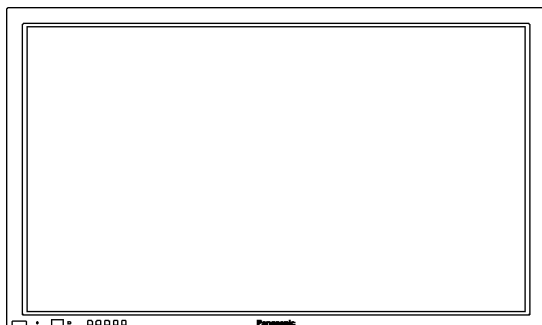


Service Manual

High Definition Plasma Display



TH-42PHW6EX
TH-42PHD6EX
TH-42PHD6BX
TH-42PHD6UY

GPH6D Chassis

Specifications

Power Source: AC120V 50/60Hz (UY version)
 AC220-240V 50/60Hz
 (Except UY version model)

Power Consumption: 265 W
 Save off 1.6 W, Save on 0.9 W (stand-by condition)
 (UY version)
 Save off 1.9 W, Save on 1.1 W (stand-by condition)
 (Except UY version model)
 0.2 W (Power off condition)
 (UY version model)
 0.4 W (Power off condition)
 (Except UY version model)

Plasma Display panel: Drive method AC type

16:9 aspect ratio

Contrast Ratio 3000:1

Screen size: 920 mm (W) × 518 mm (H)
 1,056 mm (diagonal)
 No. of pixels
 786,432 (1,024 (W) × 768 (H))
 [3,072 × 768 dots]

Operating condition:

Temperature 34 °F - 104 °F (0 °C - 40 °C)

Humidity 20 % - 80 %

Horizontal scanning frequency 15 - 110kHz

Vertical scanning frequency 48 - 120Hz

Connection terminals:

AV

Video in 1.0 Vp-p (75-ohm)
 S-VIDEO IN Y: 1 Vp-p (75-ohm), C: 0.286 Vp-p (75-ohm)
 (MINI DIN 4PIN)
 AUDIO IN 0.5 Vrms (high impedance)
 (RCA PIN JACK × 2)

COMPONENT/RGB

Y/G 1.0 Vp-p/composite (75-ohm)
 0.7 Vp-p/non-composite (75-ohm)
 P_B/B 0.7 Vp-p (75-ohm)
 P_R/R 0.7 Vp-p (75-ohm)
 HD 1.0 - 5.0 Vp-p (high impedance)
 VD 1.0 - 5.0 Vp-p (high impedance)
 AUDIO IN 0.5 Vrms (high impedance)
 (RCA PIN JACK×2)

PC

(HIGH-DENSITY R,G,B/0.7 Vp-p (75-ohm)
 D-SUB15PIN)
 HD, VD/1.0 - 5.0 Vp-p (high impedance)
 AUDIO IN (M3 JACK) 0.5Vrms (high impedance)

SERIAL

EXTERNAL CONTROL RS-232C COMPATIBLE
 TERMINAL (D-SUB9PIN)

SPEAKERS (External speakers) (6Ω) 16W [8W+8W] (10% THD)

Dimensions (W×H×D): 1,020 mm × 610 mm 89 mm

Weight (Mass) approx. 29.5 kg net (main unit only)
 approx. 33.7 kg net (with speakers)

Panasonic®

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WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

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1 Applicable signals

VIDEO input

	signal name	horizontal frequency(kHz)	vertical frequency(Hz)
1	NTSC	15.734	59.95
2	PAL	15.625	50
3	PAL60	15.734	59.95
4	SECAM	15.625	50
5	Modified NTSC	15.734	59.95

*** Mark:**
By installing the optional
Terminal Board.

Applicable input signals for PC Input (D-sub 15P) (* Mark)

	signal name	horizontal frequency(kHz)	vertical frequency(Hz)	RGB	PC	when Multi Screen and Digital Zoom
1	525(480)/60i	15.73	59.94	*	*	*
2	525(480)/60p	31.47	59.94	*	*	*
3	625(575)/50i	15.63	50.00	*	*	*
4	625(575)/50p	31.25	50.00	*	*	*
5	750(720)/60p	45.00	60.00	*	*	*
6	750(720)/50p	37.50	50.00	*	*	*
7	1,125(1,080)/60i	33.75	59.94	*	*	*
8	1,125(1,080)/50i	28.13	50.00	*	*	*
9	1,125(1,080)/24p	27.00	24.00	*	*	
10	1,125(1,080)/24sF	27.00	48.00	*	*	*
11	1,250(1,080)/50i	31.25	50.00	*	*	*
12	640 × 400@70 Hz	31.47	70.00		*	*
13	640 × 480@60 Hz	31.47	59.94		*	*
14	Macintosh13"(640 × 480)	35.00	66.67		*	*
15	640 × 480@75 Hz	37.50	75.00		*	*
16	852 × 480@60 Hz	31.50	60.00		*	*
17	800 × 600@60 Hz	37.88	60.32		*	*
18	800 × 600@75 Hz	46.88	75.00		*	*
19	800 × 600@85 Hz	53.67	85.06		*	*
20	Macintosh16"(832 × 624)	49.73	74.55		*	*
21	1,024 × 768@60 Hz	48.36	60.00		*	*
22	1,024 × 768@70 Hz	56.48	70.07		*	*
23	1,024 × 768@75 Hz	60.02	75.03		*	*
24	1,024 × 768@85 Hz	68.68	85.00		*	*
25	Macintosh21"(1,152 × 870)	68.68	75.06		*	
26	1,280 × 1,024@60 Hz	63.98	60.02		*	
27	1,280 × 1,024@75 Hz	79.98	75.03		*	
28	1,280 × 1,024@85 Hz	91.15	85.02		*	
29	1,600 × 1,200@60 Hz	75.00	60.00		*	
30	1,0660 × 600@60 Hz	37.88	60.32		*	*
31	1,366 × 768@60 Hz	48.36	60.00		*	*

2 Safety Precautions

2.1. General Guidelines

1. When servicing, observe the original lead dress. If a short circuit is found, replace all parts which have been overheated or damaged by the short circuit.
2. After servicing, see to it that all the protective devices such as insulation barriers, insulation papers shields are properly installed.
3. After servicing, make the following leakage current checks to prevent the customer from being exposed to shock hazards.

2.1.1. Leakage Current Cold Check

1. Unplug the AC cord and connect a jumper between the two prongs on the plug.
2. Measure the resistance value, with an ohmmeter, between the jumpered AC plug and each exposed metallic cabinet part on the equipment such as screwheads, connectors, control shafts, etc. When the exposed metallic part has a return path to the chassis, the reading should be between $1M\Omega$ and $5.2M\Omega$.

When the exposed metal does not have a return path to the chassis, the reading must be ∞ .

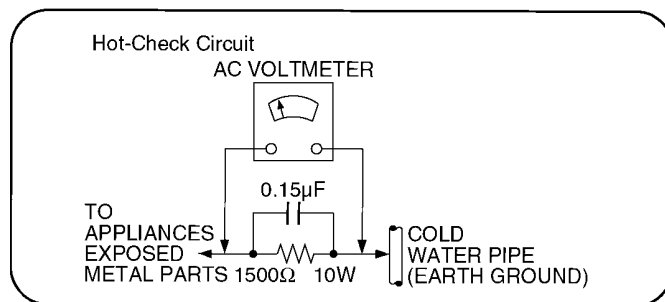


Figure 1

2.1.2. Leakage Current Hot Check (See Figure 1.)

1. Plug the AC cord directly into the AC outlet. Do not use an isolation transformer for this check.
2. Connect a 1.5kΩ, 10 watts resistor, in parallel with a 0.15µF capacitors, between each exposed metallic part on the set and a good earth ground such as a water pipe, as shown in Figure 1.
3. Use an AC voltmeter, with 1000 ohms/volt or more sensitivity, to measure the potential across the resistor.
4. Check each exposed metallic part, and measure the voltage at each point.
5. Reverse the AC plug in the AC outlet and repeat each of the above measurements.
6. The potential at any point should not exceed 0.75 volts RMS. A leakage current tester (Simpson Model 229 or equivalent) may be used to make the hot checks, leakage current must not exceed 1/2 milliamp. In case a measurement is outside of the limits specified, there is a possibility of a shock hazard, and the equipment should be repaired and rechecked before it is returned to the customer.

3 Prevention of Electro Static Discharge (ESD) to Electrostatically Sensitive (ES) Devices

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive (ES) Devices. Examples of typical ES devices are integrated circuits and some field-effect transistors and semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by electro static discharge (ESD).


1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any ESD on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging ESD wrist strap, which should be removed for potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an anti-static solder removal device. Some solder removal devices not classified as "anti-static (ESD protected)" can generate electrical charge sufficient to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material).
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

Caution

Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity (ESD) sufficient to damage an ES device).

IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are marked by  in the schematic diagrams, Exploded Views and replacement parts list. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire, or other hazards. Do not modify the original design without permission of manufacturer.

4 About lead free solder (PbF)

Note: Lead is listed as (Pb) in the periodic table of elements.

In the information below, Pb will refer to Lead solder, and PbF will refer to Lead Free Solder.

The Lead Free Solder used in our manufacturing process and discussed below is (Sn+Ag+Cu).

That is Tin (Sn), Silver (Ag) and Copper (Cu) although other types are available.

This model uses Pb Free solder in it's manufacture due to environmental conservation issues. For service and repair work, we'd suggest the use of Pb free solder as well, although Pb solder may be used.

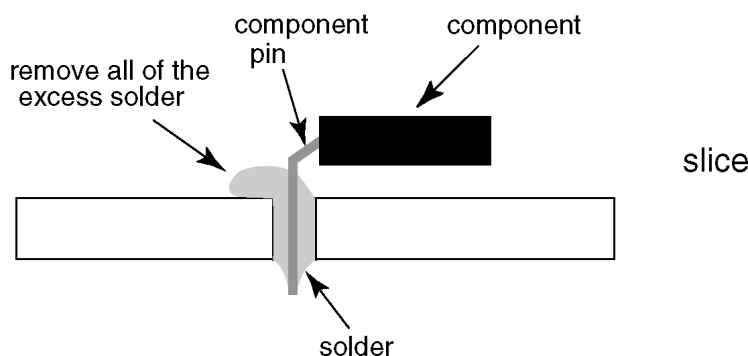
PCBs manufactured using lead free solder will have the PbF within a leaf Symbol  stamped on the back of PCB.

Caution

- Pb free solder has a higher melting point than standard solder. Typically the melting point is 50 ~ 70 °F (30~40 °C) higher. Please use a high temperature soldering iron and set it to 700 ± 20 °F (370 ± 10 °C).
- Pb free solder will tend to splash when heated too high (about 1100 °F or 600 °C).

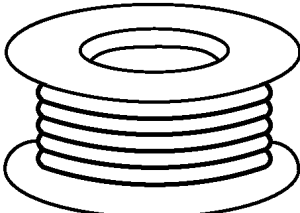
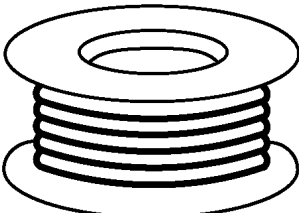
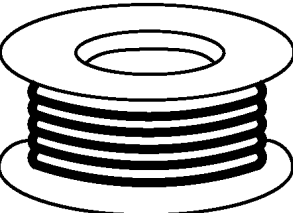
If you must use Pb solder, please completely remove all of the Pb free solder on the pins or solder area before applying Pb solder. If this is not practical, be sure to heat the Pb free solder until it melts, before applying Pb solder.

- After applying PbF solder to double layered boards, please check the component side for excess solder which may flow onto the opposite side. (see figure below)



Suggested Pb free solder

There are several kinds of Pb free solder available for purchase. This product uses Sn+Ag+Cu (tin, silver, copper) solder. However, Sn+Cu (tin, copper), Sn+Zn+Bi (tin, zinc, bismuth) solder can also be used.

0.3mm X 100g	0.6mm X 100g	1.0mm X 100g
		

5 PCB Structure sheet of GPH6D chassis

Board Name	Function	Remarks
D	Digital Signal Processor	1
J	Slot Interface & SYNC processor	1
Z	Audio out, DC-DC converter	
SS	Sustain Out	1
SC	Scan out	1
SU	Sustain connection (Upper)	1
SD	Sustain connection (Lower)	1
C1	Data Drive (Upper Right)	
C2	Data Drive (Upper Left)	
C3	Data Drive (Lower Left)	
C4	Data Drive (Lower Left)	
H3	Speaker terminal	
S1	Power switch	
SS2	Sustain connection (Upper)	
SS3	Sustain connection (Lower)	
V1	Front SW. & Remote receiver	
PF	Line filter	
P	Power supply	1
HX	PC_type_Input terminal	
HY	BNC Composite/Component Video	2
HZ	BNC Component Video	3

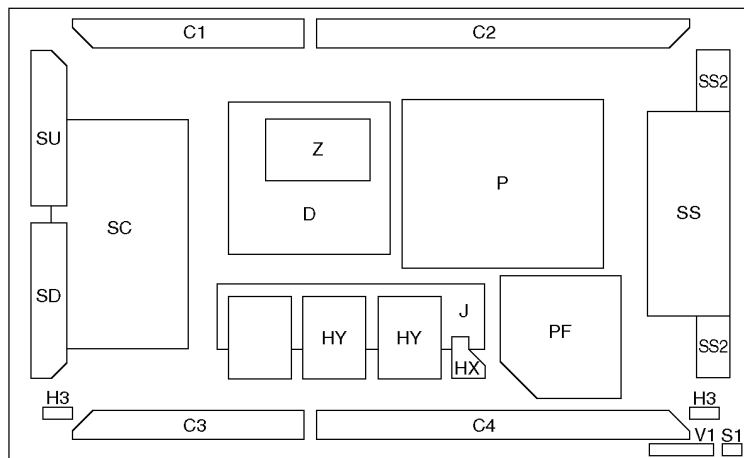
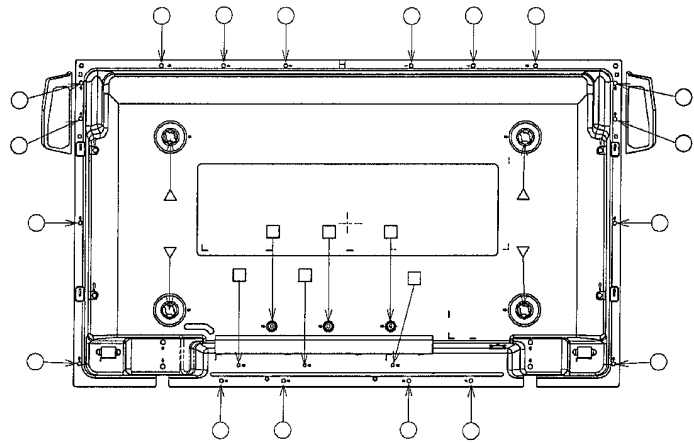
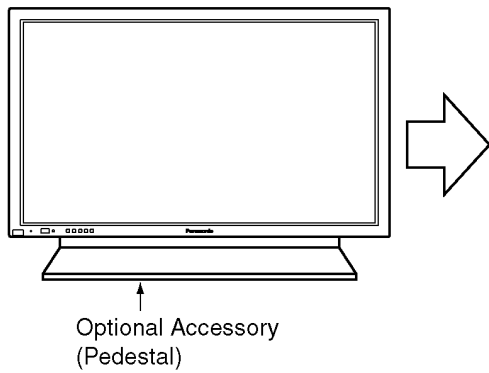
Remarks

1. Recommend PCB's for initial service for GPH6D chassis.
2. For System model except BX, EX version
3. For Consumer model except BX, EX version

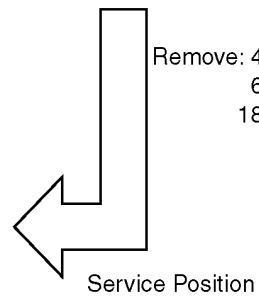
6 Service Hint

Remove the Back Cover

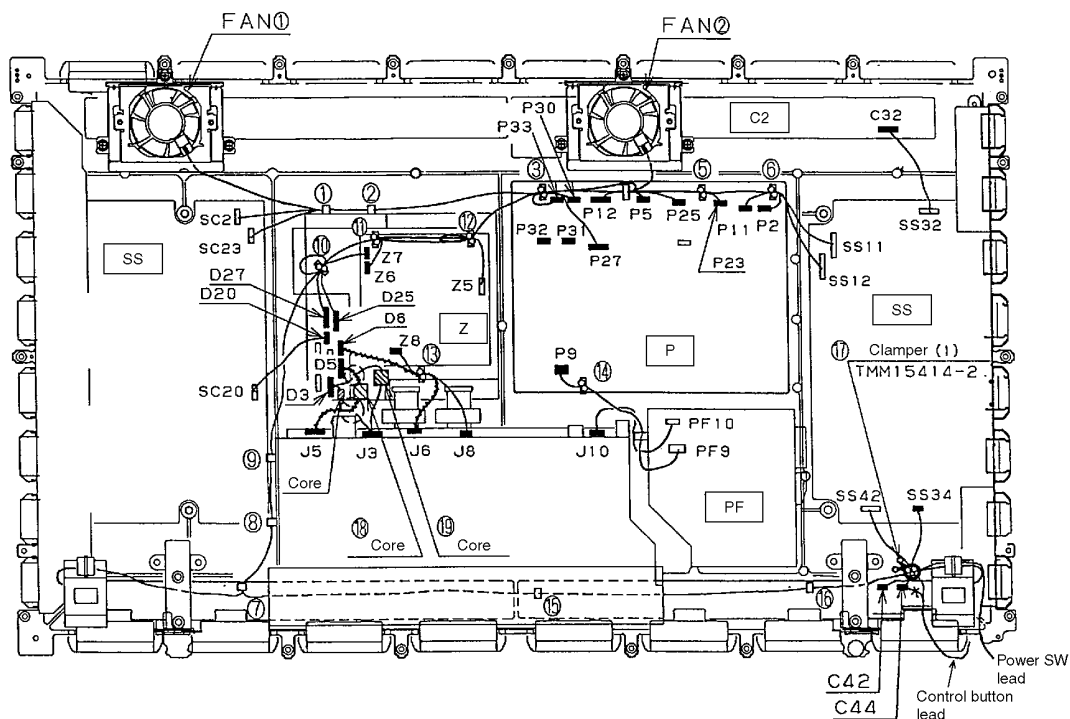
Stand the Unit used for Optional Accessory



