

INTEGRATED NETWORK AV RECEIVER
AVR-X8500H

INTEGRATED NETWORK AV AMPLIFIER
AVC-X8500H



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

[Click here!](#)

On-line service parts list

AVR-X8500H: <http://dmedia.dmglobal.com/Document/DocumentDetails/24181>

AVC-X8500H: <http://dmedia.dmglobal.com/Document/DocumentDetails/24182>

[ONLINE PARTS LIST](#) (P5)

WEB owner's manual

NA: <http://manuals.denon.com/AVRX8500H/NA/EN/index.php>

EU: <http://manuals.denon.com/AVCX8500H/EU/EN/index.php>

AP: <http://manuals.denon.com/AVCX8500H/AP/ZH/index.php>

JP: <http://manuals.denon.com/AVCX8500H/JP/JA/index.php>

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

[BEFORE SERVICING THIS UNIT](#)

[ELECTRICAL](#)

[MECHANICAL](#)

[REPAIR INFORMATION](#)

[UPDATING](#)

Please refer to the MODIFICATION NOTICE.

Confidential

BEFORE SERVICING THIS UNIT

SAFETY PRECAUTIONS

NOTE FOR SCHEMATIC DIAGRAM

HANDLING THE SEMICONDUCTOR AND OPTICS

ONLINE PARTS LIST

[Accessing the Parts List](#)

[Searching Part Numbers or Ref. Numbers](#)

[NOTE FOR PARTS LIST](#)

SERIAL NUMBER

[Serial Number Organization](#)

[SKU Code of this Unit](#)

POST-SERVICE PRECAUTIONS

[Initializing this Unit](#)

[JIG FOR SERVICING](#)

SAFETY PRECAUTIONS

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

Leakage current check

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

Be sure to test for leakage current with the AC plug in both polarities, in addition, when the set's power is in each state (on, off and standby mode), if applicable.

CAUTION

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

⊙ Heed the cautions!

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

⊙ Cautions concerning electric shock!

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

⊙ Caution concerning disassembly and assembly!

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

⊙ Use only designated parts!

The set's parts have specific safety properties (fire resistance, voltage resistance, etc.). Be sure to use parts which have the same properties for replacement. The burrs have the same properties. In particular, for the important safety parts that are indicated by the \triangle 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 reasons, some parts use tapes, tubes or other insulating materials, and some parts are mounted away from the surface of printed circuit boards. Care should also be taken with the positions of the wires by arranging them and using clamps to keep them away from heating and high voltage parts, so be sure to set everything back as it was originally placed.

⊙ Make a safety check after servicing!

Check that all screws, parts and wires removed or disconnected when servicing have been put back in their original positions, check that no serviced parts have 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 \triangle mark.
- (2) Parts lists Indicated by the \triangle mark.

The use of parts other than the designated parts could cause electric shocks, fires or other dangerous situations.

NOTE FOR SCHEMATIC DIAGRAM

WARNING:

Parts indicated by the \triangle mark have critical characteristics. Use ONLY replacement parts recommended by the manufacturer.

CAUTION:

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

WARNING:

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

NOTICE:

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

HANDLING THE SEMICONDUCTOR AND OPTICS

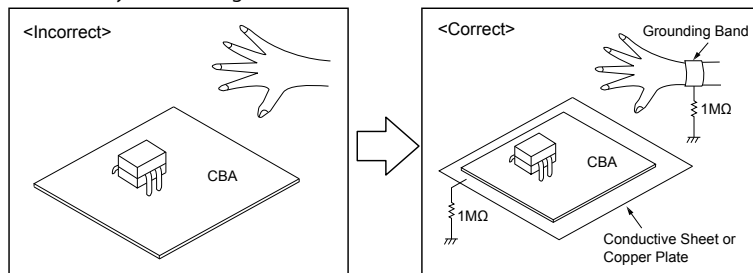
Electrostatic breakdown of the semi-conductors or optical pickup may occur due to a potential difference caused by electrostatic charge during unpacking or repair work.

1. Ground for Human Body

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

2. Ground for Workbench

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



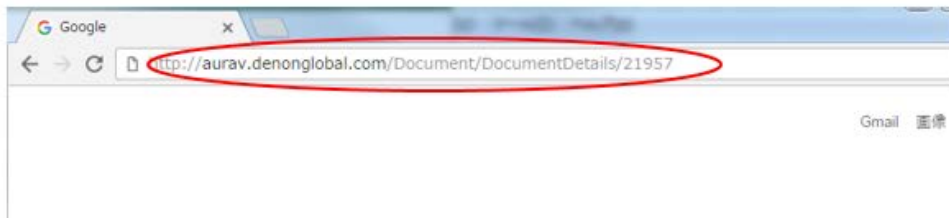
ONLINE PARTS LIST

Accessing the Parts List

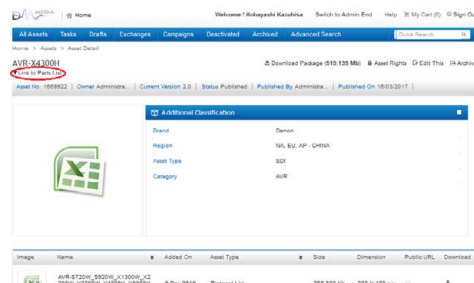
- (1) Access from the Service Manual
 - Click the URL link on the cover of the service manual.
Examples of display



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



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

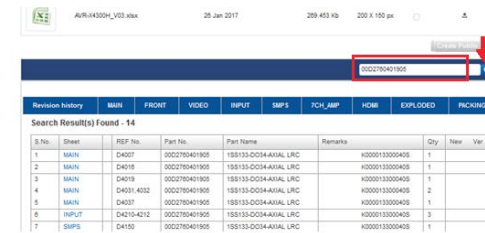


NOTE: If the ▼ Link to Parts List section is not displayed, download the parts table from the Asset list.

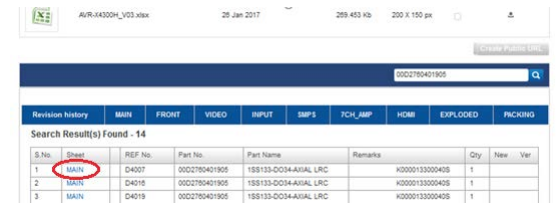
Searching Part Numbers or Ref. Numbers

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

- (1) Enter the part number or Ref. number in the search window of the Parts List, and press the search button.
- (2) The search results are displayed.
The name of the sheet in which the search part is used and the part's line are displayed.



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



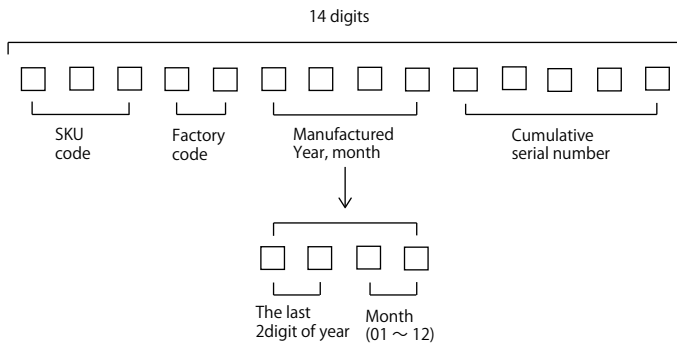
NOTE FOR PARTS LIST

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

SERIAL NUMBER

Serial Number Organization

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



SKU Code of this Unit

Product SKU	SKU Code
AVRX8500HBKE3	AXL
AVRX8500HSPE3	AXM
AVCX8500HBKE2	AXN
AVCX8500HSPE2	AXP
AVCX8500HBKE1C	AXQ
AVCX8500HK	AXR

POST-SERVICE PRECAUTIONS

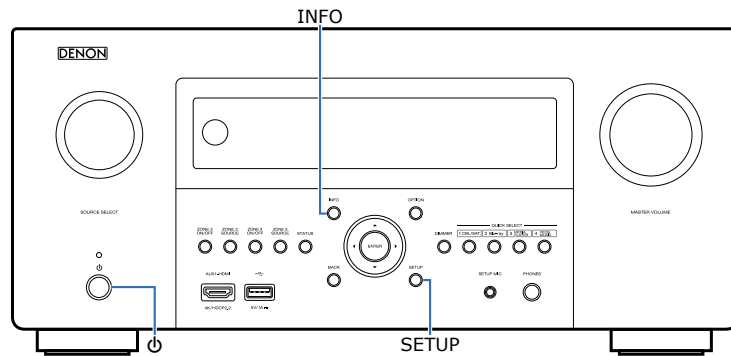
Initializing this Unit

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 "INFO" and "SETUP" 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

[SCH01 DIGITAL CONNECT](#)
[SCH02 MAIN CPU](#)
[SCH03 EXPANDER](#)
[SCH04 AUDIO PLD](#)
[SCH05 DIR, DA SUPPLY](#)
[SCH06 DSP1](#)
[SCH07 DSP2](#)
[SCH08 HDMI SUPPLY](#)
[SCH09 DECODER](#)
[SCH10 HDMI SW2](#)
[SCH11 HDMI SW1](#)
[SCH12 IP, OSD](#)
[SCH13 IP, OSD DDR](#)
[SCH14 VIDEO PLD](#)
[SCH15 HDMI TX](#)
[SCH16 eARC](#)
[SCH17 NET MODULE CONNECT](#)
[SCH18 ADC, ZONEDAC](#)
[SCH19 MAIN DAC](#)
[SCH20 SIDE CONNECT](#)
[SCH21 AUDIO, VIDEO CONNECT](#)
[SCH22 AUDIO VOLUME](#)
[SCH23 PREOUT](#)
[SCH24 ANALOG VIDEO](#)
[SCH25 FRONT JACK](#)
[SCH26 CONNECT](#)
[SCH27 AMP CONNECT](#)
[SCH28 FRONT HDMI USB](#)
[SCH29 SMPS](#)
[SCH30 P.AMP1](#)
[SCH31 P.AMP2](#)
[SCH32 SPEAKER](#)
[SCH33 REG](#)
[SCH34 232C PHONO](#)

[SCH35 FRONT](#)

PRINTED CIRCUIT BOARDS

[DIGITAL, L AMP CONNECT, R AMP CONNECT](#)
[AUDIO VIDEO, FRONT HDMI, FRONT USB, CONNECT-1, CONNECT-2, CONNECT-4, HP](#)
[FLD, 232C and PHONO, VOLUME, SOURCE, P.SW, POSISTER1, POSISTER2](#)
[SPEAKER, HEIGHT3 4 SP, HEIGHT2 SP](#)
[AMP1, AMP2, SMPS, SIDE CONNECT, DAC](#)

LEVEL DIAGRAM

[FRONT ch](#)
[CENTER / SURROUND ch](#)
[SUBWOOFER ch](#)
[SURROUND BACK / HEIGHT1 / HEIGHT2 / HEIGHT3 ch](#)
[ZONE2 / ZONE3 ch](#)

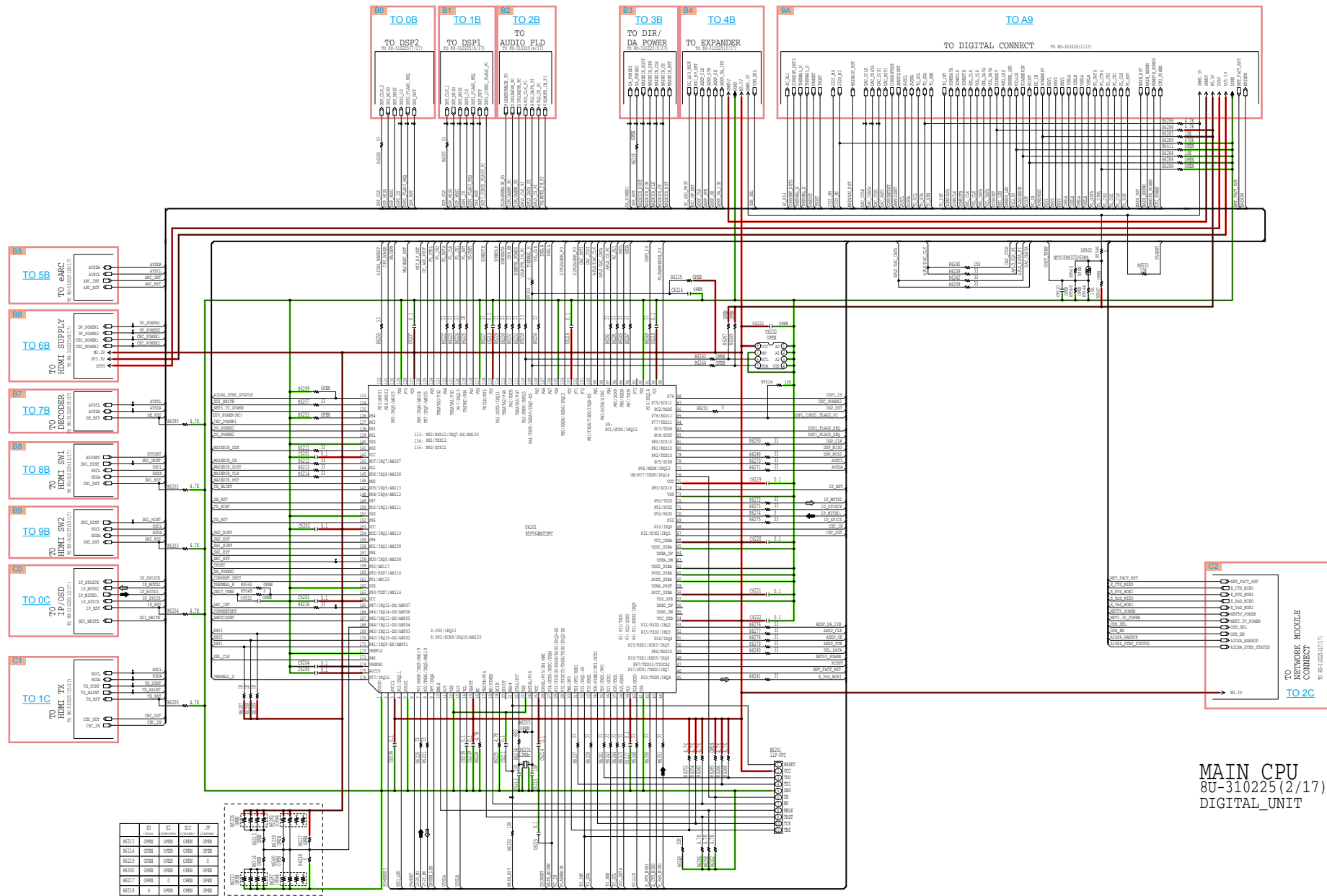
BLOCK DIAGRAM

[ANALOG AUDIO DIAGRAM](#)
[DIGITAL AUDIO DIAGRAM](#)
[VIDEO DIAGRAM](#)

POWER DIAGRAM

SEMICONDUCTORS

- [1. IC's](#)
- [2. FL DISPLAY](#)
- [3. Remote Code Table](#)



MAIN CPU
 8U-310225(2/17)
 DIGITAL_UNIT

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

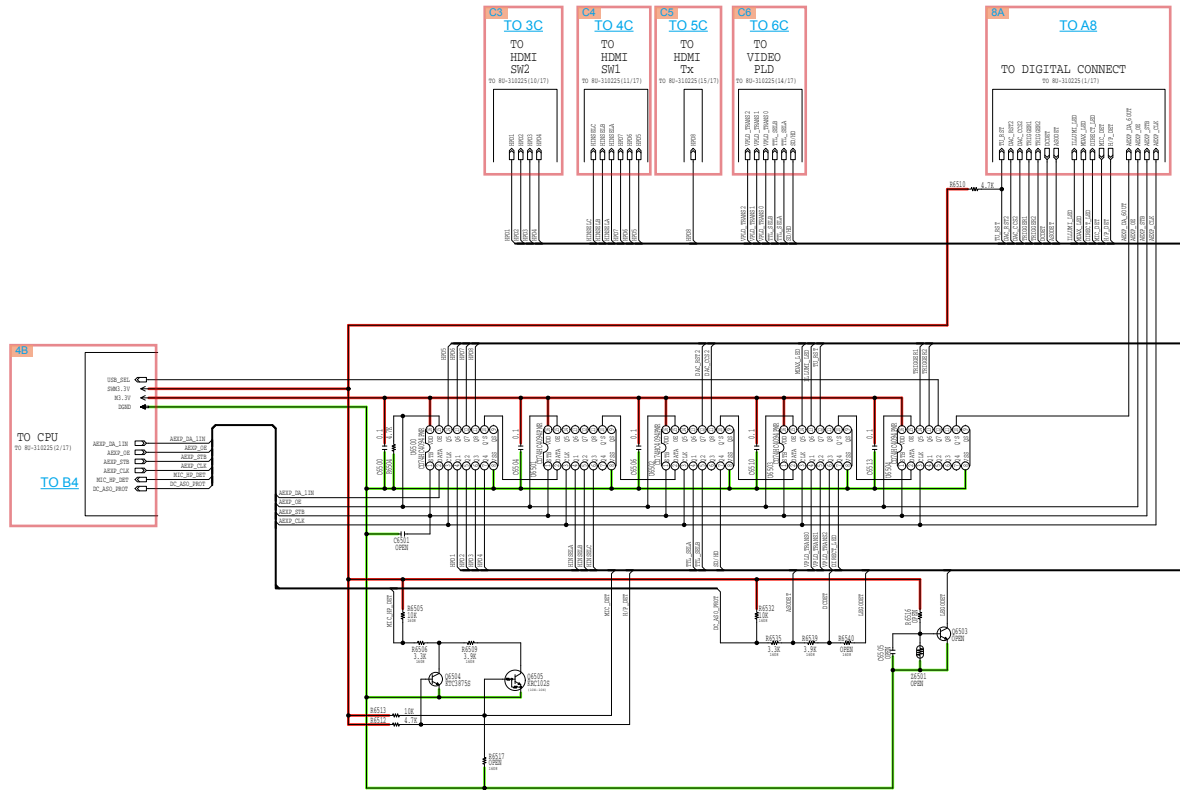
Before Servicing
 This Unit

Electrical

Mechanical

Repair Information

Updating

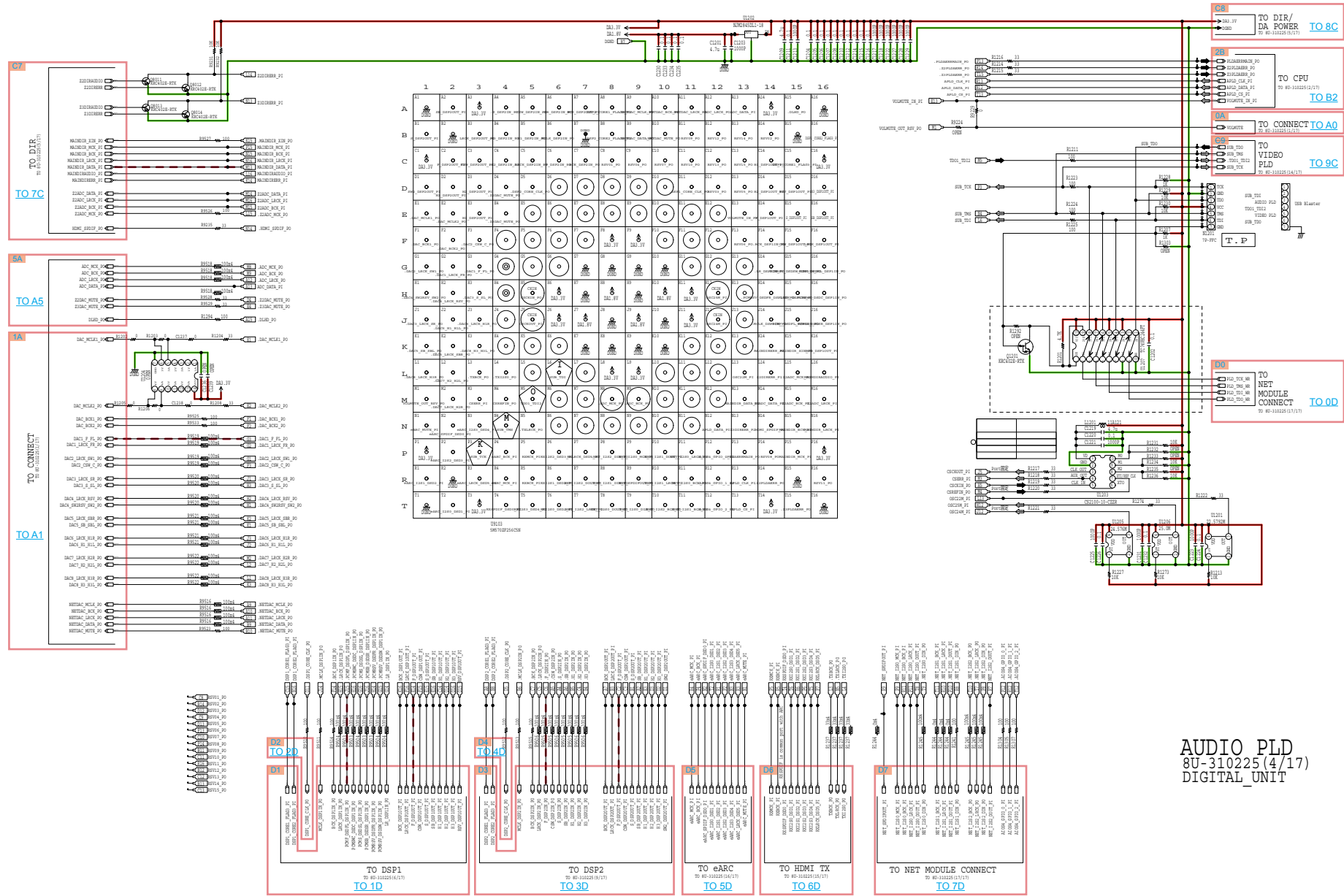


EXPANDER
8U-310225(3/17)
DIGITAL_UNIT

GND LINE POWER+ LINE POWER- LINE AUDIO SIGNAL TMDs SIGNAL ANALOG VIDEO

SCH04_AUDIO PLD

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 TMS SIGNAL ANALOG VIDEO

AUDIO PLD
8U-310225(4/17)
DIGITAL_UNIT

Before Servicing
This Unit

Electrical

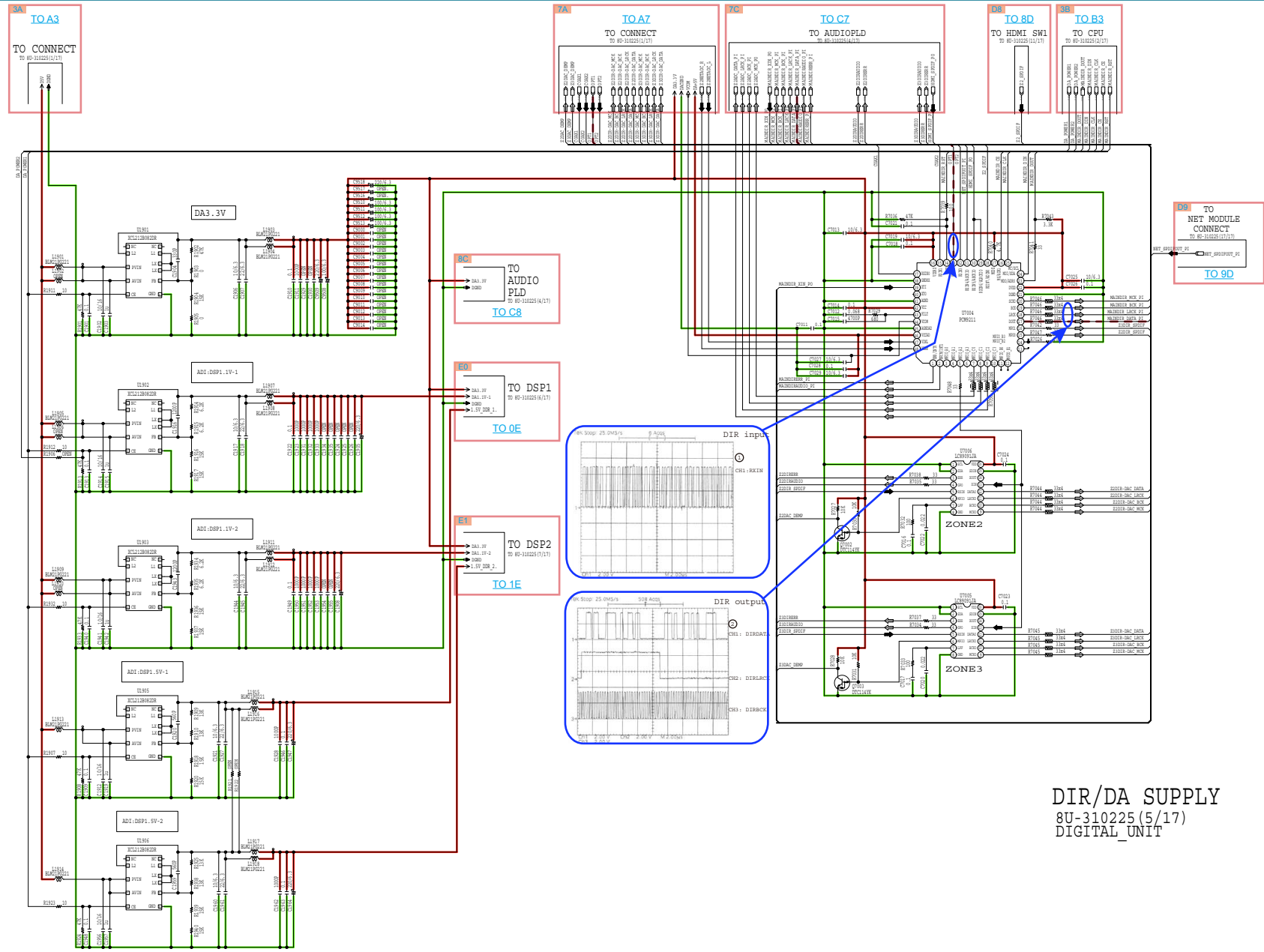
Mechanical

Repair Information

Updating

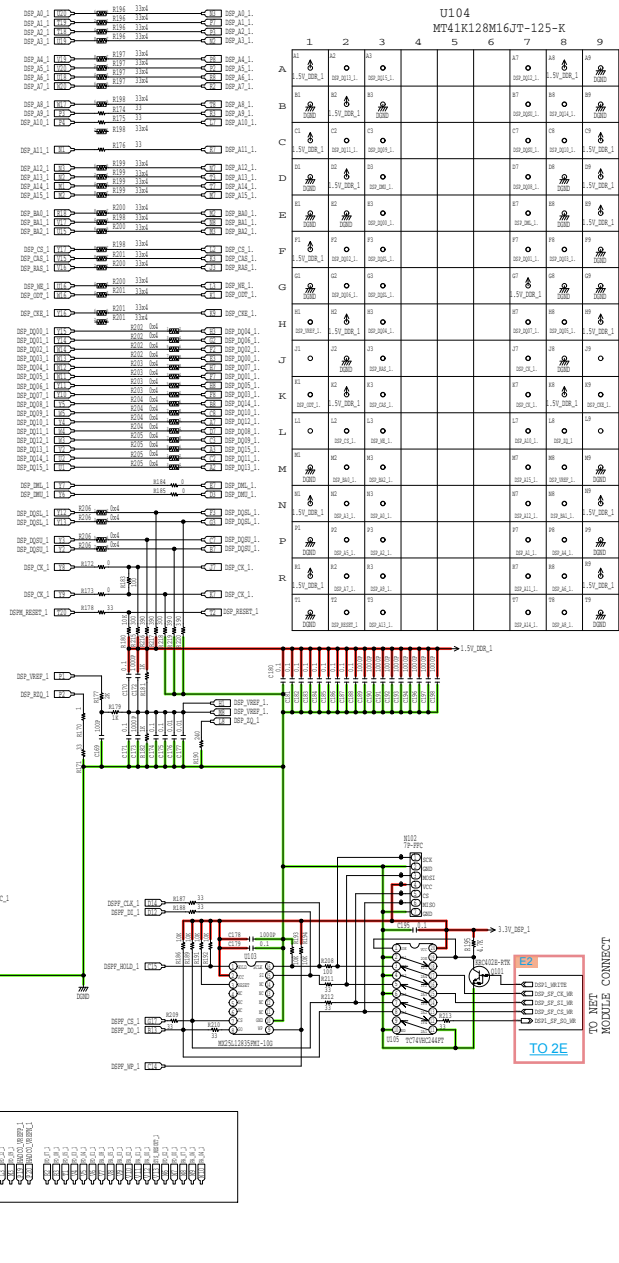
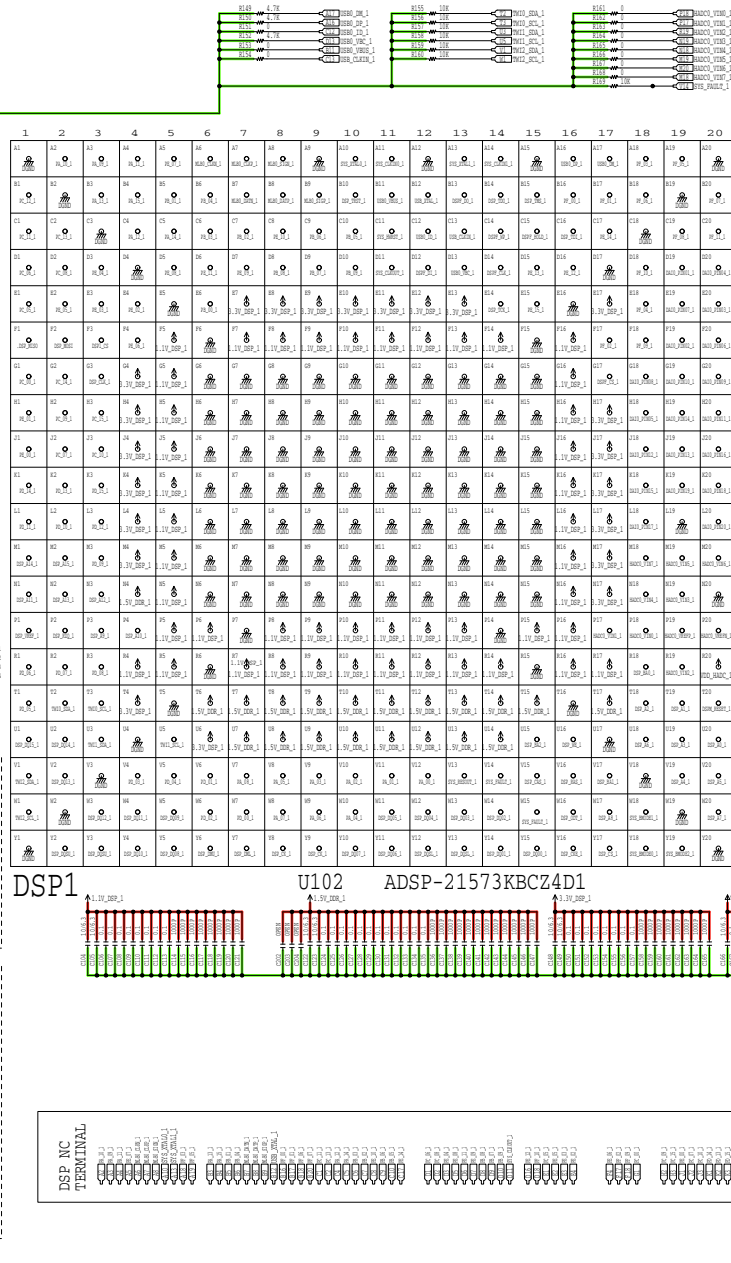
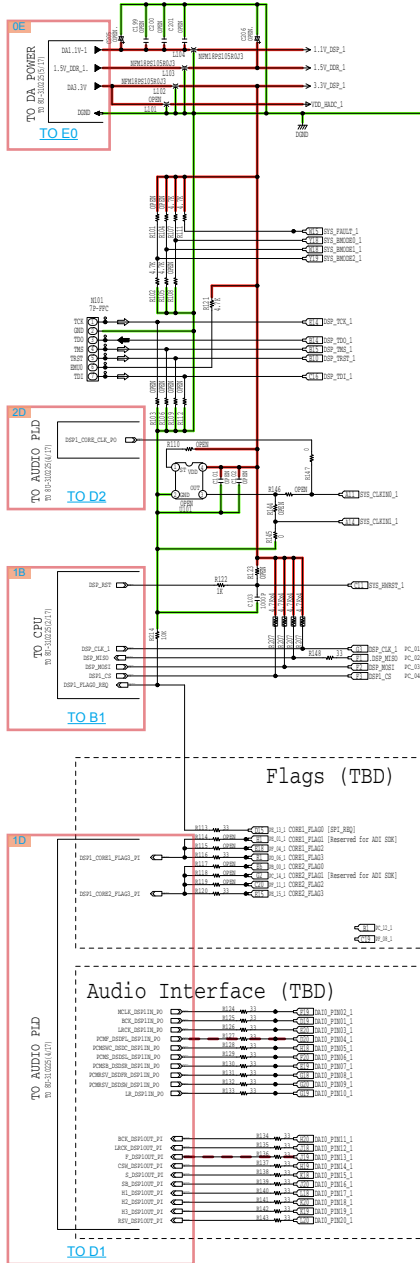
SCH05_DIR, DA SUPPLY

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.

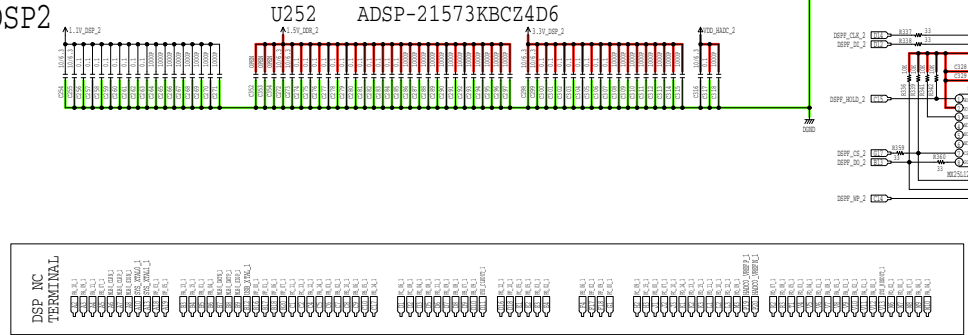
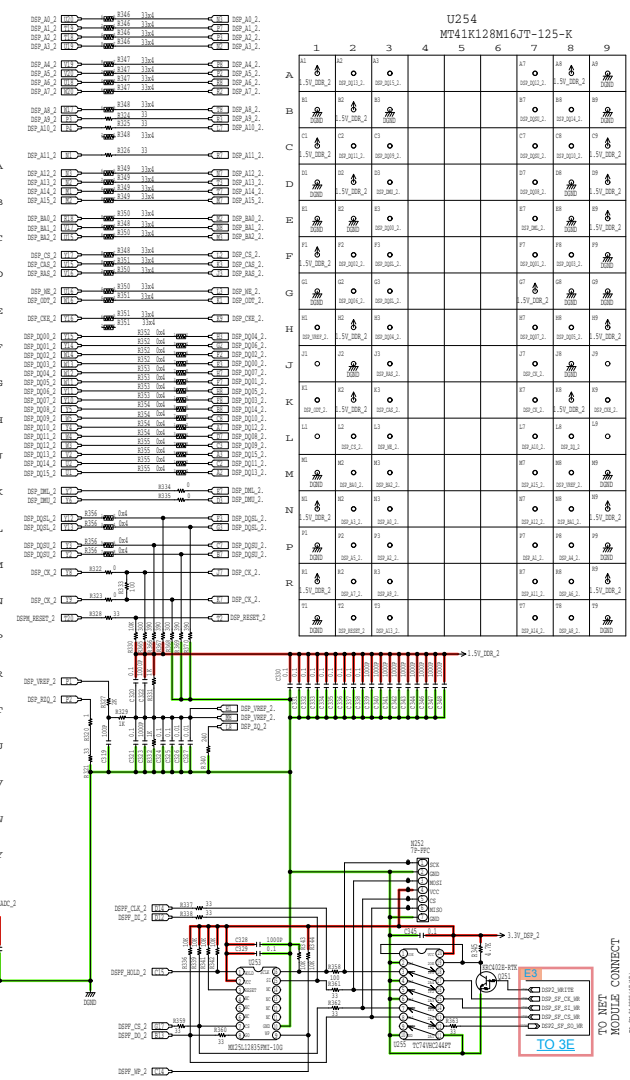
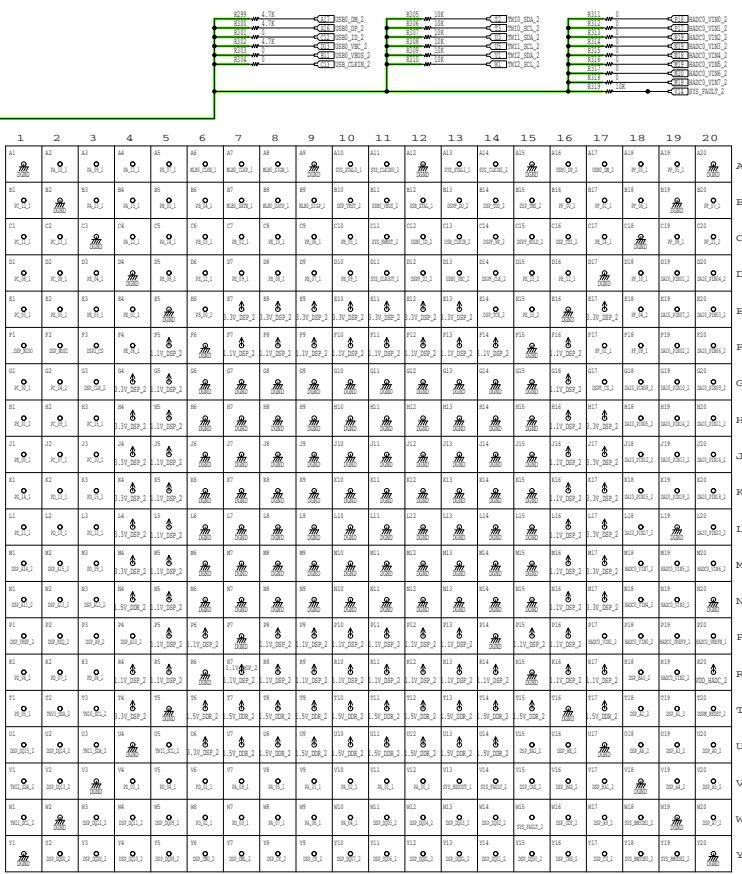
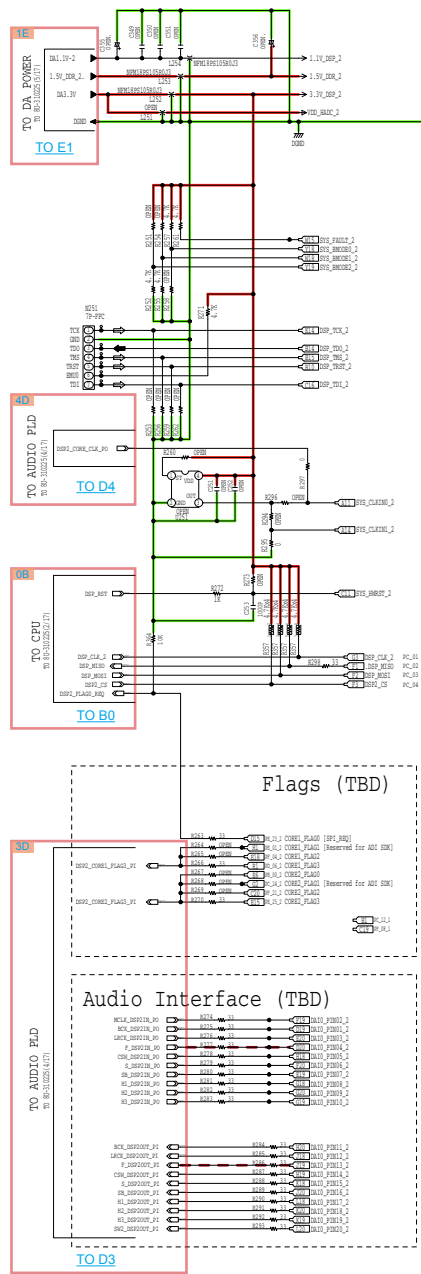


DIR/DA SUPPLY
8U-310225 (5/17)
DIGITAL_UNIT

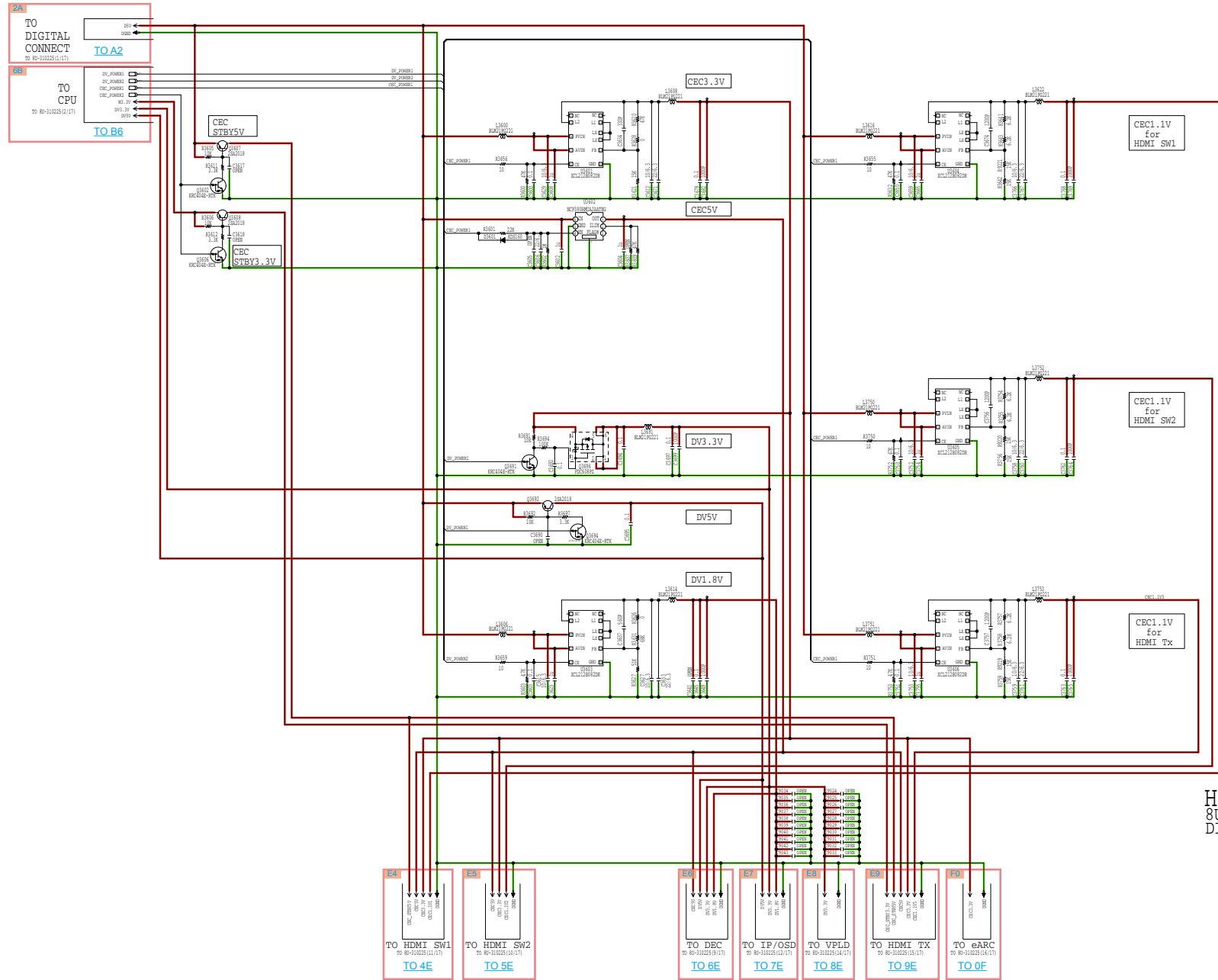
GND LINE POWER+ LINE POWER- LINE AUDIO SIGNAL TMD5 SIGNAL ANALOG VIDEO



GND LINE POWER+ LINE POWER- LINE AUDIO SIGNAL TMS SIGNAL ANALOG VIDEO



GND LINE POWER+ LINE POWER- LINE AUDIO SIGNAL TMS SIGNAL ANALOG VIDEO



HDMI_SUPPLY
8U-310225 (8/17)
DIGITAL_UNIT

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

SCH09_DECODER

All Ref.No. has 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.

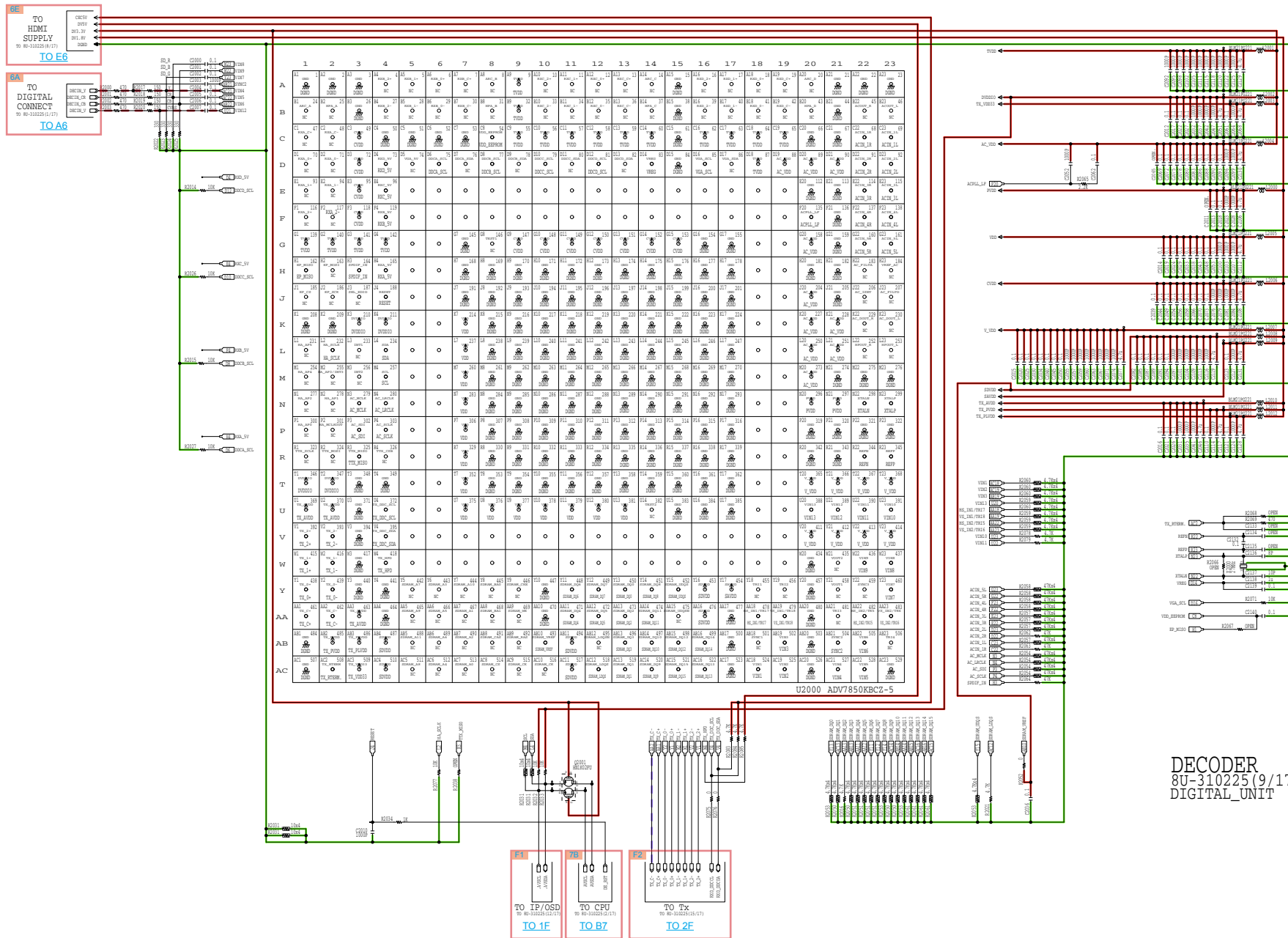
Before Servicing
 This Unit

Electrical

Mechanical

Repair Information

Updating

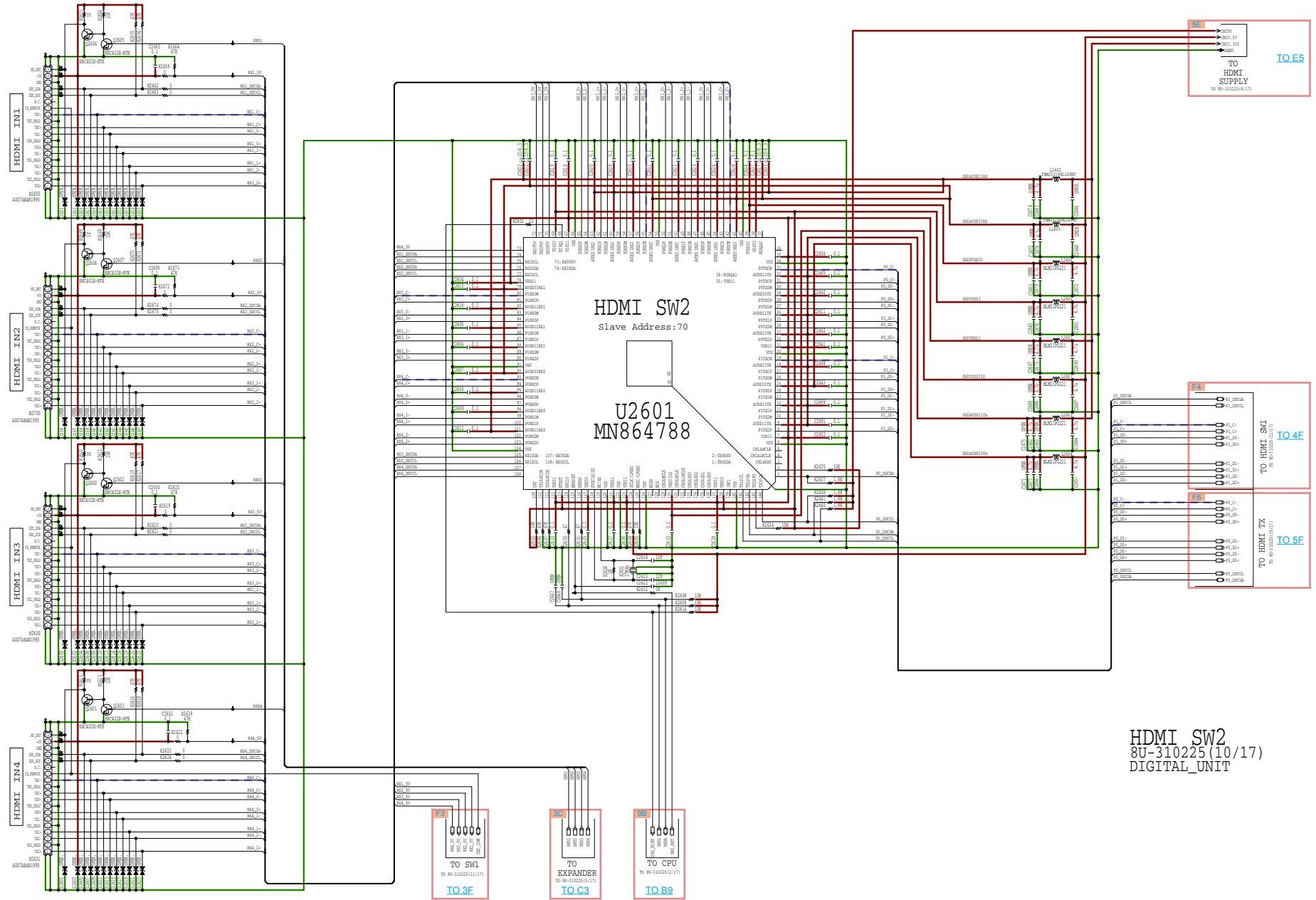


DECODER
 8U-310225(9/17)
 DIGITAL_UNIT

GND LINE POWER+ LINE POWER- LINE AUDIO SIGNAL TMSD SIGNAL ANALOG VIDEO

SCH10_HDMI SW2

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

HDMI SW2
8U-310225 (10/17)
DIGITAL_UNIT

Before Servicing
This Unit

Electrical

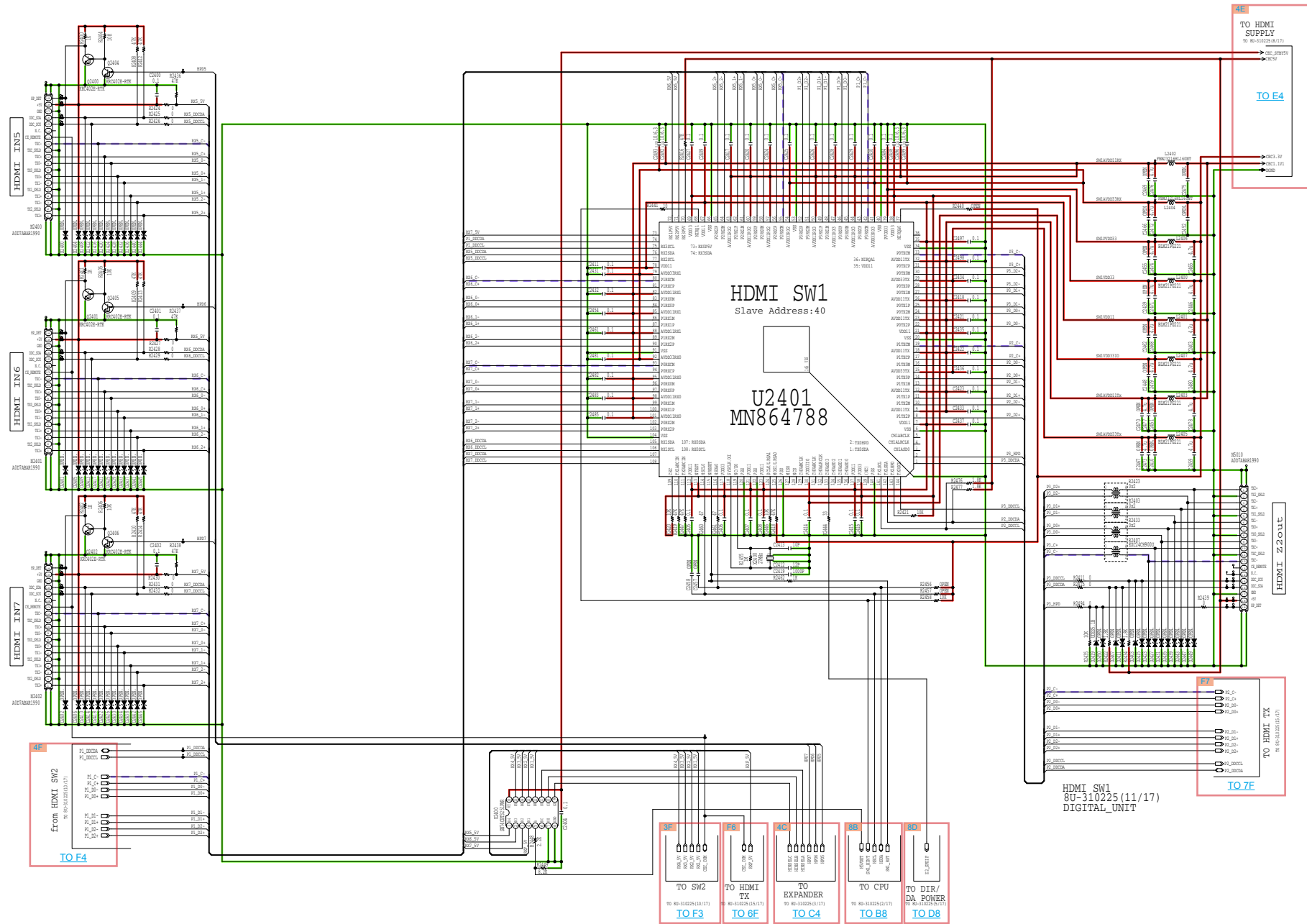
Mechanical

Repair Information

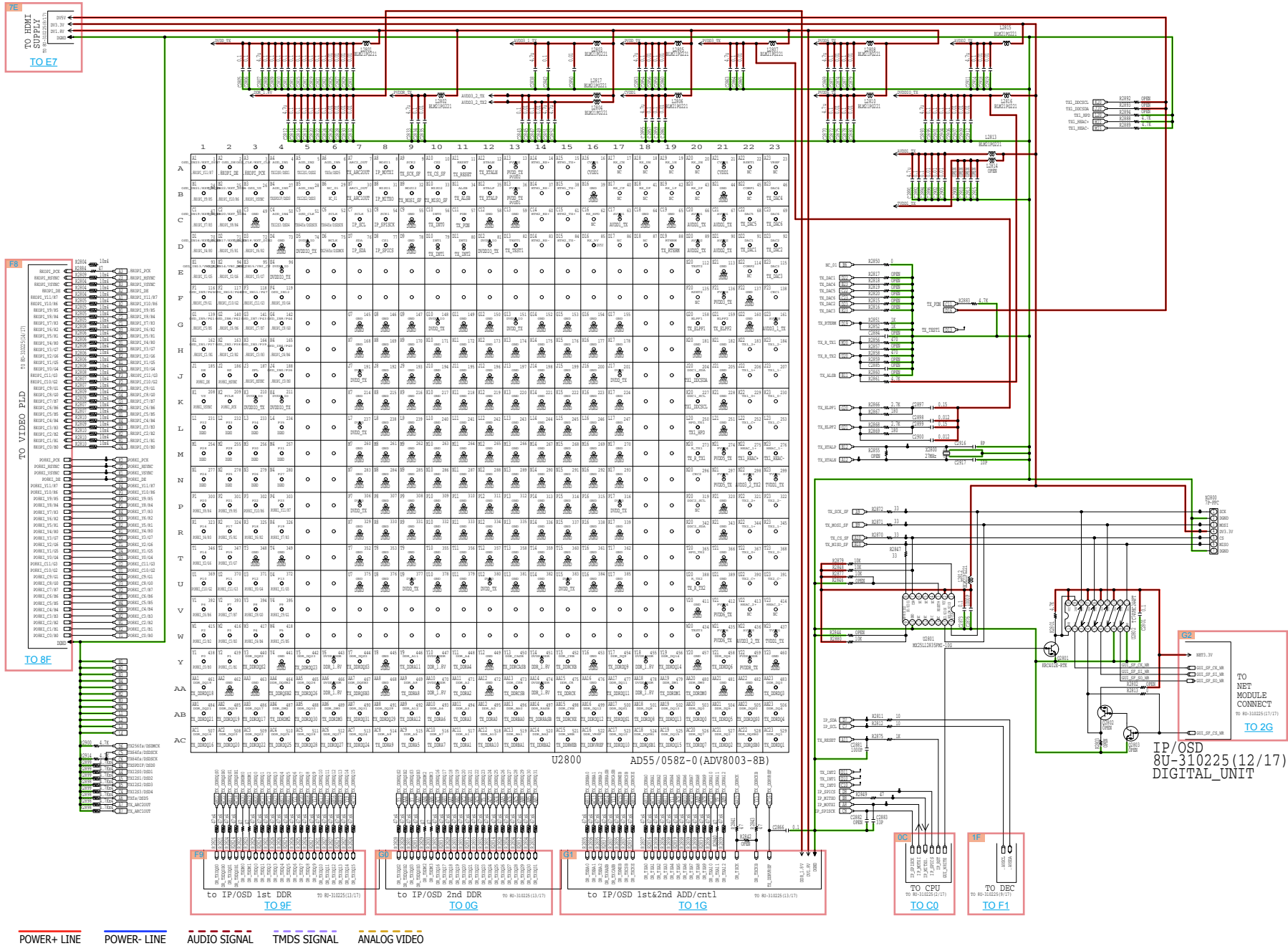
Updating

SCH11_HDMI SW1

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



Before Servicing
This Unit

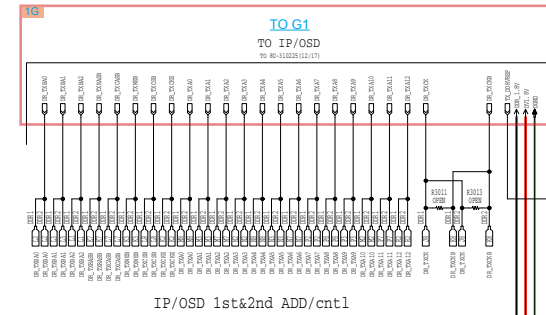
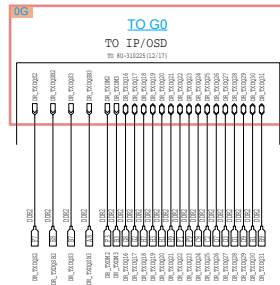
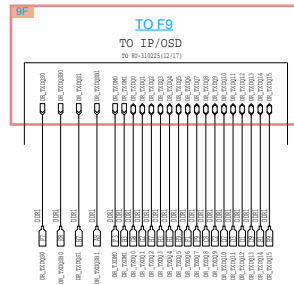
Electrical

Mechanical

Repair Information

Updating

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.

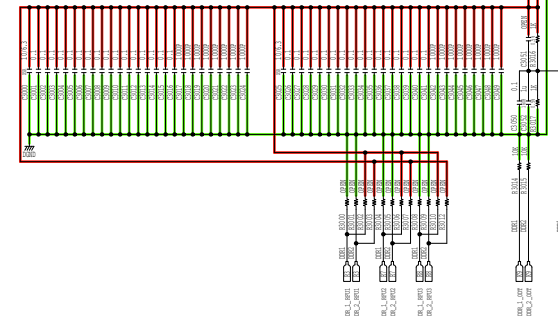


	1	2	3	4	5	6	7	8	9
A	U3000_1	U3000_2	U3000_3	U3000_4	U3000_5	U3000_6	U3000_7	U3000_8	U3000_9
B	U3000_10	U3000_11	U3000_12	U3000_13	U3000_14	U3000_15	U3000_16	U3000_17	U3000_18
C	U3000_19	U3000_20	U3000_21	U3000_22	U3000_23	U3000_24	U3000_25	U3000_26	U3000_27
D	U3000_28	U3000_29	U3000_30	U3000_31	U3000_32	U3000_33	U3000_34	U3000_35	U3000_36
E	U3000_37	U3000_38	U3000_39	U3000_40	U3000_41	U3000_42	U3000_43	U3000_44	U3000_45
F	U3000_46	U3000_47	U3000_48	U3000_49	U3000_50	U3000_51	U3000_52	U3000_53	U3000_54
G	U3000_55	U3000_56	U3000_57	U3000_58	U3000_59	U3000_60	U3000_61	U3000_62	U3000_63
H	U3000_64	U3000_65	U3000_66	U3000_67	U3000_68	U3000_69	U3000_70	U3000_71	U3000_72
J	U3000_73	U3000_74	U3000_75	U3000_76	U3000_77	U3000_78	U3000_79	U3000_80	U3000_81
K	U3000_82	U3000_83	U3000_84	U3000_85	U3000_86	U3000_87	U3000_88	U3000_89	U3000_90
L	U3000_91	U3000_92	U3000_93	U3000_94	U3000_95	U3000_96	U3000_97	U3000_98	U3000_99
M	U3000_100	U3000_101	U3000_102	U3000_103	U3000_104	U3000_105	U3000_106	U3000_107	U3000_108
N	U3000_109	U3000_110	U3000_111	U3000_112	U3000_113	U3000_114	U3000_115	U3000_116	U3000_117
P	U3000_118	U3000_119	U3000_120	U3000_121	U3000_122	U3000_123	U3000_124	U3000_125	U3000_126
R	U3000_127	U3000_128	U3000_129	U3000_130	U3000_131	U3000_132	U3000_133	U3000_134	U3000_135

U3000
A3R1GE40JBF-8E
IP/OSD 1st DDR

	1	2	3	4	5	6	7	8	9
A	U3001_1	U3001_2	U3001_3	U3001_4	U3001_5	U3001_6	U3001_7	U3001_8	U3001_9
B	U3001_10	U3001_11	U3001_12	U3001_13	U3001_14	U3001_15	U3001_16	U3001_17	U3001_18
C	U3001_19	U3001_20	U3001_21	U3001_22	U3001_23	U3001_24	U3001_25	U3001_26	U3001_27
D	U3001_28	U3001_29	U3001_30	U3001_31	U3001_32	U3001_33	U3001_34	U3001_35	U3001_36
E	U3001_37	U3001_38	U3001_39	U3001_40	U3001_41	U3001_42	U3001_43	U3001_44	U3001_45
F	U3001_46	U3001_47	U3001_48	U3001_49	U3001_50	U3001_51	U3001_52	U3001_53	U3001_54
G	U3001_55	U3001_56	U3001_57	U3001_58	U3001_59	U3001_60	U3001_61	U3001_62	U3001_63
H	U3001_64	U3001_65	U3001_66	U3001_67	U3001_68	U3001_69	U3001_70	U3001_71	U3001_72
J	U3001_73	U3001_74	U3001_75	U3001_76	U3001_77	U3001_78	U3001_79	U3001_80	U3001_81
K	U3001_82	U3001_83	U3001_84	U3001_85	U3001_86	U3001_87	U3001_88	U3001_89	U3001_90
L	U3001_91	U3001_92	U3001_93	U3001_94	U3001_95	U3001_96	U3001_97	U3001_98	U3001_99
M	U3001_100	U3001_101	U3001_102	U3001_103	U3001_104	U3001_105	U3001_106	U3001_107	U3001_108
N	U3001_109	U3001_110	U3001_111	U3001_112	U3001_113	U3001_114	U3001_115	U3001_116	U3001_117
P	U3001_118	U3001_119	U3001_120	U3001_121	U3001_122	U3001_123	U3001_124	U3001_125	U3001_126
R	U3001_127	U3001_128	U3001_129	U3001_130	U3001_131	U3001_132	U3001_133	U3001_134	U3001_135

U3001
A3R1GE40JBF-8E
IP/OSD 2nd DDR

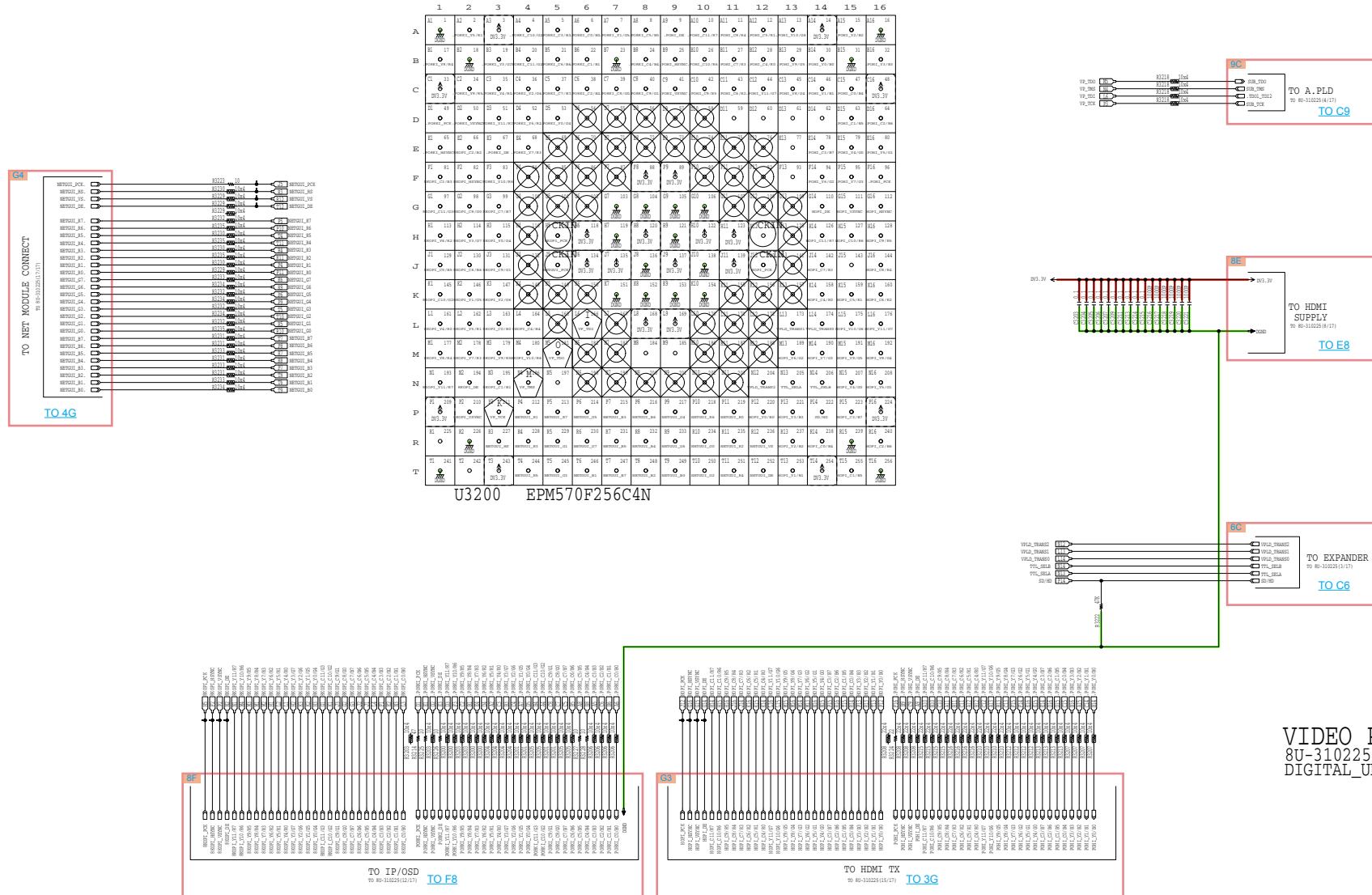


GND LINE POWER+ LINE POWER- LINE AUDIO SIGNAL TMD5 SIGNAL ANALOG VIDEO

IP/OSD DDR
8U-310225(13/17)
DIGITAL_UNIT

SCH14_VIDEO PLD

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.



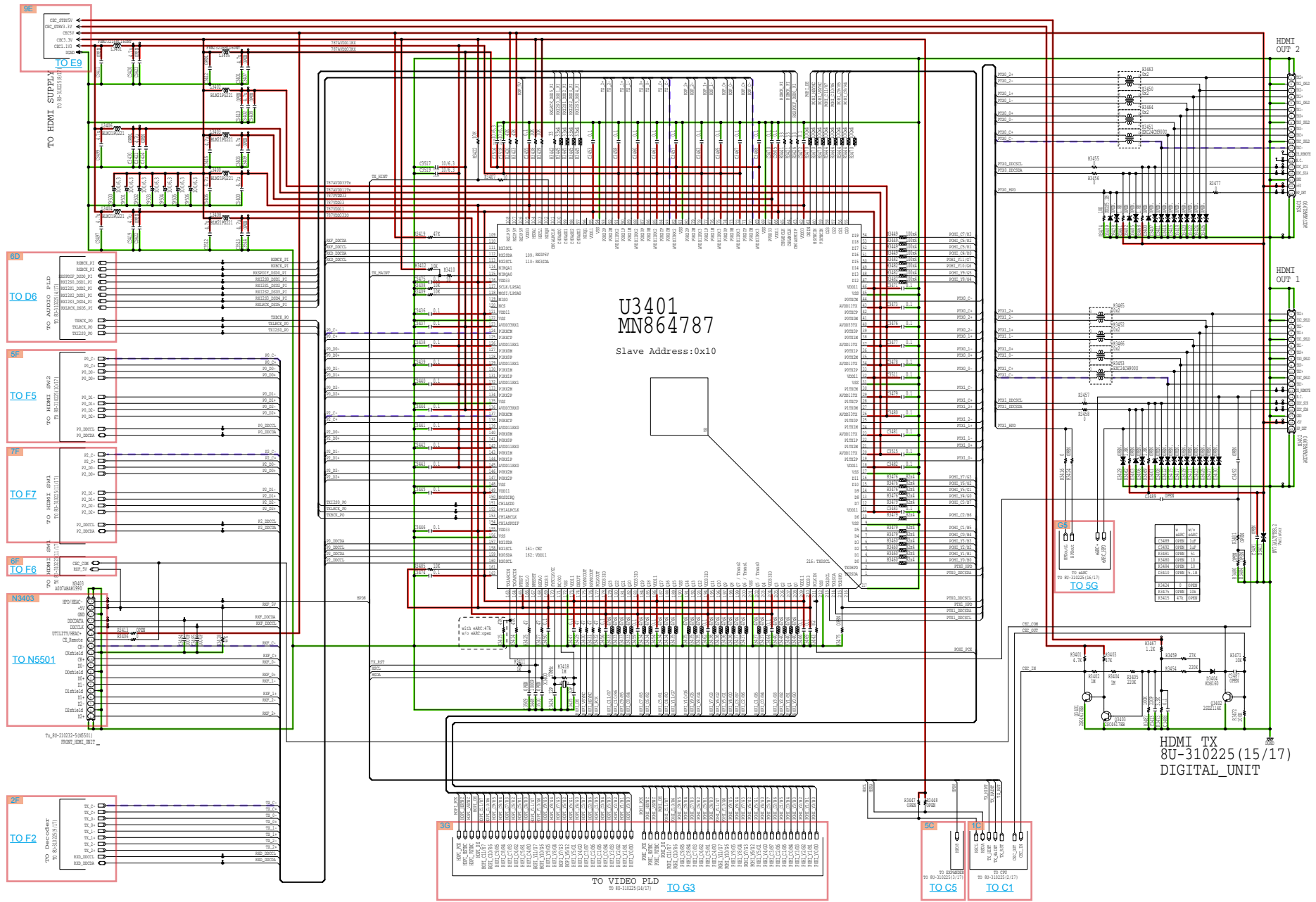
Before Servicing
This Unit

Electrical

Mechanical

Repair Information

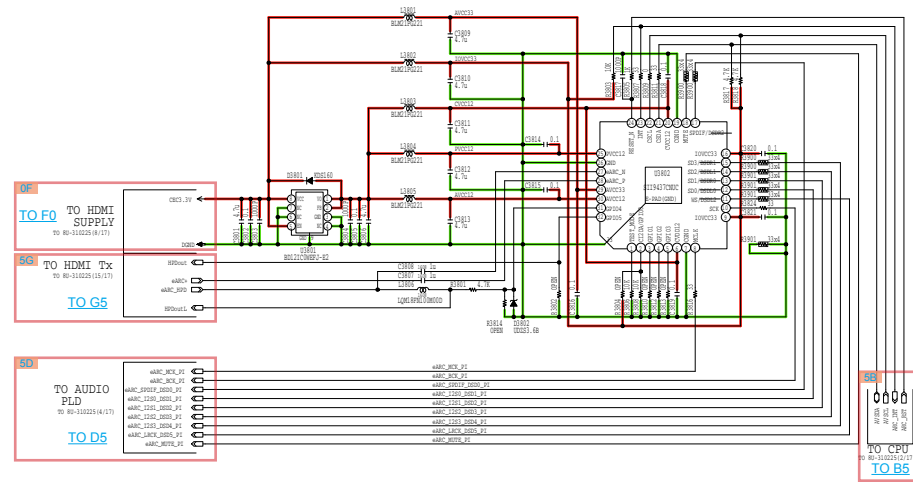
Updating



U3401
 MN864787
 Slave Address:0x10

HDMI TX
 8U-310225 (15/17)
 DIGITAL_UNIT

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

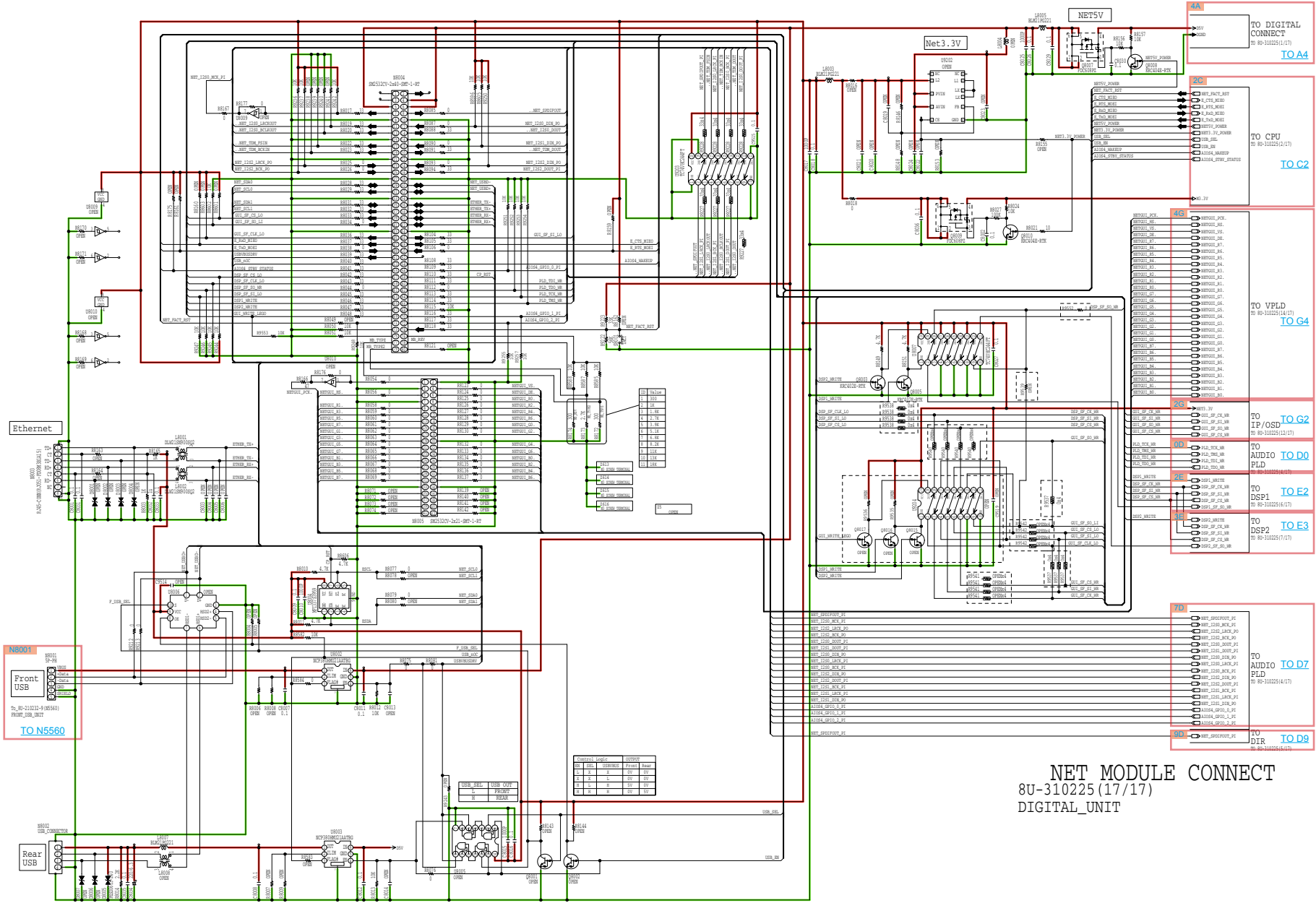


GND LINE POWER+ LINE POWER- LINE AUDIO SIGNAL TMDS SIGNAL ANALOG VIDEO

eARC
 8U-310225 (16/17)
 DIGITAL_UNIT

SCH17_NET MODULE 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.



