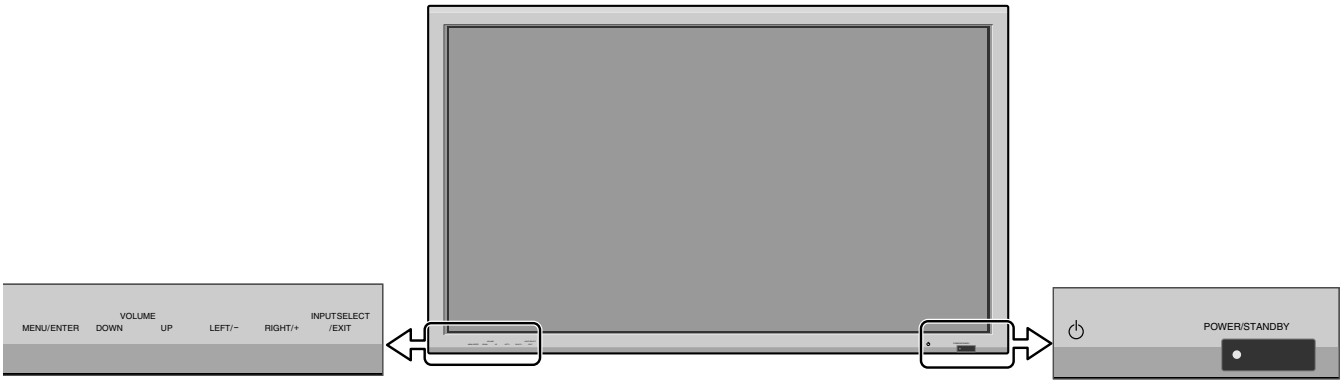
Service Manual

PD4240D /U1M

Plasma Monitor



REMARK : The PD4240D is a same product as the PX-42XM2A except the brand indications and accessories.
Please refer to the PX-42XM2A service manual except following parts.

POS. NO	VERS. COLOR	PART NO. (FOR EUR)	PART NO. (MJI)	DESCRIPTION	
				PWB ASSYS / MECHANISM PARTS	
PDP			*3S342012R	DISPLAY PANEL PDP-NP42D4MF01	3S342012
M67			38AW248510	FRONT PANEL(PD4240D)	29DS0561
M18			38AW053010	COVER CTL(PD4240D)	29F00901
M24			38AW270010	CONTROL BUTTON(PD4240D)	29G00341
A01			*936W1M01R	MAIN PWB ASSY	936W1M01
A02			*936Q0AA2R	AUDIO PWB ASSY	936Q0AA2
-			*936Q0S01R	SUB PWB ASSY (INCLUDE FROM A03 TO A09)	936Q0S01
A03			-	232C PWB ASSY	-
A04			-	CTL PWB ASSY	-
A05			-	PWR PWB ASSY	-
A06			-	LED PWB ASSY	-
A07			-	SENB PWB ASSY	-
A08			-	SENC PWB ASSY	-
A09			-	SEND PWB ASSY	-
A10			*3S110191R	POWER UNIT	3S110191
				PACKING	
⚠ PK01			*7S552001R	MAINS CORD FOR U	7S552001
PK02			ZK38AW0010	REMOTE CONTROLLER RC4240DPD	3S120181
PK21			38AW851020	USER GUIDE PD6140D/PD5040D/PD4240D	7S900052
PK28			38AW851010	MODEL INFORMATION (PD4240D)	7S900049

Please use this service manual with referring to the user guide (D.F.U.) without fail.
修理の際は、必ず取扱説明書を準備し操作方法を確認の上作業を行ってください。

marantz®

PD4240D

Part no. 38AW855010
First Issue 2003.10
ecm

MARANTZ DESIGN AND SERVICE

Using superior design and selected high grade components, **MARANTZ** company has created the ultimate in stereo sound. Only original **MARANTZ** parts can insure that your **MARANTZ** product will continue to perform to the specifications for which it is famous.

Parts for your **MARANTZ** equipment are generally available to our National Marantz Subsidiary or Agent.

ORDERING PARTS :

Parts can be ordered either by mail or by Fax.. In both cases, the correct part number has to be specified.

The following information must be supplied to eliminate delays in processing your order :

1. Complete address
2. Complete part numbers and quantities required
3. Description of parts
4. Model number for which part is required
5. Way of shipment
6. Signature : any order form or Fax. must be signed, otherwise such part order will be considered as null and void.

USA

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FAX : +822 - 3232 - 154

SHOCK, FIRE HAZARD SERVICE TEST :

CAUTION : After servicing this appliance and prior to returning to customer, measure the resistance between either primary AC cord connector pins (with unit NOT connected to AC mains and its Power switch ON), and the face or Front Panel of product and controls and chassis bottom.

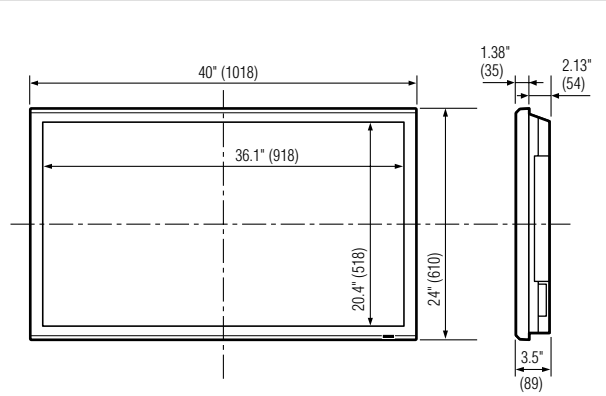
Any resistance measurement less than 1 Megohms should cause unit to be repaired or corrected before AC power is applied, and verified before it is return to the user/customer.

Ref. UL Standard No. 60950.

In case of difficulties, do not hesitate to contact the Technical Department at above mentioned address.

TECHNICAL SPECIFICATIONS

Screen Size	36.1"(H)×20.4"(V) inches 918(H)×518(V) mm diagonal 42"
Aspect Ratio	16 : 9
Resolution	1024(H)×768(V) pixels
Pixel Pitch	0.036"(H)×0.027"(V) inches 0.897(H)×0.675(V) mm
Color Reproduction	256 levels, 16,770,000 colors
Signals	
Synchronization Range	Horizontal : 15.5 to 110 kHz (automatic : step scan) Vertical : 50.0 to 120.0 Hz (automatic : step scan)
Input Signals	RGB, NTSC (3.58/4.43), PAL (B,G,M,N), PAL60, SECAM, HD*1 , DVD*1 , DTV*1
Input Terminals (VIDEO1 and RGB1 can also be used as OUTPUT terminals)	
RGB	
Visual 1 (Analog)	mini D-sub 15-pin×1
Visual 2 (Analog)	BNC (R, G, B, H/CS, V)×1*2
Visual 3 (Digital)	DVI-D 24-pin×1*3
Video	
Visual 1	BNC×1*2
Visual 2	RCA-pin×1
Visual 3	S-Video: DIN 4-pin×1
DVD/HD/DTV	
Visual 1	RCA-pin (Y, PB[CB], PR[CR])×1*1
Visual 2	BNC (Y, PB[CB], PR[CR])×1*1, *2
Audio	Stereo RCA×3(Selectable)
External Control	D-sub 9-pin×1(RS-232C)
Sound output	8W+8W at 6 ohm
Power Supply	AC120V 50/60Hz
Current Rating	4.6A (maximum)
Power Consumption	360W (typical)
Dimensions	40 (W)×24 (H)×3.5 (D) inches 1018 (W)×610 (H)×89(D) mm
Weight	65.0 lbs / 29.5 kg (without stand)
Environmental Considerations	
Operating Temperature	0°C to 40°C / 32°F to 104°F
Humidity	20 to 80% (no condensation)
Altitude	0 to 9180 feet / 0 to 2800 m
Storage Temperature	-10°C to 50°C / 14°F to 122°F
Humidity	10 to 90% (no condensation)
Altitude	0 to 9840 feet / 0 to 3000 m
Front Panel User Controls	Power on/off, Input source select, Volume up/down, OSM control
Remote Control Functions	Power on/off, Input source select, OSM control,Volume up/down, Cursor (UP, DOWN,LEFT, RIGHT), Pointer, Zoom up/down, Off timer, Wireless/ Wired remote control
OSM Functions	Picture (Contrast/Brightness/Sharpness/ Color/Tint/ Picture mode/Noise reduction/Color temperature/ White balance/Gamma/Low tone/Color tune), Audio (Bass/Treble/Balance/Audio input), Image Adjust (Aspect mode/V-Position /H-Position/V-Height /H-Width/Auto Picture/Fine picture/Picture adjustment), Option1 (OSM/BNC Input/D-Sub Input/RGB Select/ HD Select/Input Skip/All Reset), Option2 (Power management/Cinema mode/Long life [PLE, Orbiter, Inverse, White, Screen wiper, Soft focus]/Gray level/ S1/S2/DVI Set up), Option3 (Timer/Power on mode/ Control lock/IR Remote/Loop out/ID number/Video wall [Divider, Position, Disp. mode, Auto ID, Image adjust, Power on delay, PLE link, Timer]), Advanced OSM, Language*, Color system, Source information *English, German, French, Italian, Spanish, Swedish, Chinese



Units are in inch
(mm)

The features and specifications may be subject to change without notice.

***1 HD/DVD/DTV input signals supported on this system**

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

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

***3 Compatible with HDCP.**

Supported Signals

- 640×480P @ 59.94/60Hz
- 1280×720P @ 59.94/60Hz
- 1920×1080I @ 59.94/60Hz
- 720×480P @ 59.94/60Hz
- 720×480I @ 59.94/60Hz

Note: In some cases a signal on the plasma monitor may not be displayed properly. The problem may be an inconsistency with standards from the source equipment (DVD, Set-top box, etc...). If you do experience such a problem please contact Marantz Service Center, Inc. and also the manufacturer of the source equipment.

Other Features	Motion compensated 3D Scan Converter (NTSC, PAL, 480I, 576I, 525I, 625I, 1035I, 1080I), 2-3 pull down Converter (NTSC, 480I, 525I, 1035I, 1080I (60Hz)), 2-2 pull down Converter (PAL, 576I, 625I, NTSC, 480I, 525I), Digital Zoom Function (100-900% Selectable), Video Wall 2×2/ 3×3 multi screen, Self Diagnosis, Anti Image Burn (PLE LOCK1~3, INVERSE, WHITE, ORBITER (Auto1,2/Manual), SCREEN WIPER), Color Temperature select (high/mid/mid low/low, user has 4 memories), Control lock (Except power SW), Auto Picture, Input Skip, Color Tune, Low Tone (3 mode), Auto ID, Programmable Timer, Gamma Correction (4 mode), Loop through interface, Plug and play (DDC1, DDC2b, RGB3: DDC2b only)
Accessories	Remote control with two AAA batteries, Power cord, Manuals, Safety metal fitting parts, Ferrite cores, Bands
Regulations	UL Approved (UL 60950 and UL65000/CSA C22.2 No.60950-00/ CAN/CSA-E60065-00) DOC Canada requirements Meets FCC Class B requirements

Personal notes:

CONFIDENTIAL

NEC

No. 018A

Empowered by Innovation

SERVICE MANUAL

TENTATIVE

PLASMA MONITOR

MODEL PX-42XM2A
PX-42XM2A/S
PX-42XM2G
PX-42XM2GS
PX-42XM2G/S
PX-42XM2GS/S
PX-42XM2GU
PX-42XM2GU/S

- This service manual provides the technical materials for maintenance servicing, programmed for the technical personnel in charge of repair services. Prior to starting maintenance servicing, read through the [SAFETY SERVICE (P2-1)] without fail and observe the caution notes described therein.
- External appearance and specifications are subject to change without notice, for reasons of quality and performance improvements and others.
- In order to maintain safety, quality, and performance, use the genuine parts, without fail, at the time of maintenance servicing.

NEC Plasma Display Corporation
TOKYO, JAPAN

CONTENTS

SAFETY SERVICE

■ 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 500MΩ 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.

TROUBLESHOOTING

- Problems in the power supply, such as “Failure in Power ON” or “LED flashing or lighting (alarm display)”
  → 1. Go to Power failure (P4-2).

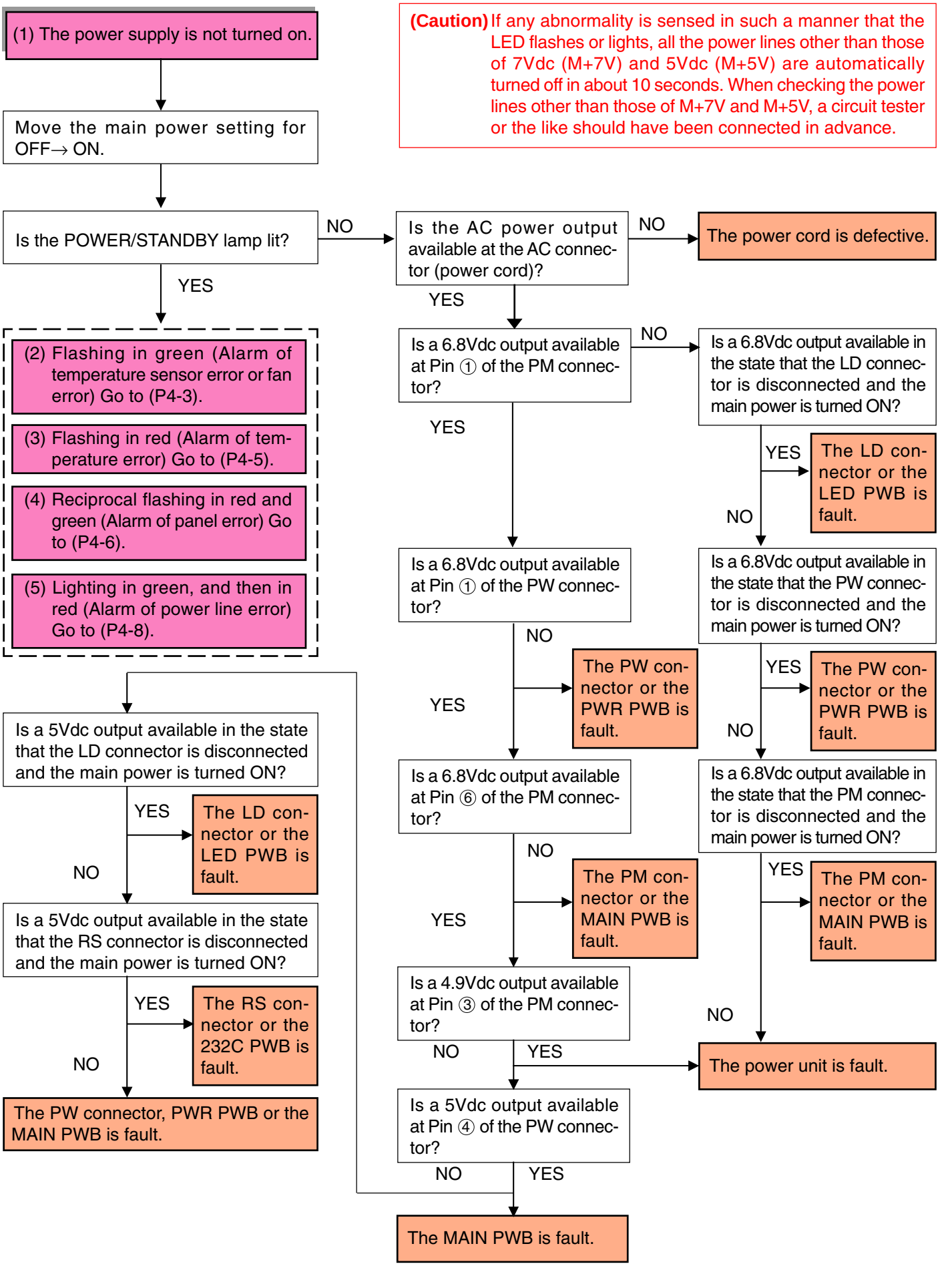
- Problems in the images, such as “No pictures available”
  → 2. Go to Image errors (P4-9).

- “No output from the video loop out”
  → Fault in the MAIN PWB

- Problems in the audio system, such as “No audio output”
  → 3. Go to Audio errors (P4-16).

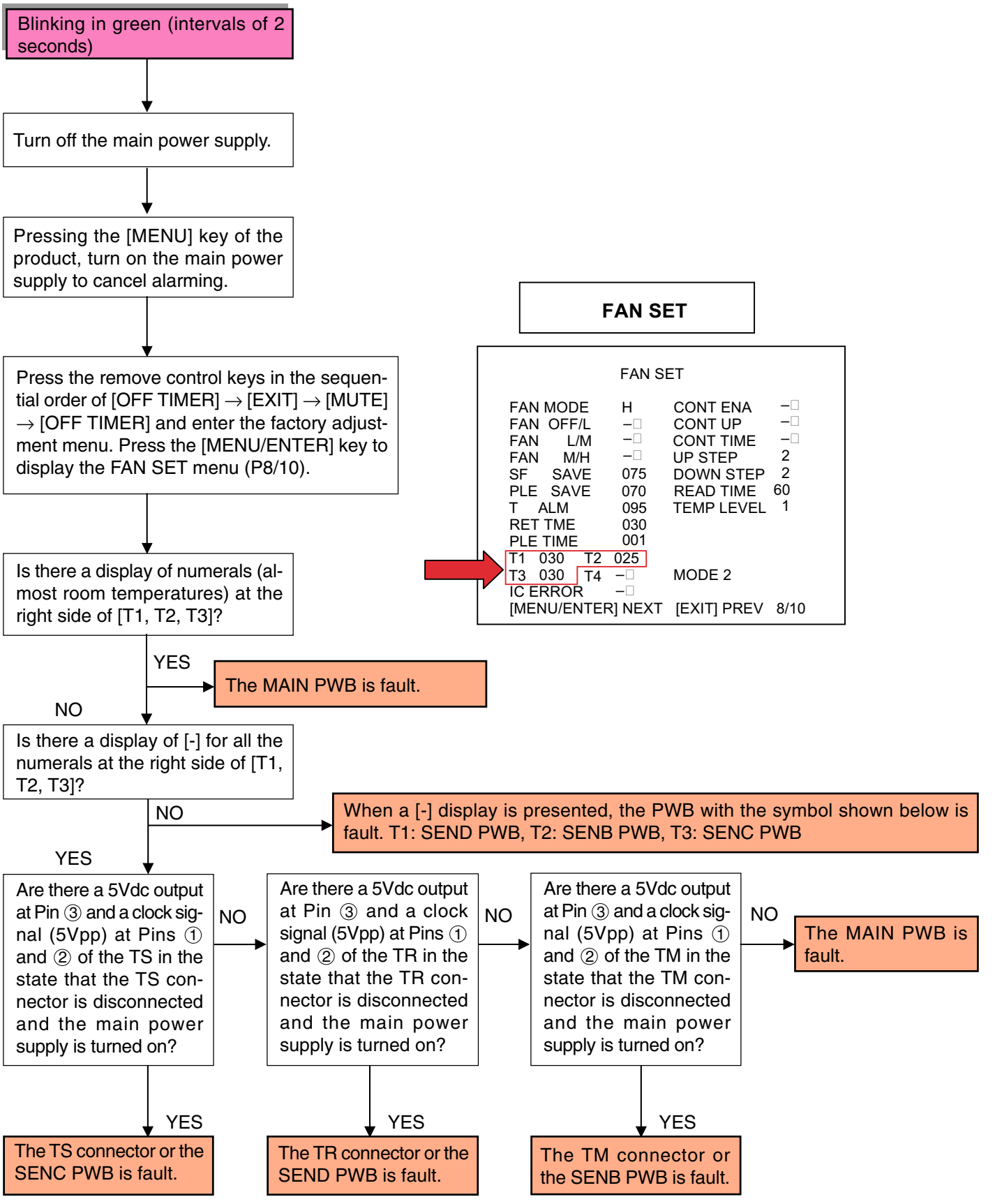
- “Remote control not effective”
  → 4. Go to Remote control not effective (P4-17).

1. Power failure



(2) Blinking in green

① Alarm of temperature sensor error (PX-42VP4, 42XM2, 50XM3, 61XM2 Series)



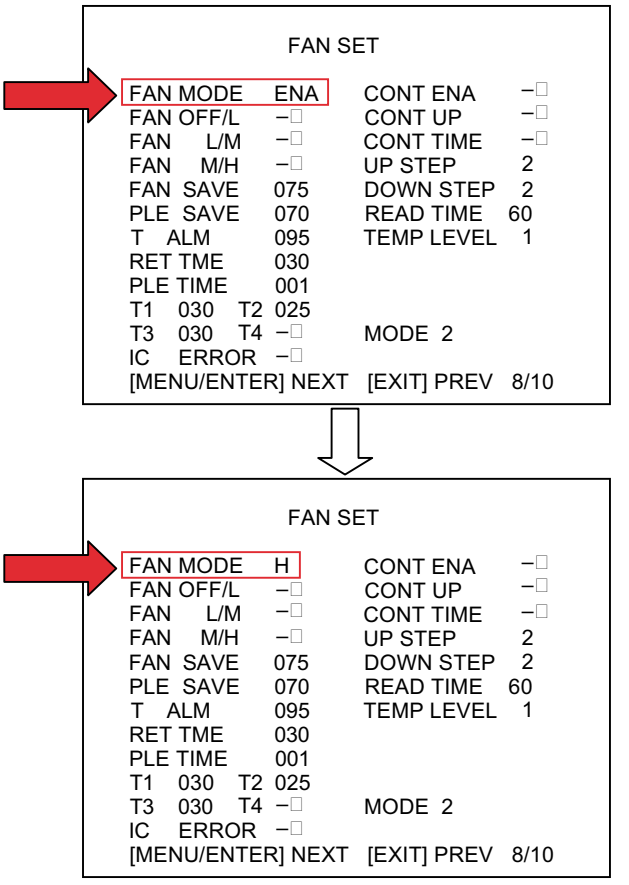
② Alarm of fan error (PX-42XM2, 50XM3, 61XM2 Series)

Blinking in green (intervals of 0.5 seconds)

Turn off the main power supply.

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

Is the fan running?
(Caution) When alarming is canceled, [FAN MODE] of FAN SET (P8/10) in the factory adjustment menu automatically moves from [ENA] to [H], thus causing the fan to run.



YES → Is there a 5Vdc output at Pin ③ of the FA and FB, FC connectors?

YES → The fan is out of order on the side where a 5Vdc output is generated.

NO → The MAIN PWB is fault.

NO → Is there a 9.3Vdc output at Pin ① of the FA and FB, FC connectors?

YES → The FAN-A/FAN-B/FAN-C is fault.

(Caution) The FAN-C and FC connectors are used only for the 61XM2 Series.

NO → Is there a 9.3Vdc output in the state that the FA connector is disconnected and the main power supply is turned on?

