DENON Service Manual Ver. 1

INTEGRATED NETWORK AV RECEIVER

AVR-X6400H

Click here!

On-line service parts list

http://dmedia.dmglobal.com/Document/DocumentDetails/23542

Online Parts List (P5 to P7)

WEB owner's manual (Release schedule)

http://manuals.denon.com/AVRX6400H/NA/EN/index.php (July 2017)

http://manuals.denon.com/AVRX6400H/EU/EN/index.php (July 2017)

http://manuals.denon.com/AVRX6400H/AP/ZH/index.php (September 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.

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.

Caution in servicing
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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

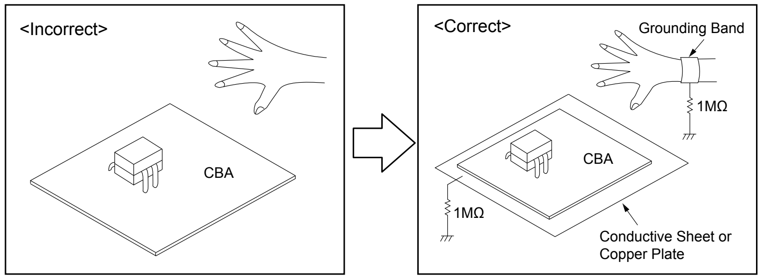
Electrostatic breakdown of the semi-conductors or optical pickup may occur due to a potential difference caused by electrostatic charge during unpacking or repair work.

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 work-bench 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

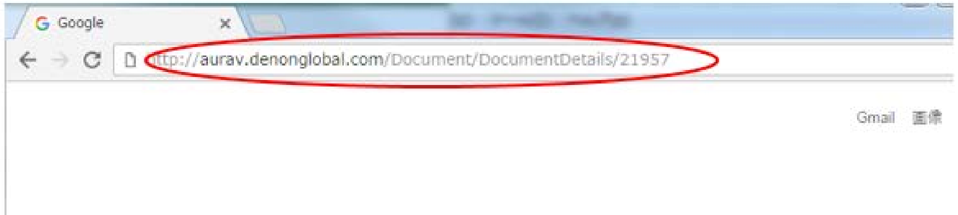


Online Parts List

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.

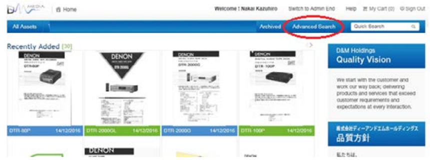
(4) Press the "**Login**" button.

Logging in to New SDI and Accessing the Parts List

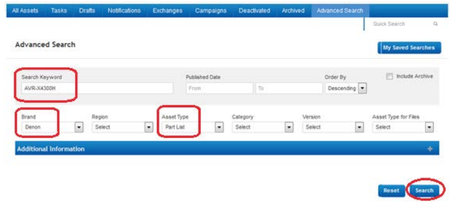
(1) Access New SDI from the URL below.
<http://dmedia.dmglobal.com>

(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.

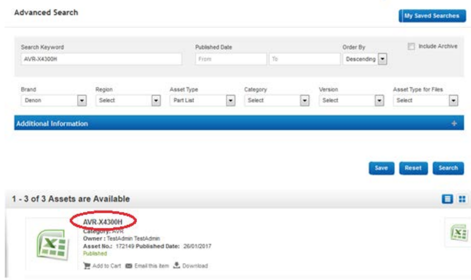
(4) Press the "**Login**" button.
(5) When the Home screen is displayed, click "**Advanced Search**".



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

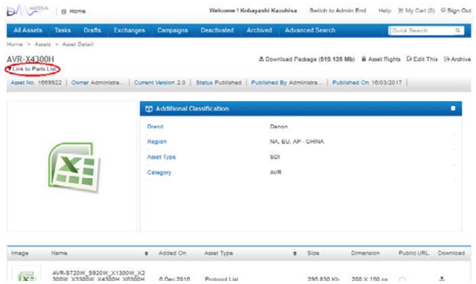


(7) Click the model name when the search results are displayed.



Accessing the Part List from the Model Asset Screen

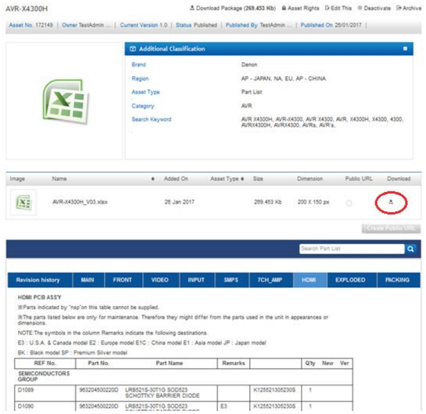
(1) Display Model Asset from New SDI.
(2) Click the section displayed as ▼ Link to Part Lists under the model name.



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

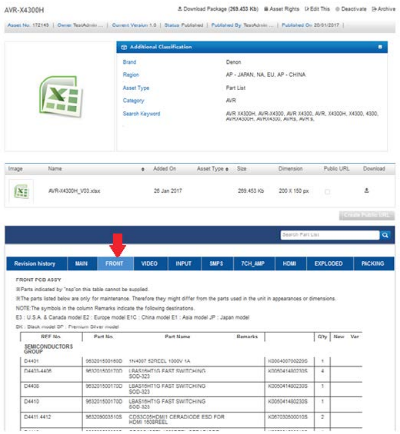
Downloading the Parts List as an Excel File

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



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.

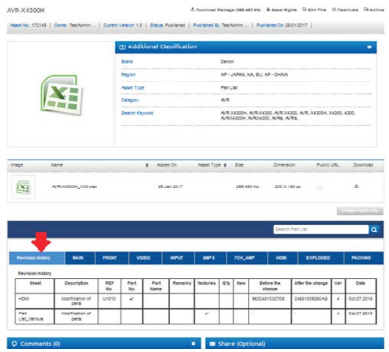


Left and right arrow icons are displayed if the circuit board name does not fit in the blue bar.
Click these icons to display a different part of the name when necessary.

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

Revision History

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



The following details are displayed.

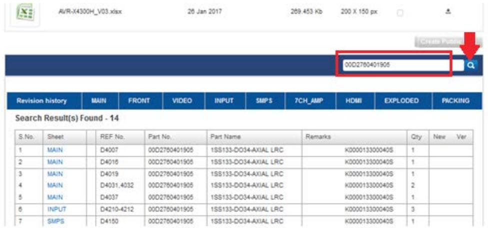
Sheet : Name of the changed sheet
Description : Description of the changes
Remarks : Destination, color information
Factories : Factory number
Ver : Version number after revision if changes were made to the parts list
Date : Date of changes

Searching Part Numbers or Ref. Numbers

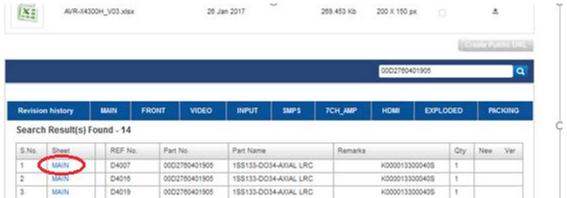
You can search a Parts List for part numbers or Ref. numbers.

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

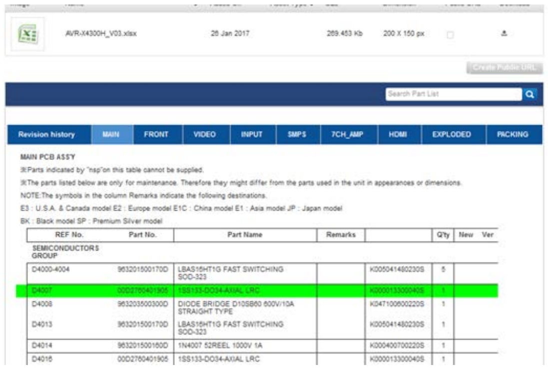
(2) The search results are displayed.
The name of the sheet in which the search part is used and the part's line are displayed.



(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.



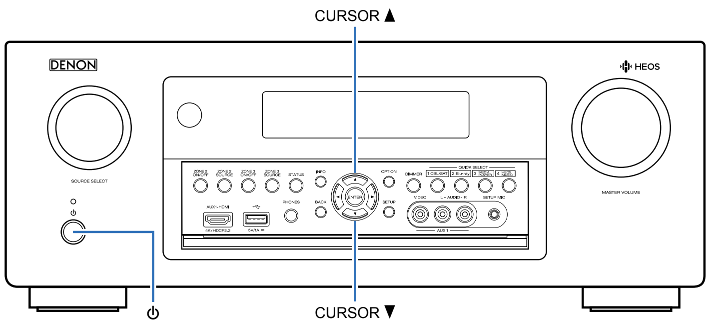
CAUTION IN SERVICING.

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 "**CURSOR ▲**" and "**CURSOR ▼**" 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
(See JIG FOR SERVICING)

SCHEMATIC DIAGRAMS

PRINTED CIRCUIT BOARDS

LEVEL DIAGRAM

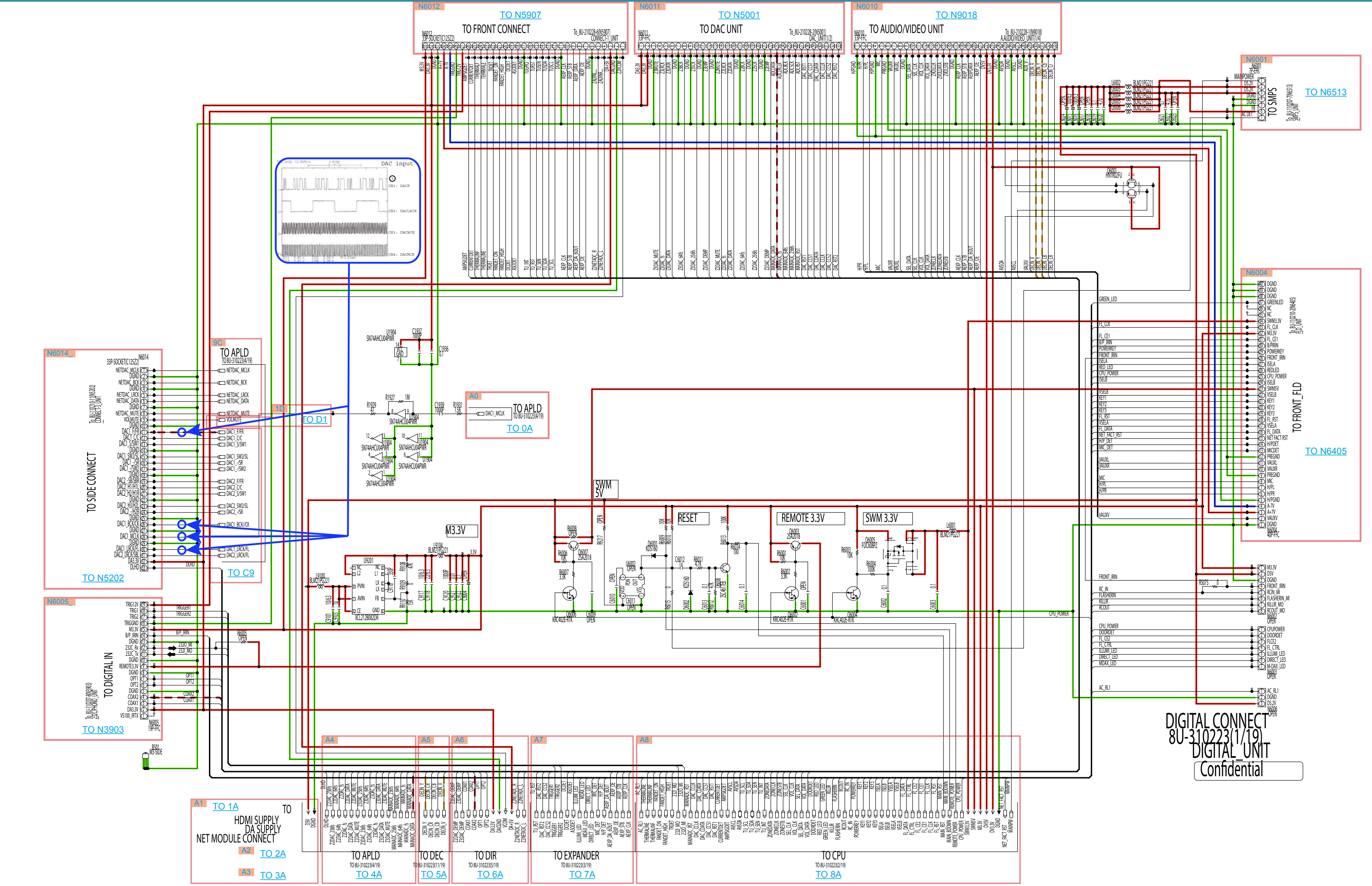
BLOCK DIAGRAM

POWER DIAGRAM

SEMICONDUCTORS

SCH01_DIGITAL CONNECT

All Ref.No. has been described in the parts list are four digits.
But there are less than four digits of printed Ref.No. on the PCB, and they have become four digits after the header by adding "0" in the parts list.



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

Caution in servicing
Electrical
Mechanical
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Updating

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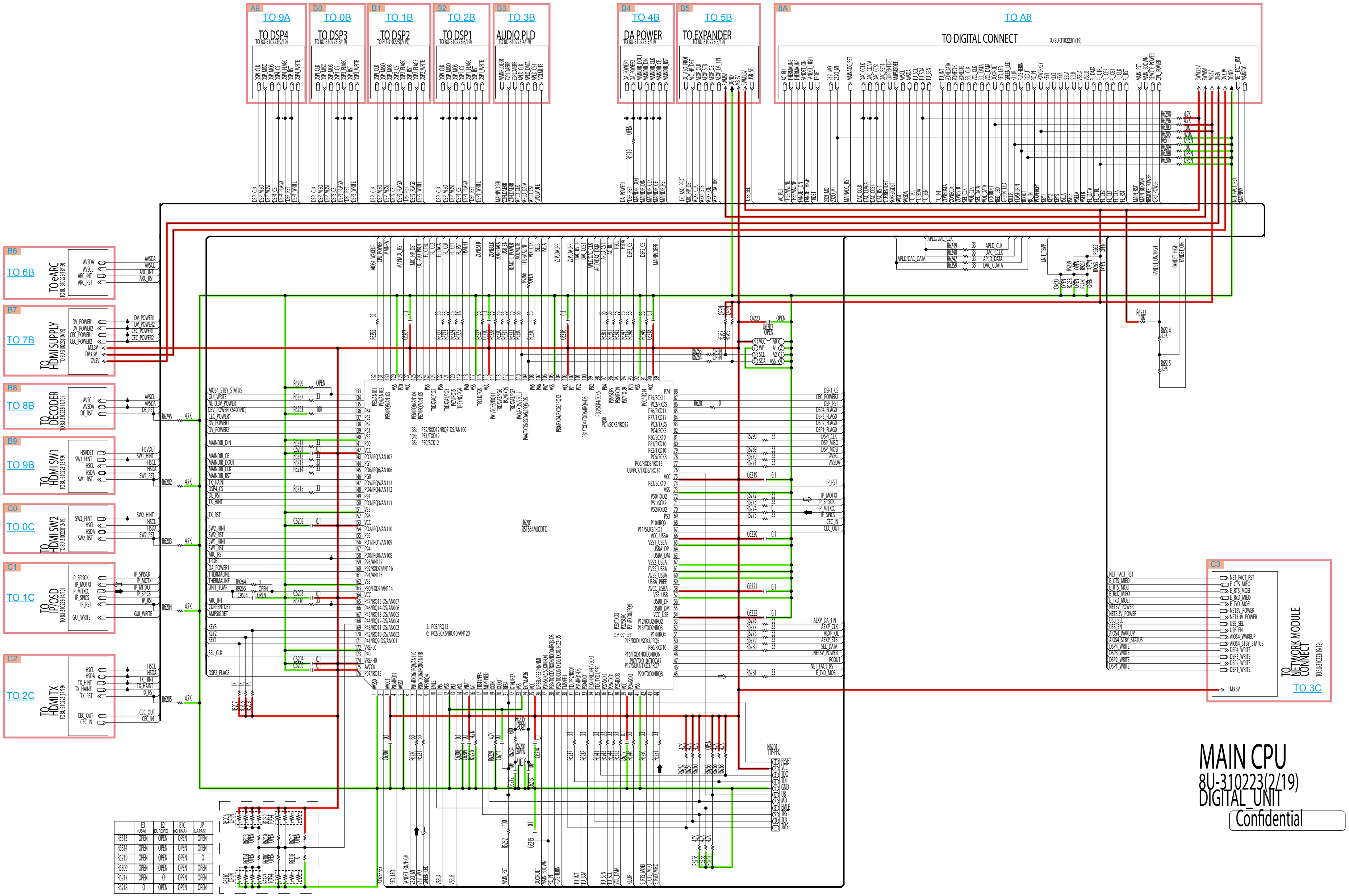

	E3 (USA)	E2 (EUROPE)	E1C (CHINA)	JP (JAPAN)
R6313	OPEN	OPEN	OPEN	OPEN
R6314	OPEN	OPEN	OPEN	OPEN
R6219	OPEN	OPEN	OPEN	0
R6300	OPEN	OPEN	OPEN	OPEN
R6217	OPEN	0	OPEN	OPEN
R6218	0	OPEN	OPEN	OPEN

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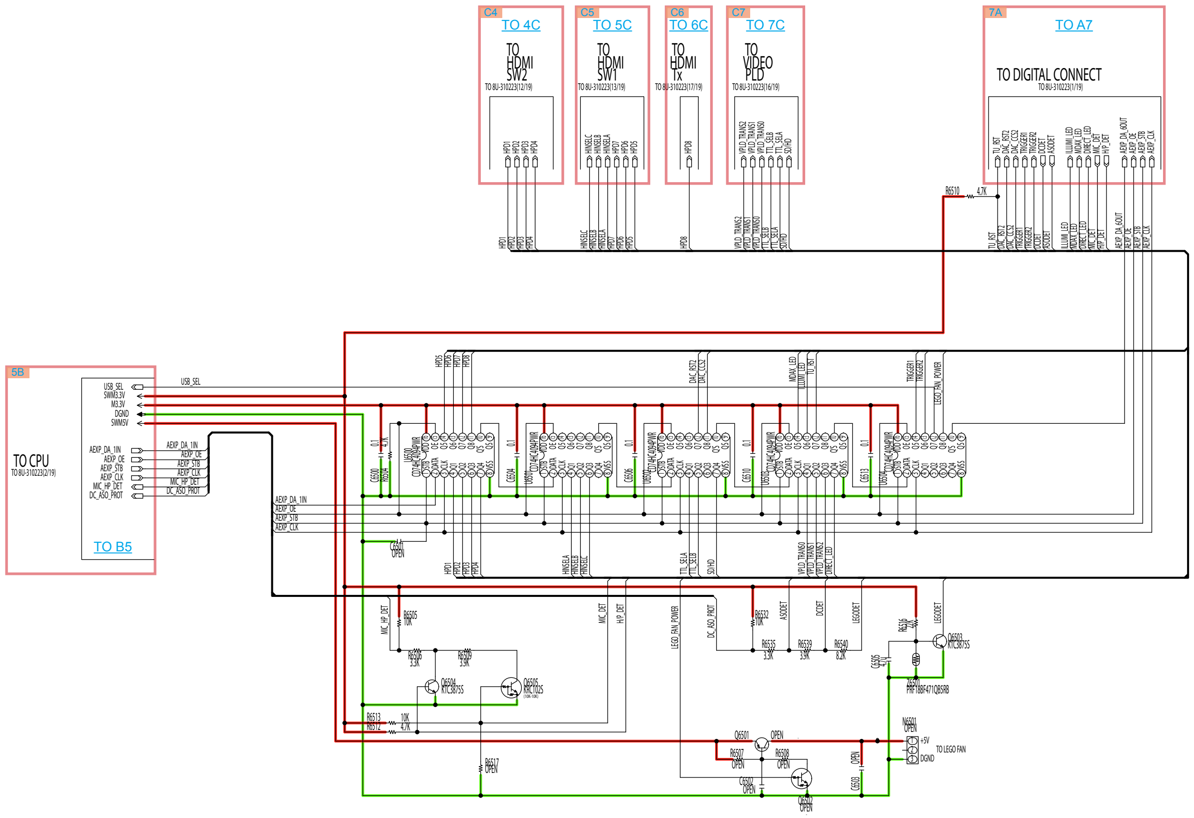

EXPANDER
8U-310223(3/19)
DIGITAL_UNIT
Confidential

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

Caution in servicing
Electrical
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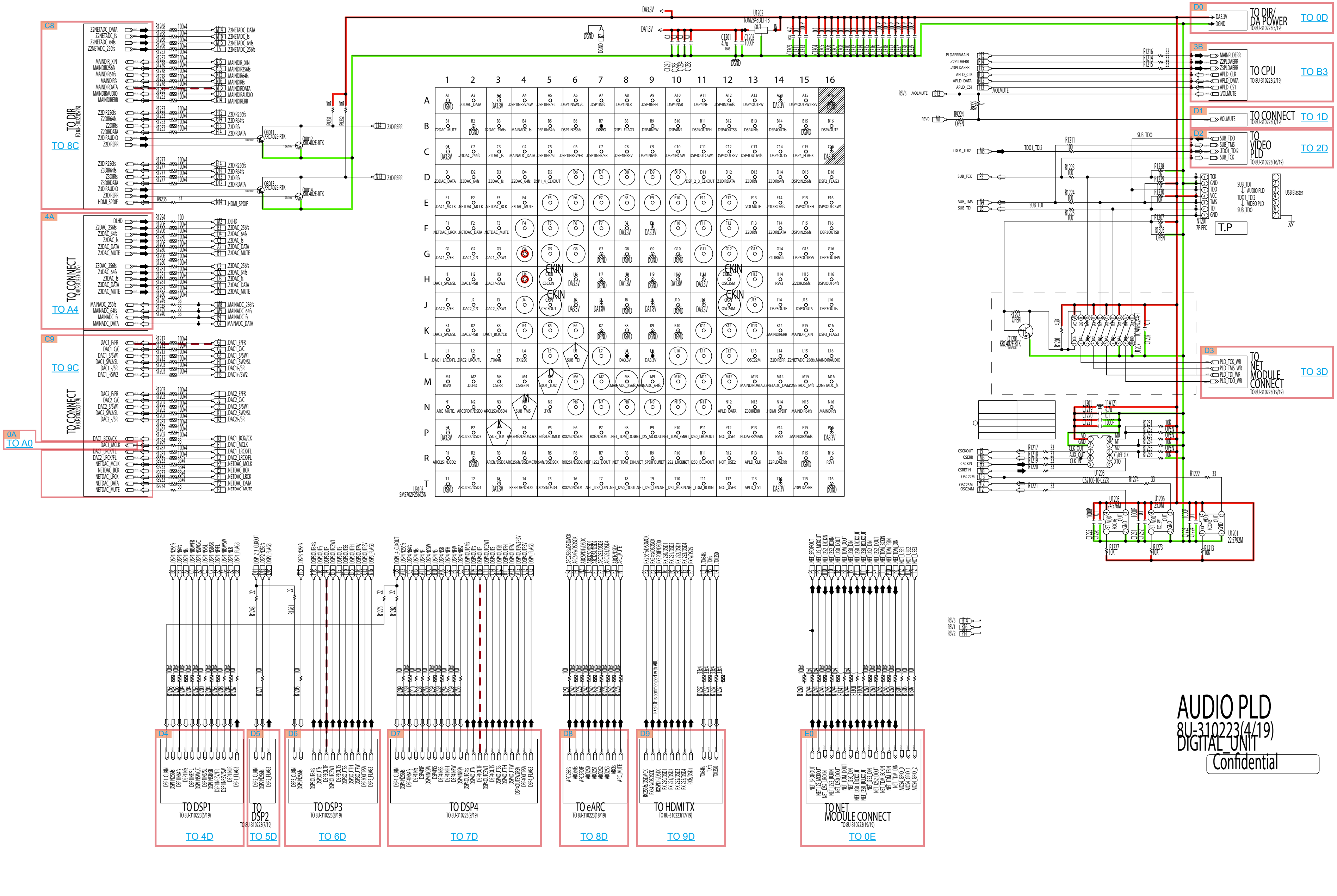
TO DIR
TO 8C
TO CONNECT
TO A4
TO 9C
TO A0
TO DIR/ DA POWER
TO 0D
TO CPU
TO B3
TO CONNECT
TO 1D
TO VIDEO PLD
TO 2D
TO NET MODULE CONNECT
TO 3D
T.P
TO DSP1
TO 4D
TO DSP2
TO 5D
TO DSP3
TO 6D
TO DSP4
TO 7D
TO eARC
TO 8D
TO HDMI TX
TO 9D
TO NET MODULE CONNECT
TO 0E
AUDIO PLD
8U-310223(4/19)
DIGITAL_UNIT
Confidential
GND LINE
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AUDIO SIGNAL
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ANALOG VIDEO
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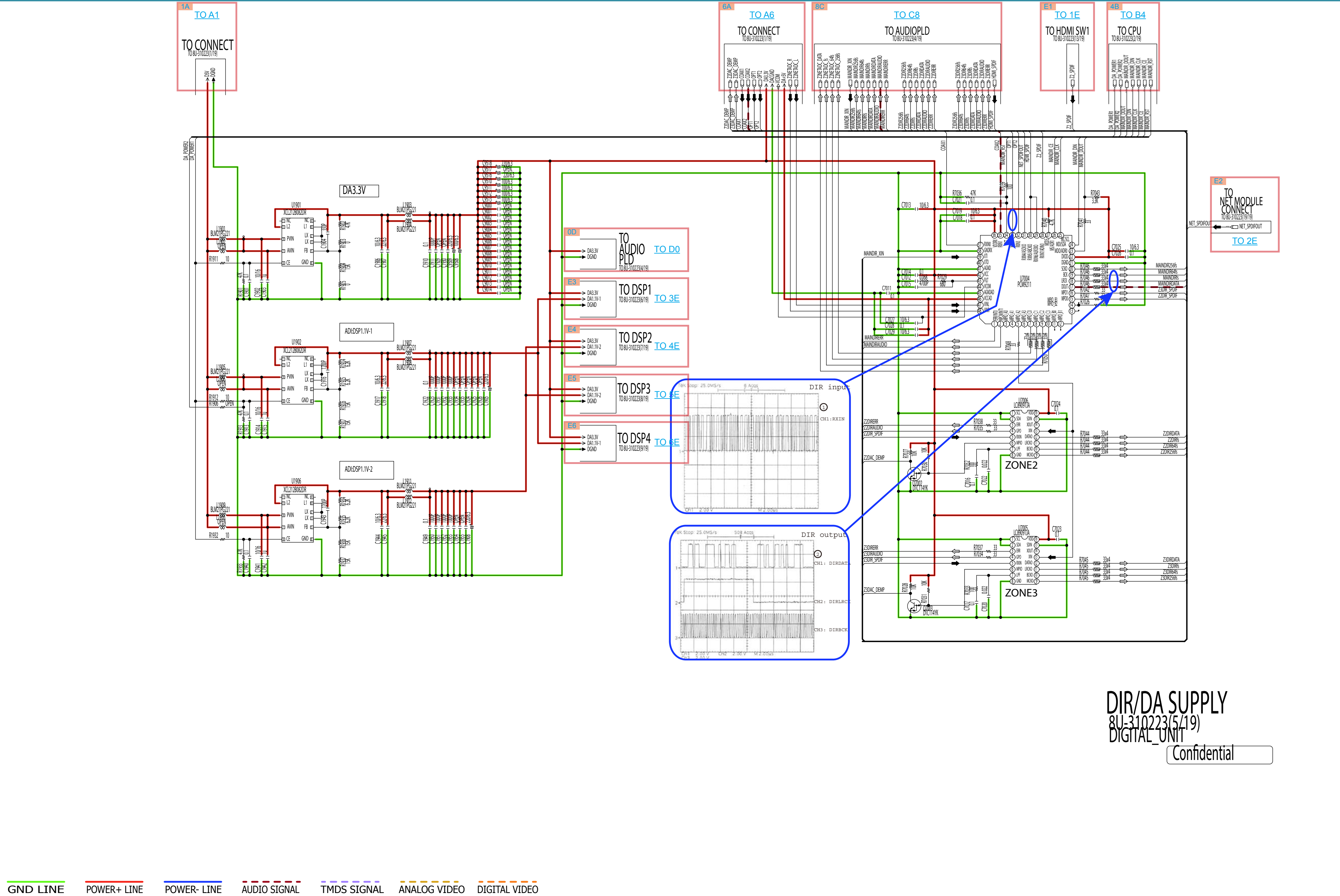

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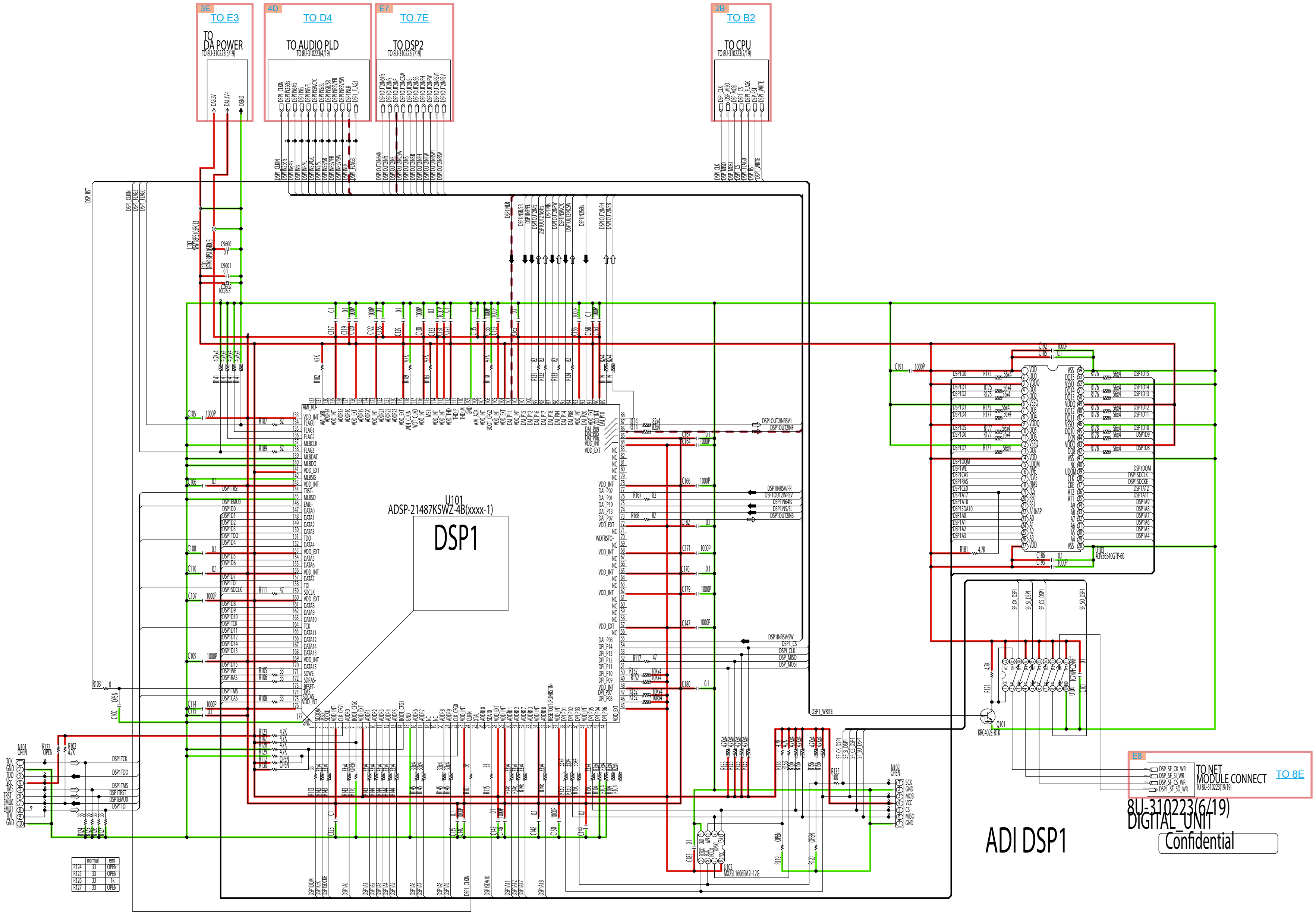

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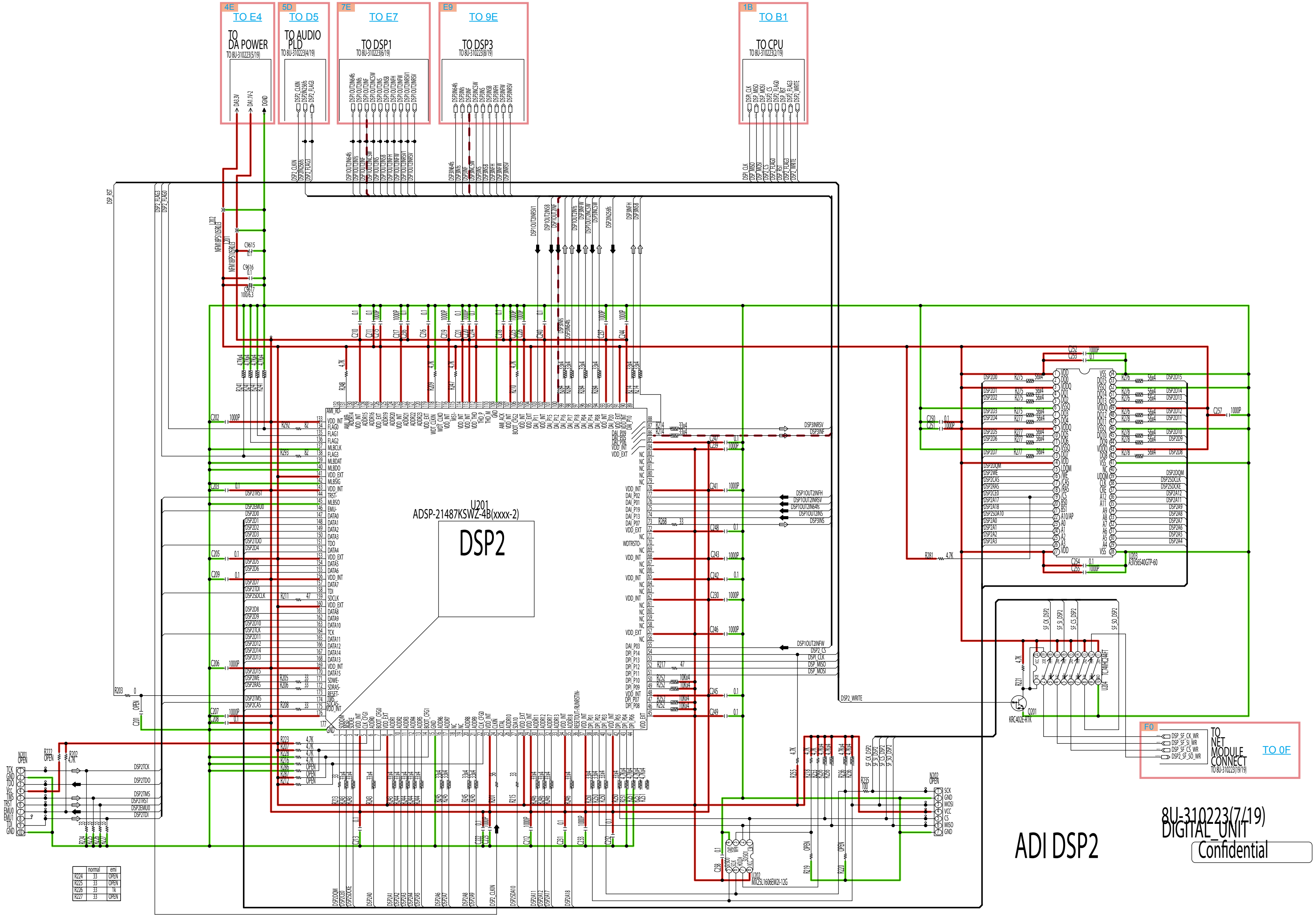

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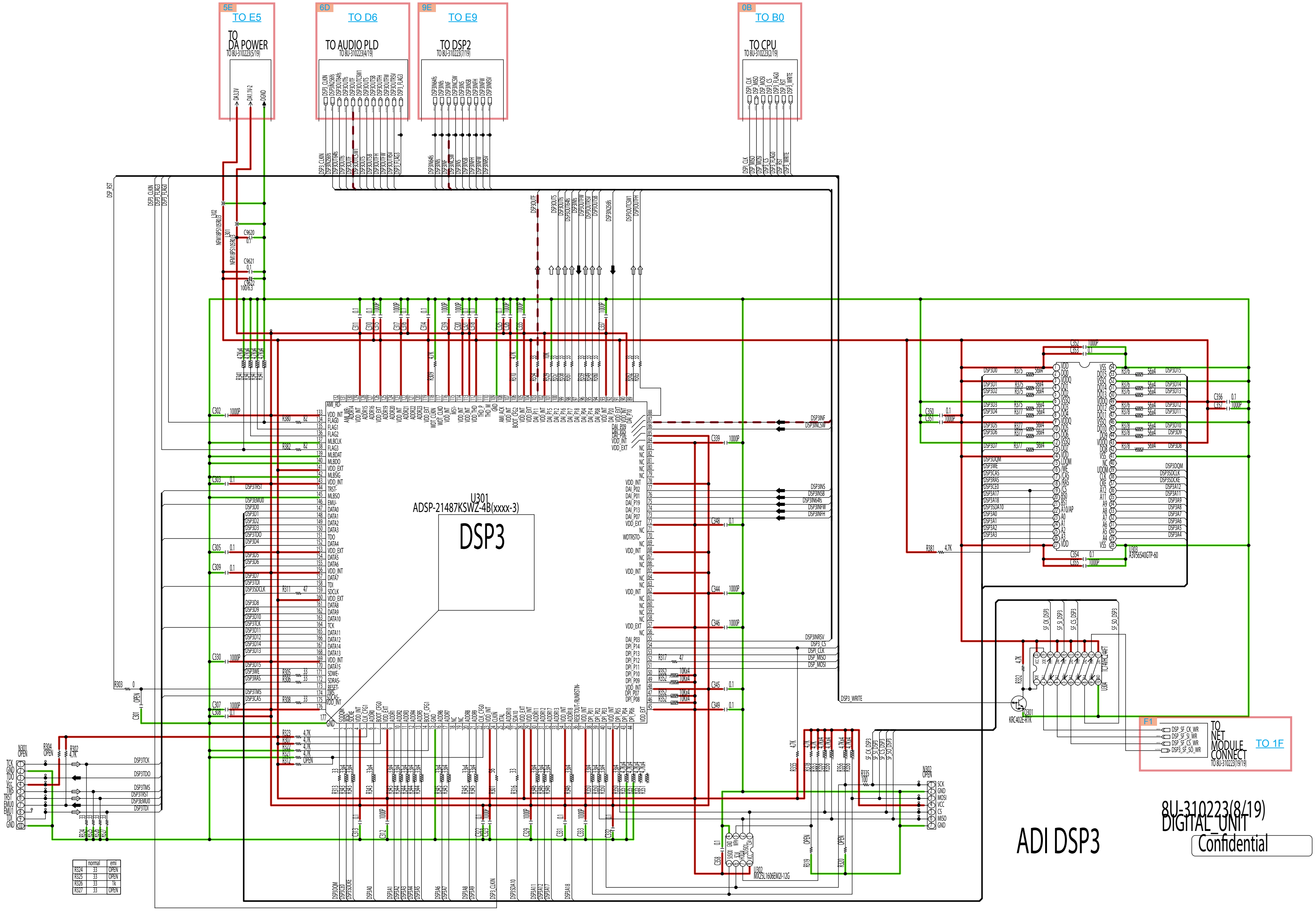

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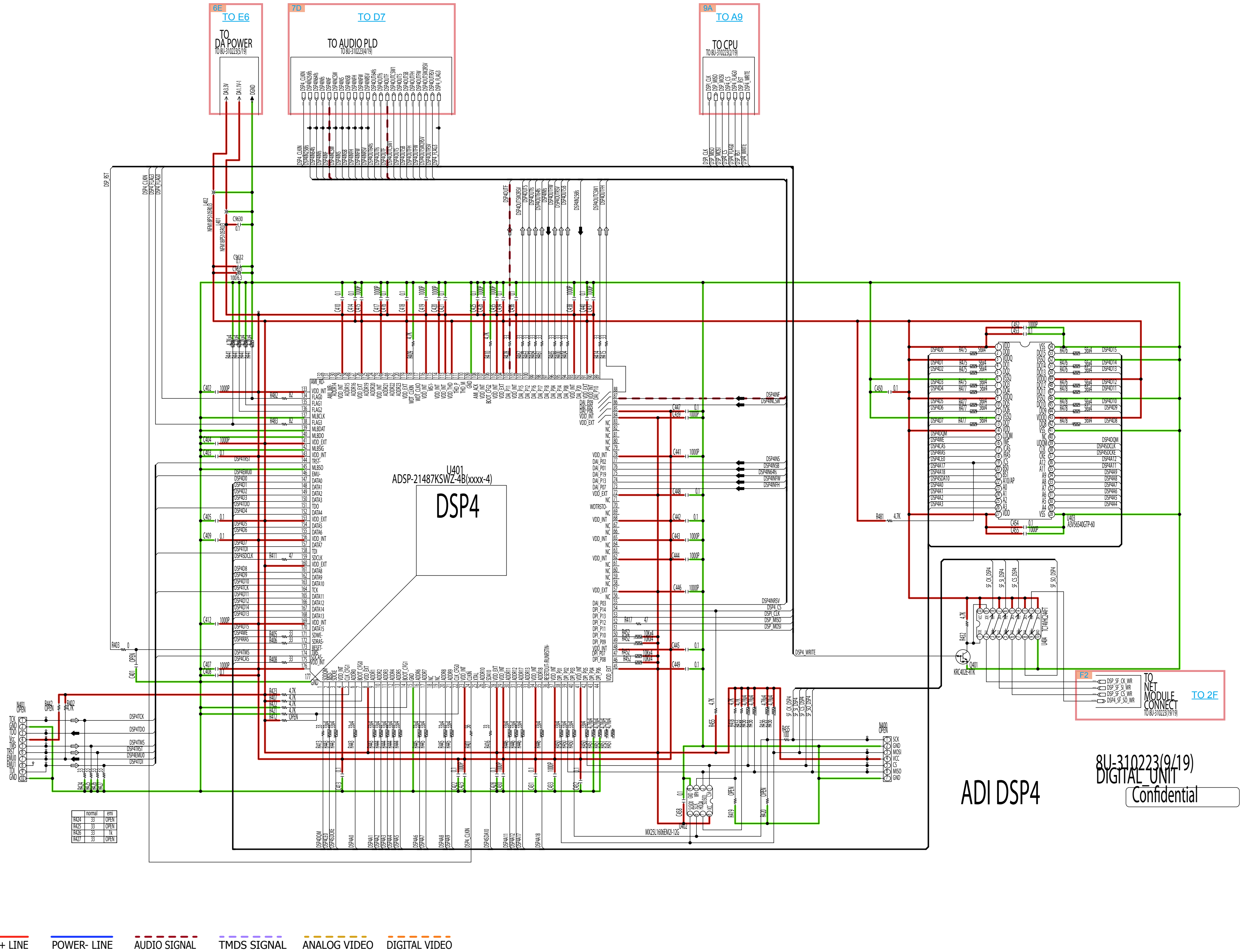

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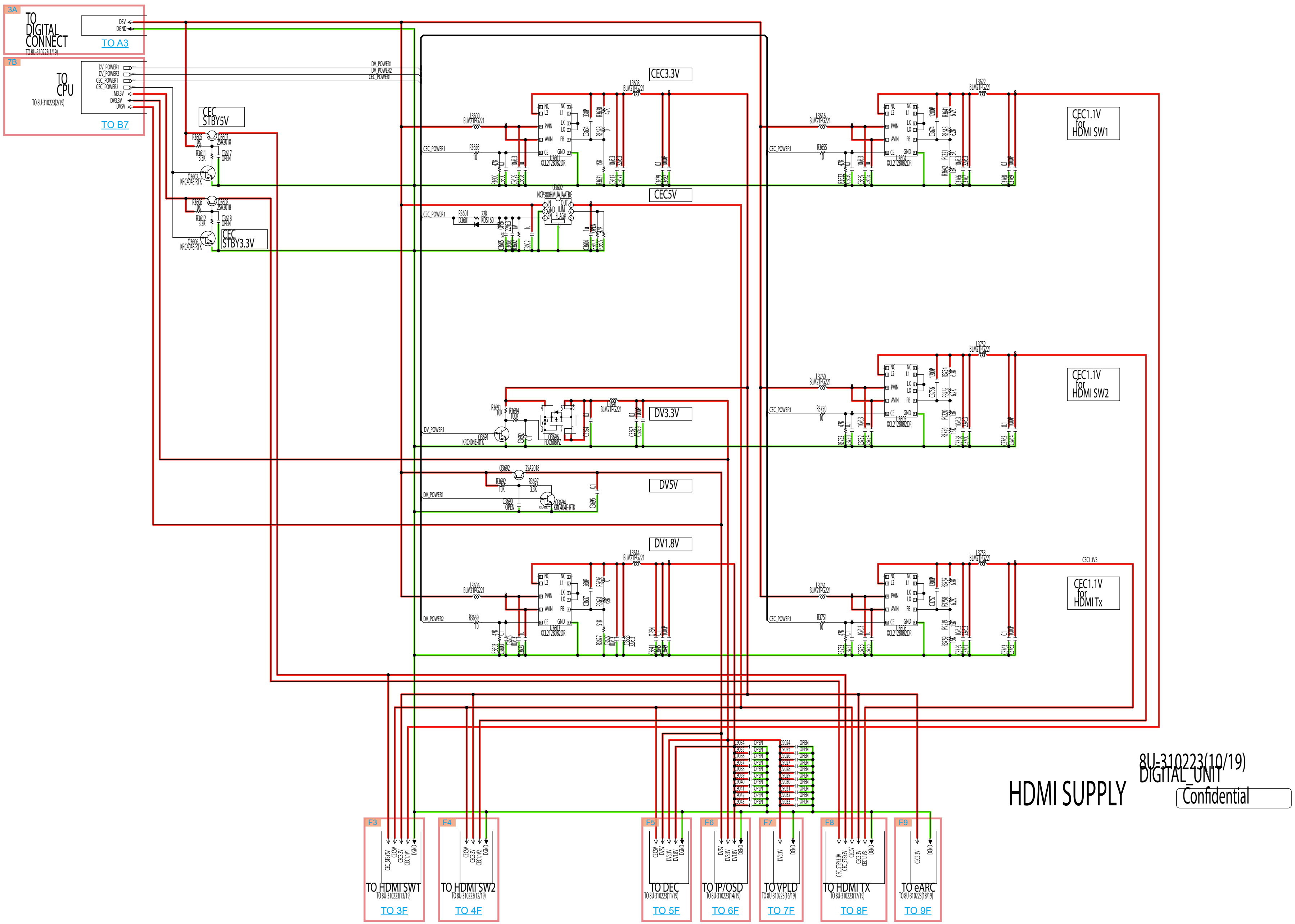

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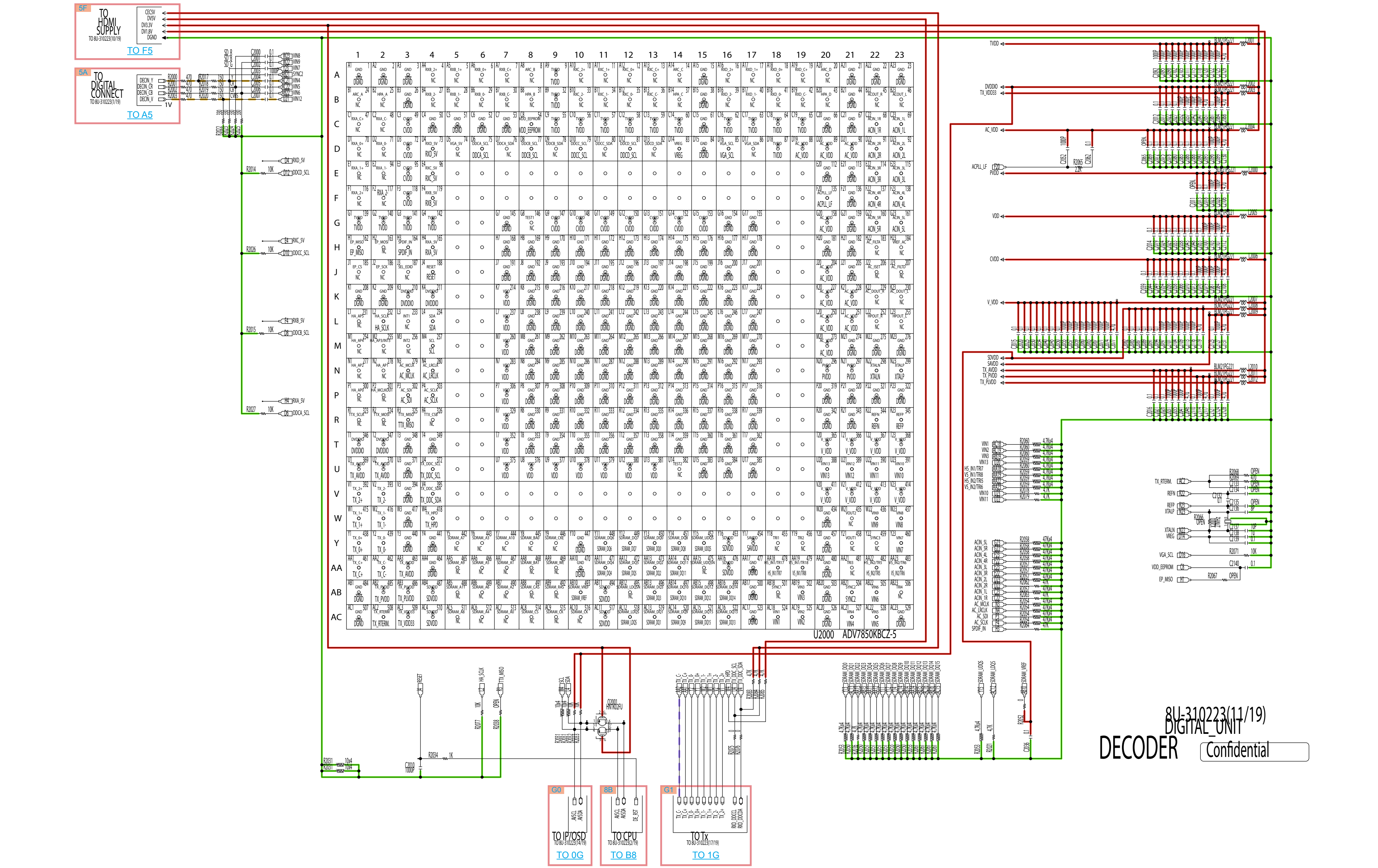

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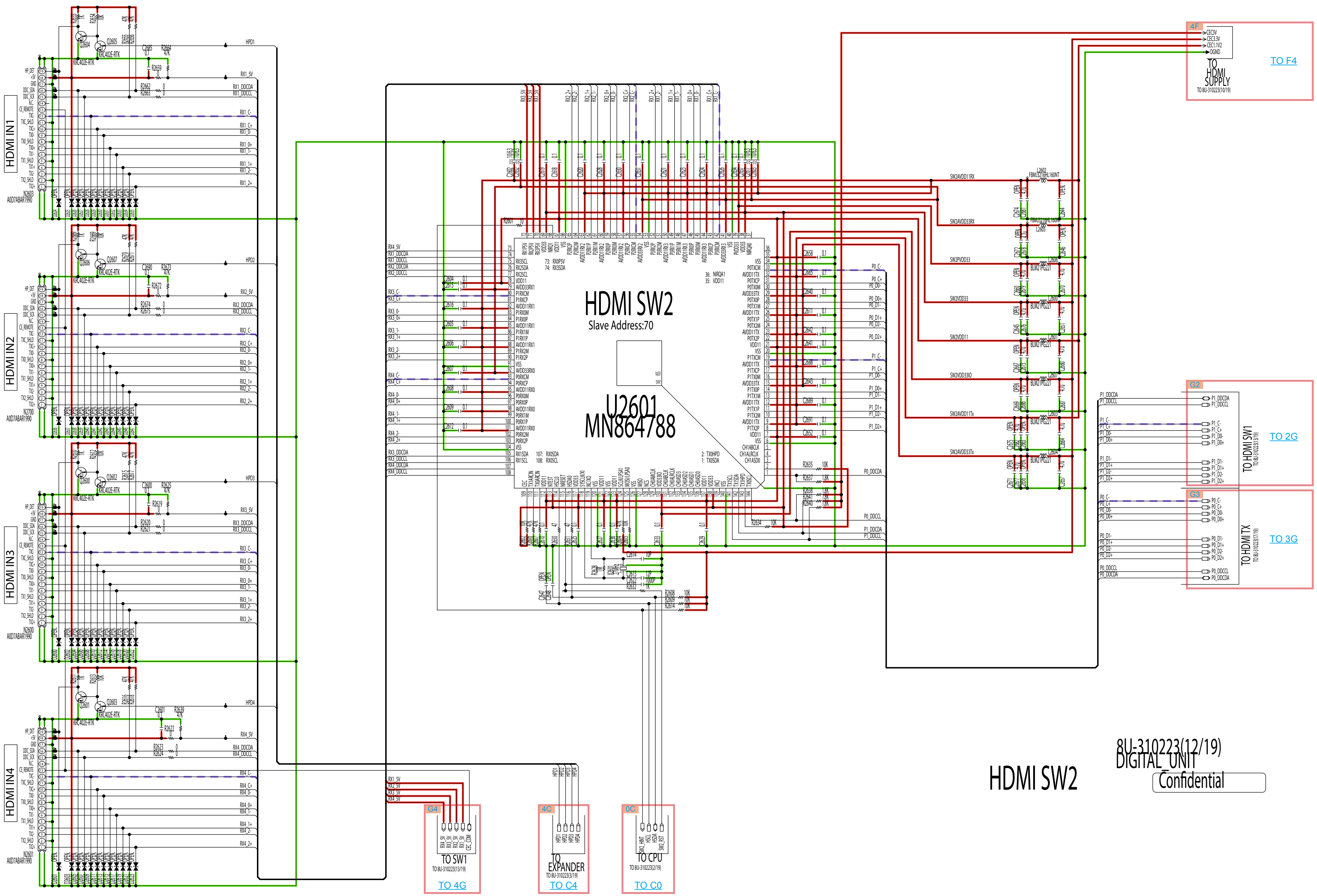

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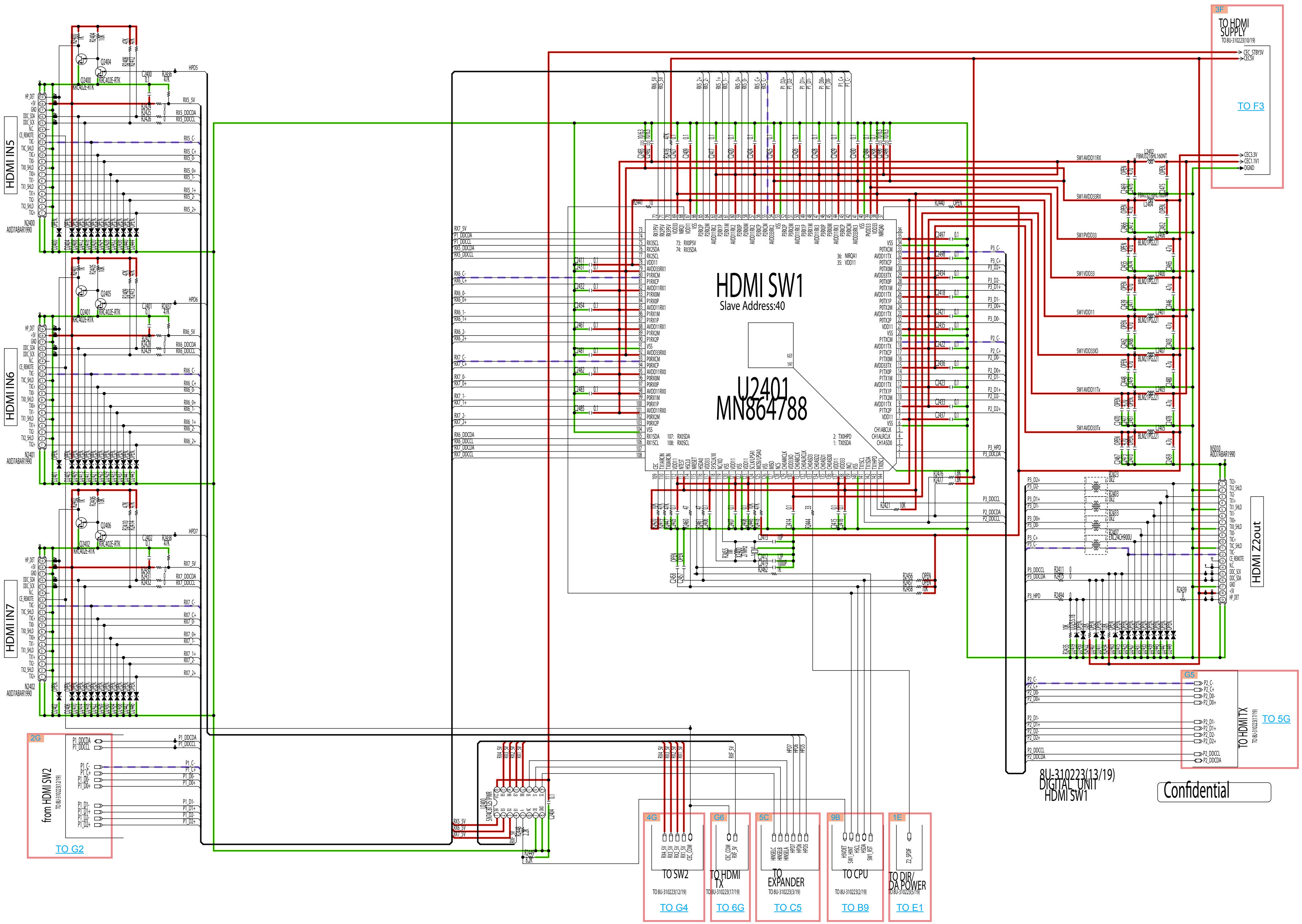

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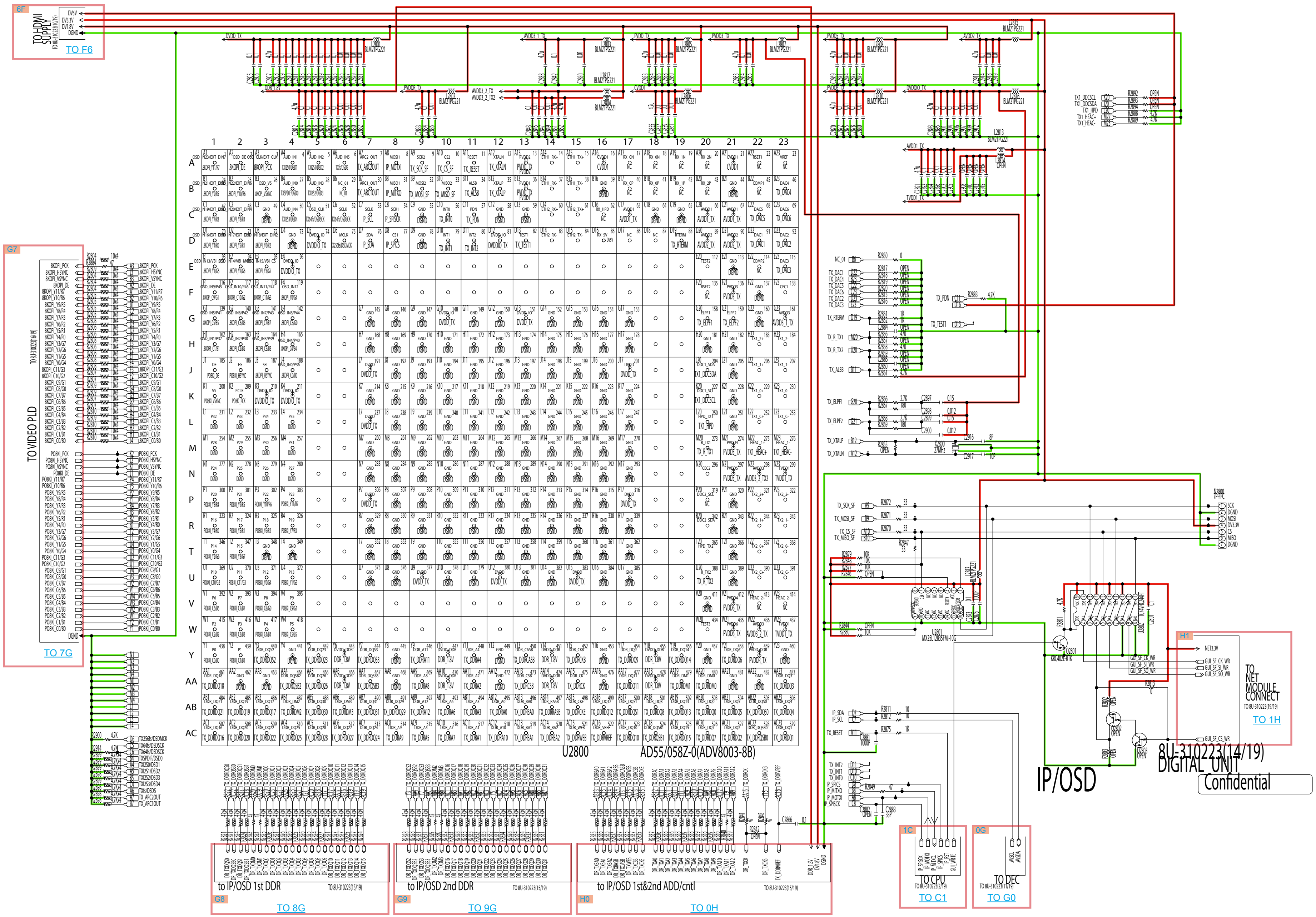

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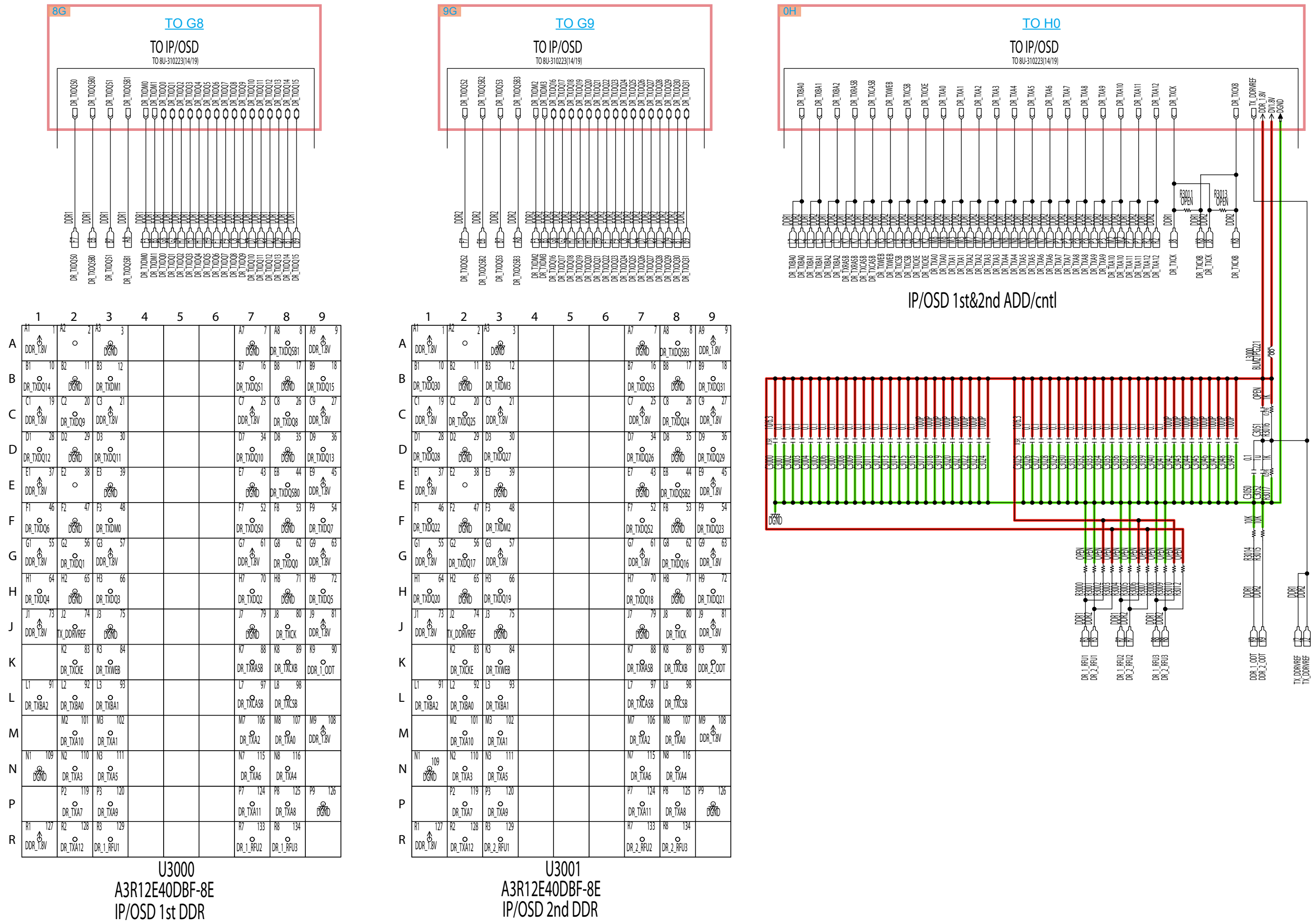

IP/OSD DDR

8U-310223(15/19)
DIGITAL_UNIT
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GND LINE | POWER+ LINE | POWER- LINE | AUDIO SIGNAL | TMDS SIGNAL | ANALOG VIDEO | DIGITAL VIDEO

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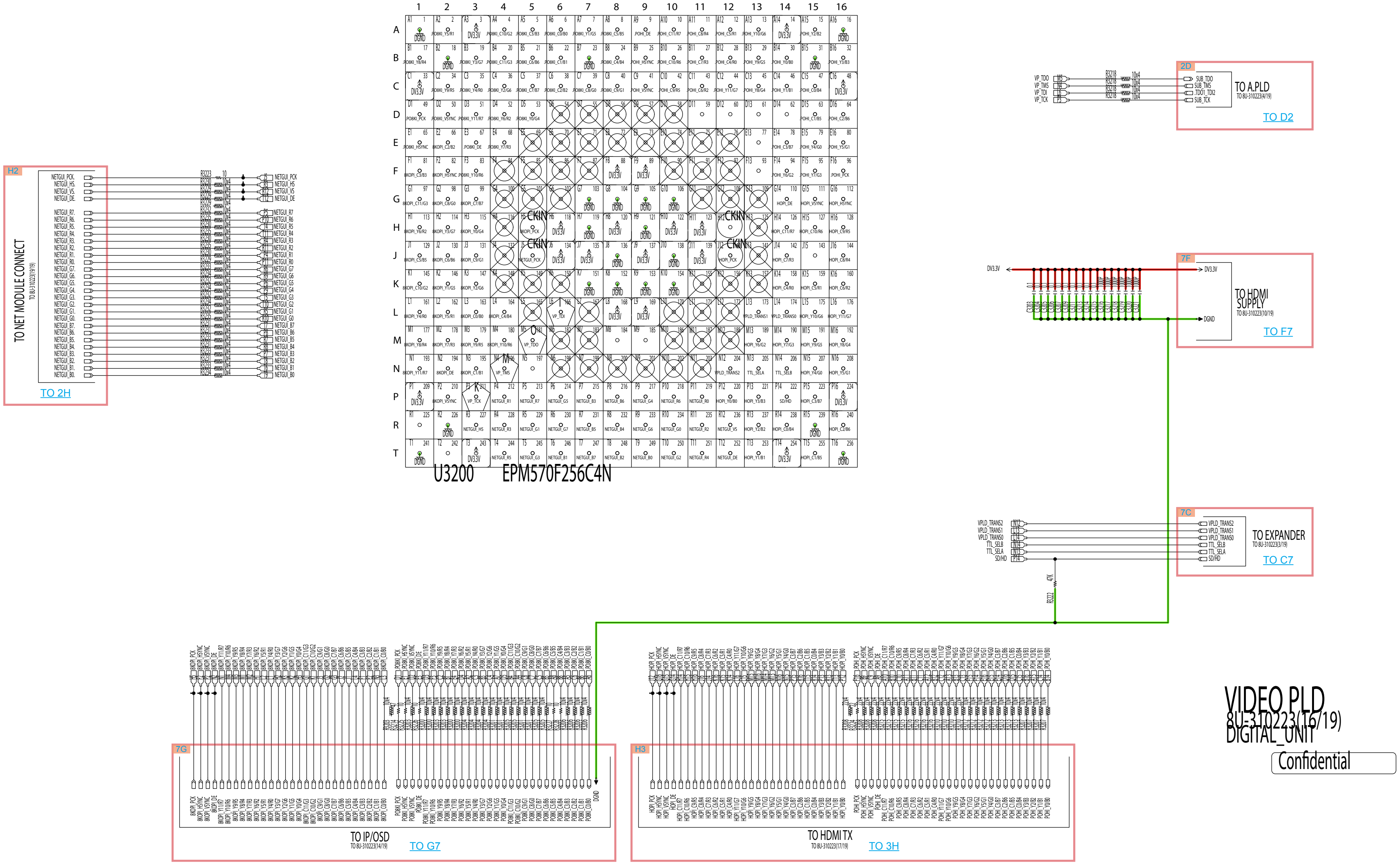

