



# LCD TV

Chassis: U71C

Model: LE32E42\*E2W

# ***SERVICE*** MANUAL

LCD TV

Contents



LE\*\*E42\*E2W

1. Precautions
2. Product specifications
3. Disassembly and Reassembly
4. Troubleshooting
5. Wiring Diagram

# Contents

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1.	Precautions .....	1 – 1
1.1.	Safety Precautions .....	1 – 1
1.2.	Servicing Precautions .....	1 – 3
1.3.	Static Electricity Precautions.....	1 – 4
1.4.	Installation Precautions .....	1 – 5
2.	Product specifications.....	2 – 1
2.1.	Product Information .....	2 – 1
2.2.	Detail Factory Option .....	2 – 4
2.3.	Accessories .....	2 – 5
3.	Disassembly and Reassembly .....	3 – 1
3.1.	Disassembly and Reassembly.....	3 – 1
4.	Troubleshooting.....	4 – 1
4.1.	Troubleshooting .....	4 – 1
4.2.	How to Check Fault Symptom.....	4 – 4
4.3.	Factory Mode Adjustments .....	4 – 16
4.4.	White Balance.....	4 – 23
4.5.	White Ratio (Balance) Adjustment .....	4 – 26
4.6.	RS-232C .....	4 – 27
4.7.	Software Upgrade .....	4 – 28
4.8.	Rear Cover Dimension.....	4 – 30
5.	Wiring Diagram .....	5 – 1
5.1.	Wiring Diagram.....	5 – 1
5.2.	Connector .....	5 – 2
5.3.	Connector Functions.....	5 – 4
5.4.	Cables .....	5 – 5

# 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



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

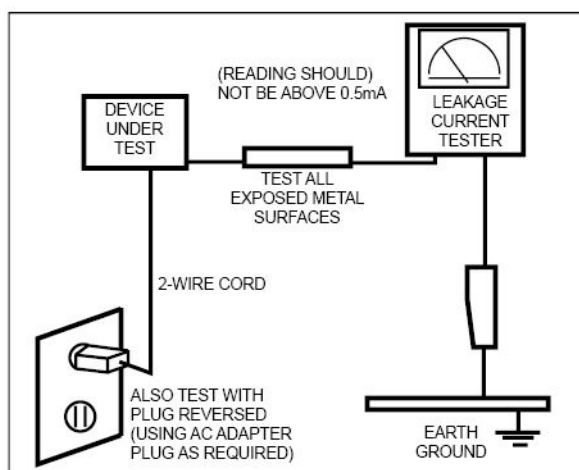
### 1-1-2. Servicing the LCD TV

1. When servicing the LCD 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 resistor/capacitor networks, mechanical insulators, etc.
3. Leakage Current Hot Check:




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 safety-related 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 the blades 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

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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.



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



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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	LE**E42*E2W		
Front View	 <p>* W : Width H : High D : Depth</p>		
Detail View			
Front Color	Black (Panel)		
Dimensions (W x H x D)	32"	Set with Stand	784.4 x 542.3 x 181.9 mm
		Set without Stand	784.4 x 502.9 x 103.3 mm
Weight	32"	Set with Stand	8.8 kg
		Set without Stand	7.7 kg
Panel Type	Anti Glare		
Internal Memory	None		
DDR	128 Mbyte		
Feature	Media Play(Movie)		



## 2-1-2. Feature & Specifications

Model	LE32E42*E2W	
Feature		
<ul style="list-style-type: none"><li>• Digital-TV, RF, 2-HDMI, 1-SCART, 1-USB2.0</li><li>• Brightness : 480 cd/m<sup>2</sup></li><li>• High Contrast Ratio : MEGA</li><li>• Response Time : 8.5 ms</li><li>• CMR : 60</li></ul>		
Specifications		
Item	Description	
LCD Panel	32 inch HD 60 Hz	
Scanning Frequency	Horizontal : 50 kHz ~ 73 kHz (Automatic) Vertical : 47 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	80MHz	
Active Display (H x V)* * Horizontal x Vertical	697.6 (H) x 392.2 (V) mm (27.5 (H) x 15.4 (V) Inches)	
AC Power Voltage & Frequency	AC 220 V ~ 240 V, 50 / 60 Hz	
Power Consumption	110 W (Under 0.3 W, Stand by)	
Dimensions Set (W x H x D)* * Width x High x Depth	Set without Stand	784.4 x 502.9 x 103.3 mm
	Set with Stand	784.4 x 542.3 x 181.9 mm
Weight	Set without Stand	7.65 kg
	Set with Stand	8.80 kg
TV System	Tunning	Frequency Synthesize (Refer to detailed Frequency Table)
	System	DVB-T/C, PAL, SECAM, NT4.43
	Sound	BK , DK , NICAM , MPEG1
Environmental Considerations	Operating Temperature: 32°F ~ 122°F (0°C ~ 50°C) Operating Humidity: 20% ~ 90% Storage Temperature: -4°F ~ 140°F (-20°C ~ 60°C) Storage Humidity: 10% ~ 90%	
Audio Specifications	MAX Internal Audio Output Power : Each 5 W(Left/Right) Equalizer : 5 Band Output Frequency : <ul style="list-style-type: none"><li>• RF : 80 Hz ~ 15 kHz</li><li>• AV/Componet/HDMI : 80 Hz ~ 20 kHz</li></ul>	
Note: Dolby Digital Plus/Pulse, USB2.0, Film mode, Energy Saving		

### 2-1-3. Specification Comparison to Old Models

Model	LE4H(LE32E42*E2W)		LD4E(LE32D403E2W)	
Design				
Display Type	LCD TV		LCD TV	
Built-in Tuner	O		O	
Resolution	1366 x 768		1366 x 768	
LCD Panel	TFT LCD Panel 60 Hz		TFT LCD Panel 60 Hz	
Screen Size	32"		32"	
Picture ratio	16 : 9		16 : 9	
Power Consumption	32"	110 W (Under 0.3 W, Standby)	32"	110 W (Under 0.3 W, Standby)
Dimensions (W x H x V)	32"	30.9 x 21.4 x 7.2 inches_with stand	32"	30.9 x 21.4 x 7.2 inches_with stand
		30.9 x 19.8 x 4.1 inches_without Stand		30.9 x 19.8 x 4.1 inches_without Stand
Weight	32"	19.40 lbs_with Stand	32"	20.18 lbs_with stand
		16.87 lbs_without Stand		17.86 lbs_without Stand
Brightness	32"	480 cd/m <sup>2</sup>	32"	480 cd/m <sup>2</sup>
Contrast Ratio	MEGA		MEGA	
Picture Enhancer	HyperReal Engine (X9)		HyperReal Engine (X5)	
Wide Color Enhance Plus	Wide Color Enhance Plus		Wide Color Enhance Plus	
Equalizer	5 Band		5 Band	
Auto Volume Control	O		O	
Surround Sound	Dolby Digital Plus/Pulse		Dolby Digital Plus	
Speaker Output	32"	5 W x 5 W	32"	5 W x 5 W
PIP	X		1 Tuner PIP	
Function	Touch function		Touch function	
Caption	O		O	
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

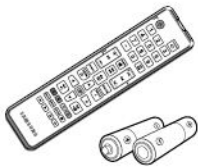




### NOTE

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			LE32E42*E2W
Panel	Vendor		AML
	Code		BN07-01064A
	Spec.		LTF320AP13-V
SMPS	Vendor		SEM
	Code		BN44-00468A
	Spec.		IV32HD_BSM
Byte	Item	Chassis Ass'y	BN91-09156A
0	Factory Reset	PBA Ass'y code	BN94-05680A
1	Type		32A6AH2C
2	Model		E420
3	SVC Model		420
4	Local Set		EU
5	Tuner		SI_ATC2
6	Ch Table		NONE
7	Front Color		NONE

## 2.3. Accessories

Product	Description	Code. No	Remark
	Remote Control Batteries (AAA x 2)	AA59-00602A	Samsung Electronics Service center
	Power Cord	3903-000603	
	User Manual (Simple Guide)	BN68-04217A	

## 3. Disassembly and Reassembly


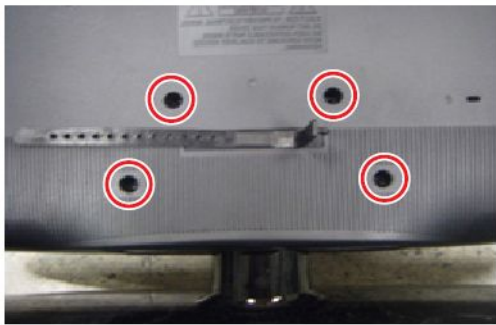




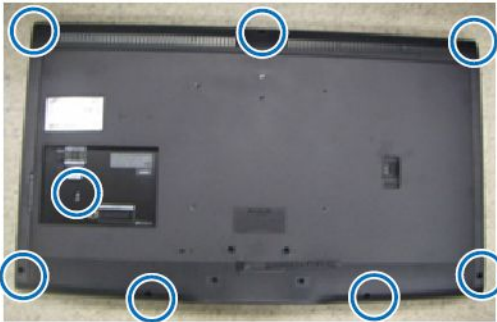

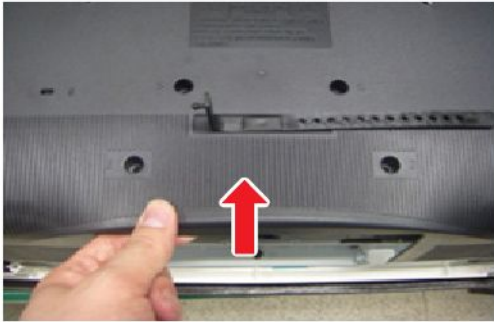


This LCD TV contains electrostatically sensitive devices. Use caution when handling these components.

### 3.1. Disassembly and Reassembly



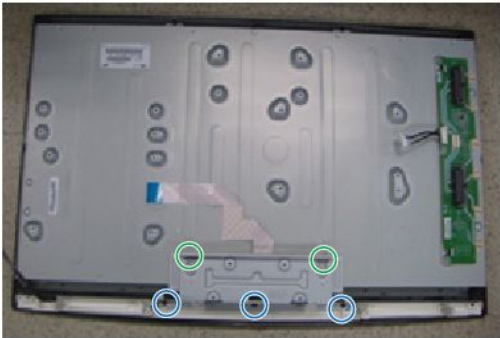




1. Disconnect the LCD TV from the power source before disassembly.
2. Follow these directions carefully; never use metal instruments to pry apart the cabinet.
3. If there is no additional coment, it is same for all inches.

Description	Picture Description	Screws
1 Place TV face down on cushioned table.		
2 Remove 4 screws from the Stand.		 6003-001785
3 Remove Stand.		

Description	Picture Description	Screws
4 Remove the 8 screws of Rear-cover.		 6003-001782
5 Remove the Rear-cover.		
6 Disconnect the Function Cable and Speaker Cable.		
		



