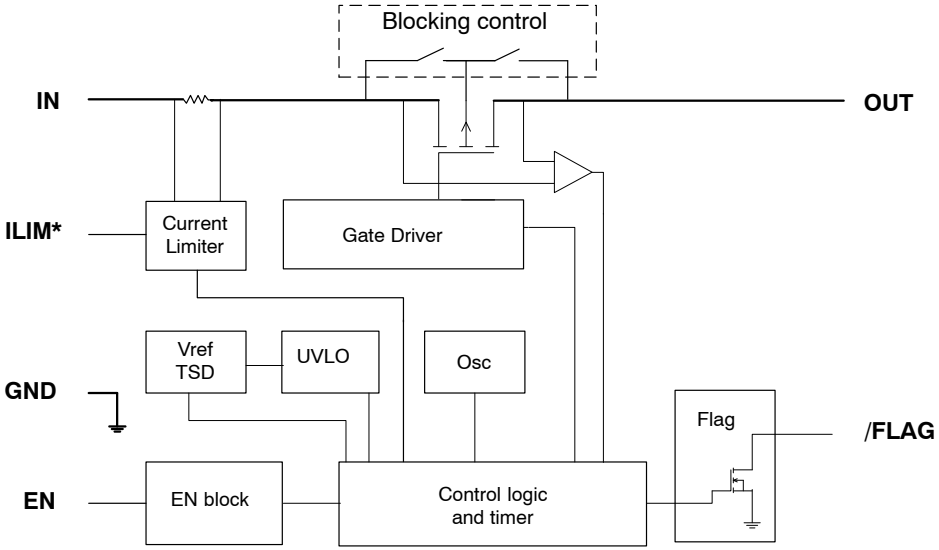
UDFN6
(Top view)

Terminal Function

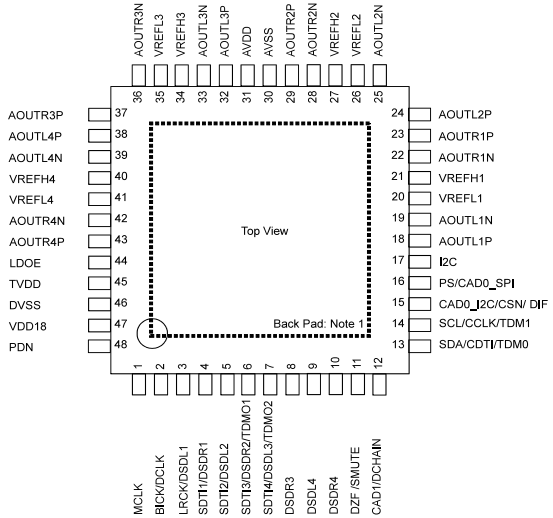
Pin Name	Type	Description
EN	INPUT	Enable input, logic low/high (i.e. $\overline{EN}$ or EN) turns on power switch
GND	POWER	Ground connection;
IN	POWER	Power−switch input voltage; connect a 1 μF or greater ceramic capacitor from IN to GND as close as possible to the IC.
$\overline{FLAG}$	OUTPUT	Active−low open−drain output, asserted during overcurrent, overtemperature or reverse−voltage conditions. Connect a 10 kΩ or greater resistor pull−up, otherwise leave unconnected.
OUT	OUTPUT	Power−switch output; connect a 1 μF ceramic capacitor from OUT to GND as close as possible to the IC is recommended. A 1 μF or greater ceramic capacitor from OUT to GND must be connected if the USB requirement (i.e.120 μF capacitor minimum) is not met.
ILIM*	INPUT	External resistor used to set current−limit threshold; recommended 5 kΩ < R_{ILIM} < 250 kΩ.
PAD1**	THERMAL	Exposed Thermal Pad: Must be soldered to PCB Ground plane

*(For adjustable version only, otherwise not connected.
**For DFN version only.

Block Diagram



AK4458VN (MAIN : U3006)



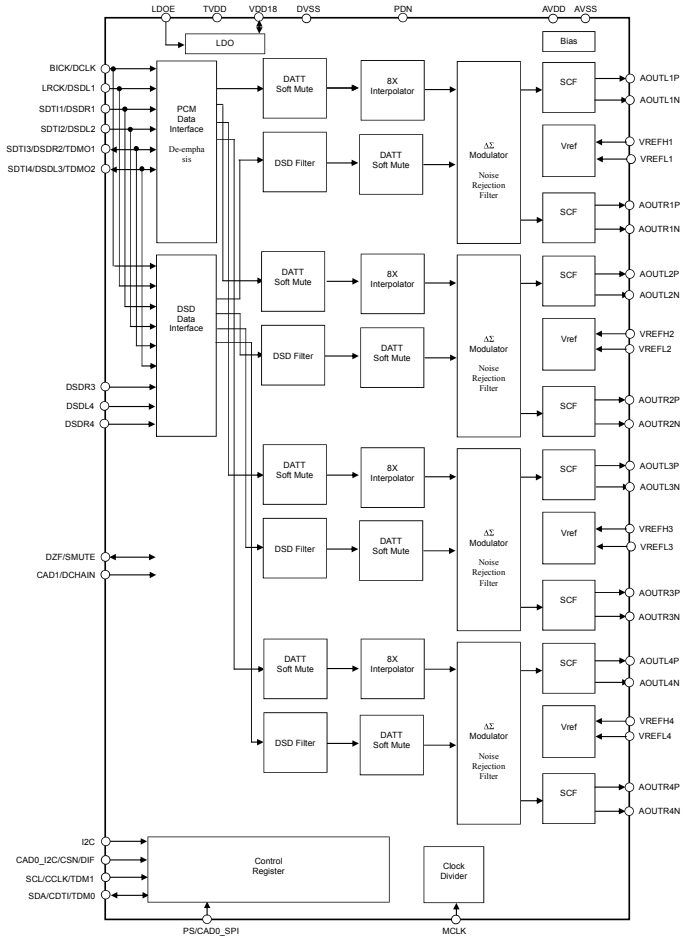
Pin Function

No.	Pin Name	I/O	Function	PD State
1	MCLK	I	External Master Clock Input Pin	Hi-Z
2	BICK	I	Audio Serial Data Clock Pin in PCM mode	Hi-z
	DCLK	I	DSD Clock Pin in DSD mode	
3	LRCK	I	Input Channel Clock Pin in PCM mode	Hi-Z
	DSDL1	I	Audio Serial Data Input in DSD mode	
4	SDTI1	I	Audio Serial Data Input in PCM mode	Hi-Z
	DSDR1	I	Audio Serial Data Input in DSD mode	
5	SDTI2	I	Audio Serial Data Input in PCM mode	Hi-Z
	DSDL2	I	Audio Serial Data Input in DSD mode	
6	SDTI3	I	Audio Serial Data Input in PCM mode	100k Ω Pull down
	DSDR2	I	Audio Serial Data Input in DSD mode	
	TDMO1	O	Audio Serial Data Output in Daisy Chain mode	
7	SDTI4	I	Audio Serial Data Input in PCM mode	100k Ω Pull down
	DSDL3	I	Audio Serial Data Input in DSD mode	
	TDMO2	O	Audio Serial Data Output in Daisy Chain mode	
8	DSDR3	I	Audio Serial Data Input in DSD mode	Hi-Z
9	DSDL4	I	Audio Serial Data Input in DSD mode	Hi-Z
10	DSDR4	I	Audio Serial Data Input in DSD mode	Hi-Z
11	DZF	O	Zero Input Detect in I2C Bus or 3-wire serial control mode	100k Ω Pull down
	SMUTE	I	Soft Mute Pin in Parallel control mode. When this pin is changed to "H", soft mute cycle is initiated. When it is returning to "L", the output mute is released.	
12	CAD1	I	Chip Address 0 Pin in I C Bus or 3-wire serial control mode	Hi-Z
	DCHAIN	I	Daisy Chain Mode select pin in Parallel control mode.	
13	SDA	I/O	Control Data Pin in I2C Bus serial control mode	Hi-Z
	CDTI	I	Control Data Input Pin in 3-wire serial control mode	
	TDM0	I	TDM Mode select pin in Parallel control mode.	
14	SCL	I	Control Data Clock Pin in I2C Bus serial control mode	Hi-Z
	CCLK	I	Control Data Clock Pin in 3-wire serial control mode	
	TDM1	I	TDM Mode select pin in Parallel control mode.	

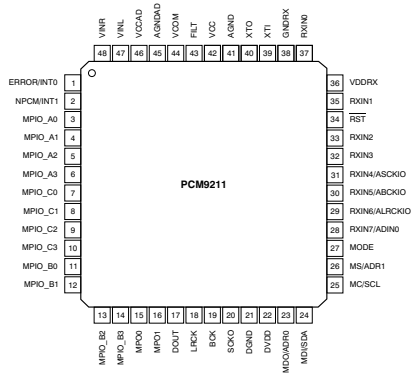
No.	Pin Name	I/O	Function	PD State
15	CAD0_I2C	I	Chip Address 0 Pin in I2C Bus serial control mode	Hi-Z
	CSN	I	Chip Select Pin in 3-wire serial control mode	
	DIF	I	Audio Data Format Select in Parallel control mode. "L": 32-bit MSB, "H": 32-bit I2S	
16	PS	I	(I2C pin = "H") Control Mode Select Pin "L": I2C Bus serial control mode, "H": Parallel control mode.	Hi-Z
	CAD0_SPI	I	(I2C pin = "L") Chip Address 0 Pin in 3-wire serial control mode	
17	I2C	I	Control Mode Select Pin "L": 3-wire serial control mode "H": I2C Bus serial control mode or Parallel control mode.	Hi-Z
18	AOUTL1P	O	Lch Positive Analog Output 1 Pin	Hi-Z
19	AOUTL1N	O	Lch Negative Analog Output 1 Pin	Hi-Z
20	VREFL1	I	Negative Voltage Reference Input Pin, AVSS	Hi-Z
21	VREFH1	I	Positive Voltage Reference Input Pin, AVDD	Hi-Z
22	AOUTR1N	O	Rch Negative Analog Output 1 Pin	Hi-Z
23	AOUTR1P	O	Rch Positive Analog Output 1 Pin	Hi-Z
24	AOUTL2P	O	Lch Positive Analog Output 2 Pin	Hi-Z
25	AOUTL2N	O	Lch Negative Analog Output 2 Pin	Hi-Z
26	VREFL2	I	Negative Voltage Reference Input Pin, AVSS	Hi-Z
27	VREFH2	I	Positive Voltage Reference Input Pin, AVDD	Hi-Z
28	AOUTR2N	O	Rch Negative Analog Output 2 Pin	Hi-Z
29	AOUTR2P	O	Rch Positive Analog Output 2 Pin	Hi-Z
30	AVSS	-	Analog Ground Pin	—
31	AVDD	-	Analog Power Supply Pin, 3.0V-5.5V	—
32	AOUTL3P	O	Lch Positive Analog Output 3 Pin	Hi-Z
33	AOUTL3N	O	Lch Negative Analog Output 3 Pin	Hi-Z
34	VREFH3	I	Positive Voltage Reference Input Pin, AVDD	Hi-Z
35	VREFL3	I	Negative Voltage Reference Input Pin, AVSS	Hi-Z
36	AOUTR3N	O	Rch Negative Analog Output 3 Pin	Hi-Z
37	AOUTR3P	O	Rch Positive Analog Output 3Pin	Hi-Z
38	AOUTL4P	O	Lch Positive Analog Output 4 Pin	Hi-Z
39	AOUTL4N	O	Lch Negative Analog Output 4 Pin	Hi-Z
40	VREFH4	I	Positive Voltage Reference Input Pin, AVDD	Hi-Z
41	VREFL4	I	Negative Voltage Reference Input Pin, AVSS	Hi-Z
42	AOUTR4N	O	Rch Negative Analog Output 4 Pin	Hi-Z
43	AOUTR4P	O	Rch Positive Analog Output 4 Pin	Hi-Z
44	LDOE	I	Internal LDO Enable Pin. "L": Disable, "H": Enable	Hi-Z
45	TVDD	-	Digital Power Supply Pin, 3.0V-3.6V	—
46	DVSS	-	Digital Ground Pin	—
47	VDD18	O	LDO Output Pin (LDOE pin = "H") This pin should be connected to DVSS with 1.0µF.	(Note 4)
		I	1.8V Power Input Pin (LDOE pin = "L")	
48	PDN	I	Power-Down & Reset Pin When this pin is "L", the AK4458 is powered-down and the control registers are reset to default state.	Hi-Z

Note 2. All input pins except internal pull-up/down pins should not be left floating.
Note 3. PCM mode and DSD mode are controlled by registers. Daisy Chain mode is controlled by both registers and pins.
Note 4. This pin outputs DVSS when the LDOE pin = "H" and Hi-z when the LDOE pin = "L".

FUNCTIONAL BLOCK DIAGRAM



PCM9211 (MAIN : U3007)