YES → The FAN-A is fault.

NO → Is there a 9.3Vdc output in the state that the FB connector is disconnected and the main power supply is turned on?

YES → The FAN-B is fault.

NO → Is there a 9.3Vdc output in the state that the FC connector is disconnected and the main power supply is turned on?

YES → The FAN-C is fault.

NO → The MAIN PWB is fault.

(Caution) When repairing is finished, press the [▶] key of POSITION/CONTROL at the remote control to return [H] of FAN MODE to [ENA], without fail. When the main power supply is moved from OFF to ON, [ENA] is automatically recovered.

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

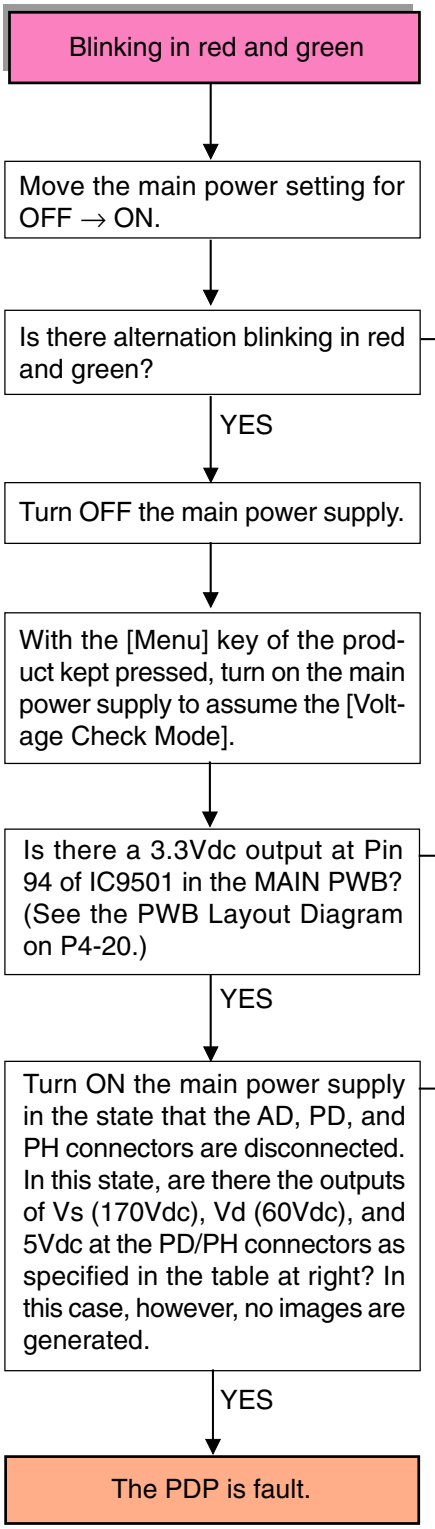
Since the internal temperature is too high in the product, the temperature protector has been actuated. In such a case, the following actions should be taken immediately:

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.

① For the PX-42XM2A/S, 50XM3A/S, and 61XM2A/S

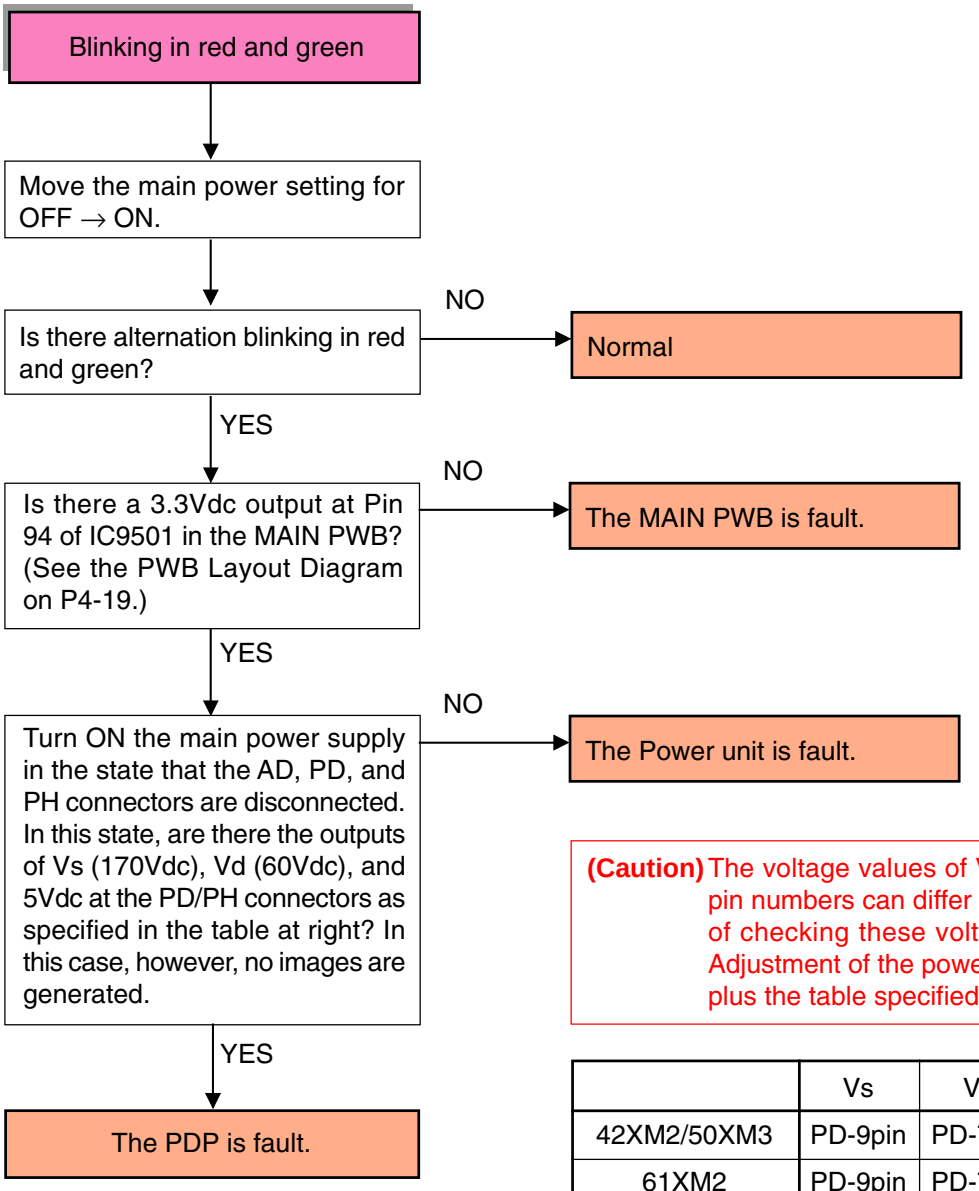


(Caution) When the main power supply is turned on with the [Menu] key of the product kept pressed, it takes 30 seconds more to assume the state of [blinking in red and green]. In this time period, the following voltage checks should be carried out.
If the state of [blinking in red and green] is assumed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

	Vs	Vd	GND	5Vdc	GND
42XM2/50XM3	PD-9pin	PD-7pin	PD-5pin	PH-1pin	PH-3pin
61XM2	PD-9pin PH-1pin	PD-7pin PH-4pin	PD-5pin PH-5pin	PD-4pin PH-7pin	PD-5pin PH-5pin

② For the PX-42XM2, 50XM3, and 61XM2 Series in cases other than those of the previous page

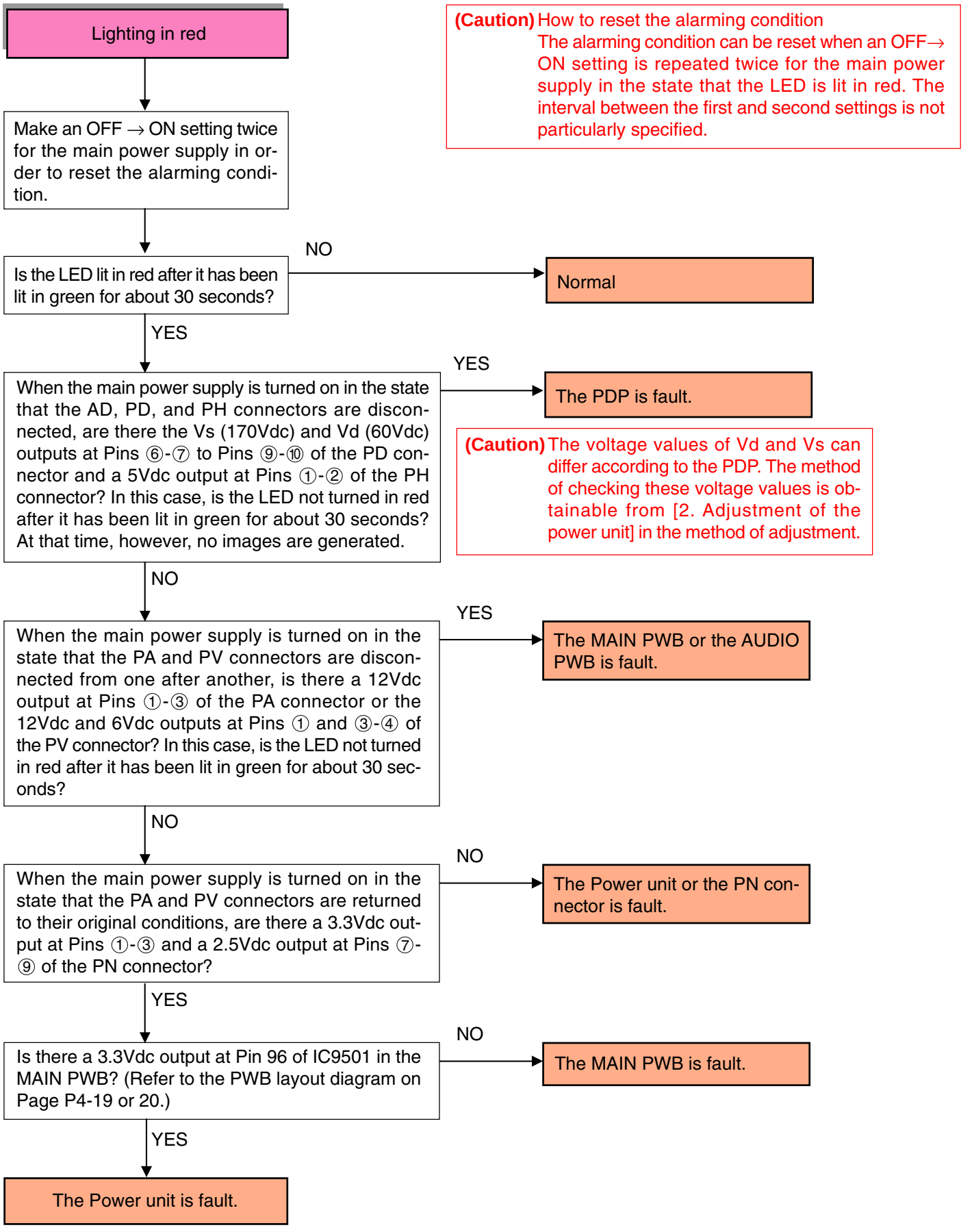


(Caution) The voltage values of Vd and Vs and also the connector pin numbers can differ according to the PDP. The method of checking these voltage values is obtainable from [2. Adjustment of the power unit] in the method of adjustment plus the table specified below.

	Vs	Vd	GND	5Vdc	GND
42XM2/50XM3	PD-9pin	PD-7pin	PD-5pin	PH-1pin	PH-3pin
61XM2	PD-9pin PH-1pin	PD-7pin PH-4pin	PD-5pin PH-5pin	PD-4pin PH-7pin	PD-5pin 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].



(Caution) How to reset the alarming condition
The alarming condition can be reset when an OFF→ ON setting is repeated twice for the main power supply in the state that the LED is lit in red. The interval between the first and second settings is not particularly specified.

(Caution) The voltage values of Vd and Vs 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.

2. Image errors

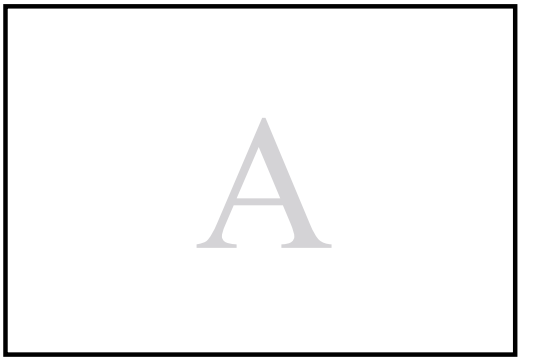
(Caution) Typical abnormal images are shown below. All errors do not always fall on these error samples.

(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.

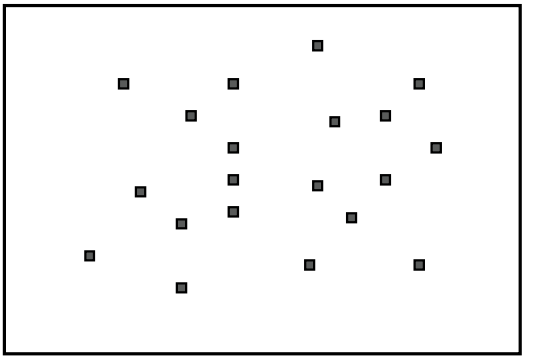
All-white signal

(2) Failure in writing

Failure in writing

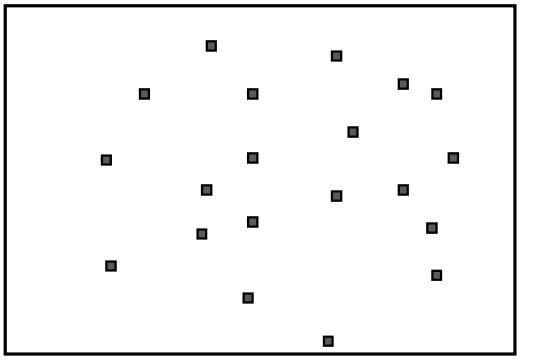
↓

The PDP is fault.



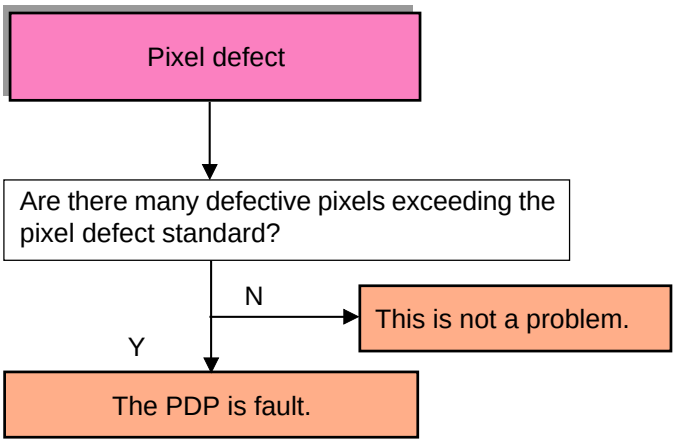
All-white signal

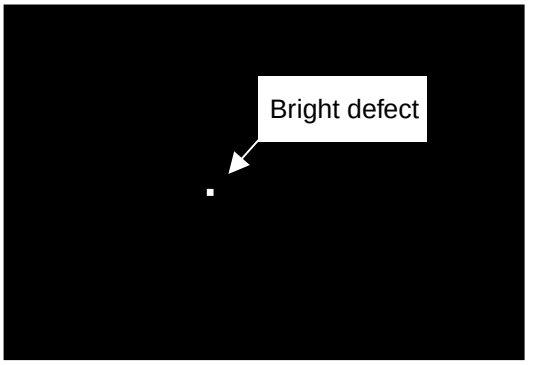
Dot errors change with no continuity.



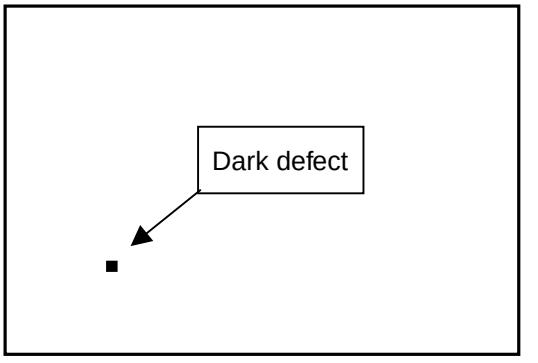
All-white signal

(3) Pixel defect





(Fig. 1) All-Black Signal

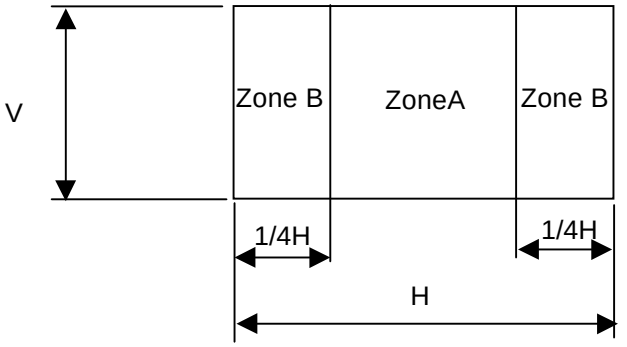


(Fig. 2) All-White Signal

[Pixel defect standard for reference]

	Displayed image	Pixel defect standard	
		Non-continuous	Continuous
Bright defect	Black all over the screen (Fig. 1)	Zone A:□dots or less in all for each color Zone B:□dots or less in all for each color	Continuous□dots or less
	Red level 100% over the screen Green level 100% over the screen Blue level 100% over the screen	Zone A:□dots or less in all for each color Zone B:□dots or less in all for each color Each zone:□dots or less for each uni-color	Defective when□dots or less are continuously horizontal and seen white.
Dark defect	Red level 100% over the screen Green level 100% over the screen Blue level 100% over the screen	Zone A:□dots or less in all for each color Zone B:□dots or less in all for each color	Zone A:□dots or less vertically continuous Zone B:□ dots or less continuous Except for the continuous portions, however, the distance between dark dots shall be□cm or more.
	White all over the screen (Fig. 2)	–	Zone A:□dots continuous in one portion or less (□dots for vertical continuity) Zone B:□ dots or less continuous Except for the continuous portions, however, the distance between dark dots shall be □ cm or more.

(Caution) In regard to the full information, refer to the PDP quality updating report (Japan) or the PDP quality report (other than Japan).



(Caution1) Zone A: Central part (the area surrounded by the right and left sides by 1/4H) with the area that is 1/2 of the whole
Zone B: Area other than A above

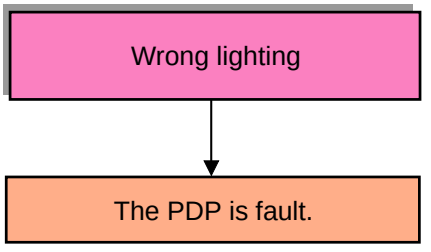
→ 3 dots continuous

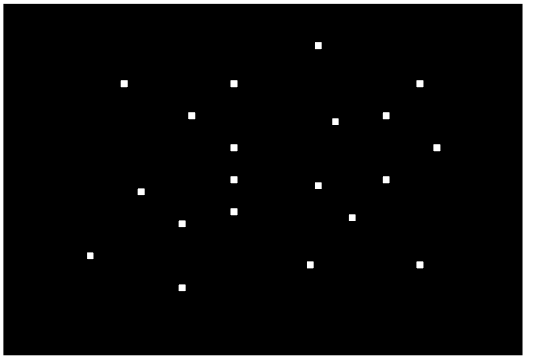
→ 3 dots continuous

→ 4 dots continuous

(Caution2) The continuous dots appearing in the slantwise direction or in a cluster state shall be defined as follows:

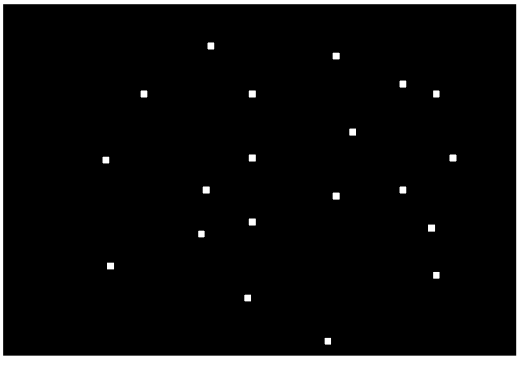
(4) Wrong lighting





All-black signal

Dot errors change with no continuity.



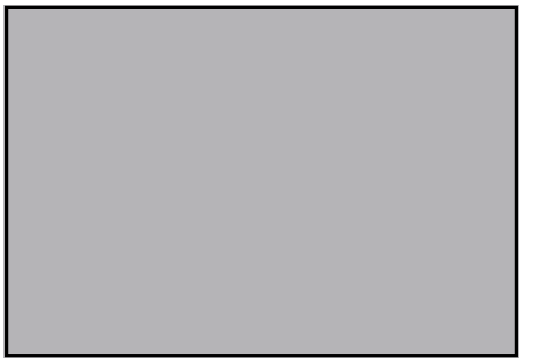
All-black signal

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

The images are dark even with an all-white input signal.

↓

The PDP is fault.



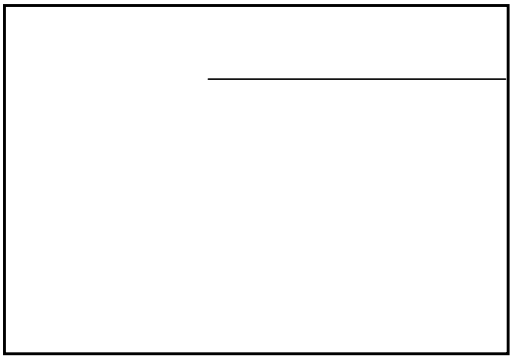
All-white signal

(6) Defect in horizontal lines

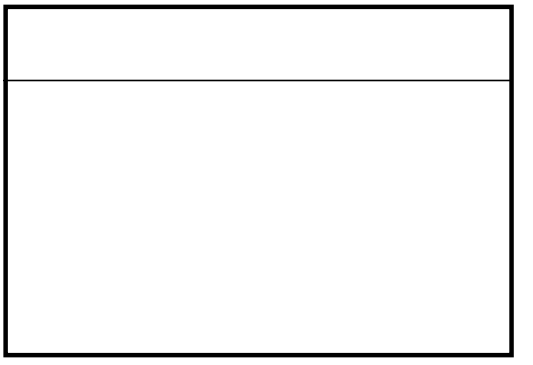
Line defect

↓

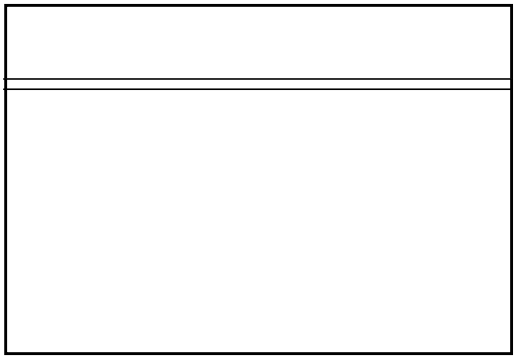
The PDP is fault.