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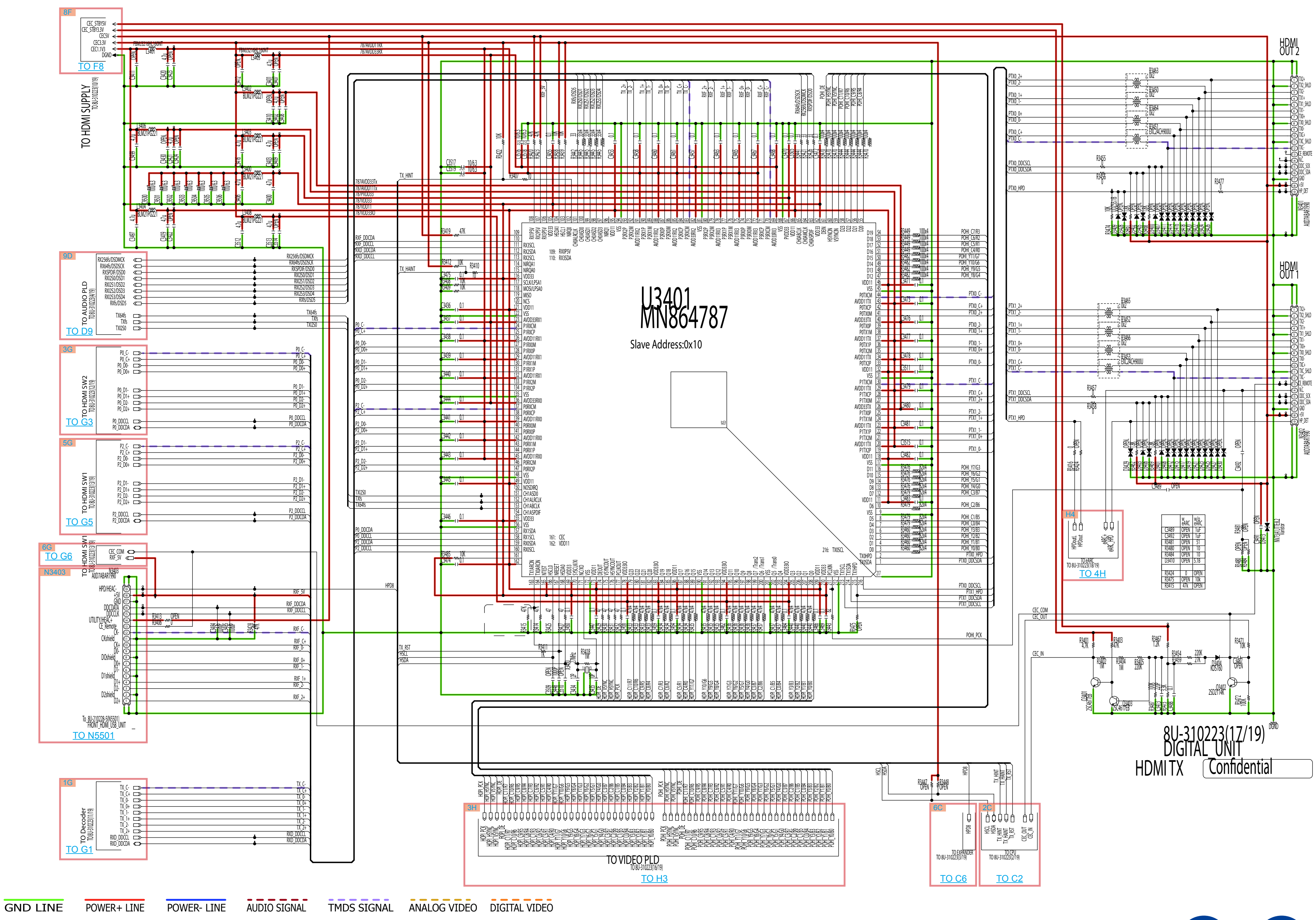

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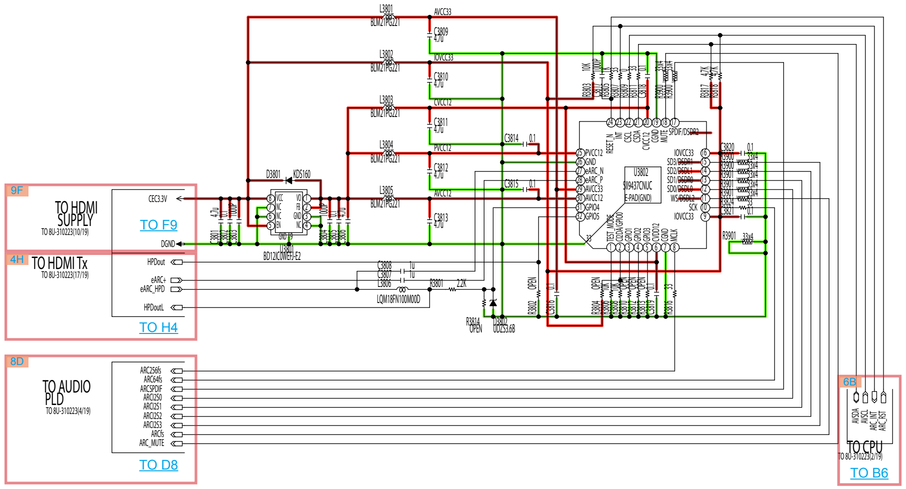

8U-310223(18/19)
DIGITAL_UNIT
eARC Confidential

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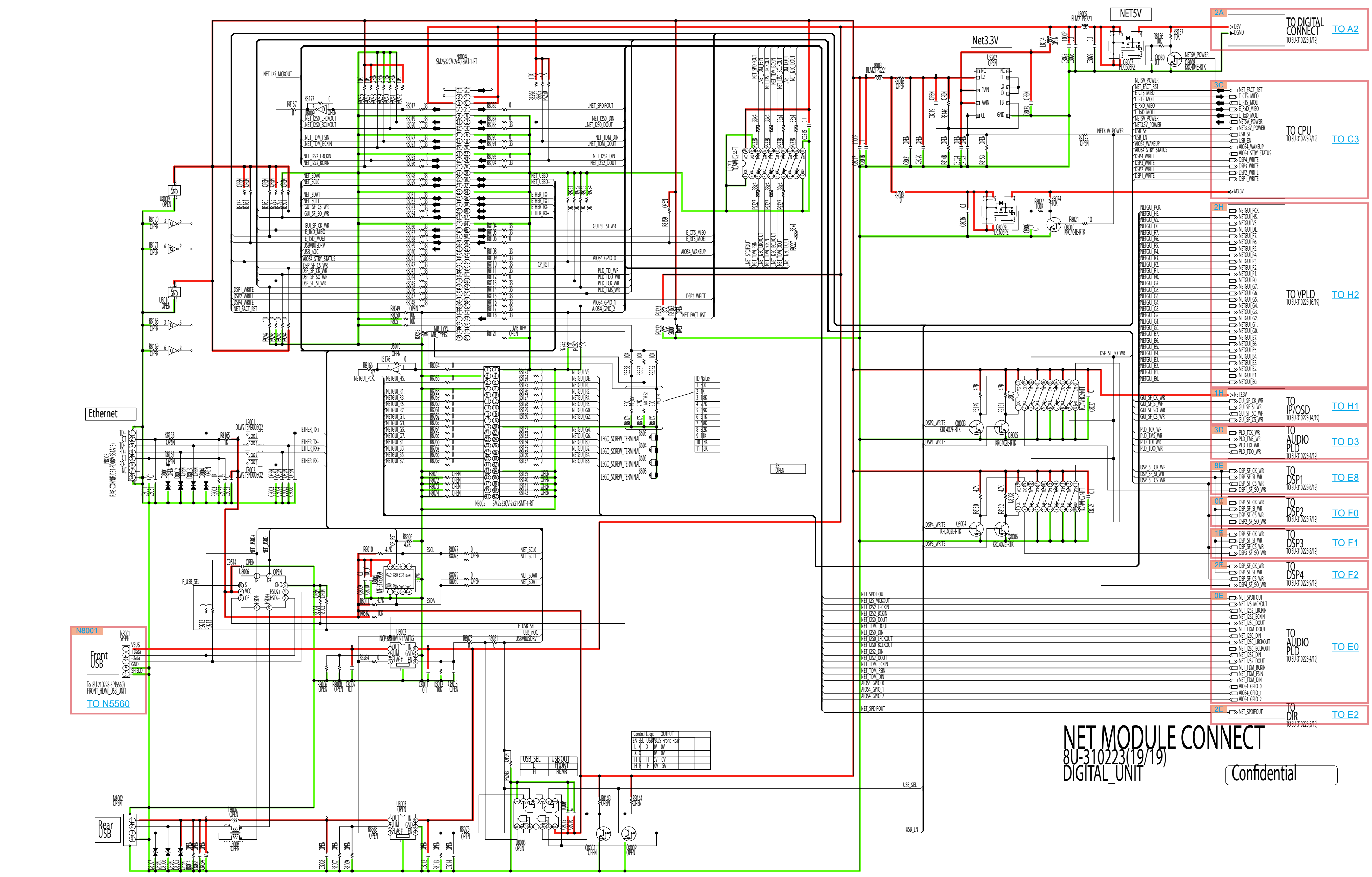

GND LINE POWER+ LINE POWER- LINE AUDIO SIGNAL TMDS SIGNAL ANALOG VIDEO DIGITAL VIDEO

Caution in servicing
Electrical
Mechanical
Repair Information
Updating

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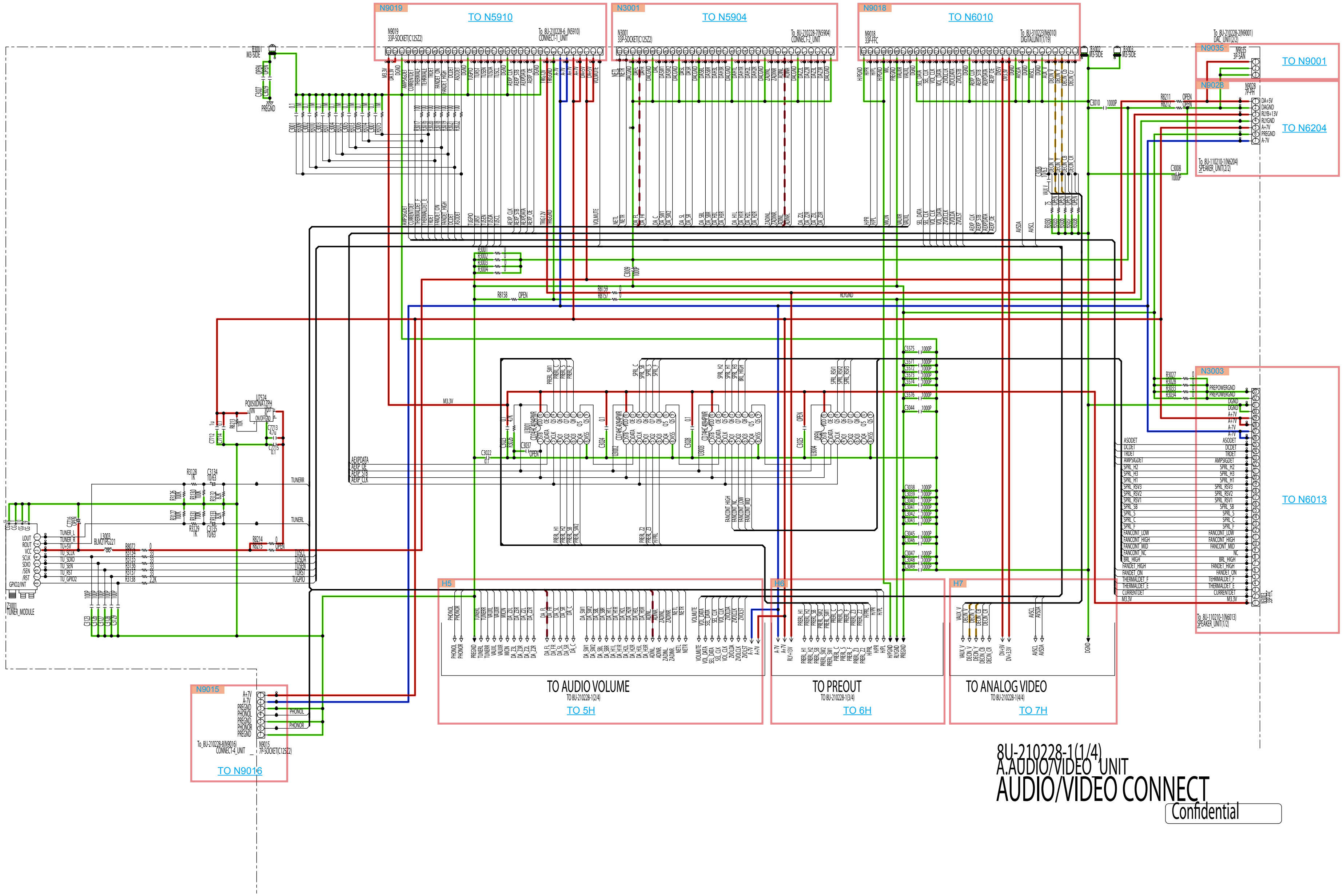

GND LINE | POWER+ LINE | POWER- LINE | AUDIO SIGNAL | TMDS SIGNAL | ANALOG VIDEO | DIGITAL VIDEO

Caution in servicing
Electrical
Mechanical
Repair Information
Updating

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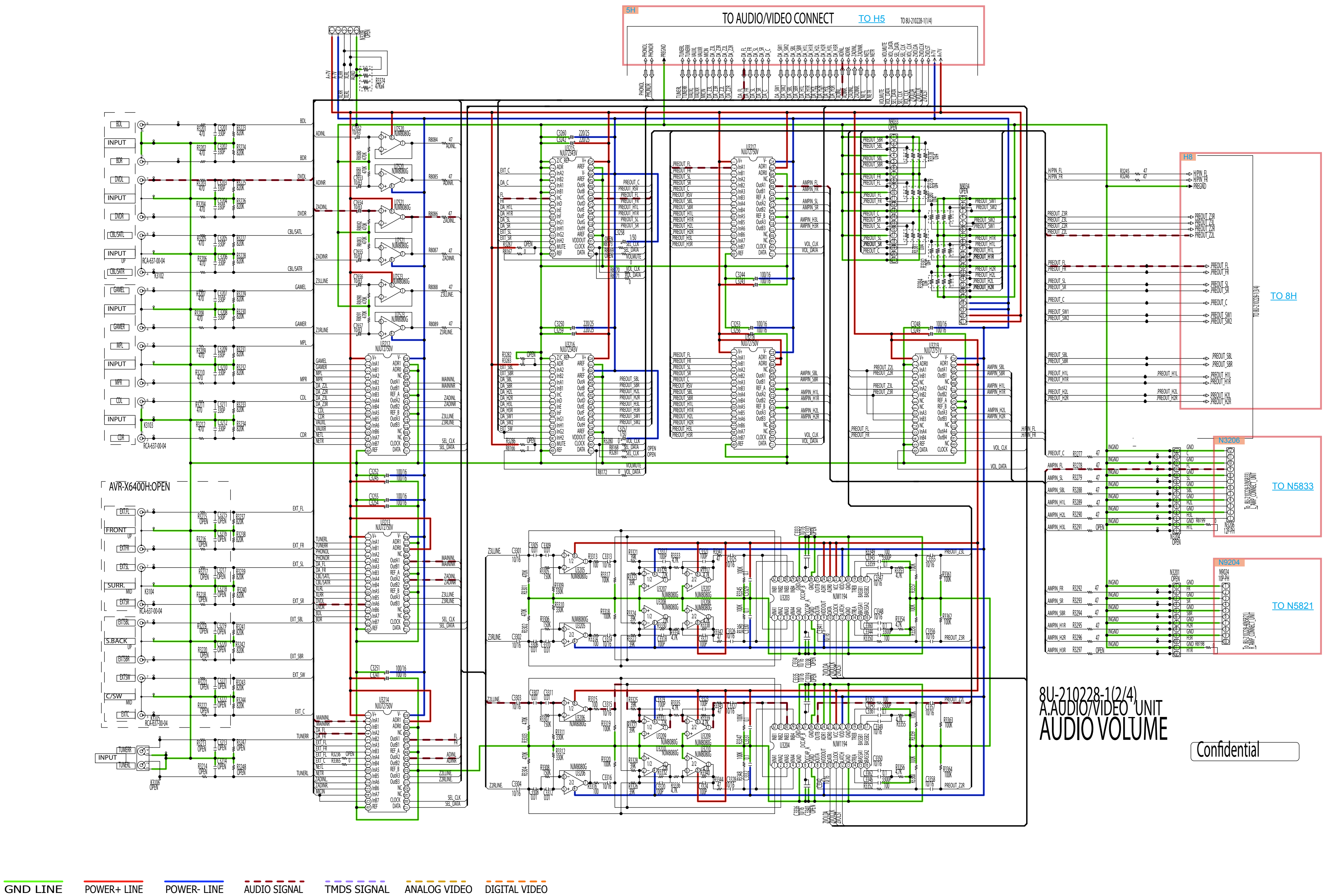

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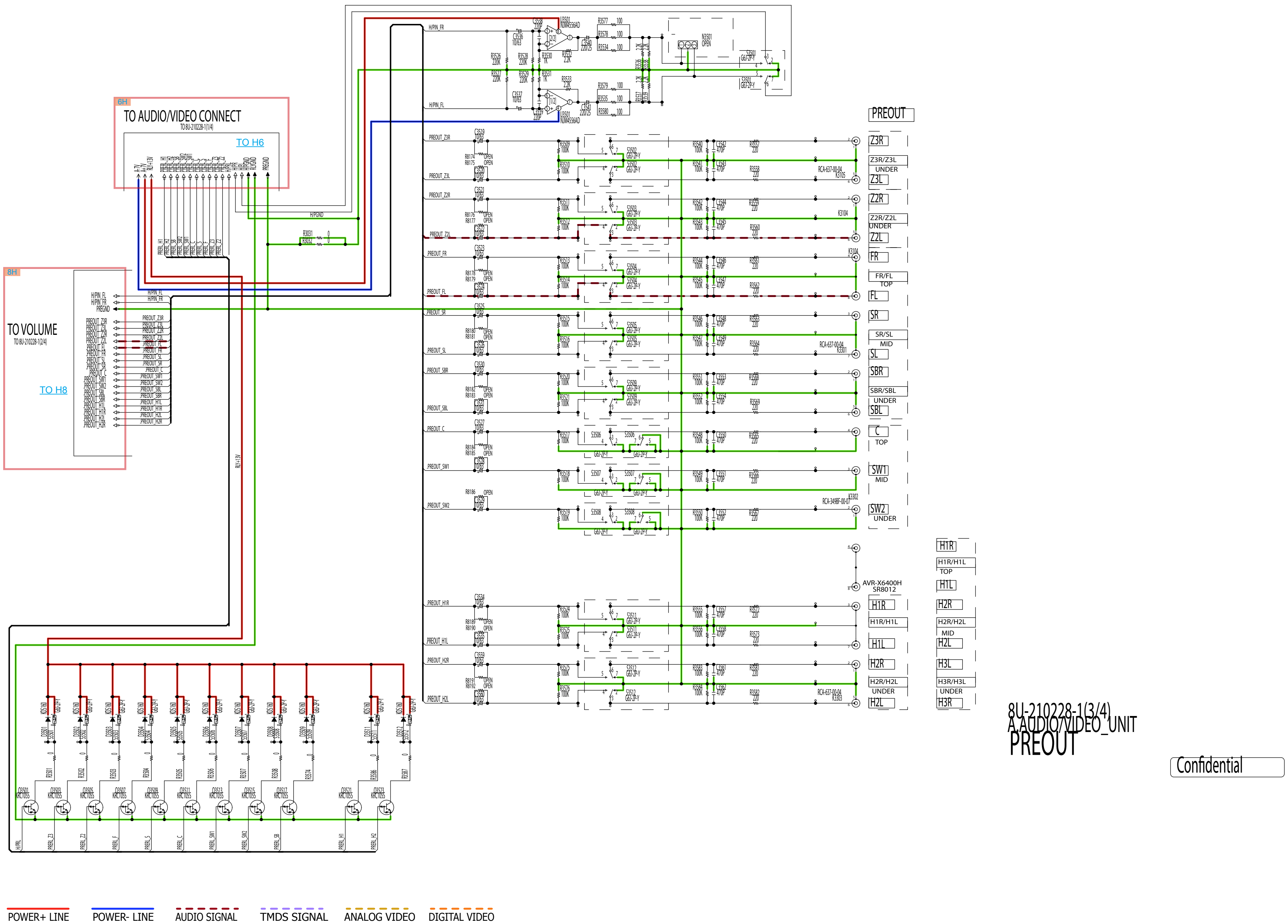

Caution in servicing
Electrical
Mechanical
Repair Information
Updating

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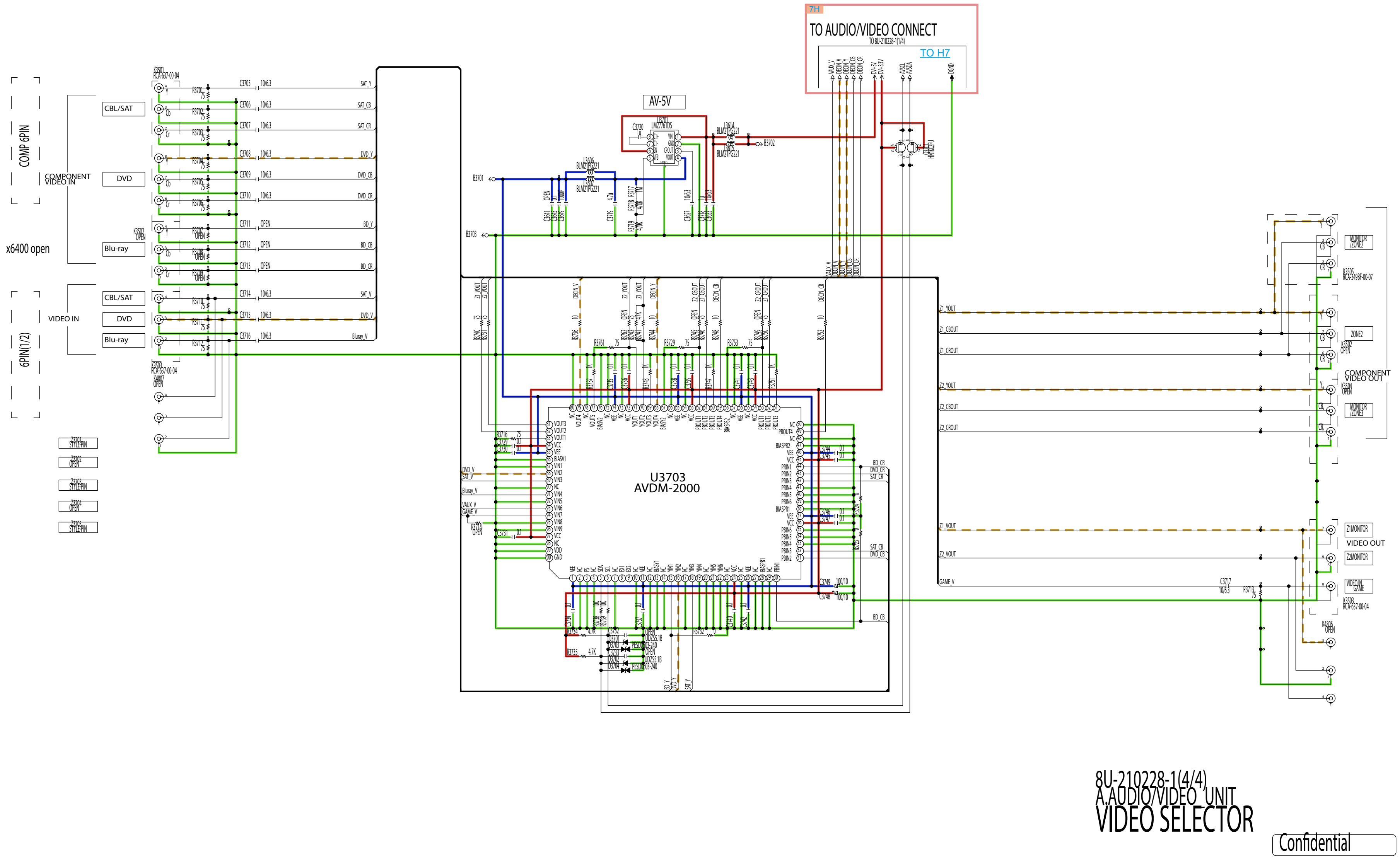

GND LINE | POWER+ LINE | POWER- LINE | AUDIO SIGNAL | TMDS SIGNAL | ANALOG VIDEO | DIGITAL VIDEO

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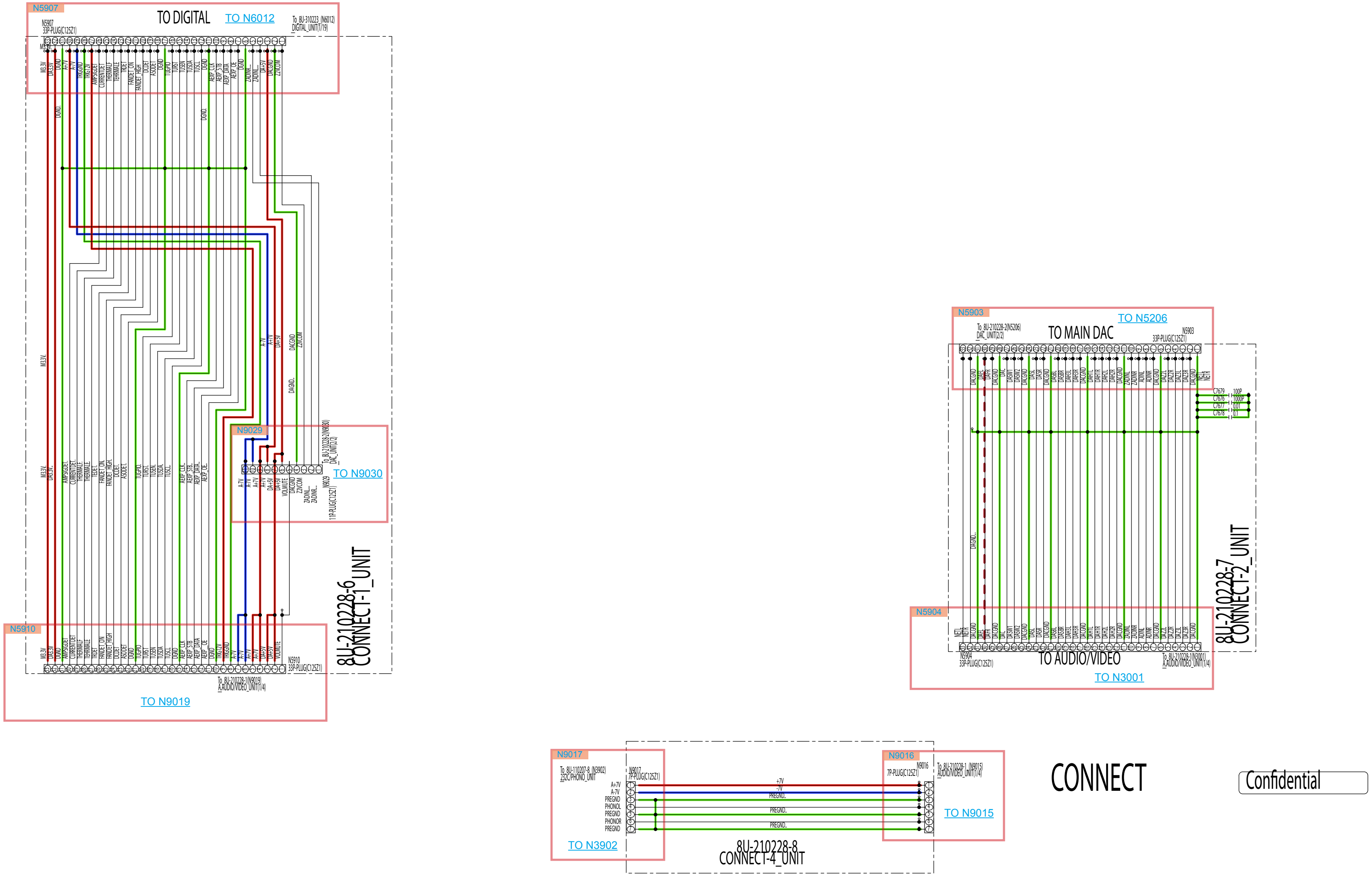

GND LINE | POWER+ LINE | POWER- LINE | AUDIO SIGNAL | TMDS SIGNAL | ANALOG VIDEO | DIGITAL VIDEO

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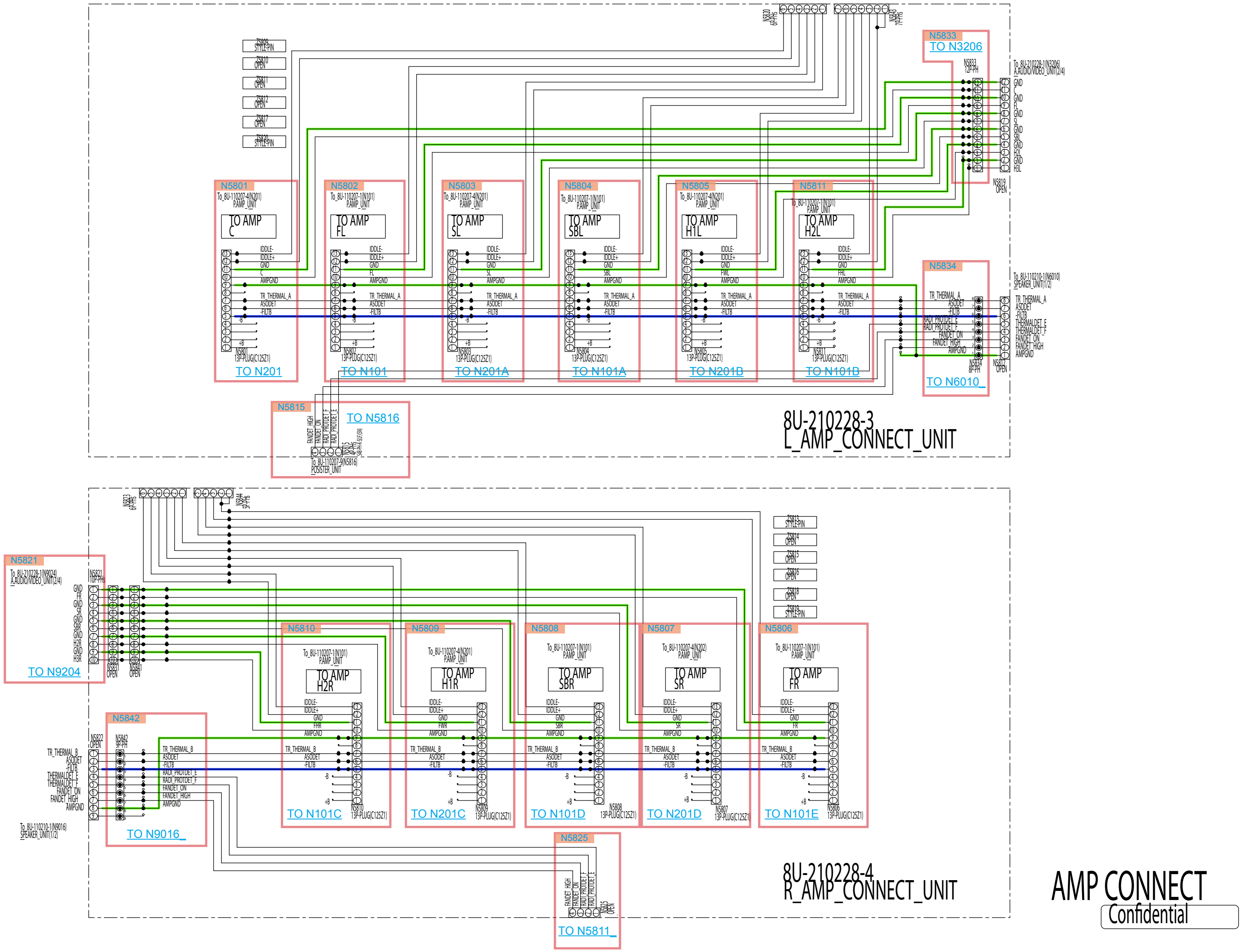

GND LINE | POWER+ LINE | POWER- LINE | AUDIO SIGNAL | TMDS SIGNAL | ANALOG VIDEO | DIGITAL VIDEO

Caution in servicing
Electrical
Mechanical
Repair Information
Updating

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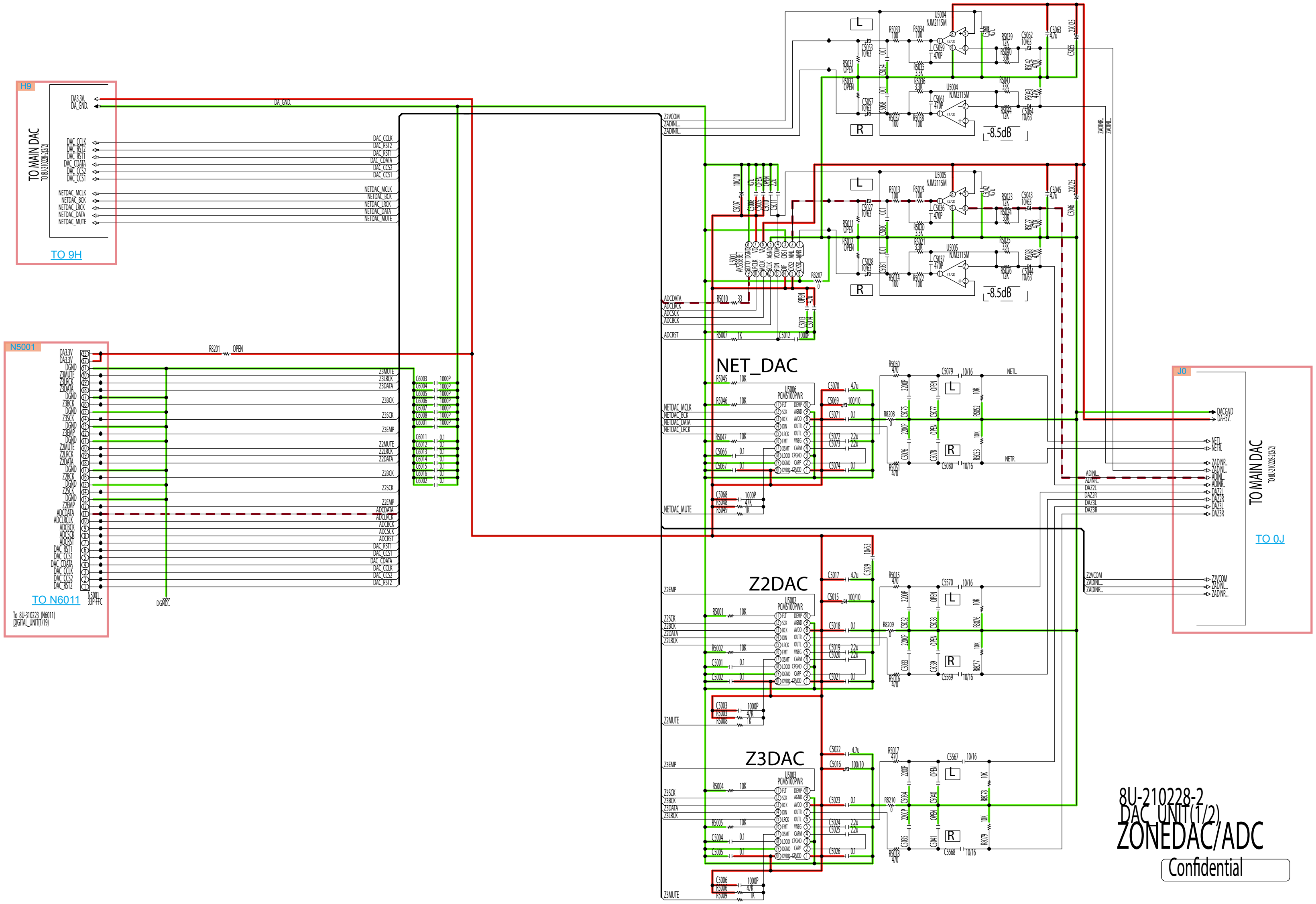

GND LINE POWER+ LINE POWER- LINE AUDIO SIGNAL TMDS SIGNAL ANALOG VIDEO DIGITAL VIDEO

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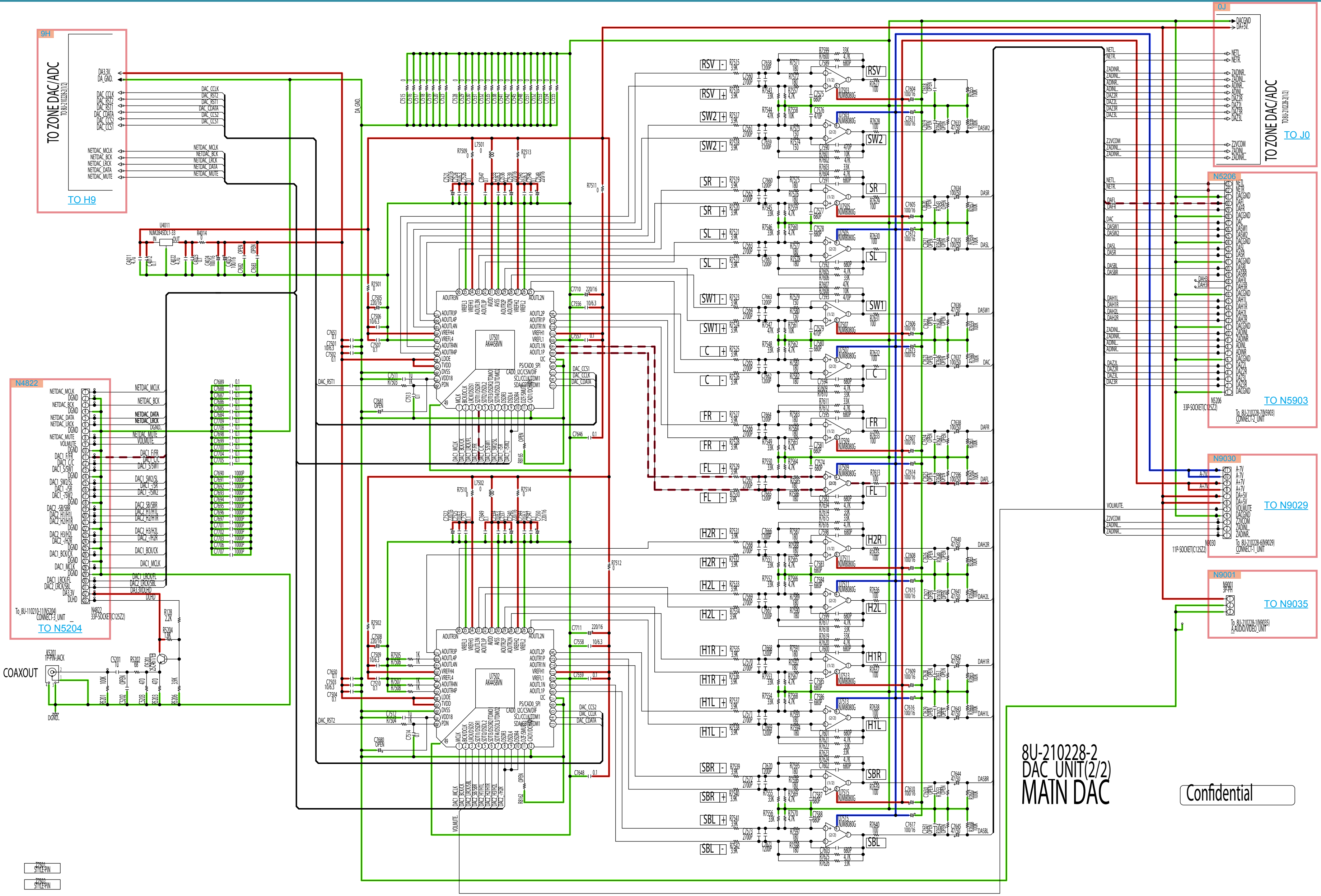

GND LINE　POWER+ LINE　POWER- LINE　AUDIO SIGNAL　TMDS SIGNAL　ANALOG VIDEO　DIGITAL VIDEO

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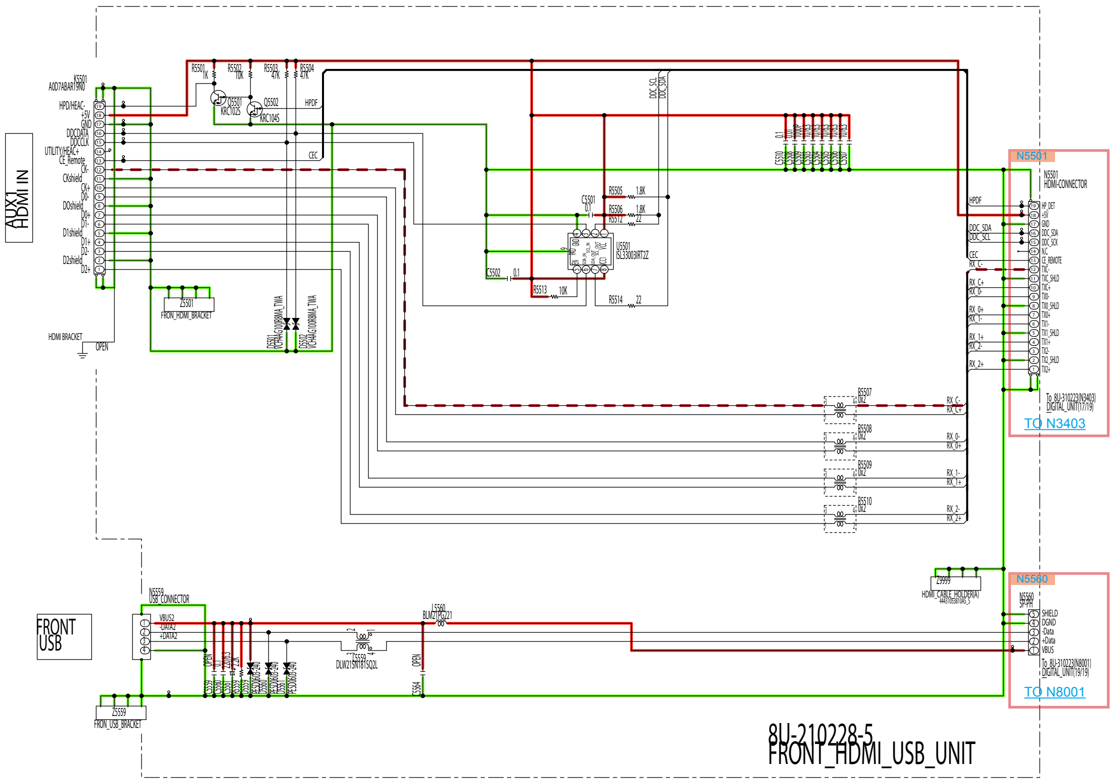

FRONT HDMI/USB
Confidential

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

Caution in servicing
Electrical
Mechanical
Repair Information
Updating

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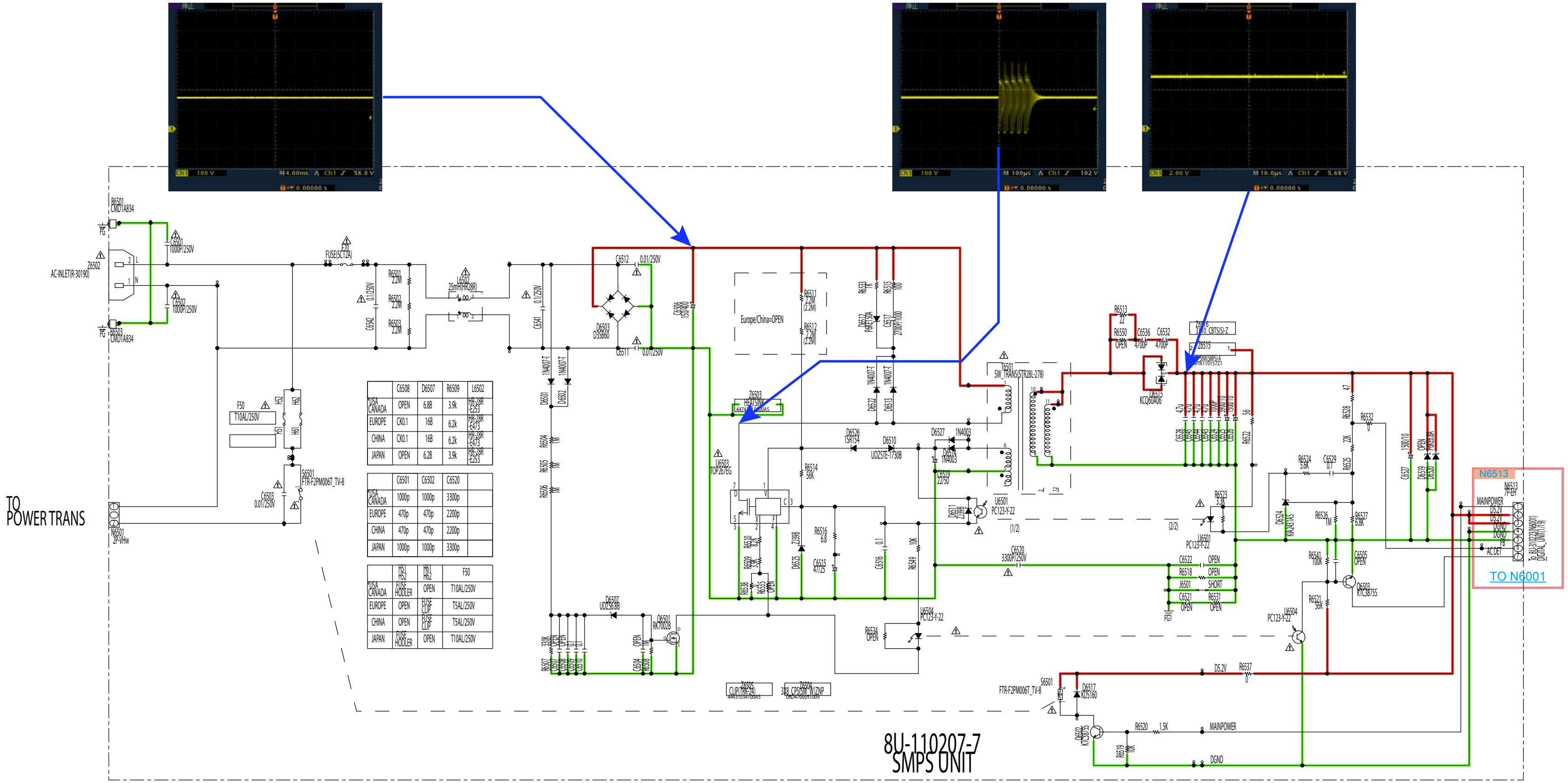
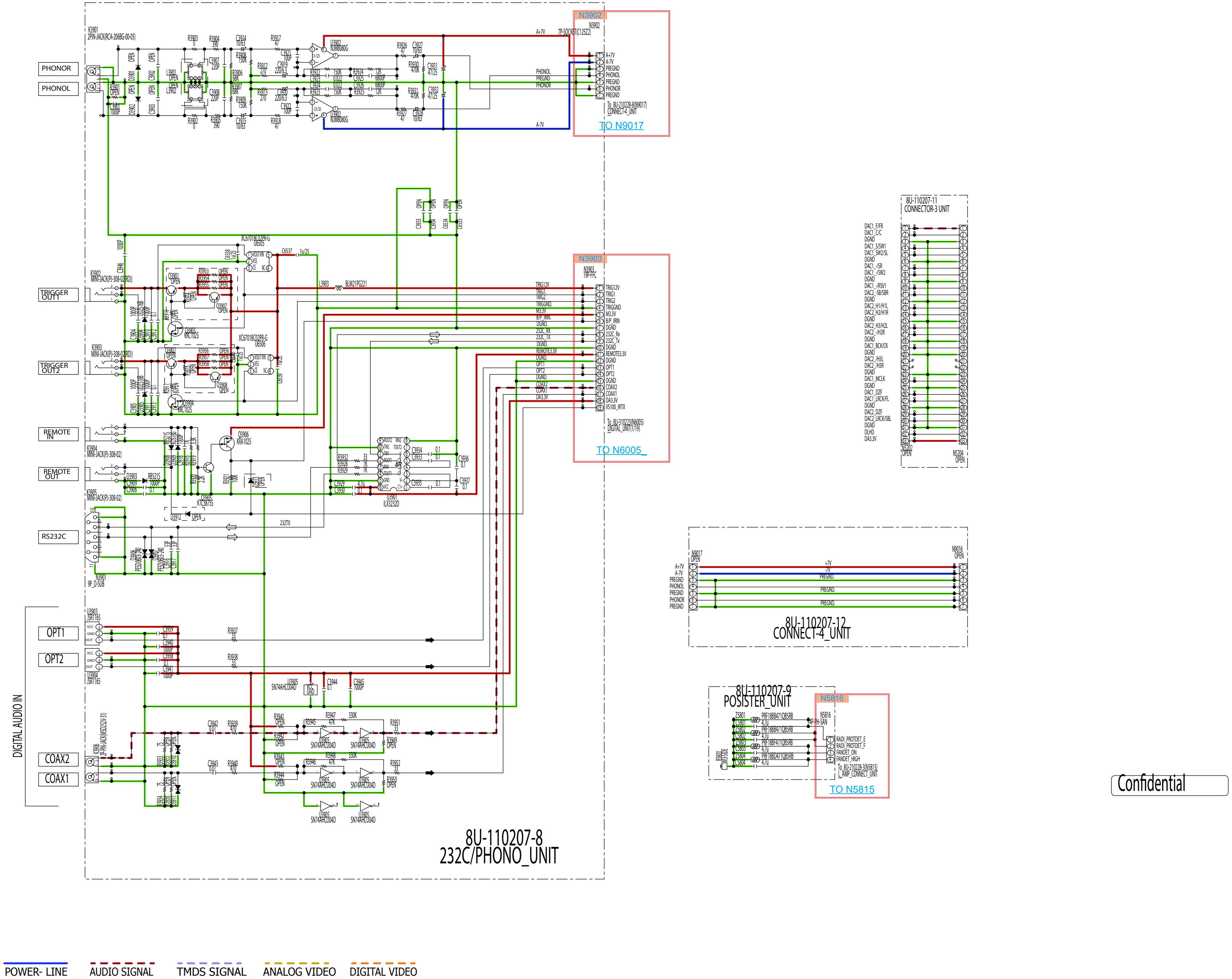


SMPS
Confidential

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

Caution in servicing
Electrical
Mechanical
Repair Information
Updating


PHONOR
PHONOL
N3902
TO N9017
TRIGGER OUT1
TRIGGER OUT2
N3903
TO N6005
REMOTE IN
REMOTE OUT
RS232C
8U-110207-11
CONNECTOR-3 UNIT
DIGITAL AUDIO IN
OPT1
OPT2
COAX2
COAX1
8U-110207-12
CONNECT-4_UNIT
8U-110207-9
POSISTER_UNIT
N5816
TO N5815
8U-110207-8
232C/PHONO_UNIT
Confidential
GND LINE
POWER+ LINE
POWER- LINE
AUDIO SIGNAL
TMDS SIGNAL
ANALOG VIDEO
DIGITAL VIDEO

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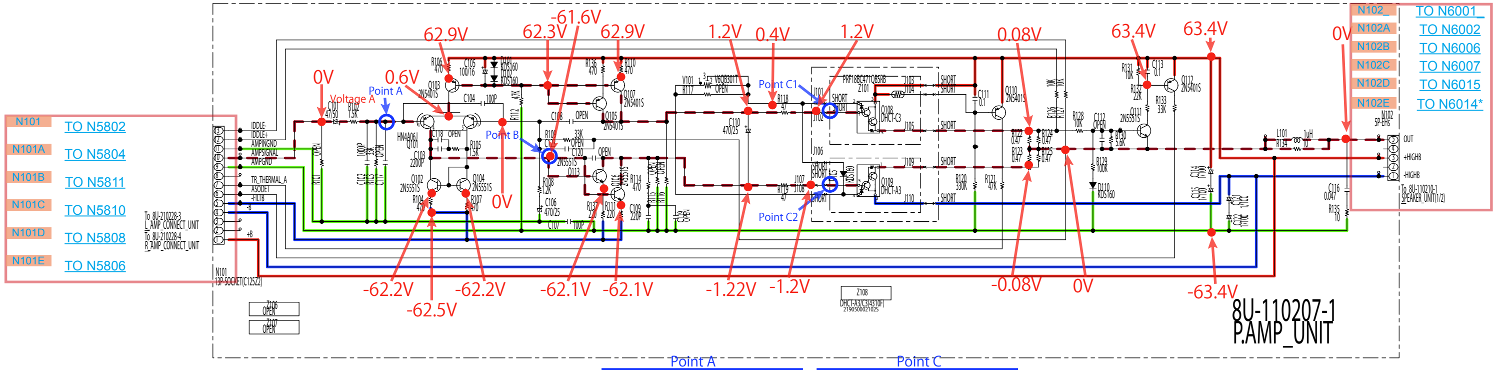
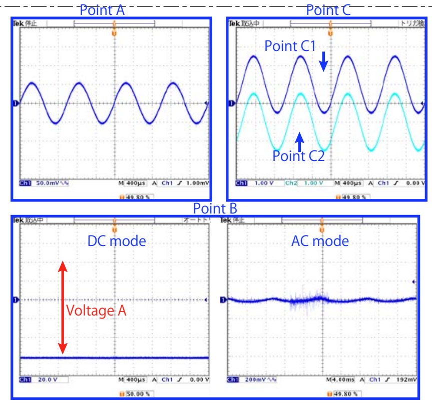
Caution in servicing
Electrical
Mechanical
Repair Information
Updating



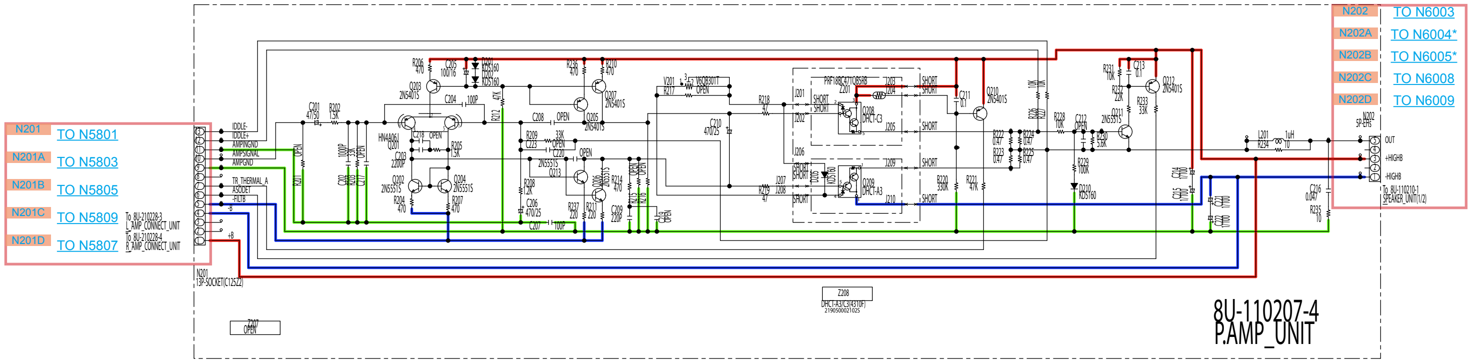


Measurement condition
・Voltage measurement : No signal
・Waveform measurement
INPUT: 200mVrms / 1KHz (ANALOG)
Surround mode: MCh Stereo
VOL: 70
Speaker load: 8ohms

POWER AMP
Confidential

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

Caution in servicing
Electrical
Mechanical
Repair Information
Updating



POWER AMP
Confidential

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

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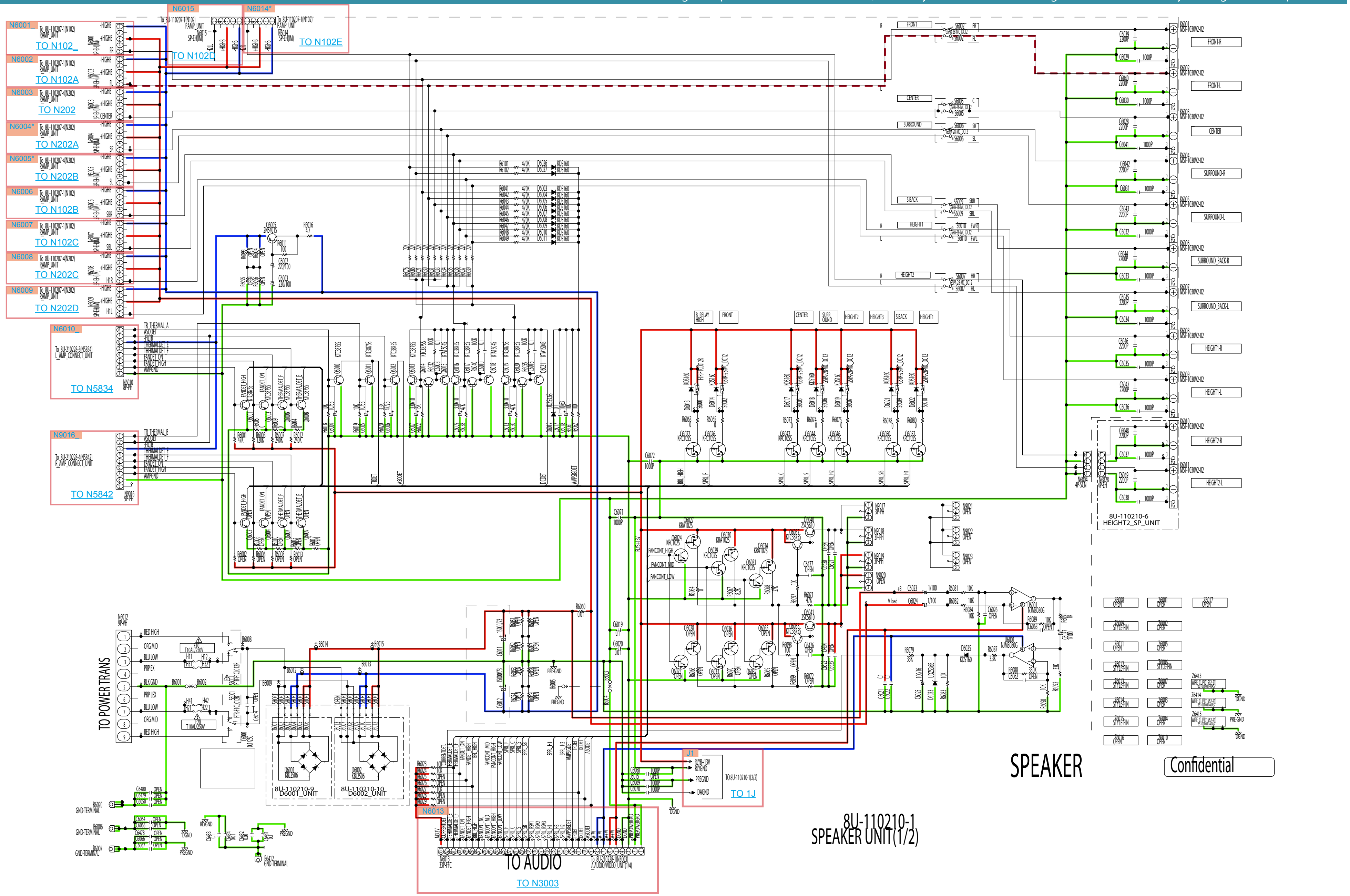
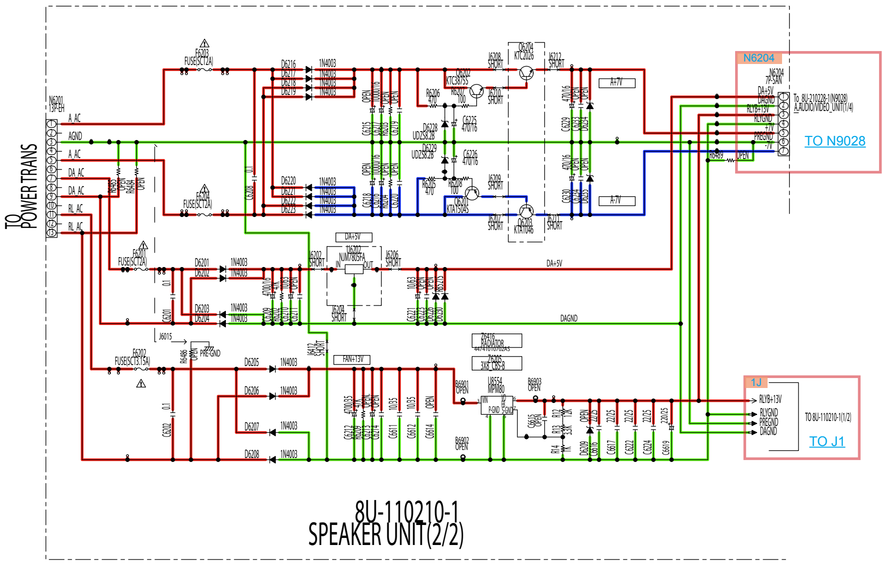
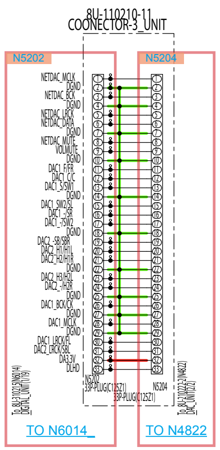


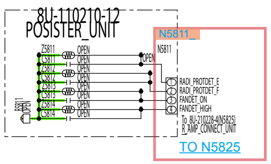
GND LINE POWER+ LINE POWER- LINE AUDIO SIGNAL TMDS SIGNAL ANALOG VIDEO DIGITAL VIDEO

Caution in servicing
Electrical
Mechanical
Repair Information
Updating

Caution in servicing
Electrical
Mechanical
Repair Information
Updating







REG
Confidential

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

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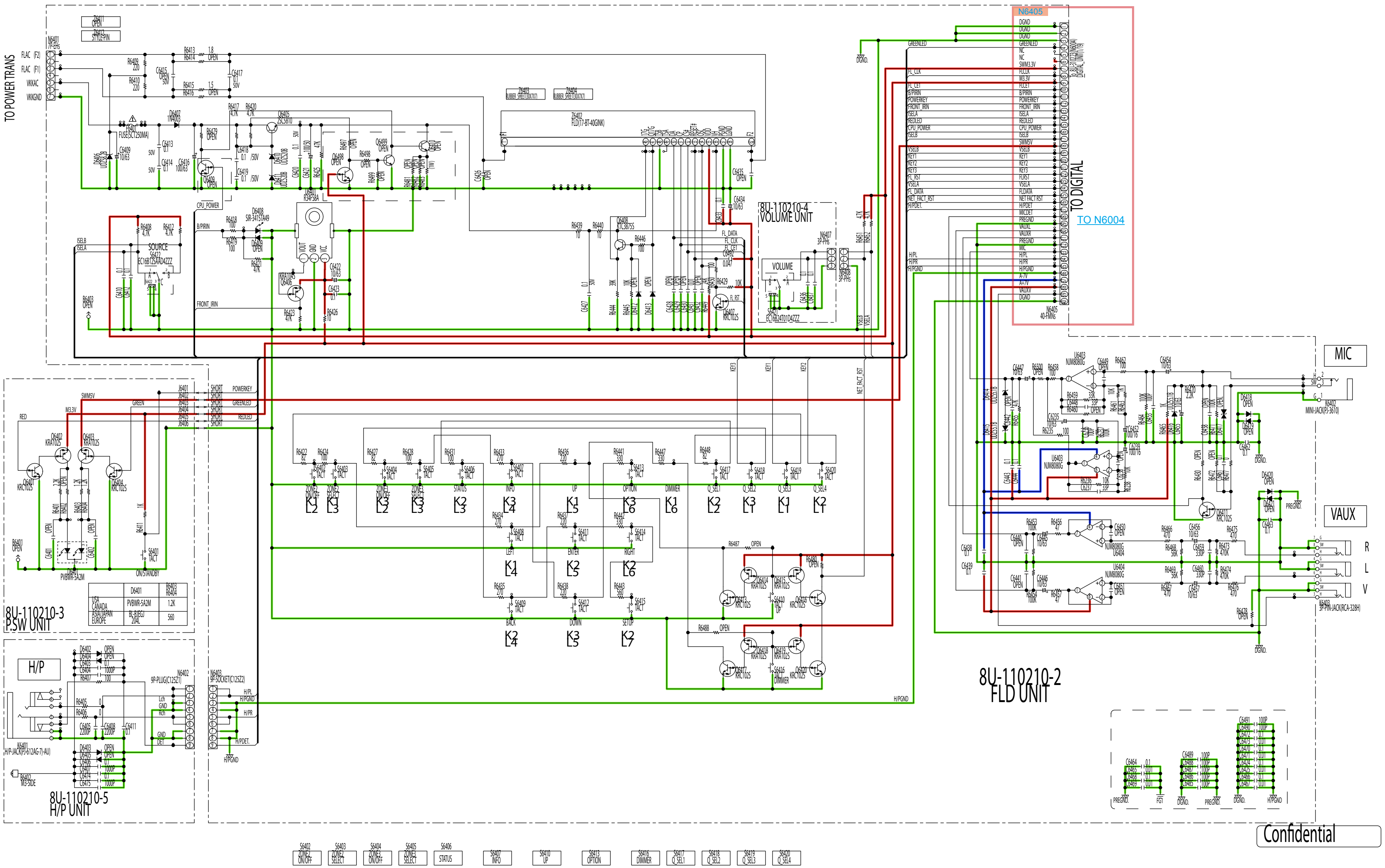


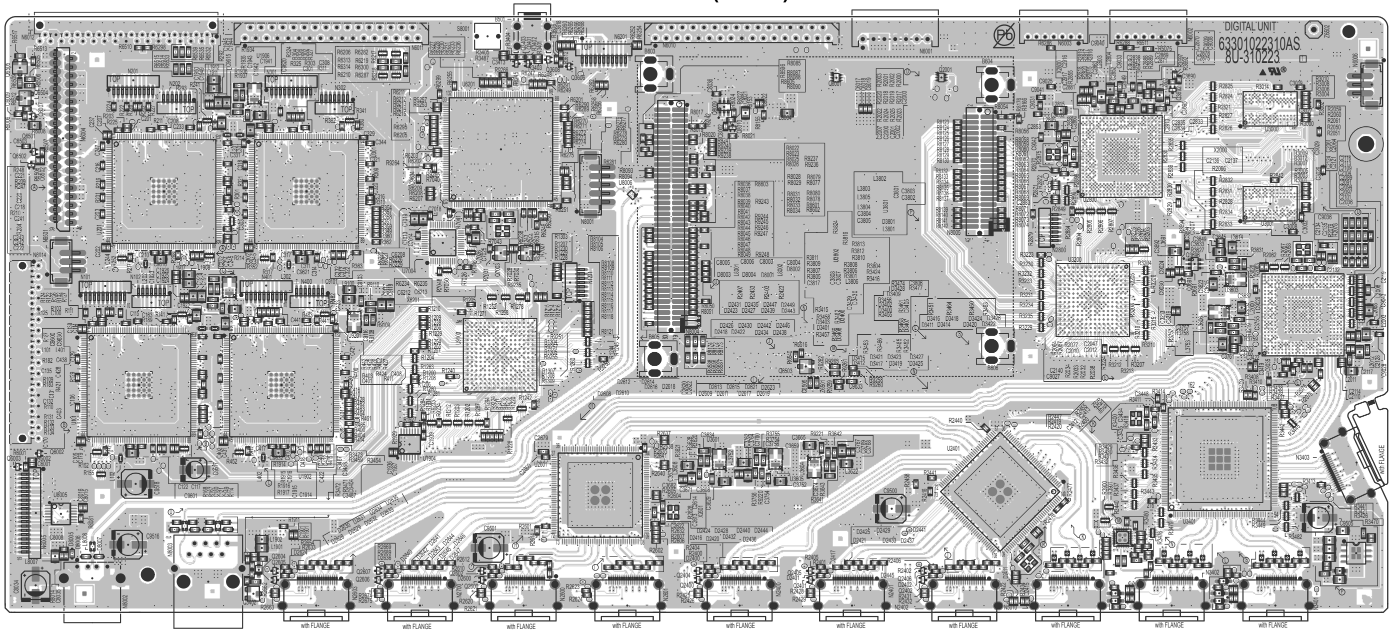
	L1	L2	L3	L4	L5	L6	L7
K1	Q-SEL-3	ZONE2 ON/OFF	ZONE2 SEL	LEFT	UP	DIMMER	
K2	Q-SEL-4	Q-SEL-1	STATUS	BACK	ENTER	RIGHT	SETUP
K3	Q-SEL-2	ZONE3 ON/OFF	ZONE3 SEL	INFO	DOWN	OPTION	