NET MODULE CONNECT
8U-310225 (17/17)
DIGITAL_UNIT

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

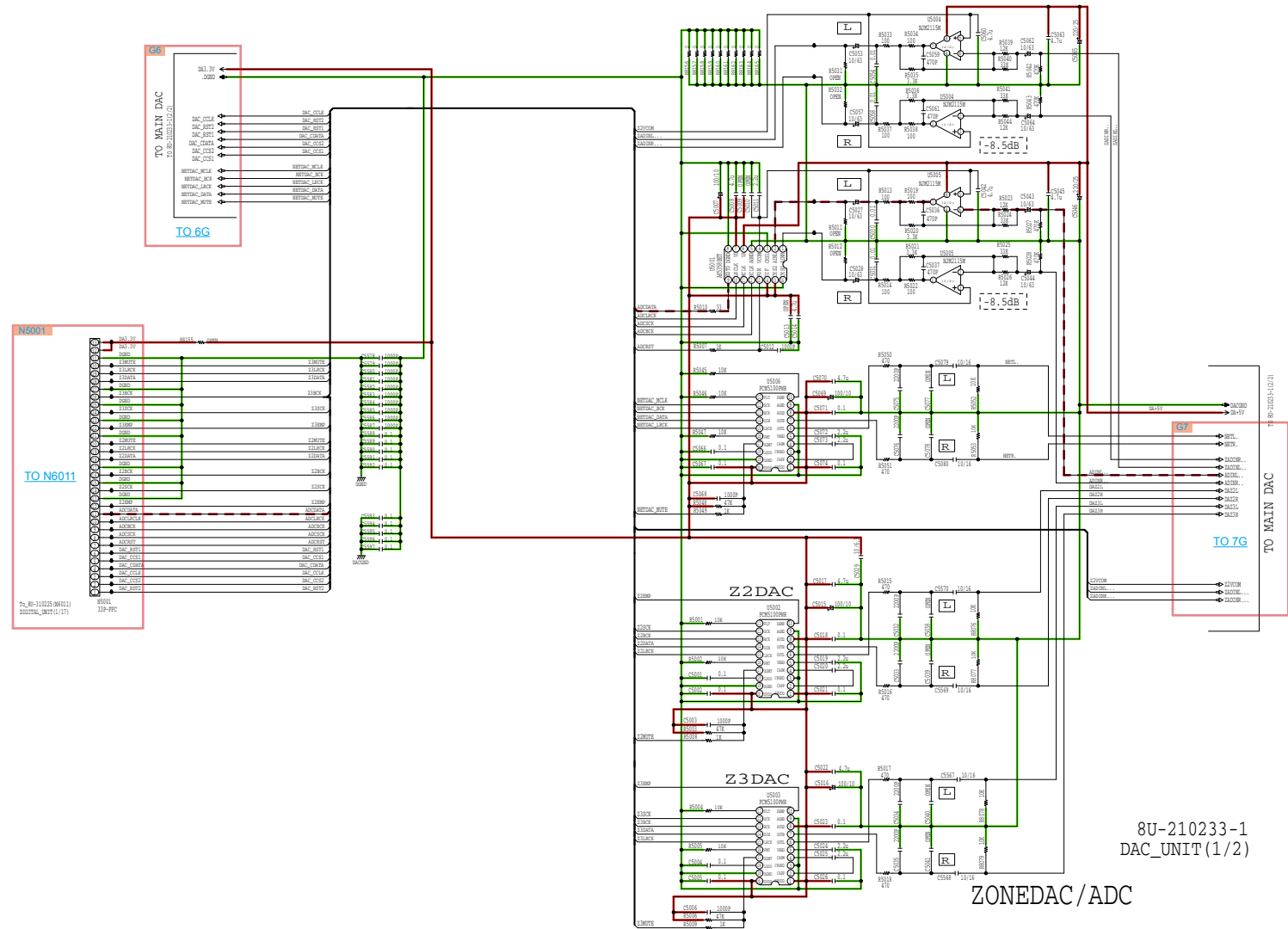
Before Servicing
This Unit

Electrical

Mechanical

Repair Information

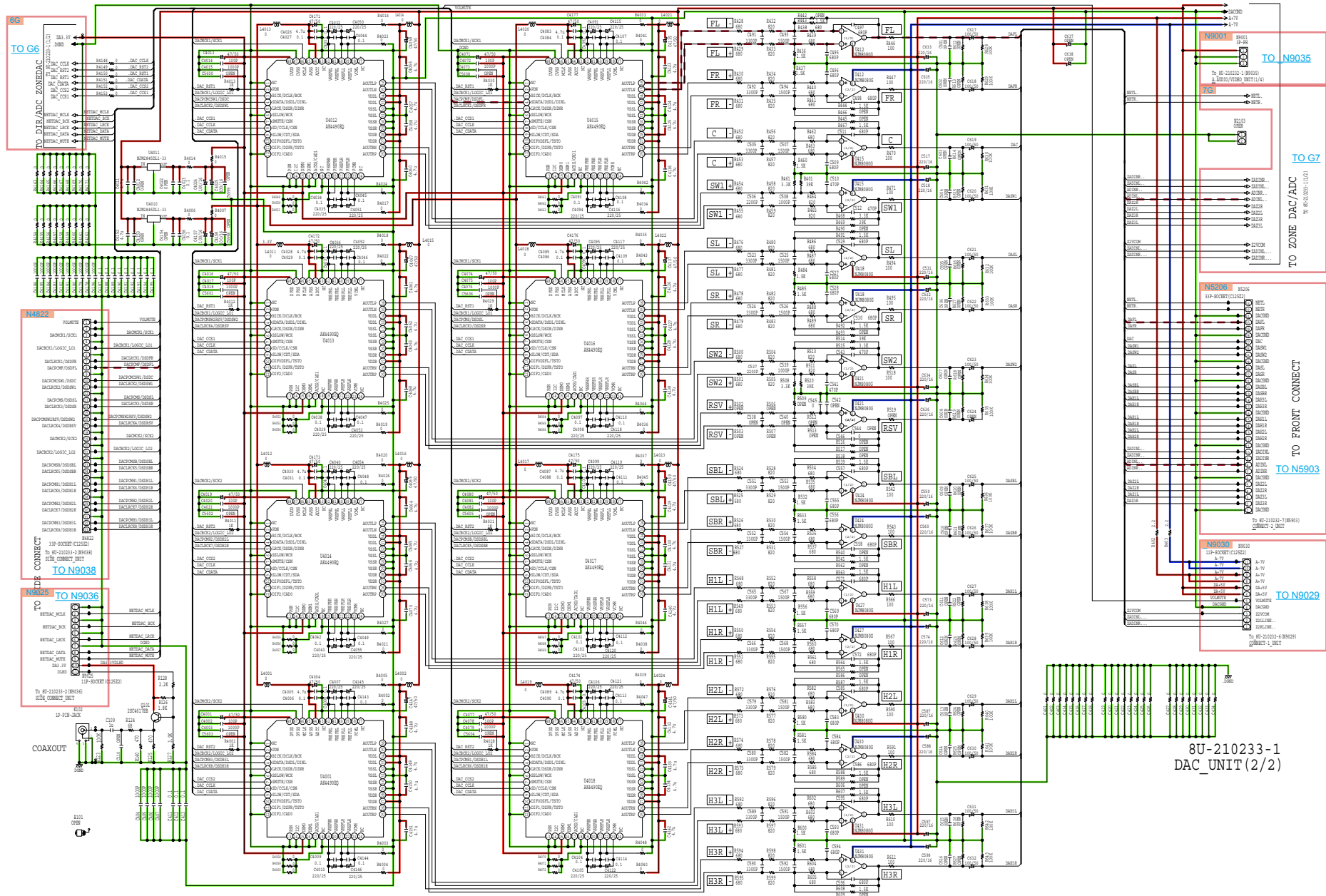
Updating



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

SCH19_MAIN DAC

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.



8U-210233-1
DAC_UNIT(2/2)

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

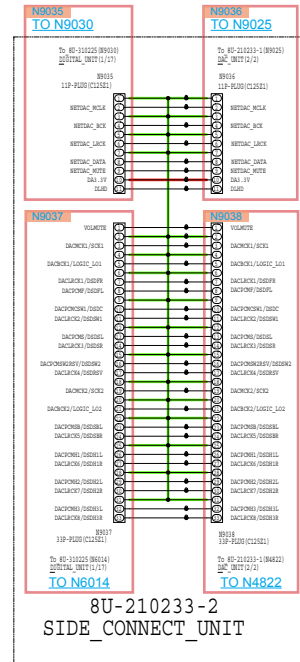
Before Servicing
This Unit

Electrical

Mechanical

Repair Information

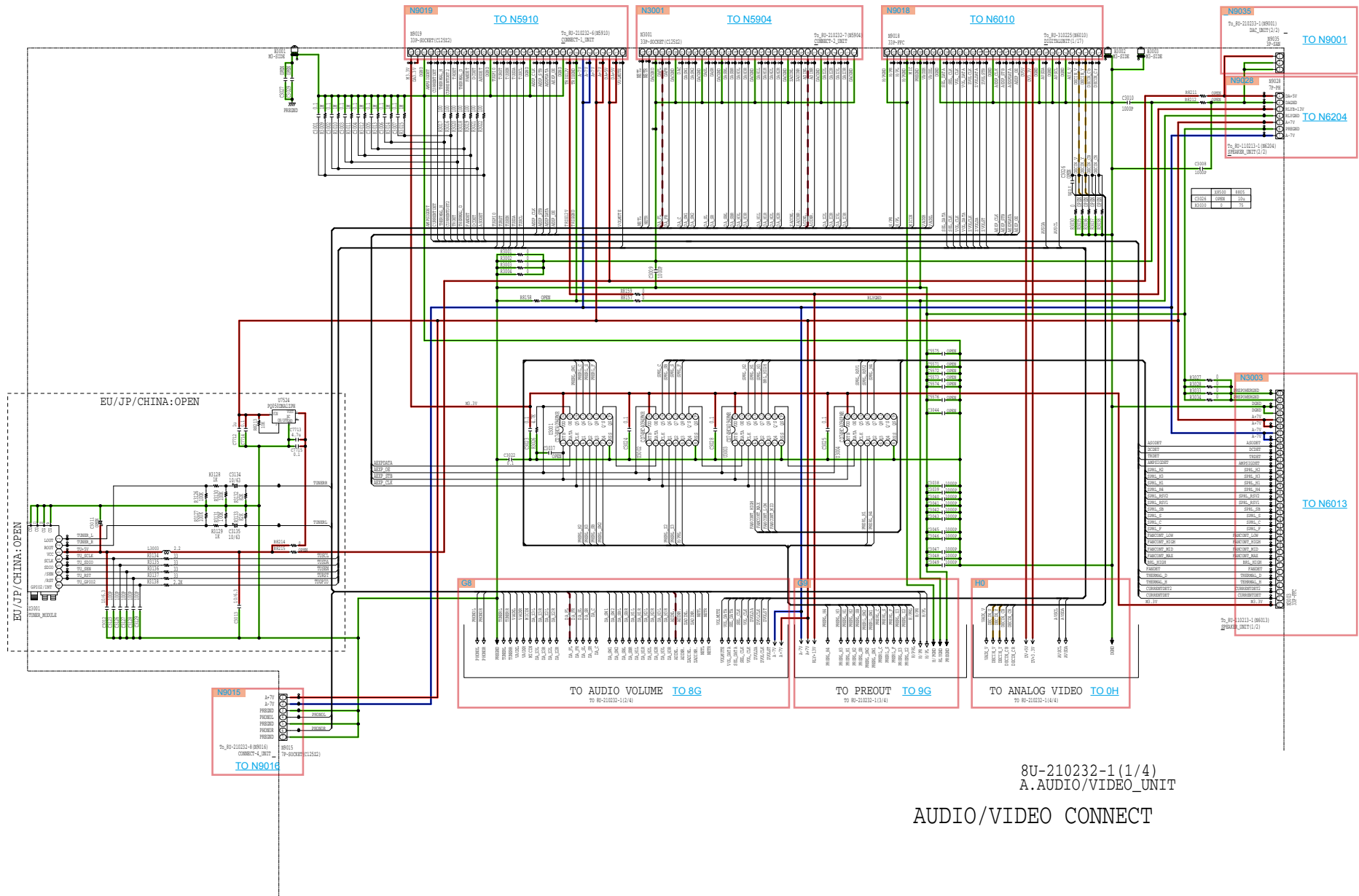
Updating



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

SCH21_AUDIO, VIDEO 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.

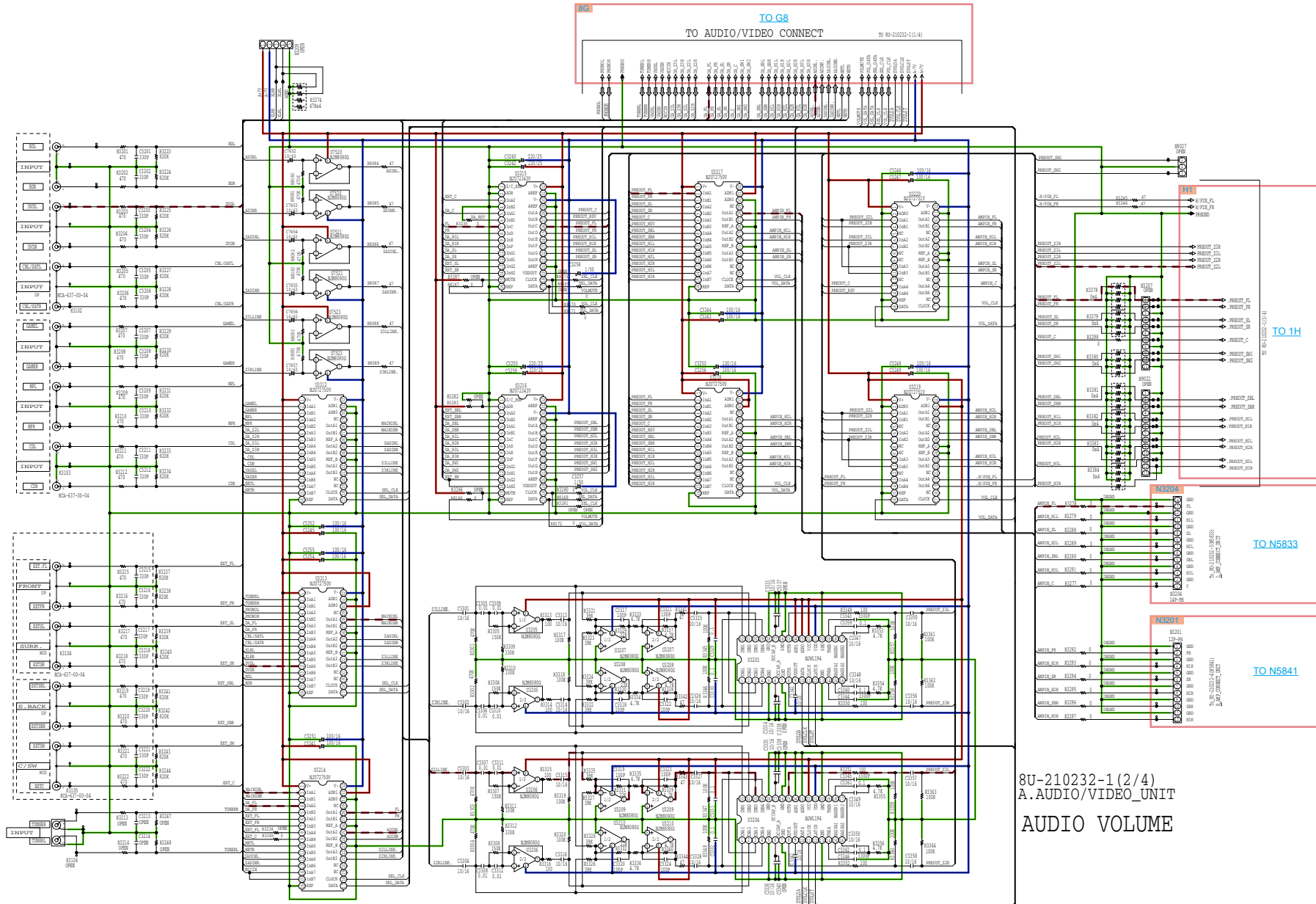


8U-210232-1(1/4)
A.AUDIO/VIDEO_UNIT
AUDIO/VIDEO CONNECT

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

SCH22_AUDIO VOLUME

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.



8U-210232-1(2/4)
A. AUDIO/VIDEO_UNIT
AUDIO VOLUME

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

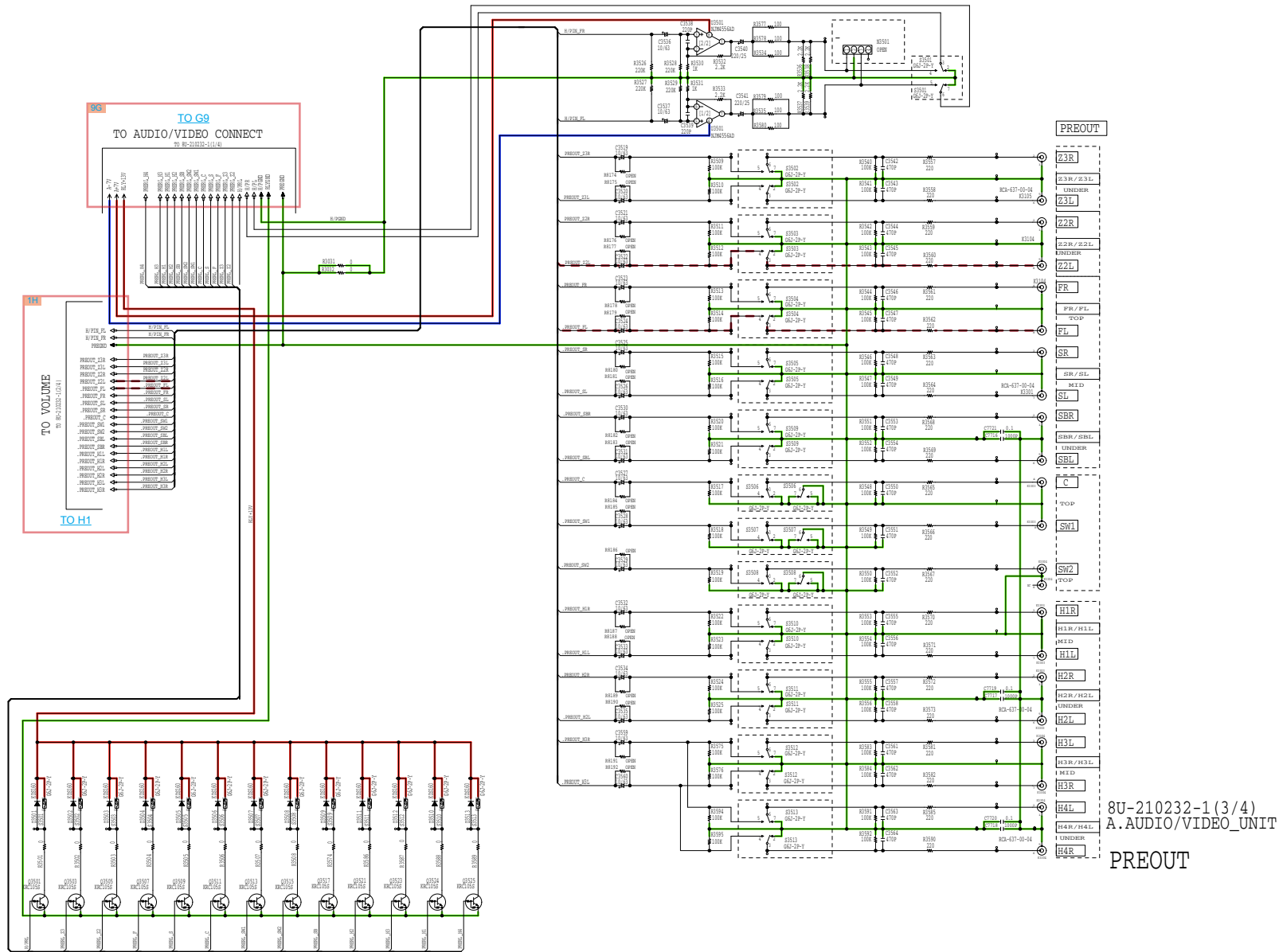
Before Servicing
This Unit

Electrical

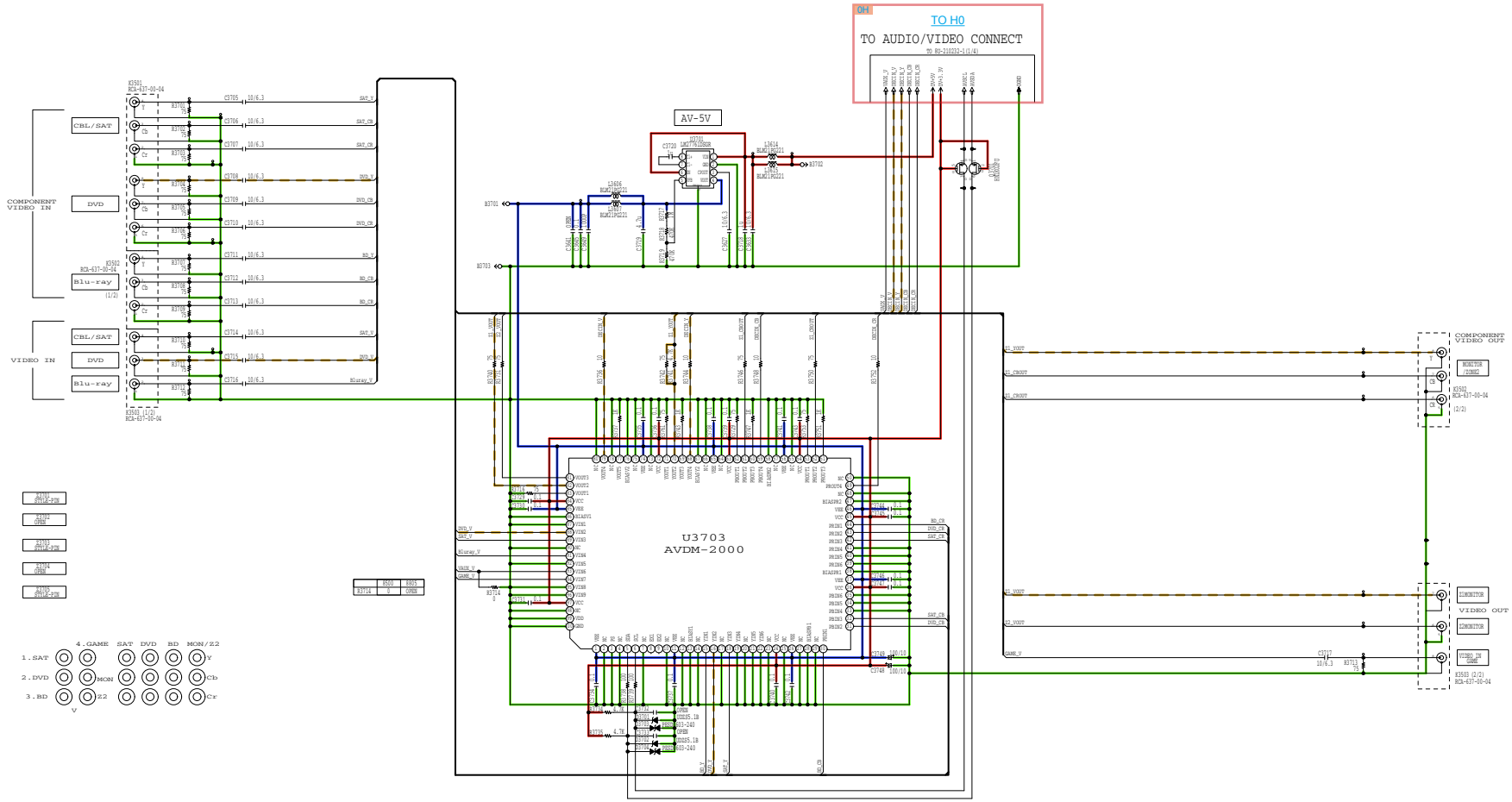
Mechanical

Repair Information

Updating

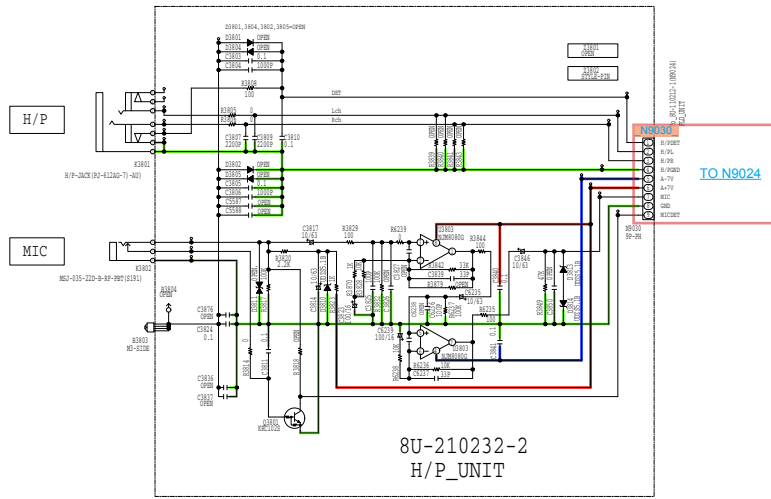


GND LINE POWER+ LINE POWER- LINE AUDIO SIGNAL TMDS SIGNAL ANALOG VIDEO



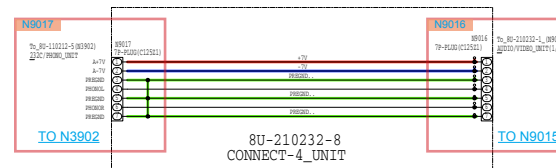
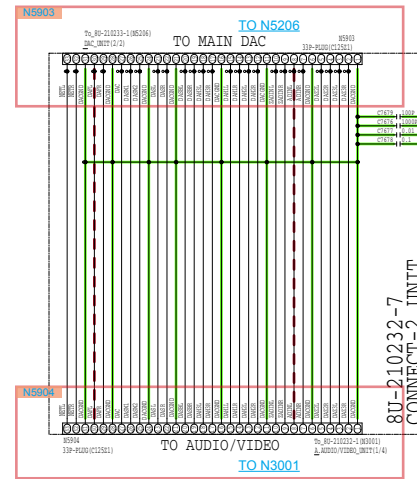
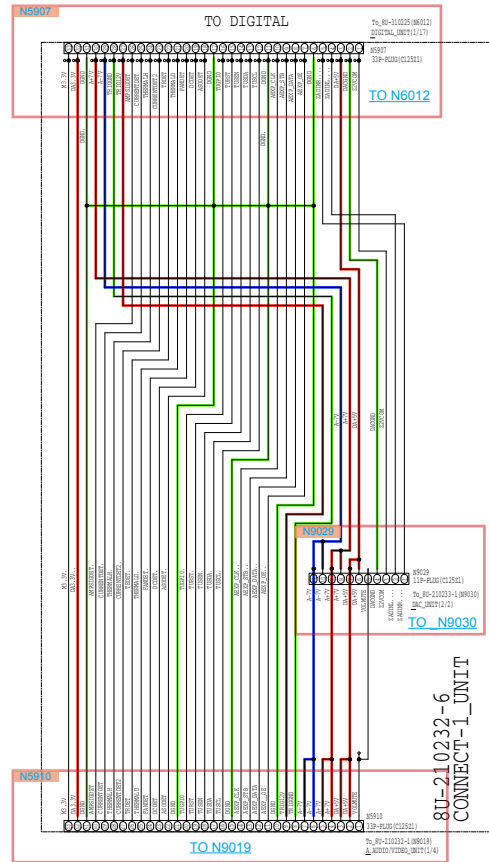
8U-210232-1(4/4)
 A.AUDIO/VIDEO_UNIT
 VIDEO SELECTOR

GND LINE POWER+ LINE POWER- LINE AUDIO SIGNAL TMD5 SIGNAL ANALOG VIDEO



H/P

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

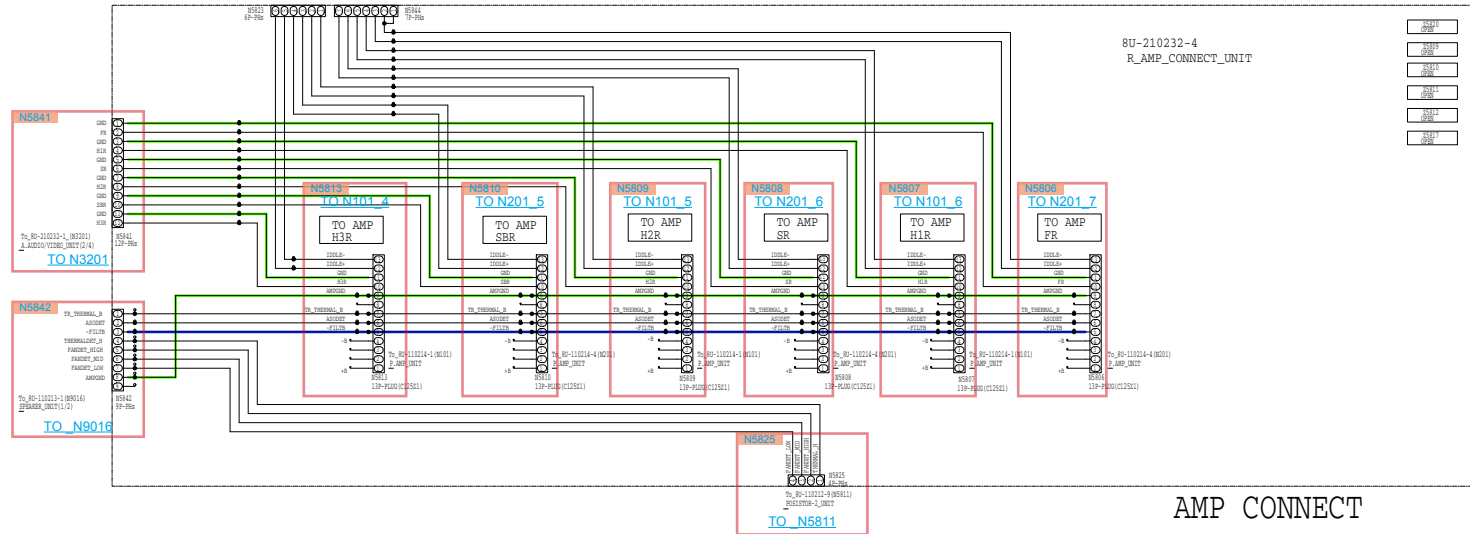
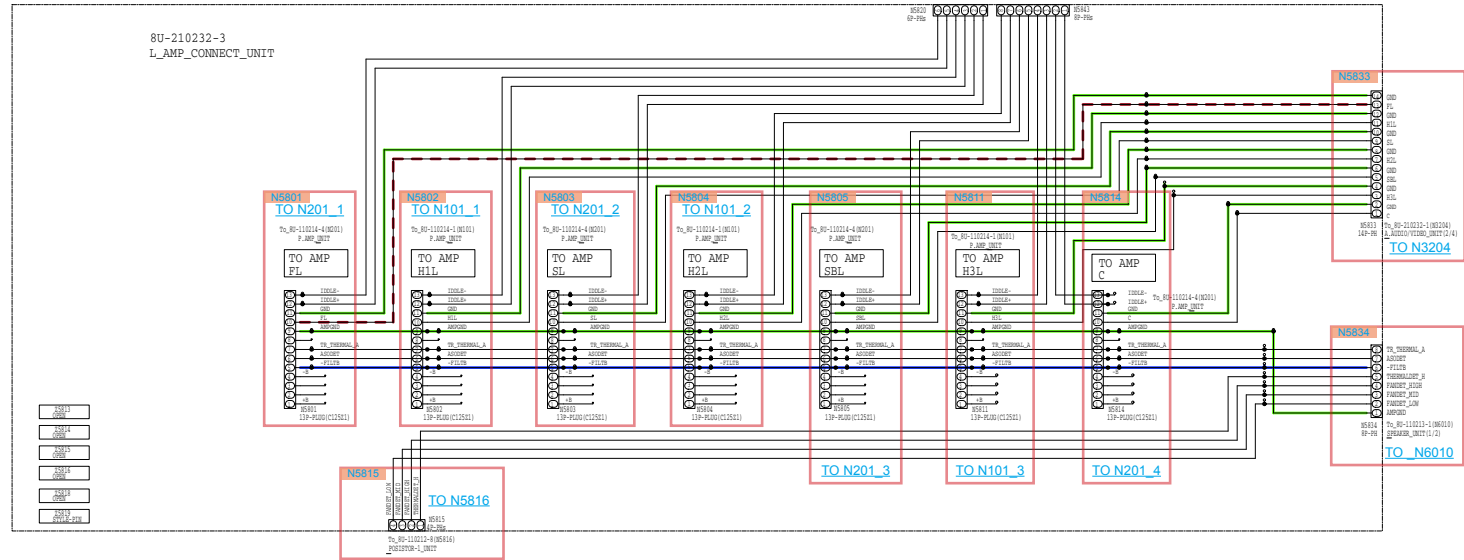


CONNECT

GND LINE POWER+ LINE POWER- LINE AUDIO SIGNAL TMD5 SIGNAL ANALOG VIDEO

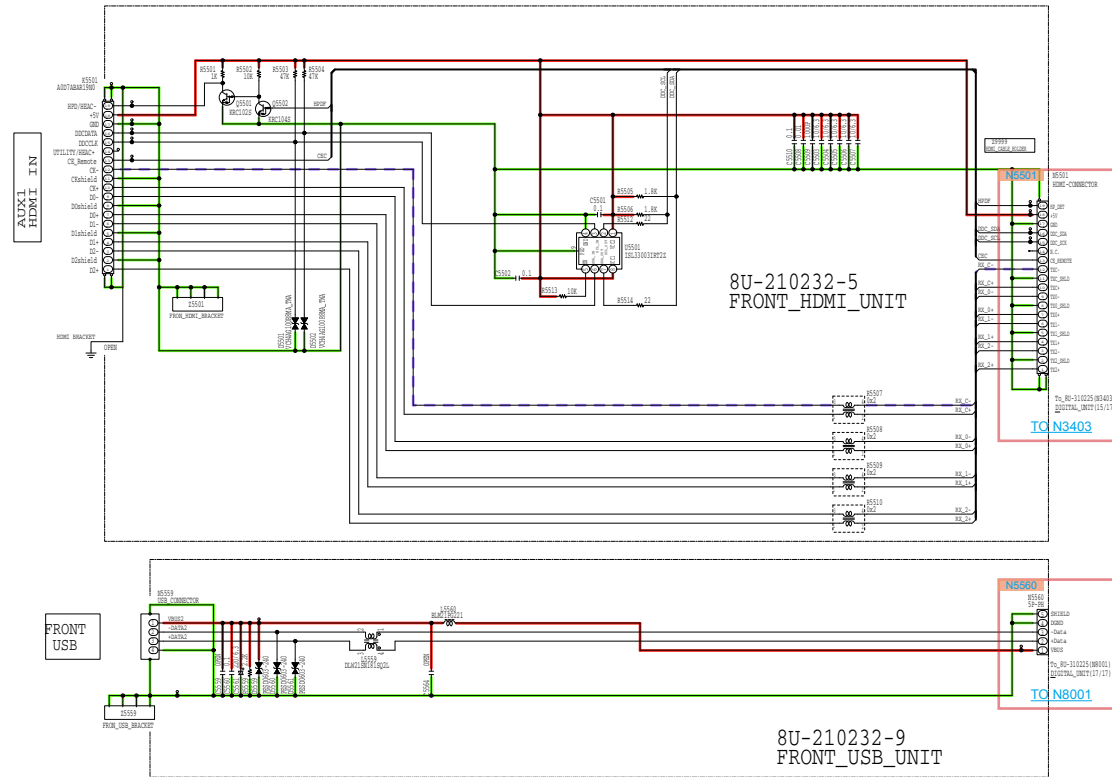
SCH27_AMP CONNECT

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.



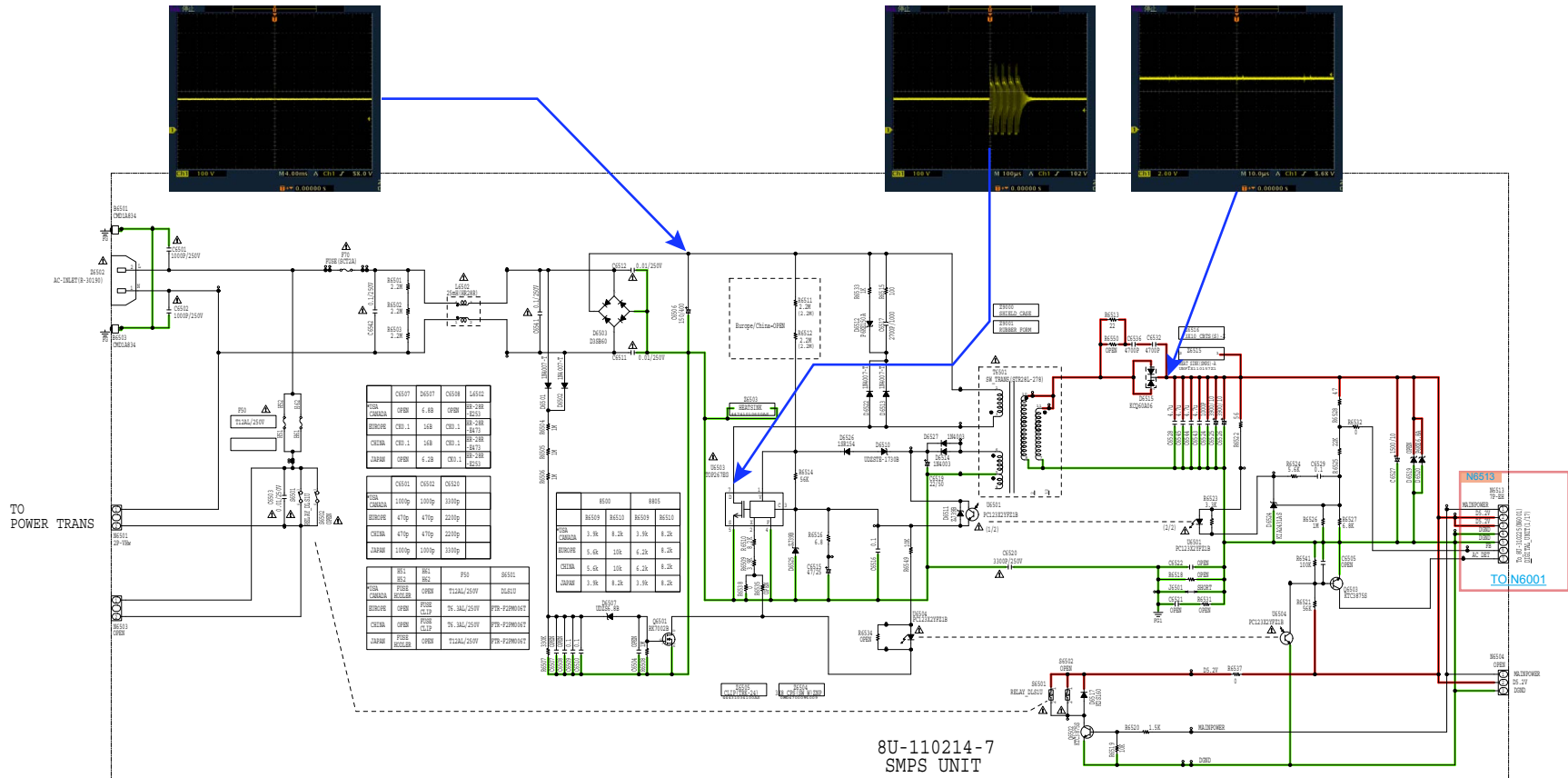
AMP CONNECT

GND LINE POWER+ LINE POWER- LINE AUDIO SIGNAL TMD5 SIGNAL ANALOG VIDEO



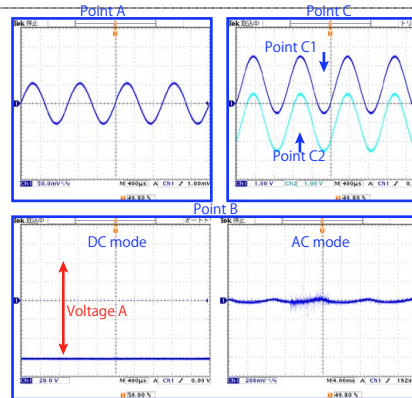
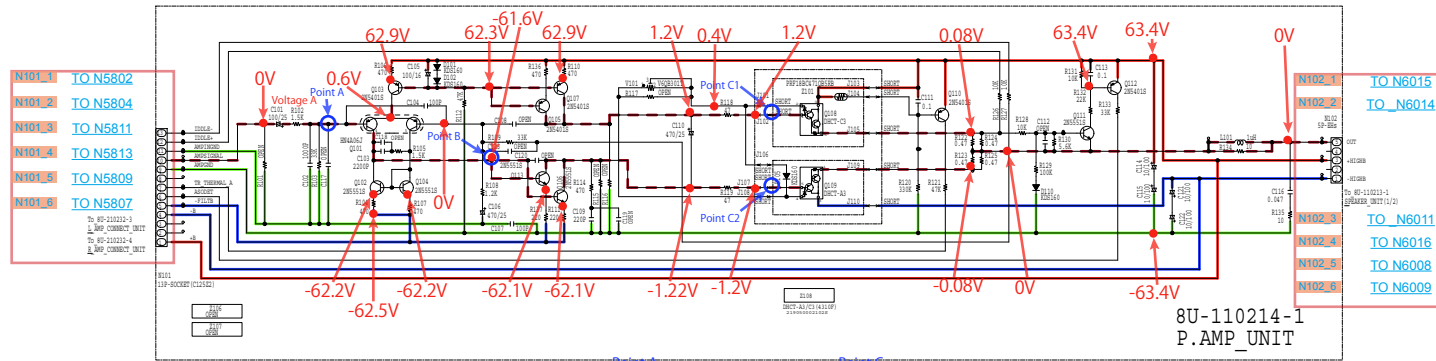
FRONT HDMI/USB

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



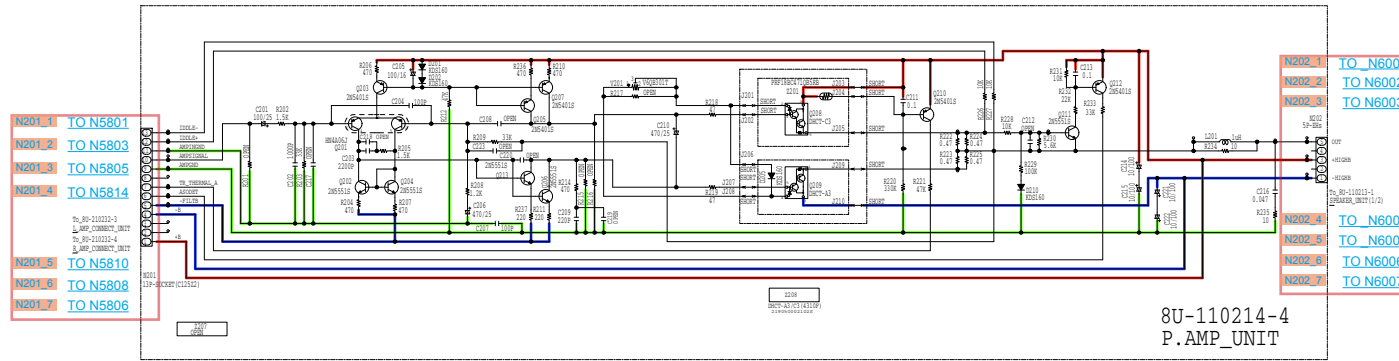
SMPS

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



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

POWER AMP



POWER AMP

Before Servicing
This Unit

Electrical

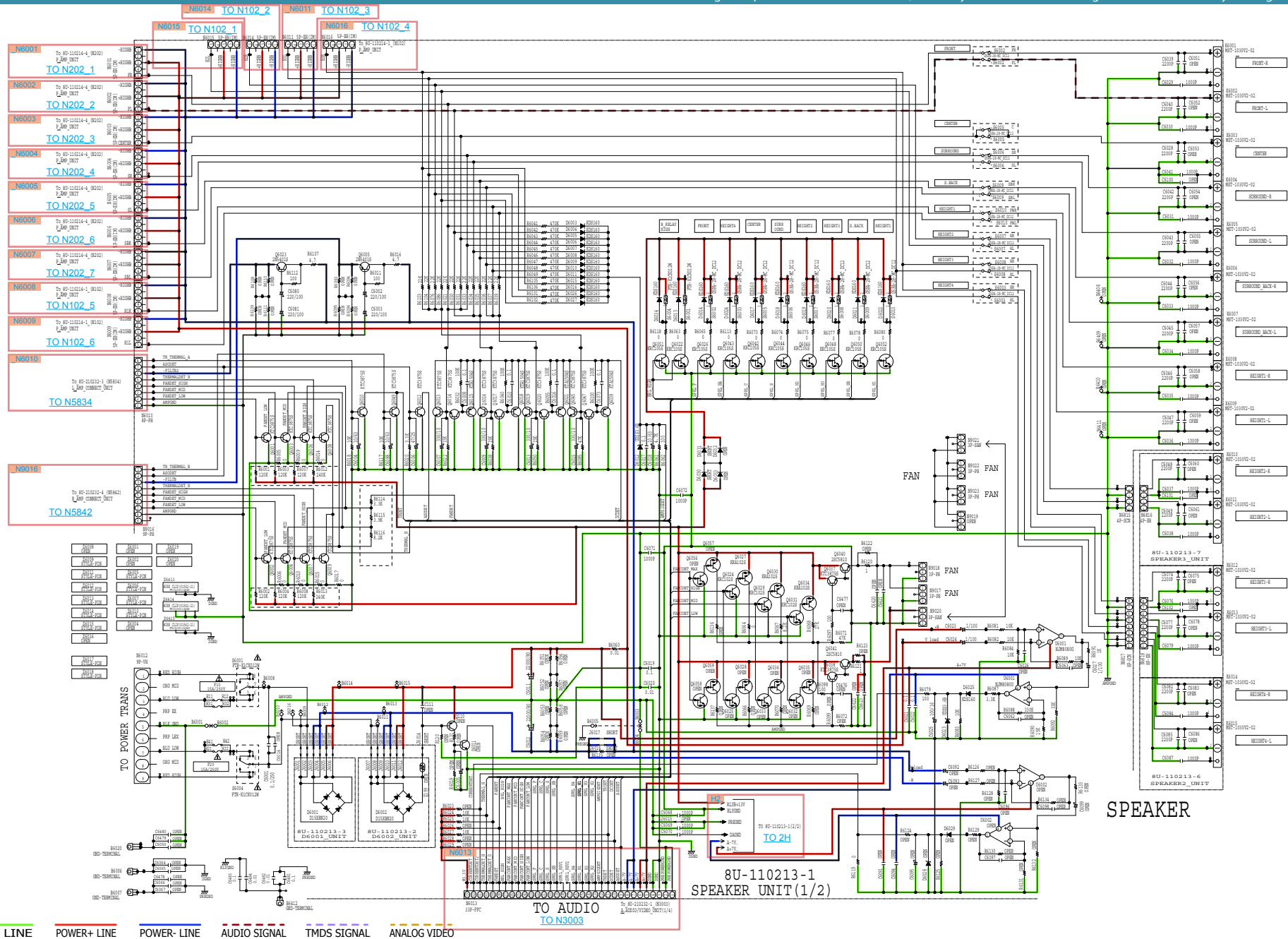
Mechanical

Repair Information

Updating

SCH32_SPEAKER

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 TMSD SIGNAL ANALOG VIDEO

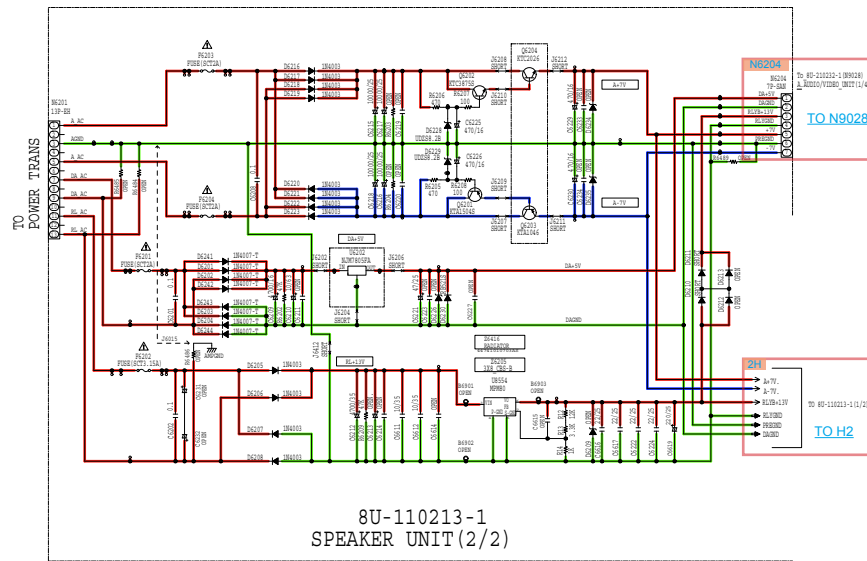
Before Servicing
This Unit

Electrical

Mechanical

Repair Information

Updating

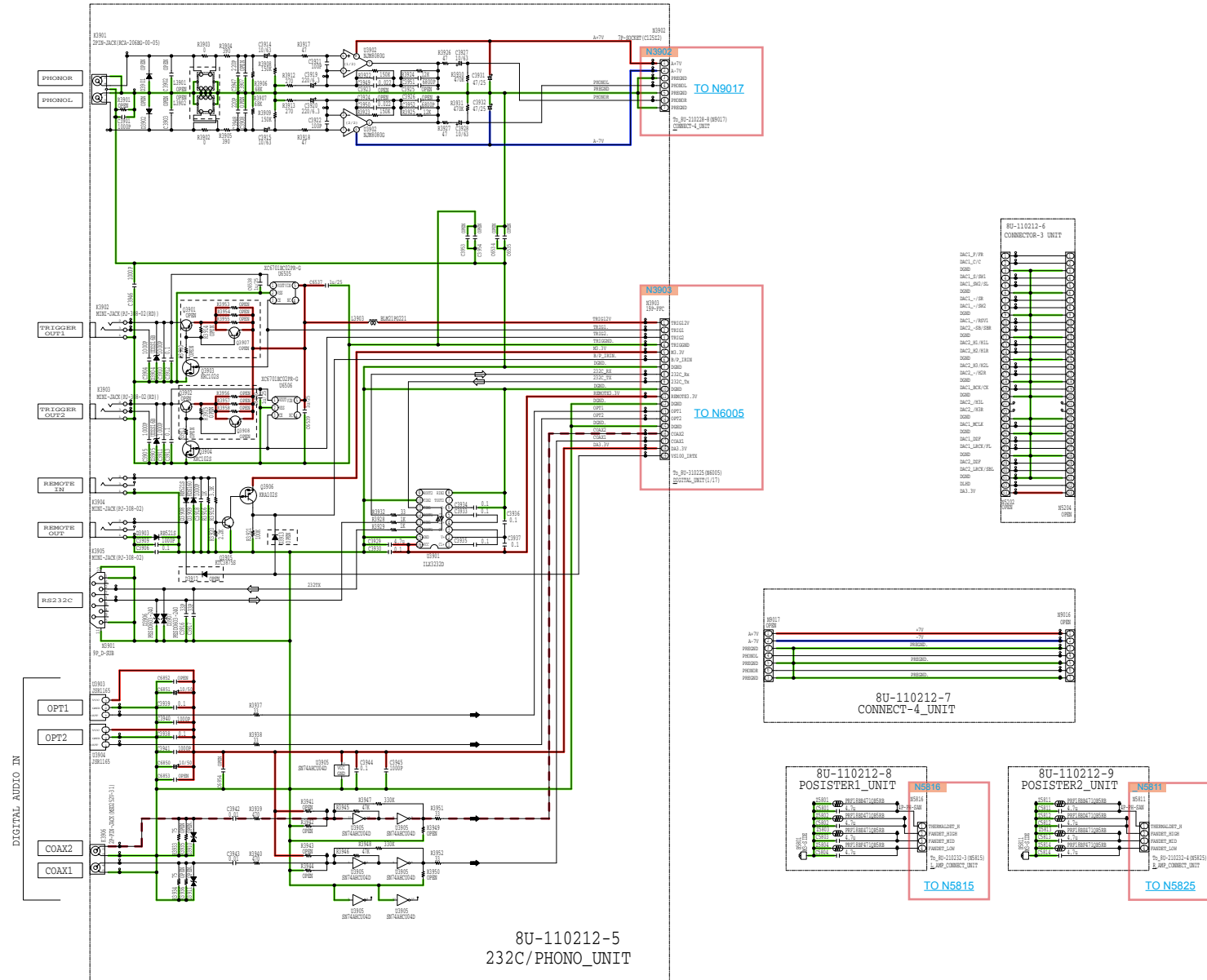


REG

GND LINE POWER+ LINE POWER- LINE AUDIO SIGNAL TMSD SIGNAL ANALOG VIDEO

SCH34_232C PHONO

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 TMS SIGNAL ANALOG VIDEO

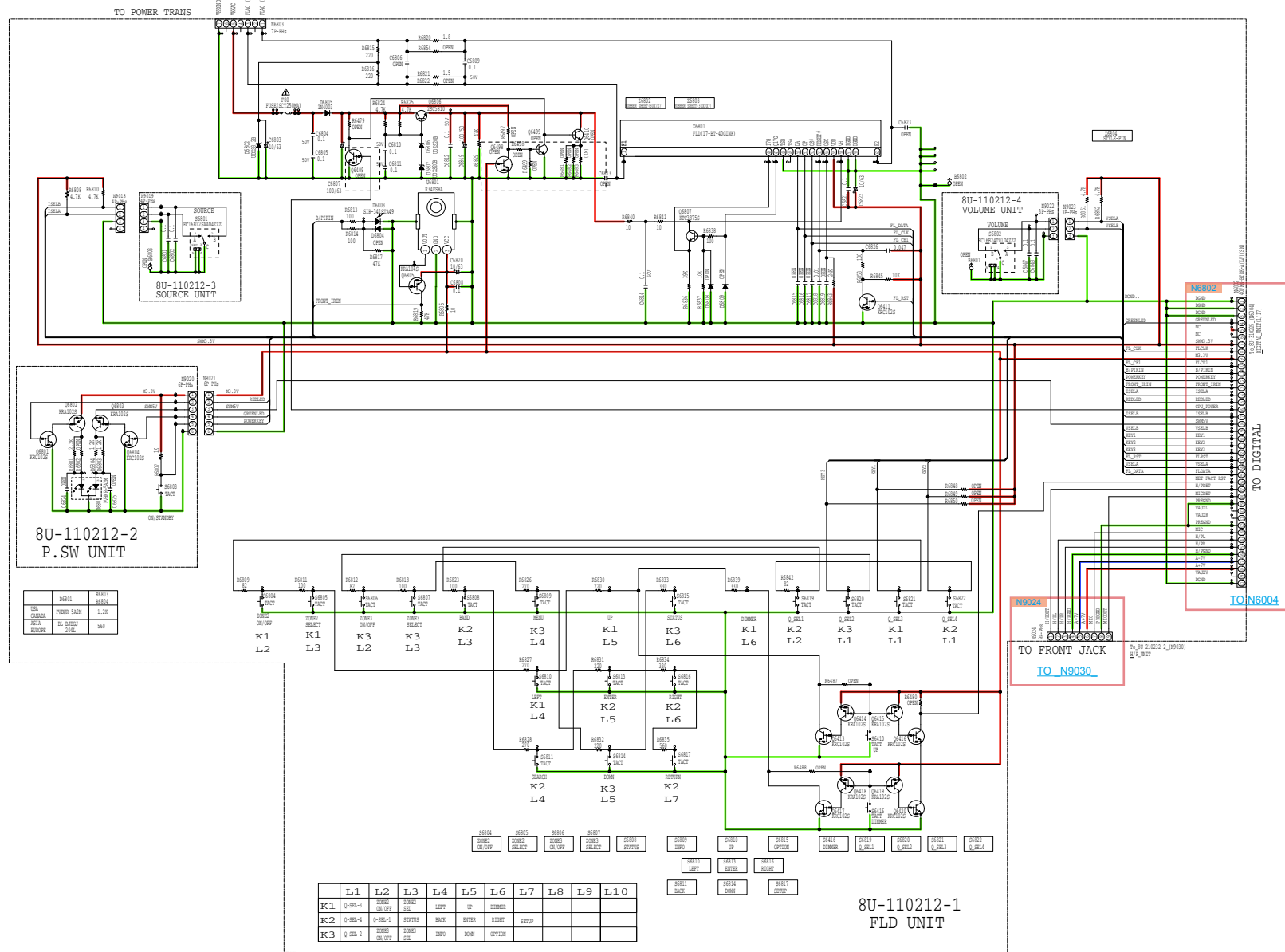
Before Servicing
This Unit

Electrical

Mechanical

Repair Information

Updating



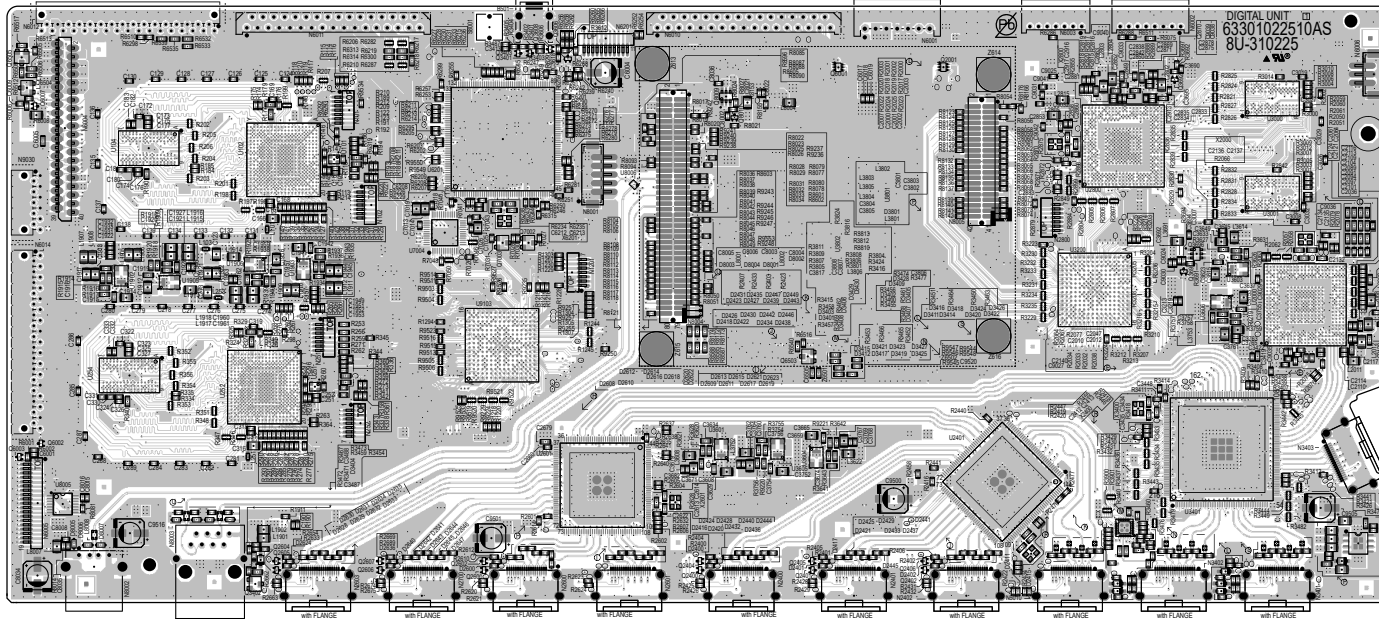
GND LINE POWER+ LINE POWER- LINE AUDIO SIGNAL TMDS SIGNAL ANALOG VIDEO

PRINTED CIRCUIT BOARDS

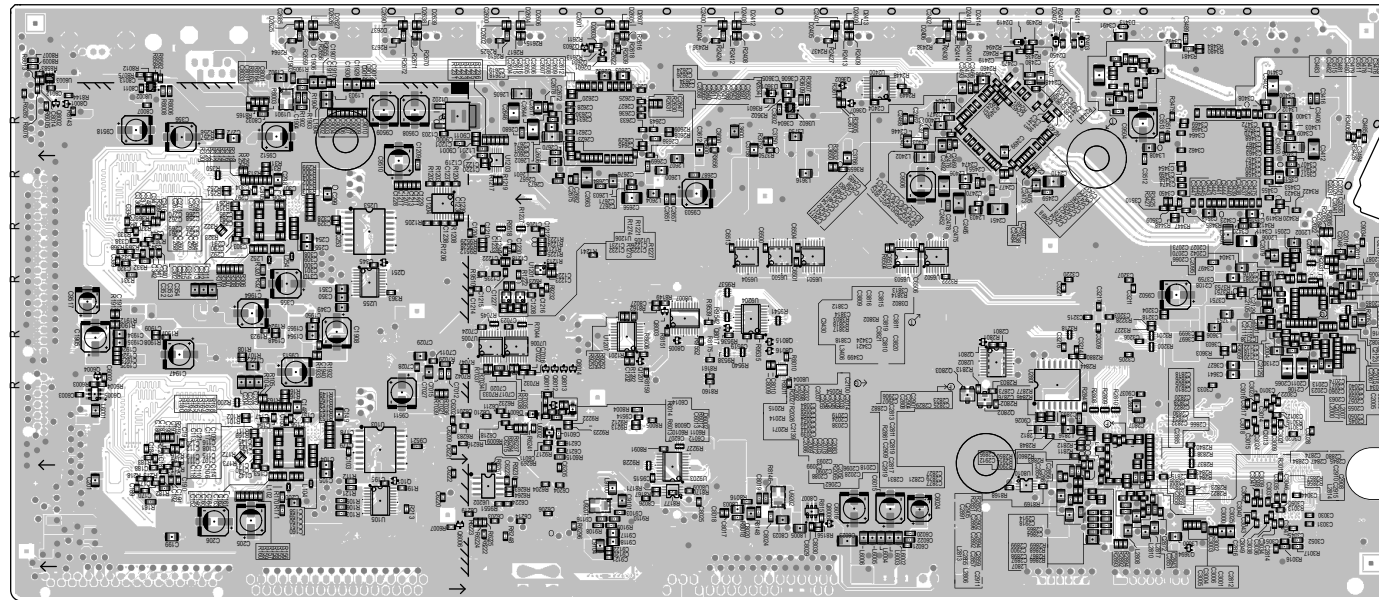
DIGITAL, L AMP CONNECT, R AMP CONNECT

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

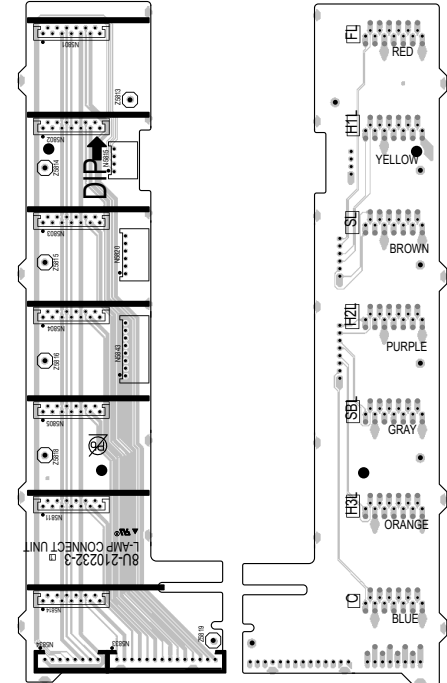
DIGITAL (A SIDE)



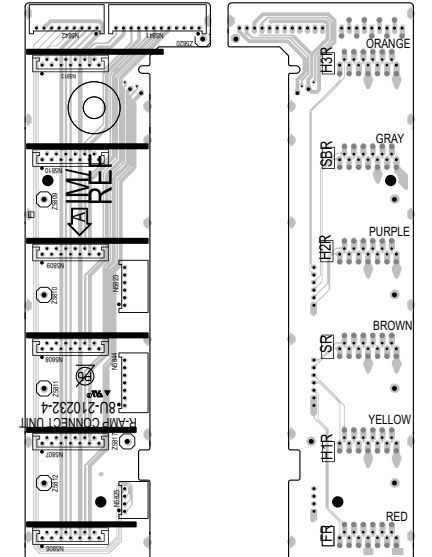
DIGITAL (B SIDE)



L AMP CONNECT (A SIDE) L AMP CONNECT (B SIDE)



R AMP CONNECT (A SIDE) R AMP CONNECT (B SIDE)



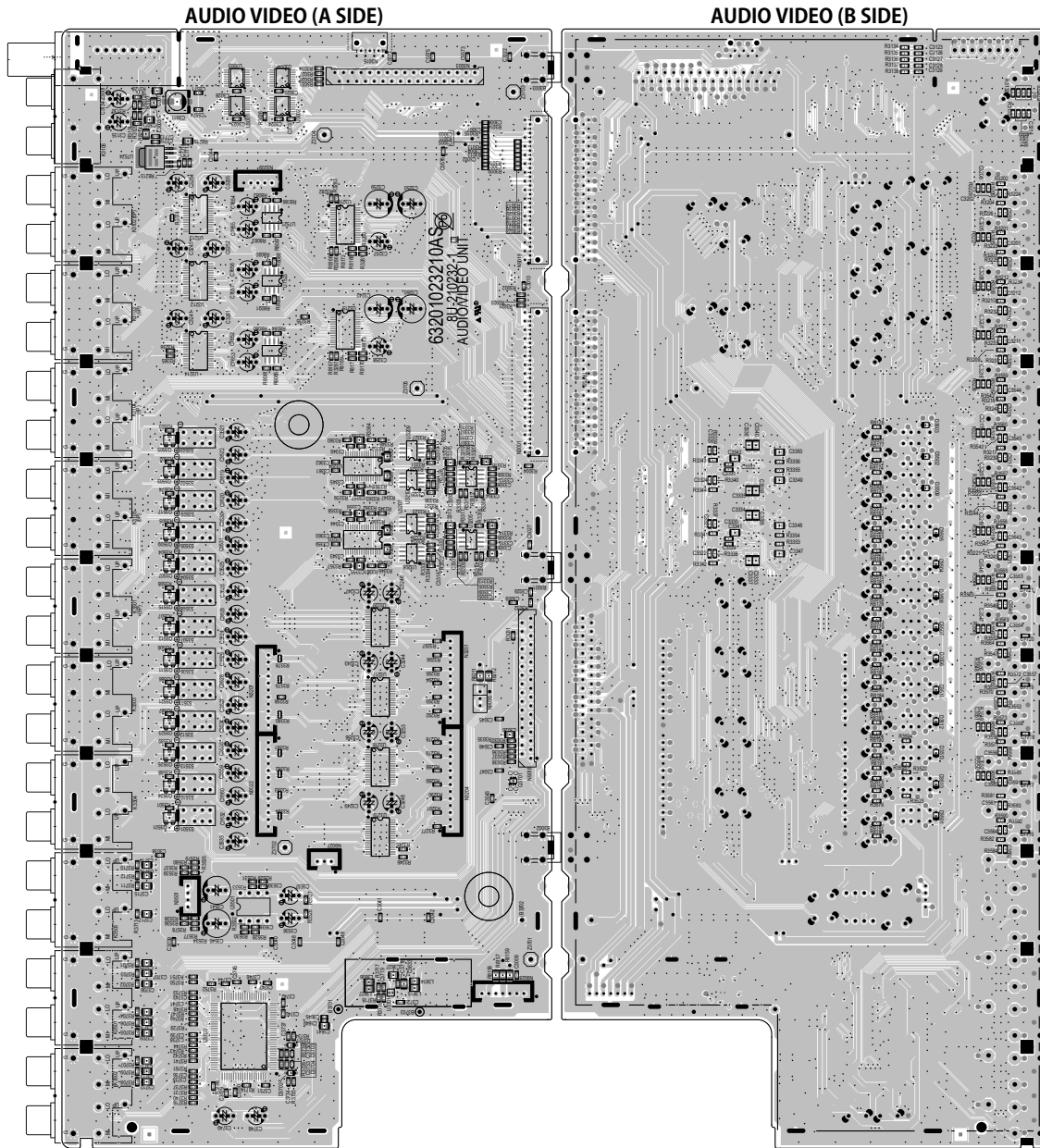
Before Servicing
This Unit

Electrical

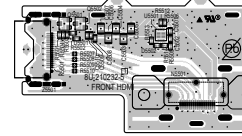
Mechanical

Repair Information

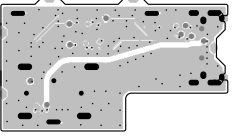
Updating



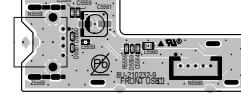
FRONT HDMI (A SIDE)



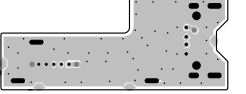
FRONT HDMI (B SIDE)



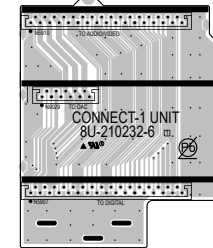
FRONT USB (A SIDE)



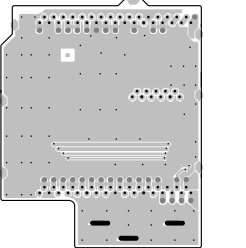
FRONT USB (B SIDE)



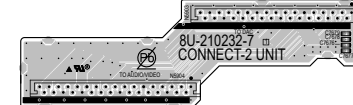
CONNECT-1 (A SIDE)



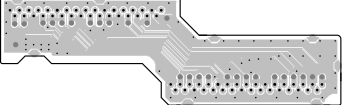
CONNECT-1 (B SIDE)



CONNECT-2 (A SIDE)



CONNECT-2 (B SIDE)



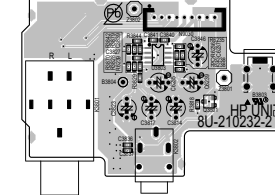
CONNECT-4 (A SIDE)



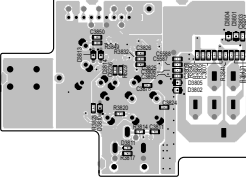
CONNECT-4 (B SIDE)



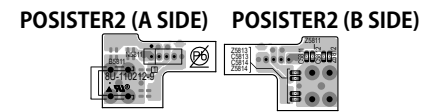
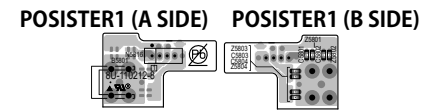
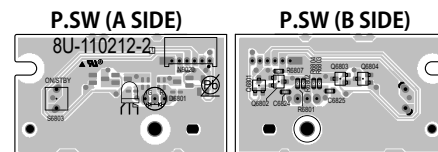
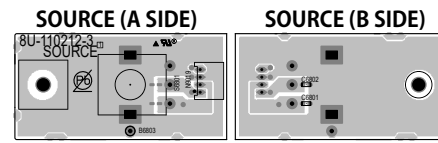
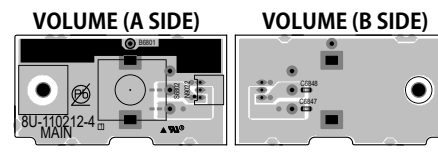
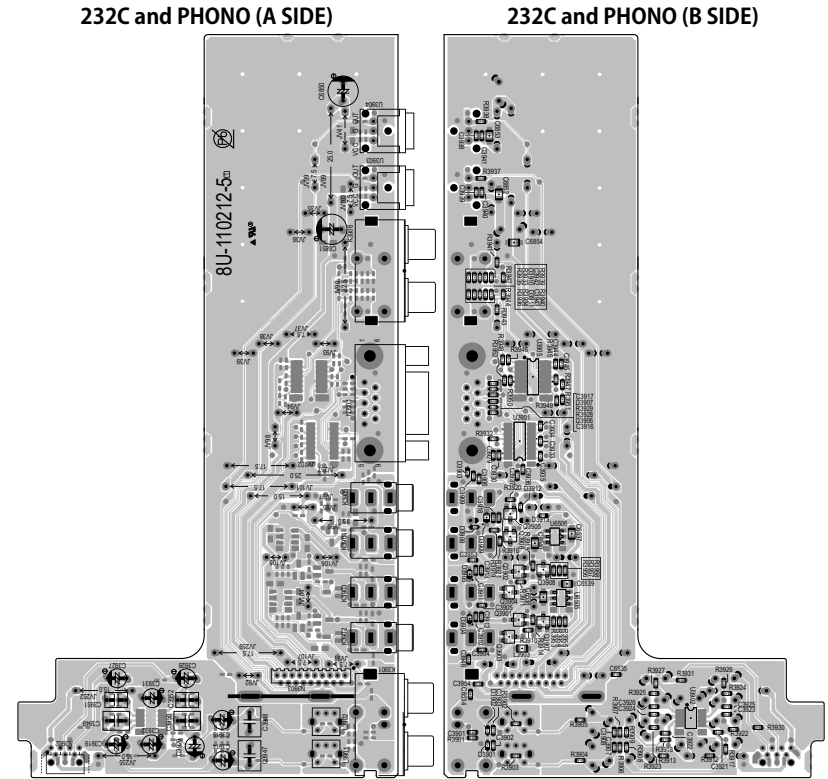
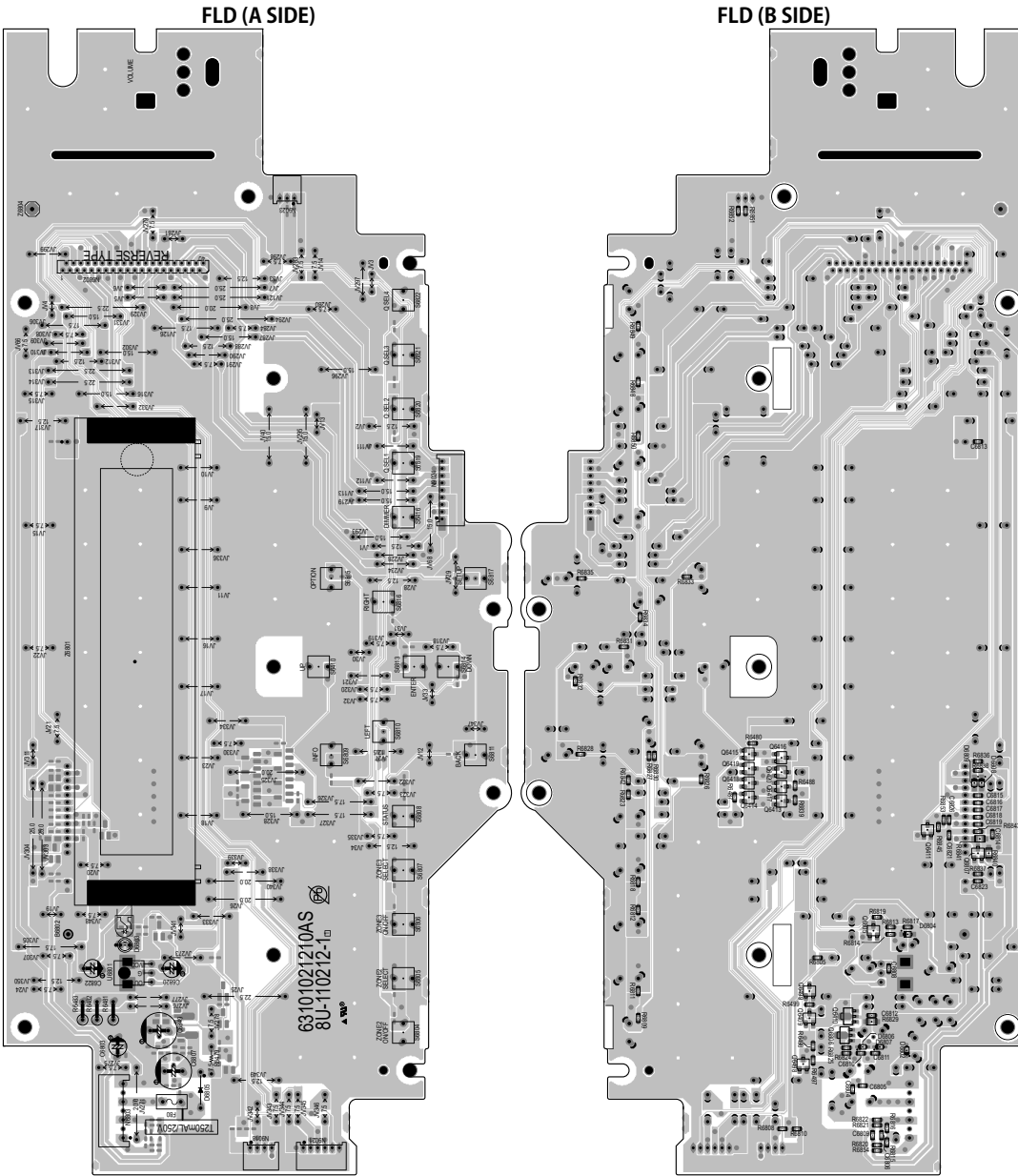
HP (A SIDE)



