DENON

Service Manual Ver. 2

INTEGRATED NETWORK AV RECEIVER

AVR-X3400H

Click here!

On-line service parts list

http://dmedia.dmglobal.com/Document/DocumentDetails/23186

Online Parts List (P5 to P7)

WEB owner's manual (Release schedule)

http://manuals.denon.com/AVRX3400H/NA/EN/index.php (May 2017)

http://manuals.denon.com/AVRX3400H/EU/EN/index.php (June 2017)

http://manuals.denon.com/AVRX3400H/AP/ZH/index.php (August 2017)

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

Please refer to the MODIFICATION NOTICE.

CAUTION IN SERVICING

SAFETY PRECAUTIONS

NOTE FOR SCHEMATIC DIAGRAM

NOTE FOR PARTS LIST

INSTRUCTIONS FOR HANDLING SEMICONDUCTORS AND OPTICAL UNIT

Online Parts List

CAUTION IN SERVICING.

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 is also 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 deteriorate 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:

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

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 view.

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

INSTRUCTIONS FOR HANDLING SEMICONDUCTORS AND OPTICAL UNIT

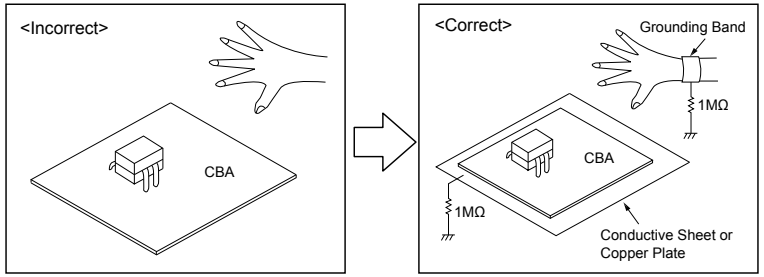
Electrostatic breakdown of the semi-conductors or optical pickup may occur due to a potential difference caused by electrostatic charge during unpacking or repair work.

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

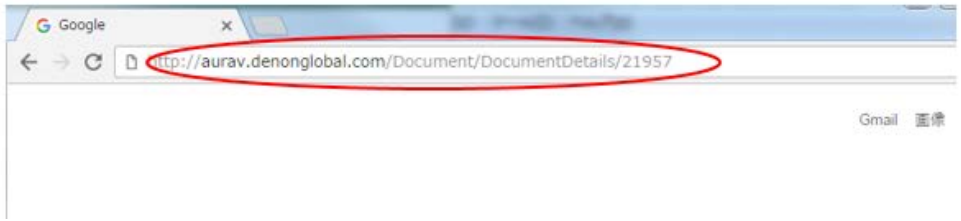


Online Parts List

Accessing the Parts List

(1) 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) When the login screen is displayed, enter your username and password.
(3) Enter the 5 letters shown as the blue CAPTCHA code as single-byte characters.
If the text is unclear, click "**Refresh**" to change the CAPTCHA code, and enter it again.

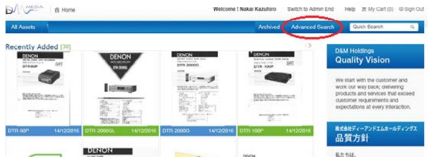
(4) Press the "**Login**" button.

Logging in to New SDI and Accessing the Parts List

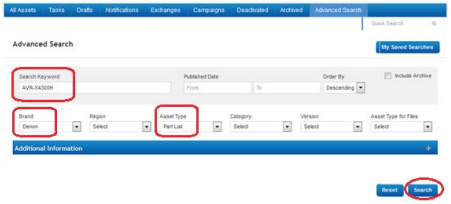
(1) Access New SDI from the URL below.
<http://dmedia.dmglobal.com>

(2) When the login screen is displayed, enter your username and password.
(3) Enter the 5 letters shown as the blue CAPTCHA code as single-byte characters.
If the text is unclear, click "**Refresh**" to change the CAPTCHA code, and enter it again.

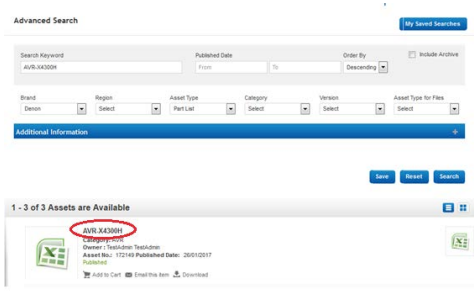
(4) Press the "**Login**" button.
(5) When the Home screen is displayed, click "**Advanced Search**".



(6) Enter the following search conditions and click "**Search**".
Keyword : Model name Brand : brand name Asset Type : Part list

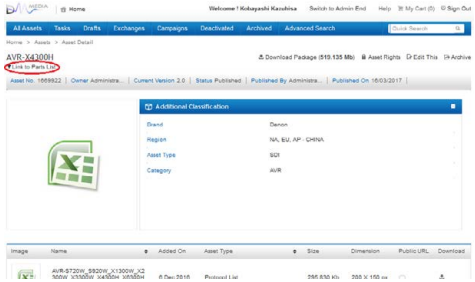


(7) Click the model name when the search results are displayed.



Accessing the Part List from the Model Asset Screen

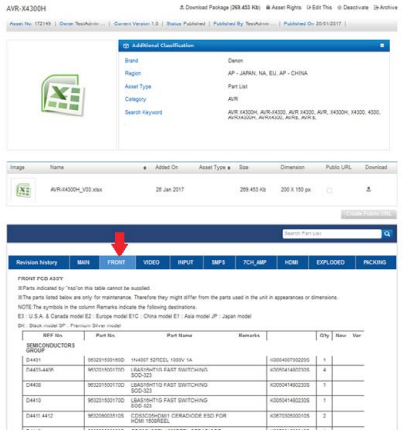
(1) Display Model Asset from New SDI.
(2) Click the section displayed as ▼ Link to Part Lists under the model name.



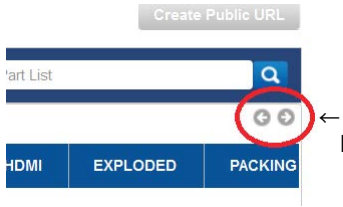
NOTE : If the ▼ Link to Parts List section is not displayed, download the parts table from the Asset list.

PRINTED CIRCUIT BOARDS Parts Table

(1) Display the Parts List. Click the PCB name in the blue bar to display the parts list for the board.



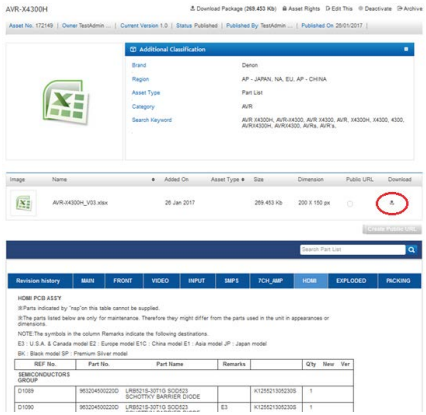
Left and right arrow icons are displayed if the circuit board name does not fit in the blue bar.
Click these icons to display a different part of the name when necessary.



← Icons to move the circuit board name left and right in the blue bar

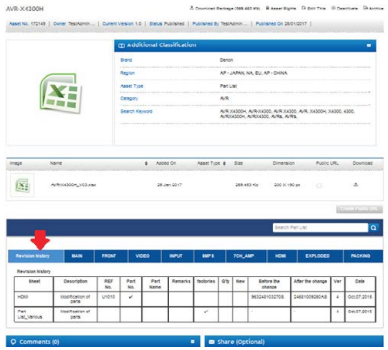
Downloading the Parts List as an Excel File

(1) Displays the Parts List. Click the Download icon.



Revision History

(1) Click "**Revision history**" in the blue bar.



The following details are displayed.

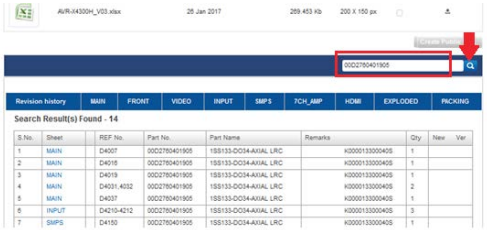
Sheet : Name of the changed sheet
Description : Description of the changes
Remarks : Destination, color information
Factories : Factory number
Ver : Version number after revision if changes were made to the parts list
Date : Date of changes

Searching Part Numbers or Ref. Numbers

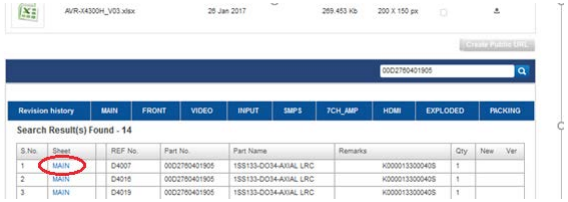
You can search a Parts List for part numbers or Ref. numbers.

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

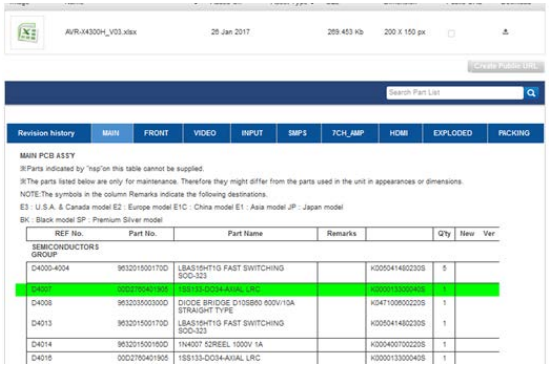
(2) The search results are displayed.
The name of the sheet in which the search part is used and the part's line are displayed.



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



(4) The Board Part Table opens and the line on which the searched part number appears is highlighted.



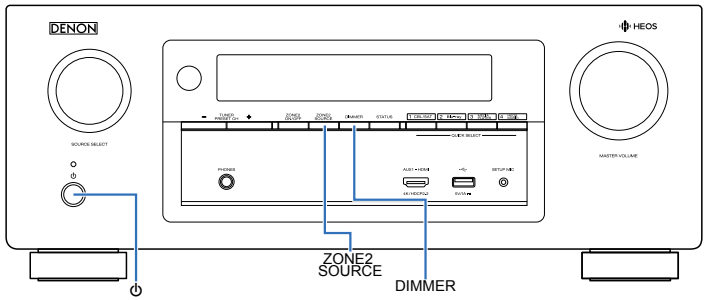
CAUTION IN SERVICING.

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 "**ZONE2 SOURCE**" and "**DIMMER**" 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.



JIG FOR SERVICING

Use the following jigs (extension cable kit) when repairing the PCBs.
Order with your dealer for the jigs your dealer if necessary.

8U-110084S : EXTENSION UNIT KIT : 1 Set
8U-110136S : EXTENSION UNIT KIT : 1 Set

(See JIG FOR SERVICING)

ELECTRICAL

SCHEMATIC DIAGRAMS

PRINTED CIRCUIT BOARDS

LEVEL DIAGRAM

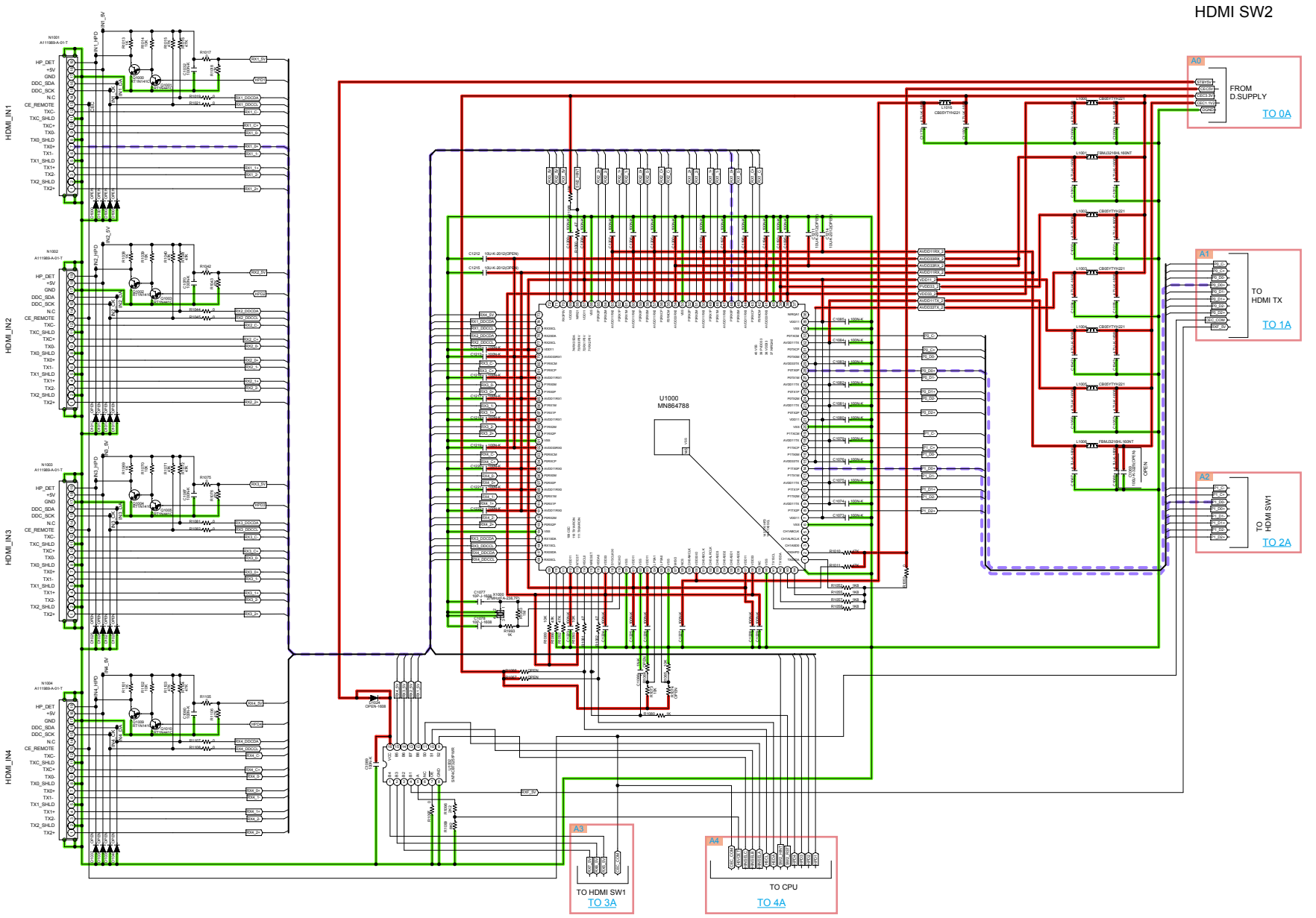
BLOCK DIAGRAM

POWER DIAGRAM

WIRING DIAGRAM

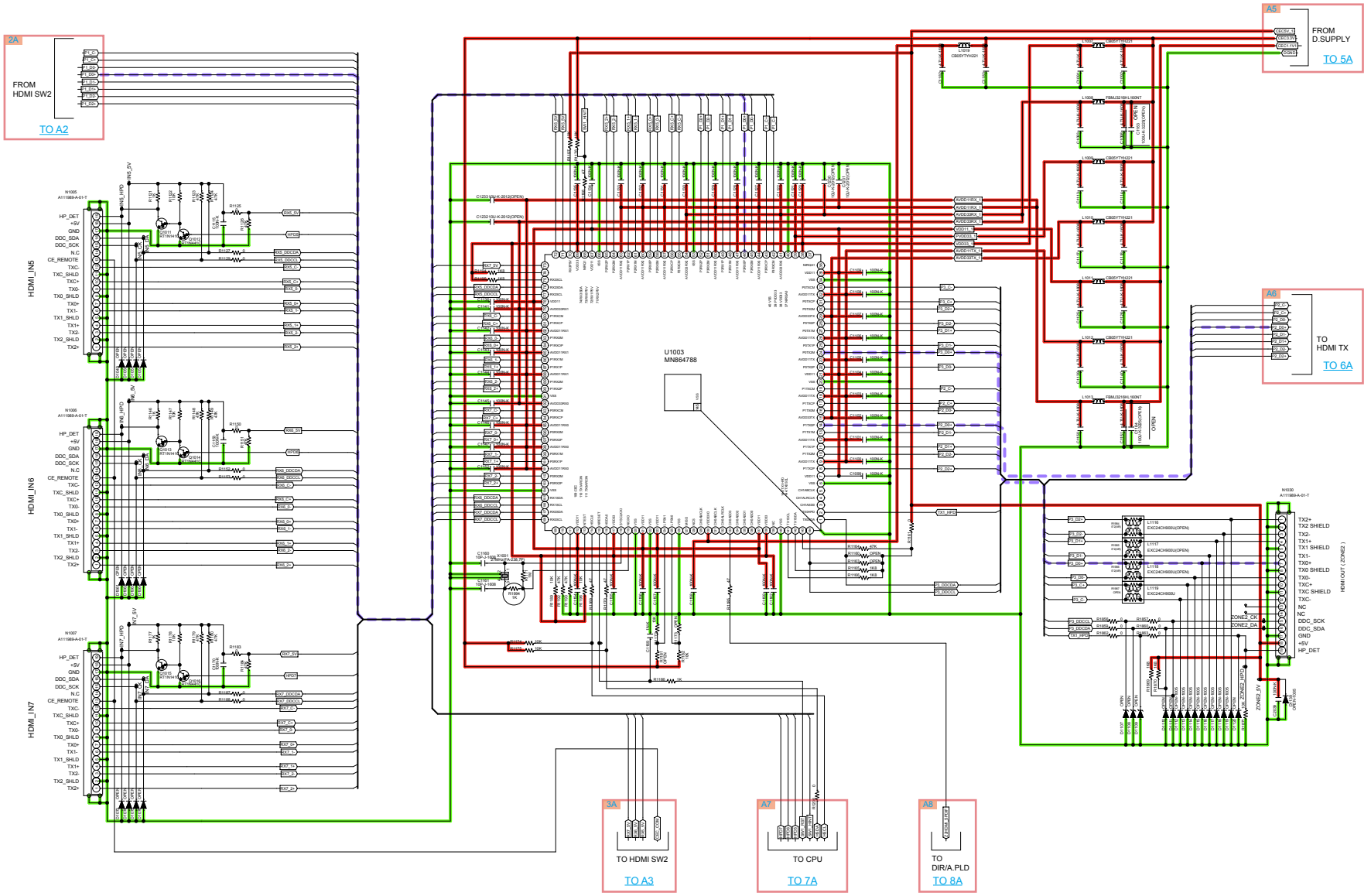
SEMICONDUCTORS

SCH01_HDMI SW2



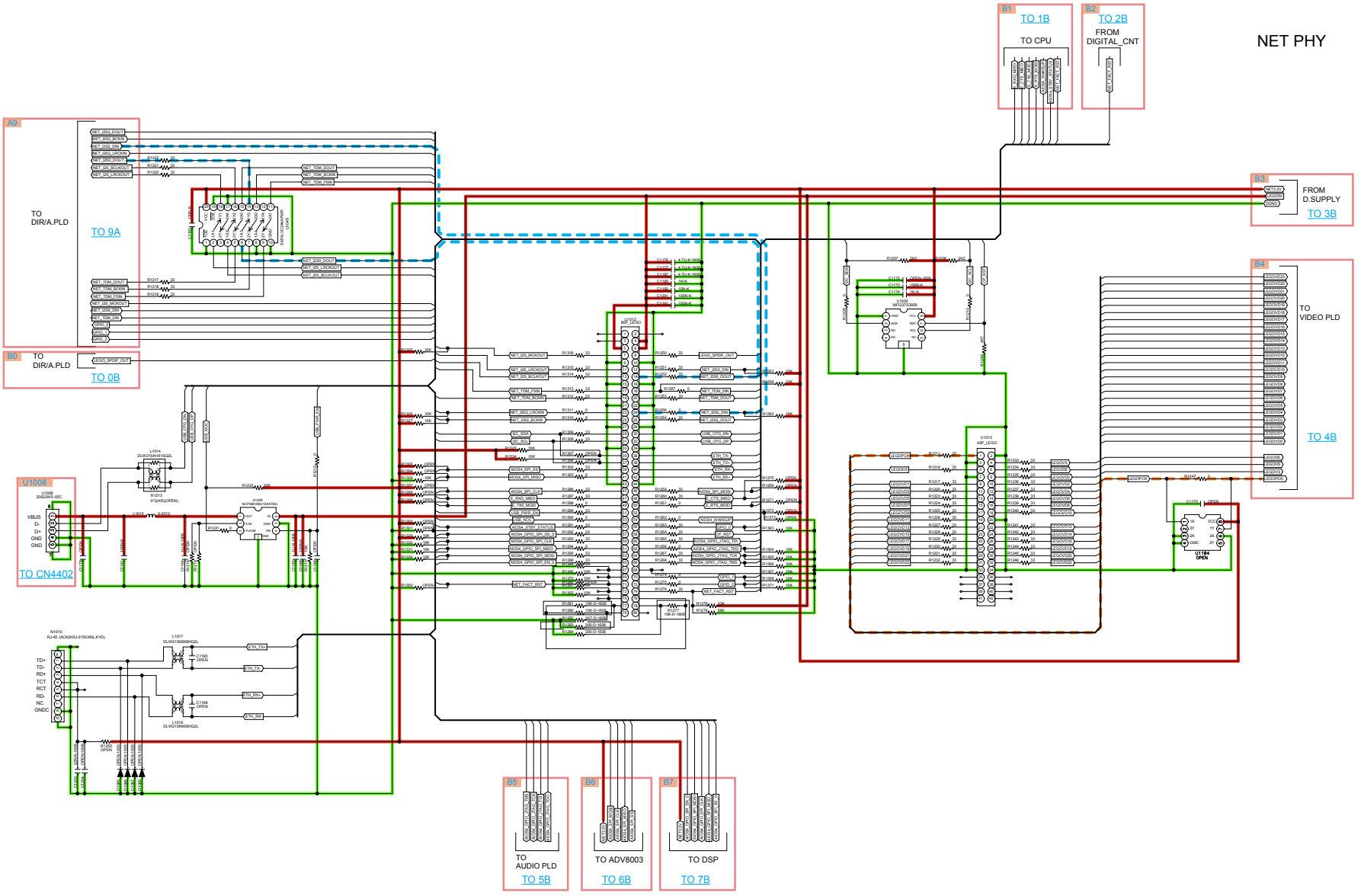
GND LINE POWER+ LINE POWER- LINE ANALOG AUDIO DIGITAL AUDIO TMDS SIGNAL ANALOG VIDEO DIGITAL VIDEO STBY POWER

HDMI SW1



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

SCH03_NET PHY



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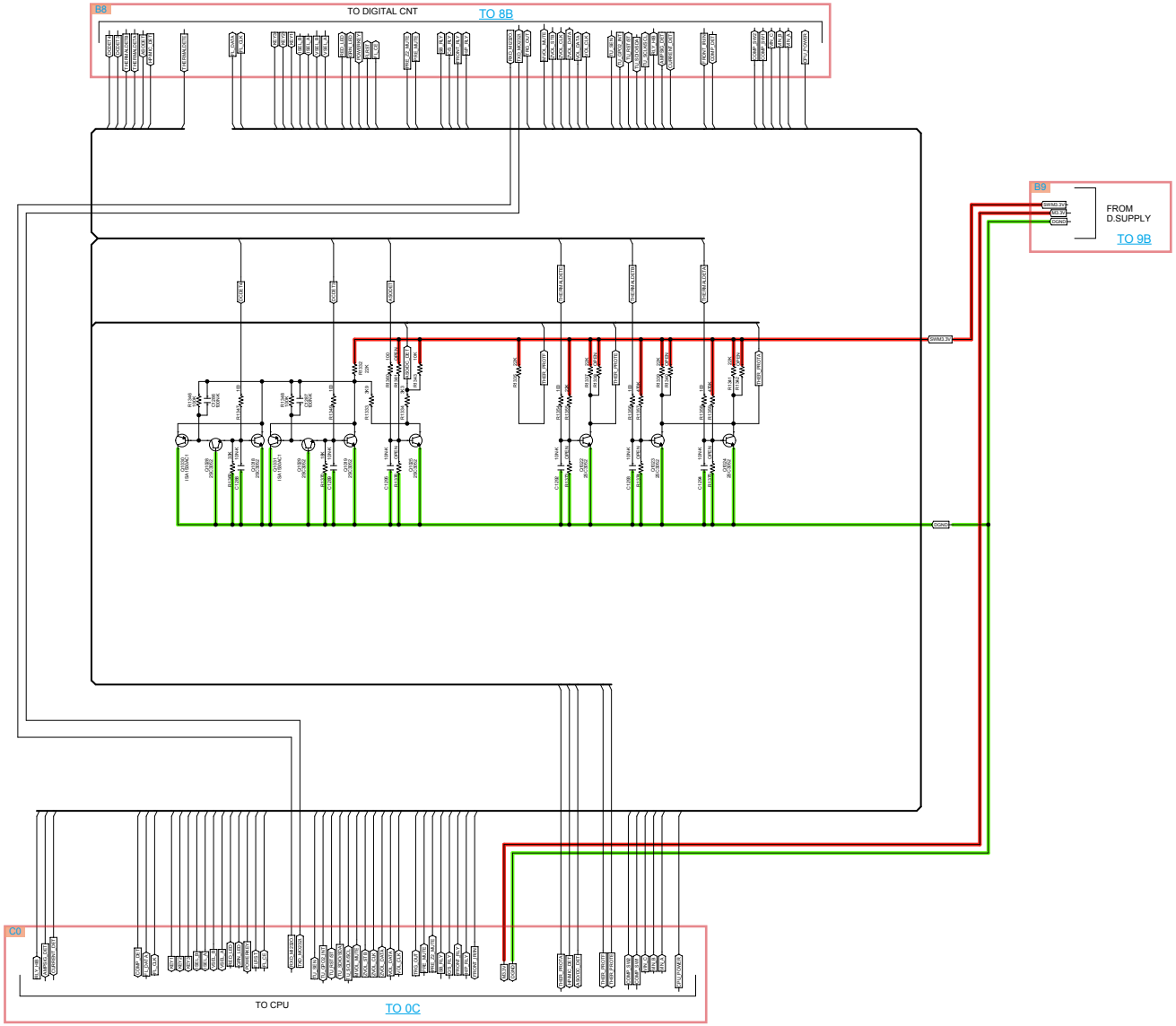
CPU LEVEL CHG



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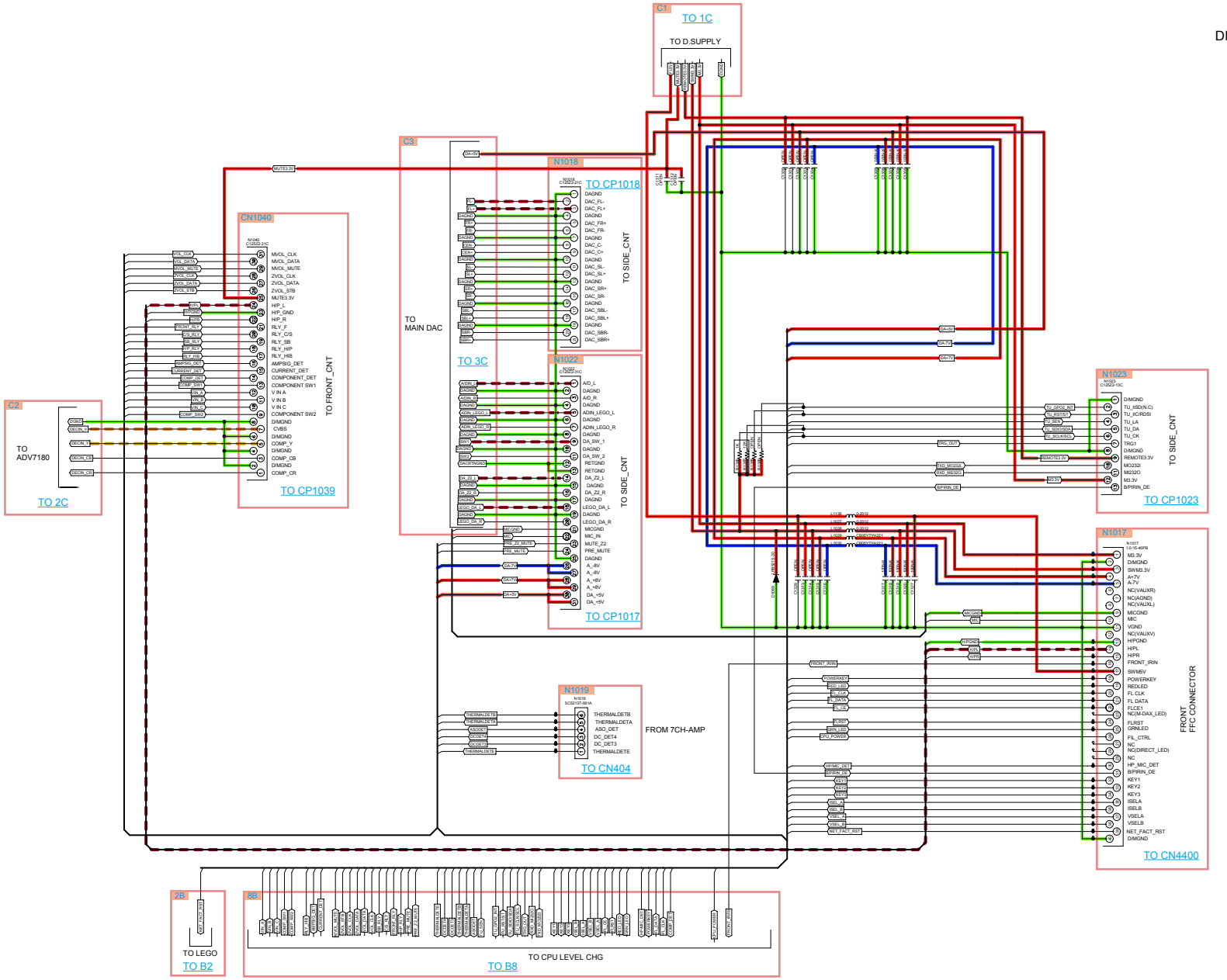
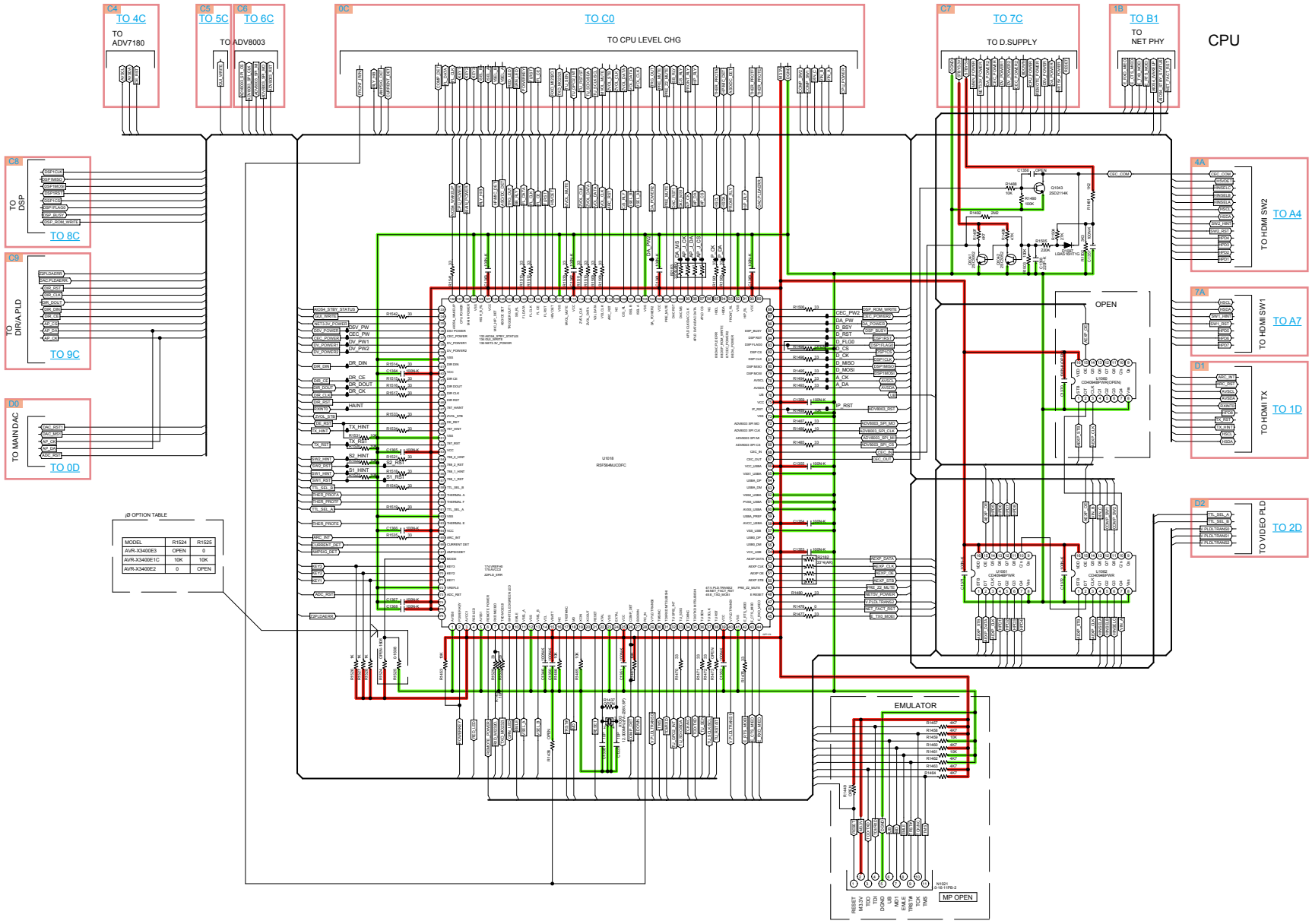
SCH05_DIGITAL CNT



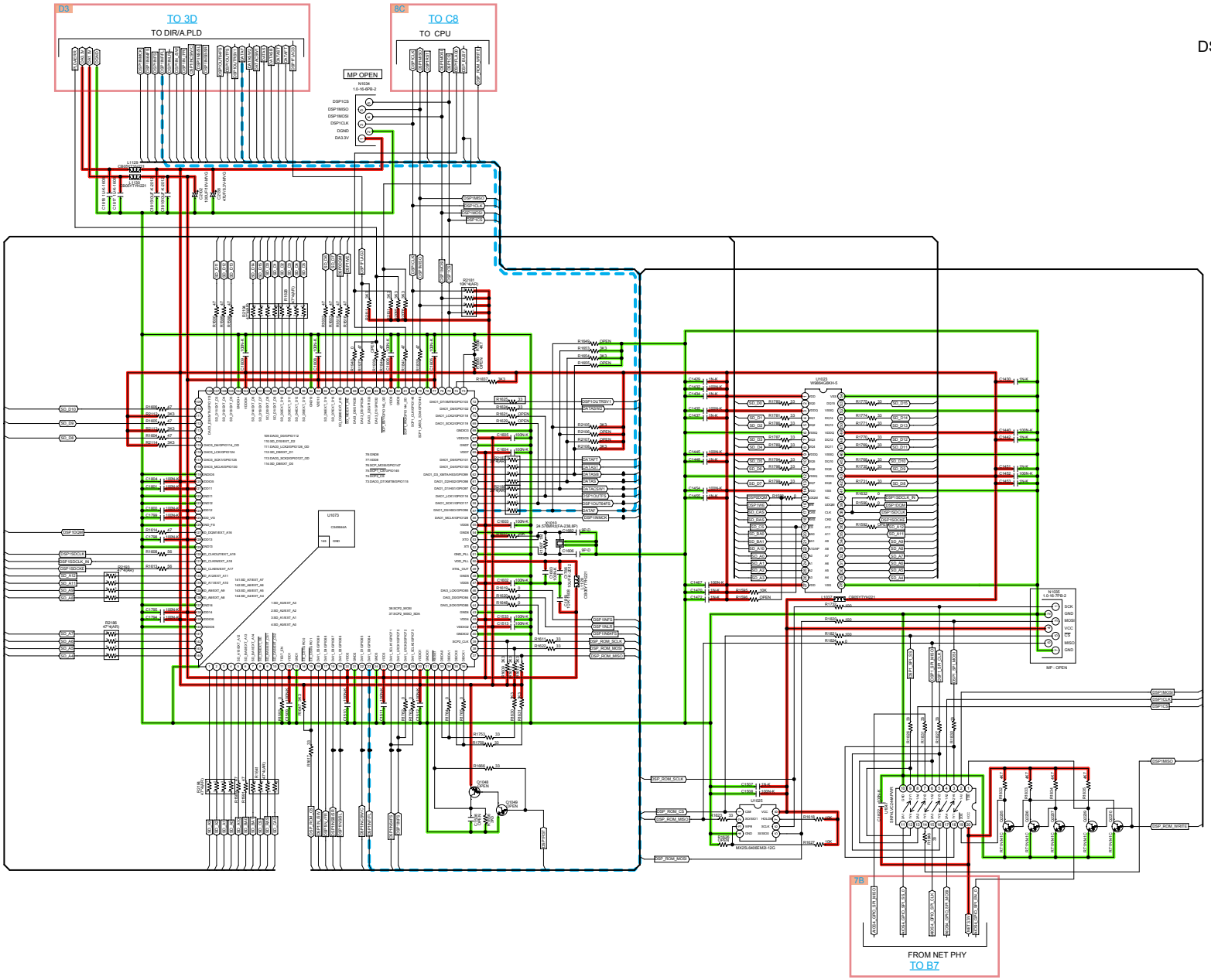
GND LINE | POWER+ LINE | POWER- LINE | ANALOG AUDIO | DIGITAL AUDIO | TMDS SIGNAL | ANALOG VIDEO | DIGITAL VIDEO | STBY POWER



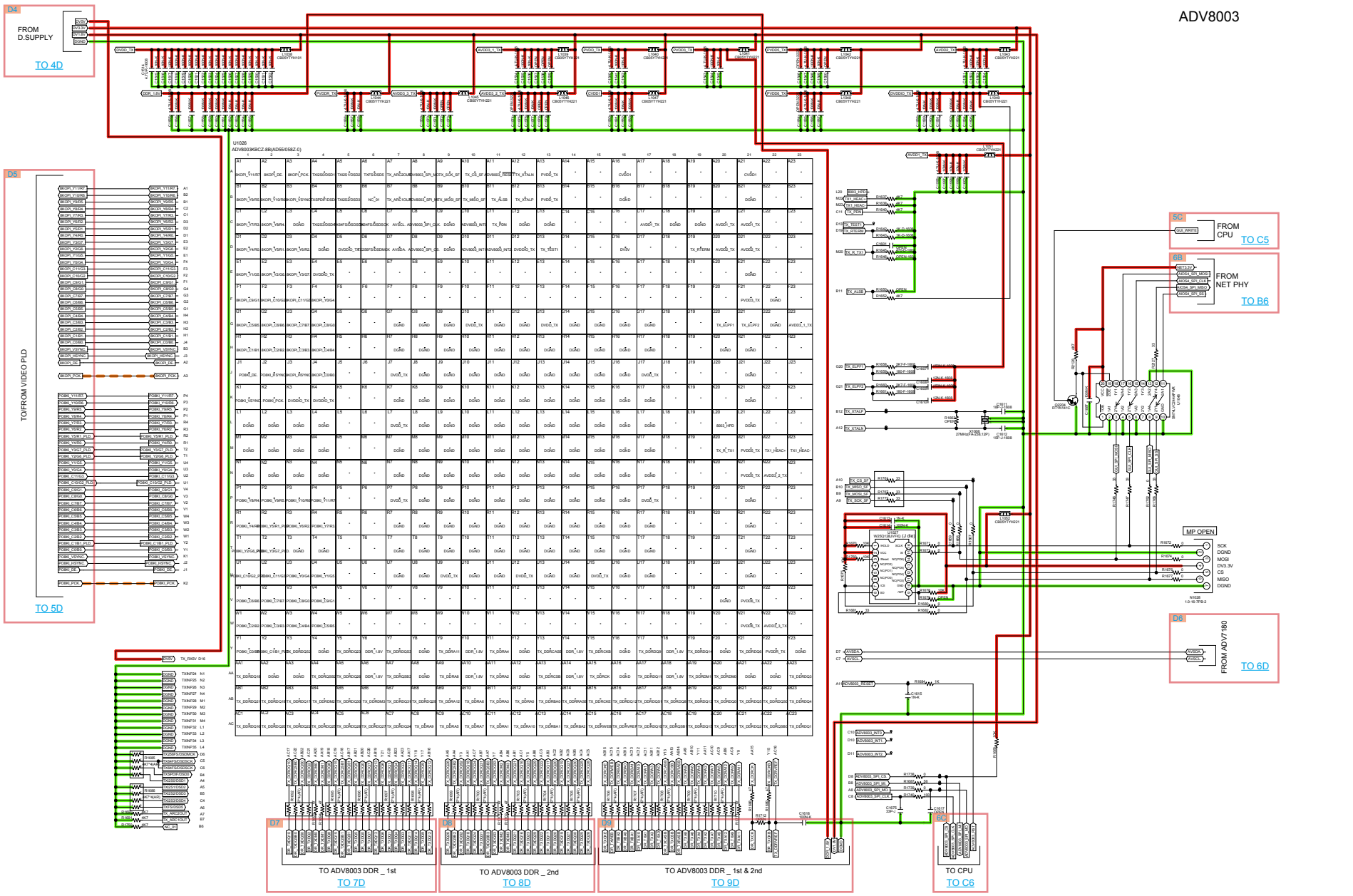
GND LINE POWER+ LINE POWER- LINE ANALOG AUDIO DIGITAL AUDIO TMDS SIGNAL ANALOG VIDEO DIGITAL VIDEO STBY POWER

SCH07_DSP

DSP

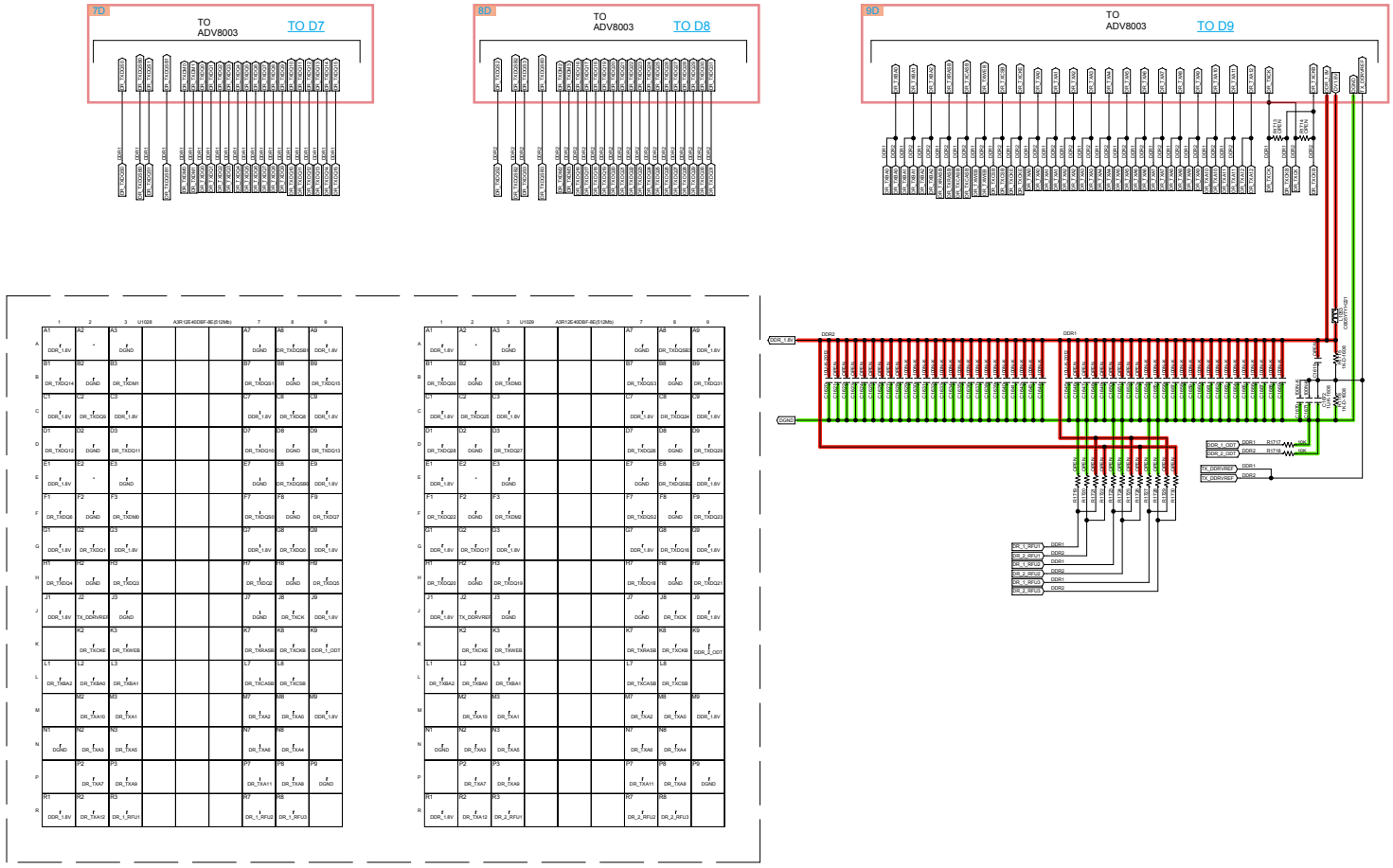


GND LINE | POWER+ LINE | POWER- LINE | ANALOG AUDIO | DIGITAL AUDIO | TMDS SIGNAL | ANALOG VIDEO | DIGITAL VIDEO | STBY POWER

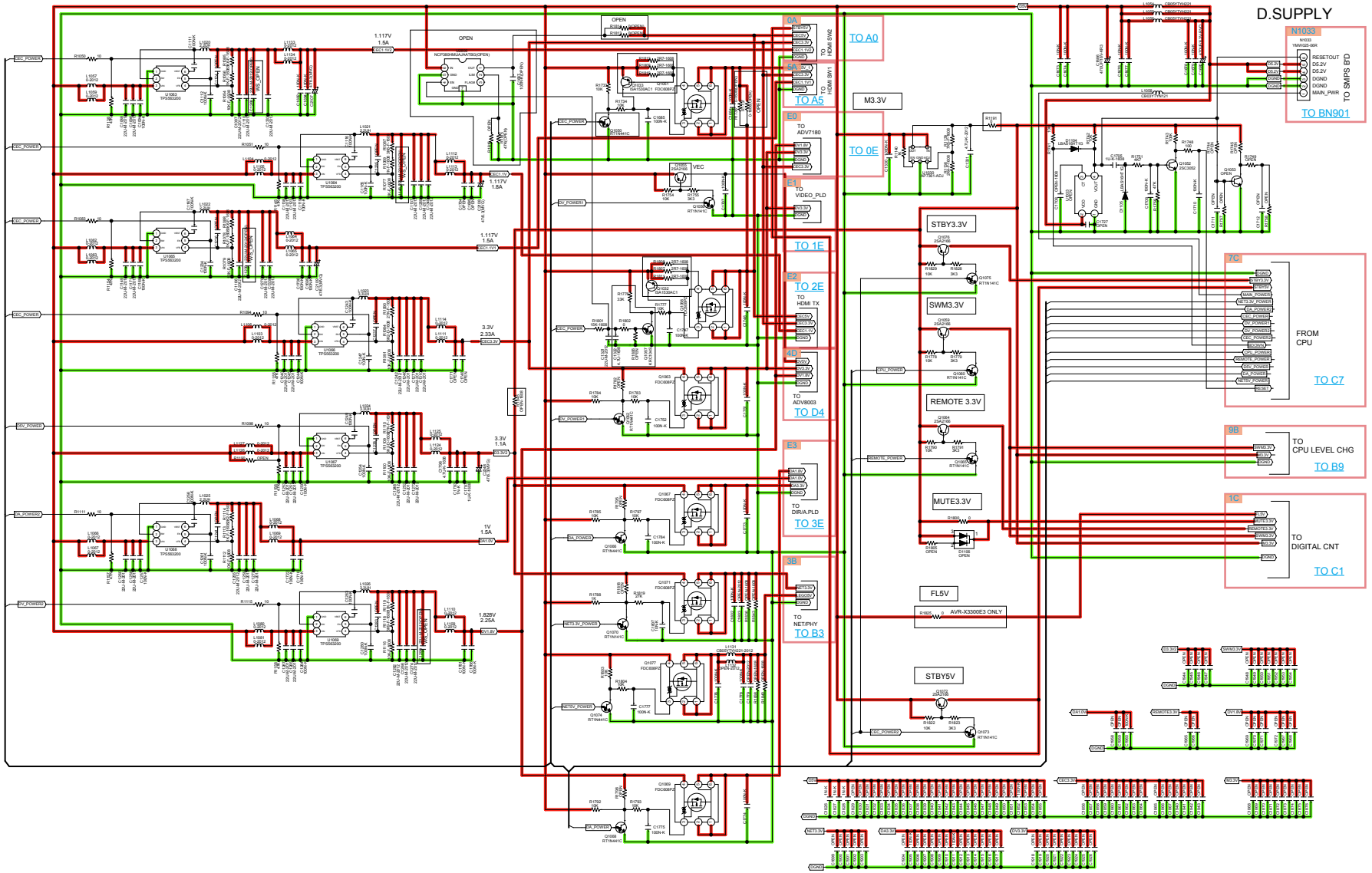


GND LINE | POWER+ LINE | POWER- LINE | ANALOG AUDIO | DIGITAL AUDIO | TMDS SIGNAL | ANALOG VIDEO | DIGITAL VIDEO | STBY POWER

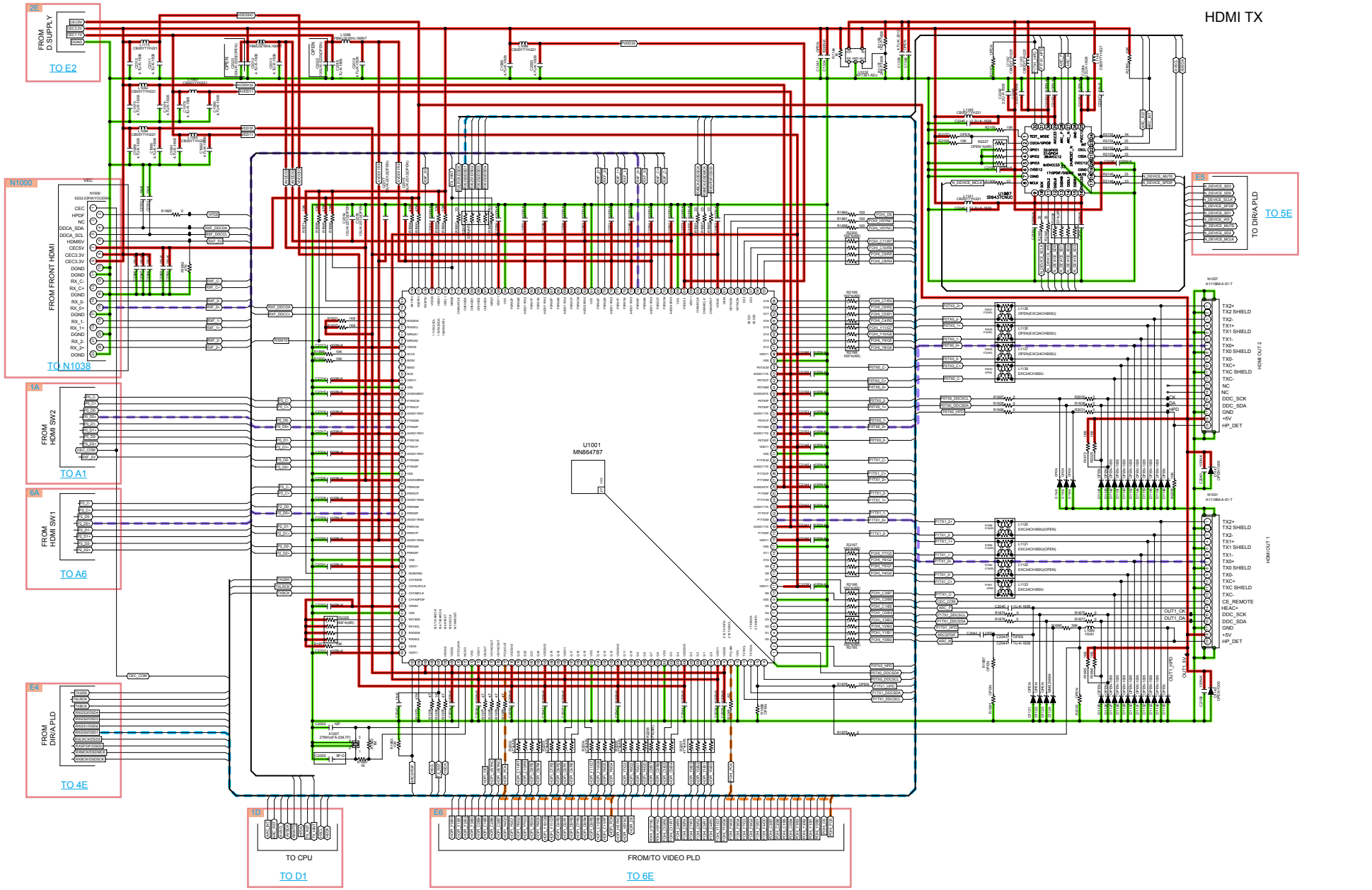
ADV8003 DDR



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

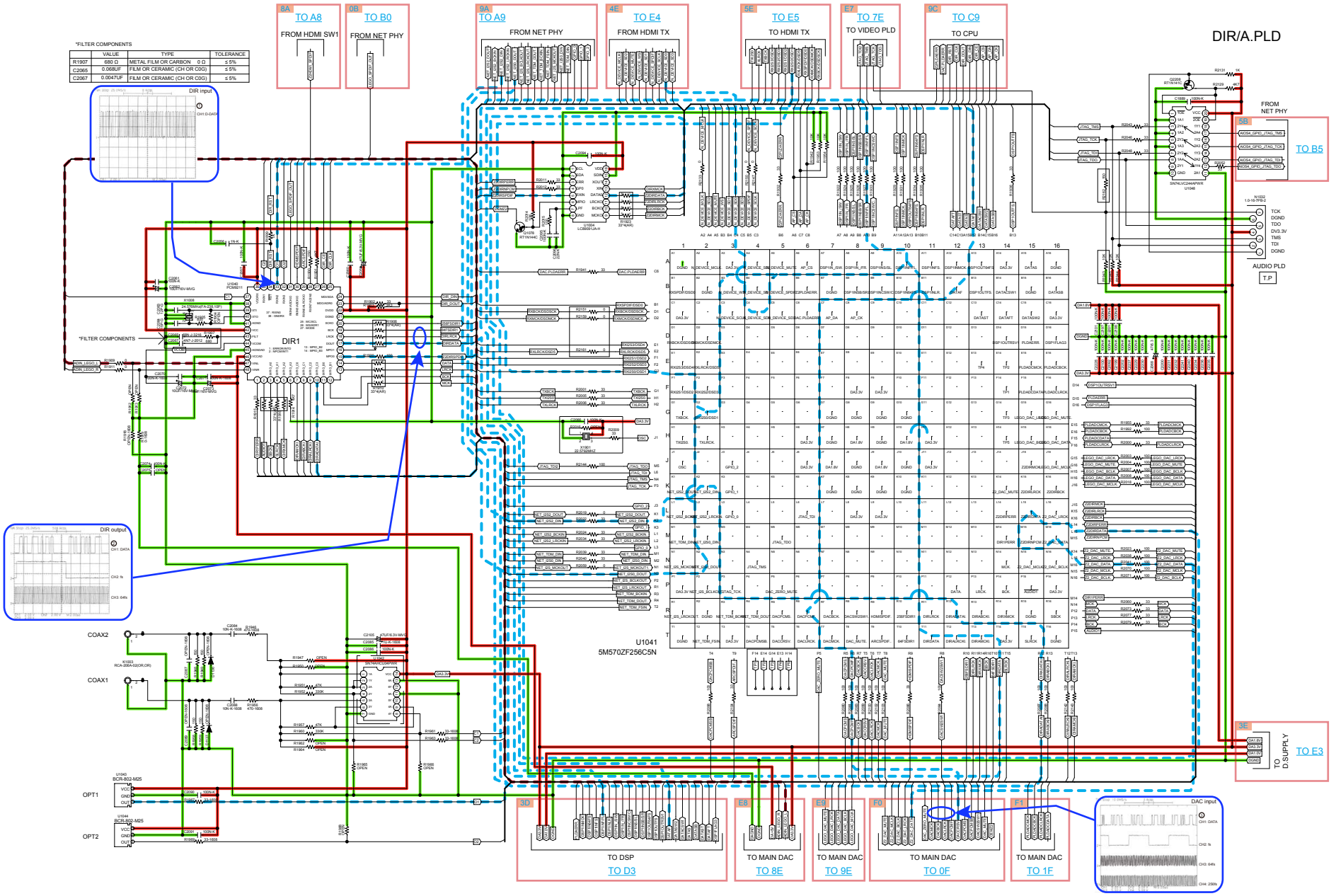


GND LINE | POWER+ LINE | POWER- LINE | ANALOG AUDIO | DIGITAL AUDIO | TMDS SIGNAL | ANALOG VIDEO | DIGITAL VIDEO | STBY POWER



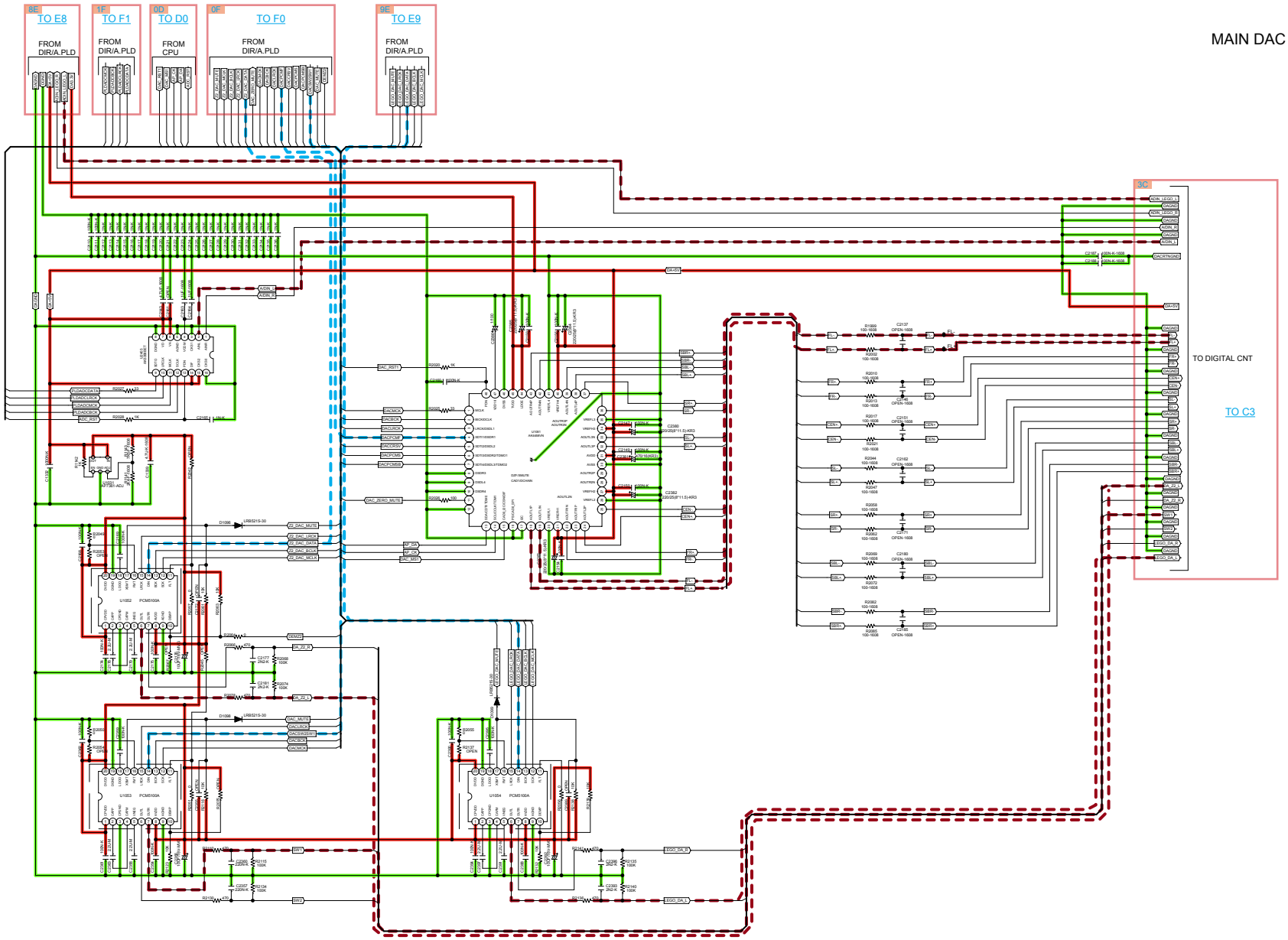
GND LINE | POWER+ LINE | POWER- LINE | ANALOG AUDIO | DIGITAL AUDIO | TMDS SIGNAL | ANALOG VIDEO | DIGITAL VIDEO | STBY POWER

SCH12_DIR A.PLD



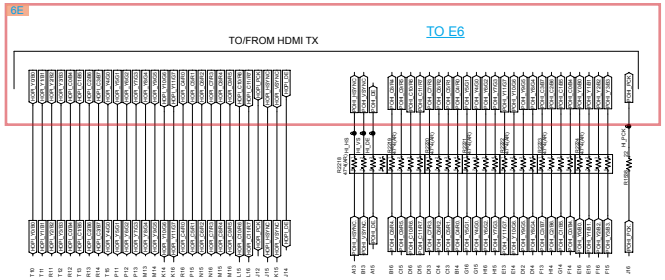
GND LINE | POWER+ LINE | POWER- LINE | ANALOG AUDIO | DIGITAL AUDIO | TMDS SIGNAL | ANALOG VIDEO | DIGITAL VIDEO | STBY POWER

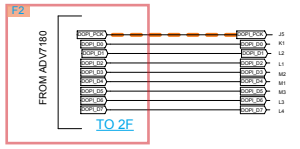
SCH13_MAIN DAC

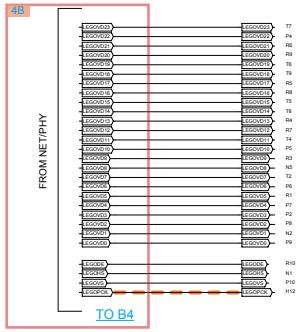


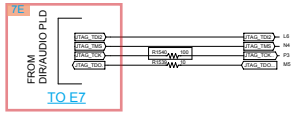
GND LINE POWER+ LINE POWER- LINE ANALOG AUDIO DIGITAL AUDIO TMDS SIGNAL ANALOG VIDEO DIGITAL VIDEO STBY POWER

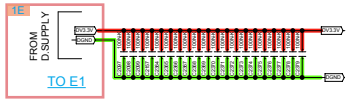
VIDEO PLD

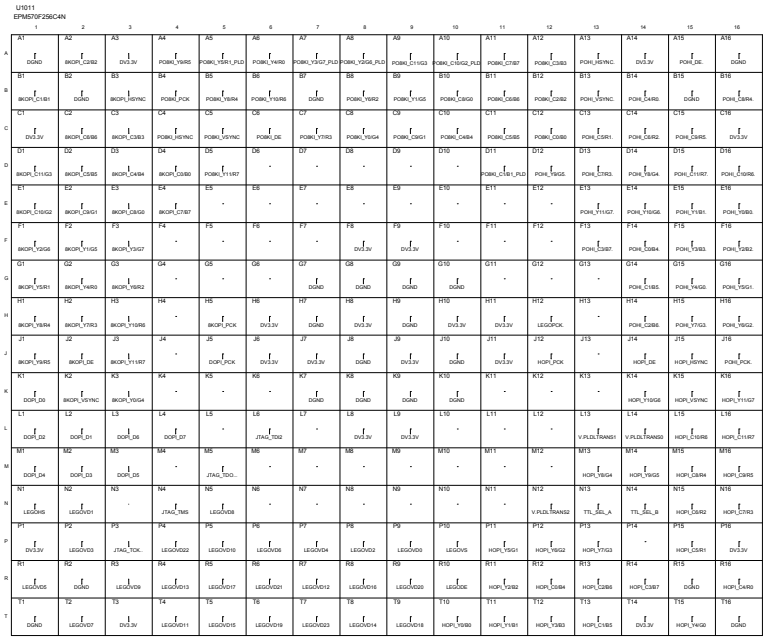


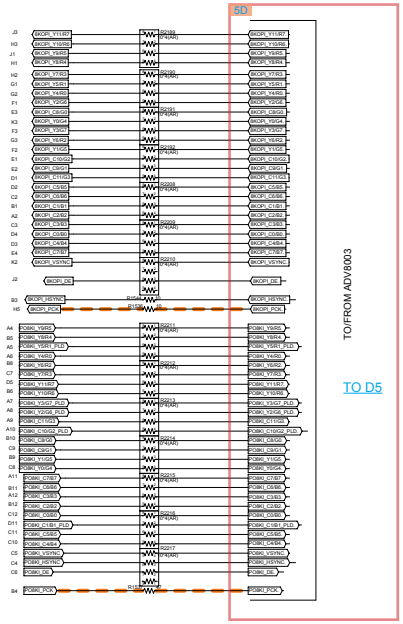






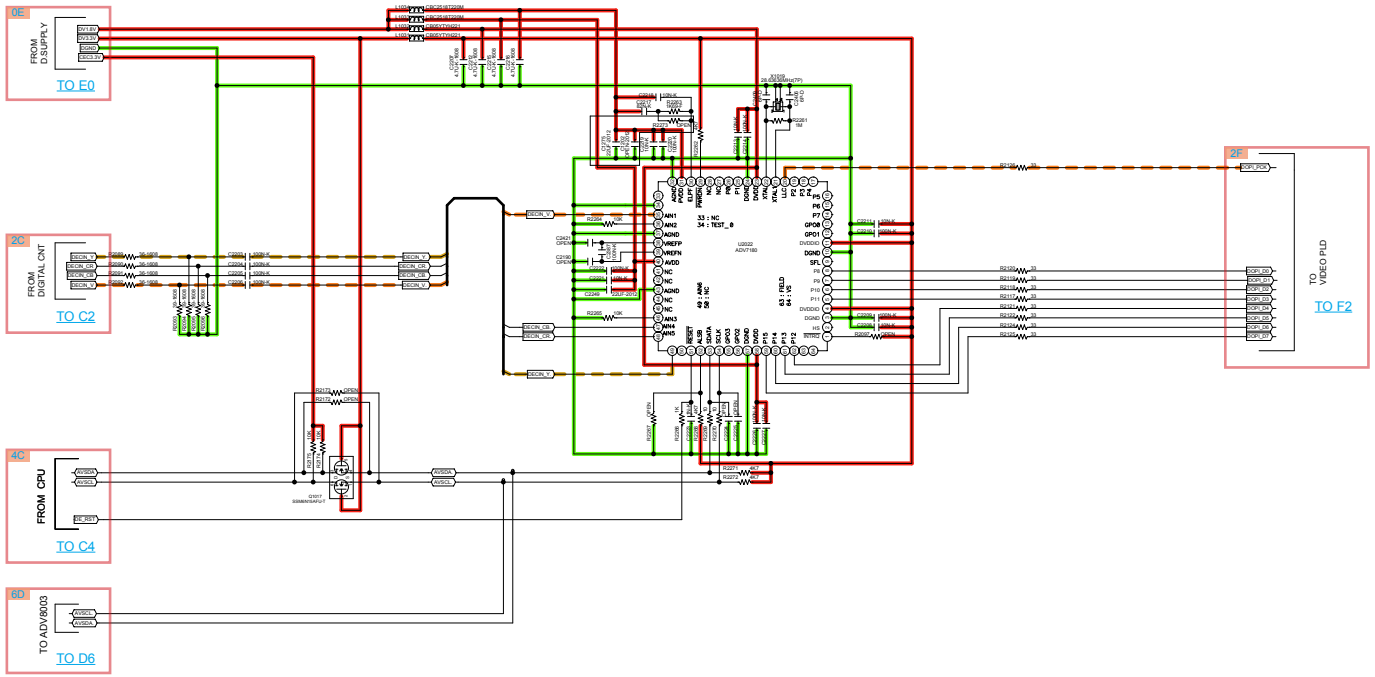




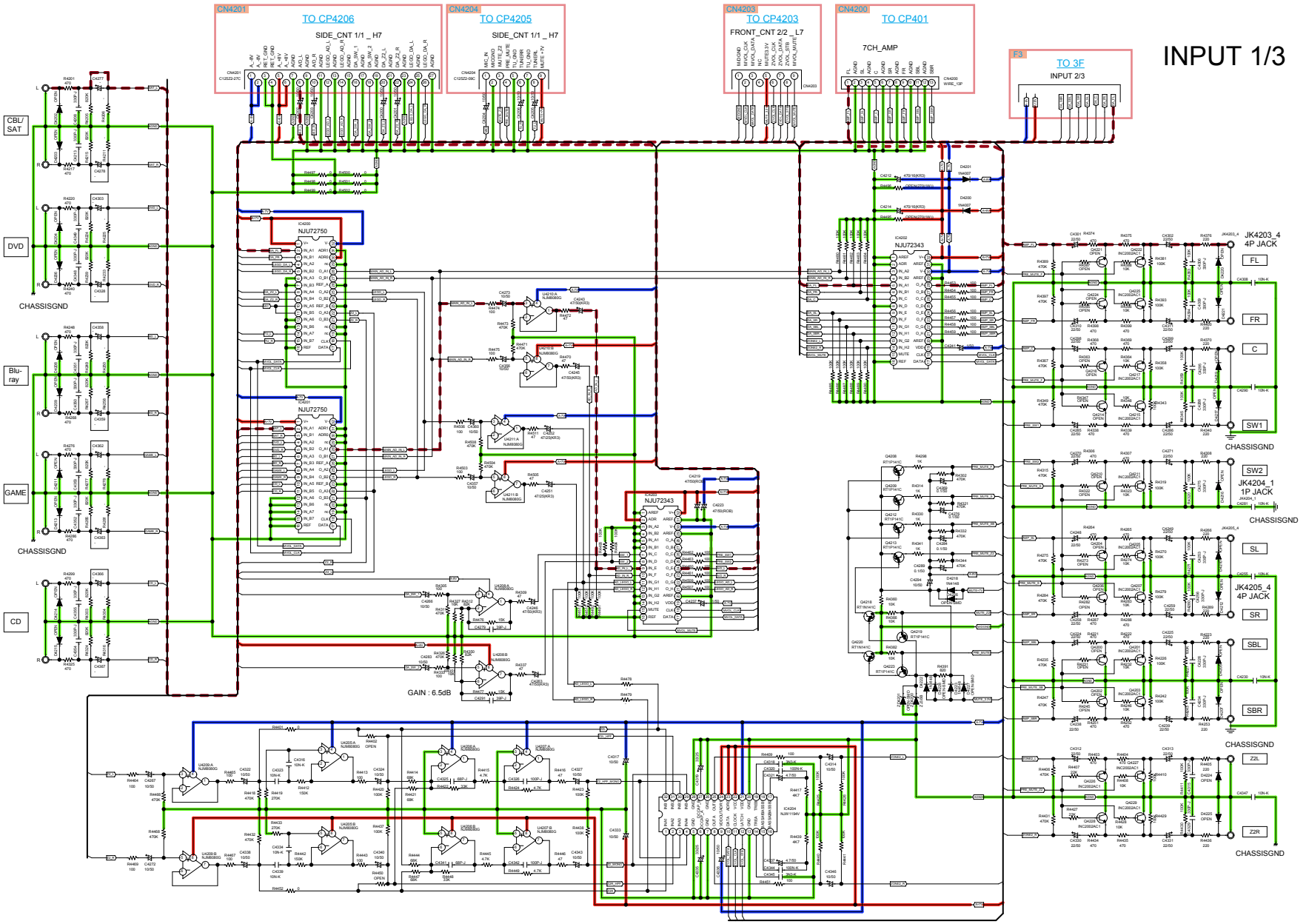


GND LINE POWER+ LINE POWER- LINE ANALOG AUDIO DIGITAL AUDIO TMDS SIGNAL ANALOG VIDEO DIGITAL VIDEO STBY POWER

ADV7180

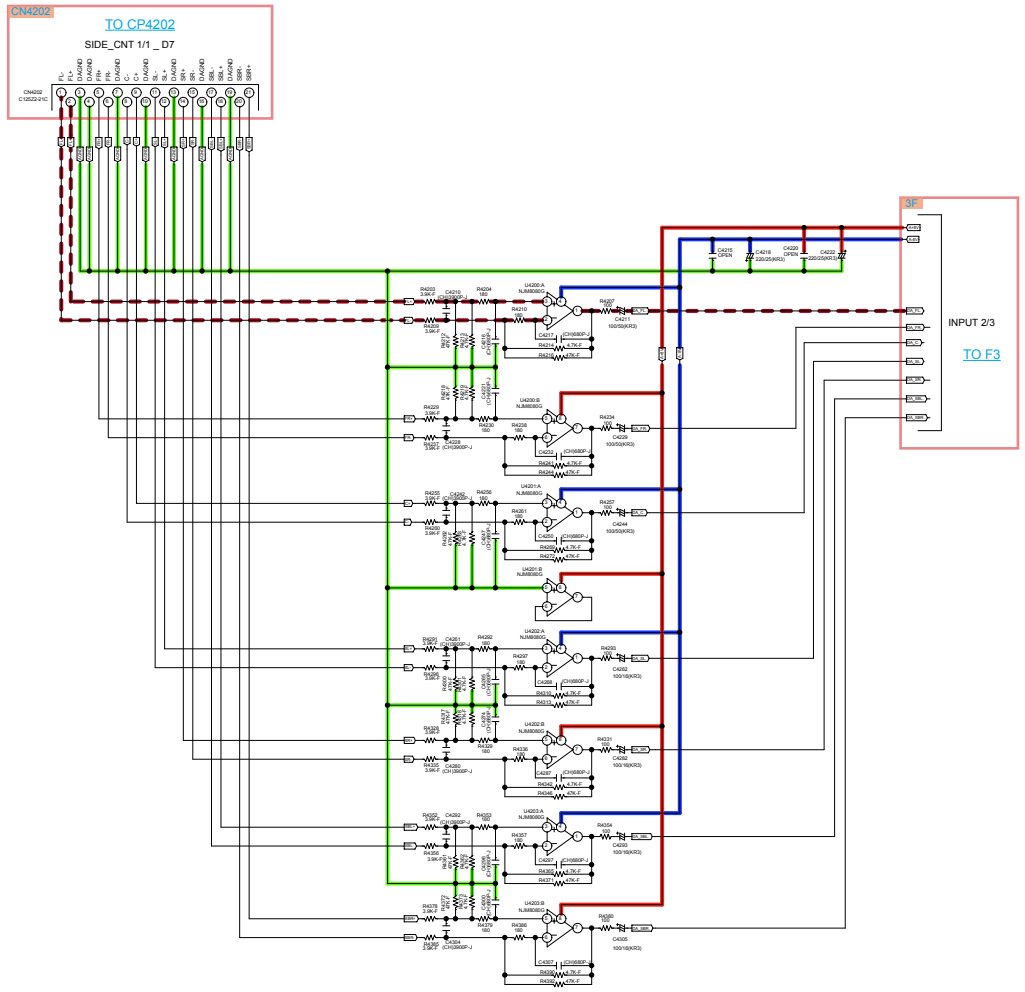


GND LINE | POWER+ LINE | POWER- LINE | ANALOG AUDIO | DIGITAL AUDIO | TMDS SIGNAL | ANALOG VIDEO | DIGITAL VIDEO | STBY POWER



