LED TV

Chassis:	U74H	U74G
Model:	UA22ES4003R UA32EH4003R	UA39EH5003R

SERVICE MANUAL

LED TV

UA**EH*003R

Contents

Refer to the service manual in the GSPN (see the rear cover) for more information.

Contents

1. Precautions

1.1. Safety Precautions

Follow these safety, servicing and ESD precautions to prevent damage and to protect against potential hazards such as electrical shock.

1-1-1. Warnings

WARNING

For continued safety, do not attempt to modify the circuit board.
Disconnect the AC power and DC power jack before servicing.

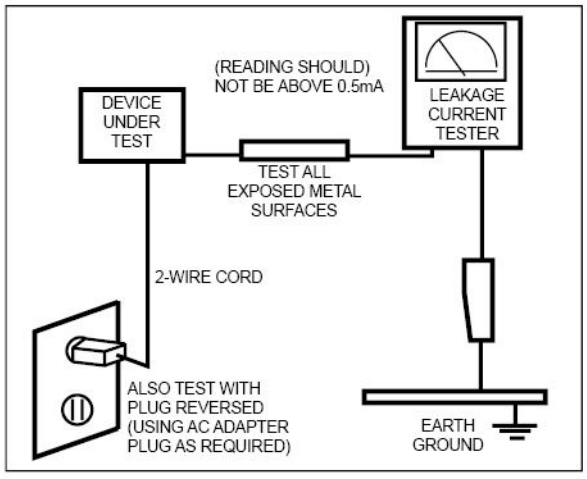
1-1-2. Servicing the LED TV

1. When servicing the LED TV, Disconnect the AC line cord from the AC outlet.
2. It is essential that service technicians have an accurate voltage meter available at all times. Check the calibration of this meter periodically.

1-1-3. Fire and Shock Hazard

Before returning the monitor to the user, perform the following safety checks:

1. Inspect each lead dress to make certain that the leads are not pinched or that hardware is not lodged between the chassis and other metal parts in the monitor.
2. Inspect all protective devices such as nonmetallic control knobs, insulating materials, cabinet backs, adjustment and compartment covers or shields, isolation resistorcapacitor networks, mechanical insulators, etc.
3. Leakage Current Hot Check:



WARNING

Do not use an isolation transformer during this test.
Use a leakage current tester or a metering system that complies with American National Standards Institute (ANSI C101.1, Leakage Current for Appliances), and Underwriters Laboratories (UL Publication UL1410, 59.7).

4. With the unit completely reassembled, plug the AC line cord directly into a 120V AC outlet. With the unit's AC switch first in the ON position and then OFF, measure the current between a known earth ground (metal water pipe, conduit, etc.) and all exposed metal parts, including: metal cabinets, screwheads and control shafts.
The current measured should not exceed 0.5 milliamp.
Reverse the power-plug prongs in the AC outlet and repeat the test.

1-1-4. Product Safety Notices

Some electrical and mechanical parts have special safetyrelated characteristics which are often not evident from visual inspection. The protection they give may not be obtained by replacing them with components rated for higher voltage, wattage, etc. Parts that have special safety characteristics are identified by ⚠ on schematics and parts lists. A substitute replacement that does not have the same safety characteristics as the recommended replacement part might create shock, fire and/or other hazards. Product safety is under review continuously and new instructions are issued whenever appropriate.

1.2. Servicing Precautions

An electrolytic capacitor installed with the wrong polarity might explode.

Before servicing units covered by this service manual, read and follow the Safety Precautions section of this manual.

If unforeseen circumstances create conflict between the following servicing precautions and any of the safety precautions, always follow the safety precautions.

1-2-1. General Servicing Precautions

1. Always unplug the unit's AC power cord from the AC power source and disconnect the DC Power Jack before attempting to: (a) remove or reinstall any component or assembly, (b) disconnect PCB plugs or connectors, (c) connect a test component in parallel with an electrolytic capacitor.
2. Some components are raised above the printed circuit board for safety. An insulation tube or tape is sometimes used. The internal wiring is sometimes clamped to prevent contact with thermally hot components. Reinstall all such elements to their original position.
3. After servicing, always check that the screws, components and wiring have been correctly reinstalled. Make sure that the area around the serviced part has not been damaged.
4. Check the insulation between the blades of the AC plug and accessible conductive parts (examples: metal panels, input terminals and earphone jacks).
5. Insulation Checking Procedure: Disconnect the power cord from the AC source and turn the power switch ON. Connect an insulation resistance meter (500 V) to theblades of the AC plug. The insulation resistance between each blade of the AC plug and accessible conductive parts (see above) should be greater than 1 megohm.
6. Always connect a test instrument's ground lead to the instrument chassis ground before connecting the positive lead; always remove the instrument's ground lead last.

1.3. Static Electricity Precautions

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

1. Immediately before handling any semiconductor components or assemblies, drain the electrostatic charge from your body by touching a known earth ground. Alternatively, wear a discharging wrist-strap device. To avoid a shock hazard, be sure to remove the wrist strap before applying power to the monitor.
2. After removing an ESD-equipped assembly, place it on a conductive surface such as aluminum foil to prevent accumulation of an electrostatic charge.
3. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ESDs.
4. Use only a grounded-tip soldering iron to solder or desolder ESDs.
5. Use only an anti-static solder removal device. Some solder removal devices not classified as “anti-static” can generate electrical charges sufficient to damage ESDs.
6. Do not remove a replacement ESD from its protective package until you are ready to install it. Most replacement ESDs are packaged with leads that are electrically shorted together by conductive foam, aluminum foil or other conductive materials.
7. Immediately before removing the protective material from the leads of a replacement ESD, 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 body motions when handling unpackaged replacement ESDs. Motions such as brushing clothes together, or lifting your foot from a carpeted floor can generate enough static electricity to damage an ESD.

1.4. Installation Precautions

1. For safety reasons, more than a people are required for carrying the product.
2. Keep the power cord away from any heat emitting devices, as a melted covering may cause fire or electric shock.
3. Do not place the product in areas with poor ventilation such as a bookshelf or closet. The increased internal temperature may cause fire.
4. Bend the external antenna cable when connecting it to the product. This is a measure to protect it from being exposed to moisture. Otherwise, it may cause a fire or electric shock.
5. Make sure to turn the power off and unplug the power cord from the outlet before repositioning the product. Also check the antenna cable or the external connectors if they are fully unplugged. Damage to the cord may cause fire or electric shock.
6. Keep the antenna far away from any high-voltage cables and install it firmly. Contact with the highvoltage cable or the antenna falling over may cause fire or electric shock.
7. When installing the product, leave enough space (0.4m) between the product and the wall for ventilation purposes. A rise in temperature within the product may cause fire.

2. Product specifications

2.1. Product Information

2-1-1. Model Comparison

Model	UA22ES4003R		
Front View			
Detail View			
Front Color	All		Black(PANEL)
Dimensions	22"	Set with Stand	518.9 x 354.1 x 123.4 mm
		Set without Stand	518.9 x 317.1 x 49 mm
Weight	22"	Set with Stand	3.3 kg
		Set without Stand	3.2 kg
Panel Type	Anti Glare		
Internal Memory	None		
DDR	128 Mbtye		
Feature	Media Play(Movie)		

Model	UA32EH4003R / UA39EH5003R		
Front View			
Detail View			
Front Color	All		Black(PANEL)
Dimensions	32"	Set with Stand	738.4 x 497.7 x 191.7 mm
		Set without Stand	738.4 x 441.7 x 93.2 mm
	39"	Set with Stand	895.9 x 589.3 x 227.6 mm
		Set without Stand	895.9 x 532.5 x 93.2 mm
	32"	Set with Stand	6.0 kg
		Set without Stand	5.4 kg
	39"	Set with Stand	9.8 kg
		Set without Stand	7.8 kg
Panel Type	Anti Glare		
Internal Memory	None		
DDR	128 Mbtye		
Feature	Media Play(Movie)		

2-1-2. Feature & Specifications

Model	UA22ES4003R

Feature

- ATV, 1-HDMI, 1-Component, 1-A/V, 1-USB2.0
- Brightness : 250 cd/m^2
- High Contrast Ratio : 1000 : 1
- Response Time : 5 ms

Specifications		
Item	**Description**	
LCD Panel	22 inch HD	
Scanning Frequency	Horizontal : 47 kHz ~ 53 kHz (Automatic) Vertical : 57 Hz ~ 63 Hz (Automatic)	
Display Colors	16.7M colors	
Maximum Resolution	Horizontal : 1366 Pixels Vertical : 768 Pixels	
Input Signal	Analog 0.7 Vp-p ± 5% positive at 75Ω, internally terminated	
Input Sync Signal	H/V Separate, TTL, P. or N.	
Maximum Pixel Clock Rate	74.25 MHz	
Active Display (H x V)* * Horizontal x Vertical	18.8 (H) x 10.6 (V) Inches (476.6 (H) x 268.1 (V) mm)	
AC Power Voltage & Frequency	AC 100 V ~ 240 V, 50 / 60 Hz	
Power Consumption	28 W (Under 0.3 W, Stand by)	
TV System	Tunning	Frequency Synthesize (Refer to detailed Frequency Table)
	System	PAL, SECAM, NT4.43
	Sound	BG, DK, L/L', NICAM, MPEG1, DD, DD+, HH-AAC
Environmental Considerations	Operating Temperature: 50°F ~ 104°F (10°C ~ 40°C) Operating Humidity: 10% ~ 80% Storage Temperature: -13°F ~ 113°F (-25°C ~ 45°C) Storage Humidity: 5% ~ 95%, non-condensing	
Audio Specifications	MAX Internal Audio Output Power : Each 3 W(Left/Right) Equalizer : 5 Band Output Frequency : • RF : 20 Hz ~ 15.4 kHz • AV/Componet/HDMI : 20 Hz ~ 20 kHz	
Note: Dolby Digital +, USB2.0(0.5A), Film Mode, Energy Saving		

Model	UA32EH4003R
Feature	
• ATV, 2-HDMI, 1-Component, 1-A/V, 1-USB2.0 • Brightness : 300 cd/m^2 • High Contrast Ratio : 1200 : 1 • Response Time : 8 ms	

Specifications		
Item	**Description**	
LCD Panel	32 inch HD	
Scanning Frequency	Horizontal : 39.4 kHz ~ 55 kHz (Automatic) Vertical : 47 Hz ~ 65 Hz (Automatic)	
Display Colors	16.7M colors	
Maximum Resolution	Horizontal : 1366 Pixels Vertical : 768 Pixels	
Input Signal	Analog 0.7 Vp-p ± 5% positive at 75Ω, internally terminated	
Input Sync Signal	H/V Separate, TTL, P. or N.	
Maximum Pixel Clock Rate	74.25 MHz	
Active Display (H x V)* * Horizontal x Vertical	28.5 (H) x 16.0 (V) Inches (697.70 (H) x 392.26 (V) mm)	
AC Power Voltage & Frequency	AC 100 V ~ 240 V, 50 / 60 Hz	
Power Consumption	50 W (Under 0.3 W, Stand by)	
TV System	Tunning	Frequency Synthesize (Refer to detailed Frequency Table)
	System	PAL, SECAM, NT4.43
	Sound	BG, DK, L/L', NICAM, MPEG1, DD, DD+, HH-AAC
Environmental Considerations	Operating Temperature: 50°F ~ 104°F (10°C ~ 40°C) Operating Humidity: 10% ~ 80% Storage Temperature: -13°F ~ 113°F (-25°C ~ 45°C) Storage Humidity: 5% ~ 95%, non-condensing	
Audio Specifications	MAX Internal Audio Output Power : Each 3 W(Left/Right) Equalizer : 5 Band Output Frequency : • RF : 20 Hz ~ 15.4 kHz • AV/Componet/HDMI : 20 Hz ~ 20 kHz	
Note: Dolby Digital +, USB2.0(1.5A), Film Mode, Energy Saving		

Model	UA39EH5003R
Feature	
• ATV, 2-HDMI, 1-Component, 1-A/V, 1-USB2.0 • Brightness : 300 cd/m^2 • High Contrast Ratio : 1200 : 1 • Response Time : 8 ms	

Specifications		
Item	**Description**	
LCD Panel	39 inch FHD	
Scanning Frequency	Horizontal : 60 kHz ~ 73 kHz (Automatic) Vertical : 47 Hz ~ 63 Hz (Automatic)	
Display Colors	16.7M colors	
Maximum Resolution	Horizontal : 1920 Pixels Vertical : 1080 Pixels	
Input Signal	Analog 0.7 Vp-p ± 5% positive at 75Ω, internally terminated	
Input Sync Signal	H/V Separate, TTL, P. or N.	
Maximum Pixel Clock Rate	74.25 MHz	
Active Display (H x V)* * Horizontal x Vertical	34.9 (H) x 19.6 (V) Inches (853.92 (H) x 480.33 (V) mm)	
AC Power Voltage & Frequency	AC 100 V ~ 240 V, 50 / 60 Hz	
Power Consumption	92 W (Under 0.3 W, Stand by)	
TV System	Tunning	Frequency Synthesize (Refer to detailed Frequency Table)
	System	PAL, SECAM, NT4.43
	Sound	BG, DK, L/L', NICAM, MPEG1, DD, DD+, HH-AAC
Environmental Considerations	Operating Temperature: 50°F ~ 104°F (10°C ~ 40°C) Operating Humidity: 10% ~ 80% Storage Temperature: -13°F ~ 113°F (-25°C ~ 45°C) Storage Humidity: 5% ~ 95%, non-condensing	
Audio Specifications	MAX Internal Audio Output Power : Each 3 W(Left/Right) Equalizer : 5 Band Output Frequency : • RF : 20 Hz ~ 15.4 kHz • AV/Componet/HDMI : 20 Hz ~ 20 kHz	
Note: Dolby Digital +, USB2.0(1.5A), Film Mode, Energy Saving		

2-1-3. Specification Comparison to Old Models

Model	UE4J(UA**E*4003R)		UD4N(UN**D4003BD)	
Design				
Diplay Type	LED TV 2D		LED TV 2D	
Built-in Tuner	O		O	
Resolution	1366 x 768		1366 x 768	
LCD Panel	TFT LCD Panel 60 Hz		TFT LCD Panel 60 Hz	
Picture ratio	16 : 9		16 : 9	
Power Consumption	22"	28 W (Under 0.3 W, Stand by)	32"	70W (Under 0.3 W, Standby)
	32"	50 W (Under 0.3 W, Stand by)		
Brightness	22"	250 cd/m²	32"	250 cd/m²
	32"	350 cd/m²		
Contrast Ratio	22"	1000 : 1	32"	1000 : 1
	32"	1200 : 1		
Picture Enhancer	HyperReal Engine (X9R)		HyperReal Engine (LOLA4)	
Equalizer	5 Band		5 Band	
Auto Volume Control	O		O	
Surround Sound	Dolby Digital Plus/Pulse		Dolby Digital Plus/Pulse	
Speaker Output	22"	3W + 3W	32"	5W + 5W
	32"	5W + 5W		
PIP	X		X	
Caption	O		O	
Entertainment Mode	X		X	
Game Mode	O		O	
Energy Saving	O		O	
Network	X		X	
Anynet+	X		X	
Antenna	1 (Cable/Air)		1 (Cable/Air)	

2.2. Detail Factory Option

NOTE

If you replace the main board with new one, please change the factory option as well.
The options you must change are "Type".

