SONY

PROFESSIONAL VIDEO MONITOR

BVM-X300

TRIMASTER 4K

SERVICE MANUAL

1st Edition

⚠警告

このマニュアルは，サービス専用です。
お客様が，このマニュアルに記載された設置や保守，点検，修理などを行うと感電や火災，人身事故につながることがあります。
危険をさけるため，サービストレーニングを受けた技術者のみご使用ください。

⚠WARNING

This manual is intended for qualified service personnel only.
To reduce the risk of electric shock, fire or injury, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

⚠WARNUNG

Die Anleitung ist nur für qualifiziertes Fachpersonal bestimmt.
Alle Wartungsarbeiten dürfen nur von qualifiziertem Fachpersonal ausgeführt werden. Um die Gefahr eines elektrischen Schlages, Feuergefahr und Verletzungen zu vermeiden, sind bei Wartungsarbeiten strikt die Angaben in der Anleitung zu befolgen. Andere als die angegeben Wartungsarbeiten dürfen nur von Personen ausgeführt werden, die eine spezielle Befähigung dazu besitzen.

⚠AVERTISSEMENT

Ce manual est destiné uniquement aux personnes compétentes en charge de l’entretien. Afin de réduire les risques de décharge électrique, d’incendie ou de blessure n’effectuer que les réparations indiquées dans le mode d’emploi à moins d’être qualifié pour en effectuer d’autres. Pour toute réparation faire appel à une personne compétente uniquement.

設置時には，通気やサービス性を考慮して設置スペースを確保してください。
・ファンの排気部や通気孔をふさがない。
・通気のために，セット周辺に空間をあける。
・作業エリアを確保するため，セット後方は，40 cm 以上の空間をあける。
机上などの平面に設置する場合は、上に 10 cm 以上の空間を確保してください。

When installing the installation space must be secured in consideration of the ventilation and service operation.
- Do not block the ventilation slots, and vents of the fans.
- Leave a space around the unit for ventilation.
- Leave more than 40 cm of space in the rear of the unit to secure the operation area.

When the unit is installed on the desk or the like, leave at least 10 cm of space in the top side.

警告

設置の際には，容易にアクセスできる固定配線内に専用遮断装置を設けるか，機器使用中に，容易に抜き差しできる機器に近いコンセントに電源プラグを接続してください。
万一，異常が起きた際には，専用遮断装置を切るか，電源プラグを抜いてください。

WARNING
When installing the unit, incorporate a readily accessible disconnect device in the fixed wiring, or connect the power plug to an accessible socket-outlet near the unit. If a fault should occur during operation of the unit, operate the disconnect device to switch the power supply off, or disconnect the power plug.

WARNUNG
Beim Einbau des Geräts ist daher im Festkabel ein leicht zugänglicher Unterbrecher einzufügen, oder der Netzstecker muss mit einer in der Nähe des Geräts befindlichen, leicht zugänglichen Wandsteckdose verbunden werden. Wenn während des Betriebs eine Funktionsstörung auftritt, ist der Unterbrecher zu betätigen bzw. der Netzstecker abzuziehen, damit die Stromversorgung zum Gerät unterbrochen wird.

安全のために，周辺機器を接続する際は，過大電圧を持つ可能性があるコネクターを以下のポートに接続しないでください。
: SERIAL REMOTE コネクター
上記のポートについては本書の指示に従ってください。

For safety, do not connect the connector for peripheral device wiring that might have excessive voltage to the following port.
: SERIAL REMOTE connector
Follow the instructions for the above port.

For kundene i Norge

Dette utstyret kan kobles til et IT-strømfordelingssystem.

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Manual Structure

Purpose of this manual

This manual is the Service Manual of the Professional Video Monitor BVM-X300. This manual describes the information on the premise of providing the block level service such as service overview, troubleshooting, replacement of parts, circuit description, spare parts, and block diagrams.

The panel module is replaced as a block. Therefore, the information of the boards (BC4 board, GP board and PT1 board) inside of the panel module is not included.

Related manuals

In addition to this Service Manual the following manuals are provided.

- **Operating Instructions (supplied with this unit)**
  This manual is necessary for application and operation of this unit.

- **Factory Service Manual (available on request)**
  This manual describes the information on the premise the service based on the components parts of this unit.

Trademarks

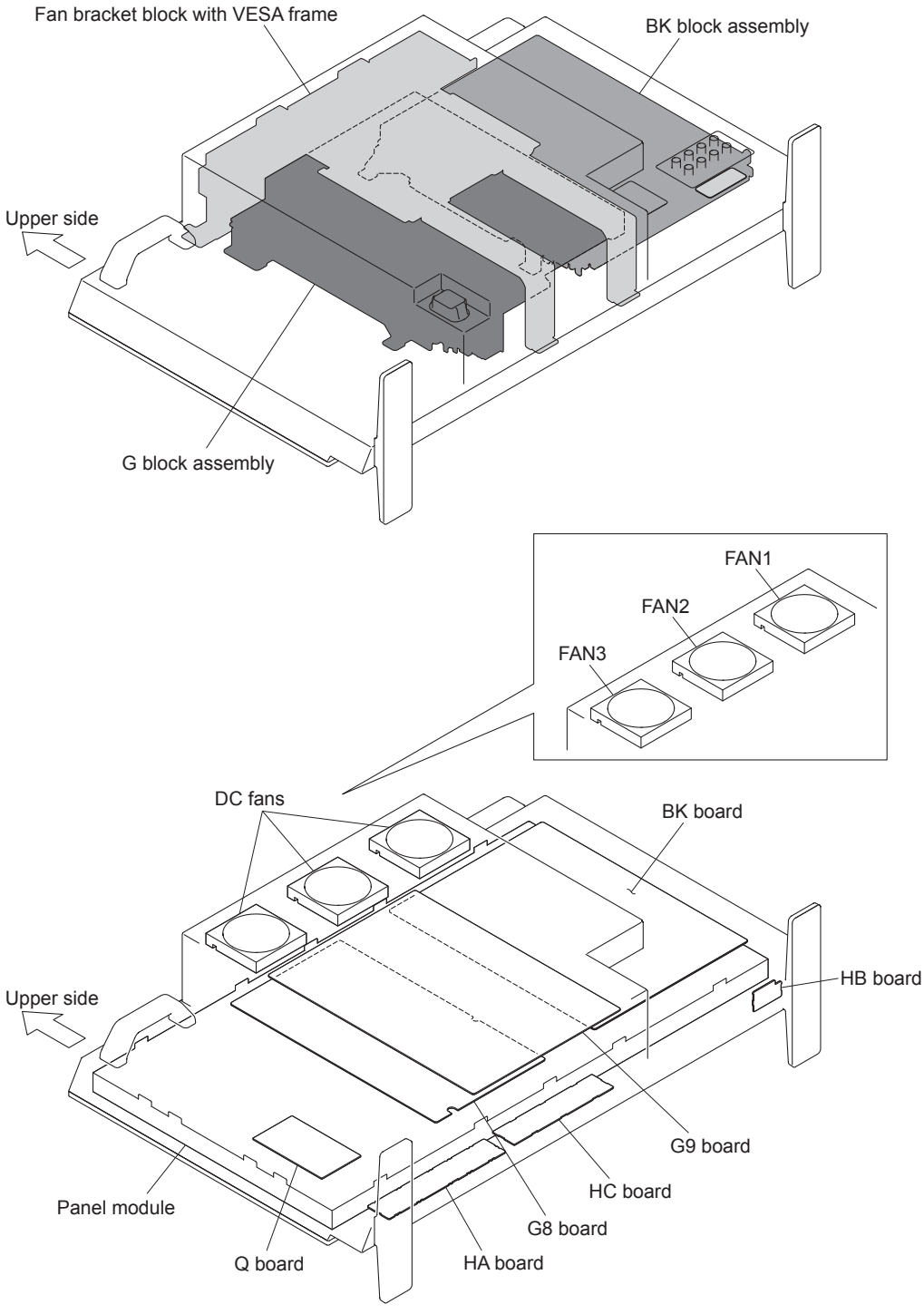
Trademarks and registered trademarks used in this manual are as follows.

- Windows is trademarks or registered trademarks of Microsoft Corporation in the United States and the other countries.

Other system names, product names, and company names appearing in this manual are trademarks or registered trademarks of their respective holders.

Section 1
Service Overview

1-1. Parts Location



1-2. Recommended Power Cord

This unit does not come with a power cord.
To get a power cord, contact your local Sony Sales Office/Service Center.

WARNING

- Use the approved Power Cord (3-core mains lead)/Appliance Connector/Plug with earthing-contacts that conforms to the safety regulations of each country if applicable.
- Use the Power Cord (3-core mains lead)/Appliance Connector/Plug conforming to the proper ratings (Voltage, Ampere).

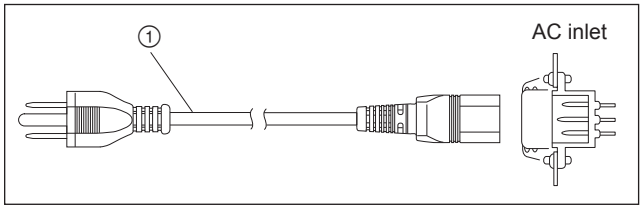
If you have questions on the use of the below Power Cord/Appliance Connector/Plug, contact your local Sony Sales Office/Service Center.

WARNING

Never use an injured power cord.

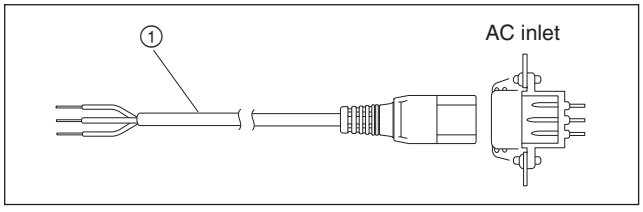
For customers in the U.S.A. and Canada:

① Power cord 125 V 10 A (2.4 m): ⚠1-534-827-15



For customers in European countries

① Power cord 250 V 10 A (2.5 m): ⚠1-782-929-13



If the unit is used in the area except above, contact your local Sony Sales Office/Service Center.

Note

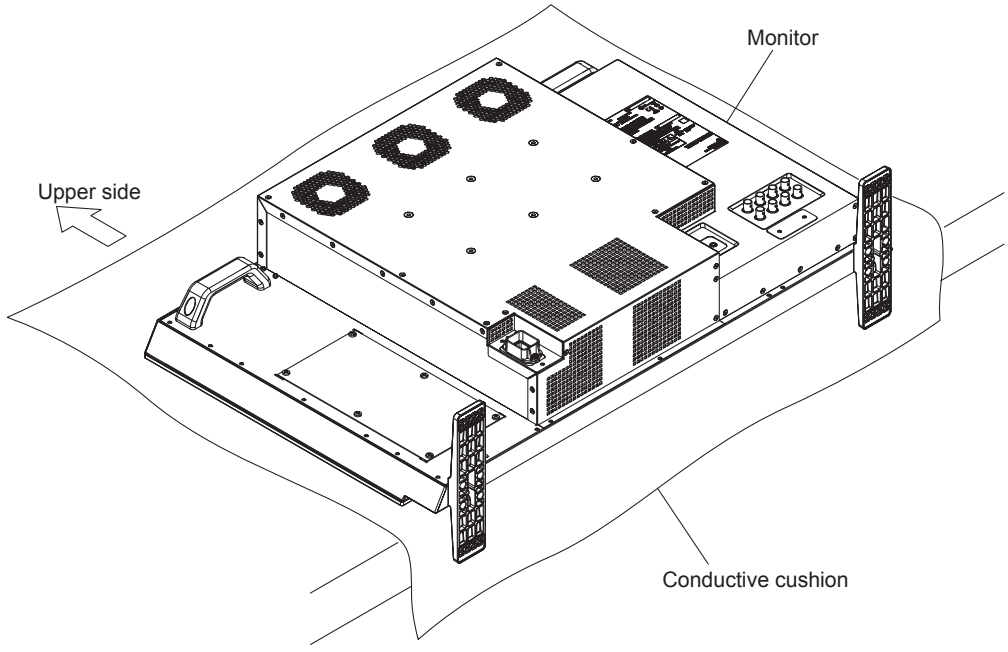
In this unit, plug holder is not used for the power cord.

1-3. Conductive Cushion

Put a monitor on the conductive cushion as shown in the figure below.
This prevents the panel or bezel assembly from being damaged.
Use a conductive material to prevent static electricity.

Illustration in this manual

A conductive cushion is not described in the illustration of replacement procedure.



1-4. Circuit Protective Parts

1-4-1. Fuse

This unit has a fuse for circuit protection. A fuse will blow when abnormality occurs and an overcurrent flows in this equipment. Be sure to replace an old fuse with the specified fuse as shown below after removing the foreign substances that may cause the shorts.

Board name	Ref No.	Part No./Part name
BK	F101 to F104	⚠ 1-523-133-31 Fuse, 50 V/1.4 A
	F201 to F203, F205 to F209, F301, F303, F305, F306, F309, F310, F401 to F405	⚠ 1-523-135-31 Fuse, 32 V/3.15 A
G8	F6000, F6001	⚠ 1-523-067-51 Fuse, 250 V/5 A

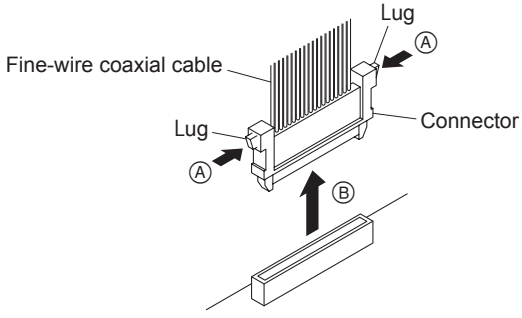
1-5. Replacing the Fine-Wire Coaxial Cable

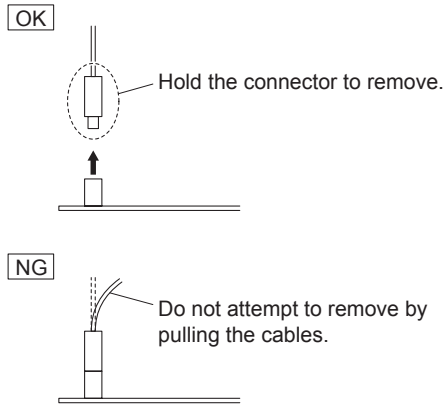
Note

- A fine-wire coaxial cable is very thin. Be careful not to break it when handling the fine-wire coaxial cable.
- When disconnecting the fine-wire coaxial cable, do not attempt to remove by pulling the cable. Be sure to hold the connector to remove.
- Confirm that the contact on the fine-wire coaxial cable is free from dirt or dust.

Disconnecting

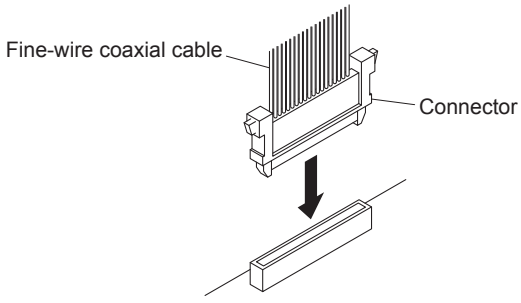
1. While pushing the two lugs in the direction of the arrow Ⓐ, pull out the connector straight in the direction of the arrow Ⓑ.





Connecting

1. Insert the connector as far as it will go.



1-6. Lead-free Solder

All boards mounted in this unit use lead-free solder. Be sure to use lead-free solder when repairing the boards of this unit. A lead free mark (LF) indicating that the solder contains no lead is printed on each board.
(Caution: Some printed circuit boards may not come printed with the lead free mark due to their particular size.)

 : LEAD FREE MARK

Note

- The lead-free solder melts at a temperature about 40 °C higher than the ordinary solder, therefore, it is recommended to use the soldering iron having a temperature regulator.
- The ordinary soldering iron can be used but the iron tip has to be applied to the solder joint for a slightly longer time. The printed pattern (copper foil) may peel away if the heated tip is applied for too long, so be careful.

Section 2
Periodic Replacement Parts and Cleaning

2-1. Periodic Replacement Parts

The replacement period of each part is changed according to the environment and conditions of use.
This section indicates the replacement period of parts when this unit is used at an operating temperature of 25 C°.

Note

This table does not describe the guarantee period of each part.

Part name	Part No.	Number of pieces	Replacement period (h) (Operating time: 24 hours/day)	(Operating time: 16 hours/day)
G8 board	A-2070-731-A	1	25000	50000
G9 board	A-2070-732-A	1	25000	50000
Panel module (when mainly operated in the HDR display)	A-2071-040-A	1	12000	20000
Panel module (when mainly operated in those other than HDR display)			15000	25000
DC fan	1-787-689-11	3	20000	40000

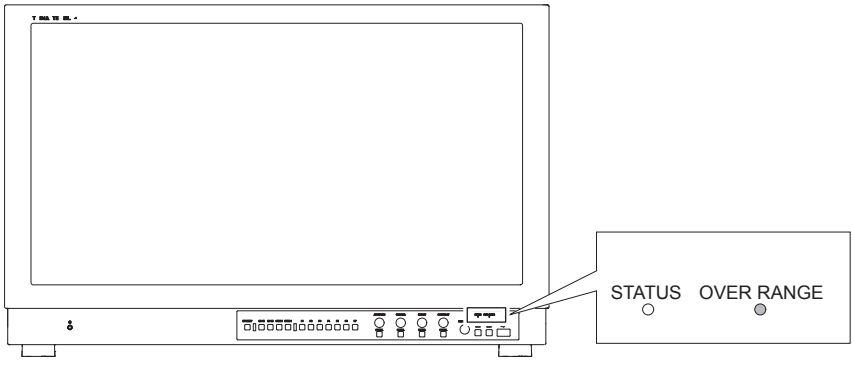
Cautions on HDR display

- The HDR (High Dynamic Range) display indicates the state in which EOTF of a monitor is set to 2.4(HDR), S-Log3(HDR), or S-Log2(HDR).
- Depending on the type of a display image or the operation method, an HDR display function may quicken the replacement period of a panel.
- To reduce burn-in, do not display a fixed image or still image in which high-luminance display is contained, a time code, a marker, or logo continuously for long time. Investigate that it is displayed in a low level signal of less than 100%.
- During HDR display, a cooling fan forcibly operates irrespective of the outside air temperature.

2-2. Cleaning

Clean the dust near a panel module, inlet port, or fans periodically.
It is recommended to clean the dust once a year.

An OVER RANGE indicator blinks in amber when luminance decreases to protect the panel during increase in temperature. Perform cleaning when the luminance frequently decreases.

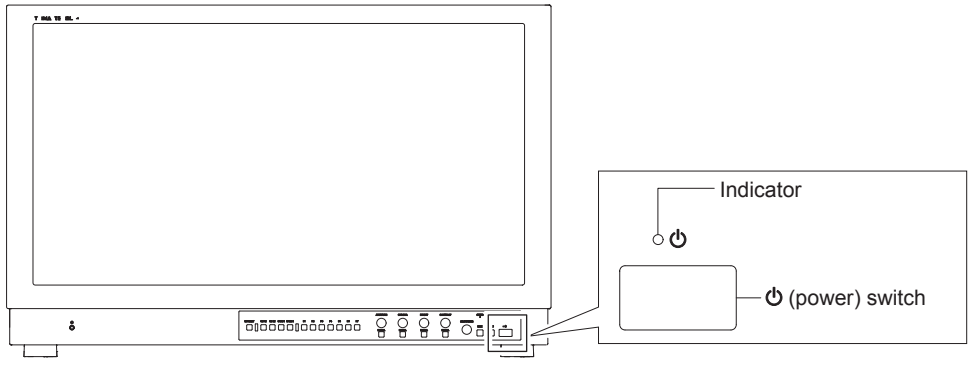


Section 3
Troubleshooting

3-1. Flow of Troubleshooting

Symptom

- The indicator of a ⏻ (power) switch on the front panel blinks in red. No image is displayed.
- The indicator of a ⏻ switch blinks in red. An image is displayed.



Remedy

1. Connect PC to the monitor and confirm a device and register. (Refer to Section 3-2.)
2. When an error cannot be identified by “Identification of an Error Using PC”, confirm the indicator on the board.

Board and indicator	Remedy
D6228 on the G8 board	Confirm the power system. (Refer to Section 3-3-1.)
D6326 on the G9 board	Confirm the power system. (Refer to Section 3-3-2.)
D401, D402, and D403 on the BK board D114, D116, D119, D120, and D121 on the BK board	Confirm the power system. (Refer to Section 3-3-3.)

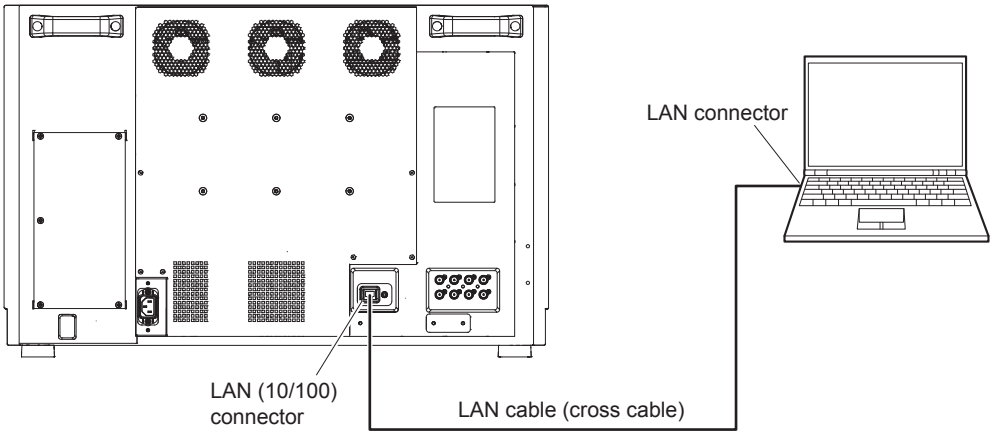
3. When an image is not displayed, acquire the information of the monitor using PC. (Refer to Section 3-4.)

