SONY

PROFESSIONAL VIDEO MONITOR

# LMD-A240

HDMI

SERVICE MANUAL

2nd Edition

Serial No. 7100001 and Higher: LMD-A240 (SY)

Serial No. 7300001 and Higher: LMD-A240 (CN)

## ⚠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.

**本機をラックに設置するとき**
**熱の適切な排気・発散を得るために，ラックと本機の間には，以下の空間を確保してください。**
**・上下 4 cm 以上**
**・左右両側面 4 cm 以上**
**・後面 10 cm 以上**

**Attention-when the product is installed in Rack:**

1. **Prevention against overloading of branch circuit**
   When this product is installed in a rack and is supplied power from an outlet on the rack, please make sure that the rack does not overload the supply circuit.

2. **Providing protective earth**
   When this product is installed in a rack and is supplied power from an outlet on the rack, please confirm that the outlet is provided with a suitable protective earth connection.

3. **Internal air ambient temperature of the rack**
   When this product is installed in a rack, please make sure that the internal air ambient temperature of the rack is within the specified limit of this product.

4. **Prevention against achieving hazardous condition due to uneven mechanical loading**
   When this product is installed in a rack, please make sure that the rack does not achieve hazardous condition due to uneven mechanical loading.

5. **Install the equipment while taking the operating temperature of the equipment into consideration**
   For the operating temperature of the equipment, refer to the specifications of the Operating Instructions.

6. **When performing the installation, keep the following space away from walls in order to obtain proper exhaust and radiation of heat.**
   Lower, Upper: 4 cm (1 5/8 inches) or more
   Right, Left: 4 cm (1 5/8 inches) or more
   Rear: 10 cm (4 inches) or more

**警告**

万一，異常が起きた際に，お客様が電源を切ることができるように，設置の際には，機器近くの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コンセントに電源プラグを接続してください。

**WARNING**
When installing the unit, incorporate a readily accessible disconnect device in the fixed wiring, or connect the power cord to a socket-outlet which must be provided near the unit and easily accessible, so that the user can turn off the power in case a fault should occur.

**WARNUNG**
Beim Einbau des Geräts ist daher im Festkabel ein leicht zugänglicher Unterbrecher einzufügen, oder das Netzkabel mu*ß* mit einer in der Nähe des Geräts befindlichen, leicht zugänglichen Wandsteckdose verbunden werden, damit sich bei einer Funktionsstörung die Stromversorgung zum Gerät jederzeit unterbrechen lä*ß*t.

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
: PARALLEL 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 ports.
: SERIAL REMOTE connector
: PARALLEL REMOTE connector
Follow the instructions for the above ports.

# Table of Contents

## Manual Structure



## 1. Service Overview



## 2. Circuit Description



## 3. Troubleshooting



## 4. Spare Parts



## 5. Diagrams

# Manual Structure

## Purpose of this manual

This manual is the Service Manual of the Professional Video Monitor LMD-A240. This manual describes the information on the premise of providing the block level service (such as service overview, circuit description, troubleshooting, spare parts, and block diagrams).

## Related manuals

The following manual is provided for this unit in addition to this “Service Manual”.

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

- **“Service Manual” 1st Edition (Available on request)**
  This manual describes the information for repair and service of the following models.
  Serial No. 7,000,001 to 7,100,000
  Serial No. 7,200,001 to 7,300,000

## Trademarks

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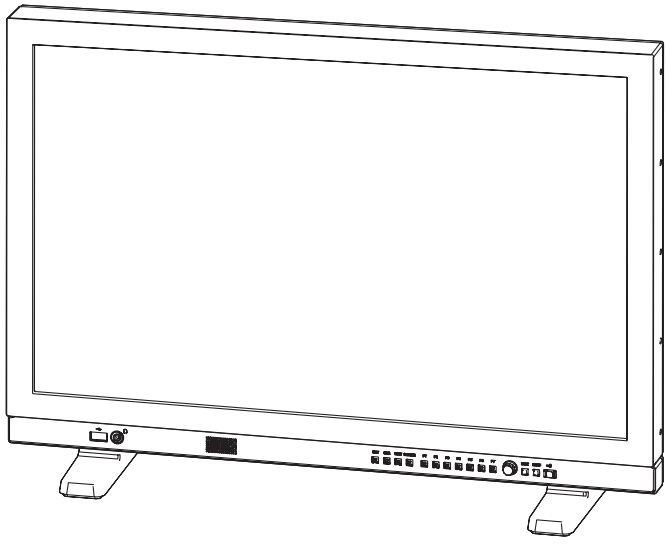
- Windows and Windows Vista are the registered trademarks of Microsoft Corporation in the United States and Other countries.

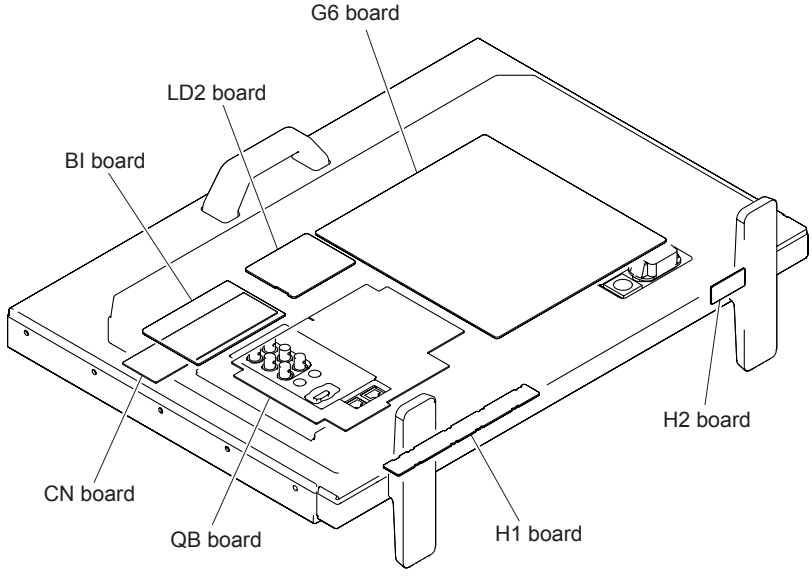
Other system names, product names, and company names appearing in this manual are trademarks or registered trademarks of their respective holders.

# Section 1
# Service Overview

## 1-1. Appearance Figure



## 1-2. Board Location



## 1-3. Tightening Torque

Tighten the each screw with the torque below.

**Note**

- The screw (BVTP3 × 10) of this unit has two types of the tighten torque. Be careful not to confuse.
- The screw (B3 × 5) of this unit has two types of the tighten torque. Be careful not to confuse.

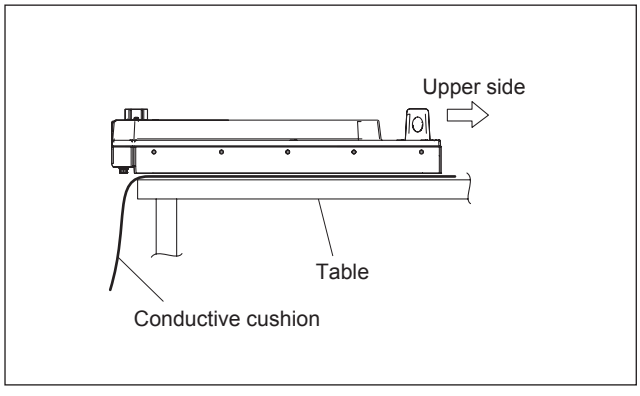
- BVTP3 × 10 (DC fan): 0.40 ±0.05 N•m (4.0 ±0.5 kgf•cm)
- BVTP3 × 10 (for excluding DC fan): 0.60 ±0.10 N•m (6.1 ±1.0 kgf•cm)
- BVTP4 × 12: 1.20 ±0.10 N•m (12.0 ±1.0 kgf•cm)
- B3 × 5 (CN board): 0.60 ±0.10 N•m (6.1 ±1.0 kgf•cm)
- B3 × 5 (for excluding CN board): 0.40 ±0.10 N•m (4.0 ±1.0 kgf•cm)
- M2.6 × 6: 0.60 ±0.10 N•m (6.1 ±1.0 kgf•cm)
- NUT (M6 × 0.5): 0.40 ±0.05 N•m (4.0 ±0.5 kgf•cm)
- PSW3 × 5: 0.60 ±0.10 N•m (6.1 ±1.0 kgf•cm)
- PSW3 × 6: 0.60 ±0.10 N•m (6.1 ±1.0 kgf•cm)
- PSW3 × 10: 0.60 ±0.10 N•m (6.1 ±1.0 kgf•cm)
- PSW4 × 8: 1.20 ±0.10 N•m (12.0 ±1.0 kgf•cm)
- PSW4 × 12: 1.20 ±0.10 N•m (12.0 ±1.0 kgf•cm)

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

## 1-4. Disassembly

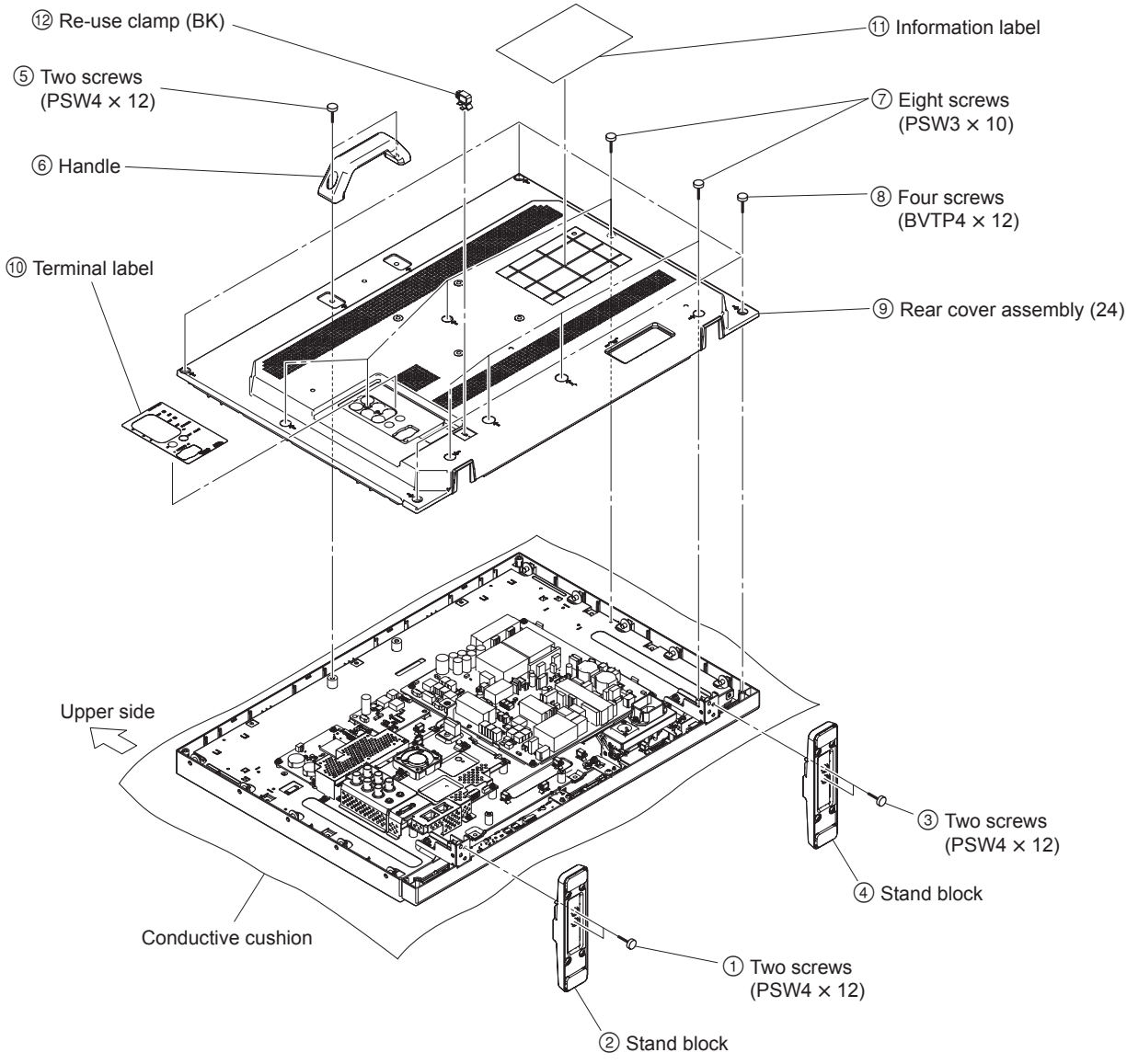
**Note**

- When removing/installing the cabinet and replacing the board, place the display on the conductive cushion as shown in the figure.



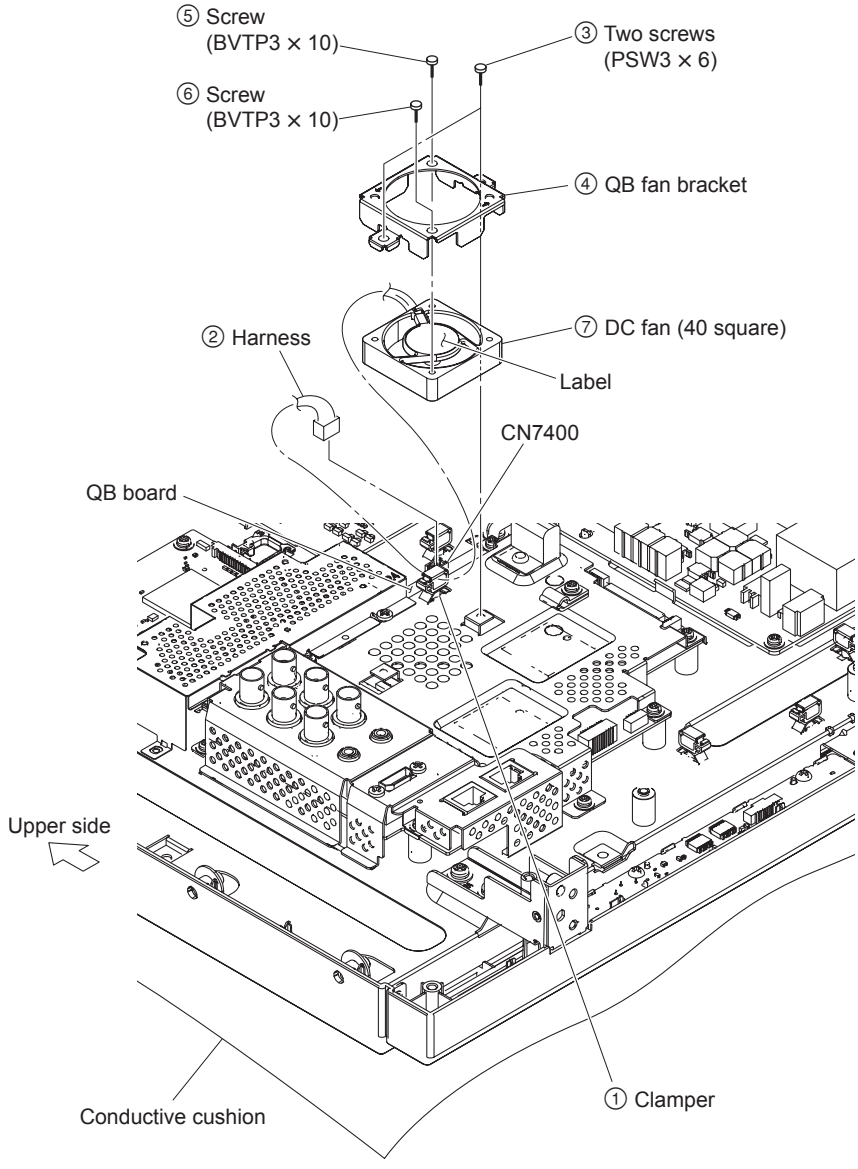

- Remove the parts in the order of numbers shown in the figure, in this section.