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

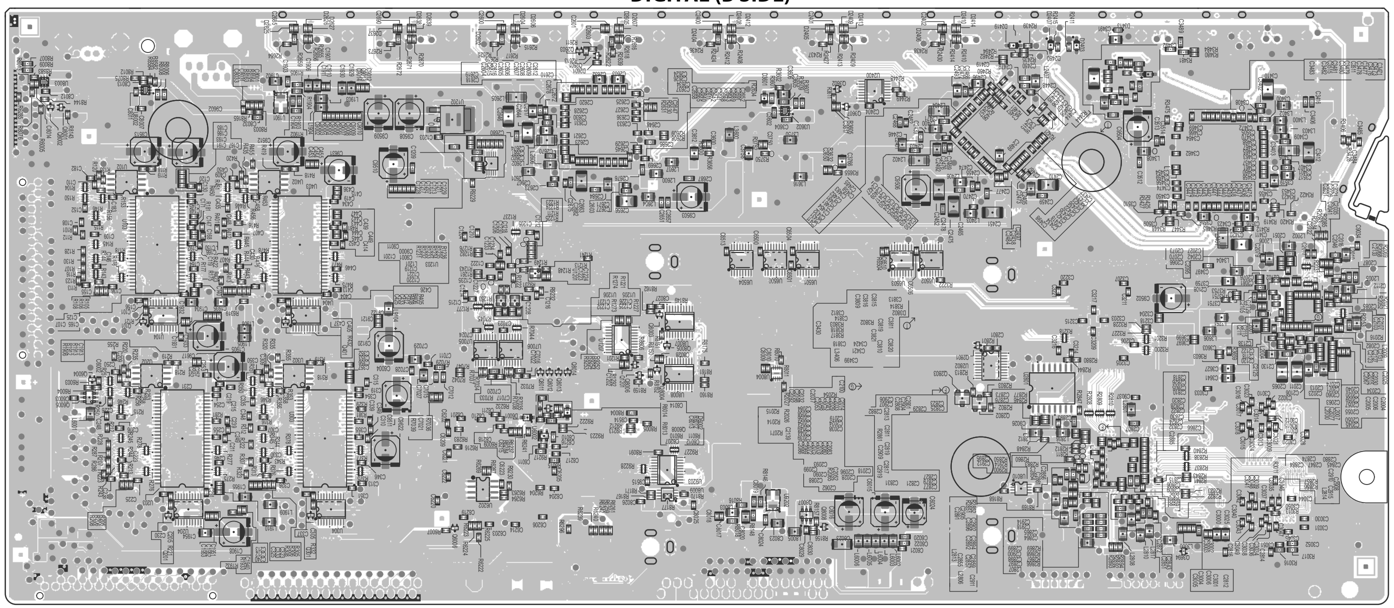
DIGITAL

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

DIGITAL (A SIDE)

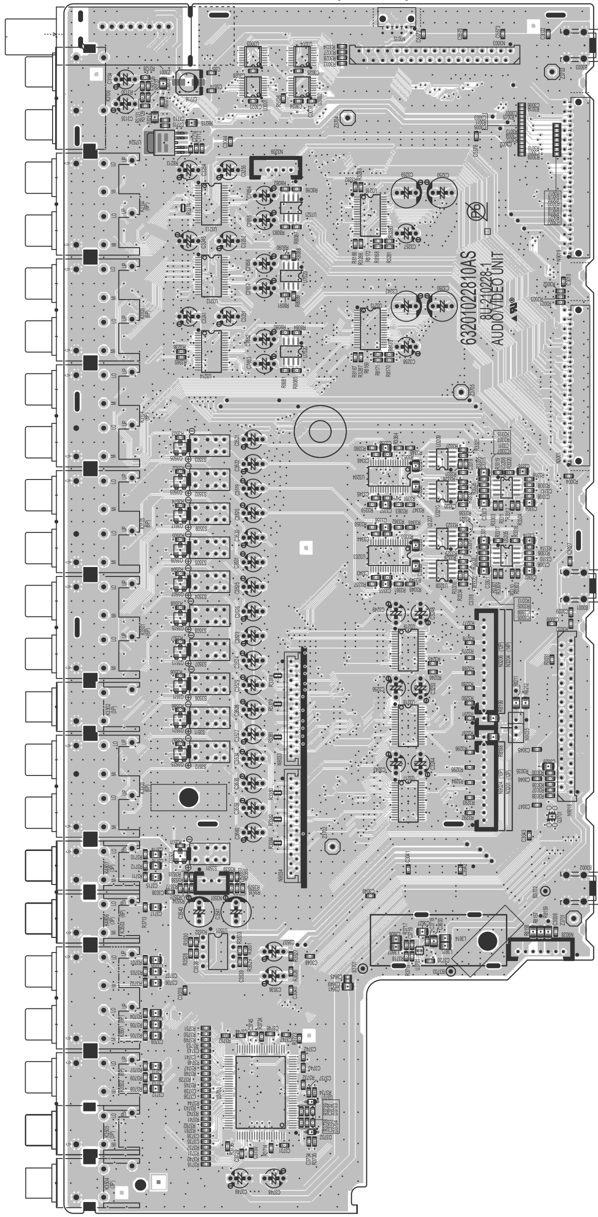


DIGITAL (B SIDE)

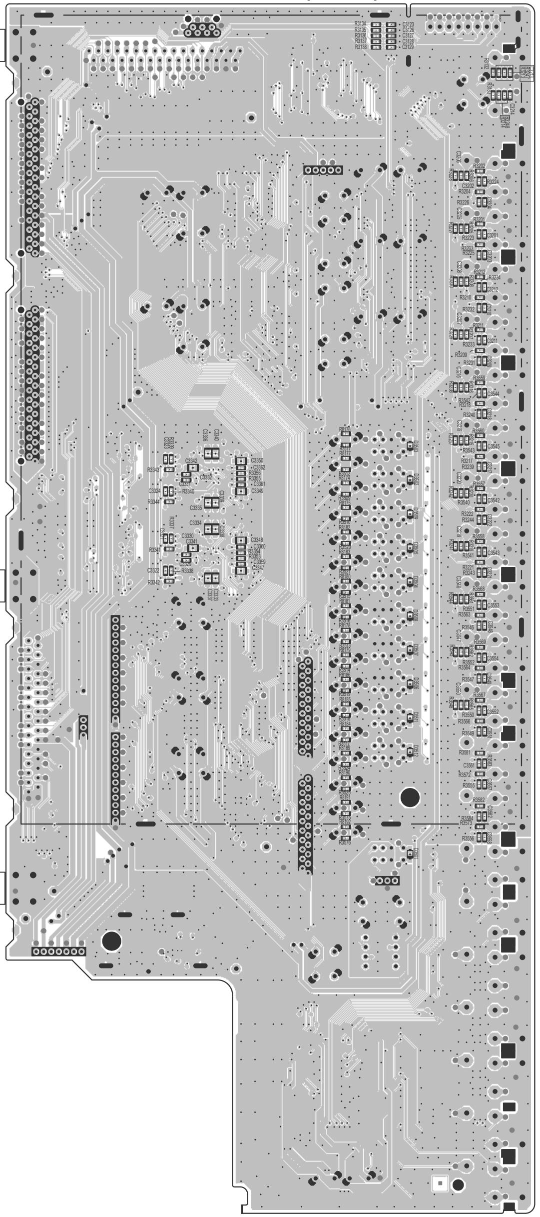


AUDIO VIDEO, FRONT HDMI USB, CONNECT-1, CONNECT-2, CONNECT-4

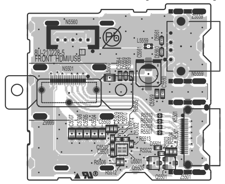
AUDIO VIDEO (A SIDE)



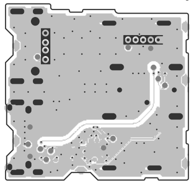
AUDIO VIDEO (B SIDE)



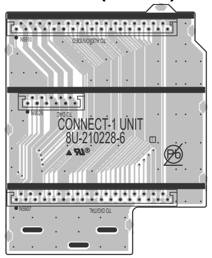
FRONT HDMI USB (A SIDE)



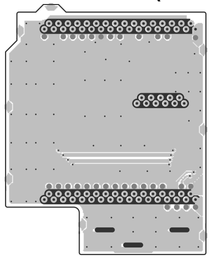
FRONT HDMI USB (B SIDE)



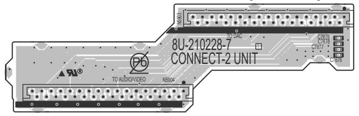
CONNECT-1 (A SIDE)



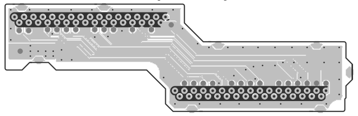
CONNECT-1 (B SIDE)



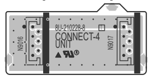
CONNECT-2 (A SIDE)



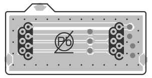
CONNECT-2 (B SIDE)



CONNECT-4 (A SIDE)

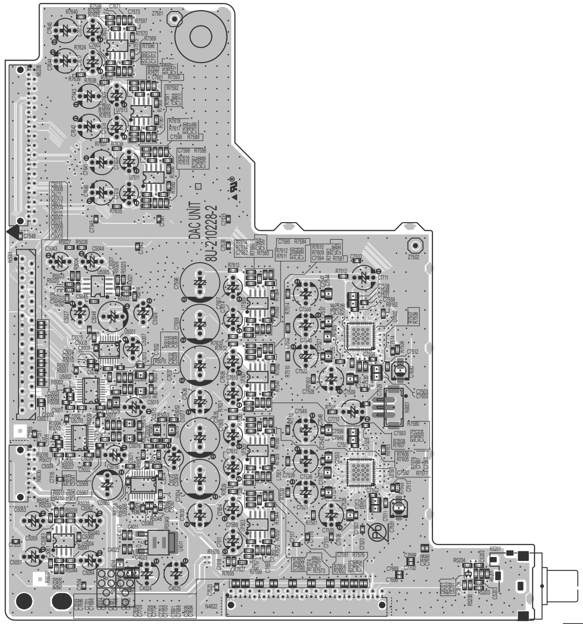


CONNECT-4 (B SIDE)

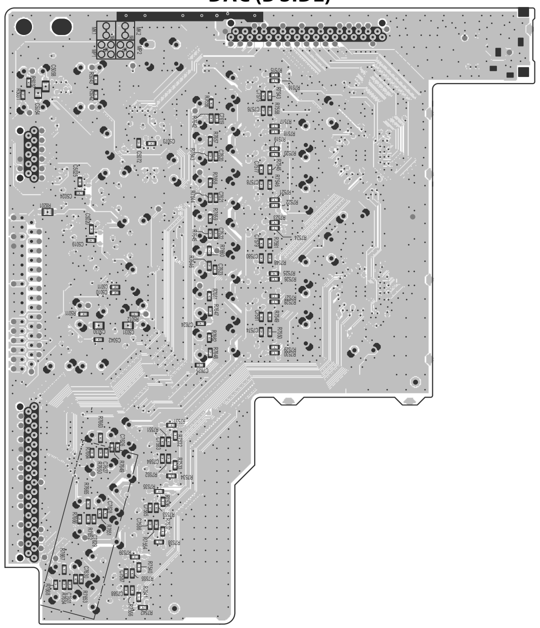


DAC, L AMP CONNECT, R AMP CONNECT, FRONT

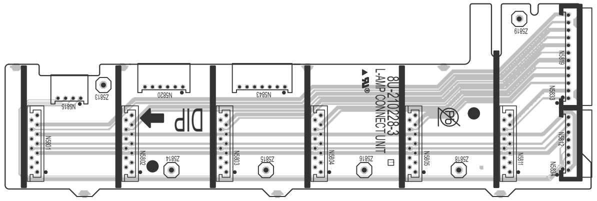
DAC (A SIDE)



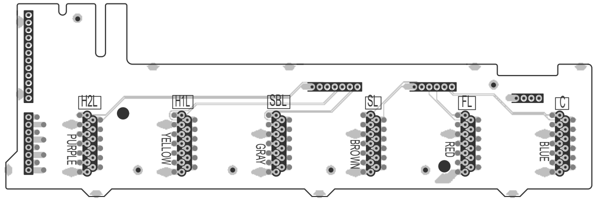
DAC (B SIDE)



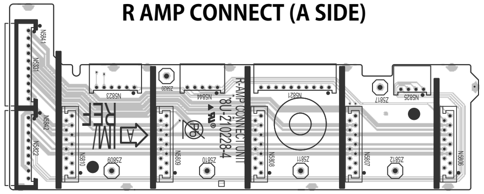
L AMP CONNECT (A SIDE)



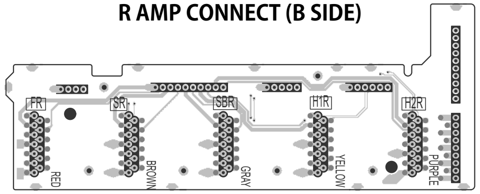
L AMP CONNECT (B SIDE)



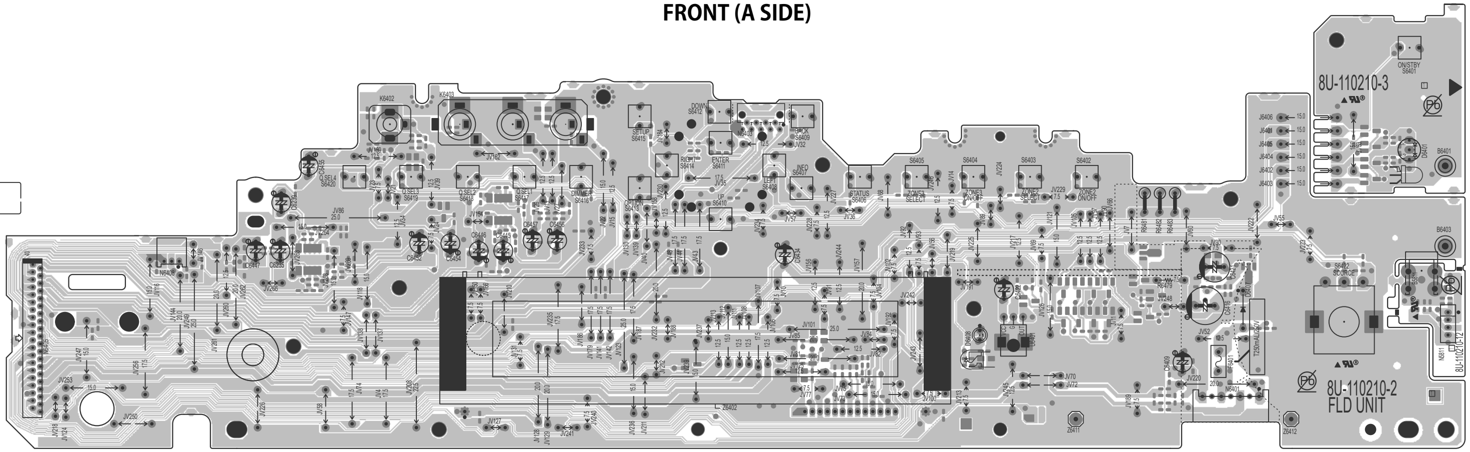
R AMP CONNECT (A SIDE)



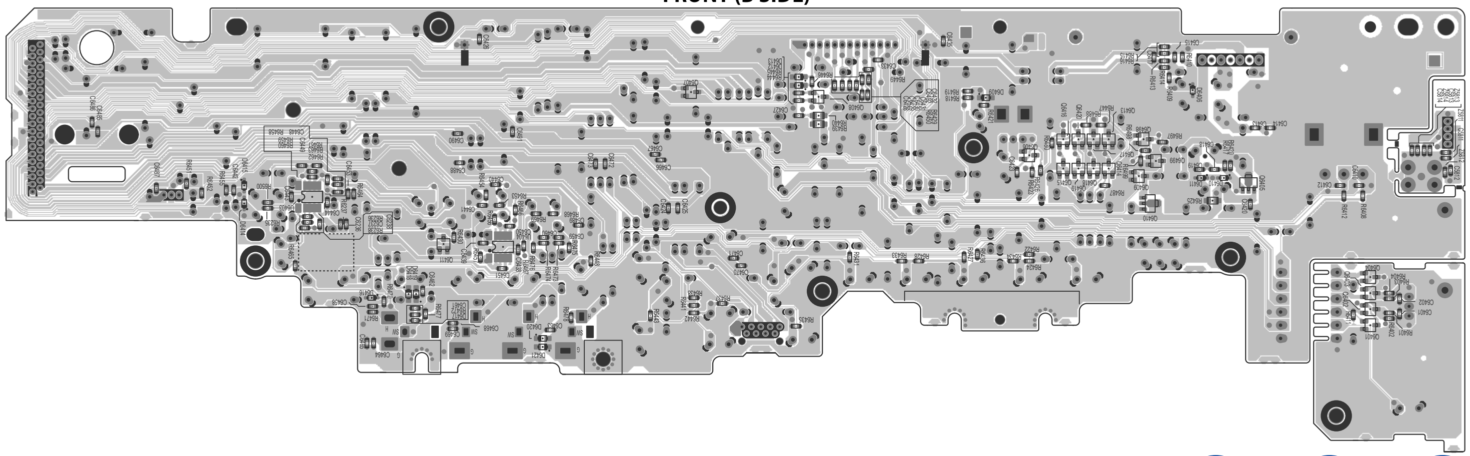
R AMP CONNECT (B SIDE)



FRONT (A SIDE)

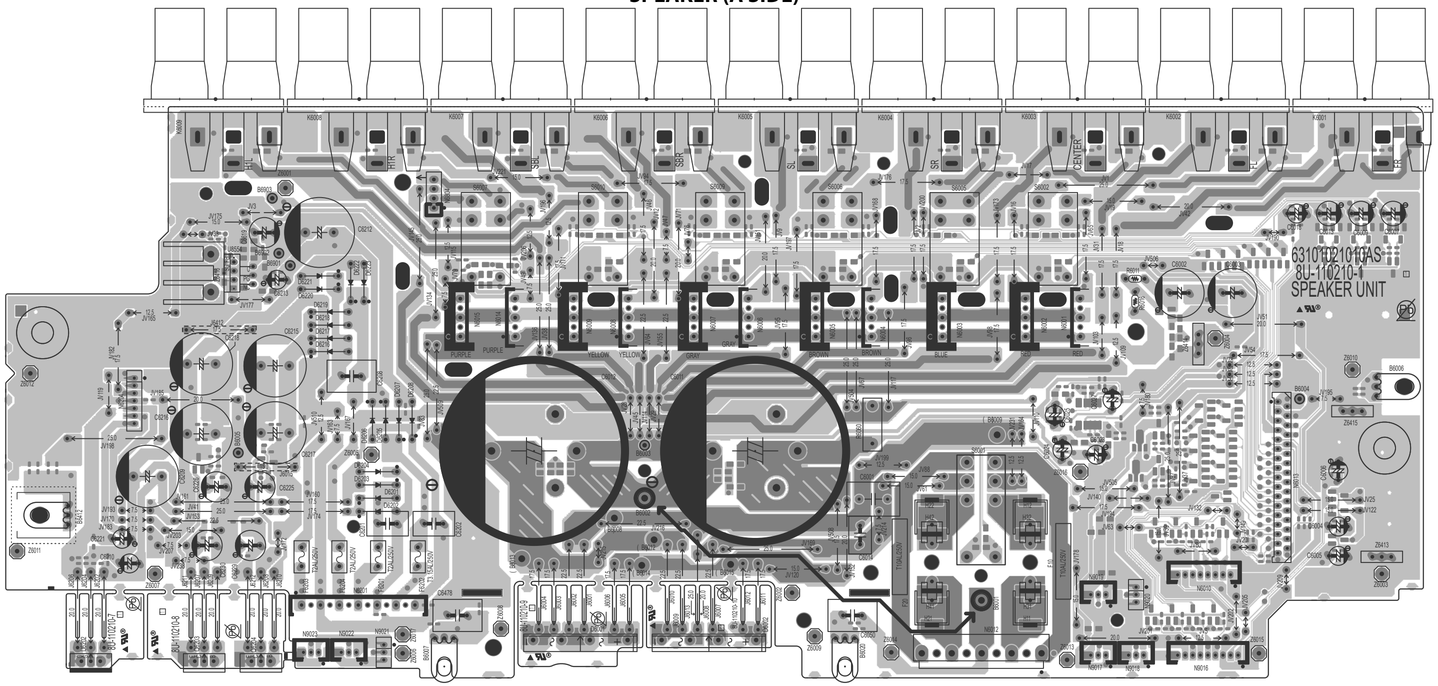


FRONT (B SIDE)

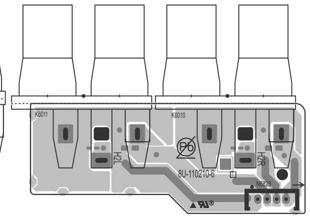


SPEAKER, HEIGHT2 SP, HP, P.SW, CONNECT-3

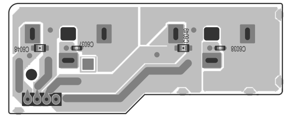
SPEAKER (A SIDE)



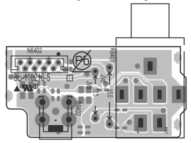
HEIGHT2 SP (A SIDE)



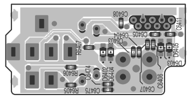
HEIGHT2 SP (B SIDE)



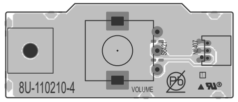
HP (A SIDE)



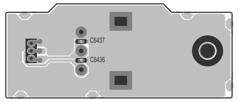
HP (B SIDE)



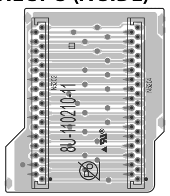
P.SW (A SIDE)



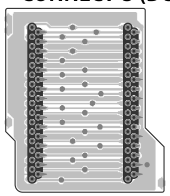
P.SW (B SIDE)



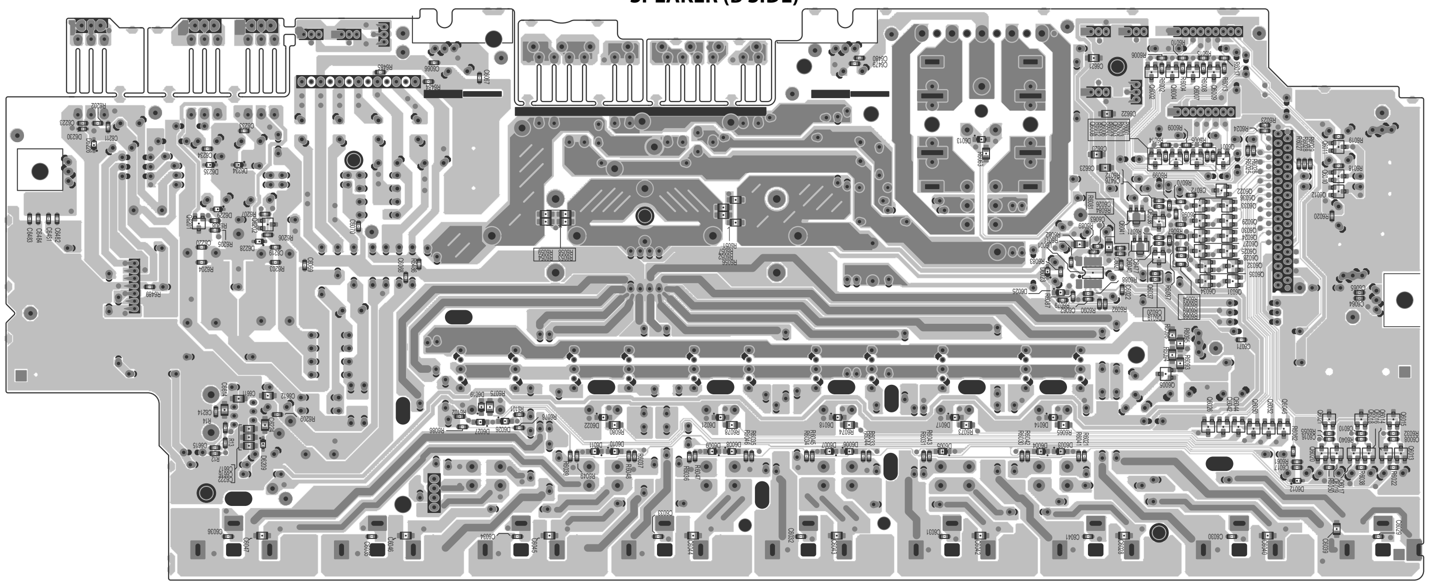
CONNECT-3 (A SIDE)



CONNECT-3 (B SIDE)

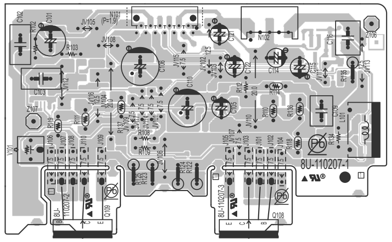


SPEAKER (B SIDE)

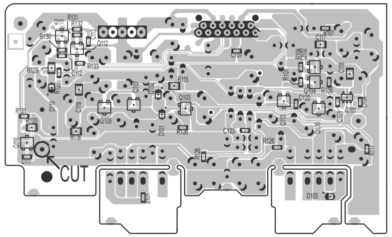


AMP1, AMP2, SMPS, 232C PHONO, POSISTER, RADIATOR COVER

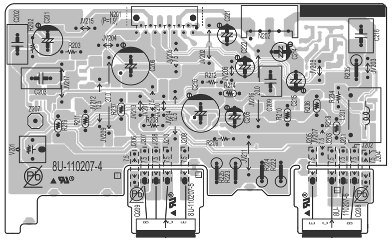
AMP1 (A SIDE)



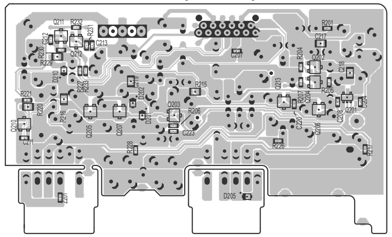
AMP1 (B SIDE)



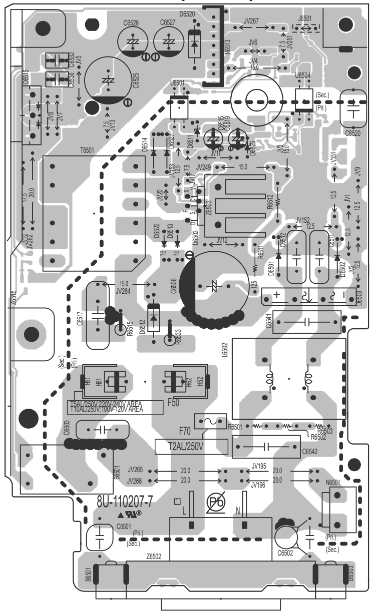
AMP2 (A SIDE)



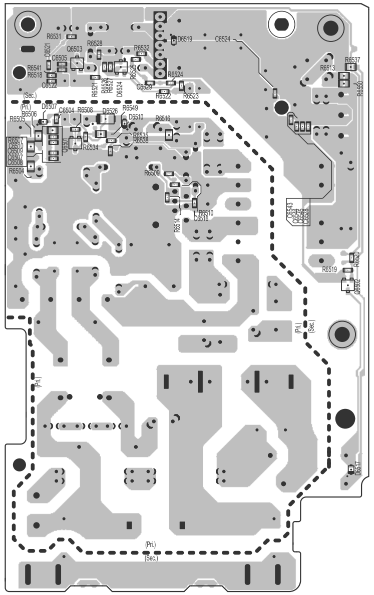
AMP2 (B SIDE)



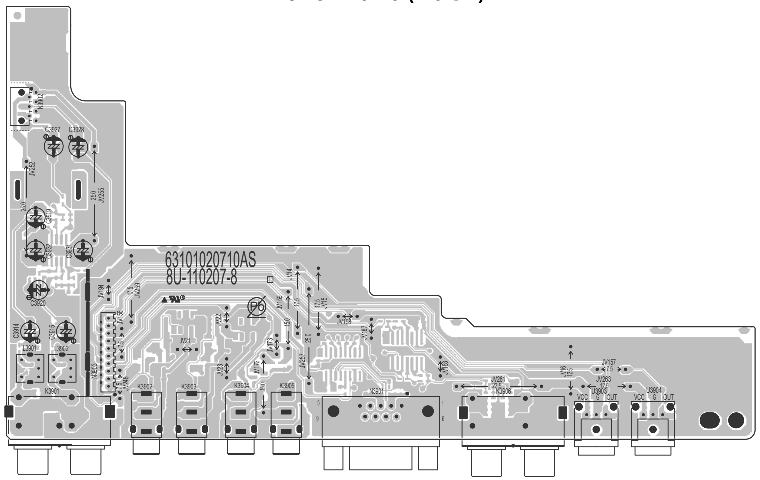
SMPS (A SIDE)



SMPS (B SIDE)



232C PHONO (A SIDE)



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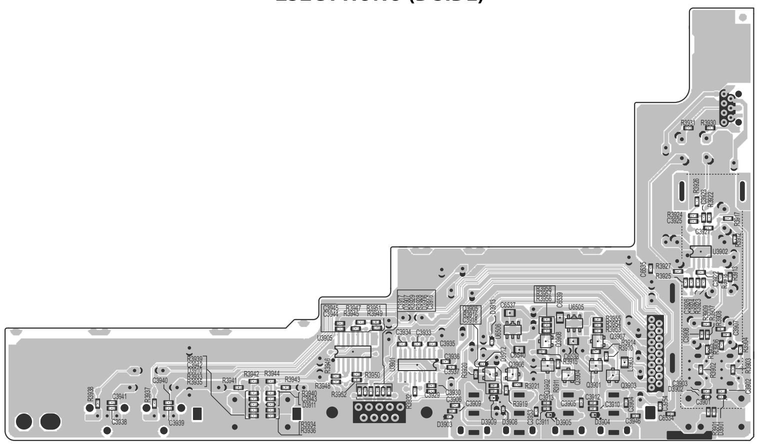
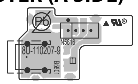
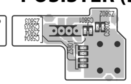


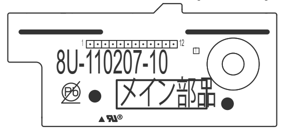
POSISTER (A SIDE)



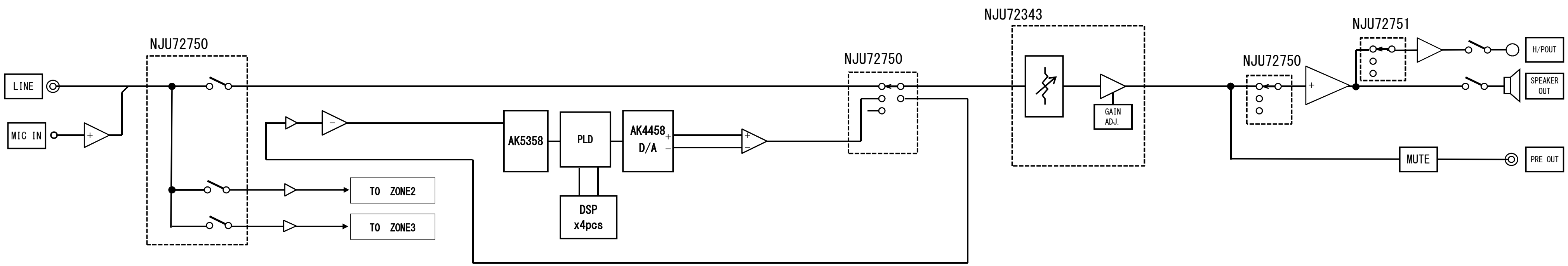
POSISTER (B SIDE)

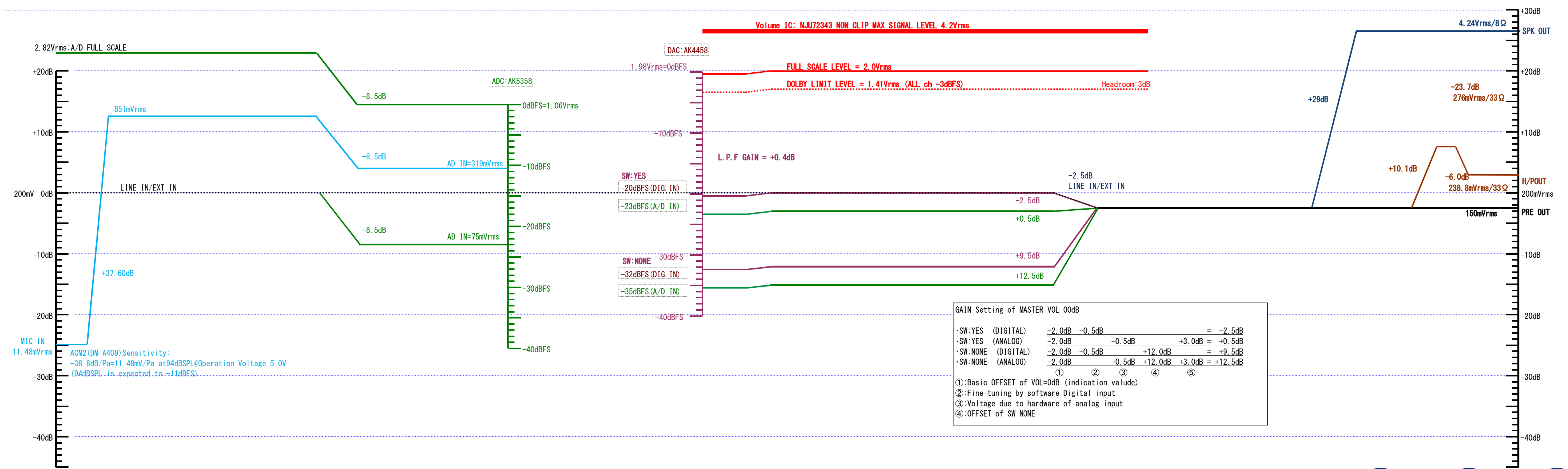


RADIATOR COVER (A SIDE)



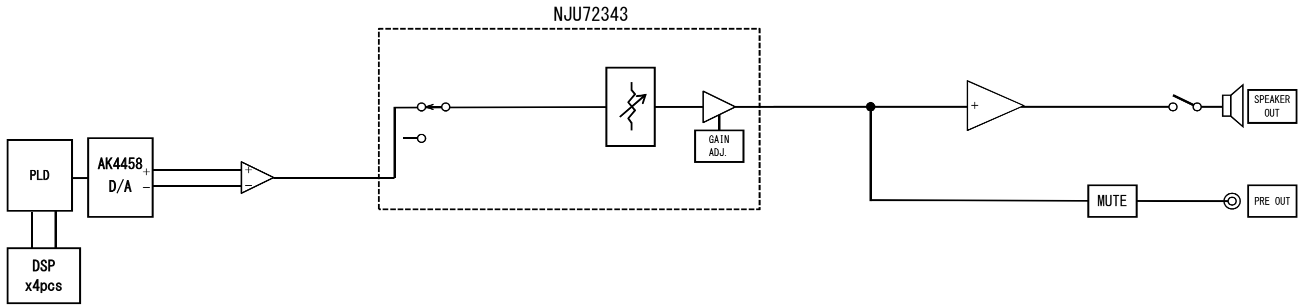
AVR-X6400H
LEVEL DIAGRAM
FRONT ch

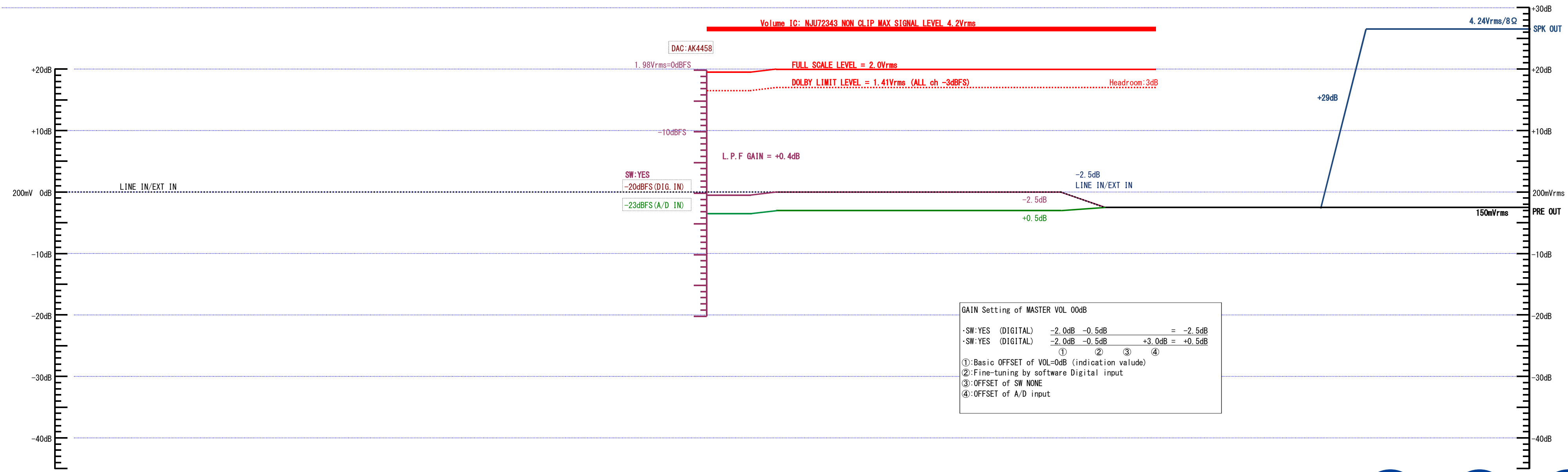




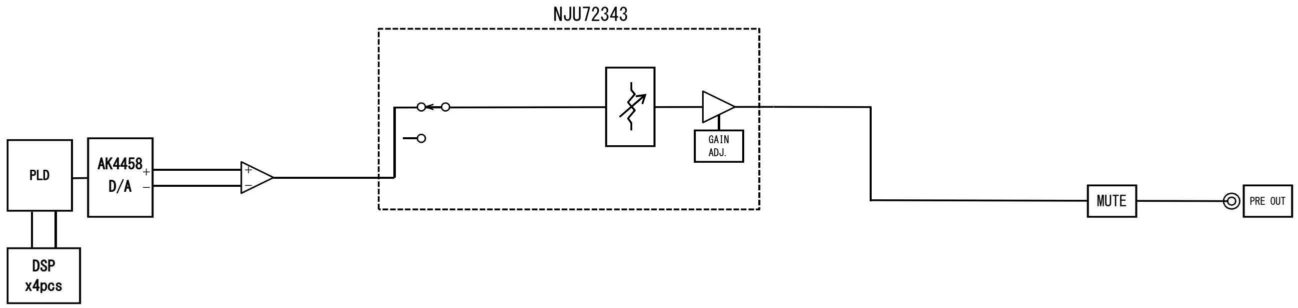
CENTER / SURROUND ch

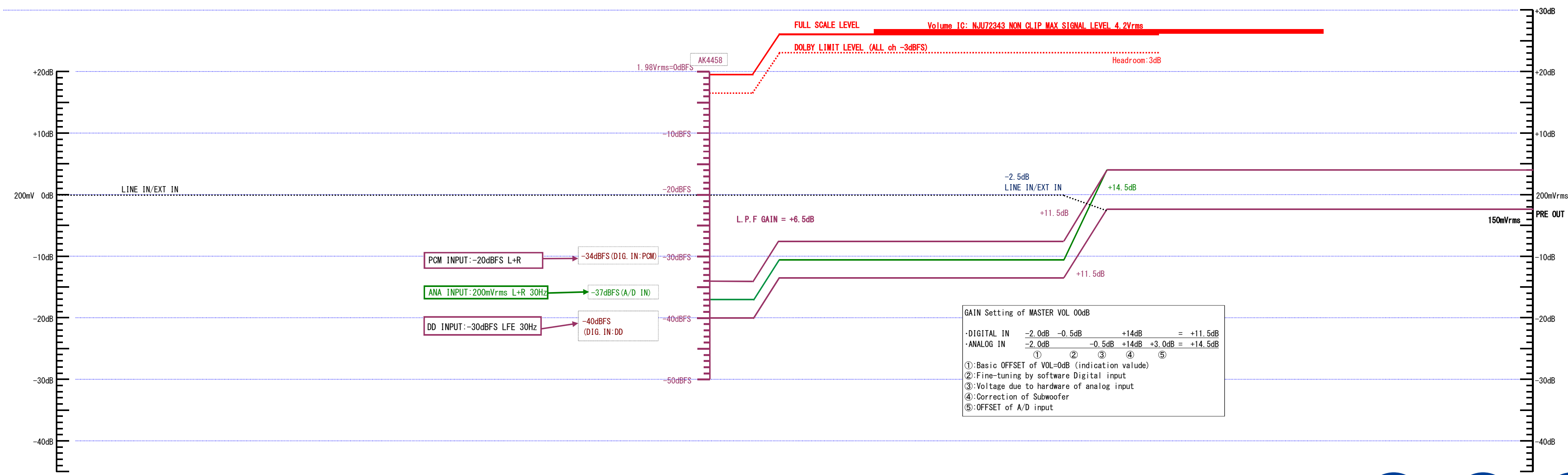
AVR-X6400H
LEVEL DIAGRAM
CENTER/SURROUND ch





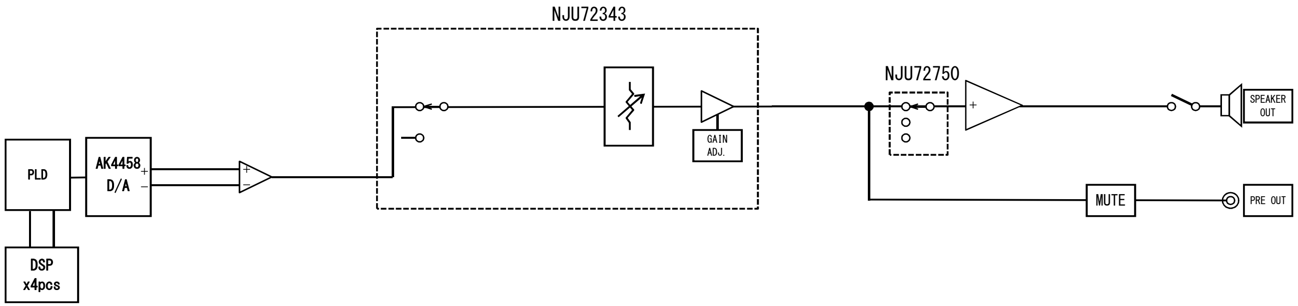
AVR-X6400H
LEVEL DIAGRAM
SUB WOOFER ch

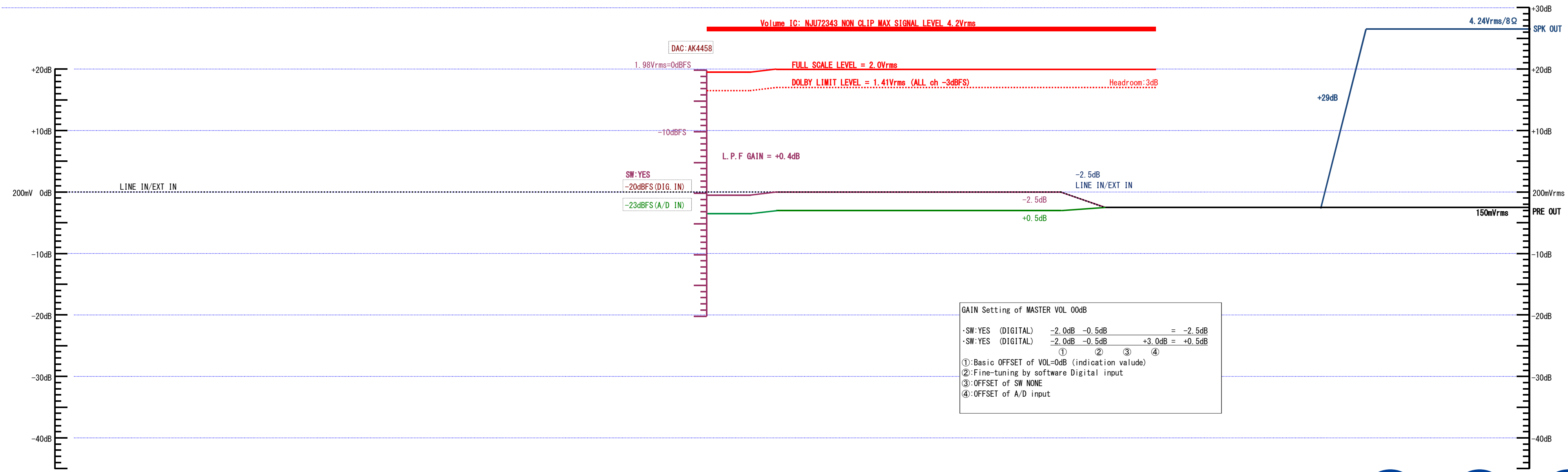




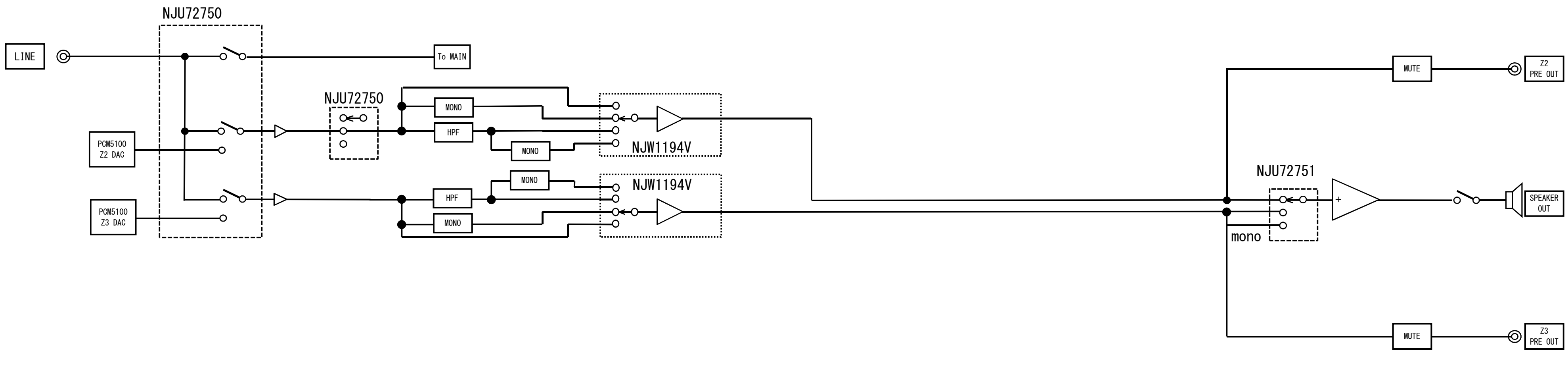
Caution in servicing
Electrical
Mechanical
Repair Information
Updating

AVR-X6400H
LEVEL DIAGRAM
SURROUND BACK/HEIGHT1/HEIGHT2 ch



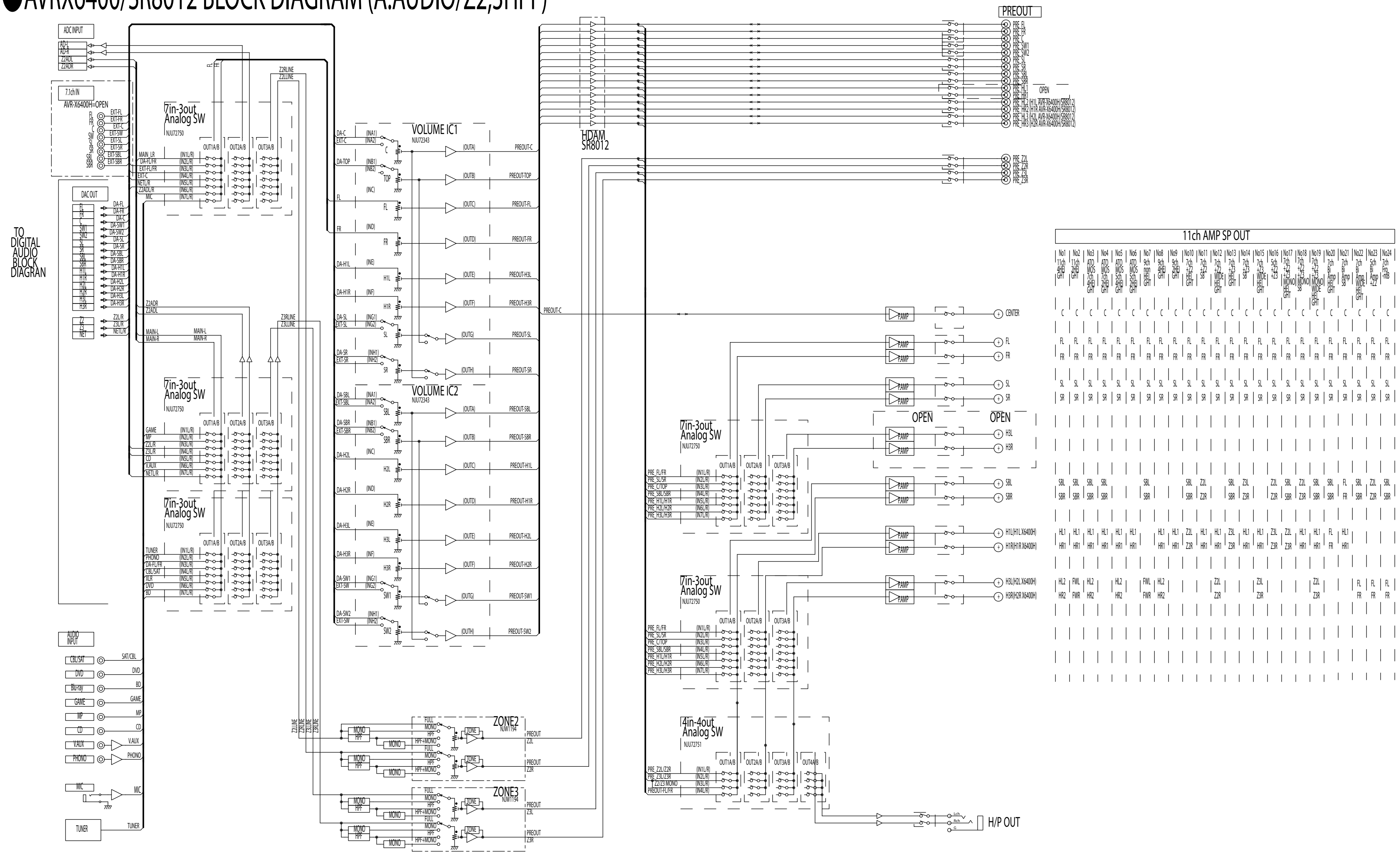


AVR-X6400H
LEVEL DIAGRAM
ZONE2/ZONE3



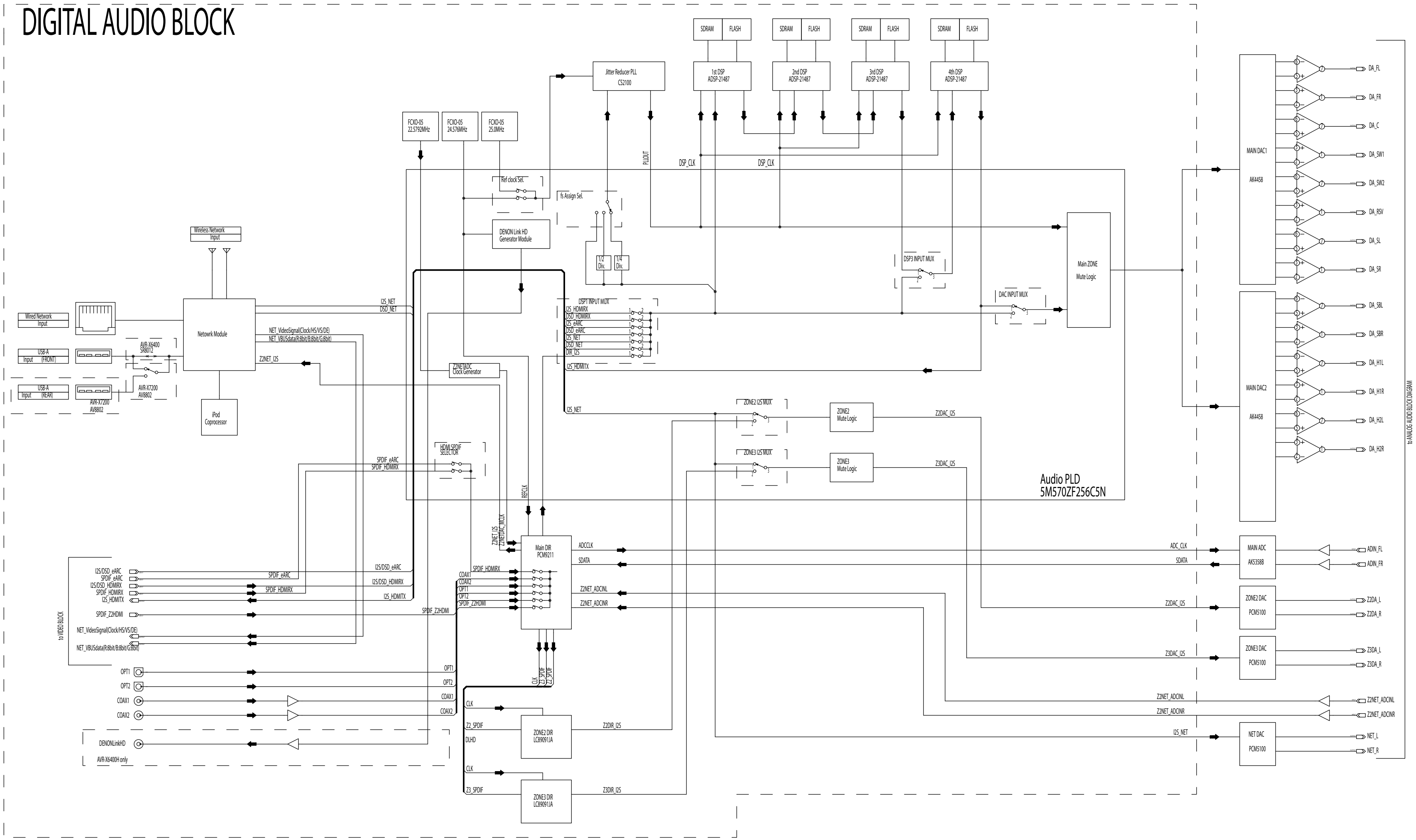
Caution in servicing
Electrical
Mechanical
Repair Information
Updating

●AVRX6400/SR8012 BLOCK DIAGRAM (A.AUDIO/Z2,3HPF)

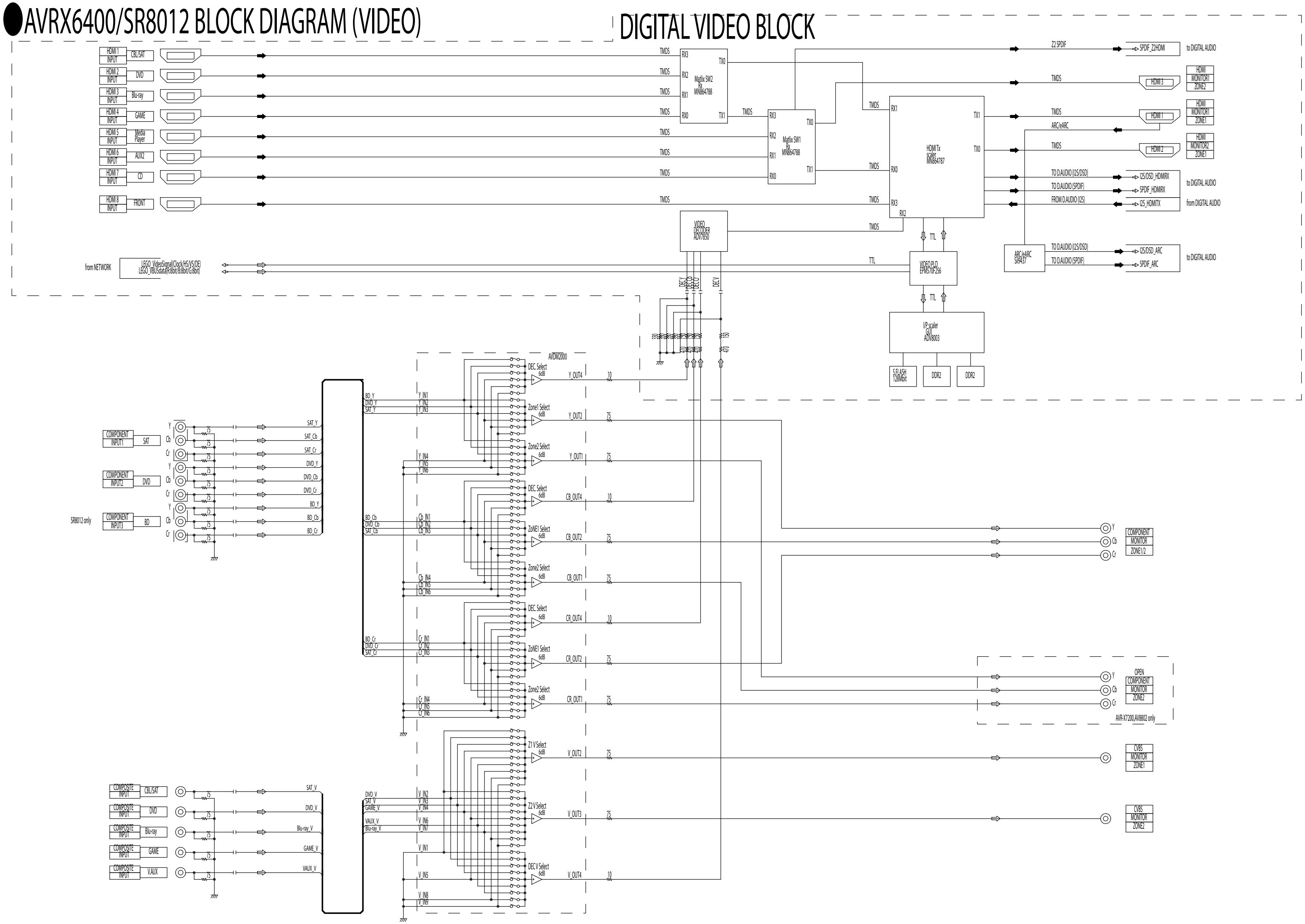


Caution in servicing
Electrical
Mechanical
Repair Information
Updating

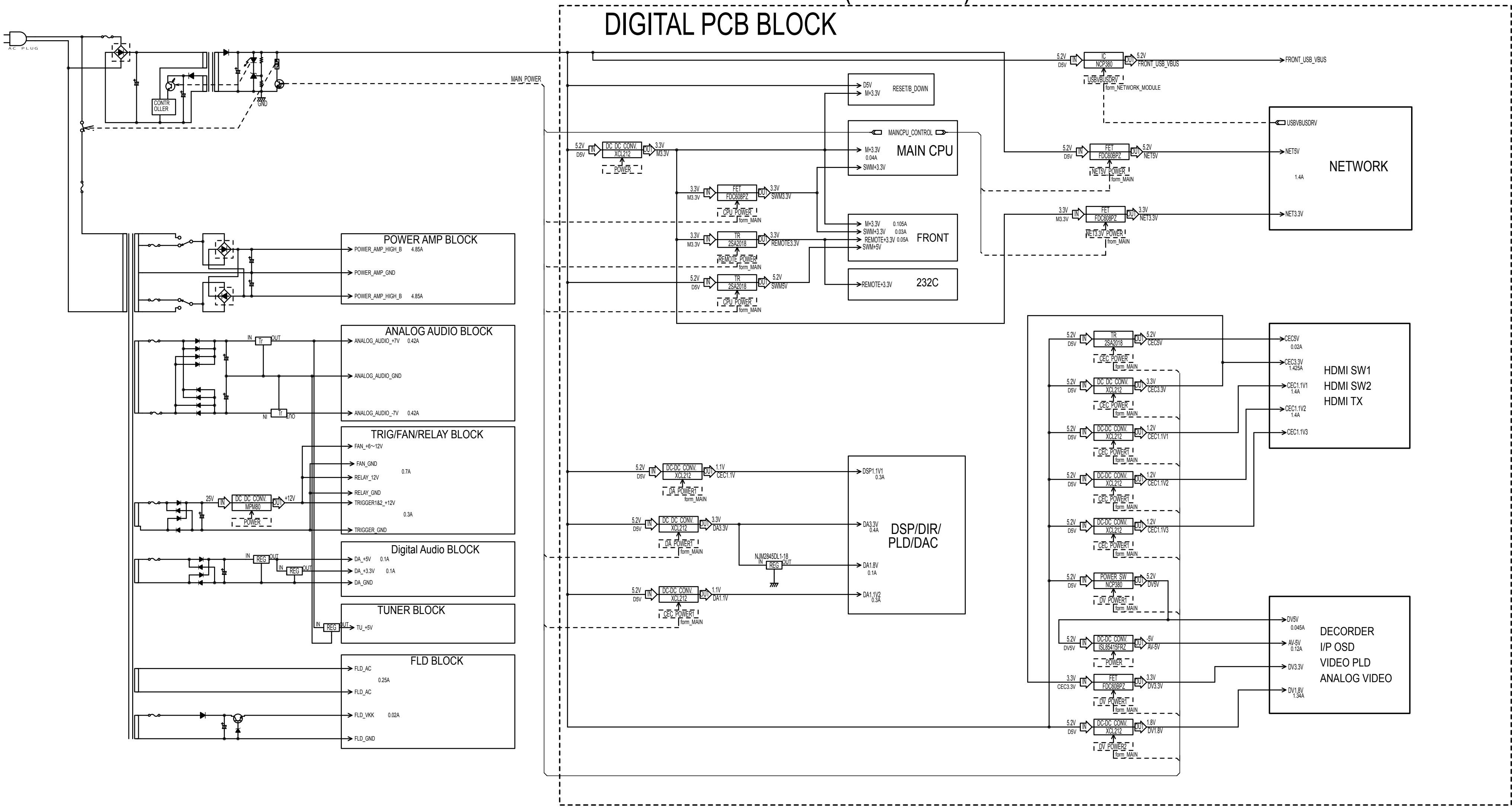
AVR-X6400H/SR8012 DIGITAL AUDIO/NETWORK BLOCK DIRAGRAM



AVRX6400/SR8012 BLOCK DIAGRAM (VIDEO)



AVRX6400/SR8012 BLOCK DIAGRAM (P.SUPPLY)

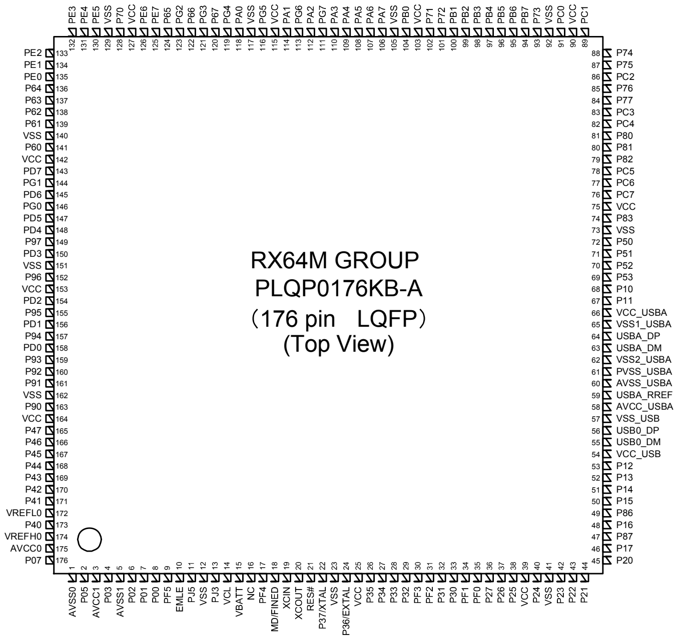


SEMICONDUCTORS

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 : U6201)



R5F56108VNFP Terminal Functions

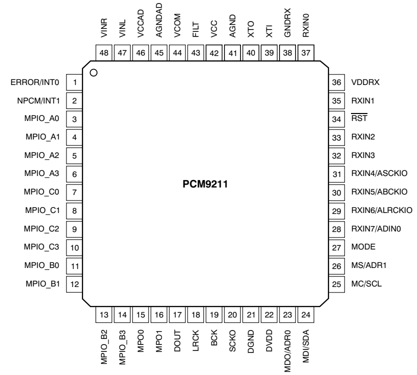
Pin	Pin Name	Symbol	I/O	Pu/Pd	STBY	STOP	CEC STBY	Function
1	AVSS0	AVSS0	-		-	-	-	Ground pin
2	P05/IRQ13	POWER_KEY	I	M3VPu	I	I	I	Detect Power switch (Release from Wait Mode,Set to interrupt)
3	AVCC1	AVCC1	-		-	-	-	Power supply pin
4	P03/IRQ11	RED_LED	O		L/H	L	H	POWER/STANDBY LED control pin
5	AVSS1	AVSS1	-		-	-	-	Ground pin
6	P02/SCK6/IRQ10/ AN120	FANDET_ LOW/MID	I/O	SW3VPu	I/L	I/L	I/L	Thermally detection input pin (for FAN control)(A/D converter)
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 (X6400 (NA))/GREEN_LED (X6400 (EU/CH/JP), SR8012)	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	NC (X6400)/ DOOR_DET (SR8012)	I	M3VPu/	I	I	I	Front trap door open/close detect input pin (High:Door open)
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	NC (X6400) / FLASHER_IN (SR8012)	O/I		L/I	L/I	L/I	IR Flasher control signal input (When standby mode,set to inturrupt)
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/I/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 (X6400(ALL), SR8012(NA))/ NC (SR8012 (EU/ JP/ CH)	I		L	L	L	TUNER control
33	P30/RXD1	TU_SDIO (X6400(ALL), SR8012 (NA))/ NC (SR8012(EU/ JP/ CH)	I_O		L	L	L	TUNER control
34	TCK/FINEC/PF1/ SCK1	TCK/NC (NORMRAL)	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 (X6400(ALL), SR8012 (NA))/ NC (SR8012 (EU/JP/CH)	O		L	L	L	TUNER control
37	P26/TXD1	TU_SCLK (X6400(ALL), SR8012(ALL))/ NC (SR8012 (EU/ JP/ CH)	O		L	L	L	TUNER control
38	P25/RXD3	VOL_DATA	O		L	L	L	Volume control pin (NJU72343)
39	VCC	VCC	-		-	-	-	Power supply pin
40	P24/SCK3	NC (X6400)/ KILL_IR (SR8012)	O		L	L	L	Front IR disable control pin
41	VSS	VSS	-		-	-	-	Ground pin
42	P23/TXD3/CTS0#/ RTS0#	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
47	P87/TXD10/TIOCA2	NC (X6400)/ RC_OUT (SR8012)	O		L/H	L/L	L/H	Remote code (RC-5) output pin
48	P16/TXD1/RXD3/ IRQ6	NET5V_POW-ER	O		L	L	L	Ethernet power supply (Net5V) control pin
49	P86/RXD10	SEL_DATA	O		L	L	L	Audio selector control pin (NJU72750/72751)

Pin	Pin Name	Symbol	I/O	Pu/Pd	STBY	STOP	CEC STBY	Function
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/ ADV7850/ ARC IC/ ADVM2000
78	PC5/SCK8	AVSCL	I/O	DV3VPu	O/L	O/L	L	VIDEO I2C control pin for ADV8003/ ADV7850/ ARC IC/ ADVM2000
79	P82/TXD10	DSP_MOSI	O	DA3VPu	L	L	L	DSP(ADI) control pin
80	P81/RXD10	DSP_MISO	I	DA3VPu	L	L	L	DSP(ADI) control pin
81	P80/SCK10	DSP_CLK	O	DA3VPu	L	L	L	DSP(ADI) control pin
82	PC4/SCK5	DSP1FLAG0	I	Pd	L	L	L	DSP(ADI) interrupt signal input pin
83	PC3/TXD5	DSP2FLAG0	I	Pd	L	L	L	DSP(ADI) interrupt signal input pin
84	P77/TXD11	DSP3FLAG0	I	Pd	L	L	L	DSP(ADI) interrupt signal input pin
85	P76/RXD11	DSP4FLAG0	I	Pd	L	L	L	DSP(ADI) interrupt signal input pin
86	PC2/RXD5	DSP_RST	O		L	L	L	DSP(ADI) reset control pin
87	P75/SCK11	CEC_POWER2	O		L	L	L	CEC standby power control (for CEC Standby Mode 3)
88	P74	DSP1CS	O	DA3VPu	L	L	L	DSP(ADI) control pin
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	DSP2CS	O	DA3VPu	L	L	L	DSP(ADI) control pin
92	VSS	VSS	-		-	-	-	Ground pin
93	P73	DSP3CS	O	DA3VPu	L	L	L	DSP(ADI) control pin
94	PB7/TXD9	HSDA	I/O	CE-C3VPu	L	L	L	HDMI I2C control pin for MN864787/MN864788
95	PB6/RXD9	HSCL	I/O	CE-C3VPu	L	L	L	HDMI I2C control pin for MN864787/MN864788
96	PB5/SCK9	NC (X6400)/ AC_RL1 (SR8012)	O		L	L	L	AC relay control pin for rush resistor (SR8012 only)
97	PB4	APLD_CS	O		L	L	L	Audio PLD (5M570ZF256C5N) control pin

