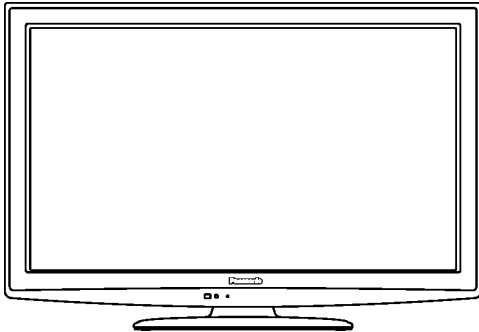


Service Manual

42 inch Class 1080p LCD HDTV

Model No. **TC-L42U22**

LA03 Chassis



WARNING

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

IMPORTANT SAFETY NOTICE

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

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1 Safety Precautions

1.1. General Guidelines

1. When servicing, observe the original lead dress. If a short circuit is found, replace all parts which have been overheated or damaged by the short circuit.
2. After servicing, see to it that all the protective devices such as insulation barriers, insulation papers shields are properly installed.
3. After servicing, make the following leakage current checks to prevent the customer from being exposed to shock hazards.
4. When conducting repairs and servicing, do not attempt to modify the equipment, its parts or its materials.
5. When wiring units (with cables, flexible cables or lead wires) are supplied as repair parts and only one wire or some of the wires have been broken or disconnected, do not attempt to repair or re-wire the units. Replace the entire wiring unit instead.
6. When conducting repairs and servicing, do not twist the Faston connectors but plug them straight in or unplug them straight out.

1.1.1. Leakage Current Cold Check

1. Unplug the AC cord and connect a jumper between the two prongs on the plug.
2. Measure the resistance value, with an ohmmeter, between the jumpered AC plug and each exposed metallic cabinet part on the equipment such as screwheads, connectors, control shafts, etc. When the exposed metallic part has a return path to the chassis, the reading should be 100 Mohm and over.

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

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

1. Plug the AC cord directly into the AC outlet. Do not use an isolation transformer for this check.
2. Connect a 1.5kohm, 10 watts resistor, in parallel with a 0.15 μ F capacitors, between each exposed metallic part on the set and a good earth ground such as a water pipe, as shown in Figure 1.
3. Use an AC voltmeter, with 1000 ohms/volt or more sensitivity, to measure the potential across the resistor.
4. Check each exposed metallic part, and measure the voltage at each point.
5. Reverse the AC plug in the AC outlet and repeat each of the above measurements.

2 Warning

2.1. Prevention of Electrostatic Discharge (ESD) to Electrostatically Sensitive (ES) Devices

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

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

Caution

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

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

2.2. About lead free solder (PbF)

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

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

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

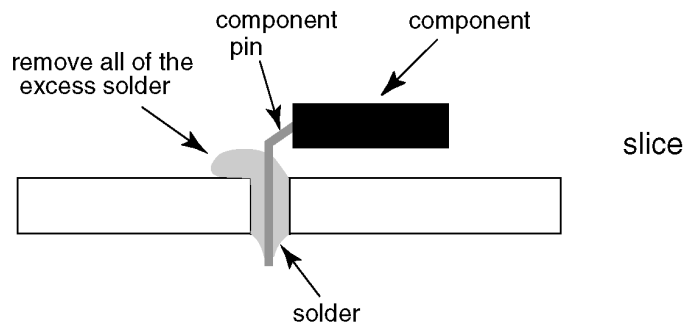
That is Tin (Sn), Silver (Ag) and Copper (Cu) although other types are available.

