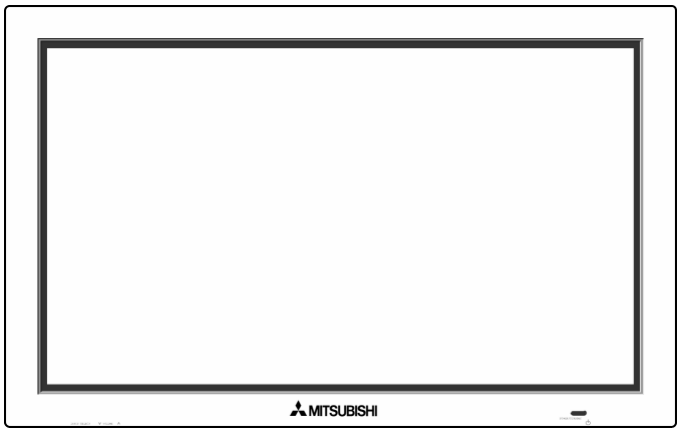
2004

MITSUBISHI ELECTRIC

Service Manual

PLASMA DISPLAY PANEL



PD-6150

CAUTION:
Before servicing this chassis, it is important that the service person read the "SERVICE SAFETY" section in this manual.

SPECIFICATIONS

- **Power** : AC 120V, 50/60Hz
  540W (Typical)
  6.7A (Maximum)
- **Signals**
  Sync Range : Horiz : 15.5 to 110kHz
  (Automatic : step scan)
  : Vert : 50.0 to 120 Hz
  (Automatic : step scan)
  Input Signals : RGB, HD*1,
  DVD*1, DTV*1
- **Input Terminals**
  RGB : Visual 1 (Analog) : Mini D-sub 15-pin
  Visual 2 (Analog) : BNC (R,G,B,H/CS,V)*2
  Visual 3 (M-LINK) : MONITORLINK™ (HDMI)
  Video : Visual 1 : BNC
  Visual 2 : RCA-pin
  Visual 3 : S-Video: DIN 4-pin
  DVD/HD/DTV : Visual 1 RCA-pin (Y,PB[CB},PR{CR])*1
  Visual 2 BNC (Y,PB[CB},PR{CR])*1 *2
  Visual 3 (M-LINK) : MONITORLINK™ (HDMI)
  Audio : Stereo RCA x 3 (Selectable)
  External Control : D-sub 9-pin MONITORLINK™ (RS232C)
- **Sound Output** : 9W+9W at 6 ohms
- **Dimensions** : (W)57.9" (H)34.7" (D)4.7"
  (W)1470 (H)880 (D)119 mm
- **Weight** : 134.5 lbs / 61 kg

***1 HD/DVD/DTV Input Signals supported:**

480P (60Hz)	480I (60Hz)
525P (60Hz)	525I (60Hz)
576P (50Hz)	576I (50Hz)
625P (50Hz)	625I (50Hz)
720P (60Hz)	1035I (60Hz)
1080I (50Hz)	1080I (60Hz)

***2 The 5-BNC connectors are used as RGB/PC2 and HD/DVD2 input. Select one of them under "BNC SELECT".**

- Weight and dimensions shown are approximate.
- Design specifications are subject to change without notice.

MITSUBISHI DIGITAL ELECTRONICS AMERICA, INC.
9351 Jeronimo Road, Irvine, CA 92618-1904
Copyright © 2004 Mitsubishi Digital Electronics America, Inc.
All Rights Reserved

CONTENTS

SERVICE SAFETY 2-1
TROUBLESHOOTING 3-1
METHOD OF ADJUSTMENTS 4-1
METHOD OF DISASSEMBLY 5-1
PARTS LIST 6-1
CONNECTION DIAGRAM 7-1
CONNECTOR PIN EXPLANATION 8-1
BLOCK DIAGRAM 9-1

■Safety cautions

The matters to be observed without fail are explained below. These matters are indispensable for the prevention of an accident during the maintenance servicing, the “security of products” after the completion of servicing work, and the “prevention of the repeated occurrence of similar fault.”

(1) The degree of danger and material damage, caused as a result of wrong use by disregarding the contents of the display” is distinguished and explained in the table below.

WARNING	If this display is disregarded and equipment is handled wrongly, this can be a cause of physical injury and a fire, thus leading a person to death or serious injury.
CAUTION	If this display is disregarded and equipment is handled wrongly, this may lead to personal injury or material damage.

(2) Kinds of the matters to be observed are classified and explained in the icons shown below.

	This icon indicates a dangerous place where an electric shock is anticipated.
	This icon indicates the contents of “caution” that must be borne in mind, without fail.
	This icon indicates the contents of “caution” that must be practiced, without fail.

WARNING

• Observe the caution matter, without fail.

- In the place where a particular caution is needed during maintenance servicing, such a caution note is displayed with a label or a stamp that is given to the cabinet, chassis, PWB, etc. These caution notes and also the caution matters of ⚠WARNING given in the instruction manuals, etc., must be observed, without fail.

• Be careful of an electric shock or a burn.

- The power block or the PDP module involves the sections where high voltage or high temperature is prevalent. When equipment is energized, use working gloves in order to prevent an electric shock or a burn. At the time of transportation, disassembly, reassembly, and the replacement of parts, such a servicing job must be done after pulling out the power plug.

• Modification of equipment is absolutely prohibited. Use the specified parts at all times.

- If any modification is performed, the validity of the manufacturer’s warranty is lost at that moment. The personnel who did this modification is responsible for the physical injury or the like, if it should occur as a result of the modification. The parts used are given the safety-based characteristics, such as non-flammability or sufficient withstand voltage. The parts to be replaced shall be those which are specified in the list of replacement parts.(Example: The lithium battery (circuit symbol BA9501 in the MAIN PWB) will give rise to explosion if its polarity is wrongly treated.

• The replaced parts and wiring must be arranged in the original conditions.

- For safety reasons, insulation materials like tubes and tapes may be used or some parts may be mounted clear of the PWB. The internal wiring and the fastening with the clampers for separation from high-heat and high-voltage parts shall be returned to their original conditions, without fail.

• For the maintenance servicing, safety inspection is needed in accordance with the check list.

• Inspection should be carried out according to the check list shown below, in regard to safety inspection before and after repairing, authentic repair, and explanation to the user.

(Method of insulation check)

Mount a PDP module on the product to complete it. After the completion of aging and others, pull out the power plug from the wall outlet, remove the cable, and turn on the power switch. Use a 500V megger (Note 1) and confirm that the insulation resistance is 50M. or more between each terminal (except for the 3-core earth terminal) of the power plug (Note 2) and the external exposed metallic parts (Note 3). If the insulation resistance is found to be below the specified value, recover the faulty section and make another insulation check again.

(Note 1) If a 500V megger is not available at that time, use a circuit tester or the like.

(Note 2) In the case of a 3-core terminal, the earth resistance shall be 1Ω or less between the earth terminal and the earth side of each input terminal.

(Note 3) Head phone jack, speaker terminals, remote control terminals, each I/O terminals, control terminals, screws, etc.

Check item			Check column
Safety inspection before repairing	Installation conditions	Is there any influence by high temperatures (due to direct sunlight, etc.), moisture (steam, etc.), oil fume, dust, and dew condensation?	
		Is the condition of ventilation acceptable (distance to the wall, ventilation holes, etc.)?	
		Is the condition of the antenna acceptable (reach to the wire, bend, tilt, etc.)?	
		Is the condition of power supply acceptable (regular outlet, adequate earthing, concentrated wiring, etc.)?	
		Is the condition of installation acceptable (unstability, height, tilt, falling preventive materials, etc.)?	
	Product main body	Are the power plug and the power cord free from damage or the attachment of dust?	
		Is the product free from unusual sound, unusual odor, or unusually high temperature?	
		Are the knobs, handles, and back cabinet free from abnormality (rattling, drop off, etc)?	
		Is equipment free from any abnormality in daily use?	
Authentic repair	Trouble-shooting	Is the symptom examined according to the user's statement?	
		Is the product disassembled to the grade where troubleshooting is possible?	
		Is the symptom reproduced, the faulty part located as a result of fault diagnosis, and replaced?	
		Is the normal condition confirmed after aging?	
	Specified parts	Is the part, specified in the list of parts, used for the power unit?	
		Is the part, specified in the list of parts, used for the insulation material (material, thickness, etc)?	
		Is the part, specified in the list of parts, used for the power plug and the power cord?	
		Is the part, specified in the list of parts, used for the internal cabling and the high voltage lead wires?	
		Is the part, specified in the list of parts, used for the PDP module?	
		Are the rest of replaced parts those specified in the list of parts?	
		Is the part version correct?	
	Wires mounted	Are the part mounting position, fixing method, and the distance the same as those of original?	
		Is the wiring layout the same as the original (connector, clamper, distance from a heat generating part, etc)?	
		Is the soldering condition acceptable (whisker, too much solder, tunnel, failure in winding, etc)?	
		Is the insulation material the same as the original (tubes, tapes, fiber, etc.)?	
Safety inspection after repairing	Are the repaired section and its peripheral parts free from abnormality?		
	Is there any intrusion of foreign substances (solder chips, wire chips, screw chips, screws, etc.)?		
	Is everything free from danger due to deterioration (discoloration, damage, leakage, etc.)?		
	Is the safety protection circuit in normal operation?		
	Are contamination and dust removed after final finish?		
	Is there any failure in mounting and tightening (back cabinet, falling preventive materials, etc.)?		
	Is there any influence by high temperatures (direct sunlight, stove, etc.), moisture (steam, etc.), oil fume, dust, and dew condensation?		
	Is the condition of ventilation acceptable (distance to the wall, ventilation holes, etc.)?		
	Is the condition of the antenna acceptable (reach to the wire, bend, tilt, etc.)?		
	Is the condition of power supply acceptable (regular outlet, adequate earthing, concentrated wiring, etc.)?		
	Is the condition of installation acceptable (unstability, height, tilt, falling preventive materials, etc.)?		
	Is the insulation check finished with a circuit tester or the like? (Refer to the above description, "Method of insulation check.")		
Explanation to the user	Are the contents and actual treatment of repairing and safety inspection services duly explained?		
	Explanation of use	To use equipment after reading through the instruction manual.	
		Not to dislodge the back cabinet.	
		Not to insert anything in ventilation holes and clearances.	
		To pull out the power plug if the product is not used for a long time.	
		To ask an NEC's authorized maintenance service company for the cleaning of the product interior for the removal of dust.	
		To turn off the power switch when cleaning the panel surface and the cabinet.	
		To turn off the power switch of the main unit for the product provided with a remote control, in case of going out or sleeping.	
	Are explanations given to pull out the power plug in case of abnormality and to contact the dealer or an NEC's authorized maintenance service company.		

CAUTION

• Observe the caution matter, without fail

• The caution matters of CAUTION given in the instruction manuals, etc., must be observed, without fail.

• Do not give shocks and vibration.

• The panel surface (display plane) of the filter and the PDP module is made of glass. If any shocks or vibration is applied, it may be broken and the scattered glass chips will be a cause of injury.

• Do not put anything.

• Do not put anything on the product. Otherwise, this can be a cause of injury as a result of falling down or dropping caused by imbalance.

• Transportation must be done by enough personnel.

• The product is heavy. In the case of transportation, unpacking, or packing, more than two persons should do it (four persons for a product of 50-inch or larger) by supporting the top and the bottom of the product.

■Miscellaneous caution matters

(1) This product uses highly integrated semiconductor parts. Since these parts are fragile to electrostatic charges, earth bands should be used for handling. The product should be handled where measures have been taken against electrostatic charges.

(2) For this product, the PDP modules and the PWBs are repaired by replacement in a unit. Therefore, the units of the PDP modules and the PWBs must not be repaired or disassembled. Otherwise, the validity of warranty will be lost.

(3) If this product is used for the fixed character display or the like as in the case of a character display board, a phenomenon of burning (not warranted) will occur. Burning is a phenomenon that the unevenness in the brightness is caused in the display. In such a case, the brightness in the section where the integrated display time is longer becomes lower than the brightness in another section where the integrated display time is shorter. This phenomenon is in proportion to the integrated display time and the brightness. For this reason, to relieve this difficulty during servicing, do not use any still picture, but use a display by motion pictures of a video or the like. In addition, use “FULL” for the screen mode and avoid using any display by “NORMAL”, “TRUE”, or MULTI SCREEN like side by side etc. If it is necessary to use only a still picture for unavoidable reasons, use a burning relief function such as “PLE LOCK”, “ORBITER”, “SCREEN WIPER”, etc.

(4) When a PDP module is operated after a long time of storage, it may encounter a difficulty like a failure in displaying a screen or unstability according to the condition of storage. In such a case, the PDP module should be incorporated in the product and aging treatment should be carried out for about two hours (all screen display).

(5) Sulfides will deteriorate the PDP module and this is a cause of malfunction. Therefore, it is absolutely prohibited to put any vulcanized rubber or a material containing sulfur in the vicinity of the PDP module.

(6) When taking out a PDP module from the maintenance package box, do it slowly so that the

panel surface does not get any shock or stress.

(7) If one touches the connector of the flexible cable exposed to the rear side of the PDP module, there is danger of causing a poor contact. As such, it must be handled with utmost care. In addition, the flexible cable is very weak in mechanical strength. Therefore, this cable must not be touched during handling.

(8) The panel surface of the filter and the PDP module is easy to be hurt. These components should be handled very carefully not to press or rub them with a hard thing. Never put them on a hard thing with the panel surface faced downwards.

(9) When the panel surface of the PDP module is contaminated, gently wipe off the contaminant with a piece of soft dry cloth. Liquid-state contamination can be removed by lightly pressing it, without rubbing it. If it is difficult to remove the contamination, use a piece of cloth soaked with a neutral detergent. The cloth for wiping off should be clean. Never use the same cloth repeatedly. If a cleansing detergent or water drops should enter the module interior or be attached to the module surface other than the display plane at the time of cleaning, this will give rise to the destruction of the product when the product is energized.

(10) Refer to the “Instruction Manual” in regard to contamination in the filter and the cabinet.

(11) When transporting this product, use the packing materials specified in the list of parts. Once used, such packing materials should not be used again.

(12) This product is composed of a variety of parts, such as those made of materials like glass, metal, plastics, etc., and those like a lithium battery (circuit symbol of the MAIN PWB: BA9501), etc. Therefore, when abandoning this product, this should be done in accordance with the relevant law of the nation or an autonomous body.

CAUTION: Risk of Explosion if Battery is replaced by an Incorrect Type. Dispose of Used Batteries According to above the Instructions.

TROUBLESHOOTING

Power Supply does not switch ON

LED does not light. ..... page 3-2

LED blinking green (2 sec. intervals), temperature sensor alarm ..... page 3-3

LED blinking green (0.5 sec. intervals), fan error alarm ..... page 3-4

LED blinking red, temperature error alarm ..... page 3-5

LED alternate red/green blinking, PDP error alarm ..... page 3-6

LED comes on green then goes red, power voltage error alarm ..... page 3-7

Image Defects

Image burn ..... page 3-8

Loss in brightness ..... page 3-8

Failure in writing ..... page 3-8

Pixel Defects ..... page 3-9

Wrong lighting ..... page 3-10

Dark Images ..... page 3-10

Horizontal lines ..... page 3-10

Block defects ..... page 3-13

No picture ..... page 3-14

Audio Problems ..... page 3-15

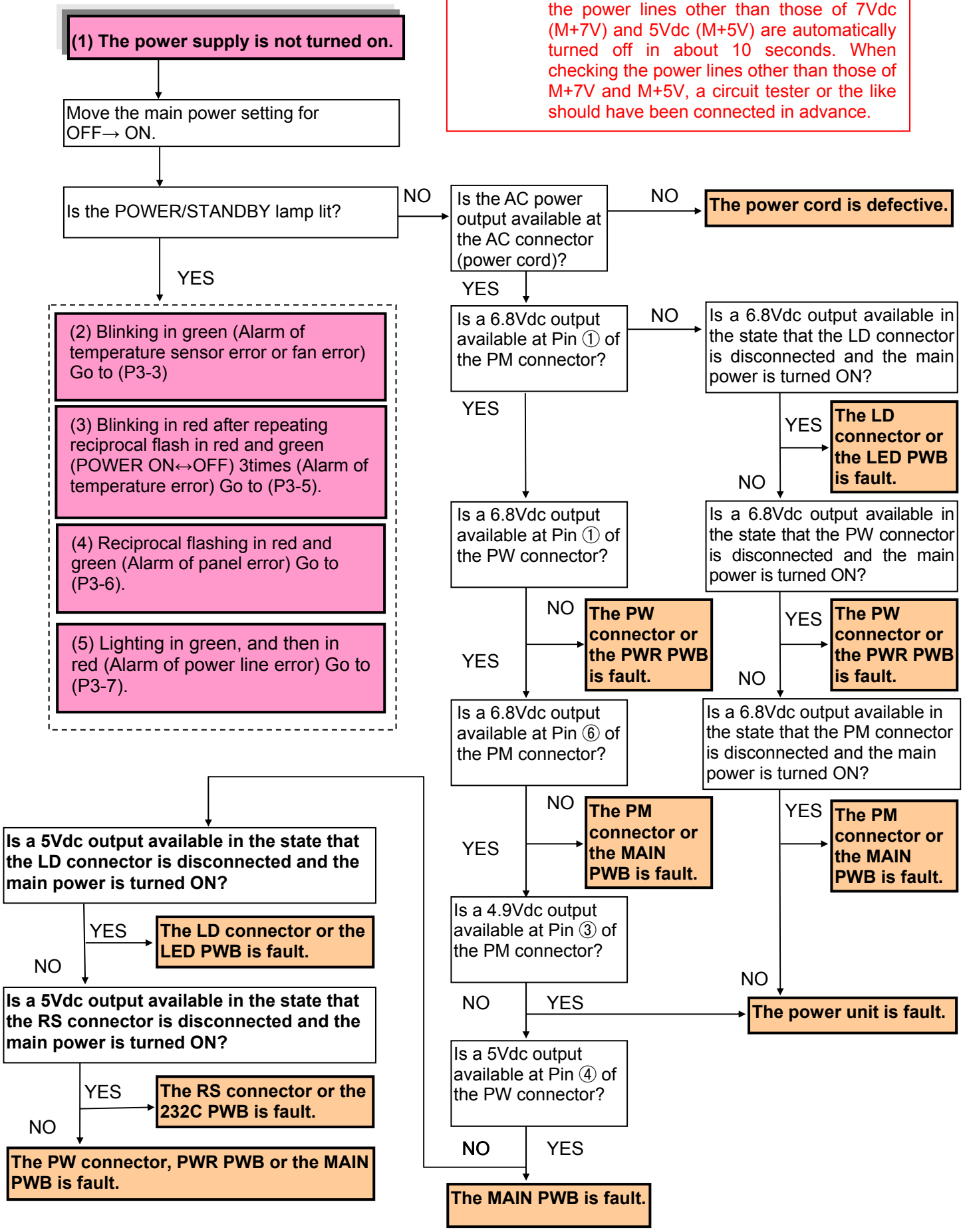
Remote Problems

Wired Remote not effective ..... page 3-16

Wireless Remote not effective ..... page 3-17

1. Power failure

(Caution) If any abnormality is sensed in such a manner that the LED flashes or lights, all the power lines other than those of 7Vdc (M+7V) and 5Vdc (M+5V) are automatically turned off in about 10 seconds. When checking the power lines other than those of M+7V and M+5V, a circuit tester or the like should have been connected in advance.



(2) Blinking in green

① Alarm of temperature sensor error

Blinking in green (intervals of 2 seconds)

Turn off the main power supply.

Pressing the [MENU] key of the product, turn on the main power supply to cancel alarming.

Press the remote control keys in the order of [MENU] [MUTE] [EXIT] [SLEEP] [EXIT] and enter the diagnostics menu. Press the [MENU/ENTER] key to display the FAN SET menu (P2/11).

FAN SET

FAN SET

FAN MODE	H	CONT ENA	–
FAN OFF/L	–	CONT UP	–
FAN L/M	–	CONT TIME	–
FAN M/H	–	UP STEP	2
SF SAVE	075	DOWN STEP	2
PLE SAVE	070	READ TIME	60
T ALM	095	TEMP LEVEL	1
RET TME	030		
PLE TIME	001		
T1 030	T2 025		
T3 030	T4 –	MODE 2	
IC ERROR	–		
[MENU/ENTER] NEXT		[EXIT] PREV	2/11

Is there a display of numerals (almost room temperatures) at the right side of [T1, T2, T3]?

YES → **The MAIN PWB is fault.**

NO

Is there a display of [-] for all the numerals at the right side of [T1, T2, T3]?

NO → **When a [-] display is presented, the PWB with the symbol shown below is fault. T1: SEND PWB, T2: SENB PWB, T3: SENC PWB**

YES

Are there a 3.3Vdc output at Pin ③ and a clock signal (3.3Vpp) at Pins ① and ④ of the TS in the state that the TS connector is disconnected and the main power supply is turned on?

NO → Are there a 3.3Vdc output at Pin ③ and a clock signal (3.3Vpp) at Pins ① and ④ of the TR in the state that the TR connector is disconnected and the main power supply is turned on?

NO → Are there a 3.3Vdc output at Pin ③ and a clock signal (3.3Vpp) at Pins ① and ④ of the TM in the state that the TM connector is disconnected and the main power supply is turned on?

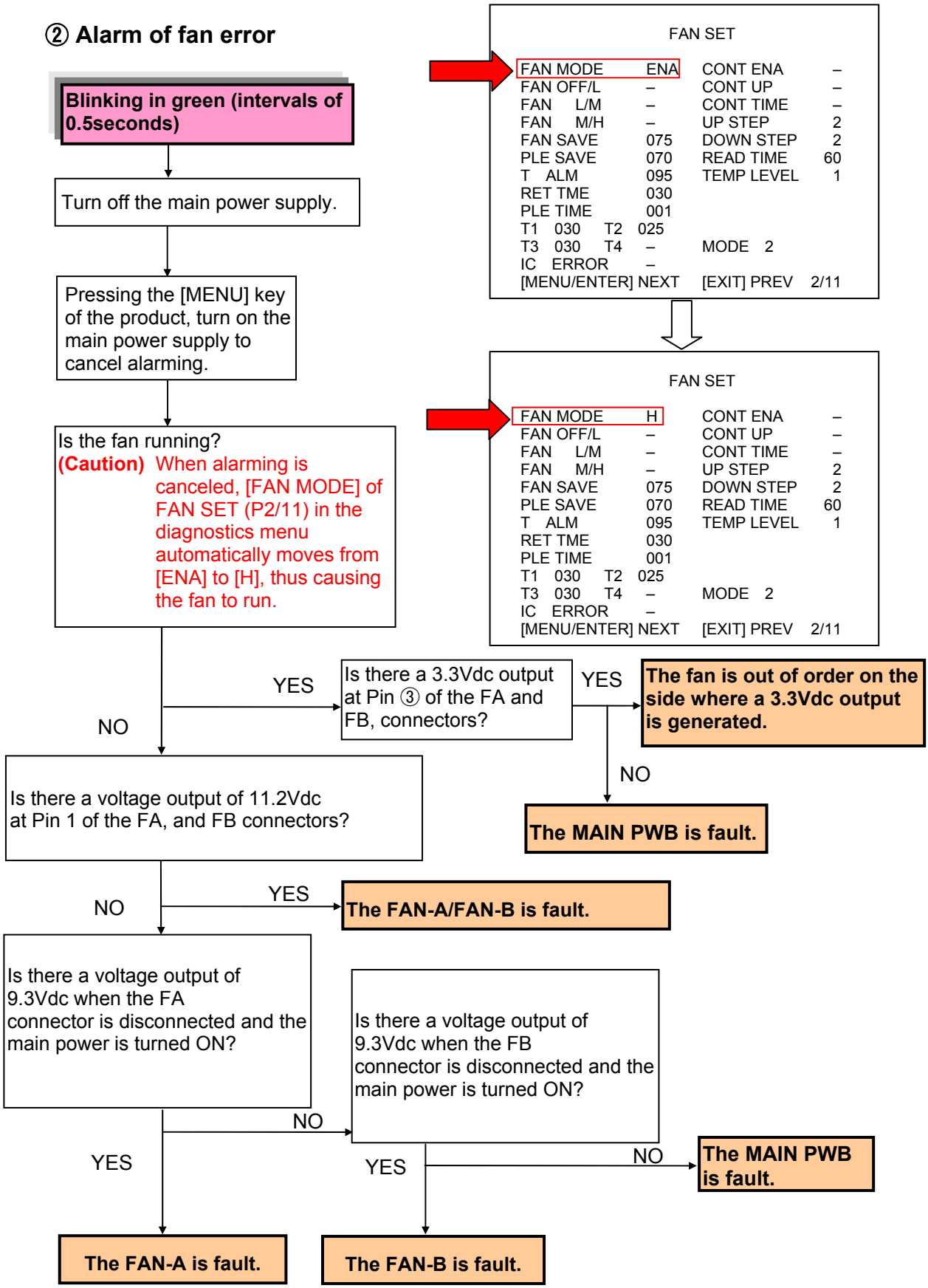
NO → **The MAIN PWB is fault.**

YES → **The TS connector or the SENC PWB is fault.**

YES → **The TR connector or the SEND PWB is fault.**

YES → **The TM connector or the SENB PWB is fault.**

② Alarm of fan error



(Caution) In the FAN MODE, [ENA] is automatically recovered when the main power is turned OFF → ON.