3-2. Identification of an Error Using PC

3-2-1. Preparation

- Personal computer (Hereinafter referred to as PC)
  OS: Windows 7, Windows 8 or Windows 8.1
- LAN cable (cross cable)
- Terminal software: Tera Term, etc.
- Login name and password
  For obtaining the login name and password, contact your local Sony Sales Office/Service Center.

3-2-2. Connection Diagram



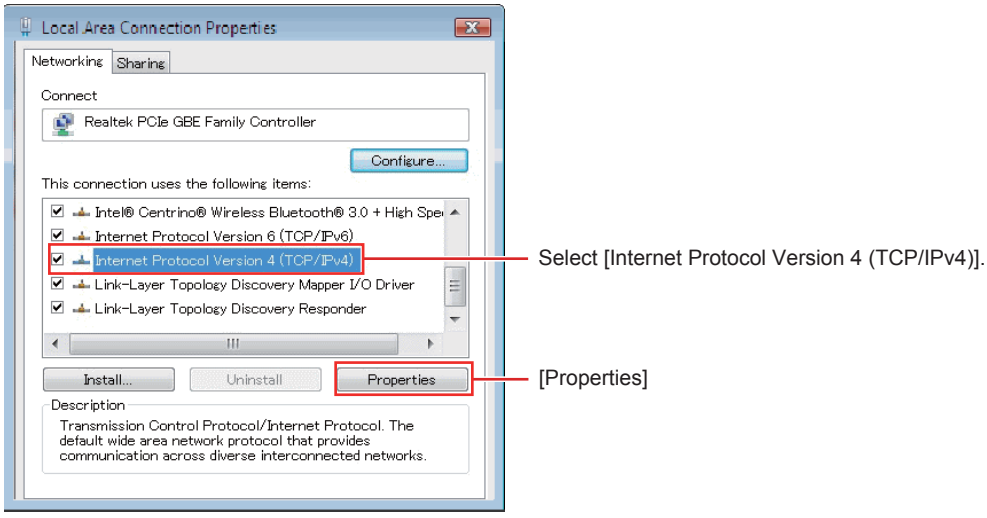
3-2-3. Setting of PC

Set PC before logging in to this unit.

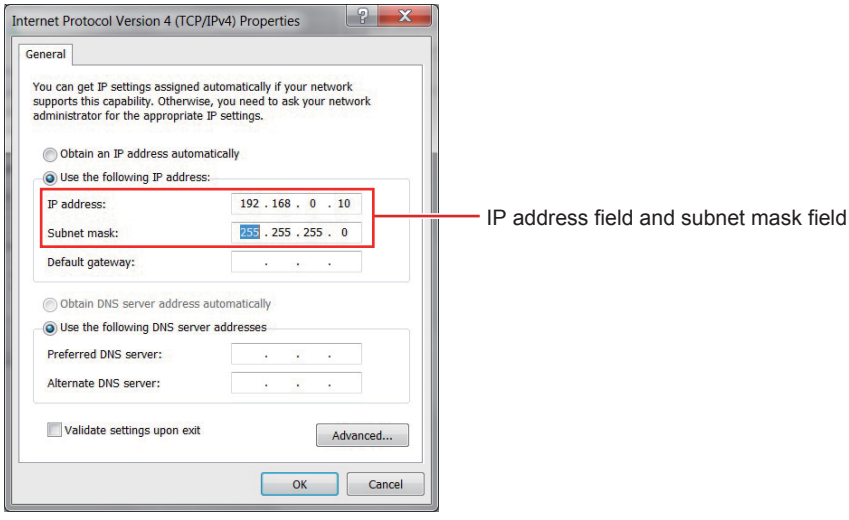
Note

The procedure in this section describes the operation based on Windows 7. The procedure or item names may vary depending on the OS used.

1. Start PC.
2. Click [Start], [Control Panel], [Network and Sharing Center], and [Change adapter settings] sequentially.
3. Right-click [Local Area Connection] and then click [Properties].
   The property screen of local area connection is displayed.
4. Select [Internet Protocol Version 4 (TCP/IPv4)] and click [Properties].



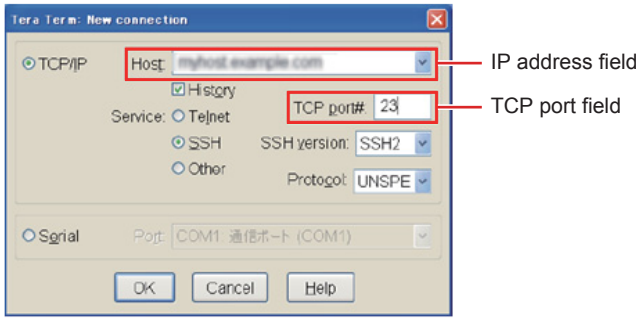
5. Select “Use the following IP address”, enter “192.168.0.10” in the IP address field, enter “255.255.255.0” in the subnet mask field, and click [OK].



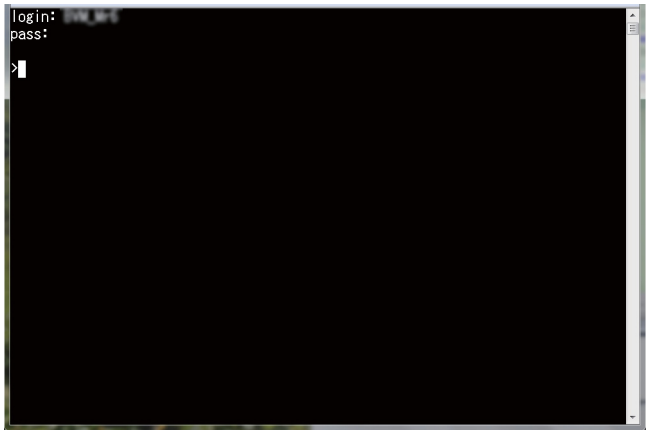
6. Close the property screen.

3-2-4. Startup and Login

1. Turn on the power of this unit.
2. Start terminal software.
3. Enter the IP address (192.168.0.1) of the monitor as connection destination and set the TCP port to "23".
   Display example:



4. Enter the login name and password acquired in advance.
   ">" is displayed.



3-2-5. Identification of Error and its Remedy

1. Log in from terminal software. (Refer to Section 3-2-4.)
2. After ">", enter "get_system_error_status", then press the Enter key.
   Identify a failure by the displayed message.

   Note

   When a command is not displayed during operation of terminal software Tera Term, click the "Local echo" check box by terminal setting.

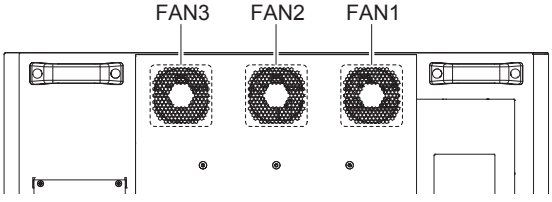
Message when no image is displayed

Message	Possible cause	Remedy
BC4 Error	A problem exists in the board inside a panel module.	The BC4 board inside the panel module is judged to be defective. Replace the panel module. (Refer to Section 4-15.)
Panel Temp Error	A panel module becomes high in temperature, and the system shut down to ensure safety.	Use the panel module in the recommended temperature range. Replace the panel module if an error occurs again. (Refer to Section 4-15.)
BK Power Error	A problem exists in the power of a BK board.	Confirm whether the DC-DC converter and the fuse on the BK board are normal. (Refer to "Power system diagram of BK board" described later.)
FPGA BC4 Config Error	A start error occurs in FPGA of a panel module.	The BC4 board inside the panel module is judged to be defective. Replace the panel module. (Refer to Section 4-15.)
FPGA BK Config Error	A start error occurs in FPGA of a BK board.	Confirm the configuration system. (Refer to "Configuration system diagram of BK board" described later.
DMA Transfer Error(Power On)	A problem exists in the correction circuit of a panel module.	The panel correction circuit inside the panel module is judged to be defective. Replace the panel module. (Refer to Section 4-15.)
Panel Temp Sensor Error	A panel becomes too high in temperature or an error occurs in a sensor.	Use the sensor in the recommended temperature range. The PT1 board inside the panel module is judged to be defective if an error occurs again. Replace the panel module. (Refer to Section 4-15.)
Room Temp Sensor Error	The peripheral temperature is too high or an error occurs in a sensor.	Use the sensor in the recommended temperature range. If an error occurs again, confirm whether a temperature sensor system is normal. (Refer to "I2C bus system diagram of BK board" described later.)

Message when an image is displayed

Message	Possible cause	Remedy
DMA Transfer Error(Normal)	A problem exists in the correction circuit of a panel module.	Turn off the power of the monitor once, turn on it again, and confirm whether the power is recovered. When the power is recovered, the error in this case is based on the temporary noise. No problem occurs during ordinary use. When the power is not recovered, no image is displayed, and the indicator of the ⏻ switch blinks in red, replace the panel module. (Refer to Section 4-15.) The panel correction circuit of the BC4 board inside the panel module is judged to be defective.
FAN Error	A problem exists in a fan.	Execute command “fan_error_status”.

3. When the “FAN Error” is displayed, enter “get_system_error_status” after “>”, then press the Enter key.
   Identify a failure by the displayed message.
   The fans on the right are called FAN1, FAN2, and FAN3 in order when viewing a monitor from the rear panel.

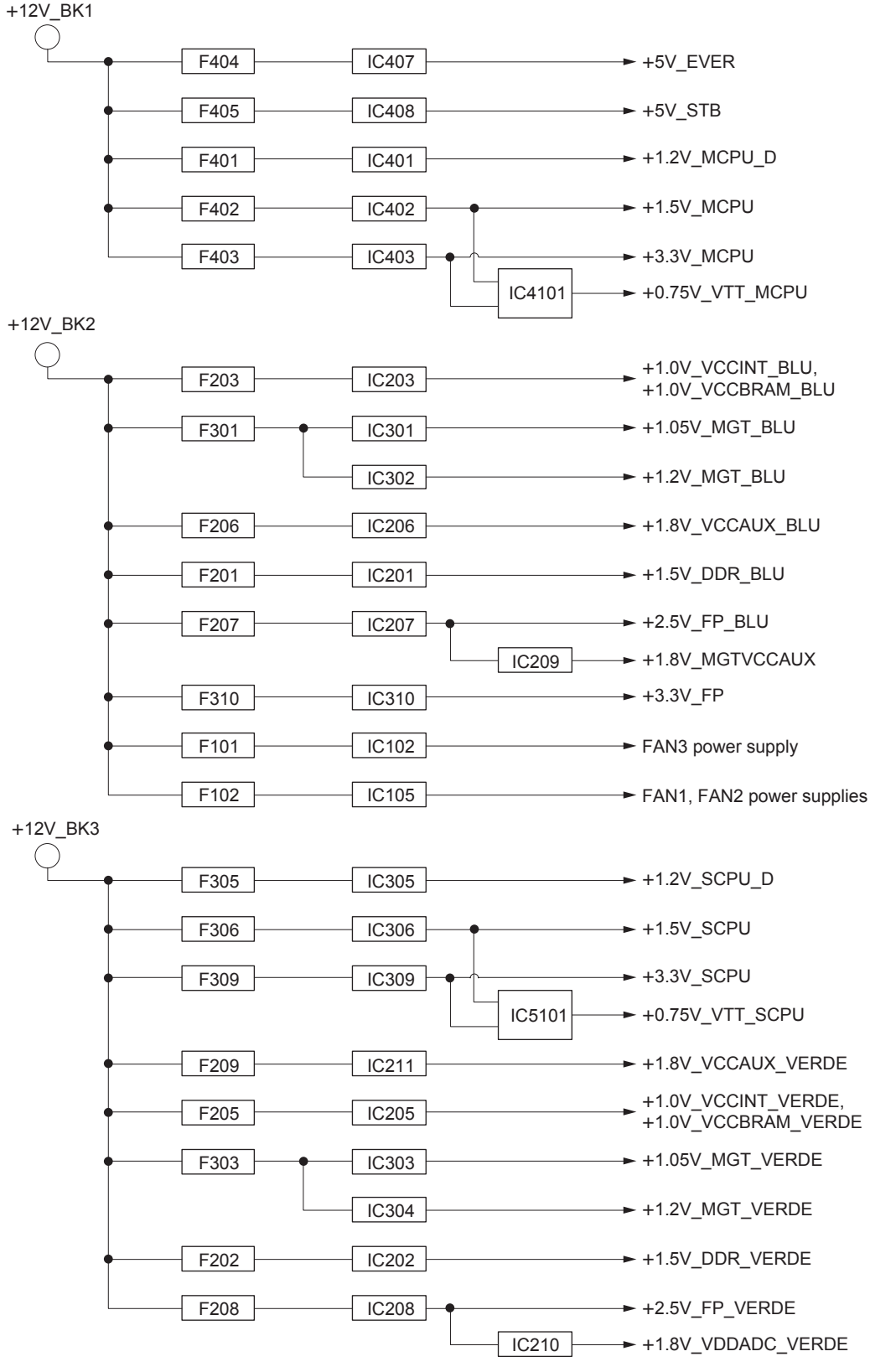


Message	Possible cause	Remedy
01	A problem exists in FAN3.	Confirm “FAN3 power supply” in the “Power system diagram of BK board” described later. If no problem exists in “FAN3 power supply”, replace the FAN3.
02	A problem exists in FAN1 or FAN2.	Confirm “FAN1, FAN2 power supplies” in the “Power system diagram of BK board” described later. If no problem exists in “FAN1, FAN2 power supplies”, replace the FAN1 or FAN2.
03	A problem exists in FAN1, FAN2 or FAN3.	Confirm “FAN1, FAN2 power supplies” and “FAN3 power supply” in the “Power system diagram of BK board” described later. If no problem exists in “FAN1, FAN2 power supplies” and “FAN3 power supply”, replace the FAN1, FAN2 or FAN3.

4. Terminate the terminal software.
   When terminating Tera Term, press the Alt and Q keys simultaneously.

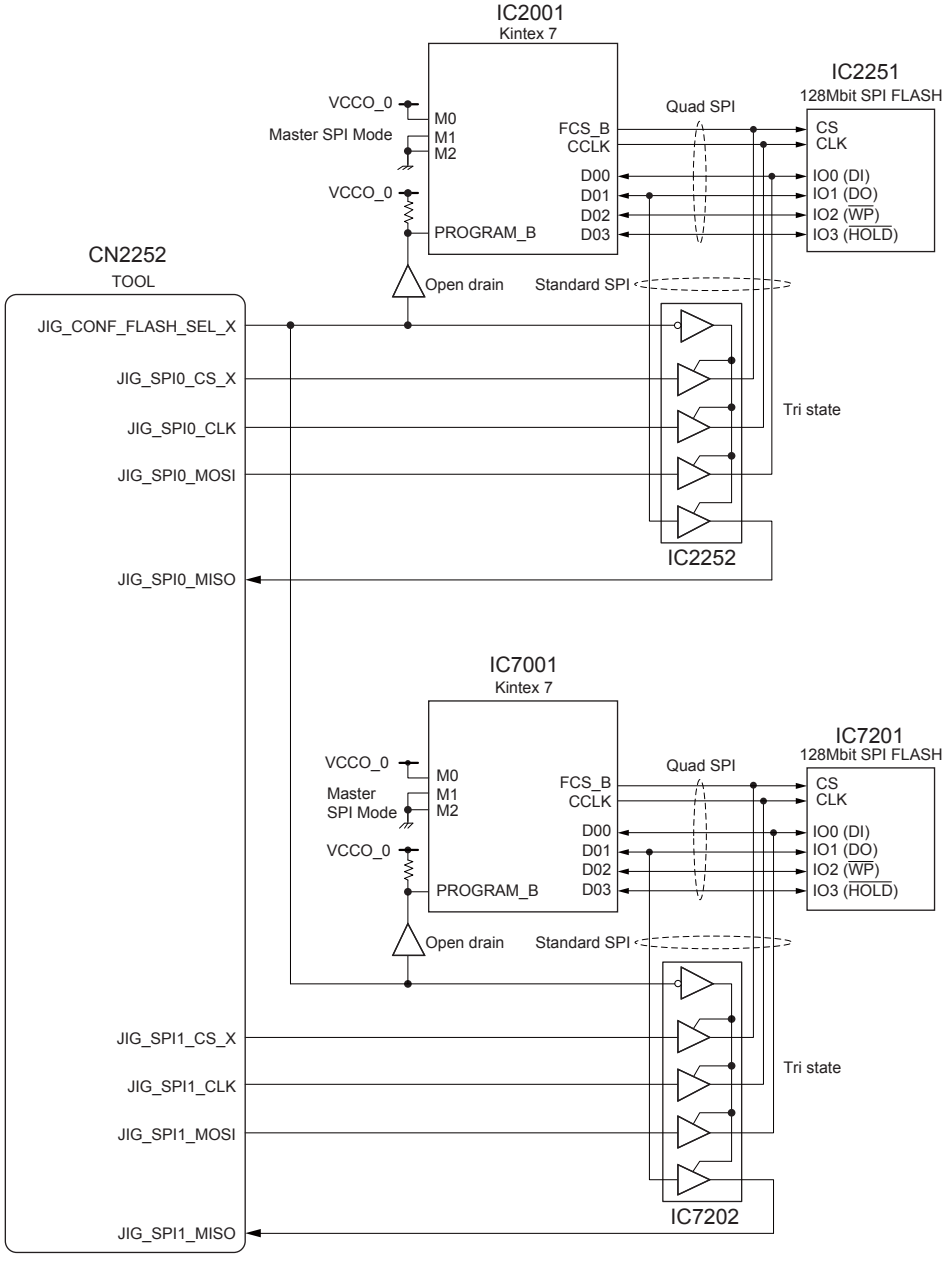
Power system diagram of BK board

The system diagram below is a simplified one that makes it easy to search for the parts in a power system. For a power error, confirm that a fuse does not blow before confirming the voltage output.



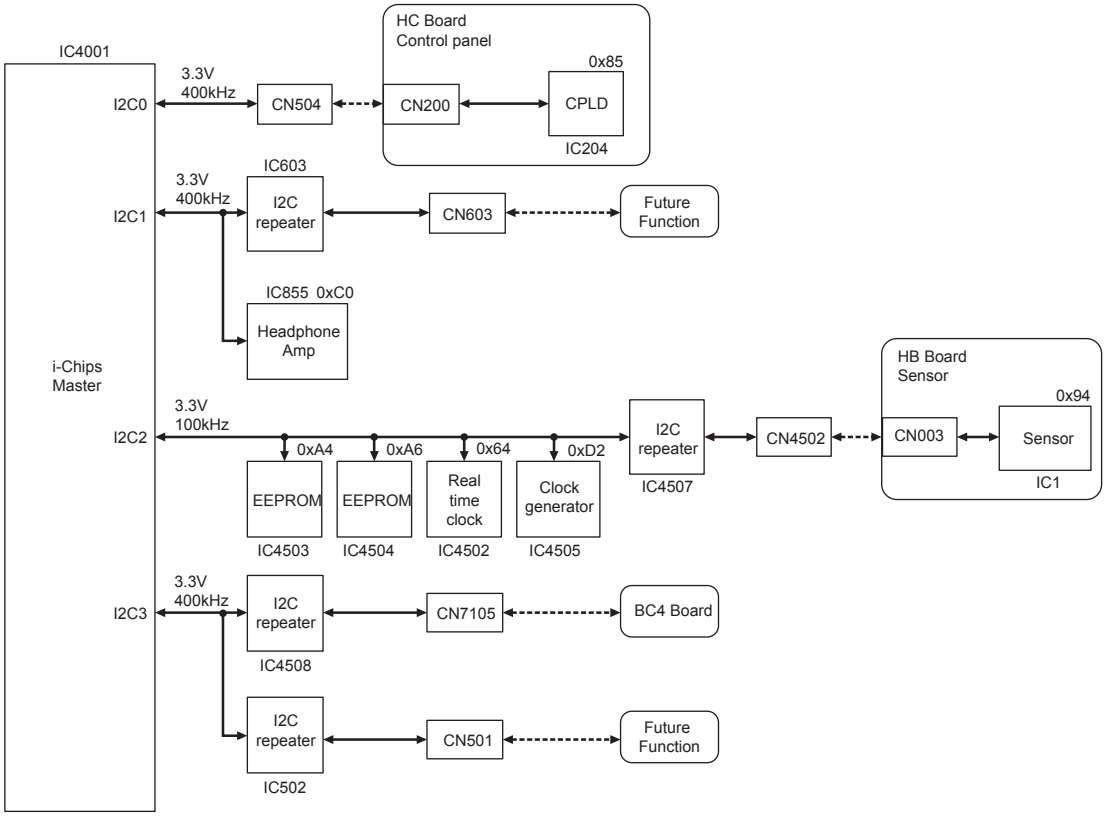
Configuration system diagram of BK board

The system diagram below is a simplified one that makes it easy to search for the parts in a configuration system.
When message “FPGA BK Config Error” is displayed, confirm that both D2001 and D7001 on the BK board light. ICs (IC2001, IC2251, and IC2252) of an SPI0 line or ICs (IC7001, IC7201, and IC7202) of an SPI1 line cannot normally communicate when D2001 and D7001 light. Confirm whether no problem exists in those lines.