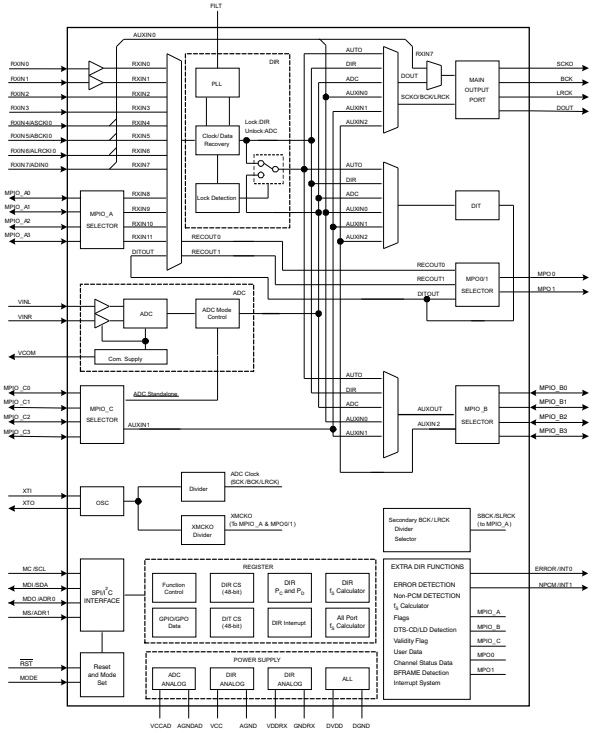


PIN Functions

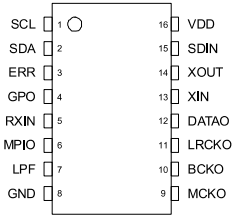
PIN				DESCRIPTION
NO.	NAME	I/O	5-V TOLERANT	
1	ERROR/INT0	O	No	DIR Error detection output / Interrupt0 output
2	NPCM/INT1	O	No	DIR Non-PCM detection output / Interrupt1 output
3	MPIO_A0	I/O	Yes	Multipurpose I/O, Group A(1)
4	MPIO_A1	I/O	Yes	Multipurpose I/O, Group A(1)
5	MPIO_A2	I/O	Yes	Multipurpose I/O, Group A(1)
6	MPIO_A3	I/O	Yes	Multipurpose I/O, Group A(1)
7	MPIO_C0	I/O	Yes	Multipurpose I/O, Group C(1)
8	MPIO_C1	I/O	Yes	Multipurpose I/O, Group C(1)
9	MPIO_C2	I/O	Yes	Multipurpose I/O, Group C(1)
10	MPIO_C3	I/O	Yes	Multipurpose I/O, Group C(1)
11	MPIO_B0	I/O	Yes	Multipurpose I/O, Group B(1)
12	MPIO_B1	I/O	Yes	Multipurpose I/O, Group B(1)
13	MPIO_B2	I/O	Yes	Multipurpose I/O, Group B(1)
14	MPIO_B3	I/O	Yes	Multipurpose I/O, Group B(1)
15	MPO0	O	No	Multipurpose output 0
16	MPO1	O	No	Multipurpose output 1
17	DOUT	O	No	Main output port, serial digital audio data output
18	LRCK	O	No	Main output port, LR clock output
19	BCK	O	No	Main output port, Bit clock output
20	SCKO	O	No	Main output port, System clock output
21	DGND	–	–	Ground, for digital
22	DVDD	–	–	Power supply, 3.3 V (typ.), for digital
23	MDO/ADR0	I/O	Yes	Software control I/F, SPI data output / I2C slave address setting0(2)
24	MDI/SDA	I/O	Yes	Software control I/F, SPI data input / I2C data input/output(2) (3)
25	MC/SCL	I	Yes	Software control I/F, SPI clock input / I2C clock input(2)
26	MS/ADR1	I	Yes	Software control I/F, SPI chip select / I2C slave address setting1(2)
27	MODE	I	No	Control mode setting, (see the Serial Control Mode section, Control Mode Pin Setting)
28	RXIN7/ADIN0	I	Yes	Biphase signal, input 7 / AUXIN0, serial audio data input(2)
29	RXIN6/ALRCKI0	I	Yes	Biphase signal, input 6 / AUXIN0, LR clock input(2)
30	RXIN5/ABCKI0	I	Yes	Biphase signal, input 5 / AUXIN0, bit clock input(2)
31	RXIN4/ASCKI0	I	Yes	Biphase signal, input 4 / AUXIN0, system clock input(2)
32	RXIN3	I	Yes	Biphase signal, input 3(2)
33	RXIN2	I	Yes	Biphase signal, input 2(2)
34	RST	I	Yes	Reset Input, active low(2) (4)
35	RXIN1	I	Yes	Biphase signal, input 1, built-in coaxial amplifier
36	VDDRX	–	–	Power supply, 3.3 V (typ.), for RXIN0 and RXIN1.
37	RXIN0	I	Yes	Biphase signal, input 0, built-in coaxial amplifier
38	GNDRX	-	-	Ground, for RXIN
39	XTI	I	No	Oscillation circuit input for crystal resonator or external XTI clock source input(5)
40	XTO	O	No	Oscillation circuit output for crystal resonator
41	AGND	–	–	Ground, for PLL analog
42	VCC	–	–	Power supply, 3.3 V (typ.), for PLL analog
43	FILT	O	No	External PLL loop filter connection terminal; must connect recommended filter
44	VCOM	O	No	ADC common voltage output; must connect external decoupling capacitor
45	AGNDAD	–	–	Ground, for ADC analog
46	VCCAD	–	–	Power supply, 5.0 V (typ.), for ADC analog
47	VINL	I	No	ADC analog voltage input, left channel
48	VINR	I	No	ADC analog voltage input, right channel

(1) Schmitt trigger input
(2) Schmitt trigger input
(3) Open-drain configuration in I2C mode
(4) Onboard pull-down resistor (50 k Ω , typical)
(5) CMOS Schmitt trigger input

PCM9211 BLOCK DIAGRAM



LC89091JA (MAIN : U3009)



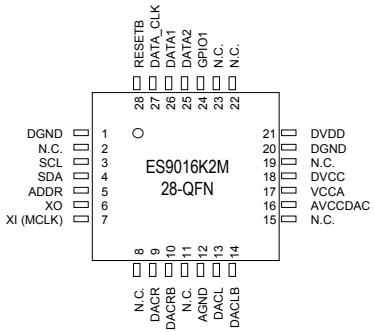
PIN Functions

Table 5.1: Pin Functions

No	Name	I/O	Function
1	SCL	I	Microcontroller interface I^2C: clock input pin
2	SDA	I	Microcontroller interface I^2C: data input pin
		O	Microcontroller interface I^2C: data output pin
3	ERR	O	PLL lock error and data error flag output pin (initial output)
			Output data mute signal output pin
4	GPO	O	Channel status bit-1 (PCM or non-PCM flag) output pin (initial output)
			Input S/PDIF (RXIN or MPIO) through output pin
			General purpose output pin
5	RXIN	I	3.3V tolerance TTL-compatible S/PDIF input pin
6	MPIO	O	Channel status emphasis flag output pin (initial output)
		I	3.3V tolerance TTL-compatible S/PDIF input pin
7	LPF	O	PLL: Loop filter connection output pin
8	GND		Digital GND
9	MCKO	O	Master clock output pin (512fs, 256fs, and 128fs)
10	BCKO	O	Bit clock output pin (64fs)
11	LRCKO	O	LR clock output pin (fs)
12	DATAO	O	Serial audio data output pin (I^2S and left justified)
13	XIN	I	Crystal resonator connection or external clock input pin (24.576MHz)
14	XOUT	O	Crystal resonator connection output pin
15	SDIN	I	Serial audio data input pin
16	VDD		Digital power supply (3.3V)

*Pin.2 and Pin 6 configure an open-drain output.
*Pin.2 needs a pull-up resistor when using microcontroller interface.
*Pin.6 needs a pull-up resistor when set to the output.

ES9016K2M (AUDIO : U2002)

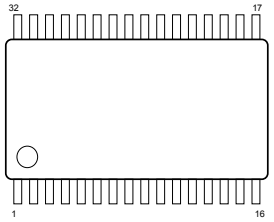


PIN DESCRIPTIONS

Pin	Name	Pin Type	Reset State	Pin Description
1	DGND	Ground	Ground	Digital Ground
2	N.C.	-	-	No internal connection. Pin may be grounded if desired.
3	SCL	I	Tri-stated	I²C Serial Clock Input
4	SDA	I/O	Tri-stated	I²C Serial Data Input/Output
5	ADDR	I	Tri-stated	I²C Address Select
6	XO	AO	Floating	XTAL Out
7	XI (MCLK)	AI	Floating	XTAL / MCLK In
8	N.C.	-	-	No internal connection. Pin may be grounded if desired.
9	DACR	AO	Driven to ground	Differential Positive Analog Output Right
10	DACRB	AO	Driven to ground	Differential Negative Analog Output Right
11	N.C.	-	-	No internal connection. Pin may be grounded if desired.
12	AGND	Ground	Ground	Analog Ground
13	DACL	AO	Driven to ground	Differential Positive Analog Output Left
14	DACLB	AO	Driven to ground	Differential Negative Analog Output Left
15	N.C.	-	-	No internal connection. Pin may be grounded if desired.
16	AVCCDAC	Power	Power	Analog AVCC for DAC
17	VCCA	Power	Power	Analog +1.8V or +3.3V for OSC
18	DVCC	Power	Power	Digital +1.8V to +3.3V
19	N.C.	-	-	No internal connection. Pin may be grounded if desired.
20	DGND	Ground	Ground	Digital Ground
21	DVDD	Power	Power	Digital Core Voltage, nominally +1.2V, is supplied by a regulator from VCCA. DVDD must be decoupled with a minimum 4.7µF capacitor to DGND for stable operation. DVDD needs to be externally supplied for high XI / MCLK frequency. Please refer to the section about the DVDD supply on page 8 for additional information.
22	N.C.	-	-	No internal connection. Pin may be grounded if desired.
23	N.C.	-	-	No internal connection. Pin may be grounded if desired.
24	GPIO1	I/O	Tri-stated	GPIO 1
25	DATA2	I	Tri-stated	DSD Data2 (R) or PCM Data CH1/CH2 or SPDIF Input 2
26	DATA1	I/O	Tri-stated	Master mode off: Input for DSD Data1 (L) or PCM Frame Clock or SPDIF Input 3 Master mode on: Output for PCM Frame Clock
27	DATA_CLK	I/O	Tri-stated	Master mode off: Input for PCM Bit Clock or DSD Bit Clock or SPDIF Input 1 Master mode on: Output for PCM Bit Clock
28	RESETB	I	Tri-stated	Master Reset / Power Down (active low)
Exposed Pad	DGND	Ground	Ground	Digital Ground. Connect the Exposed Pad to DGND

Notes:
- There are 7 N.C. (No Connect) pins. If desired, these pins can be connected to ground on the PCB to strengthen the otherwise isolated pin pads.
- The exposed pad must be connected to digital ground.

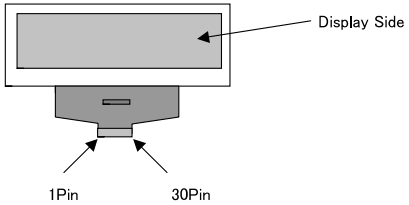
NJU72343_J (AUDIO : U2007)



No.	Symbol	Function	No.	Symbol	Function
1	AREF	Analog reference potential	17	DATA	IC control data input
2	ADR	Address selection	18	CLOCK	IC control clock input
3	InA2	Ach input2	19	VDDOUT	Digital power supply output
4	InB2	Bch input2	20	AREF	Analog reference potential
5	InA1	Ach input1	21	OutH	Hch output
6	InB1	Bch input1	22	OutG	Gch output
7	InC	Cch input	23	OutF	Fch output
8	InD	Dch input	24	OutE	Ech output
9	InE	Ech input	25	OutD	Dch output
10	InF	Fch input	26	OutC	Cch output
11	InG1	Gch input1	27	OutB	Bch output
12	InH1	Hch input1	28	OutA	Ach output
13	InG2	Cch input2	29	AREF	Analog reference potential
14	InH2	Dch input2	30	V-	Power supply(-)
15	MUTE	External mute control	31	AREF	Analog reference potential
16	REF	Digital reference potential	32	V+	Power supply(+)

2. OLED DISPLAY

MXS4035A



MXS4035A IO Interfaces

端子番号 Pin No.	端子名 Pin Name	入出力 IO	機能 Functions
1	VSS	P	グランド GND
2	VCC	P	ドライバー系陽極電源 Power supply for Anode Driver
3	VCOMH	O	ドライバー系陰極電源 Power supply for Cathode Driver
4	VLSS	P	アナロググランド Analog system ground
5	CLS	I	VDDIO に接続 Connected to VDDIO
6	D7	I	データバス Data Bus
7	D6	I	データバス Data Bus
8	D5	I	データバス Data Bus
9	D4	I	データバス Data Bus
10	D3	I	データバス Data Bus
11	D2	I	データバス Data Bus
12	D1 (SDIN)	I	データバス、またはシリアルデータ入力 Data Bus or Serial Date Input
13	D0 (SCLK)	I	データバス、またはシリアルクロック入力 Data Bus or Serial Clock Input
14	E, RD#	I	読み出し（シリアルインターフェース時、内部で "L" 固定になる） Read (This pin stays "L"(low) in Serial Interface Mode)
15	R/W#, WR#	I	書き込み（シリアルインターフェース時、内部で "L" 固定になる） Write (This pin stays "L"(low) in Serial Interface Mode)
16	BS0	I	インターフェース選択子 Select MCU bus interface setting ・BS0=0, BS1=0 : 4 line SPI ・BS0=0, BS1=1 : 8bit 8080 Parallel ・BS0=1, BS1=0 : 3 line SPI ・BS0=1, BS1=1 : 8bit 6800 Parallel
17	BS1	I	
18	D/C#	I	データ/コマンド切替制御 "H":データ, "L":コマンド Data/Command Control. "H":Data, "L":Command
19	CS#	I	チップセレクト "L" でI/F通信可能 Chip Select, Active "L"
20	RES#	I	リセット "L"でリセット Reset, Active "L"
21	VSS	P	グランド GND
22	CL	I	VSSに接続してください。 Connected to VSS
23	IREF	O	陽極出力基準電流設定端子 Reference current setting
24	NC	-	
25	VDDIO	P	インターフェイス系電源 Power supply for Interface logic level
26	VDD	O	内部ロジック系電源 Power supply for Core logic operation
27	VCI	P	外部ロジック系電源 Low voltage power supply
28	VSL	P	陽極基準電位 Segment Reference voltage
29	VLSS	P	アナロググランド Analog system ground
30	VCC	P	ドライバー系陽極電源 Power supply for Anode Driver

3. Remote Code Table

NA6006 (RC-5)

RC005NA		RC-5/RC-5 Ext.					
		Code1: AMP (Initial)			Code2: Variable		
KEY No.	Key Name	System	Command	Extension	System	Command	Extension
K1	⏻ POWER (Network)	25	12	00	<=		
K2	SLEEP	25	38	01	<=		
K3	DIMMER	25	71	00	<=		
K4	⏻ AMP POWER	16	12	- -	<=		
K5	INTERNET RADIO	25	63	51	<=		
K6	USB	25	63	21	<=		
K7	MUSIC SERVERS	25	63	50	<=		
K8	OPTICAL	25	63	31	<=		
K9	-	-	-	-	-		
K10	Bluetooth	25	63	38	<=		
K11	FAVORITES CALL	25	119	21	<=		
K12	-	-	-	-	-		
K13	FAVORITES ADD	25	119	22	<=		
K14	⏮	25	33	00	<=		
K15	⏯	25	53	00	<=		
K16	⏭	25	32	00	<=		
K17	-	-	-	-	-		
K18	■	25	54	00	<=		
K19	-	-	-	-	-		
K20	INPUT ▲	16	00	13	<=		
K21	INPUT ▼	16	00	14	<=		
K22	SOURCE DIRCET	16	34	- -	<=		
K23	MUTE	16	13	- -	25	13	10
K24	VOLUME ▲	16	16	- -	25	16	10
K25	VOLUME ▼	16	17	- -	25	17	10
K26	QUEUE	25	36	10	<=		
K27	BACK	25	87	10	<=		
K28	OPTION	25	82	20	<=		
K29	SETUP	25	82	00	<=		
K30	▲ (UP)	25	80	00	<=		
K31	▼ (DOWN)	25	81	00	<=		
K32	◀ (LEFT)	25	85	00	<=		
K33	▶ (RIGHT)	25	86	00	<=		
K34	ENTER	25	87	00	<=		
K35	1 .@/	25	01	00	<=		
K36	2 ABC	25	02	00	<=		
K37	3 DEF	25	03	00	<=		
K38	4 GHI	25	04	00	<=		
K39	5 JKL	25	05	00	<=		
K40	6 MNO	25	06	00	<=		
K41	7 PQRS	25	07	00	<=		
K42	8 TUV	25	08	00	<=		
K43	9 WXYZ	25	09	00	<=		
K44	+10 a/A	25	10	00	<=		
K45	0 "Space" *	25	00	00	<=		
K46	CLEAR	25	49	00	<=		
K47	DIG. OUT	25	77	00	<=		
K48	RANDOM	25	28	00	<=		
K49	REPEAT	25	29	00	<=		
K50	INFO	25	11	00	<=		

Extended Code
NA6006 must receive following codes.
These codes are not included in the RC005NA

		RC-5/RC-5 Ext.		
No.	Name	System	Command	Extension
P1	◀◀	25	50	00
P2	▶▶	25	52	00
P3	DIG. OUT ON	25	77	01
P4	DIG. OUT OFF	25	77	02
P5	DIMMER Off (100% brightness)	25	71	01
P6	DIMMER MODE 1	25	71	02
P7	DIMMER MODE 2	25	71	03
P8	DIMMER MODE 3	25	71	04
P9	POWER ON	25	12	01
P10	POEWR OFF	25	12	02
P11	PLAY	25	53	01
P12	PAUSE	25	48	01
P13	INPUT SELECT FWD	25	63	00
P14	INPUT SELECT REV	25	63	01
P15	FAVORITE	25	119	20
P16	FILTER	25	22	16
P17	Lock Range	25	22	30
P18	OPT/COAX	25	63	30