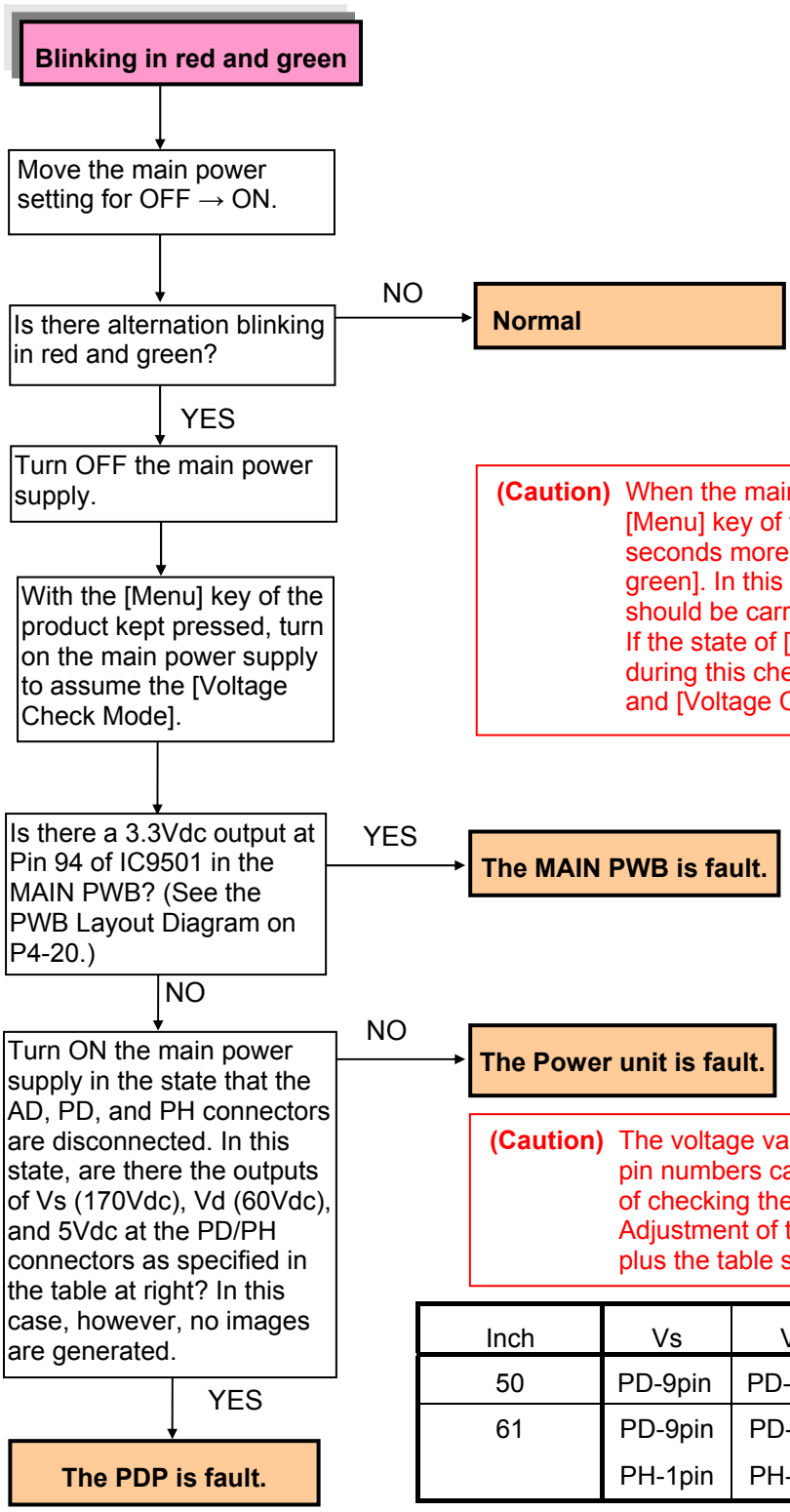
(3) Blinking in red (Alarm of temperature error)

Since the internal temperature is too high in the product, the temperature protector has been actuated. In such a case, the following actions should be taken immediately:

1. Turn off the main power supply and pull out the power cord from the wall outlet.
2. Wait for about 60 minutes until the temperature in the main unit lowers.
3. Check whether the heat discharge port is covered with dust or the like. If yes, remove the clogging substance.
4. If the unit is used where the ambient temperature is high, it should be moved to an adequate place (air temperature ranging from 5°C to 35°C).

(4) Alternation blinking in red and green (Alarm of PDP error)

(Caution) How to reset the alarming condition
Pressing the [Input Select] key of the product, turn on the main power supply of the main unit. In this state, keep pressing the [Input Select] key for more than 2 seconds until alarming is canceled. Make confirmation by the method specified below.



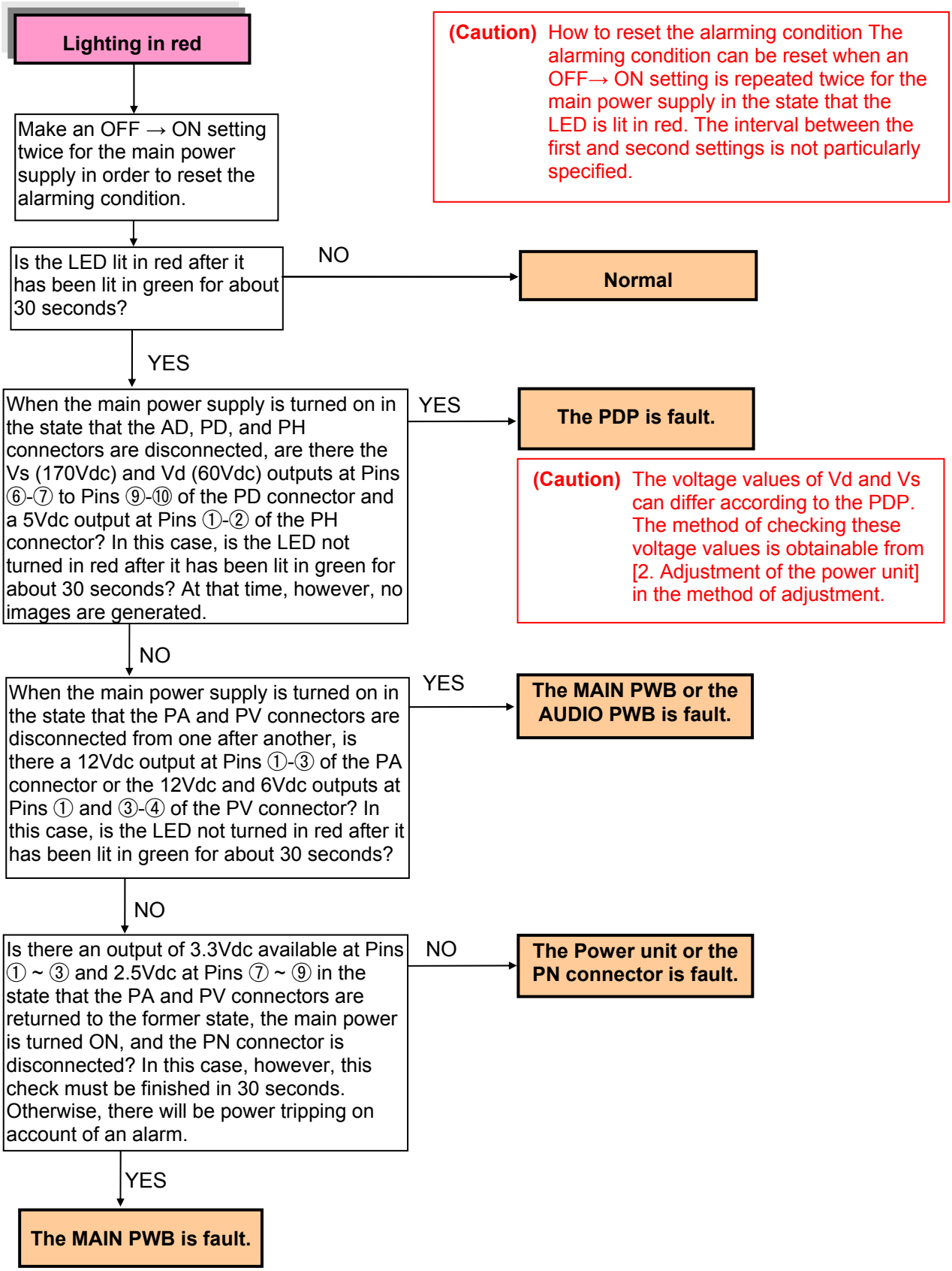
(Caution) When the main power supply is turned on with the [Menu] key of the product kept pressed, it takes 30 seconds more to assume the state of [blinking in red and green]. In this time period, the following voltage checks should be carried out.
If the state of [blinking in red and green] is assumed during this checking, take actions of [Alarm Canceling] and [Voltage Check Mode Setup] again.

(Caution) The voltage values of Vd and Vs and also the connector pin numbers can differ according to the PDP. The method of checking these voltage values is obtainable from [2. Adjustment of the power unit] in the method of adjustment plus the table specified below.

Inch	Vs	Vd	GND	5Vdc	GND
50	PD-9pin	PD-7pin	PD-5pin	PH-1pin	PH-3pin
61	PD-9pin	PD-7pin	PD-5pin	PD-4pin	PD-5pin
	PH-1pin	PH-4pin	PH-5pin	PH-7pin	PH-5pin

(5) Lighting in green, and then in red (Alarm of power voltage error)

Unlike [lighting in red] in the STANDBY mode, [lighting in green] continues for about 30 seconds without any output of images and audio signals. Since then, the mode turns into [lighting in red].



2. Image errors

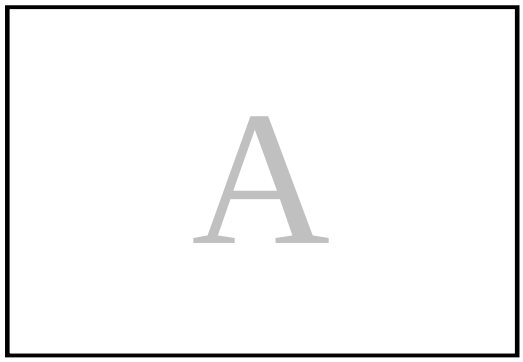
(Caution) Typical abnormal images are shown below. All errors do not always fall on these error samples.

(1) Image burn and deterioration in brightness

Residual images are seen without signal entry.

↓

This is not a fault.



No signal

Deterioration in brightness

↓

This is not a fault.

All-whitesignal

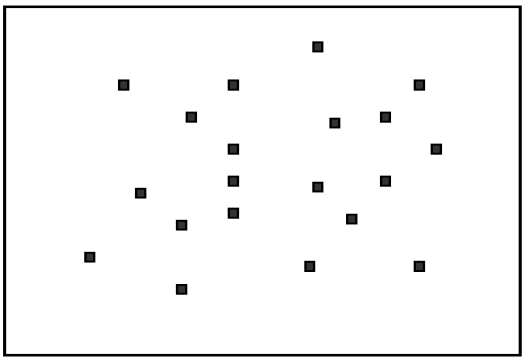
(2) Failure in writing

Failure in writing

↓

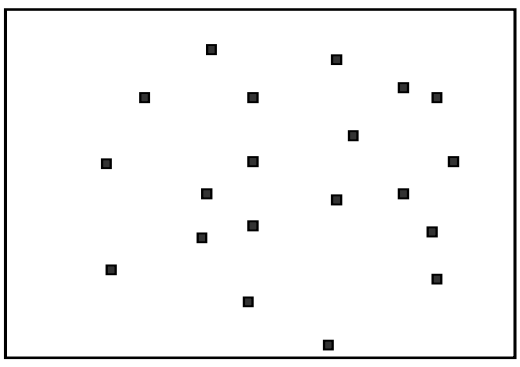
The PDP is fault.

(To the separate PDP service manual)



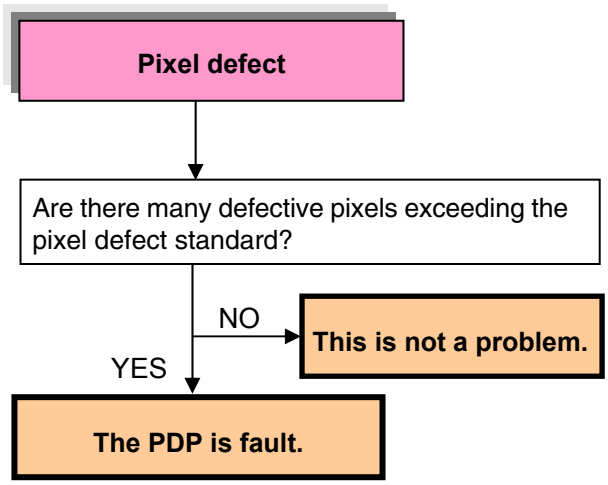
All-whitesignal

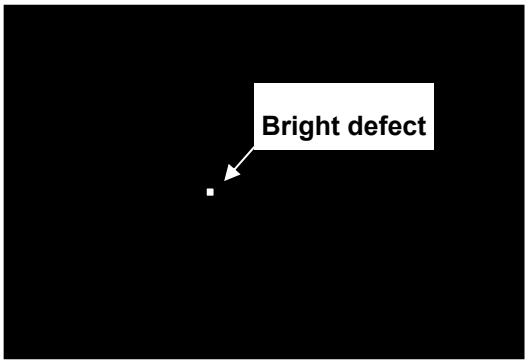
Dot errors change with no continuity.



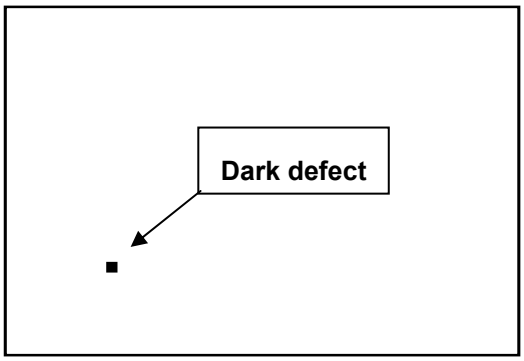
All-whitesignal

(3) Pixel defect



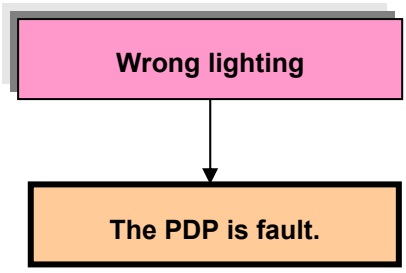


(Fig. 1) All-Black Signal

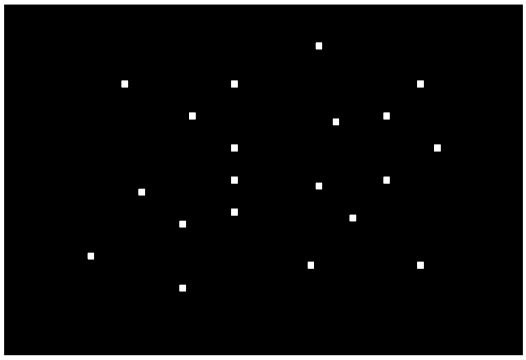


(Fig. 2) All-White Signal

(4) Wrong lighting

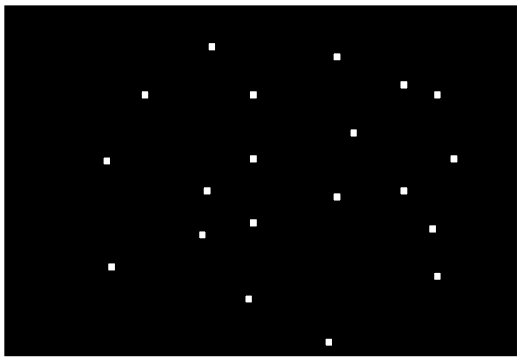


(To the separate PDP service manual)



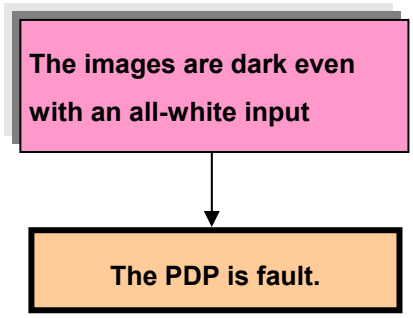
All-black signal

Dot errors change with no continuity.



All-black signal

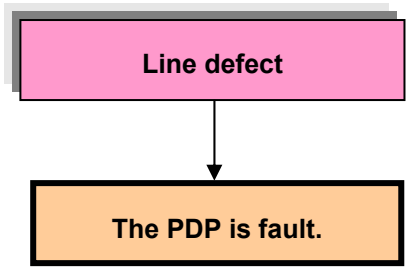
(5) Dark images [Other than the deterioration in brightness as per (1) above]



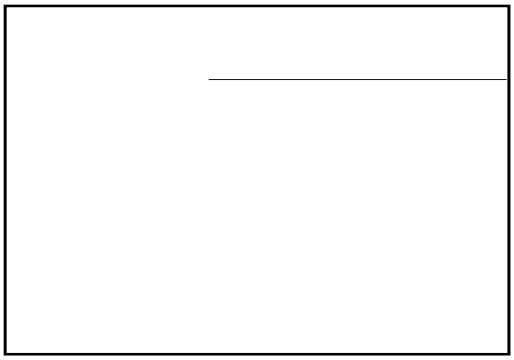
(To the separate PDP service manual)

All-white signal

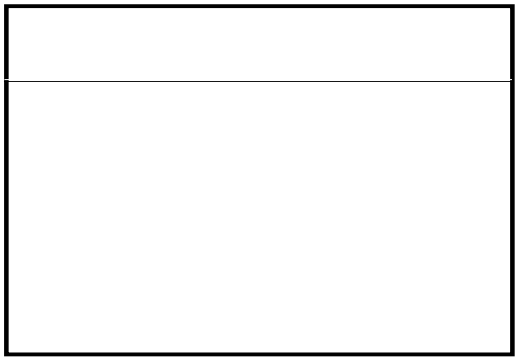
(6) Defect in horizontal lines



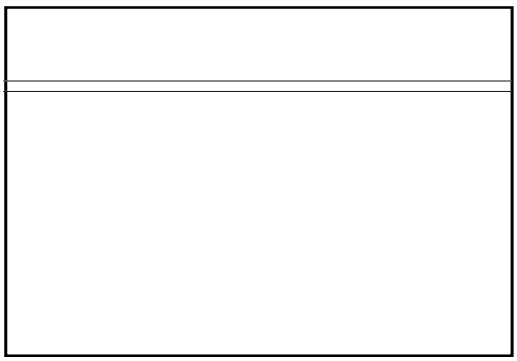
(To the separate PDP service manual)



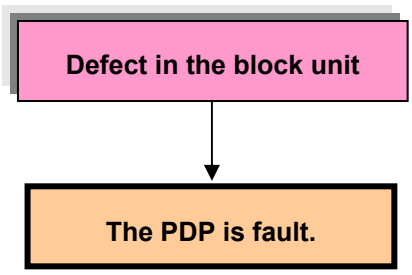
All-white signal

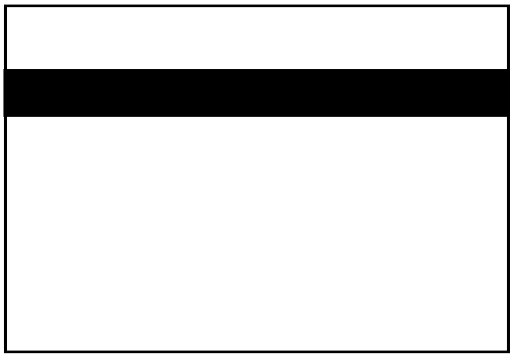


All-white signal



All-white signal

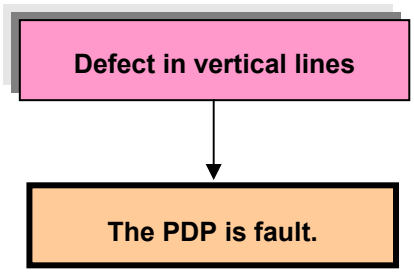


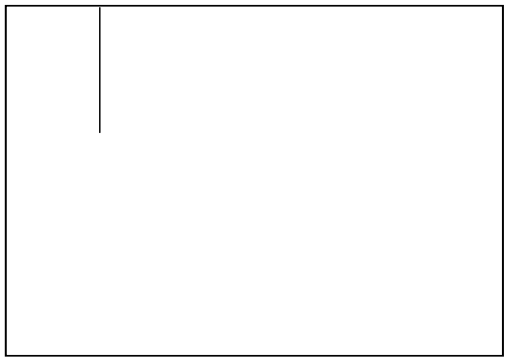


All-white signal

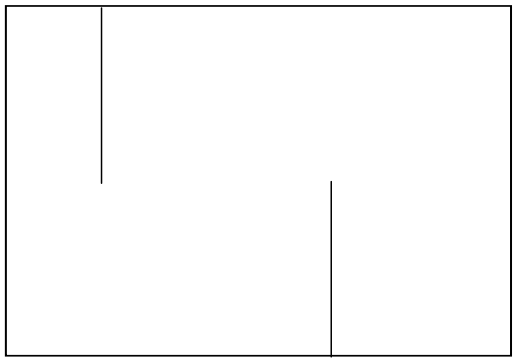
All-white signal

(7) Defect in vertical lines

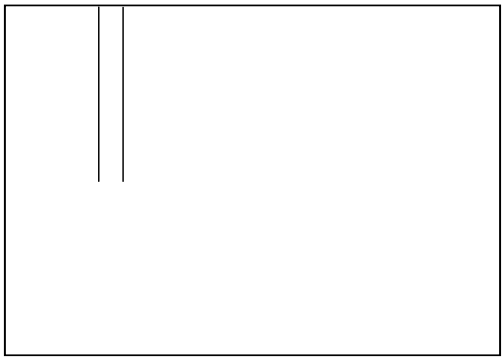




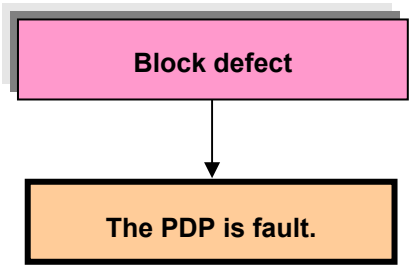
All-white signal

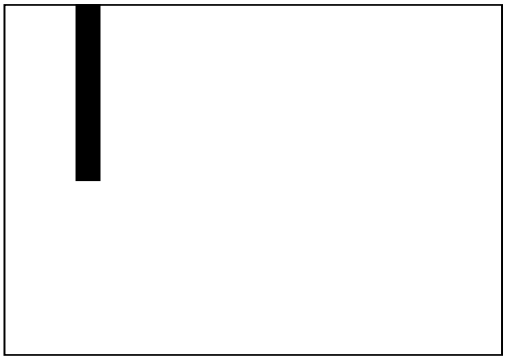


All-white signal

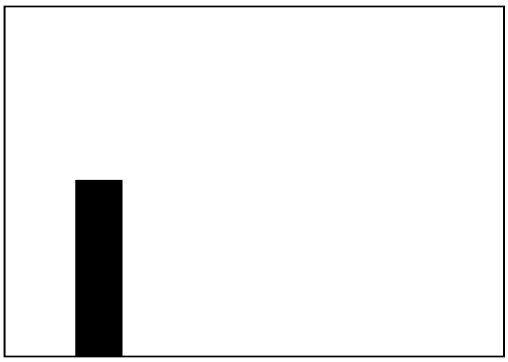


All-white signal

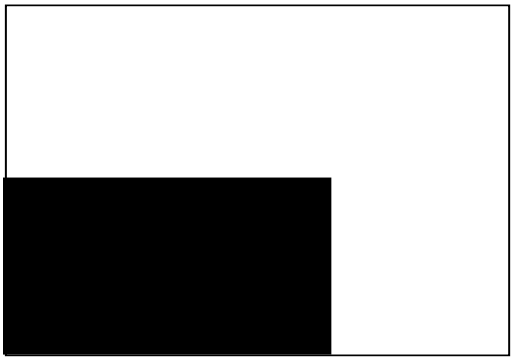




All-white signal

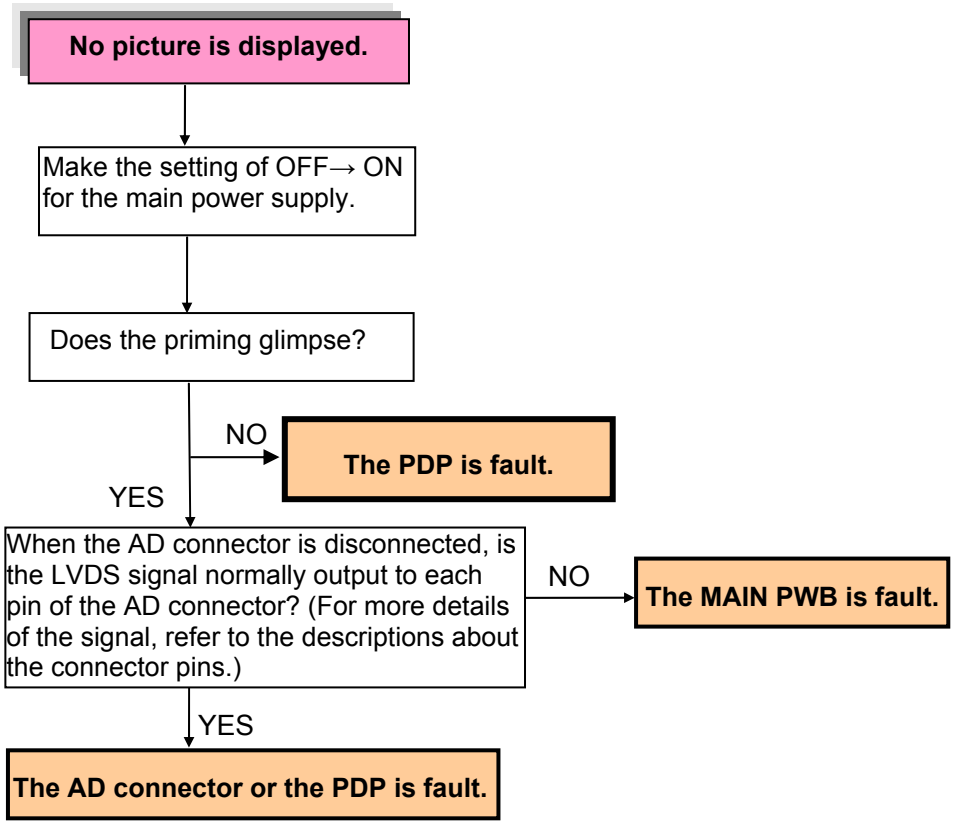


All-white signal



All-white signal

(8) No pictures [**(Caution)** The voltage outputs of Vs = 170V and Vd = 64V, 5Vdc are always generated, but the LED is not flashing or lighting for alarming. However, the voltage values can differ according to the PDP.]



3. Audio errors

(Caution) In regard to the method of audio input setting, refer to the specifications and the instruction manual to confirm that all the setting is free from errors. Since then, troubleshooting can be carried out. It must be noted that the protector functions and no audio output is available if the opposing electrodes of the speaker output or the speaker output and the ground (GND) are short-circuited. In such a case, turn off the main power supply and make the connections correctly. The protector is reset when the main power supply is turned on after that.

Audio errors

In the state that the speaker cable is disconnected, is the audio signal output available at the speaker terminal?

YES → **The speaker or the speaker cable is fault.**

NO

Is the voltage output specified below available at each pin of the PA connector in the AUDIO PWB?