Remove: 4 screws (△) XYN8+F20FZ
6 screws (□) THEL023Z
18 screws (○) XYC4+FJ35FZ



7 Location of Lead Wiring



CLAMPER		①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮	⑯	⑰	⑱	⑳
CON:NO — CON:NO																				
SC2 — P2		○	○	○	○	○														
SC23 — P23		○	○	○	○	○														
SC20 — D20																				
D27 — P27			○								◎	○	○							
D25 — P25			○	○							◎	○	○							
D3 — J3																			○	
D6 — J6															○					
Z8 — J8															○					
D5 — J5																			○	
Z5 — P5			○	○								◎								
SP (SC SIDE) — Z7								○	○	○	○									
SP (SS SIDE) — Z6								○	○	○	○					○	○	○		
SS12 — P12				○	○	○														
SS11 — P11						○														
SS42 — C42																		○		
SS32 — C32																				
POWER SW — SS34																		○		
CONTROL BUTTON — C44																		○		
PF9 — P9															○					
PF10 — J10																				
FAN① — P30	○	○	○																	
FAN② — P33			○	○																

◎ Wind up second times.

Connector Connection: P2, P5, P9, P11, P12, P23, P25, P27, P30, P31, P32, P33
 Z6, Z7, Z8,
 D3, D5, D6, D20, D25, D27
 J3, J5, J6, J8, J10,
 SS34,
 C23, C42, C44

8 Adjustment Procedure

8.1. Driver Set-up

8.1.1. Item / Preparation

1. Input an APL 100 % white signal.
2. Set the picture controls: -
 - Picture mode: Normal
 - White balance: Cool
 - Aspect: 16:9

8.1.2. Adjustments

Adjust driver section voltages referring the panel data on the panel data label.

Name	Test Point	Voltage	Volume	Remarks
Vsus	TPVSUS (SS)	170V \pm 2V	VR641 (P)	
Ve	TPVE (SS)	150V \pm 1V	R6770 (SS)	
Vset	TPVSET (SC)	220V \pm 5V	---	
Vad	TPVAD (SC)	-90V \pm 1V	R6477 (SC)	
Vscn	TPVSCN (SC)	Vad*+118V \pm 2V	---	
Vda	TPVDA (SS)	67V \pm 1V	VR665 (P)	

*See the Panel label.

Panel Label information

M

Serial No.

Ve: v, Vsus: v

MADE IN JAPAN
ITQF

Adjustment voltage

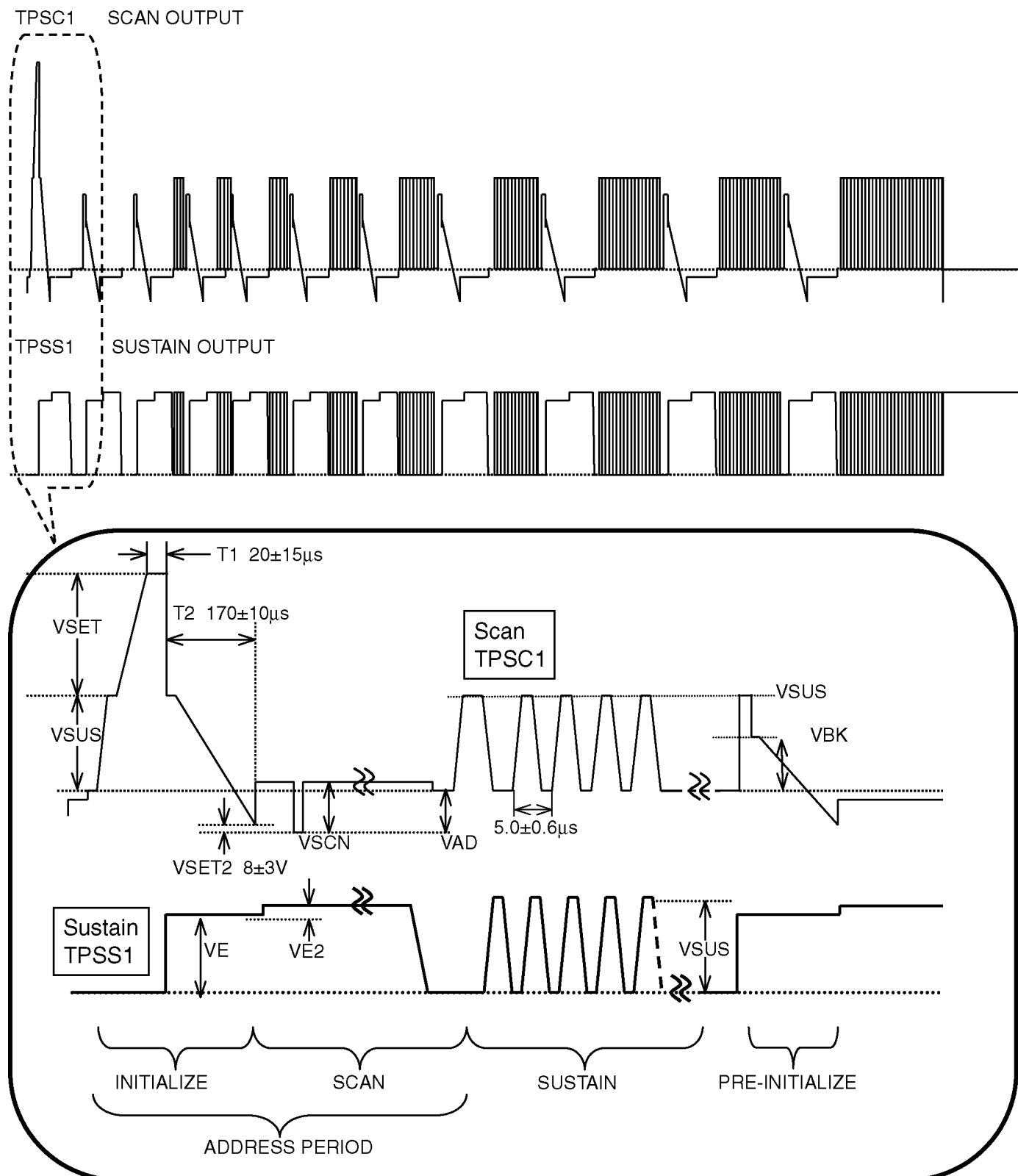
←

8.2. Initialization Pulse Adjust

1. Input a Cross hatch signal.
2. Set the picture controls: -
Picture mode: Normal
White balance: Cool

Adjust the indicated test point for the specified wave form.

	Test point	Volume	Level
T1	TPSC1 (SC)	---	$20 \pm 15\mu$ Sec
T2	TPSS1 (SS)	R6557 (SC)	$170 \pm 10\mu$ Sec



8.3. P.C.B. (Printed Circuit Board) exchange

8.3.1. Caution

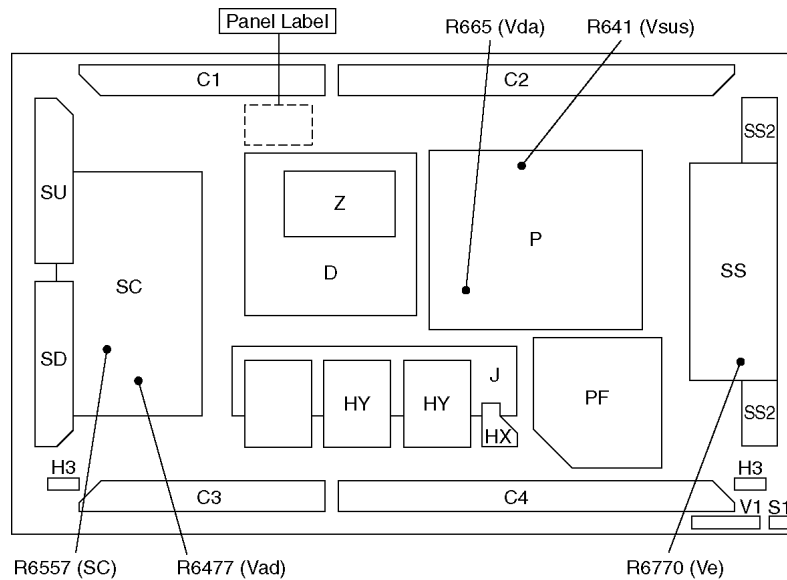
1. To remove P.C.B. , wait 1 minute after power was off for discharge from electrolysis capacitors.