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

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

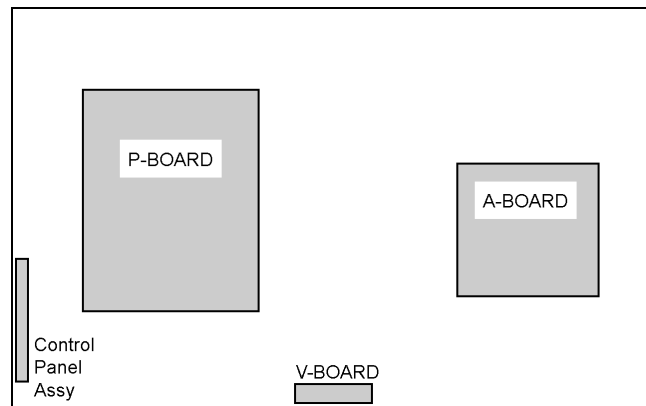
Caution

- Pb free solder has a higher melting point than standard solder. Typically the melting point is 50 ~ 70 °F (30~40 °C) higher. Please use a high temperature soldering iron and set it to 700 ± 20 °F (370 ± 10 °C).
- Pb free solder will tend to splash when heated too high (about 1100 °F or 600 °C).
If you must use Pb solder, please completely remove all of the Pb free solder on the pins or solder area before applying Pb solder. If this is not practical, be sure to heat the Pb free solder until it melts, before applying Pb solder.
- After applying PbF solder to double layered boards, please check the component side for excess solder which may flow onto the opposite side. (see figure below)



3 Service Navigation

3.1. Service Hint



Board Name	Function
A-Board	Speaker out, AV Terminal, HDMI in, SD Card, PC in, Digital Signal Processor, Nite-Tcon, Tuner
V-Board	Remote Receiver, LED
P-Board	Power (AC/DC), DC-DC Non serviceable P-Board should be exchanged for service.
Control Panel Assy	Control Button, Power switch Non serviceable Control Panel Assy should be exchanged for service.

3.2. Applicable signals

* Mark: Applicable input signal for Component (Y, PB, PR), HDMI and PC

	horizontal frequency (kHz)	vertical frequency (Hz)	COMPONENT	HDMI	PC
525 (480) / 60i	15.73	59.94	*	*	
525 (480) /60p	31.47	59.94	*	*	
750 (720) /60p	45.00	59.94	*	*	
1,125 (1,080) /60i					

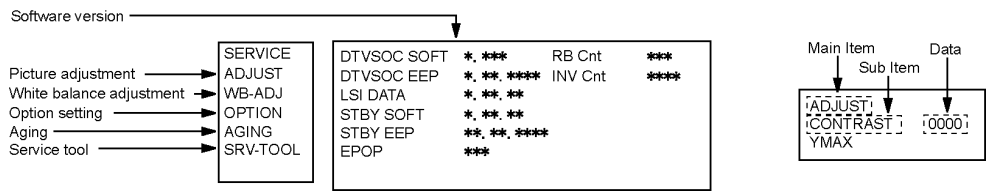
4 Specifications

Power Source	AC 110-127 V, 60 Hz	
Power Consumption		
Maximum	199 W	
Standby Condition	0.3 W	
Display panel		
Aspect Ratio	16:9	
Visible screen size	42 inch class (42.0 inches measured diagonally)	
(W × H × Diagonal)	36.6 inch × 20.6 inch × 42.0 inch (930 mm × 523 mm × 1,067 mm)	
(No. of pixels)	2,073,600 (1,920 (W) × 1,080 (H)) [5,760 × 1,080 dots]	
Sound		
Speaker	1-way 2 speakers slim under SP System	
Audio Output	20 W [10 W + 10 W] (10 % THD)	
PC signals	VGA, SVGA, XGA, WXGA, SXGA	
	Horizontal scanning frequency 31 - 69 kHz	
	Vertical scanning frequency 59 - 86 Hz	

5 Service Mode

5.1. How to enter into Service Mode

While pressing [VOLUME (-)] button of the main unit, press [INFO] button of the remote control three times within 2 seconds.



5.1.1. Key command

- [1] button...Main items Selection in forward direction
- [2] button...Main items Selection in reverse direction
- [3] button...Sub items Selection in forward direction
- [4] button...Sub items Selection in reverse direction
- [VOL] button...Value of sub items change in forward direction (+), in reverse direction (-)

5.1.2. Contents of adjustment mode

- Value is shown as a hexadecimal number.
- Preset value differs depending on models.
- After entering the adjustment mode, take note of the value in each item before starting adjustment.