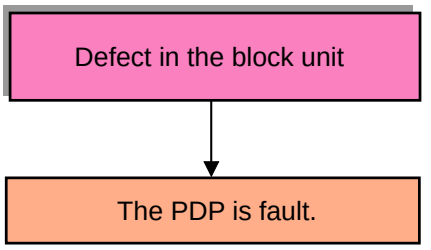
All-white signal

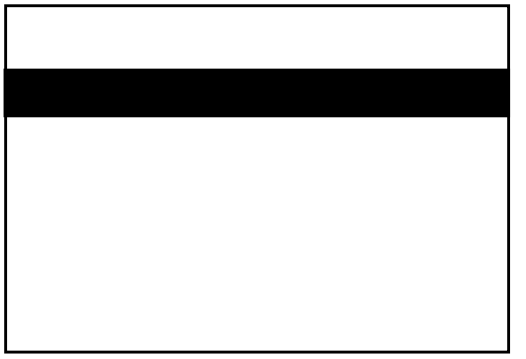


All-white signal



All-white signal

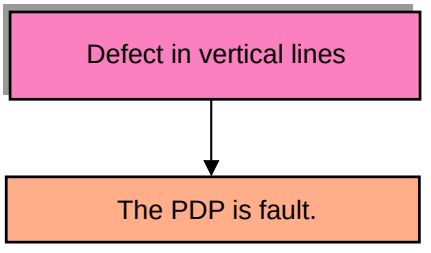


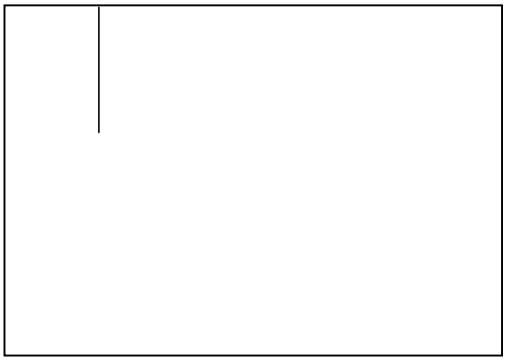


All-white signal

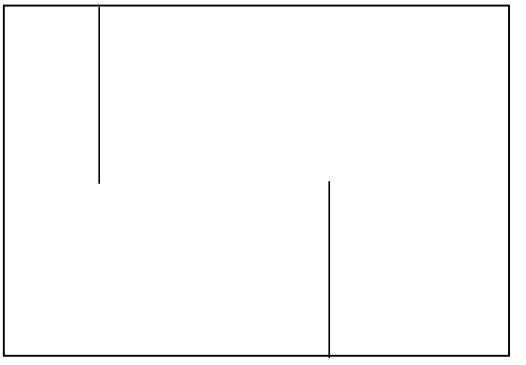
All-white signal

(7) Defect in vertical lines

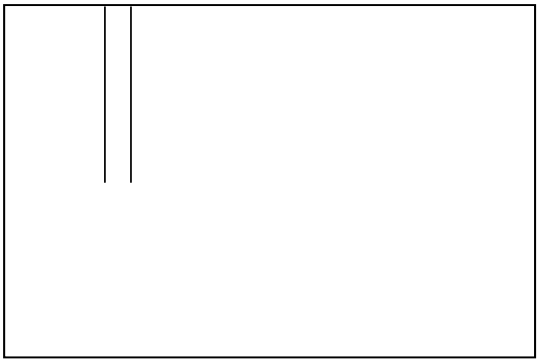




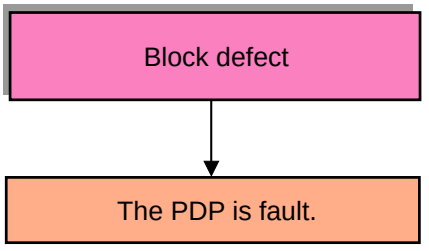
All-white signal

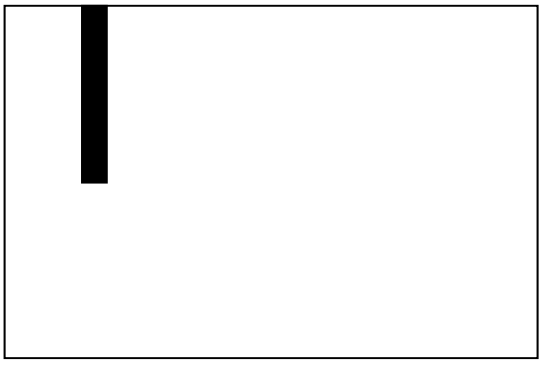


All-white signal

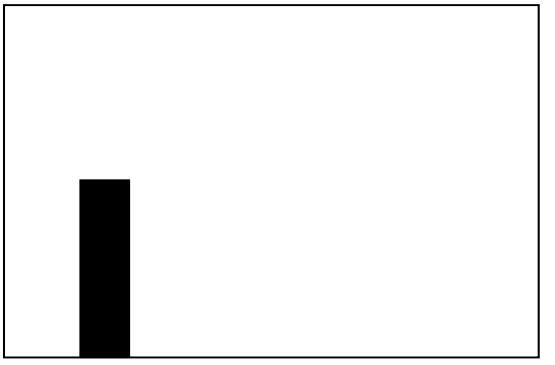


All-white signal

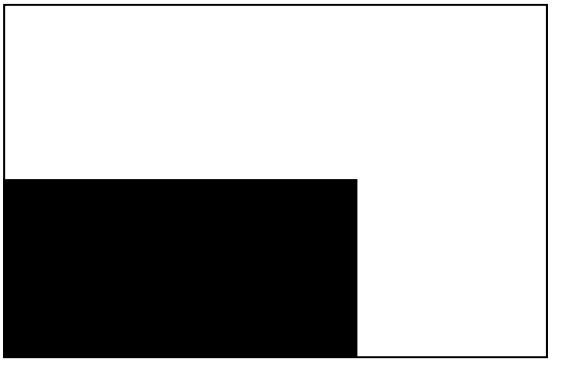




All-white signal

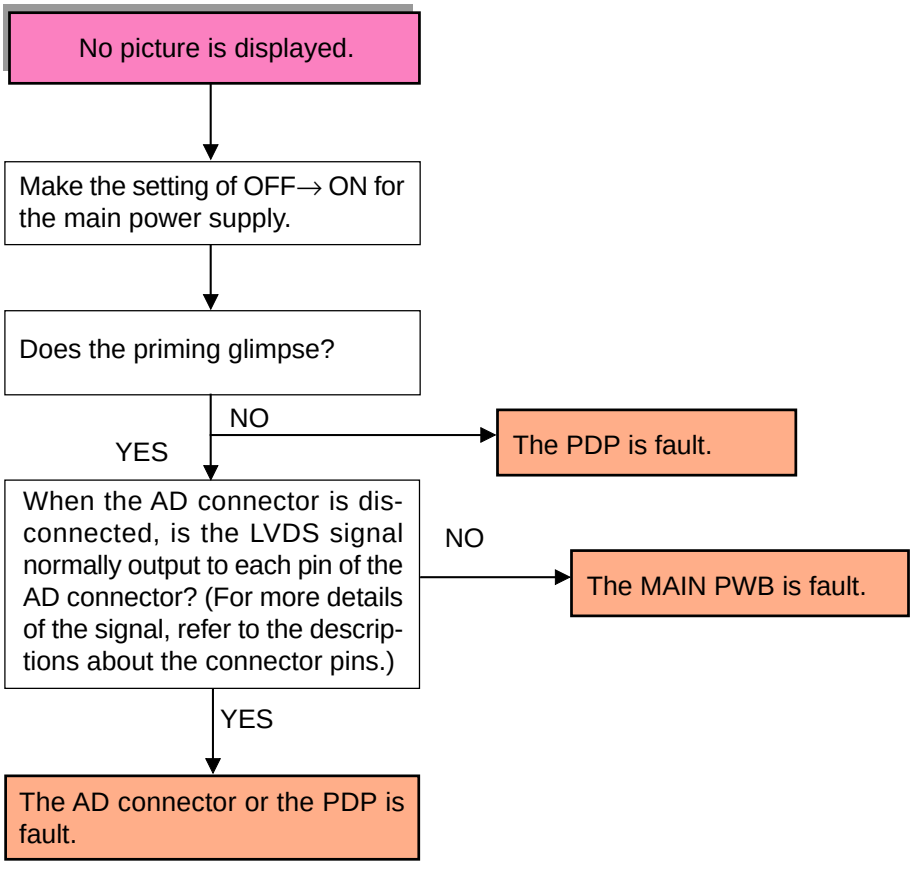


All-white signal



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?

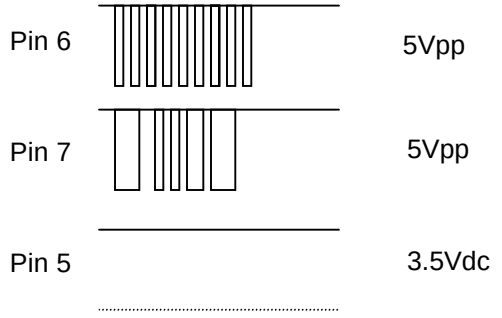
NO → The power unit or the PA connector is fault.

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.



Pin 1,3 • • • Audio signal waveform

YES

The AUDIO PWB is fault.

4. Remote control not effective

(1) The wired remote control is not effective.

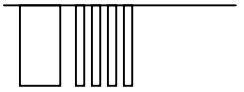
① When a single item is used

(Caution) The wired remote control is not effective if the setting of [PLE LINK], [Repeat TIMER], or [IR REMOTE] 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.

↓

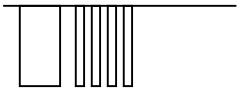
Is there a signal output specified below at Pin 7 of the RS connector?



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 P4-22.)



NO → Is there a 3.3Vdc output at Pin 2 of the M2003? (Refer to the PWB layout diagram on Page P4-22.)

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+7V	6.8Vdc
5	M+5V	5Vdc

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 P4-22.)

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

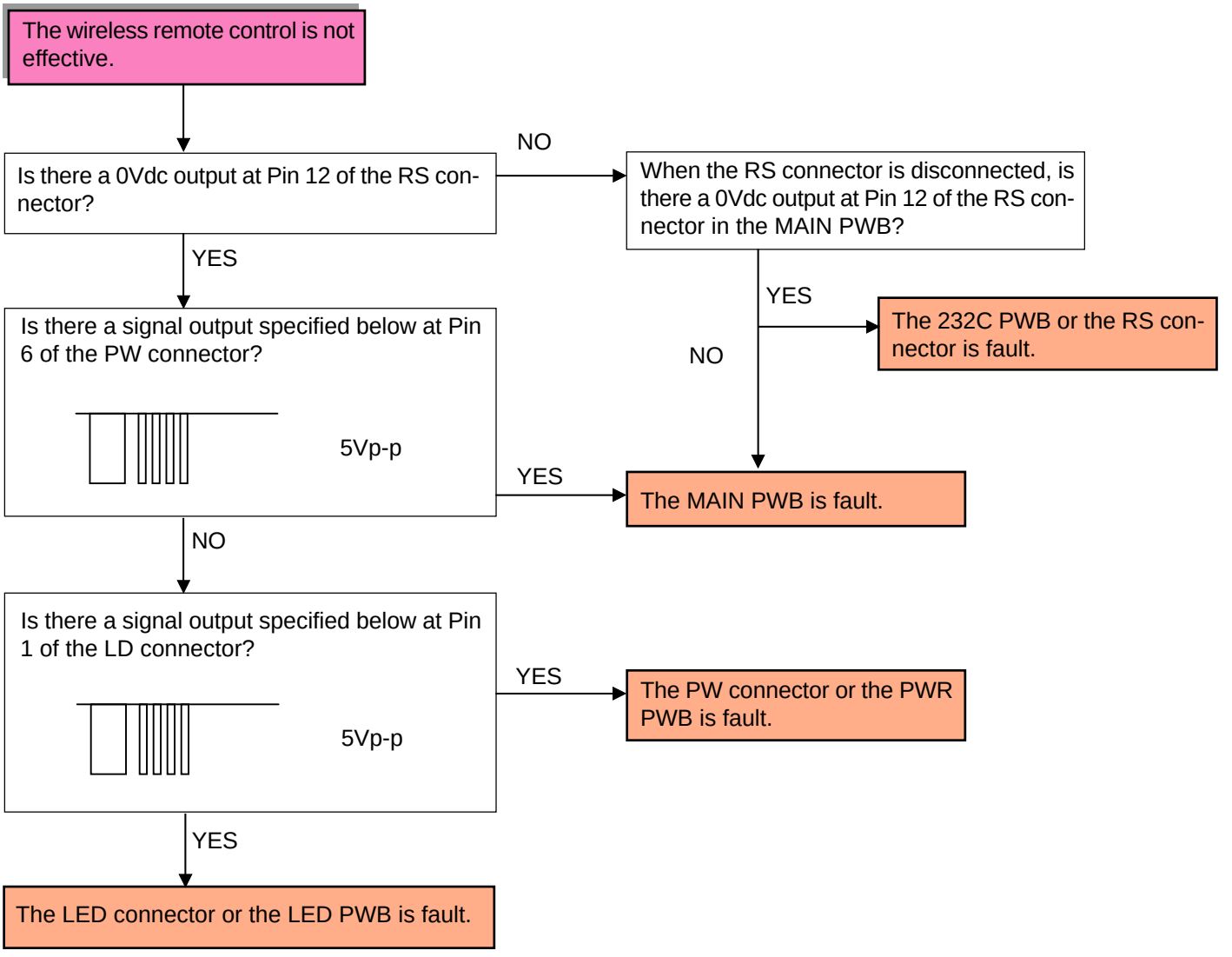
NO → The 232C PWB is fault.

↓ NO

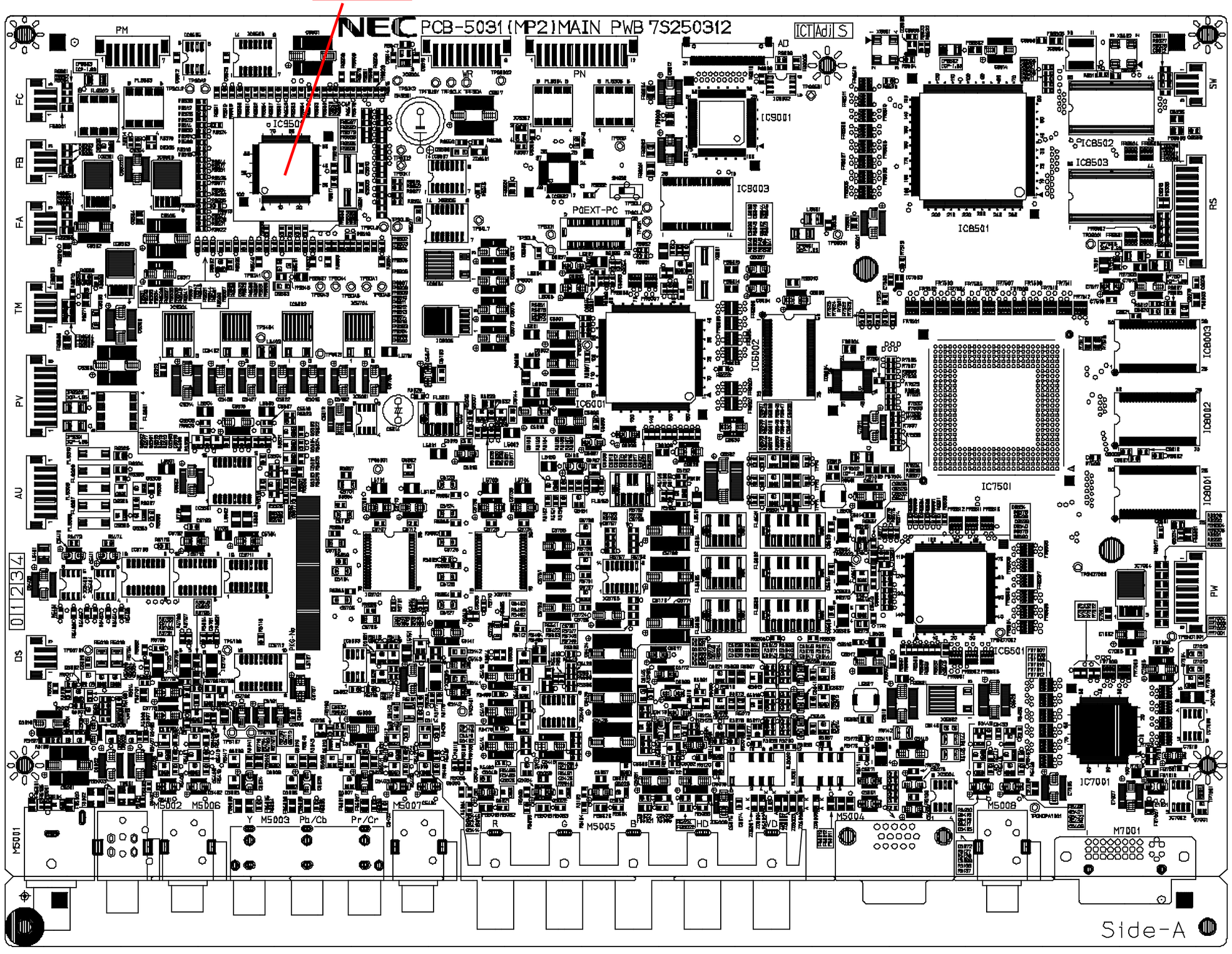
The MAIN PWB is fault.

(2) The wireless remote control is not effective.

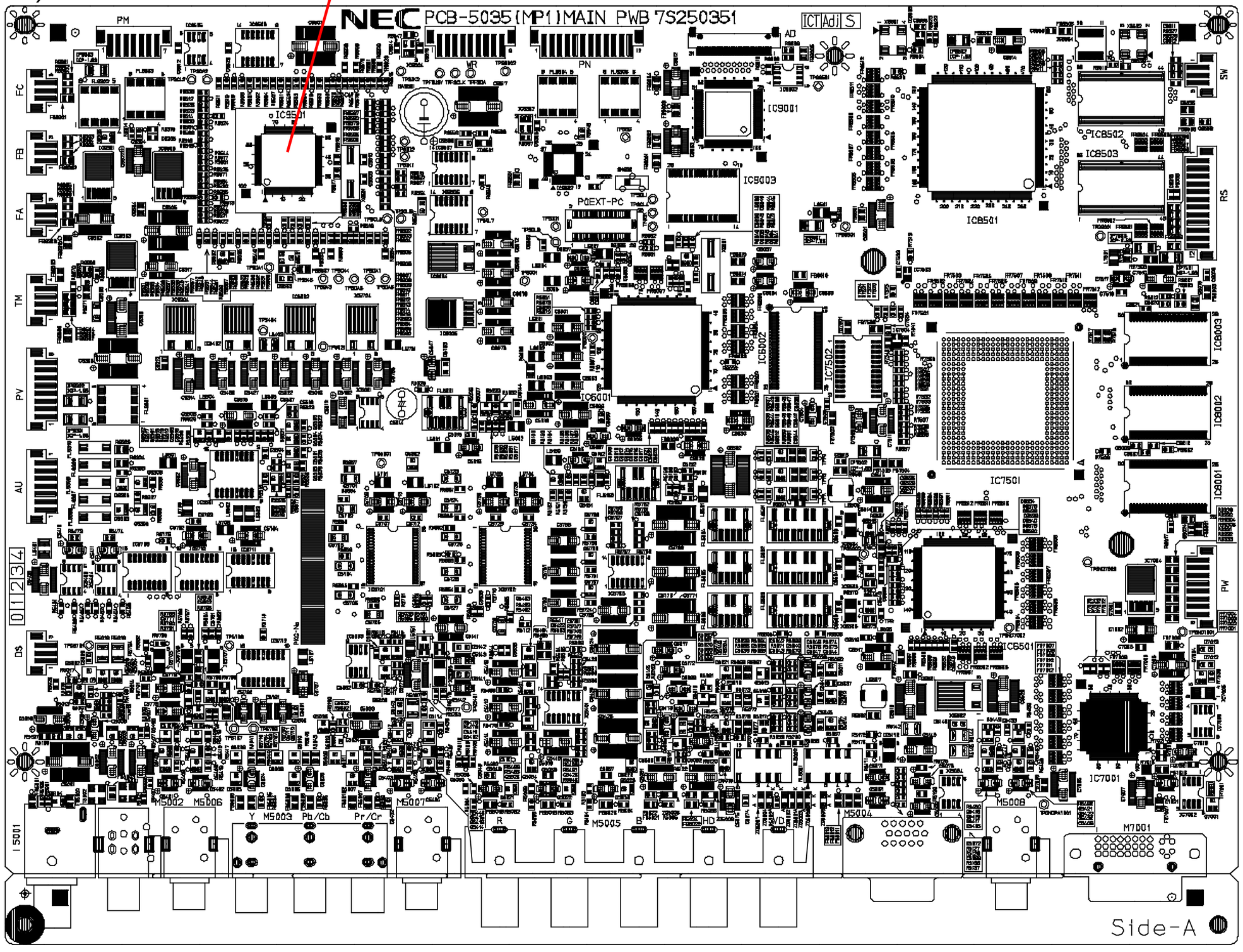
(Caution) Since the detection of “wired” or “wireless” is conducted for the remote control through the remote terminal, it is necessary to pull out the remote control cable from the remote terminal, without fail. Troubleshooting should be carried out after confirming that “IR REMOTE” is set at ON and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