HP (B SIDE)



FLD, 232C and PHONO, VOLUME, SOURCE, P.SW, POSISTER1, POSISTER2



Before Servicing
This Unit

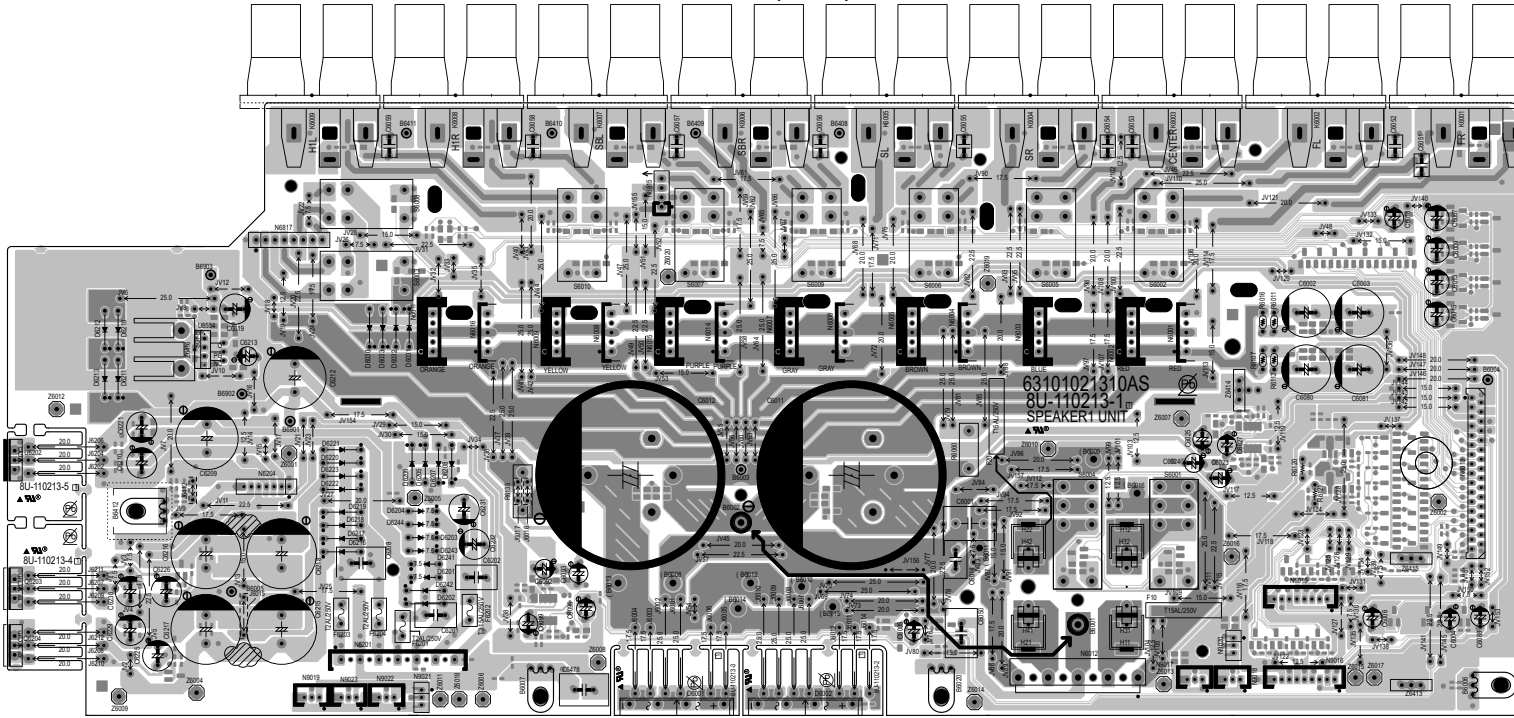
Electrical

Mechanical

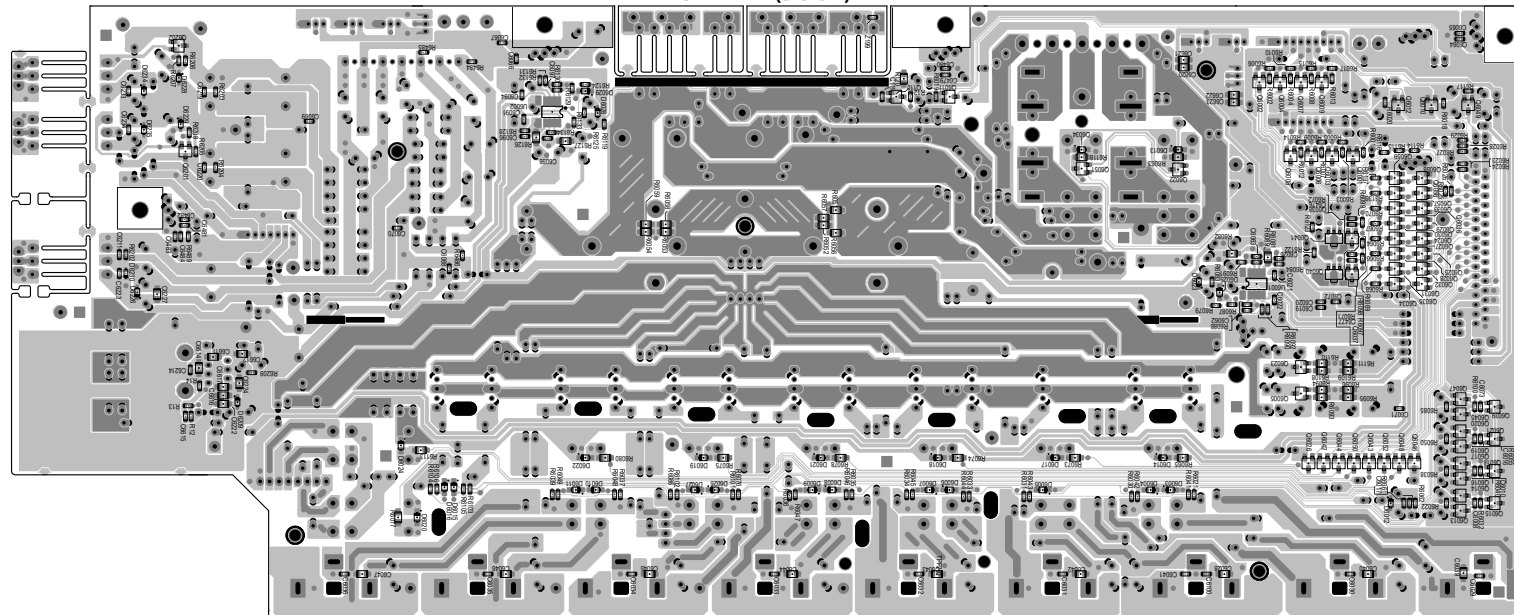
Repair Information

Updating

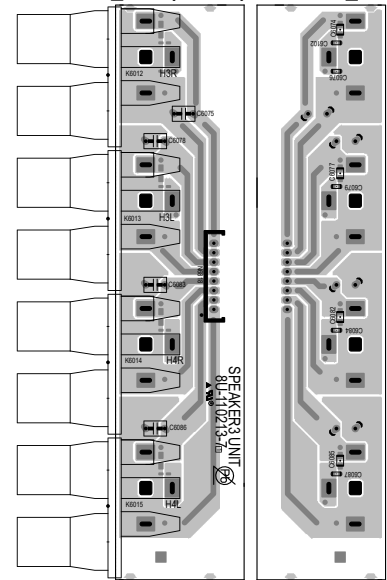
SPEAKER (A SIDE)



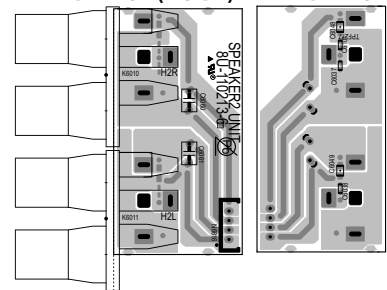
SPEAKER (B SIDE)



HEIGHT3_4 SP (A SIDE) HEIGHT3_4 SP (B SIDE)



HEIGHT2 SP (A SIDE) HEIGHT2 SP (B SIDE)



Before Servicing
This Unit

Electrical

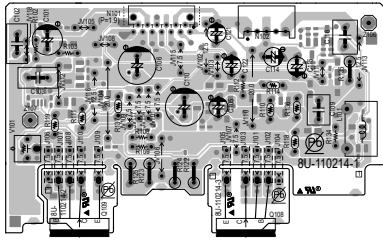
Mechanical

Repair Information

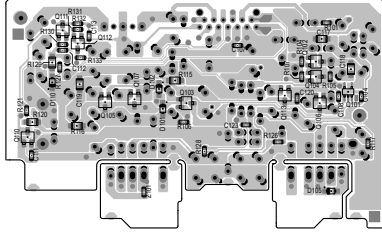
Updating

AMP1, AMP2, SMPS, SIDE CONNECT, DAC

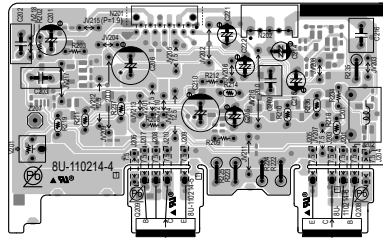
AMP1 (A SIDE)



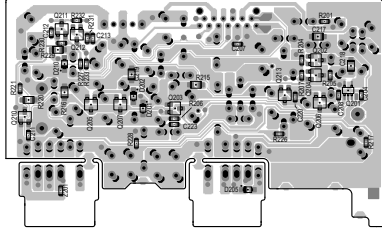
AMP1 (B SIDE)



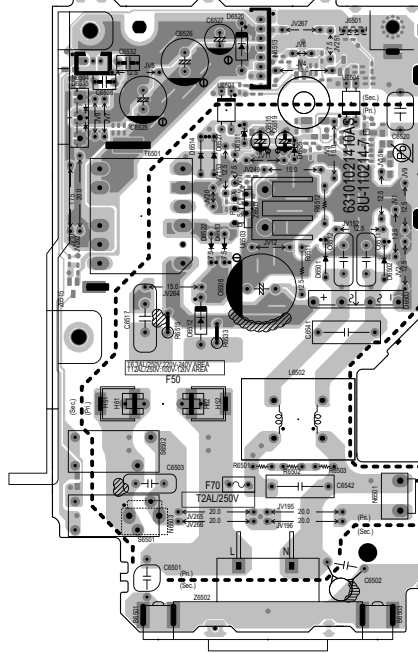
AMP2 (A SIDE)



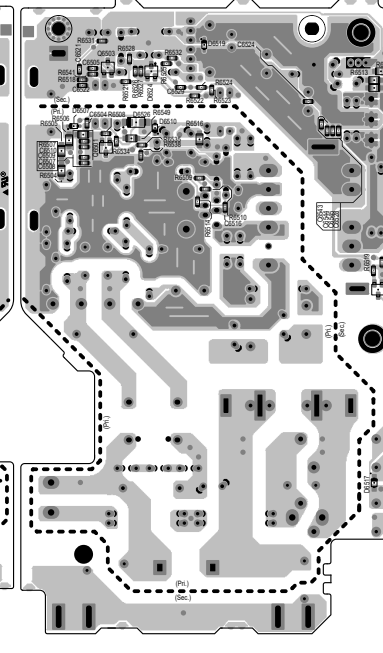
AMP2 (B SIDE)



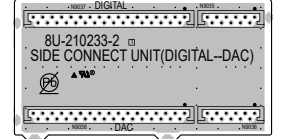
SMPS (A SIDE)



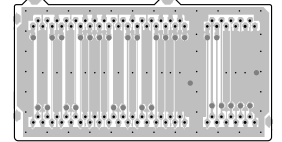
SMPS (B SIDE)



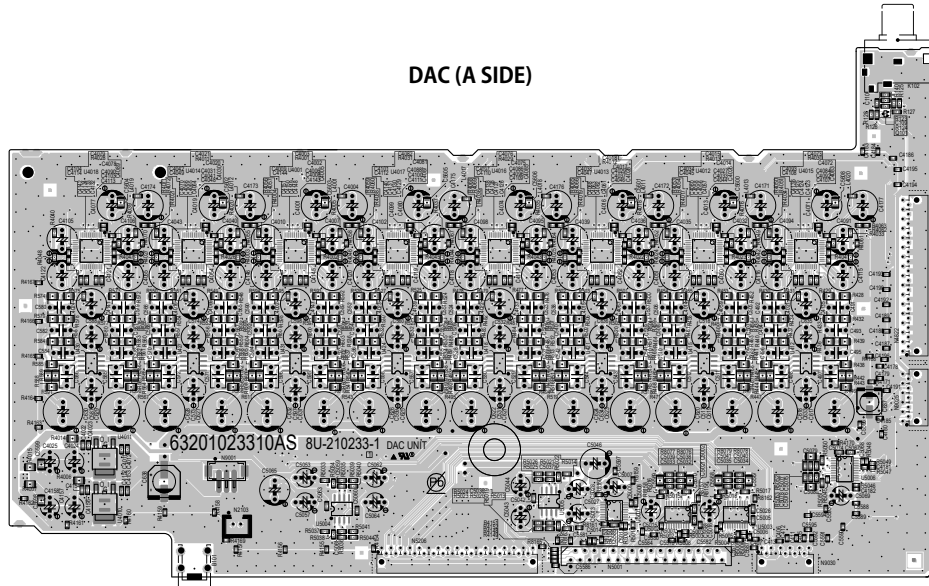
SIDE CONNECT (A SIDE)



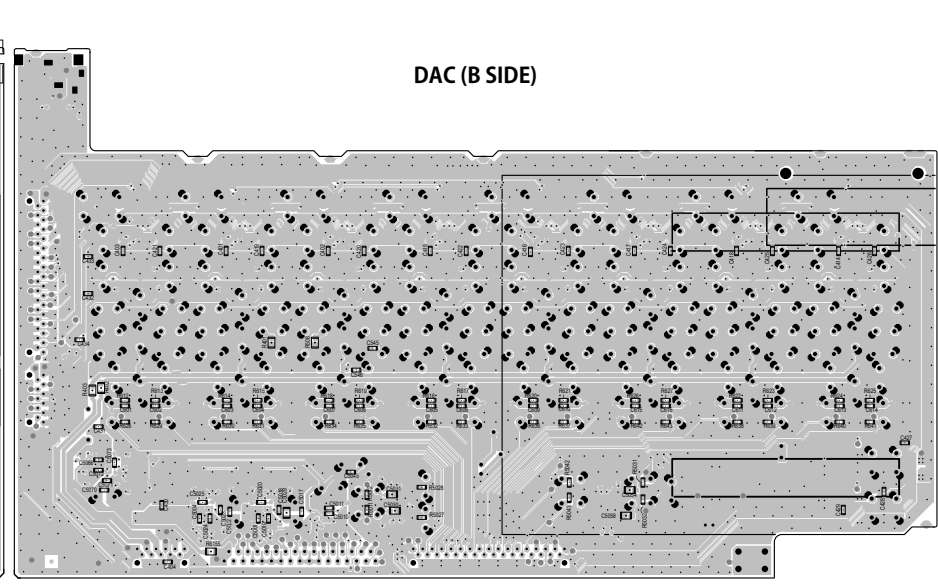
SIDE CONNECT (B SIDE)



DAC (A SIDE)



DAC (B SIDE)



Before Servicing
This Unit

Electrical

Mechanical

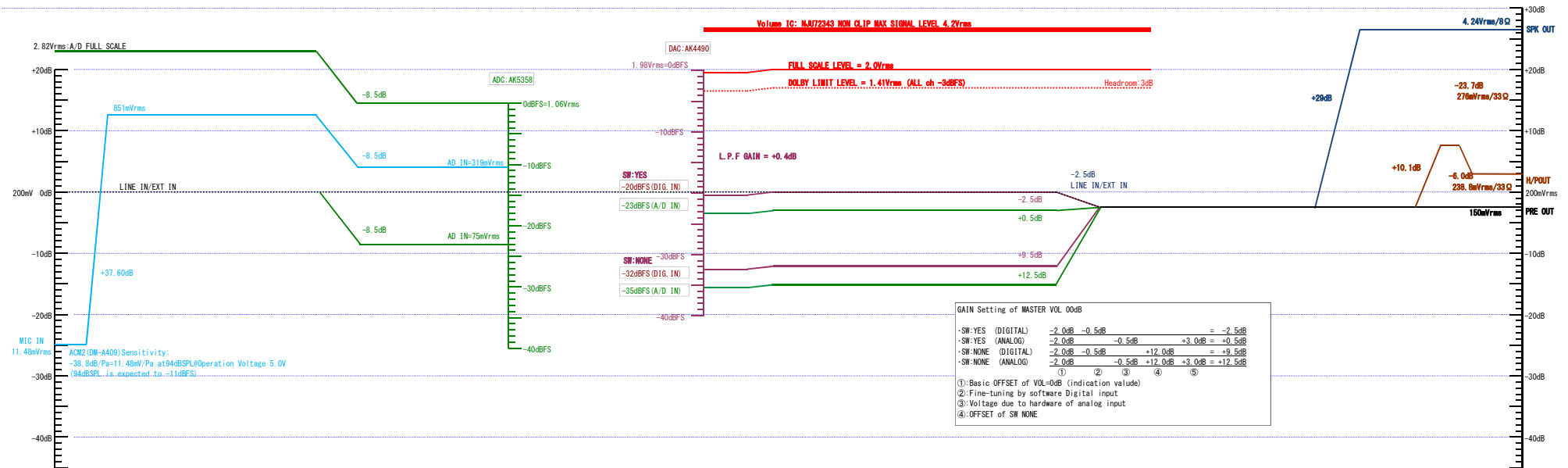
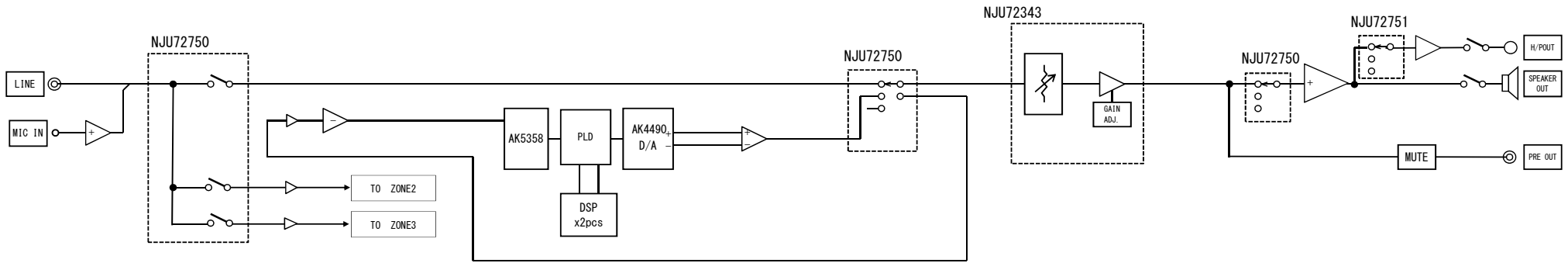
Repair Information

Updating

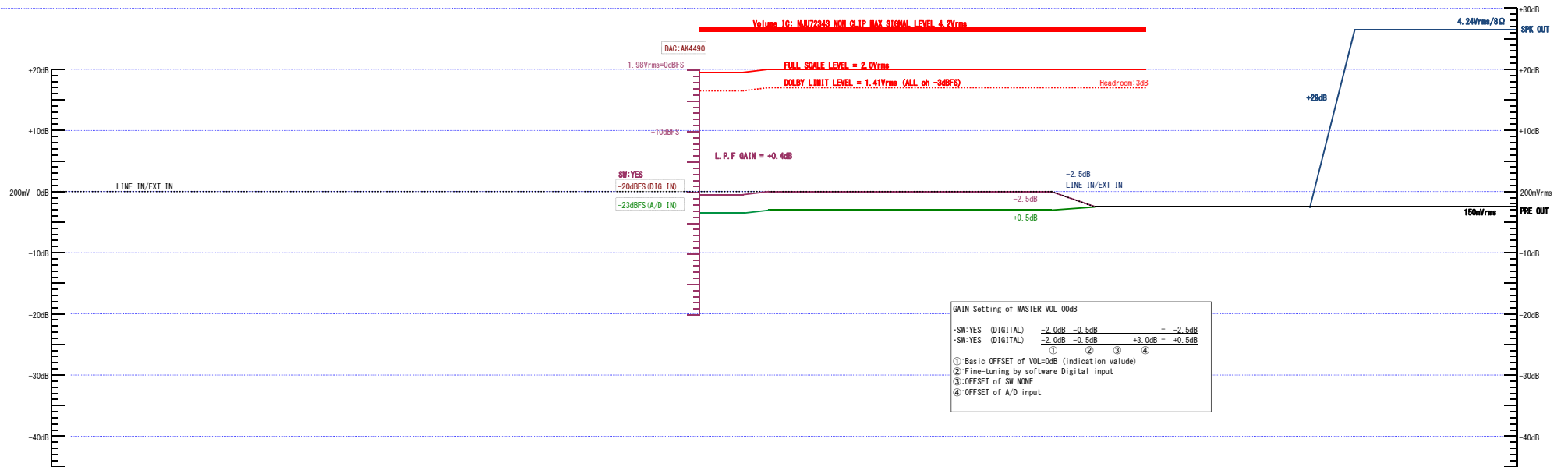
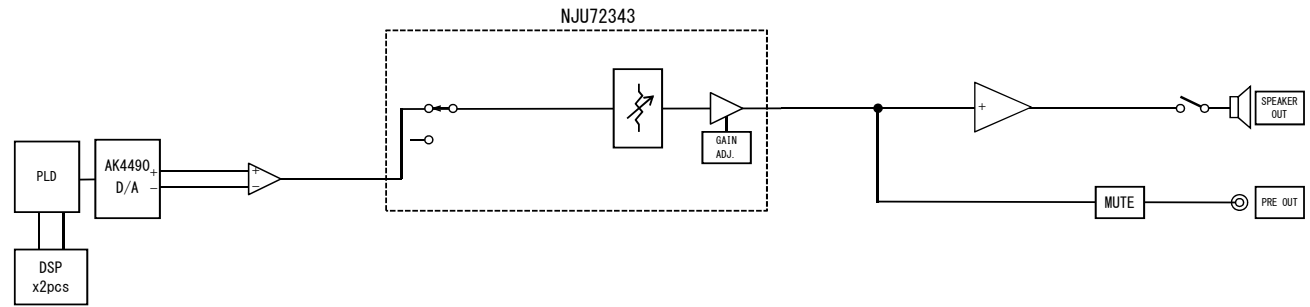
LEVEL DIAGRAM

FRONT ch

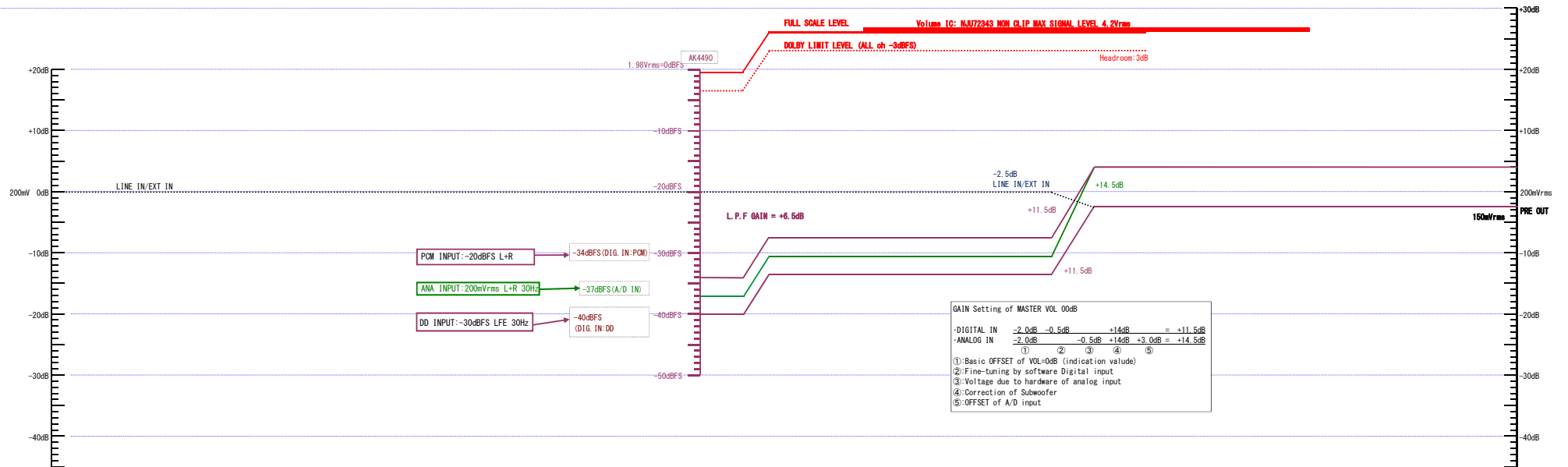
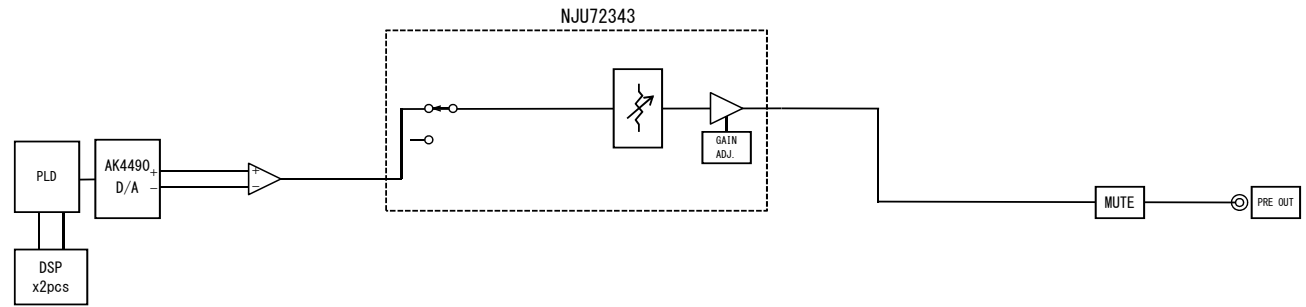
LEVEL DIAGRAM FRONT ch



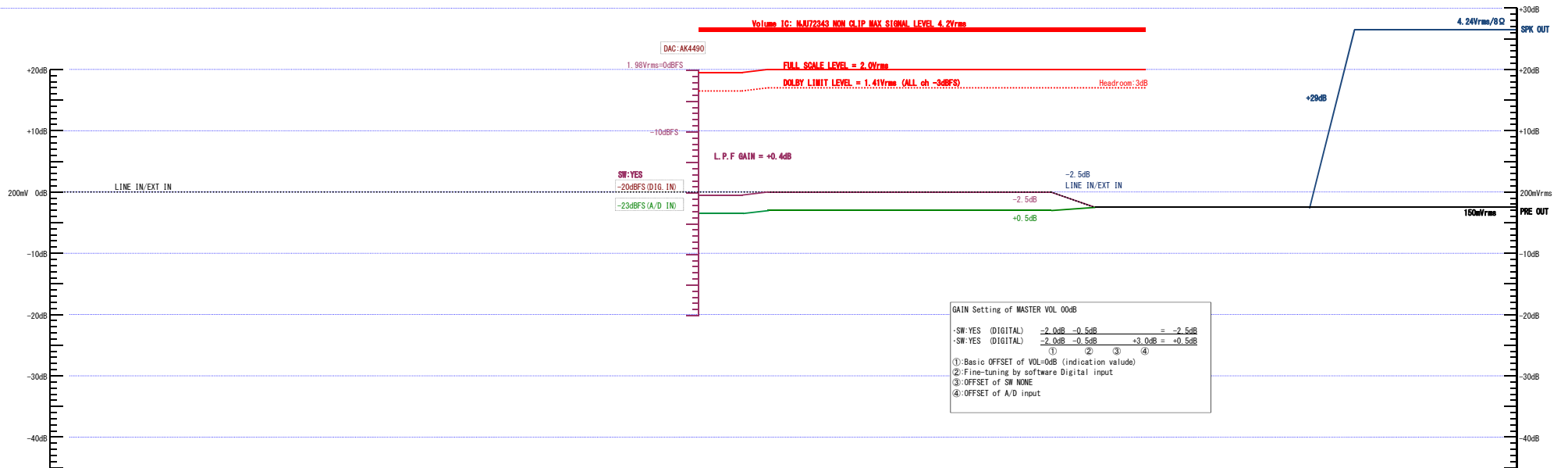
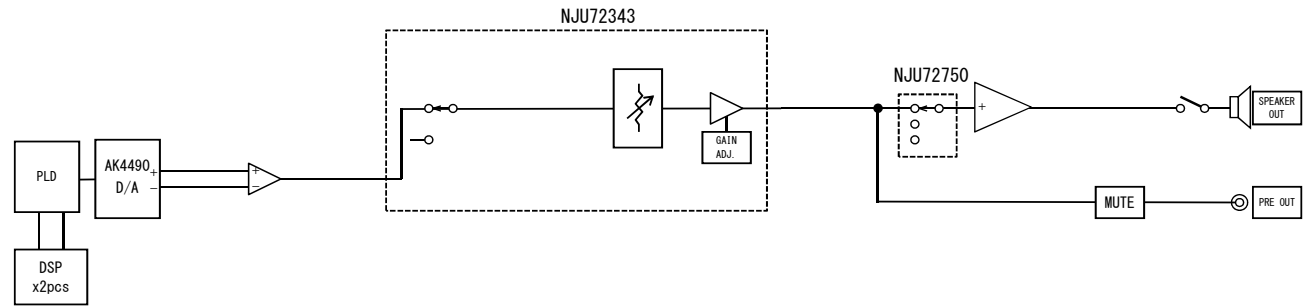
**LEVEL DIAGRAM
CENTER/SURROUND ch**



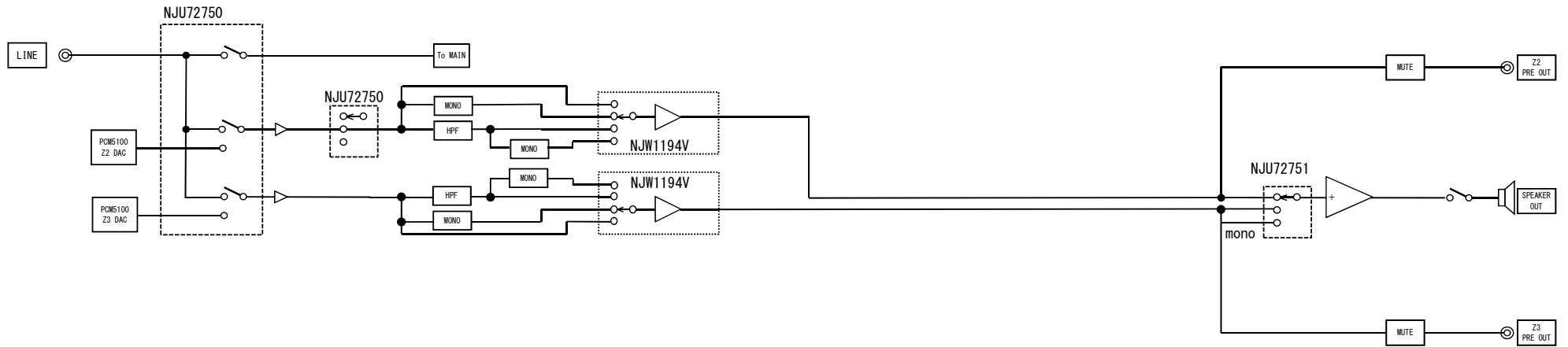
**LEVEL DIAGRAM
SUB WOOFER ch**



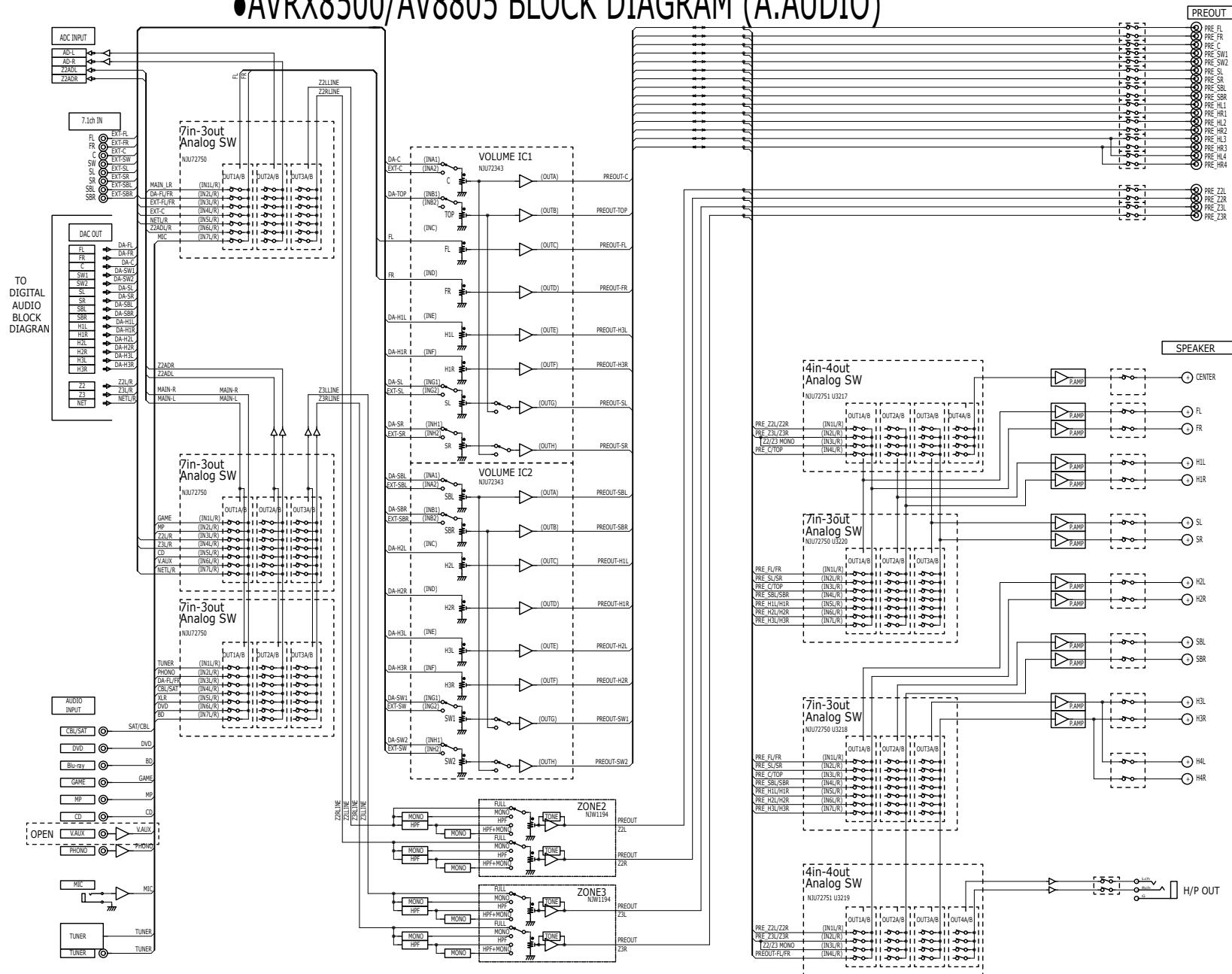
LEVEL DIAGRAM
SURROUND BACK/HEIGHT1/HEIGHT2/HEIGHT3 ch



LEVEL DIAGRAM
ZONE2/ZONE3



●AVRX8500/AV8805 BLOCK DIAGRAM (A.AUDIO)



Before Servicing
This Unit

Electrical

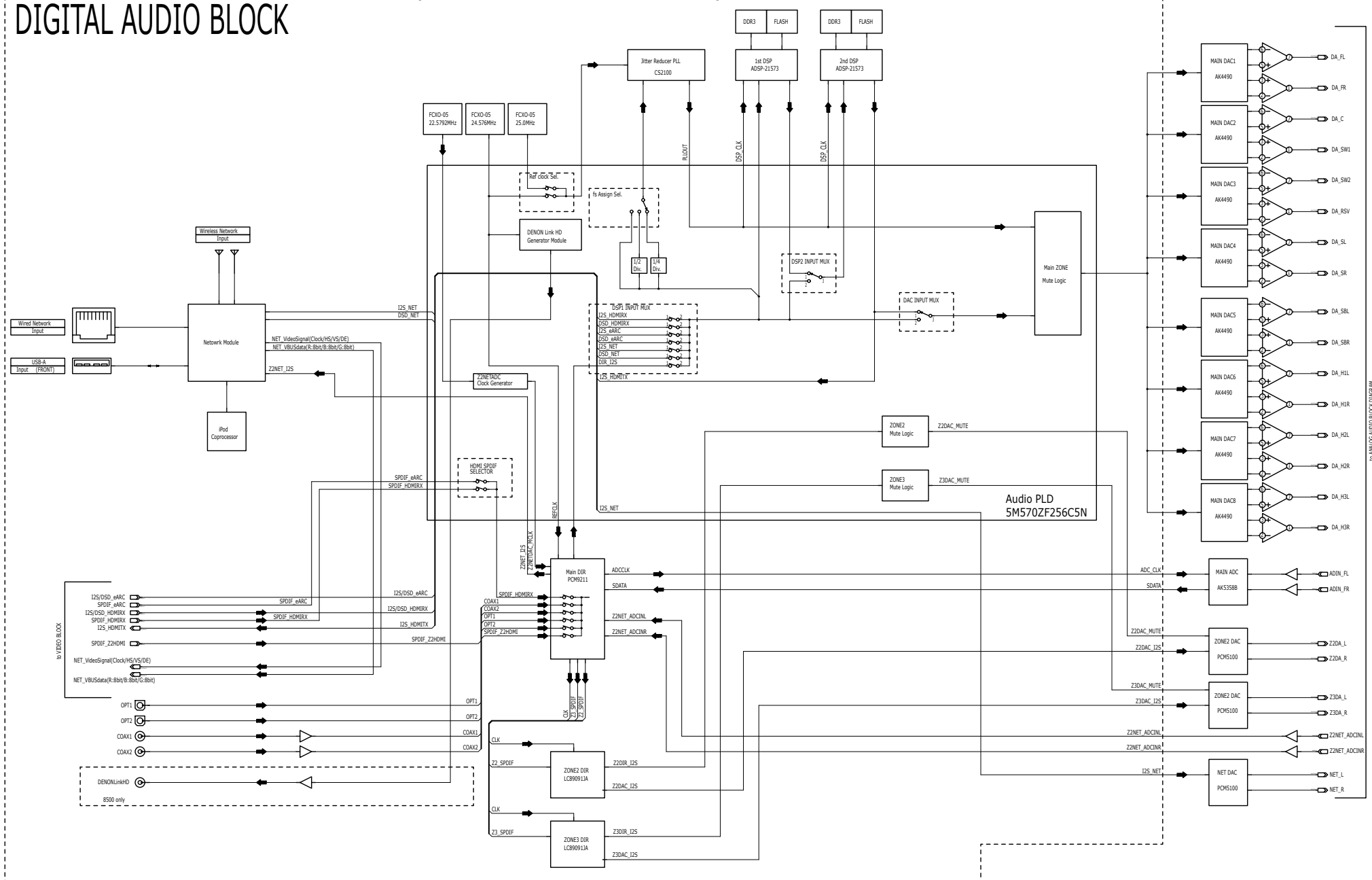
Mechanical

Repair Information

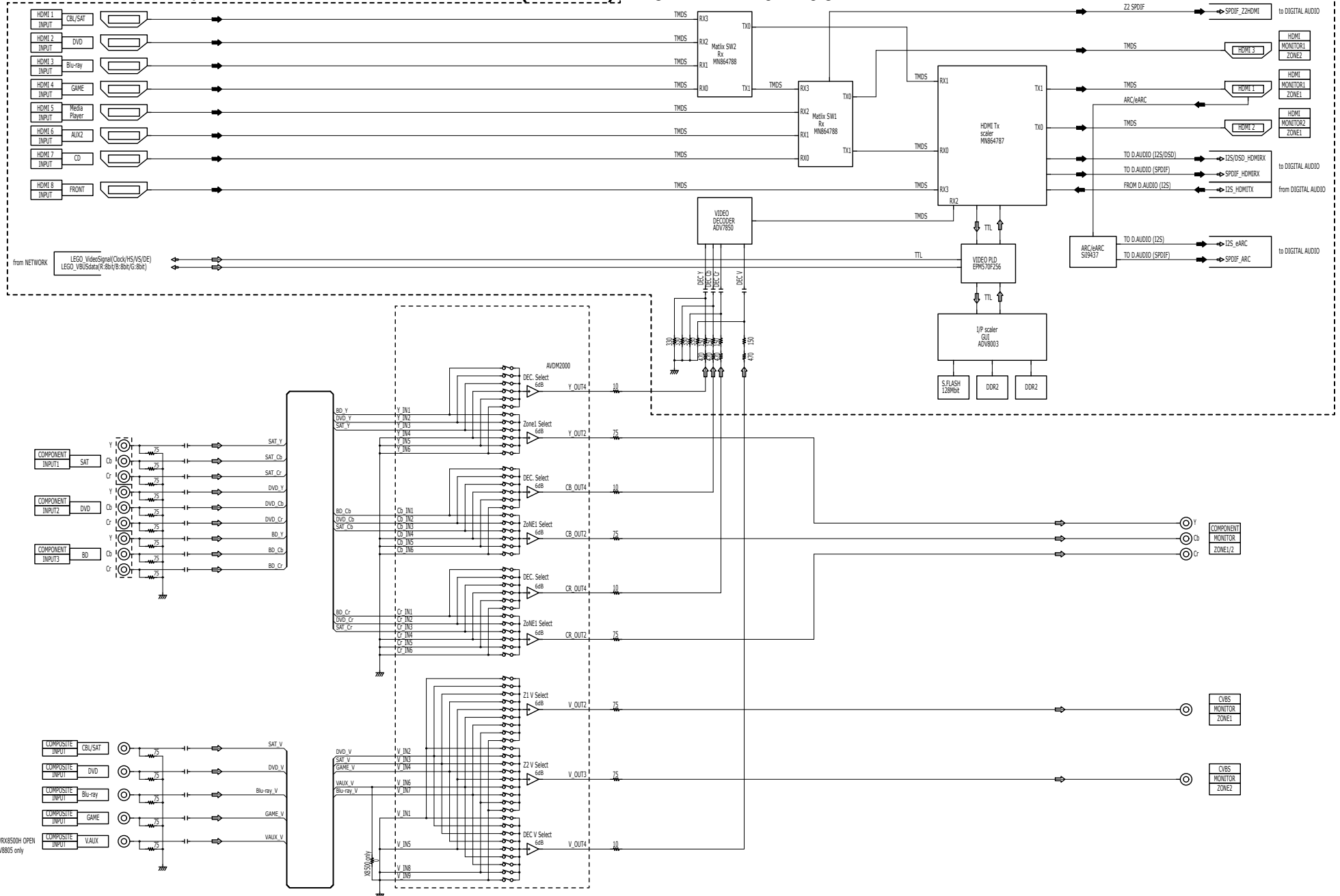
Updating

AVR-X8500/AV8805 DIGITAL AUDIO/NETWORK BLOCK DIRAGRAM

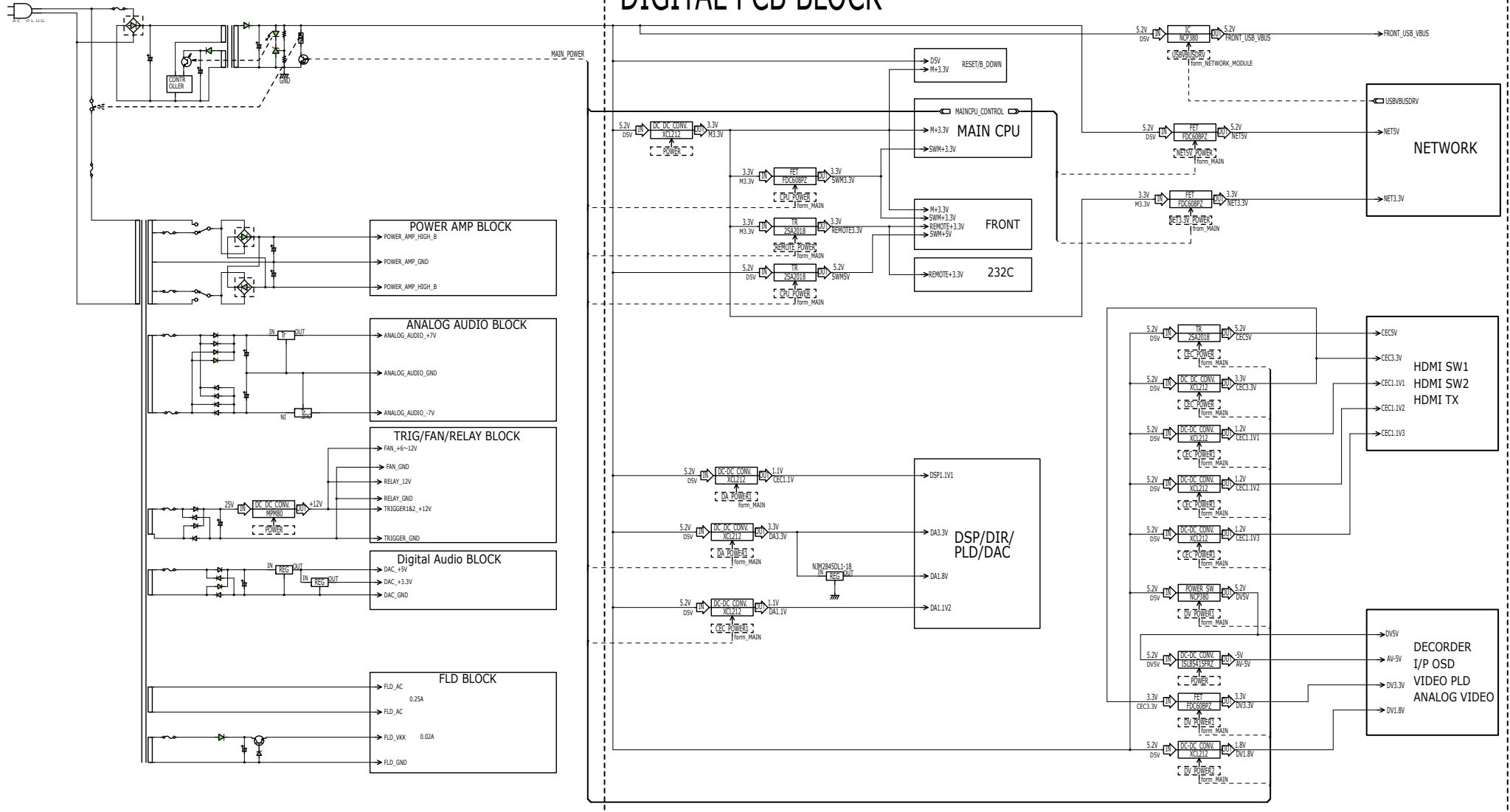
DIGITAL AUDIO BLOCK



AVRX8500/AV8805 BLOCK DIAGRAM (VIDEO): DIGITAL VIDEO BLOCK



●AVRX8500/AV8805 BLOCK DIAGRAM (P.SUPPLY)
DIGITAL PCB BLOCK



Before Servicing
This Unit

Electrical

Mechanical

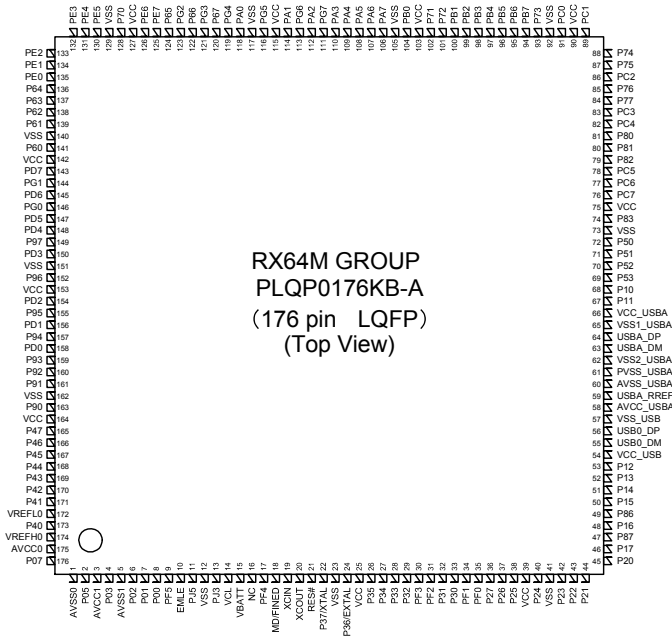
Repair Information

Updating

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)



**RX64M GROUP
PLQP0176KB-A
(176 pin LQFP)
(Top View)**

R5F56108VNFPP 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/HIGH	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_MI2320	I	Pd	I	I	I	External data input port (for AMX/FW update via 232C):Connector is FFC
8	P00/TXD6/IRQ8/AN118	TXD_MO2321	O	-	L	L	L	External data output port (for AMX/FW update via 232C):Connector is FFC
9	PF5/IRQ4	WHITE_LED (X8500(NA)) / GREEN_LED (X8500 (EU/CH/JP), AV8805)	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

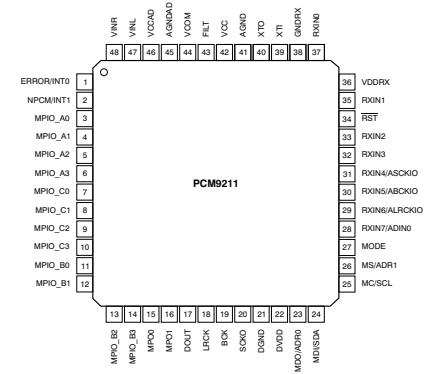
Pin	Pin Name	Symbol	I/O	Pu/Pd	STBY	STOP	CEC STBY	Function
14	VCL	VCL	I	-	-	-	-	Smoothing capacitor connection pin
15	VBATT	VBATT	-	-	-	-	-	Power supply pin
16	NC	NC	I	Pd	-	-	-	NC(Pull down)
17	TRST#/PF4	TRST# / NC(NORMAL)	I/I	Pd	I/I	I/I	I/I	E20 Emulator control pin/When normal operating mode,set to input.
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(X8500) / DOOR_DET (AV8805)	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-D5	RC_IN	I	-	I	I	I	Remote input
29	P32/TIOCC0/TXD6/TXD0/IRQ2-D5	NC(X8500) / FLASHER_IN (AV8805)	O/I	-	L/I	L/I	L/I	IR Flasher control signal input (When standby mode,set to interrupt)
30	TMS/PF3	TMS/ NC(NORMAL)	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 writer control pin/ When normal operating mode,set to input.
32	P31/IRQ1-D5	TU_INT (X8500(NA), AV8805(NA)) / NC (X8500 (EU/JP/CH), AV8805 (EU/CH))	I	-	L	L	L	TUNER control
33	P30/RXD1	TU_SDA (X8500(NA), AV8805(NA)) / NC (X8500 (EU/JP/CH), AV8805 (EU/CH))	I_O	-	L	L	L	TUNER control
34	TCK/FINEC/PF1/SCK1	TCK/ NC(NORMAL)	I/I	M3VPu	-/I	-/I	I	E20 Emulator control pin//When normal operating mode,set to input.
35	TD0/TXD1/PF0	TD0/TXD_MITSUBISHI	O/O/I	M3VPu	-/I	-/I	I	E20 Emulator control pin/Mitsubishi writer control pin/ When normal operating mode,set to input.
36	P27/SCK1	TU_SEN (X8500(NA), AV8805 (NA)) / NC (X8500 (EU/JP/CH), AV8805 (EU / CH))	O	-	L	L	L	TUNER control
37	P26/TXD1	TU_SCL (X8500(NA), AV8805(NA)) / NC (X8500(EU/JP/CH), AV8805 (EU / 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 (X8500) / KILL_IR (AV8805)	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 (onboard + BCM58305 Internal Pd)	I	I	I	Ethernet(LEGO) control pin
44	P21/RXD0/IRQ9	E_RXD_MIEO	I	Pd (onboard + 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 Pd)	Z	Z	Z	Ethernet(LEGO) control pin
47	P87/TXD10/TIOCA2	NC (X8500) / RC_OUT (AV8805)	O	-	L/H	L/L	L/H	Remote code (RC-5) output pin

Pin	Pin Name	Symbol	I/O	Pu/Pd	STBY	STOP	CEC STBY	Function
48	P16/TXD1/RXD3/IRQ6	NET5V_POWER	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)
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	NC	O		L	L	L	NC
85	P76/RXD11	DSP1_CORE1_FLAG3	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	NC	O		L	L	L	NC
94	PB7/TXD9	HSDA	I/O	CEC3VPu	L	L	L	HDMI I2C control pin for MN864787/MN864788
95	PB6/RXD9	HSCL	I/O	CEC3VPu	L	L	L	HDMI I2C control pin for MN864787/MN864788

Pin	Pin Name	Symbol	I/O	Pu/Pd	STBY	STOP	CEC STBY	Function
96	PB5/SCK9	NC (AV8805) / AC_RL1	O		L	L	L	AC relay control pin for rush resistor
97	PB4	APLD_CS	O		L	L	L	Audio PLD (5M570ZF256C5N) control pin
98	PB3/SCK4/SCK6	APLD_DATA/DAC_DATA	O		L	L	L	Audio PLD (5M570ZF256C5N) control pin/DAC (AK4490) control pin
99	PB2	APLD_CLK/DAC_CLK	O		L	L	L	Audio PLD (5M570ZF256C5N) control pin/DAC (AK4490) control pin
100	PB1/TXD4/TXD6/IRQ4-DS	DAC_CCS1	O		L	L	L	DAC (AK4490) control pin
101	P72	DAC_RST1	O		L	L	L	DAC (AK4490) 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	THERMAL_H (HEATSINK_DET)(X8500)/NC(AV8805)	I/I	SW3VPu	I/I	L	I/I	Protection detect signal input pin (for Heat sink)(When Board detect pin is connected pull-down,not operate)
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	USB_EN	O		L	L	※	Rear USB Power Distribution Control Pin(same behavior as CEC POWER Pin)
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	HSV_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_CE1	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(X8500)/FL_CE2(AV8805)	O		L	L	L	FL display control pin
124	P65	NC(X8500)/FIL_CTRL(AV8805)	O		L	L	L	Filament Power control pin (for Portal FLD)
125	PE7/IRQ7/AN105	ASO/DC_DET(X8500)/NC(AV8805)	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: Deep Standby, High: normal))
133	PE2/RXD12/IRQ7-DS/AN100	AIOS4_STBY_STATUS	I	Pd	I	I	I	Not used (This port use to detect for LEGO standby status in the future (Low: normal, High: Deep Standby))
134	PE1/TXD12	GUI_WRITE	O		L	L	L	GUI flash rom writing control
135	PE0/SCK12	NET3.3V_POWER	O		L	L	L	Ethernet power supply control(Net3.3V)
136	P64	Board Detect	I		I	I	I	To check Digital Board version (Previous:Pull-down, Current:No Pull-down) *To enable internal Pull-up resistor.

Pin	Pin Name	Symbol	I/O	Pu/Pd	STBY	STOP	CEC STBY	Function
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
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	NC	O	-	L	L	L	NC
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	TR_DET (X8500) / NC (AV8805)	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	CURRENT_DET2 (RSV) (X8500) / NC (AV8805)	I/O		I/L	L/L	I/L	Current level monitor pin (A/D converter) (Reserve)
162	VSS	VSS	-		-	-	-	Ground pin
163	P90/TXD7/AN114	UNIT_TEMP	I	-	I	L	I	Temperature sensor input pin for SRM (When Board detect pin is connected pull-down, operates as THERMAL H)
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 (X8500) / NC (AV8805)	I/O		I/L	L/L	I/L	Current level monitor pin (A/D converter)
167	P45/IRQ13-DS/ AN005	AMPSIGDET (X8500) / NC (AV8805)	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 interrupt)
170	P42/IRQ10-DS/ AN002	KEY2	I	M3VPu	I	I	I	Key control signalinput pin (When standby mode,set to interrupt)
171	P41/IRQ9-DS/ AN001	KEY1	I	M3VPu	I	I	I	Key control signalinput pin (When standby mode,set to interrupt)
172	VREFLO	VREFLO	-		-	-	-	Ground pin
173	P40	SEL_CLK	O		L	L	L	Audio selector control pin (NJU2750/72751)
174	VREFH0	VREFH0	-		-	-	-	Power supply pin
175	AVCC0	AVCC0	-		-	-	-	Power supply pin
176	P07/IRQ15	NC	I	SW3VPu	I	L	I	NC

PCM9211 (DIGITAL : U7004)



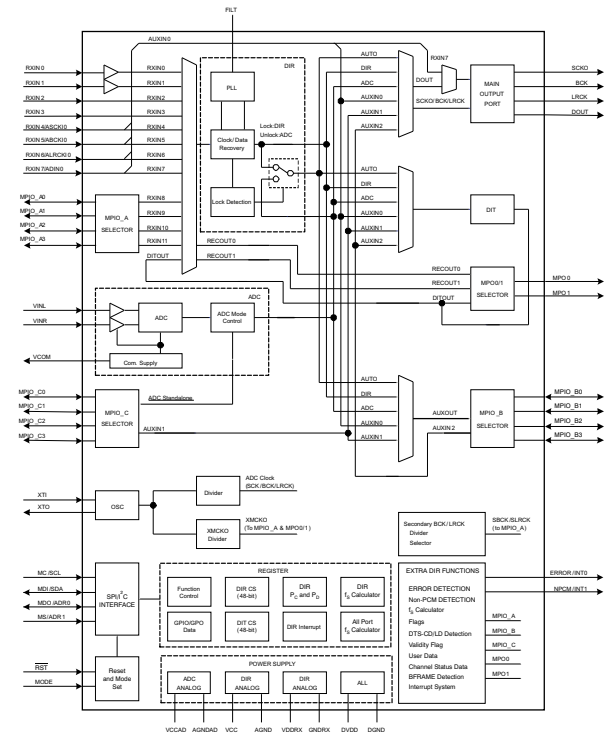
PIN Functions

NO.	PIN			DESCRIPTION
	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 setting ¹⁽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	VDDR _X	-	-	Power supply, 3.3 V (typ.), for RXIN0 and RXIN1.
37	RXIN0	I	Yes	Biphase signal, input 0, built-in coaxial amplifier
38	GNDR _X	-	-	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

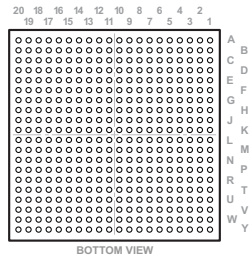
- (1) Schmitt trigger input
- (2) Schmitt trigger input
- (3) Open-drain configuration in I2C mode
- (4) Onboard pull-down resistor (50 k Ω , typical)
- (5) CMOS Schmitt trigger input

PCM9211 BLOCK DIAGRAM



ADSP-21573KBCZ4D1 (DIGITAL : U0102)

ADSP-21573KBCZ4D6 (DIGITAL : U0252)



Terminal Function

Ball No.	Pin Name	Ball No.	Pin Name	Ball No.	Pin Name	Ball No.	Pin Name
A01	GND	C02	PC_13	E03	PE_03	G04	VDD_EXT
A02	PA_10	C03	GND	E04	PE_02	G05	VDD_INT
A03	PA_09	C04	PA_12	E05	GND	G06	GND
A04	PA_11	C05	PA_14	E06	PB_00	G07	GND
A05	PE_07	C06	PB_03	E07	VDD_EXT	G08	GND
A06	MLB0_CLKN	C07	PB_02	E08	VDD_EXT	G09	GND
A07	MLB0_CLKP	C08	PE_10	E09	VDD_EXT	G10	GND
A08	MLB0_SIGN	C09	PB_06	E10	VDD_EXT	G11	GND
A09	GND	C10	PB_05	E11	VDD_EXT	G12	GND
A10	SYS_XTALO	C11	SYS_HWRST	E12	VDD_EXT	G13	GND
A11	SYS_CLKINO	C12	USB0_ID	E13	VDD_USB	G14	GND
A12	GND	C13	USB0_CLKIN	E14	JTG_TCK	G15	GND
A13	SYS_XTAL1	C14	PB_12	E15	PE_15	G16	VDD_INT
A14	SYS_CLKIN1	C15	PB_13	E16	GND	G17	PB_15
A15	GND	C16	JTG_TDI	E17	VDD_EXT	G18	DAIO_PIN08
A16	USB0_DP	C17	PE_14	E18	PF_04	G19	DAIO_PIN10
A17	USB0_DM	C18	GND	E19	DAIO_PIN07	G20	DAIO_PIN09
A18	PF_03	C19	PF_08	E20	DAIO_PIN03	H01	PE_01
A19	PF_05	C20	PF_11	F01	PC_02	H02	PC_09
A20	GND	D01	PC_06	F02	PC_03	H03	PC_15
B01	PC_12	D02	PC_08	F03	PC_04	H04	VDD_EXT
B02	GND	D03	PE_04	F04	PE_06	H05	VDD_INT
B03	PA_13	D04	GND	F05	VDD_INT	H06	GND
B04	PA_15	D05	PE_08	F06	GND	H07	GND
B05	PB_01	D06	PE_11	F07	VDD_INT	H08	GND
B06	PB_04	D07	PE_09	F08	VDD_INT	H09	GND
B07	MLB0_DATN	D08	PB_08	F09	VDD_INT	H10	GND
B08	MLB0_DATP	D09	PB_07	F10	VDD_INT	H11	GND
B09	MLB0_SIGP	D10	PB_09	F11	VDD_INT	H12	GND
B10	JTG_TRST	D11	SYS_CLKOUT	F12	VDD_INT	H13	GND
B11	USB0_VBUS	D12	PB_11	F13	VDD_INT	H14	GND
B12	USB0_XTAL	D13	USB0_VBC	F14	VDD_INT	H15	GND
B13	PB_10	D14	PB_14	F15	GND	H16	VDD_INT
B14	JTG_TDO	D15	PE_13	F16	VDD_INT	H17	VDD_EXT
B15	JTG_TMS	D16	PE_12	F17	PF_02	H18	DAIO_PIN05
B16	PF_00	D17	GND	F18	PF_09	H19	DAIO_PIN14
B17	PF_01	D18	PF_10	F19	DAIO_PIN02	H20	DAIO_PIN11
B18	PF_06	D19	DAIO_PIN01	F20	DAIO_PIN06	J01	PE_00
B19	GND	D20	DAIO_PIN04	G01	PC_00	J02	PC_07
B20	PF_07	E01	PC_05	G02	PC_14	J03	PC_10
C01	PC_11	E02	PE_05	G03	PC_01	J04	VDD_EXT

Ball No.	Pin Name	Ball No.	Pin Name	Ball No.	Pin Name	Ball No.	Pin Name
J05	VDD_INT	L13	GND	P01	DMCO_VREF	T09	VDD_DMC
J06	GND	L14	GND	P02	DMCO_RZQ	T10	VDD_DMC
J07	GND	L15	GND	P03	DMCO_A09	T11	VDD_DMC
J08	GND	L16	VDD_INT	P04	DMCO_A10	T12	VDD_DMC
J09	GND	L17	VDD_EXT	P05	VDD_INT	T13	VDD_DMC
J10	GND	L18	DAIO_PIN17	P06	VDD_INT	T14	VDD_DMC
J11	GND	L19	GND	P07	GND	T15	VDD_DMC
J12	GND	L20	DAIO_PIN20	P08	VDD_INT	T16	GND
J13	GND	M01	DMCO_A14	P09	VDD_INT	T17	VDD_DMC
J14	GND	M02	DMCO_A15	P10	VDD_INT	T18	DMCO_A02
J15	GND	M03	PD_09	P11	VDD_INT	T19	DMCO_A01
J16	VDD_INT	M04	VDD_EXT	P12	VDD_INT	T20	DMCO_RESET
J17	VDD_EXT	M05	VDD_INT	P13	VDD_INT	U01	DMCO_DQ15
J18	DAIO_PIN12	M06	GND	P14	GND	U02	DMCO_DQ14
J19	DAIO_PIN13	M07	GND	P15	VDD_INT	U03	TWI1_SDA
J20	DAIO_PIN16	M08	GND	P16	VDD_INT	U04	GND
K01	PD_14	M09	GND	P17	HADCO_VIN1	U05	TWI1_SCL
K02	PD_13	M10	GND	P18	HADCO_VIN0	U06	VDD_EXT
K03	PD_15	M11	GND	P19	HADCO_VREFP	U07	VDD_DMC
K04	VDD_EXT	M12	GND	P20	HADCO_VREFN	U08	VDD_DMC
K05	VDD_INT	M13	GND	R01	PD_06	U09	VDD_DMC
K06	GND	M14	GND	R02	PD_07	U10	VDD_DMC
K07	GND	M15	GND	R03	PD_08	U11	VDD_DMC
K08	GND	M16	VDD_INT	R04	VDD_INT	U12	VDD_DMC
K09	GND	M17	VDD_EXT	R05	VDD_INT	U13	VDD_DMC
K10	GND	M18	HADCO_VIN7	R06	GND	U14	VDD_DMC
K11	GND	M19	HADCO_VIN5	R07	VDD_INT	U15	DMCO_BA2
K12	GND	M20	HADCO_VIN6	R08	VDD_INT	U16	DMCO_WE
K13	GND	N01	DMCO_A11	R09	VDD_INT	U17	GND
K14	GND	N02	DMCO_A13	R10	VDD_INT	U18	DMCO_A06
K15	GND	N03	DMCO_A12	R11	VDD_INT	U19	DMCO_A03
K16	VDD_INT	N04	VDD_DMC	R12	VDD_INT	U20	DMCO_A00
K17	VDD_EXT	N05	VDD_INT	R13	VDD_INT	V01	TWI2_SDA
K18	DAIO_PIN15	N06	GND	R14	VDD_INT	V02	DMCO_DQ13
K19	DAIO_PIN19	N07	GND	R15	GND	V03	GND
K20	DAIO_PIN18	N08	GND	R16	VDD_INT	V04	PD_03
L01	PD_11	N09	GND	R17	VDD_INT	V05	PD_04
L02	PD_10	N10	GND	R18	DMCO_BA0	V06	PD_01
L03	PD_12	N11	GND	R19	HADCO_VIN2	V07	PA_08
L04	VDD_EXT	N12	GND	R20	VDD_HADC	V08	PA_05
L05	VDD_INT	N13	GND	T01	PD_05	V09	PA_03
L06	GND	N14	GND	T02	TWI0_SDA	V10	PA_02
L07	GND	N15	GND	T03	TWI0_SCL	V11	PA_01
L08	GND	N16	VDD_INT	T04	VDD_EXT	V12	PA_00
L09	GND	N17	VDD_EXT	T05	GND	V13	SYS_RESOUT
L10	GND	N18	HADCO_VIN4	T06	VDD_DMC	V14	SYS_FAULT
L11	GND	N19	HADCO_VIN3	T07	VDD_DMC	V15	DMCO_CAS
L12	GND	N20	GND	T08	VDD_DMC	V16	DMCO_RAS

Ball No.	Pin Name
V17	DMCO_BA1
V18	GND
V19	DMCO_A04
V20	DMCO_A05
W01	TWI2_SCL
W02	GND
W03	DMCO_DQ12
W04	DMCO_DQ11
W05	DMCO_DQ09
W06	PD_02
W07	PD_00
W08	PA_07
W09	PA_06
W10	PA_04
W11	DMCO_DQ05
W12	DMCO_DQ04
W13	DMCO_DQ03
W14	DMCO_DQ02
W15	SYS_FAULT
W16	DMCO_ODT
W17	DMCO_A08
W18	SYS_BMODE1
W19	GND
W20	DMCO_A07
Y01	GND
Y02	DMCO_UDQS
Y03	DMCO_UDQS
Y04	DMCO_DQ10
Y05	DMCO_DQ08
Y06	DMCO_UDM
Y07	DMCO_LDM
Y08	DMCO_CK
Y09	DMCO_CR
Y10	DMCO_DQ07
Y11	DMCO_DQ06
Y12	DMCO_LDQS
Y13	DMCO_LDQS
Y14	DMCO_DQ01
Y15	DMCO_DQ00
Y16	DMCO_CKE
Y17	DMCO_CS0
Y18	SYS_BMODE0
Y19	SYS_BMODE2
Y20	GND

Before Servicing This Unit

Electrical

Mechanical

Repair Information

Updating

MT41K128M16JT-125:K (DIGITAL : U104, U254)

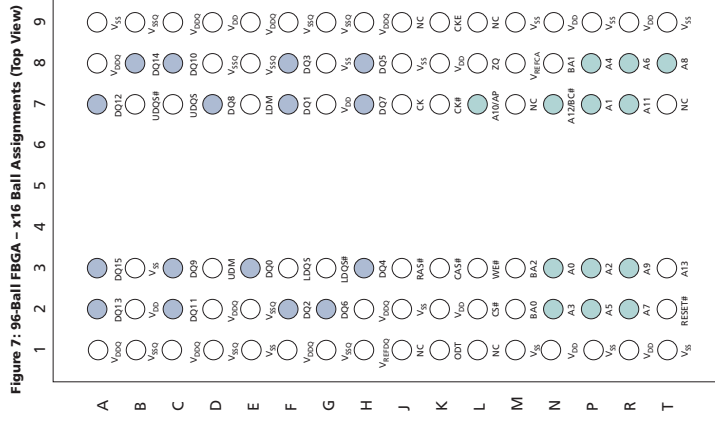
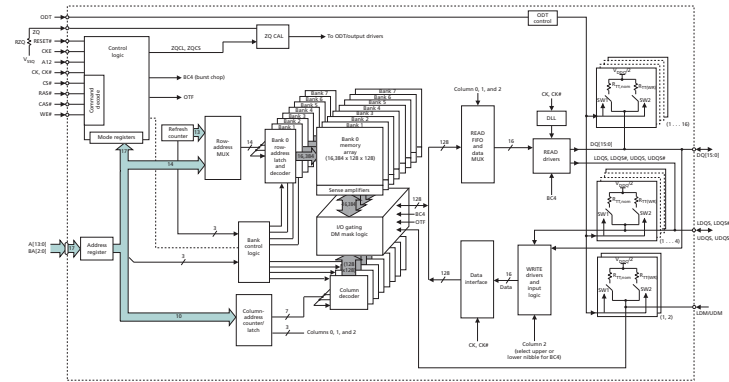


Figure 7: 96-Ball FBGA - x16 Ball Assignments (Top View)

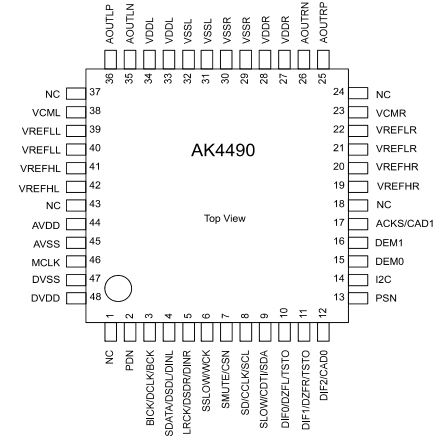
- 1. Ball descriptions listed in Table 4 (page 20) are listed as "x16."
- 2. A comma separates the configuration, a slash defines a selectable function.

Block Diagram

Figure 5: 128 Meg x 16 Functional Block Diagram



AK4490EQ (DAC : U4001, U4012, U4013, U4014, U4015, U4016, U4017, U4018)



Pin Function

No.	Pin Name	I/O	Function
1	NC	-	No internal bonding. Connect to GND.
2	PDN	I	Power-Down Mode Pin When at "L", the AK4490 is in power-down mode and is held in reset. The AK4490 must always be reset upon power-up.
3	BICK	I	Audio Serial Data Clock Pin in PCM Mode
4	DCLK	I	DSD Clock Pin in DSD Mode
5	BCK	I	Audio Serial Data Clock Pin
6	SDATA	I	Audio Serial Data Input Pin in PCM Mode
7	DSDL	I	DSD Lch Data Input Pin in DSD Mode
8	DINL	I	Lch Audio Serial Data Input Pin
9	LRCK	I	L/R Clock Pin in PCM Mode
10	DSDR	I	DSD Rch Data Input Pin in DSD Mode in Serial Control Mode
11	DINR	I	Rch Audio Serial Data Input Pin in Serial Control Mode
12	SSLOW	I	Digital filter setting in Parallel Control Mode
13	WCK	I	Word Clock input pin in Serial Control Mode
14	SMUTE	I	Soft Mute Pin in Parallel Control Mode When this pin is changed to "H", soft mute cycle is initiated. When returning "L", the output mute releases.
15	CSN	I	Chip Select Pin in Serial Control Mode, I2C= "L"
16	SD	I	Digital filter setting in Parallel Control Mode
17	CCLK	I	Control Data Clock Pin in Serial Control Mode, I2C= "L"
18	SCL	I	Control Data Clock Pin in Serial Control Mode, I2C= "H"
19	SLOW	I	Digital filter setting in Parallel Control Mode
20	CDTI	I	Control Data Input Pin in Serial Control Mode, I2C= "L"
21	SDA	I/O	Control Data Clock Pin in Serial Control Mode, I2C= "H"
22	DIF0	I	Digital Input Format 0 Pin in PCM Mode
23	DZFL	O	Lch Zero Input Detect Pin in Serial Control Mode
24	DIF1	I	Digital Input Format 1 Pin in PCM Mode
25	DZFR	O	Rch Zero Input Detect Pin in Serial Control Mode
26	DIF2	I	Digital Input Format 2 Pin in PCM Mode
27	CAD0	I	Chip Address 0 Pin in Serial Control Mode
28	PSN	I	Parallel or Serial Select Pin (Internal pull-up pin) "L": Serial Control Mode, "H": Parallel Control Mode
29	I2C	I	I2C mode select pin in Serial mode (Internal pull-down pin)
30	DEM0	I	De-emphasis Enable 0 Pin in Parallel Control Mode (Internal pull-up pin)

Note: All input pins except internal pull-up/down pins must not be left floating.

Before Servicing
This Unit

Electrical

Mechanical

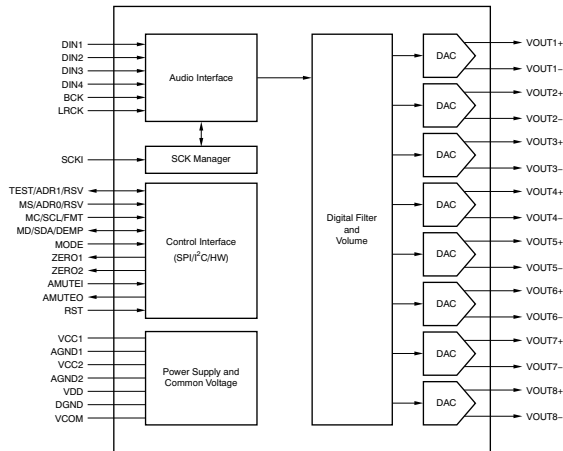
Repair Information

Updating

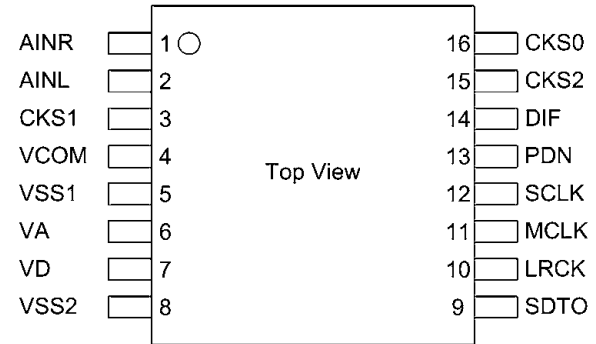
16	DEMI	I	De-emphasis Enable 1 Pin in Parallel Control Mode (Internal pull-down pin)
17	ACKS	I	Master Clock Auto Setting Mode Pin in Parallel Mode (Internal pull-down pin)
	CADI	I	Chip Address 1 Pin in Serial Control Mode
18	NC	-	No internal bonding. Connect to GND.
19	VREFHR	I	Rch High Level Voltage Reference Input Pin
20	VREFHR	I	Rch High Level Voltage Reference Input Pin
21	VREFLR	I	Rch Low Level Voltage Reference Input Pin
21	VREFLR	I	Rch Low Level Voltage Reference Input Pin
23	VCMR	-	Right channel Common Voltage Pin, Normally connected to VREFLR with a 10uF electrolytic cap.
24	NC	-	No internal bonding. Connect to GND.
25	AOUTRP	O	Rch Positive Analog Output Pin
26	AOUTRN	O	Rch Negative Analog Output Pin
27	VDDR	-	Rch Analog Power Supply Pin, 4.75 ~ 7.2V
28	VDDR	-	Rch Analog Power Supply Pin, 4.75 ~ 7.2V
29	VSSR	-	Ground Pin
30	VSSR	-	Ground Pin
31	VSSL	-	Ground Pin
32	VSSL	-	Ground Pin
33	VDDL	-	Lch Analog Power Supply Pin, 4.75 ~ 7.2V
34	VDDL	-	Lch Analog Power Supply Pin, 4.75 ~ 7.2V
35	AOUTLN	O	Lch Negative Analog Output Pin
36	AOUTLP	O	Lch Positive Analog Output Pin
37	NC	-	No internal bonding. Connect to GND.
38	VCML	-	Left channel Common Voltage Pin, Normally connected to VREFLL with a 10uF electrolytic cap.
39	VREFLL	I	Lch Low Level Voltage Reference Input Pin
40	VREFLL	I	Lch Low Level Voltage Reference Input Pin
41	VREFHL	I	Lch High Level Voltage Reference Input Pin
42	VREFHL	I	Lch High Level Voltage Reference Input Pin
43	NC	-	No internal bonding. Connect to GND.
44	AVDD	-	Analog Power Supply Pin, 3.0 ~ 3.6V
45	AVSS	-	Ground Pin
46	MCLK	I	Master Clock Input Pin
47	DVSS	-	Ground Pin
48	DVDD	-	Digital Power Supply Pin, 3.0 ~ 3.6V

Note: All input pins except internal pull-up/down pins must not be left floating.