Main item	Sub item	Sample Data	Remark
ADJUST	CONTRAST	01	
	COLOR	00	
	TINT	00	
	SUB-BRT	000	
	BACKLGT	9FFF	
	V COM	1B4	
WB-ADJ	R-GAIN	F7	
	G-GAIN	FB	
	B-GAIN	DB	
	R-CENT	82	
	G-CENT	80	
	B-CENT	86	
OPTION	Boot	ROM	Factory Preset.
	STBY-SET	00	
	EMERGENCY	ON	
	CLK MODE	OFF	
	CLOCK	FC4	
	EDID-CLK	HIGH	
AGING	COUNT		

5.2. SRV-TOOL

5.2.1. How to access

1. Select [SRV-TOOL] in Service Mode.
2. Press [OK] button on the remote control.

	SRV-TOOL	
Display of TD2Microcode version →	TD2Microcode:81c00011	
Display of Flash ROM maker code →	Flash ROM : 1 - 227E	
Display of SOS History →	PTCT : 00 . 00 . 00 . 00 . 00	Time 000040:40 Count 0000049

POWER ON TIME/COUNT
Press [MUTE] button (3sec)

5.2.2. Display of SOS History

SOS History (Number of LED blinking) indication.

From left side; Last SOS, before Last, three occurrence before, 2nd occurrence after shipment, 1st occurrence after shipment.

This indication except 2nd and 1st occurrence after shipment will be cleared by [Self-check indication and forced to factory shipment setting].

5.2.3. POWER ON TIME/COUNT

Note : To display TIME/COUNT menu, highlight position, then press MUTE for 3sec.

Time : Cumulative power on time, indicated hour : minute by decimal

Count : Number of ON times by decimal

Note : This indication will not be cleared by

5.3. Hotel mode

1. Purpose
Restrict a function for hotels.
2. Access command to the Hotel mode setup menu
In order to display the Hotel mode setup menu, please enter the following command (**within 2 second**).
[TV] : Vol. [Down] + [REMOTE] : INPUT (3 times)

Then, the Hotel mode setup menu is displayed.

Hotel Mode

Mode	Off
Input	-
Channel	-
Volume	+ 25
Vol. Max	+ 100
OSD Ctrl	Off
FP Ctrl	Off
Pow Ctrl	Off



3. To exit the Hotel mode setup menu
Disconnect AC power cord from wall outlet.
4. Explain the Hotel mode setup menu

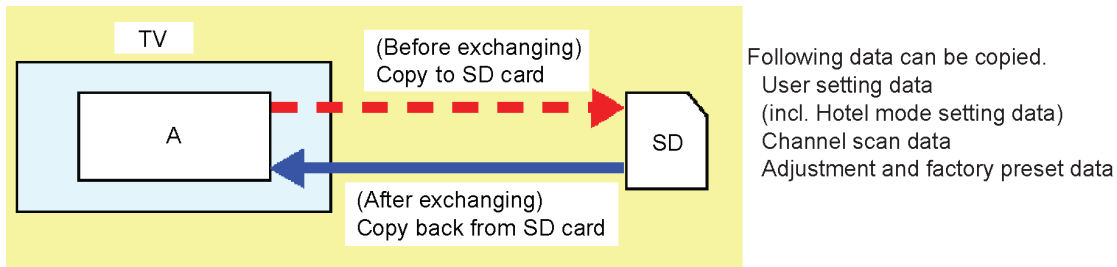
item	Function
Mode	Select hotel mode off/on
Input	Select input signal modes. Set the input, when each time power is switched on. Selection: -/RF/HDMI1/HDMI2/HDMI3/Component/Video1/Video2/PC • OFF: give priority to a last memory.
Channel	Select channel when input signal is RF. Set the channel, each time power is switched on. Selection: Any channel number or [-]. [-] means the channel when turns off.
Volume	Adjust the volume when

5.4. Data Copy by SD Card

5.4.1. Purpose

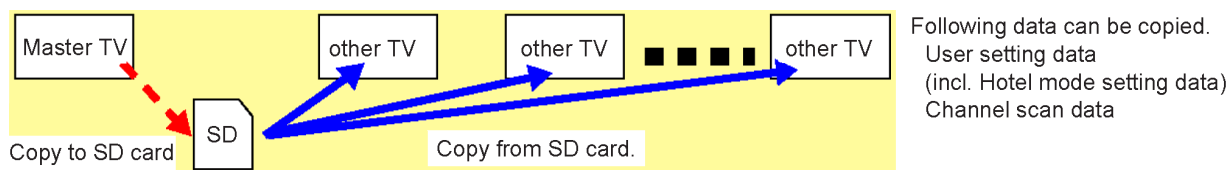
(a) Board replacement (Copy the data when exchanging A-board):

When exchanging A-board, the data in original A-board can be copied to SD card and then copy to new A-board.