Description	Picture Description	Screws
<b>7</b> Remove the Left and Right Speaker.		
<b>8</b> Remove the 4screws of main board. Remove the 5screws of IP board.		 6001-002284
<b>9</b> Disconnect the Power cable and Panel drive cable. Disconnect the LVDS Cable.		
		

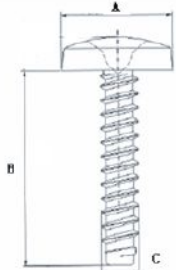
Description	Picture Description	Screws
<b>10</b> Remove the 5 screws of Bracket Stand Link & Guide.		 6001-002284  6003-001782
<b>11</b> Remove the LVDS Cable and Panel Drive Cable.		
<b>12</b> Remove the LVDS Cable.		

**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	7.80~8.20	11.20~12.00	3.81~3.91	11EA	
6003-001785	BLACK	7.50~8.00	5.7~6.0	3.81~3.91	4EA	
6001-002284	WHITE	7.40~8.00	5.7~6.0	3.83~3.98	11EA	

## 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 normal booting, replace the T-Con Board.
  - **Distorted Picture** : Check the inner patterns.

#### For All mode

X9	Picture	Problem
OK	NG	Main Board or Signal Source
NG	NG	Main Board
NG	NG	Main or LVDS cable or T-con or Panel

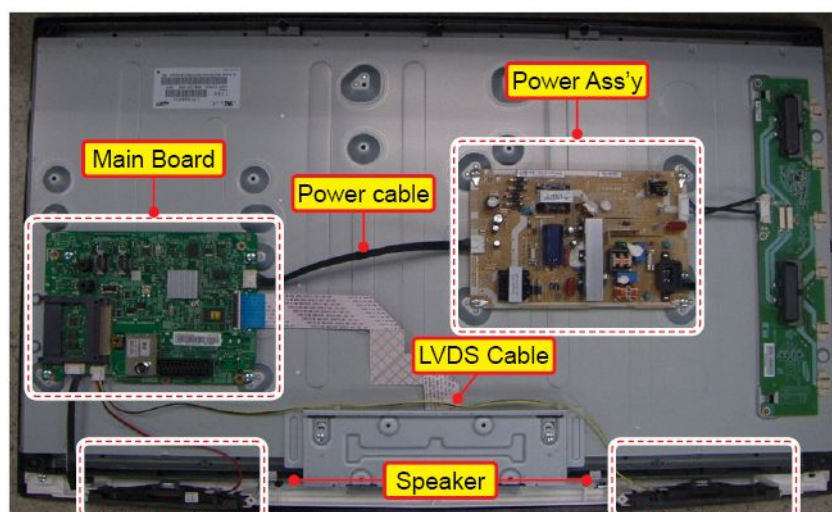
#### Only for HDMI mode (additional check)

HDMI	Picture	Problem
OK	NG	There is no problems after HDMI IC check HDMI source or HDMI jack.
NG	NG	There is no problems before HDMI IC check X9 pattern or LVDS cable or T-con.

#### ■ How to check inner pattern?

1. Factory mode. (info → menu → mute → Power on when TV is in 'stand-by mode')
2. Move to SVC menu.
3. Move to Test Pattern.
4. Check inner patterns. (This model only support FBE, READ PRE, READ POST)

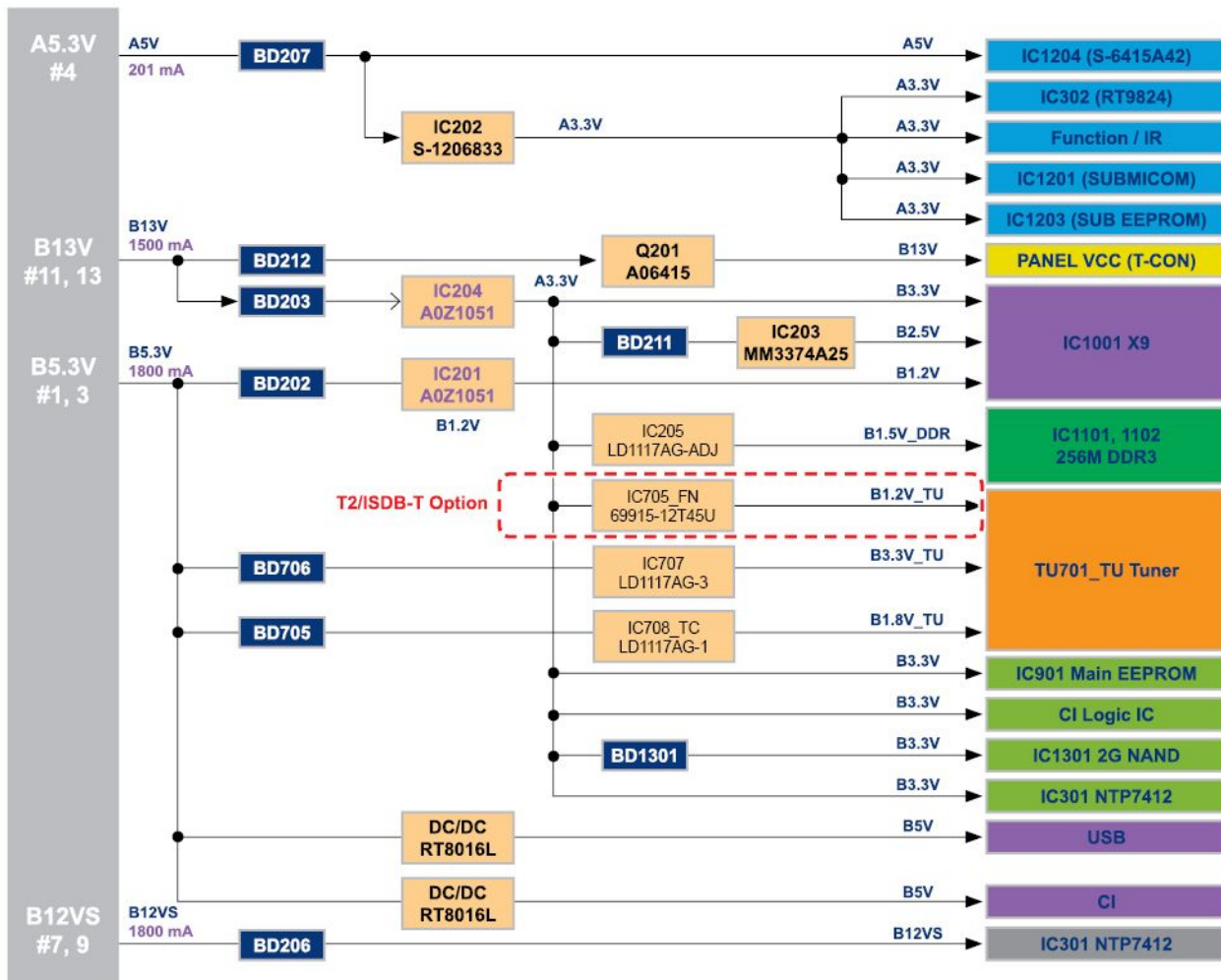
## ■ Inside View



Main Board (CN201)				Power Board (CN802)			
1	B5.3V	2	SW_PW	1	B5.3V	2	SW_PW
3	B5.3V	4	A5.3V	3	B5.3V	4	A5.3V
5	GND	6	GND	5	GND	6	GND
7	B13VS	8	GND	7	B13VS	8	GND
9	B13VS	10	SW_INV	9	B13VS	10	SW_INV
11	B13V	12	N.C	11	B13V	12	N.C
13	B13V	14	B13V	12	B13V	13	B13V