I2C bus system diagram of BK board

The system diagram below is a simplified one that makes it easy to search for the parts in an I2C bus system.
A room temperature sensor is mounted on an HB board. The HB board communicates with IC4001 using I2C. When message “Room Temp Sensor Error” is displayed, confirm an I2C2 line.



3-3. Identification of an Error Using Indicator

Confirm the indicator on a board when an error cannot be identified by “Identification of an Error Using PC”.

3-3-1. Indicator on the G8 Board

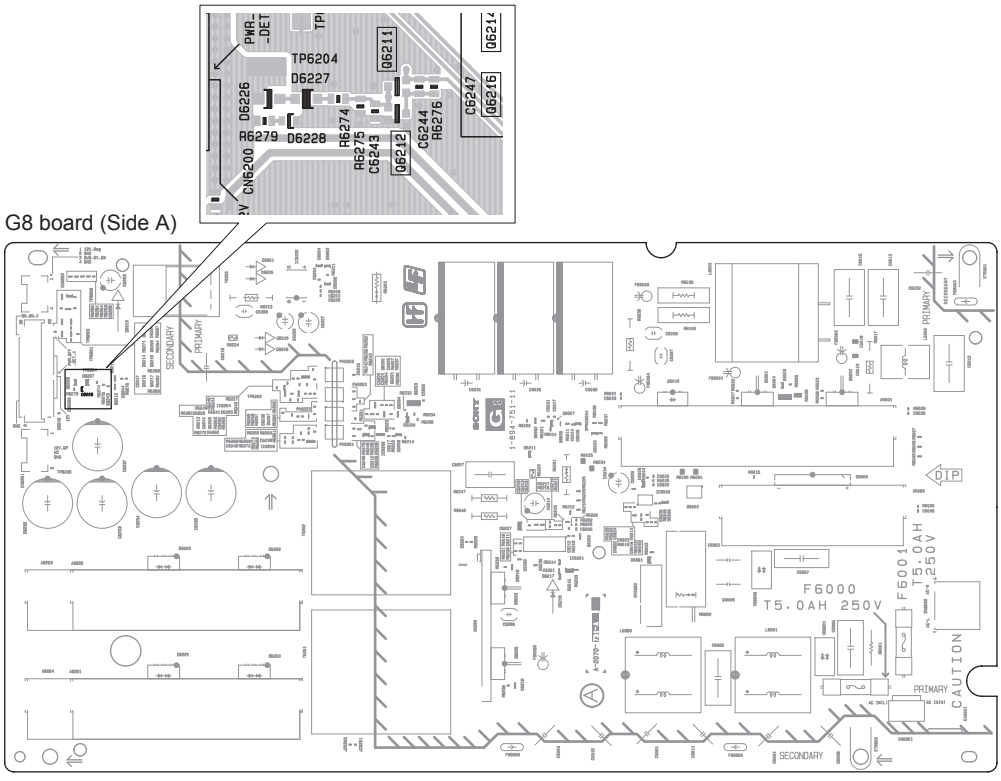
Error confirmation method and remedy

Confirm D6228 on the G8 board.

Lights: OUT_12V of the G8 board is output. The BK board or panel module is defective.

Goes off: Replace the G8 board. (Refer to Section 4-13.)

When D6228 continuously goes off even if the G8 board is replaced, any of the devices (BK board, panel module, or HC board) connected to the G8 board is defective.



3-3-2. Indicator on the G9 Board

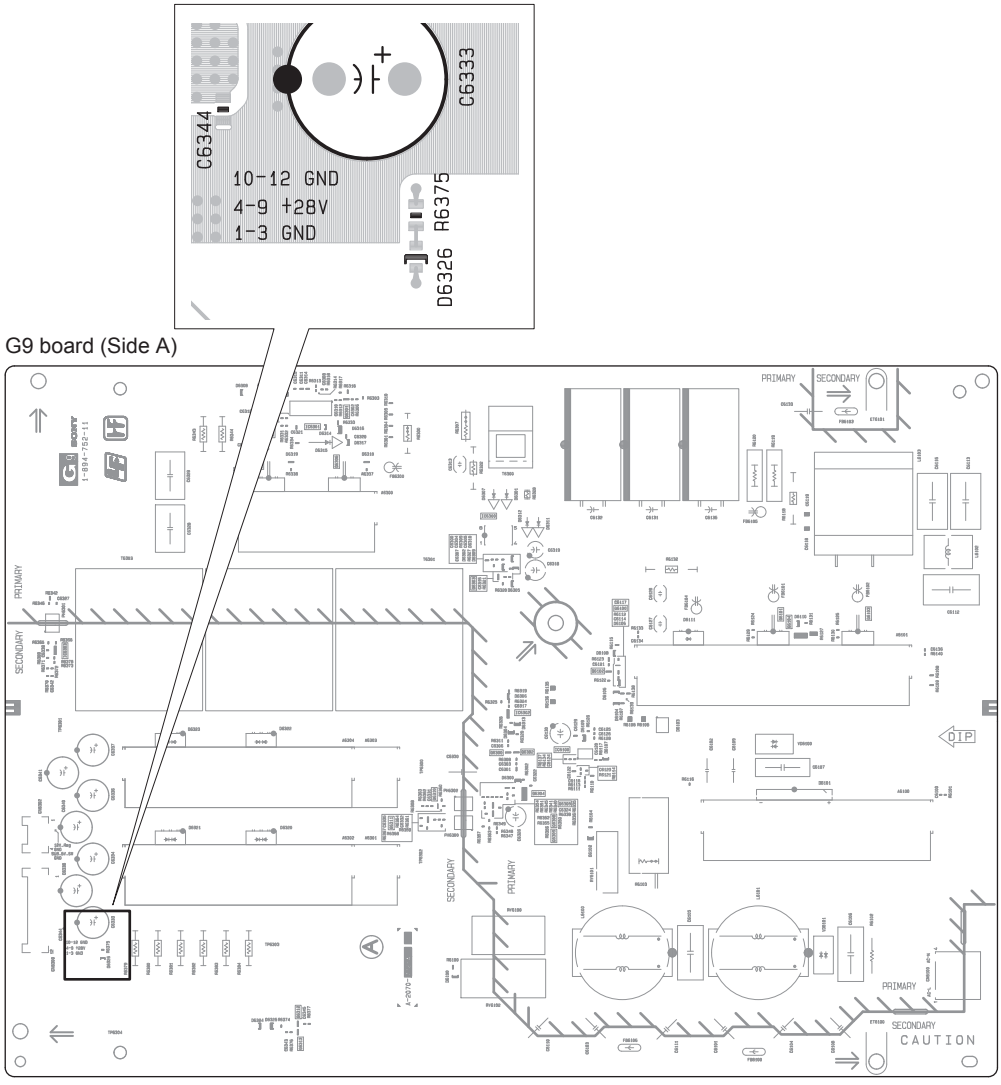
Error confirmation method and remedy

Confirm D6326 on the G9 board.

Lights: OUT_28V of the G9 board is output. The BK board or panel module is defective.

Goes off: Replace the G9 board. (Refer to Section 4-12.)

When D6326 continuously goes off even if the G9 board is replaced, panel module is defective.



3-3-3. Indicators on the BK Board

A defective power system is identified from the indicators below and “Power system diagram of BK board” described previously.

Error confirmation method and remedy

Confirm the indicators on the BK board.

- D401, D402, and D403
- D114, D116, D119, D120, and D121

D401 lights. (Normal: Goes off)

Among the DC-DC converters below, any protector operates.

+1.2V_MCPU_D
+1.5V_MCPU
+3.3V_MCPU
+1.2V_SCPU_D
+1.5V_SCPU
+3.3V_SCPU
+5V_STB

D402 lights. (Normal: Goes off)

Among the DC-DC converters below, any protector operates.

+2.5V_FP_BLU
+1.0V_VCCINT_BLU
+1.8V_VCCAUX_BLU
+1.5V_DDR_BLU
+1.0V_MGT_BLU
+1.2V_MGT_BLU
+3.3V_FP

D403 lights. (Normal: Goes off)

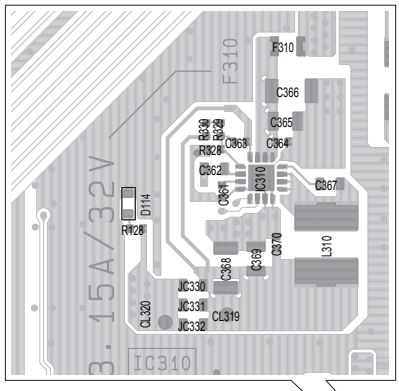
Among the DC-DC converters below, any protector operates.

+1.5V_DDR_VERDE
+1.0V_VCCINT_VERDE
+1.8V_VCCAUX_VERDE
+2.5V_FP_VERDE
+1.0V_MGT_VERDE
+1.2V_MGT_VERDE

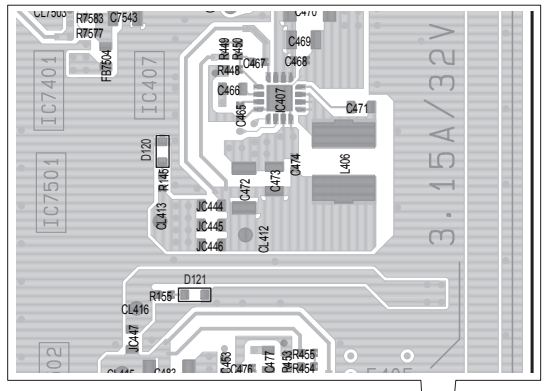
The indicators below go off. (Normal: Lights)

- D120 (+5V_EVER)
- D121 (+5V_STB)
- D119 (+3.3V_MCPU)
- D116 (+3.3V_SCPU)
- D114 (+3.3V_FP)

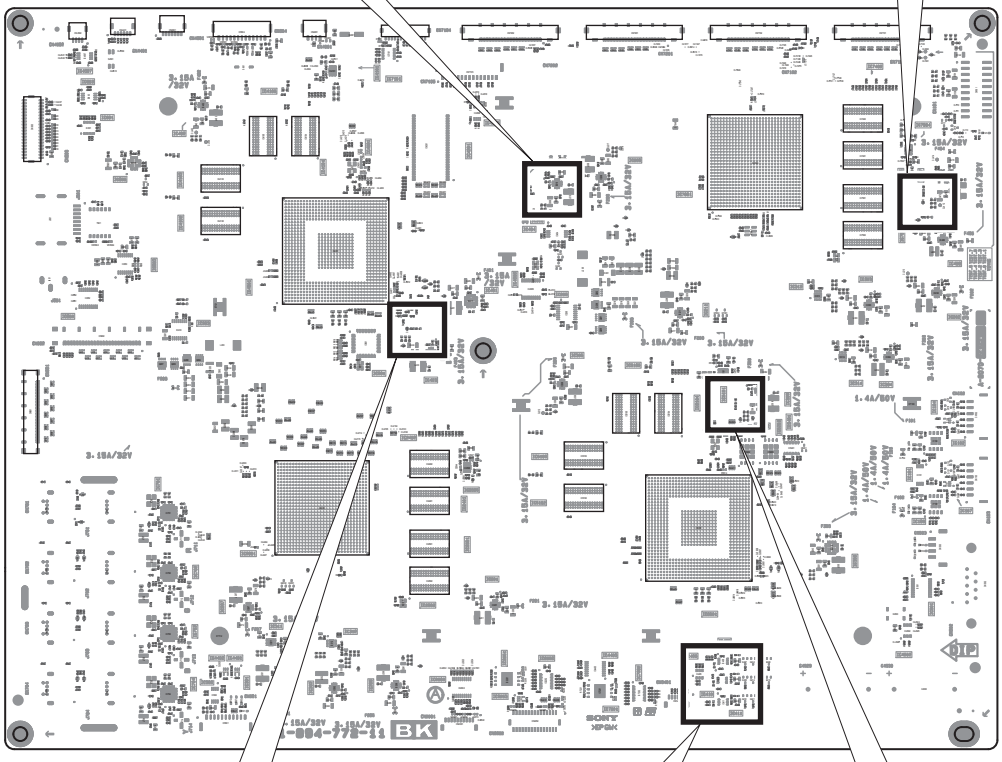
D114



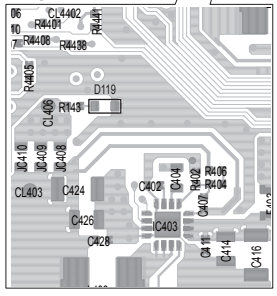
D120 and D121



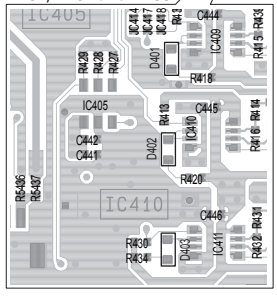
BK board (Side A)



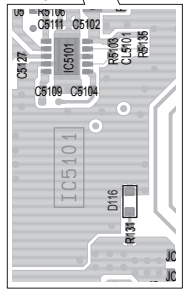
D119



D401, D402 and D403



D116



3-4. Acquisition of Data Using PC

The data below can be acquired from PC using a command even when an image cannot be displayed.
- Serial No.
- Operation time
- Panel on-time: Total time for which a panel is energized
- HDR on-time: Total time for which an HDR (High Dynamic Range) function is used

Acquire these data before making repairs. This is the first step of solving a problem occurring in the unit.

Preparation
- Personal computer (PC)
  OS: Windows 7, Windows 8 or Windows 8.1
- LAN cable (cross cable)
- Terminal software: Tera Term, etc.
- Login name and password
  For obtaining the login name and password, contact your local Sony Sales Office/Service Center.

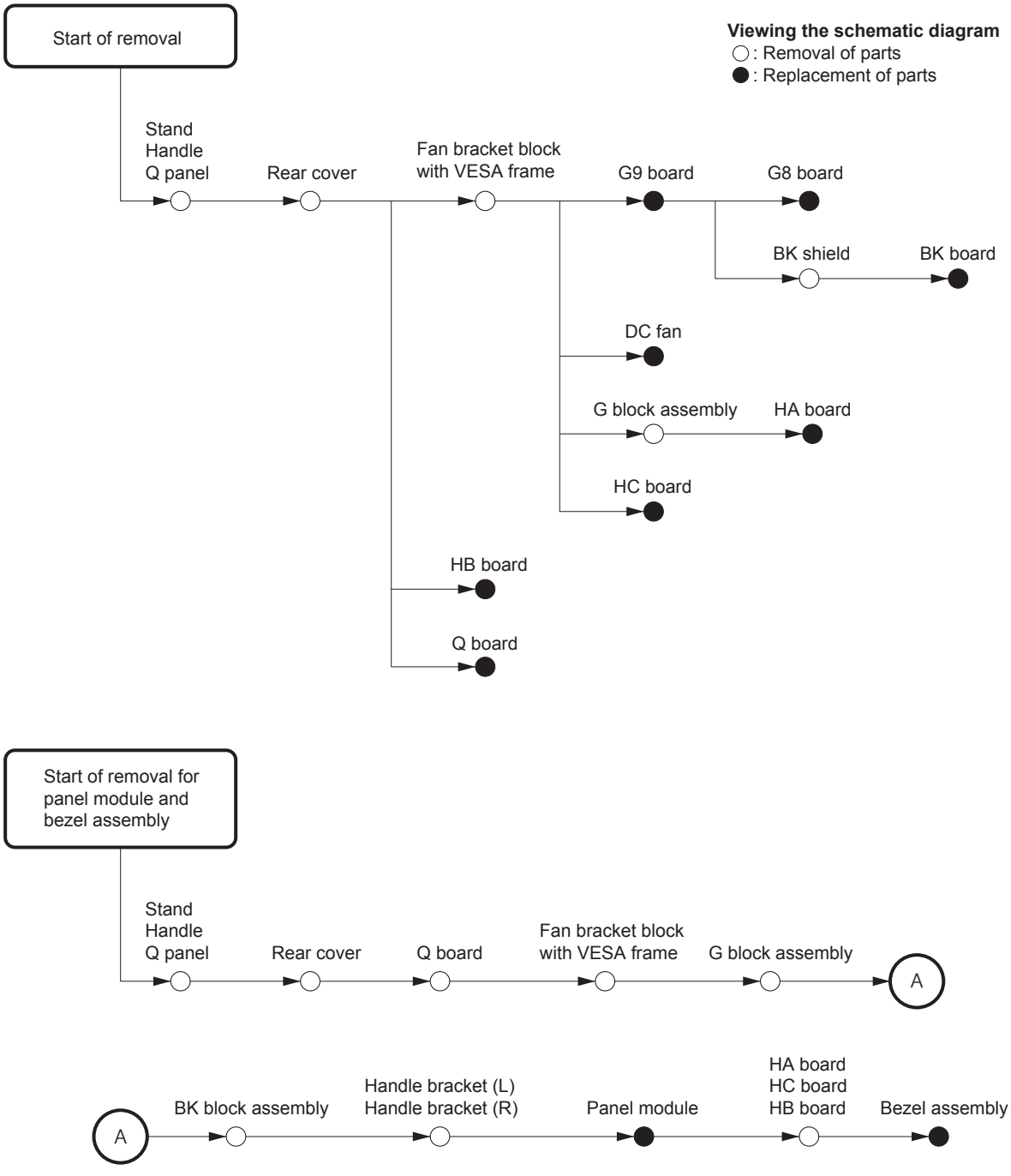
Procedure
1. Connect the monitor and PC using a LAN cable (cross cable). (Refer to Section 3-2-2.)
2. Set the PC. (Refer to Section 3-2-3.)
3. Turn on the power of the monitor and log in to the monitor using the PC. (Refer to Section 3-2-4.)
4. Enter the commands below after ">".
   Make a note of the displayed values.

Command	Acquired data	Value
get_serial_number_set	Serial No.	7XXXXXX
get_operation_time	Operation time	0 to 999999
get_panel_on_time	Panel on-time	0 to 999999
get_hdr_time	HDR on-time	0 to 999999

5. Terminate terminal software.
   When terminating Tera Term, press the Alt and Q keys simultaneously.

Section 4
Replacement of Parts

4-1. Guide of Removal



4-2. Tightening Torque

Tighten the each screw with the torque below.

- B4 × 8: 1.4 ±0.20 N•m
- PS4 × 14: 1.4 ±0.20 N•m
- PSW3 × 6: (for heatsink (BK)) 0.6 ±0.10 N•m
- PSW3 × 6: (for excluding heatsink (BK)) 0.8 ±0.10 N•m
- PSW3 × 12: 0.8 ±0.10 N•m
- PSW4 × 8: (for ground terminal) 1.5 ±0.10 N•m
- PSW4 × 8: (for excluding ground terminal) 1.4 ±0.20 N•m
- PSW4 × 10: 1.4 ±0.20 N•m
- M2 × 3: 0.2 ±0.02 N•m
- Nut M6 × 0.5: 0.4 ±0.10 N•m

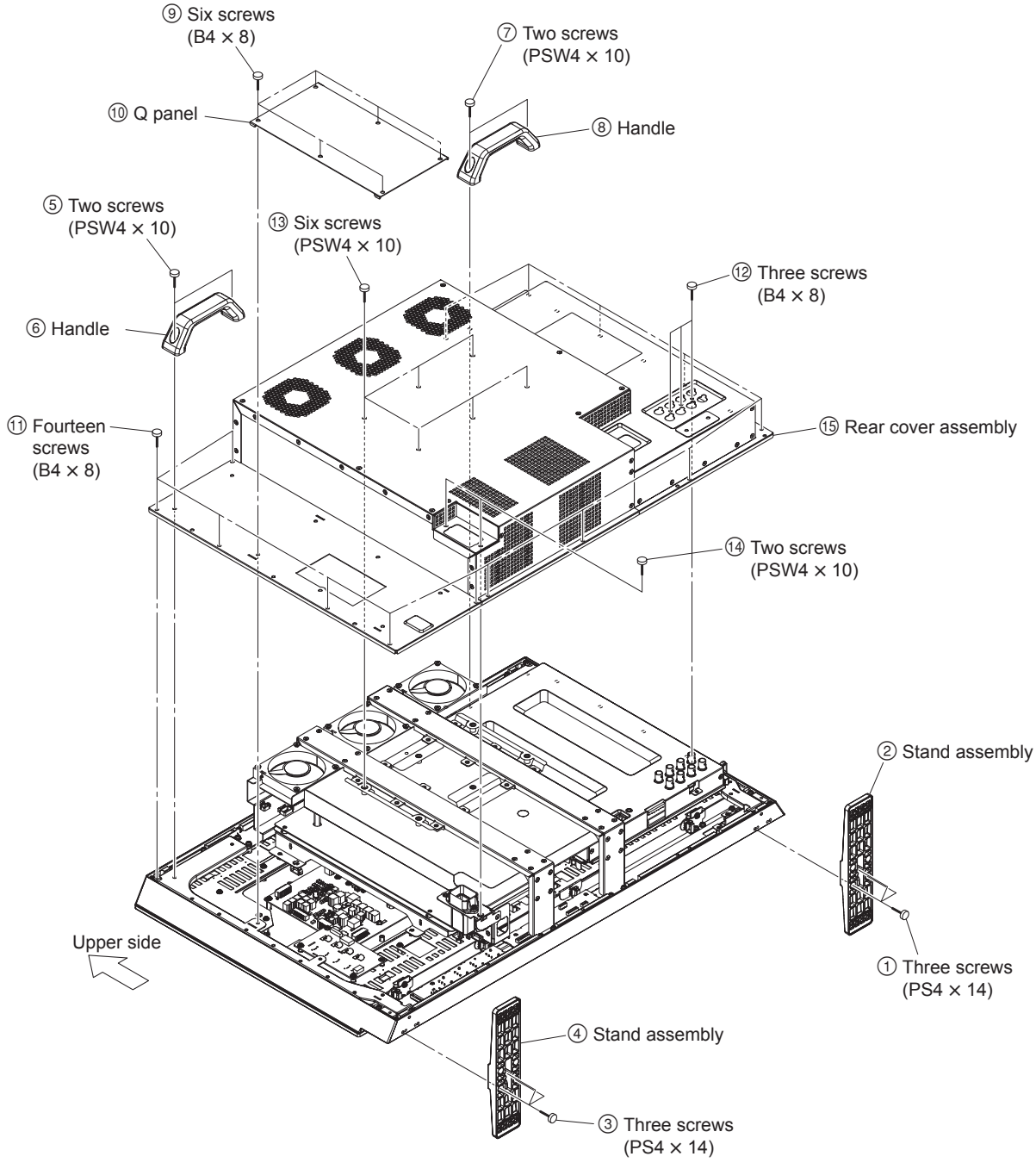
When using the torque driver with the notation of cN•m, interpret it as follows.
Example: 0.8 N•m = 80 cN•m

4-3. Removal of Rear Cabinet Parts

In this section, remove the parts below.