Model Name			UA22ES4003R	UA32EH4003R	UA39EH5003R
Panel		Vendor	CMI	BOE CMI	CHILIN
		Code	BN07-01180A	BN95-00707A BN07-01095B	BN07-01190A
		Spec.	V216BG1-LE1	HV320WX2-26 DE320AGM-C2	DE390GBM-C1
SMPS		Vendor	POWERNET	HANSOL	DYREL
		Code	BN44-00505B	BN44-00554B	BN44-00496B
		Spec.	PD23A0QV_CPN	PD323GVO_CHS	PD40AVF_CDY
Byte	Item	Chassis Ass'y	BN91-09525W	BN91-09525B	BN94-09777L
0	Factory Reset	PBA Ass'y code	BN94-05848W	BN94-05848P	BN94-05971L
1	Type		22D6TH0E	32B6AH0D 32P6AH0D	39P6AF0D
2	Model		UE4003	UE4003	UE5003
3	SVC Model		4003	4003	5003
4	Local Set		EA_Thai	EA_Thai	EA_Thai
5	Tuner		SI_ATC2	SI_ATC2	SI_ATC2
6	Ch Table		NONE	NONE	NONE

2.3. Accessories

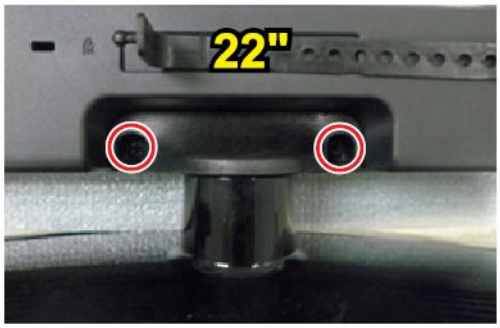
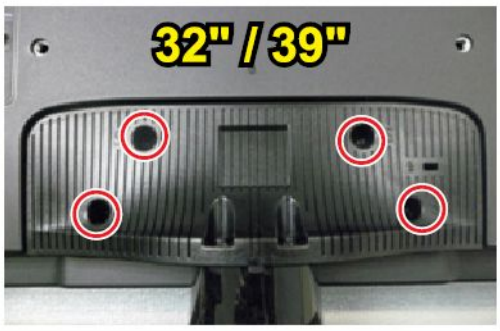
Product	Description	Code. No	Remark
	Remote Control Batteries (AAA x 2)	AA59-00607A 4301-000121	Samsnug Electronics Service center
	Warranty Card / Registration Card / Safety Guide Manual (Not available in all locations)	BN96-23840J	
	Power Cord	3903-000607	
	Holder-Wire stand	BN61-05491A	

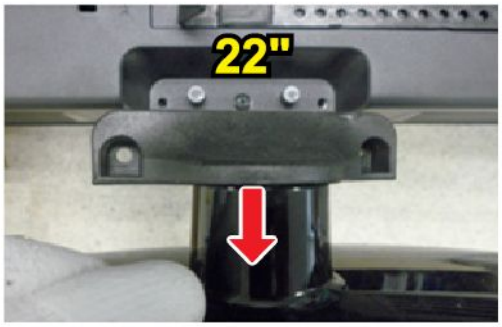
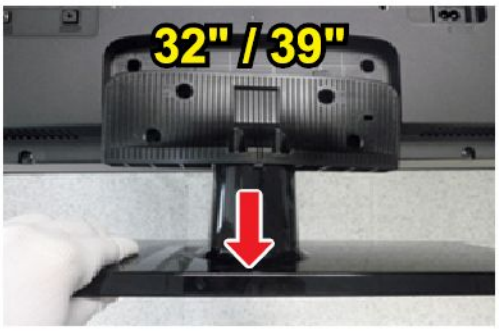
3. Disassembly and Reassembly

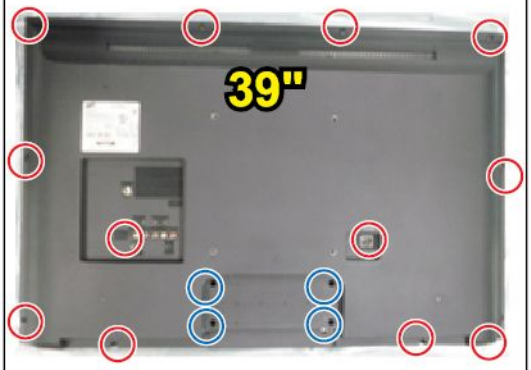
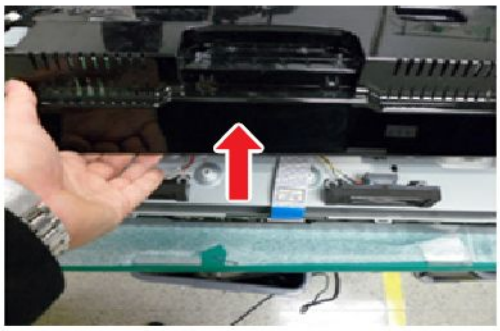
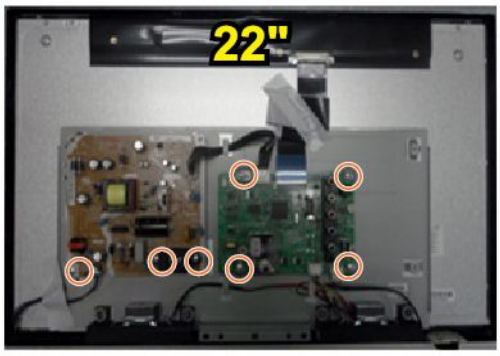
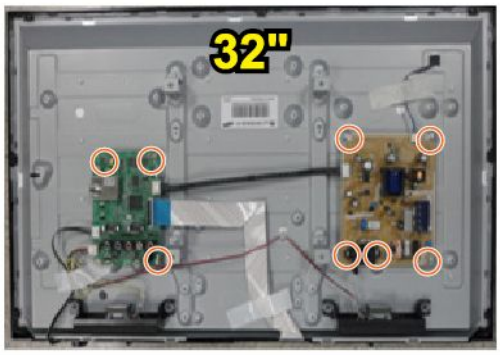
This section of the service manual describes the disassembly and reassembly procedures for the LED TV.

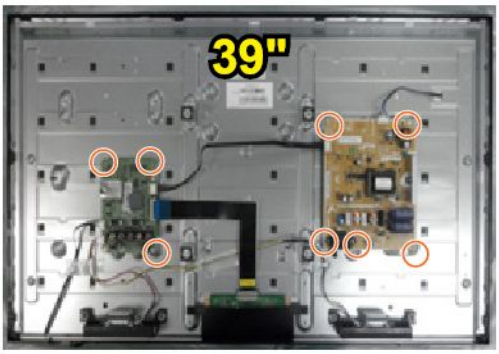
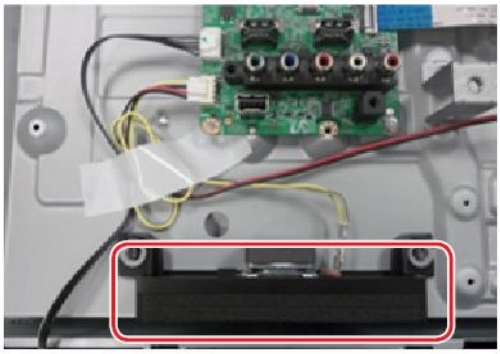
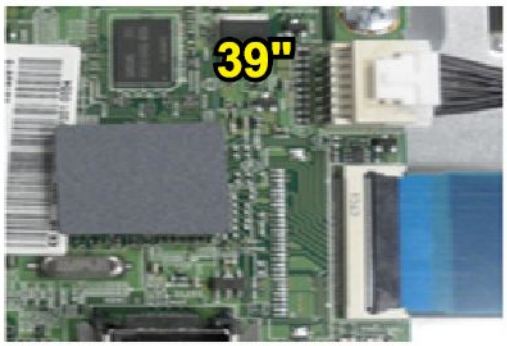
This LED TV contains electrostatically sensitive devices. Use caution when handling these components.

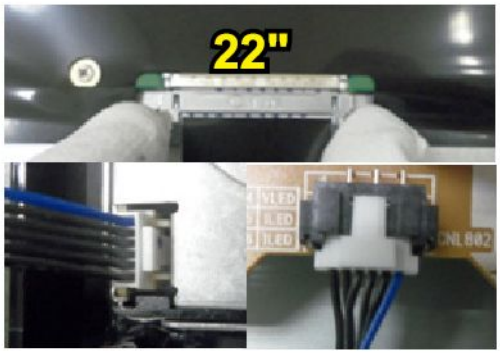
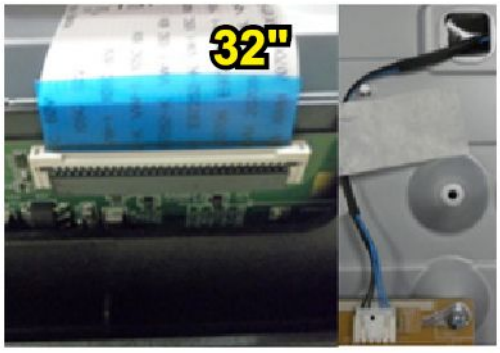
3.1. Disassembly and Reassembly

Description	Picture Description	Screws
1 Place TV face down on cushioned table.		
		
2 Remove the screws from the stand. • 22" : 2 EA		 6003-001782
• 32" / 39" : 4 EA		

Description	Picture Description	Screws
3 Remove Stand.		
		
4 Remove the screws of Rear-Cover. • 22" : 4 EA		 6003-001782  6003-002755
• 32" : 9 EA, 4 EA		

Description	Picture Description	Screws
• 39" : 12 EA, 4 EA		
5 Remove the Rear-Cover.		
6 Remove the screws of Main Board and Panel. • 22" : 7 EA		 6001-002756
• 32" : 8 EA		

Description	Picture Description	Screws
• 39" : 8 EA		
7 Remove the connector of main board and IP board and Panel.		
		
		

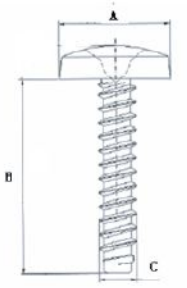
Description	Picture Description	Screws
8 Remove the LVDS Cable and Panel Drive Cable.		
		
		

Description	Picture Description	Screws
9 Completed disassembly.		
		

NOTE

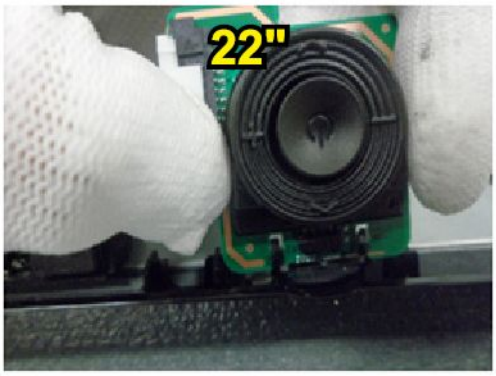
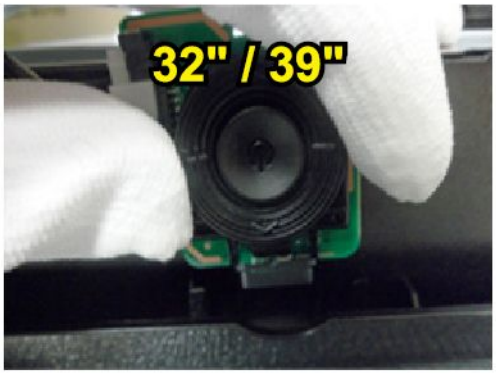
Reassembly procedures are in the reverse order of disassembly procedures.

