DENON®

Service Manual Ver. 2

NETWORK STEREO RECEIVER
DRA-800H

• 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

△2 http://dmedia.soundunited.com/documents/details/25798

ONLINE PARTS LIST (P5)

WEB owner's manual

NA: http://manuals.denon.com/DRA800H/NA/EN/index.php

EU: http://manuals.denon.com/DRA800H/EU/EN/index.php

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

Please refer to the MODIFICATION NOTICE.

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

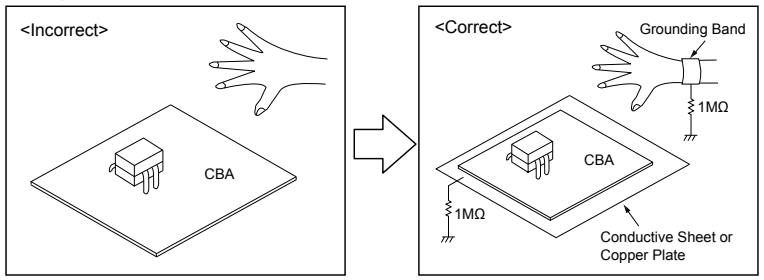
Electrostatic breakdown of the semi-conductors or optical pickup may occur due to a potential difference caused by electrostatic charge during unpacking or repair work.

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

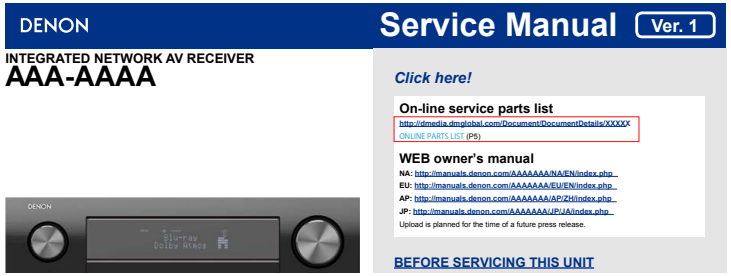


ONLINE PARTS LIST

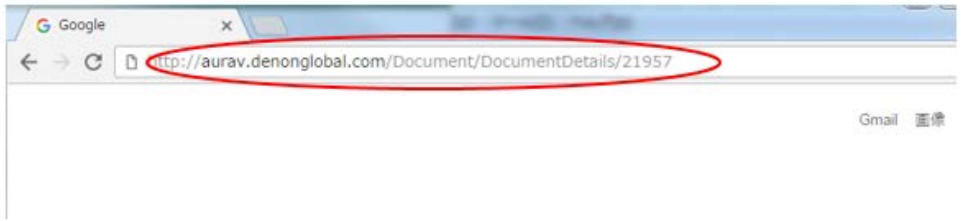
Accessing the Parts List

(1) Access from the Service Manual

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



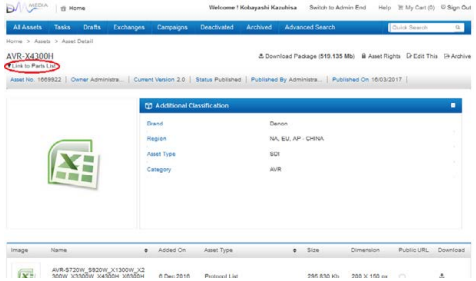
NOTE : If the web browser does not open automatically, copy the URL and paste it into the address bar of the web browser and then press Enter.



(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.



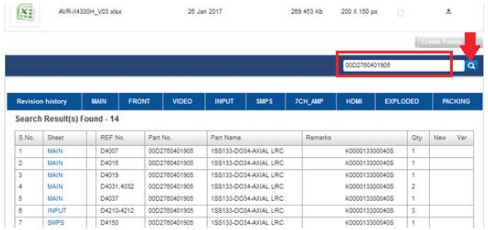
NOTE : If the ▼ Link to Parts List section is not displayed, download the parts table from the Asset list.

Searching Part Numbers or Ref. Numbers

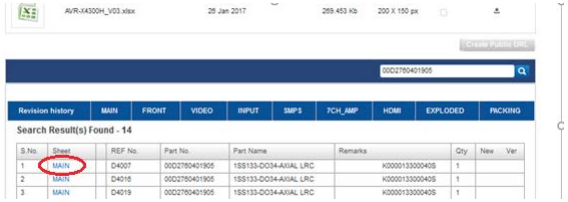
You can search a Parts List for part numbers or Ref. numbers.

(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

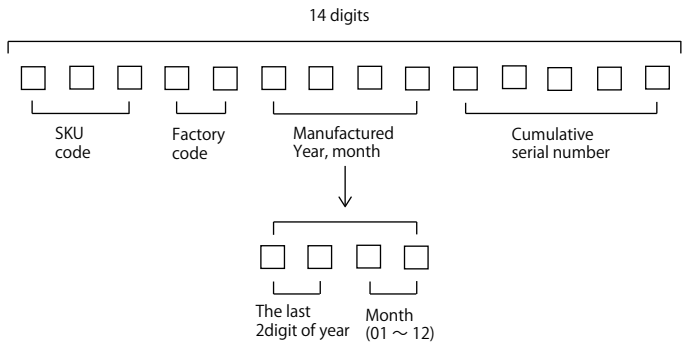
1. Parts indicated by "**nsp**" on this table cannot be supplied.
2. When ordering a part, make a clear distinction between "1" and "I" (i) to avoid mis-supplying.
3. A part ordered without specifying its part number can not be supplied.
4. Part indicated by "**@**" mark is not illustrated in the exploded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

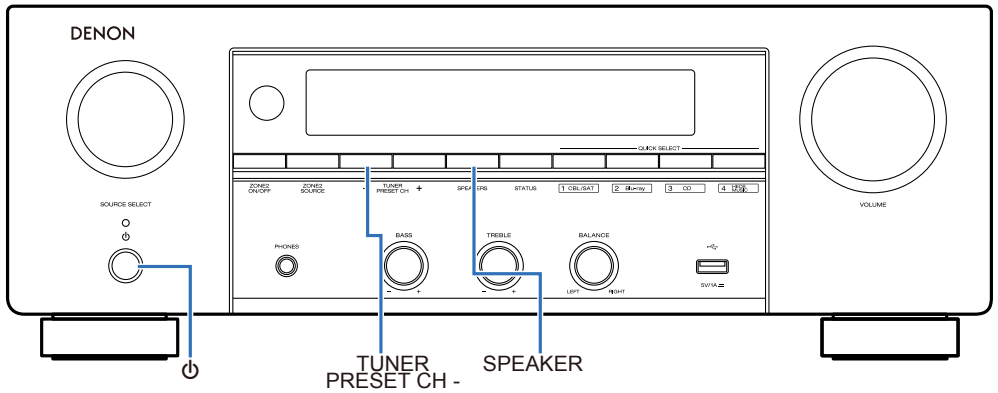
Product SKU	SKU Code
DRA800HBKE3	BJM
DRA800HBKE2	BJN
DRA800HSPE2	BJP

Initializing this Unit

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

1. Press the power button to turn off the power.
2. While holding down buttons "**TUNER PRESET CH -**" and "**SPEAKER**" simultaneously, press the power button to turn on the power.
3. Release the buttons after confirming that the display flashes at 1-second intervals.
   ∗ The unit is initialized.
   Use network initialization mode to initialize the network related settings.

NOTE：
- If the unit fails to enter the service mode in step 3, 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.



ELECTRICAL

SCHEMATIC DIAGRAMS

PRINTED CIRCUIT BOARDS

LEVEL DIAGRAM

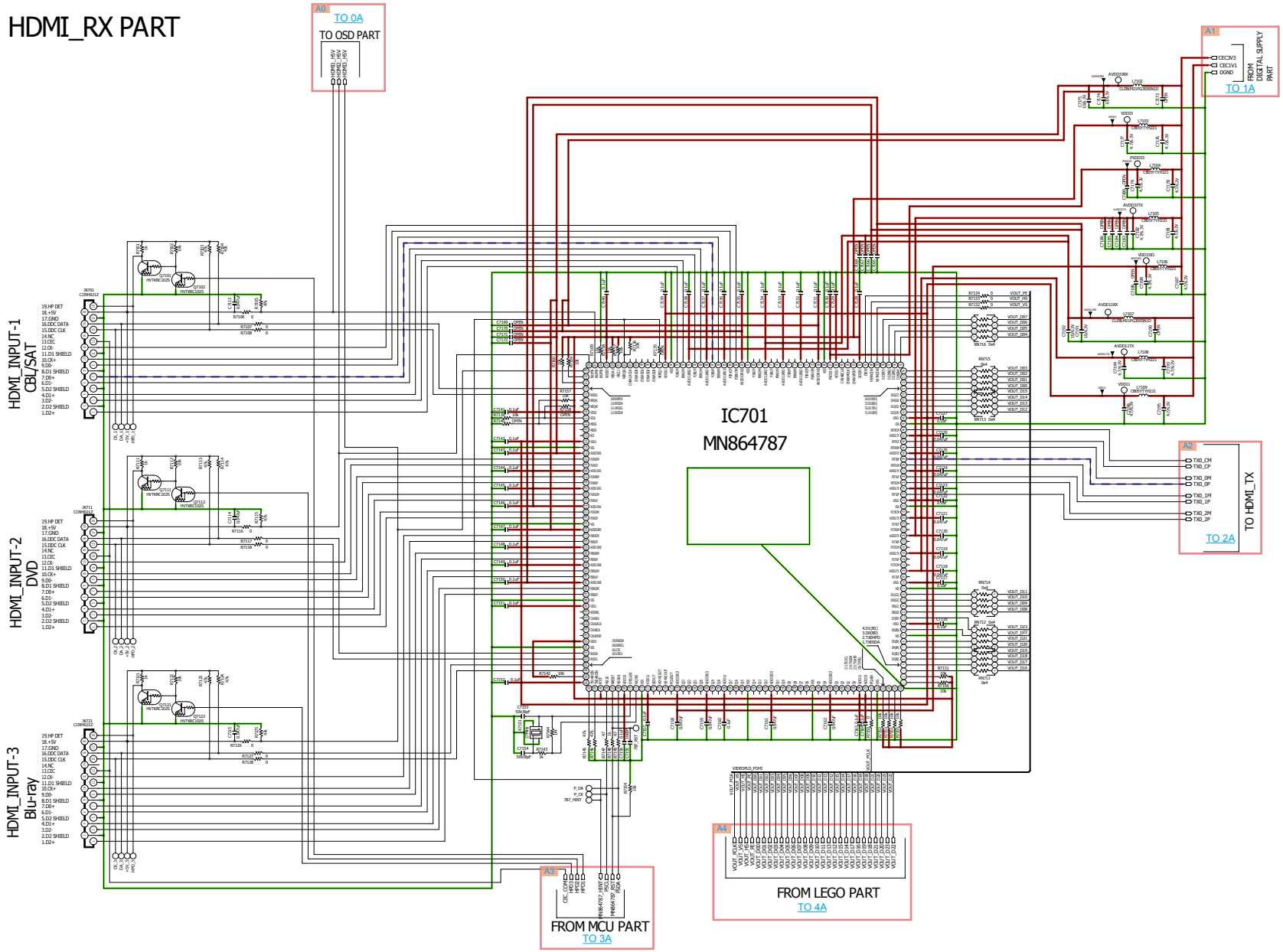
BLOCK DIAGRAM

POWER DIAGRAM

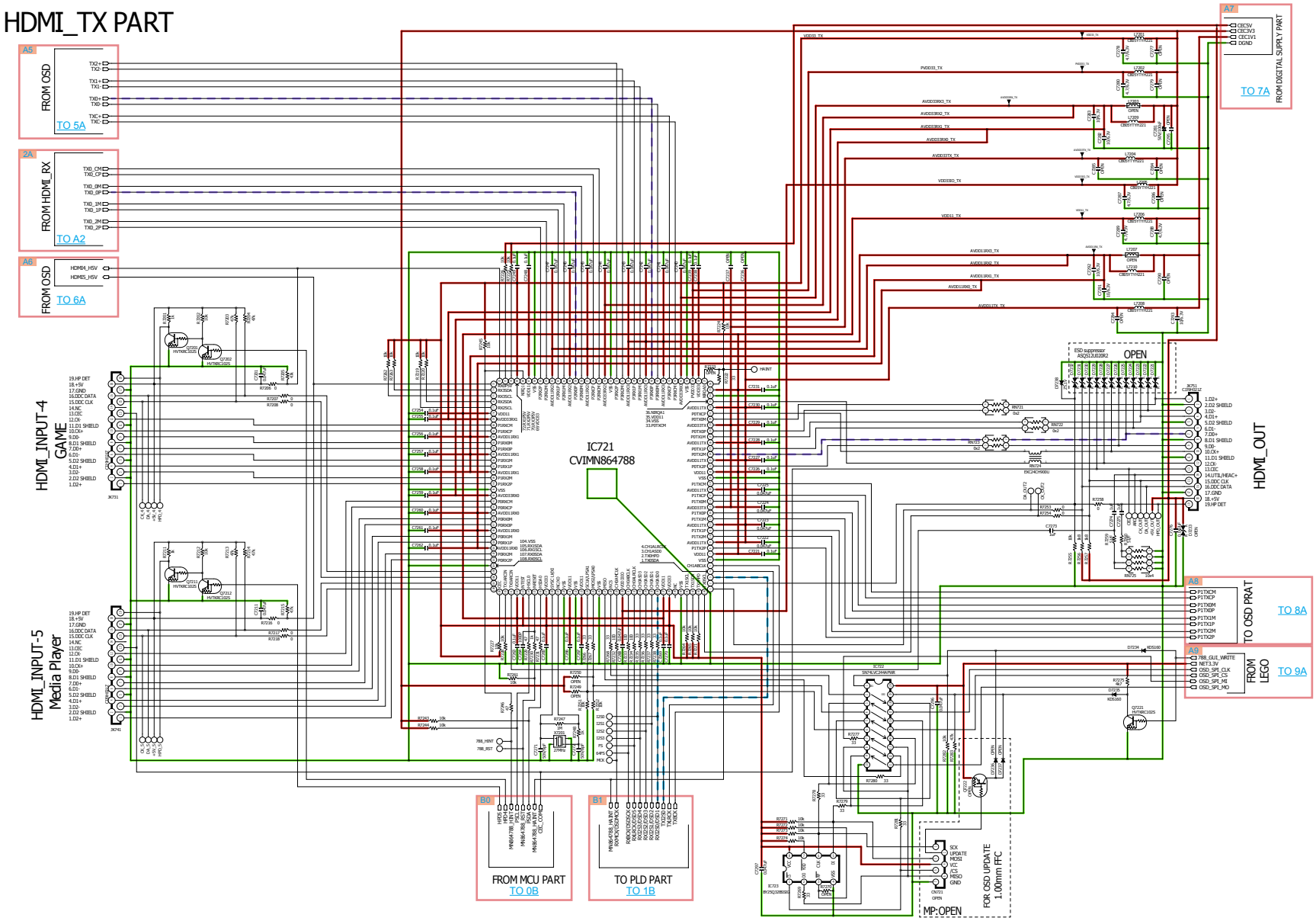
WIRING DIAGRAM

SEMICONDUCTORS

SCH01 HDMI RX

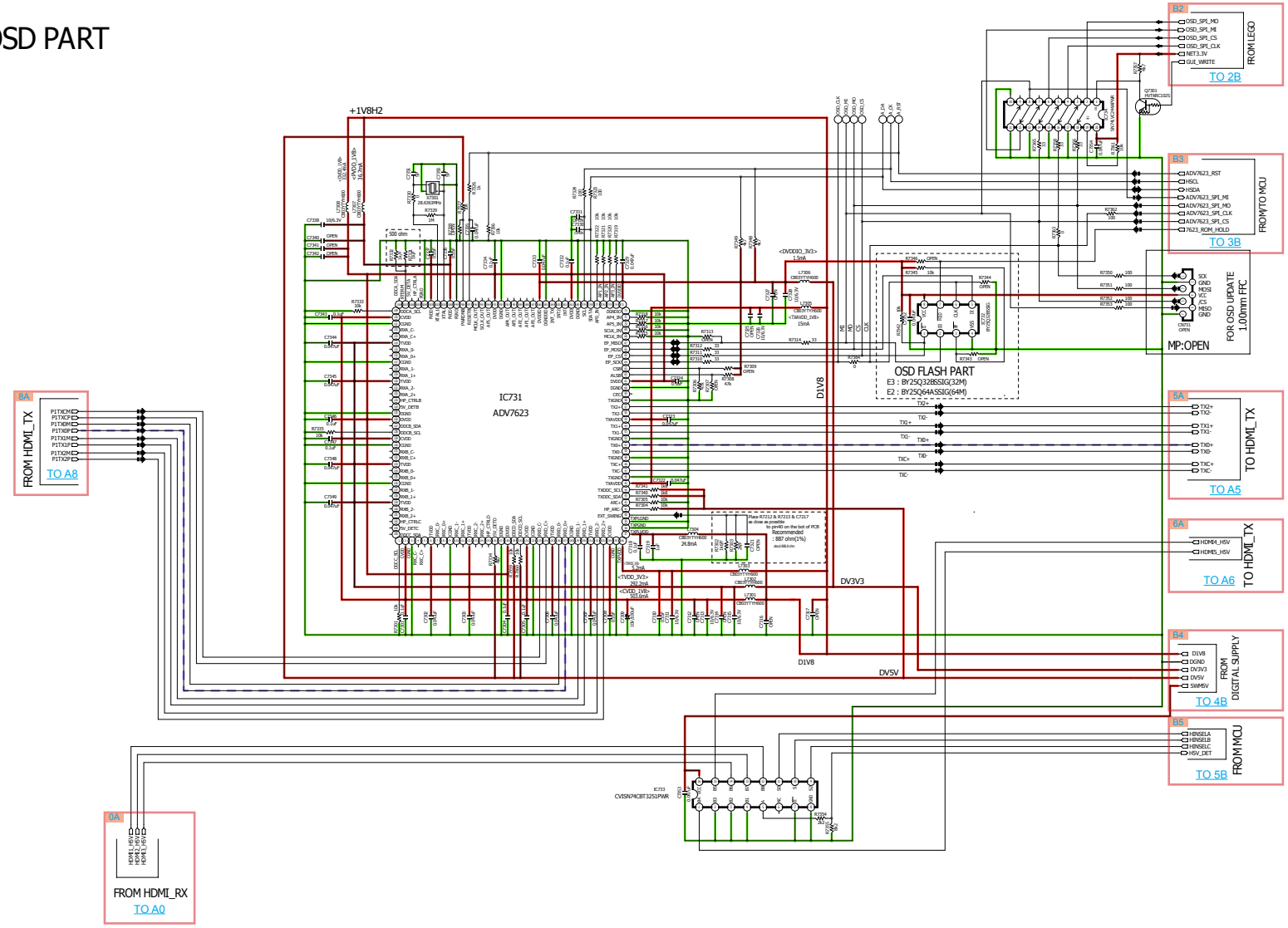


GND LINE POWER+ LINE POWER- LINE ANALOG AUDIO DIGITAL AUDIO TMDS SIGNAL ANALOG VIDEO STBY POWER



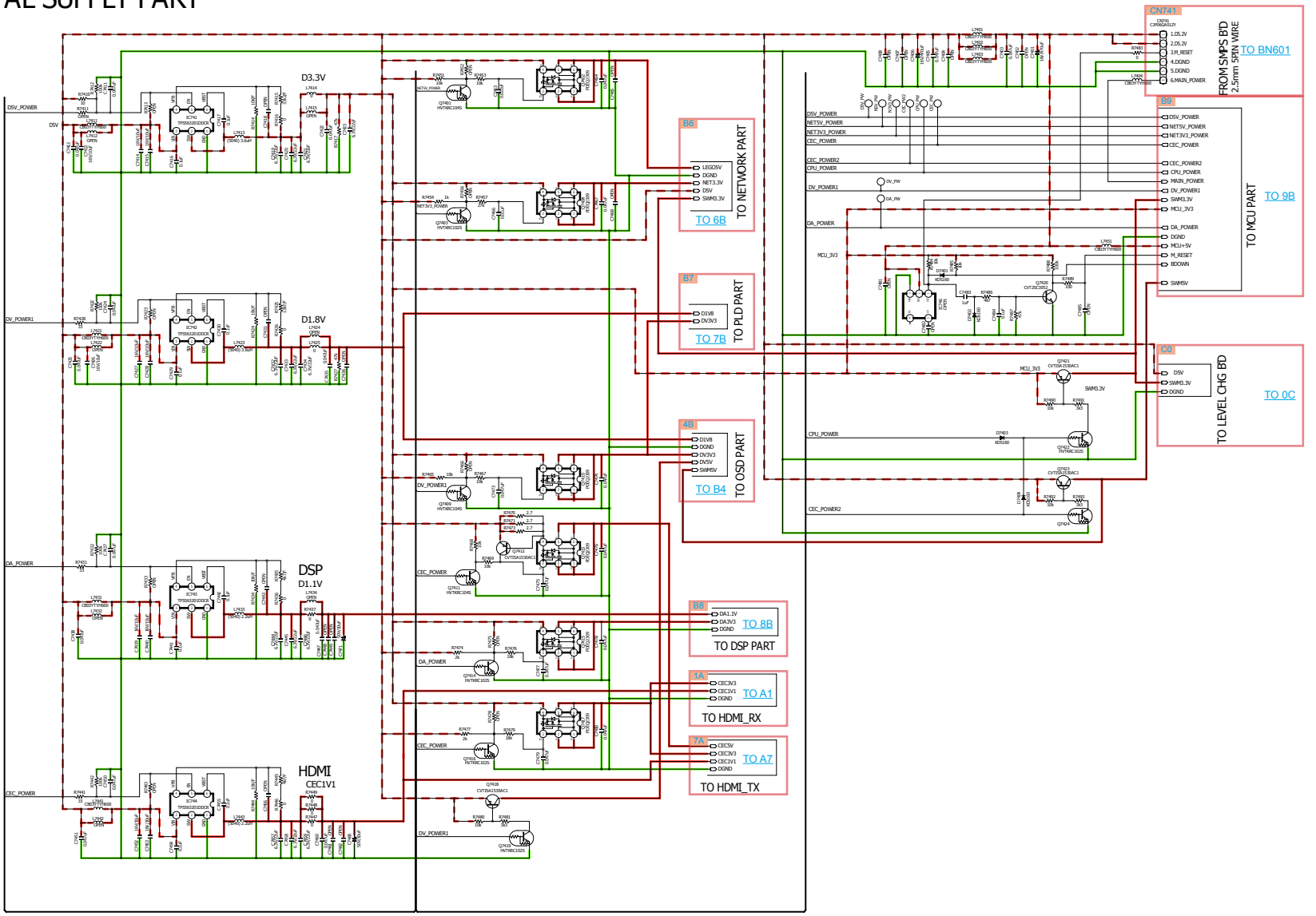
GND LINE POWER+ LINE POWER- LINE ANALOG AUDIO DIGITAL AUDIO TMDS SIGNAL ANALOG VIDEO STBY POWER

OSD PART

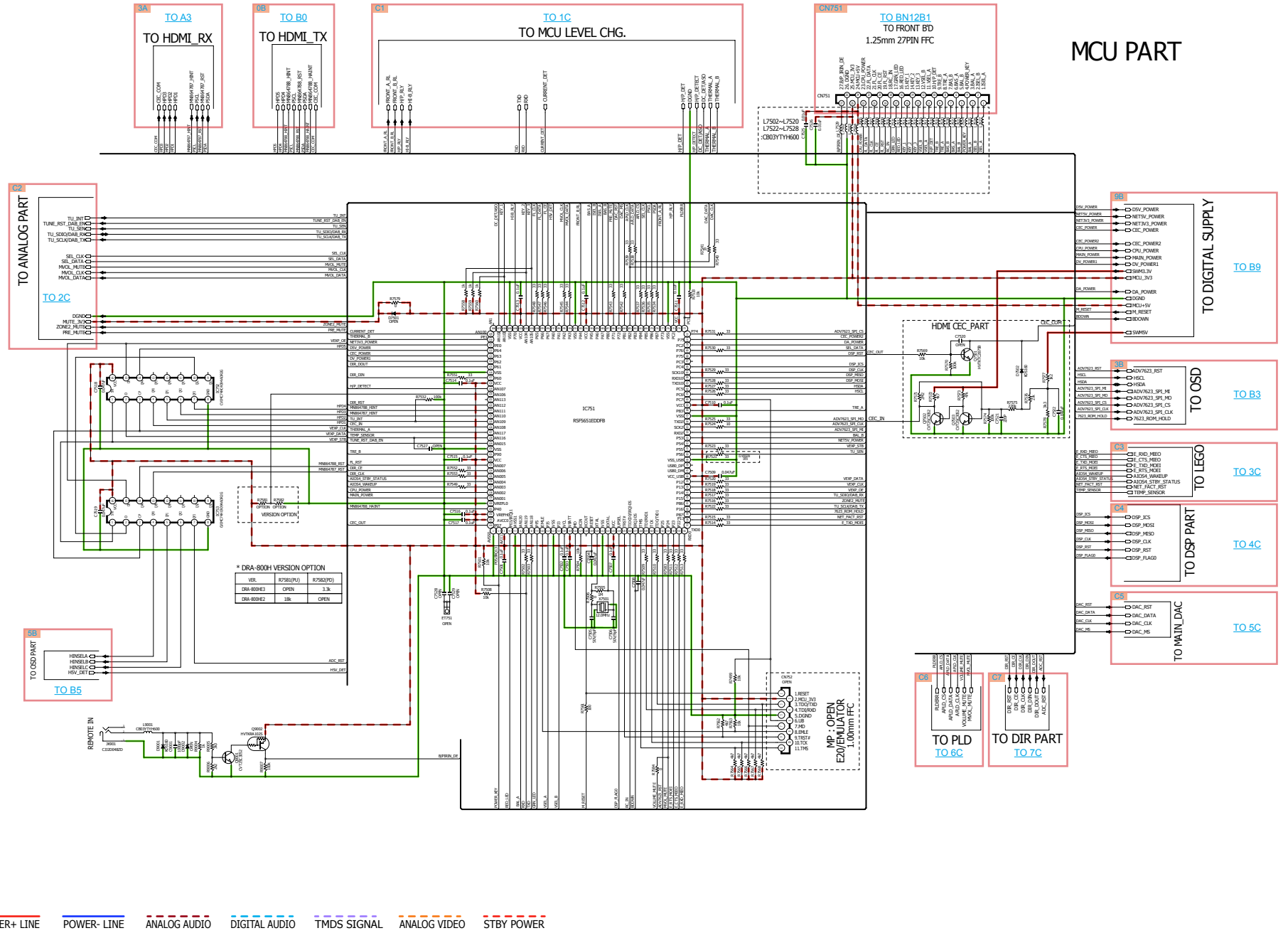


GND LINE | POWER+ LINE | POWER- LINE | ANALOG AUDIO | DIGITAL AUDIO | TMDS SIGNAL | ANALOG VIDEO | STBY POWER

DIGITAL SUPPLY PART

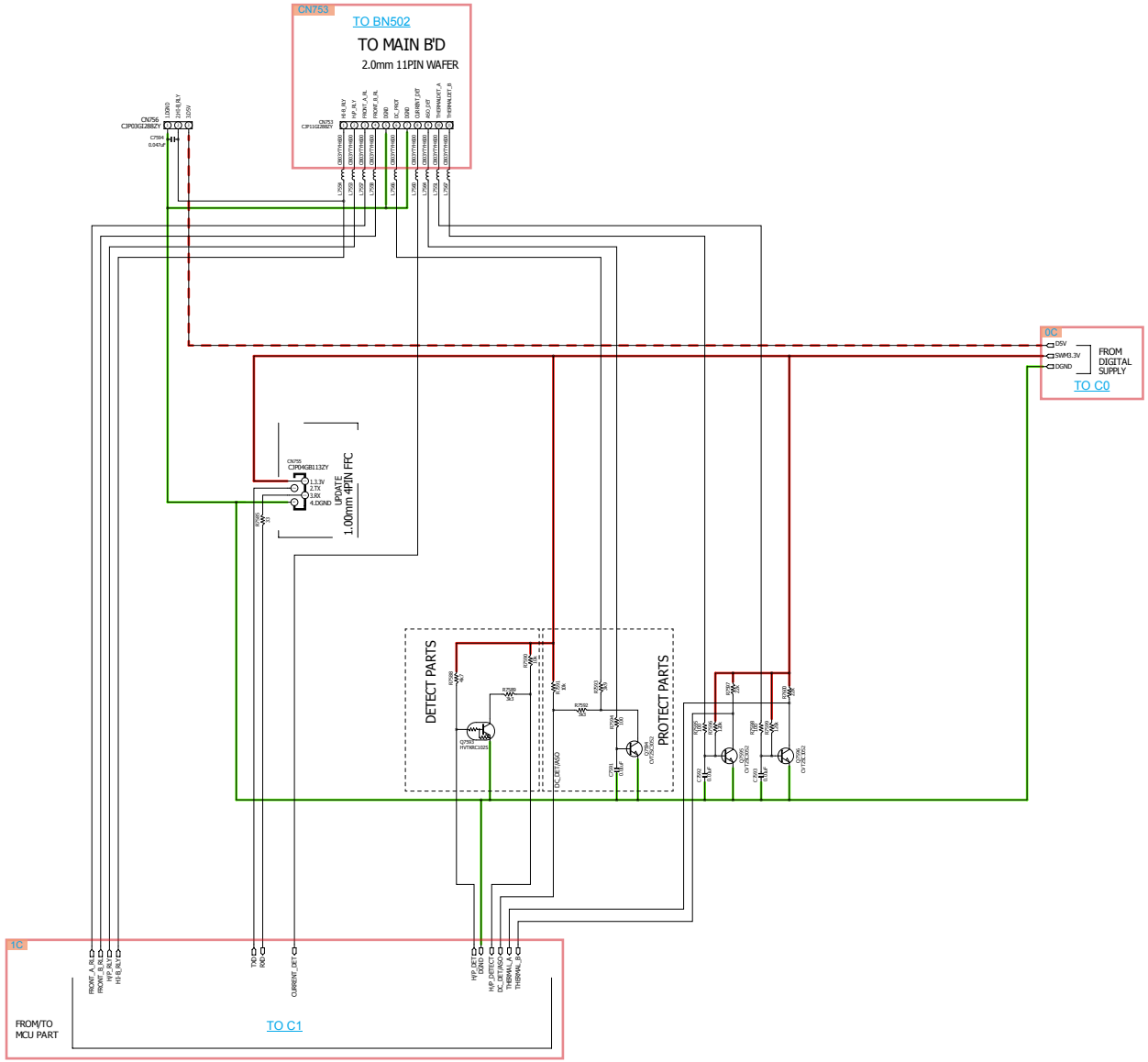


GND LINE | POWER+ LINE | POWER- LINE | ANALOG AUDIO | DIGITAL AUDIO | TMDS SIGNAL | ANALOG VIDEO | STBY POWER



GND LINE POWER+ LINE POWER- LINE ANALOG AUDIO DIGITAL AUDIO TMDS SIGNAL ANALOG VIDEO STBY POWER

MCU_LEVEL_CHG PART



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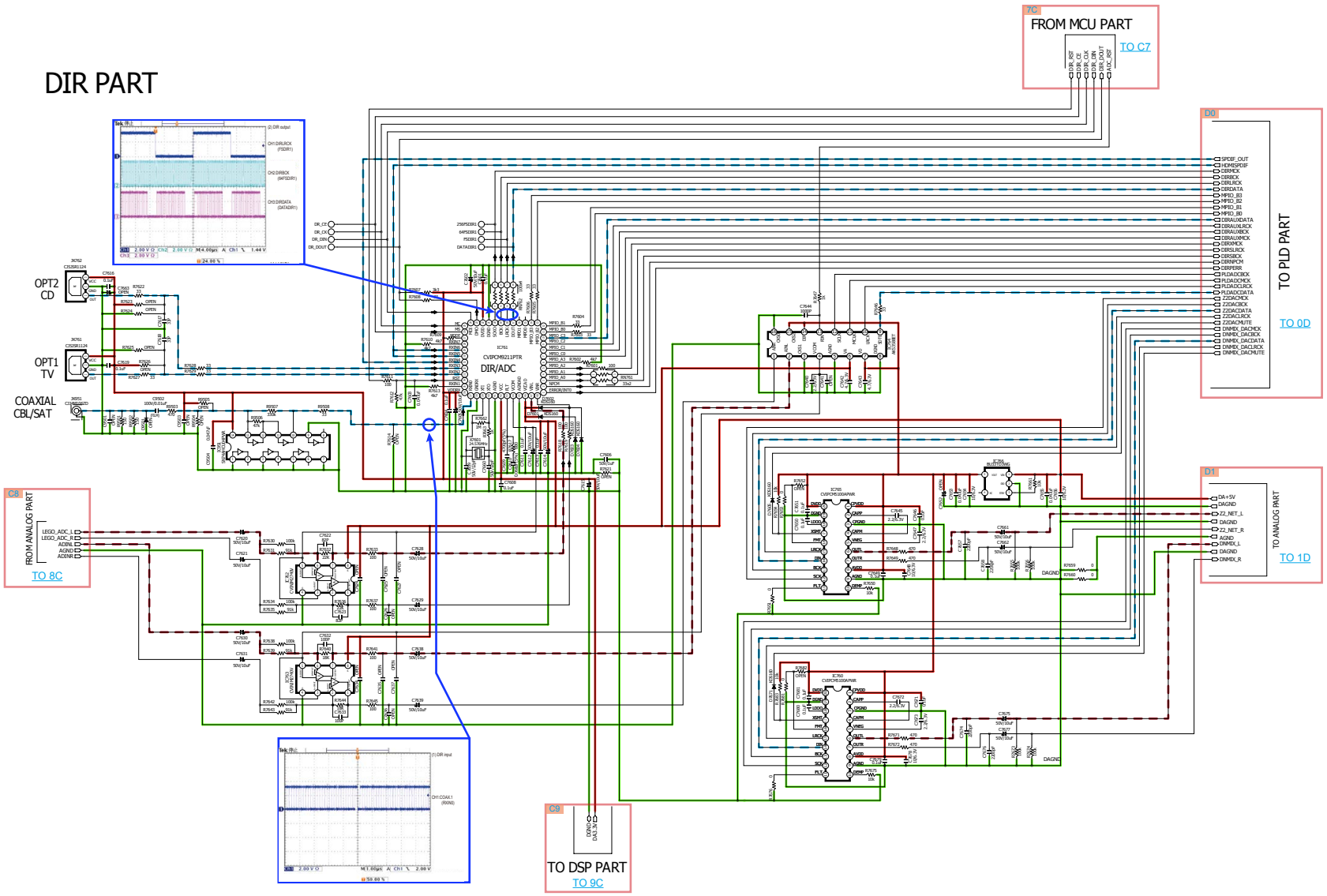
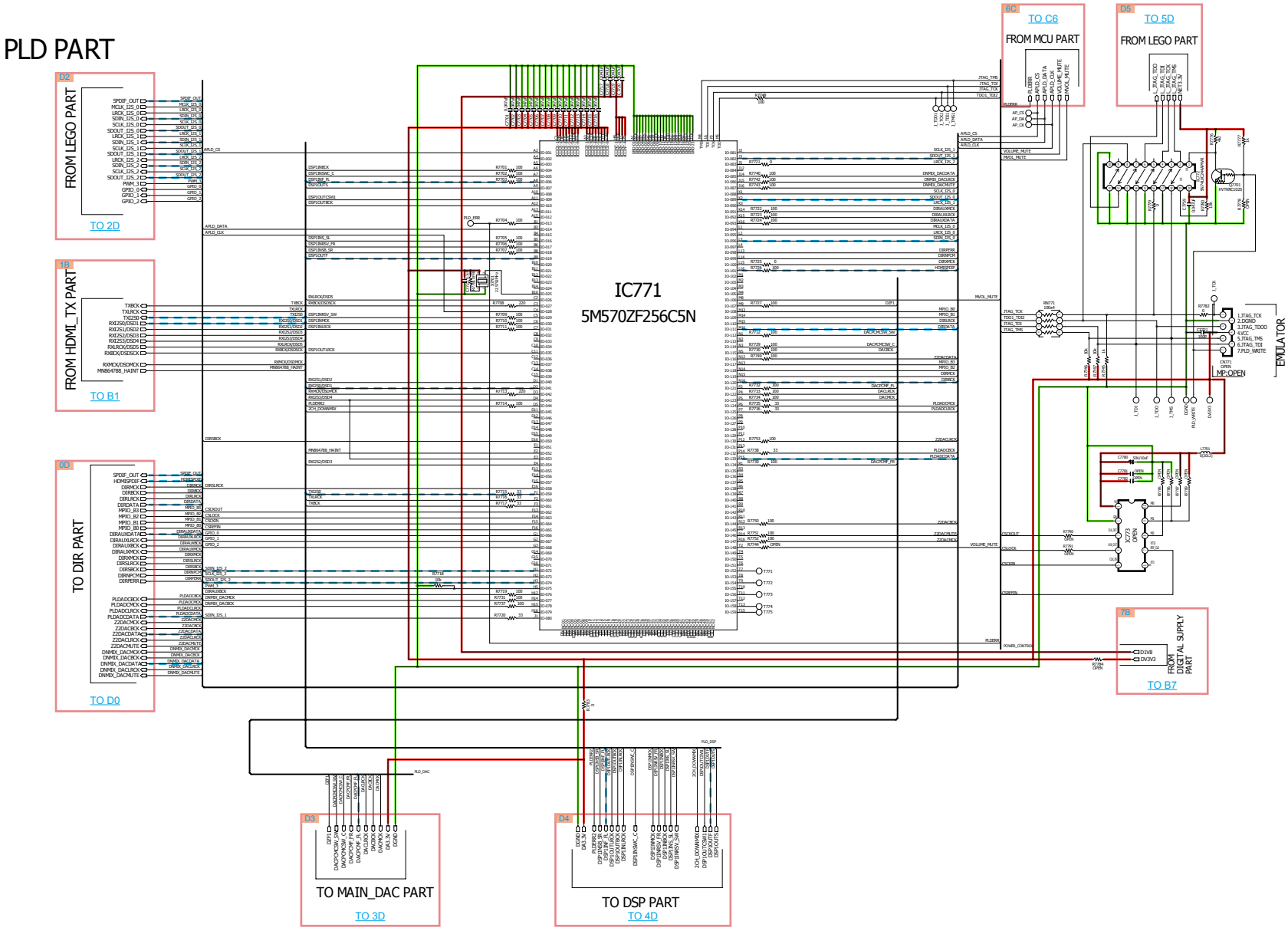
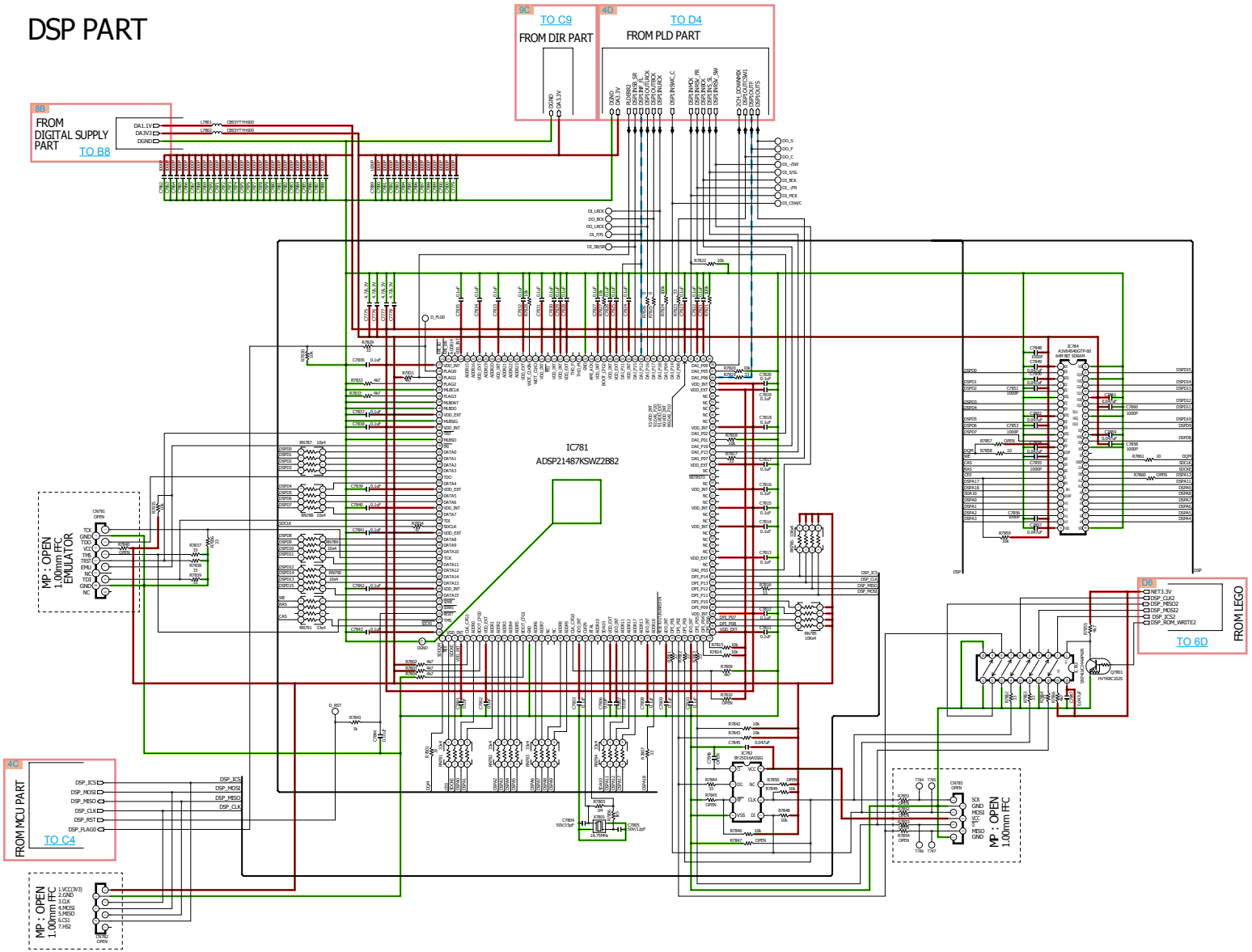


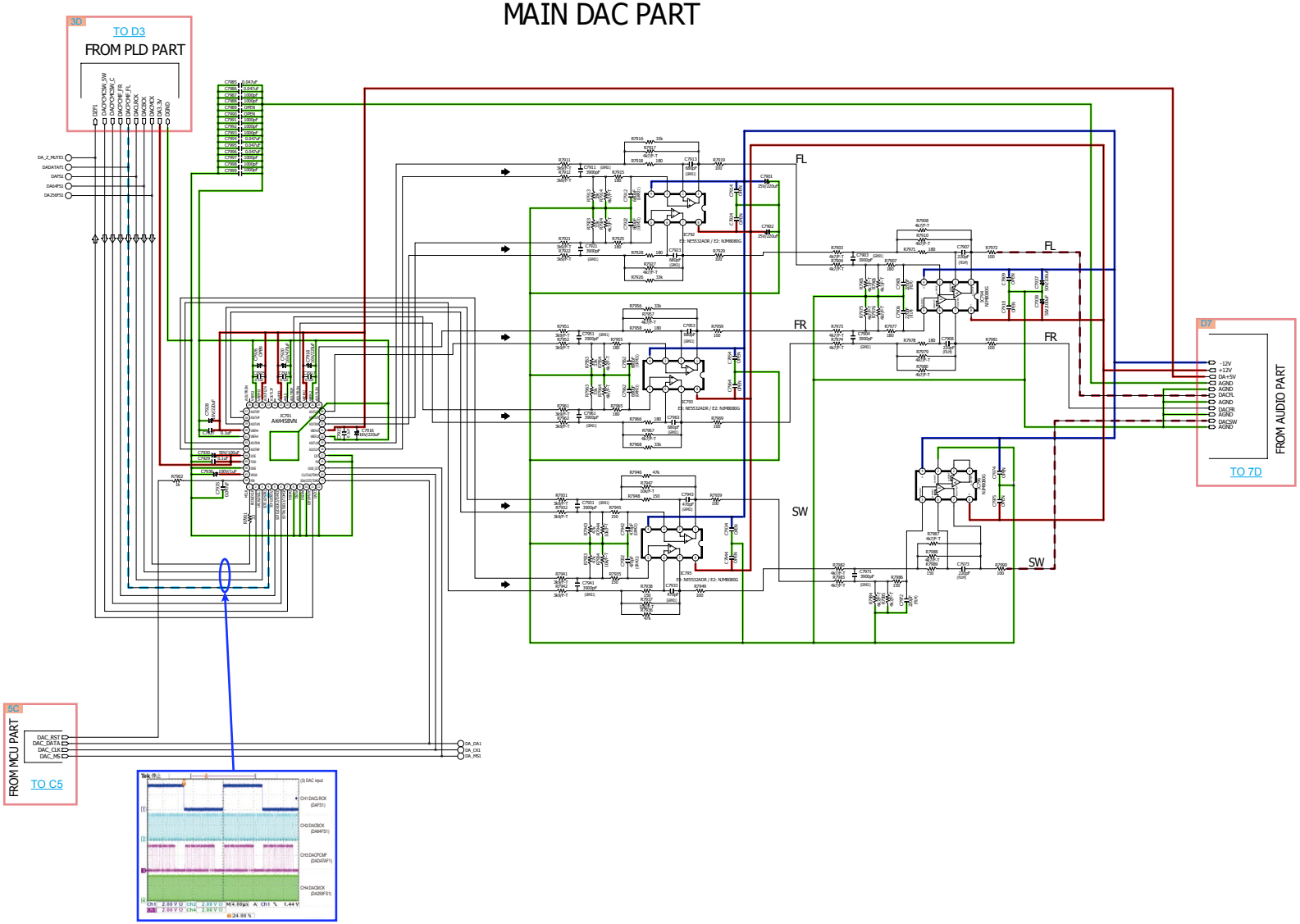
GND LINE | POWER+ LINE | POWER- LINE | ANALOG AUDIO | DIGITAL AUDIO | TMDS SIGNAL | ANALOG VIDEO | STBY POWER


PLD PART
IC771
5M570ZF256C5N
FROM LEGO PART
TO 2D
FROM HDMI_TX PART
TO B1
TO DIR PART
TO D0
TO C6
FROM MCU PART
TO 5D
FROM LEGO PART
EMULATOR
MP-OPEN
FROM DIGITAL SUPPLY PART
TO B7
TO MAIN_DAC PART
TO 3D
TO DSP PART
TO 4D
GND LINE
POWER+ LINE
POWER- LINE
ANALOG AUDIO
DIGITAL AUDIO
TMDS SIGNAL
ANALOG VIDEO
STBY POWER



GND LINE | POWER+ LINE | POWER- LINE | ANALOG AUDIO | DIGITAL AUDIO | TMDS SIGNAL | ANALOG VIDEO | STBY POWER

MAIN DAC PART



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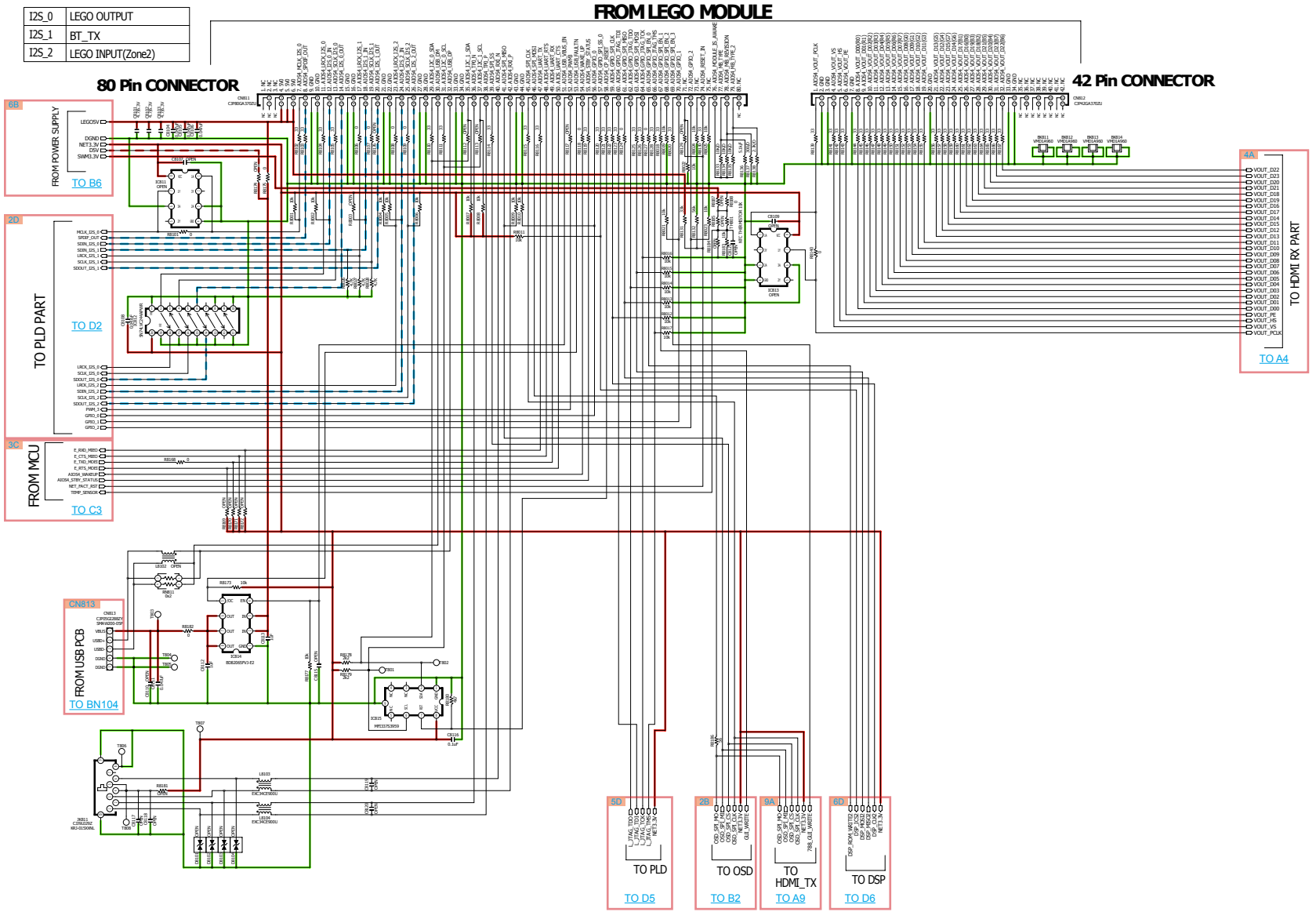

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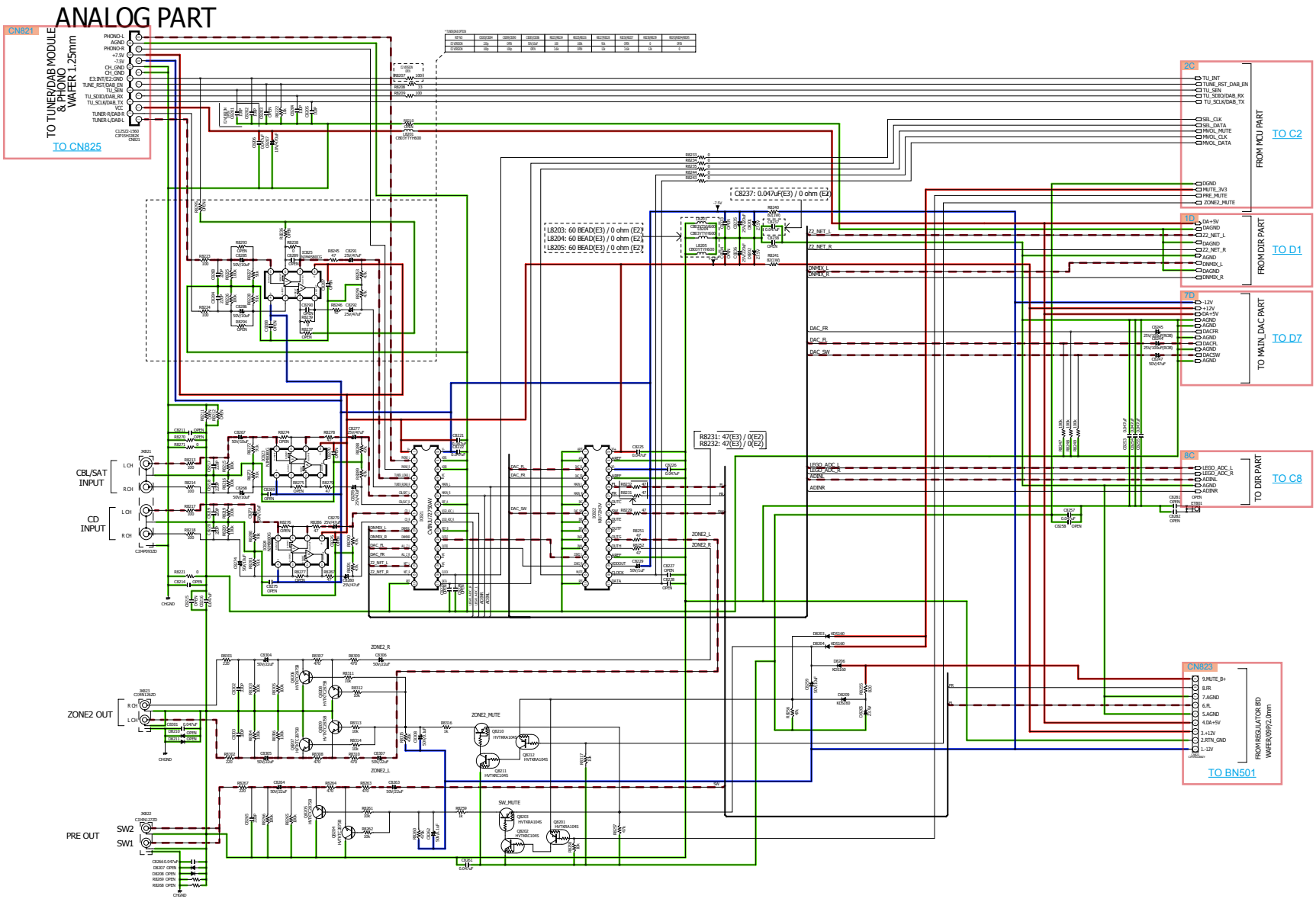
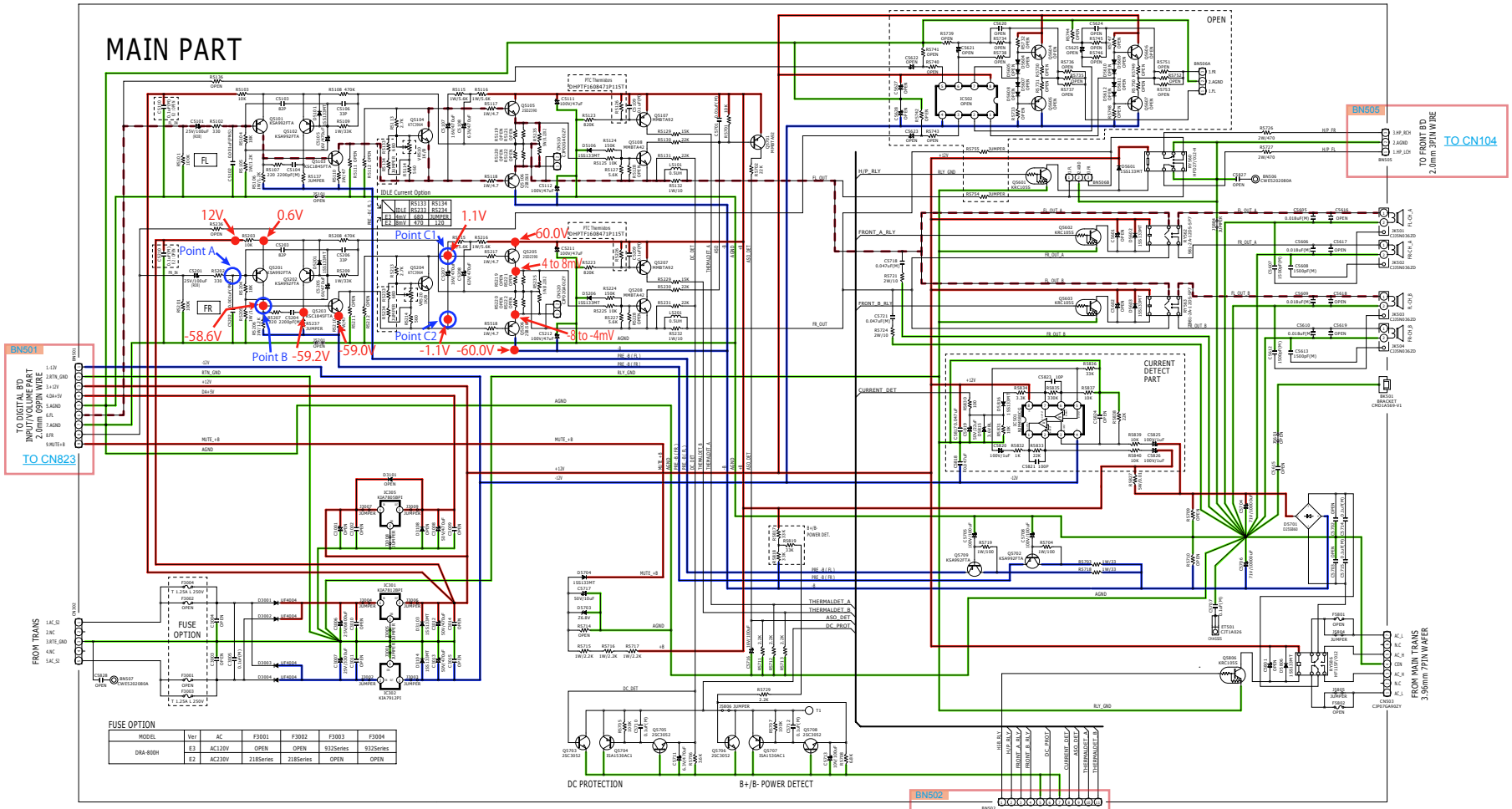
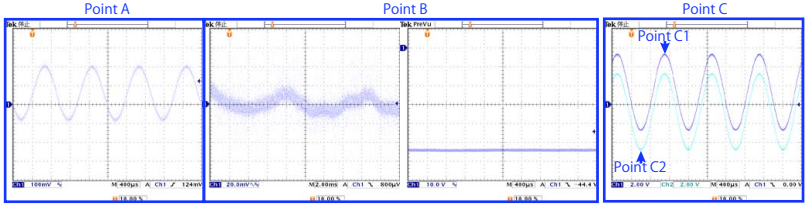