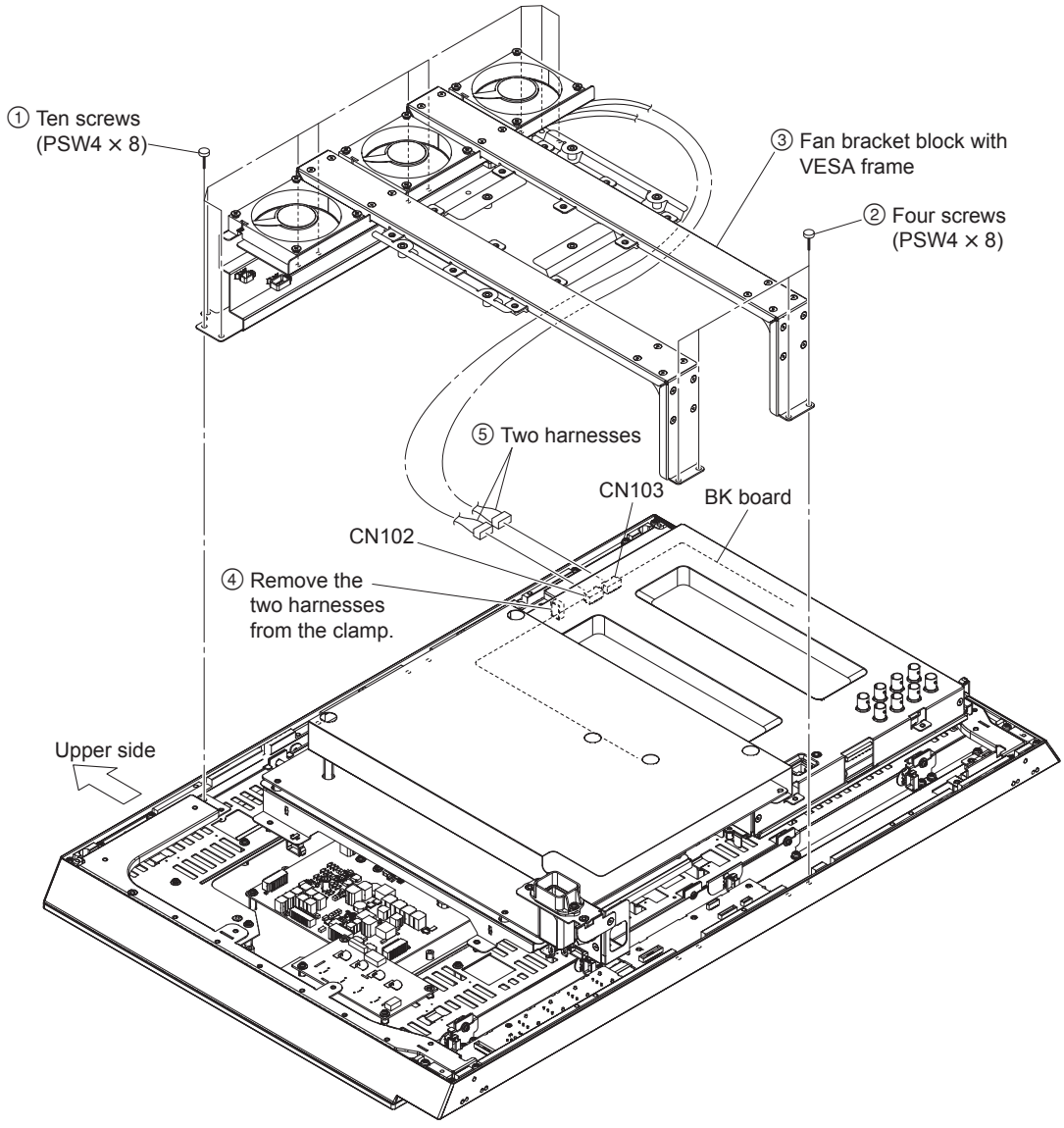
- Stand assembly
- Handle
- Q panel
- Rear cover assembly

Remove parts in the order of numbers shown in the figure.
The handle, Q panel, or rear cover assembly can be removed without removing the stand assembly.



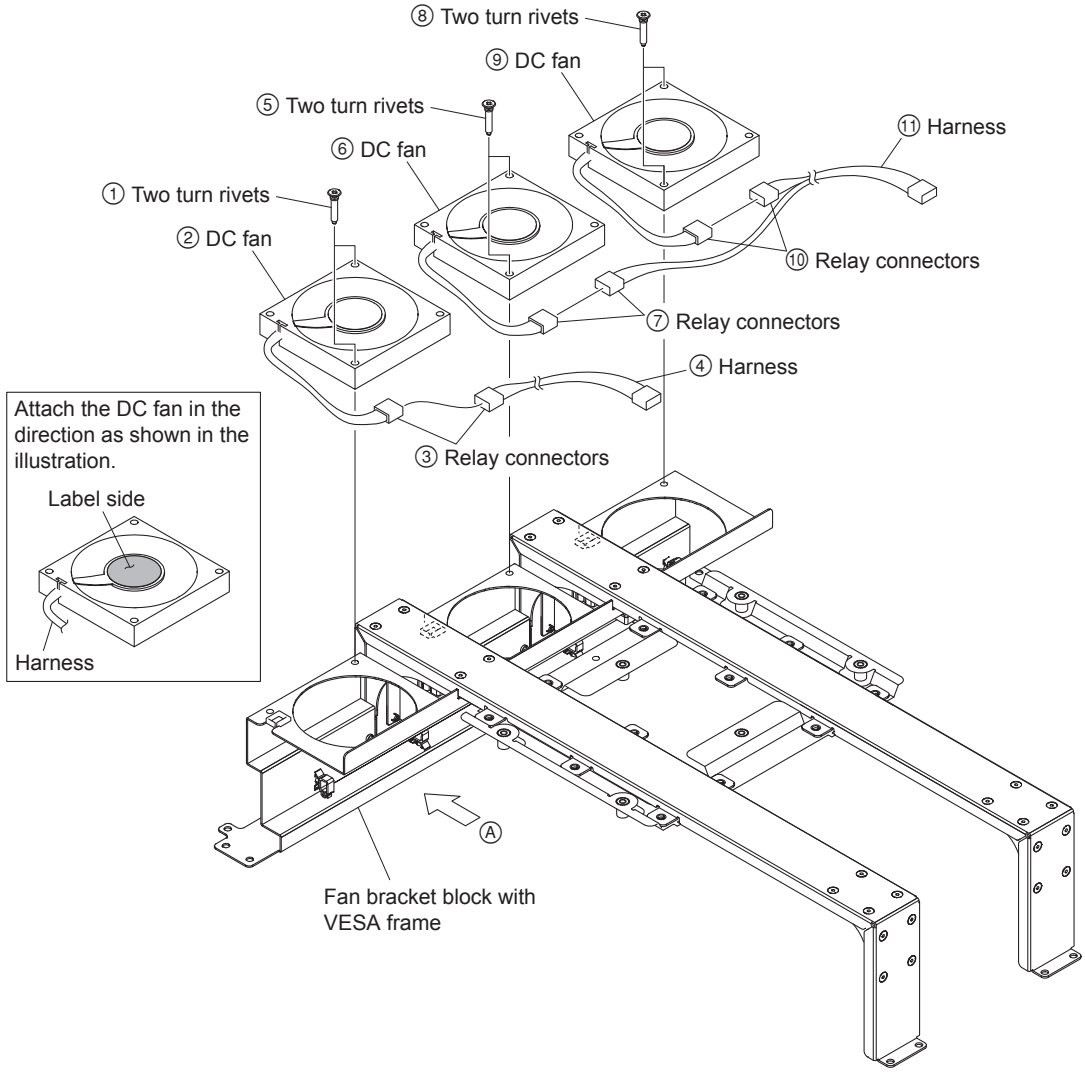
4-4. Removal of Fan Bracket Block with VESA Frame

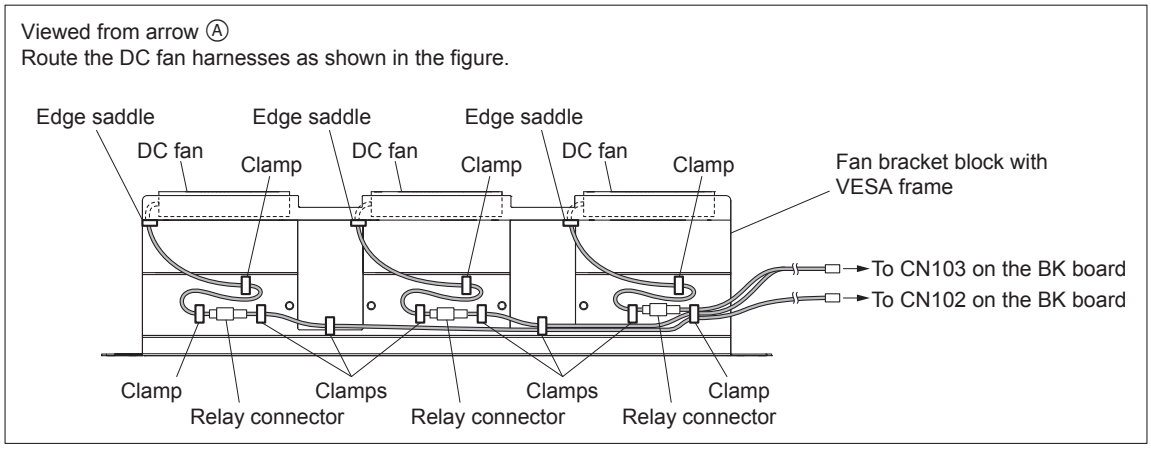
1. Remove the rear cabinet parts. (Refer to Section 4-3.)
2. Remove parts in the order of numbers shown in the figure.



4-5. DC Fan

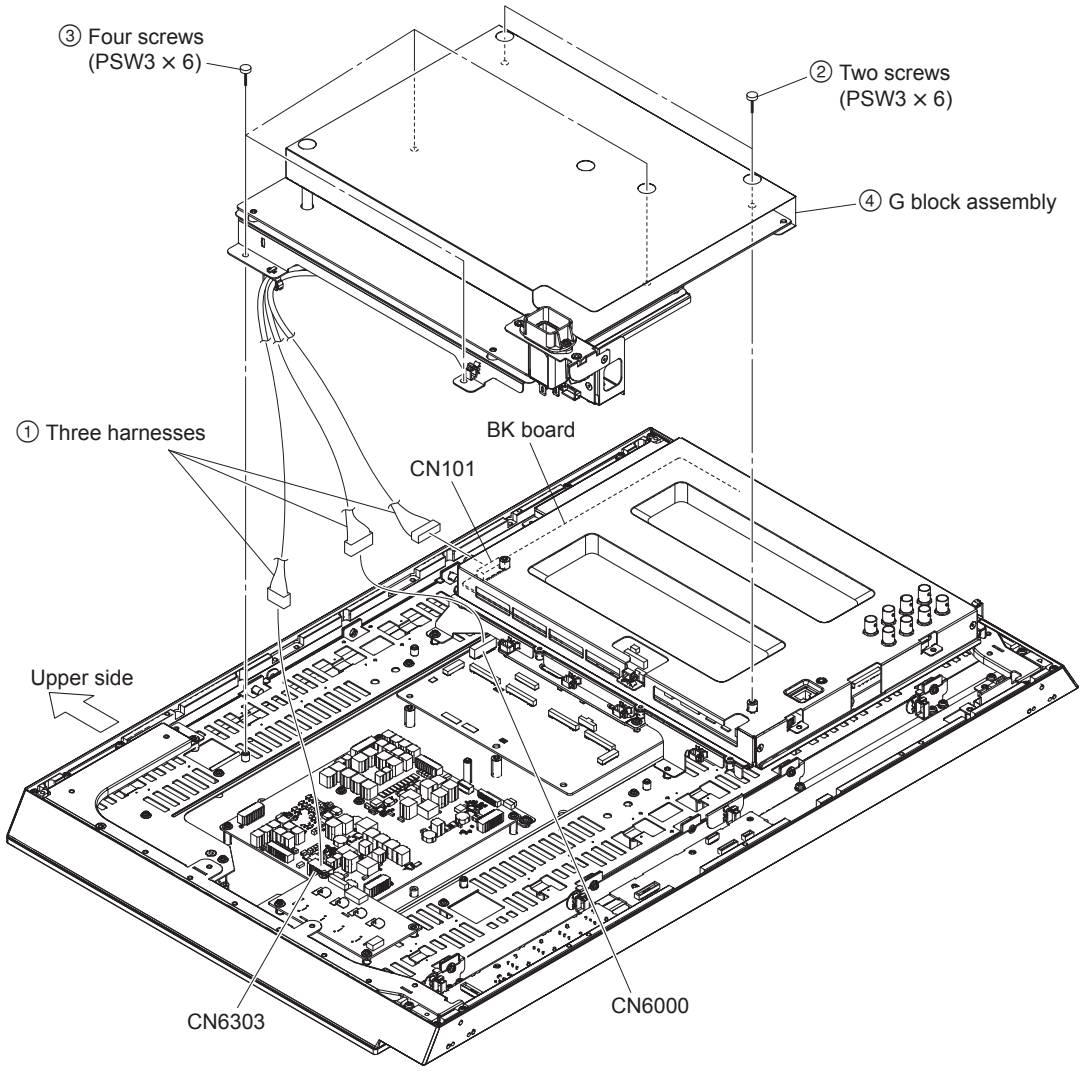
1. Remove the rear cabinet parts. (Refer to Section 4-3.)
2. Remove the fan bracket block with VESA frame. (Refer to Section 4-4.)
3. Remove parts in the order of numbers shown in the figure.





4-6. Removal of G Block Assembly

1. Remove the rear cabinet parts. (Refer to Section 4-3.)
2. Remove the fan bracket block with VESA frame. (Refer to Section 4-4.)
3. Remove parts in the order of numbers shown in the figure.

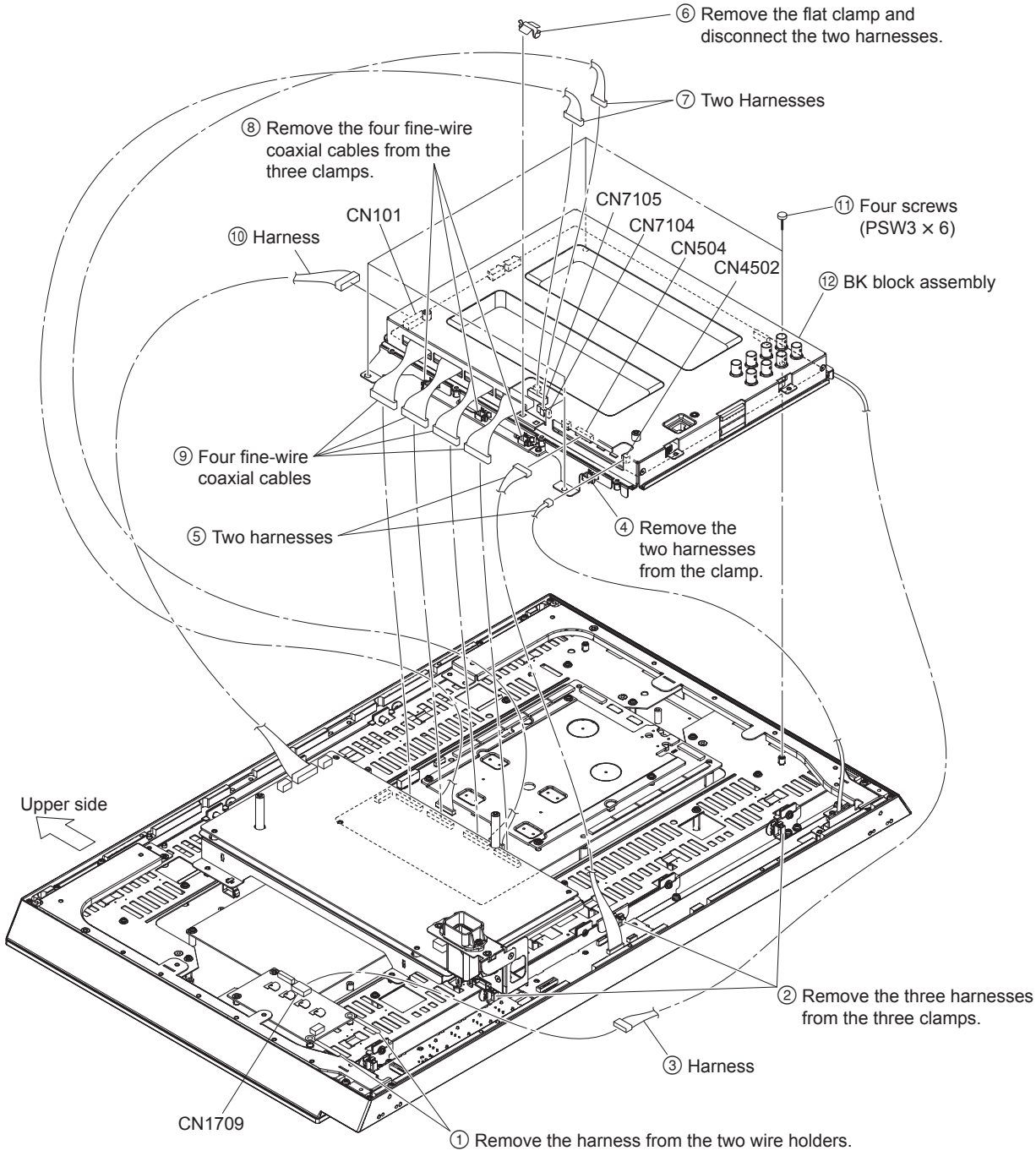


4-7. Removal of BK Block Assembly

1. Remove the rear cabinet parts. (Refer to Section 4-3.)
2. Remove the fan bracket block with VESA frame. (Refer to Section 4-4.)
3. Remove the G board. (Refer to Section 4-12.)
4. Remove parts in the order of numbers shown in the figure.

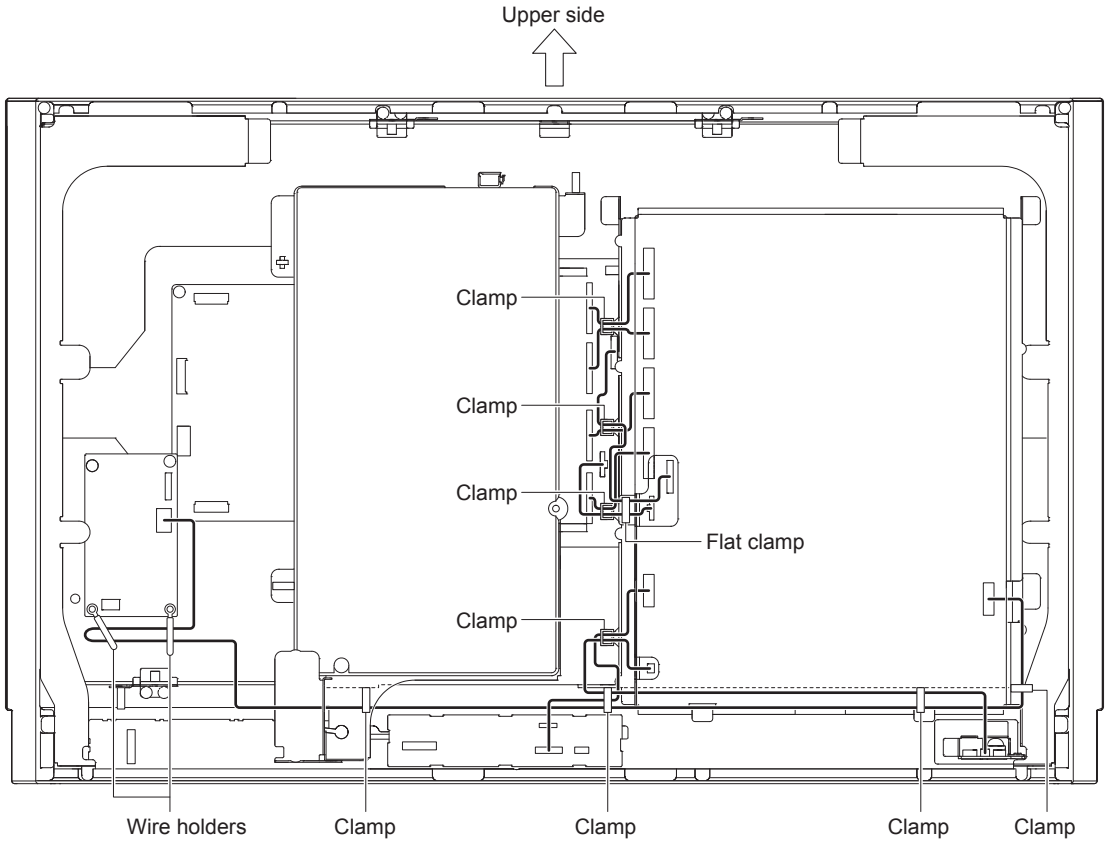
Tip

Refer to Section 1-5 for the disconnection and connection of a fine-wire coaxial cable.