Pin	Pin Name	Symbol	I/O	Pu/Pd	STBY	STOP	CEC STBY	Function
98	PB3/SCK4/SCK6	APLD_DATA/ DAC_DATA	O		L	L	L	Audio PLD (5M570ZF256C5N) control pin/DAC (AK4458) control pin
99	PB2	APLD_CLK/ DAC_CLK	O		L	L	L	Audio PLD (5M570ZF256C5N) control pin/DAC (AK4458) control pin
100	PB1/TXD4/TXD6/ IRQ4-DS	DAC_MS	O		L	L	L	DAC (AK4458) control pin
101	P72	DAC_RST	O		L	L	L	DAC (AK4458) control pin
102	P71	Z2PLD_ERR	I	-	L	L	L	Detect PLD error (from Audio PLD)
103	VCC	VCC	-		-	-	-	Power supply pin
104	PB0/RXD4/RXD6/ IRQ12	Z3PLD_ERR	I	-	L	L	L	Detect PLD error (from Audio PLD)
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	VOL_CLK	O		L	L	L	Volume control pin (NJU72343)
109	PA4/TXD5/SSDA5/ IRQ5-DS	NC	O		L	L	L	NC
110	PA3/RXD5/SSCL5	MVOL_MUTE	O		L	L	L	Volume control pin (NJU72343)
111	TRDATA3/PG7	REMOTE_ POWER (232C)	O		L	L	L	232C power supply (REMOTE 3.3V) control pin
112	PA2/RXD5	NC/(USB_EN)	O		L	L	L	NC/(for X7500H/AV8805)
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	ZVOL_STB	O		L	L	L	ZONE2 volume control pin (NJW1194)
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	NC (X6400)/ FL_CE2 (SR8012)	O		L	L	L	FL display control pin
124	P65	NC (X6400)/ FIL_CTRL (SR8012)	O		L	L	L	Filament Power control pin (for Portal FLD)
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	ADC_RST	O		I	L	I	A/D convertor(AK5358) reset 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：normal, High：Deep Standby))
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	DSP4CS	O	-	Pd	Z	L	DSP(ADI) control pin
149	P97	DE_RST	O	Pd	Z		L	Video decoder (ADV7850) 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	ARC_RST	O		L	L	L	Reset control pin for ARC IC
159	P93/AN117	THERMAL_A	I	SW3VPu	I	L	I	Protection detect signal input pin (for power TR)
160	P92/RXD7/AN116	DA_POWER1	O		L	L	L	Digital audio power supply (DA3.3V,DA1.2V) control pin
161	P91/AN115	THERMAL_E (X6400H), FANDET_ HIGH (SR8012)	I/I	SW3VPu	I/I	L	I/I	Protection detect signal input pin (for Heat sink)(X6400H), Thermally detection input pin (for FAN control)(SR8012)
162	VSS	VSS	-		-	-	-	Ground pin
163	P90/TXD7/AN114	THERMAL_F	I/I	SW3VPu	I/I	L	I/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	SEL_CLK	O		L	L	L	Audio selector control pin (NJU72750/72751)
174	VREFH0	VREFH0	-		-	-	-	Power supply pin
175	AVCC0	AVCC0	-		-	-	-	Power supply pin
176	P07/IRQ15	DSP2FLAG3	I	Pd	L	L	L	DSP(ADI) control pin

PCM9211 (DIGITAL : U7004)



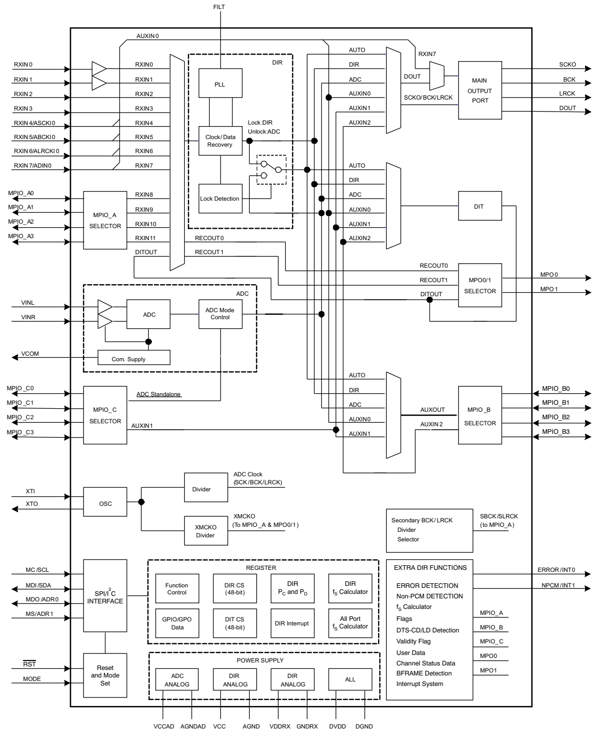
PIN Functions

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)

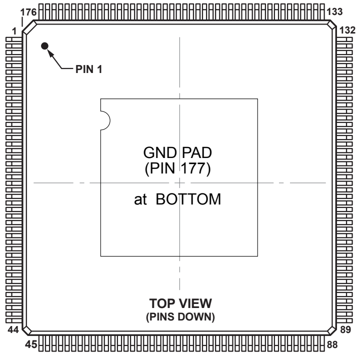
PIN				DESCRIPTION
NO.	NAME	I/O	5-V TOLERANT	
26	MS/ADR1	I	Yes	Software control I/F, SPI chip select / I2C slave address setting1(2)
27	MODE	I	No	Control mode setting, (see the Serial Control Mode section, Control Mode Pin Setting)
28	RXIN7/ADIN0	I	Yes	Biphase signal, input 7 / AUXIN0, serial audio data input(2)
29	RXIN6/ALRCKI0	I	Yes	Biphase signal, input 6 / AUXIN0, LR clock input(2)
30	RXIN5/ABCKI0	I	Yes	Biphase signal, input 5 / AUXIN0, bit clock input(2)
31	RXIN4/ASCKI0	I	Yes	Biphase signal, input 4 / AUXIN0, system clock input(2)
32	RXIN3	I	Yes	Biphase signal, input 3(2)
33	RXIN2	I	Yes	Biphase signal, input 2(2)
34	RST	I	Yes	Reset Input, active low(2) (4)
35	RXIN1	I	Yes	Biphase signal, input 1, built-in coaxial amplifier
36	VDDRX	–	–	Power supply, 3.3 V (typ.), for RXIN0 and RXIN1.
37	RXIN0	I	Yes	Biphase signal, input 0, built-in coaxial amplifier
38	GNDRX	-	-	Ground, for RXIN
39	XTI	I	No	Oscillation circuit input for crystal resonator or external XTI clock source input(5)
40	XTO	O	No	Oscillation circuit output for crystal resonator
41	AGND	–	–	Ground, for PLL analog
42	VCC	–	–	Power supply, 3.3 V (typ.), for PLL analog
43	FILT	O	No	External PLL loop filter connection terminal; must connect recommended filter
44	VCOM	O	No	ADC common voltage output; must connect external decoupling capacitor
45	AGNDAD	–	–	Ground, for ADC analog
46	VCCAD	–	–	Power supply, 5.0 V (typ.), for ADC analog
47	VINL	I	No	ADC analog voltage input, left channel
48	VINR	I	No	ADC analog voltage input, right channel

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

PCM9211 BLOCK DIAGRAM



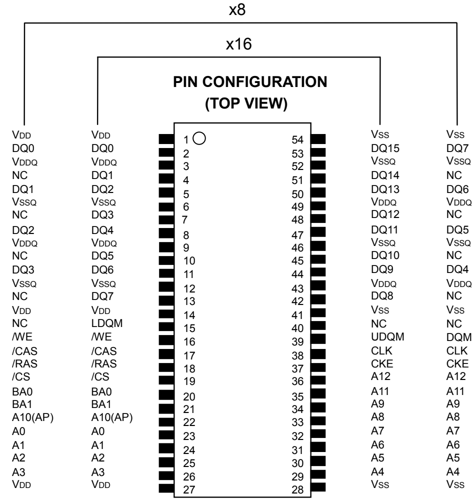
ADSP-21487KSWZ-4B (DIGITAL : U0101, U0201, U0301, U0401)



ADSP21487KSWZ3B Terminal Function

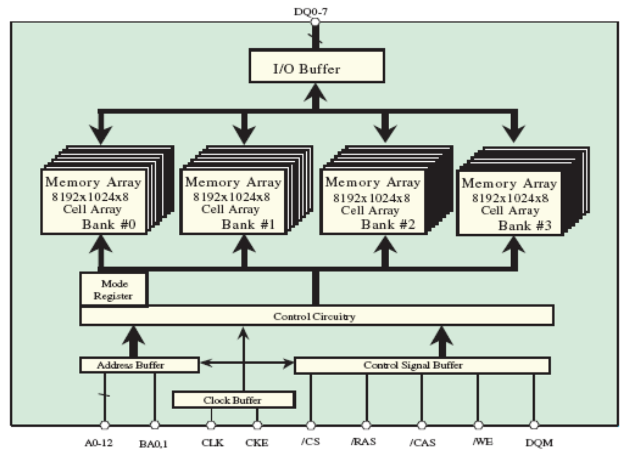
Pin Name	Pin No.	Pin Name	Pin No.	Pin Name	Pin No.	Pin Name	Pin No.
SDDQM	1	V_{DD_EXT}	45	DAI_P10	89	V_{DD_INT}	133
MS0	2	DPI_P08	46	V_{DD_INT}	90	FLAG0	134
SDCKE	3	DPI_P07	47	V_{DD_EXT}	91	FLAG1	135
V_{DD_INT}	4	V_{DD_INT}	48	DAI_P20	92	FLAG2	136
CLK_CFG1	5	DPI_P09	49	V_{DD_INT}	93	NC	137
ADDR0	6	DPI_P10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

A3V56S40GTP-60 (DIGITAL : U0103, U0203, U0303, U0403)

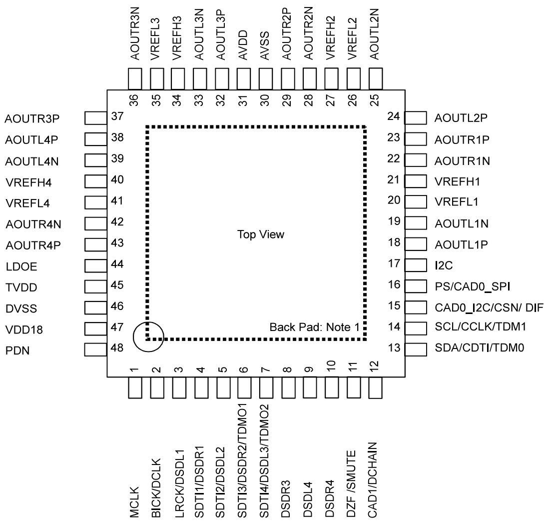


CLK	: Master Clock	DQM	: Output Disable / Write Mask (A3V56S30GTP)
CKE	: Clock Enable	U,L DQM	: Output Disable / Write Mask (A3V56S40GTP)
/CS	: Chip Select	A0-12	: Address Input
/RAS	: Row Address Strobe	BA0,1	: Bank Address
/CAS	: Column Address Strobe	VDD	: Power Supply
/WE	: Write Enable	VDDQ	: Power Supply for Output
DQ0-7	: Data I/O (A3V56S30GTP)	VSS	: Ground
DQ0-15	: Data I/O (A3V56S40GTP)	VSSQ	: Ground for Output

Block Diagram



AK4458VN (DAC : U7501, U7502)

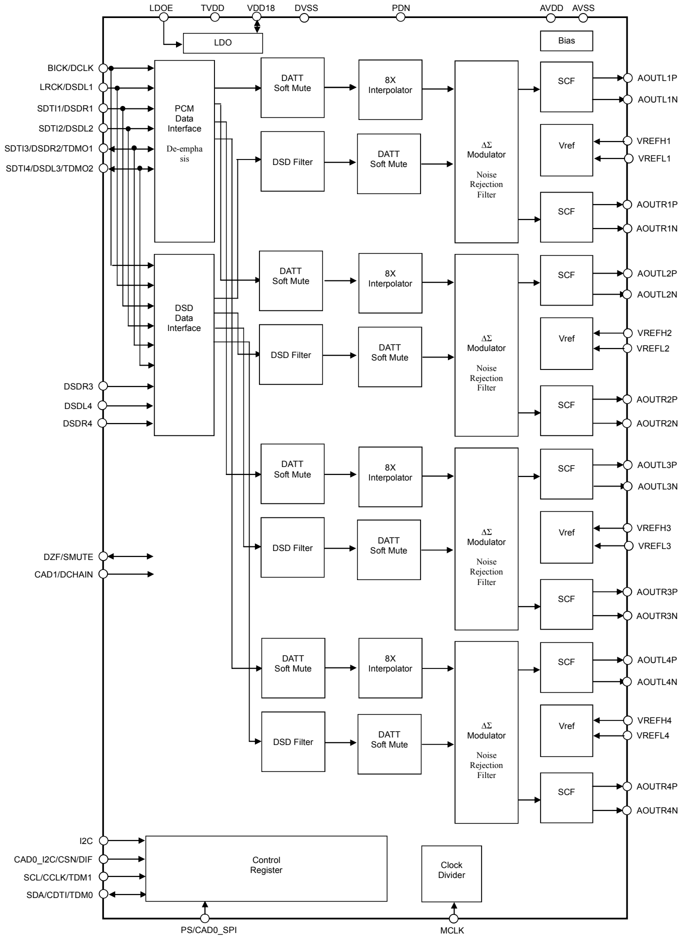


Pin Function

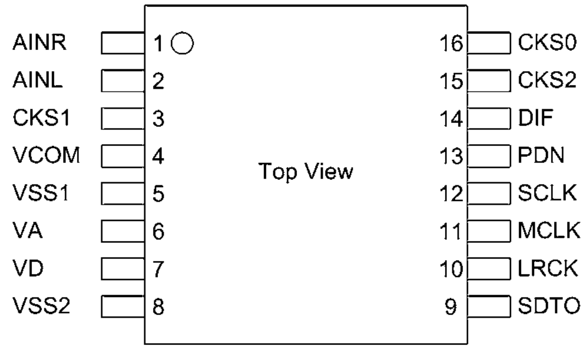
No.	Pin Name	I/O	Function	PD State
1	MCLK	I	External Master Clock Input Pin	Hi-Z
2	BICK	I	Audio Serial Data Clock Pin in PCM mode	Hi-z
	DCLK	I	DSD Clock Pin in DSD mode	
3	LRCK	I	Input Channel Clock Pin in PCM mode	Hi-Z
	DSDL1	I	Audio Serial Data Input in DSD mode	
4	SDTI1	I	Audio Serial Data Input in PCM mode	Hi-Z
	DSDR1	I	Audio Serial Data Input in DSD mode	
5	SDTI2	I	Audio Serial Data Input in PCM mode	Hi-Z
	DSDL2	I	Audio Serial Data Input in DSD mode	
6	SDTI3	I	Audio Serial Data Input in PCM mode	100k Ω Pull down
	DSDR2	I	Audio Serial Data Input in DSD mode	
	TDMO1	O	Audio Serial Data Output in Daisy Chain mode	
7	SDTI4	I	Audio Serial Data Input in PCM mode	100k Ω Pull down
	DSDL3	I	Audio Serial Data Input in DSD mode	
	TDMO2	O	Audio Serial Data Output in Daisy Chain mode	
8	DSDR3	I	Audio Serial Data Input in DSD mode	Hi-Z
9	DSDL4	I	Audio Serial Data Input in DSD mode	Hi-Z
10	DSDR4	I	Audio Serial Data Input in DSD mode	Hi-Z
11	DZF	O	Zero Input Detect in I2C Bus or 3-wire serial control mode	100k Ω Pull down
	SMUTE	I	Soft Mute Pin in Parallel control mode. When this pin is changed to "H", soft mute cycle is initiated. When it is returning to "L", the output mute is released.	
12	CAD1	I	Chip Address 0 Pin in I C Bus or 3-wire serial control mode	Hi-Z
	DCHAIN	I	Daisy Chain Mode select pin in Parallel control mode.	
13	SDA	I/O	Control Data Pin in I2C Bus serial control mode	Hi-Z
	CDTI	I	Control Data Input Pin in 3-wire serial control mode	
	TDM0	I	TDM Mode select pin in Parallel control mode.	
14	SCL	I	Control Data Clock Pin in I2C Bus serial control mode	Hi-Z
	CCLK	I	Control Data Clock Pin in 3-wire serial control mode	
	TDM1	I	TDM Mode select pin in Parallel control mode.	
15	CAD0_I2C	I	Chip Address 0 Pin in I2C Bus serial control mode	Hi-Z
	CSN	I	Chip Select Pin in 3-wire serial control mode	
	DIF	I	Audio Data Format Select in Parallel control mode. "L": 32-bit MSB, "H": 32-bit I2S	
16	PS	I	(I2C pin = "H") Control Mode Select Pin "L": I2C Bus serial control mode, "H": Parallel control mode.	Hi-Z
	CAD0_SPI	I	(I2C pin = "L") Chip Address 0 Pin in 3-wire serial control mode	
17	I2C	I	Control Mode Select Pin "L": 3-wire serial control mode "H": I2C Bus serial control mode or Parallel control mode.	Hi-Z
18	AOUTL1P	O	Lch Positive Analog Output 1 Pin	Hi-Z
19	AOUTL1N	O	Lch Negative Analog Output 1 Pin	Hi-Z
20	VREFL1	I	Negative Voltage Reference Input Pin, AVSS	Hi-Z
21	VREFH1	I	Positive Voltage Reference Input Pin, AVDD	Hi-Z
22	AOUTR1N	O	Rch Negative Analog Output 1 Pin	Hi-Z
23	AOUTR1P	O	Rch Positive Analog Output 1 Pin	Hi-Z
24	AOUTL2P	O	Lch Positive Analog Output 2 Pin	Hi-Z
25	AOUTL2N	O	Lch Negative Analog Output 2 Pin	Hi-Z
26	VREFL2	I	Negative Voltage Reference Input Pin, AVSS	Hi-Z
27	VREFH2	I	Positive Voltage Reference Input Pin, AVDD	Hi-Z
28	AOUTR2N	O	Rch Negative Analog Output 2 Pin	Hi-Z
29	AOUTR2P	O	Rch Positive Analog Output 2 Pin	Hi-Z
30	AVSS	-	Analog Ground Pin	—
31	AVDD	-	Analog Power Supply Pin, 3.0V-5.5V	—
32	AOUTL3P	O	Lch Positive Analog Output 3 Pin	Hi-Z
33	AOUTL3N	O	Lch Negative Analog Output 3 Pin	Hi-Z
34	VREFH3	I	Positive Voltage Reference Input Pin, AVDD	Hi-Z
35	VREFL3	I	Negative Voltage Reference Input Pin, AVSS	Hi-Z
36	AOUTR3N	O	Rch Negative Analog Output 3 Pin	Hi-Z
37	AOUTR3P	O	Rch Positive Analog Output 3Pin	Hi-Z
38	AOUTL4P	O	Lch Positive Analog Output 4 Pin	Hi-Z
39	AOUTL4N	O	Lch Negative Analog Output 4 Pin	Hi-Z
40	VREFH4	I	Positive Voltage Reference Input Pin, AVDD	Hi-Z
41	VREFL4	I	Negative Voltage Reference Input Pin, AVSS	Hi-Z
42	AOUTR4N	O	Rch Negative Analog Output 4 Pin	Hi-Z
43	AOUTR4P	O	Rch Positive Analog Output 4 Pin	Hi-Z
44	LDOE	I	Internal LDO Enable Pin. "L": Disable, "H": Enable	Hi-Z
45	TVDD	-	Digital Power Supply Pin, 3.0V-3.6V	—
46	DVSS	-	Digital Ground Pin	—
47	VDD18	O	LDO Output Pin (LDOE pin = "H") This pin should be connected to DVSS with 1.0μF.	(Note 4)
		I	1.8V Power Input Pin (LDOE pin = "L")	
48	PDN	I	Power-Down & Reset Pin When this pin is "L", the AK4458 is powered-down and the control registers are reset to default state.	Hi-Z

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

FUNCTIONAL BLOCK DIAGRAM



AK5358BET (DAC : U5001)



AK5358BET Pin Function

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

PCM5100 (DAC : U5002, U5003, U5006)

PCM510X (top view)

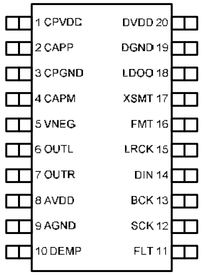


Table 2. TERMINAL FUNCTIONS, PCM510x

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^{2}S (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

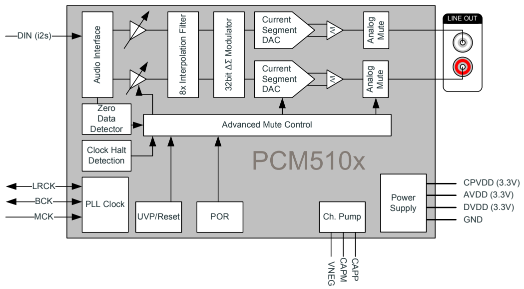
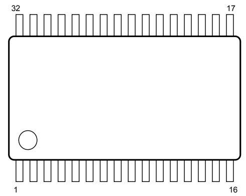


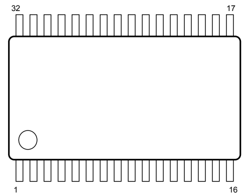
Figure 1. PCM510x Functional Block Diagram

NJU72343 (AUDIO/VIDEO : U3215, U3216)



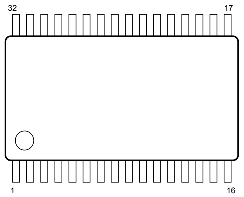
No.	Symbol	Function	No.	Symbol	Function
1	AREF	Analog reference potential	17	DATA	IC control data input
2	ADR	Address selection	18	CLOCK	IC control clock input
3	InA2	Ach input2	19	VDDOUT	Digital power supply output
4	InB2	Bch input2	20	AREF	Analog reference potential
5	InA1	Ach input1	21	OutH	Hch output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

NJU72750 (AUDIO/VIDEO : U3212, U3213, U3214, U3217, U3218)



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

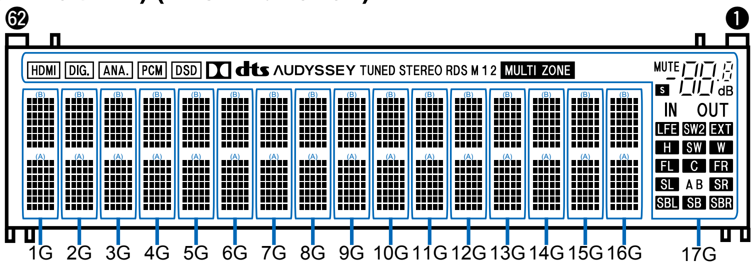
NJU72751 (AUDIO/VIDEO : U3219)



No.	Symbol	Function	No.	Symbol	Function
1	V+	Power supply(+)	17	CLOCK	IC control clock input
2	ADR0	Address selection pin 0	18	NC	-
3	InA1	Ach input1	19	OutB4	Bch output4
4	InB1	Bch input1	20	OutA4	Ach output4
5	NC	-	21	NC	-
6	InA2	Ach input2	22	OutB3	Bch output3
7	InB2	Bch input2	23	OutA3	Ach output3
8	NC	-	24	REF_B	Bch reference potential
9	NC	-	25	REF_A	Ach reference potential
10	InA3	Ach input3	26	OutB2	Bch output2
11	InB3	Bch input3	27	OutA2	Ach output2
12	NC	-	28	NC	-
13	InA4	Ach input4	29	OutB1	Bch output1
14	InB4	Bch input4	30	OutA1	Ach output1
15	REF	BIAS reference potential	31	ADR1	Address selection pin 1
16	DATA	IC control data input	32	V-	Power supply(-)

2. FL DISPLAY

FLD (17-BT-40GINK) (FRONT : Z6402)



PIN CONNECTION

PIN NO.	CONNECTION
62	F2
61	NX
60	NP
59	NP
58	LGND
57	PGND
56	VH
55	VDD
54	OSC
53	RESET
52	CS
51	CP

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

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

PATTERN DETAIL

1G-16G				
1-1	2-1	3-1	4-1	5-1
1-2	2-2	3-2	4-2	5-2
1-3	2-3	3-3	4-3	5-3
1-4	2-4	3-4	4-4	5-4
1-5	2-5	3-5	4-5	5-5
1-6	2-6	3-6	4-6	5-6
1-7	2-7	3-7	4-7	5-7

ANODE CONNECTION

	1G-16G	17G
D0A	1-1A	-
D1A	2-1A	-
D2A	3-1A	-
D3A	4-1A	-
D4A	5-1A	-
D5A	1-2A	-
D6A	2-2A	-
D7A	3-2A	-
D8A	4-2A	-
D9A	5-2A	-
D10A	1-3A	dB
D11A	2-3A	Dp
D12A	3-3A	3d
D13A	4-3A	3e
D14A	5-3A	3c
D15A	1-4A	3g
D16A	2-4A	3f
D17A	3-4A	3b
D18A	4-4A	3a
D19A	5-4A	2d
D20A	1-5A	2e
D21A	2-5A	2c
D22A	3-5A	2g
D23A	4-5A	2f
D24A	5-5A	2b
D25A	1-6A	2a
D26A	2-6A	1d
D27A	3-6A	1e
D28A	4-6A	1c
D29A	5-6A	1g
D30A	1-7A	1f
D31A	2-7A	1b
D32A	3-7A	1a
D33A	4-7A	S1
D34A	5-7A	S

	1G-16G	17G
D0B	1-1B	HDMI
D1B	2-1B	DIG.
D2B	3-1B	ANA.
D3B	4-1B	PCM
D4B	5-1B	DSD
D5B	1-2B	DD
D6B	2-2B	dts
D7B	3-2B	AUDYSSEY
D8B	4-2B	TUNED
D9B	5-2B	STEREO
D10B	1-3B	RDS
D11B	2-3B	M
D12B	3-3B	1
D13B	4-3B	2
D14B	5-3B	MULTI ZONE
D15B	1-4B	INDEXING
D16B	2-4B	MUTE
D17B	3-4B	IN
D18B	4-4B	OUT
D19B	5-4B	LFE
D20B	1-5B	SW2
D21B	2-5B	EXT
D22B	3-5B	H
D23B	4-5B	SW
D24B	5-5B	W
D25B	1-6B	FL
D26B	2-6B	C
D27B	3-6B	FR
D28B	4-6B	SL
D29B	5-6B	A
D30B	1-7B	B
D31B	2-7B	SR
D32B	3-7B	SBL
D33B	4-7B	SB
D34B	5-7B	SBR

3. Remote Code Table

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

No.	Data (C6∼C11)	Key Name	No.	Data (C6∼C11)	Key Name
RCSHP0230000	0 0 0 0 0 0		RCSHP0230016	0 0 0 0 1 0	FR LEVEL DOWN
RCSHP0230001	1 0 0 0 0 0	POWER	RCSHP0230017	1 0 0 0 1 0	
RCSHP0230002	0 1 0 0 0 0	FL LEVEL UP	RCSHP0230018	0 1 0 0 1 0	
RCSHP0230003	1 1 0 0 0 0	PHONO	RCSHP0230019	1 1 0 0 1 0	
RCSHP0230004	0 0 1 0 0 0	CD	RCSHP0230020	0 0 1 0 1 0	
RCSHP0230005	1 0 1 0 0 0	TUNER	RCSHP0230021	1 0 1 0 1 0	
RCSHP0230006	0 1 1 0 0 0		RCSHP0230022	0 1 1 0 1 0	SR LEVEL UP
RCSHP0230007	1 1 1 0 0 0	FL LEVEL DOWN	RCSHP0230023	1 1 1 0 1 0	SR LEVEL DOWN
RCSHP0230008	0 0 0 1 0 0	CBL/SAT	RCSHP0230024	0 0 0 1 1 0	VIDEO SELECT
RCSHP0230009	1 0 0 1 0 0	TV AUDIO	RCSHP0230025	1 0 0 1 1 0	
RCSHP0230010	0 1 0 1 0 0	Blu-ray	RCSHP0230026	0 1 0 1 1 0	
RCSHP0230011	1 1 0 1 0 0	FR LEVEL UP	RCSHP0230027	1 1 0 1 1 0	
RCSHP0230012	0 0 1 1 0 0	AUX1	RCSHP0230028	0 0 1 1 1 0	INPUT MODE ANALOG
RCSHP0230013	1 0 1 1 0 0	GAME	RCSHP0230029	1 0 1 1 1 0	CURSOR RIGHT
RCSHP0230014	0 1 1 1 0 0	MEDIA PLAYER	RCSHP0230030	0 1 1 1 1 0	STATUS
RCSHP0230015	1 1 1 1 0 0		RCSHP0230031	1 1 1 1 1 0	INFO

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

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

No.	Data (C6∼C11)	Key Name	No.	Data (C6∼C11)	Key Name
RCSHP0C20000	0 0 0 0 0 0	ALL BASS DOWN	RCSHP0C20016	0 0 0 0 1 0	ZONE2 CD
RCSHP0C20001	1 0 0 0 0 0		RCSHP0C20017	1 0 0 0 1 0	ZONE2 TUNER
RCSHP0C20002	0 1 0 0 0 0	SURROUND BACK	RCSHP0C20018	0 1 0 0 1 0	ZONE2 Blu-ray
RCSHP0C20003	1 1 0 0 0 0	MASTER VOL. PRESET1(0dB)	RCSHP0C20019	1 1 0 0 1 0	ZONE2 AUX1
RCSHP0C20004	0 0 1 0 0 0		RCSHP0C20020	0 0 1 0 1 0	ZONE2 GAME
RCSHP0C20005	1 0 1 0 0 0	MASTER VOL. PRESET2(-20dB)	RCSHP0C20021	1 0 1 0 1 0	
RCSHP0C20006	0 1 1 0 0 0	MASTER VOL. PRESET3(-40dB)	RCSHP0C20022	0 1 1 0 1 0	ZONE2 PRESET UP
RCSHP0C20007	1 1 1 0 0 0	ZONE2 VOL. PRESET1(0dB)	RCSHP0C20023	1 1 1 0 1 0	ZONE2 PRESET DOWN
RCSHP0C20008	0 0 0 1 0 0	ZONE2 VOL. PRESET2(-20dB)	RCSHP0C20024	0 0 0 1 1 0	
RCSHP0C20009	1 0 0 1 0 0	ZONE2 VOL. PRESET3(-40dB)	RCSHP0C20025	1 0 0 1 1 0	ZONE2 MEDIA PLAYER
RCSHP0C20010	0 1 0 1 0 0	ZONE2 CBL/SAT	RCSHP0C20026	0 1 0 1 1 0	
RCSHP0C20011	1 1 0 1 0 0		RCSHP0C20027	1 1 0 1 1 0	ZONE2 TV AUDIO
RCSHP0C20012	0 0 1 1 0 0	ZONE3 VOL. PRESET1(0dB)	RCSHP0C20028	0 0 1 1 1 0	
RCSHP0C20013	1 0 1 1 0 0	ZONE2 VOLUME UP	RCSHP0C20029	1 0 1 1 1 0	STEREO
RCSHP0C20014	0 1 1 1 0 0	ZONE2 VOLUME DOWN	RCSHP0C20030	0 1 1 1 1 0	DIRECT
RCSHP0C20015	1 1 1 1 0 0	ZONE2 PHONO	RCSHP0C20031	1 1 1 1 1 0	ZONE3 VOL. PRESET2(0dB)

No.	Data (C6∼C11)	Key Name	No.	Data (C6∼C11)	Key Name
RCSHP0C20032	0 0 0 0 0 1	SETUP MENU	RCSHP0C20048	0 0 0 0 1 1	
RCSHP0C20033	1 0 0 0 0 1		RCSHP0C20049	1 0 0 0 1 1	
RCSHP0C20034	0 1 0 0 0 1	ZONE3 VOL. PRESET2(0dB)	RCSHP0C20050	0 1 0 0 1 1	
RCSHP0C20035	1 1 0 0 0 1	CURSOR UP	RCSHP0C20051	1 1 0 0 1 1	
RCSHP0C20036	0 0 1 0 0 1	CURSOR DOWN	RCSHP0C20052	0 0 1 0 1 1	
RCSHP0C20037	1 0 1 0 0 1		RCSHP0C20053	1 0 1 0 1 1	
RCSHP0C20038	0 1 1 0 0 1		RCSHP0C20054	0 1 1 0 1 1	INPUT MODE

RCSHP0C20039	1 1 1 0 0 1		RCSHP0C20055	1 1 1 0 1 1	ALL TREBLE UP
RCSHP0C20040	0 0 0 1 0 1	MULTI CH STEREO	RCSHP0C20056	0 0 0 1 1 1	ALL TREBLE DOWN
RCSHP0C20041	1 0 0 1 0 1		RCSHP0C20057	1 0 0 1 1 1	
RCSHP0C20042	0 1 0 1 0 1		RCSHP0C20058	0 1 0 1 1 1	
RCSHP0C20043	1 1 0 1 0 1		RCSHP0C20059	1 1 0 1 1 1	
RCSHP0C20044	0 0 1 1 0 1		RCSHP0C20060	0 0 1 1 1 1	
RCSHP0C20045	1 0 1 1 0 1		RCSHP0C20061	1 0 1 1 1 1	
RCSHP0C20046	0 1 1 1 0 1		RCSHP0C20062	0 1 1 1 1 1	ZONE2 DVD
RCSHP0C20047	1 1 1 1 0 1	CH LEVEL	RCSHP0C20063	1 1 1 1 1 1	ALL BASS UP

FORMAT: SHARP / DATA CONSTRUCTION 15bits C14 0 C15 0=NOT INVERTED, 1=INVERTED /REMOTE ID : 1

SYSTEM ADDRESS(C1～C5) : 0 0 1 1 0 , EXTENSION BIT (C12,C13) : 1 0

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

FORMAT: SHARP / DATA CONSTRUCTION 15bits C14 0 C15 0=NOT INVERTED, 1=INVERTED /REMOTE ID : 1

SYSTEM ADDRESS(C1～C5) : 0 0 1 1 0 , EXTENSION BIT (C12,C13) : 1 1

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

FORMAT: SHARP / DATA CONSTRUCTION 15bits C14 0 C15 0=NOT INVERTED, 1=INVERTED /REMOTE ID : 1

SYSTEM ADDRESS (C1～C5) : 0 1 0 0 0 , EXTENSION BIT (C12,C13) : 1 0

No.	Data (C6～C11)	Key Name	No.	Data (C6～C11)	Key Name
RCSHP0210000	0 0 0 0 0 0		RCSHP0210016	0 0 0 0 1 0	
RCSHP0210001	1 0 0 0 0 0		RCSHP0210017	1 0 0 0 1 0	
RCSHP0210002	0 1 0 0 0 0		RCSHP0210018	0 1 0 0 1 0	ZONE3 TV AUDIO
RCSHP0210003	1 1 0 0 0 0		RCSHP0210019	1 1 0 0 1 0	ZONE3 CBL/SAT
RCSHP0210004	0 0 1 0 0 0		RCSHP0210020	0 0 1 0 1 0	ZONE3 GAME
RCSHP0210005	1 0 1 0 0 0		RCSHP0210021	1 0 1 0 1 0	ZONE3 MEDIAPLAYER
RCSHP0210006	0 1 1 0 0 0		RCSHP0210022	0 1 1 0 1 0	
RCSHP0210007	1 1 1 0 0 0		RCSHP0210023	1 1 1 0 1 0	ZONE3 AUX1
RCSHP0210008	0 0 0 1 0 0	ZONE3 TUNER	RCSHP0210024	0 0 0 1 1 0	
RCSHP0210009	1 0 0 1 0 0	ZONE3 PHONO	RCSHP0210025	1 0 0 1 1 0	
RCSHP0210010	0 1 0 1 0 0	ZONE3 CD	RCSHP0210026	0 1 0 1 1 0	
RCSHP0210011	1 1 0 1 0 0		RCSHP0210027	1 1 0 1 1 0	
RCSHP0210012	0 0 1 1 0 0		RCSHP0210028	0 0 1 1 1 0	
RCSHP0210013	1 0 1 1 0 0		RCSHP0210029	1 0 1 1 1 0	ZONE2 ON/OFF
RCSHP0210014	0 1 1 1 0 0	ZONE3 DVD	RCSHP0210030	0 1 1 1 1 0	
RCSHP0210015	1 1 1 1 0 0	ZONE3 Blu-ray	RCSHP0210031	1 1 1 1 1 0	

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

FORMAT: SHARP / DATA CONSTRUCTION 15bits C14 0 C15 0=NOT INVERTED, 1=INVERTED /REMOTE ID : 1

SYSTEM ADDRESS (C1～C5) : 0 0 1 0 0 , EXTENSION BIT (C12,C13) : 0 1

No.	Data (C6～C11)	Key Name	No.	Data (C6～C11)	Key Name
RCSHP0420000	0 0 0 0 0 0		RCSHP0420016	0 0 0 0 1 0	
RCSHP0420001	1 0 0 0 0 0		RCSHP0420017	1 0 0 0 1 0	
RCSHP0420002	0 1 0 0 0 0		RCSHP0420018	0 1 0 0 1 0	
RCSHP0420003	1 1 0 0 0 0	ROCK ARENA	RCSHP0420019	1 1 0 0 1 0	
RCSHP0420004	0 0 1 0 0 0	JAZZ CLUB	RCSHP0420020	0 0 1 0 1 0	
RCSHP0420005	1 0 1 0 0 0		RCSHP0420021	1 0 1 0 1 0	
RCSHP0420006	0 1 1 0 0 0	MONO MOVIE	RCSHP0420022	0 1 1 0 1 0	
RCSHP0420007	1 1 1 0 0 0	MATRIX	RCSHP0420023	1 1 1 0 1 0	
RCSHP0420008	0 0 0 1 0 0	VIDEO GAME	RCSHP0420024	0 0 0 1 1 0	
RCSHP0420009	1 0 0 1 0 0	VIRTUAL	RCSHP0420025	1 0 0 1 1 0	
RCSHP0420010	0 1 0 1 0 0		RCSHP0420026	0 1 0 1 1 0	
RCSHP0420011	1 1 0 1 0 0		RCSHP0420027	1 1 0 1 1 0	
RCSHP0420012	0 0 1 1 0 0		RCSHP0420028	0 0 1 1 1 0	
RCSHP0420013	1 0 1 1 0 0		RCSHP0420029	1 0 1 1 1 0	MultEQ XT32
RCSHP0420014	0 1 1 1 0 0		RCSHP0420030	0 1 1 1 1 0	
RCSHP0420015	1 1 1 1 0 0		RCSHP0420031	1 1 1 1 1 0	

No.	Data (C6～C11)	Key Name	No.	Data (C6～C11)	Key Name
RCSHP0420032	0 0 0 0 0 1		RCSHP0420048	0 0 0 0 1 1	
RCSHP0420033	1 0 0 0 0 1		RCSHP0420049	1 0 0 0 1 1	
RCSHP0420034	0 1 0 0 0 1		RCSHP0420050	0 1 0 0 1 1	
RCSHP0420035	1 1 0 0 0 1		RCSHP0420051	1 1 0 0 1 1	INPUT MDOE AUTO
RCSHP0420036	0 0 1 0 0 1		RCSHP0420052	0 0 1 0 1 1	
RCSHP0420037	1 0 1 0 0 1		RCSHP0420053	1 0 1 0 1 1	
RCSHP0420038	0 1 1 0 0 1		RCSHP0420054	0 1 1 0 1 1	
RCSHP0420039	1 1 1 0 0 1		RCSHP0420055	1 1 1 0 1 1	
RCSHP0420040	0 0 0 1 0 1		RCSHP0420056	0 0 0 1 1 1	
RCSHP0420041	1 0 0 1 0 1		RCSHP0420057	1 0 0 1 1 1	
RCSHP0420042	0 1 0 1 0 1		RCSHP0420058	0 1 0 1 1 1	
RCSHP0420043	1 1 0 1 0 1		RCSHP0420059	1 1 0 1 1 1	
RCSHP0420044	0 0 1 1 0 1		RCSHP0420060	0 0 1 1 1 1	
RCSHP0420045	1 0 1 1 0 1		RCSHP0420061	1 0 1 1 1 1	
RCSHP0420046	0 1 1 1 0 1		RCSHP0420062	0 1 1 1 1 1	
RCSHP0420047	1 1 1 1 0 1		RCSHP0420063	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) 21	22	23	24	GENRE2(*2) 25	26	27	28	ID(*3) 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
	ZONE3	0	0	1	0	1	0	1	0	0	0	SHARP&K4-5
	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
	ZONE3	0	0	1	0	0	1	1	0	1	0	K4-6
	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
	ZONE3	0	0	1	0	0	1	1	0	0	1	K4-6
	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
	ZONE3	0	0	1	0	0	1	1	0	0	1	K4-6
	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 29	30	31	32	33	34	35	36	37	38	ID 39	40	parity 41	42	43	44	45	46	47	48	Key Name
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	*	*	*	*	*	*	*	*	*	*	SURROUND 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	*	*	*	*	*	*	*	*	*	*	SURROUND 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	*	*	*	*	*	*	*	*	*	*	SW1 LEVEL UP
RCKSK0410391	1	1	1	0	0	0	0	1	1	0	*	*	*	*	*	*	*	*	*	*	SW1 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
RCKSK0410425	1	0	0	1	0	1	0	1	1	0	*	*	*	*	*	*	*	*	*	*	TRL LEVEL UP

RCKSK0410426	0	1	0	1	0	1	0	1	1	0	*	*	*	*	*	*	*	*	*	*	TRL LEVEL DOWN
RCKSK0410427	1	1	0	1	0	1	0	1	1	0	*	*	*	*	*	*	*	*	*	*	TRR LEVEL UP
RCKSK0410428	0	0	1	1	0	1	0	1	1	0	*	*	*	*	*	*	*	*	*	*	TRR LEVEL DOWN
RCKSK0410429	1	0	1	1	0	1	0	1	1	0	*	*	*	*	*	*	*	*	*	*	RHL LEVEL UP
RCKSK0410430	0	1	1	1	0	1	0	1	1	0	*	*	*	*	*	*	*	*	*	*	RHL LEVEL DOWN
RCKSK0410431	1	1	1	1	0	1	0	1	1	0	*	*	*	*	*	*	*	*	*	*	RHR LEVEL UP
RCKSK0410432	0	0	0	0	1	1	0	1	1	0	*	*	*	*	*	*	*	*	*	*	RHR 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
RCKSK0410441	1	0	0	1	1	1	0	1	1	0	*	*	*	*	*	*	*	*	*	*	BDL LEVEL UP
RCKSK0410442	0	1	0	1	1	1	0	1	1	0	*	*	*	*	*	*	*	*	*	*	BDL LEVEL DOWN
RCKSK0410443	1	1	0	1	1	1	0	1	1	0	*	*	*	*	*	*	*	*	*	*	BDR LEVEL UP
RCKSK0410444	0	0	1	1	1	1	0	1	1	0	*	*	*	*	*	*	*	*	*	*	BDR LEVEL DOWN
RCKSK0410445	1	0	1	1	1	1	0	1	1	0	*	*	*	*	*	*	*	*	*	*	Audyssey LFC ON
RCKSK0410446	0	1	1	1	1	1	0	1	1	0	*	*	*	*	*	*	*	*	*	*	Audyssey LFC OFF
RCKSK0410456	0	0	0	1	0	0	1	1	1	0	*	*	*	*	*	*	*	*	*	*	Audyssey LFC ON/OFF
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	*	*	*	*	*	*	*	*	*	*	FRONT SP A ON/OFF
RCKSK0410606	0	1	1	1	1	0	1	0	0	1	*	*	*	*	*	*	*	*	*	*	FRONT SP 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
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 XT32
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)
RCKSK0410896	0	0	0	0	0	0	0	1	1	1	*	*	*	*	*	*	*	*	*	*	SHL LEVEL UP
RCKSK0410897	1	0	0	0	0	0	0	1	1	1	*	*	*	*	*	*	*	*	*	*	SHL LEVEL DOWN
RCKSK0410898	0	1	0	0	0	0	0	1	1	1	*	*	*	*	*	*	*	*	*	*	SHR LEVEL UP
RCKSK0410899	1	1	0	0	0	0	0	1	1	1	*	*	*	*	*	*	*	*	*	*	SHR LEVEL DOWN
RCKSK0410900	0	0	1	0	0	0	0	1	1	1	*	*	*	*	*	*	*	*	*	*	TS LEVEL UP
RCKSK0410901	1	0	1	0	0	0	0	1	1	1	*	*	*	*	*	*	*	*	*	*	TS LEVEL DOWN
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
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 Foward
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 ▲

ZONE3

REMOTE ID SET: 1

DENON CODE																Parity				GENRE1				GENRE2			
4				5				2				3				0				4				5			
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				6			
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	
RCKSK0450005	1	0	1	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE3 POWER ON/OFF
RCKSK0450006	0	1	1	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE3 POWER ON
RCKSK0450007	1	1	1	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE3 POWER OFF
RCKSK0450016	0	0	0	0	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE3 KEY1
RCKSK0450017	1	0	0	0	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE3 KEY2
RCKSK0450018	0	1	0	0	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE3 KEY3
RCKSK0450019	1	1	0	0	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE3 KEY4
RCKSK0450020	0	0	1	0	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE3 KEY5
RCKSK0450021	1	0	1	0	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE3 KEY6
RCKSK0450022	0	1	1	0	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE3 KEY7
RCKSK0450023	1	1	1	0	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE3 KEY8
RCKSK0450024	0	0	0	1	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE3 KEY9
RCKSK0450025	1	0	0	1	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE3 KEY0
RCKSK0450027	1	1	0	1	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE3 CURSOR UP
RCKSK0450028	0	0	1	1	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE3 CURSOR DOWN
RCKSK0450029	1	0	1	1	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE3 CURSOR LEFT
RCKSK0450030	0	1	1	1	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE3 CURSOR RIGHT
RCKSK0450031	1	1	1	1	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE3 ENTER
RCKSK0450034	0	1	0	0	0	1	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE3 RETURN
RCKSK0450036	0	0	1	0	0	1	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE3 MEMORY
RCKSK0450292	0	0	1	0	0	1	0	0	1	0	*	*	*	*	*	*	*	*	*	*	ZONE3 QUICK SELECT 1
RCKSK0450293	1	0	1	0	0	1	0	0	1	0	*	*	*	*	*	*	*	*	*	*	ZONE3 QUICK SELECT 2
RCKSK0450294	0	1	1	0	0	1	0	0	1	0	*	*	*	*	*	*	*	*	*	*	ZONE3 QUICK SELECT 3
RCKSK0450295	1	1	1	0	0	1	0	0	1	0	*	*	*	*	*	*	*	*	*	*	ZONE3 QUICK SELECT 4
RCKSK0450296	0	0	0	1	0	1	0	0	1	0	*	*	*	*	*	*	*	*	*	*	ZONE3 QUICK SELECT 5
RCKSK0450368	0	0	0	0	1	1	1	0	1	0	*	*	*	*	*	*	*	*	*	*	ZONE3 VOLUME UP
RCKSK0450369	1	0	0	0	1	1	1	0	1	0	*	*	*	*	*	*	*	*	*	*	ZONE3 VOLUME DOWN
RCKSK0450370	0	1	0	0	1	1	1	0	1	0	*	*	*	*	*	*	*	*	*	*	ZONE3 VOLUME MUTE
RCKSK0450370	1	1	0	0	1	1	1	0	1	0	*	*	*	*	*	*	*	*	*	*	ZONE3 VR MUTE
RCKSK0450372	0	0	1	0	1	1	1	0	1	0	*	*	*	*	*	*	*	*	*	*	ZONE3 VR PRESET1(0dB)
RCKSK0450373	1	0	1	0	1	1	1	0	1	0	*	*	*	*	*	*	*	*	*	*	ZONE3 VR PRESET2(-20dB)
RCKSK0450374	0	1	1	0	1	1	1	0	1	0	*	*	*	*	*	*	*	*	*	*	ZONE3 VR PRESET3(-40dB)
RCKSK0450691	1	1	0	0	1	1	0	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE3 Internet Radio
RCKSK0450692	0	0	1	0	1	1	0	1	0	1	*	*	*	*	*	*	*	*	*	*	Main Zone Source CALL
RCKSK0450698	0	1	0	1	1	1	0	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE3 CD / PHONO
RCKSK0450699	1	1	0	1	1	1	0	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE3 Media Server
RCKSK0450704	0	0	0	0	0	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE3 PHONO
RCKSK0450705	1	0	0	0	0	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE3 TUNER
RCKSK0450706	0	1	0	0	0	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE3 CD
RCKSK0450711	1	1	1	0	0	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE3 **HEOS MUSIC**
RCKSK0450714	0	1	0	1	0	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE3 SIRIUSXM (NA only)
RCKSK0450715	1	1	0	1	0	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE3 TUNER
RCKSK0450716	0	0	1	1	0	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE3 **HEOS MUSIC**
RCKSK0450718	0	1	1	1	0	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE3 USB
RCKSK0450719	1	1	1	1	0	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE3 TUNER
RCKSK0450720	0	0	0	0	1	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE3 DVD
RCKSK0450721	1	0	0	0	1	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE3 Blu-ray
RCKSK0450722	0	1	0	0	1	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE3 TV AUDIO
RCKSK0450723	1	1	0	0	1	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE3 CBL/SAT
RCKSK0450725	1	0	1	0	1	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE3 GAME
RCKSK0450726	0	1	1	0	1	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE3 MEDIA PLAYER
RCKSK0450729	1	0	0	1	1	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE3 AUX1
RCKSK0450730	0	1	0	1	1	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE3 AUX2
RCKSK0450732	0	0	1	1	1	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE3 DVD/Blu-ray
RCKSK0450735	1	1	1	1	1	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE3 MEDIA PLAYER
RCKSK0450741	1	0	1	0	0	1	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE3 INTERNET RADIO(Recent Play)
RCKSK0450751	1	1	1	1	0	1	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE3 Bluetooth
RCKSK0450764	0	0	1	1	1	1	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE3 Spotify (NA & EU only)
RCKSK0450765	1	0	1	1	1	1	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE3 Pandora (NA only)
RCKSK0450787	1	1	0	0	1	0	0	0	1	1	*	*	*	*	*	*	*	*	*	*	ZONE3 INPUT SOURCE SELECT Right
RCKSK0450788	0	0	1	0	1	0	0	0	1	1	*	*	*	*	*	*	*	*	*	*	ZONE3 INPUT SOURCE SELECT Left
RCKSK0450788	0	0	1	0	0	0	1	0	1	1	*	*	*	*	*	*	*	*	*	*	ZONE3 SLEEP
RCKSK0450950	0	1	1	0	1	1	0	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE3 PAGE Previous
RCKSK0450951	1	1	1	0	1	1	0	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE3 PAGE Next
RCKSK0450956	0	0	1	1	1	1	0	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE3 REPEAT
RCKSK0450957	1	0	1	1	1	1	0	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE3 RANDOM/SHUFFLE
RCKSK0450958	0	1	1	1	1	1	0	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE3 USB DIRECT PLAY
RCKSK0450959	1	1	1	1	1	1	0	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE3 FAVORITE DIRECT PLAY
RCKSK0450970	0	1	0	1	0	0	1	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE3 TUNING UP
RCKSK0450971	1	1	0	1	0	0	1	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE3 TUNING DOWN
RCKSK0450972	0	0	1	1	0	0	1	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE3 PRESET CH UP
RCKSK0450973	1	0	1	1	0	0	1	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE3 PRESET CH DOWN
RCKSK0450976	0	0	0	0	1	0	1	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE3 Rewind
RCKSK0450977	1	0	0	0	1	0	1	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE3 BAND FM
RCKSK0450978	0	1	0	0	1	0	1	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE3 BAND AM
RCKSK0450979	1	1	0	0	1	0	1	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE3 Fast Forward
RCKSK0450983	1	1	1	0	1	0	1	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE3 SEARCH(RDS)
RCKSK0450992	0	0	0	0	0	1	1	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE3 PLAY/PAUSE
RCKSK0450993	1	0	0	0	0	1	1	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE3 STOP
RCKSK0450994	0	1	0	0	0	1	1	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE3 PAUSE
RCKSK0450995	1	1	0	0	0	1	1	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE3 SKIP MINUS/TUNING DOWN
RCKSK0450996	0	0	1	0	0	1	1	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE3 SKIP PLUS/TUNING UP
RCKSK0450997	1	0	1	0	0	1	1	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE3 TUNING ▼
RCKSK0450998	0	1	1	0	0	1	1	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE3 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
RCKSK0410153	1	0	0	1	1	0	0	1	0	0	*	*	*	*	*	*	*	*	*	*	BAND FM
RCKSK0410154	0	1	0	1	1	0	0	1	0	0	*	*	*	*	*	*	*	*	*	*	BAND AM
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
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

DISASSEMBLY

EXPLODED VIEW

PACKING VIEW

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"

TOP COVER

FRONT PANEL ASSY

DISASSEMBLY
1. FRONT PANEL ASSY
and "**EXPLODED VIEW**"

FRONT HDMI/USB PCB
Ref. No. of EXPLODED VIEW : B 02-5
FRONT PCB
Ref. No. of EXPLODED VIEW : B 03-2
HP PCB
Ref. No. of EXPLODED VIEW : B 03-5

RADIATOR ASSY

DISASSEMBLY
2. RADIATOR ASSY
and "**EXPLODED VIEW**"

L-AMP CONNECT PCB
Ref. No. of EXPLODED VIEW : B 02-3
R-AMP CONNECT PCB
Ref. No. of EXPLODED VIEW : B 02-4
AMP1 PCB
Ref. No. of EXPLODED VIEW : B 04-1
AMP2 PCB
Ref. No. of EXPLODED VIEW : B 04-4
POSISTOR PCB
Ref. No. of EXPLODED VIEW : B 04-9
RADIATOR COVER PCB
Ref. No. of EXPLODED VIEW : B 04-10

BACK PANEL ASSY

DISASSEMBLY
3. BACK PANEL ASSY
and "**EXPLODED VIEW**"

DIGITAL PCB
Ref. No. of EXPLODED VIEW : B 01
AUDIO/VIDEO PCB
Ref. No. of EXPLODED VIEW : B 02-1
DAC PCB
Ref. No. of EXPLODED VIEW : B 02-2
CONNECT-1 PCB
Ref. No. of EXPLODED VIEW : B 02-6
CONNECT-2 PCB
Ref. No. of EXPLODED VIEW : B 02-7
CONNECT-4 PCB
Ref. No. of EXPLODED VIEW : B 02-8
SPEAKER PCB
Ref. No. of EXPLODED VIEW : B 03-1
HEIGHT2 SP PCB
Ref. No. of EXPLODED VIEW : B 03-6
SMPS PCB
Ref. No. of EXPLODED VIEW : B 04-7
232C PHONO PCB
Ref. No. of EXPLODED VIEW : B 04-8
CONNECT-3 PCB
Ref. No. of EXPLODED VIEW : B 04-11
NETWORK MODULE ASSY
Ref. No. of EXPLODED VIEW : 28

TRANS

DISASSEMBLY
4. TRANS
and "**EXPLODED VIEW**"

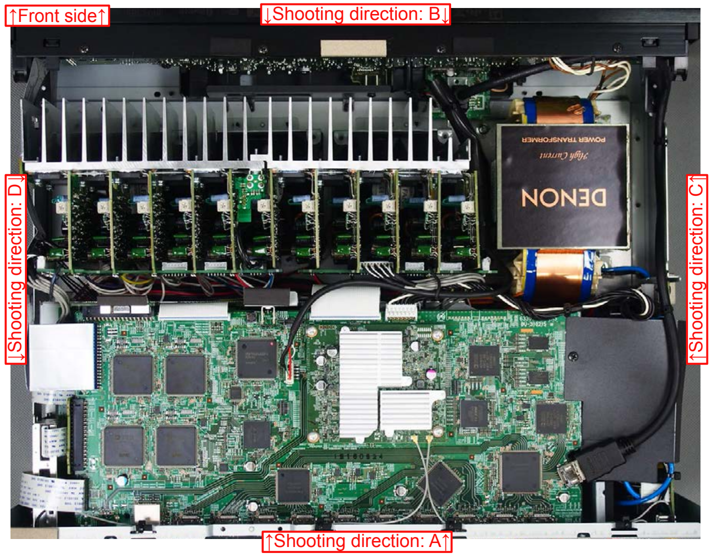
POWER TRANS
Ref. No. of EXPLODED VIEW : 8

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-X6400H E3 are used in this manual.

The viewpoint of each photograph

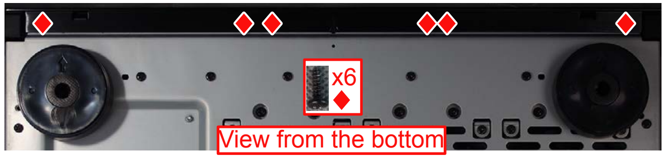
(Shooting direction : X) [View from the top]



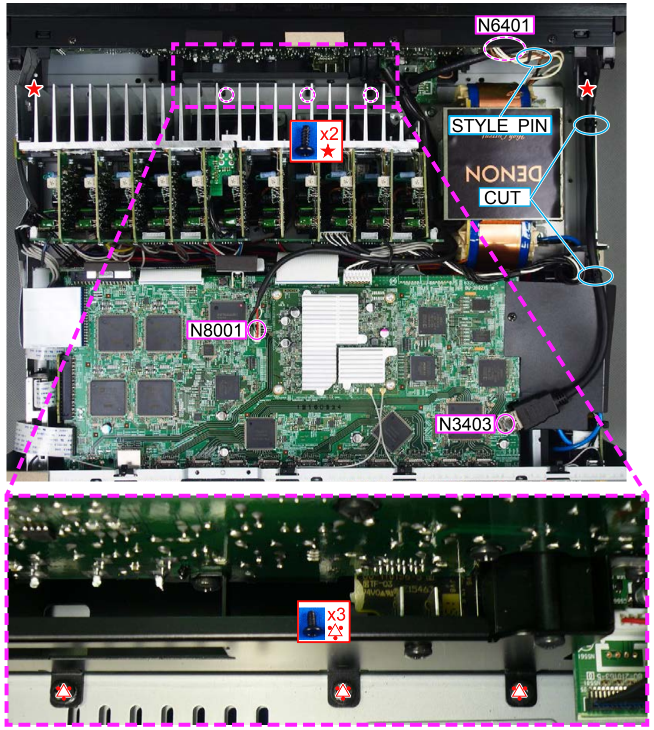
1. FRONT PANEL ASSY

Proceeding : TOP COVER → FRONT PANEL ASSY

(1) Remove the screws.



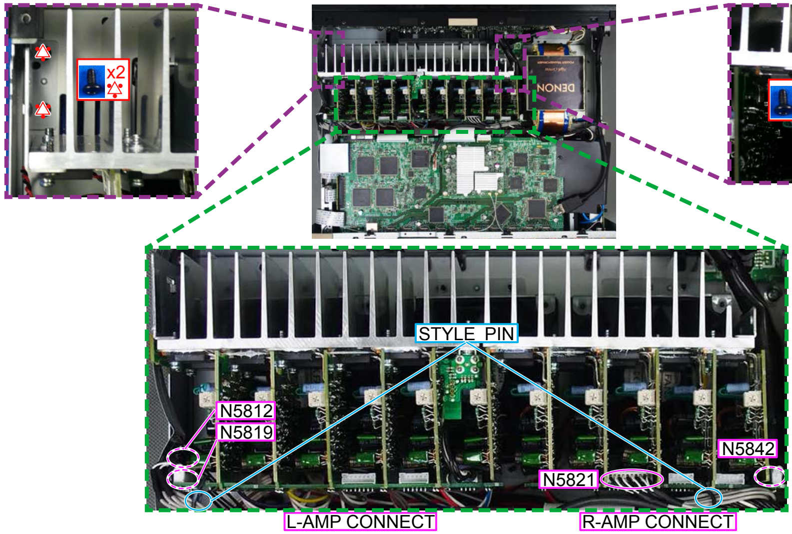
(2) Remove the screws. Cut the wire clamp, then remove the STYLE PIN and connector.



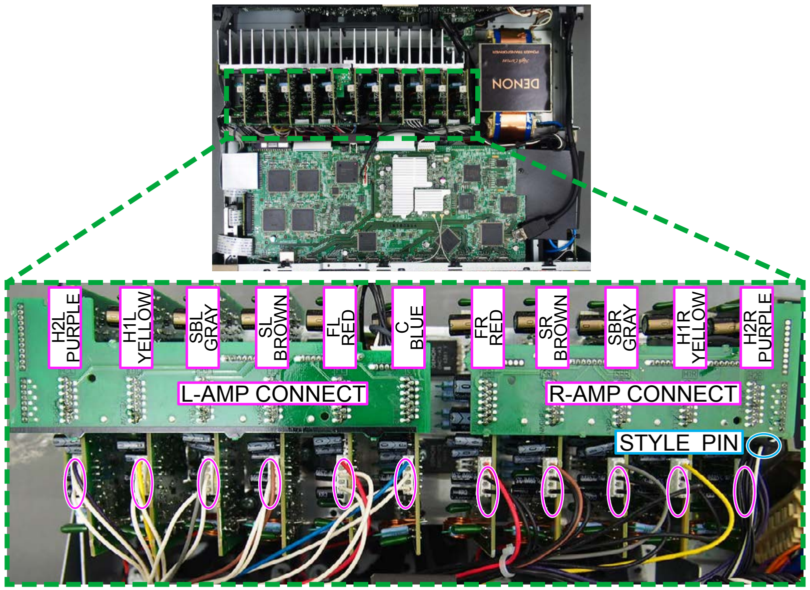
2. RADIATOR ASSY

Proceeding : TOP COVER → FRONT PANEL ASSY → RADIATOR ASSY

(1) Remove the screws. Remove the STYLE PIN and connectors.



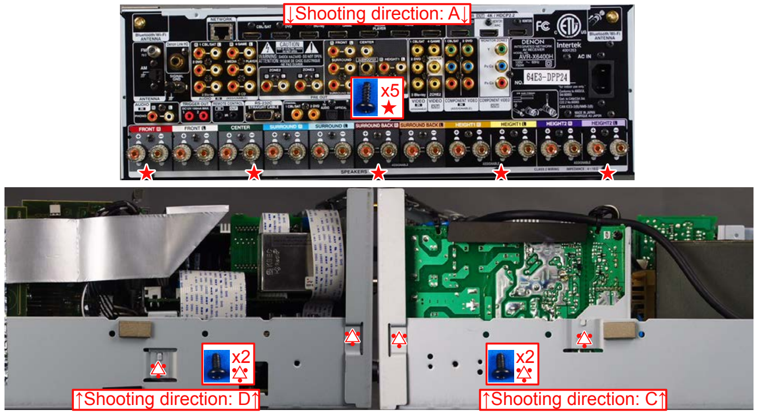
(3) Remove the connector.



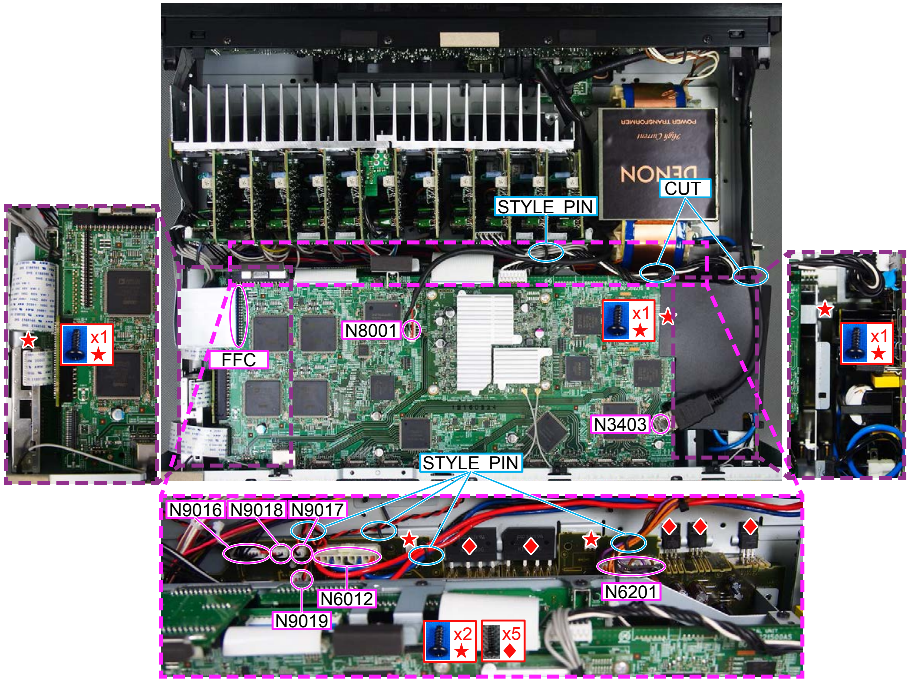
3. BACK PANEL ASSY

Proceeding : TOP COVER → BACK PANEL ASSY

(1) Remove the screws.

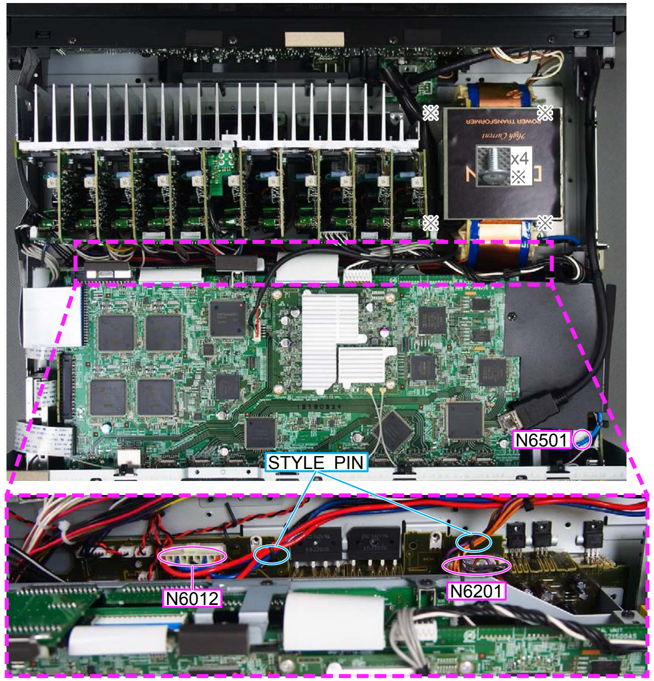


(2) Cut the wire clamps, then remove the STYLE PINs and connectors.
Remove the FFC. Remove the screws.