## 1-4-1. Rear Cover Assembly



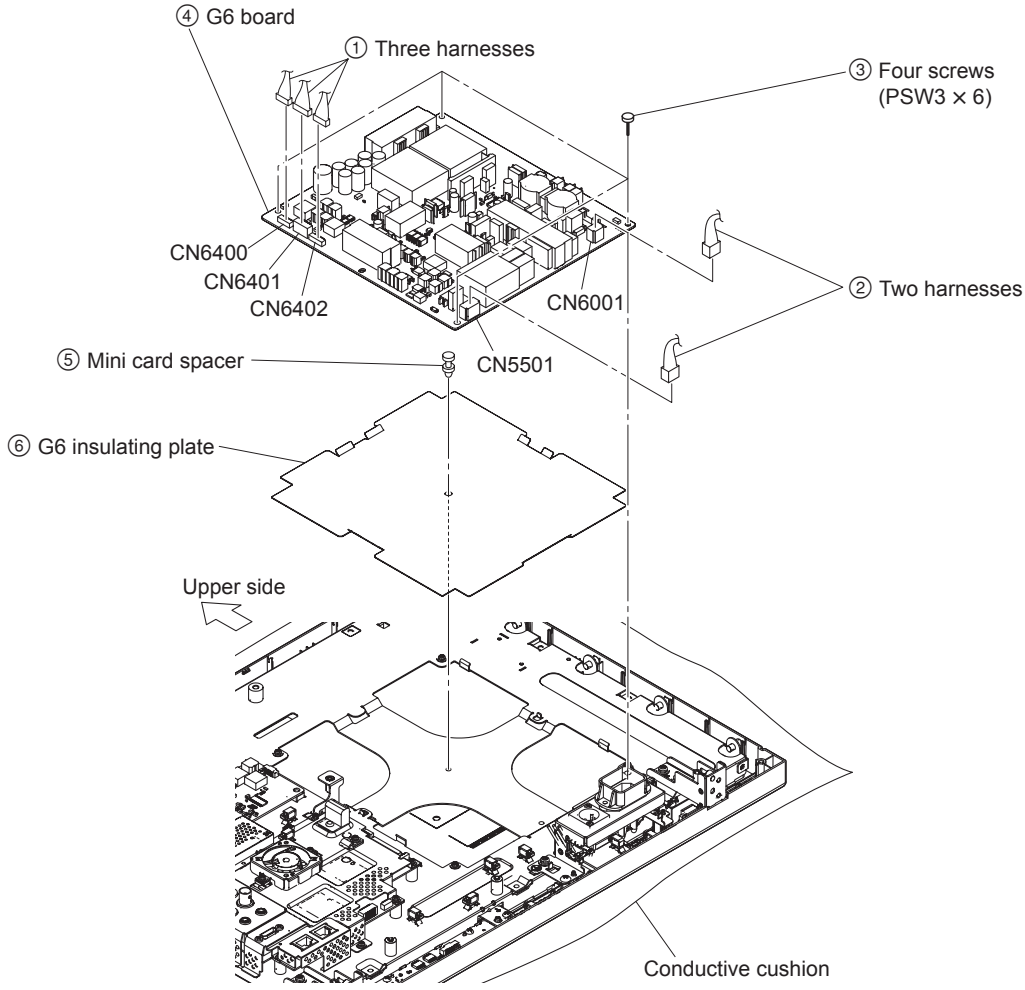
## 1-4-2. DC Fan (40 Square)

• Remove the rear cover assembly. (Refer to Section 1-4-1.)



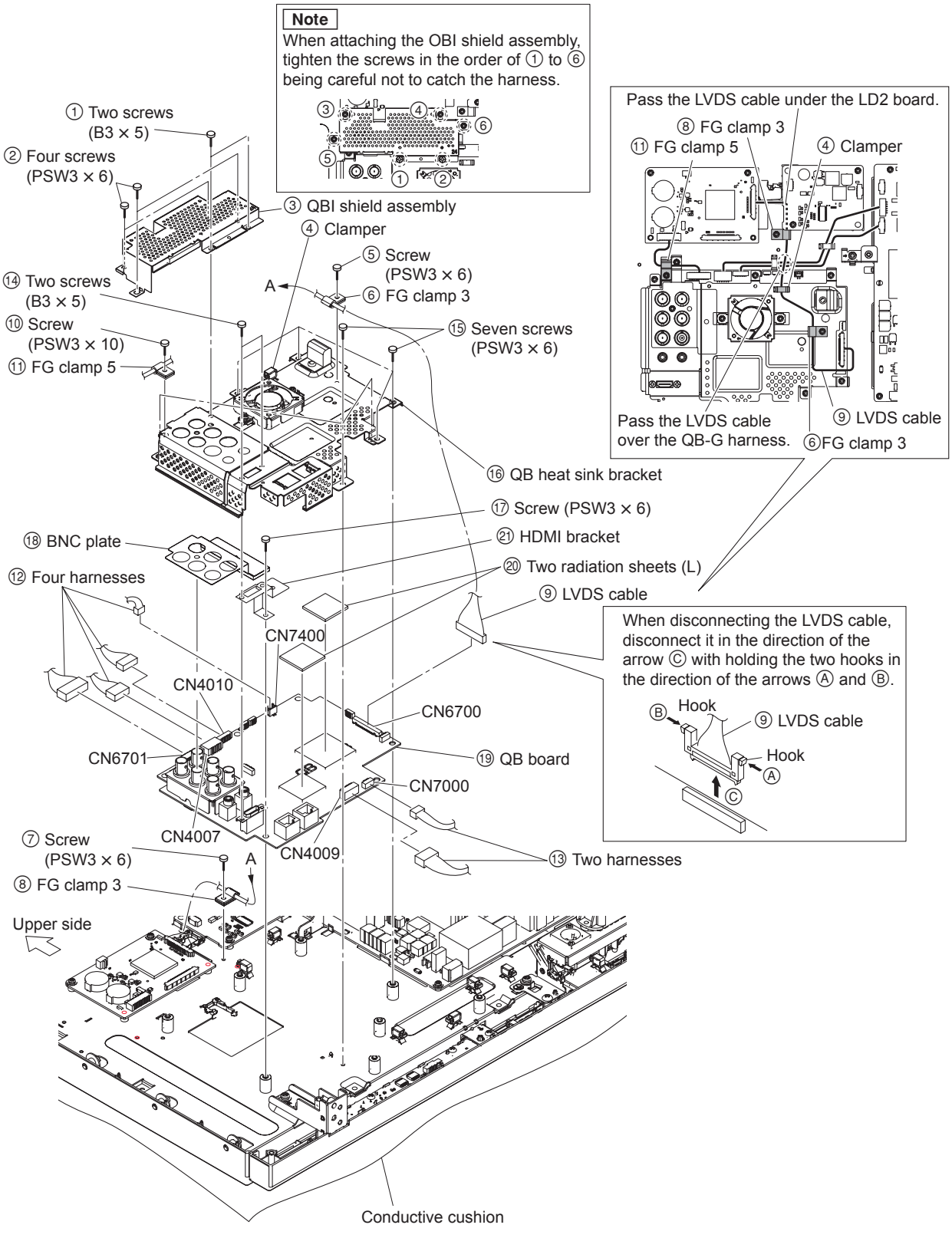
## 1-4-3. G6 Board

• Remove the rear cover assembly. (Refer to Section 1-4-1.)



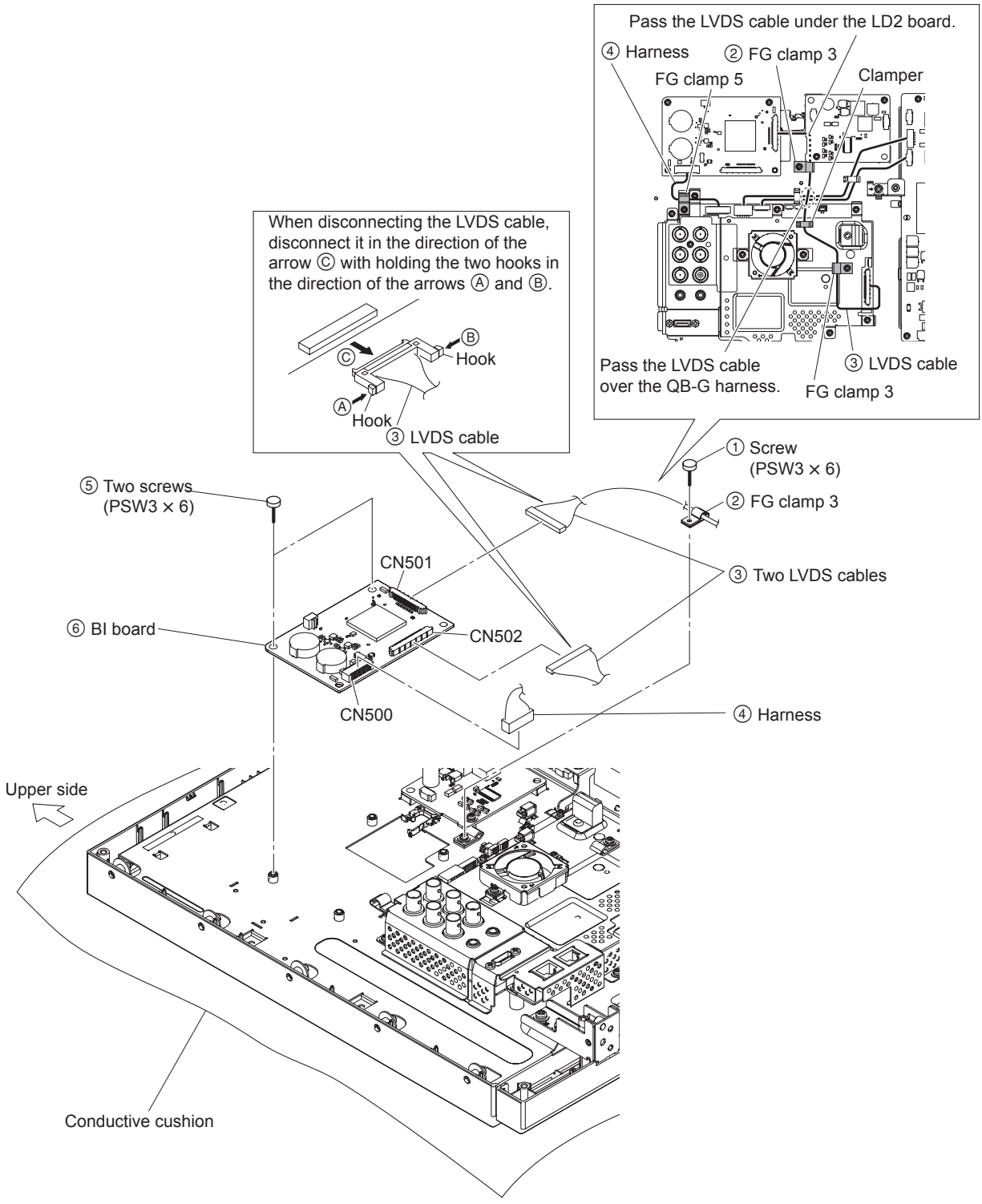
## 1-4-4. QB Board

• Remove the rear cover assembly. (Refer to Section 1-4-1.)



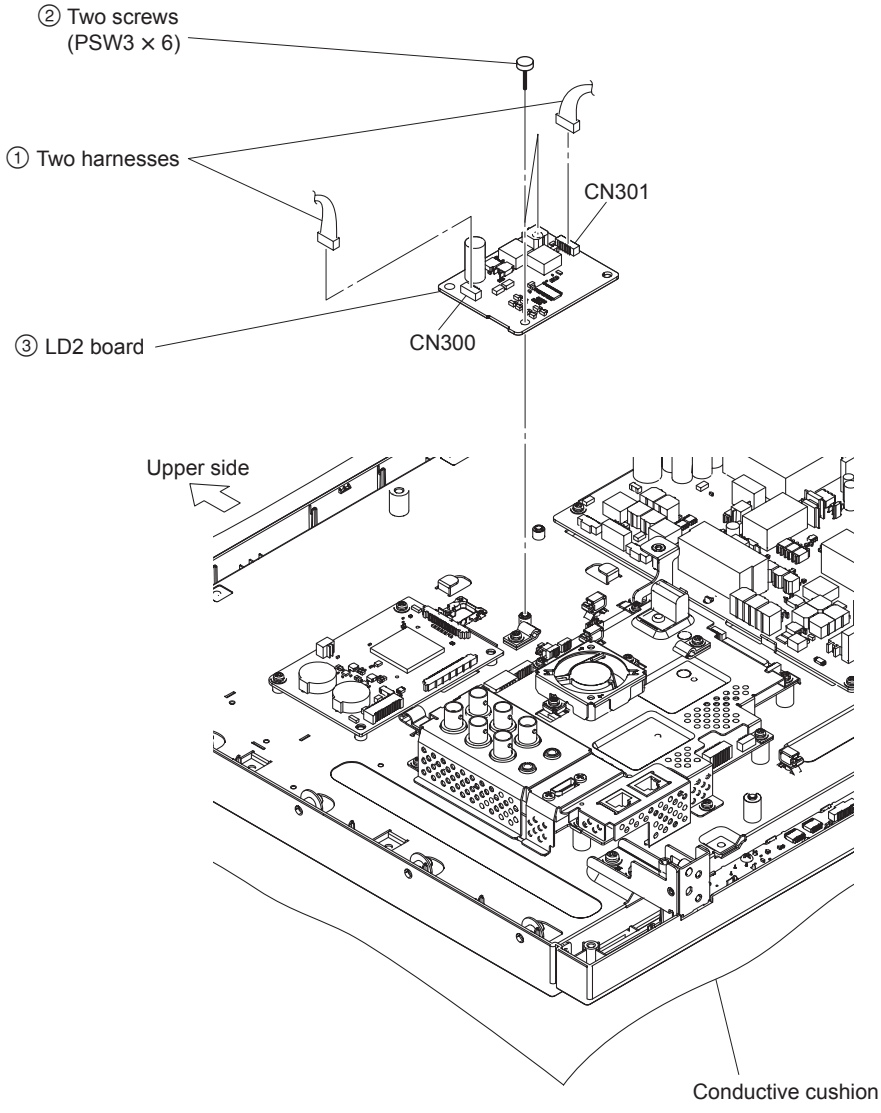
## 1-4-5. BI Board

- Remove the rear cover assembly. (Refer to Section 1-4-1.)
- Remove the QBI shield assembly. (Refer to steps ① to ③ in Section 1-4-4.)