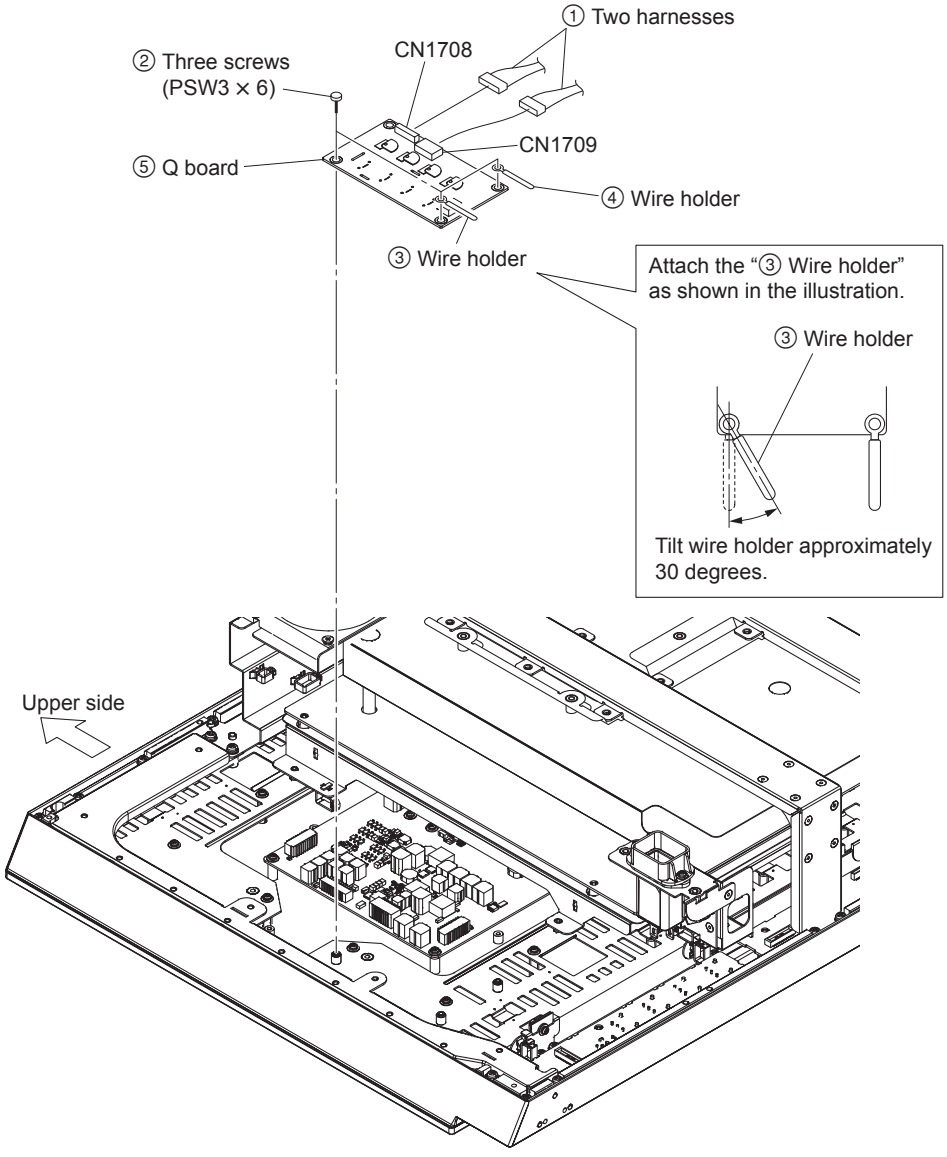
Tip

Route the harnesses and fine-wire coaxial cables as shown in the figure.



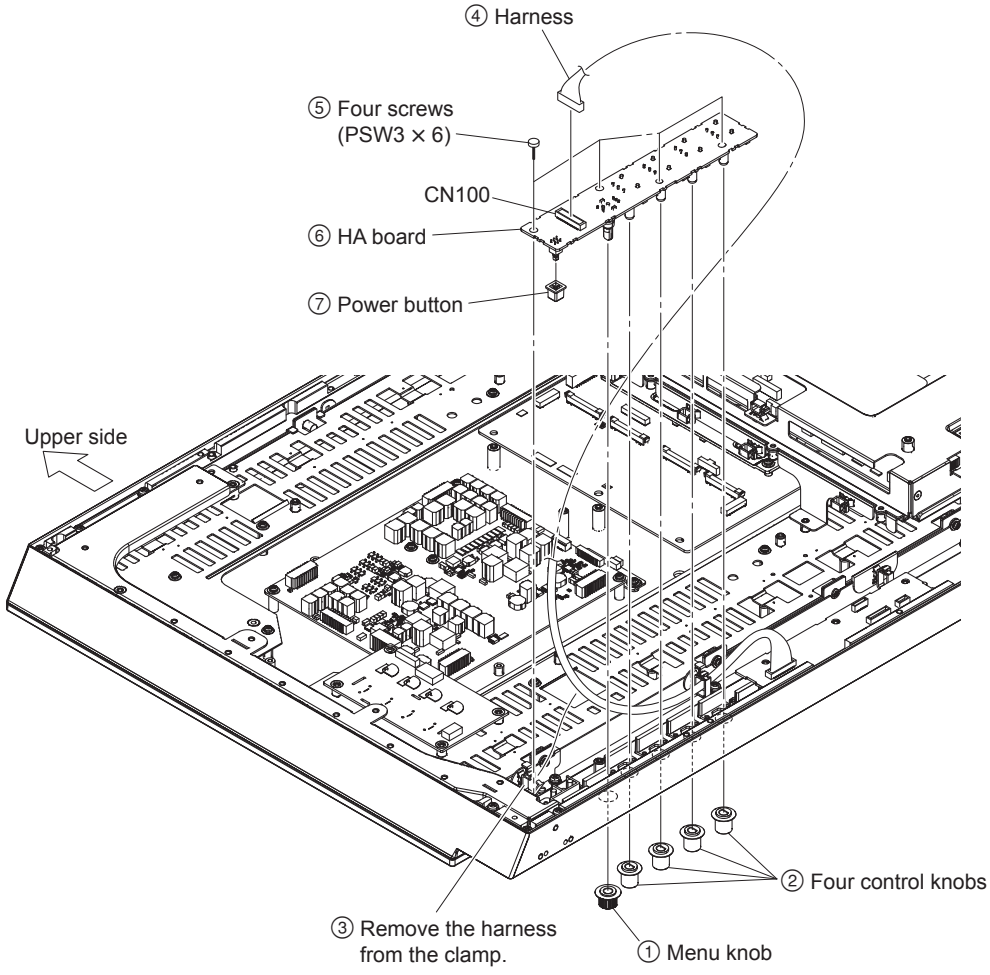
4-8. Q Board

1. Remove the rear cabinet parts. (Refer to Section 4-3.)
2. Remove parts in the order of numbers shown in the figure.



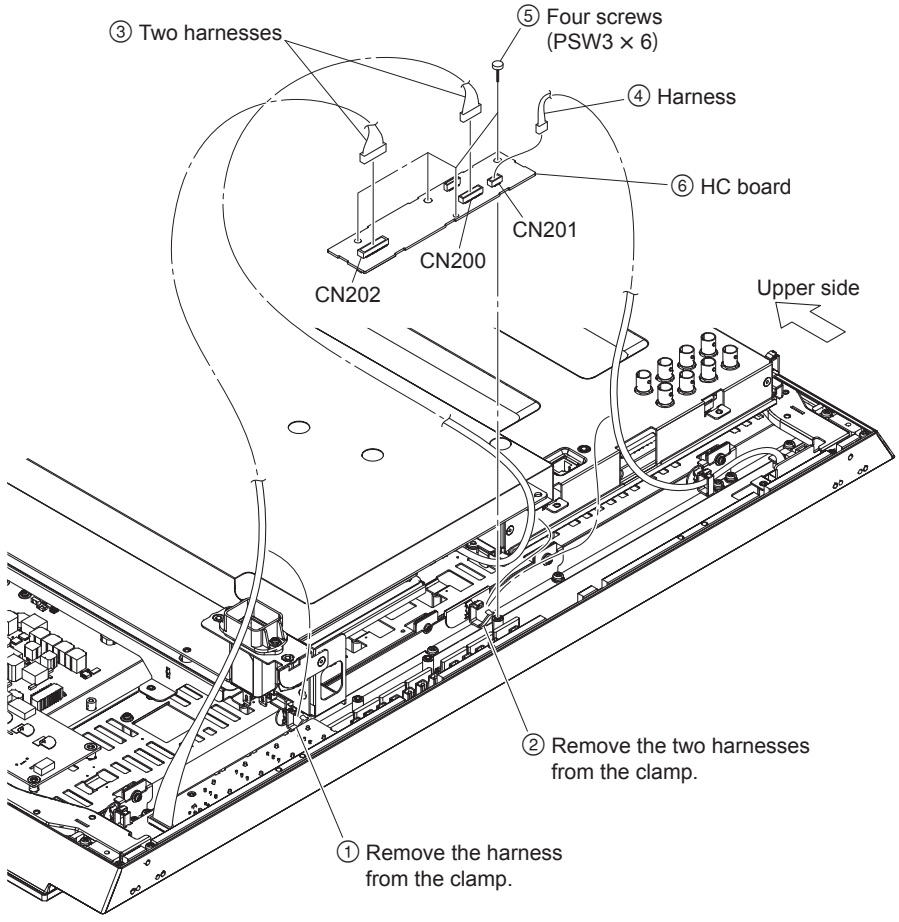
4-9. HA Board

1. Remove the rear cabinet parts. (Refer to Section 4-3.)
2. Remove the fan bracket block with VESA frame. (Refer to Section 4-4.)
3. Remove the G block assembly. (Refer to Section 4-6.)
4. Remove parts in the order of numbers shown in the figure.



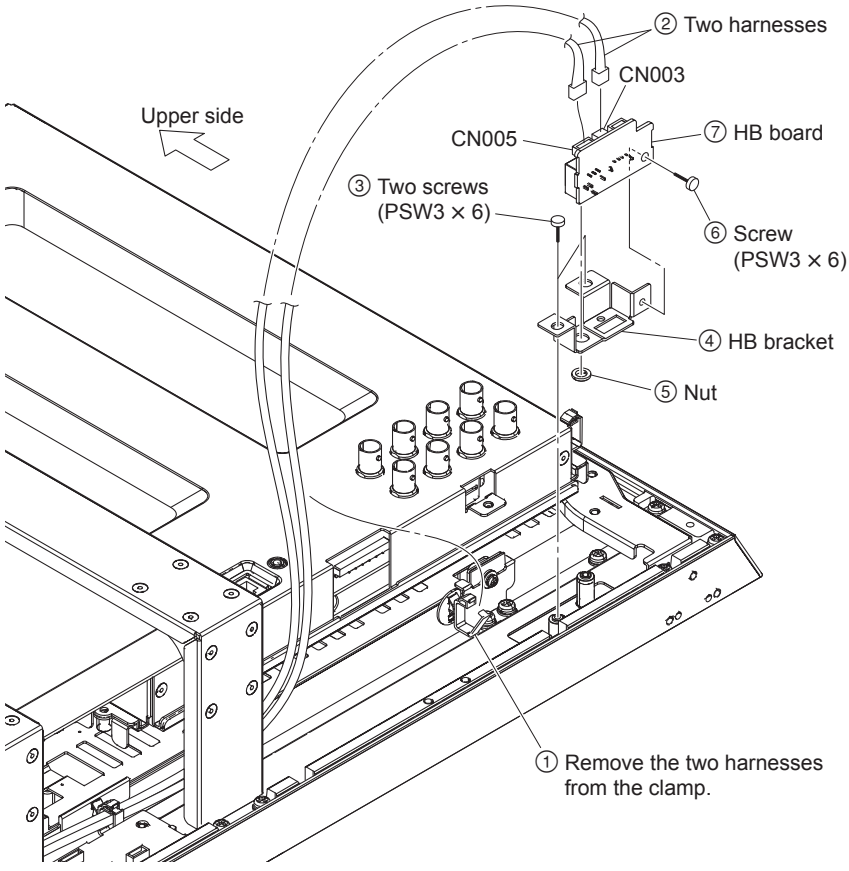
4-10. HC Board

1. Remove the rear cabinet parts. (Refer to Section 4-3.)
2. Remove the fan bracket block with VESA frame. (Refer to Section 4-4.)
3. Remove parts in the order of numbers shown in the figure.



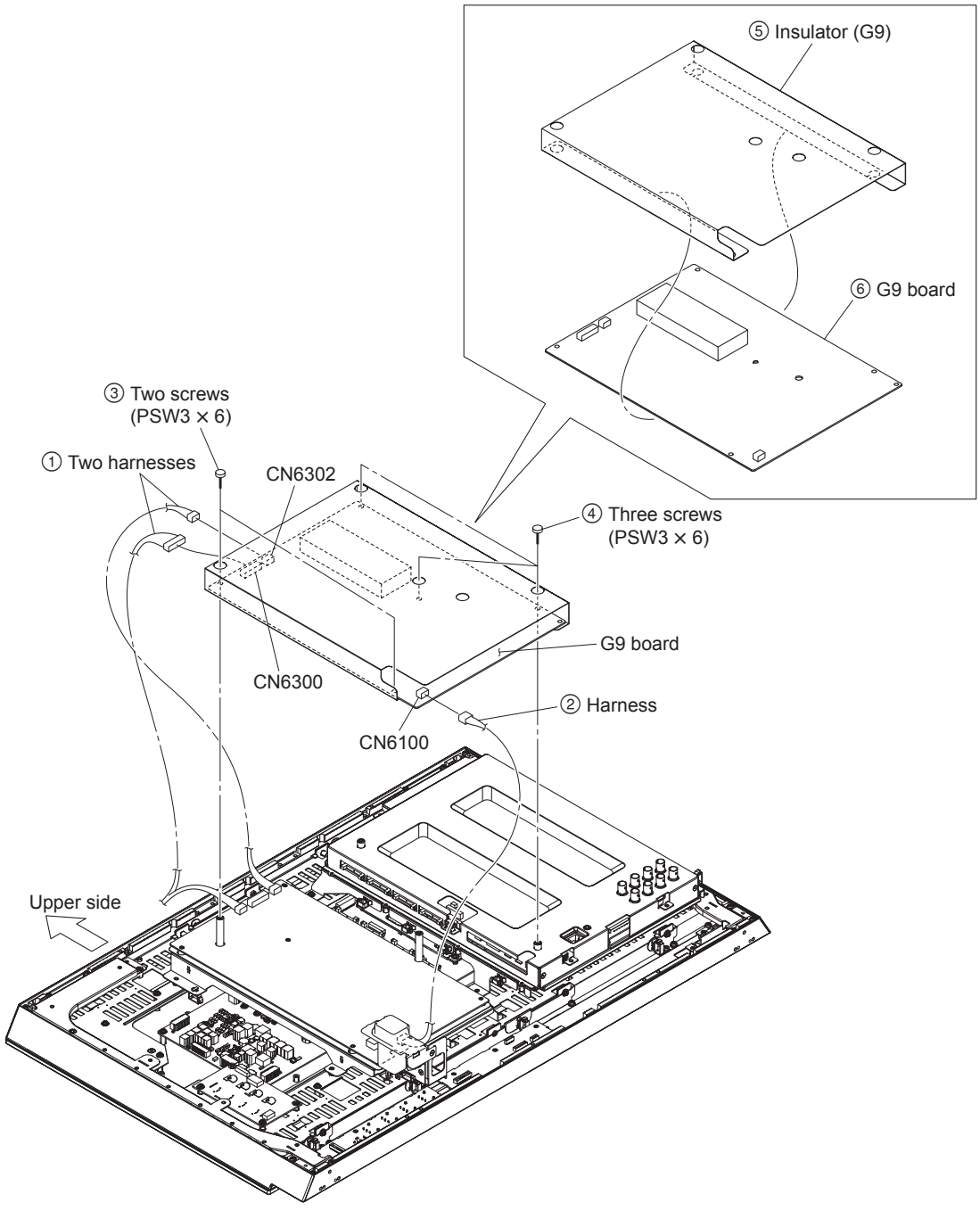
4-11. HB Board

1. Remove the rear cabinet parts. (Refer to Section 4-3.)
2. Remove parts in the order of numbers shown in the figure.



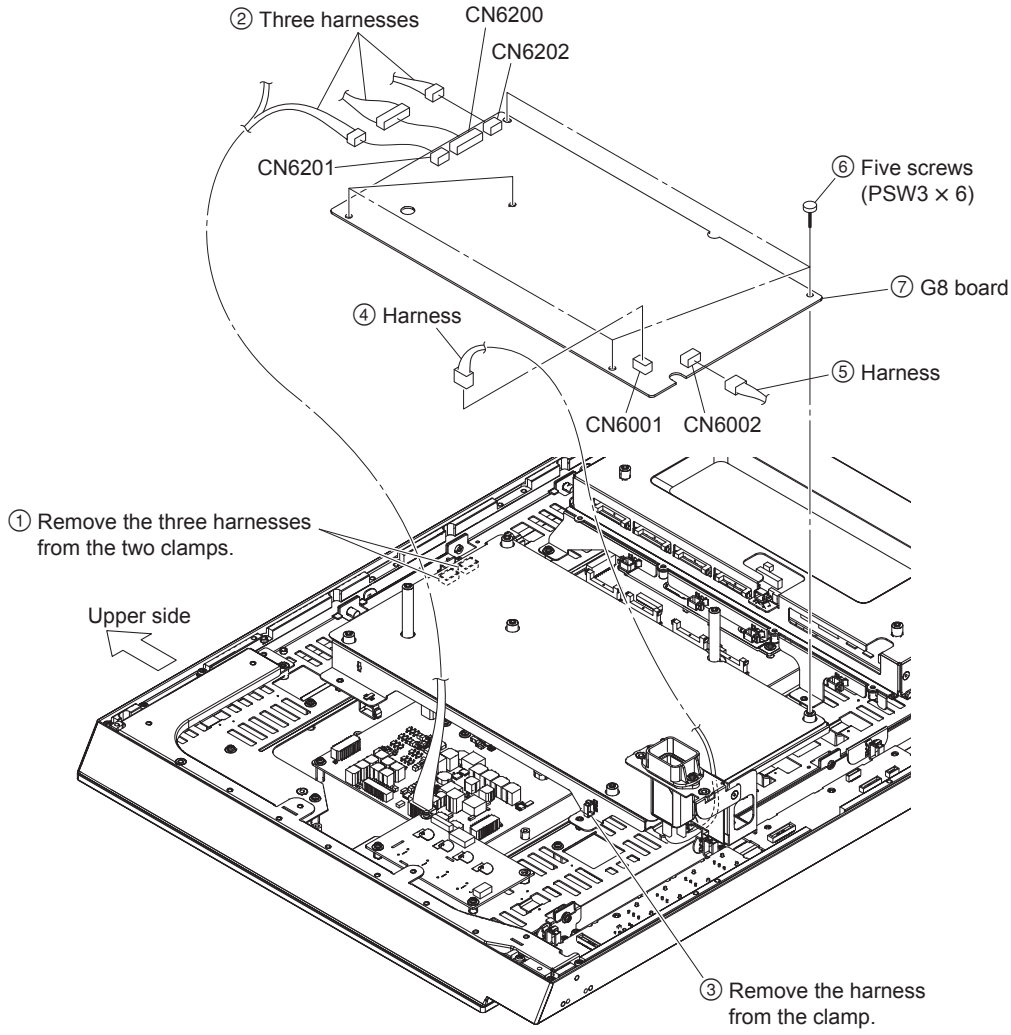
4-12. G9 Board

1. Remove the rear cabinet parts. (Refer to Section 4-3.)
2. Remove the fan bracket block with VESA frame. (Refer to Section 4-4.)
3. Remove parts in the order of numbers shown in the figure.



4-13. G8 Board

1. Remove the rear cabinet parts. (Refer to Section 4-3.)
2. Remove the fan bracket block with VESA frame. (Refer to Section 4-4.)
3. Remove the G9 board. (Refer to Section 4-12.)
4. Remove parts in the order of numbers shown in the figure.