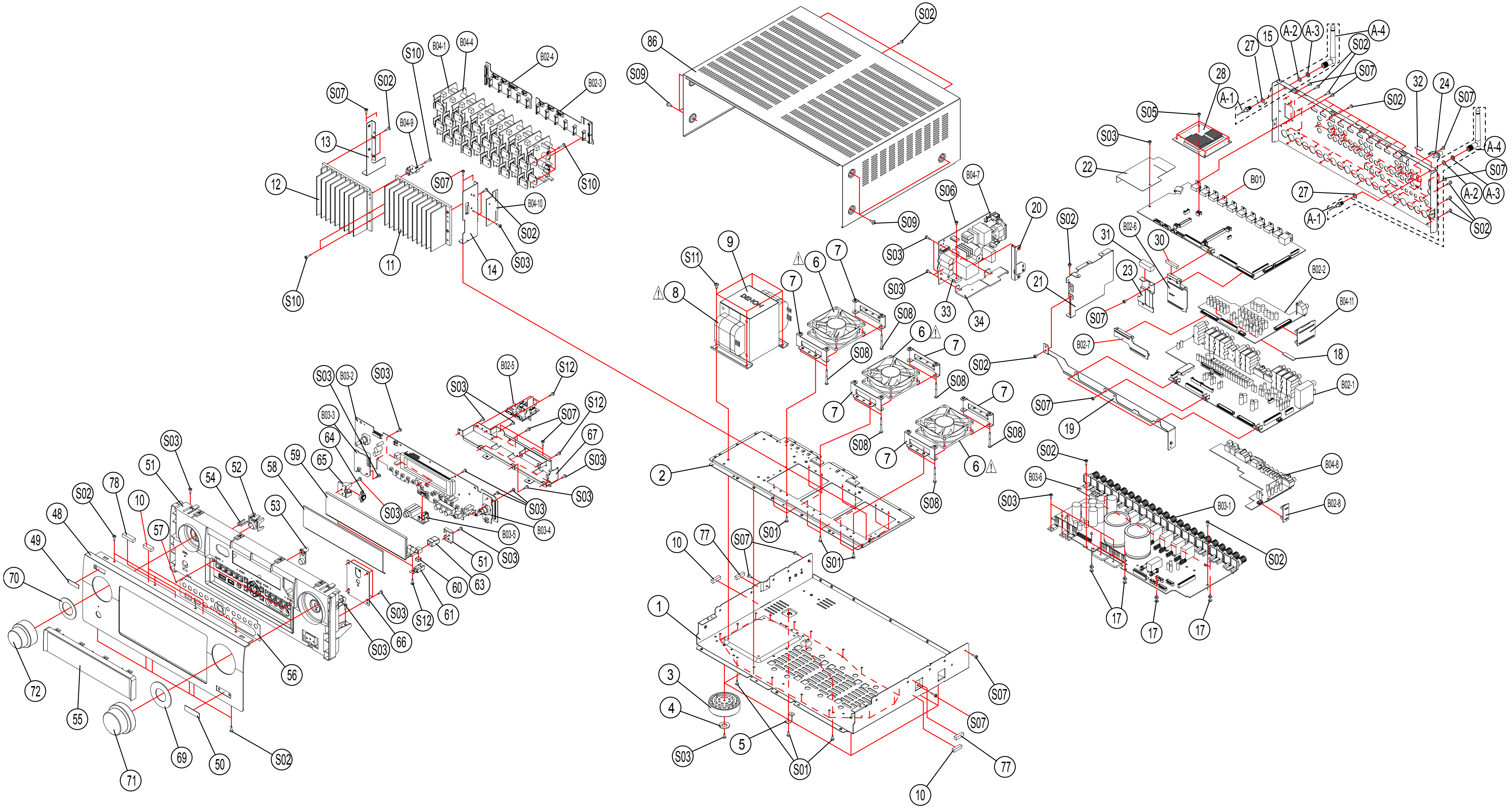
4. TRANS

Proceeding : TOP COVER → RADIATOR ASSY or BACK PANEL ASSY → TRANS



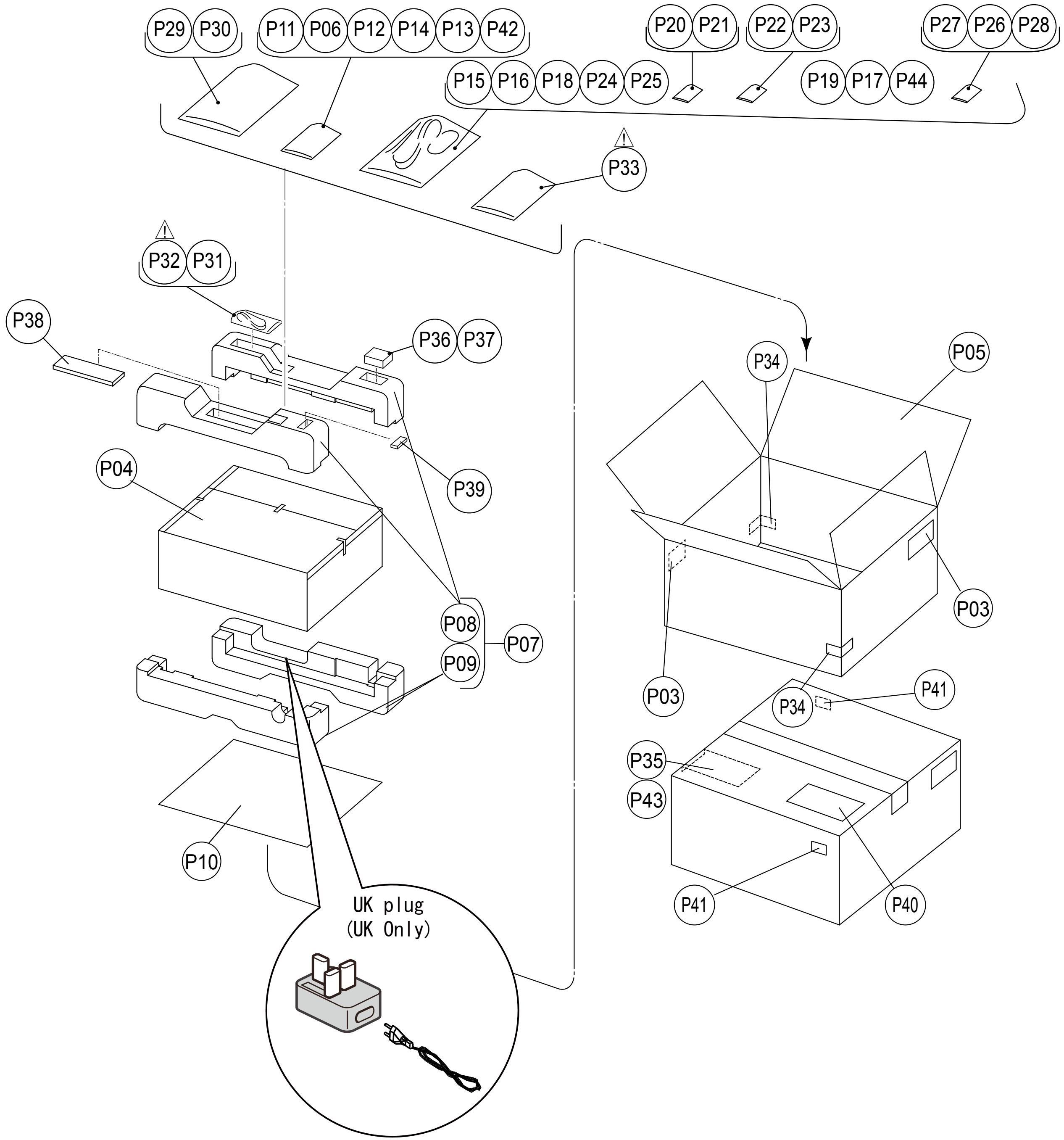
EXPLODED VIEW

Parts List : http://dmedia.dmglobal.com/Document/DocumentDetails/23542



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

Parts List : http://dmedia.dmglobal.com/Document/DocumentDetails/23542



Caution in servicing
Electrical
Mechanical
Repair Information
Updating

TROUBLE SHOOTING

HDMI "Rx/Tx" Failure Detection

CLOCK FLOW & WAVE FORM IN DIGITAL BLOCK

SPECIAL MODE

PROTECTION DIAGRAM

AUDIO CHECK PASS

DIAGNOSTIC MODE

JIG FOR SERVICING

ADJUSTMENT

1. POWER

1.1. The unit does not power on

The unit does not power on

Does the power indicator on the front panel flash in green or white when the power is turned on?

- NO → Does the power shut down after several seconds?
  - NO → Is a fuse blown?
  - YES → Check the voltage of [N6012 18, 19, 22 pin] on the DIGITAL PCB while the power display is flashing in green or white.
- YES → Does the power display on the front panel lights green after approximately 10 seconds?

Is a fuse blown?

- YES → See "1.2. Fuse is blown"
- NO → Is DC 5V being supplied from the SMPS PCB [N6513] to the DIGITAL PCB?
  - YES → Check the circuits around the Microprocessor on the DIGITAL PCB and replace any faulty parts.
  - NO → Is DC5V output even when the connector [N6001] supplying power from the SMPS PCB to the DIGITAL PCB is removed?
    - NO → TO "6. SMPS"
    - YES → Check for breakages and short circuits in the circuits and parts between [N6001] on the DIGITAL PCB and the microprocessor power supply and replace any faulty parts.

Does the power display on the front panel lights green after approximately 10 seconds?

- YES → Are there any parts not fully connected into the connectors that connect the PCBs?
  - YES → Connect the connectors correctly.
  - NO → TO "3-2. Protection History Display Mode"
- NO → Is a fuse blown?
  - YES → See "1.2. Fuse is blown"
  - NO → Check the voltage of [N6012 18, 19, 22 pin] on the DIGITAL PCB while the power display is flashing in green or white.
    - 0V → Check the circuits around the Microprocessor on the DIGITAL PCB and replace any faulty parts.
    - 0.6V or -0.6V → Remove the connector [N6012] of the SPEAKER PCB. Check the "3-2. Protection History Display Mode"

1.2. Fuse is blown

Blown fuse

- Check for leaks and short circuits in the parts on the primary side. Replace any faulty parts.
- Check the rectifier diode in the rectifier circuit on the secondary side, and check for short circuits. Replace any faulty parts.
- Check for short circuits between the regulator output terminal and GND in the power supply stabilization circuit. Replace faulty parts if there is a short circuit.

Replace the fuse after repair.

2. Analog video

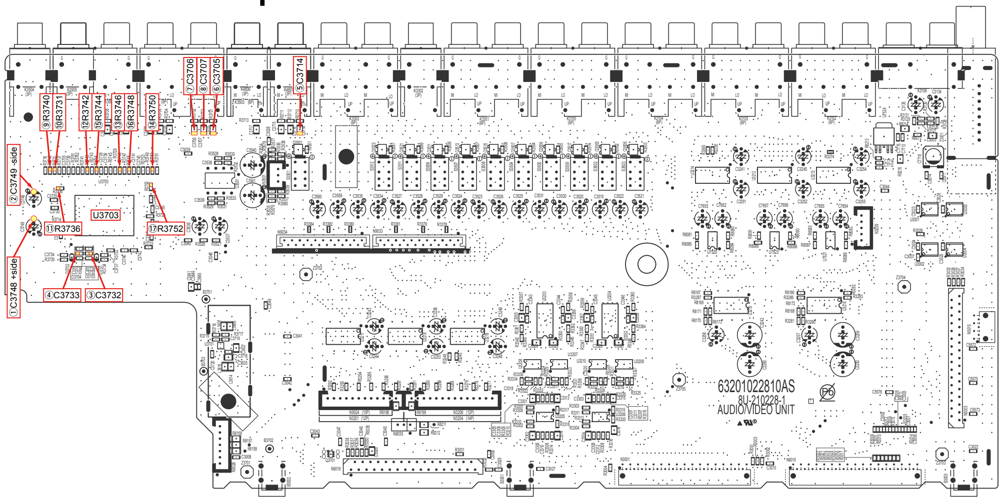
Input CVBS

- CVBS MONITOR OUT → To "A"
- COMPONENT MONITOR OUT → Not output
- Z2 CVBS MONITOR OUT → To "A"

Input COMPONENT

- CVBS MONITOR OUT → Not output
- COMPONENT MONITOR OUT → To "A"
- Z2 CVBS MONITOR OUT → Not output

AUDIO VIDEO test point



A

Use a jig to extend the DIGITAL PCB

①
Check the power supply voltage.
AUDIO/VIDEO PCB
V+3.3V : C3748 + ①
V-5V : C3749 - ②

NO → FFC connection error or contact failure. [N9018]
Power IC [U7524] failure (V-5V).
DIGITAL PCB DV+3.3V, DV5V

YES ↓

②
Check of the I2C control signal for video selector IC [U3703].
CONNECT-2 PCB
I2C(SCL) : C3732 ③
I2C(SDA) : C3733 ④
See the sample waveform

NO → FFC connection error or contact failure.
(Between [N90181] and DIGITAL PCB [N6010])
DIGITAL PCB faulty.

YES ↓

③
Does the signal input to the video selector IC [U3703]?
V : C3714 ⑤
Component-Y : C3705 ⑥
Component-Cb : C3706 ⑦
Component-Cr : C3707 ⑧

NO → Input terminal [K3503 / K3501] faulty, or a fault occurs between video select IC [U3703].

YES ↓

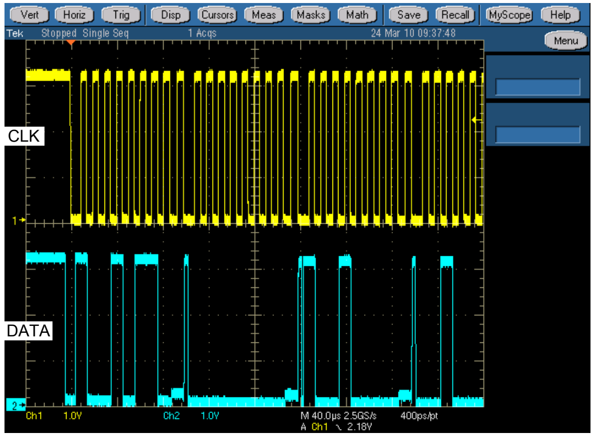
④
Does the signal output to the video selector IC [U3703]?
V (to Monitor out) : R3740 ⑨
V (to Z2 Monitor out) : R3731 ⑩
V (to DIGITAL PCB) : R3736 ⑪
Componnet-Y (to Monitor out) : R3742 ⑫
Componnet-Cb (to Monitor out) : R3746 ⑬
Componnet-Cr (to Monitor out) : R3750 ⑭
Componnet-Y (to DIGITAL PCB) : R3744 ⑮
Componnet-Cb (to DIGITAL PCB) : R3748 ⑯
Componnet-Cr (to DIGITAL PCB) : R3752 ⑰

NO → Input terminal [K3503 / K3501] faulty, or a fault occurs between video select IC [U3703].

YES ↓

Output terminal [K3503 or K3505] faulty.
TV monitor connection error or contact failure.

I2C communication wave form (sample)



3. HDMI/DVI

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

No picture or sound is output.

↓

Check the connection of the HDMI/DVI cable.

↓

(1) Is the HDMI/DVI cable correctly inserted?
- NO → Check the connection of the HDMI/DVI cable.
- YES ↓

(2) Is an HDMI/DVI selector, repeater or image quality improvement device being used?
- YES → Remove all of these and connect only the HDMI/DVI cable.
- NO ↓

(3) Is a certified HDMI cable (with the HDMI mark) being used?
- NO → Use a certified HDMI cable (with the HDMI mark).
- YES ↓

(4) Is the HDMI/DVI cable shorter than 5m?
- NO → Replace the HDMI/DVI cable with the one shorter than 5m (2m is recommended) and check again.
- YES ↓

(5) When the input signal is Deep Color or 4K, are you using a "**High speed HDMI cable with Ethernet**" or "**High speed cable**" that bears the HDMI logo?
- NO → Use an "**High speed HDMI cable with Ethernet**" or "**High speed cable**" that comes with the HDMI logo.
- YES ↓

(6) Are a picture and sound output when a different HDMI/DVI cable is used?
- YES → **The HDMI/DVI cable is faulty.**
- NO ↓

Check the Blu-ray/DVD player.

↓

(7) Are the HDMI output settings of the Blu-ray/DVD player correct?
- NO → Check the instruction manual of the Blu-ray/DVD player and set the HDMI output correctly.
- YES ↓

(8) When using a DENON Blu-ray/DVD player, is the "HDMI" indicator of the fluorescent display lit?
Proceed to YES when using a Blu-ray/DVD player produced by other manufactures.
- NO → (10)
- YES ↓

(9) Are a picture and sound output when the resolution of the Blu-ray/DVD player is changed?
- YES → Set the output resolution of the Blu-ray/DVD player to the resolution supported by the TV.
- NO ↓

(10) Is sound output from the speaker terminal of this unit when the power of the TV is turned off or the cable connecting the TV to this unit is removed?
- YES → The Blu-ray/DVD player may not support the HDCP repeater function.
Refer to the manufacturer of the Blu-ray/DVD player.
- NO ↓

(11) Are a picture and sound output when a different Blu-ray/DVD player is used?
- YES → The Blu-ray/DVD player is faulty.
- NO ↓

Check the TV.

↓

(12) Does the TV support HDCP?
- NO → Use a TV that supports HDCP. Computer monitors cannot be used.
- YES ↓

(13) Does the TV support 1080P/4K?
- NO → If the TV does not support 1080P/4K, a picture cannot be output even if the Blu-ray/DVD player is set to 1080P/4K.
- YES ↓

(14) Is the TV input setting set to HDMI?
- NO → Check the instruction manual of the TV and check the input setting.
- YES ↓

Go to next page.

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(15) Are a picture and sound output when a different TV is used?

YES → The TV is faulty.

NO ↓

Check the unit.

Check the Firmware.
Is "**IP SCALER ERR**" displayed?

NO → Check the circuits around the IP SCALER [U2800, DIGITAL PCB] and DDR2 [U3000/U3001].
If there appear to be no problems, [U2800] or [U3000/U3001] is faulty.

See "HDMI "Rx/Tx" Failure Detection"

4. AUDIO

4.1. AUDIO CHECK

No audio output

See "AUDIO CHECK PATH"

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

NO → Check the ANALOG AUDIO BLOCK

YES

CHECK 2	INPUT	SURROUND MODE	SOURCE
Audio output OK?	COAX or OPT	-	Legacy (PCM or DolbyDigital or dts···)

NO → Check the DIGITAL AUDIO BLOCK

YES

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

NO → Check the ADC BLOCK

YES

CHECK 4	INPUT	SURROUND MODE	SOURCE
Audio output OK?	HDMI	-	Legacy (PCM2ch or DolbyDigital or dts···)

NO → Check the HDMI BLOCK

YES

CHECK 5	INPUT	SURROUND MODE	SOURCE
Audio output OK?	HDMI	-	HBR audio (DolbyTrueHD or dtsHD MA)

YES (DIGITAL AUDIO BLOCK is OK) → Check for other causes

NO

CHECK 6	INPUT	Connect	
AVR's (connected in HDMI) audio output OK?	HDMI	This unit's HDMI OUT → Other AVR's HDMI IN	
	Setting	SURROUND MODE	SOURCE
	CEC STANDBY	-	HBR audio(DolbyTrueHD or dtsHD MA)

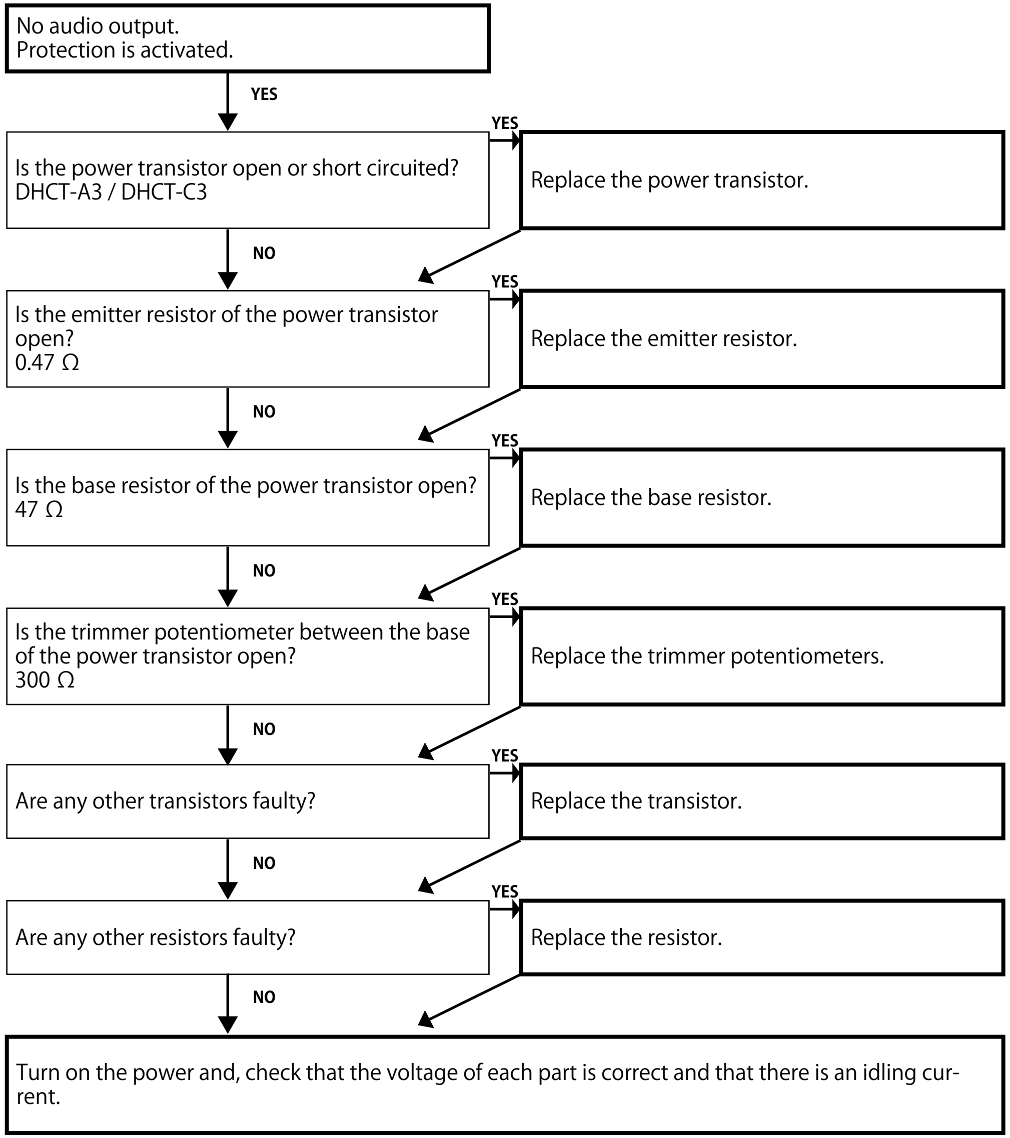
YES → Check the DIGITAL AUDIO BLOCK

NO → Check the HDMI BLOCK

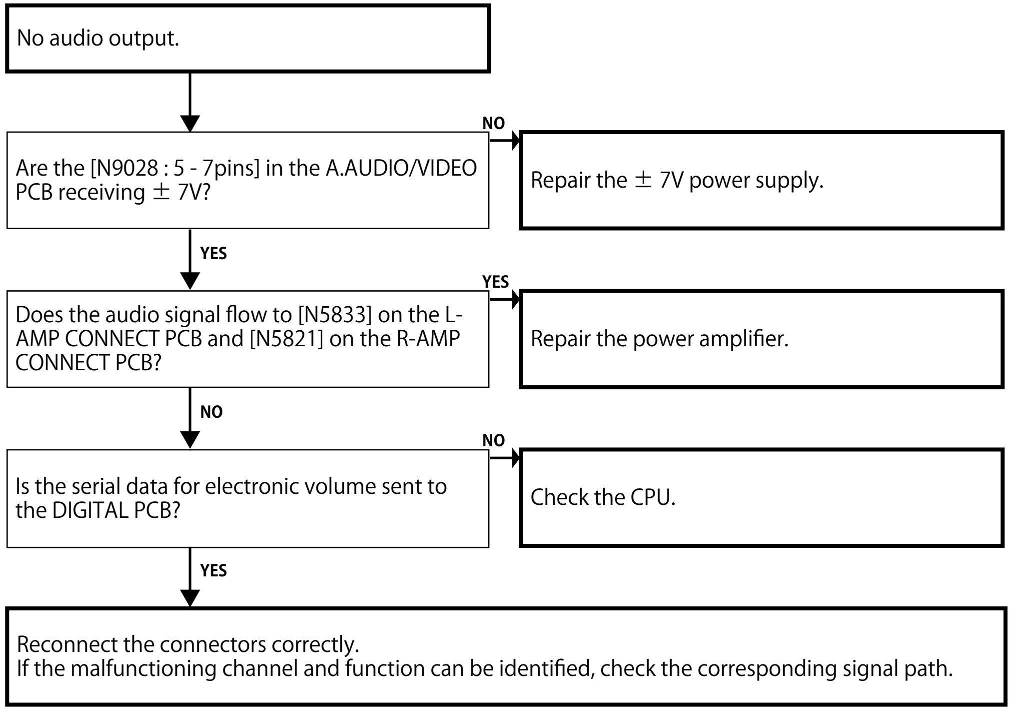
See "DIAGNOSTIC PATH DIAGRAM"

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

Check the connection environment

Is the LAN cable correctly inserted?

NO → Insert the LAN cable correctly and then turn on the power again.

YES ↓

Check the setting

Are the network settings of this unit correct?

NO → Set the IP address, etc. correctly.
When the static IP address is used, check that no other devices have the same IP address and that the subnet mask settings are correct.

YES ↓

Are peripheral devices such as the router and hub connected to this unit correctly?

NO → Connect the peripheral devices correctly.

YES ↓

Are the router settings correct?

NO → Check the instruction manual of the router and configure the settings correctly.
Check that there are no connection restrictions by MAC addresses, etc.

YES ↓

Checking the unit

Can the voltage (5V) be confirmed between [N6001 : 2, 3pin - 4, 5pin]?

NO → The circuit between the AC inlet and [N6001] is faulty.
Check the SMPS PCB.

YES ↓

Can the output voltage (5V) to [Q8007 : FET-SW] be confirmed?

NO → Is NET5V_POWER [U6201 : uCOM 48pin] "Hi" ?

- NO → The circuit of NET5V_POWE between [U6201 and Q8007] are faulty.
- YES → The circuit around [Q8007 : FET-SW] is faulty.

YES ↓

Can the output voltage (1.2V) to [Q8009 : FET-SW] be confirmed?

NO → Is NET3.3V_POWER [U6201 : uCOM 135pin] "Hi" ?

- NO → The circuit of NET3.3V_POWER between [U6201 and Q8009] are faulty.
- YES → The circuit around [Q8009 : FET-SW] is faulty.

YES ↓

Go to next page.

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YES

Are the versions of the HEOS Version displayed in Version Check Mode?

NO → The Network Module software is faulty.

YES ↓

The circuit of Network Module is faulty.

5.2. Cannot establish a Bluetooth connection

Check the Bluetooth device being used

Is the Bluetooth device compatible with the A2DP profile?

NO → Use a device that is A2DP profile compatible.

YES ↓

Is the Bluetooth function enabled on the Bluetooth device?

NO → Enable the Bluetooth function and try connecting again.

YES ↓

Checking the unit

Is the antenna cable inserted correctly into Network Module?

NO → Connect the antenna cable correctly.

YES ↓

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

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 [N8001] of the DIGITAL PCB and [N5560] of the FRONT HDMI/USB PCB correctly connected?
- NO → Connect the connectors correctly.
- YES ↓

Can a voltage (5V) be confirmed between [N5559 (USB Connector) : 1 - 4pin] on FRONT HDMI/USB PCB?
- NO → The circuit around [U8002] of the DIGITAL PCB is faulty.
- YES ↓

The USB signal circuit between Network Module and [N5559] of the FRONT HDMI/USB PCB are faulty.

5.4. No picture or sound is output

Checking the unit (If no picture is output)

Are digital video signals(NETGUI_PCK, HS, VS, DE, B0 - B7, R0 - R7, G0 - G7) output from Network Module to [U3200 : V.PLD]?
- NO → The circuit around Network Module, [U3200 : V.PLD] is faulty.
- YES ↓

• Check the VIDEO circuit.

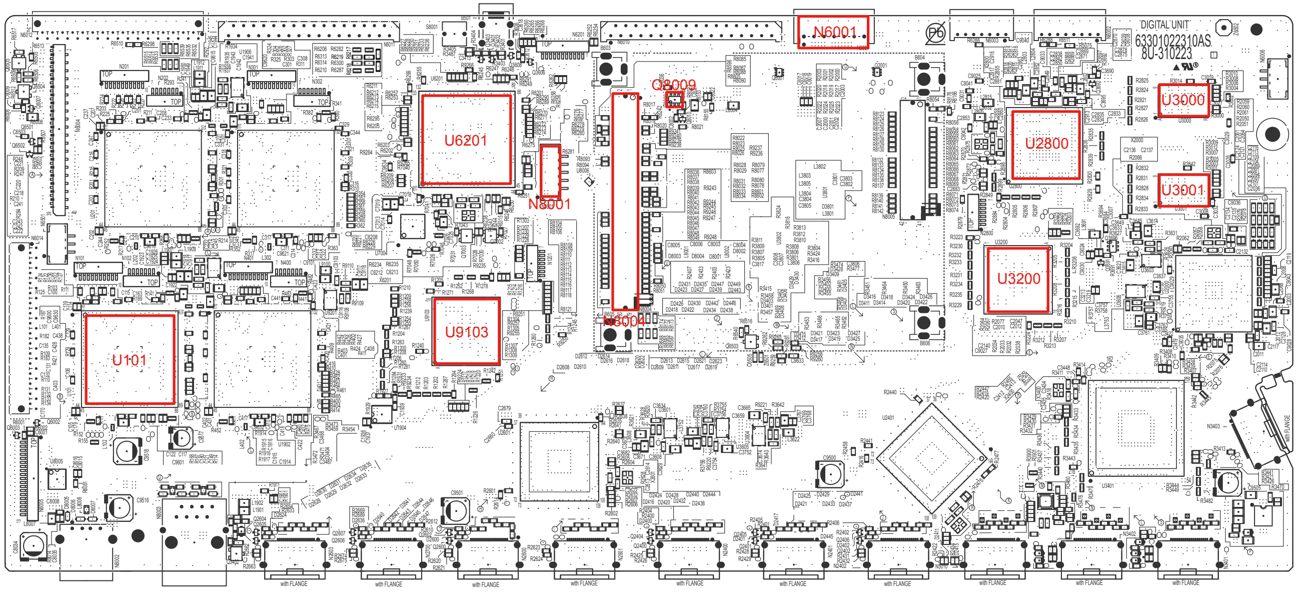
Checking the unit:(If no sound is output)

Are the I2S signal output to [N8004 : 7, 11, 13, 14pin] of the DIGITAL PCB ?
- NO → Network Module is faulty.
- YES ↓

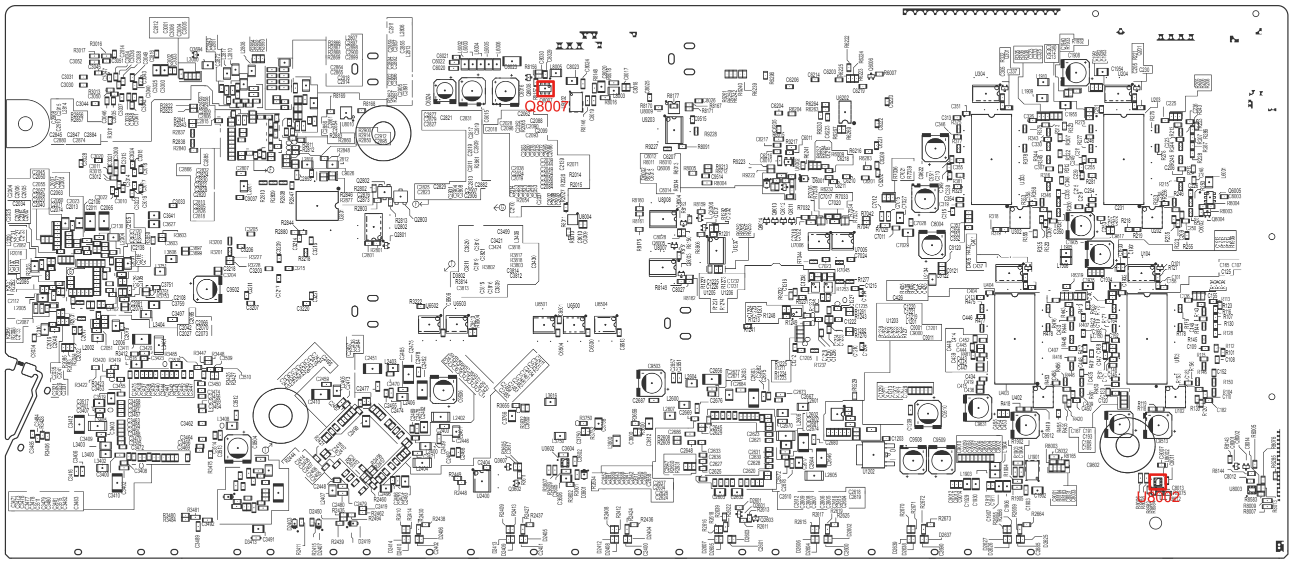
Are audio signal output to [U101(DSP1) : 100pin] (Test Point : DSP/INF/FL(TPX250)) on DIGITAL PCB.
- NO → The circuit around [U9103 : A.PLD] is faulty.
- YES ↓

Check the [U101 : DSP] AUDIO circuit and the circuits thereafter.

DIGITAL test point

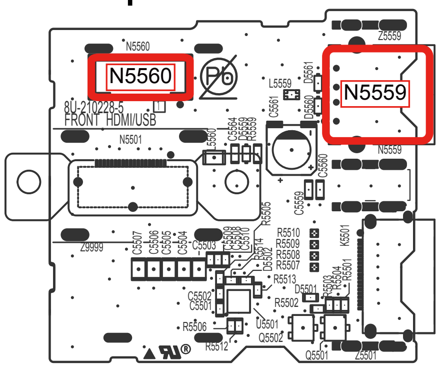


(A SIDE)



(B SIDE)

USB test point



(A SIDE)

6. SMPS

DC 5V is not output.

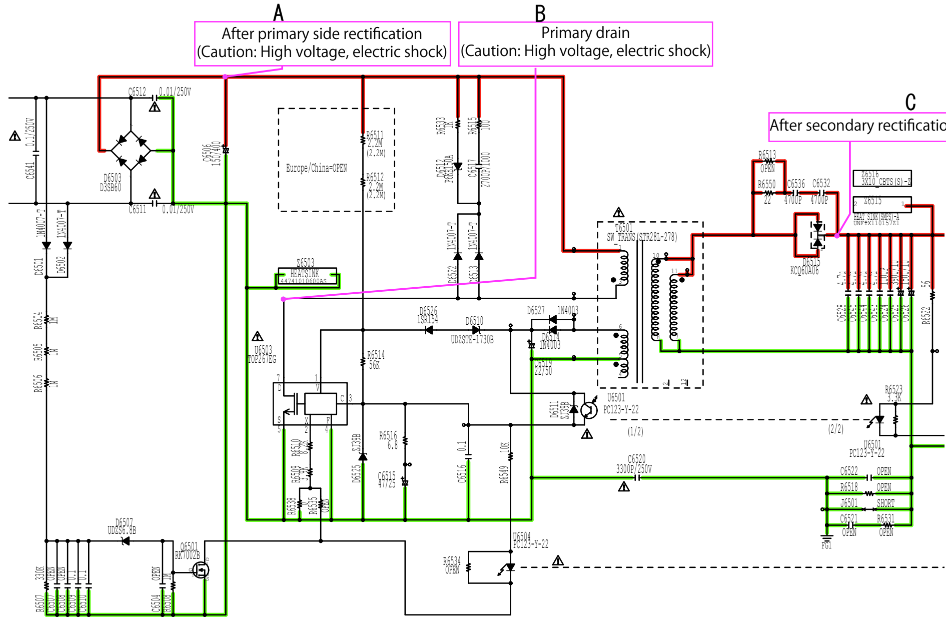
Is [U6503 : TOP267EG] damaged?
- YES → Replace the [U6503 : TOP267EG] and [D6503].
- NO ↓

Is the fuse [F70] functioning properly?
- YES → Is [U6503(TPO267EG), D6503, C6506] damaged?
  - YES → Replace the damaged part.
- NO ↓

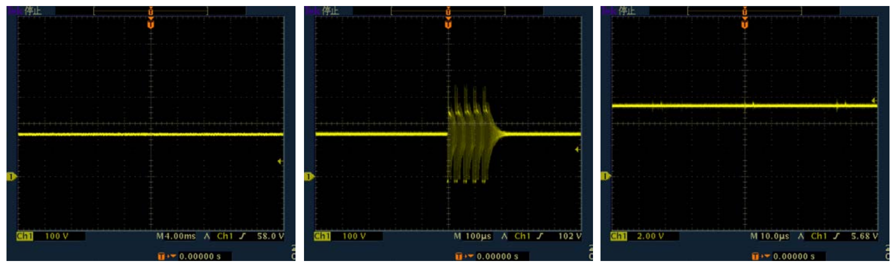
Are there any short circuits caused by the soldering on the PCB?
- YES → Repair the short circuited area on the PCB.
- NO ↓

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

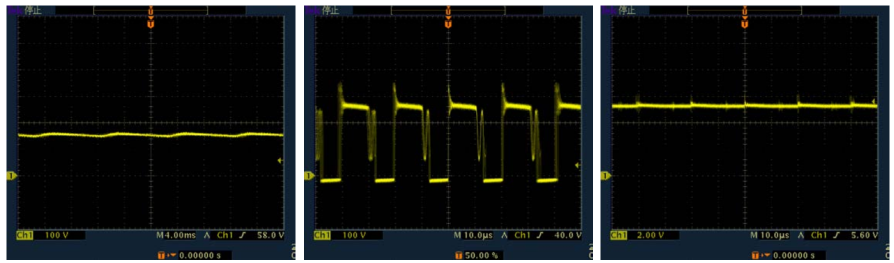
Operation waveform for each part



SMPS unit (Unloaded) A B C



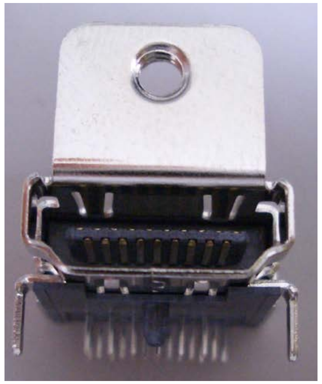
Set A B C



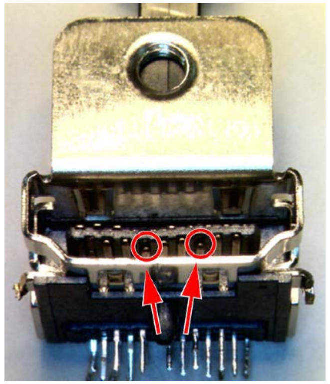
HDMI "Rx/Tx" Failure Detection

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.

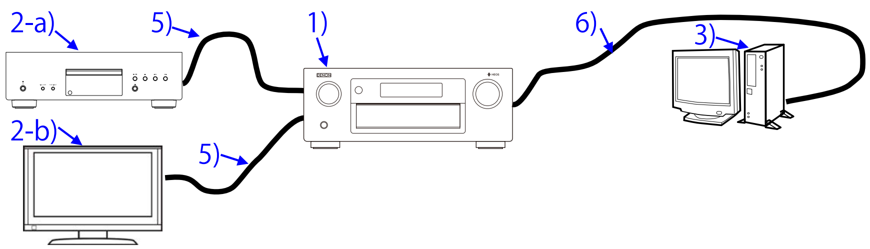


Figure 1. Device Connection Method

2-3. Device configuration method

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

After executing Termite.exe, click [Settings].

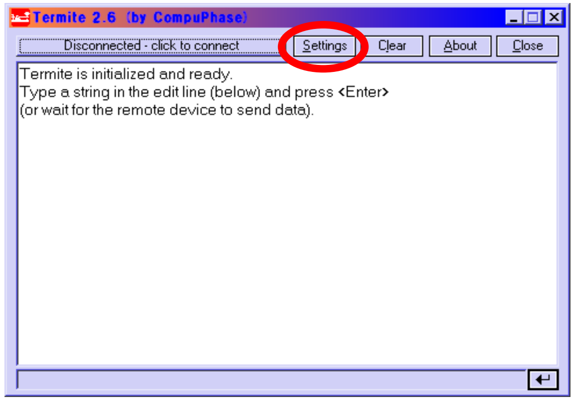


Figure 2. Screen After Executing Termite.exe

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

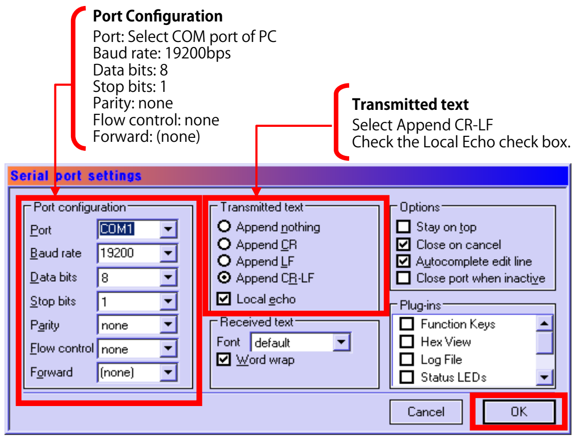


Figure 3. Serial Port Setup Screen

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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.

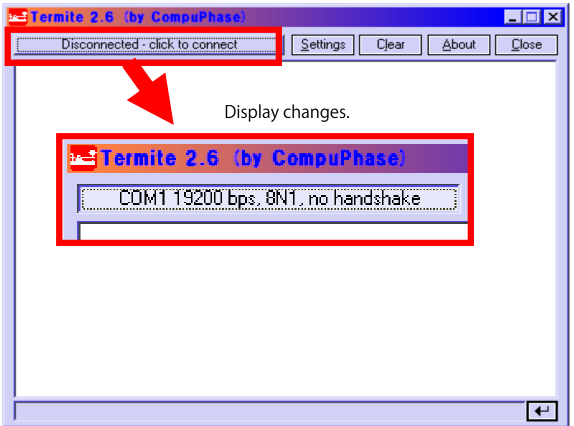

Figure 4. Change of the Display of the Communication Start Button Name

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 "**CURSOR ▼**" and "**STATUS**" 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.

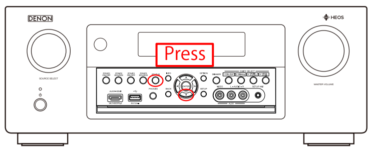

Figure 6. AVR settings

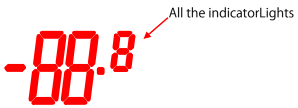

Figure 6. FLD Display When Set

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.)

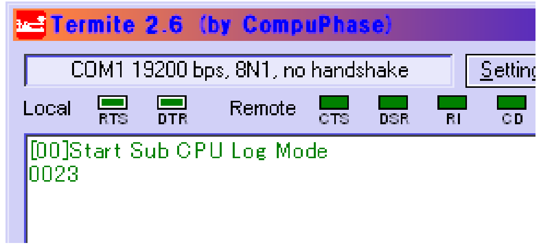

Figure 7. Display of Termite When AVR is Set

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.

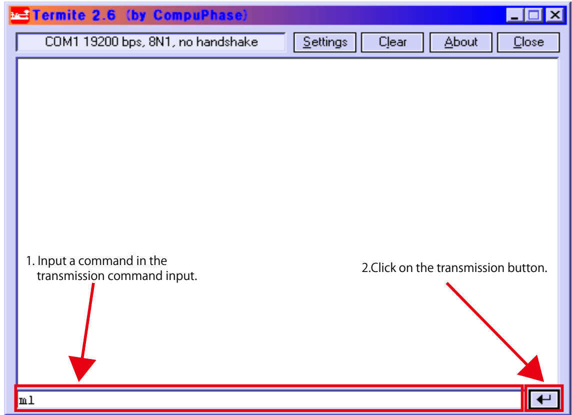

Figure 8. Method for Sending Termite Commands

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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 "**CURSOR ▲**" and "**BACK**" for at least 3 seconds.

L1	HDMI DIAGNOSTICS
L2	

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

When the mode has switched, start Hardware Check.

L1	HDMI DIAGNOSTICS
L2	HardwareCheck...

↓

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

L1	Err: H1-01
L2	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	[U3401 : MN864787]
H1-02	Check item (11)	Communication Error with HDMI SW1	[U2401 : MN864788]
H1-03	Check item (14)	Communication Error with HDMI SW2	[U2601 : MN864788]
H1-05	Check item (25)	Communication Error with VIDEO DECODER	[U2000 : ADV7850]
H1-06	Check item (17)	Communication Error with GUI IC	[U2800 : ADV8003]
H1-08	Check item (26)	Communication Error with DSP1	[U101 : ADSP21487]
H1-09	Check item (31)	Communication Error with DSP2	[U201 : ADSP21487]
H1-10	Check item (34)	Communication Error with DSP3	[U301 : ADSP21487]
H1-11	Check item (39)	Communication Error with DSP4	[U401 : ADSP21487]
H1-12	Check item (42)	Communication Error with DIR	[U7004 : PCM9211]
H1-14	Check item (22)	DDR check Error	[U3000, U3001 : A3R12E40DBF-8E]
H1-15	Check item (23)	Communication Error with GUI ROM	[U2801 : MX25L12835FMI-10G]
H1-16	Check item (45)	Communication Error with ARC IC	[U3802 : SiI9437]

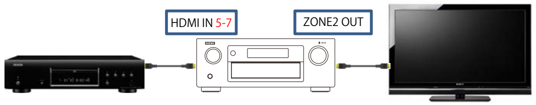
(2-2) Display when an Error is not detected.

L1	HDMI DIAGNOSTICS
L2	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?

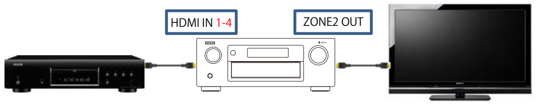


When the HDMI input terminal (HDMI 5, 6, 7) are connected in order to the player, are the audio and video from the player played back on the TV correctly in each case?

NO → Go to check item (48)
(Switcher1 failure detection procedure)

YES ↓

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

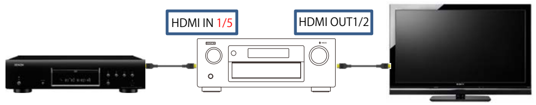


When the HDMI input terminal (HDMI 1, 2, 3, 4) are connected in order to the player, are the audio and video from the player played back on the TV correctly in each case?

NO → Go to check item (61)
(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 (69)
(Tx failure detection procedure)

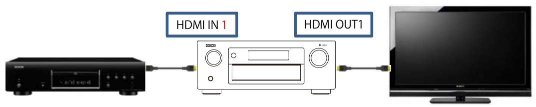
YES ↓

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 (86).
(HDMI DDC Buffer [ISL33003] 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 (95)
(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. [U3401 : MN864787]

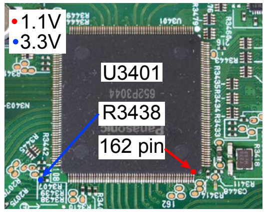
↓

Check the power supply voltage. (HDMI Tx)

↓

Check item(6). Check the power supply voltage. :
Does the power supply voltage of the HDMI Tx [U3401] indicate the correct voltage (1.1V, 3.3V)?
The test points are as follows.

HDMI Tx



YES → Checking the reset waveform. (HDMI Tx)

NO ↓

Check item(7). Check the power supply voltage. :
Check the power components [U3605/U3601] and the pattern on the substrate.
If there is no problem, remove the HDMI Tx [U3401] from the sub-strate 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.

↓

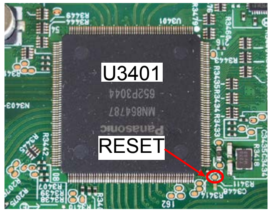
Recheck from check item (1).
If it does not work, replace the PCB.

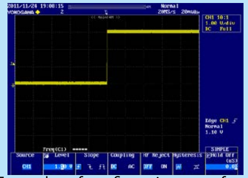
Checking the reset waveform. (HDMI Tx)

↓

Check item(8). Checking the reset waveform :
Check the waveform.
Is the "TP" waveform of the TP near the HDMI Tx [U3401] 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 [U6201] and HDMI Tx [U3401].
If there is no problem, the HDMI Tx [U3401] is faulty.
Replace with a new device.
Recheck from check item (1).
If it does not work, replace the PCB.

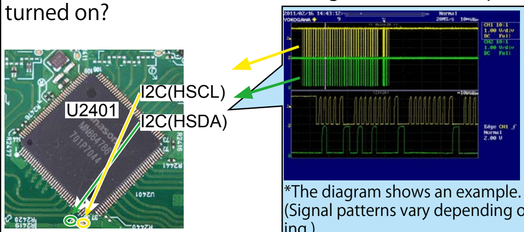
YES ↓

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 TP waveform of the TP near the HDMI SW1 [U2401] 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

HDMI Tx [U3401] is faulty.
Replace with a new device.

YES

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

NO

Check item(10). Check the I2C communication line :
Check HDMI SW [U2601 or U2401], HDMI Tx [U3401] and CPU [U6201] patterns as well as soldering.
If there is no problem, go to the next step.

Check the HDMI Tx.
Remove the damping resistor [R3425/R3427] of [U3401].
Is the "**I2C**" waveform correct?

NO

Check the HDMI SW1.
Remove the damping resistor [R2460/R2461] of [U2401].
Is the "**I2C**" waveform correct?

NO

Check the HDMI SW2.
Remove the damping resistor [R2630/R2631] of [U2601].
Is the "**I2C**" waveform correct?

YES

HDMI Tx [U3401] is faulty.
Replace with a new device.

YES

HDMI SW1 [U2401] is faulty.
Replace with a new device.

YES

HDMI SW2 [U2601] is faulty.
Replace with a new device.

NO

The CPU [U6201] 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. [U2401 : MN864788]

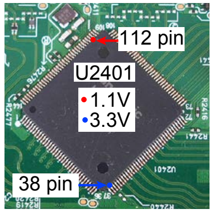
↓

Check the power supply voltage. (HDMI SW1)

↓

Check item(11). Check the power supply voltage. :
Does the power supply voltage of the HDMI SW1 [U2401] indicate the correct voltage (1.1V, 3.3V)?
The test points are as follows.

HDMI SW1



YES → Checking the reset waveform. (HDMI SW1)

NO ↓

Check item(12). Check the power supply voltage. :
Check the power components [U3604] and the pattern on the sub-strate.
If there is no problem, remove the HDMI SW1 [U2401] 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. → Recheck from check item (1). If it does not work, replace the PCB.

NO → The power supply circuit is faulty. Replace the PCB. → Recheck from check item (1). If it does not work, replace the PCB.

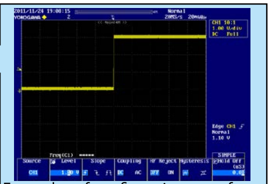
Recheck from check item (1).
If it does not work, replace the PCB.

Checking the reset waveform. (HDMI SW1)

↓

Check item(13). Checking the reset waveform :
Check the waveform.
Is the TP waveform of the TP near the HDMI SW1 [U2401] correct (like the one shown in the diagram) when the power is turned on?

HDMI SW1



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

NO → Check the reset circuit between CPU [U6201] and HDMI SW1 [U2401].
If there is no problem, the HDMI SW1 [U2401] is faulty.
Replace with a new device. → Recheck from check item (1). If it does not work, replace the PCB.

YES ↓

check item (1) again after replacing [R2460/R2461] with a new resistor.
If there is still a problem, the HDMI SW1 [U2401] is faulty.
Replace with a new device.

↓

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

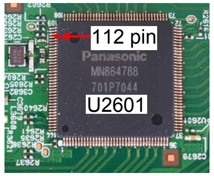
3-3. Error Code H1-03 failure detection procedure

Checking device. [U2601 : MN864788]

Check the power supply voltage. (HDMI SW2)

Check item(14). Check the power supply voltage. :
Does the power supply voltage of the HDMI SW2 [U2601] indicate the correct voltage (1.1V)?
The test points are as follows.

HDMI SW2



YES → Checking the reset waveform. (HDMI SW2)

NO ↓

Check item(15). Check the power supply voltage. :
Check the power components [U3605/U3601] and the pattern on the substrate.
If there is no problem, remove the HDMI SW2 [U2601] from the substrate and measure the voltage at the test point of check item (14).
Is the voltage correct (1.1V or 3.3V)?

YES: Replace with a new device.

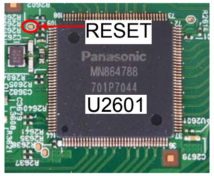
NO: The power supply circuit is faulty.
Replace the PCB.

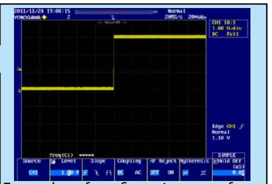
Recheck from check item (1).
If it does not work, replace the PCB.

Checking the reset waveform. (HDMI SW2)

Check item(16). Checking the reset waveform :
Check the waveform.
Is the TP waveform of the TP near the HDMI SW2 [U2601] 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 [U6201] and HDMI SW2 [U2601].
If there is no problem, the HDMI SW2 [U2601] is faulty.
Replace with a new device.
Recheck from check item (16).
If it does not work, replace the PCB.

YES: check item (1) again after replacing [R2630/R2631] with a new resistor.
If there is still a problem, the HDMI SW2 [U2601] is faulty.
Replace with a new device.

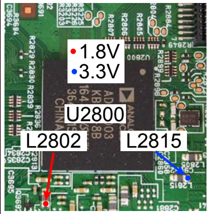
Recheck from check item (1).
If it does not work, replace the PCB.

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

Checking device. [U2800 : ADV8003]

Check the power supply voltage.

Check item(17). Check the power supply voltage.
:
Does the power supply voltage of the GUI [U2800] indicate the appropriate voltage (1.8V, 3.3V)?
The test points are as follows.



YES → Checking the reset waveform.

NO → Check item(18). Check the power supply voltage.
:
Check the power supply components (U3603, Q3696) on the substrate and peripheral pattern.
If there is no problem, remove the GUI [U2800] from the substrate and measure the voltage at the test point of check item (17).
Is the voltage correct (1.8V or 3.3V)?

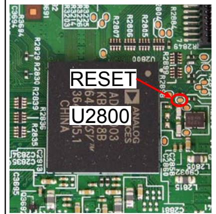
YES → The GUI [U2800] is faulty.
Replace with a new device.

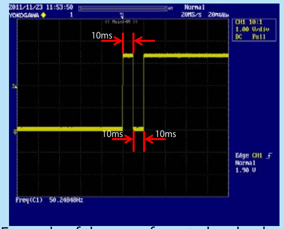
NO → The power supply circuit is faulty.
Replace the PCB.

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

Checking the reset waveform.

Check item(19). Checking the reset :
Check the CPU.
Is the waveform of the TP near the GUI (U2800) 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 → Go to next page.

NO → Check the reset circuit between CPU [U6201] and GUI [U2800].
If there is no problem, the GUI [U2800] is faulty.
Replace with a new device.

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

Go to next page.

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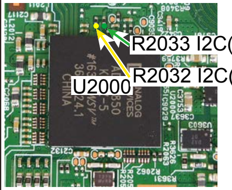
Check the I2C communication line.

YES

Check item(20). Check the I2C communication line :
Check the CPU.
Is the "**I2C**" waveform of the TP near the [U2000] 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

(NO) Check item(21). Check the I2C communication line :
Check GUI [U2800], VIDEO DECODER [U2000] and FET [Q2001] patterns as well as soldering.
If there is no problem, go to the next step.

Check the I2C communication line again after replacing the FET [Q2001].
If there is still a problem, the GUI [U2800] is faulty.
Replace with a new device.

(YES) The GUI [U2800] is faulty.
Replace with a new device.

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

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

Checking device. [U3000, U3001 : A3R12E40DBF-8E]

Check item(22).
Check soldering of IP SCALER [U2800], DDR2 [U3000/U3001] and its peripheral circuits.
Check soldering of the resistors [R2821 to R2843] between IP SCALER and DDR2.
If there is no problem with soldering, [U2800/U3000/U3001] is defective. Replace their IC. Or replace the substrate.

Recheck from check item (1).

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

Checking device. [U2801 : W25Q128JVFIQ]

Check item(23).
Write to the GUI ROM.

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

NO: Recheck from check item (2).

YES:

Check item(24).
Replace [U3001] with a new device.

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

NO: Recheck from check item (2).

YES: Go to check item (17)

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

Checking device. [U2000 : ADV7850]

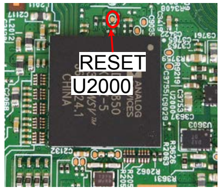
↓

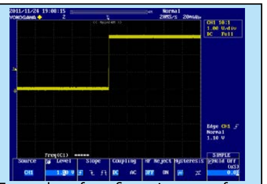
Checking the reset waveform. (VIDEO DECODER)

↓

Check item(25). Checking the reset waveform :
Check the waveform.
Is the TP waveform of the TP near the VIDEO DECODER (U2000) correct (like the one shown in the diagram) when the power is turned on?

VIDEO DECODER





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

NO

Check the reset circuit between CPU [U6201] and VIDEO DECODER [U2000].
If there is no problem, the VIDEO DECODER [U2000] is faulty.
Replace with a new device.
Recheck from check item (25).
If it does not work, replace the PCB.

YES

check item (1) again after replacing [R2031] with a new resistor.
If there is still a problem, the VIDEO DECODER [U2000] is faulty.
Replace with a new device.

↓

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

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

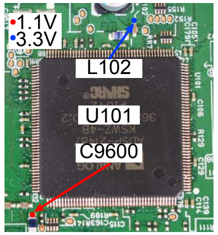
Checking device. [U101 : ADSP21487]

↓

Check the power supply voltage. (DSP1)

↓

Check item(26). Check the power supply voltage. :
Does the power supply voltage of the DSP [U101] indicate the appropriate voltage (1.1V, 3.3V)?
The test points are as follows.



- YES → Checking the reset waveform. (DSP1)
- NO → Check item(27).

Check item(27). Check the power supply voltage. :
Check the power supply components [U1901, U1902] on the substrate and peripheral pattern.
If there is no problem, remove the DSP [U101] from the substrate and measure the voltage at the test point of check item (26).
Is the voltage correct (1.1 V or 3.3V)?

- YES → DSP [U101] is faulty. Replace with a new device.
- NO → The power supply circuit is faulty. Replace the PCB.

The power supply circuit is faulty.
Replace the PCB.

DSP [U101] is faulty.
Replace with a new device.

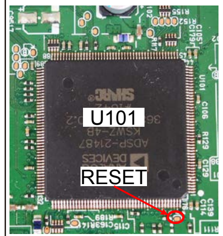
↓

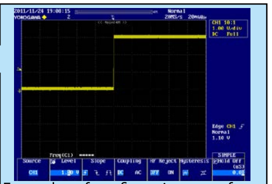
Recheck from check item (1).
If it does not work, replace the PCB.

Checking the reset waveform. (DSP1)

↓

Check item(28). Checking the reset :
Check the CPU.
Is the waveform of the TP near the DSP [U101] 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 → Go to next page.
- NO → Check the reset circuit between CPU [U6201] and DSP [U101].

Check the reset circuit between CPU [U6201] and DSP [U101].
If there is no problem, the DSP [U101] is faulty.
Replace with a new device.

↓

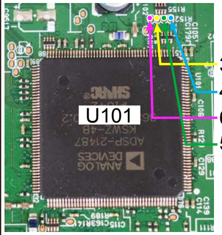
Recheck from check item (1).
If it does not work, replace the PCB.

Go to next page.

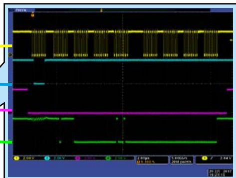
Check the SPI communication line. (DSP1)

YES

Check item(29). Check the SPI communication line :
Check the CPU.
Is the "**SPI**" waveform of the TP near the DSP [U101] correct (like the one shown in the diagram) when the power is turned on?



3 pin CLK
4 pin MOSI
6 pin CS
5 pin MISO



*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 1.2MHz)
Voltage scale : 2.0V/div
Time scale : 2us/div

YES　NO

Check item(30). Check the SPI communication line :
Check DSP [U101], CPU[U6201] patterns as well as soldering.
If there is no problem, go to the next step.

DSP [U101] is faulty.
Replace with a new device.

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

3-9. Error Code H1-09 failure detection procedure

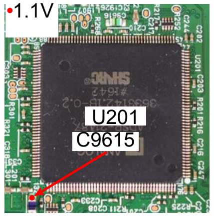
Checking device. [U201 : ADSP21487]

↓

Check the power supply voltage. (DSP2)

↓

Check item(31). Check the power supply voltage.
:
Does the power supply voltage of the DSP [U201] indicate the appropriate voltage (1.1V)?
The test points are as follows.



YES → Checking the reset waveform. (DSP2)

NO → Check item(32). Check the power supply voltage.
:
Check the power supply components [U1906] on the substrate and peripheral pattern.
If there is no problem, remove the DSP [U201] from the substrate and measure the voltage at the test point of check item (31).
Is the power supply voltage correct (1.1V)?

YES → DSP [U201] is faulty.
Replace with a new device.

NO → The power supply circuit is faulty.
Replace the PCB.

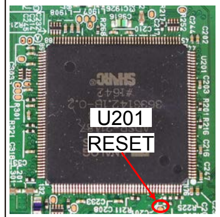
↓

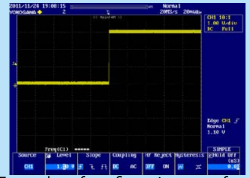
Recheck from check item (1).
If it does not work, replace the PCB.

Checking the reset waveform. (DSP2)

↓

Check item(33). Checking the reset :
Check the CPU.
Is the waveform of the TP near the DSP [U201] 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 → Go to next page.

NO → Check the reset circuit between CPU [U6201] and DSP [U201].
If there is no problem, the DSP [U201] is faulty.
Replace with a new device.

↓

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

Go to next page.

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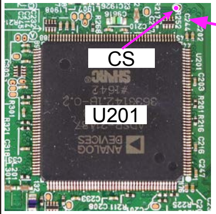
Check the SPI communication line. (DSP2)

YES

Check item(34). Check the SPI communication line :
Check the CPU.
Is the "**SPI**" waveform of the TP near the DSP [U201] 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
Voltage scale : 2.0V/div
Time scale : 2us/div

YES

NO

Check item(35). Check the SPI communication line :
Check DSP [U201], CPU [U6201] patterns as well as soldering.
If there is no problem, go to the next step.

DSP [U201] is faulty.
Replace with a new device.

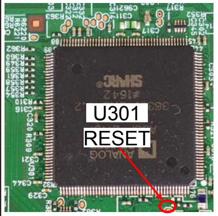
Recheck from check item (1).
If it does not work, replace the PCB.

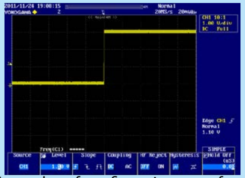
3-10. Error Code H1-10 failure detection procedure

Checking device. [U301 : ADSP21487]

Checking the reset waveform. (DSP3)

Check item(36). Checking the reset :
Check the CPU.
Is the waveform of the TP near the DSP [U301] 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

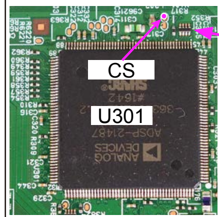
YES / NO

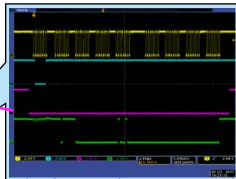
NO: Check the reset circuit between CPU [U6201] and DSP [U301].
If there is no problem, the DSP [U301] is faulty.
Replace with a new device.

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

YES: Check the SPI communication line. (DSP3)

Check item(37). Check the SPI communication line :
Check the CPU.
Is the "**SPI**" waveform of the TP near the DSP [U301] 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
Voltage scale : 2.0V/div
Time scale : 2us/div

YES / NO

NO: Check item(38). Check the SPI communication line :
Check DSP [U301], CPU [U6201] patterns as well as soldering.
If there is no problem, go to the next step.

DSP [U301] is faulty.
Replace with a new device.

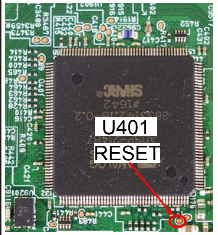
Recheck from check item (1).
If it does not work, replace the PCB.

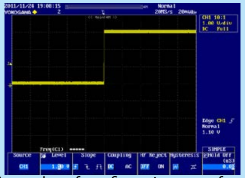
3-11. Error Code H1-11 failure detection procedure

Checking device. [U401 : ADSP21487]

Checking the reset waveform. (DSP4)

Check item(39). Checking the reset :
Check the CPU.
Is the waveform of the TP near the DSP [U401] 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 → Check the SPI communication line. (DSP4)

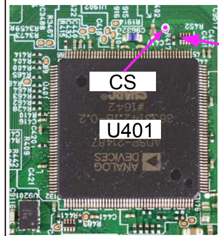
NO ↓

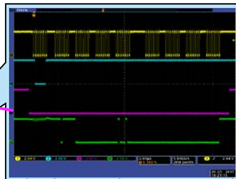
Check the reset circuit between CPU [U6201] and DSP [U401].
If there is no problem, the DSP [U401] is faulty.
Replace with a new device.

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

Check the SPI communication line. (DSP4)

Check item(40). Check the SPI communication line :
Check the CPU.
Is the "**SPI**" waveform of the TP near the DSP [U401] 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
Voltage scale : 2.0V/div
Time scale : 2us/div

YES → DSP [U401] is faulty.

NO ↓

Check item(41). Check the SPI communication line :
Check DSP [U401], CPU [U6201] patterns as well as soldering.
If there is no problem, go to the next step.

DSP [U401] is faulty.
Replace with a new device.

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

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

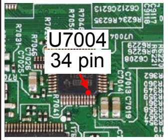
Checking device. [U7004 : PCM9211]

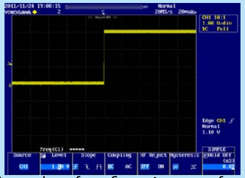
↓

Checking the reset waveform. (DIR)

↓

Check item(42). Checking the reset :
Check the CPU.
Is the waveform of the TP near the DIR [U7004] 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 → Check the communication line. (DIR)

NO ↓

Check the reset circuit between CPU [U6201] and DIR [U7004].
If there is no problem, the DIR [U7004] is faulty.
Replace with a new device.

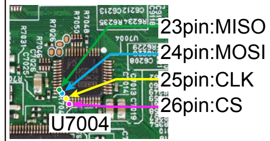
↓

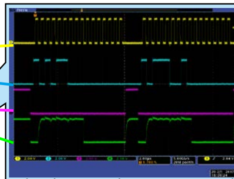
Recheck from check item (1).
If it does not work, replace the PCB.

Check the communication line. (DIR)

YES ↓

Check item(43). Check the communication line :
Check the CPU.
Is the waveform of the TP near the DIR [U7004] 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 → DIR [U7004] is faulty.

NO ↓

Check item(44). Check the communication line :
Check DIR [U7004], CPU [U6201] patterns as well as soldering.
If there is no problem, go to the next step.

↓

DIR [U7004] is faulty.
Replace with a new device.

↓

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

3-13. Error Code H1-16 failure detection procedure

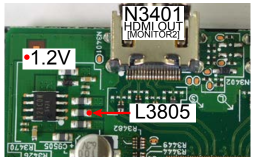
Checking device. [U3802 : Sil9437]

↓

Check the power supply voltage. (ARC IC)

↓

Check item(45). Check the power supply voltage. :
Does the power supply voltage of the ARC IC [U3802] indicate the correct voltage (1.21V)?
The test points are as follows.



YES → Checking the reset waveform. (ARC IC)

NO ↓

Check item(46). Check the power supply voltage. :
Check the power components [U3801] and the pattern on the sub-strate.
If there is no problem, remove the ARC IC [U3802] from the sub-strate and measure the voltage at the test point of check item (45).
Is the power supply voltage correct (1.2V)?

YES ↓

Replace with a new device.

NO ↓

The power supply circuit is faulty.
Replace the PCB.

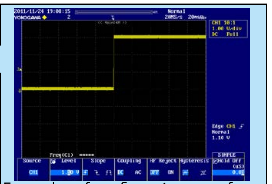
↓

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

Checking the reset waveform. (ARC IC)

↓

Check item(47). Checking the reset waveform :
Check the waveform.
Is the "RESET" waveform of the ARC IC [U3802] 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

NO ↓

Check the reset circuit between CPU [U6201] and ARC IC [U3802].
If there is no problem, the ARC IC [U3802] is faulty.
Replace with a new device.

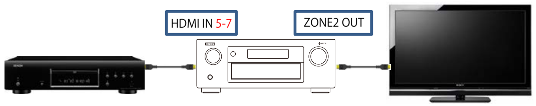
YES ↓

ARC IC [U3802] is faulty.
Replace with a new device.

↓

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

3-14. 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)

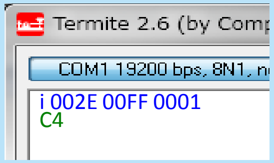
↓

Check item(48). 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 → Check item(49)

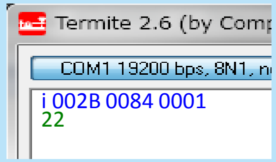
NO → Go to check item (50)

Check item(49). 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 (51)

"22 or 11"
(Detection of DDC is OK) → Go to check item (52)

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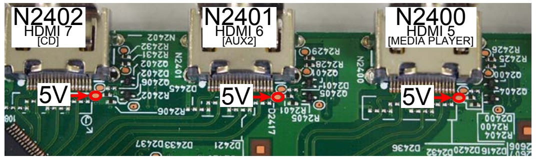
When the results of check item (48) are "NO"
(Detection of 5V is not OK)

↓

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

↓

Check item(50). Check the +5V voltage.
Does the test point near HDMI input terminal [N2400/N2401/N2402] indicate 5V?



YES ↓

HDMI Switcher1 [U2401] is faulty.
Replace with a new device.

NO ↓

Check for a short circuit in the 5V line and the 5V Switch IC [U2400].
If there is no problem, the HDMI Switcher1 (U2401) or the 5V Switch IC [U2400] is faulty
Replace with a new device.

↓

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

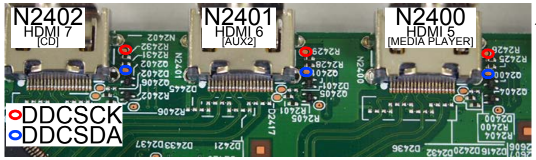
When the results of check item (49) are "00 or 04"
(Detection of DDC is not OK.)

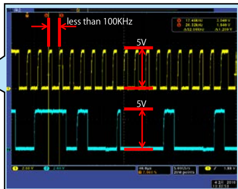
↓

Check the DDC line. (HDMI IN5 - 7)

↓

Check item(51). Check the DDC line :
Are waveforms of "DDCCL" and "DDCDA" observed at the test point near the HDMI input terminal [N2400/N2401/N2402]?





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 [U2401] is faulty.
Replace with a new device.

NO ↓

Check for a short circuit in the DDC line.
If there is no problem, the HDMI Switcher1 [U2401] 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 (49) are "22 or 11"
(Detection of DDC is OK.)