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 ² S 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)

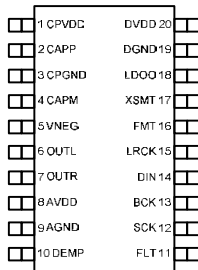


Table 2. TERMINAL FUNCTIONS, PCM510x

TERMINAL NAME	NO.	I/O	DESCRIPTION
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

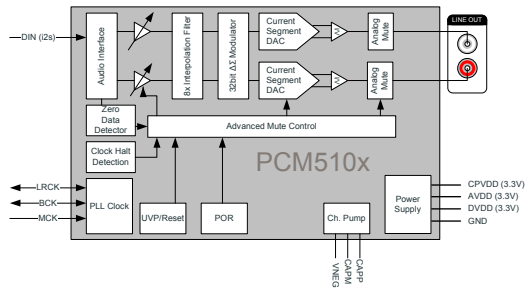
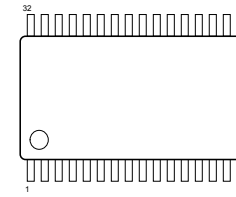


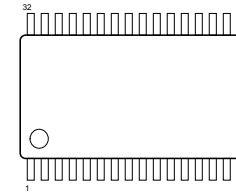
Figure 1. PCM510x Functional Block Diagram

NJU72343 (AUDIO/VIDEO : U3215, U3216)



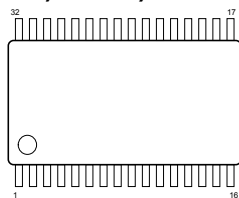
No.	Symbol	Function	No.	Symbol	Function
1	AREF	Analog reference potential	17	DATA	IC control data input
2	ADR	Address selection	18	CLOCK	IC control clock input
3	InA2	Ach input2	19	VDDOUT	Digital power supply output
4	InB2	Bch input2	20	AREF	Analog reference potential
5	InA1	Ach input1	21	OutH	Hch output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

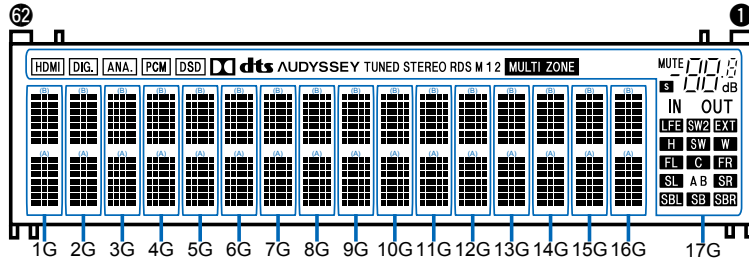
NJU72751 (AUDIO/VIDEO : U3219, U3220)



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 : Z6801)



PIN CONNECTION

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

CONNECTION	PIN NO.
DA	50
TSA	49
TSB	48
Q17G	47
17G	46
NX	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
NP	4
NP	3
NP	2
F1	1

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	D
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

Before Servicing
This Unit

Electrical

Mechanical

Repair Information

Updating

3. Remote Code Table

SHARP FORMAT / DATA CONSTRUCTION 15bits C14 0 C15 0=NOT INVERTED, 1=INVERTED /REMOTE ID : 1
 FORMAT: SHARP / DATA CONSTRUCTION 15bits C14 0 C15 0=NOT INVERTED, 1=INVERTED /REMOTE ID : 1
 SYSTEM ADDRESS(C1~C5): **01000**, EXTENSION BIT(C12,C13): **11**

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): **00110**, EXTENSION BIT (C12,C13): **01**

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): **00110**, EXTENSION BIT (C12,C13): **10**

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

Before Servicing
This Unit

Electrical

Mechanical

Repair Information

Updating

FORMAT: SHARP / DATA CONSTRUCTION 15bits C14 0 C15 0=NOT INVERTED, 1=INVERTED /REMOTE ID : 1
SYSTEM ADDRESS (C1~C5) : 00110 , EXTENSION BIT (C12,C13) : 11

No.	Data (C6~C11)	Key Name	No.	Data (C6~C11)	Key Name
RCSHP0C30000	0 0 0 0 0		RCSHP0C30016	0 0 0 0 1 0	
RCSHP0C30001	1 0 0 0 0	1 ※NA only	RCSHP0C30017	1 0 0 0 1 0	
RCSHP0C30002	0 1 0 0 0	2 ※NA only	RCSHP0C30018	0 1 0 0 1 0	DIRECT SEARCH ※NA only
RCSHP0C30003	1 1 0 0 0	3 ※NA only	RCSHP0C30019	1 1 0 0 1 0	
RCSHP0C30004	0 0 1 0 0	4 ※NA only	RCSHP0C30020	0 0 1 0 1 0	PTY ※EU only
RCSHP0C30005	1 0 1 0 0	5 ※NA only	RCSHP0C30021	1 0 1 0 1 0	TUNER PRESET DOWN ※NA only
RCSHP0C30006	0 1 1 0 0	6 ※NA only	RCSHP0C30022	0 1 1 0 1 0	TUNER PRESET UP ※NA only
RCSHP0C30007	1 1 1 0 0	7 ※NA only	RCSHP0C30023	1 1 1 0 1 0	TUNER BAND ※NA only
RCSHP0C30008	0 0 0 1 0	8 ※NA only	RCSHP0C30024	0 0 0 1 1 0	TUNER TUNING MODE ※NA only
RCSHP0C30009	1 0 0 1 0	9 ※NA only	RCSHP0C30025	1 0 0 1 1 0	TUNER TUNING UP ※NA only
RCSHP0C30010	0 1 0 1 0	0 ※NA only	RCSHP0C30026	0 1 0 1 1 0	TUNER TUNING DOWN ※NA only
RCSHP0C30011	1 1 0 1 0		RCSHP0C30027	1 1 0 1 1 0	
RCSHP0C30012	0 0 1 1 0	TUNER MEMORY ※NA only	RCSHP0C30028	0 0 1 1 1 0	
RCSHP0C30013	1 0 1 1 0		RCSHP0C30029	1 0 1 1 1 0	
RCSHP0C30014	0 1 1 1 0	RT ※EU only	RCSHP0C30030	0 1 1 1 1 0	
RCSHP0C30015	1 1 1 1 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) : 01000 , EXTENSION BIT (C12,C13) : 10

No.	Data (C6~C11)	Key Name	No.	Data (C6~C11)	Key Name
RCSHP0210000	0 0 0 0 0		RCSHP0210016	0 0 0 0 1 0	
RCSHP0210001	1 0 0 0 0		RCSHP0210017	1 0 0 0 1 0	
RCSHP0210002	0 1 0 0 0		RCSHP0210018	0 1 0 0 1 0	ZONE3 TV AUDIO
RCSHP0210003	1 1 0 0 0		RCSHP0210019	1 1 0 0 1 0	ZONE3 CBL/SAT
RCSHP0210004	0 0 1 0 0		RCSHP0210020	0 0 1 0 1 0	ZONE3 GAME
RCSHP0210005	1 0 1 0 0		RCSHP0210021	1 0 1 0 1 0	ZONE3 MEDIAPLAYER
RCSHP0210006	0 1 1 0 0		RCSHP0210022	0 1 1 0 1 0	
RCSHP0210007	1 1 1 0 0		RCSHP0210023	1 1 1 0 1 0	ZONE3 AUX1
RCSHP0210008	0 0 0 1 0	ZONE3 TUNER	RCSHP0210024	0 0 0 1 1 0	
RCSHP0210009	1 0 0 1 0	ZONE3 PHONO	RCSHP0210025	1 0 0 1 1 0	
RCSHP0210010	0 1 0 1 0	ZONE3 CD	RCSHP0210026	0 1 0 1 1 0	
RCSHP0210011	1 1 0 1 0		RCSHP0210027	1 1 0 1 1 0	
RCSHP0210012	0 0 1 1 0		RCSHP0210028	0 0 1 1 1 0	
RCSHP0210013	1 0 1 1 0		RCSHP0210029	1 0 1 1 1 0	ZONE2 ON/OFF
RCSHP0210014	0 1 1 1 0	ZONE3 DVD	RCSHP0210030	0 1 1 1 1 0	
RCSHP0210015	1 1 1 1 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 1		RCSHP0210048	0 0 0 0 1 1	
RCSHP0210033	1 0 0 0 1		RCSHP0210049	1 0 0 0 1 1	
RCSHP0210034	0 1 0 0 1		RCSHP0210050	0 1 0 0 1 1	
RCSHP0210035	1 1 0 0 1		RCSHP0210051	1 1 0 0 1 1	
RCSHP0210036	0 0 1 0 1		RCSHP0210052	0 0 1 0 1 1	
RCSHP0210037	1 0 1 0 1	ZONE3 VOLUME DOWN	RCSHP0210053	1 0 1 0 1 1	
RCSHP0210038	0 1 1 0 1	ZONE3 VOLUME UP	RCSHP0210054	0 1 1 0 1 1	
RCSHP0210039	1 1 1 0 1		RCSHP0210055	1 1 1 0 1 1	
RCSHP0210040	0 0 0 1 1		RCSHP0210056	0 0 0 1 1 1	
RCSHP0210041	1 0 0 1 1		RCSHP0210057	1 0 0 1 1 1	MAIN ZONE ON
RCSHP0210042	0 1 0 1 1	PURE DIRECT	RCSHP0210058	0 1 0 1 1 1	MAIN ZONE OFF
RCSHP0210043	1 1 0 1 1		RCSHP0210059	1 1 0 1 1 1	ZONE2 ON
RCSHP0210044	0 0 1 1 1		RCSHP0210060	0 0 1 1 1 1	ZONE2 OFF
RCSHP0210045	1 0 1 1 1		RCSHP0210061	1 0 1 1 1 1	ZONE3 ON
RCSHP0210046	0 1 1 1 1		RCSHP0210062	0 1 1 1 1 1	ZONE3 OFF
RCSHP0210047	1 1 1 1 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) : 00100 , EXTENSION BIT (C12,C13) : 01

No.	Data (C6~C11)	Key Name	No.	Data (C6~C11)	Key Name
RCSHP0420000	0 0 0 0 0		RCSHP0420016	0 0 0 0 1 0	
RCSHP0420001	1 0 0 0 0		RCSHP0420017	1 0 0 0 1 0	
RCSHP0420002	0 1 0 0 0		RCSHP0420018	0 1 0 0 1 0	
RCSHP0420003	1 1 0 0 0	ROCK ARENA	RCSHP0420019	1 1 0 0 1 0	
RCSHP0420004	0 0 1 0 0	JAZZ CLUB	RCSHP0420020	0 0 1 0 1 0	
RCSHP0420005	1 0 1 0 0		RCSHP0420021	1 0 1 0 1 0	
RCSHP0420006	0 1 1 0 0	MONO MOVIE	RCSHP0420022	0 1 1 0 1 0	
RCSHP0420007	1 1 1 0 0	MATRIX	RCSHP0420023	1 1 1 0 1 0	
RCSHP0420008	0 0 0 1 0	VIDEO GAME	RCSHP0420024	0 0 0 1 1 0	
RCSHP0420009	1 0 0 1 0	VIRTUAL	RCSHP0420025	1 0 0 1 1 0	
RCSHP0420010	0 1 0 1 0		RCSHP0420026	0 1 0 1 1 0	
RCSHP0420011	1 1 0 1 0		RCSHP0420027	1 1 0 1 1 0	
RCSHP0420012	0 0 1 1 0		RCSHP0420028	0 0 1 1 1 0	
RCSHP0420013	1 0 1 1 0		RCSHP0420029	1 0 1 1 1 0	MultiEQ XT32
RCSHP0420014	0 1 1 1 0		RCSHP0420030	0 1 1 1 1 0	
RCSHP0420015	1 1 1 1 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 1		RCSHP0420048	0 0 0 0 1 1	
RCSHP0420033	1 0 0 0 1		RCSHP0420049	1 0 0 0 1 1	
RCSHP0420034	0 1 0 0 1		RCSHP0420050	0 1 0 0 1 1	
RCSHP0420035	1 1 0 0 1		RCSHP0420051	1 1 0 0 1 1	INPUT MDOE AUTO
RCSHP0420036	0 0 1 0 1		RCSHP0420052	0 0 1 0 1 1	
RCSHP0420037	1 0 1 0 1		RCSHP0420053	1 0 1 0 1 1	
RCSHP0420038	0 1 1 0 1		RCSHP0420054	0 1 1 0 1 1	

RCSHP0420039	1 1 1 0 1		RCSHP0420055	1 1 1 0 1 1	INPUT MODE: EXT IN
RCSHP0420040	0 0 0 1 1		RCSHP0420056	0 0 0 1 1 1	
RCSHP0420041	1 0 0 1 1		RCSHP0420057	1 0 0 1 1 1	
RCSHP0420042	0 1 0 1 1		RCSHP0420058	0 1 0 1 1 1	
RCSHP0420043	1 1 0 1 1		RCSHP0420059	1 1 0 1 1 1	
RCSHP0420044	0 0 1 1 1		RCSHP0420060	0 0 1 1 1 1	
RCSHP0420045	1 0 1 1 1		RCSHP0420061	1 0 1 1 1 1	
RCSHP0420046	0 1 1 1 1		RCSHP0420062	0 1 1 1 1 1	
RCSHP0420047	1 1 1 1 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	1	0	0	1	0	0	1	1	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)

DISASSEMBLY

Flowchart

1. FRONT PANEL ASSY

2. RADIATOR ASSY

3. BACK PANEL ASSY

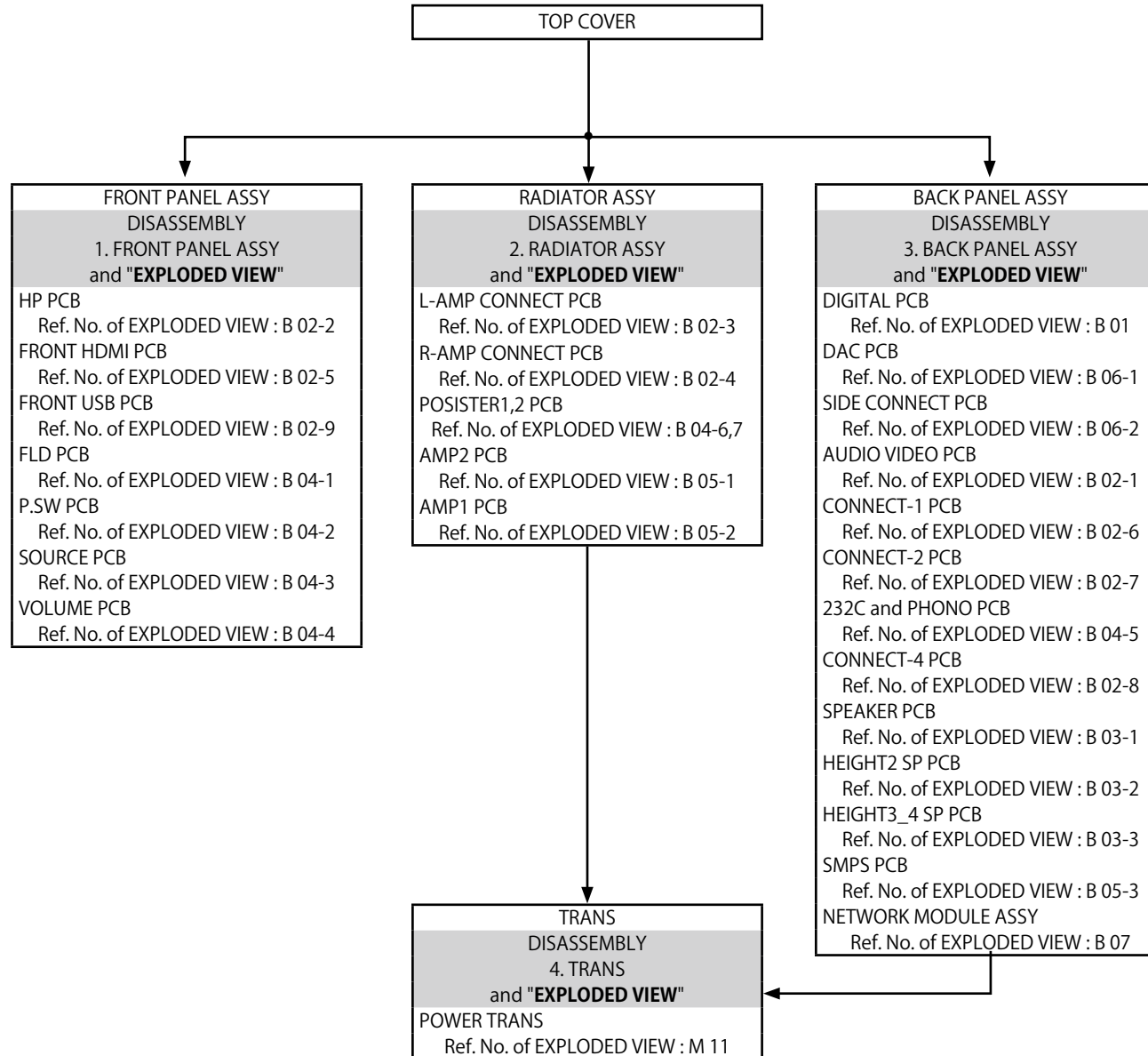
4. TRANS

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](#)"

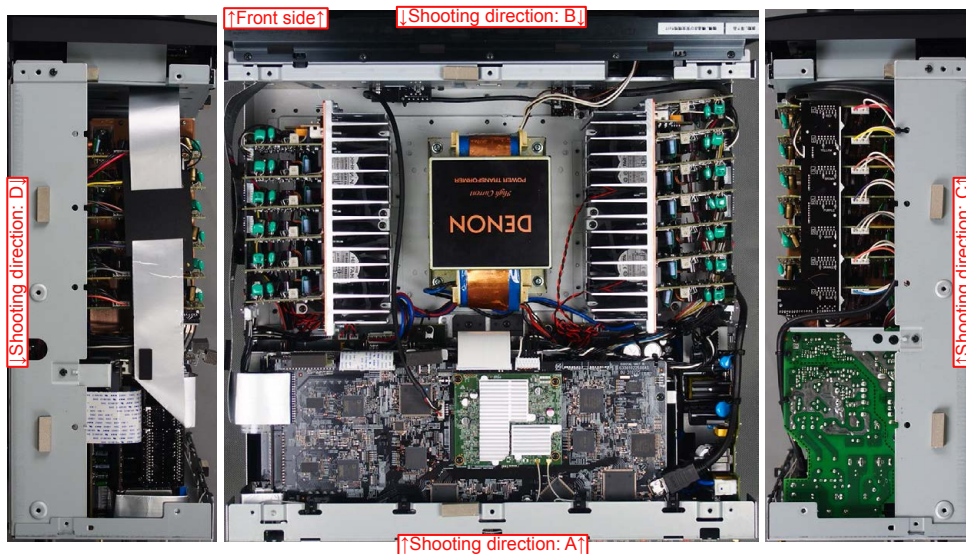


Explanatory Photos for DISASSEMBLY

- 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-X8500H E3 are used in this manual.

The viewpoint of each photograph

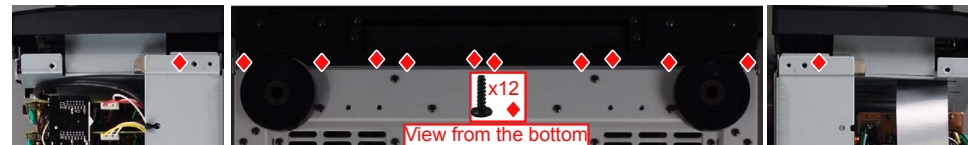
(Shooting direction : X) [View from the top]



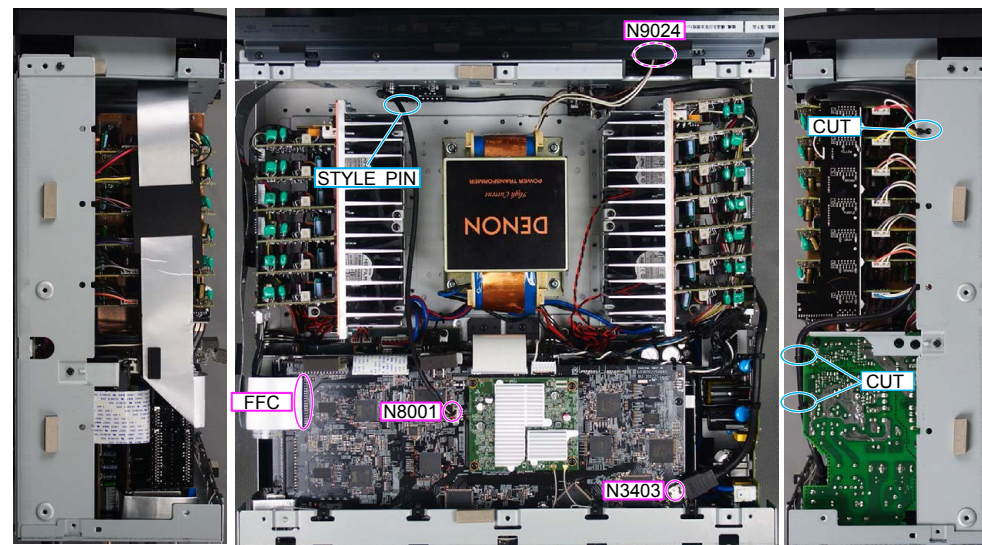
1. FRONT PANEL ASSY

Proceeding : **TOP COVER** → **FRONT PANEL ASSY**

(1) Remove the screws.



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



Before Servicing
This Unit

Electrical

Mechanical

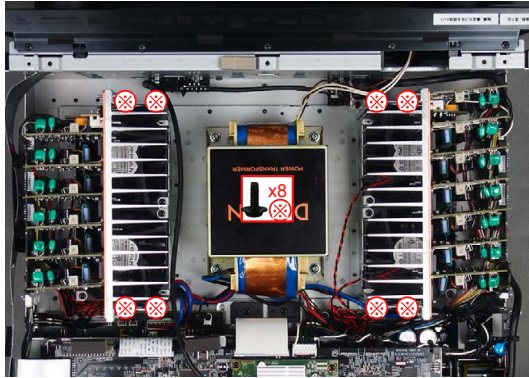
Repair Information

Updating

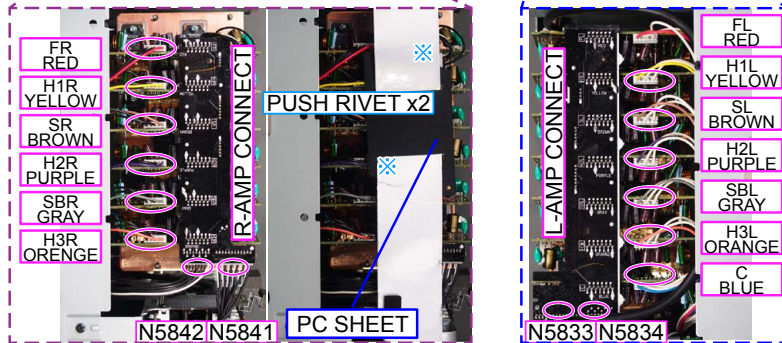
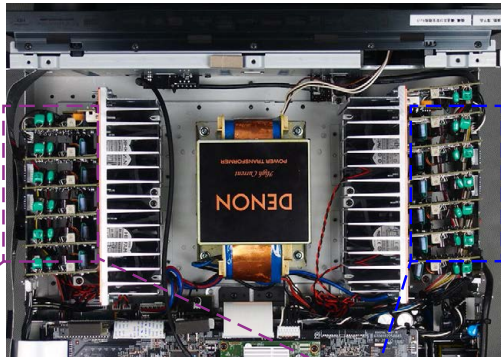
2. RADIATOR ASSY

Proceeding : **TOP COVER** → **FRONT PANEL ASSY** → **RADIATOR ASSY**

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



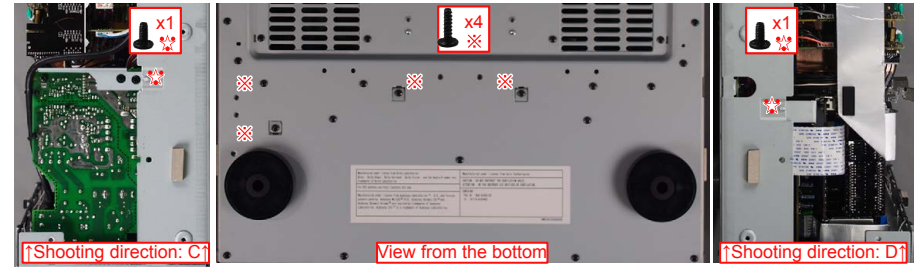
(3) Remove the connector. Remove the PUSH RIVET. Remove the connector.



3. BACK PANEL ASSY

Proceeding : **TOP COVER** → **BACK PANEL ASSY**

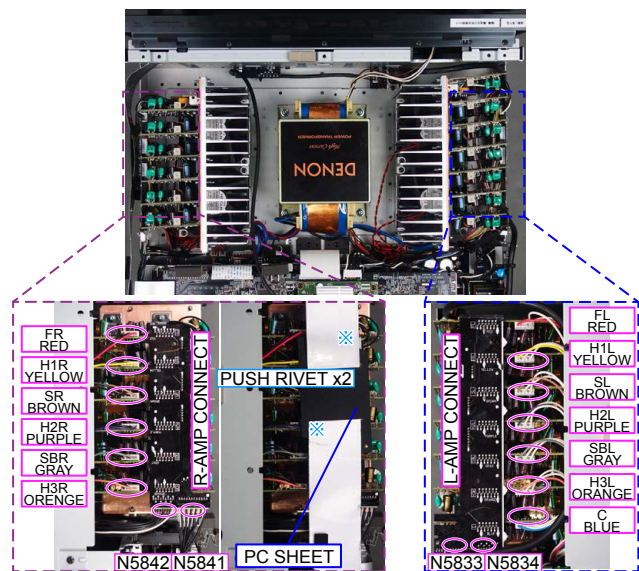
(1) Remove the screws.



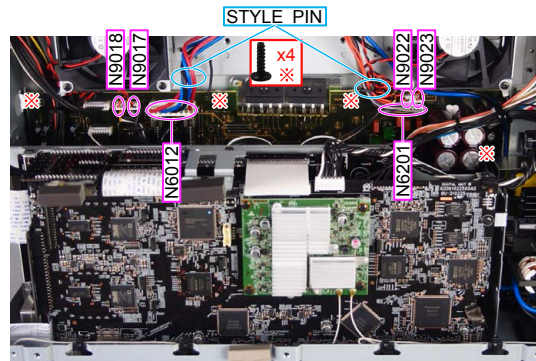
(2) Remove the screws.



(3) Remove the connector. Remove the PUSH RIVET. Remove the connector.



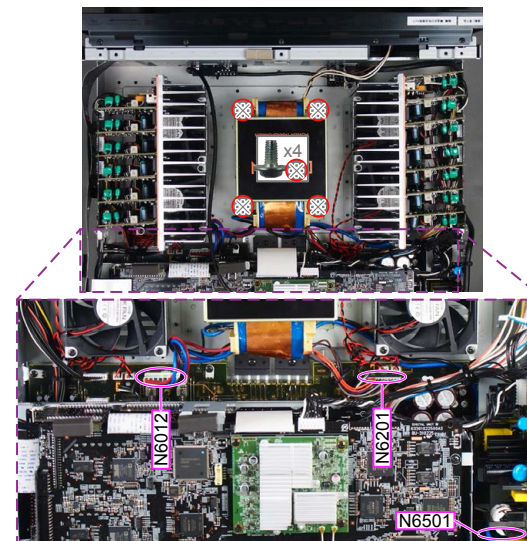
(4) Remove the screws. Remove the connector.



4. TRANS

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

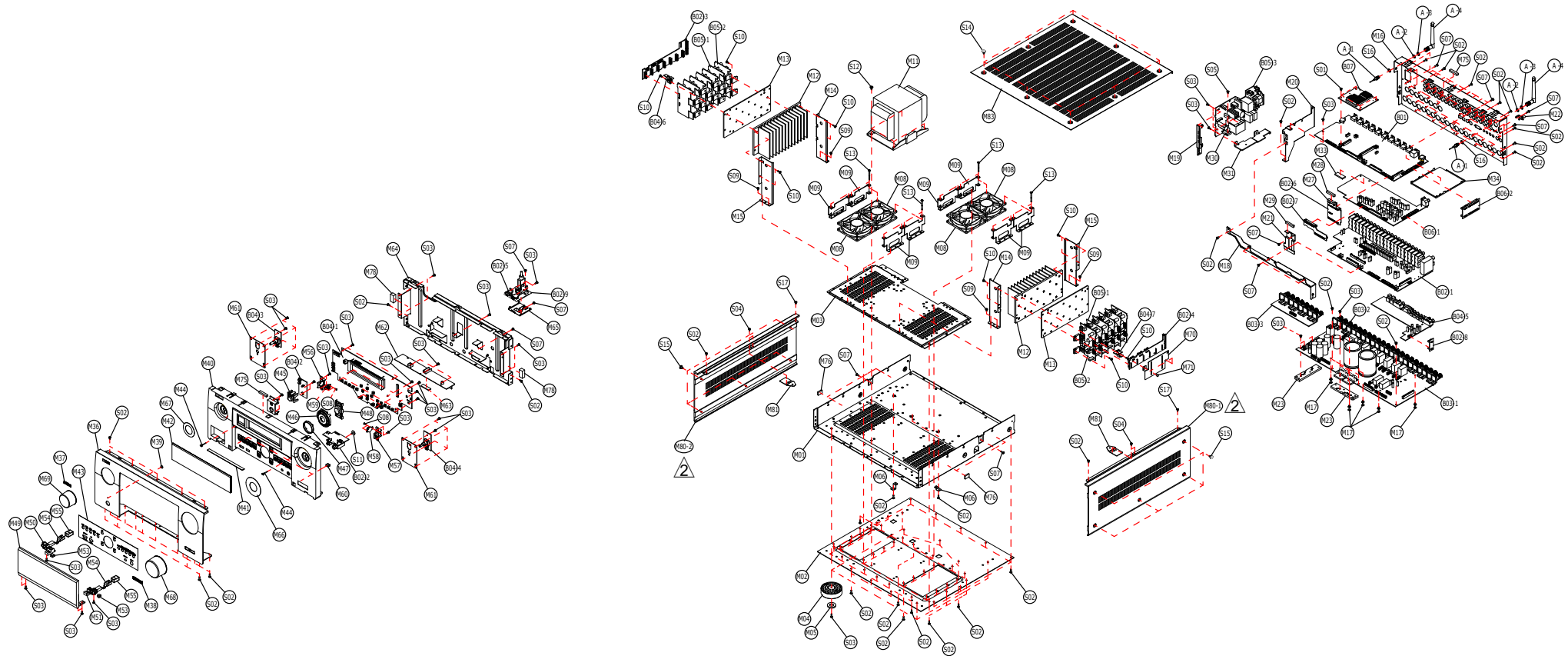
(1) Remove the screws. Remove the connector.



EXPLODED VIEW

AVR-X8500H Parts List : <http://dmedia.dmglobal.com/Document/DocumentDetails/24181>

AVC-X8500H Parts List : <http://dmedia.dmglobal.com/Document/DocumentDetails/24182>



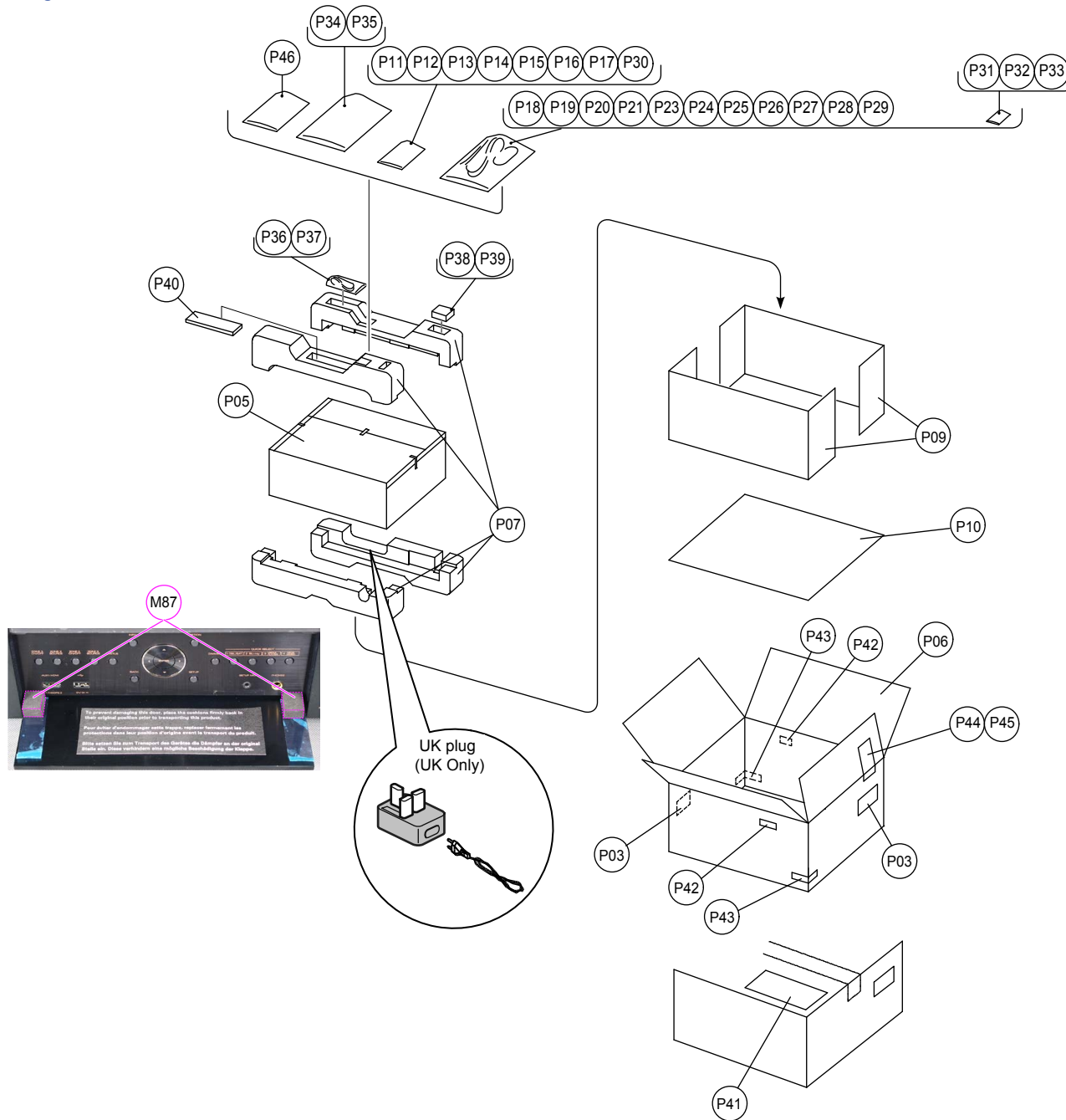
WARNING:

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

PACKING VIEW

AVR-X8500H Parts List : <http://dmedia.dmglobal.com/Document/DocumentDetails/24181>

AVC-X8500H Parts List : <http://dmedia.dmglobal.com/Document/DocumentDetails/24182>



REPAIR INFORMATION

TROUBLE SHOOTING

1. POWER
2. Analog video
3. HDMI/DVI
4. AUDIO
5. Network / Bluetooth / USB
6. SMPS

HDMI "Rx/Tx" Failure Detection

1. Prior checking
2. Preparations for checking HDMI Switcher reception/transmission register
3. Starting detecting the point of failure
4. Device implementation location

CLOCK FLOW & WAVE FORM IN DIGITAL BLOCK

SPECIAL MODE

Special mode setting button

1. Version Display Mode
2. PANEL / REMOTE LOCK Selection Mode
 - 3-1. Selecting the Mode for Service-related
 - 3-2. Protection History Display Mode
 - 3-3. 232C Standby Clear Mode
 - 3-4. Operation Info Mode
 - 3-5. TUNER STEP mode (E3 only)
 - 3-6. Remote ID Setup Mode
4. Protection Pass Mode
5. Additional Source mode
6. Network Initialization Mode
7. Clearing the Operation Info
8. Log Capture feature

PROTECTION DIAGRAM

AUDIO CHECK PATH

DIAGNOSTIC MODE

Service Path Check Mode
DIAGNOSTIC PATH DIAGRAM

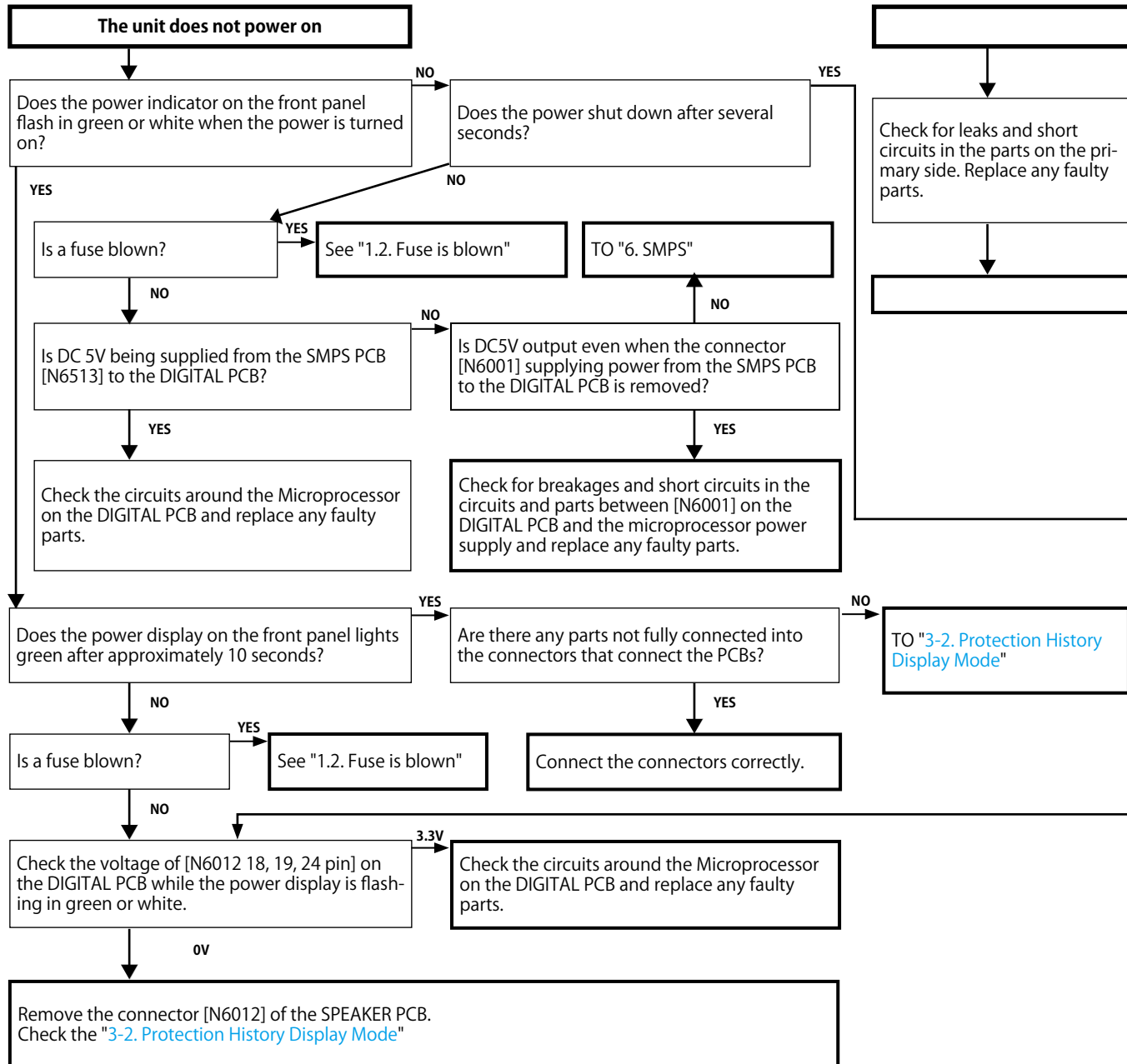
JIG FOR SERVICING

ADJUSTMENT

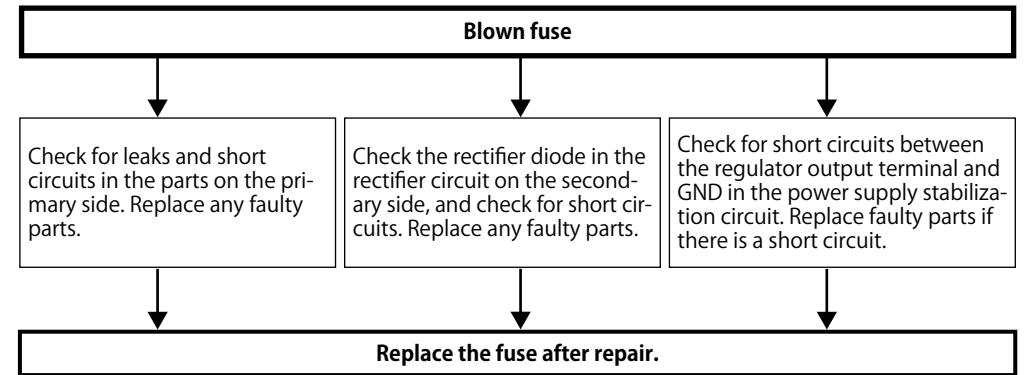
TROUBLE SHOOTING

1. POWER

1.1. The unit does not power on



1.2. Fuse is blown



Before Servicing This Unit

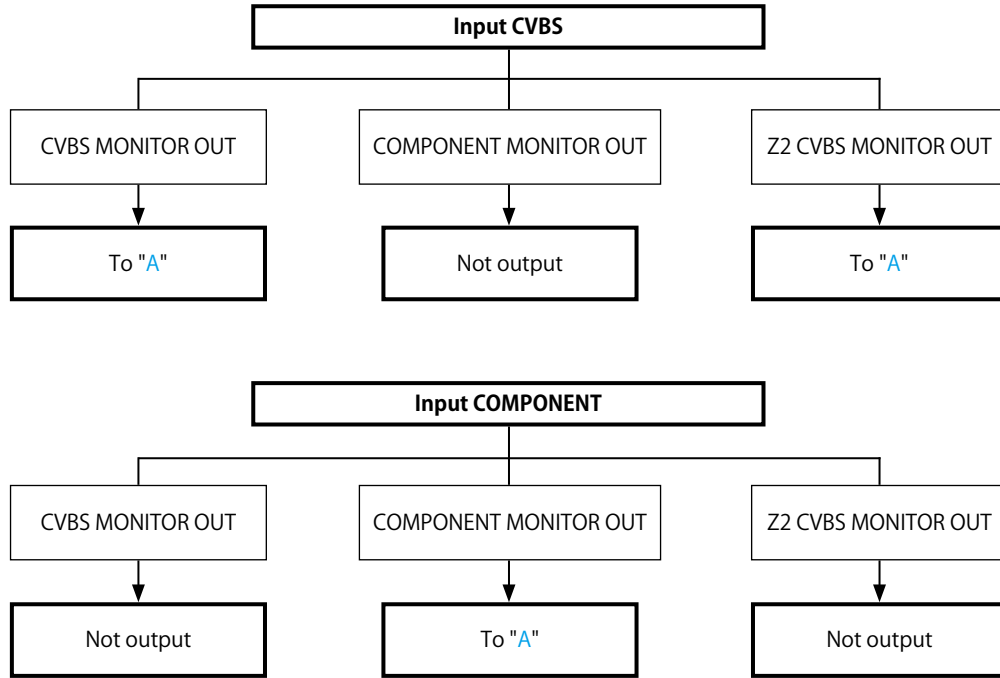
Electrical

Mechanical

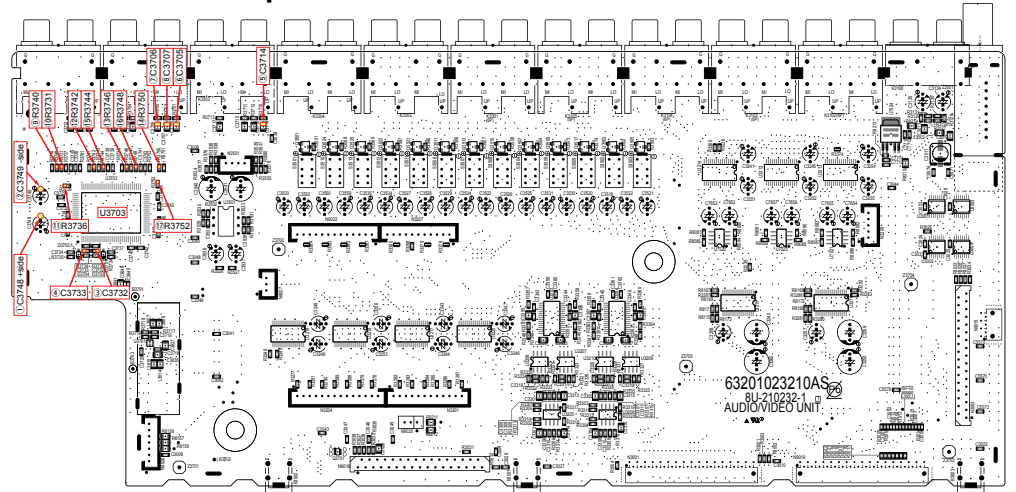
Repair Information

Updating

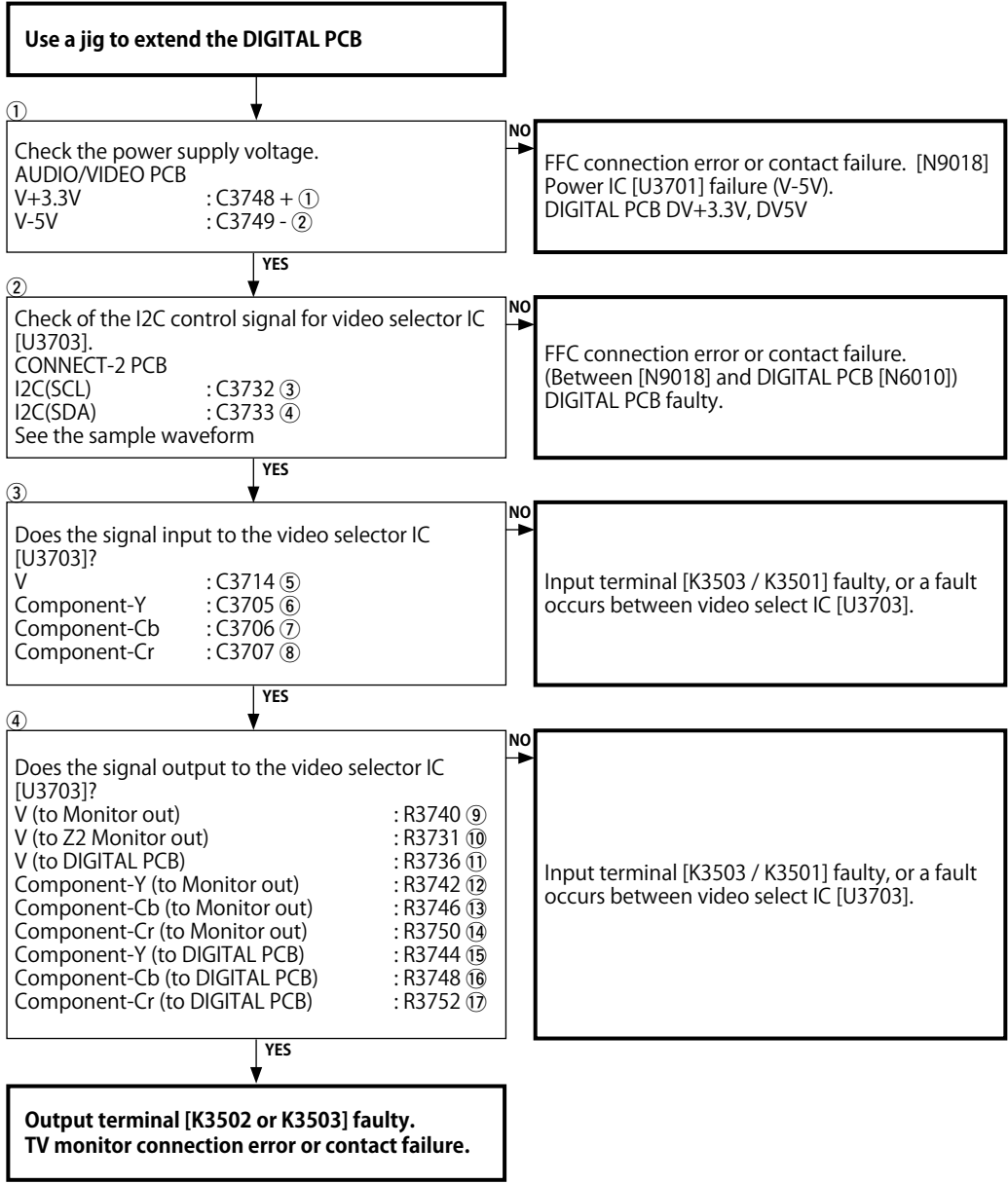
2. Analog video



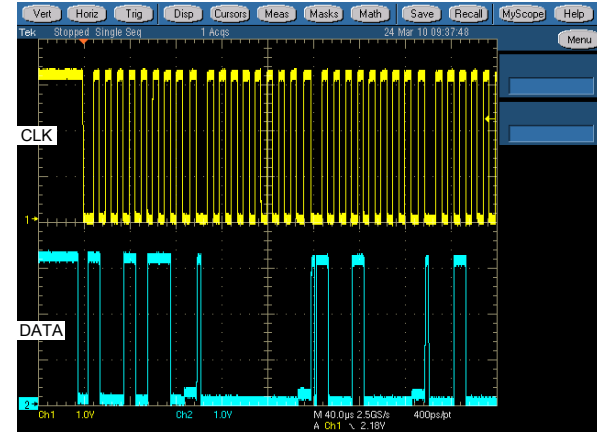
AUDIO VIDEO test point



A



I2C communication wave form (sample)



Before Servicing
This Unit

Electrical

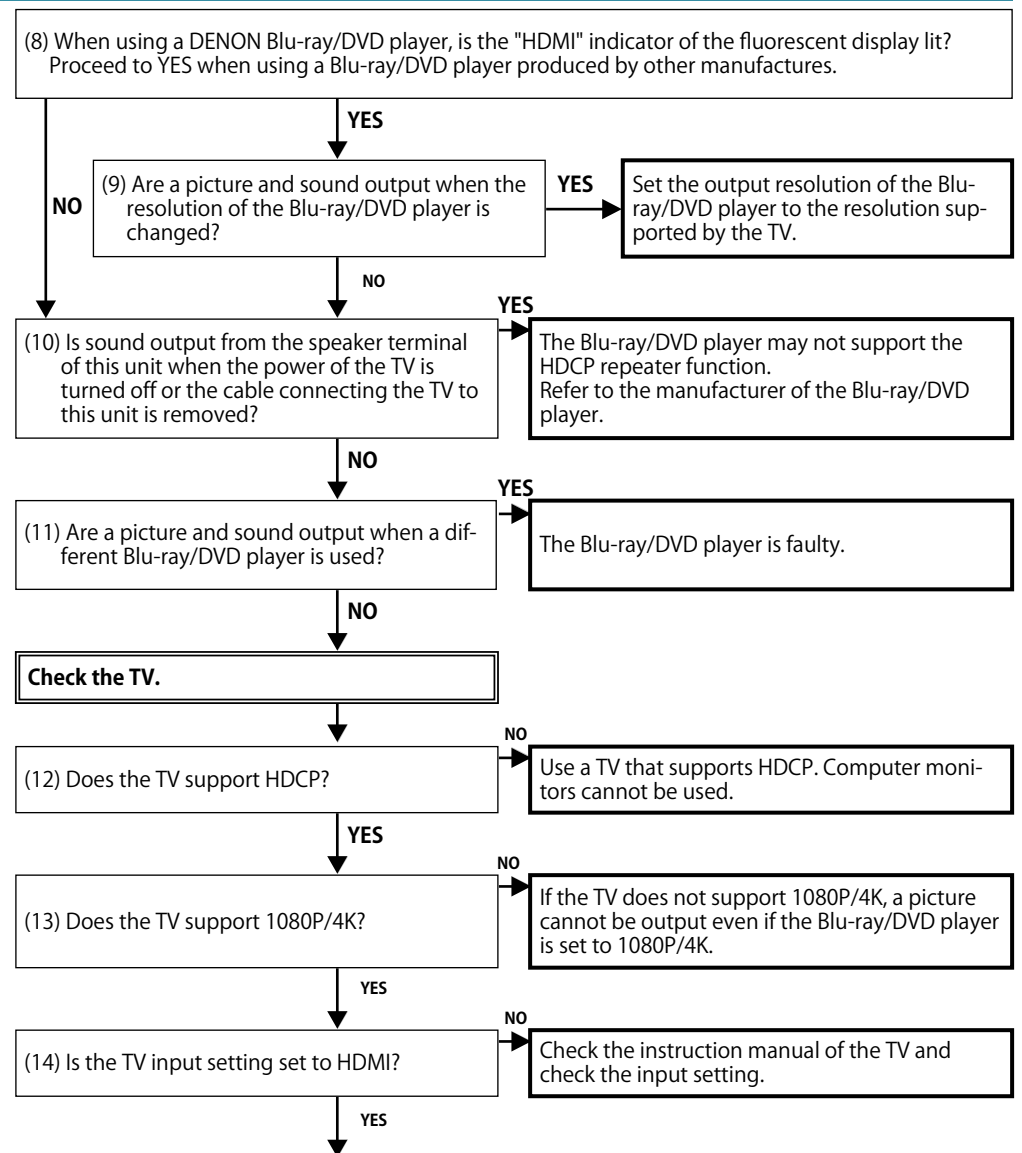
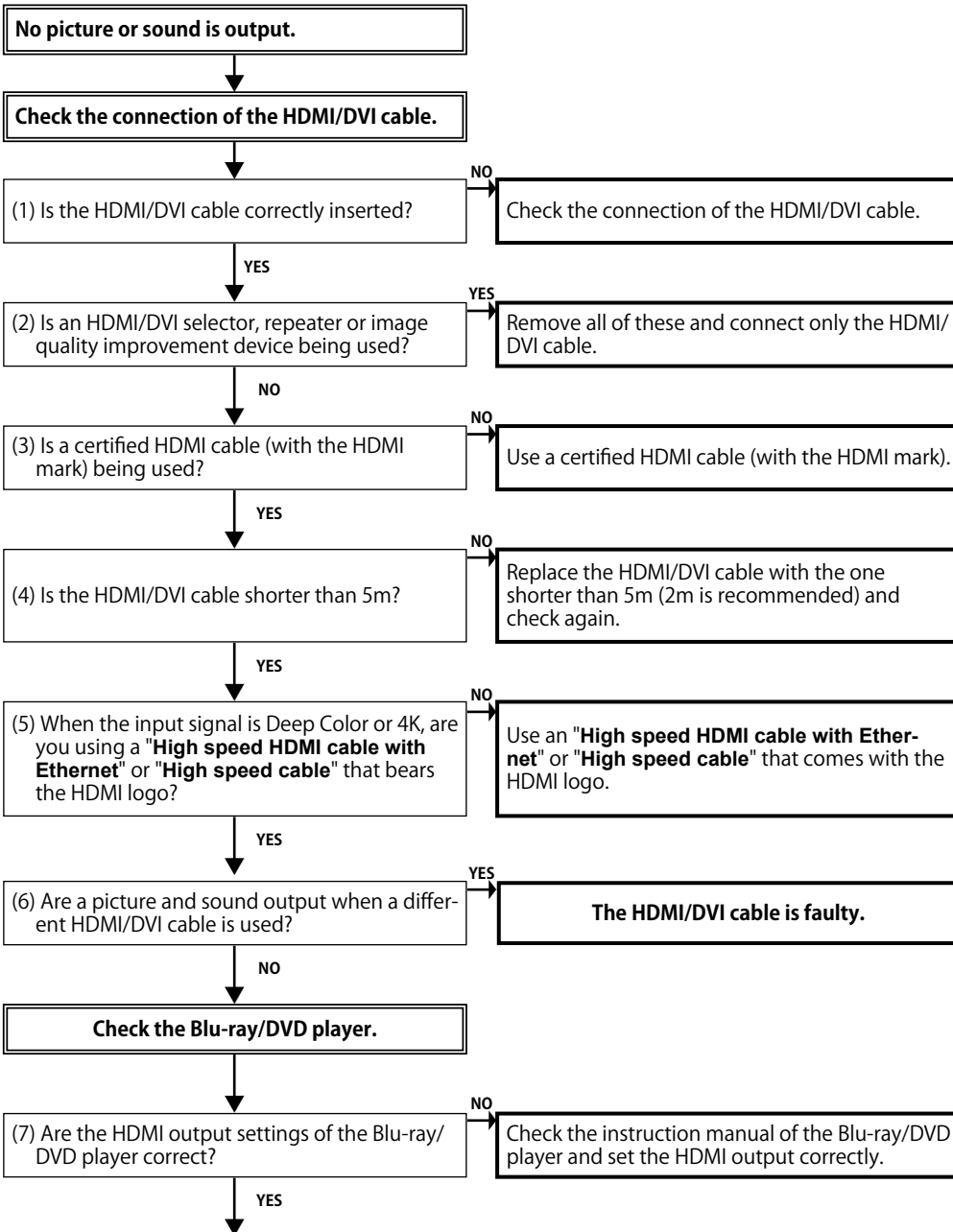
Mechanical

Repair Information

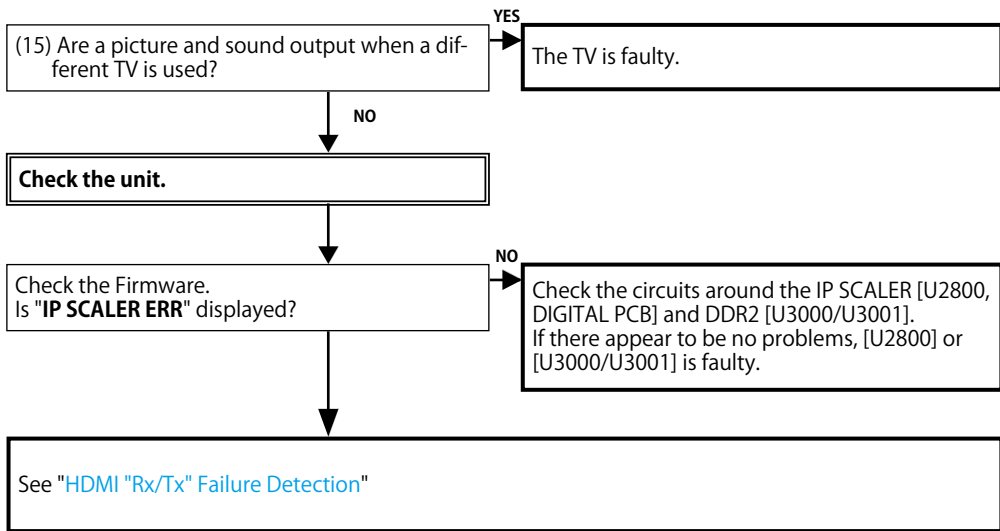
Updating

3. HDMI/DVI

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

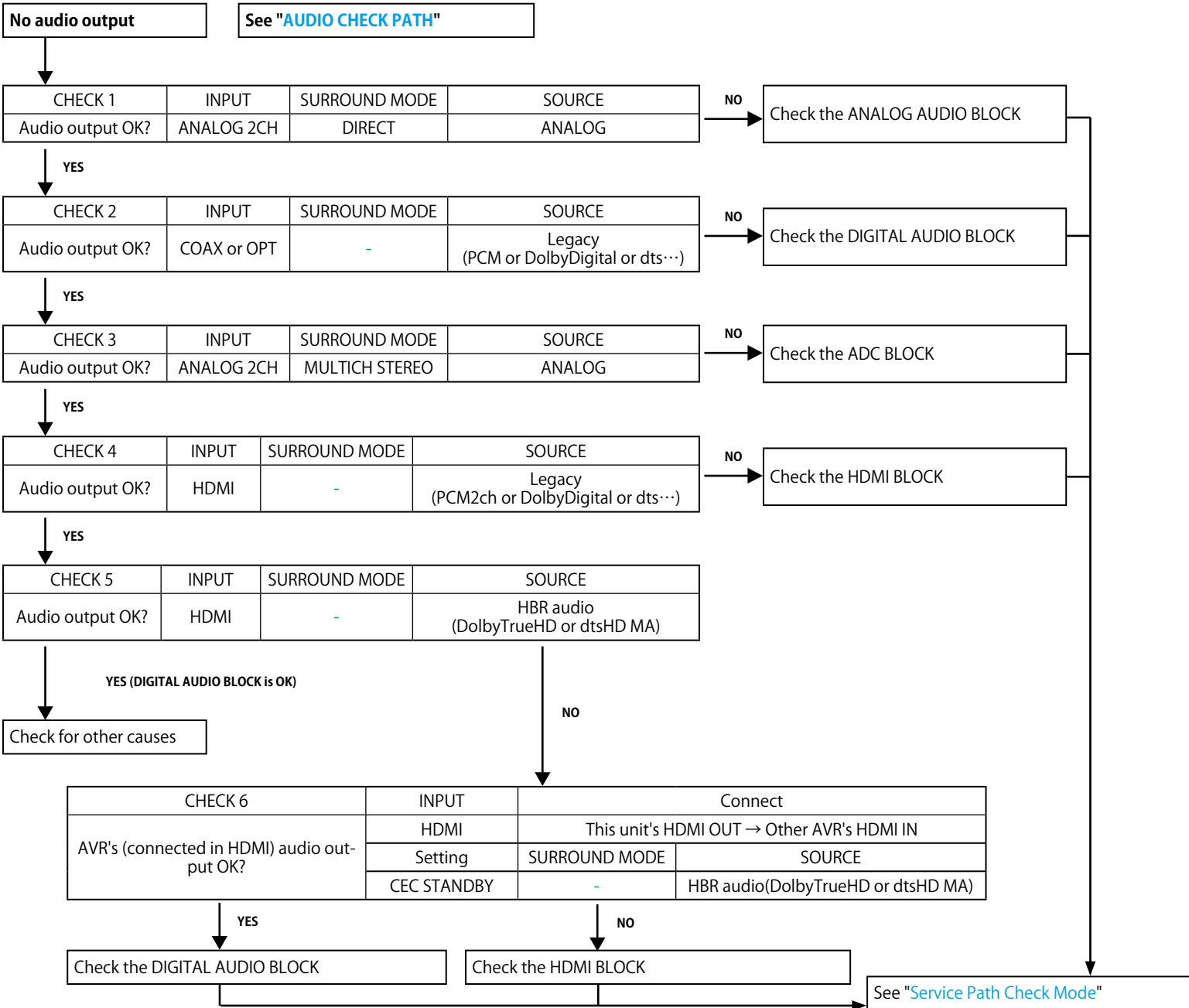


Go to next page.



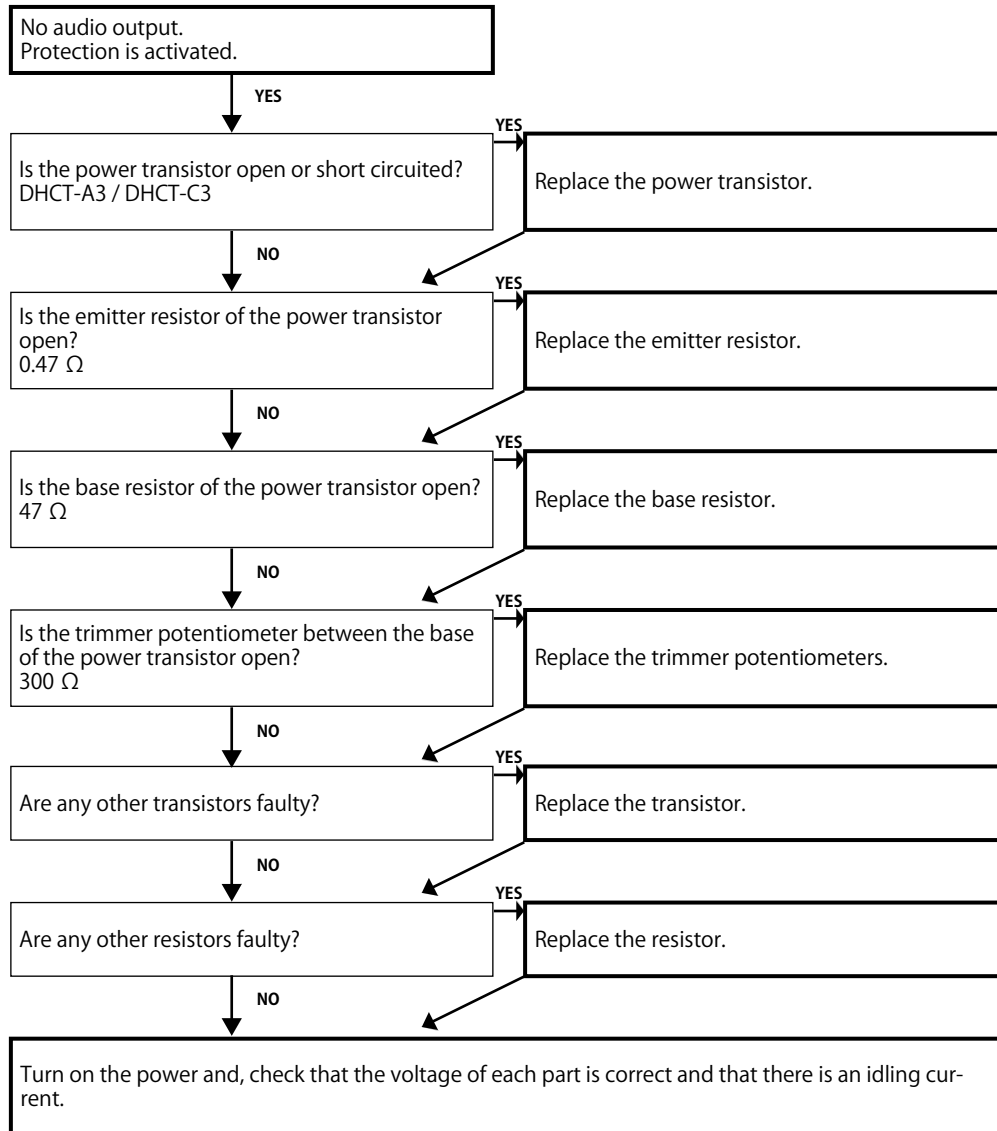
4. AUDIO

4.1. AUDIO CHECK

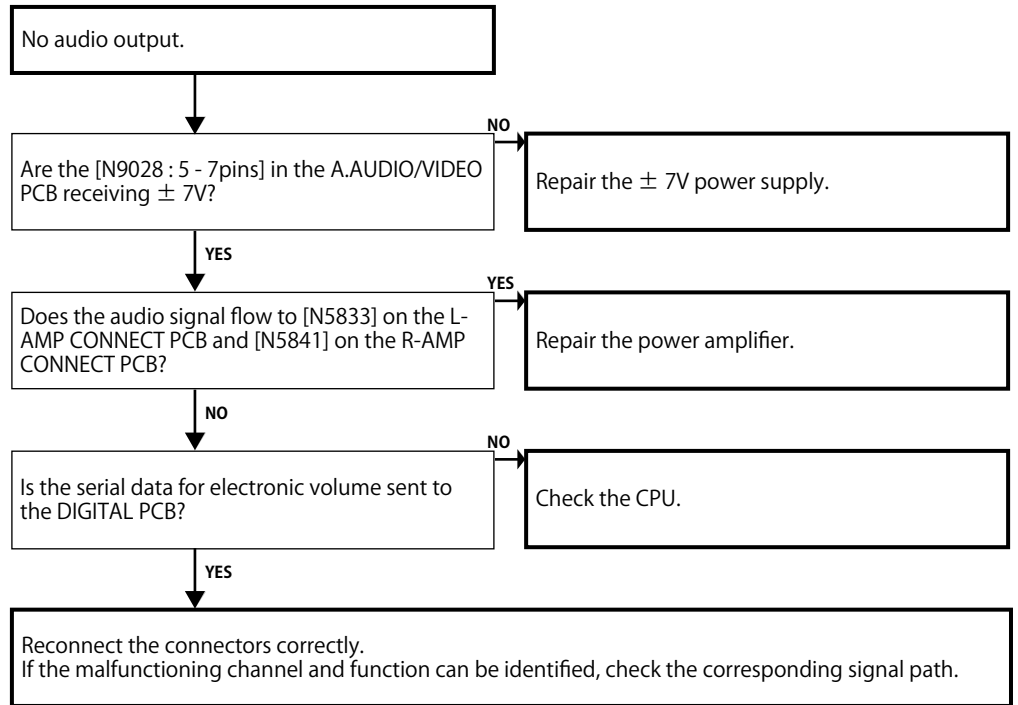


4.2. Power AMP (AMP PCB)

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

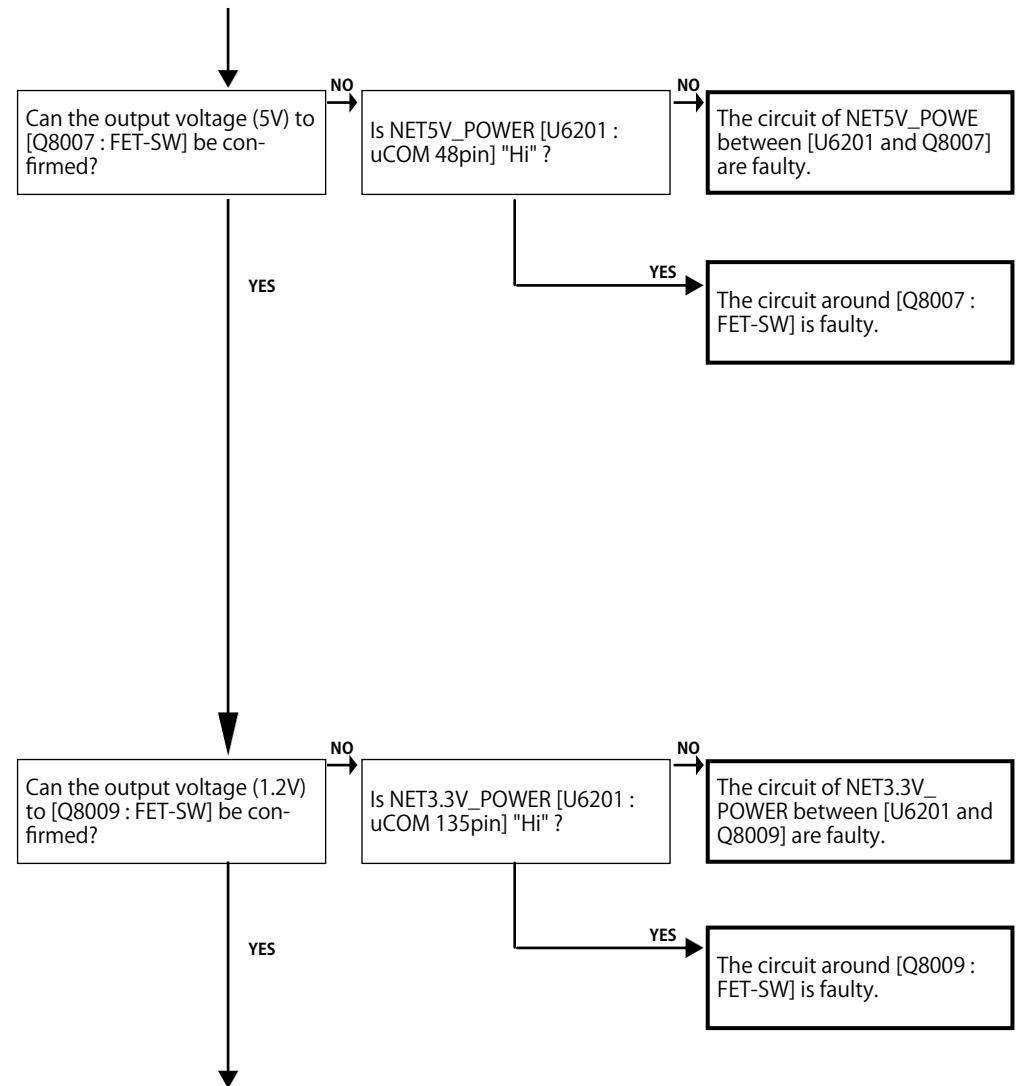
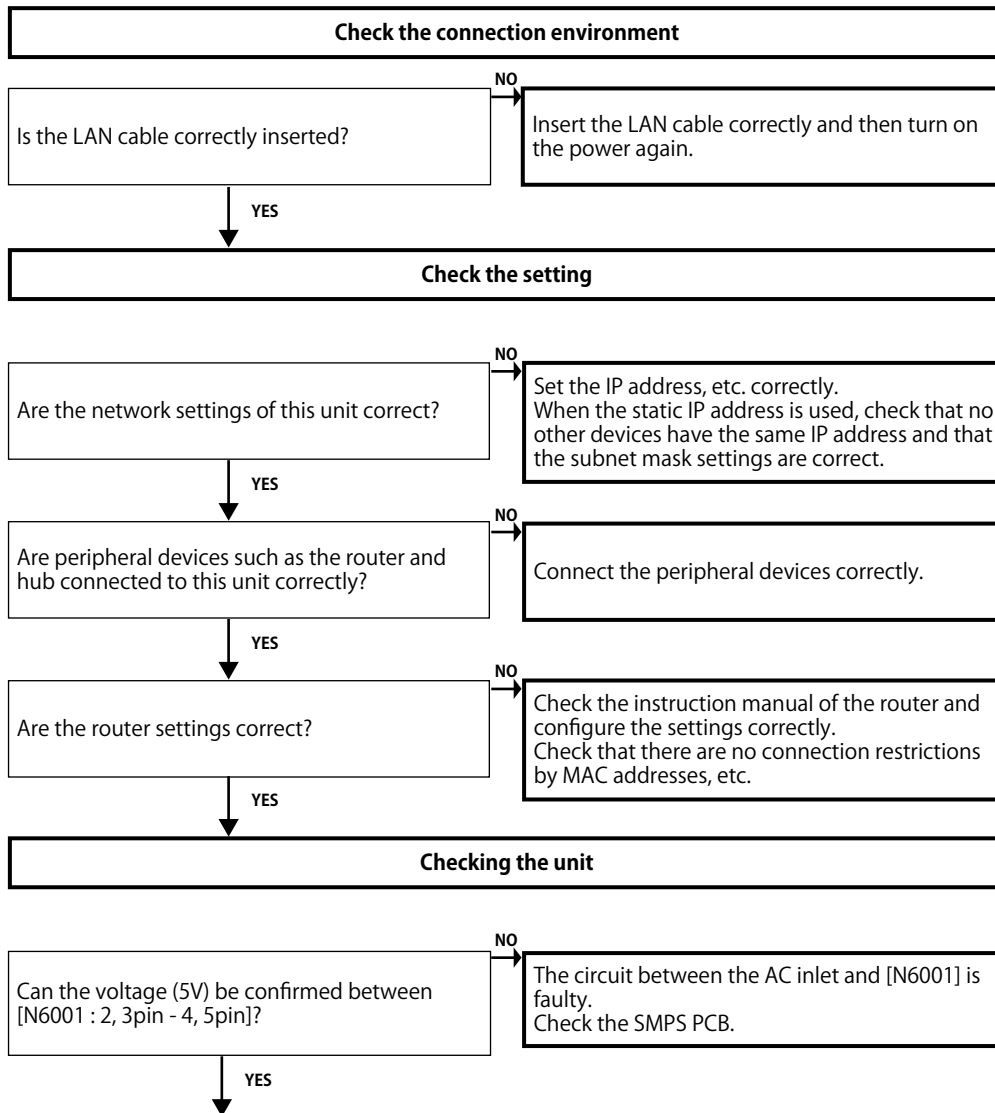


4.3. Analog audio

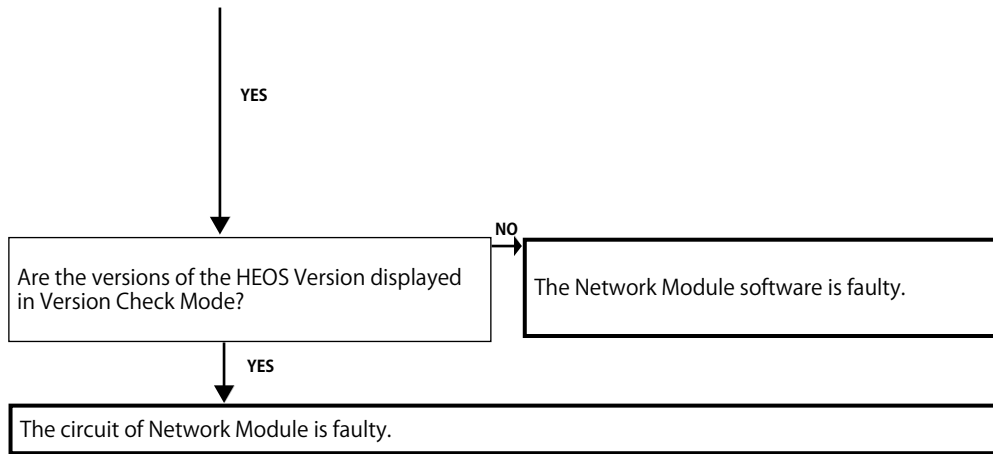


5. Network / Bluetooth / USB

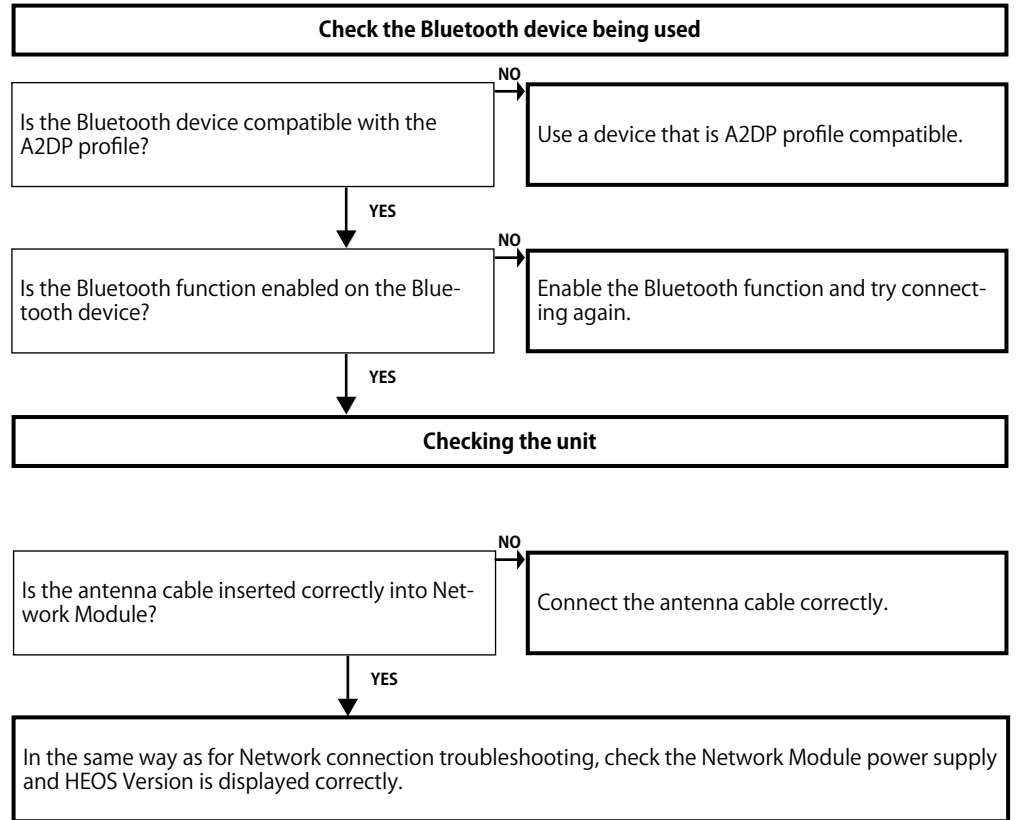
5.1. Cannot connect to the network



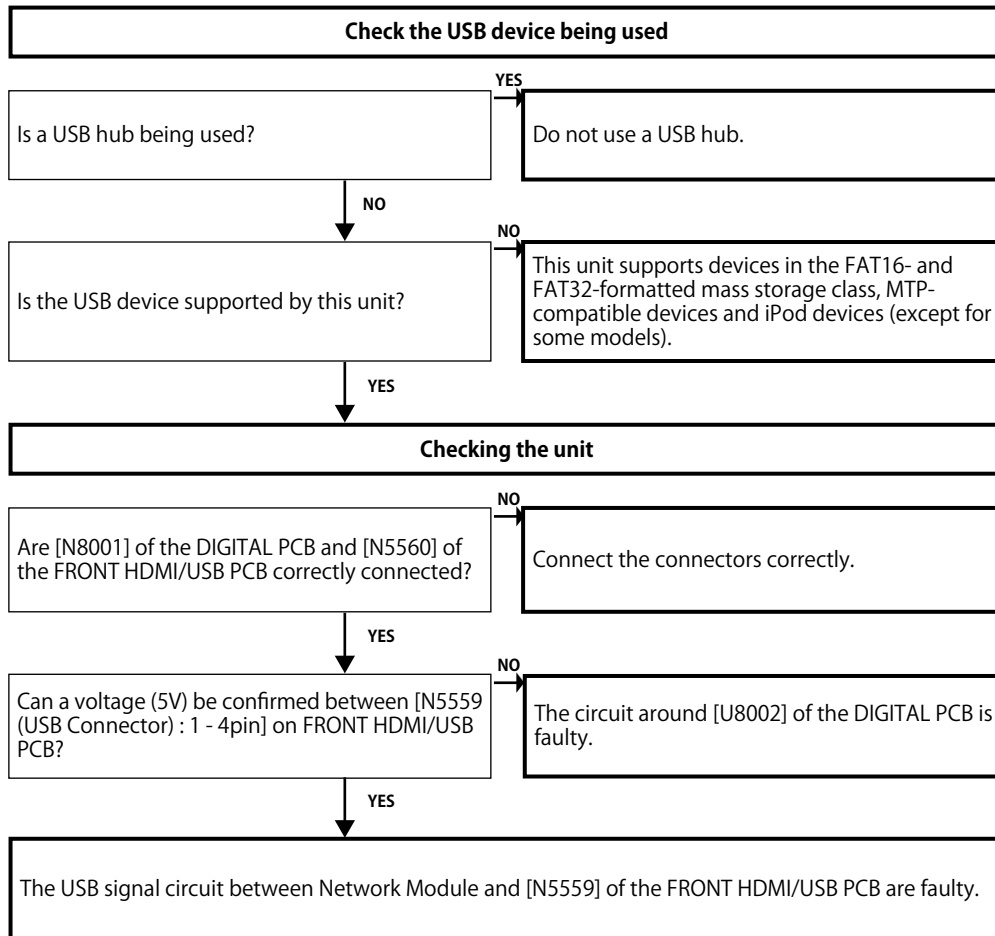
Go to next page.