MECHANICAL

DISASSEMBLY

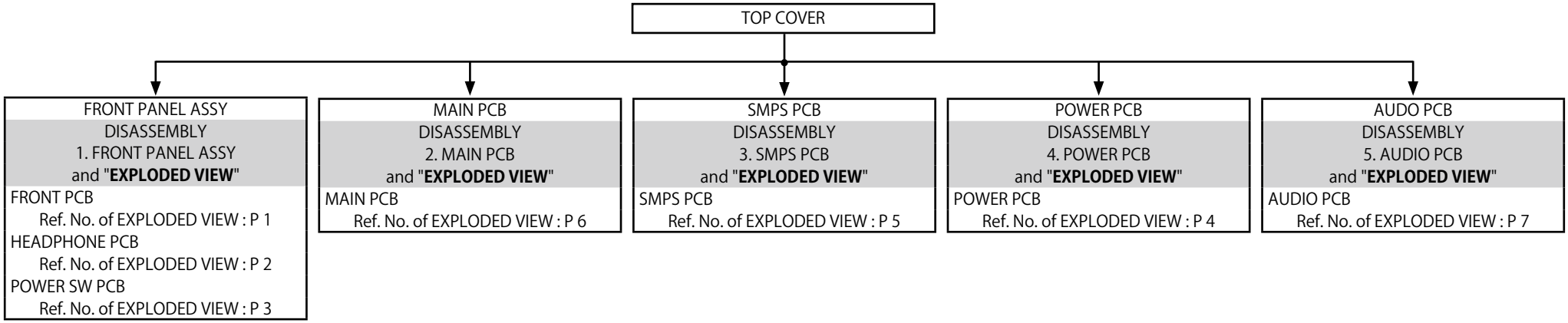
EXPLODED VIEW

PACKAGING VIEW

DISASSEMBLY

Flowchart

- Remove each part following the flow below.
- Reassemble the removed parts in the reverse order.
- Read "SAFETY PRECAUTIONS" before reassembling the removed parts.
- If wire bundles are removed or moved during adjustment or part replacement, reshape the wires after completing the work. Failure to shape the wires correctly may cause problems such as noise.
- See "EXPLODED VIEW"

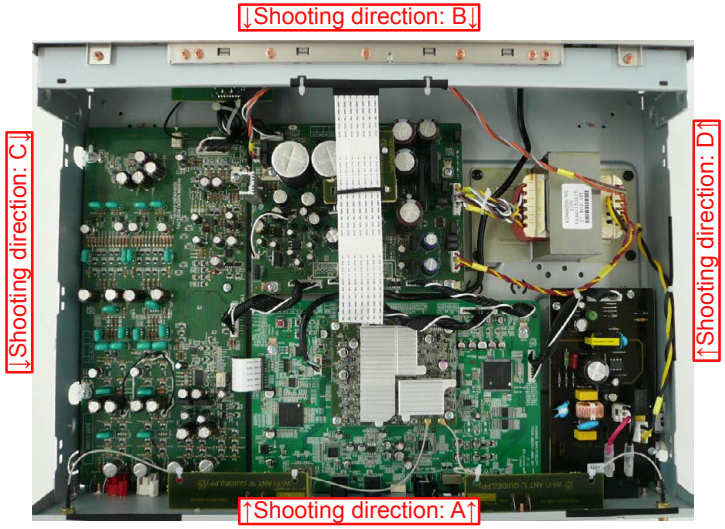


Explanatory Photos for DISASSEMBLY

- For the shooting direction of each photos used in this manual, see the photo below.
- **A, B, C and D** in the photo below indicate the shooting directions of photos.
- The photographs with no shooting direction indicated were taken from the top of the unit.
- Photos of NA6006N1SG are used in this manual.

The viewpoint of each photograph

(Shooting direction : X) [View from the top]

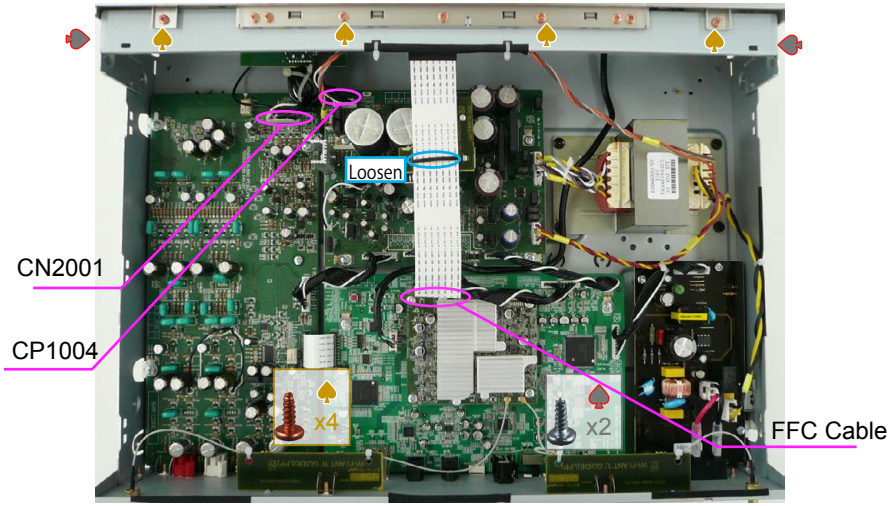


1. FRONT PANEL ASSY

Proceeding : TOP COVER → FRONT PANEL ASSY

(1) Remove the screws.

(2) Remove the connector wire and FFC. Remove the screws.

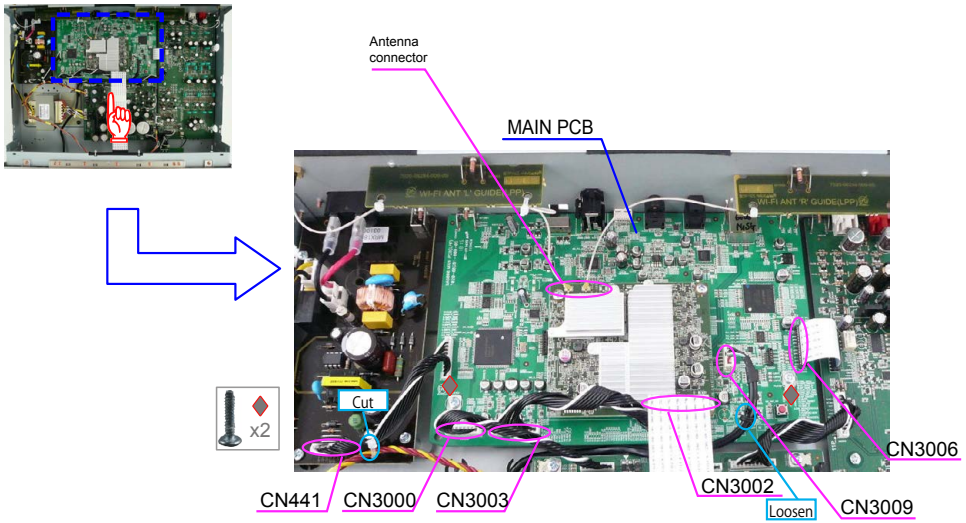


2. MAIN PCB

Proceeding : TOP COVER → MAIN PCB

(1) Remove the screws.

(2) Remove the screws. Remove the connector wire and FFC.

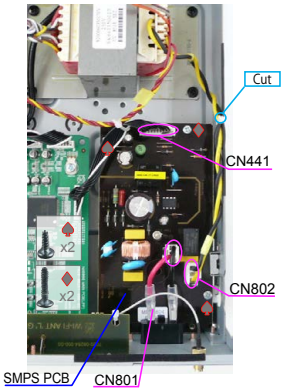


3. SMPS PCB

Proceeding : TOP COVER → SMPS PCB

(1) Remove the screws.

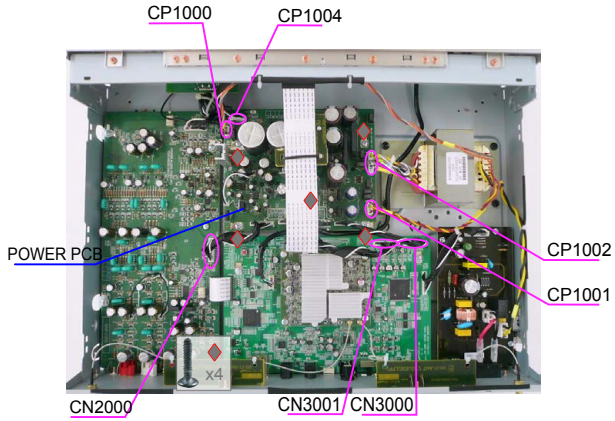
(2) Remove the screws. Remove the connector wire and FFC.



4. POWER PCB

Proceeding : TOP COVER → POWER PCB

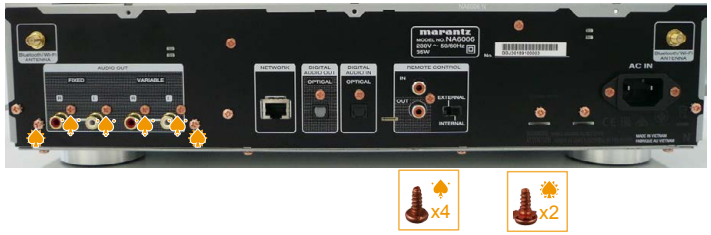
(1) Remove the screws. Remove the connector wire and FFC.



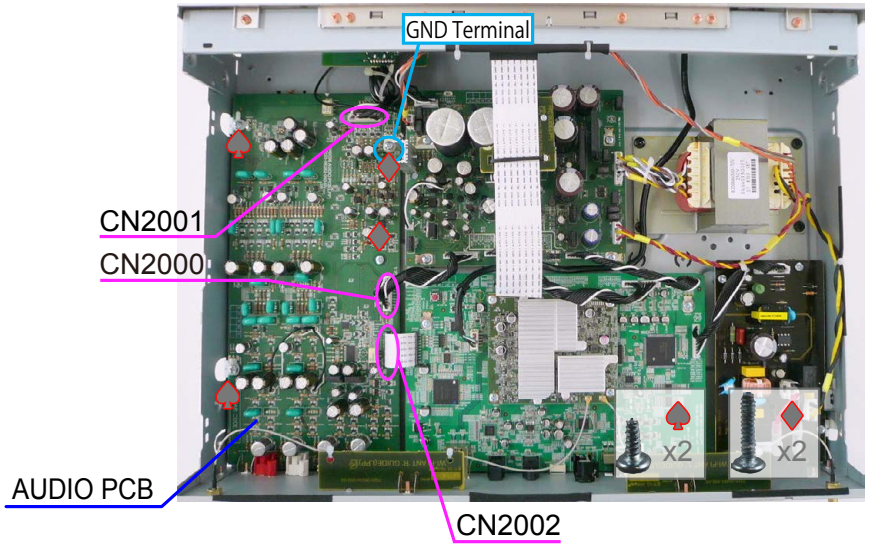
5. AUDIO PCB

Proceeding : TOP COVER → AUDIO PCB

(1) Remove the screws.

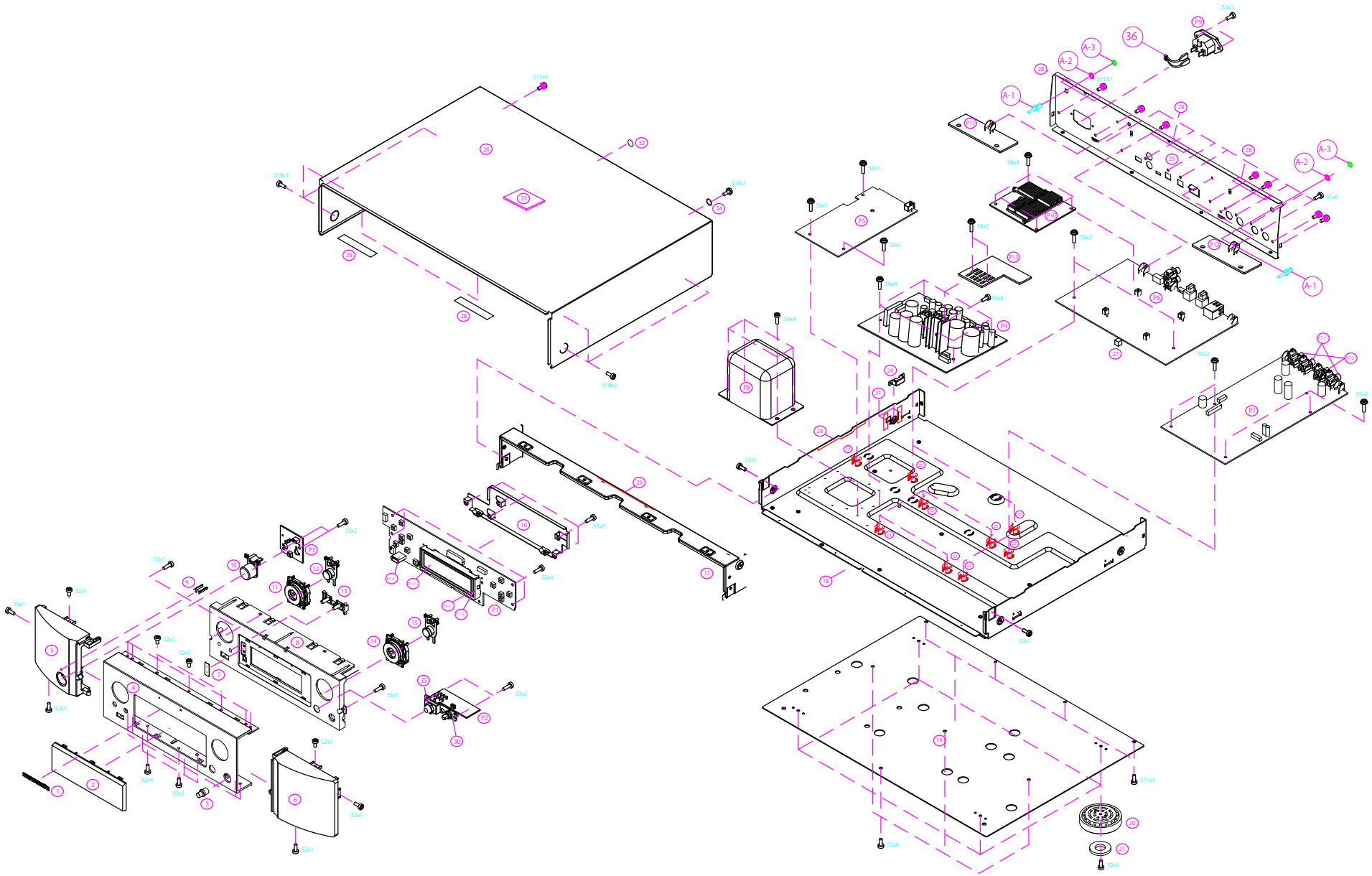


(2) Remove the screws. Remove the connector wire and FFC.