8.3.2. Quick adjustment after P.C.B. exchange

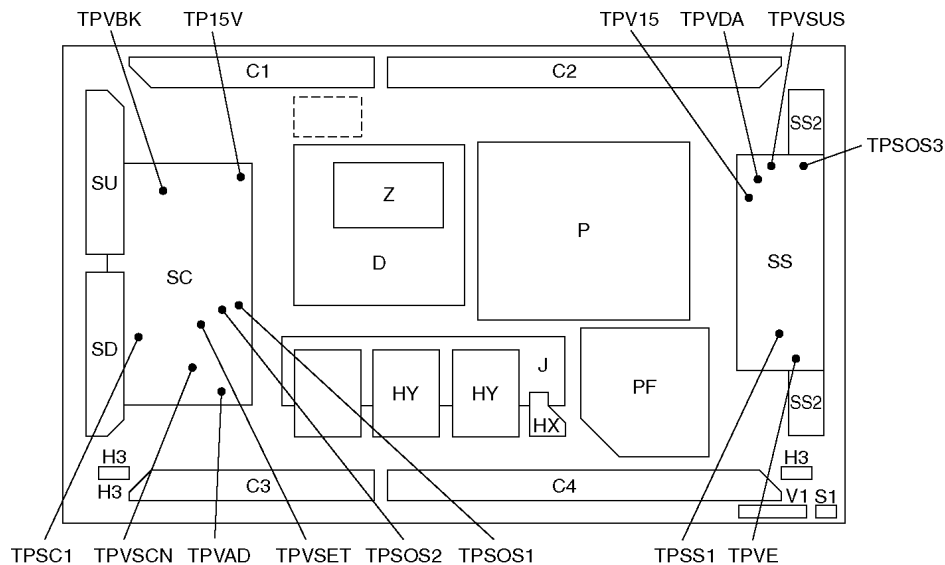
P.C.B.	Name	Test Point	Voltage	Volume	Remarks
P Board	Vsus	TPVSUS (SS)	170V \pm 2V	R641 (P)	
	Vda	TPVDA (SS)	67V \pm 1V	R665 (P)	
SC Board	Vad	TPVAD (SC)	-90V \pm 1V	R6477 (SC)	
	Vset	TPVSET (SC)	220V \pm 5V	---	
	Vscn	TPVSCN (SC)	Vad + 118 \pm 2V	---	
SS Board	Ve	TPVE (SS)	158V \pm 1V	R6770 (SS)	
D, J Board	White blanc, Pedestal and Sub brightness for NTSC, PAL, HD, PC and 625i signals				

*See the Panel label.

8.4. Adjustment Volume Location



8.5. Test Point Location



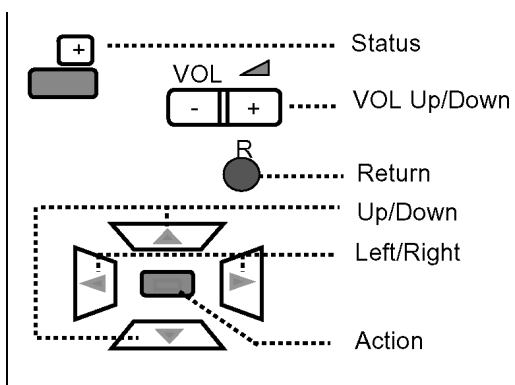
9 Service mode

9.1. CAT (computer Aided Test) mode

CAT mode menu

CAT Panel sys8.2		Mode	Function	Access button
IIC Mode	←.....	IIC	Service Alignment	Action
CD Mode	←.....	CD(Complete Diagnostics)	Software version information EEPROM edit	Mute more than 5 seconds
SD Mode	←.....	SD(Status Display)	MTBF parameter	Action
MS Mode	←.....	MS Mode	Not use	-----
ID Mode	←.....	ID	Not use	-----

Remote control



How to access the CAT mode.

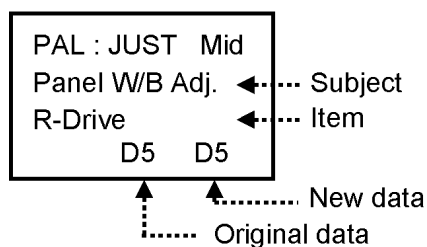
Press and the hold the Volume down / - button on the front panel of the unit and press the status button on the remote control 3 times quickly within 1 second, this will place the unit into the CAT mode.

To exit the **CAT mode**, access the **ID mode** and switch off the main power.

9.1.1. IIC mode

Select the IIC mode by **Up/Down button** on the remote control at the front page of CAT mode then press the **Action button** on the remote control.

OSD



How to use the IIC mode.

1. Select the alignment **Subject** by **Up/Down buttons** on the remote control.
2. Select the alignment **Item** by **Left/Right buttons** on the remote control.
3. Adjust **optimum setting** by **Volume Up/Down buttons** on the remote control.
4. The **data is memorized** when press the **R button** on the remote control or change the alignment Subject (or Items).

Subject and item are mentioned on page 14.

To exit the IIC mode, press the **R button** on the remote control.

9.1.2. CD mode

Select the CD mode by **Up/Down button** on the remote control at the front page of CAT mode then press the **Mute button** on the remote control more than 5 sec.

OSD

MiCom Software version.	0.11	OK	Factory use
Memory data version D	0.11 1	8 63	
Memory data version H	21.05	78 3F	
Memory data change Address	0	0	
Data	0	0	New data Original data

Micom software version (IC9354), this version can be upgrade by

1. replace of new version IC
2. Loading the new version software from loader tool, TZSC07036.

Memory data change

Address	0	0	Change by Up/Down buttons on the remote control.
			Change by Left/Right buttons on the remote control.
Data	0	0	Change by VOL Up/Down buttons on the remote control.

The data is memorized when switch off the main power.

To exit the CD mode, press the **R button** on the remote control.

9.1.3. SD mode

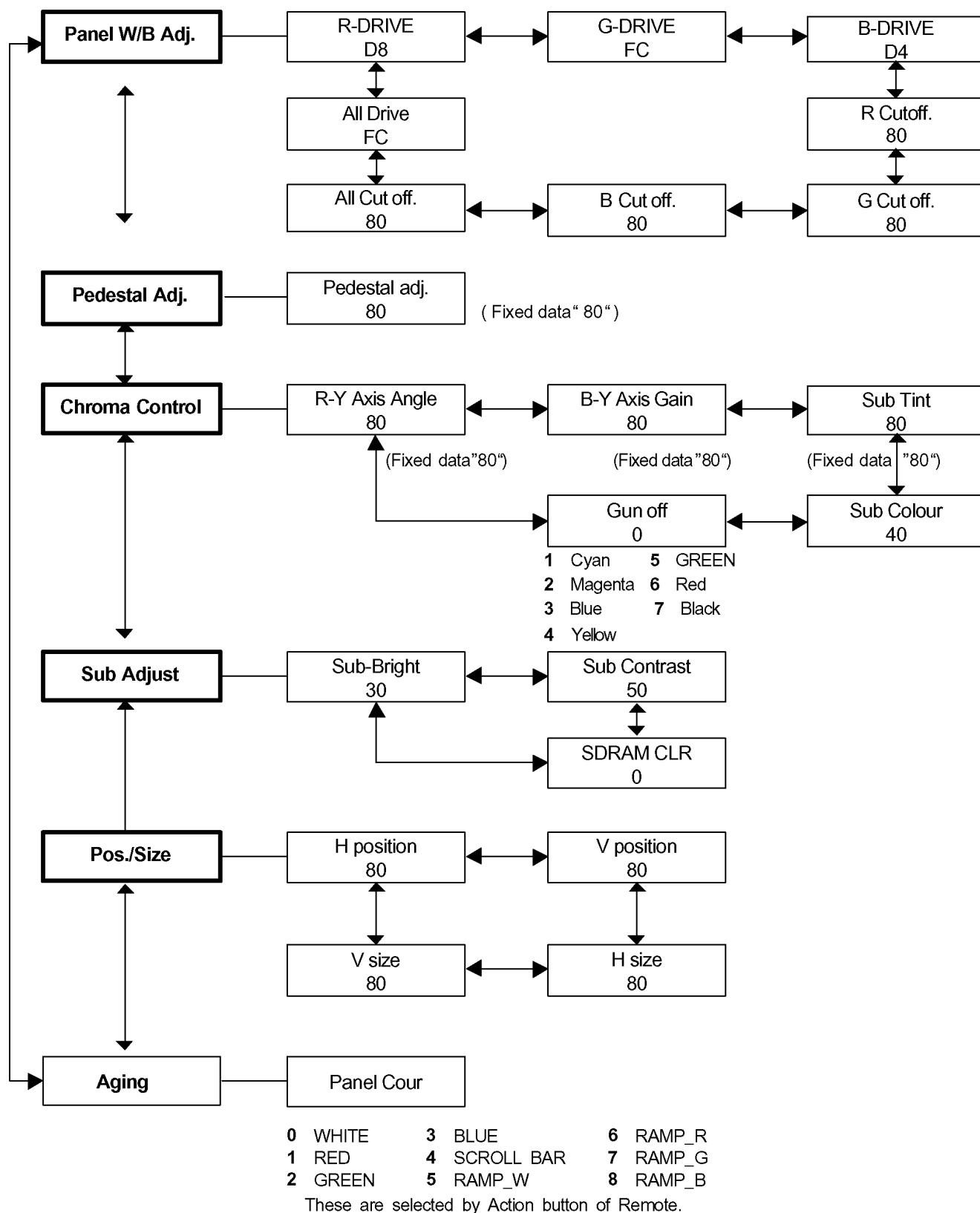
Select the SD mode by Up/Down button on the remote control at the front page of CAT mode then press the Action button on the remote control.