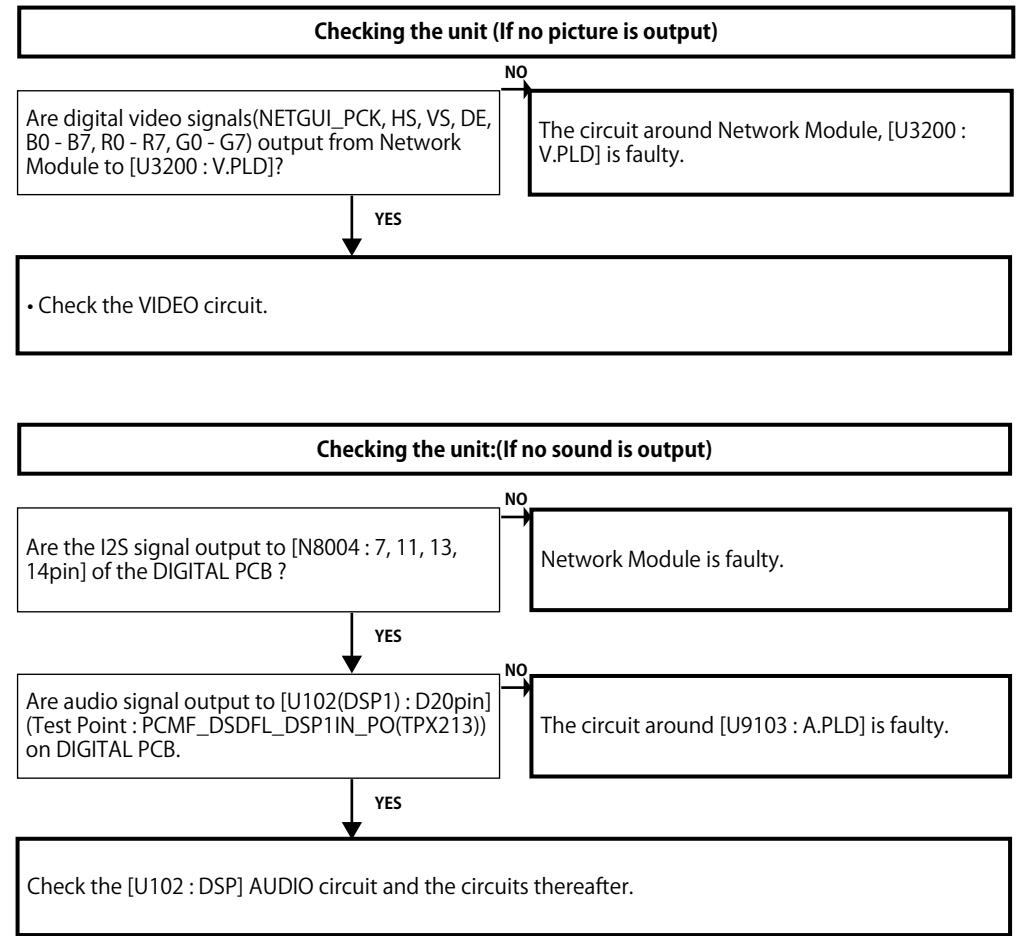
5.2. Cannot establish a Bluetooth connection



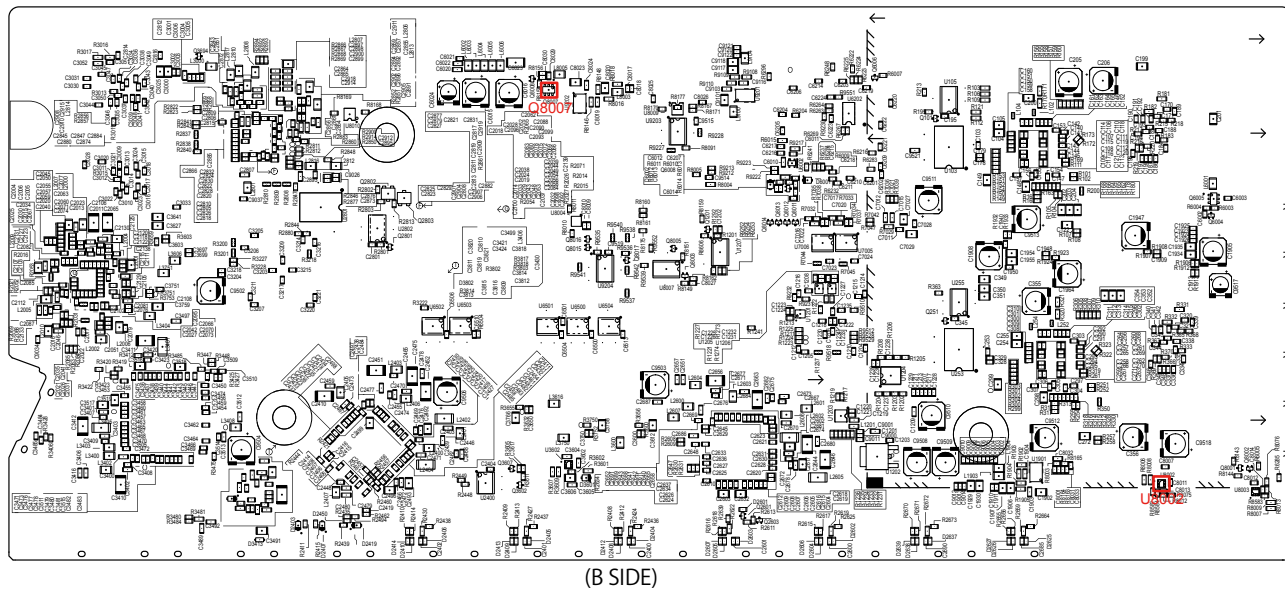
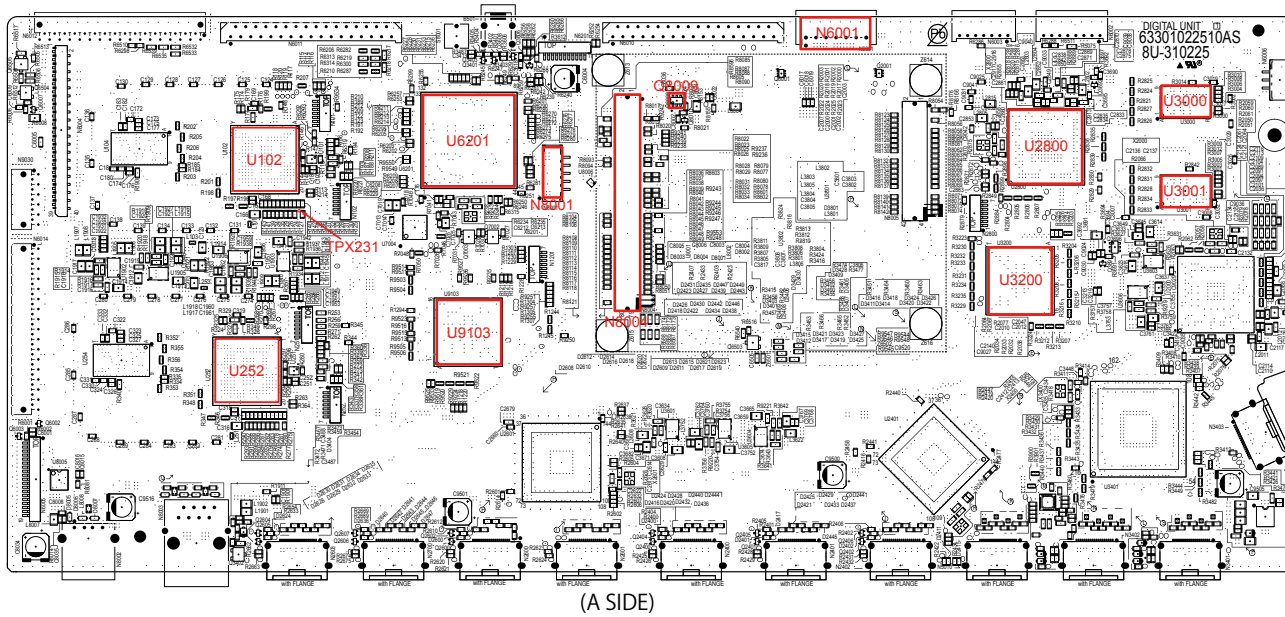
5.3. Cannot recognize the connected USB device



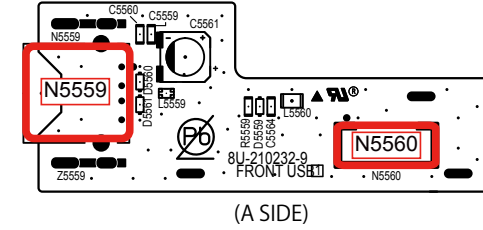
5.4. No picture or sound is output



DIGITAL test point



USB test point



Before Servicing
This Unit

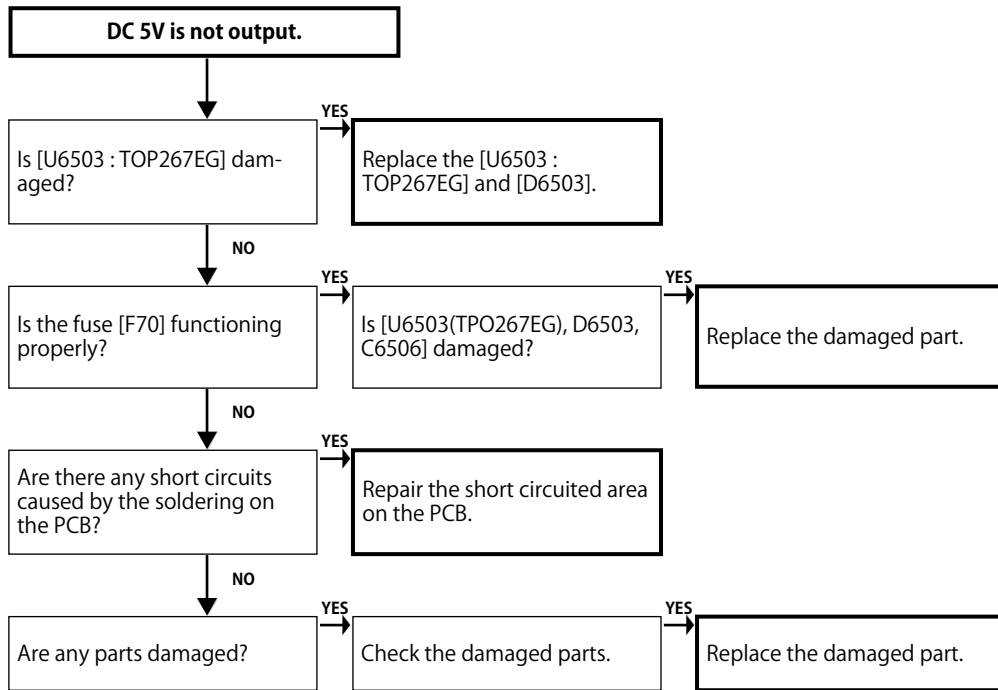
Electrical

Mechanical

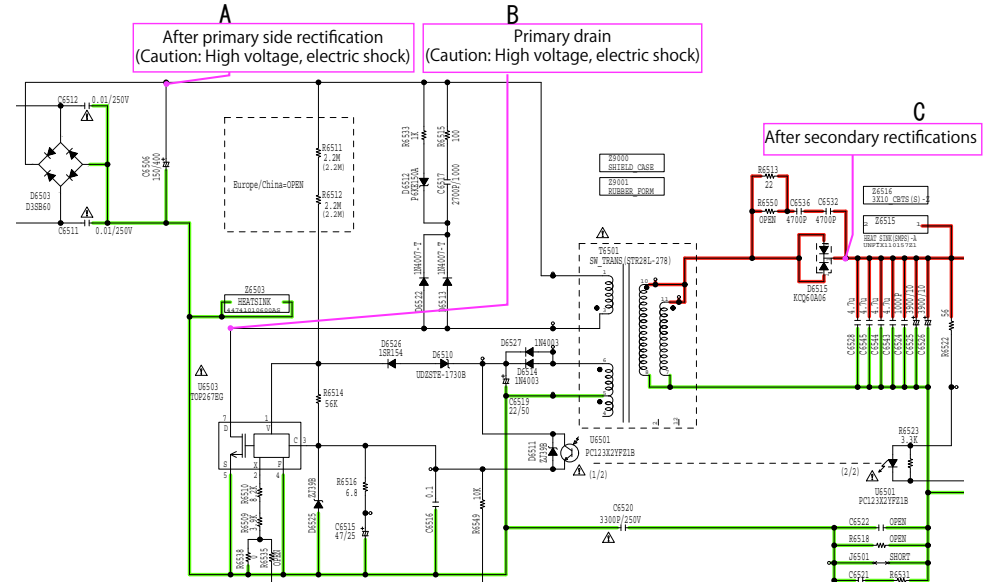
Repair Information

Updating

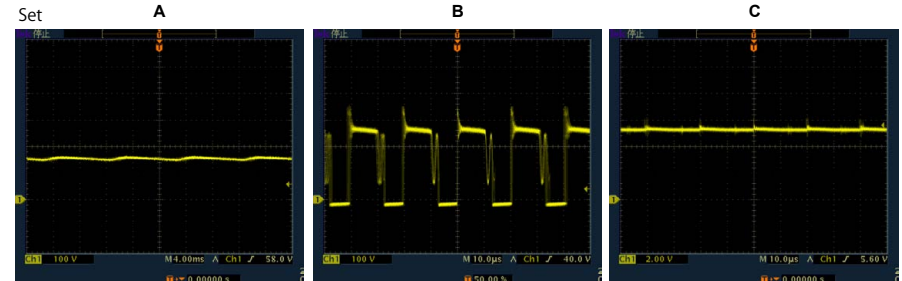
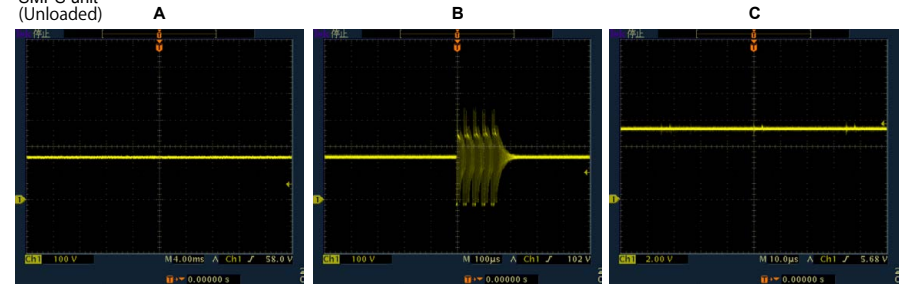
6. SMPS



Operation waveform for each part



SMPS unit (Unloaded)



Before Servicing
This Unit

Electrical

Mechanical

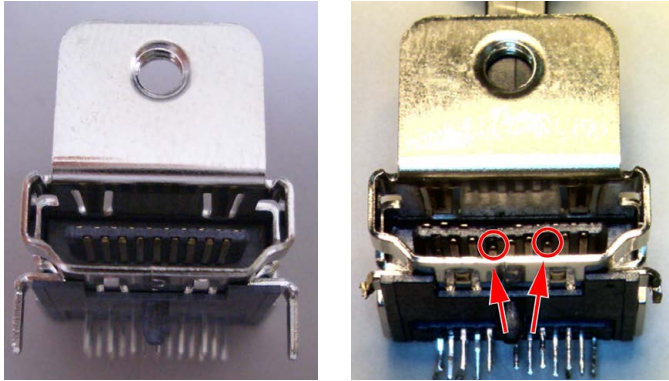
Repair Information

Updating

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.

None of the pins are deformed.

There are deformed pins.

Replace the HDMI connector.

Check by following the flow chart for "3. Starting detecting the point of failure".

NOTE :

After checking troubleshooting "3. HDMI/DVI", check "3. Starting detecting the point of failure".

2. Preparations for checking HDMI Switcher reception/transmission register

2-1. Necessary devices

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

2-2. Device Connection Method

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

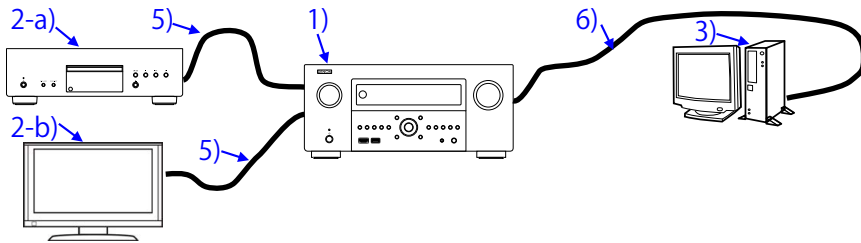


Figure 1. Device Connection Method

2-3. Device configuration method

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

After executing Termite.exe, click [Settings].

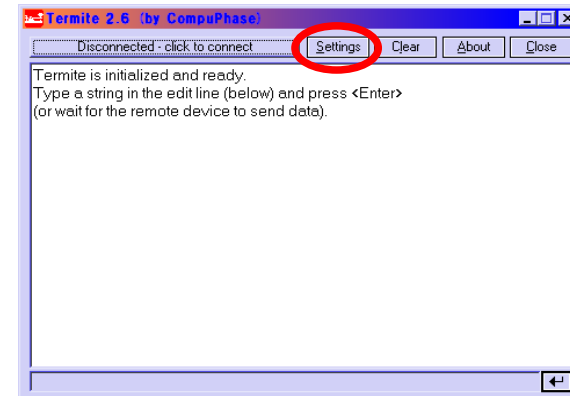


Figure 2. Screen After Executing Termite.exe

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

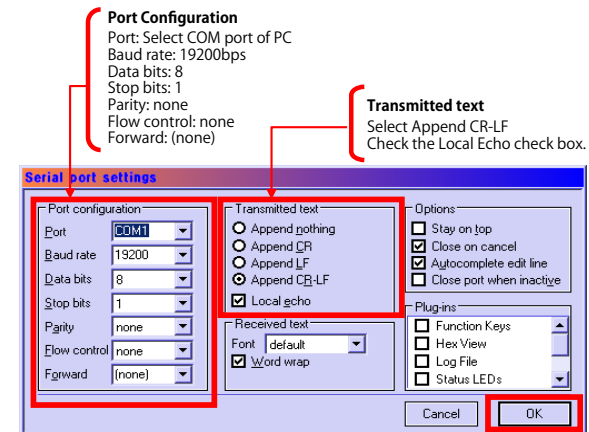


Figure 3. Serial Port Setup Screen

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

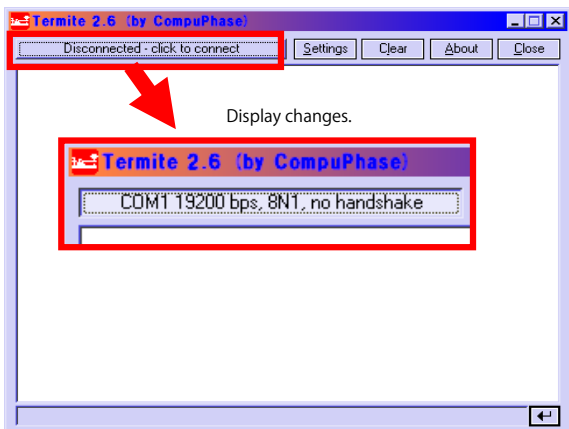


Figure 4. Change of the Display of the Communication Start Button Name

TV settings : Switch to the HDMI input in the AVR connection.
 Player settings : Turn the unit power on and configure it to play disks.
 AVR settings : While the power is On, hold down buttons "**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.

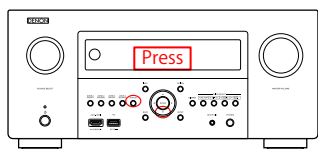


Figure 6. AVR settings



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.)
```

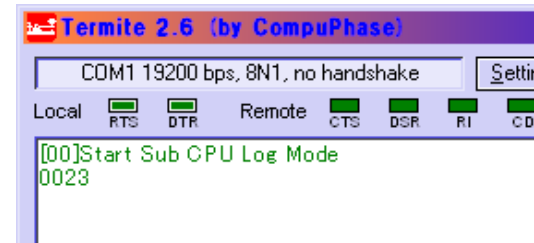


Figure 7. Display of Termite When AVR is Set

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.

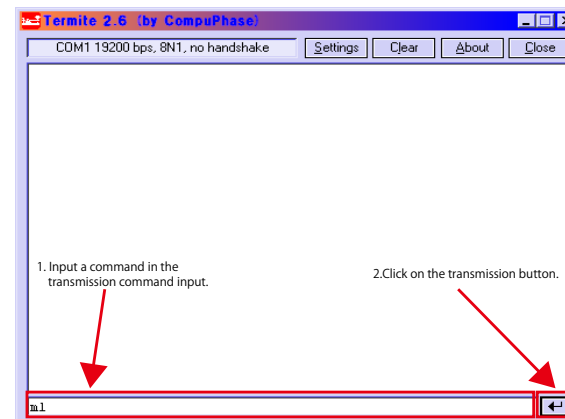


Figure 8. Method for Sending Termite Commands

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 [U102 : ADSP21573]
H1-09	Check item (31)	Communication Error with DSP2 [U252 : ADSP21573]
H1-12	Check item (36)	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 (39)	Communication Error with ARC IC [U3802 : Sil9437]

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

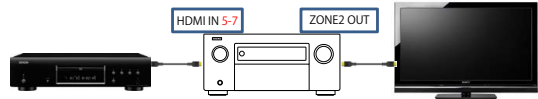
L1	HDMI DIAGNOSTICS
L2	1 Auto Test

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

Canceling the selected mode

Press the power button to exit off the power.

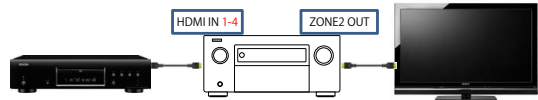
Check item(2). : Does a video signal come from HDMI ZONE2 OUT to TV correctly?



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?

YES

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



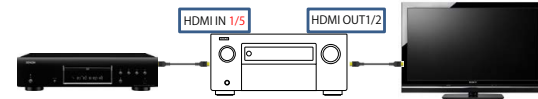
When the HDMI input terminal (HDMI 1, 2, 3, 4) are connected in order to the player, are the audio and video from the player played back on the TV correctly in each case?

YES

NO
Go to **check item (42)**
(Switcher1 failure detection procedure)

NO
Go to **check item (55)**
(Switcher2 failure detection procedure)

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)?

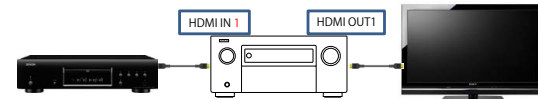
YES

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 (80)**.
(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?

YES

NO
Go to **check item (63)**
(Tx failure detection procedure)

NO
Go to **check item (87)**
(GUI and PLD failure detection procedure)

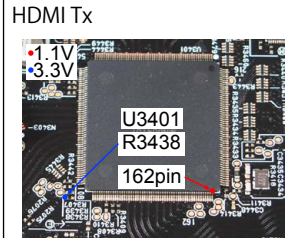
There are no problems with the HDMI device.

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.



YES

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 substrate and measure the voltage at the test point of **check item (6)**.
Is the voltage correct (1.1V or 3.3V)?

YES

NO

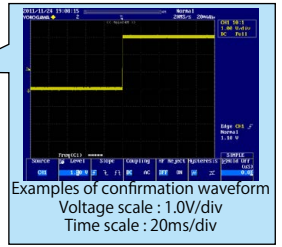
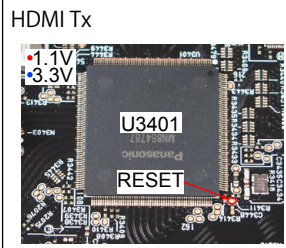
Replace with a new device.

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?

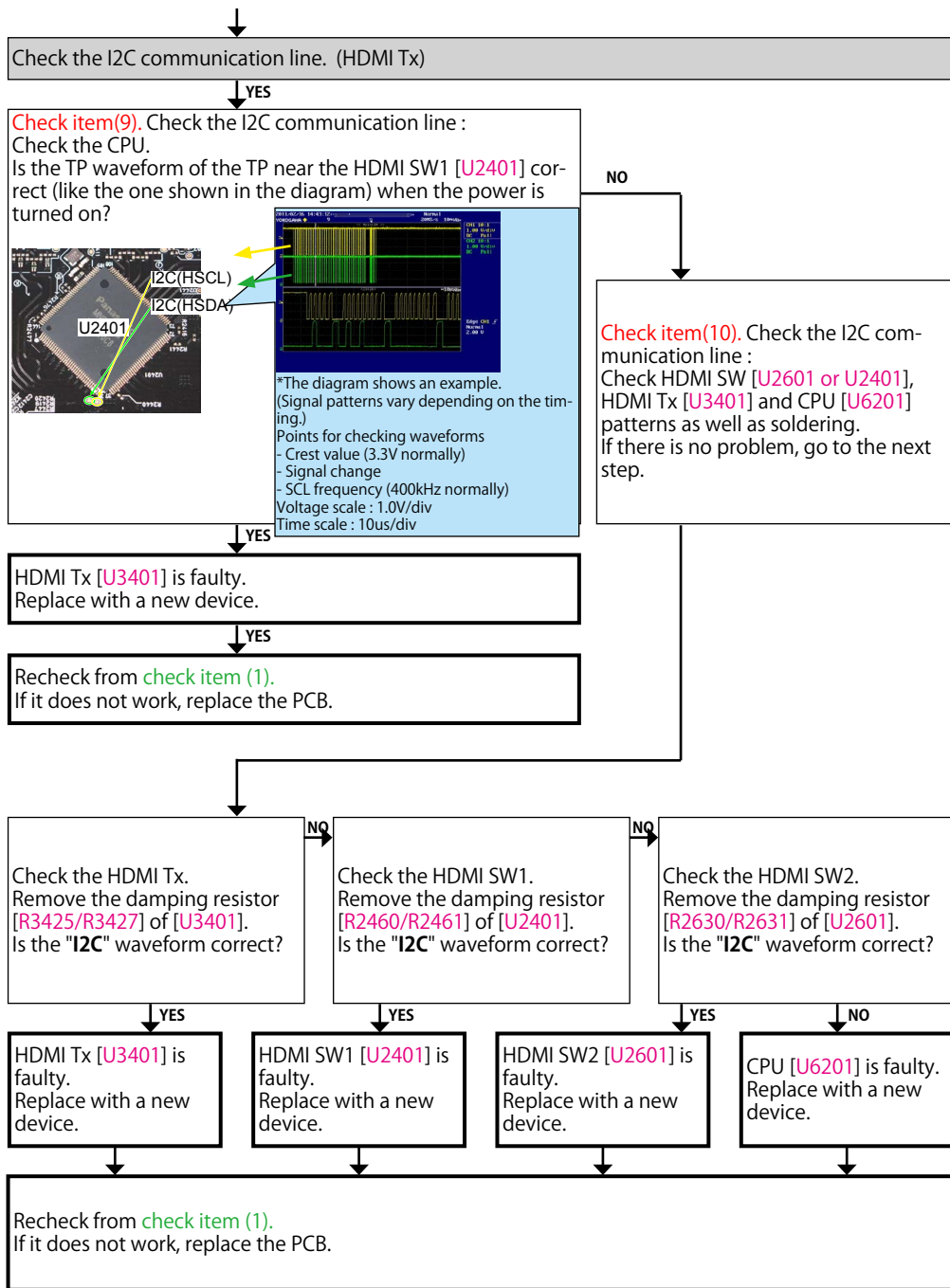


NO

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.

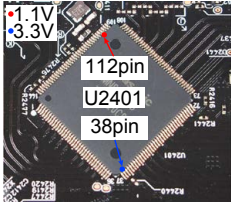


3-2. Error Code H1-02 failure detection procedure

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

NO

Check item(12). Check the power supply voltage. :
Check the power components [U3604] and the pattern on the substrate.
If there is no problem, remove the HDMI SW1 [U2401] from the substrate and measure the voltage at the test point of **check item (11)**.
Is the voltage correct (1.1V or 3.3V)?

YES

Replace with a new device.

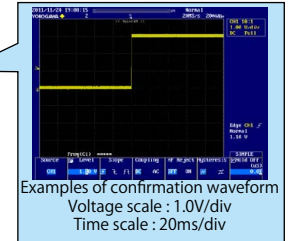
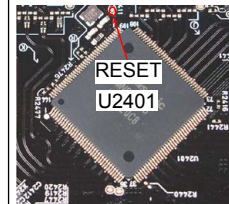
NO

The power supply circuit is faulty.
Replace the PCB.

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

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



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.

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.

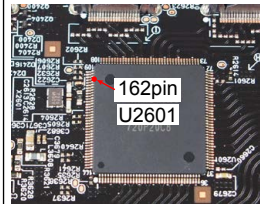
3-3. Error Code H1-03 failure detection procedure

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

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

NO

Replace with a new device.

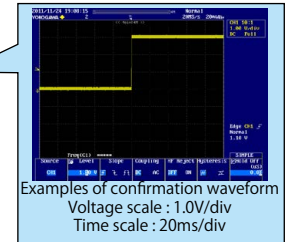
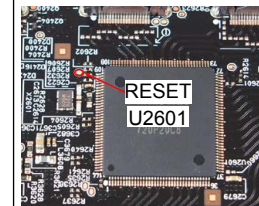
The power supply circuit is faulty.
Replace the PCB.

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



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.

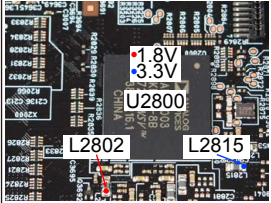
Recheck from **check item (1)**.
If it does not work, replace the PCB.

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.



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

YES

NO

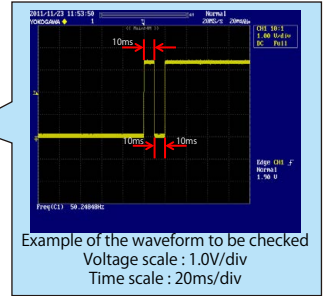
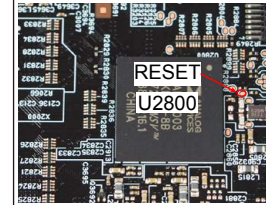
The power supply circuit is faulty.
 Replace the PCB.

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

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

Checking the reset waveform.

Check item(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?



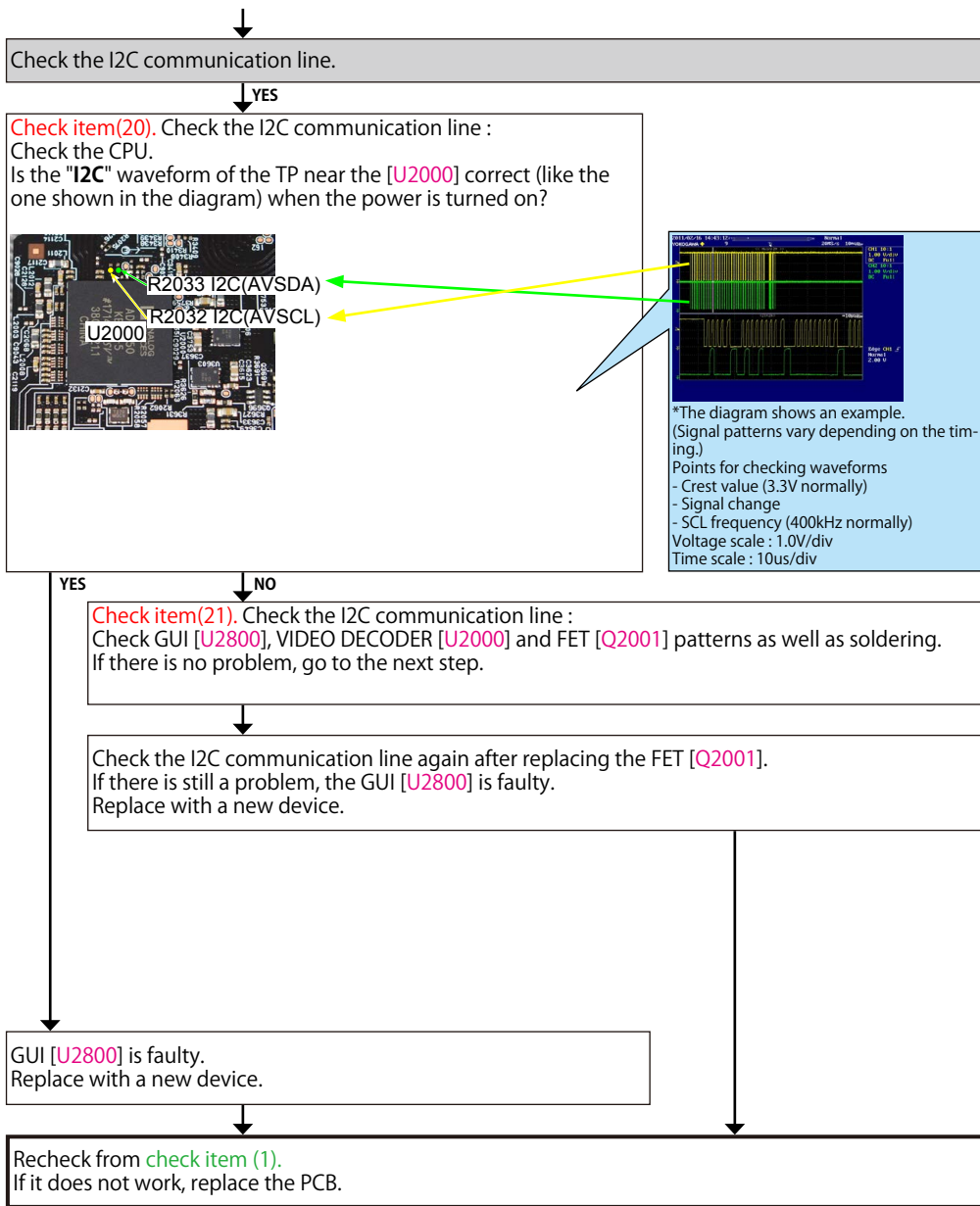
YES

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.



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 : MX25L12835FMI-10G]

Check item(23).

Write to the GUI ROM.

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

NO

YES

Check item(24).

Replace [U3001] with a new device.

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

NO

YES

Go to check item (17)

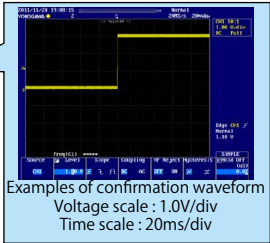
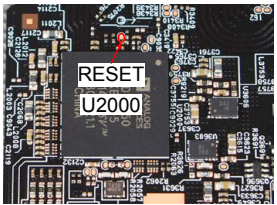
Recheck from check item (2).

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



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.

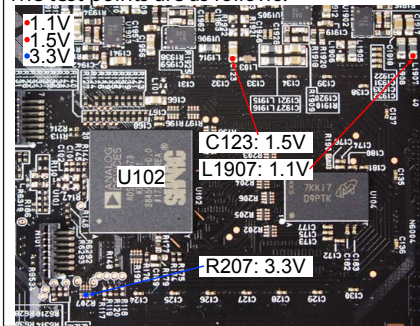
3-8. Error Code H1-08 failure detection procedure

Checking device. [U102 : ADSP21573]

Check the power supply voltage. (DSP1)

Check item(26). Check the power supply voltage.
: Does the power supply voltage of the DSP [U102] indicate the appropriate voltage (1.1V, 1.5V or 3.3V)?

The test points are as follows.



Check item(27). Check the power supply voltage.
: Check power supply parts [U1901, U1902, U1905] on the board, the surrounding layout and signal paths.

If there is no problem, remove the DSP [U102] from the substrate and measure the voltage at the test point of **check item (26)**.
Is the voltage correct (1.1V, 1.5V or 3.3V)?

YES

YES

NO

The power supply circuit is faulty.
Replace the PCB.

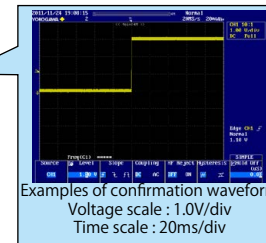
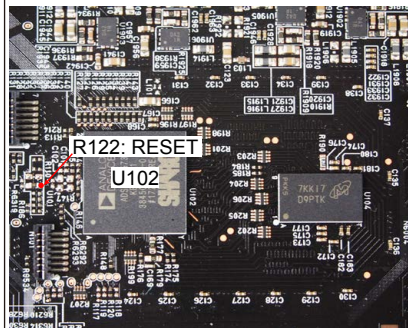
DSP [U102] is faulty.
Replace with a new device.

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 RESET near the DSP [U102] correct (like the one shown in the diagram) when the power is turned on?



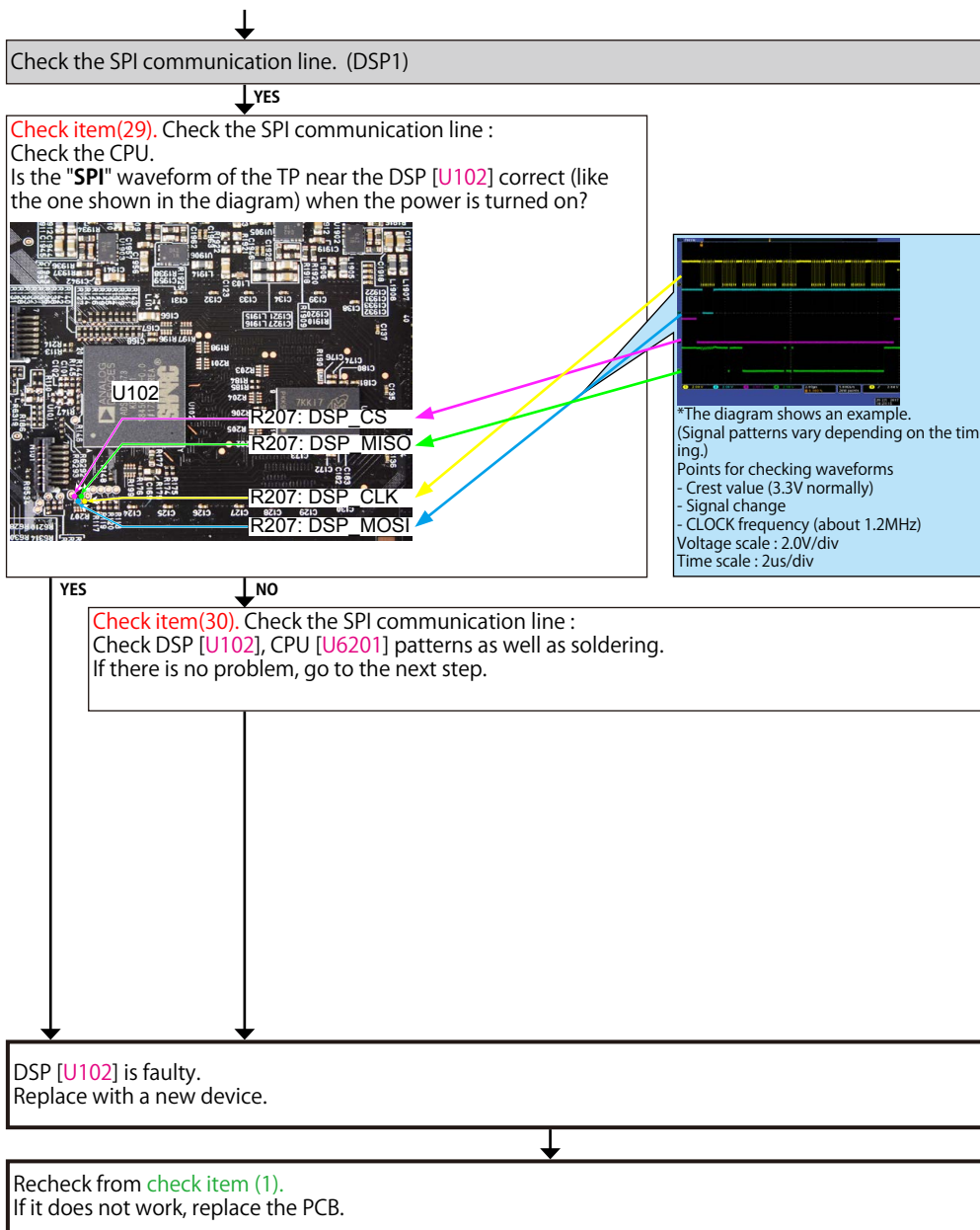
YES

NO

Check the reset circuit between CPU [U6201] and DSP [U102].
If there is no problem, the DSP [U102] is faulty.
Replace with a new device.

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

Go to next page.

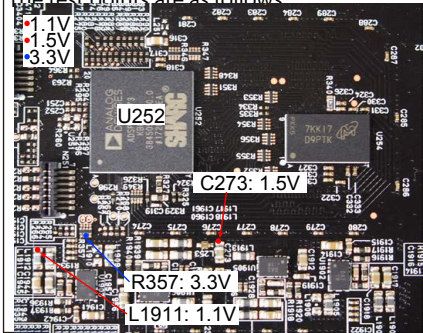


3-9. Error Code H1-09 failure detection procedure

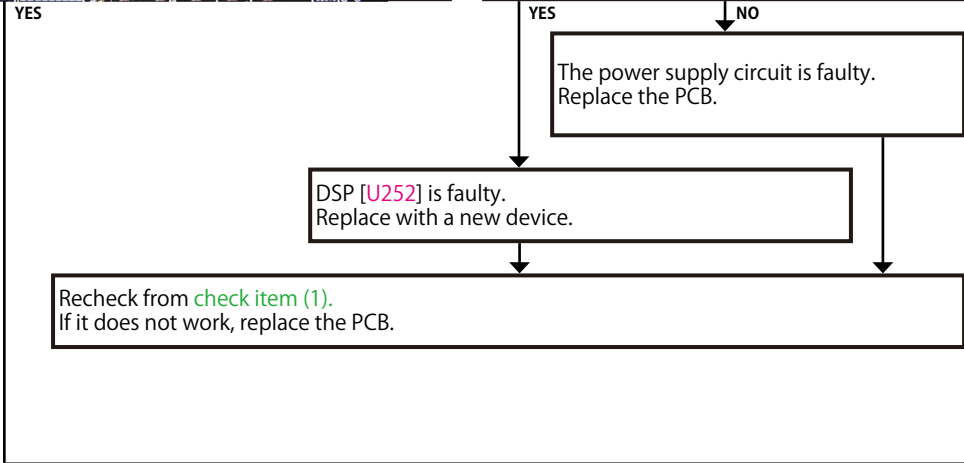
Checking device. [U252 : ADSP21573]

Check the power supply voltage. (DSP2)

Check item(31). Check the power supply voltage.
: Does the power supply voltage of the DSP [U252] indicate the appropriate voltage (1.1V, 1.5V or 3.3V)?
The test points are as follows

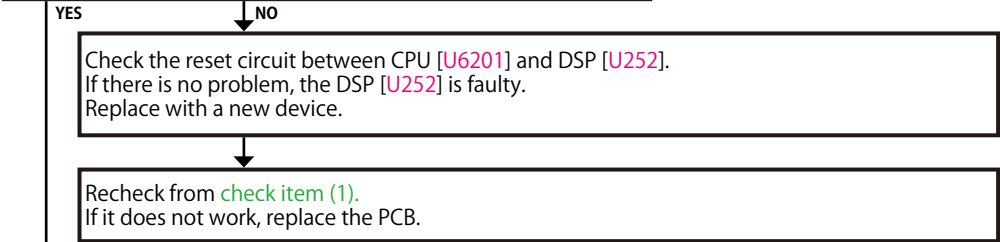
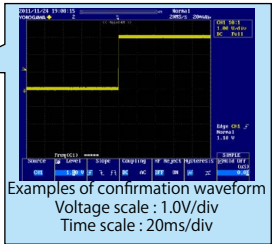
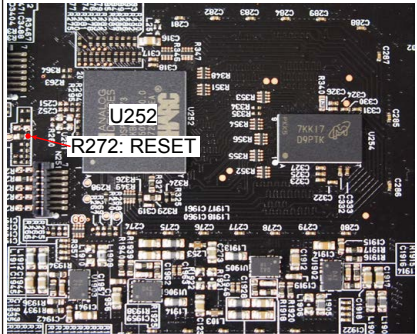


Check item(32). Check the power supply voltage.
: Check power supply parts [U1903, U1906] on the board, the surrounding layout and signal paths. If there is no problem, remove the DSP [U252] from the substrate and measure the voltage at the test point of **check item (31)**. Is the voltage correct (1.1V, 1.5V)?

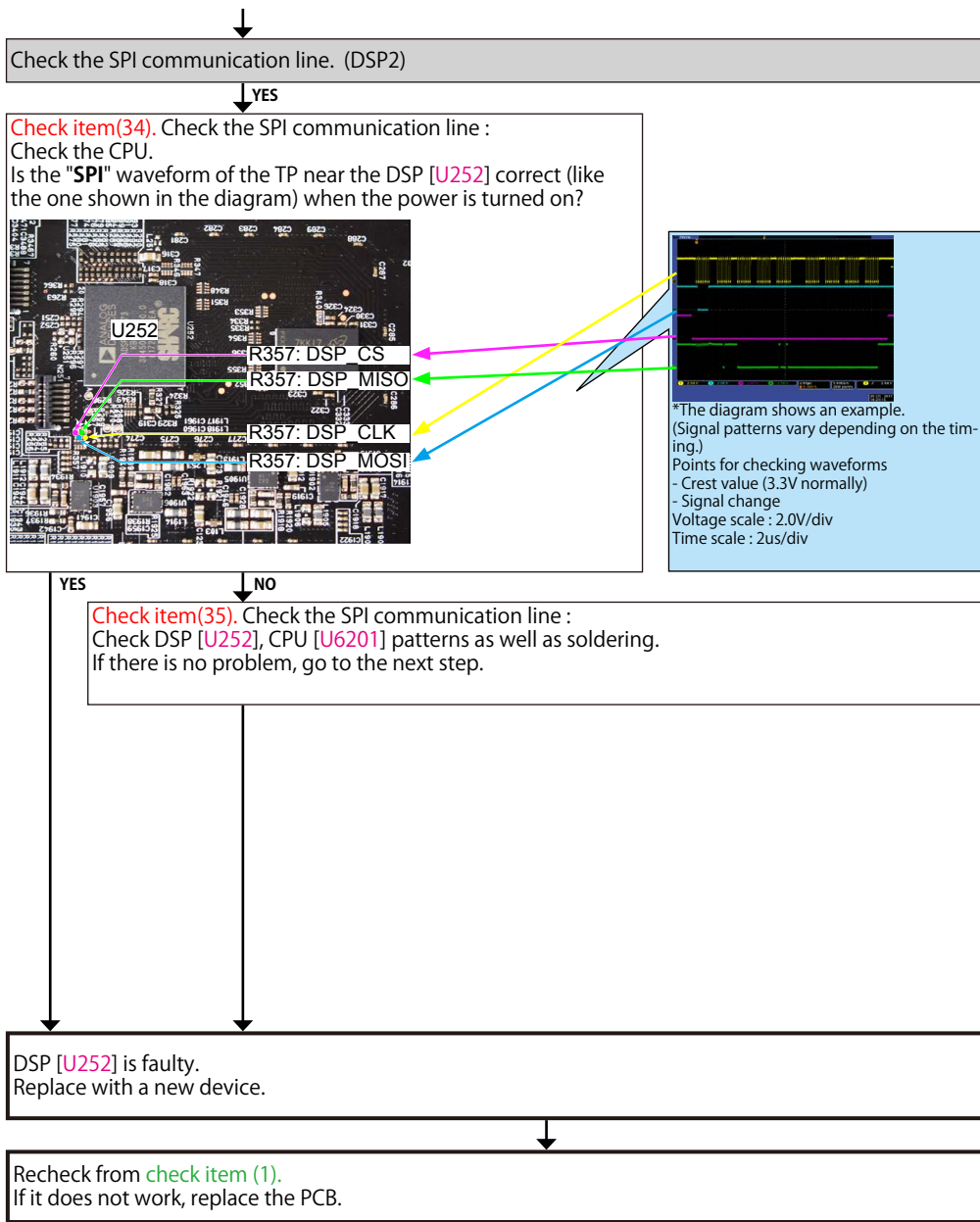


Checking the reset waveform. (DSP2)

Check item(33). Checking the reset :
Check the CPU.
Is the waveform of the RESET near the DSP [U252] correct (like the one shown in the diagram) when the power is turned on?



Go to next page.

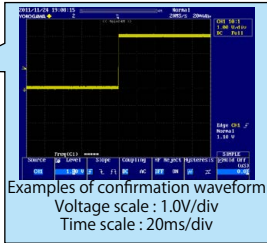
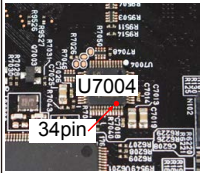


3-12. Error Code H1-12 failure detection procedure

Checking device. [U7004 : PCM9211]

Checking the reset waveform. (DIR)

Check item(36). 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?



YES NO

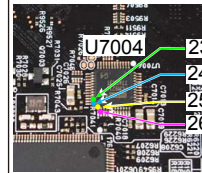
Check the reset circuit between CPU [U6201] and DIR [U7004].
If there is no problem, the DIR [U7004] is faulty.
Replace with a new device.

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

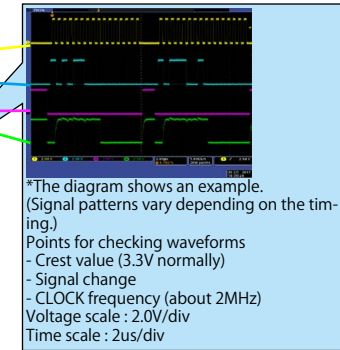
Check the communication line. (DIR)

YES

Check item(37). 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?



23pin: MISO
24pin: MOSI
25pin: CLK
26pin: CS



YES NO

Check item(38). 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.

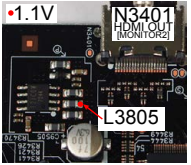
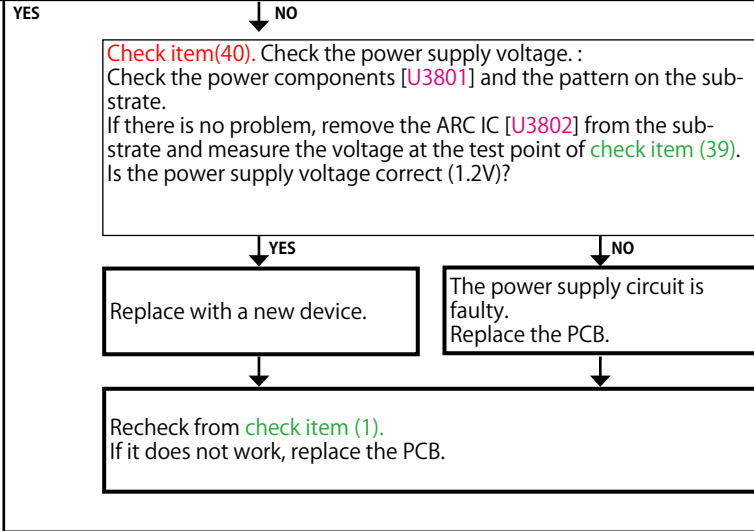
Recheck from **check item (1)**.
If it does not work, replace the PCB.

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

Checking device. [U3802 : Sii9437]


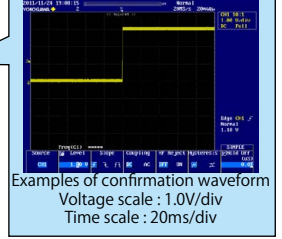
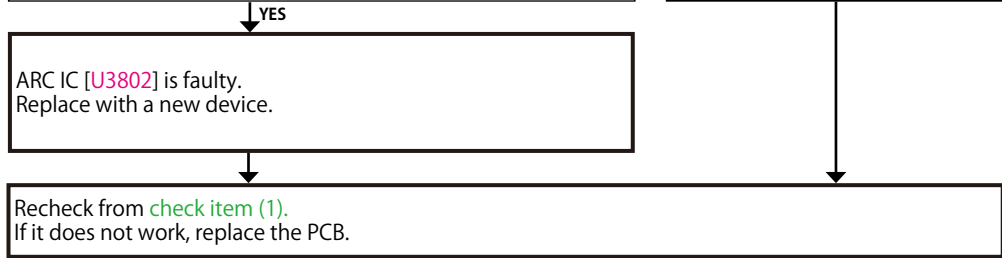
Check the power supply voltage. (ARC IC)

Check item(39). 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.

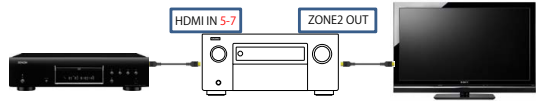



Checking the reset waveform. (ARC IC)

Check item(41). 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?

3-14. Switcher1 failure detection procedure



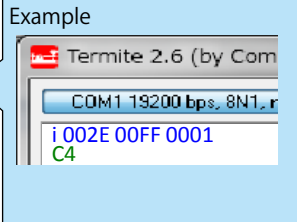
※ In order to check, connect the player to the HDMI terminal and configure the player as AVR source. Next, turn on the power for the player and TV and start playback on the player.

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

Check item(42). 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")



YES

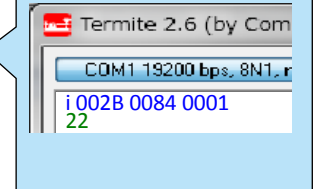
NO

Go to **check item (44)**

Check item(43). 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".

Example



Move to the branch destination according to the value returned.

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

Go to **check item (45)**

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

Go to **check item (46)**

When the results of check item (42) are "NO"
(Detection of 5V is not OK)

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

Check item(44). 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.

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

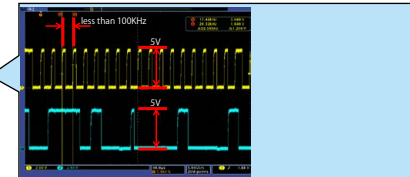
NO

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

When the results of check item (43) are "00 or 04"
(Detection of DDC is not OK.)

Check the DDC line. (HDMI IN5 - 7)

Check item(45). 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

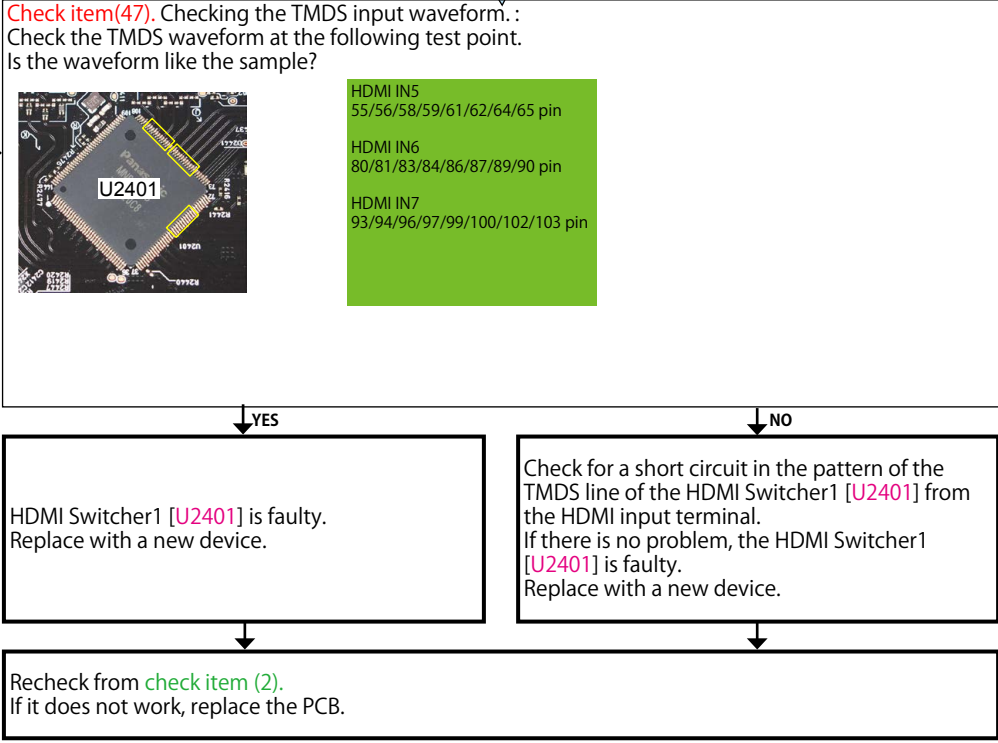
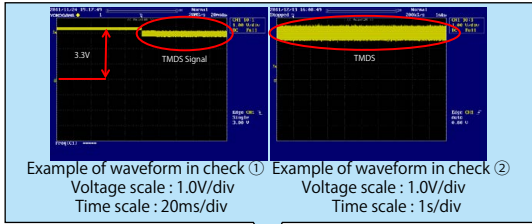
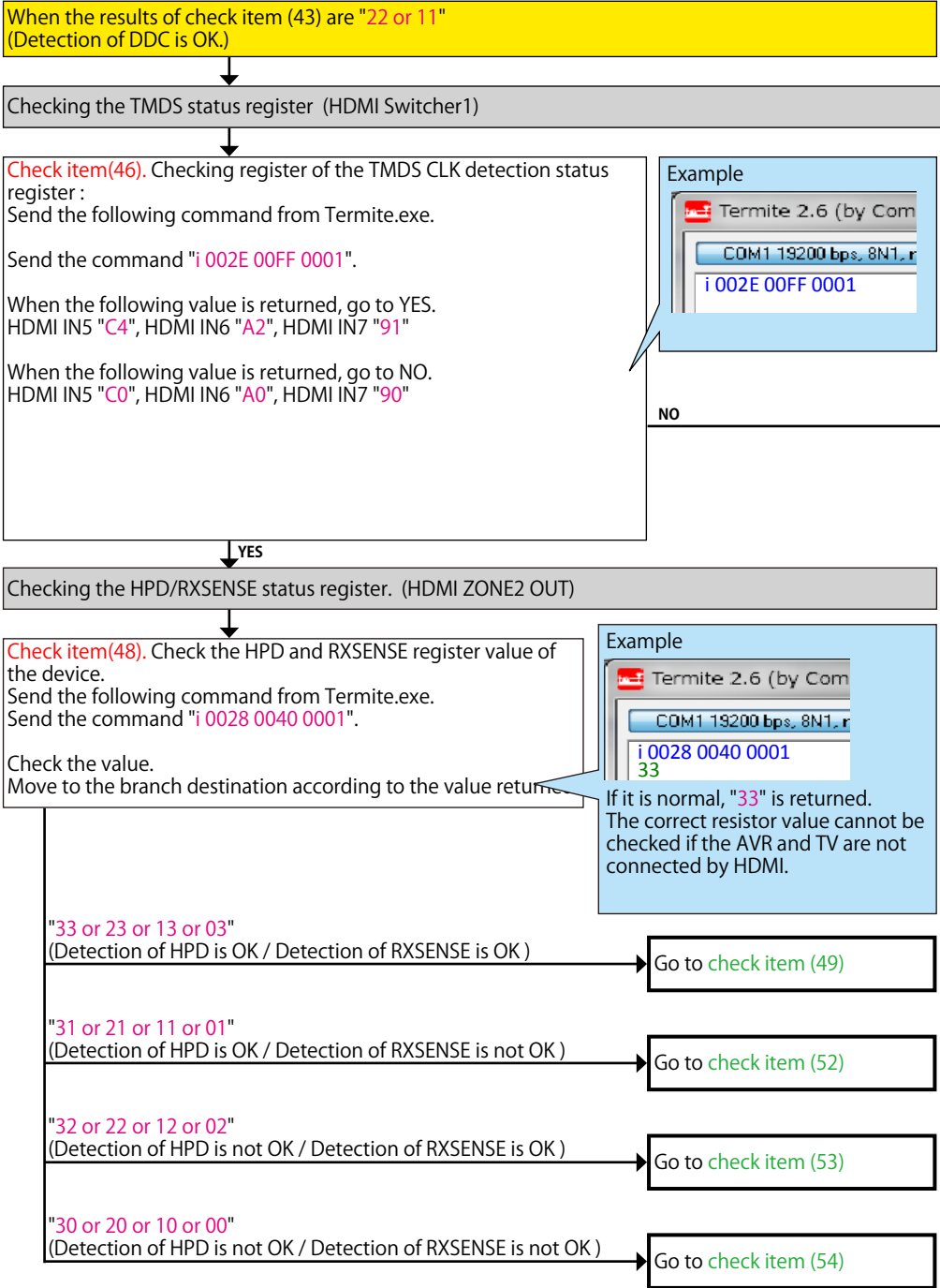
YES

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

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

NO

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



When the results of check item (48) 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(49). 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 "00FFFFFFFFF00"?

Example

```

    CDM1 19200 bps, 8N1, no handshake
    m_3
    00FFFFFFFFF000D1177945540000
    3213010380351E782E6085A6564A9C25
    125054A56808180810081C0A9C08140
    D1C061C0B30023A801871382D40582C
    4500132B2100001E000000FF00394339
    
```

The first eight bytes are normally "00FFFFFFFFF00".
 The correct resistor value cannot be checked if the AVR and TV are not connected by HDMI.

YES **NO**

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

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(50). Checking the TMDs :
 Check the TMDs waveform at the following test point.

Check item(51). Check the communication :
 Do "CK" and "DA" indicate (5V) at the test point near HDMI output connector [N5010]?

YES **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.

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

YES **NO**

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

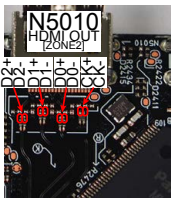
HDMI Switcher1 [U2401] is faulty.
 Replace with a new device.

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

When the results of check item (48) 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(52). Checking the RXSENSE :
Does the test point near HDMI output terminal [N5010] indicate (3.3V)?



YES 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.

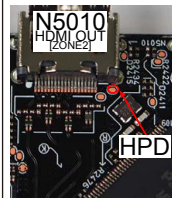
HDMI Switcher1 [U2401] is faulty.
Replace with a new device.

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

When the results of check item (48) 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(53). Checking the HPD :
Does the test point near HDMI output terminal [N5010] indicate Hi(3-5V)?



YES 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.

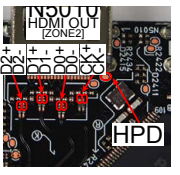
HDMI Switcher1 [U2401] is faulty.
Replace with a new device.

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

When the results of check item (48) 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(54). 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)"?



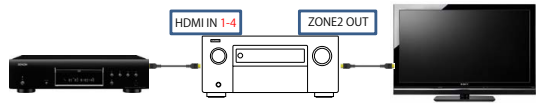
YES NO

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



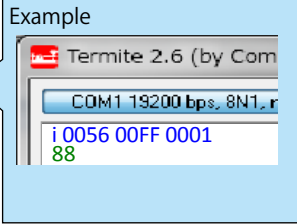
※ In order to check, connect the player to the HDMI terminal and configure the player as AVR source. Next, turn on the power for the player and TV and start playback on the player.

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

Check item(55). 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")



YES

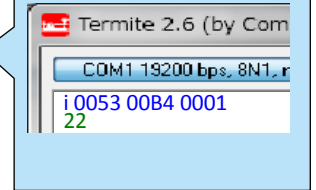
NO

Go to **check item (57)**

Check item(56). 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".

Example



Move to the branch destination according to the value returned.

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

Go to **check item (58)**

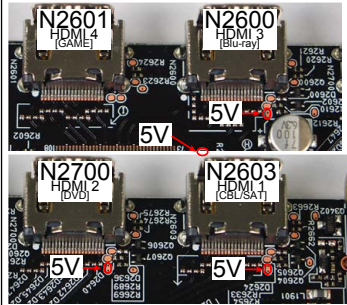
"22 or 11"
(Detection of DDC is OK)

Go to **check item (59)**

When the results of check item (55) are "NO"
(Detection of 5V is not OK)

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

Check item(57). 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

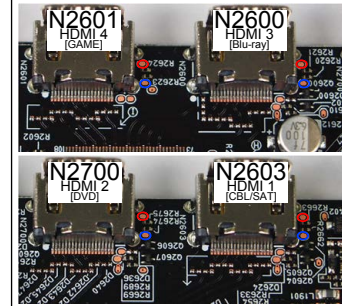
Check for a short circuit in the 5V line and the 5V
Switch IC [U2400].
If there is no problem, the HDMI Switcher2
[U2601] or the 5 V Switch IC [U2400] is faulty
Replace with a new device.

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

When the results of check item (56) are "00 or 04"
(Detection of DDC is not OK.)

Check the DDC line. (HDMI IN1 - 4)

Check item(58). Check the DDC line :
Are waveforms of "DDCSCK" and "DDCSDA" observed at the test point near the HDMI input terminal [N2603/N2700/N2600/N2601]?



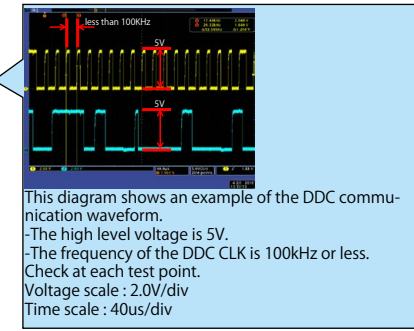
YES

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

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

NO

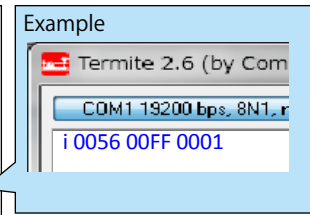
Check for a short circuit in the DDC line.
If there is no problem, the HDMI Switcher2
[U2601] is faulty.
Replace with a new device.



When the results of check item (56) are "22 or 11"
(Detection of DDC is OK.)

Checking the TMDS status register (HDMI Switcher2)

Check item(59). 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"

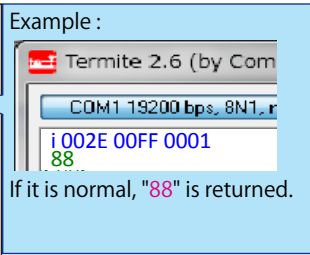


NO

YES

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

Check item(61). 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" ?



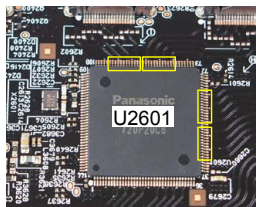
NO

YES

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

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

Check item(60). Checking the TMDS input waveform. :
Check the TMDS waveform at the following test point.
Is the waveform like the sample?



- HDMI IN1
42/43/44/45/46/48/49/51/52 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

YES

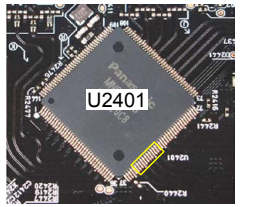
NO

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

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.

Check item(62). Checking the TMDS input waveform. :
Check the TMDS waveform at the following test point.
Is the waveform like the sample?

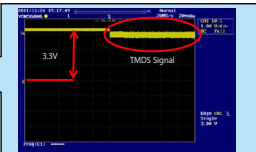


- 42/43/44/45/46/48/49/51/52 pin

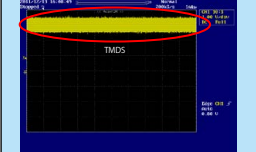
YES

NO

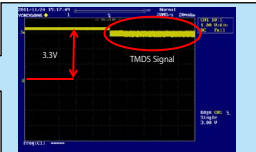
Check for a short circuit in the TMDS line.
If there is no problem, the HDMI Switcher2 [U2601] is faulty.
Replace with a new device.



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



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

3-16. Tx failure detection procedure

Check the output terminal.

Check item(63). 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.

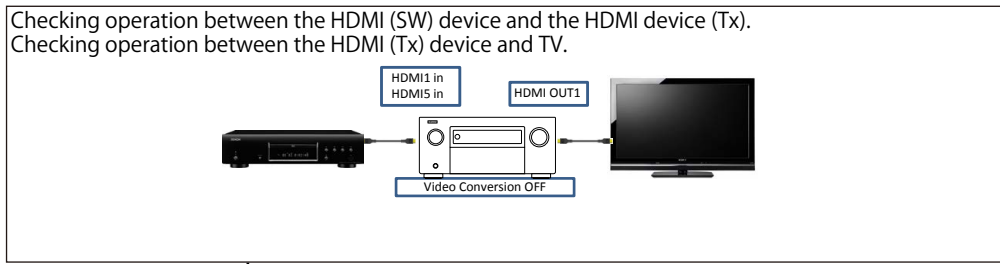
No video signal is output from both Monitor 1 and Monitor 2.

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

Go to **check item (64)**

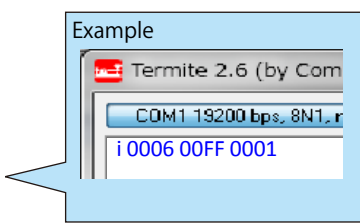
No video signal is output from Monitor 2 only.

Go to **check item (73)**



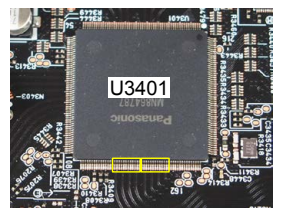
Checking the TMDS status register (Switcher1/2 -> HDMI Tx)

Check item(64). 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.

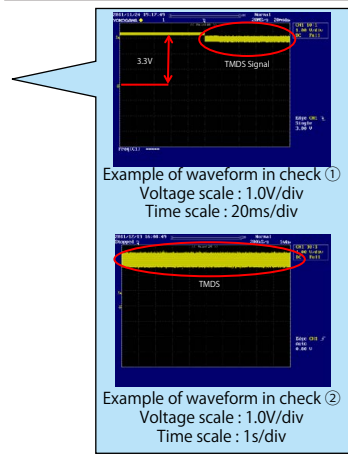


YES
The first operation : Checking between Monitor 1 and the TV.
Go to **check item (63)**
Next operation : Checking between Monitor 2 and the TV.
Go to **check item (70)**

Check item(65). 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



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

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

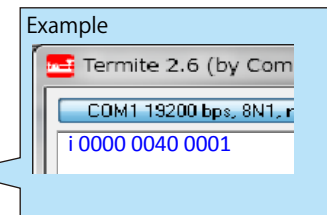
YES
Recheck from **check item (4)**.
If it does not work, replace the PCB.

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(66). 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.



"30"
(Detection of HPD is OK / Detection of RXSENSE is OK)
Go to **check item (67)**

"10"
(Detection of HPD is OK / Detection of RXSENSE is not OK)
Go to **check item (70)**

"20"
(Detection of HPD is not OK / Detection of RXSENSE is OK)
Go to **check item (71)**

"00"
(Detection of HPD is not OK / Detection of RXSENSE is not OK)
Go to **check item (72)**

When the results of check item (66) are "30"
(Detection of HPD is OK / Detection of RXSENSE is OK)

Checking the EDID register. (HDMI OUT1)

Check item(67). 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 "00FFFFFFF00"?

Example

```

    m_1
    00FFFFFFF00000D1177945540000
    3213010380351E782E6085A6564A9C25
    125054A56808180810081C0A9C08140
    D1C61C0B300023A801871382D40582C
    4500132B2100001E000000FF00394339
    