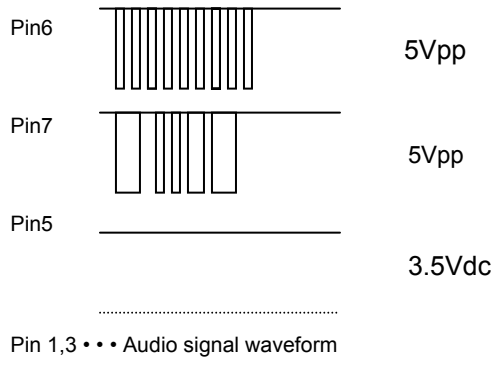
NO → **The power unit or the PA connector is fault.**

Pin_NO	Name	Voltage
1	S+12	12Vdc
2	S+12	12Vdc
3	S+12	12Vdc
4	GND	GND
5	GND	GND
6	GND	GND

YES

Is the waveform specified below output to the AU connector of the AUDIO PWB?

NO → **The MAIN PWB or the AU connector is fault.**



YES

The AUDIO PWB is fault.

4. Remote control not effective

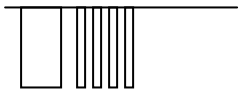
(1) The wired remote control is not effective.

① When a single item is used

(Caution) The wired remote control is not effective if the setting of [PLE LINK], or [Repeat TIMER] is ON, or if the setting of [ID NUMBER] has been made. Therefore, such a setting should be turned off, without fail. Since then, troubleshooting can be carried out.

The wired remote control is not effective.

Is there a signal output specified below at Pin 7 of the RS connector?

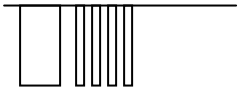


3.3Vpp

YES → **The RS connector or the MAIN PWB is fault.**

NO

Is there a signal output specified below at Pin 3 of the M2003? (Refer to the PWB layout diagram on Page P4-21.)



5Vpp

NO → **Is there a 3.3Vdc output at Pin 2 of the M2003? (Refer to the PWB layout diagram on Page P4-21.)**

YES → **The remote control or the remote control cable is fault.**

NO → **The RS232C PWB is fault.**

YES

When the RS connector is disconnected, is there a signal output specified below at the RS connector of the MAIN PWB?

Pin No.	Pin name	Voltage
1	M+5V	5Vdc
5	M+3.3V	3.3Vdc

NO → **The RS connector or the MAIN PWB is fault.**

YES

The 232C PWB is fault.

② When a daisy chain (including the video wall) is used

The wired remote control is not effective.

Are the 0Vdc and 5Vdc outputs respectively available at Pins 9 and 10 of the RS connector in the standard product of 232C PWB?

YES → Is there a clock signal output at Pin 3 of the M2004? (Refer to the PWB layout diagram on Page P4-21.)

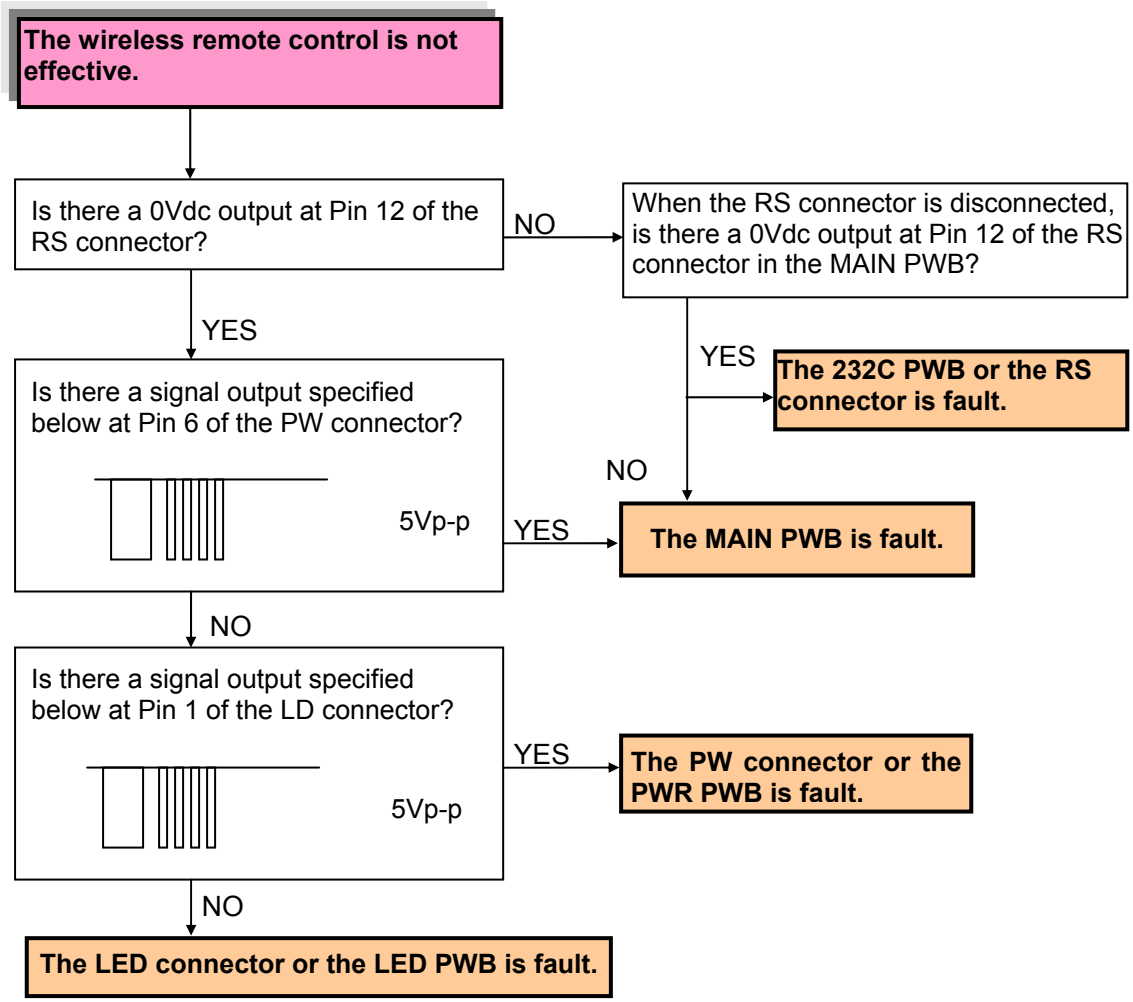
YES → **Check the products of second and thereafter according to "1 When a single item is used."**

NO → **The MAIN PWB is fault.**

NO → **The 232C PWB is fault.**

(2) The wireless remote control is not effective.

(Caution) Since the detection of “wired” or “wireless” is conducted for the remote control through the remote terminal, it is necessary to pull out the remote control cable from the remote terminal, without fail. Troubleshooting should be carried out after confirming that “IR REMOTE” is set at ON and that “ID NUMBER” is at ALL according to the user’s menu.



METHOD OF ADJUSTMENTS

■Adjusting conditions

Adjustments should be carried out in the procedures of A to E specified below. However, any adjustments other than the items A to E below are not required.

A. When the "PDP module" is replaced, adjustments should conform to the adjusting items of [1 and 2] specified below.

B. When the "POWER UNIT" is replaced, adjustments should conform to the adjusting item of [2] specified below.

C. When the "MAIN PWB" is replaced, adjustments should conform to the adjusting item of [3] specified below.

D. When the "SCAN PWB" is replaced, adjustments should conform to the adjusting item of [4] specified below.

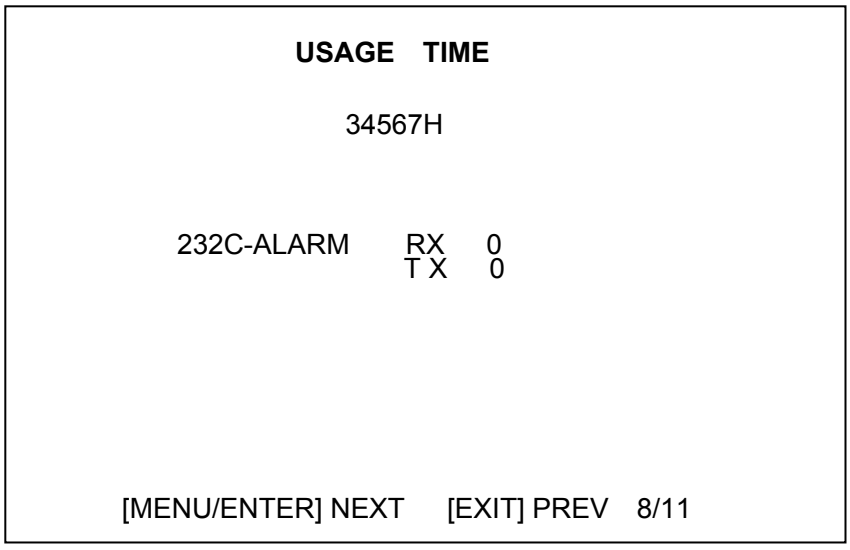
E. When the "COMMON PWB" is replaced, adjustments should conform to the adjusting item of [5] specified below.

■Adjusting items

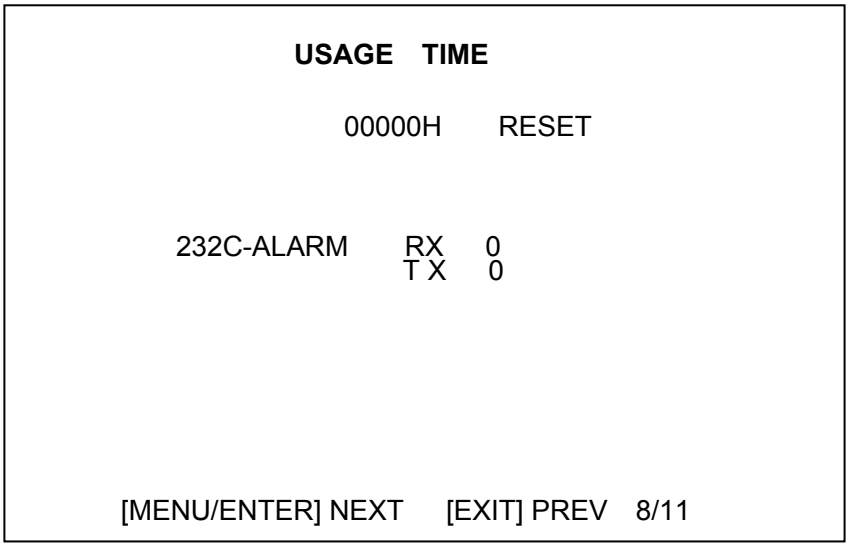
1. Clearing of the usage time (Using the remote control)

(1) Press the keys in the order of [MENU] [MUTE] [EXIT] [SLEEP] [EXIT] in order to enter the diagnostics menu.

(2) Press the [MENU/ENTER] key to select the [USAGE TIME] menu (8/11). Then, the integrated time [34567 (hours)] (example) accumulated till the present time is displayed when the main power supply is turned on (except for the standby mode).



(3) When the keys are pressed in the order of [MUTE] → POSITION/CONTROL [▲] → POSITION/CONTROL [▼] → [SLEEP], the display is cleared to [00000H]. At tnat time, the characters of [RESET] are displayed for about 5 seconds on the right side of time display.



2. Power Unit Adjustment for the PD-6150

2-1. Adjustment of the Vs voltage

(1) Enter a color bar input by means of either video signal of VIDEO input, or DVD/HD input, or RGB input, and turn on the power switch of the main unit.

(2) Turn the volume control (RV6) in the power unit and make adjustments until the voltages of CH2 and CH1 (D, GND) of the power unit attain the voltage values specified for the PDP (Vs value of the voltage regulation indicator label on below the figure) ±1V.

2-2. Adjustment of the Vd voltage

(1) Enter a color bar input by means of either video signal of VIDEO input, or DVD/HD input, or RGB input, and turn on the power switch of the main unit.

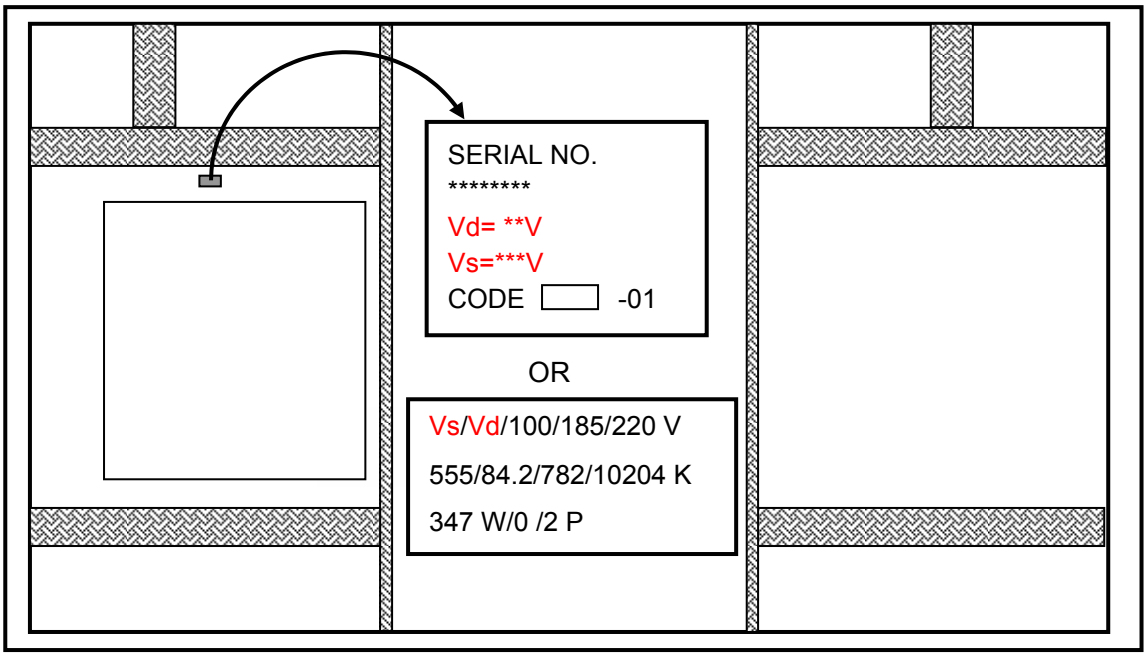
(2) Confirm that the voltages of CH4 and CH1 (D, GND) of the power unit are maintained at the voltage values specified for the PDP (Vd value of the voltage regulation indicator label on below the figure) ±1V.

Otherwise, turn the volume control (RV5) until the voltage attains the voltage values specified for the PDP (Vd value of the voltage regulation indicator label on below the figure) ±1V.

2-3. Adjustment of the +5V voltage

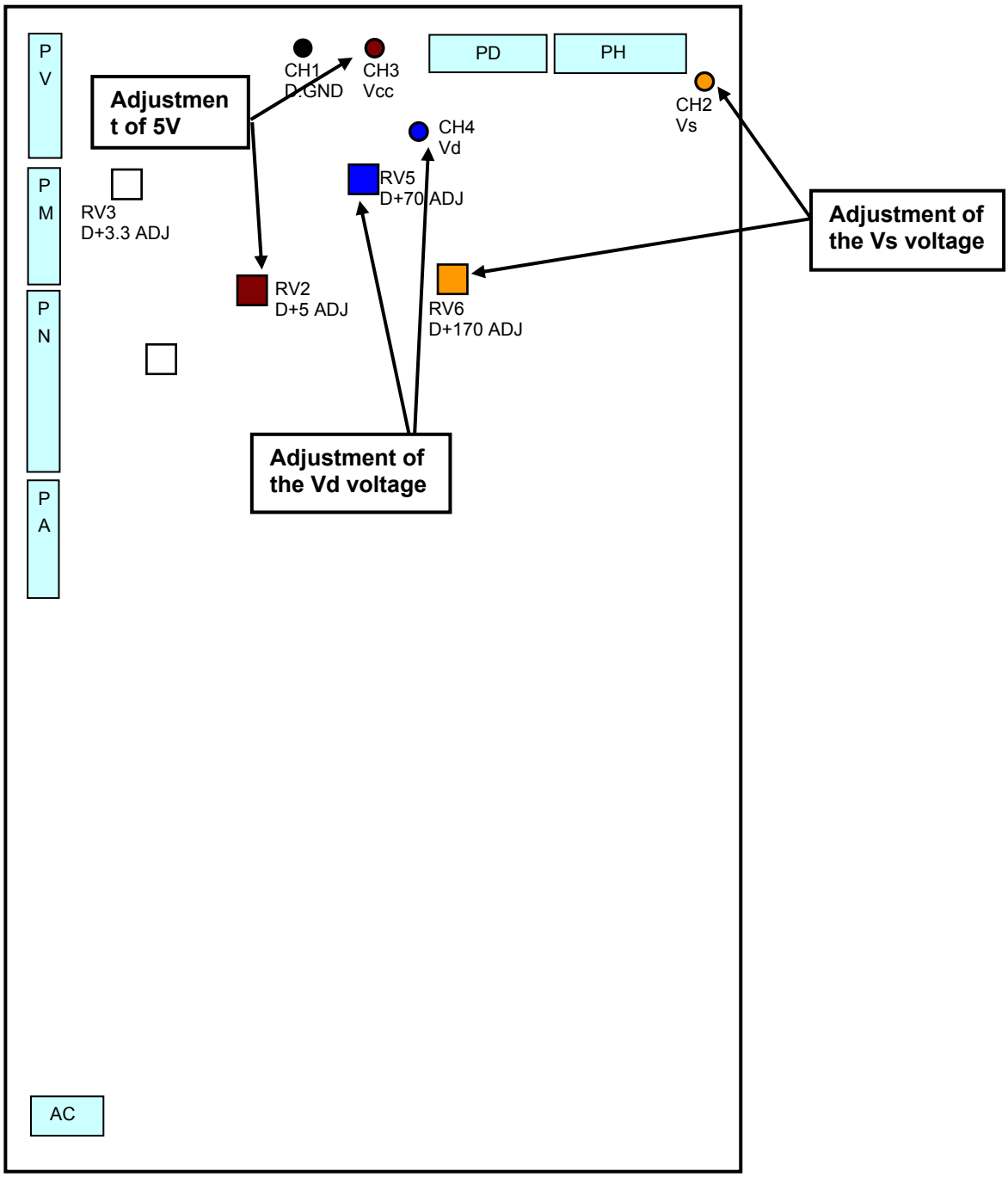
(1) Display a color bar by means of either video signal of VIDEO input, or DVD/HD input, or RGB input.

(2) Confirm that the voltages of CH3 and CH1 (D, GND) of the power unit are maintained at "5.15 ± 0.1V". Otherwise, turn the volume control (RV2) until the voltage attains "5.15 ± 0.1V".



(Caution) Rear-side view when the back cover is removed The label is concealed between the MAIN PWB and PDP. Check it by peeping through the space from above. The label position can be changed, without notice.

*** Top view of the power unit for the PD-6150**

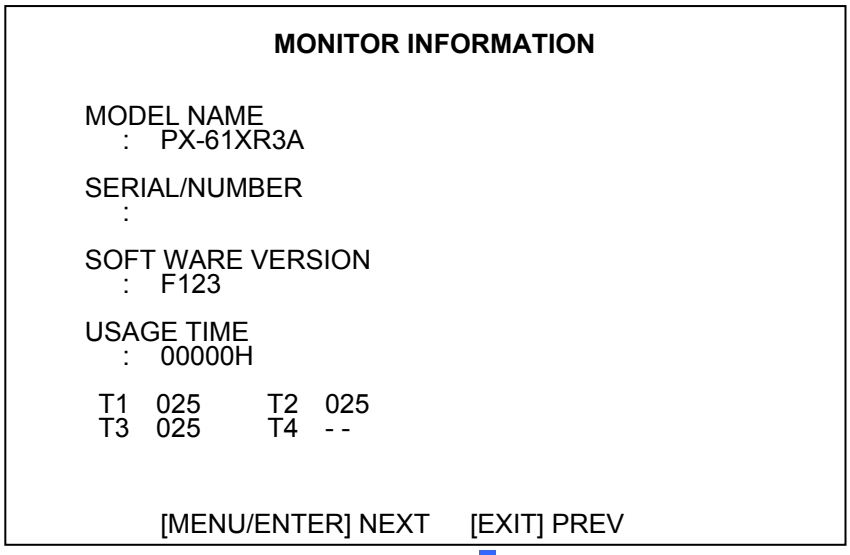


3. Adjustments after the replacement of the MAIN PWB (Using the remote control)

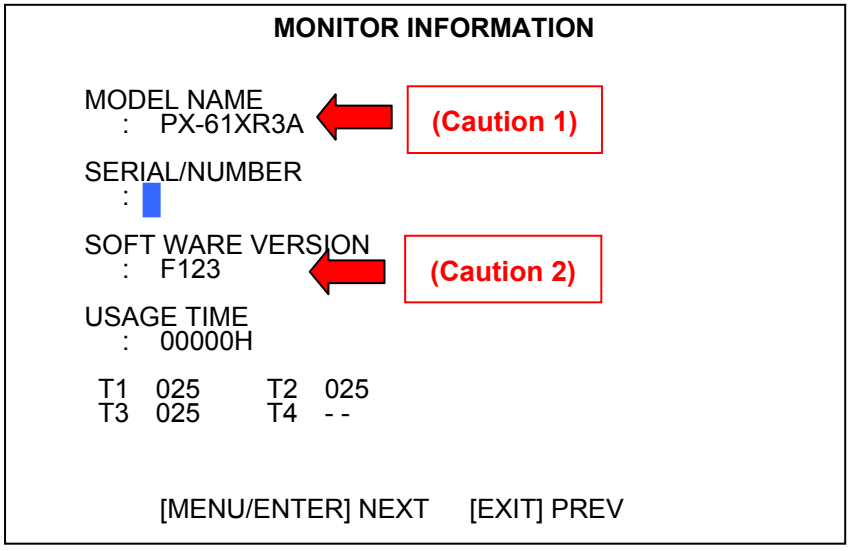
3-1. Product serial No. registration

(1) Press the keys in the order of [MENU] [MUTE] [EXIT] [SLEEP] [EXIT] in order to enter the diagnostics menu.

(2) Press the [MENU/ENTER] key to select the [MONITOR INFORMATION] No. menu. (Example : PX-61XR3A)



(3) Press the [FORMAT] key 4 times to display a cursor ▮ in the lower column of [SERIAL/NUMBER].



(Caution 1) No modification is possible here because this modification is already finished by 3-2. Factory shipment setting (initial setting).

(Caution 2) No modification is possible here because registration is already finished at the time of shipment in terms of maintenance parts.

(4) Moving the POSITION/CONTROL keys of [▲] and [▼], select the numerals and characters of the serial number that is listed in the serial label located on the rear surface of the product. Register the serial number. (Blank → 0 ~ 9 → A ~ Z)

(5) Moving the POSITION/CONTROL keys of [◀] and [▶], select the next digit by means of a cursor.

(6) Repeat the processes of (4) and (5) above and register the serial number completely.

• How to read the serial number

Serial No. ① ② ③ ④⑤⑥⑦ ⑧ ⑨

① ····· Year of manufacture (lower one digit of the year)

② ····· Month of manufacture (January to September = 1 to 9, October = X, November = Y, December =Z)

③ ····· GS model: 1, Other than GS model: 0

④⑤⑥⑦ ····· Serial numbers of 0001 to 9999. The serial number starts with 0001 in each month of production. There is no duplication or missing of the number in the same month.

⑧ ····· Place of manufacture

⑨ ····· Control number S→A→M→T→Z→N→K→U→C→W→J→P

(* Arbitrary for the first symbol)

(Example) First unit in March 1999 → 93000019C

First unit in November 2000 → 0Y000019W

(Example) When entering a serial number of [2900123 9Z]

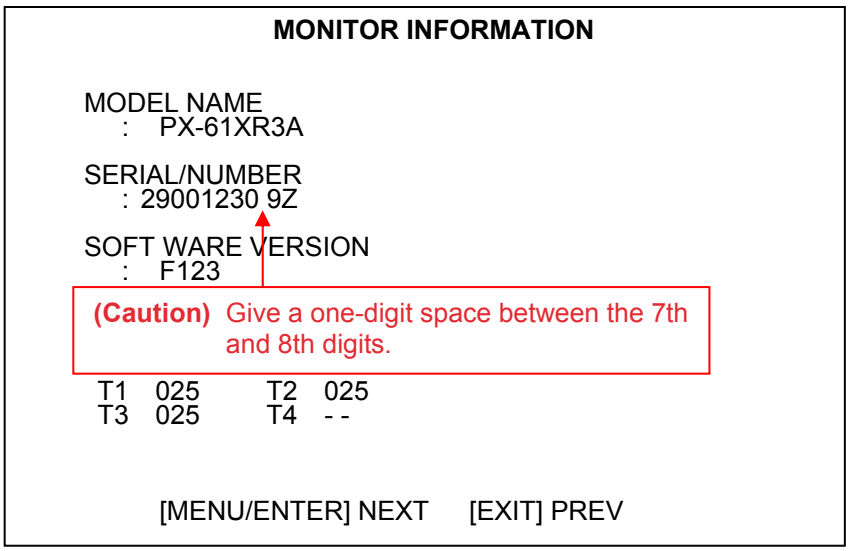
① Move the POSITION/CONTROL keys of [▲] and [▼] to select [2].

```
MONITOR INFORMATION

MODEL NAME
   :  PX-61XR3A

SERIAL/NUMBER
   : 2

SOFT WARE VERSION
   :  F123

USAGE TIME
   :  00000H

 T1  025      T2  025
 T3  025      T4  - -


      [MENU/ENTER] NEXT    [EXIT] PREV
```

② Move the POSITION/CONTROL keys of [◀] and [▶] to select the next digit.

```
MONITOR INFORMATION

MODEL NAME
   :  PX-61XR3A

SERIAL/NUMBER
   : 2

SOFT WARE VERSION
   :  F123

USAGE TIME
   :  00000H

 T1  025      T2  025
 T3  025      T4  - -


      [MENU/ENTER] NEXT    [EXIT] PREV
```

③ Repeat the procedures of ① and ② above, and enter all inputs of [2900123 9Z] from the left side.