GND LINE | POWER+ LINE | POWER- LINE | ANALOG AUDIO | DIGITAL AUDIO | TMDS SIGNAL | ANALOG VIDEO | STBY POWER



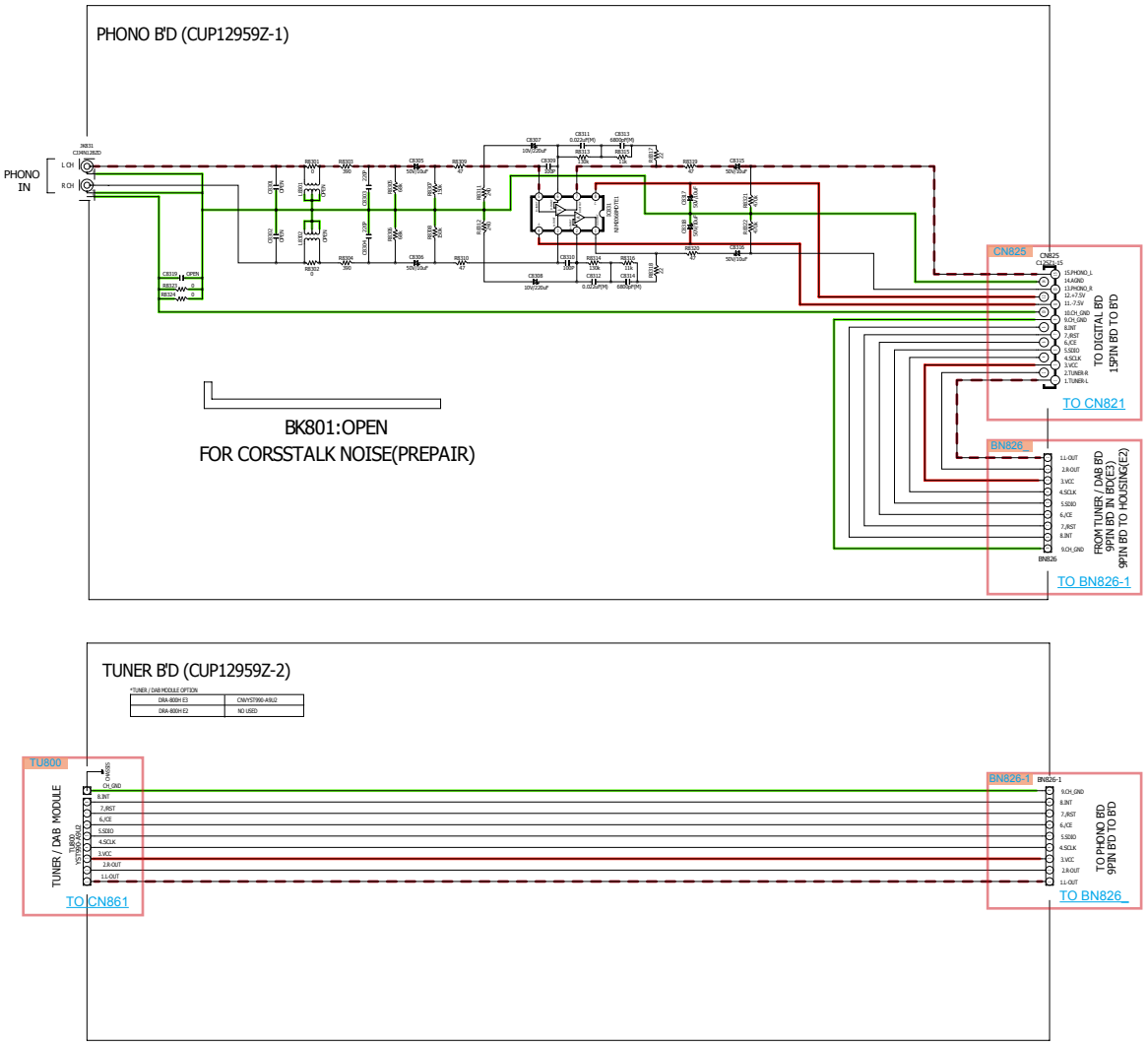
FUSE OPTION

MODEL	Ver	AC	F3001	F3002	F3003	F3004
DRA-800H	E3	AC120V	OPEN	OPEN	932Series	932Series
	E2	AC230V	218Series	218Series	OPEN	OPEN

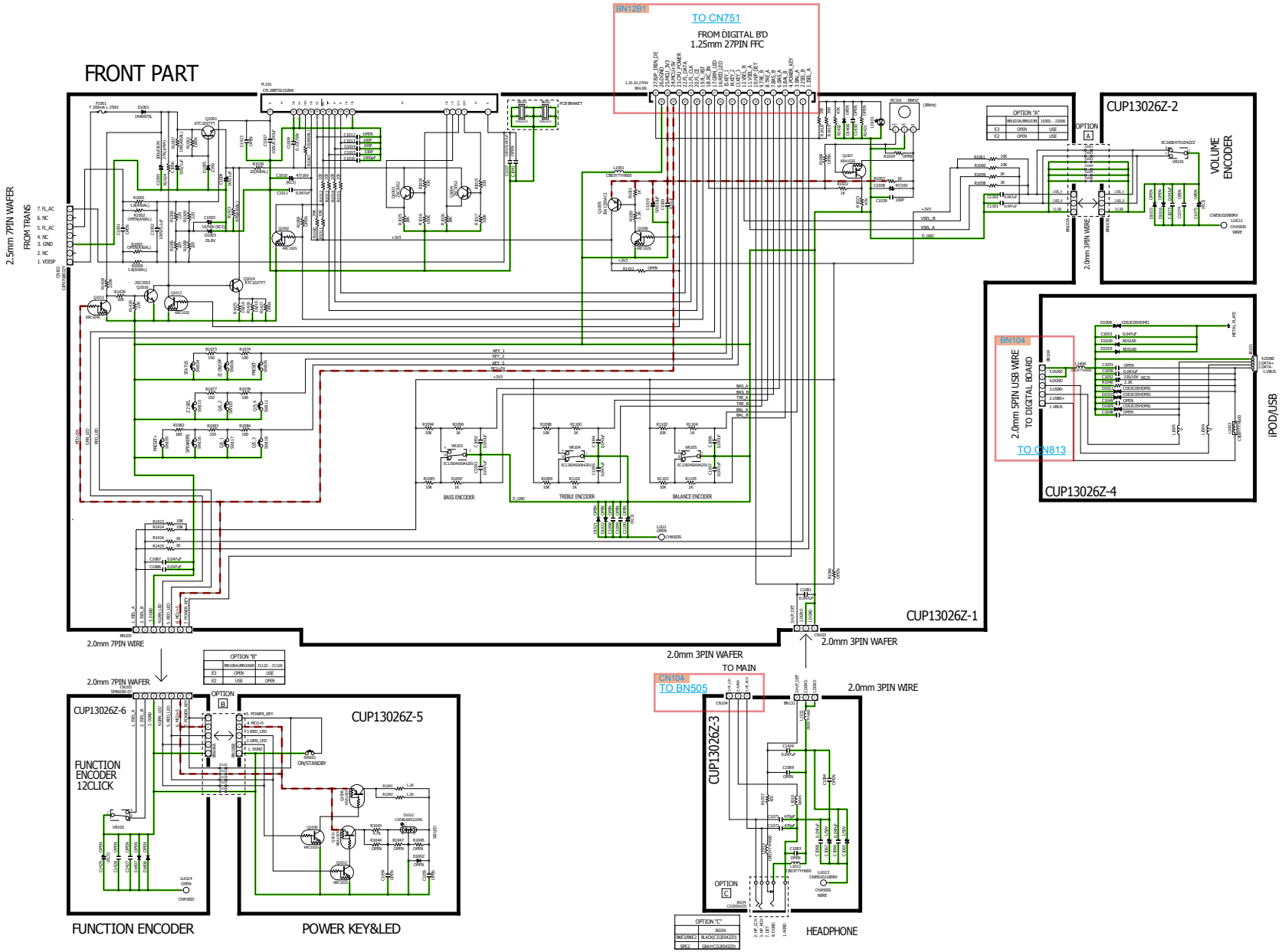


Measurement condition
- Voltage measurement
  No signal
- Waveform measurement
  INPUT: 200mVrms / 1KHz (ANALOG)
  Surround mode: MCh Stereo
  VOL: 70
  Speaker load: 8ohms

GND LINE | POWER+ LINE | POWER- LINE | ANALOG AUDIO | DIGITAL AUDIO | TMDS SIGNAL | ANALOG VIDEO | STBY POWER

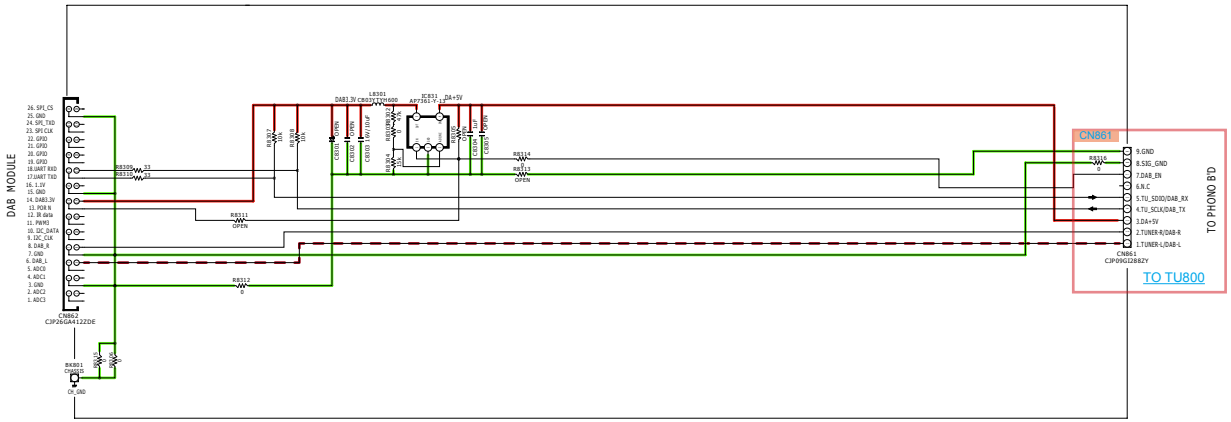


GND LINE POWER+ LINE POWER- LINE ANALOG AUDIO DIGITAL AUDIO TMDS SIGNAL ANALOG VIDEO STBY POWER

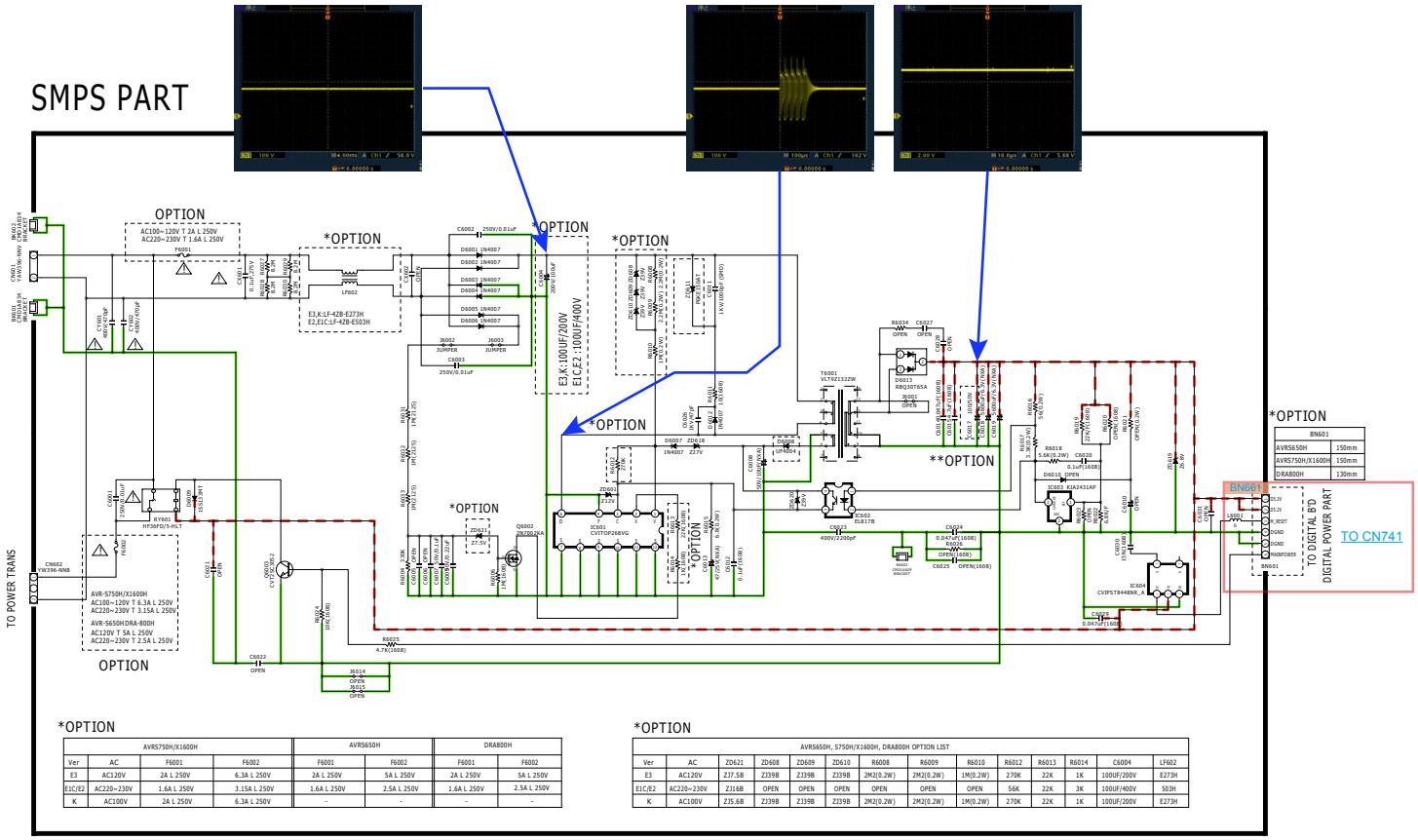


GND LINE POWER+ LINE POWER- LINE ANALOG AUDIO DIGITAL AUDIO TMDS SIGNAL ANALOG VIDEO STBY POWER

DAB B'D



GND LINE POWER+ LINE POWER- LINE ANALOG AUDIO DIGITAL AUDIO TMDS SIGNAL ANALOG VIDEO STBY POWER



*OPTION

BN601	
AVRS650H	150mm
AVRS750H/X1600H	150mm
DRA800H	130mm

*OPTION

AVRS750H/X1600H			AVRS650H		DRA800H	
Ver	AC	F6001	F6002	F6001	F6002	F6001	F6002
E3	AC120V	2A L 250V	6.3A L 250V	2A L 250V	5A L 250V	2A L 250V	5A L 250V
E1C/E2	AC220~230V	1.6A L 250V	3.15A L 250V	1.6A L 250V	2.5A L 250V	1.6A L 250V	2.5A L 250V
K	AC100V	2A L 250V	6.3A L 250V	-	-	-	-

*OPTION

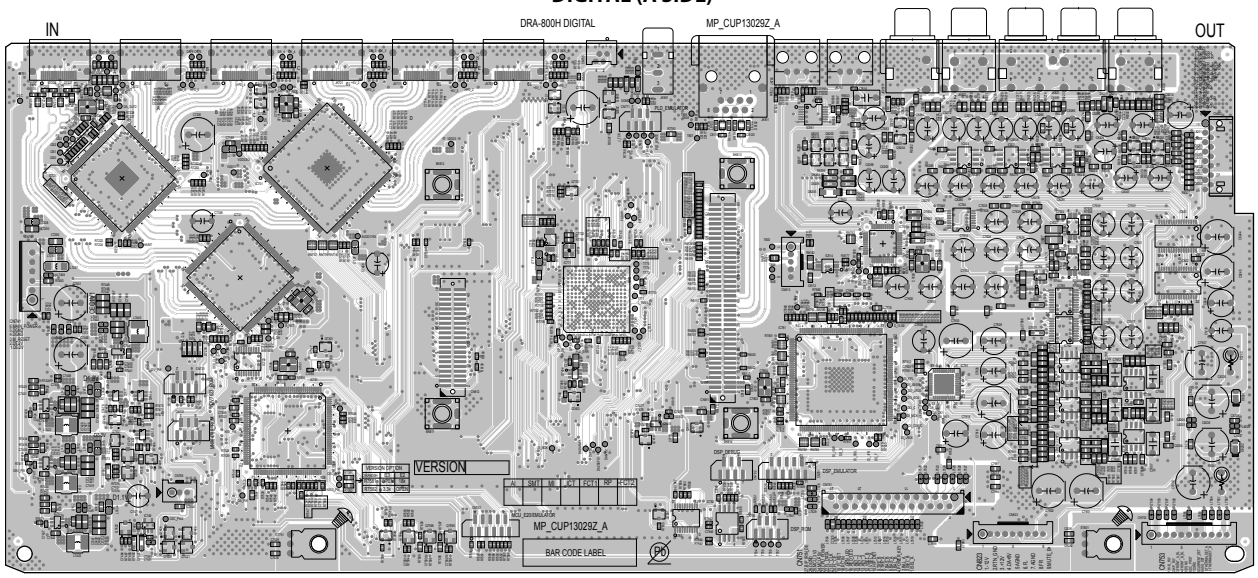
AVRS650H, S750H/X1600H, DRA800H OPTION LIST													
Ver	AC	ZD621	ZD608	ZD609	ZD610	R6008	R6009	R6010	R6012	R6013	R6014	C6004	LF602
E3	AC120V	Z37.5B	Z39B	Z39B	Z39B	2M2(0.2W)	2M2(0.2W)	1M(0.2W)	270K	22K	1K	100UF/200V	E273H
E1C/E2	AC220~230V	Z16B	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN	56K	22K	3K	100UF/400V	503H
K	AC100V	Z35.6B	Z39B	Z39B	Z39B	2M2(0.2W)	2M2(0.2W)	1M(0.2W)	270K	22K	1K	100UF/200V	E273H

GND LINE POWER+ LINE POWER- LINE ANALOG AUDIO DIGITAL AUDIO TMDS SIGNAL ANALOG VIDEO STBY POWER

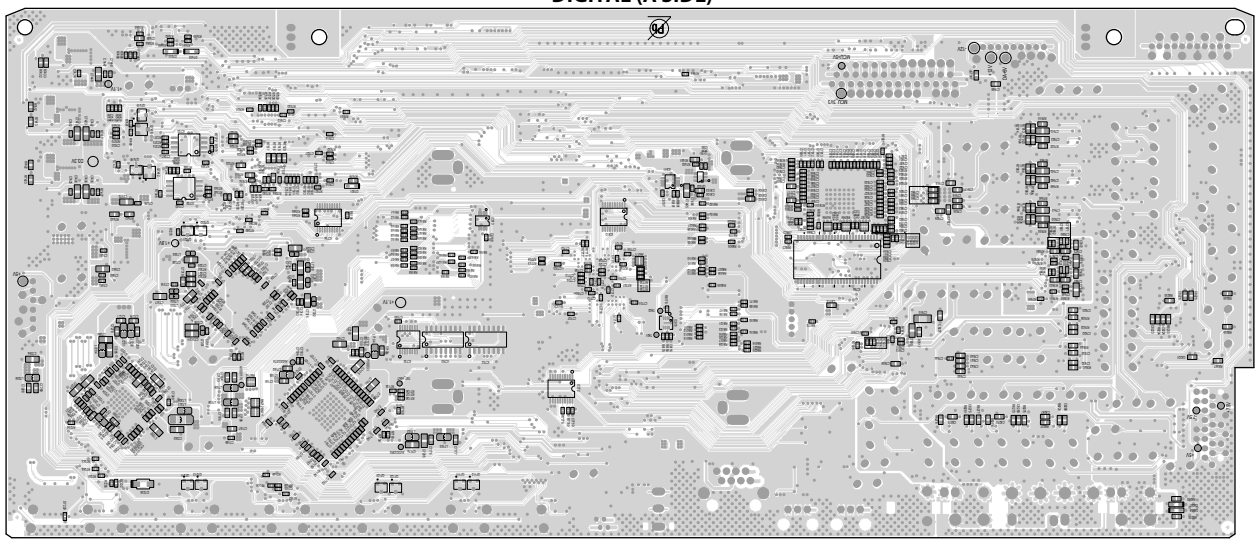
DIGITAL, TUNER(E3), PHONO, DAB(E2)

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

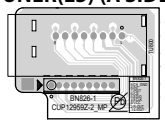
DIGITAL (A SIDE)



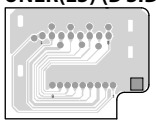
DIGITAL (A SIDE)



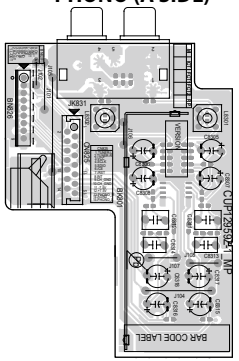
TUNER(E3) (A SIDE)



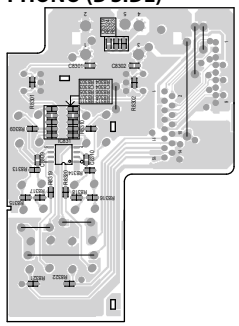
TUNER(E3) (B SIDE)



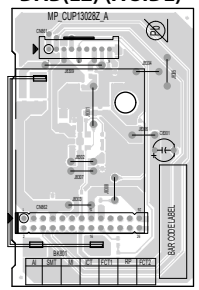
PHONO (A SIDE)



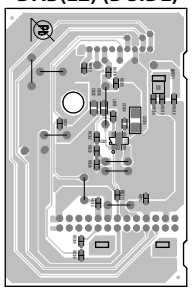
PHONO (B SIDE)



DAB(E2) (A SIDE)

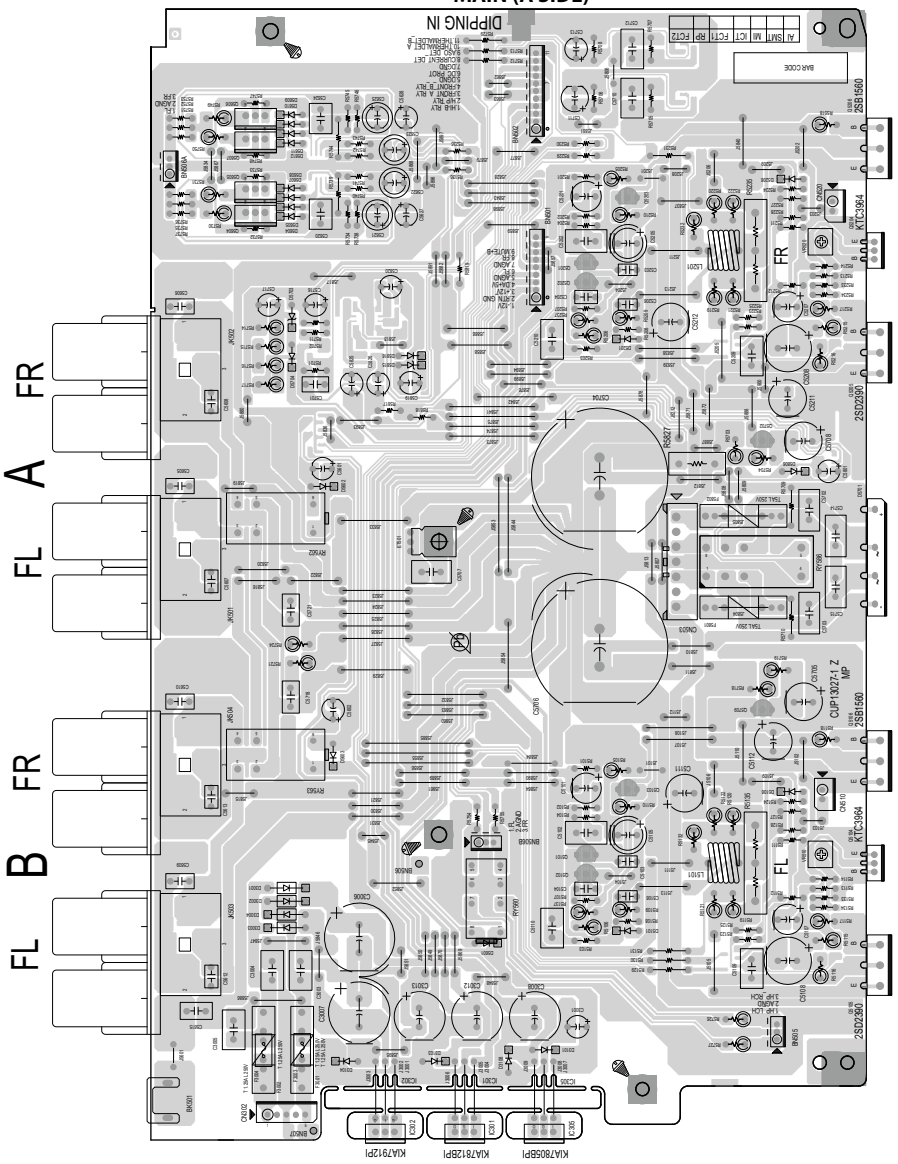


DAB(E2) (B SIDE)



MAIN, PHONE WIRE GUIDE, USB CABLE GUIDE

MAIN (A SIDE)



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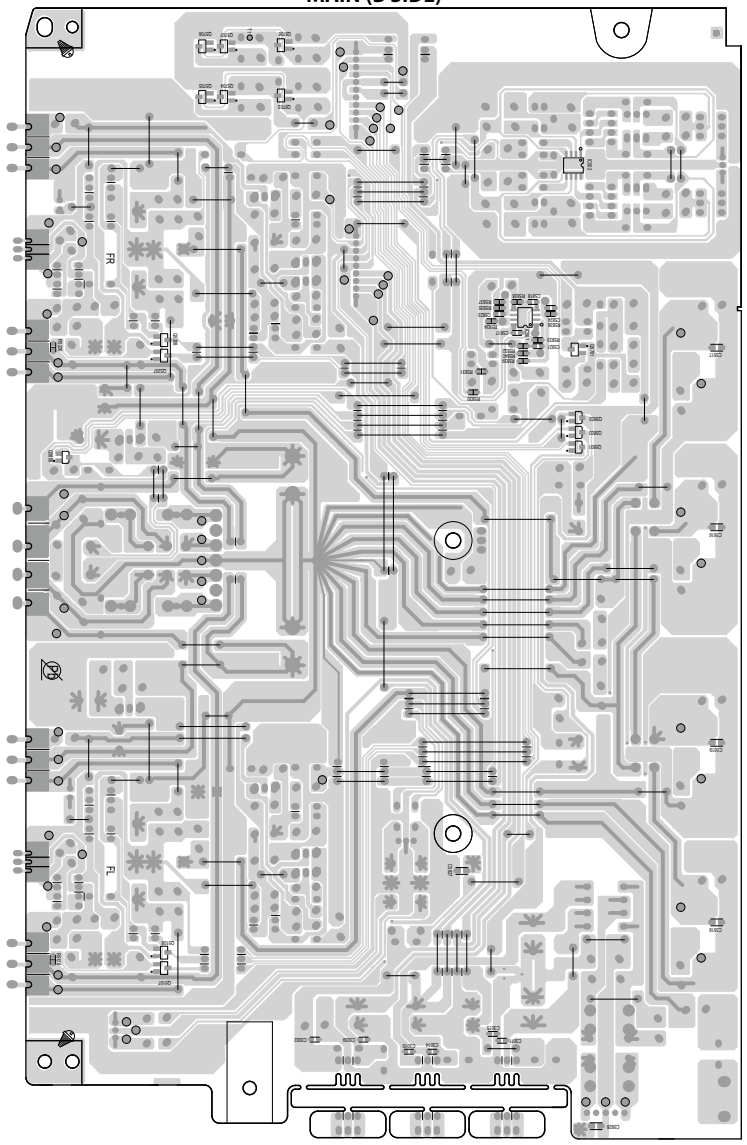
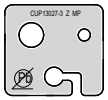
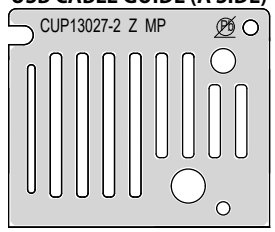


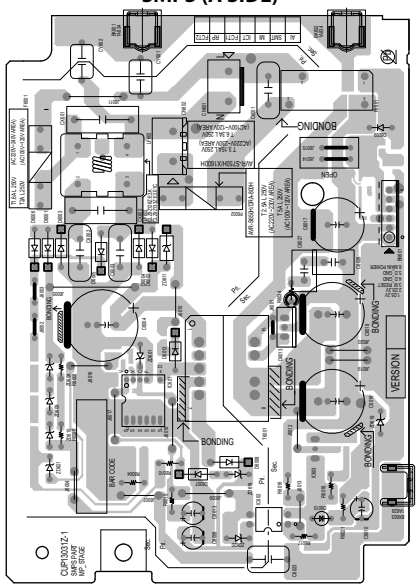
PHONE WIRE GUIDE (A SIDE)



USB CABLE GUIDE (A SIDE)



SMPS (A SIDE)



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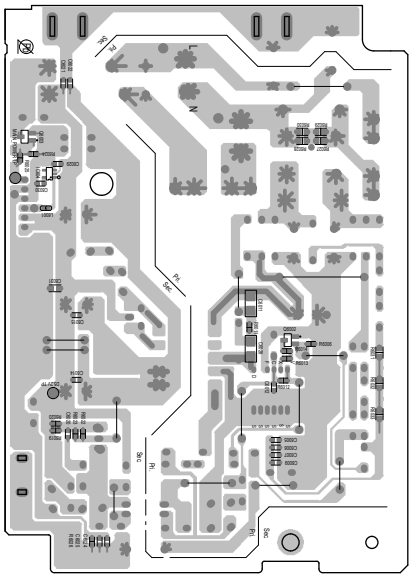

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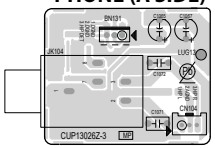

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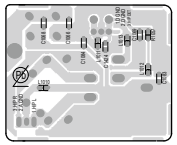
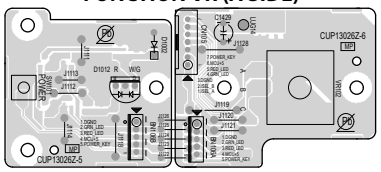
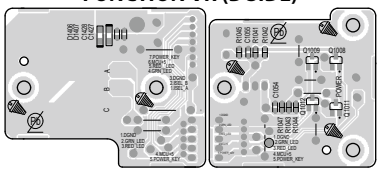


FUNCTION VR (A SIDE)



FUNCTION VR (B SIDE)



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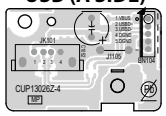
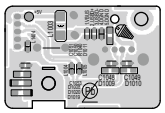


USB (B SIDE)



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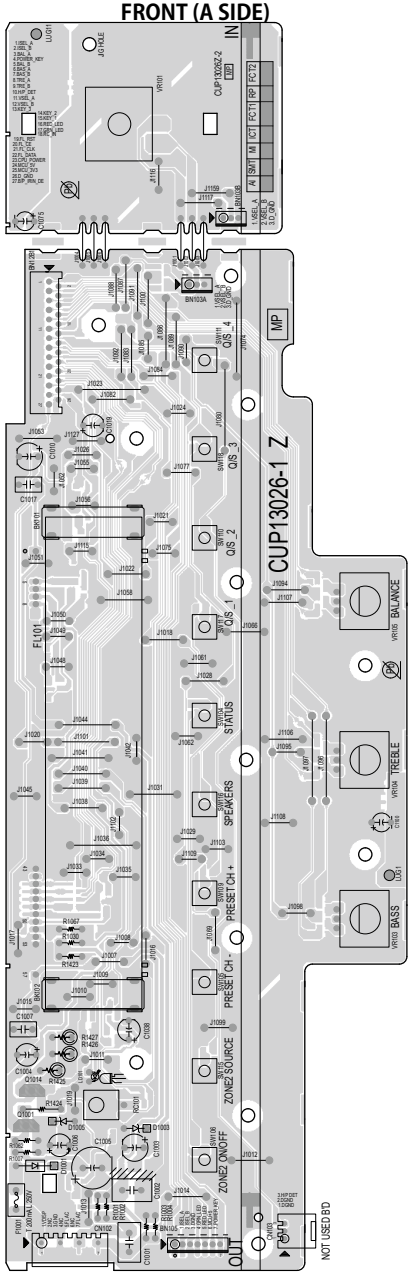

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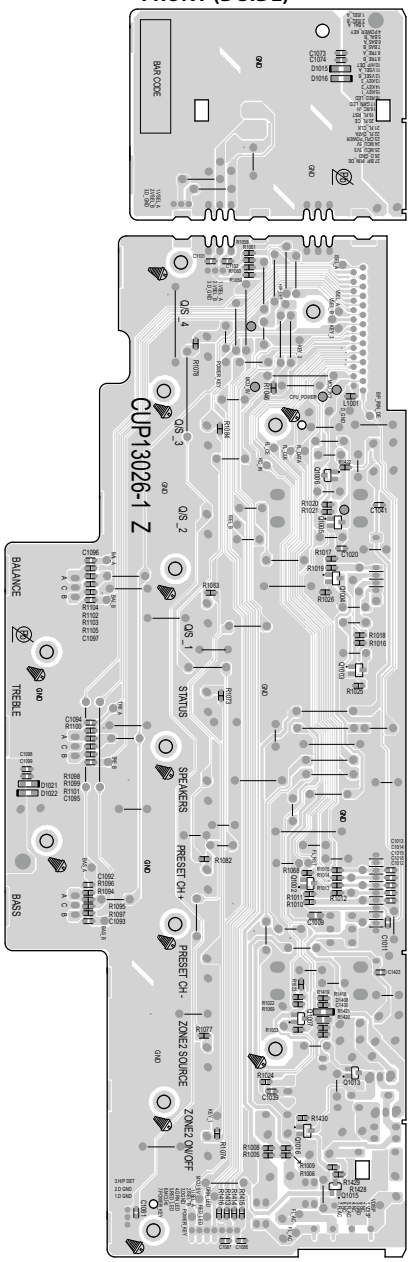
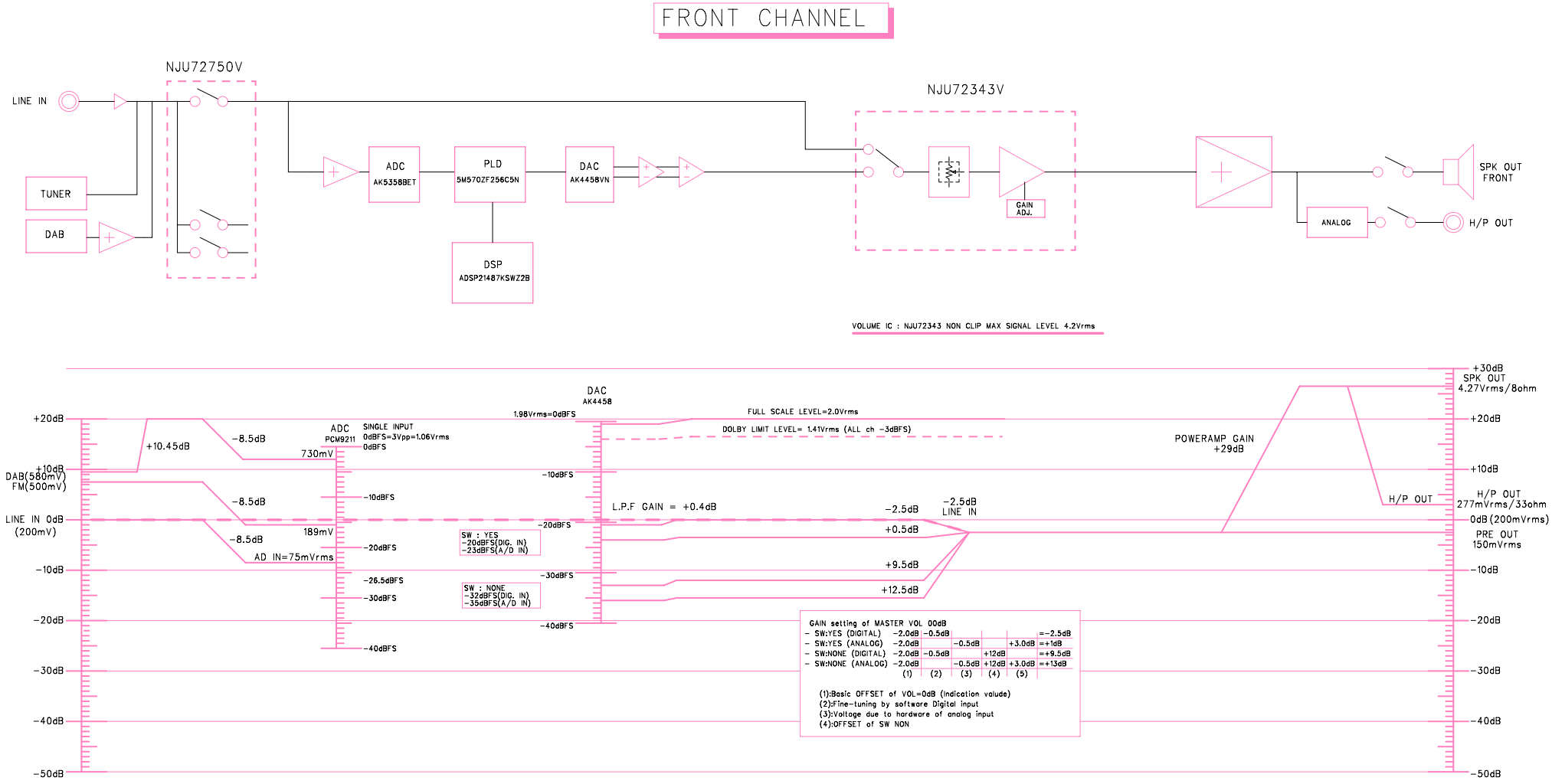
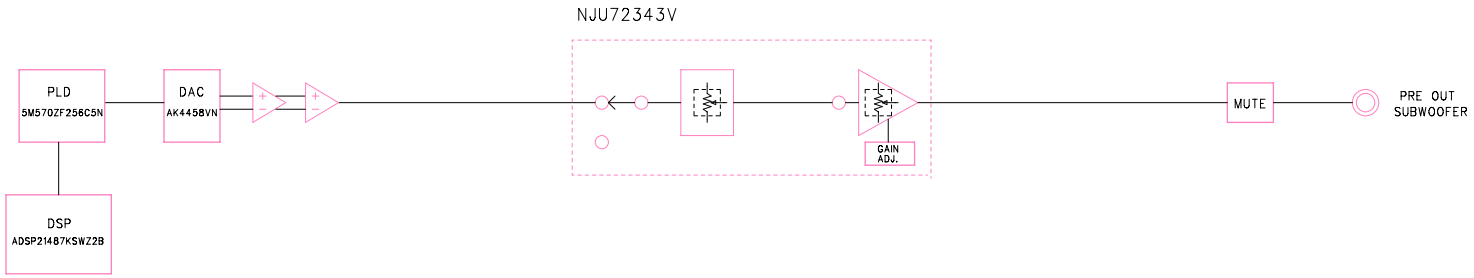


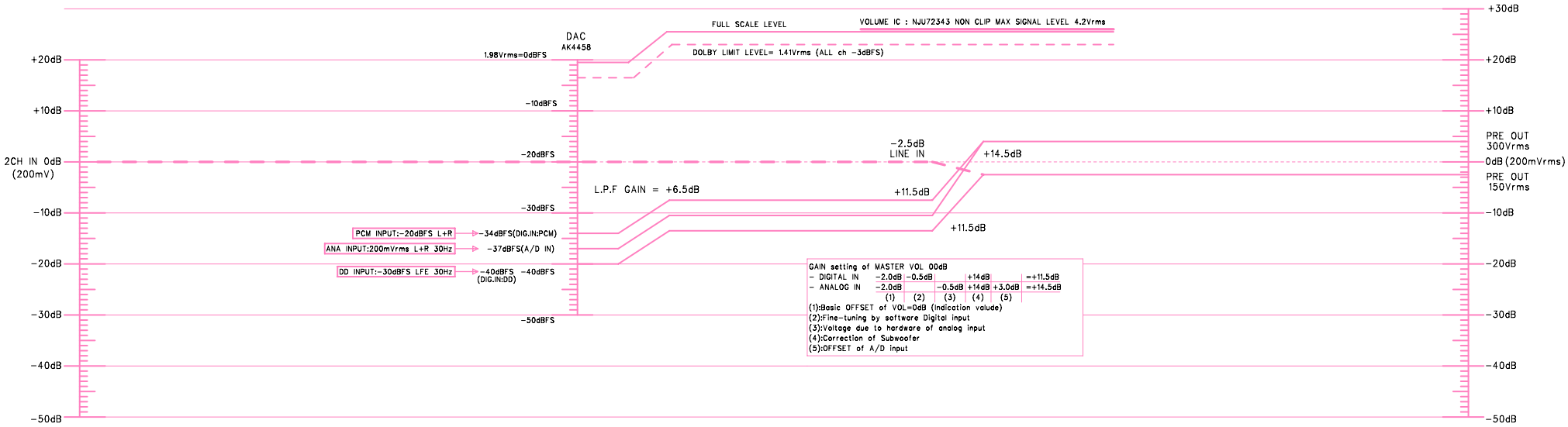
DRA-800H LEVEL DIAGRAM



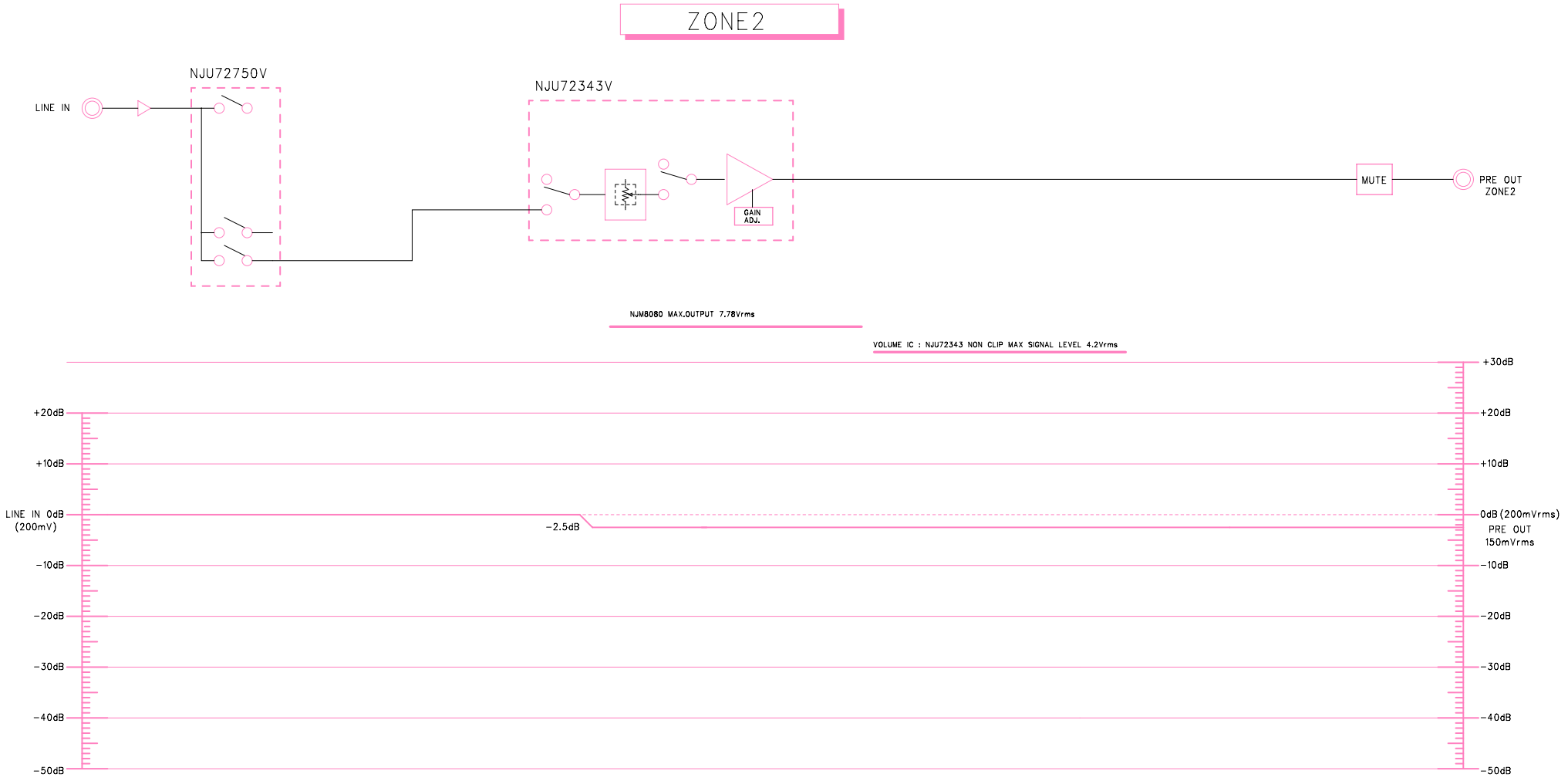
DRA-800H LEVEL DIAGRAM

SUBWOOFER CHANNEL

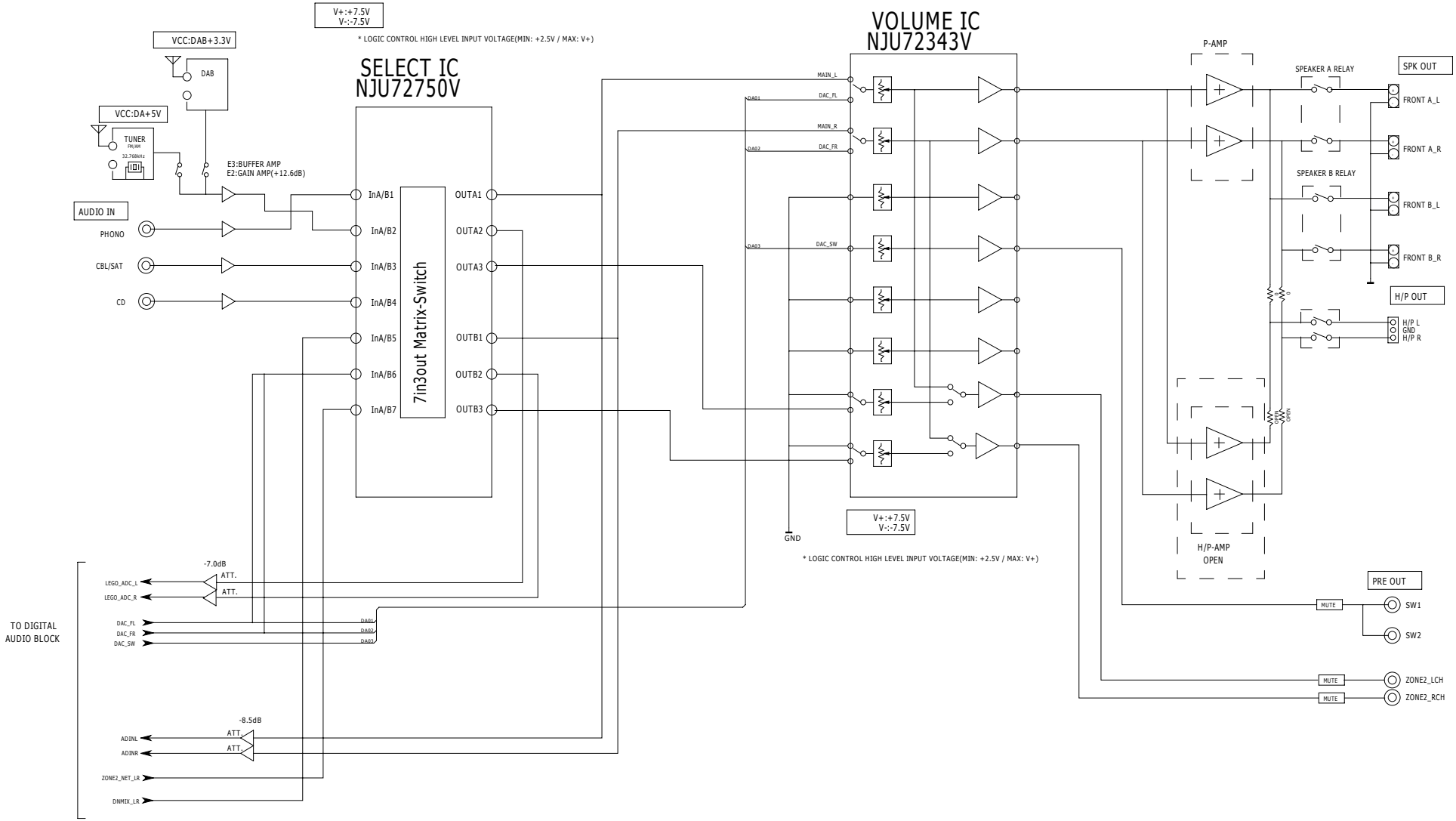




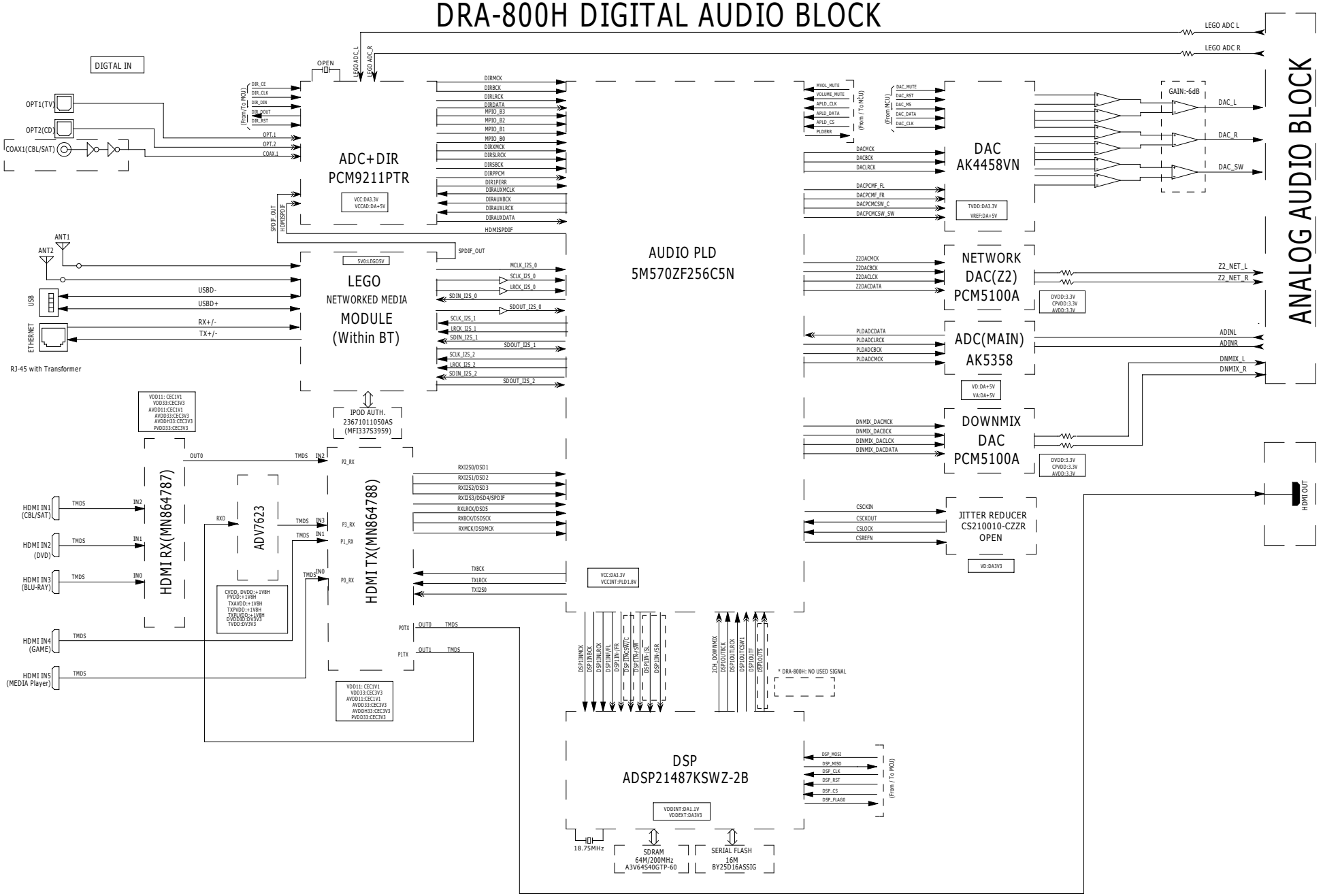
DRA-800H LEVEL DIAGRAM



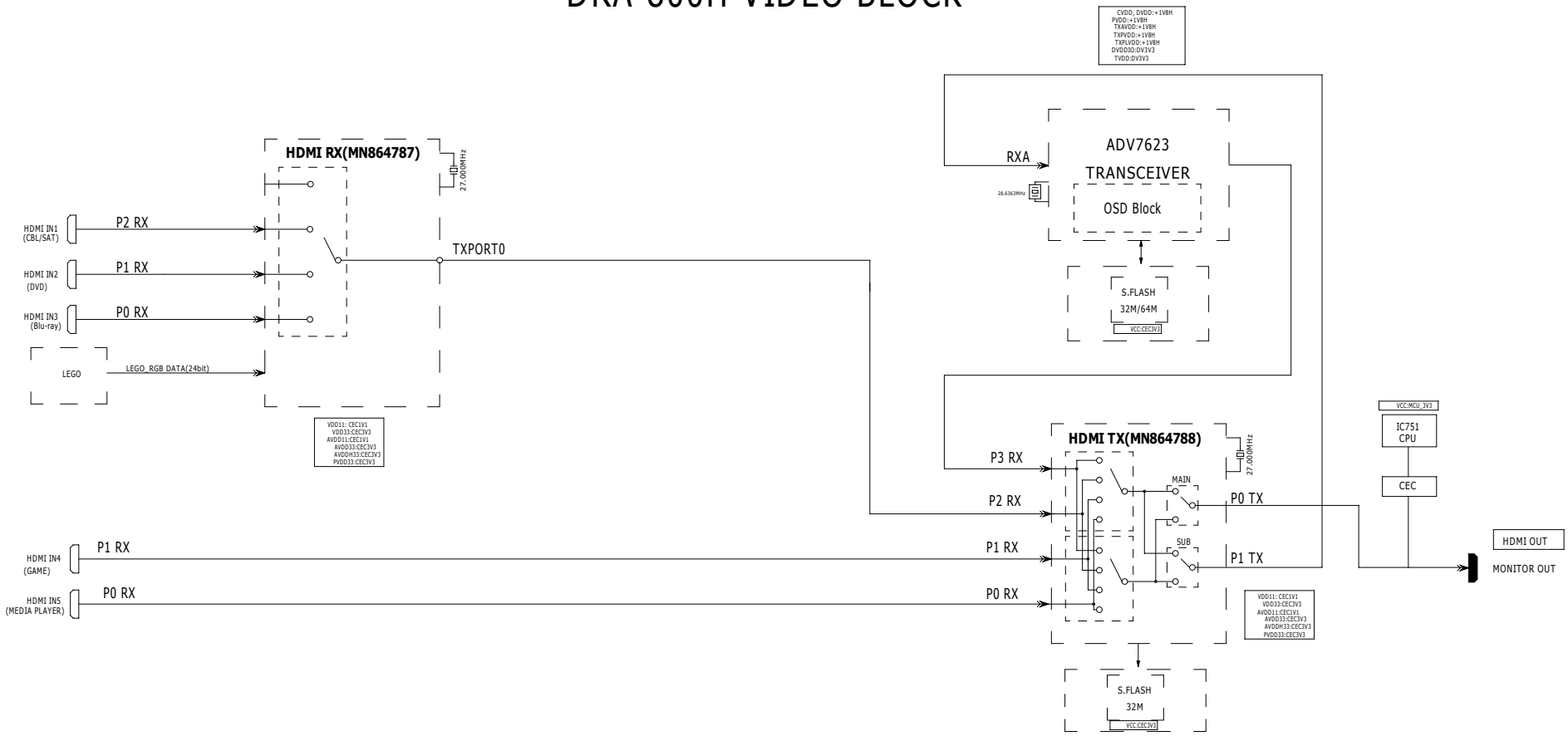
DRA-800H ANALOG AUDIO BLOCK



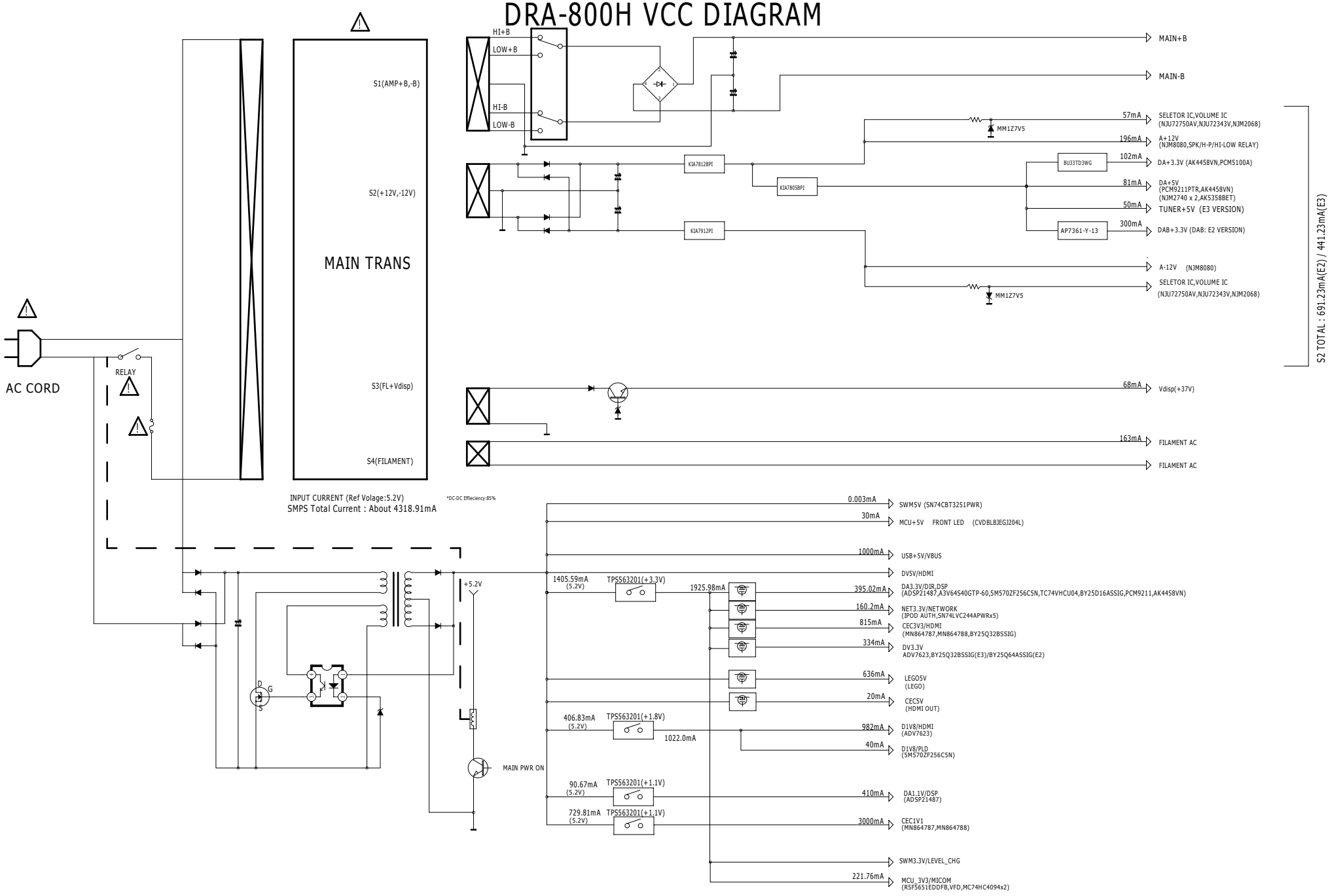
DRA-800H DIGITAL AUDIO BLOCK

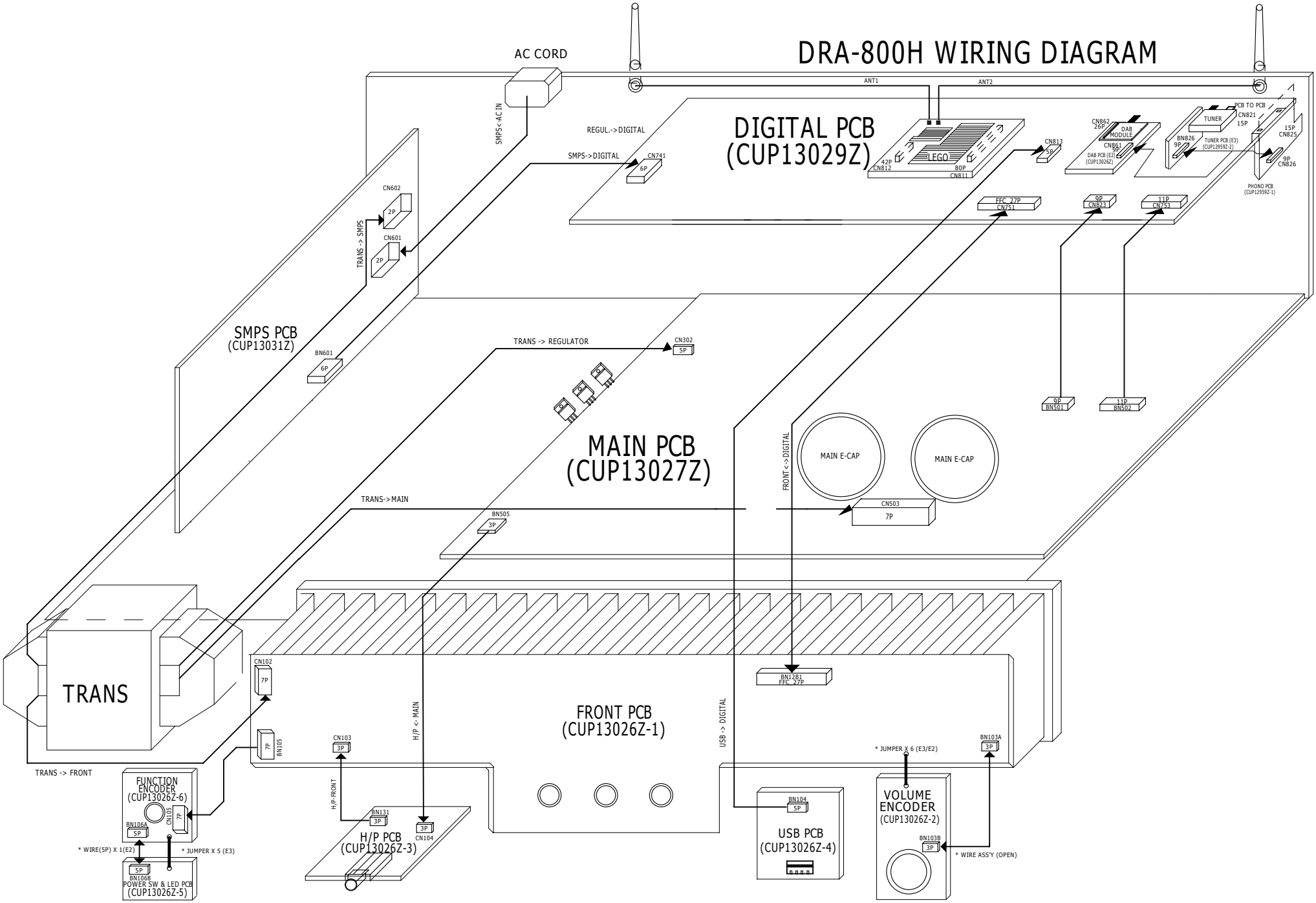


DRA-800H VIDEO BLOCK



DRA-800H VCC DIAGRAM



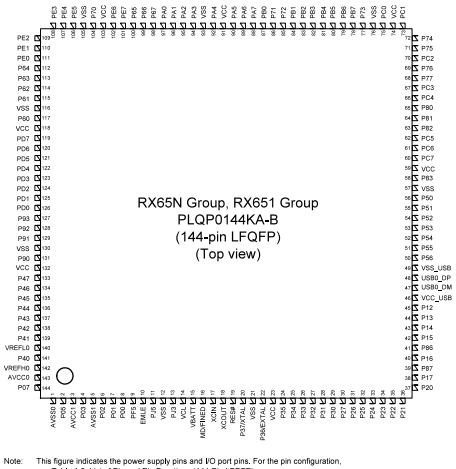

DRA-800H WIRING DIAGRAM
AC CORD
SMPS<-AC IN
ANT1
ANT2
REGUL.->DIGITAL
SMPS->DIGITAL
CN741
6P
DIGITAL PCB
(CUP13029Z)
42P
CN812
LEGO
80P
CN811
CN813
5P
CN862
26P
DAB
MODULE
CN861
9P
DAB PCB (E2)
(CUP13026Z)
TUNER
PCB TO PCB
CN821
15P
BN826
9P
TUNER PCB (E3)
(CUP12959Z-2)
15P
CN825
9P
CN826
PHONO PCB
(CUP12959Z-1)
FFC 27P
CN751
9P
CN823
11P
CN753
CN602
2P
CN601
2P
TRANS -> SMPS
SMPS PCB
(CUP13031Z)
BN601
6P
TRANS -> REGULATOR
CN302
5P
MAIN PCB
(CUP13027Z)
9P
BN501
11P
BN502
FRONT <->DIGITAL
MAIN E-CAP
MAIN E-CAP
CN503
7P
TRANS->MAIN
BN505
3P
TRANS
CN102
7P
7P
BN105
CN103
3P
H/P <- MAIN
FRONT PCB
(CUP13026Z-1)
USB -> DIGITAL
BN12B1
FFC 27P
* JUMPER X 6 (E3/E2)
BN103A
3P
TRANS -> FRONT
FUNCTION
ENCODER
(CUP13026Z-6)
CN105
7P
BN106A
5P
H/P-FRONT
BN131
3P
3P
CN104
H/P PCB
(CUP13026Z-3)
BN104
5P
USB PCB
(CUP13026Z-4)
VOLUME
ENCODER
(CUP13026Z-2)
BN103B
3P
* WIRE ASS'Y (OPEN)
* WIRE(5P) X 1(E2)
* JUMPER X 5 (E3)
5P
BN106B
POWER SW & LED PCB
(CUP13026Z-5)

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

R5F5651EDDFB (DIGITAL_MCU : IC751)



Note: This figure indicates the power supply pins and I/O port pins. For the pin configuration, see Table 1.8, List of Pin and Pin Functions (144-Pin LFQFP).