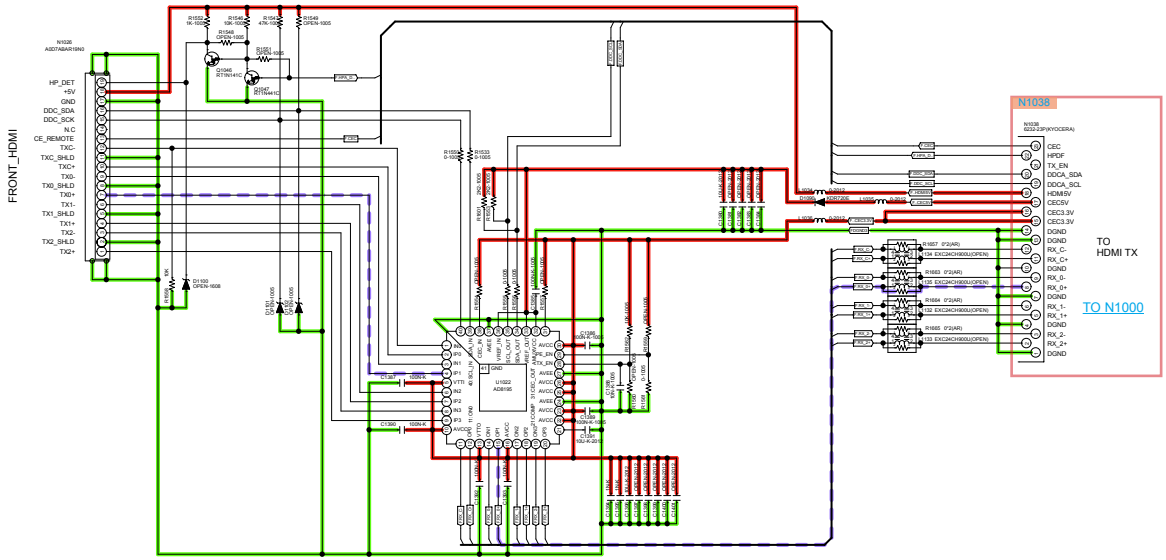
GND LINE POWER+ LINE POWER- LINE ANALOG AUDIO DIGITAL AUDIO TMDS SIGNAL ANALOG VIDEO DIGITAL VIDEO STBY POWER

INPUT 2/3



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

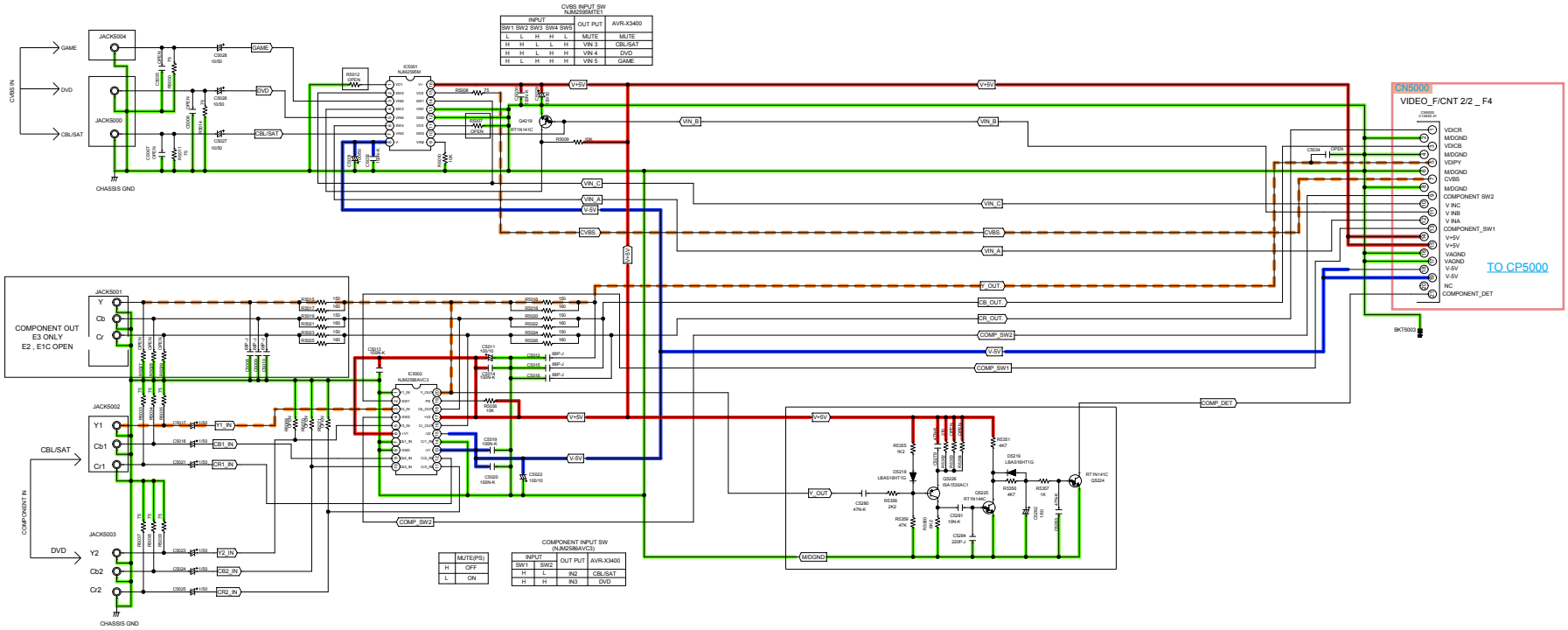
INPUT 3/3



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

VIDEO_F/CNT 1/2

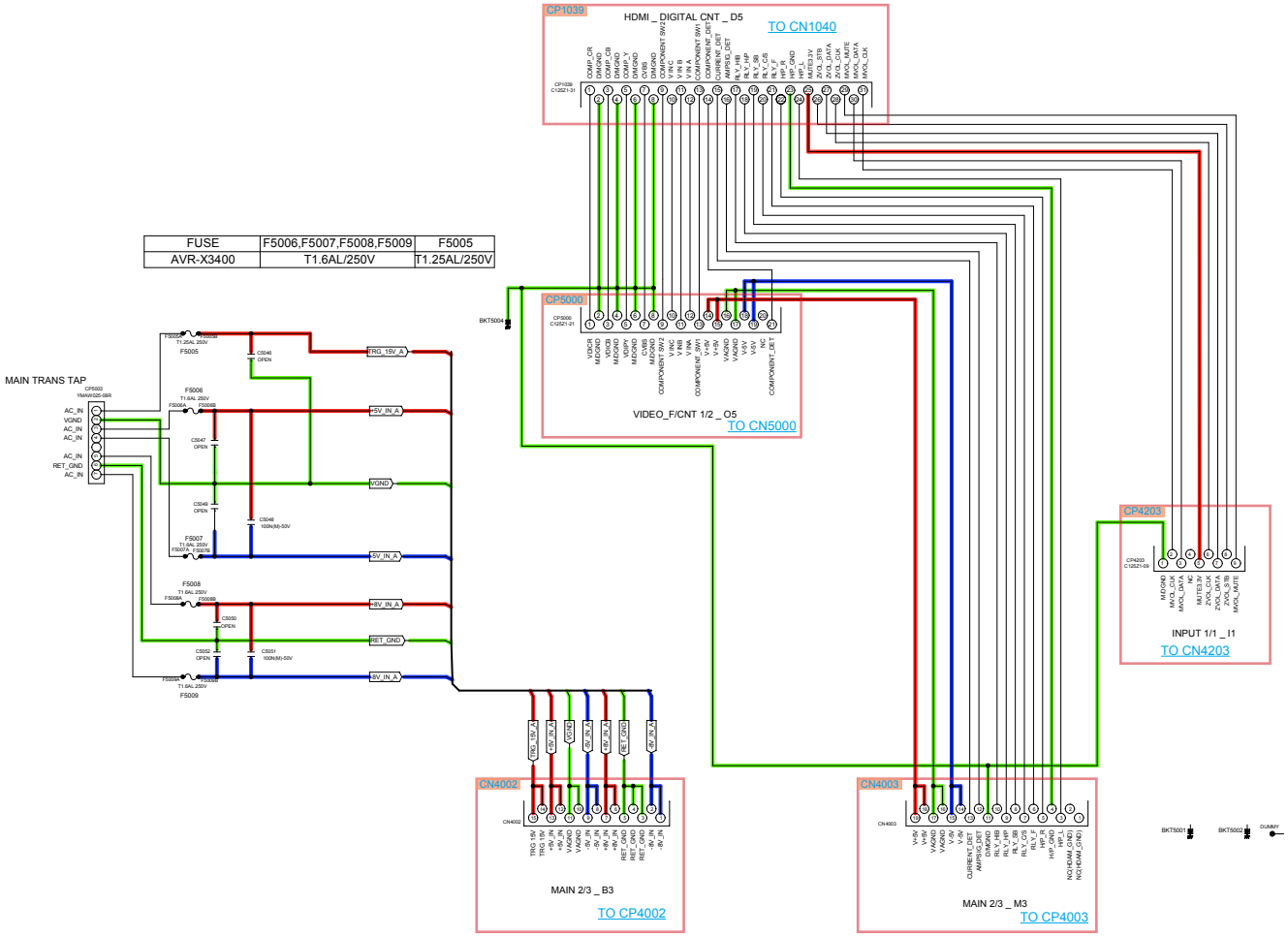
VIDEO PART



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

FRONT_CNT PART

VIDEO_F/CNT 2/2

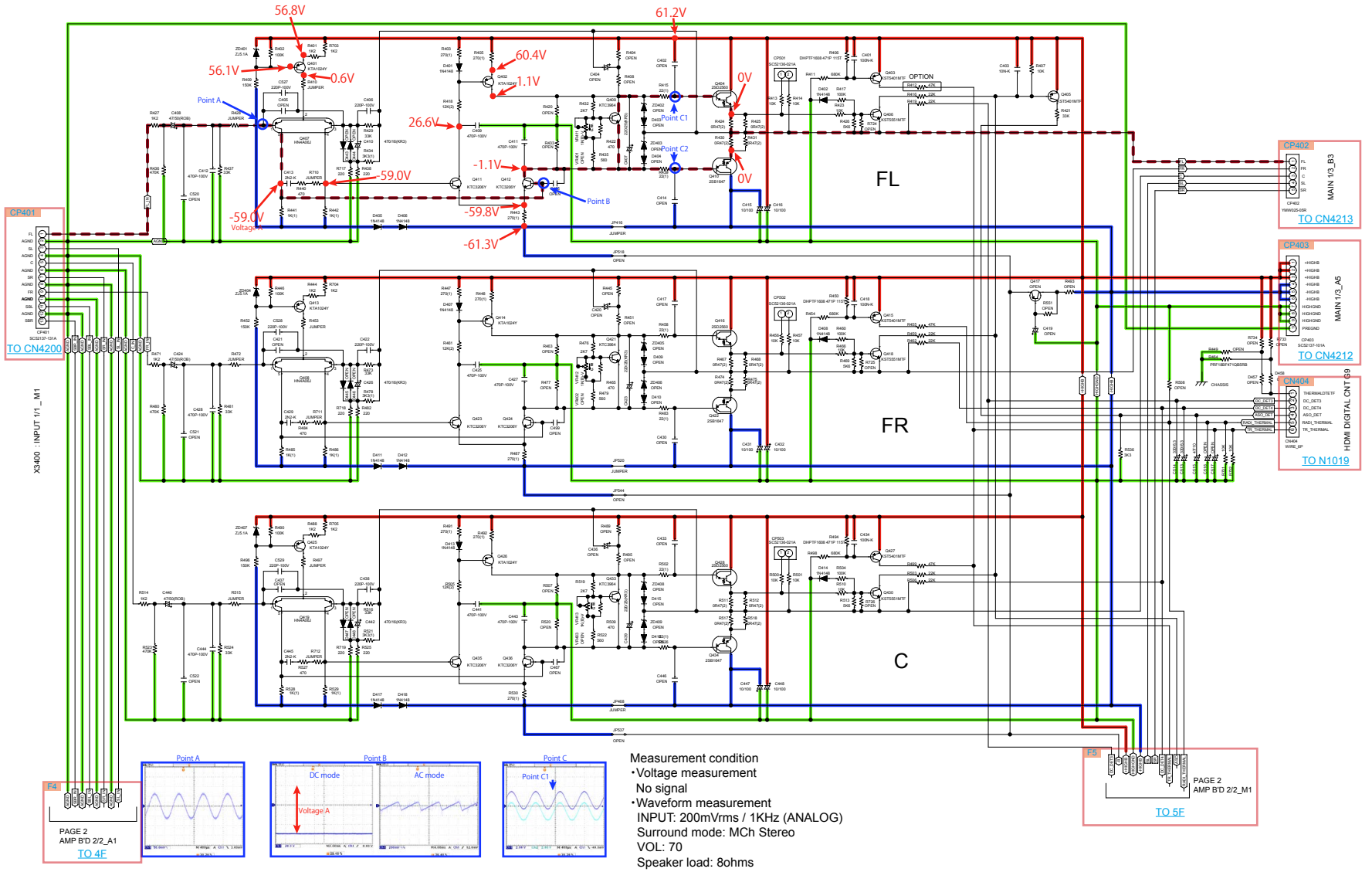


FUSE	F5006,F5007,F5008,F5009	F5005
AVR-X3400	T1.6AL/250V	T1.25AL/250V

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

AVR-X3400 AMP SCH

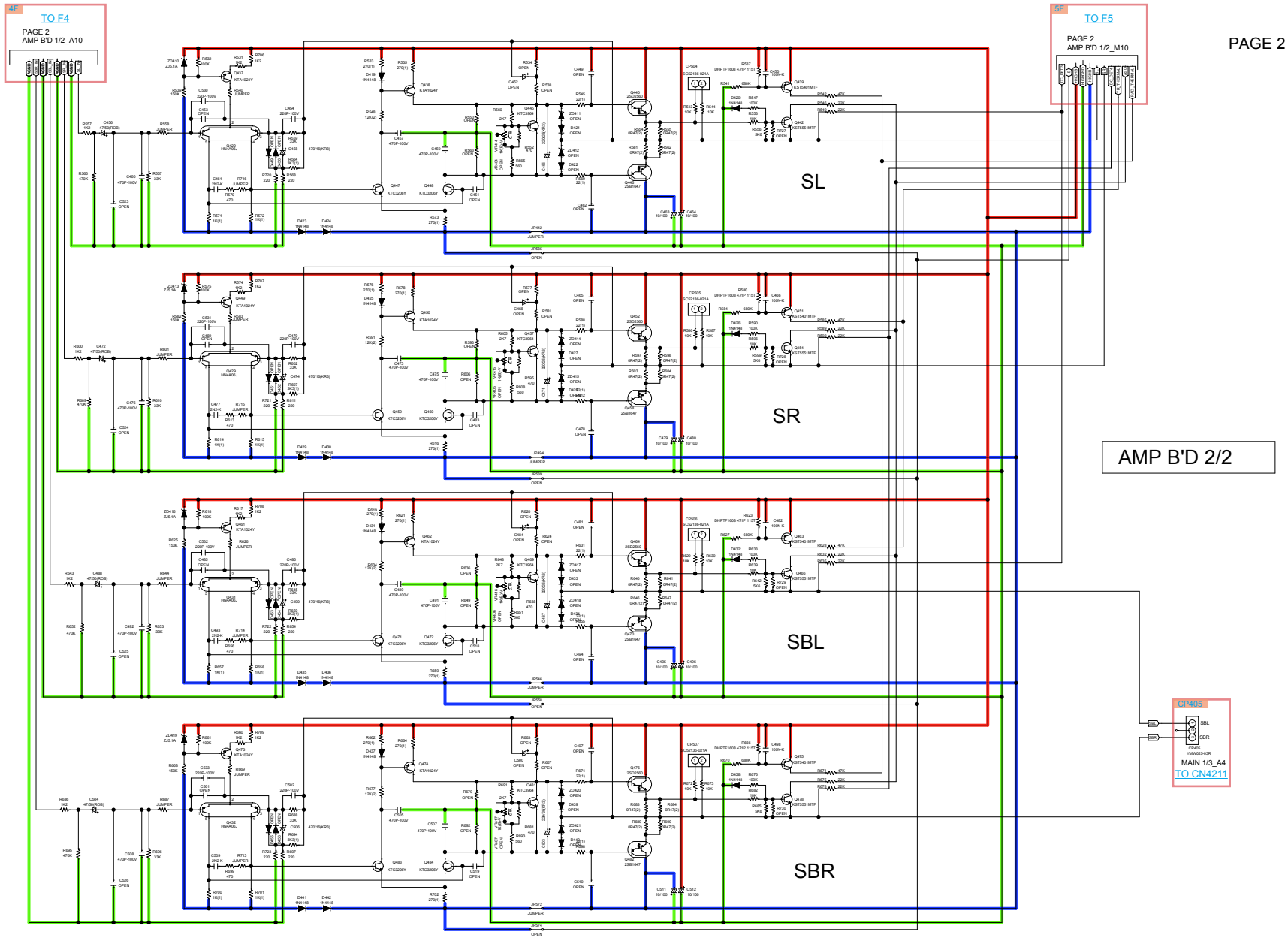
AMP B'D 1/2



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 | DIGITAL VIDEO | STBY POWER

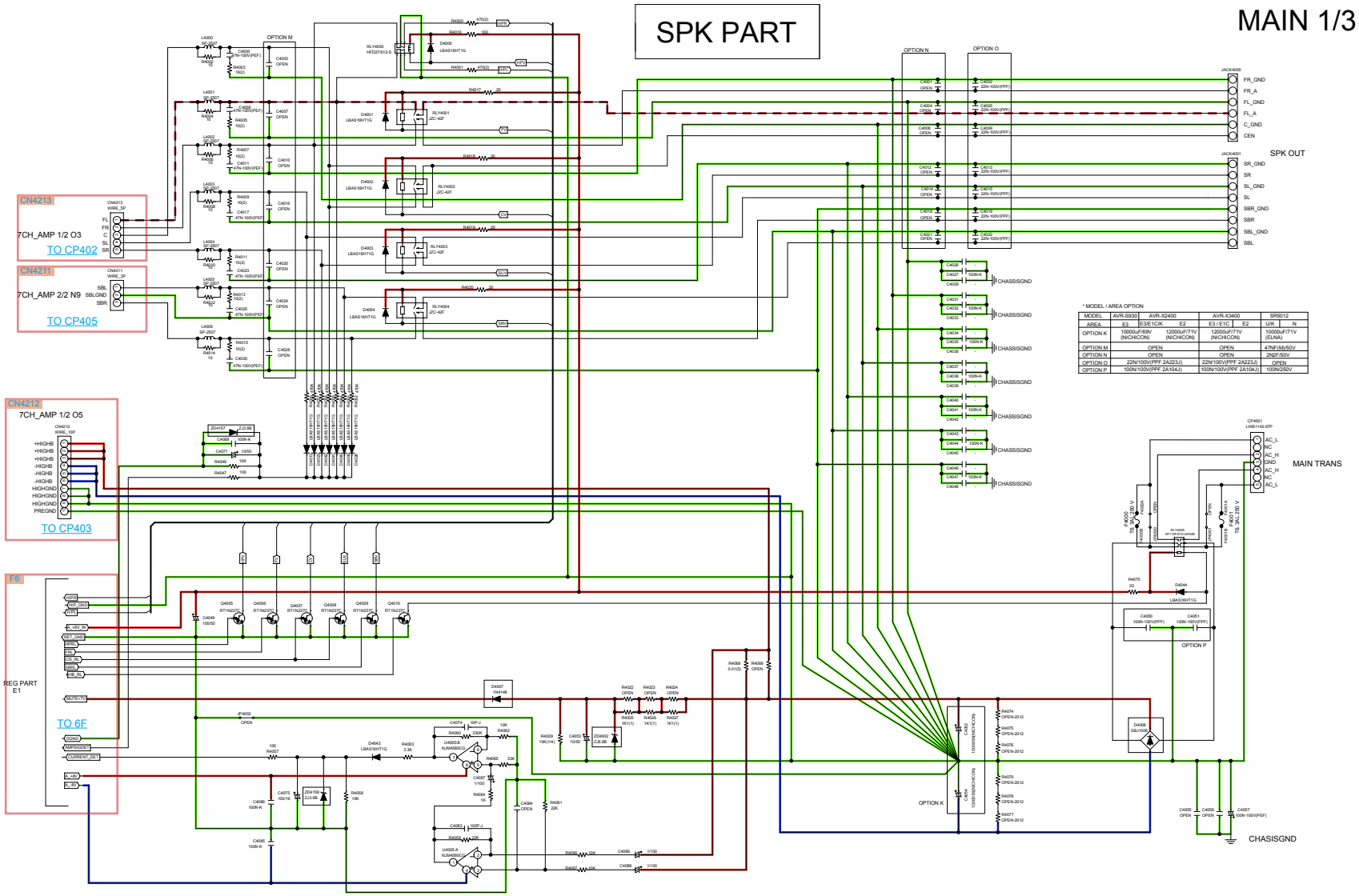
SCH22_AMP2



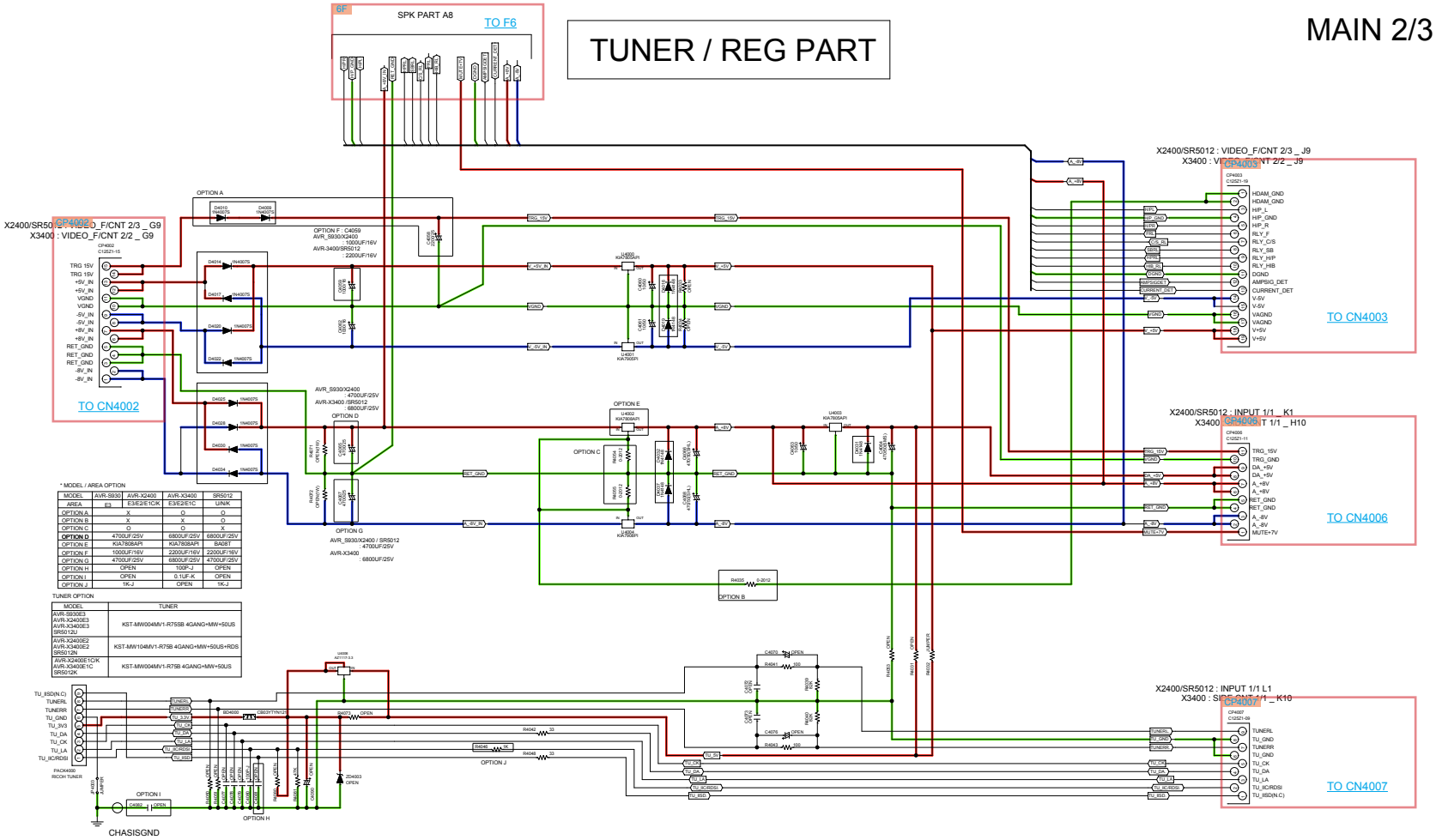
PAGE 2

AMP B'D 2/2

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



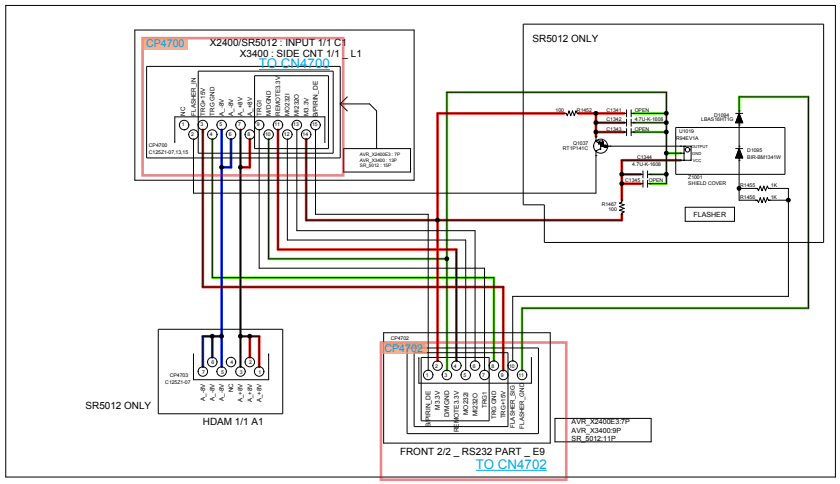
GND LINE POWER+ LINE POWER- LINE ANALOG AUDIO DIGITAL AUDIO TMDS SIGNAL ANALOG VIDEO DIGITAL VIDEO STBY POWER



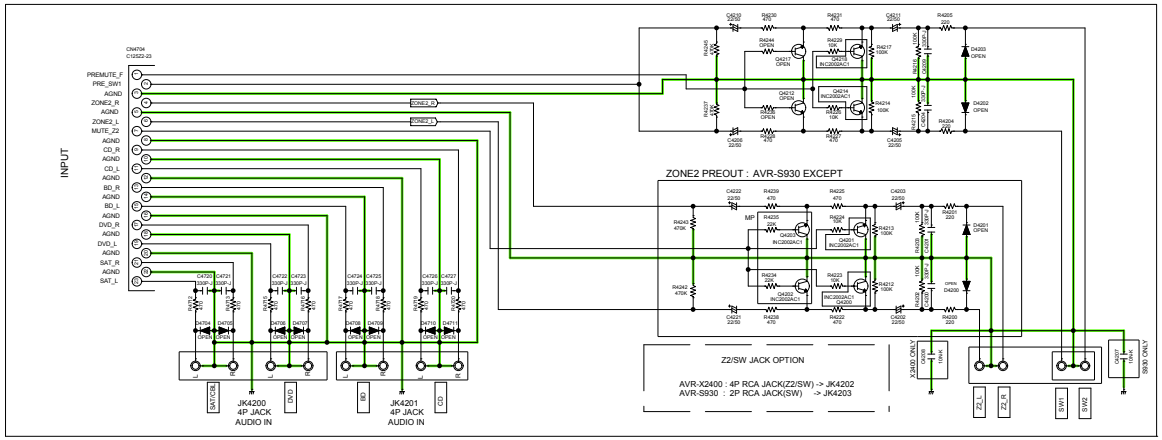
GND LINE POWER+ LINE POWER- LINE ANALOG AUDIO DIGITAL AUDIO TMDS SIGNAL ANALOG VIDEO DIGITAL VIDEO STBY POWER

MAIN 3/3

RS_CNT PART (AVR_X2400E3_X3400_SR5012 ONLY)



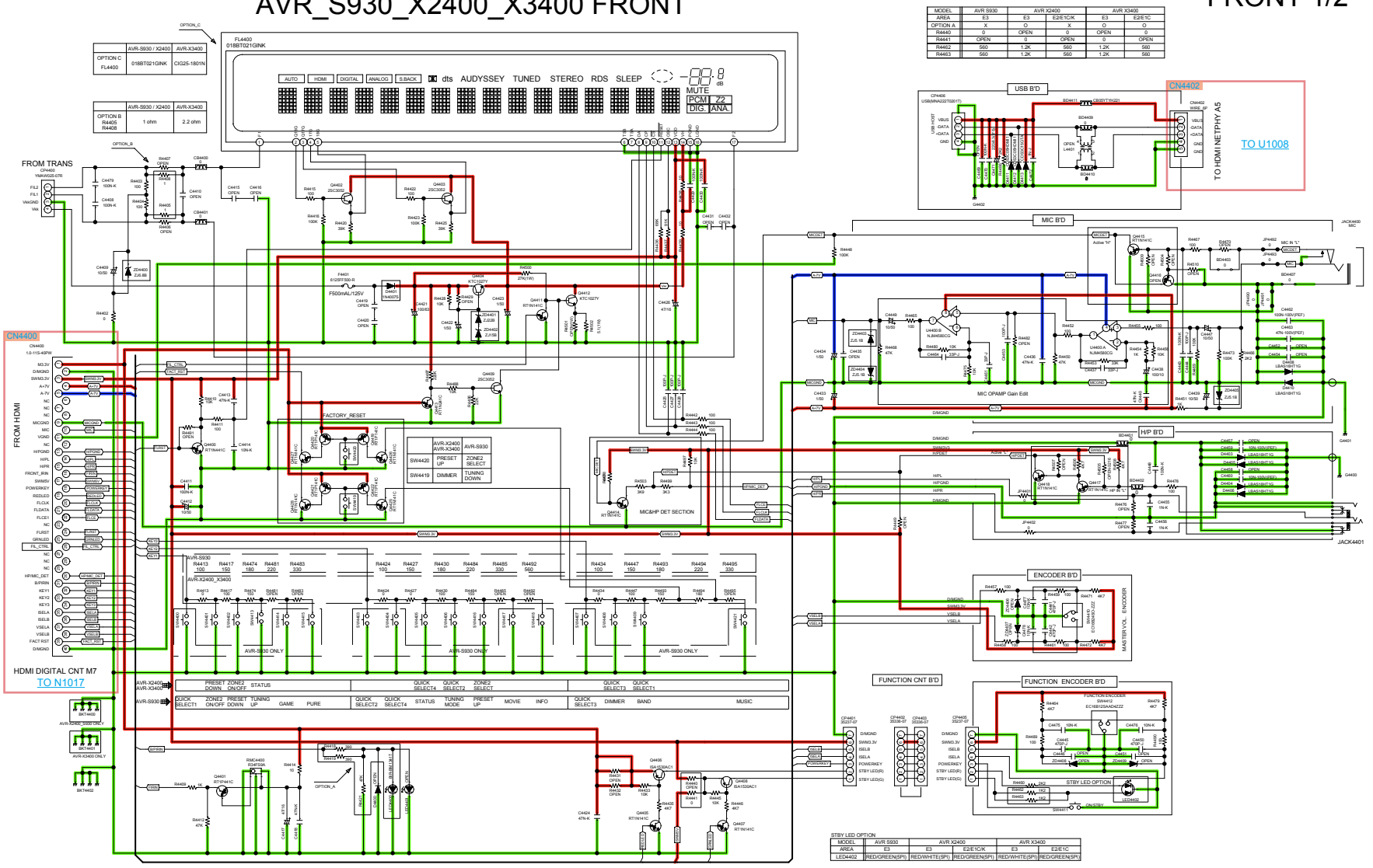
AUDIO IN PART (AVR S930 / X2400 ONLY)



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

AVR_S930_X2400_X3400 FRONT

FRONT 1/2



	AVR-S930 / X2400	AVR-X3400
OPTION C FL4400	018BT021GINK	CIG25-1801N

	AVR-S930 / X2400	AVR-X3400
OPTION B R4405 R4408	1 ohm	2.2 ohm

MODEL	AVR S930	AVR X2400		AVR X3400	
AREA	E3	E3	E2/E1C/K	E3	E2/E1C
OPTION A	X	O	X	O	O
R4440	0	OPEN	0	OPEN	0
R4441	OPEN	0	OPEN	0	OPEN
R4462	560	1.2K	560	1.2K	560
R4463	560	1.2K	560	1.2K	560

	AVR-X2400 AVR-X3400	AVR-S930
SW4420	PRESET UP	ZONE2 SELECT
SW4419	DIMMER	TUNING DOWN

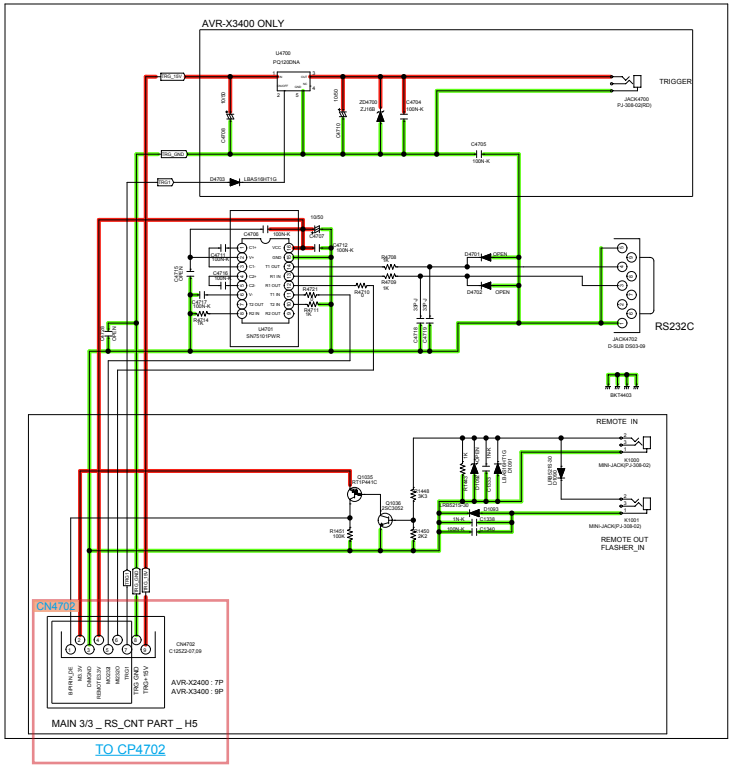
	PRESET ZONE2 DOWN	ZONE2 ON/OFF	STATUS						QUICK SELECT4	QUICK SELECT2	ZONE2 SELECT				QUICK SELECT3	QUICK SELECT1				
AVR-X2400 AVR-X3400																				
AVR-S930	QUICK SELECT1	ZONE2 ON/OFF	PRESET DOWN	TUNING UP	GAME	PURE	QUICK SELECT2	QUICK SELECT4	STATUS	TUNING MODE	PRESET UP	MOVIE	INFO	QUICK SELECT3	DIMMER	BAND	MUSIC			

STBY LED OPTION					
MODEL	AVR S930	AVR X2400		AVR X3400	
AREA	E3	E3	E2/E1C/K	E3	E2/E1C
LED4402	RED/GREEN(SPI)	RED/WHITE(SPI)	RED/GREEN(SPI)	RED/WHITE(SPI)	RED/GREEN(SPI)

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

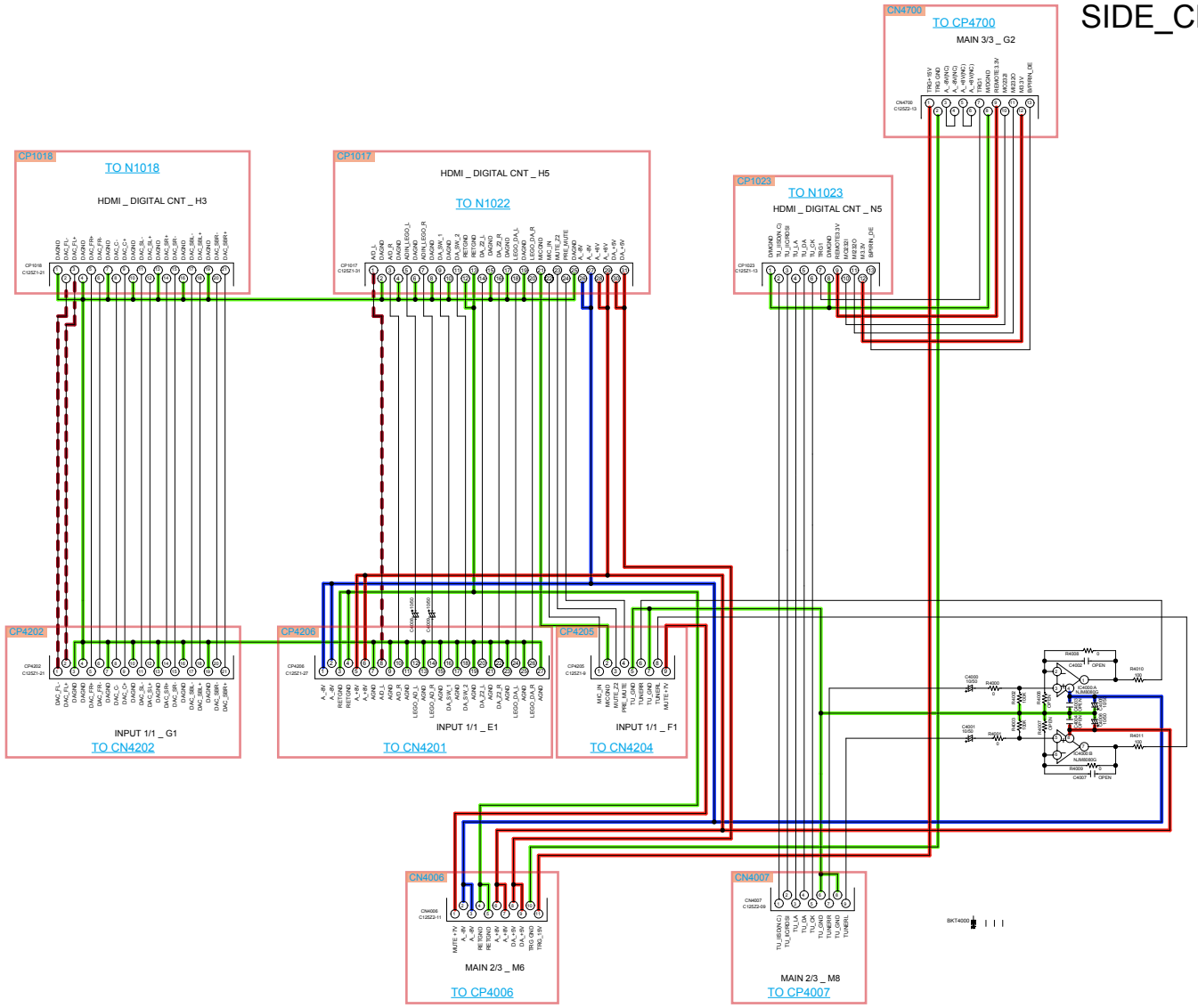
FRONT 2/2

RS232 PART
(AVR_X2400E3_X3400 ONLY)

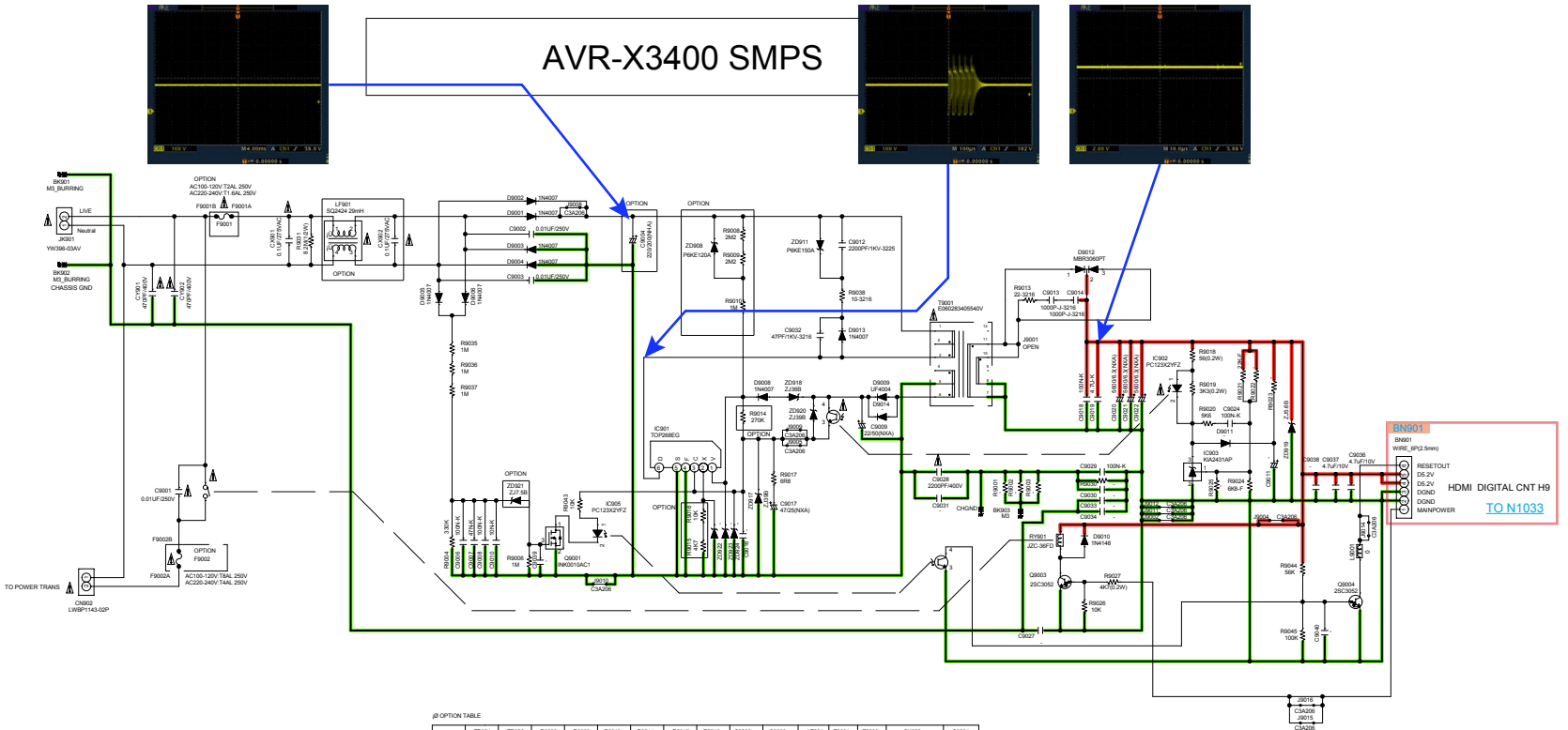


GND LINE POWER+ LINE POWER- LINE ANALOG AUDIO DIGITAL AUDIO TMDS SIGNAL ANALOG VIDEO DIGITAL VIDEO STBY POWER

SIDE_CNT 1/1



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



	ZD921	ZD908	R9008	R9009	R9010	R9014	R9015	R9016	C9006	C9008	LF901	F9001	F9002	CX902	C9004
E3	ZJT 5B	P6KE120A	2M2	2M2	1M	270K	4.7K	10K	100N	100N	29mH	T2AL	T8AL	CCGF2E104KZE-T	220uF/250V
E2 E1C	ZJ18B	OPEN	OPEN	OPEN	OPEN	56K	6.8K	10K	100N	100N	65mH	T1.6AL	T4AL	OPEN	100uF/400V

E2 CHANGCHUN_CCP-3400(ST) , CTI 600

	F9001	F9002
E3	T2AL 250V	T8AL 250V
E2 E1C	T1.6AL 250V	T4AL 250V

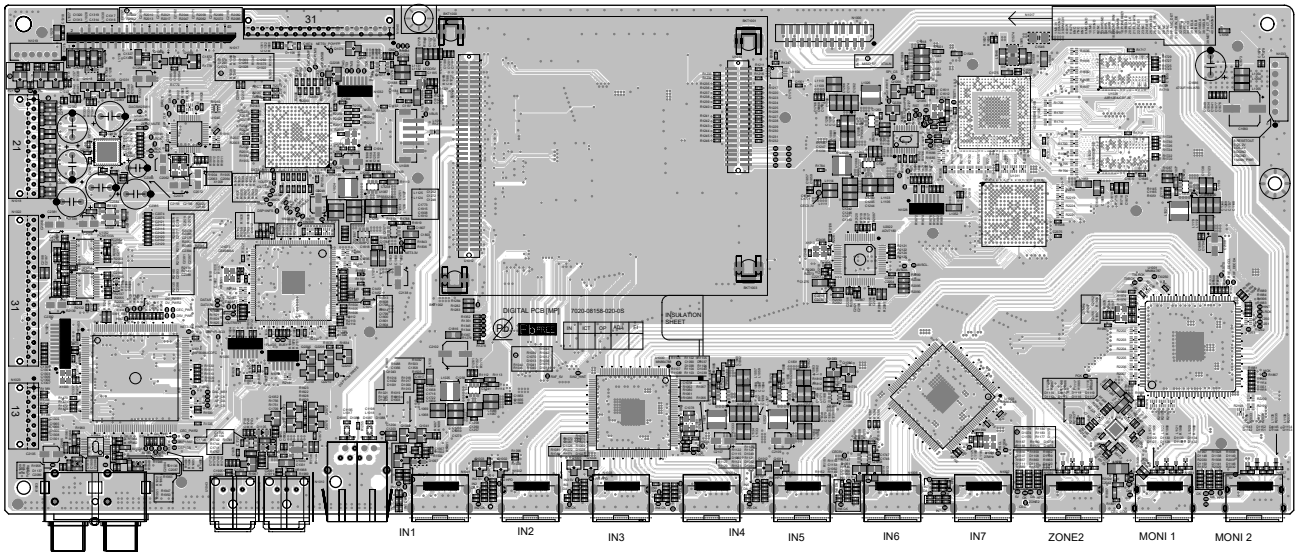
⚠ INDICATES SAFETY CRITICAL COMPONENTS.
TO REDUCE THE RISK OF ELECTIC SHOCK, LEAKAGE CURRENT OR RESISTANCE MEASUREMENTS SHALL BE CARRIED OUT (EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT) BEFORE THE APPLIANCE RETURNED TO THE CUSTOMER.

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

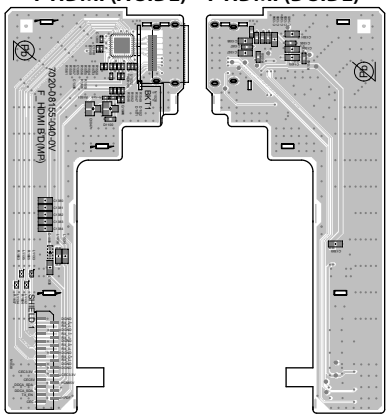
DIGITAL, F HDMI

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

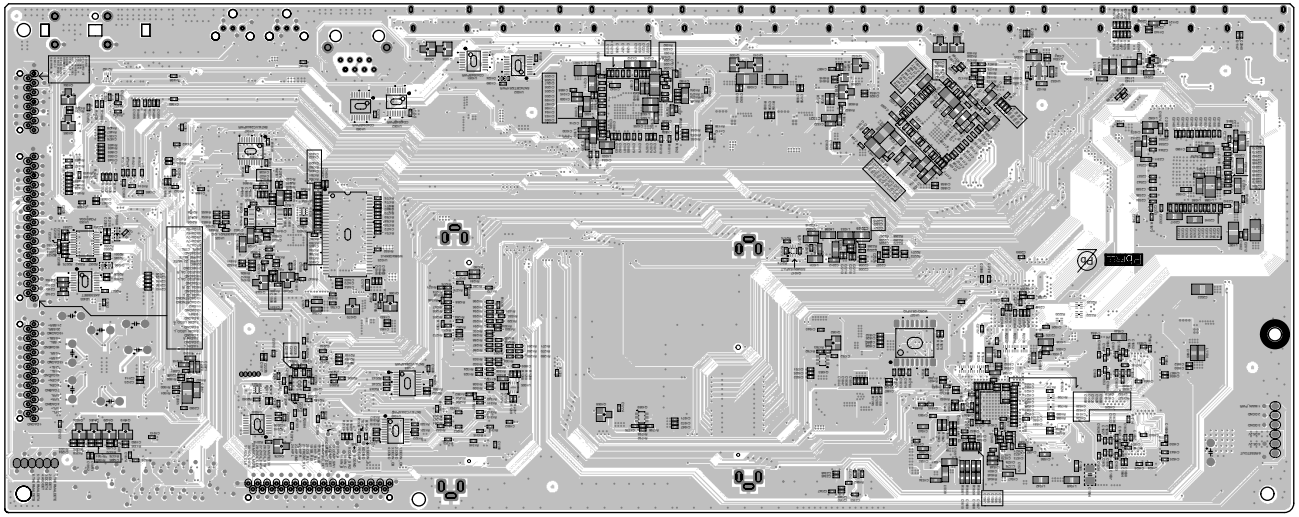
DIGITAL (A SIDE)



F HDMI (A SIDE) F HDMI (B SIDE)

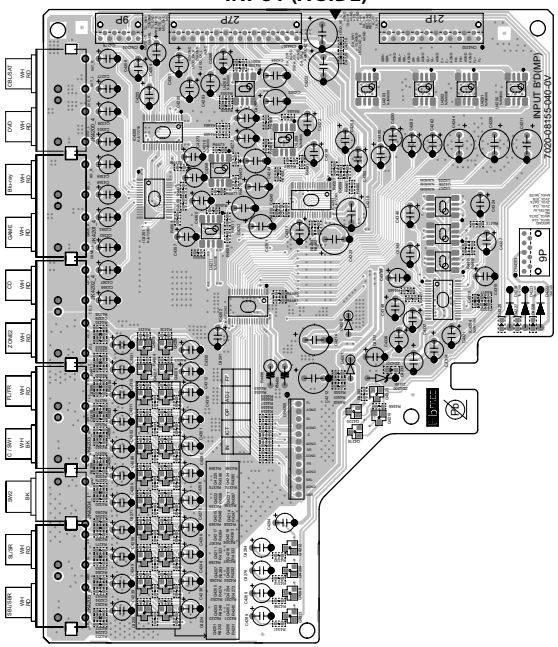


DIGITAL (B SIDE)

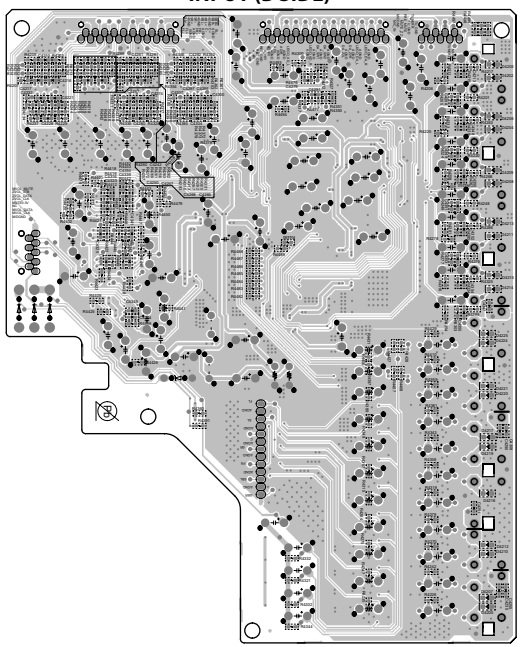


INPUT, VIDEO, FRONT CNT

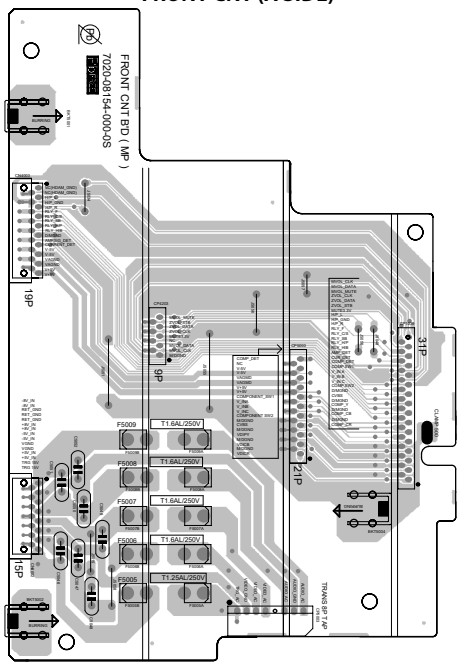
INPUT (A SIDE)



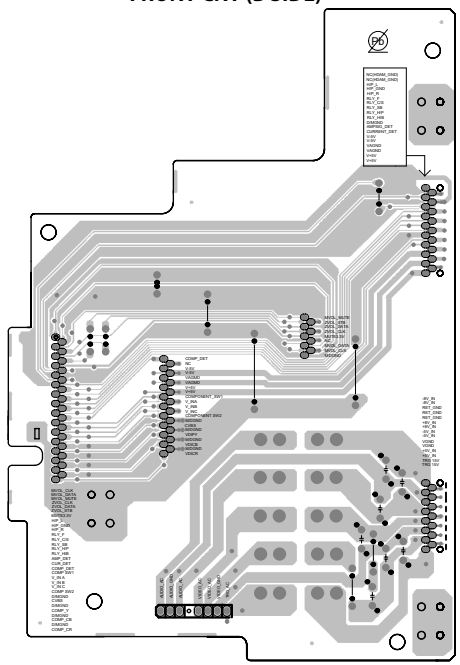
INPUT (B SIDE)



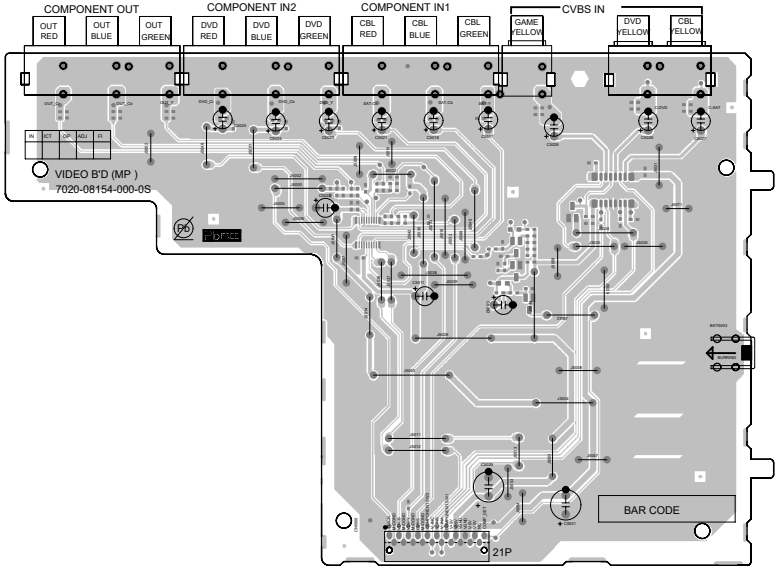
FRONT CNT (A SIDE)



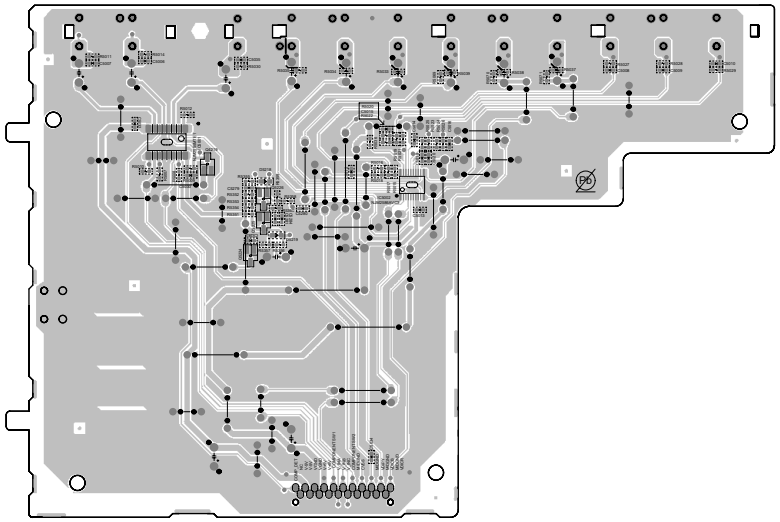
FRONT CNT (B SIDE)



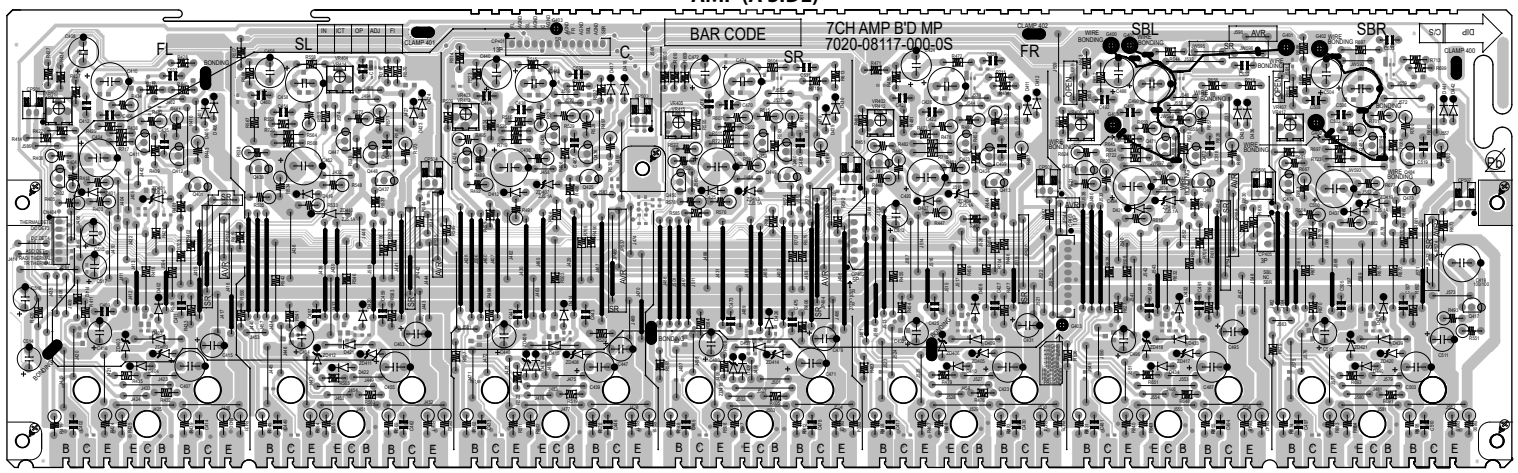
VIDEO (A SIDE)



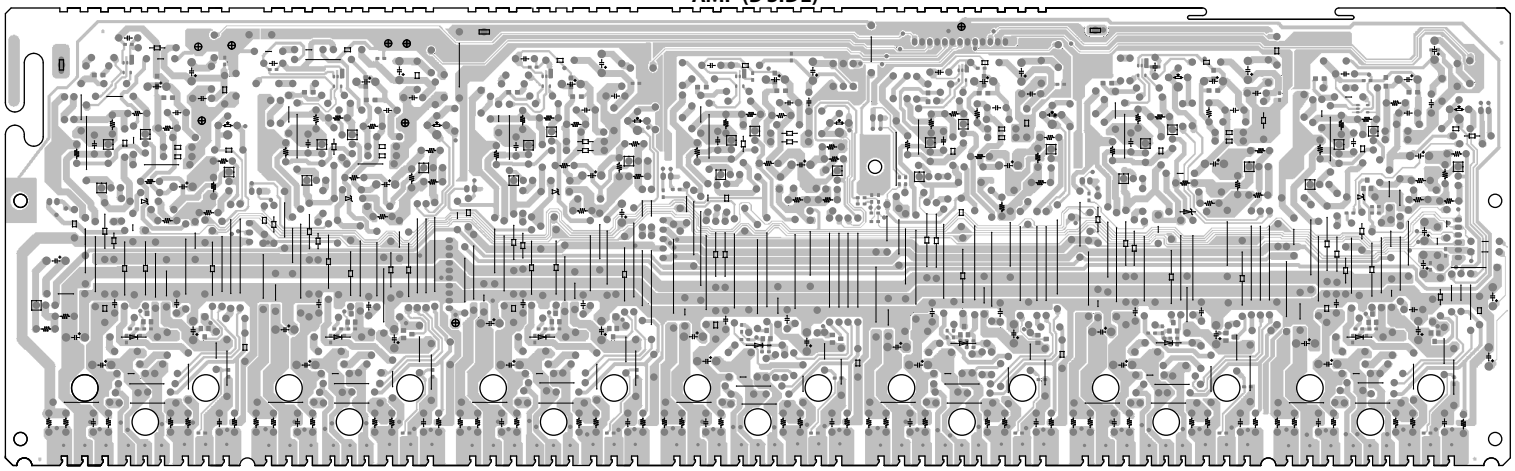
VIDEO (B SIDE)



AMP (A SIDE)

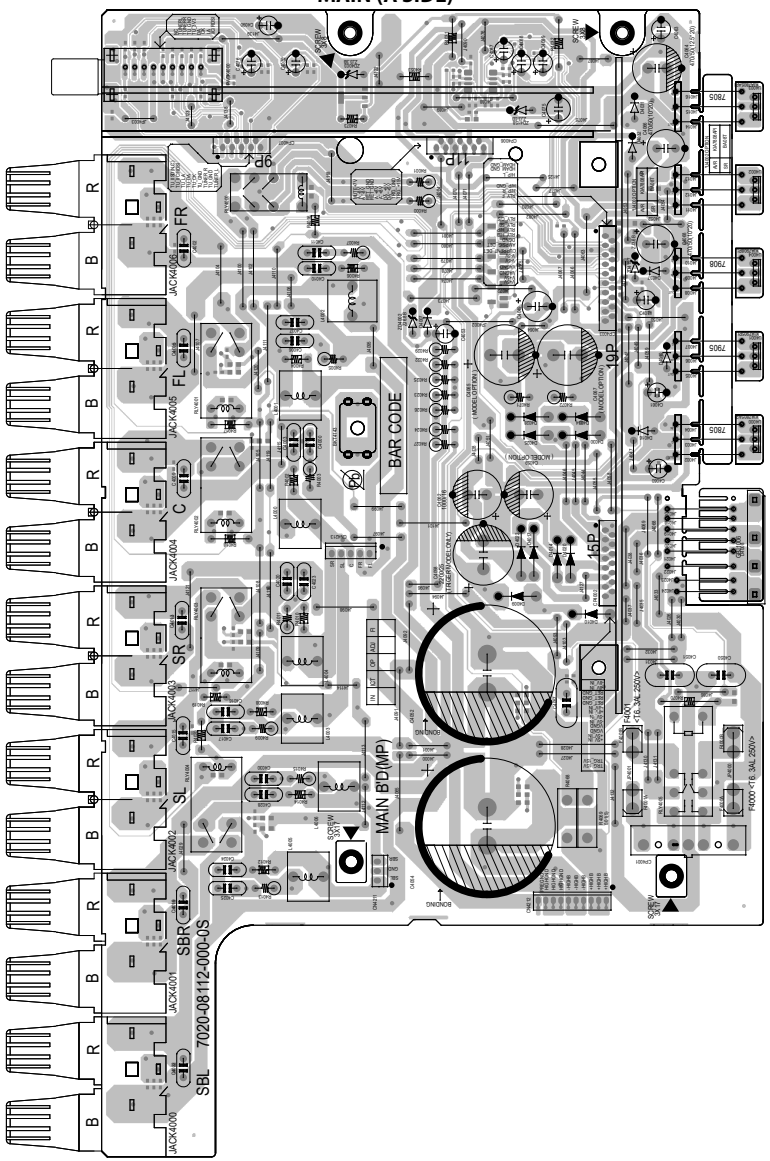


AMP (B SIDE)

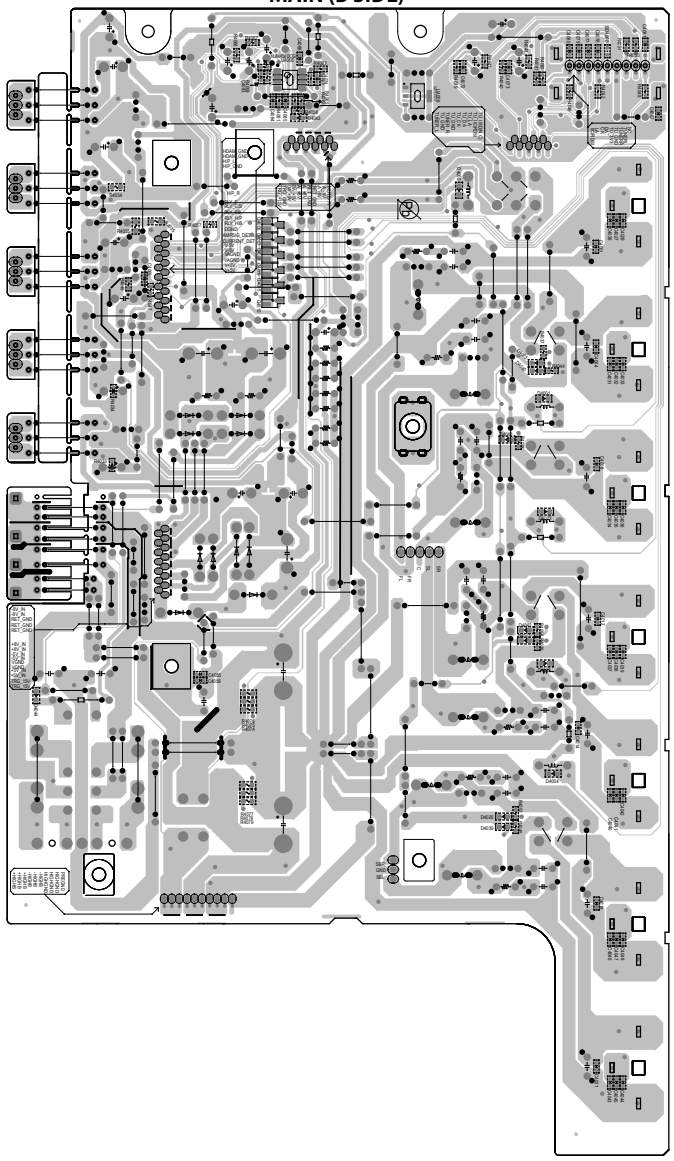


MAIN, RS CNT, GUIDE L、FH GUIDE

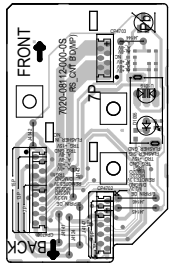
MAIN (A SIDE)



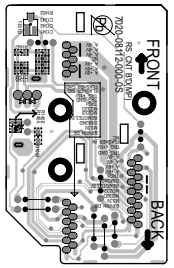
MAIN (B SIDE)



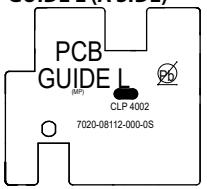
RS CNT (A SIDE)



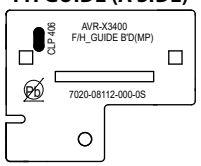
RS CNT (B SIDE)