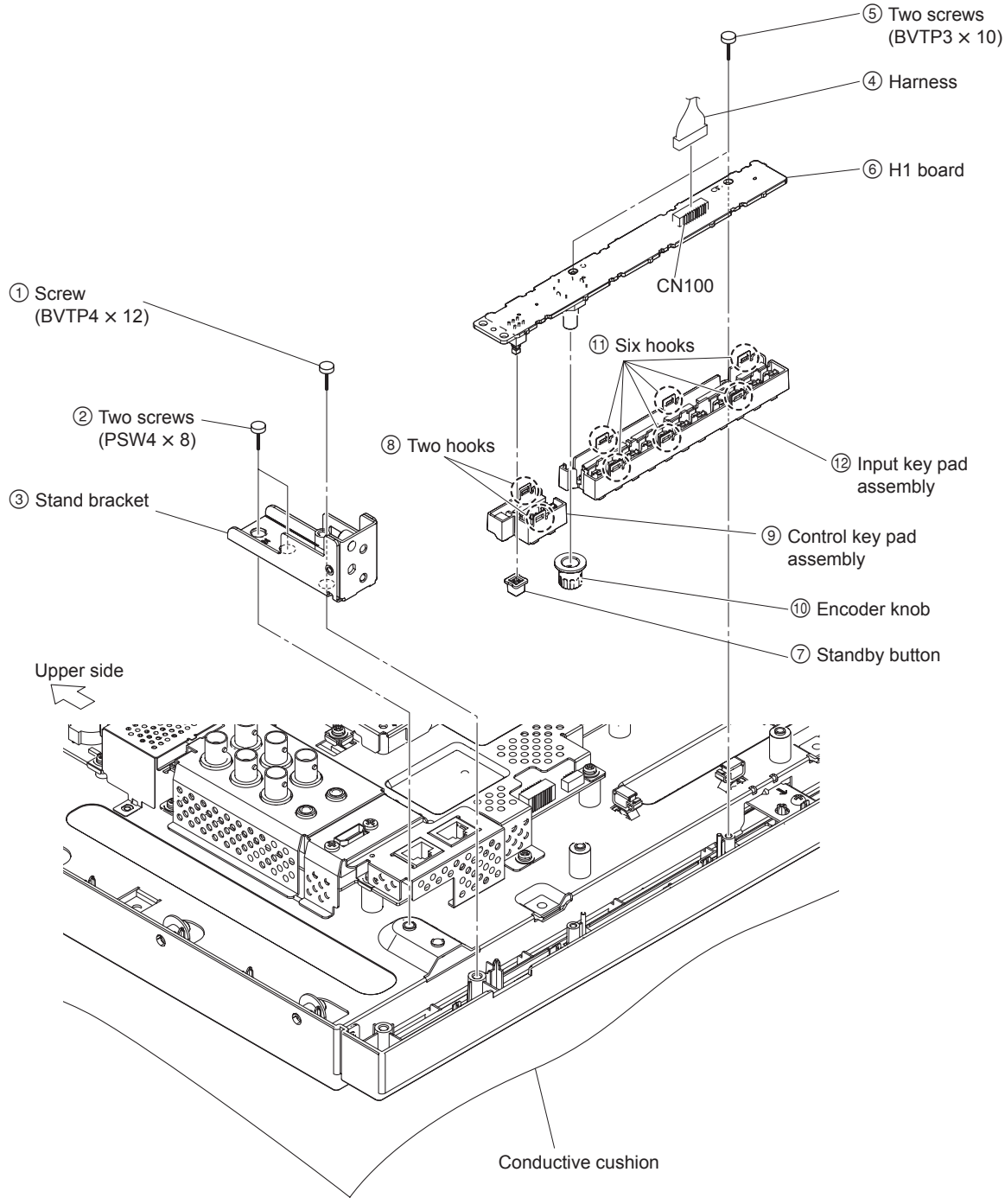
## 1-4-6. LD2 Board

- Remove the rear cover assembly. (Refer to Section 1-4-1.)
- Remove the QBI shield assembly. (Refer to steps ① to ③ in Section 1-4-4.)



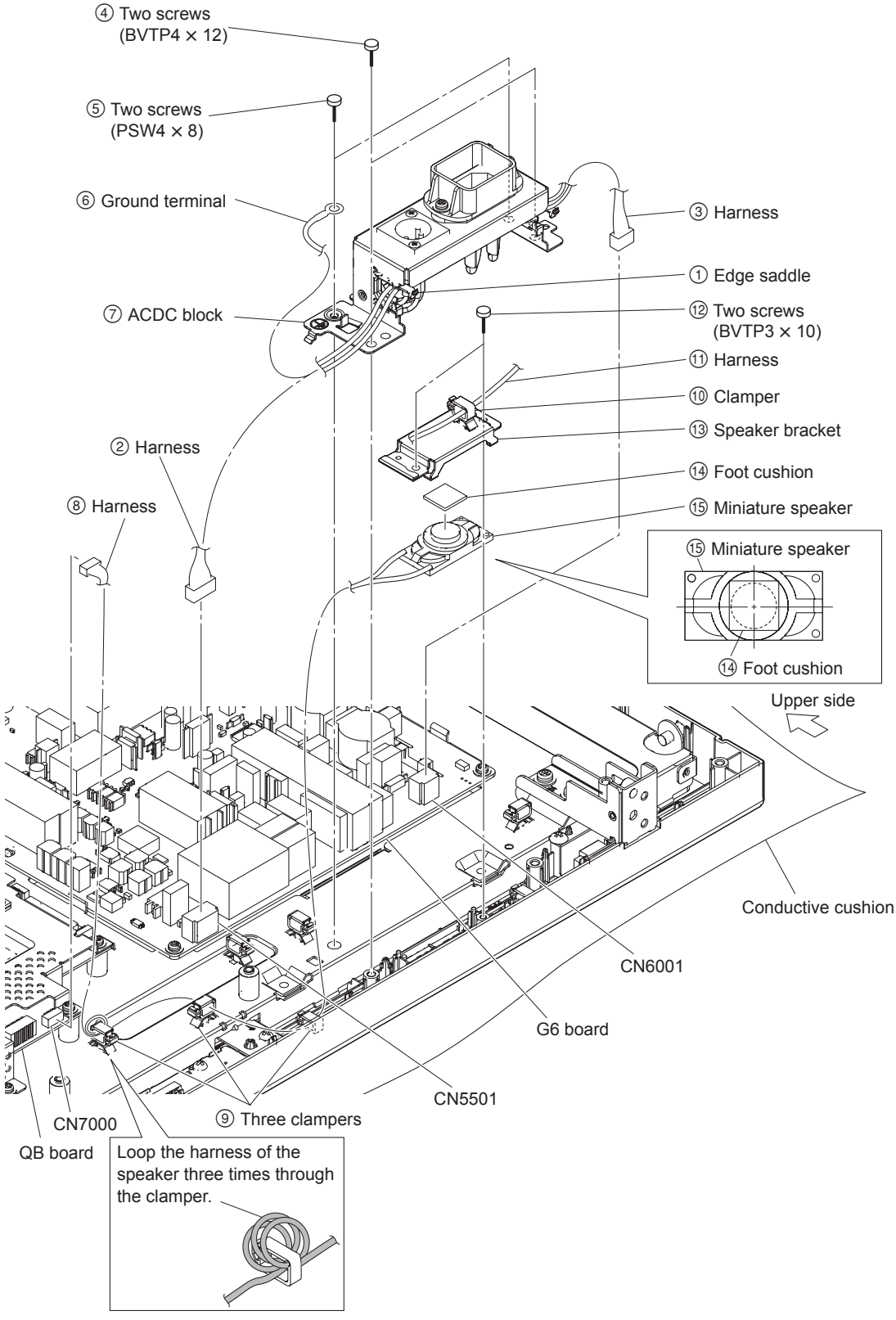
## 1-4-7. H1 Board

• Remove the rear cover assembly. (Refer to Section 1-4-1.)



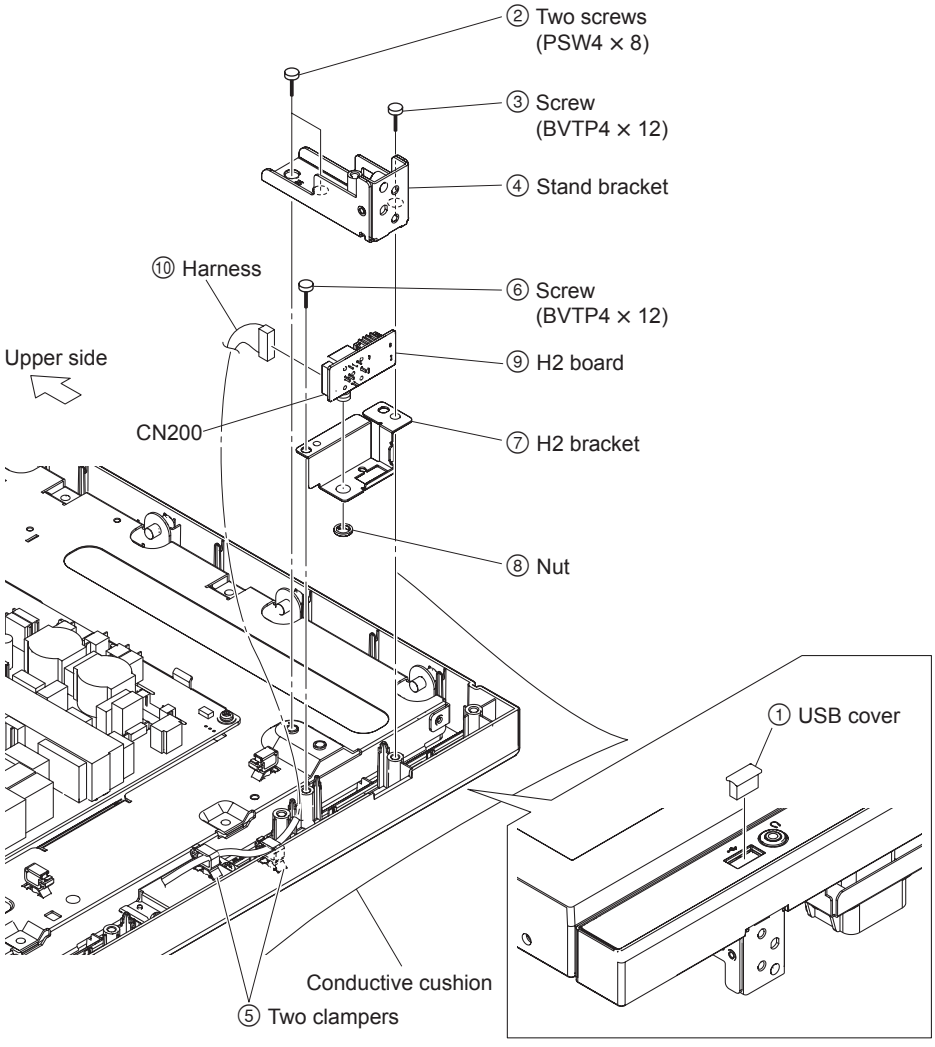
## 1-4-8. Speaker

• Remove the rear cover assembly. (Refer to Section 1-4-1.)