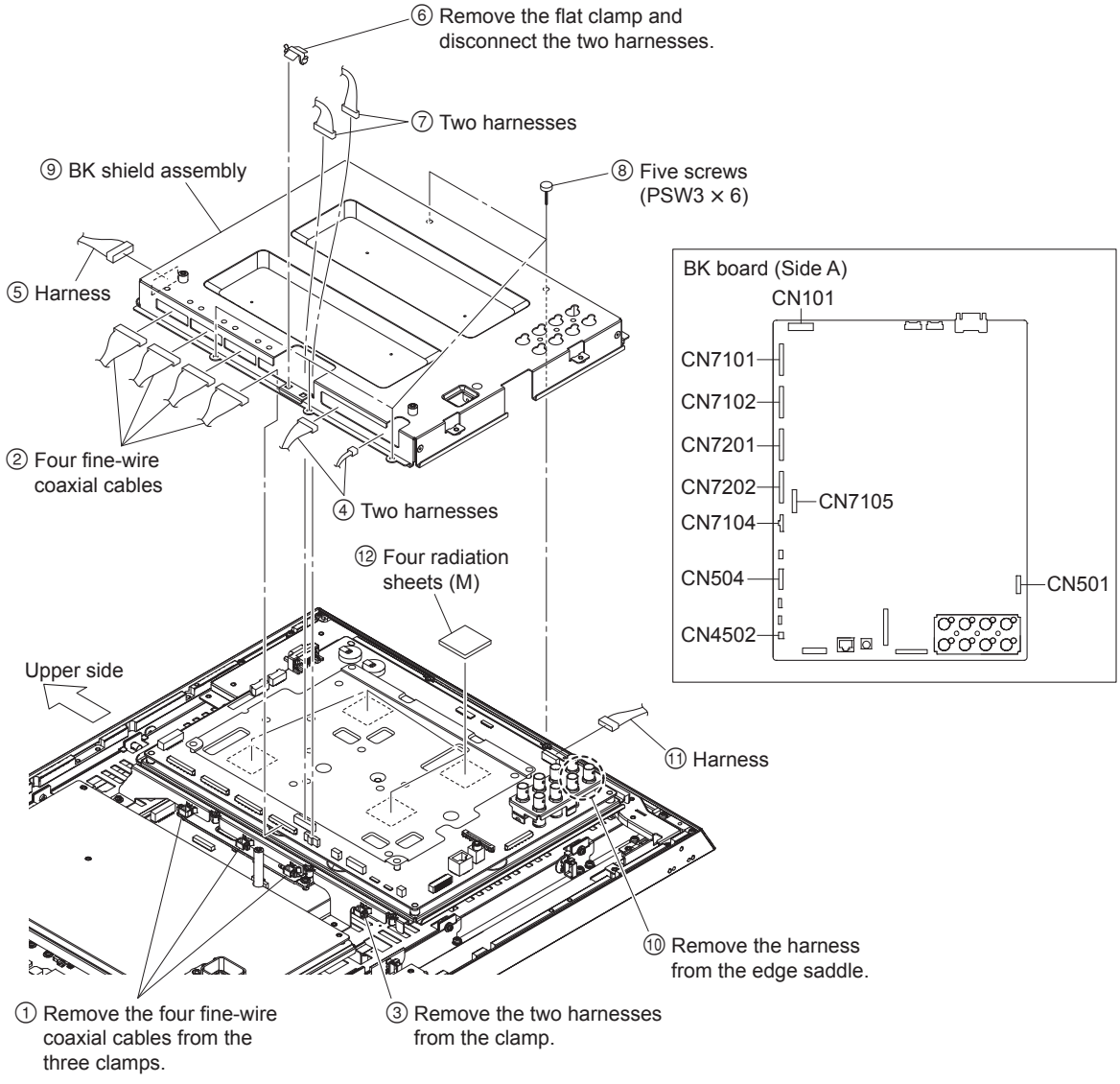


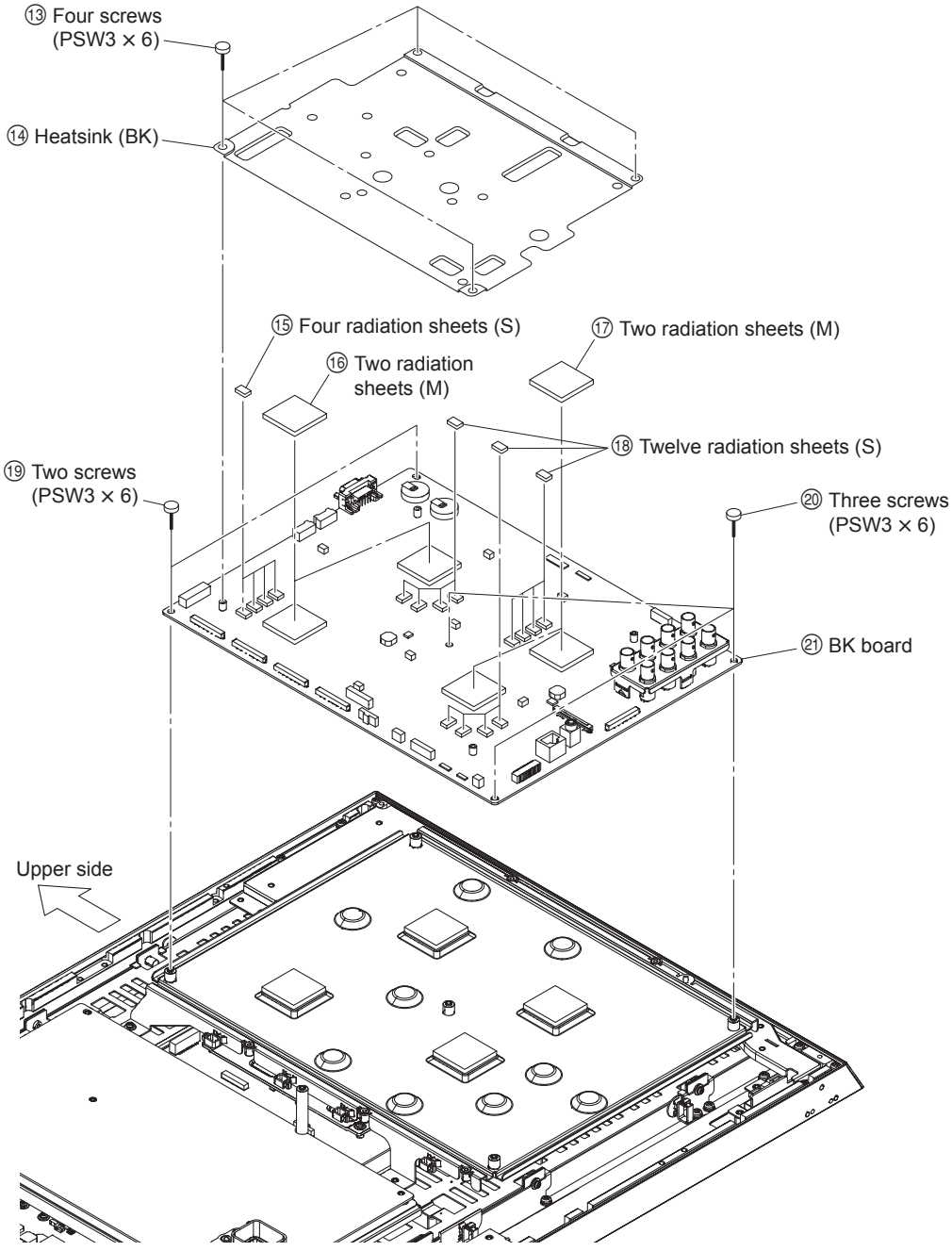
4-14. BK Board

1. Remove the rear cabinet parts. (Refer to Section 4-3.)
2. Remove the fan bracket block with VESA frame. (Refer to Section 4-4.)
3. Remove the G9 board. (Refer to Section 4-12.)
4. Remove parts in the order of numbers shown in the figure.

Tip

Refer to Section 1-5 for the disconnection and connection of a fine-wire coaxial cable.



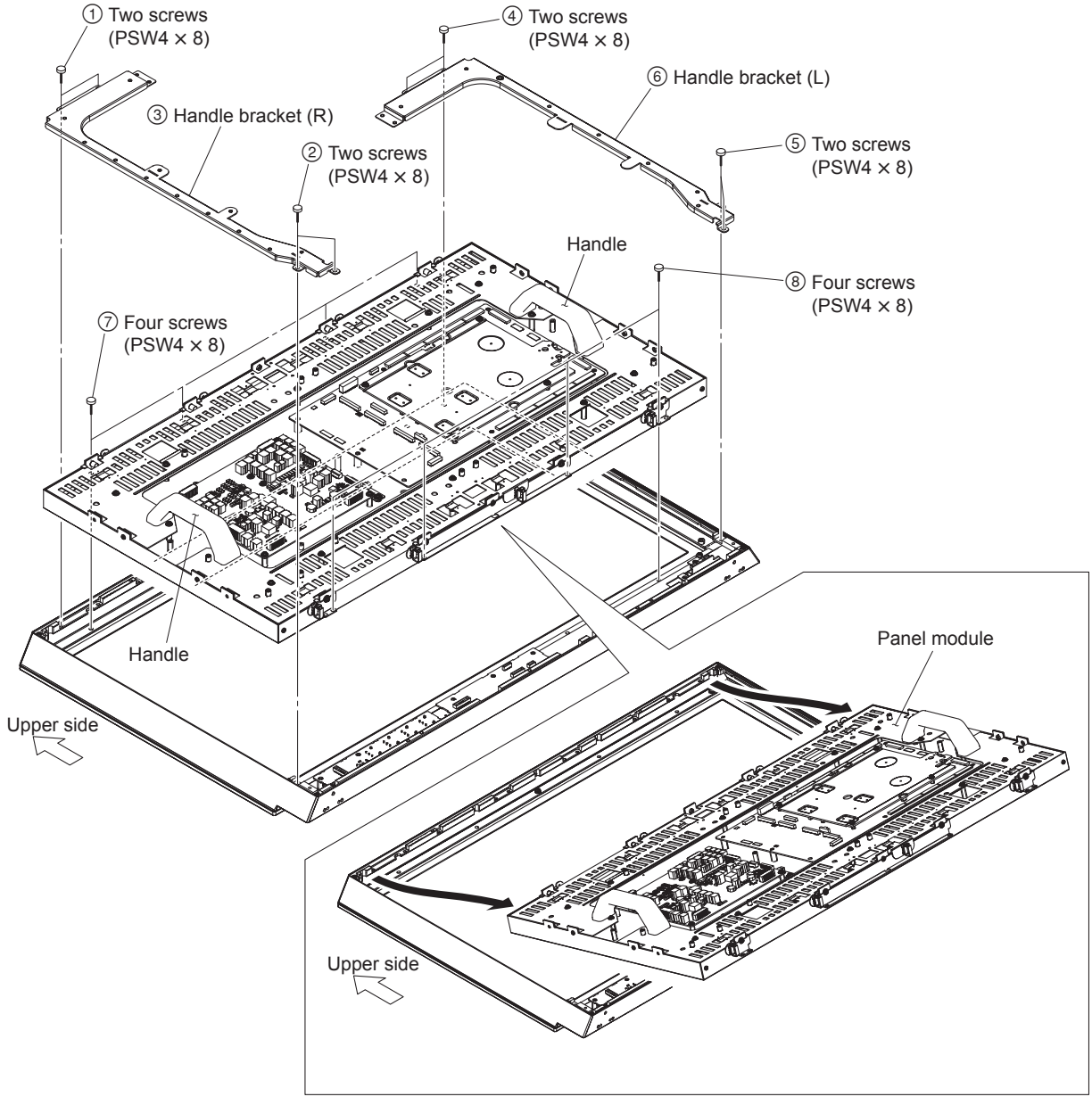

⑬ Four screws
(PSW3 × 6)
⑭ Heatsink (BK)
⑮ Four radiation sheets (S)
⑯ Two radiation
sheets (M)
⑰ Two radiation sheets (M)
⑱ Twelve radiation sheets (S)
⑲ Two screws
(PSW3 × 6)
⑳ Three screws
(PSW3 × 6)
㉑ BK board
Upper side

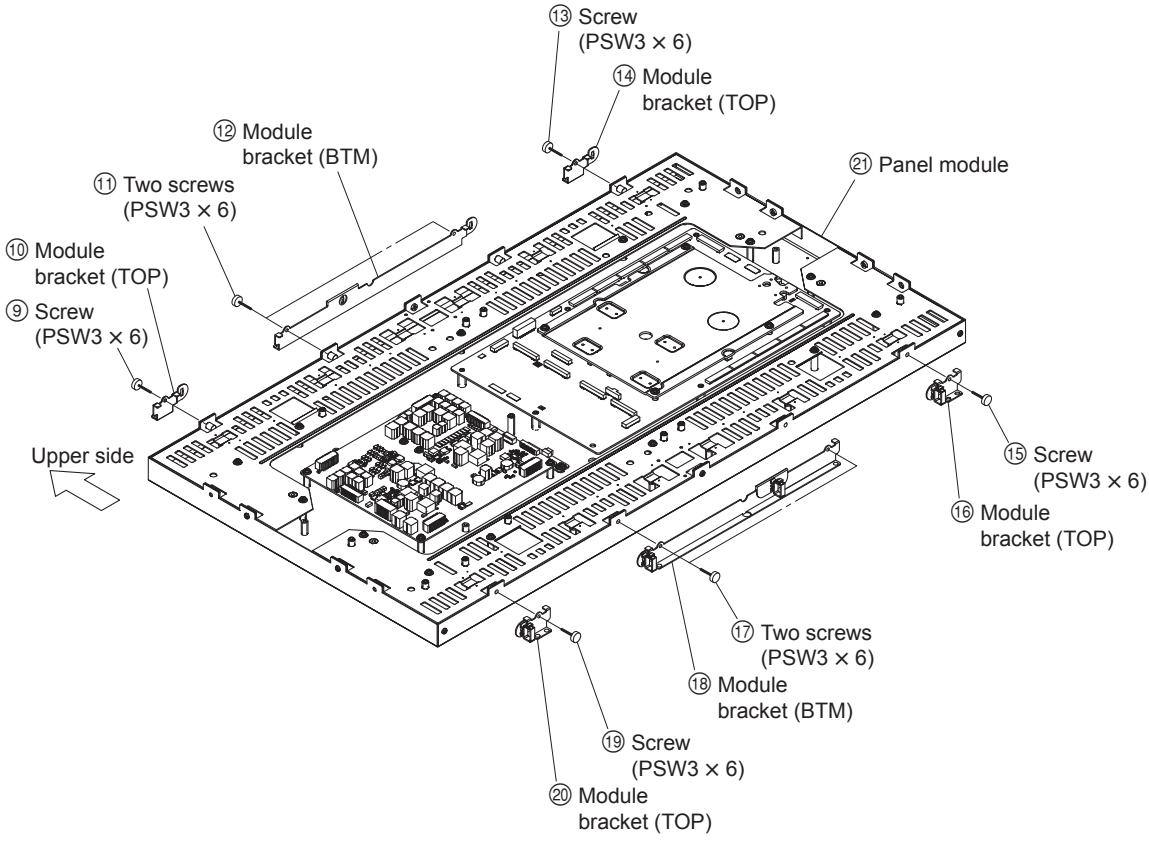
4-15. Panel Module

1. Remove the rear cabinet parts. (Refer to Section 4-3.)
2. Remove the fan bracket block with VESA frame. (Refer to Section 4-4.)
3. Remove the G block assembly. (Refer to Section 4-6.)
4. Remove the BK block assembly. (Refer to Section 4-7.)
5. Remove the Q board. (Refer to Section 4-8.)
6. Remove parts in the order of numbers shown in the figure.
7. Remove the panel module. (Refer to Section 4-15.)

Tip

Installing the two handles, removed in step 1, in the position shown in the figure is convenient when removing the panel module. However, take care not to damage the flexible flat cable by the handles when installing or removing the handles. This may cause a break in the flexible flat cable.



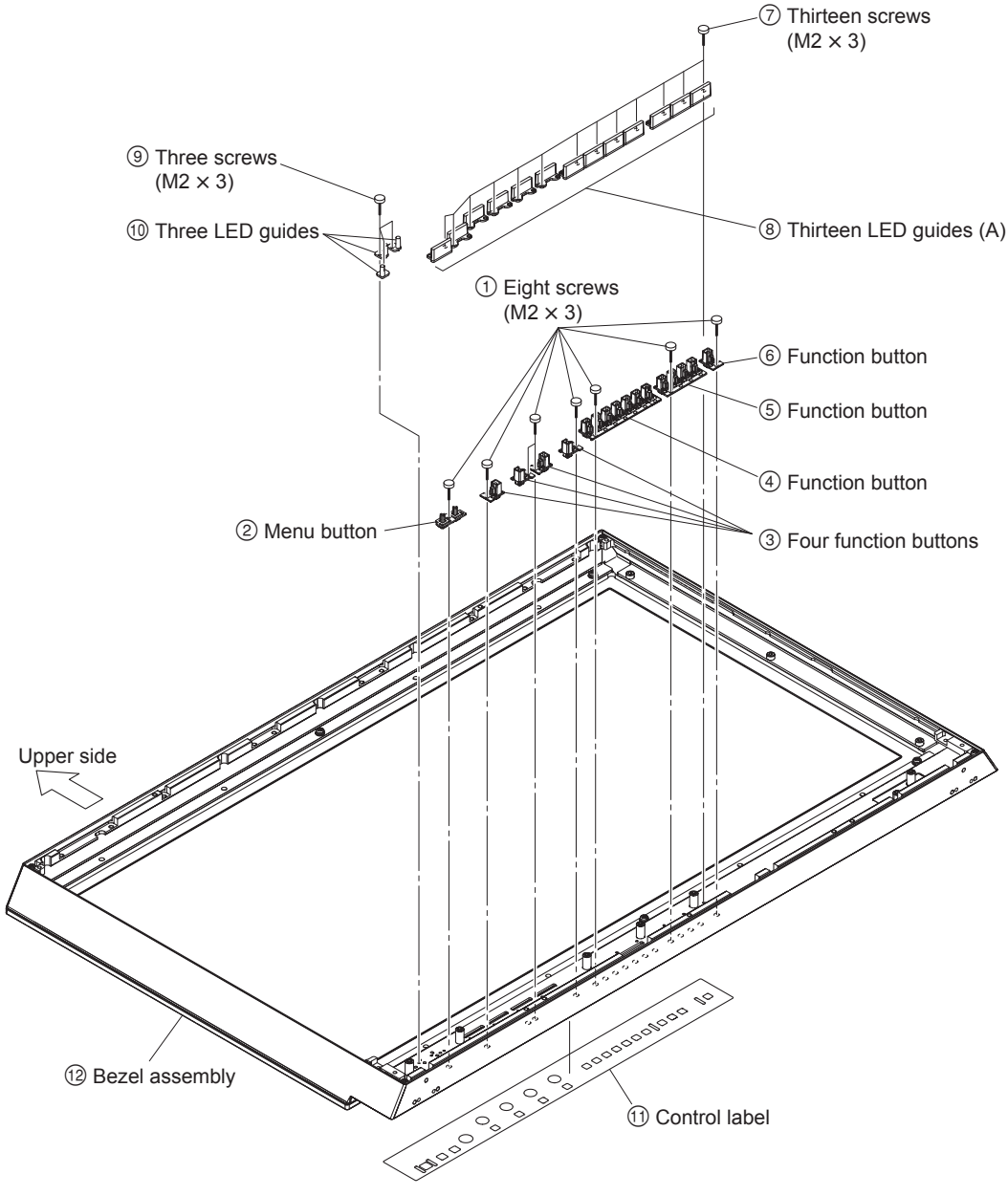


8. Install the parts in the reverse procedure of removal.
9. Perform “Operation after Replacement of a Panel Module”. (Refer to Section 4-17-1.)

4-16. Bezel Assembly

The following parts cannot be reused. Prepare the new parts.
• Control label (⚠4-559-689-01): 1pc

1. Remove the rear cabinet parts. (Refer to Section 4-3.)
2. Remove the fan bracket block with VESA frame. (Refer to Section 4-4.)
3. Remove the G block assembly. (Refer to Section 4-6.)
4. Remove the BK block assembly. (Refer to Section 4-7.)
5. Remove the Q board. (Refer to Section 4-8.)
6. Remove the HA board. (Refer to Section 4-9.)
7. Remove the HC board. (Refer to Section 4-10.)
8. Remove the HB board. (Refer to Section 4-11.)
9. Remove the panel module. (Refer to Section 4-15.)
10. Remove parts in the order of numbers shown in the figure.



4-17. Operation Regarding Replacement of Parts

4-17-1. Operation after Replacement of a Panel Module

After the panel module is replaced, transfer the data stored in the panel module to the memory on the BK board.

Preparation

- Personal computer (PC)
  OS: Windows 7, Windows 8 or Windows 8.1
- LAN cable (cross cable)
- Terminal software: Tera Term, etc.
- Login name and password
  For obtaining the login name and password, contact your local Sony Sales Office/Service Center.

Procedure

1. Replace the panel module. (Refer to Section 4-15.)
2. Connect the monitor and PC using a LAN cable (cross cable). (Refer to Section 3-2-2.)
3. Set the PC. (Refer to Section 3-2-3.)
4. Turn on the power of the monitor and log in to the monitor using the PC. (Refer to Section3-2-4.)
5. Enter “copy_panel_data” after “>” and press the Enter key.
6. Enter “calc_wb_cor_temp_coef 1” and press the Enter key.
   The data stored in the panel module is transferred to the memory on the BK board.
   When the transfer is completed, “>” is displayed.
7. Terminal software is terminated.
   When terminating Tera Term, press the Alt and Q keys simultaneously.