OSD

Input command check	23 25 27 - - - - - 27 27 27 - - - - - 28 25 25 37		History of remote control command. (Factory use)		
MTBF parameter	WT	72	PT	12	Cumulative Time for power on condition. (unit :hour)
					Counter of power on. (unit :time)
Remote Control mode	A		B		



To exit the SD mode, press the **R button** on the remote control.

9.2. IIC mode structure (following items value is sample data.)



10 Alignment

10.1. Pedestal setting (C)

	INPUT	Equipment	Setting	Alignment menu	Procedure
1	RGB(PC) Gray Scale Pattern 		Picture: Normal White balance: Cool Aspect: 16:9 COMPONENT /RGB-IN: RGB	PANEL W/B R cut off G cut off B cut off Chroma Control: Gun off RGB Sub Adjust: G Sub Bright 1 Chroma Control: Gun off RGB Sub Adjust: B Sub Bright 1 Chroma Control: Gun off RGB Sub Adjust: R Sub Bright 1	** Adjust at the dark room. 1) Set R,G and B cut off to " 80 ". 2) Set Gun off to "5". (Only green pixels can emit.) 3) Adjust G Sub bright to start some of green pixels emission at black 2% area and no emission at black 0% area. 4) Set Gun off to "3". (Only blue pixels can emit.) 5) Adjust B Sub bright to start some of blue pixels emission at black 2% area and no emission at black 0% area. 6) Set Gun off to "6". (Only red pixels can emit.) 7) Adjust R Sub bright to start some of red pixels emission at black 2% area and no emission at black 0% area.
2	Component (525i, 525p, 625i, 720i or 1080i) Gray Scale Pattern 		Picture: Normal White balance: Cool Aspect: 16:9	PANEL W/B R,G,B cut off PANEL W/B R,G,B Drive	1) Change input to Component signal. 2) Repeat procedure 1) to 7) of RGB input signal.



Note:

OSD is the difference between UY model and Except UY model.

Picture: Normal (Except UY)/Standard (UY model)

White balance (Except UY)/Color Temp (UY model)

10.2. Pedestal setting (B)

	INPUT	Equipment	Setting	Alignment menu	Procedure
1	RGB(PC) Gray Scale Pattern 		Picture: Normal White balance: Cool Aspect: 16:9 COMPONENT /RGB-IN: RGB	PANEL W/B R cut off G cut off B cut off Chroma Control: Gun off RGB Sub Adjust: G Sub Bright 2 Chroma Control: Gun off RGB Sub Adjust: B Sub Bright 2 Chroma Control: Gun off RGB Sub Adjust: R Sub Bright 2	** Adjust at the dark room. 1) Press the SWAP button, change input to signal path. 2) Set R,G and B cut off to " 3) Set Gun off to "5". (Only green pixels can emit.) 4) Adjust G Sub bright to start some of green pixels emission at black 2% area and no emission at black 0% area. 5) Set Gun off to "3". (Only blue pixels can emit.) 6) Adjust B Sub bright to start some of blue pixels emission at black 2% area and no emission at black 0% area. 7) Set Gun off to "6". (Only red pixels can emit.) 8) Adjust R Sub bright to start some of red pixels emission at black 2% area and no emission at black 0% area.
2	Component (525i, 525p, 625i, 720i or 1080i) Gray Scale Pattern 		Picture: Normal White balance: Cool Aspect: 16:9	PANEL W/B R,G,B cut off PANEL W/B R,G,B Drive	1) Change input to Component signal. 2) Repeat procedure 1) to 7) of RGB input signal.


Note:

OSD is the difference between UY model and Except UY model.


Picture: Normal (Except UY)/Standard (UY model)

White balance (Except UY)/Color Temp (UY model)

10.3. NTSC panel white balance


	INPUT	Equipment	Setting	Alignment menu	Procedure												
1	NTSC Gray Scale Pattern 	Color Analyzer	Picture: Normal White balance: Cool Aspect: 16:9	Sub Adjust Sub Bright PANEL W/B G cut off PANEL W/B B cut off R cut off Sub Adjust Sub Bright PANEL W/B G Drive PANEL W/B B Drive R Drive PANEL W/B R,G,B Drive R,G,B Drive PANEL W/B R,G,B cut off	1) Find the nearest area to brightness of 10 cd/m ² as Low light by color sensor. 2) Adjust Sub bright to set Low light level to 10 cd/m ² exactly. 3) Set G cut off to " 80 ". 4) Adjust B and R cut off to set color temperature as shown Fig.-01. 5) If Sub Bright is changed re-adjust it to set Low light to 10 cd/m ² . 6)Find 75% of white area by color sensor. 7) Set G Drive to " D8 ". 8) Adjust B and R Drive to set color temperature as shown Fig.-01. 9) Repeat item 4) to 7) to set both Low light and high light. 10) Increase same steps of R, G and B Drive to set largest level of 3 color drive to "FC". 11) Re-adjust Low light level again. <table border="1" data-bbox="932 1029 1292 1150"><tr><td>Color Temp.</td><td>x</td><td>y</td></tr><tr><td>Cool(Hi)</td><td>0.276</td><td>0.276</td></tr><tr><td>Normal(Mid)</td><td>0.288</td><td>0.296</td></tr><tr><td>Warm(Low)</td><td>0.313</td><td>0.329</td></tr></table> Fig. -01	Color Temp.	x	y	Cool(Hi)	0.276	0.276	Normal(Mid)	0.288	0.296	Warm(Low)	0.313	0.329
Color Temp.	x	y															
Cool(Hi)	0.276	0.276															
Normal(Mid)	0.288	0.296															
Warm(Low)	0.313	0.329															
2			Picture: Normal White balance: Normal Aspect: 16:9	PANEL W/B R,G,B cut off PANEL W/B R,G,B Drive	1) Change white balance to "Normal". 2) Repeat procedure 3) to 11) of Cool mode.												
3			Picture: Normal White balance: Warm Aspect: 16:9	PANEL W/B R,G,B cut off PANEL W/B R,G,B Drive	1) Change white balance to "Warm". 2) Repeat procedure 3) to 11) of Cool mode.												
4			Picture: Normal White balance: Cool Aspect: 16:9	Picture Menu Sub Adjust Sub Bright	1) Change color templatue to "Cool". 2)Re-set Sub bright to "30"												