(b) Hotel (Copy the data when installing a number of units in hotel or any facility):

When installing a number of units in hotel or any facility, the data in master TV can be copied to SD card and then copy to other TVs.



5.4.2. Preparation

Make pwd file as startup file for (a) or (b) in a empty SD card.

1. Insert a empty SD card to your PC.
2. Right-click a blank area in a SD card window, point to New, and then click text document. A new file is created by default (New Text Document.txt).
3. Right-click the new text document that you just created and select rename, and then change the name and extension of the file to the following file name for (a) or (b) and press ENTER.

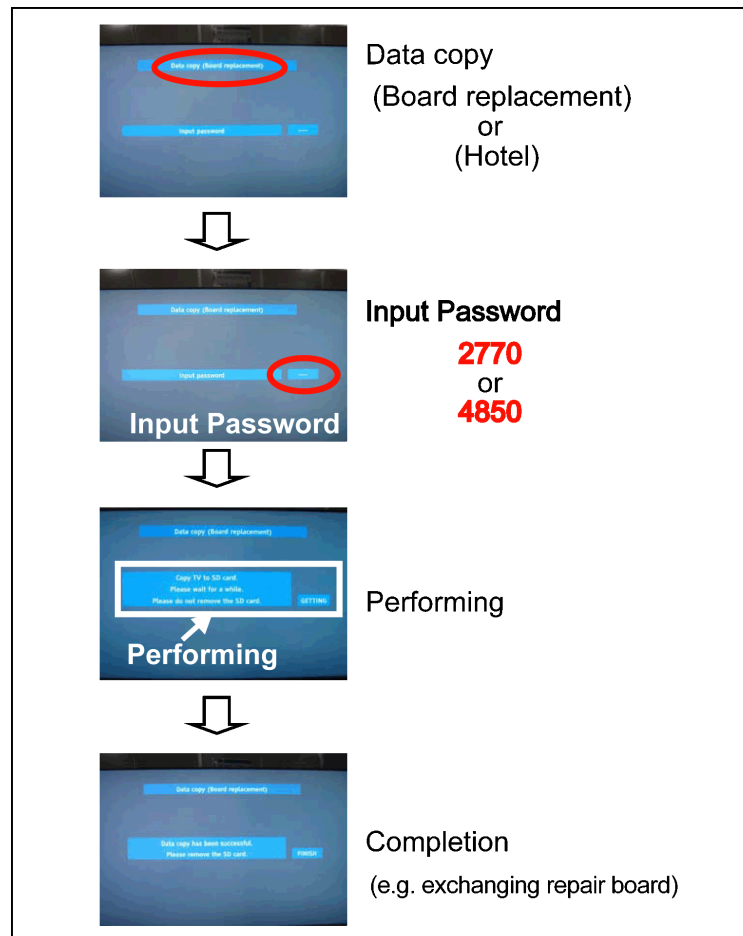
5.4.3. Data copy from TV set to SD Card

1. Turn on the TV set.
2. Insert SD card with a startup file (pwd file) to SD slot.
On-screen Display will be appeared according to the startup file automatically.
3. Input a following password for (a) or (b) by using remote control.
 - (a) For Board replacement : 2770
 - (b) For Hotel : 4850Data will be copied from TV set to SD card.
It takes around 2 to 6 minutes maximum for copying.
4. After the completion of copying to SD card, remove SD card from TV set.
5. Turn off the TV set.

Note:

Following new folder will be created in SD card for data from TV set.