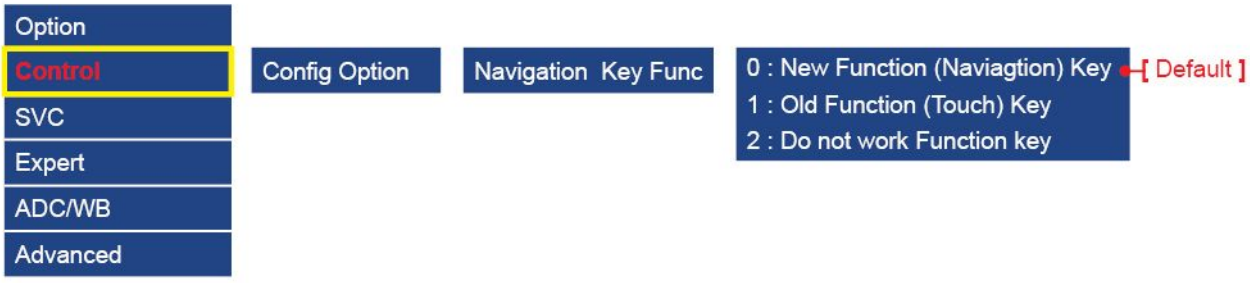
■ Screw Size

Code No.	COLOR	A (mm)	B (mm)	C (mm)	Q'ty	
6003-001782	BLACK	7.80~8.30	11.20~12.00	3.81~3.91	22" : 6 EA 32" : 14 EA 39" : 19 EA	
6001-002755	BLACK	7.1~7.5	5.7~6.0	2.98~3.02	32" : 4 EA 39" : 4 EA	
6001-002756	WHITE	7.1~7.5	5.7~6.0	2.98~3.02	22" : 7 EA 32" : 8 EA 39" : 8 EA	

3.2. Assy Board P-Jog Switch & Ir

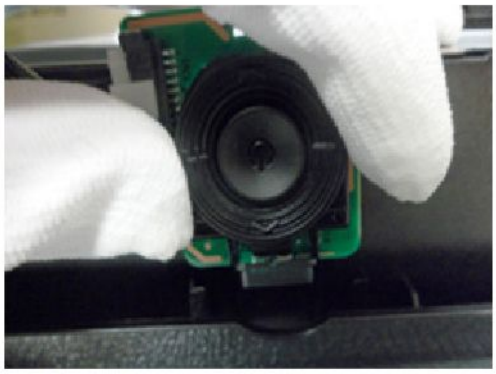
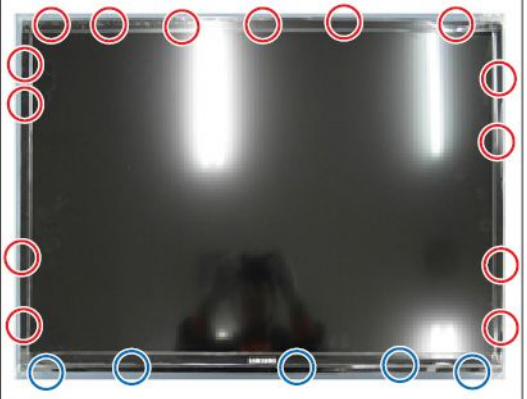
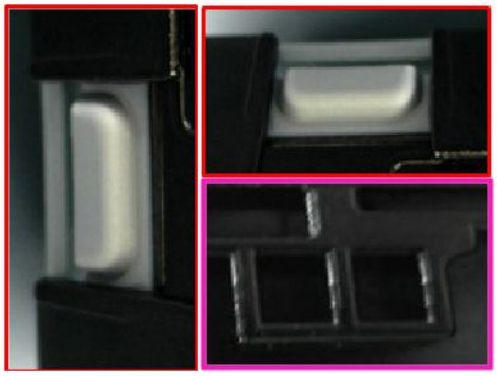
■ How to disassembly Function Assy

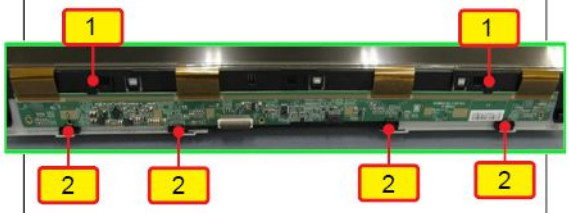
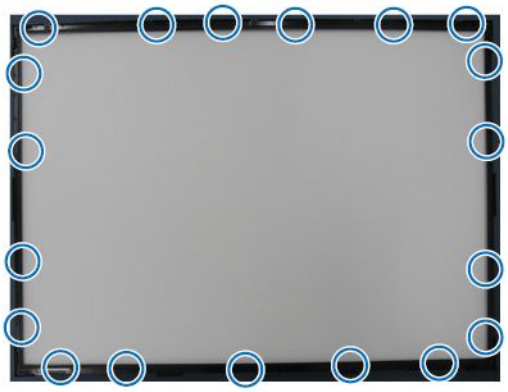
Description	Picture Description	Refer
Hold the Function Ass'y and then pull up it.		
		



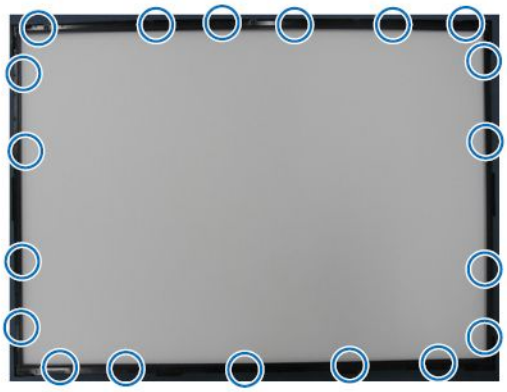
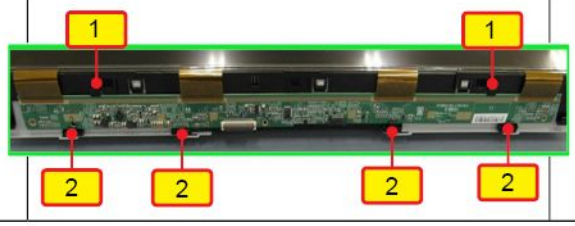
3.3. Disassembly(PTC)

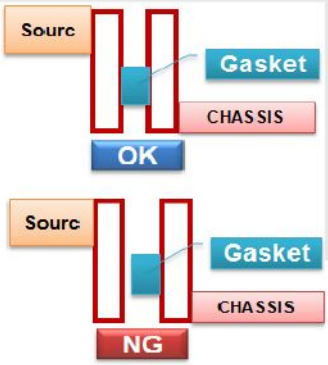
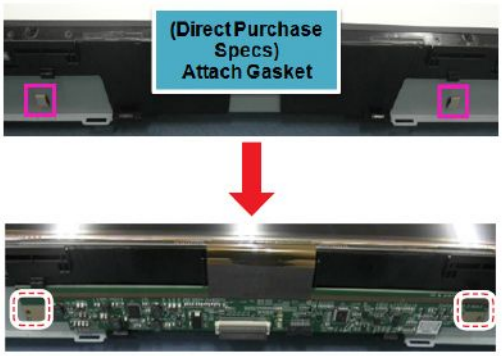
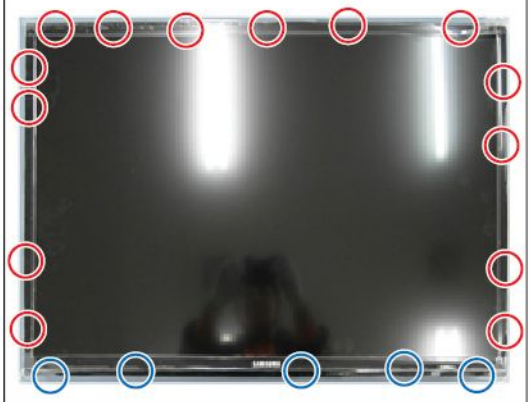
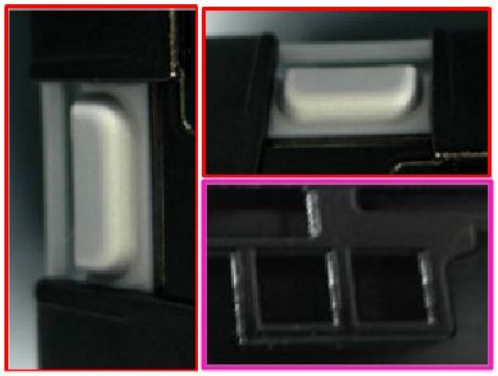
■ How to disassembly

	Description	Picture Description	Refer
1	Place TV face up on cushioned table.		
2	Remove the Function Assy.		
3	Separate ASSY MISC P-CHASSIS TOP(L/R) & ASSY MISC P-CHASSIS TOP(U/D) from the HOOK. *HOOK POINT Top : 6Point / Bottom : 5 Point Right : 4-Point / Left : 4-Point		
			

Description	Picture Description	Refer
4 Separate the Assy MISC P-Open Cell from the FRAME-MOLD MIDDLE GUIDE as same direction as picture. **CAUTION** Don't bend COF Film when you separate it from the Guide.	 	
5 Separate ASSY MISC P-CHASSIS TOP(L/R) & ASSY MISC P-CHASSIS TOP(U/D) from the HOOK and then lift up the bottom part of PCT. *HOOK POINT Top : 6Point / Bottom : 5 Point Right : 4-Point / Left : 4-Point	 	
6 Disassembly is complete.		

■ How to reassembly

	Description	Picture Description	Refer
1	Cover the PTC bottom.		
2	Asemble ASSY MISC P-CHASSIS TOP(L/R) & ASSY MISC P-CHASSIS TOP(U/D) by using HOOK. *HOOK POINT Top : 6Point / Bottom : 5 Point Right : 4-Point / Left : 4-Point	 	
3	Put down Assy MISC P-Open Cell from the FRAME-MOLD MIDDLE GUIDE as same direction as picture. **CAUTION** Don't bend COF Film when you asemble it from the Guide.	 	

Description	Picture Description	Refer
4 When you put down Source PCB, make sure to meet it with Gasket at the CHASSIS BOTTOM. **CAUTION** Combine to stick the PTC Rib into the middle mold. 		
5 Asemble ASSY MISC P-CHASSIS TOP(L/R) & ASSY MISC P-CHASSIS TOP(U/D) by using HOOK. *HOOK POINT Top : 6Point / Bottom : 5 Point Right : 4-Point / Left : 4-Point		
		

4. Troubleshooting

4.1. Troubleshooting

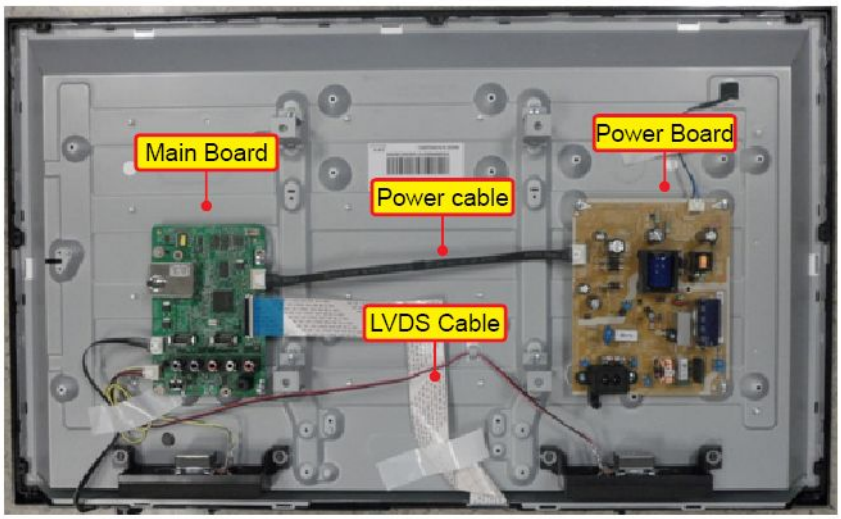
■ Previous Check

1. Check the various cable connections first.
   - Check to see if there is a burnt or damaged cable.
   - Check to see if there is a disconnected or loose cable connection.
   - Check to see if the cables are connected according to the connection diagram.
2. Check the power input to the Main Board.
3. How to distinguish if the problem is caused by Main Board or T-Con Board.
   - **No Video** : If the problem is No Video but BLU is on and Indication LED is blinking repeatedly and faster than nomal booting, replace the T-Con Board.
   - **Distorted Picture** : Check the inner patterns.
   - Service Mode (Using the Factory Remote Control - 'Info'+'Factory')
   - Move to SVC Menu
   - Move toTest Pattern
   - Check inner patterns.

For All mode

Picture	Problem	Solution
OK	Main Board	Change the Main Board
NG	Panel or T-con	Change the Panel or T-con

■ Inside View



CN201 (to Powr board)			
1	B5.3V	2	SW_PW
3	B5.3V	4	A5.3V
5	GND	6	GND
7	B13VS_AMP	8	GND
9	B13VS_AMP	10	SW_INV
11	B13VS_PW	12	B13VS_PW
13	B13VS_PW	14	PWM_DIM

CNM803 (to Main board)			
1	B13V	2	PWM_DIM
3	B13V	4	B13V
5	Vamp	6	BLU_On/Off
7	Vamp	8	GND
9	GND	10	GND
11	B5V	12	A5V
13	B5V	14	Power on

* Change the 12 PIN to B13V(2012) from NC(2011)

