SANYO

FILE NO.

SERVICE MANUAL

Original Version

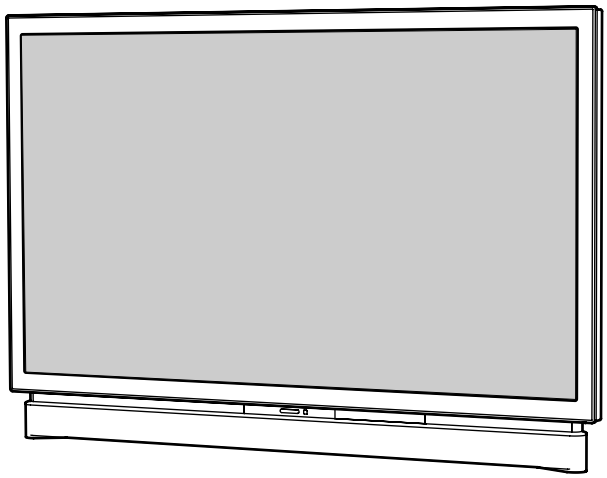
MODEL NO. PLV-55WHD1

PLV-65WHD1

U.S.A.

LCD Projection TV

HD PRO SERIES™



Chassis No.	M8L-55WHD100
	M8P-65WHD100

NOTE: Match the Chassis No. on the rating sheet on the cabinet with the Chassis No. in the Service Manual.

If the Original Version Service Manual Chassis No. does not match the unites, additional Service Literature is required. You must refer to "Notices" to the Original Service Manual prior to servicing the unit.

Give complete "CHASSIS NO." for parts order or servicing, it is shown on the rating sheet on the cabinet of the LCD Projection TV.

PRODUCT CODE :

PLV-55WHD1	M8LA	1 122 293 00
PLV-65WHD1	M8PA	1 122 364 00

REFERENCE NO. SM5110797-00

■ Contents

Note: "PTV" may be used as an abbreviation for LCD Projection TV in this manual.

■ Safety Instructions

SAFETY PRECAUTIONS

WARNING:

The chassis of this LCD projection TV is isolated (COLD) from AC line by using the converter transformer. Primary side of the converter and lamp power supply unit circuit is connected to the AC line and it is hot, which hot circuit is identified with the line (⎓) in the schematic diagram. For continued product safety and protection of personnel injury, servicing should be made with qualified personnel.

The following precautions must be observed.

1: An isolation transformer should be connected in the power line between the LCD projection TV and the AC line before any service is performed on the LCD projection TV.

2: Comply with all caution and safety-related notes provided on the cabinet top, cabinet bottom, inside the cabinet or on the chassis.

3: When replacing a chassis in the cabinet, always be certain that all the protective devices are installed properly, such as, control knobs, adjustment covers or shields, barriers, etc.

DO NOT OPERATE THIS LCD projection TV WITHOUT THE PROTECTIVE SHIELD IN POSITION AND PROPERLY SECURED.

4: Before replacing the cabinet, thoroughly inspect the inside of the cabinet to see that no stray parts or tools have been left inside.

Before returning any LCD projection TV to the customer, the service personnel must be sure it is completely safe to operate without danger of electric shock.

PRODUCT SAFETY NOTICE

Product safety should be considered when a component replacement is made in any area of the LCD projection TV. Components indicated by mark ⚠ in the parts list and the schematic diagram designate components in which safety can be of special significance. It is, therefore, particularly recommended that the replacement of the parts must be made by exactly the same parts.

Caution:

The parts and screws should be placed exactly the same position as the original otherwise it may cause lose of performance and product safety.

The wiring method of the leads should be returned exactly the same state as the original otherwise it may cause lose of performance and product safety.

SERVICE PERSONNEL WARNING

Eye damage may result from directly viewing the light produced by the Lamp used in this equipment. Always turn off Lamp before opening cover. The Ultraviolet radiation eye protection is required during this servicing.

Never turn the power on without the lamp to avoid electric-shock or damage of the devices since the stabilizer generates high voltages at its starts.

Since the lamp is very high temperature during units operation. Replacement of the lamp should be done at least 30 minutes after the power has been turned off, to allow the lamp cool-off.

CAUTION

RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE.

DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.

■ Specifications

Technical Specifications

Screen Size (Measured Diagonally):
PLV-55WHD1: 55-inches/PLV-65WHD1: 65-inches

LCD Panel System:
0.7” wide TFT Active Matrix type, 3 panels

Panel Resolution:
1280 x 720 dots

Number of Pixels:
2,764,800 (1280 x 720 x 3 panels)

Signal Compatibility:
NTSC; 480i, 480p, 1080i, 720p

Scanning Format:
720p (All Signals are Converted to 720p)

RF Antenna Input:
Analog—UHF/VHF/CATV 75 ohm
Digital—75 ohm

Jacks and Connectors:

Video 1 Input:	Composite Video/S-Video and Audio L/R
Video 2 Input:	Component (Y/Pb/Pr) with Audio L/R Input
Video 3 Input:	Component (Y/Pb/Pr) with Audio L/R Input
Digital Audio Output:	Dolby® Digital (Optical)
Analog Audio Output:	Audio L/R (Fixed)
HDMI Input:	19-pin connector (Picture/Sound with HDCP)
Woofer Output:	RCA Type
Service Jack:	D-Sub (HDB 9)

Sound:
Two Speakers, size: 5.0” x 3.0” (128 x 77 mm)

Amplifier:
Built-in with 15.0 W/ch

Power Requirement:
Source: AC 120 V, 60 Hz

AC Power Consumption (average):
PLV-55WHD1: 120 V, 2.8 A
PLV-65WHD1: 120 V, 2.8 A

Size and Weight (approximately):
PLV-55WHD1

Width:	50.9” (1294 mm)
Height:	34.0” (864 mm)
Depth:	15.6” (397 mm)
Weight:	86.4 lbs (39.2 kg)

PLV-65WHD1

Width:	60.6” (1538 mm)
Height:	40.0” (1016 mm)
Depth:	18.4” (468 mm)
Weight:	106.0 lbs (48.1 kg)

Environmental Considerations:

Operating Temperature:	41˚F–95˚F (5˚C–35˚C)
Storage Temperature:	14˚F–140˚F (-10˚C–60˚C)

Remote Control:

Battery :	1.5 V AAA Alkaline type x 2
Operating Range:	16.4’ (5 m)/±30
Dimensions:	7.72” (L) x2.15” (W) x 0.83” (H) (196 mm x 54.7 mm x 21.0 mm)
Net Weight:	2.96 oz (84 g) (without batteries)

Accessories:
Owner’s Manual
AC Power Cord
Remote Control

Specifications are subject to change without notice.

● LCD panels are manufactured to the highest possible standards. Even though 99.99% of the pixels are effective, a tiny fraction of the pixels (0.01% or less) may be ineffective by the characteristics of the LCD panels.

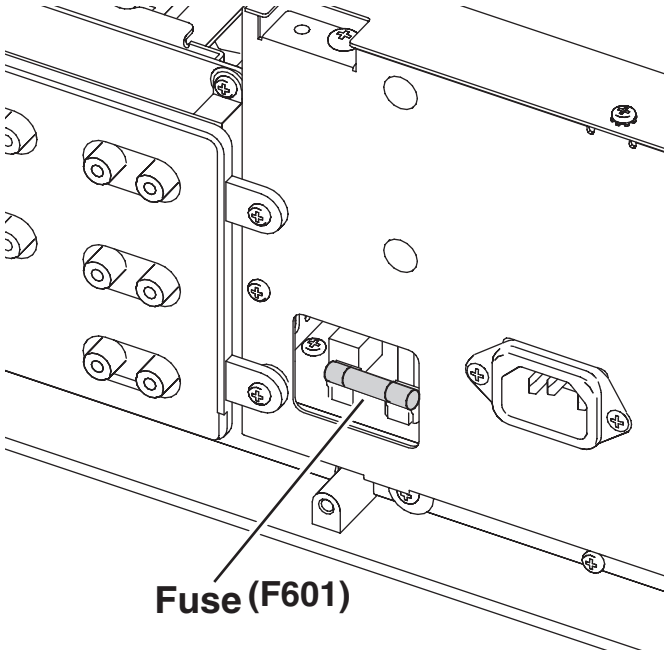
■ Circuit Protections

This LCD Projection TV provides the following circuit protections to operate in safety. If the abnormality occurs inside the LCD Projection TV, it will automatically turn off by operating one of the following protection circuits.

● Fuse

A fuse(F601) is located inside of the LCD Projection TV. When the POWER indicator is not lightning, the fuse may be opened. Check the fuse as following steps.
The fuse should be used with the following type;

Fuse Part No. : 323 022 2105
TYPE T4.0AH 250V FUSE
LITTEL FUSE INC. TYPE 215004



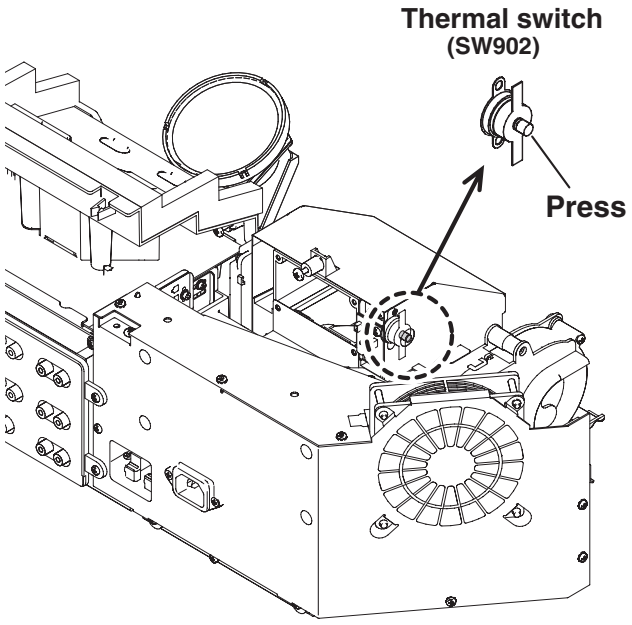
How to replace the fuse

1. Unplug the AC power cord.
2. Remove the cabinet bottom cover following to "Mechanical Disassemblies".
3. Remove the fuse from fuse holder on the Power Board.

To install the fuse, take reversed step in the above.

● Thermal switch

There is the thermal switch (SW902) inside of the LCD Projection TV to prevent the internal temperature rising abnormally. When the internal temperature reaches near 95°C, the thermal switch cuts off the drive signal to the lamp circuit automatically.
The thermal switch is not reset to normal automatically even if the internal temperature becomes normal. Reset the thermal switch following procedure.
Check the resistance between terminals of thermal switch by using a tester. If it has high impedance, thermal switch may be in open.



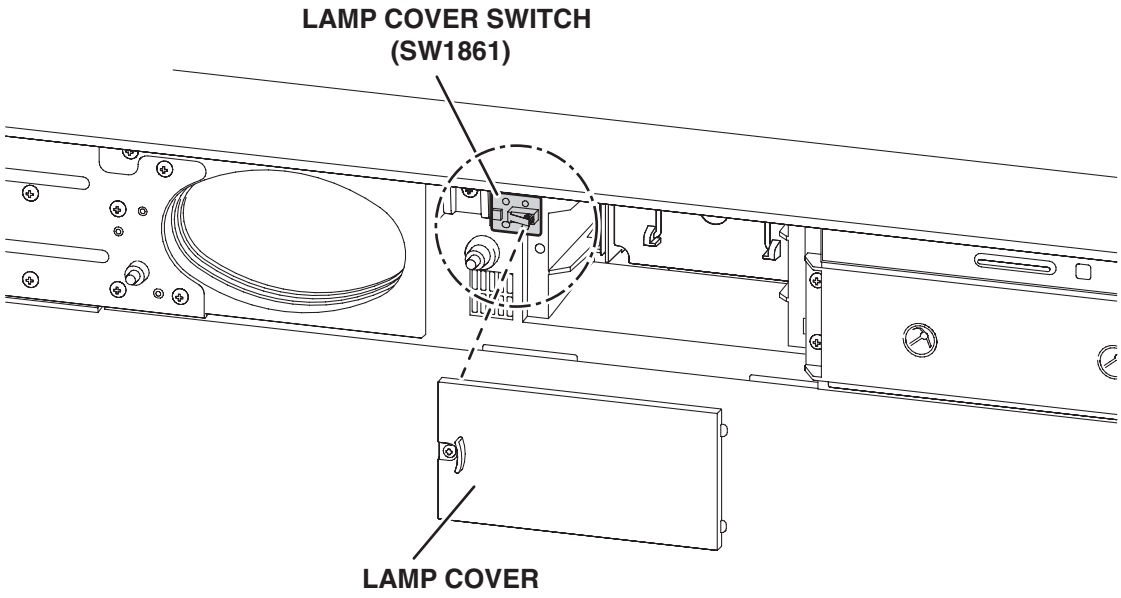
How to reset the thermal switch

1. Remove the optical / chassis unit following to "Mechanical Disassemblies".
2. Press the reset button on the thermal switch.

CAUTION:
Before press the reset button, make sure that the AC cord must be disconnected from the AC outlet.

● Lamp cover switch

The lamp cover switch (SW1861) cuts off the drive signal to the lamp circuit when the lamp cover is removed or no close completely.
After opening the lamp cover for replacing the lamp unit, place the lamp cover correctly otherwise the LCD Projection TV can not be turned on.



● Warning indicator

The LCD Projection TV is shut down and the WARNING indicator is flashing red

When the temperature inside the LCD Projection TV exceeds the normal temperature, it is automatically shut down to protect the LCD Projection TV. The POWER indicator flashes red and the LCD Projection TV is being cooled down. When the temperature inside the LCD Projection TV returns to normal, the POWER indicator is turned off and the LCD Projection TV can be turned on. When the LCD Projection TV is turned on again, the WARNING indicator stops flashing.
Check the items listed below;

> Installation and air circulation
> Temperature abnormality with temperature sensors

The LCD Projection TV is shut down and the WARNING indicator lights red

When the LCD Projection TV detects an abnormal condition, it is automatically shut down to protect the LCD Projection TV and the WARNING indicator lights red. In this case, unplug the AC power cord and plug it, and then turn the LCD Projection TV on again to verify operation. If the LCD Projection TV is turned off again or fails to be turned on, the internal check and repair will be required.
Check the items listed below;

> Power failure protection circuit
> Temperature abnormality with temperature sensors and thermal switch
> Lamp cover switch

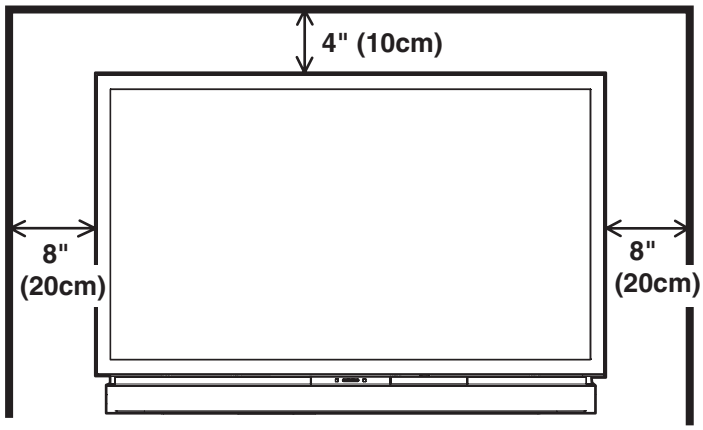
■ Installation

Placing and Settling the LCD Projection TV

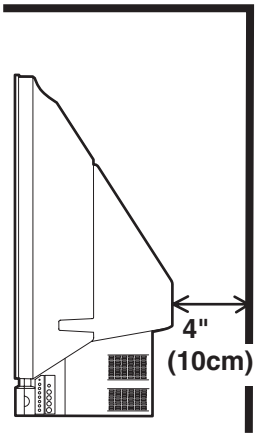
CAUTION;

When placing the LCD Projection TV, the spaces for ventilation must be maintained.

SIDE and TOP



REAR



Air Circulation

The openings in the cabinet are provided for ventilation. To ensure reliable operation of the product and protect it from overheating, these openings must not be blocked or covered.

- Take appropriate space on the top, sides and rear of the LCD Projection TV cabinet for allowing air circulation and cooling the LCD Projection TV. Minimum distance should be taken. If the LCD Projection TV is to be built into a compartment or similarly enclosed, the minimum distances must be maintained. Do not cover the ventilation slot on the LCD Projection TV. Heat build-up can reduce the service life of your LCD Projection TV, and can also be dangerous.

Place the LCD Projection TV on flat places or with an exclusive LCD Projection TV stand. Placing on uneven places may cause picture tilt or distortion.

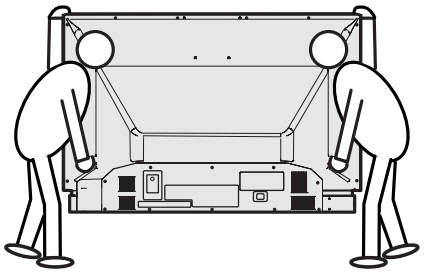
Do not place the LCD Projection TV under direct sunlight. This may have a damaging effect on picture quality and the screen surface of the LCD Projection TV.

BE SURE TO USE OR PLACE THE LCD PROJECTION TV IN THE TEMPERATURE INDICATED BELOW:

Operating Temperature	**41°F ~ 95°F (5°C ~ 35°C)**
Storage Temperature	**14°F ~ 140°F (-10°C ~ 60°C)**

RECOMMENDATION

Throughout the installation process, handling by more than two people is recommended.



Air intake vents and exhaust vents

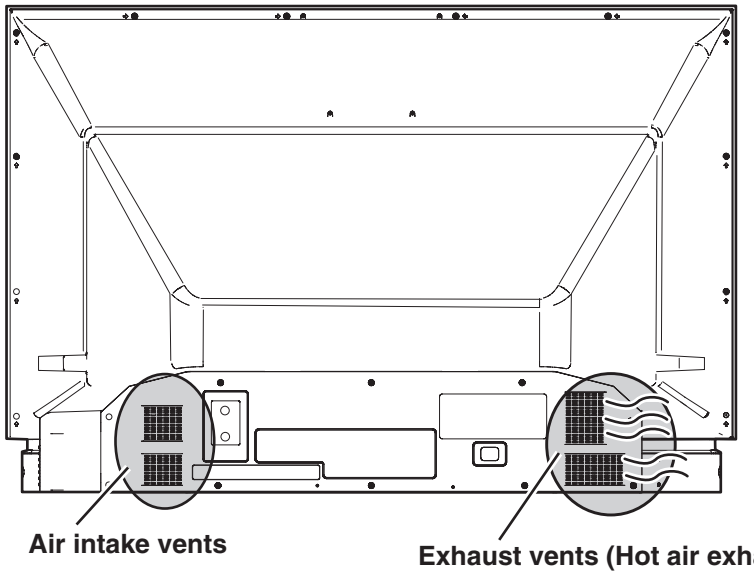
Caution;

This LCD Projection TV is equipped with cooling fans for protection from overheating. Pay attention to following to ensure proper ventilation and avoid a possible risk of fire and malfunction.

- Do not cover vent slots.

Obstructions may block cooling air.

BACK OF CABINET



Caution;

Hot air is exhausted from the exhaust vent.
When using or installing the LCD Projection TV, the following precautions should be taken.

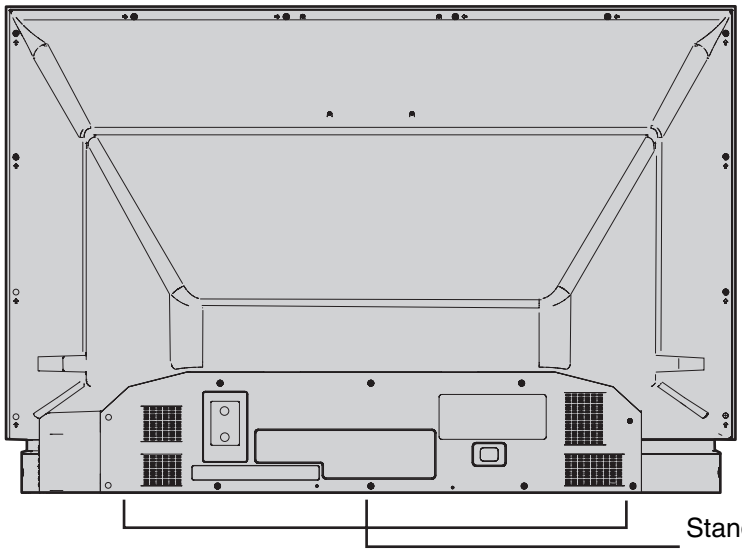
– Do not put any flammable objects near the vent.
– Do not touch a peripheral part of the exhaust vent, especially screws and metallic part. This area will become hot while the LCD Projection TV is being used.

COOLING FANS

Cooling fans are provided to cool the LCD Projection TV. The fans' running speed is changed according to the temperature inside the LCD Projection TV. When the LCD Projection TV is cooled down enough, the fans will stop running.

Placing on the TV stand

Caution;
When placing on a LCD Projection TV stand, take the measures against prevention of fall for safety.

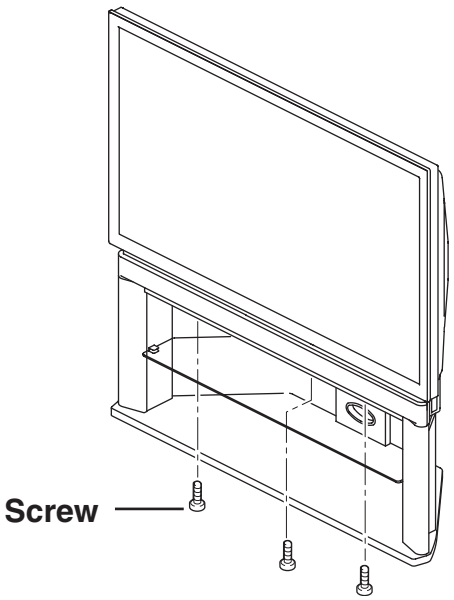


Attach the LCD Projection TV stand.

Note; Follow to installation manual of a LCD Projection TV stand. (PLV-5565STD)

Installing the LCD Projection TV for safety.
When Installing the LCD Projection TV, secure the LCD Projection TV on the stand. If not, the LCD Projection TV may fall down and accident can result.

Place the LCD Projection TV on the proper position of the stand. There are 3 holes on the top panel of the stand. Use the **3** screws (included with the stand) to fix the LCD Projection TV.

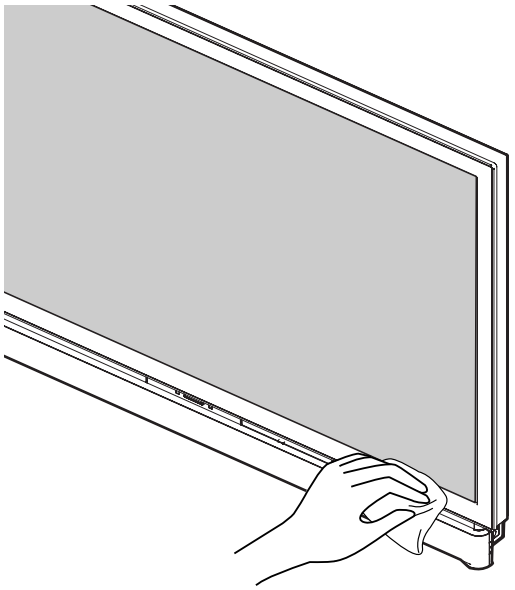


■ Cleaning

● Cleaning the LCD Projection TV

Be sure to disconnect the AC Power cord from the AC outlet before cleaning the LCD Projection TV.

- Gently wipe the screen and the cabinet with a soft dry clean cloth.
- When it is heavily soiled, wipe the screen and the cabinet with a soft cloth dampened with warm water and finish with a soft, dry clean cloth.

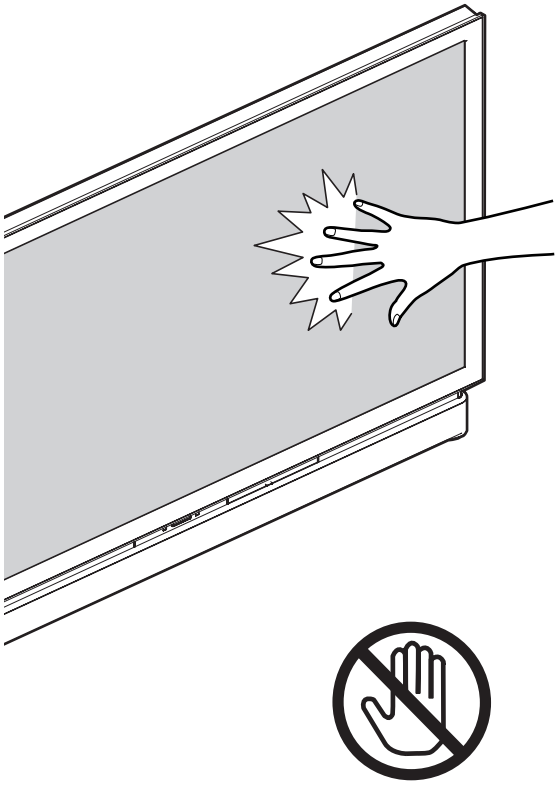


CAUTION;
Do not use benzene, thinner, or any volatile substances to clean the LCD Projection TV. These chemicals may cause damage to the product.

Care for Using the LCD Projection TV

When using the LCD Projection TV, the following precautions should be taken. Otherwise, the screen can be damaged:

- Do not push or hit the screen surface.
- Do not write, paint, or affix anything on the screen.
- Do not put anything on the LCD Projection TV.
- Never touch the projection screen directly with hands.



Do not push or hit the screen.

NOTE:

Black dots or bright points of light (red, green, or blue) may appear on the screen. This is a characteristic of the LCD panels, not a malfunction of the LCD Projection TV.

● Optical parts care and cleaning

After long periods of use, dust and other particles will accumulate on the LCD panel, prism, mirror, polarized glass, lens, etc., causing the picture to darken or color to blur. If this occurs,clean inside of the optical unit.
Remove dust or other particles using air spray. If dirt cannot be removed by air spray, disassemble and clean the optical unit.

Caution:

Use a commercial (inert gas) air spray designed for cleaning camera and computer equipment.
Use a resin-based nozzle only. Be very careful not to damage optical parts with the nozzle tip. Never use any kind of cleanser on the unit. Also, never use abrasive materials on the unit as this may cause irreparable damage.

Disassembly Cleaning

Disassembly cleaning method should only be performed when the unit is considerable dirty and cannot be sufficiently cleaned by air spraying alone.
Be sure to readjust the optical system after performing disassembly cleaning.

Cleaning Procedure
(When no good, progress to next step.)
1. Clean surface of optical parts using air spray.
2. Wipe the dry cleaning with wiping cloth and the wiper.
3. Soak a few medicines in the cloth as follows and wipe up them lightly. After that, always wipe the dry cleaning cloth.

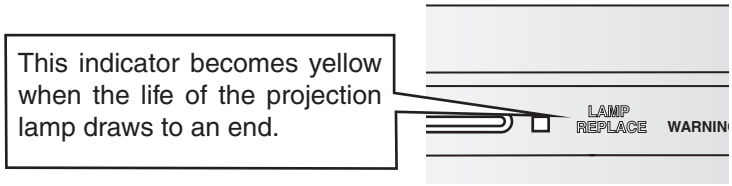
The surface of the optical components consists of multiple dielectric layers with varying degrees of refraction.
Never use organic solvents (thinner, etc.) or any kind of cleanser on these components.
Since the LCD panel is equipped with an electronic circuit, never use any liquid (water,etc.) to clean the unit.
Use of liquid may cause the unit to malfunction.

Screen handling precaution;
1. Wear gloves when handling the screen to prevent fingerprints (also, protection of hand).
2. Do not use force when handling the screen so that edges will not brake or crack.
3. Be careful in handling at the process of disassemblies, because scratch or scrub wound makes transparency decrease easily.
4. Keep the screen in a dust free environment, because dust may accumurate on the screen by static electricity.
5. Do not stand a screen obliquely for long time.
6. Use thinned synthetic detergent for cleaning, because of the weakness against solvent. Wipe gently with soft cloth.
7. The screen has laminated Lenticular lens and the Fresnel lens. As scrubbed wound on lens is occured by vibration, so avoid too much vibration after lamination of Lenticular lens and Fresnel lens.

■ Lamp Replacement

When the life of the projection lamp of this LCD Projection TV draws to an end, the **LAMP REPLACE** indicator will become yellow. If this indicator turns to yellow, replace the lamp with a new one promptly.

Front Panel



CAUTION

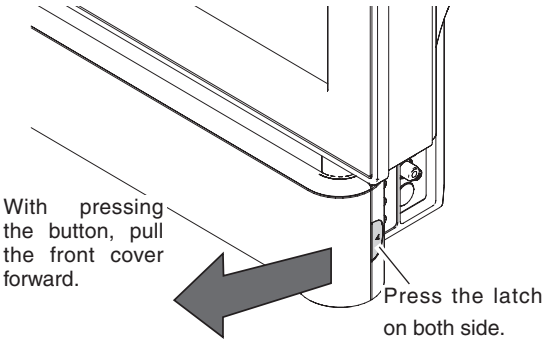
Allow a LCD Projection TV to cool, for at least 30 minutes before you open the Lamp cover. The inside of the LCD Projection TV can become very hot.