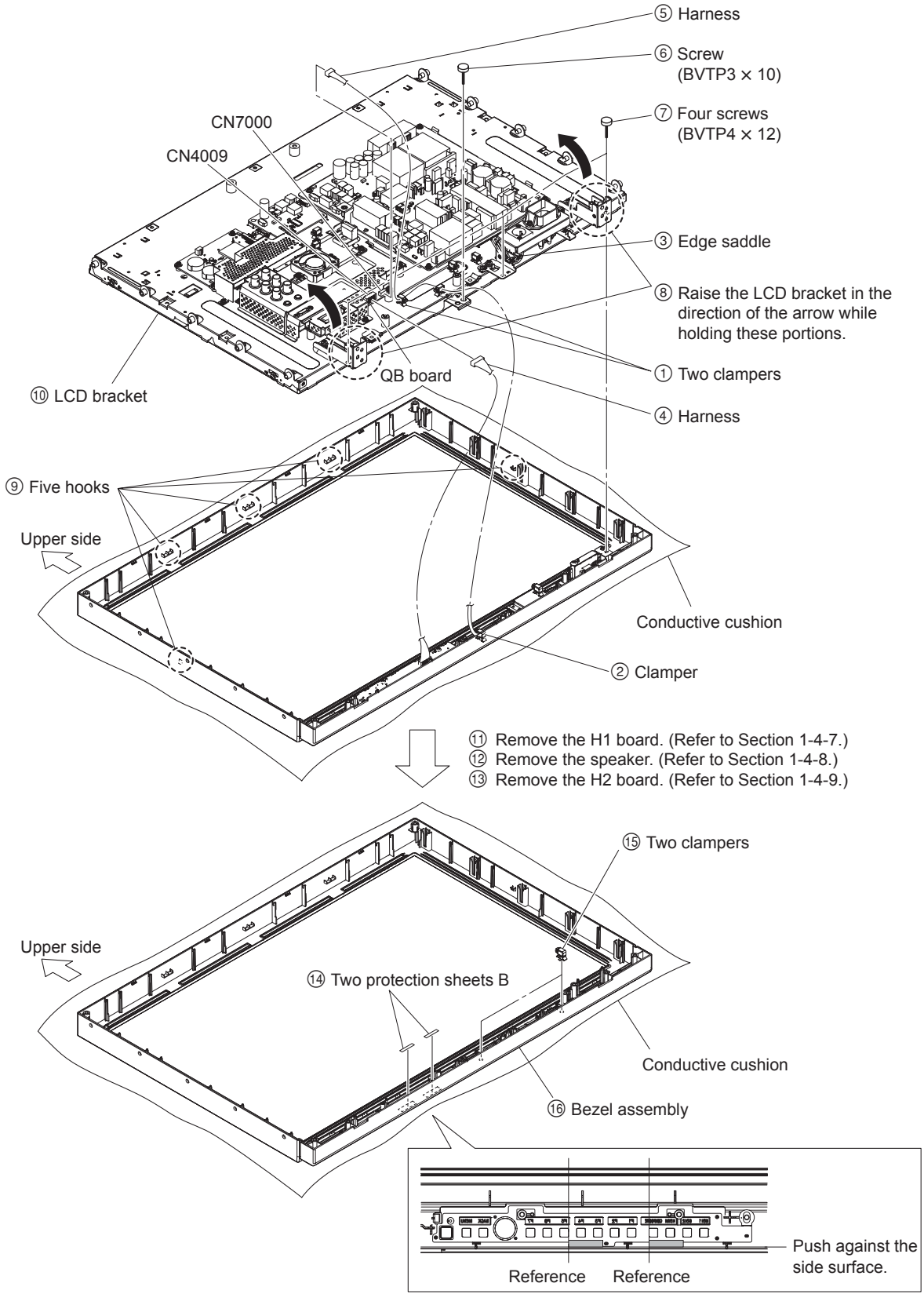
## 1-4-9. H2 Board

- Remove the rear cover assembly. (Refer to Section 1-4-1.)
- Remove the ACDC block. (Refer to steps ① to ⑦ in Section 1-4-8.)



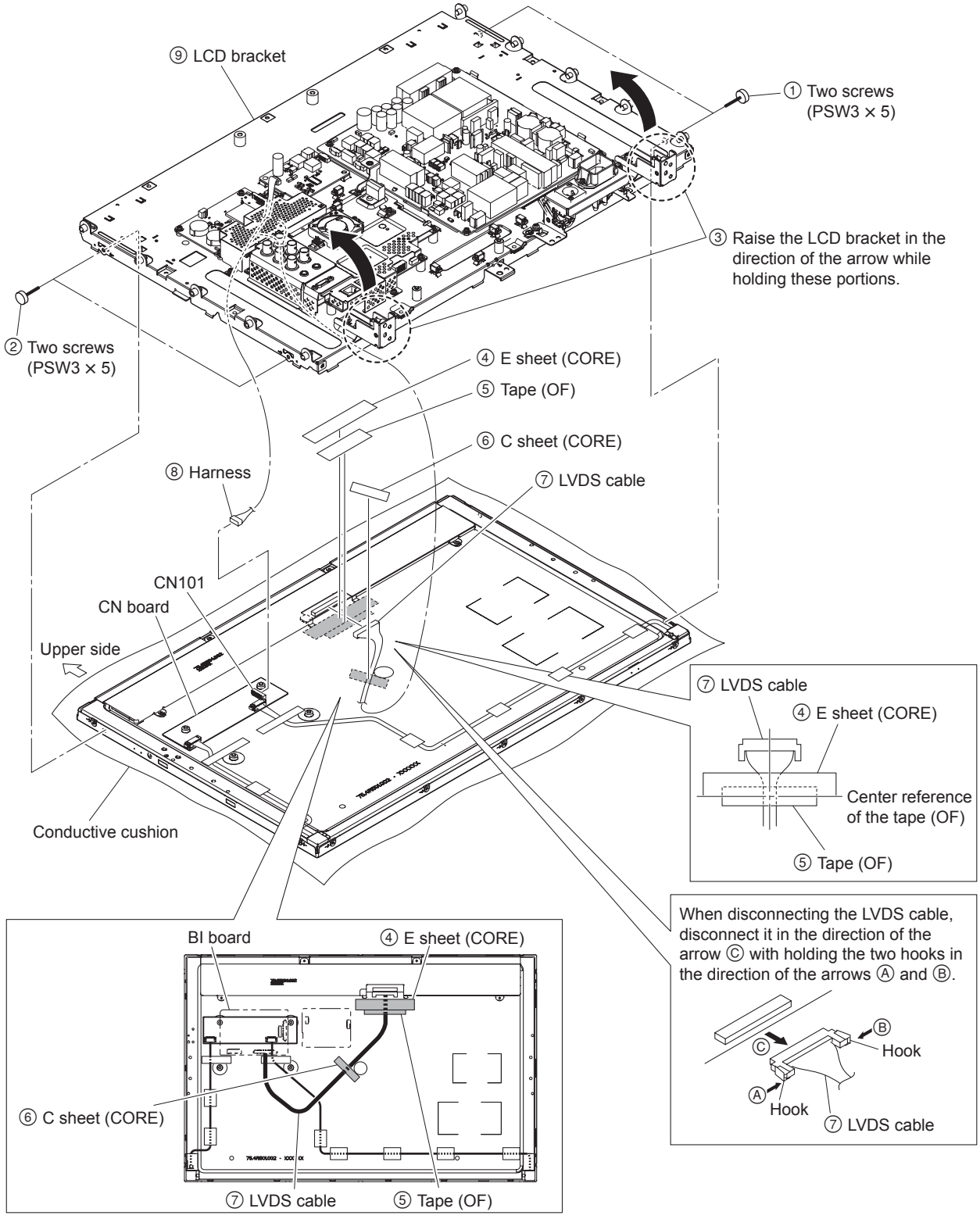
## 1-4-10. Bezel Assembly

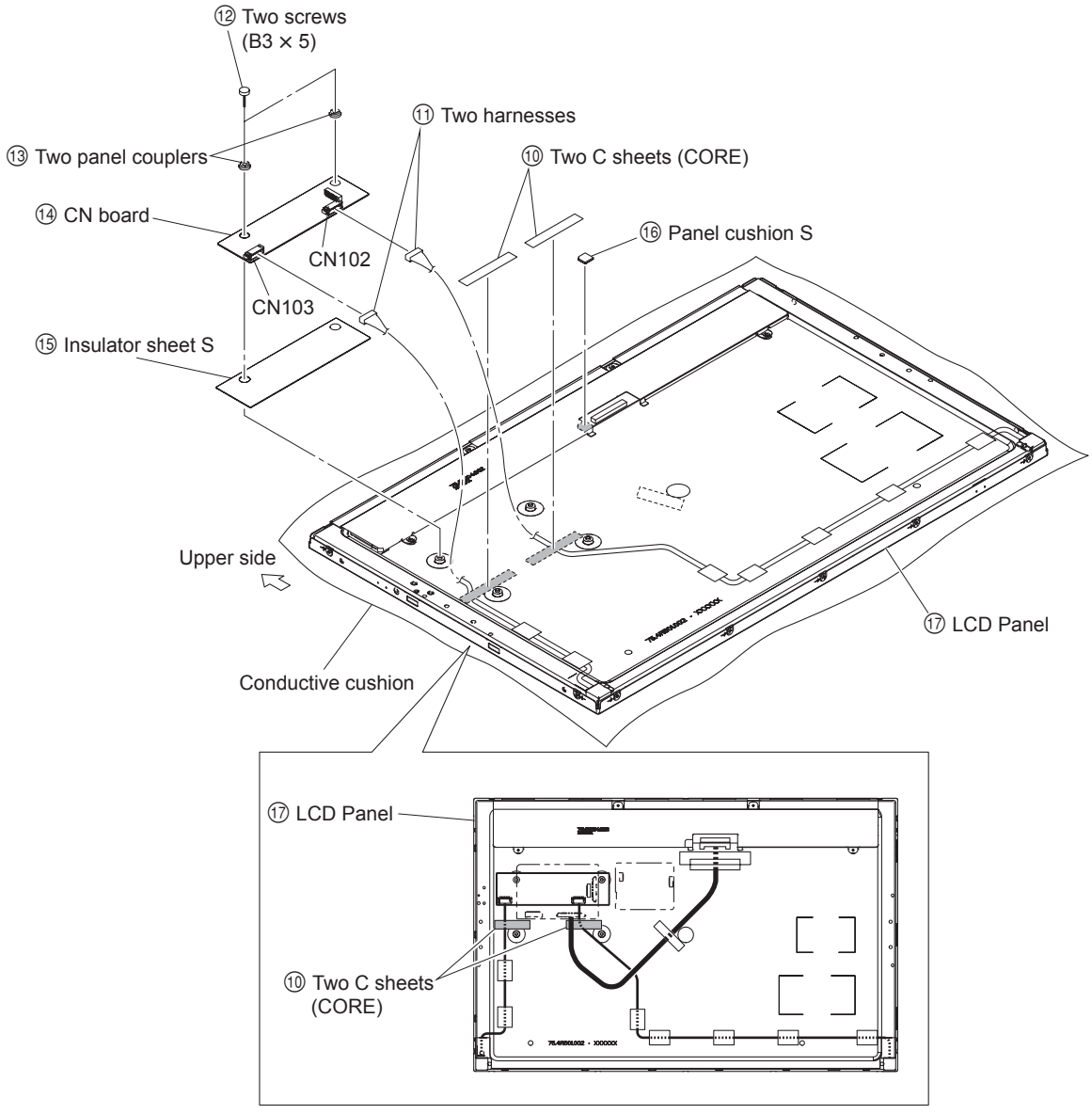
• Remove the rear cover assembly. (Refer to Section 1-4-1.)



## 1-4-11. LCD Panel and CN Board

- Remove the rear cover assembly. (Refer to Section 1-4-1.)
- Remove the bezel assembly. (Refer to Section 1-4-10.)




⑫ Two screws
(B3 × 5)
⑪ Two harnesses
⑬ Two panel couplers
⑩ Two C sheets (CORE)
⑭ CN board
⑯ Panel cushion S
CN102
CN103
⑮ Insulator sheet S
Upper side
⑰ LCD Panel
Conductive cushion
⑰ LCD Panel
⑩ Two C sheets
(CORE)

## 1-5. Procedure When Replacing the LCD Panel

When replacing the LCD panel, adjust the white balance.

### 1-5-1. Required Equipment

- Personal computer (PC)
  OS: Windows 7
- LAN cable (Cross cable)
- FPGA upgrading file
  lmd-a240_fpga_lan_update_config_data_xx_xx_ww_.zip (xx_xx indicates the version number.)
  **Tip**
  For obtaining this file, contact your local Sony Sales Office/Service Center.
- Luminance meter: Konica Minolta CA210, CA310 or the equivalent
  If the above device is not available, adjust by visually comparing with the LCD monitor which has already been adjusted.
- Signal generator: Astrodesign VG-873 or the equivalent
- Terminal software
  In this section, TeraTerm (open source software) is used for the description as the terminal software.

### 1-5-2. FPGA Upgrading

#### Preparation

1. Connect this unit and a personal computer using a LAN cable (cross cable).
   **Note**
   In this case, do not connect those other than a LAN cable and power cord to this unit.
2. Set communication as described below.
   - Fixed IP address: 192.168.0.100 (Must be except 192.168.0.1.)
   - Subnet mask: 255.255.255.0
3. Copy an FPGA upgrading file to the arbitrary place in PC.
4. Double-click the FPGA upgrading file and extract it.

#### Upgrading

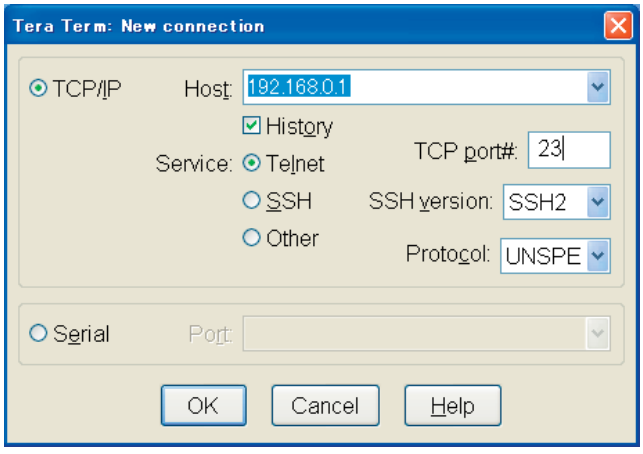
1. Double-click LMD-A:qb_fpga_update.bat.
   A batch file is executed.
   A progress status is displayed on a DOS Prompt screen during execution of the batch file.
   After about 15 minutes, “Press any key for continuation” is displayed on the DOS Prompt screen.
2. Check that “Finished correctly” is displayed and click the Enter button. (The DOS screen is terminated.)
3. Turn off and on the power of this unit.

### Version confirmation

1. Press the Menu button of this unit.
2. Press the rotary encoder of this unit and select the Status display.
3. Turn the rotary encoder and display “Status 4/4”.
4. Check that FPGA versions (FPGA1 and FGPA2 versions) are changed.
5. Turn off and on the power of this unit.

## 1-5-3. Software Reset

1. Connect this unit and each device.
2. Input the following signals in this unit.
   • SDI or HDMI (HD, 10bit signal)
   • 1080/60P, 4:4:4 (YCbCr) or 1080/60P, 4:4:4 (RGB)
3. Start the terminal software (TeraTerm).
4. Connect it to this unit with the following setting.
   Protocol: TCP/IP
   Destination IP address: 192.168.0.1
   Port No.: 23
   Service: Telnet




5. When it is connected correctly, “login:” is displayed. Then, enter the user name and press the Enter key.
6. Then, “pass:” is displayed. Enter the password and press the Enter key.
   “>” is displayed, and then you can enter the command.
   **Tip**
   • When you enter the password, no characters are displayed on the screen.
   • For the user name and password, contact your local Sony Sales Office/Service Center.
7. Enter the command below and press the Enter key.
   set_panel_type␣1 (“␣” represents a space.)
8. Check that OK is displayed.
9. Enter the following commands individually, and then press the Enter key.
   After typing each command, check that “OK” is displayed. (“␣” represents a space.)
   (1) restore_factory_init_data␣4
   ⇨ Check that “OK” is displayed
   (2) restore_factory_init_data2␣5
   ⇨ Check that “OK” is displayed

10. Turn off and on the power of this unit.
11. Enter the command below and press the Enter key.
    get_panel_type
12. Check that 06h is displayed.
13. Turn off and on the power of this unit.
14. Adjust the white balance.