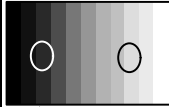

10.4. PAL/SECAM panel white balance

	INPUT	Equipment	Setting	Alignment menu	Procedure												
1	<div>PAL Gray Scale Pattern</div> <div></div>	Color Analyzer	Picture: Normal White balance: Cool Aspect: 16:9	Sub Adjust Sub Bright PANEL W/B G cut off PANEL W/B B cut off R cut off Sub Adjust Sub Bright PANEL W/B G Drive PANEL W/B B Drive R Drive PANEL W/B R,G,B Drive R,G,B Drive PANEL W/B R,G,B cut off	<div>1) Find the nearest area to brightness of 10 cd/m₂ as Low light by color sensor.</div> <div>2) Adjust Sub bright to set Low light level to 10 cd/m₂ exactly.</div> <div>3) Set G cut off to " 80 ".</div> <div>4) Adjust B and R cut off to set color temperature as shown Fig.-02.</div> <div>5) If Sub Bright is changed re-adjust it to set Low light to 10 cd/m₂.</div> <div>6)Find 75% of white area by color sensor.</div> <div>7) Set G Drive to " D8 ".</div> <div>8) Adjust B and R Drive to set color temperature as shown Fig.-02.</div> <div>9) Repeat procedure 4) to 7) to set both Low light and high light.</div> <div>10) Increase same steps of R, G and B Drive to set largest level of 3 color drive to "FC".</div> <div>11) Re-adjust Low light level again.</div> <div><table><tr><td>Color Temp.</td><td>x</td><td>y</td></tr><tr><td>Cool(Hi)</td><td>0.276</td><td>0.276</td></tr><tr><td>Normal(Mid)</td><td>0.288</td><td>0.296</td></tr><tr><td>Warm(Low)</td><td>0.313</td><td>0.329</td></tr></table><div>Fig. -02</div></div>	Color Temp.	x	y	Cool(Hi)	0.276	0.276	Normal(Mid)	0.288	0.296	Warm(Low)	0.313	0.329
Color Temp.	x	y															
Cool(Hi)	0.276	0.276															
Normal(Mid)	0.288	0.296															
Warm(Low)	0.313	0.329															
2			Picture: Normal White balance: Normal Aspect: 16:9	PANEL W/B R,G,B cut off PANEL W/B R,G,B Drive	<div>1) Change white balance to "Normal".</div> <div>2) Repeat procedure 3) to 11) of Cool mode.</div>												
3			Picture: Normal White balance: Warm Aspect: 16:9	PANEL W/B R,G,B cut off PANEL W/B R,G,B Drive	<div>1) Change white balance to "Warm".</div> <div>2) Repeat procedure 3) to 11) of Cool mode.</div>												
4			Picture: Normal White balance: Cool Aspect: 16:9	Picture Menu Sub Adjust Sub Bright	<div>1) Change color templatue to "Cool".</div> <div>2)Re-set Sub bright to "30"</div>												

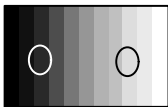
		Equipment	Setting	Alignment menu	Procedure																												
5	SECAM signal		Picture: Normal Aspect: 16:9 White balance: Cool Normal Warm		1) Write down each color temperature of R,G,B drive and Cut off data as follows. <table border="1"><tr><td>White Balance</td><td>Cool</td><td>Normal</td><td>Warm</td></tr><tr><td>R Drive</td><td></td><td></td><td></td></tr><tr><td>G Drive</td><td></td><td></td><td></td></tr><tr><td>B Drive</td><td></td><td></td><td></td></tr><tr><td>R Cut off</td><td></td><td></td><td></td></tr><tr><td>G Cut off</td><td></td><td></td><td></td></tr><tr><td>B Cut off</td><td></td><td></td><td></td></tr></table>	White Balance	Cool	Normal	Warm	R Drive				G Drive				B Drive				R Cut off				G Cut off				B Cut off			
White Balance		Cool	Normal	Warm																													
R Drive																																	
G Drive																																	
B Drive																																	
R Cut off																																	
G Cut off																																	
B Cut off																																	
					2) Input SECAM signal. 3) Copy PAL R,G,B drive and cut off data of each white balance mode to SECAM position.																												

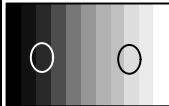


10.5. PC/RGB panel white balance

	INPUT	Equipment	Setting	Alignment menu	Procedure												
1	PC Gray Scale Pattern 	Color Analyzer	Picture: Normal White balance: Cool Aspect: 16:9	Sub Adjust Sub Bright PANEL W/B G cut off PANEL W/B B cut off R cut off Sub Adjust Sub Bright PANEL W/B G Drive PANEL W/B B Drive R Drive PANEL W/B R,G,B Drive R,G,B Drive PANEL W/B R,G,B cut off	1) Find the nearest area to brightness of 10 cd/m ₂ as Low light by color sensor. 2) Adjust Sub bright to set Low light level to 10 cd/m ₂ exactly. 3) Set G cut off to " 80 ". 4) Adjust B and R cut off to set color temperature as shown Fig.-03. 5) If Sub Bright is changed re-adjust it to set Low light to 10 cd/m ₂ . 6)Find 75% of white area by color sensor. 7) Set G Drive to " D8 ". 8) Adjust B and R Drive to set color temperature as shown Fig.-03. 9) Repeat item 4) to 7) to set both Low light and high light. 10) Increase same steps of R, G and B Drive to set largest level of 3 color drive to "FC". 11) Re-adjust Low light level again. <table border="1" data-bbox="878 1008 1239 1127"><tr><td>Color Temp.</td><td>x</td><td>y</td></tr><tr><td>Cool(Hi)</td><td>0.276</td><td>0.276</td></tr><tr><td>Normal(Mid)</td><td>0.288</td><td>0.296</td></tr><tr><td>Warm(Low)</td><td>0.313</td><td>0.329</td></tr></table> Fig. -03	Color Temp.	x	y	Cool(Hi)	0.276	0.276	Normal(Mid)	0.288	0.296	Warm(Low)	0.313	0.329
Color Temp.	x	y															
Cool(Hi)	0.276	0.276															
Normal(Mid)	0.288	0.296															
Warm(Low)	0.313	0.329															
2			Picture: Normal White balance: Normal Aspect: 16:9	PANEL W/B R,G,B cut off PANEL W/B R,G,B Drive	1) Change white balance to "Normal". 2) Repeat procedure 3) to 11) of Cool mode.												
3			Picture: Normal White balance: Warm Aspect: 16:9	PANEL W/B R,G,B cut off PANEL W/B R,G,B Drive	1) Change white balance to "Warm". 2) Repeat procedure 3) to 11) of Cool mode.												
4			Picture: Normal White balance: Cool Aspect: 16:9	Picture Menu Sub Adjust Sub Bright	1) Change color templatue to "Cool". 2)Re-set Sub bright to "30"												

	INPUT	Equipment	Setting	Alignment menu	Procedure																												
5	<div>RGB Gray Scale Pattern</div> 		Picture: Normal Aspect: 16:9 White balance: Cool Normal Warm		<div>1) Write down each color temaparature of R,G,B drive and Cut off data as follows.</div> <table border="1"><tr><td>White Balance</td><td>Cool</td><td>Normal</td><td>Warm</td></tr><tr><td>R Drive</td><td></td><td></td><td></td></tr><tr><td>G Drive</td><td></td><td></td><td></td></tr><tr><td>B Drive</td><td></td><td></td><td></td></tr><tr><td>R Cut off</td><td></td><td></td><td></td></tr><tr><td>G Cut off</td><td></td><td></td><td></td></tr><tr><td>B Cut off</td><td></td><td></td><td></td></tr></table> <div>2) Input RGB signal.</div> <div>3) Copy PC R,G,B drive and cut off data of each white balance mode to RGB position.</div>	White Balance	Cool	Normal	Warm	R Drive				G Drive				B Drive				R Cut off				G Cut off				B Cut off			
White Balance	Cool	Normal	Warm																														
R Drive																																	
G Drive																																	
B Drive																																	
R Cut off																																	
G Cut off																																	
B Cut off																																	
6	<div>DVI Gray Scale Pattern</div> 		Picture: Normal Aspect: 16:9 White balance: Cool Normal Warm		<div>1) Write down each color temaparature of R,G,B drive and Cut off data as follows.</div> <table border="1"><tr><td>White Balance</td><td>Cool</td><td>Normal</td><td>Warm</td></tr><tr><td>R Drive</td><td></td><td></td><td></td></tr><tr><td>G Drive</td><td></td><td></td><td></td></tr><tr><td>B Drive</td><td></td><td></td><td></td></tr><tr><td>R Cut off</td><td></td><td></td><td></td></tr><tr><td>G Cut off</td><td></td><td></td><td></td></tr><tr><td>B Cut off</td><td></td><td></td><td></td></tr></table> <div>2) Input DVI signal.</div> <div>3) Copy PC R,G,B drive and cut off data of each white balance mode to DVI position.</div>	White Balance	Cool	Normal	Warm	R Drive				G Drive				B Drive				R Cut off				G Cut off				B Cut off			
White Balance	Cool	Normal	Warm																														
R Drive																																	
G Drive																																	
B Drive																																	
R Cut off																																	
G Cut off																																	
B Cut off																																	