GUIDE L (A SIDE)

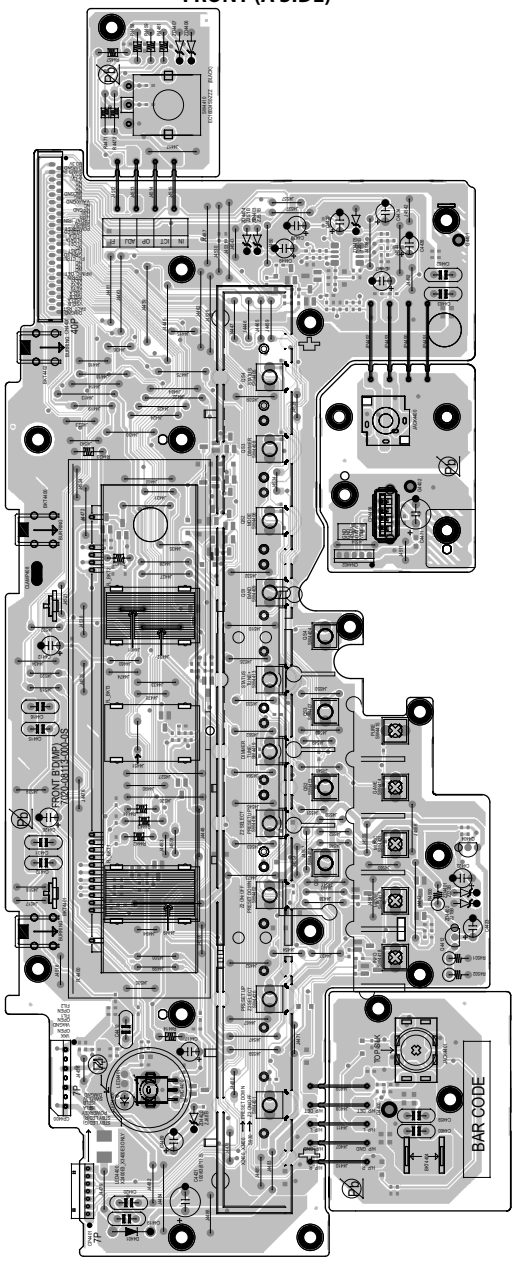


FH GUIDE (A SIDE)

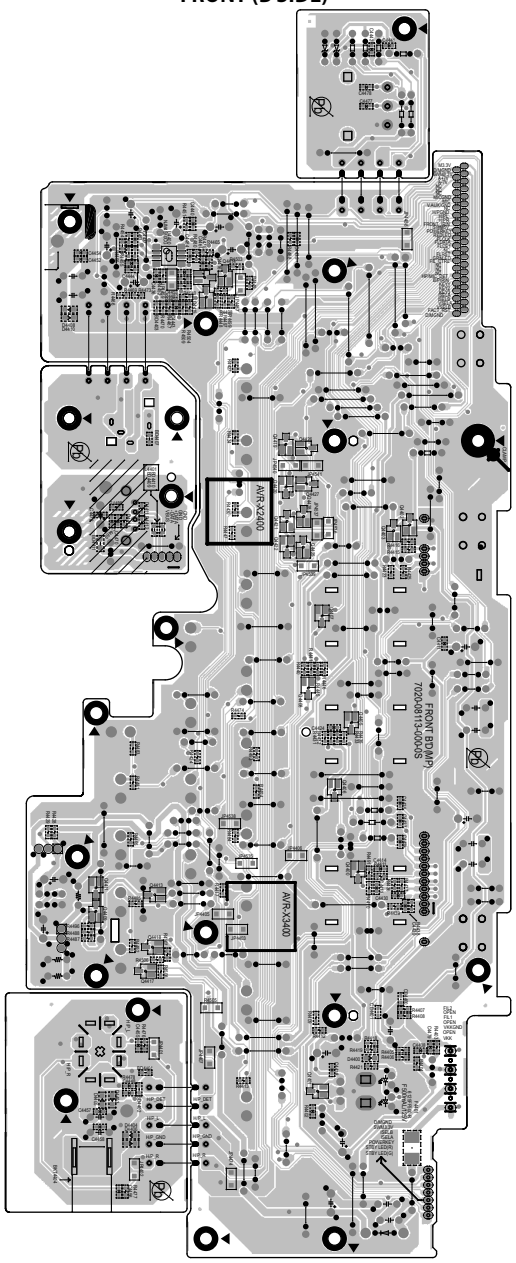


FRONT, CNT, RS232, FUNCTION, TOP GUIDE

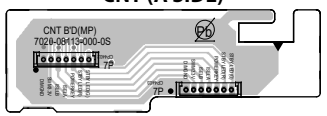
FRONT (A SIDE)



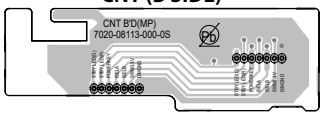
FRONT (B SIDE)



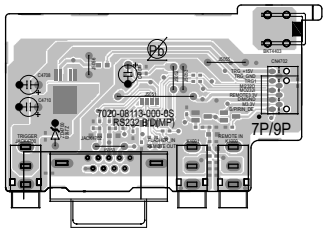
CNT (A SIDE)



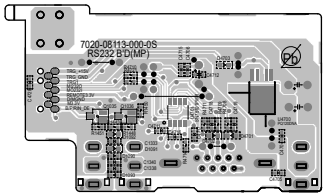
CNT (B SIDE)



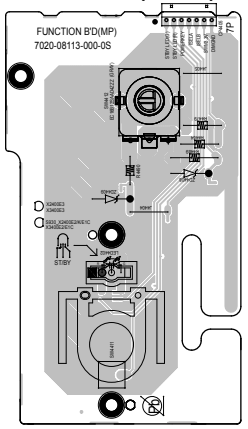
RS232C (A SIDE)



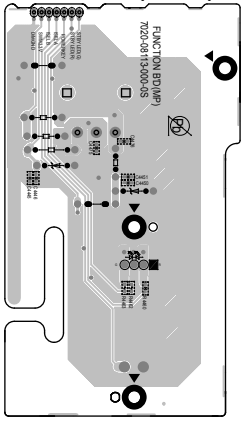
RS232C (B SIDE)



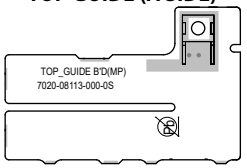
FUNCTION (A SIDE)



FUNCTION (B SIDE)

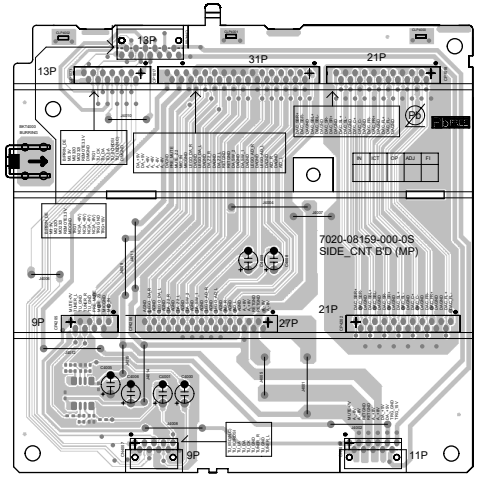


TOP GUIDE (A SIDE)

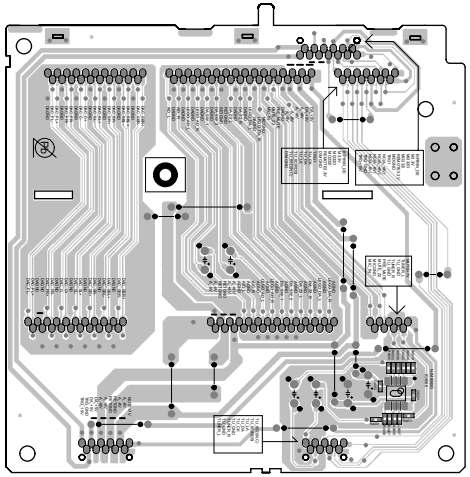


SMPS

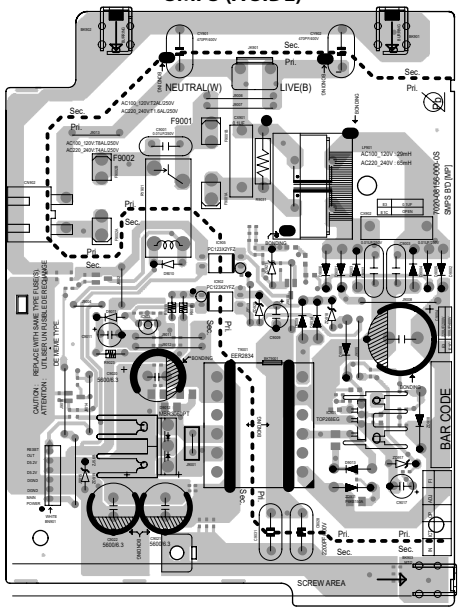
SIDE CNT (A SIDE)



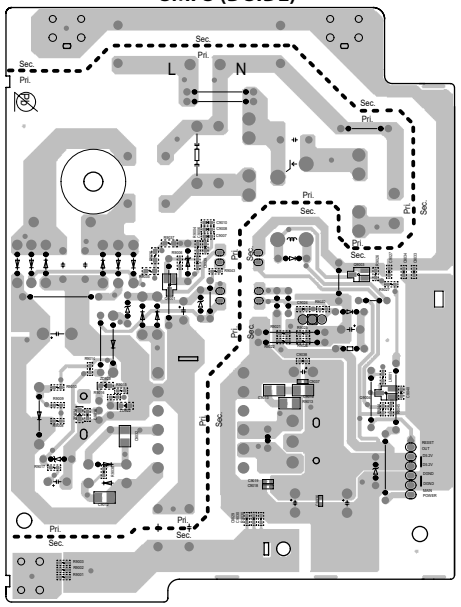
SIDE CNT (B SIDE)



SMPS (A SIDE)

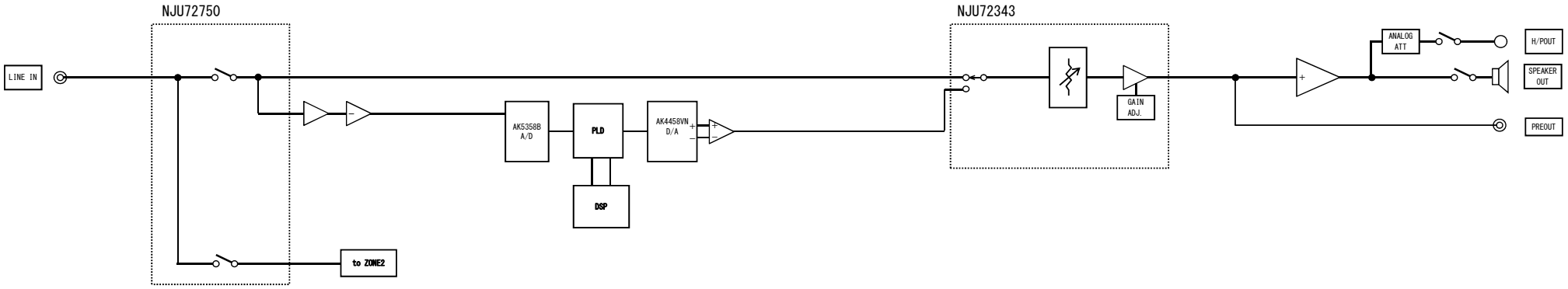


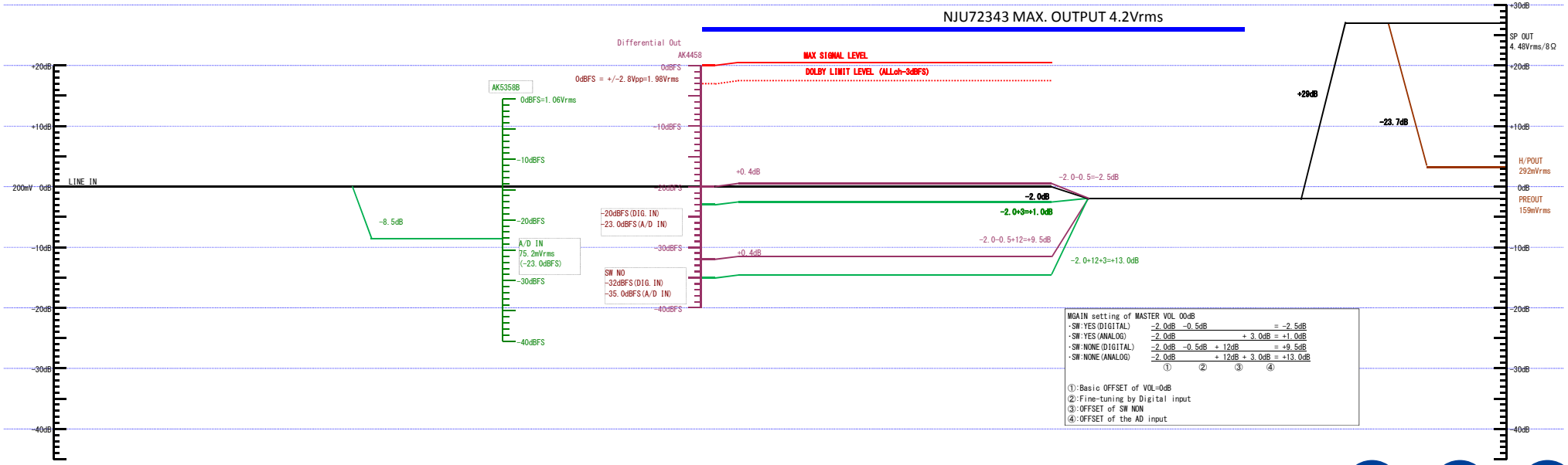
SMPS (B SIDE)



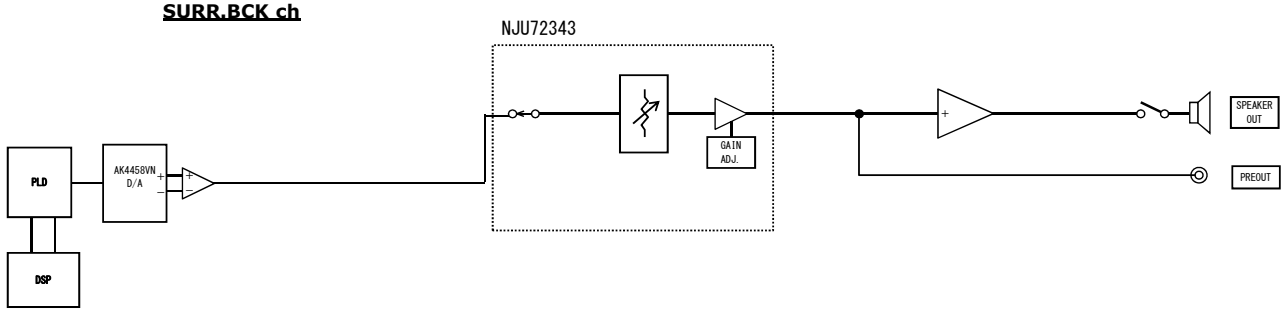
FRONT ch

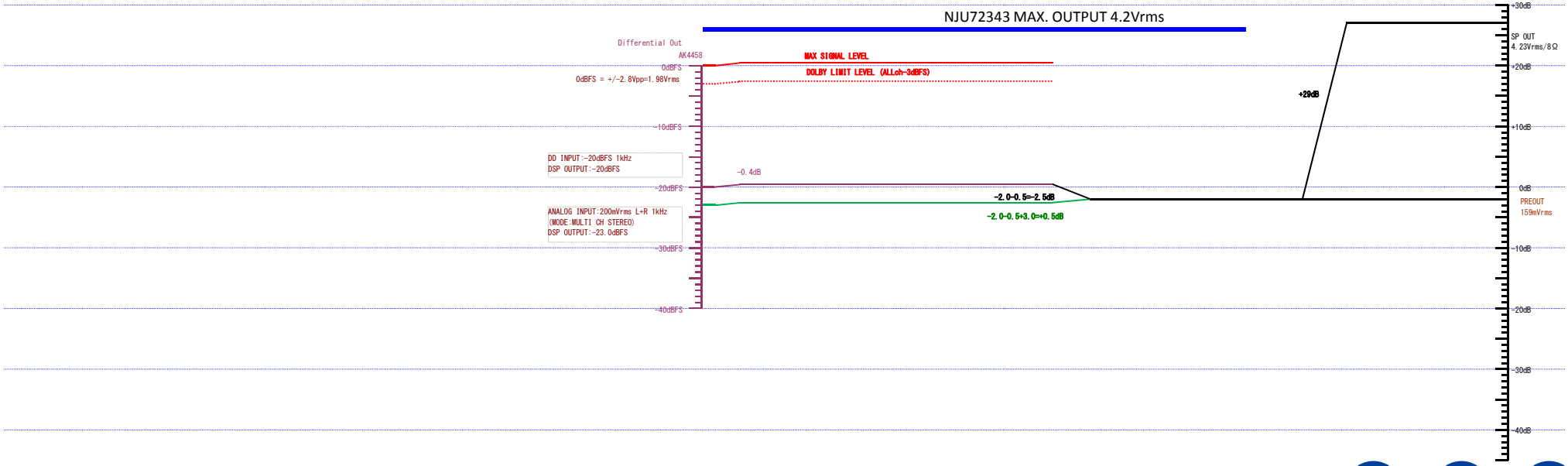
AVR-X3400H
LEVEL DIAGRAM
FRONT ch



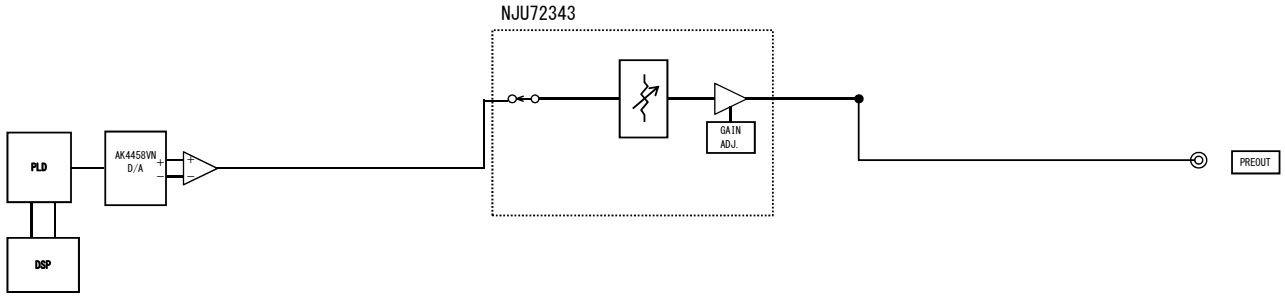


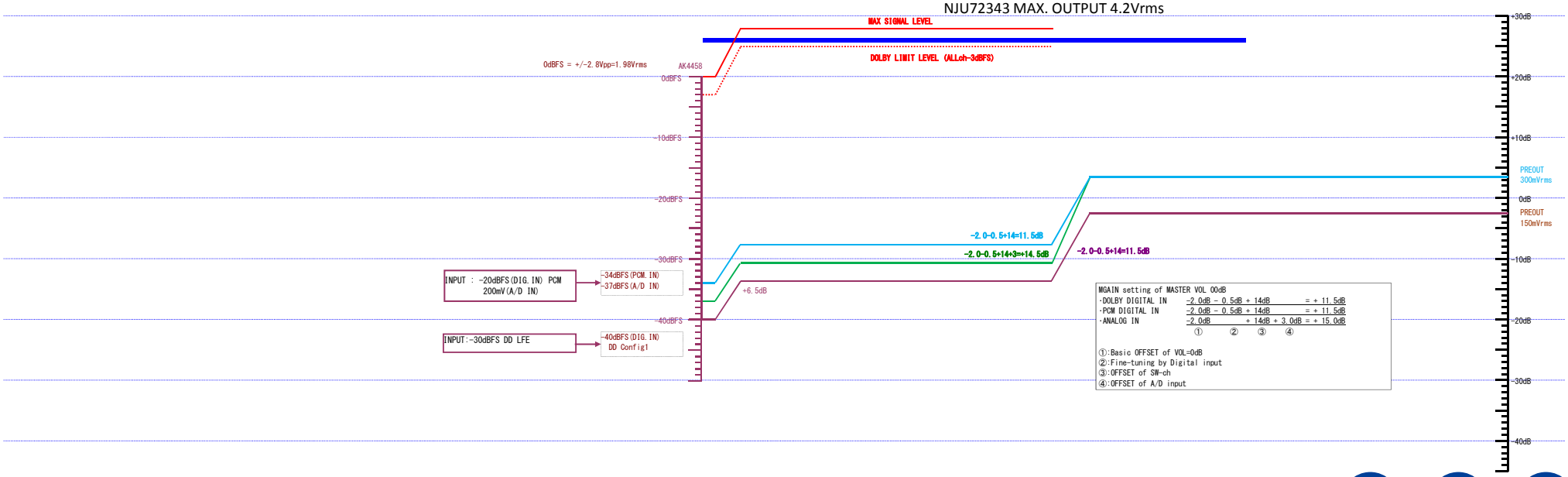
AVR-X3400H
LEVEL DIAGRAM
CENTER ch
SURROUND ch
SURR.BCK ch



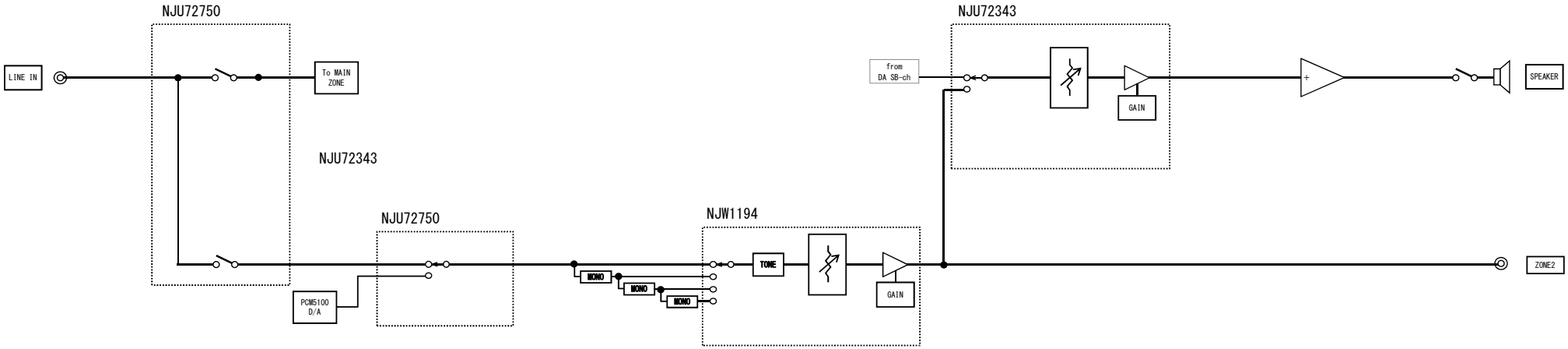


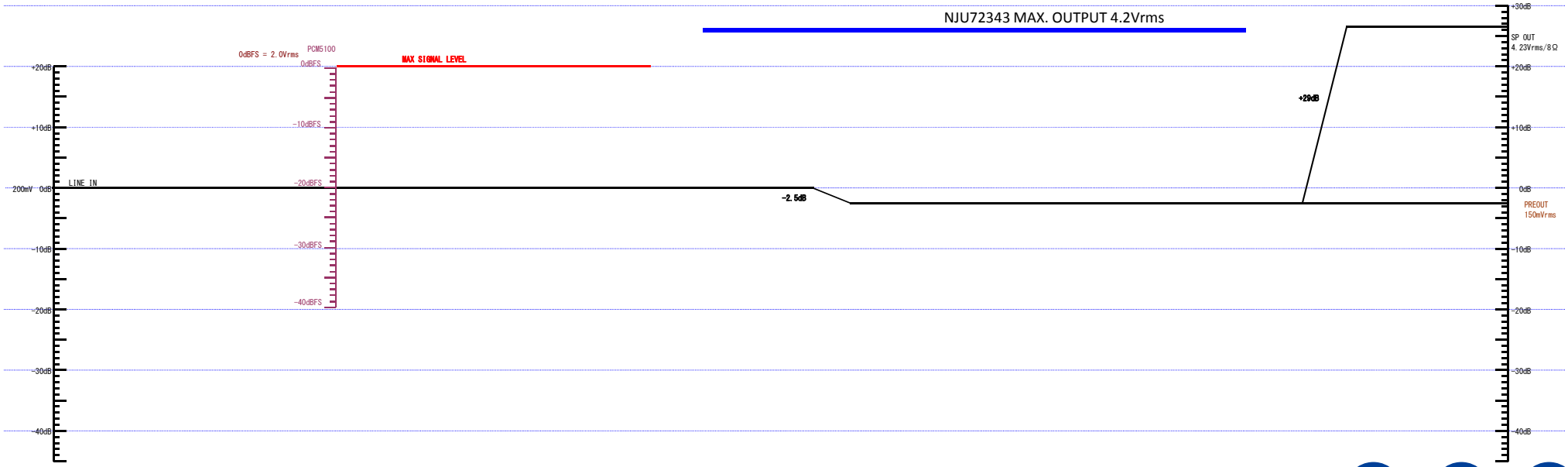
AVR-X3400H
LEVEL DIAGRAM
SUBWOOFER ch



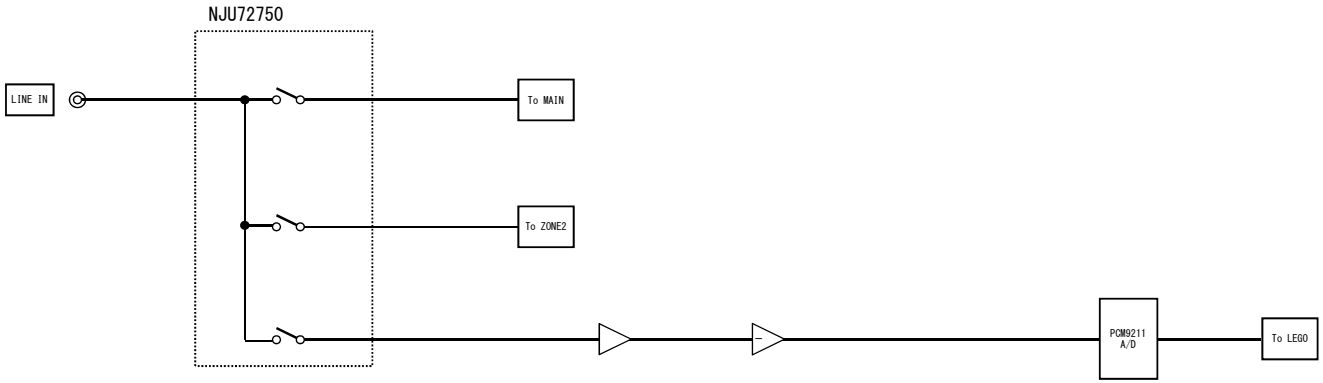


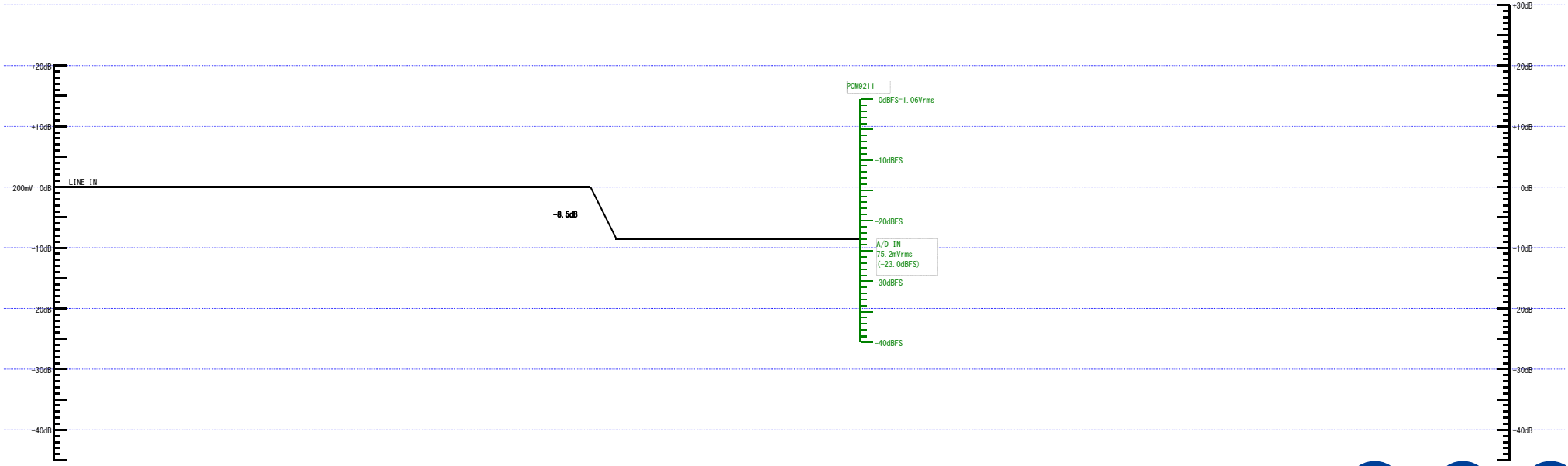
AVR-X3400H
LEVEL DIAGRAM
ZONE2



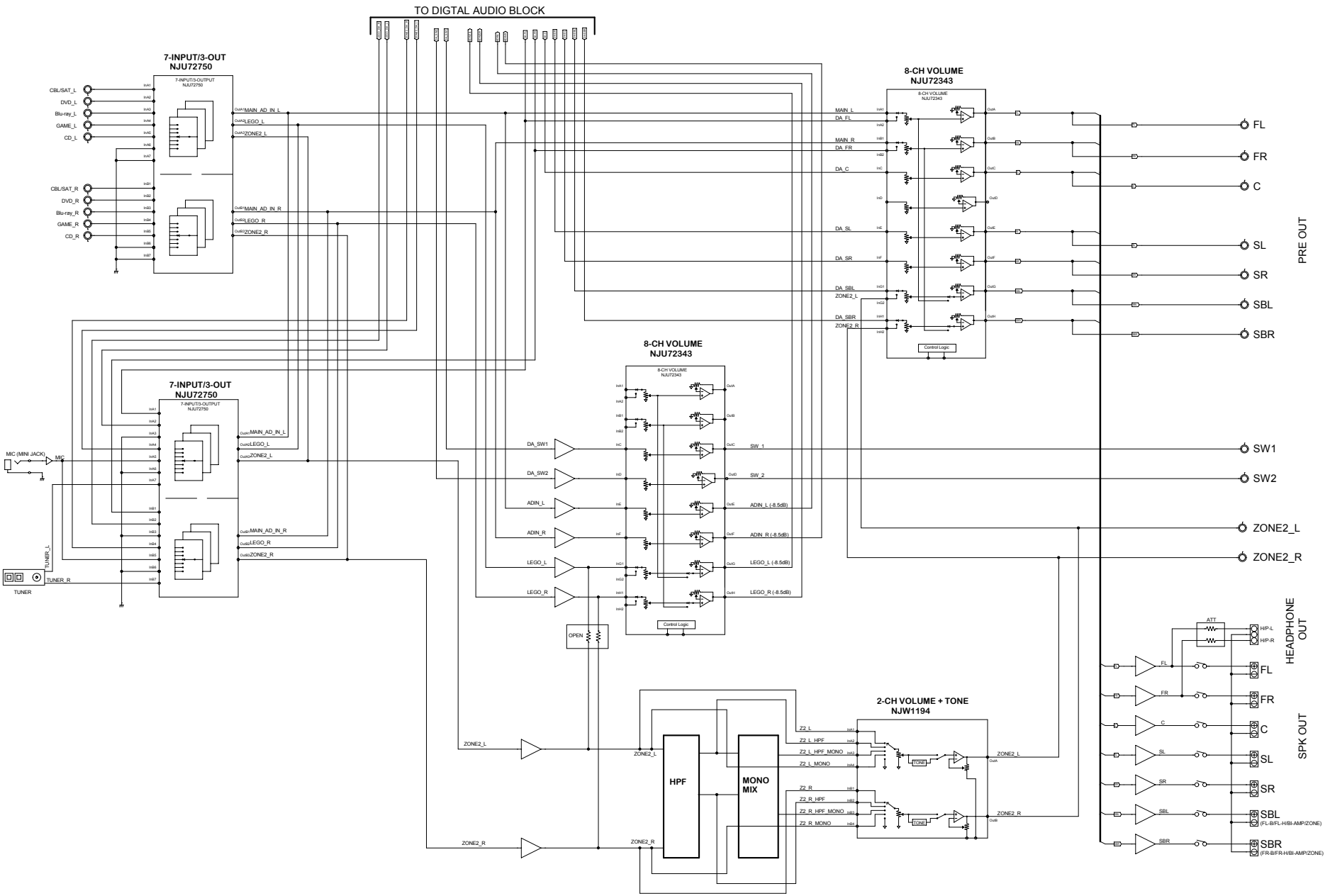


AVR-X3400H
LEVEL DIAGRAM
ZONE2(LEGO)

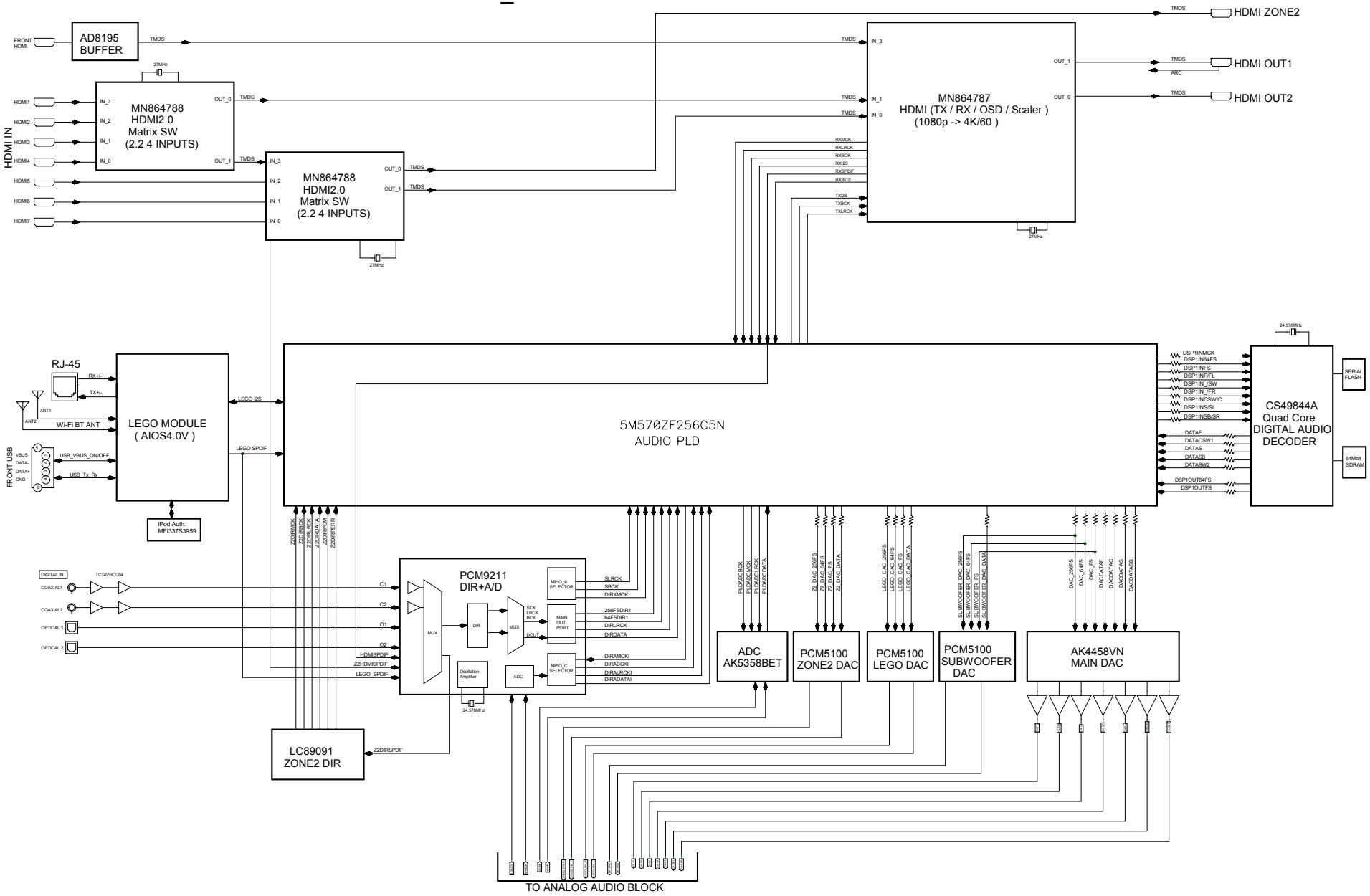




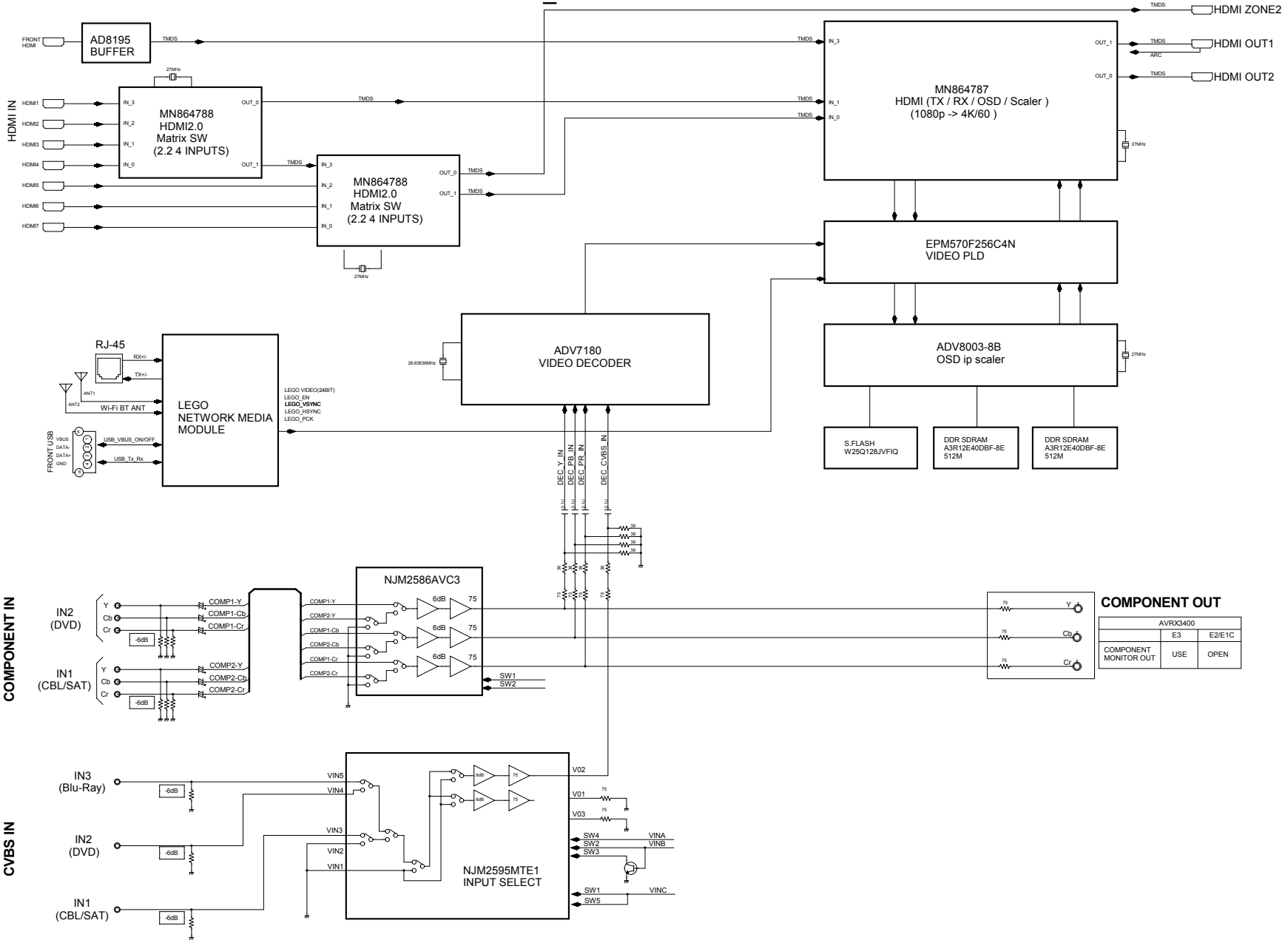
AVR_X3400 ANALOG AUDIO DIAGRAM



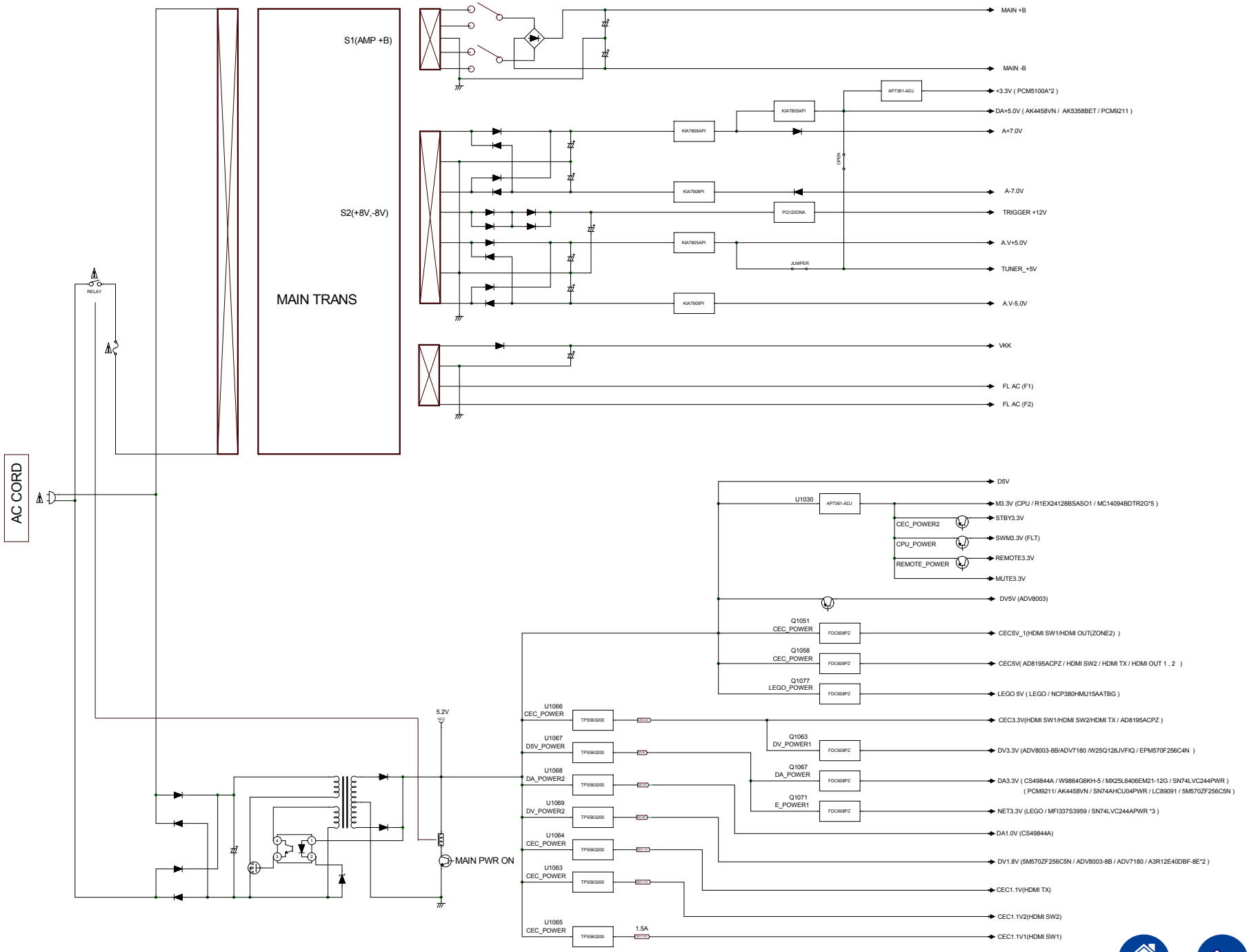
AVR_X3400 DIGITAL AUDIO DIAGRAM

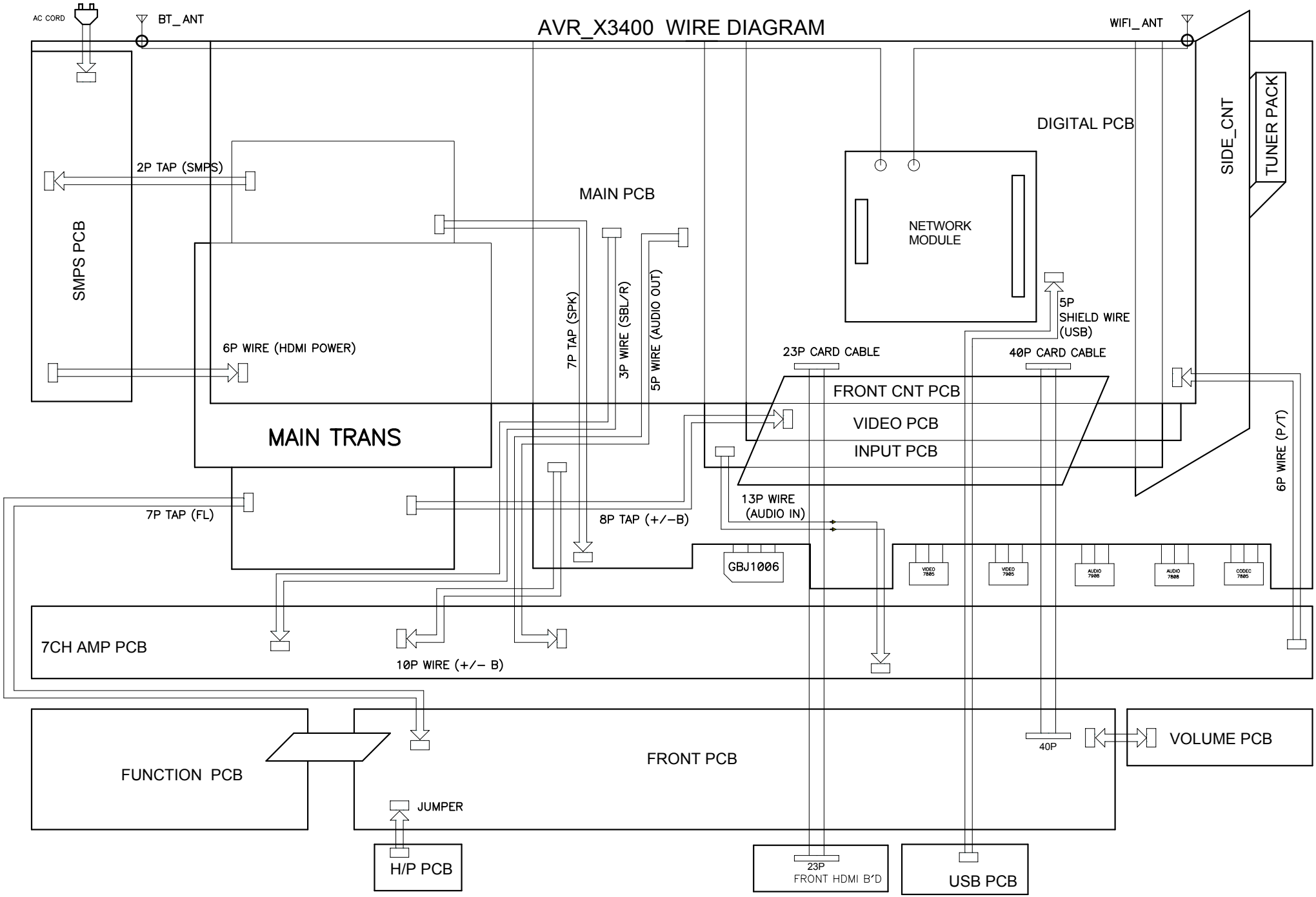


AVR_X3400 VIDEO DIAGRAM



AVR-X3400 VCC DIAGRAM



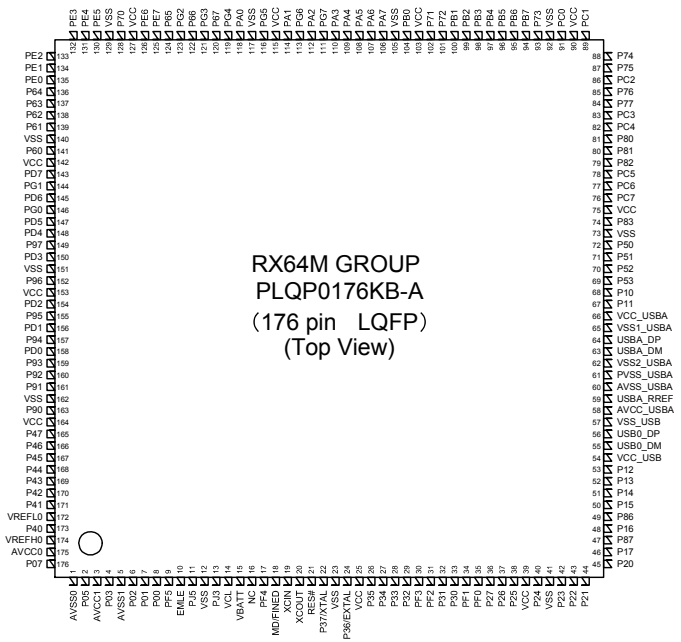

AVR_X3400 WIRE DIAGRAM
AC CORD
BT_ANT
WIFI_ANT
SMPS PCB
2P TAP (SMPS)
MAIN PCB
DIGITAL PCB
NETWORK MODULE
SIDE_CNT
TUNER PACK
5P SHIELD WIRE (USB)
6P WIRE (HDMI POWER)
7P TAP (SPK)
3P WIRE (SBL/R)
5P WIRE (AUDIO OUT)
23P CARD CABLE
40P CARD CABLE
FRONT CNT PCB
VIDEO PCB
INPUT PCB
MAIN TRANS
6P WIRE (P/T)
7P TAP (FL)
8P TAP (+/−B)
13P WIRE (AUDIO IN)
GBJ1006
7CH AMP PCB
10P WIRE (+/− B)
FUNCTION PCB
FRONT PCB
40P
VOLUME PCB
JUMPER
H/P PCB
23P FRONT HDMI B'D
USB PCB

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

R5F564MJCDFC (DIGITAL : U1018)



Terminal Functions

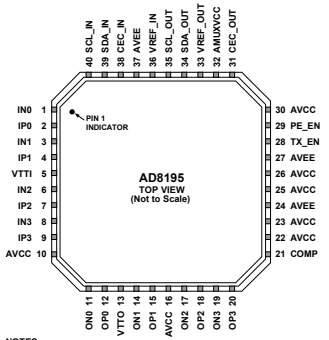
Pin	Pin Name	Symbol	I/O	Pu/Pd	STBY	STOP	CEC STBY	Function
1	AVSS0	AVSS0	-		-	-	-	Ground pin
2	P05/IRQ13	POWER_KEY	I	M3VPu	I	I	I	Detect Power switch (Release from Wait Mode,Set to interrupt)
3	AVCC1	AVCC1	-		-	-	-	Power supply pin
4	P03/IRQ11	RED_LED	O		L/H	L	H	POWER/STANDBY LED control pin
5	AVSS1	AVSS1	-		-	-	-	Ground pin
6	P02/SCK6/IRQ10/ AN120	REMOTE_ POWER(232C)	O		L	L	L	232C power supply (REMOTE 3.3V) control pin
7	P01/RXD6/IRQ9/ AN119	RXD_MI232O	I	Pd	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	WHITE_ LED(NA)/ GREEN_ LED(EU/CH)	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		I	I	I	Master Volume (Rotary encoder) signal input pin
12	VSS	VSS	-		-	-	-	Ground pin
13	PJ3	VSEL_B	I		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	NC	NC	I	Pd	-	-	-	NC(Pull down)
17	TRST#/PF4	TRST#/ NC(NORMRAL)	I/I	Pd	I/I	I/I	I/I	E20 Emulator control pin/When normal operating mode,set to input.
18	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)
19	XCIN	XCIN	I	Pd	-	-	-	NC(Pull down)
20	XCOUT	XCOUT	I		-	-	-	NC(open)
21	RES#	RESET	I		-	-	-	Reset signal input pin
22	XTAL/P37	XTAL	I		-	-	-	Pins for a crystal resonator (Xin=12MHz × 10)
23	VSS	VSS	-		-	-	-	Ground pin
24	EXTAL/P36	EXTAL	-		-	-	-	Pins for a crystal resonator (Xin=12MHz × 10)
25	VCC	VCC	-		-	-	-	Power supply pin
26	UPSEL/P35(IN)/NMI	COMP_DET	I	SW3VPu	I	I	I	Component video signal detect pin
27	P34/SCK6/SCK0/ IRQ4	BDOWN	I		I	I	I	Detect power down
28	P33/TIOCD0/RXD6/ RXD0/IRQ3-DS	RC_IN	I		I	I	I	Remote input
29	P32/TIOCC0/TXD6/ TXD0/IRQ2-DS	V.PLD_ TRANS0	O		L	L	L	Video PLD control pin (for setting of GUI transmittance)
30	TMS/PF3	TMS/ NC(NORMRAL)	I/I	M3VPu	-/I	-/I	I	E20 Emulator control pin/When normal operating mode,set to input.
31	TDI/PF2/RXD1	TDI/RXD_MIT-SUBISHI	I/O/I	M3VPu	-/-/I	-/-/I	I	E20 Emulator control pin/Mitsubishi writter control pin/ When normal operating mode,set to input.
32	P31/IRQ1-DS	TU_GPO2_INT	I		L	L	L	TUNER control
33	P30/RXD1	TU_SDIO	I_O	SW3VPu	L	L	L	TUNER control
34	TCK/FINEC/PF1/ SCK1	TCK/ NC(NORMRAL)	I/I/I	M3VPu	-/-/I	-/-/I	I	E20 Emulator control pin//When normal operating mode,set to input.
35	TD0/TXD1/PF0	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.
36	P27/SCK1	TU_SEN	O		L	L	L	TUNER control
37	P26/TXD1	TU_SCLK	O		L	L	L	TUNER control
38	P25/RXD3	TU_RST	O	SW3VPu	L	L	L	TUNER control
39	VCC	VCC	-		-	-	-	Power supply pin
40	P24/SCK3	V.PLD_ TRANS1	O		L	L	L	Video PLD control pin (for setting of GUI transmittance)
41	VSS	VSS	-		-	-	-	Ground pin
42	P23/TXD3	E_RTS_MOEI	O	Pd (BCM58305 Internal Pd)	L	L	L	Ethernet(LEGO) control pin
43	P22/SCK0	E_CTS_MIEO	I	Pd (onboad + BCM58305 Internal Pd)	I	I	I	Ethernet(LEGO) control pin
44	P21/RXD0/IRQ9	E_RXD_MIEO	I	Pd (onboad + BCM58305 Internal Pd)	I	L	I	Ethernet(LEGO) control pin
45	P20/TXD0/IRQ8	E_TXD_MOEI	O	Pd (BCM58305 Internal Pd)	L	L	L	Ethernet(LEGO) control pin
46	P17/SCK1/TXD3/ IRQ7	NET_FACT_ RST	O(ODR)	Pu (BCM58305 Internal Pu)	Z	Z	Z	Ethernet(LEGO) control pin

Pin	Pin Name	Symbol	I/O	Pu/Pd	STBY	STOP	CEC STBY	Function
47	P87/TXD10/TIOCA2	V.PLD_ TRANS2	O		L	L	L	Video PLD control pin (for setting of GUI transmittance)
48	P16/TXD1/RXD3/ IRQ6	NET5V_POW-ER	O		L	L	L	Ethernet power supply (Net5V) control pin/
49	P86/RXD10	PRE_Z2_MUTE	O		L	L	L	MUTE for ZONE2 preout control pin
50	P15/RXD1/SCK3/ IRQ5	AEXP_STB	O		L	L	L	Expander (MC14094) control pin
51	P14/IRQ4	AEXP_OE	O		L	L	L	Expander (MC14094) control pin
52	P13/TXD2/IRQ3	AEXP_CLK	O		L	L	L	Expander (MC14094) control pin
53	P12/RXD2/IRQ2	AEXP_DATA	O		L	L	L	Expander (MC14094) control pin
54	VCC_USB	VCC_USB	-		-	-	-	Power supply pin
55	USB0_DM	USB0_DM	-		-	-	-	NC(open)
56	USB0_DP	USB0_DP	-		-	-	-	NC(open)
57	VSS_USB	VSS_USB	-		-	-	-	Ground pin
58	AVCC_USBA	AVCC_USBA	-		-	-	-	Power supply pin
59	USBA_PREF	USBA_PREF	-		-	-	-	NC(open)
60	AVSS_USBA	AVSS_USBA	-		-	-	-	Ground pin
61	PVSS_USBA	PVSS_USBA	-		-	-	-	Ground pin
62	VSS2_USBA	VSS2_USBA	-		-	-	-	Ground pin
63	USBA_DM	USBA_DM	-		-	-	-	NC(open)
64	USBA_DP	USBA_DP	-		-	-	-	NC(open)
65	VSS1_USBA	VSS1_USBA	-		-	-	-	Ground pin
66	VCC_USBA	VCC_USBA	-		-	-	-	Power supply pin
67	P11/SCK2/IRQ1	CEC_OUT	O		L	L	-	CEC-D control pin
68	P10/IRQ0	CEC_IN	I	SW3VPu	I	I	I	CEC-D control pin
69	P53	ADV8003_ SPI_CS	O		L	L	L	GUI control pin(ADV8003)
70	P52/RXD2	ADV8003_ SPI_MI	I		L	L	L	GUI control pin(ADV8003)
71	P51/SCK2	ADV8003_ SPI_CLK	O		L	L	L	GUI control pin(ADV8003)
72	P50/TXD2	ADV8003_ SPI_MO	O		L	L	L	GUI control pin(ADV8003)
73	VSS	VSS	-		-	-	-	Ground pin
74	P83/SCK10	IP_RST	O	Pd	I	I	L	Scaler w/ GUI (ADV8003) Reset control pin
75	VCC	VCC	-		-	-	-	Power supply pin
76	UB/PC7/TXD8/ IRQ14	UB	I	Pd	-	-	-	Pins for setting the boot mode(select the Boot Mode or User Boot Mode)
77	PC6/RXD8/IRQ13	AVSDA	I_O	DV3VPu	O/L	O/L	L	VIDEO I2C control pin for ADV8003/ ADV7180/ ARC IC
78	PC5/SCK8	AVSCL	I_O	DV3VPu	O/L	O/L	L	VIDEO I2C control pin for ADV8003/ ADV7180/ ARC IC
79	P82/TXD10	DSP_MOSI	O	DA3VPu	L	L	L	DSP(CS49844A) control pin
80	P81/RXD10	DSP_MISO	I	DA3VPu	L	L	L	DSP(CS49844A) control pin
81	P80/SCK10	DSP_CLK	O	DA3VPu	L	L	L	DSP(CS49844A) control pin
82	PC4/SCK5	DSP_CS	O	DA3VPu	L	L	L	DSP(CS49844A) control pin
83	PC3/TXD5	DSP_FLAG0	I	Pd	L	L	L	DSP(CS49844A) interrupt signal input pin
84	P77/TXD11	DSP_RST	O		L	L	L	DSP(CS49844A) reset control pin
85	P76/RXD11	DSP_BUSY	I		L	L	L	DSP BUSY signal input
86	PC2/RXD5	DA_POWER	O		L	L	L	Digital audio power supply (DA3.3V,DA1.2V) control pin
87	P75/SCK11	CEC_POWER2	O		L	L	L	CEC standby power control (for CEC Standby Mode 3)
88	P74	DSP_ROM_ WRITE	O		L	L	L	DSP ROM writing control(When writing,set to High)
89	PC1/SCK5/IRQ12	DAC.PLD_ERR	I		L	L	L	Detect PLD error (from Audio PLD)
90	VCC	VCC	-		-	-	-	Power supply pin
91	PC0/IRQ14	H/P_RL	O	-	L	L	L	Headphone relay control pin
92	VSS	VSS	-		-	-	-	Ground pin
93	P73	FRONT_RL	O	-	L	L	L	Speaker relay control pin
94	PB7/TXD9	HSDA	I/O	CEC3VPu	L	L	L	HDMI I2C control pin for MN864787/MN864788
95	PB6/RXD9	HSCL	I/O	CEC3VPu	L	L	L	HDMI I2C control pin for MN864787/MN864788
96	PB5/SCK9	NC	O		L	L	L	NC

Pin	Pin Name	Symbol	I/O	Pu/Pd	STBY	STOP	CEC STBY	Function
97	PB4	APLD_CS	O		L	L	L	Audio PLD (5M570ZF256C5N) control pin
98	PB3/SCK4/SCK6	APLD_DATA/ DAC_DATA	O		L	L	L	Audio PLD (5M570ZF256C5N) control pin/DAC (AK4458VN) control pin
99	PB2	APLD_CLK/ DAC_CLK	O		L	L	L	Audio PLD (5M570ZF256C5N) control pin/DAC (AK4458VN) control pin
100	PB1/TXD4/TXD6/ IRQ4-DS	DAC_MS	O		L	L	L	DAC (AK4458VN) control pin
101	P72	DAC_RST	O		L	L	L	DAC (AK4458VN) control pin
102	P71	PRE_MUTE	O	-	L	L	L	MUTE for preout control pin
103	VCC	VCC	-		-	-	-	Power supply pin
104	PB0/RXD4/RXD6/ IRQ12	DA_POWER2	O		L	L	L	Digital audio power supply (DA1.0V) control pin
105	VSS	VSS	-		-	-	-	Ground pin
106	PA7	ISEL_A	I		I	I	I	Input selector (Rotary encoder) signal input pin
107	PA6	ISEL_B	I		I	I	I	Input selector (Rotary encoder) signal input pin
108	PA5	C/S_RL	O		L	L	L	Speaker relay control pin
109	PA4/TXD5/SSDA5/ IRQ5-DS	NC	O	-	L	L	L	NC
110	PA3/RXD5/SSCL5	ARC_RST	O		L	L	L	Reset control pin for ARC IC
111	TRDATA3/PG7	MVOL_CLK	O		L	L	L	Function w/ Volume control pin (NJU72343/NJU72750)
112	PA2/RXD5	MVOL_DATA	O		L	L	L	Function w/ Volume control pin (NJU72343/NJU72750)
113	TRDATA2/PG6	ZVOL_DATA	O		L	L	L	ZONE2 volume control pin (NJW1194)
114	PA1/SCK5/IRQ11	ZVOL_CLK	O		L	L	L	ZONE2 volume control pin (NJW1194)
115	VCC	VCC	-		-	-	-	Power supply pin
116	TRCLK/PG5	MVOL_MUTE	O		L	L	L	Function w/ Volume control pin (NJU72343/NJU72750)
117	VSS	VSS	-		-	-	-	Ground pin
118	PA0	H5V_DET	I	-	I	I	I	HDMI IN 5V detect signal pin
119	TRSYNC/PG4	FL_RST	O		L	L	L	FL display control pin
120	P67/IRQ15	FL_CE	O		L	L	L	FL display control pin
121	TRDATA1/PG3	FL_CLK	O		L	L	L	FL display control pin
122	P66	FL_DATA	O		L	L	L	FL display control pin
123	TRDATA0/PG2	SB_RL	O		L	L	L	Speaker relay control pin
124	P65	TRIGGER_ OUT1	O		L	L	L	Trigger output control pin
125	PE7/IRQ7/AN105	ASO/DC_DET	I		I	I	I	Protection detect signal input pin (for ASO and DC) (A/D converter)
126	PE6/IRQ6/AN104	MIC_DET/_H/ P_DET	I		I	I	I	Headphone insert detect pin/Microphone insert detect pin (A/D converter)
127	VCC	VCC	-		-	-	-	Power supply pin
128	P70	HIGH_B_RL	O		L	L	L	HIGH-B relay control pin
129	VSS	VSS	-		-	-	-	Ground pin
130	PE5/IRQ5/AN103	MAIN_POWER	O		L	L	L	Power supply control pin
131	PE4/AN102	CPU_POWER	O		L	L	L	CPU power supply control pin
132	PE3/AN101	AIOS4_WAKE-UP	O		L	L	L	same as NET5V_POWER,NET3.3V_POWER (This port use to control for LEGO standby mode in the future(Low：Deep Standby, High：normal))
133	PE2/RXD12/IRQ7-DS/AN100	AIOS4_STBY_ STATUS	I	Pd	I	I	I	Not used (This port use to detect for LEGO standby status in the future (Low：normal, High：Deep Standby))
134	PE1/TXD12	GUI_WRITE	O		L	L	L	GUI flash rom writing control
135	PE0/SCK12	NET3.3V_ POWER	O		L	L	L	Ethernet power supply control(Net3.3V)
136	P64	D5V_POWER	O		L	L	H	Digital 5V power supply control pin(3.3V and 1.8V generate from 5V)
137	P63	CEC_POWER	O		L	L	※	CEC standby power supply control(CEC5V,CEC3.3V,CEC1.8V)
138	P62	DV_POWER1	O		L	L	L	Digital video power supply (DV5V,DV3.3V) control pin
139	P61	DV_POWER2	O		L	L	L	Digital video power supply (DV1.8V) control pin
140	VSS	VSS	-		-	-	-	Ground pin
141	P60	DIR_DIN	O		L	L	L	DIR (PCM9211) control pin
142	VCC	VCC	-		-	-	-	Power supply pin

Pin	Pin Name	Symbol	I/O	Pu/Pd	STBY	STOP	CEC STBY	Function
143	PD7/IRQ7/AN107	DIR_CE	O		L	L	L	DIR (PCM9211) control pin
144	PG1	DIR_DOUT	I	DA3.3Pu	I	I	I	DIR (PCM9211) control pin
145	PD6/IRQ6/AN106	DIR_CLK	O		L	L	L	DIR (PCM9211) control pin
146	PG0	DIR_RST	O		L	L	L	DIR (PCM9211) control pin
147	PD5/IRQ5/AN113	787_HAINT	I	-	Z		-	HDMI Rx (MN864787) audio interrupt signal det
148	PD4/IRQ4/AN112	ZVOL_STB	O		L	L	L	ZONE2 volume control pin (NJW1194)
149	P97	DE_RST	O	Pd	Z		L	Video decoder (ADV7180) reset control pin
150	PD3/IRQ3/AN111	787_HINT	I	-	Z		-	HDMI Tx (MN864787) interrupt signal input pin
151	VSS	VSS	-		-	-	-	Ground pin
152	P96	787_RST	O	Pd	Z			HDMI Tx (MN864787) reset control pin
153	VCC	VCC	-		-	-	-	Power supply pin
154	PD2/IRQ2/AN110	788_2_HINT	I	-	Z	-	-	HDMI Rx (MN864788) interrupt signal input pin
155	P95	788_2_RST	O	Pd	Z	-	-	HDMI Rx (MN864788) reset control pin
156	PD1/IRQ1/AN109	788_1_HINT	I	-	Z	-	-	HDMI Rx (MN864788) interrupt signal input pin
157	P94	788_1_RST	O	Pd	Z	-	-	HDMI Rx (MN864788) reset control pin
158	PD0/IRQ0/AN108	TTL_SEL_B	O		L	L	L	Video PLD control pin(select for A to H/NET/HDMI)
159	P93/AN117	THERMAL_A	I	SW3VPu	I	L	I	Protection detect signal input pin (for power TR)
160	P92/RXD7/AN116	THERMAL_F	I	SW3VPu	I	L	I	Protection detect signal input pin (for power TR)
161	P91/AN115	TTL_SEL_A	O	-	L	L	L	Video PLD control pin(select for A to H/NET/HDMI)
162	VSS	VSS	-		-	-	-	Ground pin
163	P90/TXD7/AN114	THERMAL_E	I	SW3VPu	I	L	I	Protection detect signal input pin (for Heat sink)
164	VCC	VCC	-		-	-	-	Power supply pin
165	P47/IRQ15-DS/ AN007	ARC_INT	I		L	L	L	ARC IC interrupt signal input pin
166	P46/IRQ14-DS/ AN006	CURRENT_DET	I/O		I/L	L/L	I/L	Current level monitor pin (A/D converter)
167	P45/IRQ13-DS/ AN005	AMPSIGDET	I		I	L	I	Signal level monitor pin (AD converter)
168	P44/IRQ12-DS/ AN004	MODE	I		I	I	I	Region setting pin
169	P43/IRQ11-DS/ AN003	KEY3	I	M3VPu	I	I	I	Key control signalinput pin (When standby mode,set to inturrupt)
170	P42/IRQ10-DS/ AN002	KEY2	I	M3VPu	I	I	I	Key control signalinput pin (When standby mode,set to inturrupt)
171	P41/IRQ9-DS/ AN001	KEY1	I	M3VPu	I	I	I	Key control signalinput pin (When standby mode,set to inturrupt)
172	VREFL0	VREFL0	-		-	-	-	Ground pin
173	P40	ADC_RST	O		I	L	I	A/D convertor(AK5358) reset control pin
174	VREFH0	VREFH0	-		-	-	-	Power supply pin
175	AVCC0	AVCC0	-		-	-	-	Power supply pin
176	P07/IRQ15	Z2PLD_ERR	I	-	L	L	L	Detect ZONE2 DIR error (from Audio PLD)

AD8195ACPZ (INPUT : U1022)

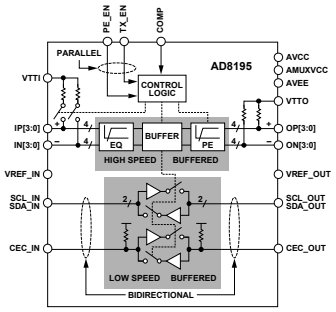


NOTES
1. THE AD8195 LFCSP HAS AN EXPOSED PAD ON THE UNDERSIDE OF THE PACKAGE THAT AIDS IN HEAT DISSIPATION. THE PAD MUST BE ELECTRICALLY CONNECTED TO THE AVEE SUPPLY PLANE IN ORDER TO MEET THERMAL SPECIFICATIONS.

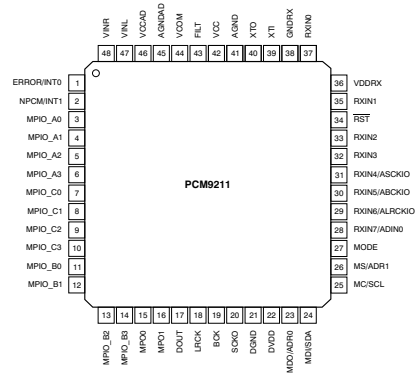
Terminl Function

Pin No.	Mnemonic	Type[1]	Description
1	IN0	HS I	High Speed Input Complement.
2	IP0	HS I	High Speed Input.
3	IN1	HS I	High Speed Input Complement.
4	IP1	HS I	High Speed Input.
5	VTTI	Power	Input Termination Supply. Nominally connected to AVCC.
6	IN2	HS I	High Speed Input Complement.
7	IP2	HS I	High Speed Input.
8	IN3	HS I	High Speed Input Complement.
9	IP3	HS I	High Speed Input.
10, 16, 22, 23, 25, 26, 30	AVCC	Power	Positive Analog Supply. 3.3 V nominal.
11	ON0	HS O	High Speed Output Complement.
12	OP0	HS O	High Speed Output.
13	VTTO	Power	Output Termination Supply. Nominally connected to AVCC.
14	ON1	HS O	High Speed Output Complement.
15	OP1	HS O	High Speed Output.
17	ON2	HS O	High Speed Output Complement.
18	OP2	HS O	High Speed Output.
19	ON3	HS O	High Speed Output Complement.
20	OP3	HS O	High Speed Output.
21	COMP	Control	Power-On Compensation Pin. Bypass to ground through a 10 µF capacitor.
24, 27, 37, Exposed Pad	AVEE	Power	Negative Analog Supply. 0 V nominal.
28	TX_EN	Control	High Speed Output Enable Parallel Interface.
29	PE_EN	Control	High Speed Preemphasis Enable Parallel Interface.
31	CEC_OUT	LS I/O	CEC Output Side.
32	AMUXVCC	Power	Positive Auxiliary Buffer Supply. 5 V nominal.