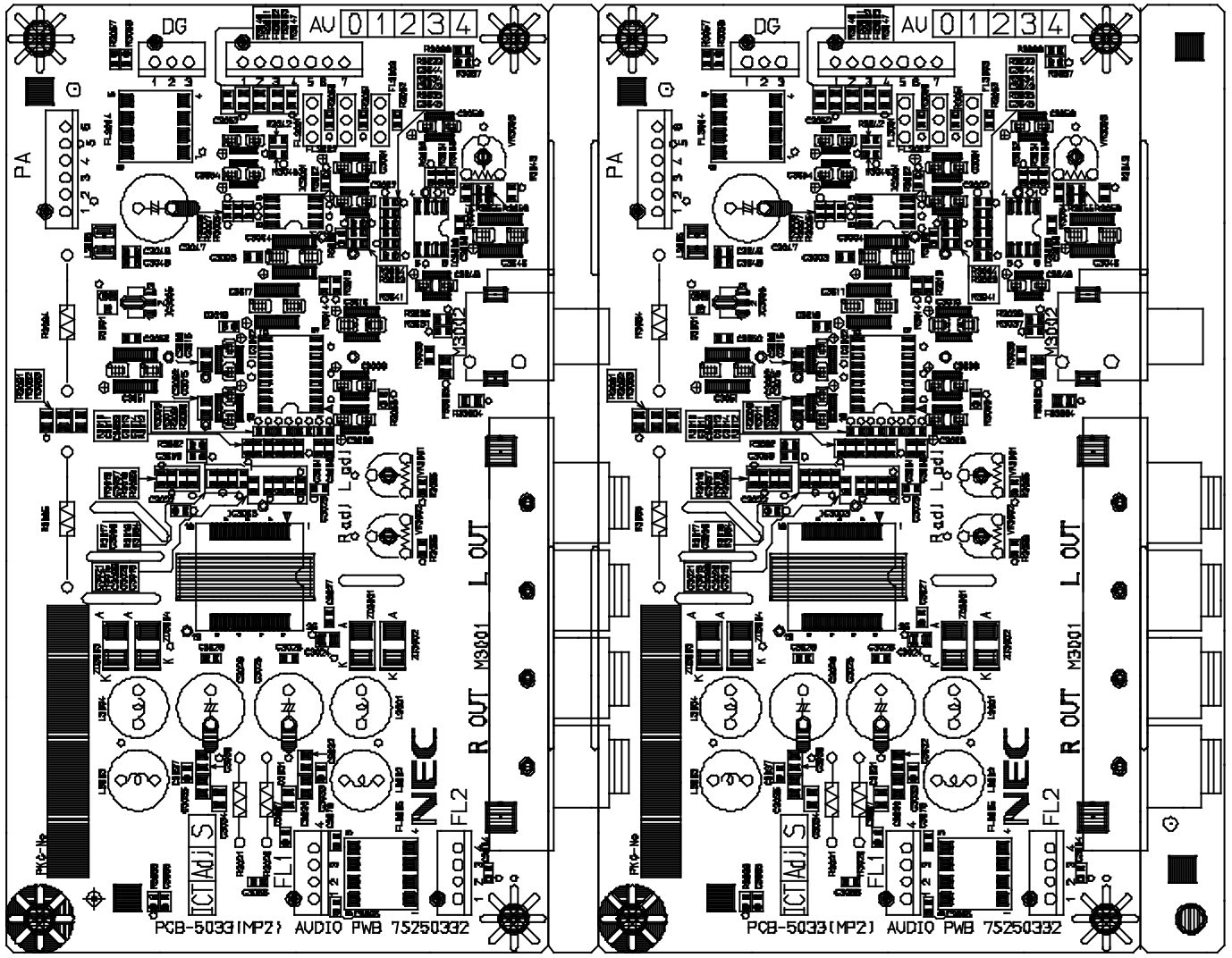
MAIN PWB


IC9501
NEC PCB-5031(MP2)MAIN PWB 7S250312
ICT Adj S
IC9001
IC9003
IC8501
IC8502
IC8503
IC8002
IC8003
IC8004
IC8005
IC8006
IC8007
IC8008
IC7501
IC7001
IC6501
M5001
M5002
M5006
M5003
M5007
M5005
M5004
M5008
M7001
Y
Pb/Cb
Pr/Cr
R
G
B
HD
VD
PQEXT-PC
Side-A

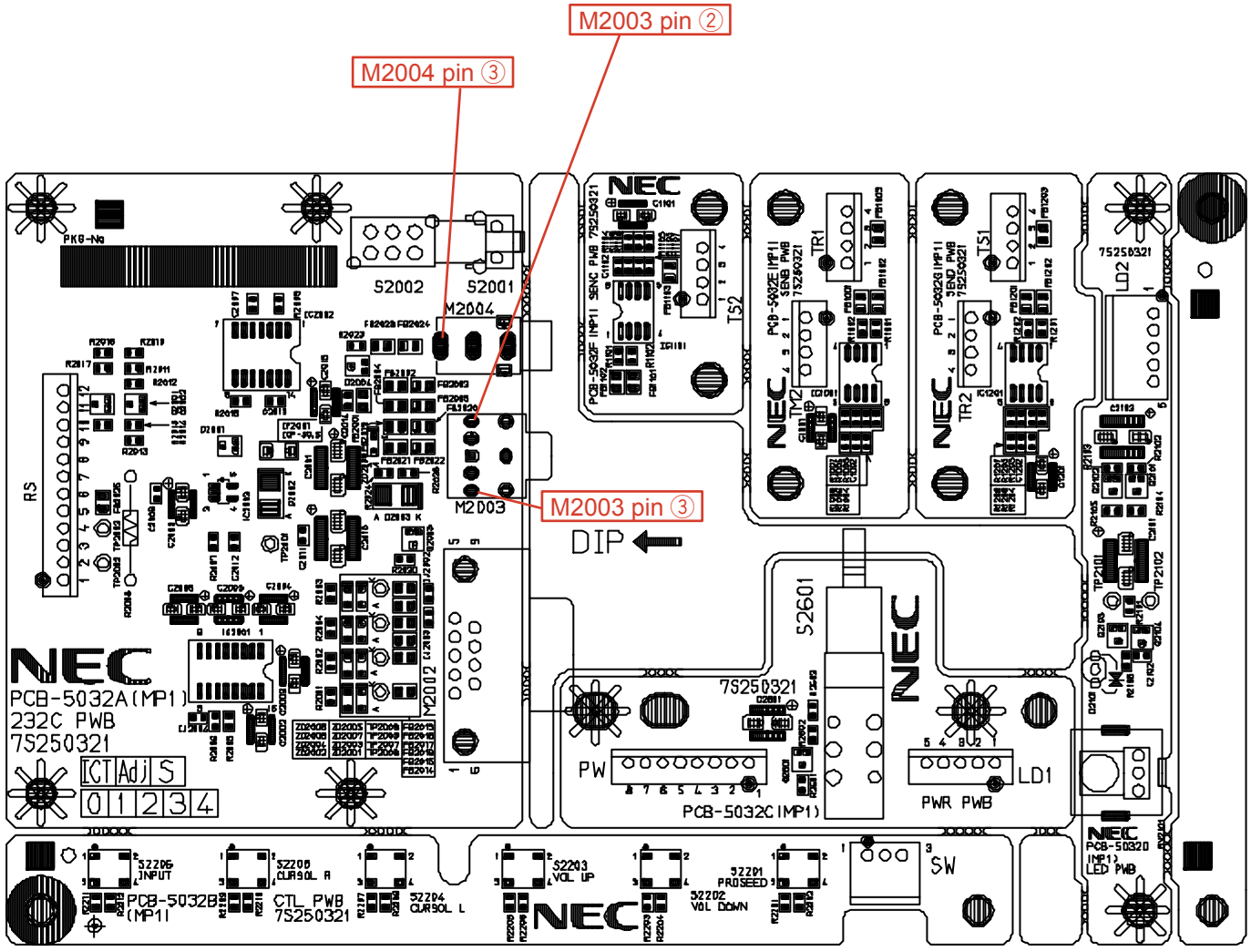
MAIN PWB(HDCP)



AUDIO PWB


DG
AU 0 1 2 3 4
PA
M3002
L_adj
R_adj
L OUT
R OUT
M3001
NEC
FL2
FL1
ICT Adj S
PCB-5033(MP2) AUDIO PWB 75250332

232C PWB
CTL PWB
PWR PWB
LED PWB
SENB PWB
SENC PWB
SEND PWB



METHOD OF ADJUSTMENTS

■ Adjusting conditions

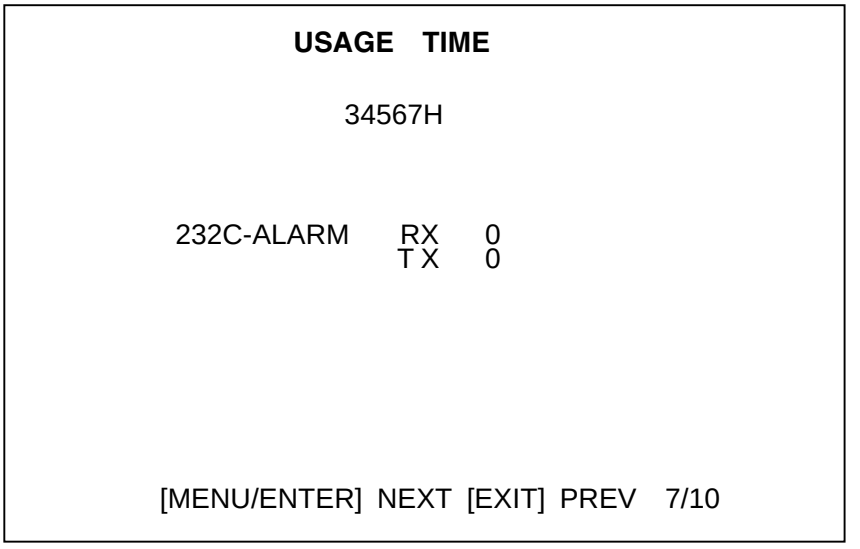
Adjustments should be carried out in the procedures of A to C specified below. However, any adjustments other than the items A to C below are not required.

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.

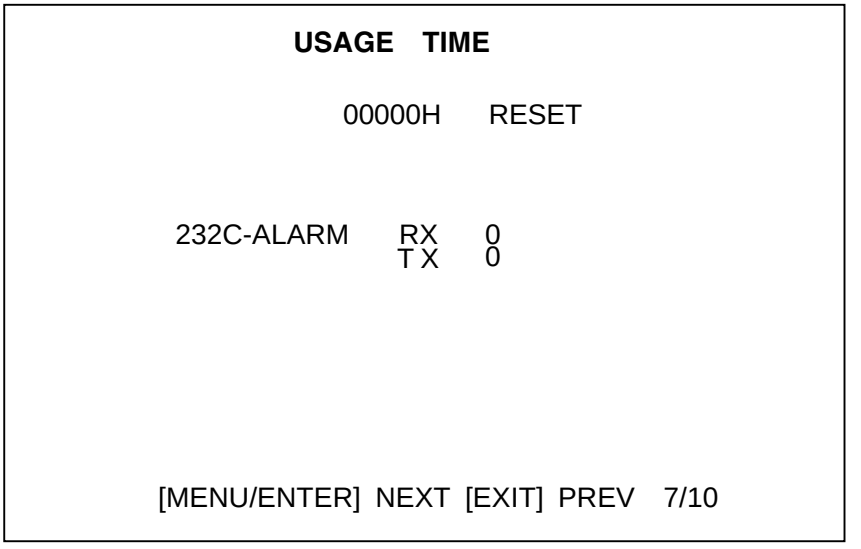
■ Adjusting items

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

(1) Press the keys in the order of [OFF TIMER] → [EXIT] → [MUTE] → [OFF TIMER] in order to enter the factory adjustment menu.
(2) Press the [MENU/ENTER] key to select the [USAGE TIME] menu (7/10). 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 [▼] → [OFF TIMER], the display is cleared to [00000H]. At that time, the characters of [RESET] are displayed for about 5 seconds on the right side of time display.



2. Adjustment of the power unit (Using a screwdriver for general-purpose adjustments)

2-1. For the PX-42XM2 Series

2-1-1. Adjustment of the Vs voltage

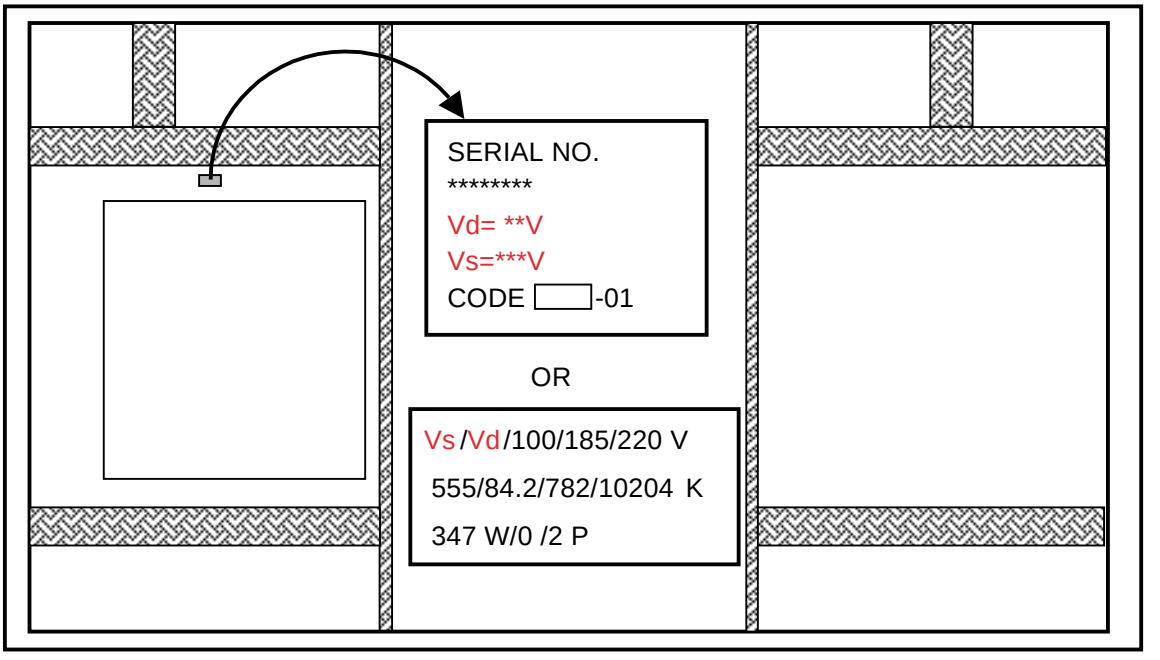
(1) Enter a color bar input by means of either video signal of VIDEO input, or DVD/HD input, or RGB input, and turn on the power switch of the main unit.
(2) Turn the volume control (RV203) in the power unit and make adjustments so that the voltage values of TP204 and TP205 (D. GND) of the power unit coincide with the voltage values specified for the PDP (Vs value of the voltage regulation indicator label on below the figure) ±1V.

2-1-2. 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) Turn the volume control (RV204) in the power unit and make adjustments so that the voltage values of TP206 and TP205 (D. GND) of the power unit coincide with the voltage values specified for the PDP (Vd value of the voltage regulation indicator label on below the figure) ±1V.

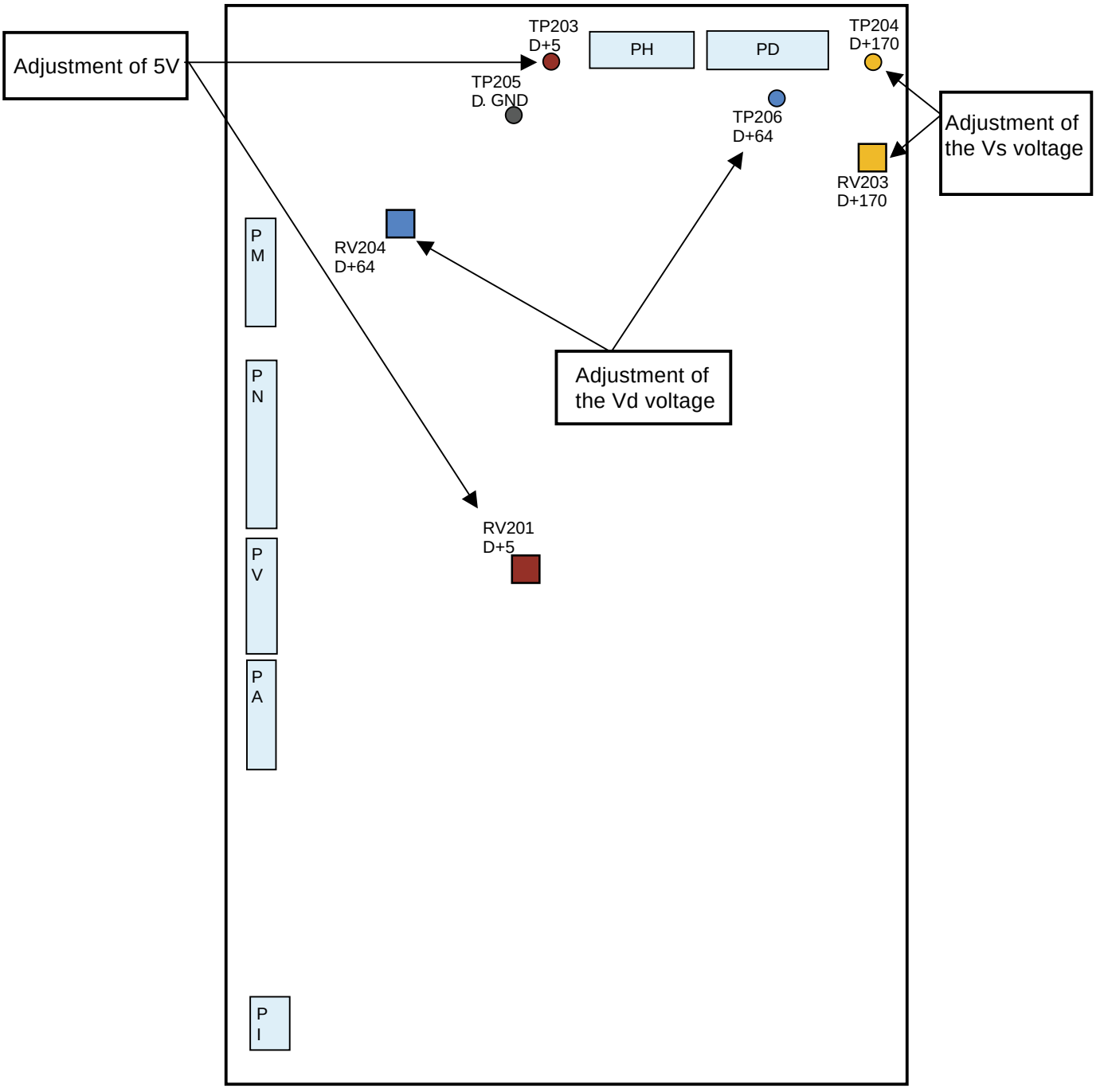
2-1-3. Adjustment of the +5V voltage

(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 voltage values of TP203 and TP205 (D. GND) of the power unit are maintained at "5.15 ± 0.1V." If no coincidence is perceived, turn the volume control (RV201) so that they are adjusted to "5.15 ± 0.1V."



(Caution) Rear Side View when the Rear Cover is Removed
The label is hidden between the MAIN PWB and the PDP. It can be checked by peeping into the gap from above. The position of this label may be modified without preliminary notice.

*** Top view of the power unit for the PX-42XM2 Series**



2-2. For the PX-50XM3 Series

2-2-1. Adjustment of the Vs voltage

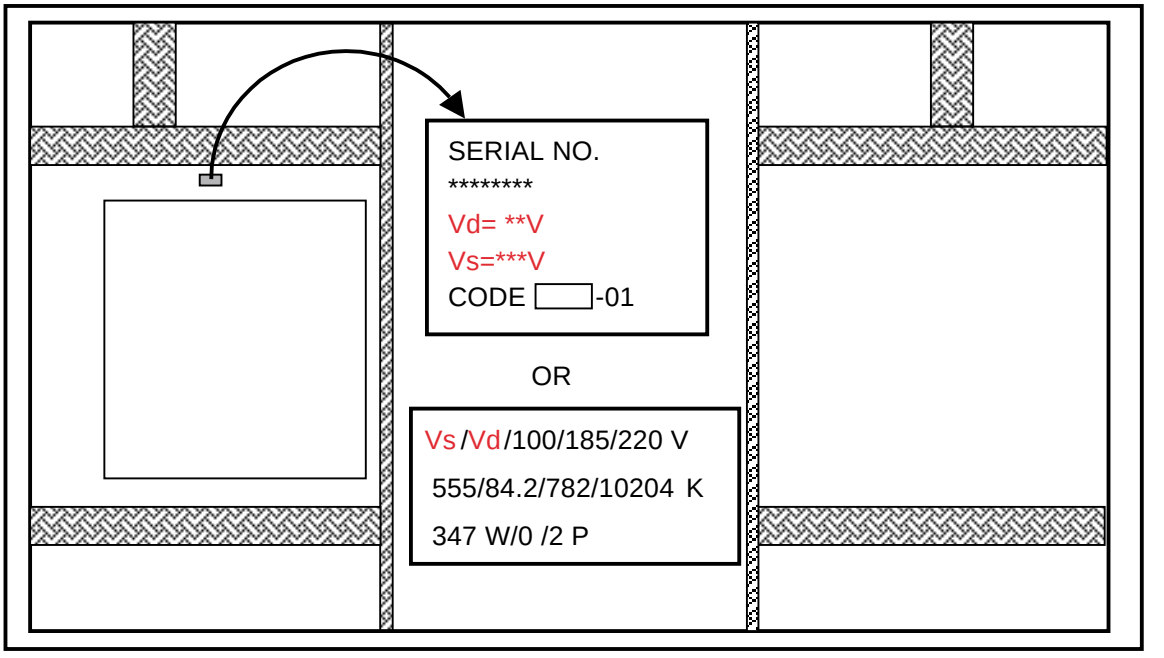
(1) Enter a color bar input by means of either video signal of VIDEO input, or DVD/HD input, or RGB input, and turn on the power switch of the main unit.
(2) Turn the volume control (RV6) in the power unit and make adjustments until the voltages of CH2 and CH1 (D, GND) of the power unit attain the voltage values specified for the PDP (Vs value of the voltage regulation indicator label on below the figure) ±1V.

2-2-2. 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.