R5F5651EDDFB Terminal Functions

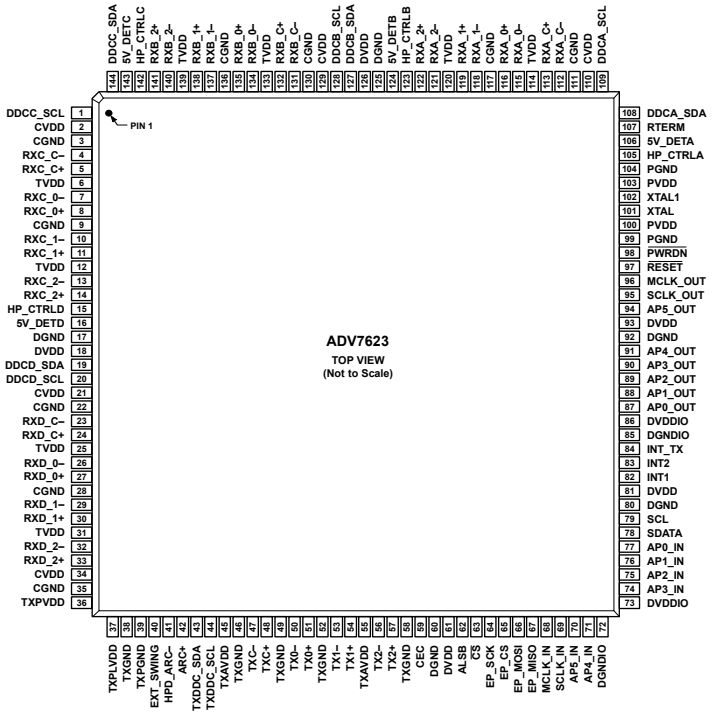
Pin	Pin Name	Symbol	I/O	Pu/Pd	STBY	STOP	CEC STBY	Function
1	AVSS0	AVSS	-		-	-	-	Ground pin
2	P05/IRQ13	POWER_KEY	I	M3VPu	I	I	I	Detect Power switch (Release from Wait Mode,Set to interrupt)
3	AVCC1	AVCC	-		-	-	-	Power supply pin
4	P03/IRQ11	RED_LED	O		L/H	L	H	POWER/STANDBY LED control pin
5	AVSS1	AVSS	-		-	-	-	Ground pin
6	P02/IRQ10/AN120	BAL_A	I	SW3VPu	I	I	I	Balance (Rotary encoder) signal input pin
7	P01/RXD6/IRQ9/AN119	RXD_MI232O	I	M3VPu	I	I	I	External data input port (for AMX/FW update via 232C) :Connector is FFC
8	P00/TXD6/IRQ8/AN118	TXD_MO232I	O		L	L	L	External data output port (for AMX/FW update via 232C) :Connector is FFC
9	PF5/IRQ4	GREEN_LED	O		L	L	L	POWER LED control pin
10	EMLE	EMLE	I	Pd	-	-	-	E20 Emulator control pin (On chip Emulator is used,this pin should be High. Not used,it should be Low)
11	PJ5	VSEL_A	I	SW3VPu	I	I	I	Master volume (Rotary encoder) signal input pin
12	VSS	VSS	-		-	-	-	Ground pin
13	PJ3	VSEL_B	I	SW3VPu	I	I	I	Master volume (Rotary encoder) signal input pin
14	VCL	VCL	I		-	-	-	Smoothing capacitor connection pin
15	VBATT	VBATT	-		-	-	-	Power supply pin
16	MD/FINED	MD	I	M3VPu	I	I	I	Pins for setting the operating mode(select the Boot Mode or User Boot Mode,Single Chip Mode)
17	XCIN	XCIN	I	Pd	-	-	-	NC(Pull down)
18	XCOUT	XCOUT	I		-	-	-	NC(open)
19	RES#	RESET	I		-	-	-	Reset signal input pin
20	XTAL/P37	XTAL	I		-	-	-	Pins for a crystal resonator (Xin=12MHz × 10)
21	VSS	VSS	-		-	-	-	Ground pin
22	EXTAL/P36	EXTAL	-		-	-	-	Pins for a crystal resonator (Xin=12MHz × 10)
23	VCC	VCC	-		-	-	-	Power supply pin.
24	UPSEL/P35(IN)/NMI	DSP_FLAG0	I	DA3VPu	L	L	L	DSP(ADI) interrupt signal input pin
25	TRST#/P34/SCK6/SCK0//IRQ4	TRST#/NC(NORMRAL)	I/I	Pd	I/I	I/I	I/I	E20 Emulator control pin/When normal operating mode,set to input.
26	P33/TIOCD0/RXD6/RXD0/IRQ3-DS	RC_IN	I	Pd	I	I	I	Remote input
27	P32/TXD6/TXD0/IRQ2-DS	BDOWN	I	M3VPu	I	I	I	Detect power down
28	TMS/P31/IRQ1-DS	TMS/NC(NORMRAL)	I/I	M3VPu	-/I	-/I	I	E20 Emulator control pin/When normal operating mode,set to input.
29	TDI/P30/RXD1/IRQ0-DS	TDI/RXD_MITSUBISHI	I/O/I	M3VPu	-/-/I	-/-/I	I	E20 Emulator control pin/Mitsubishi writter control pin/When normal operating mode,set to input.
30	TCK/FINEC/P27/SCK1/	TCK/NC(NORMRAL)	I/I/I	M3VPu	-/-/I	-/-/I	I	E20 Emulator control pin//When normal operating mode,set to input.
31	TDO/P26/TXD1	TDO/TXD_MITSUBISHI	O/O/I	M3VPu	-/-/I	-/-/I	I	E20 Emulator control pin/Mitsubishi writter control pin/When normal operating mode,set to input.
32	P25/RXD3	ADV7623_RST	O	Pd	L	L	L	HDMI transceiver w/ GUI(ADV7623) reset control pin
33	P24/SCK3	MVOL_MUTE	O		L	L	L	Volume control pin (NJU72343)
34	P23/TXD3	E_RTS_MOEI	O	Pd (BCM58305 Internal Pd)	L	L	L	Ethernet(Network Module) control pin
35	P22/SCK0	E_CTS_MIEO	I	Pd (onboad +BCM58305 Internal Pd)	I	I	I	Ethernet(Network Module) control pin
36	P21/RXD0/IRQ9	E_RXD_MIEO	I	Pd (onboad +BCM58305 Internal Pd)	I	L	I	Ethernet(Network Module) control pin
37	P20/TXD0/IRQ8	E_TXD_MOEI	O	Pd (BCM58305 Internal Pd)	L	L	L	Ethernet(Network Module) control pin
38	P17/SCK1/TXD3/IRQ7	NET_FACT_RST	O(ODR)	Pu (BCM58305 Internal Pu)	Z	Z	Z	Ethernet(Network Module) control pin
39	P87	7623_ROM_HOLD	O		L	L	L	Flash ROM for GUI control pin
40	P16/TXD1/RXD3/IRQ6	TU_SCLK(NA)/DAB_TX(EU)	O		L	L	L	TUNER control
41	P86	PRE_Z2_MUTE	O		L	L	L	Mute for zone preout control pin
42	P15/RXD1/IRQ5	TU_SDIO(NA)/DAB_Rx(EU)	I_O	NC/SW3VPu	L	L	L	TUNER control
43	P14/IRQ4	VEXP_OE	O		L	L	L	Expander (MC74HC4094) control pin
44	P13/TXD2/IRQ3	VEXP_CLK	O		L	L	L	Expander (MC74HC4094) control pin
45	P12/RXD2/IRQ2	VEXP_DATA	O		L	L	L	Expander (MC74HC4094) control pin
46	VCC_USB	VCC_USB	-		-	-	-	Power supply pin
47	USB0_DM	USB0_DM	-		-	-	-	NC(open)
48	USB0_DP	USB0_DP	-		-	-	-	NC(open)
49	VSS_USB	VSS_USB	-		-	-	-	Ground pin
50	P56	TU_SEN(NA)/NC(EU)	O		L	L	L	TUNER control pin
51	P55/IRQ10	VEXP_STB	O		L	L	L	Expander (MC14094) control pin
52	P54	NET5V_POWER	O		L	L	L	Ethernet power supply (Net5V) control pin/
53	BCLK/P53	BAL_B	I	SW3VPu	I	I	I	Balance (Rotary encoder) signal input pin
54	P52/RXD2	ADV7623_SPI_MI	I		L	L	L	HDMI transceiver w/ GUI(ADV7623) control pin (for GUI)
55	P51/SCK2	ADV7623_SPI_CLK	O		L	L	L	HDMI transceiver w/ GUI(ADV7623) control pin (for GUI)
56	P50/TXD2	ADV7623_SPI_MO	O		L	L	L	HDMI transceiver w/ GUI(ADV7623) control pin (for GUI)

Pin	Pin Name	Symbol	I/O	Pu/Pd	STBY	STOP	CEC STBY	Function
57	VSS	VSS	-		-	-	-	Ground pin
58	P83	TRE_A	I	SW3VPu	I	I	I	Tone TREBLE (Rotary encoder) signal input pin
59	VCC	VCC	-		-	-	-	Power supply pin.
60	PC7/TXD8/IRQ14	UB	I	Pd	-	-	-	Pins for setting the boot mode(select the Boot Mode or User Boot Mode)
61	PC6/RXD8/IRQ13	HSCL_(400k)	O	DV3VPu	L	L	L	HDMI transceiver w/ GUI(ADV7623) control pin (for HDMI)
62	PC5/SCK8	HSDA_(400k)	I_O	DV3VPu	L	L	L	HDMI transceiver w/ GUI(ADV7623) control pin (for HDMI)
63	P82/TXD10	DSP_MOSI	O	DA3VPu	L	L	L	DSP(ADI) control pin
64	P81/RXD10	DSP_MISO	I	DA3VPu	L	L	L	DSP(ADI) control pin
65	P80/SCK10	DSP_CLK	O	DA3VPu	L	L	L	DSP(ADI) control pin
66	PC4/SCK5	DSP_CS	O	DA3VPu	L	L	L	DSP(ADI) control pin
67	PC3/TXD5	NC	O		L	L	L	NC
68	P77/TXD11	DSP_RST	O		L	L	L	DSP(ADI) reset control pin
69	P76/RXD11	SEL_DATA	O		L	L	L	Audio selector control pin for NJU72750
70	PC2/RXD5	DA_POWER	O		L	L	L	Digital audio power supply (DA3.3V,DA1.2V) control pin
71	P75/SCK11	CEC_POWER2	O		L	L	H	CEC standby power control (for CEC Standby Mode 3)
72	P74	ADV7623_SPI_CS	O		L	L	L	HDMI transceiver w/ GUI(ADV7623) control pin (for GUI)
73	PC1/SCK5/IRQ12	DAC_PLD_ERR	I	Pd	L	L	L	Detect DAC/PLD error (from Audio PLD and DAC)
74	VCC	VCC	-		-	-	-	Power supply pin.
75	PC0/IRQ14	H/P_RL	O		L	L	L	Headphone relay control pin
76	VSS	VSS	-		-	-	-	Ground pin
77	P73	FRONT_A_RL	O		L	L	L	Speaker relay control pin for FRONT A
78	PB7/TXD9	PSDA	I/O	CEC3VPu	O/L	L	L	HDMI I2C (MN864788/787) control pin
79	PB6/RXD9	PSCL	I/O	CEC3VPu	O/L	L	L	HDMI I2C (MN864788/787) control pin
80	PB5	SEL_CLK	O		L	L	L	Audio selector control pin for NJU72750
81	PB4	APLD_CS	O		L	L	L	Audio PLD (5M570ZF256C5N) control pin
82	PB3/SCK4/SCK6	APLD_DATA/DAC_DATA	O/O		L	L	L	Audio PLD (5M570ZF256C5N) control pin/DAC (AK4458VN) control pin
83	PB2	APLD_CLK/DAC_CLK	O/O		L	L	L	Audio PLD (5M570ZF256C5N) control pin/DAC (AK4458VN) control pin
84	PB1/TXD4/TXD6/IRQ4-DS	DAC_MS	O		L	L	L	DAC (AK4458VN) control pin
85	P72	DAC_RST	O		L	L	L	DAC (AK4458VN) control pin
86	P71	PRE_MUTE	O		L	L	L	MUTE for preout control pin
87	PB0/RXD4/RXD6/IRQ12	BAS_B	I	SW3VPu	I	I	I	Tone BASS (Rotary encoder) signal input pin
88	PA7	ISEL_A	I	SW3VPu	I	I	I	Input selector (Rotary encoder) signal input pin
89	PA6	ISEL_B	I	SW3VPu	I	I	I	Input selector (Rotary encoder) signal input pin
90	PA5	BAS_A	I	SW3VPu	I	I	I	Tone BASS (Rotary encoder) signal input pin
91	VCC	VCC	-		-	-	-	Power supply pin.
92	PA4/TXD5/IRQ5-DS	FRONT_B_RL	O		L	L	L	Speaker relay control pin for FRONT B
93	VSS	VSS	-		-	-	-	Ground pin
94	PA3/RXD5/IRQ6-DS	MVOL_DATA	O		L	L	L	Volume control pin (NJU72343)
95	PA2/RXD5	MVOL_CLK	O		L	L	L	Volume control pin (NJU72343)
96	PA1/MTIOC0B/IRQ11	NC	O		L	L	L	NC
97	PA0	H5V_DET	I	Pd	I	I	I	HDMI IN 5V detect signal pin
98	P67/IRQ15	FL_CE	O		L	L	L	FL display control pin
99	P66	FL_DATA	O		L	L	L	FL display control pin
100	P65	FL_CLK	O		L	L	L	FL display control pin
101	PE7/IRQ7/AN105	KEY3	I	M3VPu	I	I	I	Key control signalinput pin (When standby mode,set to inturrupt)
102	PE6/IRQ6/AN104	KEY2	I	M3VPu	I	I	I	Key control signalinput pin (When standby mode,set to inturrupt)
103	VCC	VCC	-		-	-	-	Power supply pin.

Pin	Pin Name	Symbol	I/O	Pu/Pd	STBY	STOP	CEC STBY	Function
104	P70	Hi-B_RL	O		L	L	L	HIGH-B relay control pin
105	VSS	VSS	-		-	-	-	Ground pin
106	PE5/IRQ5/AN103	KEY1	I	M3VPu	I	I	I	Key control signalinput pin (When standby mode,set to inturrupt)
107	PE4/AN102	DC_DET/ASO	I	SW3VPu	I	I	I	Protection detect signal input pin (for DC and ASO) (A/D converter)
108	PE3/AN101	NC	O		L	L	L	NC
109	PE2/RXD12/IRQ7-DS/AN100	CURRENT_DET	I	Pd	I	L	I	Current level monitor pin (A/D converter)
110	PE1/TXD12	THERMAL_B	I	SW3VPu	I	L	I	Protection detect signal input pin
111	PE0/SCK12	NET3.3V_POWER	O		L	L	L	Ethernet power supply control(Net3.3V)
112	P64	D5V_POWER(NC)	O		L	L	H	Digital 5V power supply control pin(3.3V and 1.8V generate from 5V)(When CEC standby mode3,set to Low)
113	P63	CEC_POWER	O		L	L	H	CEC standby power supply control(CEC5V,CEC3.3V,CEC1.8V)(When CEC standby mode3,set to Low)
114	P62	DV_POWER1	O		L	L	L	Digital video power supply (DV5V,DV3.3V) control pin
115	P61	DIR_DOUT	I	DA3VPu	I	I	I	DIR (PCM9211) control pin
116	VSS	VSS	-		-	-	-	Ground pin
117	P60	DIR_DIN	O		L	L	L	DIR (PCM9211) control pin
118	VCC	VCC	-		-	-	-	Power supply pin.
119	PD7/IRQ7/AN107	H/P_DET/MIC_DET	I	SW3VPu	I	I	I	Headphone insert detect pin/Microphone insert detect pin (A/D converter)
120	PD6/IRQ6/AN106	MODE	I		I	I	I	Region setting pin
121	PD5/IRQ5/AN113	DA_POWER2(NC)	O		L	L	L	Digital audio power supply (D1.0V) control pin
122	PD4/IRQ4/AN112	DIR_RST	O	Pd	L	L	L	DIR (PCM9211) control pin
123	PD3/IRQ3/AN111	MN864788_HINT	I	CEC3VPu	I	I	I	HDMI Tx (MN864788) interrupt signal input pin
124	PD2/IRQ2/AN110	MN864787_HINT	I	CEC3VPu	I	I	I	HDMI Rx (MN864787) interrupt signal det
125	PD1/IRQ1/AN109	TU_GPO2_INT(NA)/NC(EU)	I	Pd(NA/EU)	L	L	L	TUNER control pin
126	PD0/TIOCA7/IRQ0/AN108	CEC_IN	I	SW3VPu	I	I	I	CEC-D control pin
127	P93/AN117	THERMAL_A	I	SW3VPu	I	L	I	Protection detect signal input pin
128	P92/RXD7/AN116	TEMP_SENSOR	I	NET3.3VPu	I	L	I	Temperature sensor input pin (for SRM)
129	P91/SCK7/AN015	TU_RST(NA)/DAB EN(EU)	O		L	L	L	TUNER control/DAB Power control
130	VSS	VSS	-		-	-	-	Ground pin
131	P90/TXD7/AN114	TRE_B	I	SW3VPu	I	I	I	Tone TREBLE (Rotary encoder) signal input pin
132	VCC	VCC	-		-	-	-	Power supply pin.
133	P47/IRQ15-DS/AN007	FL_RST	O		L	L	L	FL display control pin
134	P46/IRQ14-DS/AN006	DIR_CE	O		L	L	L	DIR (PCM9211) control pin
135	P45/IRQ13-DS/AN005	DIR_CLK	O		L	L	L	DIR (PCM9211) control pin
136	P44/IRQ12-DS/AN004	AIOS4_STBY_STATUS	I	-	I	I	I	Not used (This port use to detect for Network Module standby status in the future (Low:normal, High:Deep Standby))
137	P43/IRQ11-DS/AN003	AIOS4_WAKEUP	O		L	L	L	same as NET5V_POWER,NET3.3V_POWER (This port use to control for Network Module standby mode in the future(Low:Deep Standby, High:normal))
138	P42/IRQ10-DS/AN002	CPU_POWER	O		L	L	L	CPU power supply control pin
139	P41/IRQ9-DS/AN001	MAIN_POWER	O		L	L	L	Power supply control pin
140	VREFL0	VREFL0	-		-	-	-	Ground pin
141	P40/IRQ8-DS/AN000	MN864788_HAINT	I	CEC3VPu	I	I	I	HDMI Tx (MN864788) interrupt signal input pin(for Audio)
142	VREFH0	VREFH0	-		-	-	-	Power supply pin

Pin	Pin Name	Symbol	I/O	Pu/Pd	STBY	STOP	CEC STBY	Function
143	AVCC0	AVCC0	-		-	-	-	Power supply pin
144	P07/IRQ15	CEC_OUT	O		L	L	-	CEC-D control pin

ADV7623 (DIGITAL_OSD : IC731)



Pin Function Descriptions

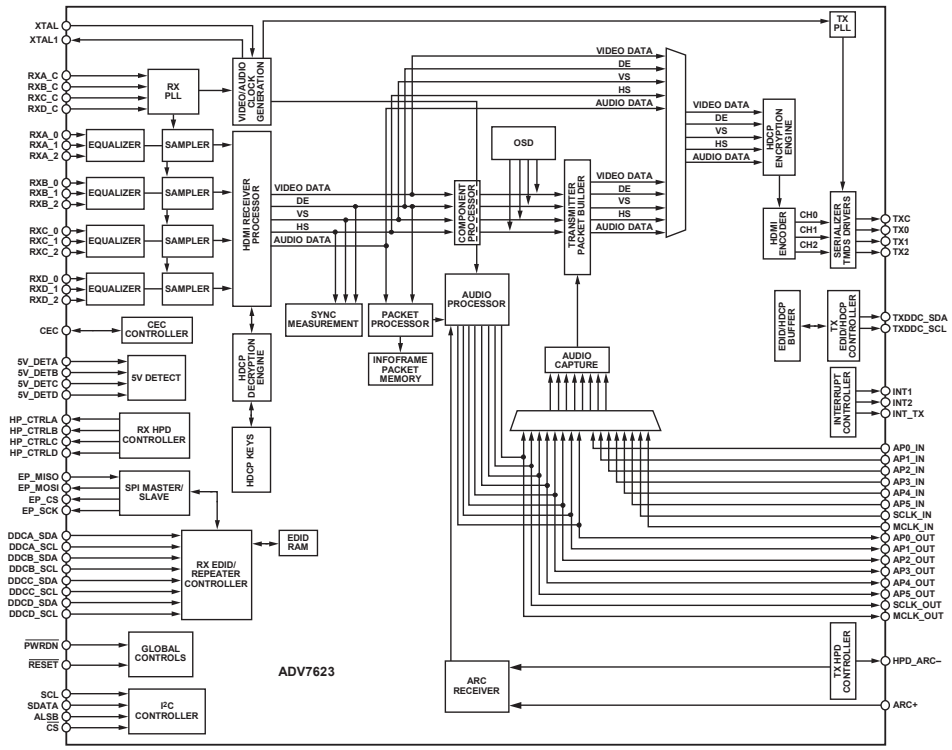
Pin No.	Mnemonic	Type	Description
1	DDCC_SCL	Digital input	HDCP Slave Serial Clock Port C. DDCC_SCL is a 3.3 V input that is 5 V tolerant.
2	CVDD	Power	Receiver Comparator Supply Voltage (1.8 V).
3	CGND	Ground	TVDD and CVDD Ground.
4	RXC_C–	HDMI input	Digital Input Clock Complement of Port C in the HDMI Interface.
5	RXC_C+	HDMI input	Digital Input Clock True of Port C in the HDMI Interface.
6	TVDD	Power	Receiver Terminator Supply Voltage (3.3 V).
7	RXC_0–	HDMI input	Digital Input Channel 0 Complement of Port C in the HDMI Interface.
8	RXC_0+	HDMI input	Digital Input Channel 0 True of Port C in the HDMI Interface.
9	CGND	Ground	TVDD and CVDD Ground.
10	RXC_1–	HDMI input	Digital Input Channel 1 Complement of Port C in the HDMI Interface.
11	RXC_1+	HDMI input	Digital Input Channel 1 True of Port C in the HDMI Interface.
12	TVDD	Power	Receiver Terminator Supply Voltage (3.3 V).

Pin No.	Mnemonic	Type	Description
13	RXC_2–	HDMI input	Digital Input Channel 2 Complement of Port C in the HDMI Interface.
14	RXC_2+	HDMI input	Digital Input Channel 2 True of Port C in the HDMI Interface.
15	HP_CTRLD	Digital output	Hot Plug Detect for Port D.
16	5V_DETD	Digital input	5 V Detect Pin for Port D in the HDMI Interface.
17	DGND	Ground	DVDD Ground.
18	DVDD	Power	Digital Supply Voltage (1.8 V).
19	DDCD_SDA	Digital I/O	HDCP Slave Serial Data Port D. DDCD_SDA is a 3.3 V input/output that is 5 V tolerant.
20	DDCD_SCL	Digital input	HDCP Slave Serial Clock Port D. DDCD_SCL is a 3.3 V input that is 5 V tolerant.
21	CVDD	Power	Receiver Comparator Supply Voltage (1.8 V).
22	CGND	Ground	TVDD and CVDD Ground.
23	RXD_C–	HDMI input	Digital Input Clock Complement of Port D in the HDMI Interface.
24	RXD_C+	HDMI input	Digital Input Clock True of Port D in the HDMI Interface.
25	TVDD	Power	Receiver Terminator Supply Voltage (3.3 V).
26	RXD_0–	HDMI input	Digital Input Channel 0 Complement of Port D in the HDMI Interface.
27	RXD_0+	HDMI input	Digital Input Channel 0 True of Port D in the HDMI Interface.
28	CGND	Ground	TVDD and CVDD Ground.
29	RXD_1–	HDMI input	Digital Input Channel 1 Complement of Port D in the HDMI Interface.
30	RXD_1+	HDMI input	Digital Input Channel 1 True of Port D in the HDMI Interface.
31	TVDD	Power	Receiver Terminator Supply Voltage (3.3 V).
32	RXD_2–	HDMI input	Digital Input Channel 2 Complement of Port D in the HDMI Interface.
33	RXD_2+	HDMI input	Digital Input Channel 2 True of Port D in the HDMI Interface.
34	CVDD	Power	Receiver Comparator Supply Voltage (1.8 V).
35	CGND	Ground	TVDD and CVDD Ground.
36	TXPVDD	Power	1.8 V Power Supply for Digital and I/O Power Supply. This pin supplies power to the digital logic and I/Os. It should be filtered and as quiet as possible.
37	TXPLVDD	Power	1.8 V Power Supply.
38	TXGND	Ground	TXPVDD Ground.
39	TXPGND	Ground	TXPLVDD Ground.
40	EXT_SWING	Analog input	This pin sets the internal reference currents. Place an 887 Ω resistor (1% tolerance) between this pin and ground.
41	HPD_ARC–	Analog input	Hot Plug Detect Signal. This pin indicates to the interface whether the receiver is connected. It supports 1.8 V to 5 V CMOS logic levels.
42	ARC+	Analog input	Audio Return Channel Input (5 V Tolerant).
43	TXDDC_SDA	Digital I/O	Serial Port Data I/O to Receiver. This pin serves as the master to the DDC bus. It supports a 5 V CMOS logic level.
44	TXDDC_SCL	Digital output	Serial Port Data Clock to Receiver. This pin serves as the master clock for the DDC bus. It supports a 5 V CMOS logic level.
45	TXAVDD	Power	1.8 V Power Supply for TMDS Outputs.
46	TXGND	Ground	TXAVDD Ground.
47	TXC–	HDMI output	Differential Clock Output. Differential clock output at the TMDS clock rate; supports TMDS logic level.
48	TXC+	HDMI output	Differential Clock Output. Differential clock output at the TMDS clock rate; supports TMDS logic level.
49	TXGND	Ground	TXAVDD Ground.
50	TX0–	HDMI output	Differential Output Channel 0 Complement. Differential output of the red data at 10× the pixel clock rate; supports TMDS logic level.
51	TX0+	HDMI output	Differential Output Channel 0 True. Differential output of the red data at 10× the pixel clock rate; supports TMDS logic level.
52	TXGND	Ground	TXAVDD Ground.
53	TX1–	HDMI output	Differential Output Channel 1 Complement. Differential output of the red data at 10× the pixel clock rate; supports TMDS logic level.
54	TX1+	HDMI output	Differential Output Channel 1 True. Differential output of the red data at 10× the pixel clock rate; supports TMDS logic level.
55	TXAVDD	Power	1.8 V Power Supply for TMDS Outputs.

Pin No.	Mnemonic	Type	Description
13	RXC_2–	HDMI input	Digital Input Channel 2 Complement of Port C in the HDMI Interface.
14	RXC_2+	HDMI input	Digital Input Channel 2 True of Port C in the HDMI Interface.
15	HP_CTRLD	Digital output	Hot Plug Detect for Port D.
16	5V_DETD	Digital input	5 V Detect Pin for Port D in the HDMI Interface.
17	DGND	Ground	DVDD Ground.
18	DVDD	Power	Digital Supply Voltage (1.8 V).
19	DDCD_SDA	Digital I/O	HDCP Slave Serial Data Port D. DDCD_SDA is a 3.3 V input/output that is 5 V tolerant.
20	DDCD_SCL	Digital input	HDCP Slave Serial Clock Port D. DDCD_SCL is a 3.3 V input that is 5 V tolerant.
21	CVDD	Power	Receiver Comparator Supply Voltage (1.8 V).
22	CGND	Ground	TVDD and CVDD Ground.
23	RXD_C–	HDMI input	Digital Input Clock Complement of Port D in the HDMI Interface.
24	RXD_C+	HDMI input	Digital Input Clock True of Port D in the HDMI Interface.
25	TVDD	Power	Receiver Terminator Supply Voltage (3.3 V).
26	RXD_0–	HDMI input	Digital Input Channel 0 Complement of Port D in the HDMI Interface.
27	RXD_0+	HDMI input	Digital Input Channel 0 True of Port D in the HDMI Interface.
28	CGND	Ground	TVDD and CVDD Ground.
29	RXD_1–	HDMI input	Digital Input Channel 1 Complement of Port D in the HDMI Interface.
30	RXD_1+	HDMI input	Digital Input Channel 1 True of Port D in the HDMI Interface.
31	TVDD	Power	Receiver Terminator Supply Voltage (3.3 V).
32	RXD_2–	HDMI input	Digital Input Channel 2 Complement of Port D in the HDMI Interface.
33	RXD_2+	HDMI input	Digital Input Channel 2 True of Port D in the HDMI Interface.
34	CVDD	Power	Receiver Comparator Supply Voltage (1.8 V).
35	CGND	Ground	TVDD and CVDD Ground.
36	TXPVDD	Power	1.8 V Power Supply for Digital and I/O Power Supply. This pin supplies power to the digital logic and I/Os. It should be filtered and as quiet as possible.
37	TXPLVDD	Power	1.8 V Power Supply.
38	TXGND	Ground	TXPVDD Ground.
39	TXPGND	Ground	TXPLVDD Ground.
40	EXT_SWING	Analog input	This pin sets the internal reference currents. Place an 887 Ω resistor (1% tolerance) between this pin and ground.
41	HPD_ARC–	Analog input	Hot Plug Detect Signal. This pin indicates to the interface whether the receiver is connected. It supports 1.8 V to 5 V CMOS logic levels.
42	ARC+	Analog input	Audio Return Channel Input (5 V Tolerant).
43	TXDDC_SDA	Digital I/O	Serial Port Data I/O to Receiver. This pin serves as the master to the DDC bus. It supports a 5 V CMOS logic level.
44	TXDDC_SCL	Digital output	Serial Port Data Clock to Receiver. This pin serves as the master clock for the DDC bus. It supports a 5 V CMOS logic level.
45	TXAVDD	Power	1.8 V Power Supply for TMDS Outputs.
46	TXGND	Ground	TXAVDD Ground.
47	TXC–	HDMI output	Differential Clock Output. Differential clock output at the TMDS clock rate; supports TMDS logic level.
48	TXC+	HDMI output	Differential Clock Output. Differential clock output at the TMDS clock rate; supports TMDS logic level.
49	TXGND	Ground	TXAVDD Ground.
50	TX0–	HDMI output	Differential Output Channel 0 Complement. Differential output of the red data at 10× the pixel clock rate; supports TMDS logic level.
51	TX0+	HDMI output	Differential Output Channel 0 True. Differential output of the red data at 10× the pixel clock rate; supports TMDS logic level.
52	TXGND	Ground	TXAVDD Ground.
53	TX1–	HDMI output	Differential Output Channel 1 Complement. Differential output of the red data at 10× the pixel clock rate; supports TMDS logic level.
54	TX1+	HDMI output	Differential Output Channel 1 True. Differential output of the red data at 10× the pixel clock rate; supports TMDS logic level.
55	TXAVDD	Power	1.8 V Power Supply for TMDS Outputs.

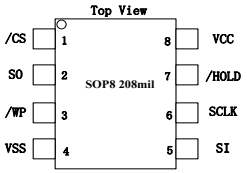
Pin No.	Mnemonic	Type	Description
99	PGND	Ground	PVDD Ground.
100	PVDD	Power	PLL Supply Voltage (1.8 V).
101	XTAL	Miscellaneous analog	Input pin for 28.63636 MHz crystal or an external 1.8 V 28.63636 MHz clock oscillator source to clock the ADV7623.
102	XTAL1	Miscellaneous analog	Crystal Output Pin. This pin should be left floating if a clock oscillator is used.
103	PVDD	Power	PLL Supply Voltage (1.8 V).
104	PGND	Ground	PVDD Ground.
105	HP_CTRLA	Digital output	Hot Plug Detect for Port A.
106	5V_DETA	Digital input	5 V Detect Pin for Port A in the HDMI Interface.
107	RTERM	Miscellaneous analog	This pin sets the internal termination resistance. A 500 Ω resistor between this pin and ground should be used.
108	DDCA_SDA	Digital I/O	HDCP Slave Serial Data Port A. DDCA_SDA is a 3.3 V input/output that is 5 V tolerant.
109	DDCA_SCL	Digital input	HDCP Slave Serial Clock Port A. DDCA_SCL is a 3.3 V input that is 5 V tolerant.
110	CVDD	Power	Receiver Comparator Supply Voltage (1.8 V).
111	CGND	Ground	TVDD and CVDD Ground.
112	RXA_C–	HDMI input	Digital Input Clock Complement of Port A in the HDMI Interface.
113	RXA_C+	HDMI input	Digital Input Clock True of Port A in the HDMI Interface.
114	TVDD	Power	Receiver Terminator Supply Voltage (3.3 V).
115	RXA_0–	HDMI input	Digital Input Channel 0 Complement of Port A in the HDMI Interface.
116	RXA_0+	HDMI input	Digital Input Channel 0 True of Port A in the HDMI Interface.
117	CGND	Ground	TVDD and CVDD Ground.
118	RXA_1–	HDMI input	Digital Input Channel 1 Complement of Port A in the HDMI Interface.
119	RXA_1+	HDMI input	Digital Input Channel 1 True of Port A in the HDMI Interface.
120	TVDD	Power	Receiver Terminator Supply Voltage (3.3 V).
121	RXA_2–	HDMI input	Digital Input Channel 2 Complement of Port A in the HDMI Interface.
122	RXA_2+	HDMI input	Digital Input Channel 2 True of Port A in the HDMI Interface.
123	HP_CTRLB	Digital output	Hot Plug Detect for Port B.
124	5V_DETB	Digital input	5 V Detect Pin for Port B in the HDMI Interface.
125	DGND	Ground	DVDD Ground.
126	DVDD	Power	Digital Supply Voltage (1.8 V).
127	DDCB_SDA	Digital I/O	HDCP Slave Serial Data Port B. DDCB_SDA is a 3.3 V input/output that is 5 V tolerant.
128	DDCB_SCL	Digital input	HDCP Slave Serial Clock Port B. DDCB_SCL is a 3.3 V input that is 5 V tolerant.
129	CVDD	Power	Receiver Comparator Supply Voltage (1.8 V).
130	CGND	Ground	TVDD and CVDD Ground.
131	RXB_C–	HDMI input	Digital Input Clock Complement of Port B in the HDMI Interface.
132	RXB_C+	HDMI input	Digital Input Clock True of Port B in the HDMI Interface.
133	TVDD	Power	Receiver Terminator Supply Voltage (3.3 V).
134	RXB_0–	HDMI input	Digital Input Channel 0 Complement of Port B in the HDMI Interface.
135	RXB_0+	HDMI input	Digital Input Channel 0 True of Port B in the HDMI Interface.
136	CGND	Ground	TVDD and CVDD Ground.
137	RXB_1–	HDMI input	Digital Input Channel 1 Complement of Port B in the HDMI Interface.
138	RXB_1+	HDMI input	Digital Input Channel 1 True of Port B in the HDMI Interface.
139	TVDD	Power	Receiver Terminator Supply Voltage (3.3 V).
140	RXB_2–	HDMI input	Digital Input Channel 2 Complement of Port B in the HDMI Interface.
141	RXB_2+	HDMI input	Digital Input Channel 2 True of Port B in the HDMI Interface.
142	HP_CTRLC	Digital output	Hot Plug Detect for Port C.
143	5V_DETC	Digital input	5 V Detect Pin for Port C in the HDMI Interface.
144	DDCC_SDA	Digital I/O	HDCP Slave Serial Data Port C. DDCC_SDA is a 3.3 V input/output that is 5 V tolerant.

ADV7623 Block diagram



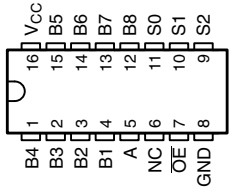
DIGITAL_OSD : IC732

BY25Q32BSSIG (except : E2)
BY25Q64ASSIG (only E2)

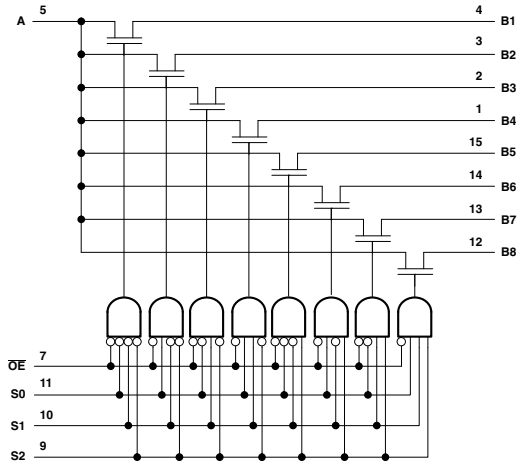


Pin Name	I/O	Description
/CS	I	Chip Select
SO (IO1)	I/O	Serial Output for single bit data Instructions. IO1 for Dual or Quad Instructions.
/WP (IO2)	I/O	Write Protect in single bit or Dual data Instructions. IO2 in Quad mode. The signal has an internal pull-up resistor and may be left unconnected in the host system if not used for Quad Instructions.
VSS		Ground
SI (IO0)	I/O	Serial Input for single bit data Instructions. IO0 for Dual or Quad Instructions.
SCLK	I	Serial Clock
/HOLD (IO3)	I/O	Hold (pause) serial transfer in single bit or Dual data Instructions. IO3 in Quad-I/O mode. The signal has an internal pull-up resistor and may be left unconnected in the host system if not used for Quad Instructions.
VCC		Core and I/O Power Supply

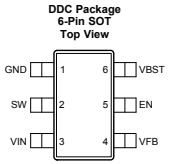
SN74CBT3251PWR (DIGITAL_OSD : IC733)



Block diagram



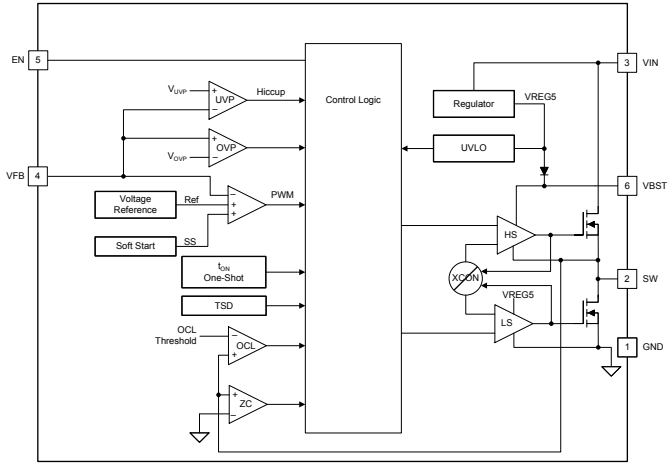
TPS563201 (DIGITAL_DIGITAL SUPPLY : IC741, IC742, IC743, IC744)



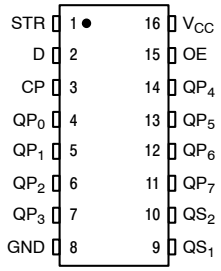
Terminal Functions

PIN		DESCRIPTION
NAME	NUMBER (I/O)	
GND	1(-)	Ground pin Source terminal of low-side power NFET as well as the ground terminal for controller circuit. Connect sensitive VFB to this GND at a single point.
SW	2(O)	Switch node connection between high-side NFET and low-side NFET.
VIN	3(I)	Input voltage supply pin. The drain terminal of high-side power NFET.
VFB	4(I)	Converter feedback input. Connect to output voltage with feedback resistor divider.
EN	5(I)	Enable input control. Active high and must be pulled up to enable the device.
VBST	6(O)	Supply input for the high-side NFET gate drive circuit. Connect 0.1 μ F capacitor between VBST and SW pins.

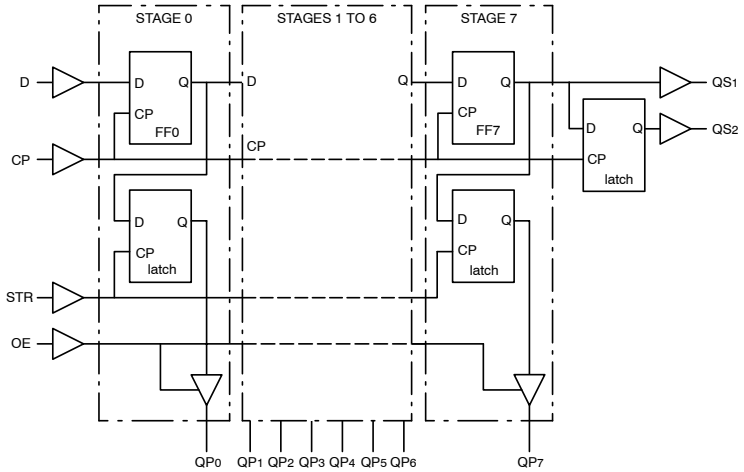
Block diagram



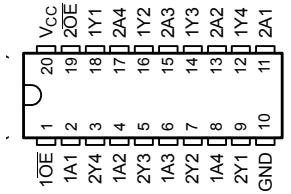
MC74HC4094ADR2G (DIGITAL_MCU : IC752, IC753)



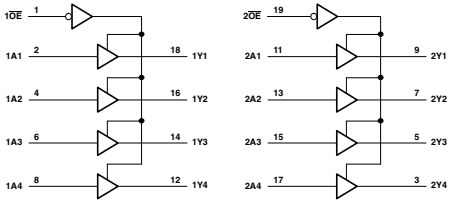
Logic Diagram



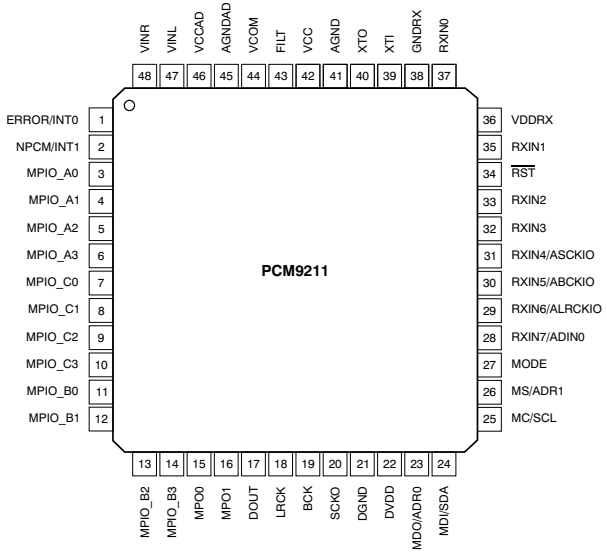
SN74LVC244APWR (DIGITAL_OSD : IC734) (DIGITAL_PLD : IC772) (DIGITAL_DSP : IC783) (DIGITAL_LEGO : IC812) (DIGITAL_HDMI_TX : IC722)



Block diagram



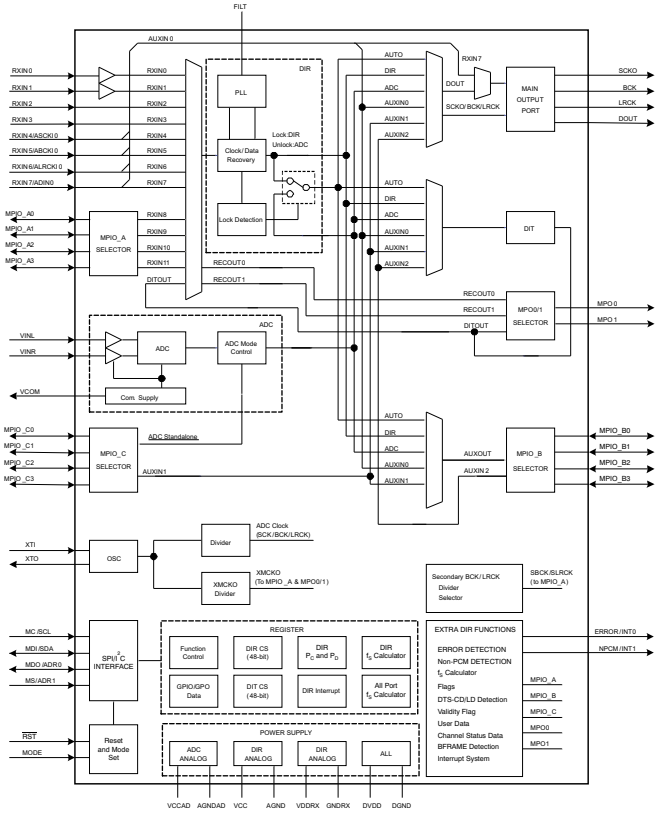
PCM9211PTR (DIGITAL_DIR : IC761)



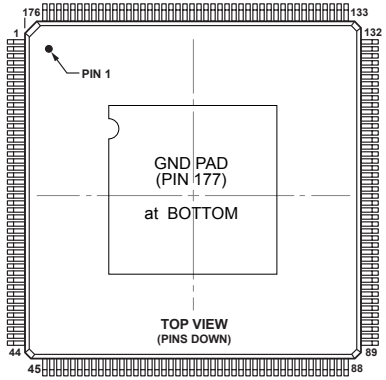
PIN Functions

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



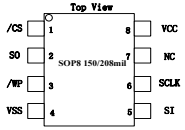
ADSP21487KSWZ2B (DIGITAL_DSP : IC781)



Pin Name	Pin No.	Pin Name	Pin No.	Pin Name	Pin No.	Pin Name	Pin No.
SDDQM	1	V_{DD_EXT}	45	DAI_P10	89	V_{DD_INT}	133
$\overline{MS0}$	2	DPI_P08	46	V_{DD_INT}	90	FLAG0	134
SDCKE	3	DPI_P07	47	V_{DD_EXT}	91	FLAG1	135
V_{DD_INT}	4	V_{DD_INT}	48	DAI_P20	92	FLAG2	136
CLK_CFG1	5	DPI_P09	49	V_{DD_INT}	93	NC	137
ADDR0	6	DPI_P10	50	DAI_P08	94	FLAG3	138
BOOT_CFG0	7	DPI_P11	51	DAI_P14	95	NC	139
V_{DD_EXT}	8	DPI_P12	52	DAI_P04	96	NC	140
ADDR1	9	DPI_P13	53	DAI_P18	97	V_{DD_EXT}	141
ADDR2	10	DPI_P14	54	DAI_P17	98	NC	142
ADDR3	11	DAI_P03	55	DAI_P16	99	V_{DD_INT}	143
ADDR4	12	NC	56	DAI_P12	100	$\overline{TRST}$	144
ADDR5	13	V_{DD_EXT}	57	DAI_P15	101	NC	145
BOOT_CFG1	14	NC	58	V_{DD_INT}	102	$\overline{EMU}$	146
GND	15	NC	59	DAI_P11	103	DATA0	147
ADDR6	16	NC	60	V_{DD_EXT}	104	DATA1	148
ADDR7	17	NC	61	V_{DD_INT}	105	DATA2	149
NC	18	V_{DD_INT}	62	BOOT_CFG2	106	DATA3	150
NC	19	NC	63	V_{DD_INT}	107	TDO	151
ADDR8	20	NC	64	AMI_ACK	108	DATA4	152
ADDR9	21	V_{DD_INT}	65	GND	109	V_{DD_EXT}	153
CLK_CFG0	22	NC	66	THD_M	110	DATA5	154
V_{DD_INT}	23	NC	67	THD_P	111	DATA6	155
CLKIN	24	V_{DD_INT}	68	V_{DD_THD}	112	V_{DD_INT}	156
XTAL	25	NC	69	V_{DD_INT}	113	DATA7	157
ADDR10	26	$\overline{WDTRSTO}$	70	V_{DD_INT}	114	TDI	158
SDA10	27	NC	71	$\overline{MS1}$	115	SDCLK	159
V_{DD_EXT}	28	V_{DD_EXT}	72	V_{DD_INT}	116	V_{DD_EXT}	160
V_{DD_INT}	29	DAI_P07	73	WDT_CLKO	117	DATA8	161
ADDR11	30	DAI_P13	74	WDT_CLKIN	118	DATA9	162
ADDR12	31	DAI_P19	75	V_{DD_EXT}	119	DATA10	163
ADDR17	32	DAI_P01	76	ADDR23	120	TCK	164
ADDR13	33	DAI_P02	77	ADDR22	121	DATA11	165
V_{DD_INT}	34	V_{DD_INT}	78	ADDR21	122	DATA12	166
ADDR18	35	NC	79	V_{DD_INT}	123	DATA14	167
$\overline{RESETOUT/RUNRSTIN}$	36	NC	80	ADDR20	124	DATA13	168
V_{DD_INT}	37	NC	81	ADDR19	125	V_{DD_INT}	169
DPI_P01	38	NC	82	V_{DD_EXT}	126	DATA15	170
DPI_P02	39	NC	83	ADDR16	127	$\overline{SDWE}$	171
DPI_P03	40	V_{DD_EXT}	84	ADDR15	128	$\overline{SDRAS}$	172
V_{DD_INT}	41	V_{DD_INT}	85	V_{DD_INT}	129	$\overline{RESET}$	173
DPI_P05	42	DAI_P06	86	ADDR14	130	TMS	174
DPI_P04	43	DAI_P05	87	$\overline{AMI\_WR}$	131	$\overline{SDCAS}$	175
DPI_P06	44	DAI_P09	88	$\overline{AMI\_RD}$	132	V_{DD_INT}	176
						GND	177*

* at BOTTOM

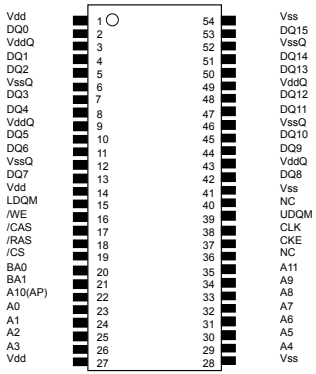
BY25D16ASSIG (DIGITAL_DSP : IC782)



Terminal Functions

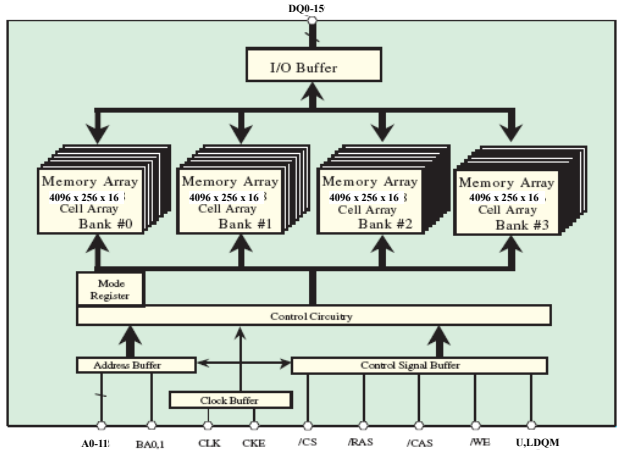
Pin Name	I/O	Description
/CS	I	Chip Select
SO (IO1)	I/O	Serial Output for single bit data Instructions. IO1 for Dual Instructions.
/WP (IO2)	I	Write Protect in single bit
VSS		Ground
SI (IO0)	I/O	Serial Input for single bit data Instructions. IO0 for Dual Instructions.
SCLK	I	Serial Clock
NC		No Connection
VCC		Core and I/O Power Supply

A3V64S40GTP-60 (DIGITAL_DSP : IC784)

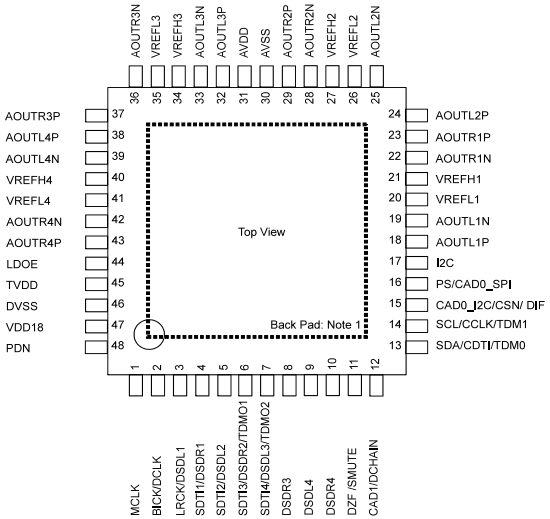


CLK	: Master Clock	U,LDQM	: Output Disable / Write Mask
CKE	: Clock Enable	A0-11	: Address Input
/CS	: Chip Select	BA0,1	: Bank Address
/RAS	: Row Address Strobe	Vdd	: Power Supply
/CAS	: Column Address Strobe	VddQ	: Power Supply for Output
/WE	: Write Enable	Vss	: Ground
DQ0-15	: Data I/O	VssQ	: Ground for Output

Block diagram



AK4458VN (DIGITAL_MAIN DAC : IC791)

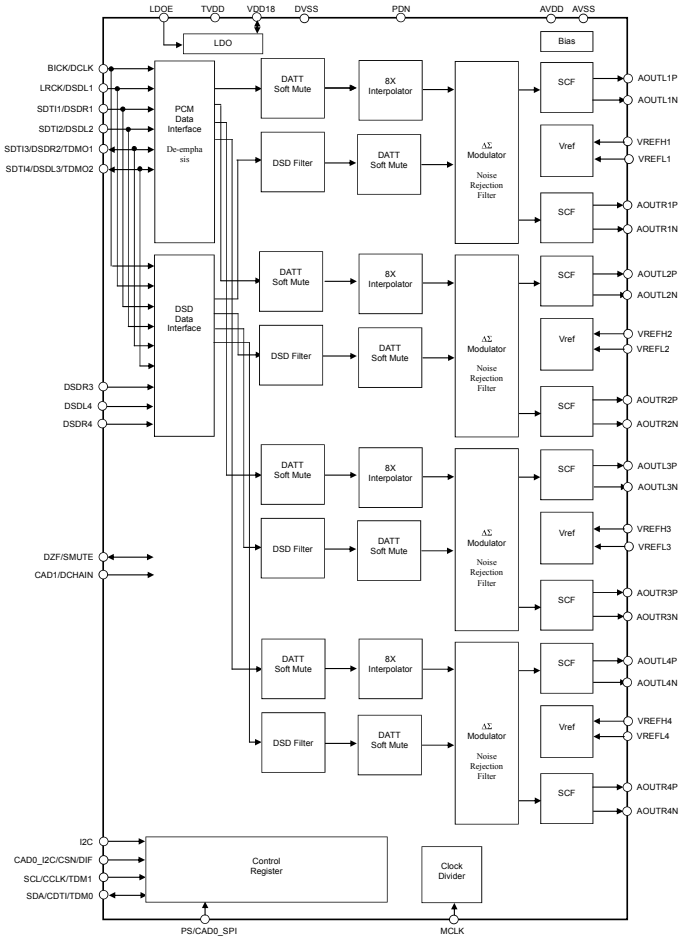


Pin Function

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.	
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

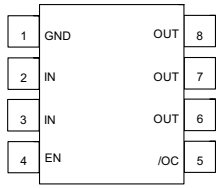
Note 2. All input pins except internal pull-up/down pins should not be left floating.
Note 3. PCM mode and DSD mode are controlled by registers. Daisy Chain mode is controlled by both registers and pins.
Note 4. This pin outputs DVSS when the LDOE pin = "H" and Hi-z when the LDOE pin = "L".