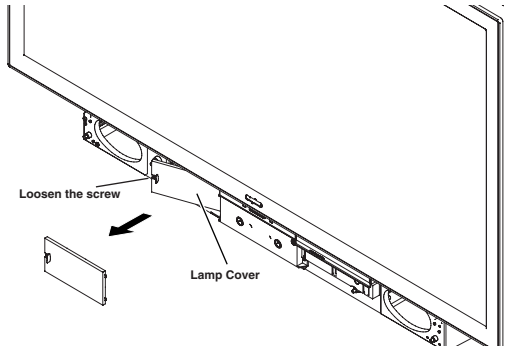
CAUTION

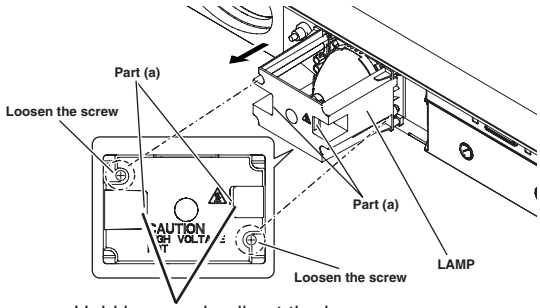
For continued safety, replace with a lamp of the same type. Do not drop a lamp or touch a glass bulb! The glass can shatter and may cause injury.

Follow these steps to replace the lamp assembly.

1. Turn off the LCD Projection TV and disconnect the AC plug. Allow the LCD Projection TV to cool for at least 30 minutes.
2. Press the latches on both side of the front cover and pull the front cover forward to remove.
3. Loosen a screw that secure the Lamp Cover with a screwdriver and remove the Lamp Cover.
4. Loosen 2 screws that secure the lamp with a screwdriver and pull out the Lamp by holding the holes on both sides.
5. Replace the Lamp with a new one and put it back and tighten 2 screws. Make sure that the Lamp is correctly secured into the Lamp compartment.
6. Put the Lamp Cover back and tighten the screw, and then replace the front cover.
7. Connect the AC Power Cord to the Power Cord Connector and turn on the LCD Projection TV.
8. Reset the Lamp replace counter.
   See “Lamp Replace Counter” on the next page .







Hold here and pull out the lamp.
(There are holes inside)

CAUTION

When installing the new Lamp into the Lamp compartment, make sure the Lamp socket is securely plugged into the compartment socket. Improper or loosen socket connection may cause arc discharge resulting fire hazard.

Lamp Replace Counter

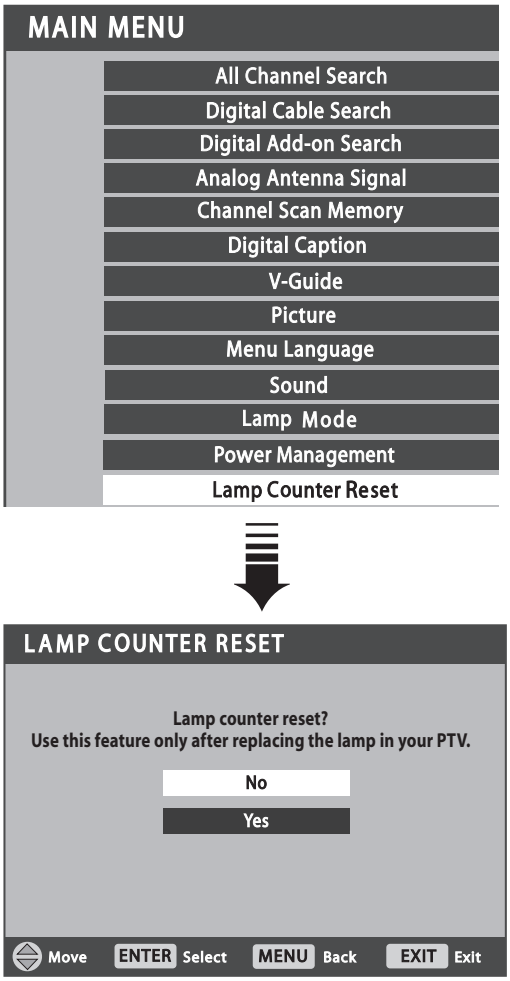
Be sure to reset the lamp counter after the lamp is replaced. When the lamp counter is reset, the LAMP REPLACE indicator will be turned off.

1 Press the **MENU** key to display the Main menu.

2 Use the **CURSOR ▲▼** keys to highlight (green) *Lamp Counter Reset*. Press **ENTER**.

3 Use the **CURSOR ▼** key to select *Yes*. Press **ENTER**.

4 Press the **EXIT** key to return to normal TV viewing.



NOTE:

- Do not reset Lamp replace counter without implementation of lamp replacement. Be sure to reset the Lamp replace counter only after replacing the lamp.
- The lamp counter cannot be reset even if you press the **RESET** key on the remote control.

● How to check Lamp Used Time

The LAMP REPLACE indicator will light yellow when the total lamp used time reaches 7,980 hours -(✻). This is to indicate that lamp replacement is required. The total lamp used time is calculated by using the below expression;

Total lamp used time = **T***eco* + **T***normal* **x** 1.14 -(✻)

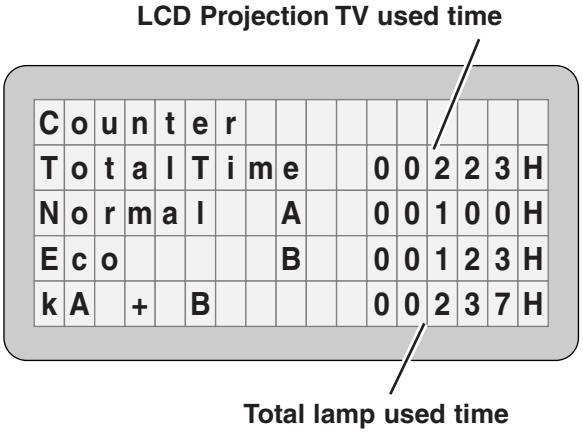
T*eco* : used time in LAMP MODE "Low"

T*normal* : used time in LAMP MODE "High" & "Mid"

You can check the lamp replace counter following to below procedure.

1 Press and hold **INFO** button on the remote control and then press **CH(+)** button on the side control.

2 The LCD Projection TV used time and lamp used time will be displayed on the screen briefly.



(✻) The specifications are subject to change without notice.

ORDER REPLACEMENT LAMP

Replacement lamp can be ordered through your dealer. When ordering a projection lamp, give the following information to the dealer.

- **Model No. of your LCD Projection TV : PLV-55WHD1 / PLV-65WHD1**
- **Replacement Lamp Type No. : POA-LMP96**
  (Service Parts No. 610 322 7382)

This LCD Projection TV uses a high-pressure lamp which must be handled carefully and properly. Improper handling may result in accidents, injury, or create a fire hazard.

- Lamp lifetime may differ from lamp to lamp and according to the environment of use. There is no guarantee of the same lifetime for each lamp. Some lamps may fail or terminate their lifetime in a shorter period of time than other similar lamps.

- If the LCD Projection TV indicates that the lamp should be replaced, i.e., if the LAMP REPLACE indicator lights up, replace the lamp with a new one IMMEDIATELY after the LCD Projection TV has cooled down.
  (Follow carefully the instructions in the Lamp Replacement section of this manual.) Continuous use of the lamp with the LAMP REPLACE indicator lighted may increase the risk of lamp explosion.

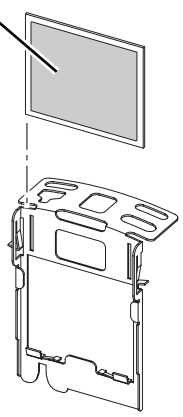
- A Lamp may explode as a result of vibration, shock or degradation as a result of hours of use as its lifetime draws to an end. Risk of explosion may differ according to the environment or conditions in which the LCD Projection TV and lamp are being used.

IF A LAMP EXPLODES, THE FOLLOWING SAFETY PRECAUTIONS SHOULD BE TAKEN.

If a lamp explodes, disconnect the LCD Projection TV's AC plug from the AC outlet immediately. Contact an authorized service station for a checkup of the unit and replacement of the lamp. Additionally, check carefully to ensure that there are no broken shards or pieces of glass around the LCD Projection TV or coming out from the cooling air circulation holes. Any broken shards found should be cleaned up carefully. No one should check the inside of the LCD Projection TV except those who are authorized trained technicians and who are familiar with LCD Projection TV service. Inappropriate attempts to service the unit by anyone, especially those who are not appropriately trained to do so, may result in an accident or injury caused by pieces of broken glass.

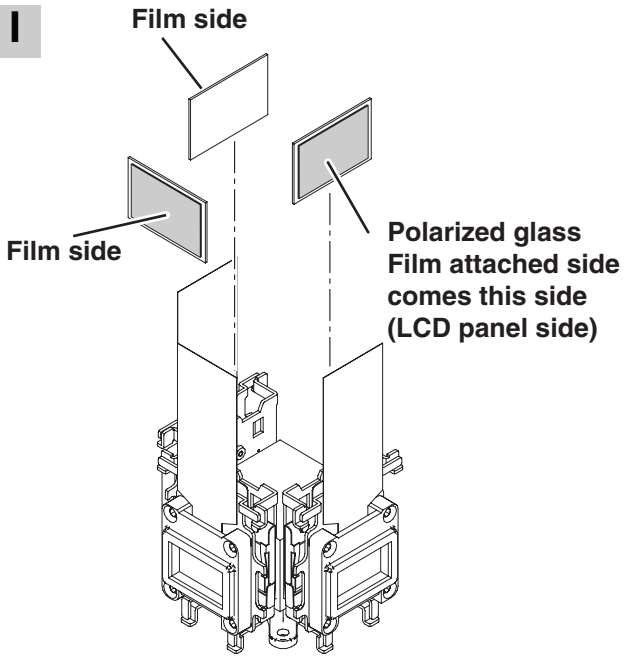
H

Film attached side comes this side.



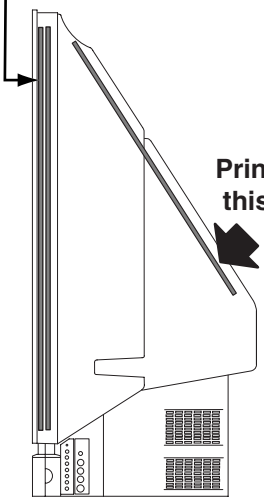
POLARIZED GLASS(IN)

I



J

Optical filter (LENTI) comes this side.
(Black surface screen comes this side.)



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■ Adjustments after Parts Replacement

After replacing electrical parts and optical parts, electrical adjustments and optical adjustments are required.

● : Adjustment necessary ❍ : Check necessary

		Disassembly / Replaced Parts												
		LCD/ Prism unit	Opti- cal unit		Projec -tion lens	Screen and mirror	Polarized glass			Power Board	Main Board	Digital Board	
							R	G	B				
Optical Adjustments	Contrast Adjustment												
	R-Contrast adjustment	●	❍				●						
	G-Contrast Adjustment	●	❍					●					
	B-Contrast adjustment	●	❍						●				
	Condenser lens adjustment	❍	❍										
	Relay lens adjustment	❍	❍										
	Picture image adjustment	❍	❍		●	●							
	Picture focus adjustment	❍	❍		●	●							
Electrical Adjustments	Output voltage adjustment									❍			
	Fan minimum voltage adjustment										●		
	TV sound level adjustment										●		
	TV stereo separation adjustment										●		
	TV video level adjustment										●		
	Common center adjustment	●									●		
	Panel luminance adjustment	❍									❍		
	White balance adjustment	❍									❍		
	Color shading correction	❍									❍		

● Memory IC Replacement

IC836 on the main board stores the data for the service adjustments, and should not be replaced except for the case of defective device.
If replaced, it should be performed the re-adjustments following to the “Electrical Adjustments”.
The data of lamp replacement monitor timer is stored in the IC836.
Please note that the lamp replace counter is reset when the memory IC (IC836) is replaced.
(Lamp replace counter can not be set to the previous value.)

● Caution to memory IC replacement
When IC836 is replaced with new one, the CPU writes down the default data of the service adjustments to the replaced IC, refer to the service adjustment table. As these data are not the same data as factory shipped data, it should be required to perform the re-adjustments following to the “Electrical Adjustments”.
Please note that in this case the lamp replace counter will be reset.

● Caution of Main Board replacement (in the case IC836 is not defective)
When the main board is replaced, IC836 should be replaced with the one on previous main board. After replacement, it should be required to perform the re-adjustments following to the “Electrical Adjustments”.
In this case, the lamp replace counter can be kept the value as before.

■ Optical Adjustments

● Preparation for Adjustments

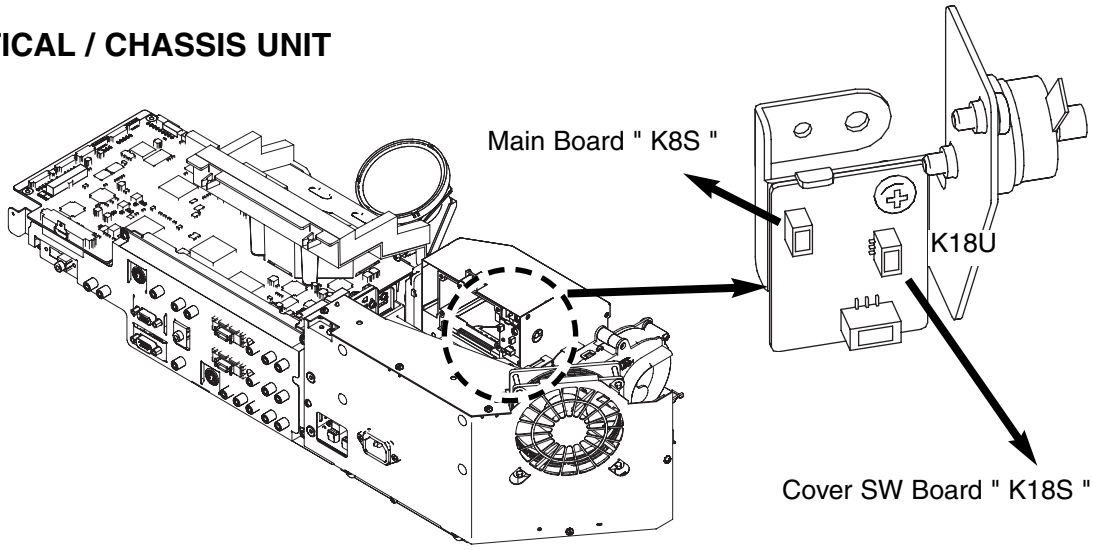
Before taking optical adjustments, remove the optical / chassis unit, front panel unit, key unit, digital unit following to the “Mechanical Disassemblies”

Note: Do not disconnect connectors on the main board, except for **K01L, K01R**, **K35R**, **K35G,** or **K35B**, because the LCD Projection TV can not be turned on due to operate the power failure protection.

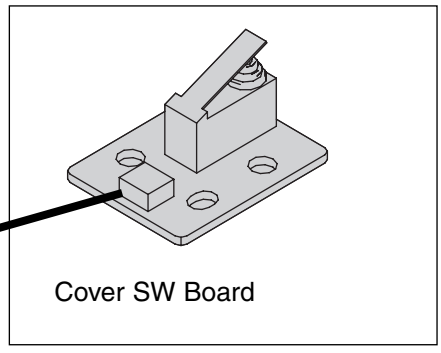
Note: The connector **K18U** is for the lamp cover switch, so you should short **SW1861** on the Cover SW board. Or you should short between **1** pin and **3** pin of **K18U**.

Joint Board

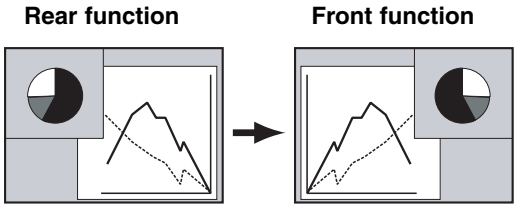
OPTICAL / CHASSIS UNIT



LAMP COVER SWITCH (SW1861)



Note:
If the picture is left / right reversed on a screen, you can select front or rear projection for your convenience.



● Rear - Front Project SW

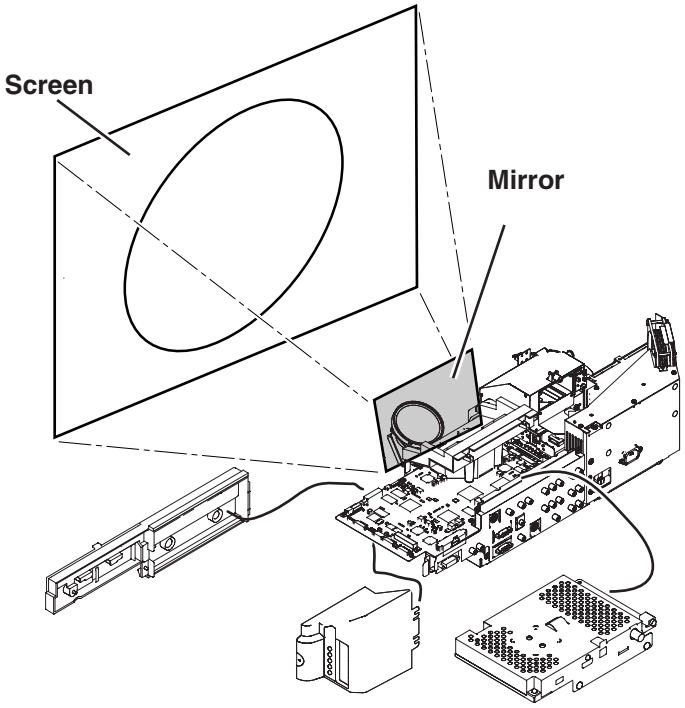
1. Enter the service mode.
2. Select item no. "**400**" and change data value to select a direction of projection.

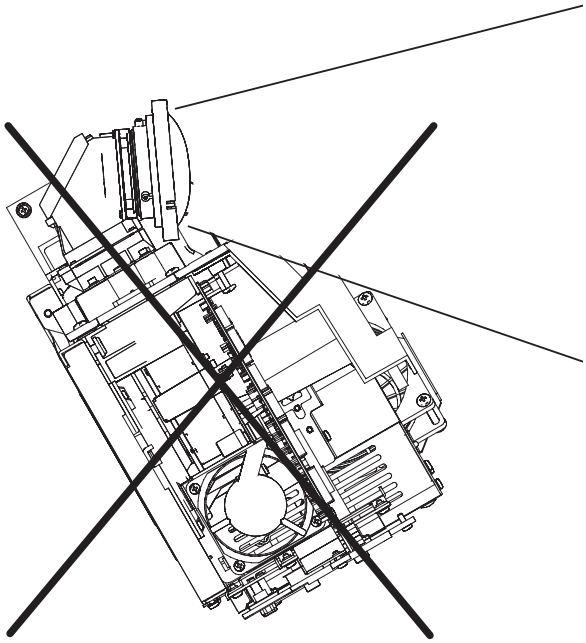
Item no.	Adjustment value	Function
400	**0**	Front projection
	1	Rear projection

3. Exit the service mode.
   ---
4. After servicing, this item should be set to default value = **1**.

Note: Service mode is refer to "Service Adjustment Menu Operation".

Overview for Servicing (an example)



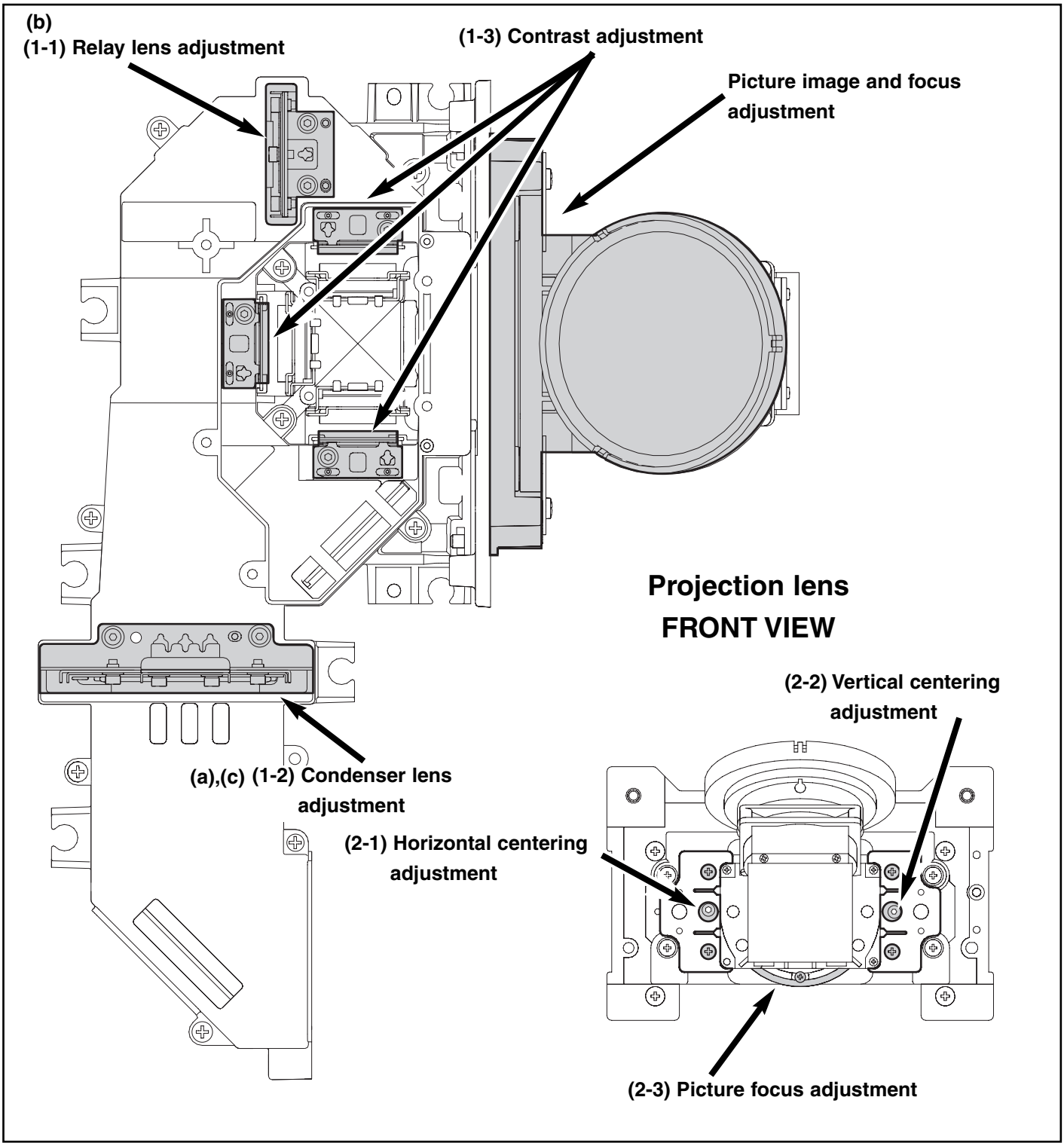


Warning!

Do not use Optical/chassis unit with inclining.
It may result in malfunction of the LCD Projection TV

Adjustment of optical components location

Blue mirror, Condenser lens, Relay lens and contrast adjustment operate it from a back side.(Item1-1~1-3)
(Remove the Optical/Chassis unit from the Cabinet)
Picture image and focus adjustment operate it from a front side.(Item 2-1~2-3)
(An optical unit must be fixed.)
(Install the cabinet bottom cover.)



Optical components adjustments procedure

When adjusting optical components, adjust each adjustment item in numerical order.
Incorrect adjustment steps may produce improper adjustment. The items adjusted correctly can be omitted from the steps.

When the Optical unit is disassembled, the pre-adjustment is necessary.
The pre-adjustment can be omitted usually.

Pre-adjustment

- **(a) Condenser lens setting**
- **(b) Relay lens adjustment**
- **(c) Condenser lens adjustment**

1. Optical system adjustment (Optical axis adjustment)

- **(1-1) Relay lens adjustment**
- **(1-2) Condenser lens adjustment**
- **(1-3) Contrast adjustment (Polarized glass adjustment) R,G,B**

2. Picture image and focus adjustment

- **(2-1) Horizontal centering adjustment**
- **(2-2) Vertical centering adjustment**
- **(2-3) Picture focus adjustment**

Optical Pre-adjustment

Turn the LCD projection TV on by a state of without FPC cables.

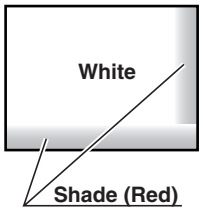
(a) Condenser lens pre-adjustment

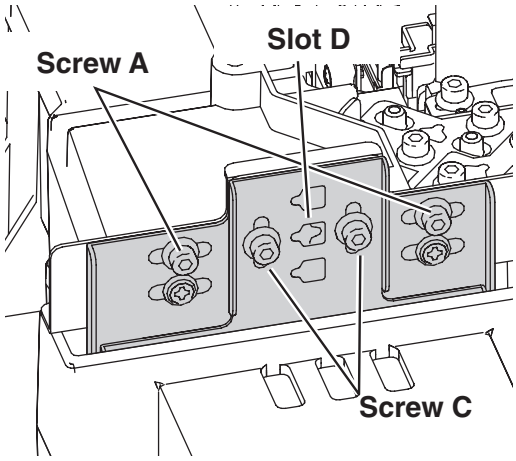
Loosen the 2 screws A and 2 screws C.

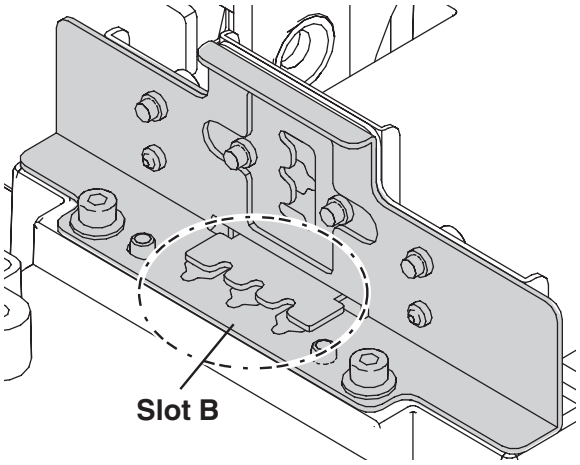
Adjust the slot B to make shading(Red) appears on the right of the screen as shown in figure.

Adjust the slot D to make shading(Red) appears on the bottom of the screen as shown in figure.

(The screws are tightened later. The screws are tightened in step-d)







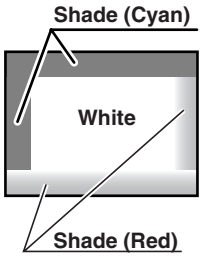
(b) Relay lens pre-adjustment

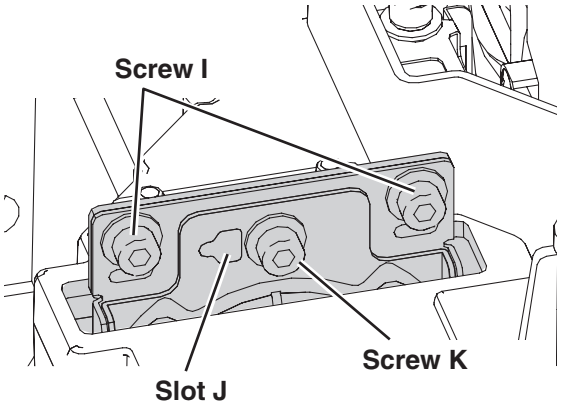
Loosen the 2 screws I and screw K.

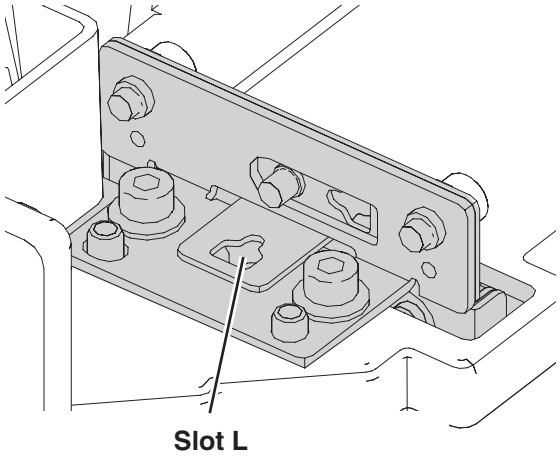
Adjust the slot J to make shading(Cyan) appears on the right of the screen as shown in figure. (The same amount as red is appeared on the other side.)

Adjust the slot L to make shading(Cyan) appears on the bottom of the screen as shown in figure. (The same amount as red is appeared on the other side.)

Tighten 2 screws I and screw K.