Block diagram



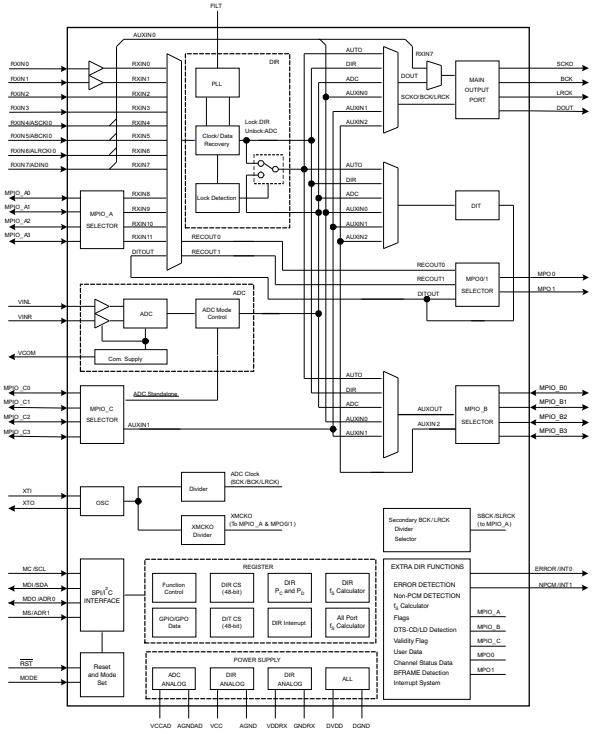
PCM9211 (DIGITAL : U1040)



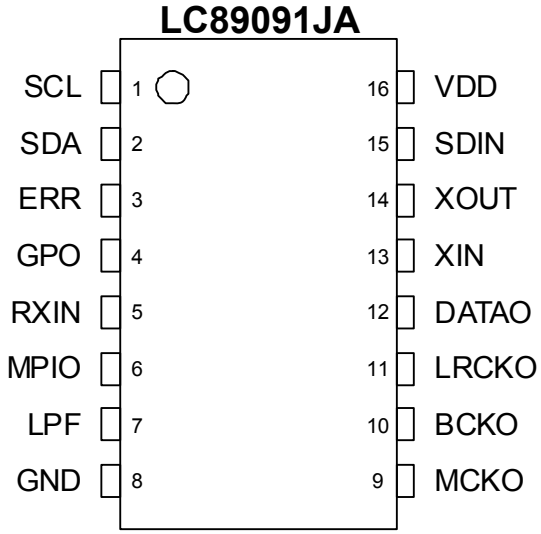
PIN Functions

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

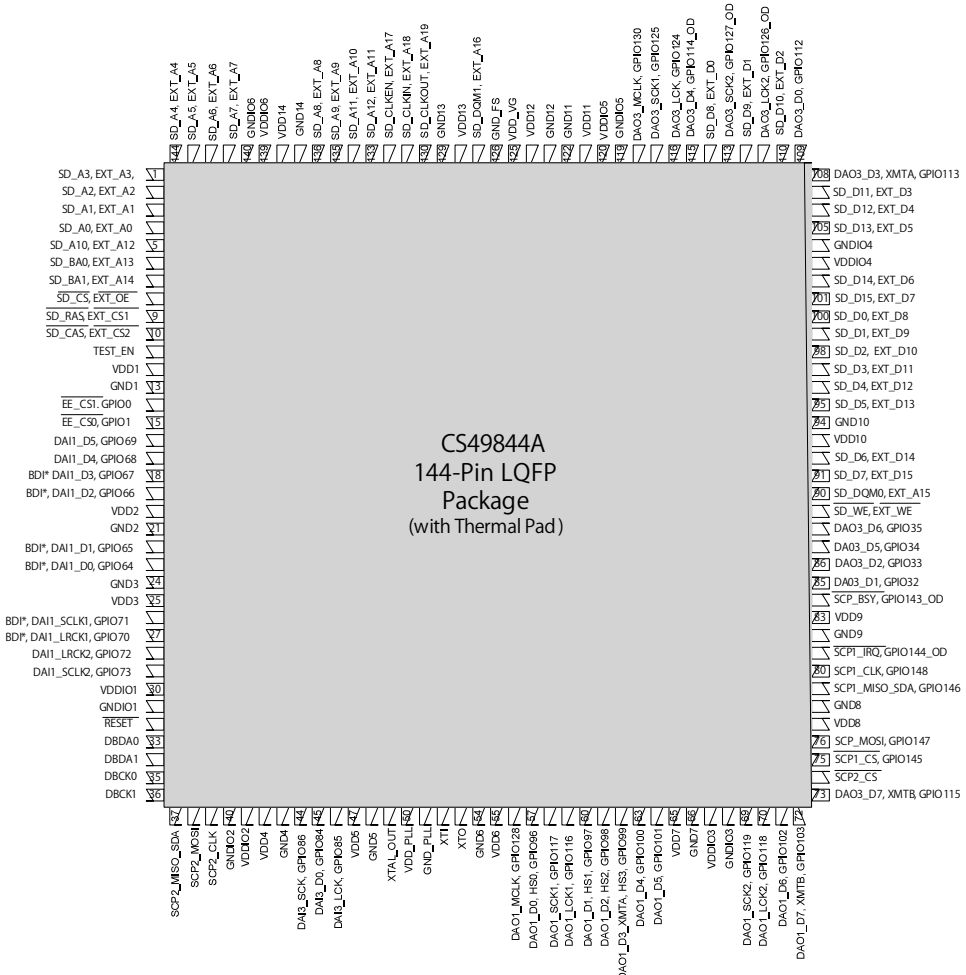
(1) Schmitt trigger input
(2) Schmitt trigger input
(3) Open-drain configuration in I2C mode
(4) Onboard pull-down resistor (50 k Ω , typical)
(5) CMOS Schmitt trigger input



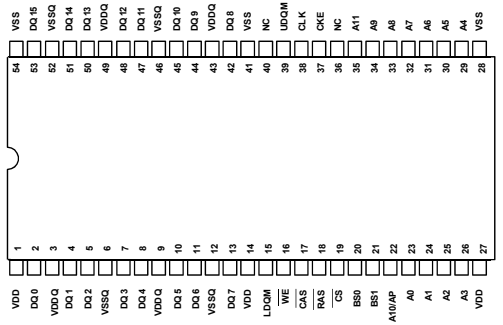
LC89091JA (DIGITAL : U1004)



CS49844A (DIGITAL : U1073)



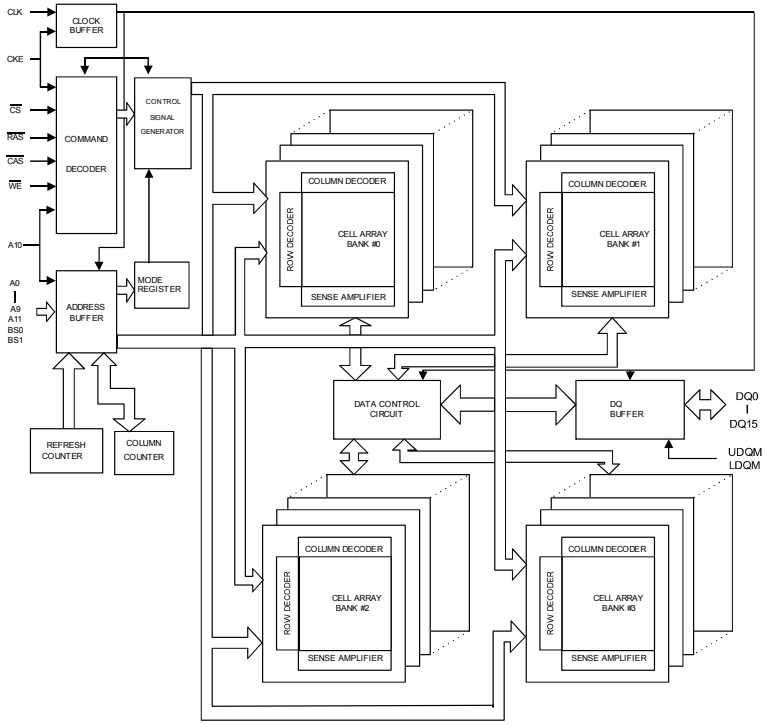
W9864G6KH-5 (DIGITAL : U1023)



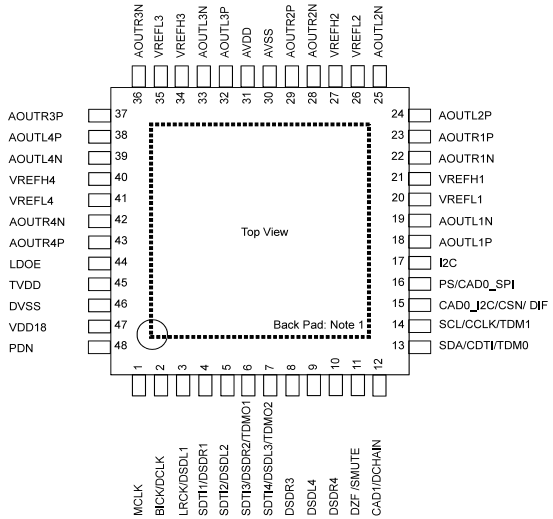
W9864G6KH-5 Pin description

PIN NUMBER	PIN NAME	FUNCTION	DESCRIPTION
23 ~ 26, 22, 29 ~35	A0–A11	Address	Multiplexed pins for row and column address. Row address: A0–A11. Column address: A0–A7. A10 is sampled during a precharge command to determine if all banks are to be precharged or bank selected by BS0, BS1.
20, 21	BS0, BS1	Bank Select	Select bank to activate during row address latch time, or bank to read/write during address latch time.
2, 4, 5, 7, 8, 10, 11, 13, 42, 44, 45, 47, 48, 50, 51, 53	DQ0–DQ15	Data Input/ Output	Multiplexed pins for data output and input.
19	$\overline{CS}$	Chip Select	Disable or enable the command decoder. When command decoder is disabled, new command is ignored and previous operation continues.
18	$\overline{RAS}$	Row Address Strobe	Command input. When sampled at the rising edge of the clock $\overline{RAS}$, $\overline{CAS}$ and $\overline{WE}$ define the operation to be executed.
17	$\overline{CAS}$	Column Address Strobe	Referred to $\overline{RAS}$
16	$\overline{WE}$	Write Enable	Referred to $\overline{RAS}$
39, 15	UDQM LDQM	Input/output mask	The output buffer is placed at Hi-Z (with latency of 2) when DQM is sampled high in read cycle. In write cycle, sampling DQM high will block the write operation with zero latency.
38	CLK	Clock Inputs	System clock used to sample inputs on the rising edge of clock.
37	CKE	Clock Enable	CKE controls the clock activation and deactivation. When CKE is low, Power Down mode, Suspend mode, or Self Refresh mode is entered.
1, 14, 27	V_{DD}	Power	Power for input buffers and logic circuit inside DRAM.
28, 41, 54	V_{SS}	Ground	Ground for input buffers and logic circuit inside DRAM.
3, 9, 43, 49	V_{DDQ}	Power for I/O buffer	Separated power from V_{DD}, to improve DQ noise immunity.
6, 12, 46, 52	V_{SSQ}	Ground for I/O buffer	Separated ground from V_{SS}, to improve DQ noise immunity.
36, 40	NC	No Connection	No connection.

W9864G6KH-5 Block diagram



AK4458VN (DIGITAL : U1051)



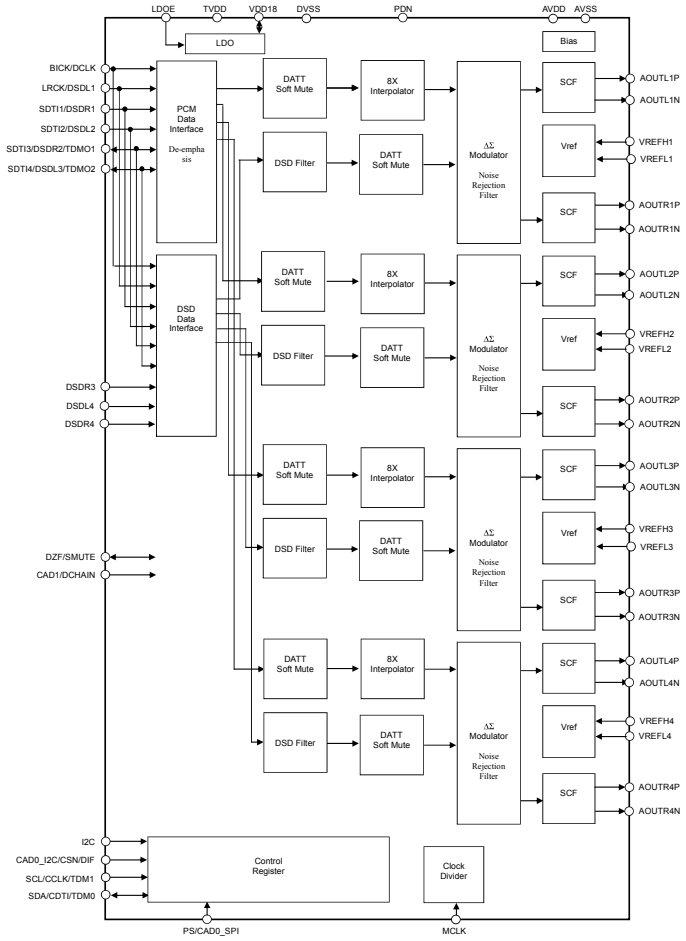
Pin Function

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

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

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

FUNCTIONAL BLOCK DIAGRAM



PCM5100 (DIGITAL : U1052, U1053, U1054)

PCM510X (top view)

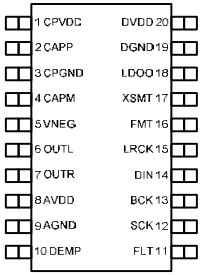


Table 2. TERMINAL FUNCTIONS, PCM510x

TERMINAL		I/O	DESCRIPTION
NAME	NO.		
CPVDD	1	-	Charge pump power supply, 3.3V
CAPP	2	O	Charge pump flying capacitor terminal for positive rail
CPGND	3	-	Charge pump ground
CAPM	4	O	Charge pump flying capacitor terminal for negative rail
VNEG	5	O	Negative charge pump rail terminal for decoupling, -3.3V
OUTL	6	O	Analog output from DAC left channel
OUTR	7	O	Analog output from DAC right channel
AVDD	8	-	Analog power supply, 3.3V
AGND	9	-	Analog ground
DEMP	10	I	De-emphasis control for 44.1kHz sampling rate(1): Off (Low) / On (High)
FLT	11	I	Filter select : Normal latency (Low) / Low latency (High)
SCK	12	I	System clock input
BCK	13	I	Audio data bit clock input
DIN	14	I	Audio data input
LRCK	15	I	Audio data word clock input
FMT	16	I	Audio format selection : I^2S (Low) / Left justified (High)
XSMT	17	I	Soft mute control : Soft mute (Low) / soft un-mute (High)
LDOO	18	-	Internal logic supply rail terminal for decoupling
DGND	19	-	Digital ground
DVDD	20	-	Digital power supply, 3.3V

PCM5100 Block Diagram

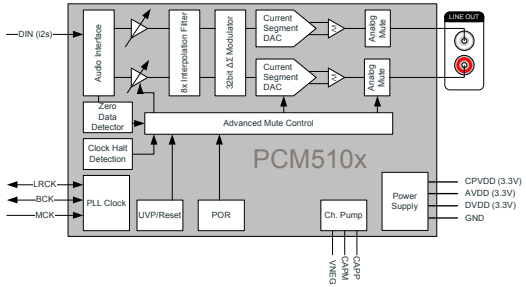
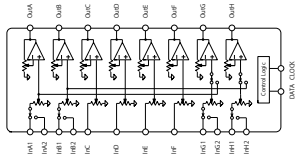


Figure 1. PCM510x Functional Block Diagram

NJU72343 (INPUT : IC4202, IC4203)

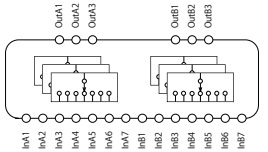


Pin Function

No.	Symbol	Function
1	AREF	Analog reference potential terminal
2	ADR	Address selection terminal
3	InA2	Ach input2
4	InB2	Bch input2
5	InA1	Ach input1
6	InB1	Bch input1
7	InC	Cch input
8	InD	Dch input
9	InE	Ech input
10	InF	Fch input
11	InG1	Gch input1
12	InH1	Hch input1
13	InG2	Cch input2
14	InH2	Dch input2
15	MUTE	External mute control terminal
16	REF	Digital reference potential terminal

No.	Symbol	Function
17	DATA	IC control data input
18	CLOCK	IC control clock input
19	VDDOUT	Digital power supply output terminal
20	AREF	Analog reference potential terminal
21	OutH	Hch output
22	OutG	Gch output
23	OutF	Fch output
24	OutE	Ech output
25	OutD	Dch output
26	OutC	Cch output
27	OutB	Bch output
28	OutA	Ach output
29	AREF	Analog reference potential terminal
30	V-	negative power supply terminal
31	AREF	Analog reference potential terminal
32	V+	positive power supply terminal

NJU72750A (INPUT : IC4200, IC4201)

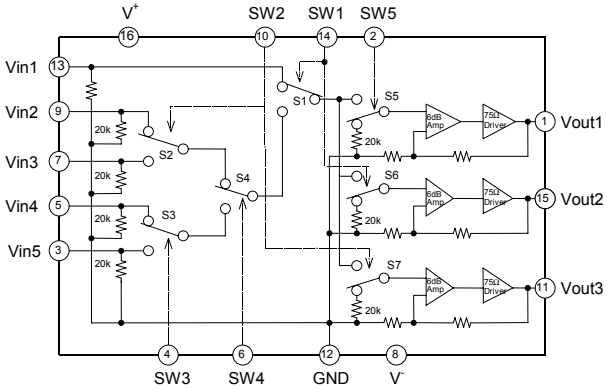


Pin Function

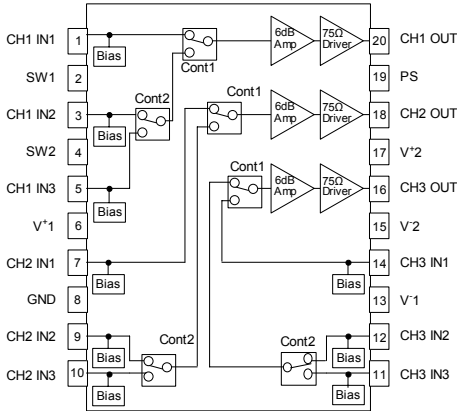
No.	Symbol	Function
1	V+	positive power supply terminal
2	InA1	Ach input1
3	InB1	Bch input1
4	InA2	Ach input2
5	InB2	Bch input2
6	InA3	Ach input3
7	InB3	Bch input3
8	InA4	Ach input4
9	InB4	Bch input4
10	InA5	Ach input5
11	InB5	Bch input5
12	InA6	Ach input6
13	InB6	Bch input6
14	InA7	Ach input7
15	InB7	Bch input7
16	REF	Reference potential terminal for BIAS

No.	Symbol	Function
17	DATA	IC control data input
18	CLOCK	IC control clock input
19	NC	-
20	NC	-
21	OutB3	Bch output3
22	OutA3	Ach output3
23	REF_B	Bch reference potential terminal
24	OutB2	Bch output2
25	OutA2	Ach output2
26	REF_A	Ach reference potential terminal
27	OutB1	Bch output1
28	OutA1	Ach output1
29	NC	-
30	ADR0	Address selection pin 0
31	ADR1	Address selection pin 1
32	V-	negative power supply terminal

NJM2595MTE1 (VIDEO:IC5001)



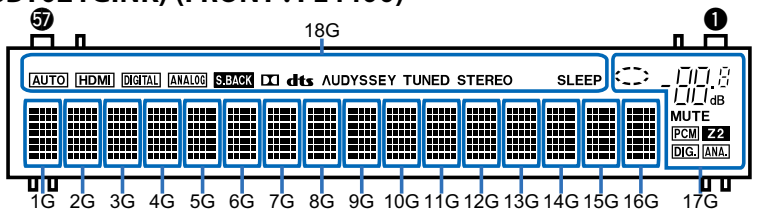
NJM2586AVC3(VIDEO:IC5002)



SSOP20-C3

2. FL DISPLAY

FLD (018BT021GINK) (FRONT : FL4400)



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	RESET	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) $\overline{CS}$ ------Chip Select Input pin
13) $\overline{RESET}$ --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	DD
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
RCSHP0230**00**	0 0 0 0 0 0		RCSHP0230**16**	0 0 0 0 1 0	FR LEVEL DOWN
RCSHP0230**01**	1 0 0 0 0 0	POWER	RCSHP0230**17**	1 0 0 0 1 0	
RCSHP0230**02**	0 1 0 0 0 0	FL LEVEL UP	RCSHP0230**18**	0 1 0 0 1 0	
RCSHP0230**03**	1 1 0 0 0 0	PHONO	RCSHP0230**19**	1 1 0 0 1 0	
RCSHP0230**04**	0 0 1 0 0 0	CD	RCSHP0230**20**	0 0 1 0 1 0	
RCSHP0230**05**	1 0 1 0 0 0	TUNER	RCSHP0230**21**	1 0 1 0 1 0	
RCSHP0230**06**	0 1 1 0 0 0		RCSHP0230**22**	0 1 1 0 1 0	SR LEVEL UP
RCSHP0230**07**	1 1 1 0 0 0	FL LEVEL DOWN	RCSHP0230**23**	1 1 1 0 1 0	SR LEVEL DOWN
RCSHP0230**08**	0 0 0 1 0 0	CBL/SAT	RCSHP0230**24**	0 0 0 1 1 0	VIDEO SELECT
RCSHP0230**09**	1 0 0 1 0 0	TV AUDIO	RCSHP0230**25**	1 0 0 1 1 0	
RCSHP0230**10**	0 1 0 1 0 0	Blu-ray	RCSHP0230**26**	0 1 0 1 1 0	
RCSHP0230**11**	1 1 0 1 0 0	FR LEVEL UP	RCSHP0230**27**	1 1 0 1 1 0	
RCSHP0230**12**	0 0 1 1 0 0	AUX1	RCSHP0230**28**	0 0 1 1 1 0	INPUT MODE ANALOG
RCSHP0230**13**	1 0 1 1 0 0	GAME	RCSHP0230**29**	1 0 1 1 1 0	CURSOR RIGHT
RCSHP0230**14**	0 1 1 1 0 0	MEDIA PLAYER	RCSHP0230**30**	0 1 1 1 1 0	STATUS
RCSHP0230**15**	1 1 1 1 0 0		RCSHP0230**31**	1 1 1 1 1 0	INFO

No.	Data (C6~C11)	Key Name	No.	Data (C6~C11)	Key Name
RCSHP0230**32**	0 0 0 0 0 1	ENTER	RCSHP0230**48**	0 0 0 0 1 1	MUTING
RCSHP0230**33**	1 0 0 0 0 1	POWER ON	RCSHP0230**49**	1 0 0 0 1 1	MASTER VOLUME UP
RCSHP0230**34**	0 1 0 0 0 1	POWER OFF	RCSHP0230**50**	0 1 0 0 1 1	MASTER VOLUME DOWN
RCSHP0230**35**	1 1 0 0 0 1	DVD	RCSHP0230**51**	1 1 0 0 1 1	SL LEVEL UP
RCSHP0230**36**	0 0 1 0 0 1	STANDARD(DOLBY/DTS SURR.)	RCSHP0230**52**	0 0 1 0 1 1	SL LEVEL DOWN
RCSHP0230**37**	1 0 1 0 0 1	SW LEVEL DOWN	RCSHP0230**53**	1 0 1 0 1 1	CENTER LEVEL UP
RCSHP0230**38**	0 1 1 0 0 1	DSP SIMULATION	RCSHP0230**54**	0 1 1 0 1 1	CENTER LEVEL DOWN
RCSHP0230**39**	1 1 1 0 0 1	SB/SBL LEVEL UP	RCSHP0230**55**	1 1 1 0 1 1	SBR LEVEL UP
RCSHP0230**40**	0 0 0 1 0 1		RCSHP0230**56**	0 0 0 1 1 1	SBR LEVEL DOWN
RCSHP0230**41**	1 0 0 1 0 1		RCSHP0230**57**	1 0 0 1 1 1	TONE CONTROL OFF
RCSHP0230**42**	0 1 0 1 0 1		RCSHP0230**58**	0 1 0 1 1 1	TONE CONTROL ON
RCSHP0230**43**	1 1 0 1 0 1	SB/SBL LEVEL DOWN	RCSHP0230**59**	1 1 0 1 1 1	
RCSHP0230**44**	0 0 1 1 0 1	SW LEVEL UP	RCSHP0230**60**	0 0 1 1 1 1	
RCSHP0230**45**	1 0 1 1 0 1	FRONT SPEAKER	RCSHP0230**61**	1 0 1 1 1 1	
RCSHP0230**46**	0 1 1 1 0 1	SP-A ,FRONT	RCSHP0230**62**	0 1 1 1 1 1	
RCSHP0230**47**	1 1 1 1 0 1	SP-B ,FRONT	RCSHP0230**63**	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
RCSHP0C200**00**	0 0 0 0 0 0	ALL BASS DOWN	RCSHP0C200**16**	0 0 0 0 1 0	ZONE2 CD
RCSHP0C200**01**	1 0 0 0 0 0		RCSHP0C200**17**	1 0 0 0 1 0	ZONE2 TUNER
RCSHP0C200**02**	0 1 0 0 0 0	SURROUND BACK	RCSHP0C200**18**	0 1 0 0 1 0	ZONE2 Blu-ray
RCSHP0C200**03**	1 1 0 0 0 0	MASTER VOL. PRESET1(0dB)	RCSHP0C200**19**	1 1 0 0 1 0	ZONE2 AUX
RCSHP0C200**04**	0 0 1 0 0 0		RCSHP0C200**20**	0 0 1 0 1 0	ZONE2 GAME
RCSHP0C200**05**	1 0 1 0 0 0	MASTER VOL. PRESET2(-20dB)	RCSHP0C200**21**	1 0 1 0 1 0	
RCSHP0C200**06**	0 1 1 0 0 0	MASTER VOL. PRESET3(-40dB)	RCSHP0C200**22**	0 1 1 0 1 0	ZONE2 PRESET UP
RCSHP0C200**07**	1 1 1 0 0 0	ZONE2 VOL. PRESET1(0dB)	RCSHP0C200**23**	1 1 1 0 1 0	ZONE2 PRESET DOWN
RCSHP0C200**08**	0 0 0 1 0 0	ZONE2 VOL. PRESET2(-20dB)	RCSHP0C200**24**	0 0 0 1 1 0	
RCSHP0C200**09**	1 0 0 1 0 0	ZONE2 VOL. PRESET3(-40dB)	RCSHP0C200**25**	1 0 0 1 1 0	ZONE2 MEDIA PLAYER
RCSHP0C200**10**	0 1 0 1 0 0	ZONE2 CBL/SAT	RCSHP0C200**26**	0 1 0 1 1 0	
RCSHP0C200**11**	1 1 0 1 0 0		RCSHP0C200**27**	1 1 0 1 1 0	ZONE2 TV AUDIO
RCSHP0C200**12**	0 0 1 1 0 0	ZONE3 VOL. PRESET1(0dB)	RCSHP0C200**28**	0 0 1 1 1 0	
RCSHP0C200**13**	1 0 1 1 0 0	ZONE2 VOLUME UP	RCSHP0C200**29**	1 0 1 1 1 0	STEREO
RCSHP0C200**14**	0 1 1 1 0 0	ZONE2 VOLUME DOWN	RCSHP0C200**30**	0 1 1 1 1 0	DIRECT
RCSHP0C200**15**	1 1 1 1 0 0	ZONE2 PHONO	RCSHP0C200**31**	1 1 1 1 1 0	ZONE3 VOL. PRESET2(0dB)

No.	Data (C6~C11)	Key Name	No.	Data (C6~C11)	Key Name
RCSHP0C200**32**	0 0 0 0 0 1	SETUP MENU	RCSHP0C200**48**	0 0 0 0 1 1	
RCSHP0C200**33**	1 0 0 0 0 1		RCSHP0C200**49**	1 0 0 0 1 1	
RCSHP0C200**34**	0 1 0 0 0 1	ZONE3 VOL. PRESET2(0dB)	RCSHP0C200**50**	0 1 0 0 1 1	
RCSHP0C200**35**	1 1 0 0 0 1	CURSOR UP	RCSHP0C200**51**	1 1 0 0 1 1	
RCSHP0C200**36**	0 0 1 0 0 1	CURSOR DOWN	RCSHP0C200**52**	0 0 1 0 1 1	
RCSHP0C200**37**	1 0 1 0 0 1		RCSHP0C200**53**	1 0 1 0 1 1	
RCSHP0C200**38**	0 1 1 0 0 1		RCSHP0C200**54**	0 1 1 0 1 1	INPUT MODE
RCSHP0C200**39**	1 1 1 0 0 1		RCSHP0C200**55**	1 1 1 0 1 1	ALL TREBLE UP
RCSHP0C200**40**	0 0 0 1 0 1	MULTI CH STEREO	RCSHP0C200**56**	0 0 0 1 1 1	ALL TREBLE DOWN
RCSHP0C200**41**	1 0 0 1 0 1		RCSHP0C200**57**	1 0 0 1 1 1	
RCSHP0C200**42**	0 1 0 1 0 1		RCSHP0C200**58**	0 1 0 1 1 1	
RCSHP0C200**43**	1 1 0 1 0 1		RCSHP0C200**59**	1 1 0 1 1 1	
RCSHP0C200**44**	0 0 1 1 0 1		RCSHP0C200**60**	0 0 1 1 1 1	
RCSHP0C200**45**	1 0 1 1 0 1		RCSHP0C200**61**	1 0 1 1 1 1	
RCSHP0C200**46**	0 1 1 1 0 1		RCSHP0C200**62**	0 1 1 1 1 1	ZONE2 DVD
RCSHP0C200**47**	1 1 1 1 0 1	CH LEVEL	RCSHP0C200**63**	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
RCSHP0C10**32**	0 0 0 0 0 1		RCSHP0C10**48**	0 0 0 0 1 1	
RCSHP0C10**33**	1 0 0 0 0 1		RCSHP0C10**49**	1 0 0 0 1 1	
RCSHP0C10**34**	0 1 0 0 0 1		RCSHP0C10**50**	0 1 0 0 1 1	
RCSHP0C10**35**	1 1 0 0 0 1		RCSHP0C10**51**	1 1 0 0 1 1	
RCSHP0C10**36**	0 0 1 0 0 1		RCSHP0C10**52**	0 0 1 0 1 1	
RCSHP0C10**37**	1 0 1 0 0 1		RCSHP0C10**53**	1 0 1 0 1 1	
RCSHP0C10**38**	0 1 1 0 0 1		RCSHP0C10**54**	0 1 1 0 1 1	
RCSHP0C10**39**	1 1 1 0 0 1		RCSHP0C10**55**	1 1 1 0 1 1	
RCSHP0C10**40**	0 0 0 1 0 1		RCSHP0C10**56**	0 0 0 1 1 1	
RCSHP0C10**41**	1 0 0 1 0 1		RCSHP0C10**57**	1 0 0 1 1 1	
RCSHP0C10**42**	0 1 0 1 0 1		RCSHP0C10**58**	0 1 0 1 1 1	
RCSHP0C10**43**	1 1 0 1 0 1		RCSHP0C10**59**	1 1 0 1 1 1	
RCSHP0C10**44**	0 0 1 1 0 1		RCSHP0C10**60**	0 0 1 1 1 1	
RCSHP0C10**45**	1 0 1 1 0 1		RCSHP0C10**61**	1 0 1 1 1 1	
RCSHP0C10**46**	0 1 1 1 0 1		RCSHP0C10**62**	0 1 1 1 1 1	
RCSHP0C10**47**	1 1 1 1 0 1		RCSHP0C10**63**	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
RCSHP0C30**000**	0 0 0 0 0 0		RCSHP0C30**016**	0 0 0 0 1 0	
RCSHP0C30**001**	1 0 0 0 0 0	1	RCSHP0C30**017**	1 0 0 0 1 0	
RCSHP0C30**002**	0 1 0 0 0 0	2	RCSHP0C30**018**	0 1 0 0 1 0	DIRECT SEARCH (RDS SEARCH ※EU only)
RCSHP0C30**003**	1 1 0 0 0 0	3	RCSHP0C30**019**	1 1 0 0 1 0	
RCSHP0C30**004**	0 0 1 0 0 0	4	RCSHP0C30**020**	0 0 1 0 1 0	PTY ※EU only
RCSHP0C30**005**	1 0 1 0 0 0	5	RCSHP0C30**021**	1 0 1 0 1 0	TUNER PRESET DOWN
RCSHP0C30**006**	0 1 1 0 0 0	6	RCSHP0C30**022**	0 1 1 0 1 0	TUNER PRESET UP
RCSHP0C30**007**	1 1 1 0 0 0	7	RCSHP0C30**023**	1 1 1 0 1 0	TUNER BAND
RCSHP0C30**008**	0 0 0 1 0 0	8	RCSHP0C30**024**	0 0 0 1 1 0	TUNER TUNING MODE
RCSHP0C30**009**	1 0 0 1 0 0	9	RCSHP0C30**025**	1 0 0 1 1 0	TUNER TUNING UP
RCSHP0C30**010**	0 1 0 1 0 0	0	RCSHP0C30**026**	0 1 0 1 1 0	TUNER TUNING DOWN
RCSHP0C30**011**	1 1 0 1 0 0		RCSHP0C30**027**	1 1 0 1 1 0	
RCSHP0C30**012**	0 0 1 1 0 0	TUNER MEMORY	RCSHP0C30**028**	0 0 1 1 1 0	
RCSHP0C30**013**	1 0 1 1 0 0		RCSHP0C30**029**	1 0 1 1 1 0	
RCSHP0C30**014**	0 1 1 1 0 0	RT ※EU only	RCSHP0C30**030**	0 1 1 1 1 0	
RCSHP0C30**015**	1 1 1 1 0 0		RCSHP0C30**031**	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
RCSHP0210**000**	0 0 0 0 0 0		RCSHP0210**016**	0 0 0 0 1 0	
RCSHP0210**001**	1 0 0 0 0 0		RCSHP0210**017**	1 0 0 0 1 0	
RCSHP0210**002**	0 1 0 0 0 0		RCSHP0210**018**	0 1 0 0 1 0	ZONE3 TV AUDIO
RCSHP0210**003**	1 1 0 0 0 0		RCSHP0210**019**	1 1 0 0 1 0	ZONE3 CBL/SAT
RCSHP0210**004**	0 0 1 0 0 0		RCSHP0210**020**	0 0 1 0 1 0	ZONE3 GAME
RCSHP0210**005**	1 0 1 0 0 0		RCSHP0210**021**	1 0 1 0 1 0	ZONE3 MEDIAPLAYER
RCSHP0210**006**	0 1 1 0 0 0		RCSHP0210**022**	0 1 1 0 1 0	
RCSHP0210**007**	1 1 1 0 0 0		RCSHP0210**023**	1 1 1 0 1 0	ZONE3 AUX
RCSHP0210**008**	0 0 0 1 0 0	ZONE3 TUNER	RCSHP0210**024**	0 0 0 1 1 0	
RCSHP0210**009**	1 0 0 1 0 0	ZONE3 PHONO	RCSHP0210**025**	1 0 0 1 1 0	
RCSHP0210**010**	0 1 0 1 0 0	ZONE3 CD	RCSHP0210**026**	0 1 0 1 1 0	
RCSHP0210**011**	1 1 0 1 0 0		RCSHP0210**027**	1 1 0 1 1 0	
RCSHP0210**012**	0 0 1 1 0 0		RCSHP0210**028**	0 0 1 1 1 0	
RCSHP0210**013**	1 0 1 1 0 0		RCSHP0210**029**	1 0 1 1 1 0	ZONE2 ON/OFF
RCSHP0210**014**	0 1 1 1 0 0	ZONE3 DVD	RCSHP0210**030**	0 1 1 1 1 0	
RCSHP0210**015**	1 1 1 1 0 0	ZONE3 Blu-ray	RCSHP0210**031**	1 1 1 1 1 0	

No.	Data (C6～C11)	Key Name	No.	Data (C6～C11)	Key Name
RCSHP0210**032**	0 0 0 0 0 1		RCSHP0210**048**	0 0 0 0 1 1	
RCSHP0210**033**	1 0 0 0 0 1		RCSHP0210**049**	1 0 0 0 1 1	
RCSHP0210**034**	0 1 0 0 0 1		RCSHP0210**050**	0 1 0 0 1 1	
RCSHP0210**035**	1 1 0 0 0 1		RCSHP0210**051**	1 1 0 0 1 1	
RCSHP0210**036**	0 0 1 0 0 1		RCSHP0210**052**	0 0 1 0 1 1	
RCSHP0210**037**	1 0 1 0 0 1	ZONE3 VOLUME DOWN	RCSHP0210**053**	1 0 1 0 1 1	
RCSHP0210**038**	0 1 1 0 0 1	ZONE3 VOLUME UP	RCSHP0210**054**	0 1 1 0 1 1	

RCSHP0210**039**	1 1 1 0 0 1		RCSHP0210**055**	1 1 1 0 1 1	
RCSHP0210**040**	0 0 0 1 0 1		RCSHP0210**056**	0 0 0 1 1 1	
RCSHP0210**041**	1 0 0 1 0 1		RCSHP0210**057**	1 0 0 1 1 1	MAIN ZONE ON
RCSHP0210**042**	0 1 0 1 0 1	PURE DIRECT	RCSHP0210**058**	0 1 0 1 1 1	MAIN ZONE OFF
RCSHP0210**043**	1 1 0 1 0 1		RCSHP0210**059**	1 1 0 1 1 1	ZONE2 ON
RCSHP0210**044**	0 0 1 1 0 1		RCSHP0210**060**	0 0 1 1 1 1	ZONE2 OFF
RCSHP0210**045**	1 0 1 1 0 1		RCSHP0210**061**	1 0 1 1 1 1	ZONE3 ON
RCSHP0210**046**	0 1 1 1 0 1		RCSHP0210**062**	0 1 1 1 1 1	ZONE3 OFF
RCSHP0210**047**	1 1 1 1 0 1		RCSHP0210**063**	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		RCSHP0420**29**	1 0 1 1 1 0	MultEQ XT
RCSHP0420**14**	0 1 1 1 0 0		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(*5)							
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

(*5) 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
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
RCKSK0410012	0	0	1	1	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	TRIGGER-1 ON
RCKSK0410013	1	0	1	1	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	TRIGGER-1 OFF
RCKSK0410014	0	1	1	1	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	TRIGGER-2 ON
RCKSK0410015	1	1	1	1	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	TRIGGER-2 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
RCKSK0410045	1	0	1	1	0	1	0	0	0	0	*	*	*	*	*	*	*	*	*	*	Bilingual Mode(toggle) (JP only)
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
RCKSK0410308	0	0	1	0	1	1	0	0	1	0	*	*	*	*	*	*	*	*	*	*	STANDARD
RCKSK0410309	1	0	1	0	1	1	0	0	1	0	*	*	*	*	*	*	*	*	*	*	DIRECT
RCKSK0410320	0	0	0	0	0	0	1	0	1	0	*	*	*	*	*	*	*	*	*	*	DTS SURROUND
RCKSK0410324	0	0	1	0	0	0	1	0	1	0	*	*	*	*	*	*	*	*	*	*	AUTO SOUND
RCKSK0410329	1	0	0	1	0	0	1	0	1	0	*	*	*	*	*	*	*	*	*	*	MOVIE SURROUND
RCKSK0410330	0	1	0	1	0	0	1	0	1	0	*	*	*	*	*	*	*	*	*	*	MUSIC SURROUND
RCKSK0410331	1	1	0	1	0	0	1	0	1	0	*	*	*	*	*	*	*	*	*	*	GAME SURROUND
RCKSK0410332	0	0	1	1	0	0	1	0	1	0	*	*	*	*	*	*	*	*	*	*	SOUND MODE toggle (Reverse)
RCKSK0410336	0	0	0	0	1	0	1	0	1	0	*	*	*	*	*	*	*	*	*	*	DSP SIMULATION
RCKSK0410337	1	0	0	0	1	0	1	0	1	0	*	*	*	*	*	*	*	*	*	*	MULTI CH STEREO
RCKSK0410340	0	0	1	0	1	0	1	0	1	0	*	*	*	*	*	*	*	*	*	*	ROCK ARENA
RCKSK0410341	1	0	1	0	1	0	1	0	1	0	*	*	*	*	*	*	*	*	*	*	JAZZ CLUB
RCKSK0410343	1	1	1	0	1	0	1	0	1	0	*	*	*	*	*	*	*	*	*	*	MONO MOVIE
RCKSK0410344	0	0	0	1	1	0	1	0	1	0	*	*	*	*	*	*	*	*	*	*	MATRIX
RCKSK0410345	1	0	0	1	1	0	1	0	1	0	*	*	*	*	*	*	*	*	*	*	VIDEO GAME
RCKSK0410346	0	1	0	1	1	0	1	0	1	0	*	*	*	*	*	*	*	*	*	*	VIRTUAL
RCKSK0410348	0	0	1	1	1	0	1	0	1	0	*	*	*	*	*	*	*	*	*	*	Dolby Atmos ON/OFF
RCKSK0410349	1	0	1	1	1	0	1	0	1	0	*	*	*	*	*	*	*	*	*	*	SOUND MODE toggle (Normal)
RCKSK0410352	0	0	0	0	0	1	1	0	1	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	1	1	0	1	1	1	0	1	0	*	*	*	*	*	*	*	*	*	*	M.VR PRESET3(-40dB)
RCKSK0410378	0	1	0	1	1	1	1	0	1	0	*	*	*	*	*	*	*	*	*	*	CHANNEL LEVEL
RCKSK0410384	0	0	0	0	0	0	0	1	1	0	*	*	*	*	*	*	*	*	*	*	FL LEVEL UP
RCKSK0410385	1	0	0	0	0	0	0	1	1	0	*	*	*	*	*	*	*	*	*	*	FL LEVEL DOWN
RCKSK0410386	0	1	0	0	0	0	0	1	1	0	*	*	*	*	*	*	*	*	*	*	FR LEVEL UP
RCKSK0410387	1	1	0	0	0	0	0	1	1	0	*	*	*	*	*	*	*	*	*	*	FR LEVEL DOWN
RCKSK0410388	0	0	1	0	0	0	0	1	1	0	*	*	*	*	*	*	*	*	*	*	C LEVEL UP
RCKSK0410389	1	0	1	0	0	0	0	1	1	0	*	*	*	*	*	*	*	*	*	*	C LEVEL DOWN
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
RCKSK0410392	0	0	0	1	0	0	0	1	1	0	*	*	*	*	*	*	*	*	*	*	SL LEVEL UP
RCKSK0410393	1	0	0	1	0	0	0	1	1	0	*	*	*	*	*	*	*	*	*	*	SL LEVEL DOWN
RCKSK0410394	0	1	0	1	0	0	0	1	1	0	*	*	*	*	*	*	*	*	*	*	SR LEVEL UP
RCKSK0410395	1	1	0	1	0	0	0	1	1	0	*	*	*	*	*	*	*	*	*	*	SR LEVEL DOWN
RCKSK0410396	0	0	1	1	0	0	0	1	1	0	*	*	*	*	*	*	*	*	*	*	SBL LEVEL UP
RCKSK0410397	1	0	1	1	0	0	0	1	1	0	*	*	*	*	*	*	*	*	*	*	SBL LEVEL DOWN
RCKSK0410398	0	1	1	1	0	0	0	1	1	0	*	*	*	*	*	*	*	*	*	*	SBR LEVEL UP
RCKSK0410399	1	1	1	1	0	0	0	1	1	0	*	*	*	*	*	*	*	*	*	*	SBR 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
RCKSK0410406	0	1	1	0	1	0	0	1	1	0	*	*	*	*	*	*	*	*	*	*	TONE CONTROL ON/OFF
RCKSK0410407	1	1	1	0	1	0	0	1	1	0	*	*	*	*	*	*	*	*	*	*	TONE CONTROL OFF
RCKSK0410408	0	0	0	1	1	0	0	1	1	0	*	*	*	*	*	*	*	*	*	*	TONE CONTROL ON
RCKSK0410410	0	1	0	1	1	0	0	1	1	0	*	*	*	*	*	*	*	*	*	*	SW2 LEVEL UP
RCKSK0410411	1	1	0	1	1	0	0	1	1	0	*	*	*	*	*	*	*	*	*	*	SW2 LEVEL DOWN
RCKSK0410417	1	0	0	0	0	1	0	1	1	0	*	*	*	*	*	*	*	*	*	*	TFL LEVEL UP
RCKSK0410418	0	1	0	0	0	1	0	1	1	0	*	*	*	*	*	*	*	*	*	*	TFL LEVEL DOWN
RCKSK0410419	1	1	0	0	0	1	0	1	1	0	*	*	*	*	*	*	*	*	*	*	TFR LEVEL UP
RCKSK0410420	0	0	1	0	0	1	0	1	1	0	*	*	*	*	*	*	*	*	*	*	TFR LEVEL DOWN
RCKSK0410421	1	0	1	0	0	1	0	1	1	0	*	*	*	*	*	*	*	*	*	*	TML LEVEL UP
RCKSK0410422	0	1	1	0	0	1	0	1	1	0	*	*	*	*	*	*	*	*	*	*	TML LEVEL DOWN
RCKSK0410423	1	1	1	0	0	1	0	1	1	0	*	*	*	*	*	*	*	*	*	*	TMR LEVEL UP
RCKSK0410424	0	0	0	1	0	1	0	1	1	0	*	*	*	*	*	*	*	*	*	*	TMR LEVEL DOWN
RCKSK0410433	1	0	0	0	1	1	0	1	1	0	*	*	*	*	*	*	*	*	*	*	FDL LEVEL UP
RCKSK0410434	0	1	0	0	1	1	0	1	1	0	*	*	*	*	*	*	*	*	*	*	FDL LEVEL DOWN
RCKSK0410435	1	1	0	0	1	1	0	1	1	0	*	*	*	*	*	*	*	*	*	*	FDR LEVEL UP
RCKSK0410436	0	0	1	0	1	1	0	1	1	0	*	*	*	*	*	*	*	*	*	*	FDR LEVEL DOWN

RCKSK0410437	1	0	1	0	1	1	0	1	1	0	*	*	*	*	*	*	*	*	*	*	SDL LEVEL UP
RCKSK0410438	0	1	1	0	1	1	0	1	1	0	*	*	*	*	*	*	*	*	*	*	SDL LEVEL DOWN
RCKSK0410439	1	1	1	0	1	1	0	1	1	0	*	*	*	*	*	*	*	*	*	*	SDR LEVEL UP
RCKSK0410440	0	0	0	1	1	1	0	1	1	0	*	*	*	*	*	*	*	*	*	*	SDR LEVEL DOWN
RCKSK0410522	0	1	0	1	0	0	0	0	0	1	*	*	*	*	*	*	*	*	*	*	FRONT SPEAKER
RCKSK0410542	0	1	1	1	1	0	0	0	0	1	*	*	*	*	*	*	*	*	*	*	DYNAMIC VOLUME OFF
RCKSK0410545	1	0	0	0	0	1	0	0	0	1	*	*	*	*	*	*	*	*	*	*	DYNAMIC VOLUME SELECT
RCKSK0410547	1	1	0	0	0	1	0	0	0	1	*	*	*	*	*	*	*	*	*	*	DYNAMIC EQ SELECT
RCKSK0410548	0	0	1	0	0	1	0	0	0	1	*	*	*	*	*	*	*	*	*	*	AUDIO RESTORER SELECT
RCKSK0410549	1	0	1	0	0	1	0	0	0	1	*	*	*	*	*	*	*	*	*	*	DYNAMIC EQ/VOLUME 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	*	*	*	*	*	*	*	*	*	*	FRONTSP A ON/OFF
RCKSK0410606	0	1	1	1	1	0	1	0	0	1	*	*	*	*	*	*	*	*	*	*	FRONTSP 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
RCKSK0410649	1	0	0	1	0	0	0	1	0	1	*	*	*	*	*	*	*	*	*	*	FHL LEVEL UP
RCKSK0410650	0	1	0	1	0	0	0	1	0	1	*	*	*	*	*	*	*	*	*	*	FHL LEVEL DOWN
RCKSK0410651	1	1	0	1	0	0	0	1	0	1	*	*	*	*	*	*	*	*	*	*	FHR LEVEL UP
RCKSK0410652	0	0	1	1	0	0	0	1	0	1	*	*	*	*	*	*	*	*	*	*	FHR LEVEL DOWN
RCKSK0410656	0	0	0	0	1	0	0	1	0	1	*	*	*	*	*	*	*	*	*	*	Front Display(Dimmer)
RCKSK0410669	**1**	**0**	**1**	**1**	**1**	**0**	**0**	**1**	**0**	**1**	*	*	*	*	*	*	*	*	*	*	**HDMI Monitor Select 1**
RCKSK0410670	**0**	**1**	**1**	**1**	**1**	**0**	**0**	**1**	**0**	**1**	*	*	*	*	*	*	*	*	*	*	**HDMI Monitor Select 2**
RCKSK0410671	**1**	**1**	**1**	**1**	**1**	**0**	**0**	**1**	**0**	**1**	*	*	*	*	*	*	*	*	*	*	**HDMI Monitor Select Auto(Dual)**
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 (CD)
RCKSK0410699	1	1	0	1	1	1	0	1	0	1	*	*	*	*	*	*	*	*	*	*	Media Server
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**
RCKSK0410714	0	1	0	1	0	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	SIRIUSXM (NA only)
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
RCKSK0410729	1	0	0	1	1	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	AUX1
RCKSK0410730	0	1	0	1	1	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	AUX2
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
RCKSK0410736	0	0	0	0	0	1	1	1	0	1	*	*	*	*	*	*	*	*	*	*	MultEQ XT
RCKSK0410741	1	0	1	0	0	1	1	1	0	1	*	*	*	*	*	*	*	*	*	*	INTERNET RADIO(Recent Play)
RCKSK0410746	0	1	0	1	0	1	1	1	0	1	*	*	*	*	*	*	*	*	*	*	DYNAMIC EQ ON
RCKSK0410747	1	1	0	1	0	1	1	1	0	1	*	*	*	*	*	*	*	*	*	*	DYNAMIC EQ OFF
RCKSK0410748	0	0	1	1	0	1	1	1	0	1	*	*	*	*	*	*	*	*	*	*	DYNAMIC VOLUME(Heavy)
RCKSK0410749	1	0	1	1	0	1	1	1	0	1	*	*	*	*	*	*	*	*	*	*	DYNAMIC VOLUME(Medium)
RCKSK0410750	0	1	1	1	0	1	1	1	0	1	*	*	*	*	*	*	*	*	*	*	DYNAMIC VOLUME(Light)
RCKSK0410751	1	1	1	1	0	1	1	1	0	1	*	*	*	*	*	*	*	*	*	*	Bluetooth
RCKSK0410752	0	0	0	0	1	1	1	1	0	1	*	*	*	*	*	*	*	*	*	*	RESOLUTION
RCKSK0410753	1	0	0	0	1	1	1	1	0	1	*	*	*	*	*	*	*	*	*	*	Monitor Select
RCKSK0410754	0	1	0	0	1	1	1	1	0	1	*	*	*	*	*	*	*	*	*	*	RESOLUTION(HDMI)
RCKSK0410757	1	0	1	0	1	1	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ASPECT(16:9)
RCKSK0410758	0	1	1	0	1	1	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ASPECT(4:3)
RCKSK0410760	0	0	0	1	1	1	1	1	0	1	*	*	*	*	*	*	*	*	*	*	Reference Level Offset (0dB) for Dynamic EQ
RCKSK0410761	1	0	0	1	1	1	1	1	0	1	*	*	*	*	*	*	*	*	*	*	Reference Level Offset (5dB) for Dynamic EQ
RCKSK0410762	0	1	0	1	1	1	1	1	0	1	*	*	*	*	*	*	*	*	*	*	Reference Level Offset (10dB) for Dynamic EQ
RCKSK0410763	1	1	0	1	1	1	1	1	0	1	*	*	*	*	*	*	*	*	*	*	Reference Level Offset (15dB) for Dynamic EQ
RCKSK0410764	0	0	1	1	1	1	1	1	0	1	*	*	*	*	*	*	*	*	*	*	Spotify (NA & EU only)
RCKSK0410765	1	0	1	1	1	1	1	1	0	1	*	*	*	*	*	*	*	*	*	*	Pandora (NA only)
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
RCKSK0410789	1	0	1	0	1	0	0	0	1	1	*	*	*	*	*	*	*	*	*	*	Graphic EQ (toggle)
RCKSK0410791	1	1	1	1	1	0	0	0	1	1	*	*	*	*	*	*	*	*	*	*	Graphic EQ ON
RCKSK0410792	0	0	0	1	1	0	0	0	1	1	*	*	*	*	*	*	*	*	*	*	Graphic EQ OFF
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

RCKSK0410849	1	0	0	0	1	0	1	0	1	1	*	*	*	*	*	*	*	*	*	*	Video Mode Select
RCKSK0410850	0	1	0	0	1	0	1	0	1	1	*	*	*	*	*	*	*	*	*	*	Video Mode Select Auto
RCKSK0410851	1	1	0	0	1	0	1	0	1	1	*	*	*	*	*	*	*	*	*	*	Video Mode Select Movie
RCKSK0410852	0	0	1	0	1	0	1	0	1	1	*	*	*	*	*	*	*	*	*	*	Video Mode Select Game
RCKSK0410857	1	0	0	1	1	0	1	0	1	1	*	*	*	*	*	*	*	*	*	*	Loudness Management ON/OFF
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)
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
RCKSK0410958	0	1	1	1	1	1	0	1	1	1	*	*	*	*	*	*	*	*	*	*	MAIN ZONE USB DIRECT PLAY
RCKSK0410959	1	1	1	1	1	1	0	1	1	1	*	*	*	*	*	*	*	*	*	*	MAIN ZONE FAVORITE DIRECT PLAY
RCKSK0410970	0	1	0	1	0	0	1	1	1	1	*	*	*	*	*	*	*	*	*	*	MAIN ZONE TUNING UP
RCKSK0410971	1	1	0	1	0	0	1	1	1	1	*	*	*	*	*	*	*	*	*	*	MAIN ZONE TUNING DOWN
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
RCKSK0410976	0	0	0	0	1	0	1	1	1	1	*	*	*	*	*	*	*	*	*	*	MAIN ZONE Rewind
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 Fast Forward
RCKSK0410983	1	1	1	0	1	0	1	1	1	1	*	*	*	*	*	*	*	*	*	*	MAIN ZONE SEARCH(RDS)
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
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
RCKSK0410996	0	0	1	0	0	1	1	1	1	1	*	*	*	*	*	*	*	*	*	*	MAIN ZONE SKIP PLUS/TUNING UP
RCKSK0410997	1	0	1	0	0	1	1	1	1	1	*	*	*	*	*	*	*	*	*	*	MAIN ZONE TUNING ▼
RCKSK0410998	0	1	1	0	0	1	1	1	1	1	*	*	*	*	*	*	*	*	*	*	MAIN ZONE TUNING ▲

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
RCKSK0430370	1	1	0	0	1	1	1	0	1	0	*	*	*	*	*	*	*	*	*	*	ZONE2 VR PRESET(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 (CD)
RCKSK0430699	1	1	0	1	1	1	0	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE2 Media Server
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**
RCKSK0430714	0	1	0	1	0	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE2 SIRIUSXM (NA only)
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
RCKSK0430729	1	0	0	1	1	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE2 AUX1
RCKSK0430730	0	1	0	1	1	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE2 AUX2
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
RCKSK0430764	0	0	1	1	1	1	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE2 Spotify (NA & EU only)
RCKSK0430765	1	0	1	1	1	1	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE2 Pandora (NA only)
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
RCKSK0430788	0	0	1	0	0	0	1	0	1	1	*	*	*	*	*	*	*	*	*	*	ZONE2 SLEEP
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
RCKSK0430958	0	1	1	1	1	1	0	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE2 USB DIRECT PLAY
RCKSK0430959	1	1	1	1	1	1	0	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE2 FAVORITE DIRECT PLAY
RCKSK0430970	0	1	0	1	0	0	1	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE2 TUNING UP
RCKSK0430971	1	1	0	1	0	0	1	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE2 TUNING DOWN
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
RCKSK0430976	0	0	0	0	1	0	1	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE2 Rewind
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 Fast Forward
RCKSK0430983	1	1	1	0	1	0	1	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE2 SEARCH(RDS)
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
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
RCKSK0430996	0	0	1	0	0	1	1	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE2 SKIP PLUS/TUNING UP
RCKSK0430997	1	0	1	0	0	1	1	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE2 TUNING ▼
RCKSK0430998	0	1	1	0	0	1	1	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE2 TUNING ▲

ANALOG TUNER

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	*	*	*	*	*	*	*	*	*	*	TUNING UP
RCKSK0410145	1	0	0	0	1	0	0	1	0	0	*	*	*	*	*	*	*	*	*	*	TUNING 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 (NA only)
RCKSK0410153	1	0	0	1	1	0	0	1	0	0	*	*	*	*	*	*	*	*	*	*	BAND FM (NA only)
RCKSK0410154	0	1	0	1	1	0	0	1	0	0	*	*	*	*	*	*	*	*	*	*	BAND AM (NA only)
RCKSK0410156	0	0	1	1	1	0	0	1	0	0	*	*	*	*	*	*	*	*	*	*	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	*	*	*	*	*	*	*	*	*	*	RDS(EU only)/SEARCH
RCKSK0410166	0	1	1	0	0	1	0	1	0	0	*	*	*	*	*	*	*	*	*	*	RT (EU only)
RCKSK0410169	1	0	0	1	0	1	0	1	0	0	*	*	*	*	*	*	*	*	*	*	PTY(EU only)
RCKSK0410170	0	1	0	1	0	1	0	1	0	0	*	*	*	*	*	*	*	*	*	*	CURSOR UP(TUNER)
RCKSK0410171	1	1	0	1	0	1	0	1	0	0	*	*	*	*	*	*	*	*	*	*	CURSOR DOWN(TUNER)
RCKSK0410173	1	0	1	1	0	1	0	1	0	0	*	*	*	*	*	*	*	*	*	*	CURSOR LEFT(TUNER)
RCKSK0410174	0	1	1	1	0	1	0	1	0	0	*	*	*	*	*	*	*	*	*	*	CURSOR RIGHT(TUNER)
RCKSK0410175	1	1	1	1	0	1	0	1	0	0	*	*	*	*	*	*	*	*	*	*	CURSOR ENTER(TUNER)
RCKSK0410176	0	0	0	0	1	1	0	1	0	0	*	*	*	*	*	*	*	*	*	*	PRESET 1 / Numeric 1
RCKSK0410177	1	0	0	0	1	1	0	1	0	0	*	*	*	*	*	*	*	*	*	*	PRESET 2 / Numeric 2
RCKSK0410178	0	1	0	0	1	1	0	1	0	0	*	*	*	*	*	*	*	*	*	*	PRESET 3 / Numeric 3
RCKSK0410179	1	1	0	0	1	1	0	1	0	0	*	*	*	*	*	*	*	*	*	*	PRESET 4 / Numeric 4
RCKSK0410180	0	0	1	0	1	1	0	1	0	0	*	*	*	*	*	*	*	*	*	*	PRESET 5 / Numeric 5
RCKSK0410181	1	0	1	0	1	1	0	1	0	0	*	*	*	*	*	*	*	*	*	*	PRESET 6 / Numeric 6
RCKSK0410182	0	1	1	0	1	1	0	1	0	0	*	*	*	*	*	*	*	*	*	*	PRESET 7 / Numeric 7
RCKSK0410183	1	1	1	0	1	1	0	1	0	0	*	*	*	*	*	*	*	*	*	*	PRESET 8 / 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(TUNER)

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
RCKSK0470146	0	1	0	0	1	0	0	1	0	0	*	*	*	*	*	*	*	*	*	*	PRESET CH UP
RCKSK0470147	1	1	0	0	1	0	0	1	0	0	*	*	*	*	*	*	*	*	*	*	PRESET CH DOWN
RCKSK0470160	0	0	0	0	0	1	0	1	0	0	*	*	*	*	*	*	*	*	*	*	MEMORY
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

MECHANICAL

DISASSEMBLY

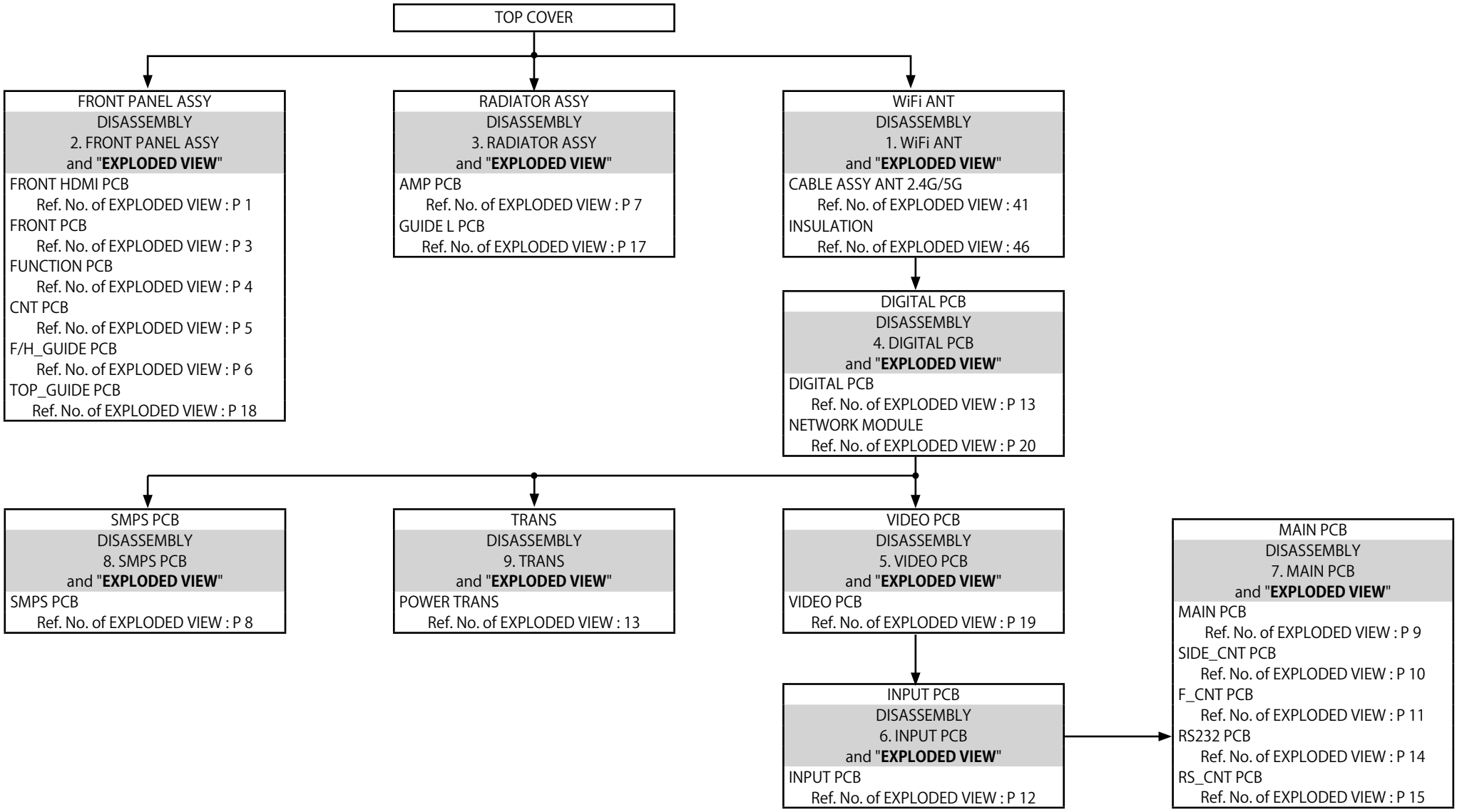
EXPLODED VIEW

PACKING 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"

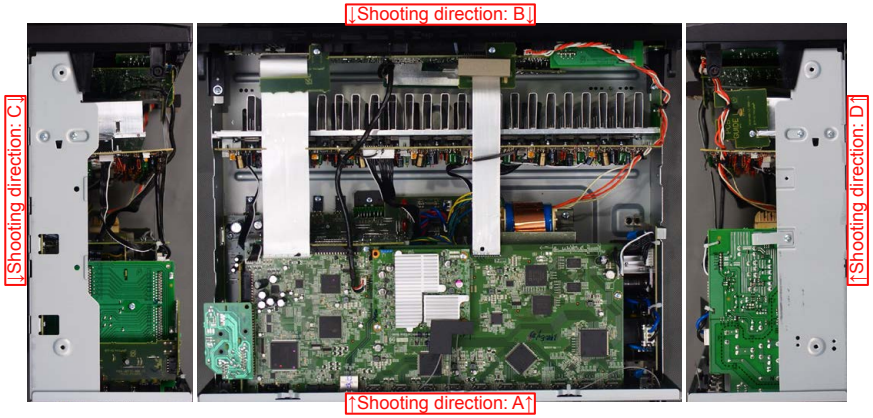


Explanatory Photos for DISASSEMBLY

- 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 AVR-X3400H E3 are used in this manual.

The viewpoint of each photograph

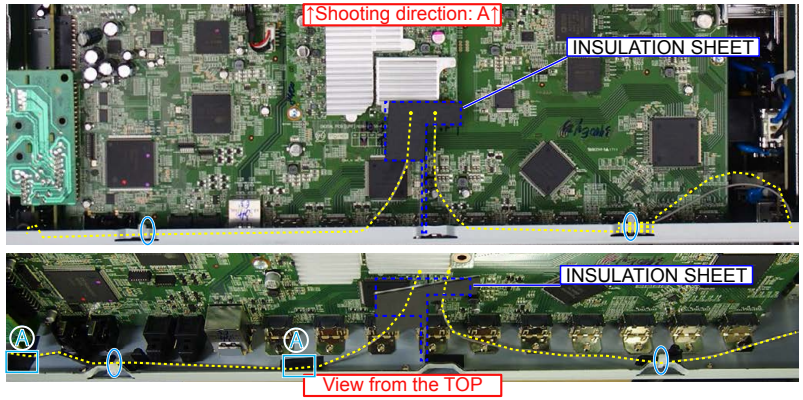
(Shooting direction : X) [View from the top]



1. WiFi ANT

Proceeding : TOP COVER → WiFi ANT

(1) Remove the INSULATION SHEET. Cut the wire clamps.

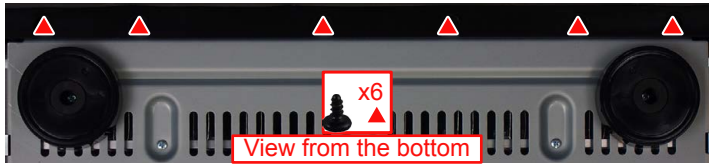


NOTE : ・If the INSULATION SHEET has been removed, replace with a new sheet.
・When attaching the INSULATION SHEET, align with the Silk-Print and up to side of the NET-WORK MODULE PCB.
・Fix with tape in position A.

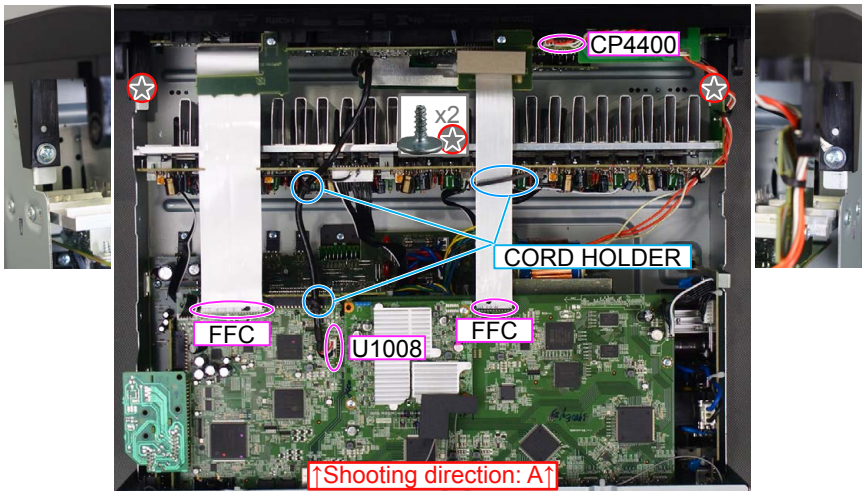
2. FRONT PANEL ASSY

Proceeding : TOP COVER → FRONT PANEL ASSY

(1) Remove the screws.



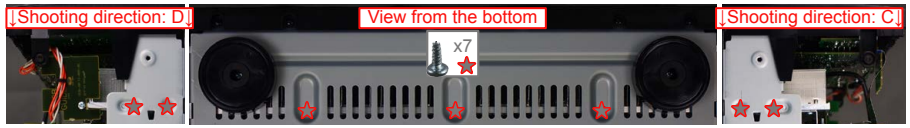
(2) Remove the screws. Remove the CORD HOLDER and connectors. Remove the FFC.



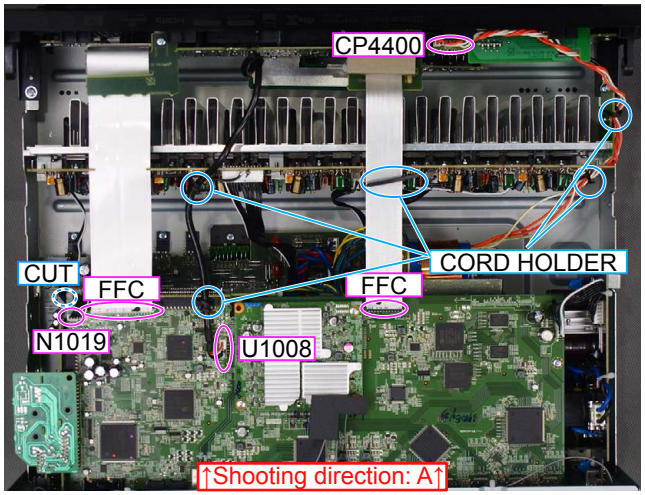
3. RADIATOR ASSY

Proceeding : TOP COVER → RADIATOR ASSY

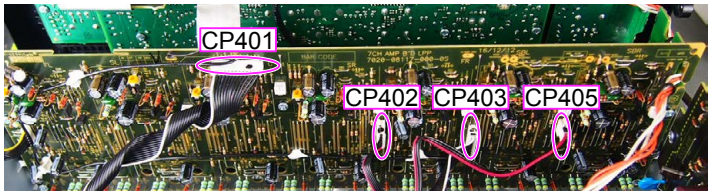
(1) Remove the screws.