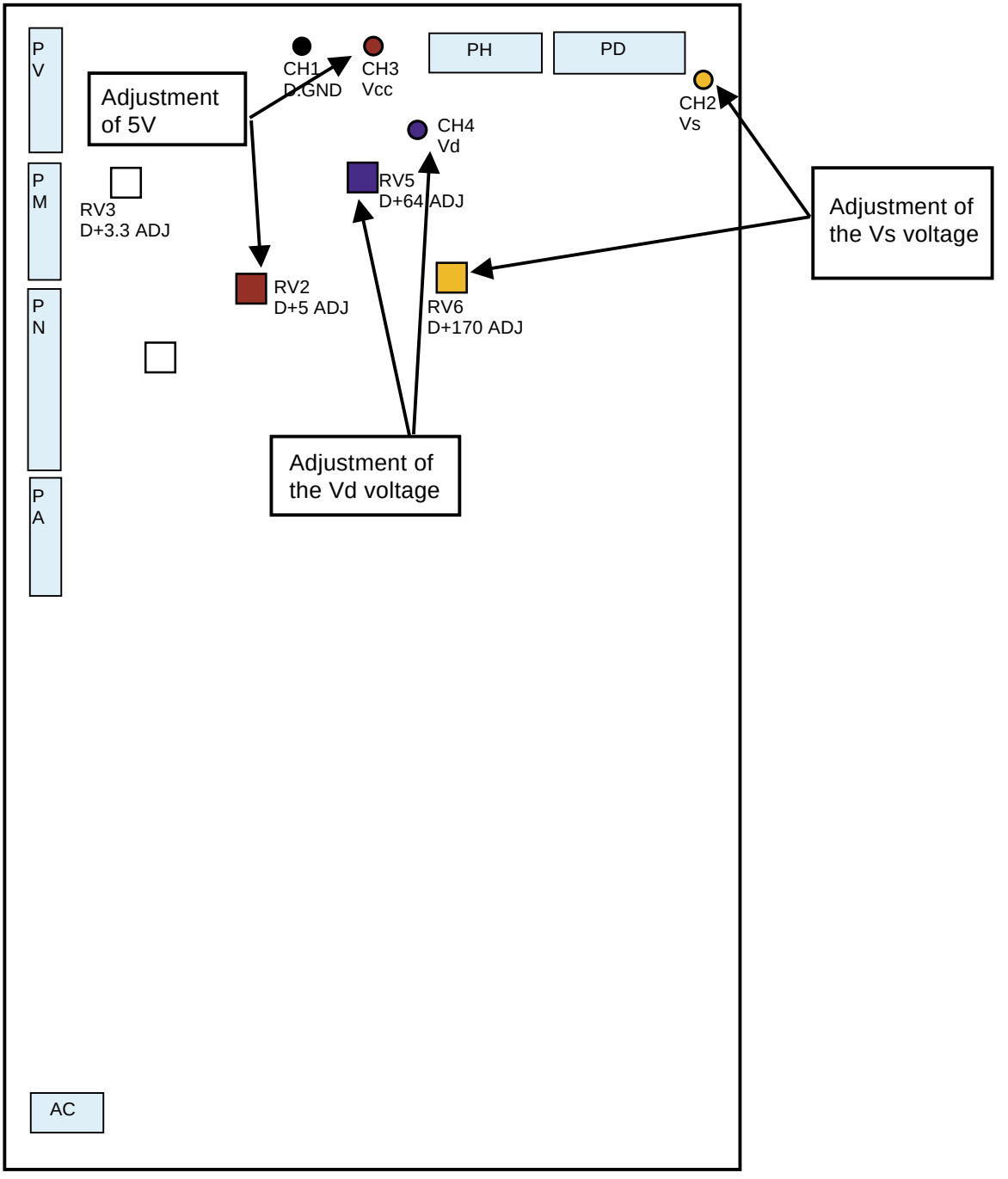
2-2-3. Adjustment of the +5V voltage

(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 Rear Cover is Removed
The label is hidden between the MAIN PWB and the PDP. It can be checked by peeping into the gap from above. The position of this label may be modified without preliminary notice.

*** Top view of the power unit for the PX-50XM3 Series**



2-3. For the PX-61XM2 Series

2-3-1. Adjustment of the Vs voltage

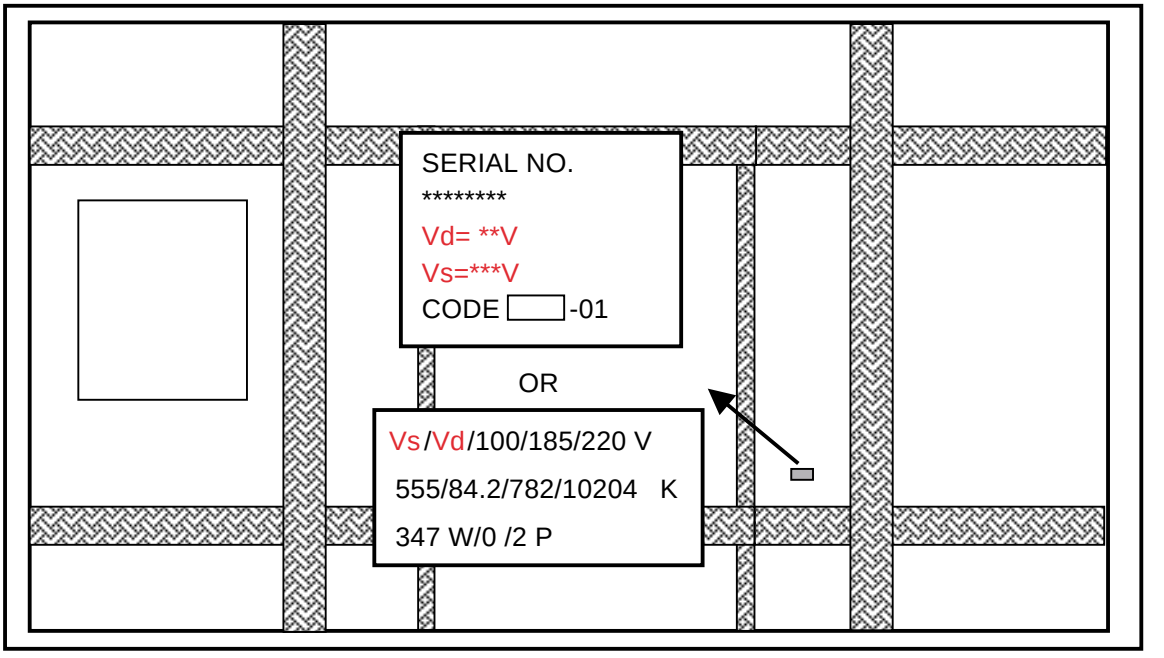
(1) Enter a color bar input by means of either video signal of VIDEO input, or DVD/HD input, or RGB input, and turn on the power switch of the main unit.
(2) Turn the volume control (RV6) in the power unit and make adjustments until the voltages of CH2 and CH1 (D, GND) of the power unit attain the voltage values specified for the PDP (Vs value of the voltage regulation indicator label on below the figure) ±1V.

2-3-2. 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.

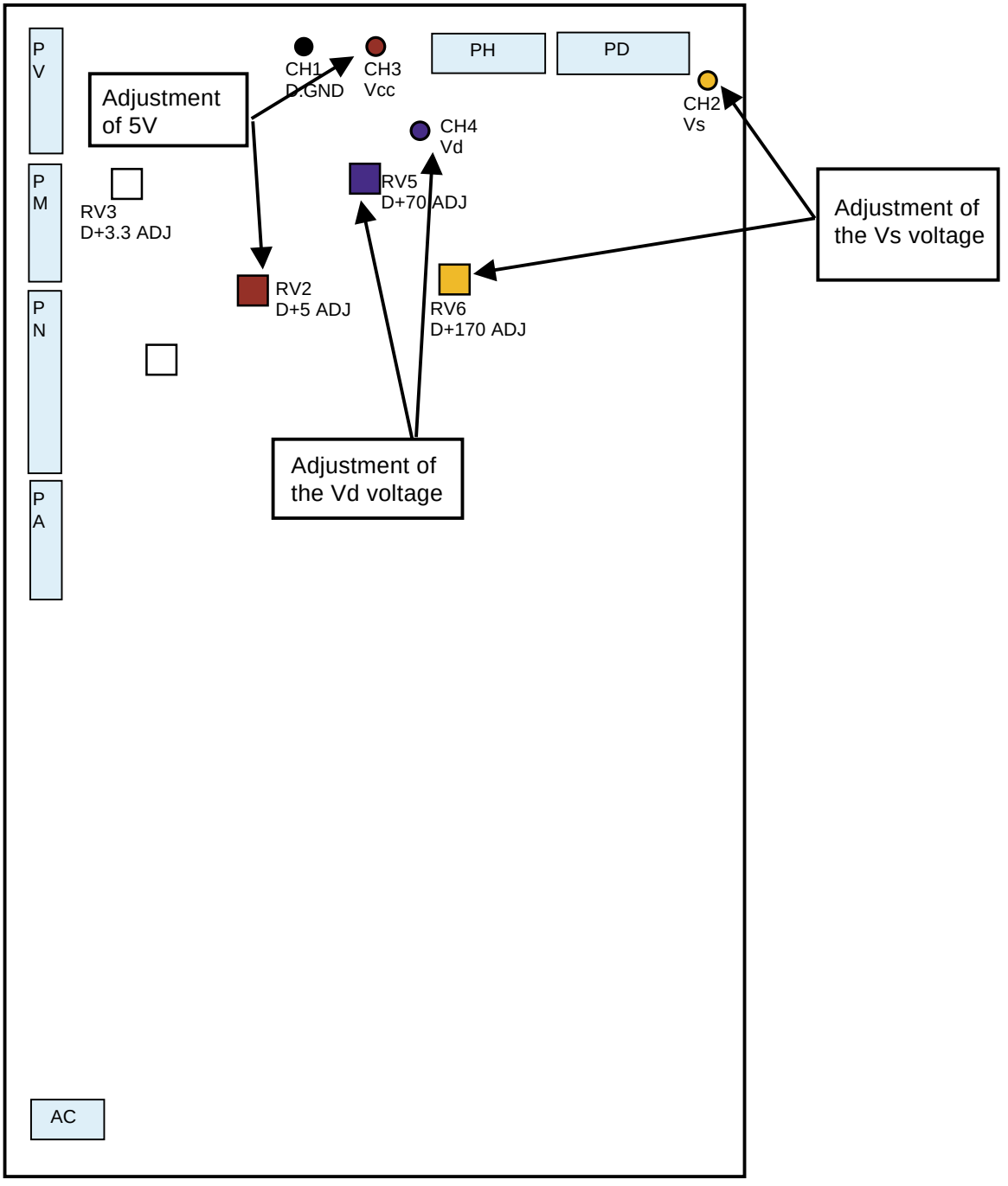
2-3-3. Adjustment of the +5V voltage

(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 Rear Cover is Removed
The position of label adhesion is subject to change without notice.

*** Top view of the power unit for the PX-61XM2 Series**

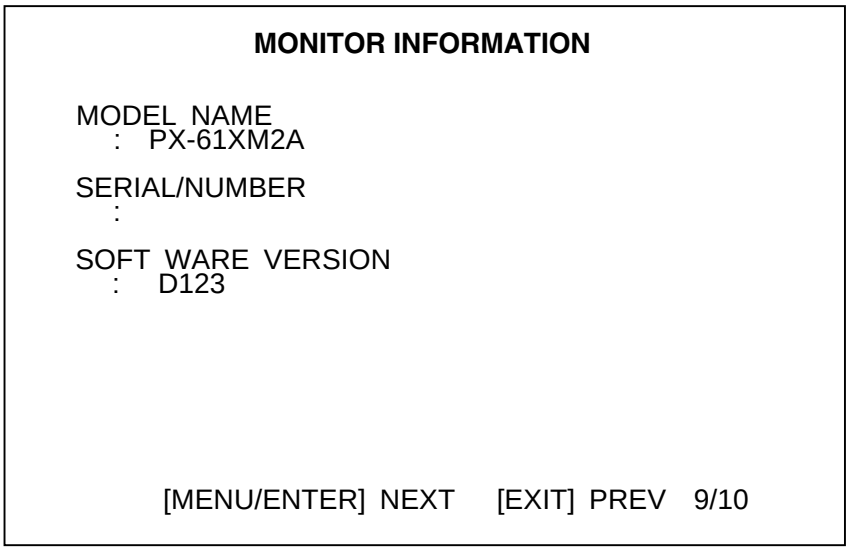


3. Adjustments after the replacement of the MAIN PWB (Using the remote control)

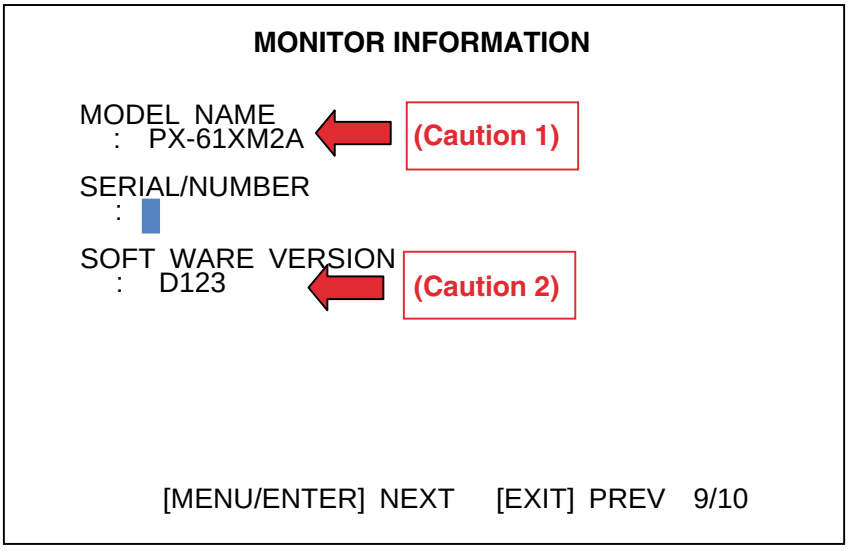
3-1. Product serial No. registration

(1) Press the keys in the order of [OFF TIMER] → [EXIT] → [MUTE] → [OFF TIMER] in order to enter the factory adjustment menu.

(2) Press the [MENU/ENTER] key to select the [MONITOR INFORMATION] No. menu (P9/10). (Example : PX-61XM2A)



(3) Press the [WIDE] 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 2-2. 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)

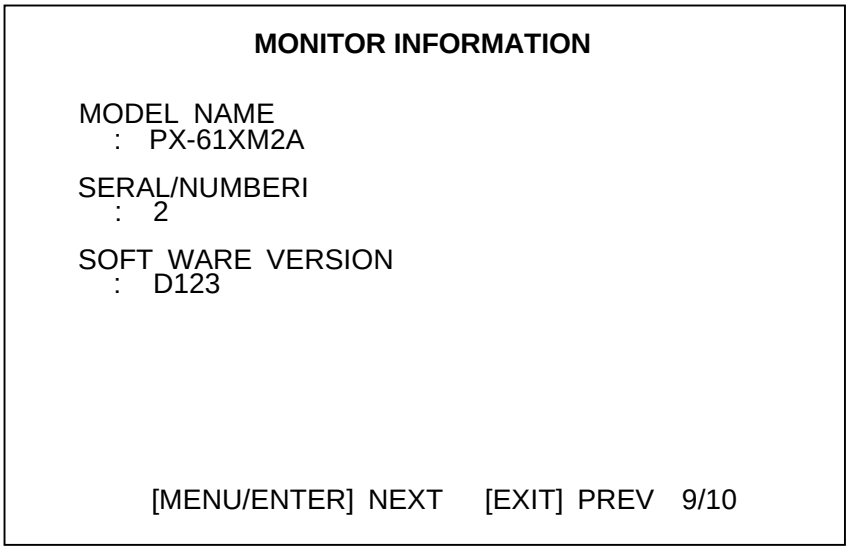
④⑤⑥⑦ ..... Serial numbers of 0001 to 9999. The serial number starts with 0001 in each month of production. There is no duplication or missing of the number in the same month.

⑧ ..... Place of manufacture

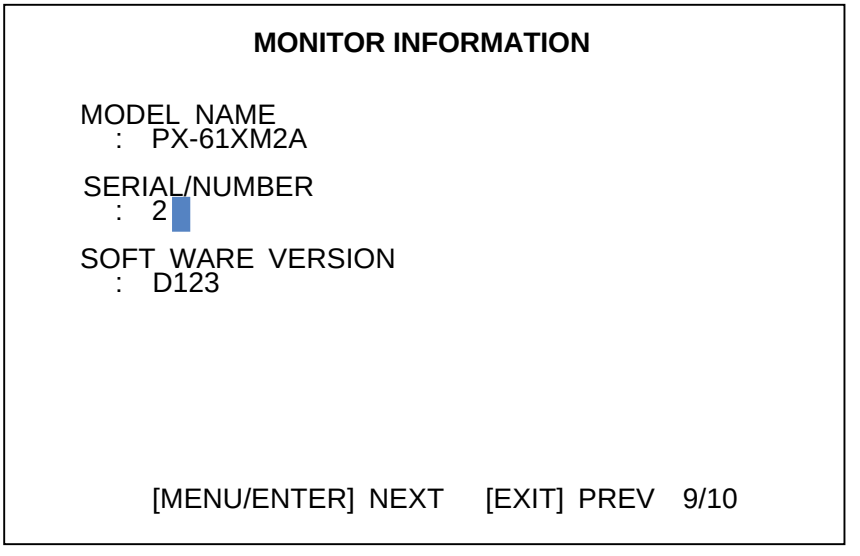
⑨ ..... Control number

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

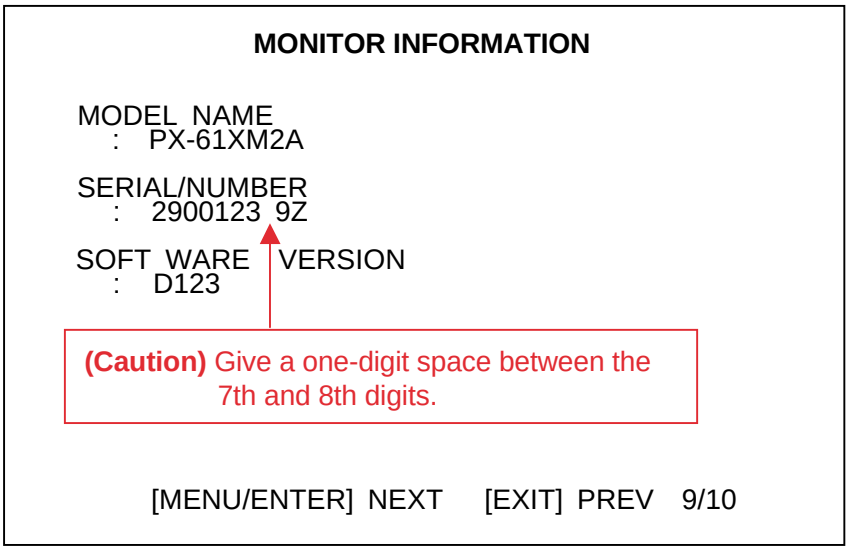
① Move the POSITION/CONTROL keys of [▲] and [▼] to select [2].



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



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



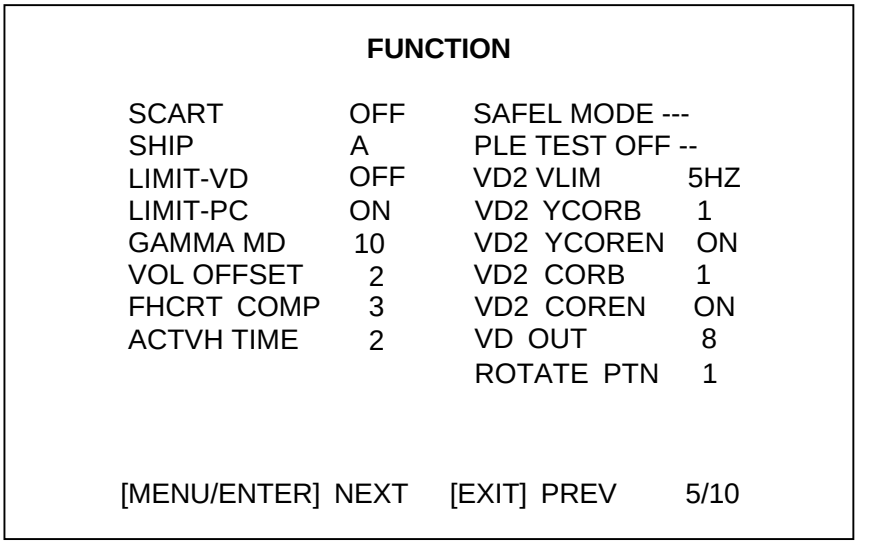
(5) Following the above, setting must be carried out without fail according to “3-2. Factory shipment setting (Initial setting)”

3-2.Factory shipment setting (Initial setting)

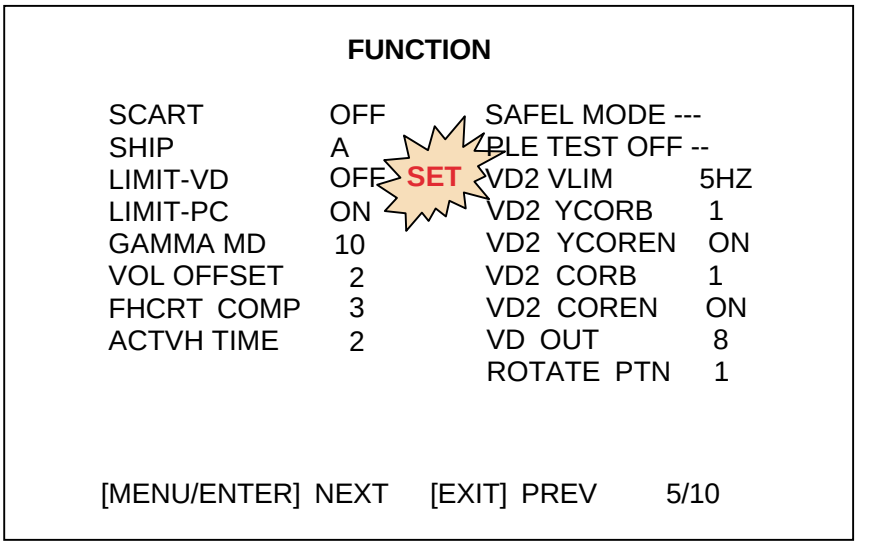
(1) Press the [MENU/ENTER] key to select the [FUNCTION] menu (P5/10).

(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-*****	JW	: OEM Specifications for use in Japan
A	: PX-*****A, A/S	AW	: OEM Specifications for North America
G	: PX-*****G, GS, GS/S, G/S	GW	: OEM Specifications for European countries
GU	: PX-*****GU, GU/S	GUW	: OEM Specifications for zones other than the above



(3) Press the keys in the order of [MUTE] → POSITION/CONTROL [▲] → POSITION/CONTROL [▼] → [OFF TIMER] 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 [OFF TIMER] → [EXIT] → [MUTE] → [OFF TIMER] in order to withdraw from the Factory shipment setting.