FUNCTIONAL BLOCK DIAGRAM

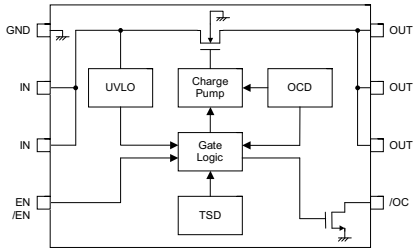


BD82065FVJ-E2 (DIGITAL_NETWORK : IC814)

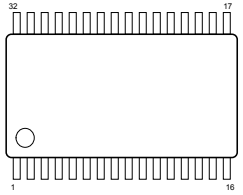
BD82065FVJ
TOP VIEW



Block diagram

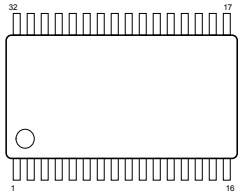


NJU72343 (DIGITAL_ANALOG : IC822)



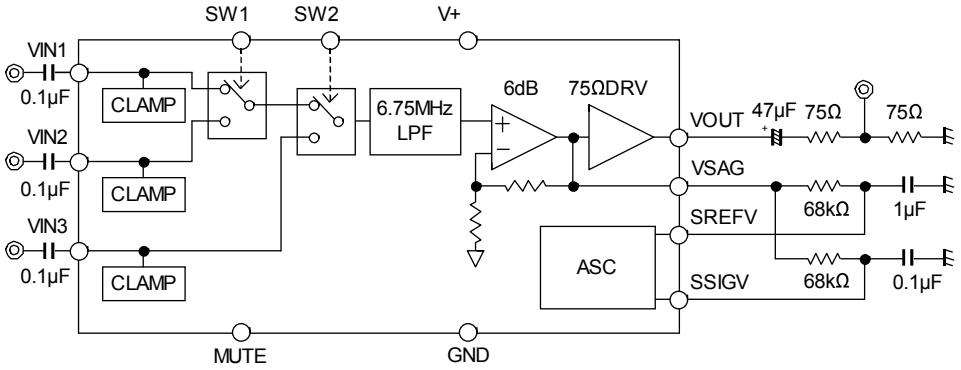
No.	Symbol	Function	No.	Symbol	Function
1	AREF	Analog reference potential	17	DATA	IC control data input
2	ADR	Address selection	18	CLOCK	IC control clock input
3	InA2	Ach input2	19	VDDOUT	Digital power supply output
4	InB2	Bch input2	20	AREF	Analog reference potential
5	InA1	Ach input1	21	OutH	Hch output
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(+)

NJU72750A (DIGITAL_ANALOG : IC821)



No.	Symbol	Function	No.	Symbol	Function
1	V+	Power supply(+)	17	DATA	IC control data input
2	InA1	Ach input1	18	CLOCK	IC control clock input
3	InB1	Bch input1	19	NC	-
4	InA2	Ach input2	20	NC	-
5	InB2	Bch input2	21	OutB3	Bch output3
6	InA3	Ach input3	22	OutA3	Ach output3
7	InB3	Bch input3	23	REF_B	Bch reference potential
8	InA4	Ach input4	24	OutB2	Bch output2
9	InB4	Bch input4	25	OutA2	Ach output2
10	InA5	Ach input5	26	REF_A	Ach reference potential
11	InB5	Bch input5	27	OutB1	Bch output1
12	InA6	Ach input6	28	OutA1	Ach output1
13	InB6	Bch input6	29	NC	-
14	InA7	Ach input7	30	ADR0	Address selection pin 0
15	InB7	Bch input7	31	ADR1	Address selection pin 1
16	REF	BIAS reference potential	32	V-	Power supply(-)

NJM41050V (DIGITAL_ANALOG : IC881)



TOP268VG (SMPS : IC601)

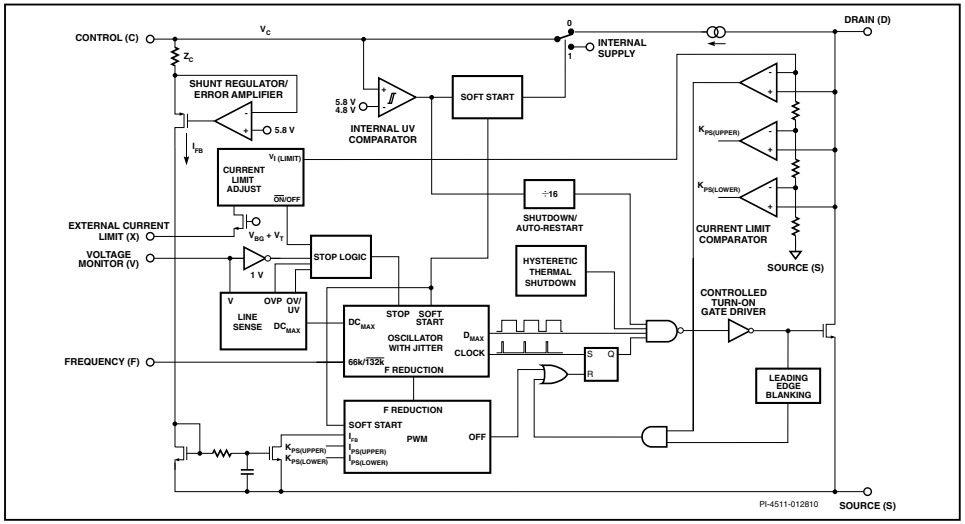


Figure 3. Functional Block Diagram.

Pin Functional Description

DRAIN (D) Pin:
High-voltage power MOSFET DRAIN pin. The internal start-up bias current is drawn from this pin through a switched high-voltage current source. Internal current limit sense point for drain current.

CONTROL (C) Pin:
Error amplifier and feedback current input pin for duty cycle control. Internal shunt regulator connection to provide internal bias current during normal operation. It is also used as the connection point for the supply bypass and auto-restart/ compensation capacitor.

EXTERNAL CURRENT LIMIT (X) Pin:
Input pin for external current limit adjustment remote-ON/OFF and device reset. A connection to SOURCE pin disables all functions on this pin. This pin should not be left floating.

VOLTAGE MONITOR (V) Pin:
Input for OV, UV, line feed-forward with DC_{MAX} reduction, output overvoltage protection (OVP), remote-ON/OFF. A connection to the SOURCE pin disables all functions on this pin. This pin should not be left floating.

FREQUENCY (F) Pin :
Input pin for selecting switching frequency 132 kHz if connected to SOURCE pin and 66 kHz if connected to CONTROL pin. This pin should not be left floating.

SOURCE (S) Pin:
Output MOSFET source connection for high-voltage power return. Primary-side control circuit common and reference point.

NO CONNECTION (NC) Pin:
Internally not connected, floating potential pin.

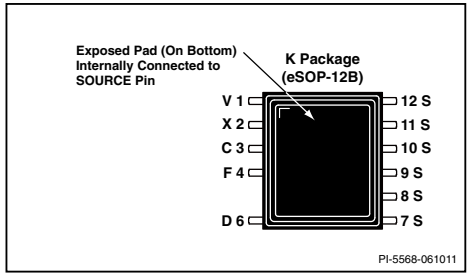
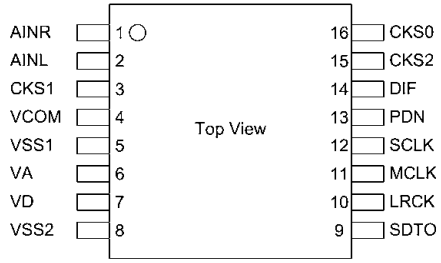


Figure 4. Pin Configuration (Top View).

AK5358BET(DIGITAL_DIR : IC764)

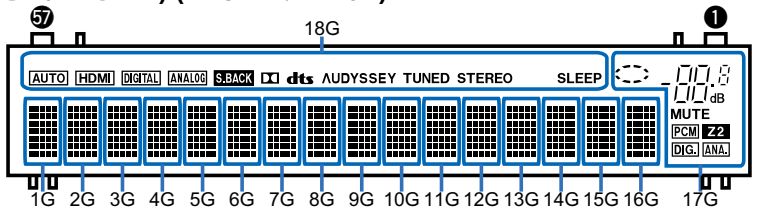


AK5358BET Pin Function

No.	Pin Name	I/O	Function
1	AINR	I	Rch Analog Input Pin
2	AINL	I	Lch Analog Input Pin
3	CKS1	I	Mode Select 1 Pin
4	VCOM	O	Common Voltage Output Pin, VA/2 Bias voltage of ADC input.
5	VSS1	-	Ground Pin
6	VA	-	Analog Power Supply Pin, 4.5 ~ 5.5V
7	VD	-	Digital Power Supply Pin, 2.7 ~ 5.5V
8	VSS2	-	Ground Pin
9	SDTO	O	Audio Serial Data Output Pin "L" Output at Power-down mode.
10	LRCK	I/O	Output Channel Clock Pin "L" Output in Master Mode at Power-down mode.
11	MCLK	I	Master Clock Input Pin
12	SCLK	I/O	Audio Serial Data Clock Pin "L" Output in Master Mode at Power-down mode.
13	PDN	I	Power Down Mode & Reset Pin "H": Power up, "L": Power down & Reset
14	DIF	I	Audio Interface Format Pin "H": 24bit I^2S Compatible, "L": 24bit MSB justified
15	CKS2	I	Mode Select 2 Pin
16	CKS0	I	Mode Select 0 Pin

2. FL DISPLAY

FLD (018BT021GINK) (FRONT : FL101)



PIN CONNECTION

PIN NO.	57	56	55	54	53	52	51
CONNECTION	F2	NP	NP	NP	LGND	PGND	VH

PIN NO.	50	49	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
CONNECTION	VDD	OSC	$\overline{\text{RESET}}$	$\overline{\text{CS}}$	CP	DA	TSA	TSB	NX	NX	NX	NX	NX	NX	NX	NX	NX	NX	NX	NX	NX	NX	NX	NX	NX	NX	NX	NX	NX	NX	NX	NX	NX	NX	NX	NX	NX	NX	NX	NX	NX	NX	18G	17G	Q17G	Q18G	NP	NP	NP	F1

NOTE

1) F1, F2 ----Filament
2) NP ------No pin
3) DL ------Datum Line
4) NX ------No extend pin
5) LGND ----Logic GND pin
6) PGND ----Power GND pin
7) VH ------High Voltage Supply pin
8) VDD ------Logic Voltage Supply pin
9) CP ----Shift Register Clock
10) DA ----Serial Data Input
11) TSA, B --Test pin
12) $\overline{\text{CS}}$ ------Chip Select Input pin
13) $\overline{\text{RESET}}$ --Reset Input
14) OSC ----Pin for self-oscillation
15) Solder composition is Sn-3Ag-0.5Cu.
16) 17G, 18G ---Grid
17) Q17G, Q18G ---Driver Output Port.
18) Field of vision is a minimum of 21.8° from the lower side.

ANODE CONNECTION

	1G	2G	3G	4G	5G	6G	7G	8G	9G	10G	11G	12G	13G	14G	15G	16G	17G(AD3)	18G(AD4)
D0	1-1	1-1	1-1	1-1	1-1	1-1	1-1	1-1	1-1	1-1	1-1	1-1	1-1	1-1	1-1	1-1	S9	-
D1	2-1	2-1	2-1	2-1	2-1	2-1	2-1	2-1	2-1	2-1	2-1	2-1	2-1	2-1	2-1	2-1	3d	-
D2	3-1	3-1	3-1	3-1	3-1	3-1	3-1	3-1	3-1	3-1	3-1	3-1	3-1	3-1	3-1	3-1	2d	-
D3	4-1	4-1	4-1	4-1	4-1	4-1	4-1	4-1	4-1	4-1	4-1	4-1	4-1	4-1	4-1	4-1	3e	-
D4	5-1	5-1	5-1	5-1	5-1	5-1	5-1	5-1	5-1	5-1	5-1	5-1	5-1	5-1	5-1	5-1	2e	-
D5	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	3c	-
D6	2-2	2-2	2-2	2-2	2-2	2-2	2-2	2-2	2-2	2-2	2-2	2-2	2-2	2-2	2-2	2-2	2c	-
D7	3-2	3-2	3-2	3-2	3-2	3-2	3-2	3-2	3-2	3-2	3-2	3-2	3-2	3-2	3-2	3-2	3g	-
D8	4-2	4-2	4-2	4-2	4-2	4-2	4-2	4-2	4-2	4-2	4-2	4-2	4-2	4-2	4-2	4-2	2g	-
D9	5-2	5-2	5-2	5-2	5-2	5-2	5-2	5-2	5-2	5-2	5-2	5-2	5-2	5-2	5-2	5-2	3f	-
D10	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	2f	-
D11	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3	3b	-
D12	3-3	3-3	3-3	3-3	3-3	3-3	3-3	3-3	3-3	3-3	3-3	3-3	3-3	3-3	3-3	3-3	2b	-
D13	4-3	4-3	4-3	4-3	4-3	4-3	4-3	4-3	4-3	4-3	4-3	4-3	4-3	4-3	4-3	4-3	3a	-
D14	5-3	5-3	5-3	5-3	5-3	5-3	5-3	5-3	5-3	5-3	5-3	5-3	5-3	5-3	5-3	5-3	2a	-
D15	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	Dp	-
D16	2-4	2-4	2-4	2-4	2-4	2-4	2-4	2-4	2-4	2-4	2-4	2-4	2-4	2-4	2-4	2-4	dB	-
D17	3-4	3-4	3-4	3-4	3-4	3-4	3-4	3-4	3-4	3-4	3-4	3-4	3-4	3-4	3-4	3-4	1d	-
D18	4-4	4-4	4-4	4-4	4-4	4-4	4-4	4-4	4-4	4-4	4-4	4-4	4-4	4-4	4-4	4-4	1e	-
D19	5-4	5-4	5-4	5-4	5-4	5-4	5-4	5-4	5-4	5-4	5-4	5-4	5-4	5-4	5-4	5-4	1c	-
D20	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1g	-
D21	2-5	2-5	2-5	2-5	2-5	2-5	2-5	2-5	2-5	2-5	2-5	2-5	2-5	2-5	2-5	2-5	1f	-
D22	3-5	3-5	3-5	3-5	3-5	3-5	3-5	3-5	3-5	3-5	3-5	3-5	3-5	3-5	3-5	3-5	1b	-
D23	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	1a	AUTO
D24	5-5	5-5	5-5	5-5	5-5	5-5	5-5	5-5	5-5	5-5	5-5	5-5	5-5	5-5	5-5	5-5	S1	HDMI
D25	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	S2	DIGITAL
D26	2-6	2-6	2-6	2-6	2-6	2-6	2-6	2-6	2-6	2-6	2-6	2-6	2-6	2-6	2-6	2-6	S3	ANALOG
D27	3-6	3-6	3-6	3-6	3-6	3-6	3-6	3-6	3-6	3-6	3-6	3-6	3-6	3-6	3-6	3-6	S4	S.BACK
D28	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	S5	DTS
D29	5-6	5-6	5-6	5-6	5-6	5-6	5-6	5-6	5-6	5-6	5-6	5-6	5-6	5-6	5-6	5-6	S6	dts
D30	1-7	1-7	1-7	1-7	1-7	1-7	1-7	1-7	1-7	1-7	1-7	1-7	1-7	1-7	1-7	1-7	S7	AUDYSSEY
D31	2-7	2-7	2-7	2-7	2-7	2-7	2-7	2-7	2-7	2-7	2-7	2-7	2-7	2-7	2-7	2-7	S8	TUNED
D32	3-7	3-7	3-7	3-7	3-7	3-7	3-7	3-7	3-7	3-7	3-7	3-7	3-7	3-7	3-7	3-7	MUTE	STEREO
D33	4-7	4-7	4-7	4-7	4-7	4-7	4-7	4-7	4-7	4-7	4-7	4-7	4-7	4-7	4-7	4-7	PCM	RDS
D34	5-7	5-7	5-7	5-7	5-7	5-7	5-7	5-7	5-7	5-7	5-7	5-7	5-7	5-7	5-7	5-7	Z2	SLEEP
AD1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	DIG.	-
AD2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ANA.	-

3. Remote Code Table

FORMAT SHARP

FORMAT: SHARP /DATA CONSTRUCTION 15bits C14 0 C15 0=NOT INVERTED, 1=INVERTED /REMOTE ID: 1
SYSTEM ADDRESS (C1 ～ C5) : 0 1 0 0 0 , EXTENSION BIT (C12,C13) : 1 1

No.	Data (C6 ～ C11)	Key Name	No.	Data (C6 ～ C11)	Key Name
RCSHP0230000	0 0 0 0 0 0		RCSHP0230016	0 0 0 0 1 0	FR LEVEL DOWN
RCSHP0230001	1 0 0 0 0 0	POWER	RCSHP0230017	1 0 0 0 1 0	
RCSHP0230002	0 1 0 0 0 0	FL LEVEL UP	RCSHP0230018	0 1 0 0 1 0	
RCSHP0230003	1 1 0 0 0 0	PHONO	RCSHP0230019	1 1 0 0 1 0	
RCSHP0230004	0 0 1 0 0 0	CD	RCSHP0230020	0 0 1 0 1 0	
RCSHP0230005	1 0 1 0 0 0	TUNER	RCSHP0230021	1 0 1 0 1 0	
RCSHP0230006	0 1 1 0 0 0		RCSHP0230022	0 1 1 0 1 0	SR LEVEL UP
RCSHP0230007	1 1 1 0 0 0	FL LEVEL DOWN	RCSHP0230023	1 1 1 0 1 0	SR LEVEL DOWN
RCSHP0230008	0 0 0 1 0 0	CBL/SAT	RCSHP0230024	0 0 0 1 1 0	VIDEO SELECT
RCSHP0230009	1 0 0 1 0 0	TV AUDIO	RCSHP0230025	1 0 0 1 1 0	
RCSHP0230010	0 1 0 1 0 0	Blu-ray	RCSHP0230026	0 1 0 1 1 0	
RCSHP0230011	1 1 0 1 0 0	FR LEVEL UP	RCSHP0230027	1 1 0 1 1 0	
RCSHP0230012	0 0 1 1 0 0	AUX	RCSHP0230028	0 0 1 1 1 0	INPUT MODE ANALOG
RCSHP0230013	1 0 1 1 0 0	GAME	RCSHP0230029	1 0 1 1 1 0	CURSOR RIGHT
RCSHP0230014	0 1 1 1 0 0	MEDIA PLAYER	RCSHP0230030	0 1 1 1 1 0	STATUS
RCSHP0230015	1 1 1 1 0 0		RCSHP0230031	1 1 1 1 1 0	INFO

No.	Data (C6 ～ C11)	Key Name	No.	Data (C6 ～ C11)	Key Name
RCSHP0230032	0 0 0 0 0 1	ENTER	RCSHP0230048	0 0 0 0 1 1	MUTING
RCSHP0230033	1 0 0 0 0 1	POWER ON	RCSHP0230049	1 0 0 0 1 1	MASTER VOLUME UP
RCSHP0230034	0 1 0 0 0 1	POWER OFF	RCSHP0230050	0 1 0 0 1 1	MASTER VOLUME DOWN
RCSHP0230035	1 1 0 0 0 1	DVD	RCSHP0230051	1 1 0 0 1 1	SL LEVEL UP
RCSHP0230036	0 0 1 0 0 1	STANDARD (DOLBY/DTS SURR.)	RCSHP0230052	0 0 1 0 1 1	SL LEVEL DOWN
RCSHP0230037	1 0 1 0 0 1	SW LEVEL DOWN	RCSHP0230053	1 0 1 0 1 1	CENTER LEVEL UP
RCSHP0230038	0 1 1 0 0 1	DSP SIMULATION	RCSHP0230054	0 1 1 0 1 1	CENTER LEVEL DOWN
RCSHP0230039	1 1 1 0 0 1	SB/SBL LEVEL UP	RCSHP0230055	1 1 1 0 1 1	SBR LEVEL UP
RCSHP0230040	0 0 0 1 0 1		RCSHP0230056	0 0 0 1 1 1	SBR LEVEL DOWN
RCSHP0230041	1 0 0 1 0 1		RCSHP0230057	1 0 0 1 1 1	TONE CONTROL OFF
RCSHP0230042	0 1 0 1 0 1		RCSHP0230058	0 1 0 1 1 1	TONE CONTROL ON
RCSHP0230043	1 1 0 1 0 1	SB/SBL LEVEL DOWN	RCSHP0230059	1 1 0 1 1 1	
RCSHP0230044	0 0 1 1 0 1	SW LEVEL UP	RCSHP0230060	0 0 1 1 1 1	
RCSHP0230045	1 0 1 1 0 1	FRONT SPEAKER	RCSHP0230061	1 0 1 1 1 1	
RCSHP0230046	0 1 1 1 0 1	SP-A ,FRONT	RCSHP0230062	0 1 1 1 1 1	
RCSHP0230047	1 1 1 1 0 1	SP-B ,FRONT	RCSHP0230063	1 1 1 1 1 1	

FORMAT: SHARP /DATA CONSTRUCTION 15bits C14 0 C15 0=NOT INVERTED, 1=INVERTED /REMOTE ID: 1
SYSTEM ADDRESS (C1 ～ C5) : 0 0 1 1 0 , EXTENSION BIT (C12,C13) : 0 1

No.	Data (C6 ～ C11)	Key Name	No.	Data (C6 ～ C11)	Key Name
RCSHP0C20000	0 0 0 0 0 0	ALL BASS DOWN	RCSHP0C20016	0 0 0 0 1 0	ZONE2 CD
RCSHP0C20001	1 0 0 0 0 0		RCSHP0C20017	1 0 0 0 1 0	ZONE2 TUNER
RCSHP0C20002	0 1 0 0 0 0	SURROUND BACK	RCSHP0C20018	0 1 0 0 1 0	ZONE2 Blu-ray
RCSHP0C20003	1 1 0 0 0 0	MASTER VOL. PRESET1 (0dB)	RCSHP0C20019	1 1 0 0 1 0	ZONE2 AUX
RCSHP0C20004	0 0 1 0 0 0		RCSHP0C20020	0 0 1 0 1 0	ZONE2 GAME
RCSHP0C20005	1 0 1 0 0 0	MASTER VOL. PRESET2 (-20dB)	RCSHP0C20021	1 0 1 0 1 0	
RCSHP0C20006	0 1 1 0 0 0	MASTER VOL. PRESET3 (-40dB)	RCSHP0C20022	0 1 1 0 1 0	ZONE2 PRESET UP
RCSHP0C20007	1 1 1 0 0 0	ZONE2 VOL. P1 (0dB)	RCSHP0C20023	1 1 1 0 1 0	ZONE2 PRESET DOWN
RCSHP0C20008	0 0 0 1 0 0	ZONE2 VOL. P2 (-20dB)	RCSHP0C20024	0 0 0 1 1 0	
RCSHP0C20009	1 0 0 1 0 0	ZONE2 VOL. P3 (-40dB)	RCSHP0C20025	1 0 0 1 1 0	ZONE2 MEDIA PLAYER
RCSHP0C20010	0 1 0 1 0 0	ZONE2 CBL/SAT	RCSHP0C20026	0 1 0 1 1 0	
RCSHP0C20011	1 1 0 1 0 0		RCSHP0C20027	1 1 0 1 1 0	ZONE2 TV AUDIO
RCSHP0C20012	0 0 1 1 0 0	ZONE3 VOL. PRESET1 (0dB)	RCSHP0C20028	0 0 1 1 1 0	
RCSHP0C20013	1 0 1 1 0 0	ZONE2 VOL UP	RCSHP0C20029	1 0 1 1 1 0	STEREO
RCSHP0C20014	0 1 1 1 0 0	ZONE2 VOL DOWN	RCSHP0C20030	0 1 1 1 1 0	DIRECT
RCSHP0C20015	1 1 1 1 0 0	ZONE2 PHONO	RCSHP0C20031	1 1 1 1 1 0	ZONE3 VOL. PRESET2 (0dB)

No.	Data (C6 ～ C11)	Key Name	No.	Data (C6 ～ C11)	Key Name
RCSHP0C20032	0 0 0 0 0 1	SETUP MENU	RCSHP0C20048	0 0 0 0 1 1	
RCSHP0C20033	1 0 0 0 0 1		RCSHP0C20049	1 0 0 0 1 1	
RCSHP0C20034	0 1 0 0 0 1	ZONE3 VOL. PRESET2 (0dB)	RCSHP0C20050	0 1 0 0 1 1	
RCSHP0C20035	1 1 0 0 0 1	CURSOR UP	RCSHP0C20051	1 1 0 0 1 1	
RCSHP0C20036	0 0 1 0 0 1	CURSOR DOWN	RCSHP0C20052	0 0 1 0 1 1	
RCSHP0C20037	1 0 1 0 0 1		RCSHP0C20053	1 0 1 0 1 1	
RCSHP0C20038	0 1 1 0 0 1		RCSHP0C20054	0 1 1 0 1 1	INPUT MODE
RCSHP0C20039	1 1 1 0 0 1		RCSHP0C20055	1 1 1 0 1 1	ALL TREBLE UP
RCSHP0C20040	0 0 0 1 0 1	MULTI CH STEREO	RCSHP0C20056	0 0 0 1 1 1	ALL TREBLE DOWN
RCSHP0C20041	1 0 0 1 0 1		RCSHP0C20057	1 0 0 1 1 1	
RCSHP0C20042	0 1 0 1 0 1		RCSHP0C20058	0 1 0 1 1 1	
RCSHP0C20043	1 1 0 1 0 1		RCSHP0C20059	1 1 0 1 1 1	
RCSHP0C20044	0 0 1 1 0 1		RCSHP0C20060	0 0 1 1 1 1	
RCSHP0C20045	1 0 1 1 0 1		RCSHP0C20061	1 0 1 1 1 1	
RCSHP0C20046	0 1 1 1 0 1		RCSHP0C20062	0 1 1 1 1 1	ZONE2 DVD
RCSHP0C20047	1 1 1 1 0 1	Subwoofer Option Menu	RCSHP0C20063	1 1 1 1 1 1	ALL BASS UP

FORMAT: SHARP /DATA CONSTRUCTION 15bits C14 0 C15 0=NOT INVERTED, 1=INVERTED /REMOTE ID: 1
SYSTEM ADDRESS(C1 ～ C5) : 0 0 1 1 0 , EXTENSION BIT (C12,C13) : 1 0

No.	Data (C6 ～ C11)	Key Name	No.	Data (C6 ～ C11)	Key Name
RCSHP0C10032	0 0 0 0 0 1		RCSHP0C10048	0 0 0 0 1 1	
RCSHP0C10033	1 0 0 0 0 1		RCSHP0C10049	1 0 0 0 1 1	
RCSHP0C10034	0 1 0 0 0 1		RCSHP0C10050	0 1 0 0 1 1	
RCSHP0C10035	1 1 0 0 0 1		RCSHP0C10051	1 1 0 0 1 1	
RCSHP0C10036	0 0 1 0 0 1		RCSHP0C10052	0 0 1 0 1 1	
RCSHP0C10037	1 0 1 0 0 1		RCSHP0C10053	1 0 1 0 1 1	
RCSHP0C10038	0 1 1 0 0 1		RCSHP0C10054	0 1 1 0 1 1	
RCSHP0C10039	1 1 1 0 0 1		RCSHP0C10055	1 1 1 0 1 1	
RCSHP0C10040	0 0 0 1 0 1		RCSHP0C10056	0 0 0 1 1 1	
RCSHP0C10041	1 0 0 1 0 1		RCSHP0C10057	1 0 0 1 1 1	
RCSHP0C10042	0 1 0 1 0 1		RCSHP0C10058	0 1 0 1 1 1	
RCSHP0C10043	1 1 0 1 0 1		RCSHP0C10059	1 1 0 1 1 1	
RCSHP0C10044	0 0 1 1 0 1		RCSHP0C10060	0 0 1 1 1 1	
RCSHP0C10045	1 0 1 1 0 1		RCSHP0C10061	1 0 1 1 1 1	
RCSHP0C10046	0 1 1 1 0 1		RCSHP0C10062	0 1 1 1 1 1	
RCSHP0C10047	1 1 1 1 0 1		RCSHP0C10063	1 1 1 1 1 1	CURSOR LEFT

FORMAT: SHARP /DATA CONSTRUCTION 15bits C14 0 C15 0=NOT INVERTED, 1=INVERTED /REMOTE ID: 1
SYSTEM ADDRESS (C1 ～ C5) : 0 0 1 1 0 , EXTENSION BIT (C12,C13) : 1 1

No.	Data (C6 ～ C11)	Key Name	No.	Data (C6 ～ C11)	Key Name
RCSHP0C30000	0 0 0 0 0 0		RCSHP0C30016	0 0 0 0 1 0	
RCSHP0C30001	1 0 0 0 0 0	1	RCSHP0C30017	1 0 0 0 1 0	
RCSHP0C30002	0 1 0 0 0 0	2	RCSHP0C30018	0 1 0 0 1 0	DIRECT FREQ. SEARCH (FM/AM)
RCSHP0C30003	1 1 0 0 0 0	3	RCSHP0C30019	1 1 0 0 1 0	
RCSHP0C30004	0 0 1 0 0 0	4	RCSHP0C30020	0 0 1 0 1 0	PTY ※ EU only
RCSHP0C30005	1 0 1 0 0 0	5	RCSHP0C30021	1 0 1 0 1 0	TUNER PRESET DOWN
RCSHP0C30006	0 1 1 0 0 0	6	RCSHP0C30022	0 1 1 0 1 0	TUNER PRESET UP
RCSHP0C30007	1 1 1 0 0 0	7	RCSHP0C30023	1 1 1 0 1 0	TUNER BAND FM/AM TUNER BAND FM/DAB (EU only)
RCSHP0C30008	0 0 0 1 0 0	8	RCSHP0C30024	0 0 0 1 1 0	TUNER TUNING MODE (FM/AM)
RCSHP0C30009	1 0 0 1 0 0	9	RCSHP0C30025	1 0 0 1 1 0	TUNER TUNING UP/ STATION UP (DAB) (EU only)
RCSHP0C30010	0 1 0 1 0 0	0	RCSHP0C30026	0 1 0 1 1 0	TUNER TUNING DOWN/ STATION DOWN (DAB) (EU only)
RCSHP0C30011	1 1 0 1 0 0		RCSHP0C30027	1 1 0 1 1 0	
RCSHP0C30012	0 0 1 1 0 0	TUNER MEMORY	RCSHP0C30028	0 0 1 1 1 0	
RCSHP0C30013	1 0 1 1 0 0	TUNER SHIFT	RCSHP0C30029	1 0 1 1 1 0	
RCSHP0C30014	0 1 1 1 0 0	RT ※ EU only	RCSHP0C30030	0 1 1 1 1 0	
RCSHP0C30015	1 1 1 1 0 0		RCSHP0C30031	1 1 1 1 1 0	DIMMER

FORMAT: SHARP /DATA CONSTRUCTION 15bits C14 0 C15 0=NOT INVERTED, 1=INVERTED /REMOTE ID: 1
SYSTEM ADDRESS (C1 ～ C5) : 0 1 0 0 0 , EXTENSION BIT (C12,C13) : 1 0

No.	Data (C6 ～ C11)	Key Name	No.	Data (C6 ～ C11)	Key Name
RCSHP0210000	0 0 0 0 0 0		RCSHP0210016	0 0 0 0 1 0	
RCSHP0210001	1 0 0 0 0 0		RCSHP0210017	1 0 0 0 1 0	
RCSHP0210002	0 1 0 0 0 0		RCSHP0210018	0 1 0 0 1 0	ZONE3 TV AUDIO
RCSHP0210003	1 1 0 0 0 0		RCSHP0210019	1 1 0 0 1 0	ZONE3 CBL/SAT
RCSHP0210004	0 0 1 0 0 0		RCSHP0210020	0 0 1 0 1 0	ZONE3 GAME
RCSHP0210005	1 0 1 0 0 0		RCSHP0210021	1 0 1 0 1 0	ZONE3 MEDIA PLAYER
RCSHP0210006	0 1 1 0 0 0		RCSHP0210022	0 1 1 0 1 0	
RCSHP0210007	1 1 1 0 0 0		RCSHP0210023	1 1 1 0 1 0	ZONE3 AUX
RCSHP0210008	0 0 0 1 0 0	ZONE3 TUNER	RCSHP0210024	0 0 0 1 1 0	
RCSHP0210009	1 0 0 1 0 0	ZONE3 PHONO	RCSHP0210025	1 0 0 1 1 0	
RCSHP0210010	0 1 0 1 0 0	ZONE3 CD	RCSHP0210026	0 1 0 1 1 0	
RCSHP0210011	1 1 0 1 0 0		RCSHP0210027	1 1 0 1 1 0	
RCSHP0210012	0 0 1 1 0 0		RCSHP0210028	0 0 1 1 1 0	
RCSHP0210013	1 0 1 1 0 0		RCSHP0210029	1 0 1 1 1 0	ZONE2 ON/OFF
RCSHP0210014	0 1 1 1 0 0	ZONE3 DVD	RCSHP0210030	0 1 1 1 1 0	
RCSHP0210015	1 1 1 1 0 0	ZONE3 Blu-ray	RCSHP0210031	1 1 1 1 1 0	

No.	Data (C6 ～ C11)	Key Name	No.	Data (C6 ～ C11)	Key Name
RCSHP0210032	0 0 0 0 0 1		RCSHP0210048	0 0 0 0 1 1	
RCSHP0210033	1 0 0 0 0 1		RCSHP0210049	1 0 0 0 1 1	
RCSHP0210034	0 1 0 0 0 1		RCSHP0210050	0 1 0 0 1 1	
RCSHP0210035	1 1 0 0 0 1		RCSHP0210051	1 1 0 0 1 1	
RCSHP0210036	0 0 1 0 0 1		RCSHP0210052	0 0 1 0 1 1	
RCSHP0210037	1 0 1 0 0 1	ZONE3 VOLUME DOWN	RCSHP0210053	1 0 1 0 1 1	
RCSHP0210038	0 1 1 0 0 1	ZONE3 VOLUME UP	RCSHP0210054	0 1 1 0 1 1	
RCSHP0210039	1 1 1 0 0 1		RCSHP0210055	1 1 1 0 1 1	
RCSHP0210040	0 0 0 1 0 1		RCSHP0210056	0 0 0 1 1 1	
RCSHP0210041	1 0 0 1 0 1		RCSHP0210057	1 0 0 1 1 1	MAIN ZONE ON
RCSHP0210042	0 1 0 1 0 1	PURE DIRECT	RCSHP0210058	0 1 0 1 1 1	MAIN ZONE OFF
RCSHP0210043	1 1 0 1 0 1		RCSHP0210059	1 1 0 1 1 1	ZONE2 ON
RCSHP0210044	0 0 1 1 0 1		RCSHP0210060	0 0 1 1 1 1	ZONE2 OFF
RCSHP0210045	1 0 1 1 0 1		RCSHP0210061	1 0 1 1 1 1	ZONE3 ON
RCSHP0210046	0 1 1 1 0 1		RCSHP0210062	0 1 1 1 1 1	ZONE3 OFF
RCSHP0210047	1 1 1 1 0 1		RCSHP0210063	1 1 1 1 1 1	

FORMAT: SHARP /DATA CONSTRUCTION 15bits C14 0 C15 0=NOT INVERTED, 1=INVERTED /REMOTE ID: 1
SYSTEM ADDRESS (C1 ～ C5) : 0 0 1 0 0 , EXTENSION BIT (C12,C13) : 0 1

No.	Data (C6 ～ C11)	Key Name	No.	Data (C6 ～ C11)	Key Name
RCSHP0420**00**	0 0 0 0 0 0		RCSHP0420**16**	0 0 0 0 1 0	DOLBY PL II MUSIC
RCSHP0420**01**	1 0 0 0 0 0		RCSHP0420**17**	1 0 0 0 1 0	DOLBY PL
RCSHP0420**02**	0 1 0 0 0 0		RCSHP0420**18**	0 1 0 0 1 0	
RCSHP0420**03**	1 1 0 0 0 0	ROCK ARENA	RCSHP0420**19**	1 1 0 0 1 0	
RCSHP0420**04**	0 0 1 0 0 0	JAZZ CLUB	RCSHP0420**20**	0 0 1 0 1 0	
RCSHP0420**05**	1 0 1 0 0 0		RCSHP0420**21**	1 0 1 0 1 0	
RCSHP0420**06**	0 1 1 0 0 0	MONO MOVIE	RCSHP0420**22**	0 1 1 0 1 0	
RCSHP0420**07**	1 1 1 0 0 0	MATRIX	RCSHP0420**23**	1 1 1 0 1 0	
RCSHP0420**08**	0 0 0 1 0 0	VIDEO GAME	RCSHP0420**24**	0 0 0 1 1 0	
RCSHP0420**09**	1 0 0 1 0 0	VIRTUAL	RCSHP0420**25**	1 0 0 1 1 0	
RCSHP0420**10**	0 1 0 1 0 0		RCSHP0420**26**	0 1 0 1 1 0	
RCSHP0420**11**	1 1 0 1 0 0		RCSHP0420**27**	1 1 0 1 1 0	
RCSHP0420**12**	0 0 1 1 0 0		RCSHP0420**28**	0 0 1 1 1 0	
RCSHP0420**13**	1 0 1 1 0 0	DTS NEO:6 CINEMA	RCSHP0420**29**	1 0 1 1 1 0	MultEQ
RCSHP0420**14**	0 1 1 1 0 0	DTS NEO:6 MUSIC	RCSHP0420**30**	0 1 1 1 1 0	
RCSHP0420**15**	1 1 1 1 0 0	DOLBY PL II CINEMA	RCSHP0420**31**	1 1 1 1 1 0	

No.	Data (C6 ～ C11)	Key Name	No.	Data (C6 ～ C11)	Key Name
RCSHP0420**32**	0 0 0 0 0 1		RCSHP0420**48**	0 0 0 0 1 1	
RCSHP0420**33**	1 0 0 0 0 1		RCSHP0420**49**	1 0 0 0 1 1	
RCSHP0420**34**	0 1 0 0 0 1		RCSHP0420**50**	0 1 0 0 1 1	
RCSHP0420**35**	1 1 0 0 0 1		RCSHP0420**51**	1 1 0 0 1 1	INPUT MDOE AUTO
RCSHP0420**36**	0 0 1 0 0 1		RCSHP0420**52**	0 0 1 0 1 1	
RCSHP0420**37**	1 0 1 0 0 1		RCSHP0420**53**	1 0 1 0 1 1	
RCSHP0420**38**	0 1 1 0 0 1		RCSHP0420**54**	0 1 1 0 1 1	
RCSHP0420**39**	1 1 1 0 0 1		RCSHP0420**55**	1 1 1 0 1 1	
RCSHP0420**40**	0 0 0 1 0 1		RCSHP0420**56**	0 0 0 1 1 1	
RCSHP0420**41**	1 0 0 1 0 1		RCSHP0420**57**	1 0 0 1 1 1	
RCSHP0420**42**	0 1 0 1 0 1		RCSHP0420**58**	0 1 0 1 1 1	
RCSHP0420**43**	1 1 0 1 0 1		RCSHP0420**59**	1 1 0 1 1 1	
RCSHP0420**44**	0 0 1 1 0 1		RCSHP0420**60**	0 0 1 1 1 1	
RCSHP0420**45**	1 0 1 1 0 1		RCSHP0420**61**	1 0 1 1 1 1	
RCSHP0420**46**	0 1 1 1 0 1		RCSHP0420**62**	0 1 1 1 1 1	
RCSHP0420**47**	1 1 1 1 0 1		RCSHP0420**63**	1 1 1 1 1 1	

FORMAT KASEIKYO

DATA CONSTRUCTION 48bits

DENON CODE																Parity				GENRE1 (*1)			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
0	0	1	0	1	0	1	0	0	1	0	0	1	1	0	0	0	0	0	0	*	*	*	*
GENRE2 (*2)				Data											ID (*3)	Parity (*4)							
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

(*4) Parity :
Delimit of each to 8 bits, and add the 3rd byte and the 4th byte and the 5th byte with modulo 2 (exclusive-OR).
3rd byte (17 - 24 bit)
4th byte (25 - 32 bit)
5th byte (33 - 40 bit)

REMOTE ID SETTING: (default ID 1)

ID No.	ZONE/DEVICE	GENRE1 (*1)				GENRE2 (*2)				ID (*3)		
		21	22	23	24	25	26	27	28	39	40	
1	MAIN ZONE	0	0	1	0	1	0	0	0	0	0	SHARP&K4-1
	ZONE2	0	0	1	0	1	1	0	0	0	0	SHARP&K4-3
	TUNER	0	0	1	0	1	0	0	0	0	0	SHARP&K4-1
	HEOS MUSIC	0	0	1	0	1	1	1	0	0	0	K4-7
2	MAIN ZONE	0	0	1	0	0	1	0	0	1	0	K4-2
	ZONE2	0	0	1	0	0	0	1	0	1	0	K4-4
	TUNER	0	0	1	0	0	1	0	0	1	0	K4-2
	HEOS MUSIC	0	0	1	0	0	0	0	1	1	0	K4-8
3	MAIN ZONE	0	0	1	0	0	1	0	0	0	1	K4-2
	ZONE2 *	0	0	1	0	0	0	1	0	0	1	K4-4
	TUNER	0	0	1	0	0	1	0	0	0	1	K4-2
	HEOS MUSIC	0	0	1	0	0	0	0	1	0	1	K4-8
4	MAIN ZONE	0	0	1	0	0	1	0	0	1	1	K4-2
	ZONE2 *	0	0	1	0	0	0	1	0	1	1	K4-4
	TUNER	0	0	1	0	0	1	0	0	1	1	K4-2
	HEOS MUSIC	0	0	1	0	0	0	0	1	1	1	K4-8

MAIN ZONE

REMOTE ID SET: 1

DENON CODE																Parity				GENRE1				GENRE2			
4				5				2				3				0				4				1			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
0	0	1	0	1	0	1	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	1	0	1	0	0	0

REMOTE ID SET: 2-4

DENON CODE																Parity				GENRE1				GENRE2			
4				5				2				3				0				4				2			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
0	0	1	0	1	0	1	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	1	0	0	1	0	0

No.	Data										ID		parity								Key Name
	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	
RCKSK0410001	1	0	0	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ALL POWER ON/OFF
RCKSK0410002	0	1	0	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ALL POWER ON
RCKSK0410003	1	1	0	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ALL POWER OFF
RCKSK0410005	1	0	1	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	MAIN ZONE ON/OFF
RCKSK0410006	0	1	1	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	MAIN ZONE ON
RCKSK0410007	1	1	1	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	MAIN ZONE OFF
RCKSK0410016	0	0	0	0	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	KEY1
RCKSK0410017	1	0	0	0	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	KEY2
RCKSK0410018	0	1	0	0	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	KEY3
RCKSK0410019	1	1	0	0	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	KEY4
RCKSK0410020	0	0	1	0	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	KEY5
RCKSK0410021	1	0	1	0	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	KEY6
RCKSK0410022	0	1	1	0	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	KEY7
RCKSK0410023	1	1	1	0	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	KEY8
RCKSK0410024	0	0	0	1	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	KEY9
RCKSK0410025	1	0	0	1	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	KEY0
RCKSK0410027	1	1	0	1	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	CURSOR UP
RCKSK0410028	0	0	1	1	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	CURSOR DOWN
RCKSK0410029	1	0	1	1	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	CURSOR LEFT
RCKSK0410030	0	1	1	1	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	CURSOR RIGHT
RCKSK0410031	1	1	1	1	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ENTER
RCKSK0410034	0	1	0	0	0	1	0	0	0	0	*	*	*	*	*	*	*	*	*	*	RETURN/BACK
RCKSK0410035	1	1	0	0	0	1	0	0	0	0	*	*	*	*	*	*	*	*	*	*	SETUP MENU
RCKSK0410036	0	0	1	0	0	1	0	0	0	0	*	*	*	*	*	*	*	*	*	*	MEMORY
RCKSK0410042	0	1	0	1	0	1	0	0	0	0	*	*	*	*	*	*	*	*	*	*	UPGRADE ID ON
RCKSK0410112	0	0	0	0	1	1	1	0	0	0	*	*	*	*	*	*	*	*	*	*	VIDEO SELECT
RCKSK0410292	0	0	1	0	0	1	0	0	1	0	*	*	*	*	*	*	*	*	*	*	QUICK SELECT 1
RCKSK0410293	1	0	1	0	0	1	0	0	1	0	*	*	*	*	*	*	*	*	*	*	QUICK SELECT 2
RCKSK0410294	0	1	1	0	0	1	0	0	1	0	*	*	*	*	*	*	*	*	*	*	QUICK SELECT 3
RCKSK0410295	1	1	1	0	0	1	0	0	1	0	*	*	*	*	*	*	*	*	*	*	QUICK SELECT 4
RCKSK0410296	0	0	0	1	0	1	0	0	1	0	*	*	*	*	*	*	*	*	*	*	QUICK SELECT 5
RCKSK0410304	0	0	0	0	1	1	0	0	1	0	*	*	*	*	*	*	*	*	*	*	STEREO
RCKSK0410305	1	0	0	0	1	1	0	0	1	0	*	*	*	*	*	*	*	*	*	*	DIRECT/STEREO
RCKSK0410306	0	1	0	0	1	1	0	0	1	0	*	*	*	*	*	*	*	*	*	*	DIRECT
RCKSK0410307	1	1	0	0	1	1	0	0	1	0	*	*	*	*	*	*	*	*	*	*	PURE DIRECT
RCKSK0410309	1	0	1	0	1	1	0	0	1	0	*	*	*	*	*	*	*	*	*	*	DIRECT
RCKSK0410332	0	0	1	1	0	0	1	0	1	0	*	*	*	*	*	*	*	*	*	*	SOUND MODE toggle (Reverse)
RCKSK0410349	1	0	1	1	1	0	1	0	1	0	*	*	*	*	*	*	*	*	*	*	SOUND MODE toggle (Normal)
RCKSK0410352	0	0	0	0	1	1	0	1	0	0	*	*	*	*	*	*	*	*	*	*	INPUT MODE SELECT
RCKSK0410353	1	0	0	0	0	1	1	0	1	0	*	*	*	*	*	*	*	*	*	*	INPUT MODE:ANALOG
RCKSK0410357	1	0	1	0	0	1	1	0	1	0	*	*	*	*	*	*	*	*	*	*	INPUT MODE HDMI
RCKSK0410358	0	1	1	0	0	1	1	0	1	0	*	*	*	*	*	*	*	*	*	*	INPUT MODE:AUTO
RCKSK0410359	1	1	1	0	0	1	1	0	1	0	*	*	*	*	*	*	*	*	*	*	INPUT MODE DIGITAL
RCKSK0410368	0	0	0	0	1	1	1	0	1	0	*	*	*	*	*	*	*	*	*	*	Volume Up
RCKSK0410369	1	0	0	0	1	1	1	0	1	0	*	*	*	*	*	*	*	*	*	*	Volume Down
RCKSK0410370	0	1	0	0	1	1	1	0	1	0	*	*	*	*	*	*	*	*	*	*	Mute
RCKSK0410372	0	0	1	0	1	1	1	0	1	0	*	*	*	*	*	*	*	*	*	*	M.VR PRESET1 (0dB)
RCKSK0410373	1	0	1	0	1	1	1	0	1	0	*	*	*	*	*	*	*	*	*	*	M.VR PRESET2 (-20dB)
RCKSK0410374	0	0	1	0	1	1	1	0	1	0	*	*	*	*	*	*	*	*	*	*	M.VR PRESET3 (-40dB)
RCKSK0410378	0	1	0	1	1	1	1	0	1	0	*	*	*	*	*	*	*	*	*	*	Subwoofer Option Menu
RCKSK0410390	0	1	1	0	0	0	0	1	1	0	*	*	*	*	*	*	*	*	*	*	SW LEVEL UP
RCKSK0410391	1	1	1	0	0	0	0	1	1	0	*	*	*	*	*	*	*	*	*	*	SW LEVEL DOWN
RCKSK0410400	0	0	0	0	1	0	0	1	1	0	*	*	*	*	*	*	*	*	*	*	ALL TREBLE UP
RCKSK0410401	1	0	0	0	1	0	0	1	1	0	*	*	*	*	*	*	*	*	*	*	ALL TREBLE DOWN
RCKSK0410403	1	1	0	0	1	0	0	1	1	0	*	*	*	*	*	*	*	*	*	*	ALL BASS UP
RCKSK0410404	0	0	1	0	1	0	0	1	1	0	*	*	*	*	*	*	*	*	*	*	ALL BASS DOWN
RCKSK0410522	0	1	0	1	0	0	0	0	0	1	*	*	*	*	*	*	*	*	*	*	SPEAKER
RCKSK0410548	0	0	1	0	0	1	0	0	0	1	*	*	*	*	*	*	*	*	*	*	AUDIO RESTORER SELECT
RCKSK0410556	0	0	1	1	0	1	0	0	0	1	*	*	*	*	*	*	*	*	*	*	RESTORER (OFF)
RCKSK0410557	1	0	1	1	0	1	0	0	0	1	*	*	*	*	*	*	*	*	*	*	RESTORER (High)
RCKSK0410558	0	1	1	1	0	1	0	0	0	1	*	*	*	*	*	*	*	*	*	*	RESTORER (Medium)
RCKSK0410559	1	1	1	1	0	1	0	0	0	1	*	*	*	*	*	*	*	*	*	*	RESTORER (Low)
RCKSK0410605	1	0	1	1	1	0	1	0	0	1	*	*	*	*	*	*	*	*	*	*	SPEAKER A ON/OFF
RCKSK0410606	0	1	1	1	1	0	1	0	0	1	*	*	*	*	*	*	*	*	*	*	SPEAKER B ON/OFF
RCKSK0410620	0	0	1	1	0	1	1	0	0	1	*	*	*	*	*	*	*	*	*	*	AUDIO DELAY MODE
RCKSK0410621	1	0	1	1	0	1	1	0	0	1	*	*	*	*	*	*	*	*	*	*	AUDIO DELAY UP
RCKSK0410622	0	1	1	1	0	1	1	0	0	1	*	*	*	*	*	*	*	*	*	*	AUDIO DELAY DOWN
RCKSK0410624	0	0	0	0	1	1	1	0	0	1	*	*	*	*	*	*	*	*	*	*	INFO
RCKSK0410640	0	0	0	0	0	0	0	1	0	1	*	*	*	*	*	*	*	*	*	*	FLD STATUS
RCKSK0410653	1	0	1	1	0	0	0	1	0	1	*	*	*	*	*	*	*	*	*	*	BALANCE LEFT
RCKSK0410654	0	1	1	1	0	0	0	1	0	1	*	*	*	*	*	*	*	*	*	*	BALANCE RIGHT
RCKSK0410656	0	0	0	0	1	0	0	1	0	1	*	*	*	*	*	*	*	*	*	*	Front Display (Dimmer)
RCKSK0410691	1	1	0	0	1	1	0	1	0	1	*	*	*	*	*	*	*	*	*	*	Internet Radio
RCKSK0410698	0	1	0	1	1	1	0	1	0	1	*	*	*	*	*	*	*	*	*	*	CD / PHONO
RCKSK0410704	0	0	0	0	0	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	PHONO

RCKSK0410705	1	0	0	0	0	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	TUNER
RCKSK0410706	0	1	0	0	0	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	CD
RCKSK0410711	1	1	1	0	0	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	HEOS MUSIC
RCKSK0410715	1	1	0	1	0	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	TUNER
RCKSK0410716	0	0	1	1	0	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	HEOS MUSIC
RCKSK0410718	0	1	1	1	0	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	USB
RCKSK0410719	1	1	1	1	0	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	TUNER
RCKSK0410720	0	0	0	0	1	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	DVD
RCKSK0410721	1	0	0	0	1	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	Blu-ray
RCKSK0410722	0	1	0	0	1	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	TV AUDIO
RCKSK0410723	1	1	0	0	1	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	CBL/SAT
RCKSK0410725	1	0	1	0	1	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	GAME
RCKSK0410726	0	1	1	0	1	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	MEDIA PLAYER
RCKSK0410732	0	0	1	1	1	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	DVD/Blu-ray
RCKSK0410735	1	1	1	1	1	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	MEDIA PLAYER
RCKSK0410741	1	0	1	0	0	1	1	1	0	1	*	*	*	*	*	*	*	*	*	*	INTERNET RADIO (Recent Play)
RCKSK0410751	1	1	1	1	0	1	1	1	0	1	*	*	*	*	*	*	*	*	*	*	Bluetooth
RCKSK0410787	1	1	0	0	1	0	0	0	1	1	*	*	*	*	*	*	*	*	*	*	INPUT SOURCE SELECT Right
RCKSK0410788	0	0	1	0	1	0	0	0	1	1	*	*	*	*	*	*	*	*	*	*	INPUT SOURCE SELECT Left
RCKSK0410822	0	1	1	0	1	1	0	0	1	1	*	*	*	*	*	*	*	*	*	*	All Zone Stereo ON
RCKSK0410823	1	1	1	0	1	1	0	0	1	1	*	*	*	*	*	*	*	*	*	*	All Zone Stereo OFF
RCKSK0410826	0	1	0	1	1	1	0	0	1	1	*	*	*	*	*	*	*	*	*	*	HDMI (CEC)Control ON
RCKSK0410827	1	1	0	1	1	1	0	0	1	1	*	*	*	*	*	*	*	*	*	*	HDMI (CEC)Control OFF
RCKSK0410829	1	0	1	1	1	1	0	0	1	1	*	*	*	*	*	*	*	*	*	*	HDMI Audio Out Select
RCKSK0410830	0	1	1	1	1	1	0	0	1	1	*	*	*	*	*	*	*	*	*	*	HDMI Audio Out TV
RCKSK0410831	1	1	1	1	1	1	0	0	1	1	*	*	*	*	*	*	*	*	*	*	HDMI Audio Out AMP
RCKSK0410834	0	1	0	0	0	0	1	0	1	1	*	*	*	*	*	*	*	*	*	*	All Zone Stereo ON/OFF
RCKSK0410836	0	0	1	0	0	0	1.	0	1	1	*	*	*	*	*	*	*	*	*	*	SLEEP MODE
RCKSK0410872	0	0	0	1	0	1	1	0	1	1	*	*	*	*	*	*	*	*	*	*	ECO MODE (toggle)
RCKSK0410873	1	0	0	1	0	1	1	0	1	1	*	*	*	*	*	*	*	*	*	*	ECO MODE (OFF)
RCKSK0410874	0	1	0	1	0	1	1	0	1	1	*	*	*	*	*	*	*	*	*	*	ECO MODE (ON)
RCKSK0410875	1	1	0	1	0	1	1	0	1	1	*	*	*	*	*	*	*	*	*	*	ECO MODE (AUTO)
RCKSK0410945	1	0	0	0	1	1	0	1	1	1	*	*	*	*	*	*	*	*	*	*	MAIN ZONE PRESET CH UP/ PAGE Previous
RCKSK0410946	0	1	0	0	1	1	0	1	1	1	*	*	*	*	*	*	*	*	*	*	MAIN ZONE PRESET CH DOWN/PAGE Next
RCKSK0410949	1	0	1	0	1	1	0	1	1	1	*	*	*	*	*	*	*	*	*	*	OPTION
RCKSK0410950	0	1	1	0	1	1	0	1	1	1	*	*	*	*	*	*	*	*	*	*	PAGE Previous
RCKSK0410951	1	1	1	0	1	1	0	1	1	1	*	*	*	*	*	*	*	*	*	*	PAGE Next
RCKSK0410956	0	0	1	1	1	1	0	1	1	1	*	*	*	*	*	*	*	*	*	*	MAIN ZONE REPEAT
RCKSK0410957	1	0	1	1	1	1	0	1	1	1	*	*	*	*	*	*	*	*	*	*	MAIN ZONE RANDOM/SHUFFLE
RCKSK0410970	0	1	0	1	0	0	1	1	1	1	*	*	*	*	*	*	*	*	*	*	MAIN ZONE TUNING UP/ STATION UP (DAB)
RCKSK0410971	1	1	0	1	0	0	1	1	1	1	*	*	*	*	*	*	*	*	*	*	MAIN ZONE TUNING DOWN STATION DOWN (DAB)
RCKSK0410972	0	0	1	1	0	0	1	1	1	1	*	*	*	*	*	*	*	*	*	*	MAIN ZONE PRESET CH UP
RCKSK0410973	1	0	1	1	0	0	1	1	1	1	*	*	*	*	*	*	*	*	*	*	MAIN ZONE PRESET CH DOWN
RCKSK0410975	1	1	1	1	0	0	1	1	1	1	*	*	*	*	*	*	*	*	*	*	MAIN ZONE BAND DAB
RCKSK0410976	0	0	0	0	1	0	1	1	1	1	*	*	*	*	*	*	*	*	*	*	MAIN ZONE BAND
RCKSK0410977	1	0	0	0	1	0	1	1	1	1	*	*	*	*	*	*	*	*	*	*	MAIN ZONE BAND FM
RCKSK0410978	0	1	0	0	1	0	1	1	1	1	*	*	*	*	*	*	*	*	*	*	MAIN ZONE BAND AM
RCKSK0410979	1	1	0	0	1	0	1	1	1	1	*	*	*	*	*	*	*	*	*	*	MAIN ZONE TUNER MEMORY
RCKSK0410983	1	1	1	0	1	0	1	1	1	1	*	*	*	*	*	*	*	*	*	*	MAIN ZONE DIRECT FREQ. SEARCH (FM/AM)
RCKSK0410992	0	0	0	0	0	1	1	1	1	1	*	*	*	*	*	*	*	*	*	*	MAIN ZONE PLAY/PAUSE
RCKSK0410993	1	0	0	0	0	1	1	1	1	1	*	*	*	*	*	*	*	*	*	*	MAIN ZONE STOP/TUNING MODE (FM/AM only)
RCKSK0410994	0	1	0	0	0	1	1	1	1	1	*	*	*	*	*	*	*	*	*	*	MAIN ZONE PAUSE
RCKSK0410995	1	1	0	0	0	1	1	1	1	1	*	*	*	*	*	*	*	*	*	*	MAIN ZONE SKIP MINUS/ TUNING DOWN STATION DOWN (DAB)
RCKSK0410996	0	0	1	0	0	1	1	1	1	1	*	*	*	*	*	*	*	*	*	*	MAIN ZONE SKIP PLUS/TUNING UP STATION UP (DAB)
RCKSK0410997	1	0	1	0	0	1	1	1	1	1	*	*	*	*	*	*	*	*	*	*	MAIN ZONE TUNING DOWN STATION DOWN (DAB)
RCKSK0410998	0	1	1	0	0	1	1	1	1	1	*	*	*	*	*	*	*	*	*	*	MAIN ZONE TUNING UP STATION UP (DAB)

ZONE2

REMOTE ID SET: 1

DENON CODE																Parity				GENRE1				GENRE2			
4				5				2				3				0				4				3			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
0	0	1	0	1	0	1	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	1	0	1	1	0	0

REMOTE ID SET: 2-4

DENON CODE																Parity				GENRE1				GENRE2			
4				5				2				3				0				4				4			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
0	0	1	0	1	0	1	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	1	0	0	0	1	0

No.	Data										ID		parity							Key Name
	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	
RCKSK0430005	1	0	1	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE2 POWER ON/OFF
RCKSK0430006	0	1	1	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE2 POWER ON