EXPLODED VIEW

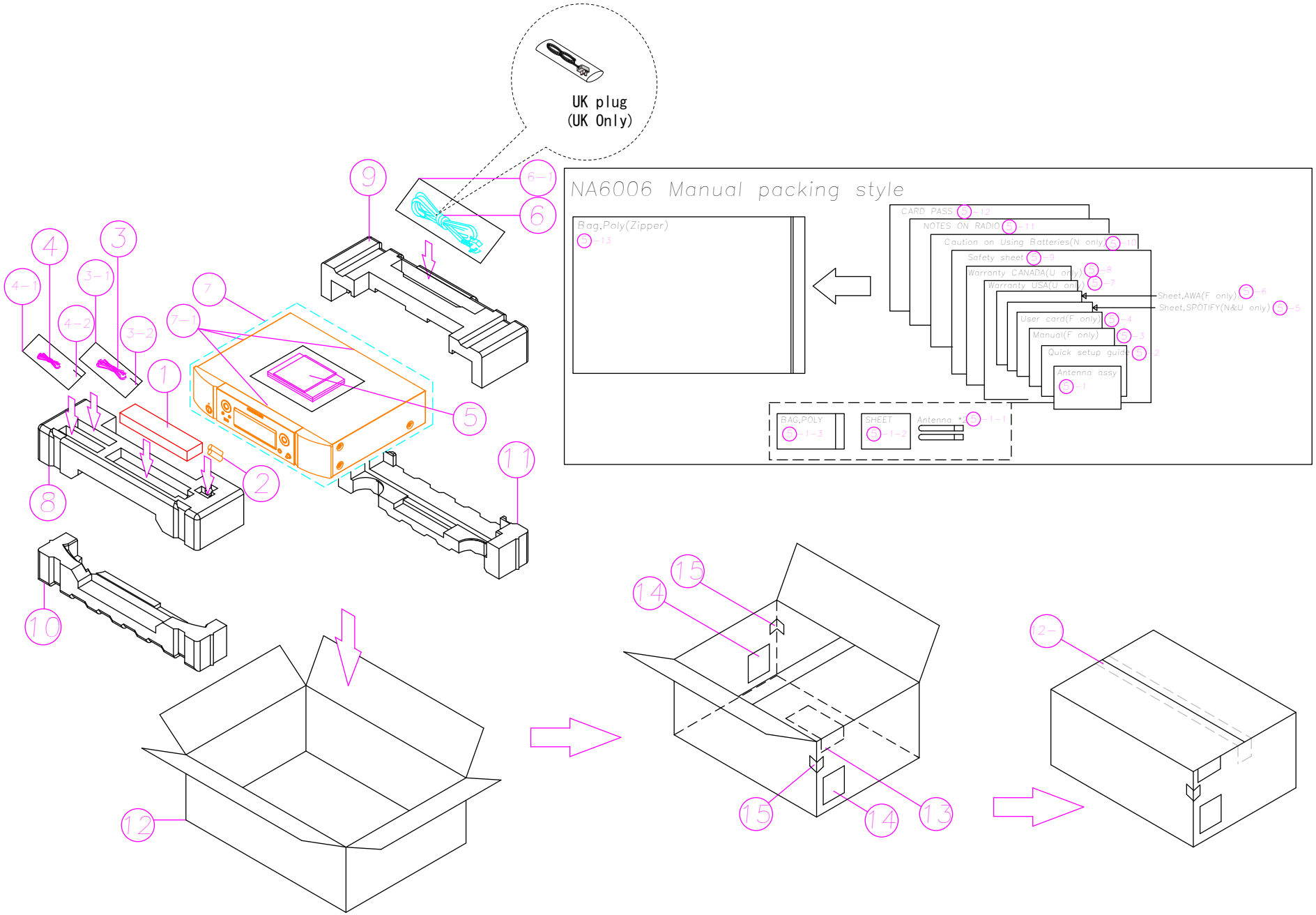
Parts List : http://dmedia.dmglobal.com/Document/DocumentDetails/24925



WARNING:
Parts marked with this symbol ⚠ have critical characteristics.
Use ONLY replacement parts recommended by the manufacturer.

PACKAGING VIEW

Parts List : http://dmedia.dmglobal.com/Document/DocumentDetails/24925



REPAIR INFORMATION

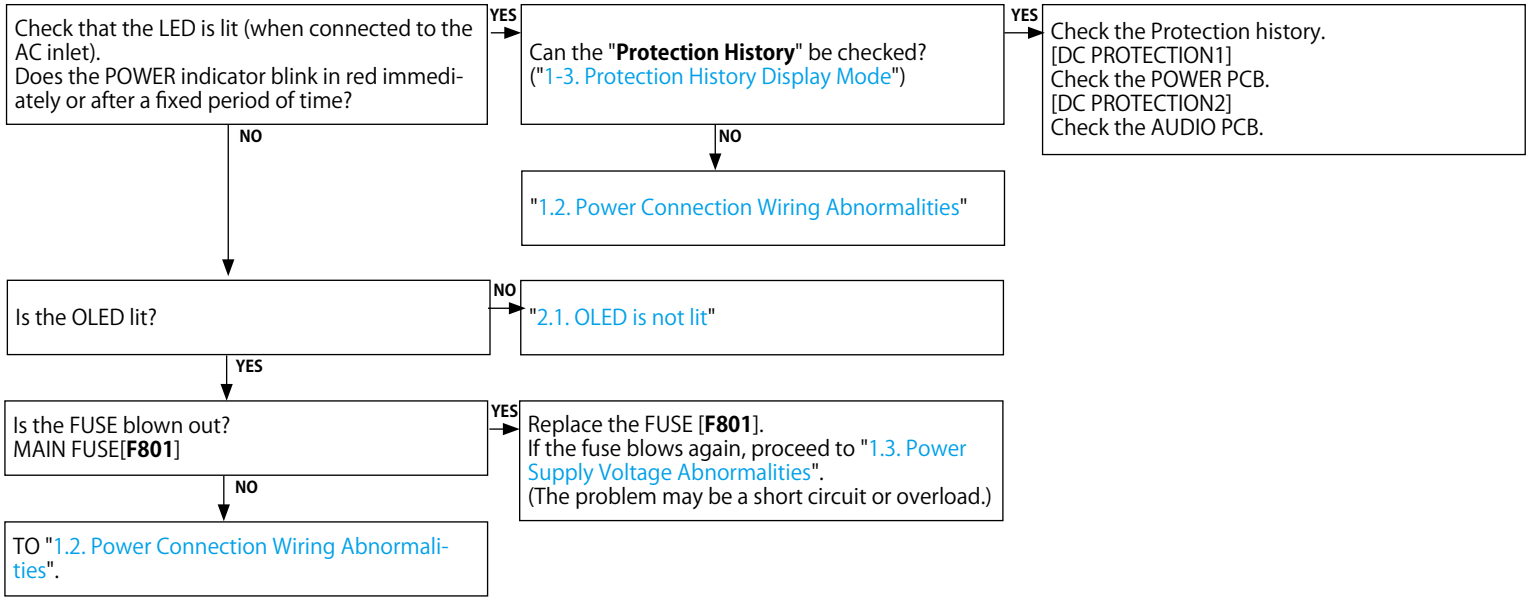
TROUBLE SHOOTING

MEASURING METHOD AND WAVEFORMS

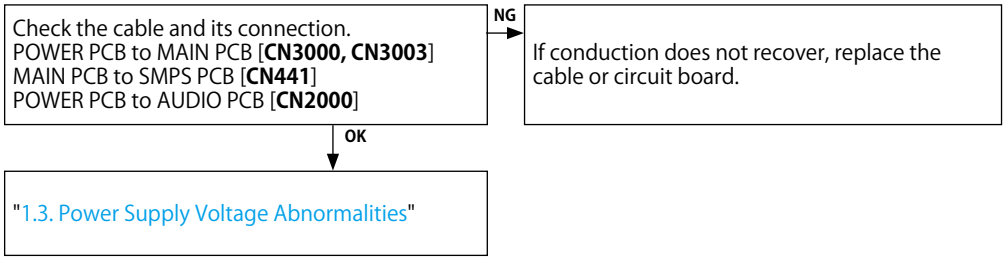
SPECIAL MODE

1. POWER

1.1. The unit does not power on



1.2. Power Connection Wiring Abnormalities



1.3. Power Supply Voltage Abnormalities

Check the output voltage. POWER PCB to MAIN PCB
[**CN3003 : 1pin**] = +3.3 ± 0.5V, +3.3V_CPU
[**CN3003 : 2pin**] = +3.3 ± 0.5V, +3.3V_D
[**CN3003 : 4, 5pin**] = +5V ± 0.5V, +5V_LEGO
[**CN3003 : 7, 8pin**] = +5 ± 0.5V, +5V_USB
[**CN3003 : 10pin**] = +5 ± 0.5V, +5V_D_A
[**CN3003 : 12pin**] = -5 ± 0.5V, -5V_D_A
Are there large deviations in the output voltage?

YES → POWER PCB
Is there an abnormality in any of the power supply ICs?
If the input voltage of all the power supply ICs is 0V, proceed to "**NO**".

YES → Replace any faulty parts.
Or replace the POWER PCB.

NO → Is SMPS [**IC811**] operation stopped while power is being supplied to the Power PCB unit?
Check the voltage.
The normal value is [**CN3001 : 7, 8pin**]+1V or lower.

YES → The SMPS circuit is faulty.
Replace any faulty parts.
Or replace the SMPS PCB.

NO → Does the power relay operate when the POWER switch is on?
Check conduction in the following area.
RL801 : [3pin] - [4pin]

YES → The temperature fuse is blown out in the main transformer, or a related abnormality has occurred.
Replace the power transformer.

NO → The power relay [**RL801**] or relay operation circuit is malfunctioning.
Replace any faulty parts. Or replace the POWER PCB.

NO → TO "1.4. I2C Communication Line Abnormalities"

1.4. I2C Communication Line Abnormalities

Check output signal.
MAIN PCB, MCU[**U3001 : 106(SDA), 107(SCL)pin**]
Is there an abnormality in the "**Hi**" (3.3V) or "**Lo**" (0V) level?
Check the communication signal during startup.
MCU [**U3001** : **106(SDA), 107(SCL)pin**] to I2C Device
Is an ACK signal returned from each I2C device?

YES → Check Soldering or replace for the following parts.
AUDIO PCB [Pull-up : **R2030, R2029**], MCU[**U3001 : 106(SDA), 107(SCL)pin**]
Replace the [**U3001**].
Or replace the AUDIO PCB.

NO → Check the cable and its connection.
MAIN PCB : [**CN3006**] to AUDIO PCB : [**CN2002**]

NG → Check that the connection is correct and reconnect FFC.
If conduction does not recover, replace the cable or circuit board.

OK → Check the output voltage.
POWER PCB
[**U1006**] = +5.0V, +5VA
[**U1008**] = +3.3V, +3.3D1
[**U1007**] = +3.3V, +3.3DAC
[**U1009**] = +1.3V, +1V3.DAC
Are there large deviations in the output voltage?
Check each internal connection. If no abnormalities are found, disconnect the AC power supply, allow the internal charge to discharge for around 1 minute and then start the power supply again.

2. OLED

2.1. OLED is not lit

Check the cable and its connection.
MAIN PCB : [**CN3002**] to FRONT PCB : [**CP119**]

NG → Check that the connection is correct and reconnect FFC.
If conduction does not recover, replace the cable or circuit board.

OK ↓

Check the cable and its connection.
POWER PCB : [**CP1004**] to FRONT PCB : [**CP120**]

NG → Check that the connection is correct and reconnect FFC.
If conduction does not recover, replace the cable or circuit board.

OK ↓

Check the power supply voltage.
FRONT PCB
[**CP120 : 7pin**] = +3.3V ± 0.5V, (+3.3V_CPU)
[**CP120 : 6pin**] = +3.3V ± 0.5V, (+3.3V_D1)
[**CP120 : 4, 5pin**] = +18V or more +35V or less (+18V_OLED)
Is the power supply voltage abnormal?

YES → Check each part listed after "**YES**" in "1.3. Power Supply Voltage Abnormalities".

NO ↓

Check the output voltage.
FRONT PCB
[**IC112 : 3, 6pin**] = +16V ± 1V
Does the output voltage largely deviate from +16V?

YES → Check the following and replace for the following parts.
FRONT PCB [**IC112**], [**R438, R439, R440**]

NO ↓

Check the output voltage.
FRONT PCB
[**C308 :** + terminal] = +12V ± 2V
Does the output voltage largely deviate from +12V?

YES → Disconnect [**CP118**] and check for a short circuit.
FRONT PCB [**C308 :** + terminal] and GND。
If there are no abnormalities, replace the OLED module.

NO ↓

Check the EL_RESET signal after starting the power supply.
FRONT PCB [**CP119 : 25pin**]
"**Hi**"?

NO → The MCU is malfunctioning or latched.
Check each part listed after "1.4. I2C Communication Line Abnormalities".

YES ↓

Checking the Digital communication waveform after starting the power supply.
FRONT PCB [**CP119 : 13-24pin**]
Is there an abnormality in the "**Hi**" (3.3V) or "**Lo**" (0V) level?

YES → The MCU is malfunctioning or latched.
Check each part listed after "1.4. I2C Communication Line Abnormalities".

NO ↓

Check the connection.
OLED module and [**CP118**]。
If there are no abnormalities, replace the OLED module.

3. No Remote Control Reception

Check that you are using a [RC005NA] remote control and replace the batteries.

NO

Is the [REMOTE CONTROL] switch on the back panel set to [EXTERNAL]?

YES → Change the setting of the [REMOTE CONTROL] switch.
[EXTERNAL] -> [INTERNAL]

NO

Can a square wave be found?
Point the remote control at the unit and check .
MCU[**U3001 : 26pin**] RC_IN

YES → MCU[**U3001 : 26pin**] is faulty.
Replace the [**U3001**].
Or replace the MAIN PCB.

NO

Check the cable and its connection.
MAIN PCB : [**CN3002**] to FRONT PCB : [**CP119**]

YES → Check that the connection is correct and reconnect FFC.
If conduction does not recover, replace the cable or circuit board.

NO

Check the cable and its connection.
POWER PCB : [**CP1004**] to FRONT PCB : [**CP120**]

YES → Check that the connection is correct and reconnect FFC.
If conduction does not recover, replace the cable or circuit board.

NO

Check the power supply voltage.
FRONT PCB [**CP120 : 7pin**] = +3.3V ± 0.5V, +3.3V_CPU
Does the power supply voltage largely deviate from 3.3V?

YES → Check each part listed after "**YES**" in "1.3. Power Supply Voltage Abnormalities".

NO

Can a square wave be found?
Point the remote control at the unit and check .
FRONT PCB
[**RMC100 : 1pin**]

YES → Check the Square wave signal.
FRONT PCB[**Q518**] Collector。
No signal: Replace the [**Q518**].