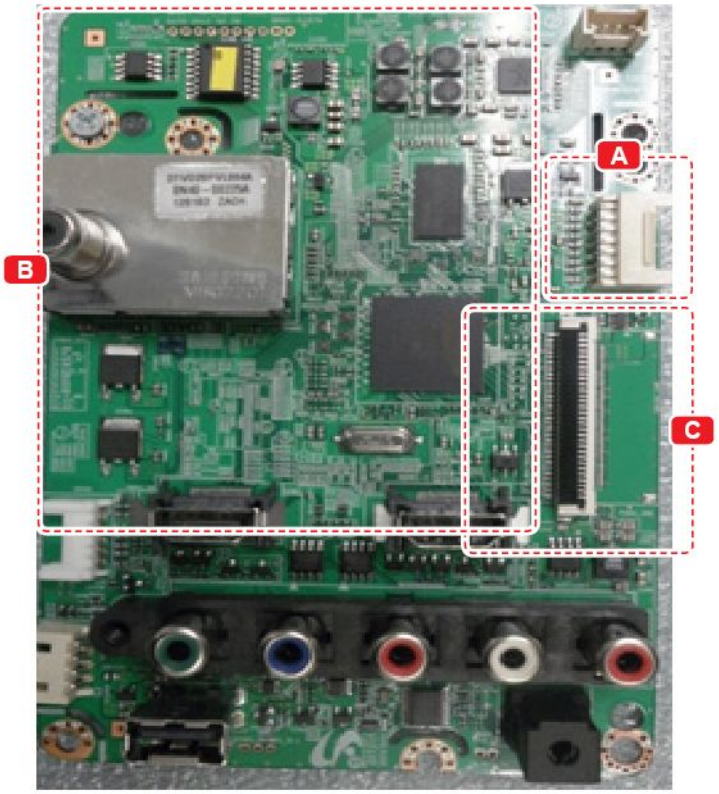
4.2. How to Check Fault Symptom

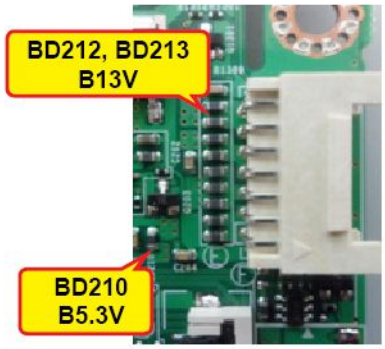
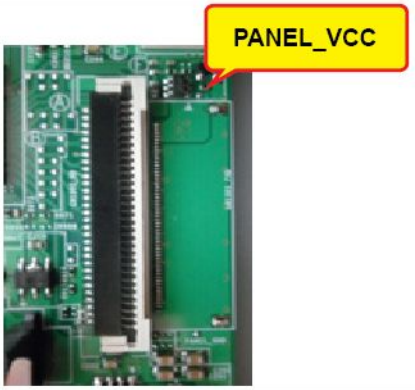
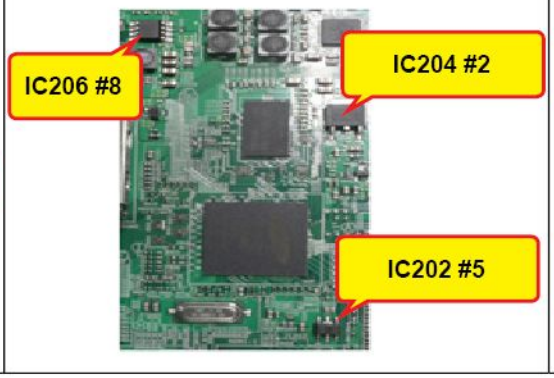
■ NO Power

* Refer to the next page to check the lacation such a CN201 or IC1001 SVC Manual mentioned.

Symptom	• The LEDs on The front panel do not work when connecting The power cord. • The SMPS relay does not work when connecting The power cord. • The units appears to be dead.
Major checkpoints	The IP relay or the LEDs on the front panel does not work when connecting the power cord if the cables are improperly connected or the Main Board or SMPS is not functioning. In this case, check the following: • Check the internal cable connection status inside the unit. • Check the fuses of each part. • Check the output voltage of SMPS. • Replace the Main Board.
Diagnostics	Power indicator LED is on? — No → Check a connetion power code. Yes ↓ Check 'Stand-By A5.3V' 5.3V appear at BD210? 0V to 5.3V (CN201 #4) — No → Change the Power cable. Change SMPS. Yes ↓ Set on. Yes ↓ Check 'SW_POWER' more than 3.3V appear at CN201(#2) 0V to 3.3V↑ (CN201 #2) — No → Change the Main Board. Yes ↓ Check 'Power input of Main Ass'y' ? DC B13V, B5.3V appear at BD212, BD213(B13V) BD210(B5.3V)? — No → Change 14P power cable and SMPS. Yes ↓ Check 'Power IC output of Main Ass'y' ? IC206 : B1.2V / IC204 : B1.5V IC202 : 2.5V — No → **Measure** : Change the Main Board. Yes ↓ Check 'Power of LVDS (13V)' appear at TP-PANEL_VCC? 0V to 13V (TP-PANEL_VCC) — No → Change the Main Board. Yes ↓ Please, Contact tech support.
Caution	Make sure to disconnect the power before working on the IP board.

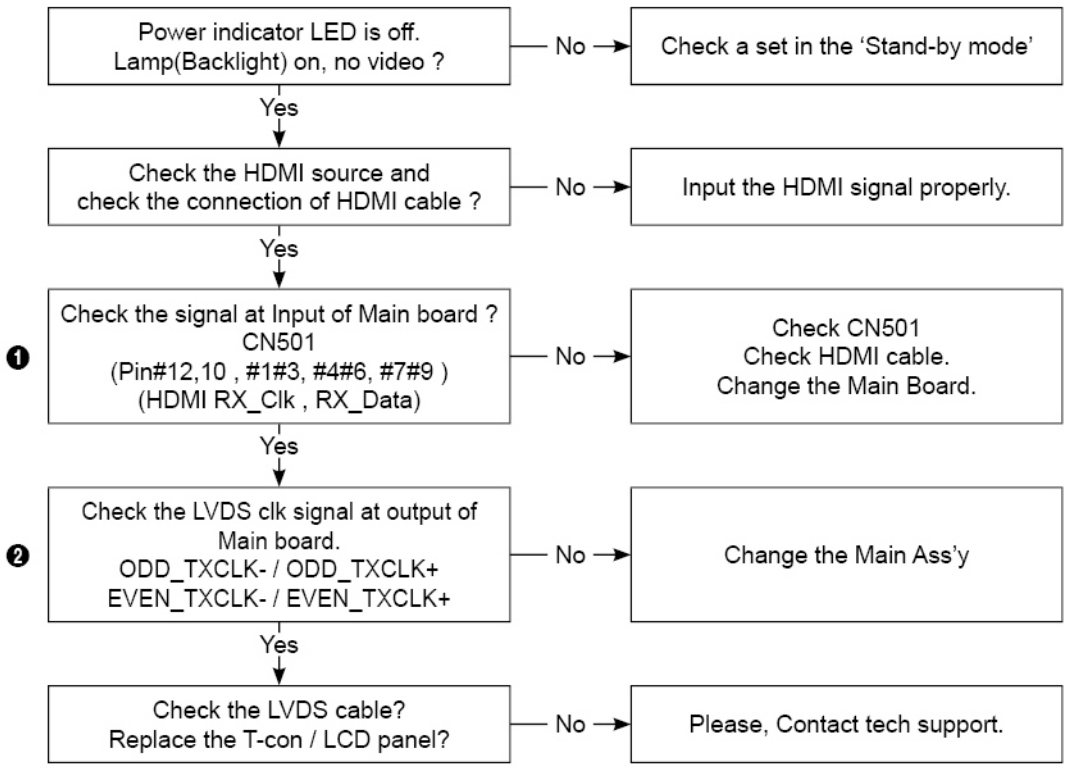
■ Location of Parts

Main Board_Front


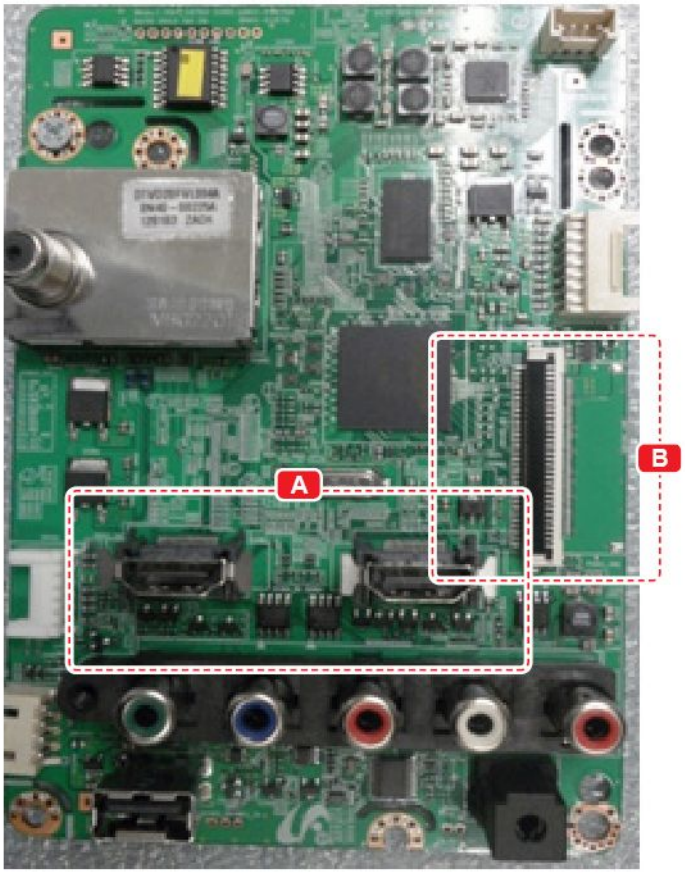
Detail			
A		c	
B			

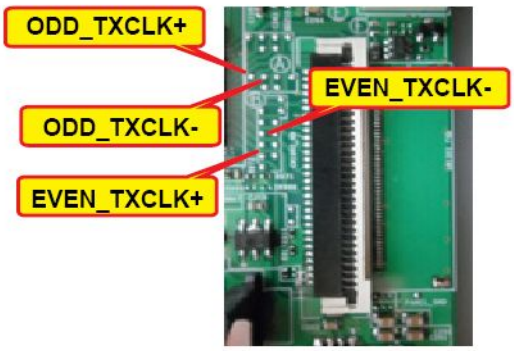
■ No Video (HDMI 1, 2 - Digital Signal)

* Refer to the next page to check the lacation such a CN201 or IC1001 SVC Manual mentioned.

Symptom	• Audio is normal but no picture is displayed on the screen.
Major checkpoints	• Check the HDMI source. • Check the HDMI switch. • This may happen when the LVDS cable connecting the Main Board and the Panel is disconnected.
Diagnostics	
Caution	Make sure to disconnect the power before working on the IP board.