[Factory shipment setting values]

1. Initial setting values for the user menu

MENU	A, AW, G, GW, GU, GUW	J, JW
POWER ON/OFF	ON	ON
VOLUME	10step	10step
INPUT MODE	VIDEO1	VIDEO1
WIDE MODE	STADIUM	STADIUM
AUTO PICTURE	OFF (RGB1~3)	OFF (RGB1~3)
HD SELECT	1080B	1080B
LANGUAGE	ENGLISH	JAPANEASE
COLOR SYSTEM	AUTO	AUTO
All items to be reset to the initial values during the selection of [ALL RESET] for Option 1 (See service manual on P. 3-31 (A, AW), P. 3-86 (G, GW, GU, GUW), P. 3-17 (J, JW)	Initial values	Initial values

2. Initial setting values for the field menu (Common to each model)

MENU		A	G	GU	J	AW, GW, GUW, JW
FIELD	PCS-LIMIT	OFF	OFF	OFF	OFF	OFF
	LIMIT-VD	OFF	OFF	OFF	OFF	OFF
	LIMIT-PC	ON	ON	ON	ON	ON
	POS-RESET	OFF	OFF	OFF	OFF	OFF
	U-SCAN	OFF	OFF	OFF	OFF	OFF
	L-BOOST	OFF	OFF	OFF	OFF	OFF
	V-FREQ OT	AUTO	AUTO	AUTO	AUTO	AUTO
	V-FREQ VD	AUTO	AUTO	AUTO	AUTO	AUTO
	ERROR	HOR	HOR	HOR	HOR	HOR
	2VDELAY	OFF	OFF	OFF	OFF	OFF
	DVI-SEL	–	–	–	–	–
MONITOR INFORMATION	MODEL NAME	PX-****A	PX-****G	PX-****GU	PX-****	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,AW	G,GW	GU, GUW	J,JW
FUNCTION	SHIP	A or AW	G or GW	GU or GUW	J or JW
	LIMIT-VD	OFF	OFF	OFF	OFF
	LIMIT-PC	ON	ON	ON	ON
MONITOR INFORMATION	SERIAL/ NUMBER	–	–	–	–

[Materials for reference]

1. Signal generator

(1) Digital RGB, Component signal generator
- Equivalent to the VIDEO GENERATOR LT1615 (made by LEADER)
- Equivalent to the PANEL LINK ADAPTER LT9217 (made by LEADER)
- Equivalent to the VIDEO ENCODER LT1606 (made by LEADER)

(2) NTSC signal generator
- Equivalent to the NTSC PATTERN GENERATER LCG-403YC (made by LEADER)

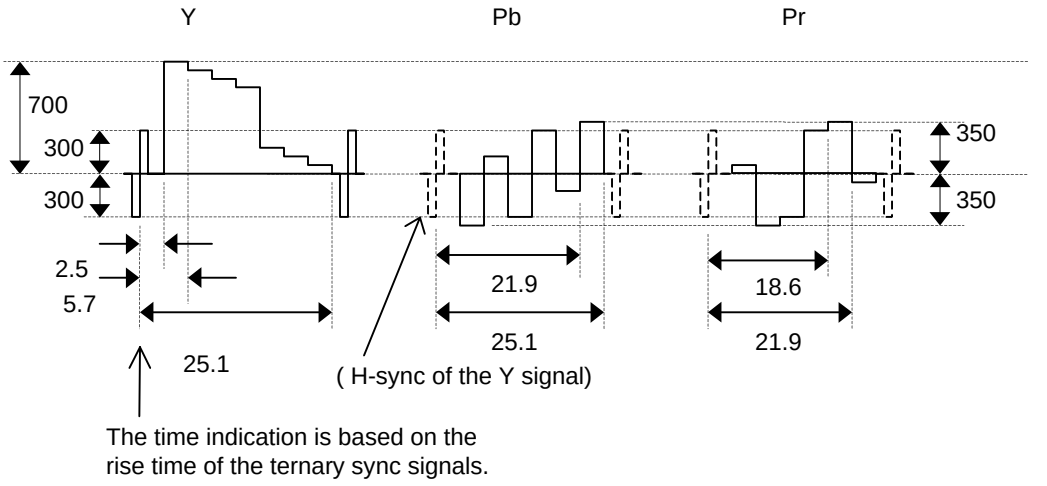
(3) PAL signal generator
- Equivalent to the COLOR BAR PATTERN GENERATOR PM-5518 (made by PHILIPS)

2. VIDEO input

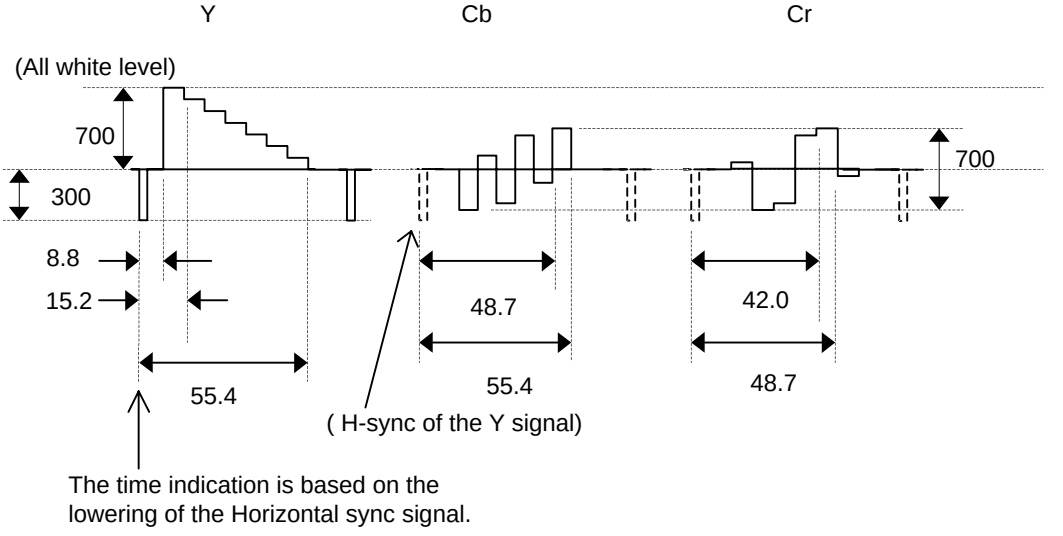
Input: Composite video input or S-terminal input

3. DVD/HD/DTV inputs

3-1. HD: Y/Pb/Pr component inputs, ternary sync signals

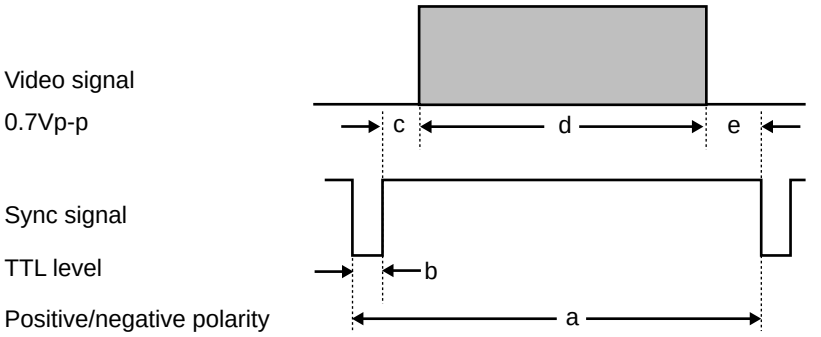


3-2. DVD: Y/Cb/Cr component inputs

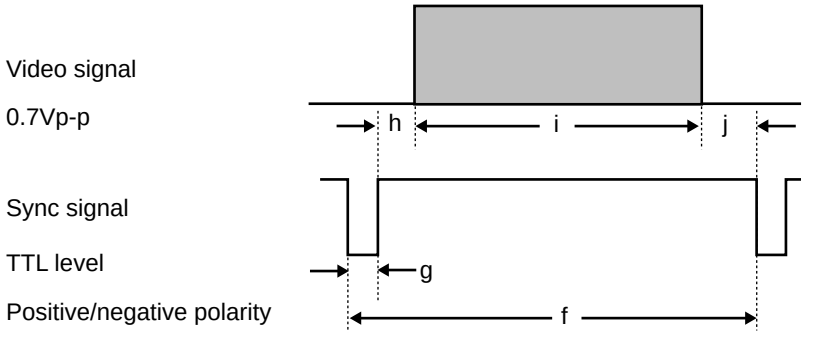


4. RGB inputs

1) Horizontal sync period



2) Vertical sync period



For the respective inspection signals, the above “a” to “j” shall be listed on the next page and thereafter.

5. RGB/PC signal timing table

(Caution 1) For HDCP non-application products, the signals of the PC mode 1 ~ 89 can be received. For HDCP application products, the signals of the PC mode 1 ~ 98 can be received.

(Caution 2) The received PC mode number specified below is displayed in the memory column of the user menu "Information."

PC mode	1	2	3	4	5
Signal name	VU-6010 NTSC	VU-6010 PAL/SECAM	NOT USED	PC98 400@70Hz	PC98 480@60HZ
Definition	640*240	768*288		640*400	640*480
Dot clock frequency (MHz)	12.214	14.752		25.175	25.175
H frequency (kHz)	15.734	15.557		31.469	31.469
V frequency (Hz)	59.94	50.39		70.086	59.94
H total (uS) [a]	63.534	64.262		31.778	31.778
(dots)	776	948		800	800
H display period (uS) [d]	52.4	52.06		25.422	25.422
(dots)	640	768		640	640
H front porch (uS) [c]	1.146	1.288		0.675	0.596
(dots)	14	19		17	15
H sync pulse width (uS) [b]	8.76	8.677		2.542	3.813
(dots)	107	128		64	96
H back porch (uS) [e]	1.228	2.237		3.138	1.946
(dots)	15	33		79	49
V total (mS) [f]	16.652	20.055		14.268	16.683
(line)	262	312		449	525
V display period (mS) [i]	15.3	18.513		12.711	15.253
(line)	240	288		400	480
V front porch (mS) [h]	0.191	0.321		0.413	0.191
(line)	3	5		13	6
V sync pulse width (mS) [g]	1.144	1.093		0.064	0.064
(line)	18	17		2	2
V back porch (mS) [j]	0.064	0.064		1.08	1.176
(line)	1	1		34	37
H sync polarity	Neg	Neg		Neg	Neg
V sync polarity	Neg	Neg		Neg	Neg
Scan type	Interlaced	Interlaced		Non Interlaced	Non Interlaced
Remarks					

PC mode	6	7	8	9	10
Signal name	MAC@13”	VESA 480@72Hz	VESA 480@75Hz	VESA 480@85Hz	NOT USED
Definition	640*480	640*480	640*480	640*480	
Dot clock frequency (MHz)	30.24	31.5	31.5	36.0	
H frequency (kHz)	35	37.861	37.5	43.269	
V frequency (Hz)	66.667	72.809	75	85.008	
H total (uS)	28.571	26.413	26.667	23.111	
(dots)	864	832	840	832	
H display period (uS)	21.164	20.317	20.317	17.778	
(dots)	640	640	640	640	
H front porch (uS)	2.116	0.762	0.508	1.556	
(dots)	64	24	16	56	
H sync pulse width (uS)	2.116	1.27	2.032	1.556	
(dots)	64	40	64	56	
H back porch (uS)	3.175	4.064	3.81	2.222	
(dots)	96	128	120	80	
V total (mS)	15	13.735	13.333	11.764	
(line)	525	520	500	509	
V display period (mS)	13.714	12.678	12.8	11.093	
(line)	480	480	480	480	
V front porch (mS)	0.086	0.237	0.027	0.023	
(line)	3	9	1	1	
V sync pulse width (mS)	0.086	0.079	0.08	0.069	
(line)	3	3	3	3	
V back porch (mS)	1.114	0.739	0.427	0.578	
(line)	39	28	16	25	
H sync polarity	Sync on G	Neg	Neg	Neg	
V sync polarity	Sync on G	Neg	Neg	Neg	
Scan type	Non Interlaced	Non Interlaced	Non Interlaced	Non Interlaced	
Remarks					

PC mode	11	12	13	14	15
Signal name	VESA 600@56Hz	VESA 600@60Hz	VESA 600@72Hz	VESA 600@75Hz	VESA 600@85Hz
Definition	800*600	800*600	800*600	800*600	800*600
Dot clock frequency (MHz)	36	40	50	49.5	56.25
H frequency (kHz)	35.156	37.879	48.077	46.875	53.674
V frequency (Hz)	56.25	60.317	72.188	75	85.061
H total (uS)	28.444	26.4	20.8	21.333	18.631
(dots)	1024	1056	1040	1056	1048
H display period (uS)	22.222	20	16	16.162	14.222
(dots)	800	800	800	800	800
H front porch (uS)	0.667	1	1.12	0.323	0.569
(dots)	24	40	56	16	32
H sync pulse width (uS)	2	3.2	2.4	1.616	1.138
(dots)	72	128	120	80	64
H back porch (uS)	3.556	2.2	1.28	3.232	2.702
(dots)	128	88	64	160	152
V total (mS)	17.778	16.579	13.853	13.333	11.756
(line)	625	628	666	625	631
V display period (mS)	17.067	15.84	12.48	12.8	11.179
(line)	600	600	600	600	600
V front porch (mS)	0.028	0.026	0.77	0.021	0.019
(line)	1	1	37	1	1
V sync pulse width (mS)	0.057	0.106	0.125	0.064	0.056
(line)	2	4	6	3	3
V back porch (mS)	0.626	0.607	0.478	0.448	0.503
(line)	22	23	23	21	27
H sync polarity	Pos.	Pos.	Pos.	Pos.	Pos.
V sync polarity	Pos.	Pos.	Pos.	Pos.	Pos.
Scan type	Non Interlaced	Non Interlaced	Non Interlaced	Non Interlaced	Non Interlaced
Remarks					

PC mode	16	17	18	19	20
Signal name	MAC@16”	I/O data wide	NOT USED	VESA wide (NEC1)	NOT USED
Definition	832*624	852*480		848*480	
Dot clock frequency (MHz)	57.2832	34.006		33.75	
H frequency (kHz)	49.725	31.722		31.02	
V frequency (Hz)	74.55	59.966		60	
H total (uS)	20.111	31.524		32.237	
(dots)	1152	1072		1088	
H display period (uS)	14.524	25.055		25.126	
(dots)	832	852		848	
H front porch (uS)	0.559	0.659		0.474	
(dots)	32	22		16	
H sync pulse width (uS)	1.117	3.764		3.319	
(dots)	64	128		112	
H back porch (uS)	3.91	2.047		3.319	
(dots)	224	70		112	
V total (mS)	13.414	16.676		16.667	
(line)	667	529		517	
V display period (mS)	12.549	15.132		15.474	
(line)	624	480		480	
V front porch (mS)	0.02	0.378		0.193	
(line)	1	12		6	
V sync pulse width (mS)	0.06	0.095		0.258	
(line)	3	3		8	
V back porch (mS)	0.784	1.072		0.741	
(line)	39	34		23	
H sync polarity	Sync on G	Neg		Pos.	
V sync polarity	Sync on G	Neg		Pos.	
Scan type	Non Interlaced	Non Interlaced		Non Interlaced	
Remarks					

PC mode	21	22	23	24	25
Signal name	NOT USED	VESA wide (NEC4)	NOT USED	VESA 768@60Hz	VESA 768@70Hz
Definition		1360*768		1024*768	1024*768
Dot clock frequency (MHz)		85.5		65	75
H frequency (kHz)		47.712		48.363	56.476
V frequency (Hz)		60.015		60.004	70.069
H total (uS)		20.959		20.677	17.707
(dots)		1792		1344	1328
H display period (uS)		15.906		15.754	13.653
(dots)		1360		1024	1024
H front porch (uS)		0.749		0.369	0.32
(dots)		64		24	24
H sync pulse width (uS)		1.31		2.092	1.813
(dots)		112		136	136
H back porch (uS)		2.994		2.462	1.92
(dots)		256		160	144
V total (mS)		16.662		16.666	14.272
(line)		795		806	806
V display period (mS)		16.097		15.88	13.599
(line)		768		768	768
V front porch (mS)		0.063		0.062	0.053
(line)		3		3	3
V sync pulse width (mS)		0.126		0.124	0.106
(line)		6		6	6
V back porch (mS)		0.377		0.6	0.513
(line)		18		29	29
H sync polarity		Pos.		Neg.	Neg.
V sync polarity		Pos.		Neg.	Neg.
Scan type		Non Interlaced		Non Interlaced	Non Interlaced
Remarks					

PC mode	26	27	28	29	30
Signal name	VESA 768@75Hz	VESA 768@85Hz	MAC@19”	VESA 1024@60Hz	VESA 1024@75Hz
Definition	1024*768	1024*768	1024*768	1280*1024	1280*1024
Dot clock frequency (MHz)	78.75	94.5	80	108	135
H frequency (kHz)	60.023	68.677	60.24	63.981	79.976
V frequency (Hz)	75.029	84.997	74.93	60.02	75.025
H total (uS)	16.66	14.561	16.600	15.63	12.501
(dots)	1312	1376	1328	1688	1688
H display period (uS)	13	10.836	12.8	11.852	9.481
(dots)	1024	1024	1024	1280	1280
H front porch (uS)	0.203	0.508	0.4	0.444	0.119
(dots)	16	48	32	48	2
H sync pulse width (uS)	1.219	1.016	1.2	1.037	1.067
(dots)	96	96	96	112	144
H back porch (uS)	2.235	2.201	2.2	2.296	1.837
(dots)	176	208	176	248	248
V total (mS)	13.328	11.765	13.347	16.661	13.329
(line)	800	808	804	1066	1066
V display period (mS)	12.795	11.183	12.749	16.005	12.804
(line)	768	768	768	1024	1024
V front porch (mS)	0.017	0.015	0.050	0.016	0.013
(line)	1	1	3	1	1
V sync pulse width (mS)	0.05	0.044	0.050	0.047	0.038
(line)	3	3	3	3	3
V back porch (mS)	0.466	0.524	0.498	0.594	0.475
(line)	28	36	30	38	38
H sync polarity	Pos.	Pos.	–	Pos.	Pos.
V sync polarity	Pos.	Pos.	–	Pos.	Pos.
Scan type	Non Interlaced	Non Interlaced	Non Interlaced	Non Interlaced	Non Interlaced
Remarks					

PC mode	31	32	33	34	35
Signal name	IDC-3000G PAL 625P	IDC-3000G NTSC 525P	HDTV-J	DTV(480P)	DTV(720P)
Definition	768*576	640*480	1920*1035	644*483	1280*720
Dot clock frequency (MHz)	29.687	24.39	74.25	24.37	74.25
H frequency (kHz)	31.389	31.47	33.75	31.469	45.000
V frequency (Hz)	50	59.9	60	59.94	60
H total (uS)	31.933	31.775	29.63	31.777	22.222
(dots)	948	775	2200	774	1650
H display period (uS)	25.87	26.24	25.86	26.427	17.239
(dots)	768	640	1920	644	1280
H front porch (uS)	0.269	0.41	0.59	0.75	0.943
(dots)	8	10	44	18	70
H sync pulse width (uS)	2.526	2.46	0.59	2.35	1.077
(dots)	75	60	44	57	80
H back porch (uS)	3.267	2.665	2.59	2.25	2.963
(dots)	97	65	192	55	220
V total (mS)	19.911	16.522	16.666	16.683	16.667
(line)	625	525	562.5	525	750
V display period (mS)	18.35	15.106	15.348	15.348	16
(line)	576	480	517/518	483	720
V front porch (mS)	0.223	0.252	0.163/0.148	0.191	0.111
(line)	7	8	5.5/5	6	5
V sync pulse width (mS)	0.223	0.22	0.148	0.191	0.111
(line)	7	7	5	6	5
V back porch (mS)	1.115	0.944	1.037/1.022	0.953	0.444
(line)	35	30	35/34.5	30	20
H sync polarity	Neg	Neg	Neg	Neg	Neg
V sync polarity	Neg	Neg	Neg	Neg	Neg
Scan type	Non Interlaced	Non Interlaced	Interlaced	Non Interlaced	Non Interlaced
Remarks					

PC mode	36	37	38	39	40
Signal name	HDTV-W	NOT USED	NOT USED	MAC@21”	VESA 1024@85Hz
Definition	1920*1080			1152*870	1280*1024
Dot clock frequency (MHz)	74.25			100	157.5
H frequency (kHz)	33.75			68.681	91.146
V frequency (Hz)	60			75.062	85.024
H total (uS)	29.630			14.560	10.971
(dots)	2200			1456	1728
H display period (uS)	25.859			11.520	8.127
(dots)	1920			1152	1280
H front porch (uS)	0.593			0.320	0.406
(dots)	44			32	64
H sync pulse width (uS)	1.185			1.280	1.016
(dots)	88			128	160
H back porch (uS)	1.993			1.440	1.422
(dots)	148			144	224
V total (mS)	16.666			13.322	11.761
(line)	562.5			915	1072
V display period (mS)	16.000			12.667	11.235
(line)	540			870	1024
V front porch (mS)	0.074/0.059			0.044	0.011
(line)	2.5/2			3	1
V sync pulse width (mS)	0.148			0.044	0.033
(line)	5			3	3
V back porch (mS)	0.444/0.459			0.568	0.483
(line)	15/15.5			39	44
H sync polarity	Neg			Sync on G	Pos.
V sync polarity	Neg			Sync on G	Pos.
Scan type	Interlaced			Non Interlaced	Non Interlaced
Remarks					

PC mode	41	42	43	44	45
Signal name	I/O data 480@100H	I/O data 480@120Hz	I/O data 600@100Hz	I/O data 600@120Hz	I/O data 768@100Hz
Definition	640*480	640*480	800*600	800*600	1024*768
Dot clock frequency (MHz)	42.506	51.008	66.022	79.942	111.987
H frequency (kHz)	51.089	61.307	62.998	75.703	80.451
V frequency (Hz)	100.370	120.440	99.838	119.97	100.56
H total (uS)	19.573	16.311	15.873	13.209	12.43
(dots)	832	832	1048	1056	1392
H display period (uS)	15.057	12.574	12.117	10.007	9.144
(dots)	640	640	800	800	1024
H front porch (uS)	1.506	1.255	0.606	0.300	0.214
(dots)	64	64	40	24	24
H sync pulse width (uS)	1.317	1.098	0.969	1.001	0.786
(dots)	56	56	64	80	88
H back porch (uS)	1.694	1.412	2.181	1.901	2.286
(dots)	72	72	144	152	256
V total (mS)	9.963	8.302	10.016	8.335	9.944
(line)	509	509	631	631	800
V display period (mS)	9.395	7.829	9.524	7.926	9.546
(line)	480	480	600	600	768
V front porch (mS)	0.020	0.016	0.016	0.013	0.012
(line)	1	1	1	1	1
V sync pulse width (mS)	0.059	0.049	0.048	0.04	0.037
(line)	3	3	3	3	3
V back porch (mS)	0.489	0.408	0.429	0.357	0.348
(line)	25	25	27	27	28
H sync polarity	Neg	Neg	Pos.	Pos.	Neg
V sync polarity	Neg	Neg	Pos.	Pos.	Neg
Scan type	Non Interlaced	Non Interlaced	Non Interlaced	Non Interlaced	Non Interlaced
Remarks					