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

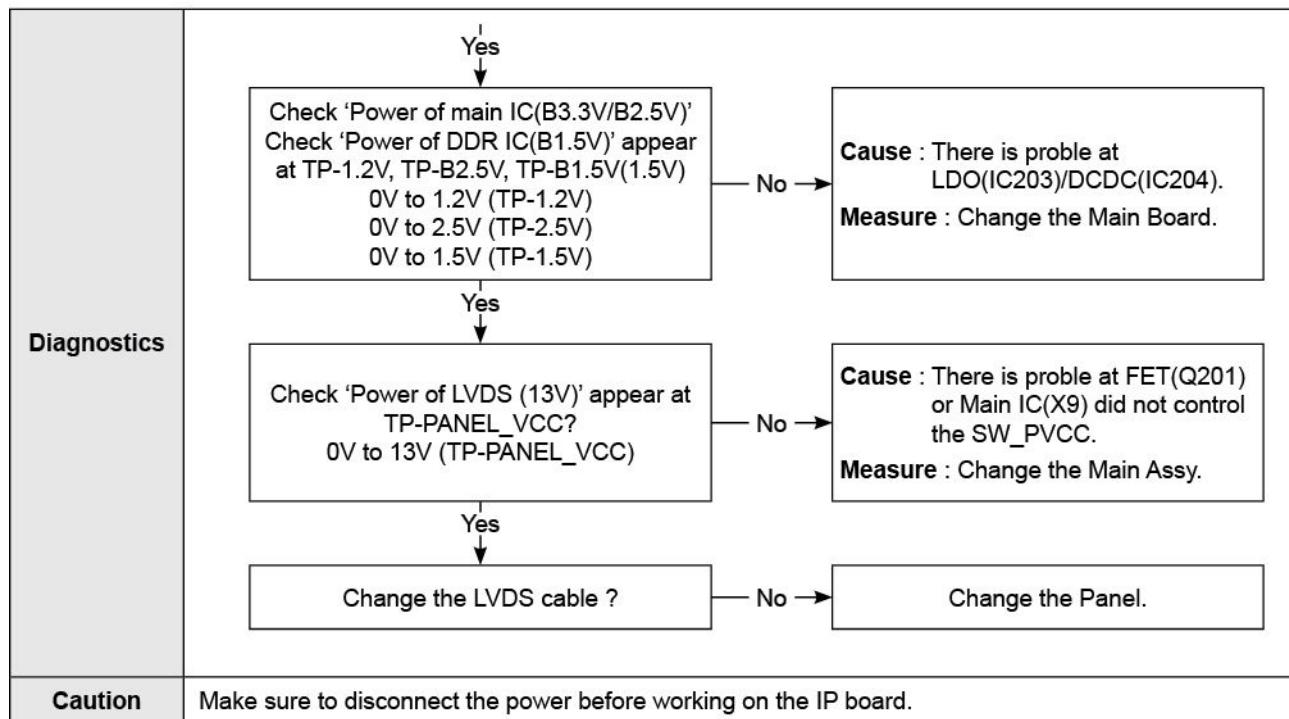
## Power-Tree



## 4.2. How to Check Fault Symptom

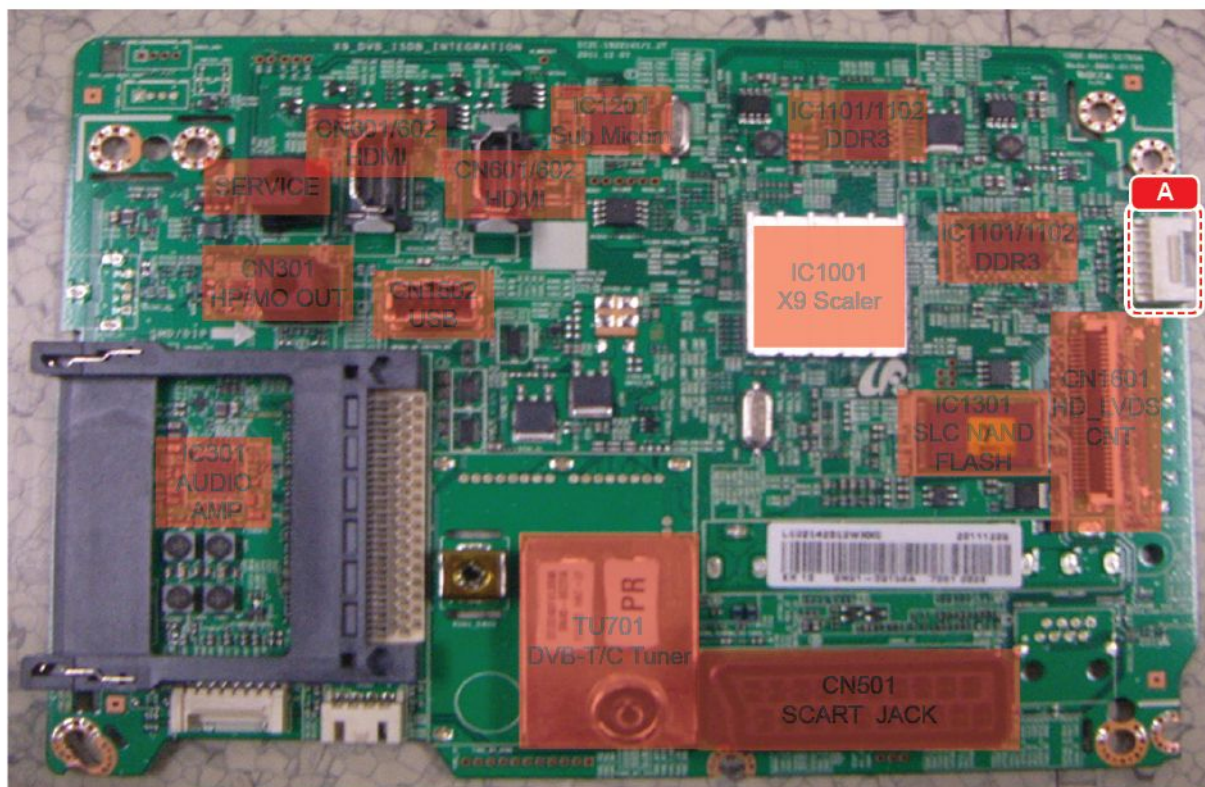
### ■ NO Power and No Video

<b>Symptom</b>	<ul style="list-style-type: none"> <li>The LEDs on The front panel do not work when connecting The power cord.</li> <li>The SMPS relay does not work when connecting The power cord.</li> <li>The units appears to be dead.</li> </ul>
<b>Major checkpoints</b>	<p>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:</p> <ul style="list-style-type: none"> <li>Check the internal cable connection status inside the unit.</li> <li>Check the fuses of each part.</li> <li>Check the output voltage of SMPS.</li> <li>Replace the Main Board.</li> </ul>
<b>Diagnostics</b>	<pre> graph TD     Start[Power cord on.] -- Yes --&gt; Check1[Check 'Stand-By A5.3V' 5.3V appear at at CN201 #4? 0V to 5.3V (CN201 #4)]     Check1 -- No --&gt; Cause1[Cause : There did not supply the power from SMPS. Measure : Change 14p power cable and SMPS.]     Check1 -- Yes --&gt; SetOn[Set On.]     SetOn -- Yes --&gt; Check2[Check 'SW_POWER' more than 3.3V appear at CN201(#2) ? 0V to 3.3V↑ (CN201 #2)]     Check2 -- No --&gt; Cause2[Cause : Main IC(X9) did not control the SW_Power. Measure : Change the Main Assy]     Check2 -- Yes --&gt; Check3[Check 'Power input of Main Ass'y' ? DC B13V, B5.3V appear at CN201 #11,12,13(B13V) CN201 #1,3 (B5.3V)? 0V to 13V (CN201 #11,13) 0V to 5.3V (CN201 #1,3)]     Check3 -- No --&gt; Cause3[Cause : There did not supply the power from SMPS. Measure : Change 14p power cable and SMPS.]   </pre>

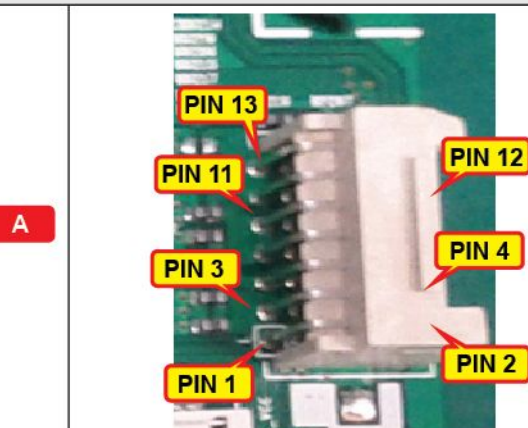


## ■ Location of Parts

Main Board\_Front



Detail



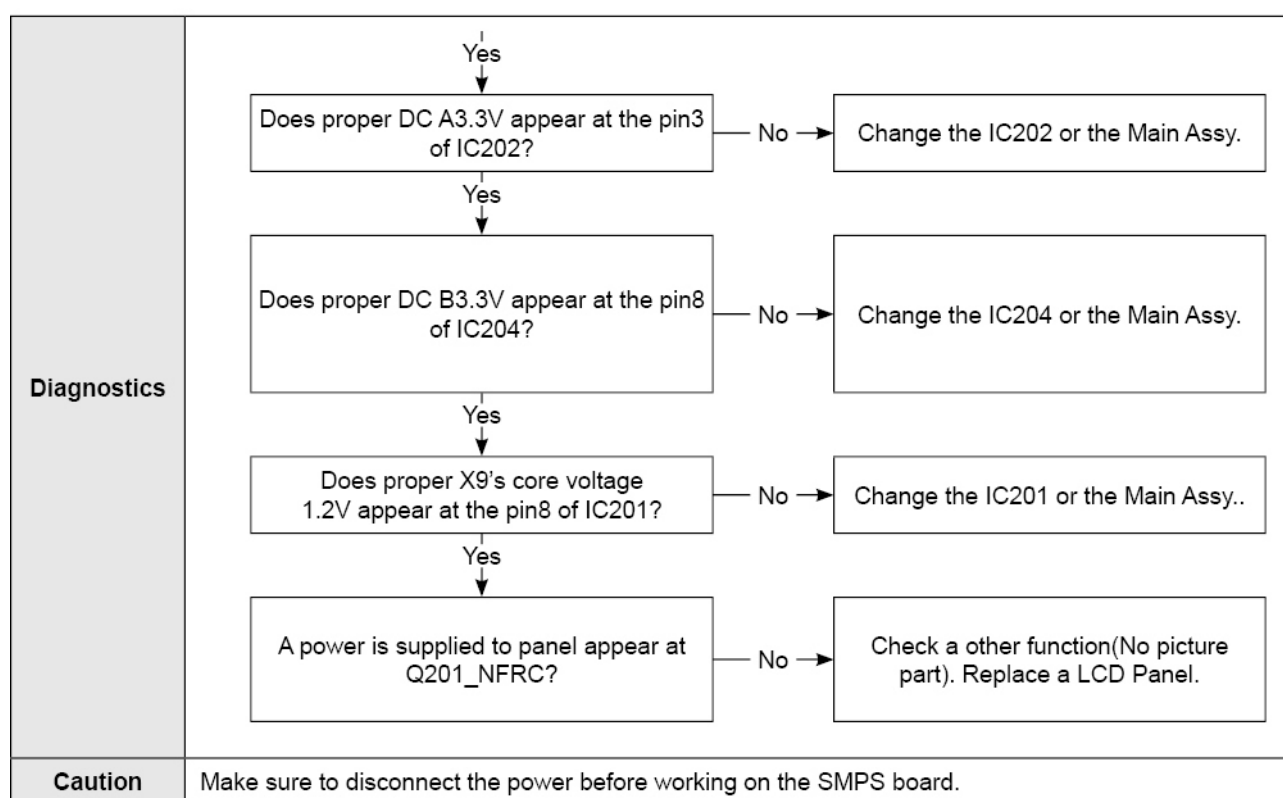


## ■ NO Power

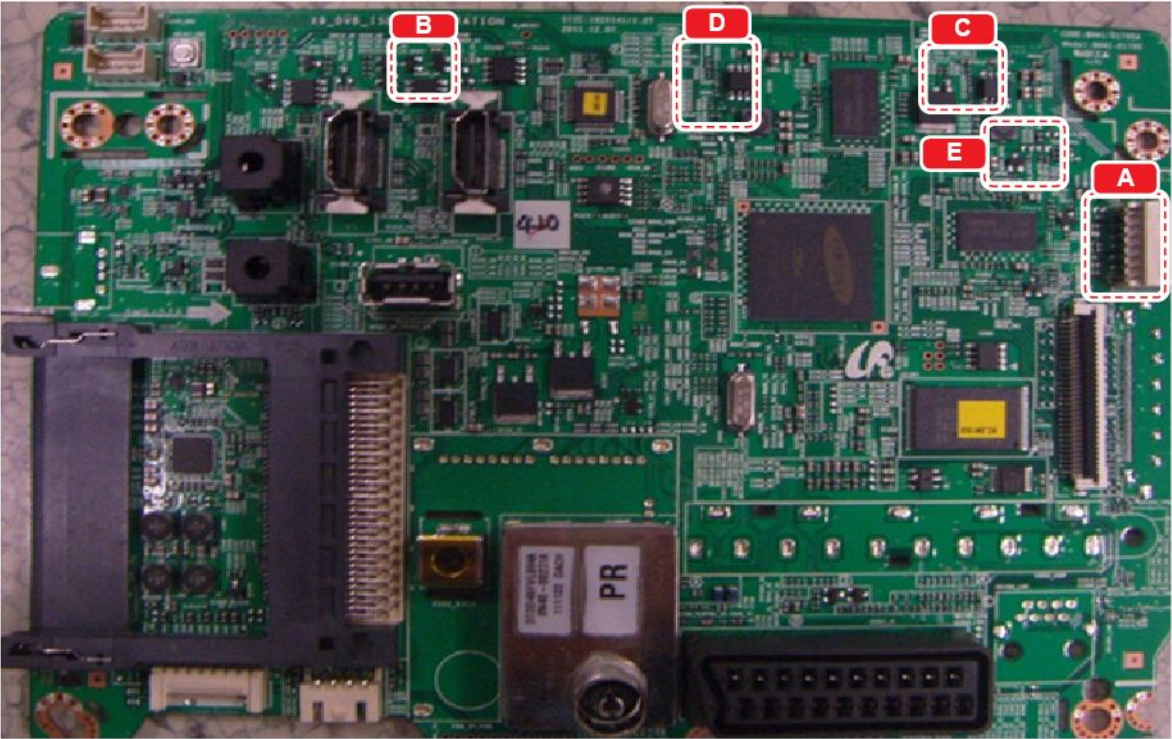
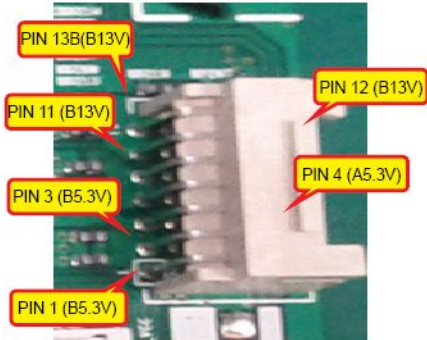
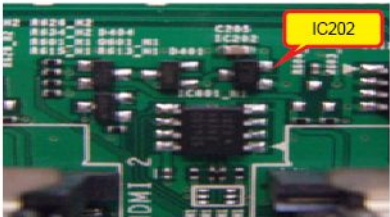



Refer to the next page to check the location such a CN201 or IC1001 SVC Manual mentioned.