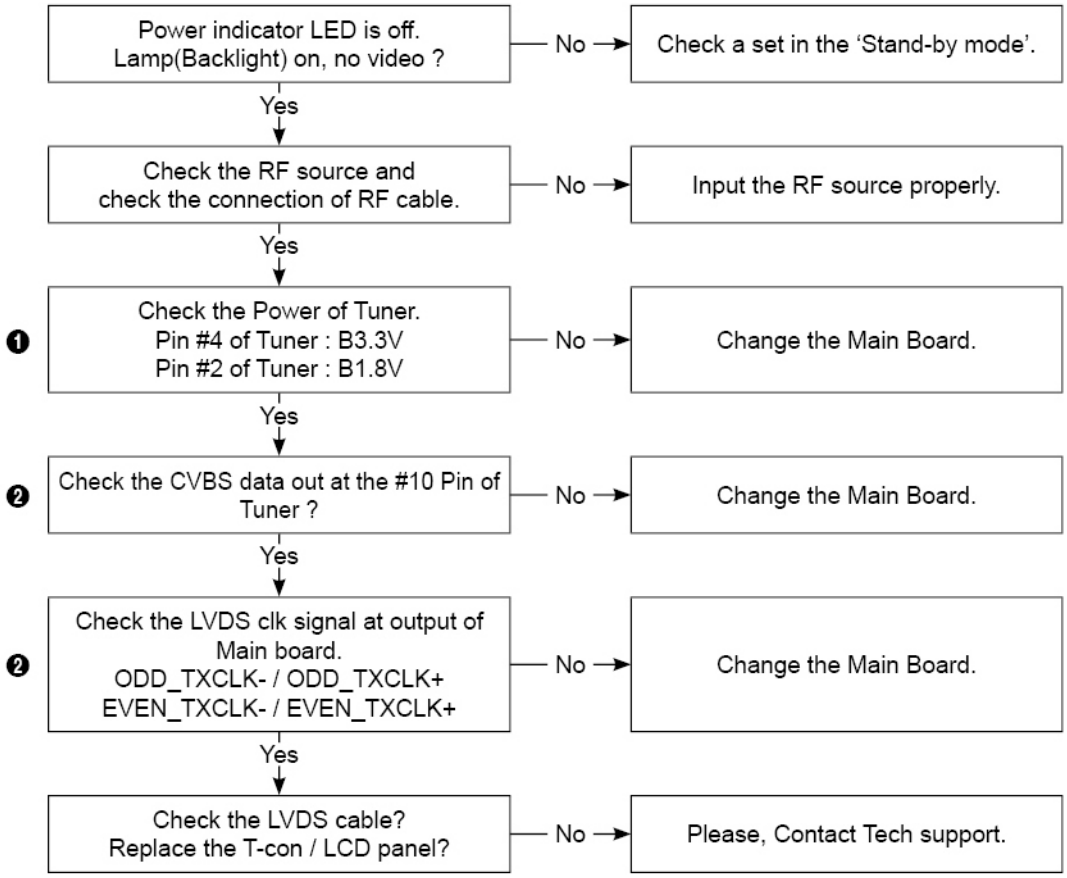
■ Location of Parts

Main Board_Front


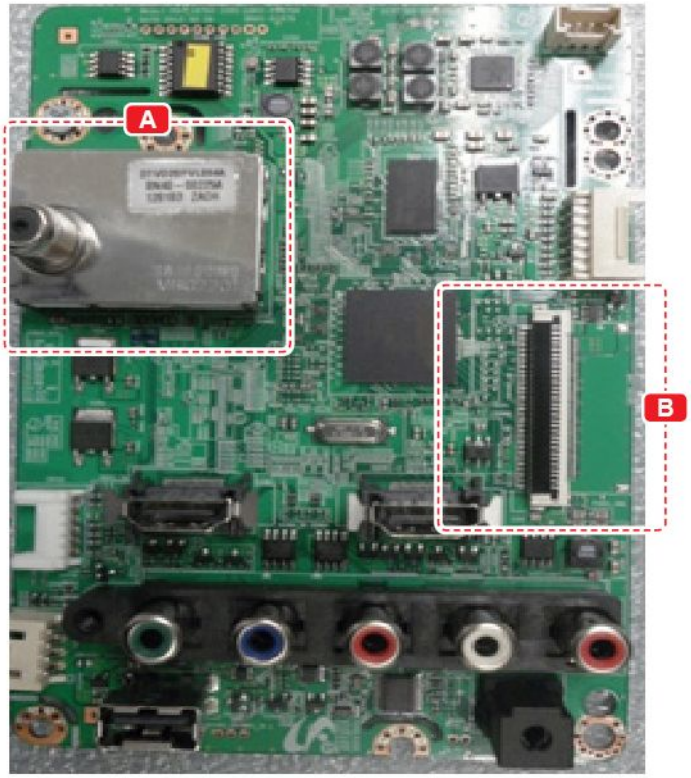
Detail		
A		
B		

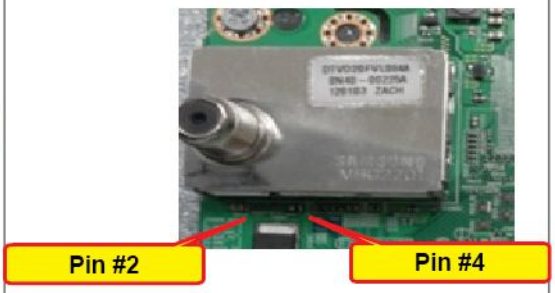
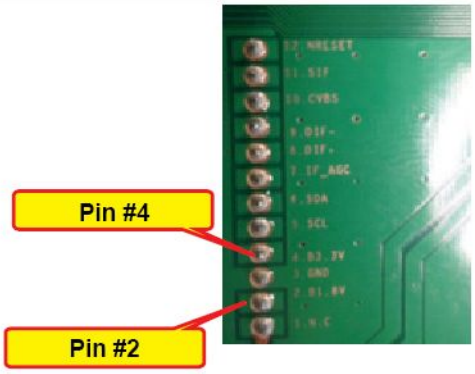
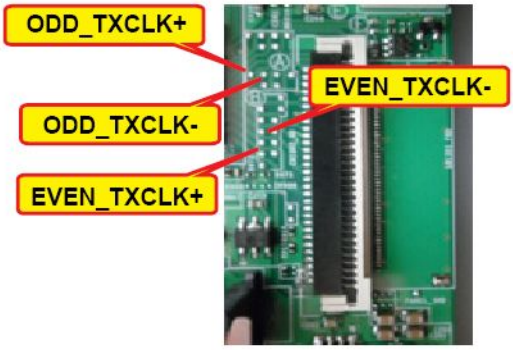
■ No Video (Tuner_CVBS)

* Refer to the next page to check the lacation such a CN201 or IC1001 SVC Manual mentioned.

Symptom	• Audio is normal but no picture is displayed on the screen.
Major checkpoints	• Check the Tuner CVBS source. • Check the Tuner. • This may happen when the LVDS cable connecting the Main Board and the Panel is disconnected.
Diagnostics	
Caution	Make sure to disconnect the power before working on the Power board.

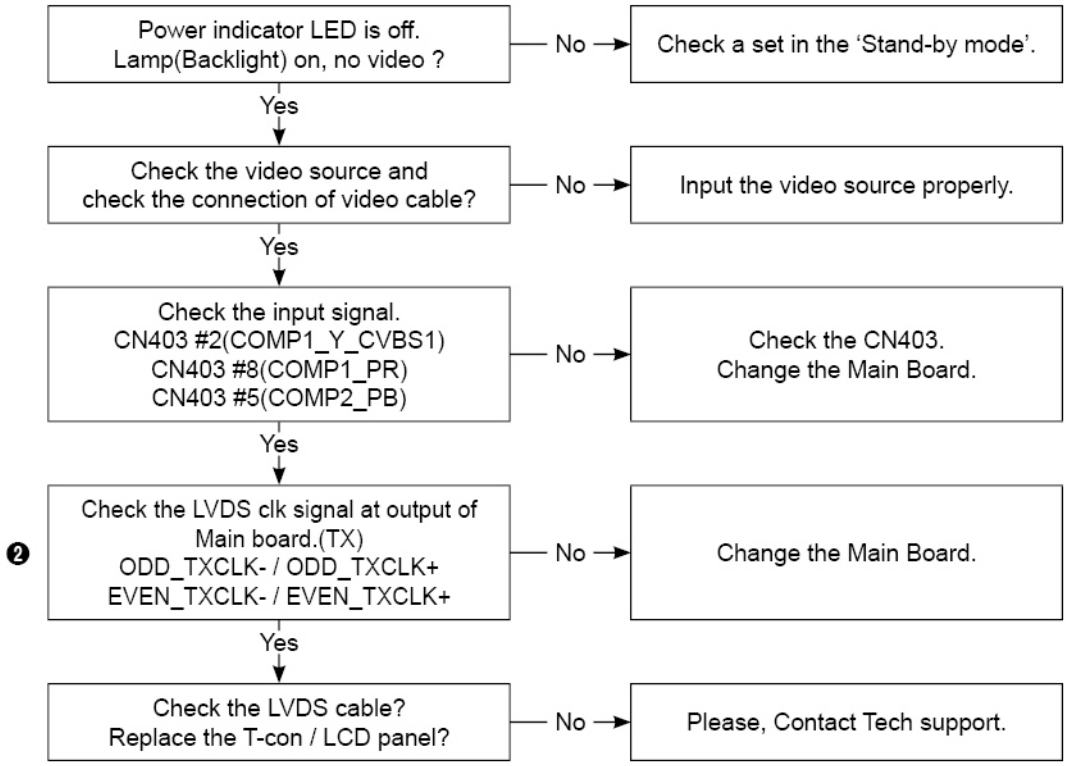
■ Location of Parts

Main Board_Front


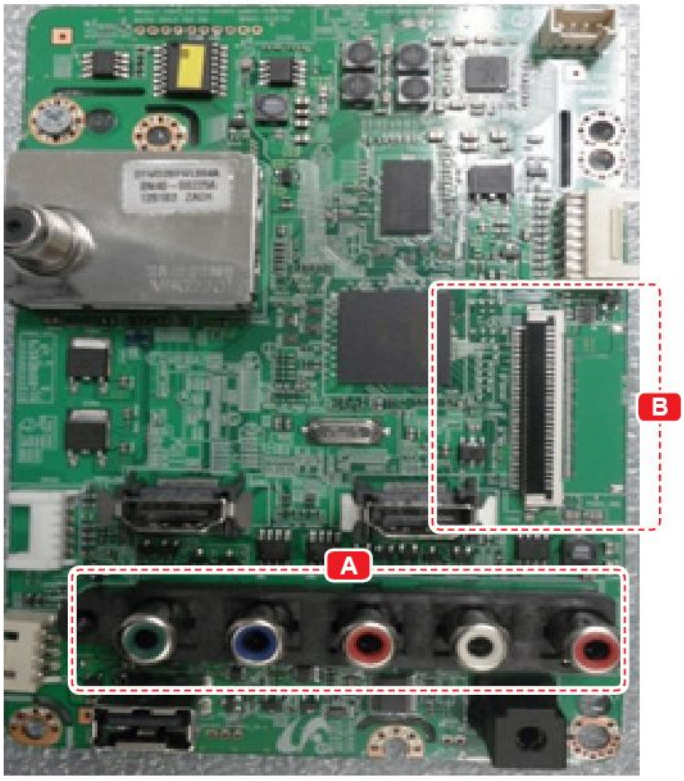
Detail			
A (Front)		A (Rear)	
B			

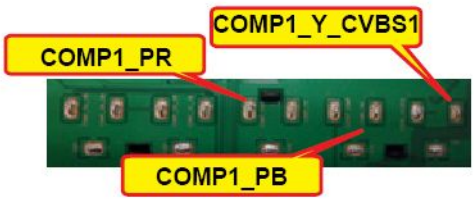
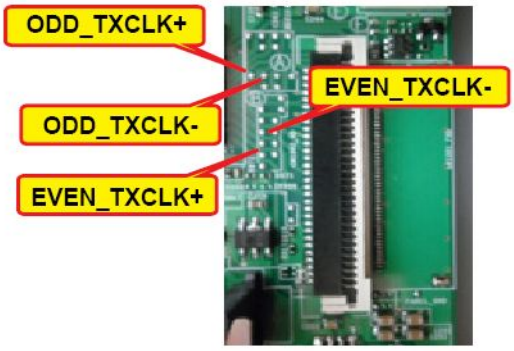
■ No Video (Video AV, Component)

* Refer to the next page to check the lacation such a CN201 or IC1001 SVC Manual mentioned.

Symptom	• Audio is normal but no picture is displayed on the screen.
Major checkpoints	• Check the Video CVBS source. • This may happen when the LVDS cable connecting the Main Board and the Panel is disconnected.
Diagnostics	
Caution	Make sure to disconnect the power before working on the IP board.

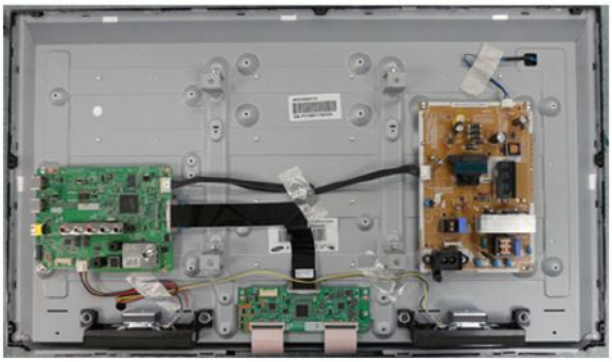
■ Location of Parts

Main Board_Front


Detail			
A (Front)		A (Rear)	
B			

4.3. Troubleshooting2

4-3-1. Troubleshooting

Image	Sympton
	• Sympton : greensh • Reason : LVDS connector Even0 +/- short • Counterplan : Resoldering or Change Main Assy
	• Sympton : NO LAMP • Reason : Disconnected haness cable. • Counterplan : RConnecting the harness cable

4-3-2. New componenets and function

Trouble	Counterplan
• No HDMI video and sound.	Check the EDID and HDCP in Factory menu
• No HDMI video with weak signal caused by long cable.	• Factory mode • Control → Sub option → HDMI# EQ • Change the value. • # : trouble port
• No CEC. • No E-manual.	• No supported in 2012 model.

4.4. Factory Mode Adjustments

4-4-1. Entering Factory Mode

To enter 'Service Mode' Press the remote -control keys in this sequence :

- If you do not have Factory remote control

  Power OFF → MENU → 1 → 8 → 2 → Power On

- If you have Factory remote control

  INFO → Factory

- If you don't have Factory remote control, can't control some menus.

■ Initial SERVICE MODE DISPLAY State

Option	**T-M9RHMASC-******
Control	**DTP-LP3-******
SVC	**DTP-LP3-App-******
Expert	**OPTION:32b6AH0D, THAI, 4003, NONE**
ADC/WB	**FactoryCS:***********
Advanced	**ADC : HDMI / COMP / PC / AV**
	EDID SUCCESS
	HDCP SUCCESS
	BuildDate : **--******

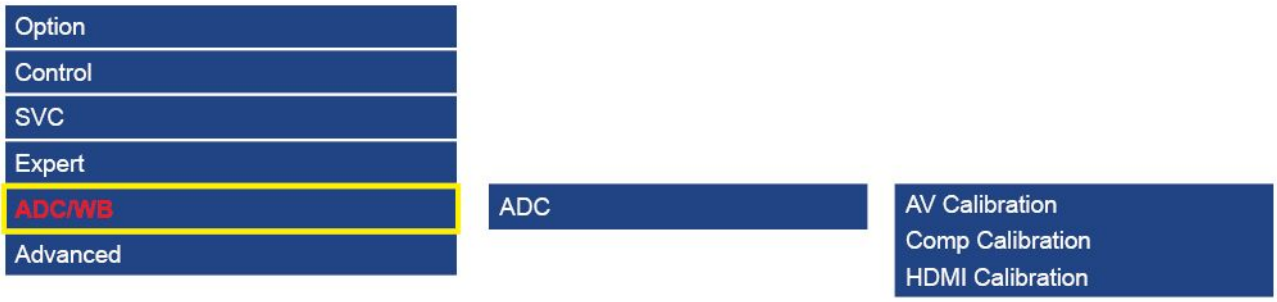
*** How to enter the hidden factory mode.**

a. into the factory mode
b. move the tap to Advanced
c. key input : 0 + 0 + 0 + 0
** hidden menu : Advanced

4.5. White Balance

4-5-1. Calibration

1. Into the Factory Mode.
2. Select SVC Menu.
3. Select ADC/WB menu.
4. Select ADC menu.



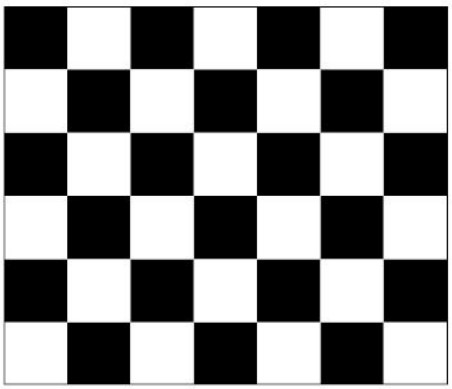
4-5-2. Service Adjustment

You must perform Calibration in the Lattice Pattern before adjusting the White Balance.

■ Color Calibration

- Adjust Specification

Source	Setting Mode	Pattern	Use Equipment
HDMI	1280 x 720@60 Hz	Pattern #24 (Chess Pattern)	CA210 & MIK K-7256



(Chess Pattern)

- Use other equipment only after comparing the result with that of the Master equipment.

Input mode	Calibration	Pattern
CVBS IN (Time_#2)	Perform in PAL B&W Pattern #24	Lattice
Component IN (Time_#6)	Perform in 720p B&W Pattern #24	Lattice
HDMI IN (Time_#6)	Perform in 720p B&W Pattern #24	Lattice
PC Analog IN (Time_#21)	Perform in VESA XGA (1024*768) B&W Pattern #24	Lattice

■ Method of Color Calibration (AV)

1. Apply the NTSC Lattice (N0. 3) pattern signal to the AV IN 1 port.
2. Press the Source key to switch to “AV1” mode.
3. Enter Service mode.
4. Select the “ADC” menu.
5. Select the “AV Calibration” menu.
6. In “AV Calibration Off” status, press the “► ” key to perform Calibration.
7. When Calibration is complete, it returns to the high-level menu.
8. You can see the change of the “AV Calibration” status from Failure to Success.