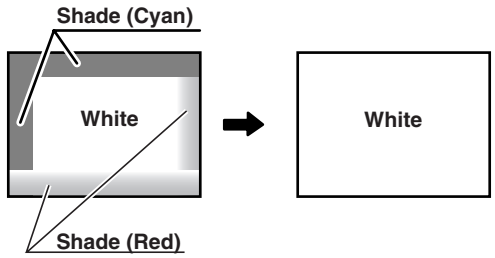


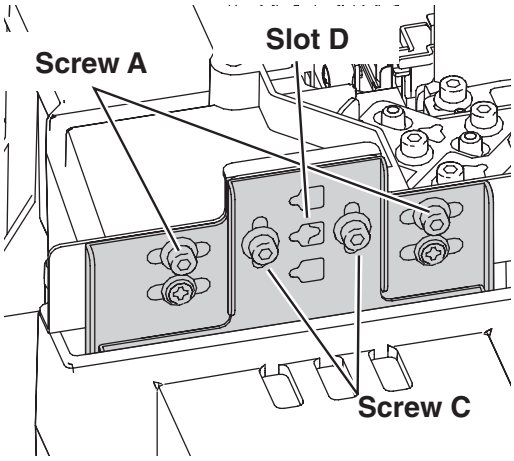


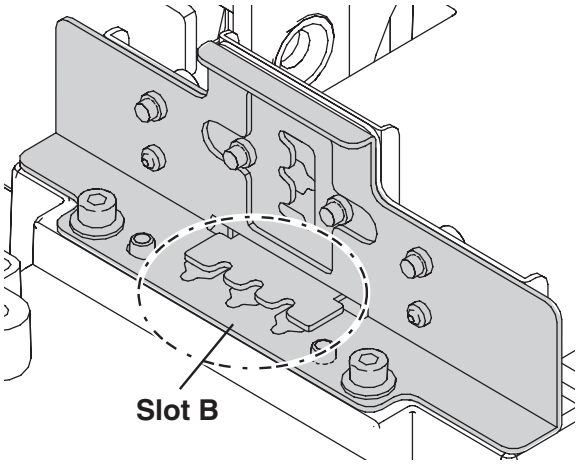
(c) Condenser lens pre-adjustment

Adjust the slot B to make color uniformity in white.
(Shading disappears on the right of the screen. Red and Cyan)
Adjust the slot D to make color uniformity in white.
(Shading disappears on the bottom of the screen. Red and Cyan)

Tighten 2 screws A and 2 screws C.

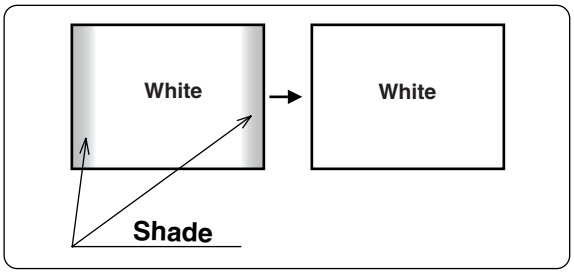


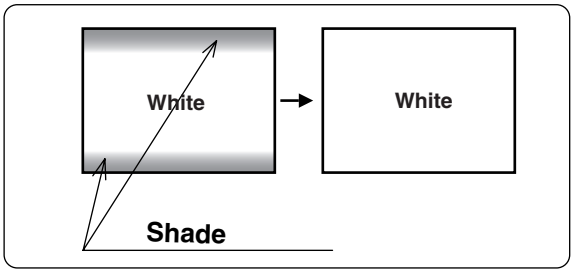


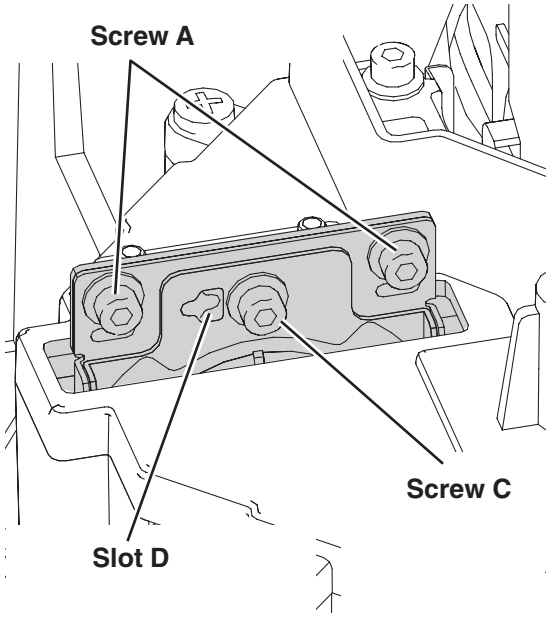


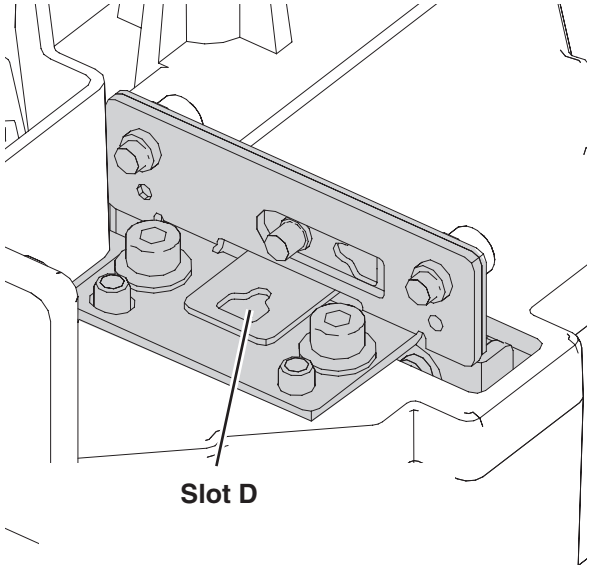
1-1. Relay lens adjustment

1. Turn the LCD projection TV on by a state of without FPC cables.
2. Adjust the adjustment base of Relay lens unit to make color uniformity in white.
   a) If the shading appears on the left or right of the screen as shown in figure, loosen **2** screws **A** with the ball allen wrench, and adjust the slot **B** to make color uniformity in white by using a slot screwdriver.
   b) If the shading appears on the top or bottom of the screen as shown in figure, loosen screw **C** with the ball allen wrench, and adjust the slot D to make color uniformity in white by using a slot screwdriver.
3. Tighten 2 screws **A** and screw **C** to fix the condenser lens unit.



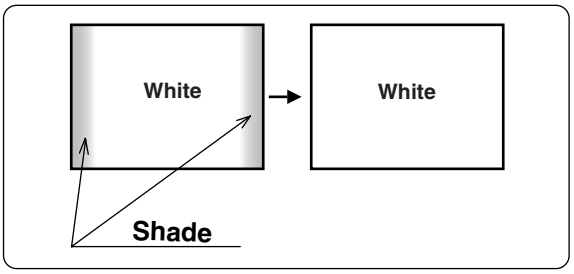


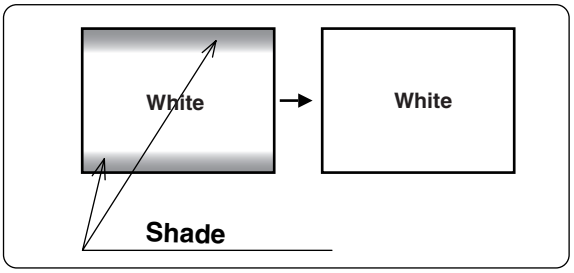


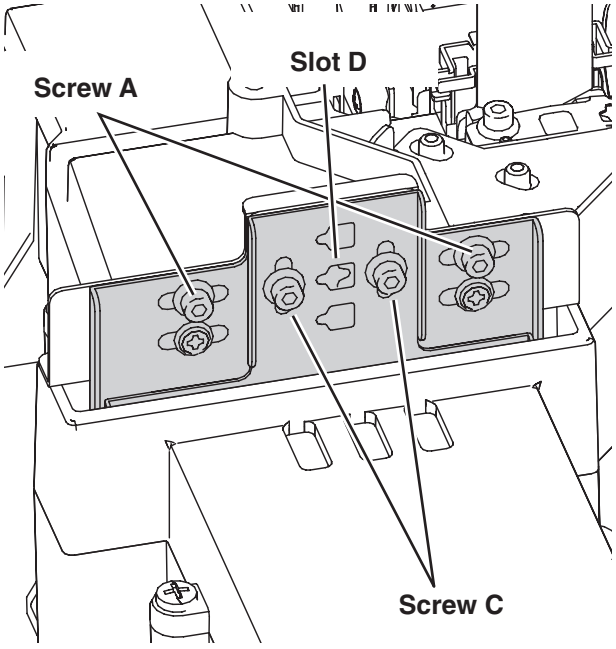


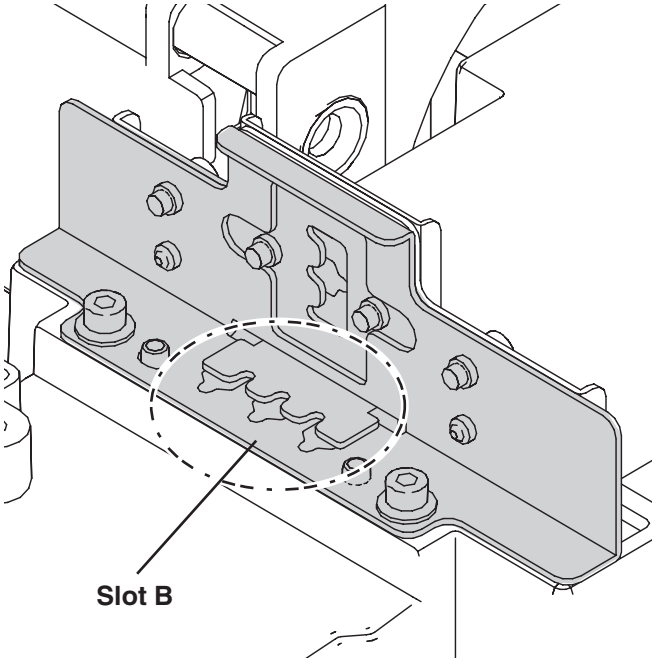
1-2. Condenser lens adjustment

1. Turn the LCD projection TV on by a state of without FPC cables.
2. Adjust the adjustment base of Condenser lens unit to make color uniformity in white.
   a) If the shading appears on the left or right of the screen as shown in figure, loosen **2** screws **A** with the ball allen wrench, and adjust the slot **B** to make color uniformity in white by using a slot screwdriver.
   b) If the shading appears on the top or bottom of the screen as shown in figure, loosen **2** screws **C** with the ball allen wrench, and adjust the slot D to make color uniformity in white by using a slot screwdriver.
3. Tighten 2 screws **A** and 2 screws **C** to fix the condenser lens unit.





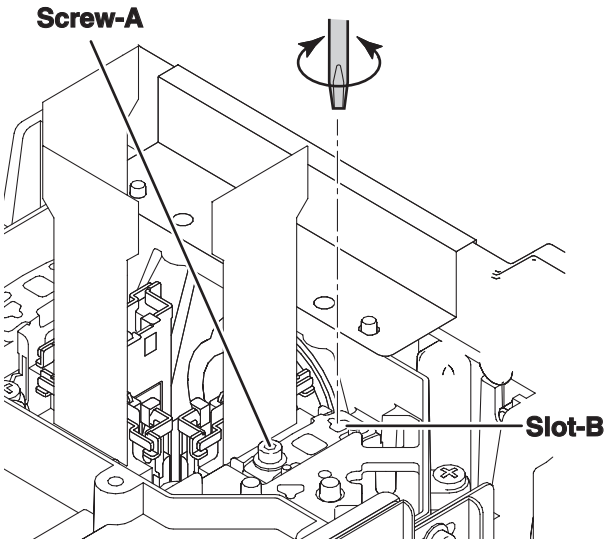


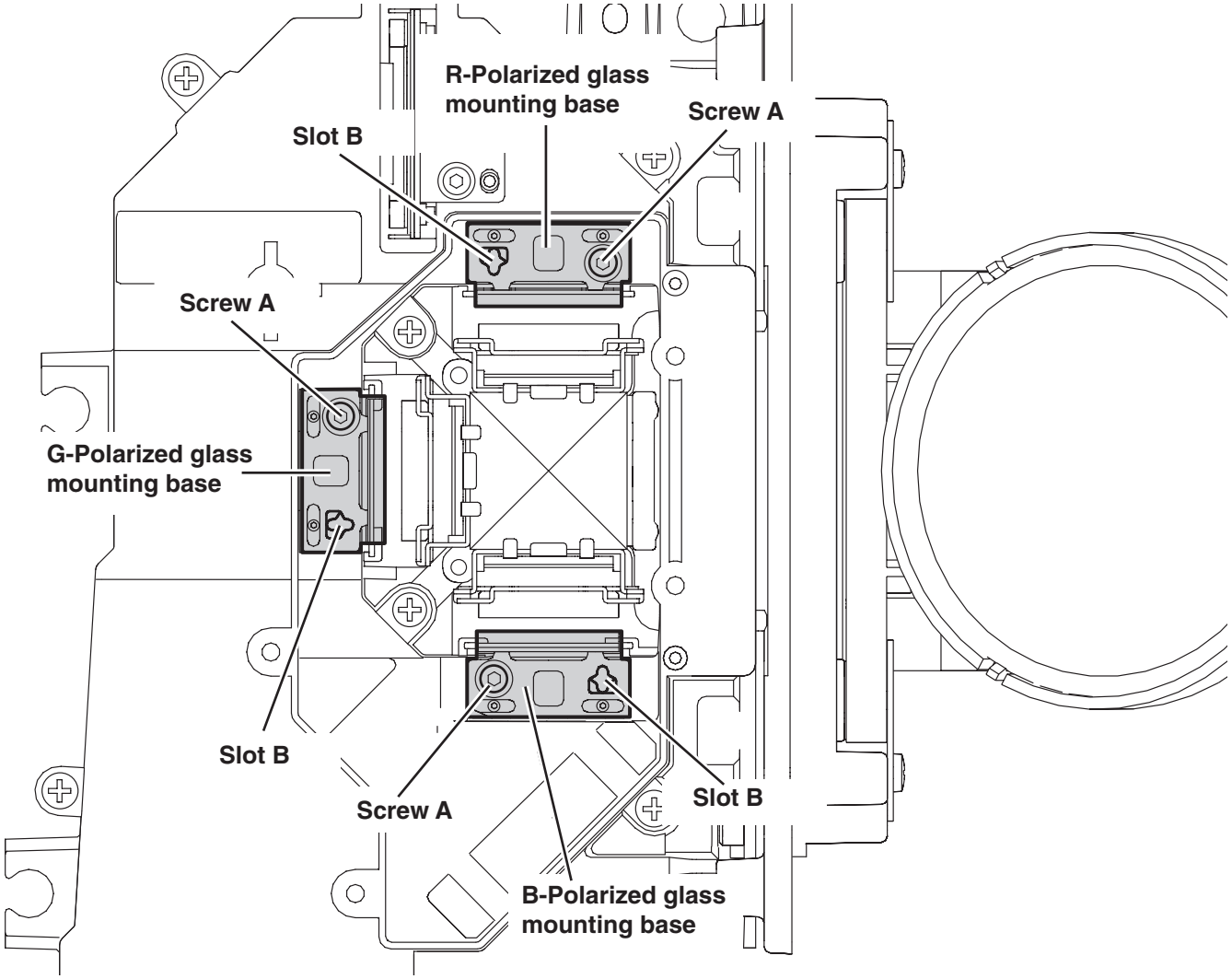


1-3. Contrast adjustment (R,G,B, polarized glass)

R, G and B Contrast adjustment :

1. Turn the LCD projection TV on and input a 100% of black raster signal (0% of white raster signal).
2. Loosen screw **A** on the polarizer unit which you intend to adjust using ball allen wrench.
3. Turn the polarized glass mounting base (slot **B**) by using a slot screwdriver and adjust the brightness on the screen to the lowest level of black.
4. Tighten the screw **A** to fix the polarizer unit.
5. Adjust the polarizer unit of other colors.
   (Repeat steps 2 to 4.)

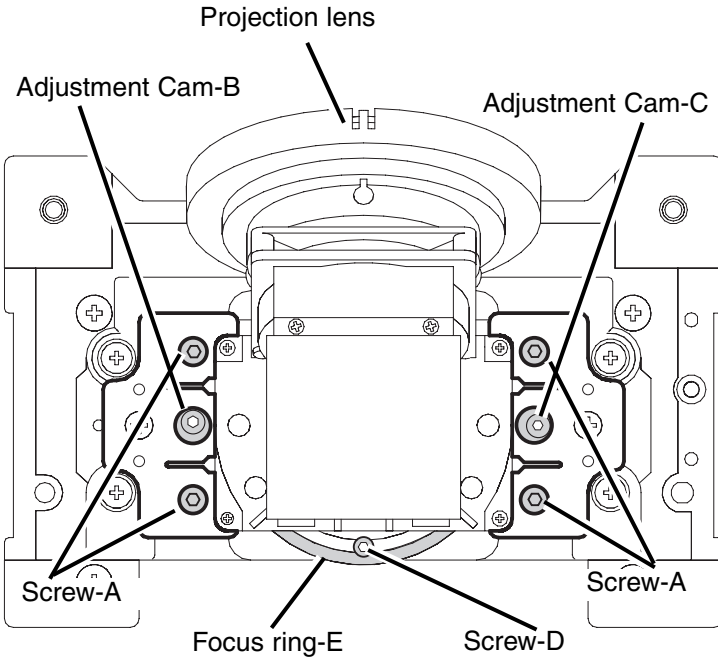


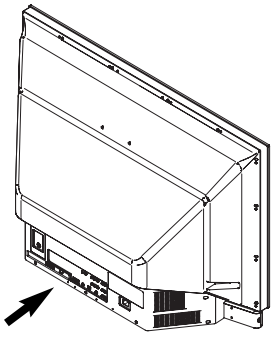


2 Picture Image and focus adjustment (Projection lens adjustment)

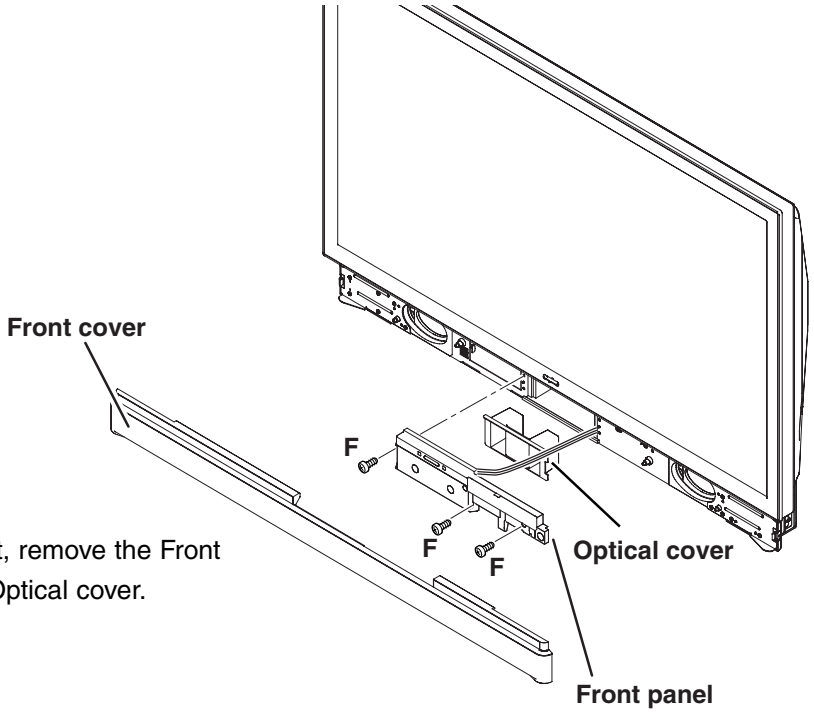
Before adjustment

1. Turn the LCD projection TV on and display grid pattern or circular pattern on the screen.
2. Be sure to fixed the Optical / Chassis unit with **3** screws to the cabinet.
   Install all parts on a back side, otherwise it may cause lose of performance of Optical Adjustment.
   (Refer to mechanical disassemblies.)
3. Remove the Front Cover unit from the cabinet bottom.
4. Remove the **3** screws **F** and remove the Front panel unit.
5. Remove the Optical Cover.
   (Refer to mechanical disassemblies.)
6. When adjust the picture image (horizontal centering and vertical centering) , loosen the **4** screws **A** of the lens shift unit**.**
7. When adjust the picture focus, loosen the focus fixed screw **D** of the projection lens.

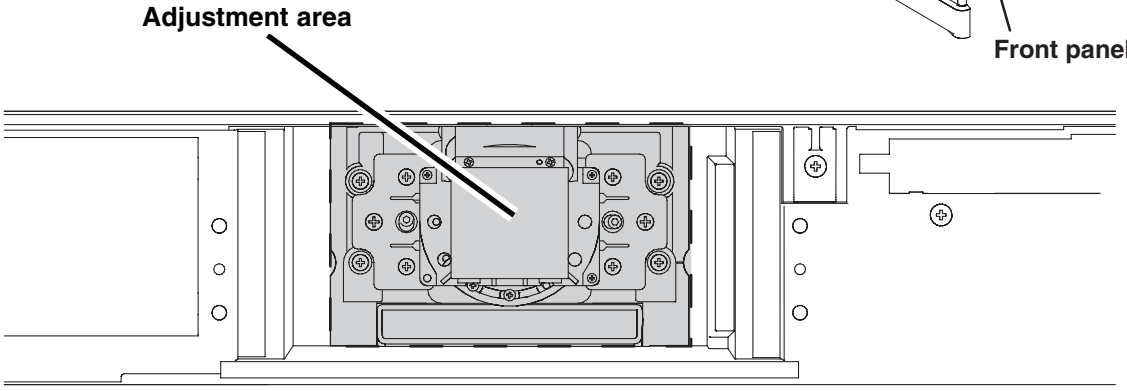




Install all parts on a back side.



Remove the Front cover unit, remove the Front panel unit and remove the Optical cover.



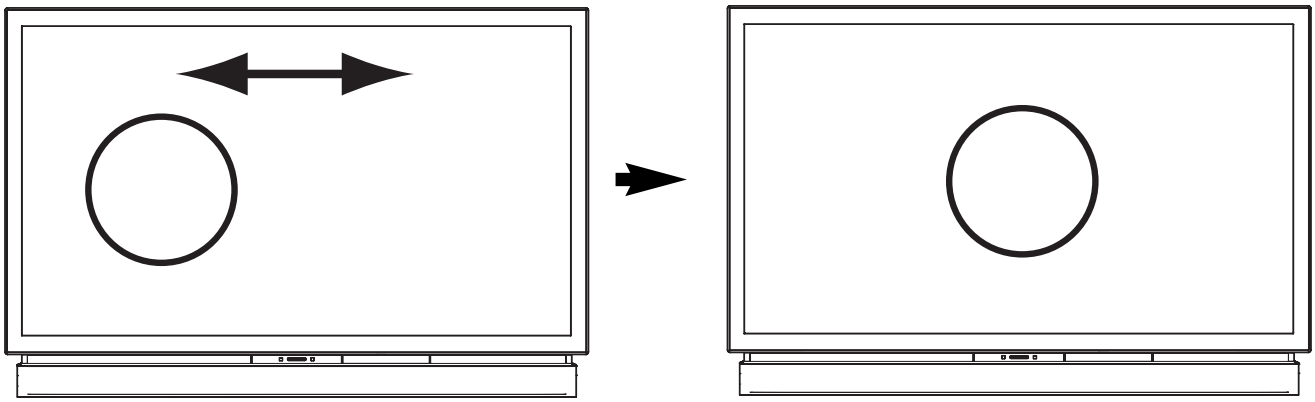
2-1. Horizontal centering adjustment

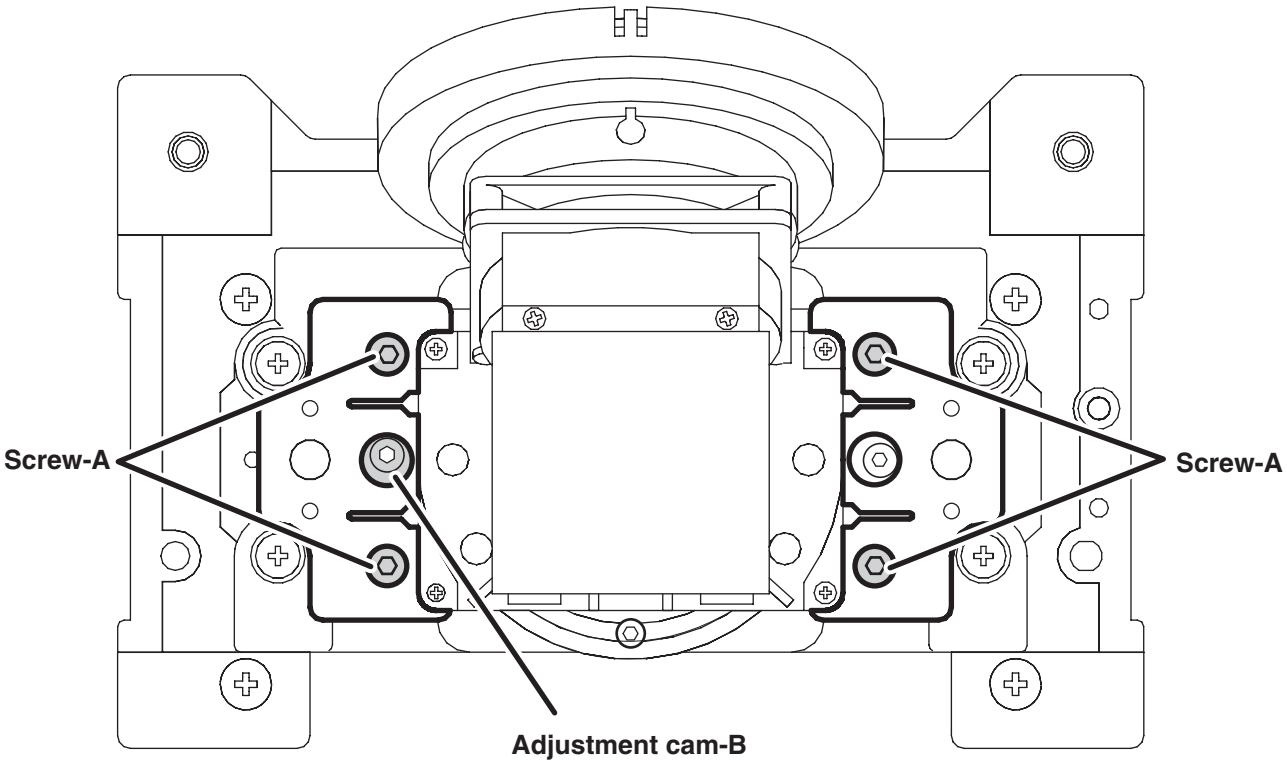
When the picture is shifted to right or left, adjust the picture horizontally.

1. Loosen the **4** screws **A** from the lens shift unit.
2. Project the circular pattern on screen.
3. Turn the adjustment cam **B** to right or left and adjust the position to project the picture on just center of the screen.
4. Tighten the **4** screws **A**.