(2) Cut the wire clamps, then remove the CORD HOLDERs and connectors. Remove the FFC.



(3) Remove the connector.

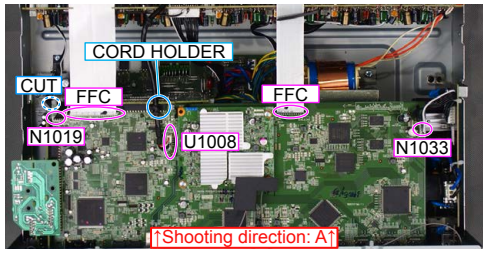


4. DIGITAL PCB

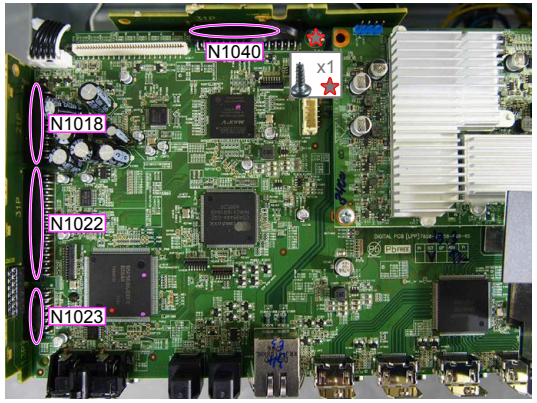
Proceeding : TOP COVER → WiFi ANT → DIGITAL PCB

(1) Remove the screws.

(2) Cut the wire clamps, then remove the CORD HOLDERs and connectors. Remove the FFC.



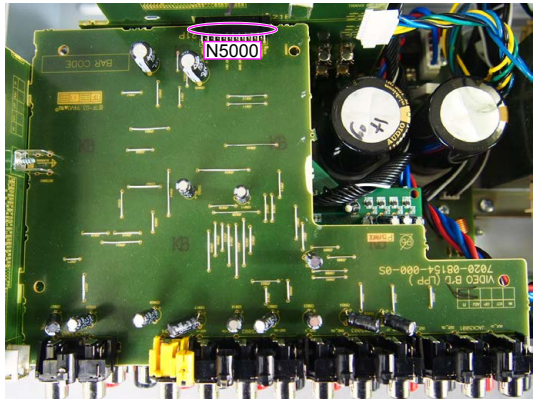
(3) Remove the screws. Remove the connector.



5. VIDEO PCB

Proceeding : TOP COVER → WiFi ANT → DIGITAL PCB → VIDEO PCB

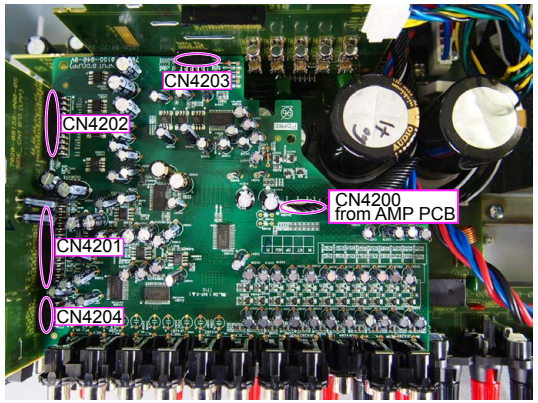
(1) Remove the connector.



6. INPUT PCB

Proceeding : TOP COVER → WiFi ANT → DIGITAL PCB → VIDEO PCB → INPUT PCB

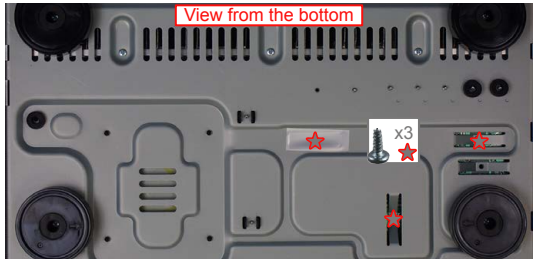
(1) Remove the connector.



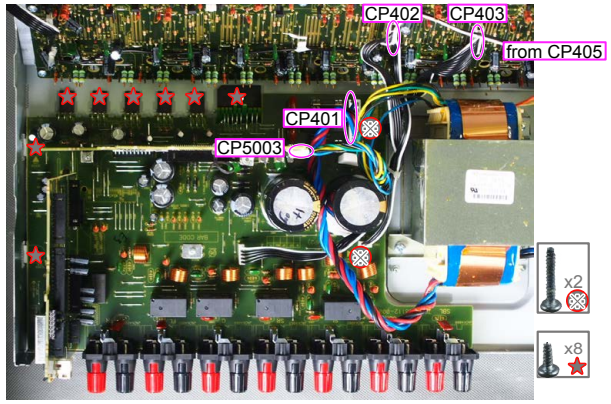
7. MAIN PCB

Proceeding : TOP COVER → WiFi ANT → DIGITAL PCB → VIDEO PCB → INPUT PCB → MAIN PCB

(1) Remove the screws.



(2) Remove the screws. Remove the connector.



8. SMPS PCB

Proceeding : TOP COVER → SMPS PCB

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

9. TRANS

Proceeding : TOP COVER → WiFi ANT → DIGITAL PCB → TRANS

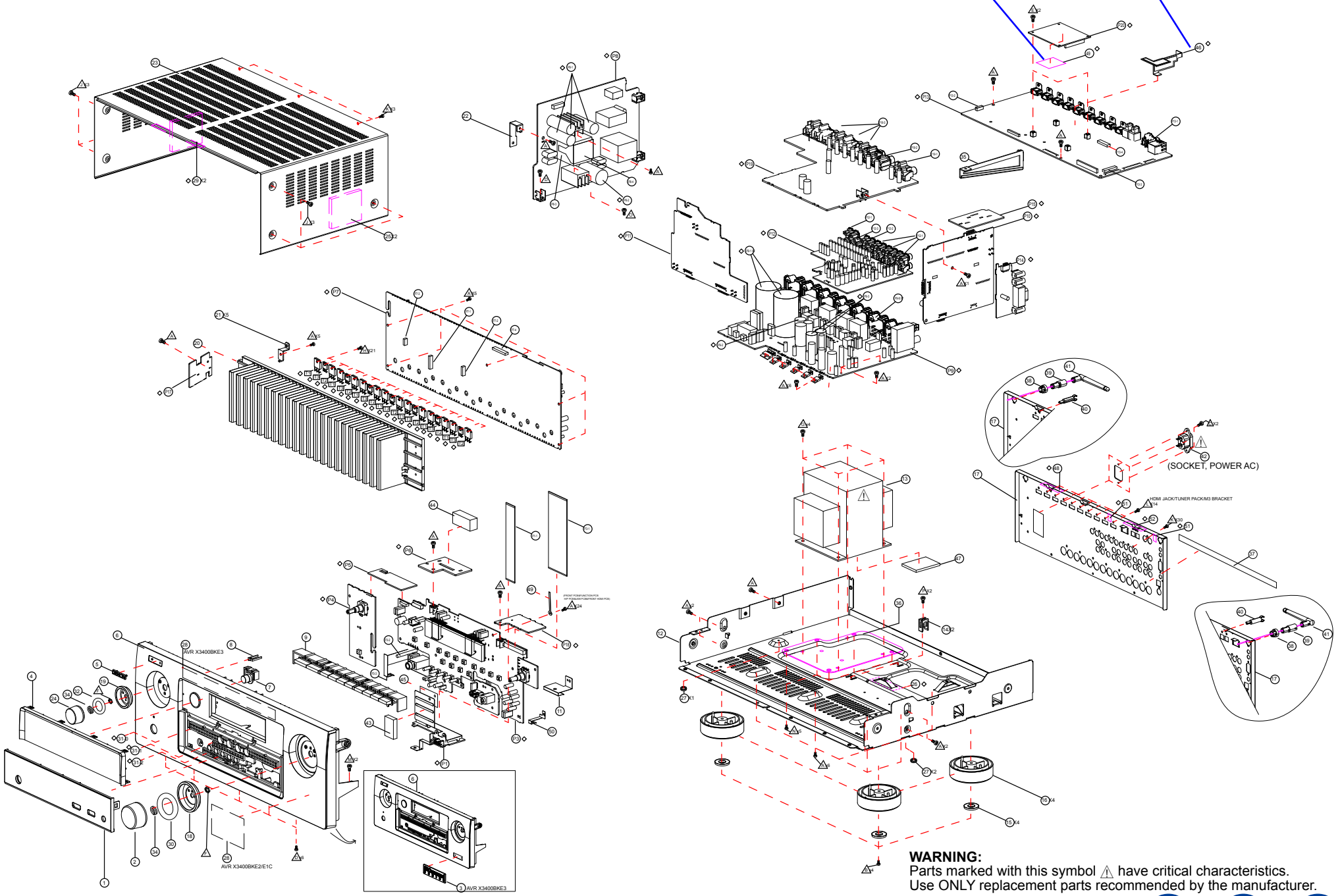
See "EXPLODED VIEW" for instructions on removing the transformer (TRANS).

EXPLODED VIEW

Parts List : http://dmedia.dmglobal.com/Document/DocumentDetails/23186

See "PROCEDURE AFTER REPLACING THE U-COM, ETC."

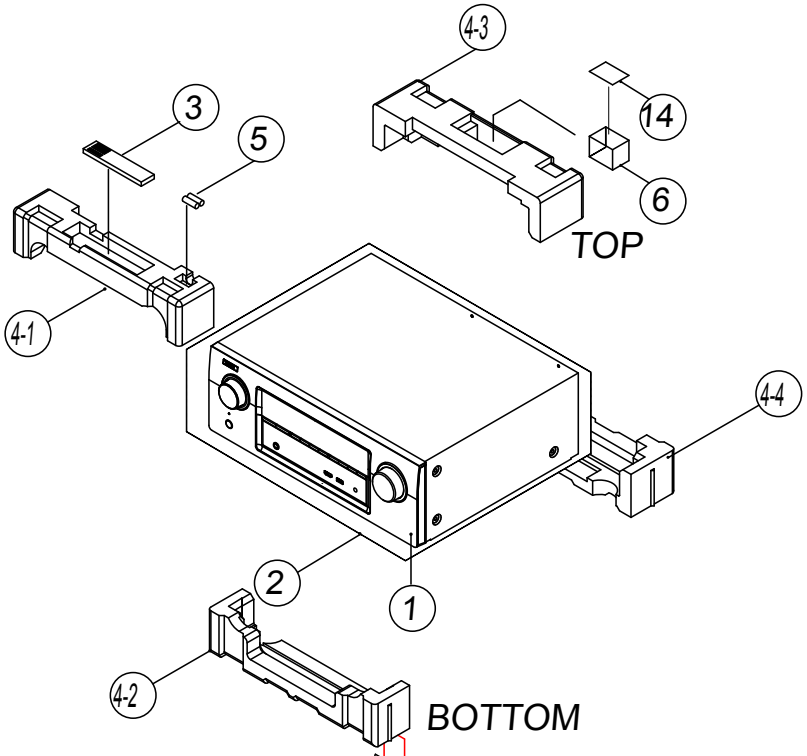
See "1. WiFi ANT"

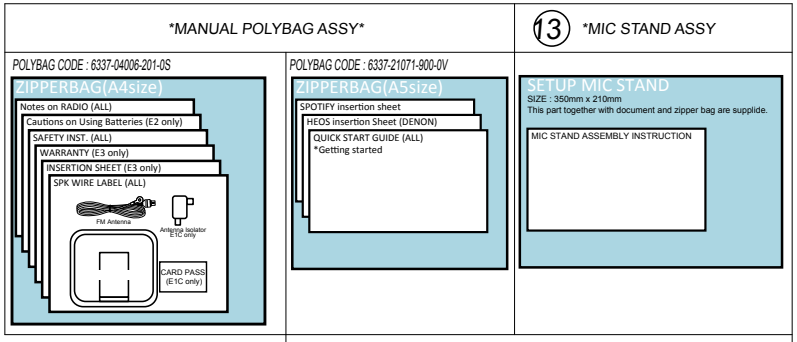


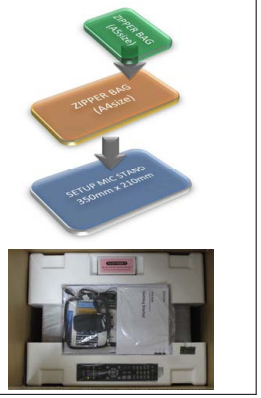
WARNING:
Parts marked with this symbol ⚠ have critical characteristics.
Use ONLY replacement parts recommended by the manufacturer.

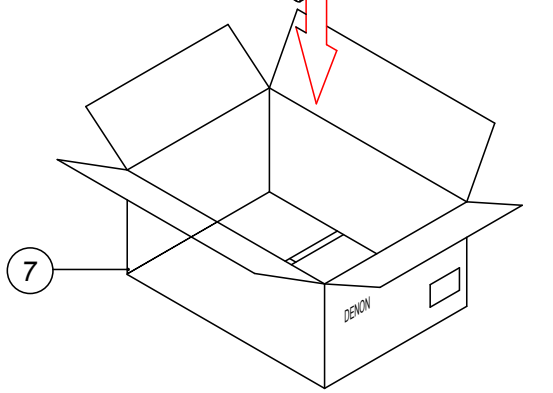
PACKING VIEW

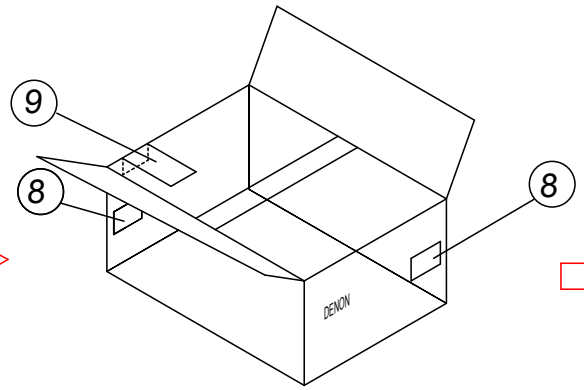
Parts List : http://dmedia.dmglobal.com/Document/DocumentDetails/23186

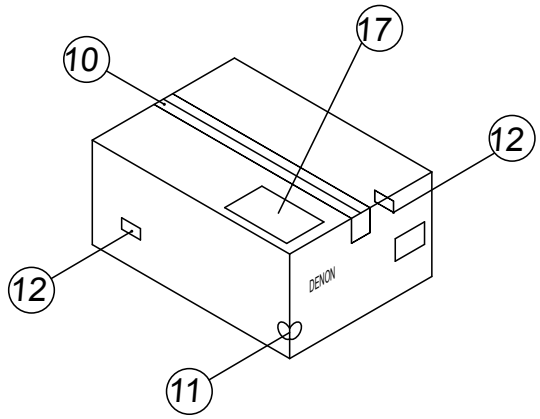












* POLY BAG PACKING STYLE	SPEAKER TERMINAL BUSHING	* BOX BOTTOM TAPING
TAPE (CLEAR) SET 15 CORD AC OLNY UK PLUG(at store)	16	10

REPAIR INFORMATION

TROUBLE SHOOTING

AUDIO CHECK PATH

HDMI "Rx/Tx" Failure Detection

CLOCK FLOW & WAVE FORM IN DIGITAL BLOCK

SPECIAL MODE

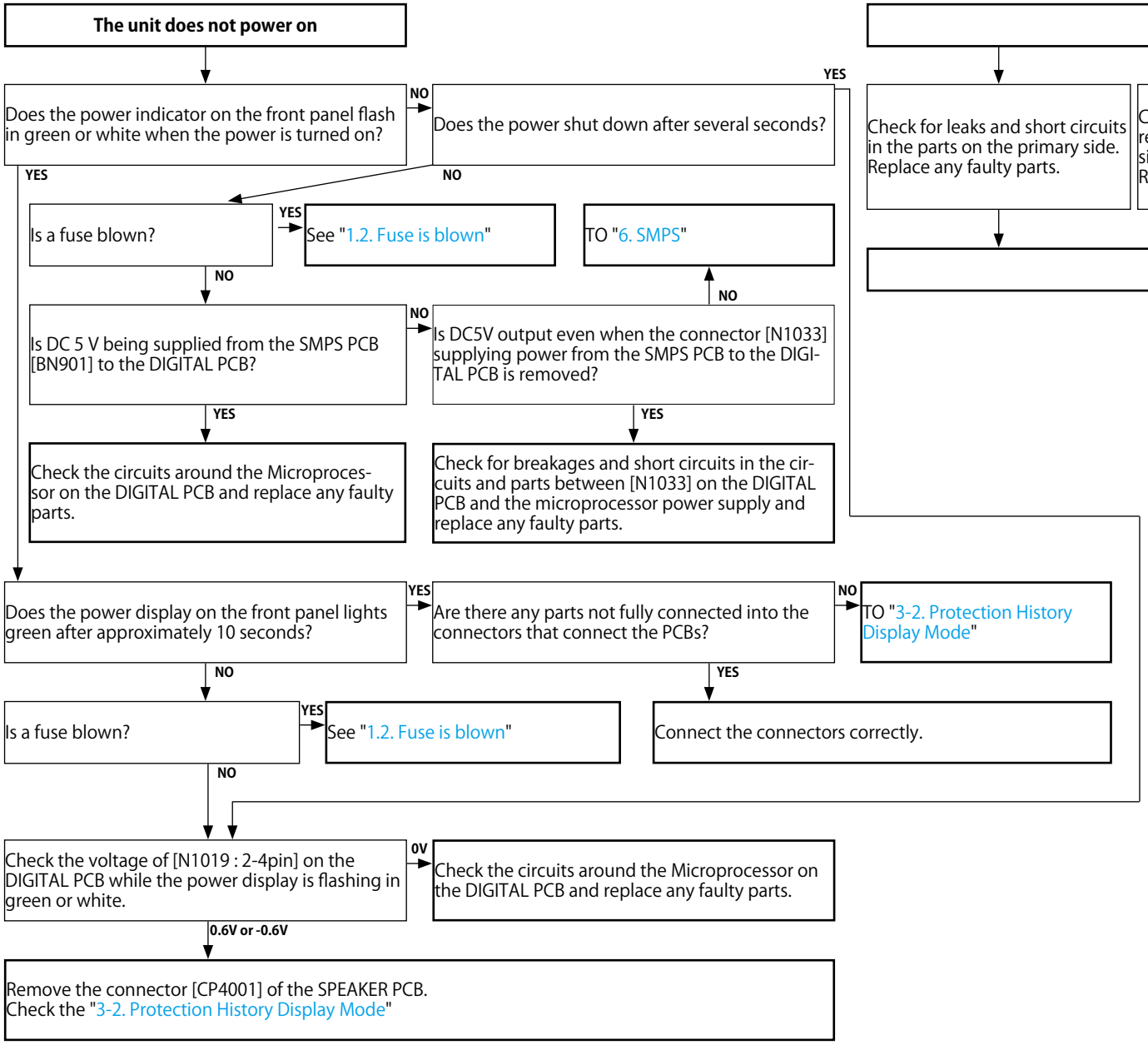
DIAGNOSTIC MODE

JIG FOR SERVICING

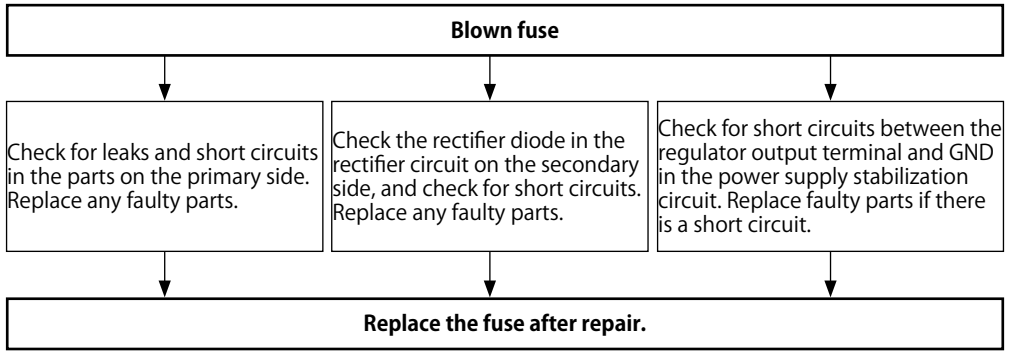
ADJUSTMENT

1. POWER

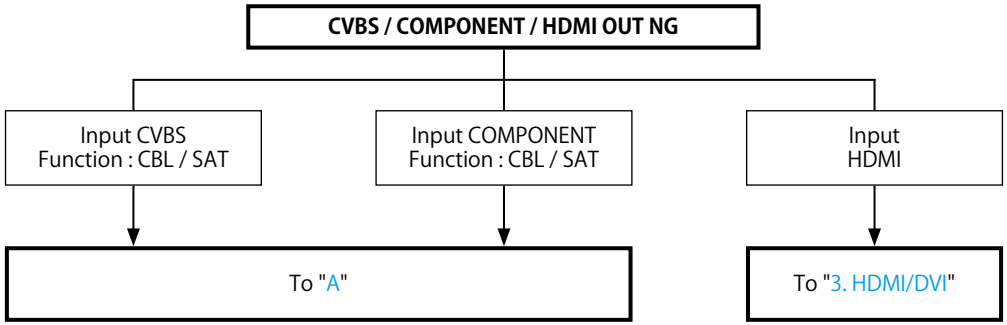
1.1. The unit does not power on

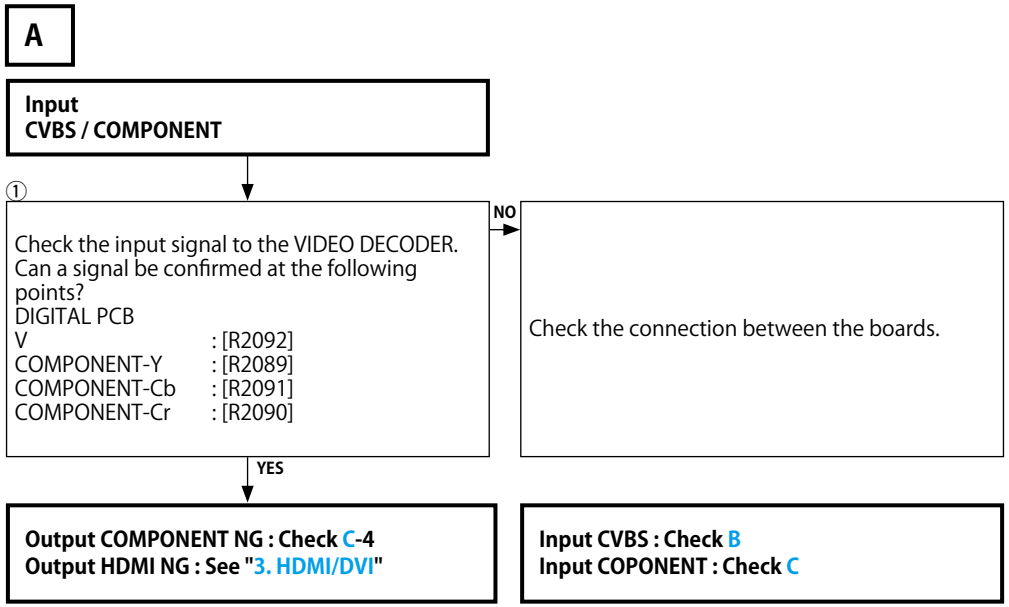


1.2. Fuse is blown

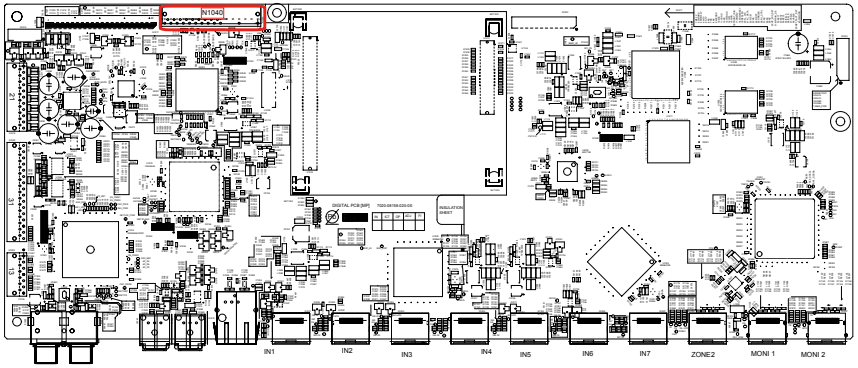


2. Analog video

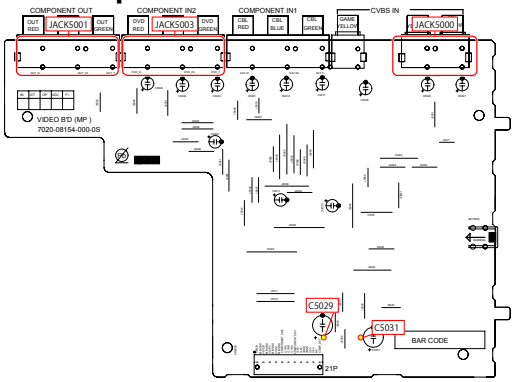




DIGITAL test point



VIDEO test point



B

Input
CVBS

① Check the settings of each IC.
Are the following voltages set?
DIGITAL PCB
[N1040 : 10pin] : Hi (3.3 V)
[N1040 : 11pin] : Hi (3.3 V)
[N1040 : 12pin] : Lo (0 V)

NO → DIGITAL PCB faulty.

YES ↓

② Extend the DIGITAL PCB using the jig.

③ Is the power voltage being output correctly?
V+5V : [C5029 : + side]
V-5V : [C5031 : - side]

NO → Check the connection between the FRONT CONNECTOR PCB and the VIDEO PCB.

NO → The regulator part of REG PCB is faulty.

YES ↓

④ Is a signal being output from the video amplifier?
CVBS : [CN5000 : 7pin]

NO → •Check the [IC5001] power voltage and check the soldering of the surrounding circuits.

YES ↓

- Check the connection between the FRONT CONNECTOR PCB and the VIDEO PCB.
- Check the soldering of [CP1039 and CP5000] on the FRONT CONNECTOR PCB.
- Check the soldering of [CN5000] on the VIDEO PCB.

※ These instructions refer to the VIDEO PCB unless otherwise specified.

C

Input
COMPONENT

① Check the settings of each IC.
Are the following voltages set?
DIGITAL PCB
[N1039 : 9pin] : Lo (0 V)
[N1039 : 13pin] : Hi (3.3 V)

NO → DIGITAL PCB faulty.

YES ↓

② Extend the DIGITAL PCB using the jig.

③ Is the power voltage being output correctly?
V+5V : [C5029 : + side]
V-5V : [C5031 : - side]

NO → Check the connection between the FRONT CONNECTOR PCB and the VIDEO PCB.

NO → The regulator part of REG PCB is faulty.

YES ↓

④ Is a signal being output from the video amplifier?
COMP-Y : [J5032]
COMP-CB : [J5033]
COMP-CR : [J5000]

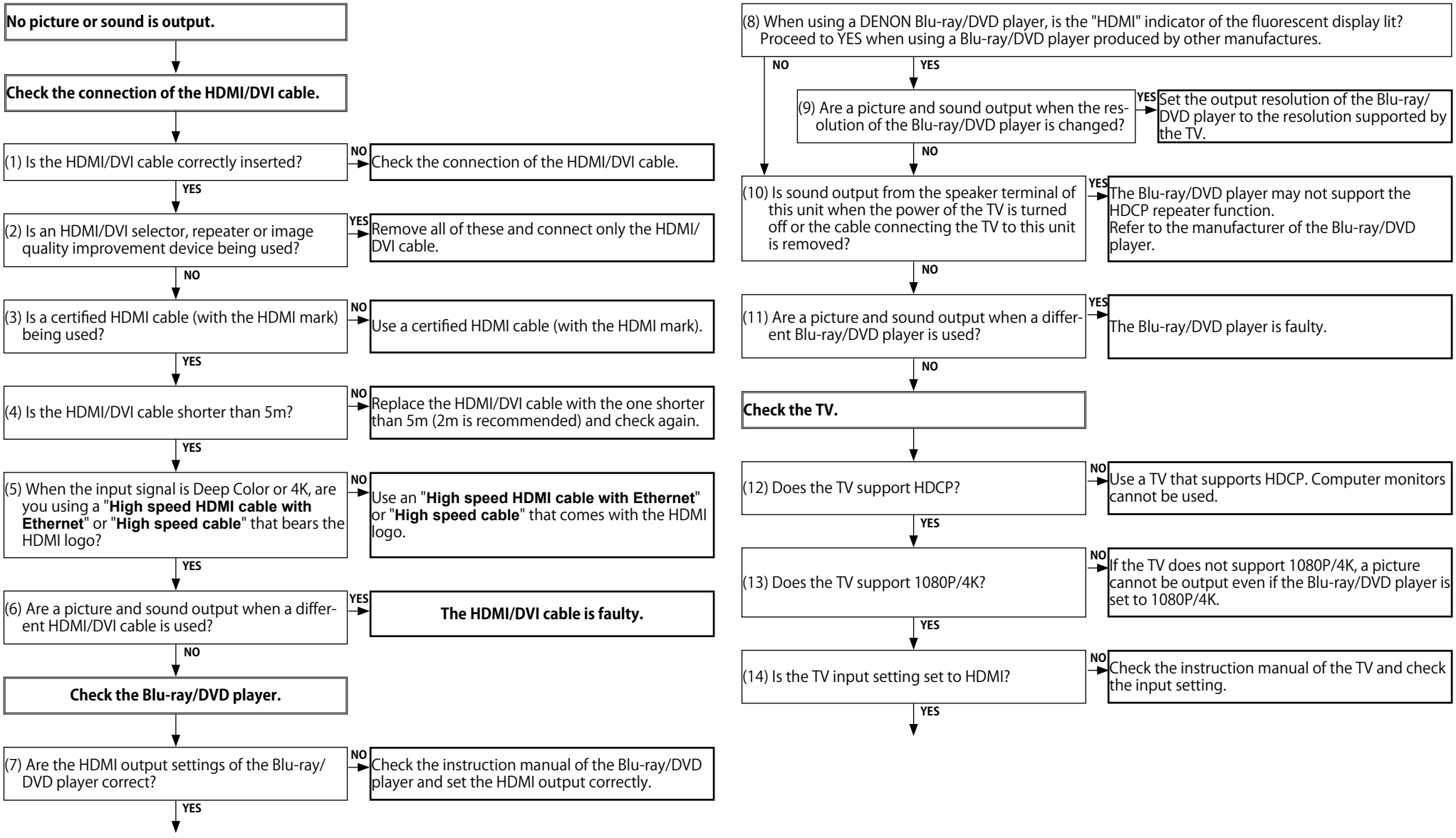
NO → •Check the [IC5002] power voltage and check the soldering of the surrounding circuits.
•The pattern between [IC5002, JACK5002 and JACK5003] and is faulty.

YES ↓

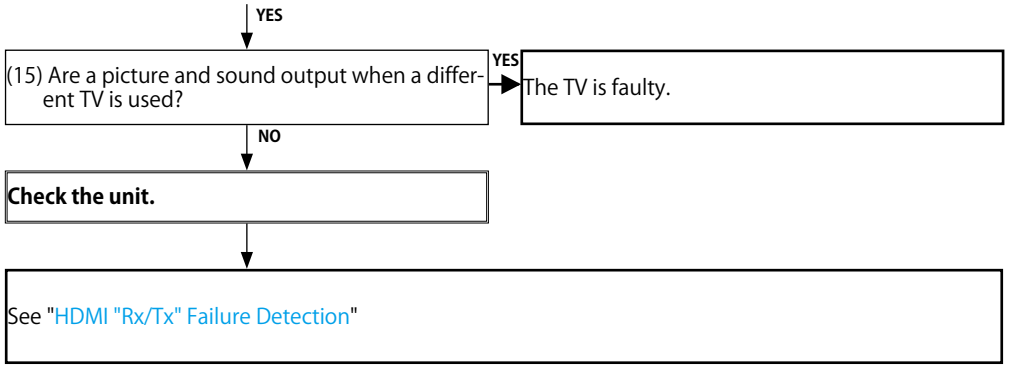
- Check the connection between the FRONT CONNECTOR PCB and the VIDEO PCB.
- Check the soldering of [CP1039 and CP5000] on the FRONT CONNECTOR PCB.
- Check the soldering of [CN5000] on the VIDEO PCB.
- Check the soldering of [JACK5001] on the VIDEO PCB.

※ These instructions refer to the VIDEO PCB unless otherwise specified.

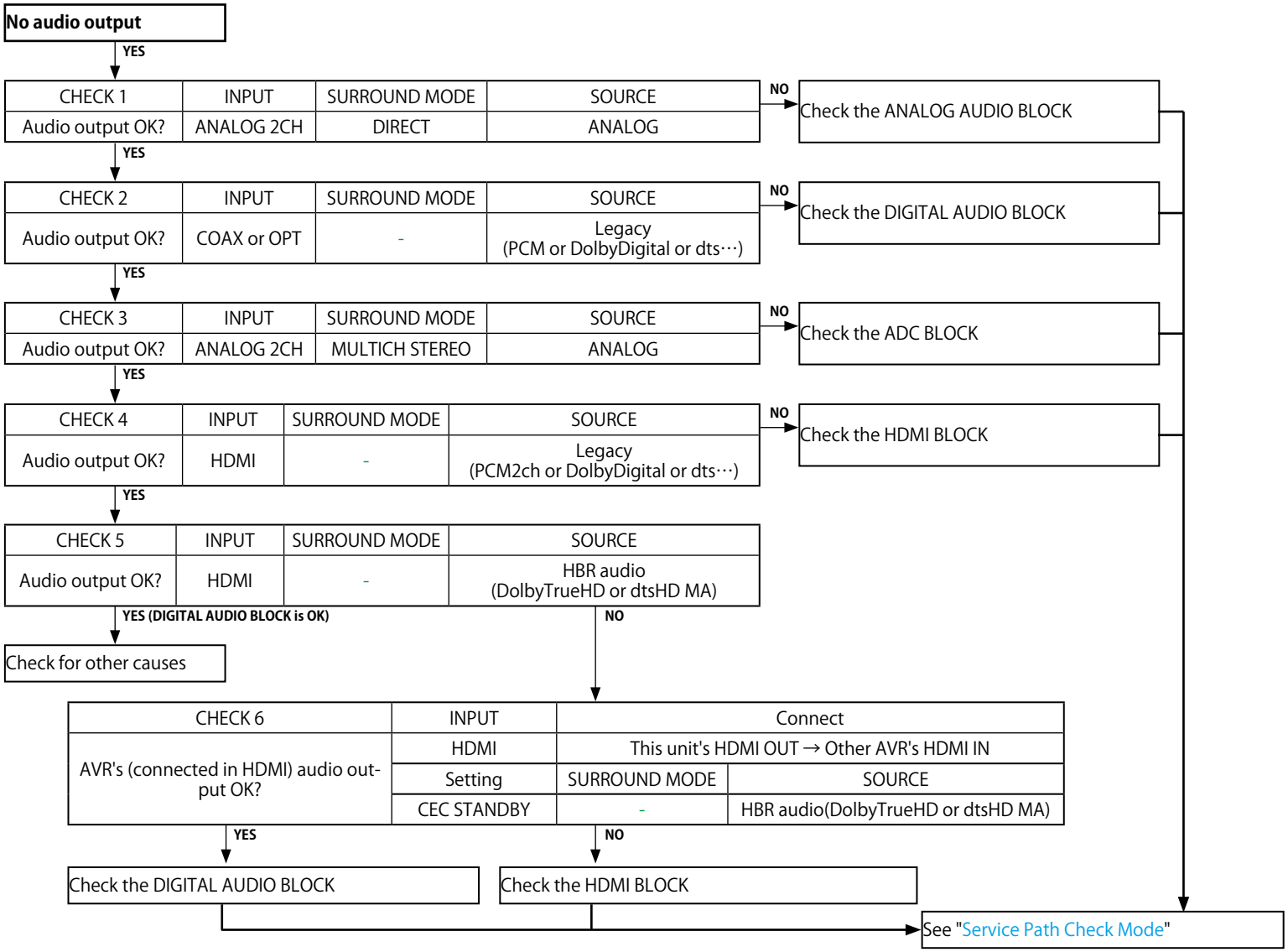
3.1. No picture or sound is output (HDMI to HDMI)



Go to next page.

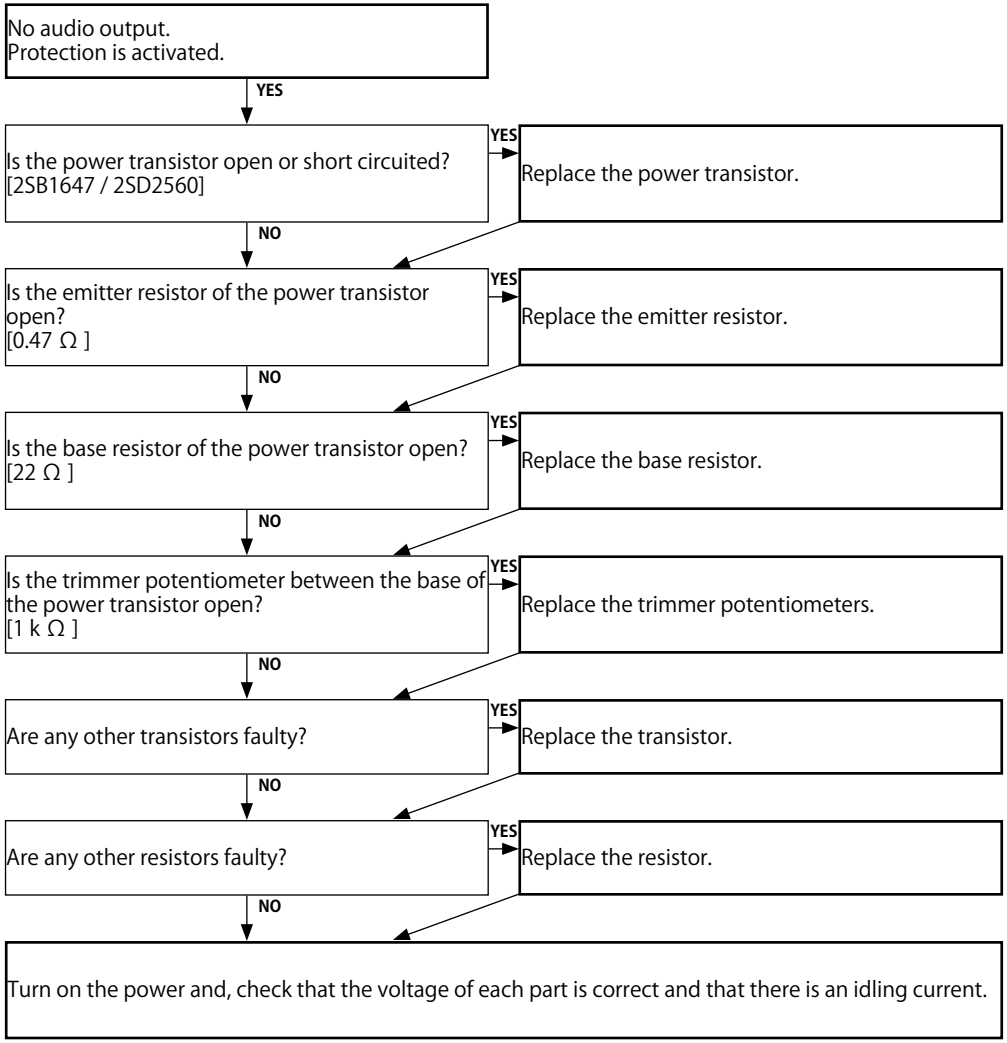

YES
(15) Are a picture and sound output when a different TV is used?
YES
The TV is faulty.
NO
Check the unit.
See "HDMI "Rx/Tx" Failure Detection"

4.1. AUDIO CHECK

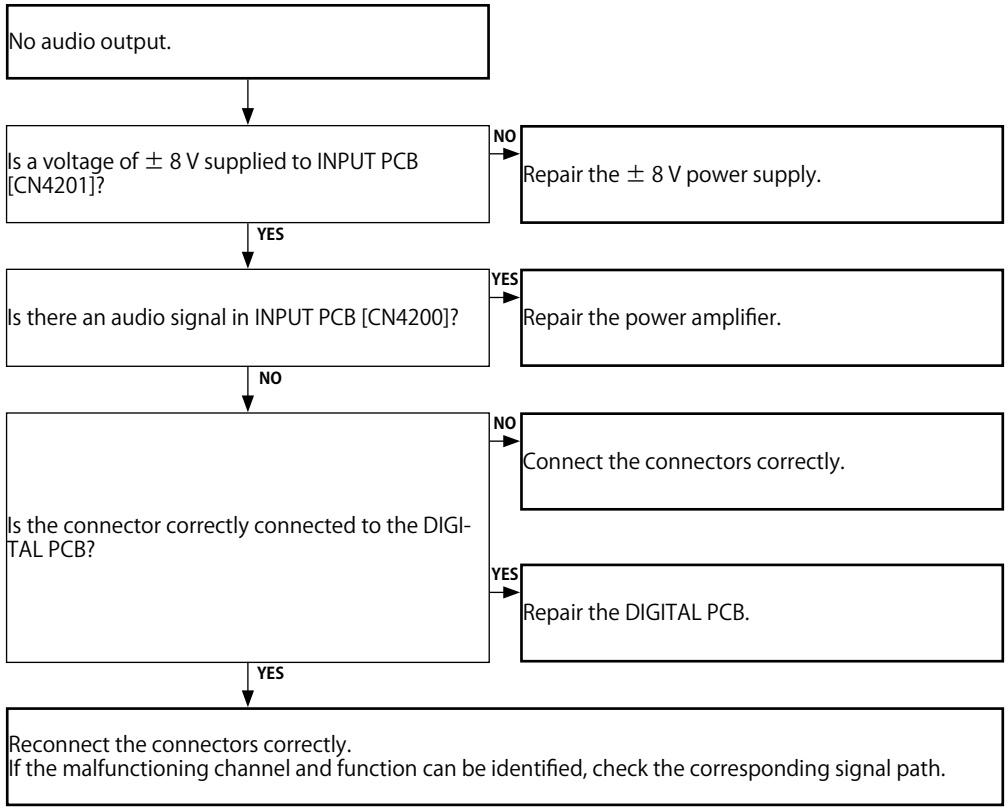


4.2. Power AMP (AMP PCB)

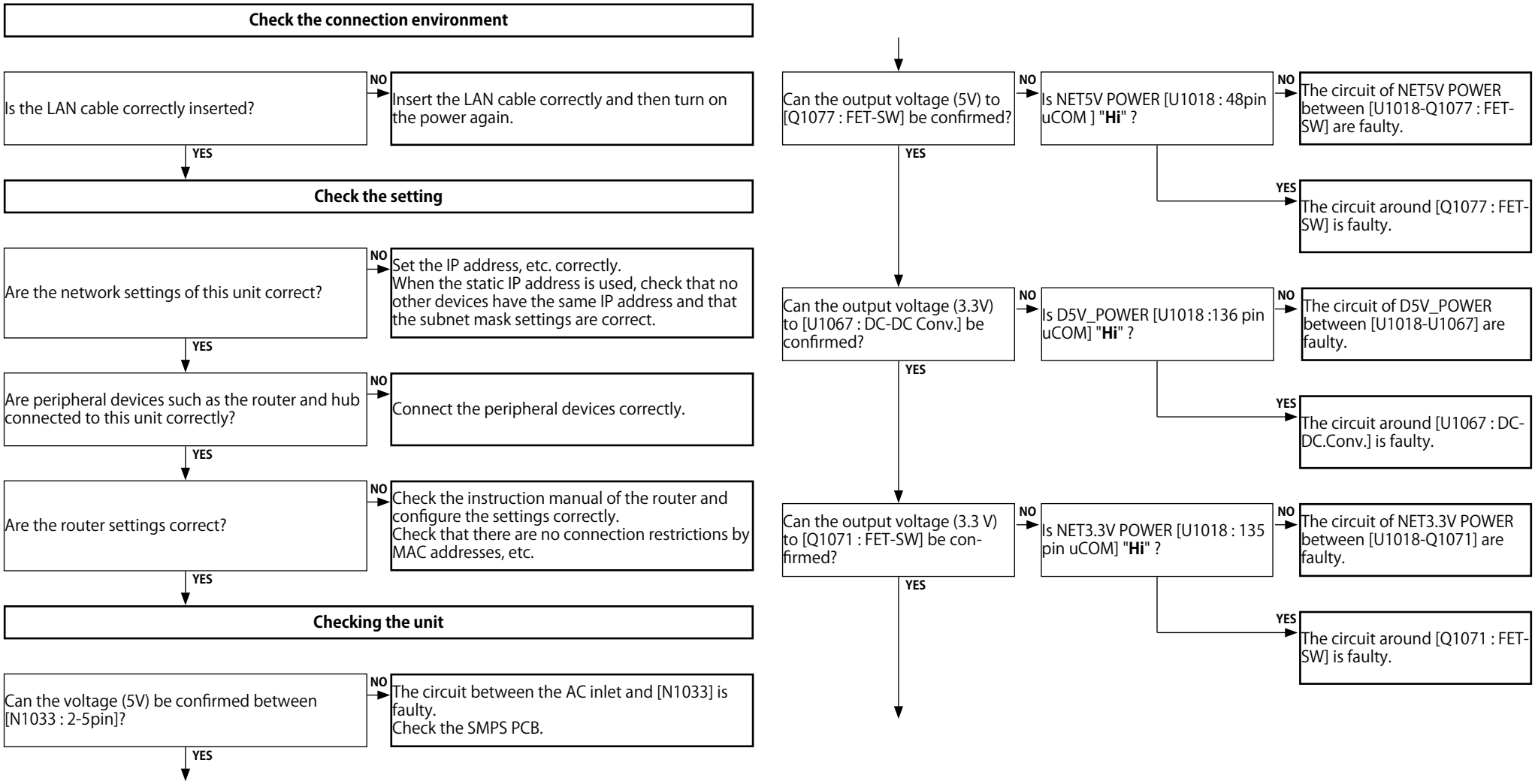
When using the protection pass mode, do not connect speakers to the speaker terminals.



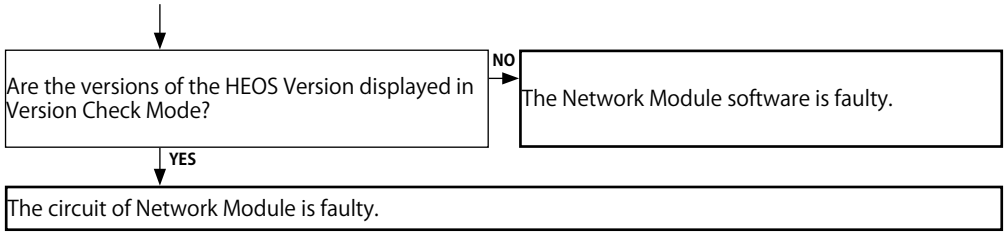
4.3. Analog audio



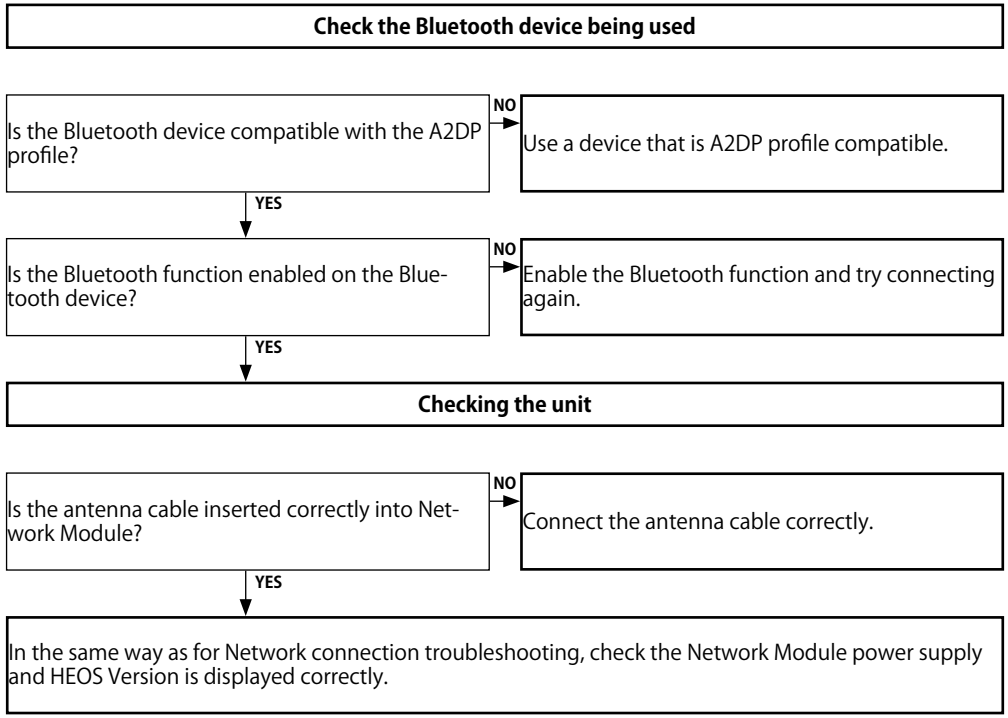
5.1. Cannot connect to the network



Go to next page.



5.2. Cannot establish a Bluetooth connection



5.3. 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 → This unit supports devices in the FAT16- and FAT32-formatted mass storage class, MTP-compatible devices and iPod devices (except for some models).
- YES ↓

Checking the unit

Are [N1008] of the DIGITAL PCB and [CN4402] of the FRONT PCB correctly connected?
- NO → Connect the connectors correctly.
- YES ↓

Can a voltage (5V) be confirmed between [CP4406 : 1 - 4pin] (USB Connector) on FRONT PCB?
- NO → The circuit around [U1009] of the DIGITAL PCB is faulty.
- YES ↓

The USB signal circuit between Network Module and [CP4406] of the FRONT PCB are faulty.

5.4. No picture or sound is output

Checking the unit (If no picture is output)

Are digital video signals(LEGOPCK, LEGOVS, LEGOHS, LEGODE, LEGOVD0-LEGOVD23) output from Network Module to [U1011 : VPLD]?
- NO → The circuit around Network Module, [U1011 : VPLD] is faulty.
- YES ↓

• Check the VIDEO circuit.

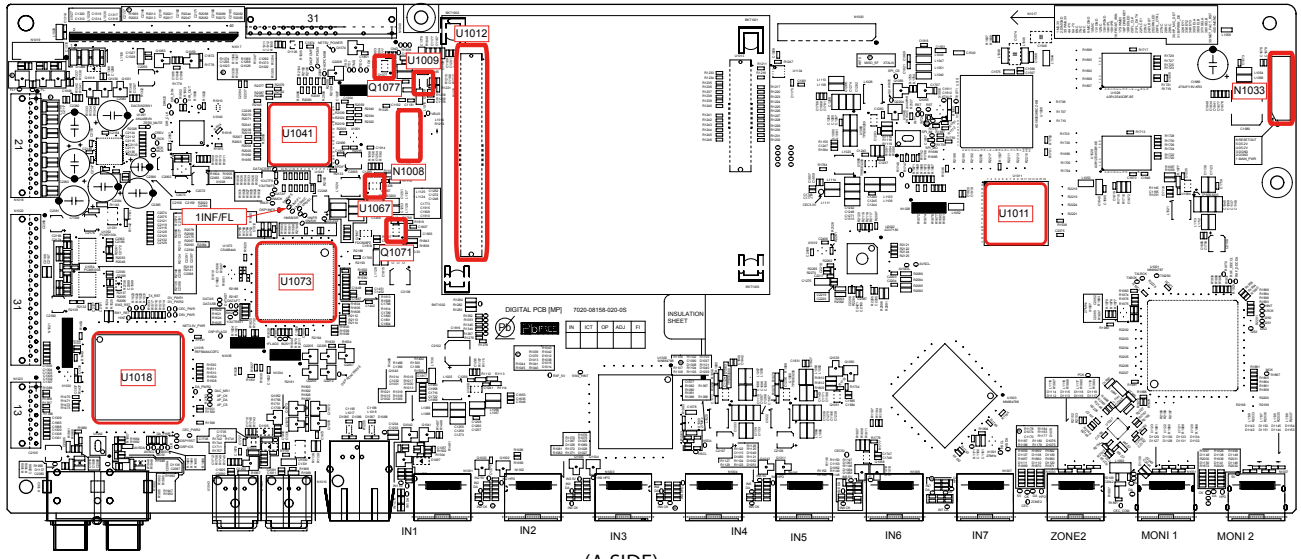
Checking the unit:(If no sound is output)

Are the I2S signal output to [U1012 : 7, 11, 13, 14pin] of the DIGITAL PCB ?
- NO → Network Module is faulty.
- YES ↓

Are audio signal output to Test point 1INF/FL on DIGITAL PCB.
- NO → The circuit around [U1041 : A.PLD] is faulty.
- YES ↓

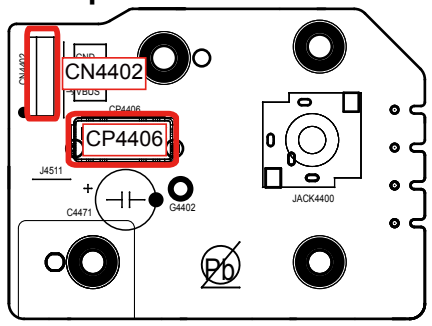
Check the [U1073 : DSP] AUDIO circuit and the circuits thereafter.

DIGITAL test point



(A SIDE)

USB test point



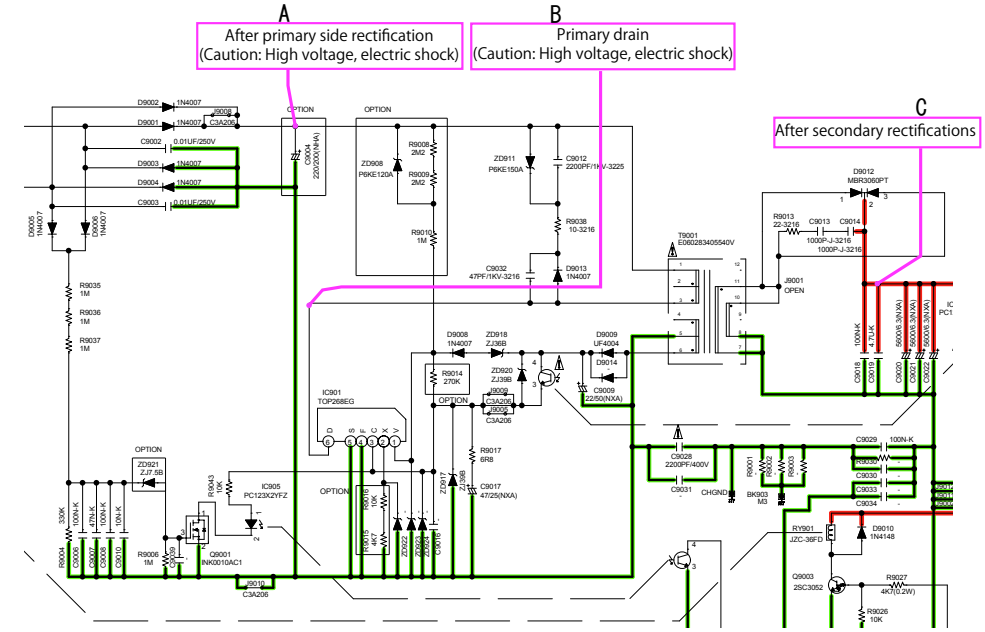
(A SIDE)

6. SMPS

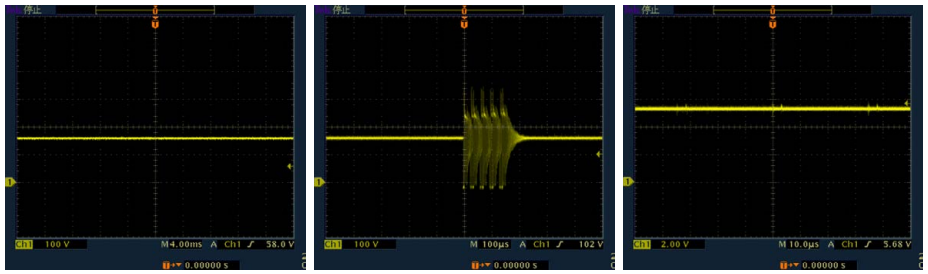
DC 5V is not output.

- Is [IC901 : TOP268EG] damaged? — YES → Replace the [IC901 : TOP268EG and D9001 / D9002 / D9003 / D9004].
- NO
- Is the fuse [F9001] functioning properly? — YES → Is [D9001 / D9002 / D9003 / D9004 / IC901] 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.

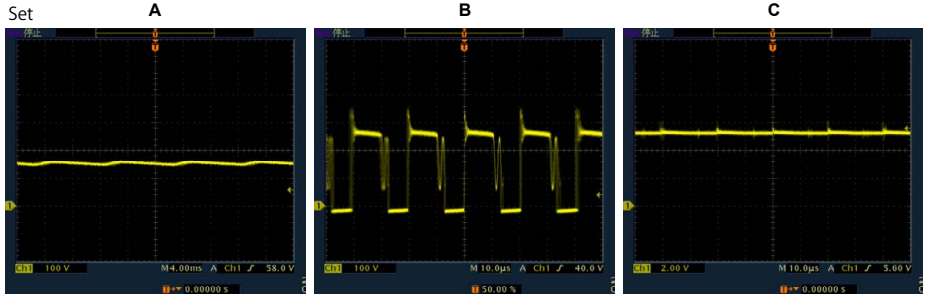
Operation waveform for each part



SMPS unit (Unloaded)

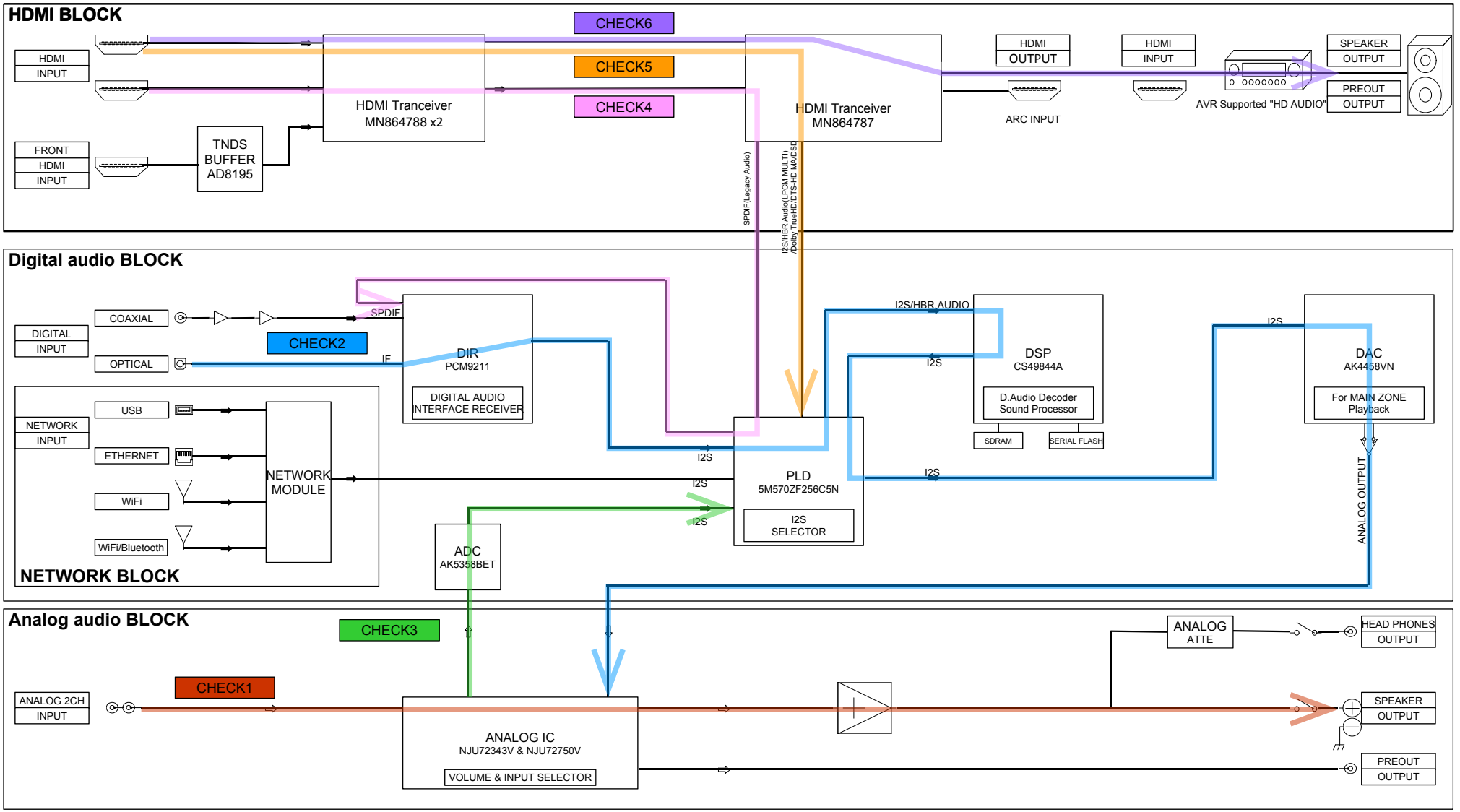


Set



AUDIO CHECK PATH

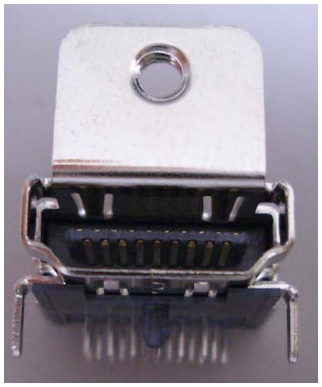
➡: Digital Signal
⇨: Analog Signal



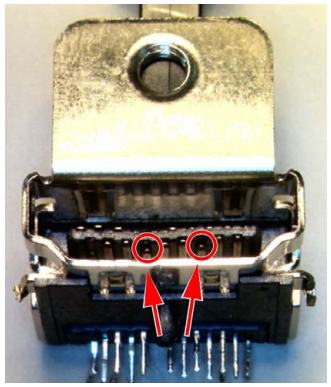
HDMI "Rx/Tx" Failure Detection

1. Prior checking

Check item(0). : 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 "3. 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) 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.

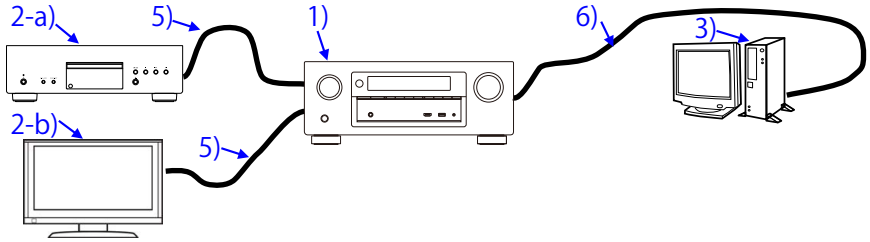


Figure 1 Device Connection Method

2-3. Device configuration method

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

After executing Termite.exe, click [Settings].

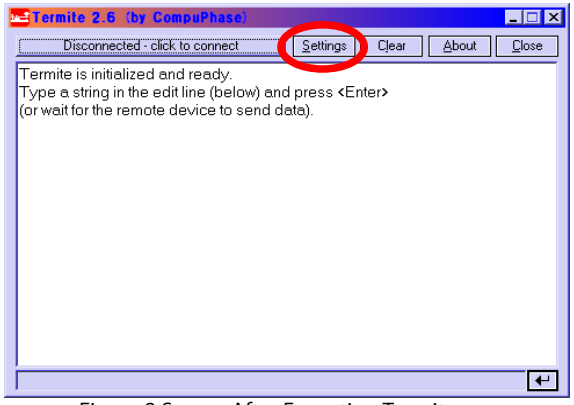


Figure 2 Screen After Executing Termite.exe

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

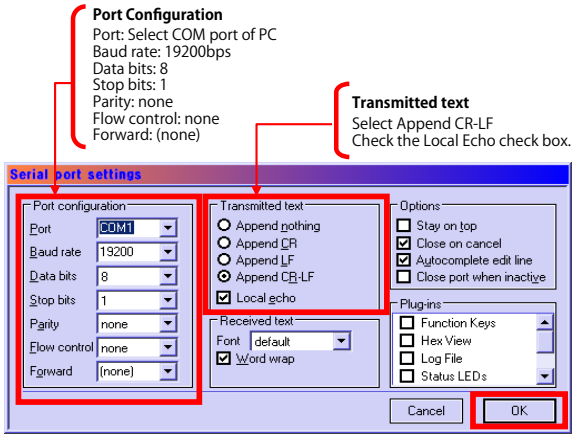


Figure 3 Serial Port Setup Screen

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.

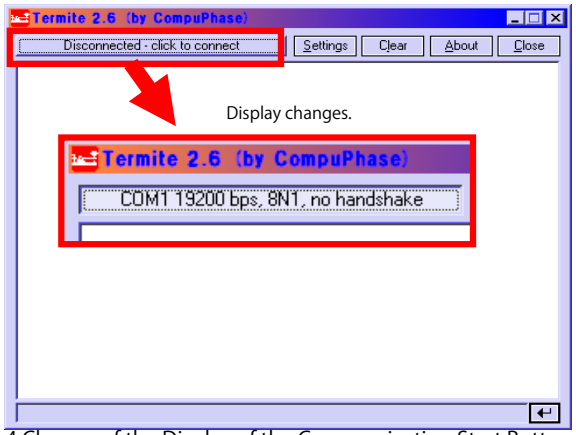


Figure 4 Change of the Display of the Communication Start Button Name

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 "**PRESET UP**" and "**ZONE2 SOURCE**" 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.

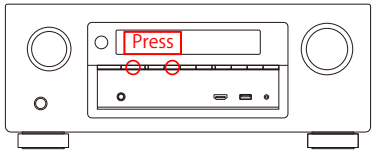


Figure 6 AVR settings

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.)

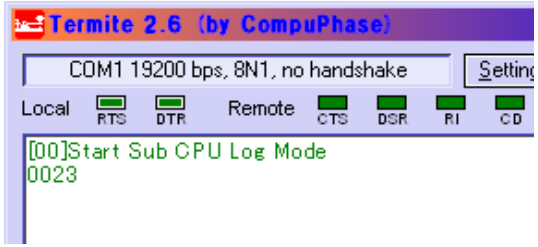


Figure 7 Display of Termite When AVR is Set

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.

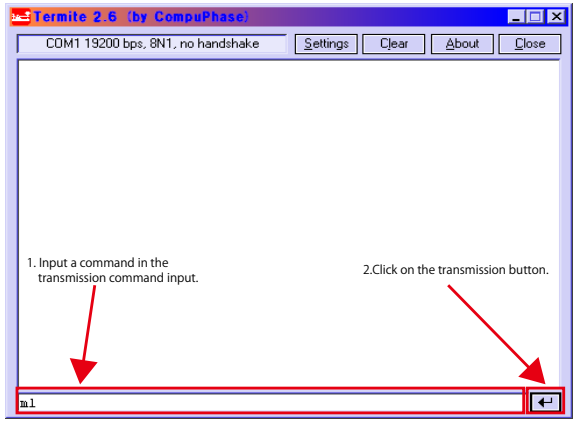


Figure 8 Method for Sending Termite Commands

3. Starting detecting the point of failure

Check item(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.

(1) 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...
```

↓

(2-1) Display when an Error Code is displayed.

```
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 (6)	Communication Error with HDMI Tx	[U1001 : MN864787]
H1-02	Check item (11)	Communication Error with HDMI SW1	[U1003 : MN864788]
H1-03	Check item (16)	Communication Error with HDMI SW2	[U1000 : MN864788]
H1-05	Check item (29)	Communication Error with VIDEO DECODER	[U2022 : ADV7180]
H1-06	Check item (21)	Communication Error with GUI IC	[U1026 : ADV8003]
H1-08	Check item (30)	Communication Error with DSP	[U1073 : CS49844A]
H1-12	Check item (35)	Communication Error with DIR	[U1040 : PCM9211]
H1-14	Check item (26)	DDR check Error	[U1028, U1029 : A3R12E40DBF-8E]
H1-15	Check item (27)	Communication Error with GUI ROM	[U1027 : W25Q128JVFIQ]
H1-16	Check item (40)	Communication Error with ARC IC	[U1007 : Sil9437]

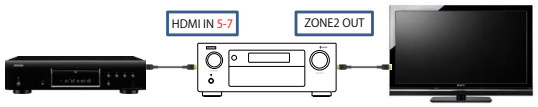
(2-2) Display when an Error is not detected.

```
1 Auto Test
```

Cancel the mode, and proceed to check item (2).

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

Check item(2). : Does a video signal come from HDMI ZONE2 OUT to TV correctly?

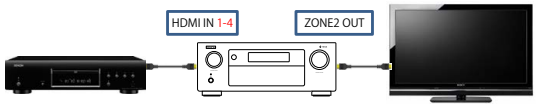


When the HDMI input terminal (HDMI 5, 6, 7) are connected in order to the player, are the audio and video from the player played back on the TV correctly in each case?

NO → Go to check item (45) (Switcher1 failure detection procedure)

YES ↓

Check item(3). : Does a video signal come from HDMI ZONE2 OUT to TV correctly?

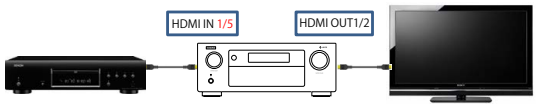


When the HDMI input terminal (HDMI 1, 2, 3, 4) are connected in order to the player, are the audio and video from the player played back on the TV correctly in each case?

NO → Go to check item (58) (Switcher2 failure detection procedure)

YES ↓

Check item(4). Does a video signal come from HDMI OUT1 to TV correctly?



Turn Video Conversion "**OFF**" on the setup menu.
(SETUP MENU-> Video-> Output Settings-> Video Conversion = Off)
When the player is connected in order to the HDMI input terminals (HDMI 1, 5), in each case is the player video played back on the TV connected to the HDMI output terminal (HDMI OUT 1,2)?

NO → Go to check item (66) (Tx failure detection procedure)

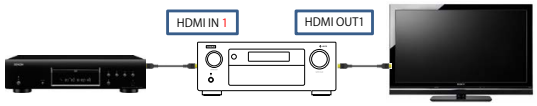
YES ↓

When the HDMI input terminal (AUX1) is connected to the player, the video from the player will be played back on the TV?
Use any of Dolby TrueHD/DTSHD MA/PCM 8ch 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 (83).
(Front HDMI Buffer [AD8195] failure detection procedure)

YES ↓

Check item(5). Does a video signal come from HDMI OUT1 to TV correctly?



Turn Video Conversion "**ON**" on the setup menu.
(SETUP MENU-> Video-> Output Settings-> Video Conversion = On)
When the HDMI input terminal (HDMI 1) is connected to the player, the video from the player will be played back on the TV?

NO → Go to check item (92) (GUI and PLD failure detection procedure)

YES ↓

There are no problems with the HDMI device.

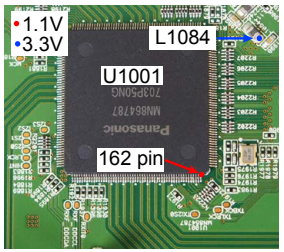
3-1. Error Code H1-01 failure detection procedure

Checking device. [U1001 : MN864787]

Check the power supply voltage. (HDMI Tx)

Check item(6). Check the power supply voltage. :
Does the power supply voltage of the HDMI Tx [U1001] indicate the correct voltage (1.1V, 3.3V)?
The test points are as follows.