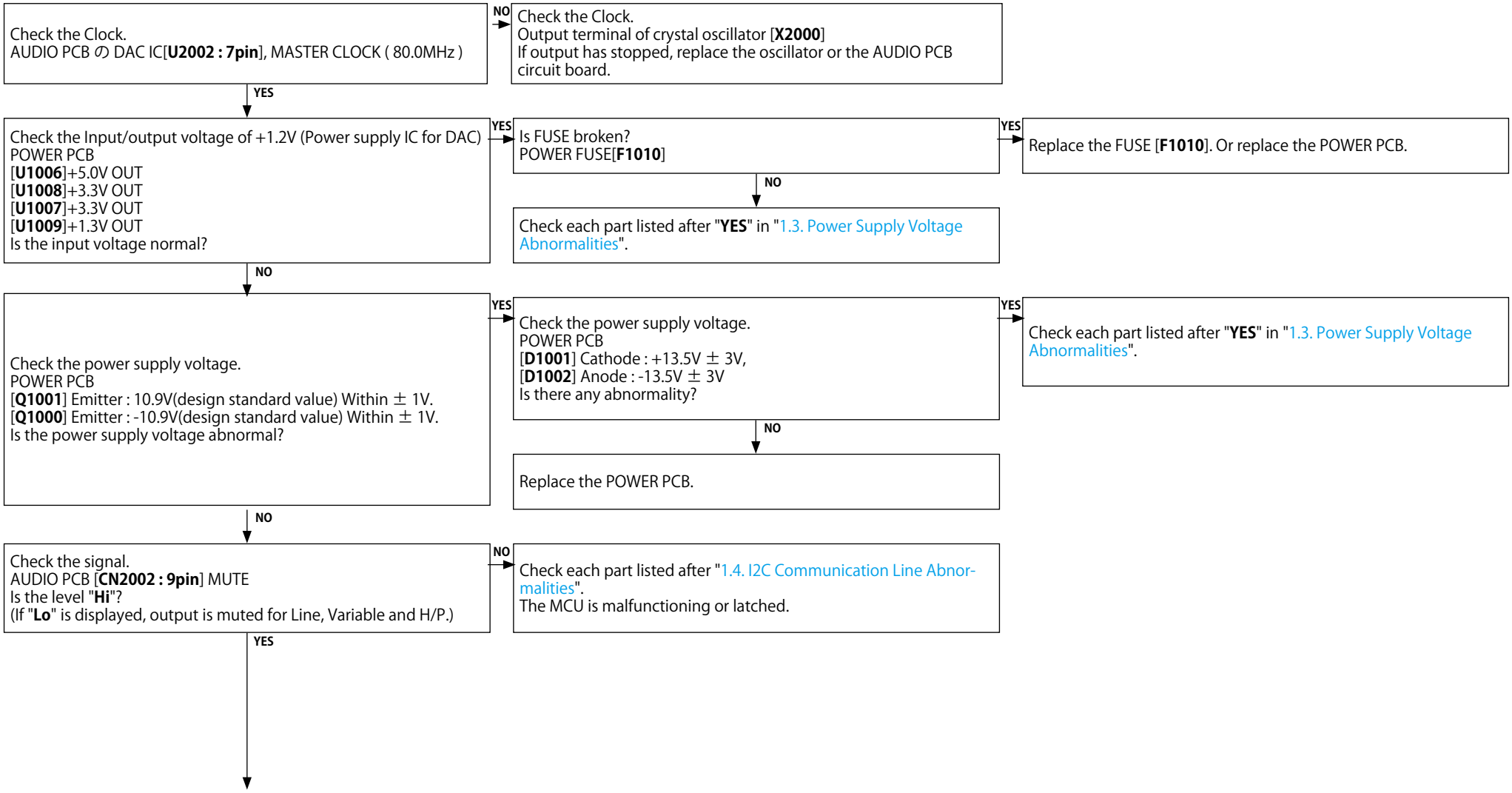
There is a signal: Check the state / soldering for the following parts.
MAIN PCB [**SW3000, Q3004, Q3006**]
Replace any faulty parts.

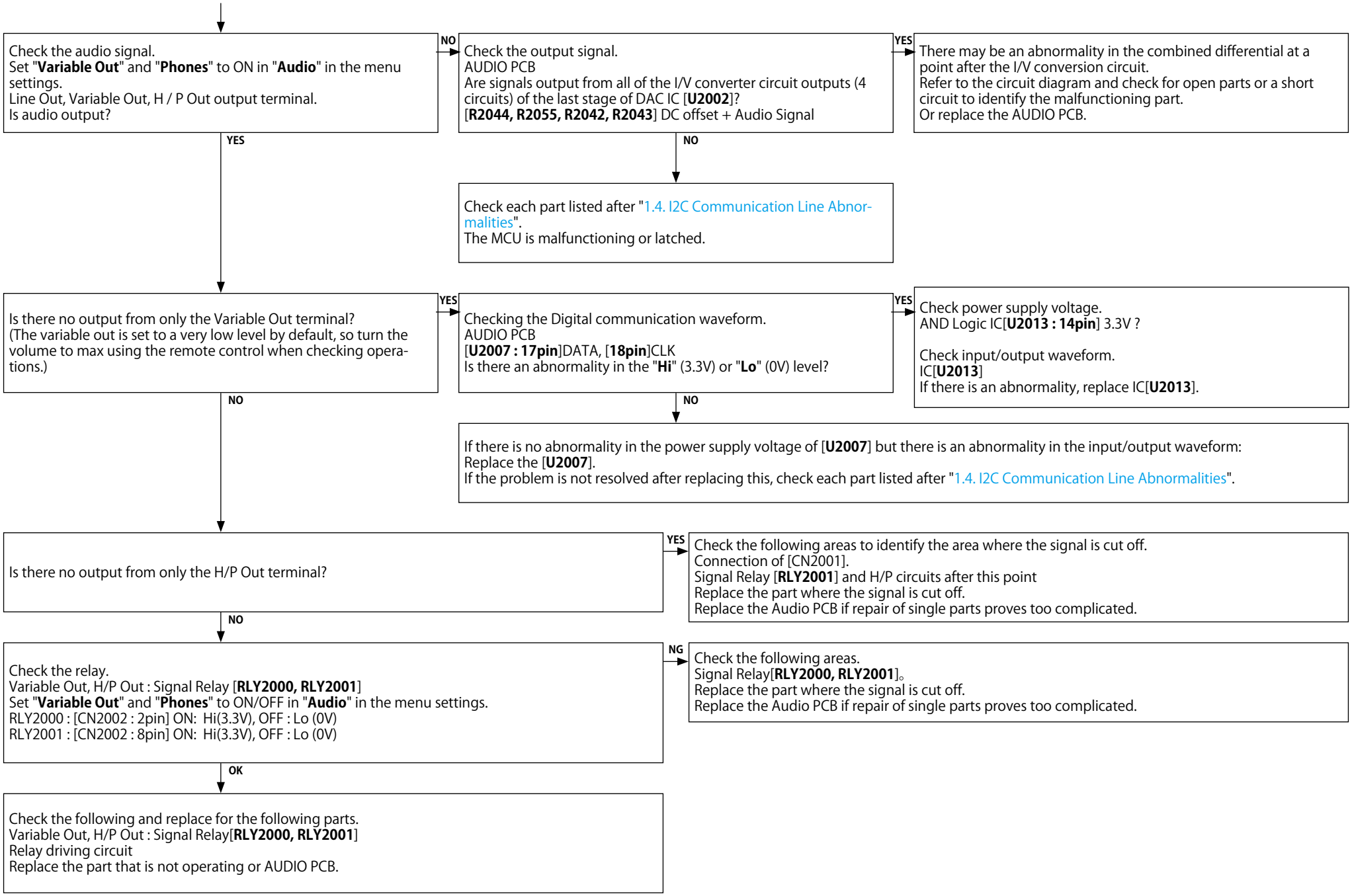
NO

Replace the FRONT PCB[**RMC100**].

4. Audio PCB Abnormalities and no Audio Output (Line Out, Variable Out, H/P Out)

This section details items to check if the digital audio signal is being correctly input to the Audio PCB DAC IC [**U2002**].




Check the audio signal.
Set "Variable Out" and "Phones" to ON in "Audio" in the menu settings.
Line Out, Variable Out, H / P Out output terminal.
Is audio output?
NO
Check the output signal.
AUDIO PCB
Are signals output from all of the I/V converter circuit outputs (4 circuits) of the last stage of DAC IC [U2002]?
[R2044, R2055, R2042, R2043] DC offset + Audio Signal
YES
There may be an abnormality in the combined differential at a point after the I/V conversion circuit.
Refer to the circuit diagram and check for open parts or a short circuit to identify the malfunctioning part.
Or replace the AUDIO PCB.
YES
NO
Check each part listed after "1.4. I2C Communication Line Abnormalities".
The MCU is malfunctioning or latched.
Is there no output from only the Variable Out terminal?
(The variable out is set to a very low level by default, so turn the volume to max using the remote control when checking operations.)
YES
Checking the Digital communication waveform.
AUDIO PCB
[U2007 : 17pin]DATA, [18pin]CLK
Is there an abnormality in the "Hi" (3.3V) or "Lo" (0V) level?
YES
Check power supply voltage.
AND Logic IC[U2013 : 14pin] 3.3V ?
Check input/output waveform.
IC[U2013]
If there is an abnormality, replace IC[U2013].
NO
NO
If there is no abnormality in the power supply voltage of [U2007] but there is an abnormality in the input/output waveform:
Replace the [U2007].
If the problem is not resolved after replacing this, check each part listed after "1.4. I2C Communication Line Abnormalities".
Is there no output from only the H/P Out terminal?
YES
Check the following areas to identify the area where the signal is cut off.
Connection of [CN2001].
Signal Relay [RLY2001] and H/P circuits after this point
Replace the part where the signal is cut off.
Replace the Audio PCB if repair of single parts proves too complicated.
NO
Check the relay.
Variable Out, H/P Out : Signal Relay [RLY2000, RLY2001]
Set "Variable Out" and "Phones" to ON/OFF in "Audio" in the menu settings.
RLY2000 : [CN2002 : 2pin] ON: Hi(3.3V), OFF : Lo (0V)
RLY2001 : [CN2002 : 8pin] ON: Hi(3.3V), OFF : Lo (0V)
NG
Check the following areas.
Signal Relay[RLY2000, RLY2001]。
Replace the part where the signal is cut off.
Replace the Audio PCB if repair of single parts proves too complicated.
OK
Check the following and replace for the following parts.
Variable Out, H/P Out : Signal Relay[RLY2000, RLY2001]
Relay driving circuit
Replace the part that is not operating or AUDIO PCB.

5. No Audio Output during USB File Playback (USB input), File Playback on a Server or Internet Radio and Bluetooth Playback

Before testing circuit operation, check if the file to be played back is in a supported format and network settings are correct.

Check output of digital audio waveform. (Audio file, Streaming を再生)
LEGO Module[**CN3010**]
MAIN PCB
[**L3017**]LRCK, [**L3018**]BCK, [**L3019**]DATA

NG → There is a malfunction in the communication between the following areas or in LEGO Module.
LEGO Module[**CN3010**] and SYSTEM uCOM[**U3001**]

If there is no abnormality, replace LEGO Module [**CN3010**].

OK ↓

Check output of digital audio waveform.
PLD[**U3013**]
MAIN PCB
[**L3025**]BCK/DBCK, [**L3024**]LRCK/DSD_DATAL, [**L3023**]PCM_DATA/DSD_DATA

NG → There is a malfunction in the communication between the following areas or in PLD[U3013].
PLD[**U3013**] and SYSTEM uCOM[**U3001**]

Replace PLD [**U3013**] or the MAIN PCB.

OK ↓

Check each part listed after "4. Audio PCB Abnormalities and no Audio Output (Line Out, Variable Out, H/P Out)".

6. No Audio Output during OPT Playback

Check output of digital audio waveform during playback of OPT input signal.
MAIN PCB
DIR[**U3007**]
[**R3181**]BCK, [**R3180**]LRCK, [**R3179**]DATA

NO → Check the S/PDIF input signal.
MAIN PCB
DIR[**U3007**], [**R3151**] OPT IN

NO → Check the following areas to identify the area where the S/PDIF signal is cut off.
Malfunctions in the OPT INPUT terminal
Power supply voltage of input buffer IC[U3011], input/output

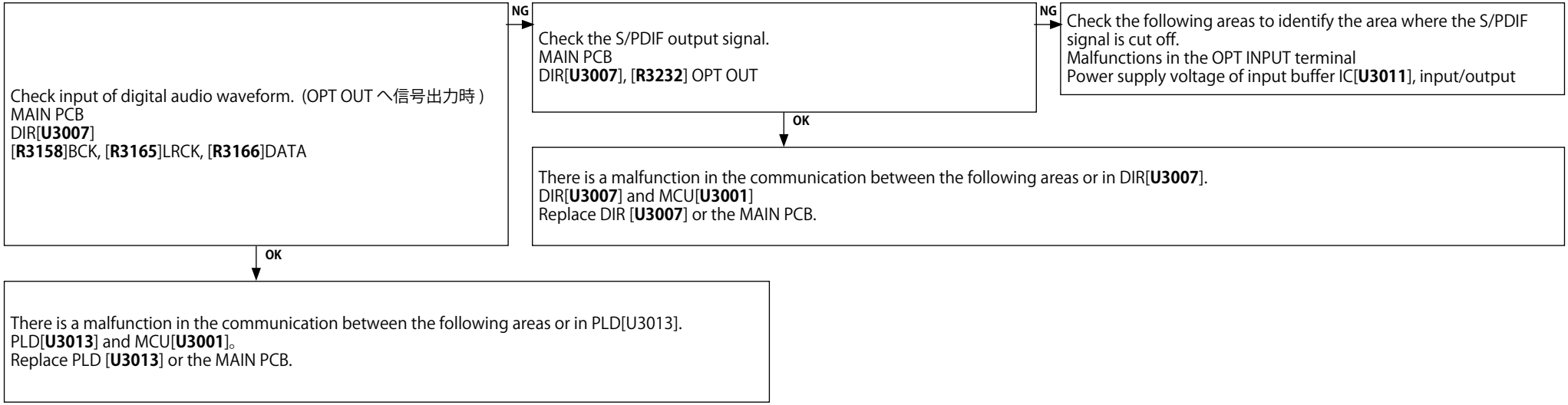
YES → There is a malfunction in the communication between the following areas or in DIR[U3007].
DIR[**U3007**] and MCU[**U3001**]。
Replace DIR [**U3007**] or the MAIN PCB.

YES → Check output of digital audio waveform.
PLD[**U3013**]
MAIN PCB
[**L3025**]BCK/DBCK, [**L3024**]LRCK/DSD_DATAL, [**L3023**]PCM_DATA/DSD_DATA

YES → There is a malfunction in the communication between the following areas or in PLD[U3013].
PLD[**U3013**] and MCU[**U3001**]。
Replace PLD [**U3013**] or the MAIN PCB.

NO → Check each part listed after "4. Audio PCB Abnormalities and no Audio Output (Line Out, Variable Out, H/P Out)".