<b>Symptom</b>	<ul style="list-style-type: none"> <li>The LEDs on The front panel do not work when connecting The power cord.</li> <li>The SMPS relay does not work when connecting The power cord.</li> <li>The units appears to be dead.</li> </ul>
<b>Major checkpoints</b>	<p>The SMPS 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:</p> <ul style="list-style-type: none"> <li>Check the internal cable connection status inside the unit.</li> <li>Check the fuses of each part.</li> <li>Check the output voltage of SMPS.</li> <li>Replace the Main Board.</li> </ul>
<b>Diagnostics</b>	<pre> graph TD     Q1[When power on, check the sound of relay on?] -- No --&gt; A1[Check a connection power cable.]     Q1 -- Yes --&gt; Q2[Check the backlight on, when 14p cable unconnected ?]     Q2 -- Yes --&gt; Q3[Does proper Stand-By DC A5.3V appear at the PIN 4 of CN201?]     Q3 -- No --&gt; A2[Change 14p cable. Change Main Power Assy.]     Q3 -- Yes --&gt; Q4[Check 'Main power input' ? - PIN11,12,13 : B13V - PIN1,3 : B5.3V]   </pre> <p>The flowchart for diagnosing 'NO Power' starts with the question 'When power on, check the sound of relay on?'. If the answer is 'No', the instruction is to 'Check a connection power cable.'. If 'Yes', the next step is 'Check the backlight on, when 14p cable unconnected?'. If 'Yes', the next step is 'Does proper Stand-By DC A5.3V appear at the PIN 4 of CN201?'. If 'No', the instruction is to 'Change 14p cable. Change Main Power Assy.'. If 'Yes', the final step is 'Check 'Main power input' ?' with sub-points: '- PIN11,12,13 : B13V' and '- PIN1,3 : B5.3V'.</p>





■ Location of Parts

Main Board_Front			
			
Detail			
<div>A</div>		<div>B</div>	
		<div>D</div>	
			

## ■ NO Video (HDMI 1,2)

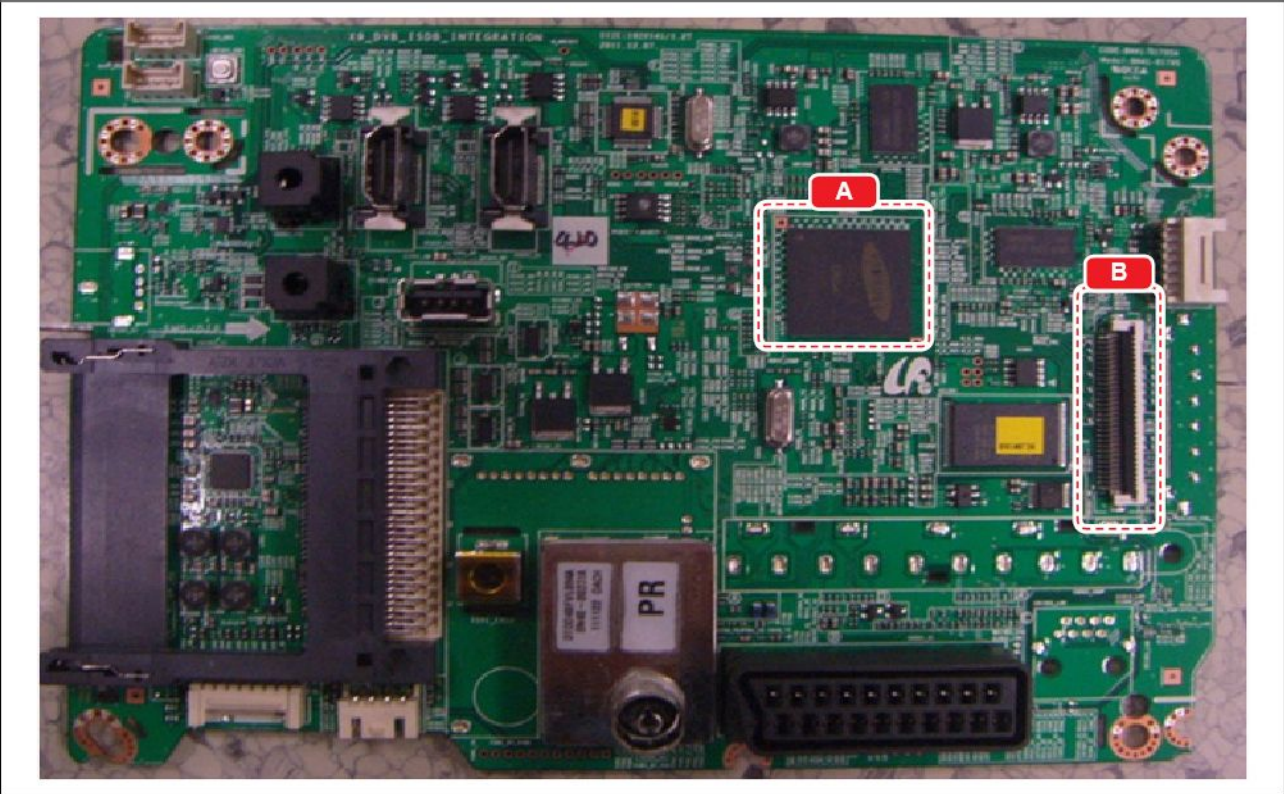
Refer to the next page to check the location such a CN201 or IC1001 SVC Manual mentioned.

<b>Symptom</b>	<ul style="list-style-type: none"> <li>Audio is normal but no picture is displayed on the screen.</li> </ul>
<b>Major checkpoints</b>	<ul style="list-style-type: none"> <li>Check the HDMI source.</li> <li>Check the HDMI switch, Check the X9.</li> <li>This may happen when the LVDS cable connecting the Main Board and the Panel is disconnected.</li> </ul>
<b>Diagnostics</b>	<pre> graph TD     Q1[Power indicator LED is off. Lamp(Backlight) on, no video ?] -- No --&gt; A1[Check a set in the 'Stand-by mode'.]     Q1 -- Yes --&gt; Q2[Check the HDMI source and check the connection of HDMI cable ?]     Q2 -- No --&gt; A2[Input the HDMI signal properly.]     Q2 -- Yes --&gt; Q3[Does the signal appear at pins of IC1001(HDMI1),(HDMI2)?]     Q3 -- No --&gt; A3[First of all check the setting of the external device. And then check the HDMI cable. If the problem still occurs, replace the Main Board.]     Q3 -- Yes --&gt; Q4[Does the digital data appear at pin13~26 of CN1601_HD?]     Q4 -- No --&gt; A4[Change the CN1601_HD or the Main Assy.]     Q4 -- Yes --&gt; Q5[Check the LVDS cable? Check the T-con board? Replace the LCD panel?]     Q5 -- No --&gt; A5[Please, contact Tech support.]   </pre>
<b>Caution</b>	Make sure to disconnect the power before working on the SMPS board.