### 1-5-4. White Balance Adjustment

1. Input the full white signal from SDI or HDMI to this unit.
2. Set the color temperature to the level used by the user. (Refer to the operating instructions.)
   (1) Select “Main menu → Color temperature/color space/gamma”.
   (2) Select D93 or D65 in the color temperature.
3. Press the MENU button on the front of this unit to display the menu.
4. Press the F6 button while holding down the BACK button on the front of this unit to enter the service mode.
   To exit the service mode, press the MENU button.
5. Select Maintenance Menu 2.

| **Gain offset** | **Bias offset** |
|---|---|
| • R: 512 | • R: 0 |
| • G: 512 (fixed value) | • G: 0 (fixed value) |
| • B: 512 | • B: 0 |

6. Adjust the white balance.
   Specifications (error: ±0.05)
   D93: x = 0.283, y = 0.298
   D65: x = 0.313, y = 0.329
   (1) Measure the center of screen using the luminance sensor.
   (2) Adjust the white balance so that the specifications are met by changing Gain on the high-light side (equivalent to 80IRE) and Bias on the low-light side (equivalent to 22IRE).
   When adjusting “x”, change R Gain/Bias, and when adjusting “y”, change B Gain/Bias.
   (3) Repeat this twice respectively (Gain → Bias → Gain → Bias).
   Check that the specifications are met in both luminance values. (Completed)
   (4) Turn the power of this unit off and on again, and check that the specifications are met.

7. In case that the specifications are not met in steps 1 to 6, perform the following procedure.
   (1) Write down the user setting.
   Be sure to write it down because when you perform steps (2) to (4), the user setting is reset.
   (2) Enter the service mode, and then select Restore Factory from Maintenance Menu 1.
   (3) Select “confirm” to determine.
   (4) Select the language in “Select Language”, and then select “confirm”.
   (5) Perform the steps 1 to 6 again.
   (6) Return the setting to the user setting written down in step (1).

## 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**

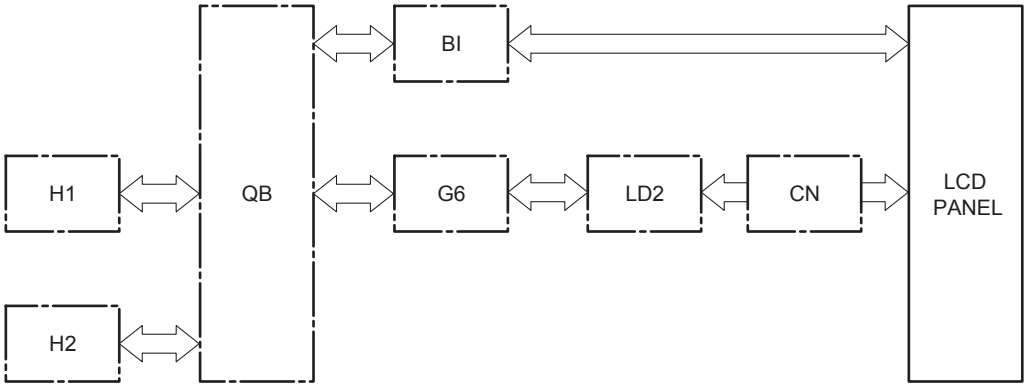
- The lead-free solder melts at a temperature about 40 ˚C higher than the ordinary solder, therefore, it is recommended to use the soldering iron having a temperature regulator.
- The ordinary soldering iron can be used but the iron tip has to be applied to the solder joint for a slightly longer time.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

# Section 2
# Circuit Description

## 2-1. Board Configuration

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

- G6 board: Power board
- H1 board: User control interface board
- H2 board: Headphone/USB terminal-mounted board
- LD2 board: Backlight lighting board
- QB board: Video/audio/communication input/output and LCD panel control board
- BI board: Video signal output board to the LCD panel
- CN board: Backlight signal relay board




## 2-2. G6 Board

The G6 board is used for AC and DC inputs. It generates the power used in a monitor.
During AC input, the G6 board generates 28 V through a power-factor improvement regulator using an insulating converter and outputs it to an LD2 board. The G6 board also generates 12 V in two channels from 28 V using a step-down DC/DC converter and outputs it to a QB board and LCD panel.
During DC input, the G6 board generates 28 V using a step-up DC/DC converter and outputs it to the LD2 board. It also generates 12 V in two channels from 28 V using a step-down DC/DC converter and outputs it to the QB board and LCD panel.

## 2-3. H1 Board

The H1 board mounts a power switch, input selector button, function button, and rotary encoder.

## 2-4. H2 Board

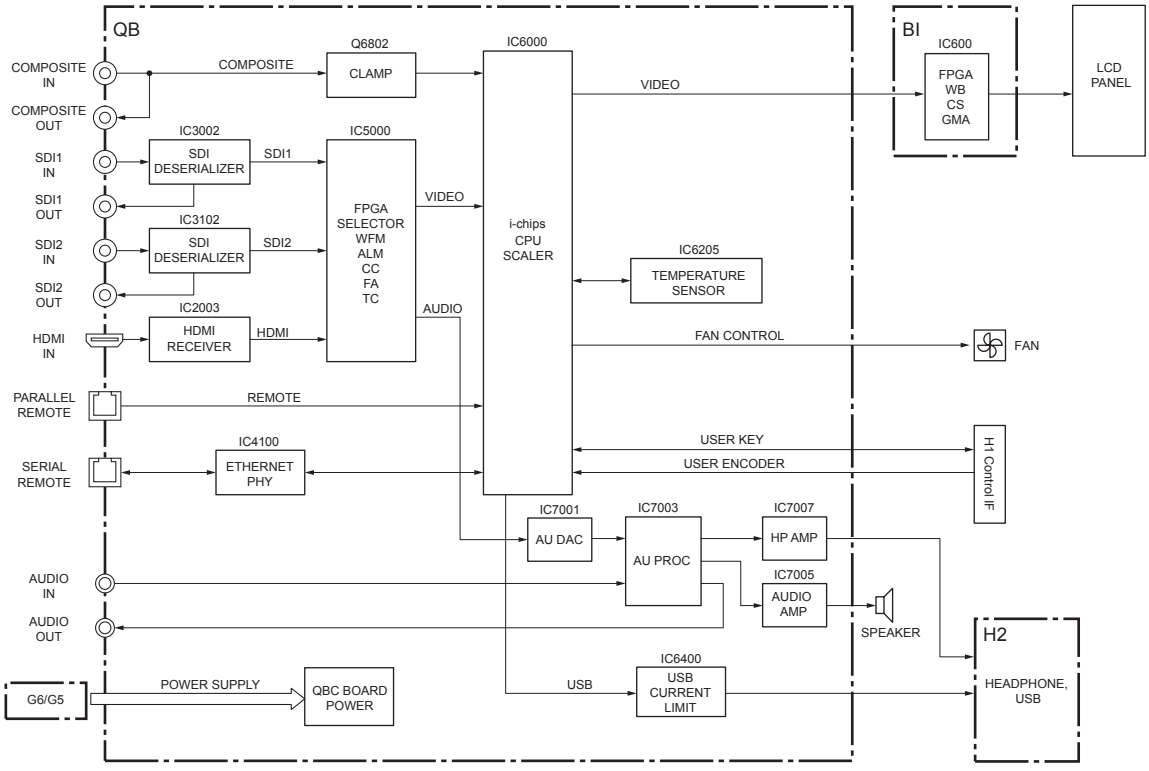
The H2 board mounts a headphone terminal and USB terminal (for function extension in future).

## 2-5. LD2 Board

The LD2 board is used to make backlight bright.
The LD2 board controls an LED current using a constant-current driver and makes the LED light at a fixed luminance. An LED voltage steps up from 28 V to about 57 V suitable for LED specifications using a step-up circuit.

## 2-6. QB Board

The QB board performs video/audio signal processing, LCD panel control, and CPU and network processing. The details of each block are as shown below.




### 1. Video signal processing

For a video signal, an SDI signal (2 channel), HDMI signal (1 channel), and analog composite signal (1 channel) can be input.

After a serial signal is cable-compensated using equalizers (IC3000 and IC3100), the SDI signal is converted into a parallel signal using deserializers (IC3002 and IC3102) and sent to selector FPGA (IC5000). In the active throughout terminal of the SDI signal, the signal re-clocked in the deserializers is output through driver circuits (IC3001 and IC3101).

The HDMI signal is converted into a parallel signal using a receiver (IC2003) and sent to selector FPGA (IC5000). The selector FPGA extracts AVI Info superimposed on a signal and performs the processing based on AVI Info. EDID data is stored in EEPROM (IC2000). The EDID data is also used for the contents protected by HDCP. It is authenticated for decoding using a receiver.

The analog composite signal is clamped using Q6802 and then sent to the main signal processing circuit (IC6000) incorporated into a decoder. YC separation and color demodulation are all processed in IC6000.

IC5000 realizes two-channel SDI and HDMI signal selection, sub-screen functions (WFM: Wave-Form Monitor, ALM: Audio Level Meter, and VS: Vector Scope), the camera focus assist (FA: Focus Assist) superimposed on a video signal, time code display (TC: Time Code), and closed caption display (CC: Close Caption).

IC6000 performs the IP conversion of a video signal's interlacing signal, image scaling processing, and sub-screen superimposition.

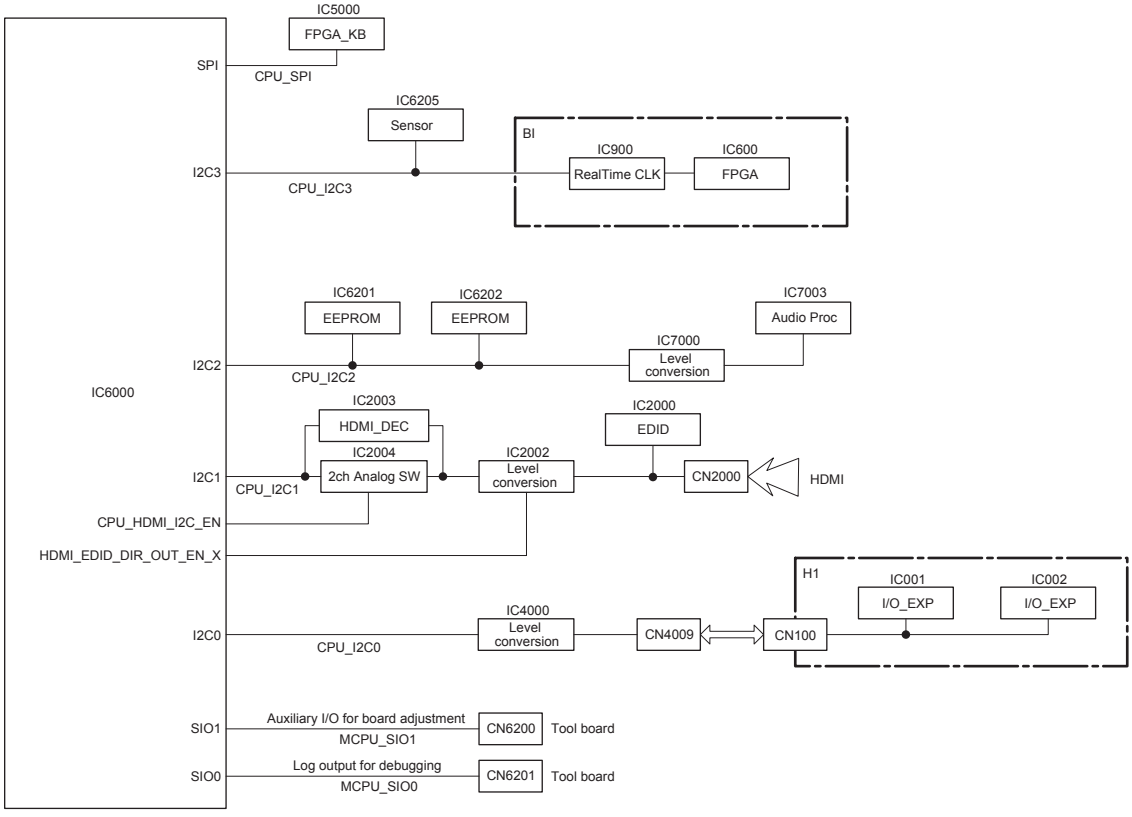
### 2. Audio signal processing

The audio signal embedded into an SDI signal is decoded using IC5000. The audio signal embedded into an HDMI signal is decoded using IC2003. One signal is selected out of these two kinds of digital signals and an analog audio signal from AUDIO IN terminal, and sent to an analog output terminal, speaker output terminal, and then headphone output terminal.

### 3. CPU

The CPU of this unit is mounted in IC6000. Each device is set and controlled by the user control and parallel remote control from an H1 board, the control from LAN, and the value that a panel temperature sensor detects.

Connection buses are as shown below.




## 2-7. BI Board

The BI board mounts FPGA for video signal processing and RTC (Real Time Clock).
FPGA (IC600) switches gamma correction, white balance, and color space and superimposes an on-screen tally and IMD (In Monitor Display). The image-adjusted signal is output to an LCD panel

# Section 3
# Troubleshooting

## 3-1. LED (Power Switch) on the Front Panel Blinks in Red

Connect this unit and terminal PC to confirm the device and register in this unit and perform the processing corresponding to the value.