Picture image movement

Horizontal centering



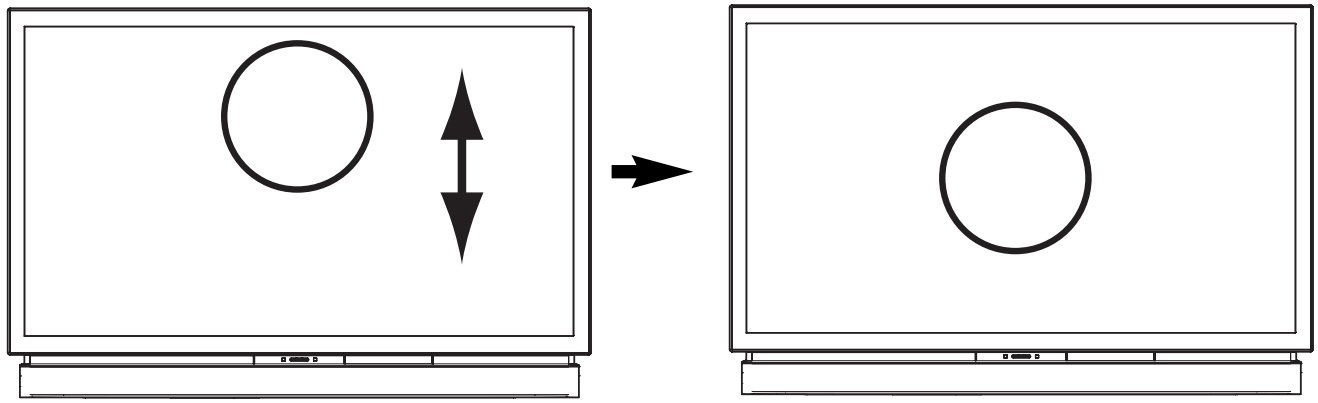


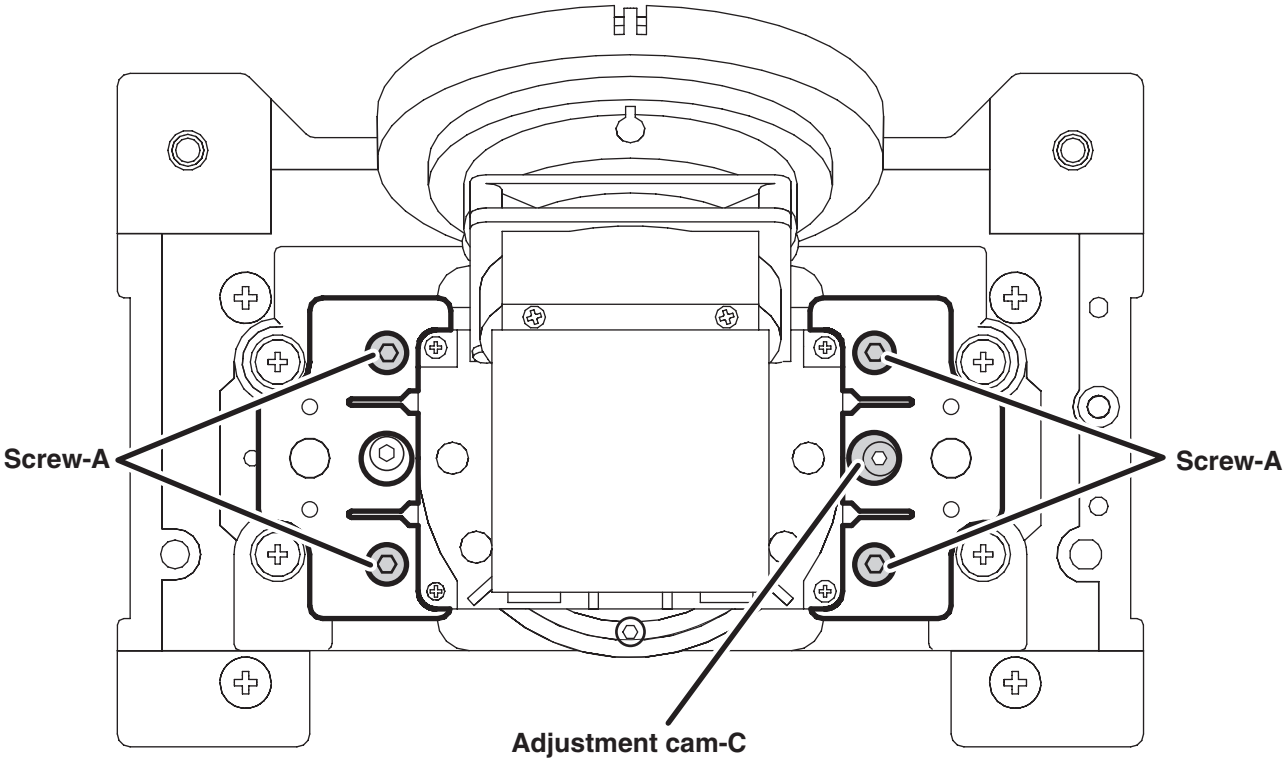
2-2. Vertical centering adjustment

When the picture is shifted to right or left, adjust the picture vertically.

1. Loosen the **4** screws **A** from the lens shift unit.
2. Project the circular pattern on screen.
3. Turn the adjustment cam **C** to right or left and adjust the position to project the picture on just center of the screen.
4. Tighten the **4** screws **A**.

Picture image movement **Vertical centering**





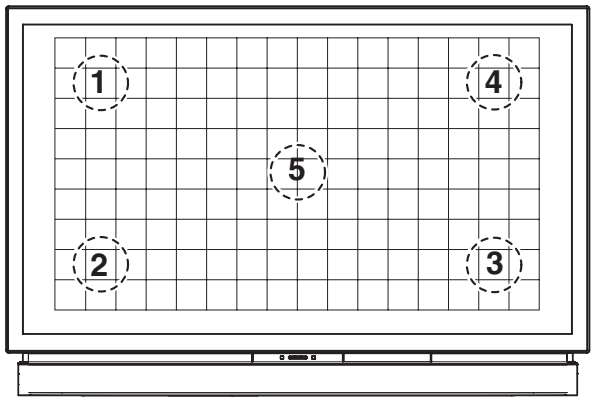
2-3. Picture focus adjustment

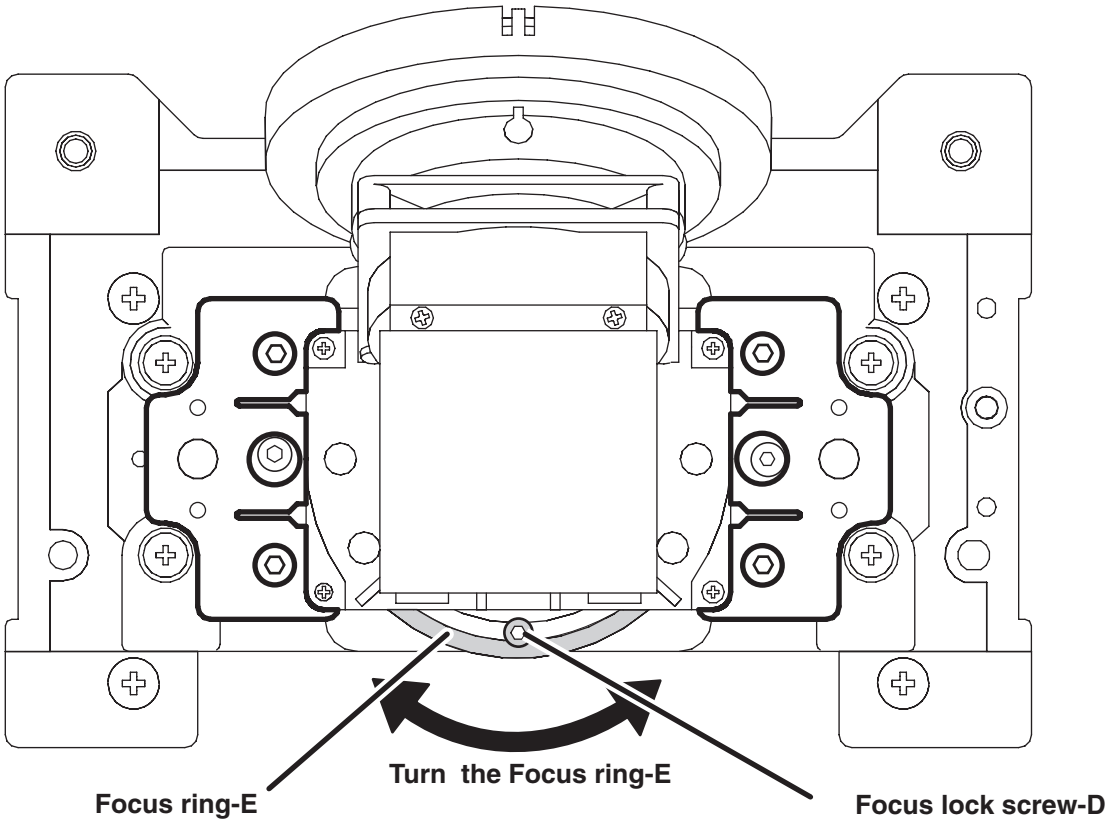
When the picture is off focused, adjust the picture focus.

1. Loosen the Projection lens focus lock screw **D** and turn the focus ring **E** for best focus.

Be sure to tighten the Projection lens focus lock screw **D** and fix the Projection lens after adjustment.

Adjust center part and four corners on the grid pattern to sharp focus.





■ Electrical Adjustments

● Service Adjustment Menu Operation

◆To enter service mode

To enter service mode, press and hold the "**INFO**" button on the remote control, then press the "**VOL(–)**" button on the side control. As shown in a figure, the service mode display appears on the screen.

◆To adjust service data

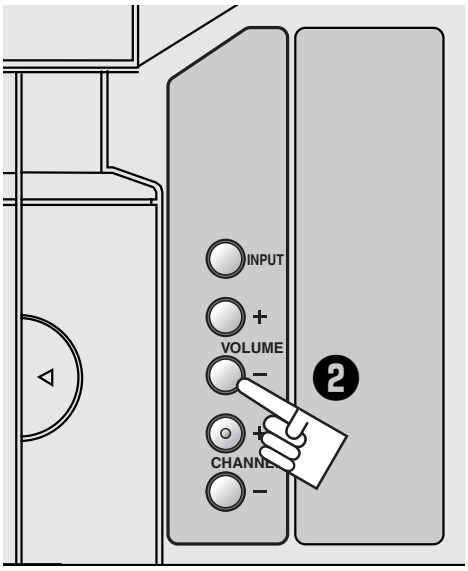
Adjust service data using the following control buttons on the LCD projection TV or the remote control.

– "**CHANNEL UP**" .....An item number increases.
– "**CHANNEL DOWN**" .....An item number decreases.
– "**POINT RIGHT**" or "**VOLUME (+)**" .....An adjustment value increases.
– "**POINT LEFT**" or "**VOLUME (–)**" .....An adjustment value decreases.

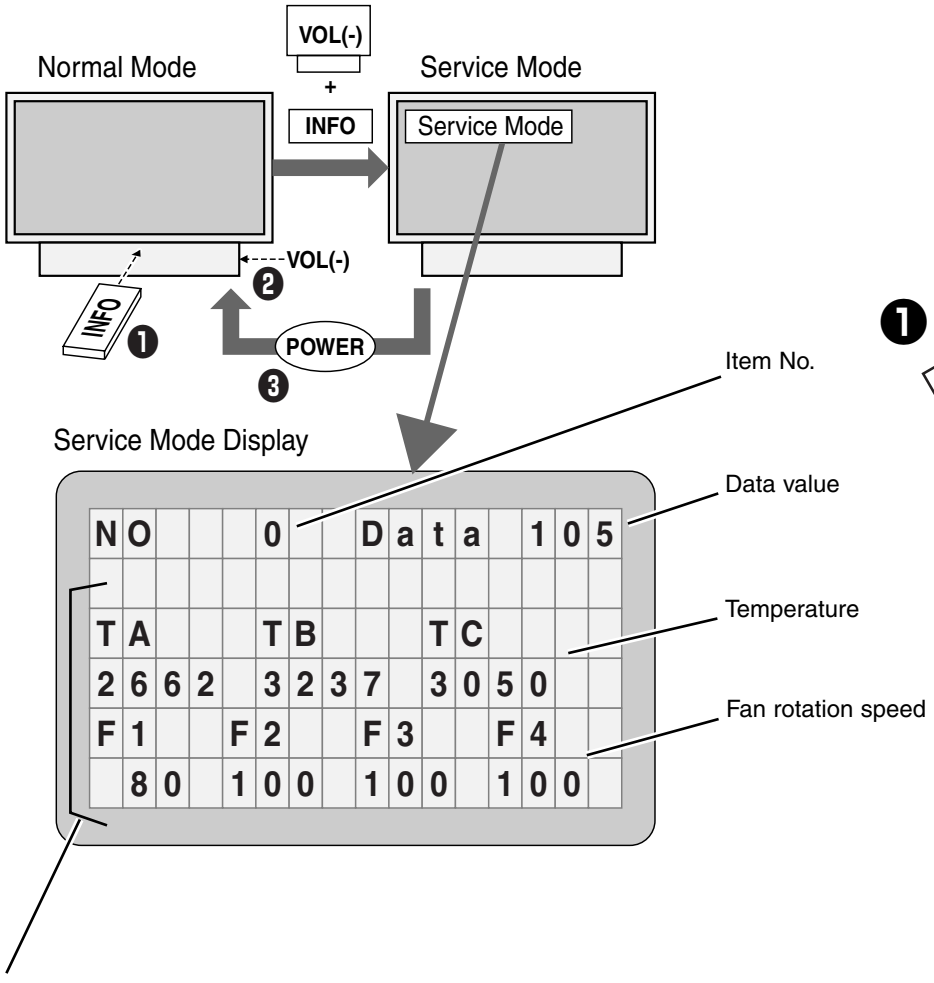
◆To exit service mode

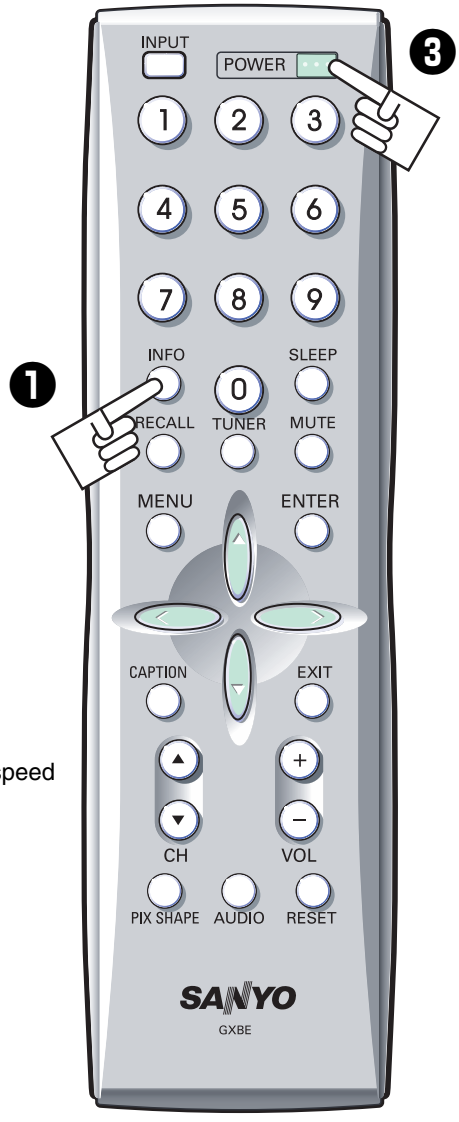
To quit the service mode, press the "**POWER ON/OFF**" button only once on the LCD projection TV or the remote control.

Side Control



Remote Control





Note :
This part of display is available at the service mode No.600s.

● Circuit Adjustments

CAUTION: The each circuit has been made by the fine adjustment at factory. Do not attempt to adjust the following adjustments except requiring the readjustments in servicing otherwise it may cause loss of performance and product safety.

Note: Please refer to "Service Adjustment Menu Operation" for entering to the service mode and adjusting the service data.

[Adjustment Condition]

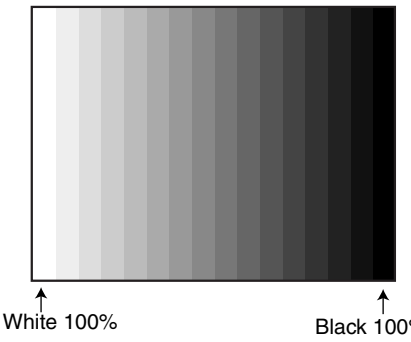
● Input signal

Video signal ..... 1.0Vp-p/75Ω terminated, color bar pattern, 16 steps gray scale pattern, and 100%/50% white pattern (Composite video signal)

Component video signal ..... 0.7Vp-p/75Ω terminated, color bar pattern (480i format)

RF Audio signal ..... 1KHz 100% modulation signal and multi stereo signal

16 steps gray scale pattern



● Picture setup menu ..... Before the electrical adjustments from step [6] to step [11], the picture setup menu should be set as follows;
Main menu > Picture setup menu >
Picture --- Auto

1 Output voltage adjustment

Equipment Digital voltmeter

1. Adjust the voltage by using **VR621** on the power board as following.

Test Point	AC Input	Reading
(+) **1**pin of **K6A**	120V	.355V ±2Vdc
(–) **3**pin of **K6A**	(or 230V	.370V ±2Vdc)

Caution:
Be sure to connect the lamp when taking this adjustment.

"K6A" is in the primary circuit. HOT CIRCUIT!

Note:
The Power Board for replacing is already adjusted in a factory, so it is not required to perform this readjustment.

2 Fan minimum voltage adjustment

Equipment Digital voltmeter

1. Enter the service mode.
2. Change data values of each test points to adjust the fan minimum output voltage.

Item no.	Fan Location	Test Point	Adjustment value
0	FN905/6	TPFAN1	**8.0** ±0.05Vdc
1	FN901	TPFAN2	**8.0** ±0.05Vdc
2	FN903/4	TPFAN3	**8.0** ±0.05Vdc
3	FN902	TPFAN4	**8.0** ±0.05Vdc

Note:
The location of each fan is refer to P.90.

3 TV sound level adjustment

Equipment	Digital voltmeter
Input mode	**Analog TV** mode
Input audio signal	1KHz 100% modulation

1. Enter the service mode.
2. Adjust the audio output amplitude at Audio output-(L) terminal to become 400 ±10 mVac.

Item no.	Test Point	Adjustment value
750	(+) **L** audio output (–) **GND**	**500** ±10 mVac

Note:

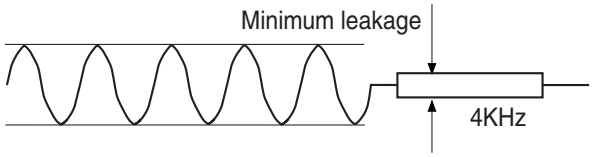
At the case with using an oscilloscope, adjust the audio output amplitude at Audio output-(L) terminal to become 1.41 ±0.02 Vp-p.

4 TV stereo separation adjustment

Equipment	Oscilloscope
Input mode	**Analog TV** mode
Audio mode	Stereo mode
Input audio signal	Multi sound program

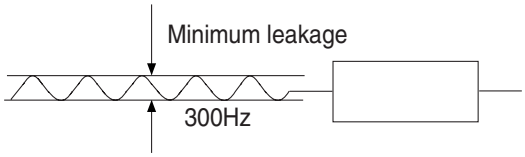
1. Enter the service mode.
2. Adjust the amplitude of 4KHz at Audio output-(L) terminal to become minimum level.

Item no.	Test Point	Adjustment value
751	(+) **L** audio output (–) **GND**	Minimum at 4KHz



3. Adjust the amplitude of 300Hz at Audio output-(R) terminal to become minimum level.

Item no.	Test Point	Adjustment value
752	(+) **R** audio output (–) **GND**	Minimum at 300Hz

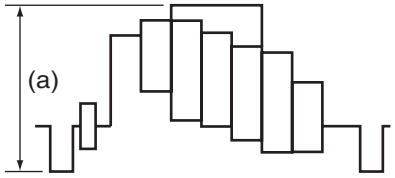


5 TV video level adjustment

Equipment	Oscilloscope
Input mode	**Analog TV** mode
Input signal	Color bar pattern

1. Adjust the amplitude "**a**" by using **VR101** on the tuner board.

Test Point	Adjustment value
(+) **TPTV** (–) **TUNER_GND**	**1.0** ±0.03Vdc



6 Common center adjustment

Input mode	Not designated
Input signal	50% whole green, blue or red signal
Picture	Auto
Lamp mode	**High**

1. Enter the service mode.
2. Select item no. "**308**", and change data value from "**0**" to "**2**". (Flicker adjustment mode ...see Note)
3. Receive 50% whole green, blue or red signal and project only one color component to the screen.
4. Change data value to obtain **the minimum flicker** for each color on the screen.
5. After this adjustment, select item no. "**308**", and change data value from "**2**" to "**0**" for normal operation. (Or turn off the projection TV, then this data value will be reset to "**0**".)

Item no.	Screen
4	Only **green** color picture
5	Only **blue** color picture
6	Only **red** color picture

Note:
The FRP signal (common electrode reverse signal) works at 120Hz, so flicker is invisible for human eyes. The service mode no. "**308**" can change the FRP signal from 120Hz to 60Hz, and flicker can be seen.

7 Panel luminance adjustment (High)

Equipment	luminance meter
Input mode	**VIDEO_1 [Video]** mode
Picture	Auto
Lamp mode	**High**

1. Receive the 100% whole-white signal.
2. Enter the service mode.
3. Measure luminance on the screen with the luminance meter. It is **A** for the reading of luminance meter.
4. Change the signal source to the 50% whole-white signal.
5. Select item no. "**7**" and change data value to make the reading of luminance meter to be **A x 22±1%**.

Item no.	Screen	Ajustment value
	100% white	**A** (reading value)
7	50% white	**A x 22** ± 1**%**

8 White balance adjustment (High)

Input signal	16-step gray scale signal
Input mode	**VIDEO_1 [Video]** mode
Picture	Auto
Lamp mode	**High**

1. Enter the service mode.
2. Select group/item no. "**8**" (**Blue**) or "**9**" (**Red**), and change data values respectively to make a proper white balance.

Note:
If the luminance meter is not equipped, you can take another method instead as follows;

1. When the main board is replaced, the data value at "**7/8/9**" of the previous main board should be copied manually.
2. If the main board is not replaced, you need not re-adjust these items.

9 Panel luminance adjustment (Mid)

Equipment luminance meter
Input mode **VIDEO_1 [Video]** mode
Picture Auto
Lamp mode **Mid**

1. Enter the service mode.
2. Receive the 100% whole-white signal, and select item no. "**10**", the screen image will be whole-green.
3. Measure luminance on the screen with the luminance meter. It is **B** for the reading of luminance meter.
4. Change the signal source to the 50% whole-white signal.
5. Change data value to make the reading of luminance meter to be **B x 22±1%**.

6. Receive the 100% whole-white signal, and select item no. "**11**", the screen image will be whole-blue.
7. Measure luminance on the screen with the luminance meter. It is **C** for the reading of luminance meter.
8. Change the signal source to the 50% whole-white signal.
9. Change data value to make the reading of luminance meter to be **C x 22±1%**.

10. Receive the 100% whole-white signal, and select item no. "**12**", the screen image will be whole-red.
11. Measure luminance on the screen with the luminance meter. It is **D** for the reading of luminance meter.
12. Change the signal source to the 50% whole-white signal.
13. Change data value to make the reading of luminance meter to be **D x 22±1%**.

Item no.	Screen	Ajustment value
10	100% green	**B** (reading value)
	50% green	**B x 22±1%**
11	100% blue	**C** (reading value)
	50% blue	**C x 22±1%**
12	100% red	**D** (reading value)
	50% red	**D x 22±1%**

Note:
If the luminance meter is not equipped, you can take another method instead as follows;

1. When the main board is replaced, the data value at "**10/11/12**" of the previous main board should be copied manually.
2. If the main board is not replaced, you need not re-adjust these items.

10 White balance adjustment (Mid)

Input mode **VIDEO_1 [Video]** mode
Picture Auto
Lamp mode **Mid**

1. Enter the service mode.
2. Receive the 100% whole-white signal.
3. Select item no. "**13**" (**Green**), "**14**" (**Blue**) or "**15**" (**Red**), and change data values respectively to make a proper white balance.
4. Receive the 50% whole-white signal.
5. Select item no. "**17**" (**Blue**) or "**18**" (**Red**), and change data values respectively to make a proper white balance.

Note:
Confirm that the same white balance is obtained in 100% white and 50% white signals.

Note on WHITE UNIFORMITY Adjustment

If you find the color shading on the screen, please adjust the white uniformity by using the proper computer and "Color Shading Correction" software supplied separately. The software can be ordered as follows;

COLOR SHADING CORRECTION ver.. 4.00
Service Parts No. 645 075 9611

● Service Adjustment Data Table

These initial values are the reference data written from the CPU ROM to memory IC when replaced new memory IC. The adjustment items indicated with "※" are required to readjust following to the "Electrical adjustments". Other items should be used with the initial data value.

Item No.	Adjustment Item	Range	Initial Value	Description
	FACTORY ADJUSTMENT			
0	Fan1 Min Adjust	0 ~ 255	105	※ FAN1 minimum voltage adjustment
1	Fan2 Min Adjust	0 ~ 255	105	※ FAN2 minimum voltage adjustment
2	Fan3 Min Adjust	0 ~ 255	105	※ FAN3 minimum voltage adjustment
3	Fan4 Min Adjust	0 ~ 255	105	※ FAN4 minimum voltage adjustment
4	G_LCCOM	0 ~ 511	280	※ Common center adjustment [G]
5	B_LCCOM	0 ~ 511	280	※ Common center adjustment [B]
6	R_LCCOM	0 ~ 511	280	※ Common center adjustment [R]
7	G-GammaShift (Lamp mode=High)	0 ~ 1023	512	※ Panel luminance adjustment [High]
8	B-GammaShift(Lamp mode=High)	0 ~ 1023	512	※ White balance adjustment B [High]
9	R-GammaShift (Lamp mode=High)	0 ~ 1023	512	※ White balance adjustment R [High]
10	G-GammaShift (Lamp mode=Mid or Low)	0 ~ 1023	512	※ Panel luminance adjustment G [Mid]
11	B-GammaShift (Lamp mode=Mid or Low)	0 ~ 1023	512	※ Panel luminance adjustment B [Mid]
12	R-GammaShift (Lamp mode=Mid or Low)	0 ~ 1023	512	※ Panel luminance adjustment R [Mid]
13	G-SubGain factor (Lamp=Mid or Low)	0 ~ 255	255	※ White balance adjustment 100% G [Mid]
14	B-SubGain factor (Lamp=Mid or Low)	0 ~ 255	255	※ White balance adjustment 100% B [Mid]
15	R-SubGain factor (Lamp=Mid or Low)	0 ~ 255	255	※ White balance adjustment 100% R [Mid]
16	G-GammaShift (Lamp mode=Mid or Low)	0 ~ 1023	512	
17	B-GammaShift (Lamp mode=Mid or Low)	0 ~ 1023	512	※ White balance adjustment 50% B [Mid]
18	R-GammaShift (Lamp mode=Mid or Low)	0 ~ 1023	512	※ White balance adjustment 50% R [Mid]
19	G_V_CENTER	0 ~ 255	18	
20	B_V_CENTER	0 ~ 255	18	
21	R_V_CENTER	0 ~ 255	18	
22	REF_G	0 ~ 255	191	
23	REF_B	0 ~ 255	191	
24	REF_R	0 ~ 255	191	
25	GAIN_G (Lamp mode=Mid or Low)	360 ~ 535	512	
26	GAIN_B (Lamp mode=Mid or Low)	360 ~ 535	512	
27	GAIN_R (Lamp mode=Mid or Low)	360 ~ 535	512	
	PANEL DRIVER			(L3E07110, L3E06150, L3E01060)
100	G-SubGain (Lamp mode=High)	360 ~ 535	512	
101	B-SubGain (Lamp mode=High)	360 ~ 535	512	
102	R-SubGain (Lamp mode=High)	360 ~ 535	512	
103	G_OFFSET	0 ~ 255	0	
104	B_OFFSET	0 ~ 255	0	
105	R_OFFSET	0 ~ 255	0	
106	G_ENBX1 ~ 4 Pulse Width	0 ~ 127	11	
107	B_ENBX1 ~ 4 Pulse Width	0 ~ 127	11	
108	R_ENBX1 ~ 4 Pulse Width	0 ~ 127	11	
109	G_DXIN Delay	0 ~ 255	20	
110	B_DXIN Delay	0 ~ 255	20	
111	R_DXIN Delay	0 ~ 255	20	
112	G_CLXIN Delay	0 ~ 255	20	
113	B_CLXIN Delay	0 ~ 255	20	
114	R_CLXIN Delay	0 ~ 255	20	
115	G_ENBX Delay	0 ~ 255	14	
116	B_ENBX Delay	0 ~ 255	14	
117	R_ENBX Delay	0 ~ 255	14	
118	G-SubBright	0 ~ 1023	0	
119	B-SubBright	0 ~ 1023	0	
120	R-SubBright	0 ~ 1023	0	
121	G_ReferH (NRS Level)	0 ~ 1023	1020	
122	B_ReferH (NRS Level)	0 ~ 1023	1020	
123	R_ReferH (NRS Level)	0 ~ 1023	1020	
124	G_ReferL (NRS Level)	0 ~ 1023	256	
125	B_ReferL (NRS Level)	0 ~ 1023	256	
126	R_ReferL (NRS Level)	0 ~ 1023	256	
127	G V-Line Correction (-) Tilt	0 ~ 255	0	
128	G V-Line Correction (-) 1 dot	0 ~ 511	503	
129	G V-Line Correction (-) 2 dot	0 ~ 511	0	
130	G V-Line Correction (-) 3 dot	0 ~ 511	0	