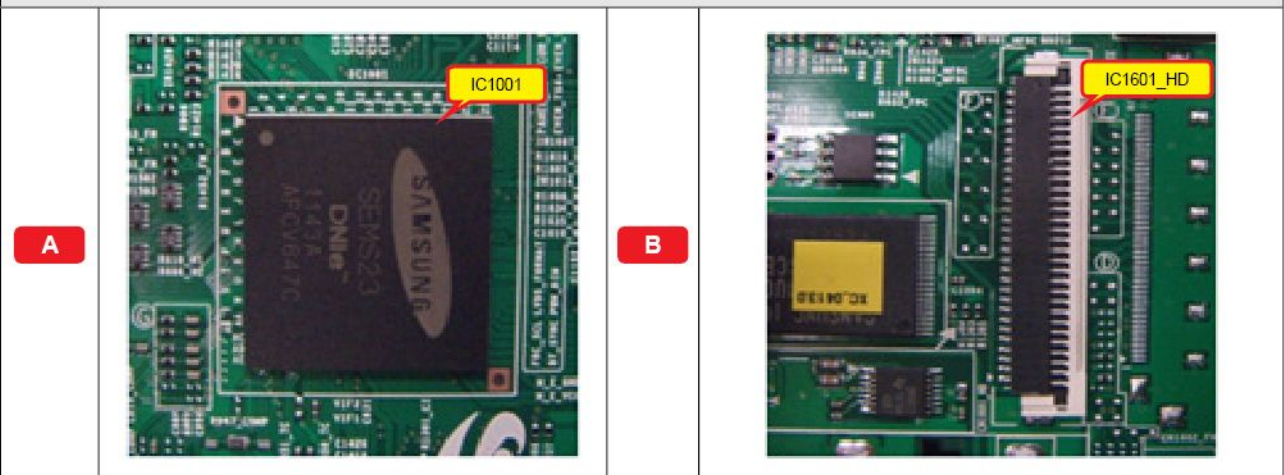


## ■ Location of Parts

Main Board_Front
------------------



Detail	
--------	--

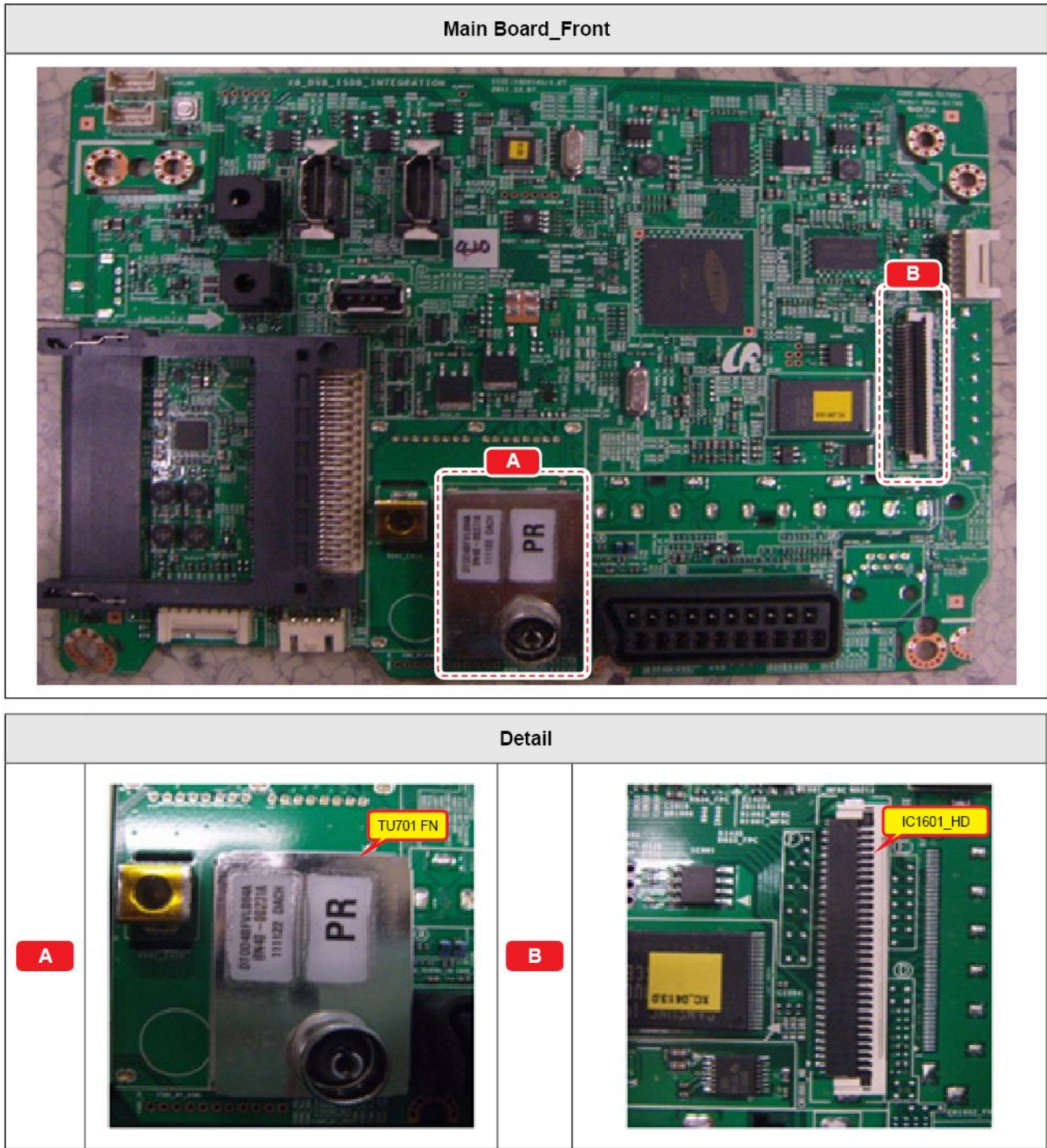


## ■ No Video (TUNER DTV/ATV)

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

<b>Symptom</b>	<ul style="list-style-type: none"> <li>Audio is normal but no picture is displayed on the screen.</li> </ul>
<b>Major checkpoints</b>	<ul style="list-style-type: none"> <li>Check the DTV/ATV source.</li> <li>Check the Tuner, Check the X9.</li> <li>This may happen when the LVDS cable connecting the Main Board and the Panel is disconnected.</li> </ul>
<b>Diagnostics</b>	<pre> graph TD     Q1[Power indicator LED is off. Lamp(Backlight) on, no video ?] -- No --&gt; A1[Check a set in the 'Stand-by mode'.]     Q1 -- Yes --&gt; Q2[Check the Digital, RF source and check the connection of RF cable ?]     Q2 -- No --&gt; A2[Input the Digital, RF source properly..]     Q2 -- Yes --&gt; Q3[① Does the signal appear at pin11, 12 of TU701_FN?]     Q3 -- No --&gt; A3[Change the TU701_FN or the Main Assy.]     Q3 -- Yes --&gt; Q4[② Does the digital data appear at pin13~26 of CN1601_HD?]     Q4 -- No --&gt; A4[Change the CN1601_HD or the Main Assy.]     Q4 -- Yes --&gt; Q5[Check the LVDS cable? Replace the T-con / LCD panel?]     Q5 -- No --&gt; A5[Please, Contact Tech support.]   </pre>
<b>Caution</b>	Make sure to disconnect the power before working on the IP board.

■ Location of Parts



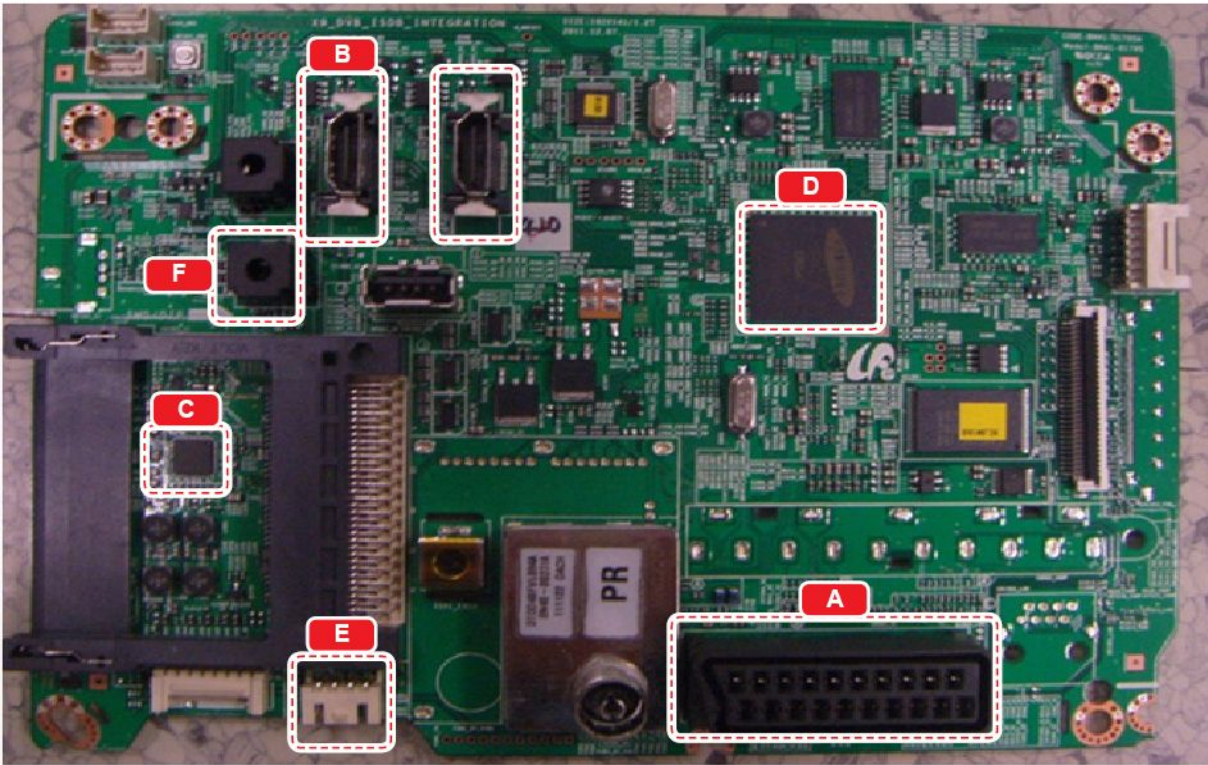


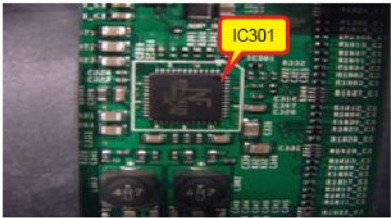

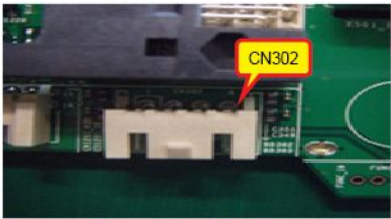



## ■ No Sound (Speaker, HP LR OUT)

Refer to the next page to check the location such a CN201 or IC201 SVC Manual mentioned.

<b>Symptom</b>	<ul style="list-style-type: none"> <li>Video is normal but there is no sound.</li> </ul>
<b>Major checkpoints</b>	<ul style="list-style-type: none"> <li>When the speaker connectors are disconnected or damaged.</li> <li>When the sound processing part of the Main Board is not functioning.</li> <li>Speaker defect.</li> </ul>
<b>Diagnostics</b>	<pre> graph TD     Q1[Check the source and check the connection of sound cable (HDMI to HDMI, SCART) ?] -- No --&gt; A1[Input the sound source properly.]     Q1 -- Yes --&gt; Q2[Check the signal at input of Main board?]     Q2 -- No --&gt; A2[Check CN501_SC, CN601_H1, CN602_H2 Change the Main Assy.]     Q2 -- Yes --&gt; Q3[Check the I2C DATA between the Audio IC's ?]     Q3 -- No --&gt; A3[Check IC301, IC1001. Change the Main Assy.]     Q3 -- Yes --&gt; Q4["1. Check the Speaker sound data at the pin of CN302? #1 : R+ / #2 : R- / #3 : L+ / #4 : L- 2. Check the Headphone/Monitor out sound data at MO_HP_SL_OUT, MO_HP_SR_OUT (CN301)?"]     Q4 -- No --&gt; A4[Check IC301, IC1001. Change the Main Assy.]     Q4 -- Yes --&gt; Q5[Replace speaker ?]     Q5 -- No --&gt; A5[Please, Contact Tech support.]   </pre>
<b>Caution</b>	Make sure to disconnect the power before working on the IP board.