```

The first eight bytes are normally "00FFFFFFF00".
 The correct resistor value cannot be checked if the AVR and TV are not connected by HDMI.

YES **NO**

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

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(68). Checking the TMDs :
 Check the TMDs waveform at the following test point.

Check item(69). Check the communication :
 Are the waveforms for "CLK" and "DATA" at the test point near the HDMI output connector [N3402] correct (as shown in the figure)?

YES **NO**

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

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

YES **NO**

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

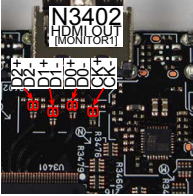
HDMI Tx [U3401] is faulty.
 Replace with a new device.

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

When the results of check item (66) are "10"
(Detection of HPD is OK / Detection of RXSENSE is not OK)

Check the TMDS. (HDMI OUT1)

Check item(70). Checking the RXSENSE :
Does the test point near HDMI output terminal [N3402] indicate
(3.3V)?



YES 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.

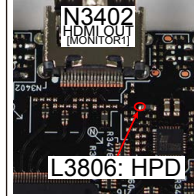
HDMI Tx [U3401] is faulty.
Replace with a new device.

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

When the results of check item (66) are "20"
(Detection of HPD is not OK / Detection of RXSENSE is OK)

Check the HPD. (HDMI OUT1)

Check item(71). Checking the HPD :
Does the test point (HPD) near HDMI output terminal [N3402] indicate
"Hi(3-5V)"?



YES 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.

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 (66) are "00"
(Detection of HPD is not OK / Detection of RXSENSE is not OK)

Check the TMDS/HPD. (HDMI OUT1)

Check item(72). Checking the HPD and RXSENSE. :
Does the test point near HDMI output terminal [N3402] indicate (3.3V)?
Does the test point (HPD) near HDMI output terminal [N3402] indicate "Hi(3-5V)"?



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.

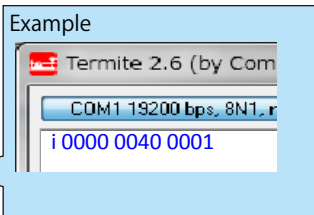
HDMI Tx [U3401] is faulty.
Replace with a new device.

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

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(73). Check the HPD and RXSENSE register value of the HDMI TX device. :
Send the following command from Termitte.exe.
Send the command "i 0000 0040 0001".
Move to the branch destination according to the value returned.



"03"
(Detection of HPD is OK / Detection of RXSENSE is OK)

Go to **check item (74)**

"01"
(Detection of HPD is OK / Detection of RXSENSE is not OK)

Go to **check item (77)**

"02"
(Detection of HPD is not OK / Detection of RXSENSE is OK)

Go to **check item (78)**

"00"
(Detection of HPD is not OK / Detection of RXSENSE is not OK)

Go to **check item (79)**

When the results of check item (73) are "03"
(Detection of HPD is OK / Detection of RXSENSE is OK)

Checking the EDID register. (OUT2)

Check item(74). 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 "00FFFFFFF00"?

Example

The first eight bytes are normally "00FFFFFFF00".
 *If the AVR and the TV are not connected via HDMI, the correct register value cannot be verified.

YES

NO

Check item(75). Checking the TMDS :
 Check the TMDS waveform at the following test point.

Check item(76). Check communication with the monitor :
 Are waveforms of "DDCSCK" and "DDCSDA" observed at the test point near the HDMI output terminal [N3401]?

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

YES

NO

YES

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.

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

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

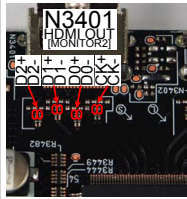
HDMI Tx [U3401] is faulty.
 Replace with a new device.

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

When the results of check item (73) are "01"
(Detection of HPD is OK / Detection of RXSENSE is not OK)

Check the RXSENSE. (OUT2)

Check item(77). Checking the RXSENSE :
Does the test point of RXSENSE close to the HDMI output terminal [N3401] indicate the (3.3V)?



YES 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.

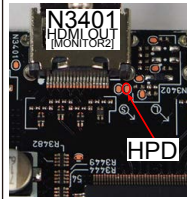
HDMI Tx [U3401] is faulty.
Replace with a new device.

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

When the results of check item (73) are "02"
(Detection of HPD is not OK / Detection of RXSENSE is OK)

Check the HPD. (OUT2)

Check item(78). Checking the HPD :
Does the voltage of HPD test point close to the HDMI output terminal [N3401] indicate "Hi" (3-5 V)?



YES 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.

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

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

Before Servicing
This Unit

Electrical

Mechanical

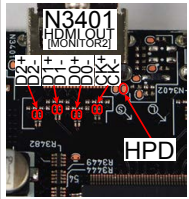
Repair Information

Updating

When the results of check item (73) are "00"
(Detection of HPD is not OK / Detection of RXSENSE is not OK)

Checking the HPD/RXSENSE status register. (OUT2)

Check item(79). Checking the HPD and RXSENSE. :
Does the test point of RXSENSE close to the HDMI output terminal [N3401] indicate the (3.3V)?
Does the voltage of HPD test point close to the HDMI output terminal [N3401] 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.

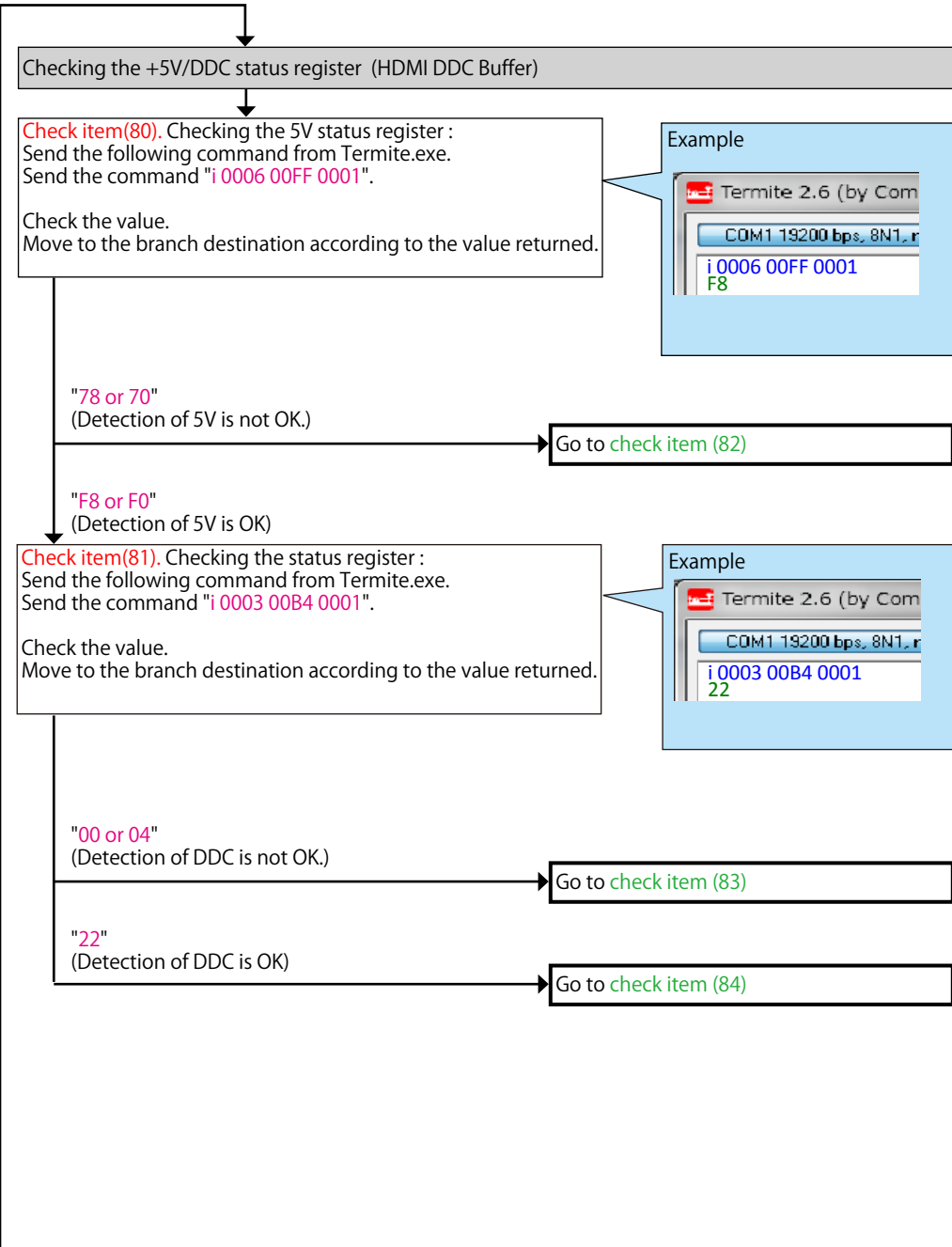
Recheck from check item (4).
If it does not work, replace the PCB.

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

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



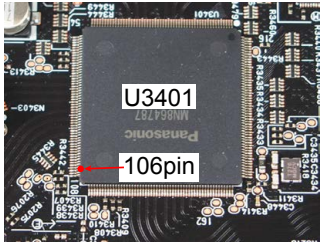
※ In order to check, connect the player to the HDMI terminal and configure the player as AVR source. Check the sound output while turning on the player.



When the results of check item (80) are "78 or 70"
(Detection of 5V is not OK.)

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

Check item(82). 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

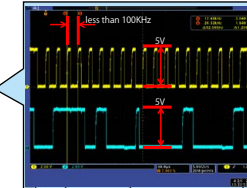
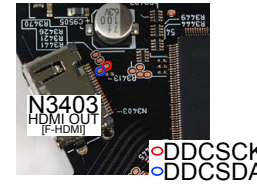
HDMI Tx [U3401] is faulty.
Replace with a new device.

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

When the results of check item (81) are "00 or 04"
(Detection of DDC is not OK.)

Check the DDC Line. (HDMI DDC Buffer)

Check item(83). 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

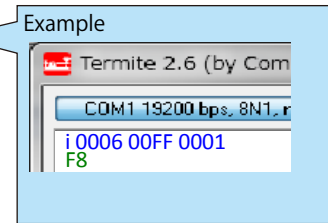
HDMI Tx [U3401] is faulty.
Replace with a new device.

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

When the results of check item (81) are "22"
(Detection of DDC is OK)

Checking the TMDS status register (HDMI DDC Buffer)

Check item(84). Check the TMDS CLK detection status of the register :
Send the following command from Termit.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"



YES

NO

Check item(86). 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

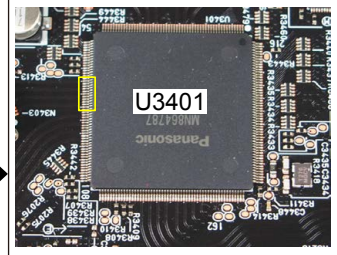
NO

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

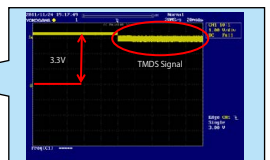
HDMI Tx [U3401] is faulty.
Replace with a new device.

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

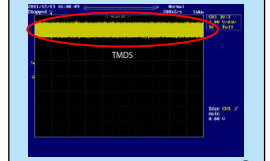
Check item(85). Checking the TMDS input waveform. :
Check the TMDS waveform at the following test point.
Is the waveform like the sample?



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

NO

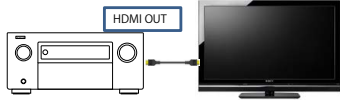
HDMI Tx [U3401] is faulty.
Replace with a new device.

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.

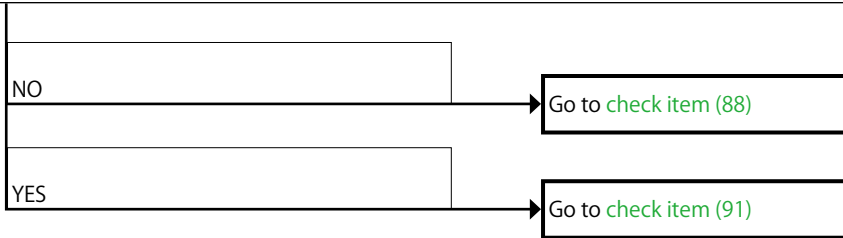
Recheck from check item (4).
If it does not work, replace the PCB.

3-18. GUI and PLD failure detection procedure

Check item(87). 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?



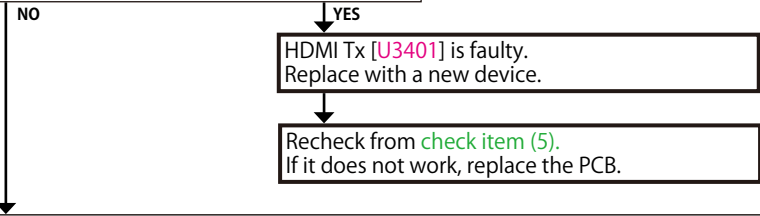
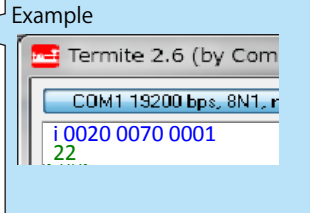
When the results of check item (87) are "NO"
 (When the menu display is not OK)

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

Check item(88). Check the format of the resistor video signal :

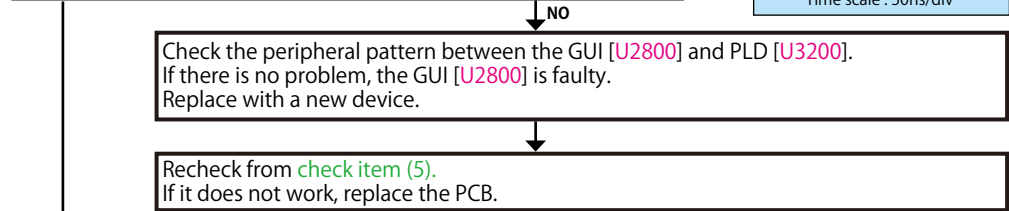
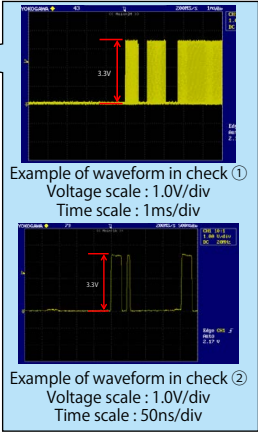
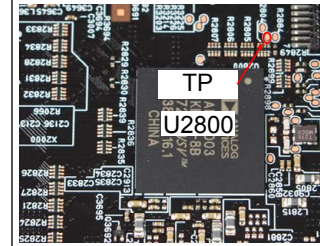
Send the following command from Termit.exe.
 Send the command "i 0020 0070 0001".

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



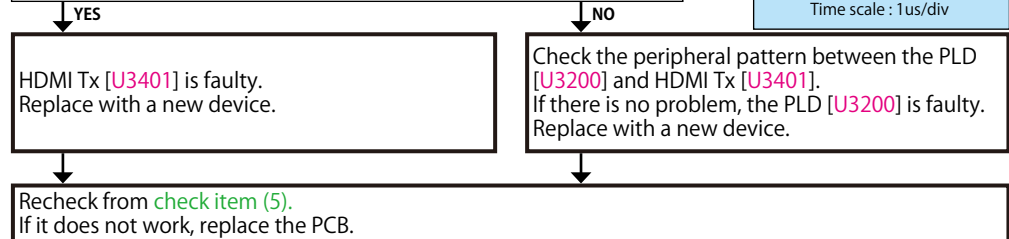
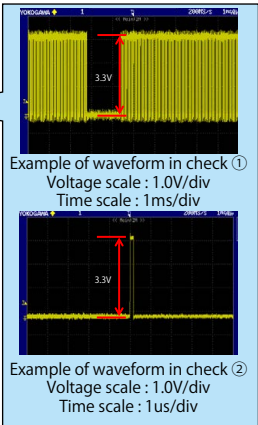
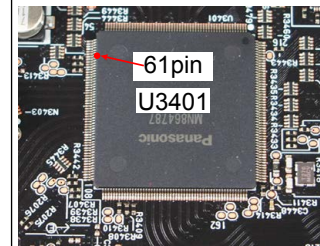
Check the Video signal line. (GUI -> PLD)

Check item(89). Check the GUI video signal line from the HDMI Tx :
 Check the video signal waveform at the following test point.
 Is the waveform like the sample?



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

Check item(90). 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?

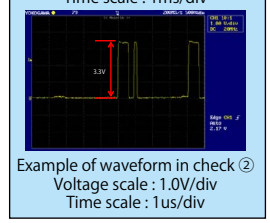
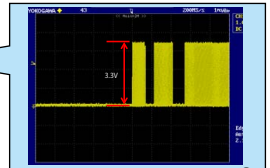
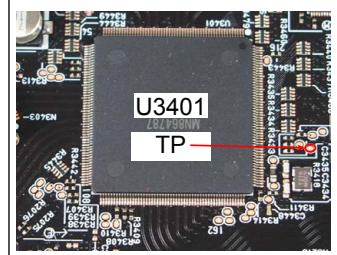


When the results of check item (87) are "YES"
(When the menu display is OK)

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



YES

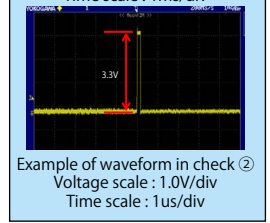
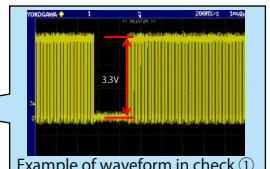
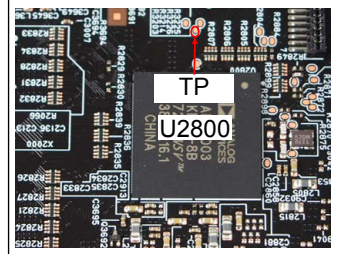
NO

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.

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

Check item(92). 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?



YES

NO

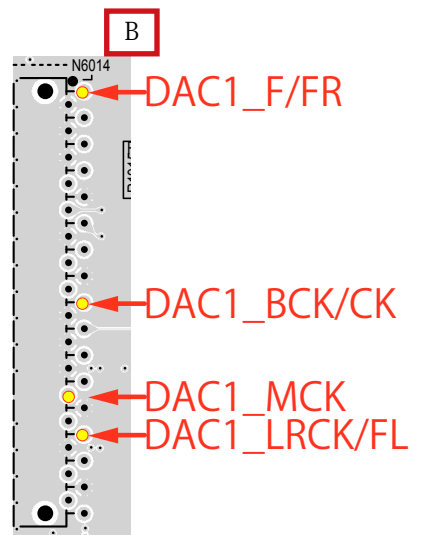
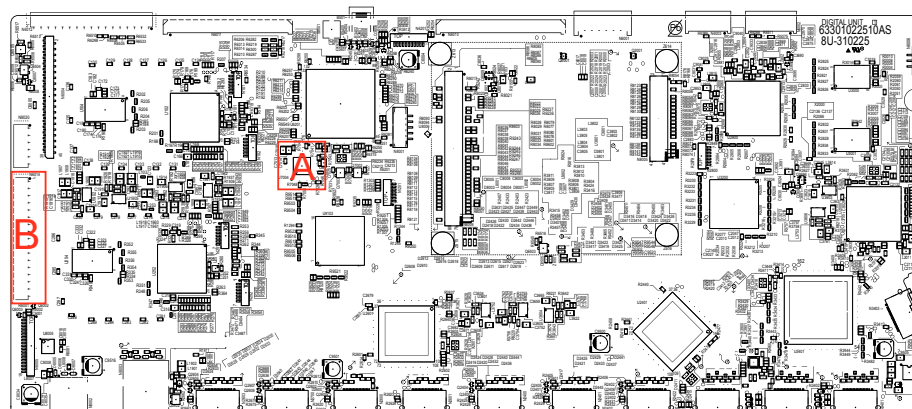
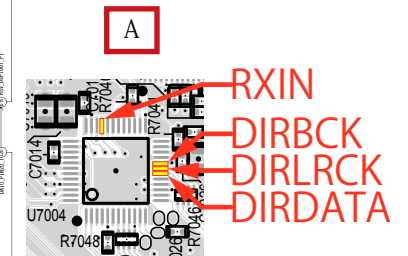
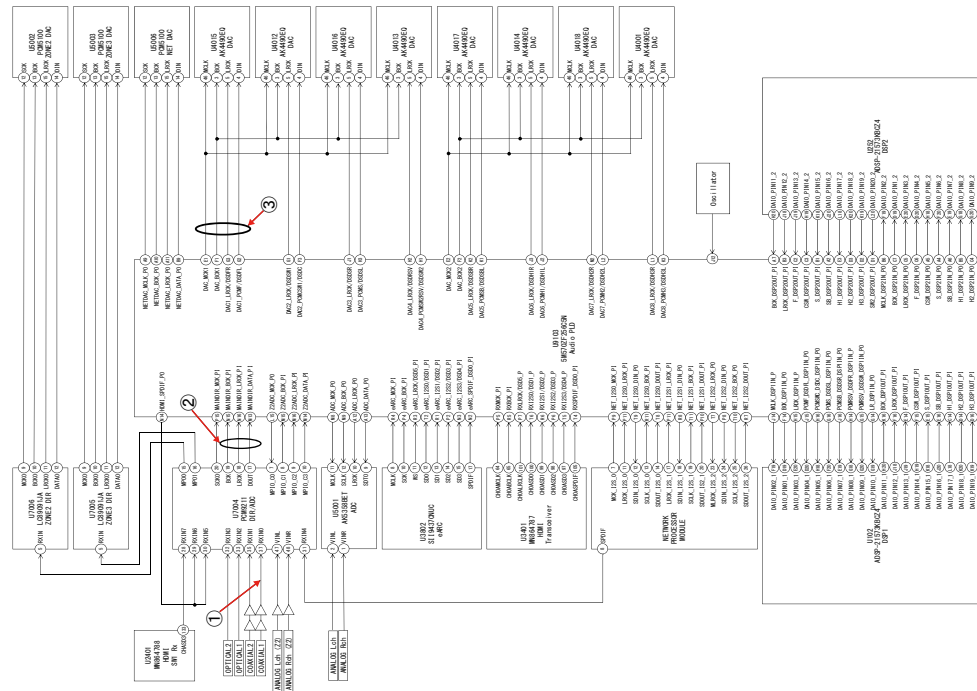
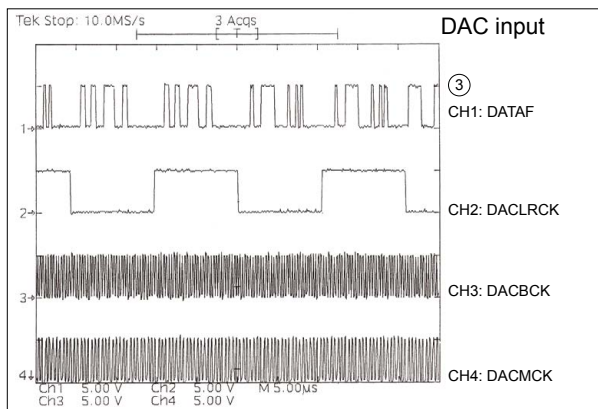
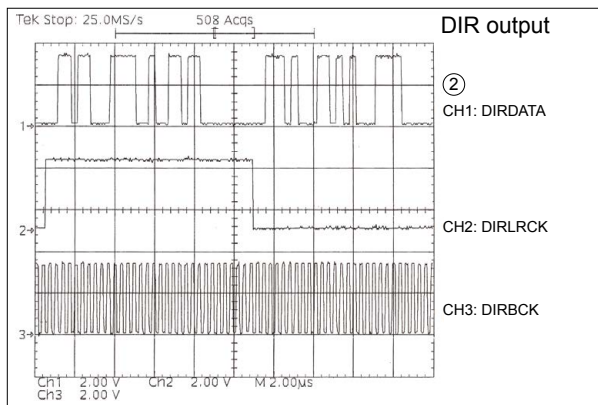
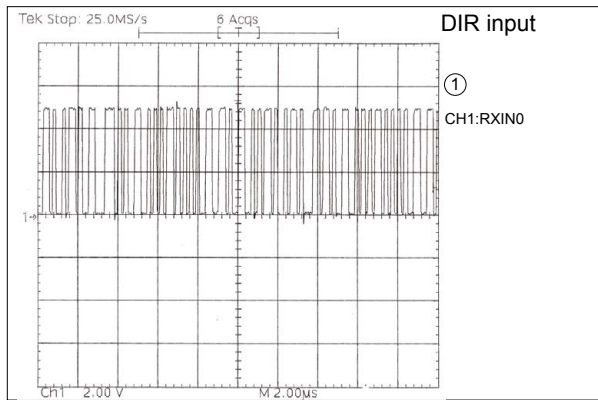
GUI [U2800] is faulty.
Replace with a new device.

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.

CLOCK FLOW & WAVE FORM IN DIGITAL BLOCK

WAVE FORM



SPECIAL MODE

Special mode setting button

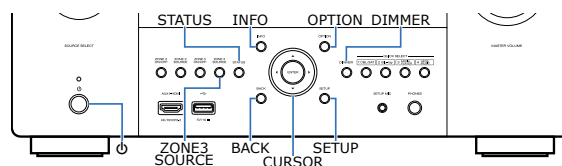
※ No. 1 - 5, 7 - 9: While holding down buttons "A", "B" and "C" simultaneously, press the power button to turn on the power.

※ No. 6, 10, 11: 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 model only)	↑	↑	-	Enables reception STEP of the ANALOG TUNER to be changed. (See 3-5. TUNER STEP mode (E3 only))
3-6	Remote ID Setup Mode	↑	↑	-	If there are multiple DENON AV receivers in the same area, this mode prevents other AV receivers from being operated concurrently with this device. (See 3-6. Remote ID Setup Mode)
4	Protection Pass Mode	ZONE3 SOURCE	STATUS	CURSOR ◀	Enables the power to be turned on when protection detection is disabled. (See 4. Protection Pass Mode)
5	Additional Source mode	BACK	CURSOR ▼	-	Adds AUX3-7 as a Source. (See 5. Additional Source mode)
6	Network Initialization Mode	CURSOR ▶	DIMMER	-	Network module backup data is initialized. (See 6. Network Initialization Mode)
7	User Initialization Mode	BACK	INFO	-	Initialize the backup data for the MCU and network module. (Settings for the Installer Setup are not initialized.)
8	Factory Initialization Mode	INFO	SETUP	-	Initialize the backup data only for MCU. (Settings for the Installer Setup are not initialized) (Network function settings are not initialized.) (See Initializing this Unit)
9	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 7. Clearing the Operation Info)
10	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.
11	Log Capture feature	BACK	OPTION	-	Acquires the Network Module log. The log is deleted when the Network Module is deleted. (See 8. Log Capture feature)

NOTE: When the volume indicator displays " -00.0 ", 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.



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 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

① Model destination information, Serial Number :

L1	000-X8500H \\\
L2	SN*****

@ : Model name (AVR, AVC)
 \ : Region (E3, E2, E1C, JP)

② Firmware Package :

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

③ Main μ -com, Main 1st Boot Loader :

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

④ DSP 1/2 ROM :

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

⑤ Audio, Video PLD :

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

⑥ GUI SFLASH :

L1	GUI : @Q\$~****
----	-----------------

@ : 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

⑦ HEOS Version :

L1	HEOS Version
L2	*.*.*.*

⑧ HEOS Build :

L1	HEOS Build
L2	*****

⑨ HEOS Module :

L1	HEOS Module
L2	***

⑩ HEOS Configuration :

L1	HEOS Config
L2	Development
	Production

⑪ HEOS Locale :

L1	HEOS Locale
L2	*****

⑫ Ether Mac Address :

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

⑬ WiFi Mac Address :

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

⑭ BT Mac Address :

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

⑮ Audyssey App Interface Version :

L1	Audy IFVer: **.*
L2	

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)	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).	<div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">FIRM ERROR</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">▲M:*****</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">▲Main FBL :**,**</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">▲DSP# :**,**</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">▲Audio PLD:**,**</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">▲Video PLD:**,**</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">▲GUI :*****</div>	<ul style="list-style-type: none"> •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). During the initial setting of i/p Scaler (ADV8003) , there is not the reply of the Loop back Test result of the DDR memory .	<div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">IP SCALER ERR 01</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">IP SCALER ERR 02</div>	<ul style="list-style-type: none"> •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.
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. If GUI Serial Flash is damaged, "▲" is displayed as the first character.	<div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">GUI VER. ERROR</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">▼GUI :*****</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">▲GUI :*****</div>	<ul style="list-style-type: none"> •Check the firmware version.
④ DIR NG	This error is displayed if there is no response from the DIR.	<div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">DIR ERROR 01</div>	<ul style="list-style-type: none"> •Check the DIR [U7004, DIGITAL PCB] and surrounding circuits.
⑤ DSP# NG (# : 1/2)	Boot error 1 (After reset the DSP, DSP_Flag0 port is "LOW") Boot error 2 (After reset the DSP, DSP initialization is not completed) (Unused) Command error 1 (After sending the command to the DSP, DSP_Flag0 port is "LOW".) Command error 2 (After sending the command to the DSP, MCU received " COMMAND ERROR ".) Command error 3 (After sending the command to the DSP, MCU did not receive " COMMAND SUCCESS ".) IDL error 1 (Before receiving IDL, " COMMAND BYTE " is not cleared.) IDL error 2 (MCU received " IDL SERIOUS ERROR ".) SPI communication error	<div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">DSP# ERROR 01</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">DSP# ERROR 02</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">DSP# ERROR 03</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">DSP# ERROR 04</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">DSP# ERROR 05</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">DSP# ERROR 06</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">DSP# ERROR 07</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">DSP# ERROR 08</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">DSP# ERROR 09</div>	<ul style="list-style-type: none"> •Check the DSP [U102, U252, DIGITAL PCB] and surrounding circuits.
⑥ EEPROM NG	An error occurred in a checksum of the EEPROM(*** is a block address number).	<div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">BACKUP ERROR</div>	

1.5. Version Display in the Setup Menu

Follow the steps below to display the firmware information.

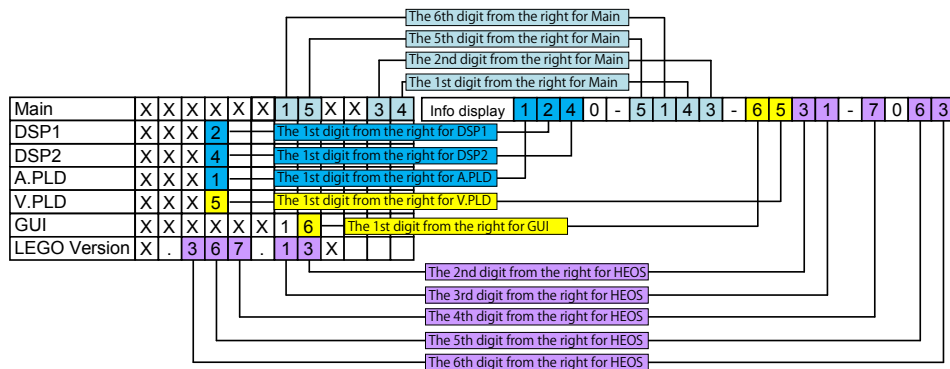
- (1) Press the "SETUP" button on the remote control.
- (2) Select "General - Information - Firmware".

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(E3 Only)

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.

(1) If no protections has occurred.

L1	PROTECT HISTORY
L2	:NO PROTECT

(2) 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.

(3) 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.

(4) Case of THERMAL (when the last protection incident is THERMAL(H) protection)

L2	:THERMAL H
----	------------

Cause : Abnormal heat sink temperature.

If the power is turned on in the abnormal state, protection is activated after around 6 seconds and the power is turned off.

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

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.

- (1) 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
----	-------------

- (2) Initialize this unit. (See "[Initializing this Unit](#)")

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

Warning Displays by POWER LED

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

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

3-3. 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

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.

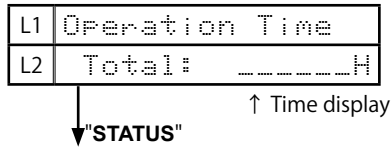
Select the "4. OP INFO" using the "CURSOR ▼/▲" button, then press the "ENTER" button to confirm.

3-4.3. Operations

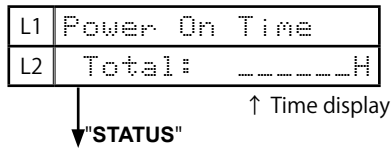
Press the "STATUS" button after starting up this device in Operation Info mode.

The following information is displayed in the following order.

- (1) Accumulated operating time



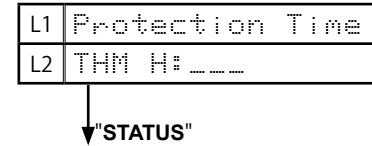
- (2) Power On time



- (3) DC / ASO Protection time



- (4) Thermal Protection (H) count



- (5) Current Protection time



(Returns to normal display)

3-5. TUNER STEP mode (E3 only)

3-5.1. Actions

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

3-5.2. Starting up

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.

- (1) AM9 kHz / FM50 kHz is selected

L1	*TUNER FRQ Set
L2	< AM9/FM50 >

"CURSOR ◀" ↓ ↑ "CURSOR ▶"

- (2) AM10 kHz / FM200 kHz is selected

L2	< AM10/FM200 >
----	----------------

↓ "ENTER"

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

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

L1	
L2	REMOTE ID ?

- (2) 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

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

※ Only "QUICK SELECT 1 - 4" and the POWER button on the unit can be used in Remote ID Setup Mode.

3-6.4. Setting the Remote control unit

- (1) Press and hold the "RC SETUP" button for over 3 seconds.
(2) Use "▲/▼" to display "RC-ID" on the remote control unit, then press "ENTER".
(3) Use "▲/▼" to display "ID-1-4" on the remote control unit, then press "ENTER".
"OK" flashes 2 times on the remote control unit and the unit returns to normal operation mode.

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. Additional Source mode

5.1. Actions

- These functions add Additional Source settings for use with the Custom installer. AUX 3-7 is added as a source when these settings are enabled.
- Assign input terminals to AUX 3-7 in "Setup Menu" → "Input" → "Input Assign" to increase the number of usable input sources.
- The default factory setting is "OFF".

5.2. Starting up

While holding down buttons "BACK" and "CURSOR ▼" simultaneously, press the power button to turn on the power.

5.3. Operations

- (1) The Additional Source mode is displayed in FLD after the POWER ON sequence.
- (2) Select settings using the "CURSOR ◀/▶" buttons.

ON ← → OFF

```
L1 *Add Source Mode
L2 < OFF >
```

- ON is selected.

```
L2 < ON >
```

- OFF is selected.