■ Method of Color Calibration (Component)

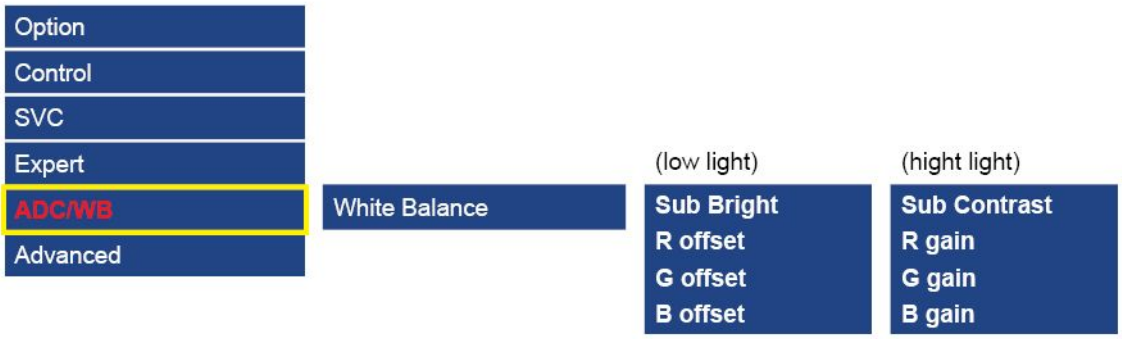
1. Apply the 720p Lattice (N0. 6) pattern signal to the Component IN 1 port.
2. Press the Source key to switch to “Component1” mode.
3. Enter Service mode.
4. Select the “ADC” menu.
5. Select the “Comp Calibration” menu.
6. In “Comp Calibration Off” status, press the “ ►” key to perform Calibration.
7. When Calibration is complete, it returns to the high-level menu.
8. You can see the change of the “Comp Calibration” status from Failure to Success.

■ Method of Color Calibration (HDMI)

1. Apply the 720p Lattice (N0. 6) pattern signal to the HDMI1/DVI IN port.
2. Press the Source key to switch to “HDMI1” mode.
3. Enter Service mode.
4. Select the “ADC” menu.
5. Select the “HDMI Calibration” menu.
6. In “HDMI Calibration Off” status, press the “►” key to perform Calibration.
7. When Calibration is complete, it returns to the high-level menu.
8. You can see the change of the “HDMI Calibration” status from Failure to Success.

4-5-3. Adjustment

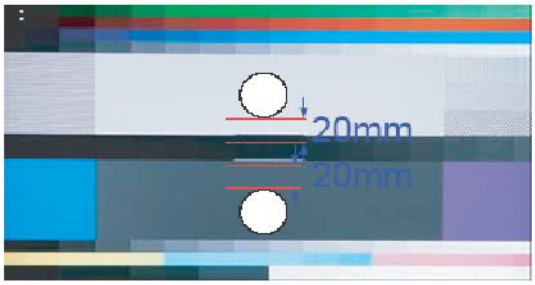
1. Into the Factory Mode.
2. Select SVC Menu.
3. Select ADC/WB menu.
4. Select White Balance menu.



4.6. White Ratio (Balance) Adjustment

1. You can adjust the white ratio in factory mode (1:Calibration, 3:White-Balance).
2. Since the adjustment value and the data value vary depending on the input source, you have to adjust these in CVBS, Component 1 and HDMI 1 modes.
3. The optimal values for each mode are configured by default. It varies with Panel's size and Specification.

- Equipment : CS-210
- Pattern: MIK K-7256 #92 "Flat W/B Pattern" as standard
- Altenate Equipmet : CA200& anyone Master supported pattern#92(refer to right photo)
- Use other Equipment only after comparing the result with that of the Master equipment.
- Set Aging time : 60 min



Calibration and Manual setting for WB adjustment

- HDMI : Calibration at #24 Chessboard Pattern Manual adjustment at #92 pattern (720p)
- COMP: Calibration at #24 Chessboard Pattern Manual adjustment at #92 pattern (720p)
- CVBS: Calibration at #24 Chessboard Pattern Manual adjustment at #92 pattern ((PAL)

Note

If finishing in HDMI mode, adjustment coordinate is almost same in AV/COMP mode.

White Balance Manual adjustment

- UA22ES4003R

P-Mode Input source	Section	Adjustment Coordinate CA-210					
HDMI COMP VIDEO	W/B High	Hx	264	Hy	274	HY	-
	W/B Low	Lx	-	Ly	-	LY	-
MOVIE	W/B High	Hx	318	Hy	340	HY	-
	W/B Low	Lx	-	Ly	-	LY	-

Sub Contrast	136	Sub Bright	128		
R-Gain	AJD	G-Gain	128	B-Gain	AJD
R-Offset	128	G-Offset	128	B-Offset	128

- UA32EH4003R

P-Mode Input source	Section	Adjustment Coordinate CA-210					
HDMI COMP VIDEO	W/B High	Hx	264	Hy	274	HY	-
	W/B Low	Lx	-	Ly	-	LY	-
MOVIE	W/B High	Hx	318	Hy	340	HY	-
	W/B Low	Lx	-	Ly	-	LY	-

Sub Contrast	136	Sub Bright	128		
R-Gain	AJD	G-Gain	128	B-Gain	AJD
R-Offset	128	G-Offset	128	B-Offset	128

- UA39EH5003R

P-Mode Input source	Section	Adjustment Coordinate CA-210					
HDMI COMP VIDEO	W/B High	Hx	264	Hy	274	HY	-
	W/B Low	Lx	-	Ly	-	LY	-
MOVIE	W/B High	Hx	318	Hy	340	HY	-
	W/B Low	Lx	-	Ly	-	LY	-

Sub Contrast	135	Sub Bright	128		
R-Gain	AJD	G-Gain	128	B-Gain	AJD
R-Offset	128	G-Offset	128	B-Offset	128

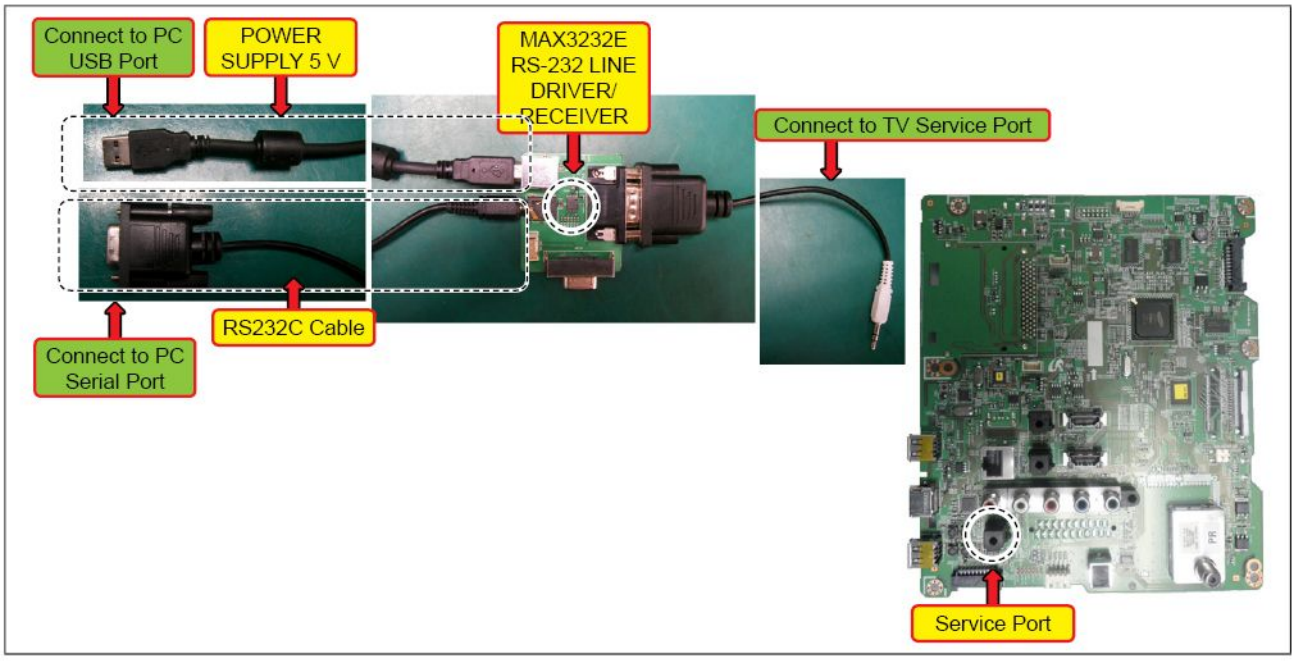
4.7. RS-232C

RS232C Control

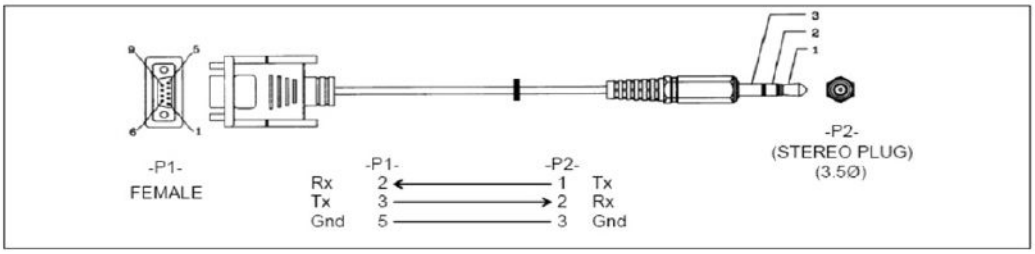
- Port : COM#(Serial)
- Bit rate : 38400(Control)
- Data Bit : 8 bit
- Parity : None
- Stop Bits : 1
- Flow Control : None

How to connect to TV set

If TV set do not have MAX3232E circuit, you need Jig board and cables. (Refer to below picture and description.)



		
Gender to connect with JIG Board and TV SET	Power suply Cable (5V)	RS232C Cable



Description of RS232C

Pin#	Name	Full Name	Pin#	Name	Full Name	Pin#	Name	Full Name
1	CD	Carrier Detect	4	DTR	Data Terminal Ready	7	RTS	Request To Send
2	RxD	Received Data	5	GND	Signal Ground	8	CTS	Clear To Send
3	TxD	Transmitted Data	6	DSR	Data Set Ready	9	RI	Ring Indicator

4.8. Software Upgrade

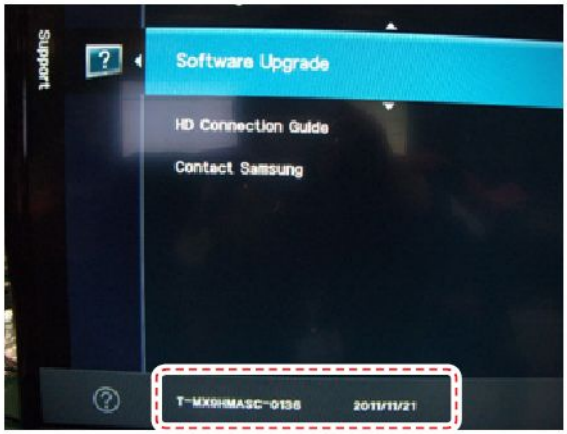
Software Upgrade can be performed by downloading the. latest firmware from samsung.com to a USB memory device.

- Current Version - The software already installed in the TV.
- Software is represented as 'Year/Month/Day_Version'.

4-8-1. How to Check the Software Version

■ Use the Main Menu

1. Click the "MENU" key in remote controller.
2. Select "Support" menu.
3. Locate the menu cursor "Software Upgrade" menu.
4. Click the "INFO" key.
   - Check the Main SW and Micom version.



■ Use the Factory Mode

Option
Control
SVC
Expert
ADC/WB
Advanced

T-M9RHMASC-****
DTP-LP3-****
DTP-LP3-App-****
OPTION:32B6AH0D, THAI, 4003, NONE
FactoryCS:*********
ADC : HDMI / COMP / PC / AV
EDID SUCCESS
HDCP SUCCESS
BuildDate : **-**-****

UE4003 T-M9RHMASC
UE5003 T-M9RFMASC

4-8-2. How to Upgade Software and Micom

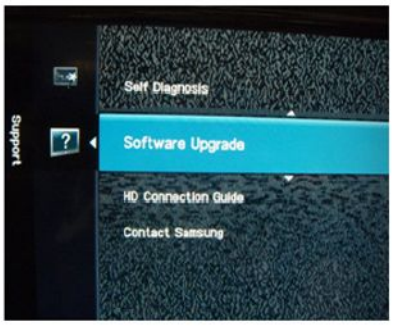
Insert a USB drive containing the firmware upgrade downloaded from samsung.com into the TV. Please be careful not to disconnect the power or remove the USB drive while upgrades are being applied. The TV will turn off and turn on automatically after completing the firmware upgrade. Please check the firmware version after the upgrades are complete (the new version will have a higher number than the older version). When software is upgraded, video and audio settings you have made will return to their default (factory) settings. We recommend you write down your settings before beginning firmware update. After update is completed, restore your previous settings.

■ Main Software Upgrade

1. Store the sw program named "T-MX9FMASC(FHD),T-MX9HMAFC(AFRICA)/ T-MX9HMASC(ASIA) / T-MX9HMCHC(CHINA)[HD]" in USB memory stick.
   - Connect the USB.