■ Location of Parts

Main Board_Front			
			
Detail			
A		B	
C		D	
E		F	



## 4.3. Factory Mode Adjustments

### 4-3-1. Entering Factory Mode

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

- If you do not have Factory remote control



- If you have Factory remote control



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

#### ■ Initial SERVICE MODE DISPLAY State

Option	EDID : SUCCESS	Onboot : ***	Type : ****
Contro	HDCP : SUCCESS	SDAL_****	Model : ****
SVC	CALIB : AV / COMP / PC / HDMI	RFS:Mstar-X9 ****	CIP SUCCESS
Expert	OPTION : 32A6AH2C,EU,420,NONE	TFUNC-TAG-ERR	Factory Data Ver : ***
ADC/WB	FactoryCS : *****		Date Of Purchase : **/**/**
Advanced	T-MSXDEUCIP-****		
T-MST9DEUC- S/W Ver.			
T-MST9DEUS- S/W Ver.			
E-Manual : X9DVBEU4E-****			

### 4-3-2. Factory Data



#### Note

- Version of the software is written in 0002.
- Black : I should not be possible to adjust or change that does not require a change item
- Blue : Adjustment Services for the corresponding
- Red : Items that are secured

#### ■ Option

Factory Menu Name	Data	Range	Remark
Factory Reset	-	-	
Type	32A6AH2C	-	use to change panel
Local Set	EU		
Model	LE420		
SVC Model	420		
Tuner	SI_ATSC2		do not change
Ch Table	NONE		
Front Color	NONE		

#### ■ Control

Factory Menu Name	Data	Range	Remark
<b>EDID</b>			
EDID ON/OFF	Off	On/Off	
EDID WRITE ALL		Success/Failure	use to write the EDID
EDID WRITE PC		Success/Failure	
EDID WRITE HDMI		Success/Failure	
EDID WRITE HDMI1	Success	Success/Failure	
EDID WRITE HDMI2	Success	Success/Failure	
EDID WRITE HDMI3		Success/Failure	
EDID WRITE HDMI4		Success/Failure	
EDID VER	HDMI 1.3	HDMI 1.3/HDMI1/2	
EDID PORT	NONE	NONE	
EDID WRITE DVI			
<b>Sub Option</b>			
RF Mute Time	600ms		
RS-232 Jack	UART		
Watchdog	ON		

Factory Menu Name	Data	Range	Remark
WD Count	0		
Lvds Format	JEIDA		
Language_Arabic	EU		
TOOLS Support	57		
LNA Supprot	0		
NETWORK Support	Not Support		
IPERF	Stopped		
Info Link Server Type	development		
Info Link country	None		
TTX List	---		
TTX Group	---		
24Px4 Support	OFF		
Power Indicator Support	OFF		
BD Wise Support	OFF		
Data Swrvice Support	OFF		
IIC Bus Stop	OFF		
Visual Test	Disable		
Emergency Log Copy			
Checksum	0x0000		
View Log			
Gemstar On/Off	OFF		
WSS Support	ON		
PVR Support	OFF		
CI Support	ON		
Eeprom Reset			
Spread Spectrum			
DDR Margin			
H.264 Margin	8		
MPEG Margin	1000		
2nd mips	ON		
2nd mips count	0		
Region	PANEURO		
PnP Language	ENG		
PC Auto Ident	Enable		
OTP Lock	---		
Auto Power	MEMORY		

#### 4. Troubleshooting

Factory Menu Name	Data	Range	Remark
KEY SENSITIVITY	Not used		
OTA Support	General		
FKP Down			
WIFI REGION	E		
e-pop Default	ON		
OPTION_SWU			
OPTION_MEDIAPLAY			
3D OPTIMIZE VALUE	1		
ECO IC TYPE	NLS1006		
Energy Star Logo	OFF		
Fast USB Booting	OFF		
<b>PDP Option</b>			
<b>Hotel Option</b>			
<b>Shop Option</b>			
Shop Mode	OFF	ON/OFF	
Exhibition Mode	OFF	ON/OFF	
<b>Asia Option</b>			
<b>Sound</b>			
High Devi	OFF		
Carrier_Mute	OFF		
Volume Curve	Type1		
Speaker Delay Normal	10		
Pilot Level High Thld	0x28h		
Pilot Level Low Thld	0x10h		
FM Prescale	68		
AM Prescae	49		
NICAM Prescale	45		
Amp Volume	0xc7h		
Amp Scale	0x67h		
Amp Check Sum	0x01045459		
Woofer Type	1		
Woofer Scale	0x8ah		
Woofer Check Sum			
Speaker EQ	ON		
PEQ Test	0		
Amp Model	NTP7412		do not change
Speaker cut-off Freq	4		

Factory Menu Name	Data	Range	Remark
SPDIF PCM Gain			
FM M Prescale	48		
BTSC Mono Prescale	25		
BTSC stereo Prescale	47		
SAP Prescale	43		
A2 Ident High Thld	31		
A2 Ident Low Thld	2		
Carrier2 Amp High Thld	4		
Carrier2 Amp Low Thld	3		
Carrier2 SNR High Thld	15		
Carrier2 SNR Low Thld	80		
Audio-IP Test	Ready		
TruBass-Checksum	0xFFFFFFFF		
PWM Mode	BD		
Mic Scale	0		
SubWoofer Support	0		
India Sound	OFF		
<b>Config Option</b>			
Num of ATV	1		
Num of DTV	1		
Num of AV	1		
Num of SVIDEO	0		
Num of Comp	0		
Num of HDMI	2		
Num of SCART	1		
Num of DVI	0		
Num of OPTICAL Link	0		
Num of MEDIA	1		
Num of PANEL KEY	6		
Num of USB Port	1		
Number of HeadPhone	1		
Num of RVU	0		
MFT OFFSET	62.5		
Select LCD/PDP	LCD		
HDMI/DVI SEL	1		
Indicator Led	OFF		
Wall Mount	OFF		

#### 4. Troubleshooting

Factory Menu Name	Data	Range	Remark
HV Flip	ON		
Num of Display	2		
DVI/HDMI SOUND	Auto		
HDMI HOT PLUG	Disable		
HOTPLUG SWITCHING	Boot		
HOT PLUG DURATION	1200ms		
CLK TERM DURATION	1200ms		
HDMI FLT CNT SIG	100ms		
HDMI FLT CNT LOS	100ms		
UNSTABLE BAN CNT	3500ms		
HDMI Err Cnt	1		
HDMI ROBIN	ON		
HDMI Callback	OFF		
HDMI CTS Thld	8		
HDMI CTS Cnt1	1		
HDMI EQ	AUTO		
HDMI Write Type	Separate		
HDMI Switch	NONE		
DVI SET TIME	300ms		
Type Of PANEL KEY	Horizontal		
EcoSensor Support	OFF		
LEDMotionPlus Support	OFF		
Natural Mode Support	OFF		
All Share Support	OFF		
Relax Mode Support	OFF		
BT Support	OFF		
3D Support	OFF		
H Write			
HDMI Sync	DE		
HeadPhone Port			
FANET	OFF		
Support MultiMedia Key	ON		
Config_AV_PATH			

Factory Menu Name	Data	Range	Remark
Num of IPTV	0		
PVR RECORD NUM	0		
Num of RUI	0		
5 Way Funtion Key	NONE		
Contents Bar	OFF		
Num Of Tuner	1		

## ■ SVC

Factory Menu Name	Data	Range	Remark
Test pattern			
T-CON USB Download			



## 4.4. White Balance

### 4-4-1. Calibration

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

Option
Control
SVC
Expert
<b>ADC/WB</b>
Advanced

ADC

AV Calibration  
Comp Calibration  
PC Calibration  
HDMI Calibration

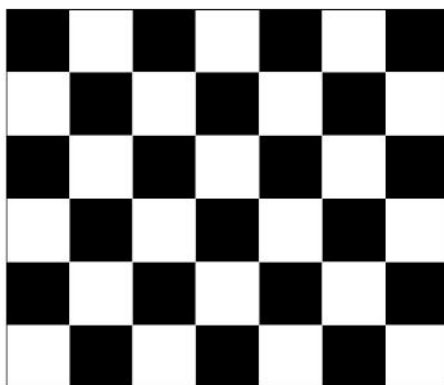
### 4-4-2. Service Adjustment

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 & Master MSPG925 Generator



(Chess Pattern)

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

Input mode	Calibration	Pattern
CVBS IN (Model_#1)	Perform in NTSC B&W Pattern #24	Lattice
Component IN (Model_#6)	Perform in 720p B&W Pattern #24	Lattice
PC Analog IN (Model_#21)	Perform in VESA XGA (1024x768) B&W Pattern #24	Lattice
HDMI IN	Perform in 720p 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 (PC)

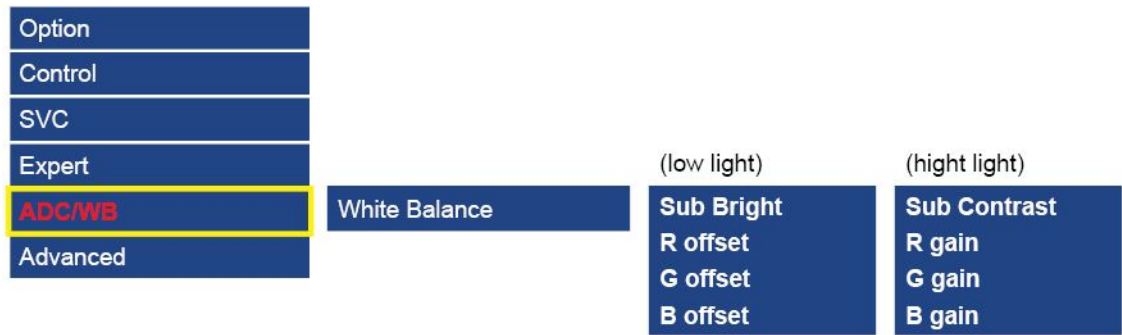
1. Apply the VESA XGA Lattice (N0. 21) pattern signal to the PC IN port.
2. Press the Source key to switch to "PC" mode.
3. Enter Service mode.
4. Select the "ADC" menu.
5. Select the "PC Calibration" menu.
6. In "PC Calibration Off" status, press the "▶" key to perform Calibration.
7. When Calibration is complete, it returns to the high-level menu.
8. You can see the change of the "PC 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.

4-4-3. Adjustment

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

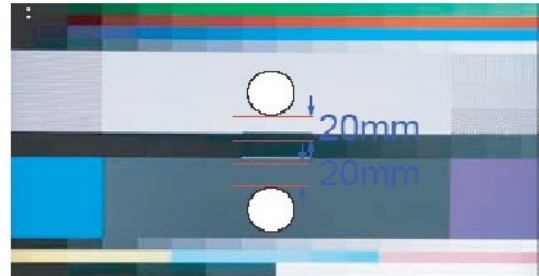


## 4.5. White Ratio (Balance) Adjustment

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. (Refer to Table 1, 2)

It varies with Panel's size and Specification.

- Equipment : CS-210
- Pattern: MIK K-7256 #92 "Flat W/B Pattern" as standard
- Alternate Equipment : 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)
- PC : Calibration at #24 Chessboard Pattern Manual adjustment #92 pattern ( VESA XGA (1024x768))
- 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.