```
L2 < OFF >
```

- (3) Press the "ENTER" button on the main unit to apply.

6. Network Initialization Mode

6.1. 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

6.2. 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.

7. Clearing the Operation Info

7.1. 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.

7.2. 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 button "power" → "ZONE2 ON/OFF" → "ZONE3 ON/OFF" to place the product in standby mode.

8. Log Capture feature

8.1. 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.

8.2. Starting up

While the power is on, hold down buttons "BACK" and "OPTION" for at least 3 seconds.

8.2.1. If the USB flash drive is connected after starting the unit

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

L1	Storing Logs...
----	-----------------

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

L1	USB SUCCESS
----	-------------

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

L1	USB FAILED
----	------------

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

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

L1	Storing Logs...
----	-----------------

- (2) 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.

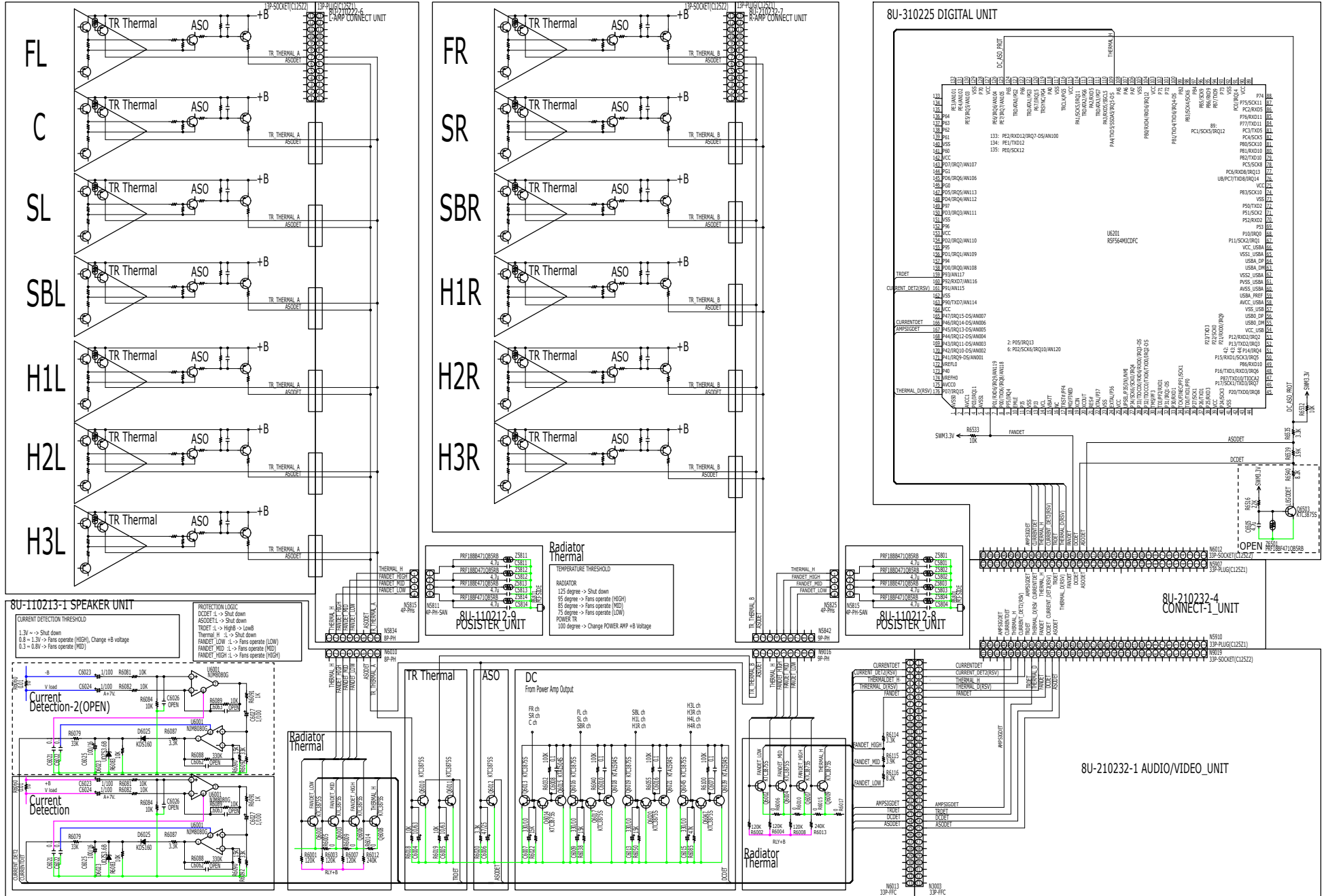
L1	Ticket No:XXXXX
----	-----------------

L2	Push ENTER
----	------------

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

L1	FAILED
----	--------

AVR-X8500H PROTECTION DIAGRAM



Before Servicing
This Unit

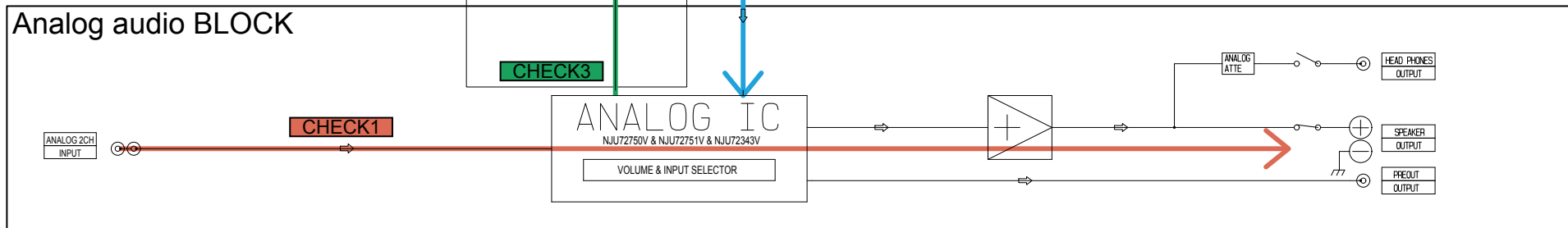
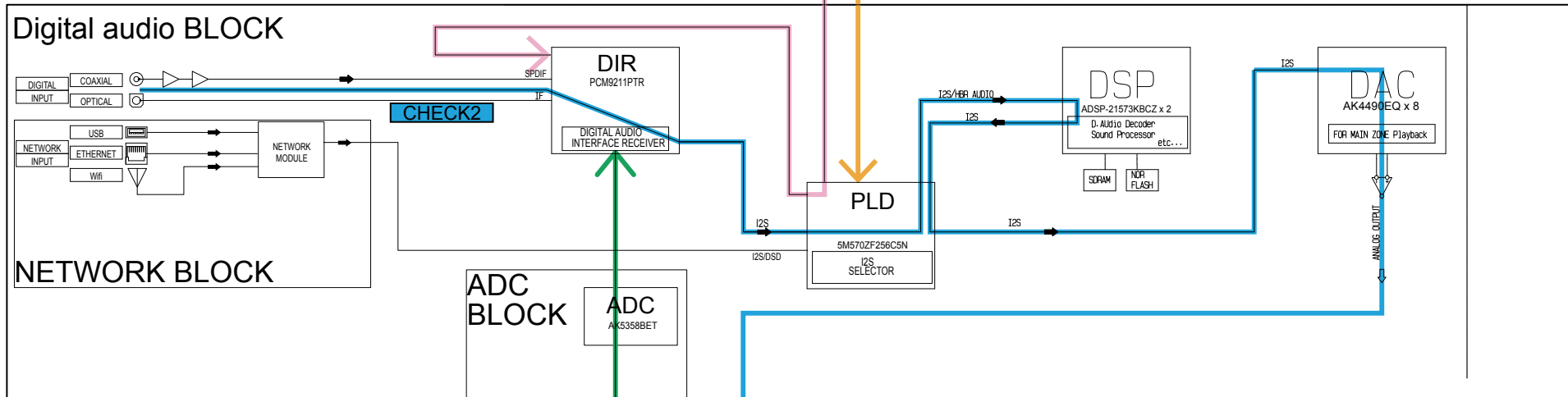
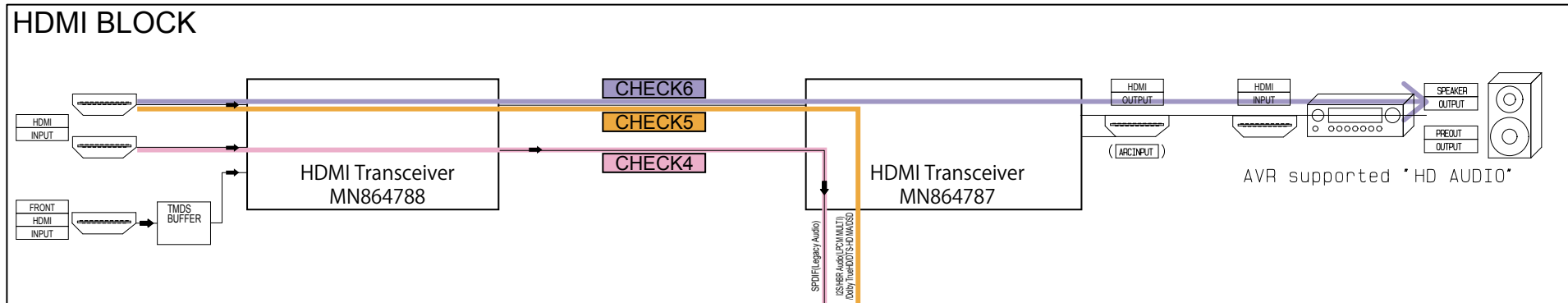
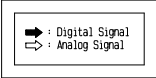
Electrical

Mechanical

Repair Information

Updating

AUDIO CHECK PATH



Before Servicing This Unit

Electrical

Mechanical

Repair Information

Updating

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.

Actions	The unit			Remote control unit		
	①	②	③	①	②	③
	Audio ⇄ Video ⇄ FAN	PREVIOUS	NEXT	Audio ⇄ Video ⇄ FAN	PREVIOUS	NEXT
Button	DIMMER	CURSOR ◀	CURSOR ▶	SLEEP	CURSOR ◀	CURSOR ▶

1.5. Audio system confirmation items

See the block diagram fig.AXXth.

Paths to be confirmed		Display	Settings	What to confirm
1	Analog	fig.A01 A01:ANALOG PASS	Input Source : CBL/SAT Input Mode : Analog (fixed) Sound mode : DIRECT Amp assign : 13.1ch Floor Layout : 5.1&SB Height Sp : 6ch Dolby Sp : None Height Layout : Front Height/Top Middle/Rear Height MAIN ZONE : On ZONE2 : Off ZONE3 : Off	<ul style="list-style-type: none"> • 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.A02a fig.A02b A02:DIGITAL	Input Source : CBL/SAT Input Mode : DIGITAL (fixed) Sound mode : MULTI CH STEREO Amp assign : 13.1ch Floor Layout : 5.1&SB Height Sp : 6ch Dolby Sp : None Height Layout : Front Height/Top Middle/Rear Height Speaker Select : Floor Speaker Config ALL Speaker = Small / SW = Yes(2ch) MAIN ZONE : On ZONE2 : Off ZONE3 : Off	<ul style="list-style-type: none"> • 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.A03a fig.A03b fig.A03c	#03: DIGITAL-Z2	Input Source : HEOS Music Input Mode : Auto Sound mode : STEREO Amp assign : 11.1ch + ZONE2 Speaker for ZONE2 : S.Back Floor Layout : 5ch Height Sp : 6ch Dolby Sp : None Height Layout : Front Height/Top Middle/Rear Height MAIN ZONE : On ZONE2 : On ZONE3 : Off	<ul style="list-style-type: none"> • Digital(PCM) input ⇒ Speaker output (S.Back L/R (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.A04a fig.A04b	#04: DIGITAL-Z3	Input Source : HEOS Music Input Mode : Auto Sound mode : STEREO Amp assign : 11.1ch + 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	<ul style="list-style-type: none"> • Digital(PCM) input ⇒ Amp Assign Speaker output (Height2 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.A05a fig.A05b fig.A05c	#05: HDMI	Input Source : CBL/SAT Input Mode : HDMI (fixed) Sound mode : STEREO Amp assign : 13.1ch Floor Layout : 5ch&SB Height Sp : 6ch Dolby Sp : None Height Layout : Front Height/Top Middle/Rear Height MAIN ZONE : On ZONE2 : Off ZONE3 : Off	<ul style="list-style-type: none"> • 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.A06a fig.A06b	#06: AD	Input Source : CBL/SAT Input Mode : Analog (fixed) Sound mode : MULTI CH STEREO Amp assign : 13.1ch Floor Layout : 5ch&SB Height Sp : 6ch Dolby Sp : None Height Layout : Front Height/Top Middle/Rear Height Speaker Select : Floor Speaker Config ALL Speaker = Small/SW = Yes(2ch) MAIN ZONE : On ZONE2 : Off ZONE3 : Off	<ul style="list-style-type: none"> • Analog input ⇒ Speaker output (Front L/R, Center, Surround L/R, S.Back L/R, Height1 L/R, Height2 L/R, Height3 L/R) • Analog input ⇒ Pre OUT output, SW(20Hz) (Front L/R, Center, Surround L/R, S.Back L/R, Height1 L/R, Height2 L/R, Height3 L/R, SubWoofer1/2) (※ The input source can be switched to any source except CBL/SAT.) (※ Volume 60 is the value when Absolute settings are used. The value is -20 when Relative settings are used)
7	Analog Amp Assign (Amp Assign : ZONE2) fig.A07	#07: ASSIGN-Z2	Input Source : CBL/SAT Input Mode : Auto Sound mode : STEREO Z2 Source : Source Amp assign : 11.1ch + ZONE2 Speaker for ZONE2 : S.Back Floor Layout : 5ch Height Sp : 6ch Dolby Sp : None Height Layout : Front Height/Top Middle/Rear Height MAIN ZONE : On ZONE2 : On ZONE3 : Off	<ul style="list-style-type: none"> • Analog input ⇒ Speaker output (S.Back L/R (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.A08	A08: ASSIGN-Z3 Input Source : CBL/SAT Input Mode : Auto Sound mode : STEREO Z3 Source : Source Amp assign : 11.1ch + 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	<ul style="list-style-type: none"> Analog input ⇒ Speaker output (Height2 L/R (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.A09	A09: ASSIGN-Z2/3M Input Source : CBL/SAT Input Mode : Auto Sound mode : STEREO Z2 Source : Source Z3 Source : Source Amp assign : 11.1ch + ZONE2/3 Speaker for ZONE2/3 : Height3 Floor Layout : 5ch&SB Height Sp : 4ch Dolby Sp : None Height Layout : Front Height/Top Middle MAIN ZONE : On ZONE2 : On ZONE3 : On	<ul style="list-style-type: none"> Analog input ⇒ Speaker output (Height3 L (ZONE2 MONO), Height3 R (ZONE3 MONO)) 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.A10a fig.A10b	A11: ASSIGN-BiAMP Input Source : CBL/SAT Input Mode : Auto Sound mode : MULTI CH STEREO Amp assign : 11.1ch + BiAMP Speaker for Bi-Amp : S.Back Floor Layout : 5ch Height Sp : 6ch Dolby Sp : None Height Layout : Front Height/Top Middle/Rear Height MAIN ZONE : On ZONE2 : Off ZONE3 : Off	<ul style="list-style-type: none"> 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.A11a fig.A11b	A14: FRONT HEIGHT Input Source : CBL/SAT Input Mode : Auto Sound mode : MULTI CH STEREO Amp assign : 13.1ch Floor Layout : 5ch&SB Height Sp : 6ch Dolby Sp : None Height Layout : Front Height/Top Middle/Rear Height Speaker Select=Floor & Height MAIN ZONE : On ZONE2 : Off ZONE3 : Off	<ul style="list-style-type: none"> Analog 入力 ⇒ Speaker 出力 (Height1 L/R (Front Height), Height2 L/R (Rear Height), Height3 L/R (Top Middle)) Analog input ⇒ Pre OUT output (Height1 L/R (Front Height), Height2 L/R (Rear Height), Height3 L/R (Top Middle)) 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)
12	Front Wide	fig.A12a fig.A12b	A15: FRONT WIDE Input Source : CBL/SAT Input Mode : Auto Sound mode : MULTI CH STEREO Vol. : 60.0(-20.0dB) Amp assign : 13.1ch Floor Layout : 5ch&SB&FW Height Sp : 4ch Dolby Sp : None Height Layout : Front Height/Rear Height Speaker Select=Floor & Height MAIN ZONE : On ZONE2 : Off ZONE3 : Off	<ul style="list-style-type: none"> Analog input ⇒ Speaker output (Height4, Front Wide L/R) Analog input ⇒ Pre OUT output (Height4, Front Wide L/R) 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)

Paths to be confirmed		Display	Settings	What to confirm
13	7.1ch	fig.A13 #19: 7.1CH IN	Input Source : CBL/SAT Input Mode : 7.1ch In Amp assign : 13.1ch Floor Layout : 5ch&SB Height Sp : None Dolby Sp : None Speaker Config ALL Speaker = Small/SW = Yes(2ch)	<ul style="list-style-type: none"> • 7.1ch IN input ⇒ Speaker output (Front L/R, Center, Surround L/R, S.Back L/R) • 7.1ch IN input ⇒ Pre output (Front L/R, Center, Surround L/R, S.Back L/R, Subwoofer1/2)
14	Amp Assign Custom (Case1)	fig.A14a fig.A14b #24: CUSTOM1	Input Source : CBL/SAT Input Mode : Auto Sound mode : MULTI CH STEREO Amp assign : Custom Floor Layout : 5ch&SB Height Sp : 6ch Dolby Sp : None Height Layout : Front Height/Top Middle/Rear Height Speaker Select=Floor & Height MAIN ZONE : ON ZONE2 : OFF ZONE3 : OFF Setting Front Terminal : Rear Height Surround Terminal : Top Middle S.Back Terminal : Front Height Height1 Terminal : S.Back Height2 Terminal : Front Height3 Terminal : Surround	<ul style="list-style-type: none"> • Analog 入力 ⇒ Speaker 出力 (Front L/R (Rear Height), Surround L/R (Top Middle), S.Back L/R (Front Height), Height1 L/R (S.Back), Height2 L/R (Front), Height3 L/R (Surround)) (※ 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)
15	Amp Assign Custom (Case2)	fig.A15a fig.A15b #25: CUSTOM2	Input Source : CBL/SAT Input Mode : Auto Sound mode : MULTI CH STEREO Amp assign : Custom Floor Layout : 5ch&SB Height Sp : 6ch Dolby Sp : None Height Layout : Front Height/Top Middle/Rear Height Speaker Select=Floor & Height MAIN ZONE : ON ZONE2 : OFF ZONE3 : OFF Setting Front Terminal : Center Surround Terminal : Surround S.Back Terminal : Center Height1 Terminal : Front Height Height2 Terminal : Rear Height Height3 Terminal : Top Middle	<ul style="list-style-type: none"> • Analog input ⇒ Speaker output (Front L/R (Center), S.Back L/R (Center)) (※ 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)
16	Amp Assign Custom (Case3)	fig.A16a fig.A16b #26: CUSTOM3	Input Source : CBL/SAT Input Mode : Auto Sound mode : MULTI CH STEREO Amp assign : Custom Floor Layout : 5ch&SB Height Sp : 6ch Dolby Sp : None Height Layout : Front Height/Top Middle/Rear Height Speaker Select=Floor & Height MAIN ZONE : ON ZONE2 : ON ZONE3 : ON Setting Front Terminal : ZONE2 Surround Terminal : ZONE3 S.Back Terminal : L: ZONE2 (U3219 10pin) R: ZONE3 (U3219 11pin) Height1 Terminal : L: ZONE2 (U3220 10pin) R: ZONE3 (U3220 11pin) Height2 Terminal : ZONE2 Height3 Terminal : ZONE3	<ul style="list-style-type: none"> • Analog 入力 ⇒ Speaker 出力 (Front L/R (Zone2), Surround L/R (Zone3), S.Back L/R (L:Zone2L / R:Zone3R), Height1 L/R (L:Zone2L / R:Zone3R), Height2 L/R (Zone2), Height3 L/R (Zone3)) (※ 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.VXXth.

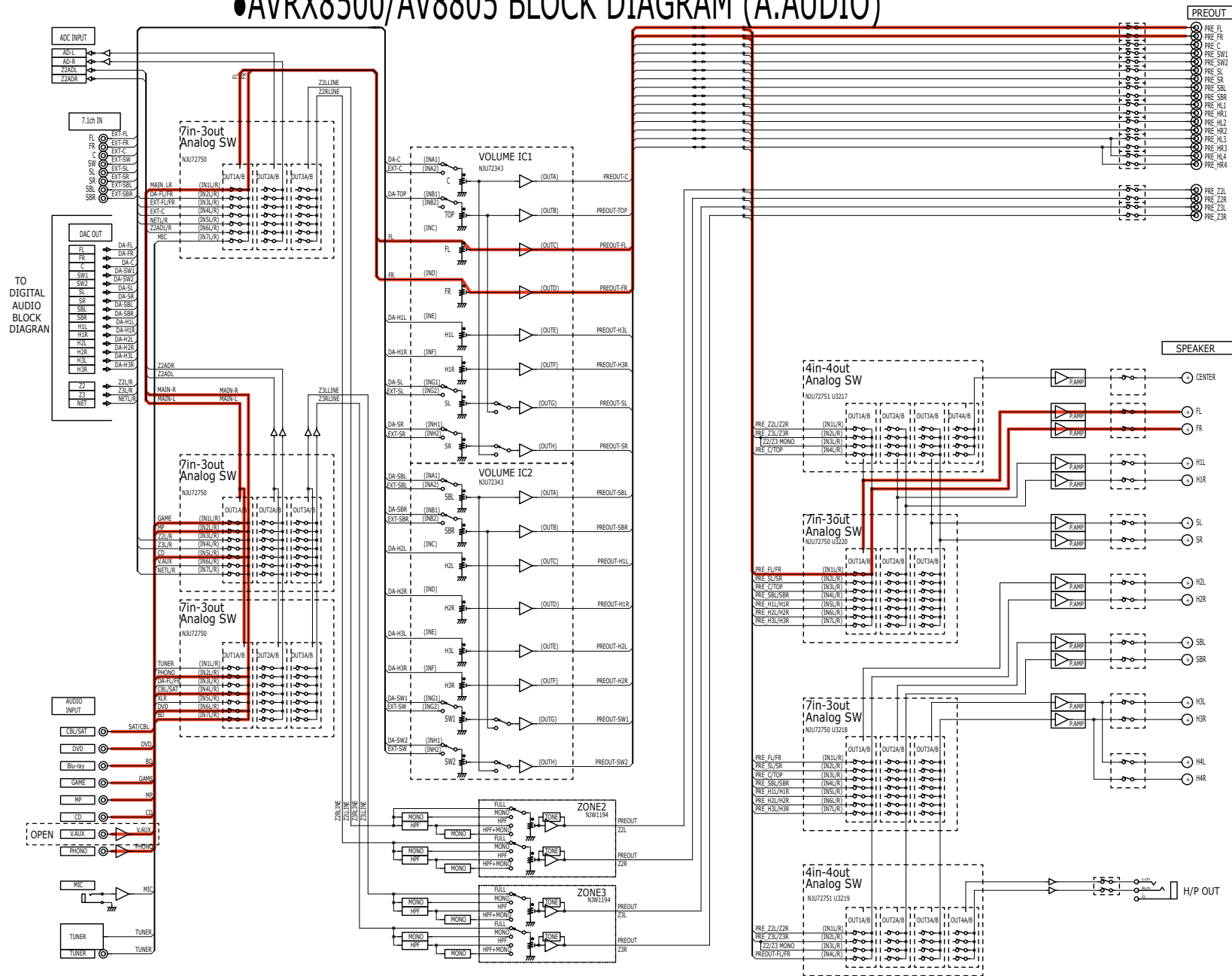
Paths to be confirmed		Display	Settings	What to confirm
1	Analog Video pass fig.V01	U01:VIDEO PASS	Input Source : CBL/SAT Video Convert (IP Scaler) : "OFF" All sources MAIN ZONE : On ZONE2 : On	<ul style="list-style-type: none"> • Component input ⇒ Component output (※ The input source can be switched to any source except CBL/SAT.)
2	Video Convert (Analog or HDMI ⇒ HDMI) fig.V02	U02: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	<ul style="list-style-type: none"> • HDMI input ⇒ IP Scaler ⇒ HDMI output. • NETWORK 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.V03	U03:HDMI PASS	Input Source : CBL/SAT Video Convert (IP Scaler) : "OFF" All sources MAIN ZONE : On ZONE2 : Off ZONE3 : Off	<ul style="list-style-type: none"> • HDMI input (MAIN function) ⇒ HDMI output (MAIN) (※ The input source can be switched to any source except CBL/SAT.)
4	HDMI CEC fig.V04	U04:HDMI CEC	Input Source : CBL/SAT HDMI Control : On MAIN ZONE : On ZONE2 : Off ZONE3 : Off	<ul style="list-style-type: none"> • 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.V05a fig.V05b fig.V05c	U05:H-AUDIO-AVR	Input Source : CBL/SAT HDMI Control : Off HDMI Audio : AVR (if checking the audio output from AVR)	<ul style="list-style-type: none"> • 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.V06a fig.V06b	U06:H. AUDIO-TV	HDMI Audio : TV (if checking the audio output from TV)	<ul style="list-style-type: none"> • 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.V07	U07: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	<ul style="list-style-type: none"> • GUI display ⇒ HDMI output. (※ The input source can be switched to any source except CBL/SAT.)
8	HDMI pass (ZONE2) fig.V08	U08:ZONE2 HDMI	Input Source : CBL/SAT Z2 Source : Source MAIN ZONE : On ZONE2 : On ZONE3 : Off	<ul style="list-style-type: none"> • 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 FAN CONT_MAX = LOW MAIN ZONE: ON ZONE2: OFF ZONE3: OFF	<ul style="list-style-type: none"> • Low-speed fan (※ The input source can be switched to any source except CBL/SAT.)
2	Medium-speed fan	-	F02:FAN MID	FAN CONT_LOW = LOW FAN CONT_MID = HIGH FAN CONT_HIGH = LOW FAN CONT_MAX = LOW MAIN ZONE: ON ZONE2: OFF ZONE3: OFF	<ul style="list-style-type: none"> • Medium-speed fan (※ The input source can be switched to any source except CBL/SAT.)
3	High-speed fan	-	F03:FAN HIGH	FAN CONT_LOW = LOW FAN CONT_MID = LOW FAN CONT_HIGH = HIGH FAN CONT_MAX = LOW MAIN ZONE: ON ZONE2: OFF ZONE3: OFF	<ul style="list-style-type: none"> • High-speed fan (※ The input source can be switched to any source except CBL/SAT.)
4	Max-speed fan (Unused)	-	F04:FAN MAX	-	-

fig.A01

●AVRX8500/AV8805 BLOCK DIAGRAM (A.AUDIO)



Before Servicing
This Unit

Electrical

Mechanical

Repair Information

Updating

fig.A02a

AVR-X8500/AV8805 DIGITAL AUDIO/NETWORK BLOCK DIRAGRAM

DIGITAL AUDIO BLOCK

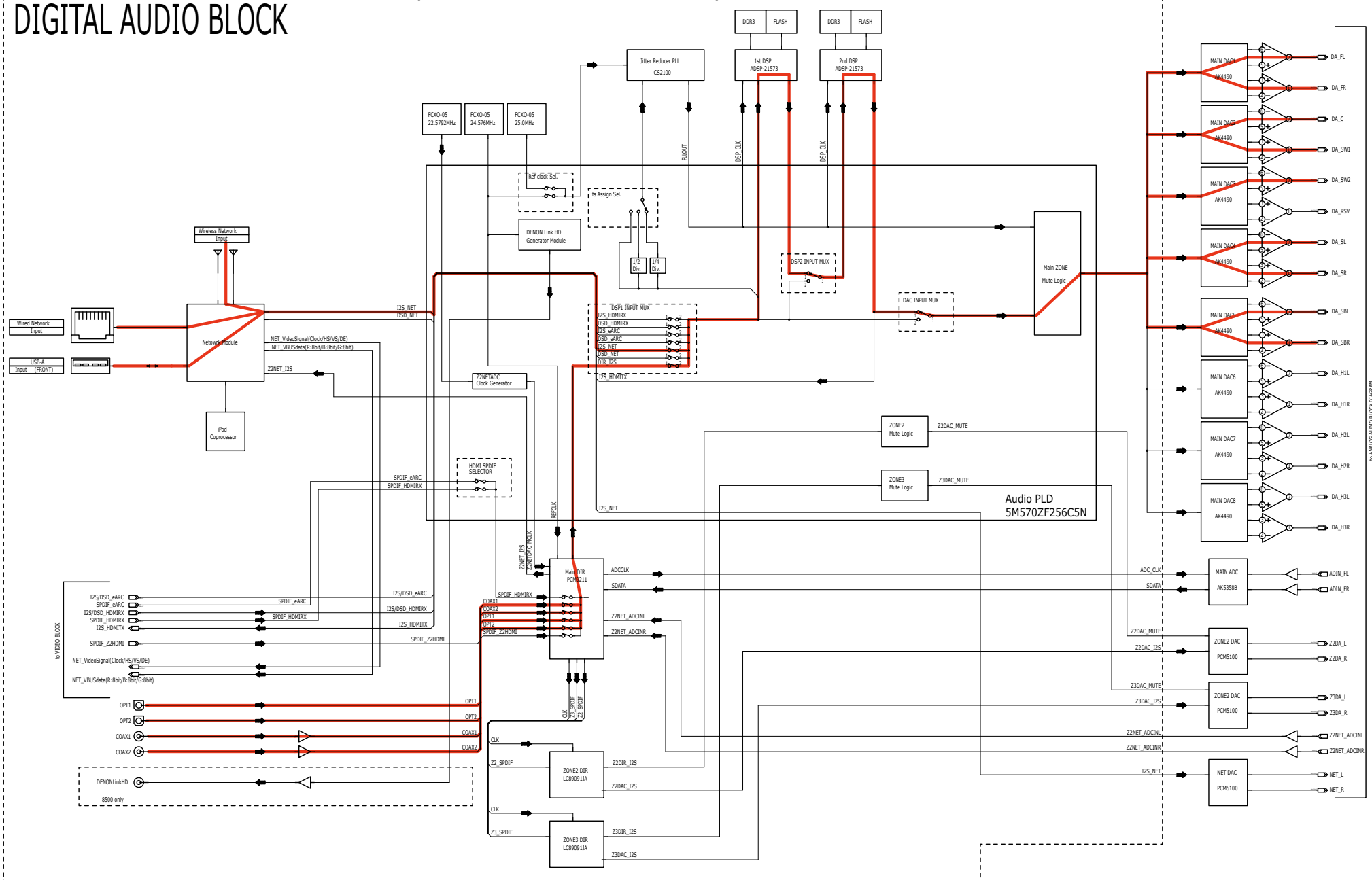


fig.A02b

●AVRX8500/AV8805 BLOCK DIAGRAM (A.AUDIO)

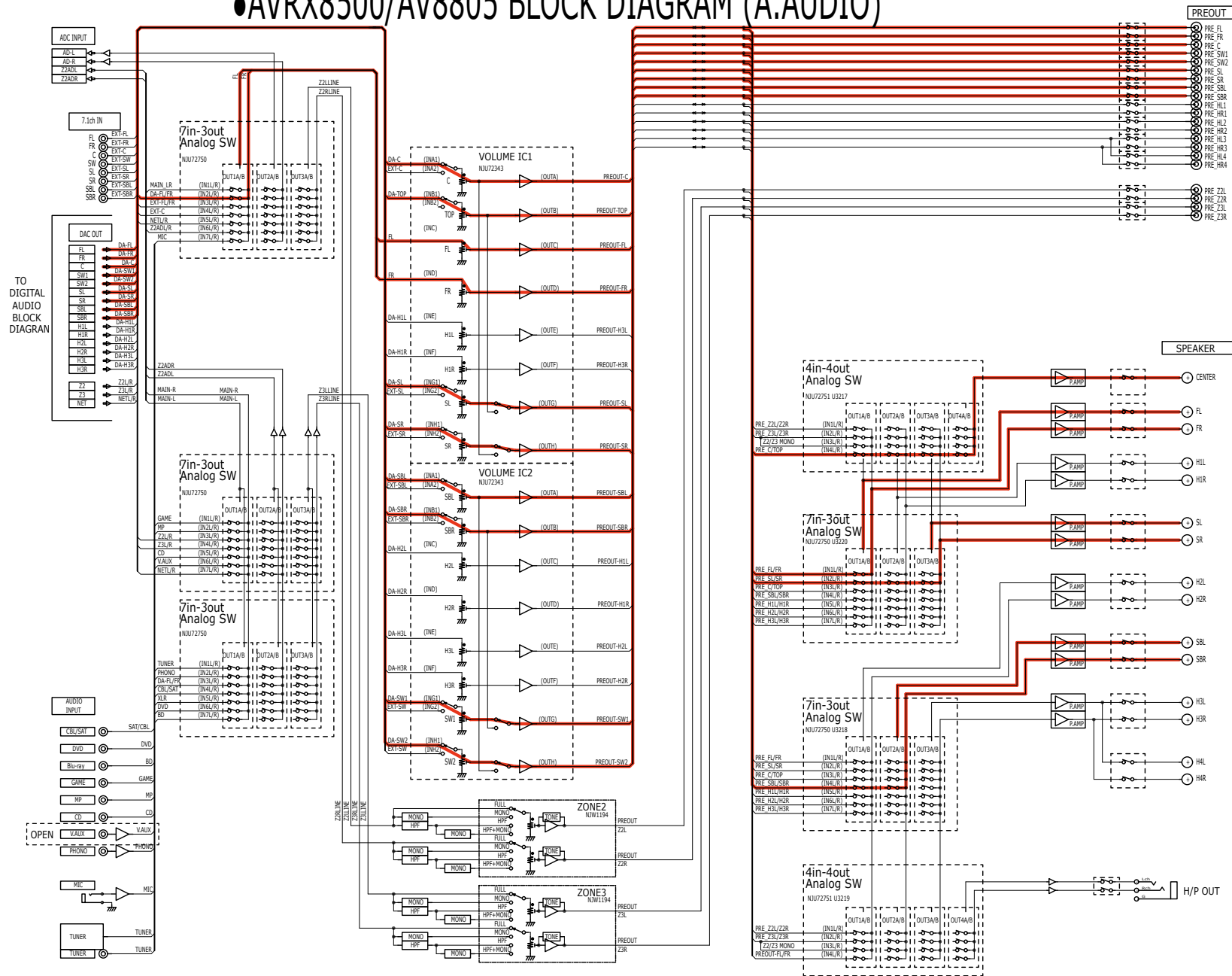
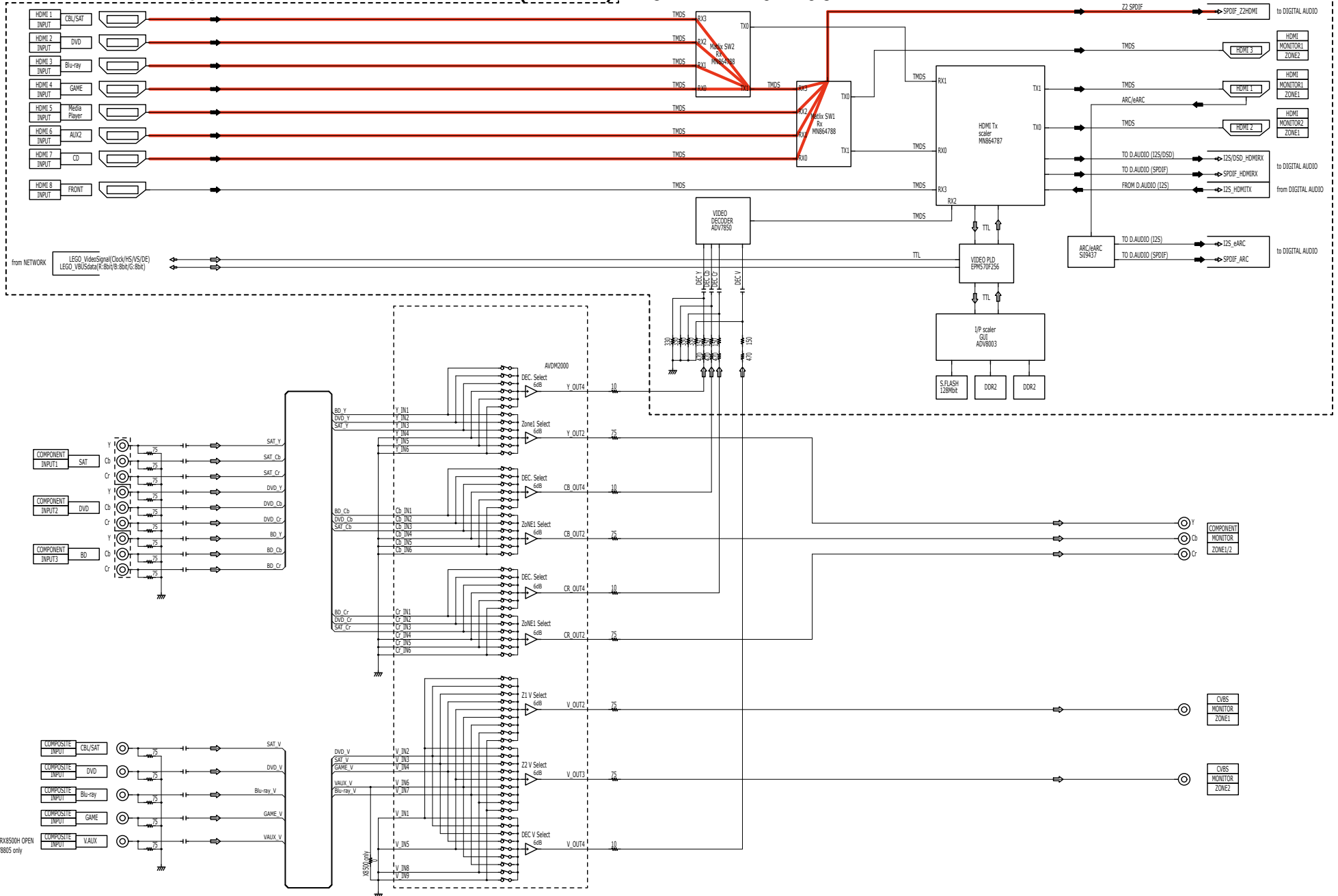


fig.A03a

AVRX8500/AV8805 BLOCK DIAGRAM (VIDEO): DIGITAL VIDEO BLOCK

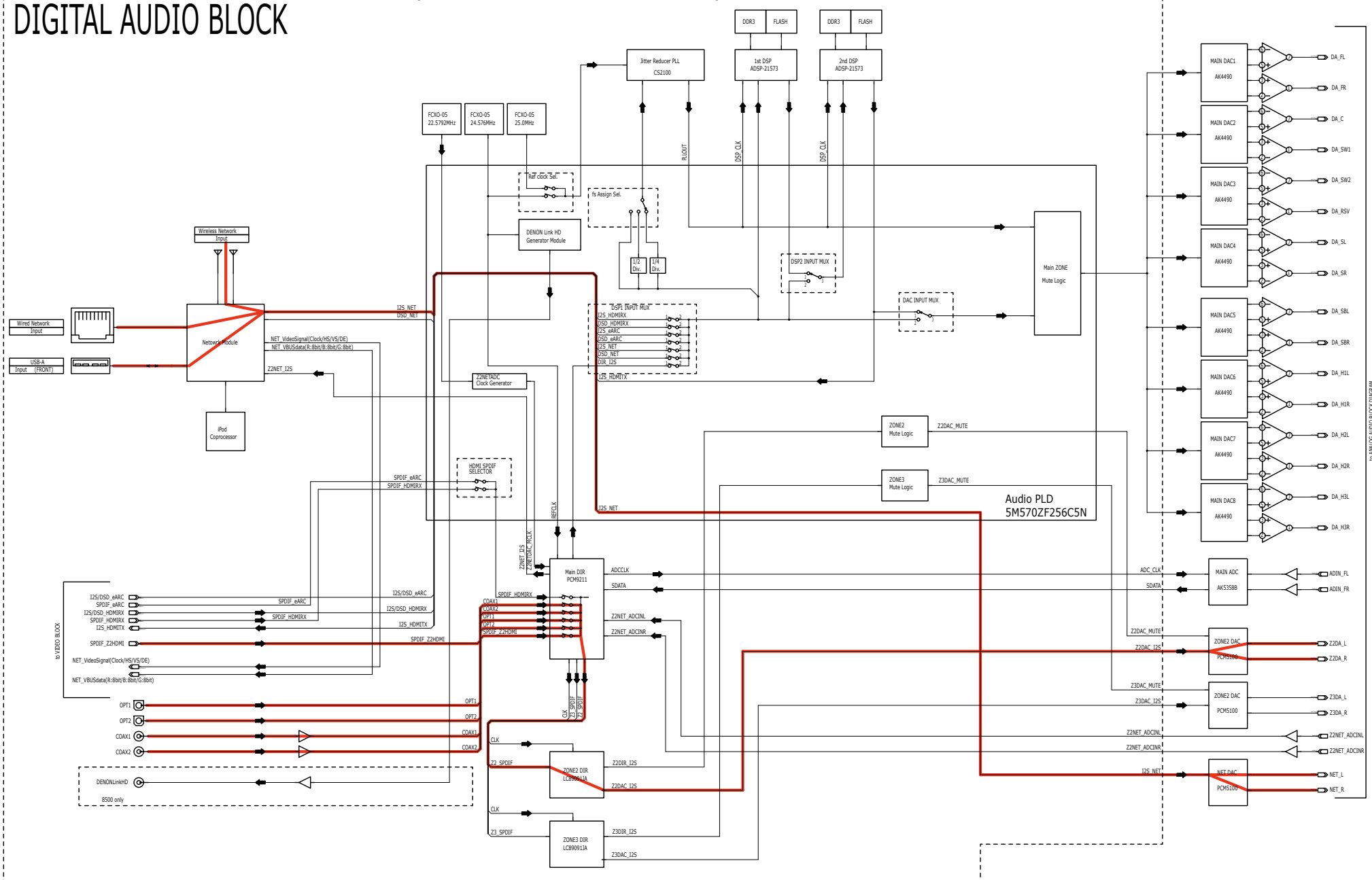


AVRX8500H OPEN
AV8805 only

fig.A03b

AVR-X8500/AV8805 DIGITAL AUDIO/NETWORK BLOCK DIRAGRAM

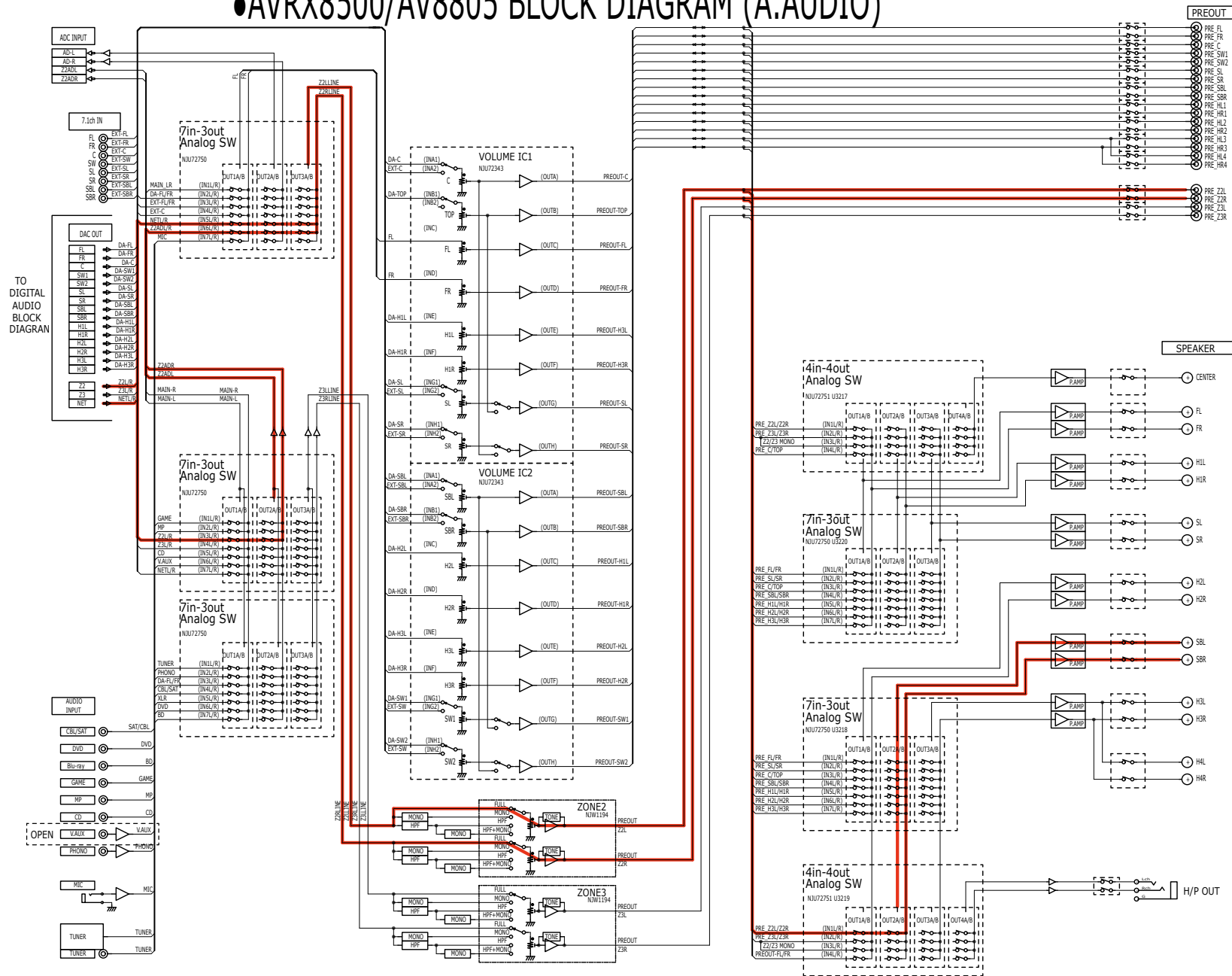
DIGITAL AUDIO BLOCK



AVR8805/AVR8805 DIGITAL AUDIO BLOCK DIRAGRAM

fig.A03c

●AVRX8500/AV8805 BLOCK DIAGRAM (A.AUDIO)



Before Servicing
This Unit

Electrical

Mechanical

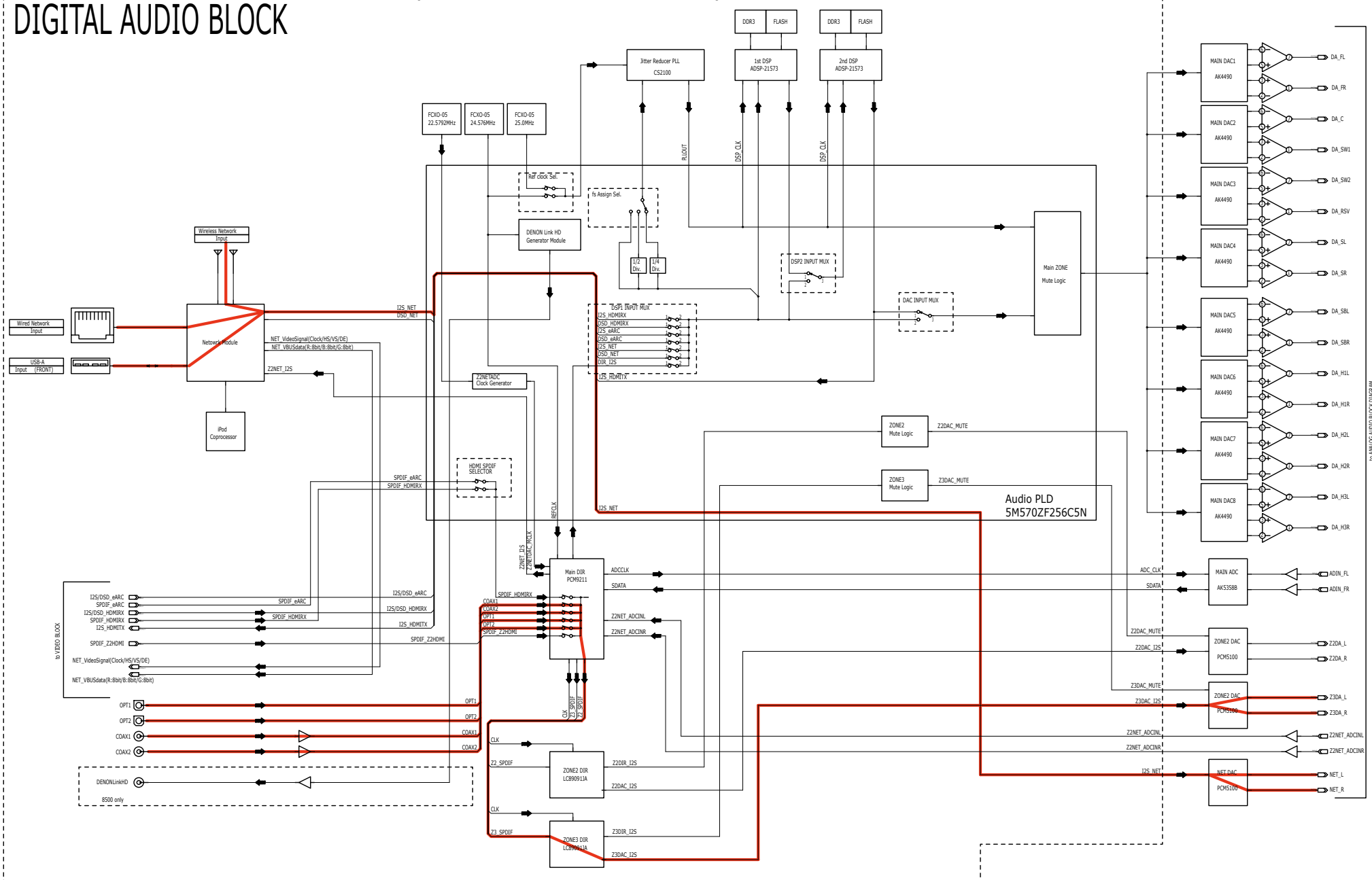
Repair Information

Updating

fig.A04a

AVR-X8500/AV8805 DIGITAL AUDIO/NETWORK BLOCK DIRAGRAM