10.6. HD/ 525i /525p /625I /625P panel white balance

	INPUT	Equipment	Setting	Alignment menu	Procedure												
1	HD (720i or 1080i) Gray Scale Pattern 	Color Analyzer	Picture: Normal White balance: Cool Aspect: 16:9	Sub Adjust Sub Bright PANEL W/B G cut off PANEL W/B B cut off R cut off Sub Adjust Sub Bright PANEL W/B G Drive PANEL W/B B Drive R Drive PANEL W/B R,G,B Drive R,G,B Drive PANEL W/B R,G,B cut off	1) Find the nearest area to brightness of 10 cd/m ² as Low light by color sensor. 2) Adjust Sub bright to set Low light level to 10 cd/m ² exactly. 3) Set G cut off to " 80 " . 4) Adjust B and R cut off to set color temperature as shown Fig.-04. 5) If Sub Bright is changed re-adjust it to set Low light to 10 cd/m ² . 6)Find 75% of white area by color sensor. 7) Set G Drive to " D8 " . 8) Adjust B and R Drive to set color temperature as shown Fig.-04. 9) Repeat item 4) to 7) to set both Low light and high light. 10) Increase same steps of R, G and B Drive to set largest level of 3 color drive to "FC". 11) Re-adjust Low light level again. <table border="1" data-bbox="880 1037 1239 1159"><tr><td>Color Temp.</td><td>x</td><td>y</td></tr><tr><td>Cool(Hi)</td><td>0.276</td><td>0.276</td></tr><tr><td>Normal(Mid)</td><td>0.288</td><td>0.296</td></tr><tr><td>Warm(Low)</td><td>0.313</td><td>0.329</td></tr></table> Fig. -04	Color Temp.	x	y	Cool(Hi)	0.276	0.276	Normal(Mid)	0.288	0.296	Warm(Low)	0.313	0.329
Color Temp.	x	y															
Cool(Hi)	0.276	0.276															
Normal(Mid)	0.288	0.296															
Warm(Low)	0.313	0.329															
2			Picture: Normal White balance: Normal Aspect: 16:9	PANEL W/B R,G,B cut off PANEL W/B R,G,B Drive	1) Change white balance to "Normal". 2) Repeat procedure 3) to 11) of Cool mode.												
3			Picture: Normal White balance: Warm Aspect: 16:9	PANEL W/B R,G,B cut off PANEL W/B R,G,B Drive	1) Change white balance to "Warm". 2) Repeat procedure 3) to 11) of Cool mode.												
4			Picture: Normal White balance: Cool Aspect: 16:9	Picture Menu Sub Adjust Sub Bright	1) Change color templatue to "Cool". 2)Re-set Sub bright to "30"												

	INPUT	Equipment	Setting	Alignment menu	Procedure																												
5	<div>RGB Gray Scale Pattern</div> 		Picture: Normal Aspect: 16:9 White balance: Cool Normal Warm		<div>1) Write down each color temaparature of R,G,B drive and Cut off data as follows.</div> <table border="1"><tr><th>White Balance</th><th>Cool</th><th>Normal</th><th>Warm</th></tr><tr><td>R Drive</td><td></td><td></td><td></td></tr><tr><td>G Drive</td><td></td><td></td><td></td></tr><tr><td>B Drive</td><td></td><td></td><td></td></tr><tr><td>R Cut off</td><td></td><td></td><td></td></tr><tr><td>G Cut off</td><td></td><td></td><td></td></tr><tr><td>B Cut off</td><td></td><td></td><td></td></tr></table> <div>2)Change input signal to 525i and 525p.</div> <div>3) Copy HD drive and cut off data of each white balance mode to each signals position.</div>	White Balance	Cool	Normal	Warm	R Drive				G Drive				B Drive				R Cut off				G Cut off				B Cut off			
White Balance	Cool	Normal	Warm																														
R Drive																																	
G Drive																																	
B Drive																																	
R Cut off																																	
G Cut off																																	
B Cut off																																	
6	<div>RGB Gray Scale Pattern</div> 		Picture: Normal Aspect: 16:9 White balance: Cool Normal Warm		<div>1) Write down each color temaparature of R,G,B drive and Cut off data as follows.</div> <table border="1"><tr><th>White Balance</th><th>Cool</th><th>Normal</th><th>Warm</th></tr><tr><td>R Drive</td><td></td><td></td><td></td></tr><tr><td>G Drive</td><td></td><td></td><td></td></tr><tr><td>B Drive</td><td></td><td></td><td></td></tr><tr><td>R Cut off</td><td></td><td></td><td></td></tr><tr><td>G Cut off</td><td></td><td></td><td></td></tr><tr><td>B Cut off</td><td></td><td></td><td></td></tr></table> <div>2)Change input signal to 525p and 625i.</div> <div>3) Copy HD drive and cut off data of each white balance mode to each signals position.</div>	White Balance	Cool	Normal	Warm	R Drive				G Drive				B Drive				R Cut off				G Cut off				B Cut off			
White Balance	Cool	Normal	Warm																														
R Drive																																	
G Drive																																	
B Drive																																	
R Cut off																																	
G Cut off																																	
B Cut off																																	
7	<div>RGB Gray Scale Pattern</div> 		Picture: Normal Aspect: 16:9 White balance: Cool Normal Warm		<div>1) Write down each color temaparature of R,G,B drive and Cut off data as follows.</div> <table border="1"><tr><th>White Balance</th><th>Cool</th><th>Normal</th><th>Warm</th></tr><tr><td>R Drive</td><td></td><td></td><td></td></tr><tr><td>G Drive</td><td></td><td></td><td></td></tr><tr><td>B Drive</td><td></td><td></td><td></td></tr><tr><td>R Cut off</td><td></td><td></td><td></td></tr><tr><td>G Cut off</td><td></td><td></td><td></td></tr><tr><td>B Cut off</td><td></td><td></td><td></td></tr></table> <div>2)Change input signal to 625i and 625p.</div> <div>3) Copy HD drive and cut off data of each white balance mode to each signals position.</div>	White Balance	Cool	Normal	Warm	R Drive				G Drive				B Drive				R Cut off				G Cut off				B Cut off			
White Balance	Cool	Normal	Warm																														
R Drive																																	
G Drive																																	
B Drive																																	
R Cut off																																	
G Cut off																																	
B Cut off																																	

11 Trouble shooting guide

11.1. Self Check

11.1.1. Display Indication

1. Self-check is used to automatically check the bus line controlled circuit of the Plasma display.
2. To get into the Self-check mode, press the **volume down** button on the customer controls at the front of the set, at the same time pressing the **OFF-TIMER** button on the remote control, and the screen will show :-

If the CCU ports have been checked and found to be incorrect
Or not located then " - - " will appear in place of " OK "

ID	IIC1	IIC2	IIC3		
D	IC9702	OK H21	J/ DG	IC1001	OK H51
	IC9009	OK H61		IC3003	OK H63
	IC9019	OK H62		IC3004	OK H64
	IC9151	OK H53		IC3005	OK H65
	IC9305	---		IC3006	OK H66
	IC9455	OK H55			
	IC9605	OK H56			
	IC9709	OK H52	Z	IC2401	OK H54

11.1.2. Power LED Blinking timing chart

1. Subject

Information of LED Flashing timing chart.

2. Contents

When an abnormality has occurred the unit, the protection circuit operates and reset to the stand by mode. At this time, the defective block can be identified by the number of blinks of the Power LED on the front panel of the unit.

Blinking times	Blinking timing	Contents & Check point
1		Main Micom Power
2		SCAN Driver1
3		3.3V SOS
4		5V SOS
5		Power SOS
6		FAN
7		SCAN Driver2
8		TEMP (Not used)
9		SUS Driver

3. Remarks

Above Fan function is operated during the fans are installed.

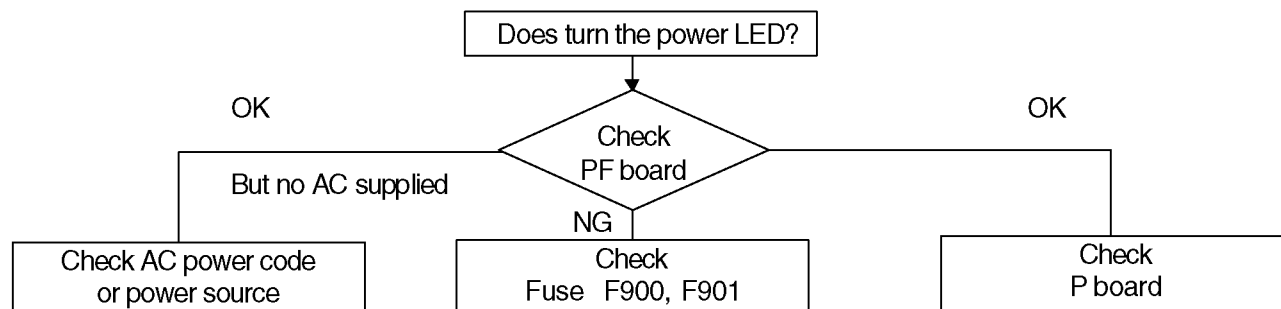
11.2. No Power

First check point

There are following 3 states of No Power indication by power LED.

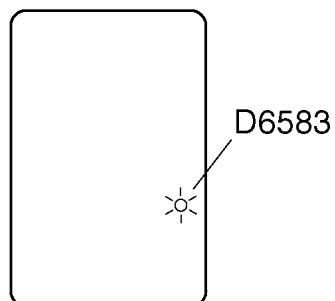
1. No lit
2. Green is lit then turns red blinking a few seconds later.
3. Only red is lit.