RCKSK0430007	1	1	1	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE2 POWER OFF
RCKSK0430016	0	0	0	0	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE2 KEY1
RCKSK0430017	1	0	0	0	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE2 KEY2
RCKSK0430018	0	1	0	0	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE2 KEY3
RCKSK0430019	1	1	0	0	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE2 KEY4
RCKSK0430020	0	0	1	0	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE2 KEY5
RCKSK0430021	1	0	1	0	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE2 KEY6
RCKSK0430022	0	1	1	0	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE2 KEY7
RCKSK0430023	1	1	1	0	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE2 KEY8
RCKSK0430024	0	0	0	1	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE2 KEY9
RCKSK0430025	1	0	0	1	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE2 KEY0
RCKSK0430027	1	1	0	1	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE2 CURSOR UP
RCKSK0430028	0	0	1	1	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE2 CURSOR DOWN
RCKSK0430029	1	0	1	1	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE2 CURSOR LEFT
RCKSK0430030	0	1	1	1	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE2 CURSOR RIGHT
RCKSK0430031	1	1	1	1	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE2 ENTER
RCKSK0430034	0	1	0	0	0	1	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE2 RETURN
RCKSK0430036	0	0	1	0	0	1	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE2 MEMORY
RCKSK0430292	0	0	1	0	0	1	0	0	1	0	*	*	*	*	*	*	*	*	*	*	ZONE2 QUICK SELECT 1
RCKSK0430293	1	0	1	0	0	1	0	0	1	0	*	*	*	*	*	*	*	*	*	*	ZONE2 QUICK SELECT 2
RCKSK0430294	0	1	1	0	0	1	0	0	1	0	*	*	*	*	*	*	*	*	*	*	ZONE2 QUICK SELECT 3
RCKSK0430295	1	1	1	0	0	1	0	0	1	0	*	*	*	*	*	*	*	*	*	*	ZONE2 QUICK SELECT 4
RCKSK0430296	0	0	0	1	0	1	0	0	1	0	*	*	*	*	*	*	*	*	*	*	ZONE2 QUICK SELECT 5
RCKSK0430368	0	0	0	0	1	1	1	0	1	0	*	*	*	*	*	*	*	*	*	*	ZONE2 VOLUME UP
RCKSK0430369	1	0	0	0	1	1	1	0	1	0	*	*	*	*	*	*	*	*	*	*	ZONE2 VOLUME DOWN
RCKSK0430370	0	1	0	0	1	1	1	0	1	0	*	*	*	*	*	*	*	*	*	*	ZONE2 VOLUME MUTE
RCKSK0430372	0	0	1	0	1	1	1	0	1	0	*	*	*	*	*	*	*	*	*	*	ZONE2 VR PRESET1 (0dB)
RCKSK0430373	1	0	1	0	1	1	1	0	1	0	*	*	*	*	*	*	*	*	*	*	ZONE2 VR PRESET2 (-20dB)
RCKSK0430374	0	1	1	0	1	1	1	0	1	0	*	*	*	*	*	*	*	*	*	*	ZONE2 VR PRESET3 (-40dB)
RCKSK0430691	1	1	0	0	1	1	0	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE2 Internet Radio
RCKSK0430692	0	0	1	0	1	1	0	1	0	1	*	*	*	*	*	*	*	*	*	*	Main Zone Source CALL
RCKSK0430698	0	1	0	1	1	1	0	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE2 CD / PHONO
RCKSK0430704	0	0	0	0	0	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE2 PHONO
RCKSK0430705	1	0	0	0	0	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE2 TUNER
RCKSK0430706	0	1	0	0	0	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE2 CD
RCKSK0430711	1	1	1	0	0	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE2 HEOS MUSIC
RCKSK0430715	1	1	0	1	0	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE2 TUNER
RCKSK0430716	0	0	1	1	0	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE2 HEOS MUSIC
RCKSK0430718	0	1	1	1	0	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE2 USB
RCKSK0430719	1	1	1	1	0	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE2 TUNER
RCKSK0430720	0	0	0	0	1	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE2 DVD
RCKSK0430721	1	0	0	0	1	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE2 Blu-ray
RCKSK0430722	0	1	0	0	1	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE2 TV AUDIO
RCKSK0430723	1	1	0	0	1	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE2 CBL/SAT
RCKSK0430725	1	0	1	0	1	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE2 GAME
RCKSK0430726	0	1	1	0	1	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE2 MEDIA PLAYER
RCKSK0430732	0	0	1	1	1	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE2 DVD/Blu-ray
RCKSK0430735	1	1	1	1	1	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE2 MEDIA PLAYER
RCKSK0430741	1	0	1	0	0	1	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE2 INTERNET RADIO (Recent Play)
RCKSK0430751	1	1	1	1	0	1	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE2 Bluetooth
RCKSK0430787	1	1	0	0	1	0	0	0	1	1	*	*	*	*	*	*	*	*	*	*	ZONE2 INPUT SOURCE SELECT Right
RCKSK0430788	0	0	1	0	1	0	0	0	1	1	*	*	*	*	*	*	*	*	*	*	ZONE2 INPUT SOURCE SELECT Left
RCKSK0430836	0	0	1	0	0	0	1	0	1	1	*	*	*	*	*	*	*	*	*	*	ZONE2 SLEEP
RCKSK0430945	1	0	0	0	1	1	0	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE2 PRESET CH UP/ PAGE Previous
RCKSK0430946	0	1	0	0	1	1	0	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE2 PRESET CH DOWN/ PAGE Next
RCKSK0430950	0	1	1	0	1	1	0	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE2 PAGE Previous
RCKSK0430951	1	1	1	0	1	1	0	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE2 PAGE Next
RCKSK0430956	0	0	1	1	1	1	0	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE2 REPEAT
RCKSK0430957	1	0	1	1	1	1	0	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE2 RANDOM/SHUFFLE
RCKSK0430970	0	1	0	1	0	0	1	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE2 TUNING UP/ STATION UP (DAB)
RCKSK0430971	1	1	0	1	0	0	1	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE2 TUNING DOWN/ STATION DOWN (DAB)
RCKSK0430972	0	0	1	1	0	0	1	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE2 PRESET CH UP
RCKSK0430973	1	0	1	1	0	0	1	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE2 PRESET CH DOWN
RCKSK0430975	1	1	1	1	0	0	1	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE2 BAND DAB
RCKSK0430976	0	0	0	0	1	0	1	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE2 BAND
RCKSK0430977	1	0	0	0	1	0	1	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE2 BAND FM
RCKSK0430978	0	1	0	0	1	0	1	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE2 BAND AM
RCKSK0430979	1	1	0	0	1	0	1	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE2 TUNING MEMORY
RCKSK0430983	1	1	1	0	1	0	1	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE2 DIRECT FREQ. SEARCH (FM/AM only)
RCKSK0430992	0	0	0	0	0	1	1	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE2 PLAY/PAUSE
RCKSK0430993	1	0	0	0	0	1	1	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE2 STOP/TUNING MDOE (FM/AM only)
RCKSK0430994	0	1	0	0	0	1	1	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE2 PAUSE
RCKSK0430995	1	1	0	0	0	1	1	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE2 SKIP MINUS/TUNING DOWN STATION DOWN (DAB)
RCKSK0430996	0	0	1	0	0	1	1	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE2 SKIP PLUS/TUNING UP STATION UP (DAB)
RCKSK0430997	1	0	1	0	0	1	1	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE2 TUNING DOWN STATION DOWN (DAB)
RCKSK0430998	0	1	1	0	0	1	1	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE2 TUNING UP STATION UP (DAB)

ANALOG TUNER/DAB

REMOTE ID SET: 1

DENON CODE																Parity				GENRE1				GENRE2			
4				5				2				3				0				4				1			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
0	0	1	0	1	0	1	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	1	0	1	0	0	0

REMOTE ID SET: 2-4

DENON CODE																Parity				GENRE1				GENRE2			
4				5				2				3				0				4				2			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
0	0	1	0	1	0	1	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	1	0	0	1	0	0

No.	Data										ID		parity								Key Name
	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	
RCKSK0410144	0	0	0	0	1	0	0	1	0	0	*	*	*	*	*	*	*	*	*	*	(FM/AM)TUNING UP (DAB) STATION UP
RCKSK0410145	1	0	0	0	1	0	0	1	0	0	*	*	*	*	*	*	*	*	*	*	(FM/AM) TUNING DOWN (DAB) STATION DOWN
RCKSK0410146	0	1	0	0	1	0	0	1	0	0	*	*	*	*	*	*	*	*	*	*	PRESET CH UP
RCKSK0410147	1	1	0	0	1	0	0	1	0	0	*	*	*	*	*	*	*	*	*	*	PRESET CH DOWN
RCKSK0410152	0	0	0	1	1	0	0	1	0	0	*	*	*	*	*	*	*	*	*	*	BAND FM/AM BAND FM/DAB (EU only)
RCKSK0410153	1	0	0	1	1	0	0	1	0	0	*	*	*	*	*	*	*	*	*	*	BAND FM
RCKSK0410154	0	1	0	1	1	0	0	1	0	0	*	*	*	*	*	*	*	*	*	*	BAND AM
RCKSK0410155	1	1	0	1	1	0	0	1	0	0	*	*	*	*	*	*	*	*	*	*	BAND DAB
RCKSK0410156	0	0	1	1	1	0	0	1	0	0	*	*	*	*	*	*	*	*	*	*	(FM/AM) TUNING MODE AUTO/ MANUAL
RCKSK0410160	0	0	0	0	0	1	0	1	0	0	*	*	*	*	*	*	*	*	*	*	MEMORY
RCKSK0410163	1	1	0	0	0	1	0	1	0	0	*	*	*	*	*	*	*	*	*	*	(FM/AM) DIRECT FREQ. SEARCH
RCKSK0410170	0	1	0	1	0	1	0	1	0	0	*	*	*	*	*	*	*	*	*	*	CURSOR UP
RCKSK0410171	1	1	0	1	0	1	0	1	0	0	*	*	*	*	*	*	*	*	*	*	CURSOR DOWN
RCKSK0410173	1	0	1	1	0	1	0	1	0	0	*	*	*	*	*	*	*	*	*	*	CURSOR LEFT
RCKSK0410174	0	1	1	1	0	1	0	1	0	0	*	*	*	*	*	*	*	*	*	*	CURSOR RIGHT
RCKSK0410175	1	1	1	1	0	1	0	1	0	0	*	*	*	*	*	*	*	*	*	*	CURSOR ENTER
RCKSK0410176	0	0	0	0	1	1	0	1	0	0	*	*	*	*	*	*	*	*	*	*	Numeric 1
RCKSK0410177	1	0	0	0	1	1	0	1	0	0	*	*	*	*	*	*	*	*	*	*	Numeric 2
RCKSK0410178	0	1	0	0	1	1	0	1	0	0	*	*	*	*	*	*	*	*	*	*	Numeric 3
RCKSK0410179	1	1	0	0	1	1	0	1	0	0	*	*	*	*	*	*	*	*	*	*	Numeric 4
RCKSK0410180	0	0	1	0	1	1	0	1	0	0	*	*	*	*	*	*	*	*	*	*	Numeric 5
RCKSK0410181	1	0	1	0	1	1	0	1	0	0	*	*	*	*	*	*	*	*	*	*	Numeric 6
RCKSK0410182	0	1	1	0	1	1	0	1	0	0	*	*	*	*	*	*	*	*	*	*	Numeric 7
RCKSK0410183	1	1	1	0	1	1	0	1	0	0	*	*	*	*	*	*	*	*	*	*	Numeric 8
RCKSK0410184	0	0	0	1	1	1	0	1	0	0	*	*	*	*	*	*	*	*	*	*	Numeric 9
RCKSK0410185	1	0	0	1	1	1	0	1	0	0	*	*	*	*	*	*	*	*	*	*	Numeric 0
RCKSK0410241	1	0	0	0	1	1	1	1	0	0	*	*	*	*	*	*	*	*	*	*	RETURN

HEOS MUSIC

REMOTE ID SET: 1

DENON CODE																Parity				GENRE1				GENRE2			
4				5				2				3				0				4				7			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
0	0	1	0	1	0	1	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	1	0	1	1	1	0

REMOTE ID SET: 2-4

DENON CODE																Parity				GENRE1				GENRE2			
4				5				2				3				0				4				8			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
0	0	1	0	1	0	1	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	1

No.	Data										ID		parity								Key Name
	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	
RCKSK0470027	1	1	0	1	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	CURSOR UP
RCKSK0470028	0	0	1	1	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	CURSOR DOWN
RCKSK0470029	1	0	1	1	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	CURSOR LEFT
RCKSK0470030	0	1	1	1	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	CURSOR RIGHT
RCKSK0470031	1	1	1	1	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ENTER
RCKSK0470034	0	1	0	0	0	1	0	0	0	0	*	*	*	*	*	*	*	*	*	*	RETURN
RCKSK0470773	1	0	1	0	0	0	0	0	1	1	*	*	*	*	*	*	*	*	*	*	PLAY
RCKSK0470774	0	1	1	0	0	0	0	0	1	1	*	*	*	*	*	*	*	*	*	*	PAUSE
RCKSK0470775	1	1	1	0	0	0	0	0	1	1	*	*	*	*	*	*	*	*	*	*	STOP
RCKSK0470776	0	0	0	1	0	0	0	0	1	1	*	*	*	*	*	*	*	*	*	*	SKIP PLUS
RCKSK0470777	1	0	0	1	0	0	0	0	1	1	*	*	*	*	*	*	*	*	*	*	SKIP MINUS
RCKSK0470778	0	1	0	1	0	0	0	0	1	1	*	*	*	*	*	*	*	*	*	*	REPEAT ONE
RCKSK0470779	1	1	0	1	0	0	0	0	1	1	*	*	*	*	*	*	*	*	*	*	REPEAT OFF
RCKSK0470780	0	0	1	1	0	0	0	0	1	1	*	*	*	*	*	*	*	*	*	*	RANDOM ON
RCKSK0470781	1	0	1	1	0	0	0	0	1	1	*	*	*	*	*	*	*	*	*	*	RANDOM OFF
RCKSK0470785	1	0	0	0	1	0	0	0	1	1	*	*	*	*	*	*	*	*	*	*	REPEAT ALL

HI-FI Remote Code

DRA-800H can receive the following IR codes (KASEIKYO code and SHARP code) which are used for DENON Hi-Fi Amplifiers.

FORMAT : KASEIKYO

REMOTE ID SET: 1

DENON CODE																Parity				GENRE1				GENRE2			
4				5				2				3				0				7				1			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
0	0	1	0	1	0	1	0	0	1	0	0	1	1	0	0	0	0	0	0	1	1	1	0	1	0	0	0

*Hi-Fi remote codes do not have ID 2-4

No.	Data										ID		parity								Key Name
	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	
RCKSK0710011	1	1	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	MAIN ZONE MUTE (Toggle)
RCKSK0710012	0	0	1	1	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	1	MAIN ZONE VOLUME DOWN
RCKSK0710013	1	0	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1	MAIN ZONE VOLUME UP
RCKSK0710016	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	MAIN ZONE ON/OFF
RCKSK0710094	0	1	1	1	1	0	1	0	0	0	0	0	0	0	1	0	1	0	0	1	MAIN ZONE ON
RCKSK0710095	1	1	1	1	1	0	1	0	0	0	0	0	0	0	1	0	0	0	0	1	MAIN ZONE OFF

FORMAT: SHARP /DATA CONSTRUCTION 15bits C14 0 C15 0=NOT INVERTED, 1=INVERTED /REMOTE ID: 1
SYSTEM ADDRESS (C1 ～ C5) : 0 1 0 0 0 , EXTENSION BIT (C12,C13) : 0 1

No.	Data (C6 ～ C11)	Key Name	No.	Data (C6 ～ C11)	Key Name
RCSHP0C20000	0 0 0 0 0 0		RCSHP0C20016	0 0 0 0 1 0	MAIN ZONE ON/OFF
RCSHP0C20001	1 0 0 0 0 0		RCSHP0C20017	1 0 0 0 1 0	
RCSHP0C20002	0 1 0 0 0 0		RCSHP0C20018	0 1 0 0 1 0	
RCSHP0C20003	1 1 0 0 0 0		RCSHP0C20019	1 1 0 0 1 0	
RCSHP0C20004	0 0 1 0 0 0		RCSHP0C20020	0 0 1 0 1 0	
RCSHP0C20005	1 0 1 0 0 0		RCSHP0C20021	1 0 1 0 1 0	
RCSHP0C20006	0 1 1 0 0 0		RCSHP0C20022	0 1 1 0 1 0	
RCSHP0C20007	1 1 1 0 0 0		RCSHP0C20023	1 1 1 0 1 0	
RCSHP0C20008	0 0 0 1 0 0		RCSHP0C20024	0 0 0 1 1 0	
RCSHP0C20009	1 0 0 1 0 0		RCSHP0C20025	1 0 0 1 1 0	
RCSHP0C20010	0 1 0 1 0 0		RCSHP0C20026	0 1 0 1 1 0	
RCSHP0C20011	1 1 0 1 0 0	MAIN ZONE MUTE(Toggle)	RCSHP0C20027	1 1 0 1 1 0	
RCSHP0C20012	0 0 1 1 0 0	MAIN ZONE VOLUME DOWN	RCSHP0C20028	0 0 1 1 1 0	
RCSHP0C20013	1 0 1 1 0 0	MAIN ZONE VOLUME UP	RCSHP0C20029	1 0 1 1 1 0	
RCSHP0C20014	0 1 1 1 0 0		RCSHP0C20030	0 1 1 1 1 0	
RCSHP0C20015	1 1 1 1 0 0		RCSHP0C20031	1 1 1 1 1 0	

No.	Data (C6 ～ C11)	Key Name	No.	Data (C6 ～ C11)	Key Name
RCSHP0C20032	0 0 0 0 0 1		RCSHP0C20048	0 0 0 0 1 1	
RCSHP0C20033	1 0 0 0 0 1		RCSHP0C20049	1 0 0 0 1 1	
RCSHP0C20034	0 1 0 0 0 1		RCSHP0C20050	0 1 0 0 1 1	
RCSHP0C20035	1 1 0 0 0 1		RCSHP0C20051	1 1 0 0 1 1	
RCSHP0C20036	0 0 1 0 0 1		RCSHP0C20052	0 0 1 0 1 1	
RCSHP0C20037	1 0 1 0 0 1		RCSHP0C20053	1 0 1 0 1 1	
RCSHP0C20038	0 1 1 0 0 1		RCSHP0C20054	0 1 1 0 1 1	
RCSHP0C20039	1 1 1 0 0 1		RCSHP0C20055	1 1 1 0 1 1	
RCSHP0C20040	0 0 0 1 0 1		RCSHP0C20056	0 0 0 1 1 1	
RCSHP0C20041	1 0 0 1 0 1		RCSHP0C20057	1 0 0 1 1 1	
RCSHP0C20042	0 1 0 1 0 1		RCSHP0C20058	0 1 0 1 1 1	
RCSHP0C20043	1 1 0 1 0 1		RCSHP0C20059	1 1 0 1 1 1	
RCSHP0C20044	0 0 1 1 0 1		RCSHP0C20060	0 0 1 1 1 1	
RCSHP0C20045	1 0 1 1 0 1		RCSHP0C20061	1 0 1 1 1 1	
RCSHP0C20046	0 1 1 1 0 1		RCSHP0C20062	0 1 1 1 1 1	
RCSHP0C20047	1 1 1 1 0 1		RCSHP0C20063	1 1 1 1 1 1	

MECHANICAL

DISASSEMBLY

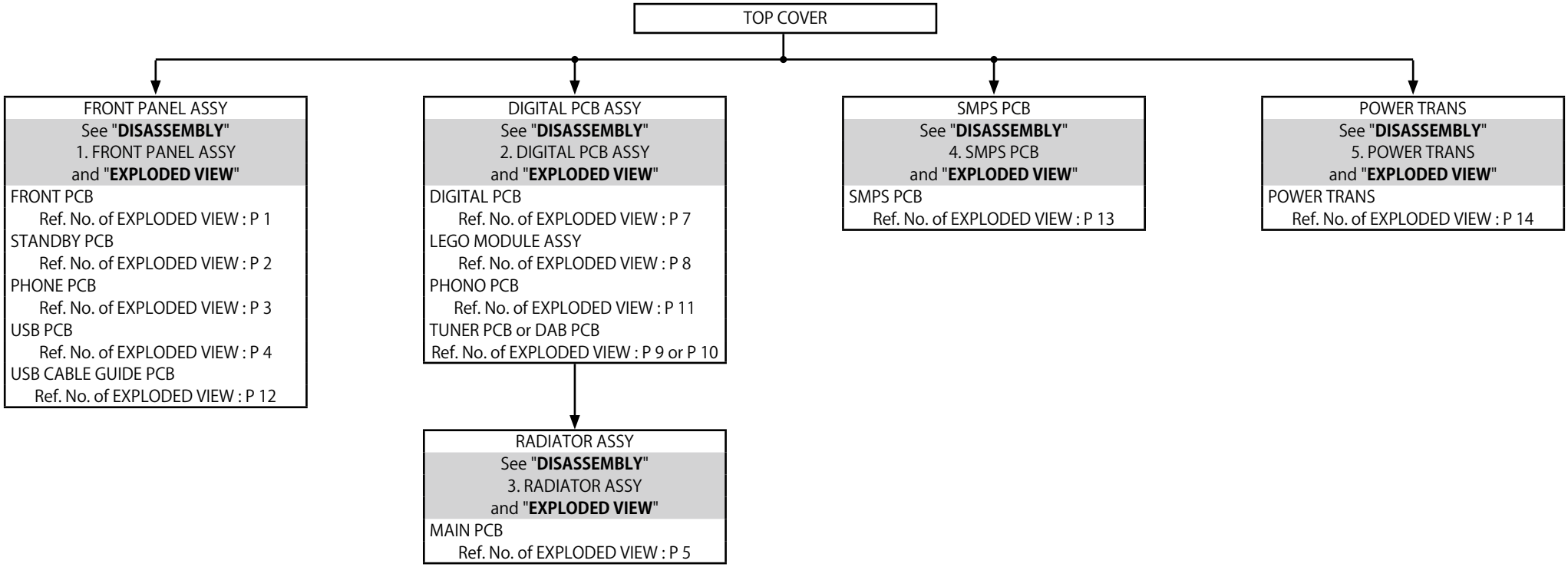
EXPLODED VIEW

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"



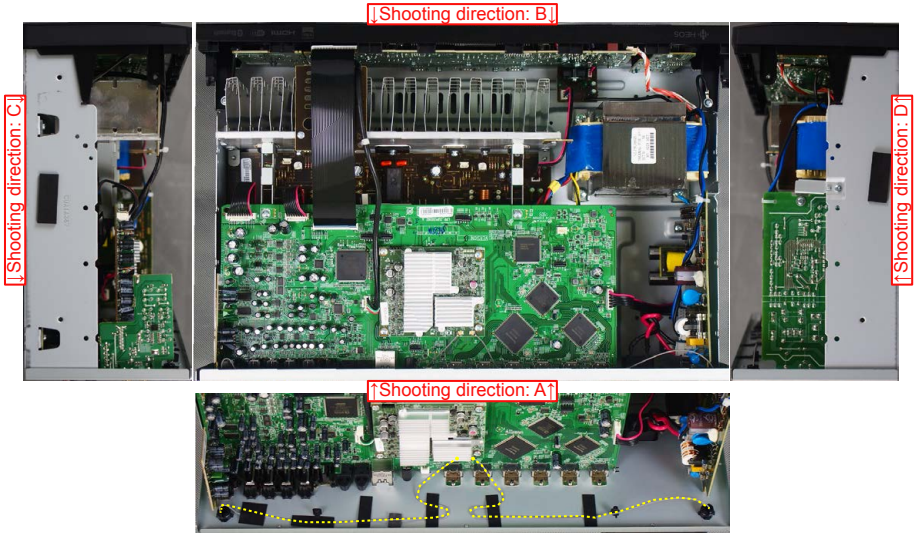
Explanatory Photos for DISASSEMBLY

- 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 DRA-800H E3 are used in this manual.

The viewpoint of each photograph

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

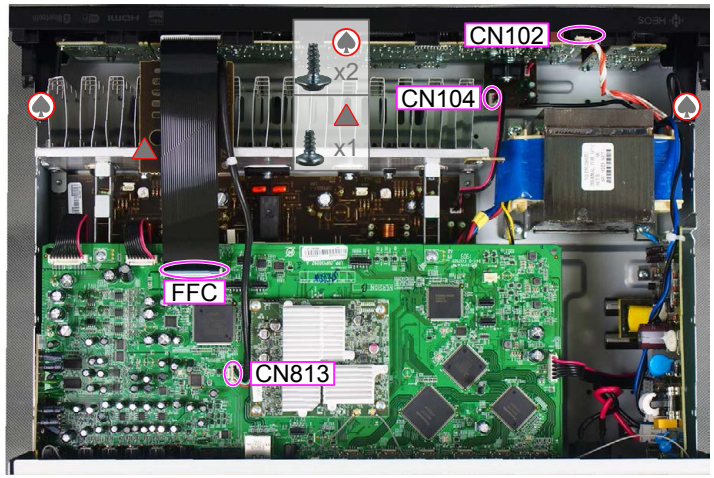


1. FRONT PANEL ASSY

Proceeding : TOP COVER → FRONT PANEL ASSY

(1) Remove the screws.

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

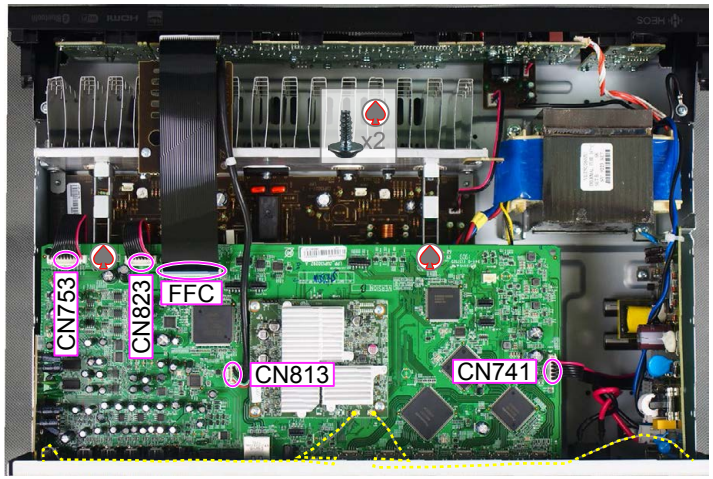


2. DIGITAL PCB

Proceeding : TOP COVER → DIGITAL PCB

(1) Remove the screws.

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

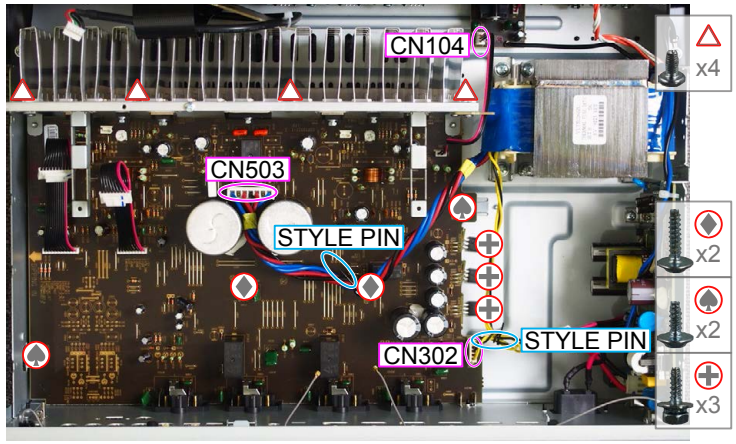


3. RADIATOR ASSY

Proceeding : TOP COVER → DIGITAL PCB → RADIATOR ASSY

(1) Remove the screws.

(2) Remove the screws. Remove the STYLE PIN. Remove the connector.



4. SMPS PCB

Proceeding : TOP COVER → SMPS PCB

See "EXPLODED VIEW" for instructions on removing the SMPS PCB.

5. POWER TRANS

Proceeding : TOP COVER → POWER TRANS

See "EXPLODED VIEW" for instructions on removing the transformer (TRANS).

EXPLODED VIEW

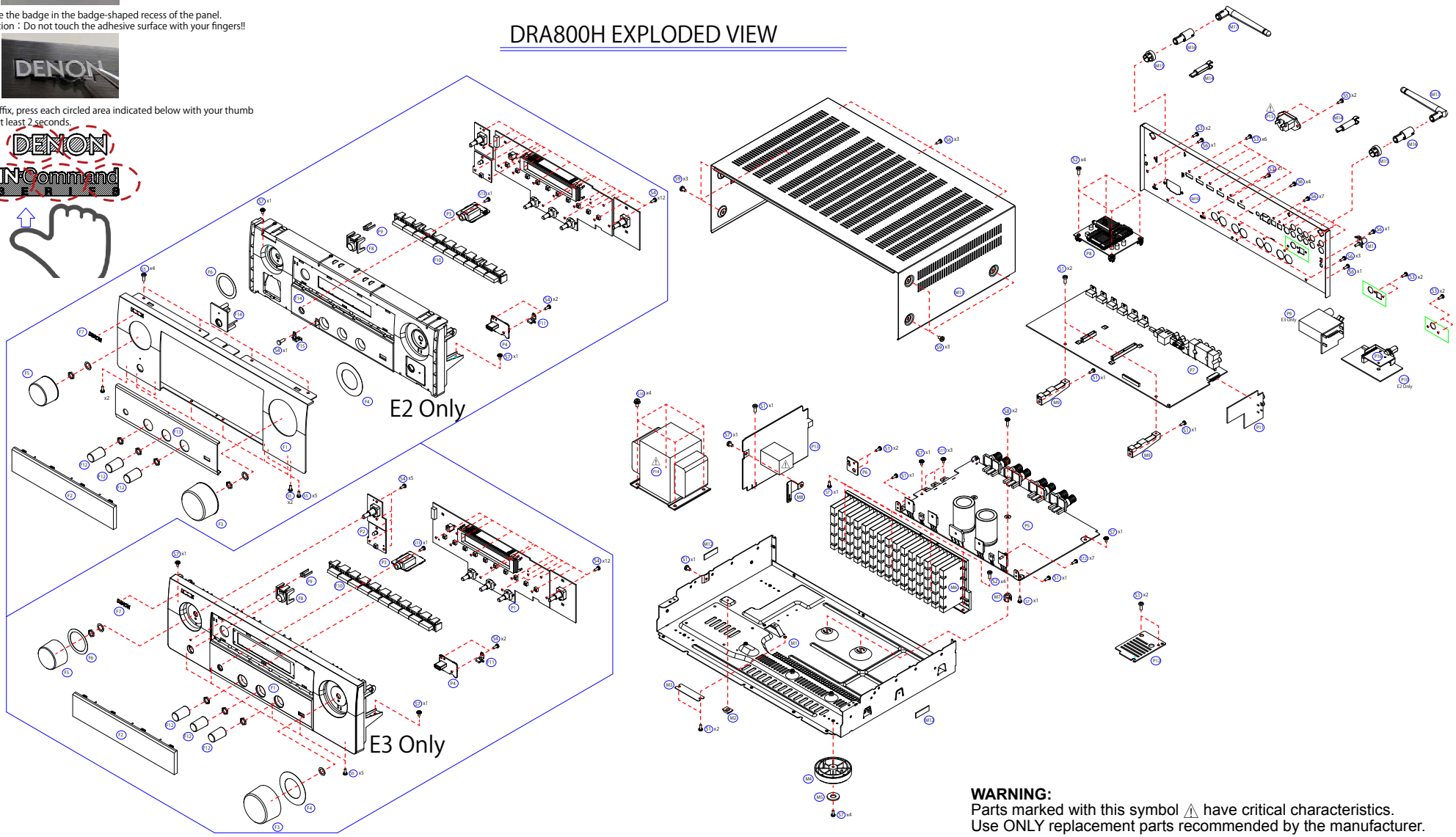
⚠2 **Parts List : http://dmedia.soundunited.com/documents/details/25798**

Precautions when affixing the BADGE
(1) The BADGE is incredibly fragile, so using the same force as you would when applying a label is likely to cause deformation. Once deformed it is very difficult to return it to its original shape, so take care when handling it.
(2) Make sure the BADGE is not flat before affixing it.
(3) Use tweezers to remove the backing paper from the double-sided tape and be careful not to touch the adhesive surface with your fingers.

(4) Place the badge in the badge-shaped recess of the panel.
Caution：Do not touch the adhesive surface with your fingers!!

(5) To affix, press each circled area indicated below with your thumb for at least 2 seconds.

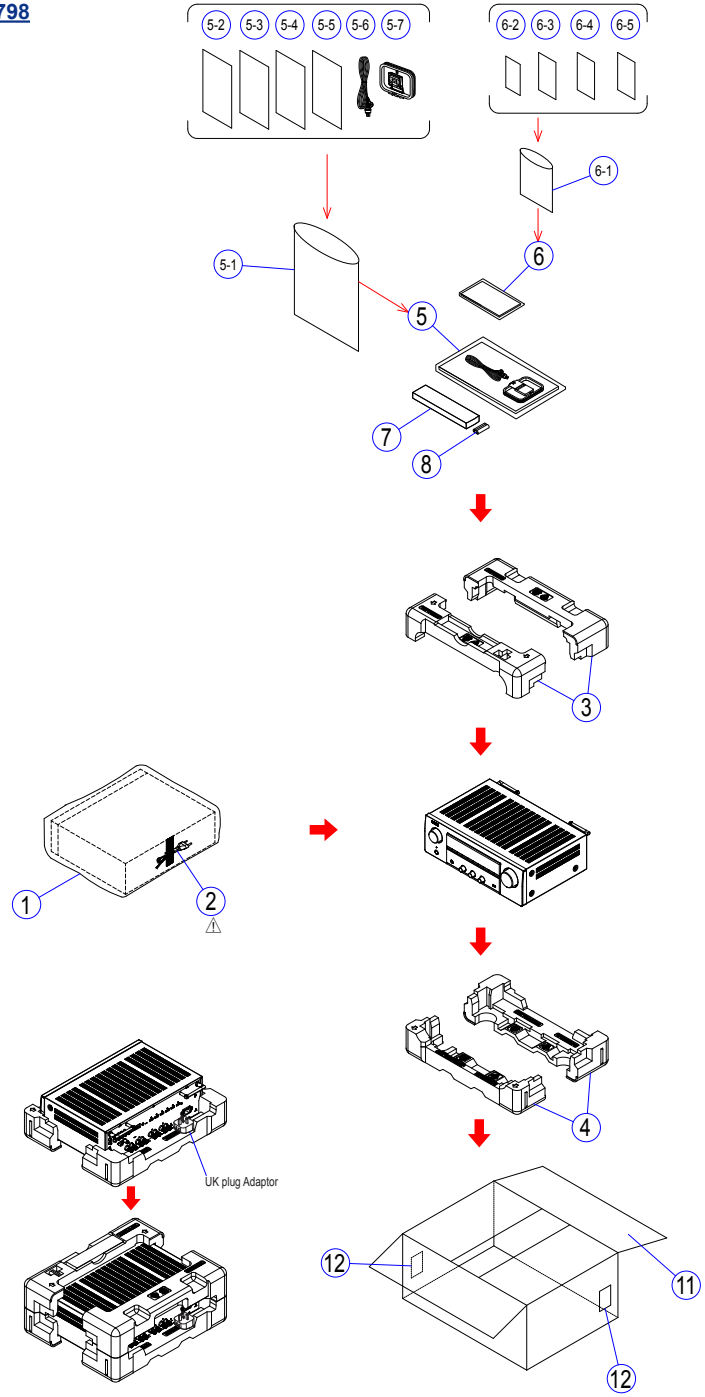
DRA800H EXPLODED VIEW



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

PACKAGING VIEW

⚠2 **Parts List :** http://dmedia.soundunited.com/documents/details/25798



REPAIR INFORMATION

TROUBLE SHOOTING

HDMI "Rx/Tx" Failure Detection

CLOCK FLOW & WAVE FORM IN DIGITAL BLOCK

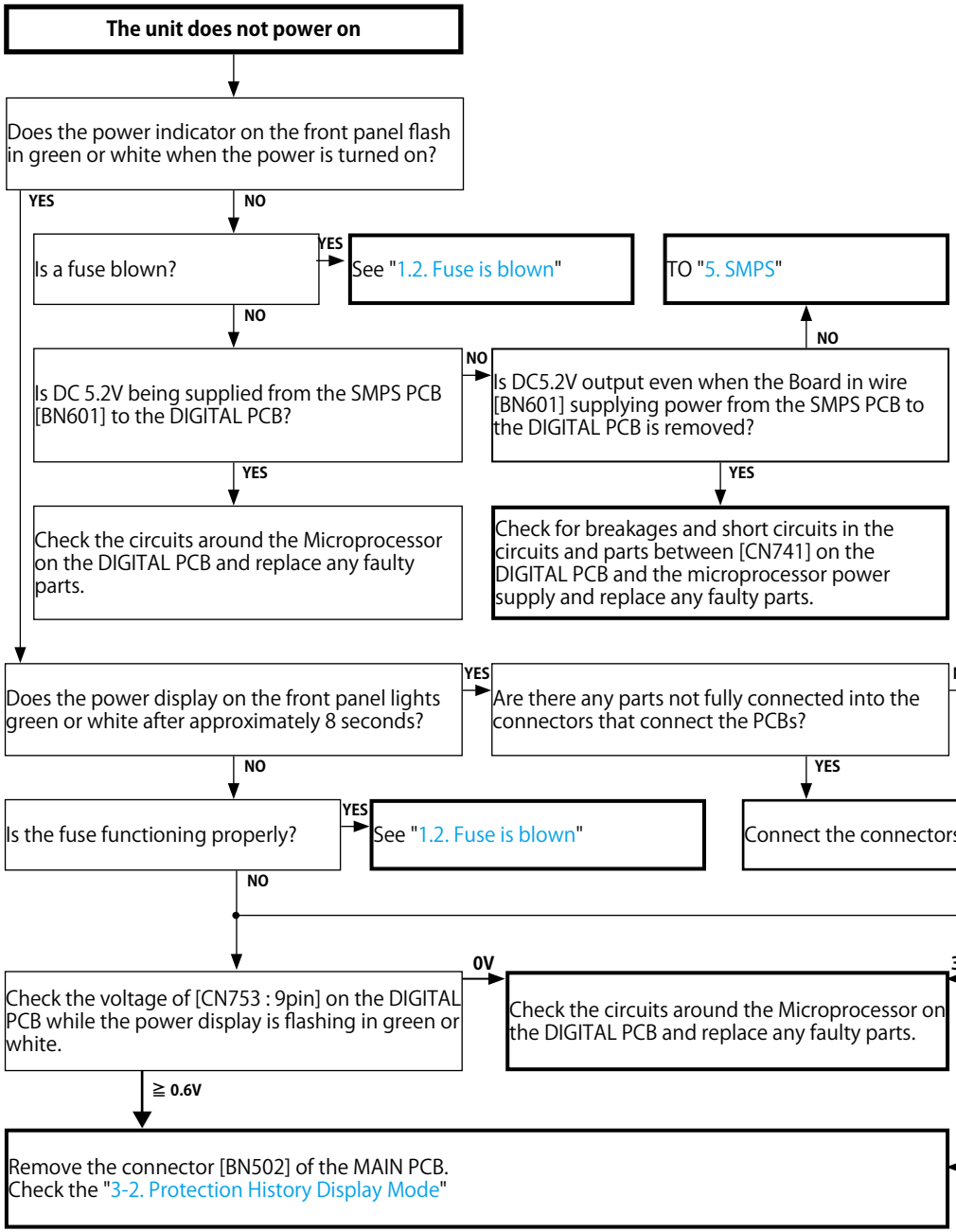
SPECIAL MODE

DIAGNOSTIC MODE

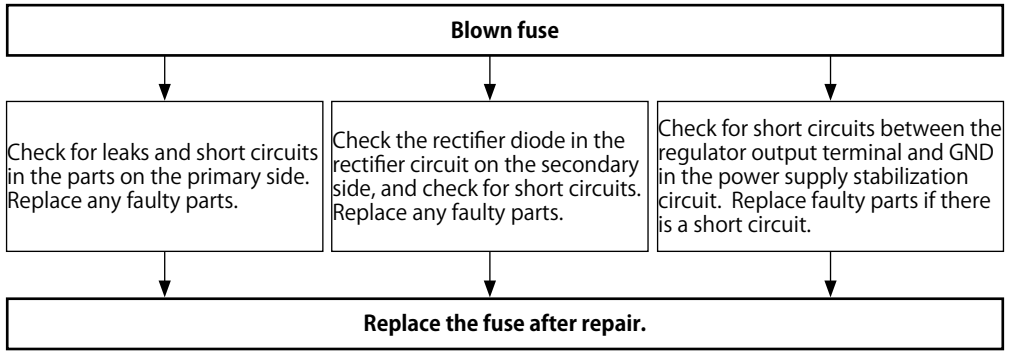
ADJUSTMENT

1. POWER

1.1. The unit does not power on

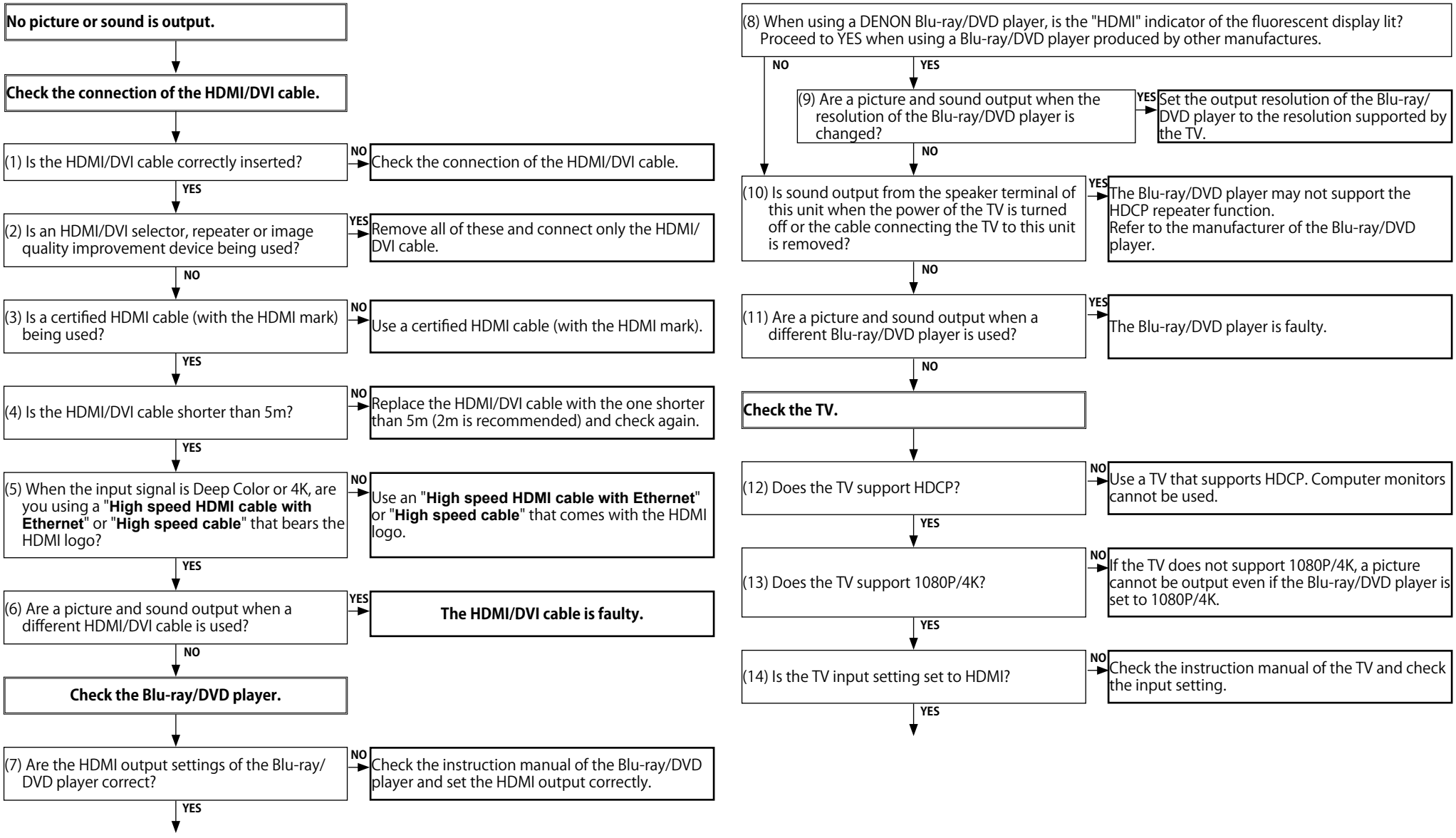


1.2. Fuse is blown

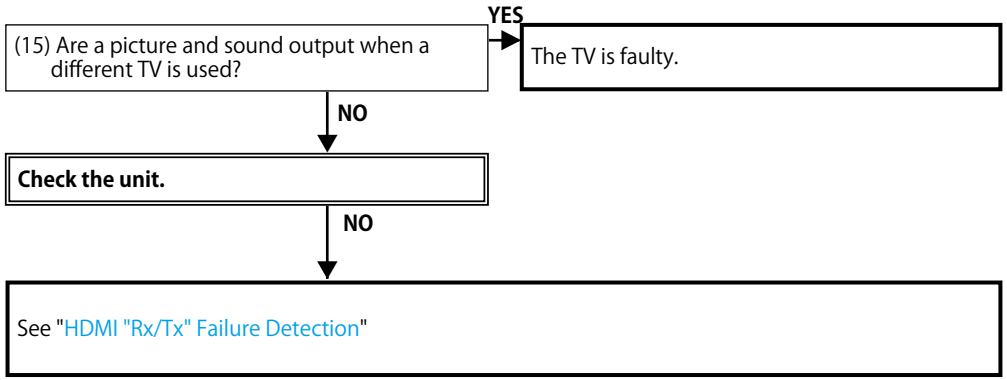


2. HDMI/DVI

2.1. No picture or sound is output (HDMI to HDMI)



Go to next page.


(15) Are a picture and sound output when a different TV is used?
YES
The TV is faulty.
NO
Check the unit.
NO
See "HDMI "Rx/Tx" Failure Detection"

3. AUDIO

3.1. AUDIO CHECK

No audio output

YES

CHECK 1	INPUT	SURROUND MODE	SOURCE
Audio output OK?	ANALOG 2CH	DIRECT	ANALOG

NO → Check the ANALOG AUDIO BLOCK

YES

CHECK 2	INPUT	SURROUND MODE	SOURCE
Audio output OK?	COAX or OPT	-	2ch PCM

NO → Check the DIGITAL AUDIO BLOCK

YES

CHECK 3	INPUT	SURROUND MODE	SOURCE
Audio output OK?	ANALOG 2CH	STEREO	ANALOG

NO → Check the ADC BLOCK

YES

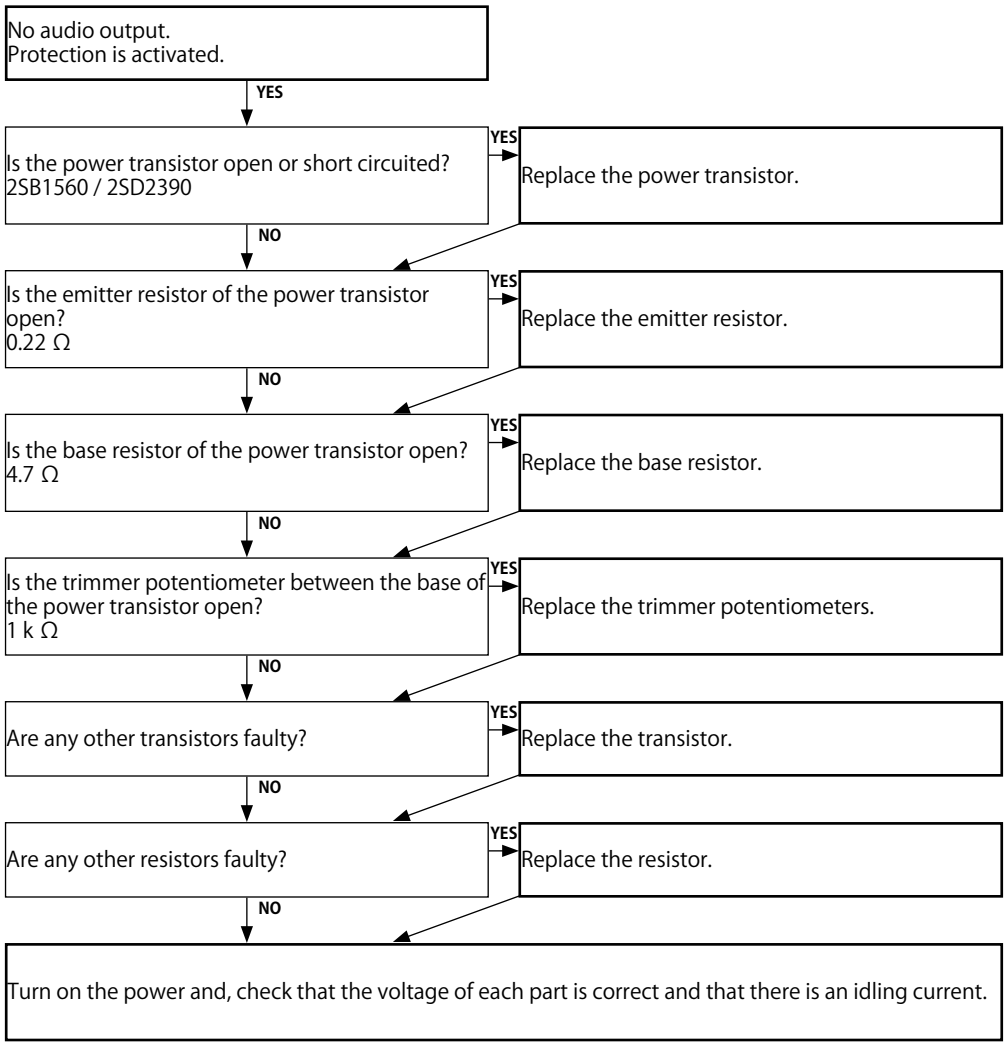
CHECK 4	INPUT	SURROUND MODE	SOURCE
Audio output OK?	HDMI	-	2ch PCM

NO → Check the HDMI BLOCK

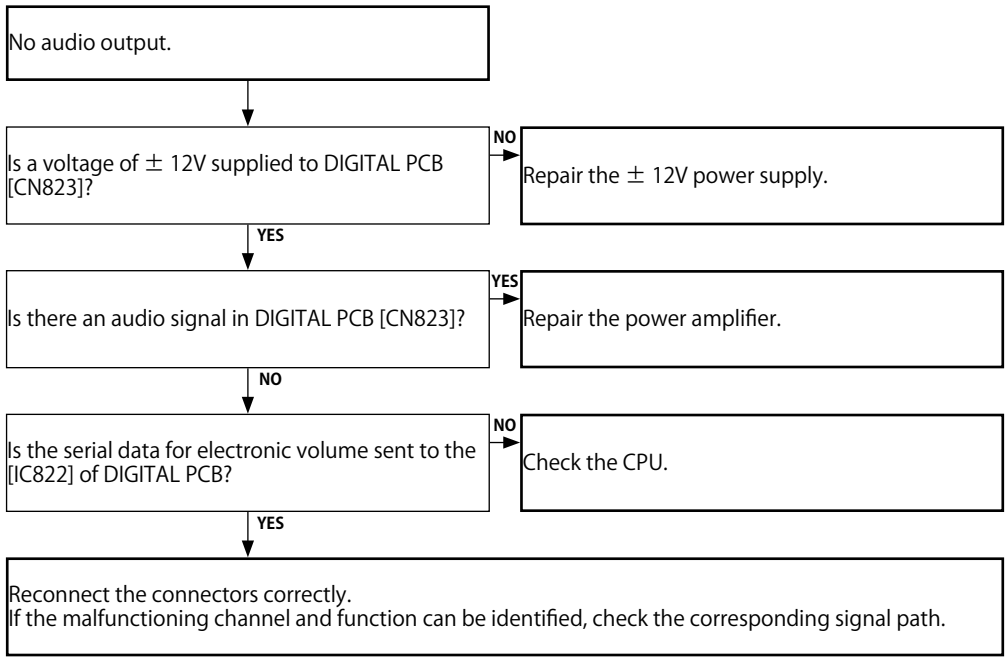
→ See "Service Path Check Mode"

3.2. Power AMP (AMP PCB)

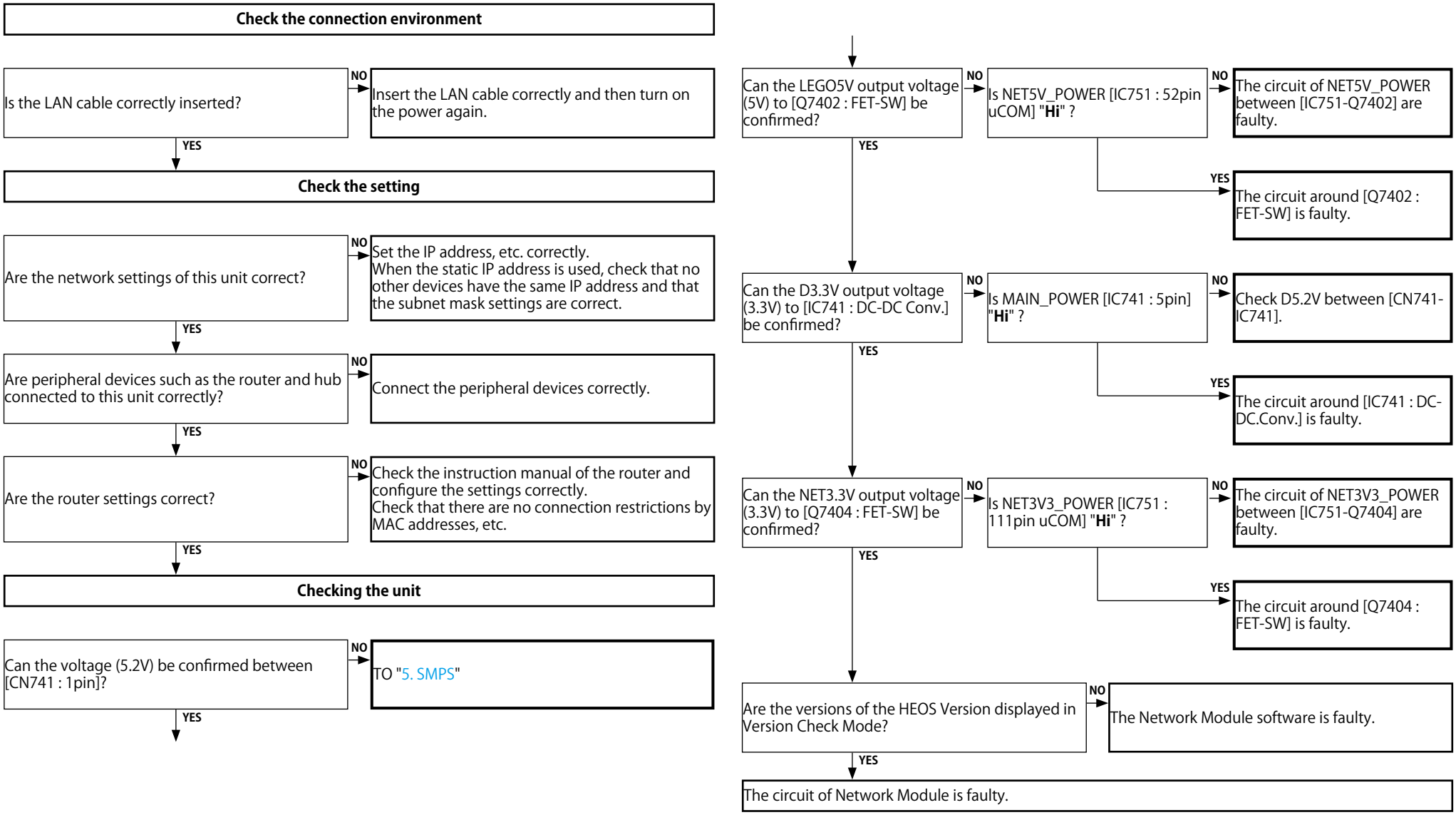
When using the protection pass mode, do not connect speakers to the speaker terminals.



3.3. Analog audio



4.1. Cannot connect to the network



4.2. Cannot establish a Bluetooth connection

Check the Bluetooth device being used

Is the Bluetooth device compatible with the A2DP profile?
- NO → Use a device that is A2DP profile compatible.
- YES ↓

Is the Bluetooth function enabled on the Bluetooth device?
- NO → Enable the Bluetooth function and try connecting again.
- YES ↓

Checking the unit

Is the antenna cable inserted correctly into Network Module?
- NO → Connect the antenna cable correctly.
- YES ↓

In the same way as for Network connection troubleshooting, check the Network Module power supply and HEOS Version is displayed correctly.

4.3. Cannot recognize the connected USB device

Check the USB device being used

Is a USB hub being used?
- YES → Do not use a USB hub.
- NO ↓

Is the USB device supported by this unit?
- NO → Supports mass storage class and MTP-compatible devices formatted to FAT16, FAT32 or NTFS.
- YES ↓

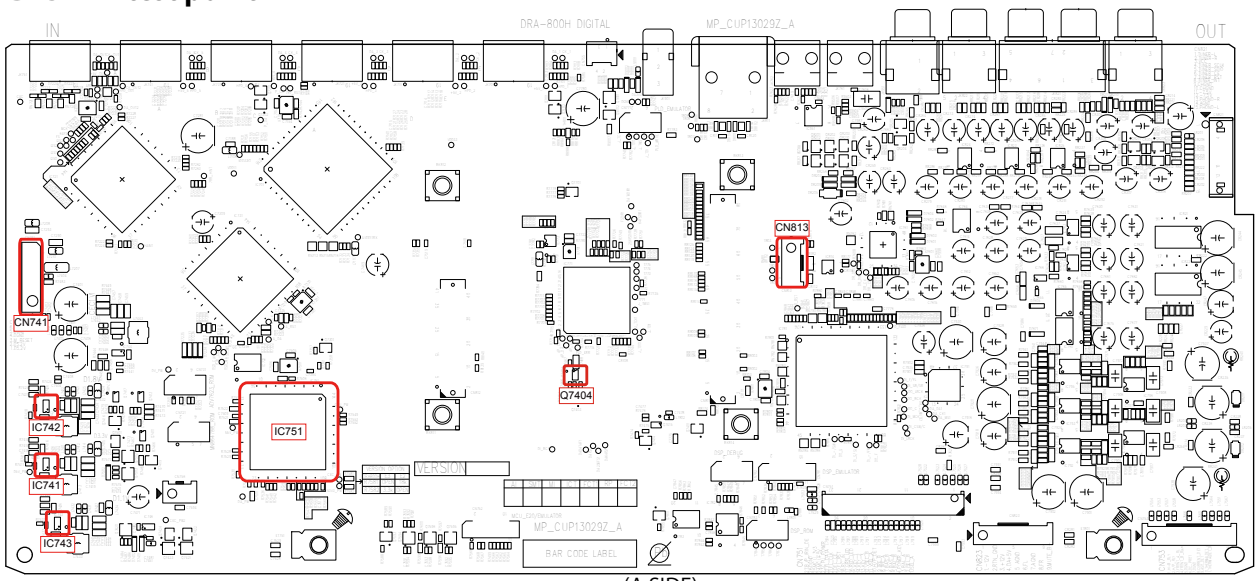
Checking the unit

Are [CN813] of the DIGITAL PCB and [BN104] of the USB PCB correctly connected?
- NO → Connect the connectors correctly.
- YES ↓

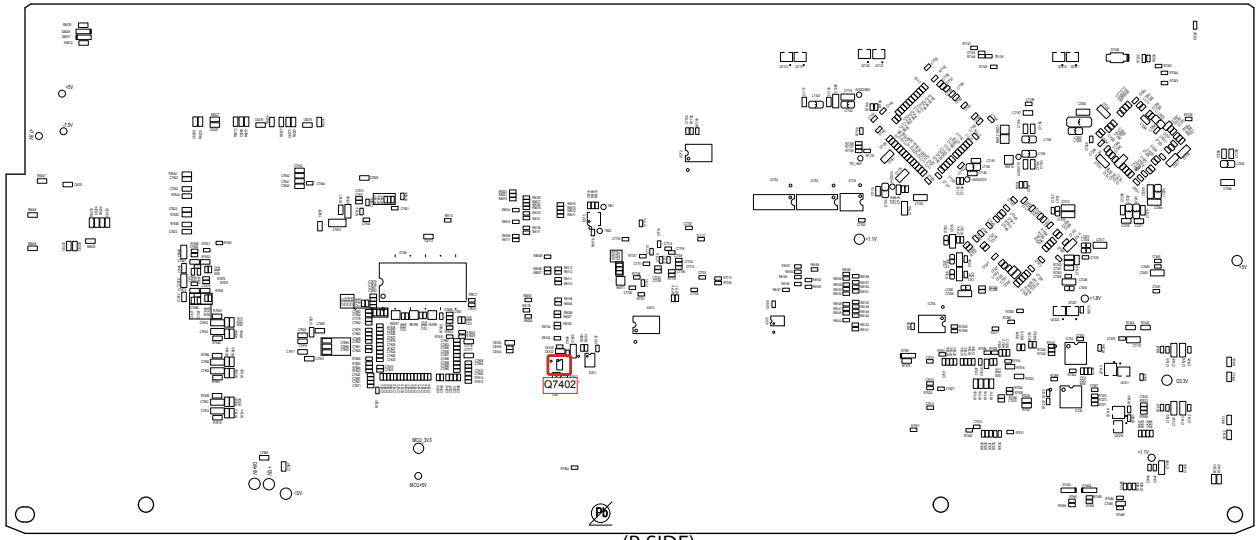
Can the voltage of the USB PCB (5.2V) be confirmed?
[JK101 : 1pin]
- NO → The circuit around [IC814] of the DIGITAL PCB is faulty.
- YES ↓

The USB signal circuit between Network Module and [JK101] of the USB PCB are faulty.

DIGITAL test point

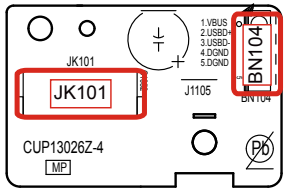


(A SIDE)



(B SIDE)

USB test point



(A SIDE)

DC 5V is not output.

Is [IC601 : TOP268VG] damaged? YES → Replace the [IC601 : TOP268VG and D6001/ D6002 / D6003 / D6004].

NO

Is the fuse [F6001] functioning properly? YES → Is [D6001/ D6002 / D6003 / D6004] damaged? YES → Replace the damaged part.

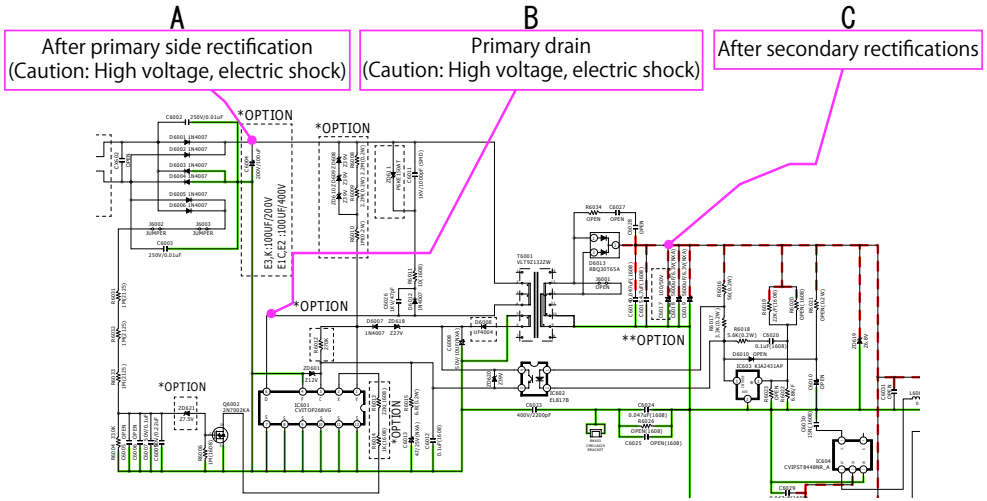
NO

Are there any short circuits caused by the soldering on the PCB? YES → Repair the short circuited area on the PCB.