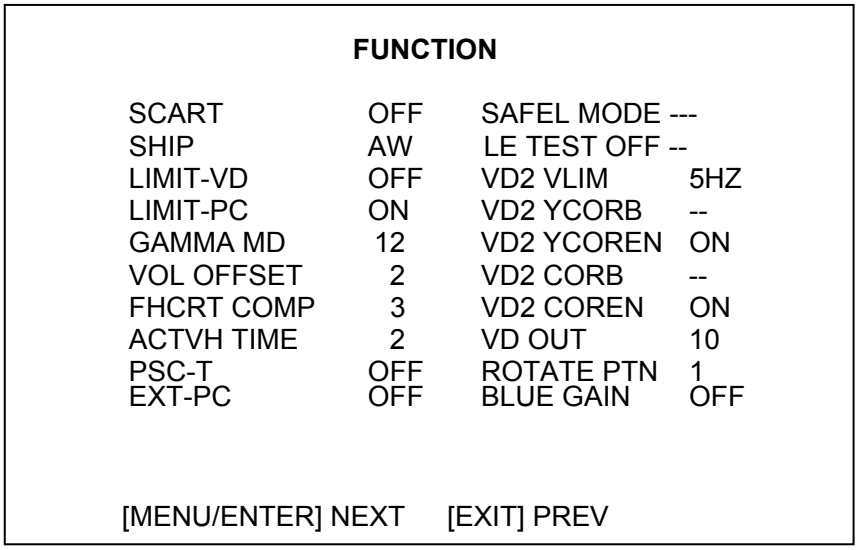
(7) Following the above, setting must be carried out without fail according to "3-2. Factory shipment setting (Initial setting)"

3-2.Factory shipment setting (Initial setting)

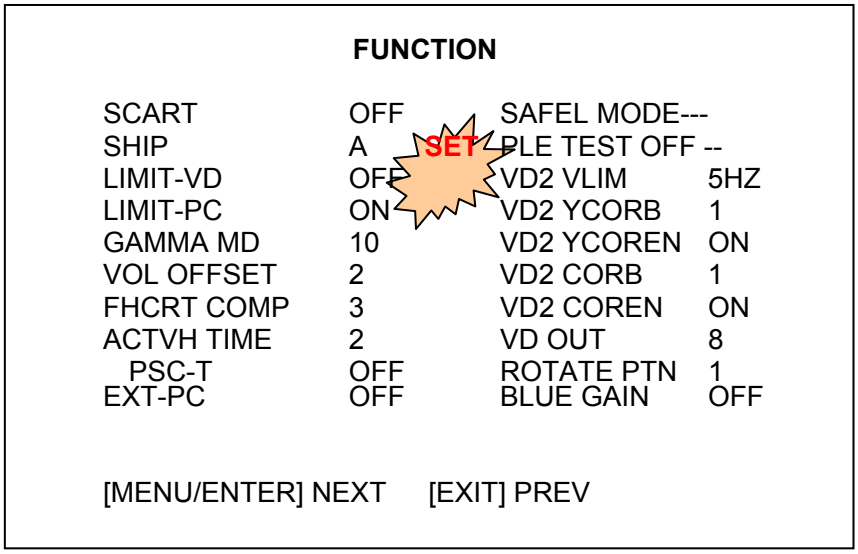
(1) Press the [MENU/ENTER] ke to select the [FUNCTION] menu.

(2) Move the POSITION/CONTROL keys of [▲] and [▼] to the item of [SHIP]. Then, move the POSITION/CONTROL keys of [◀] and [▶] to select [DESTINATION ALPHABETS] shown below. (The asterisks * shown below denote the numerals or the characters.)

J	: PX-*****J	JW	:	OEM Specifications for use in Japan
A	: PX-*****A	AW	:	OEM Specifications for North America (PD-6150)
G	: PX-*****G	GW	:	OEM Specifications for European countries
W	: PX-*****W	WW	:	OEM Specifications for zones other than the above



(3) Press the keys in the order of [MUTE] → POSITION/CONTROL [▲] → POSITION/CONTROL [▼] → [SLEEP] to make "Factory shipment setting". When "Factory shipment setting" is executed, the red characters of [SET] is shown for about 5 seconds on the right side of the [DESTINATION ALPHABETS]. The setting is finished when these red characters of [SET] go out. In regard to the factory shipment setting values, refer to the descriptions given below.



(4) Press the keys of the remote control in the order of [MENU] [MUTE] [EXIT] [SLEEP] [EXIT] in order to withdraw from the Factory shipment setting.

[Factory shipment setting values]

1. Initial setting values for the user menu

MENU	A	
POWER ON/OFF	ON	
VOLUME	10step	
INPUT MODE	VIDEO1	
WIDE MODE	STADIUM	
AUTO PICTURE	OFF (RGB1~3)	
HD SELECT	1080I	
LANGUAGE	ENGLISH	
COLOR SYSTEM	AUTO	
All items intended to recover the initial values through the selection of [All Reset] in the user menu	Initial values	

I

2. Field menu initial setup values (applicable in common to all models)

MENU		A				
SERVICE	SHIP	A				
	PSC-LIMIT	OFF				
	LIMIT-PC	ON				
	U-SCAN	OFF				
	V-FREQ OT	AUTO				
	V-FREQ VD	AUTO				
	SYNCLEVEL1	TTL				
	SYNCLEVEL2	TTL				
	SUB-ORB	ON				
	PIC FREEZE	ON				
MONITOR INFORMATION	MODEL NAME	PD-6150				

PD-5050: 50-WXGA,

PD-6150: 61-WXGA,

3. Initial setting values for the Factory shipment setting menu The table shown below specifies only the items that can be changed in the factory adjusting mode. Therefore, any setting values of the items not specified below cannot be modified.

MENU		A			
	SHIP	A			
	LIMIT-PC	ON			
MONITOR INFORMATION	SERIAL/ NUMBER	-	-	-	-

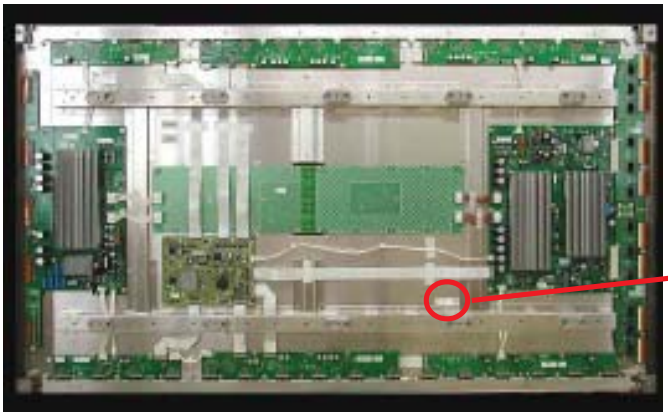
4. Adjustments after the replacement of the Common PWB.

4-1 Condition of Adjustment

(1) After the Common PWB has been replaced, perform the Vsw adjustment.

4-2 Voltage Label Check

(1) Prior to adjustment, note the voltage levels recorded on the Voltage Label as shown.



Vbw Vsw Vp

Label Location

(s185.0 / dd65.0)115.2/209.9/199.8
****
311200062

Example:

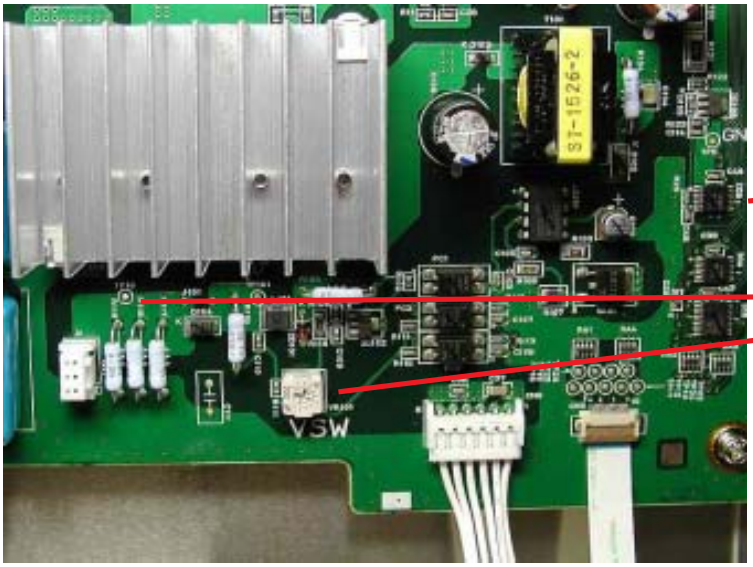
Vbw : 115.2
Vsw : 209.9
Vp : 199.8

4-3 Vsw Adjustment

Note: Measure voltage between the TP and closest Chassis Ground.

(1) Vsw - Adjust VR101 so the voltage at TP10 is set to the level specified for Vsw on the Voltage Label +/- 0.5V.

Vsw Location



Vsw
TP10
VR101

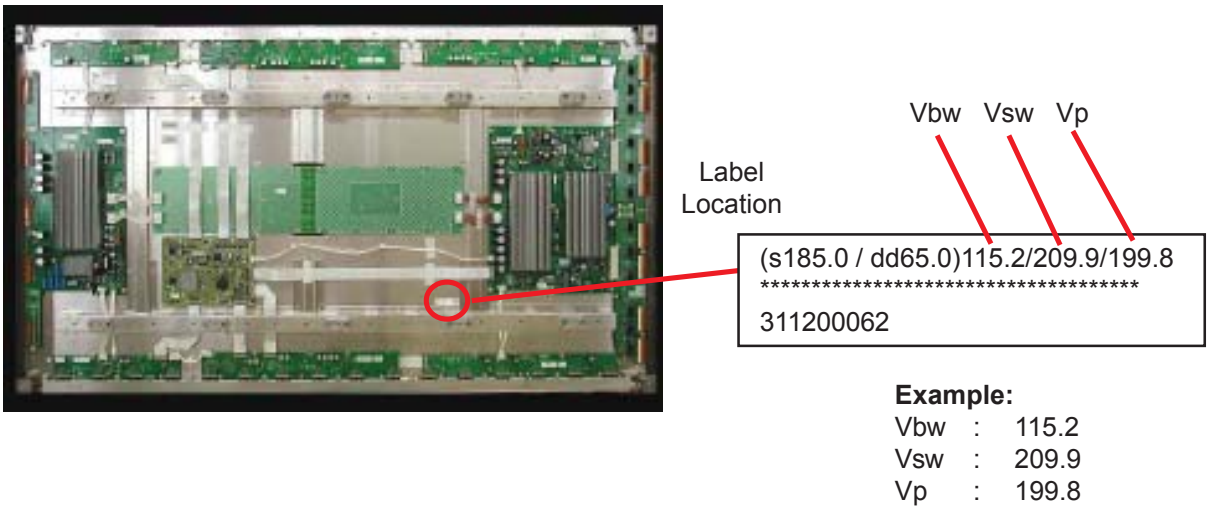
5. Adjustments after the replacement of the Scan PWB.

5-1 Condition of Adjustment

(1) After the Scan PWB has been replaced, perform the Vp and Vbw adjustments in the order described.

5-2 Voltage Label Check

(1) Prior to adjustment, note the voltage levels recorded on the Voltage Label as shown.



Example:

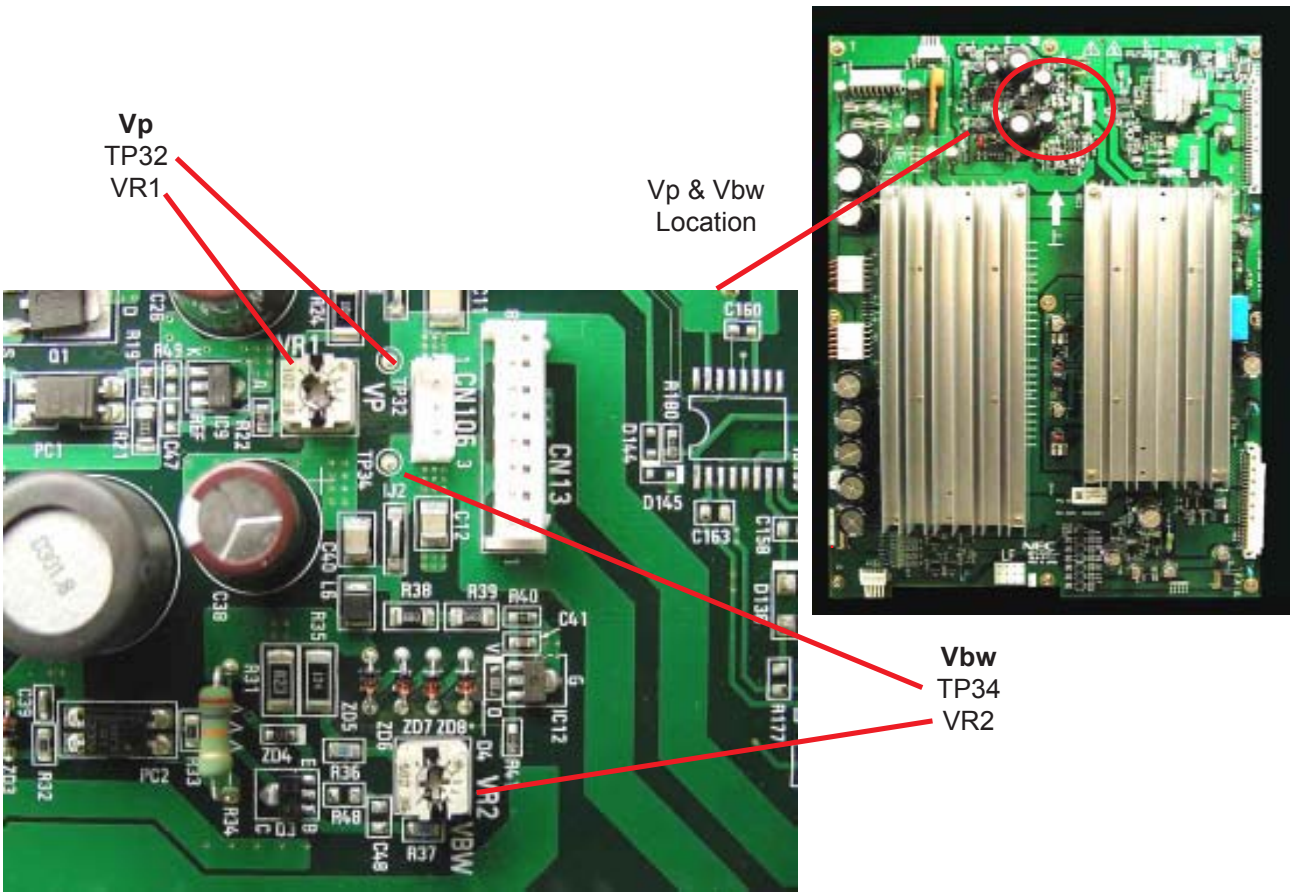
Vbw : 115.2
Vsw : 209.9
Vp : 199.8

5-3 Vp & Vbw Adjustments

Note: Measure voltage between the TP and closest Chassis Ground.

(1) Vp - Adjust VR1 so the voltage at TP32 is set to the level specified for Vp on the Voltage Label +/- 0.5V.

(2) Vbw - Adjust VR2 so the voltage at TP34 is set to the level specified for Vbwon the Voltage Label +/- 0.5V.

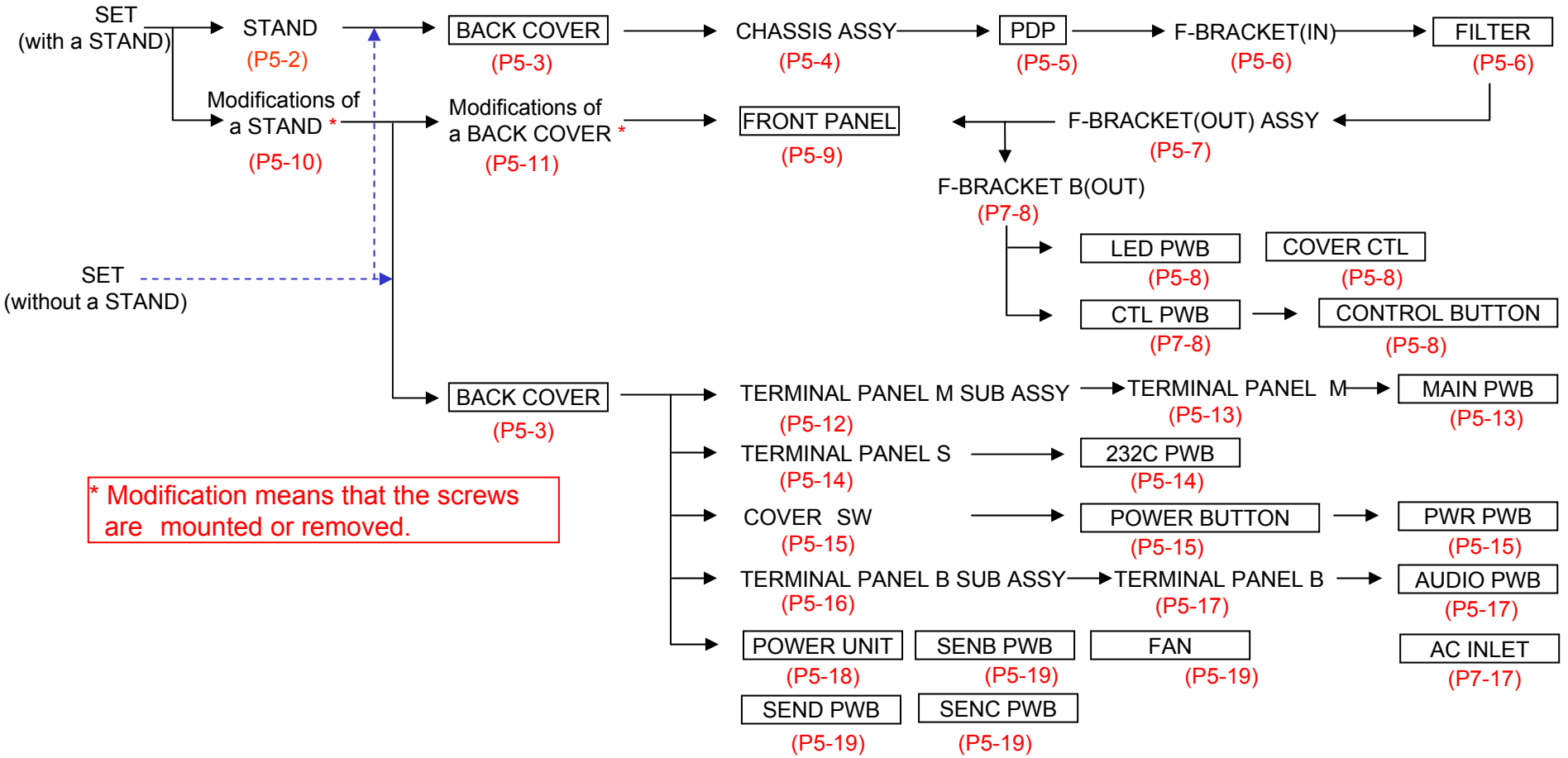


METHOD OF DISASSEMBLY

(Caution) 1. Before disassembly, turn power off the main unit and pull out the power plug from the wall outlet.
2. Use a screwdriver with a fitting size. Otherwise, the screw threads may be damaged.
3. Reassembly can be carried out in the reverse order for disassembly. Refer to the disassembly procedures and forward reassembly in the reverse order.
4. The order for taking out the parts (or components) is indicated by the foregoing numeral that is attached to the name of each part.
5. The wire connector symbol is indicated by two digits of Marking ☐☐. Read CN-☐☐ when examining the table of parts.
6. Class A or Class B in the text is applicable to the models specified below.
CLASS B: PD-6150

1. Outlined method of disassembly

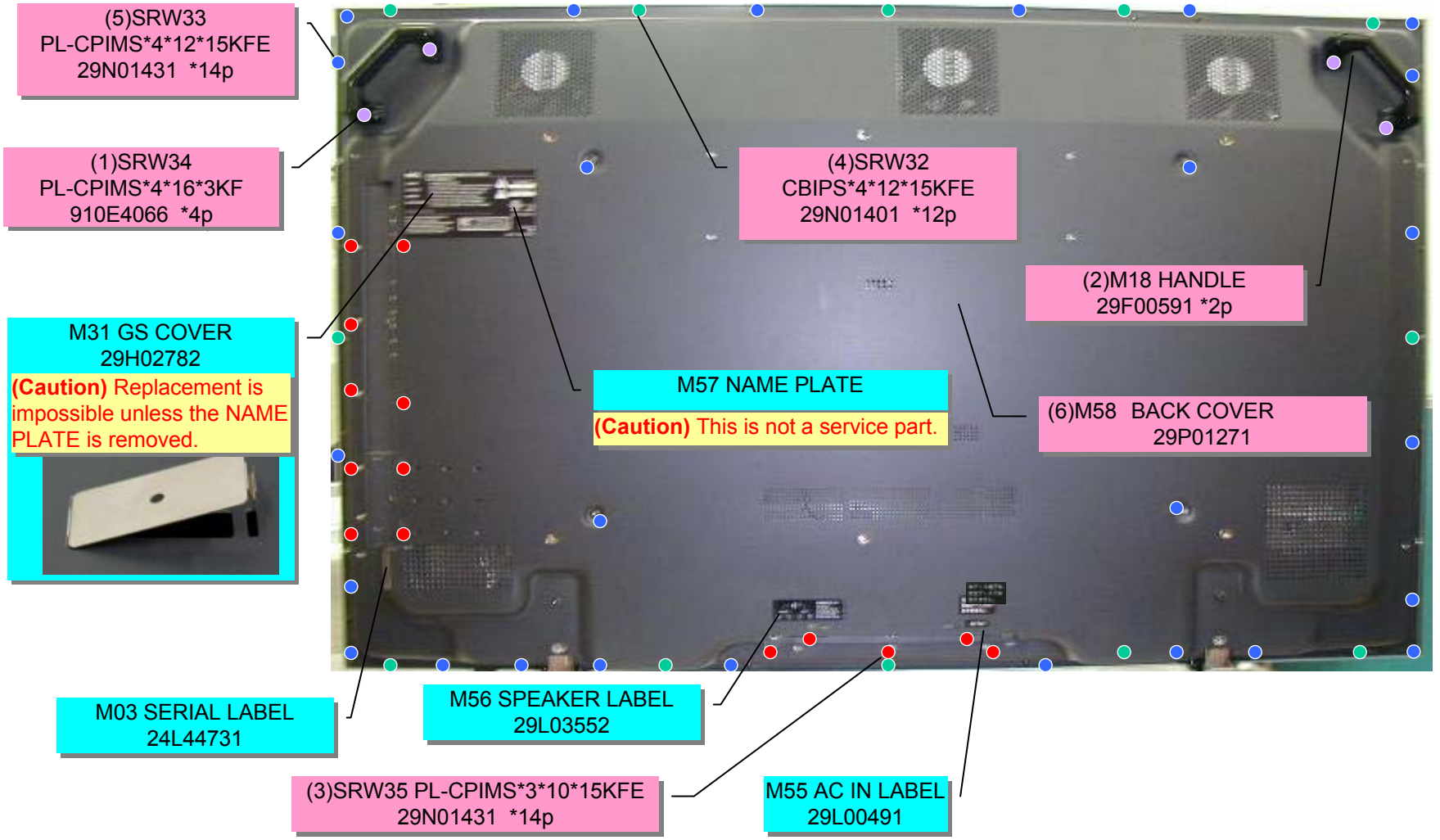
The outlined procedures for the disassembly of the major parts [ ] are shown below (disassembled in the direction of →).
In regard to the details of disassembly, cautions, etc., refer to the method of replacement for each part [page indicated in ( )].



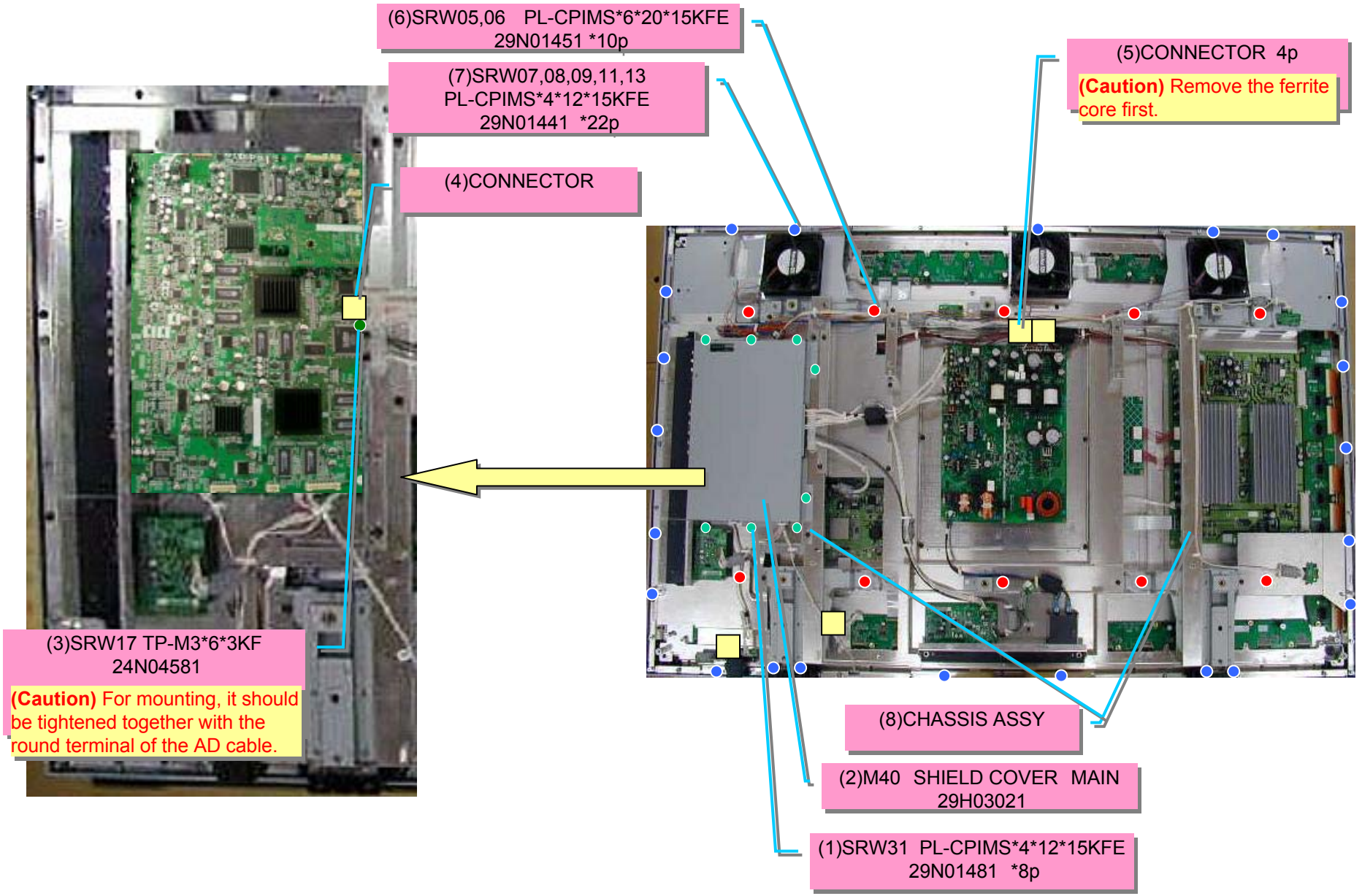
* Modification means that the screws are mounted or removed.