- (a) For Board replacement : user_setup
- (b) For Hotel : hotel

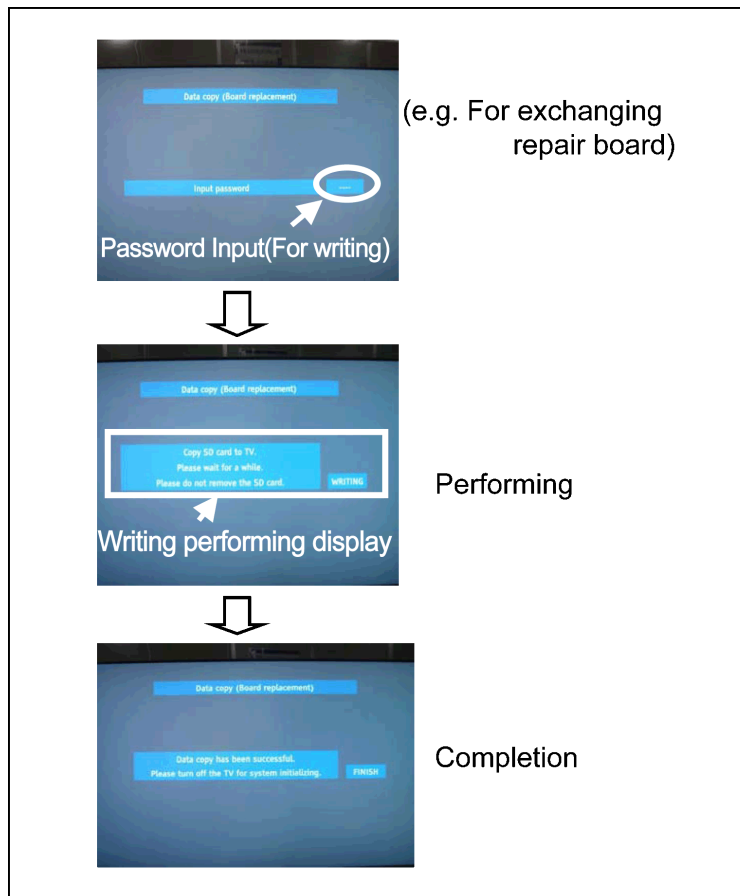


5.4.4. Data copy from to SD Card to TV set

1. Turn on the TV set.
2. Insert SD card with Data to SD slot.
On-screen Display will be appeared according to the Data folder automatically.
3. Input a following password for (a) or (b) by using remote control.
(a) For Board replacement : 2771
(b) For Hotel : 4851
Data will be copied from SD card to TV set.
4. After the completion of copying to SD card, remove SD card from TV set.
(a) For Board replacement : Data will be deleted after copying (Limited one copy).
(b) For Hotel : Data will not be deleted and can be used for other TVs.
5. Turn off the TV set.

Note:

1. Depending on the failure of boards, function of Data copy for board replacement does not work.
2. This function can be effective among the same model numbers.



6 Troubleshooting Guide

Use the self-check function to test the unit.

1. Checking the IIC bus lines
2. Power LED Blinking timing

6.1. Check of the IIC bus lines

6.1.1. How to access

Self-check indication only:

Produce TV reception screen, and while pressing [VOLUME (-)] button on the main unit, press [OK] button on the remote control for more than 3 seconds.

Self-check indication and forced to factory shipment setting:

Produce TV reception screen, and while pressing [VOLUME (-)] button on the main unit, press [MENU] button on the remote control for more than 3 seconds.

6.1.2. Exit

Disconnect the AC cord from wall outlet.

6.1.3. Screen display

SELF CHECK		0.101 - 0.00.0000
DTVSOC	OK	
TUN	OK	
MEM1	OK	
MEM2	OK	
AMP	OK	
SYSPMU	OK	
EPOP	021	
ROM CHECK:		*****
EDID:		** ** *

6.2. Power LED Blinking timing chart

1. Subject

Information of LED Flashing timing chart.