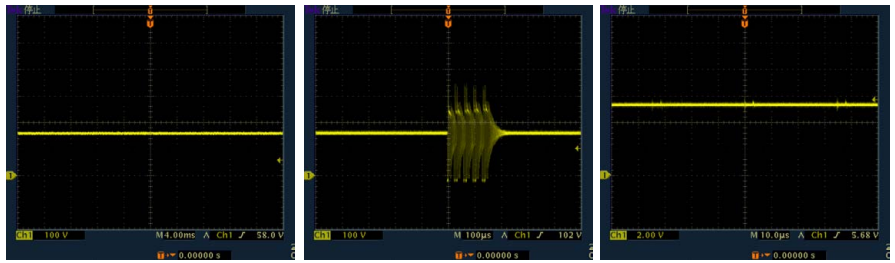
NO

Are any parts damaged? YES → Check the damaged parts. YES → Replace the damaged part.

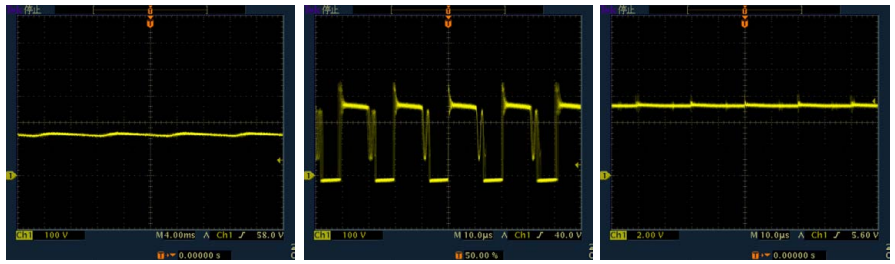
Operation waveform for each part



SMPS unit (Unloaded)



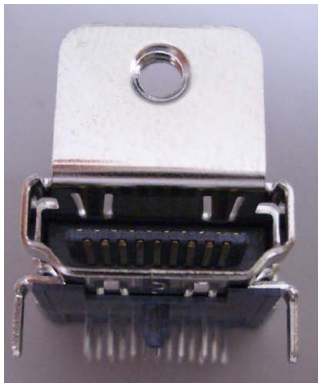
Set



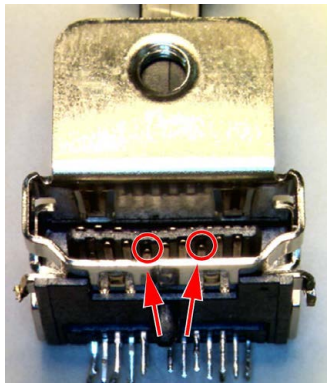
HDMI "Rx/Tx" Failure Detection

1. Prior checking

Check item(1.). : Checking the HDMI connector
Checking the condition of the HDMI pin (rear/front).



OK



NG

Check for deformed pins.

There are deformed pins.

Replace the HDMI connector.

None of the pins are deformed.

Check by following the flow chart for "3. Starting detecting the point of failure".
NOTE :
After checking troubleshooting "2. HDMI/DVI", check "3. Starting detecting the point of failure".

2. Preparations for checking HDMI Switcher reception/transmission register

2-1. Necessary devices

1) Check the product settings.
2-a) Player with an HDMI terminal
2-b) TV with an HDMI terminal (* NOTE : Do not use a computer monitor.)
3) Windows PC
4) Serial communication software "**Termite.exe**"
(Download the software from http://www.compuphase.com/software_termite.htm and install it.)
5) HDMI cable
6) RS-232C Straight cable
7) 8U-210100S WRITING KIT
8) oscilloscope

2-2. Device Connection Method

Connect the TV and the AVR to the player using an HDMI cable and connect the AVR to the PC through an RS-232C cable as shown in Figure 1.

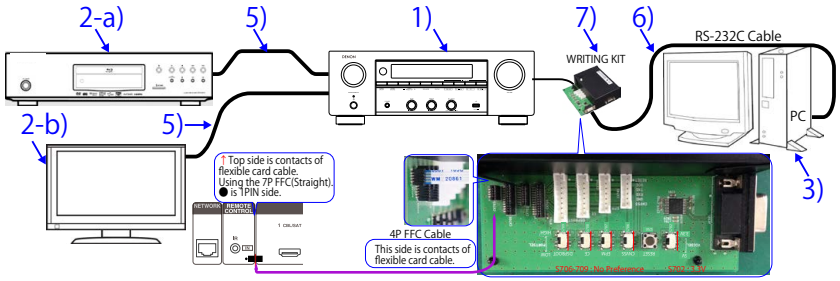


Figure 1 Device Connection Method (DRA-800H)

2-3. Device configuration method

PC settings : Execute the serial communication program, Termite.exe.

After executing Termite.exe, click [Settings].

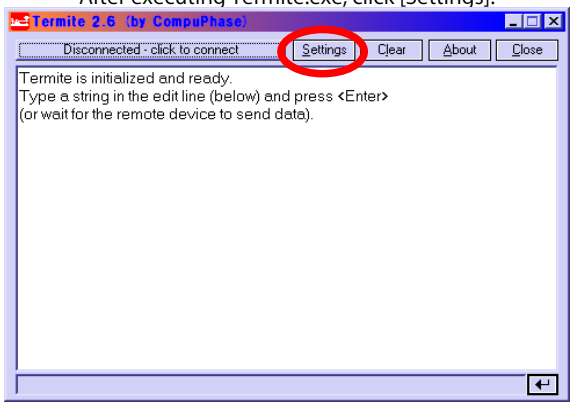


Figure 2. Screen After Executing Termite.exe

The serial port setup screen will be displayed.
Configure the settings as shown in Figure 3 and click the "**OK**" button.

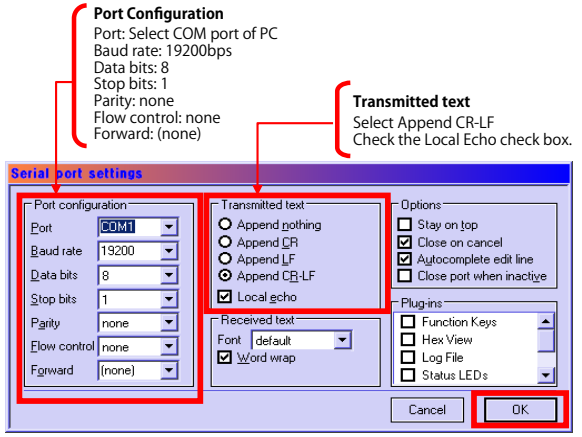


Figure 3. Serial Port Setup Screen

Click the [click to connect] button to start communication.
After a connection is established successfully, the display of the button name will change as shown in Figure 4.

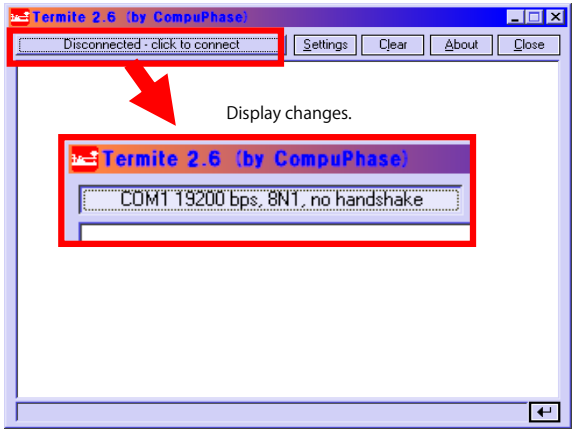


Figure 4. Change of the Display of the Communication Start Button Name

TV settings : Switch to the HDMI input in the AVR connection.
Player settings : Turn the unit power on and configure it to play disks.
AVR settings : While the power is On, hold down buttons "**ZONE2 SOURCE**" and "**PRESET CH +**" for at least 3 seconds.
(Continue to press and hold the buttons until all segments of the FLD volume illuminate.)
※ When the power is turned on after initialization, "**Setup Assistant**" will be displayed.
After exiting "**Setup Assistant**" execute the above.

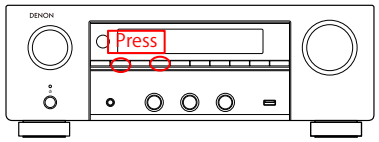


Figure 6-1. AVR settings (DRA-800H)

Figure 6. FLD Display When Set

When the settings are correct, the following message will be displayed in the window of Termite.
[00]Start Sub CPU Log Mode
****
(**** is a version of Sub CPU.)

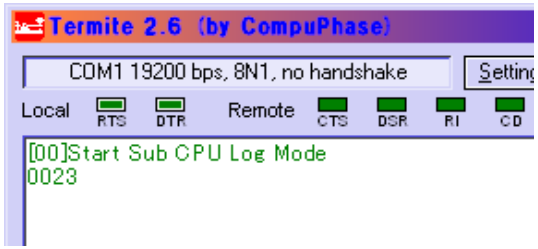


Figure 7. Display of Termite When AVR is Set

The setup is now complete.

Method for sending commands
Enter the command in the transmission command entry section, click the [Send] button and send the command.

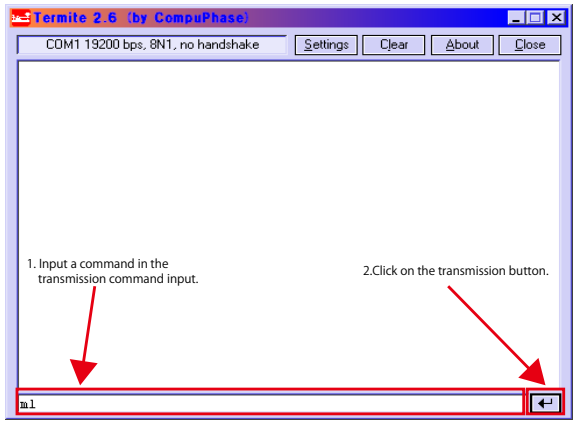


Figure 8. Method for Sending Termite Commands

3. Starting detecting the point of failure

Check item(3.1.).
Check the power supply status and communication status with the CPU of each device.
Start in HDMI Diagnostics mode and follow the procedures below.

Start in HDMI Diagnostics mode

While the power is on, hold down buttons "**TUNER PRESET CH -**" and "**ZONE2 SOURCE**" for at least 3 seconds.

```
HDMI DIAGNOSTICS
```

↓ "**HDMI DIAGNOSTICS**" is displayed.

When the mode has switched, start Hardware Check.

```
HardwareCheck...
```

↓

Display when an Error is detected.

```
Err:  H1-XX
```

↓↑ Alternating display.

```
Contact support
```

Check the Error Code table items.

Error Code table

Error Code	Check item No.	Description
H1-01	Check item (3-1.1.)	Communication Error with HDMI Rx/Tx [IC721 : MN864788]
H1-02	Check item (3-2.1.)	Communication Error with HDMI SW [IC701 : MN864787]
H1-07	Check item (3-3.1.)	Communication Error with OSD [IC731 : ADV7623]
H1-08	Check item (3-5.1.)	Communication Error with DSP [IC781 : ADSP21487KSWZ2B82]
H1-12	Check item (3-6.1.)	Communication Error with DIR [IC761 : PCM9211]
H1-15	Check item (3-4.1.)	Communication Error with OSD ROM [IC732 : BY25Q32BSSIG/BY25Q64ASSIG]

Display when an Error is not detected.

```
1 Auto Test
```

Cancel the mode, and proceed to check item (3.2.).

Canceling the selected mode
Press the power button to exit off the power.

Check item(3.2.). : Check operation of the HDMI input terminal.

When the HDMI input terminal of this device is connected to the player correctly, is sound heard from the speaker?
※ When checking, turn the AV amplifier on and off after checking the connection terminal with the player. (To set the same conditions during verification of operation)

Check that sound is heard from the input terminal of the HDMI4, 5.
Use any of 2ch PCM for the playback audio format.

NO → Is the "**DIG**" indicator illuminated on the FLD?
When the "**DIG**" indicator is illuminated, the digital audio block is faulty.
If the "**DIG**" indicator is not illuminated, go to check item (3-7.1.).
(HDMI Rx/Tx IC [MN864788] failure detection procedure)

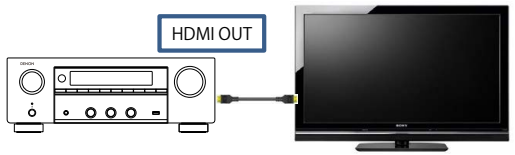
YES

Check that sound is heard from the input terminal of the HDMI1, 2, 3.

NO → Go to check item (3-8.1.).
(HDMI SW [MN864787] failure detection procedure)

YES

Check item(3.3). : Check operation of the HDMI output terminal.

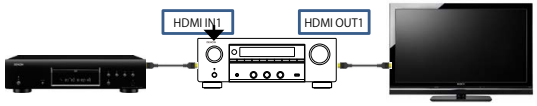


When the "**SETUP**" button on a remote control is pressed, is "**MENU**" displayed on TV which is connected to the HDMI output terminal on the AVR?

NO → Go to check item (3-9.1.).
(OSD [ADV7623] failure detection procedure)

YES

Check item(3.4). : Check operation of the HDMI output terminal.



When the player is connected to the HDMI input terminals in order, are the images on the player displayed on the TV in both cases?

NO → Go to check item (3-10.1.).
(Between HDMI Tx [MN864788] & OSD [ADV7623] failure detection procedure)

YES

There is no problem with Rx, Tx, and GUI of HDMI as well as IC of SW.

3-1. Error Code H1-01 failure detection procedure

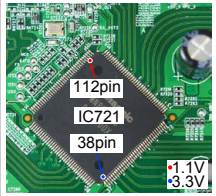
Checking device. (HDMI Rx/Tx)

↓

Check the power supply voltage. (HDMI Rx/Tx)

↓

Check item(3-1.1.). Check the power supply voltage. :
Does the power supply voltage of the HDMI Rx/Tx [IC721] indicate the correct voltage (1.1V, 3.3V)?
The test points are as follows.



YES ↓

NO ↓

Check item(3-1.2.). Check the power supply voltage. :
Check the power components [IC741/IC744/Q7417] and the pattern on the substrate.
If there is no problem, remove the HDMI Rx/Tx [IC721] from the substrate and measure the voltage at the test point of check item (3-1.1.).
Is the voltage correct (1.1V or 3.3V)?

YES ↓

Replace with a new device.

↓

NO ↓

The power supply circuit is faulty.
Replace the PCB.

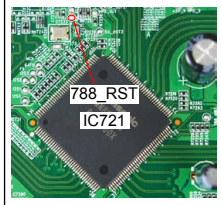
↓

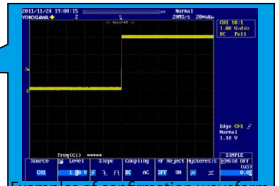
Recheck from check item (3.1.).
If it does not work, replace the PCB.

Checking the reset waveform. (HDMI Rx/Tx)

↓

Check item(3-1.3.). Checking the reset waveform :
Check the waveform.
When the power is turned on, is the TP [788_RST] waveform correct (as shown in the figure)?





Examples of confirmation waveform
Voltage scale：1.0V/div
Time scale：20ms/div

NO →

Check the reset circuit between CPU [IC751] and HDMI Rx/Tx [IC721].
If there is no problem, the HDMI Rx/Tx [IC721] is faulty.
Replace with a new device.
Recheck from check item (3.1.).
If it does not work, replace the PCB.

YES ↓

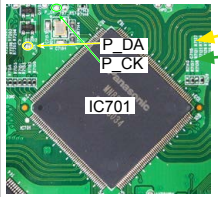
Go to next page.

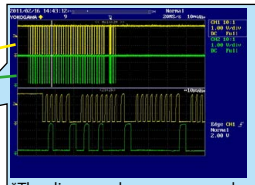
Check the I2C communication line. (HDMI Rx/Tx)

YES

Check item(3-1.4.). Check the I2C communication line :
Check the CPU.
Is the "**I2C**" waveform of the TP HDMI Rx/Tx [IC721] correct (like the one shown in the diagram) when the power is turned on?

NO





*The diagram shows an example.
(Signal patterns vary depending on the timing.)
Points for checking waveforms
- Crest value (3.3V normally)
- Signal change
- SCL frequency (400kHz normally)
Voltage scale：1.0V/div
Time scale：10us/div

Check item(3-1.5.). Check the I2C communication line :
Check HDMI Rx/Tx [IC721], CPU[IC751] patterns as well as soldering.
If there is no problem, go to the next step.

YES

HDMI Rx/Tx [IC721] is faulty.
Replace with a new IC.

YES

Recheck from check item (3.1.).
If it does not work, replace the PCB.

Check the HDMI Rx/Tx.
Remove the damping resistor [R7229/R7231] of [IC721].
Is the "**I2C**" waveform correct?

NO

Check the HDMI SW.
Remove the damping resistor [R7147/R7149] of [IC701].
Is the "**I2C**" waveform correct?

YES

HDMI Rx/Tx [IC721] is faulty. Replace with a new device.

YES

HDMI SW [IC701] is faulty. Replace with a new device.

NO

CPU [IC751] is faulty. Replace with a new device.

Recheck from check item (3.1.).
If it does not work, replace the PCB.

3-2. Error Code H1-02 failure detection procedure

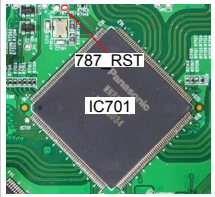
Checking device. (HDMI SW)

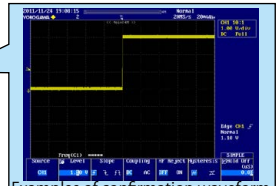
↓

Checking the reset waveform. (HDMI SW)

↓

Check item(3-2.1.). Checking the reset waveform :
Check the waveform.
When the power is turned on, is the TP"787_RST" waveform correct (as shown in the figure)?





Examples of confirmation waveform
Voltage scale：1.0V/div
Time scale：20ms/div

NO → Check the reset circuit between CPU [IC751] and HDMI SW [IC701].
If there is no problem, the HDMI SW [IC701] is faulty.
Replace with a new device.

↓ YES

Check item(3-2.2.). Checking the HDMI SW :
Remove the [R7147/R7149].
Is the waveform of "**I2C**" the correct waveform?

YES ↓

NO → HDMI SW [IC701] is faulty.
Replace with a new device.

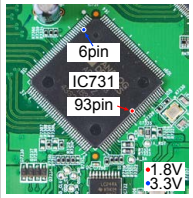
Recheck from check item (3.1.).
If it does not work, replace the PCB.

3-3. Error Code H1-07 failure detection procedure

Checking device. (OSD)

Check the power supply voltage.

Check item(3-3.1.). Check the power supply voltage. :
Does the power supply voltage of the OSD [IC731] indicate the appropriate voltage (1.8V, 3.3V)?
The test points are as follows.



NO

Check item(3-3.2.). Check the power supply voltage. :
Check the power supply components [IC742/IC741/Q7410] on the substrate and peripheral pattern.
If there is no problem, remove the OSD [IC731] from the substrate and measure the voltage at the test point of check item (3-3.1.).
Is the voltage correct (1.8V or 3.3V)?

YES

The power supply circuit is faulty.
Replace the PCB.

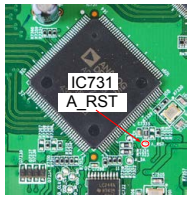
NO

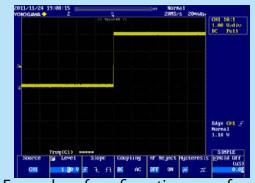
HDMI OSD [IC731] is faulty.
Replace with a new device.

Recheck from check item (3.1.).
If it does not work, replace the PCB.

Checking the reset waveform.

Check item(3-3.3.). Checking the reset :
Check the CPU.
When the power is turned on, is the TP"A_RST" waveform correct (as shown in the figure)?





Examples of confirmation waveform
Voltage scale：1.0V/div
Time scale：20ms/div

YES

Check the reset circuit between CPU [IC751] and HDMI OSD [IC731].
If there is no problem, the HDMI OSD [IC731] is faulty.
Replace with a new device.

NO

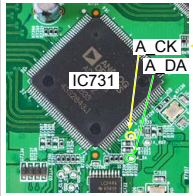
Recheck from check item (3.1.).
If it does not work, replace the PCB.

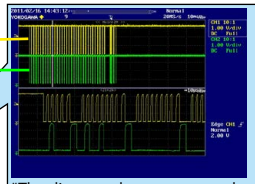
Go to next page.

Check the I2C communication line.

YES

Check item(3-3.4.). Check the I2C communication line :
Check the CPU.
Is the "**I2C**" waveform of the HDMI OSD [IC731] correct (like the one shown in the diagram) when the power is turned on?





*The diagram shows an example.
(Signal patterns vary depending on the timing.)
Points for checking waveforms
- Crest value (3.3V normally)
- Signal change
- SCL frequency (400kHz normally)
Voltage scale：1.0V/div
Time scale：10us/div

YES

NO

Check item(3-3.5.). Check the I2C communication line :
Check HDMI OSD [IC731], CPU [IC751] patterns as well as soldering.
If there is no problem, go to the next step.

Check the HDMI Rx.
Remove the damping resistor [R7323/R7324] of [IC731].
Is the "**I2C**" waveform correct?

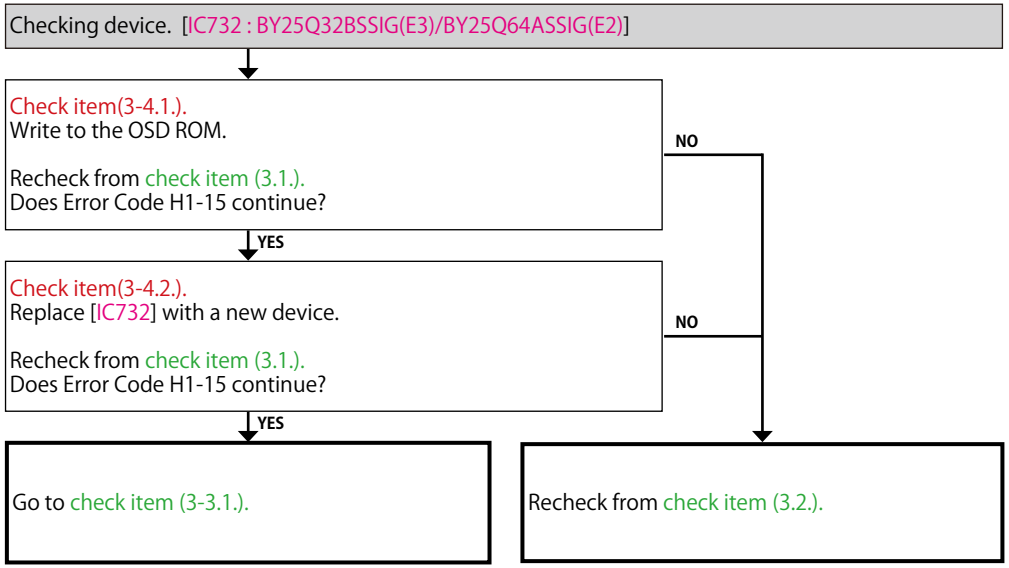
NO → CPU [IC751] is faulty.
Replace with a new device.

YES

OSD [IC731] is faulty.
Replace with a new device.

Recheck from check item (3.1.).
If it does not work, replace the PCB.

3-4. Error Code H1-15 failure detection procedure

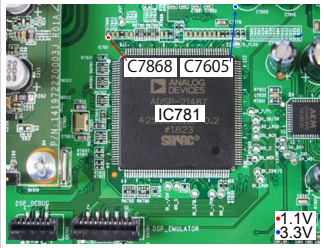


3-5. Error Code H1-08 failure detection procedure

Checking device. [IC781 : ADSP21487KSWZ2B82]

Check the power supply voltage.

Check item(3-5.1.). Check the power supply voltage. :
Does the power supply voltage of the DSP [IC781] indicate the appropriate voltage (1.1V, 3.3V)?
The test points are as follows.



NO

Check item(3-5.2.). Check the power supply voltage. :
Check the power supply components [IC741/IC743/Q7415] on the substrate and peripheral pattern.
If there is no problem, remove the DSP [IC781] from the substrate and measure the voltage at the test point of check item (3-5.1.).
Is the voltage correct (1.1V or 3.3V)?

YES

YES

NO

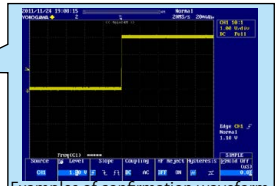
The power supply circuit is faulty.
Replace the PCB.

DSP [IC781] is faulty.
Replace with a new device.

Recheck from check item (3.1.).
If it does not work, replace the PCB.

Checking the reset waveform.

Check item(3-5.3.). Checking the reset :
Check the CPU.
Is the waveform of the TP near the DSP [IC781] correct (like the one shown in the diagram) when the power is turned on?



Examples of confirmation waveform
Voltage scale : 1.0V/div
Time scale : 20ms/div

YES

NO

Check the reset circuit between CPU [IC751] and DSP [IC781].
If there is no problem, the DSP [IC781] is faulty.
Replace with a new device.

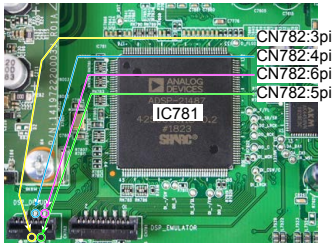
Recheck from check item (3.1.).
If it does not work, replace the PCB.

Go to next page.

Check the SPI communication line.

YES

Check item(3-5.4.). Check the SPI communication line :
Check the CPU.
Is the "**SPI**" waveform of the TP near the DSP [IC781] correct (like the one shown in the diagram) when the power is turned on?



*The diagram shows an example.
(Signal patterns vary depending on the timing.)
Points for checking waveforms
- Crest value (3.3V normally)
- Signal change
- CLOCK frequency (about 6MHz)
Voltage scale：2.0V/div
Time scale：2us/div

YES

NO

Check item(3-5.5.). Check the SPI communication line :
Check DSP [IC781], CPU [IC751] patterns as well as soldering.
If there is no problem, go to the next step.

DSP [IC781] is faulty.
Replace with a new device.

Recheck from check item (3.1.).
If it does not work, replace the PCB.

3-6. Error Code H1-12 failure detection procedure

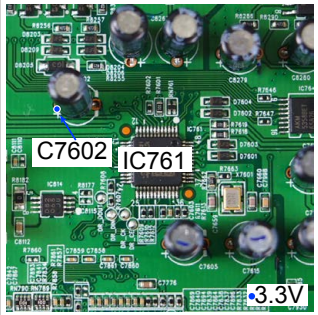
Checking device. [IC761 : PCM9211]

↓

Check the power supply voltage.

↓

Check item(3-6.1.). Check the power supply voltage. :
Does the power supply voltage of the DIR [IC761] indicate the appropriate voltage (3.3V)?
The test points are as follows.



NO →

Check item(3-6.2.). Check the power supply voltage. :
Check the power supply components [IC741/Q7415] on the substrate and peripheral pattern.
If there is no problem, remove the DIR [IC761] from the substrate and measure the voltage at the test point of check item (3-6.1.).
Is the power supply voltage correct (3.3V)?

YES ↓

The power supply circuit is faulty.
Replace the PCB.

NO ↓

DIR [IC761] is faulty.
Replace with a new device.

↓

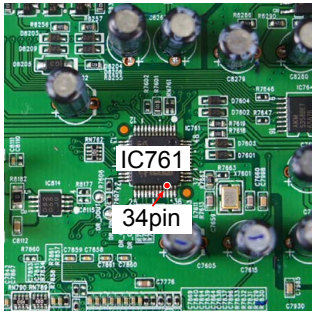
Recheck from check item (3.1.).
If it does not work, replace the PCB.

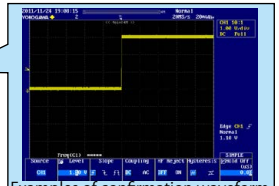
YES ↓

Checking the reset waveform.

↓

Check item(3-6.3.). Checking the reset :
Check the CPU.
When the power is turned on, is the DIR [IC761 : 34pin] waveform correct (as shown in the figure)?





Examples of confirmation waveform
Voltage scale : 1.0V/div
Time scale : 20ms/div

YES ↓

Go to next page.

NO ↓

Check the reset circuit between CPU [IC751] and DIR [IC761].
If there is no problem, the DIR [IC761] is faulty.
Replace with a new device.

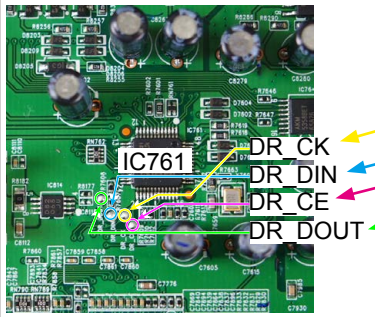
↓

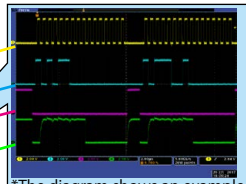
Recheck from check item (3.1.).
If it does not work, replace the PCB.

Check the communication line.

YES

Check item(3-6.4.). Check the communication line :
Check the CPU.
Is the waveform of the TP near the DIR [IC761] correct (like the one shown in the diagram) when the power is turned on?





*The diagram shows an example.
(Signal patterns vary depending on the timing.)
Points for checking waveforms
- Crest value (3.3V normally)
- Signal change
- CLOCK frequency (about 2MHz)
Voltage scale：2.0V/div
Time scale：2us/div

YES

NO

Check item(3-6.5.). Check the communication line :
Check DIR [IC761], CPU[IC751] patterns as well as soldering.
If there is no problem, go to the next step.

DIR [IC761] is faulty.
Replace with a new device.

Recheck from check item (3.1.).
If it does not work, replace the PCB.

3-7. HDMI Rx [MN864788] failure detection procedure

Checking operation between the HDMI (Rx/Tx) device and the player

※ In order to check, connect the player to the HDMI terminal and configure the player as AVR source.
Check the sound output while turning on the player.

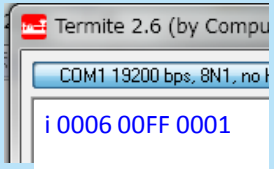
Checking the +5V/DDC status register (HDMI Rx/Tx)

Check item(3-7.1.). Checking the 5V status register :
Send the following command from Termite.exe.

Send the command "i 0006 00FF 0001".

Move to the branch destination according to the value returned.

Example



HDMI IN 4, 5 "00"
(Detection of 5V is not OK.)

→ Go to check item (3-7.3.).

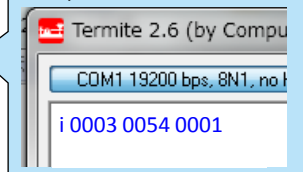
HDMI IN4 "22 or 20"HDMI IN5 "11 or 10"
(Detection of 5V is OK)

Check item(3-7.2.). Checking the DDC status register :
Send the following command from Termite.exe.

Case of HDMI IN4
Send the command "i 0003 0054 0001".
Case of HDMI IN5
Send the command "i 0003 0024 0001".

Move to the branch destination according to the value returned.

Example



"00 or 04"
(Detection of DDC is not OK.)

→ Go to check item (3-7.4.).

"22"
(Detection of DDC is OK)

→ Go to check item (3-7.5.).

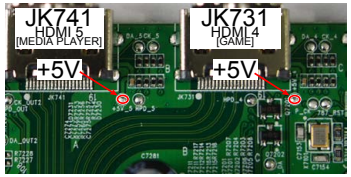
When the results of check item (3-7.1.) are "00"
(Detection of 5V is not OK)

↓

Check the +5V voltage. (HDMI Rx/Tx)

↓

Check item(3-7.3.). Check the +5V voltage.
Does "**+5V**" at the following test point indicate 5 V? [JK731/JK741]



↓ YES

HDMI Rx/Tx [IC721] is faulty.
Replace with a new device.

↓

Recheck from check item (3.2.).
If it does not work, replace the PCB.

↓ NO

Check for a short circuit in the 5 V line and the 5 V Switch IC [IC733].
If there is no problem, the HDMI Rx/Tx [IC721] or the 5 V Switch IC [IC733] is faulty
Replace with a new device.

↓

Recheck from check item (3.2.).
If it does not work, replace the PCB.

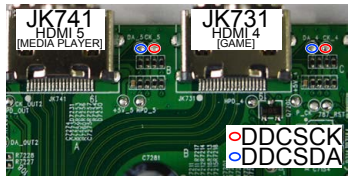
When the results of check item (3-7.2.) are "00 or 04"
(Detection of DDC is not OK.)

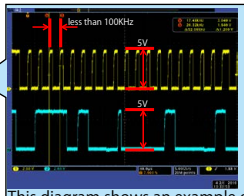
↓

Check the DDC line. (HDMI Rx/Tx)

↓

Check item(3-7.4.). Check the DDC line :
Are waveforms of "**DDCSCK**" and "**DDCSDA**" observed at the test point near the HDMI input terminal?





This diagram shows an example of the DDC communication waveform.
-The high level voltage is 5V.
-The frequency of the DDC CLK is 100 KHz or less.
Check at each test point.
Voltage scale：2.0V/div
Time scale：40us/div

↓ YES

HDMI Rx/Tx [IC721] is faulty.
Replace with a new device.

↓

Recheck from check item (3.2.).
If it does not work, replace the PCB.

↓ NO

Check for a short circuit in the DDC line.
If there is no problem, the HDMI Rx/Tx [IC721] is faulty.
Replace with a new device.

↓

Recheck from check item (3.2.).
If it does not work, replace the PCB.

When the results of check item (3-7.2.) are "22"
(Detection of DDC is OK.)

Checking the TMDS status register

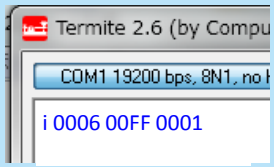
Check item(3-7.5.). Checking register of the TMDS CLK detection status register :
Send the following command from Termite.exe.

HDMI Rx/Tx
Send the command "i 0006 00FF 0001".

When the following value is returned, go to Yes.
HDMI IN4 "22" HDMI IN5 "11"

When the following value is returned, go to No.
HDMI IN4 "20" HDMI IN5 "10"

Example

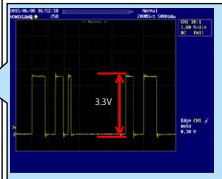


NO

YES

Check item(3-7.7.). Checking the audio signal output :
Check the audio signal waveform at the following test point.
Is the waveform like the sample?

129/131/132/133/134/135/136pin



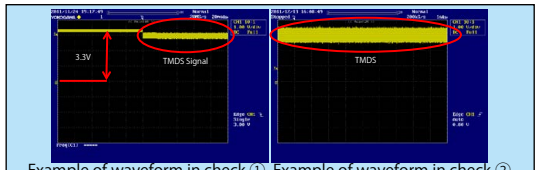
The diagram shows an example of the waveform of pin 129. (I2S0 Data)
Waveform check points
- Crest value (3.3V normally)
- Signal change
Check the waveform of each pin.
Voltage scale：1.0V/div
Time scale：20ms/div

YES

The digital audio block is faulty.
Check the digital audio device.
Check "**AUDIO**" in troubleshooting.
If it does not work, replace the PCB.

NO

HDMI Rx/Tx [IC721] is faulty.
Replace with a new device.



Example of waveform in check ①
Voltage scale：1.0V/div
Time scale：20ms/div

Example of waveform in check ②
Voltage scale：1.0V/div
Time scale：1s/div

Check item(3-7.6.). Checking the TMDS input waveform. :
Check the TMDS waveform at the following test point.
Is the waveform like the sample?

HDMI IN4
80/81/83/84/86/87/89/90pin

HDMI IN5
93/94/96/97/99/100/102/103pin

YES

HDMI Rx/Tx [IC721] is faulty.
Replace with a new device.

NO

Check for a short circuit in the pattern of the TMDS line of the HDMI Rx/Tx [IC721] from the HDMI input terminal.
If there is no problem, the HDMI Rx/Tx [IC721] is faulty.
Replace with a new device.

Recheck from check item (3.2.).
If it does not work, replace the PCB.

3-8. HDMI SW [MN864787] failure detection procedure

Checking operation between the HDMI (HDMI SW) device and the player

※ In order to check, connect the player to the HDMI terminal and configure the player as AVR source.
Check the sound output while turning on the player.

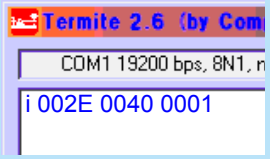
Checking the +5V/DDC status register (HDMI SW)

Check item(3-8.1.). Checking the 5V status register :
Send the following command from Termite.exe.

Send the command "i 002E 00FF 0001".

Move to the branch destination according to the value returned.

Example



HDMI IN1/In2/In3 "00"
(Detection of 5V is not OK.)

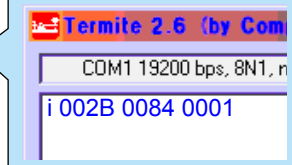
→ Go to check item (3-8.3.).

HDMI IN1 "44 or 40" HDMI IN2 "22 or 20" HDMI IN3 "11 or 10"
(Detection of 5V is OK)

Check item(3-8.2.). Checking the DDC status register :
Send the following command from Termite.exe.

Case of HDMI IN1
Send the command "i 002B 0084 0001".
Case of HDMI IN2
Send the command "i 002B 0054 0001".
Case of HDMI IN3
Send the command "i 002B 0054 0001".
Move to the branch destination according to the value returned.

Example



"00 or 04"
(Detection of DDC is not OK.)

→ Go to check item (3-8.4.).

"22"
(Detection of DDC is OK)

→ Go to check item (3-8.5.).

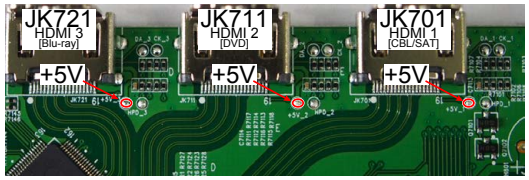
When the results of check item (3-8.1.) are "00"
(Detection of 5V is not OK)

↓

Check the +5V voltage. (HDMI SW)

↓

Check item(3-8.3.). Check the +5V voltage :
Does "**+5V**" at the following test point indicate 5 V? [JK701/JK711/JK721]



YES ↓

HDMI SW [IC701] is faulty.
Replace with a new device.

↓

Recheck from check item (3.2.).
If it does not work, replace the PCB.

NO ↓

Check for a short circuit in the 5 V line and the 5 V Switch IC [IC733].
If there is no problem, the HDMI SW [IC701] is faulty.
Replace with a new device.

↓

Recheck from check item (3.2.).
If it does not work, replace the PCB.

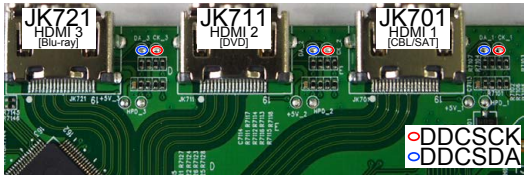
When the results of check item (3-8.2.) are "00 or 04"
(Detection of DDC is not OK.)

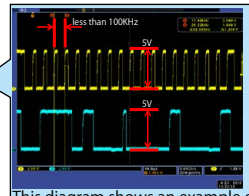
↓

Check the DDC line. (HDMI SW)

↓

Check item(3-8.4.). Check the DDC Line HPD line :
Are waveforms of "**DDCSCK**" and "**DDCSDA**" observed at the test point near the HDMI input terminal [JK701/JK711/JK721]?





This diagram shows an example of the DDC communication waveform.
-The high level voltage is 5V.
-The frequency of the DDC CLK is 100 KHz or less.
Check at each test point.
Voltage scale：2.0V/div
Time scale：40us/div

YES ↓

HDMI SW [IC701] is faulty.
Replace with a new device.

↓

Recheck from check item (3.2.).
If it does not work, replace the PCB.

NO ↓

Check for a short circuit in the DDC line.
If there is no problem, the HDMI SW [IC701] is faulty.
Replace with a new device.

↓

Recheck from check item (3.2.).
If it does not work, replace the PCB.

When the results of check item (3-8.2.) are "22"
(Detection of DDC is OK.)

Checking the TMDS status register (HDMI SW)

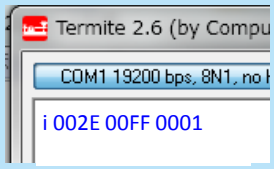
Check item(3-8.5.). Checking register of the TMDS CLK detection status register :
Send the following command from Termite.exe.

HDMI Rx/Tx
Send the command "i 002E 00FF 0001".

When the following value is returned, go to Yes.
HDMI IN1 "44" HDMI IN2 "22" HDMI IN3 "11"

When the following value is returned, go to No.
HDMI IN1 "00" HDMI IN2 "00" HDMI IN3 "00"

Example



NO

YES

Checking the TMDS status register (HDMI SW -> HDMI Rx/Tx)

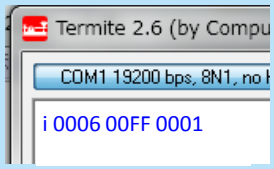
Check item(3-8.7.). Checking register of the TMDS CLK detection status register :
Send the following command from Termite.exe.

Send the command "i 0006 00FF 0001".

When the following value is returned, go to Yes.
"CC or 44"

When the following value is returned, go to No.
"other"

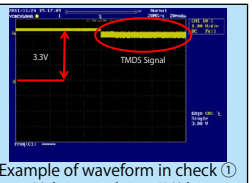
Example



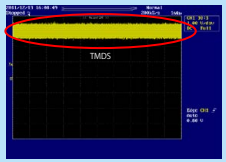
YES

Check item(3-8.8.). Checking the TMDS input waveform. :
Check the TMDS waveform at the following test point.
Is the waveform like the sample?

55/56/58/59/61/62/64/65pin



Example of waveform in check ①
Voltage scale : 1.0V/div
Time scale : 20ms/div



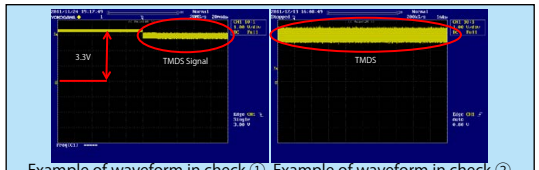
Example of waveform in check ②
Voltage scale : 1.0V/div
Time scale : 1s/div

YES

HDMI Rx/Tx [IC721] is faulty.
Replace with a new device.

NO

HDMI SW [IC701] is faulty.
Replace with a new device.



Example of waveform in check ①
Voltage scale : 1.0V/div
Time scale : 20ms/div

Example of waveform in check ②
Voltage scale : 1.0V/div
Time scale : 1s/div

Check item(3-8.6.). Checking the TMDS input waveform. :
Check the TMDS waveform at the following test point.
Is the waveform like the sample?

HDMI IN3
137/138/140/141/143/144/146/147pin

HDMI IN2
124/125/127/128/130/131/133/134pin

HDMI IN1
83/84/86/87/89/90/92/93pin

YES

HDMI SW [IC701] is faulty.
Replace with a new device.

NO

Check for a short circuit in the pattern of the TMDS line of the HDMI SW [IC701] from the HDMI input terminal.
If there is no problem, the HDMI SW [IC701] is faulty.
Replace with a new device.

Recheck from check item (3.2.).
If it does not work, replace the PCB.

3-9. OSD [ADV7623] failure detection procedure

Checking the TMDS status register (OSD -> HDMI Rx/Tx)

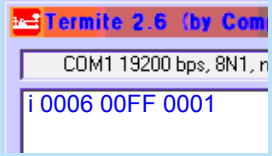
Check item(3-9.1.). Check the TMDS CLK detection status of the register.
Send the following command from Termite.exe.

Send the command "i 0006 00FF 0001".

When the following value is returned, go to Yes.
"C8"

When the following value is returned, go to No.
"other"

Example

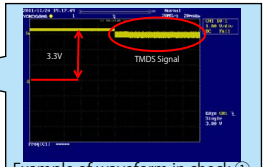


NO

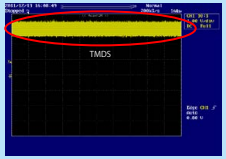
Check item(3-9.2.). Checking the TMDS input waveform. :
Check the TMDS waveform at the following test point.
Is the waveform like the sample?

HDMI SW [IC721]

42/43/45/46/48/49/51/52pin



Example of waveform in check ①
Voltage scale：1.0V/div
Time scale：20ms/div



Example of waveform in check ②
Voltage scale：1.0V/div
Time scale：1s/div

YES

Check the connection between the HDMI OUT terminal and the TV.
Go to check item (3-9.3.).

YES

HDMI Rx/Tx [IC721] is faulty.
Replace with a new device.

NO

OSD [IC731] is faulty.
Replace with a new device.

Recheck from check item (3.3.).
If it does not work, replace the PCB.

Check the connection between the HDMI OUT terminal and the TV.
Connect the HDMI OUT terminal and the TV, and then turn on the TV and check the following items.

↓

Checking the HPD/RXSENSE status register. (HDMI Tx -> Monitor)

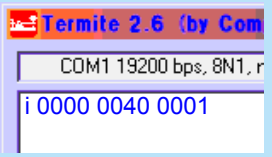
↓

Check item(3-9.3.). Check the HPD and RXSENSE register value of the HDMI TX device.：
Send the following command from Termite.exe.

Send the command "i 0000 0040 0001".

Move to the branch destination according to the value returned.

Example



"03"
(Detection of HPD is OK / Detection of RXSENSE is OK)
→ Go to check item (3-9.4.).

"01"
(Detection of HPD is OK / Detection of RXSENSE is not OK)
→ Go to check item (3-9.7.).

"02"
(Detection of HPD is not OK / Detection of RXSENSE is OK)
→ Go to check item (3-9.8.).

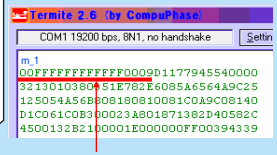
"00"
(Detection of HPD is not OK / Detection of RXSENSE is not OK)
→ Go to check item (3-9.9.).

When the results of check item (3-9.3.) are "03"
(Detection of HPD is OK / Detection of RXSENSE is OK)

Checking the EDID register. (Monitor)

Check item(3-9.4.). Check the Monitor EDID :
① Unplug the AC cord. Plug the AC cord into a power outlet.
② Send the transmission command "m_1" from Termit.exe.
Are the first eight bytes of the returned value "00FFFFFFFFFFFF00"?

Example

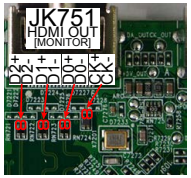


The first eight bytes are normally "00FFFFFFFFFFFF00".
*If the AVR and the TV are not connected via HDMI, the correct register value cannot be verified.

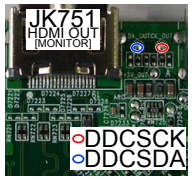
YES

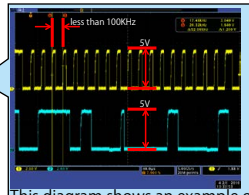
NO

Check item(3-9.5.). Checking the TMDS :
Check the TMDS waveform at the following test point.



Check item(3-9.6.). Check communication with the monitor :
Are waveforms of "**DDCSCK**" and "**DDCSDA**" observed at the test point near the HDMI output terminal [JK751]?





This diagram shows an example of the DDC communication waveform.
-The high level voltage is 5V.
-The frequency of the DDC CLK is 100 KHz or less.
Check at each test point.
Voltage scale：2.0V/div
Time scale：40us/div

YES

NO

Check for a short circuit in the TMDS line.
If there is no problem, the HDMI Rx/Tx (IC721) is faulty.
Replace with a new device.

HDMI Rx/Tx [IC721] is faulty.
Replace with a new device.

YES

NO

HDMI Rx/Tx [IC721] is faulty.
Replace with a new device.

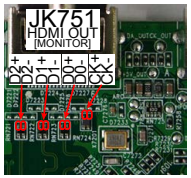
HDMI Rx/Tx [IC721] is faulty.
Replace with a new device.

Recheck from check item (3.3.).
If it does not work, replace the PCB.

When the results of check item (3-9.3.) are "01"
(Detection of HPD is OK / Detection of RXSENSE is not OK)

Check the RXSENSE. (Monitor)

Check item(3-9.7.). Checking the RXSENSE :
Does the test point of RXSENSE close to the HDMI output terminal [JK751] indicate the 3.3 V?



YES

NO

Check for a short circuit in the TMDS line.
If there is no problem, the HDMI Rx/Tx [IC721] is faulty.
Replace with a new device.

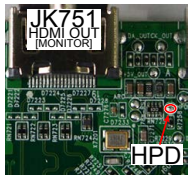
HDMI Rx/Tx [IC721] is faulty.
Replace with a new device.

Recheck from check item (3.3.).
If it does not work, replace the PCB.

When the results of check item (3-9.3.) are "02"
(Detection of HPD is not OK / Detection of RXSENSE is OK)

Check the HPD. (Monitor)

Check item(3-9.8.). Checking the HPD :
Does the voltage of HPD test point close to the HDMI output terminal [JK751] indicate "**Hi**" (3-5 V)?



YES

NO

Check for a short circuit in the HPD line.
If there is no problem, the HDMI Rx/Tx [IC721] is faulty.
Replace with a new device.

HDMI Rx/Tx [IC721] is faulty.
Replace with a new device.

Recheck from check item (3.3.).
If it does not work, replace the PCB.

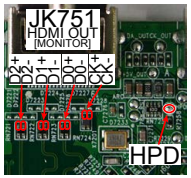
When the results of check item (3-9.3.) are "00"
(Detection of HPD is not OK / Detection of RXSENSE is not OK)

↓

Check the RXSENSE/HPD. (Monitor)

↓

Check item(3-9.9.). Checking the HPD and RXSENSE. :
Does the test point of RXSENSE close to the HDMI output terminal [JK751] indicate the 3.3 V?
Does the voltage of HPD test point close to the HDMI output terminal [JK751] indicate "**Hi**" (3-5 V)?



YES ↓ **NO**

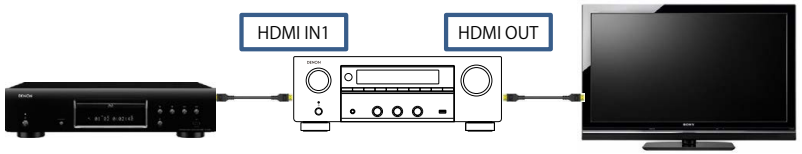
Check for a short circuit in the TMDS/HPD line.
If there is no problem, the HDMI Rx/Tx [IC721] is faulty.
Replace with a new device.

HDMI Rx/Tx [IC721] is faulty.
Replace with a new device.

↓

Recheck from check item (3.3.).
If it does not work, replace the PCB.

3-10. Fault detection procedure between HDMI Rx/Tx [MN864788] & OSD [ADV7623].



※ In order to check, connect the player to the HDMI terminal and configure the player and TV as AVR source.
Check the sound output while turning on the player and TV.

Checking the TMDS status register (Rx/Tx -> OSD)

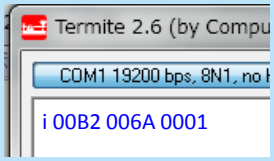
Check item(3-10.1.). Check the TMDS CLK detection status of the register.
Send the following command from Termite.exe.

Send the command "i 00B2 006A 0001".

When the following value is returned, go to Yes.
"11"

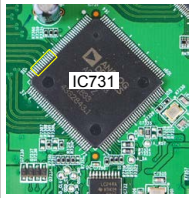
When the following value is returned, go to No.
"00"

Example

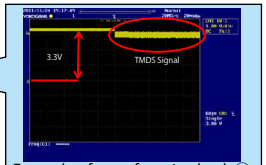


YES

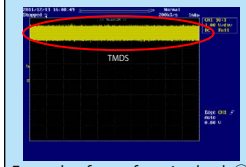
Check item(3-10.2.). Checking the TMDS input waveform. :
Check the TMDS waveform at the following test point.
Is the waveform like the sample?



23/24/26/27/29/30/32/33 pin



Example of waveform in check ①
Voltage scale：1.0V/div
Time scale：20ms/div



Example of waveform in check ②
Voltage scale：1.0V/div
Time scale：1s/div

YES

HDMI Rx/Tx [IC721] is faulty.
Replace with a new device.

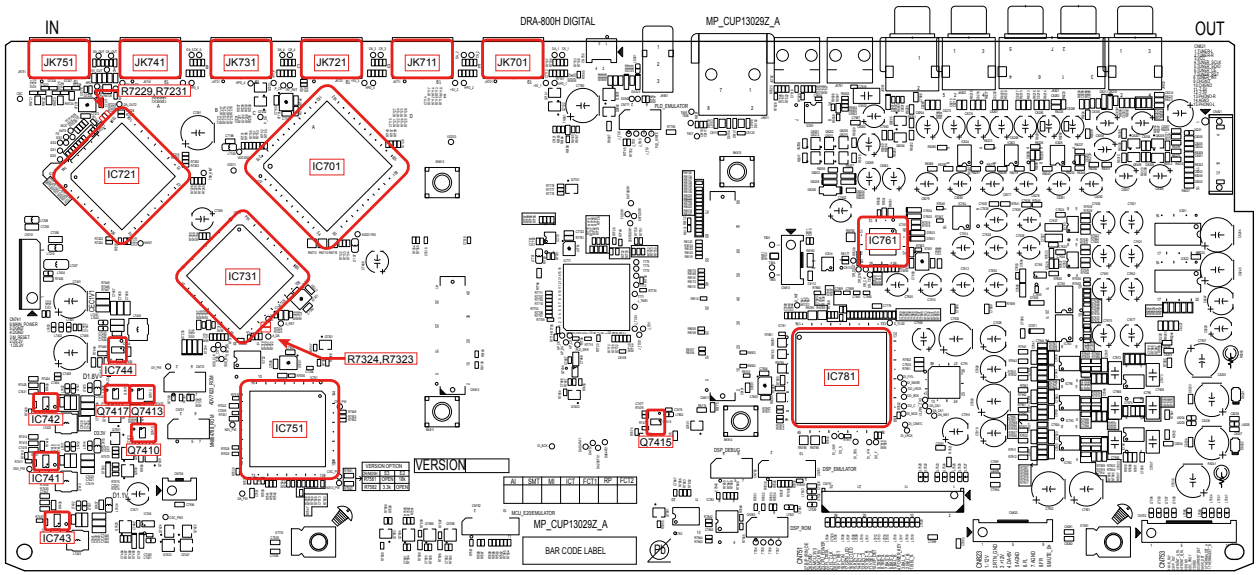
NO

OSD [IC731] is faulty.
Replace with a new device.

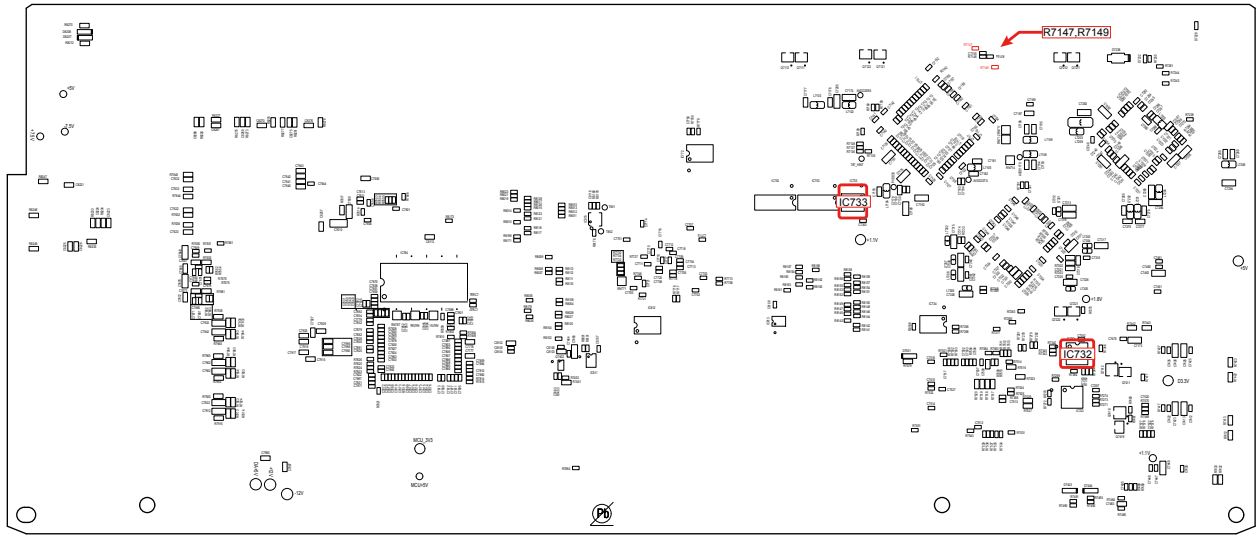
Recheck from check item (3.4.).
If it does not work, replace the PCB.