PC mode	46	47	48	49	50
Signal name	I/O data 768@120Hz	I/O data 1024@100Hz	EWS 4800@71Hz	RCA-STB 1080A	DTV(570P)
Definition	1024*768	1280*1024	1280*1024	1920*1034	768*576
Dot clock frequency (MHz)	132.953	190.908	125	81	29.538
H frequency (kHz)	95.512	108.47	75.12	33.75	31.25
V frequency (Hz)	119.39	100.06	71.204	60	50
H total (uS)	10.47	9.219	13.312	29.630	31.993
(dots)	1392	1760	1664	2400	945
H display period (uS)	7.702	6.7	10.24	23.7	26
(dots)	1024	1280	1280	1920	768
H front porch (uS)	0.181	0.545	0.256	0.59	0.745
(dots)	24	104	32	48	22
H sync pulse width (uS)	0.662	0.75	1.024	3.56	2.35
(dots)	88	143	128	288	69
H back porch (uS)	1.925	1.22	1.792	1.78	2.9
(dots)	256	233	224	144	86
V total (mS)	8.376	9.994	14.044	16.652	20
(line)	800	1084	1055	562	625
V display period (mS)	8.041	9.44	13.631	15.319	18.432
(line)	768	1024	1024	517	576
V front porch (mS)	0.010	0.01	0.04	0.059	0.16
(line)	1	1	3	2	5
V sync pulse width (mS)	0.031	0.03	0.04	0.089	0.16
(line)	3	3	3	3	5
V back porch (mS)	0.293	0.52	0.333	1.185	1.248
(line)	28	56	25	40	39
H sync polarity	Neg	Pos.	Neg	Pos.	Neg
V sync polarity	Neg	Pos.	Neg	Pos.	Neg
Scan type	Non Interlaced	Non Interlaced	Non Interlaced	Interlaced	Non Interlaced
Remarks					

PC mode	51	52	53	54	55
Signal name	VESA 864@75Hz	I/O data W_XGA@56Hz	I/O wide XGA	VESA 1200@60Hz	VESA 1200@65Hz
Definition	1152*864	1280*768	1376*768	1600*1200	1600*1200
Dot clock frequency (MHz)	108	76.064	87.34	162	175.5
H frequency (kHz)	67.5	45.064	48.307	75	81.25
V frequency (Hz)	75	56.187	59.934	60	65
H total (uS)	14.815	22.192	20.701	13.333	12.308
(dots)	1600	1688	1808	2160	2160
H display period (uS)	10.667	16.828	15.755	9.877	9.117
(dots)	1152	1280	1376	1600	1600
H front porch (uS)	0.593	0.631	0.366	0.395	0.365
(dots)	64	48	32	64	64
H sync pulse width (uS)	1.185	1.472	1.466	1.185	1.094
(dots)	128	112	128	192	192
H back porch (uS)	2.37	3.26	3.114	1.877	1.732
(dots)	256	248	272	304	304
V total (mS)	13.333	17.78	16.685	16.667	15.385
(line)	900	802	806	1250	1250
V display period (mS)	12.8	17.043	15.898	16	14.769
(line)	864	768	768	1200	1200
V front porch (mS)	0.015	0.044	0.062	0.013	0.012
(line)	1	2	3	1	1
V sync pulse width (mS)	0.044	0.067	0.124	0.04	0.037
(line)	3	3	6	3	3
V back porch (mS)	0.474	0.644	0.6	0.613	0.566
(line)	32	29	29	46	46
H sync polarity	Pos.	Pos.	Neg	Pos.	Pos.
V sync polarity	Pos.	Pos.	Pos.	Pos.	Pos.
Scan type	Non Interlaced	Non Interlaced	Non Interlaced	Non Interlaced	Non Interlaced
Remarks					

PC mode	56	57	58	59	60
Signal name	VESA 1200@70Hz	VESA 1200@75Hz	VESA 1200@85Hz	HP 1024@72Hz	SUN 900@66Hz
Definition	1600*1200	1600*1200	1600*1200	1280*1024	1152*900
Dot clock frequency (MHz)	189	202.5	229.5	135	92.941
H frequency (kHz)	87.5	93.75	106.25	78.130	61.796
V frequency (Hz)	70	75	85	72.009	65.95
H total (uS)	11.429	10.667	9.412	12.8	16.182
(dots)	2160	2160	2160	1728	1504
H display period (uS)	8.466	7.901	6.972	9.481	12.395
(dots)	1600	1600	1600	1280	1152
H front porch (uS)	0.339	0.316	0.279	0.474	0.312
(dots)	64	64	64	64	29
H sync pulse width (uS)	1.016	0.948	0.837	1.442	1.377
(dots)	192	192	192	192	128
H back porch (uS)	1.608	1.501	1.325	1.442	2.098
(dots)	304	304	304	192	195
V total (mS)	14.286	13.333	11.765	13.887	15.163
(line)	1250	1250	1250	1085	937
V display period (mS)	13.714	12.8	11.294	13.107	14.564
(line)	1200	1200	1200	1024	900
V front porch (mS)	0.011	0.011	0.009	0.038	0.032
(line)	1	1	1	3	2
V sync pulse width (mS)	0.034	0.032	0.028	0.038	0.065
(line)	3	3	3	3	4
V back porch (mS)	0.526	0.491	0.433	0.704	0.502
(line)	46	46	46	55	31
H sync polarity	Pos.	Pos.	Pos.	SOG.	Csync
V sync polarity	Pos.	Pos.	Pos.	SOG.	Csync
Scan type	Non Interlaced	Non Interlaced	Non Interlaced	Non Interlaced	Non Interlaced
Remarks					

PC mode	61	62	63	64	65
Signal name	SUN 900@76Hz	SGI 768@60Hz	VESA 960@60Hz	VESA 960@60Hz	VESA 1050@60Hz
Definition	1152*900	1024*768	1280*960	1280*960	1400*1050
Dot clock frequency (MHz)	105.561	70	108	148.5	108
H frequency (kHz)	71.710	49.716	60	85.938	63.981
V frequency (Hz)	76.047	60.043	60	85.002	60.020
H total (uS)	13.945	2.0114	16.667	11.636	15.630
(dots)	1472	1408	1800	1728	1688
H display period (uS)	10.913	14.629	11.852	8.62	12.963
(dots)	1152	1024	1280	1280	1400
H front porch (uS)	0.152	2.057	0.889	0.431	0.444
(dots)	16	144	96	64	48
H sync pulse width (uS)	0.909	1.371	1.037	1.077	1.037
(dots)	96	96	112	160	112
H back porch (uS)	1.97	2.507	2.889	1.508	1.185
(dots)	208	144	312	224	128
V total (mS)	13.15	16.655	16.667	11.764	16.661
(line)	943	828	1000	1011	1066
V display period (mS)	12.55	15.448	16	11.171	16.411
(line)	900	768	960	960	1050
V front porch (mS)	0.028	0.443	0.017	0.012	0.016
(line)	2	22	1	1	1
V sync pulse width (mS)	0.112	0.06	0.05	0.035	0.047
(line)	8	3	3	3	3
V back porch (mS)	0.460	0.704	0.6	0.547	0.188
(line)	33	35	36	47	12
H sync polarity	Csync	SOG.	Pos.	Pos.	Neg
V sync polarity	Csync	SOG.	Pos.	Pos.	Neg
Scan type	Non Interlaced	Non Interlaced	Non Interlaced	Non Interlaced	Non Interlaced
Remarks					

PC mode	66~74
Signal name	NOT USED
Definition	
Dot clock frequency (MHz)	
H frequency (kHz)	
V frequency (Hz)	
H total (uS) (dots)	
H display period (uS) (dots)	
H front porch (uS) (dots)	
H sync pulse width (uS) (dots)	
H back porch (uS) (dots)	
V total (mS) (line)	
V display period (mS) (line)	
V front porch (mS) (line)	
V sync pulse width (mS) (line)	
V back porch (mS) (line)	
H sync polarity V sync polarity	
Scan type	
Remarks	

PC mode	75	80	81	82	83
Signal name	1080I 50Hz	W_XGA	NOT USED	400H	350H
Definition	1920*1080	1280*768		720*400	720*350
Dot clock frequency (MHz)	74.25	81.0		28.3	28.3
H frequency (kHz)	28.125	47.99		31.5	31.5
V frequency (Hz)	50	59.34		70.1	70.1
H total (uS)	35.556	20.84		31.78	31.78
(dots)	2640	1688		900	900
H display period (uS)	25.859	15.80		25.42	25.42
(dots)	1920	1280		720	720
H front porch (uS)	6.519	0.593		0.636	0.636
(dots)	484	48		18	18
H sync pulse width (uS)	1.185	1.38		3.81	3.81
(dots)	88	112		108	108
H back porch (uS)	1.993	3.06		1.91	1.91
(dots)	148	248		54	54
V total (mS)	10	16.713		14.269	14.269
(line)	562.5	802		449	449
V display period (mS)	9.6	16.005		12.712	11.123
(line)	540	768		400	350
V front porch (mS)	0.074/0.059	0.063		0.424	1.307
(line)	2.5/2	3		12	37
V sync pulse width (mS)	0.148	0.125		0.064	0.064
(line)	5	6		2	2
V back porch (mS)	0.444/0.459	0.521		1.112	1.907
(line)	15/15.5	25		35	60
H sync polarity	Neg.	Pos.		Neg.	Pos.
V sync polarity	Neg.	Neg.		Pos.	Neg.
Scan type	Interlaced	Non Interlaced		Non Interlaced	Non Interlaced
Remarks					

PC mode	84	85	86	87	88
Signal name	720P 24Hz	1080P 24Hz	720P 50Hz	1080I 48Hz	NOT USED
Definition	1280*720	1920*1080	1280*720	1920*1080	
Dot clock frequency (MHz)	74.176	74.176	74.25	74.1758	
H frequency (kHz)	17.982	26.973	37.5	26.973	
V frequency (Hz)	23.976	23.976	50	37.074	
H total (uS)	55.611	37.704	26.667	37.074	
(dots)	4125	2750	1980	2750	
H display period (uS)	17.256	25.884	17.239	25.884	
(dots)	1280	1920	1280	1920	
H front porch (uS)	34.310	8.008	5.387	8.008	
(dots)	2545	594	400	594	
H sync pulse width (uS)	1.078	1.078	1.078	1.078	
(dots)	80	88	80	88	
H back porch (uS)	2.256	1.995	2.963	1.995	
(dots)	220	148	220	148	
V total (mS)	41.706	41.708	20	20.855	
(line)	750	1125	750	1125	
V display period (mS)	40.040	40.040	19.2	20.020	
(line)	720	1080	720	1080	
V front porch (mS)	0.278	0.148	0.133	0.093	
(line)	5	4	5	5	
V sync pulse width (mS)	0.278	0.185	0.133	0.185	
(line)	5	5	5	10	
V back porch (mS)	1.112	1.335	0.533	0.556	
(line)	20	36	20	30	
H sync polarity	Neg	Neg	Neg	Neg	
V sync polarity	Neg	Neg	Neg	Neg	
Scan type	Non Interlaced	Non Interlaced	Non Interlaced	Interlaced	
Remarks					

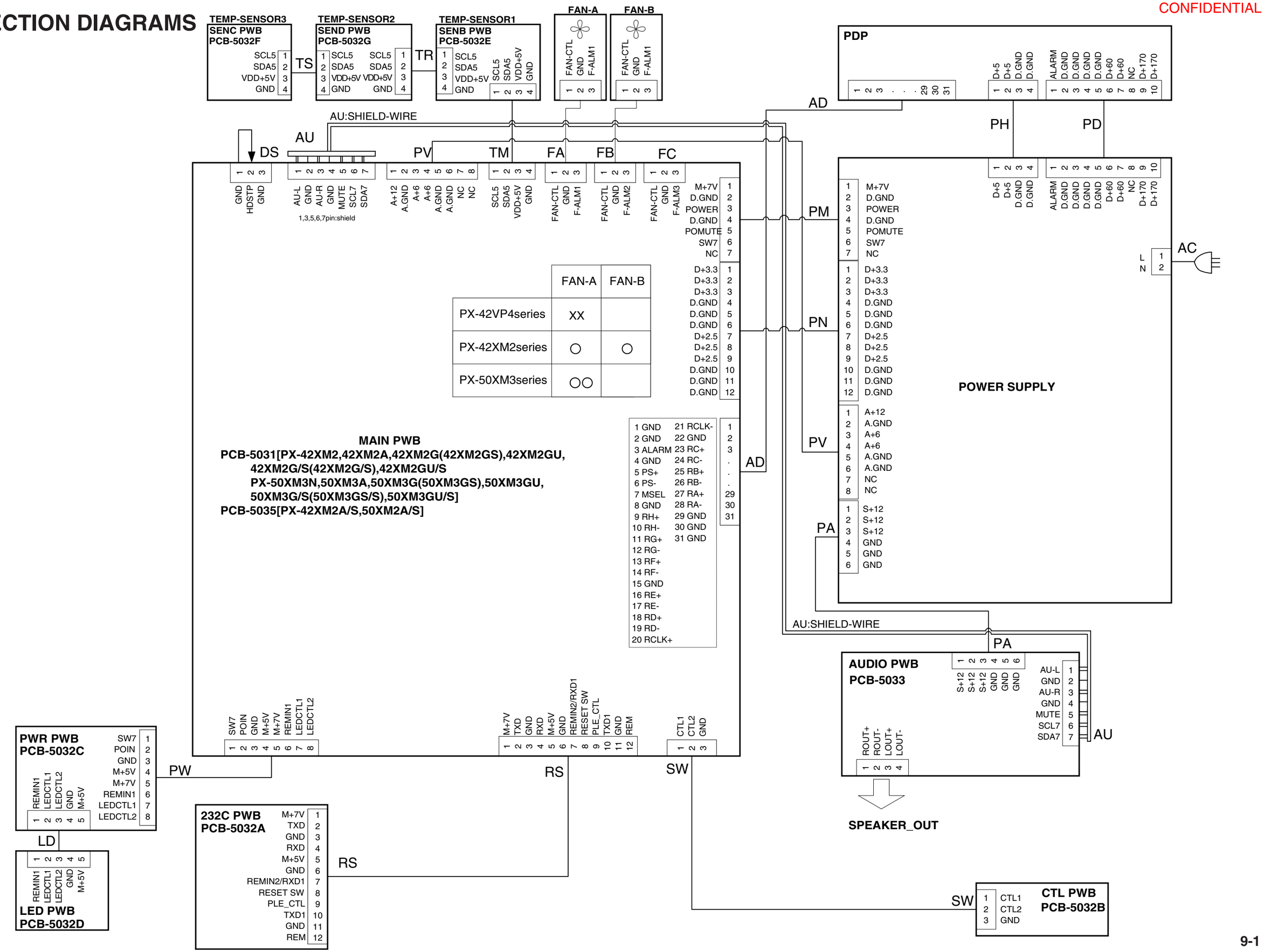
PC mode	89	90	91	92	93
Signal name	NOT USED	480i(60Hz)	DTV(480P)	DTV(480P)	DTV(720P)
Definition		720*480Hz	640*480Hz	720*480Hz	1280*720Hz
Dot clock frequency (MHz)		27.000	25.175	27.000	74.250
H frequency (kHz)		15.734	31.469	31.469	45.000
V frequency (Hz)		59.94	59.940	59.94	60.000
H total (uS)		16.555	31.777	31.777	22.222
(dots)		1716	800	858	1650
H display period (uS)		53.333	25.422	26.666	17.239
(dots)		1440	640	720	1280
H front porch (uS)		1.407	0.635	0.592	1.481
(dots)		38	16	16	10
H sync pulse width (uS)		4.593	3.813	2.296	0.538
(dots)		124	96	62	40
H back porch (uS)		4.222	1.906	2.222	2.963
(dots)		114	48	60	220
V total (mS)		16.635	16.683	19.444	10.101
(line)		262	525	525	750
V display period (mS)		15.253	15.253	15.253	16.000
(line)		240	480	480	720
V front porch (mS)		0.254	0.317	0.333	0.067
(line)		4	10	9	5
V sync pulse width (mS)		0.191	0.064	0.191	0.111
(line)		3	2	6	5
V back porch (mS)		0.953	1.049	0.953	0.444
(line)		15	33	30	20
H sync polarity		Neg	Neg	Neg	Pos
V sync polarity		Neg	Neg	Neg	Pos
Scan type		Interlaced	Non Interlaced	Non Interlaced	Non Interlaced
Remarks		HDCP *	HDCP	HDCP	HDCP

* HDCP : High-bandwidth Digital Content Protection

PC mode	94	95	96	97	98
Signal name	HDTV-W				
Definition	1920*1080Hz				
Dot clock frequency (MHz)	74.250				
H frequency (kHz)	33.750				
V frequency (Hz)	60.000				
H total (uS)	29.629				
(dots)	2200				
H display period (uS)	25.859				
(dots)	1920				
H front porch (uS)	1.185				
(dots)	88				
H sync pulse width (uS)	0.592				
(dots)	44		NOT USED		
H back porch (uS)	1.993				
(dots)	148				
V total (mS)	7.582				
(line)	563				
V display period (mS)	16.000				
(line)	540				
V front porch (mS)	0.040				
(line)	3				
V sync pulse width (mS)	0.148				
(line)	5				
V back porch (mS)	0.444				
(line)	15				
H sync polarity	Pos				
V sync polarity	Pos				
Scan type	Interlaced				
Remarks	HDCP				

* HDCP : High-bandwidth Digital Content Protection

CONNECTION DIAGRAMS



CONNECTOR PIN EXPLANATION

PX-42VP4/PX-42XM2/PX-50XM3 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.

Ver. 1

Name PN	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					
PM	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	–	–
PV	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	NC	Non-connection terminal	–	–	–	–	–	–	–	–
DS	1	A+12V	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	No-connection terminal	–	–	–	–	–	–	–	–
	8	NC	No-connection terminal	–	–	–	–	–	–	–	–
AU	1	GND	GND	0	0	0	0	0	0	–	–
	2	HDSTP	Video mute control for chroma signals	0	0V when the DS connector is connected; High-Z when it is not connected (Video mute)	0V when the DS connector is connected; High-Z when it is not connected (Video mute)	0V when the DS connector is connected; High-Z when it is not connected (Video mute)	0V when the DS connector is connected; High-Z when it is not connected (Video mute)	0	–	–
	3	GND	GND	0	0	0	0	0	0	–	–
RS	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→0	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.	0	1 1	0	–	MAIN→AUDIO
	1	M+7V	7V power supply for microcomputer	6.8	6.8	6.8	6.8	6.8	6.8	–	MAIN→RS232C
	2	TXD	RS232 driver output	5	5	5	5	5	5	–	MAIN→RS232C
	3	GND	GND	0	0	0	0	0	0	–	–
	4	RXD	RS232 receiver input	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.	0	0	–	RS232C→MAIN
	5	M+5V	5V power supply for microcomputer	0	5	5	5	5	0	–	MAIN→RS232C
	6	GND	GND	0	0	0	0	0	0	–	–
	7	REMIN2/RXD1	Data signal of wired remote control	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.	0	0	–	RS232C→MAIN

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					
	8	RESET SW	NC	–	–	–	–	–	–	–	–
	9	PLE_CTL	PLE control	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.	0	0	–	MAIN→RS232C
	10	TXD1	RS232 driver output	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.	0	0	–	MAIN→RS232C
	11	GND	GND	0	0	0	0	0	0	–	–
	12	REM	Insertion detection for wired remote control input	0	5V when the wired remote control is connected; 0V when no wired remote control is connected.	5V when the wired remote control is connected; 0V when no wired remote control is connected.	5V when the wired remote control is connected; 0V when no wired remote control is connected.	0	0	–	RS232C→MAIN
TM	1	SCL5	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.	Clock signal (5Vac) when data are received; 5Vdc when no data are received.	0	0	–	MAIN→SENB
	2	SDA5	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.	Clock signal (5Vac) when data are received; 5Vdc when no data are received.	0	0	–	MAIN←→SENB
	3	VDD+5V	5V power supply for analog signals	0	5	5	0	0	0	–	MAIN→SENB
	4	GND	GND	0	0	0	0	0	0	–	–
TR	1	SCL5	I2C bus clock for temperature sensors	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.	0	0	–	SENB←→SEND
	2	SDA5	I2C bus data for temperature sensors	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.	0	0	–	SENB←→SEND
	3	VDD+5V	5V power supply for analog signals	0	5	5	0	0	0	–	SENB→SEND
	4	GND	GND	0	0	0	0	0	0	0	–
TS	1	SCL5	I2C bus clock for temperature sensors	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.	0	0	–	SEND←→SENC
	2	SDA5	I2C bus data for temperature sensors	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.	0	0	–	SEND←→SENDC
	3	VDD+5V	5V power supply for analog signals	0	5	5	0	0	0	–	SEND→SENC
	4	GND	GND	0	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					
FA	1	FAN-CTL	Voltage-controllable power supply	PX-42VP4	–	–	–	–	–	–	–	–
				PX-42XM2 PX-50XM3	0	[PX-42XM2] 9.3Vdc during high-speed revolution (Fan mode H); 6.0Vdc during low-speed revolution (Fan mode L); 0V while the fan is stopped (Fan mode OFF) [PX-50XM3] 9.3Vdc during high-speed revolution (Fan mode H); 7.6Vdc during medium-speed revolution (Fan mode L); 5.3Vdc during low-speed revolution (Fan mode OFF).	[PX-42XM2] 9.3Vdc during high-speed revolution (Fan mode H); 6.0Vdc during low-speed revolution (Fan mode L); 0V while the fan is stopped (Fan mode OFF) [PX-50XM3] 9.3Vdc during high-speed revolution (Fan mode H); 7.6Vdc during medium-speed revolution (Fan mode L); 5.3Vdc during low-speed revolution (Fan mode OFF).	0	0	0	–	MAIN→FAN
	2	GND	GND		0	0	0	0	0	0	–	–
	3	ALARM	Fan lock detect signal output	PX-42VP4	–	–	–	–	–	–	–	–
				PX-42XM2 PX-50XM3	0	0V during normal fan operation; 5V while the fan is stopped.	0V during normal fan operation; 5V while the fan is stopped.	0	0	0	–	FAN→MAIN
FB	1	FAN-CTL	Voltage-controllable power supply	PX-42VP4	–	–	–	–	–	–	–	–
				PX-42XM2 PX-50XM3	0	[PX-42XM2] 9.3Vdc during high-speed revolution (Fan mode H); 6.0Vdc during low-speed revolution (Fan mode L); 0V while the fan is stopped (Fan mode OFF) [PX-50XM3] 9.3Vdc during high-speed revolution (Fan mode H); 7.6Vdc during medium-speed revolution (Fan mode L); 5.3Vdc during low-speed revolution (Fan mode OFF).	[PX-42XM2] 9.3Vdc during high-speed revolution (Fan mode H); 6.0Vdc during low-speed revolution (Fan mode L); 0V while the fan is stopped (Fan mode OFF) [PX-50XM3] 9.3Vdc during high-speed revolution (Fan mode H); 7.6Vdc during medium-speed revolution (Fan mode L); 5.3Vdc during low-speed revolution (Fan mode OFF).	0	0	0	–	MAIN→FAN
	2	GND	GND		0	0	0	0	0	0	–	–
	3	ALARM	Fan lock detect signal output	PX-42VP4	–	–	–	–	–	–	–	–
				PX-42XM2 PX-50XM3	0	0V during normal fan operation; 5V while the fan is stopped.	0V during normal fan operation; 5V while the fan is stopped.	0	0	0	–	FAN→MAIN
FC (not used)	1	VCC 0-9V	Voltage-controllable power supply		–	–	–	–	–	–	–	MAIN→FAN
	2	GND	GND		–	–	–	–	–	–	–0	–
	3	ALARM	Fan lock detect signal output		–	–	–	–	–	–	–	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 1.41Vdc	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 data LVDS serial differential E+ output 0Vac; Bias 1.1Vdc	Video data LVDS serial differential E+ output 0Vac; Bias 1.1Vdc *Only for the PX-42VP4V Series, 0.3Vac and bias 1.25 Vdc in theater mode when 60Hz motion pictures are displayed.	0	0	0	–	MAIN→PDP
	17	RE–	Video system output E–	0	Video data LVDS serial differential E– output 0Vac; Bias 1.4Vdc	Video data LVDS serial differential E– output 0.3Vac; Bias 1.25Vdc *Only for the PX-42VP4V Series, 0.3Vac and bias 1.25 Vdc in theater mode when 60Hz motion pictures are displayed.	0	0	0	–	MAIN→PDP
	18	RD+	Video system output D+	0	Video data LVDS serial differentialD+ output 0Vac; Bias 1.1Vdc	Video data LVDS serial differential D+ output 0.3Vac; Bias 1.25Vdc	0	0	0	–	MAIN→PDP
	19	RD–	Video system output D–	0	Video data LVDS serial differential D– output 0Vac; Bias 1.4Vdc	Video data LVDS serial differential D– output 0.3Vac; Bias 1.25Vdc	0	0	0	–	MAIN→PDP