1. No lit

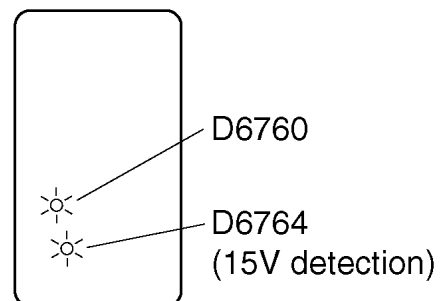


Drive circuits LED indicator

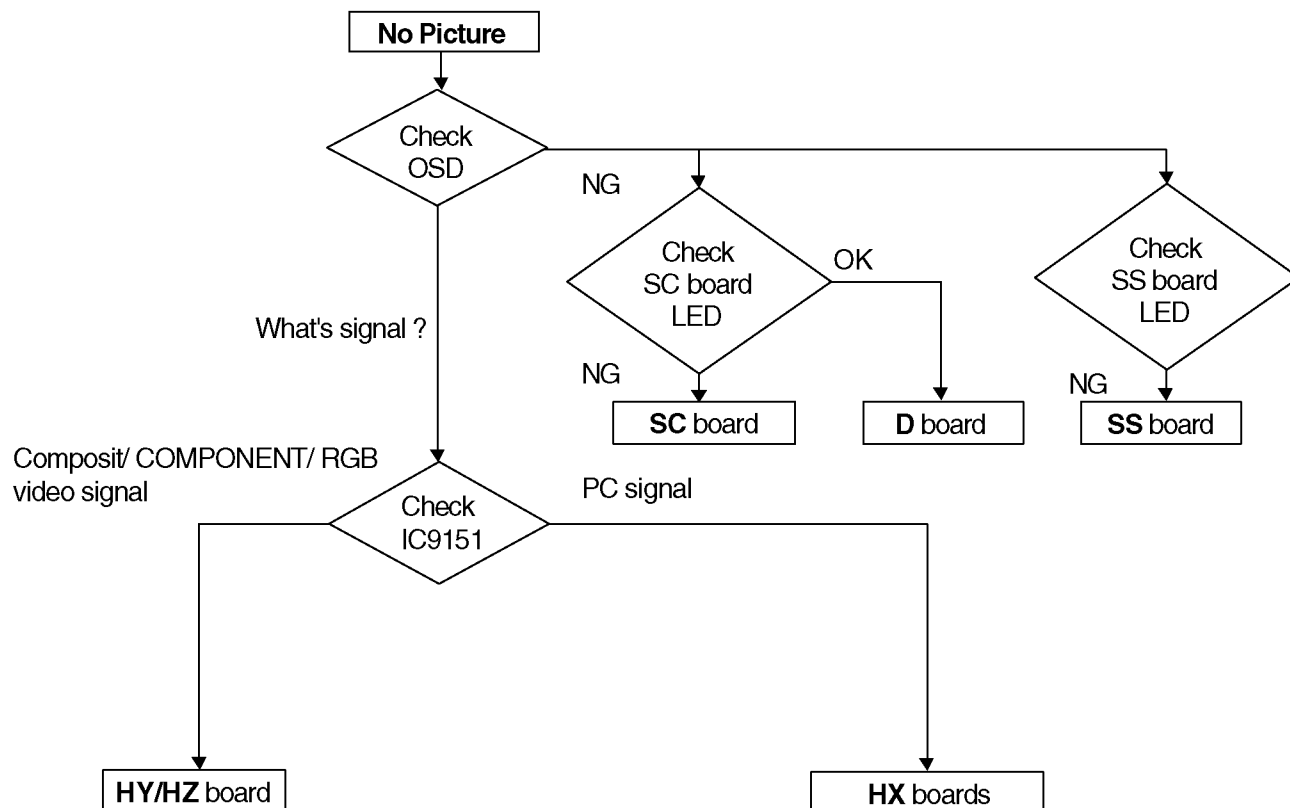
SC board



SS board

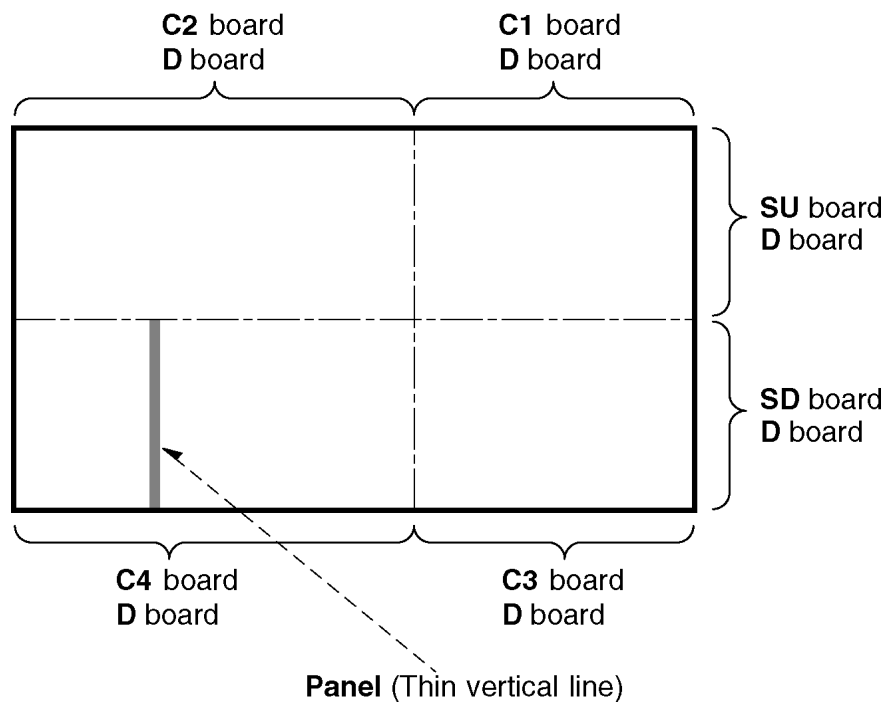


11.3. No Picture



11.4. Local screen failure

Plasma display may have local area failure on the screen. Fig - 1 is the possible defect P.C.B. for each local area.



<Local screen failure chart>

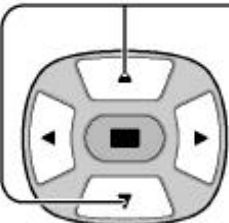
Fig - 1

12 Option Setting


12.1. How to access and setting

How to access the Option menu

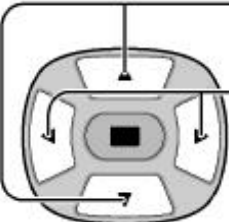
- 1**  Press to display the Setup menu.

- 2**  Press to select OSD Language.



- 3**  Press down for more than 3 seconds to display the Option menu.

Setting the Option menus

- 1**  Press to select the desired item.
Press to select the desired function.

The option menu will disappear 60 seconds after operation.

- 2**  Press to exit Option menu.

12.2. Contents of Option Menu

This chassis series have special function and operation setting facility called Option Menu. This Option Menu is useful for special function required customers. This should be set at the installation stage. The end user could not set or change these because of hidden On screen menu.

Option menus	default setting	Contents
Off-timer function	Enable	Off-timer operation Enable/Disable.
On Screen display	On	Enable/Disable to display input mode indication after power on and no signal indication.
Initial Input	Off	Sets the initial input mode when the power is turned on . Allow input mode selection while power is on.
Initial VOL. level	Off	Sets the initial volume level when the power is turned on. Allow Volume control while power is on.
Maximum VOL. Level	Off	Sets the maximum volume to desired level. Volume cannot exceed this level.
INPUT lock	Off	Fixes the input mode to AV, Component/RGB or PC. Can not change input mode by input selection key.
Button lock	Off	Enable/Disable front operation buttons (Input and/or volume up/down)
Studio W/B	Off	Set warm mode color temperature to 3,200 Kelvin.
Remocon User Level	Off	Remote key invalidation. Off : Valid key is all key of remote. User1 : Valid key are only Stand-by (ON/OFF), Input, Status, Surround, Sound mute On/Off, and volume adjustment. User2 : Valid key is only Stand-by (ON/OFF). User3 : All keys are null and void
ID Select	0 to 100	Set ID number from 001 to 100.
Remote ID	Off	Remote ID function On/Off. (While the Remote ID on, standard remote function can not control the unit.)
Serial	Off	Serial ID function On/Off
Slot power	Off	Sets the slot power mode the power is turned on. Allow Optional Terminal Board insert Slots while power is on.

Note :

How to set Remocon User Level and Remote ID off

1. Access service mode (CAT-mode) and press SET UP key on remote.
2. Access option menu.
3. Change Remocon User Level and/ or Remote ID set to Off.