Item No.	Adjustment Item	Range	Initial Value	Description
131	G V-Line Correction (-) 4 dot	0 ~ 511	0	
132	G V-Line Correction (-) 5 dot	0 ~ 511	0	
133	G V-Line Correction (-) 6 dot	0 ~ 511	0	
134	G V-Line Correction (-) 7 dot	0 ~ 511	0	
135	G V-Line Correction (-) 8 dot	0 ~ 511	0	
136	G V-Line Correction (-) 9 dot	0 ~ 511	0	
137	G V-Line Correction (-) 10 dot	0 ~ 511	0	
138	G V-Line Correction (-) 11 dot	0 ~ 511	503	
139	G V-Line Correction (-) 12 dot	0 ~ 511	503	
140	B V-Line Correction (-) Tilt	0 ~ 255	0	
141	B V-Line Correction (-) 1 dot	0 ~ 511	503	
142	B V-Line Correction (-) 2 dot	0 ~ 511	0	
143	B V-Line Correction (-) 3 dot	0 ~ 511	0	
144	B V-Line Correction (-) 4 dot	0 ~ 511	0	
145	B V-Line Correction (-) 5 dot	0 ~ 511	0	
146	B V-Line Correction (-) 6 dot	0 ~ 511	0	
147	B V-Line Correction (-) 7 dot	0 ~ 511	0	
148	B V-Line Correction (-) 8 dot	0 ~ 511	0	
149	B V-Line Correction (-) 9 dot	0 ~ 511	0	
150	B V-Line Correction (-) 10 dot	0 ~ 511	0	
151	B V-Line Correction (-) 11 dot	0 ~ 511	503	
152	B V-Line Correction (-) 12 dot	0 ~ 511	503	
153	R V-Line Correction (-) Tilt	0 ~ 255	0	
154	R V-Line Correction (-) 1 dot	0 ~ 511	503	
155	R V-Line Correction (-) 2 dot	0 ~ 511	0	
156	R V-Line Correction (-) 3 dot	0 ~ 511	0	
157	R V-Line Correction (-) 4 dot	0 ~ 511	0	
158	R V-Line Correction (-) 5 dot	0 ~ 511	0	
159	R V-Line Correction (-) 6 dot	0 ~ 511	0	
160	R V-Line Correction (-) 7 dot	0 ~ 511	0	
161	R V-Line Correction (-) 8 dot	0 ~ 511	0	
162	R V-Line Correction (-) 9 dot	0 ~ 511	0	
163	R V-Line Correction (-) 10 dot	0 ~ 511	0	
164	R V-Line Correction (-) 11 dot	0 ~ 511	503	
165	R V-Line Correction (-) 12 dot	0 ~ 511	503	
166	G V-Line Correction (+) Tilt	0 ~ 255	0	
167	G V-Line Correction (+) 1 dot	0 ~ 511	10	
168	G V-Line Correction (+) 2 dot	0 ~ 511	0	
169	G V-Line Correction (+) 3 dot	0 ~ 511	0	
170	G V-Line Correction (+) 4 dot	0 ~ 511	0	
171	G V-Line Correction (+) 5 dot	0 ~ 511	0	
172	G V-Line Correction (+) 6 dot	0 ~ 511	0	
173	G V-Line Correction (+) 7 dot	0 ~ 511	0	
174	G V-Line Correction (+) 8 dot	0 ~ 511	0	
175	G V-Line Correction (+) 9 dot	0 ~ 511	0	
176	G V-Line Correction (+) 10 dot	0 ~ 511	0	
177	G V-Line Correction (+) 11 dot	0 ~ 511	10	
178	G V-Line Correction (+) 12 dot	0 ~ 511	10	
179	B V-Line Correction (+) Tilt	0 ~ 255	0	
180	B V-Line Correction (+) 1 dot	0 ~ 511	10	
181	B V-Line Correction (+) 2 dot	0 ~ 511	5	
182	B V-Line Correction (+) 3 dot	0 ~ 511	0	
183	B V-Line Correction (+) 4 dot	0 ~ 511	0	
184	B V-Line Correction (+) 5 dot	0 ~ 511	0	
185	B V-Line Correction (+) 6 dot	0 ~ 511	0	
186	B V-Line Correction (+) 7 dot	0 ~ 511	0	
187	B V-Line Correction (+) 8 dot	0 ~ 511	0	
188	B V-Line Correction (+) 9 dot	0 ~ 511	0	
189	B V-Line Correction (+) 10 dot	0 ~ 511	0	
190	B V-Line Correction (+) 11 dot	0 ~ 511	10	
191	B V-Line Correction (+) 12 dot	0 ~ 511	10	
192	R V-Line Correction (+) Tilt	0 ~ 255	0	
193	R V-Line Correction (+) 1 dot	0 ~ 511	10	
194	R V-Line Correction (+) 2 dot	0 ~ 511	5	
195	R V-Line Correction (+) 3 dot	0 ~ 511	0	
196	R V-Line Correction (+) 4 dot	0 ~ 511	0	
197	R V-Line Correction (+) 5 dot	0 ~ 511	0	
198	R V-Line Correction (+) 6 dot	0 ~ 511	0	

Item No.	Adjustment Item	Range	Initial Value	Description
199	R V-Line Correction (+) 7 dot	0 ~ 511	0	
200	R V-Line Correction (+) 8 dot	0 ~ 511	0	
201	R V-Line Correction (+) 9 dot	0 ~ 511	0	
202	R V-Line Correction (+) 10 dot	0 ~ 511	0	
203	R V-Line Correction (+) 11 dot	0 ~ 511	10	
204	R V-Line Correction (+) 12 dot	0 ~ 511	10	
205	DXOUTG	0 ~ 1023	214	
206	DXOUTB	0 ~ 1023	214	
207	DXOUTR	0 ~ 1023	214	
208	h_change_pos	0 ~ 255	22	
209	sh_base_pos_b	0 ~ 4096	2730	
210	NRG Position	0 ~ 127	34	
211	NRG Width	0 ~ 255	45	
212	OSD	0 ~ 3	2	
213	OSD	0 ~ 7	0	
214	GAMMA (ON/OFF)	0-1	1	
215	ref_gate_pos (NRS Position)	0 ~ 1023	1	
216	ref_gate_dur (NR Width)	0 ~ 1023	157	
217	gray_on	0 ~ 7	7	
218	Correction	0 ~ 1	0	
219	V Line Correction DC Offset EN	0 ~ 1	1	
220	V Line Correction Offset EN	0 ~ 1	1	
221	V Line Correction BLSP_EN	0 ~ 1	1	
222	Sequential Ghost Correction EN	0 ~ 1	1	
223	Block Ghost Correction EN	0 ~ 1	1	
224	Reversal Ghost Correction EN	0 ~ 1	1	
225	Rear Crosstalk Correction EN	0 ~ 1	1	
226	G_base_pos	0 ~ 15	6	
227	B_base_pos	0 ~ 15	6	
228	R_base_pos	0 ~ 15	6	
229	RGB_adjust	0 ~ 7	0	
230	RGB_level	0 ~ 1023	0	5 Step Setting [0,256,512,768,1023]
231	V Line Correction <G0>	0 ~ 255	8	
232	V Line Correction <G1>	0 ~ 255	6	
233	V Line Correction <G2>	0 ~ 255	2	
234	V Line Correction <G3>	0 ~ 255	254	
235	V Line Correction <G4>	0 ~ 255	253	
236	V Line Correction <B0>	0 ~ 255	8	
237	V Line Correction <B1>	0 ~ 255	6	
238	V Line Correction <B2>	0 ~ 255	2	
239	V Line Correction <B3>	0 ~ 255	254	
240	V Line Correction <B4>	0 ~ 255	253	
241	V Line Correction <R0>	0 ~ 255	8	
242	V Line Correction <R1>	0 ~ 255	6	
243	V Line Correction <R2>	0 ~ 255	2	
244	V Line Correction <R3>	0 ~ 255	254	
245	V Line Correction <R4>	0 ~ 255	253	
246	Ghost_G_pos (Sequential)	0 ~ 15	6	
247	Ghost_B_pos (Sequential)	0 ~ 15	6	
248	Ghost_R_pos (Sequential)	0 ~ 15	6	
249	Ghost_G_center	0 ~ 2047	0	
250	Ghost_G_start	0 ~ 255	128	
251	Ghost_G_end	0 ~ 255	128	
252	Ghost_B_center	0 ~ 2047	0	
253	Ghost_B_start	0 ~ 255	128	
254	Ghost_B_end	0 ~ 255	128	
255	Ghost_R_center	0 ~ 2047	0	
256	Ghost_R_start	0 ~ 255	128	
257	Ghost_R_end	0 ~ 255	128	
258	G-Block Ghost	0 ~ 2047	0	
259	B-Block Ghost	0 ~ 2047	0	
260	R-Block Ghost	0 ~ 2047	0	
261	G_base_level (Block)	0 ~ 2047	0	
262	B_base_level (Block)	0 ~ 2047	0	
263	R_base_level (Block)	0 ~ 2047	0	
264	Ghost_G_pos (Reverse)	0 ~ 2047	0	
265	Ghost_B_pos (Reverse)	0 ~ 2047	0	
266	Ghost_R_pos (Reverse)	0 ~ 2047	0	

Item No.	Adjustment Item	Range	Initial Value	Description
267	C_TALK G_CENT	0 ~ 2047	0	
268	C_TALK G_START	0 ~ 255	128	
269	C_TALK G_END	0 ~ 255	128	
270	C_TALK B_CENT	0 ~ 2047	0	
271	C_TALK B_START	0 ~ 255	128	
272	C_TALK B_END	0 ~ 255	128	
273	C_TALK R_CENT	0 ~ 2047	0	
274	C_TALK R_START	0 ~ 255	128	
275	C_TALK R_END	0 ~ 255	128	
276	Iccom_correct_select	0 ~ 1	0	
277	iromura_correct_select	0 ~ 1	1	
278	Hori Start	0 ~ 2047	266	
279	Vert Start	0 ~ 2047	8	
280	Hori End	0 ~ 2047	1545	
281	Vert End	0 ~ 2047	728	
282	G MIN	0 ~ 1023	594	
283	G_MID2	0 ~ 1023	664	
284	G_MID1	0 ~ 1023	736	
285	G_MAX	0 ~ 1023	780	
286	B MIN	0 ~ 1023	594	
287	B_MID2	0 ~ 1023	664	
288	B_MID1	0 ~ 1023	736	
289	B_MAX	0 ~ 1023	780	
290	R MIN	0 ~ 1023	594	
291	R_MID2	0 ~ 1023	664	
292	R_MID1	0 ~ 1023	736	
293	R_MAX	0 ~ 1023	780	
294	G MIN (8 Stair)	0 ~ 1023	705	
295	G_MID2 (8 Stair)	0 ~ 1023	730	
296	G_MID1 (8 Stair)	0 ~ 1023	757	
297	G_MAX (8 Stair)	0 ~ 1023	787	
298	B MIN (8 Stair)	0 ~ 1023	705	
299	B_MID2 (8 Stair)	0 ~ 1023	730	
300	B_MID1 (8 Stair)	0 ~ 1023	757	
301	B_MAX (8 Stair)	0 ~ 1023	787	
302	R MIN((8 Stair)	0 ~ 1023	705	
303	R_MID2 (8 Stair)	0 ~ 1023	730	
304	R_MID1 (8 Stair)	0 ~ 1023	757	
305	R_MAX (8 Stair)	0 ~ 1023	787	
306	H_OUT_START	0 ~ 2047	102	
307	Stair Output out of effective field	0 ~ 1023	0	
308	Flicker Adjustment Mode	0 ~ 3	0	0: Off, 1: Flicker adj. mode 1, 2: Flicker adj. mode 2
309	Frame Modulation Step	0 ~ 3	2	
310	H Crosstalk Correction 2 G center	0 ~ 2047	0	
311	H Crosstalk Correction 2 G start	0 ~ 255	126	
312	H Crosstalk Correction 2 G end	0 ~ 255	128	
313	H Crosstalk Correction 2 B center	0 ~ 2047	0	
314	H Crosstalk Correction 2 B start	0 ~ 255	126	
315	H Crosstalk Correction 2 B end	0 ~ 255	128	
316	H Crosstalk Correction 2 R center	0 ~ 2047	0	
317	H Crosstalk Correction 2 R start	0 ~ 255	126	
318	H Crosstalk Correction 2 R end	0 ~ 255	128	
319	R_hosei point 0	0-3FF	0	
320	R_hosei point 24	0-3FF	200	
321	R_hosei point 48	0-3FF	420	
322	R_hosei point 88	0-3FF	565	
323	R_hosei point 140	0-3FF	615	
324	R_hosei point 200	0-3FF	645	
325	R_hosei point 300	0-3FF	685	
326	R_hosei point 400	0-3FF	712	
327	R_hosei point 500	0-3FF	738	
328	R_hosei point 600	0-3FF	758	
329	R_hosei point 700	0-3FF	782	
330	R_hosei point 800	0-3FF	807	
331	R_hosei point 900	0-3FF	841	
332	R_hosei point 948	0-3FF	878	
333	R_hosei point 980	0-3FF	950	
334	R_hosei point 1024	0-3FF	1023	

Item No.	Adjustment Item	Range	Initial Value		Description
335	G_hosei point 0	0 ~ 3FF	0		
336	G_hosei point 24	0 ~ 3FF	200		
337	G_hosei point 48	0 ~ 3FF	420		
338	G_hosei point 88	0 ~ 3FF	565		
339	G_hosei point 140	0 ~ 3FF	615		
340	G_hosei point 200	0 ~ 3FF	645		
341	G_hosei point 300	0 ~ 3FF	685		
342	G_hosei point 400	0 ~ 3FF	712		
343	G_hosei point 500	0 ~ 3FF	738		
344	G_hosei point 600	0 ~ 3FF	758		
345	G_hosei point 700	0 ~ 3FF	782		
346	G_hosei point 800	0 ~ 3FF	807		
347	G_hosei point 900	0 ~ 3FF	841		
348	G_hosei point 948	0 ~ 3FF	878		
349	G_hosei point 980	0 ~ 3FF	950		
350	G_hosei point 1024	0 ~ 3FF	1023		
351	B_hosei point 0	0 ~ 3FF	0		
352	B_hosei point 24	0 ~ 3FF	200		
353	B_hosei point 48	0 ~ 3FF	420		
354	B_hosei point 88	0 ~ 3FF	565		
355	B_hosei point 140	0 ~ 3FF	615		
356	B_hosei point 200	0 ~ 3FF	645		
357	B_hosei point 300	0 ~ 3FF	685		
358	B_hosei point 400	0 ~ 3FF	712		
359	B_hosei point 500	0 ~ 3FF	738		
360	B_hosei point 600	0 ~ 3FF	758		
361	B_hosei point 700	0 ~ 3FF	782		
362	B_hosei point 800	0 ~ 3FF	807		
363	B_hosei point 900	0 ~ 3FF	841		
364	B_hosei point 948	0 ~ 3FF	878		
365	B_hosei point 980	0 ~ 3FF	950		
366	B_hosei point 1024	0 ~ 3FF	1023		
367	Color Shading Correction 4/8 Layer SW		3		3: 4 Layer, 7: 8 Layer
	Option				
400	Rear Projection On/Off	0 ~ 1	1		0: Front Projection, 1: Rear Projection
401	PANEL R/B Reversal	0 ~ 1	1		0: Normal, 1: Reverse (Bin - Rout, Rin - Bout)
402	OnTimer/OffTimer Flag	0 ~ 1	0		0: Normal, 1: Acceleration
	LPS mode		< 55 inch >	< 65 inch >	
500	LPS1_Wat	1 ~ 75	30	30	
501	LPS2_Wat	1 ~ 75	30	30	
502	LPS3_Wat	1 ~ 75	30	30	
503	LPS1_Time	2 ~ 120	45	45	
504	LPS2_Time	2 ~ 120	60	60	
505	LPS3_Time	2 ~ 120	15	15	
506	INITIAL_Time	0 ~ 255	120	120	
507	INIT_CURRENT	20 ~ 80	75	75	
508	STARTUP_TIME	2 ~ 10	6	6	
509	PULSE_ON_OFF	0 ~ 1	1	1	
510	PowerUP_Time	0 ~ 120	30	30	
511	PowerUP_LEVEL	50 ~ 110	100	100	
512	ECO_Power	50 ~ 100	77	77	
513	START_Power	50 ~ 110	100	100	
514	COLD Start Time	0 ~ 255	10	10	
515	HOT Start Time	0 ~ 255	1	1	
516	NORMAL_Power	50 ~ 110	94	94	
	Dimmer (Lamp Mode:Auto)		< 55 inch >	< 65 inch >	
517	Not used	-	-	-	
518	Not used	-	-	-	
519	Not used	-	-	-	
520	Not used	-	-	-	
521	Not used	-	-	-	
522	Not used	-	-	-	
523	Not used	-	-	-	
524	Not used	-	-	-	
525	Not used	-	-	-	
526	Not used	-	-	-	
527	Not used	-	-	-	
528	Not used	-	-	-	

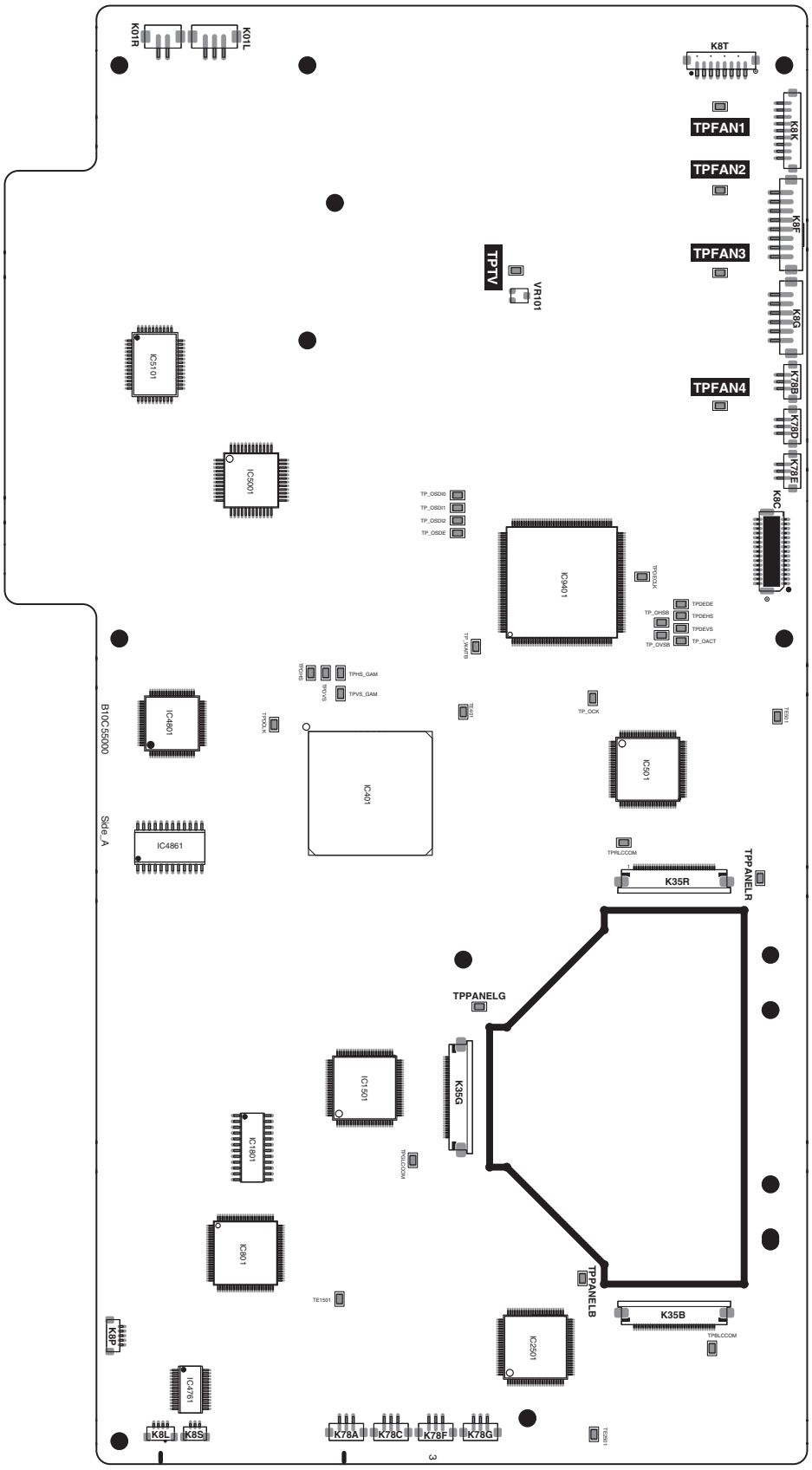
Item No.	Adjustment Item	Range	Initial Value				Description
529	Not used	-	-		-		
530	Not used	-	-		-		
531	Not used	-	-		-		
532	Not used	-	-		-		
	Fan Control						
600	Fan1 Max Adjust	0 ~ 255	135				
601	Fan2 Max Adjust	0 ~ 255	135				
602	Fan3 Max Adjust	0 ~ 255	135				
603	Fan4 Max Adjust	0 ~ 255	135				
604	Fan Control Mode	0 ~ 1	0				
605	Fan Max Min SW	0 ~ 3	0				
			< 55 inch >		< 65 inch >		
			Normal	Highland	Normal	Highland	
606	Manual Fan1 Voltage	40 ~ 138	100	100	100	100	
607	Manual Fan2 Voltage	40 ~ 138	100	100	100	100	
608	Manual Fan3 Voltage	40 ~ 138	100	100	100	100	
609	Manual Fan4 Voltage	40 ~ 138	100	100	100	100	
610	Normal Fan1 Min	40 ~ 138	67	95	67	95	
611	Normal Fan2 Min	40 ~ 138	73	90	73	90	
612	Normal Fan3 Min	40 ~ 138	65	95	65	95	
613	Normal Fan4 Min	40 ~ 138	80	90	80	90	
614	Normal Fan1 Max	40 ~ 138	135	135	135	135	
615	Normal Fan2 Max	40 ~ 138	95	116	95	116	
616	Normal Fan3 Max	40 ~ 138	135	135	135	135	
617	Normal Fan4 Max	40 ~ 138	135	135	135	135	
618	Normal TempA Low	10 ~ 100	30	30	30	30	
619	Normal TempA High	10 ~ 100	37	37	37	37	
620	Normal TempA Error	10 ~ 100	43	43	43	43	
621	Normal TempB Low	10 ~ 100	60	60	60	60	
622	Normal TempB High	10 ~ 100	65	65	65	65	
623	Normal TempB Error	10 ~ 100	73	73	73	73	
624	Normal TempC Low	10 ~ 100	80	80	80	80	
625	Normal TempC High	10 ~ 100	80	80	80	80	
626	Normal TempC Error	10 ~ 100	73	73	73	73	
627	Normal TempB-A Error	10 ~ 100	42	42	42	42	
628	Normal TempC-A Error	10 ~ 100	80	80	80	80	
629	Eco Fan1 Min	40 ~ 138	55	85	55	85	
630	Eco Fan2 Min	40 ~ 138	50	56	50	56	
631	Eco Fan3 Min	40 ~ 138	55	80	55	80	
632	Eco Fan4 Min	40 ~ 138	55	60	55	60	
633	Eco Fan1 Max	40 ~ 138	135	135	135	135	
634	Eco Fan2 Max	40 ~ 138	50	56	50	56	
635	Eco Fan3 Max	40 ~ 138	135	135	135	135	
636	Eco Fan4 Max	40 ~ 138	55	60	55	60	
637	Eco TempA Low	10 ~ 100	30	30	30	30	
638	Eco TempA High	10 ~ 100	37	37	37	37	
639	Eco TempA Error	10 ~ 100	43	43	43	43	
640	Eco TempB Low	10 ~ 100	60	60	60	60	
641	Eco TempB High	10 ~ 100	65	65	65	65	
642	Eco TempB Error	10 ~ 100	73	73	73	73	
643	Eco TempC Low	10 ~ 100	80	80	80	80	
644	Eco TempC High	10 ~ 100	80	80	80	80	
645	Eco TempC Error	10 ~ 100	73	73	73	73	
646	Eco TempB-A Error	10 ~ 100	42	42	42	42	
647	Eco TempC-A Error	10 ~ 100	80	80	80	80	
648	Not used	-	-				
649	LPS Fan1 Min	40 ~ 138	55		55		
650	LPS Fan2 Min	40 ~ 138	55		55		
651	LPS Fan3 Min	40 ~ 138	55		55		
652	LPS Fan4 Min	40 ~ 138	55		55		
653	Not used	-	-		-		
654	Not used	-	-		-		
655	Not used	-	-		-		
656	Not used	-	-		-		
657	LPS Fan Stop ON/OFF	0 ~ 1	0				
658	Not used	-	-				
659	Not used	-	-				
660	Not used	-	-				

Item No.	Adjustment Item	Range	Initial Value	Description
661	Not used	-	-	
662	Ignore Time	0 ~ 5	1	
	NJW1180			
700	AGC	0 ~ 7	3	bit2(AGC) 0:OFF,1:ON, bit1-0 (AGC-FLAT): LEVEL 0 ~ 3
701	FOCUS	0 ~ 4	2	0:OFF, 1 ~ 4:FOCUS LEVEL 1 ~ 4
702	SRS Surround	0 ~ 5	3	0:OFF, 1 ~ 5:SRS SURROUND LEVEL 1 ~ 5
703	TruBass_Low	0 ~ 4	1	0:OFF, 1 ~ 4:TruBass LEVEL 1 ~ 4 (Low)
704	TruBass_Mid	0 ~ 4	2	0:OFF, 1 ~ 4:TruBass LEVEL 1 ~ 4 (Mid)
705	TruBass_High	0 ~ 4	3	0:OFF, 1 ~ 4:TruBass LEVEL 1 ~ 4 (High)
706	Woofer_Level_Low	0 ~ 4	1	0:OFF, 1 ~ 4:Woofer LEVEL 1 ~ 4 (Low)
707	Woofer_Level_Mid	0 ~ 4	2	0:OFF, 1 ~ 4:Woofer LEVEL 1 ~ 4 (Mid)
708	Woofer_Level_High	0 ~ 4	3	0:OFF, 1 ~ 4:Woofer LEVEL 1 ~ 4 (High)
	CXA2234			
750	ATT	0 ~ 15	8	✻TV sound level adjustment
751	SPECTRAL	0 ~ 63	31	✻TV stereo separation adjustment at 4KHz
752	WIDEBAND	0 ~ 63	31	✻TV stereo separation adjustment at 300Hz
	Lamp Replace			
800	Lamp Replace Time	0 ~ 7FFFh	7980	
801	ECO Corresponding Factor	0 ~ 300	114	100=Equal, Step=10
802	NORMAL LAMP TIME	0 ~ 7FFFh	0	
803	ECO LAMP TIME	0 ~ 7FFFh	0	
804	PROJECTOR TIME	0 ~ 7FFFh	0	
	JEPICO			
805	Through Mode	0 ~ 1	0	0: Normal, 1: Through
806	Outer Control Mode	0 ~ 1	0	0: Normal, 1: Outer Control Mode
	Version			
900	DM Version		-	Read Only
901	TVCPU Version		-	Read Only

NOTE:
The items and values of this service adjustment data table are subject to change without notice.