2. STAND

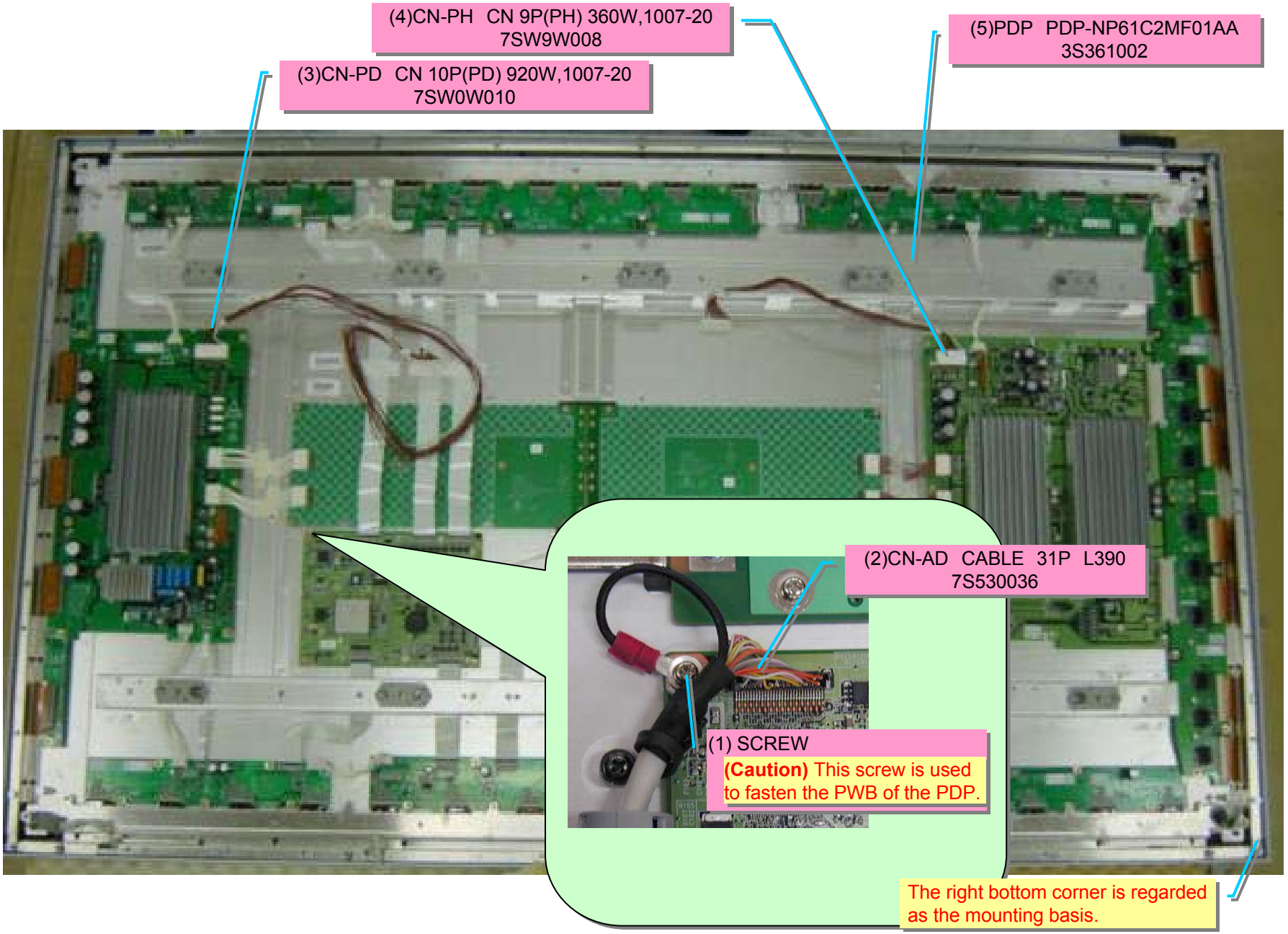
3. BACK COVER


(5)SRW33
PL-CPIMS*4*12*15KFE
29N01431 *14p
(1)SRW34
PL-CPIMS*4*16*3KF
910E4066 *4p
M31 GS COVER
29H02782
(Caution) Replacement is impossible unless the NAME PLATE is removed.
M03 SERIAL LABEL
24L44731
(4)SRW32
CBIPS*4*12*15KFE
29N01401 *12p
(2)M18 HANDLE
29F00591 *2p
M57 NAME PLATE
(Caution) This is not a service part.
(6)M58 BACK COVER
29P01271
M56 SPEAKER LABEL
29L03552
(3)SRW35 PL-CPIMS*3*10*15KFE
29N01431 *14p
M55 AC IN LABEL
29L00491

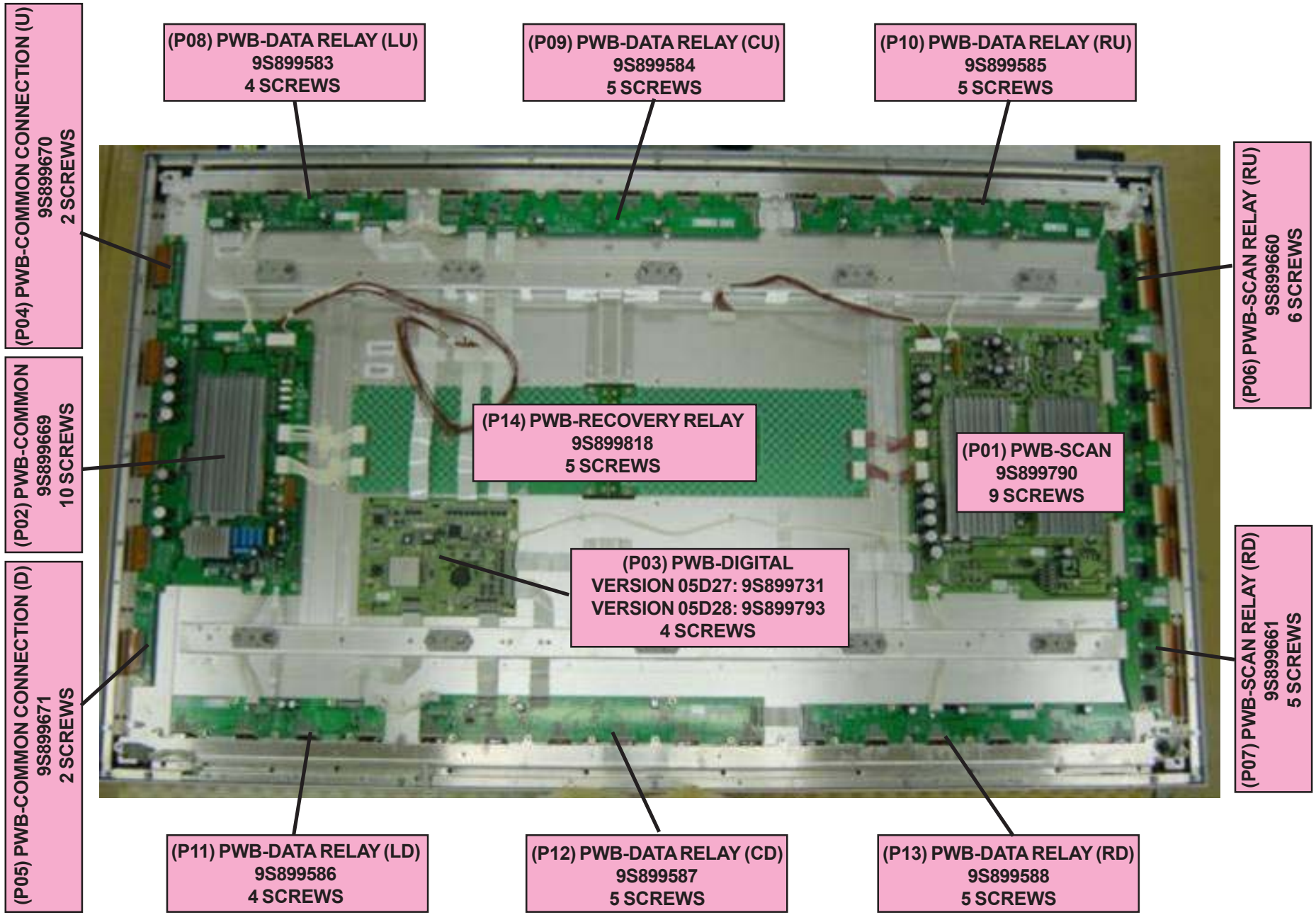
4. CHASSIS ASSY



5. PDP

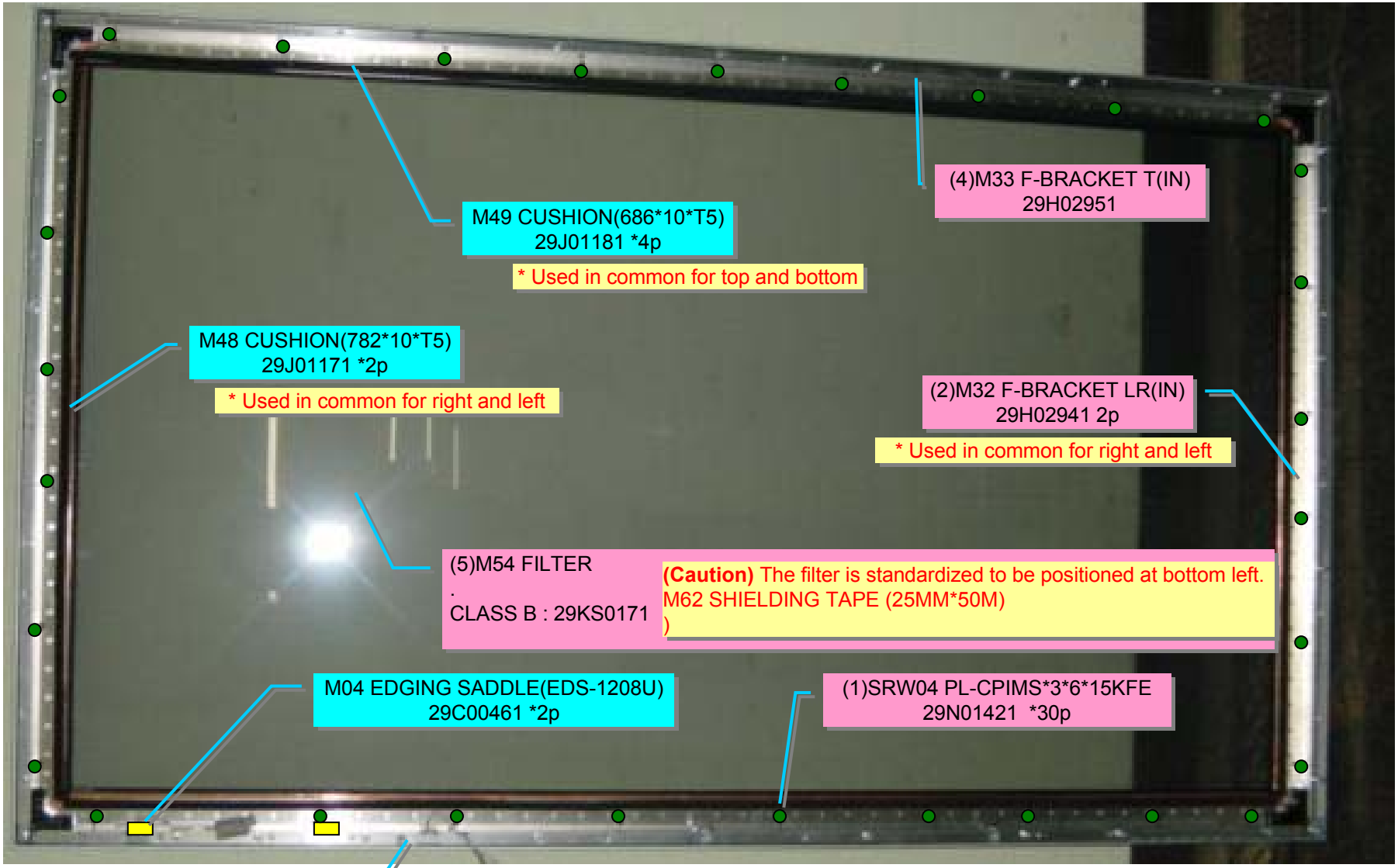

(4)CN-PH CN 9P(PH) 360W,1007-20
7SW9W008
(5)PDP PDP-NP61C2MF01AA
3S361002
(3)CN-PD CN 10P(PD) 920W,1007-20
7SW0W010
(2)CN-AD CABLE 31P L390
7S530036
(1) SCREW
(Caution) This screw is used to fasten the PWB of the PDP.
The right bottom corner is regarded as the mounting basis.

5-1. PDP ASSEMBLY

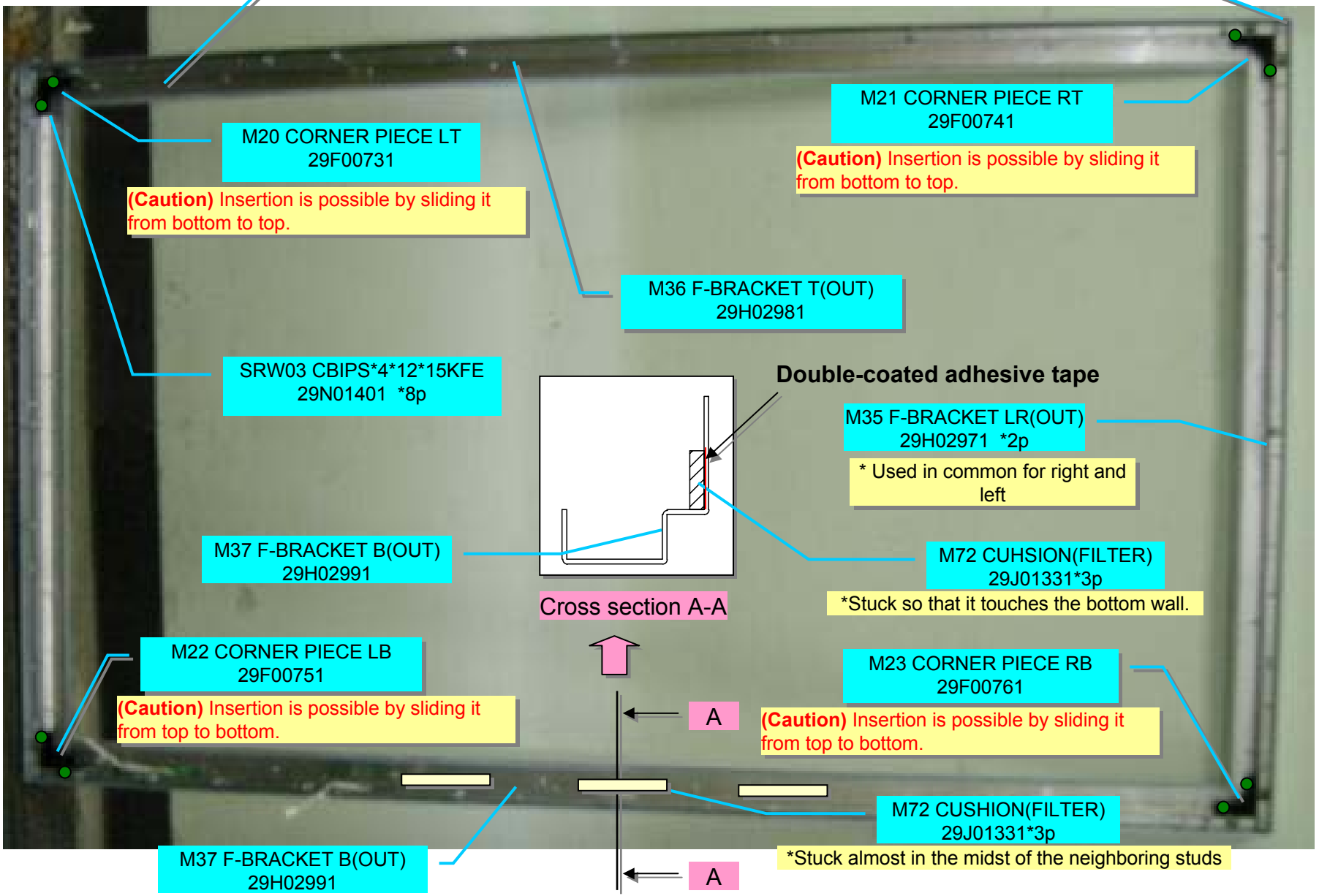


6. F-BRACKET(IN) /FILTER

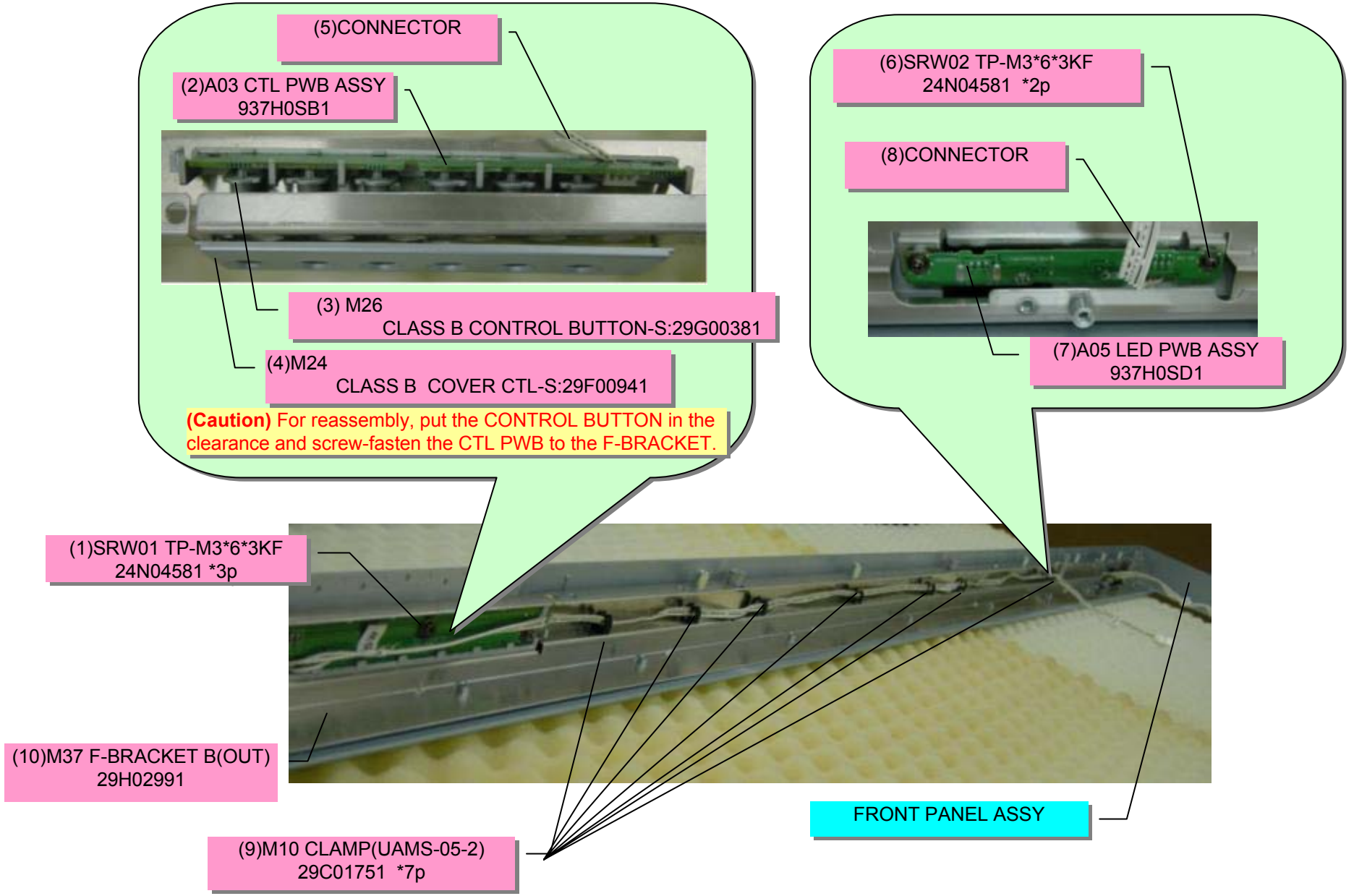
(Caution) Once the shielding tape and the cushion are removed, they must not be used again because their adhesive strength has been reduced.



8. F-BRACKET(OUT) ASSY



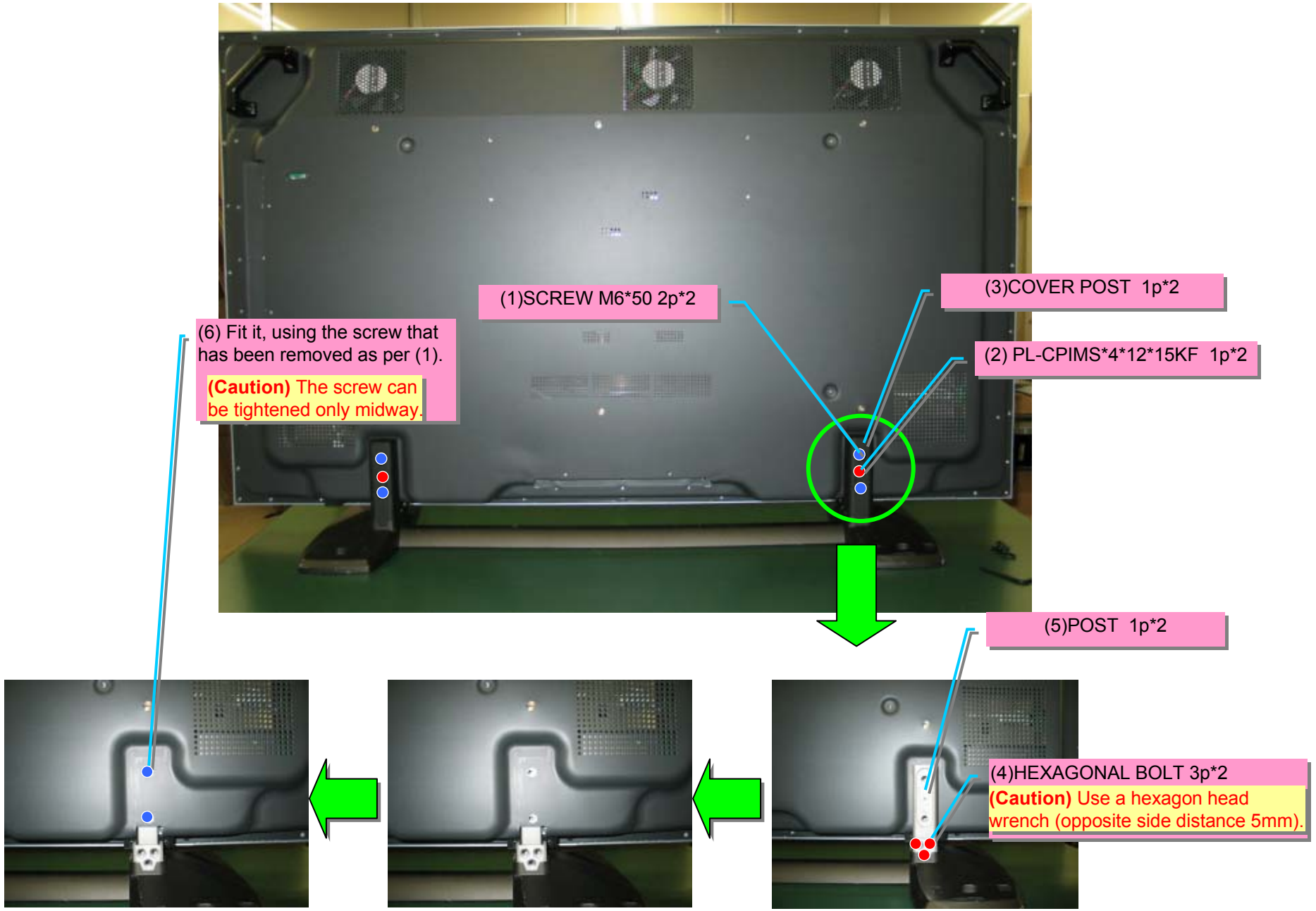
9. LED PWB/CTL PWB/F-BRACKET B(OUT)/COVER CTL/CONTROL BUTTON



10. FRONT PANEL

(2)M16
CLASS B FRONT PANEL:29D00711

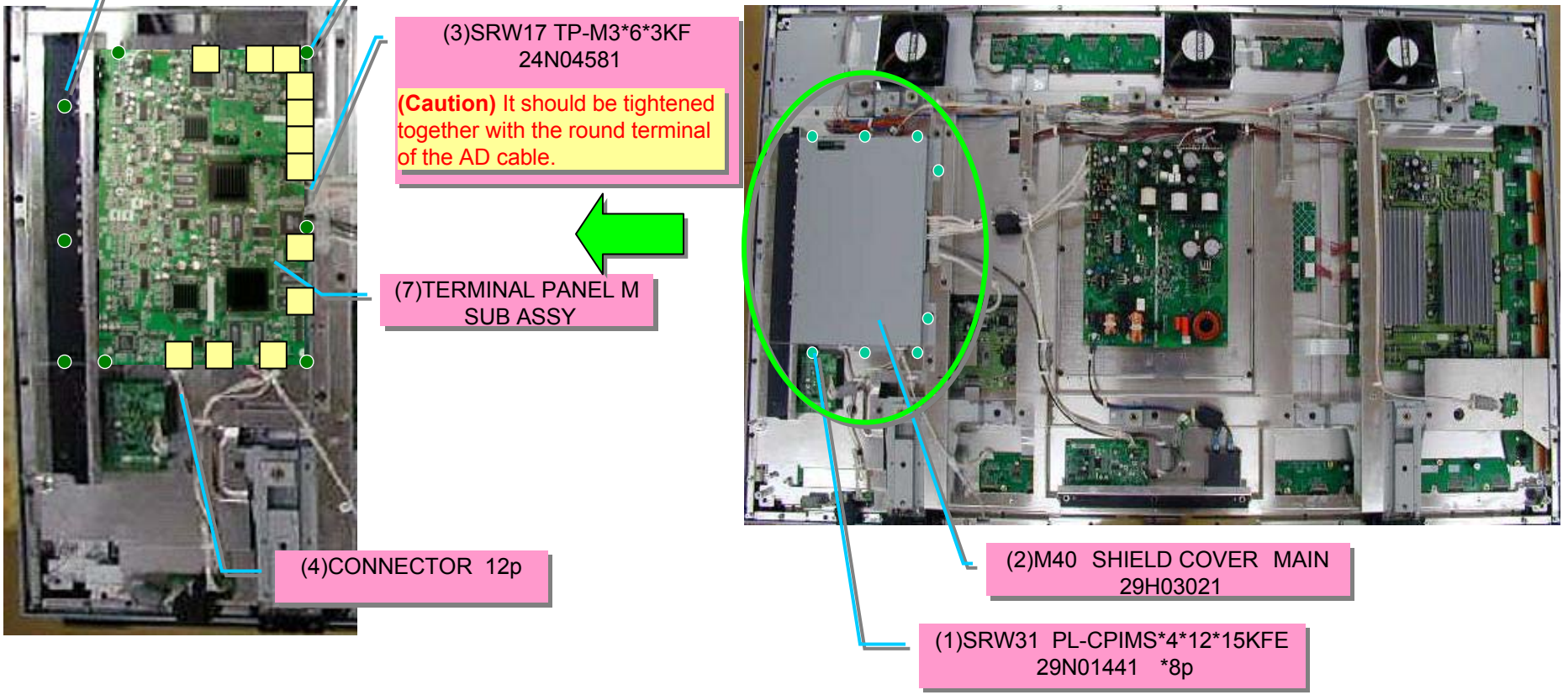
11. STAND (modification)



12. BACK COVER (modification)

(Caution) The illustration below shows a case when the STAND has been removed.