↓

Checking the TMDS status register (HDMI Switcher1)

↓

Check item(52). 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

Termite 2.6 (by Comp
COM1 19200 bps, 8N1, n
i 002E 00FF 0001

NO → Check item(54)

YES ↓

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

↓

Check item(53). 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

Termite 2.6 (by Comp
COM1 19200 bps, 8N1, n
i 0028 0040 0001
33

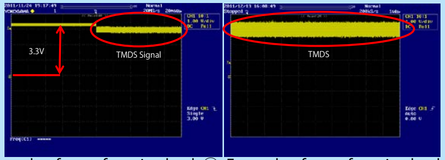
If it is normal, "33" is returned.
The correct resistor value cannot be checked if the AVR and TV are not connected by HDMI.

"33 or 23 or 13 or 03"
(Detection of HPD is OK / Detection of RXSENSE is OK) → Go to check item (55)

"31 or 21 or 11 or 01"
(Detection of HPD is OK / Detection of RXSENSE is not OK) → Go to check item (58)

"32 or 22 or 12 or 02"
(Detection of HPD is not OK / Detection of RXSENSE is OK) → Go to check item (59)

"30 or 20 or 10 or 00"
(Detection of HPD is not OK / Detection of RXSENSE is not OK) → Go to check item (60)



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(54). 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 [U2401] is faulty.
Replace with a new device.

NO ↓

Check for a short circuit in the pattern of the TMDS line of the HDMI Switcher1 [U2401] from the HDMI input terminal.
If there is no problem, the HDMI Switcher1 [U2401] is faulty.
Replace with a new device.

↓

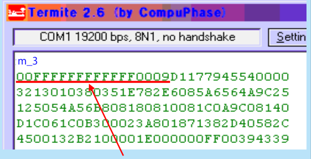
Recheck from check item (2).
If it does not work, replace the PCB.

When the results of check item (53) 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)

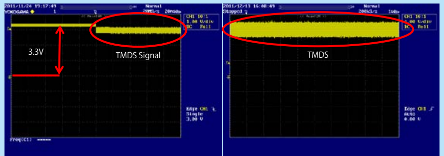
Check item(55). Check the Monitor EDID :
① Unplug the AC cord. Plug the AC cord into a power outlet.
② Send the transmission command "m_3" from Termite.exe.
Are the first eight bytes of the returned value "00FFFFFFFFFFFF00"?

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.

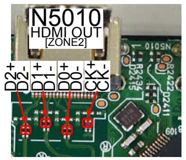
YES



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

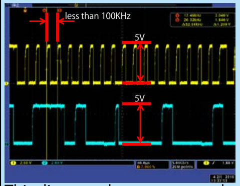
Check item(56). Checking the TMDS :
Check the TMDS waveform at the following test point.



YES → HDMI Switcher1 [U2401] is faulty.
Replace with a new device.

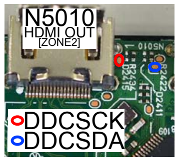
NO → Check for a short circuit in the TMDS line.
If there is no problem, the HDMI Switcher1 [U2401] is faulty.
Replace with a new device.

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(57). Check the communication :
Do "CK" and "DA" indicate (5V) at the test point near HDMI output connector [N5010]?



YES → HDMI Switcher1 [U2401] is faulty.
Replace with a new device.

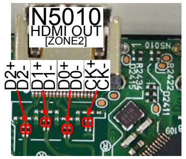
NO → Check for a short circuit in the DDC line.
If there is no problem, the HDMI Switcher1 [U2401] is faulty.
Replace with a new device.

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

When the results of check item (53) 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(58). Checking the RXSENSE. :
Does the test point near HDMI output terminal [N5010] indicate (3.3V)?



YES → HDMI Switcher1 [U2401] is faulty.
Replace with a new device.

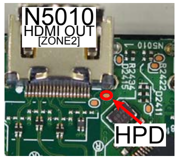
NO → Check for a short circuit in the TMDS line.
If there is no problem, the HDMI Switcher1 [U2401] is faulty.
Replace with a new device.

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

When the results of check item (53) 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(59). Checking the HPD :
Does the test point near HDMI output terminal [N5010] indicate Hi(3-5V)?



YES → HDMI Switcher1 [U2401] is faulty.
Replace with a new device.

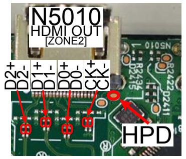
NO → Check for a short circuit in the HPD line.
If there is no problem, the HDMI Switcher1 [U2401] is faulty.
Replace with a new device.

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

When the results of check item (53) 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(60). Checking the HPD and RXSENSE. :
Does the test point near HDMI output terminal [N5010] indicate (3.3V)?
Does the test point (HPD) near HDMI output terminal [N5010] indicate "Hi(3-5V)"?



YES

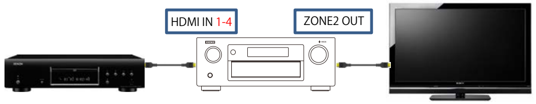
NO

Check for a short circuit in the TMDS/ HPD line.
If there is no problem, the HDMI Switcher1 [U2401] is faulty.
Replace with a new device.

HDMI Switcher1 [U2401] is faulty.
Replace with a new device.

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

3-15. 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.

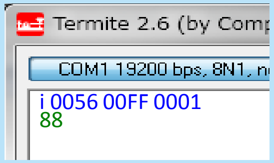
Checking the +5V/DDC status register (HDMI Switcher2)

Check item(61). 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 → Check item(62)

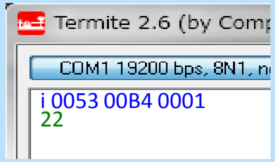
NO → Go to check item (63)

Check item(62). 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 (64)

"22 or 11"
(Detection of DDC is OK) → Go to check item (65)

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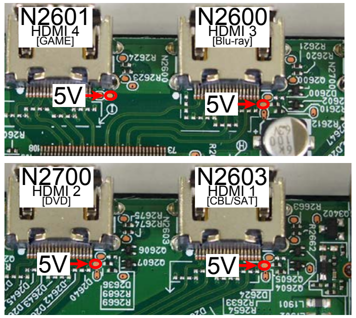
When the results of check item (61) are "NO"
(Detection of 5V is not OK)

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

Check item(63). Check the +5V voltage.
Does the test point near HDMI input terminal [N2603/N2700/N2600/N2601] indicate 5V?



YES

HDMI Switcher2 [U2601] is faulty.
Replace with a new device.

NO

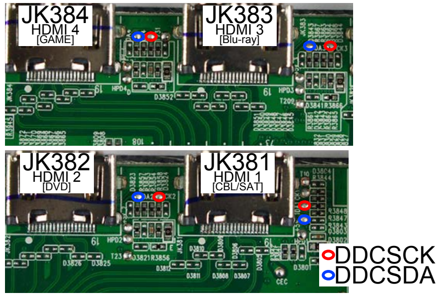
Check for a short circuit in the 5V line and the 5V Switch IC [U2400].
If there is no problem, the HDMI Switcher2 [U2601] or the 5 V Switch IC [U2400] is faulty
Replace with a new device.

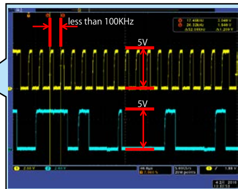
Recheck from check item (3).
If it does not work, replace the PCB.

When the results of check item (62) are "00 or 04"
(Detection of DDC is not OK.)

Check the DDC line. (HDMI IN1 - 4)

Check item(64). Check the DDC line :
Are waveforms of "DDCSCK" and "DDCSDA" observed at the test point near the HDMI input terminal [N2603/N2700/N2600/N2601]?





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 [U2601] is faulty.
Replace with a new device.

NO

Check for a short circuit in the DDC line.
If there is no problem, the HDMI Switcher2 [U2601] 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 (62) are "22 or 11"
(Detection of DDC is OK.)

Checking the TMDS status register (HDMI Switcher2)

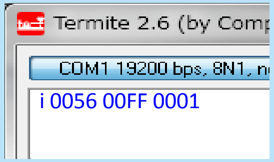
Check item(65). Checking register of the TMDS CLK detection status register :

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



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

NO → Check item(66)

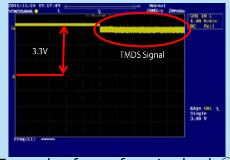
Check item(66). Checking the TMDS input waveform. :
Check the TMDS waveform at the following test point.
Is the waveform like the sample?

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

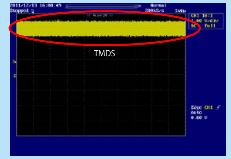
HDMI IN2
55/56/58/59/61/62/64/65 pin

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 [U2601] is faulty.
Replace with a new device.

NO → Check for a short circuit in the pattern of the TMDS line of the HDMI Switcher2 [U2601] from the HDMI input terminal.
If there is no problem, the HDMI Switcher2 [U2601] is faulty.
Replace with a new device.

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

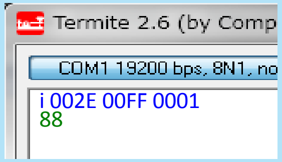
Checking the TMDS status register (HDMI Switcher2 -> HDMI Switcher1)

Check item(67). 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 :

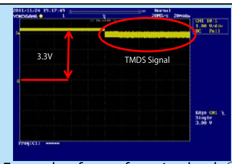


If it is normal, "88" is returned.

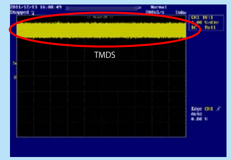
NO → Check item(68)

Check item(68). 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 (check item 67) / YES (check item 68) → HDMI Switcher1 [U2401] is faulty.
Replace with a new device.

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

NO (check item 68) → Check for a short circuit in the TMDS line.
If there is no problem, the HDMI Switcher2 [U2601] is faulty.
Replace with a new device.

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

3-16. Tx failure detection procedure

Check the output terminal.

Check item(69). Check the video output port for failure. :
Check the Monitor 1 output video signal is correct.

After checking the Monitor 1, change the HDMI cable connection from OUT1 to OUT2.
Turn off the AV AMP and turn it on again.
To check under the same conditions, use the same procedure as that for checking Monitor 1 when checking the Monitor 2 output.

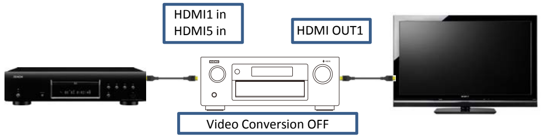
No video signal is output from both Monitor 1 and Monitor 2.
Also, No video signal is output from Monitor 1 only.

Go to check item (70)

No video signal is output from Monitor 2 only.

Go to check item (79)

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



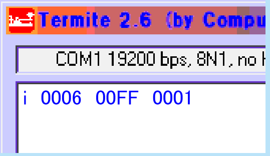
Checking the TMDS status register (Switcher1/2 -> HDMI Tx)

Check item(70). 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

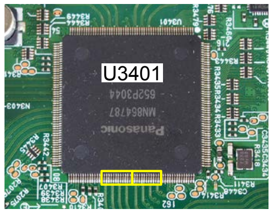


YES

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)

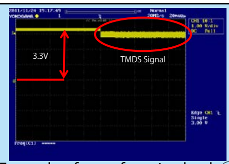
NO

Check item(71). Checking the TMDS input. :
TMDS waveform at the following points.

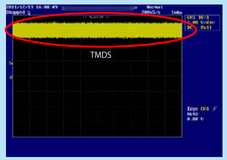


HDMI IN1
124/125/127/128/130/131/133/134 pin

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

NO

HDMI Tx [U3401] is faulty.
Replace with a new device.

YES

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

Case of HDMI IN1
HDMI Switcher2 [U2601] is faulty.
Replace with a new device.

Case of HDMI IN5
HDMI Switcher1 [U2401] 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.

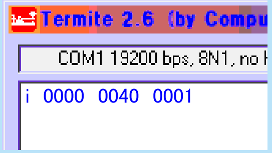
Checking the HPD/RXSENSE status register. (HDMI Tx -> Monitor)

Check item(72). 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 (73)

"10"
(Detection of HPD is OK / Detection of RXSENSE is not OK)
Go to check item (76)

"20"
(Detection of HPD is not OK / Detection of RXSENSE is OK)
Go to check item (77)

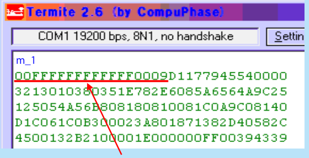
"00"
(Detection of HPD is not OK / Detection of RXSENSE is not OK)
Go to check item (78)

When the results of check item (72) are "30"
(Detection of HPD is OK / Detection of RXSENSE is OK)

Checking the EDID register. (HDMI OUT1)

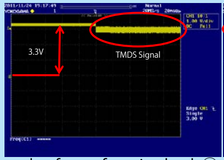
Check item(73). Check the Monitor EDID :
① Unplug the AC cord. Plug the AC cord into a power outlet.
② Send the transmission command "m_1" from Termite.exe.
Are the first eight bytes of the returned value "00FFFFFFFFFFFF00"?

Example

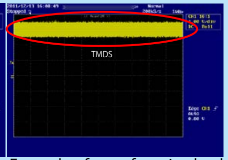


The first eight bytes are normally "00FFFFFFFFFFFF00".
The correct resistor value cannot be checked if the AVR and TV are not connected by HDMI.

YES

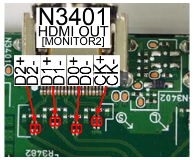


Example of waveform in check ①
Voltage scale : 1.0V/div
Time scale : 20ms/div



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

Check item(74). Checking the TMDS :
Check the TMDS waveform at the following test point.



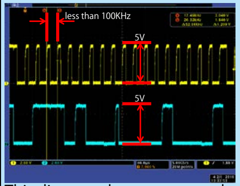
YES

HDMI Tx [U3401] is faulty.
Replace with a new device.

NO

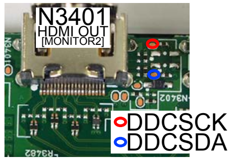
Check for a short circuit in the TMDS line.
If there is no problem, the HDMI Tx [U3401] is faulty.
Replace with a new device.

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(75). Check the communication :
Are the waveforms for "CKL" and "DATA" at the test point near the HDMI output connector [N3401] correct (as shown in the figure)?



YES

HDMI Tx [U3401] is faulty.
Replace with a new device.

NO

Check for a short circuit in the DDC line.
If there is no problem, the HDMI Tx [U3401] is faulty.
Replace with a new device.

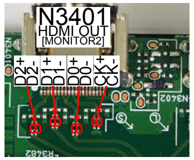
Recheck from check item (4).
If it does not work, replace the PCB.

Caution in servicing
Electrical
Mechanical
Repair Information
Updating

When the results of check item (72) are "10"
(Detection of HPD is OK / Detection of RXSENSE is not OK)

Check the TMDS. (HDMI OUT1)

Check item(76). Checking the RXSENSE. :
Does the test point near HDMI output terminal [N3401] indicate (3.3V)?



YES → HDMI Tx [U3401] is faulty.
Replace with a new device.

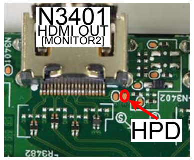
NO → Check for a short circuit in the TMDS line.
If there is no problem, the HDMI Tx [U3401] is faulty.
Replace with a new device.

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

When the results of check item (72) are "20"
(Detection of HPD is not OK / Detection of RXSENSE is OK)

Check the HPD. (HDMI OUT1)

Check item(77). Checking the HPD :
Does the test point (HPD) near HDMI output terminal [N3401] indicate "Hi(3-5V)"?



YES → HDMI Tx [U3401] is faulty.
Replace with a new device.

NO → Check for a short circuit in the HPD line.
If there is no problem, the HDMI Tx [U3401] is faulty.
Replace with a new device.

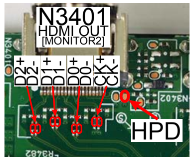
Recheck from check item (4).
If it does not work, replace the PCB.

Caution in servicing
Electrical
Mechanical
Repair Information
Updating

When the results of check item (72) are "00"
(Detection of HPD is not OK / Detection of RXSENSE is not OK)

Check the TMDS/HPD. (HDMI OUT1)

Check item(78). Checking the HPD and RXSENSE. :
Does the test point near HDMI output terminal [N3401] indicate (3.3V)?
Does the test point (HPD) near HDMI output terminal [N3401] indicate "Hi(3-5V)"?



YES: HDMI Tx [U3401] is faulty.
Replace with a new device.

NO: Check for a short circuit in the TMDS/HPD line.
If there is no problem, the HDMI Tx [U3401] 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)

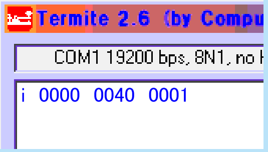
↓

Check item(79). 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 (80)

"01"
(Detection of HPD is OK / Detection of RXSENSE is not OK)
→ Go to check item (83)

"02"
(Detection of HPD is not OK / Detection of RXSENSE is OK)
→ Go to check item (84)

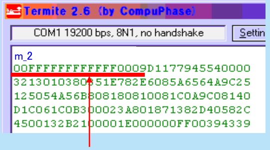
"00"
(Detection of HPD is not OK / Detection of RXSENSE is not OK)
→ Go to check item (85)

When the results of check item (79) are "03"
(Detection of HPD is OK / Detection of RXSENSE is OK)

Checking the EDID register. (OUT2)

Check item(80). 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"?

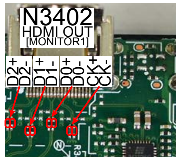
Example



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

Check item(81). Checking the TMDS :
Check the TMDS waveform at the following test point.

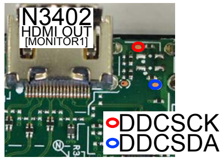


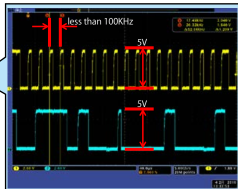
YES: HDMI Tx [U3401] is faulty.
Replace with a new device.

NO: Check for a short circuit in the TMDS line.
If there is no problem, the HDMI Tx [U3401] is faulty.
Replace with a new device.

NO

Check item(82). Check communication with the monitor :
Are waveforms of "DDCSCK" and "DDCSDA" observed at the test point near the HDMI output terminal [N3402]?





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 Tx [U3401] is faulty.
Replace with a new device.

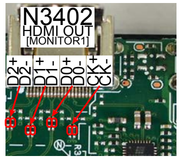
NO: HDMI Tx [U3401] is faulty.
Replace with a new device.

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

When the results of check item (79) are "01"
(Detection of HPD is OK / Detection of RXSENSE is not OK)

Check the RXSENSE. (OUT2)

Check item(83). Checking the RXSENSE. :
Does the test point of RXSENSE close to the HDMI output terminal [N3402] indicate the (3.3V)?



YES → HDMI Tx [U3401] is faulty.
Replace with a new device.

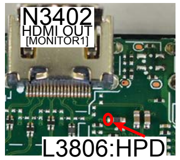
NO → Check for a short circuit in the TMDS line.
If there is no problem, the HDMI Tx [U3401] is faulty.
Replace with a new device.

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

When the results of check item (79) are "02"
(Detection of HPD is not OK / Detection of RXSENSE is OK)

Check the HPD. (OUT2)

Check item(84). Checking the HPD :
Does the voltage of HPD test point close to the HDMI output terminal [N3402] indicate "Hi" (3-5 V)?



YES → HDMI Tx [U3401] is faulty.
Replace with a new device.

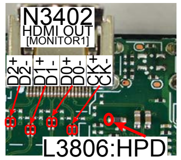
NO → Check for a short circuit in the HPD line.
If there is no problem, the HDMI Tx [U3401] is faulty.
Replace with a new device.

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

When the results of check item (79) are "00"
(Detection of HPD is not OK / Detection of RXSENSE is not OK)

Checking the HPD/RXSENSE status register. (OUT2)

Check item(85). Checking the HPD and RXSENSE. :
Does the test point of RXSENSE close to the HDMI output terminal [N3402] indicate the (3.3V)?
Does the voltage of HPD test point close to the HDMI output terminal [N3402] indicate "Hi" (3-5 V)?



YES

NO

Check for a short circuit in the TMDS/ HPD line.
If there is no problem, the HDMI Tx [U3401] is faulty.
Replace with a new device.

HDMI Tx [U3401] is faulty.
Replace with a new device.

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

3-17. HDMI DDC Buffer (ISL33003) failure detection procedure

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

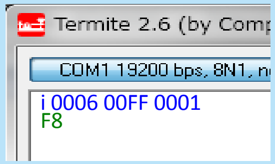
※ In order to check, connect the player to the HDMI terminal and configure the player as AVR source.
Check the sound output while turning on the player.

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

Check item(88). 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



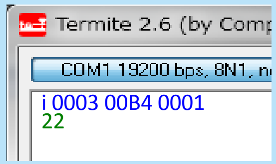
"78 or 70"
(Detection of 5V is not OK.)
Go to check item (90)

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

Check item(88). 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 (91)

"22"
(Detection of DDC is OK)
Go to check item (92)

When the results of check item (88) are "78 or 70"
(Detection of 5V is not OK.)

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

Check item(90). Check the +5V voltage.
Does the HDMI Tx [U3401] 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 [U2400]. If there is no problem, the HDMI Tx [U3401] or the 5V Switch [U2400] is faulty. Replace with a new device.

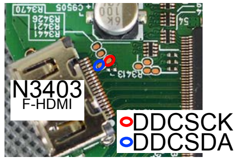
YES: HDMI Tx [U3401] is faulty. Replace with a new device.

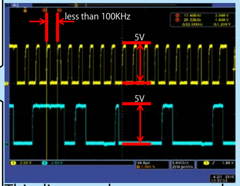
Recheck from check item (4).
If it does not work, replace the PCB.

When the results of check item (89) are "00 or 04"
(Detection of DDC is not OK.)

Check the DDC Line. (HDMI DDC Buffer)

Check item(91). Check the DDC line :
Are the "DDCSCK" and "DDCSDA" waveforms for the HDMI Tx [U3401] 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 HDMI DDC Buffer [U5501] is faulty. Replace with a new device.

YES: HDMI Tx [U3401] 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 (89) are "22"
(Detection of DDC is OK)

Checking the TMDS status register (HDMI DDC Buffer)

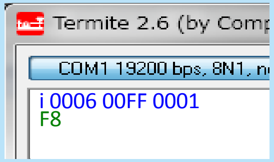
Check item(92). Check the TMDS CLK detection status of the register :

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

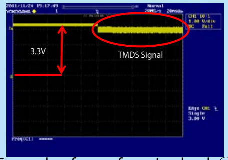


NO → Check item(93).

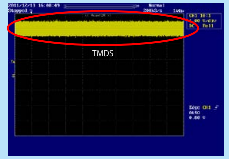
YES → Check item(94).

Check item(93). 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:

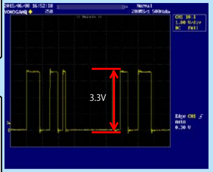
HDMI Tx [U3401] is faulty.
Replace with a new device.

NO:

Check for a short circuit in the TMDS line and the Front HDMI FFC.
If there is no problem, the HDMI DDC Buffer [U5501] is faulty.
Replace with a new device.

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

Check item(94). Check the AUDIO signal output :
Check the AUDIO signal waveform at the following test point.
Is the waveform like the sample?
(MCK/64FS/FS/I2S0/I2S1/I2S2/I2S3/SPDIF)



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.

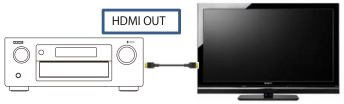
NO:

HDMI Tx [U3401] is faulty.
Replace with a new device.

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

3-18. GUI and PLD failure detection procedure

Check item(95). 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 (96)

YES → Go to check item (99)

When the results of check item (95) are "NO"
(When the menu display is not OK)

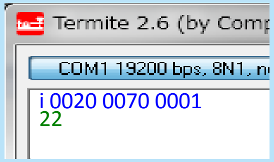
Check the Video signal line. (GUI -> HDMI Tx)

Check item(96). 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

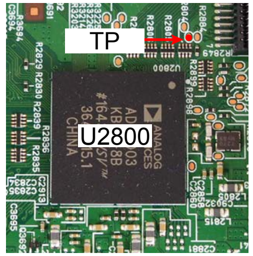


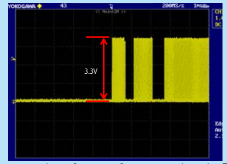
YES → HDMI Tx [U3401] is faulty.
Replace with a new device.

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

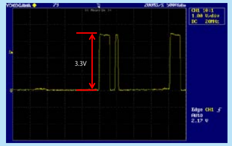
NO → Check the Video signal line. (GUI -> PLD)

Check item(97). 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



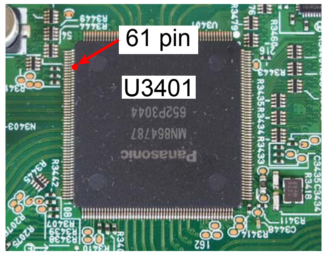
Example of waveform in check ②
Voltage scale : 1.0V/div
Time scale : 50ns/div

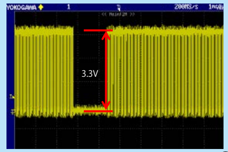
NO → Check the peripheral pattern between the GUI [U2800] and PLD [U3200].
If there is no problem, the GUI [U2800] is faulty.
Replace with a new device.

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

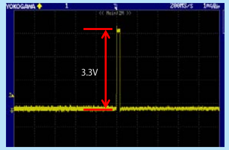
Check the Video signal line. (PLD -> HDMI Tx)

Check item(98). 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



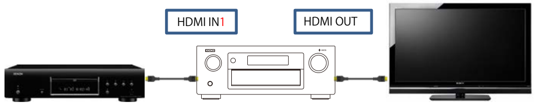
Example of waveform in check ②
Voltage scale : 1.0V/div
Time scale : 1us/div

YES → HDMI Tx [U3401] is faulty.
Replace with a new device.

NO → Check the peripheral pattern between the PLD [U3200] and HDMI Tx [U3401].
If there is no problem, the PLD [U3200] is faulty.
Replace with a new device.

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

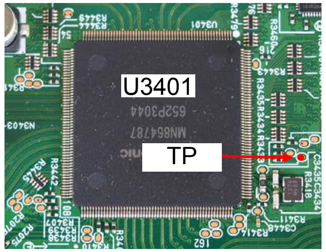
When the results of check item (95) are "YES"
(When the menu display is OK)

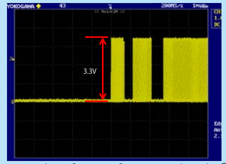


Turn Video Conversion "**ON**" on the setup menu.
(SETUP MENU-> Video-> Output Settings-> Video Conversion = On)
In order to check, connect the player to the HDMI terminal and configure the player as AVR source.
Next, turn on the power for the player and TV and start playback on the player.

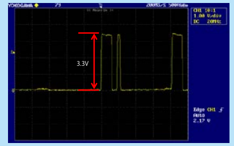
Check the Video signal line. (HDMI Tx -> PLD)

Check item(99). 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

NO

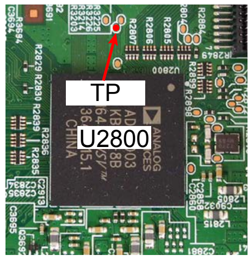
Check the peripheral pattern between the HDMI Tx [U3401] and PLD [U3200].
If there is no problem, the HDMI Tx [U3401] is faulty.
Replace with a new device.

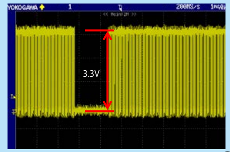
Recheck from check item (5).
If it does not work, replace the PCB.

YES

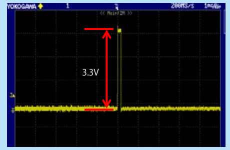
Check the Video signal line. (PLD -> GUI)

Check item(100). 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

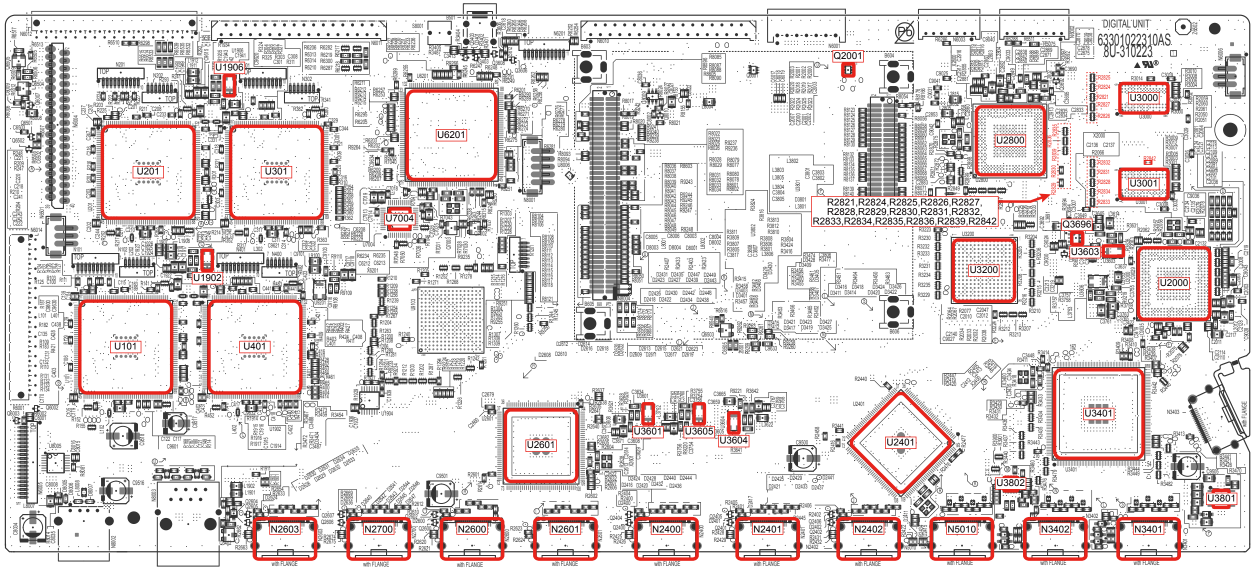
The GUI [U2800] is faulty.
Replace with a new device.

NO

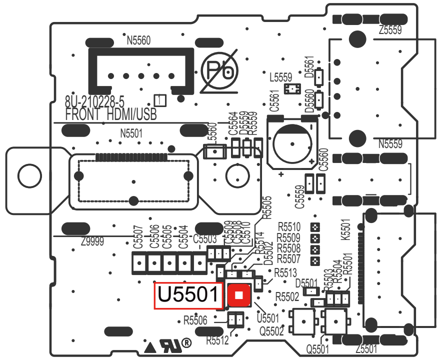
Check the peripheral pattern between the PLD [U3200] and GUI [U2800].
If there is no problem, the PLD [U3200] is faulty.
Replace with a new device.

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

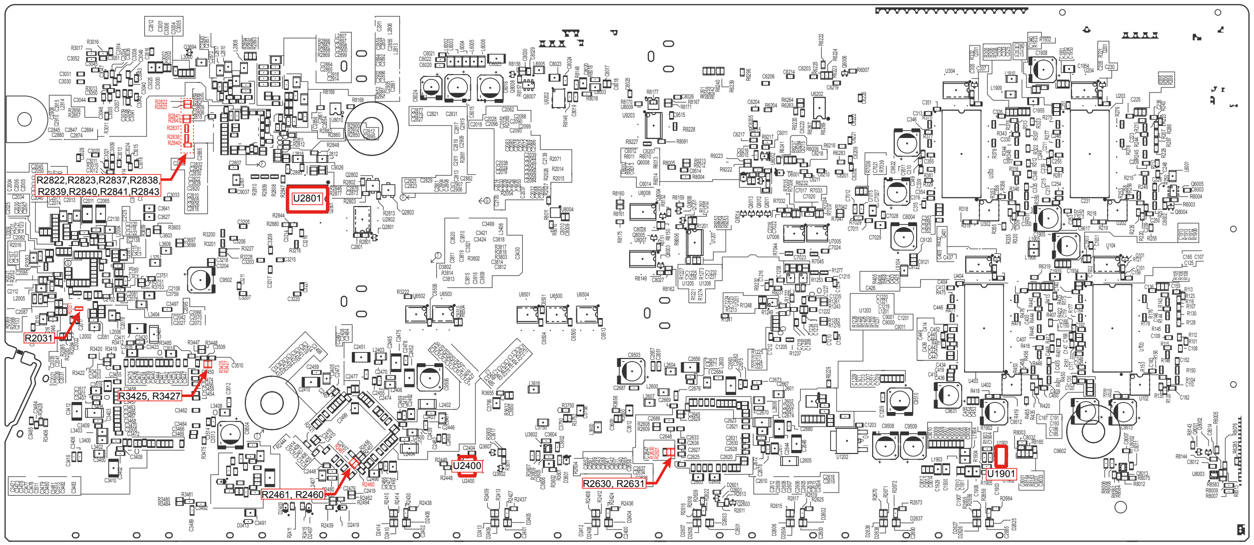
DIGITAL (A SIDE)



F HDMI (A SIDE)



DIGITAL (B SIDE)



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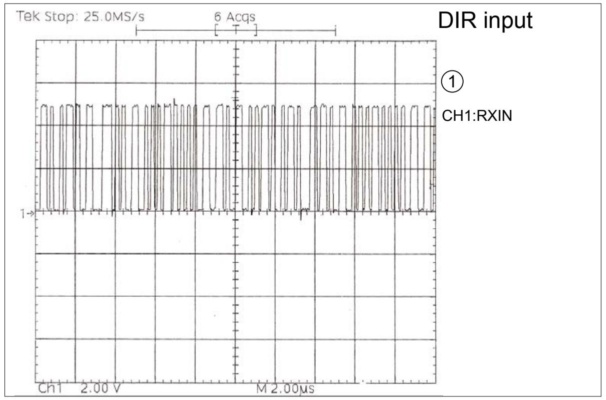
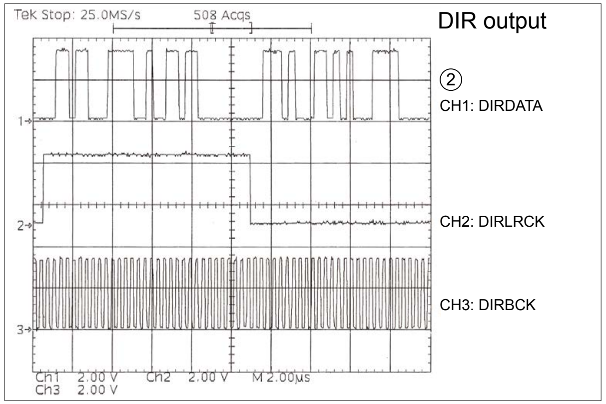
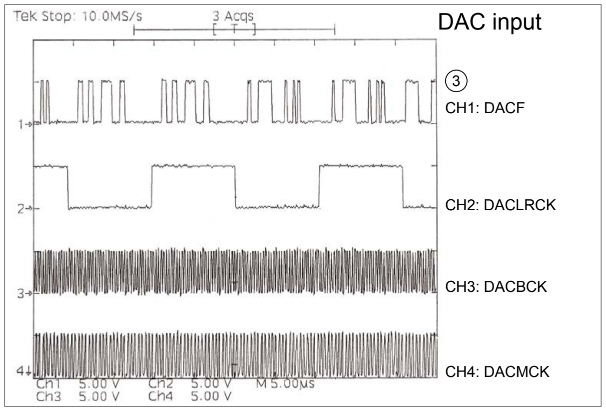
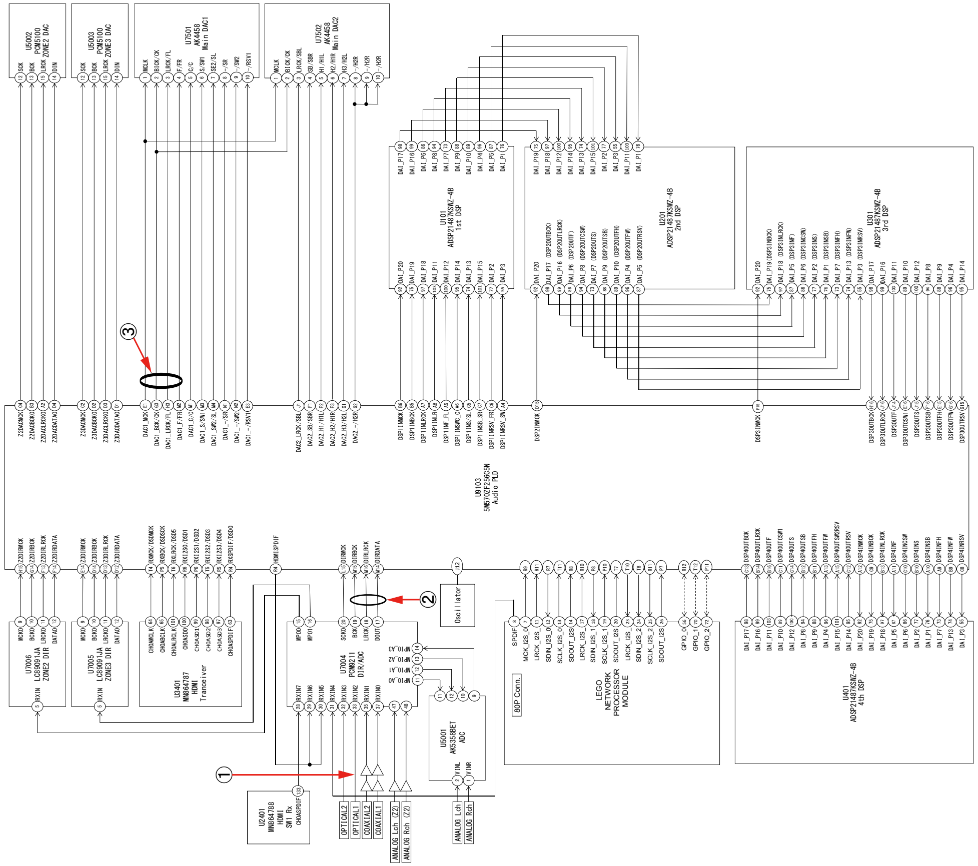
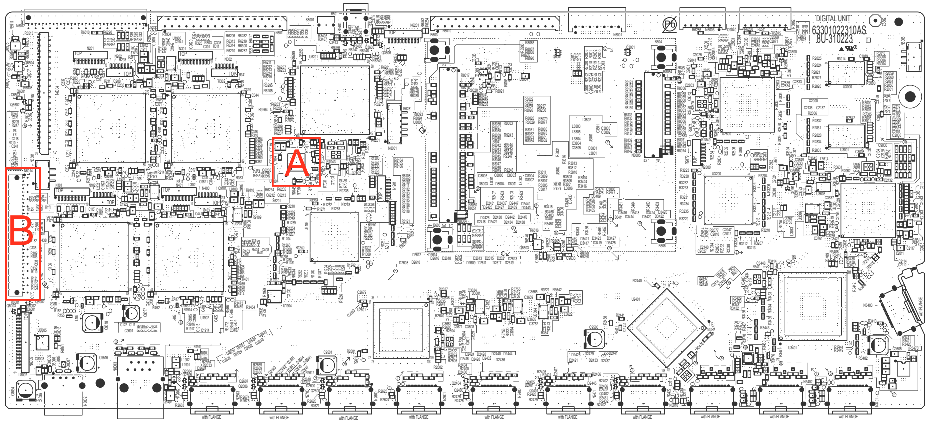
WAVE FORM

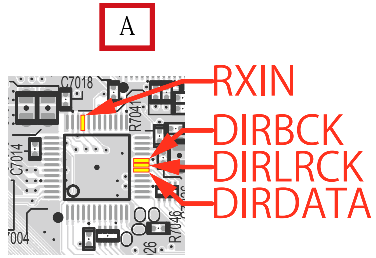


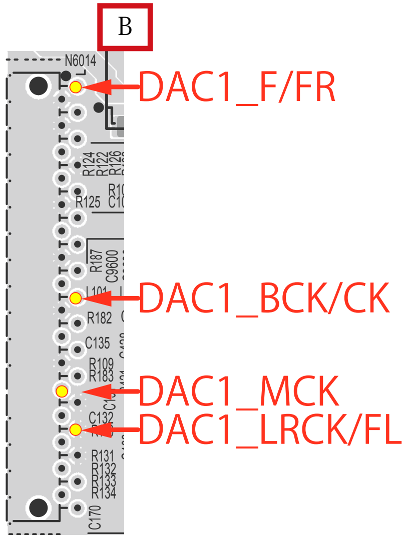












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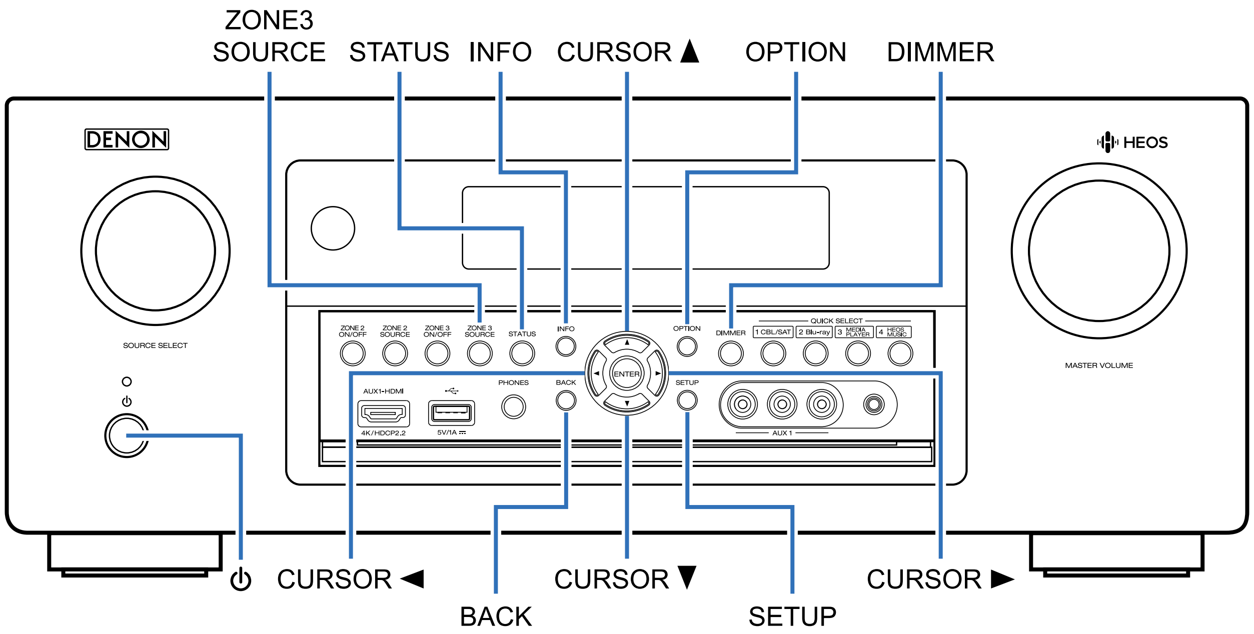
SPECIAL MODE

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)	SETUP	OPTION	-	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	STATUS	INFO	-	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	ZONE3 SOURCE	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 (E3, E2 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	ZONE3 SOURCE	STATUS	CURSOR ◄	Enables the power to be turned on when protection detection is disabled. (See 4. Protection Pass Mode)
5	Network Initialization Mode	CURSOR ►	DIMMER	-	Network module backup data is initialized. (See 5. Network Initialization Mode)
6	User Initialization Mode	BACK	INFO	-	Initialize the backup data for the MCU and network module. (Settings for the Installer Setup are not initialized.)
7	Factory Initialization Mode	CURSOR ▲	CURSOR ▼	-	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	OPTION	DIMMER	-	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	CURSOR ▲	BACK		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	BACK	OPTION	-	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 " -88.8 ", 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 "**STATUS**" and "**CURSOR ▼**" 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.


ZONE3
SOURCE
STATUS
INFO
CURSOR ▲
OPTION
DIMMER
CURSOR ◄
BACK
CURSOR ▼
SETUP
CURSOR ►
DENON
HEOS
SOURCE SELECT
MASTER VOLUME
ENTER
PHONES
AUX1-HDMI
4K/HDCP2.2
AUX 1
QUICK SELECT

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 "**SETUP**" and "**OPTION**" 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, Serial Number
→ ② Firmware Package → ③ Main μ -com, Main 1st Boot Loader → ④ DSP1/2/3/4 ROM
→ ⑤ Audio Video PLD → ⑥ GUI SFLASH → ⑦ HEOS Version → ⑧ HEOS Build → ⑨ HEOS Module
→ ⑩ HEOS Configuration → ⑪ HEOS Locale → ⑫ Ether Mac Address → ⑬ WiFi Mac Address
→ ⑭ BT Mac Address → ⑮ Audyssey App Interface Version

①Model destination information, Serial Number :

L1	AVR-X6400H \\\
L2	S/N. ************

\ : Region (E3, E2, JP)

②Firmware Package :

L1	Firm. Package
L2	Ver.:****

③Main μ-com, Main 1st Boot Loader :

L1	M:**************
L2	Main FBL :**.**

④DSP 1/2/3/4 ROM :

L1	DSP1 :**.**
L2	DSP2 :**.**

L1	DSP3 :**.**
L2	DSP4 :**.**

⑤Audio, Video PLD :

L1	Audio PLD:**.**
L2	Video PLD:**.**

⑥GUI SFLASH :

L1	GUI :@@$****

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

⑦HEOS Version :

L1	HEOS Version
L2	*.***.***

⑧HEOS Build :

L1	HEOS Build
L2	******

⑨HEOS Module :

L1	HEOS Module
L2	***

⑩HEOS Configuration :

L1	HEOS Config
L2	Development
	Production

⑪HEOS Locale :

L1	HEOS Locale
L2	*****

⑫Ether Mac Address :

L1	*Ether MAC
L2	******-******

⑬WiFi Mac Address :

L1	*Wi-Fi MAC
L2	******-******

⑭BT Mac Address :

L1	*BT MAC Address
L2	******-******

⑮Audyssey App Interface Version :

L1	Audy IFVer:**.**
L2	

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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 (# : 1/2/3/4)	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:************** ▲Main FBL :**.** ▲DSP# :**.** ▲Audio PLD:**.** ▲Video PLD:**.** ▲GUI :********	•Check the resistor for setting the region [R6217, R6218, R6219, 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 [U2800, DIGITAL PCB] and DDR2 [U3000/U3001]. If there appear to be no problems, [U2800] or [U3000/U3001] 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 [U7004, DIGITAL PCB] and surrounding circuits.
⑤ DSP# NG (# : 1/2/3/4)	The DSP FLAG0 port does not enter "**Hi**" status while booting a DSP code even after resetting DSP.	DSP# ERROR 01	•Check the DSP [U101, U201, U301, U401, 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	

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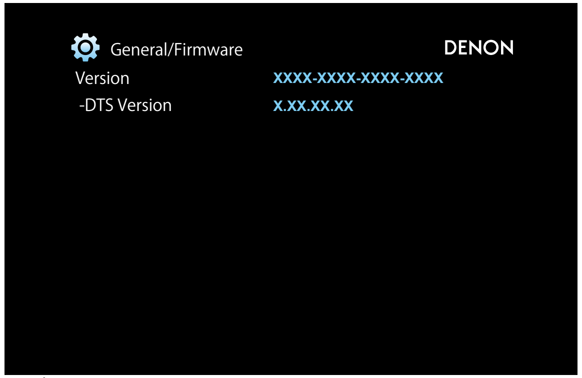
1.5. Version Display in the Setup Menu

Follow the steps below to display the firmware information.

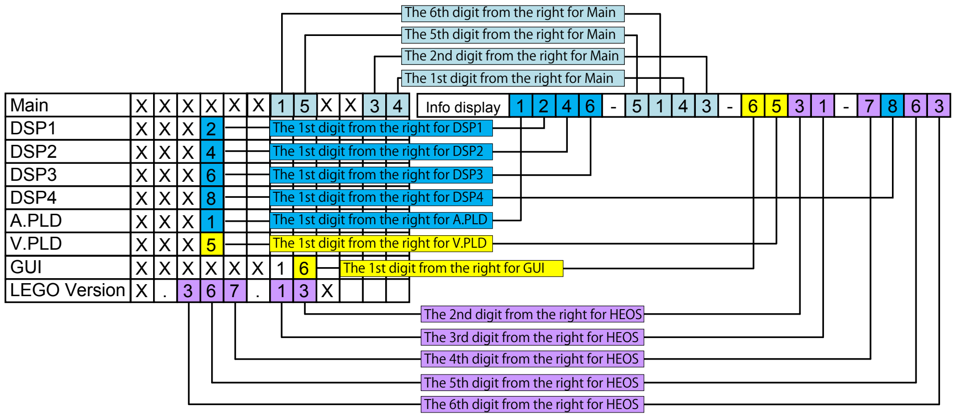
(1) Press the "**SETUP**" button on the remote control.
(2) Select "**General** - **Information** - **Firmware**".

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 "**STATUS**" and "**INFO**" simultaneously, press the power button to turn on the power.
Select the desired mode using the "**CURSOR ▼/▲**" button, then press the "**ENTER**" button to confirm.

2.3. Displaying and Selecting Each Mode

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

①

L1	▶FP/VOL LOCK*On
L2	FP LOCK On

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

↓

②

L1	FP/VOL LOCK*On
L2	▶FP LOCK On

The buttons on the unit does not function.

↓

③

L1	FP LOCK On
L2	▶FP LOCK Off

The PANEL LOCK mode is turned off.

↓

④

L1	FP LOCK Off
L2	▶RC LOCK On

The device cannot be operated by the remote control.

↓

⑤

L1	RC LOCK On
L2	▶RC LOCK *Off

The REMOTE LOCK mode is turned off.

3-1. Selecting the Mode for Service-related

3-1.1. Actions

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

3-1.2. Starting up

While holding down buttons "**ZONE3 SOURCE**" and "**STATUS**" simultaneously, press the power button to turn on the power.
Select the desired mode using the "**CURSOR ▼/▲**" button, then press the "**ENTER**" button to confirm.

3-1.3. Displaying and Selecting Each Mode

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

①

L1	▶1.SERVICE CHECK
L2	2.PROTECTION

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

L1	1.SERVICE CHECK
L2	▶2.PROTECTION

The protection history can be checked.

↓

③

L1	2.PROTECTION
L2	▶3.RS232C RESET

Switches from 232C standby mode to normal standby mode.

↓

④

L1	3.RS232C RESET
L2	▶4.OP INFO

Operation Info for the unit can be checked.

↓

⑤

L1	4.OP INFO
L2	▶5.TUNER FRQ SET

Enables reception STEP of the ANALOG TUNER to be changed.

↓

⑥

L1	5.TUNER FRQ SET
L2	▶6.REMOTE ID

This function is for operating only the desired AV receiver.

3-1.4. Canceling the selected mode

Press the power button to turn off the power.

3-2. Protection History Display Mode

3-2.1. Actions

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

3-2.2. Starting up

While holding down buttons "**ZONE3 SOURCE**" and "**STATUS**" simultaneously, press the power button to turn on the power.
Select the "**2. PROTECTION**" using the "**CURSOR ▼/▲**" button, then press the "**ENTER**" button 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.

L1	PROTECT HISTORY
L2	:NO PROTECT

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

L2	: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)

L2	: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(E) or THERMAL(F))

L2	:THERMAL E

L2	:THERMAL F

Cause : Abnormal heat sink temperature.
If the power is turned on in the abnormal state, protection is activated after around 180 seconds and the power is turned off.

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

L2	:CURRENT

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 "**ENTER**" button for 3 seconds.

L1	PROTECT HISTORY
L2	:DC

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

↓

L2	CLEAR

The above message is displayed and the protection history is cleared.

↓

L2	:NO PROTECT

(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 (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 "**ZONE3 SOURCE**" and "**STATUS**" simultaneously, press the power button to turn on the power.
Select the "**3.RS232C RESET**" using the "**CURSOR ▼/▲**" button, then press the "**ENTER**" button to confirm.

L1	2.PROTECTION
L2	▶3.RS232C RESET

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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

While holding down buttons "**ZONE3 SOURCE**" and "**STATUS**" simultaneously, press the power button to turn on the power.
Select the "**4. OP INFO**" using the "**CURSOR ▼/▲**" button, then press the "**ENTER**" button 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

L1	Operation Time
L2	Total: ______H

↑ Time display

↓ "**STATUS**"

(b) Power On count

L1	Power On Time
L2	Total: ______H

↑ Count display

↓ "**STATUS**"

(c) DC / ASO Protection count

L1	Protection Time
L2	DC:___/ASO:___

↓ "**STATUS**"

(d) Thermal Protection (E/F) count

L1	Protection Time
L2	THM E:___/F:___

↓ "**STATUS**"

(e) Current Protection count

L1	Protection Time
L2	Current:___

↓ "**STATUS**"

(Returns to normal display)

3-5. TUNER STEP mode (E3, E2 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

While holding down buttons "**ZONE3 SOURCE**" and "**STATUS**" simultaneously, press the power button to turn on the power.
Select the "**5. TUNER FRQ SET**" using the "**CURSOR ▼/▲**" button, then press the "**ENTER**" button to confirm.

3-5.3. Displays

Start up this unit in TUNER STEP mode, select the desired option using the "**CURSOR ◄/►**" button, then enter using the "**ENTER**" button.
The following information is displayed in the following order.

(a) AM9 kHz / FM50 kHz is selected

L1	*TUNER FRQ Set
L2	< AM9/FM50 >

"**CURSOR ◄**" "**CURSOR ►**"

(b) AM10 kHz / FM200 kHz is selected

L2	< AM10/FM200 >

"**ENTER**"

(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

While holding down buttons "**ZONE3 SOURCE**" and "**STATUS**" simultaneously, press the power button to turn on the power.
Select the "**6. REMOTE ID**" using the "**CURSOR ▼/▲**" button, then press the "**ENTER**" button to confirm.

3-6.3. Operations

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

L1	
L2	REMOTE ID ?

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

Button	Display
QUICK SELECT 1	L2 REMOTE ID 1
QUICK SELECT 2	L2 REMOTE ID 2
QUICK SELECT 3	L2 REMOTE ID 3
QUICK SELECT 4	L2 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.

3-6.4. Setting the Remote control unit

(a) Press and hold the "**DEVICE MENU**" button for at least 3 seconds until the "**DEV.**", "**TU**" and "**AVR**" indicators flash.
(b) Press "**MAIN**" button.
The "**DEV.**", "**TU**" and "**AVR**" indicators flash twice.
(c) Press the "**1**", "**2**", "**3**" or "**4**" button.
The "**DEV.**", "**TU**" and "**AVR**" indicators flash twice.

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

4. Protection Pass Mode

4.1. Actions

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

4.2. Operations

While holding down buttons "**ZONE3 SOURCE**", "**STATUS**" and "**CURSOR ◄**" simultaneously, press the power button to turn on the power.

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

L1	Protection Pass

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 "**CURSOR ►**" and "**DIMMER**" buttons for more than 3 seconds.

Initializing Display

L1	Network Reset...

Complete Display

L1	Completed

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 "**OPTION**" and "**DIMMER**" simultaneously, press the power button to turn on the power.

L1	PRODUCT MODE

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 "**BACK**" and "**OPTION**" 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.

L1	Storing Logs...

(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.

L1	USB SUCCESS

(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.

L1	USB FAILED

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.

L1	Storing Logs...

(b) When the log package is uploaded, the ticket numbers "**UPLOAD No：XXXXX**" and "**Push ENTER**" are displayed until RC or the "**Enter**" or "**Back**" button of this machine is pressed.

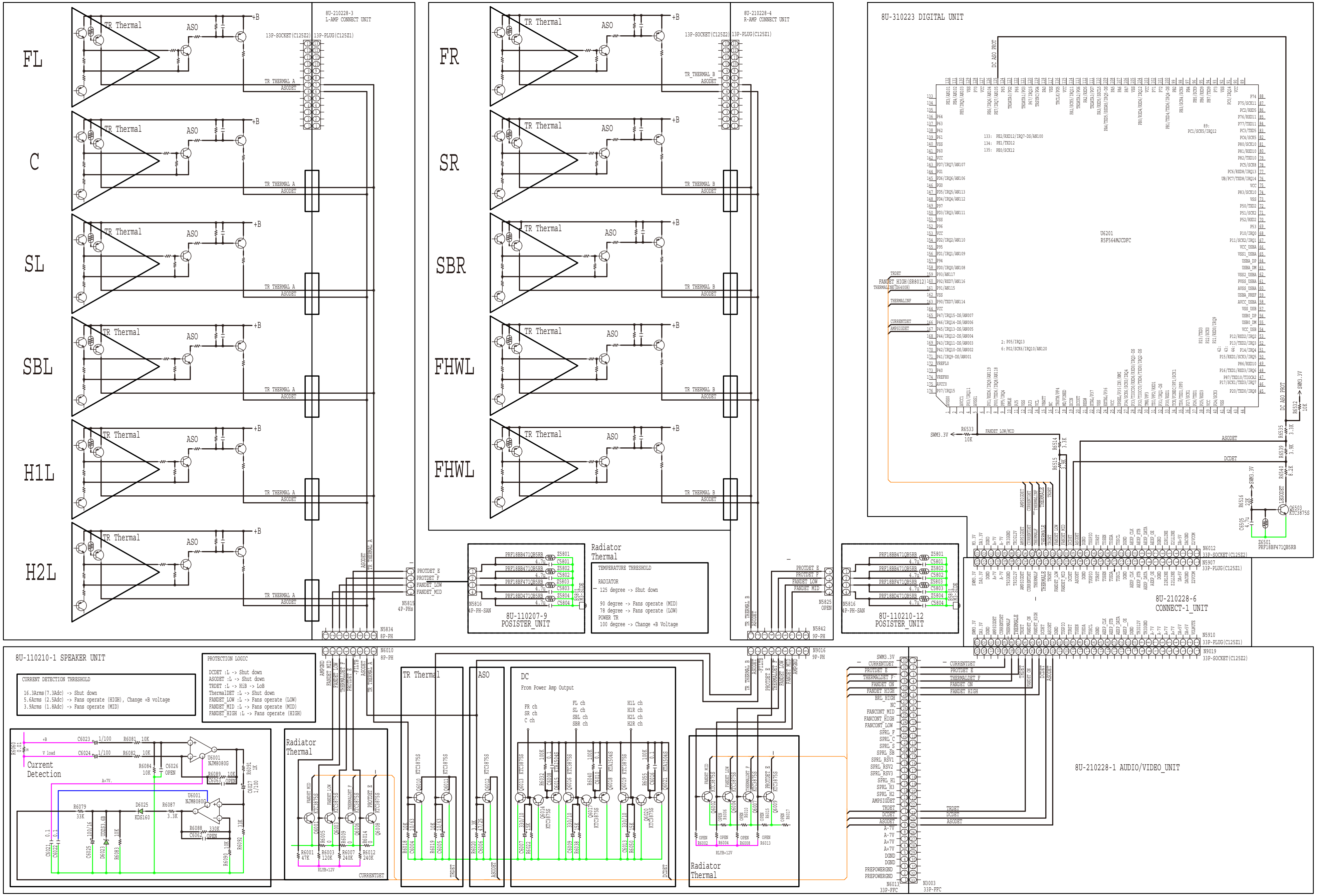
L1	Ticket No:XXXXX
L2	Push ENTER

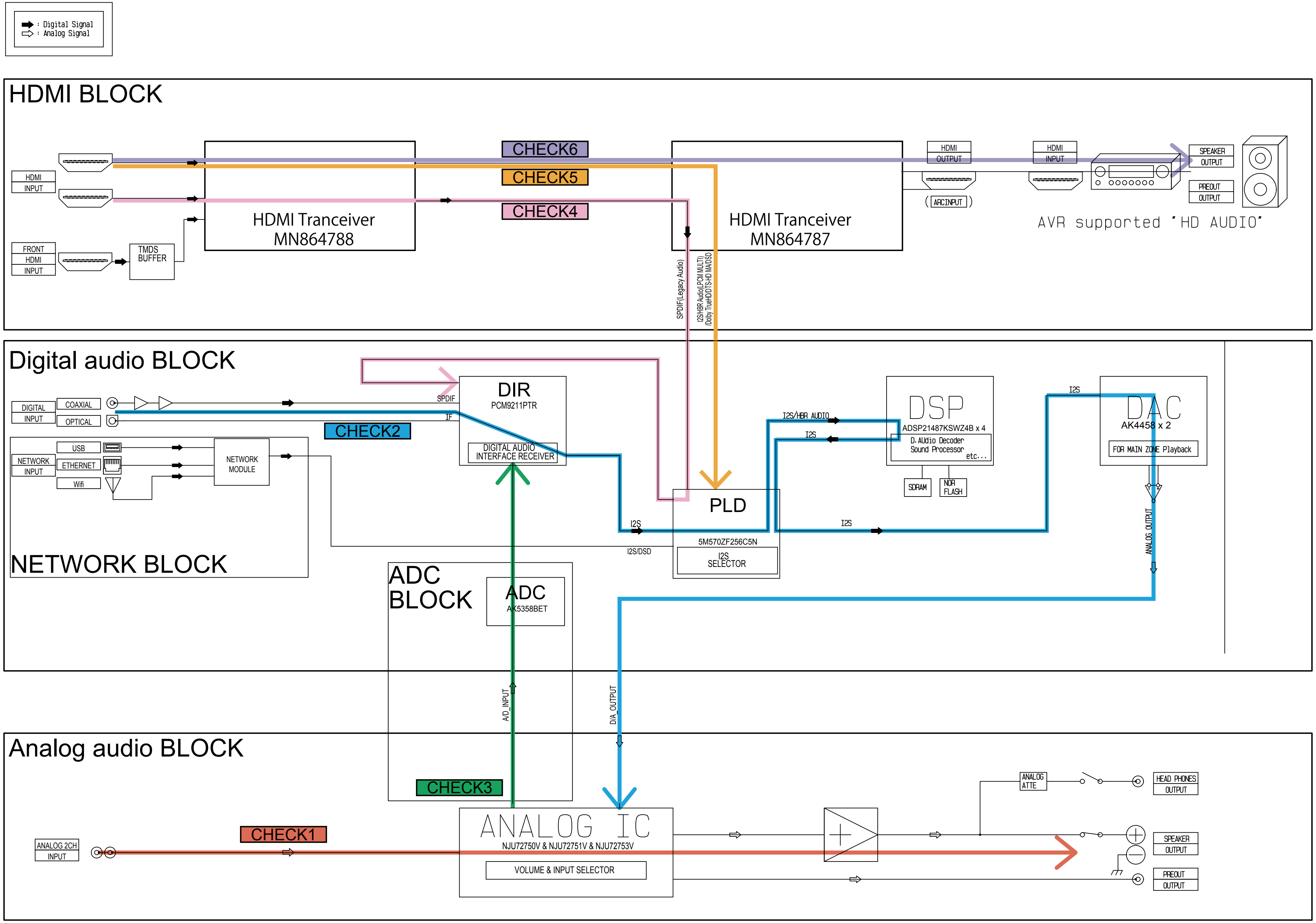
(c) If the log package upload fails, "**FAILED**" is displayed for 5 seconds.

L1	FAILED

PROTECTION DIAGRAM

AVR-X6400 ASO/DC/THERMAL PROTECTION DIAGRAM





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Service Path Check Mode

1.1. Actions

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

1.2. Starting up

While holding down buttons "**ZONE3 SOURCE**" and "**STATUS**" simultaneously, press the power button to turn on the power.
Select the "**1. SERVICE CHECK**" using the "**CURSOR ▼/▲**" button, then press the "**ENTER**" button 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 ⇔ FAN	PREVIOUS	NEXT	Audio ⇔ Video	PREVIOUS	NEXT
Button	DIMMER	CURSOR ◀	CURSOR ▶	SLEEP	CURSOR ◀	CURSOR ▶

1.5. Audio system confirmation items

See the block diagram fig.XXth. Change the Amp Assign and Speaker Config settings manually when checking the audio system path.

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 : 11.1ch Floor Layout : 5.1&SB Height Sp : 4ch Dolby Sp : None Height Layout : Front Height/Rear Height MAIN ZONE : On ZONE2 : Off ZONE3 : 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	A2:DIGITAL	Input Source : CBL/SAT Input Mode : DIGITAL (fixed) Sound mode : MULTI CH STEREO Amp assign : 11.1ch Floor Layout : 5.1&SB Height Sp : 4ch Dolby Sp : None Height Layout : Front Height/Rear Height Speaker Select : Floor Speaker Config ALL Speaker = Small / SW = Yes(2ch) MAIN ZONE : On ZONE2 : Off ZONE3 : Off	• Digital input ⇒ Speaker output (Front L/R, Center, Surround L/R, S.Back L/R) • Digital input ⇒ Pre output (Front L/R, Center, Surround L/R, S.Back L/R, SubWoofer1/2) (※ The input source can be switched to any source except CBL/SAT.)

Paths to be confirmed			Display	Settings	What to confirm
3	DIGITAL (ZONE2)	fig.03a fig.03b fig.03c	A03:DIGITAL-Z2	Input Source : HEOS Music Input Mode : Auto Sound mode : STEREO Amp assign : 9.1ch + ZONE2 Speaker for ZONE2 : S.Back Floor Layout : 5ch Height Sp : 2ch Dolby Sp : None Height Layout : Front Height/Rear Height MAIN ZONE : On ZONE2 : On ZONE3 : Off	• Digital(PCM) input ⇒ Speaker output (S.Back (ZONE2) L/R) • Digital(PCM) input ⇒ Pre OUT output (ZONE2 L/R) (※ The input source can be switched to any source except HEOS Music.)
4	DIGITAL (ZONE3)	fig.04a fig.04b	A04:DIGITAL-Z3	Input Source : HEOS Music Input Mode : Auto Sound mode : STEREO Amp assign : 9.1ch + ZONE3 Speaker for ZONE3 : Height2 Floor Layout : 5ch Height Sp : 2ch Dolby Sp : None Height Layout : Front Height/Rear Height MAIN ZONE : On ZONE2 : Off ZONE3 : On	• Digital(PCM) input ⇒ Amp Assign Speaker output (Height2 (ZONE3) L/R) • Digital(PCM) input ⇒ Pre OUT output (ZONE3 L/R) (※ The input source can be switched to any source except HEOS Music.)
5	HDMI	fig.05a fig.05b fig.05c	A05:HDMI	Input Source : CBL/SAT Input Mode : HDMI (fixed) Sound mode : STEREO Amp assign : 11.1ch Floor Layout : 5ch&SB Height Sp : 4ch Dolby Sp : None Height Layout : Front Height/Rear Height MAIN ZONE : On ZONE2 : Off ZONE3 : Off	• HDMI input ⇒ Speaker output (Front L/R) • HDMI input ⇒ Pre OUT output (Front L/R) (※ The input source can be switched to any source except CBL/SAT.)
6	Analog AD (MAIN ZONE)	fig.06a fig.06b	A06:AD	Input Source : CBL/SAT Input Mode : Analog (fixed) Sound mode : MULTI CH STEREO Amp assign : 11.1ch Floor Layout : 5ch&SB Height Sp : 4ch Dolby Sp : None Height Layout : Front Height/Rear Height Speaker Select : Floor Speaker Config ALL Speaker = Small/SW = Yes(2ch) MAIN ZONE : On ZONE2 : Off ZONE3 : Off	• Analog input ⇒ Speaker output (Front L/R, Center, Surround L/R, S.Back L/R, Height1 L/R) • Analog input ⇒ Pre OUT output, SW(20Hz) (Front L/R, Center, Surround L/R, S.Back L/R, Sub-Woofer) (※ 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	Analog Amp Assign (Amp Assign : ZONE2)	fig.07	A07:ASSIGN-Z2	Input Source : CBL/SAT Input Mode : Auto Sound mode : STEREO Z2 Source : Source Amp assign : 9.1ch + ZONE2 Speaker for ZONE2 : S.Back Floor Layout : 5ch Height Sp : 4ch Dolby Sp : None Height Layout : Front Height/Rear Height MAIN ZONE : On ZONE2 : On ZONE3 : Off	• Analog input ⇒ Speaker output (S.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)

Paths to be confirmed			Display	Settings	What to confirm
8	Analog Amp Assign (Amp Assign : ZONE3)	fig.08	A08:ASSIGN-Z3	Input Source : CBL/SAT Input Mode : Auto Sound mode : STEREO Z3 Source : Source Amp assign : 9.1ch + ZONE3 Speaker for ZONE3 : Height2 Floor Layout : 5ch Height Sp : 4ch Dolby Sp : None Height Layout : Front Height/Rear Height MAIN ZONE : On ZONE2 : Off ZONE3 : On	• Analog input ⇒ Speaker output (Height 2 (ZONE3) L/R) • Analog input ⇒ Pre OUT output (ZONE3 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)
9	Analog Amp Assign (Amp Assign : ZONE2/ZONE3-MONO)	fig.09	A09:ASSIGN-Z2/3M	Input Source : CBL/SAT Input Mode : Auto Sound mode : STEREO Z2 Source : Source Z3 Source : Source Amp assign : 9.1ch + ZONE2/3 Speaker for ZONE2/3 : Height2 Floor Layout : 5ch&SB Height Sp : 2ch Dolby Sp : None Height Layout : Front Height/Rear Height MAIN ZONE : On ZONE2 : On ZONE3 : On	• Analog input ⇒ Speaker output (Height2 (ZONE2 MONO L), Height2 (ZONE3 MONO) R) • Analog input ⇒ Pre OUT output (ZONE2 L/R MONO, ZONE3 L/R MONO) (※ 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)
10	Amp Assign (Amp Assign : BiAMP)	fig.10a fig.10b	A11:ASSIGN-BiAMP	Input Source : CBL/SAT Input Mode : Auto Sound mode : MULTI CH STEREO Amp assign : 9.1ch + BiAMP Speaker for Bi-Amp : S.Back Floor Layout : 5ch Height Sp : 4ch Dolby Sp : None Height Layout : Front Height/Rear Height MAIN ZONE : On ZONE2 : Off ZONE3 : Off	• Analog input ⇒ Speaker output (S.Back 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)
11	Front Height	fig.11a fig.11b	A14:FRONT HEIGHT	Input Source : CBL/SAT Input Mode : Auto Sound mode : MULTI CH STEREO Amp assign : 11.1ch Floor Layout : 5ch&SB Height Sp : 4ch Dolby Sp : None Height Layout : Top Front & Top Rear Speaker Select=Floor & Height MAIN ZONE : On ZONE2 : Off ZONE3 : Off	• Analog input ⇒ Speaker output (Height1 L/R (Top Front), Height2 L/R (Top Rear)) • Analog input ⇒ Pre OUT output (Height1 L/R (Top Front), Height2 L/R (Top Rear)) • Pre OUT 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.12	V01:VIDEO PASS	Input Source : CBL/SAT Video Convert (IP Scaler) : "OFF" All sources MAIN ZONE : On ZONE2 : On	• Component input ⇒ Component output (※ The input source can be switched to any source except CBL/SAT.)
2	Video Convert (Analog or HDMI ⇒ HDMI)	fig.13	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 ZONE3 : 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.14	V03:HDMI PASS	Input Source : CBL/SAT Video Convert (IP Scaler) : "OFF" All sources MAIN ZONE : On ZONE2 : Off ZONE3 : Off	• HDMI input (MAIN function) ⇒ HDMI output (MAIN) (※ The input source can be switched to any source except CBL/SAT.)
4	HDMI CEC (Control Monitor : HDMI Monitor1)	fig.15	V04:HDMI CEC	Input Source : CBL/SAT HDMI Control : On Control Monitor : Monitor1 (if checking the HDMI Monitor Out1) MAIN ZONE : On ZONE2 : Off ZONE3 : 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.16a fig.16b fig.16c	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.17a fig.17b	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.18	V07:GUI MENU ON	Input Source : CBL/SAT Video Conversion (IP Scaler) : ON, All sources IP Scaler : "Analog & HDMI", All sources Resolution : "AUTO", All sources Setup Menu : On MAIN ZONE : On ZONE2 : Off ZONE3 : OFF	• GUI display ⇒ HDMI output. (※ The input source can be switched to any source except CBL/SAT.)
8	HDMI pass (ZONE2)	fig.19	V08:ZONE2 HDMI	Input Source : CBL/SAT Z2 Source : Source MAIN ZONE : On ZONE2 : On ZONE3 : Off	• HDMI input (ZONE2 Function) ⇒ HDMI output (ZONE2) (※ The input source can be switched to any source except CBL/SAT.)