2. Contents

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

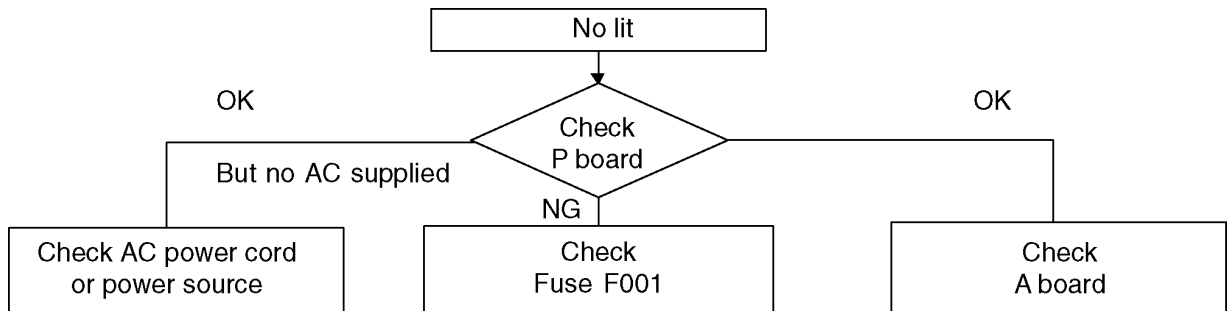
Blinking Times	Blinking timing	Contents	Check point
1		INVERTER SOS	LCD PANEL P-Board
3		Tuner SOS (SUB1.2V, SUB1.8V, SUB5V F15V, SOUND15V)	A-Board P-Board
4		F15V SOS	A-Board P-Board
7		SUB3.3V SOS	A-Board
9		SOUND SOS	A-Board
13		EMERGENCY SOS	A-Board

6.3. No Power

First check point

There are following 2 states of No Power indication by power LED.

1. No lit
2. Red is lit then turns red blinking a few seconds later. (See 6.2.)



8 Measurements and Adjustments

8.1. Voltage chart of A-board

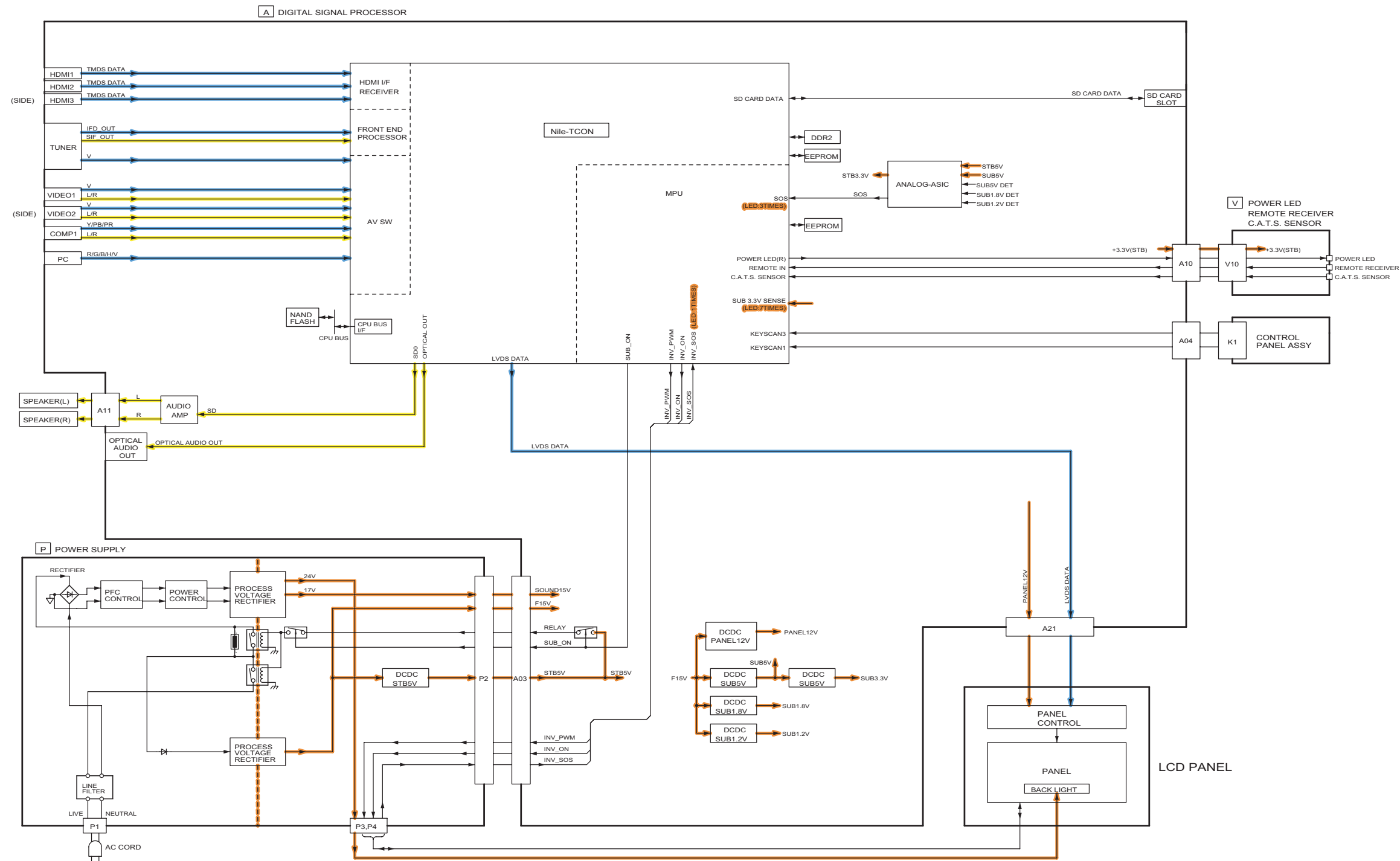
VOLTAGE	TEST POINT	SPECIFICATION (Reception state)
STB3.3V	TP4716	$3.3 \pm 0.16 \text{ V}$
SUB5V	TP4724	$5 \pm 0.25 \text{ V}$
PANEL12V	TP5413	$12 \pm 0.6 \text{ V}$
SOUND15V	TP2765	$18 \pm 2 \text{ V}$
5VS	TP2768	$6.1 \pm 0.3 \text{ V}$
SUB6V	TP2767	$6.1 \pm 0.3 \text{ V}$