2. Click the "MENU" key in Remote Controler.

3. Select "Support" menu.
   Locate the menu cursor "Software Upgrade" menu.

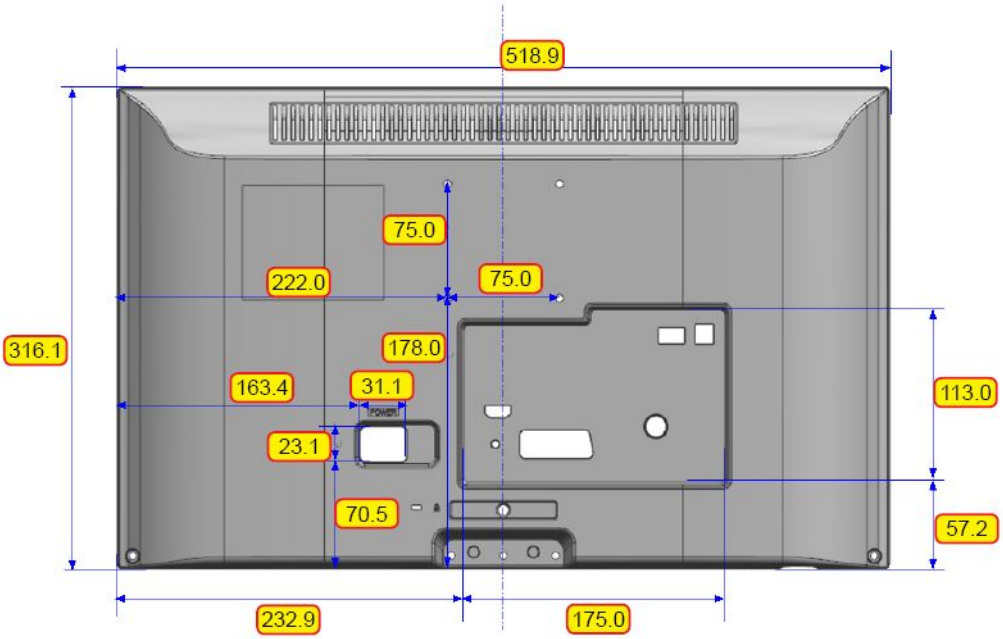


4. Click the "ENTER" key.

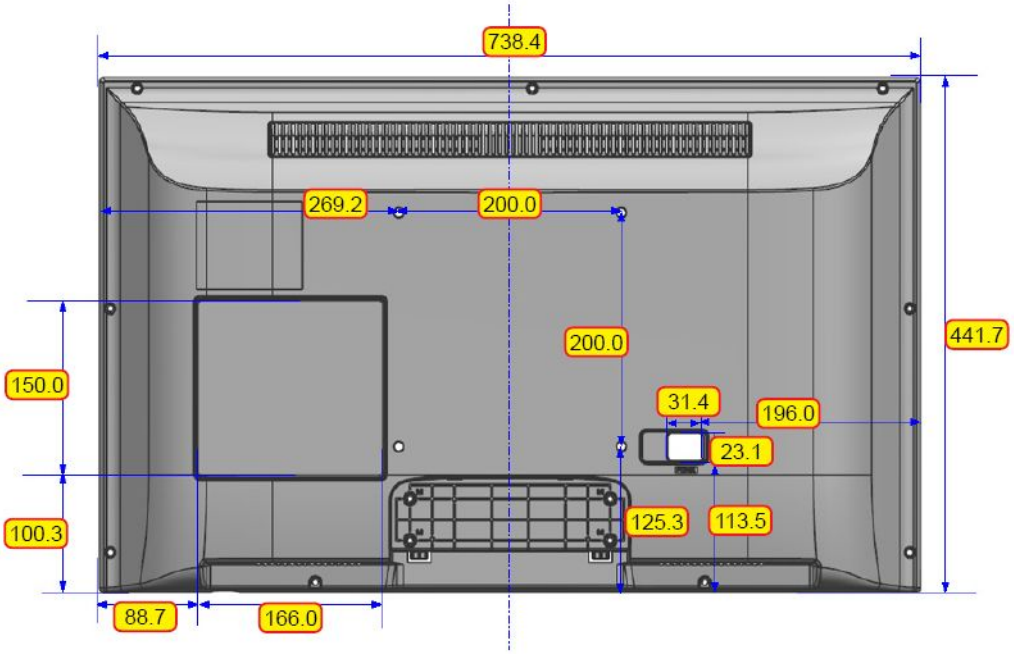
5. Click the "ENTER" key.
   - Wait for upgrade complete.
   - Check the Software Version.