13. TERMINAL PANEL M SUB ASSY



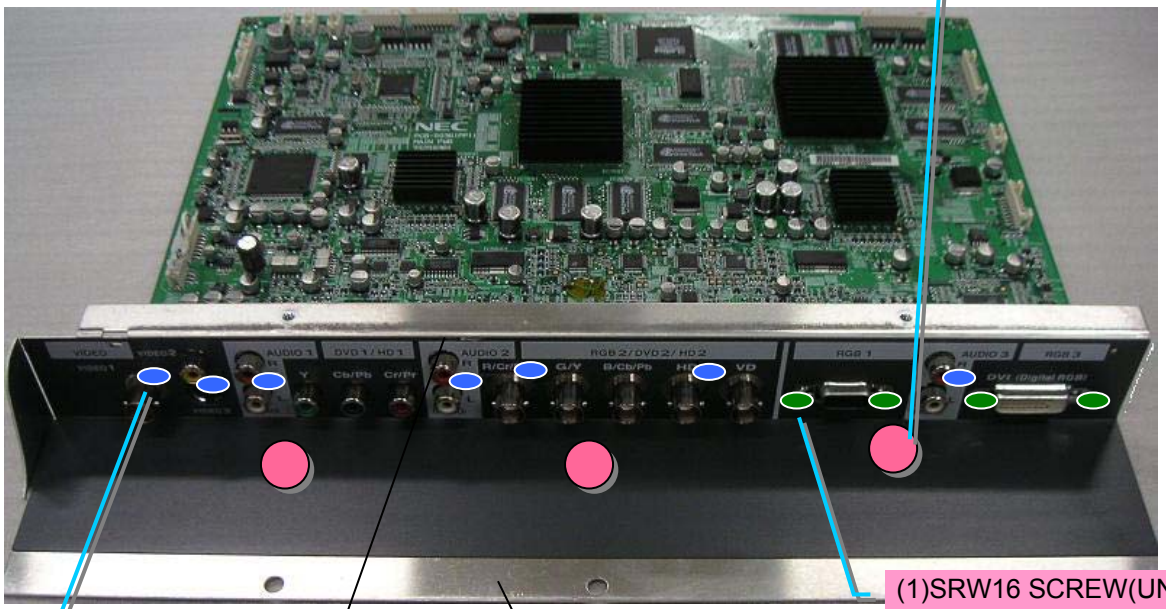
14. TERMINAL PANEL M /MAIN PWB

(Caution) Please note that no DS connector is furnished even though the MAIN PWB is ordered.

(6)A01 MAIN PWB ASSY
937H1M01

(Caution) After sticking the TERMINAL SHEET to the TERMINAL PANEL, push the peripheral area of the screw hole to strengthen the adhesion.
(In 3 positions)

(5)M27 SHIELD PLATE MAIN(42XM3)
29H03541



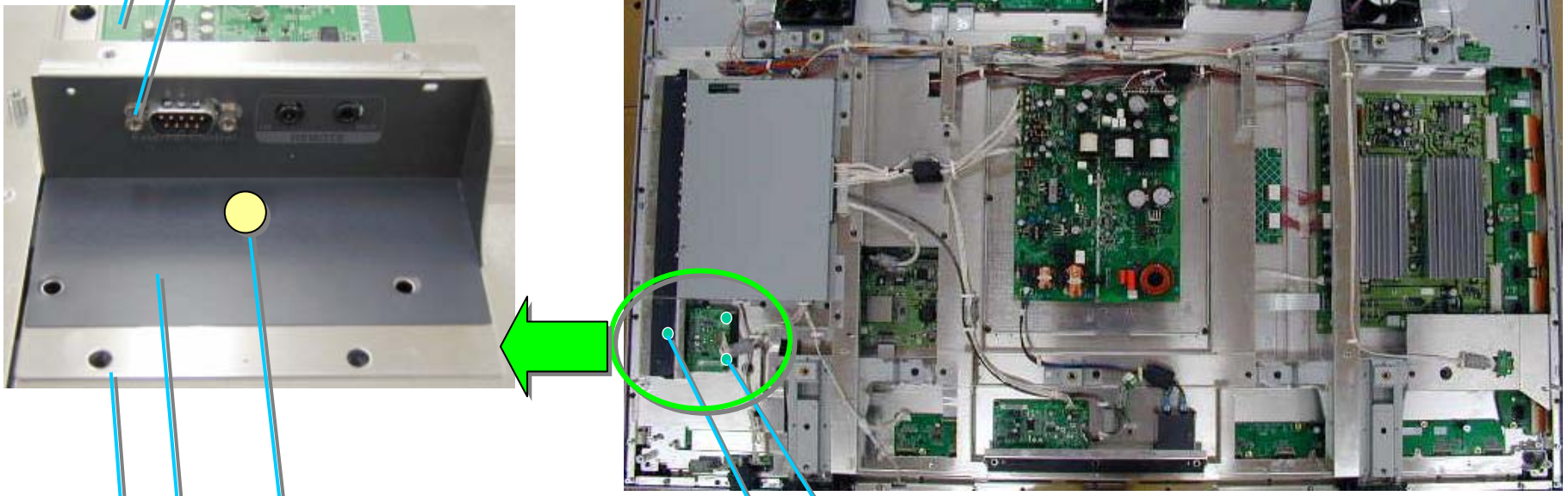
(2)SRW15 CBIPS*3*8*3KF
24N03691 *7p

(3)M52 TERMINAL SHEET M(50XM3)W
29K00571

(1)SRW16 SCREW(UNC4-40/4-40)
32990229 *4p
(Caution) Use a hexagon head driver (opposite side distance 5mm)

(4)M28 TERMINAL PANEL M(50XM3)
29H02551

15. TERMINAL PANEL S/ 232C PWB



(4)A02 232C PWB ASSY
937H0SA1

(3)SRW19 SCREW(UNC4-40/4-40)
32990229 *2p

(Caution) Use a hexagon head driver (opposite side distance 5mm).

(Caution) After sticking the TERMINAL SHEET to the TERMINAL PANEL, push the peripheral area of the screw hole to strengthen the adhesion.

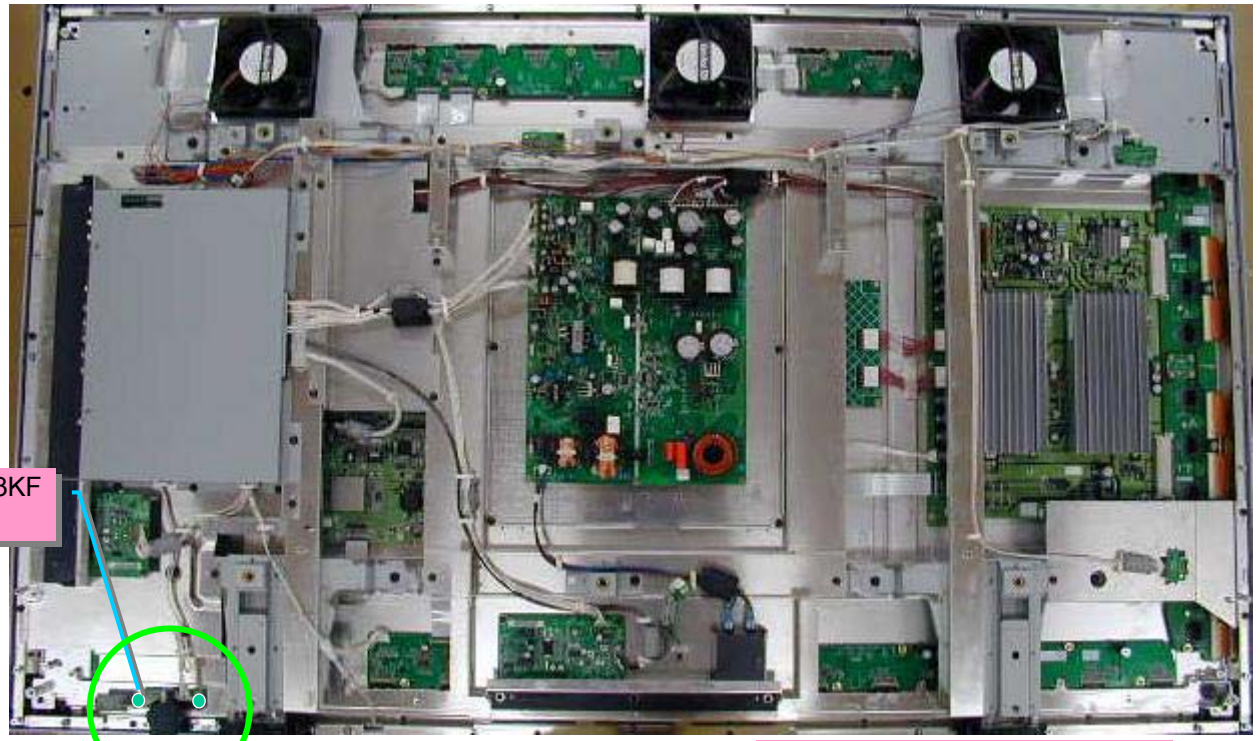
(1)SRW20 TP-M3*6*3KF
24N04581 *1p

(2)SRW26 TP-M3*6*3KF
24N04581

(5)M53 TERMINAL SHEET S(50XM3)W
29K00581

(6)M29 TERMINAL PANEL S(50XM3)
29H02561

16. COVER SW/POWER BUTTON/PWR PWB

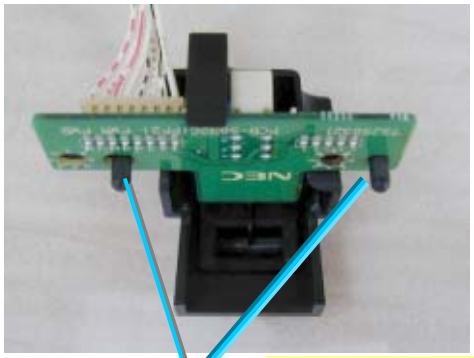


(1)SRW28 TP-M3*6*3KF
24N04581 *2p

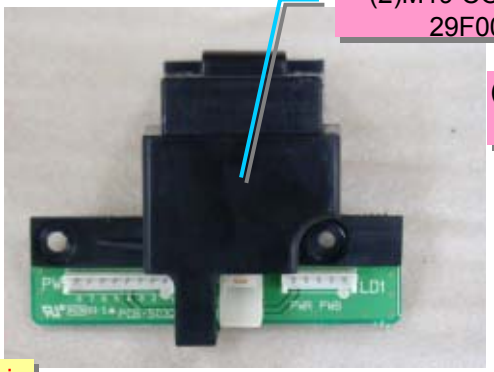
(3)M25 POWER BUTTON
29G00281

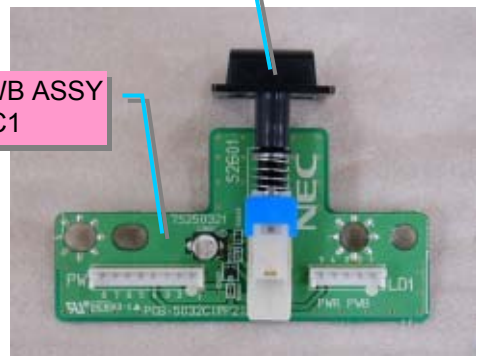
(2)M19 COVER SW
29F00721

(4)A04 PWR PWB ASSY
937H0SC1



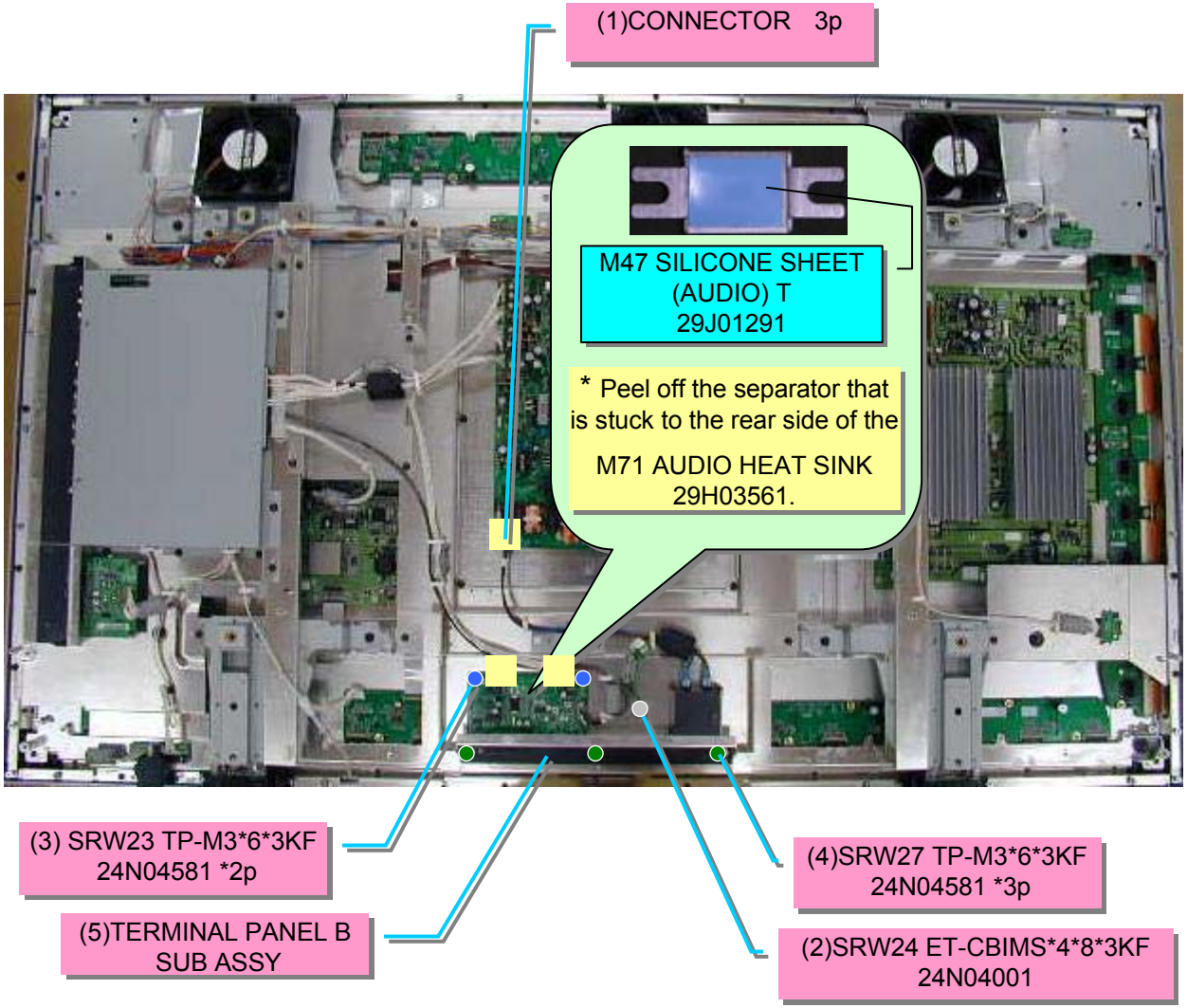
Rear side



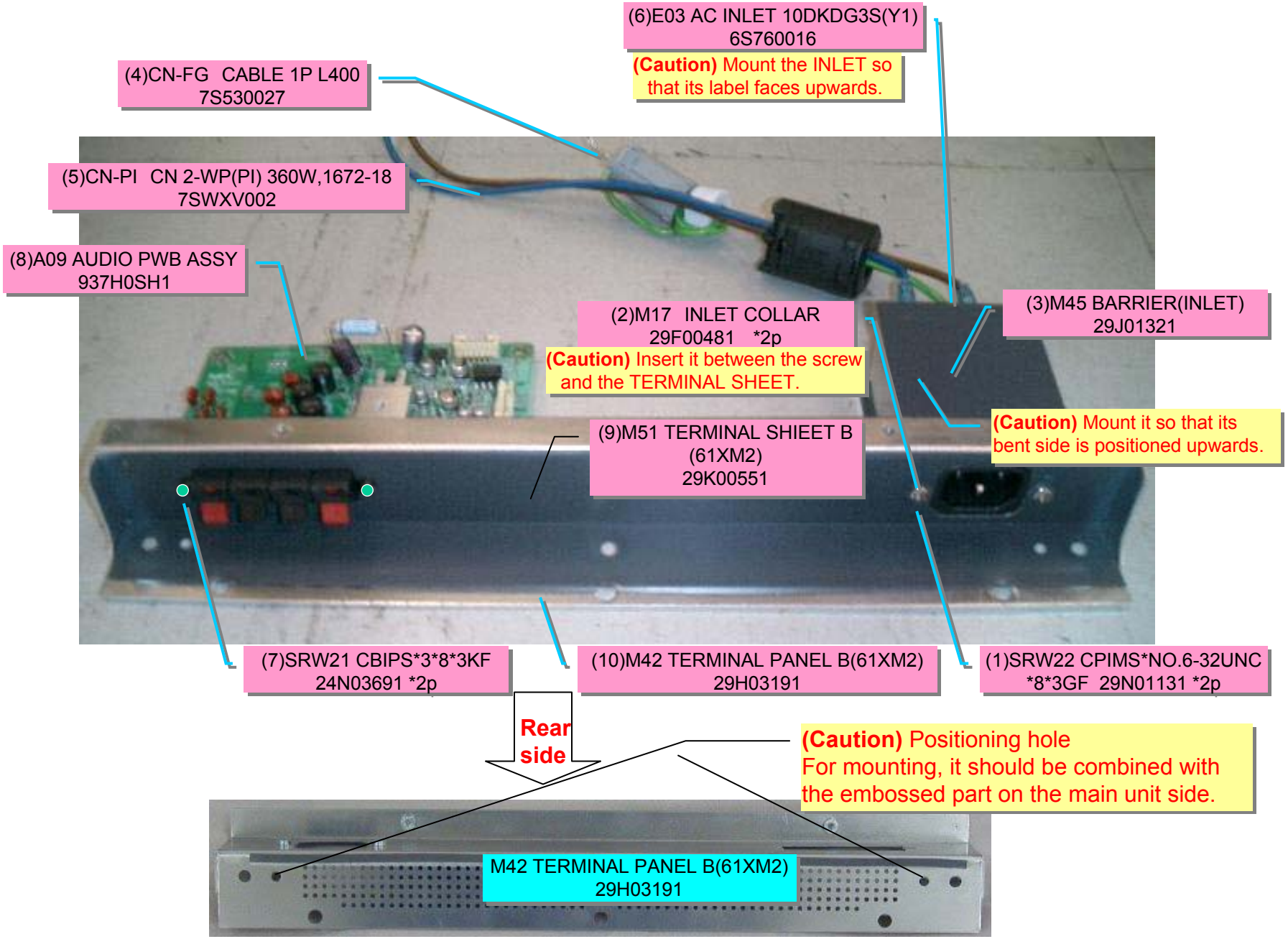


(Caution) Positioning pin Use it in the case of reassembly.