8.2. Picture level adjustment (RF)

Instrument Name	Remarks
1. REMOTE TRANSMITTER 2. Ex. Signal (Sprit color bar)	
Adjustment or Inspection Procedure	Remarks
< procedure > 1. Receive the Sprit color bar. (Screen mode: ZOOM or FULL Picture mode: DYNAMIC AI: OFF AI Picture: OFF) *BACK LIGHT +30 < Inspection > 1. Enter Service mode, and select MAIN_ADJ PICTURE. Volume UP/DOWN key makes GAIN displayed under PICTURE to set. Pushing the remote controller [OK] key for about 3 seconds, GAIN is suited to the adjustment value automatically.	

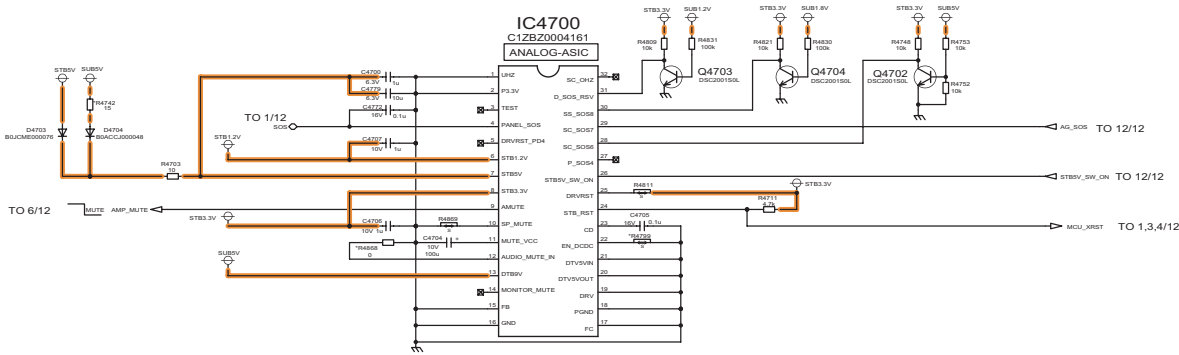
9 Block Diagram

9.1. Main Block Diagram



11.8. A-Board (7/12) Schematic Diagram

⚠ A-BOARD TXN/A10QHMS (7/12)



13.1.3. Mechanical Replacement Parts List

Note: All parts except parts mentioned [PAVCA] in the Remarks column are supplied by AVC-CSPC.
Parts mentioned [PAVCA] are supplied by PAVCA.