7. Audio is not output from OPT OUT



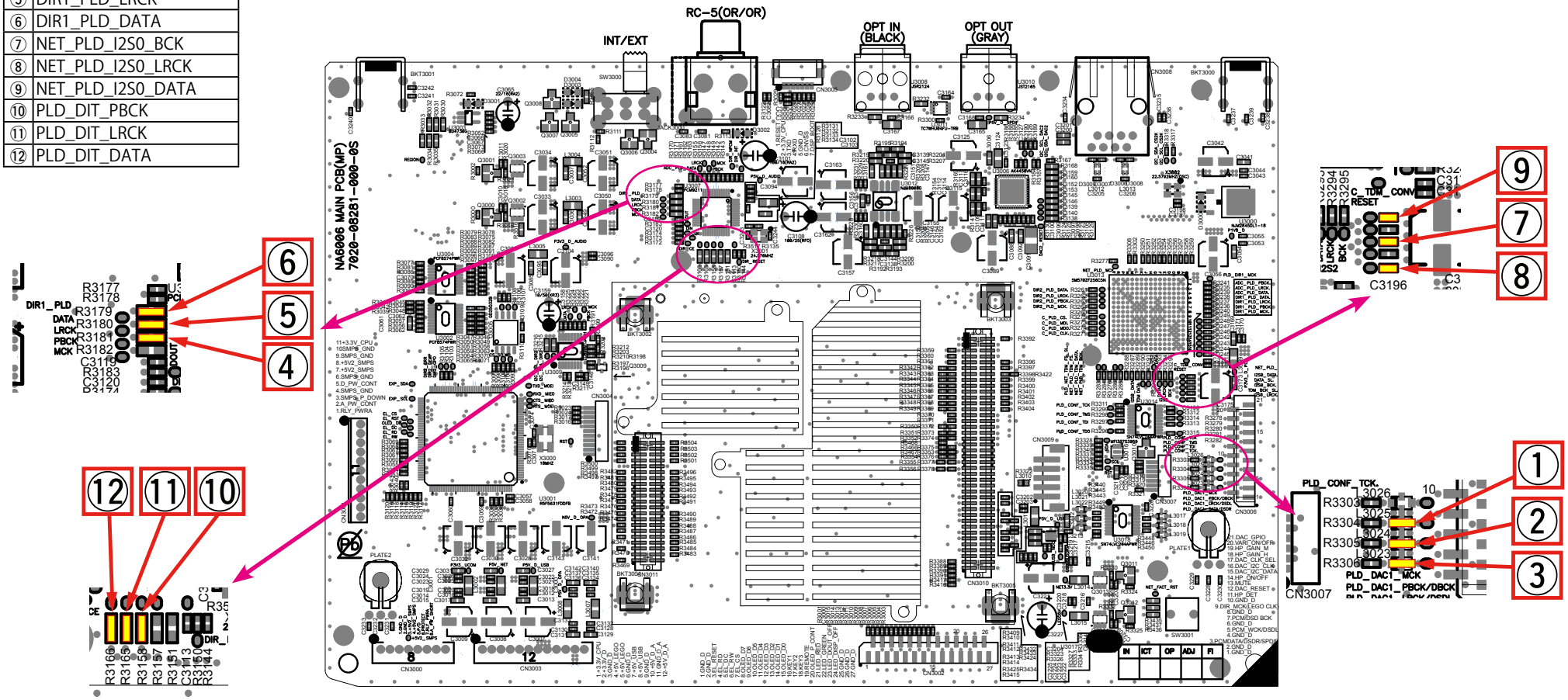
MEASURING METHOD AND WAVEFORMS

1. MAIN PCB test point

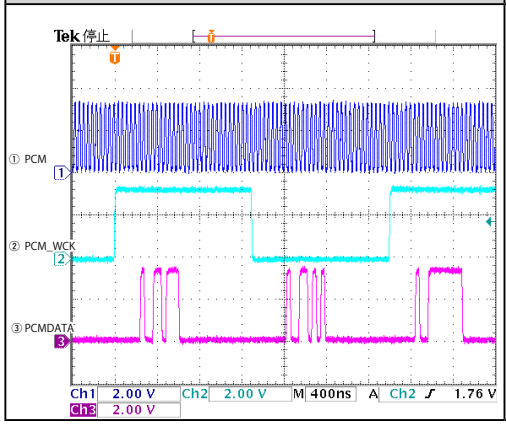
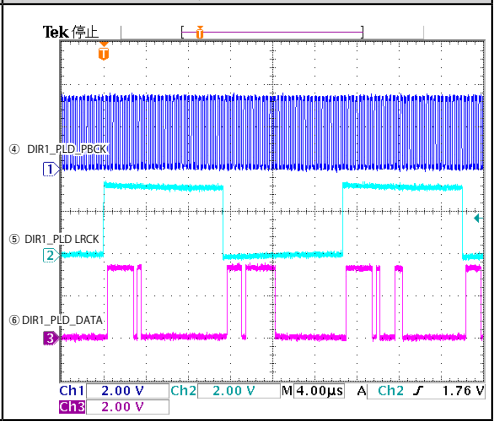
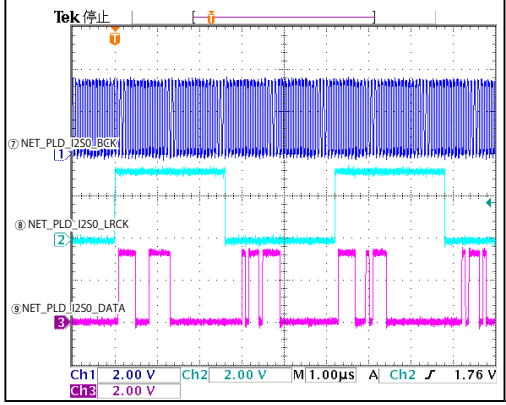
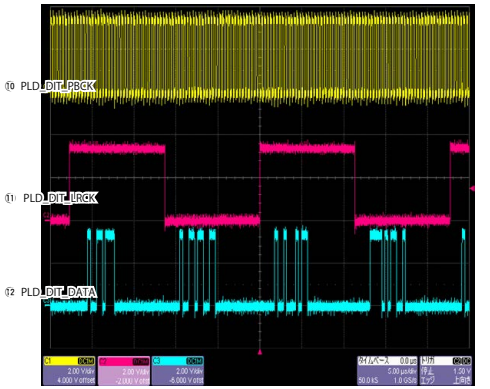
Check playback from the applicable input source.
(It is recommended to use extension wires between the probe and test points.)

MAIN PCB : test point

①	PCM/DSD_BCK
②	PCM_WCK/DSDL
③	PCMDATA/DSDR
④	DIR1_PLD_PBCK
⑤	DIR1_PLD_LRCK
⑥	DIR1_PLD_DATA
⑦	NET_PLD_I2S0_BCK
⑧	NET_PLD_I2S0_LRCK
⑨	NET_PLD_I2S0_DATA
⑩	PLD_DIT_PBCK
⑪	PLD_DIT_LRCK
⑫	PLD_DIT_DATA



WAVEFORMS

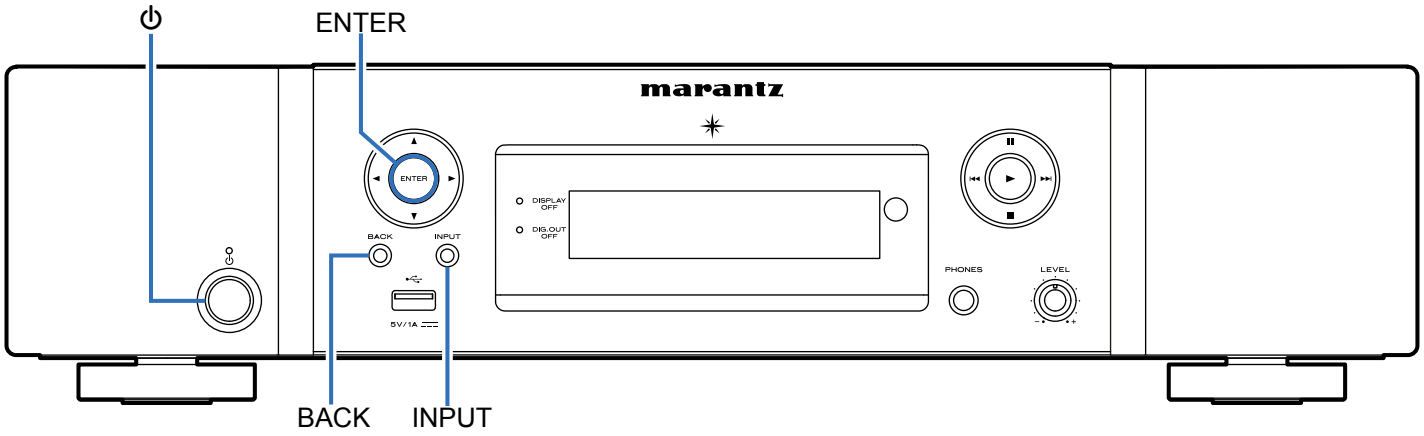
1-3 DAC input PCM PBCK_LRCK_DATA	4-6 Digital input playback PCM PBCK_LRCK_DATA
	
7-9 Network playback PCM PBCK_LRCK_DATA	**10-12 DIT input PCM_BCK_LRCK_DATA**
	

SPECIAL MODE

Special mode setting button

※ No. 1: Insert the AC plug while pressing button "**A**", and wait for more than 3 seconds.
※ No. 2 - 4: Insert the AC plug while pressing buttons "**A**" and "**B**" together, and wait for more than 3 seconds.
※ No. 5 - 6: While the power is On, hold down buttons "**A**" and "**B**" for at least 3 seconds.
※ No. 7: While the power is On, hold down buttons "**A**" for at least 3 seconds.

No.	Mode	Button A	Button B	Descriptions
1	Selecting the Mode1 for Service-related	Power		Service mode information is selected in Service-related selection mode 1. Service-related modes: No. 1-1 - No. 1-5 (See 1. Selecting the Mode1 for Service-related)
1-1	Version Display Mode	↑		The firmware version is shown on the display. (See 1-1. Version Display Mode)
1-2	IR Control Test	↑		This function is used to check IR control operations. (See 1-2. IR Control Test)
1-3	Protection history display mode	↑		Displays the protection occurrence history. (See 1-3. Protection History Display Mode)
1-4	All Device DPMS Update	↑		Since this mode is only for production/development, the detailed information is not provided.
1-5	Initialize	↑		Initialize the backup data for the MCU and network module. (Settings for the Installer Setup are not initialized.) (See 1-5. Initialize)
2	Factory Initialization Mode (Factory Reset)	INPUT	BACK	Initialize the backup data only for MCU. (Settings for the Installer Setup are initialized) (Network function settings are not initialized.) (See 2. Factory Initialization Mode)
3	All Device USB Update	INPUT	ENTER	Forcibly rewrite the firmware of all devices by USB. (See 3. All Device USB Update)
4	Firmware Factory Restore	POWER	BACK	Used when replacing the Network module. (See 3. Update method when the MAIN PCB or network module is replaced (Using a USB flash drive U3001, U3013, NETWORK MODULE))
5	Network Function Reset	POWER	BACK	Network module backup data is initialized. (See 5. Network Function Reset)
6	Selecting the Mode2 for Service-related	POWER	ENTER	Service mode information is selected in Service-related selection mode 2. Service-related modes: No. 6-1 - No. 6-2 (See 6. Selecting the Mode2 for Service-related)
6-1	LEGO Log Capture mode	↑	↑	Acquires the Network Module log. The log is deleted when the Network Module is deleted. (See 6-1. LEGO Log Capture mode)
6-2	Change LEGO Audio Path	↑	↑	Since this mode is only for production/development, the detailed information is not provided.
7	Restart	POWER		Use this to resolve network issues. (See 7. Restart)



1. Selecting the Mode1 for Service-related

1.1. Actions

Selecting Each Mode.

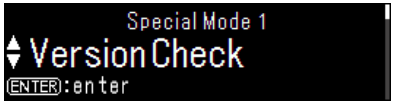
1.2. Starting up

Insert the AC plug while pressing button "**POWER**", and wait for more than 3 seconds.
Release button "**POWER**" when the power indicator turns green.
Select the desired mode using the "**CURSOR ▼/▲**" button, then press the "**ENTER**" button to confirm.

1.3. Displaying and Selecting Each Mode

The information shown on the display switches each time the "**CURSOR ▼/▲**" button is pressed.
Press the "**ENTER**" button to set the currently displayed mode and restart the device.

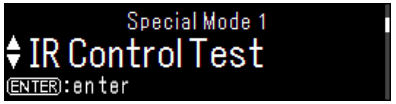
①



The firmware version is shown on the display.

↓

②



Used to check IR control operations.

↓

③

The protection history can be checked.

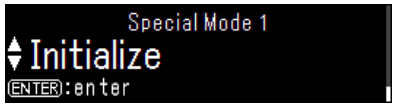
↓

④

Executes an update for the entire device via DPMS.

↓

⑤



Initialize the backup data for the MCU and network module.

1-4. Canceling the selected mode

Unplug the AC plug to cancel this mode.

1-1. Version Display Mode

1-1.1. Actions

Version information is displayed when the device is started in this mode.

1-1.2. Starting up

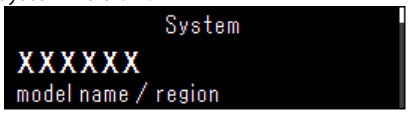
Insert the AC plug while pressing button "**POWER**", and wait for more than 3 seconds.
Release button "**POWER**" when the power indicator turns green.
Select the "**Version Check**" using the "**CURSOR ▼/▲**" button, then press the "**ENTER**" button to confirm.

Startup display

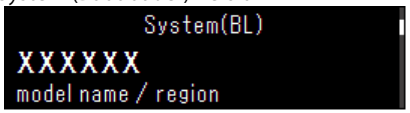
1-1.3. Display Order

① System Version → ② System (Bootloader) Version → ③ → PLD Version
→ ④ HEOS Version → ⑤ HEOS Build → ⑥ HEOS Module → ⑦ HEOS Configuration
→ ⑧ HEOS Locate → ⑨ HEOS Restore → ⑩ Ether Mac Address → ⑪ WiFi Mac Address
→ ⑫ BT Mac Address → ⑬ Serial Number ·····
Unplug the AC plug to cancel this mode.

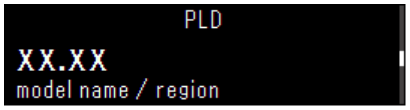
①System Version :



②System (Bootloader) Version

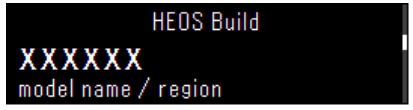


③PLD Version

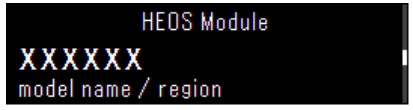


④HEOS Version

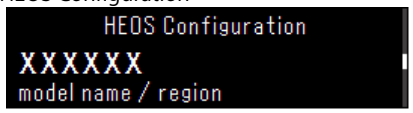
⑤HEOS Build



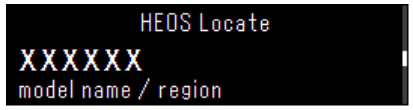
⑥HEOS Module



⑦HEOS Configuration

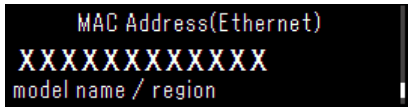


⑧HEOS Locate



⑨HEOS Restore

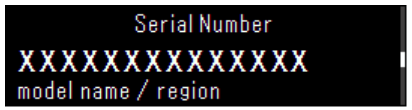
⑩Ether Mac Address



⑪WiFi Mac Address

⑫BT Mac Address

⑬Serial Number



1-2. IR Control Test

This function is used to check IR control operations.

1-2.1. Starting up

Insert the AC plug while pressing button "**POWER**", and wait for more than 3 seconds.
Release button "**POWER**" when the power indicator turns green.
Select the "**IR Control Test**" using the "**CURSOR ▼/▲**" button, then press the "**ENTER**" button to confirm.

1-2.2. Operations

Displayed until AC is turned off.
1. The "I**R Control Test**" screen is displayed (5 second).
2. The names of the codes to be sent are displayed in the following order.
   - •AMP POWER: 16-12 (RC-5 code)
   - •MUTE: 16-13 (RC-5 code)
   - •VOLUME UP: 16-16 (RC-5 code)
   - •VOLUME DOWN: 16-17 (RC-5 code)
   - •STOP: 20-54 (RC-5 code)
   - •PLAY/PAUSE: 20-53-10 (RC-5 code)
   - •OPEN/CLOSE: 20-45 (RC-5 code)
   - •CD POWER: 20-12 (RC-5 code)
3. Use the "**CURSOR ▼/▲**" buttons to select codes, then press the "**ENTER**" button to send them. (2 pulses)

1-3. Protection History Display Mode

If protections have been activated multiple times, the latest protection operation is recorded.