### 3-1-1. Preparation

**Required equipment**

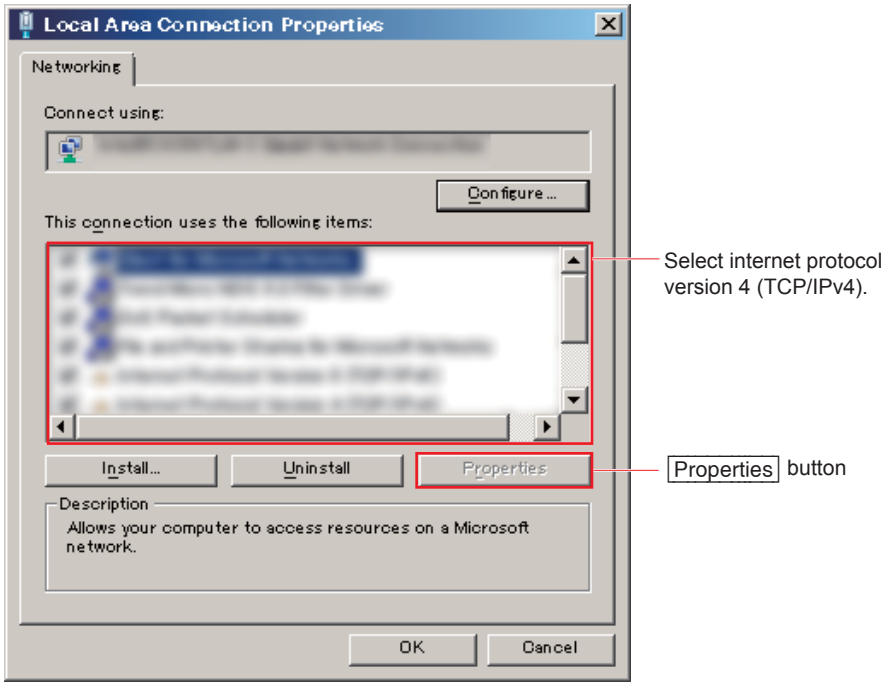
- Personal computer (PC)
  OS: Windows Vista, Windows 7, and Windows 8
- LAN cable (Cross cable)
- Terminal software: TeraTerm, etc.
  In this section, TeraTerm (open source software) is used as the terminal software for the description.

### 3-1-2. Setting of PC

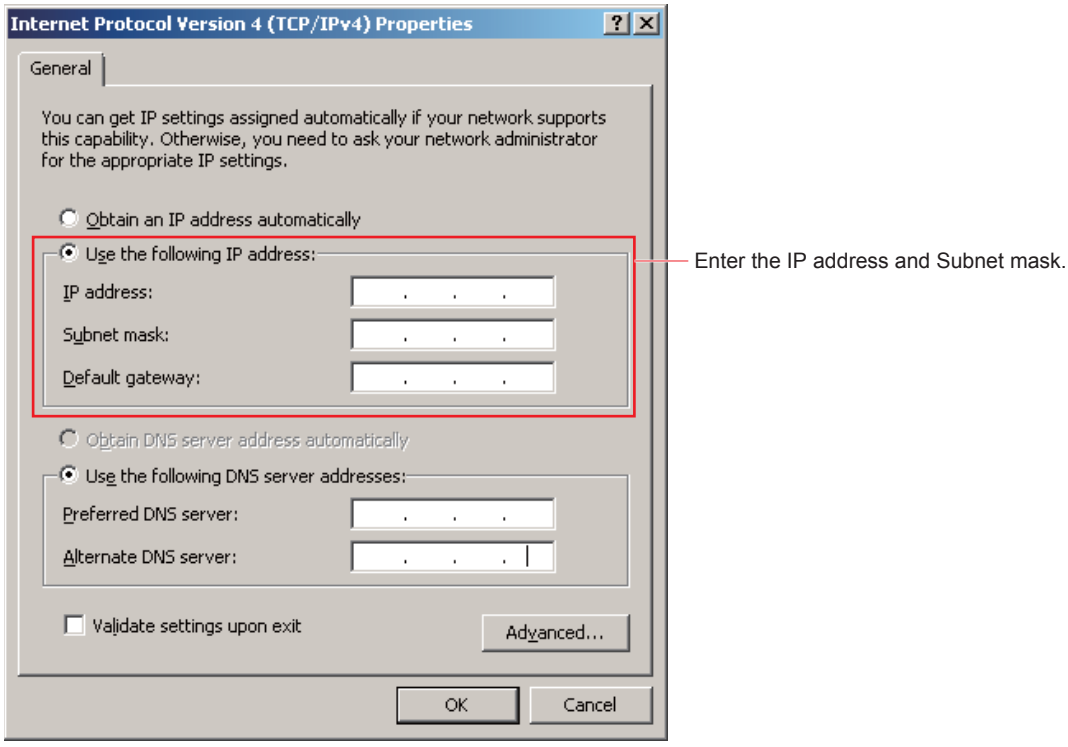
**Tip**

The procedure in this section is described using Windows 7. The procedure and term may vary depending on the environment of OS used.

1. Start PC.
2. Click Start → Setting → Control panel → Network connection.
3. Right-click the Local Area Connection.
   A Local Area Connection Properties screen is displayed.



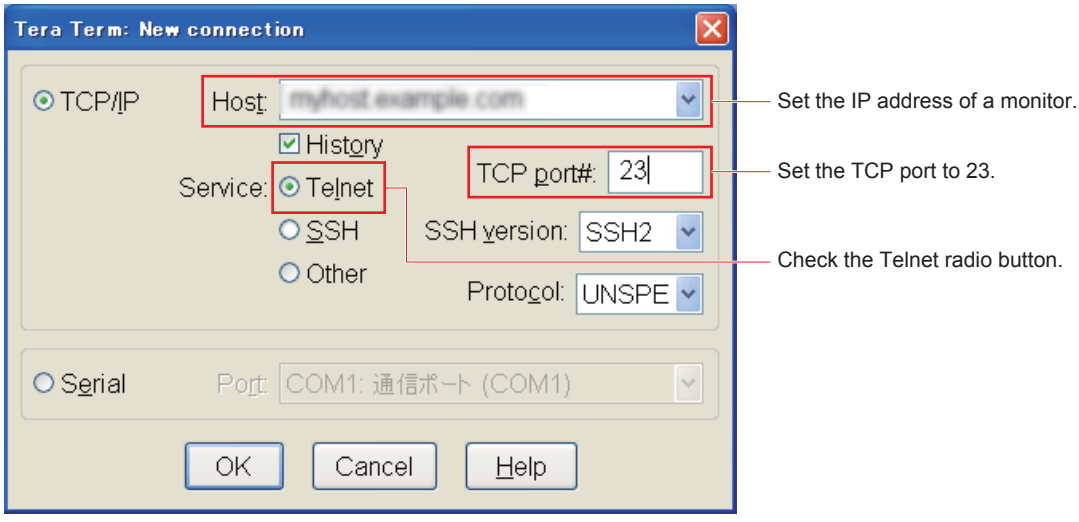
4. Select internet protocol version 4 (TCP/IPv4) and click the Properties button.




5. Enter 192.168.0.10 in the IP address field, enter 255.255.255.0 in the subnet mask field, and click the OK button.
6. Close the Local area connection property screen.

### 3-1-3. Connection with Monitor

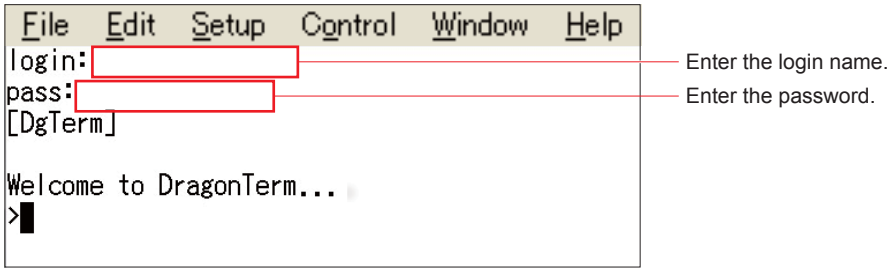
1. Start terminal software (TeraTerm).
2. Set the connection destination to the IP address of a monitor and set the TCP port to 23.
3. Check the Telnet radio button in the Service column.



4. Enter the login name and password.
   "Welcome to Dragon Term…" is displayed. (Connection is completed.)

**Tip**

- When you enter the password, no characters are displayed on the screen.
- For the login name and password, contact your local Sony Sales Office/Service Center.




## 3-1-4. Reading the Register

### Abnormal temperature check method

1. Enter "cd lm75_qb" on the terminal software (TeraTerm) and press the Enter key.
   ">lm75_qb>" is displayed.
2. Enter "ra 0 1" and press the Enter key.
3. Check the value of Bit 15-8 in address 0h.
   0 2680 // read OK
   └─Bit15 to 8

<Display example>

```
Welcom to DragonTerm..
>cd lm75_qb
>lm75_qb>
>lm75_qb>ra 0 1
0 2680 // read OK
```

### Backlight board check method

1. Enter "cd C812_master" on the terminal software (TeraTerm) and press the Enter key.
   ">C812_master" is displayed.
2. Enter "ra 23 22 1" and press the Enter key.
3. Check the value of 23 22.
   23 22 9e //read OK

<Display example>

```
Welcom to DragonTerm..
>cd C812_master
>C812_master>
>C812_master>ra 23 22 1
23 22 9e //read OK
```

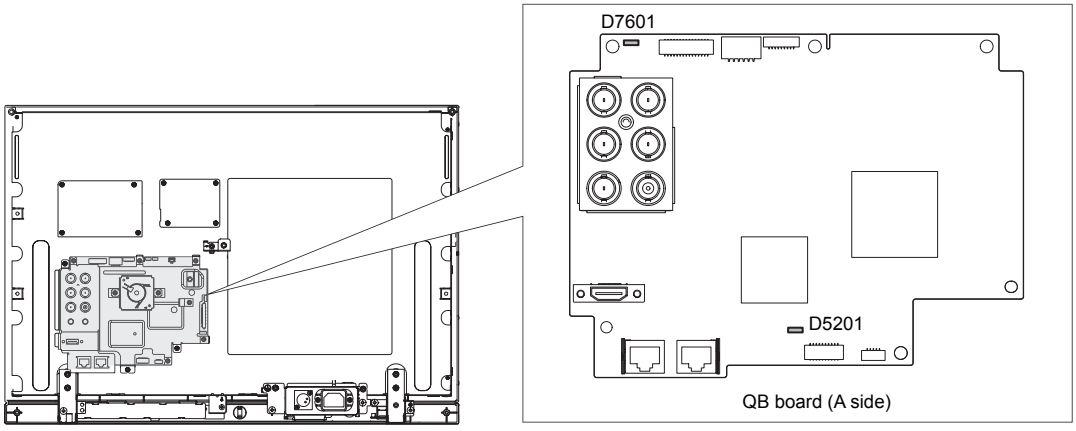
## 3-1-5. Check Method and Remedy

| Check item | Reference device | Address | Read data in a normal state | Check method | Remedy |
|---|---|---|---|---|---|
| Temperature failure | lm75_qb | 0h<br>Bit15-8 | Value less than 41h | Read data value is 41h or more.<br>Any communication is impossible. | When the value is 41h or more<br>⇨ Replace the QB board or LCD panel. (Refer to Section 1-4-4 or 1-4-11.)<br><br>When any communication is impossible<br>⇨ Replace the QB board. (Refer to Section 1-4-4.)<br><br>**Note**<br>This failure does not appear as symptoms when a fixed time does not pass. In this case, the LED display below appears.<br>Power ON → LED blinking in orange (every other second) → LED blinking in red |
| Backlight board | C812_master | 23 22h | 16h:<br>When the backlight error is detected<br>9Eh:<br>When the backlight is lit normally<br>1Eh:<br>During the power saving operation | Read data is 16h. | Check the LD2 board.<br>When the LD2 board CL302 (CN301, 8-pin) is Lo, check the power supply of the LD2 board. (CN301, 1-pin: 28 V)<br>⇨ If there is no problem with the input voltage, replace the LD2 board or LCD panel. (Refer to Section 1-4-6 or 1-4-11.) |
| During DC input | | | | | • Confirm whether the supplied DC voltage is the prescribed voltage (12 V to 17 V).<br>• Replace the G6 board. (Refer to Section 1-4-3.) |

## 3-2. LED on a QB Board Lights

**Tip**

Check the (lighting and blinking) state of LED on a QB board with only the rear cover and QBI shield removed with reference to the parts location shown in the figure below.




### 1. State in which D5201 was turned on

A failure occurs in FPGA on a QB board. If the problem is improved by installing the BI board (works properly), replace the BI board. If the problem persists, replace the QB board.

### 2. State in which D7601 was turned on

A failure occurs in the power supply below. Replace the board corresponding to the defective power supply.

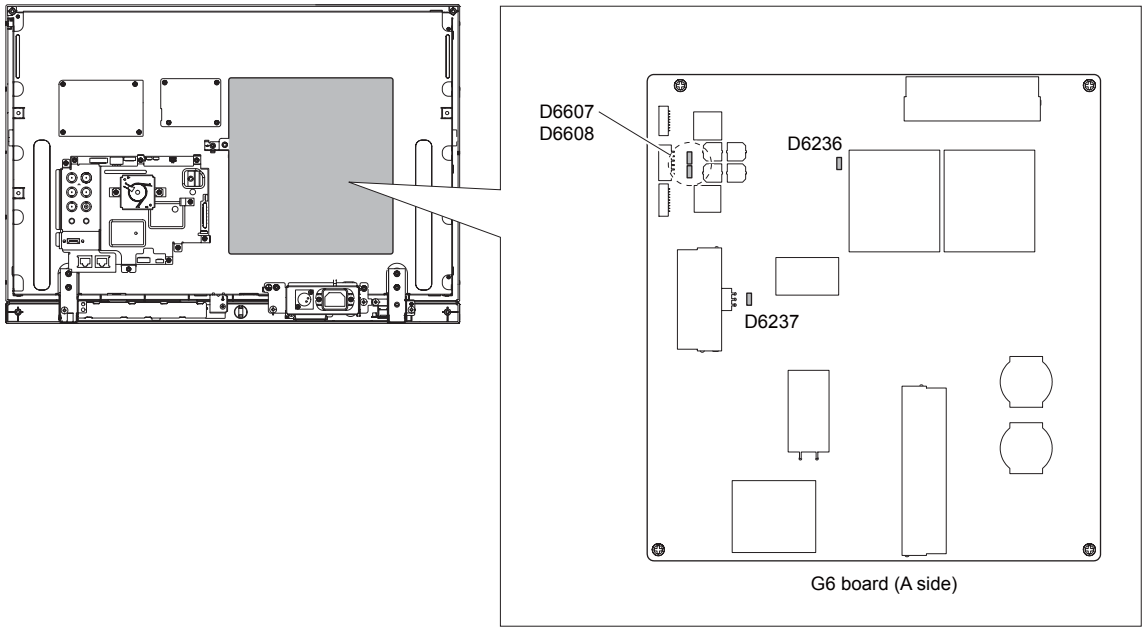
**QB board**

- +3.3V_STB
- +1.5V_STB
- +1.2V_STB
- +3.3V_QBI

**BI board**

- +3.3V
- +1.2V

## 3-3. LED on a G6 Board Lights




**Note**

Pay careful attention to an electric shock when measuring a G6 board using a tester.