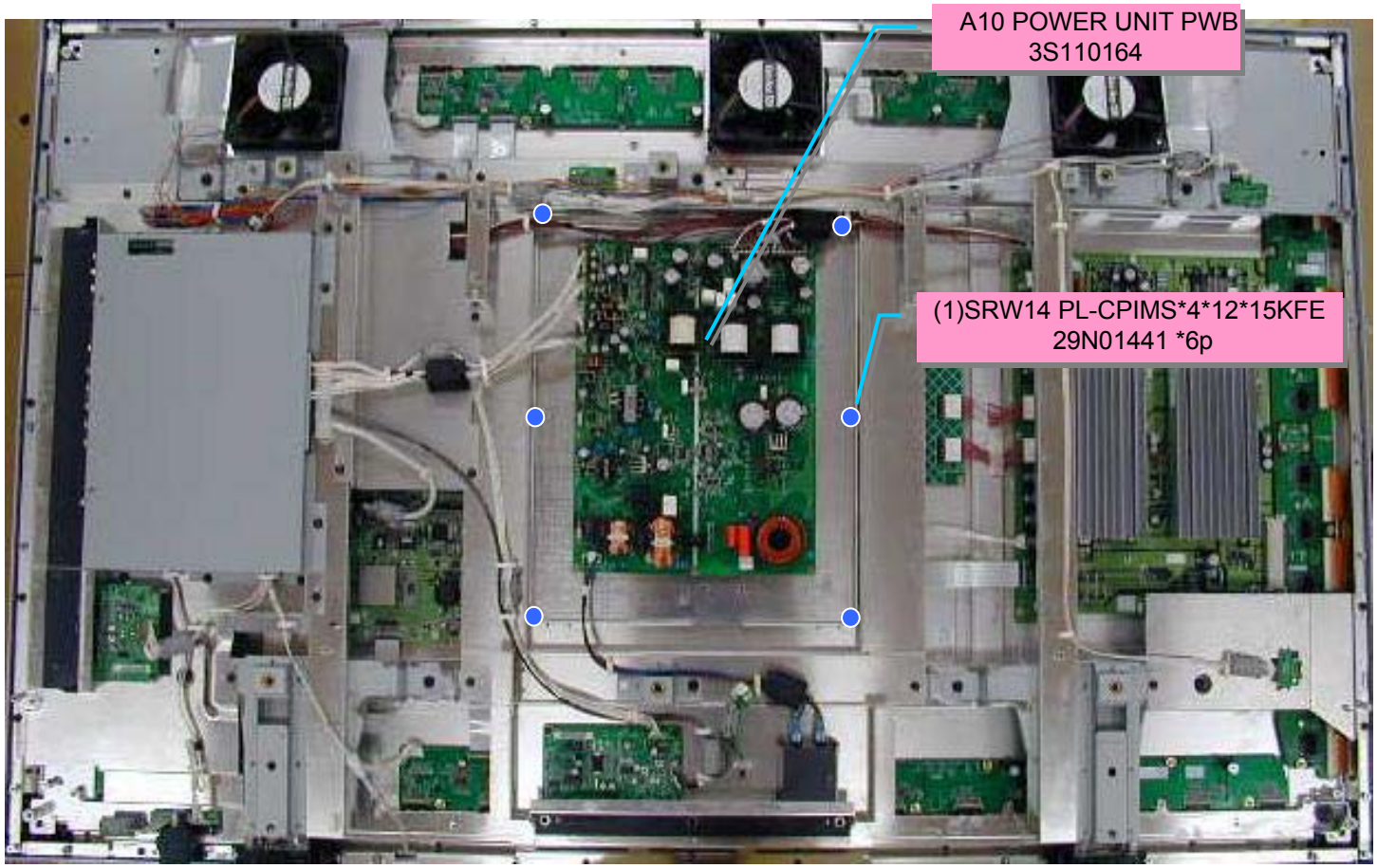
17. TERMINAL PANEL B SUB ASSY



18. TERMINAL PANEL B/AUDIO PWB/AC INLET

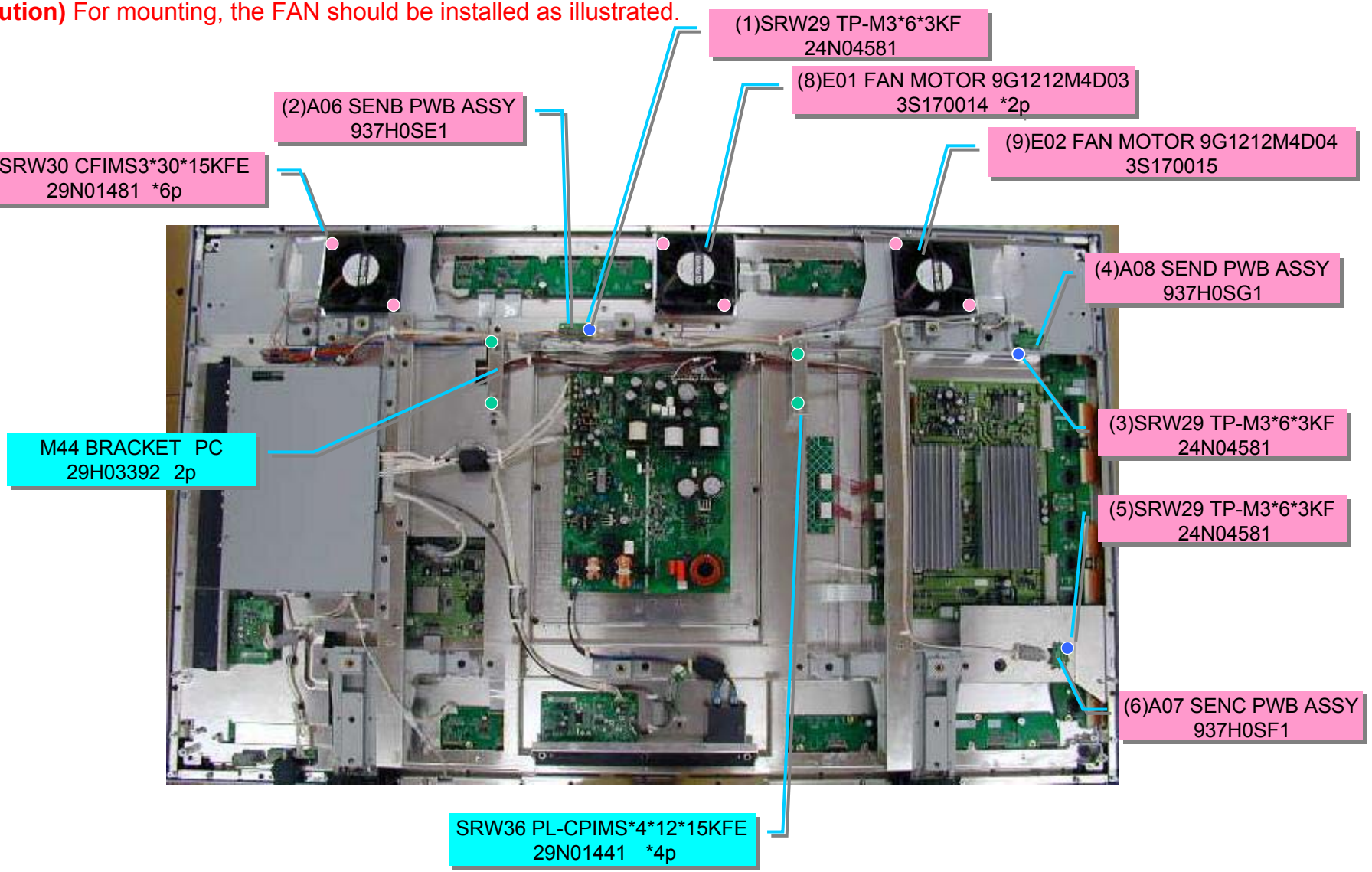


19. POWER UNIT

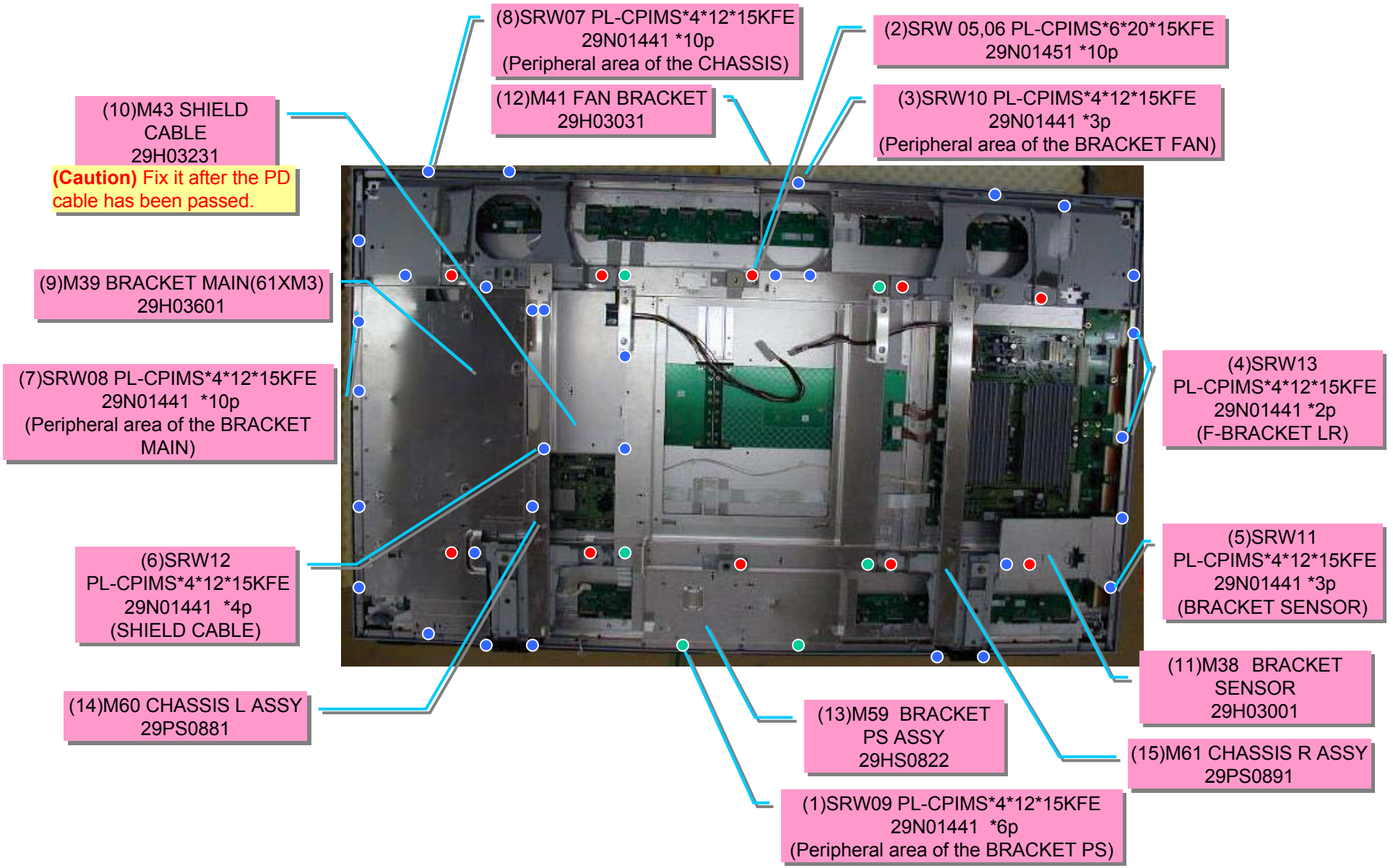


20. SENB PWB/SENC PWB/SEND PWB/FAN

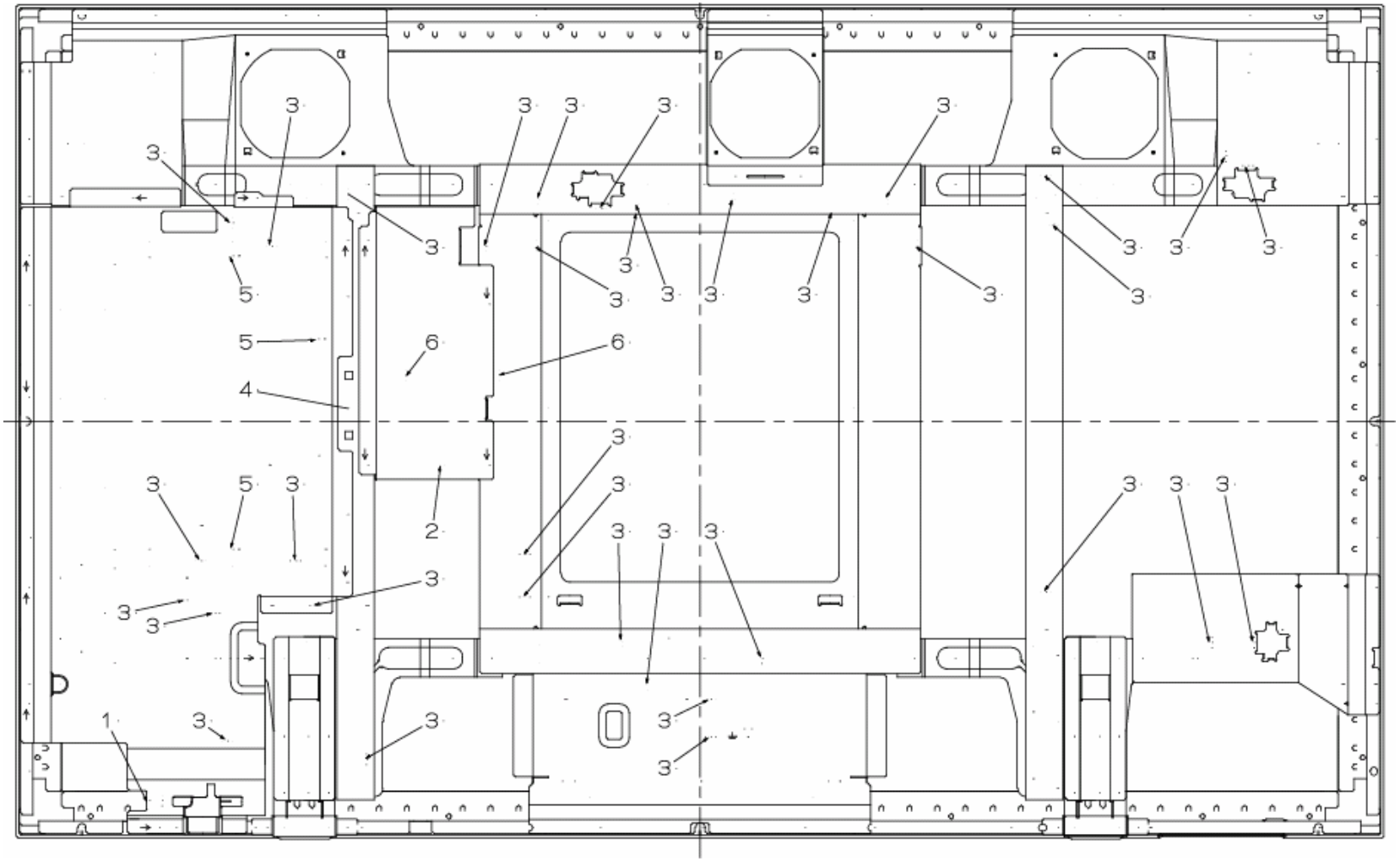
(Caution) For mounting, the FAN should be installed as illustrated.



21. BRACKET/SHIELD



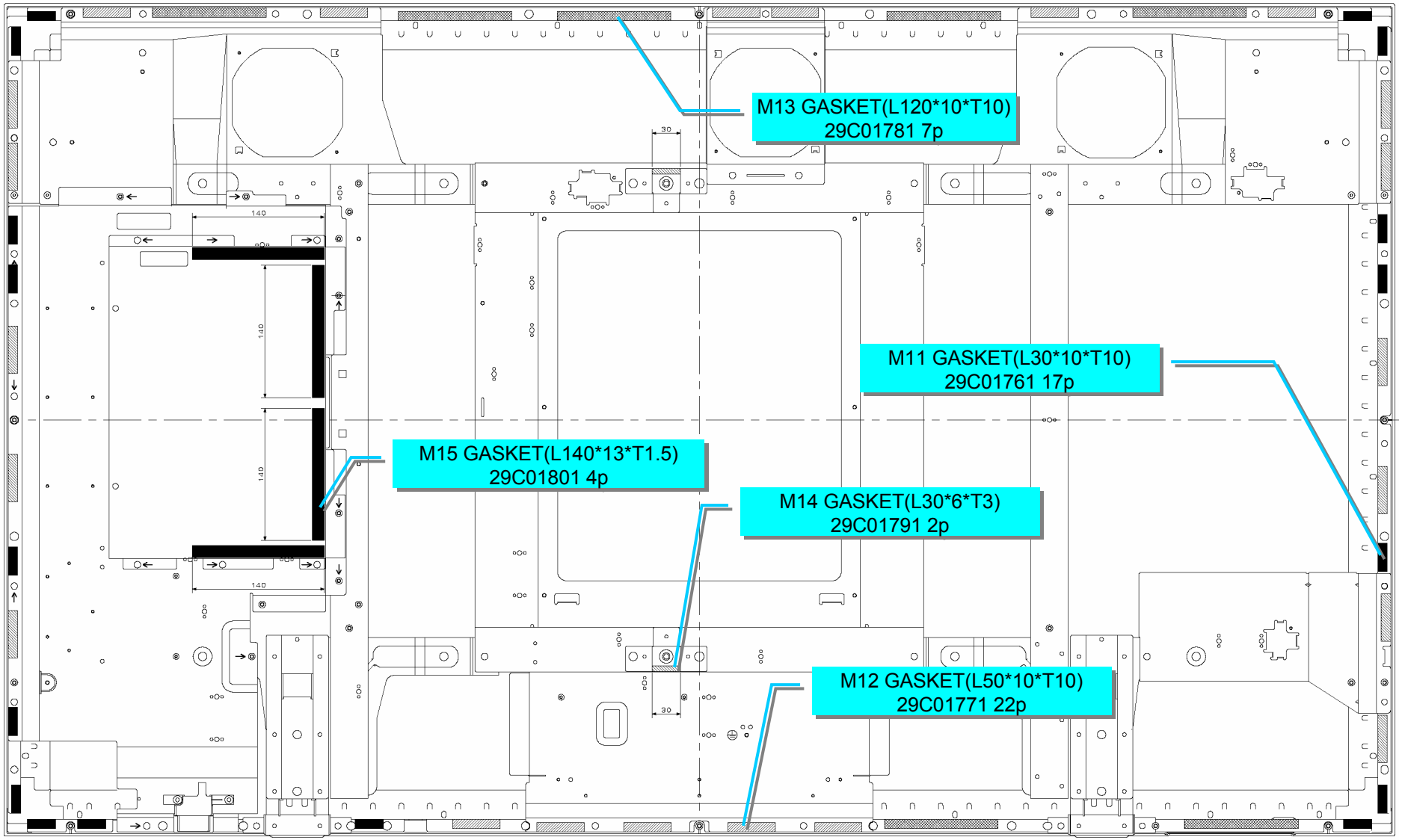
22. WIRE CLAMP



①M04 EDGING SADDLE(EDS-1208U)	29C00461	1p	
②M05 CLAMP(LCT-1S)	29C00551	1p	
③M64 CLAMP(RLWC-2SV0)	29C01901	34p	
④M07 CLAMP(RFCC-625)	29C01721	1p	
⑤M01 BUSHING,INSULATOR	24282991	3p	
⑥M09 CLAMP(RBWS-5N)	29C01741	2p	

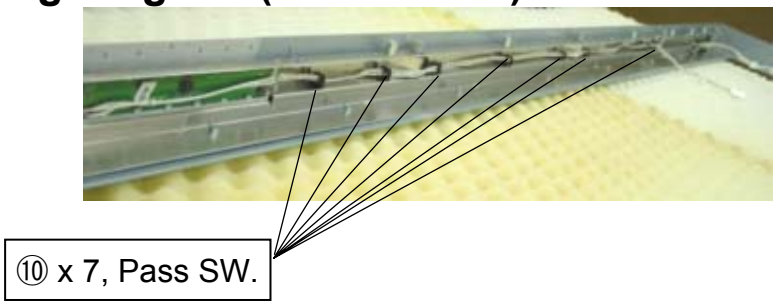
23. GASKET(CLASS B)

(Caution) Gaskets are used only for the CLASS B model. [For more details, refer to Item 6 of the caution column on P.7-1.] If replacement is intended, the gasket should be carefully stuck without permitting it to protrude from the BACK COVER when this BACK COVER is being mounted.



24. WIRING

Wiring Diagram (Front Block)



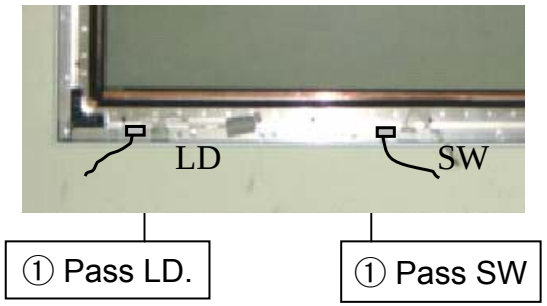
X

X

P

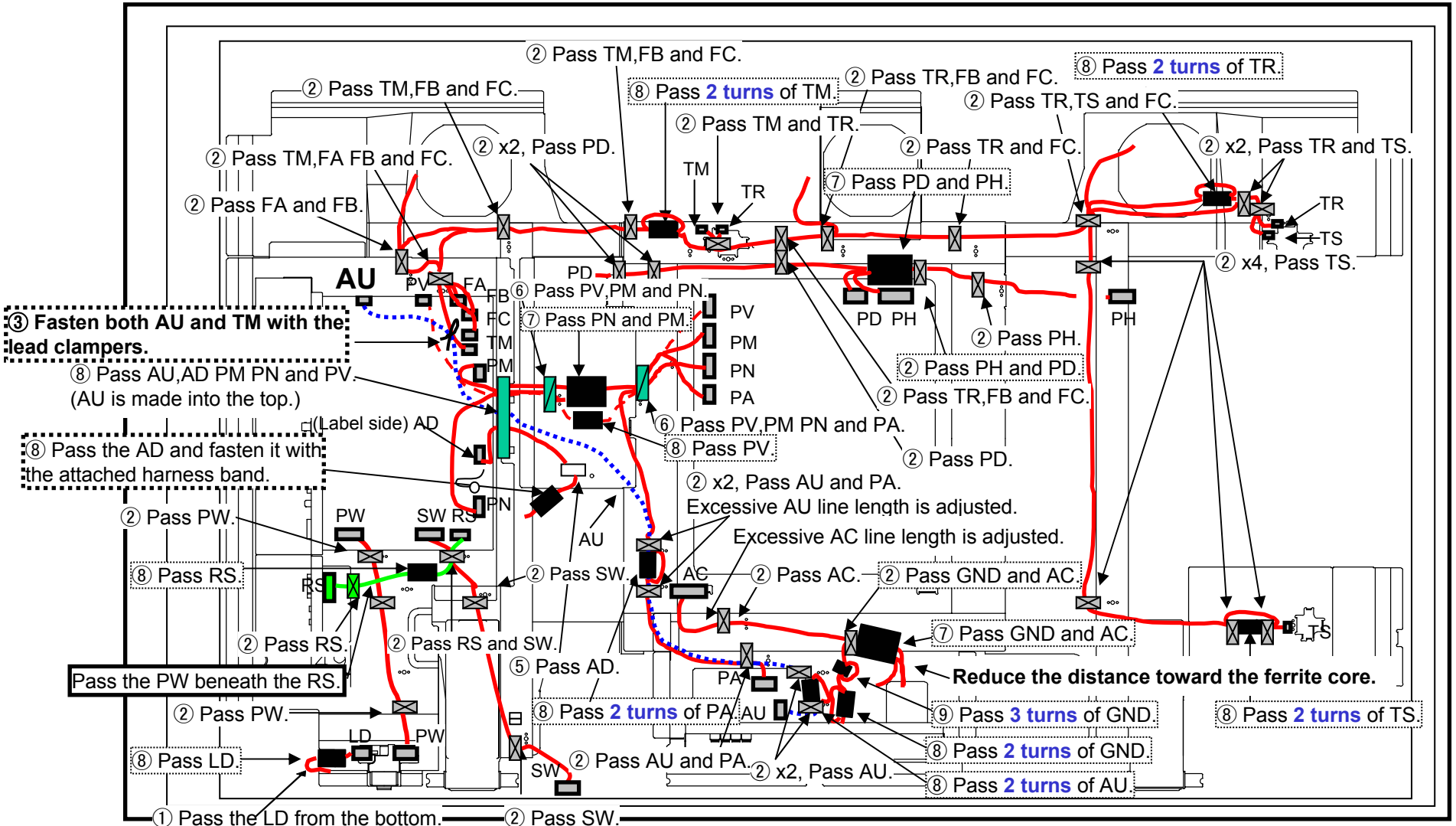
P

P



	PARTS NAME	PARTS NO.	Q'TY
①	EDGING SADDLE (EDS-1208U)	29C00461	2
②	CLAMP (UAMS-05-2)	29C01751	7

25. Wiring Diagram



		PARTS NAME (PARTS NO.)	Q'TY
①	EDGING SADDLE	EDS-1208U (29C00461)	1
②	CLAMP	RLWC-2SV0 (29C01901)	34
③	LEAD CLAMP	D8.3 (24C00101)	1
④	CLAMP	RFCC-625 (29C01721)	1

		PARTS NAME (PARTS NO.)	Q'TY
⑤	CLAMP	LCT-1S (29C00551)	1
⑥	CLAMP	RBWS-5N (29C01741)	2
⑦	FERRITE CORE	SFT-72SNB-026K (6S170003)	3
⑧	FERRITE CORE	ZCAT2032-930 (6S170005)	10

		PARTS NAME (PARTS NO.)	Q'TY
⑨	FERRITE CORE	ESD-R-19 (6S170007)	1
⑩	CLAMP	UAMS-05-2 (29C01751)	7

CCD board of PX-61XM3A/PX-61XR3A : Try to push the bush rivet and the connector, and confirm that there is no floating of parts.

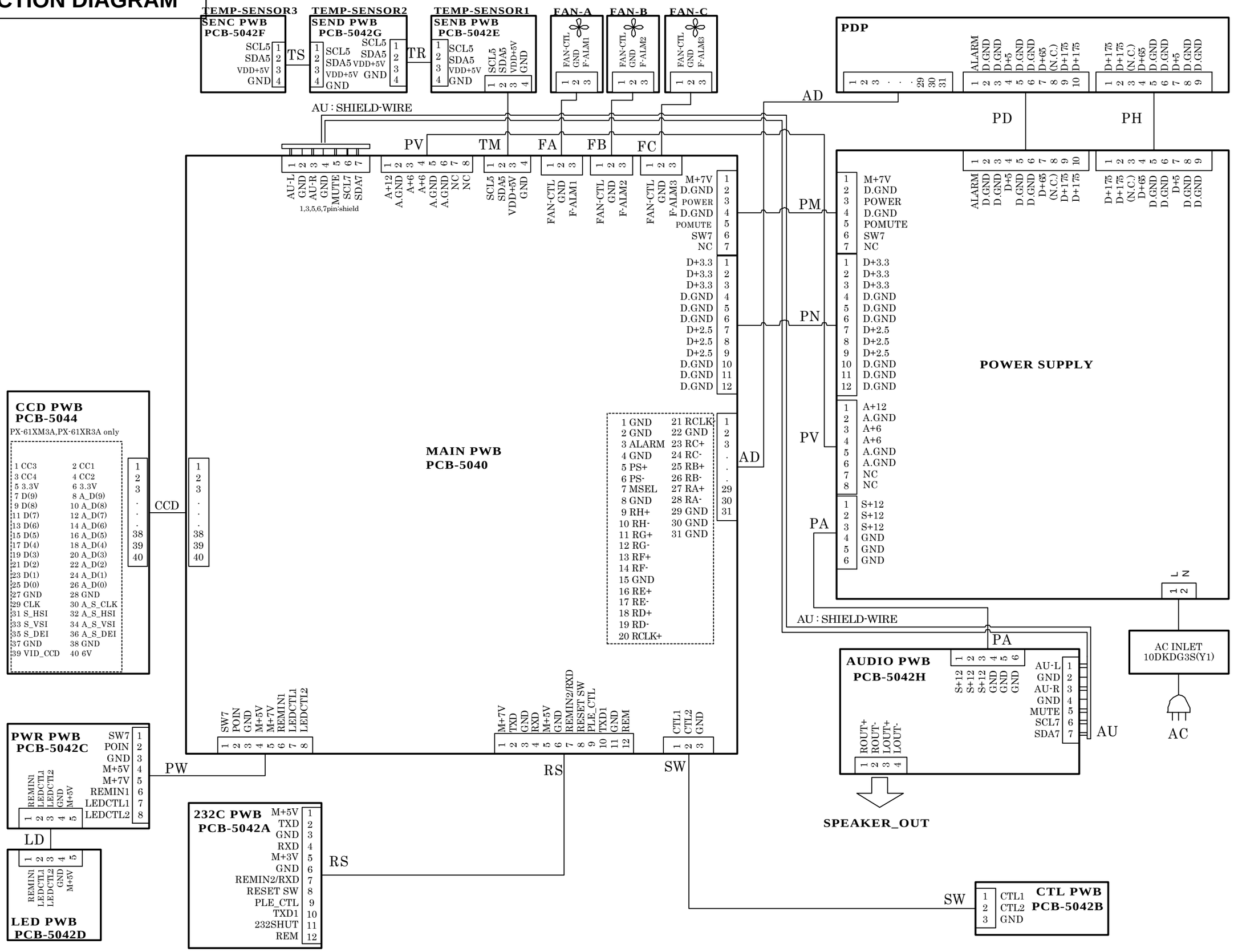
6. PARTS LIST

PD-6150 Parts List		
Ref	**Part Number**	**Description**
A01	937H1M01	PWB-MAIN (PD6150)
A02	937H0SA1	PWB-232C (PD5050)
A03	937H0SB1	PWB-CTL (PD5050)
A04	937H0SC1	PWB-PWR (PD5050)
A05	937H0SD1	PWB-LED (PD5050)
A06	937H0SE1	PWB-SENB (PD-5050)
A07	937H0SF1	PWB-SENC (PD5050)
A08	937H0SG1	PWB-SEND(PD5050)
A09	937H0SH1	PWB-AUDIO ASSY (PD5050)
A10	3S110164	PWB-POWER UNIT
E01	3S170014	FAN-MOTOR (9G1212M4D03)
E02	3S170015	FAN-MOTOR (9G1212M4D043)
M16	29D00711	PANEL-FRONT
M18	29F00591	HANDLE
M24	29F00941	COVER-CTL (PD-6130)
M25	29G00281	BUTTON-POWER
M26	29G00381	BUTTON-CONTROL
M54	29KS0171	SCREEN SHIELD (FILTER) PD6150
M58	29P01271	COVER-BACK (61XM2)
PDP*	3S361002	PDP-NP61C2MF01AA (T/A REQ)
	29P01371	ORNAMENT-TOP
	29P01381	ORNAMENT-BOTTOM
	3S120231	REMOTE
	7S530027	CABLE -1P L400
	7S530036	CABLE- 31P L390
	7S552001	CORD-POWER AC

***PDP-NP61C2MF01 PARTS LIST**

Ref	**Part Number**	**Description**
P01	9S899790	PWB-SCAN
P02	9S899669	PWB-COMMON
P03	9S899731	PWB-DIGITAL (05D27)
	9S899793	PWB-DIGITAL (05D28)
P04	9S899670	PWB-COMMON CONNECTION (U)
P05	9S899671	PWB-COMMON CONNECTION (D)
P06	9S899660	PWB-SCAN RELAY (RU)
P07	9S899661	PWB-SCAN RELAY (RD)
P08	9S899583	PWB-DATA RELAY (LU)
P09	9S899584	PWB-DATA RELAY (CU)
P10	9S899585	PWB-DATA RELAY (RU)
P11	9S899586	PWB-DATA RELAY (LD)
P12	9S899587	PWB-DATA RELAY (CD)
P13	9S899588	PWB-DATA RELAY (RD)
P14	9S899589	PWB-RECOVERY RELAY

CONNECTION DIAGRAM



CONNECTOR PIN EXPLANATION

PD-6150 Series

(Caution) The operating voltages specified below are used in common irrespective of the presence of signals. In this case, however, part of the operating voltages (red characters) may change according to the signal conditions when the main power supply is turned on (POWER button ON).

Status of LED lighting: ★ for lighting in green, ★★ for unlighting, and ★★★ for lighting in red.