1.7. Confirmation items for fan operation

Paths to be confirmed			Display	Settings	What to confirm
1	Low-speed fan	-	F01:FAN LOW	FAN CONT_LOW = HIGH FAN CONT_MID = LOW FAN CONT_HIGH = LOW MAIN ZONE : ON ZONE2 : OFF ZONE3 : OFF	• Low-speed fan (※ The input source can be switched to any source except CBL/SAT.)
2	High-speed fan	-	F03:FAN HIGH	FAN CONT_LOW = LOW FAN CONT_MID = LOW FAN CONT_HIGH = HIGH MAIN ZONE : ON ZONE2 : OFF ZONE3 : OFF	• High-speed fan (※ The input source can be switched to any source except CBL/SAT.)

fig.01

●AVRX6400/SR8012 BLOCK DIAGRAM (A.AUDIO/Z2,3HPF)

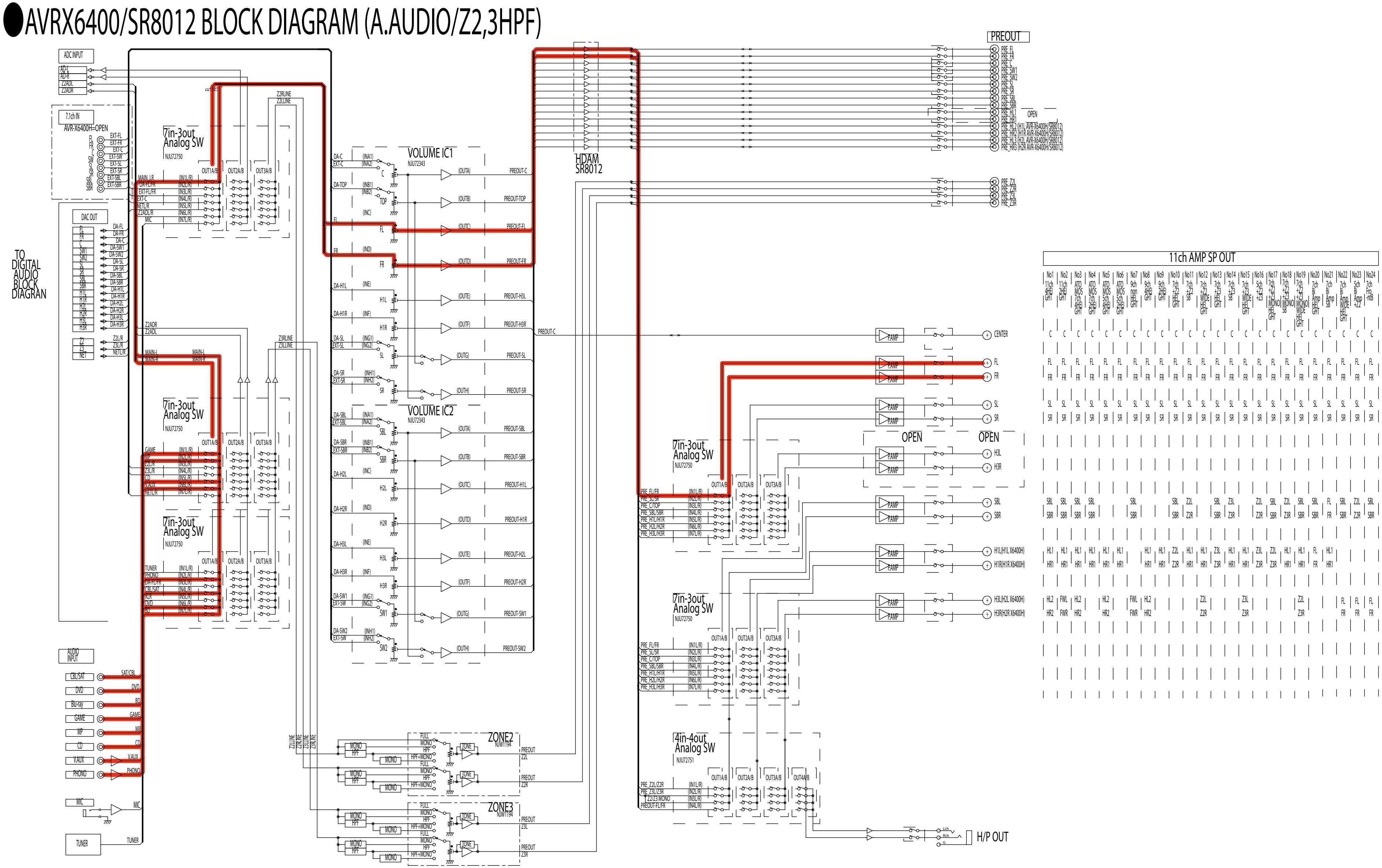

fig.02a

AVR-X6400H/SR8012 DIGITAL AUDIO/NETWORK BLOCK DIRAGRAM

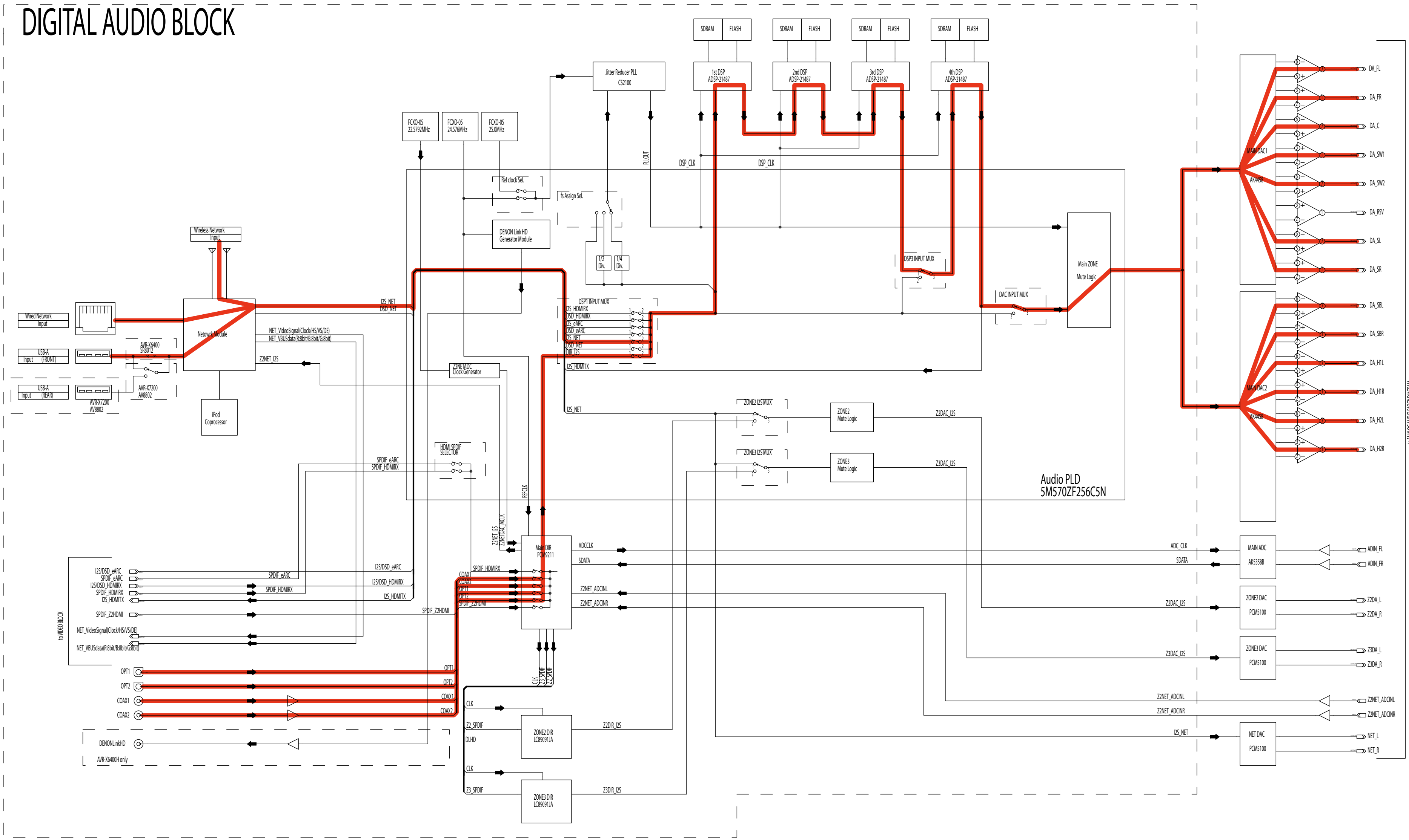

fig.02b

●AVRX6400/SR8012 BLOCK DIAGRAM (A.AUDIO/Z2,3HPF)

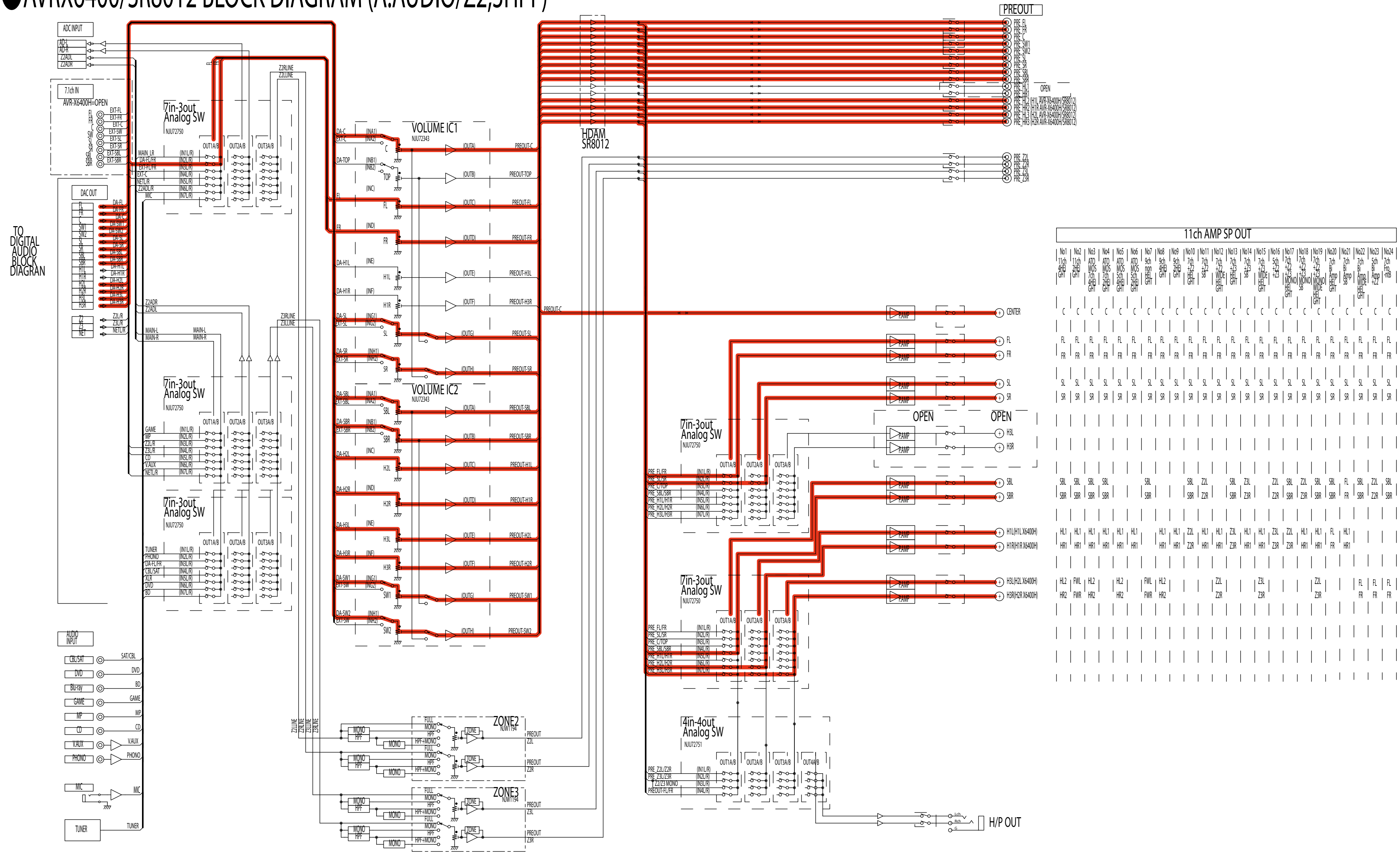

fig.03a

AVRX6400/SR8012 BLOCK DIAGRAM (VIDEO)

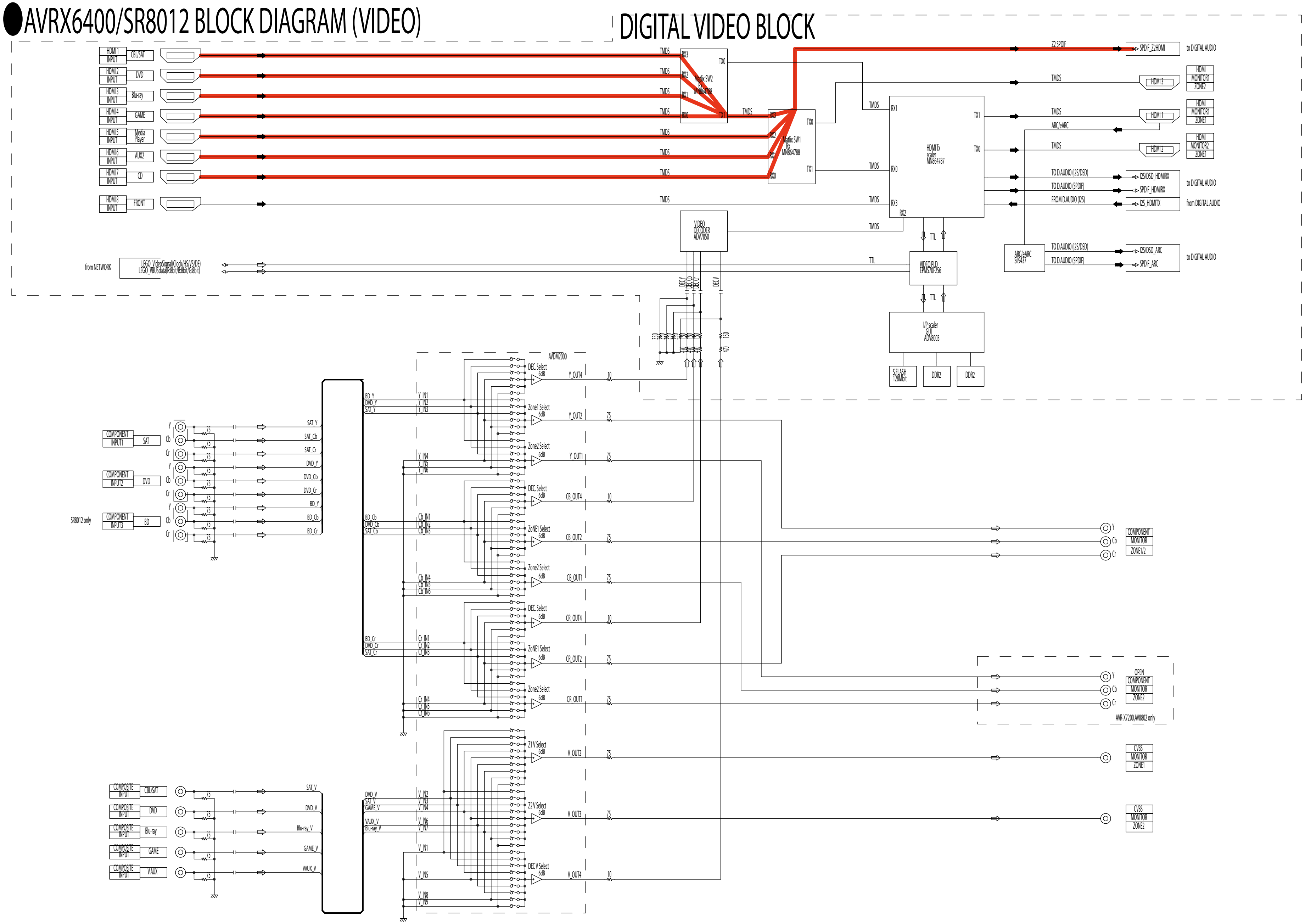

fig.03b

AVR-X6400H/SR8012 DIGITAL AUDIO/NETWORK BLOCK DIRAGRAM

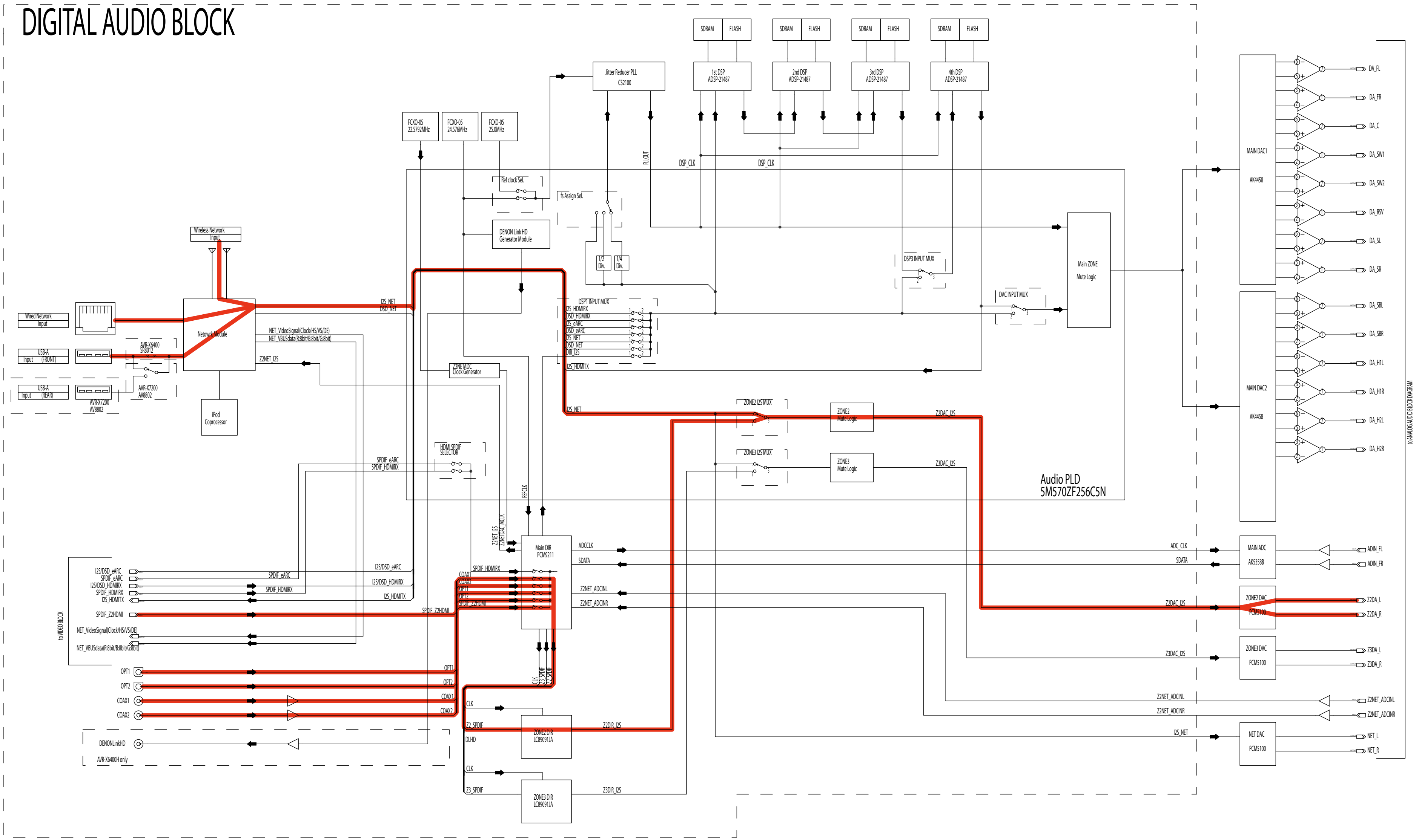

fig.03c

●AVRX6400/SR8012 BLOCK DIAGRAM (A.AUDIO/Z2,3HPF)

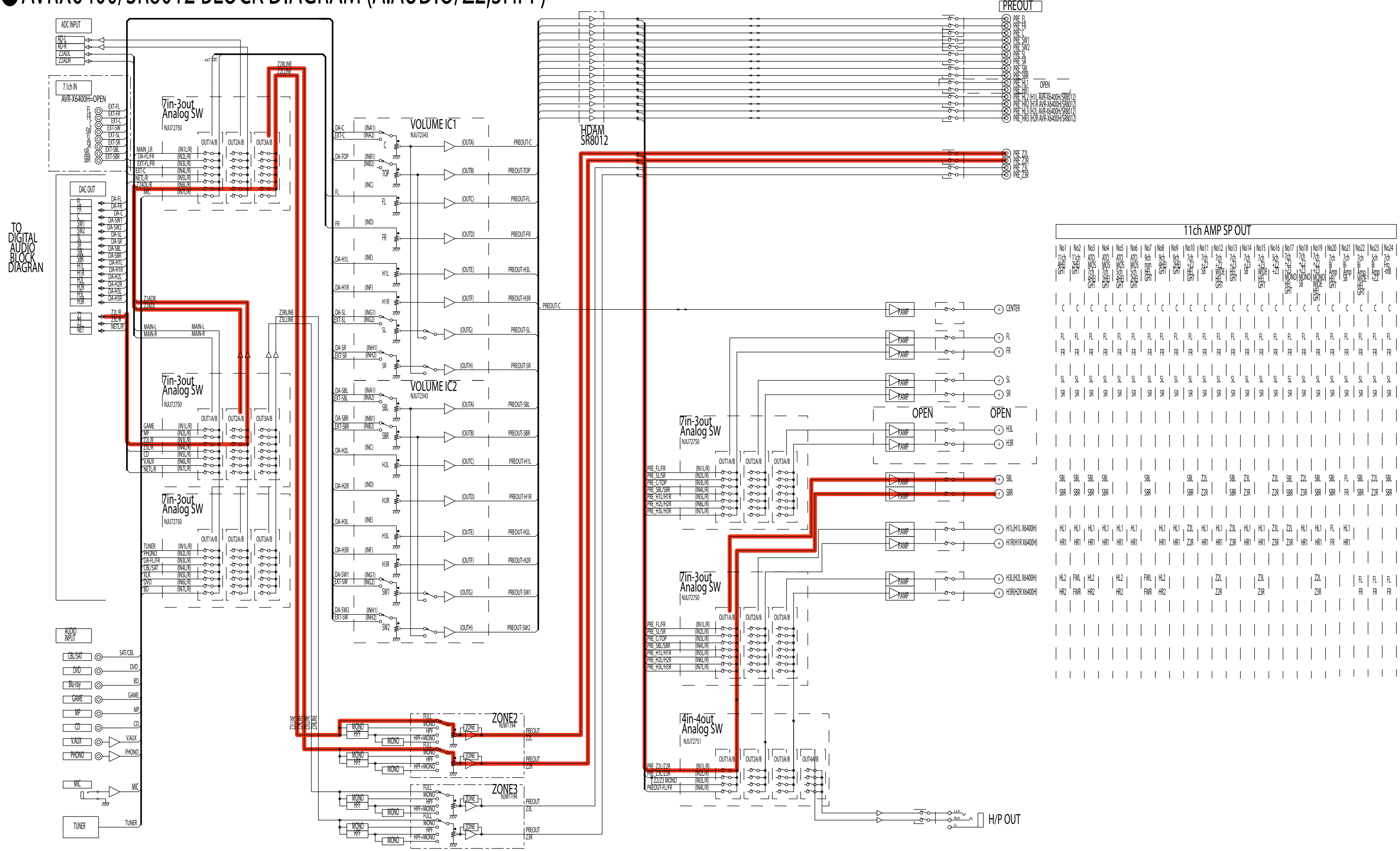

fig.04a

AVR-X6400H/SR8012 DIGITAL AUDIO/NETWORK BLOCK DIRAGRAM

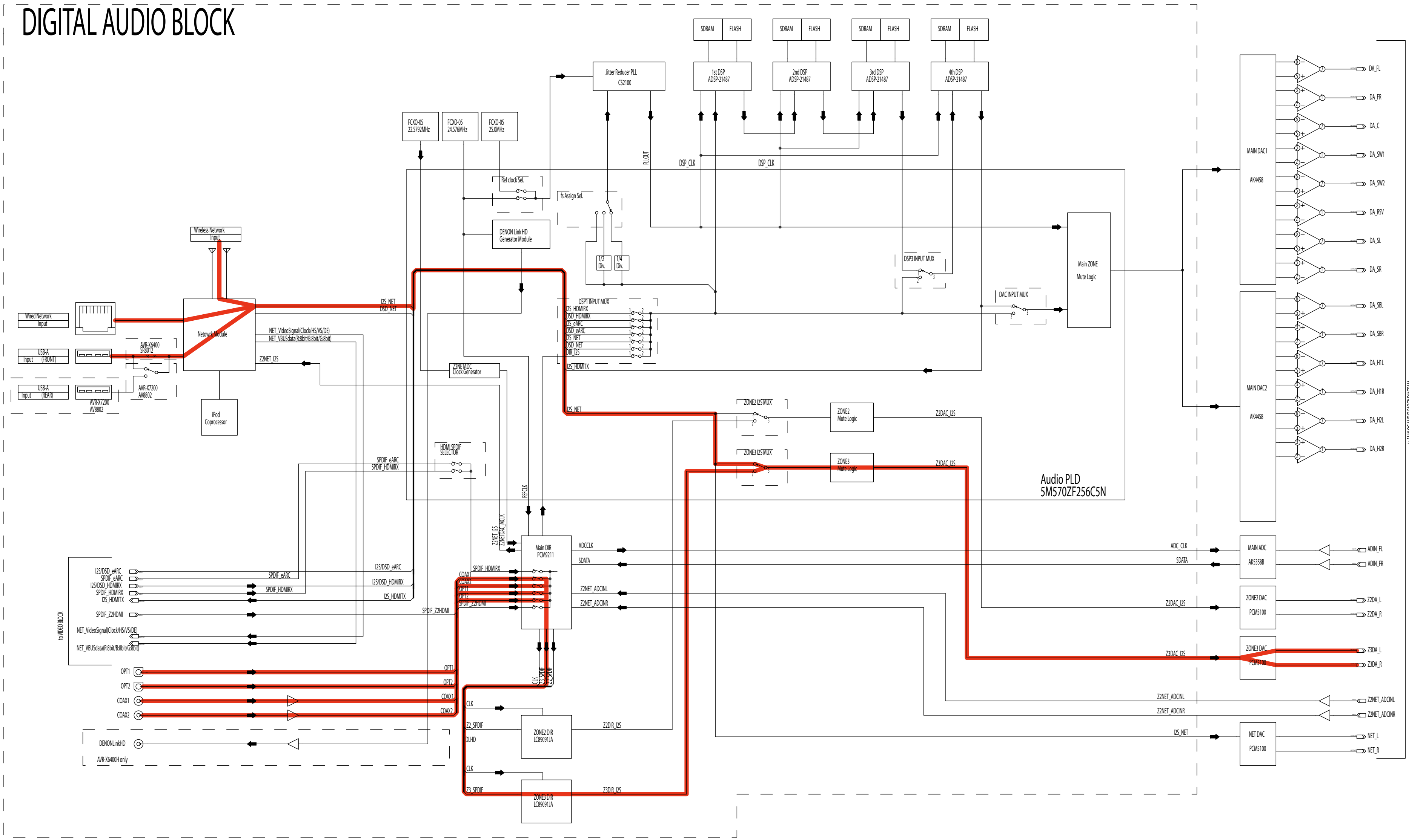

fig.04b

AVRX6400/SR8012 BLOCK DIAGRAM (A.AUDIO/Z2,3HPF)

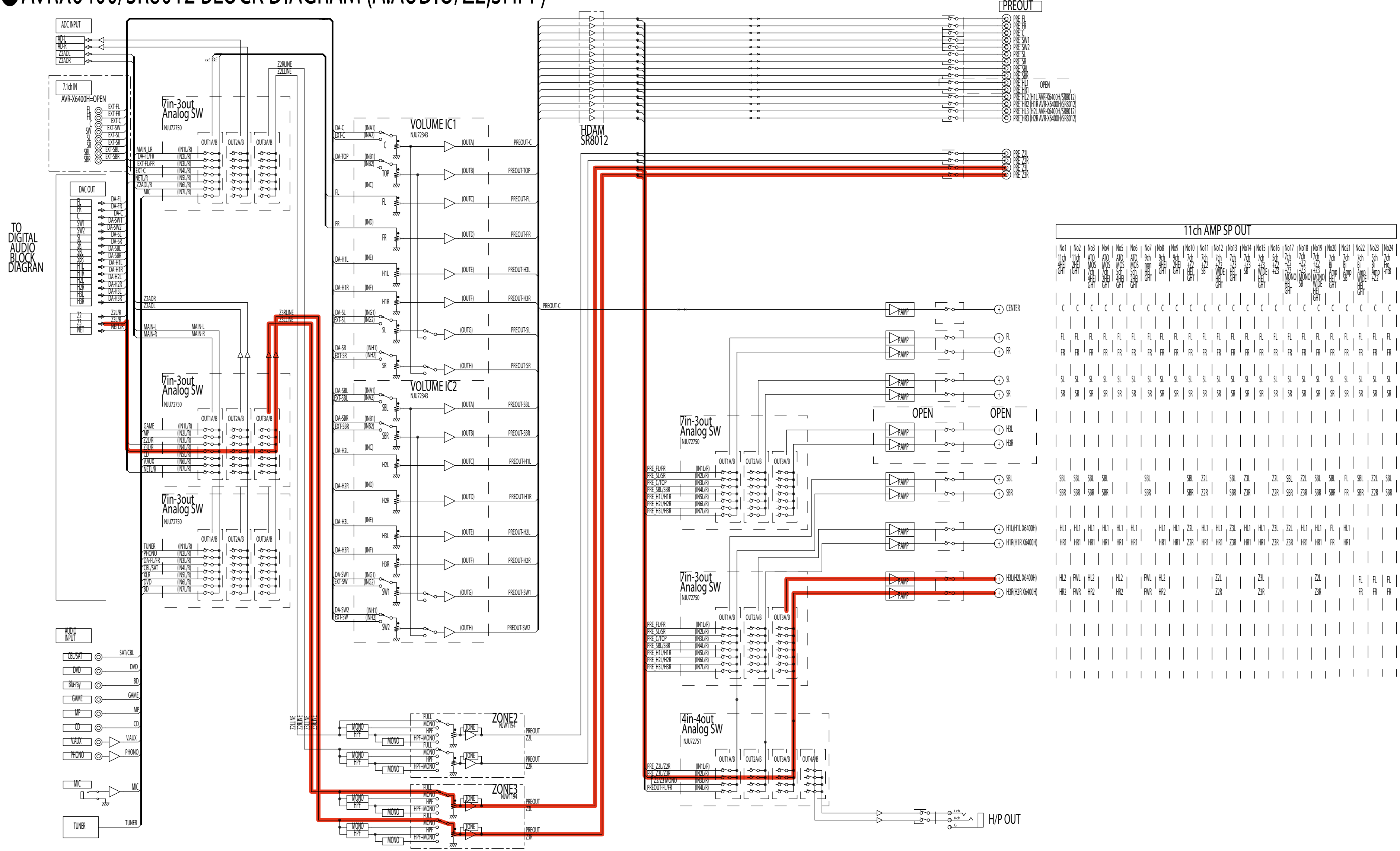

fig.05a

AVRX6400/SR8012 BLOCK DIAGRAM (VIDEO)

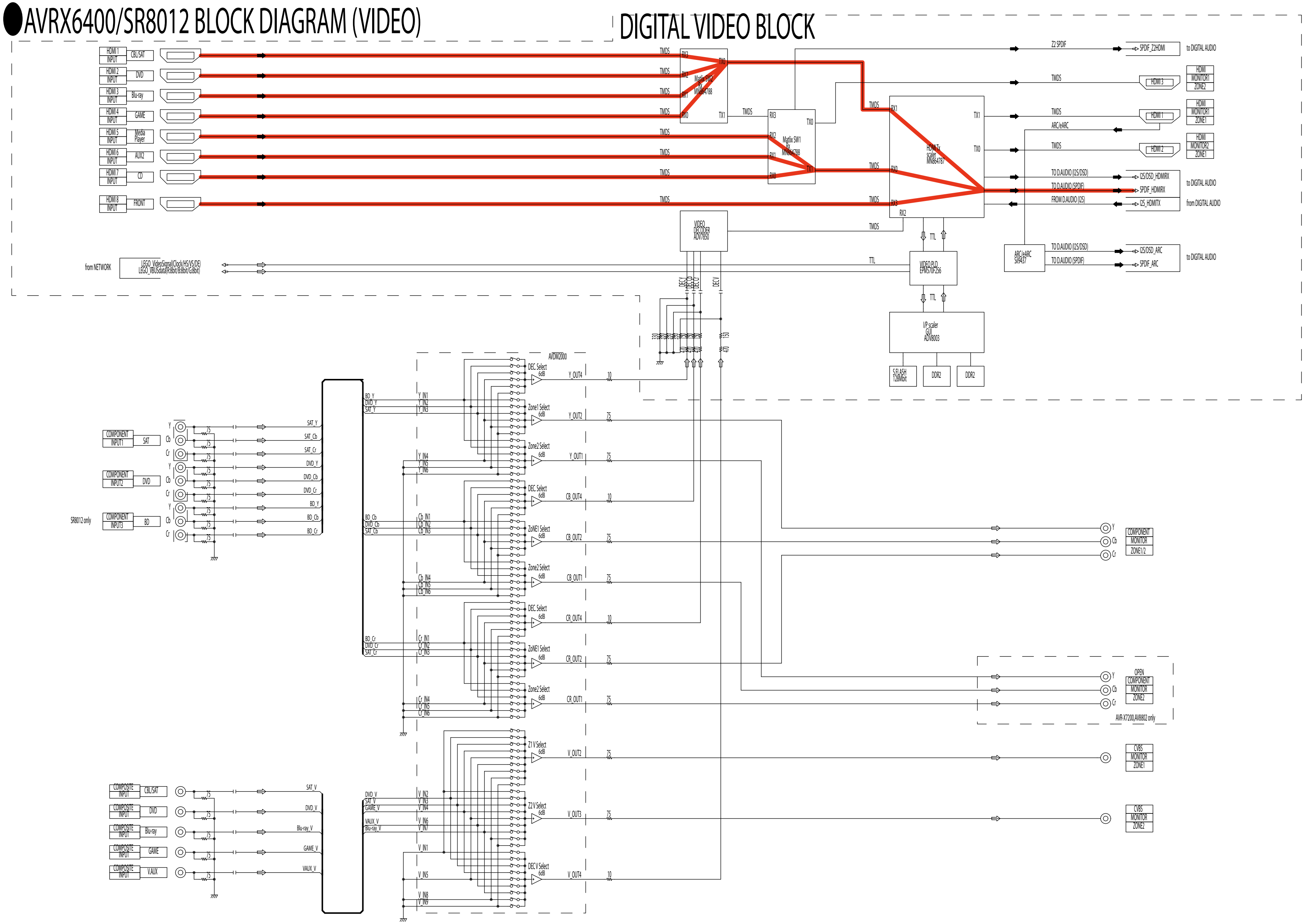

fig.05b

AVR-X6400H/SR8012 DIGITAL AUDIO/NETWORK BLOCK DIRAGRAM

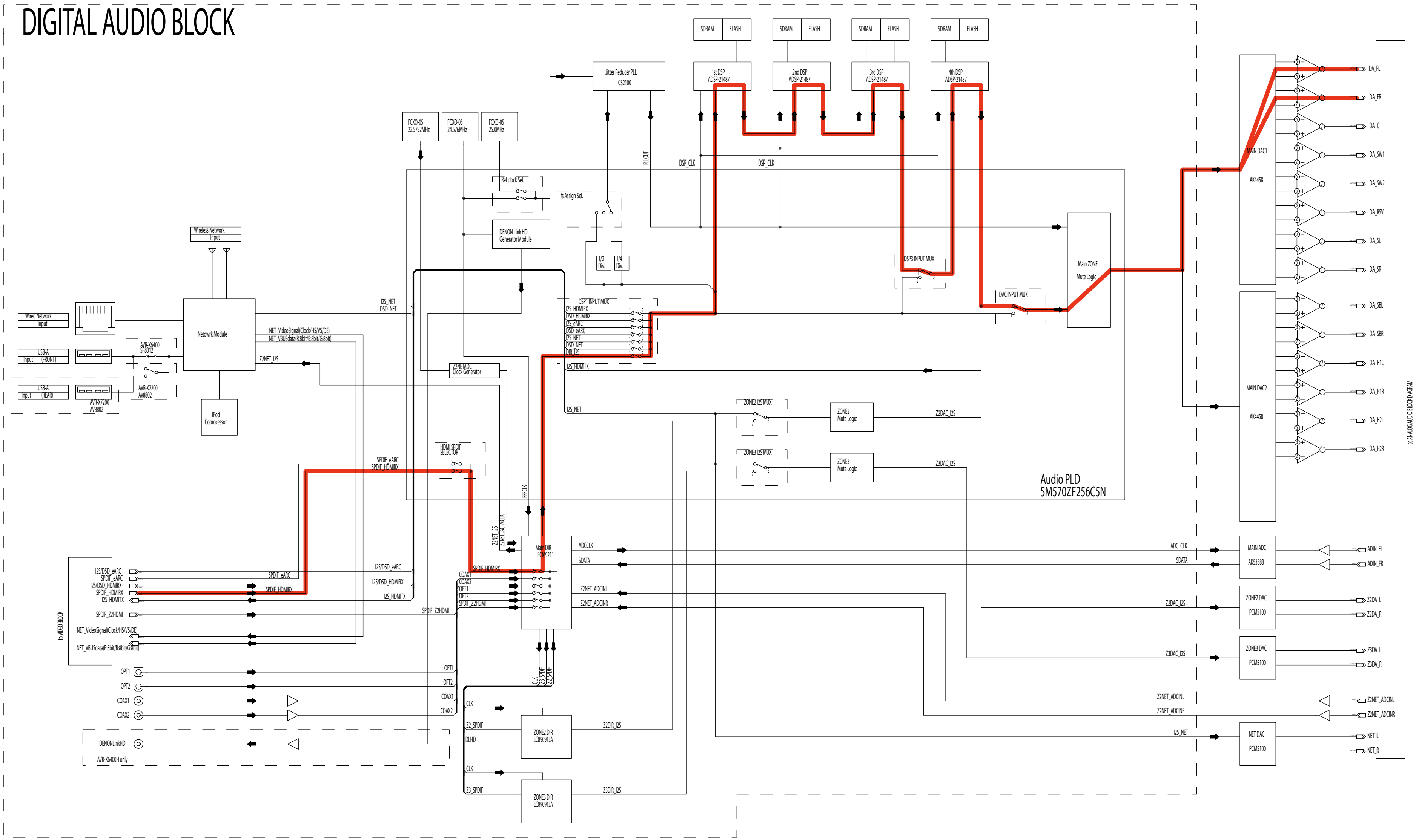

fig.05c

●AVRX6400/SR8012 BLOCK DIAGRAM (A.AUDIO/Z2,3HPF)

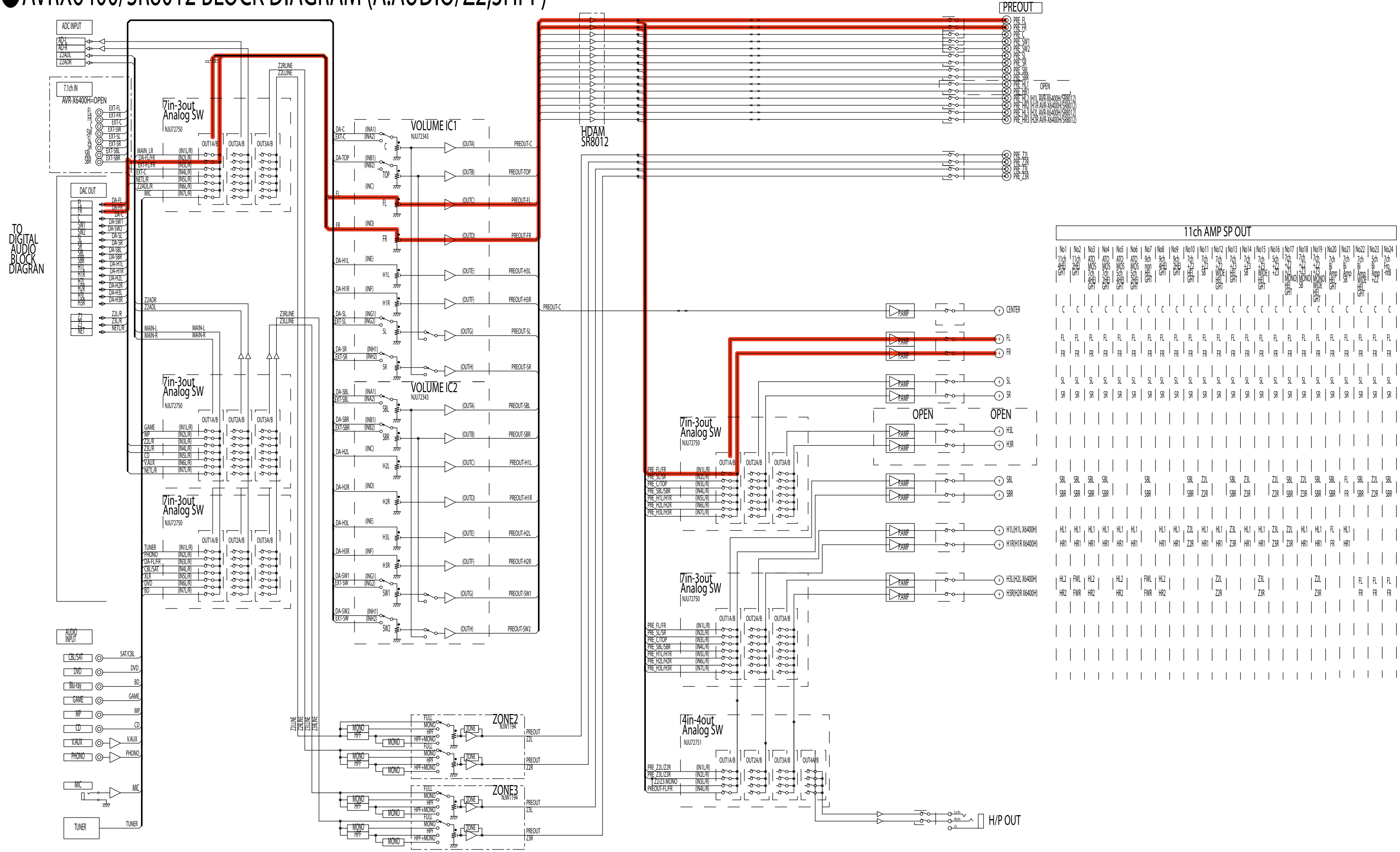

fig.06a

AVR-X6400H/SR8012 DIGITAL AUDIO/NETWORK BLOCK DIRAGRAM

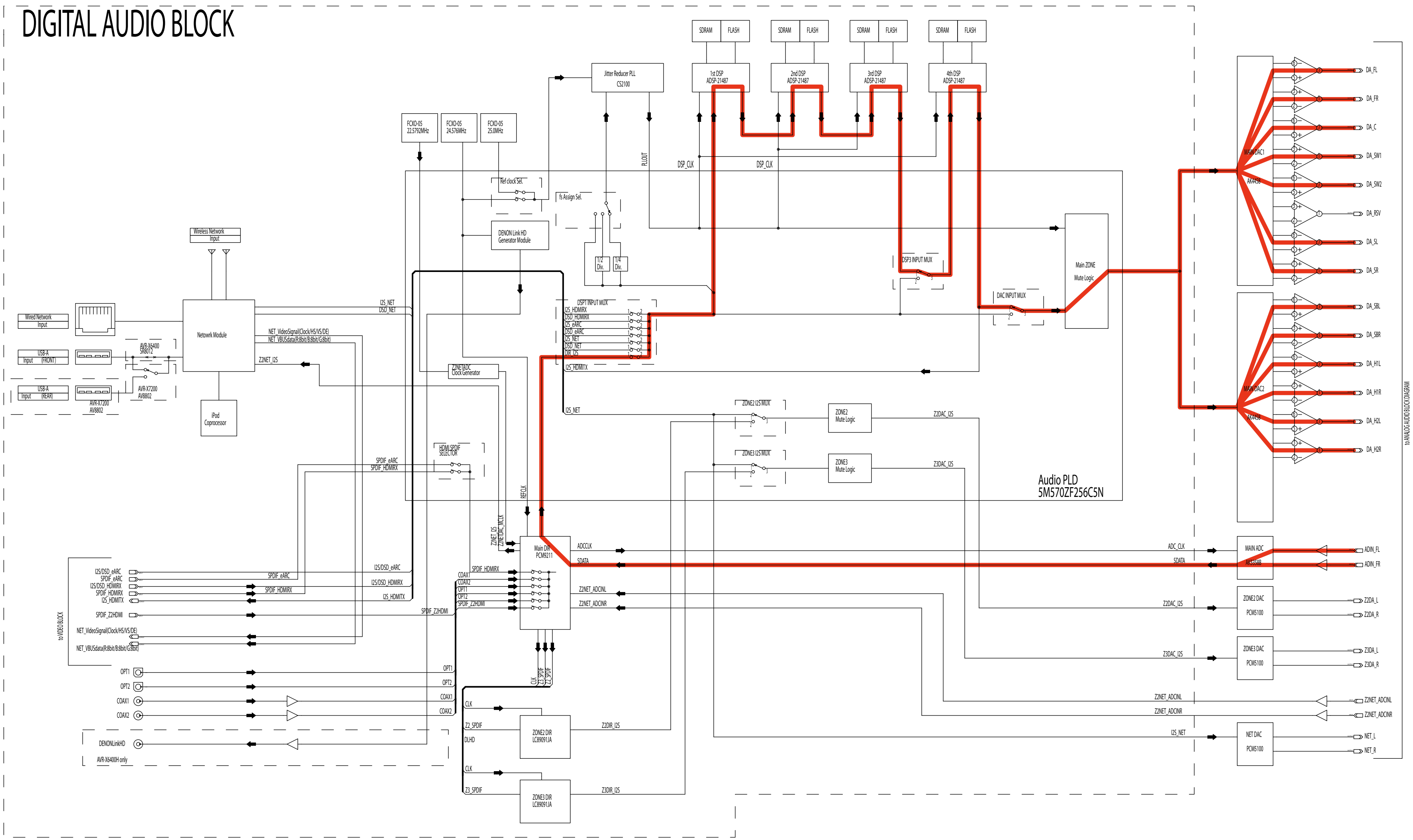

fig.06b

AVRX6400/SR8012 BLOCK DIAGRAM (A.AUDIO/Z2,3HPF)

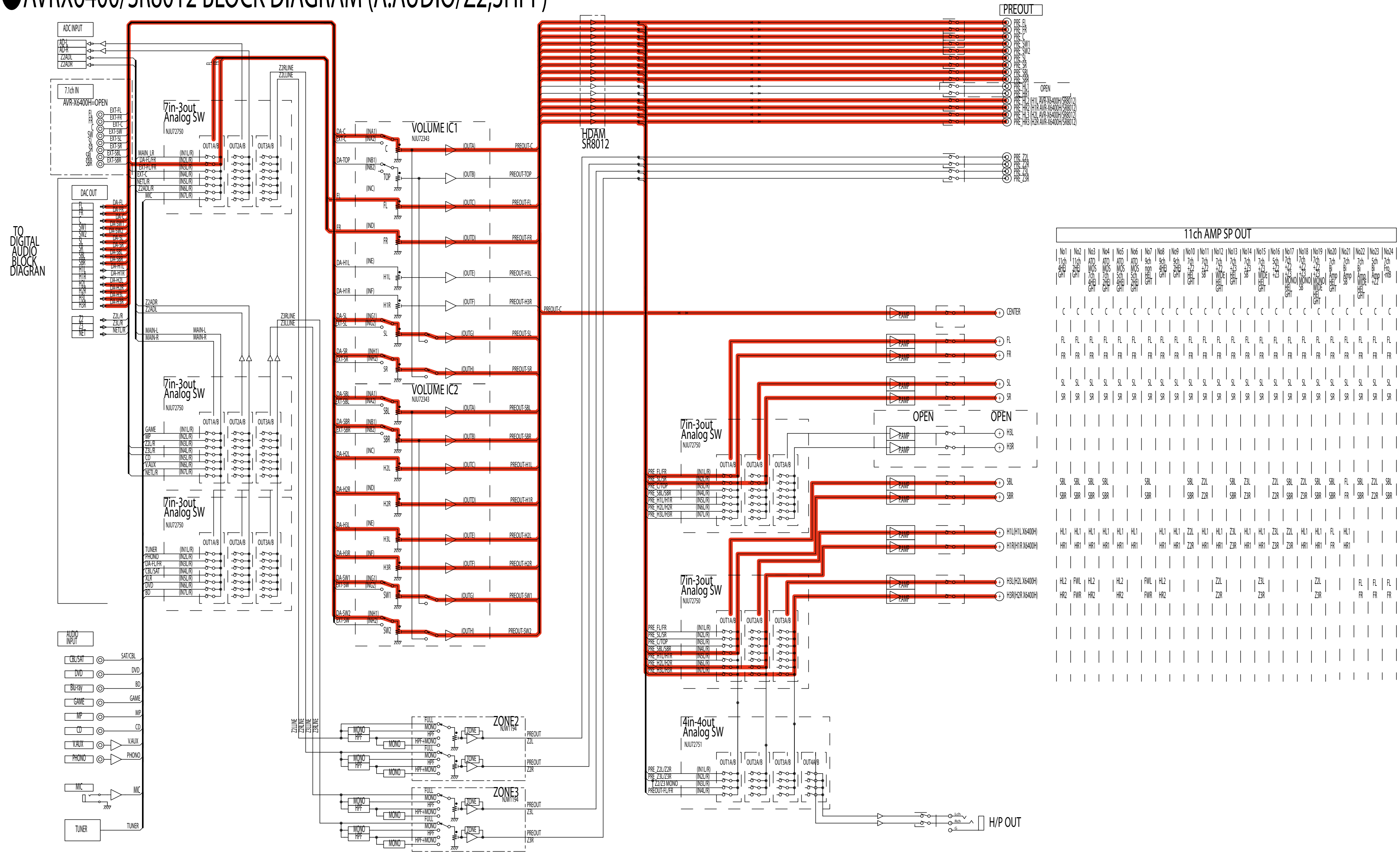

fig.07

●AVRX6400/SR8012 BLOCK DIAGRAM (A.AUDIO/Z2,3HPF)

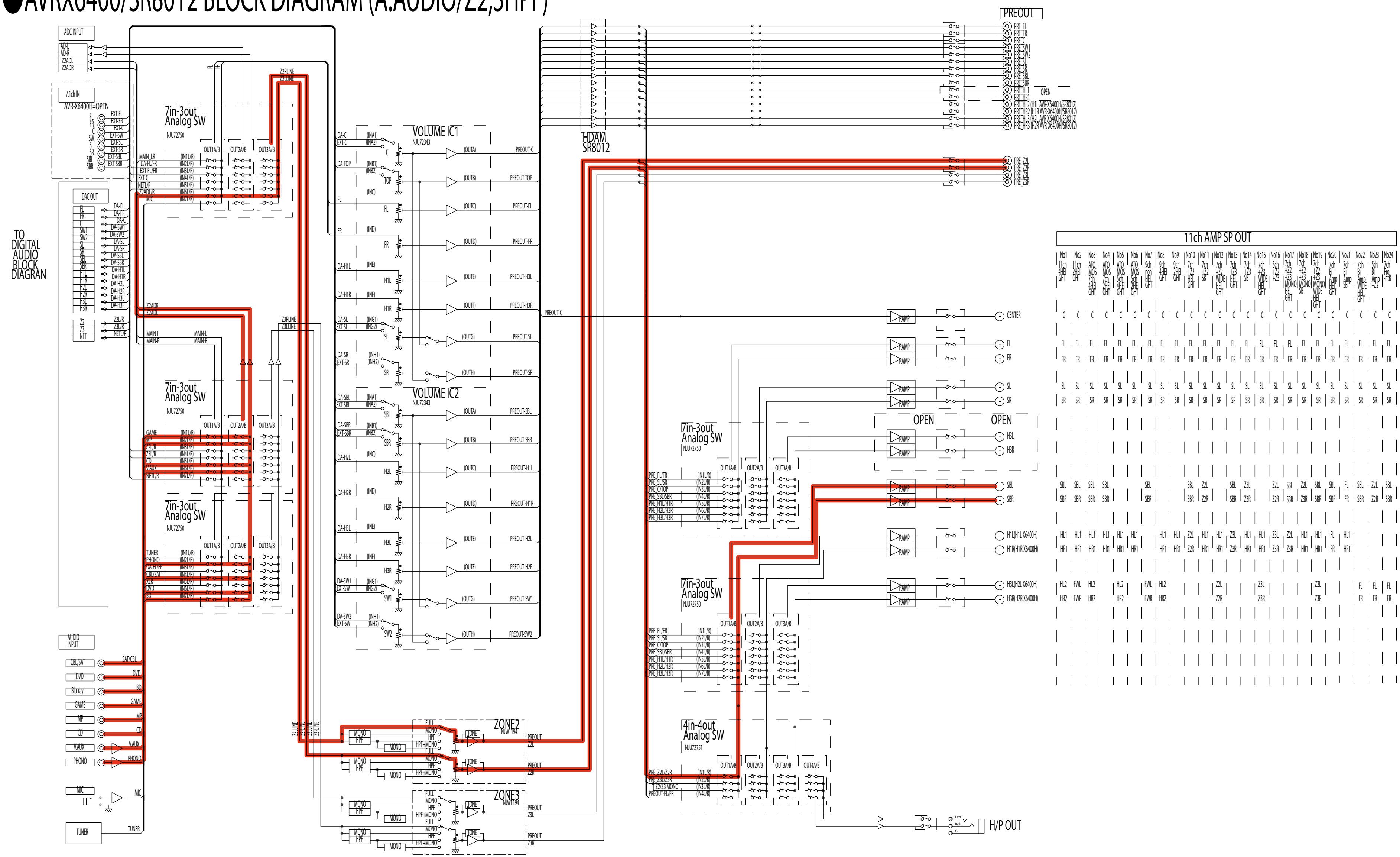

fig.08

AVRX6400/SR8012 BLOCK DIAGRAM (A.AUDIO/Z2,3HPF)

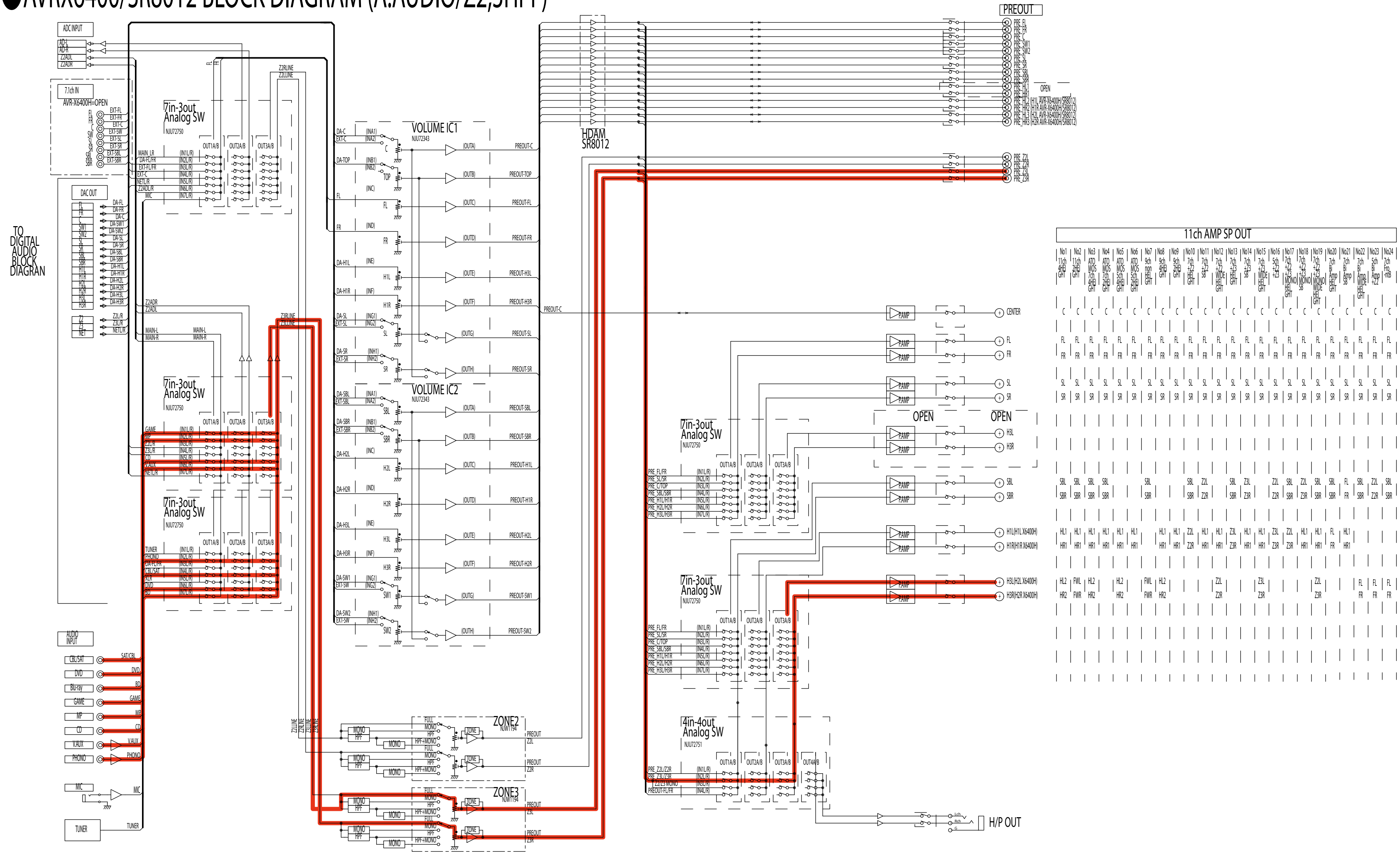

fig.09

●AVRX6400/SR8012 BLOCK DIAGRAM (A.AUDIO/Z2,3HPF)

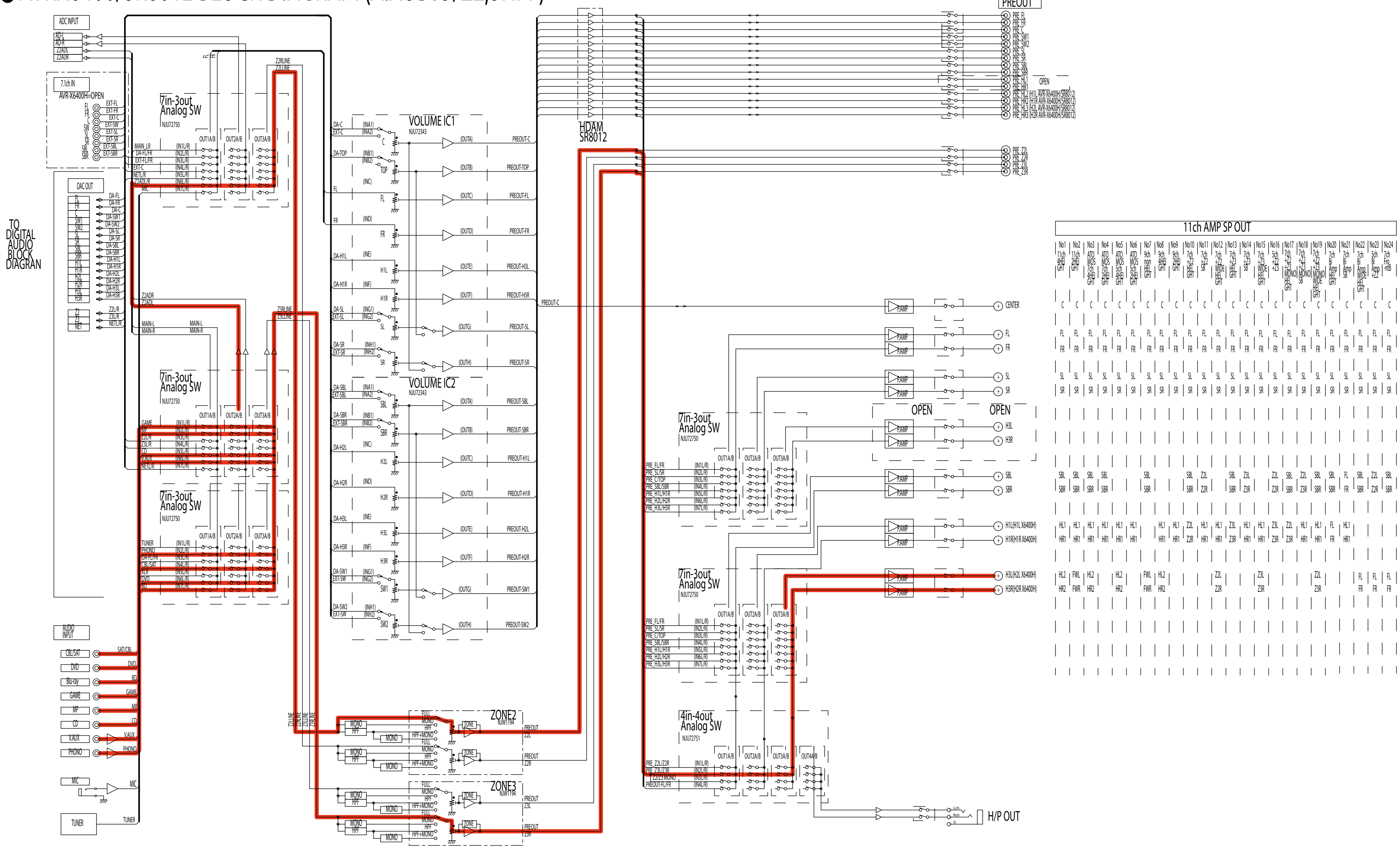

fig.10a

AVR-X6400H/SR8012 DIGITAL AUDIO/NETWORK BLOCK DIRAGRAM

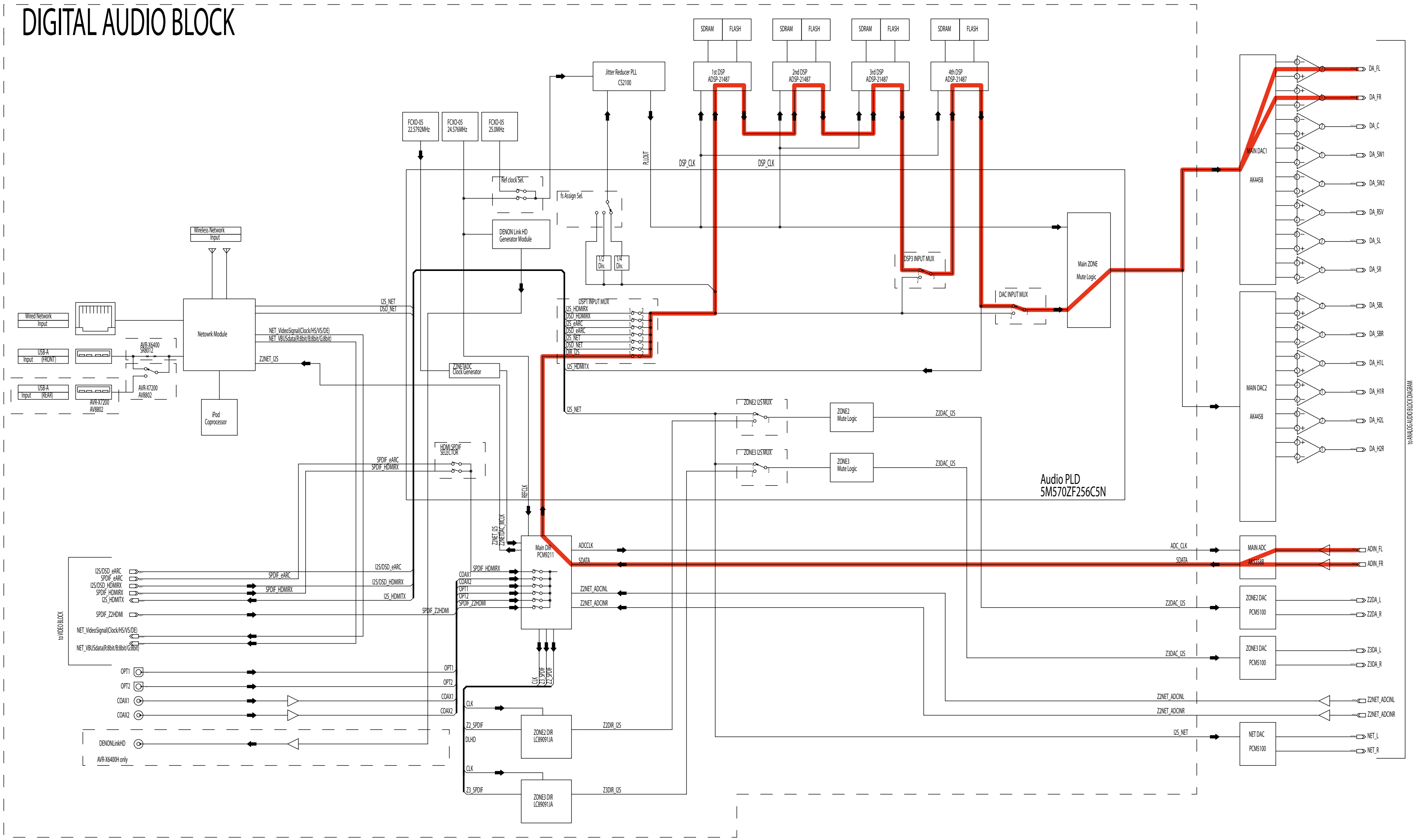

fig.10b

●AVRX6400/SR8012 BLOCK DIAGRAM (A.AUDIO/Z2,3HPF)