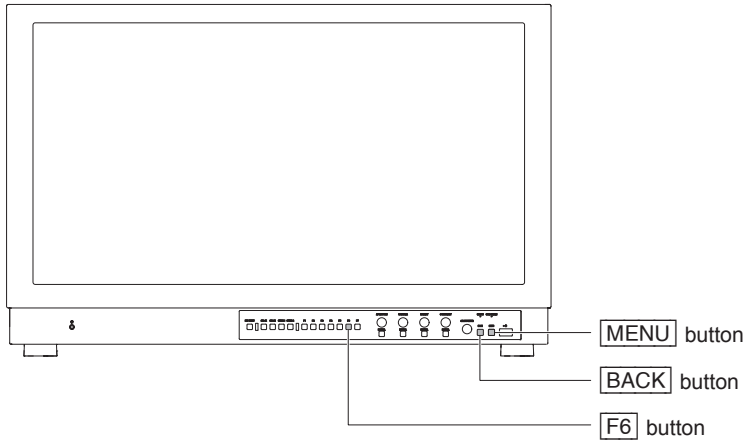
Section 5
Software Update (Issued in Next Revision)

Section 6
Maintenance Menu

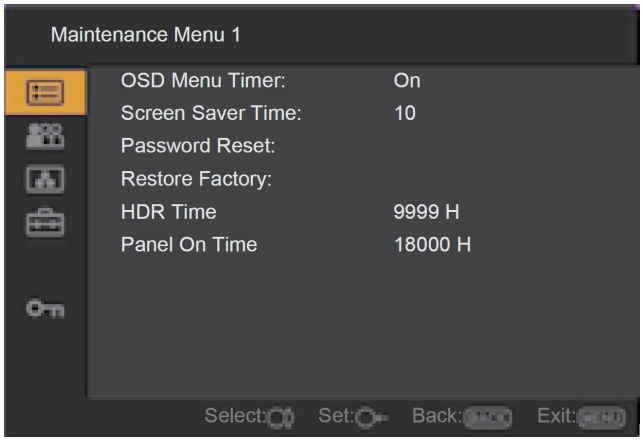
The maintenance menu is used when resetting the password of a monitor or returning a monitor to the factory setting.

6-1. Entering the Maintenance Menu

Press the BACK and F6 buttons simultaneously with the menu screen displayed.



The Maintenance menu is displayed.



To exit the Maintenance menu

Press the MENU button. The Maintenance menu display disappears.

6-2. Maintenance Menu List

Item	Function
OSD Menu Timer	Used for design. Do not change the setting.
Screen Saver Time	Used for design. Do not change the setting.
Password Reset	Resets the password of a monitor.
Restore Factory	Returns all setting values to the factory-setting values.
HDR Time	Displays the total time for which an HDR (High Dynamic Range) function is used.
Panel On Time	Displays the total time for which a panel is energized.

6-3. Menu Operation

To move the cursor to the right

Press the menu selection control.

To move the cursor up and down

Turn the menu selection control clockwise.
When the control is set to the lower position in the lowermost line, the cursor is moved to the uppermost position.

To determine an item

Press the menu selection control.

To move the cursor to the left

Press the BACK button.

6-4. Initializing the Password

Reset the password of a monitor.

1. Select [Password Reset] in the Maintenance menu and determine it.
   The screen below appears.

2. Select [Confirm] and determine it.

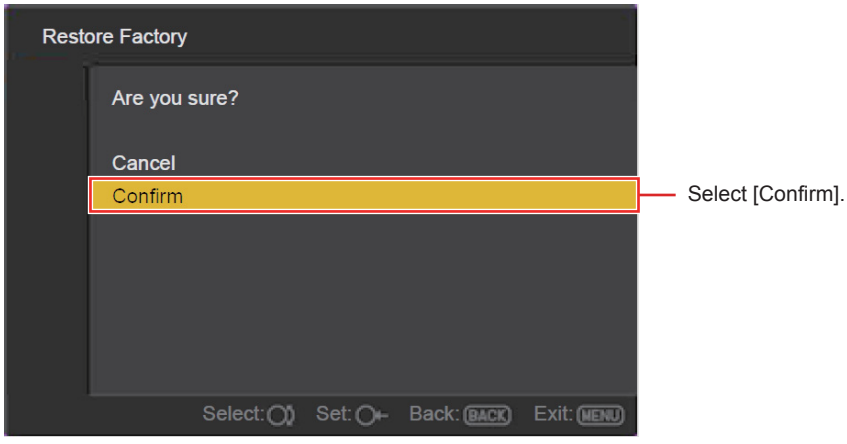
To set a password

Refer to the Operating Instructions.

6-5. Returning to Factory-Setting Values

Return all setting values set in a monitor to the factory-setting values.

1. Select [Restore Factory] in the Maintenance menu.
   The screen below appears.



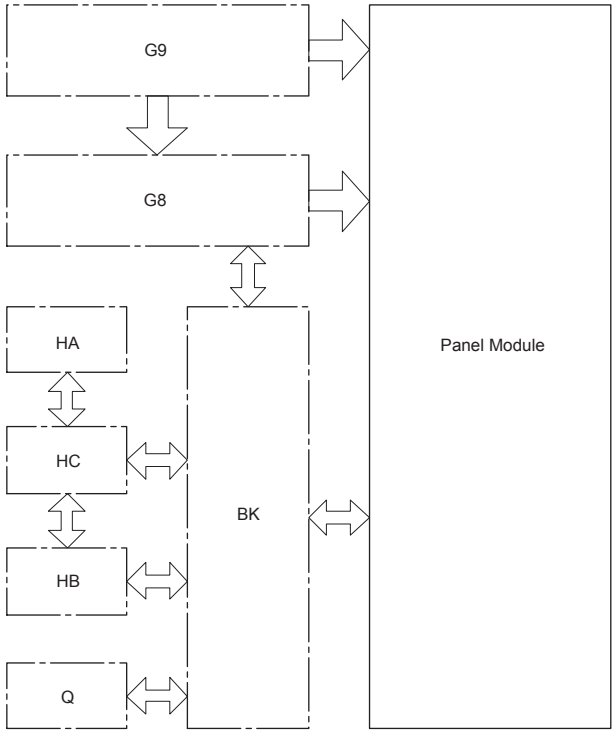
2. Select [Confirm] and determine it.

Section 7
Circuit Description

7-1. Board Configuration

The whole block and board configuration of this unit are as follows:

- G8 board: Power board (12 VAC → 12 VDC output)
- G9 board: Power board (28 VAC → 28 VDC output)
- BK board: Signal processing board (SDI input processing, each signal processing, and CPU)
- Q board: Input extension board (Dummy board for an extension board in future)
- HA board: User interface board (Switch and rotary encoder)
- HB board: User interface board (Headphone terminal)
- HC board: User interface board (Switch and CPLD)



7-2. G8 Board

The G8 board generates the power used in this unit. When this board receives AC power, this board improves a power factor using a regulator and generates 12 VDC using an insulating converter. The generated 12 VDC is output to the panel module and the BK board for signal processing.

7-3. G9 Board

The G9 board generates the power used in this unit. When this board receives AC power, this board improves a power factor using a regulator and generates 28 VDC using an insulating converter. The generated 28 VDC is output to the panel module.

7-4. BK Board

The BK board processes a video signal. SDI inputs (J701 to J704) that are provided as a standard feature and SDI inputs (J711 to J714) used for extension in future are selected using ICs (IC701 to IC704).
The main device is as described below.

- FPGA (IC2001): Processes the signal output from IC701 through IC704, for example, converts a signal format.
- IC4001 and IC5001: Perform system control or scaling.
- FPGA (C7001): Generates the signal output to the panel module.

IC2001 performs Serdes (Serial-to-Parallel conversion) of an SDI signal, decoding, signal discrimination, and signal rearrangement for a later-stage device.
IC4001 has a role of CPU. It controls a control panel, temperature, and power supply. IC4001 can receive a 2K signal (maximum). Therefore, a 4K signal is sent from IC2001 in two phases and input to IC4001 and IC5001. IC4001 and IC5001 perform frame frequency switching, scaling processing, or OSD display.
The signals sent from IC4001 and IC5001, and the 4K signal directly sent from IC2001 are input to IC7001. The selection of a path is switched by the setting of a monitor. IC7001 has mainly an image adjustment function. It performs various adjustments (contrast, brightness, chroma, aperture, or white balance) and gamma switching. The image-adjusted signal is converted into the timing in which the panel module can be driven, then output to the panel module in the four phases of an LVDS signal.

7-5. HA Board, HB Board, and HC Board

These boards process the signal of a user interface part (controller).
The HA board, HB board, and HC board consist of an input selector, function selector, image adjustment rotary encoder, menu control, headphone terminal, and power switch. The user interface part reads an input signal using CPLD (IC204) and exchanges data with CPU (IC4001) on the BK board.

Section 8
Spare Parts

8-1. Notes on Repair Parts

1. Safety Related Components Warning

WARNING

Components marked ⚠ are critical to safe operation. Therefore, specified parts should be used in the case of replacement.

2. Standardization of Parts

Some repair parts supplied by Sony differ from those used for the unit. These are because of parts commonality and improvement.

3. Stock of Parts

Parts marked with “o” at SP (Supply Code) column of the spare parts list may not be stocked. Therefore, the delivery date will be delayed.

4. Harness

Harnesses with no part number are not registered as spare parts.

8-1. 補修部品注意事項

1. 安全重要部品

⚠警告

⚠印のついた部品は安全性を維持するために重要な部品です。したがって，交換する時は必ず指定の部品を使ってください。

2. 部品の共通化

ソニーから供給する補修用部品は，セットに使われているものと異なることがあります。
これは部品の共通化，改良等によるものです。

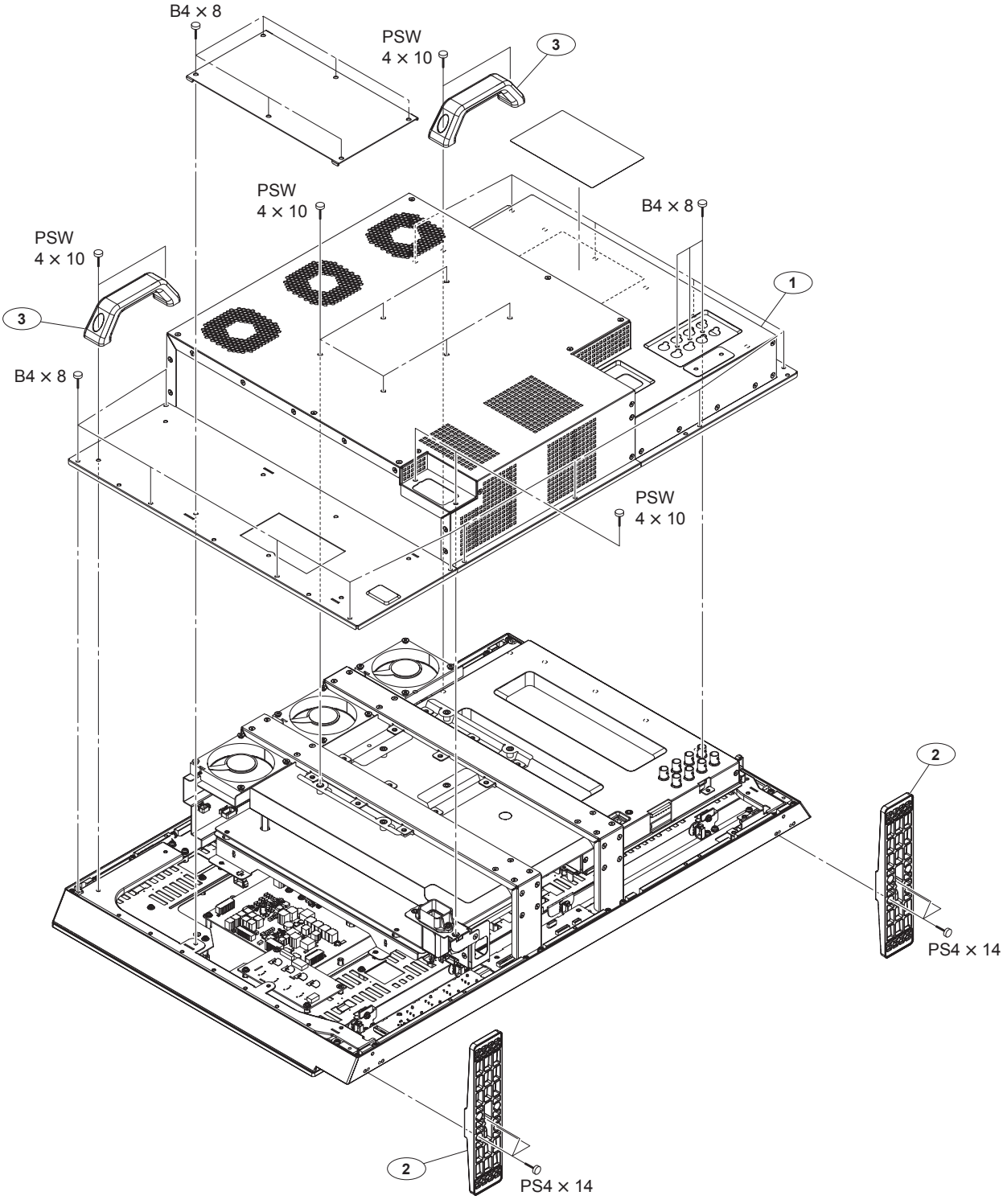
3. 部品の在庫

部品表の SP（Supply code）欄に “o” で示される部品は在庫していないことがあり，納期が長くなることがあります。

4. ハーネス

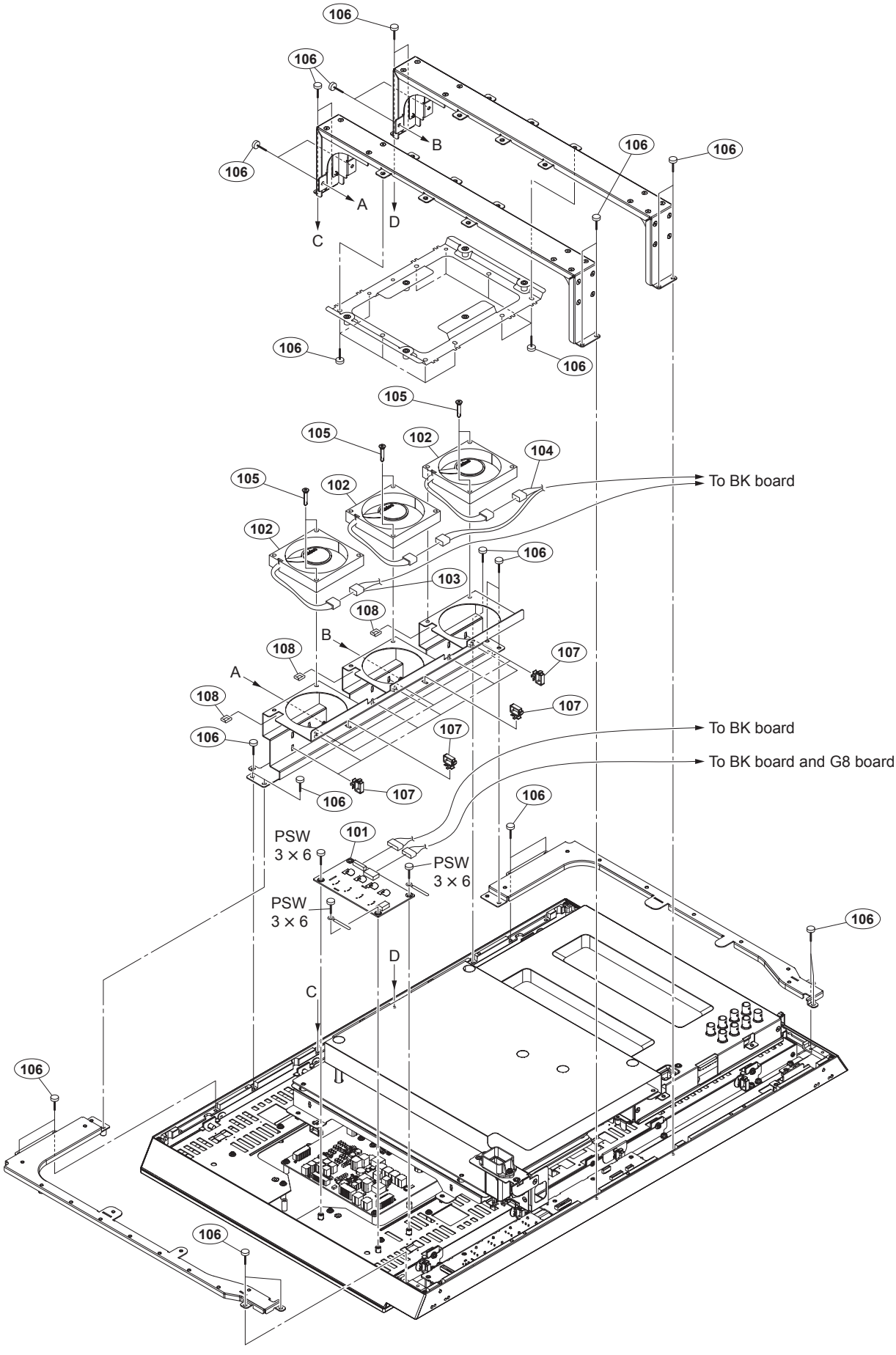
部品番号の記載されていないハーネスは，サービス部品として登録されていません。

8-2. Exploded Views



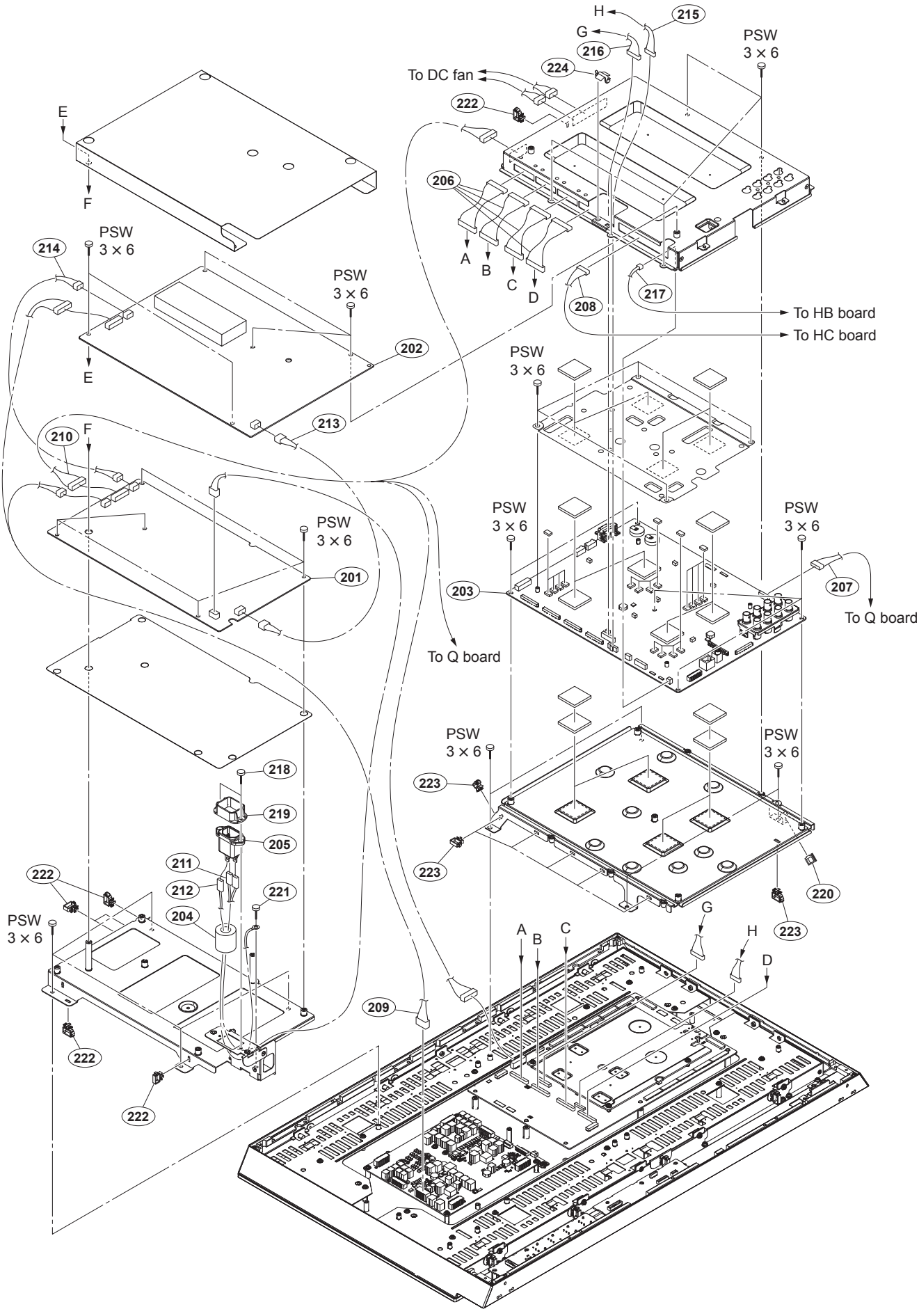
No.	Part No.	SP	Description
1	X-2591-109-1	s	REAR COVER ASSY
2	X-2591-110-1	s	STAND ASSY
3	⚠ 4-264-182-01	s	HANDLE
	7-682-561-09	s	SCREW +B 4X8
	7-682-664-01	s	SCREW +PS 4X14
	7-682-962-09	s	SCREW +PSW 4X10