4. Device implementation location

DIGITAL (A SIDE)

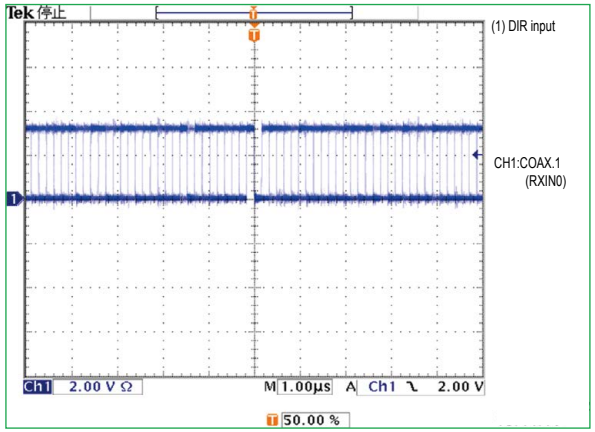


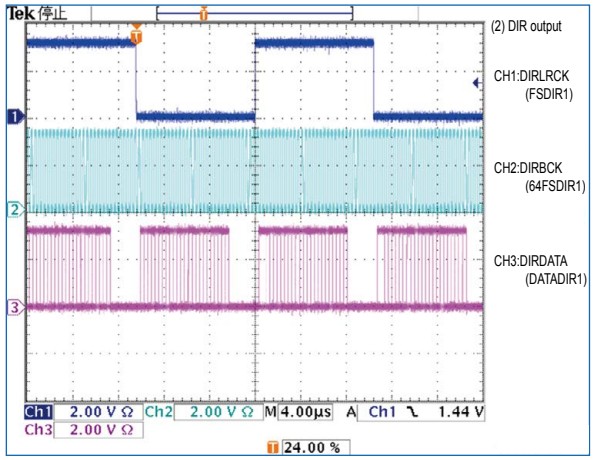
DIGITAL (B SIDE)

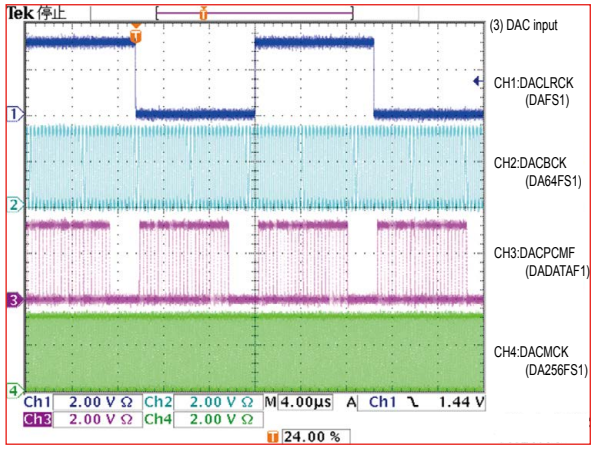


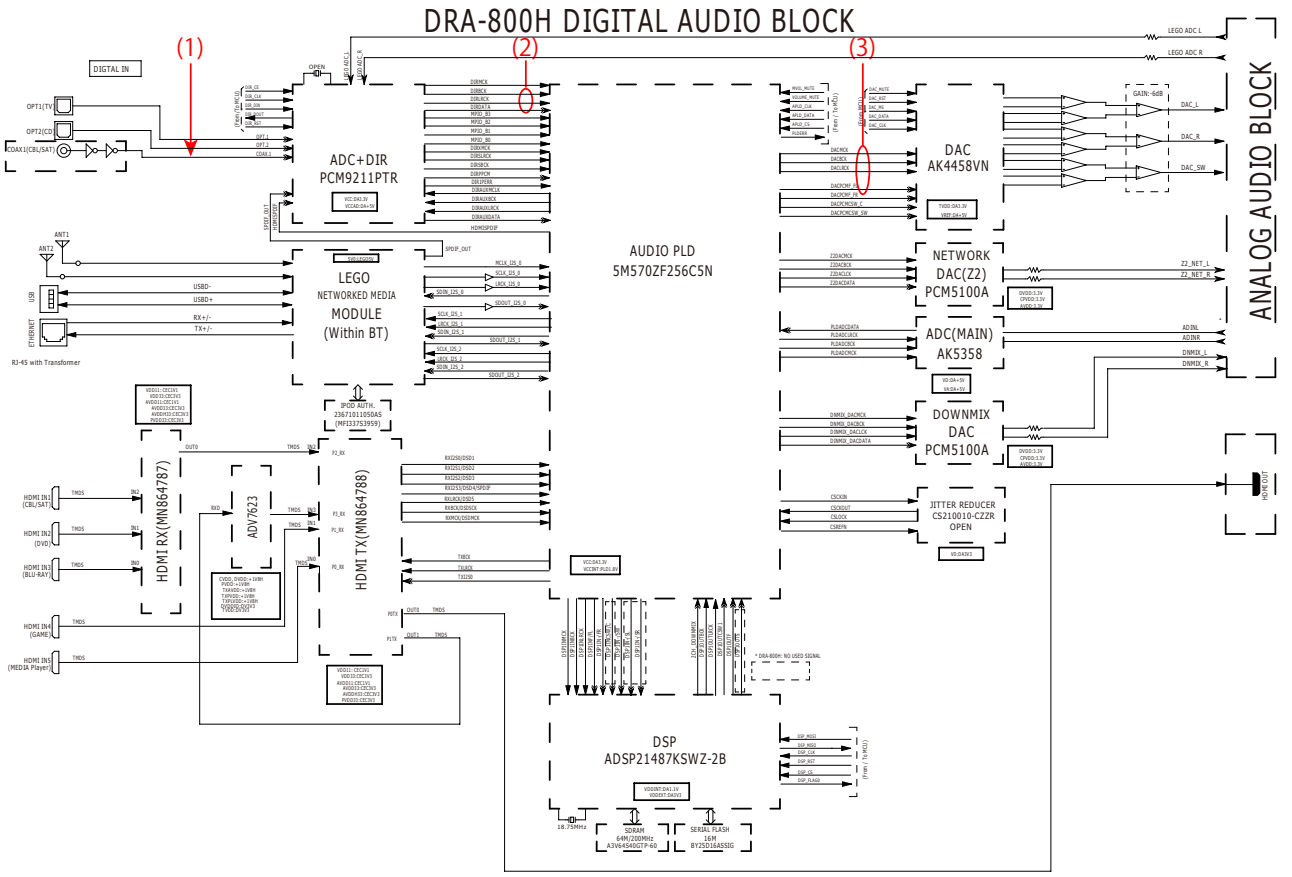
CLOCK FLOW & WAVE FORM IN DIGITAL BLOCK

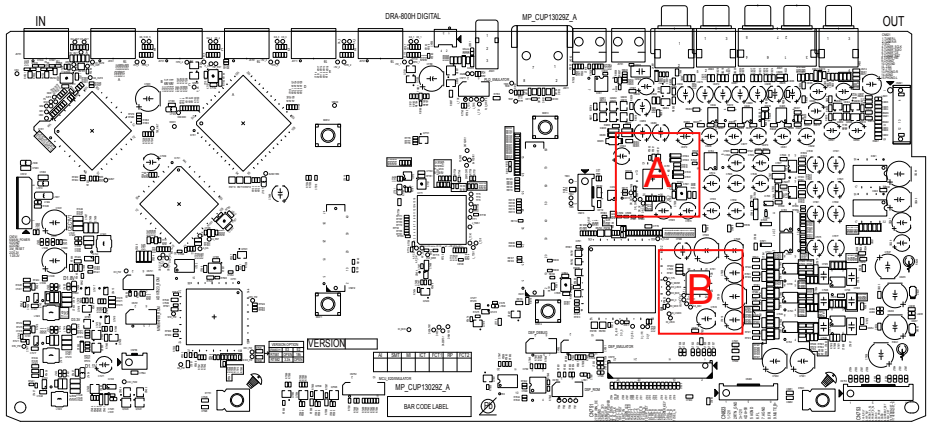
WAVE FORM



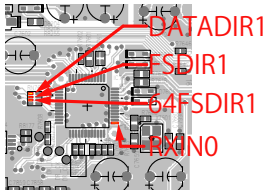




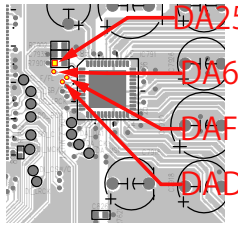




Detail A



Detail B



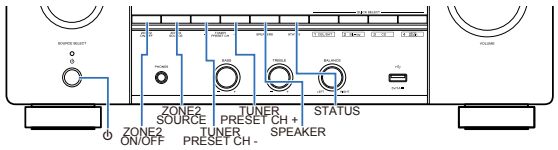
SPECIAL MODE

Special mode setting button

※ No. 1 - 4, 6 - 8 : While holding down buttons "**A**", "**B**" and "**C**" simultaneously, press the power button to turn on the power.
※ No. 5, 9, 10 : While the power is on, hold down buttons "**A**", "**B**", and "**C**" for at least 3 seconds .

No.	Mode	Button A	Button B	Button C	Descriptions
1	Version Display Mode (MCU / DSP Error Display)	SPEAKER	STATUS	-	Displays the version of firmware such as the MCU or DSP. Errors that have occurred are displayed. (See 1. Version Display Mode)
2	PANEL / REMOTE LOCK Selection Mode	ZONE2 SOURCE	TUNER PRESET CH +	-	Activates the unit in PANEL/REMOTE LOCK selection mode to enable PANEL LOCK and Remote Lock On/Off to be set. (See 2. PANEL / REMOTE LOCK Selection Mode)
3	Selecting the Mode for Service-related	ZONE2 SOURCE	SPEAKER	STATUS	A selection mode for entering service-related modes. Service-related modes : No. 3-1 - No. 3-5 (See 3-1. Selecting the Mode for Service-related)
3-1	Check the Video/Audio path Mode	↑	↑	↑	This is a special mode for service confirmation used during repair work to simplify the confirmation work for the Audio channel / video channel. (See Service Path Check Mode)
3-2	Protection history display mode	↑	↑	↑	Displays the latest occurred protection history. (See 3-2. Protection History Display Mode)
3-3	Operation Info Mode	↑	↑	↑	Displays the accumulated operating time of the unit, the number of times the power was switched on, and the number of occurrences of each protection. (See 3-3. Operation Info Mode)
3-4	TUNER STEP Mode (E3 model only)	↑	↑	↑	Enables the FM/AM tuner reception frequency step to be changed. (See 3-4. TUNER STEP mode (E3 only))
3-5	Remote ID Setup Mode	↑	↑	↑	If there are multiple DENON AV receivers in the same area, this mode prevents other AV receivers from being operated concurrently with this device. (See 3-5. Remote ID Setup Mode)
4	Protection Pass Mode	TUNER PRESET CH +	ZONE2 SOURCE	STATUS	Enables the power to be turned on when protection detection is disabled. (See 4. Protection Pass Mode)
5	Network Initialization Mode	TUNER PRESET CH +	ZONE2 ON/OFF	-	Network module backup data is initialized. (See 5. Network Initialization Mode)
6	User Initialization Mode	TUNER PRESET CH -	TUNER PRESET CH +	-	Initialize the backup data for the MCU and network module. (Settings for the Installer are not initialized.)
7	Factory Initialization Mode	TUNER PRESET CH -	SPEAKER	-	Initialize the backup data only for MCU. (Settings for the Installer are initialized) (Network function settings are not initialized.) (See Initializing this Unit)
8	Clearing of Operation Info	TUNER PRESET CH +	STATUS	-	Clear the accumulated operating time of the unit, the number of times the power was switched on, and the number of occurrences of each protection. (See 6. Clearing of Operation Info)
9	HDMI Diagnostics Mode	TUNER PRESET CH -	ZONE2 SOURCE		This mode is used to identify and solve the cause when there is a connectivity issue with this unit and an HDMI device. For details on the operating methods and diagnosis procedures, see the HDMI Diagnostics and Troubleshooting guide issued on SDI.
10	Log Capture feature	TUNER PRESET CH +	ZONE2 SOURCE	STATUS	Acquires the Network Module log. As the Network Module reboots, the log is deleted. Make sure to obtain the log before turning off the unit's power. (See 7. Log Capture feature)

NOT : If the volume indicator displays " -88.8 ", the unit has entered the developer's special mode. In this case, the RS-232C communication is not available.
To release this special mode, press and hold the "**ZONE2 SOURCE**" and "**TUNER PRESET CH +**" buttons for 3 seconds or more while the power is ON. When the volume indicator returns to the normal display, the RS-232C communication is available.



1. Version Display Mode

1.1. Actions

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

1.2. Starting up

While holding down buttons "**SPEAKER**" and "**STATUS**" simultaneously, press the power button to turn on the power.
then press the "**STATUS**" button to display the information in section 1.3 on the display.
※ The version list is also displayed on GUI while the version is displayed on the display.

1.3. Display Order

Error information(See "1.4. Error display") → ① Model destination information → ② Serial Number → ③ Firmware Package → ④ MCU → ⑤ MCU 1st Boot Loader → ⑥ DSP → ⑦ Audio PLD → ⑧ GUI SFLASH → ⑨ PIMGI → ⑩ Hybrid GUI → ⑪ HEOS Version → ⑫ HEOS Build → ⑬ HEOS Module → ⑭ HEOS Configuration → ⑮ HEOS Locale → ⑯ Restore Version → ⑰ Ether Mac Address → ⑱ WiFi Mac Address → ⑲ BT Mac Address

①Model destination information :

```
DRA-@@@@@   \\\
```

@ : Model name (800H)
\ : Region (E3, E2,E1C, JP)

②Serial Number :

```
SN%%**********
```

% : SKU code

③Firmware Package :

```
Package     :****
```

④MCU :

```
M:**************
```

⑤MCU 1st Boot Loader :

```
Main FBL :**.**
```

⑥DSP ROM :

```
DSP         :**.**
```

⑦Audio PLD :

```
A.PLD :********
```

⑧GUI SFLASH :

```
GUI    :@@$\****
```

@ : Model code
$: Brand code (Non=0, De=1, Mz=2, Mc=3)
\ : Region code (E3=1, E2=2, E1C=5, JP=4, ALL=0)
* : version

⑨PIMG :

```
PIMG   :********
```

⑩Hybrid GUI :

```
HIMG   :********
```

⑪HEOS Version :

```
HEOS Version
```

↓"Press "**STATUS**" button.

```
*.***.***
```

⑫HEOS Build :

```
HEOS Build
```

↓"Press "**STATUS**" button.

```
*******
```

⑬HEOS Module :

```
HEOS Module
```

↓"Press "**STATUS**" button.

```
***
```

⑭HEOS Config :

```
HEOS Config
```

↓"Press "**STATUS**" button.

```
Development
Production
```

⑮HEOS Locale :

```
HEOS Locale
```

↓"Press "**STATUS**" button.

```
**_**
```

⑯Restore Version :

```
RSTR
```

↓"Press "**STATUS**" button.

```
************
```

⑰Ether MAC Address :

```
*Ether MAC
```

↓"Press "**STATUS**" button.

```
******-******
```

⑱Wi-Fi MAC Address :

```
*Wi-Fi MAC
```

↓"Press "**STATUS**" button.

```
******-******
```

⑲Bluetooth MAC Address :

```
*BT MAC Address
```

↓"Press "**STATUS**" button.

```
******-******
```

1.4. Error display

See the table below for descriptions of the displayed errors and countermeasures for these.
If multiple errors occur, only one item is displayed.
The priority order is ②, ③, ④, ①.

Condition	States	Display	TROUBLE SHOOTING
① Firm Check Error	The model name, brand name and region information written in the firmware are compared to the region settings in the PCB. This error is displayed if the information does not match. " ▲ " is not displayed if firmware information is correct.	FIRM ERROR ▲M:********** ▲Main FBL :**.** ▲DSP :**.** ▲A.PLD :******** ▲PIMG :********	•Check the resistor for setting the region [R7581, R7582, DIGITAL PCB]. •Write the firmware for the correct region. **PIMG Error indication** •Check the circuits around the Logic [IC722] and SFROM [IC723]. If there appear to be no problems, [IC722] or [IC723] is faulty.
② DIR Error	This error is displayed if there is no response from the DIR.	DIR ERROR 01	•Check the DIR [IC761, DIGITAL PCB] and surrounding circuits.
③ DSP Error	Boot error 1 (After reset the DSP, DSP_Flag0 port is "**Low**")	DSP ERROR 01	•Check the DSP [IC781, DIGITAL PCB] and surrounding circuits.
	Boot error 2 (After reset the DSP, DSP initialization is not completed)	DSP ERROR 02	
	(Unused)	DSP ERROR 03	
	Command error 1 (After sending the command to the DSP, DSP_Flag0 port is "**Low**".)	DSP ERROR 04	
	Command error 2 (After sending the command to the DSP, MCU received "**COMMAND ERROR**".)	DSP ERROR 05	
	Command error 3 (After sending the command to the DSP, MCU did not receive "**COMMAND SUCCESS**".)	DSP ERROR 06	
	IDL error 1 (Before receiving IDL, "**COMMAND BYTE**" is not cleared.)	DSP ERROR 07	
	IDL error 2 (MCU received "**IDL SERIOUS ERROR**".)	DSP ERROR 08	
	SPI communication error	DSP ERROR 09	
④ BACKUP Error	Error occurred in BACKUP. it is an error of the check sum.	BACKUP ERROR	

1.5. Version Display in the Setup Menu

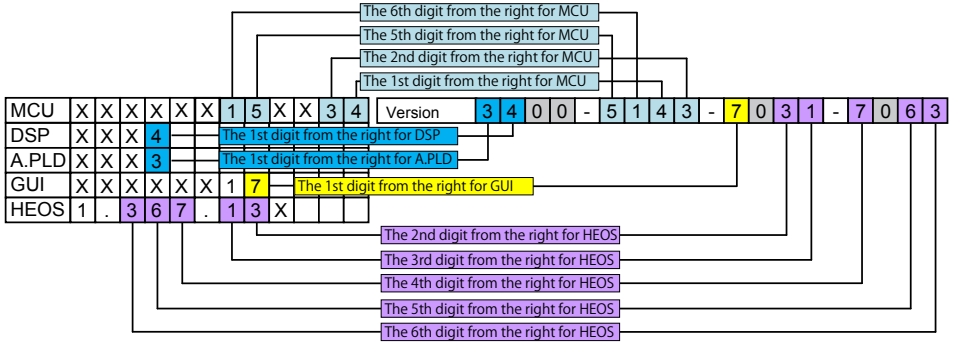
Follow the steps below to display the firmware information.

(1) Press the "**SETUP**" button on the remote control.
(2) Select "**General** - **Information** - **Firmware**".

The version information is displayed as a 16-digit number as shown in the screenshot below.

GUI Image

This 16-digit number comprises a part of the version number of each device and module.
Numerics and version numbers correspond as shown below.



※ The firmware version numbers and this 16-digit version information are written in the Service Information.
※ Replace as follows for the 5th to 7th digits of HEOS version.

X.XXX.X → X.XXX.00X
X.XXX.XX → X.XXX.0XX
X.XXX.XXX → X.XXX.XXX

2. PANEL / REMOTE LOCK Selection Mode

2.1. Actions

Switch the PANEL LOCK and REMOTE LOCK modes between on and off.

- PANEL LOCK Mode (with Volume)
  Disables reception from all keys and encoders on the front panel except the power button (including the volume).
- PANEL LOCK Mode (without Volume)
  Disables reception from all keys and encoders on the front panel except the power button and volume encoder.
- PANEL LOCK mode is turned off

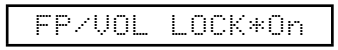
2.2. Starting up

While holding down buttons "**ZONE2 SOURCE**" and "**TUNER PRESET CH +**" simultaneously, press the power button to turn on the power.
Select the desired mode using the "**TUNER PRESET +/-**" button, then press the "**STATUS**" button to confirm.

2.3. Displaying and Selecting Each Mode

The information shown on the display switches each time the "**TUNER PRESET +/-**" button is pressed.
Press the "**STATUS**" button to set the currently displayed mode and restart the device.
The setting with "*" is selected for each mode.

①



The buttons on the unit and the master volume knob does not function.

②

The buttons on the unit does not function.

③

The PANEL LOCK mode is turned off.

④

The device cannot be operated by the remote control.

⑤

The REMOTE LOCK mode is turned off.

3-1. Selecting the Mode for Service-related

3-1.1. Actions

Select diagnostic mode (service path check mode), protection history display mode, 232C standby clear mode, Operation Info mode, TUNER STEP mode or Remote ID Setup Mode.

3-1.2. Starting up

While holding down buttons "**ZONE2 SOURCE**", "**SPEAKER**" and "**STATUS**" simultaneously, press the power button to turn on the power.
Select the desired mode using the "**TUNER PRESET +/-**" button, then press the "**STATUS**" button to confirm.

3-1.3. Displaying and Selecting Each Mode

The information shown on the display switches each time the "**TUNER PRESET +**" button is pressed.
Press the "**STATUS**" button to set the currently displayed mode and restart the device.

①

Service Path Check Mode：See "DIAGNOSTIC MODE"
The Video and Audio paths can be checked.
This function is convenient for confirming problem paths in the product and checking the paths after repairing.

↓

②

The protection history can be checked.

↓

③

Operation Info for the unit can be checked.

↓

④E3 model only

Enables the reception frequency STEP of the ANALOG TUNER to be changed.

↓

⑤

This function is for operating only the desired AV receiver.

3-1.4. Canceling the selected mode

Press the power button to turn off the power.

3-2. Protection History Display Mode

3-2.1. Actions

This mode enables the unit to record and display the event when the THERMAL, ASO or DC protection is activated.
If protections have been activated multiple times, the latest protection operation is recorded.

3-2.2. Starting up

While holding down buttons "**ZONE2 SOURCE**", "**SPEAKER**" and "**STATUS**" simultaneously, press the power button to turn on the power.
Select the "**2. PROTECTION**" using the "**TUNER PRESET +/-**" button, then press the "**STATUS**" button then to confirm.

3-2.3. Protection information and displays

- Press the "**STATUS**" button in Protection History Display Mode.
- The protection history can be checked.

(1) If no protections has occurred.

(2) ASO (if the last protection is ASO)

Cause A short circuit occurred between the speaker terminals, or speakers with an impedance outside the rating were connected.
Note : Short circuits in speaker terminals or speakers can be identified.
If the power is turned on in the abnormal state, protection is activated after around 6 seconds and the power is turned off.

(3) DC (if the last protection is DC)

Cause : DC output of the power amplifier is abnormal.
If the power is turned on in the abnormal state, protection is activated after around 6 seconds and the power is turned off.

(4) THERMAL (if the last protection is THERMAL(A) or THERMAL(B))

Cause : Abnormal heat sink temperature.
If the power is turned on in the abnormal state, protection is activated after around 6 seconds and the power is turned off.

(5) Case of CURRENT (when the last protection incident is CURRENT protection)

Cause : An over current flowed in power amp.
If the power is turned on in the abnormal state, protection is activated after around 90 seconds and the power is turned off.

Caution : These protections may also be activated due to other factors such as disconnection of connectors or operations around the MCU.
After viewing the above protection history, press the "**STATUS**" button to return to the normal display.

3-2.4. Clearing the Protection History

There are two ways to clear the protection history.

(1) Activate Protection History Display Mode. Press the "**STATUS**" button to display the protection history.

Press and hold the "**SPEAKER**" button for 3 seconds.

The above is displayed and protection history is cleared.

(2) Initialize this unit. (See "POST-SERVICE PRECAUTIONS")

※ Use the method in **3-2.4. (1)** if you do not want to erase your settings from this unit.

Warning Displays by POWER LED

If the power is turned Off while a protection is being detected, the POWER LED flashes in red to warn you depending on the protection status as follows.

(1) ASO/DC protection: Flashes at 0.5-second intervals (0.25 seconds lit, 0.25 seconds unlit)
(2) THERMAL(A/B) protection: Flashes at 2-second intervals (1 seconds lit, 1 seconds unlit)
(3) CURRENT protection: Flashes at 4-second intervals (2 seconds lit, 2 seconds unlit)

3-3. Operation Info Mode

3-3.1. Actions

This mode enables the unit to display the accumulated operating time, power On count and each protection count.

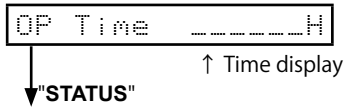
3-3.2. Starting up

While holding down buttons "**ZONE2 SOURCE**", "**SPEAKER**" and "**STATUS**" simultaneously, press the power button to turn on the power.
Select the "**4. OP INFO**" using the "**TUNER PRESET +/-**" button, then press the "**STATUS**" button then to confirm.

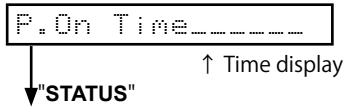
3-3.3. Operations

Press the "**STATUS**" button after starting up this device in Operation Info mode.
The following information is displayed in the following order.

(1) Accumulated operating time

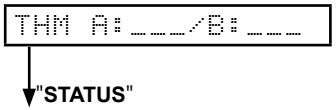


(2) Power On time

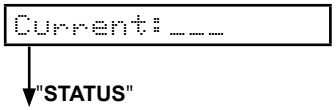


(3) DC / ASO Protection count

(4) Thermal Protection (A/B) count



(5) Current Protection count



(Returns to normal display)

3-4. TUNER STEP mode (E3 only)

3-4.1. Actions

This is a special mode that enables the reception frequency STEP of the FM/AM TUNER to be changed.

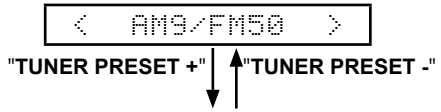
3-4.2. Starting up

While holding down buttons "**ZONE2 SOURCE**", "**SPEAKER**" and "**STATUS**" simultaneously, press the power button to turn on the power.
Select the "**5. TUNER FRQ SET**" using the "**TUNER PRESET +/-**" button, then press the "**STATUS**" button then to confirm.

3-4.3. Displays

Start up this unit in TUNER STEP mode, select the desired option using the "**TUNER PRESET +/-**" button, then enter using the "**STATUS**" button.
The following information is displayed in the following order.

(1) AM9 kHz / FM50 kHz is selected



(2) AM10 kHz / FM200 kHz is selected

(3) Press the power button to turn off the power.
(4) Press the power button to turn on the power.

3-5. Remote ID Setup Mode

3-5.1. Actions

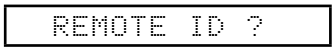
This function allows only the desired AV receiver to be operated if multiple DENON AV receivers are used in the same room.

3-5.2. Starting up

While holding down buttons "**ZONE2 SOURCE**", "**SPEAKER**" and "**STATUS**" simultaneously, press the power button to turn on the power.
Select the "**6. REMOTE ID**" using the "**TUNER PRESET +/-**" button, then press the "**STATUS**" button then to confirm.

3-5.3. Operations

(1) When Remote ID Setup mode is activated, the following message is displayed.



(2) Press the desired "**QUICK SELECT 1 - 4**" button.

Button	Display
QUICK SELECT 1	REMOTE ID 1
QUICK SELECT 2	REMOTE ID 2
QUICK SELECT 3	REMOTE ID 3
QUICK SELECT 4	REMOTE ID 4

(3) Press the power button to turn off the power.
(4) Press the power button to turn on the power.

※ Only "**QUICK SELECT 1 - 4**" and the POWER button on the unit can be used in Remote ID Setup Mode.
※ The remote ID of the remote control supplied with this unit cannot be changed.

NOTE :
If the ID of the unit and remote control do not match, "**AVAMP**∗" appears on the display of the unit when the remote control is used
(∗ : own remote control ID).

4. Protection Pass Mode

4.1. Actions

- This mode allows the power to be turned on without activating protections.
- This mode functions in the same way as normal power-on, except that protections are not activated.
- When using the protection pass mode, do not connect speakers to the speaker terminals.

4.2. Operations

While holding down buttons "**TUNER PRESET CH +**", "**ZONE2 SOURCE**" and "**STATUS**" simultaneously, press the power button to turn on the power.

The device returns to the normal display message after the following is displayed.

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

5. Network Initialization Mode

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

5.2. Operations

When the power is on and the input source is HEOS Music, press and hold the "**TUNER PRESET CH +**" and "**ZONE2 ON/OFF**" buttons for more than 3 seconds.

Initializing Display

Complete Display

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

6. Clearing of Operation Info

6.1. Actions

• Displays the accumulated operating time of the unit, the number of times the power was switched on, and the number of occurrences of each protection.

6.2. Operations

Remove all input/output terminals and the AC plug.
Connect the AC plug again and place the product in standby mode.
While holding down buttons "**TUNER PRESET CH +**" and "**STATUS**" simultaneously, press the power button to turn on the power.

When "**PRODUCT MODE**" appears on the display, release the button and press the button "**power**" to place the product in standby mode.

7. Log Capture feature

7.1. Actions

- 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.

7.2. Starting up

While the power is On, hold down buttons "**TUNER PRESET CH +**", "**ZONE2 SOURCE**" and "**STATUS**" for at least 3 seconds.

7.2.1. 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.

7.2.2. 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 "**XXXXX**" and "**Push ENTER**" are displayed until the "**Enter**" or "**Back**" button of RC is pressed.

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

DIAGNOSTIC MODE

Service Path Check Mode

1.1. Actions

This function is convenient for confirming problem paths in the product and checking the paths after repairing.
The video system and audio system operation paths can be checked.
The backup data is not rewritten.

1.2. Starting up

While holding down buttons "**ZONE2 SOURCE**", "**SPEAKER**" and "**STATUS**" simultaneously, press the power button to turn on the power.
Select the "**1. SERVICE CHECK**" using the "**TUNER PRESET +/-**" button, then press the "**STATUS**" button then to confirm.
The "**TUNED**", "**STEREO**" and "**RDS**" segments are lit in this mode.

1.3. Canceling diagnostic mode

Press the power button to turn off the power.

1.4. Selecting items to check

Press the ① button to switch between video items and audio items.
Press the ② or ③ button to select the previous or next item.

	The unit			Remote control unit		
Actions	①	②	③	①	②	③
	Audio ⇔ Video	PREVIOUS	NEXT	Audio ⇔ Video	PREVIOUS	NEXT
Button	SPEAKER	QUICK SELECT 1	QUICK SELECT 2	SLEEP	CURSOR ◄	CURSOR ►

1.5. Audio system confirmation items

See the block diagram fig.AXXth.

Paths to be confirmed			Display	Settings	What to confirm
1	Analog	fig.A01	A01:ANALOG PASS	Input Source : CBL/SAT Input Mode : Analog (fixed) Sound mode : DIRECT MAIN ZONE : On ZONE2 : Off	• Analog input ⇒ Speaker output (Left/Right A) (※ The input source can be switched to any source except CBL/SAT.)
2	DIGITAL (MAIN)	fig.A02a fig.A02b	A02:DIGITAL	Input Source : CBL/SAT Input Mode : DIGITAL (fixed) Sound mode : STEREO MAIN ZONE : On ZONE2 : Off	• Digital input ⇒ Speaker output (Left/Right A) • Digital input ⇒ Pre OUT output (Subwoofer) (※ The input source can be switched to any source except CBL/SAT.)
3	DIGITAL (ZONE2)	fig.A03a fig.A03b	A03:DIGITAL-Z2	Input Source : HEOS Music Input Mode : Auto Sound mode : STEREO Z2 Source : HEOS Music MAIN ZONE : On ZONE2 : On	• Digital(PCM) input ⇒ Pre OUT output (ZONE2 L/R) (※ Only HEOS Music can be set as the input source.)
4	HDMI	fig.A04a fig.A04b	A05:HDMI	Input Source : CBL/SAT Input Mode : HDMI (fixed) Sound mode : STEREO MAIN ZONE : On ZONE2 : Off	• HDMI input ⇒ Speaker output (Left/Right A) (※ The input source can be switched to any source except CBL/SAT.)

Paths to be confirmed			Display	Settings	What to confirm
5	Analog AD (MAIN ZONE)	fig.A05a fig.A05b	A06:AD	Input Source : CBL/SAT Input Mode : Analog (fixed) Sound mode : STEREO Vol 60(-20dB) MAIN ZONE : On ZONE2 : Off	• Analog input ⇒ Speaker output (Front L/R, Center, Surround L/R) • Analog input ⇒ SW(20Hz) (※ The input source can be switched to any source except CBL/SAT.) (※ Volume 60 is the value when Absolute settings are used. The value is -20 when Relative settings are used)
6	Analog ZONE2	fig.A06	A07:ANALOG-Z2	Input Source : CBL/SAT Input Mode : Auto Sound mode : STEREO Z2 Source : CBL/SAT(select a setting other than Source) Vol 60(-20dB) MAIN ZONE : On ZONE2 : On	• Analog input ⇒ Pre OUT output (ZONE2 L/R) (※ Source for ZONE2 does not change even when Source for the main zone is changed.) (※ The input source for ZONE2 can be switched to any source except CBL or SAT.) (※ Volume 60 is the value when Absolute settings are used. The value is -20 when Relative settings are used)
7	Speaker B	fig.A07	A12:SPEAKER-B	Input Source : CBL/SAT Input Mode : Analog (fixed) Sound mode : DIRECT Speaker Select : B MAIN ZONE : On ZONE2 : Off	• Analog input ⇒ Speaker output (Left/Right B) (※ The input source can be switched to any source except CBL/SAT.)
8	ZONE2 Downmix	fig.A08a fig.A08b	A22:Z2 Downmix	Input Source : CBL/SAT Input Mode : Auto ZONE2 Source : Source ZONE2 Vol : 60 MAIN ZONE : On ZONE2 : On	• Analog input ⇒ Pre OUT output (ZONE2 L/R) (※ The input source can be switched to any source except CBL/SAT.) (Leave the ZONE2 Source as Source.) (※ Volume 60 is the value when Absolute settings are used. The value is -20 when Relative settings are used)

1.6. Confirmation items for the video system

See the block diagram fig.VXXth.

Paths to be confirmed			Display	Settings	What to confirm
1	HDMI pass	fig.V01	V03:HDMI PASS	Input Source : CBL/SAT MAIN ZONE : On ZONE2 : Off	• HDMI input ⇒ HDMI output (MAIN) (※ The input source can be switched to any source except CBL/SAT.)
2	HDMI CEC	fig.V02	V04:HDMI CEC	Input Source : CBL/SAT HDMI Control : On MAIN ZONE : On ZONE2 : Off	• Check that the stereo receiver enters standby when the TV is set to Standby via HDMI OUT. (※ The input source can be switched to any source except CBL/SAT.) • The ARC path can also be checked (check this using the TV input source).
3	HDMI Audio (Audio : Stereo Receiver)	fig.A04a fig.A04b	V05:H.AUDIO-Amp	Input Source : CBL/SAT HDMI Control : Off HDMI Audio : Stereo Receiver (if checking the audio output from Stereo Receiver)	• HDMI input (PCM) ⇒ Speaker output (※ The input source can be switched to any source except CBL/SAT.)
4	HDMI Audio (Audio : TV)	fig.V03	V06:H.AUDIO-TV	HDMI Audio : TV (if checking the audio output from TV)	• HDMI input (PCM) ⇒ HDMI output (audio output from connected TV) (※ The input source can be switched to any source except CBL/SAT.)
5	GUI	fig.V04	V07:GUI MENU ON	Input Source : CBL/SAT Setup Menu : On MAIN ZONE : On ZONE2 : Off	• GUI display ⇒ HDMI output. (※ The input source can be switched to any source except CBL/SAT.)

fig.A01

DRA-800H ANALOG AUDIO BLOCK

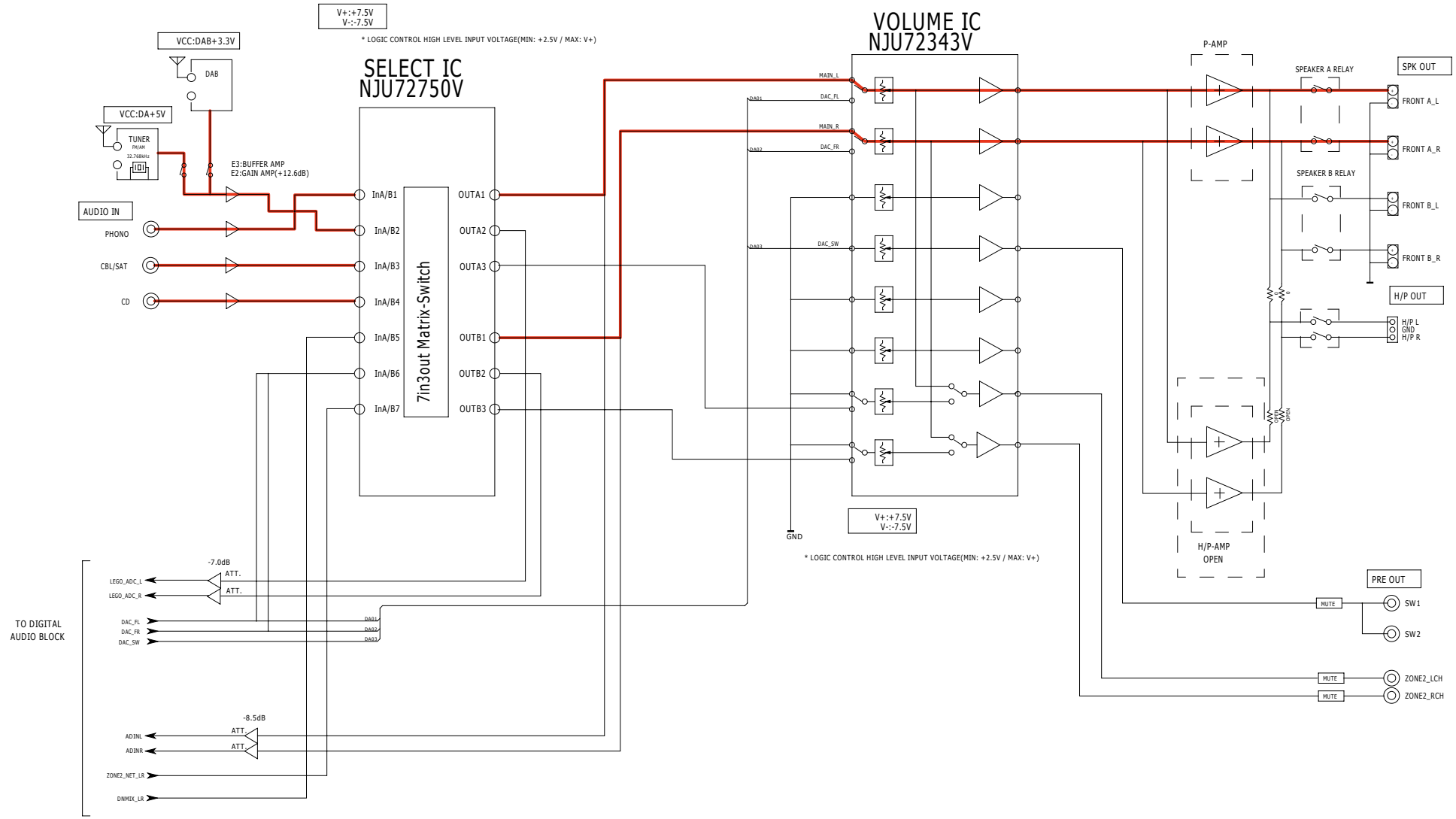


fig.A02a

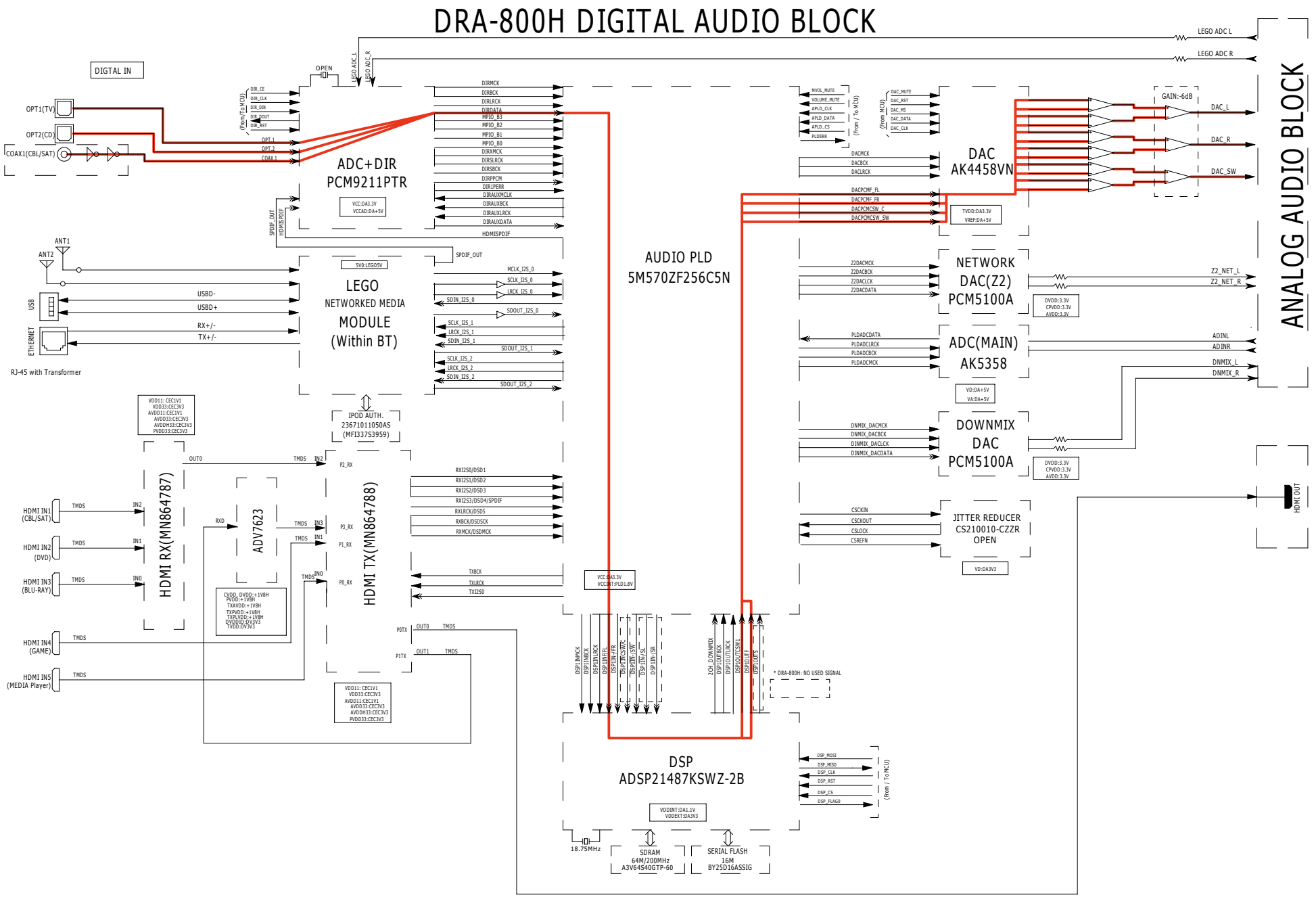

DRA-800H DIGITAL AUDIO BLOCK
DIGTAL IN
OPT1(TV)
OPT2(CD)
COAX1(CBL/SAT)
OPEN
ADC+DIR
PCM9211PTR
LEGO ADC L
LEGO ADC R
ANT1
ANT2
USB
ETHERNET
USBD-
USBD+
RX+/-
TX+/-
RJ-45 with Transformer
LEGO
NETWORKED MEDIA
MODULE
(Within BT)
IPOD AUTH.
2367101050AS
(MFI33753959)
AUDIO PLD
5M570ZF256C5N
HDMI RX(MN864787)
ADV7623
HDMI TX(MN864788)
HDMI IN1
(CBL/SAT)
HDMI IN2
(DVD)
HDMI IN3
(BLU-RAY)
HDMI IN4
(GAME)
HDMI IN5
(MEDIA Player)
DSP
ADSP21487KSWZ-2B
18.75MHz
SDRAM
64M/200MHz
A3V64S40GTP-60
SERIAL FLASH
16M
BY25D16ASSIG
DAC
AK4458VN
NETWORK
DAC(Z2)
PCM5100A
ADC(MAIN)
AK5358
DOWNMIX
DAC
PCM5100A
JITTER REDUCER
CS210010-CZZR
OPEN
GAIN:-6dB
DAC_L
DAC_R
DAC_SW
Z2_NET_L
Z2_NET_R
ADINL
ADINR
DNMIX_L
DNMIX_R
HDMI OUT
ANALOG AUDIO BLOCK
* DRA-800H: NO USED SIGNAL

fig.A02b

DRA-800H ANALOG AUDIO BLOCK

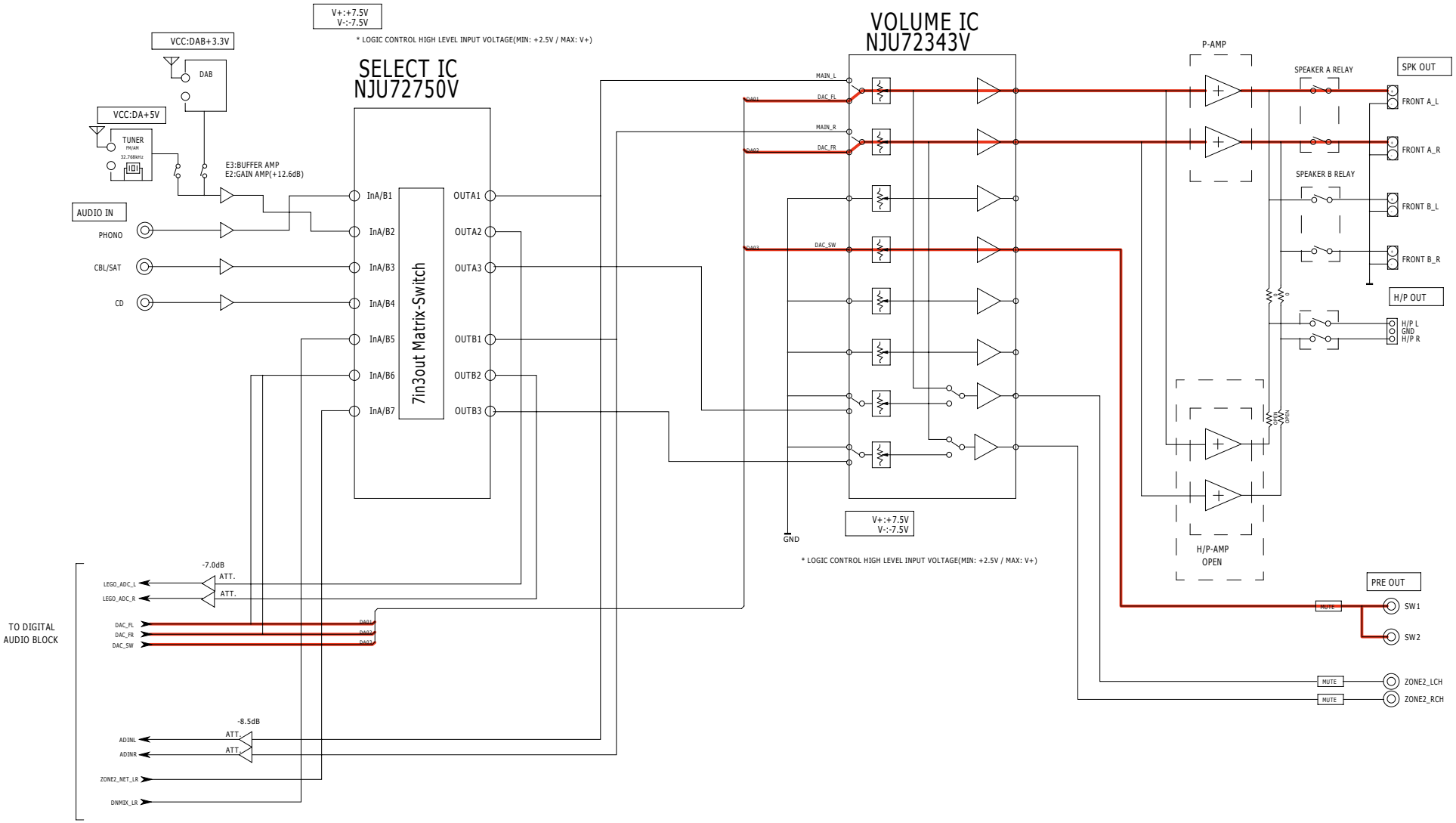


fig.A03a

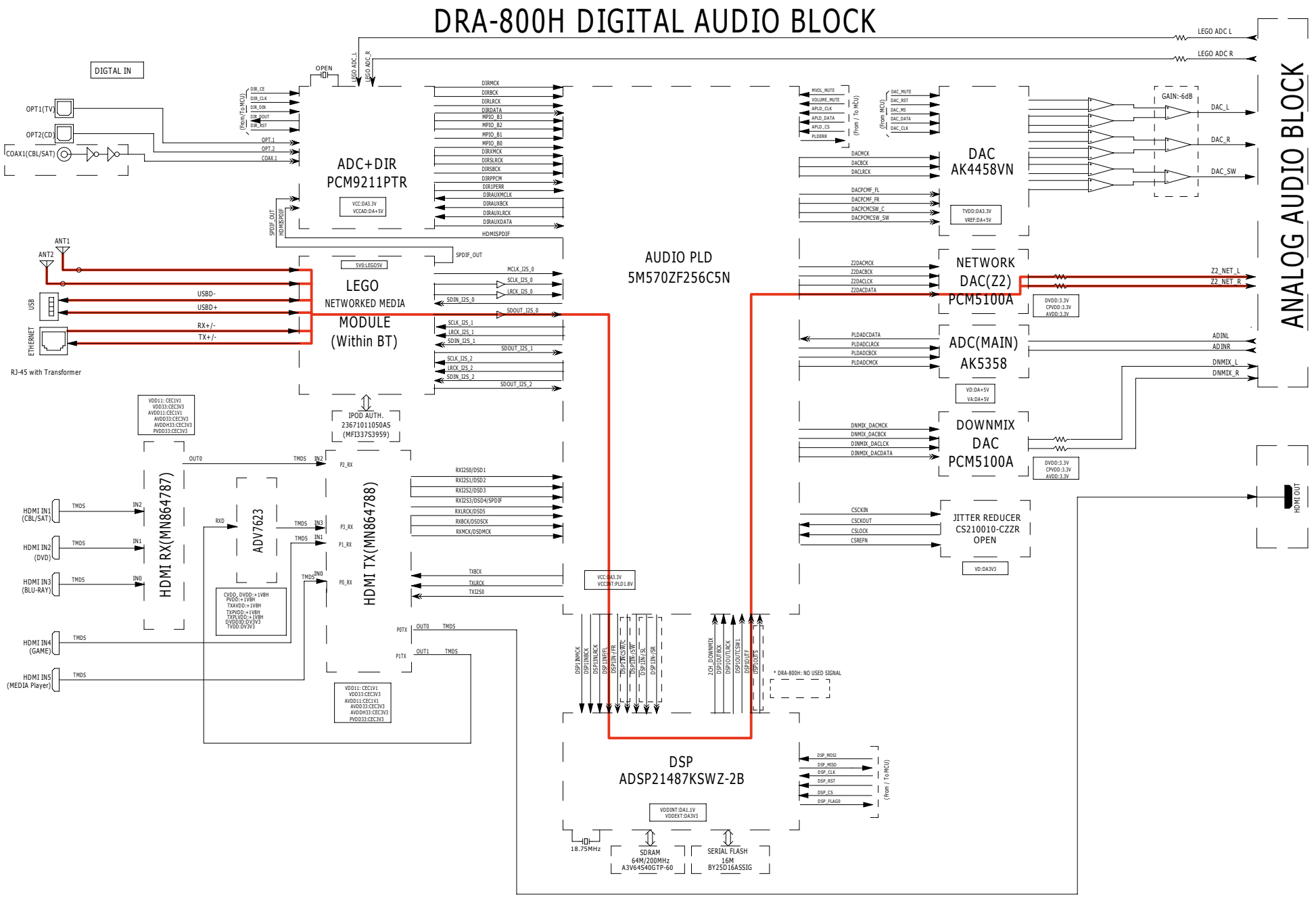

DRA-800H DIGITAL AUDIO BLOCK
DIGTAL IN
OPT1(TV)
OPT2(CD)
COAX1(CBL/SAT)
OPEN
ADC+DIR
PCM9211PTR
LEGO ADC L
LEGO ADC R
ANT1
ANT2
USB
ETHERNET
USBD-
USBD+
RX+/-
TX+/-
RJ-45 with Transformer
LEGO
NETWORKED MEDIA
MODULE
(Within BT)
AUDIO PLD
5M570ZF256C5N
IPOD AUTH.
2367101050AS
(MFI337S3959)
HDMI IN1
(CBL/SAT)
HDMI IN2
(DVD)
HDMI IN3
(BLU-RAY)
HDMI IN4
(GAME)
HDMI IN5
(MEDIA Player)
HDMI RX(MN864787)
ADV7623
HDMI TX(MN864788)
DSP
ADSP21487KSWZ-2B
18.75MHz
SDRAM
64M/200MHz
A3V64S40GTP-60
SERIAL FLASH
16M
BY25D16ASSIG
DAC
AK4458VN
NETWORK
DAC(Z2)
PCM5100A
ADC(MAIN)
AK5358
DOWNMIX
DAC
PCM5100A
JITTER REDUCER
CS210010-CZZR
OPEN
GAIN:-6dB
DAC_L
DAC_R
DAC_SW
Z2_NET_L
Z2_NET_R
ADINL
ADINR
DNMIX_L
DNMIX_R
HDMI OUT
ANALOG AUDIO BLOCK
* DRA-800H: NO USED SIGNAL

fig.A03b

DRA-800H ANALOG AUDIO BLOCK

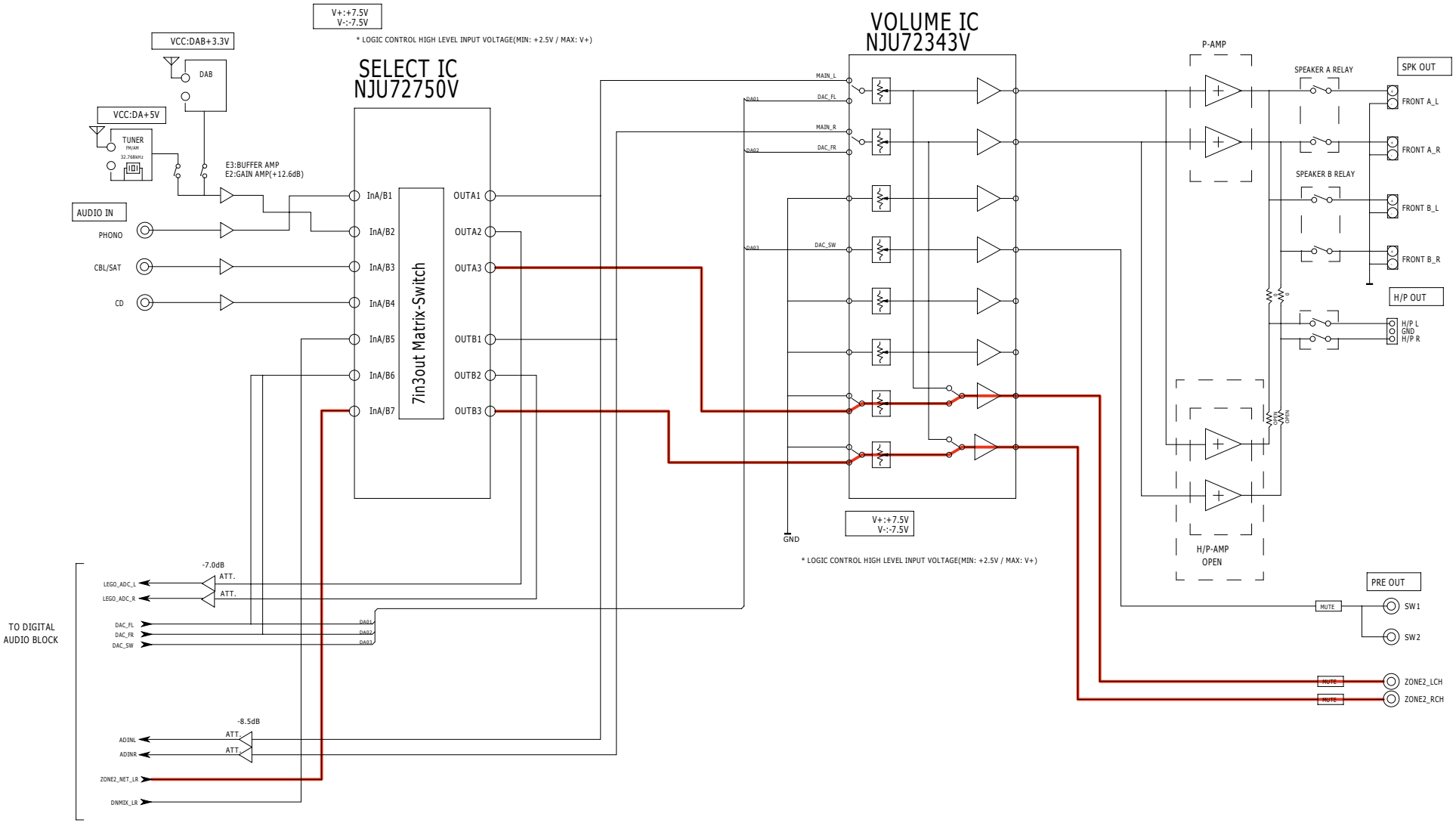


fig.A04a

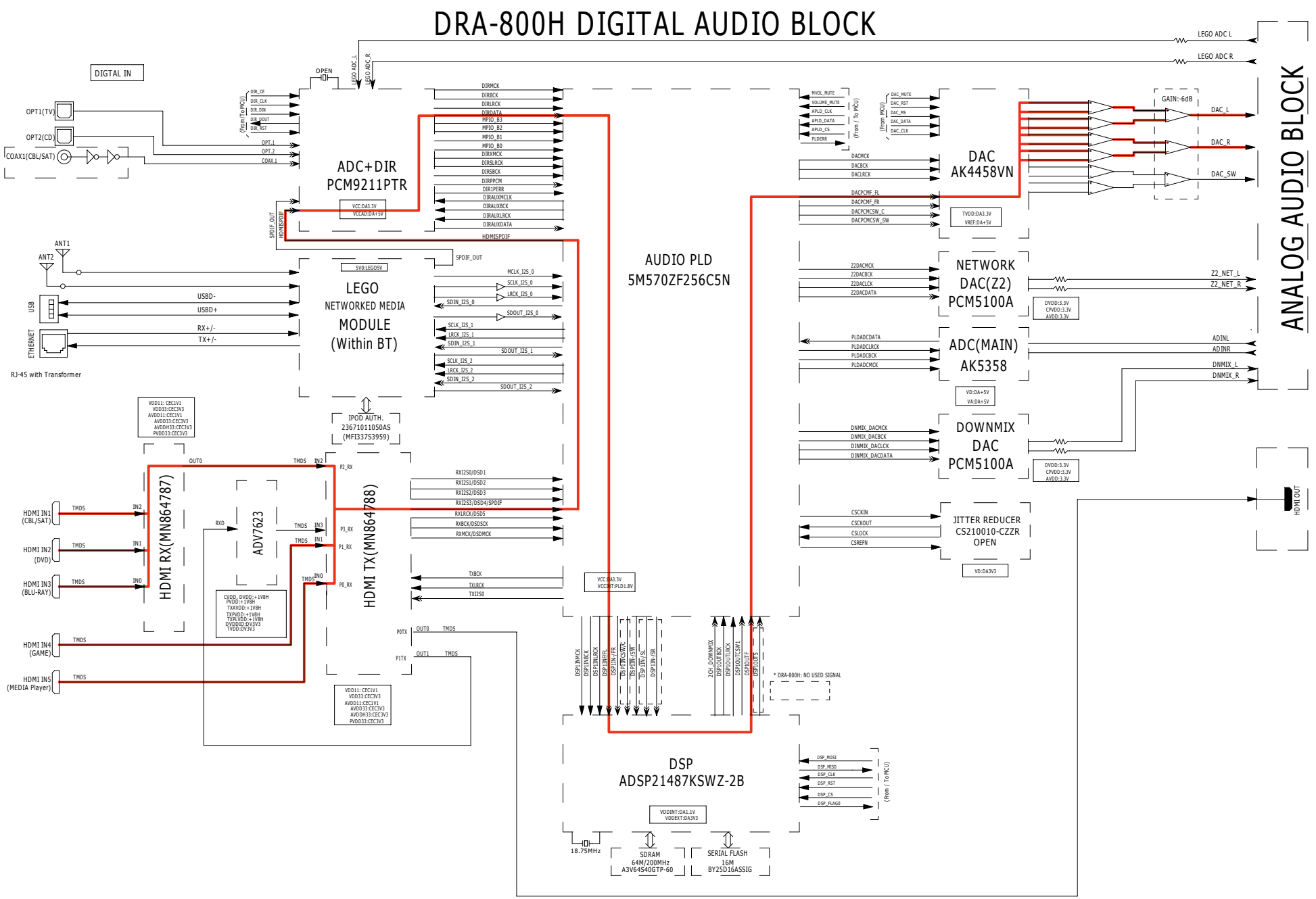

DRA-800H DIGITAL AUDIO BLOCK
DIGTAL IN
OPT1(TV)
OPT2(CD)
COAX1(CBL/SAT)
OPEN
ADC+DIR
PCM9211PTR
LEGO ADC L
LEGO ADC R
ANT1
ANT2
USB
ETHERNET
USBD-
USBD+
RX+/-
TX+/-
RJ-45 with Transformer
LEGO
NETWORKED MEDIA
MODULE
(Within BT)
IPOD AUTH.
2367101050AS
(MFI33753959)
AUDIO PLD
5M570ZF256C5N
HDMI IN1
(CBL/SAT)
HDMI IN2
(DVD)
HDMI IN3
(BLU-RAY)
HDMI IN4
(GAME)
HDMI IN5
(MEDIA Player)
HDMI RX(MN864787)
ADV7623
HDMI TX(MN864788)
DSP
ADSP21487KSWZ-2B
18.75MHz
SDRAM
64M/200MHz
A3V64S40GTP-60
SERIAL FLASH
16M
BY25D16ASSIG
DAC
AK4458VN
NETWORK
DAC(Z2)
PCM5100A
ADC(MAIN)
AK5358
DOWNMIX
DAC
PCM5100A
JITTER REDUCER
CS210010-CZZR
OPEN
GAIN:-6dB
DAC_L
DAC_R
DAC_SW
Z2_NET_L
Z2_NET_R
ADINL
ADINR
DNMIX_L
DNMIX_R
HDMI OUT
ANALOG AUDIO BLOCK
* DRA-800H: NO USED SIGNAL