- D6236: 28 V output display (Green)
- D6608: 12 V (For LCD panel) output display (Green)
- D6607: 12 V (For QB board) output display (Green)
- D6237: AC_OFF_DET output display and AC input monitoring (Red)

### How to deal with the status during AC input

D6236, D6607 and D6608 turn on. D6237 normally operates with the light turned off. 28 V, 12 V (QB) and 12 V (T-CON) become output state. Also, 12 V generates the power with the step-down converter from 28 V.

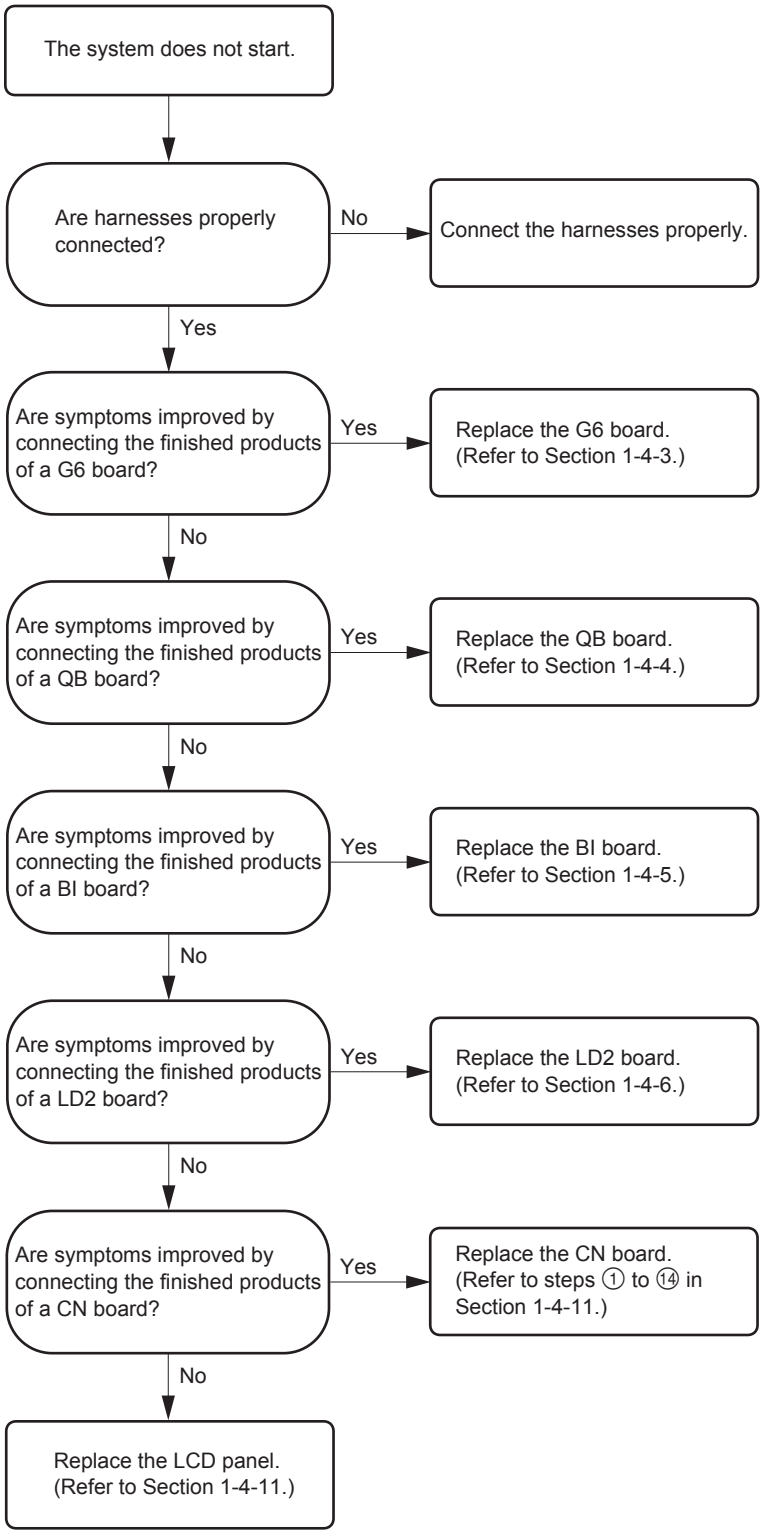
| D6236 | D6608/D6607 | D6237 | Status | Remedy ("⇨" indicates remedy.) |
|---|---|---|---|---|
| Turn on | Turn on | Turn off | Normal | – |
| Turn off | Turn off | Turn off | 28 V failure | 28 V is not output.<br>When 28 V is not output, 12 V is not also output and all LEDs are turned off.<br>A primary power circuit (AC input to 28 V insulating converter) is judged to be abnormal.<br>⇨ Replace the G6 board. (Refer to Section 1-4-3.) |
| Turn on | Turn off | Turn off | 12 V failure | 12 V is not output.<br>A secondary DC/DC converter is judged to be abnormal. .<br>⇨ Replace the G6 board. (Refer to Section 1-4-3.) |
| Turn on | Turn on | Turn oN | AC detection circuit failure | Abnormality is found in an AC voltage or AC detection circuit (AC OFF DET circuit).<br>Confirm the item below using a tester.<br>⇨ Confirm whether an AC input voltage is 70 V or more.<br>Yes (70 V or more):<br>If the problem is improved by replacing with the G6 board (works properly), replace the G6 board. (Refer to Section 1-4-3.) If the problem persists, replace the QB board. (Refer to Section 1-4-4.)<br><br>No:<br>Set the AC voltage to the normal value (77 V or more), and then check the state of LED. If the problem persists, replace the G6 board. (Refer to Section 1-4-3.) |

### How to deal with the status during DC input

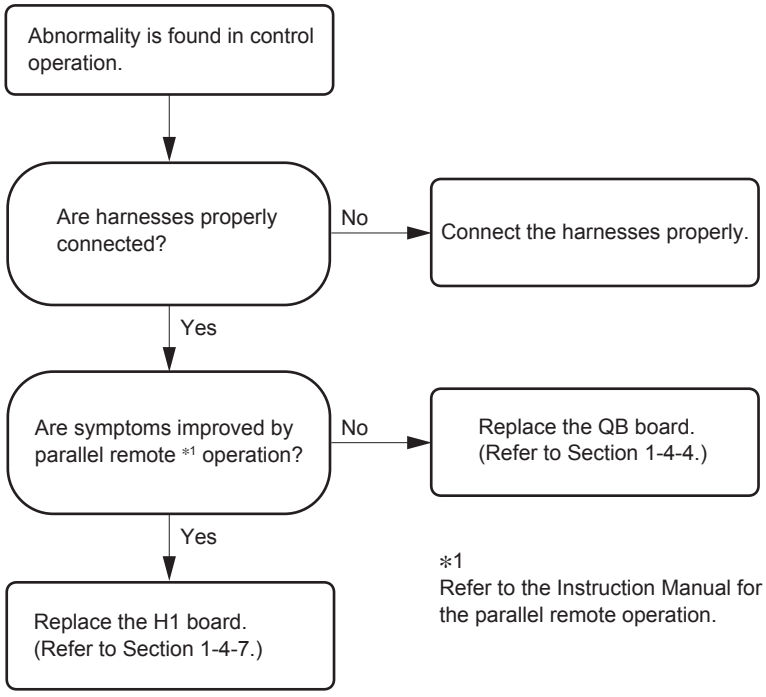
D6236, D6607 and D6608 light up. D6237 normally operates with the light turned off. 28 V, 12 V (QB) and 12 V (T-CON) become output state.

| D6236 | D6608/D6607 | D6237 | Status | Remedy ("⇨" indicates remedy.) |
|---|---|---|---|---|
| Turn on | Turn on | Turn off | Normal | – |
| Turn off | Turn off | Turn off | 28 V failure | 28 V is not output.<br>When 28 V is not output, 12 V is not also output and all LEDs are turned off.<br>⇨ Replace the G6 board. (Refer to Section 1-4-3.) |
| Turn on | Turn off | Turn off | 12 V failure | 12 V is not output.<br>⇨ Replace the G6 board. (Refer to Section 1-4-3.) |