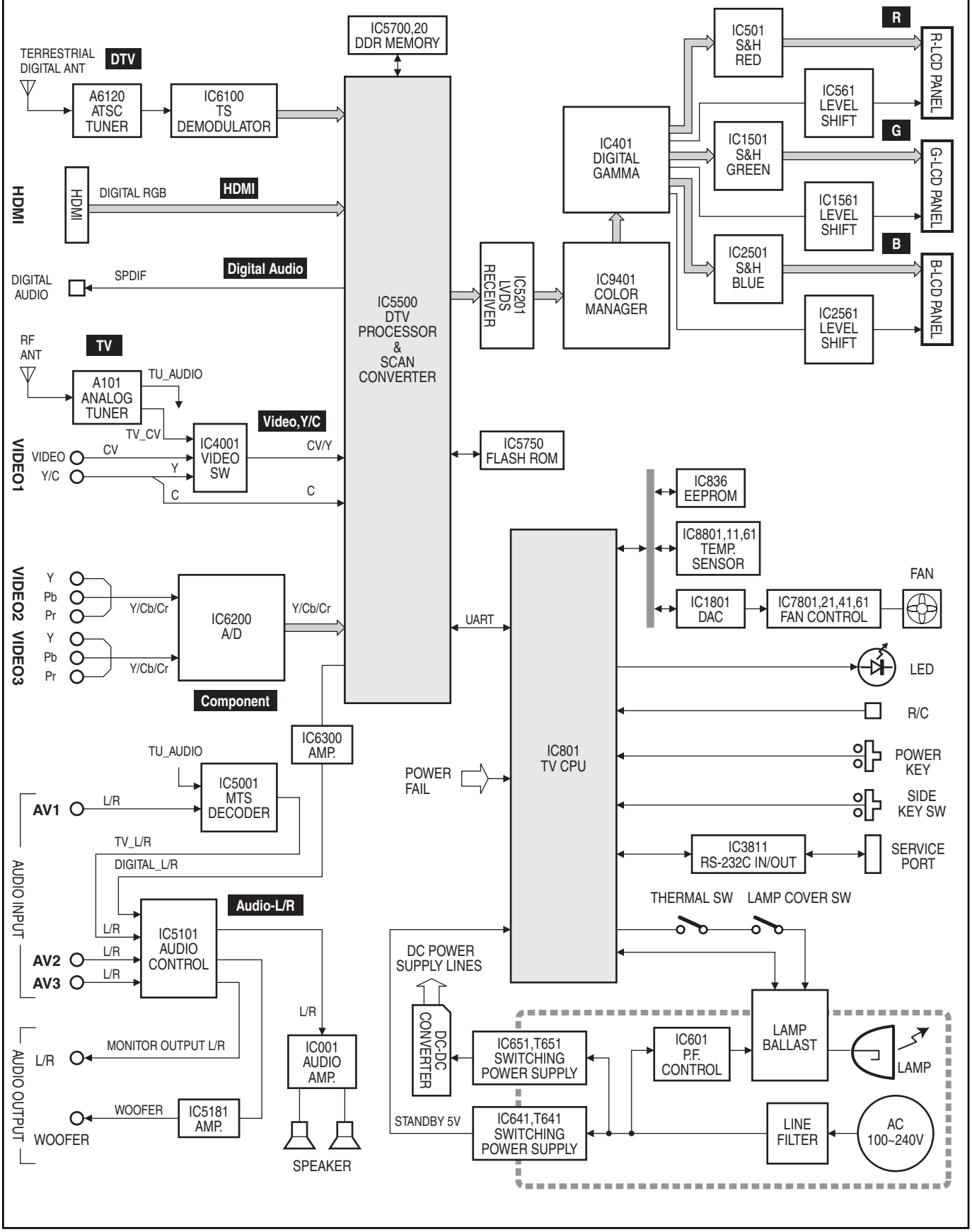
● Test Points Location

● MAIN BOARD

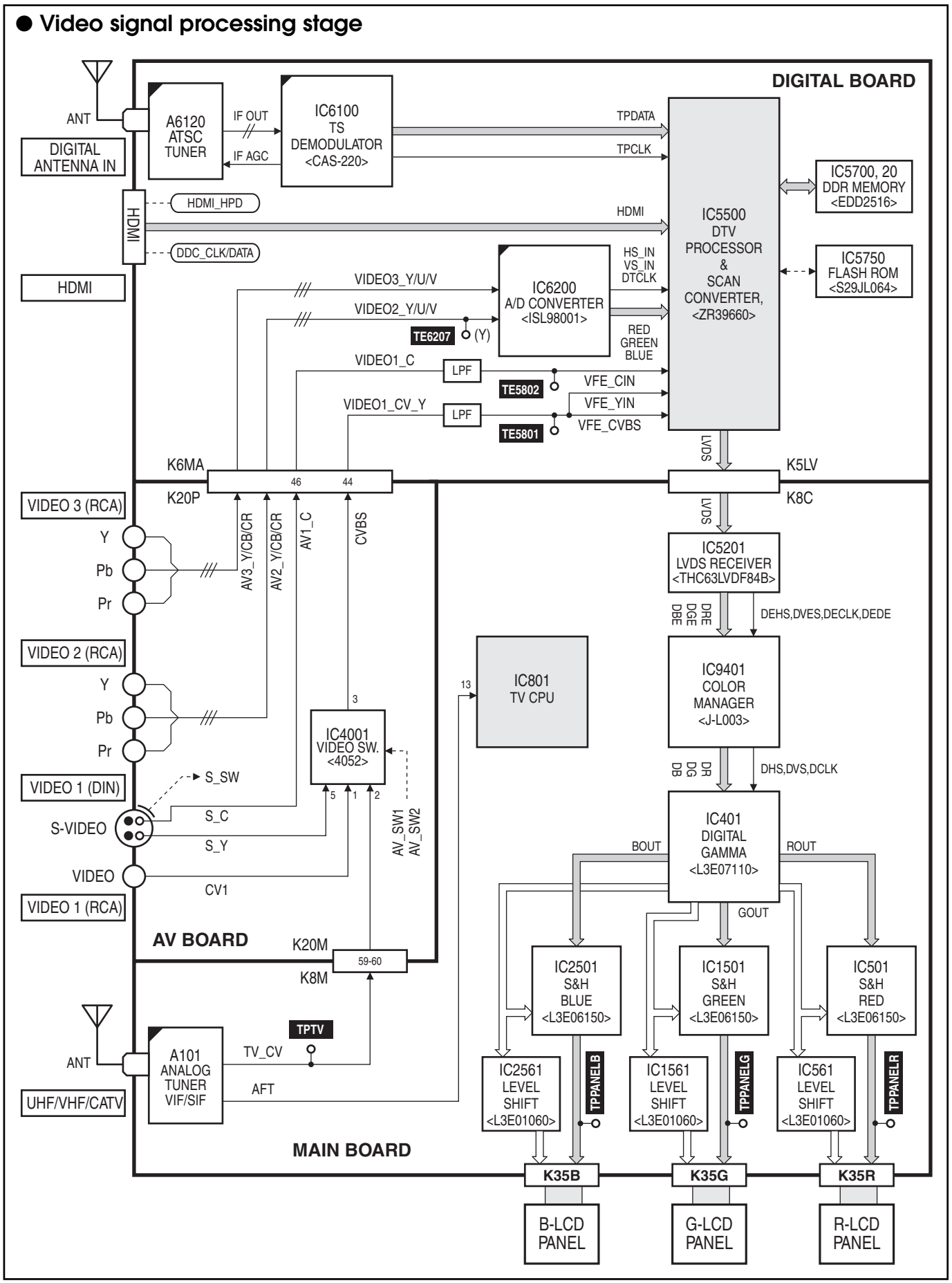


■ Chassis Block Diagrams

● Chassis Overview



● Video signal processing stage



● Description of video signal processing stage

Input signal selecting stage:

TV input; RF signal is converted to TV_CV signal in A101(Analog Tuner) and sent to IC4001. TV composite video signal is selected in IC4001. The output signal from IC4001 is sent to IC5500.

Composite video input; Composite video signal [Video1] is selected in IC4001. The output signal from IC4001 is sent to IC5500.

S-video input; S-video Y signal [Video1]is selected in IC4001. The output signal from IC4001 is sent to IC5500. S-video C signal is sent to IC5500. S_SW signal [Video1] is sent to IC801 and IC5500.
(Truth table of IC4001; AV_SW1/SW2: L/H=Tuner, H/L=S-video, H/H=CVBS)

Component video input; Component video signals [Video2/3] are sent to IC6200(A/D converter). They are selected by IIC bus, and A/D-converted in IC6200. Y signal is sync-separated in IC6200. The output RGB digital signals are sent to IC5500.

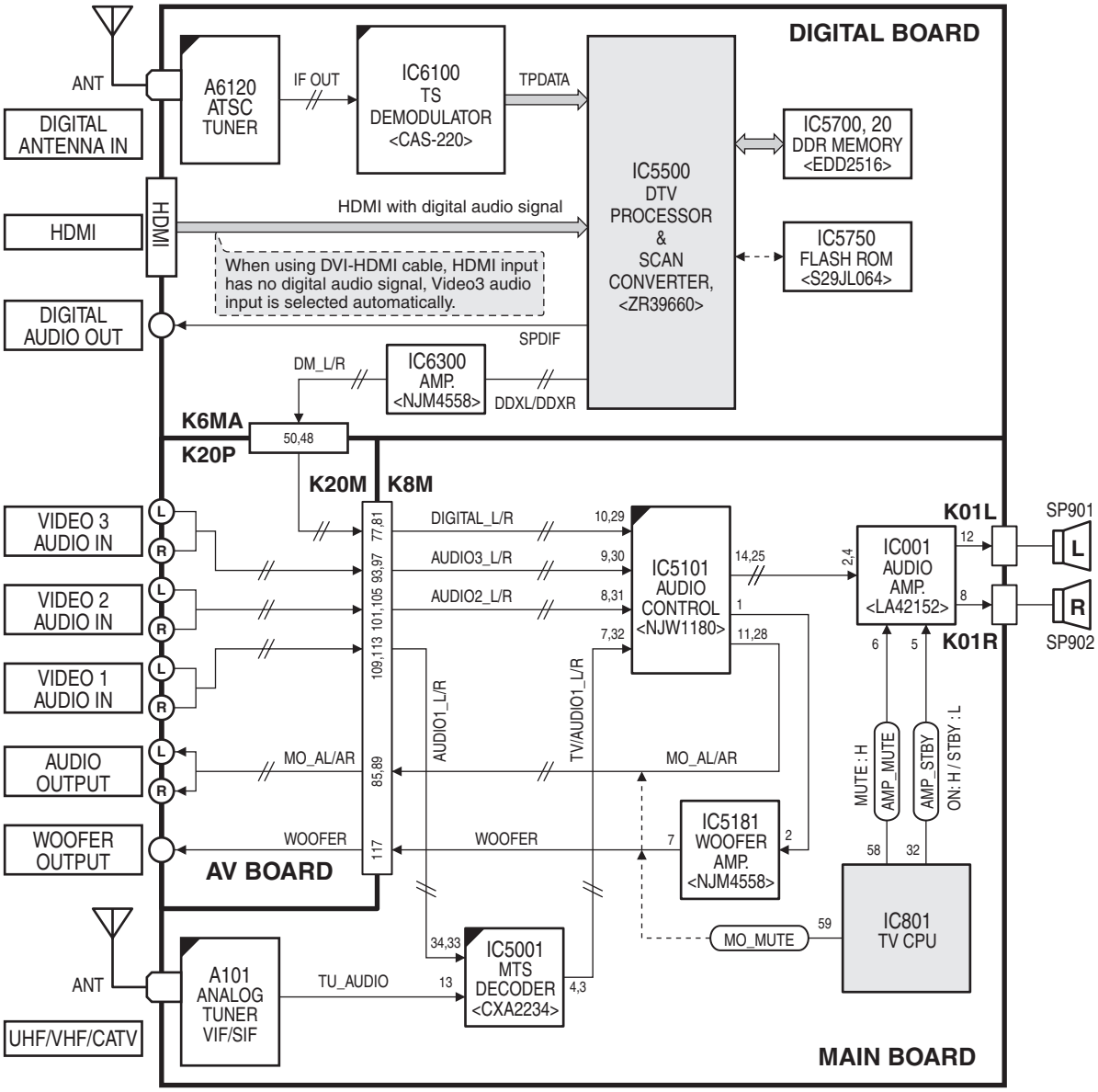
HDMI input; TMDS data are sent to IC5500.

Digital-TV input; IF signals from A6120(ATSC Tuner) are converted to serial data in IC6100(TS Demodulator), then sent to IC5500.

Video signal processing stage:

All signals are scaled and converted to RGB LVDS signals in IC5500(Scan converter), then sent to MAIN board. LVDS signals are received in IC5201(LVDS Receiver), then sent to IC9401(Color manager). After correcting for picture quality in IC9401 and IC401(Digital Gamma), and they are sent to IC501, IC1501, IC2501(sampling & holding, D/A converter).

● Audio signal processing stage



● Description

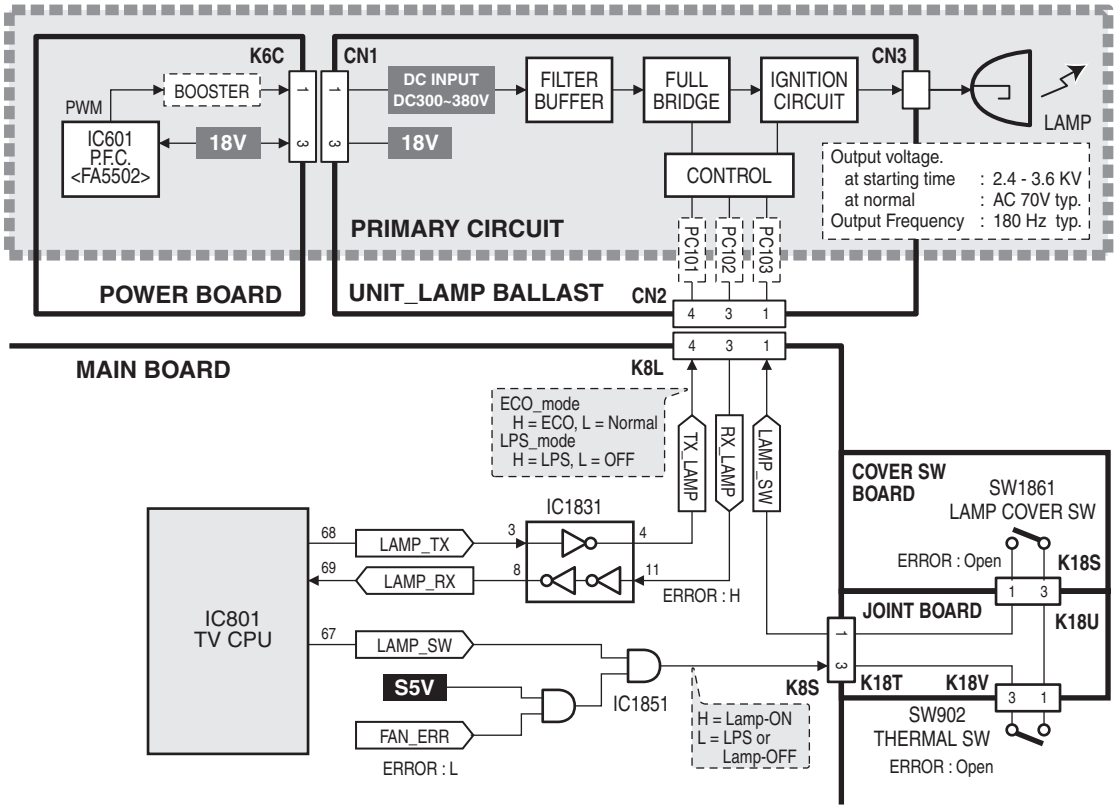
SIF signal from the TUNER is sent to IC5001(MTS decoder), Video1 audio input signal is sent to IC5001, and selected signal is sent to IC5101(Audio controller). Video2/3 audio input signals are sent to IC5101. Digital-TV or HDMI audio signal is output from IC5500 and sent to IC5101 via IC6300(Amp.).
The sound volume and sound quality are controlled in IC5101 by IIC bus. The output audio signals from pins 14 and 25 of IC5101 are sent to pins 2 and 4 of IC001(Audio Amp.) and amplified and output from pins 8 and 12 as the signals to drive speakers.

Woofer output; Woofer signal is output from pin 1 of IC5101 and sent to pin 2 of IC5181 (Woofer amp.), amplified and output from pin 7 for woofer speaker. The woofer level can be selected Off/Low/Mid/High with user menu.

Audio monitor output; Audio monitor output signal is output from pins 11 and 28 of IC5101.

Digital audio output; Digital-TV and HDMI audio signals are decoded in IC5500 and SPDIF signal is output from IC5500.

● Lamp control stage



● Description

Lamp Driving Circuit

Turn PTV on, LAMP_ON signal becomes to "H" and the lamp starts lighting.
The ballast output is about 140W at High and Mid mode, or about 115W at Low mode.
Lamp_Rx/Tx signals between IC801 and the ballast unit control the output of the ballast by UART.
Rx_LAMP signal (lamp error signal) becomes "H" and then the projection TV shuts down.
Turn PTV off, TV CPU shuts down the lamp after the period of LPS mode.

LPS Mode (Low Power Shutdown)

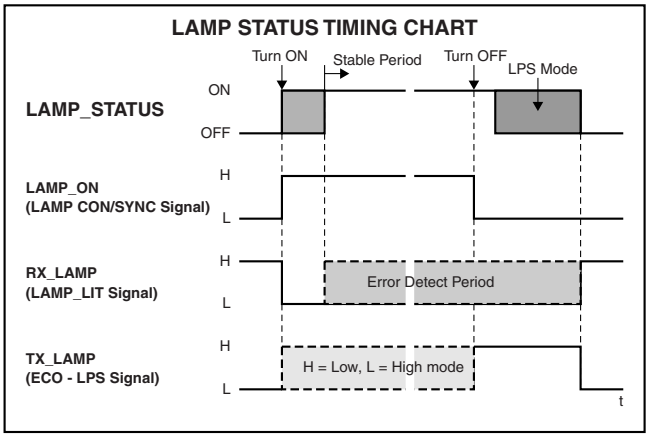
At LPS mode, the ballast output is keeping about 30W for about 4 minutes after turn-off.
When PTV is turned on during LPS mode, the lamp lights at once.

P.F.C. Circuit

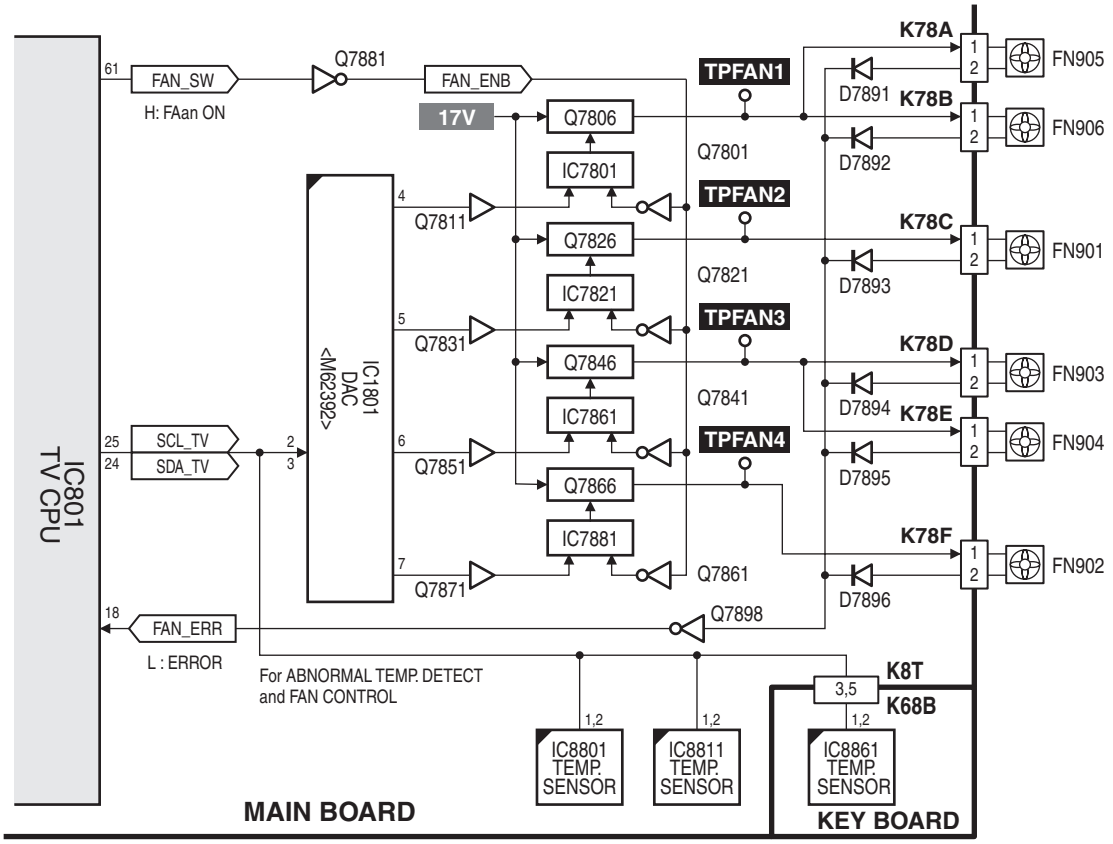
Power factor control (P.F.C.) is performed by IC601 and the peripheral circuits. The output voltage 370V (at AC input = 230V) is supplied to the ballast. The output voltage is adjusted with VR621.

Lamp Cover Switch and Thermal Switch

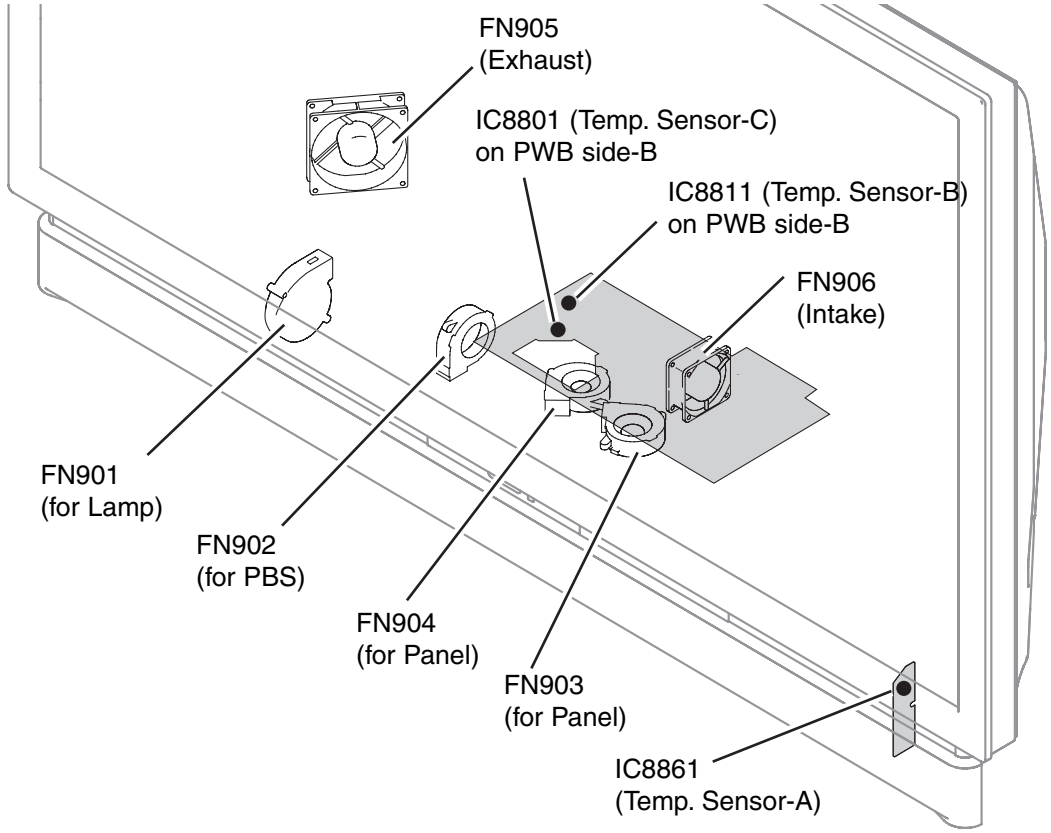
When the lamp cover switch or the thermal switch is open, Lamp_ON signal will be cut off and the lamp does not light for safety.



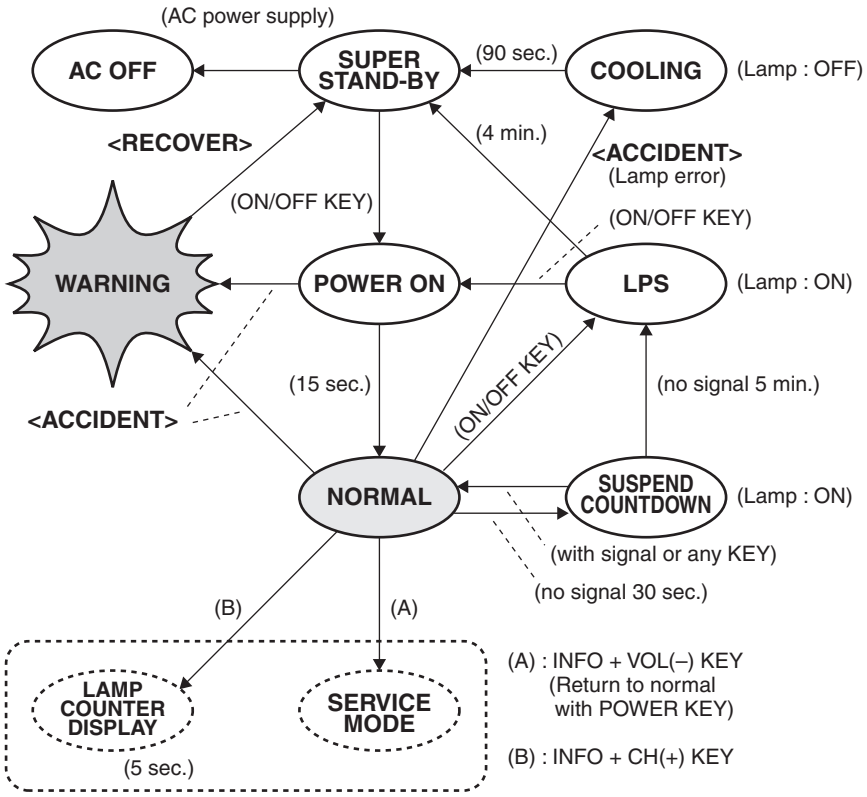
● Fan control stage



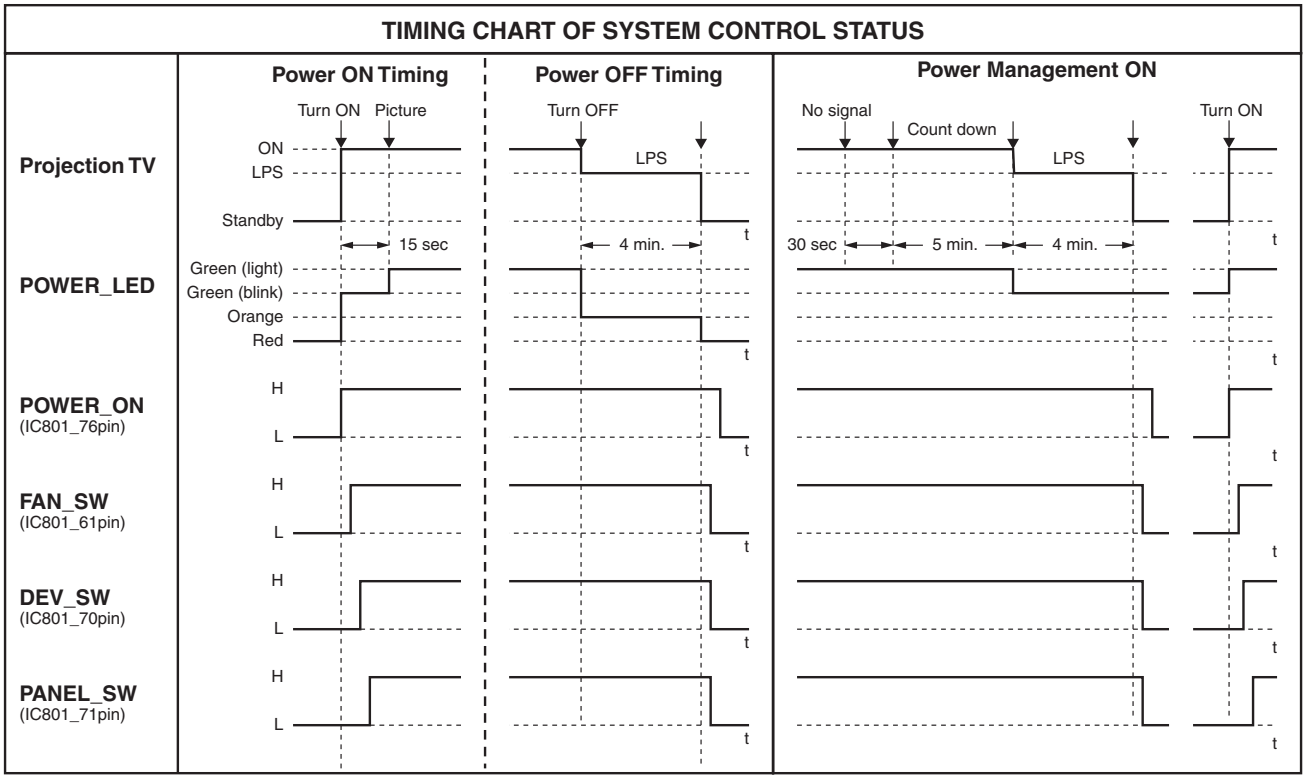
Location of Fan and Temperature sensor



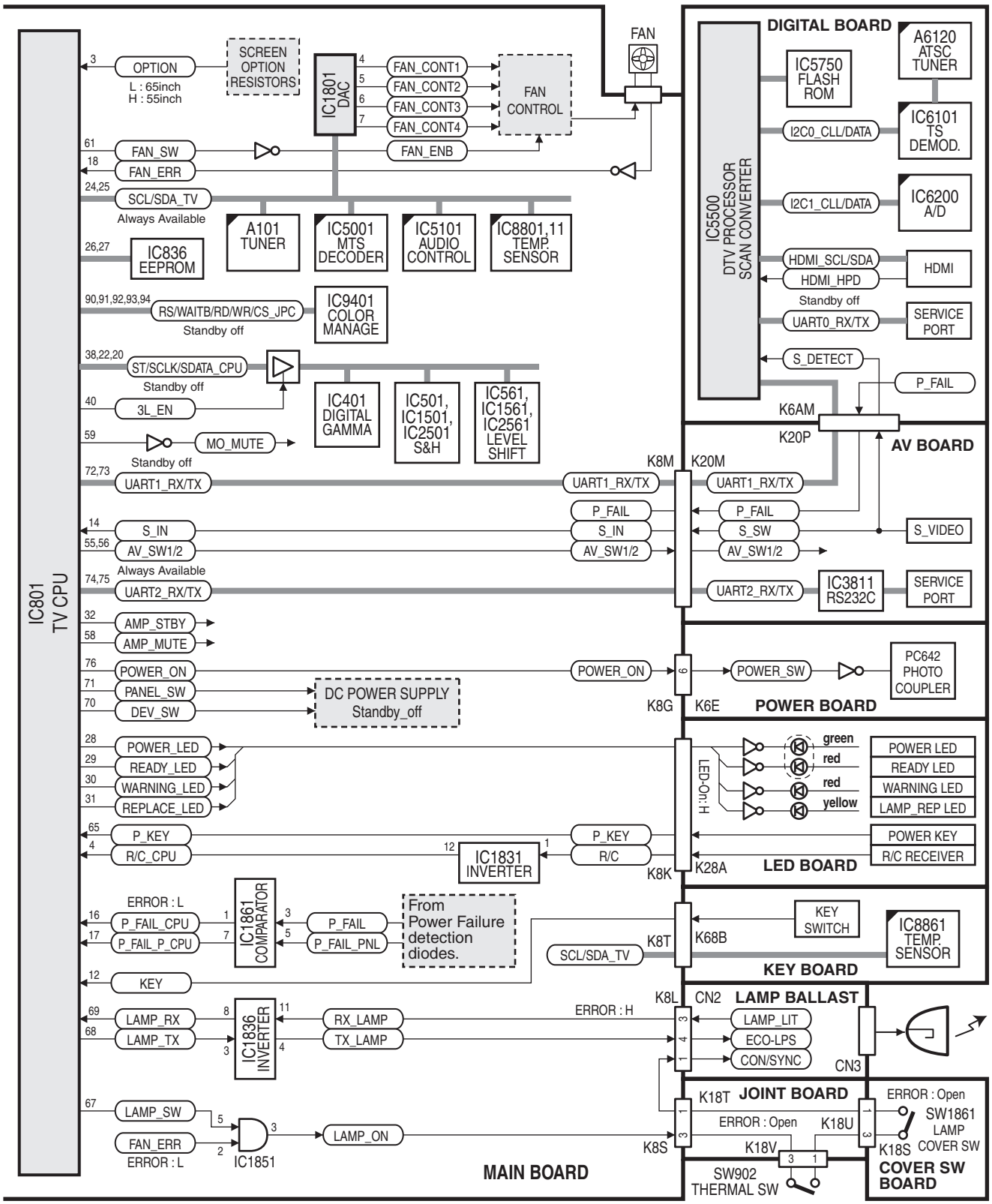
● Mode Variation



● Timing Chart of System Controls



● System Controls



● Description of System controls

Communication between Main board and Digital board
IC801(TV CPU) and IC5500(DTV processor & scan converter) are communicated with UART data. The service data is memorized in IC836(EEPROM).