### White Balance Manual adjustment

- LE32E420E2W

P-Mode Input source	Section		Adjustment Coordinate CA-210					
HDMI COMP VIDEO	W/B High		Hx	272	Hy	278	HY	-
	W/B Low		Lx	-	Ly	-	LY	-
MOVIE	W/B High		Hx	306	Hy	327	HY	-
	W/B Low		Lx	-	Ly	-	LY	-

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

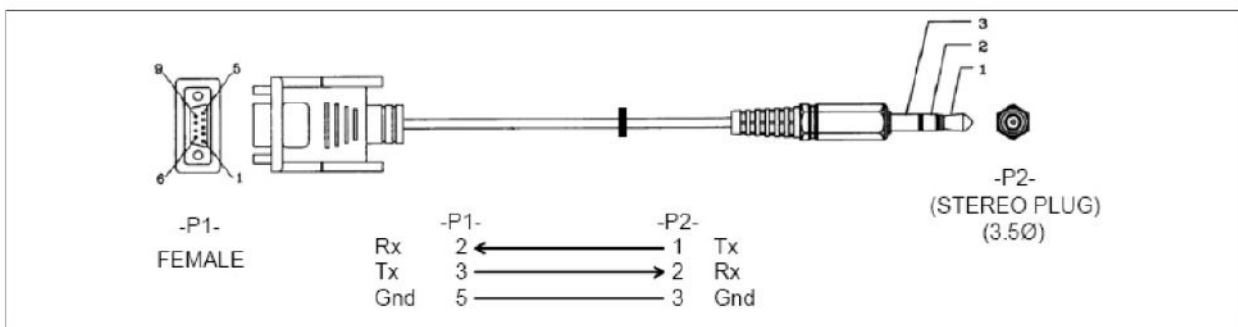
## 4.6. RS-232C

### 1. RS232C Control

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

### 2. Description of RS232C

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



## 4.7. Software Upgrade

Software Upgrade can be performed by downloading the latest firmware from [samsung.com](http://samsung.com) to a USB memory device.

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

### 4-7-1. 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	T-MST9DEUC : SW Ver.
Contro	T-MST9DEUS : SW Ver.
SVC	EDID : SUCCESS
Expert	HDCP : SUCCESS
ADC/WB	Option : 32A6AH2C,EU,420,NONE
Advanced	FactoryCS:*****
	T-MSXDEUCIP_***
	Omboot :=****
	SDAL_****
	RFS:MSATR-X9 ****
	20**_**_**
	Type : ****
	Model : ****
	CIP SUCCESS
	***
	***
	***
	Date Of Purchase : **/**/**
	*Main S/W
	*SubMicom S/W



## 4-7-2. How to Upgrade Software and Micom

Insert a USB drive containing the firmware upgrade downloaded from [samsung.com](http://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 folder named "T-MST9DEU" in USB memory stick.
  - Connect the USB.



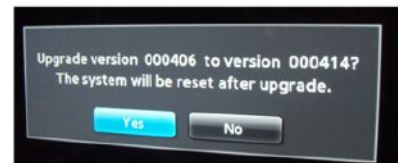
2. Click the "MENU" key in Remote Controller.
3. Select "Support" menu.
  - Locate the menu cursor "Software Upgrade" menu.



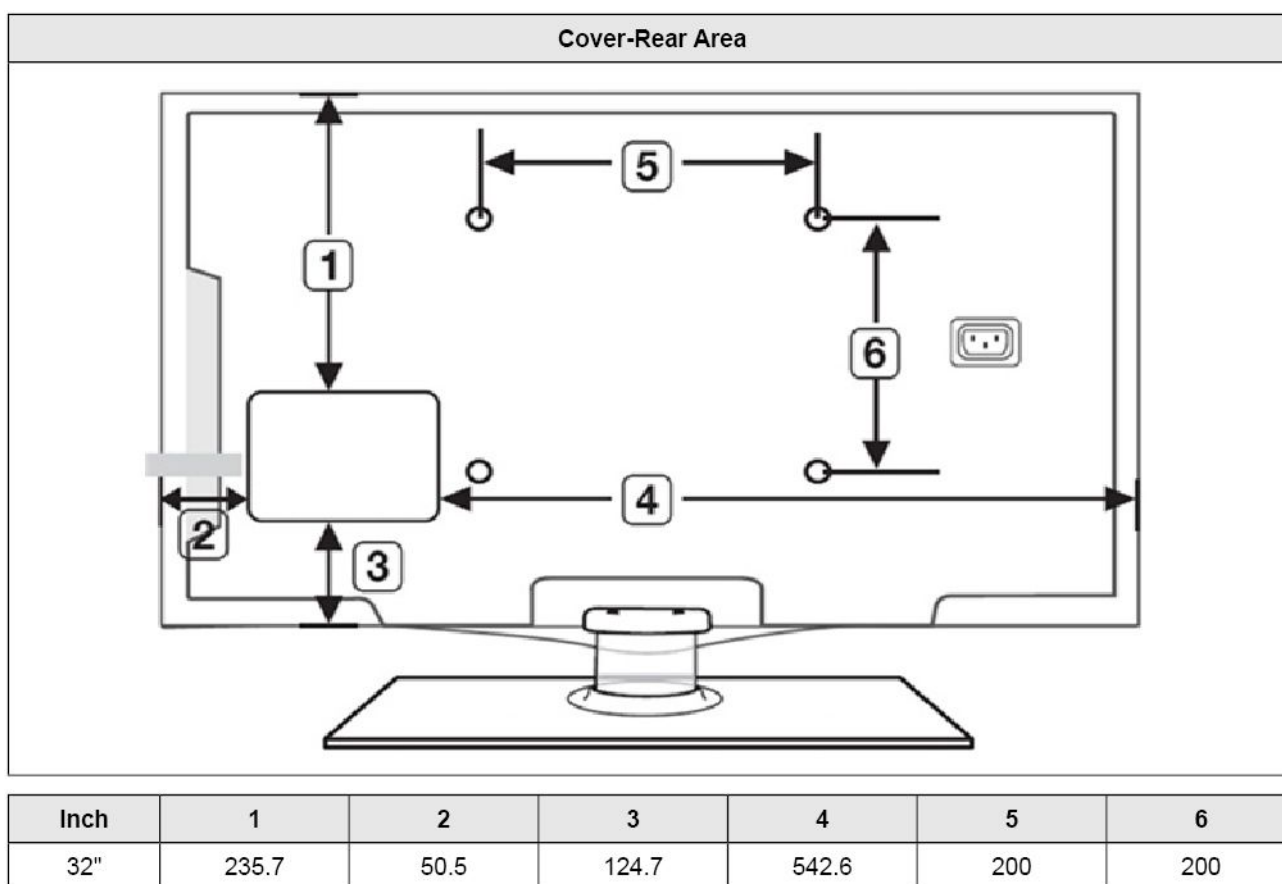
4. Locate the menu cursor "By USB" menu.



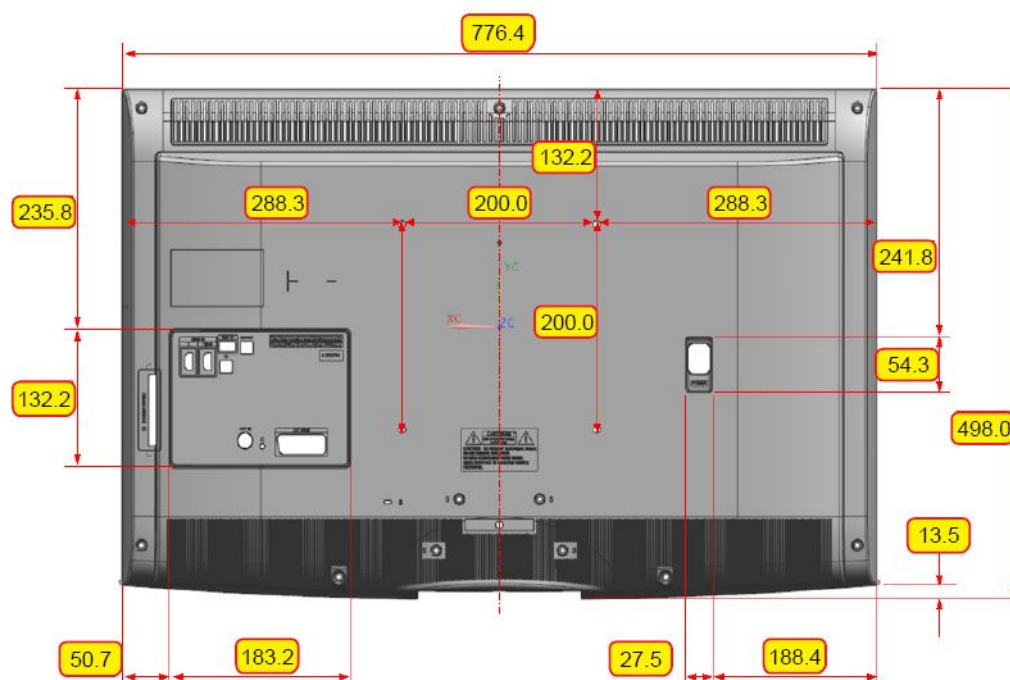
5. Click the "ENTER" key.
6. Click the "ENTER" key.
  - Wait for upgrade complete.
  - Check the Main SW version.