HDMI Tx



YES

NO

Check item(7). Check the power supply voltage. :
Check the power components [U1064/U1066] and the pattern on the substrate.
If there is no problem, remove the HDMI Tx [U1001] from the substrate and measure the voltage at the test point of check item (6).
Is the voltage correct (1.1V or 3.3V)?

YES

Replace with a new device.

NO

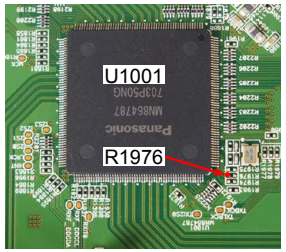
The power supply circuit is faulty.
Replace the PCB.

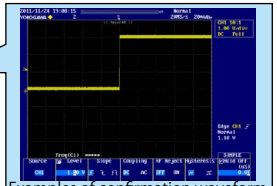
Recheck from check item (1).
If it does not work, replace the PCB.

Checking the reset waveform. (HDMI Tx)

Check item(8). Checking the reset waveform :
Check the waveform.
Is the [R1976] waveform near the HDMI Tx [U1001] correct (like the one shown in the diagram) when the power is turned on?

HDMI Tx





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

NO

Check the reset circuit between CPU [U1018] and HDMI Tx [U1001].
If there is no problem, the HDMI Tx [U1001] is faulty.
Replace with a new device.
Recheck from check item (1).
If it does not work, replace the PCB.

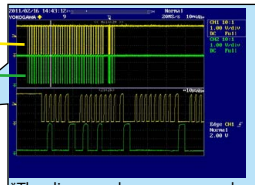
YES

Go to next page.

Check the I2C communication line. (HDMI Tx)

YES

Check item(9). Check the I2C communication line :
Check the CPU.
Is the "I2C" waveform of the TP near the HDMI SW1 [U1003] 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

NO

Check item(10). Check the I2C communication line :
Check HDMI SW [U1000 or U1003], HDMI Tx [U1001] and CPU [U1018] patterns as well as soldering.
If there is no problem, go to the next step.

YES

HDMI Tx [U1001] is faulty.
Replace with a new device.

YES

Recheck from check item (1).
If it does not work, replace the PCB.

Check the HDMI Tx.
Remove the damping resistor [R1974/R1975] of [U1000].
Is the "**I2C**" waveform correct?

NO

Check the HDMI SW1.
Remove the damping resistor [R1169/R1170] of [U1003].
Is the "**I2C**" waveform correct?

NO

Check the HDMI SW2.
Remove the damping resistor [R1061/R1062] of [U1000].
Is the "**I2C**" waveform correct?

YES

HDMI Tx [U1001] is faulty.
Replace with a new device.

YES

HDMI SW1 [U1003] is faulty.
Replace with a new device.

YES

HDMI SW2 [U1000] is faulty.
Replace with a new device.

NO

The CPU [U1018] is faulty.
Replace with a new device.

Recheck from check item (1).
If it does not work, replace the PCB.

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

Checking device. [U1003 : MN864788]

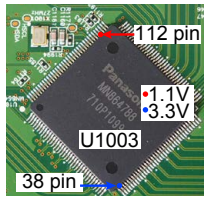
↓

Check the power supply voltage. (HDMI SW1)

↓

Check item(11). Check the power supply voltage. :
Does the power supply voltage of the HDMI Rx2 [U1003] indicate the correct voltage (1.1V, 3.3V)?
The test points are as follows.

HDMI Rx2



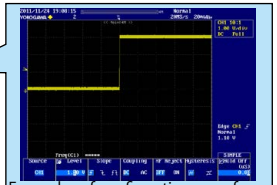
YES ↓

Checking the reset waveform. (HDMI SW1)

↓

Check item(13). Checking the reset waveform :
Check the waveform.
Is the "RESET" waveform of the TP near the HDMI SW1 [U1003] correct (like the one shown in the diagram) when the power is turned on?

HDMI Rx2



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

NO →

Check the reset circuit between CPU [U1018] and HDMI SW1 [U1003].
If there is no problem, the HDMI SW1 [U1003] is faulty.
Replace with a new device.
Recheck from check item (13).
If it does not work, replace the PCB.

YES ↓

Go to next page.

NO ↓

Check item(12). Check the power supply voltage. :
Check the power components [U1065] and the pattern on the sub-strate.
If there is no problem, remove the HDMI SW1 [U1003] from the sub-strate and measure the voltage at the test point of check item (11).
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.

↓

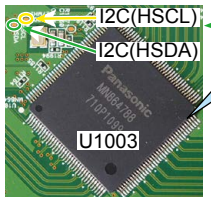
Recheck from check item (1).
If it does not work, replace the PCB.

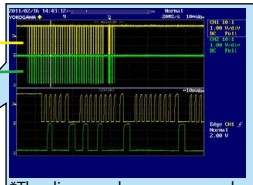
YES

Check the I2C communication line. (HDMI SW1)

YES

Check item(14). Check the I2C communication line :
Check the CPU.
Is the "I2C" waveform of the TP near the HDMI SW1 [U1003] 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

NO

Check item(15). Check the I2C communication line :
Check HDMI SW1 [U1003] patterns as well as soldering.
If there is no problem, go to the next step.

YES

HDMI SW1 [U1003] is faulty.
Replace with a new device.

YES

Recheck from check item (1).
If it does not work, replace the PCB.

Check the HDMI SW1.
Remove the damping resistor [R1169/R1170] of [U1003].
Is the "**I2C**" waveform correct?

YES

HDMI SW1 [U1003] is faulty.
Replace with a new device.

NO

Recheck from check item (1).
If it does not work, replace the PCB.

3-3. Error Code H1-03 failure detection procedure

Checking device. [U1000 : MN864788]

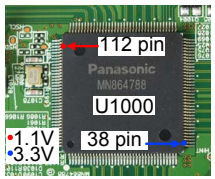
↓

Check the power supply voltage. (HDMI SW2)

↓

Check item(16). Check the power supply voltage. :
Does the power supply voltage of the HDMI SW2 [U1000] indicate the correct voltage (1.1V, 3.3V)?
The test points are as follows.

HDMI SW2



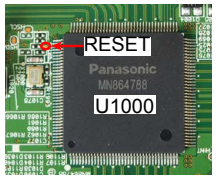
YES ↓

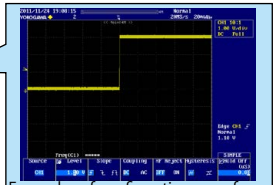
Checking the reset waveform. (HDMI SW2)

↓

Check item(18). Checking the reset waveform :
Check the waveform.
Is the "RESET" waveform of the TP near the HDMI SW2 [U1000] correct (like the one shown in the diagram) when the power is turned on?

HDMI SW2





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

NO →

Check the reset circuit between CPU [U1018] and HDMI SW2 [U1000].
If there is no problem, the HDMI SW2 [U1000] is faulty.
Replace with a new device.
Recheck from check item (18).
If it does not work, replace the PCB.

YES ↓

NO ↓

Check item(17). Check the power supply voltage. :
Check the power components [U1063/U1066] and the pattern on the substrate.
If there is no problem, remove the HDMI SW2 [U1000] from the substrate and measure the voltage at the test point of check item (16).
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.

↓

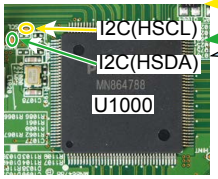
Recheck from check item (1).
If it does not work, replace the PCB.

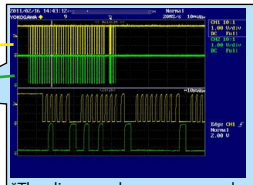
Go to next page.

Check the I2C communication line. (HDMI SW2)

YES

Check item(19). Check the I2C communication line :
Check the CPU.
Is the "I2C" waveform of the TP near the HDMI SW2 [U1000] 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

NO

Check item(20). Check the I2C communication line :
Check HDMI SW2 [U1000 or U1003], HDMI Tx [U1001] and CPU [U1018] patterns as well as soldering.
If there is no problem, go to the next step.

YES

HDMI SW2 [U1000] is faulty.
Replace with a new device.

YES

Recheck from check item (1).
If it does not work, replace the PCB.

Check the HDMI SW2.
Remove the damping resistor [R1061/R1062] of [U1000].
Is the "**I2C**" waveform correct?

YES

HDMI SW2 [U1000] is faulty.
Replace with a new device.

NO

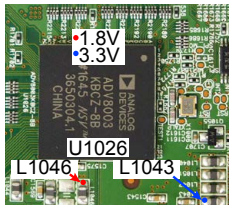
Recheck from check item (1).
If it does not work, replace the PCB.

3-4. Error Code H1-06 failure detection procedure

Checking device. [U1026 : ADV8003]

Check the power supply voltage.

Check item(21). Check the power supply voltage.
:
Does the power supply voltage of the GUI[U1026] indicate the appropriate voltage (1.8V, 3.3V)?
The test points are as follows.



NO

Check item(22). Check the power supply voltage.
:
Check the power supply components [U1069, Q1063] on the substrate and peripheral pattern.
If there is no problem, remove the GUI [U1026] from the substrate and measure the voltage at the test point of check item (21).
Is the voltage correct (1.8V or 3.3V)?

YES

The power supply circuit is faulty.
Replace the PCB.

NO

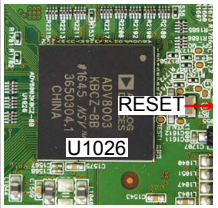
The GUI [U1026] is faulty.
Replace with a new device.

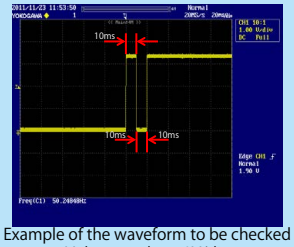
Recheck from check item (1).
If it does not work, replace the PCB.

YES

Checking the reset waveform.

Check item(23). Checking the reset :
Check the CPU.
Is the waveform of the TP near the GUI [U1026] correct (like the one shown in the diagram) when the power is turned on?





Example of the waveform to be checked
Voltage scale : 1.0V/div
Time scale : 20ms/div

YES

NO

Check the reset circuit between CPU [U1018] and GUI [U1026].
If there is no problem, the GUI [U1026] is faulty.
Replace with a new device.

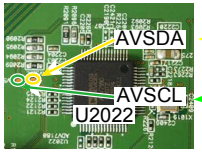
Recheck from check item (1).
If it does not work, replace the PCB.

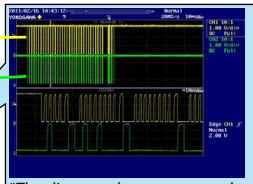
Go to next page.

Check the I2C communication line.

YES

Check item(24). Check the I2C communication line :
Check the CPU.
Is the "**I2C**" waveform of the TP near the CPU [U1018] 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(25). Check the I2C communication line :
Check GUI [U1026], HDMI SW [U1003] and CPU [U1018] patterns as well as soldering.
If there is no problem, go to the next step.

Check the CPU.
Remove the damping resistor [R1493/R1494] of [U1018].
Is the "**I2C**" waveform correct?

NO

The CPU [U1018] is faulty.
Replace with a new device.

YES

The GUI [U1026] is faulty.
Replace with a new device.

The GUI [U1026] is faulty.
Replace with a new device.

Recheck from check item (1).
If it does not work, replace the PCB.

3-5. Error Code H1-14 failure detection procedure

Checking device. [U1028, U1029 : A3R12E40DBF-8E]

Check item(26).
Check soldering of IP SCALER [U1026], DDR2 [U1028/U1029] and its peripheral circuits.
Check soldering of the resistors [R1688/1689/1692/1695 to 1700/1703 to 1711] between IP SCALER and DDR2.
If there is no problem with soldering, [U1026/U1028/U1029] is defective. Replace their IC. Or replace the substrate.

3-6. Error Code H1-15 failure detection procedure

Checking device. [U1027 : W25Q128JVFIQ]

Check item(27).
Write to the GUI ROM.

Recheck from check item (1)
Does Error Code H1-15 continue?

NO

YES

Check item(28).
Replace [U1029] with a new device.

Recheck from check item (1)
Does Error Code H1-15 continue?

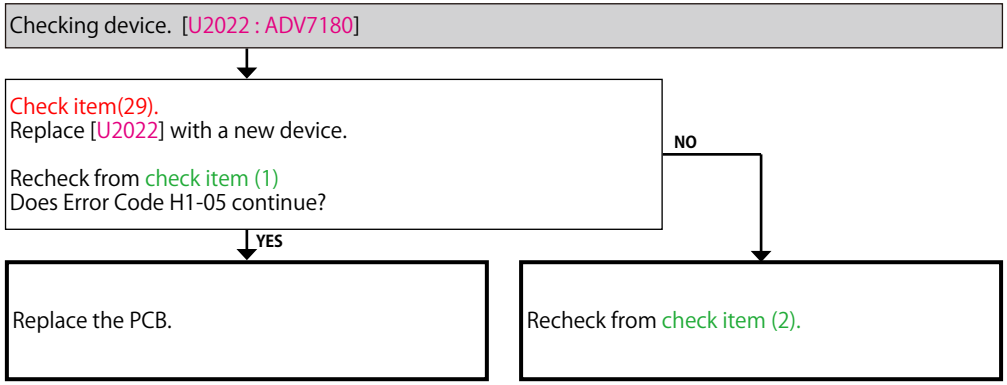
NO

YES

Go to check item (21)

Recheck from check item (2).

3-7. Error Code H1-05 failure detection procedure



3-8. Error Code H1-08 failure detection procedure

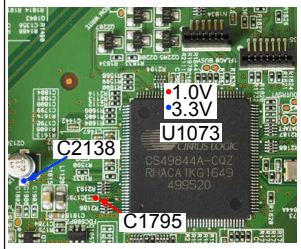
Checking device. [U1073 : CS49844A]

↓

Check the power supply voltage.

↓

Check item(30). Check the power supply voltage.
:
Does the power supply voltage of the DSP [U1073] indicate the appropriate voltage (1.0V, 3.3V)?
The test points are as follows.



NO →

Check item(31). Check the power supply voltage.
:
Check the power supply components [U1067, U1068, Q1067] on the substrate and peripheral pattern.
If there is no problem, remove the DSP [U1073] from the substrate and measure the voltage at the test point of check item (30).
Is the voltage correct (1.0 V or 3.3V)?

YES ↓

NO →

The power supply circuit is faulty.
Replace the PCB.

YES ↓

DSP [U1073] is faulty.
Replace with a new device.

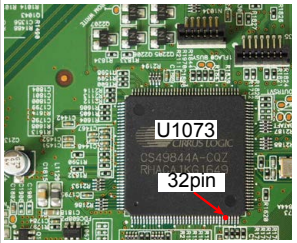
↓

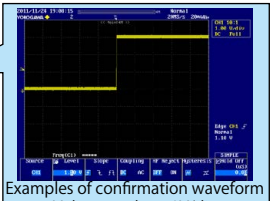
Recheck from check item (1).
If it does not work, replace the PCB.

Checking the reset waveform.

↓

Check item(32). Checking the reset :
Check the CPU.
Is the waveform of the TP near the DSP [U1073] 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 [U1018] and DSP [U1073].
If there is no problem, the DSP [U1073] is faulty.
Replace with a new device.

↓

Recheck from check item (1).
If it does not work, replace the PCB.

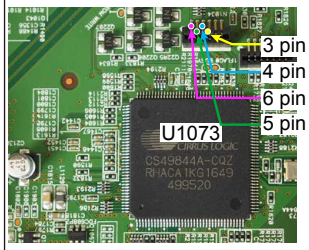
YES ↓

Go to next page.

Check the SPI communication line.

YES

Check item(33). Check the SPI communication line :
Check the CPU.
Is the "**SPI**" waveform of the TP near the DSP [U1073] 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 6 MHz)
Voltage scale : 2.0V/div
Time scale : 2us/div

YES

NO

Check item(34). Check the SPI communication line :
Check DSP [U1073], CPU[U1018] patterns as well as soldering.
If there is no problem, go to the next step.

DSP [U1073] is faulty.
Replace with a new device.

Recheck from check item (1).
If it does not work, replace the PCB.

3-9. Error Code H1-12 failure detection procedure

Checking device. [U1040 : PCM9211]

Check the power supply voltage.

Check item(35). Check the power supply voltage.
:
Does the power supply voltage of the DIR [U1040] indicate the appropriate voltage (3.3V)?
The test points are as follows.

NO

Check item(36). Check the power supply voltage.
:
Check the power supply components [U1067, Q1067] on the substrate and peripheral pattern.
If there is no problem, remove the DIR [U1040] from the substrate and measure the voltage at the test point of check item (35).
Is the power supply voltage correct (3.3V)?

YES

NO

The power supply circuit is faulty.
Replace the PCB.

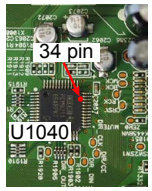
YES

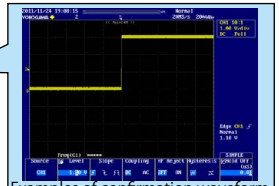
DIR [U1040] is faulty.
Replace with a new device.

Recheck from check item (1).
If it does not work, replace the PCB.

Checking the reset waveform.

Check item(37). Checking the reset :
Check the CPU.
Is the waveform of the TP near the DIR [U1040] 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 [U1018] and DIR [U1040].
If there is no problem, the DIR [U1040] is faulty.
Replace with a new device.

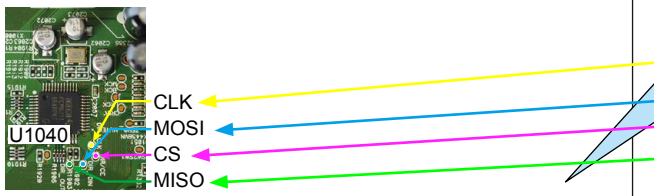
Recheck from check item (1).
If it does not work, replace the PCB.

Go to next page.

Check the communication line.

YES

Check item(38). Check the communication line :
Check the CPU.
Is the waveform of the TP near the DIR [U1040] 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(39). Check the communication line :
Check DIR [U1040], CPU [U1018] patterns as well as soldering.
If there is no problem, go to the next step.

DIR [U1040] is faulty.
Replace with a new device.

Recheck from check item (1).
If it does not work, replace the PCB.

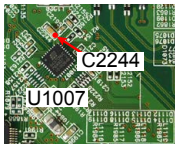
3-10. Error Code H1-15 failure detection procedure

Checking device. [U1007 : Sil9437]

Check the power supply voltage. (ARC IC)

Check item(40). Check the power supply voltage. :
Does the power supply voltage of the ARC IC [U1007] indicate the correct voltage (1.21V)?
The test points are as follows.

HDMI Rx2



YES

NO

Check item(41). Check the power supply voltage. :
Check the power components [U1032] and the pattern on the sub-strate.
If there is no problem, remove the ARC IC [U1007] from the sub-strate and measure the voltage at the test point of check item (40).
Is the power supply voltage correct (1.2V)?

YES

Replace with a new device.

NO

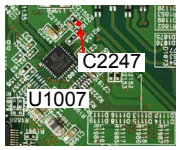
The power supply circuit is faulty.
Replace the PCB.

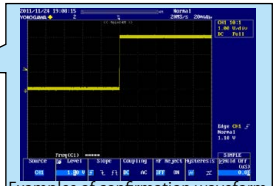
Recheck from check item (1).
If it does not work, replace the PCB.

Checking the reset waveform. (ARC IC)

Check item(42). Checking the reset waveform :
Check the waveform.
Is the "RESET" waveform of the ARC IC [U1007] correct (like the one shown in the diagram) when the power is turned on?

HDMI Rx2





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

NO

Check the reset circuit between CPU [U1018] and ARC IC [U1007].
If there is no problem, the ARC IC [U1007] is faulty.
Replace with a new device.
Recheck from check item (1).
If it does not work, replace the PCB.

YES

Go to next page.

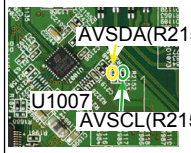
YES

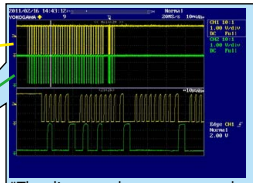
Check the I2C communication line. (ARC IC)

YES

Check item(43). Check the I2C communication line :
Check the CPU.
Is the waveform of the TP near the ARC IC [U1007] 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(44). Check the I2C communication line :
Check ARC IC [U1007] patterns as well as soldering.
If there is no problem, go to the next step.

YES

ARC IC [U1007] is faulty.
Replace with a new device.

YES

Recheck from check item (1).
If it does not work, replace the PCB.

Check the ARC IC.
Remove the damping resistor [R2152/R2153] of [U1007].
Is the "**I2C**" waveform correct?

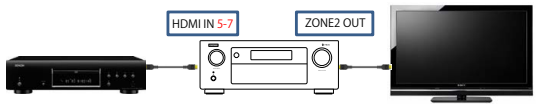
YES

NO

ARC IC [U1007] is faulty.
Replace with a new device.

Recheck from check item (1).
If it does not work, replace the PCB.

3-11. Switcher1 failure detection procedure



※ In order to check, connect the player to the HDMI terminal and configure the player as AVR source.
Next, turn on the power for the player and TV and start playback on the player.

↓

Checking the +5V/DDC status register (HDMI Switcher1)

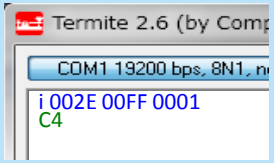
↓

Check item(45). Checking the 5V status register :
Send the following command from Termite.exe.

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

Case of IN5
Is the return value "C4 or C0" ?
(IN6 : "A2 or A0", IN7 : "91 or 90")

Example



YES

NO

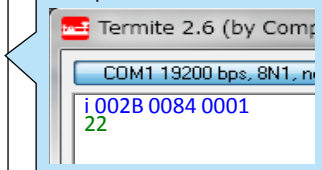
Go to check item (47)

Check item(46). Checking the DDC status register :
Send the following command from Termite.exe.

Case of IN5
Send the command "i 002B 0084 0001".
Case of IN6
Send the command "i 002B 0054 0001".
Case of IN7
Send the command "i 002B 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 (48)

"22 or 11"
(Detection of DDC is OK)

Go to check item (49)

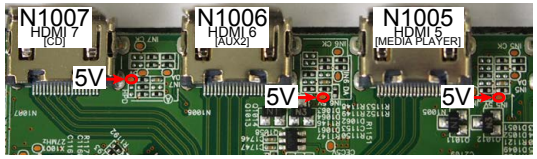
When the results of check item (45) are "NO"
(Detection of 5V is not OK)

↓

Check the +5V voltage. (HDMI IN5 - 7)

↓

Check item(47). Check the +5V voltage.
Does the test point near HDMI input terminal [N1005/N1006/N1007] indicate 5V?



YES ↓

HDMI Switcher1 [U1003] is faulty.
Replace with a new device.

↓

Recheck from check item (2).
If it does not work, replace the PCB.

NO ↓

Check for a short circuit in the 5V line and the 5V Switch IC [U1002].
If there is no problem, the HDMI Switcher1 [U1003] or the 5 V Switch IC [U1002] is faulty.
Replace with a new device.

↓

Recheck from check item (2).
If it does not work, replace the PCB.

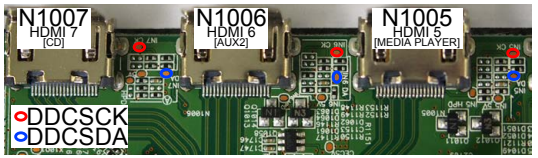
When the results of check item (46) are "00 or 04"
(Detection of DDC is not OK.)

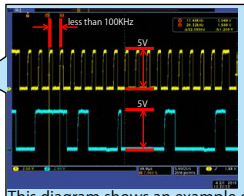
↓

Check the DDC line. (HDMI IN5 - 7)

↓

Check item(48). Check the DDC line :
Are waveforms of "DDCSCK" and "DDCSDA" observed at the test point near the HDMI input terminal [N1005/N1006/N1007]?





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

YES ↓

HDMI Switcher1 [U1003] is faulty.
Replace with a new device.

↓

Recheck from check item (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 Switcher1 [U1003] is faulty.
Replace with a new device.

↓

Recheck from check item (2).
If it does not work, replace the PCB.

When the results of check item (46) are "22 or 11"
(Detection of DDC is OK.)

Checking the TMDS status register (HDMI Switcher1)

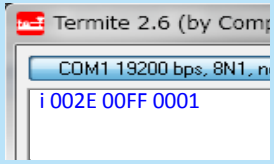
Check item(49). Checking register of the TMDS CLK detection status register :
Send the following command from Termite.exe.

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

When the following value is returned, go to YES.
HDMI IN5 "C4", HDMI IN6 "A2", HDMI IN7 "91"

When the following value is returned, go to NO.
HDMI IN5 "C0", HDMI IN6 "A0", HDMI IN7 "90"

Example



NO

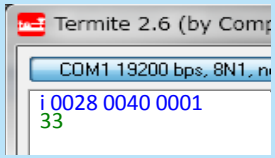
YES

Checking the HPD/RXSENSE status register. (HDMI ZONE2 OUT)

Check item(51). Check the HPD and RXSENSE register value of the device.
Send the following command from Termite.exe.
Send the command "i 0028 0040 0001".

Check the value.
Move to the branch destination according to the value returned.

Example



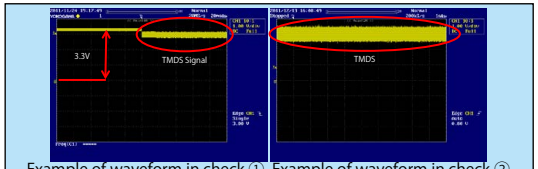
If it is normal, "33" is returned.
The correct resistor value cannot be checked if the AVR and TV are not connected by HDMI.

"33 or 23 or 13 or 03"
(Detection of HPD is OK / Detection of RXSENSE is OK) → Go to check item (52)

"31 or 21 or 11 or 01"
(Detection of HPD is OK / Detection of RXSENSE is not OK) → Go to check item (55)

"32 or 22 or 12 or 02"
(Detection of HPD is not OK / Detection of RXSENSE is OK) → Go to check item (56)

"30 or 20 or 10 or 00"
(Detection of HPD is not OK / Detection of RXSENSE is not OK) → Go to check item (57)



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(50). Checking the TMDS input waveform. :
Check the TMDS waveform at the following test point.
Is the waveform like the sample?

HDMI IN5
55/56/58/59/61/62/64/65 pin

HDMI IN6
80/81/83/84/86/87/89/90 pin

HDMI IN7
93/94/96/97/99/100/102/103 pin

YES

HDMI Switcher1 [U1003] is faulty.
Replace with a new device.

NO

Check for a short circuit in the pattern of the TMDS line of the HDMI Switcher1 [U1003] from the HDMI input terminal.
If there is no problem, the HDMI Switcher1 [U1003] is faulty.
Replace with a new device.

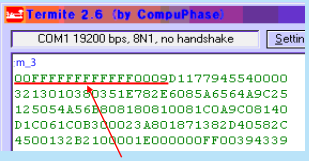
Recheck from check item (2).
If it does not work, replace the PCB.

When the results of check item (51) are "33 or 23 or 13 or 03"
(Detection of HPD is OK / Detection of RXSENSE is OK)

Checking the EDID register. (HDMI ZONE2 OUT)

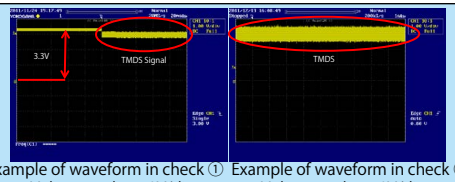
Check item(52). Check the Monitor EDID :
① Unplug the AC cord. Plug the AC cord into a power outlet.
② Send the transmission command "m_3" from Termite.exe.
Are the first eight bytes of the returned value "00FFFFFFFFFFFF00"?

Example



The first eight bytes are normally "00FFFFFFFFFFFF00".
The correct resistor value cannot be checked if the AVR and TV are not connected by HDMI.

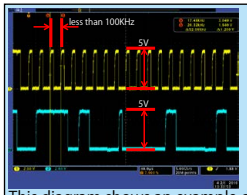
YES



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

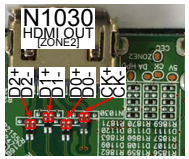
Example of waveform in check ②
Voltage scale : 1.0V/div
Time scale : 1s/div

NO

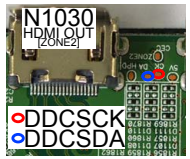


This diagram shows an example of the DDC communication waveform.
-The high level voltage is 5V.
-The frequency of the DDC CLK is 100kHz or less.
Check at each test point.
Voltage scale : 2.0V/div
Time scale : 40us/div

Check item(53). Checking the TMDS :
Check the TMDS waveform at the following test point.



Check item(54). Check the communication :
Do "CK" and "DA" indicate (5V) at the test point near HDMI output connector [N1030]?



YES

NO

Check for a short circuit in the TMDS line.
If there is no problem, the HDMI Switcher1 [U1003] is faulty.
Replace with a new device.

HDMI Switcher1 [U1003] is faulty.
Replace with a new device.

YES

NO

Check for a short circuit in the DDC line.
If there is no problem, the HDMI Switcher1 [U1003] is faulty.
Replace with a new device.

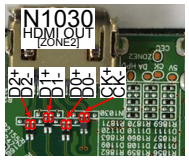
HDMI Switcher1 [U1003] is faulty.
Replace with a new device.

Recheck from check item (2).
If it does not work, replace the PCB.

When the results of check item (51) are "31 or 21 or 11 or 01"
(Detection of HPD is OK / Detection of RXSENSE is not OK)

Check the TMDS. (HDMI ZONE2 OUT)

Check item(55). Checking the RXSENSE. :
Does the test point near HDMI output terminal [N1030] indicate (3.3V)?



YES

NO

Check for a short circuit in the TMDS line.
If there is no problem, the HDMI Switcher1 [U1003] is faulty.
Replace with a new device.

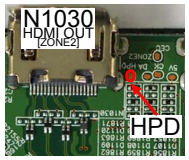
HDMI Switcher1 [U1003] is faulty.
Replace with a new device.

Recheck from check item (2).
If it does not work, replace the PCB.

When the results of check item (51) are "32 or 22 or 12 or 02"
(Detection of HPD is not OK / Detection of RXSENSE is OK)

Check the HPD. (HDMI ZONE2 OUT)

Check item(56). Checking the HPD :
Does the test point near HDMI output terminal [N1030] indicate Hi(3-5V)?



YES

NO

Check for a short circuit in the HPD line.
If there is no problem, the HDMI Switcher1 [U1003] is faulty.
Replace with a new device.

HDMI Switcher1 [U1003] is faulty.
Replace with a new device.

Recheck from check item (2).
If it does not work, replace the PCB.

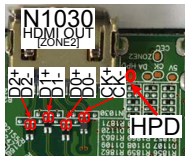
When the results of check item (51) are "30 or 20 or 10 or 00"
(Detection of HPD is not OK / Detection of RXSENSE is not OK)

↓

Check the TMDS/HPD. (HDMI ZONE2 OUT)

↓

Check item(57). Checking the HPD and RXSENSE. :
Does the test point near HDMI output terminal [N1030] indicate (3.3V)?
Does the test point (HPD) near HDMI output terminal [N1030] indicate "Hi(3-5V)"?



YES ↓ NO

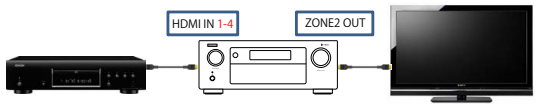
NO → Check for a short circuit in the TMDS/ HPD line.
If there is no problem, the HDMI Switcher1 [U1003] is faulty.
Replace with a new device.

YES → HDMI Switcher1 [U1003] is faulty.
Replace with a new device.

↓

Recheck from check item (2).
If it does not work, replace the PCB.

3-12. Switcher2 failure detection procedure



※ In order to check, connect the player to the HDMI terminal and configure the player as AVR source.
Next, turn on the power for the player and TV and start playback on the player.

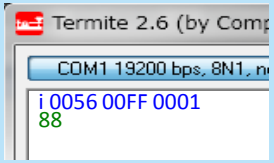
Checking the +5V/DDC status register (HDMI Switcher2)

Check item(58). Checking the 5V status register :
Send the following command from Termite.exe.

Send the command "i 0056 00FF 0001".

Case of IN1
Is the return value "88 or 80" ?
(IN2 : "44 or 40", IN3 : "22 or 20", IN4 : "11 or 10")

Example



YES

NO

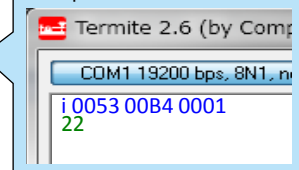
Go to check item (60)

Check item(59). Checking the DDC status register :
Send the following command from Termite.exe.

Case of IN1
Send the command "i 0053 00B4 0001".
Case of IN2
Send the command "i 0053 0084 0001".
Case of IN3
Send the command "i 0053 0054 0001".
Case of IN4
Send the command "i 0053 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 (61)

"22 or 11"
(Detection of DDC is OK)

Go to check item (62)

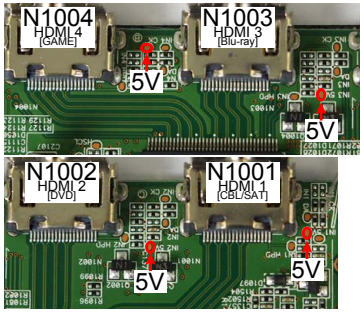
When the results of check item (58) are "NO"
(Detection of 5V is not OK)

↓

Check the +5V voltage. (HDMI IN1 - 4)

↓

Check item(60). Check the +5V voltage.
Does the test point near HDMI input terminal [N1001/N1002/N1003/N1004] indicate 5V?



↓ YES

HDMI Switcher2 (U1000) is faulty.
Replace with a new device.

↓

Recheck from check item (3).
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 [U1002].
If there is no problem, the HDMI Switcher2 (U1000) or the 5V Switch IC (U1002) is faulty
Replace with a new device.

↓

Recheck from check item (3).
If it does not work, replace the PCB.

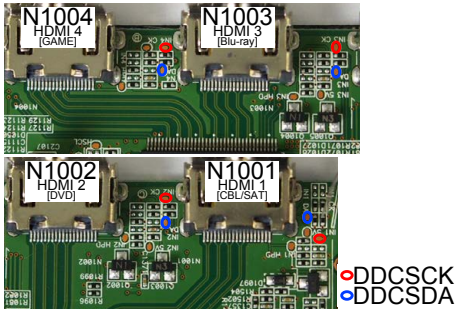
When the results of check item (59) are "00 or 04"
(Detection of DDC is not OK.)

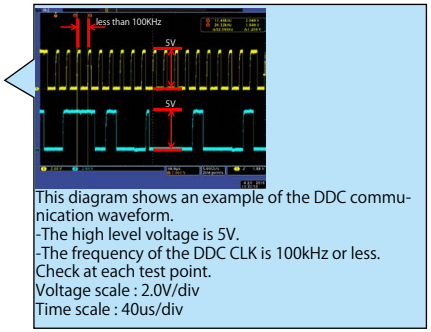
↓

Check the DDC line. (HDMI IN1 - 4)

↓

Check item(61). Check the DDC line :
Are waveforms of "DDCSCK" and "DDCSDA" observed at the test point near the HDMI input terminal [N1001/N1002/N1003/N1004]?





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

↓ YES

HDMI Switcher2 [U1000] is faulty.
Replace with a new device.

↓

Recheck from check item (3).
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 Switcher2 [U1000] is faulty.
Replace with a new device.

↓

Recheck from check item (3).
If it does not work, replace the PCB.

When the results of check item (59) are "22 or 11"
(Detection of DDC is OK.)

Checking the TMDS status register (HDMI Switcher2)

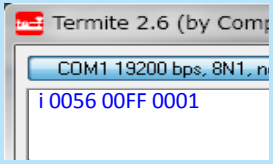
Check item(62). Checking register of the TMDS CLK detection status register :

Send the following command from Termite.exe.
Send the command "i 0056 00FF 0001".

When the following value is returned, go to YES.
HDMI IN1 "88", HDMI IN2 "44", HDMI IN3 "22", HDMI IN4 "11"

When the following value is returned, go to NO.
HDMI IN1 "80", HDMI IN2 "40", HDMI IN3 "20", HDMI IN4 "10"

Example



NO

YES

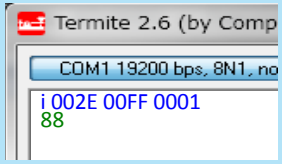
Checking the TMDS status register (HDMI Switcher2 -> HDMI Switcher1)

Check item(64). Check the TMDS CLK detection status of the register :

Send the following command from Termite.exe.
Send the command "i 002E 00FF 0001".

Is the return value "88" ?

Example :



If it is normal, "88" is returned.

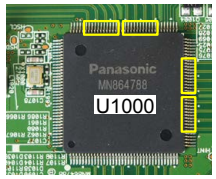
NO

YES

HDMI Switcher1 [U1003] is faulty.
Replace with a new device.

Recheck from check item (3).
If it does not work, replace the PCB.

Check item(63). Checking the TMDS input waveform. :
Check the TMDS waveform at the following test point.
Is the waveform like the sample?

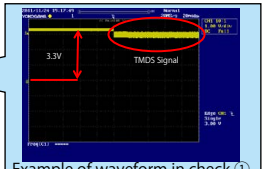


HDMI IN1
42/43/45/46/48/49/51/52 pin

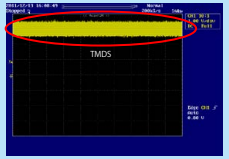
HDMI IN2
55/56/58/59/61/62/64/65 pin

HDMI IN3
80/81/83/84/86/87/89/90 pin

HDMI IN4
93/94/96/97/99/100/ 102/103 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 Switcher2 [U1000] is faulty.
Replace with a new device.

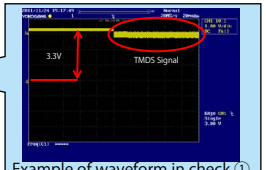
NO

Check for a short circuit in the pattern of the TMDS line of the HDMI Switcher2 [U1000] from the HDMI input terminal.
If there is no problem, the HDMI Switcher2 [U1000] is faulty.
Replace with a new device.

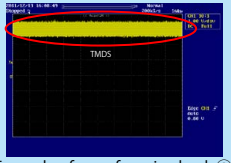
Recheck from check item (3).
If it does not work, replace the PCB.

Check item(65). Checking the TMDS input waveform. :
Check the TMDS waveform at the following test point.
Is the waveform like the sample?

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



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



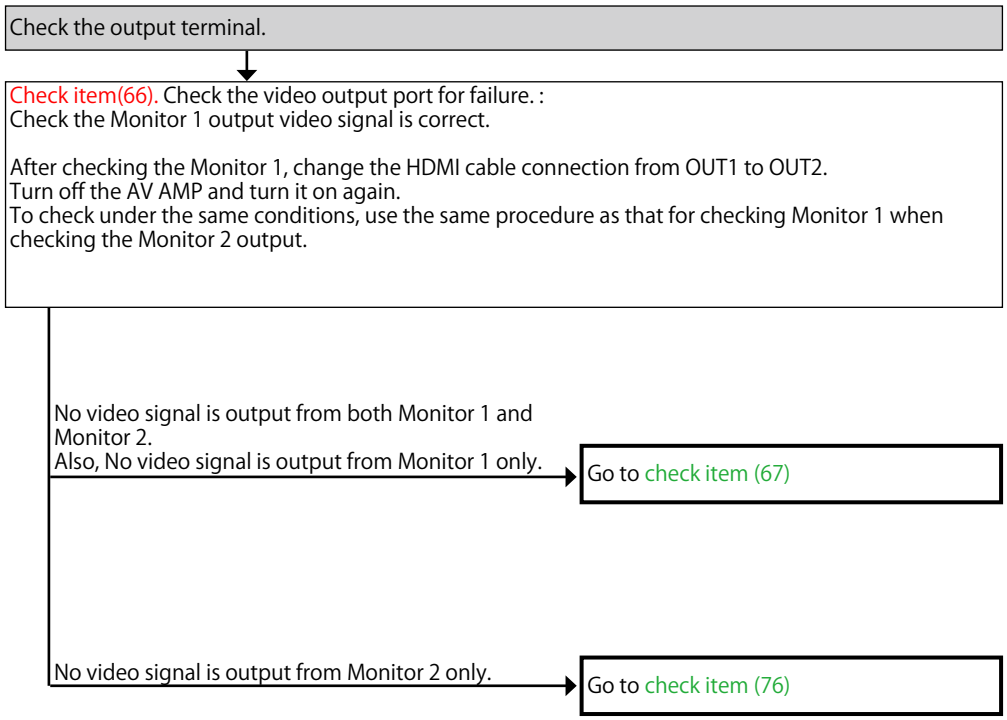
Example of waveform in check ②
Voltage scale : 1.0V/div
Time scale : 1s/div

YES

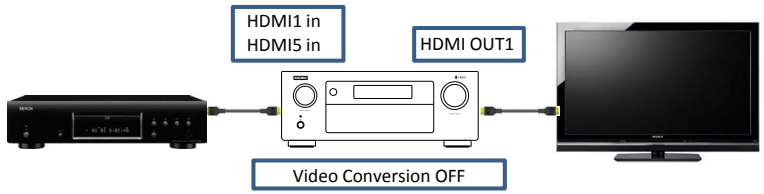
NO

Check for a short circuit in the TMDS line.
If there is no problem, the HDMI Switcher2 [U1000] is faulty.
Replace with a new device.

3-13. Tx failure detection procedure



Checking operation between the HDMI (SW) device and the HDMI device (Tx).
Checking operation between the HDMI (Tx) device and TV.



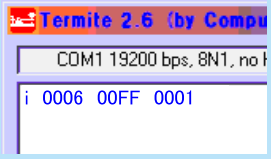
Checking the TMDS status register (Switcher1/2 -> HDMI Tx)

Check item(67). Check the TMDS CLK detection status of the register.
Send the following command from Termite.exe.

Send the command "i 0006 00FF 0001".
When checking the signal path from HDMI1 to HDMI OUT1
"72" : Go to YES.
"74" : Go to No.

When checking the signal path from HDMI5 IN to HDMI OUT1
"71" : Go to YES.
"74" : Go to No.

Example

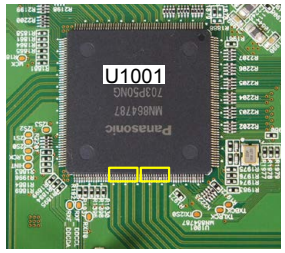


YES

The first operation : Checking between Monitor 1 and the TV.
Go to check item (69)
Next operation : Checking between Monitor 2 and the TV.
Go to check item (76)

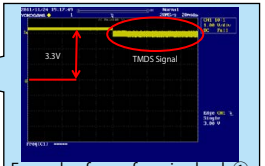
NO

Check item(68). Checking the TMDS input. :
TMDS waveform at the following points.

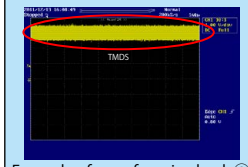


HDMI IN1
124/125/127/128/130/131/133/134 pin

HDMI IN5
137/138/140/141/143/144/146/147 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

NO

HDMI Tx [U1001] is faulty.
Replace with a new device.

YES

Recheck from check item (4).
If it does not work, replace the PCB.

NO

Case of HDMI IN1
HDMI Switcher2 [U1000] is faulty.
Replace with a new device.

Case of HDMI IN5
HDMI Switcher1 [U1003] is faulty.
Replace with a new device.

Checking between Monitor1 and the TV.
Connect Monitor1 to the TV and check the following items with the TV turned on.

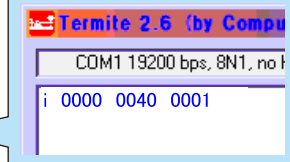
Checking the HPD/RXSENSE status register. (HDMI Tx -> Monitor)

Check item(69). 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



"30"
(Detection of HPD is OK / Detection of RXSENSE is OK)
→ Go to check item (70)

"10"
(Detection of HPD is OK / Detection of RXSENSE is not OK)
→ Go to check item (73)

"20"
(Detection of HPD is not OK / Detection of RXSENSE is OK)
→ Go to check item (74)

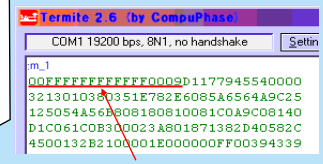
"00"
(Detection of HPD is not OK / Detection of RXSENSE is not OK)
→ Go to check item (75)

When the results of check item (69) are "30"
(Detection of HPD is OK / Detection of RXSENSE is OK)

Checking the EDID register. (HDMI OUT1)

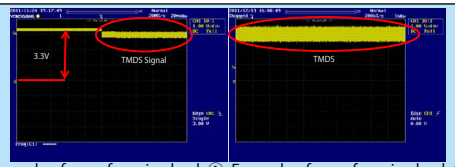
Check item(70). Check the Monitor EDID :
① Unplug the AC cord. Plug the AC cord into a power outlet.
② Send the transmission command "m_1" from Termite.exe.
Are the first eight bytes of the returned value "00FFFFFFFFFFFF00"?

Example



The first eight bytes are normally "00FFFFFFFFFFFF00".
The correct resistor value cannot be checked if the AVR and TV are not connected by HDMI.

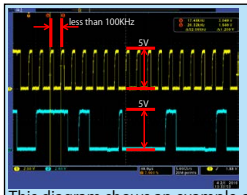
YES



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

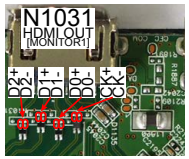
Example of waveform in check ②
Voltage scale : 1.0V/div
Time scale : 1s/div

NO

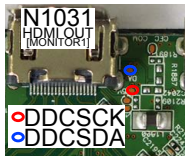


This diagram shows an example of the DDC communication waveform.
-The high level voltage is 5V.
-The frequency of the DDC CLK is 100kHz or less.
Check at each test point.
Voltage scale : 2.0V/div
Time scale : 40us/div

Check item(71). Checking the TMDS :
Check the TMDS waveform at the following test point.



Check item(72). Check the communication :
Are the waveforms for "CKL" and "DATA" at the test point near the HDMI output connector [N1031] correct (as shown in the figure)?



YES

NO

Check for a short circuit in the TMDS line.
If there is no problem, the HDMI Tx [U1001] is faulty.
Replace with a new device.

HDMI Tx [U1001] is faulty.
Replace with a new device.

YES

NO

Check for a short circuit in the DDC line.
If there is no problem, the HDMI Tx [U1001] is faulty.
Replace with a new device.

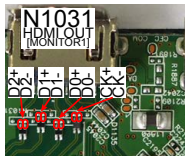
HDMI Tx [U1001] is faulty.
Replace with a new device.

Recheck from check item (4).
If it does not work, replace the PCB.

When the results of check item (69) are "10"
(Detection of HPD is OK / Detection of RXSENSE is not OK)

Check the TMDS. (HDMI OUT1)

Check item(73). Checking the RXSENSE. :
Does the test point near HDMI output terminal [N1031] indicate (3.3V)?



YES

NO

Check for a short circuit in the TMDS line.
If there is no problem, the HDMI Tx [U1001] is faulty.
Replace with a new device.

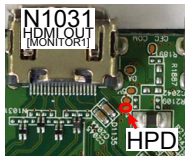
HDMI Tx [U1001] is faulty.
Replace with a new device.

Recheck from check item (4).
If it does not work, replace the PCB.

When the results of check item (69) are "20"
(Detection of HPD is not OK / Detection of RXSENSE is OK)

Check the HPD. (HDMI OUT1)

Check item(74). Checking the HPD :
Does the test point (HPD) near HDMI output terminal [N1031] indicate "Hi(3-5V)"?



YES

NO

Check for a short circuit in the HPD line.
If there is no problem, the HDMI Tx [U1001] is faulty.
Replace with a new device.

HDMI Tx [U1001] is faulty.
Replace with a new device.

Recheck from check item (4).
If it does not work, replace the PCB.

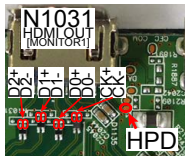
When the results of check item (69) are "00"
(Detection of HPD is not OK / Detection of RXSENSE is not OK)

↓

Check the TMDS/HPD. (HDMI OUT1)

↓

Check item(75). Checking the HPD and RXSENSE. :
Does the test point near HDMI output terminal [N1031] indicate (3.3V)?
Does the test point (HPD) near HDMI output terminal [N1031] indicate "Hi(3-5V)"?



YES ↓ NO

NO → Check for a short circuit in the TMDS/HPD line.
If there is no problem, the HDMI Tx [U1001] is faulty.
Replace with a new device.

YES → HDMI Tx [U1001] is faulty.
Replace with a new device.

↓

Recheck from check item (4).
If it does not work, replace the PCB.

Checking between Monitor 2 and the TV.
Connect Monitor2 to the TV and check the following items with the TV turned on.

↓

Checking the HPD/RXSENSE status register. (HDMI OUT2)

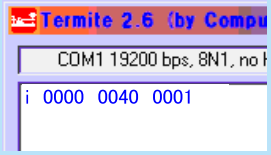
↓

Check item(76). 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 (77)

"01"
(Detection of HPD is OK / Detection of RXSENSE is not OK)
→ Go to check item (80)

"02"
(Detection of HPD is not OK / Detection of RXSENSE is OK)
→ Go to check item (81)

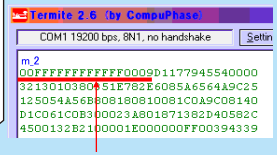
"00"
(Detection of HPD is not OK / Detection of RXSENSE is not OK)
→ Go to check item (82)

When the results of check item (76) are "03"
(Detection of HPD is OK / Detection of RXSENSE is OK)

Checking the EDID register. (OUT2)

Check item(77). Check the Monitor EDID :
① Unplug the AC cord. Plug the AC cord into a power outlet.
② Send the transmission command "m_2" from Termite.exe.
Are the first eight bytes of the returned value "00FFFFFFFFFFFF00"?

Example

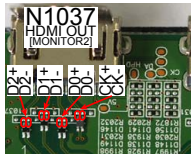


The first eight bytes are normally "00FFFFFFFFFFFF00".
*If the AVR and the TV are not connected via HDMI, the correct register value cannot be verified.

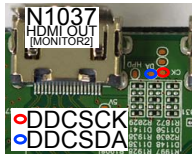
YES

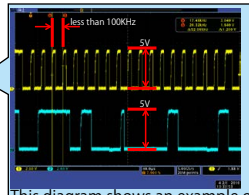
NO

Check item(78). Checking the TMDS :
Check the TMDS waveform at the following test point.



Check item(79). Check communication with the monitor :
Are waveforms of "DDCSCK" and "DDCSDA" observed at the test point near the HDMI output terminal [N1037]?





This diagram shows an example of the DDC communication waveform.
-The high level voltage is 5V.
-The frequency of the DDC CLK is 100kHz 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 Tx [U1001] is faulty.
Replace with a new device.

HDMI Tx [U1001] is faulty.
Replace with a new device.

YES

NO

HDMI Tx [U1001] is faulty.
Replace with a new device.

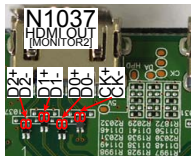
HDMI Tx [U1001] is faulty.
Replace with a new device.

Recheck from check item (4).
If it does not work, replace the PCB.

When the results of check item (76) are "01"
(Detection of HPD is OK / Detection of RXSENSE is not OK)

Check the RXSENSE. (OUT2)

Check item(80). Checking the RXSENSE. :
Does the test point of RXSENSE close to the HDMI output terminal [N1037] indicate the (3.3V)?



YES

NO

Check for a short circuit in the TMDS line.
If there is no problem, the HDMI Tx [U1001] is faulty.
Replace with a new device.

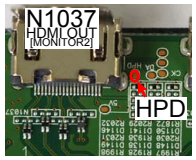
HDMI Tx [U1001] is faulty.
Replace with a new device.

Recheck from check item (4).
If it does not work, replace the PCB.

When the results of check item (76) are "02"
(Detection of HPD is not OK / Detection of RXSENSE is OK)

Check the HPD. (OUT2)

Check item(81). Checking the HPD :
Does the voltage of HPD test point close to the HDMI output terminal [N1037] indicate Hi (3-5 V)?



YES

NO

Check for a short circuit in the HPD line.
If there is no problem, the HDMI Tx [U1001] is faulty.
Replace with a new device.

HDMI Tx [U1001] is faulty.
Replace with a new device.

Recheck from check item (4).
If it does not work, replace the PCB.

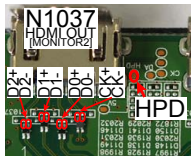
When the results of check item (76) are "00"
(Detection of HPD is not OK / Detection of RXSENSE is not OK)

↓

Checking the HPD/RXSENSE status register. (OUT2)

↓

Check item(82). Checking the HPD and RXSENSE. :
Does the test point of RXSENSE close to the HDMI output terminal [N1037] indicate the (3.3V)?
Does the voltage of HPD test point close to the HDMI output terminal [N1037] indicate Hi (3-5 V)?



YES ↓ NO

NO:
Check for a short circuit in the TMDS/ HPD line.
If there is no problem, the HDMI Tx [U1001] is faulty.
Replace with a new device.

YES:
HDMI Tx [U1001] is faulty.
Replace with a new device.

↓

Recheck from check item (4).
If it does not work, replace the PCB.

3-14. Front HDMI Buffer (AD8195) failure detection procedure

Checking operation between the HDMI (Front HDMI Buffer) and the player

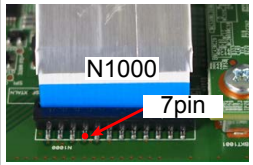
※ In order to check, connect the player to the HDMI terminal and configure the player as AVR source.
Check the sound output while turning on the player.

↓

Check the power supply voltage. (Front HDMI Buffer)

↓

Check item(83). Check the power supply voltage. :
Does the power supply voltage of the Front HDMI FFC base [N1000] indicate the correct voltage (5V)?
The test points are as follows.



YES ↓ NO

Check item(84). Check the power supply voltage. :
Check the FFT SW [Q1058] and peripheral pattern.
If there is no problem, remove the Front HDMI FFC from the substrate and measure the voltage at the test point of check item (83).
Is the power supply voltage correct (5 V)?

YES ↓ NO

Front HDMI Buffer [U1022] is faulty.
Replace with a new device.

Replace the FET SW [Q1058] and recheck from check item (83).
If it does not work, replace the PCB.

↓

Recheck from check item (4).
If it does not work, replace the PCB.

↓

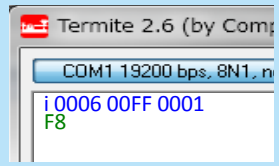
Checking the +5V/DDC status register (Front HDMI Buffer)

↓

Check item(85). Checking the 5V status register :
Send the following command from Termite.exe.
Send the command "i 0006 00FF 0001".

Check the value.
Move to the branch destination according to the value returned.

Example



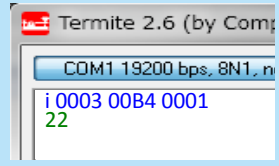
"78 or 70"
(Detection of 5V is not OK.)
→ Go to check item (87)

"F8 or F0"
(Detection of 5V is OK)

Check item(86). Checking the status register :
Send the following command from Termite.exe.
Send the command "i 0003 00B4 0001".

Check the value.
Move to the branch destination according to the value returned.

Example



"00 or 04"
(Detection of DDC is not OK.)
→ Go to check item (88)

"22"
(Detection of DDC is OK)
→ Go to check item (89)

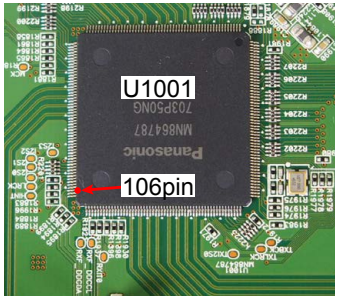
When the results of check item (85) are "78 or 70"
(Detection of 5V is not OK.)

↓

Check the +5V voltage. (Front HDMI Buffer)

↓

Check item(87). Check the +5V voltage.
Does the HDMI Tx [U1001] test point indicate (5V)?
The test points are as follows.



NO → Check for a short circuit in the 5 V line, the Front HDMI FFC, and the 5 V Switch [U1002].
If there is no problem, the HDMI Tx [U1001] or the 5 V Switch [U1002] is faulty.
Replace with a new device.

↓ YES

HDMI Tx [U1001] is faulty.
Replace with a new device.

↓

Recheck from check item (4).
If it does not work, replace the PCB.

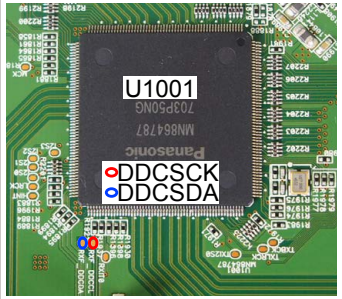
When the results of check item (86) are "00 or 04"
(Detection of DDC is not OK.)

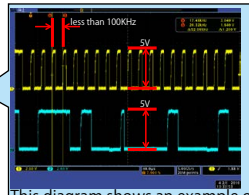
↓

Check the DDC Line. (Front HDMI Buffer)

↓

Check item(88). Check the DDC line :
Are the "DDCSCK" and "DDCSDA" waveforms for the HDMI Tx [U1001] signal correct (as shown in the figure)?
The test points are as follows.





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

NO → Check for a short circuit in the DDC line and check the Front HDMI FFC.
If there is no problem, the Front HDMI Buffer [U1022] is faulty.
Replace with a new device.

↓ YES

HDMI Tx [U1001] is faulty.
Replace with a new device.

↓

Recheck from check item (4).
If it does not work, replace the PCB.

When the results of check item (86) are "22"
(Detection of DDC is OK)

Checking the TMDS status register (Front HDMI Buffer)

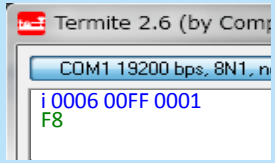
Check item(89). Check the TMDS CLK detection status of the register :

Send the following command from Termite.exe.
Send the command "i 0006 00FF 0001".

When the following value is returned, go to YES.
"F8"

When the following value is returned, go to NO.
"F0"

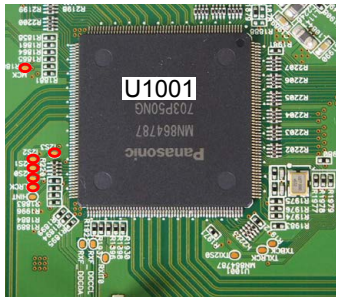
Example

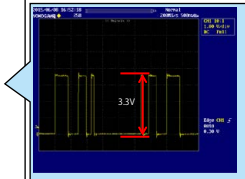


NO

YES

Check item(91). Check the AUDIO signal output :
Check the AUDIO signal waveform at the following test point.
Is the waveform like the sample?





The diagram shows an example of the waveform of I2S0.
Waveform check points
- Crest value (3.3 V normally)
- Signal change
Check the waveform of each pin.
Voltage scale : 1.0V/div
Time scale : 500us/div

YES

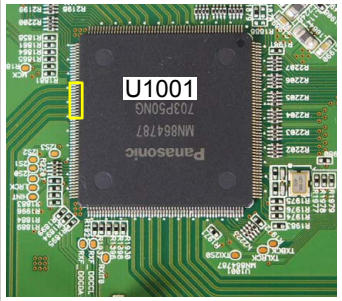
The DIGITAL AUDIO block is faulty.
Check the DIGITAL AUDIO device.
Check "AUDIO" in troubleshooting.
If it does not work, replace the PCB.

NO

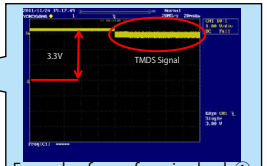
HDMI Tx [U1001] is faulty.
Replace with a new device.

Recheck from check item (4).
If it does not work, replace the PCB.

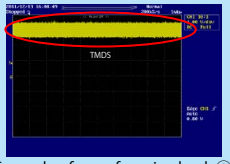
Check item(90). Checking the TMDS input waveform. :
Check the TMDS waveform at the following test point.
Is the waveform like the sample?



70/71/73/74/76/77/79/80 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 Tx [U1001] is faulty.
Replace with a new device.

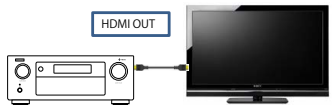
NO

Check for a short circuit in the TMDS line and the Front HDMI FFC.
If there is no problem, the Front HDMI Buffer [U1022] is faulty.
Replace with a new device.

Recheck from check item (4).
If it does not work, replace the PCB.

3-15. GUI and PLD failure detection procedure

Check item(92). Does a video signal come from HDMI OUT to TV correctly? :



Turn Video Conversion "**ON**" on the setup menu.
(SETUP MENU-> Video-> Output Settings-> Video Conversion = On)
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 (93)

YES → Go to check item (96)

When the results of check item (92) are "NO"
(When the menu display is not OK)

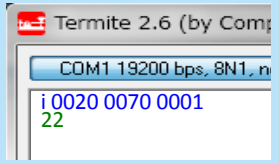
Check the Video signal line. (GUI -> HDMI Tx)

Check item(93). Check the format of the resistor video signal :

Send the following command from Termite.exe.
Send the command "i 0020 0070 0001".

Is the return value "22/21/20/1F/15/14/13/11/10/06/05/04/02" ?

Example



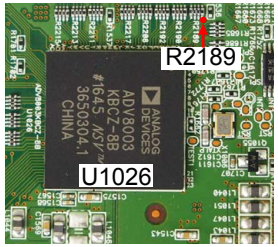
NO

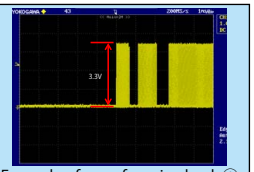
YES → HDMI Tx [U1001] is faulty.
Replace with a new device.

Recheck from check item (5).
If it does not work, replace the PCB.

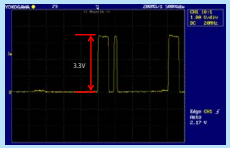
Check the Video signal line. (GUI -> PLD)

Check item(94). Check the PLD video signal line from the GUI :
Check the video signal waveform at the following test point.
Is the waveform like the sample?





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



Example of waveform in check ②
Voltage scale : 1.0V/div
Time scale : 50ns/div

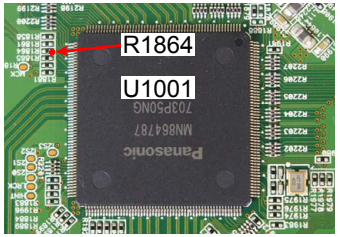
NO

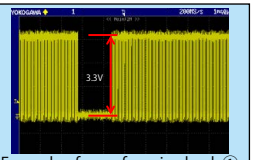
Check the peripheral pattern between the GUI [U1026] and PLD [U1011].
If there is no problem, the GUI [U1026] is faulty.
Replace with a new device.

Recheck from check item (5).
If it does not work, replace the PCB.

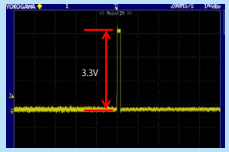
Check the Video signal line. (PLD -> HDMI Tx)

Check item(95). Check the HDMI Tx video signal line from the PLD :
Check the video signal waveform at the following test point.
Is the waveform like the sample?





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



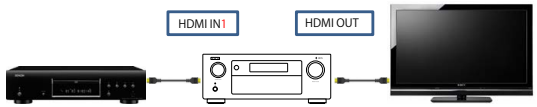
Example of waveform in check ②
Voltage scale : 1.0V/div
Time scale : 1us/div

YES → HDMI Tx [U1001] is faulty.
Replace with a new device.

NO → Check the peripheral pattern between the PLD [U1011] and HDMI Tx [U1001].
If there is no problem, the PLD [U1011] is faulty.
Replace with a new device.

Recheck from check item (5).
If it does not work, replace the PCB.

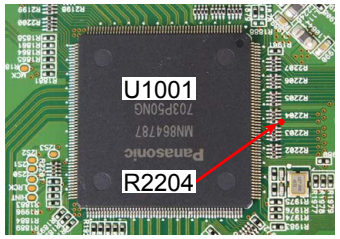
When the results of check item (92) are "YES"
(When the menu display is OK)

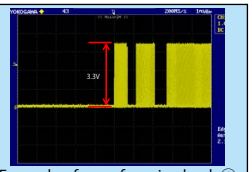


Turn Video Conversion "**ON**" on the setup menu.
(SETUP MENU-> Video-> Output Settings-> Video Conversion = On)
In order to check, connect the player to the HDMI terminal and configure the player as AVR source.
Next, turn on the power for the player and TV and start playback on the player.

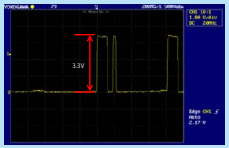
Check the Video signal line. (HDMI Tx -> PLD)

Check item(96). Check the HDMI Tx video signal line from the HDMI Tx :
Check the video signal waveform at the following test point.
Is the waveform like the sample?





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



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

YES

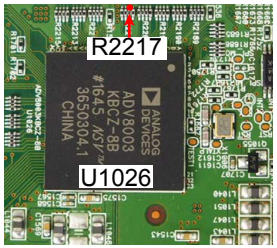
NO

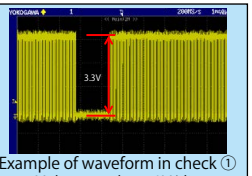
Check the peripheral pattern between the HDMI Tx [U1001] and PLD [U1011].
If there is no problem, the HDMI Tx [U1001] is faulty.
Replace with a new device.

Recheck from check item (5).
If it does not work, replace the PCB.

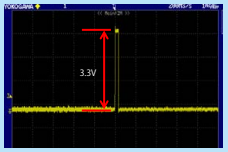
Check the Video signal line. (PLD -> GUI)

Check item(97). Check the GUI video signal line from the PLD :
Check the video signal waveform at the following test point.
Is the waveform like the sample?





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



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

YES

NO

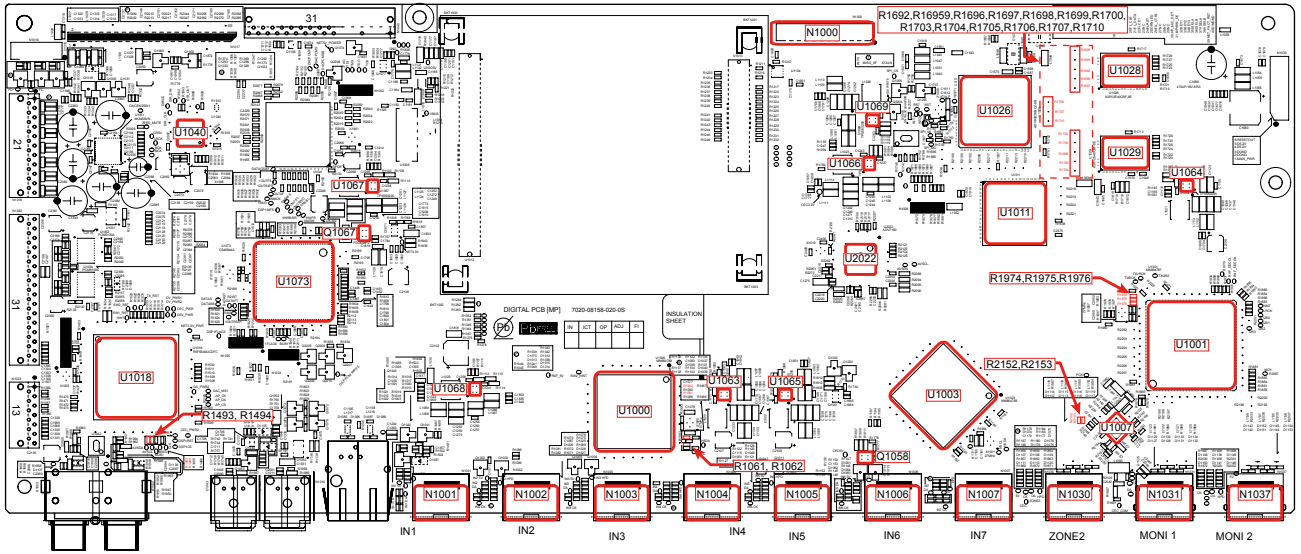
The GUI [U1026] is faulty.
Replace with a new device.

Check the peripheral pattern between the PLD [U1011] and GUI [U1026].
If there is no problem, the PLD [U1011] is faulty.
Replace with a new device.

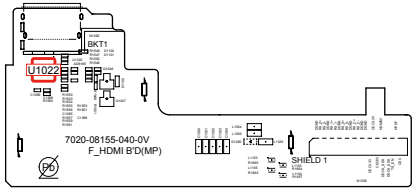
Recheck from check item (5).
If it does not work, replace the PCB.