DIGITAL AUDIO BLOCK

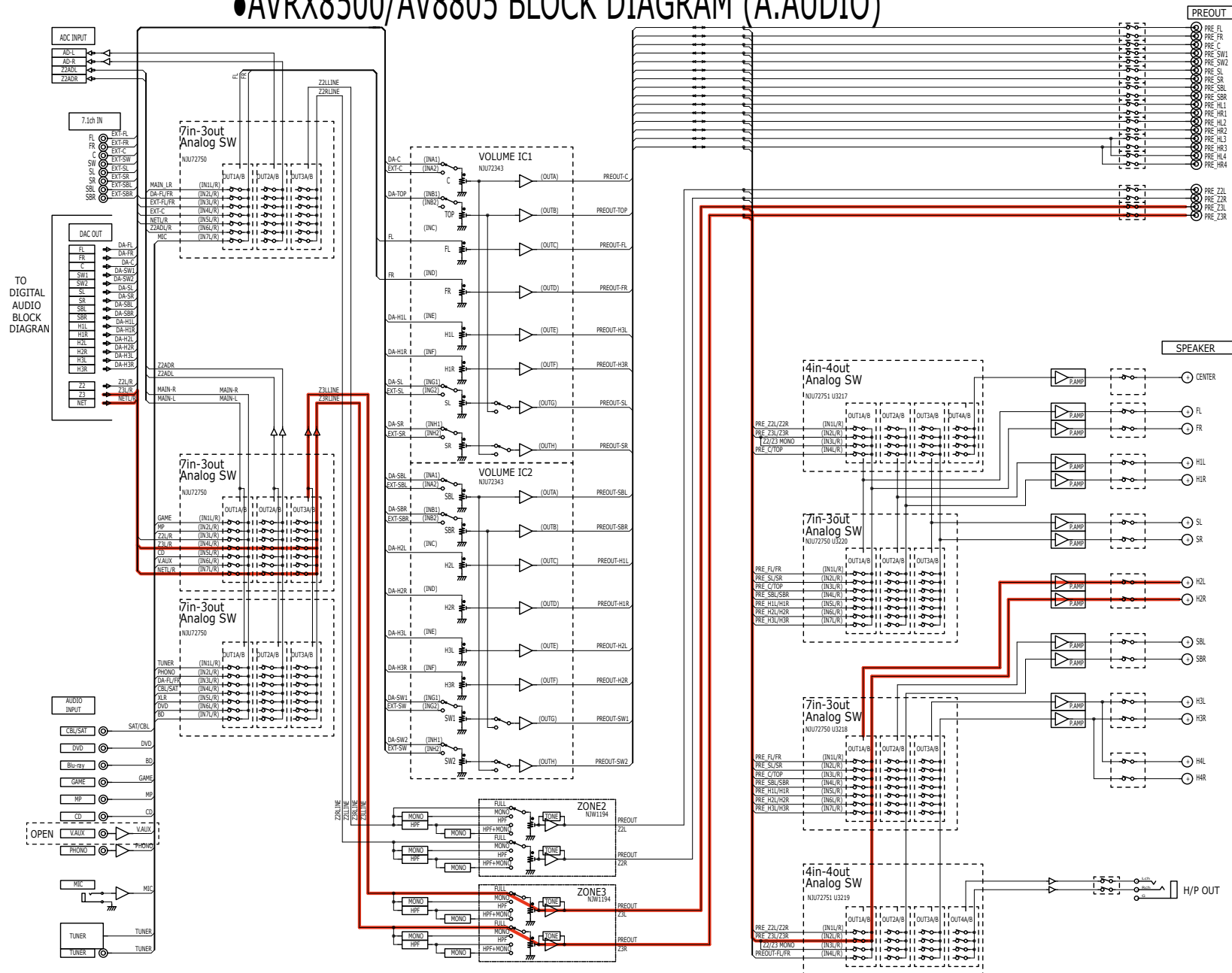


AVR8805/AVR8805 DIGITAL AUDIO BLOCK

- Before Servicing
This Unit
- Electrical
- Mechanical
- Repair Information
- Updating

fig.A04b

AVRX8500/AV8805 BLOCK DIAGRAM (A.AUDIO)



TO DIGITAL AUDIO BLOCK DIAGRAM

Before Servicing This Unit

Electrical

Mechanical

Repair Information

Updating

fig.A05a

AVRX8500/AV8805 BLOCK DIAGRAM (VIDEO): DIGITAL VIDEO BLOCK

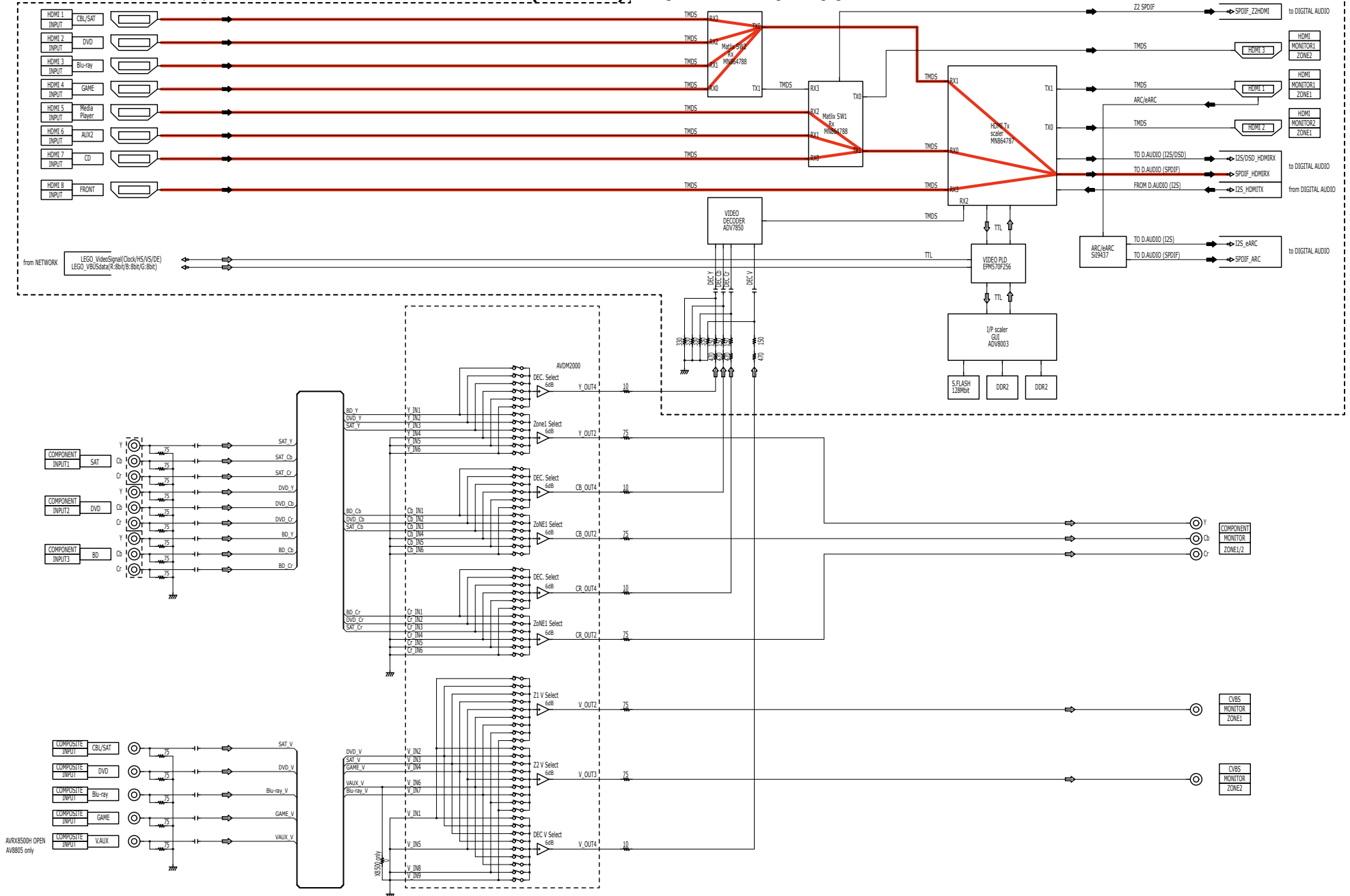
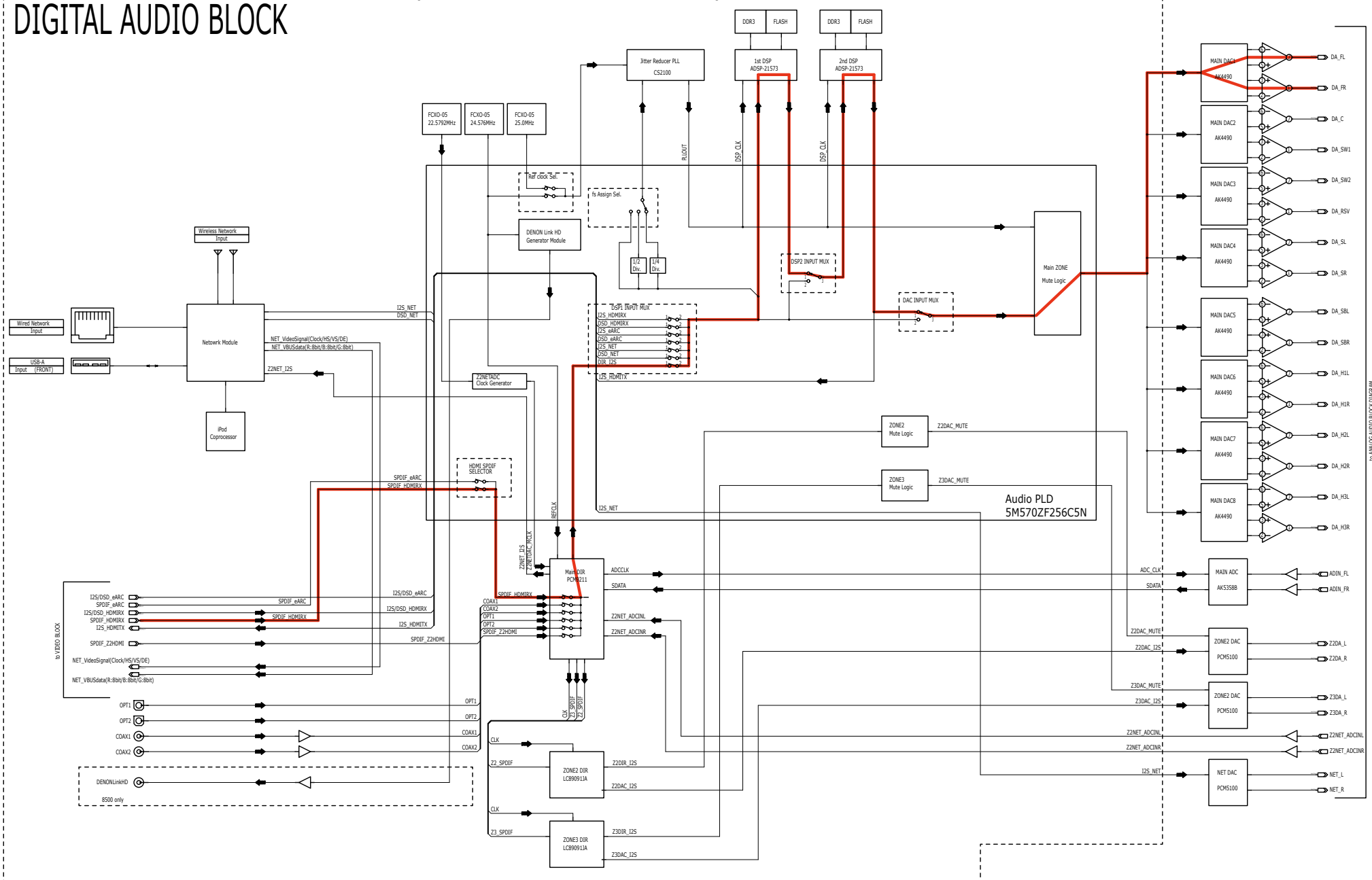


fig.A05b

AVR-X8500/AV8805 DIGITAL AUDIO/NETWORK BLOCK DIRAGRAM

DIGITAL AUDIO BLOCK



Before Servicing This Unit

Electrical

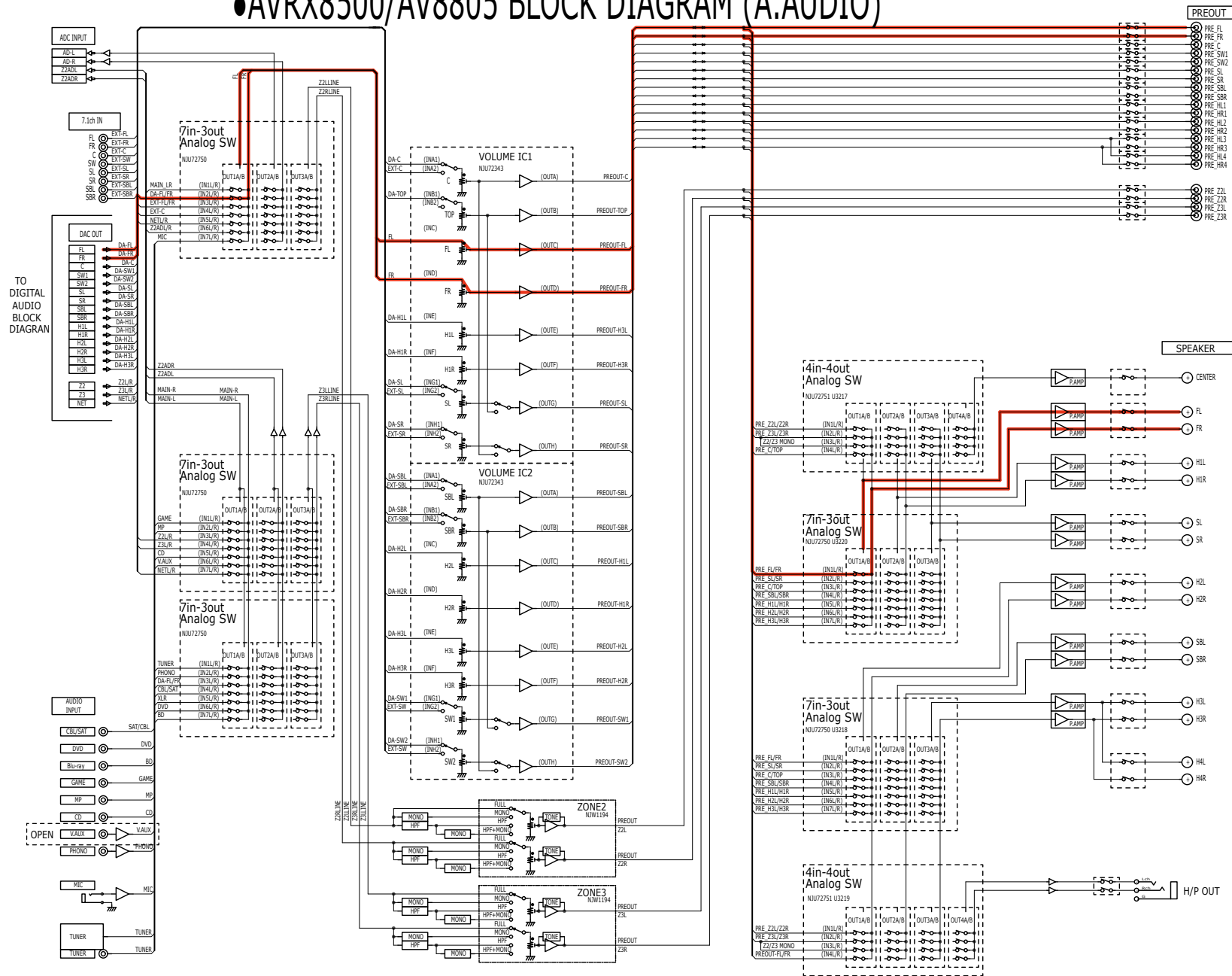
Mechanical

Repair Information

Updating

fig.A05c

●AVRX8500/AV8805 BLOCK DIAGRAM (A.AUDIO)



TO DIGITAL AUDIO BLOCK DIAGRAM

fig.A06a

AVR-X8500/AV8805 DIGITAL AUDIO/NETWORK BLOCK DIRAGRAM

DIGITAL AUDIO BLOCK

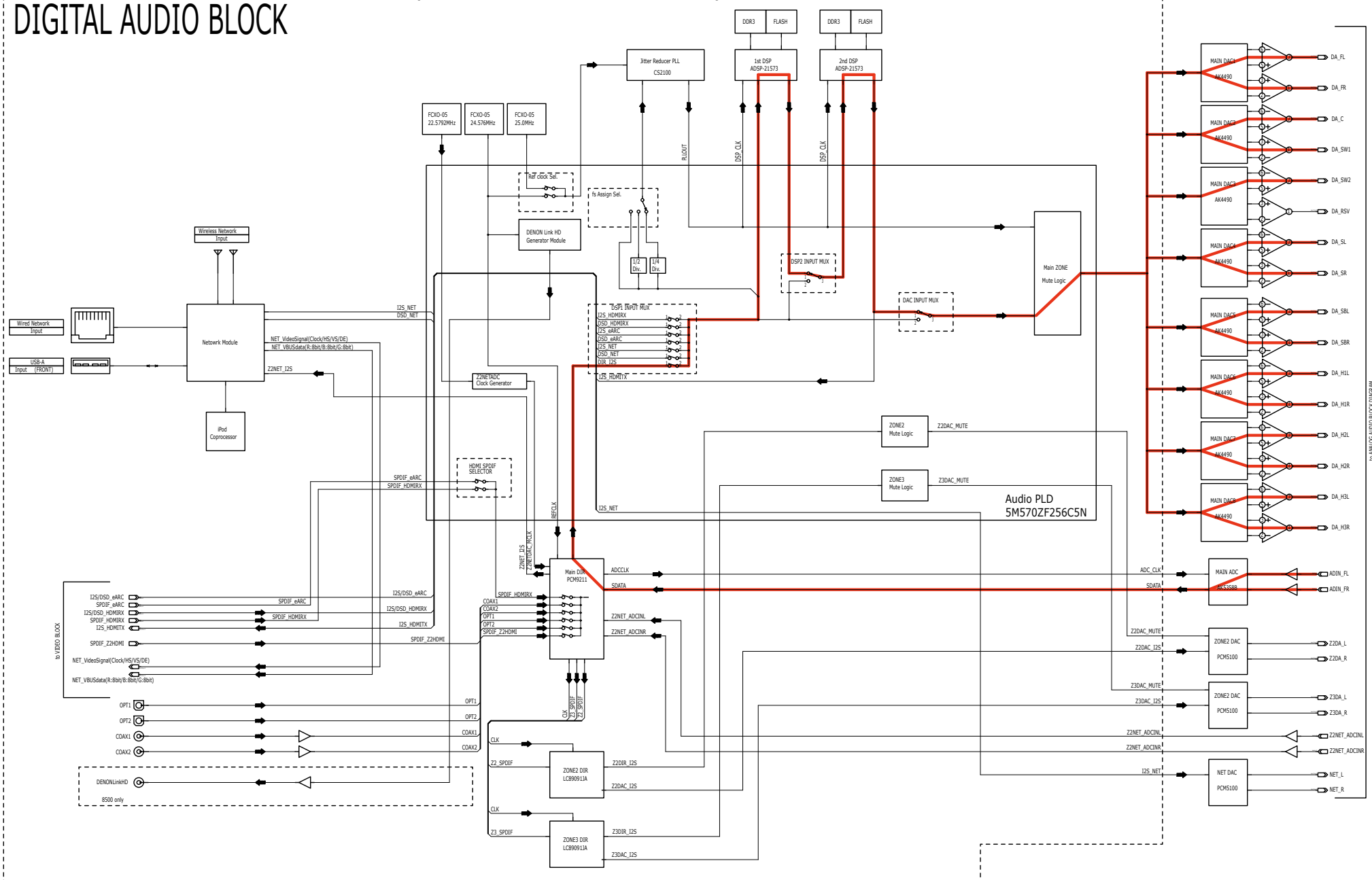
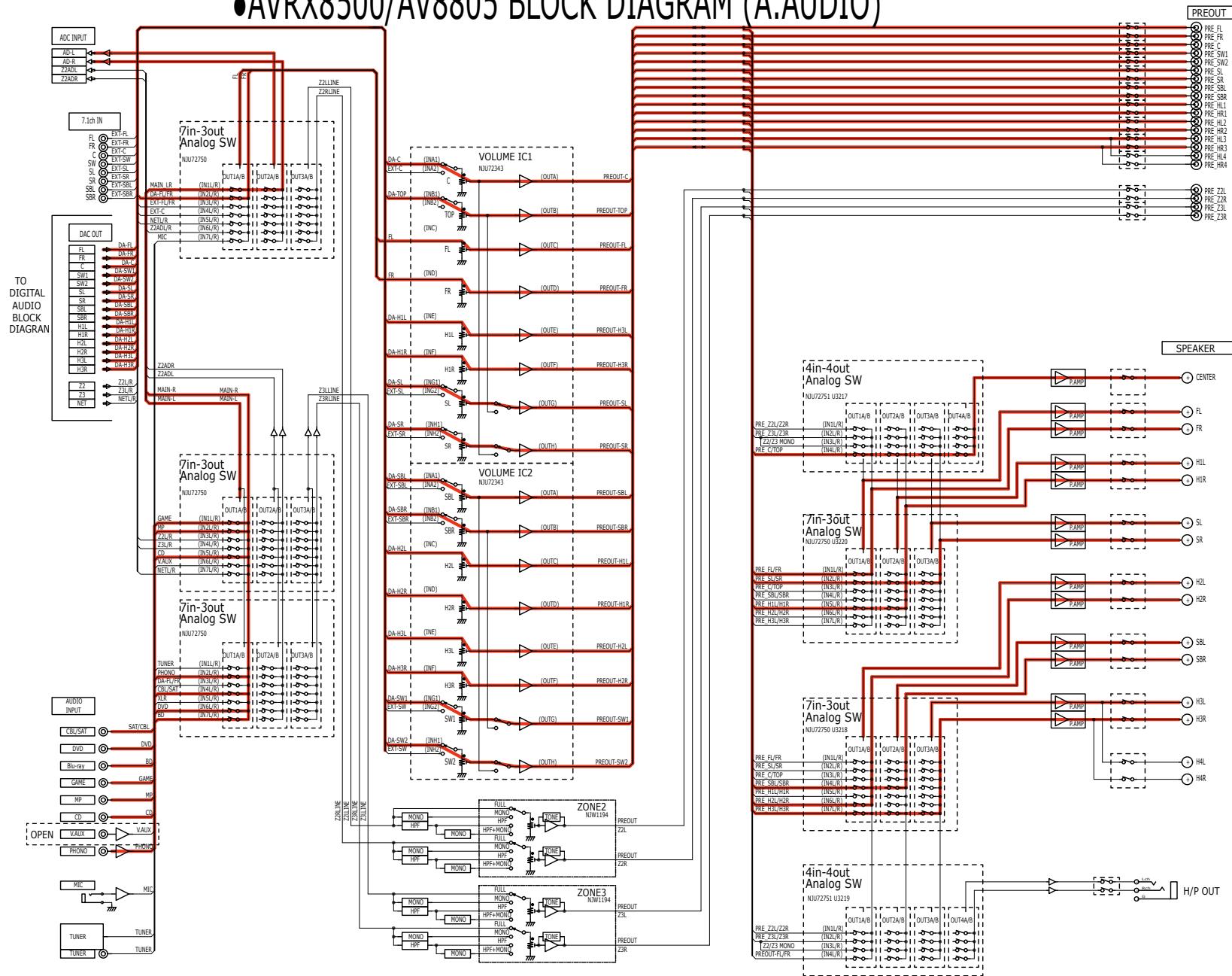


fig.A06b

AVRX8500/AV8805 BLOCK DIAGRAM (A.AUDIO)



TO DIGITAL AUDIO BLOCK DIAGRAM

fig.A07

●AVRX8500/AV8805 BLOCK DIAGRAM (A.AUDIO)

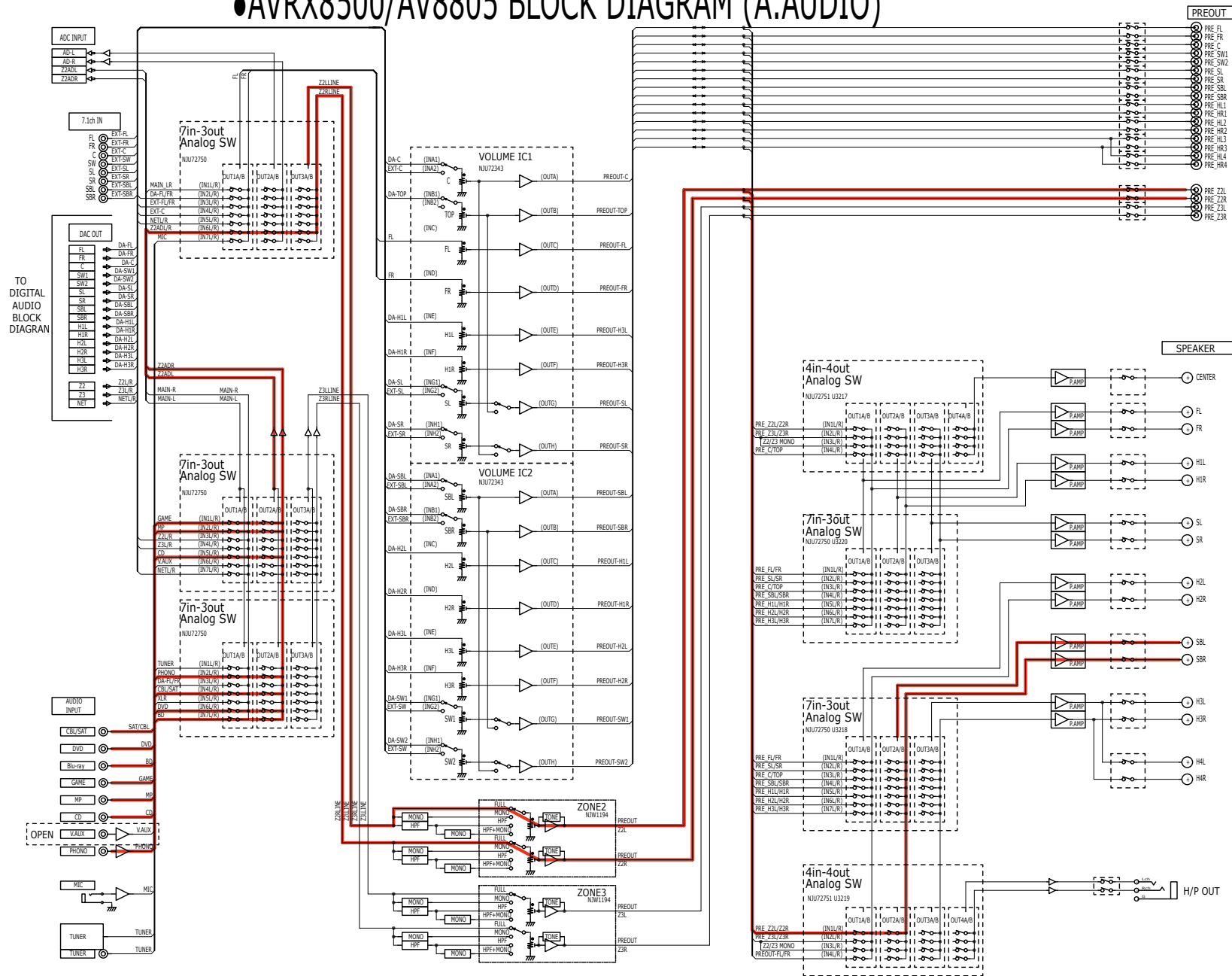


fig.A08

AVRX8500/AV8805 BLOCK DIAGRAM (A.AUDIO)

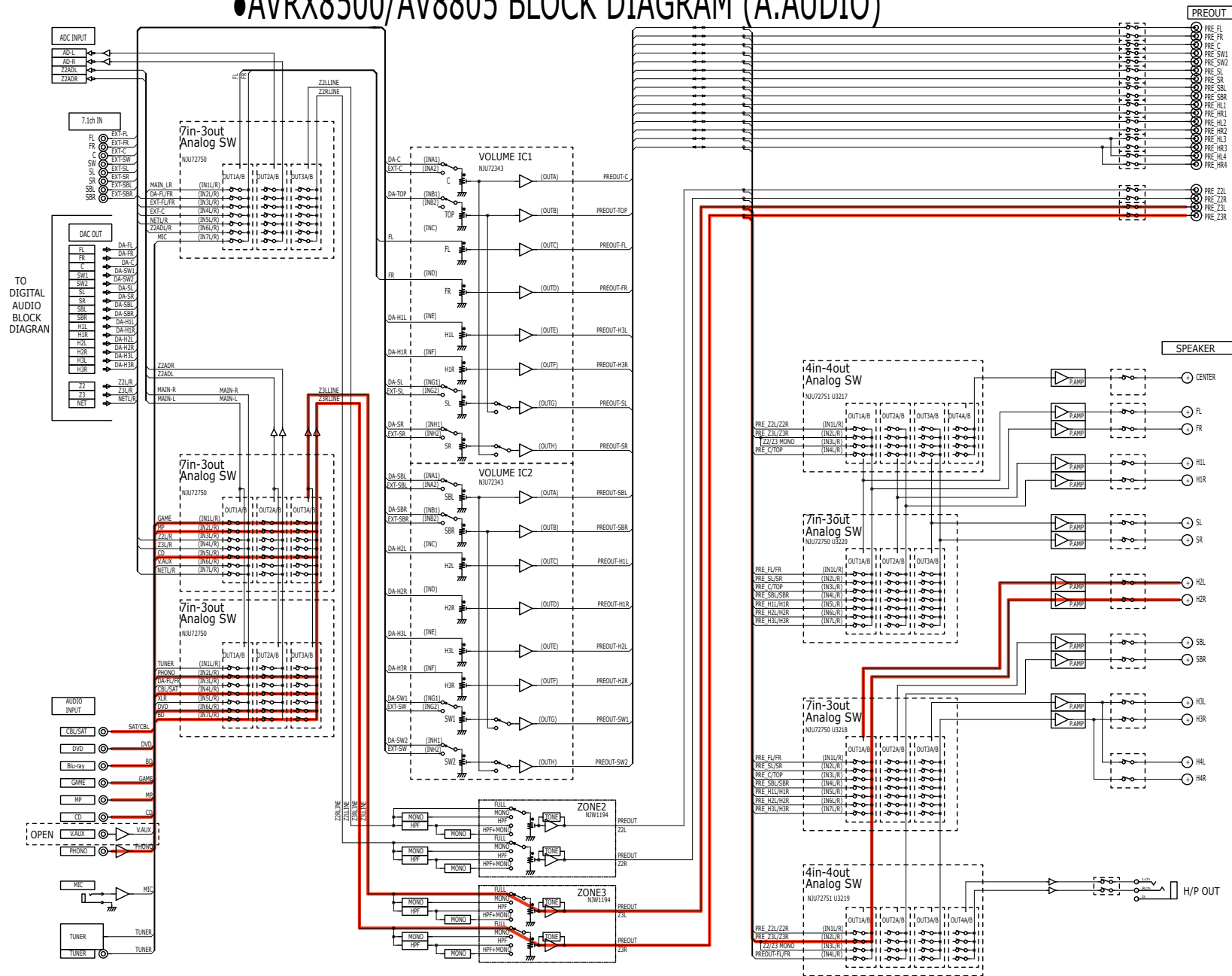


fig.A09

●AVRX8500/AV8805 BLOCK DIAGRAM (A.AUDIO)

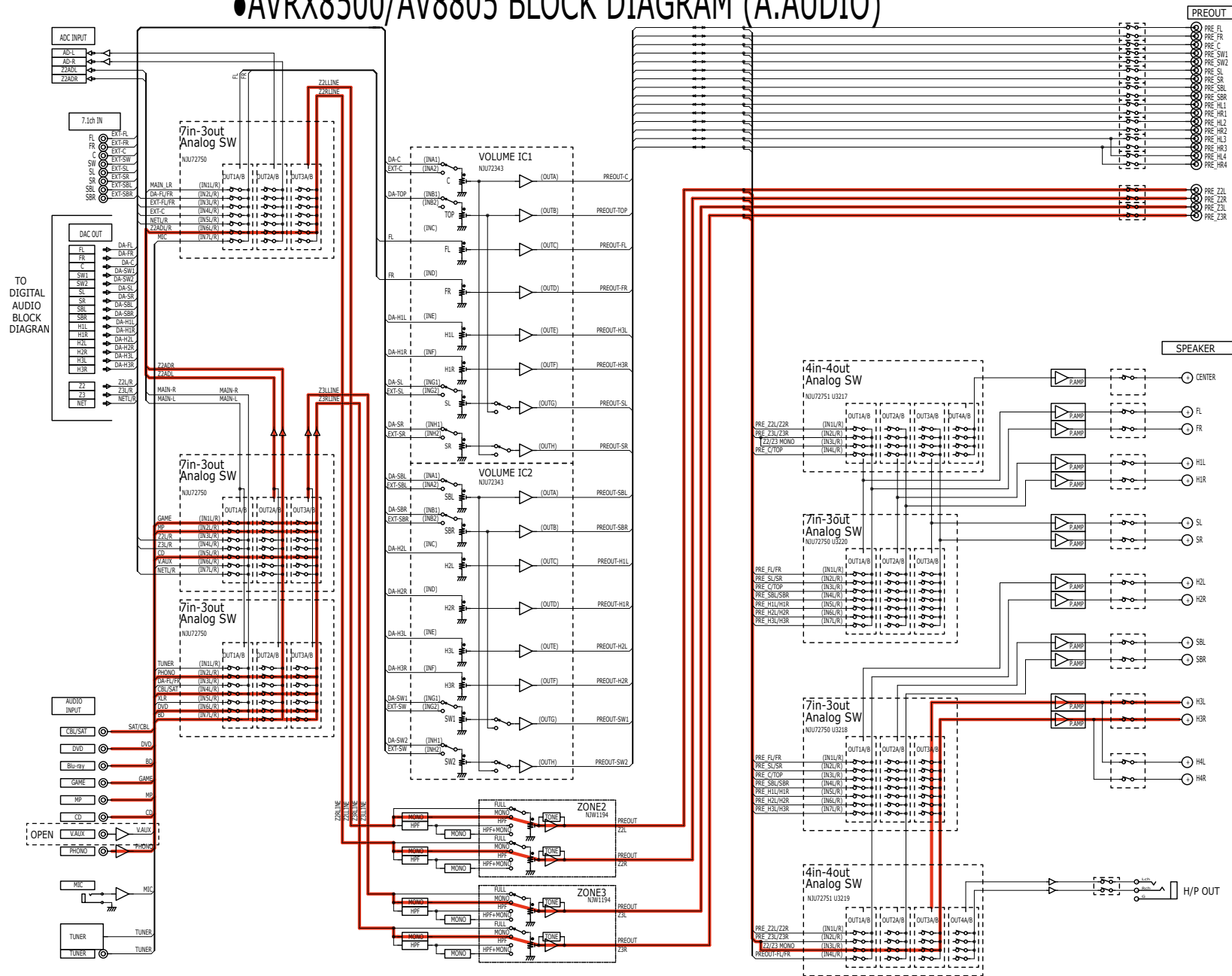
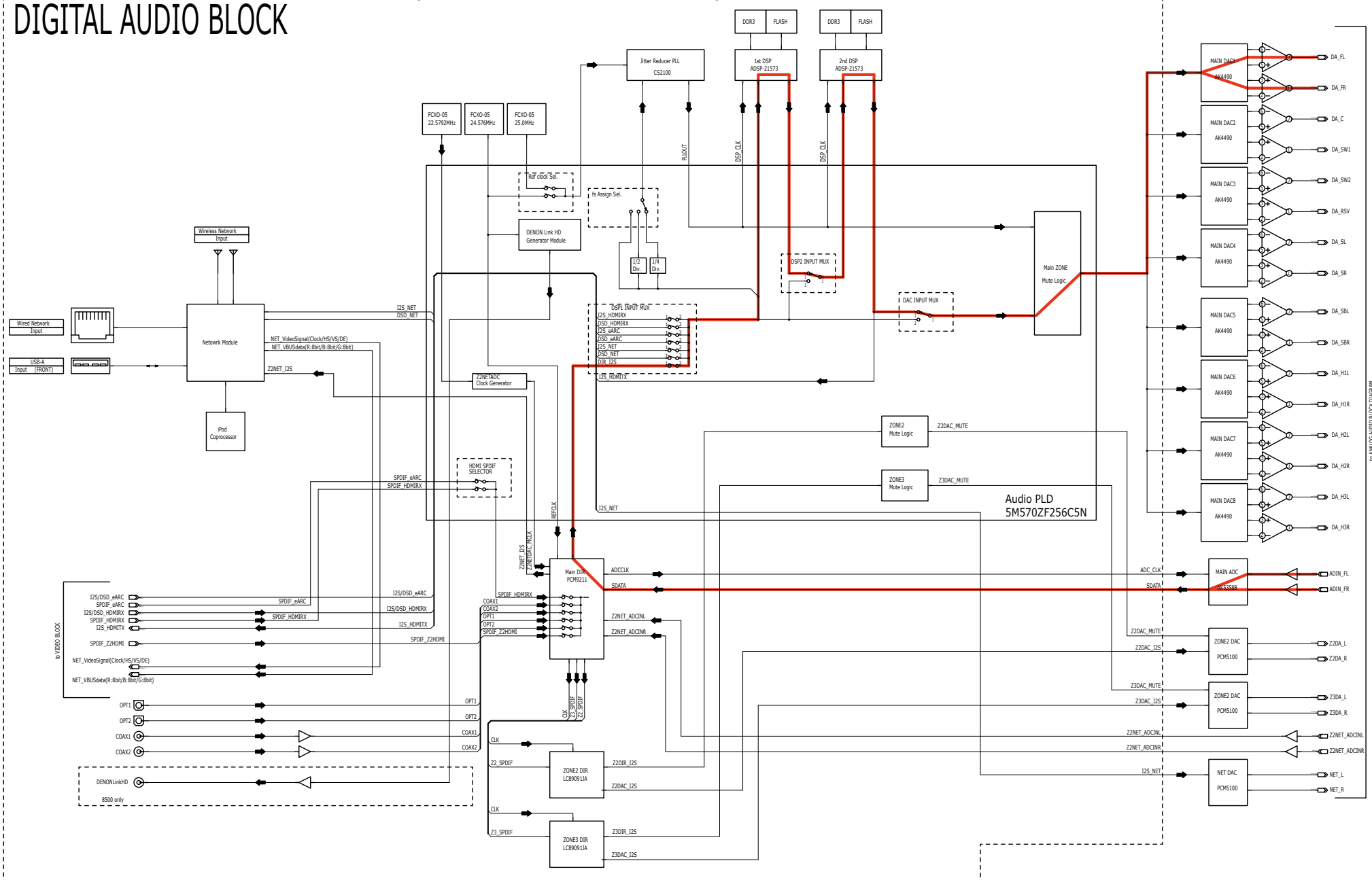


fig.A10a

AVR-X8500/AV8805 DIGITAL AUDIO/NETWORK BLOCK DIRAGRAM

DIGITAL AUDIO BLOCK



AVR8805/0101/0102/0103/0104

fig.A10b

●AVRX8500/AV8805 BLOCK DIAGRAM (A.AUDIO)

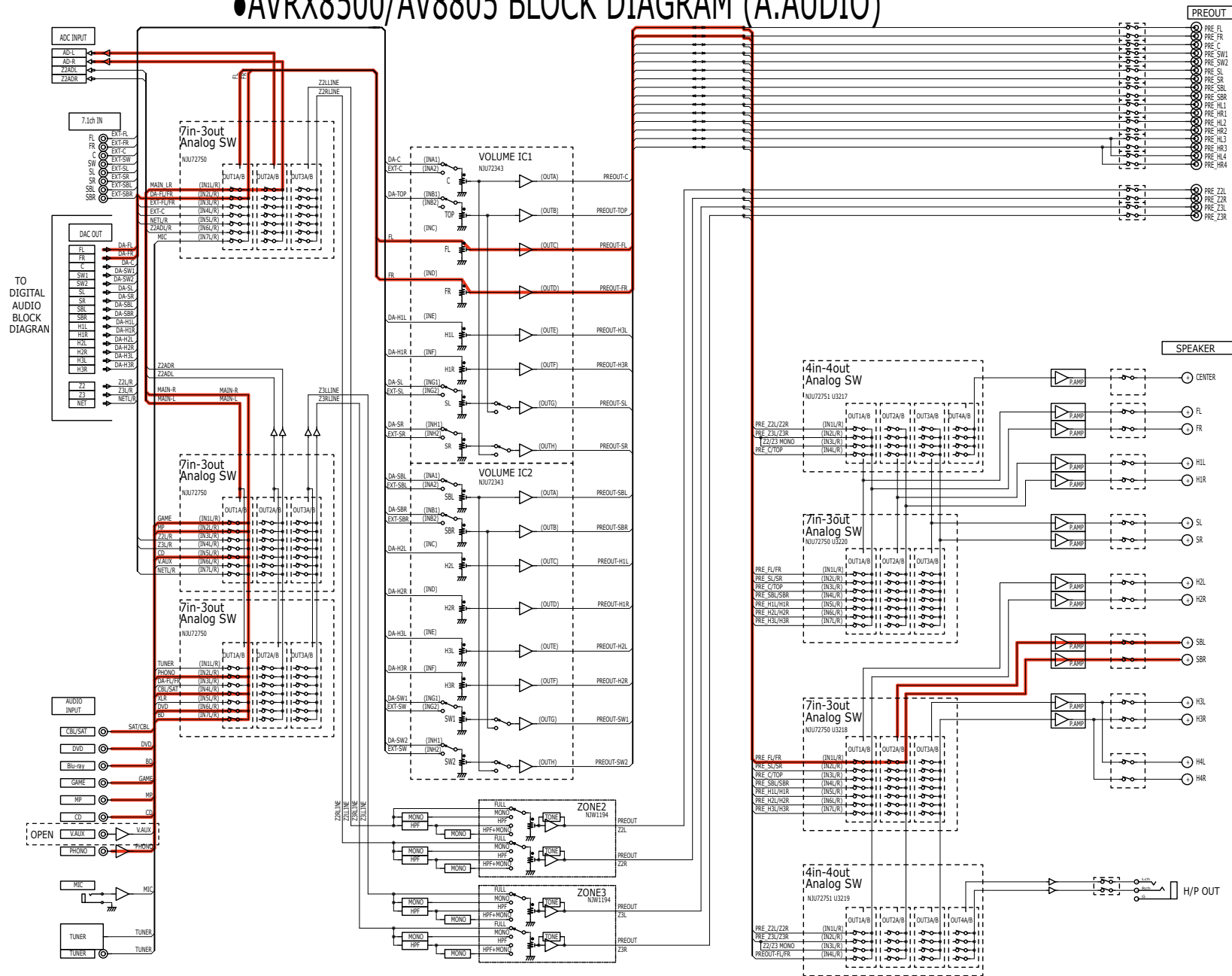


fig.A11a

AVR-X8500/AV8805 DIGITAL AUDIO/NETWORK BLOCK DIRAGRAM

DIGITAL AUDIO BLOCK

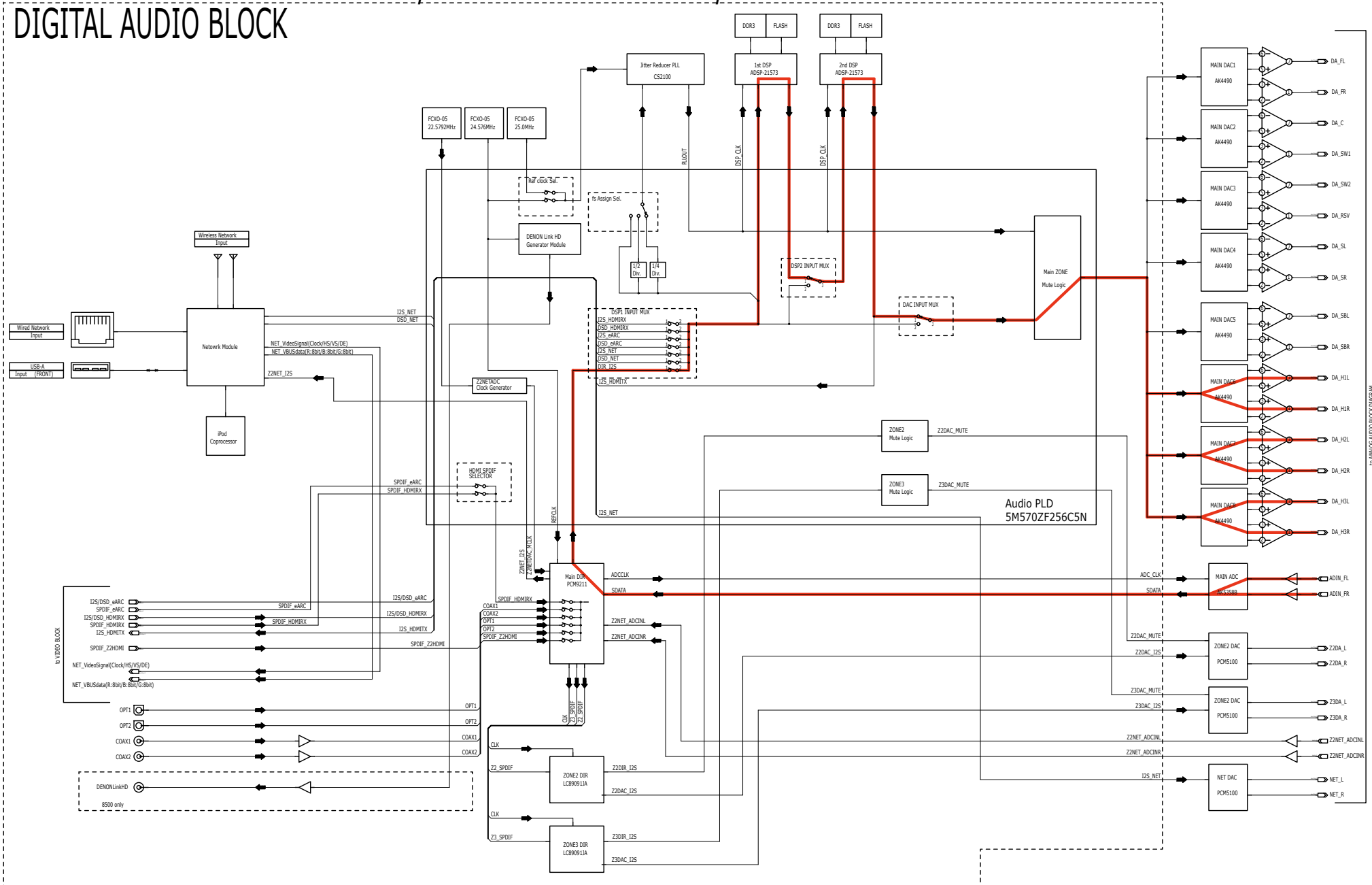


fig.A11b

●AVRX8500/AV8805 BLOCK DIAGRAM (A.AUDIO)

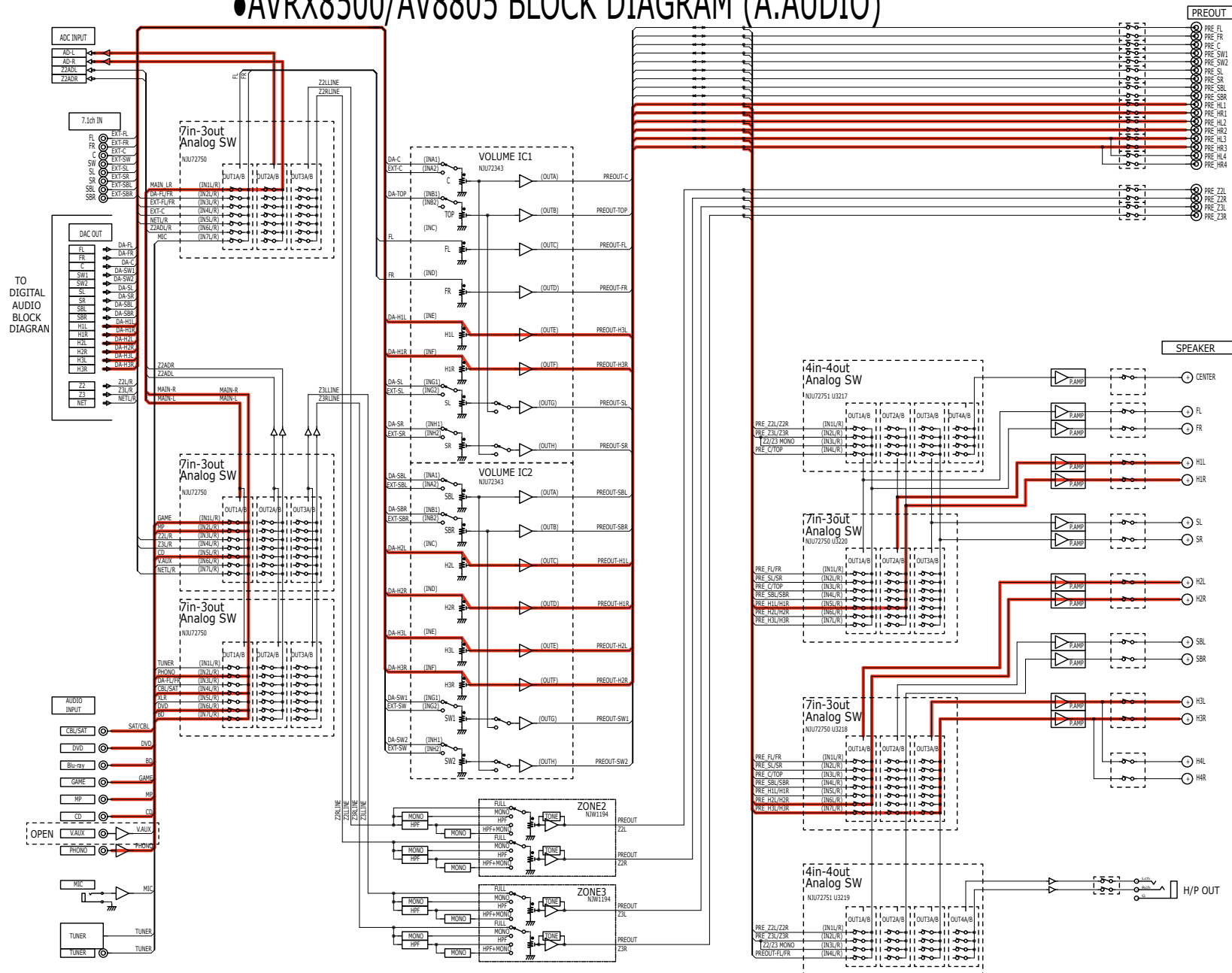
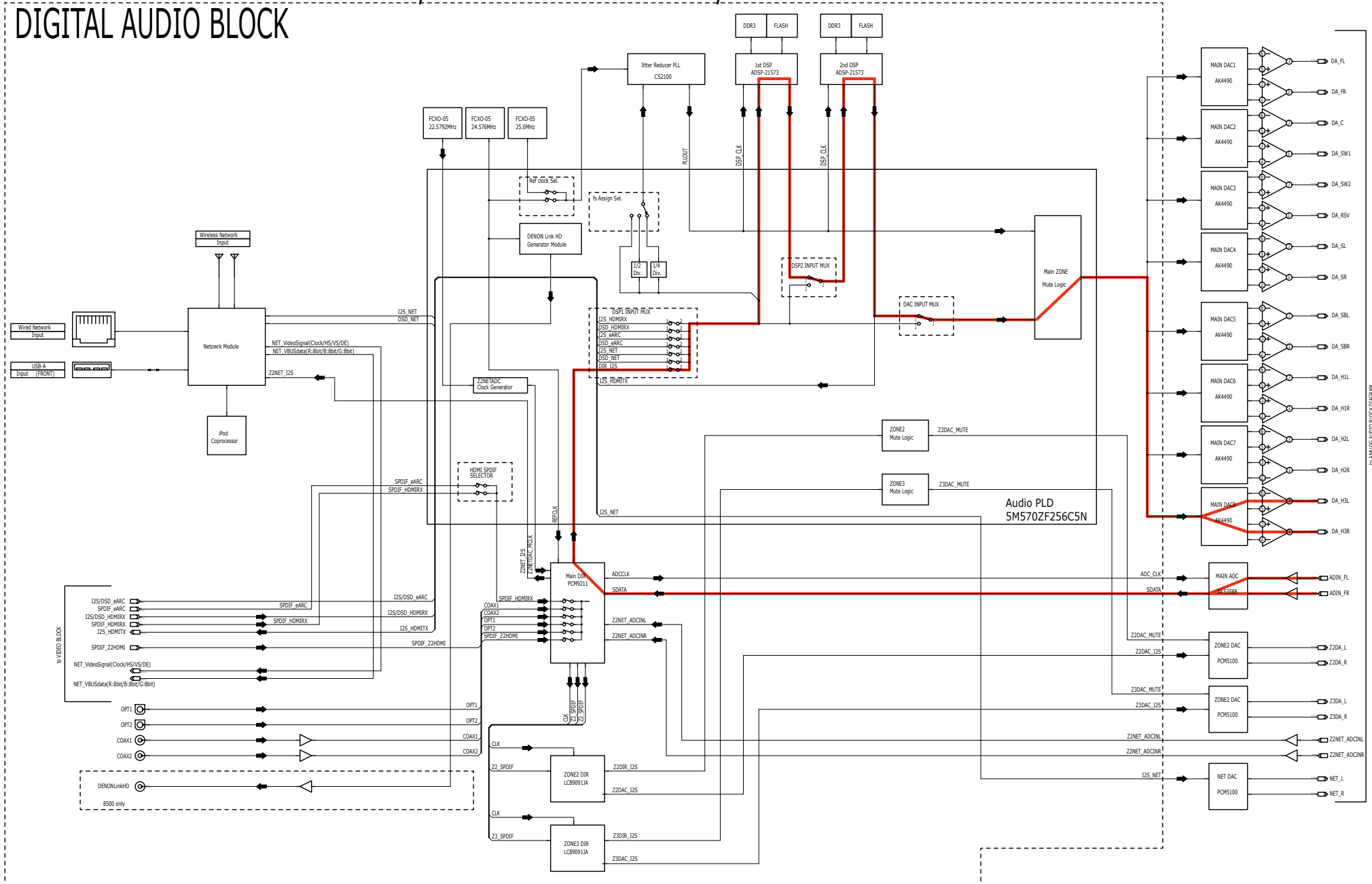


fig.A12a

AVR-X8500/AV8805 DIGITAL AUDIO/NETWORK BLOCK DIRAGRAM

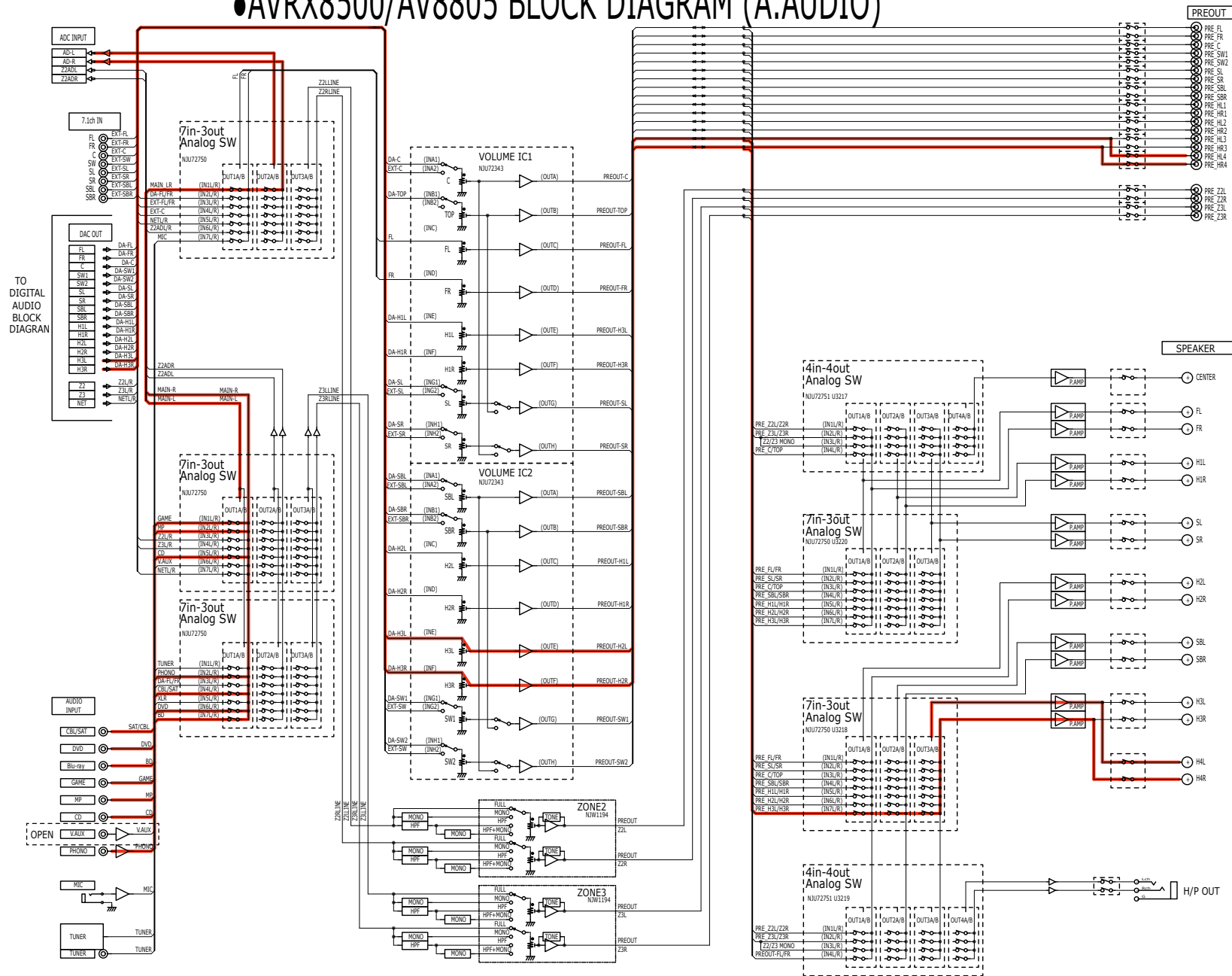
DIGITAL AUDIO BLOCK



AVR8805/0301/0301A/0301AV3

fig.A12b

●AVRX8500/AV8805 BLOCK DIAGRAM (A.AUDIO)



Before Servicing
This Unit

Electrical

Mechanical

Repair Information

Updating

fig.A13

●AVRX8500/AV8805 BLOCK DIAGRAM (A.AUDIO)

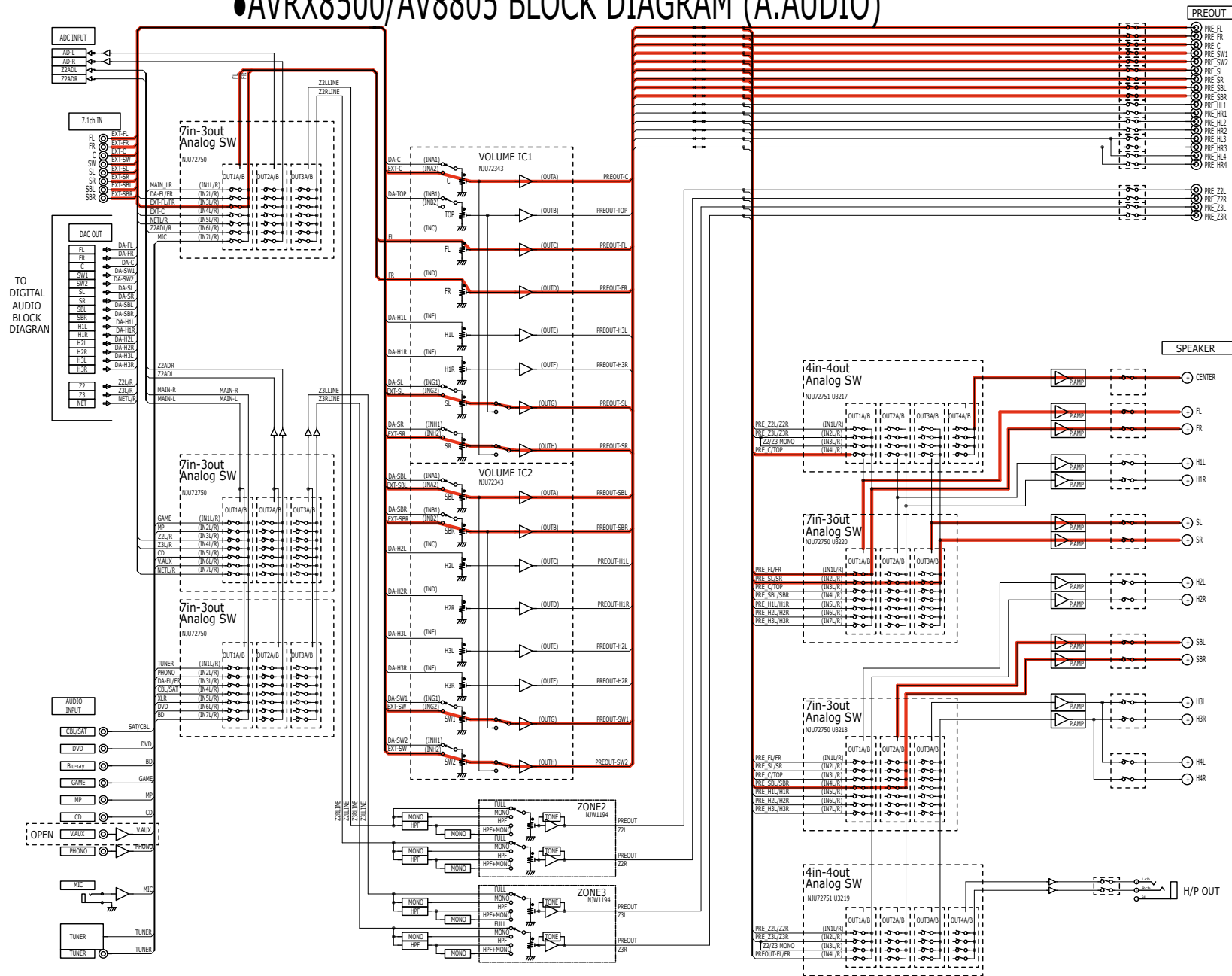
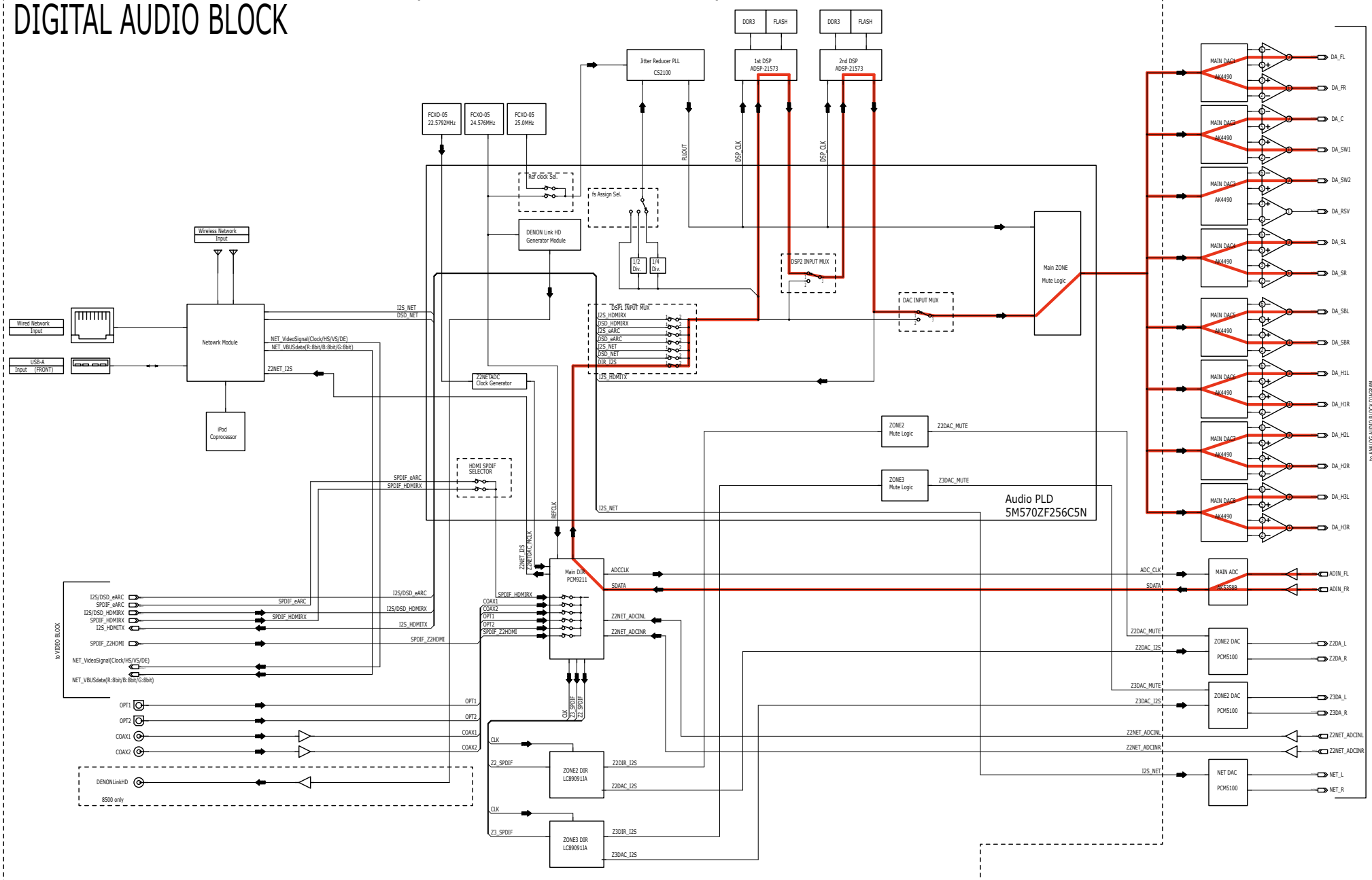


fig.A14a

AVR-X8500/AV8805 DIGITAL AUDIO/NETWORK BLOCK DIRAGRAM

DIGITAL AUDIO BLOCK



Before Servicing This Unit
Electrical
Mechanical
Repair Information
Updating

fig.A14b

AVRX8500/AV8805 BLOCK DIAGRAM (A.AUDIO)

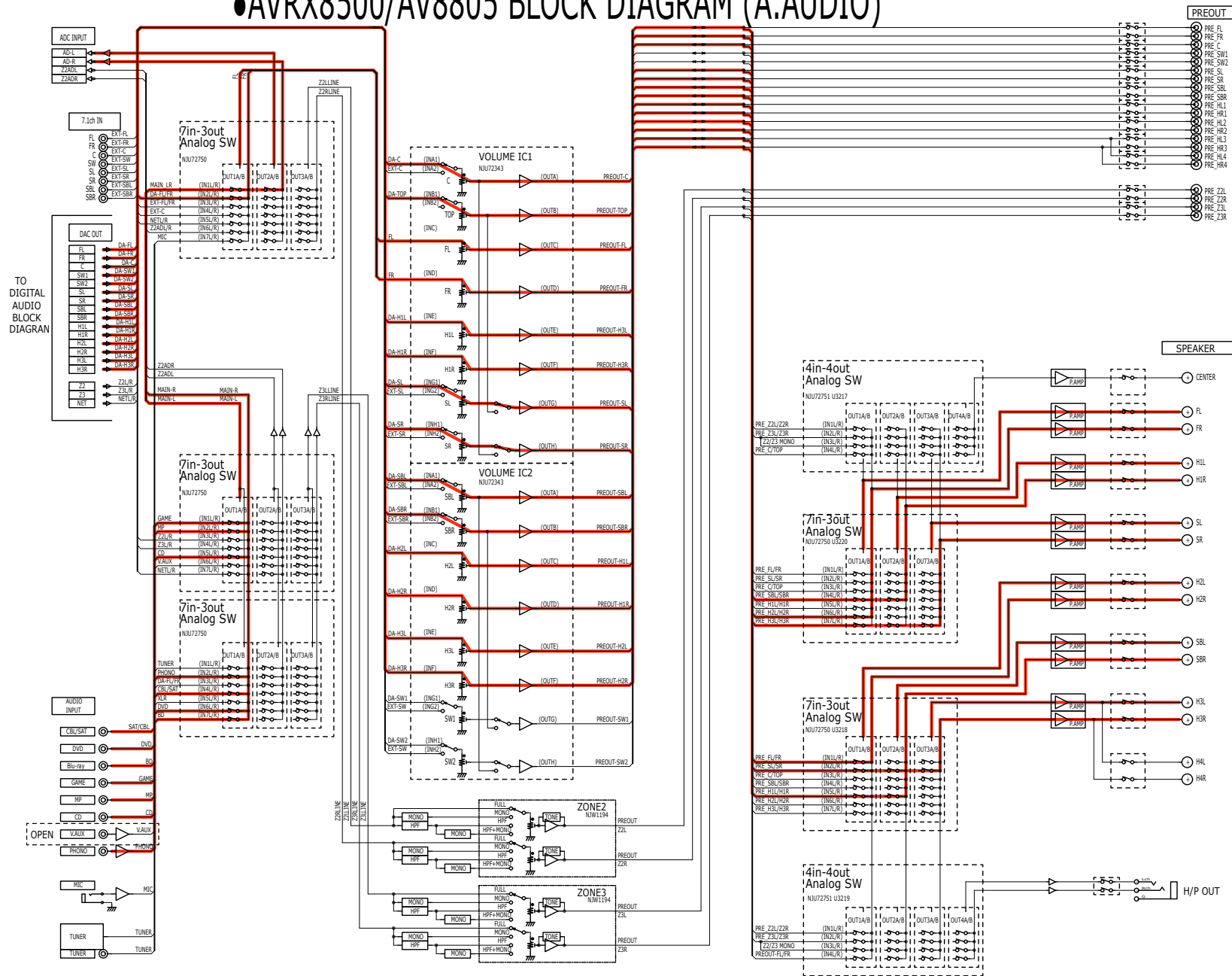


fig.A15a

AVR-X8500/AV8805 DIGITAL AUDIO/NETWORK BLOCK DIRAGRAM

DIGITAL AUDIO BLOCK

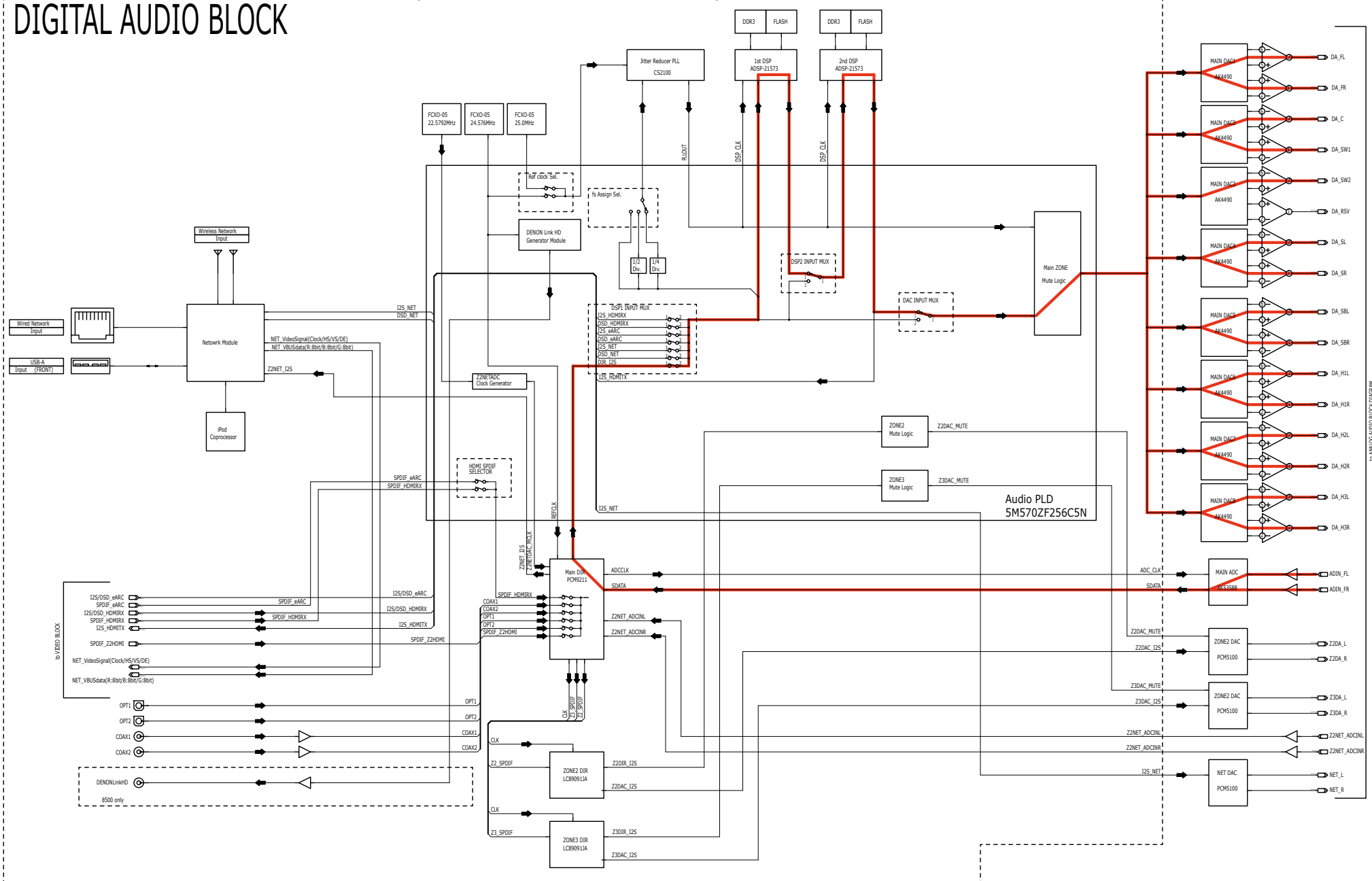
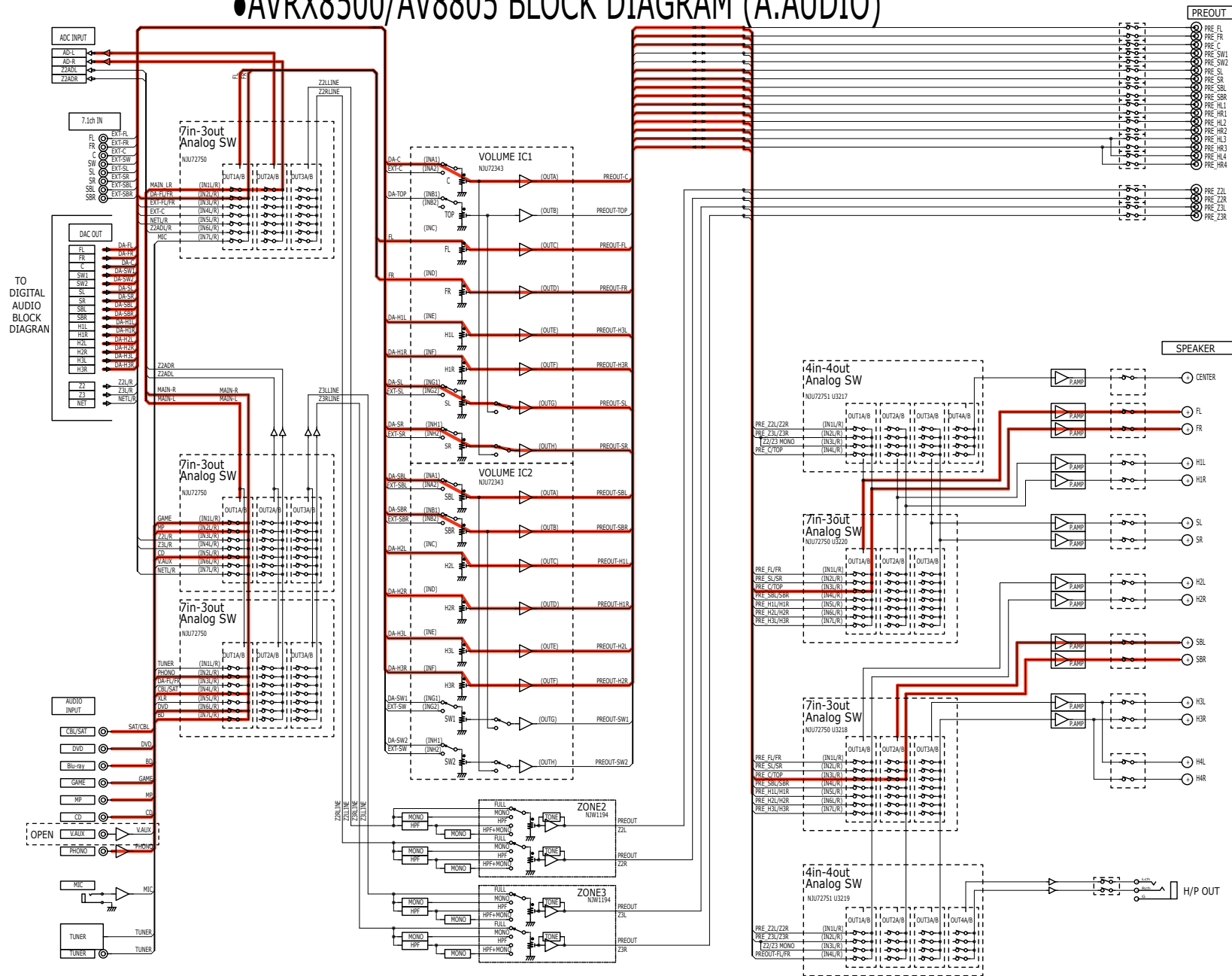


fig.A15b

●AVRX8500/AV8805 BLOCK DIAGRAM (A.AUDIO)



TO DIGITAL AUDIO BLOCK DIAGRAM

Before Servicing This Unit

Electrical

Mechanical

Repair Information

Updating

fig.A16a

AVR-X8500/AV8805 DIGITAL AUDIO/NETWORK BLOCK DIRAGRAM

DIGITAL AUDIO BLOCK

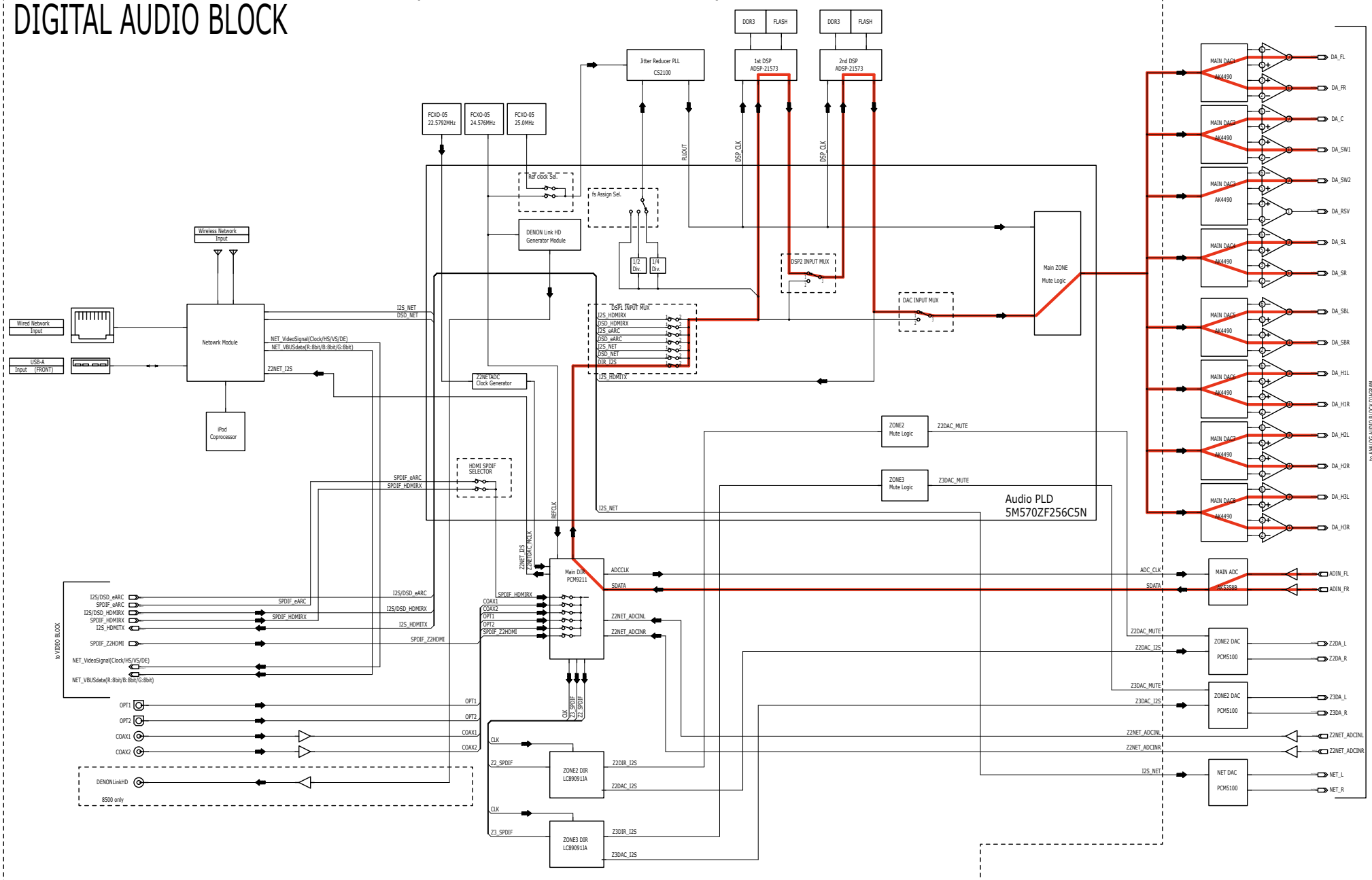


fig.A16b

●AVRX8500/AV8805 BLOCK DIAGRAM (A.AUDIO)

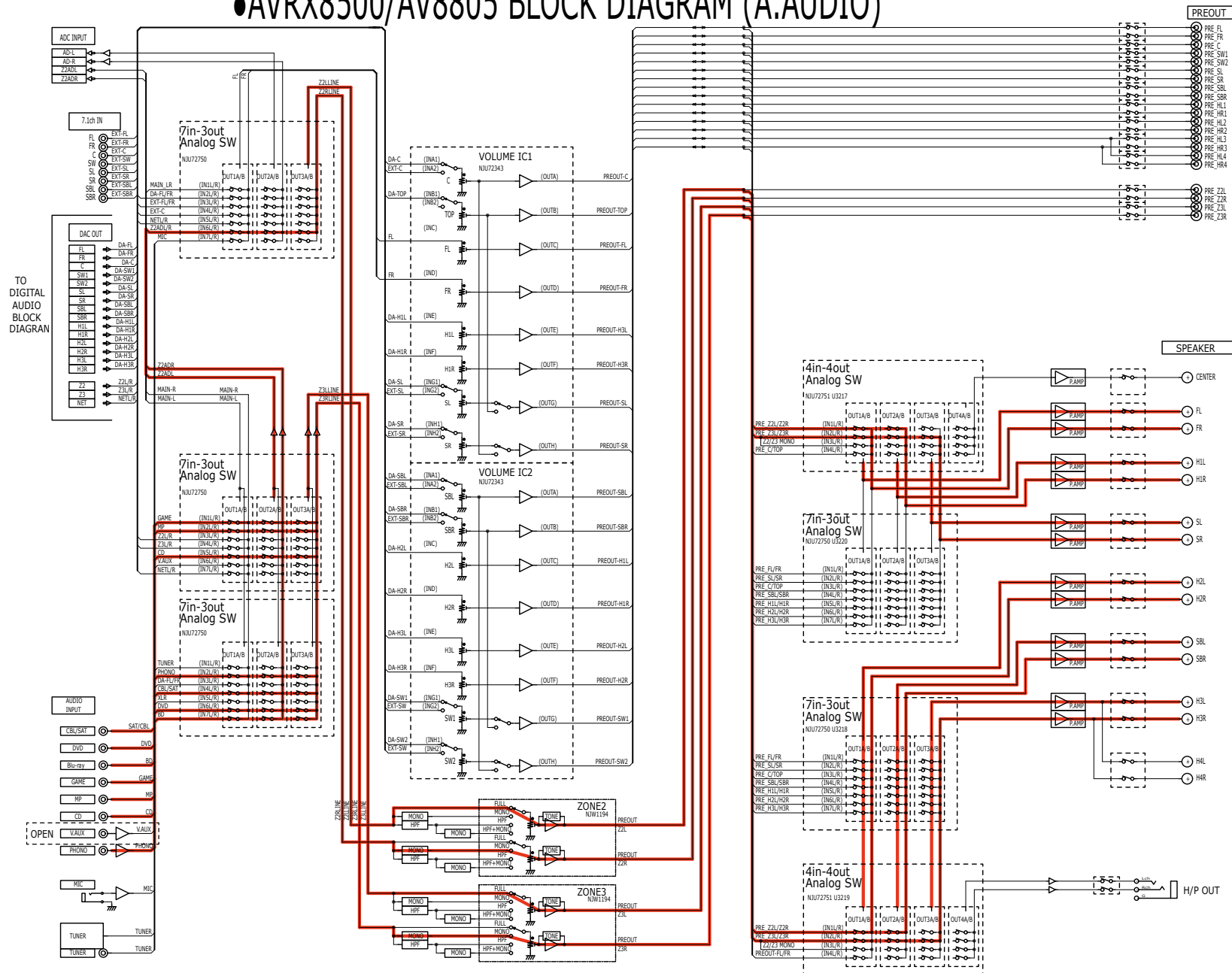


fig.V01

AVRX8500/AV8805 BLOCK DIAGRAM (VIDEO): DIGITAL VIDEO BLOCK

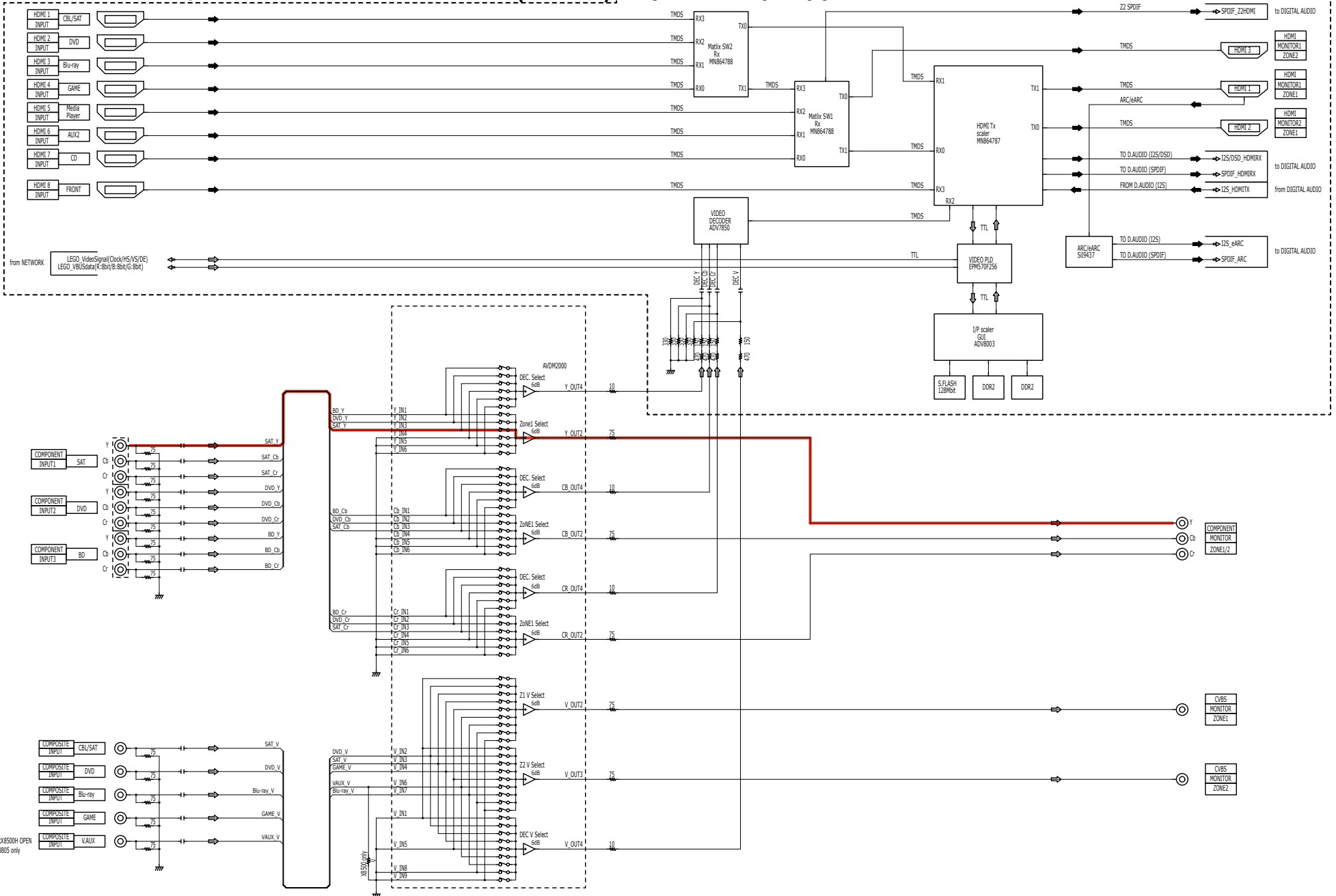


fig.V02

AVRX8500/AV8805 BLOCK DIAGRAM (VIDEO): DIGITAL VIDEO BLOCK

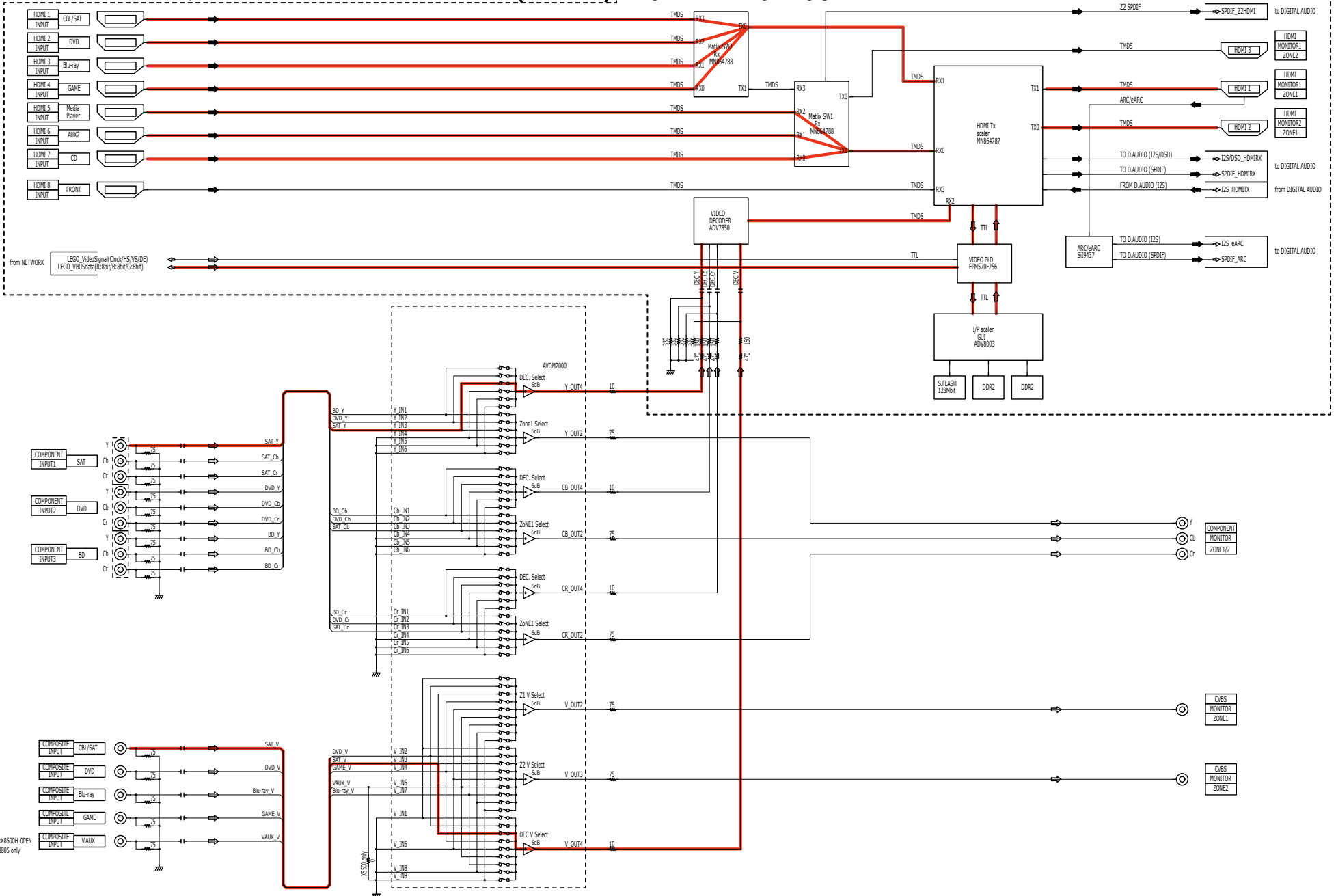
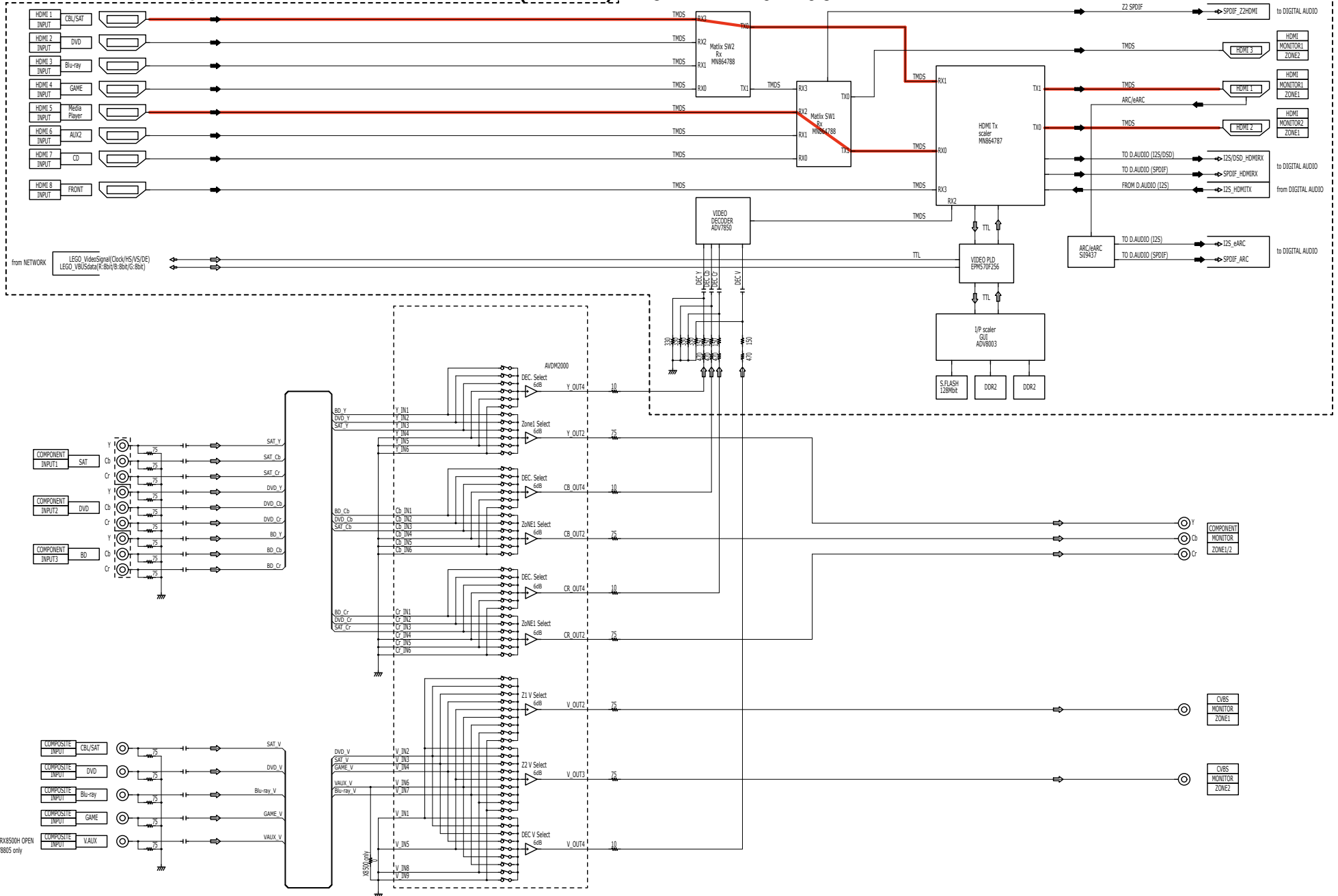


fig.V03

AVRX8500/AV8805 BLOCK DIAGRAM (VIDEO): DIGITAL VIDEO BLOCK



AVRX8500H OPEN
AV8805 only

fig.V04

AVRX8500/AV8805 BLOCK DIAGRAM (VIDEO): DIGITAL VIDEO BLOCK

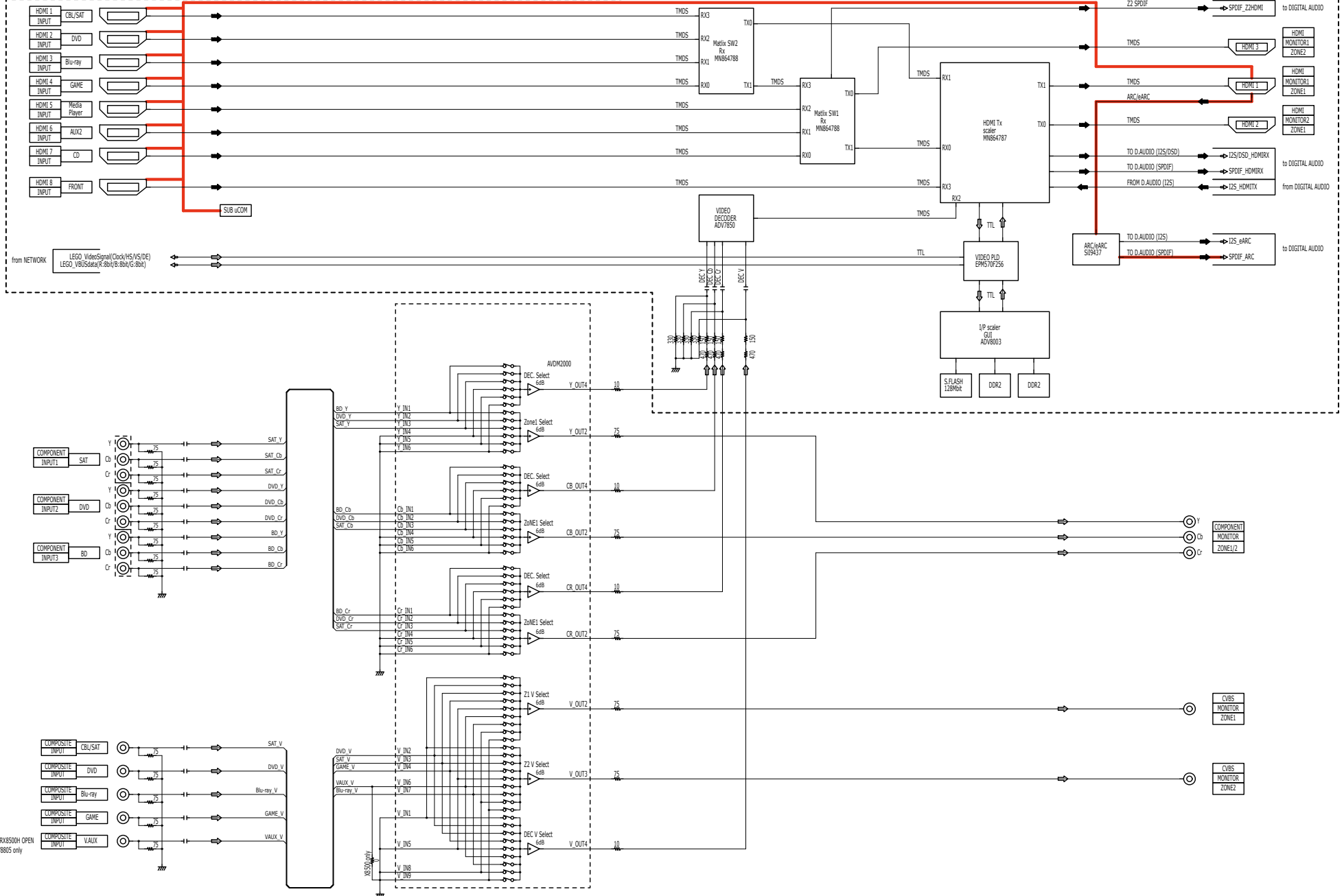


fig.V05a

AVRX8500/AV8805 BLOCK DIAGRAM (VIDEO): DIGITAL VIDEO BLOCK

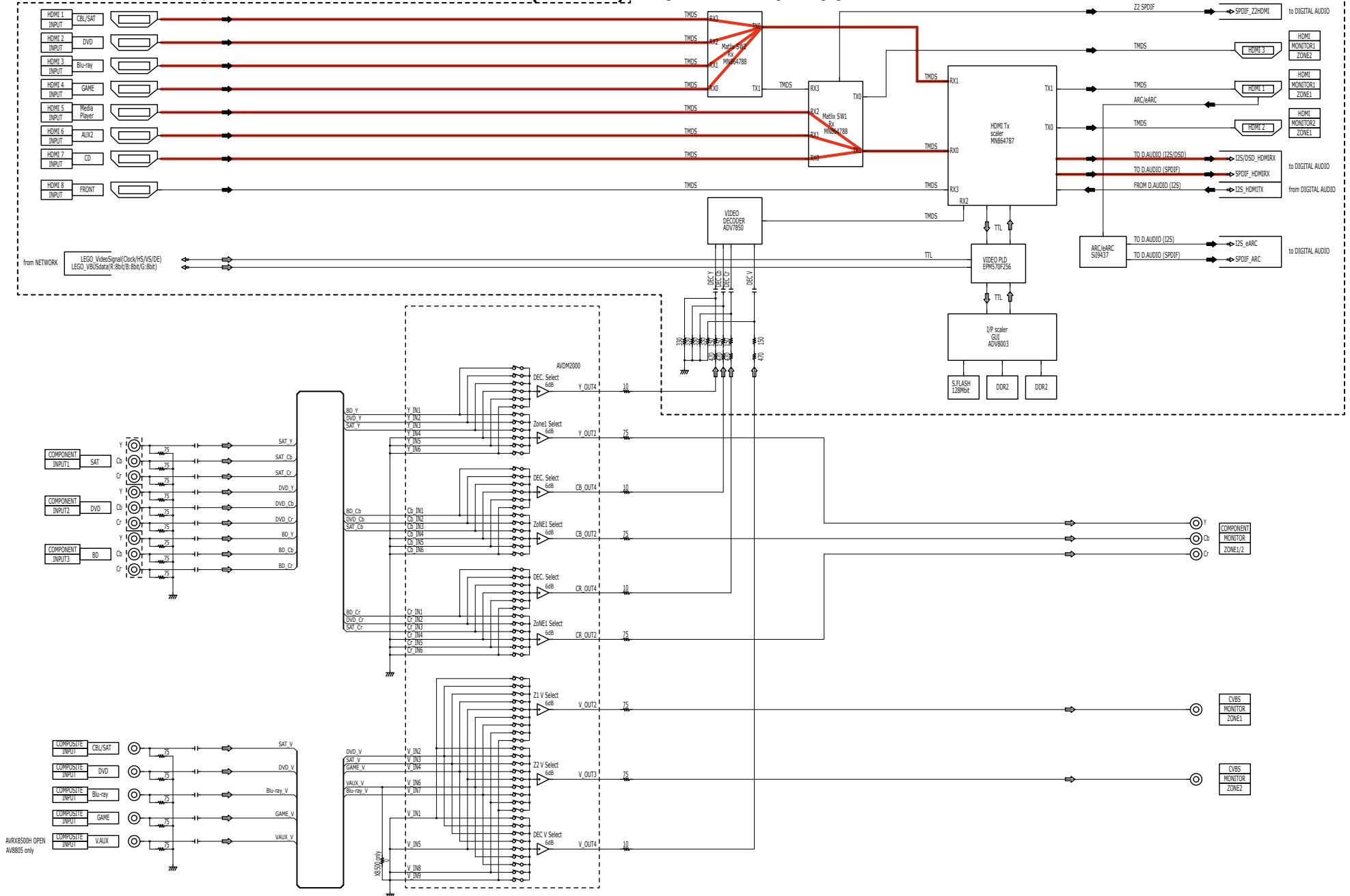


fig.V05b

AVR-X8500/AV8805 DIGITAL AUDIO/NETWORK BLOCK DIRAGRAM

DIGITAL AUDIO BLOCK

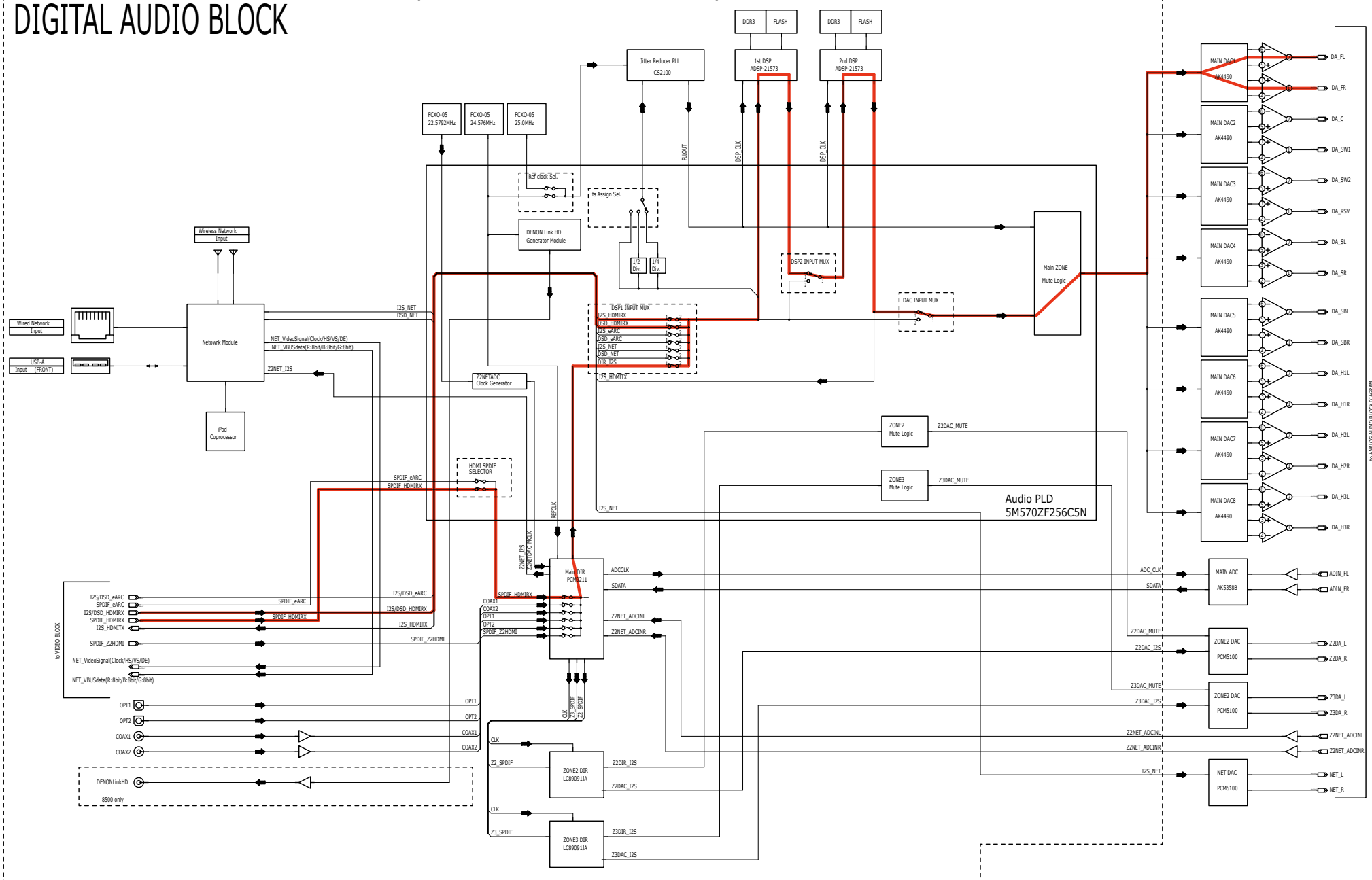
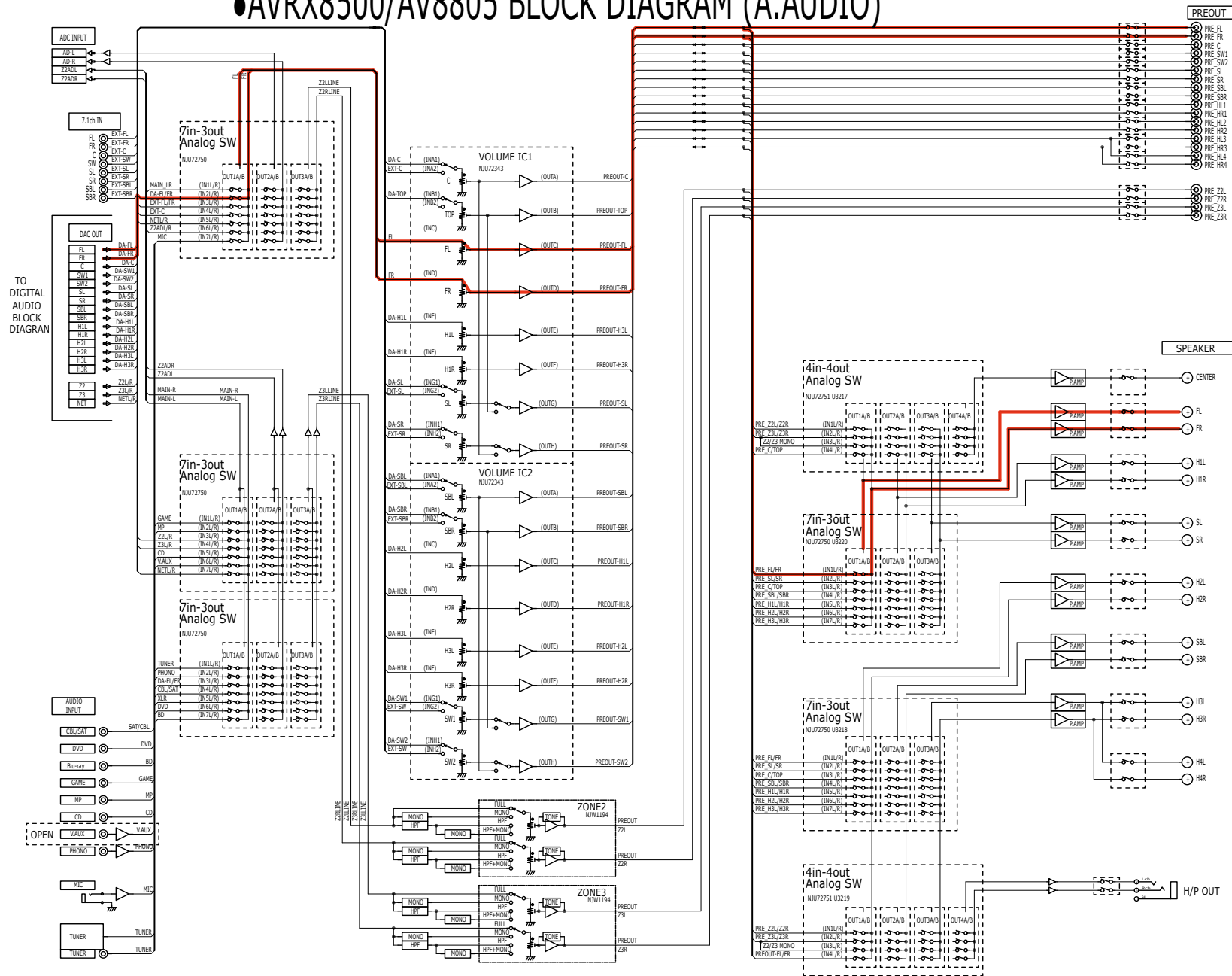


fig.V05c

●AVRX8500/AV8805 BLOCK DIAGRAM (A.AUDIO)



TO DIGITAL AUDIO BLOCK DIAGRAM

fig.V06a

AVRX8500/AV8805 BLOCK DIAGRAM (VIDEO): DIGITAL VIDEO BLOCK

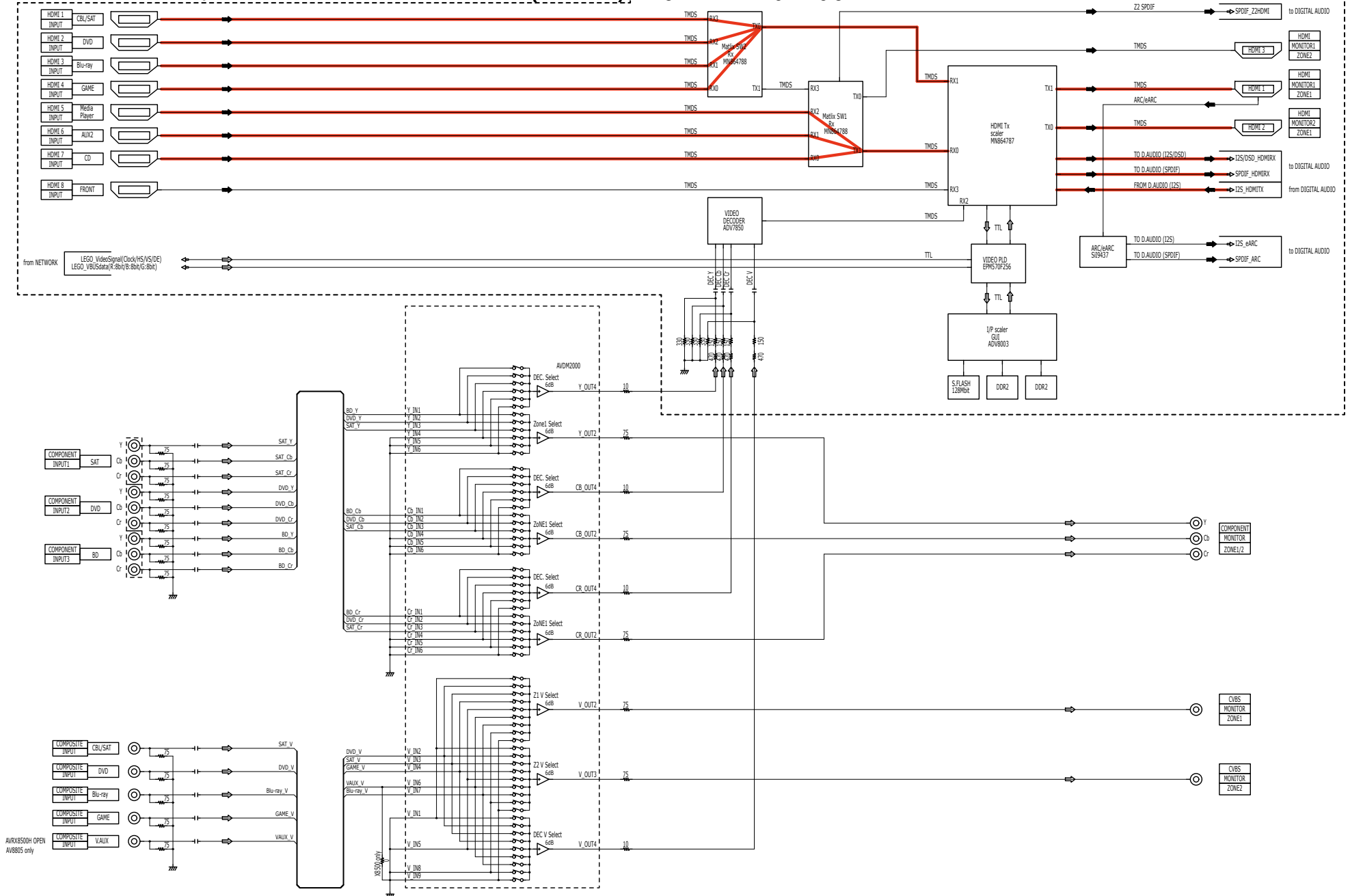
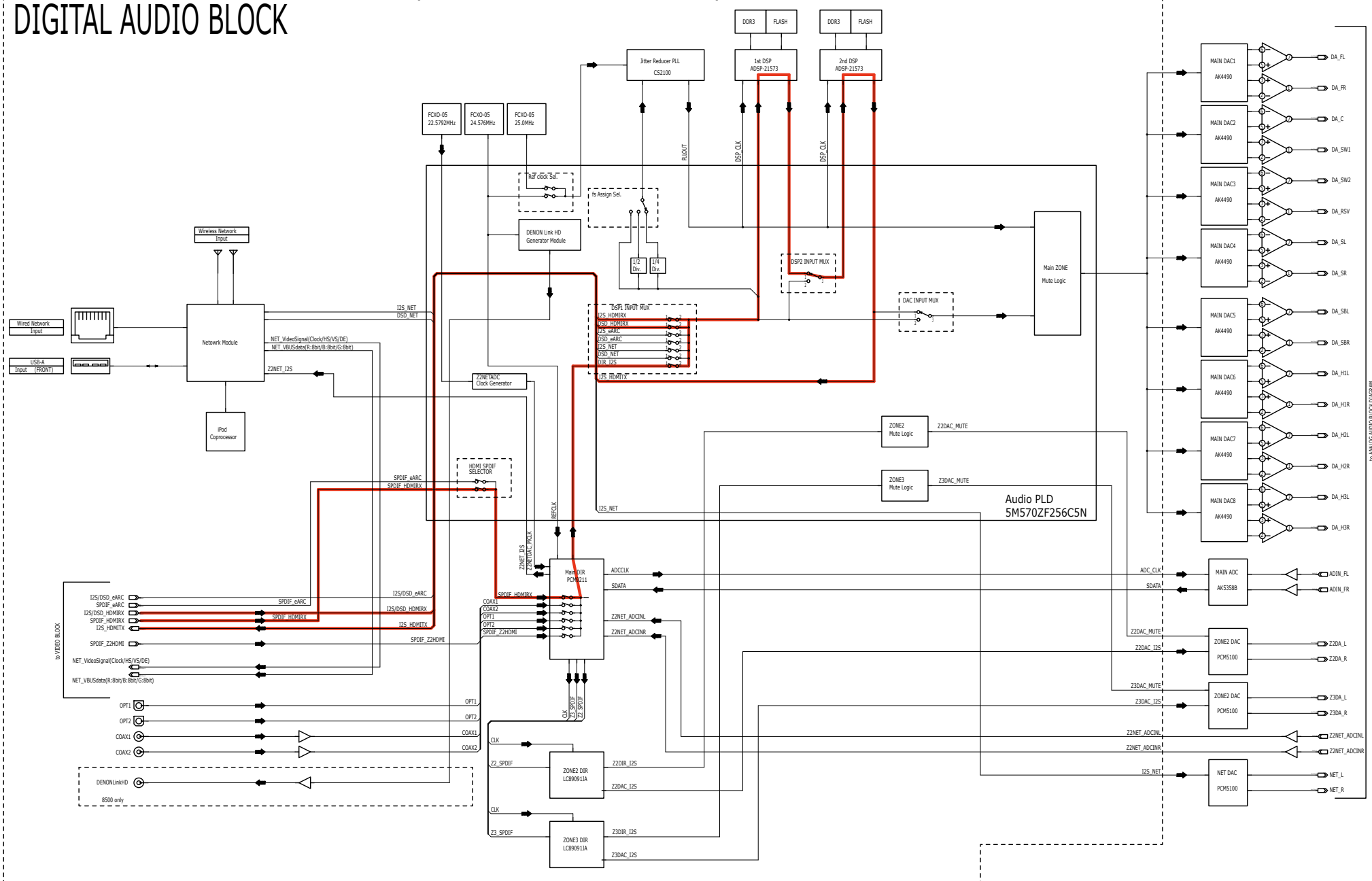


fig.V06b

AVR-X8500/AV8805 DIGITAL AUDIO/NETWORK BLOCK DIRAGRAM

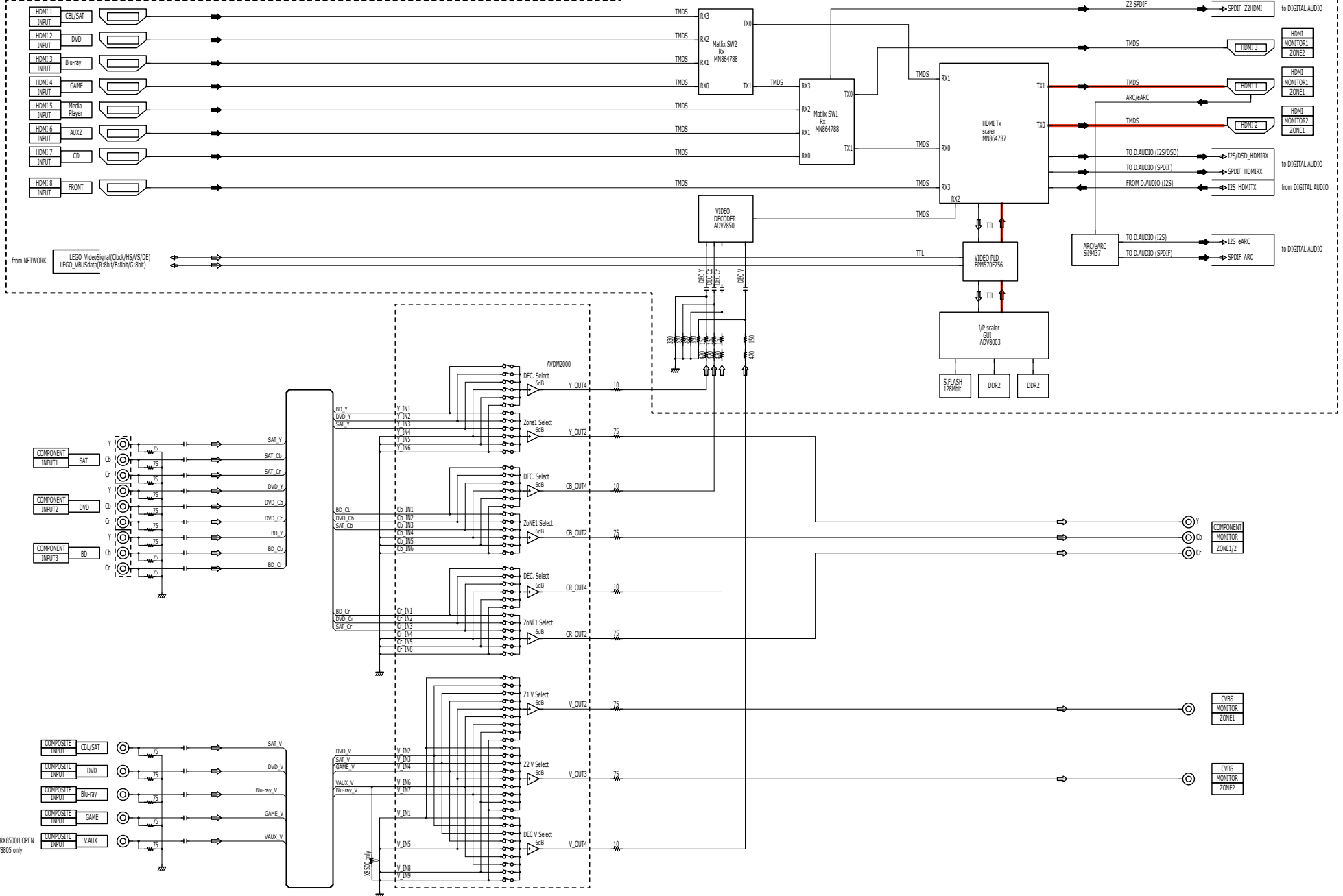
DIGITAL AUDIO BLOCK



AVR8805/8500/8300/8300V3

fig.V07

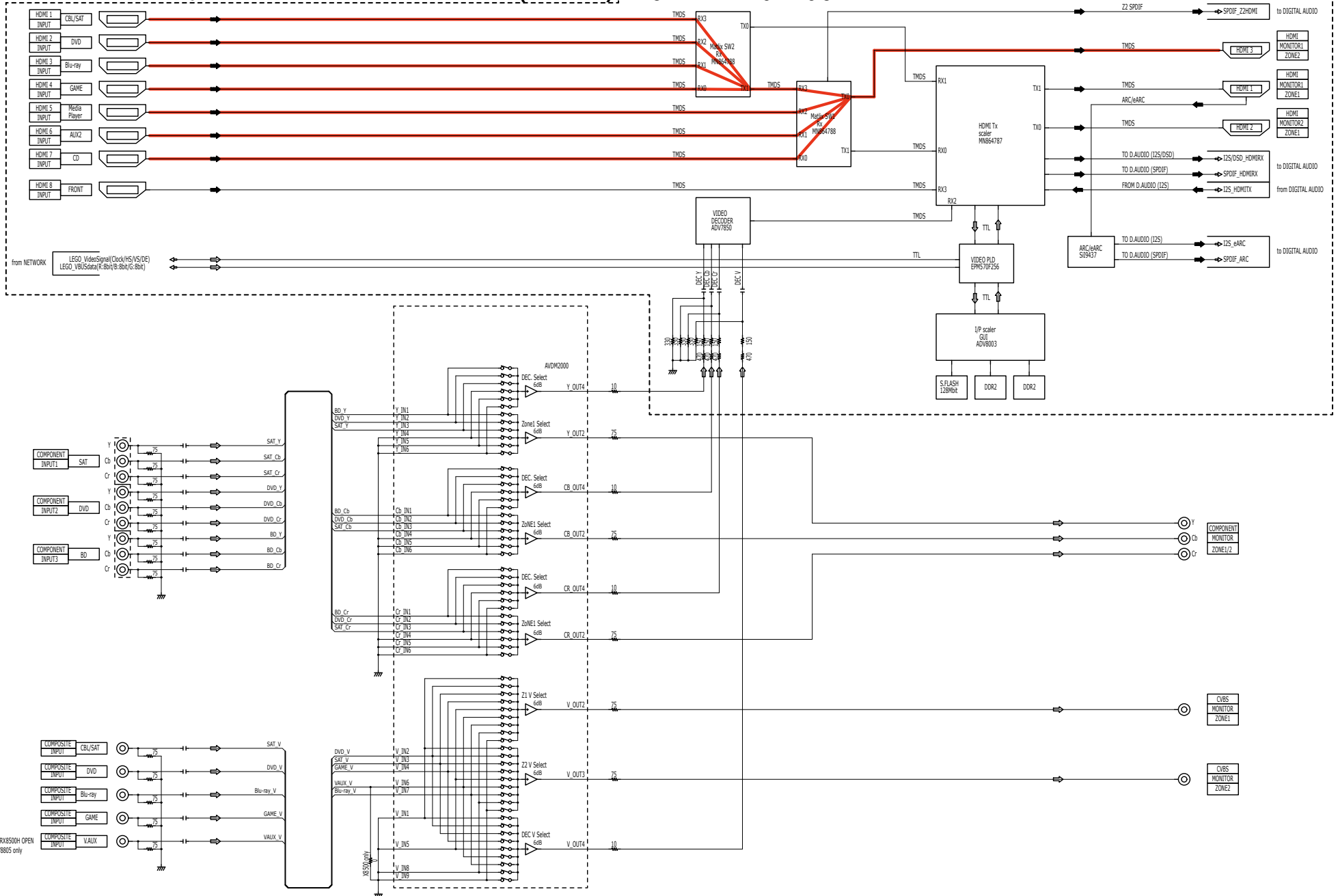
AVRX8500/AV8805 BLOCK DIAGRAM (VIDEO): DIGITAL VIDEO BLOCK



AVRX8500H OPEN
AV8805 only

fig.V08

AVRX8500/AV8805 BLOCK DIAGRAM (VIDEO): DIGITAL VIDEO BLOCK



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---

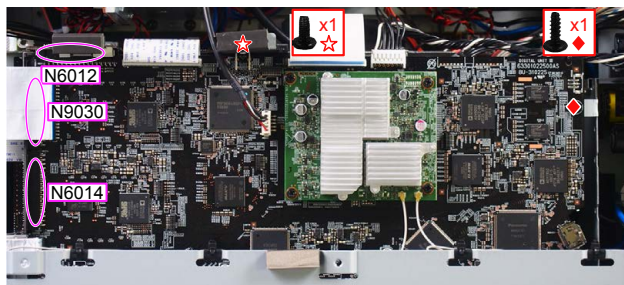
- 8U-110084S : EXTENSION UNIT KIT : 1 Set
- Insulation sheet (Not supplied) : 1 sheet
- Ground lead (Not supplied) : 1 pc

-Proceeding-

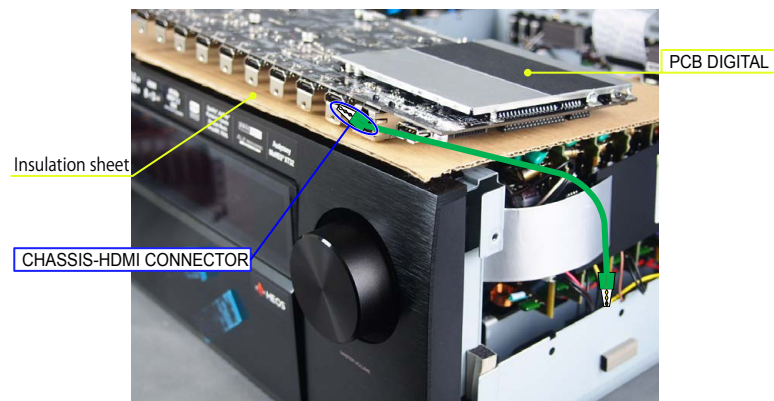
(1) Remove the screws.



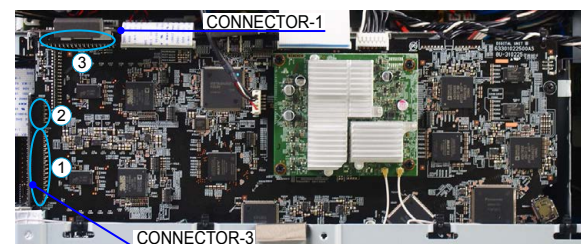
(2) Remove the screws. Remove the connector PCB.



- (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	N9037	SIDE CONNECT	↔	N6014	DIGITAL
②	11pin	N9035	SIDE CONNECT	↔	N9030	DIGITAL
③	33pin	N5910	CONNECT-1	↔	N6012	DIGITAL

Before Servicing
This Unit

Electrical

Mechanical

Repair Information

Updating

Adjusting Idling Current

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

1. Preparation

- Prepare a DC voltmeter.
- 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°C to 30°C and standard humidity.
- 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

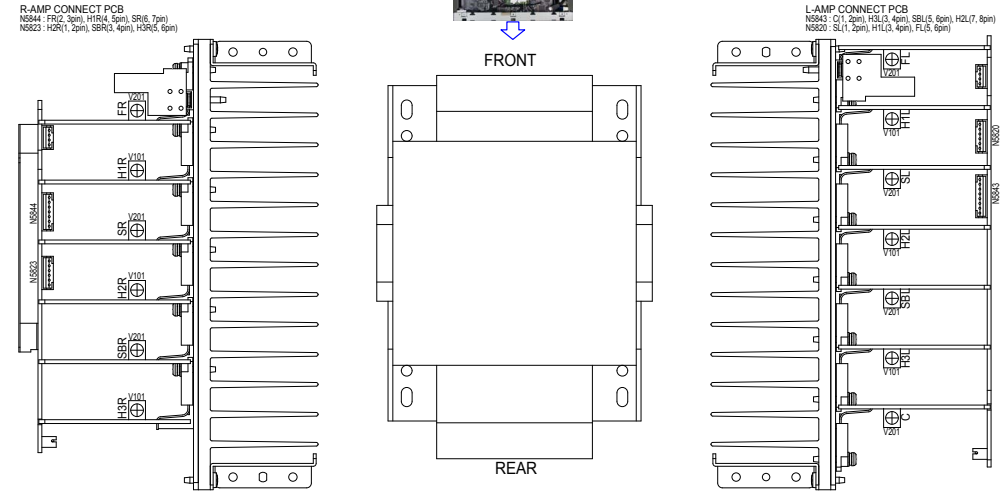
- Make sure that "ECO Mode" is off.
 - Press the "SETUP" button on the remote control to display the GUI menu.
 - Press the cursor button to select "General" → "ECO" → "ECO Mode" → "Off".
- Remove the top cover and turn "V101/V201"(ALL Channel) of the AMP PCB counterclockwise(↺) as far as possible.
- Connect the DC Voltmeter to the test points.

FRONT Lch	: N5820 5, 6pin	: V201
FRONT Rch	: N5844 2, 3pin	: V201
CENTER ch	: N5843 1, 2pin	: V201
SURROUND Lch	: N5820 1, 2pin	: V201
SURROUND Rch	: N5844 6, 7pin	: V201
SURROUND-BACK Lch	: N5843 5, 6pin	: V201
SURROUND-BACK Rch	: N5823 3, 4pin	: V201
HEIGHT1 Lch	: N5820 3, 4pin	: V101
HEIGHT1 Rch	: N5844 4, 5pin	: V101
HEIGHT2 Lch	: N5843 7, 8pin	: V101
HEIGHT2 Rch	: N5823 1, 2pin	: V101
HEIGHT3 Lch	: N5843 3, 4pin	: V101
HEIGHT3 Rch	: N5823 5, 6pin	: V101
- Connect the power cord to an outlet. Next, press the power button to turn on the power.
- 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
- Turn "V101/V201" clockwise (↻) and adjust the voltage of the test point to "**8.0mV ± 0.5mV DC**" within 2 minutes.
- 10 minutes after the preliminary adjustment, turn V101/V201 and set the voltage to "**8.0mV ± 2.0mV DC**".
- Adjust the variable resistance of each channel using the same method.



PROCEDURE AFTER REPLACING THE PCB.

PROCEDURE AFTER REPLACING THE U-COM, ETC.

FIRMWARE UPDATE PROCEDURE

1. Items necessary for update
2. Update preparation with a USB flash drive
3. Update method when the DIGITAL PCB or network module is replaced (Using a USB flash drive)
4. Update Method for Service Region Settings
5. Normal Firmware Update Method from USB Flash Drive
6. Normal Firmware Update Method from OTA
7. About the error codes

PROCEDURE AFTER REPLACING THE PCB.

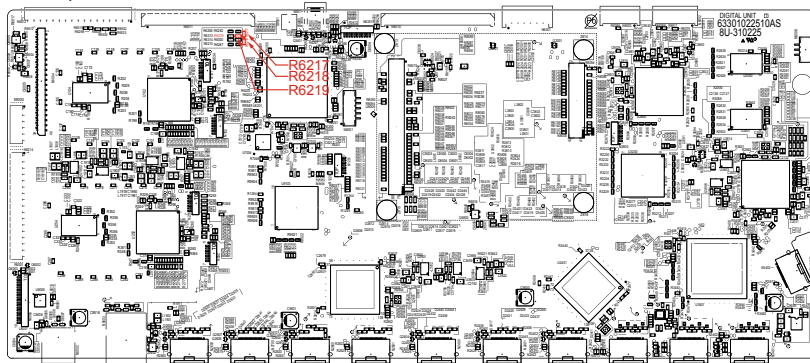
The procedure after replacing the printed circuit boards is as follows.

(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 Replacement	Remark
DIGITAL	U6201	R5F564MJCDFC	B	SOFTWARE : Main
DIGITAL	U0103 U0253	MX25L12835FMI-10G	B	SOFTWARE : DSP1/2 ROM
DIGITAL	U2801	MX25L12835FMI-10G	B	SOFTWARE : GUI ROM
DIGITAL	U9103	5M570ZF256C5N	C	SOFTWARE : VIDEO PLD
DIGITAL	U3200	EPM570F256C4N	C	SOFTWARE : AUDIO PLD
MODULE	B07	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 rewriting the software.

FIRMWARE UPDATE PROCEDURE

1. Items necessary for update

Items necessary for update are as follows.

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

Table 1

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

Model Name	Model Area	Download from SDI
AVR-X8500H AVC-X8500H	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-X8500HE3	North America (E3)	Product ID : 000101020100	DPMS_AVR-X8500HALL_LEGO_xxxx.zip heos_40.prod_x.xxx.xx.zip
AVC-X8500HE2	Europe (E2)	Product ID : 000101020200	
AVC-X8500HE1C	China (E1C)	Product ID : 000101020500	
AVC-X8500HJP	Japan (JP)	Product ID : 000101020400	

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

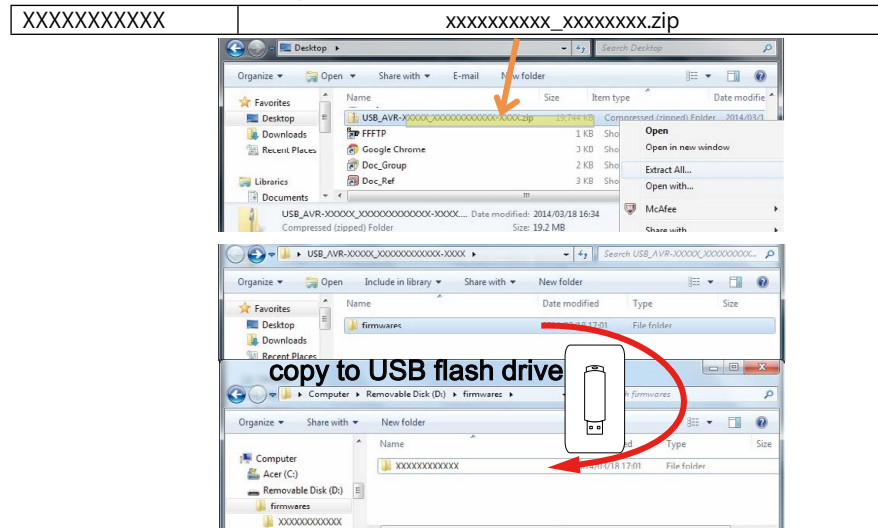
- Windows PC
- USB flash drive format : Prepare a USB flash drive formatted in FAT16 or FAT32.
※We recommend a USB flash drive that has an LED installed.

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.



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.

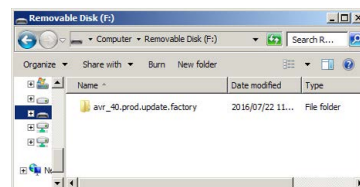
After unzipping the files, store them in the root of the same USB flash drive.

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

USB flash drive root

- + avr_40.prod.update.factory
- + xxxxxxx.ota-download
- + heos_40.prod.update.factory

xxxxxx : Model name
zz : Region

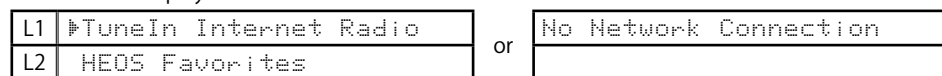


3.2. Start the update.

NOTE :

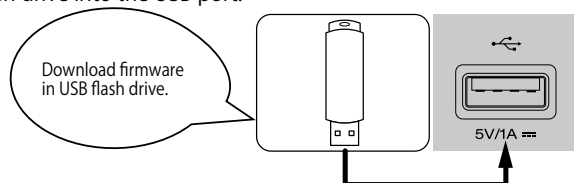
- Remove the LAN cable from this unit when updating. (Do not connect to a wired or wireless network.)
- The GUI menu setting details and image quality adjustment setting details are initialized when Firmware Factory Restore is performed. Therefore, take a note of the setting details beforehand and reconfigure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

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



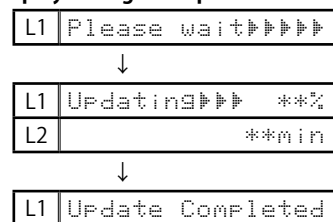
L1 : Content of the display is scrolled.

- Insert the USB flash drive into the USB port.



- USB Update starts automatically. The Standby LED lights red.

Display during USB update

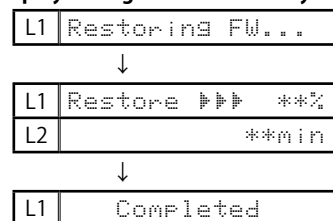


It takes a maximum of approximately 25 minutes for update to complete.

- 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.

- 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



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

- Execute Service Region Settings. See "4. Update Method for Service Region Settings"
- Check that the version is the specified version. See "1. Version Display Mode"
- 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.

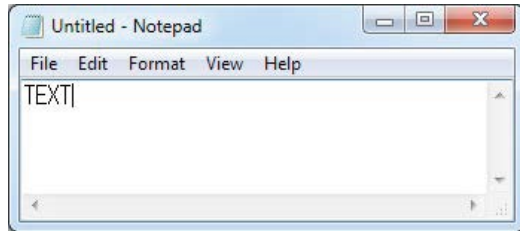
4. Update Method for Service Region Settings

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

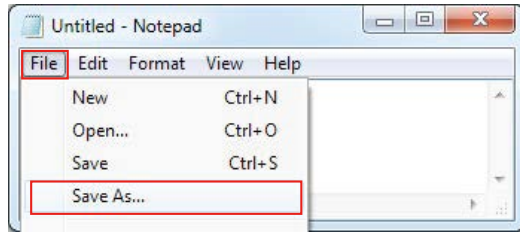
4.1. Creating a Service Region Settings file

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

(2) Enter "TEXT".



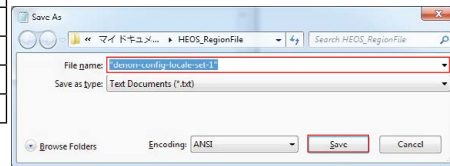
(3) Click "File", and then click "Save As...".



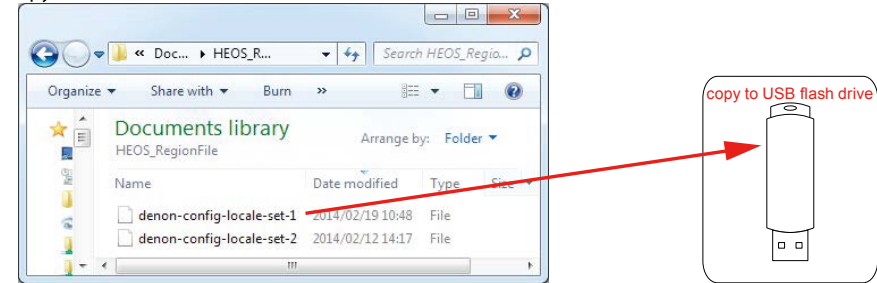
(4) Enter the file name and click the Save button.

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 :

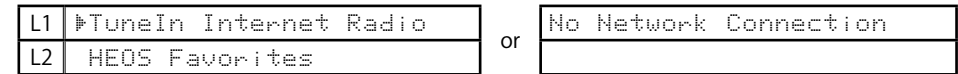
- Remove the LAN cable from this unit when updating. (Do not connect to a wired or wireless network.)
- We recommend a USB memory device that has an LED installed.

(1) Press the power button to turn on the power.

(2) Wait for this unit to start up.

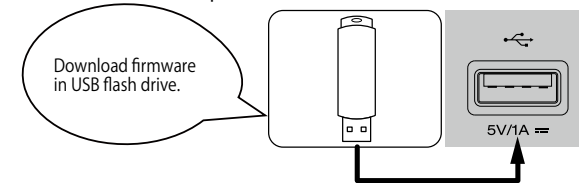
(3) Set the input source to HEOS Music.

Check that the display is as shown below.



L1 : 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

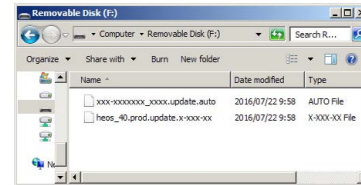
Copy the normal update files onto the USB flash drive in the following structure.

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-X8500HALL_LEGO_PopupNone.zip Product ID : 000101020100	heos_40.prod_x.xxx.xx.zip
Europe (E2)	DPMS_AVC-X8500HALL_LEGO_PopupNone.zip Product ID : 000101020200	
China (E1C)	DPMS_AVC-X8500HALL_LEGO_PopupNone.zip Product ID : 000101020500	
Japan (JP)	DPMS_AVC-X8500HALL_LEGO_PopupNone.zip Product ID : 000101020400	

USB flash drive root

- + AVx-X8500Hxx_xxxx.update.auto
- + heos_40.prod.update.x-xxx-xx



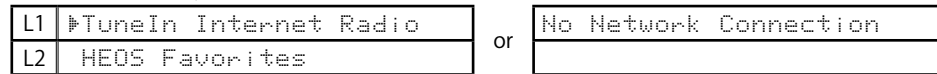
5.2. Start normal update

NOTE :

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

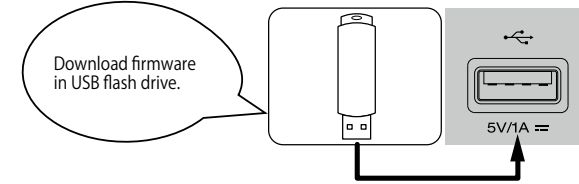
- Press the power button to turn on the power.
- Wait for this unit to start up.
- Set the input source to HEOS Music.

Check that the display is as shown below.



L1 : Content of the display is scrolled.

- Insert the USB flash drive into the USB port.



- 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.

- The unit restarts when update is complete.

- 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

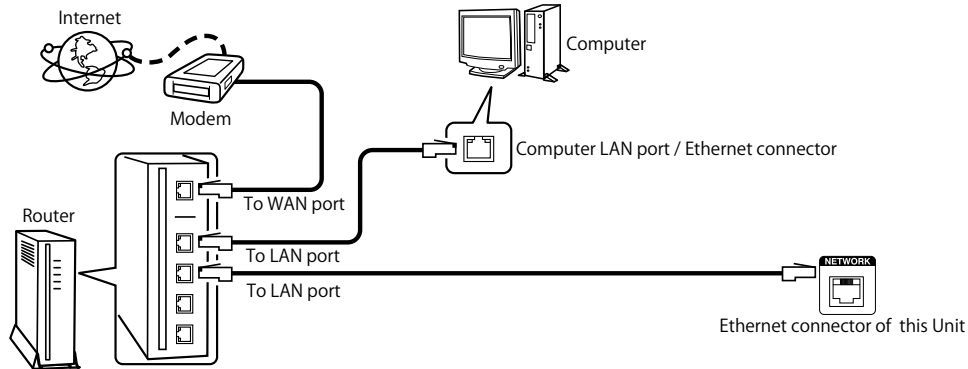
Download the latest firmware from our website and update the firmware.

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" → "Check for Update".

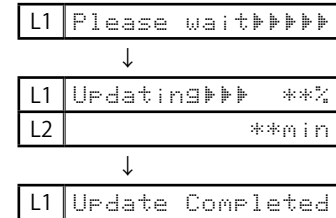
(3) Check update

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

(4) OTA Update starts automatically.

The Standby LED lights red.

Display during OTA update



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

(5) The unit restarts when update is complete.

(6) After updating the firmware, check the version.

See "1. Version Display Mode"

---Cautions on Firmware Update---

- For the update procedure, a proper broadband Internet connection environment and settings are required.
 - Do not turn off the power until updating is completed.
 - It takes a maximum of approximately 25 minutes for update to complete.
- Once an update is started, normal operations cannot be performed until it is completed. The GUI menu settings and image adjustment settings of this unit may be initialized. Note down the settings before updating, and set them again after updating.

7. About the error codes

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

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
0E	Main FBL (No used)
11	DSP1 or DSP
12	DSP2
15	Audio PLD
22	Video PLD
2A	GUI
33	LEGO

Error Code table

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

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

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

DENON®
www.denon.com