#### 4.8. Rear Cover Dimension

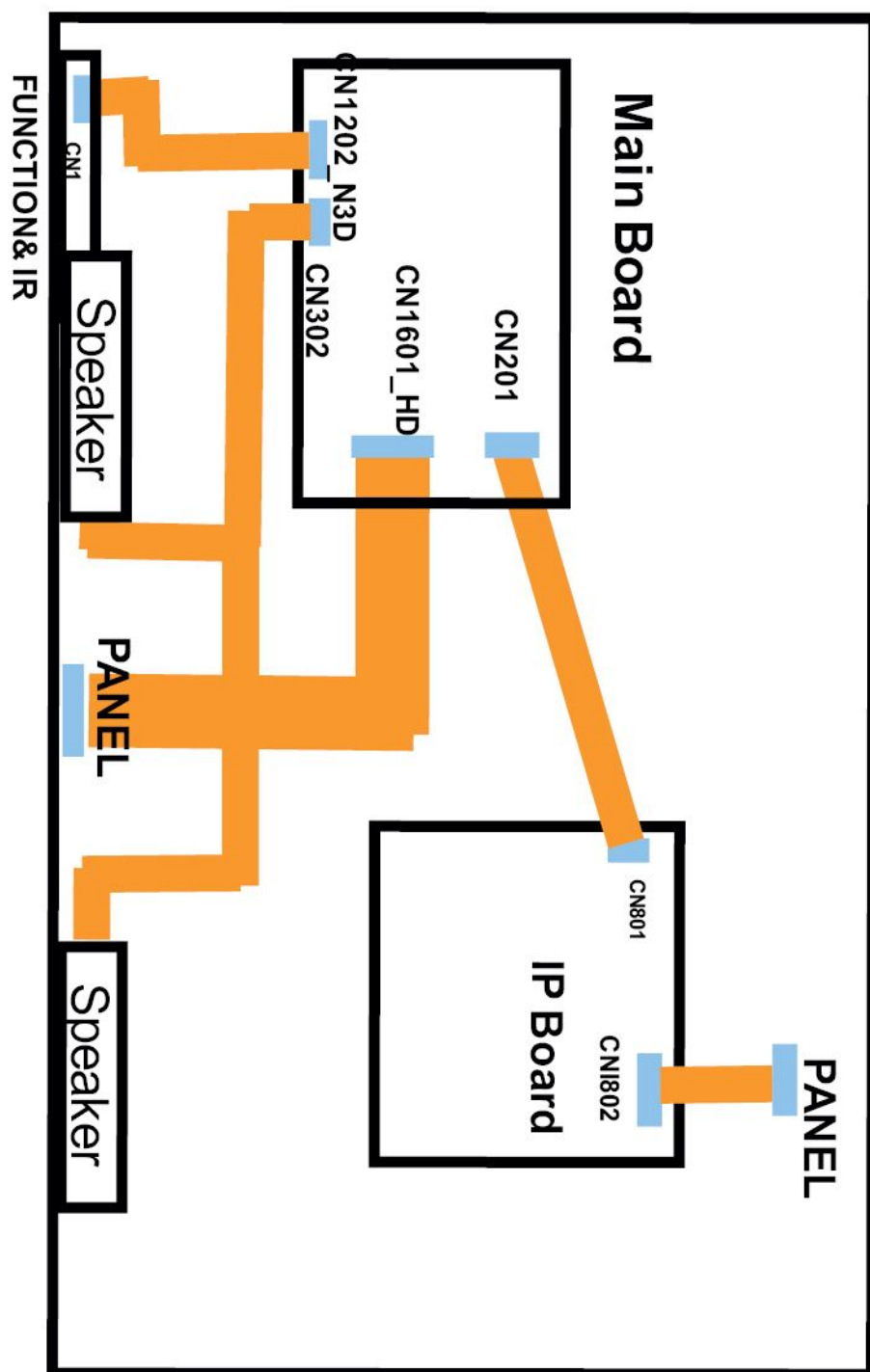


■ LE32E42\*E2W



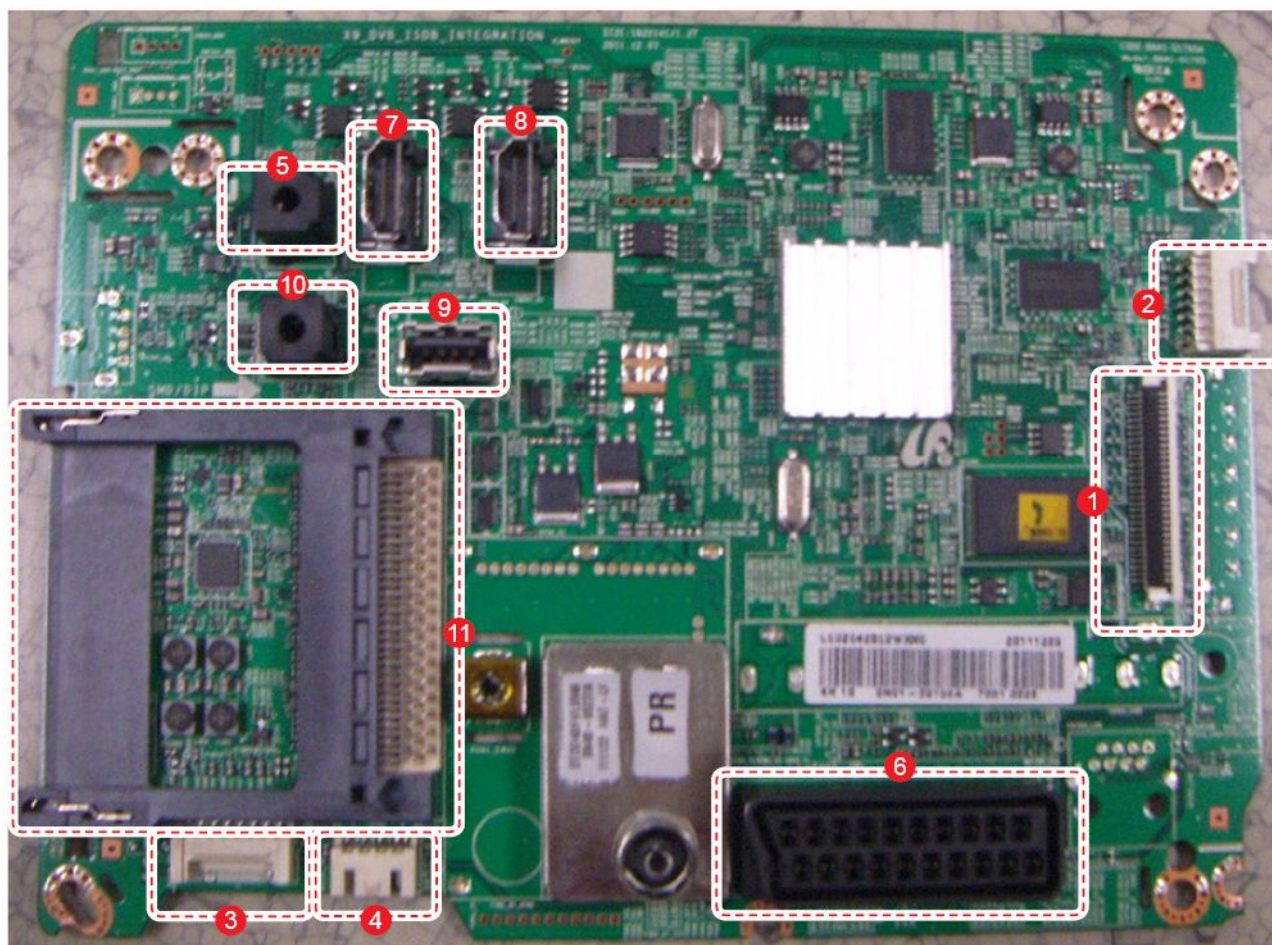
## 5. Wiring Diagram

### 5.1. Wiring Diagram



## 5.2. Connector

### ■ Main Board



**① CN1602\_HD (to Panel)**

1	PANEL_VCC	16	EVEN_TXCLK+
2	PANEL_VCC	17	EVEN_TXCLK-
3	PANEL_VCC	18	GND
4	PANEL_VCC	19	EVEN_TX2+
5	PANEL_VCC	20	EVEN_TX2-
6	GND	21	GND
7	GND	22	EVEN_TX1+
8	GND	23	EVEN_TX1-
9	WP_PANEL	24	GND
10	LVDS FORMAT	25	EVEN_TX0+
11	NC	26	EVEN_TX0-
12	GND	27	GND
13	EVEN_TX3+	28	TCON_SDA
14	EVEN_TX3-	29	TCON_SCL
15	GND	30	NC

**② CN201 (to Powr Board)**

1	B5.3V	8	GND
2	SW_POWER	9	B12VS
3	B5.3V	10	SW_INVERTER
4	A5.3V	11	B13V
5	GND	12	NC
6	GND	13	B13V
7	B12VS	14	PWM_DIMMING_OUT

**③ CN1202\_N3D (Function)**

1	IR	5	MSDA
2	GND	6	KEY_INPUT1
3	A3.3V	7	KEY_INPUT2
4	MSCL	8	LED_STB

**④ CN302 (Speaker)**

1	R+	3	L+
2	R-	4	L-



⑤ CN503_FPC (Debug)			
1	GND	5	TDB_FANET
2	RDB_FANET	6	RDB_FANET
3	TDB_FANET	7	RDB_FANET
4	TDB_FANET		

⑥ CN501 (Scart)			
1	SC_SR_OUT	12	NC
2	SC_SR_IN	13	GND
3	SC_SL_OUT	14	GND
4	GND	15	SC_R
5	GND	16	SC_FB
6	SC_SL_IN	17	GND
7	SC_B	18	GND
8	IDENT_SC	19	SC_CVBS_OUT
9	GND	20	SC_CVBS_IN
10	NC	21	GND
11	SC_G		

⑦ CN601 (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	SCL
6	HDMI1_RX1-	16	SDA
7	HDMI1_RX0+	17	GND
8	GND	18	5V
9	HDMI1_RX0-	19	HOT_PLUG
10	HDMI1_RXCLK+		

⑧ CN602 (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	SCL
6	HDMI2_RX1-	16	SDA
7	HDMI2_RX0+	17	GND
8	GND	18	5V
9	HDMI2_RX0-	19	HOT_PLUG
10	HDMI2_RXCLK+		

⑨ CN1501_U2 (USB1)			
1	USB_VCC	3	USB_DP+
2	USB_DM-	4	GND

⑩ CN301 (Monitor Out)			
1	GND	5	NC
2	SR_OUT	6	GND
3	SL_OUT	7	IDENT_HP
4	GND		



⑪ CN1801 (PCMCIA)			
1	GND	35	GND
2	EXT_DATA[3]	36	PCM_CD1
3	EXT_DATA[4]	37	TSO_DATA[3]
4	EXT_DATA[5]	38	TSO_DATA[4]
5	EXT_DATA[6]	39	TSO_DATA[5]
6	EXT_DATA[7]	40	TSO_DATA[6]
7	PCM_CE1	41	TSO_DATA[7]
8	EXT_ADDR[10]	42	PCM_CE2
9	PCM_OE	43	NC
10	EXT_ADDR[11]	44	PCM_IORD
11	EXT_ADDR[9]	45	PCM_IOWR
12	EXT_ADDR[8]	46	CH_START
13	EXT_ADDR[13]	47	CH_DATA[0]
14	EXT_ADDR[14]	48	CH_DATA[1]
15	PCM_WE	49	CH_DATA[2]
16	PCM_IRQA	50	CH_DATA[3]
17	CI_VCC	51	CI_VCC
18	CI_VCC	52	CI_VCC
19	CH_VALID	53	CH_DATA[4]
20	CH_CLK	54	CH_DATA[5]
21	EXT_ADDR[12]	55	CH_DATA[6]
22	EXT_ADDR[7]	56	CH_DATA[7]
23	EXT_ADDR[6]	57	TSO_CLK
24	EXT_ADDR[5]	58	PCM_RESET
25	EXT_ADDR[4]	59	PCM_WAIT
26	EXT_ADDR[3]	60	NC
27	EXT_ADDR[2]	61	PCM_REG
28	EXT_ADDR[1]	62	TSO_VALID
29	EXT_ADDR[0]	63	TSO_START
30	EXT_DATA[0]	64	TSO_DATA[0]
31	EXT_DATA[1]	65	TSO_DATA[1]
32	EXT_DATA[2]	66	TSO_DATA[2]
33	CI_VCC	67	GND
34	GND	68	GND

## 5.3. Connector Functions

Connector	Function
CN201 ↔ IP CNT	Supply main power and dimming signal from IP board to Main Board.
CN1602_HD <-> T-CON CNT	The LVDS signal transfered from Main Board to Panel .



5.4. Cables

Use	POWER CABLE (Main - IP 14P)	LVDS CALBE (Main - panel 30P)
Code No.	BN39-01449A (200mm)	BN96-13227A (107/77/83/118mm)
Image		



## GSPN (GLOBAL SERVICE PARTNER NETWORK)

Area	Web Site
Europe, MENA, CIS, Africa	<a href="https://gspn1.samsungcsportal.com">https://gspn1.samsungcsportal.com</a>
E.Asia, W.Asia, China, Japan	<a href="https://gspn2.samsungcsportal.com">https://gspn2.samsungcsportal.com</a>
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