Power supply lines
When the PTV is connected to outlet with AC power cord, S5V line from T641(Converter Transformer) is supplied for standby circuit, including IC801(TV CPU). IC801 is waiting for POWER key input or remote control signal.
When the PTV is turned on, the "POWER_ON" signal (Power ON:H) from pin 76 of IC801 is sent to PC642(photo-coupler), and then the switching power supply circuit, including IC651(Switching regulator controller), T651 (Converter Transformer), starts operation.
The "DEV_SW" signal (ON:H) from pin 70 of IC801 and "PANEL_SW" signal (ON:H) from pin 71 of IC801 are also sent to the power supply circuits.

Thermal switch
The thermal switch (SW902) is above the lamp to prevent the internal abnormal temperature rising. If the internal temperature reaches near 95°C, the switch will be opened and LAMP_SW signal will be cut off.

Note; The thermal switch is not reset to normal automatically even if the internal temperature becomes normal, so in this case you have to reset it manually.

Lamp cover switch
If the lamp cover is not fixed securely, lamp cover switch(SW1861) will be open, and LAMP_SW signal will be cut off.

Temperature sensor
There are the temperature sensors inside of the PTV to prevent the internal temperature rising abnormally and to control the cooling fans. (refer to P.90 "Fan control stage" for detail)
- Temp. sensor-A IC8861 (around the intake fan "FN906") on the Key board
- Temp. sensor-B IC8811 (above the lamp) on the Main board
- Temp. sensor-C IC8801 (above the prism block) on the Main board

The temperature sensors monitor the surrounding temperature and send data to IC801 via the IIC bus. IC801 controls the proper fan spinning speed based upon these temperature data.
If the internal temperature rising abnormally to the threshold level, TV CPU shuts down the PTV after cooling.

Power failure protection of secondary power circuit
The PTV provides the protection circuits to prevent the secondary failure when the power failure, fans failure or temperature failure occurs. The power failure detection lines are connected to the power supplies and fans. When a failure occurs, IC801 receives the power failure detection signals "P_FAIL" and "P_FAIL_PNL" through the power failure detection lines and the "POWER_ON" signal (Power OFF:L) is supplied to stop the power supply operation.

Fan control circuit
The fan driving power supplies "FAN1", "FAN2", "FAN3" and "FAN4" drive the fans as follows;

FAN1 ....FN905 for power and ballast exhaust and FN906 for intake
FAN2 ....FN901 for lamp cooling
FAN3 ....FN903 and FN904 for LCD panel cooling
FAN4 ....FN902 for PBS cooling

The fan spinning speed is controlled by "FAN_CONT1", "FAN_CONT2", "FAN_CONT3" and "FAN_CONT4" from pins 4, 5, 6 and 7 of IC1801(D/A).

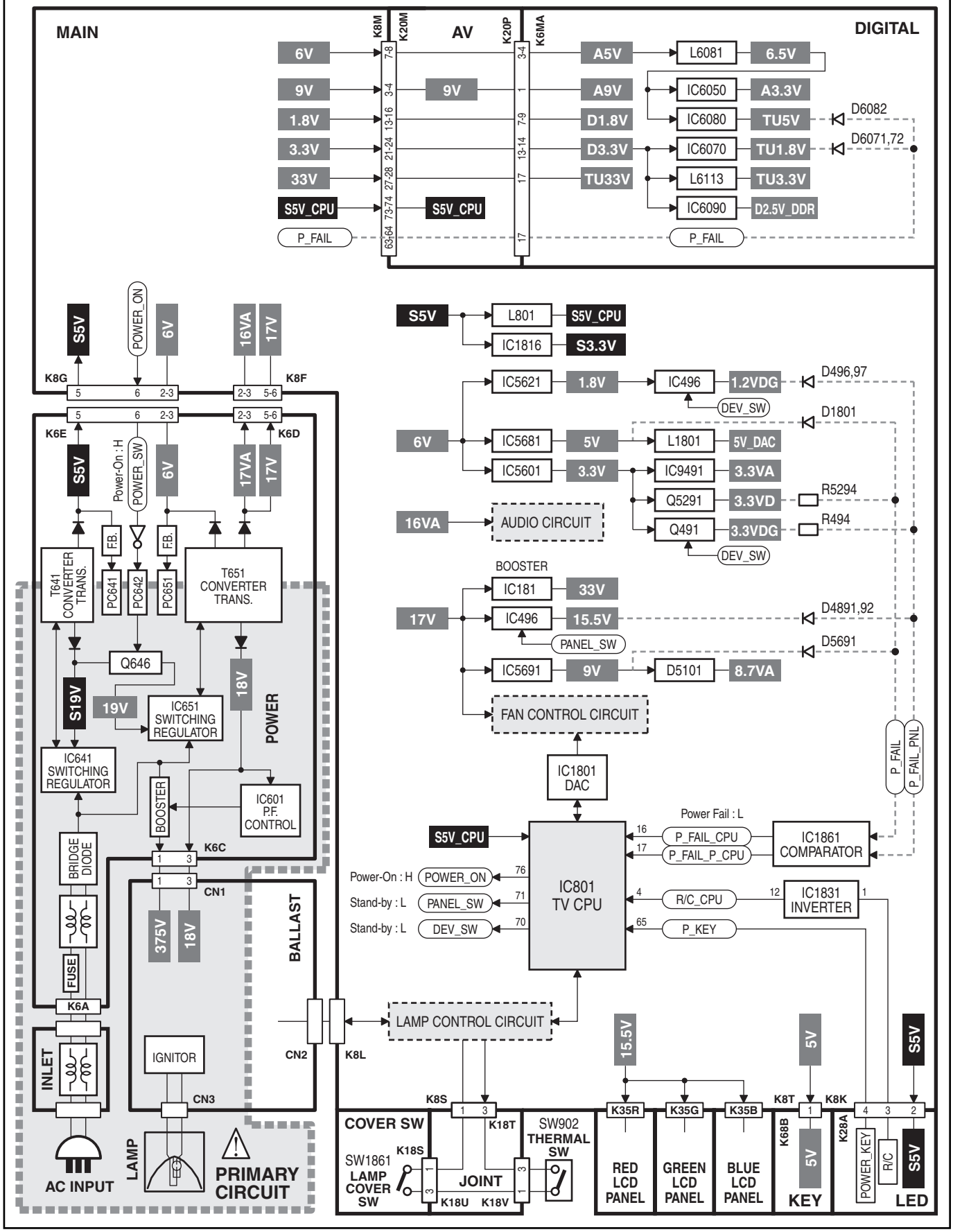
Power failure protection of Fan
When a fan abnormality occurs, the fan lock signal becomes to "H". "FAN_ERROR" signal (Error: L) is sent to pin 18 of IC801 via Q7898. If a fan connector is not connected firmly, the power failure protection will be operated.

Screen size option
R801 and R802 connected to pin 3 of IC801 are the option resistors for the screen size.

L: 65 inch, H: 55 inch

■ Power Supply Lines

● Power supply circuit and protection circuit



■ Troubleshooting

● No Power

This LCD projection TV provides a function which can be specified a defective area simply by indicating the LEDs on the front panel. Connect the AC cord and press the Power button once and then check the LED indication.

● LED Indicators and Error Conditions

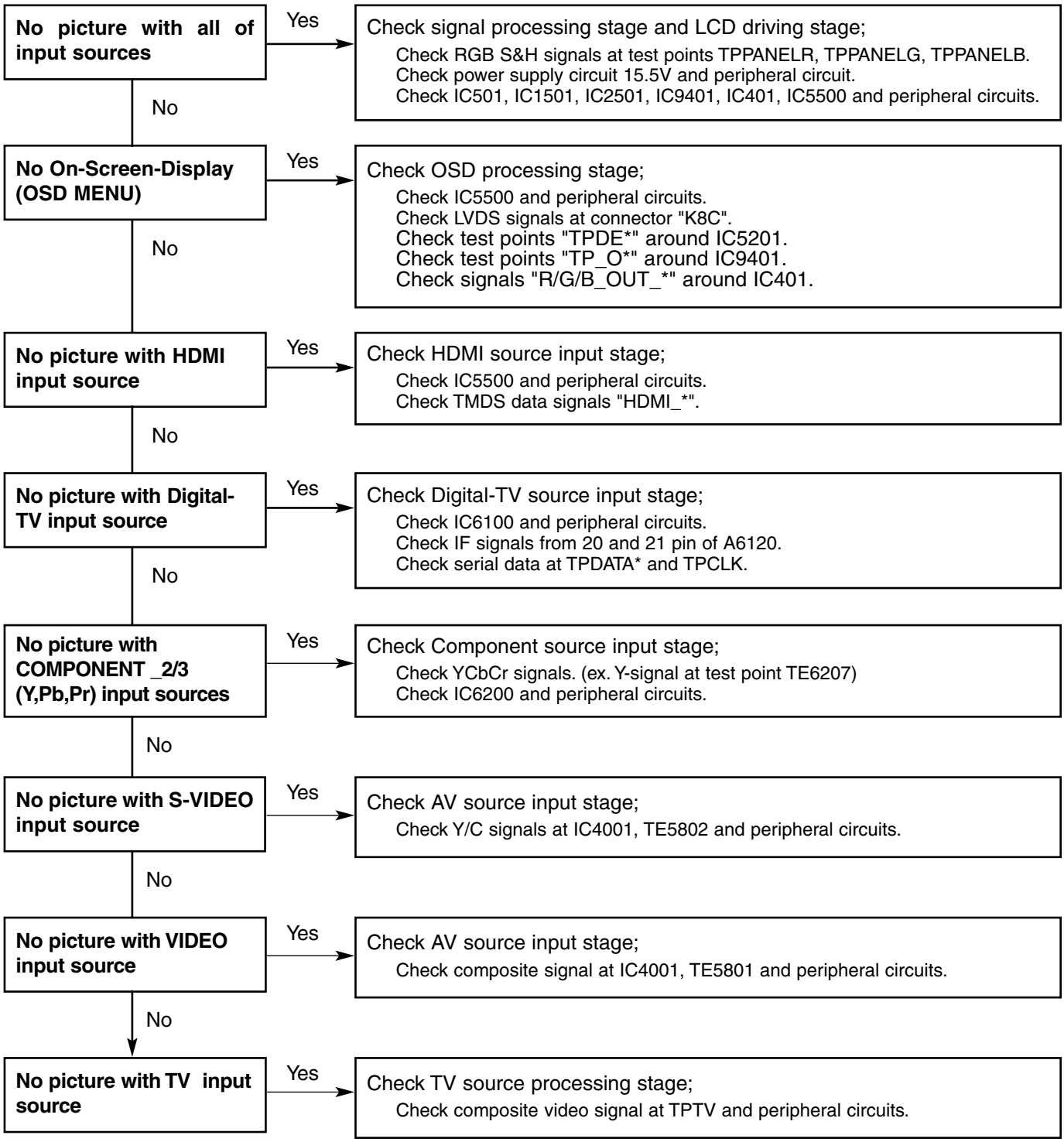
POWER (RED)	POWER (GREEN)	WARNING (RED)	LAMP REPLACE	ERROR CONDITION	CHECK POINT
OFF	OFF	OFF	OFF	Power failure (Primary circuit)	AC cord, Fuse, Varistor, Power board (See below table)
OFF	OFF	EMIT	OFF	Power failure (Secondary circuit)	P_Fail or P_Fail_PNL signal, Fan lock signal, Connectors
BLINK --> EMIT	OFF	OFF	OFF	Lamp failure, Temperature failure	Lamp Ballast Unit SW1861 (Lamp cover SW) SW902 (Thermal SW)
BLINK --> OFF	OFF	BLINK	OFF	Temperature failure	Cooling down
---	EMIT	---	EMIT	Lamp Lifetime	Lamp replacement

● Troubled parts in primary circuit and Check points

Circuit	Unit	Troubled Location	Error Condition	Check Points
Primary Circuit	Power Board	C616	Power shut down	F601
		C619	Power shut down	F601,D619
		C655	Power shut down	R651
		C656	Power shut down	IC651,F651
		DB611	Power shut down	F601
		D611	Power shut down	F601,Q611
		D651	Power shut down	R651
		D671	Power shut down	IC641
		IC641	Power shut down	F619,R641
		IC651	Power shut down	C659,C661,C662,D653,F651,
				Q646,Q661,R652,R653,R654
		L613	Power shut down	F601,Q611
		Q611	Power shut down	D612,F601,Q621,R618
		T641	Power shut down	IC641
		T651	Power shut down	IC651,F651

● No Picture

Check following steps.



● No Sound

Check following steps.

■ Control Port Functions

● TV CPU (IC801, LC87F5KP6AU)

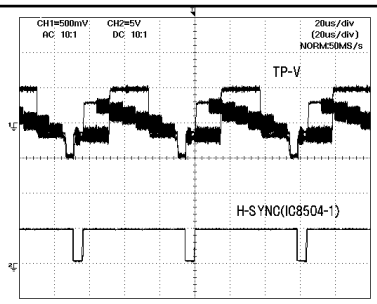
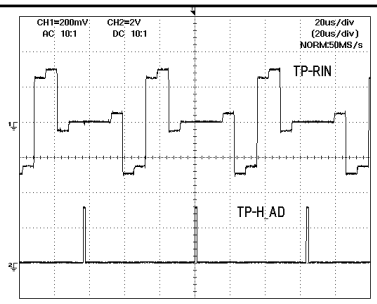
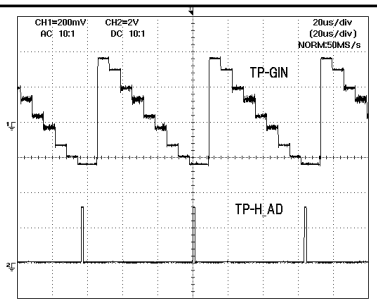
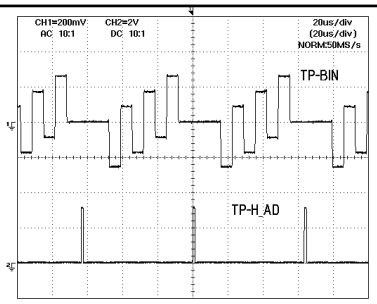
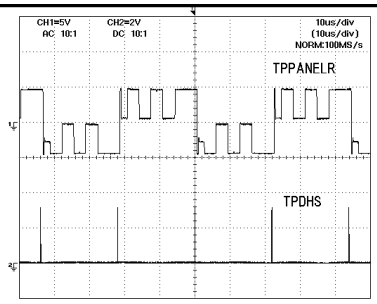
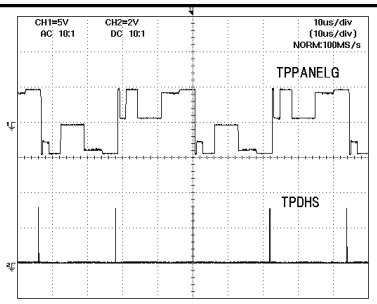
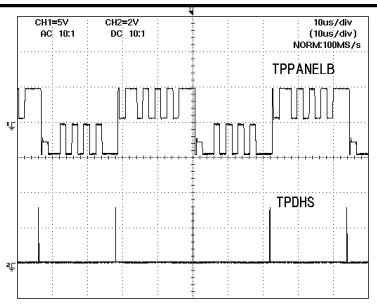
Pin No.	Function Name	Function	Polarity	I/O
1	P70/INT0/T0LCP/AN8	GAMMA_RESET	L=Reset	O
2	P71/INT1/T0HCP/AN9	CS_PC_in		I
3	P72/INT2/T0IN/T0LCP	Screen Size OPTION	L=65", H=55"	I
4	P73/INT3/T0IN/T0HCP	RCin		I
5	RES	RESET in		I
6	XT1/AN10	Xin		I
7	XT2/AN11	Xout		O
8	VSS1	Vss	GND	I
9	CF1	CFin		I
10	CF2	CFout		O
11	VDD1	Power IN	5V	I
12	P80/AN0	Key in		I
13	P81/AN1	AFT S-Figure in		I
14	P82/AN2	S IN	L=S-video	I
15	P83/AN3	TB in	H=TB in	I
16	P84/AN4	Power Fail 1 in	L=Power Fail	I
17	P85/AN5	Power Fail 2 in	L=Power Fail	I
18	P86/AN6	FAN Error in	L=Fan Error	I
19	P87/AN7			
20	P10/SO0	SDATA_CPU		O
21	P11/SI0/SB0			
22	P12/SCK0	SCLK_CPU		O
23	P13/SO1			
24	P14/SI1/SB1	IIC-BUS for TV		I/O
25	P15/SCK1	IIC-BUS for TV		O
26	P16/T1PWML	IIC-BUS for NV		I/O
27	P17/T1PWMH/BUZ	IIC-BUS for NV		O
28	PE0	Power_LED (Green)	H=ON	O
29	PE1	Ready_LED (Red)	H=ON	O
30	PE2	Warning_LED (Red)	H=ON	O
31	PE3	Lamp_Replace_LED	H=ON	O
32	PE4	AMP_STBY	H=stand-by	O
33	PE5	LVDS_PowerDown	Not used	O
34	PE6			
35	PE7	WDT out (Watch Dog Timer)	Not used	-
36	VSS4	Vss	GND	I
37	VDD4	Power IN	5V	I
38	PF0	GAMMA_ST	Active Low	O
39	PF1			
40	PF2	3L_EN	Active Low	O
41	PF3	EXT_OSD_ST	Active Low	O
42	PF4			
43	PF5			
44	PF6			
45	PF7			
46	SI2P0/SO2	Reserve		O
47	SI2P1/SI2/SB2	SDATA_PC_in		I
48	SI2P2/SCK2	SCLK_PC_in		I
49	SI2P3/SCK20			
50	PWM1			
51	PWM0			
52	VDD2	Power IN	5V	I
53	VSS2	Vss	GND	I
54	P00	PFC_SW	Not used	O
55	P01	AV SW1		O
56	P02	AV SW2		O
57	P03			O
58	P04	AMP MUTE	H=Mute	O
59	P05/CKO	MO_MUTE	L=Mute	O
60	P06/T6O			
61	P07/T7O	FAN_SW		O
62	P20/INT4/T1IN/T0LCP/T0HCP	ENA/DATA1		I/O
63	P21/INT4/T1IN/T0LCP/T0HCP	DATA0		I/O
64	P22/INT4/T1IN/T0LCP/T0HCP	CLK		I
65	P23/INT4/T1IN/T0LCP/T0HCP	P Key in	H=Key in	I
66	P24/INT5/T1IN/T0LCP/T0HCP	EXT_OSD_RST	Active Low	O
67	P25/INT5/T1IN/T0LCP/T0HCP	LAMP_SW		O

Pin No.	Function Name	Function	Polarity	I/O
68	P26/INT5/T1IN/T0LCP/T0HCP	LAMP_TX		O
69	P27/INT5/T1IN/T0LCP/T0HCP	LAMP_RX		I
70	P30/PWM4	DEV_SW	H=ON	O
71	P31/PWM5	PANEL_SW	H=ON	O
72	P32/UTX1	UART1 OUT		O
73	P33/URX1	UART1 IN		I
74	P34/UTX2	UART2 OUT		O
75	P35/URX2	UART2 IN		I
76	P36	Power_ON	H=ON	O
77	PB7	D7		I/O
78	PB6	D6		I/O
79	PB5	D5		I/O
80	PB4	D4		I/O
81	PB3	D3		I/O
82	PB2	D2		I/O
83	PB1	D1		I/O
84	PB0	D0		I/O
85	VSS3	Vss	GND	I
86	VDD3	Power IN	5V	I
87	PC7/DBGP2	DBGP2		I
88	PC6/DBGP1	DBGP1		I/O
89	PC5/DBGP0	DBGP0		I/O
90	PC4	RS_JPC		O
91	PC3	WAITB_JPC		I
92	PC2	RD_JPC		O
93	PC1	WR_JPC		O
94	PC0	CS_JPC		O
95	PA0	A1		O
96	PA1	A2		O
97	PA2	A3		O
98	PA3/AN12	A4		O
99	PA4/AN13	A5		O
100	PA5/AN14	A6		O

● IIC Bus D/A Converter

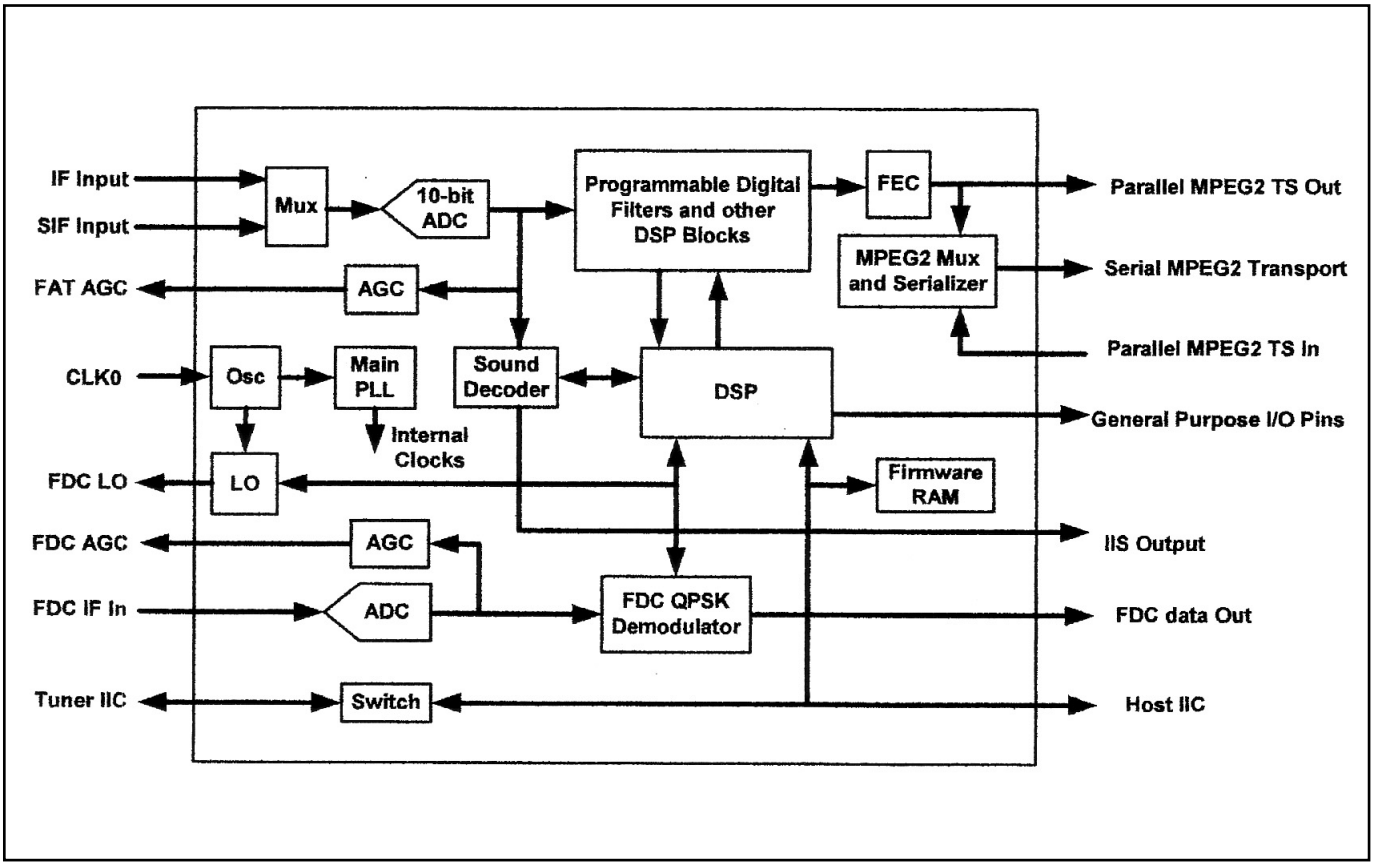
IC Ref. No.	Pin	I/O	Signal Name	Function	Note
IC1801	2	I	IICSCL_DAC		
	3	I/O	IICSDA_DAC		
M62392	4	O	FAN_CONT1		
	5	O	FAN_CONT2		
	6	O	FAN_CONT3		
	7	O	FAN_CONT4		
	8	O			
	9	O			
	14	O			
	15	O			
	16	O	PWDN_SH		
	17	O			
	18	O			
	19	O			
	20	-	Vcc		5V
	21	-	Vdd		5V
	22	I	CS2	Slave address setting port 2	Vdd
	23	I	CS1	Slave address setting port 1	Vdd
	24	I	CS0	Slave address setting port 0	GND