## 3-4. System Does Not Start



## 3-5. Abnormality Is Found in Control Operation



# Section 4
# Spare Parts

## 4-1. 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.

## 4-1. 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。

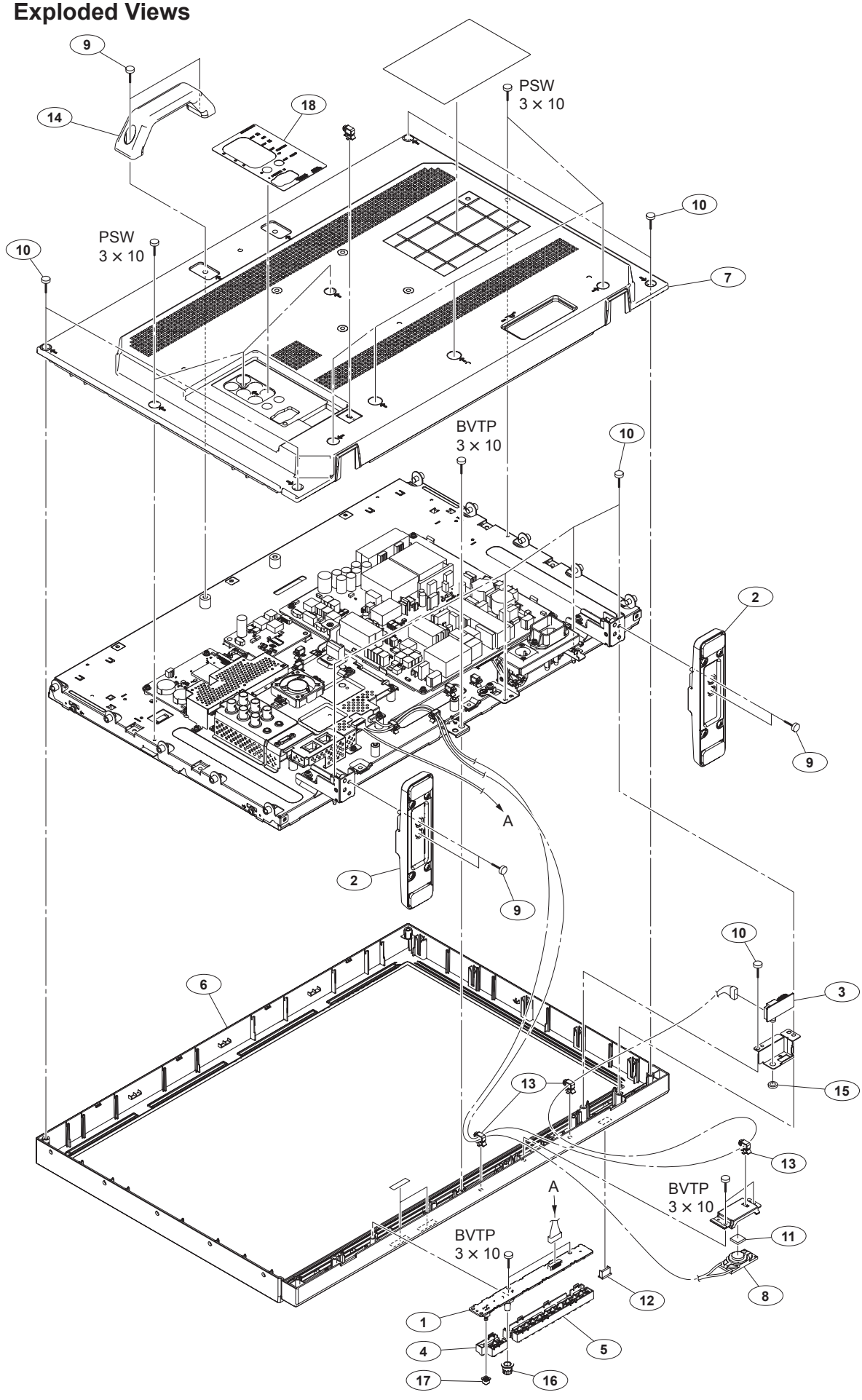
### 3. 部品の在庫

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

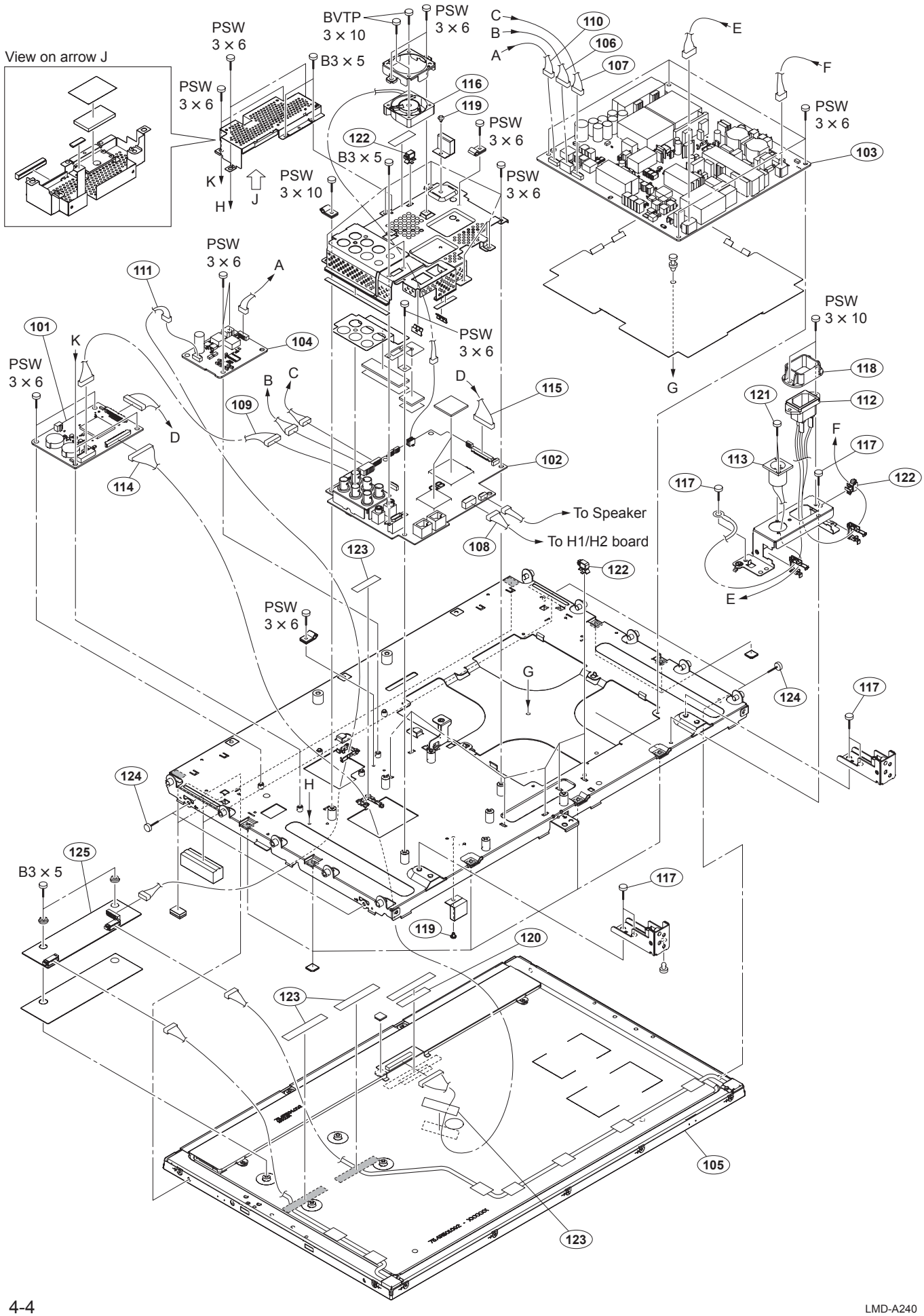
部品番号の記載されていないハーネスは，サービス部品として登録されていません。

## 4-2. Exploded Views



| No. | Part No. | SP | Description |
|---|---|---|---|
| 1 | A-2015-470-A | s | MOUNTED CIRCUIT BOARD, H1 |
| 2 | A-2015-476-A | s | BLOCK, STAND |
| 3 | A-2015-478-A | s | MOUNTED CIRCUIT BOARD, H2 |
| 4 | X-2588-938-2 | s | KEYPAD ASSY, CONTROL |
| 5 | X-2588-939-1 | s | KEYPAD ASSY, INPUT |
| 6 | X-2589-226-2 | s | BEZEL ASSY (24) |
| 7 | X-2589-229-2 | s | REAR COVER ASSY (24) |
| 8 | 1-859-036-13 | s | MINIATURE SPEAKER (WITH HARNESS) |
| 9 | 2-580-602-01 | s | SCREW, +PSW M4X12 |
| 10 | 2-580-639-01 | s | SCREW, +BVTP 4X12 TYPE2 IT-3 |
| 11 | 3-087-319-01 | o | CUSHION, FOOT |
| 12 | 3-275-891-11 | s | COVER, USB |
| 13 | 4-098-147-41 | s | CLAMP |
| 14 | 4-264-182-01 | s | HANDLE |
| 15 | 4-487-558-01 | s | NUT (M6X0.5) |
| 16 | 4-488-286-01 | s | KNOB, ROTARY ENCODER |
| 17 | 4-488-287-01 | s | BUTTON, STANDBY |
| 18 | 4-529-786-01 | s | TERMINAL LABEL |
| | 7-682-949-09 | s | SCREW +PSW 3X10 |
| | 7-685-647-71 | s | SCREW +BVTP 3X10 TYPE2 IT-3 |

## Board and LCD Block



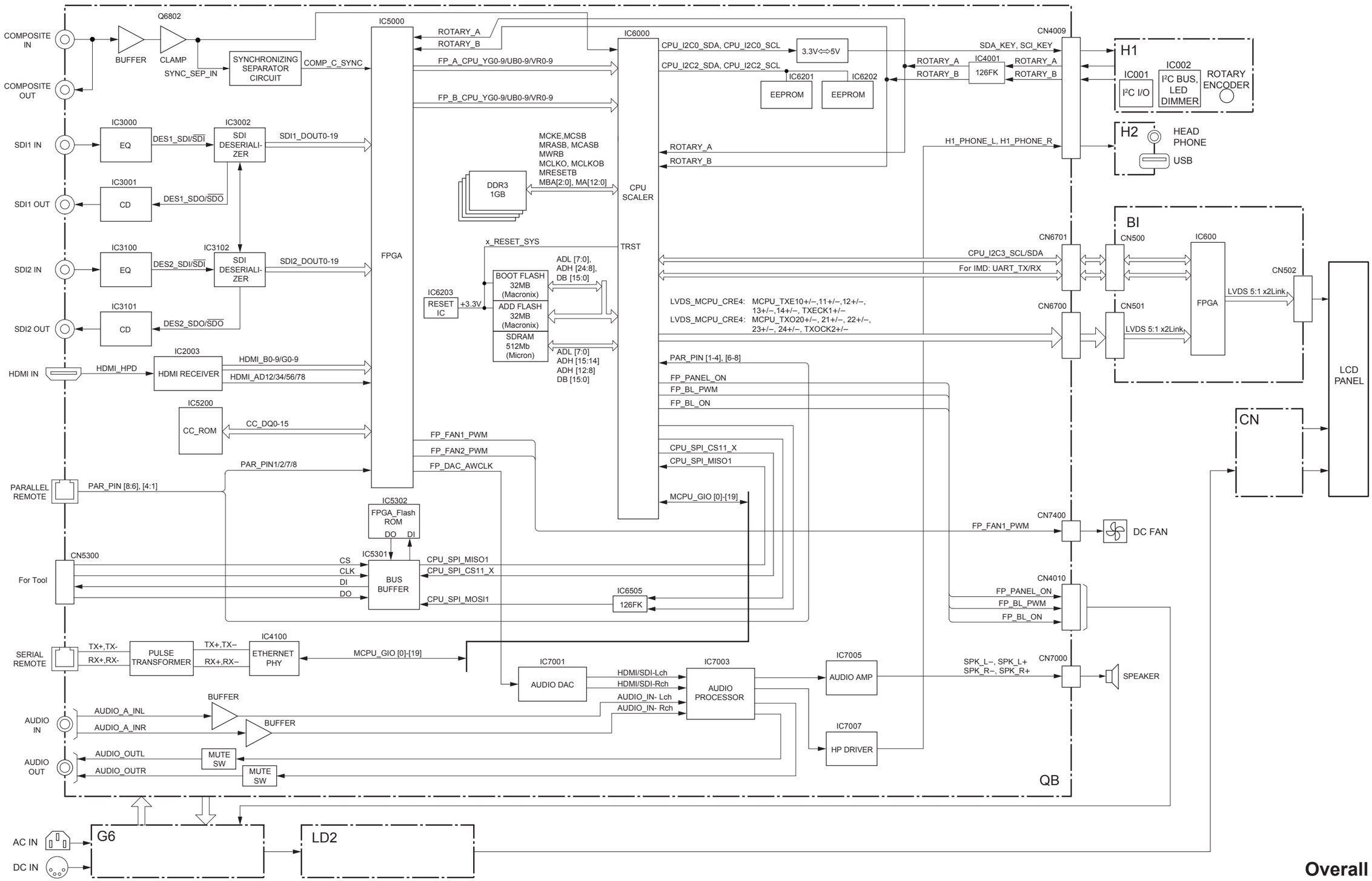
| No. | | Part No. | SP | Description |
|---|---|---|---|---|
| 101 | | A-2015-480-A | s | MOUNTED CIRCUIT BOARD, BI |
| 102 | | A-2015-649-C | s | MOUNTED CIRCUIT BOARD, QB |
| 103 | | A-2015-652-A | s | MOUNTED CIRCUIT BOARD, G6(24) |
| 104 | | A-2107-588-A | s | MOUNTED CIRCUIT BOARD, LD2 |
| 105 | ⚠ | 1-812-204-11 | s | LCD PANEL |
| 106 | | 1-848-245-12 | s | CONNECTOR ASSY (6P) |
| 107 | | 1-848-246-12 | s | CONNECTOR ASSY (9P) |
| 108 | | 1-848-249-11 | s | CONNECTOR ASSY (20P) |
| 109 | | 1-848-250-11 | s | CONNECTOR ASSY (6P) |
| 110 | | 1-848-251-11 | s | CONNECTOR ASSY (8P) |
| 111 | | 1-971-067-11 | s | CONNECTOR ASSY (12P) |
| 112 | ⚠ | 1-848-254-11 | s | AC CONNECTOR ASSY (3P) |
| 113 | ⚠ | 1-848-256-12 | s | CONNECTOR ASSY (4P) |
| 114 | | 1-971-217-11 | s | CONNECTOR ASSY (LVDS51P) |
| 115 | | 1-848-259-11 | s | CONNECTOR ASSY (LVDS41P) |
| 116 | ⚠ | 1-855-048-11 | s | DC FAN 40MM |
| 117 | | 2-434-609-02 | s | SCREW (M4X8) |
| 118 | | 2-990-241-02 | s | HOLDER (A), PLUG |
| 119 | | 3-531-576-01 | s | RIVET |
| 120 | | 4-000-499-01 | s | TAPE (OF) |
| 121 | | 4-035-802-01 | s | SCREW (M2.6X.6) |
| 122 | | 4-098-147-41 | s | CLAMP |
| 123 | | 4-100-136-01 | s | SHEET (CORE), C |
| 124 | | 2-580-591-01 | s | SCREW, +PSW M3X5 |
| 125 | | A-2107-589-A | s | MOUNTED CIRCUIT BOARD, CN |
| | | 7-682-546-09 | s | SCREW +B 3X5 |
| | | 7-682-947-01 | s | SCREW +PSW 3X6 |
| | | 7-682-949-09 | s | SCREW +PSW 3X10 |
| | | 7-685-647-71 | s | SCREW +BVTP 3X10 TYPE2 IT-3 |

## 4-3. Packing Materials & Supplied Accessories

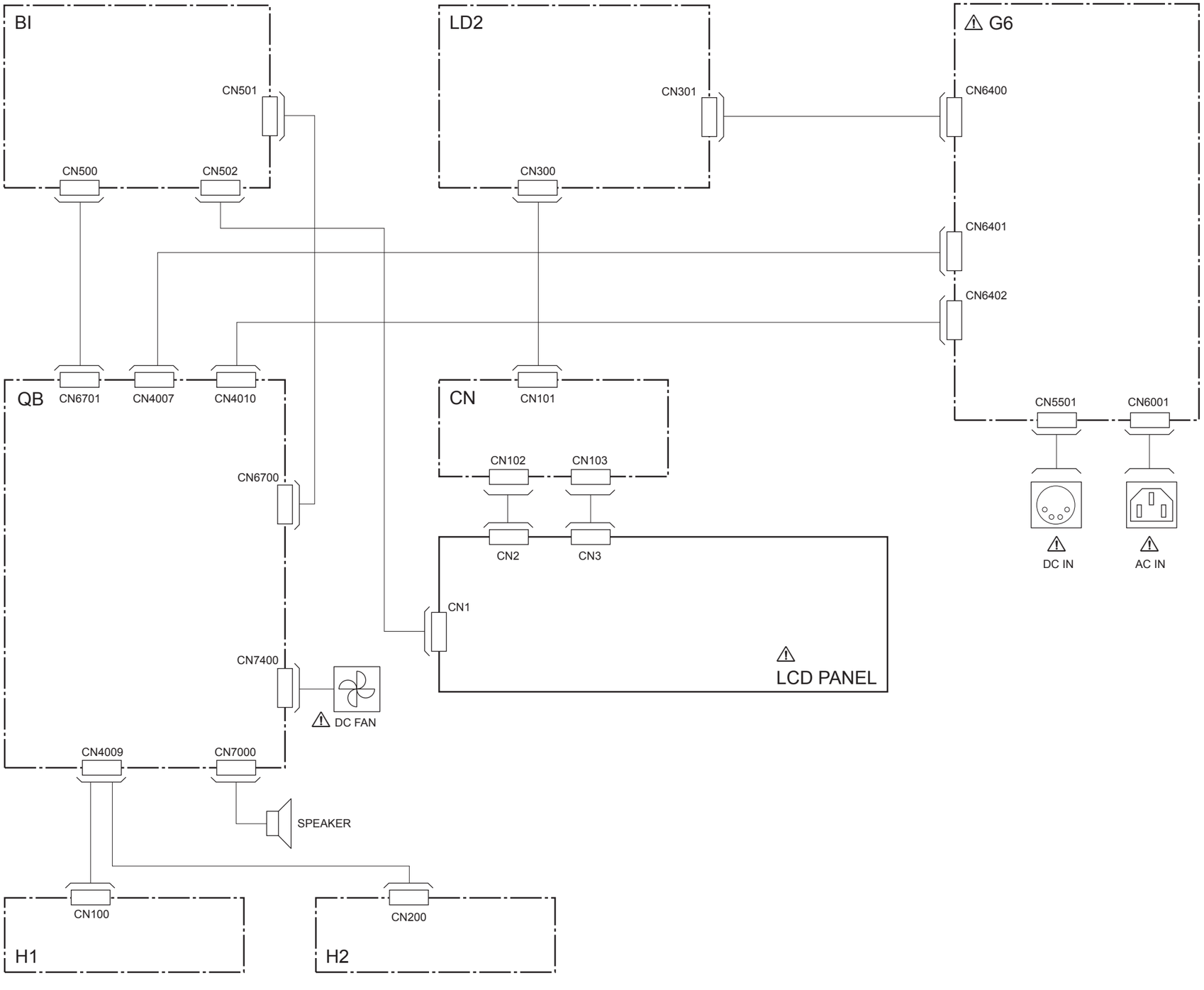
```
---------------------------------------
PACKING MATERIALS & SUPPLIED ACCESSORIES
---------------------------------------

 *1:[For SY]
 *2:[For CN]

 Ref. No.
 or Q'ty  Part No.    SP Description

 1pc *1 ⚠ 1-791-041-33 s CORD SET, POWER (For J)
 1pc *1 ⚠ 1-793-461-12 s PLUG, CONVERSION (3P-2P) (For J)
 1pc *2 ⚠ 1-830-860-12 s AC POWER-SUPPLY CORD
 1pc      2-990-242-01 s HOLDER (B), PLUG
 1pc *1 ⚠ 4-527-033-04 s CD-ROM
                         OPERATING INSTRUCTIONS (PDF)
                         (JAPANESE, ENGLISH, FRENCH, GERMAN,
                          ITALIAN, SPANISH, SIMPLIFIED CHINESE,
                          TRADITIONAL CHINESE, KOREAN)
```

# Section 5
# Diagrams

## 5-1. Overall Block Diagram



## 5-2. Frame Wiring



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