4. Device implementation location

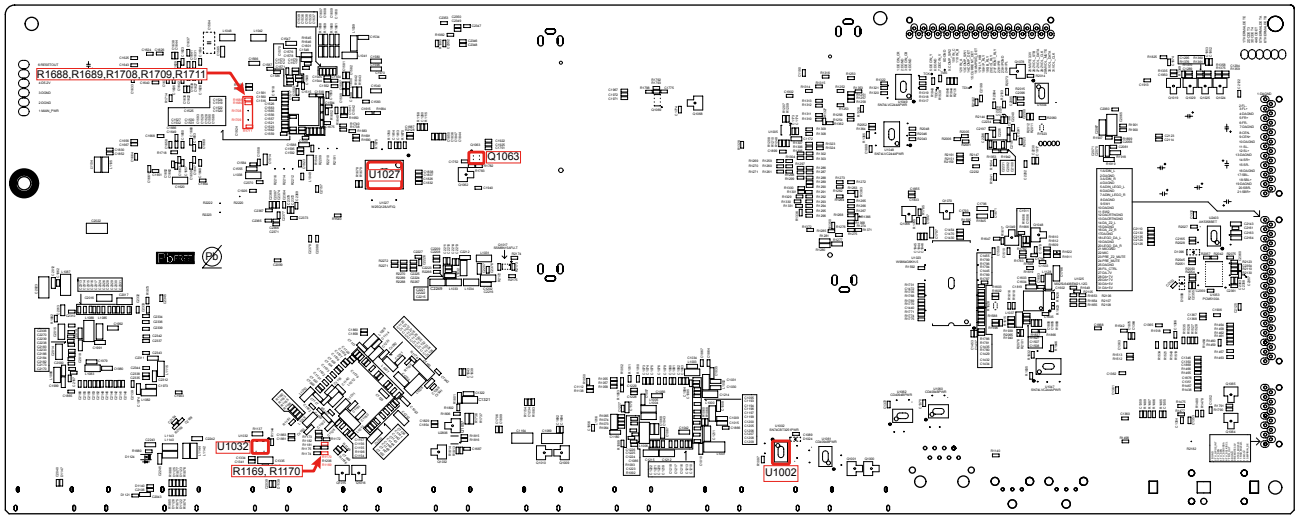
DIGITAL (A SIDE)



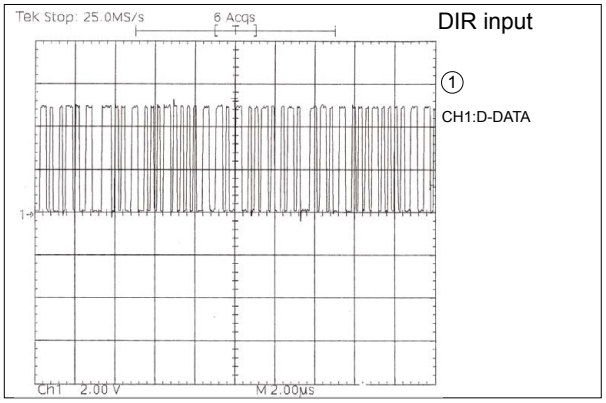
F-HDMI (A SIDE)



DIGITAL (B SIDE)

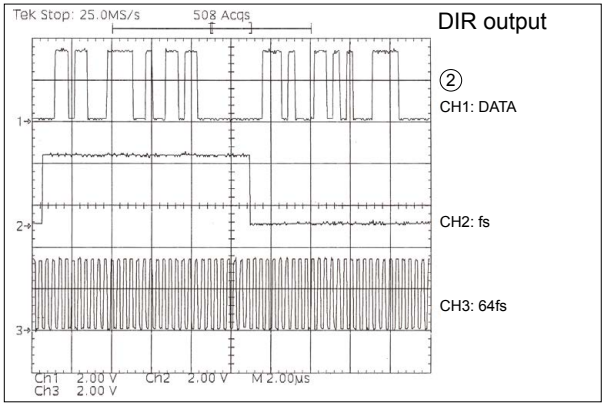


WAVE FORM



DIR input

① CH1:D-DATA

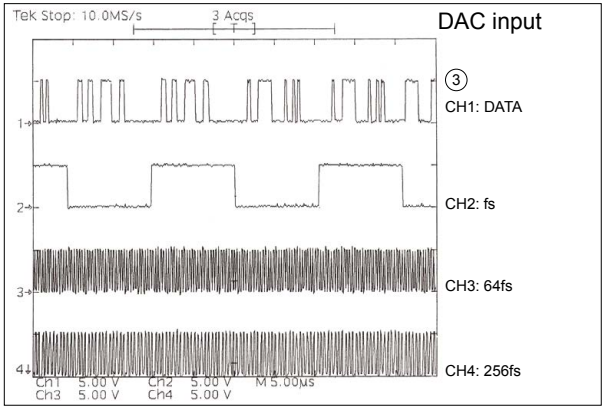


DIR output

② CH1: DATA

CH2: fs

CH3: 64fs



DAC input

③ CH1: DATA

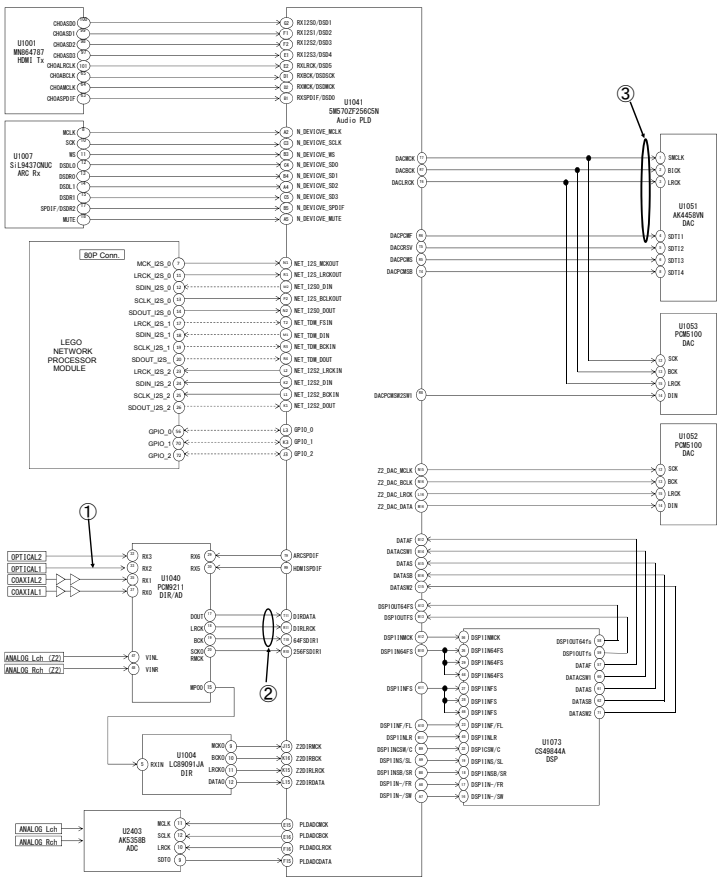
CH2: fs

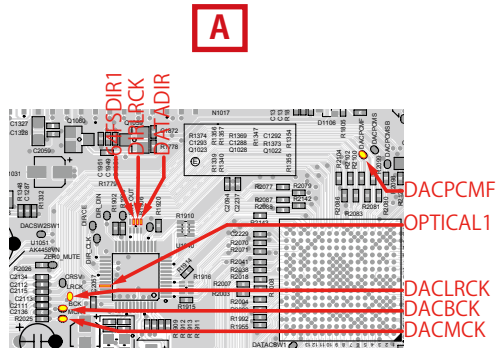
CH3: 64fs

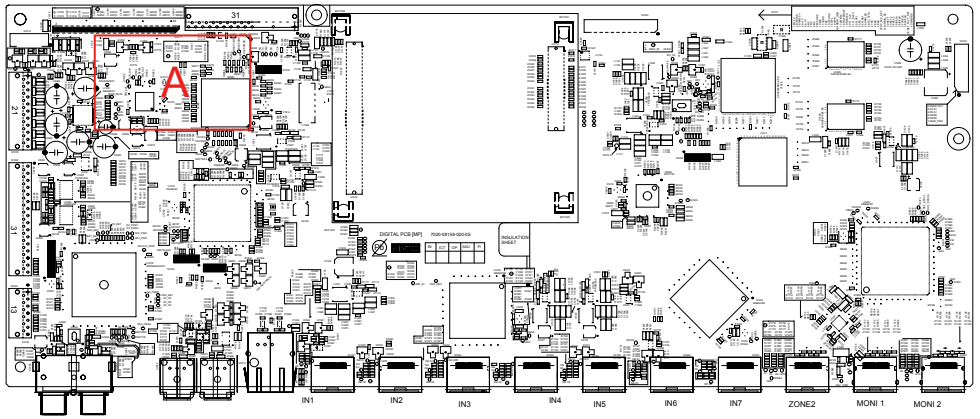
CH4: 256fs

CLOCK FLOW & WAVE FORM IN DIGITAL BLOCK

WAVE FORM







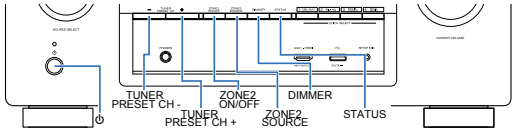
SPECIAL MODE

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 (u-COM / DSP Error Display)	DIMMER	STATUS	-	Displays the version of firmware such as the main firmware or DSP. Errors that have occurred are displayed. (See 1. Version Display Mode)
2	PANEL / REMOTE LOCK Selection Mode	TUNER PRESET CH +	ZONE2 SOURCE	-	Start this unit in the PANEL/REMOTE LOCK selection mode so that PANEL LOCK and Remote Lock can be switched between On and Off. (See 2. PANEL / REMOTE LOCK Selection Mode) ·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
3	Selecting the Mode for Service-related	ZONE2 SOURCE	DIMMER	STATUS	This is a display for turning on each service-related mode. Service-related modes : No. 3-1 - No. 3-5
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 protection occurrence history. (See 3-2. Protection History Display Mode)
3-3	232C Standby Clear Mode	↑	↑	↑	Switches from 232C standby mode to normal standby mode. (See 3-3. 232C Standby Clear Mode)
3-4	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 3-4. Operation Info Mode)
3-5	TUNER STEP Mode (E3 and E2 model only)	↑	↑	↑	Enables reception STEP of the ANALOG TUNER to be changed. (See 3-5. TUNER STEP mode (E2 / E3 only))
3-6	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 3-6. 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 Setup are not initialized.)
7	Factory Initialization Mode	ZONE2 SOURCE	DIMMER	-	Initialize the backup data only for MCU. (Settings for the Installer Setup are initialized) (Network function settings are not initialized.) (See Initializing This Unit)
8	Clearing the Operation Info	ZONE2 SOURCE	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 the Operation Info)
9	HDMI Diagnostics Mode	ZONE2 SOURCE	TUNER PRESET CH -	-	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. The log is deleted when the Network Module is deleted. (See 7. Log Capture feature)

NOTE : When the volume indicator displays " -88 ", the unit has entered a special mode for developers. 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 "**DIMMER**" 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 Main μ -com → ⑤ Main 1st Boot Loader → ⑥ DSP → ⑦ Audio PLD → ⑧ Video PLD → ⑨ GUI SFLASH → ⑩ HEOS Version → ⑪ HEOS Build → ⑫ HEOS Module → ⑬ HEOS Configuration → ⑭ HEOS Locale → ⑮ Ether Mac Address → ⑯ WiFi Mac Address → ⑰ BT Mac Address → ⑱ Audyssey App Interface Version

①Model destination information :

```
AVR-X3400H \\\ *
```

\ : Region (E3, E2, E1C, JP)

②Serial Number :

```
SN**************
```

③Firmware Package :

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

④Main μ-com :

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

⑤Main 1st Boot Loader :

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

⑥DSP ROM :

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

⑦Audio PLD :

```
Audio PLD:**.**
```

⑧Video PLD :

```
Video PLD:**.**
```

⑨GUI SFLASH :

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

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

⑩HEOS Version :

```
HEOS Version
```

↓"Press "**STATUS**" button.

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

⑪HEOS Build :

```
HEOS Build
```

↓"Press "**STATUS**" button.

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

⑫HEOS Module :

```
HEOS Module
```

↓"Press "**STATUS**" button.

```
***
```

⑬HEOS Config :

```
HEOS Config
```

↓"Press "**STATUS**" button.

```
Production
```

⑭HEOS Locale :

```
HEOS Locale
```

↓"Press "**STATUS**" button.

```
*****
```

⑮Ether MAC Address :

```
*Ether MAC
```

↓"Press "**STATUS**" button.

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

⑯Wi-Fi MAC Address :

```
*Wi-Fi MAC
```

↓"Press "**STATUS**" button.

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

⑰Bluetooth MAC Address :

```
*BT MAC Address
```

↓"Press "**STATUS**" button.

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

⑱Audyssey App Interface Ver :

```
Audy IFVer:**.**
```

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, ⑤, ⑥, ①.

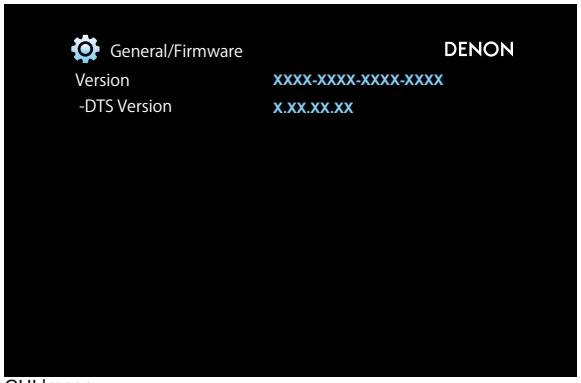
Condition	States	Display	TROUBLE SHOOTING
① Firm Check NG	The model name, brand name and region information written in the firmware are compared to the region settings in the PCB. This error is displayed if the information does not match. " ▲ " is displayed as the first character if the firmware is not correct (see the illustrations on the right).	FIRM ERROR ▲M:********** ▲DSP :**.** ▲Audio PLD:**.** ▲Video PLD:**.** ▲GUI :********	•Check the resistor for setting the region(R1524 / 1525 DIGITAL PCB). •Write the firmware for the correct region.
② IP SCALER NG	An error occurs in Loop back Test of the DDR memory which is performed during the initial setting of i/p Scaler(ADV8003).	IP SCALER ERR 01	•Check the circuits around the IP SCALER (U1026, DIGITAL PCB) and DDR2 (U1028/1029). If there appear to be no problems, U1026 or U1028/1029 is faulty.
	During the initial setting of i/p Scaler (ADV8003) , there is not the reply of the Loop back Test result of the DDR memory .	IP SCALER ERR 02	
③ GUI Serial Flash NG	If the Main CPU version is not supported by the GUI Serial Flash (ADV8003), " ▼ " is displayed as the first character of the GUI firmware version.	▼GUI VER. ERROR ▼GUI :********	•Check the firmware version.
④ DIR NG	This error is displayed if there is no response from the DIR.	DIR ERROR 01	•Check the DIR (U1040, DIGITAL PCB) and surrounding circuits.
⑤ DSP NG	The DSP FLAG0 port does not enter "**Hi**" status while booting a DSP code even after resetting DSP.	DSP ERROR 01	•Check the DSP (U1073, DIGITAL PCB) and surrounding circuits.
	The DSP FLAG0 port does not enter "**Hi**" status before issuing a DSP command.	DSP ERROR 02	
	Setting WRITE to "**Lo**" does not set ACK to "**Hi**" during DSP data reading.	DSP ERROR 03	
	Setting REQ to "**Lo**" does not set ACK to "**Lo**" during DSP data reading.	DSP ERROR 04	
	Setting WRITE to "**Hi**" does not set ACK to "**Hi**" during DSP data writing.	DSP ERROR 05	
	Setting REQ to "**Lo**" does not set ACK to "**Lo**" during DSP data writing.	DSP ERROR 06	
⑥ EEPROM NG	An error occurred in a checksum of the EEPROM(*** is a block address number).	BACKUP ERROR	

1.5. Version Display in the Setup Menu

Follow the steps below to display the firmware information.

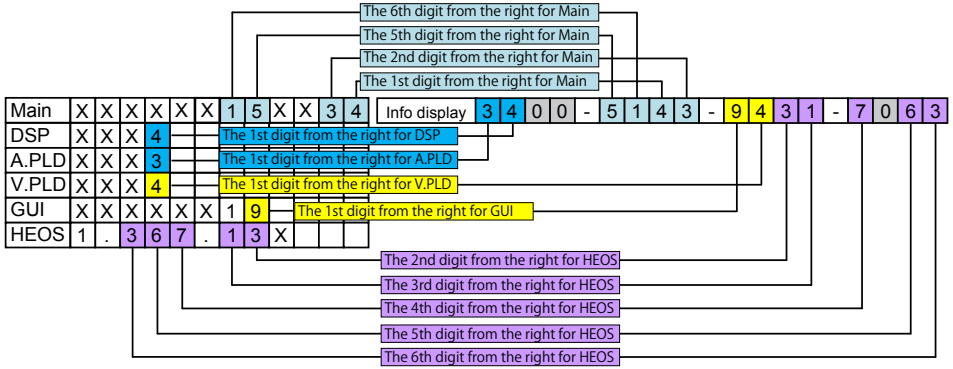
(1) Press the "**SETUP**" button on the remote control.
(2) Select "**General** - **Information** - **Firmware**".

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.

2.2. Starting up

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

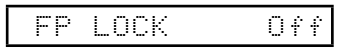
①

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

②

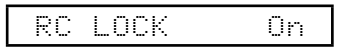
The buttons on the unit does not function.

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

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

Switches from 232C standby mode to normal standby mode.

↓

④

Operation Info for the unit can be checked.

↓

⑤ E3 and E2 model only

Enables reception STEP of the ANALOG TUNER to be changed.

↓

⑥

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

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

(a) If no protections has occurred.

(b) 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.

(c) 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.

(d) THERMAL (if the last protection is THERMAL(A) or THERMAL(E) or THERMAL(F))

Cause : Abnormal heat sink temperature.
If the power is turned on under abnormal conditions, the protection function works immediately and the power is turned off.

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

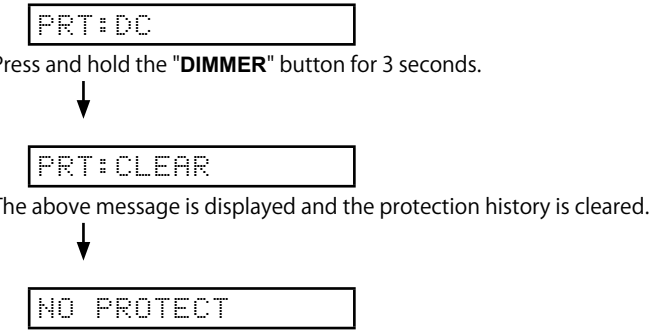
Cause : An over current flowed in power amp.
If the power is turned on in the abnormal state, protection is activated after around 90 seconds and the power is turned off.

Caution : These protections may also be activated due to other factors such as disconnection of connectors or operations around the microcomputer.
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.

(a) Activate Protection History Display Mode. Press the "**STATUS**" button to display the protection history. Press and hold the "**DIMMER**" button for 3 seconds.



(b) Initialize this unit. (See "Initializing This Unit")

※ Use the method in **3-2.4. (a)** 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.

(a) ASO/DC protection: Flashes at 0.5-second intervals (0.25 seconds lit, 0.25 seconds unlit)
(b) THERMAL (A/E/F) protection: Flashes at 2-second intervals (1 seconds lit, 1 seconds unlit)
(c) CURRENT protection: Flashes at 4-second intervals (2 seconds lit, 2 seconds unlit)

3-3. 232C Standby Clear Mode

3-3.1. Actions

Switches from 232C standby mode to normal standby mode.

3-3.2. Starting up

· While holding down buttons "**ZONE2 SOURCE**", "**DIMMER**" and "**STATUS**" simultaneously, press the power button to turn on the power.

Select the "**3.RS232C RESET**" using the "**TUNER PRESET CH+/-**" button, then press the "**STATUS**" button then to confirm.

3-4. Operation Info Mode

3-4.1. Actions

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

3-4.2. Starting up

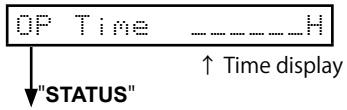
2. While holding down buttons "**ZONE2 SOURCE**", "**DIMMER**" and "**STATUS**" simultaneously, press the power button to turn on the power.

Select the "**4. OP INFO**" using the "**TUNER PRESET CH+/-**" button, then press the "**STATUS**" button then to confirm.

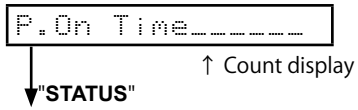
3-4.3. Operations

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

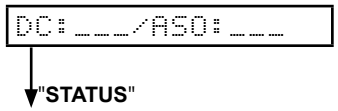
(a) Accumulated operating time



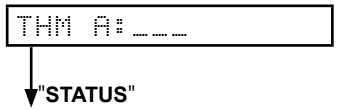
(b) Power On count



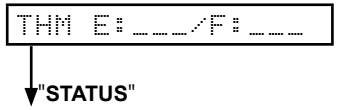
(c) DC / ASO Protection count



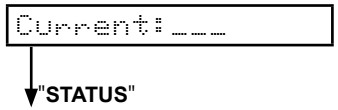
(d) Thermal Protection (A) count



(e) Thermal Protection (E/F) count



(f) Current Protection count



(Returns to normal display)

3-5. TUNER STEP mode (E2 / E3 only)

3-5.1. Actions

This is a special mode for enabling reception STEP of the ANALOG TUNER to be changed.

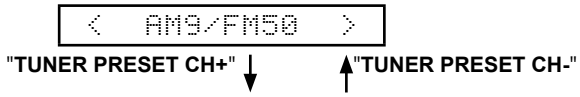
3-5.2. Starting up

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

3-5.3. Displays

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

(a) AM9 kHz / FM50 kHz is selected



(b) AM10 kHz / FM200 kHz is selected

(c) Press the power button to turn off the power.
(d) Press the power button to turn on the power.

3-6. Remote ID Setup Mode

3-6.1. Actions

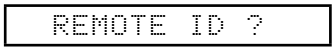
This function allows only the desired AV receiver to be operated if multiple DENON AV receivers are used in the same room.

3-6.2. Starting up

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

3-6.3. Operations

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



(b) 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

(c) Press the power button to turn off the power.
(d) 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

2. 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
(11) Crestron Connected Setup

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 the 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 "**ZONE2 SOURCE**" 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 "**power**" button and "**ZONE2 ON/OFF**" 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

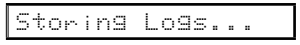
(a) The log is written to the USB flash drive and "**Storing Logs...**" is displayed.
The log is also sent to the server.

(b) 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.

(c) 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.

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



(b) When the log package is uploaded, the ticket numbers "**XXXXX**" and "**Push ENTER**" are displayed until RC or the "**Enter**" or "**Back**" button of this machine is pressed.

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

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 and Audio paths can be checked.
The backup data is not rewritten.

1.2. Starting up

2. While holding down buttons "**ZONE2 SOURCE**", "**DIMMER**" and "**STATUS**" simultaneously, press the power button to turn on the power.

Select the "**1. SERVICE CHECK**" using the "**TUNER PRESET CH+**" 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	DIMMER	QUICK SELECT 1	QUICK SELECT 2	SLEEP	CURSOR ◄	CURSOR ►

1.5. Audio system confirmation items

See the block diagram fig.XXth.

Paths to be confirmed			Display	Settings	What to confirm
1	Analog	fig.01	A01:ANALOG PASS	Input Source : CBL/SAT Input Mode : Analog (fixed) Sound mode : DIRECT Amp assign : Surround Back MAIN ZONE : On ZONE2 : Off	• Analog input ⇒ Speaker output (Front L/R) • Analog input ⇒ Pre OUT output (Front L/R) (※ The input source can be switched to any source except CBL/SAT.)
2	DIGITAL (MAIN)	fig.02a fig.02b	A02:DIGITAL	Input Source : CBL/SAT Input Mode : DIGITAL (fixed) Sound mode : MULTI CH STEREO Amp assign : Surround Back Speaker Config ALL Speaker = Small / SW = Yes(2ch) MAIN ZONE : On ZONE2 : Off	• Digital input ⇒ Speaker output (Front L/R, Center, Surround L/R, Surround Back L/R) • Digital input ⇒ Pre output (Front L/R, Center, Surround L/R, Surround Back L/R, Subwoofer1/2) (※ The input source can be switched to any source except CBL/SAT.)
3	DIGITAL (ZONE2)	fig.03a fig.03b	A03:DIGITAL-Z2	Input Source : HEOS Music Input Mode : Auto Sound mode : STEREO Amp assign : ZONE2 MAIN ZONE : On ZONE2 : On	• Digital(PCM) input ⇒ Speaker output (Surround Back (ZONE2) L/R) • Digital(PCM) input ⇒ Pre OUT output (ZONE2 L/R)

Paths to be confirmed			Display	Settings	What to confirm
4	HDMI	fig.04a fig.04b	A05:HDMI	Input Source : CBL/SAT Input Mode : HDMI (fixed) Sound mode : STEREO Amp assign : Surround Back MAIN ZONE : On ZONE2 : Off	• HDMI input ⇒ Speaker output (Front L/R) (※ The input source can be switched to any source except CBL/SAT.)
5	Analog AD (MAIN ZONE)	fig.05a fig.05b	A06:AD	Input Source : CBL/SAT Input Mode : Analog (fixed) Sound mode : MULTI CH STEREO Vol 60(-20dB) Amp assign : Surround Back Speaker Config ALL Speaker = Small/SW = Yes(2ch) MAIN ZONE : On ZONE2 : Off	• Analog input ⇒ Speaker output (Front L/R, Center, Surround L/R, Surround Back L/R) • Analog input ⇒ Speaker output, SW(20Hz) (Front L/R, Center, Surround L/R, Surround Back L/R, Subwoofer1/2) (※ 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 Amp Assign (Amp Assign : ZONE2)	fig.06	A07:ASSIGN-Z2	Input Source : CBL/SAT Input Mode : Auto Sound mode : STEREO Z2 Source : Source Vol 60(-20dB) Amp assign : ZONE2 MAIN ZONE : On ZONE2 : On	• Analog input ⇒ Speaker output (Surround Back (ZONE2) L/R) • Analog input ⇒ Pre OUT output (ZONE2 L/R) (※ 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)
7	Amp Assign (Amp Assign : BiAMP)	fig.07a fig.07b	A11:ASSIGN-Bi AMP	Input Source : CBL/SAT Input Mode : Auto Sound mode : MULTI CH STEREO Amp assign : Bi-Amp MAIN ZONE : ON ZONE2 : OFF	• Analog input ⇒ Speaker output Surround Back L/R (Front output) • Confirmation of Pre OUT No. (※ 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)
8	Front Height	fig.08a fig.08b	A14:FRONT HEIGHT	Input Source : CBL/SAT Input Mode : Auto Sound mode : MULTI CH STEREO Amp assign : Front Height MAIN ZONE : ON ZONE2 : OFF	• Analog input ⇒ Speaker output Surround Back L/R (Front Height output) • Analog input ⇒ Speaker output Surround Back L/R (Front Height output) (※ 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)

1.6. Confirmation items for the video system

See the block diagram fig.XXth.

Paths to be confirmed			Display	Settings	What to confirm
1	Analog Video pass	fig.09	V01:VIDEO PASS	Input Source : CBL/SAT MAIN ZONE : On ZONE2 : On	• CVBS input ⇒ CVBS output • Component input ⇒ Component output (※ The input source can be switched to any source except CBL/SAT.)
2	Video Convert (HDMI ⇒ HDMI) (Analog ⇒ HDMI)	fig.10	V02:V.CONVERT	Input Source : CBL/SAT Video Conversion (IP Scaler) : ON, All sources IP Scaler : "Analog & HDMI", All sources Resolution : "Auto", All sources MAIN ZONE : On ZONE2 : Off	• HDMI input ⇒ IP Scaler ⇒ HDMI output. • ETHERNET input ⇒ IP Scaler ⇒ HDMI output. • CVBS input ⇒ IP Scaler ⇒ HDMI output. • Component input ⇒ IP Scaler ⇒ HDMI output. (※ The input source can be switched to any source except CBL/SAT.)
3	HDMI pass (MAIN ZONE)	fig.11	V03:HDMI PASS	Input Source : CBL/SAT Video Conversion (IP Scaler) : OFF, All sources MAIN ZONE : On ZONE2 : Off	• HDMI input (MAIN function) ⇒ HDMI output (MAIN) (※ The input source can be switched to any source except CBL/SAT.)
4	HDMI CEC	fig.12	V04:HDMI CEC	Input Source : CBL/SAT HDMI Control : On MAIN ZONE : On ZONE2 : Off	• When the power supply of a TV is put in the standby mode, make sure that the power supply of this unit is also put in the standby mode. (※ 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).
5	HDMI Audio (Audio : AVR)	fig.13a fig.13b	V05:H.AUDIO-AVR	Input Source : CBL/SAT HDMI Control : Off HDMI Audio : AVR (if checking the audio output from AVR)	• HDMI input (PCM , DolbyDigital , DTS) ⇒ Speaker output. • HDMI input(HD audio) ⇒ Speaker output. (※ The input source can be switched to any source except CBL/SAT.)
6	HDMI Audio (Audio : TV)	fig.14	V06:H.AUDIO-TV	HDMI Audio : TV (if checking the audio output from TV)	• HDMI input (PCM , DolbyDigital , DTS) ⇒ HDMI output (audio output from connected TV) (※ The input source can be switched to any source except CBL/SAT.)
7	GUI	fig.15	V07:GUI MENU ON	Input Source : CBL/SAT IP Scaler : On, All sources Resolution : "AUTO", All sources Setup Menu : On MAIN ZONE : On ZONE2 : Off	• GUI display ⇒ HDMI output. (※ The input source can be switched to any source except CBL/SAT.)
8	HDMI (ZONE2)	fig.16	V08:ZONE2 HDMI	Input Source : CBL/SAT Z2 Source : Source MAIN ZONE : ON ZONE2 : ON	• HDMI input (ZONE2 Function) ⇒ HDMI output (ZONE2) (※ The input source can be switched to any source except CBL/SAT.)