4.9. Rear Cover Dimension

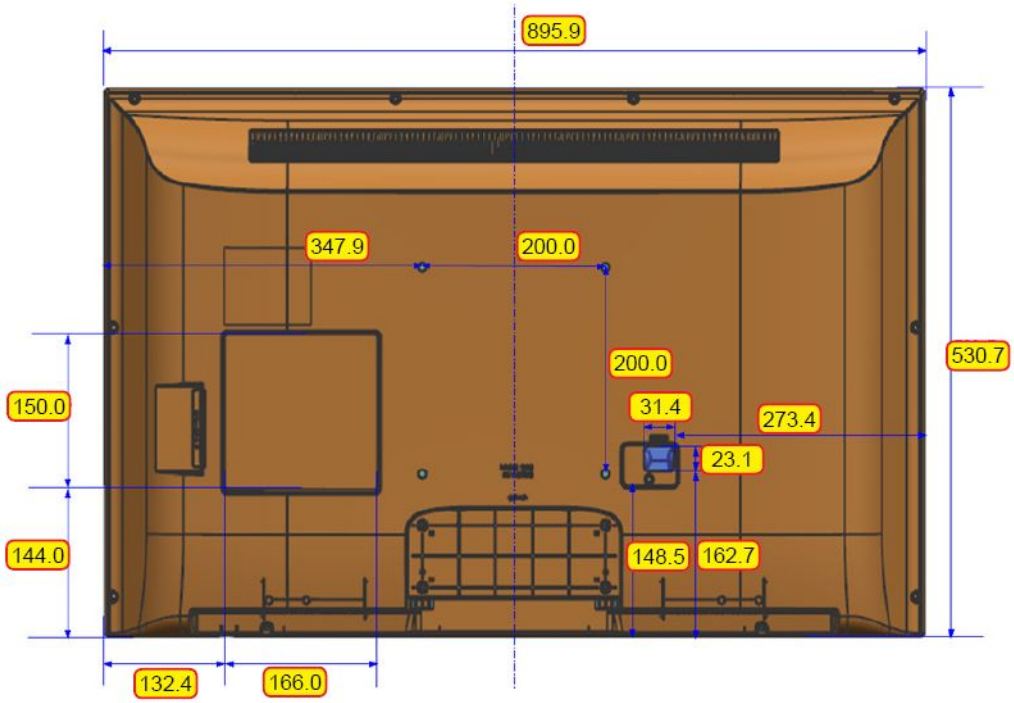
■ UA22ES4003R



■ UA32EH4003R



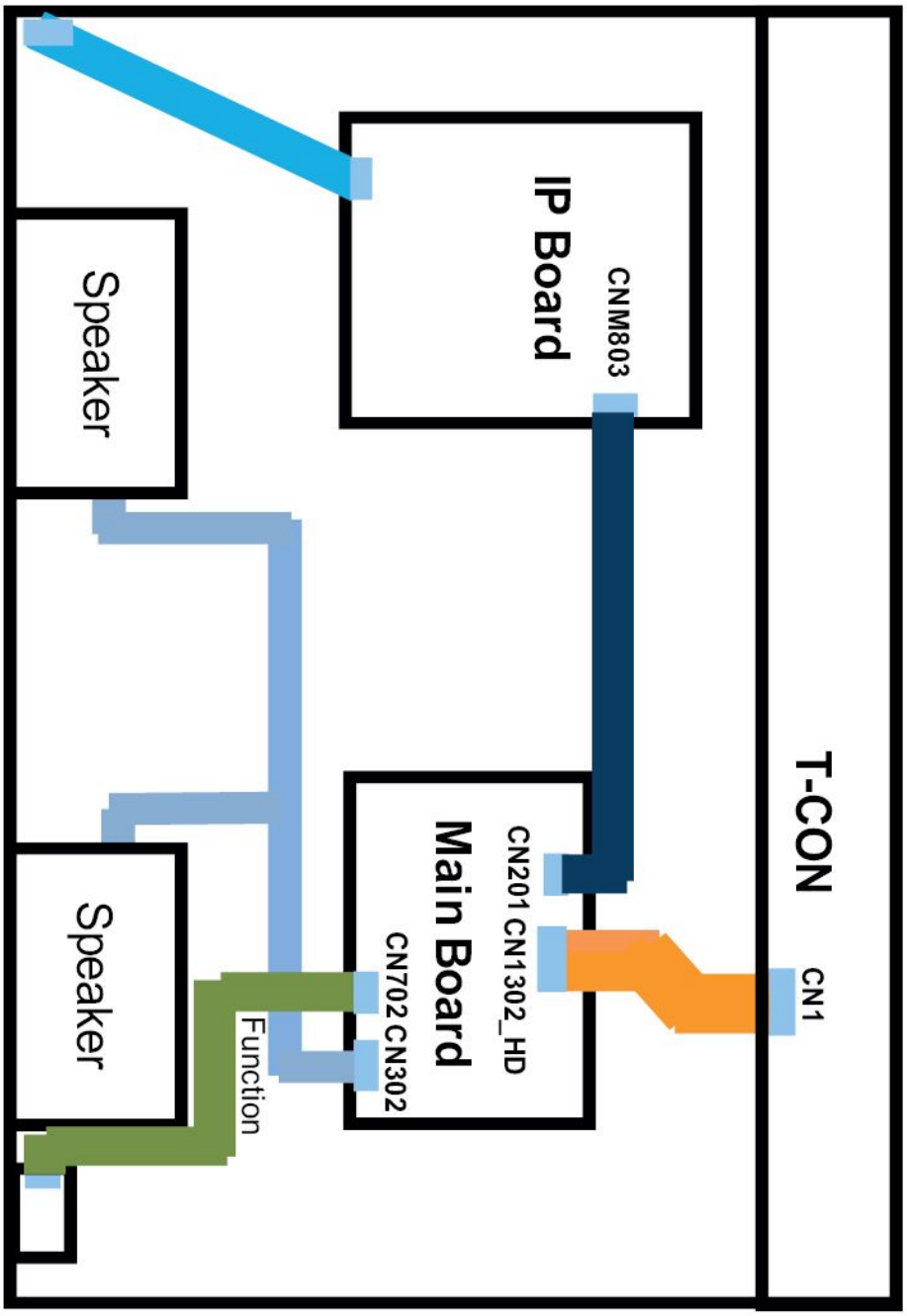
■ UA39EH5003R



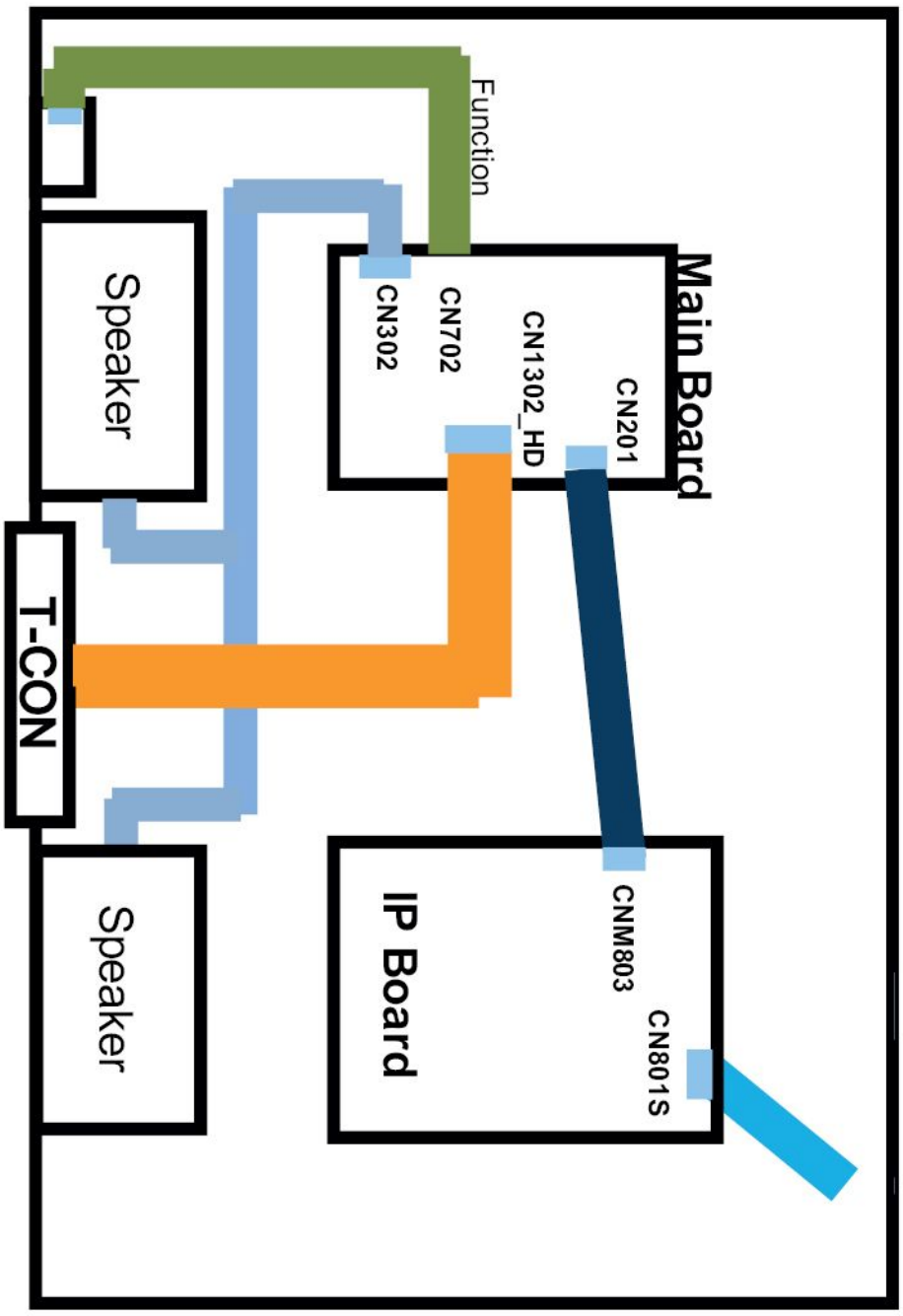
5. Wiring Diagram

5.1. Wiring Diagram

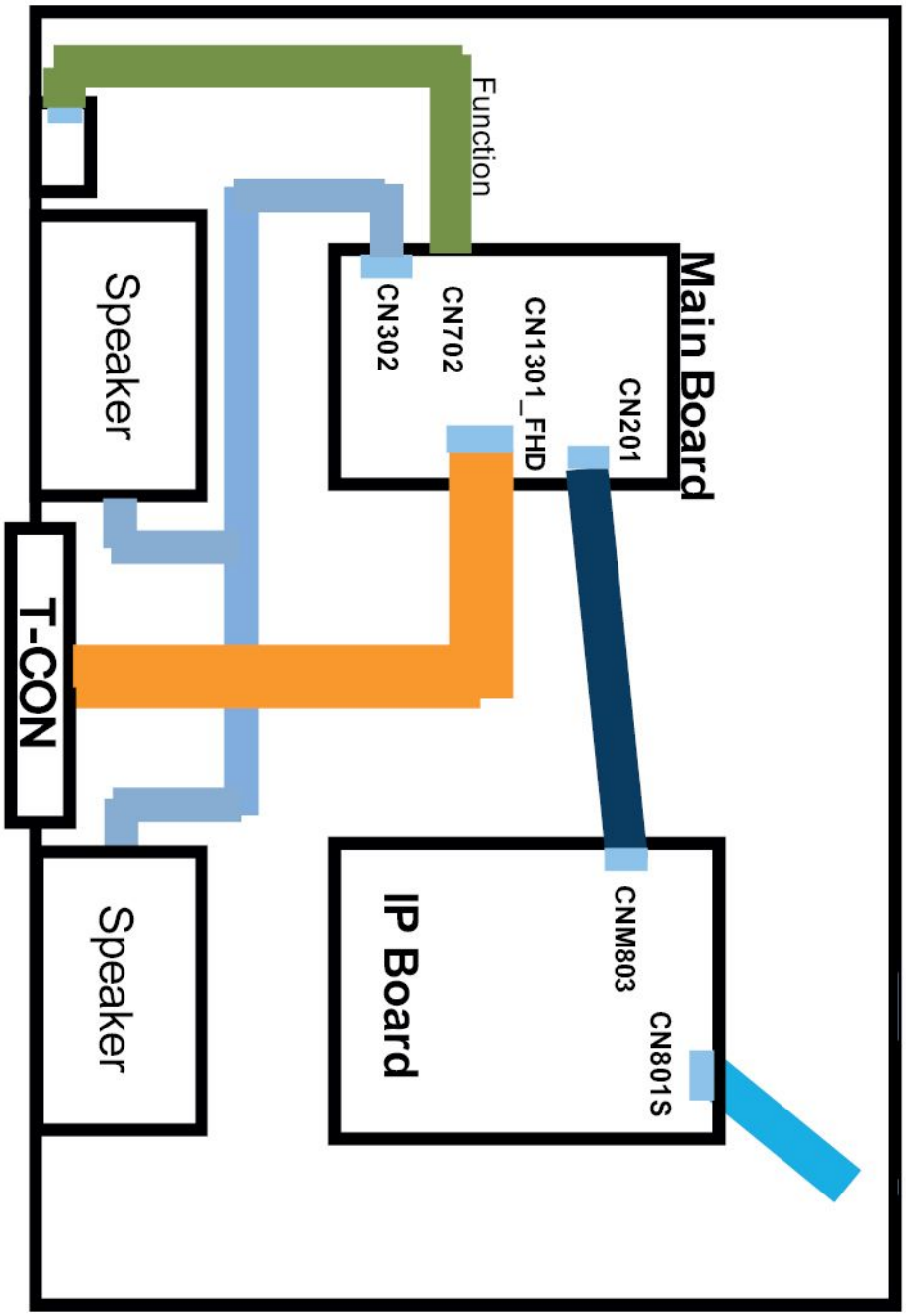
■ 22"



■ 32"

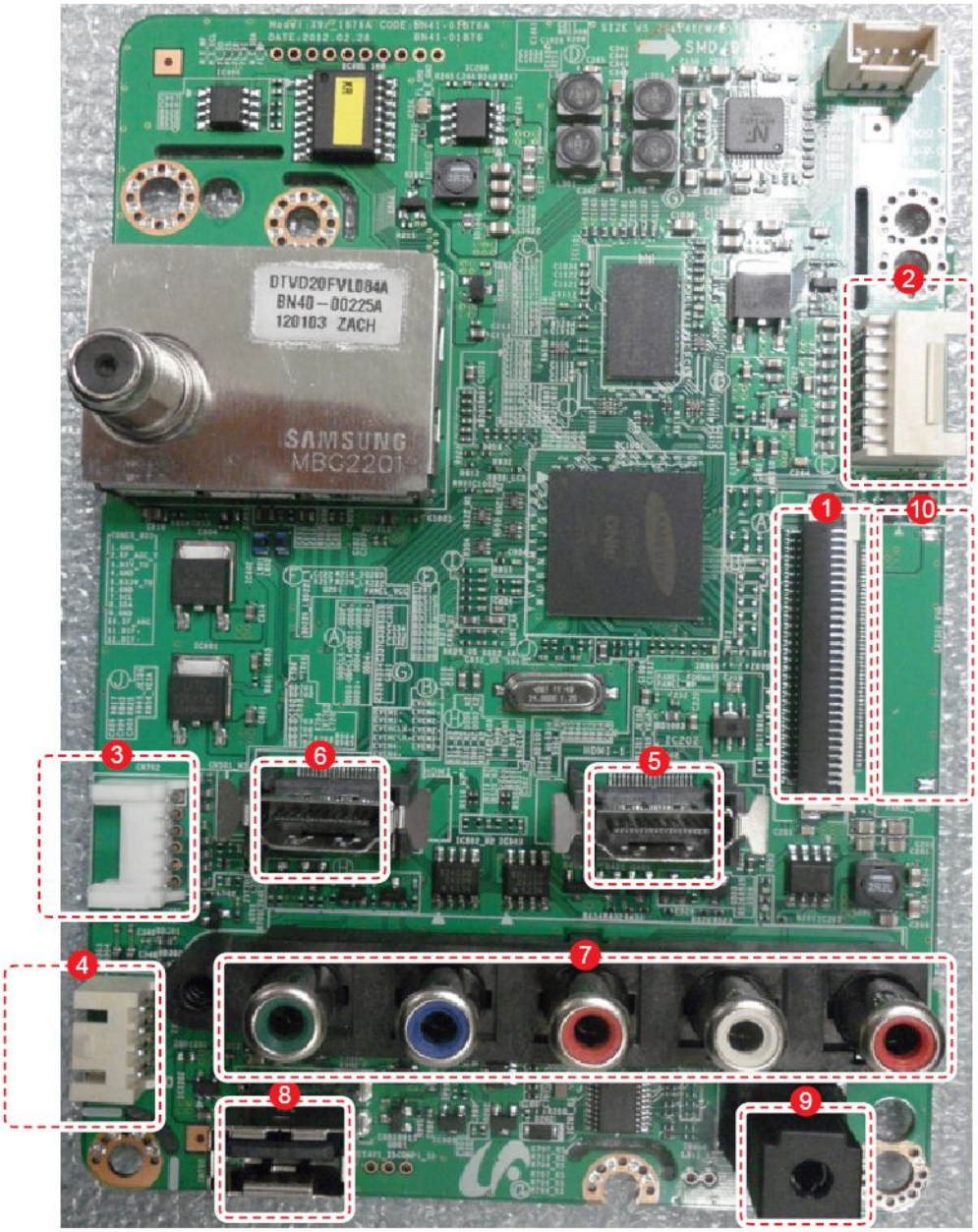


■ 39"



5.2. Connector

■ Main Board



❶ CN1302_HD			
1	PANEL_13V_PW	9	TCON_WP
2	PANEL_13V_PW	10	PANEL_FORMAT
3	PANEL_13V_PW	11	NC
4	PANEL_13V_PW	12	GND
5	PANEL_13V_PW	13	EVEN_TX3+_LVDS
6	GND	14	EVEN_TX3-_LVDS
7	GND	15	GND
8	GND	16	EVEN_TXCLK+_LVDS

❶ CN1302_HD			
17	EVEN_TXCLK-_LVDS	24	GND
18	GND	25	EVEN_TX0+_LVDS
19	EVEN_TX2+_LVDS	26	EVEN_TX0-_LVDS
20	EVEN_TX2-_LVDS	27	GND
21	GND	28	TCON_SDA
22	EVEN_TX1+_LVDS	29	TCON_SCL
23	EVEN_TX1-_LVDS	30	NC

❷ CN201 (to Powr board)			
1	B5.3V	8	GND
2	SW_PW	9	B13VS_AMP
3	B5.3V	10	SW_INV
4	A5.3V	11	B13VS_PW
5	GND	12	B13VS_PW
6	GND	13	B13VS_PW
7	B13VS_AMP	14	PWM_DIM

❸ CN702 (FUNCTION)			
1	IR	4	KEY_INPUT1
2	GND	5	KEY_INPUT2
3	A3.3V_PW	6	GND

❹ CN302 (SPEAKER)			
1	R+	3	L+
2	R-	4	L-

❺ CN502_H1 (HDMI1)			
1	HDMI1_RX2+	11	GND
2	GND	12	HDMI1_RXCLK-
3	HDMI1_RX2-	13	HDMI_CEC
4	HDMI1_RX1+	14	NC
5	GND	15	HDMI1_SCL_DDC
6	HDMI1_RX1-	16	HDMI1_SDA_DDC
7	HDMI1_RX0+	17	GND
8	GND	18	IDENT_HDMI1
9	HDMI1_RX0-	19	HDMI1_HOT_PLUG
10	HDMI1_RXCLK+		

❻ CN501_H2 (HDMI2)			
1	HDMI2_RX2+	11	GND
2	GND	12	HDMI2_RXCLK-
3	HDMI2_RX2-	13	HDMI_CEC
4	HDMI2_RX1+	14	NC
5	GND	15	HDMI2_SCL_DDC
6	HDMI2_RX1-	16	HDMI2_SDA_DDC
7	HDMI2_RX0+	17	GND
8	GND	18	IDENT_HDMI2
9	HDMI2_RX0-	19	HDMI2_HOT_PLUG
10	HDMI2_RXCLK+		

❼ CN403 (COMPONENT)			
1	GND	9	COMP1_PR
2	COMP1_Y_CVBS	10	GND
3	IDENT_VIDEO1	11	COMP1_SL_IN
4	GND	12	COMP1_SR_IN
5	COMP1_PB	13	GND
6	IDENT_COMP1	14	COMP1_SR_IN
7	GND	15	COMP1_SL_IN
8	COMP1_PR		

❽ CN1201 (USB)			
1	B5V_USB1_PW	3	USB0_DP+
2	USB0_DM-	4	GND

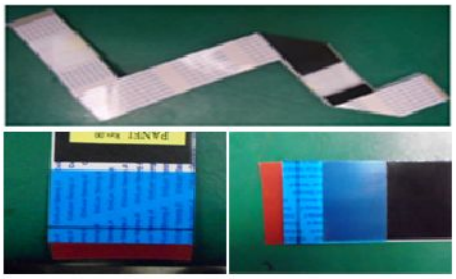
❾ CN701(Debug Port)			
1	FA_RX	3	NC
2	FA_TX	4	GND

10 CN1301_FHD			
1	NC	27	EVEN_TX0-_LVDS
2	GND	28	GND
3	NC	29	ODD_TX4+_LVDS
4	NC	30	ODD_TX4-_LVDS
5	NC	31	ODD_TX3+_LVDS
6	NC	32	ODD_TX3-_LVDS
7	PANEL_FORMAT	33	GND
8	TCON_SDA	34	ODD_TXCLK+_LVDS
9	TCON_WP	35	ODD_TXCLK-_LVDS
10	NC	36	GND
11	NC	37	ODD_TX2+_LVDS
12	TCON_SCL	38	ODD_TX2-_LVDS
13	GND	39	ODD_TX1+_LVDS
14	EVEN_TX4+_LVDS	40	ODD_TX1-_LVDS
15	EVEN_TX4-_LVDS	41	ODD_TX0+_LVDS
16	EVEN_TX3+_LVDS	42	ODD_TX0-_LVDS
17	EVEN_TX3-_LVDS	43	GND
18	GND	44	GND
19	EVEN_TXCLK+_ LVDS	45	GND
20	EVEN_TXCLK-_ LVDS	46	NC
21	GND	47	PANEL_13V_PW
22	EVEN_TX2+_LVDS	48	PANEL_13V_PW
23	EVEN_TX2-_LVDS	49	PANEL_13V_PW
24	EVEN_TX1+_LVDS	50	PANEL_13V_PW
25	EVEN_TX1-_LVDS	51	PANEL_13V_PW
26	EVEN_TX0+_LVDS		

5.3. Connector Functions

Connector	Function
CN201 ↔ IP CN	Power Supply to Main Board.
CN1302_HD ↔ T-CON CNF1	Translate the LVDS Signal.
CN1301_FHD ↔ T-CON CNF1	Translate the LVDS Signal.

5.4. Cables

Use	LEAD (Main-IP 14P)	LVDS CALBE (Main - Panel 30P)
Code No.	UA22ES4003R : BN39-01695A(14pin) BN39-01464F(6pin) UA32EH4003R : BN39-01449B	UA22ES4003R : BN96-18610G UA32EH4003R : BN96-20370T
Image		
Code No.	UA39EH5003R : BN39-01449Q	UA39EH5003R : BN96-24278B
Image		

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E.Asia, W.Asia, China, Japan	https://gspn2.samsungcsportal.com
N.America, S.America	https://gspn3.samsungcsportal.com

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