DC Fan and Frame Block



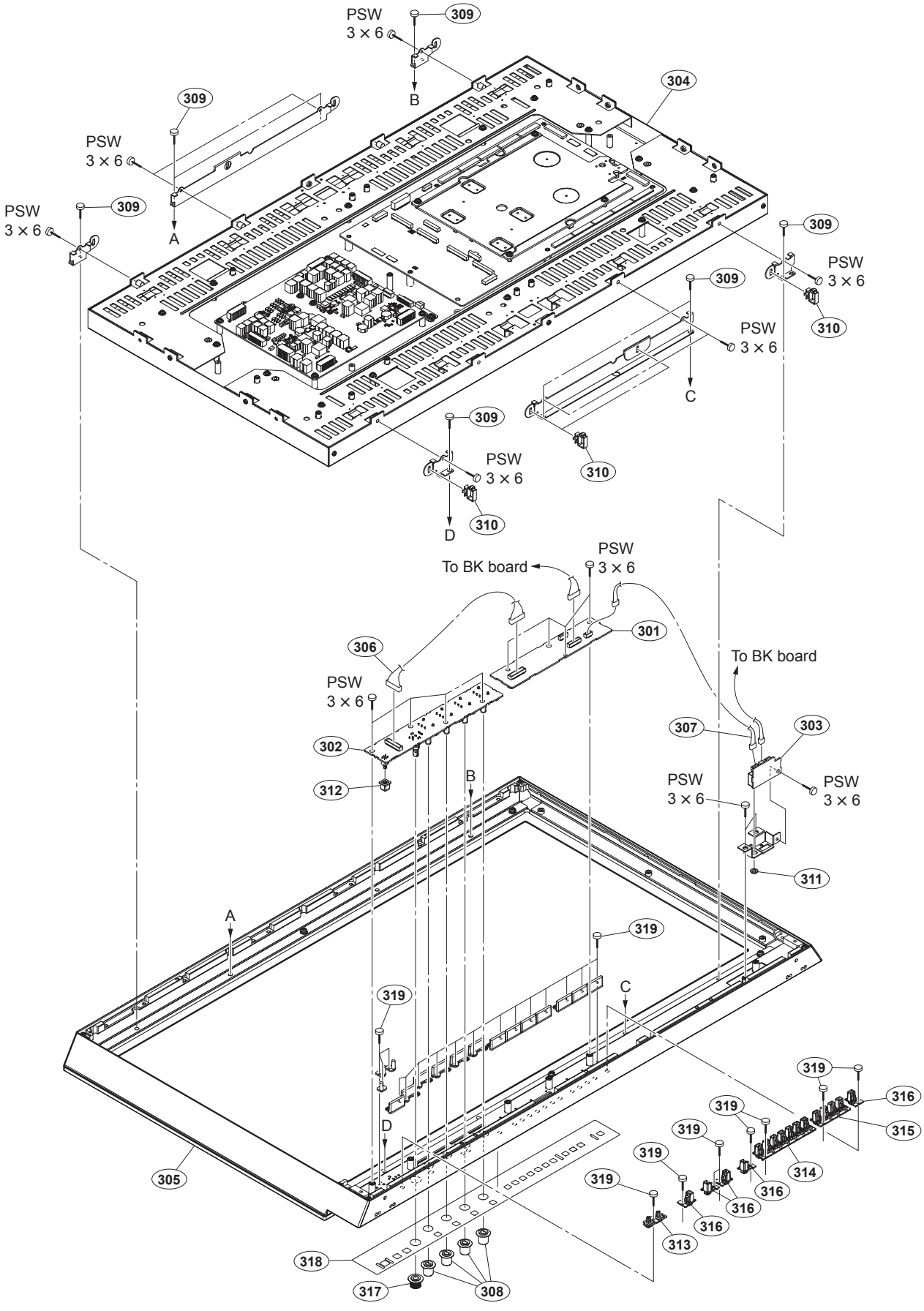
No.		Part No.	SP	Description
101		A-1919-961-A	s	MOUNTED CIRCUIT BOARD, Q
102	⚠	1-787-689-11	s	D.C. FAN
103		1-970-703-11	s	SUB HARNESS (FAN3)
104		1-970-730-11	s	SUB HARNESS (FAN1,2)
105		2-637-595-01	s	RIVET, TURN
106		4-066-309-02	s	SCREW, MACHINE, (+) P M4X8
107		4-098-147-41	s	CLAMP
108		4-137-926-01	s	SADDLE (LES-0505), EDGE
		7-682-947-01	s	SCREW +PSW 3X6

G Block and BK Block



No.	Part No.	SP	Description
201	A-2070-731-A	s	MOUNTED CIRCUIT BOARD, G8
202	A-2070-732-A	s	MOUNTED CIRCUIT BOARD, G9
203	A-2071-733-A	s	MOUNTED CIRCUIT BOARD, BK (SERVICE)
204	1-500-021-11	s	CLAMP, SLEEVE FERRITE
205 ⚠	1-842-404-11	s	AC INLET (SCREW) 3P FASTEN
206	1-848-946-11	s	COAXIAL CABLE ASSY (LVDS)
207	1-969-408-21	o	SUB HARNESS (BF-Q 11P)
208	1-970-693-11	s	SUB HARNESS (BK-HC 13P)
209	1-970-695-11	s	SUB HARNESS (GP-G8-G9)
210	1-970-696-11	s	SUB HARNESS (G8-BC4-BK-Q)
211 ⚠	1-970-697-11	s	SUB HARNESS (G8-G9_AC IN 2P)
212 ⚠	1-970-698-11	s	SUB HARNESS (G8-G9_AC IN 1P)
213 ⚠	1-970-699-11	s	SUB HARNESS (G8-G9_AC IN 4P)
214	1-970-700-11	s	SUB HARNESS (G8-G9_4P)
215	1-970-701-11	s	SUB HARNESS (BK-BC4 14P)
216	1-970-702-11	s	SUB HARNESS (BK-BC4 15P)
217	1-970-705-11	s	SUB HARNESS (BK-HB TEMP 4P)
218	2-580-595-01	s	SCREW, +PSW M3X12
219	2-990-241-02	s	HOLDER (A), PLUG
220	3-281-853-02	s	SADDLE, LOCKING EDGE
221	4-066-309-02	s	SCREW, MACHINE, (+) P M4X8
222	4-098-147-31	s	CLAMP
223	4-098-147-41	s	CLAMP
224	4-572-129-01	s	CLAMP, FLAT
	7-682-947-01	s	SCREW +PSW 3X6

Panel Module and Bezel Block



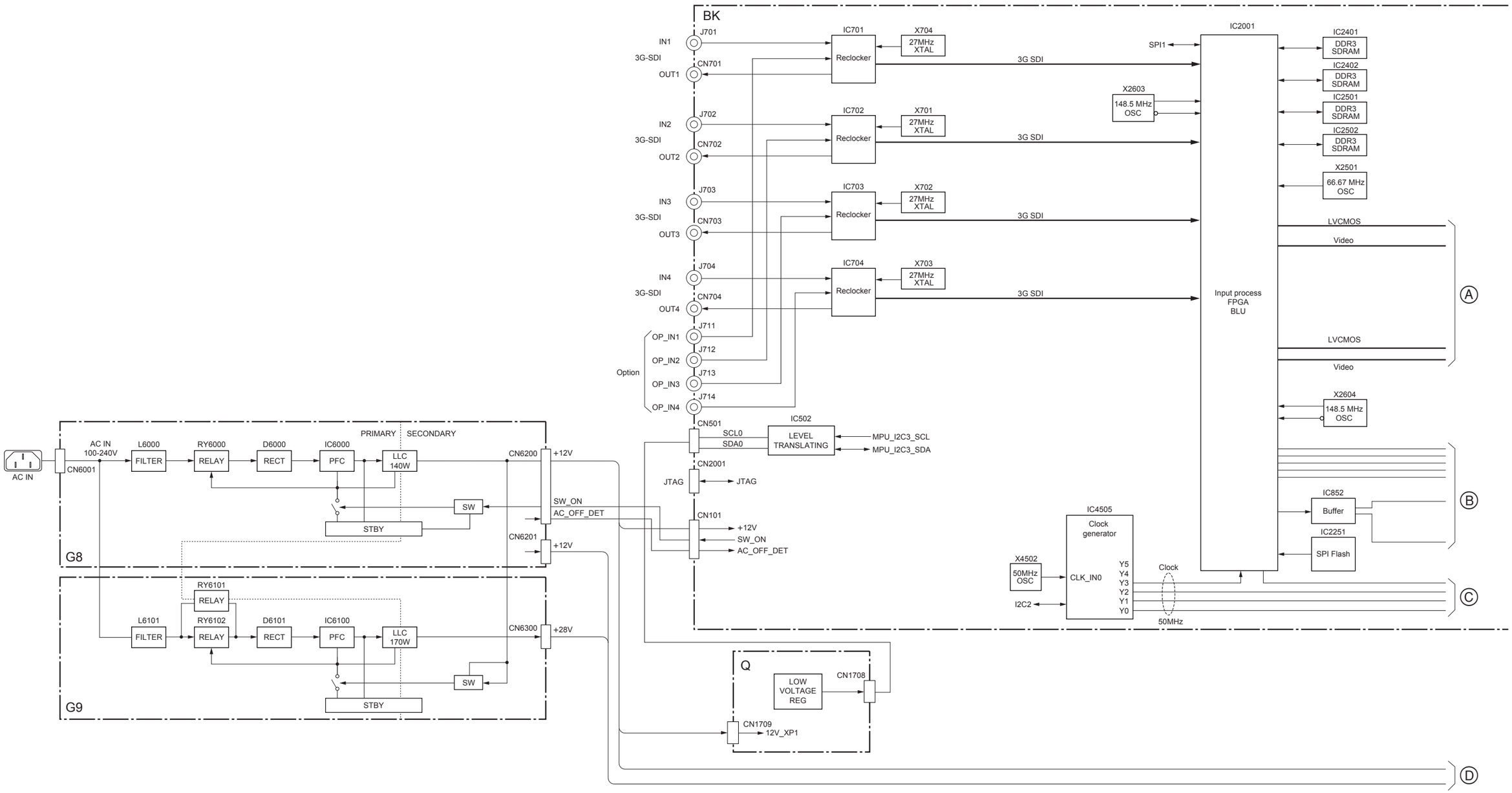
No.		Part No.	SP	Description
301		A-2070-748-A	s	MOUNTED CIRCUIT BOARD, HC
302		A-2070-749-A	s	MOUNTED CIRCUIT BOARD, HA
303		A-2070-750-A	s	MOUNTED CIRCUIT BOARD, HB
304	⚠	A-2071-040-A	s	MODULE ASSY (SVC), OLED
305	⚠	X-2591-097-1	s	BEZEL ASSY
306		1-970-694-11	s	SUB HARNESS (HA-HC 40P)
307		1-970-704-11	s	SUB HARNESS (HB-HC 5P)
308		2-672-611-01	s	KNOB, CONTROL
309		4-066-309-02	s	SCREW, MACHINE, (+) P M4X8
310		4-098-147-31	s	CLAMP
311		4-487-558-01	s	NUT (M6X0.5)
312		4-559-427-01	s	COVER, BUTTON
313		4-559-428-01	s	BUTTON, MENU
314		4-559-430-01	s	BUTTON, FUNCTION
315		4-559-430-11	s	BUTTON, FUNCTION
316		4-559-430-21	s	BUTTON, FUNCTION
317		4-559-434-01	s	KNOB, MENU
318	⚠	4-559-689-01	s	LABEL, CONTROL
319		4-644-492-21	s	ACE (M2), LOCK
		7-682-947-01	s	SCREW +PSW 3X6

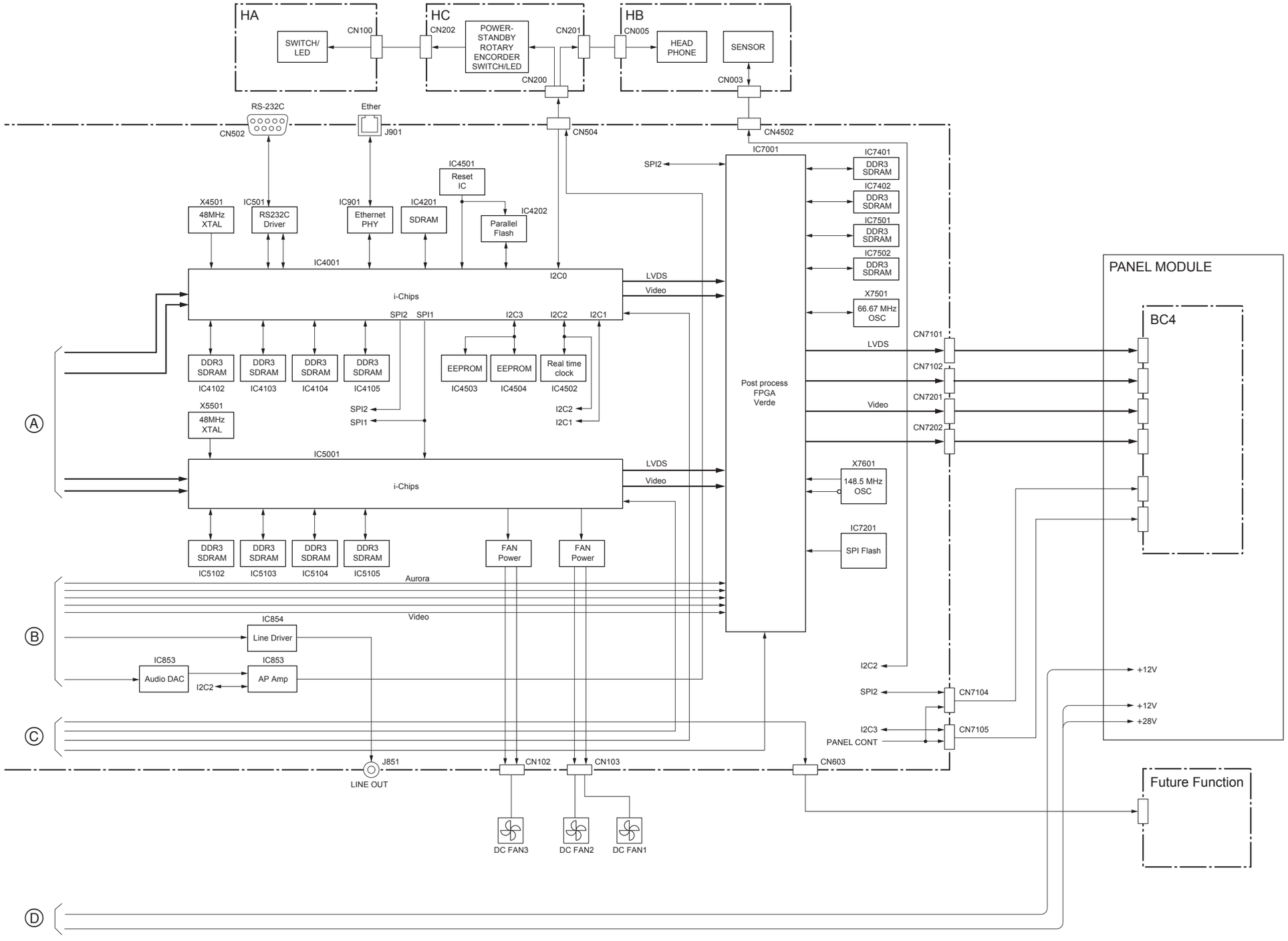
8-3. Packing Materials & Supplied Accessories

PACKING MATERIALS & SUPPLIED ACCESSORIES

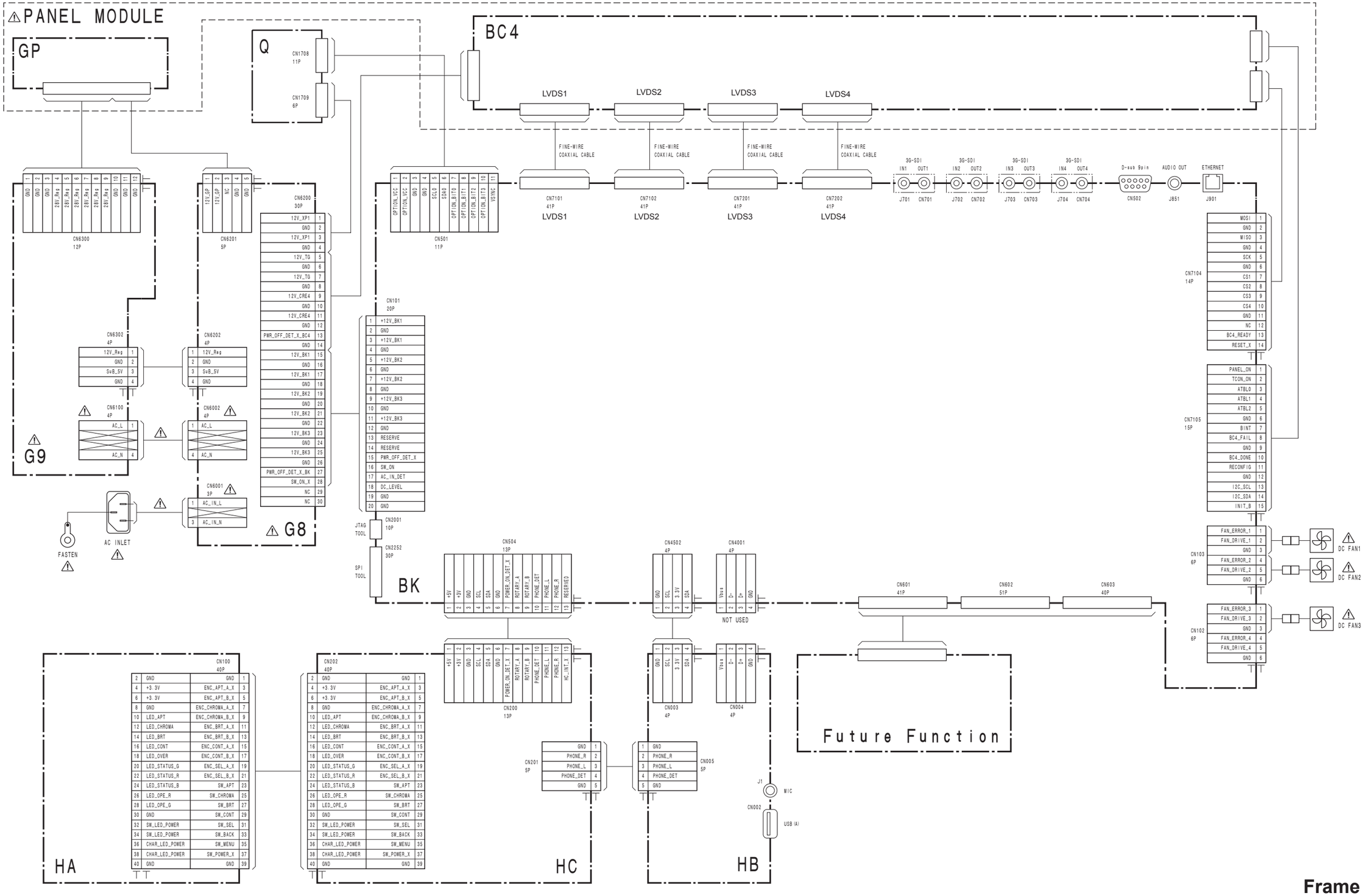
Ref. No. or Q'ty	Part No.	SP	Description
1pc	2-990-242-01	s	HOLDER (B), PLUG
1pc	⚠ 4-566-074-01	s	CD-ROM OPERATING INSTRUCTIONS (JAPANESE, ENGLISH)

Section 9
Block Diagrams




HA
SWITCH/ LED
CN100
HC
CN202
POWER- STANDBY ROTARY ENCORDER SWITCH/LED
CN201
CN200
HB
CN005
HEAD PHONE
SENSOR
CN003
RS-232C
CN502
Ether
J901
CN504
CN4502
IC4501
Reset IC
IC7001
SPI2
IC7401
DDR3 SDRAM
IC7402
DDR3 SDRAM
IC7501
DDR3 SDRAM
IC7502
DDR3 SDRAM
X4501
48MHz XTAL
IC501
RS232C Driver
IC901
Ethernet PHY
IC4201
SDRAM
IC4202
Parallel Flash
IC4001
I2C0
i-Chips
LVDS
Video
SPI2
SPI1
I2C3
I2C2
I2C1
X7501
66.67 MHz OSC
PANEL MODULE
BC4
CN7101
LVDS
CN7102
CN7201
Video
CN7202
DDR3 SDRAM
IC4102
DDR3 SDRAM
IC4103
DDR3 SDRAM
IC4104
DDR3 SDRAM
IC4105
EEPROM
IC4503
EEPROM
IC4504
Real time clock
IC4502
Post process FPGA Verde
X5501
48MHz XTAL
IC5001
i-Chips
LVDS
Video
X7601
148.5 MHz OSC
IC7201
SPI Flash
DDR3 SDRAM
IC5102
DDR3 SDRAM
IC5103
DDR3 SDRAM
IC5104
DDR3 SDRAM
IC5105
FAN Power
FAN Power
Aurora
Video
IC854
Line Driver
IC853
Audio DAC
I2C2
IC853
AP Amp
I2C2
SPI2
CN7104
I2C3
PANEL CONT
CN7105
+12V
+12V
+28V
J851
LINE OUT
CN102
CN103
CN603
DC FAN3
DC FAN2
DC FAN1
Future Function
A
B
C
D

Section 10
Frame Wiring



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