fig.01

AVR_X3400 ANALOG AUDIO DIAGRAM

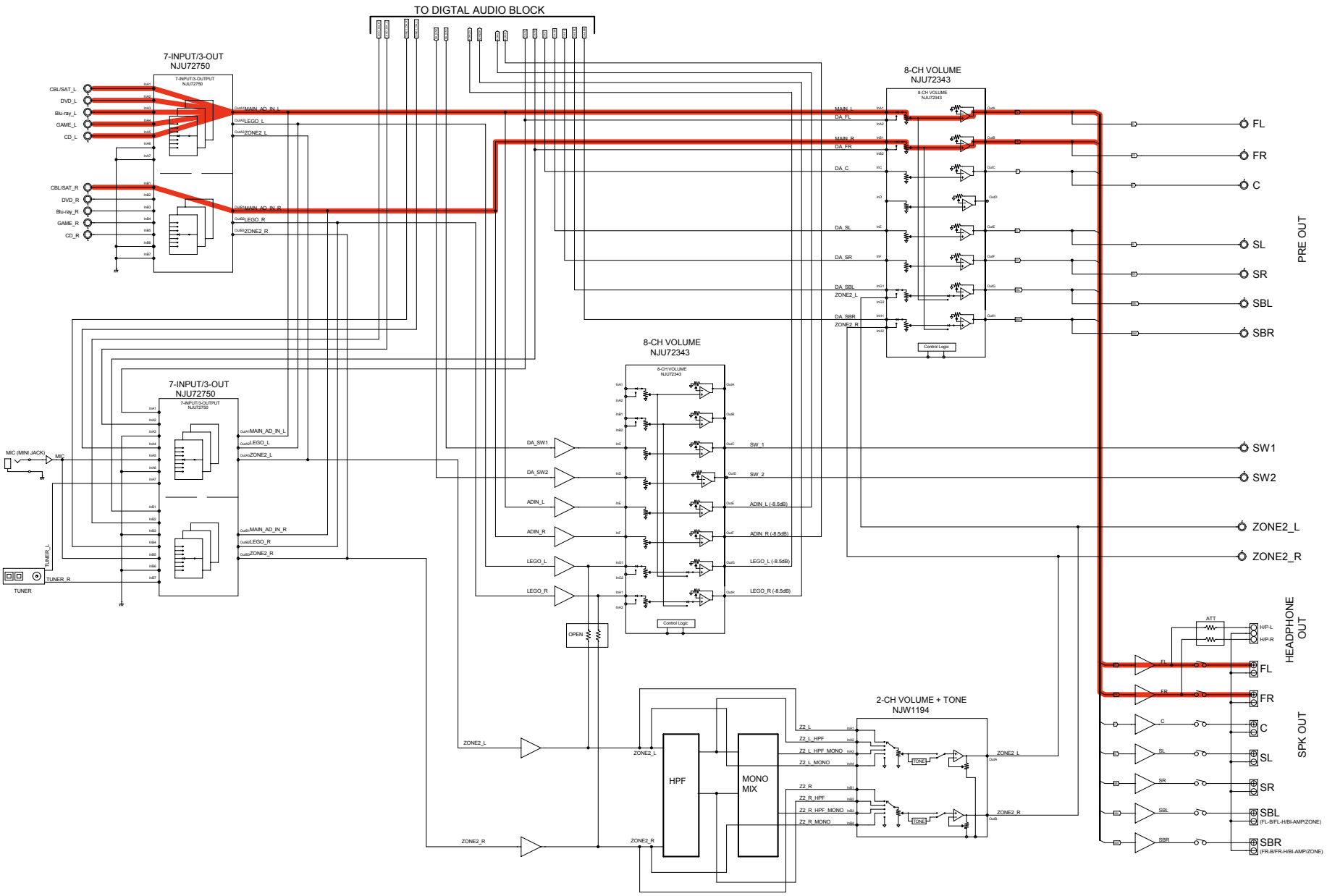


fig.02a

AVR_X3400 DIGITAL AUDIO DIAGRAM

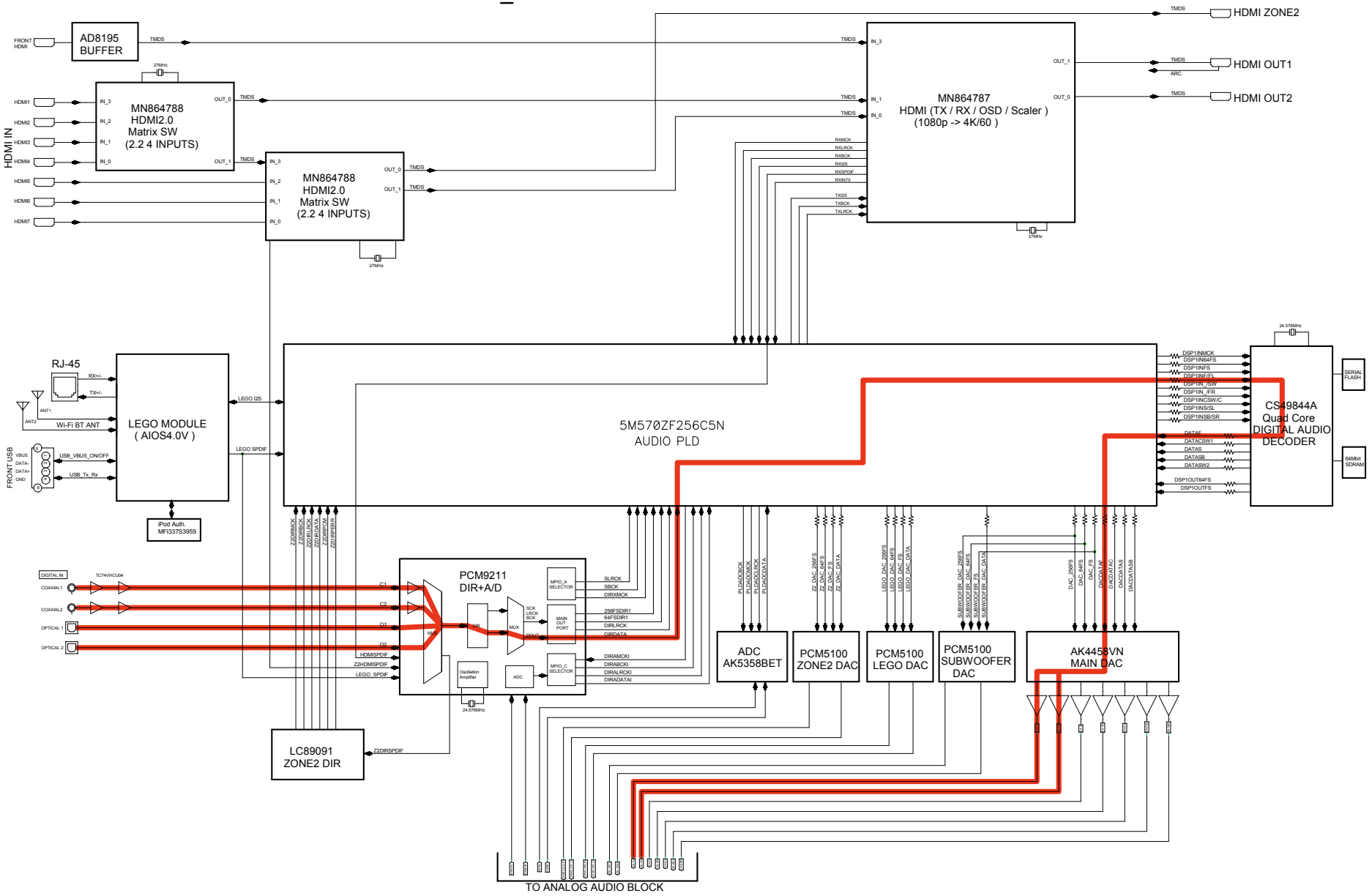


fig.02b

AVR_X3400 ANALOG AUDIO DIAGRAM

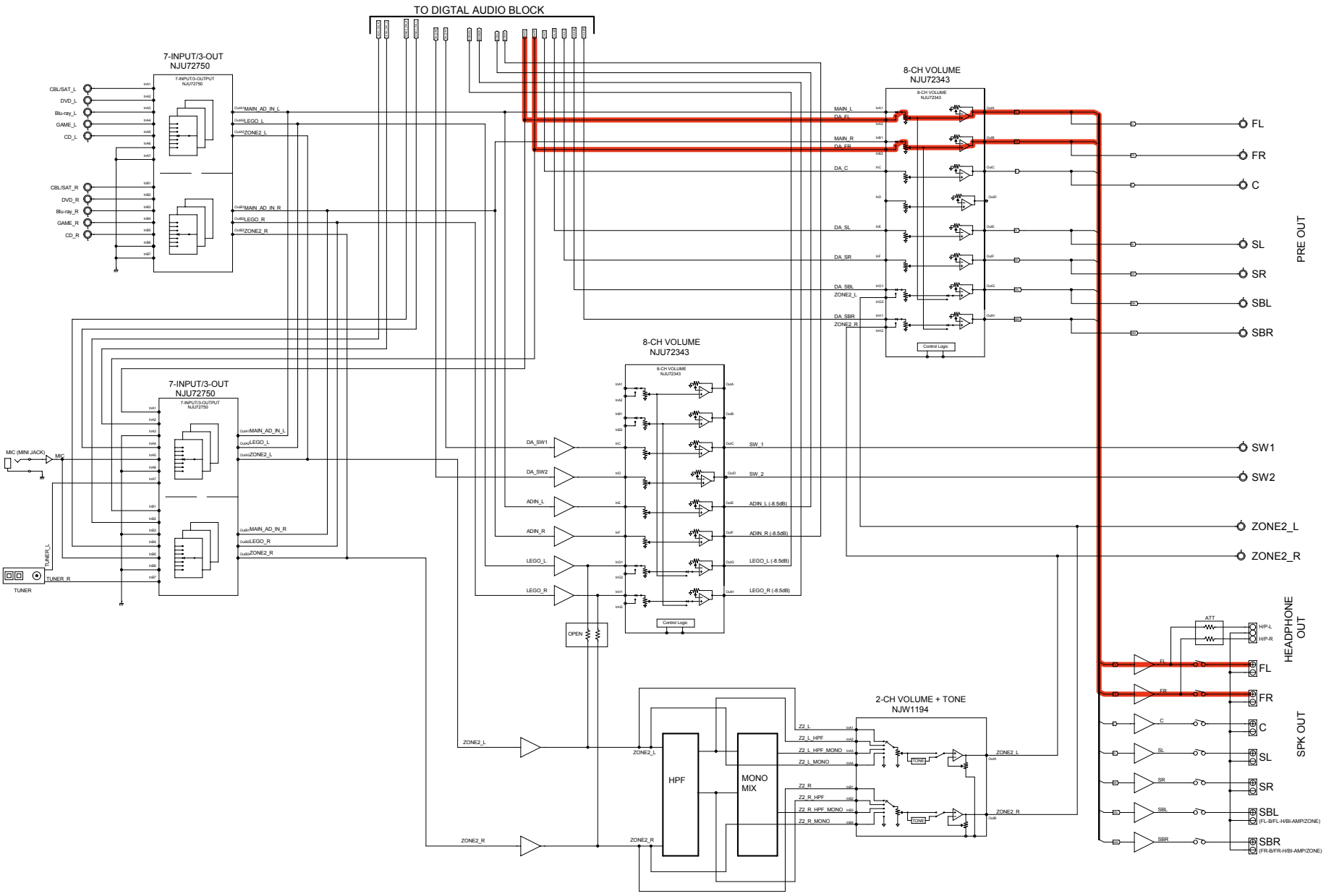


fig.03a

AVR_X3400 DIGITAL AUDIO DIAGRAM

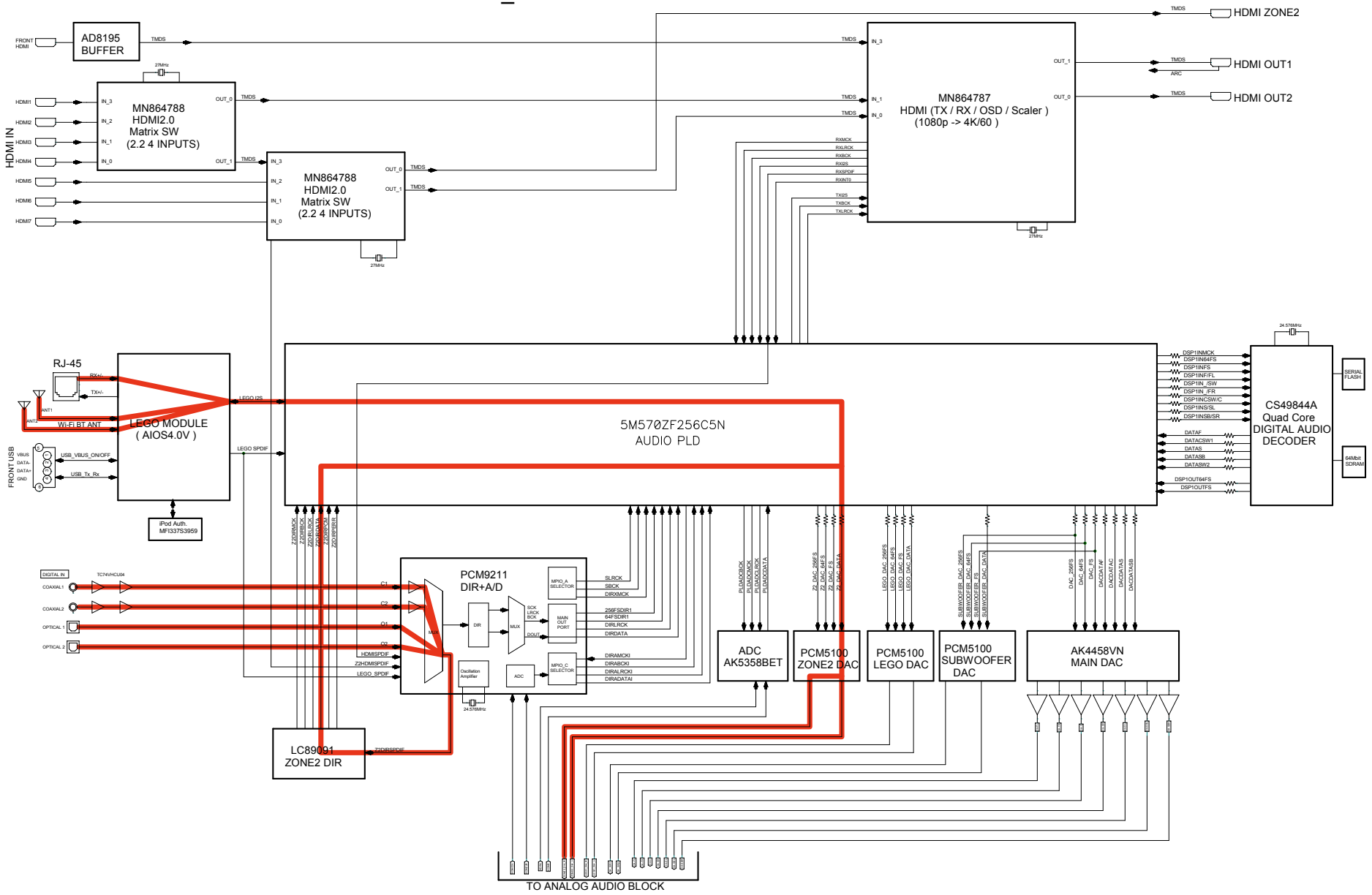


fig.03b

AVR_X3400 ANALOG AUDIO DIAGRAM

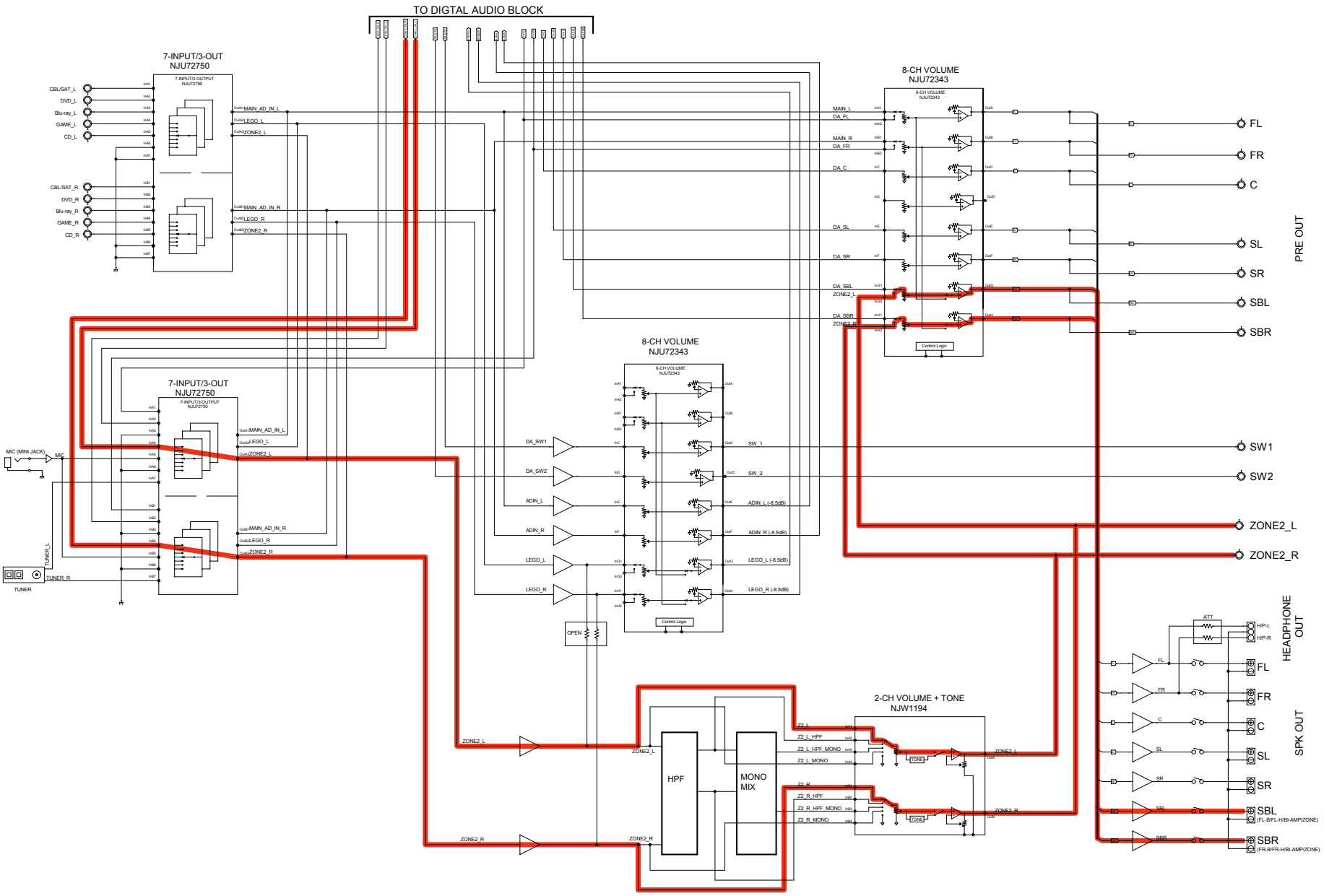


fig.04a

AVR_X3400 DIGITAL AUDIO DIAGRAM

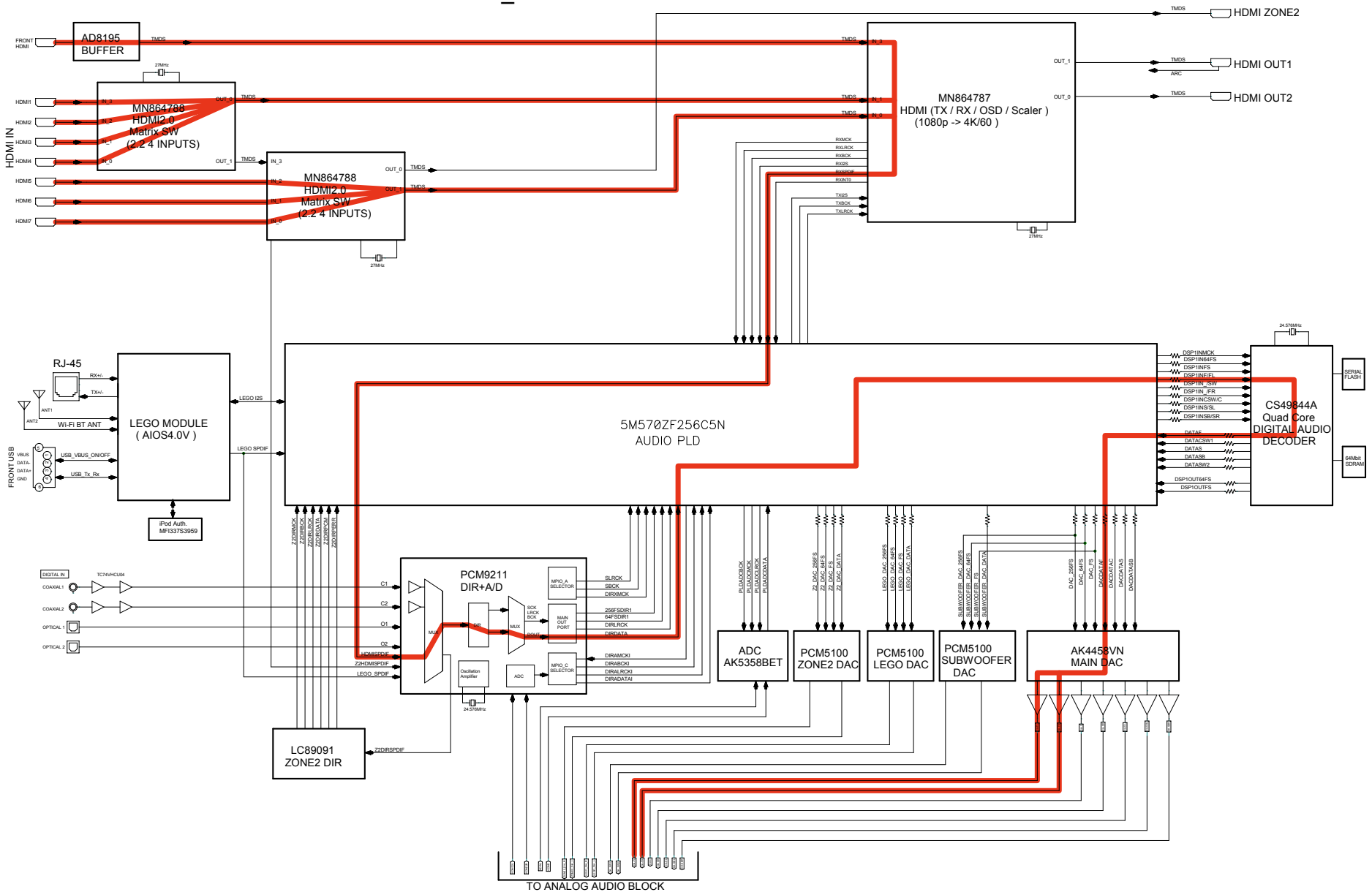


fig.04b

AVR_X3400 ANALOG AUDIO DIAGRAM

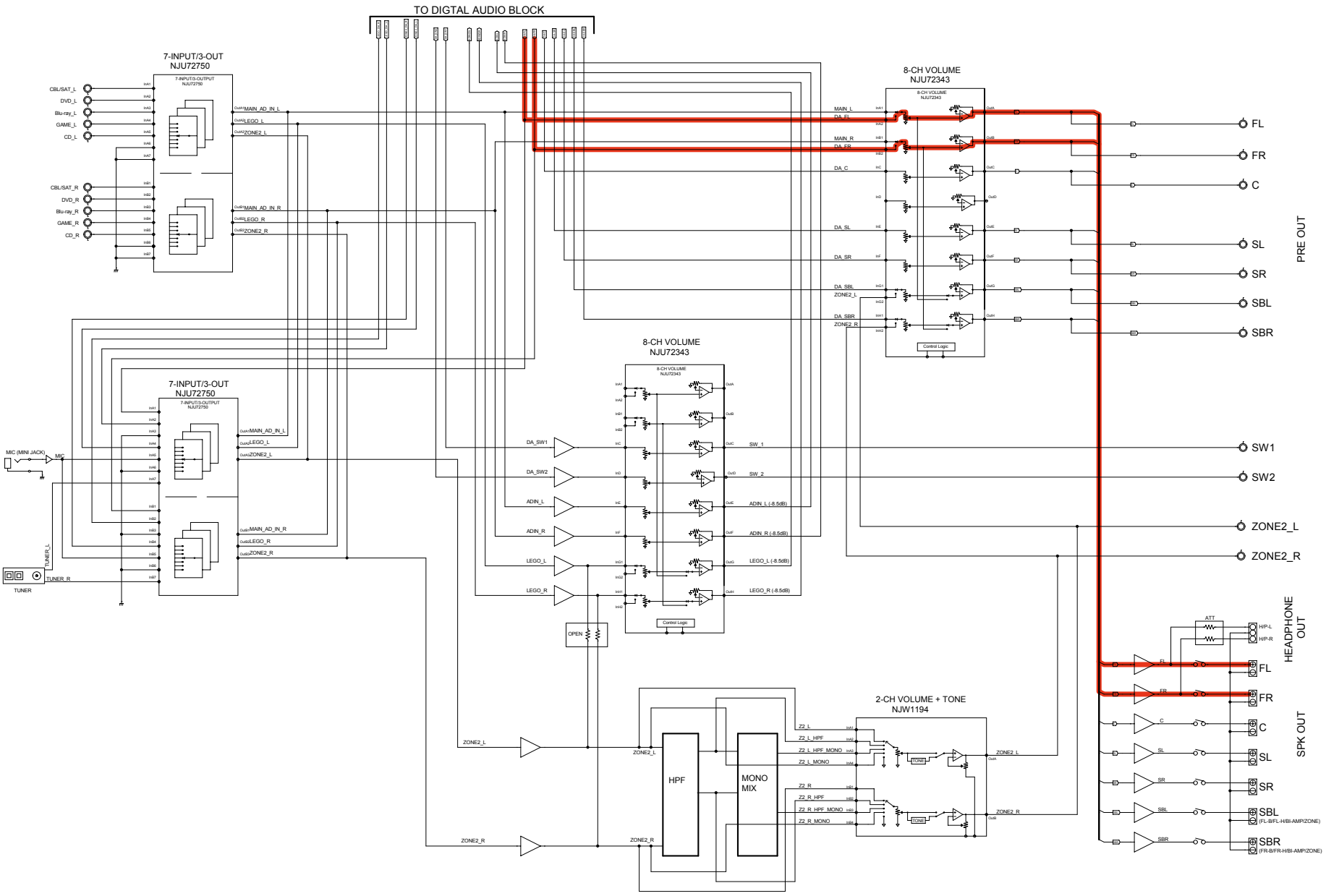


fig.05a

AVR_X3400 DIGITAL AUDIO DIAGRAM

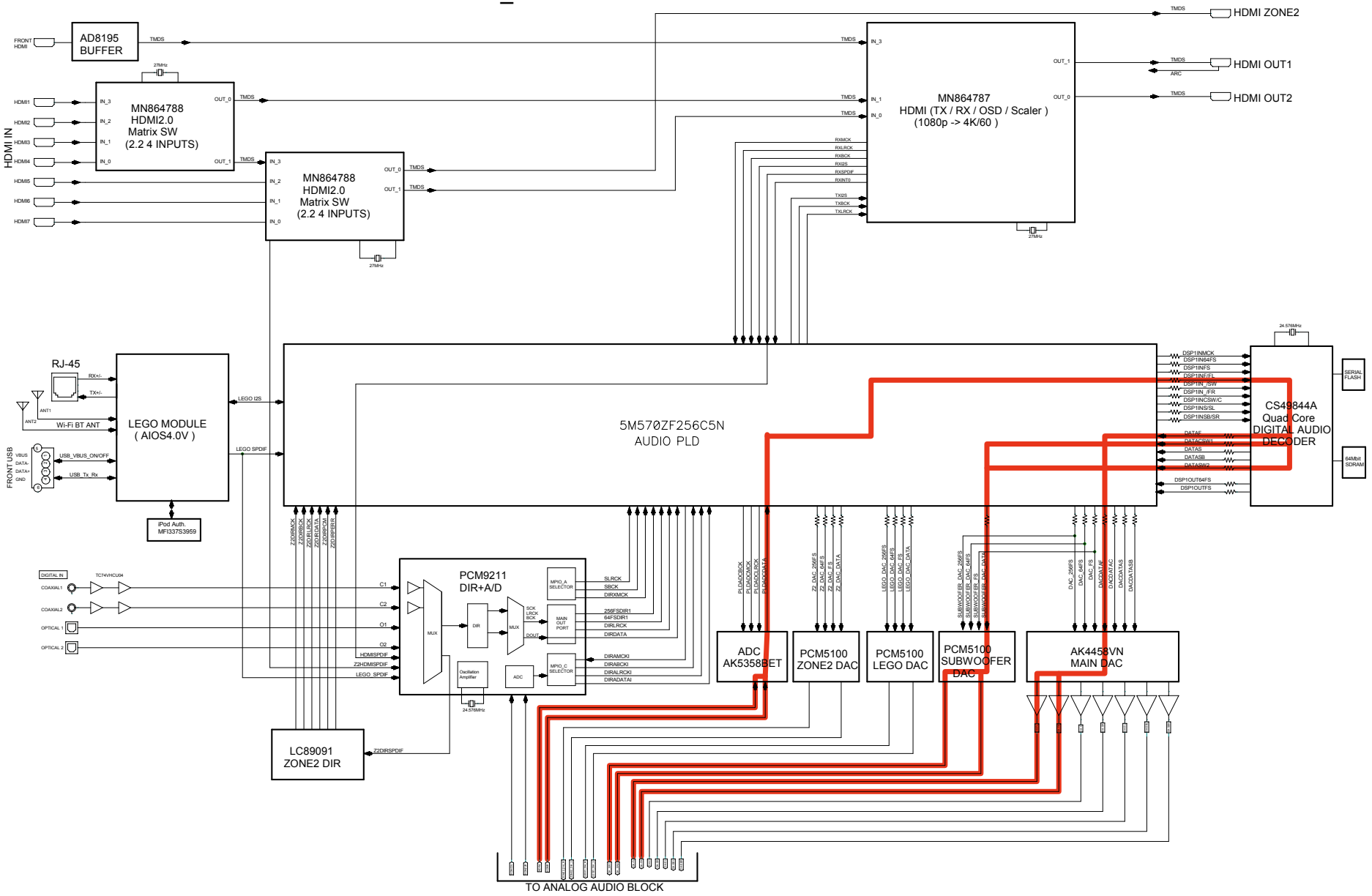


fig.05b

AVR_X3400 ANALOG AUDIO DIAGRAM

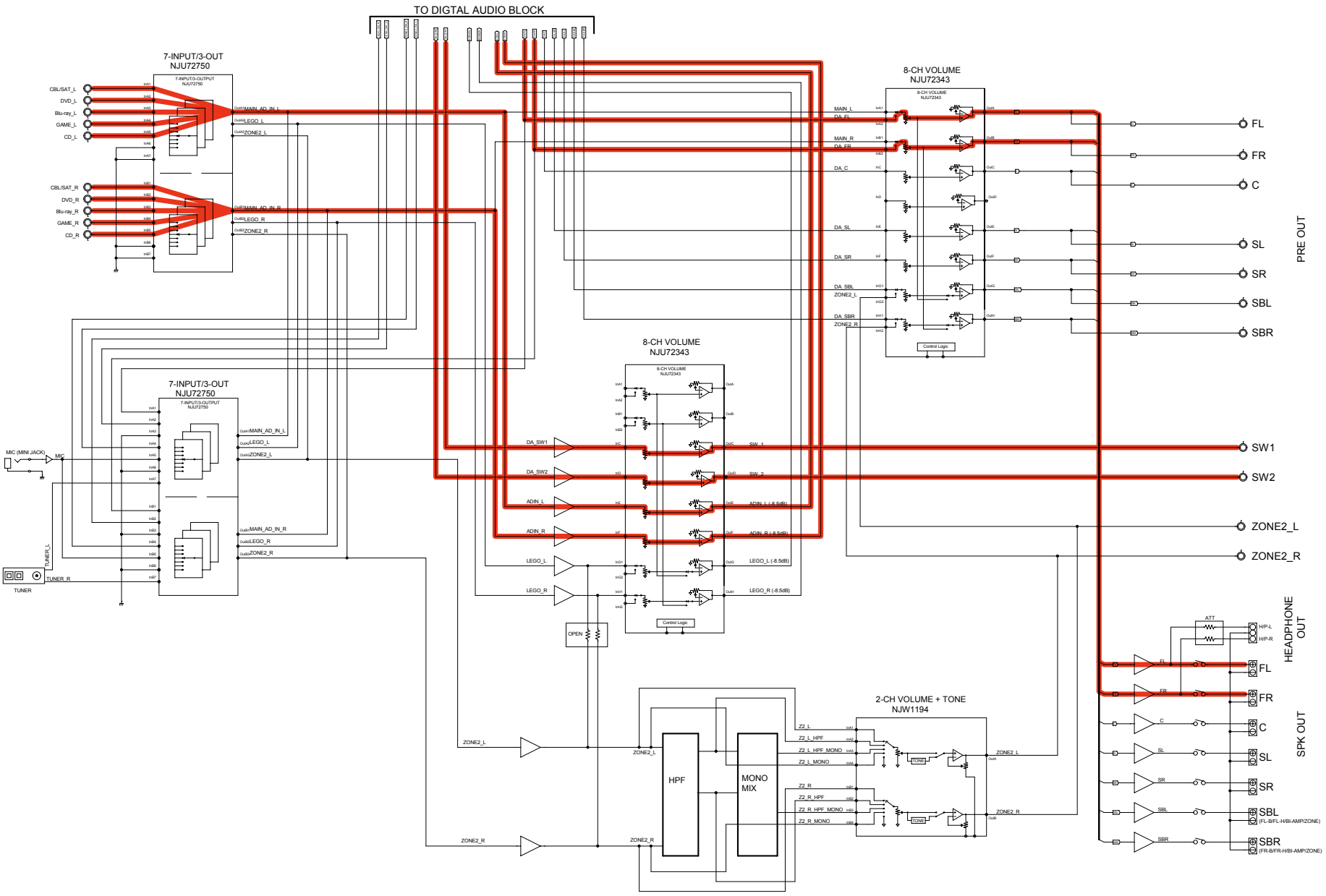


fig.06

AVR_X3400 ANALOG AUDIO DIAGRAM

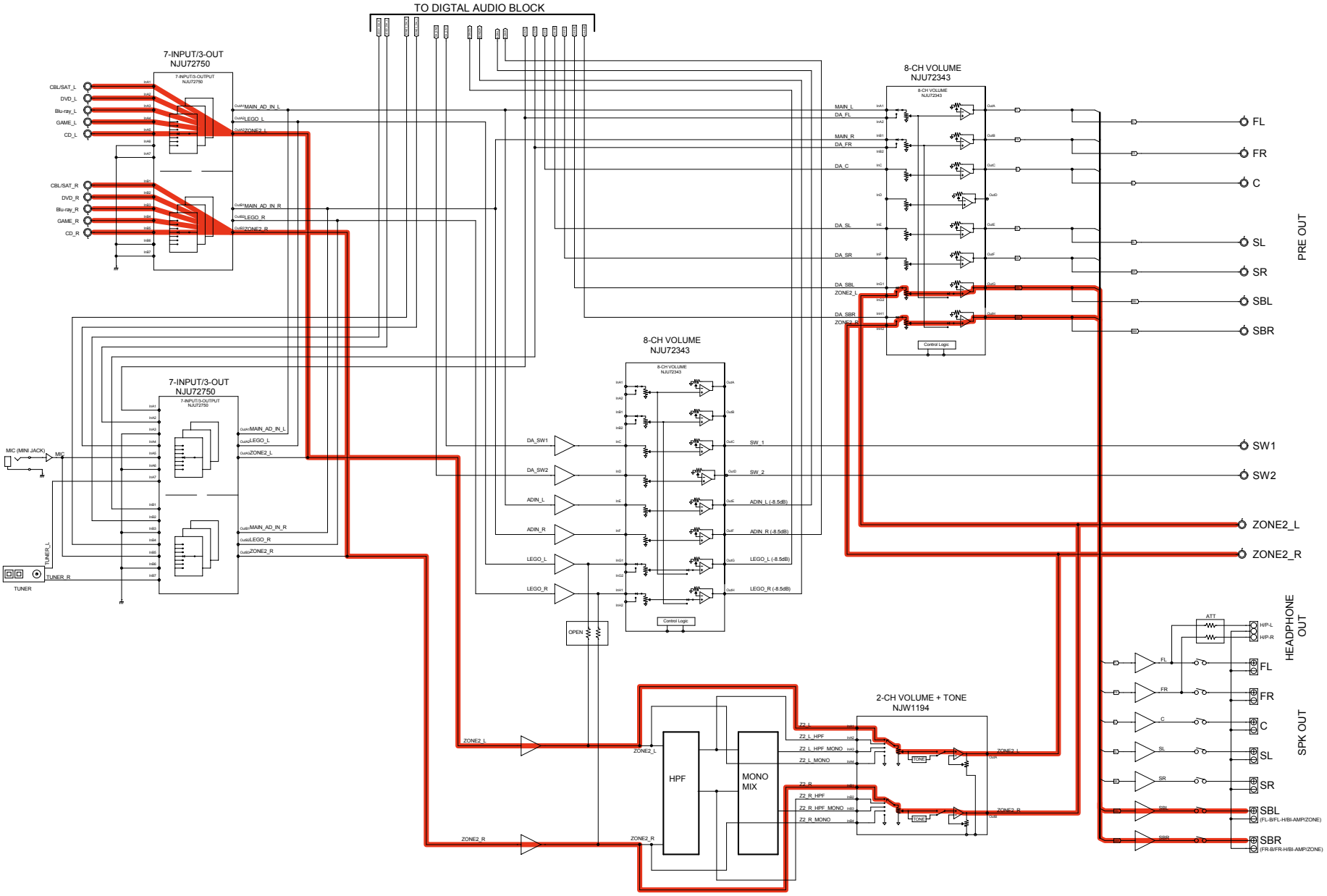


fig.07a

AVR_X3400 DIGITAL AUDIO DIAGRAM

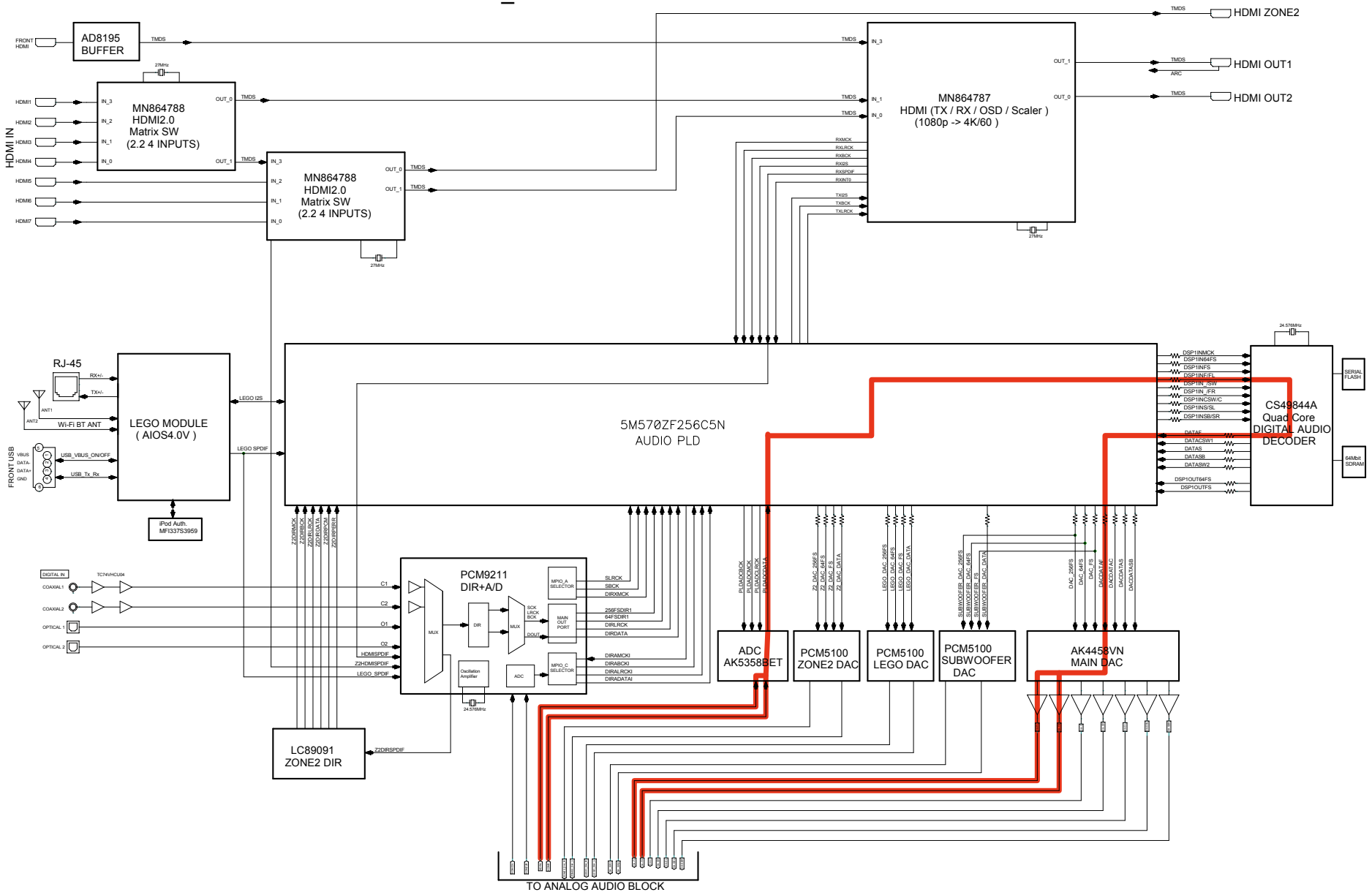


fig.07b

AVR_X3400 ANALOG AUDIO DIAGRAM

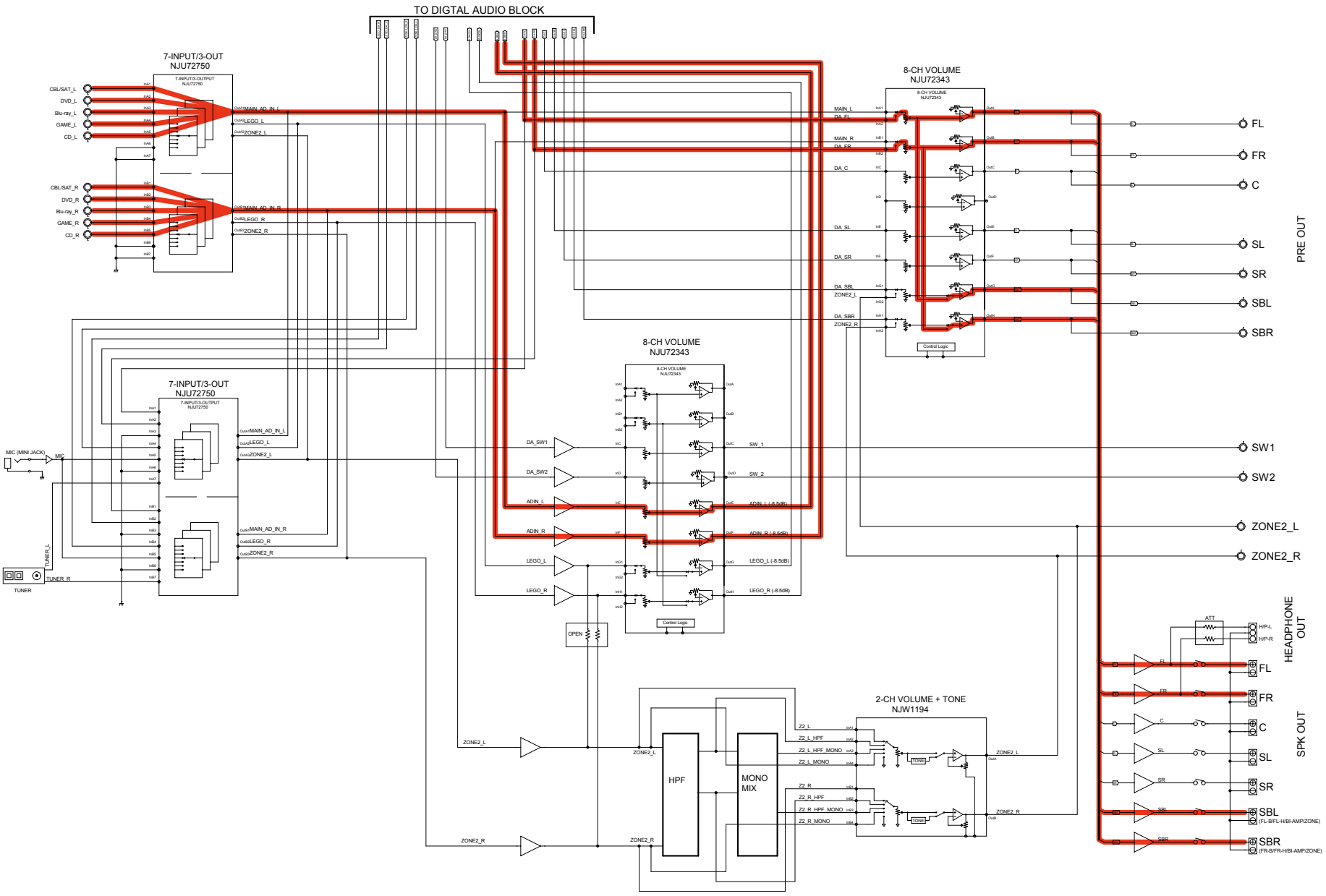


fig.08a

AVR_X3400 DIGITAL AUDIO DIAGRAM

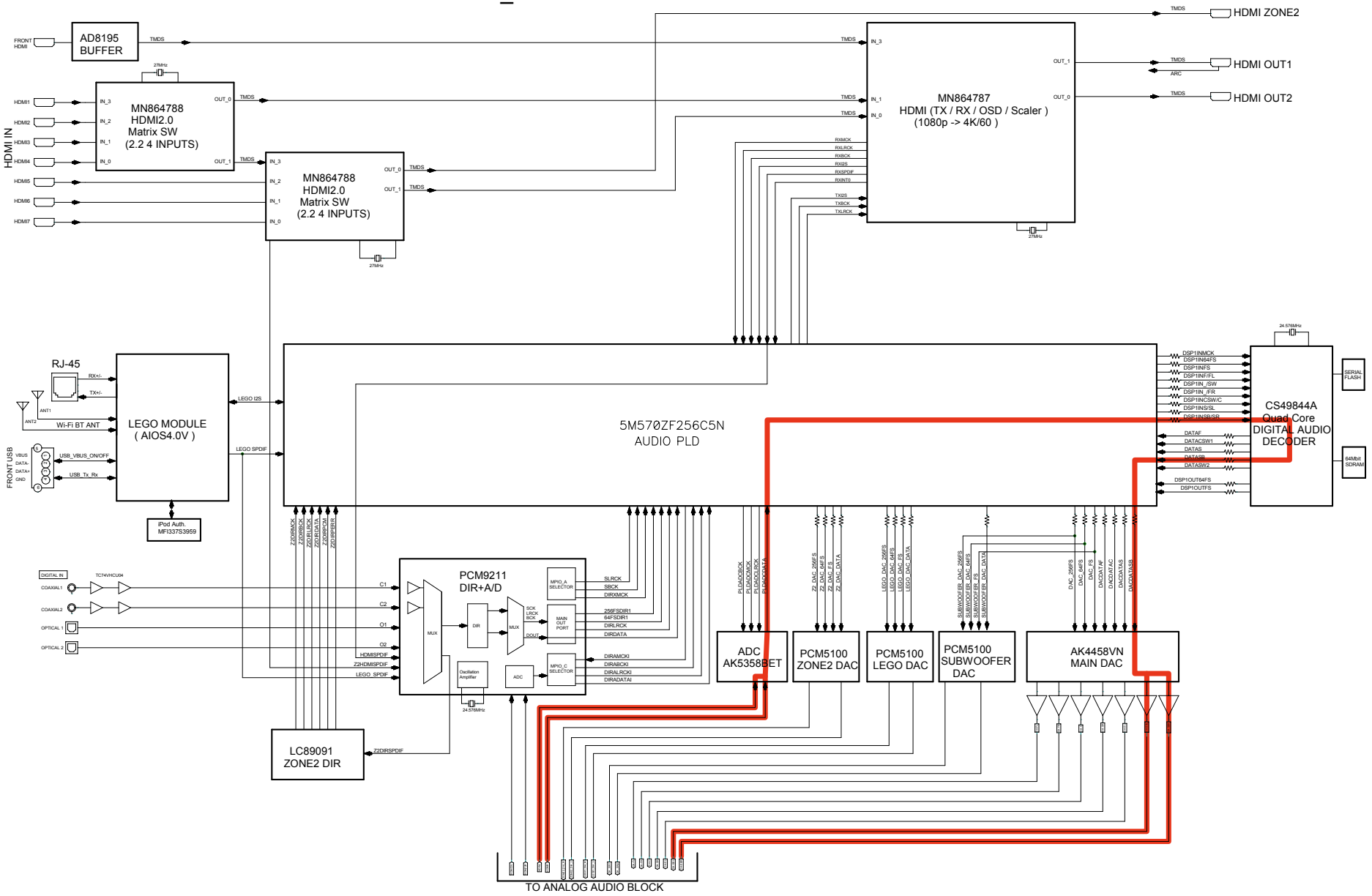


fig.08b

AVR_X3400 ANALOG AUDIO DIAGRAM

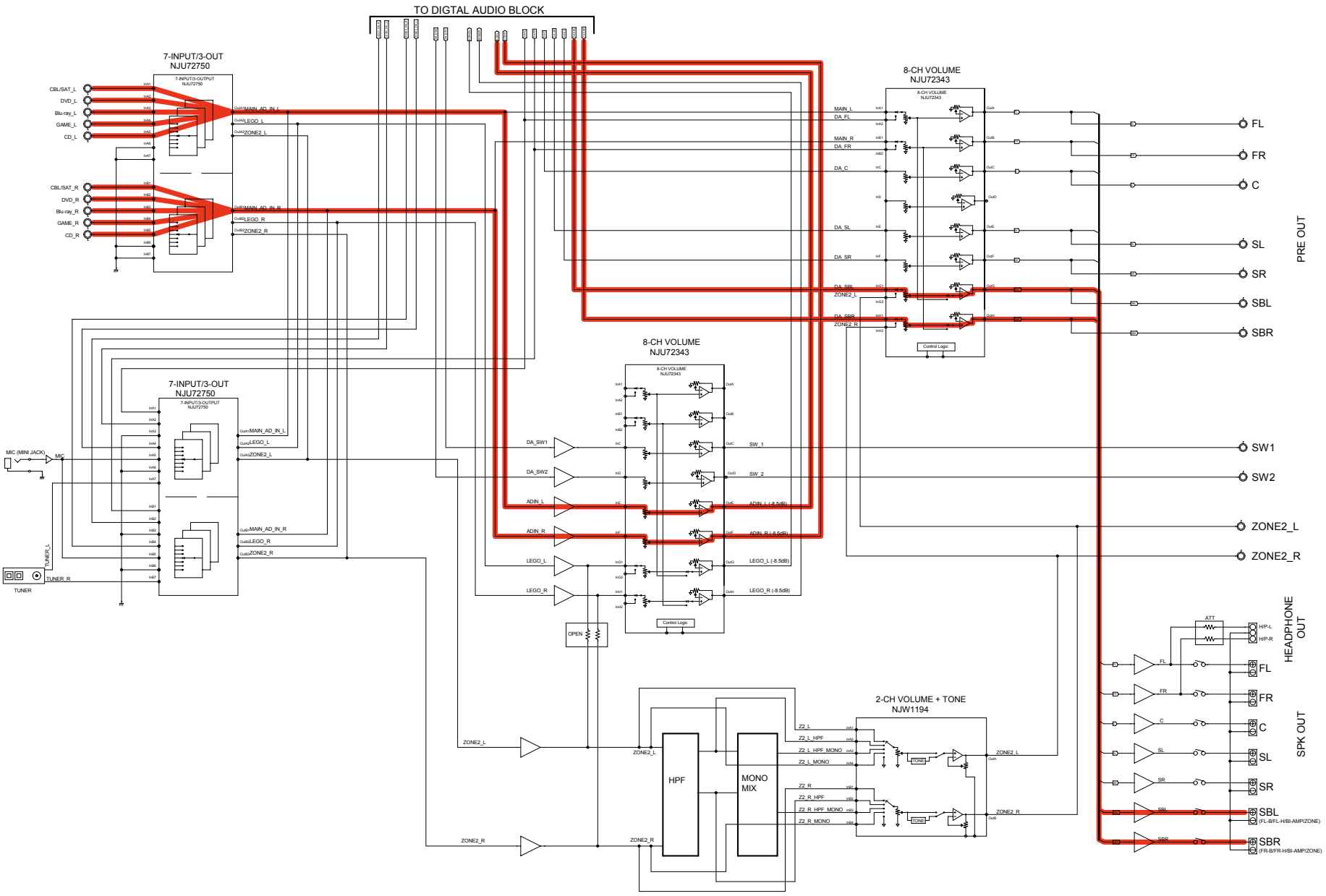


fig.09

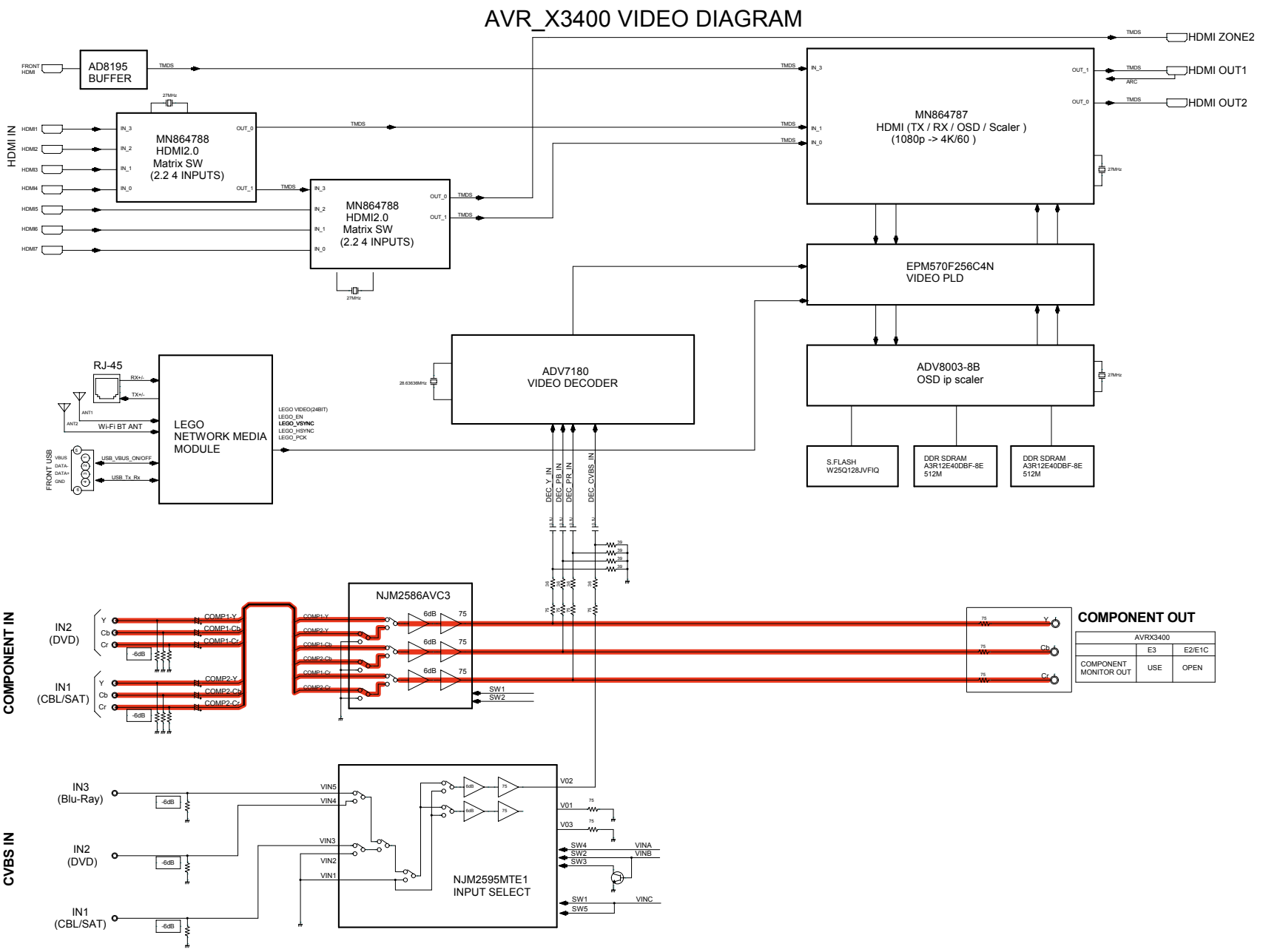

AVR_X3400 VIDEO DIAGRAM
AD8195 BUFFER
MN864788 HDMI2.0 Matrix SW (2.2 4 INPUTS)
MN864788 HDMI2.0 Matrix SW (2.2 4 INPUTS)
MN864787 HDMI (TX / RX / OSD / Scaler) (1080p -> 4K/60)
EPM570F256C4N VIDEO PLD
ADV7180 VIDEO DECODER
ADV8003-8B OSD ip scaler
LEGO NETWORK MEDIA MODULE
NJM2586AVC3
NJM2595MTE1 INPUT SELECT
S.FLASH W25Q128JVFIQ
DDR SDRAM A3R12E40DBF-8E 512M
DDR SDRAM A3R12E40DBF-8E 512M
HDMI ZONE2
HDMI OUT1
HDMI OUT2
HDMI IN
COMPONENT IN
CVBS IN
IN2 (DVD)
IN1 (CBL/SAT)
IN3 (Blu-Ray)
COMPONENT OUT
AVRX3400
E3
E2/E1C
COMPONENT MONITOR OUT
USE
OPEN

fig.10

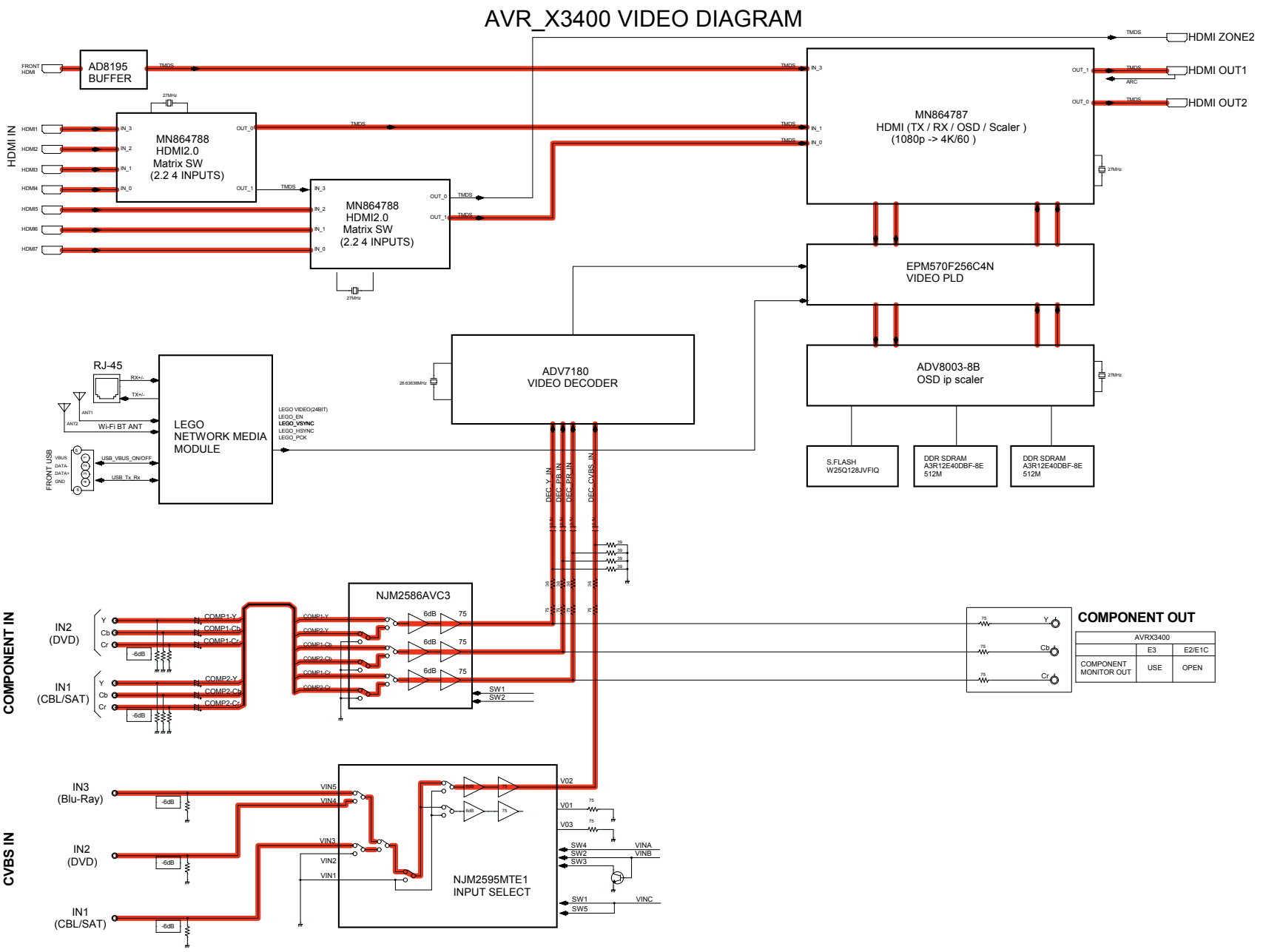

AVR_X3400 VIDEO DIAGRAM
AD8195 BUFFER
MN864788 HDMI2.0 Matrix SW (2.2 4 INPUTS)
MN864788 HDMI2.0 Matrix SW (2.2 4 INPUTS)
MN864787 HDMI (TX / RX / OSD / Scaler) (1080p -> 4K/60)
EPM570F256C4N VIDEO PLD
ADV7180 VIDEO DECODER
ADV8003-8B OSD ip scaler
S.FLASH W25Q128JVFIQ
DDR SDRAM A3R12E40DBF-8E 512M
DDR SDRAM A3R12E40DBF-8E 512M
LEGO NETWORK MEDIA MODULE
RJ-45
Wi-Fi BT ANT
FRONT USB
NJM2586AVC3
NJM2595MTE1 INPUT SELECT
HDMI ZONE2
HDMI OUT1
HDMI OUT2
HDMI IN
COMPONENT IN
CVBS IN
IN2 (DVD)
IN1 (CBL/SAT)
IN3 (Blu-Ray)
COMPONENT OUT
AVRX3400
E3
E2/E1C
COMPONENT MONITOR OUT
USE
OPEN

fig.11

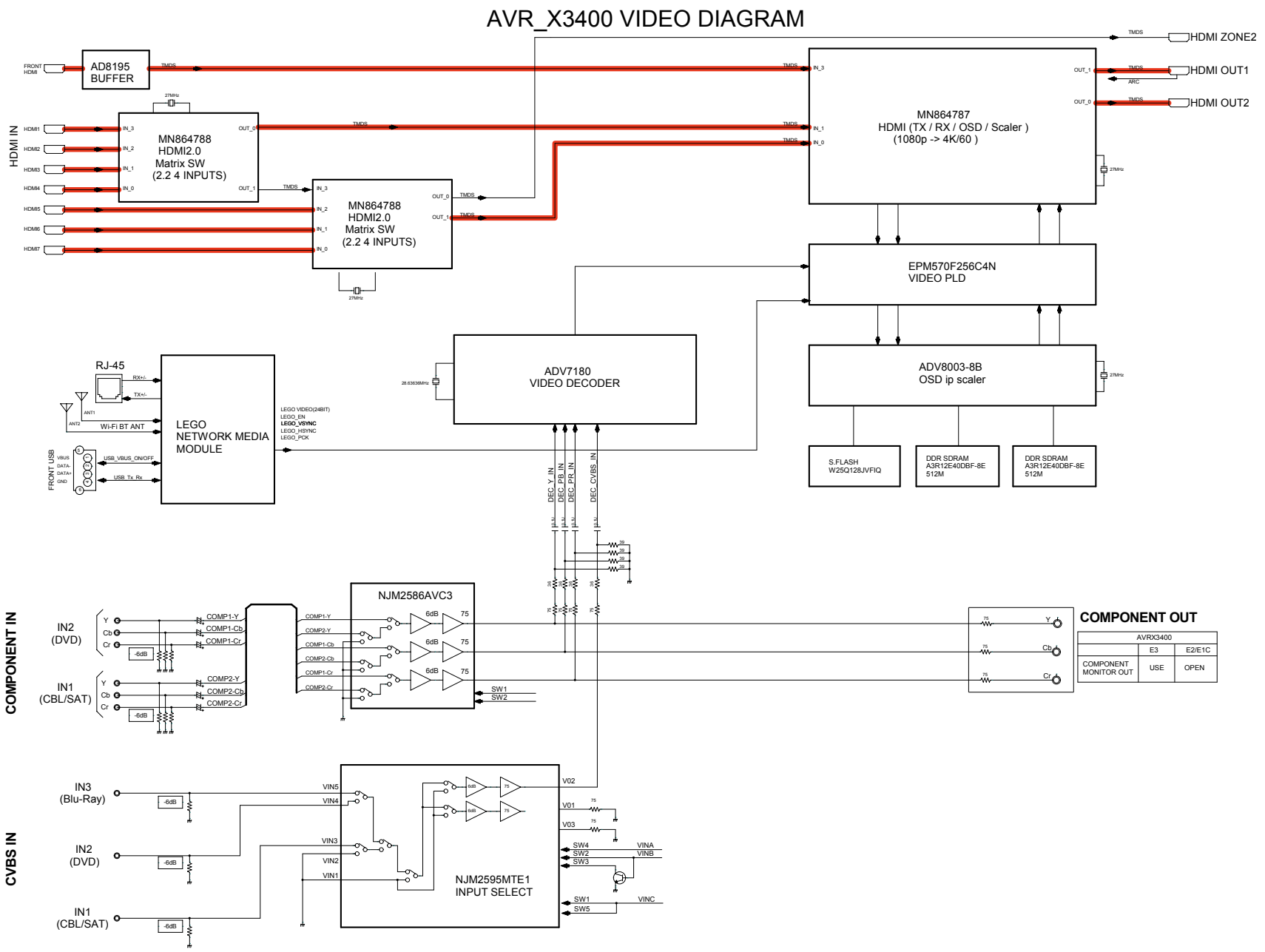

AVR_X3400 VIDEO DIAGRAM
AD8195 BUFFER
MN864788 HDMI2.0 Matrix SW (2.2 4 INPUTS)
MN864788 HDMI2.0 Matrix SW (2.2 4 INPUTS)
MN864787 HDMI (TX / RX / OSD / Scaler) (1080p -> 4K/60)
EPM570F256C4N VIDEO PLD
ADV7180 VIDEO DECODER
ADV8003-8B OSD ip scaler
LEGO NETWORK MEDIA MODULE
S.FLASH W25Q128JVFIQ
DDR SDRAM A3R12E40DBF-8E 512M
DDR SDRAM A3R12E40DBF-8E 512M
NJM2586AVC3
NJM2595MTE1 INPUT SELECT
HDMI ZONE2
HDMI OUT1
HDMI OUT2
HDMI IN
COMPONENT IN
CVBS IN
IN2 (DVD)
IN1 (CBL/SAT)
IN3 (Blu-Ray)
COMPONENT OUT
AVRX3400
E3
E2/E1C
COMPONENT MONITOR OUT
USE
OPEN

fig.12

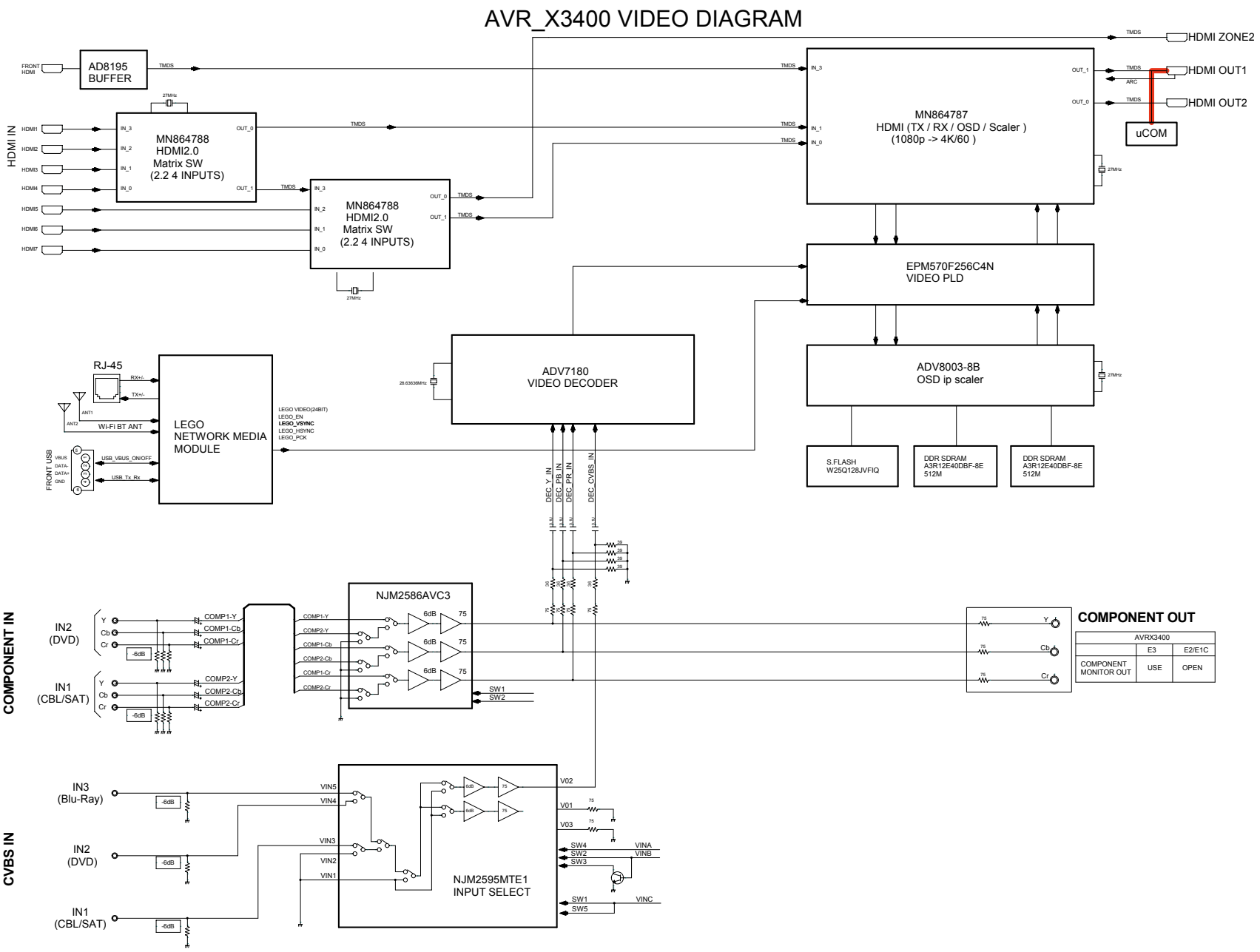

AVR_X3400 VIDEO DIAGRAM
HDMI IN
COMPONENT IN
CVBS IN
AD8195 BUFFER
MN864788 HDMI2.0 Matrix SW (2.2 4 INPUTS)
MN864788 HDMI2.0 Matrix SW (2.2 4 INPUTS)
MN864787 HDMI (TX / RX / OSD / Scaler) (1080p -> 4K/60)
HDMI ZONE2
HDMI OUT1
HDMI OUT2
uCOM
EPM570F256C4N VIDEO PLD
ADV7180 VIDEO DECODER
ADV8003-8B OSD ip scaler
S.FLASH W25Q128JVFIQ
DDR SDRAM A3R12E40DBF-8E 512M
DDR SDRAM A3R12E40DBF-8E 512M
RJ-45
LEGO NETWORK MEDIA MODULE
Wi-Fi BT ANT
FRONT USB
NJM2586AVC3
NJM2595MTE1 INPUT SELECT
IN2 (DVD)
IN1 (CBL/SAT)
IN3 (Blu-Ray)
COMPONENT OUT
AVRX3400
E3
E2/E1C
COMPONENT MONITOR OUT
USE
OPEN

fig.13a

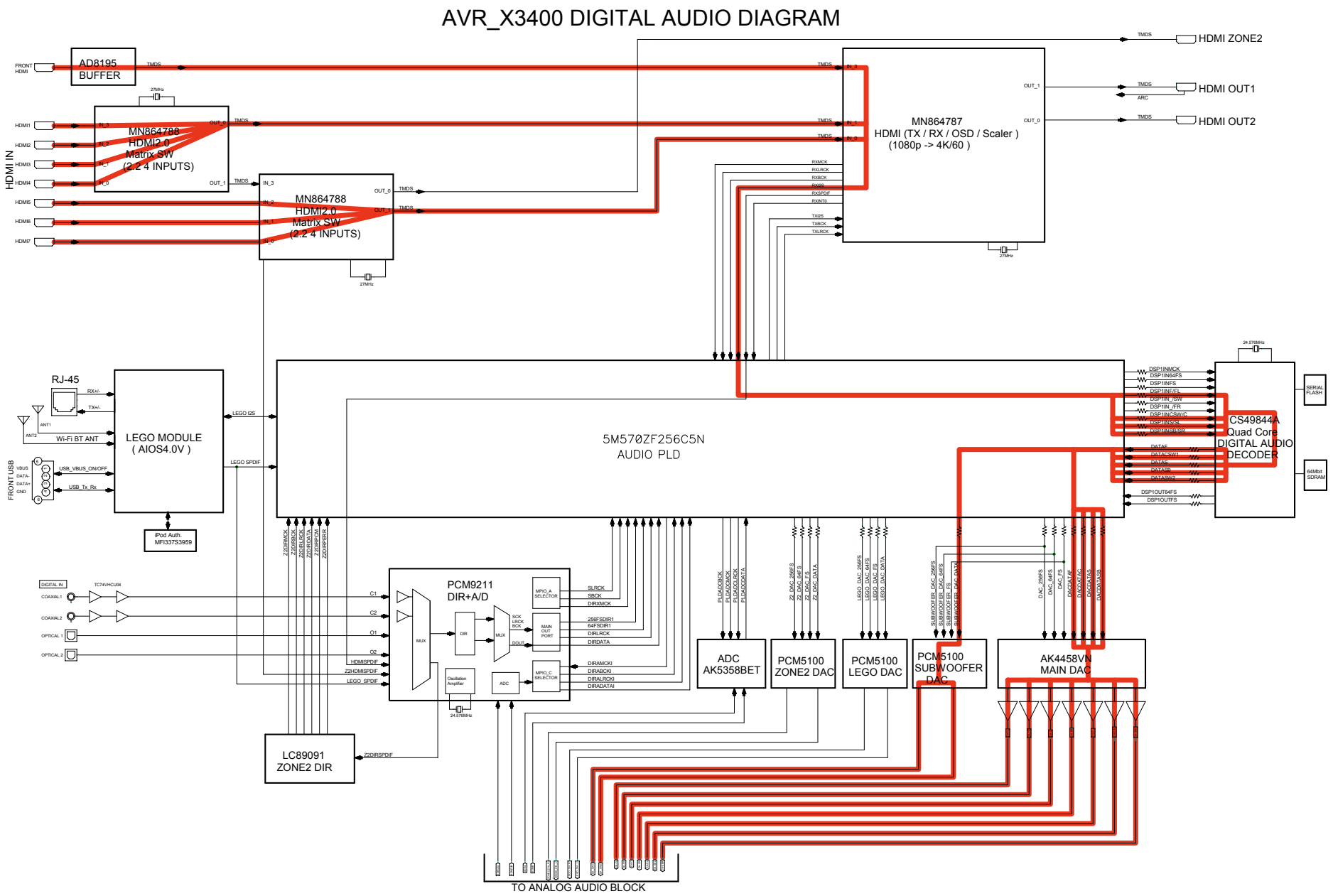

AVR_X3400 DIGITAL AUDIO DIAGRAM
AD8195 BUFFER
MN864786 HDMI2.0 Matrix SW (2.2 4 INPUTS)
MN864788 HDMI2.0 Matrix SW (2.2 4 INPUTS)
MN864787 HDMI (TX / RX / OSD / Scaler) (1080p -> 4K/60)
HDMI ZONE2
HDMI OUT1
HDMI OUT2
HDMI IN
RJ-45
Wi-Fi BT ANT
LEGO MODULE (AIOS4.0V)
iPod Auth. MFi337S3959
FRONT USB
5M570ZF256C5N AUDIO PLD
CS49844A Quad Core DIGITAL AUDIO DECODER
PCM9211 DIR+A/D
LC89091 ZONE2 DIR
ADC AK5358BET
PCM5100 ZONE2 DAC
PCM5100 LEGO DAC
PCM5100 SUBWOOFER DAC
AK4458VN MAIN DAC
TO ANALOG AUDIO BLOCK

fig.13b

AVR_X3400 ANALOG AUDIO DIAGRAM

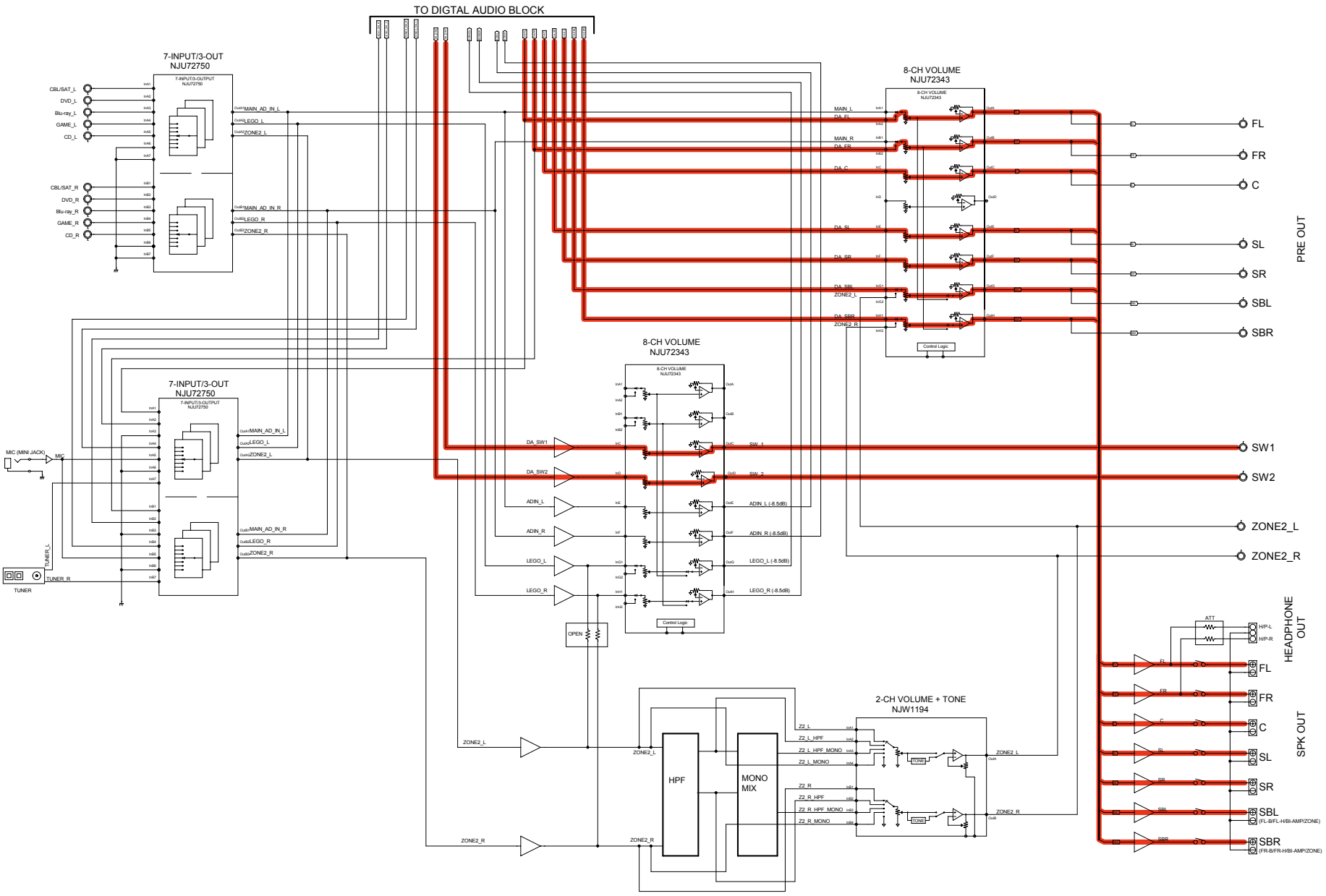


fig.14

AVR_X3400 DIGITAL AUDIO DIAGRAM

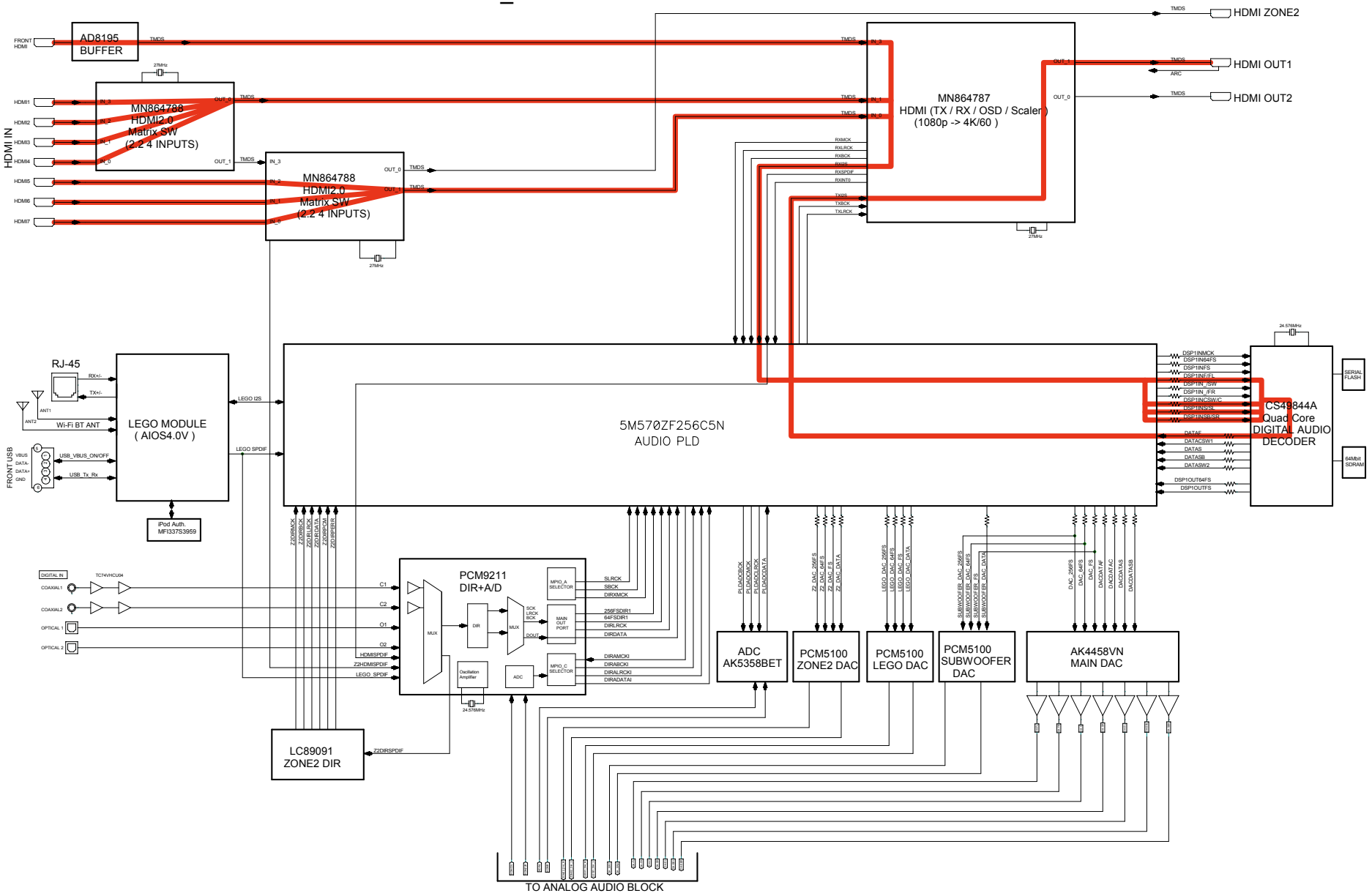
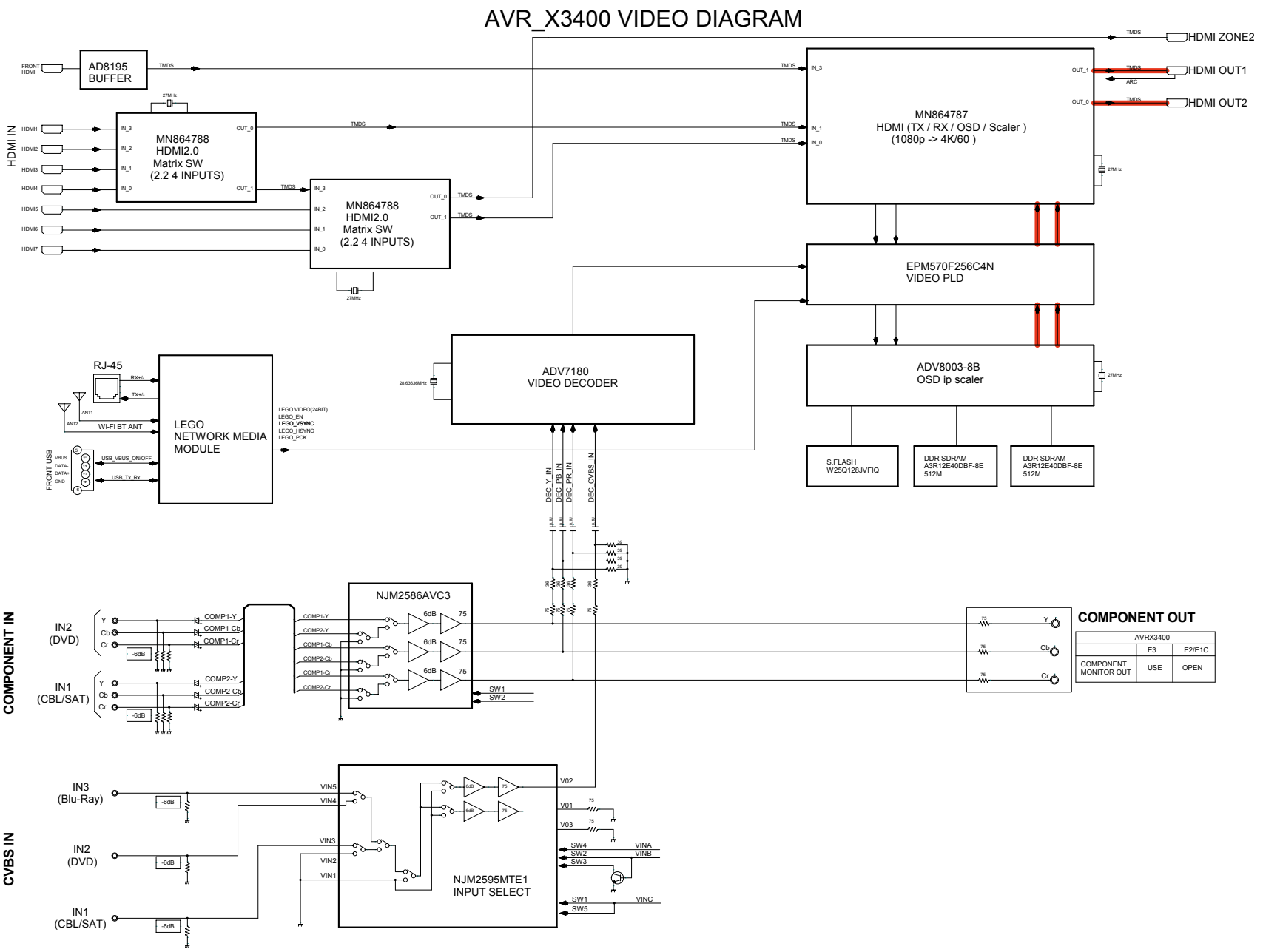


fig.15


AVR_X3400 VIDEO DIAGRAM
AD8195 BUFFER
MN864788 HDMI2.0 Matrix SW (2.2 4 INPUTS)
MN864788 HDMI2.0 Matrix SW (2.2 4 INPUTS)
MN864787 HDMI (TX / RX / OSD / Scaler) (1080p -> 4K/60)
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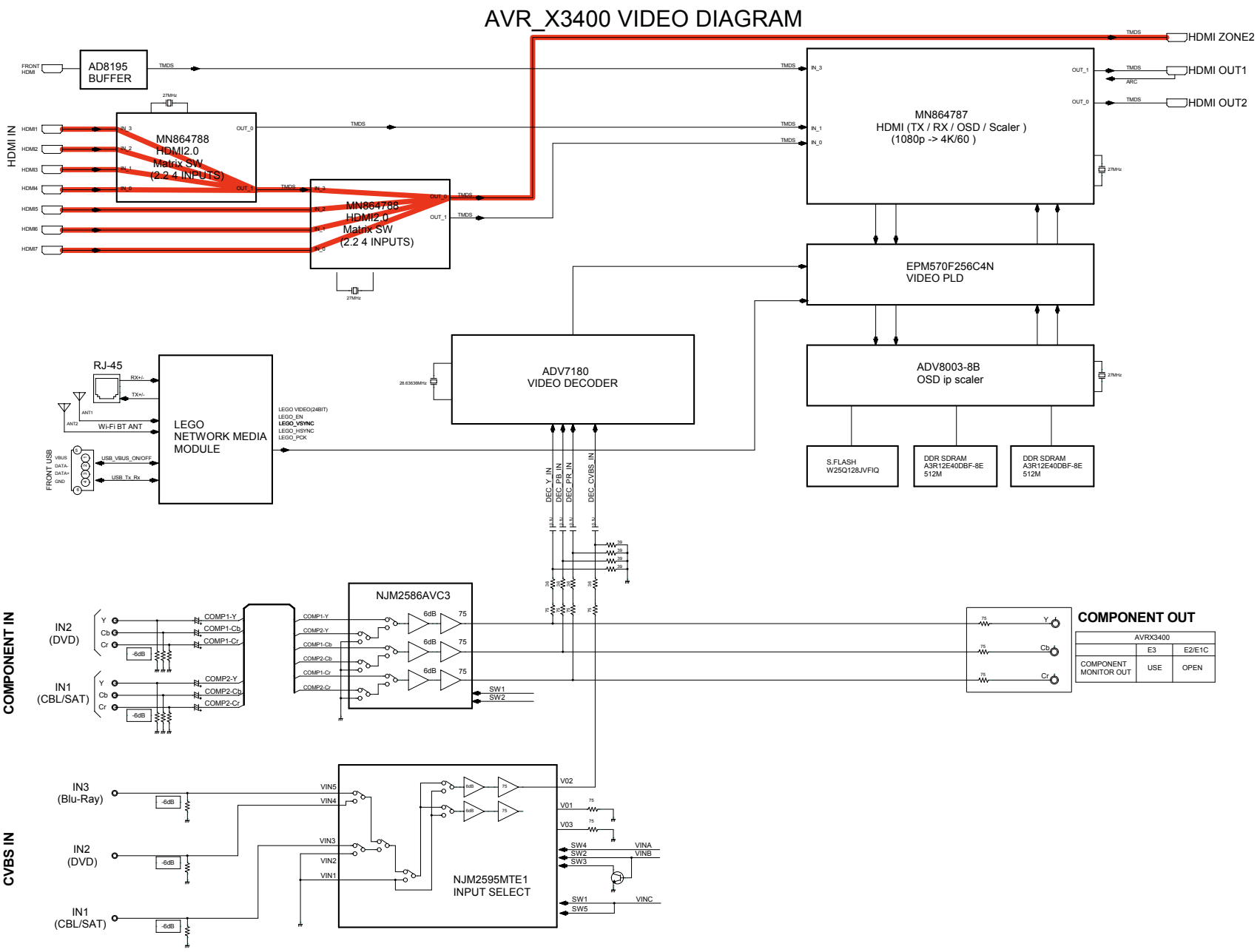
NJM2586AVC3
NJM2595MTE1 INPUT SELECT
HDMI ZONE2
HDMI OUT1
HDMI OUT2
HDMI IN
COMPONENT IN
CVBS IN
IN2 (DVD)
IN1 (CBL/SAT)
IN3 (Blu-Ray)
COMPONENT OUT
AVRX3400
E3
E2/E1C
COMPONENT MONITOR OUT
USE
OPEN

fig.16



COMPONENT OUT

AVRX3400		
	E3	E2/E1C
COMPONENT MONITOR OUT	USE	OPEN

JIG FOR SERVICING

Use the following jigs (extension cable kit) when repairing the PCBs.
Order with your dealer for the jigs your dealer if necessary.

CAUTION : Incorrect connections may cause malfunction.

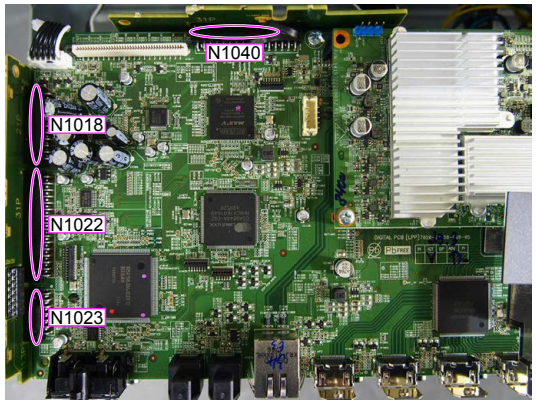
Connection of Jig for DIGITAL PCB
---Items to Be Prepared---

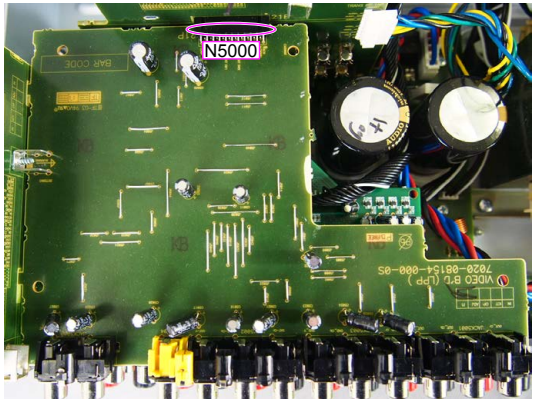
8U-110084S : EXTENSION UNIT KIT	:	1 Set
8U-110136S : EXTENSION UNIT KIT	:	1 Set
Insulation sheet (Not supplied)	:	3 sheet
Ground lead (Not supplied)	:	2 pc

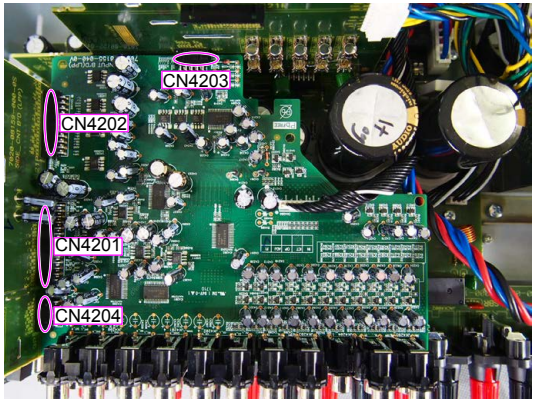
-Proceeding-

(1) Remove the screws.

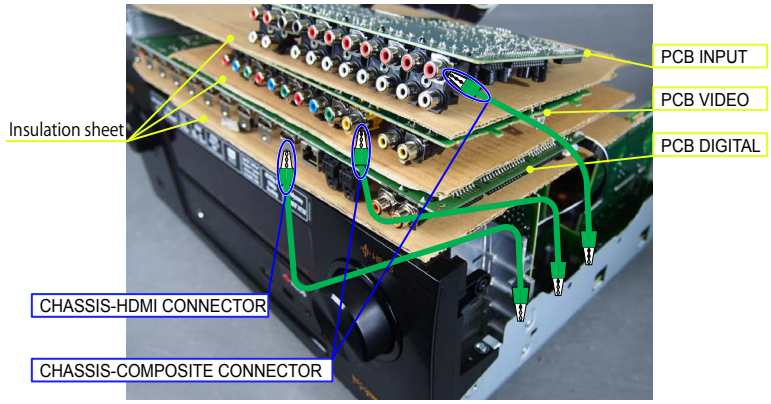
(2) Remove the connector PCB.



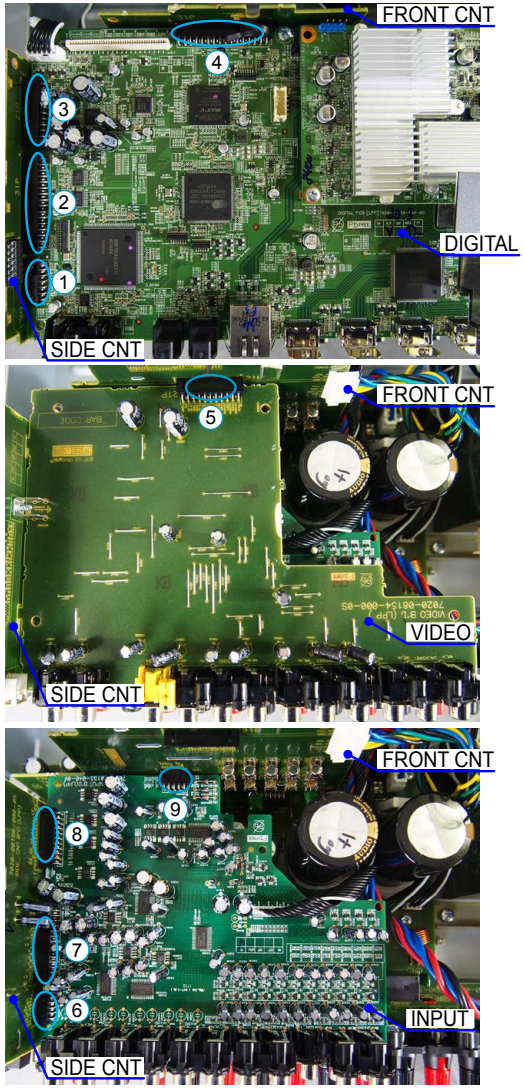




(3) Remove the DIGITAL PCB from the chassis and turn it over.
Place an insulation sheet larger than the PCB underneath the DIGITAL PCB.
※ Connect the earth of the PCB to the chassis using an earth wire, etc.



(4) Connect the expansion cables.



Board-to-Board Connections

No.	Pin	Ref. No.	PCB		Ref. No.	PCB
①	13pin	CP1023	SIDE CNT	⟷	N1023	DIGITAL
②	31pin	CP1017	SIDE CNT	⟷	N1022	DIGITAL
③	21pin	CP1018	SIDE CNT	⟷	N1018	DIGITAL
④	31pin	CP1039	FRONT CNT	⟷	N1040	DIGITAL
⑤	21pin	CP5000	FRONT CNT	⟷	CN5000	VIDEO
⑥	9pin	CP4205	SIDE CNT	⟷	CN4204	INPUT
⑦	27pin	CP4206	SIDE CNT	⟷	CN4201	INPUT
⑧	21pin	CP4202	SIDE CNT	⟷	CN4202	INPUT
⑨	9pin	CP4203	FRONT CNT	⟷	CN4203	INPUT

Adjusting Idling Current

1. Preparation

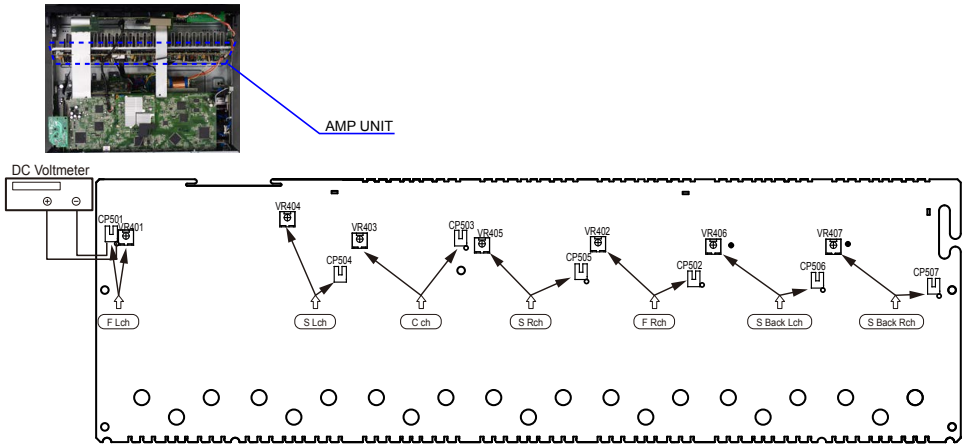
(1) Prepare a DC voltmeter.
(2) Place the unit under normal usage conditions, away from highly ventilated areas such as next to an air conditioning machine or electric fan.
The set requires an ambient temperature of 15℃ to 30℃ and standard humidity.
(3) Settings of This Unit
• POWER (Power source switch) STANDBY
• SPEAKER (Speaker terminal) No load
(Do not connect equipment such as speakers or dummy resistors.)

2. Adjustment Procedure

(1) Remove the top cover and turn **VR411**((ALL Channel) of the AMP PCB counterclockwise(↺) as far as possible.
(2) Connect the DC Voltmeter to the test points.

FRONT-Lch	: CP501	: VR411
FRONT-Rch	: CP502	: VR412
CENTER ch	: CP503	: VR413
SURROUND-Lch	: CP504	: VR414
SURROUND-Rch	: CP505	: VR415
SURROUND-BACK Lch	: CP506	: VR416
SURROUND-BACK Rch	: CP507	: VR417

(3) Connect the power cord to an outlet. Next, press the power button to turn on the power.
(4) 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 : MCH STEREO
FUNCTION : DVD
(5) Turn **VR411** clockwise (↻) and adjust the voltage of the test point to "**8.0mV ± 0.5mV DC**" within 2 minutes.
(6) Check whether the voltage is within the range "**8.0mV ± 2mV DC**" 10 minutes after adjustment.
(7) 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

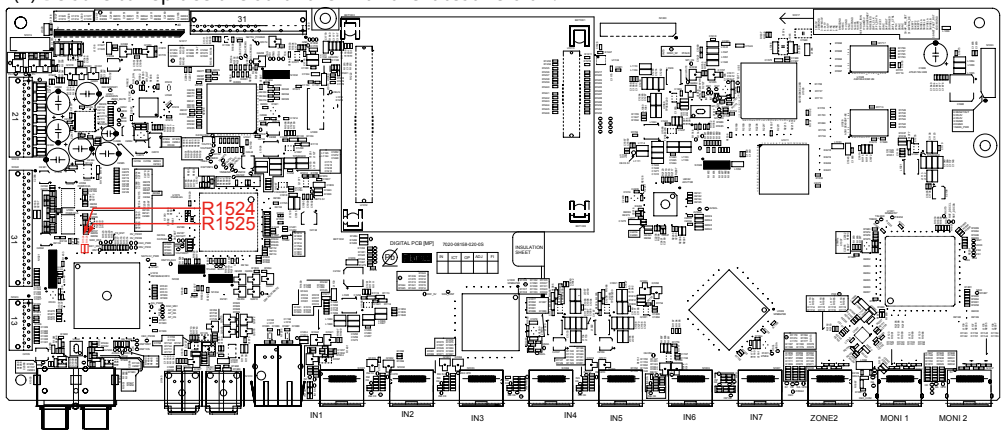
PROCEDURE AFTER REPLACING THE PCB.

The procedure after replacing the printed circuit boards is as follows.
(1) Change the resistor for setting the region.

Model Area	DIGITAL PCB	
	R1524	R1525
North America (E3)	OPEN	0
Europe (E2)	0	OPEN
China (E1C)	10k	10k

See the PCB below.

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



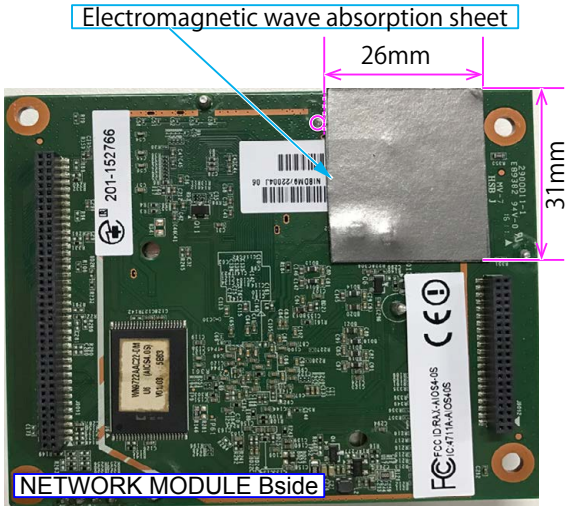
PROCEDURE AFTER REPLACING THE U-COM, ETC.

The procedure after replacing the u-COM (microprocessor), 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	U1018	R5F564MJCDFC	B	SOFTWARE : Main
DIGITAL	U1025	MX25L6406EM2I-12G 64M	B	SOFTWARE : DSP ROM
DIGITAL	U1027	W25Q128JVFIQ	B	SOFTWARE : GUI ROM
DIGITAL	U1011	EPM570F256C4N	C	SOFTWARE : VIDEO PLD
DIGITAL	U1041	5M570ZF256C5N	C	SOFTWARE : AUDIO PLD
MODULE	P20	NETWORK MODULE	D, E	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 replace the software with the latest version.
See "3. Update method when the DIGITAL PCB or network module is replaced (Using a USB flash drive)" for information on writing the software.
E : An Electromagnetic wave absorption sheet [HS05-R050] needs to be attached to the back of NETWORK MODULE.
If the Electromagnetic wave absorption sheet [HS05-R050] has been removed, replace with a new sheet.
Service product numbers are set, for details see the parts list [REF No.52].
Refer to the figure below for details of the attachment position.



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
AVR-X3400H	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
AVR-X3400HE3	North America (E3)	Product ID : 000100990100	DPMS_AVR-X3400HALL_LEGO_xxxx.zip	heos_40.prod_x.xxx.xx.zip
AVR-X3400HE2	Europe (E2)	Product ID : 000100990200		
AVR-X3400HE1C	China (E1C)	Product ID : 000100990500		

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.

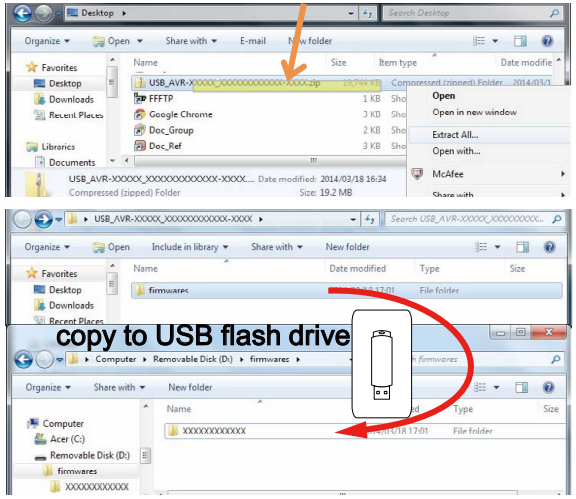
NOTE :

- 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

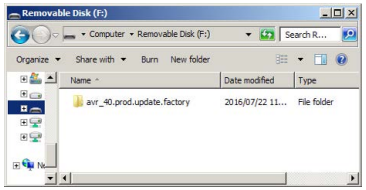
DIGITAL PCB or network module is replaced onto the USB flash drive in the following structure.

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.

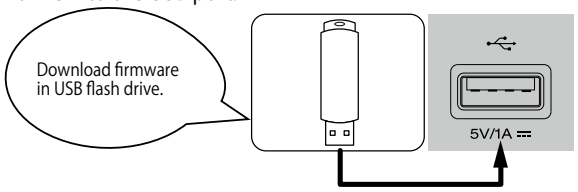
NOTE :
- Remove the LAN cable from this unit when updating.
  (Do not connect to a wired or wireless network.)
- The GUI menu setting details and image quality adjustment setting details are initialized when Firmware Factory Restore is performed. Therefore, take a note of the setting details beforehand and reconfigure the settings after update.

(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.
※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 "**TUNER PRESET CH-**" and "**DIMMER**" simultaneously, press the power button to turn on the power.
Display during Firmware Factory Restore

`Restoring FW...`
↓
`Restore▶▶**% **m`
↓
`Completed`

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"

---Cautions on Firmware 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.

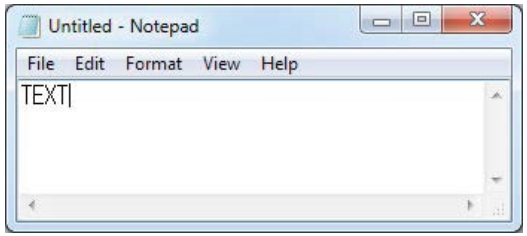
4. Update Method for Service Region Settings

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

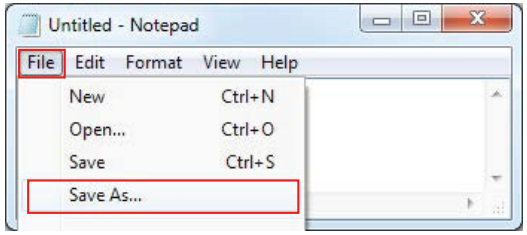
4.1. Creating a Service Region Settings file

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

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

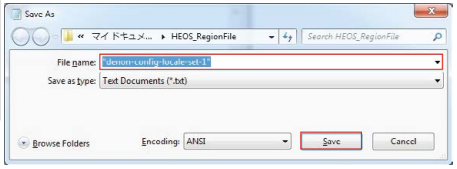


(3) Click "**File**", and then click "**Save As...**".

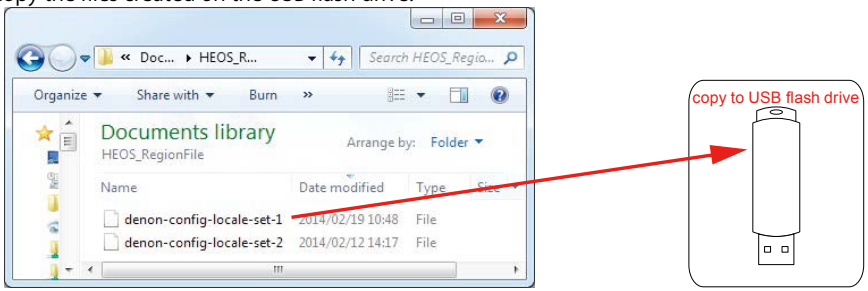


(4) Enter the file name and click the Save button.
NOTE : Enter the file name in double quotation marks. (The file extension is not required.)

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"



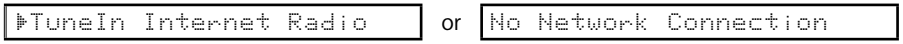
(5) Copy the files created on the USB flash drive.



4.2. Starting Service Region Settings

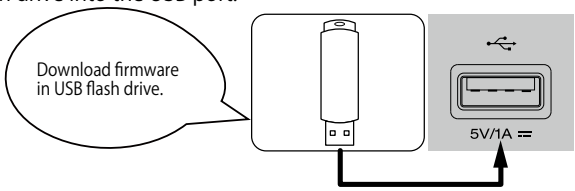
NOTE :
- Remove the LAN cable from this unit when updating.
  (Do not connect to a wired or wireless network.)
- We recommend a USB memory device that has an LED installed.

(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

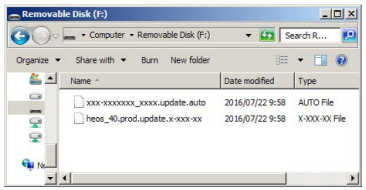
5.1. File structure on USB flash drive

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_AVR-X3400HALL_LEGO_xxxx.zip Product ID : 000100990100	heos_40.prod_x.xxx.xx.zip
Europe (E2)	DPMS_AVR-X3400HALL_LEGO_xxxx.zip Product ID : 000100990200	
China (E1C)	DPMS_AVR-X3400HALL_LEGO_xxxx.zip Product ID : 000100990500	

USB flash drive root
+ AVR-X3400Hxx_xxxx.update.auto
+ heos_40.prod.update.x-xxx-xx



5.2. Start normal update

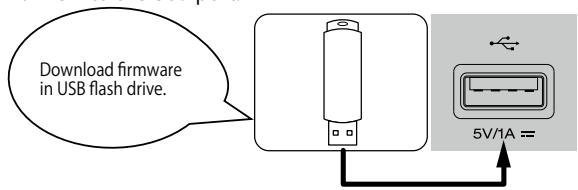
NOTE :
- Remove the LAN cable from this unit when updating.
  (Do not connect to a wired or wireless network.)

(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"

---Cautions on Firmware 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.
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. Normal Firmware Update Method from OTA

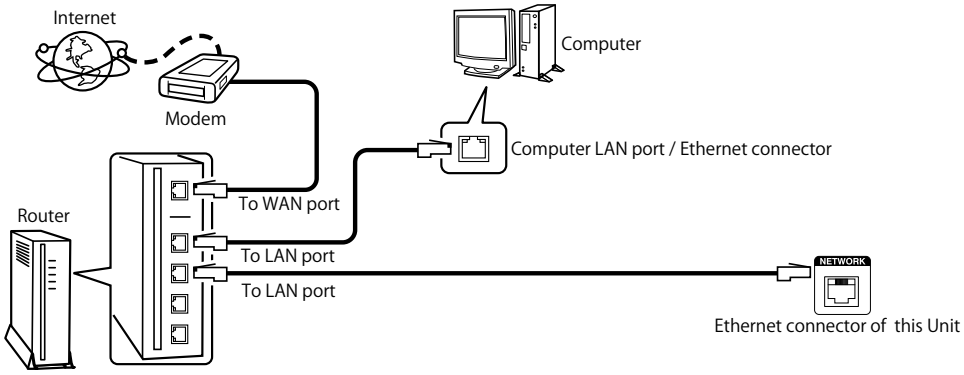
Download the latest firmware from our website and update the firmware.

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.

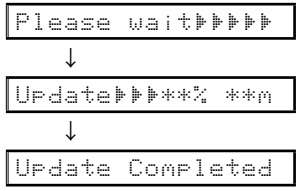
(1) Press the "**SETUP**" button on the remote control to display the GUI menu.

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

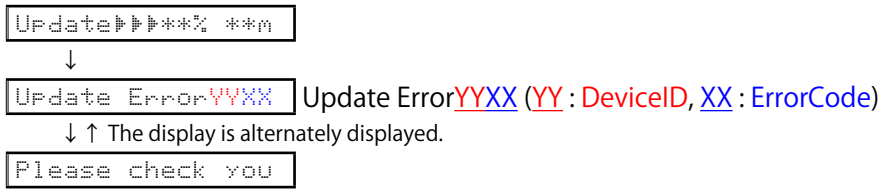
---Cautions on Firmware Update---

- 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.

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).



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 : AVR-S730H/S930H/X1400H/X2400H/X3400H
13	DSP3 ※ Except : AVR-S730H/S930H/X1400H/X2400H/X3400H
19	DSP4 ※ Except : AVR-S730H/S930H/X1400H/X2400H/X3400H
15	Audio PLD
22	Video PLD ※ Except : AVR-S730H/S930H/X1400H/X2400H
2A	GUI
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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