Vol.1

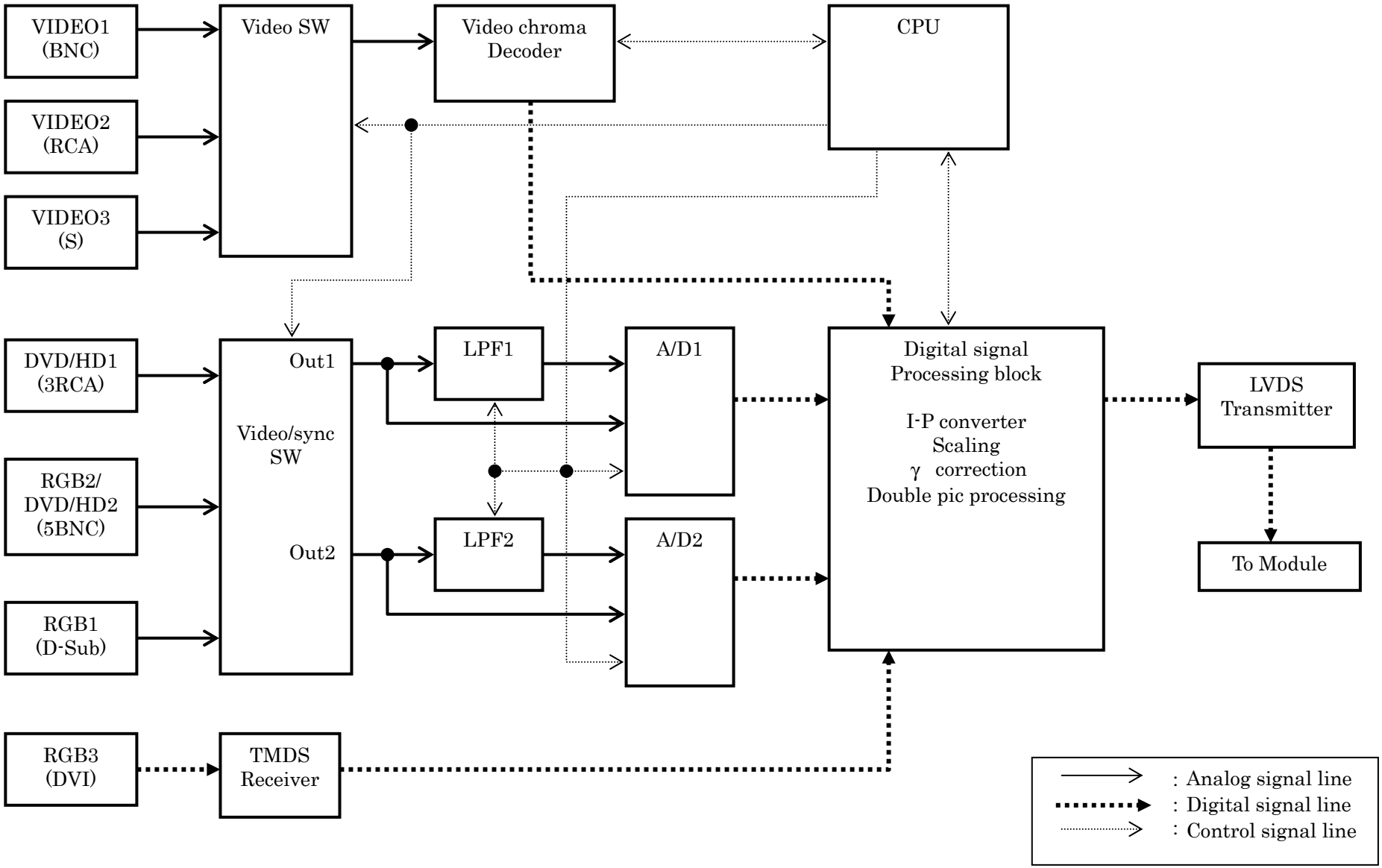
Name	Pin No.	Pin name	Function	Basic operation (Numerical unit: Vdc; except for the case when units are individually indicated)							Signal direction
				AC power ON (Power cord connected to the wall outlet) ★★	Main power ON (POWER button ON) ★		Power management ★★	Standby ★★★	Main power OFF ★★	AC power OFF (Power cord pulled out of the wall outlet) ★★	
					No signal	With signal					
PN	1	D+3.3	3.3V power supply for digital circuits	0	3.3	3.3	0	0	0	-	POWER→MAIN
	2	D+3.3	3.3V power supply for digital circuits	0	3.3	3.3	0	0	0	-	POWER→MAIN
	3	D+3.3	3.3V power supply for digital circuits	0	3.3	3.3	0	0	0	-	POWER→MAIN
	4	D.GND	GND	0	0	0	0	0	0	-	-
	5	D.GND	GND	0	0	0	0	0	0	-	-
	6	D.GND	GND	0	0	0	0	0	0	-	-
	7	D+2.5	2.5V power supply for digital circuits	0	2.5	2.5	0	0	0	-	POWER→MAIN
	8	D+2.5	2.5V power supply for digital circuits	0	2.5	2.5	0	0	0	-	POWER→MAIN
	9	D+2.5	2.5V power supply for digital circuits	0	2.5	2.5	0	0	0	-	POWER→MAIN
	10	D.GND	GND	0	0	0	0	0	0	-	-
	11	D.GND	GND	0	0	0	0	0	0	-	-
	12	D.GND	GND	0	0	0	0	0	0	-	-
PM	1	M+7	7V power supply for microcomputer	6.8	6.8	6.8	6.8	6.8	6.8	-	POWER→MAIN
	2	D.GND	GND	0	0	0	0	0	0	-	-
	3	POWER	Power control	0	4.9	4.9	0	0	0	-	MAIN→POWER
	4	D.GND	GND	0	0	0	0	0	0	-	-
	5	POMUTE	Mute signal for AC power OFF	4.8	4.8	4.8	4.8	4.8	4.8	4.8→-	POWER→MAIN
	6	SW7	Power start control	0	6.8	6.8	6.8	6.8	0	-	POWER→MAIN
	7	N C	Non-connection terminal	-	-	-	-	-	-	-	-
PV	1	A+12	12V power supply for analog circuits	0	12	12	0	0	0	-	POWER→MAIN
	2	A.GND	GND	0	0	0	0	0	0	-	-
	3	A+6	6V power supply for analog circuits	0	6	6	0	0	0	-	POWER→MAIN
	4	A+6	6V power supply for analog circuits	0	6	6	0	0	0	-	POWER→MAIN
	5	A.GND	GND	0	0	0	0	0	0	-	-
	6	A.GND	GND	0	0	0	0	0	0	-	-
	7	NC	Non-connection terminal	-	-	-	-	-	-	-	-
	8	NC	Non-connection terminal	-	-	-	-	-	-	-	-
AU	1	AU_L	Audio signal L CH	0	Selected input signals are output.	Selected input signals are output.	0	0	0	-	MAIN→AUDIO
	2	GND	GND	0	0	0	0	0	0	-	-
	3	AU_R	Audio signal R CH	0	Selected input signals are output.	Selected input signals are output.	0	0	0	-	MAIN→AUDIO
	4	GND	GND	0	0	0	0	0	0	-	-
	5	MUTE	Mute signal of audio output	3.5	3.5→0	3.5→0	3.5	3.5→0	3.5	3.5→-	MAIN→AUDIO
	6	SCL7	Clock line of the I2C bus	0	Clock signal (5Vac) when data are received; 5Vdc when no data are received.	Clock signal (5Vac) when data are received; 5Vdc when no data are received.	0	0	0	-	MAIN→AUDIO
	7	SDA7	Data line of the I2C bus	0	Clock signal (5Vac) when data are received; 5Vdc when no data are received.	Clock signal (5Vac) when data are received; 5Vdc when no data are received.	1	1	0	-	MAIN→AUDIO
RS	1	M+5V	5V power supply for microcomputer	0	5	5	5	5	0	-	MAIN→RS232C
	2	TXD	RS232 driver output	0	Clock signal used during data transmission (3.3Vac) 3.3Vdc when no data are received.	Clock signal used during data transmission (3.3Vac) 3.3Vdc when no data are received.	Clock signal used during data transmission (3.3Vac) 3.3Vdc when no data are received.	Clock signal used during data transmission (3.3Vac) 3.3Vdc when no data are received.	0	-	MAIN→RS232C
	3	GND	GND	0	0	0	0	0	0	-	-
	4	RXD	RS232 receiver input	0	Clock signal (3.3Vac) when data are received; 3.3Vdc when no data are received.	Clock signal (3.3Vac) when data are received; 3.3Vdc when no data are received.	Clock signal (3.3Vac) when data are received; 3.3Vdc when no data are received.	Clock signal (3.3Vac) when data are received; 3.3Vdc when no data are received.	0	-	RS232C→MAIN
	5	M+3.3V	3.3V power supply for microcomputer	0	3.3	3.3	3.3	3.3	0	-	MAIN→RS232C
	6	GND	GND	0	0	0	0	0	0	-	-
	7	REMIN2/RXD1	Data signal of wired remote control						0	-	RS232C→MAIN
				0	0	0	0	0	0	-	
	8	RESET SW	NC	-	-	-	-	-	-	-	-
	9	PLE_CTL	PLE control					0	0	-	MAIN→RS232C
				0	0	0	0	0	0	-	
	10	TXD1	RS232 driver output					0	0	-	MAIN→RS232C

Name	Pin No.	Pin name	Function	Basic operation (Numerical unit: Vdc; except for the case when units are individually indicated)							Signal direction
				AC power ON (Power cord connected to the wall outlet) ★★	Main power ON (POWER button ON) ★		Power management ★★	Standby ★★★	Main power OFF ★★	AC power OFF (Power cord pulled out of the wall outlet) ★★	
					No signal	With signal					
				0	0	0	0	0	0	-	
	11	232C_SHUT	ON/OFF control for TXD0 driver	0	3.3	3.3	3.3	3.3	0	-	MAIN→RS232C
	12	REM	Insertion detection for wired remote control input						0	-	RS232C→MAIN
				-	-	-	-	-	-	-	(NC for Model R)
TM	1	SCL5	Clock line of the I2C bus	0	Clock signal used during data transmission (3.3Vac) 3.3Vdc when no data are transmitted.	Clock signal used during data transmission (3.3Vac) 3.3Vdc when no data are transmitted.	0	0	0	-	MAIN→SENB
	2	GND	GND	0	0	0	0	0	0	-	-
	3	VDD+3.3V	3.3V power supply for analog signals	0	3.3	3.3	0	0	0	-	MAIN→SENB
	4	SDA5	Data line of the I2C bus	0	During data exchange: Clock signal (3.3Vac), Data not exchanged: 3.3Vdc	During data exchange: Clock signal (3.3Vac), Data not exchanged: 3.3Vdc	0	0	0	-	MAIN←→SENB
TR	1	SCL5	Clock line of the I2C bus	0	Clock signal used during data transmission (3.3Vac) 3.3Vdc when no data are transmitted.	Clock signal used during data transmission (3.3Vac) 3.3Vdc when no data are transmitted.	0	0	0	-	SENB→SEND
	2	GND	GND	0	0	0	0	0	0	-	-
	3	VDD+3.3V	3.3V power supply for analog signals	0	3.3	3.3	0	0	0	-	SENB→SEND
	4	SDA5	Data line of the I2C bus	0	During data exchange: Clock signal (3.3Vac), Data not exchanged: 3.3Vdc	During data exchange: Clock signal (3.3Vac), Data not exchanged: 3.3Vdc	0	0	0	-	SENB←→SEND
TS	1	SCL5	Clock line of the I2C bus	0	Clock signal used during data transmission (3.3Vac) 3.3Vdc when no data are transmitted.	Clock signal used during data transmission (3.3Vac) 3.3Vdc when no data are transmitted.	0	0	0	-	SEND→SENC
	2	GND	GND	0	0	0	0	0	0	-	-
	3	VDD+3.3V	3.3V power supply for analog signals	0	3.3	3.3	0	0	0	-	SEND→SENC
	4	SDA5	Data line of the I2C bus	0	During data exchange: Clock signal (3.3Vac), Data not exchanged: 3.3Vdc	During data exchange: Clock signal (3.3Vac), Data not exchanged: 3.3Vdc	0	0	0	-	SEND←→SENC
FA	1	FAN-CTL	Voltage-controllable power supply								
							0	0	0	-	
				0	9.3Vdc during high-speed revolution (Fan mode H); 7.6Vdc during medium speed revolution (Fan mode M); 5.3Vdc during low-speed revolution (Fan mode L)	9.3Vdc during high-speed revolution (Fan mode H); 7.6Vdc during medium speed revolution (Fan mode M); 5.3Vdc during low-speed revolution (Fan mode L)	0	0	0	-	
	2	GND	GND	0	0	0	0	0	0	-	-
	3	ALARM	FAN lock detect signal output	-	-	-	-	-	-	-	-

Name	Pin No.	Pin name	Function		Basic operation (Numerical unit: Vdc; except for the case when units are individually indicated)							Signal direction
					AC power ON (Power cord connected to the wall outlet) ★★	Main power ON (POWER button ON) ★		Power management ★★	Standby ★★★	Main power OFF ★★	AC power OFF (Power cord pulled out of the wall outlet) ★★	
						No signal	With signal					
					0	0V during normal fan operation;3.3V dc while the fan is stopped.	0V during normal fan operation;3.3V dc while the fan is stopped.	0	0	0	-	FAN→MAIN
FB	1	FAN-CTL	Voltage-controllable power supply									
								0	0	0	-	MAIN→FAN
					0			0	0	0	-	
					0	9.3Vdc during high-speed revolution (Fan mode H); 7.6Vdc during medium speed revolution (Fan mode M); 5.3Vdc during low-speed revolution (Fan mode L)	9.3Vdc during high-speed revolution (Fan mode H); 7.6Vdc during medium speed revolution (Fan mode M); 5.3Vdc during low-speed revolution (Fan mode L)	0	0	0	-	
	2	GND	GND		0	0	0	0	0	0	-	-
	3	ALARM	FAN lock detect signal output		-	-	-	-	-	-	-	-
					0	0V during normal fan operation;3.3V dc while the fan is stopped.	0V during normal fan operation;3.3V dc while the fan is stopped.	0	0	0	-	FAN→MAIN
FC	1	FAN-CTL	Voltage-controllable power supply									
					0	9.3Vdc during high-speed revolution (Fan mode H); 7.6Vdc during medium speed revolution (Fan mode M); 5.3Vdc during low-speed revolution (Fan mode L)	9.3Vdc during high-speed revolution (Fan mode H); 7.6Vdc during medium speed revolution (Fan mode M); 5.3Vdc during low-speed revolution (Fan mode L)	0	0	0	-	FAN→MAIN
	2	GND	GND		0	0	0	0	0	0	-	-
	3	ALARM	FAN lock detect signal output		-	-	-	-	-	-	-	-
					0	0V during normal fan operation;3.3V dc while the fan is stopped.	0V during normal fan operation;3.3V dc while the fan is stopped.	0	0	0	-	FAN→MAIN
AD	1	GND	GND		0	0	0	0	0	0	-	-
	2	GND	GND		0	0	0	0	0	0	-	-
	3	ALARM	Module alarm signal		0	5Vdc during normal PDP operation; 0V when the PDP is out of order.	5Vdc during normal PDP operation; 0V when the PDP is out of order.	0	0	0	-	PDP→MAIN
	4	GND	GND		0	0	0	0	0	0	-	-

Name	Pin No.	Pin name	Function	Basic operation (Numerical unit: Vdc; except for the case when units are individually indicated)							Signal direction
				AC power ON (Power cord connected to the wall outlet) ★★	Main power ON (POWER button ON) ★		Power management ★★	Standby ★★★	Main power OFF ★★	AC power OFF (Power cord pulled out of the wall outlet) ★★	
					No signal	With signal					
	5	PS+	PSS input PS+	0	PSS LVDS serial differential PS+ input 0Vac; Bias 1.1Vdc	PSS LVDS serial differential PS+ input 0.3Vac; Bias 1.25Vdc	0	0	0	-	PDP→MAIN
	6	PS-	PSS input PS-	0	PSS LVDS serial differential PS+ input 0Vac; Bias 1.4Vdc	PSS LVDS serial differential PS+ input 0.3Vac; Bias 1.25Vdc	0	0	0	-	PDP→MAIN
	7	MSEL	42V5 compatible interface OFF	0	0	0	0	0	0	-	-
	8	GND	GND	0	0	0	0	0	0	-	-
	9	RH+	OSD system output H+	0	OSD LVDS serial differential H+ output 0Vac; Bias 1.1Vdc	OSD LVDS serial differential H+ output 0Vac; Bias 1.1Vdc	0	0	0	-	MAIN→PDP
	10	RH-	OSD system output H–	0	OSD LVDS serial differential H- output 0Vac; Bias 1.4Vdc	OSD LVDS serial differential H- output 0Vac; Bias 1.4Vdc	0	0	0	-	MAIN→PDP
	11	RG+	OSD system output G+	0	OSD LVDS serial differential G+ output 0.3Vac; Bias 1.25Vdc	OSD LVDS serial differential G+ output 0.3Vac; Bias 1.25Vdc	0	0	0	-	MAIN→PDP
	12	RG-	OSD system output G-	0	OSD LVDS serial differential G- output 0.3Vac; Bias 1.25Vdc	OSD LVDS serial differential G- output 0.3Vac; Bias 1.25Vdc	0	0	0	-	MAIN→PDP
	13	RF+	Mode system output F+	0	Video mode LVDS serial differential F+ output 0.3Vac; Bias 1.25Vdc	Video mode LVDS serial differential F+ output 0.3Vac; Bias 1.25Vdc	0	0	0	-	MAIN→PDP
	14	RF-	Mode system output F-	0	Video mode LVDS serial differential F- output 0.3Vac; Bias 1.25Vdc	Video mode LVDS serial differential F- output 0.3Vac; Bias 1.25Vdc	0	0	0	-	MAIN→PDP
	15	GND	GND	0	0	0	0	0	0	-	-
	16	RE+	Video system output E+	0	Video mode LVDS serial differential E+ output 0Vac; Bias 1.1Vdc	Video mode LVDS serial differential E+ output 0Vac; Bias 1.1Vdc	0	0	0	-	MAIN→PDP
	17	RE-	Video system output E-	0	Video mode LVDS serial differential E- output 0Vac; Bias 1.4Vdc	Video mode LVDS serial differential E- output 0.3Vac; Bias 1.25Vdc	0	0	0	-	MAIN→PDP
	18	RD+	Video system output D+	0	Video mode LVDS serial differential D+ output 0Vac; Bias 1.1Vdc	Video mode LVDS serial differential D+ output 0.3Vac; Bias 1.25Vdc	0	0	0	-	MAIN→PDP
	19	RD-	Video system output D–	0	Video mode LVDS serial differential D- output 0Vac; Bias 1.4Vdc	Video mode LVDS serial differential D- output 0.3Vac; Bias 1.25Vdc	0	0	0	-	MAIN→PDP

Name	Pin No.	Pin name	Function	Basic operation (Numerical unit: Vdc; except for the case when units are individually indicated)							Signal direction
				AC power ON (Power cord connected to the wall outlet) ★★	Main power ON (POWER button ON) ★		Power management ★★	Standby ★★★	Main power OFF ★★	AC power OFF (Power cord pulled out of the wall outlet) ★★	
					No signal	With signal					
	20	RCLK+	Video system output clock+	0	Video data clock LVDS serial differential clock+ output 0.3Vac; Bias 1.25Vdc	Video data clock LVDS serial differential clock+ output 0.3Vac; Bias 1.25Vdc	0	0	0	-	MAIN→PDP
	21	RCLK-	Video system output clock–	0	Video data clock LVDS serial differential clock- output 0.3Vac; Bias 1.25Vdc	Video data clock LVDS serial differential clock- output 0.3Vac; Bias 1.25Vdc	0	0	0	-	MAIN→PDP
	22	GND	GND	0	0	0	0	0	0	-	-
	23	RC+	Video system output C+	0	Video data LVDS serial differential C+ output 0.3Vac; Bias 1.25Vdc	Video data LVDS serial differential C+ output 0.3Vac; Bias 1.25Vdc	0	0	0	-	MAIN→PDP
	24	RC-	Video system output C–	0	Video data LVDS serial differential C- output 0.3Vac; Bias 1.25Vdc	Video data LVDS serial differential C- output 0.3Vac; Bias 1.25Vdc	0	0	0	-	MAIN→PDP
	25	RB+	Video system output B+	0	Video data LVDS serial differential B+ output 0Vac; Bias 1.1Vdc	Video data LVDS serial differential B+ output 0Vac; Bias 1.1Vdc	0	0	0	-	MAIN→PDP
	26	RB-	Video system output B–	0	Video data LVDS serial differential B- output 0Vac; Bias 1.4Vdc	Video data LVDS serial differential B- output 0.3Vac; Bias 1.25Vdc	0	0	0	-	MAIN→PDP
	27	RA+	Video system output A+	0	Video data LVDS serial differential A+ output 0Vac; Bias 1.1Vdc	Video data LVDS serial differential A+ output 0.3Vac; Bias 1.25Vdc	0	0	0	-	MAIN→PDP
	28	RA-	Video system output A–	0	Video data LVDS serial differential A- output 0Vac; Bias 1.4Vdc	Video data LVDS serial differential A- output 0.3Vac; Bias 1.25Vdc	0	0	0	-	MAIN→PDP
	29	GND	GND	0	0	0	0	0	0	-	-
	30	GND	GND	0	0	0	0	0	0	-	-
	31	GND	GND	0	0	0	0	0	0	-	-
LD	1	REMIN1	Infrared remote control data	0	Clock signal (5Vac) when data are received; 5Vdc when no data are received.	Clock signal (5Vac) when data are received; 5Vdc when no data are received.	Clock signal (5Vac) when data are received; 5Vdc when no data are received.	Clock signal (5Vac) when data are received; 5Vdc when no data are received.	0	-	LED→PWR
	2	LEDCTL1	Standby red LED control	0	0	0	3.3	3.3	0	-	PWR→LED
	3	LEDCTL2	POWER ON green LED control	0	3.3	3.3	0	0	0	-	PWR→LED
	4	GND	GND	0	0	0	0	0	0	-	-
	5	M+5V	5V power supply for microcomputer	0	5	5	5	5	0	-	PWR→LED
PW	1	SW7	Power start control	0	6.8	6.8	6.8	6.8	0	-	PW→MAIN
	2	POIN	Power start detection	0	3.3	3.3	3.3	3.3	0	-	PW→MAIN
	3	GND	GND	0	0	0	0	0	0	-	-
	4	M+5V	5V power supply for microcomputer	0	5	5	5	5	0	-	MAIN→PW
	5	M+7V	7V power supply for microcomputer	0	6.8	6.8	6.8	6.8	6.8	-	MAIN→PW
	6	REMIN1	Infrared remote control data	0	Clock signal (5Vac) when data are received; 5Vdc when no data are received.	Clock signal (5Vac) when data are received; 5Vdc when no data are received.	Clock signal (5Vac) when data are received; 5Vdc when no data are received.	Clock signal (5Vac) when data are received; 5Vdc when no data are received.	0	-	PW→MAIN
	7	LEDCTL1	Standby red LED control	0	0	0	3.3	3.3	0	-	MAIN→PW
	8	LEDCTL2	POWER ON green LED control	0	3.3	3.3	0	0	0	-	MAIN→PW
SW	1	CTL1	Key input detection	0	0.7~2.8Vdc when key inputs are entered; 3.3Vdc when no key inputs are entered.	0.7~2.8Vdc when key inputs are entered; 3.3Vdc when no key inputs are entered.	0.7~2.8Vdc when key inputs are entered; 3.3Vdc when no key inputs are entered.	0.7~2.8Vdc when key inputs are entered; 3.3Vdc when no key inputs are entered.	0	-	SW→MAIN
	2	CTL2	Key input detection	0	0.7~2.8Vdc when key inputs are entered; 3.3Vdc when no key inputs are entered.	0.7~2.8Vdc when key inputs are entered; 3.3Vdc when no key inputs are entered.	0.7~2.8Vdc when key inputs are entered; 3.3Vdc when no key inputs are entered.	0.7~2.8Vdc when key inputs are entered; 3.3Vdc when no key inputs are entered.	0	-	SW→MAIN
	3	GND	GND	0	0	0	0	0	0	-	-
PA	1	S+12	+12V power supply for audio circuits	0	12	12	0	0	0	-	POWER→AUDIO
	2	S+12	+12V power supply for audio circuits	0	12	12	0	0	0	-	POWER→AUDIO
	3	S+12	+12V power supply for audio circuits	0	12	12	0	0	0	-	POWER→AUDIO
	4	GND	GND	0	0	0	0	0	0	-	-

Name	Pin No.	Pin name	Function	Basic operation (Numerical unit: Vdc; except for the case when units are individually indicated)							Signal direction
				AC power ON (Power cord connected to the wall outlet) ★★	Main power ON (POWER button ON) ★		Power management ★★	Standby ★★★	Main power OFF ★★	AC power OFF (Power cord pulled out of the wall outlet) ★★	
					No signal	With signal					
	5	GND	GND	0	0	0	0	0	0	-	-
	6	GND	GND	0	0	0	0	0	0	-	-
PD											
							0	0	0	-	PDWER→PDP
						)					
	1	ALARM	PDP alarm signal	0	5Vdc when the PDP is normal; 0V when it is abnormal.	5Vdc when the PDP is normal; 0V when it is abnormal.	0	0	0	-	PDP→POWER
	2	D.GND	GND	0	0	0	0	0	0	-	-
	3	D.GND	GND	0	0	0	0	0	0	-	-
	4	D+5	5V power supply for digital circuits	0	5.15	5.15	0	0	0	-	POWER→PDP
	5	D.GND	GND	0	0	0	0	0	0	-	-
	6	D.GND	GND	0	0	0	0	0	0	-	-
	7	D+65	Vd power supply for PDP	0	65Vdc (changeable according to the PDP)	65Vdc (changeable according to the PDP)	0	0	0	-	POWER→PDP
	8	NC	digital circuits	-	-	-	-	-	-	-	-
	9	D+175	Vs power supply for PDP high-voltage circuits	0	175Vdc (changeable according to the PDP)	175Vdc (changeable according to the PDP)	0	0	0	-	POWER→PDP
	10	D+175	Vs power supply for PDP high-voltage circuits	0	175Vdc (changeable according to the PDP)	175Vdc (changeable according to the PDP)	0	0	0	-	POWER→PDP
PH											
											-
	1	D+175	Vs power supply for PDP high-voltage circuits	0	175Vdc (changeable according to the PDP)	175Vdc (changeable according to the PDP)	0	0	0	-	POWER→PDP
	2	D+175	Vs power supply for PDP high-voltage circuits	0	175Vdc (changeable according to the PDP)	175Vdc (changeable according to the PDP)	0	0	0	-	POWER→PDP
	3	NC	Non-connection	-	-	-	-	-	-	-	-
	4	D+65	Vd power supply for PDP	0	65Vdc (changeable according to the PDP)	65Vdc (changeable according to the PDP)	0	0	0	-	POWER→PDP
	5	D.GND	digital circuits	0	0	0	0	0	0	-	-
	6	D.GND	GND	0	0	0	0	0	0	-	-
	7	D+5	5V power supply for digital circuits	0	5.15	5.15	0	0	0	-	POWER→PDP
	8	D.GND	GND	0	0	0	0	0	0	-	-
	9	D.GND	GND	0	0	0	0	0	0	-	-

BLOCK DIAGRAM