1-3.1. Starting up

Insert the AC plug while pressing button "**POWER**", and wait for more than 3 seconds.
Release button "**POWER**" when the power indicator turns green.
Select the "**Protection History**" using the "**CURSOR ▼/▲**" button, then press the "**ENTER**" button to confirm.

1-3.2. Displays

Startup display
"**Protection History**" is displayed for 5 seconds.

To exit this mode, unplug the power cord.

- Display when there is no history of protection being activated

- Display when protection has been activated

Cause : Power supply short circuit detected in the power supply board

Cause : Overcurrent detected due to short in audio PCB.

Resetting the protection history
With the protection history displayed, press and hold the "**Cursor▲**" button for over 5 seconds to clear the protection history.

After the history is cleared, "**No Protection**" is displayed.

Protection history is cleared, even when the set is reset (Factory Reset).

1-4. All Device DPMS Update

Standard updates are now performed through OTA.
Since this mode is only for production/development, the detailed information is not provided.

1-5. Initialize

Initializes all MCU and network module backup data.

NOTE: If initialization is executed in LEGO Off mode, cancel LEGO off mode then reset the LEGO Network.

1-5.1. Starting up

Insert the AC plug while pressing button "**POWER**", and wait for more than 3 seconds.
Release button "**POWER**" when the power indicator turns green.
Select the "**Initialize**" using the "**CURSOR ▼/▲**" button, then press the "**ENTER**" button to confirm.
"**Initialized**" is shown on the display for 5 seconds.

(English is selected)

(Japanese is selected)

1-5.2. Initialization item

Network module backup data
(1) Network setup
(2) Friendly Name
(3) Auto Update setting
(4) Allow Update setting
(5) Time Zone setting
(6) Queue list
(7) Internet Radio recently played station
(8) Quick Select playback station
(9) AirPlay Password
(10) Bluetooth Pairing History
(11) Crestron Connected Setup

MCU backup data	
Items	Default
(1) INPUT	Internet Radio
(2) Dimmer	100%
(3) Sleep	Off
(4) Repeat / Random / Program	Off
(5) Favorites list	Clear all
(6) Setup Menu items	Clear all
(7) Variable Volume	54 (-40dB)
(8) Volume Limit	Off
(9) Standby / Power On	Power On

2. Factory Initialization Mode

Initialize backup data of the MCU.

2.1. Starting up

1. Press the power operation button to turn off the power, and remove the AC plug from the socket.
2. Insert the AC plug while pressing buttons "**INPUT**" and "**BACK**" together, and wait for more than 3 seconds.
3. Release buttons "**INPUT**" and "**BACK**" when the power indicator turns green.
4. All lights on the display illuminate for 2 seconds. The power indicator lights up in orange.
5. All lights on the display turn off for 2 seconds.
6. All of the indicators illuminate for 4 seconds.
7. "**Factory Reset**" is shown on the display for 5 seconds.
   The settings for the Installer Setup is also initialized.
   Network function settings are not initialized.

2.2. Factory Reset item

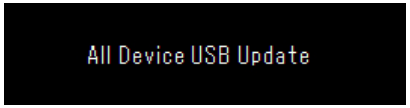
Items	Default
INPUT	Internet Radio
Dimmer	100%
Sleep	Off
Repeat / Random / Program	Off
Setup Menu items	Clear all
Variable Volume	54 (-40dB)
Favorites list	Clear
Standby / Power On	Power On
Protection history	Delete
Update retry flag	Clear

3. All Device USB Update

Perform an update by USB memory.
The firmware of all devices in the unit is forcibly updated without performing a version check.
Button and remote control operation is not recognized during the update.

Insert the AC plug while pressing buttons "**INPUT**" and "**ENTER**" together, and wait for more than 3 seconds.

- "**All Device USB Update**" is displayed for 5 seconds.



The display during this update is the same as standard update mode.

4. Firmware Factory Restore

Used when replacing the Network module.
See "3. Update method when the MAIN PCB or network module is replaced (Using a USB flash drive U3001, U3013, NETWORK MODULE)"

5. Network Function Reset

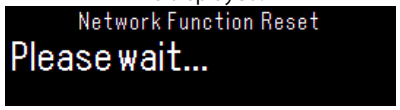
Initializes network settings.

5.1. Actions

The following items are initialized.
(1) Network setup
(2) Friendly Name
(3) Auto Update setting
(4) Allow Update setting
(5) Time Zone setting
(6) Queue list
(7) Internet Radio recently played station
(8) Quick Select playback station
(9) AirPlay Password
(10) Bluetooth Pairing History
(11) Crestron Connected Setup

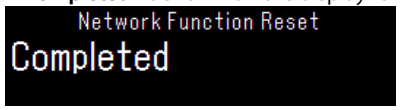
5.2. Starting up

While the power is on, hold down buttons "**POWER**" and "**BACK**" for at least 3 seconds.
(1) "**Please wait**" is displayed.



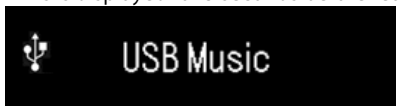
Changes between ".", then ".." and "..." for 1 second each.
(English is selected) (Japanese is selected)

(2) "**Completed**" is shown on the display for 5 seconds.



(English is selected) (Japanese is selected)

(3) This is displayed for 5 seconds before returning to the normal display.



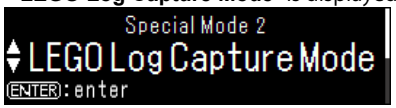
6. Selecting the Mode2 for Service-related

Selecting Each Mode.

6.1. Starting up

While the power is on, hold down buttons "**POWER**" and "**ENTER**" for at least 3 seconds.

(1) "**LEGO Log Capture Mode**" is displayed.



(2) The information shown on the display switches each time the "**CURSOR ▼/▲**" button is pressed.
LEGO Log Capture Mode ⇔ Change LEGO Audio Path

6-1. LEGO Log Capture mode

- Acquires the Network Module log.
- The log is deleted when the Network Module is deleted.
  If an error occurs, it is acquired without turning off the power of this unit.
- The log can be copied to a writable USB flash drive.
  It can also be sent to a server if this unit is connected to the Internet.
- The log is stored in the root folder of the USB flash drive with the name "**logs-<friendlyname>-<number>.tar.gz**".
  <**friendlyname**> indicates the friendly name and <**number**> indicates the sequence number.
  Previous logs on the USB flash drive are not overwritten. The log is encrypted.

6-1.1. Starting up

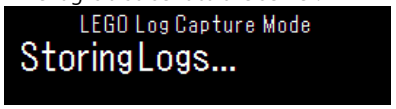
While the power is on, hold down buttons "**POWER**" and "**ENTER**" for at least 3 seconds.

(1) "**LEGO Log Capture Mode**" is displayed.

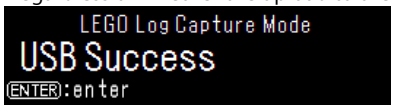
(2) Select the "**LEGO Log Capture Mode**" using the "**CURSOR ▼/▲**" button, then press the "**ENTER**" button to confirm.
LEGO Log Capture Mode ⇔ Change LEGO Audio Path

6-1.2. If the USB flash drive is connected after starting the unit

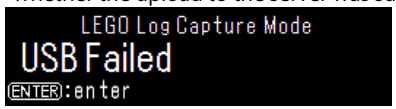
(1) The log is written to the USB flash drive and "**Storing Logs...**" is displayed.
The log is also sent to the server.



(2) When a log package is saved to a USB flash drive, "**USB Success**" appears in the display for 5 seconds, regardless of whether the upload to the server was successful.

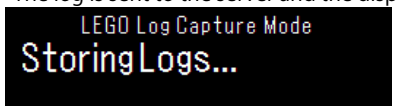


(3) When saving of the log package fails, "**USB Failed**" appears in the display for 5 seconds, regardless of whether the upload to the server was successful.



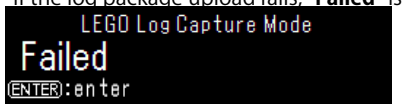
6-1.3. When the USB flash drive is not connected after startup, and this unit is connected to the Internet.

(1) The log is sent to the server and the display shows "**Storing Logs...**" for 5 seconds.



(2) When the log package is uploaded, the ticket numbers "**Ticket No：XXXXX**" are displayed until RC or the "**Enter**" or "**BACK**" button of this machine is pressed.

(3) If the log package upload fails, "**Failed**" is displayed for 5 seconds.



6-2. Change LEGO Audio Path

Since this mode is only for production/development, the detailed information is not provided.

7. Restart

Use this to restart the unit in the event of a network problem.
While the power is On, hold down buttons "**POWER**" for at least 3 seconds.
"**Restart**" is shown on the display for 5 seconds.

This unit restarts

UPDATING

PROCEDURE AFTER REPLACING THE PCB.

PROCEDURE AFTER REPLACING THE U-COM, ETC.

FIRMWARE UPDATE PROCEDURE

PROCEDURE AFTER REPLACING THE PCB.

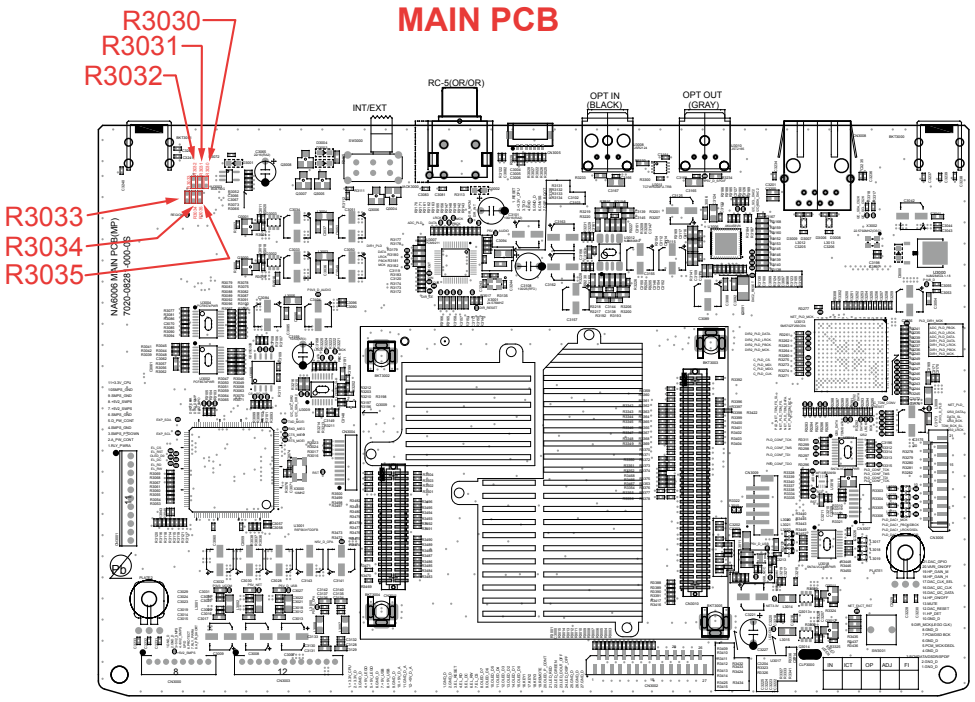
The procedure after replacing the printed circuit boards is as follows.

(1) Change the resistor for setting the region.

Model Area	MAIN PCB					
	R3035	R3033	R3034	R3032	R3030	R3031
North America (U)	10K	OPEN	OPEN	OPEN	OPEN	OPEN
Europe (N)	10K	OPEN	27K	2.7K	OPEN	OPEN
Japan (F)	10K	10K	OPEN	OPEN	OPEN	OPEN
CHINA (K)	OPEN	10K	OPEN	OPEN	OPEN	OPEN

See the PCB below.

(2) Be sure to replace the software with the latest version.



PROCEDURE AFTER REPLACING THE U-COM, ETC.

The procedure after replacing the u-COM (microprocessor) is as follows.
Implement the update method when the MAIN PCB or network module is replaced.

PCB Name	Ref. No.	Description	Procedure after Re-placement	Remark
MAIN	U3001	R5F5631FDDFB	B	SOFTWARE : System
MAIN	U3013	5M570ZF256C5N	C	SOFTWARE : AUDIO PLD
MODULE	U3010	NETWORK MODULE	D	SOFTWARE : Network
China region only				
MAIN	U3005	GD25Q32B	A	SOFTWARE : China font

Procedure after Replacement

A : The software has been written. The software is not written at the time of replacement.

B : The software has been written. The software may need to be rewritten by version updates. Check the version.

C : The software has not been written. The software needs to be written after replacement.
See "FIRMWARE UPDATE PROCEDURE" for information on writing the software.

D : The software has been written. Be sure to replace the software with the latest version.
See "3. Update method when the MAIN PCB or network module is replaced (Using a USB flash drive U3001, U3013, NETWORK MODULE)" for information on rewriting the software.

FIRMWARE UPDATE PROCEDURE

1. Items necessary for update

Items necessary for update are as follows.

Update Type	Needed Part for Update	Requirement	Offered / not Offered		
			Standard Service Equipment Not offered by D&M	Purchase from D&M Article code	Download from SDI
Via USB	USB flash drive (USB 2.0 : Min 1GB) • We recommend a USB memory device that has an LED installed.	Formatting FAT16 or FAT 32	X	-	"Table 1" or "Table 2"
Via OTA	Internet Connection by Broadband Circuit	-	X	-	-
	Modem	-	X	-	-
	Router	-	X	-	-
	Ethernet cable (CAT-5 or greater is recommended)	-	X	-	-

Table 1

Update download file when the MAIN PCB or network module is replaced

Model Name	Model Area	Download from SDI
NA6006	ALL	avr_40.prod.update.factory.xxxx.zip

Table 2

Update download file when the firmware is updated (Two files, "HW component" and "LEGO component")

Model Name	Model Area	Download from SDI		
		For HW component		For LEGO component
NA6006 U	North America (U)	Product ID : 100200120100	DPMS_NA6006ALL_LEGO_xxx.zip	heos_40.prod_x.xxx.xx.zip
NA6006 N	Europe (N)	Product ID : 100200120200		
NA6006 F	Japan (F)	Product ID : 100200120400		
NA6006 K	China (K)	Product ID : 100200120500		

2. Update preparation with a USB flash drive (U3001, U3013, NETWORK MODULE)

You can update the firmware by downloading the latest version with USB flash drive.

2.1. Connecting to the USB flash drive

(1) Preparation

- Windows PC
- USB flash drive format : Prepare a USB flash drive formatted in FAT16 or FAT32.
  ※We recommend a USB flash drive that has an LED installed.

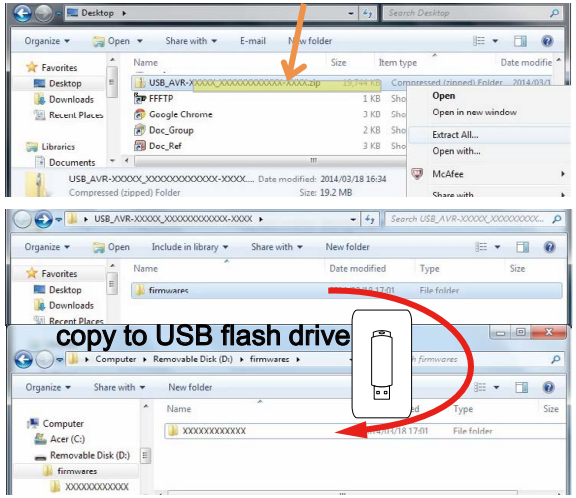
NOTE :

- Use a memory that supports USB2.0.
- Do not run the USB flash drive through a hub.
- Do not connect a computer to the USB port of this unit using a USB cable.
- Do not use an extension cable when connecting the USB flash drive.
- Save the update file on a blank USB flash drive for use.
- If a USB flash drive cannot be updated, replace it with a different USB flash drive and perform the update again.