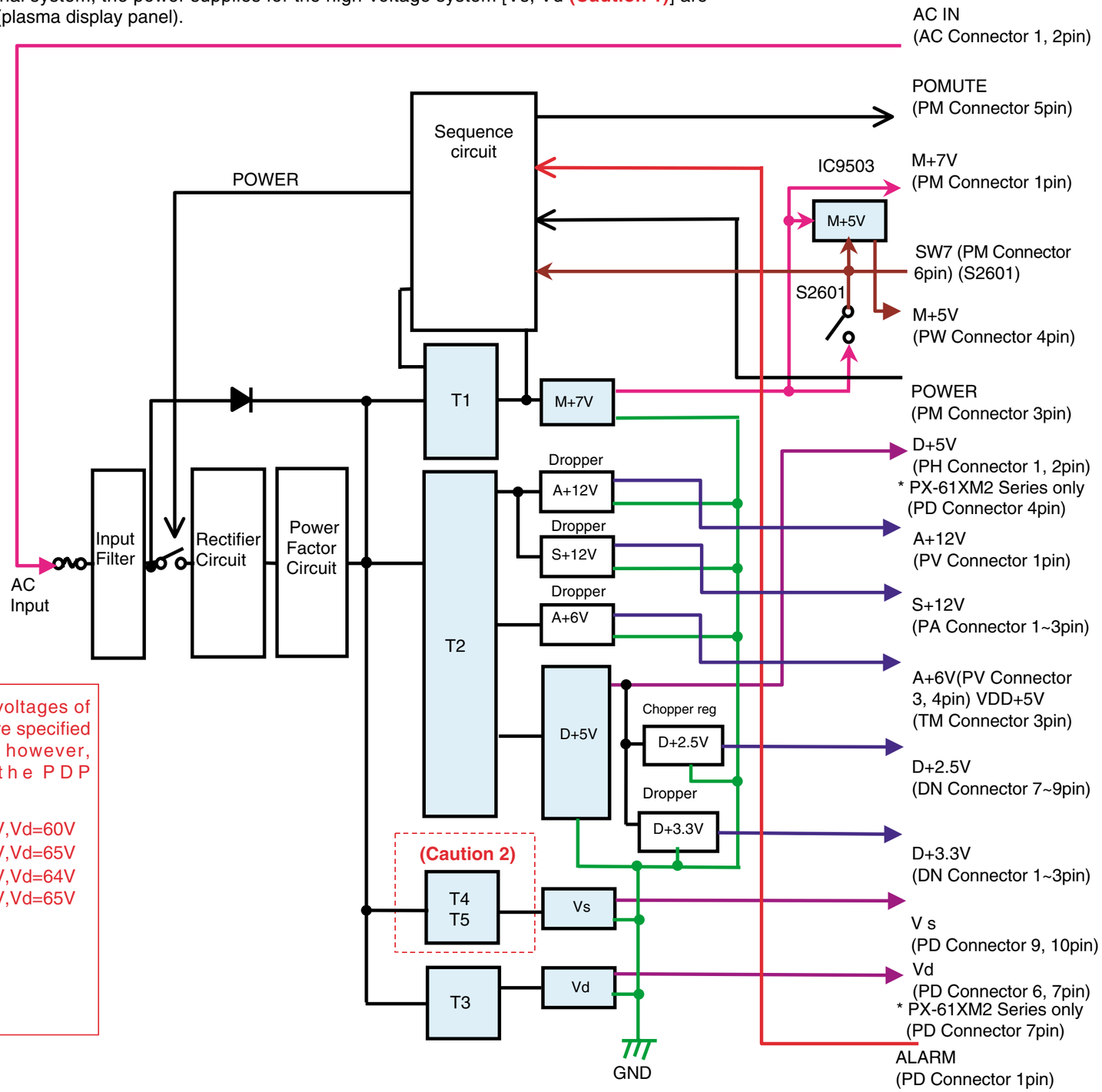
Name	Pin No.	Pin name	Function	Basic operation (Numerical unit: Vdc; except for the case when units are individually indicated)							Signal direction
				AC power ON (Power cord connected to the wall outlet) ★★	Main power ON (POWER button ON) ★		Power management ★★★	Standby ★★★	Main power OFF ★★	AC 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 differentia C– output 0.3Vac; Bias 1.25Vdc	Video data LVDS serial differential C– output 0.3Vac; Bias 1.25Vdc	0	0	0	–	MAIN→PDP
	235	RB+	Video system output B+	0	Video data LVDS serial differential B+ output 0Vac; Bias 1.1Vdc	Video data LVDS serial differential B+ output 0.3Vac; Bias 1.25Vdc	0	0	0	–	MAIN→PDP
	26	RB–	Video system output B–	0	Video data LVDS serial differentia 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 differentia 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.	0	0	–	LED→PWR
	2	LEDCTL1	Standby LED control	0	0	0	5	5	0	–	PWR→LED
	3	LEDCTL2	Standby LED control	5	5	5	5	0	5	–	PWR→LED
	4	GND	GND	0	0	0	0	0	0	–	–
	5	M+5V	5V power supply for microcomputer	0	5	5	5	0	0	–	PWR→LED
PW	1	SW7	Power start control	0	6.8	6.8	0	0	0	–	PW→MAIN
	2	POIN	Power start detection	0	5	5	5	5	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.	0	0	–	PW→MAIN
	7	LEDCTL1	Standby red LED control	0	0	0	5	5	0	–	MAIN→PW
	8	LEDCTL2	Standby green LED control	0	5	5	5	0	0	–	MAIN→PW
SW	1	CTL1	Key input detection	0	1~4.2Vdc when key inputs are entered; 5Vdc when no key inputs are entered.	1~4.2Vdc when key inputs are entered; 5Vdc when no key inputs are entered.	1~4.2Vdc when key inputs are entered; 5Vdc when no key inputs are entered.	0	0	–	SW→MAIN
	2	CTL2	Key input detection	0	1~4.2Vdc when key inputs are entered; 5Vdc when no key inputs are entered.	1~4.2Vdc when key inputs are entered; 5Vdc when no key inputs are entered.	1~4.2Vdc when key inputs are entered; 5Vdc when no key inputs are entered.	0	0	–	SW→MAIN
	3	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					
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	–	–
	5	GND	GND	0	0	0	0	0	0	–	–
	6	GND	GND	0	0	0	0	0	0	–	–
PD	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.GND	GND	0	0	0	0	0	0	–	–
	5	D.GND	GND	0	0	0	0	0	0	–	–
	6	D+60	Vd power supply for PDP digital circuits	0	60Vdc (changeable according to the PDP)	60Vdc (changeable according to the PDP)	0	0	0	–	PDWER→PDP
	7	D+60	Vd power supply for PDP digital circuits	0	60Vdc (changeable according to the PDP)	60Vdc (changeable according to the PDP)	0	0	0	–	PDWER→PDP
	8	NC	Non-connection terminal	–	–	–	–	–	–	–	–
	9	D+170	Vs power supply for PDP high-voltage circuits	0	170Vdc (changeable according to the PDP)	170Vdc (changeable according to the PDP)	0	0	0	–	PDWER→PDP
	10	D+170	Vs power supply for PDP high-voltage circuits	0	170Vdc (changeable according to the PDP)	170Vdc (changeable according to the PDP)	0	0	0	–	PDWER→PDP
PH	1	D+5	5V power supply for digital circuits	0	5.15	5.15	0	0	0	–	PDWER→PDP
	2	D+5	5V power supply for digital circuits	0	5.15	5.15	0	0	0	–	PDWER→PDP
	3	D.GND	GND	0	0	0	0	0	0	–	–
	4	D.GND	GND	0	0	0	0	0	0	–	–

BLOCK DIAGRAMS

■Power supply

When the power cord is connected to a wall outlet, M+7V (7Vdc) begins to be fed to IC9503 (M+5V) from Pin①of the PM connector. When the main power switch (S2601) is turned on, IC9503 is turned on by means of SW7 (M+7V) and M+5V (5Vdc) is fed to the CPU (IC9501). With the power supply of M+5V, the CPU feeds the POWER signal [H] to the power unit from Pin③of the PM connector. As a result, power supplies of the signal system (D+5V, D+3.3V, D+2.5V, A+12V, A+6V, S+12V) are turned on so that power can be fed to the respective circuits of the signal system. After the power has been fed to the signal system, the power supplies for the high-voltage system [Vs, Vd **(Caution 1)**] are generated and fed to the PDP (plasma display panel).



(Caution 1) The standard voltages of Vd and Vs for each model are specified below. These values can, however, differ according to the PDP specifications.

PX-42VP4 Series Vs=170V,Vd=60V
PX-42XM2 Series Vs=190V,Vd=65V
PX-50XM3 Series Vs=195V,Vd=64V
PX-61XM2 Series Vs=175V,Vd=65V

(Caution 2)
PX-42VP4 Series T4
PX-42XM2 Series T4
PX-50XM3 Series T4/5
PX-61XM2 Series T4/5

ANALOG BLOCK DIAGRAM

CONFIDENTIAL

Analog video signal
Digital video signal
Single Line
Two or more Lines

M5001
VIDEO 1 [BNC]
VIDEO 2 [PHONO]
VIDEO 3 [S-Video]
Loop out
Amp.& Buff
From CPU THRU_ON
Y IN
C IN
M5002
M5003
DVD1/HD1 (DVD) [PHONO]
YUV
M5006
AUDIO 1 [PHONO] L R
M5007
AUDIO 2 [PHONO] L R
M5008
AUDIO 3 [PHONO] L R
M5004
RGB1 (PC1) [Min_D-sub 15pin]
VD(PC1)
VD(PC2)
Loop out
SEL IC5170 SN74AHC2 G66
HD(PC1)
Reform IC5005 OPA2356
VD2(PC2)
M5005
RGB2/DVD2/HD2 (PC2) [BNC]
RGB/YUV (PC2)
VD(PC1)
HD(PC2)
Reform IC5004 BA10393
M7001
VD2(PC2)
RGB3 (PC3) [DVI-D]
DVI signal

From IC5708 V_SW_1/2 V_SW_3
Video SEL (6dB amp. Out) IC5001 MM1118
FL5001 LPF 6MHz
FL5150 LPF 6MHz
From CPU AUSEL1 AUSEL2
Audio SEL IC5403,IC5404 MM1113
AUDIO 1-3
From CPU PNPWE
PNP IC5003 24LCS21AT /SN
VD SCL,SDA
RL5001,5002
RGB/YUV(PC1)
RGB/YUV(PC2)
THRU_ON From CPU
AMP IC5401 AD8013
From IC5708 From CPU HD1_ON PS_SW
DVD/PC2 SELECT Switch IC5701 M61323
YUV(DVD)
RGB/YUV (PC2)
Sync on Green/Y
RGB/YUV(PC1)
DVD/PC1/PC2 SELECT Switch IC5702 M61323

Video proccesor IC6001 UPD64011
VIDEO 1,3 IN
VIDEO2 IN
DVD2 IN
DVD1 IN
Scart_HV
DVD_Y
SDA3, SCL3
MEMORY IC6002 K4S16122D
Picture& sync cont. IC5708 M62320
V_SW_1/2
V_SW_3
PC1
PC2/HD2
PC3
HD1_ON
PC1/2ON
SOG_HD_ON
SCL4, SDA4
To/from CPU

From CPU SCL7, SDA7,SMUTE
Selected L/R
"AU"
AUDIO PWB
Audio controller IC3002 BD3869
Audio amplifire IC3003 TA2024
SPEAKER TERMINAL
MAIN PWB(1/2)

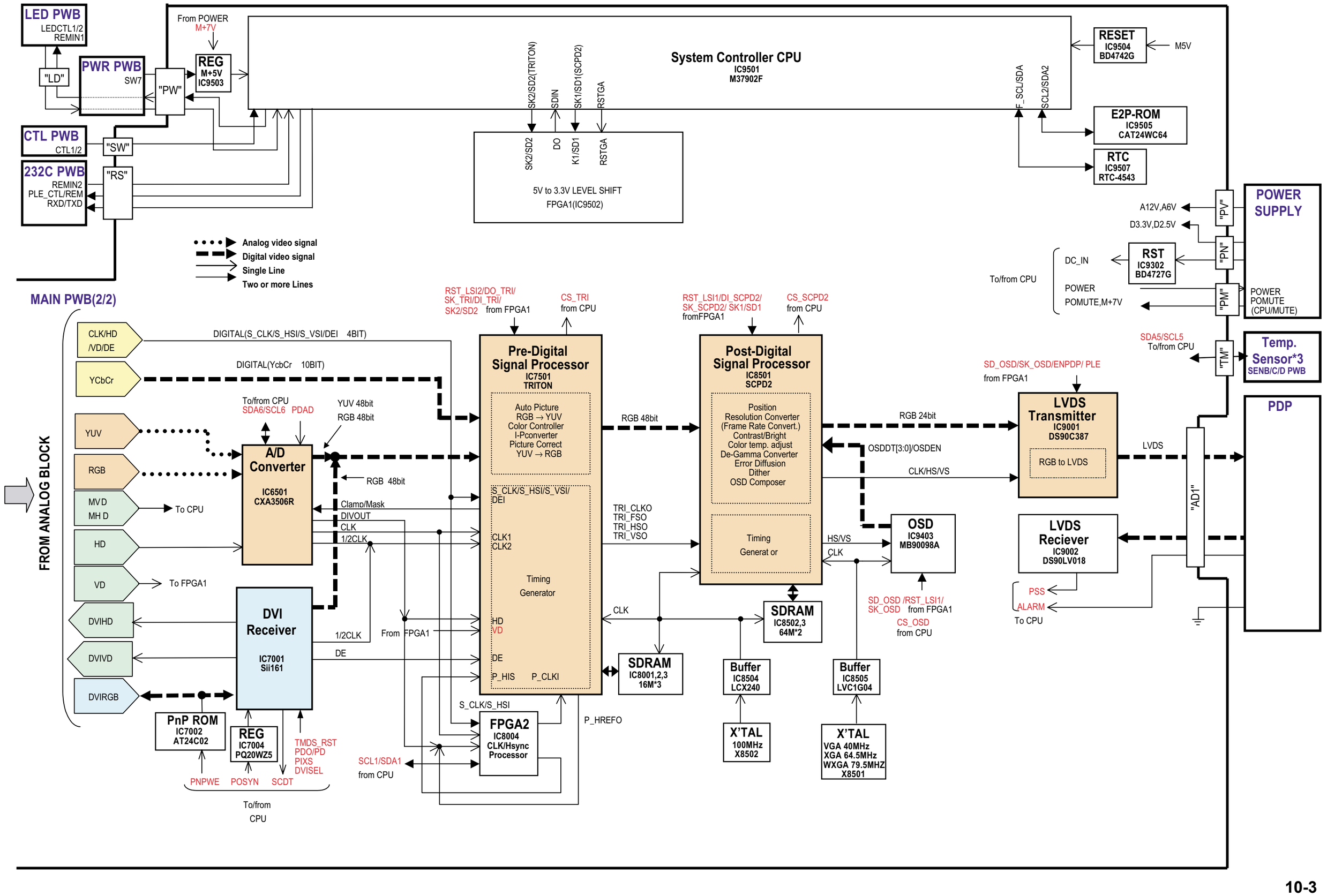
DIGITAL (S_CLK/S-HSI/S-VSI/DEI 4 Bit)
CLK/HD /VD/DE
DIGITAL(YCbCr 10 Bit)
YCbCr

From IC5708 PC1 PS SW
From CPU
RGB/HD/DTV/DVD
AMP IC5703 AD8013
DTV/HD
FL6501-6503
LPF 18MHz
LPF 8MHz
RGB/DVD
From CPU 8M 18M
SELECT Switch IC6504-6506 SN74AHC2G66
YUV
FL6504-6506
23MHz Filter sw 23MHz
23M From CPU
RGB
PC/720P
Q6507
Q6509
Q6511
720P
DIGITAL (S-HSI/S-VSI) [HD/VD]
MSYNCTL From CPU
VIDEO/RGB/ YUV sync. select IC5710 SN74HC153
MVD
MHD
HD
From CPU SYNCTL
VIDEO/RGB/ YUV sync. select IC5711 74ACTQ153
VD
DVIHD
DVIVD
DVIRGB

From IC5708 PC1/2_ON
HD/VD Select Switch IC5706 SN74AHC 2G66
VD
HD
VD(PC3)
HD(PC3)
From IC5708 SOG_HD_ON
VD Select Switch IC5707 SN74AHC 2G66
Sync on Green/Y
From IC5708 PC2/HD2 PC3 PC1
HD Select Switch IC5705 SN74AHC 2G66
Sync. Sep. IC5712 BA7078
VSIN
VIN
HSIN
HD / VD
PCH_POL
PCH_STATE
PCV_STATE
PCV_POL
To CPU

TO DIGITAL BLOCK

DIGITAL BLOCK DIAGRAM



DIGITAL BLOCK DIAGRAM (HDCP)

LED PWB
LEDCTL1/2
REMIN1

"LD"

PWR PWB
SW7

"PW"

From POWER
M+7V

REG
M+5V
IC9503

CTL PWB
CTL1/2

"SW"

232C PWB
REMIN2
PLE_CTL/REM
RXD/TXD

"RS"

Analog video signal
Digital video signal
Single Line
Two or more Lines

System Controller CPU
IC9501
M37902F

SK2/SD2(TRITON)
SDIN
SK1/SD1(SCPD2)
RSTGA

SK2/SD2
DO
K1/SD1
RSTGA

5V to 3.3V LEVEL SHIFT
FPGA1(IC9502)

F_SCL/SDA
SCL2/SDA2

RESET
IC9504
BD4742G

M5

E2P-ROM
IC9505
CAT24WC64

RTC
IC9507
RTC-4543

"PV"
"PN"
"PM"

POWER SUPPLY

A12V,A6V
D3.3V,D2.5V

RST
IC9302
BD4727G

DC_IN
To/from CPU
POWER
POMUTE,M+7V

POWER
POMUTE
(CPU/MUTE)

SDA5/SCL5
To/from CPU

"TM"

Temp. Sensor*3
SENB/C/D PWB

PDP

SD_OSD/SK_OSD/ENPDP/ PLE
from FPGA1

LVDS
Transmitter
IC9001
DS90C387
RGB to LVDS

RGB24bit
OSDDT[3:0]/OSDEN
CLK/HS/VS
LVDS

"AD1"

LVDS
Reciever
IC9002
DS90LV018

PSS
ALARM
To CPU

OSD
IC9403
MB90098A

HS/VS
CLK

SD_OSD /RST_LSI1/
SK_OSD from FPGA1
CS_OSD
from CPU

MAIN PWB(2/2)

FROM ANALOG BLOCK

CLK/HD
/VD/DE

DIGITAL(S_CLK/S_HSI/S_VSI/DEI 4BIT)

YCbCr

DIGITAL(YcbCr 10BIT)

To/from CPU
SDA6/SCL6 PDAD

YUV 48bit
RGB 48bit

YUV

RGB

A/D
Converter
IC6501
CXA3506R

RGB 48bit

MVD
MHD

To CPU

HD

VD

To FPGA1

Clamp/Mask
DIVOUT
CLK
1/2CLK

DVIHD
DVIVD
DVIRGB

DVI
Receiver
IC7001
Sii161

1/2CLK
From FPGA1
DE

RST_LSI2/DO_TRI/
SK_TRI/DI_TRI/
SK2/SD2 from FPGA1

CS_TRI
from CPU

Pre-Digital Signal Processor
IC7501
TRITON

Au to Picture
RGBÆYUV
Color Controller
I-P converter
Picture Correct
YUVÆRGB

S_CLK/S_HSI/S_VSI/
DEI
HD
CLK1
CLK2

Timing
Generator

VD
DE
P_HREFO
P_CLKI
P_HIS

RGB 48bit

TRI_CLKO
TRI_FSO
TRI_HSO
TRI_VSO

CLK

RST_LSI1/DI_SCPD2/
SK_SCPD2/ SK1/SD1
fromFPGA1

CS_SCPD2
from CPU

Post-Digital Signal Processor
IC8501
SCPD2

Position
Resolution Converter
(Frame Rate Convert.)
Contrast/Bright
Color temp. adjust
De-Gamma Converter
Error Diffusion
Dither
OSD Composer

Timing
Generator

SDRAM
IC8502,3
64M*2

SDRAM
IC8001,2,3
16M*3

Buffer
IC8504
LCX240

X'TAL
100MHz
X8502

Buffer
IC8505
LVC1G04

X'TAL
VGA 40MHz
XGA 64.5MHz
WXGA79.5MHz
X8501

Inverter
IC7504
LCX240

PLL
IC7502
CLK/Hsync
Processor

SCL1/SDA1
from CPU

SEL
IC7005
SN74AHC
2G66

REG
IC7004
PQ20WZ5

TMDS_RST
PDO/PD
PIXS
DVISEL

POSYN SCDT

To/from
CPU

PnP ROM
(PC)
IC7002
24C02

PnP ROM
(STB/DVD)
IC7006
24C02

PNPWE EDID_SEL
from CPU