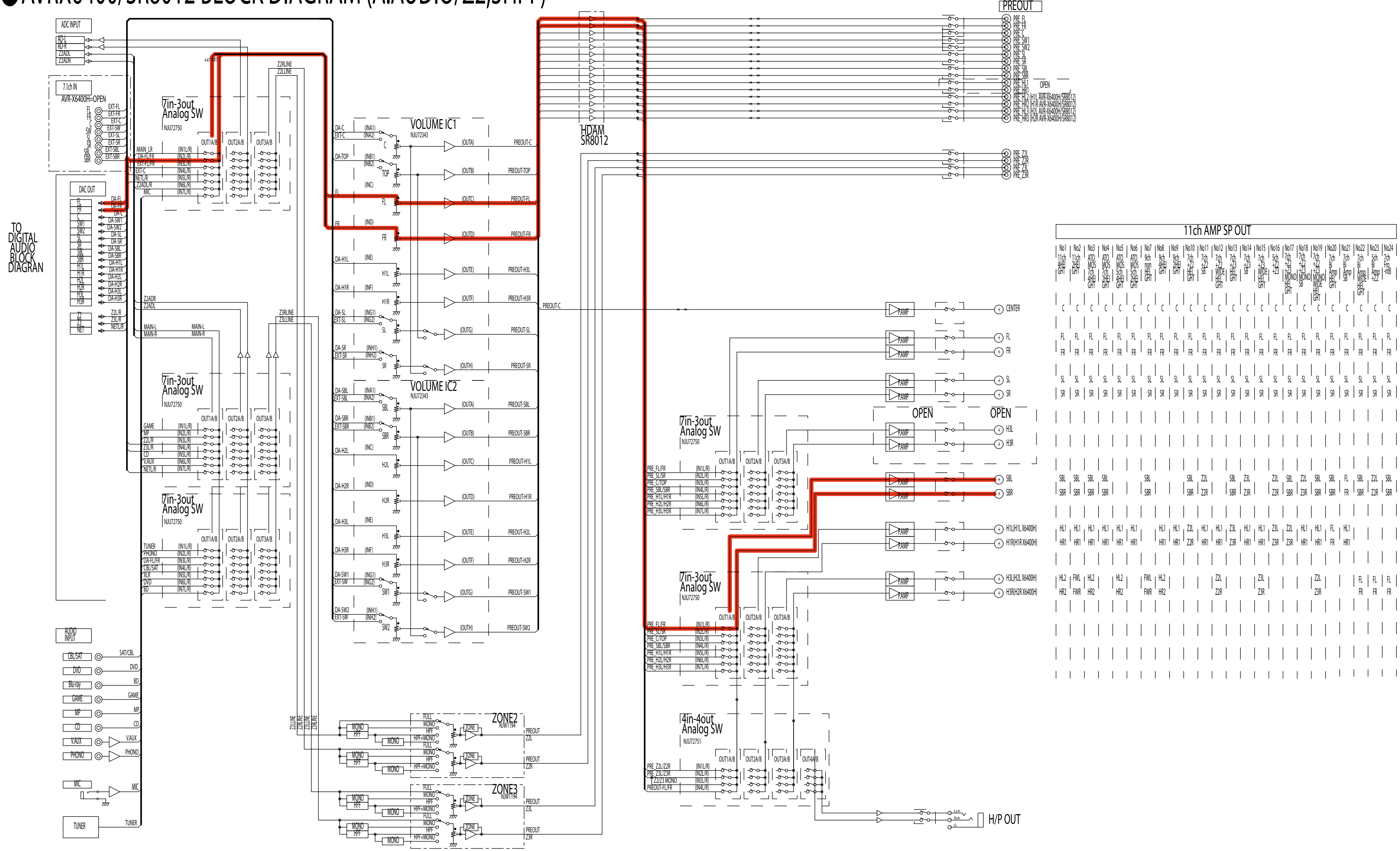

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fig.11a

AVR-X6400H/SR8012 DIGITAL AUDIO/NETWORK BLOCK DIRAGRAM

DIGITAL AUDIO BLOCK

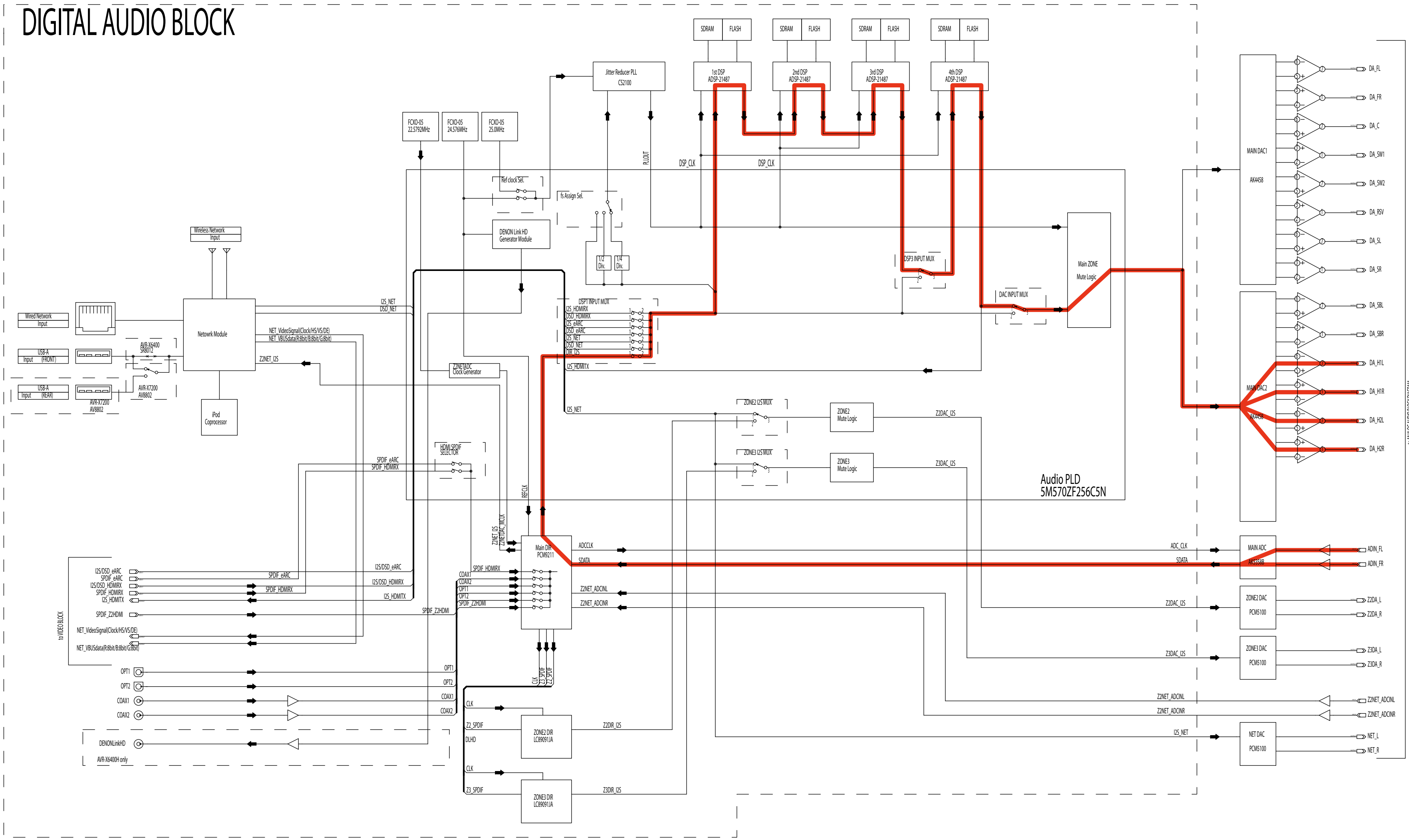


fig.11b

●AVRX6400/SR8012 BLOCK DIAGRAM (A.AUDIO/Z2,3HPF)

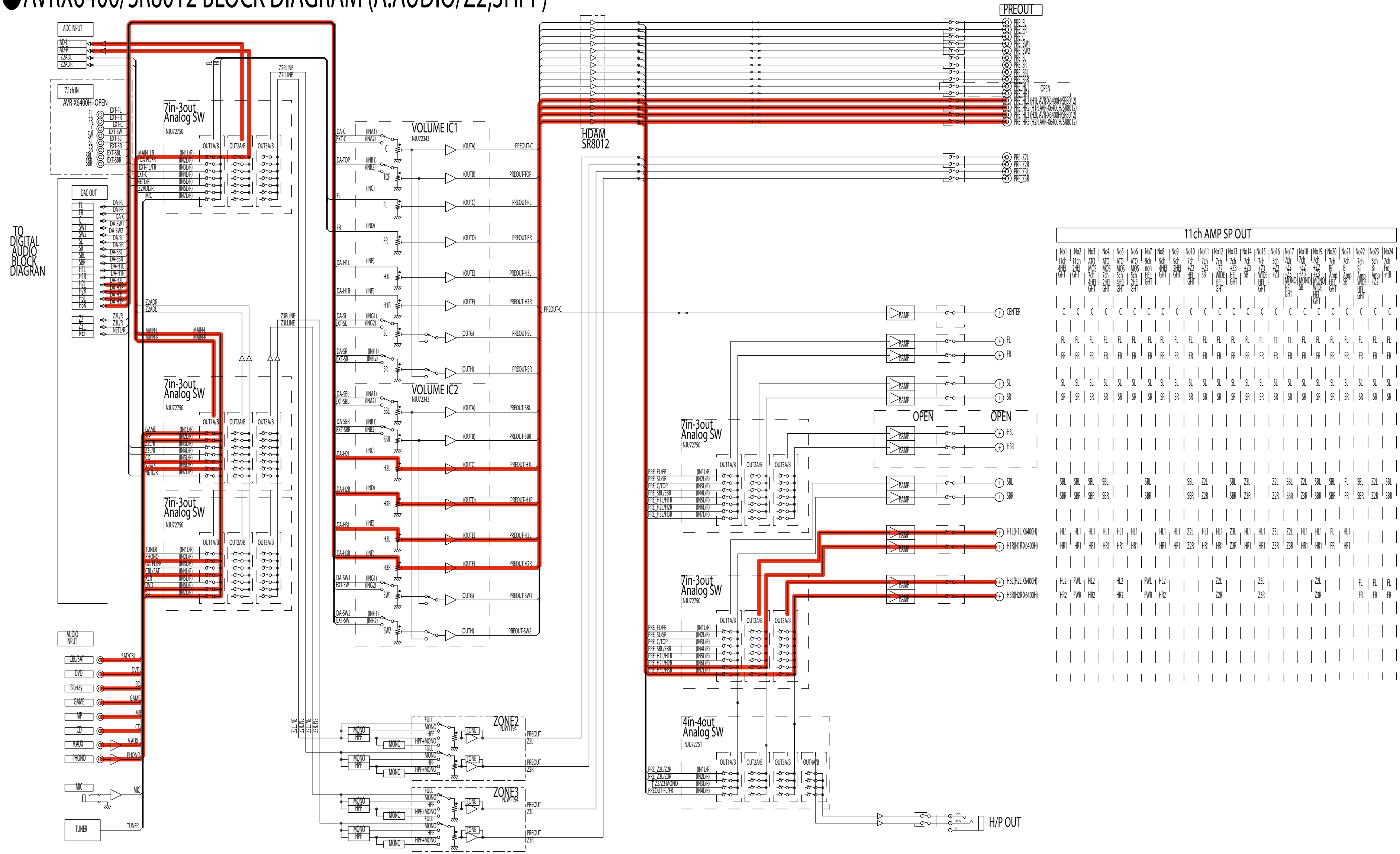


fig.12

AVRX6400/SR8012 BLOCK DIAGRAM (VIDEO)

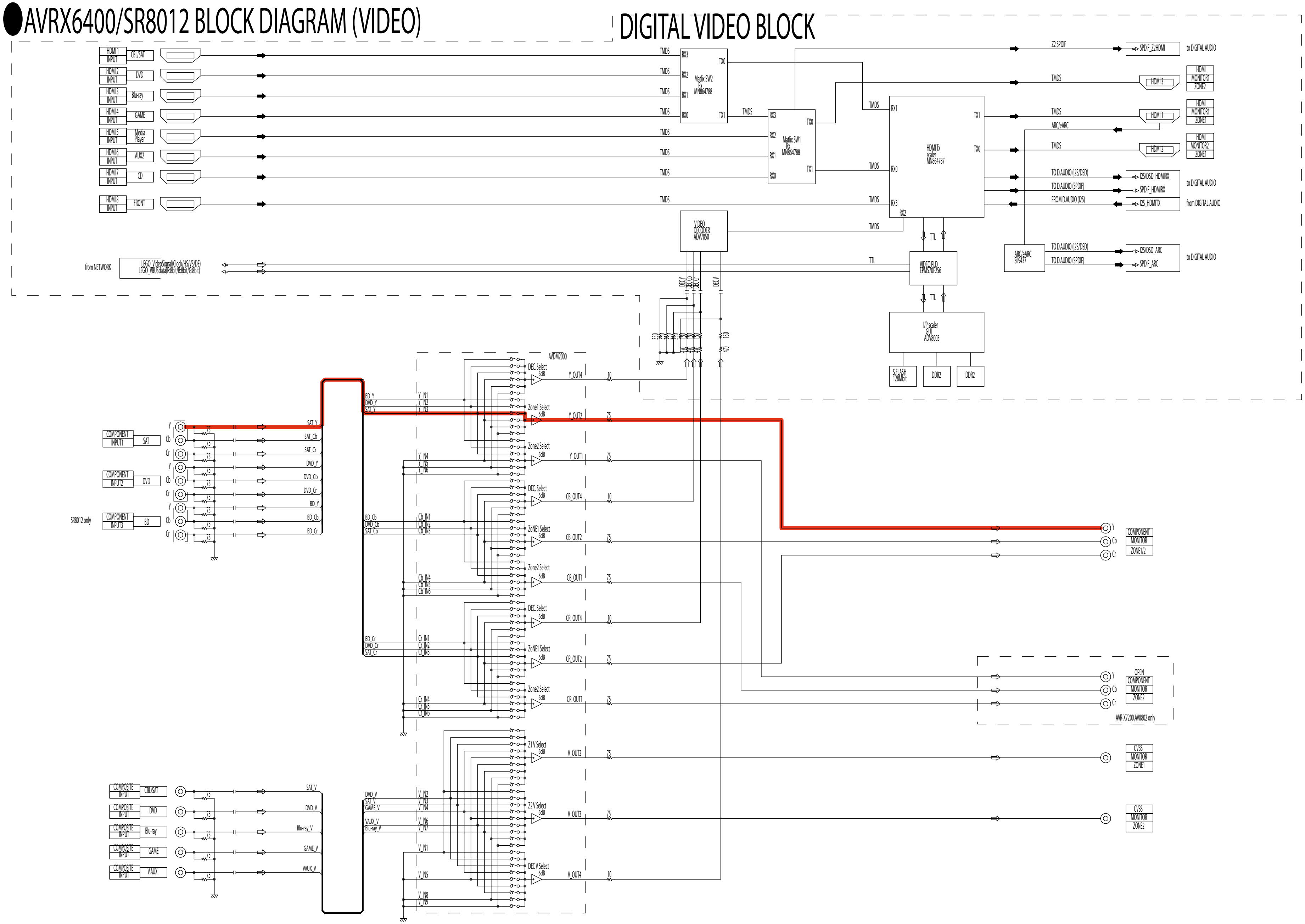


fig.13

AVRX6400/SR8012 BLOCK DIAGRAM (VIDEO)

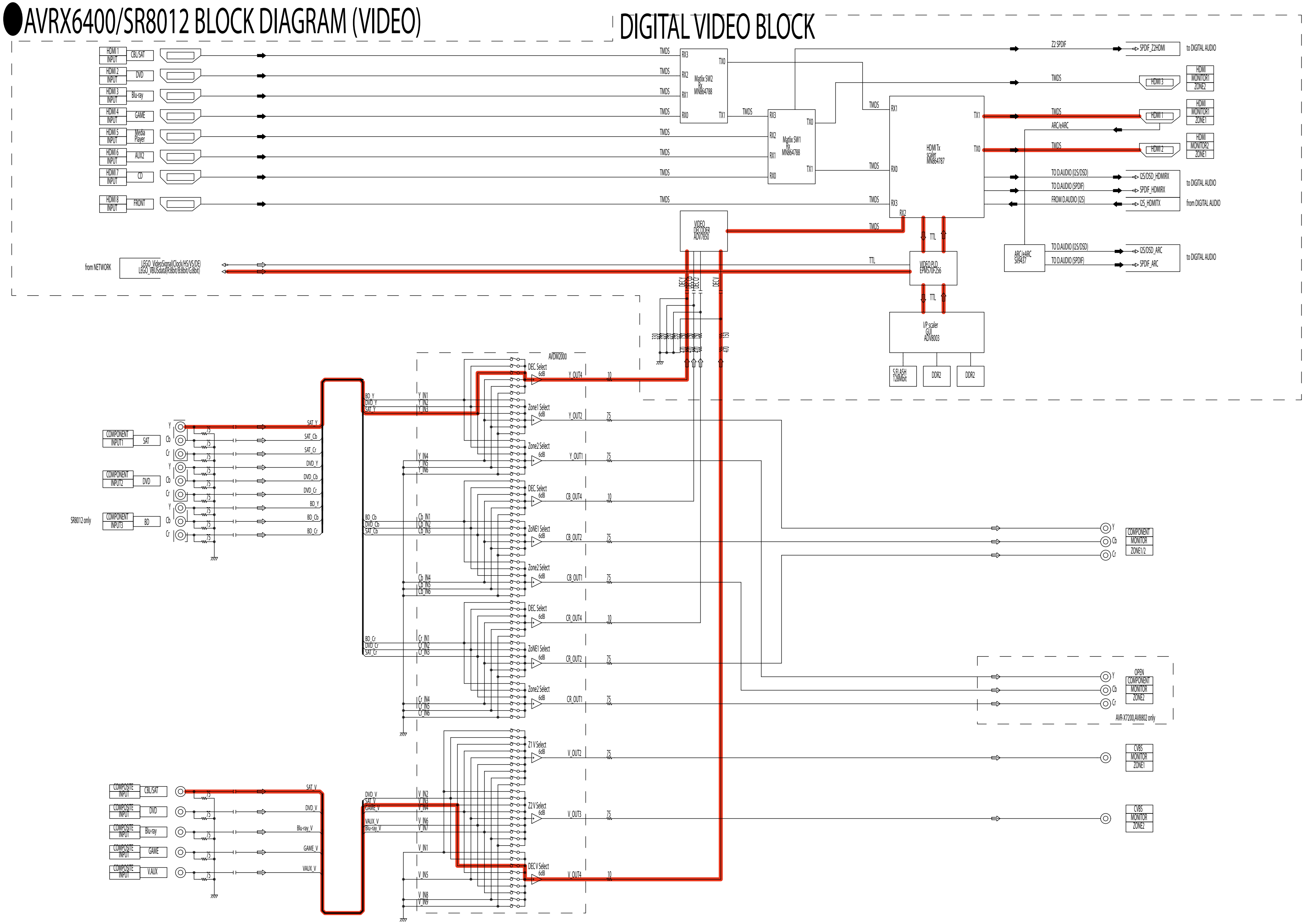


fig.14

AVRX6400/SR8012 BLOCK DIAGRAM (VIDEO)

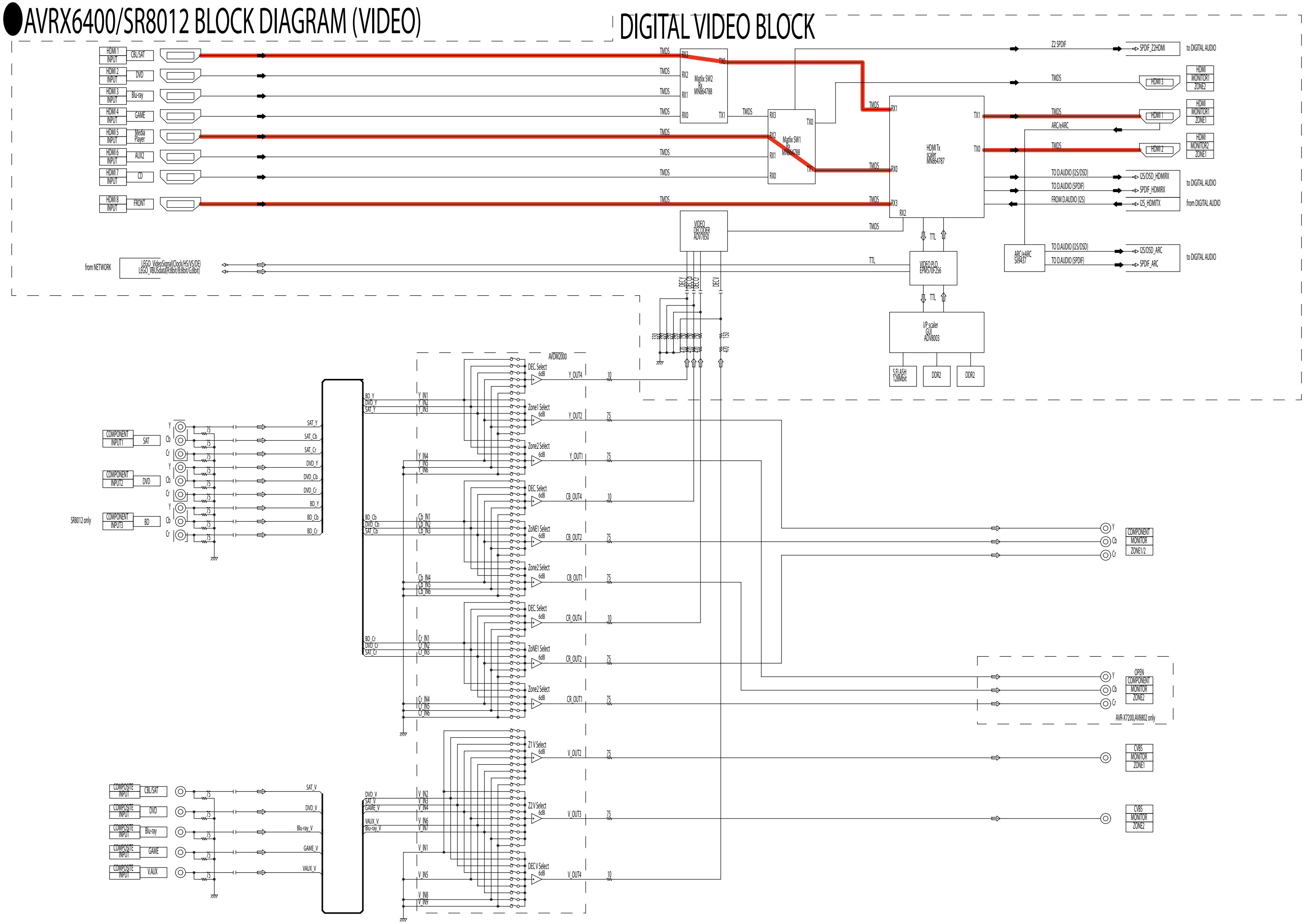


fig.15

AVRX6400/SR8012 BLOCK DIAGRAM (VIDEO)

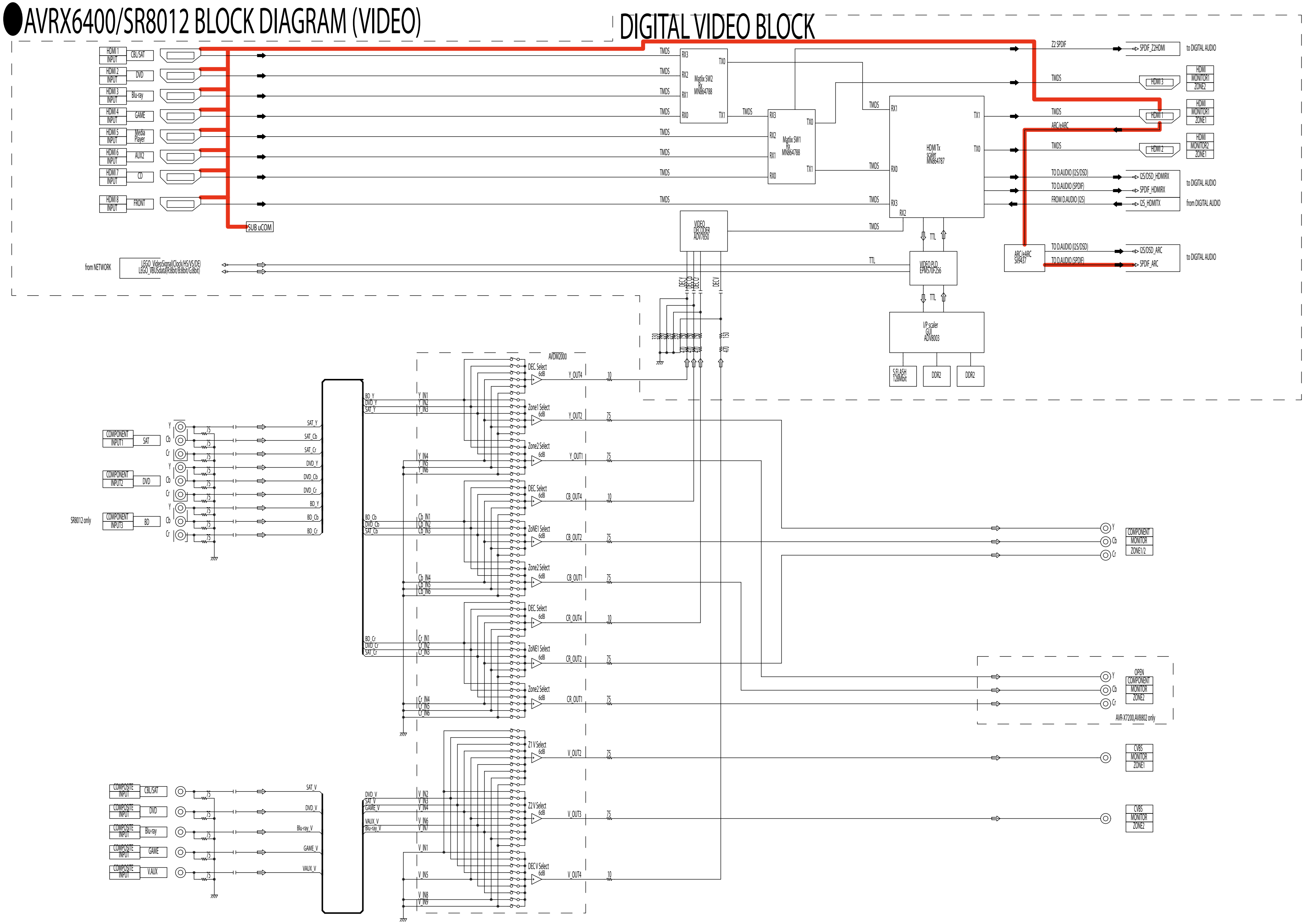


fig.16a

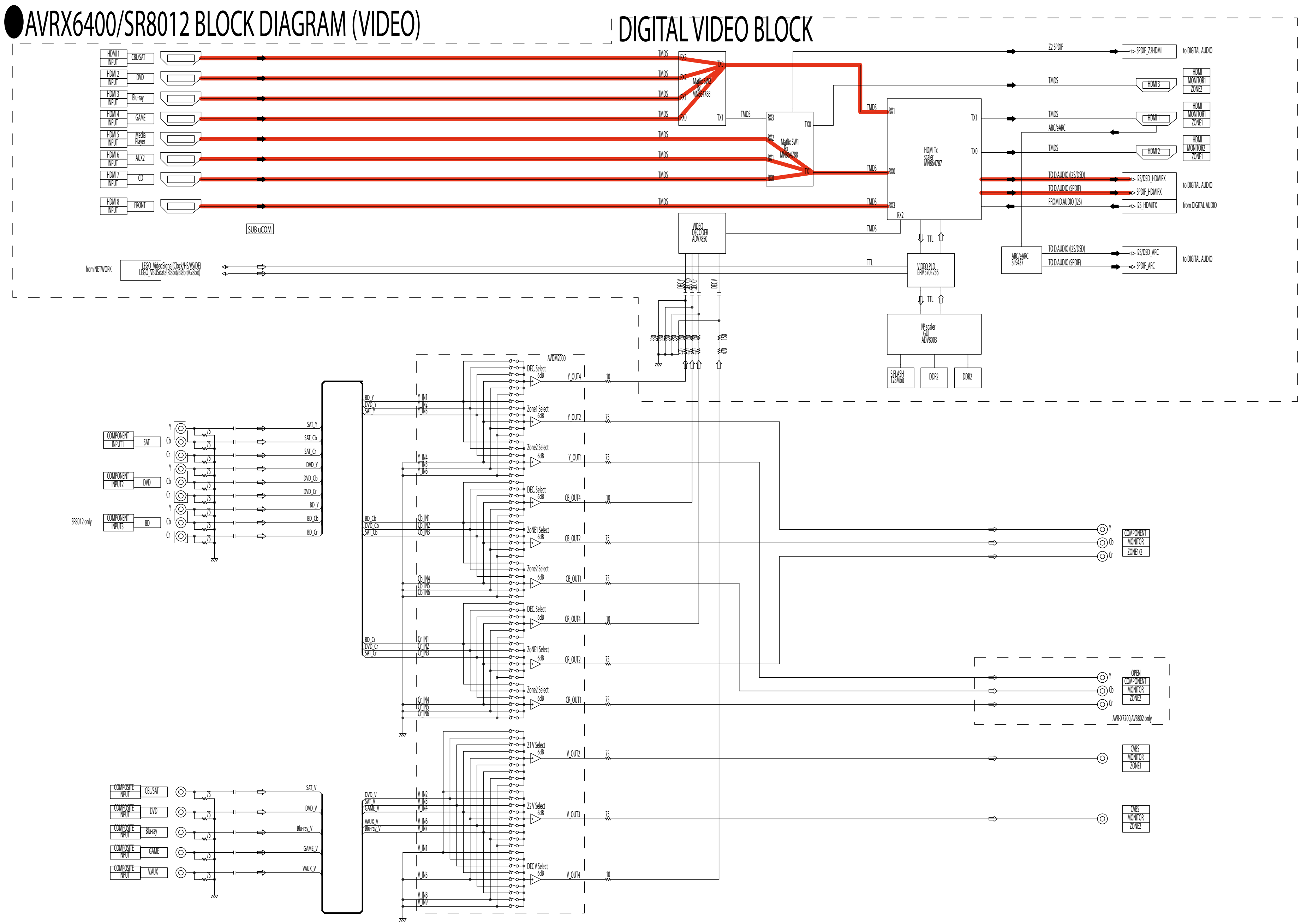


fig.16b

AVR-X6400H/SR8012 DIGITAL AUDIO/NETWORK BLOCK DIRAGRAM

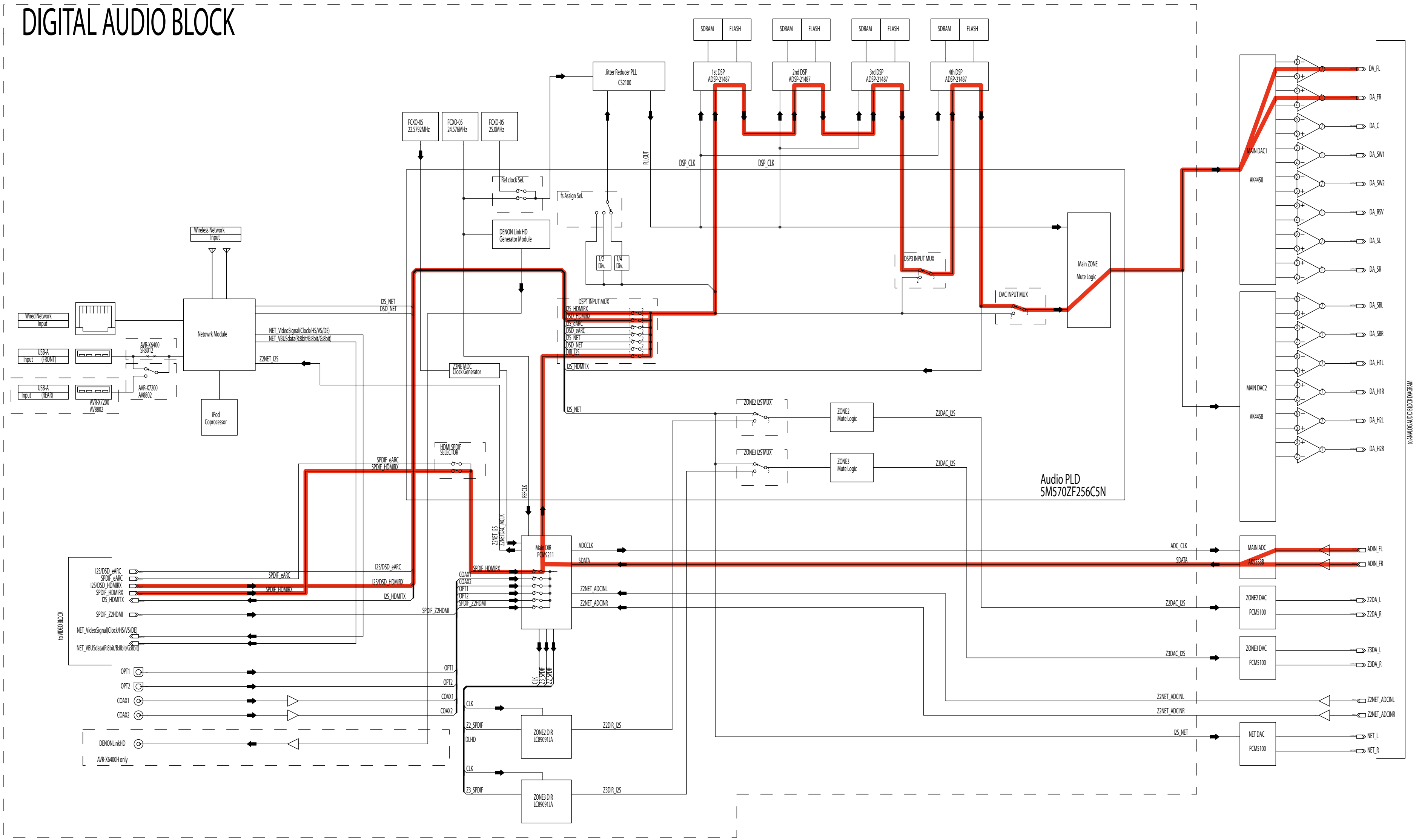


fig.16c

●AVRX6400/SR8012 BLOCK DIAGRAM (A.AUDIO/Z2,3HPF)

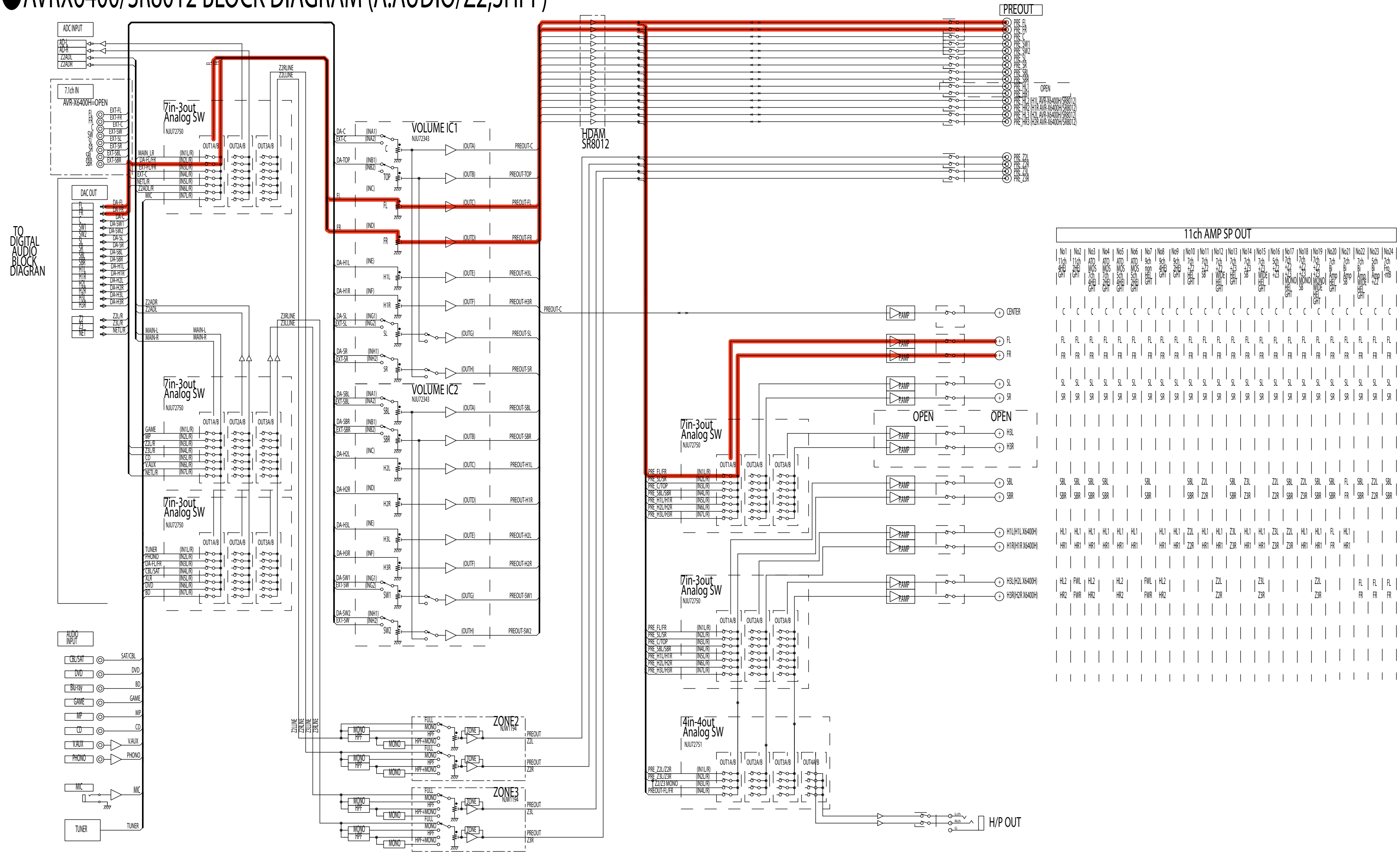


fig.17a

AVRX6400/SR8012 BLOCK DIAGRAM (VIDEO)

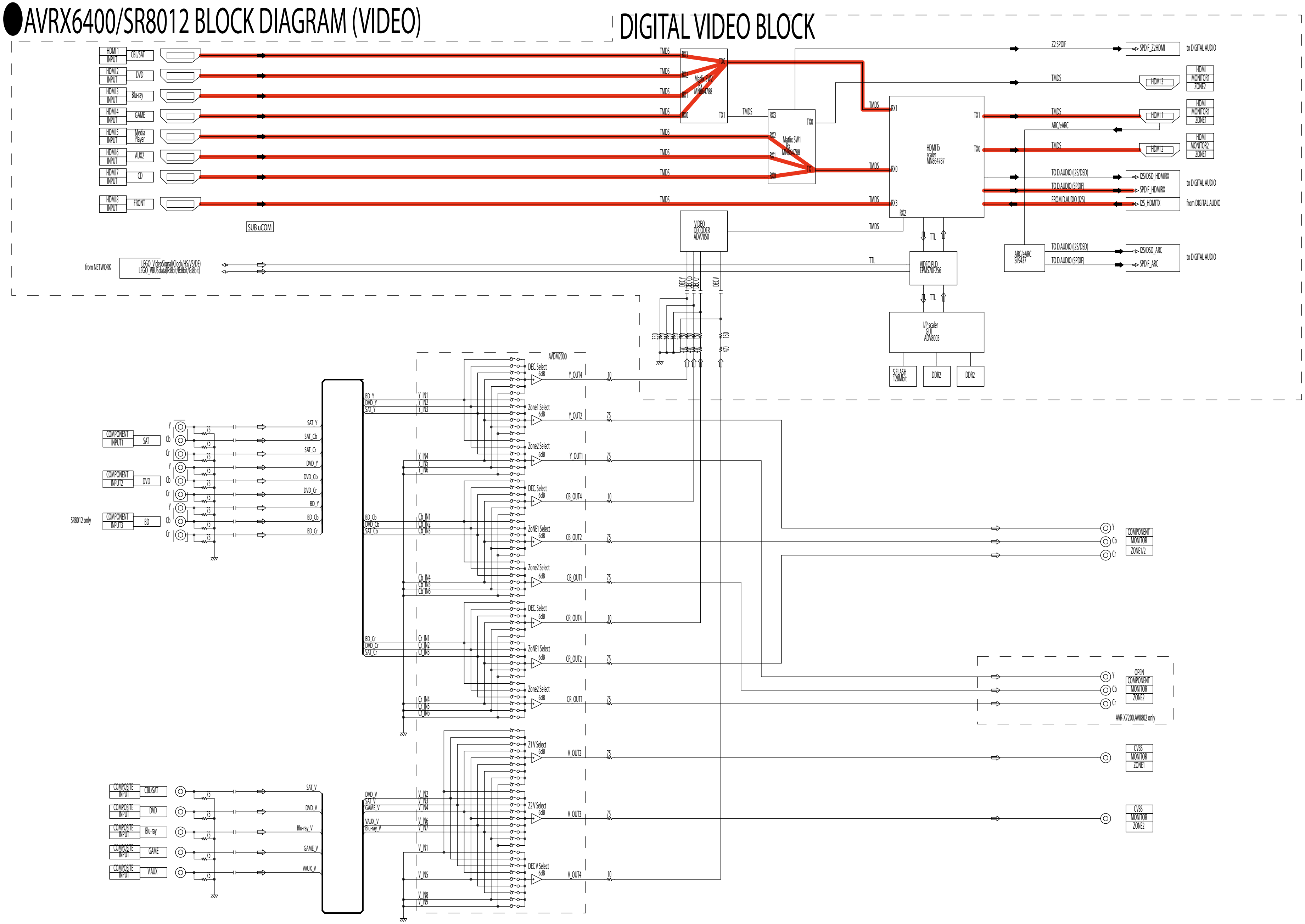


fig.17b

AVR-X6400H/SR8012 DIGITAL AUDIO/NETWORK BLOCK DIRAGRAM

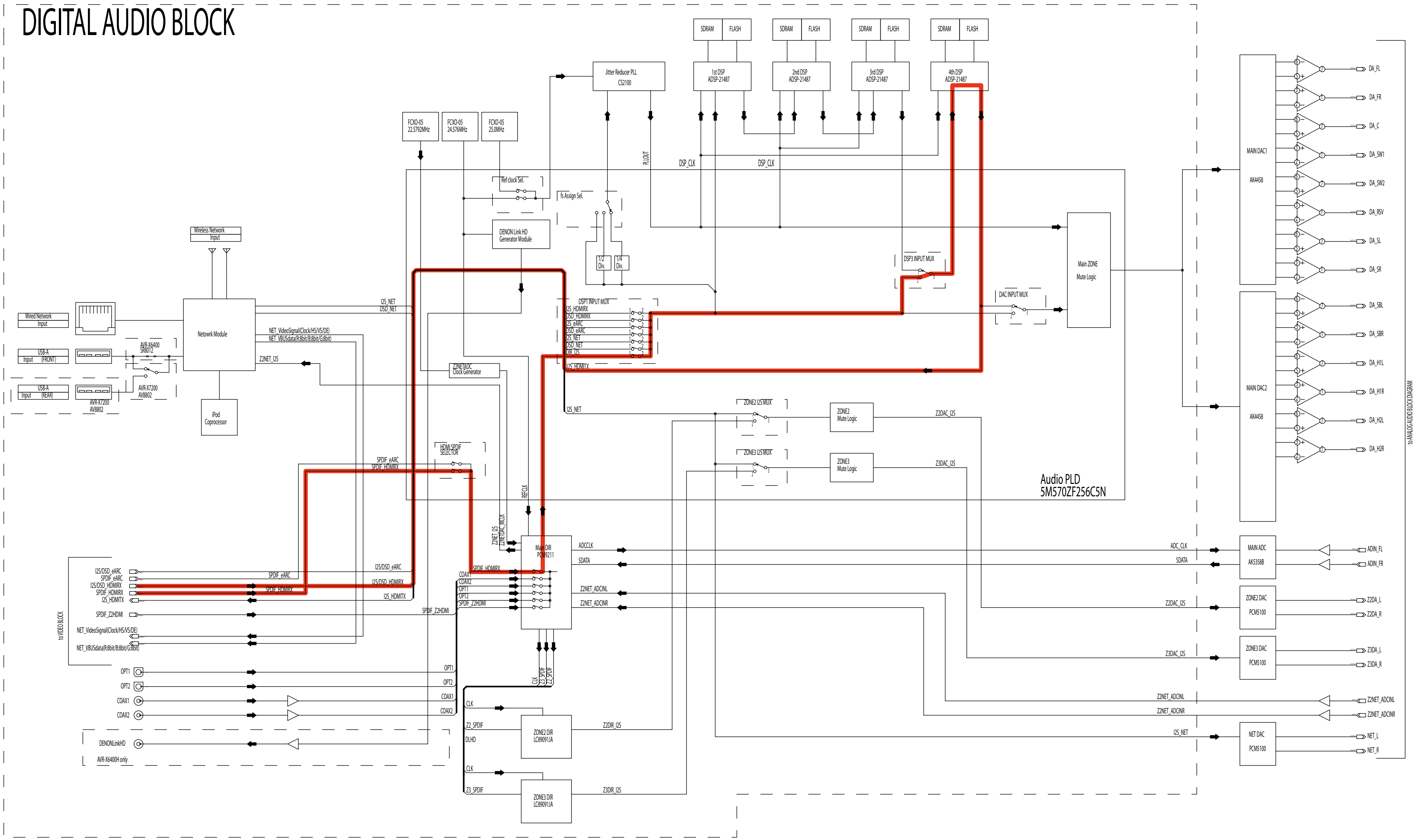


fig.18

AVRX6400/SR8012 BLOCK DIAGRAM (VIDEO)

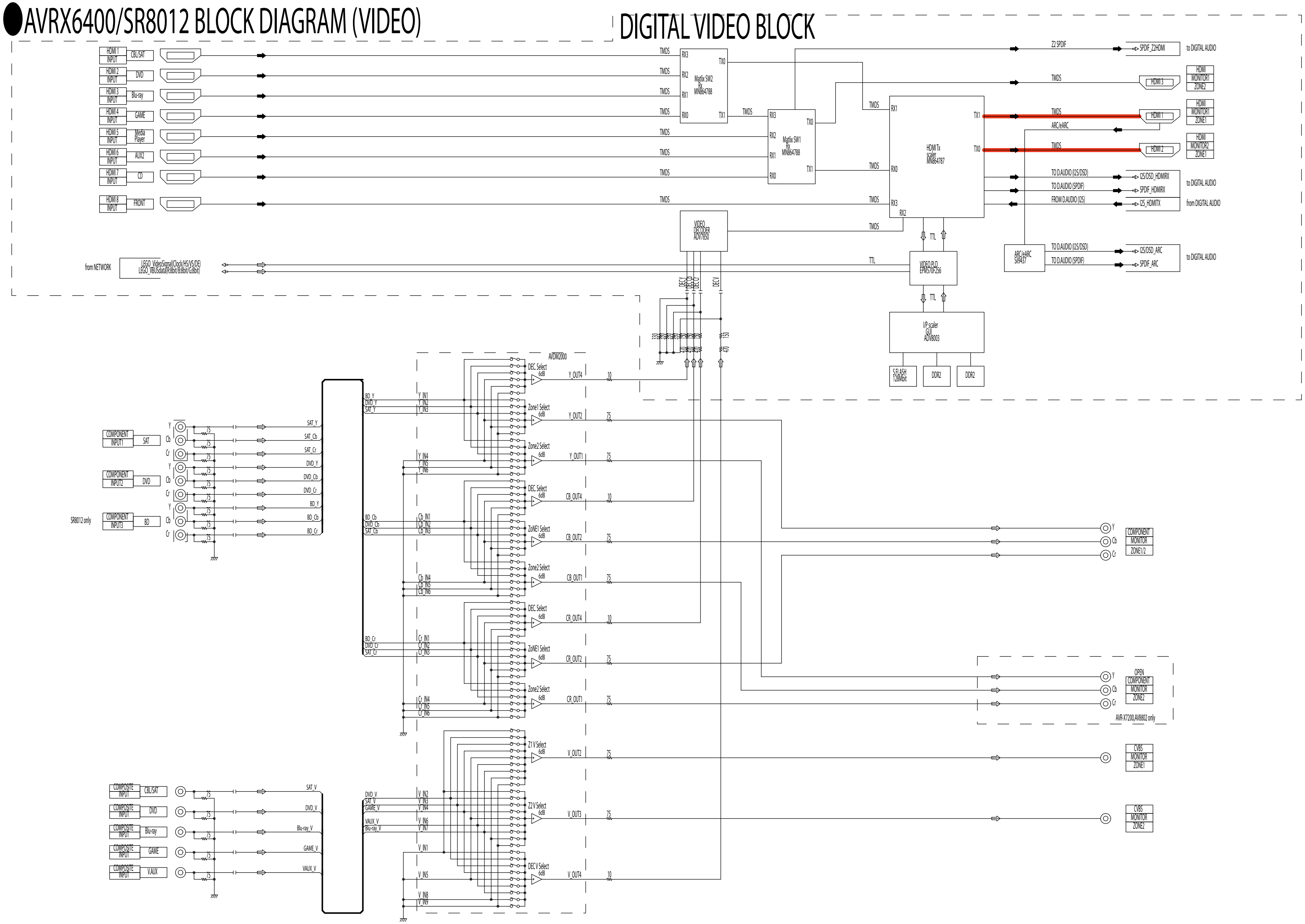
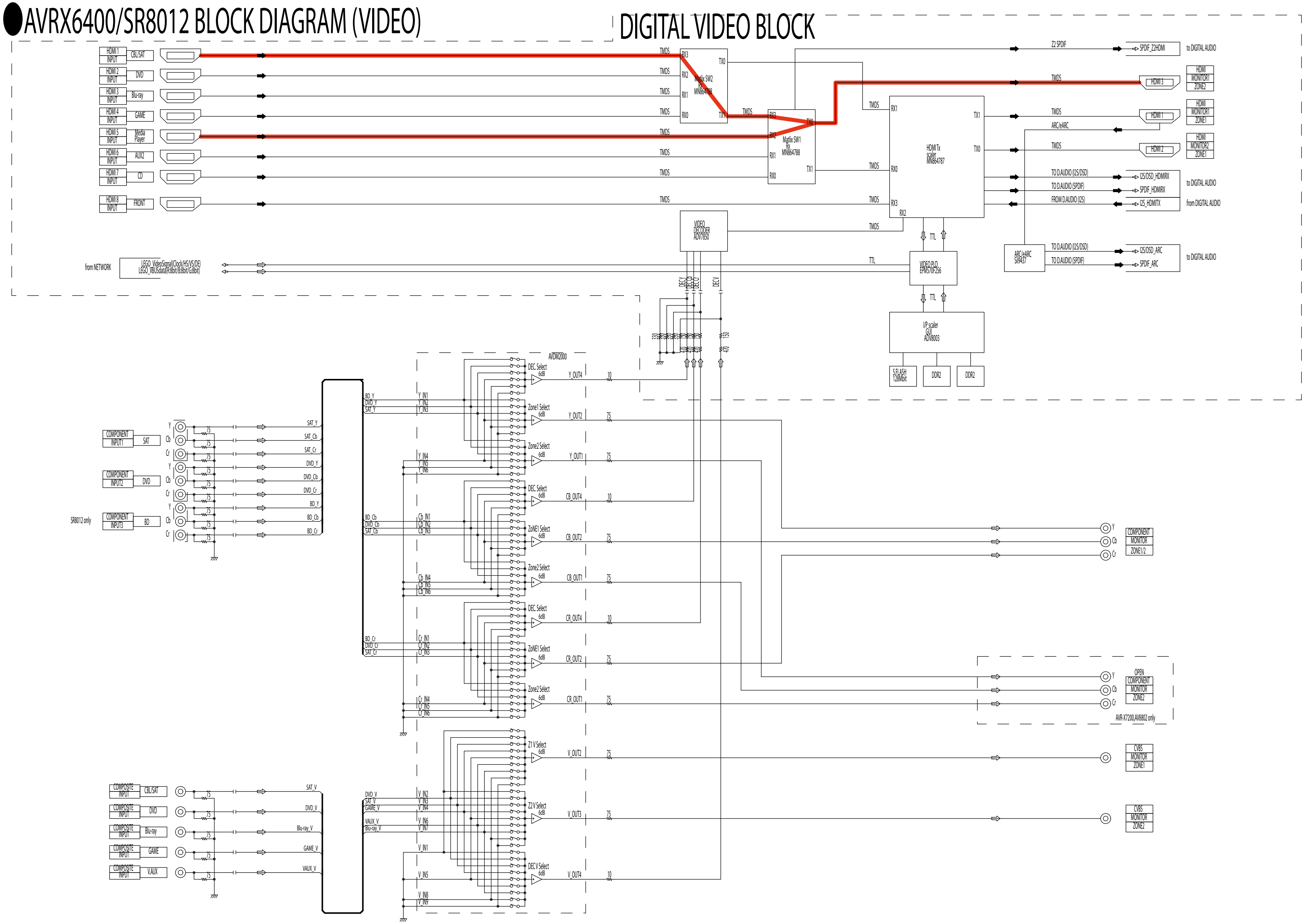


fig.19

AVRX6400/SR8012 BLOCK DIAGRAM (VIDEO)



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.

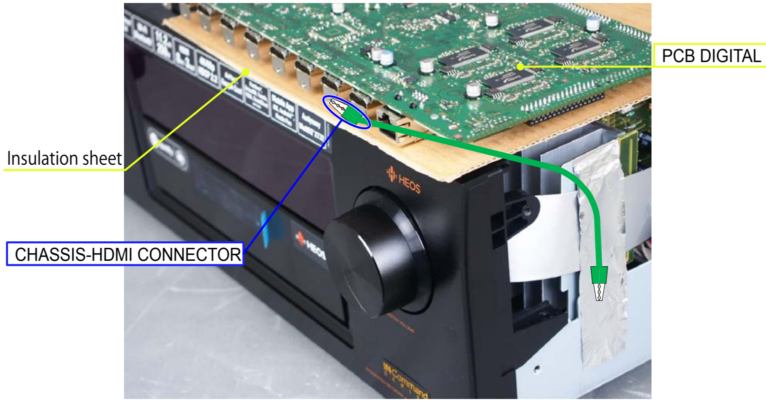
CAUTION : Incorrect connections may cause malfunction.

Connection of Jig for DIGITAL PCB
---Items to Be Prepared---
8U-110084S : EXTENSION UNIT KIT : 1 Set
Insulation sheet (Not supplied) : 1 sheet
Ground lead (Not supplied) : 1 pc

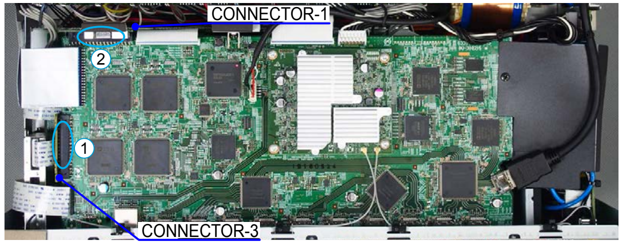
-Proceeding-
(1) Remove the screws.

(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

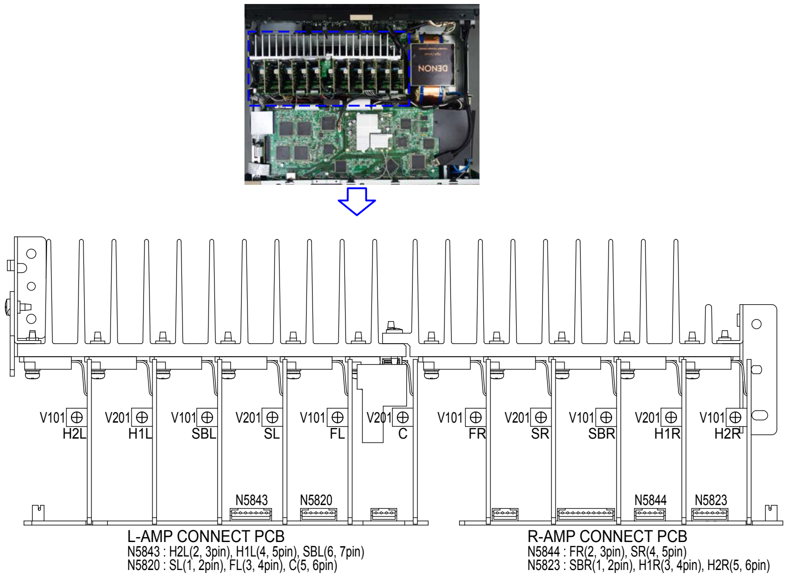
No.	Pin	Ref. No.	PCB		Ref. No.	PCB
①	33pin	N5202	CONNECT-3	⟷	N6014	DIGITAL
②	33pin	N5907	CONNECT-1	⟷	N6012	DIGITAL

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 "**V101/V201**"(ALL Channel) of the AMP PCB counterclockwise(↶) as far as possible.
(2) Connect the DC Voltmeter to the test points.

FRONT Lch	: N5820 3, 4pin	: V101
FRONT Rch	: N5844 2, 3pin	: V201
CENTER ch	: N5820 5, 6pin	: V101
SURROUND Lch	: N5820 1, 2pin	: V101
SURROUND Rch	: N5844 4, 5pin	: V201
SURROUND-BACK Lch	: N5843 6, 7pin	: V101
SURROUND-BACK Rch	: N5823 1, 2pin	: V201
HEIGHT1 Lch	: N5843 4, 5pin	: V101
HEIGHT1 Rch	: N5823 3, 4pin	: V201
HEIGHT2 Lch	: N5843 2, 3pin	: V101
HEIGHT2 Rch	: N5823 5, 6pin	: V201

(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 : Multi Ch Stereo
FUNCTION : DVD

(5) Turn "**V101/V201**" clockwise (↷) and adjust the voltage of the test point to "**8.0mV ± 0.5mV DC**" within 2 minutes.
(6) 10 minutes after the preliminary adjustment, turn **V101/V201** and set the voltage to "**8.0mV ± 2.0mV DC**".
(7) Adjust the variable resistance of each channel using the same method.

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PROCEDURE AFTER REPLACING THE PCB.

PROCEDURE AFTER REPLACING THE U-COM, ETC.

FIRMWARE UPDATE PROCEDURE

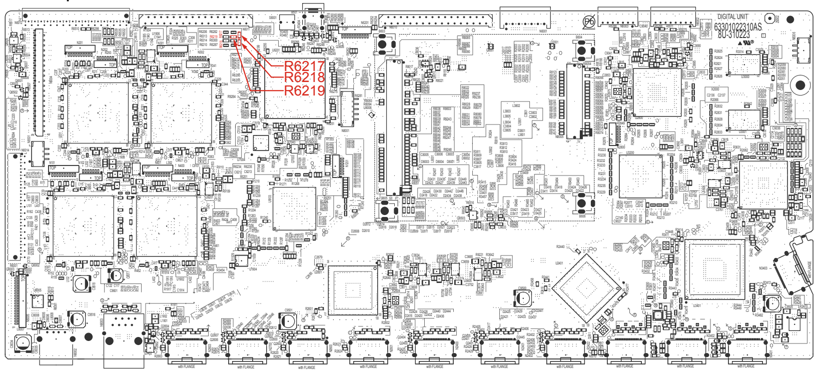
PROCEDURE AFTER REPLACING THE PCB.

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

Model Area	DIGITAL PCB		
	R6217	R6218	R6219
North America (E3)	OPEN	0	OPEN
Europe (E2)	0	OPEN	OPEN
China (E1C)	OPEN	OPEN	OPEN
Japan (JP)	OPEN	OPEN	0

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 Re-placement	Remark
DIGITAL	U6201	R5F564MJCDFC	B	SOFTWARE : Main
DIGITAL	U0102 U0202 U0302 U0402	MX25L1606EM2I-12G	B	SOFTWARE : DSP1/2/3/4 ROM
DIGITAL	U2801	MX25L12835FMI-10G	B	SOFTWARE : GUI ROM
DIGITAL	U9103	5M570ZF256C5N	C	SOFTWARE : VIDEO PLD
DIGITAL	U3200	EPM570F256C4N	C	SOFTWARE : AUDIO PLD
MODULE	28	NETWORK MODULE	D	SOFTWARE : Network

Procedure after Replacement

A : The software has been written. The software is not written at the time of replacement.
B : The software has been written. The software may need to be rewritten by version updates. Check the version.
C : The software has not been written. The software needs to be written after replacement.
See "FIRMWARE UPDATE PROCEDURE" for information on writing the software.
D : The software has been written. Be sure to 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.

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-X6400H	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-X6400HE3	North America (E3)	Product ID : 000101010100	DPMS_AVR-X6400HALL_LEGO_xxxx.zip	heos_40.prod_x.xxx.xx.zip
AVR-X6400HE2	Europe (E2)	Product ID : 000101010200		
AVR-X6400HE1C	China (E1C)	Product ID : 000101010500		
AVR-X6400HJP	Japan (JP)	Product ID : 000101010400		

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.

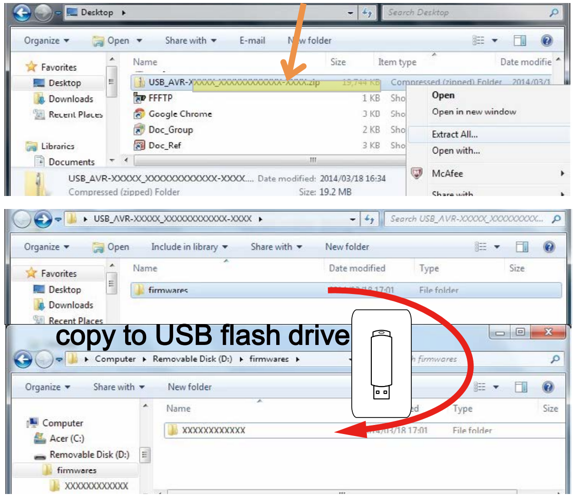
NOTE :

- 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.

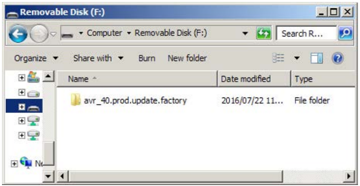
After unzipping the files, store them in the root of the same USB flash drive.

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.

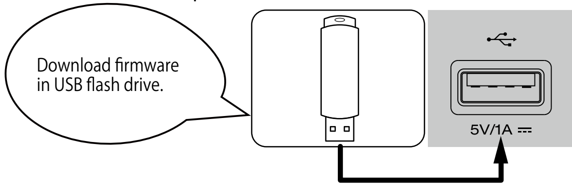
L1	▶TuneIn Internet Radio
L2	HEOS Favorites

or

No Network Connection

L1 : 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

L1	Please wait▶▶▶▶▶

↓

L1	Updating▶▶▶ **%
L2	**min

↓

L1	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 "**SETUP**" and "**DIMMER**" simultaneously, press the power button to turn on the power.

Display during Firmware Factory Restore

L1	Restoring FW...

↓

L1	Restore ▶▶▶ **%
L2	**min

↓

L1	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.

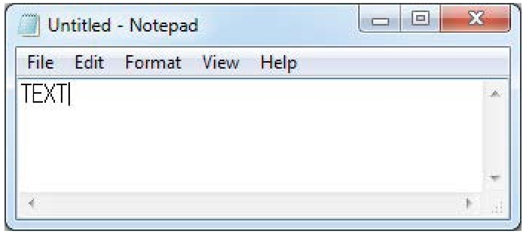
4. Update Method for Service Region Settings

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

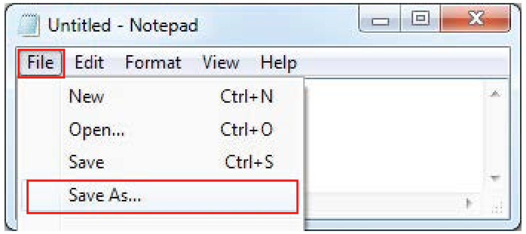
4.1. Creating a Service Region Settings file

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

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

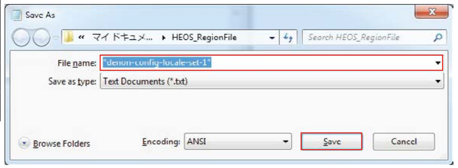


(3) Click "**File**", and then click "**Save As...**".

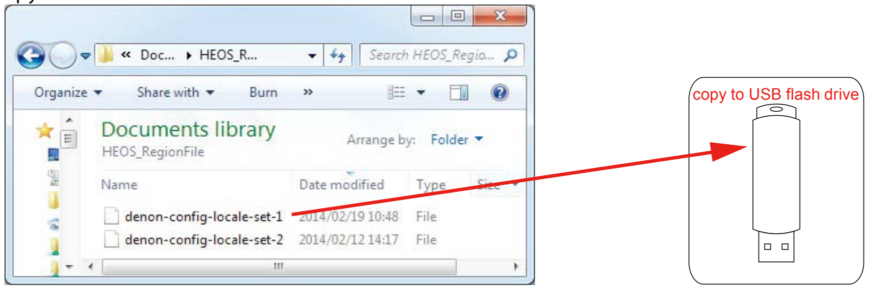


(4) Enter the file name and click the Save button.
NOTE : Enter the file name in double quotation marks. (The file extension is not required.)

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 :

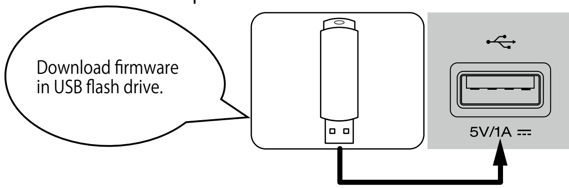
- Remove the LAN cable from this unit when updating.
  (Do not connect to a wired or wireless network.)
- We recommend a USB memory device that has an LED installed.

(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.

L1	▶TuneIn Internet Radio	or	No Network Connection
L2	HEOS Favorites		

L1 : 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

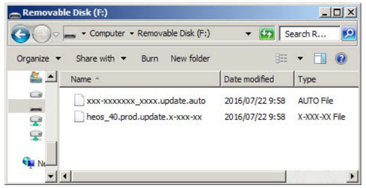
5.1. File structure on USB flash drive

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-X6400HALL_LEGO_PopupNone.zip Product ID : 000101010100	heos_40.prod_x.xxx.xx.zip
Europe (E2)	DPMS_AVR-X6400HALL_LEGO_PopupNone.zip Product ID : 000101010200	
China (E1C)	DPMS_AVR-X6400HALL_LEGO_PopupNone.zip Product ID : 000101010500	
Japan (JP)	DPMS_AVR-X6400HALL_LEGO_PopupNone.zip Product ID : 000101010400	

USB flash drive root
+ AVR-X6400Hxx_xxxx.update.auto
+ heos_40.prod.update.x-xxx-xx



5.2. Start normal update

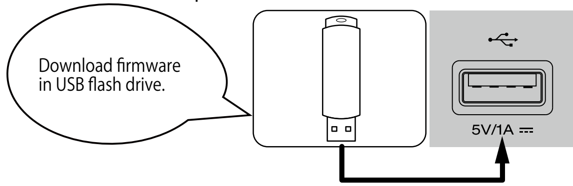
NOTE :
- Remove the LAN cable from this unit when updating.
  (Do not connect to a wired or wireless network.)

(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.

L1	▶TuneIn Internet Radio	or	No Network Connection
L2	HEOS Favorites		

L1 : 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

L1	Please wait▶▶▶▶▶

↓

L1	Updating▶▶▶ **%
L2	**min

↓

L1	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

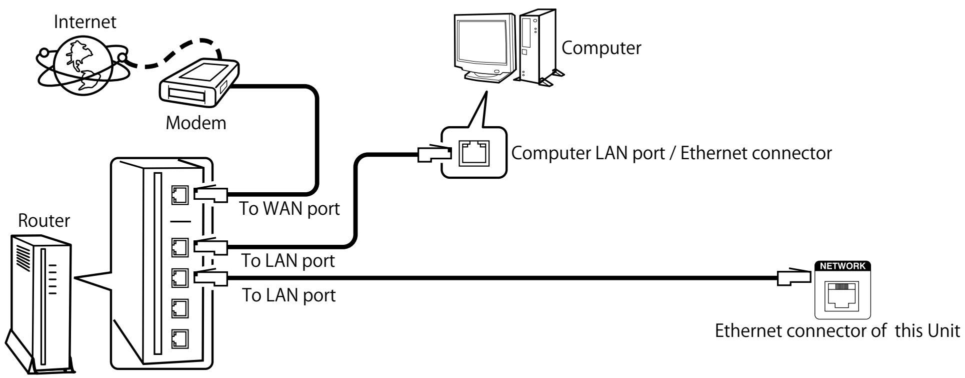
Download the latest firmware from our website and update the firmware.

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

L1	Please wait▶▶▶▶▶

↓

L1	Updating▶▶▶ **%
L2	**min

↓

L1	Update Completed

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).

Display

L1	Updating▶▶ **%
L2	**min

↓

L1	Update ErrorYYXX
L2	Please check you

L2 : 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 mani-fest
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"

Caution in servicing
Electrical
Mechanical
Repair Information
Updating

www.denon.com