2.2. Unzipping the Downloaded File

Unzip the downloaded file on your computer.

XXXXXXXXXXX	xxxxxxxxxx_xxxxxxxx.zip



There are folders or files after unzipping.
Copy these folders or files onto the USB flash drive.
The folders or files must be placed in the root directory of the USB flash drive.

3. Update method when the MAIN PCB or network module is replaced (Using a USB flash drive U3001, U3013, NETWORK MODULE)

3.1. File structure on USB flash drive

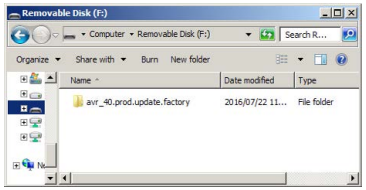
MAIN PCB or network module is replaced onto the USB flash drive in the following structure.

After unzipping the files, store them in the root of the same USB flash drive.

Model Area	Download from SDI
ALL	avr_40.prod.update.factory.xxxx.zip

USB flash drive root
+ avr_40.prod.update.factory
  + xxxxxxzz.ota-download
  + heos_40.prod.update.factory

xxxxxx : Model name
zz : Region



3.2. Start the update.

NOTE :
- Remove the LAN cable from this unit when updating.
  (Do not connect to a wired or wireless network.)
- The GUI menu setting details and image quality adjustment setting details are initialized when Firmware Factory Restore is performed. Therefore, take a note of the setting details beforehand and reconfigure the settings after update.
- Do not remove the USB flash drive until updating is completed.
- Do not turn off the power until updating is completed.
- It takes a maximum of approximately 25 minutes for update to complete.

Once an update is started, normal operations cannot be performed until it is completed.

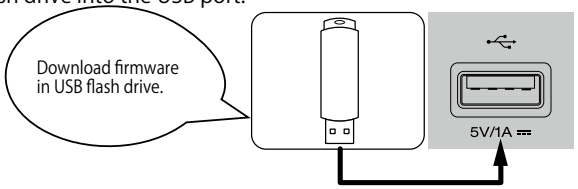
(1) Press the power button to turn on the power.
(2) Wait for this unit to start up.
(3) Set the input source to Internet Radio.
  Check that the display is as shown below.

"**No Network Connection**" appears in a scrolling display.

(English is selected)

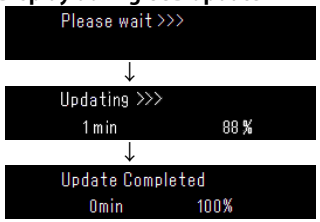
(Japanese is selected)

(4) Insert the USB flash drive into the USB port.



(5) USB Update starts automatically.
  The Standby LED lights red.

Display during USB update



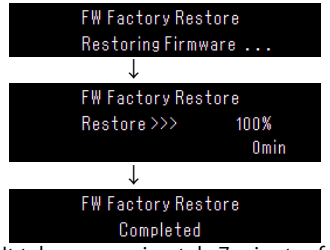
It takes a maximum of approximately 11 minutes for update to complete.

(6) The unit restarts when update is complete.
  ※When update is complete, the folder name on the USB flash drive changes to "**avr_40.prod.update.factory.done**". To use the files again, delete the "**.done**" part.

(7) Execute Firmware Factory Restore.
  Insert the AC plug while pressing buttons "**POWER**" and "**BACK**" together, and wait for more than 3 seconds.

Display during Firmware Factory Restore

The "**DISPLAY OFF**" and "**DIG. OUT OFF**" LED indicator lights red.



It takes approximately 7 minutes for Firmware Factory Restore to complete.

(8) Execute Service Region Settings.
  See "4. Update Method for Service Region Settings (U3001, U3013, NETWORK MODULE)"

(9) Check that the version is the specified version. See "1-1. Version Display Mode"

(10) OTA or the USB flash drive to update the firmware to the newest version.
  ※We recommend using the firmware update method using OTA.
  See "5. Normal Firmware Update Method from USB Flash Drive (U3001, U3013, NETWORK MODULE)" or "6. Normal Firmware Update Method from OTA (U3001, U3013, NETWORK MODULE)"

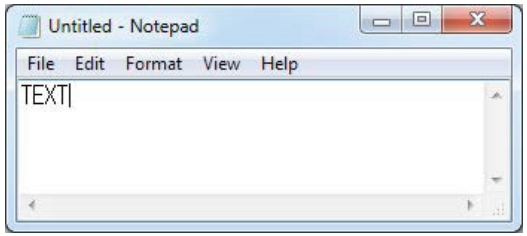
4. Update Method for Service Region Settings (U3001, U3013, NETWORK MODULE)

Copy the Service Region Settings from the USB flash drive to this unit.

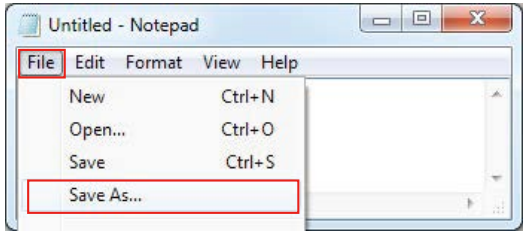
4.1. Creating a Service Region Settings file

(1) Click [Start button] - [Accessories] - [notepad] on the PC to launch the notepad.

(2) Enter "**TEXT**".

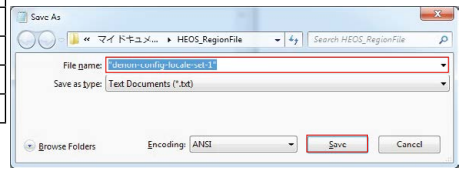


(3) Click "**File**", and then click "**Save As...**".

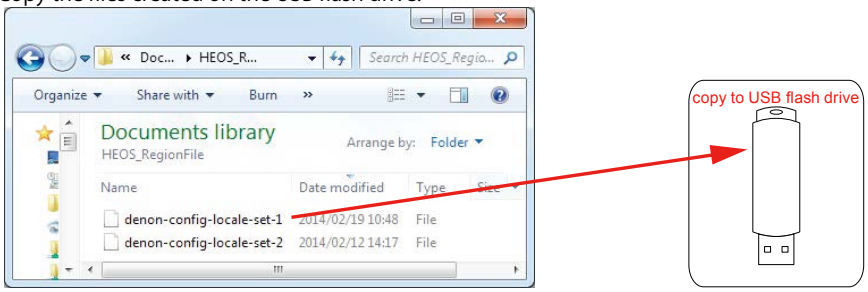


(4) Enter the file name and click the Save button.
NOTE : Enter the file name in double quotation marks. (The file extension is not required.)

Service Region	File name
North America	"denon-config-locale-set-1"
Europe	"denon-config-locale-set-2"
Japan	"denon-config-locale-set-3"
Australia	"denon-config-locale-set-4"
Korea	"denon-config-locale-set-5"
China	"denon-config-locale-set-6"
Israel	"denon-config-locale-set-7"



(5) Copy the files created on the USB flash drive.



4.2. Starting Service Region Settings

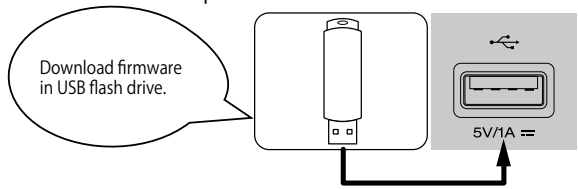
NOTE :
- Remove the LAN cable from this unit when updating.
  (Do not connect to a wired or wireless network.)
- We recommend a USB memory device that has an LED installed.

(1) Press the power button to turn on the power.
(2) Wait for this unit to start up.
(3) Set the input source to Internet Radio.
Check that the display is as shown below.
"**No Network Connection**" appears in a scrolling display.

(English is selected)

(Japanese is selected)

(4) Insert the USB flash drive into the USB port.



(5) Wait for at least 10 seconds before removing the USB flash drive.
(If the USB flash drive has an LED, this LED will be flashing. Remove the USB flash drive when the LED stops flashing.)

5. Normal Firmware Update Method from USB Flash Drive (U3001, U3013, NETWORK MODULE)

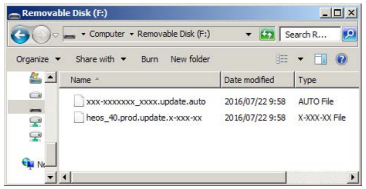
5.1. File structure on USB flash drive

Copy the normal update files onto the USB flash drive in the following structure.

After unzipping the HW component USB update files for the target model and LEGO USB update files, store them in the root of the same USB flash drive.

Model Area	Download from SDI	
	For HW component	For LEGO component
North America (U)	DPMS_NA6006ALL_LEGO_xxx.zip Product ID : 100200120100	heos_40.prod_x.xxx.xx.zip
Europe (N)	DPMS_NA6006ALL_LEGO_xxx.zip Product ID : 100200120200	
Japan (F)	DPMS_NA6006ALL_LEGO_xxx.zip Product ID : 100200120400	
China (K)	DPMS_NA6006ALL_LEGO_xxx.zip Product ID : 100200120500	

USB flash drive root
+ NA6006xx_xxxx.update.auto
+ heos_40.prod.update.x-xxx-xx



5.2. Start normal update

NOTE :

- Remove the LAN cable from this unit when updating.
  (Do not connect to a wired or wireless network.)
- Do not remove the USB flash drive until updating is completed.
- Do not turn off the power until updating is completed.
- It takes a maximum of approximately 25 minutes for update to complete.

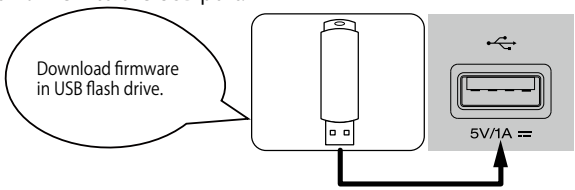
Once an update is started, normal operations cannot be performed until it is completed.
The menu settings and image adjustment settings of this unit may be initialized.
Note down the settings before updating, and set them again after updating.

(1) Press the power button to turn on the power.
(2) Wait for this unit to start up.
(3) Set the input source to Internet Radio.
Check that the display is as shown below.
"**No Network Connection**" appears in a scrolling display.

(English is selected)

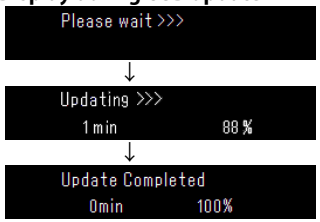
(Japanese is selected)

(4) Insert the USB flash drive into the USB port.



(5) USB Update starts automatically.
The Standby LED lights red.

Display during USB update



It takes a maximum of approximately 25 minutes for update to complete.

(6) The unit restarts when update is complete.

(7) After updating the firmware, check the version.
See "1-1. Version Display Mode"

6. Normal Firmware Update Method from OTA (U3001, U3013, NETWORK MODULE)

Download the latest firmware from our website and update the firmware.

---Cautions on Firmware Update---

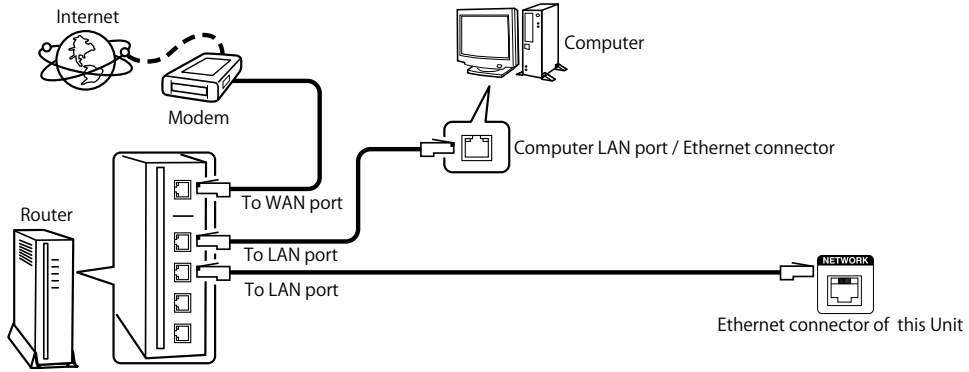
- For the update procedure, a proper broadband Internet connection environment and settings are required.
- Do not turn off the power until updating is completed.
- It takes a maximum of approximately 25 minutes for update to complete.

Once an update is started, normal operations cannot be performed until it is completed.
The menu settings and image adjustment settings of this unit may be initialized.
Note down the settings before updating, and set them again after updating.

6.1. Network Connection

(1) System Requirements
- Internet Connection by Broadband Circuit
- Modem
- Router
- Ethernet cable (CAT-5 or greater is recommended)

(2) Setting



6.2. Check and update the firmware

Check if there is a firmware update available. It is also possible to check approximately how long the update will take.

(1) Press the "**SETUP**" button on the remote control to select the setting.

(2) Press the cursor button to select "**General**" → "**Firmware**" → "**Check for Update**".

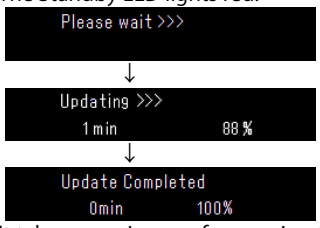
(3) Check update
- If the firmware version is anything other than the latest version, select "**Update Now**" to update the firmware.
- "**No update required. Latest version installed.** "is displayed when the firmware version is up to date.

(4) OTA Update starts automatically.

Display during OTA update

Firmware is downloaded.

The Standby LED lights red.



It takes a maximum of approximately 25 minutes for update to complete.

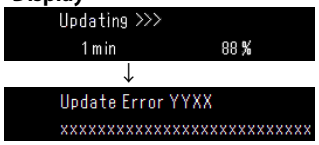
(5) The unit restarts when update is complete.

(6) After updating the firmware, check the version.
See "1-1. Version Display Mode"

7. About the error codes (U3001, U3013, NETWORK MODULE)

See the table below for details on error codes and solutions when updating the firmware.
Error codes are displayed in 4 digits, YYXX(YY : DeviceID, XX : ErrorCode).

Display



L2 : Content of the display is scrolled.

Remedies

Error Code (YYXX) (DeviceID/ErrorCode)	Remedies(Display portion of **********)
000A	"Connection failed. Please check your network, then try again."
0009	"Update failed. Please check your network, then try again."
0009	"Upgrade failed. Please check your network, then try again."
YY00 YY01 YY02 YY03 YY04 YY07	"Please check your network, unplug and reconnect the power cord, and try again."
YY00 YY01 YY02 YY03 YY04 YY07	"Please unplug and reconnect the power cord, and try again."
0006	"Update file is corrupted. Please check the file."
000B	"Please contact customer service in your area." ※ Check the power supply and communication lines of each device.

Device ID table

Device ID (YY)	Device Name
00	General
01	Main CPU
0B	Main FBL (No used)
15	Audio PLD
33	LEGO

Error Code table

Type code (XX)	Description
00	Logical error
01	Error during erasing
02	Error during writing
03	Error during verifying
04	No access for the component
05	Package mismatched. Product ID, package version un-matched of the package manifest
06	Unpack dis-available of component package file
07	Time out
08	Latest firmware has already installed.
09	Error during download
0A	Error connection
0B	Hardware Error

---Checking the Firmware Version After the Update---

After updating the firmware, check the version.
See "1-1. Version Display Mode"

www.marantz.com

You can find your nearest authorized distributor or dealer on our website.

marantz® is a registered trademark.