fig.A04b

DRA-800H ANALOG AUDIO BLOCK

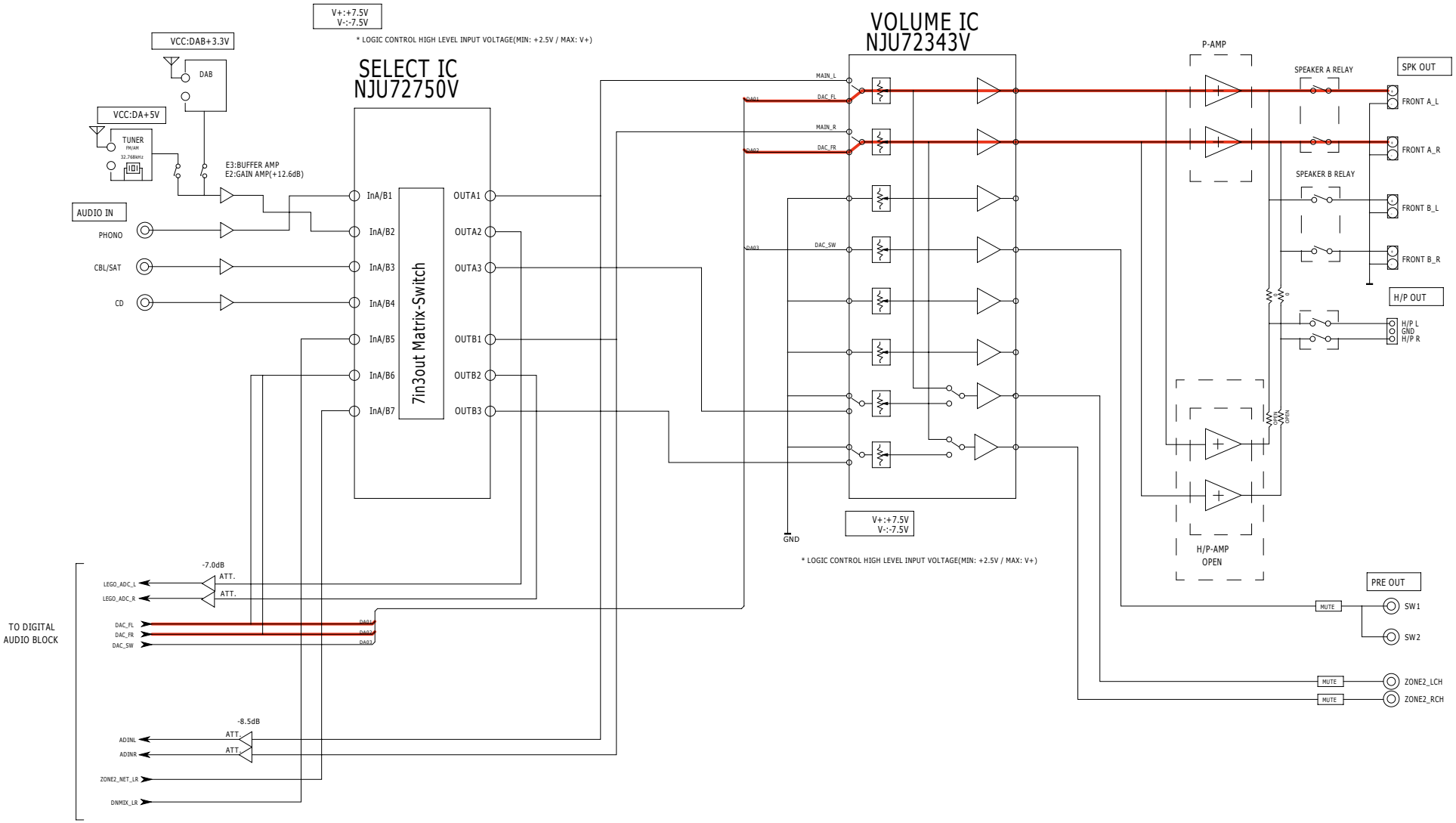


fig.A05a

DRA-800H ANALOG AUDIO BLOCK

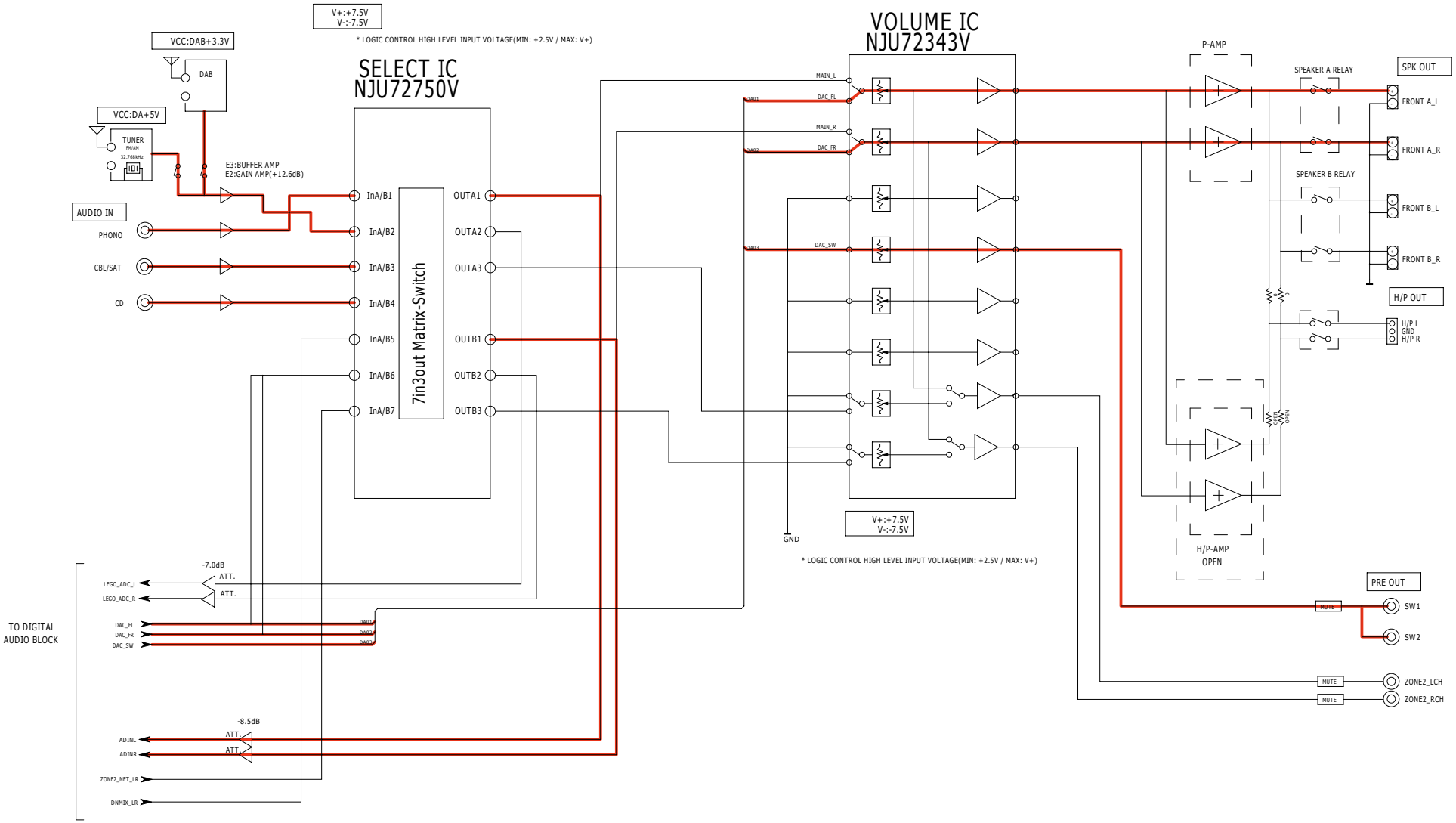


fig.A05b

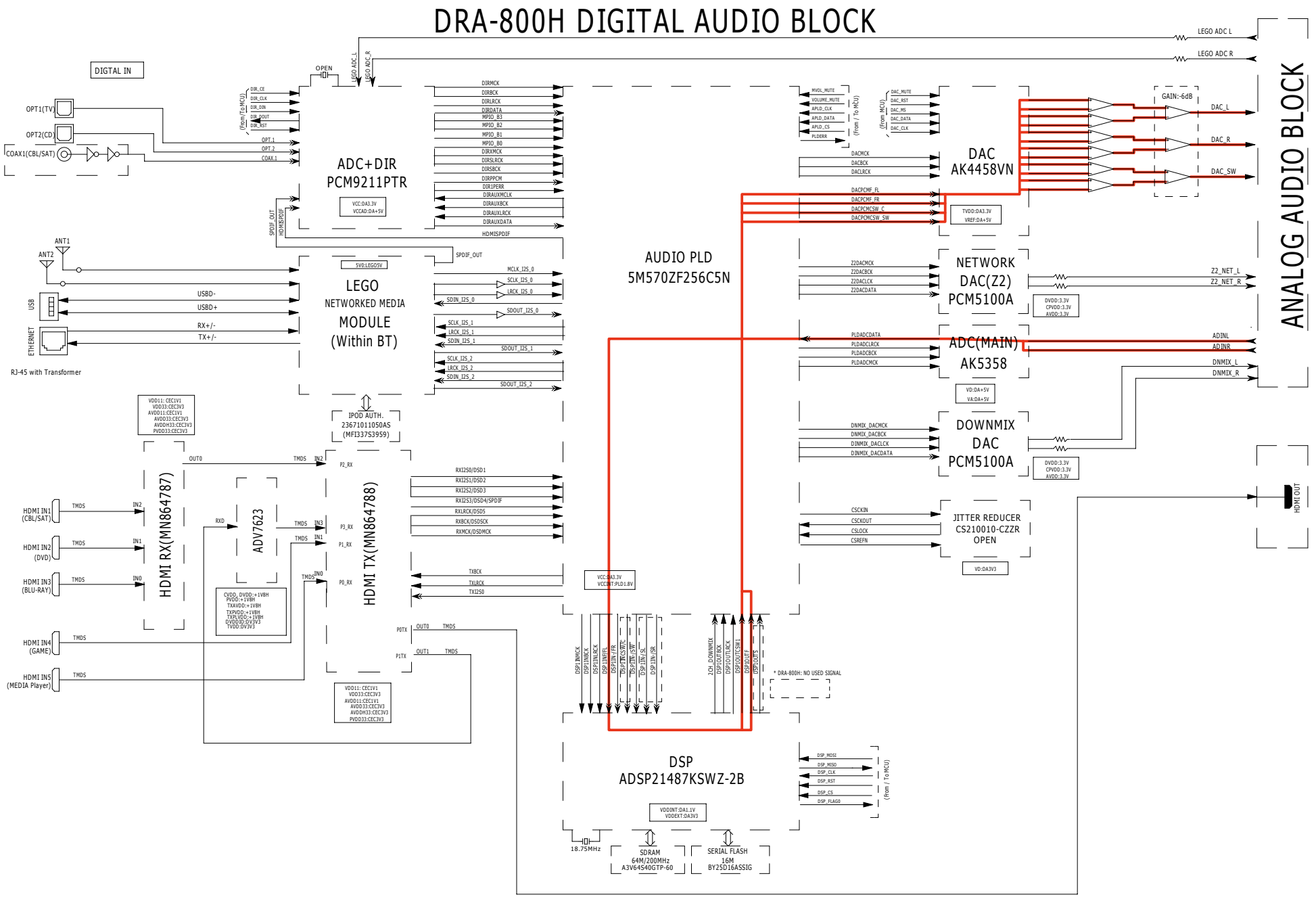

DRA-800H DIGITAL AUDIO BLOCK
DIGTAL IN
OPT1(TV)
OPT2(CD)
COAX1(CBL/SAT)
OPEN
ADC+DIR
PCM9211PTR
LEGO ADC L
LEGO ADC R
ANT1
ANT2
USB
ETHERNET
USBD-
USBD+
RX+/-
TX+/-
RJ-45 with Transformer
LEGO
NETWORKED MEDIA
MODULE
(Within BT)
IPOD AUTH.
2367101050AS
(MFI337S3959)
AUDIO PLD
5M570ZF256C5N
HDMI IN1
(CBL/SAT)
HDMI IN2
(DVD)
HDMI IN3
(BLU-RAY)
HDMI IN4
(GAME)
HDMI IN5
(MEDIA Player)
HDMI RX(MN864787)
ADV7623
HDMI TX(MN864788)
DSP
ADSP21487KSWZ-2B
18.75MHz
SDRAM
64M/200MHz
A3V64S40GTP-60
SERIAL FLASH
16M
BY25D16ASSIG
DAC
AK4458VN
GAIN:-6dB
DAC_L
DAC_R
DAC_SW
NETWORK
DAC(Z2)
PCM5100A
Z2_NET_L
Z2_NET_R
ADC(MAIN)
AK5358
ADINL
ADINR
DOWNMIX
DAC
PCM5100A
DNMIX_L
DNMIX_R
JITTER REDUCER
CS210010-CZZR
OPEN
HDMI OUT
* DRA-800H: NO USED SIGNAL
ANALOG AUDIO BLOCK

fig.A06

DRA-800H ANALOG AUDIO BLOCK

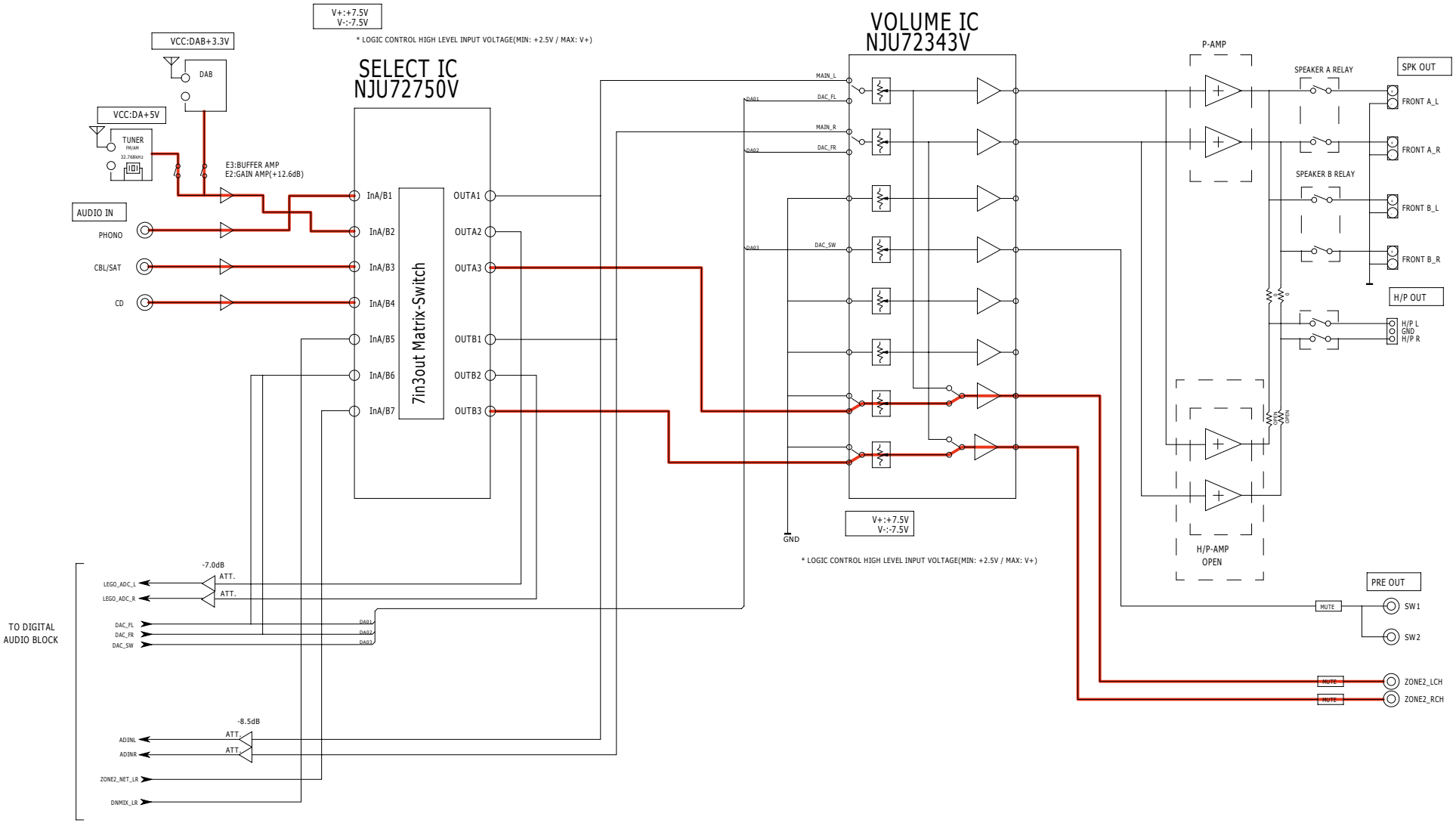


fig.A07

DRA-800H ANALOG AUDIO BLOCK

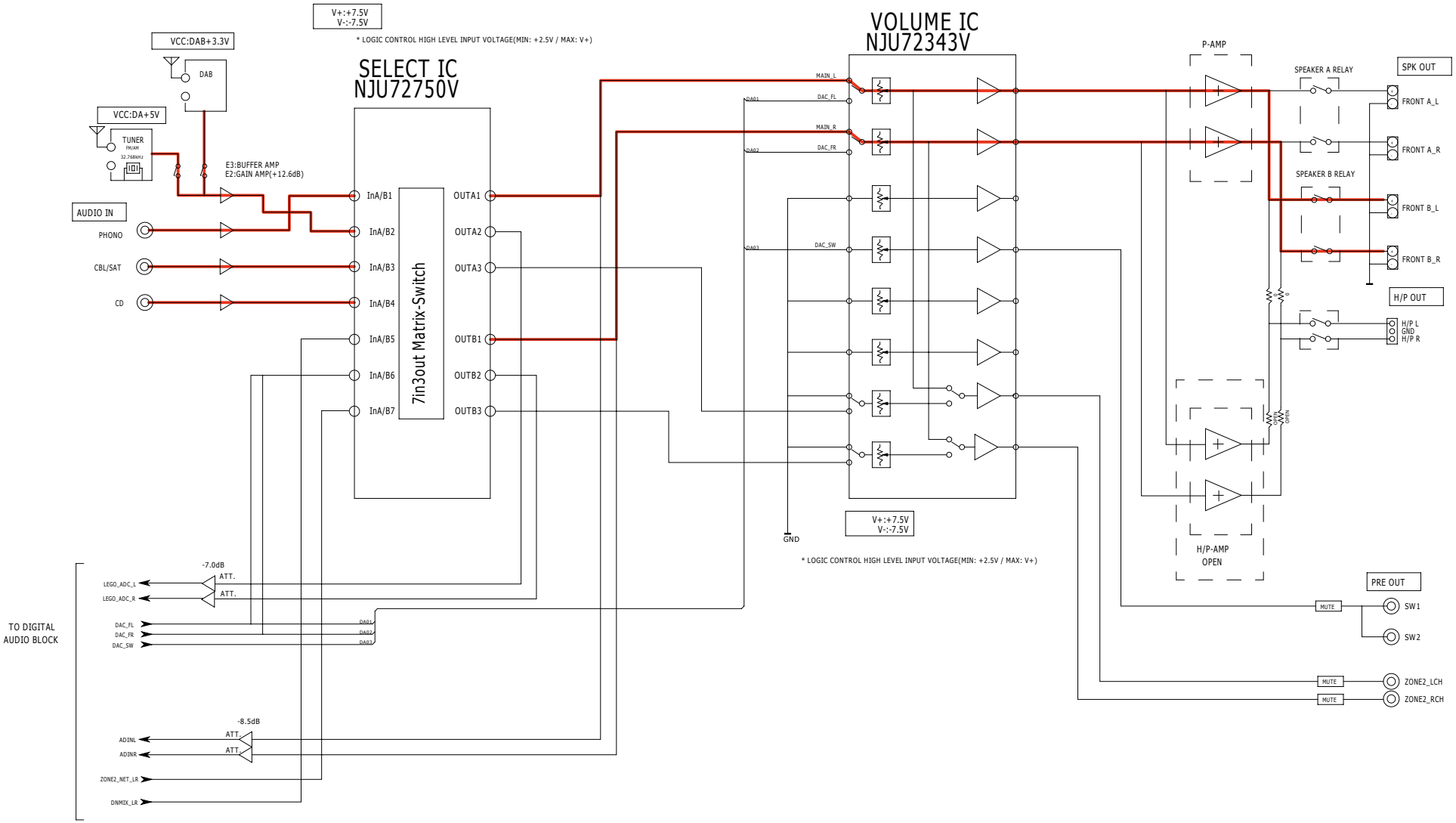


fig.A08a

DRA-800H ANALOG AUDIO BLOCK

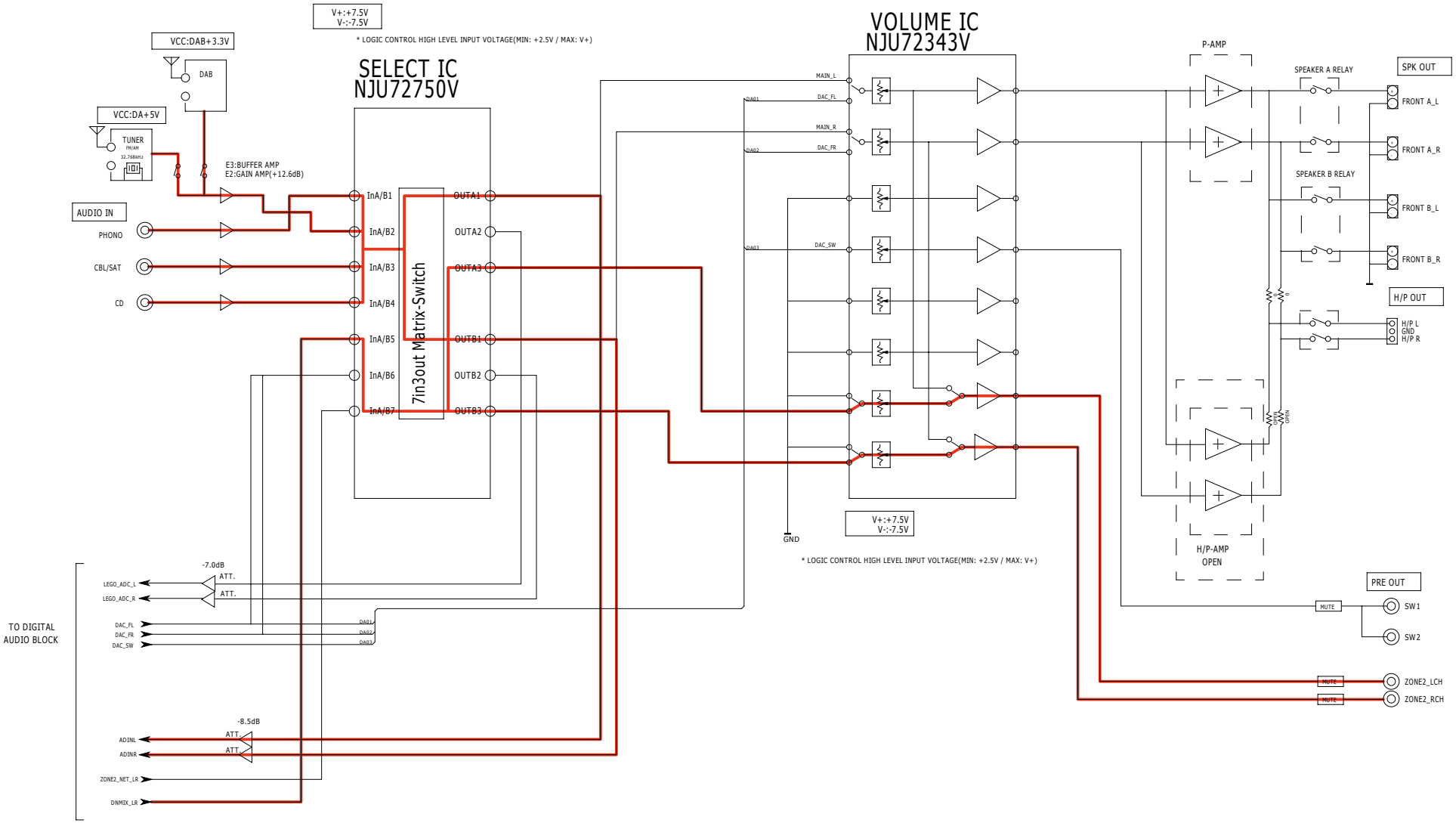
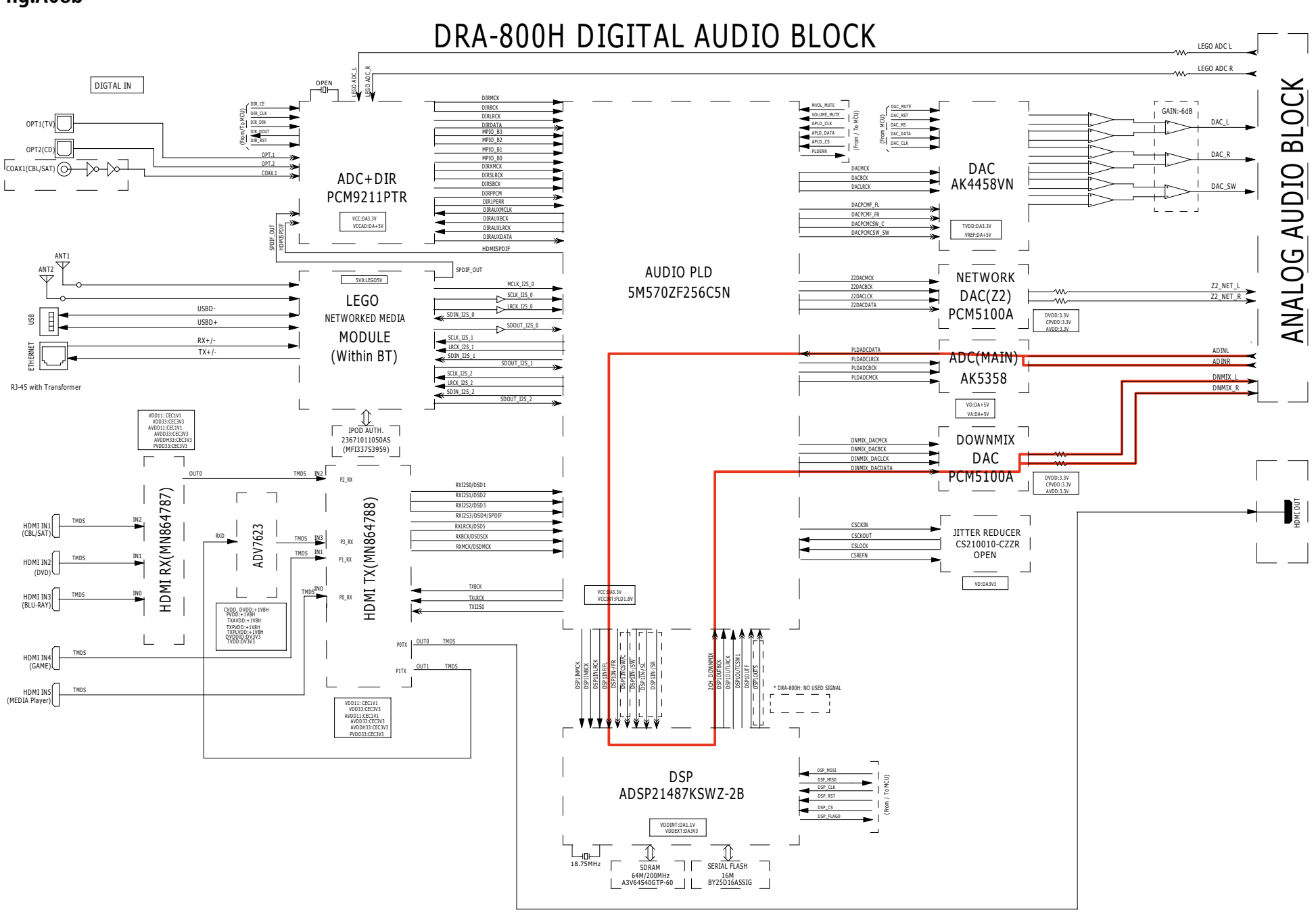


fig.A08b


DRA-800H DIGITAL AUDIO BLOCK
DIGTAL IN
OPT1(TV)
OPT2(CD)
COAX1(CBL/SAT)
OPEN
ADC+DIR
PCM9211PTR
LEGO ADC L
LEGO ADC R
ANT1
ANT2
USB
ETHERNET
USBD-
USBD+
RX+/-
TX+/-
RJ-45 with Transformer
LEGO
NETWORKED MEDIA
MODULE
(Within BT)
AUDIO PLD
5M570ZF256C5N
IPOD AUTH.
2367101050AS
(MFI337S3959)
HDMI IN1
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HDMI IN2
(DVD)
HDMI IN3
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HDMI IN4
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NETWORK
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PCM5100A
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JITTER REDUCER
CS210010-CZZR
OPEN
GAIN:-6dB
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DAC_R
DAC_SW
Z2_NET_L
Z2_NET_R
ADINL
ADINR
DNMIX_L
DNMIX_R
HDMI OUT
ANALOG AUDIO BLOCK
* DRA-800H: NO USED SIGNAL

fig.V01

DRA-800H VIDEO BLOCK

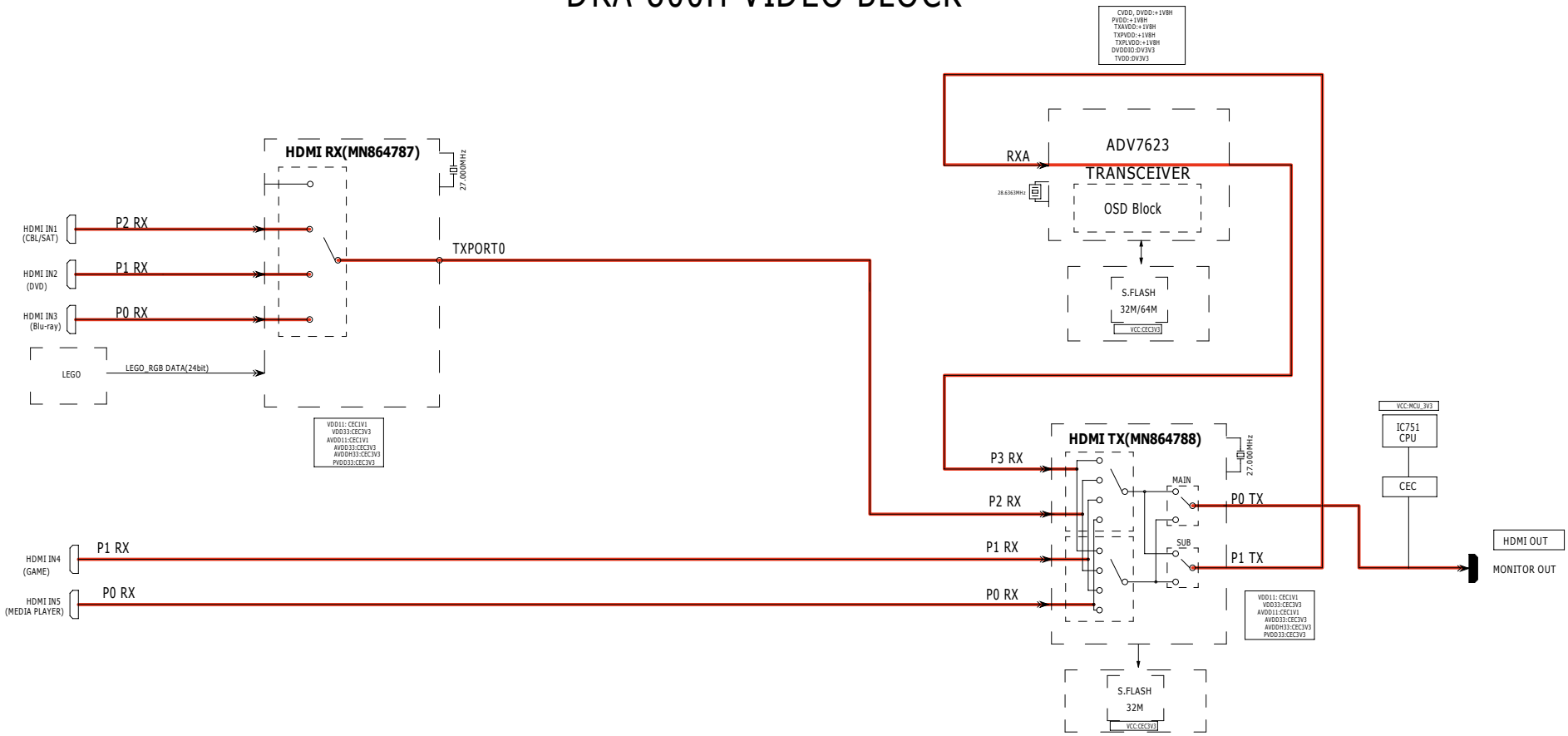


fig.V02

DRA-800H VIDEO BLOCK

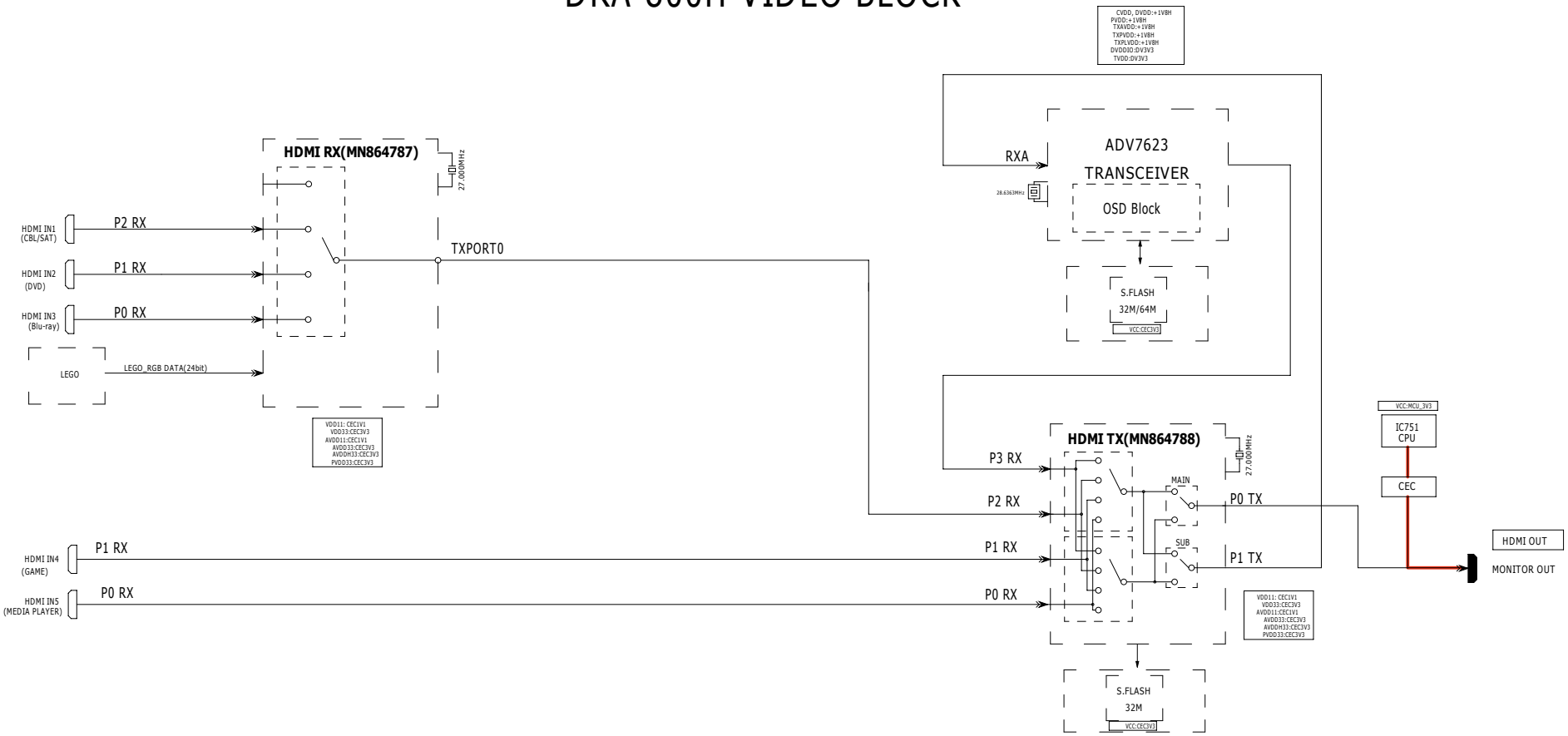
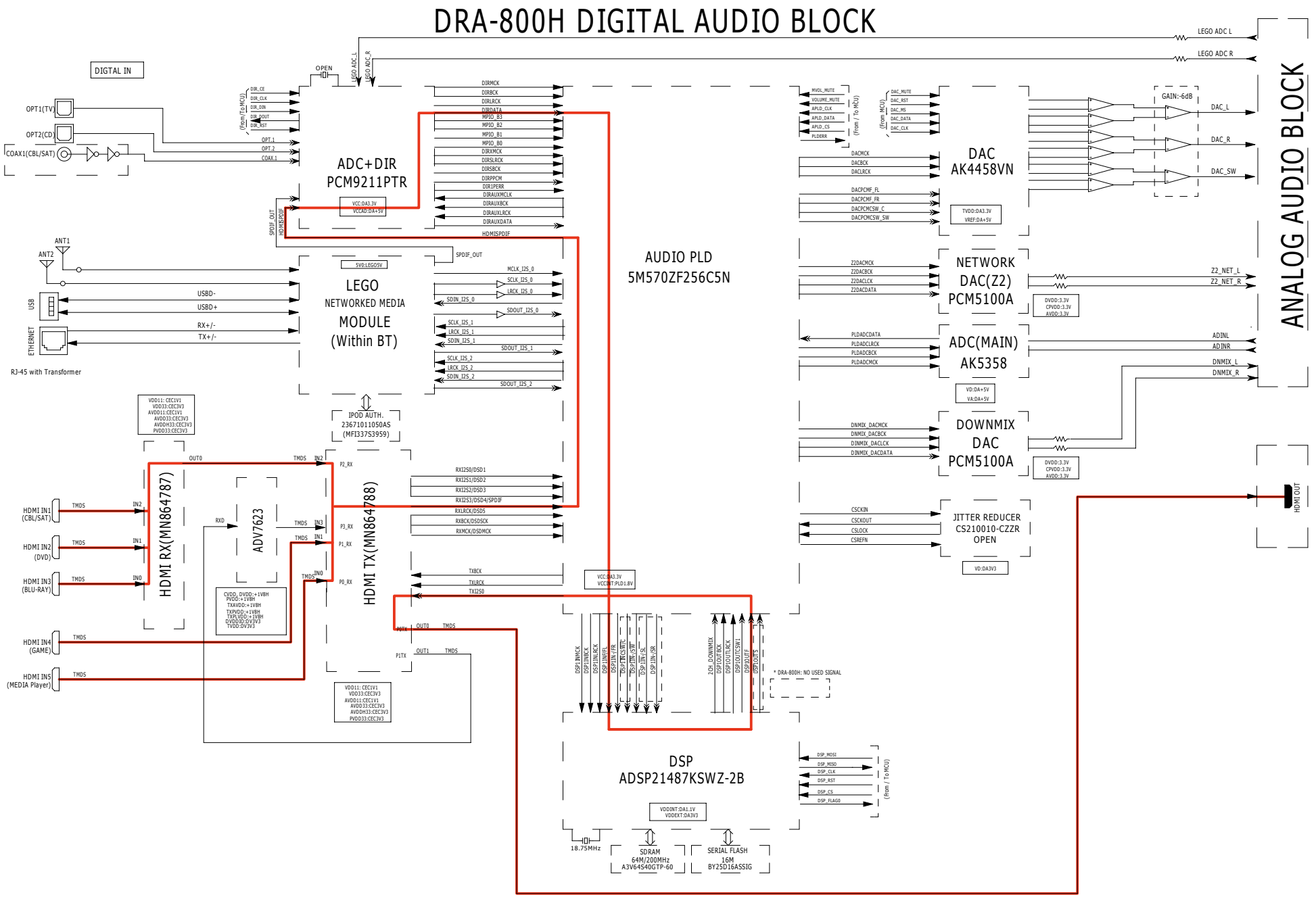


fig.V03


DRA-800H DIGITAL AUDIO BLOCK
DIGTAL IN
OPT1(TV)
OPT2(CD)
COAX1(CBL/SAT)
OPEN
ADC+DIR
PCM9211PTR
LEGO ADC L
LEGO ADC R
ANT1
ANT2
USB
ETHERNET
USBD-
USBD+
RX+/-
TX+/-
RJ-45 with Transformer
LEGO
NETWORKED MEDIA
MODULE
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16M
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DOWNMIX
DAC
PCM5100A
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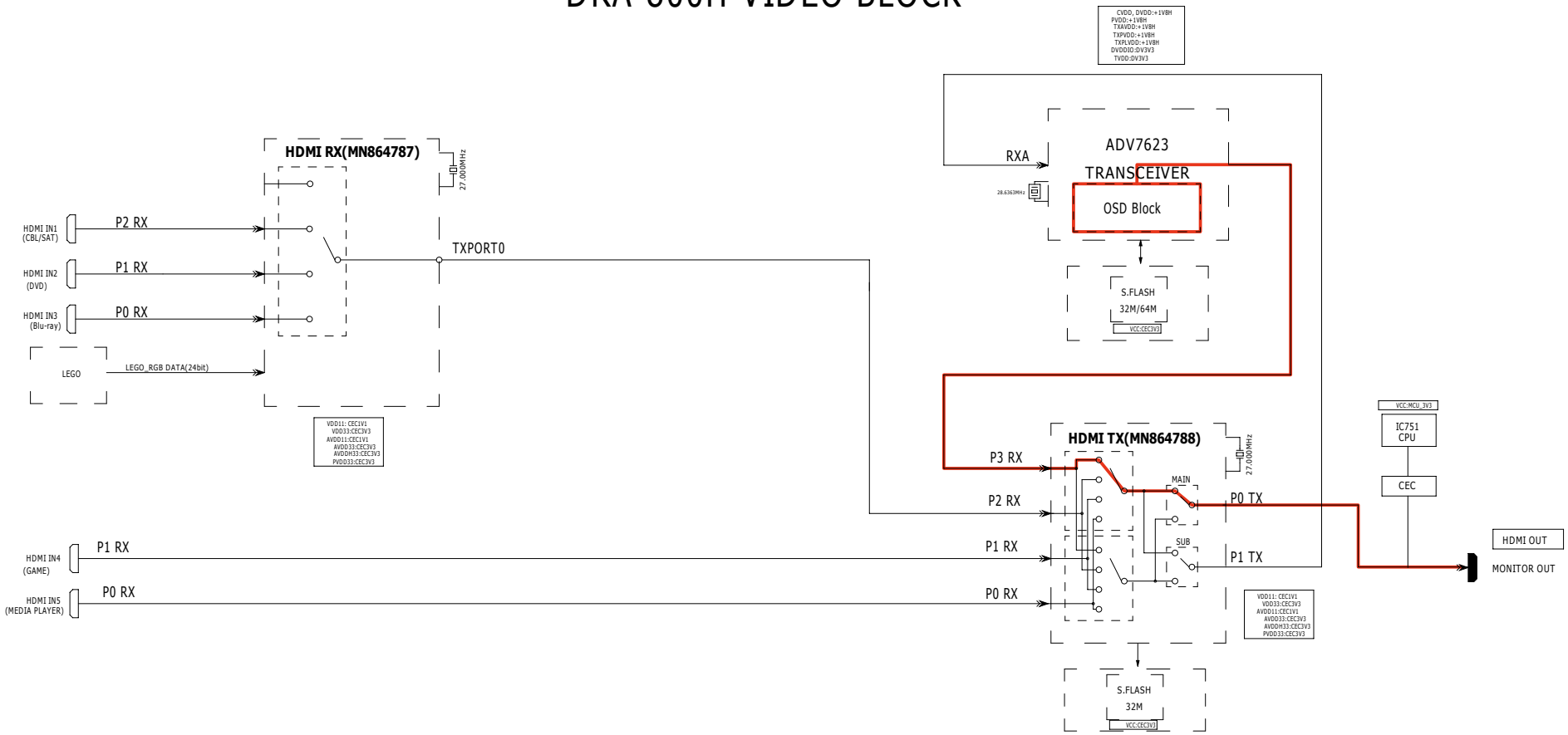
CS210010-CZZR
OPEN
GAIN:-6dB
DAC_L
DAC_R
DAC_SW
Z2_NET_L
Z2_NET_R
ADINL
ADINR
DNMIX_L
DNMIX_R
HDMI OUT
ANALOG AUDIO BLOCK
* DRA-800H: NO USED SIGNAL

fig.V04

DRA-800H VIDEO BLOCK



Adjusting Idling Current

NOTE : Adjusting the idling current when "**ECO Mode**" is set may damage the Power AMP.

1. Preparation

(1) Prepare a DC voltmeter.
(2) Place the unit under normal usage conditions, away from highly ventilated areas such as next to an air conditioning machine or electric fan.
The set requires an ambient temperature of 15℃ to 30℃ and standard humidity.
(3) Settings of This Unit
- POWER (Power source switch) STANDBY
- SPEAKER (Speaker terminal) No load

(Do not connect equipment such as speakers or dummy resistors.)

2. Adjustment Procedure

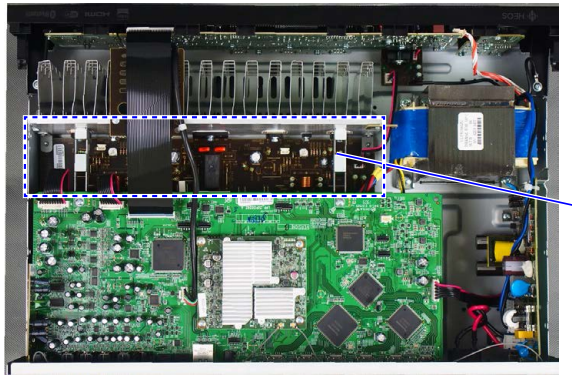
(1) Make sure that "**ECO Mode**" is off.
•Press the "**SETUP**" button on the remote control to display the GUI menu.
•Press the cursor button to select "**General**" → "**ECO**" → "**Mode**" → "**Off**".
(2) Remove the top cover and turn **VR510** (ALL Channel) of the MAIN PCB counterclockwise(↺) as far as possible.
(3) Connect the DC Voltmeter to the test points.

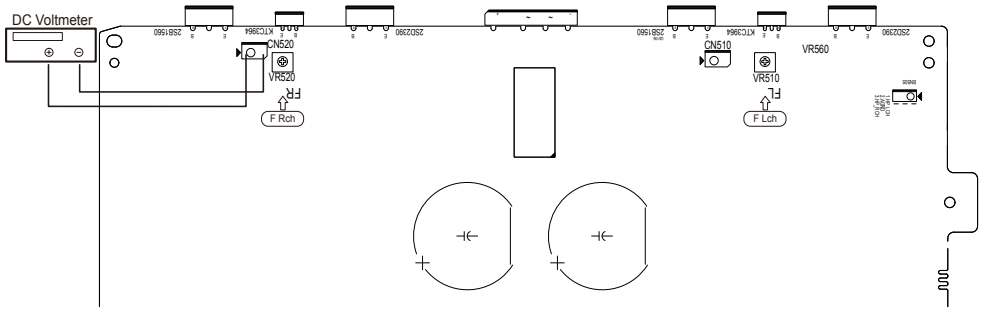
FRONT-Lch	: CN510	: VR510
FRONT-Rch	: CN520	: VR520

(4) Connect the power cord to an outlet. Next, press the power button to turn on the power.
(5) Set this unit as follows.
MASTER VOLUME : "---" (↺ min.) : turn counterclockwise to the lowest position.
SPEAKER (Speaker terminal) : No load
(Do not connect equipment such as speakers or dummy resistors.)
MODE : DIRECT
FUNCTION : TUNER
(6) E3 model
Turn **VR510** clockwise (↻) and adjust the voltage of the test point to "**4.0mV ± 0.5mV DC**" within 2 minutes.
E2 model
Turn **VR510** clockwise (↻) and adjust the voltage of the test point to "**8.0mV ± 0.5mV DC**" within 2 minutes.

(7) E3 model
Check whether the voltage is within the range "**4.0mV ±1mV DC**" 10 minutes after adjustment.
E2 model
Check whether the voltage is within the range "**8.0mV ±2mV DC**" 10 minutes after adjustment.

(8) Adjust the variable resistance of each channel using the same method.





UPDATING

PROCEDURE AFTER REPLACING THE PCB.

PROCEDURE AFTER REPLACING THE U-COM, ETC.

FIRMWARE UPDATE PROCEDURE

PROCEDURE AFTER REPLACING THE PCB.

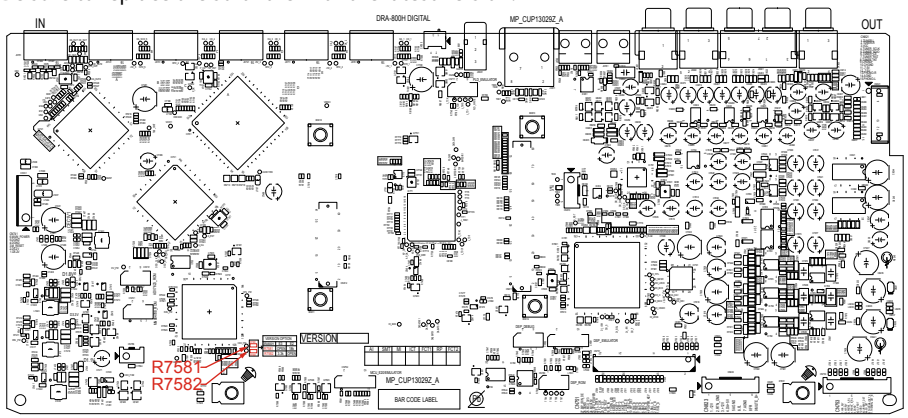
The procedure after replacing the printed circuit boards is as follows.

(1) Change the resistor for setting the region.

Model Area	DIGITAL PCB	
	R7581	R7582
DRA800H (E3)	OPEN	3.3K
DRA800H (E2)	18K	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 MCU (microprocessor), flash ROM, etc. is as follows.
Implement the update method when the DIGITAL PCB or network module is replaced.

PCB Name	Ref. No.	Description	Procedure after Replacement	Remark
DIGITAL	IC751	R5F5651EDDFB	B	SOFTWARE : Main
DIGITAL	IC782	BY25D16ASSIG	B	SOFTWARE : DSP ROM
DIGITAL	IC732	BY25Q32BSSIG (E3 only) BY25Q64ASSIG (E2 only)	B	SOFTWARE : GUI ROM
DIGITAL	IC723	BY25Q32BSSIG	B	SOFTWARE : 4k GUI
DIGITAL	IC771	5M570ZF256C5N	B	SOFTWARE : AUDIO PLD
MODULE	P8	NETWORK MODULE	D	SOFTWARE : Network

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 rewrite with the latest software for your service region.
See "3. Update method when the DIGITAL PCB or network module is replaced (Using a USB flash drive)" 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 DIGITAL PCB or network module is replaced

Model Name	Model Area	Download from SDI
DRA-800H	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
DRA-800HE3	North America (E3)	Product ID : 000101130100	DPMS_DRA-800HE3_LEGO_xxxx.zip	heos_40.prod_x.xxx.xx.zip
DRA-800HE2	Europe (E2)	Product ID : 000101130200	DPMS_DRA-800HE2_LEGO_xxxx.zip	

2. Update preparation with a USB flash drive

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.

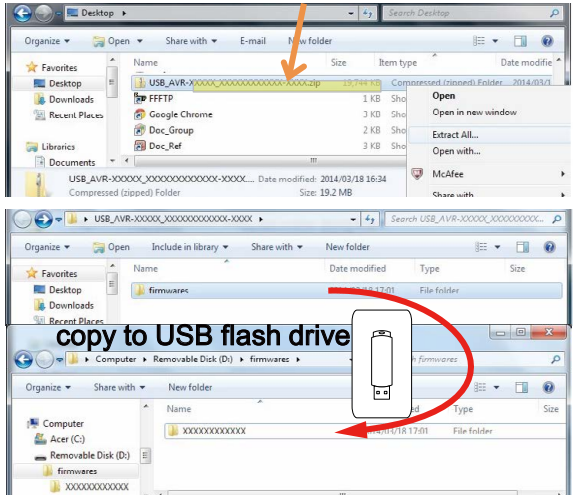
NOTE :

- 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 DIGITAL PCB or network module is replaced (Using a USB flash drive)

3.1. File structure on USB flash drive

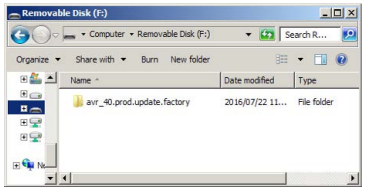
DIGITAL PCB or network module is replaced onto the USB flash drive in the following structure.

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

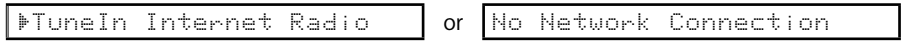


3.2. Start the update.

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.

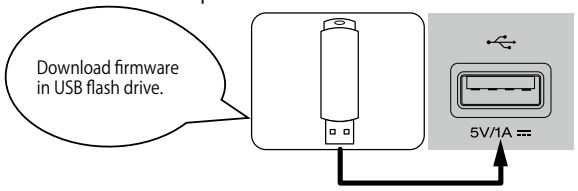
Once an update is started, normal operations cannot be performed until it is completed.

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



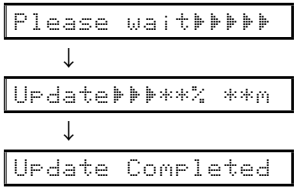
Content of the display is scrolled.

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



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

Display during USB update

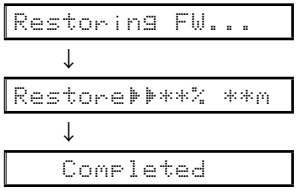


It takes a maximum of approximately 25 minutes for update to complete.

(6) The unit restarts when update is complete.
※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.
While holding down buttons "**ZONE2 SOURCE**" and "**SPEAKER**" simultaneously, press the power button to turn on the power.

Display during Firmware Factory Restore



It takes approximately 15 minutes for Firmware Factory Restore to complete.

(8) Execute Service Region Settings.
See "4. Update Method for Service Region Settings"

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

(10) If necessary, use 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" or "6. Normal Firmware Update Method from OTA"

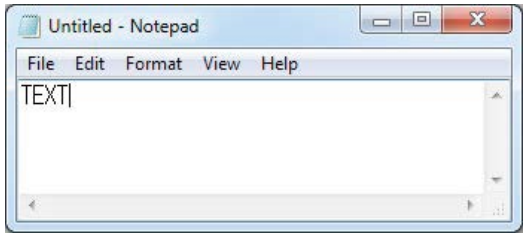
4. Update Method for Service Region Settings

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

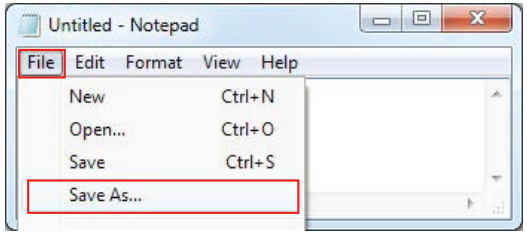
4.1. Creating a Service Region Settings file

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

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

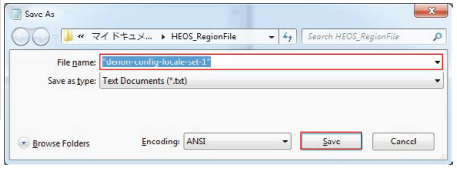


(3) Click "**File**", and then click "**Save As...**".

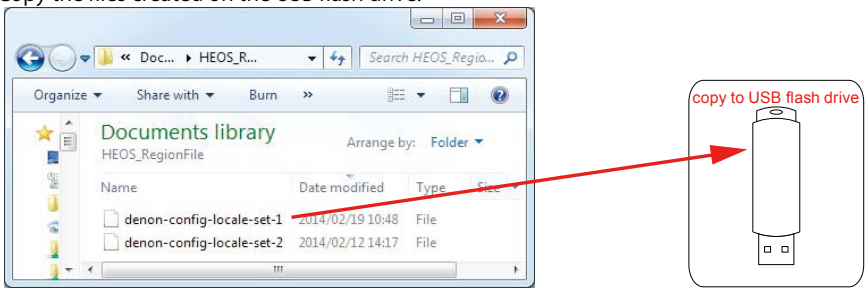


(4) Enter the file name and click the Save button.
NOTE : Enter the file name in double quotation marks. (The file extension is not required.)

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.

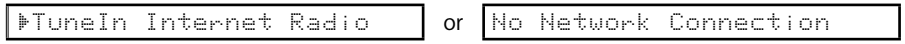


4.2. Starting Service Region Settings

NOTE :

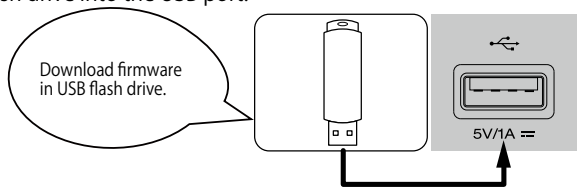
- Remove the LAN cable from this unit when updating.
  (Do not connect to a wired or wireless network.)
- We recommend a USB memory device that has an LED installed.

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



Content of the display is scrolled.

(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

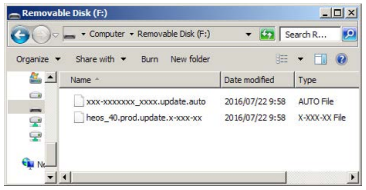
5.1. File structure on USB flash drive

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 (E3)	DPMS_DRA-800HE3_LEGO_xxxx.zip Product ID : 000101130100	heos_40.prod_x.xxx.xx.zip
Europe (E2)	DPMS_DRA-800HE2_LEGO_xxxx.zip Product ID : 000101130200	

USB flash drive root
+ AVR-xxxxHxx_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.

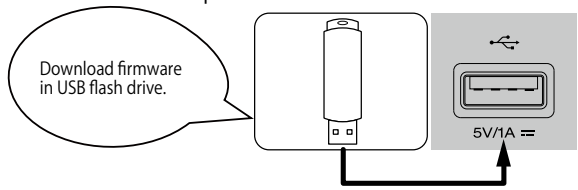
Once an update is started, normal operations cannot be performed until it is completed.
The GUI menu settings and image adjustment settings of this unit may be initialized.
Note down the settings before updating, and set them again after updating.

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

`▶TuneIn Internet Radio` or `No Network Connection`

Content of the display is scrolled.

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



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

Display during USB update

`Please wait▶▶▶▶▶`
↓
`Update▶▶▶**% **m`
↓
`Update Completed`

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. Version Display Mode"

6. Normal Firmware Update Method from OTA

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

---Cautions on Firmware Update---

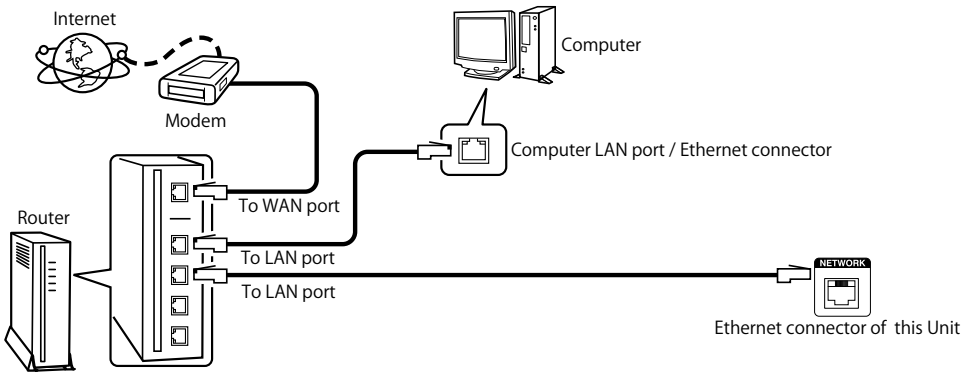
- For the update procedure, a proper broadband Internet connection environment and settings are required.
- Do not turn off the power until updating is completed.
- It takes a maximum of approximately 25 minutes for update to complete.

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

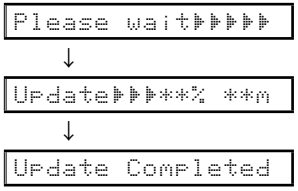
Check if there is a firmware update available. It is also possible to check approximately how long the update will take.

(1) Press the "**SETUP**" button on the remote control to display the GUI menu.

(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.
The Standby LED lights red.
Display during OTA update



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. Version Display Mode"

7. About the error codes

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

Update▶▶▶**% **m

↓

Update ErrorYYXX Update ErrorYYXX (YY : DeviceID, XX : ErrorCode)

↓ ↑ The display is alternately displayed.

Please check you

Content of the display is scrolled.

Remedies

Error Code (YYXX) (DeviceID/ErrorCode)	Remedies
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."
0005	"Incompatible update file found on the USB device. Please check the file."
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)
11	DSP1 or DSP
12	DSP2 ※ Except : DRA-800H/AVR-S650H/S750H/S950H/X1600H/X2600H/X3600H
13	DSP3 ※ Except : DRA-800H/AVR-S650H/S750H/S950H/X1600H/X2600H/X3600H
19	DSP4 ※ Except : DRA-800H/AVR-S650H/S750H/S950H/X1600H/X2600H/X3600H
15	Audio PLD
22	Video PLD ※ Except : DRA-800H/AVR-S650H/S750H/S950H/X1600H/X2600H
2A	GUI
2B	PIMG ※ ONLY : DRA-800H/AVR-S650H/S750H/S950H/X1600H/X2600H
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. Version Display Mode"

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