■ Waveforms

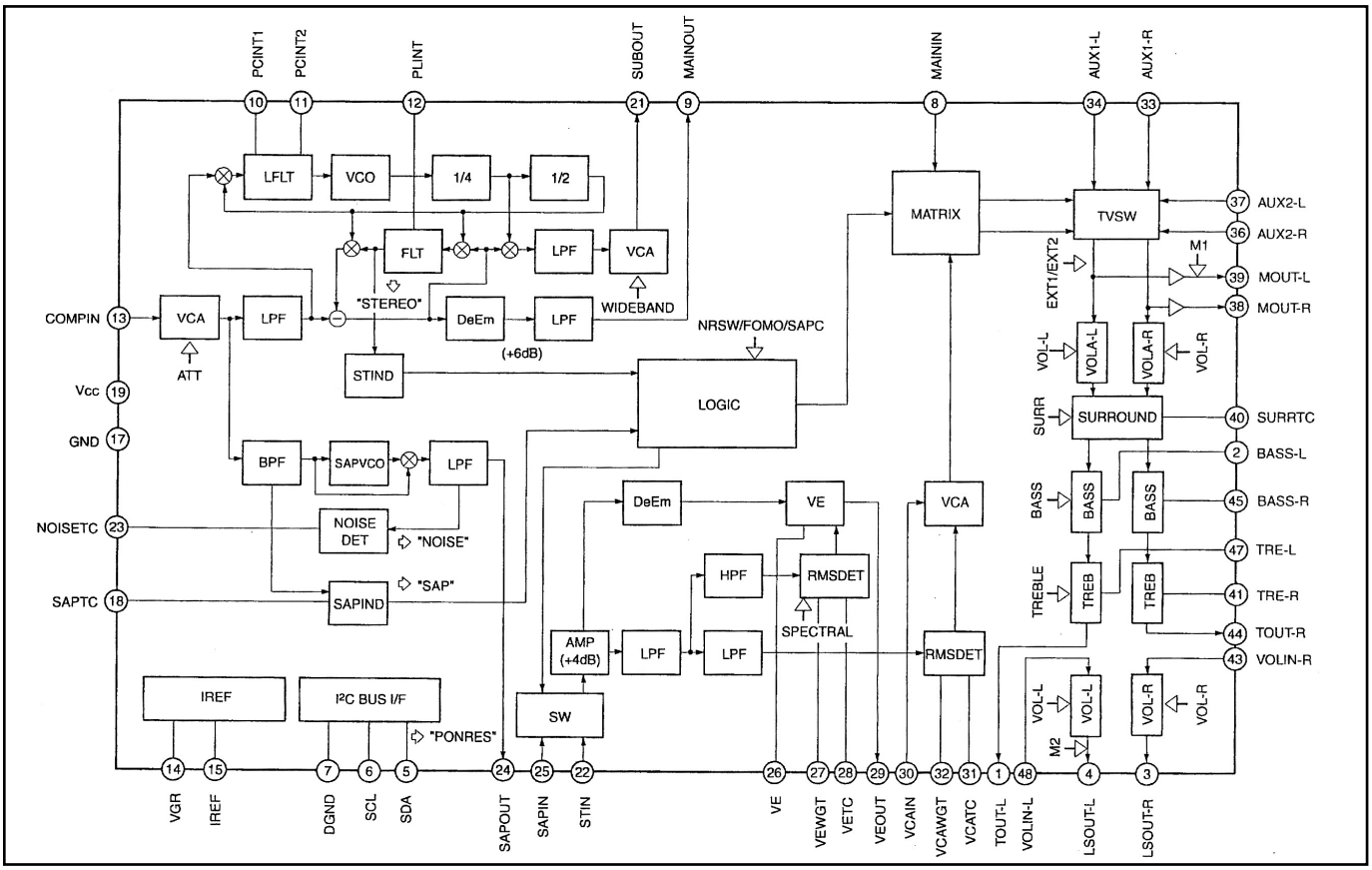
TV_COLORBAR-IN <TPTV>		
		
VIDEO2_Cr-IN <VIDEO2_V>	VIDEO2_Y-IN <TE6207>	VIDEO2_Cb-IN <VIDEO2_U>
		
R-OUT <TPPANELR>	G-OUT <TPPANELG>	B-OUT <TPPANELB>
		

■ IC Block Diagrams

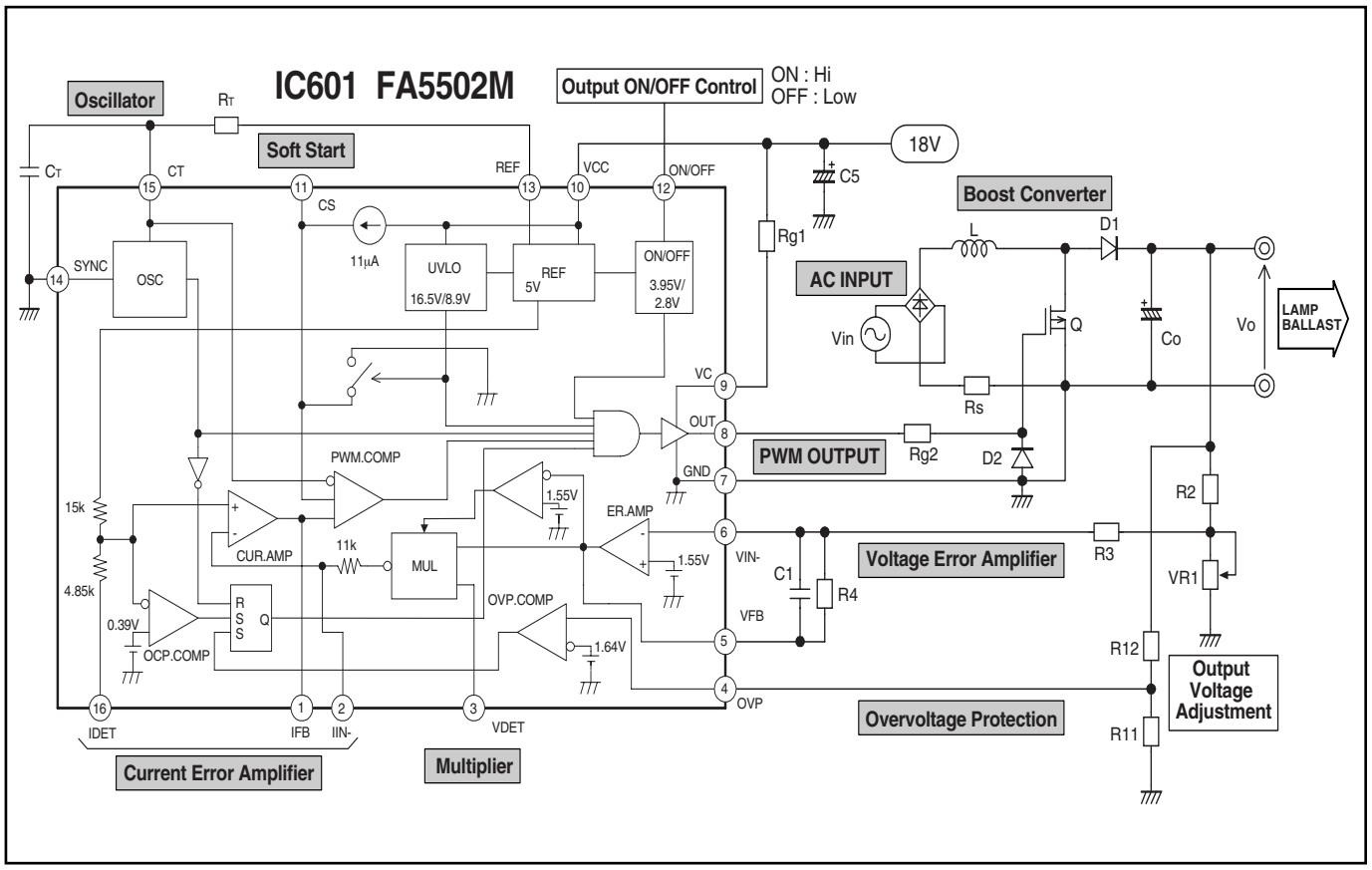
● CAS-220 <TS Demodulator, IC6100>



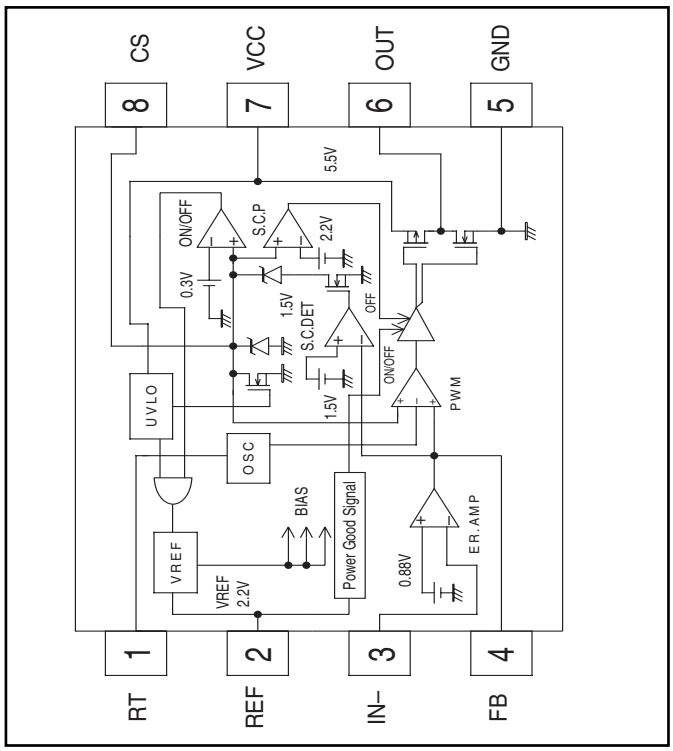
● CXA2234Q <MTS Decoder, IC5001>



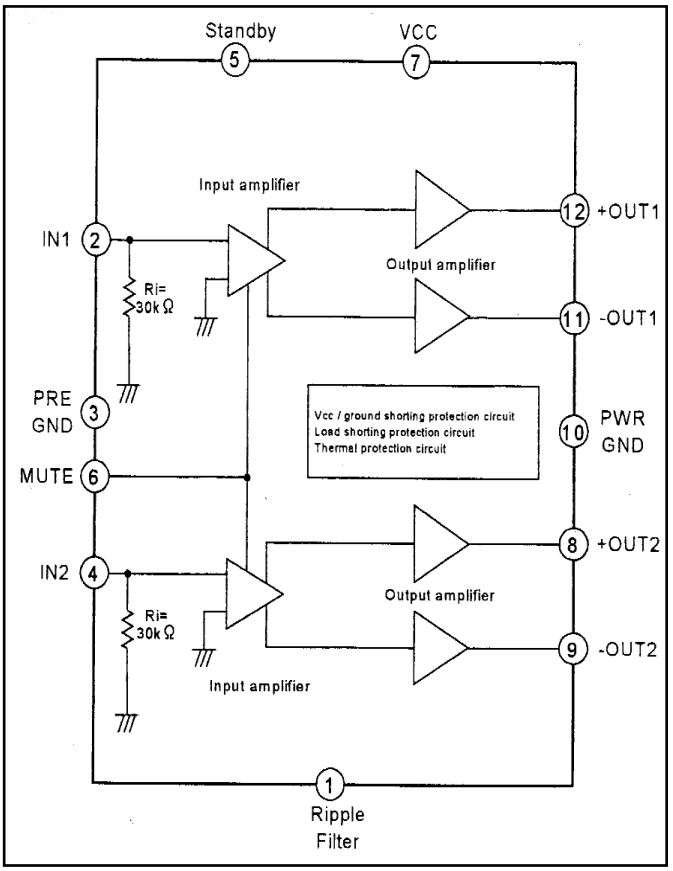
● FA5502M <P. F. Controller, IC601>



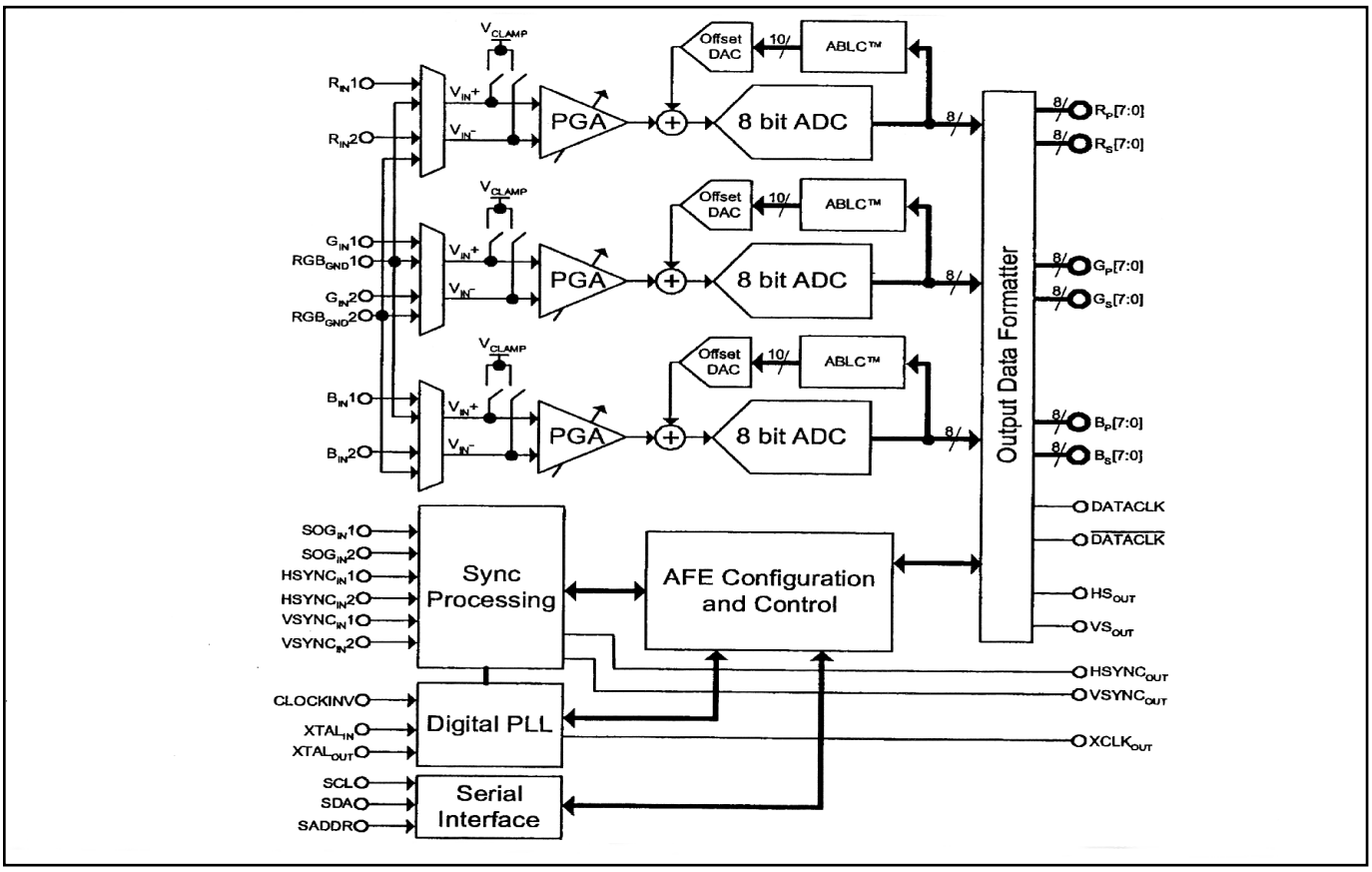
● FA7700V, FA7701V <Switching power supply controller, IC181, IC5601, IC5621, IC7801, IC7821, IC7841, IC7861>



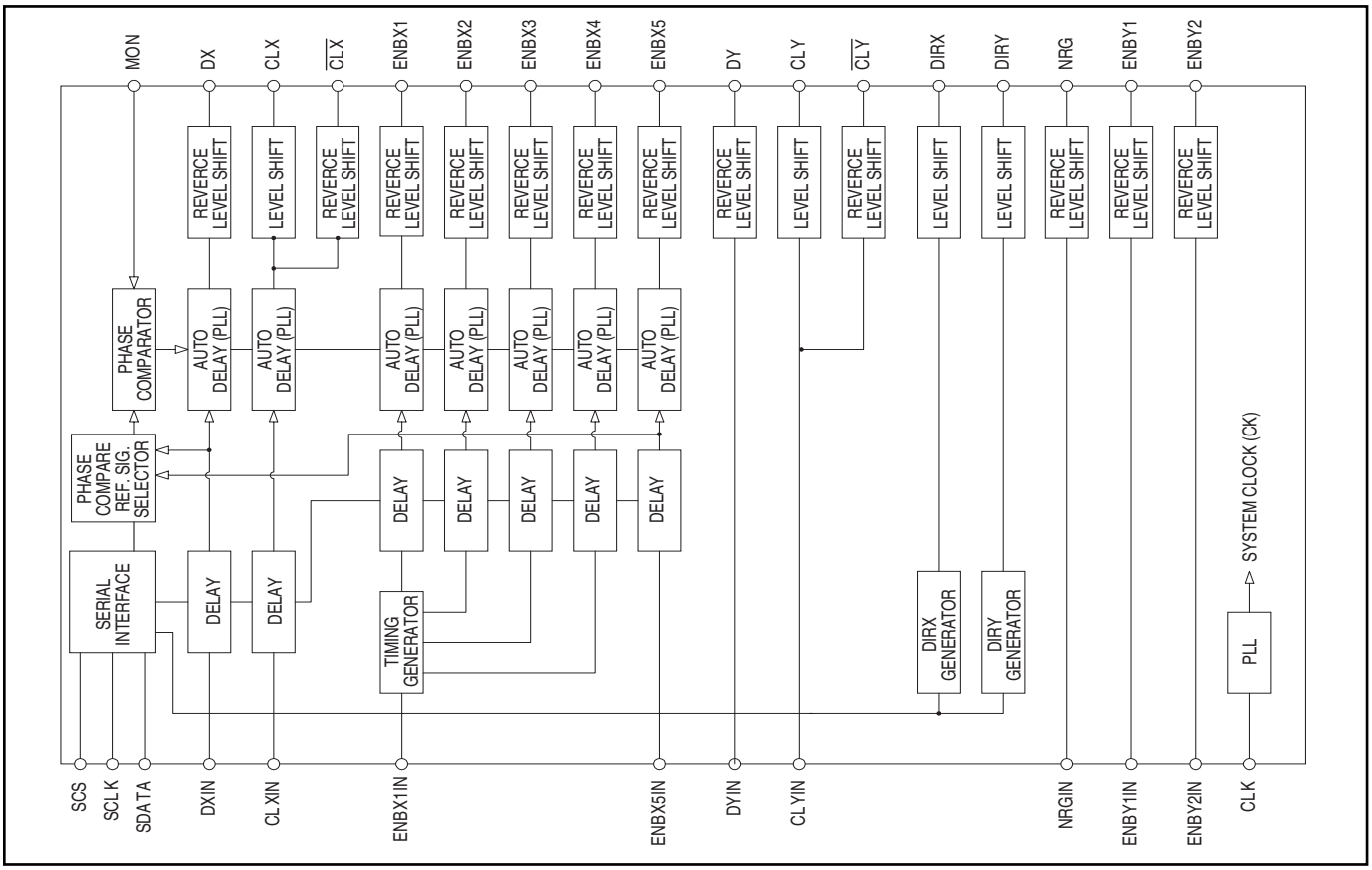
● LA42152 <Audio Amplifier, IC001>



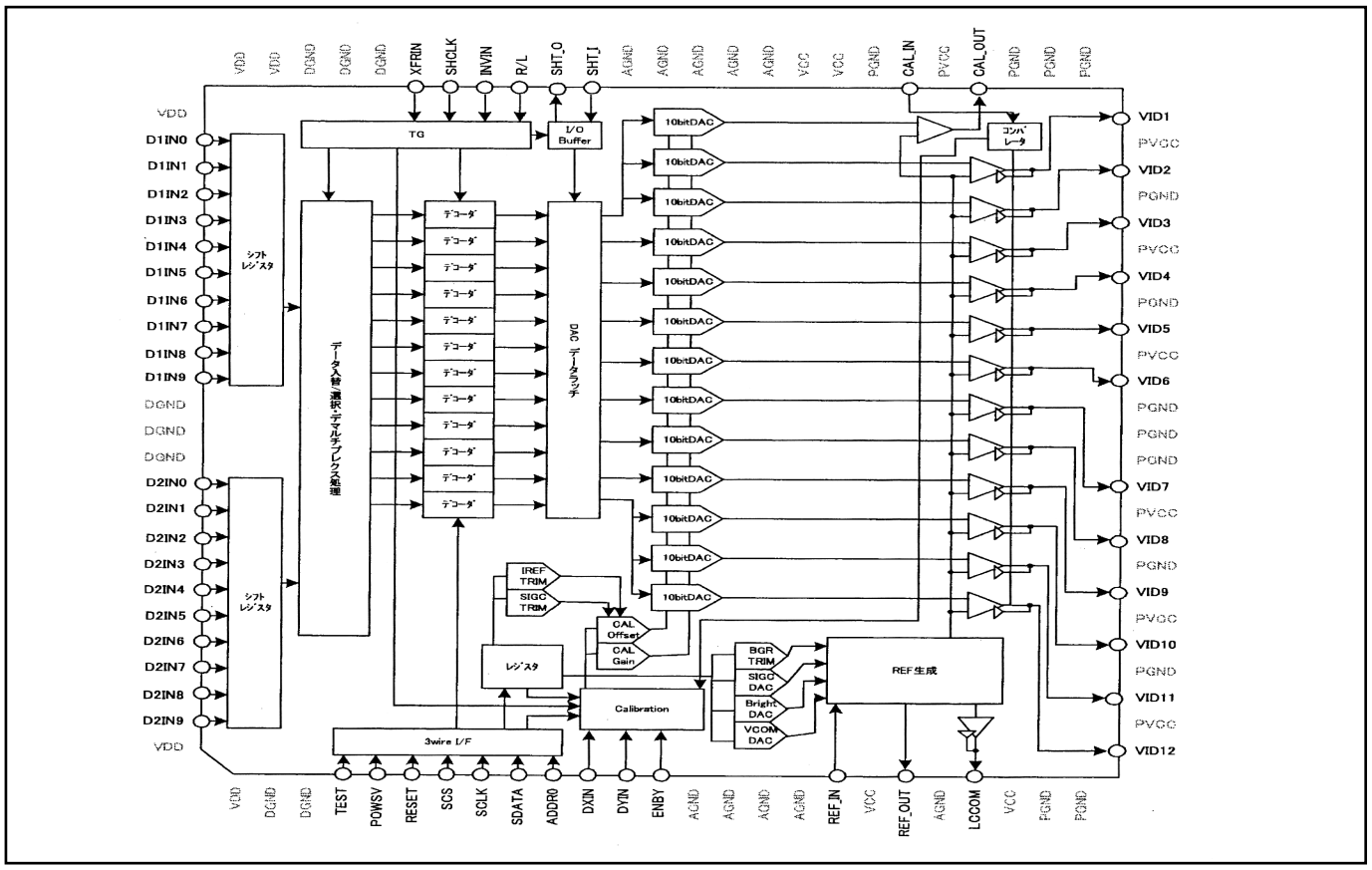
● ISL98001 <A/D Converter, IC6200>



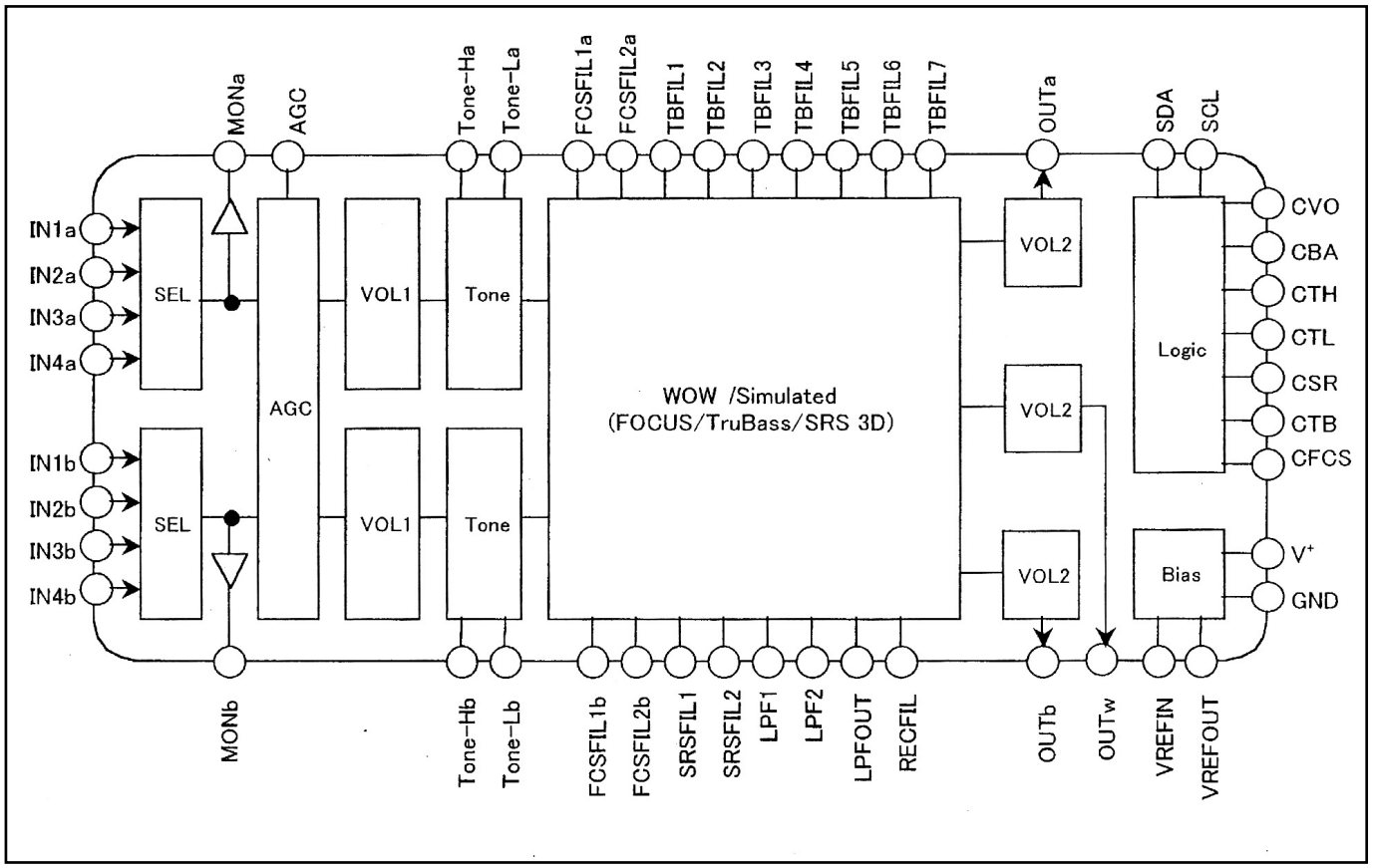
● L3E01060 <Level Shift, IC561, IC1561, IC2561>



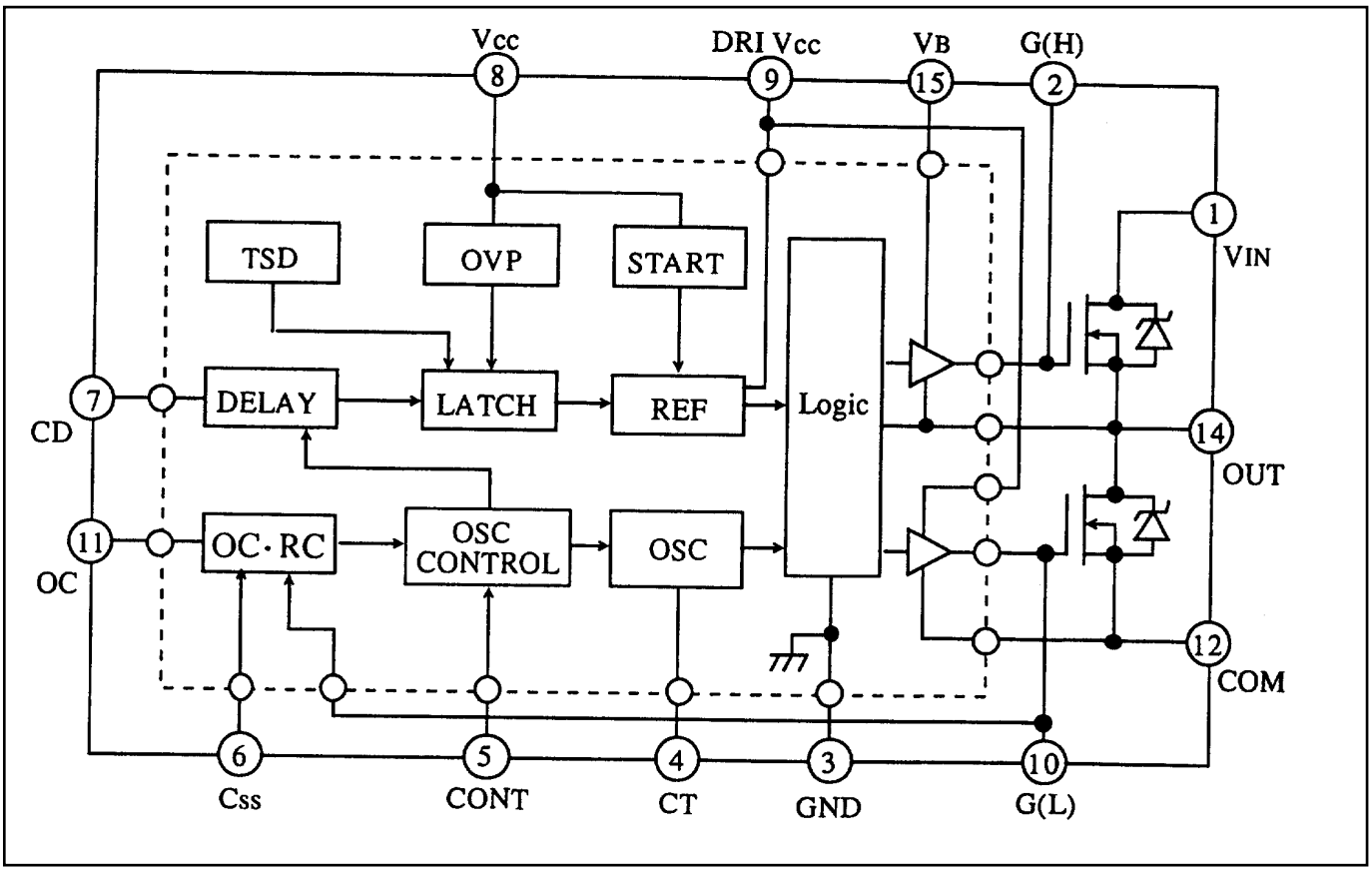
● L3E06150 <LCD Driver, IC501, IC1501, IC2501>



● NJW1180 <Audio Processor, IC5101>



● STR-Z2156A <Switching Power, IC651>



● STR-A6159 <Switching Regulator, IC641>