



LED TV

Chassis: U74A
Model: UN32EH50*0F
UN37EH50*0F
UN40EH50*0F
UN46EH50*0F
UN50EH50*0F

SERVICE MANUAL

LED TV

Contents



UN**EH50*0F

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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.

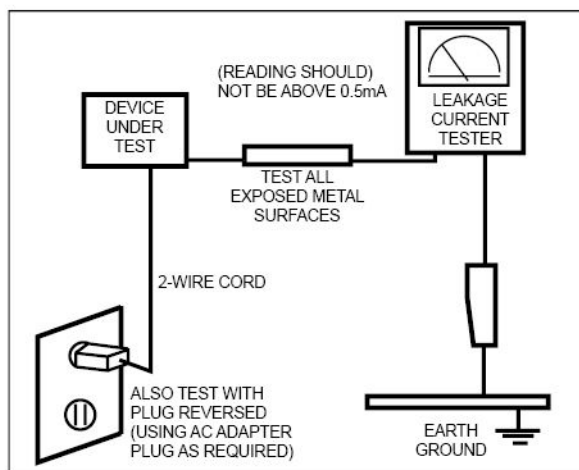
1-1-2. Servicing the LED TV

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 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

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

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 | UN**EH50*0F | | |
|---------------------------|--|-------------------|--|
| 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 | 29.1 x 19.6 x 7.5 inches / 738.3 x 498.2 x 191.7 mm |
| | | Set without Stand | 29.1 x 17.5 x 3.7 inches / 738.3 x 444.9 x 93.2 mm |
| | 37" | Set with Stand | 34.1 x 22.7 x 9.0 inches / 866.5 x 575.5 x 227.6 mm |
| | | Set without Stand | 34.1 x 20.4 x 3.7 inches / 866.5 x 519.2 x 93.0 mm |
| | 40" | Set with Stand | 36.5 x 23.9 x 9.0 inches / 927.6 x 606.4 x 227.6 mm |
| | | Set without Stand | 36.5 x 21.7 x 3.7 inches / 927.6 x 551.0 x 93.0 mm |
| | 46" | Set with Stand | 41.7 x 26.8 x 9.0 inches / 1059.8 x 680.7 x 227.6 mm |
| | | Set without Stand | 41.7 x 24.6 x 3.7 inches / 1059.8 x 625.6 x 94.3 mm |
| | 50" | Set with Stand | 44.8 x 28.5 x 9.0 inches / 1137.6 x 725.0 x 227.6 mm |
| | | Set without Stand | 44.8 x 26.4 x 3.7 inches / 1137.6 x 669.4 x 94.5 mm |

| Model | UN**EH50*0F | | |
|-----------------|-------------------|-------------------|--------------------|
| Weight | 32" | Set with Stand | 14.6 lbs / 6.6 kg |
| | | Set without Stand | 13.0 lbs / 5.9 kg |
| | 37" | Set with Stand | 22.5 lbs / 10.2 kg |
| | | Set without Stand | 17.6 lbs / 8.0 kg |
| | 40" | Set with Stand | 24.3 lbs / 11.0 kg |
| | | Set without Stand | 19.8 lbs / 9.0 kg |
| | 46" | Set with Stand | 30.9 lbs / 14.0 kg |
| | | Set without Stand | 26.5 lbs / 12.0 kg |
| | 50" | Set with Stand | 40.3 lbs / 18.3 kg |
| | | Set without Stand | 34.6 lbs / 15.7 kg |
| Panel Type | Anti Glare | | |
| Internal Memory | None | | |
| DDR | 128 Mbyte | | |
| Feature | Media Play(Movie) | | |

2-1-2. Feature & Specifications

| Model | UN32EH50*0F | |
|--|--|--|
| Feature | | |
| <ul style="list-style-type: none">• Digital-TV, RF, 2-HDMI, 1-Component, 1-A/V, 1-USB2.0• Brightness : 370 cd/m²• High Contrast Ratio : MEGA• Response Time : 8 ms• CMR : 120 | | |
| Specifications | | |
| Item | Description | |
| LCD Panel | 32 inch FHD 60 Hz | |
| 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 | 27.7 (H) x 15.7 (V) inches (703.4 (H) x 397.8 (V) mm) | |
| AC Power Voltage & Frequency | AC 110 V ~ 120 V, 60 Hz | |
| Power Consumption | 70 W (Under 0.3 W, Stand by) | |
| Dimensions Set (W x H x D)* * Width x High x Depth | Set with Stand | 29.1 x 19.6 x 7.5 inches / 738.3 x 498.2 x 191.7 mm |
| | Set without Stand | 29.1 x 17.5 x 3.7 inches / 738.3 x 444.9 x 93.2 mm |
| Weight | Set with Stand | 14.6 lbs / 6.6 kg |
| | Set without Stand | 13.0 lbs / 5.9 kg |
| TV System | Tunning | Frequency Synthesize (Refer to detailed Frequency Table) |
| | System | ATSC & Clear QAM |
| | Sound | NTSC-M |
| 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">• RF : 20 Hz ~ 15.4 kHz• AV/Componet/HDMI : 20 Hz ~ 20 kHz | |
| Note: Dolby Digital Plus/Pulse, USB2.0, Film mode, Energy Saving, Eco sensor | | |



| Model | UN37EH50*0F | |
|--|--|--|
| Feature | | |
| <ul style="list-style-type: none">• Digital-TV, RF, 2-HDMI, 1-Component, 1-A/V, 1-USB2.0• Brightness : 300 cd/m²• High Contrast Ratio : MEGA• Response Time : 6.5 ms• CMR : 120 | | |
| Specifications | | |
| Item | Description | |
| LCD Panel | 37 inch FHD 60 Hz | |
| Scanning Frequency | Horizontal : 60 kHz ~ 73 kHz (Automatic) Vertical : 47 Hz ~ 63 Hz (Automatic) | |
| Display Colors | 1.07G 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 | 32.3 (H) x 18.1 (V) inches (819.4 (H) x 460.9 (V) mm) | |
| AC Power Voltage & Frequency | AC 110 V ~ 120 V, 60 Hz | |
| Power Consumption | 79 W (Under 0.3 W, Stand by) | |
| Dimensions Set (W x H x D)* * Width x High x Depth | Set with Stand | 34.1 x 22.7 x 9.0 inches / 866.5 x 575.5 x 227.6 mm |
| | Set without Stand | 34.1 x 20.4 x 3.7 inches / 866.5 x 519.2 x 93.0 mm |
| Weight | Set with Stand | 22.5 lbs / 10.2 kg |
| | Set without Stand | 17.6 lbs / 8.0 kg |
| TV System | Tunning | Frequency Synthesize (Refer to detailed Frequency Table) |
| | System | ATSC & Clear QAM |
| | Sound | NTSC-M |
| 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">• RF : 20 Hz ~ 15.4 kHz• AV/Componet/HDMI : 20 Hz ~ 20 kHz | |
| Note: Dolby Digital Plus/Pulse, USB2.0, Film mode, Energy Saving, Eco sensor | | |

| Model | UN40EH50*0F | |
|--|--|--|
| Feature | | |
| <ul style="list-style-type: none">• Digital-TV, RF, 2-HDMI, 1-Component, 1-A/V, 1-USB2.0• Brightness : 340 cd/m²• High Contrast Ratio : MEGA• Response Time : 8 ms• CMR : 120 | | |
| Specifications | | |
| Item | Description | |
| LCD Panel | 40 inch FHD 60 Hz | |
| 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 | 35.1 (H) x 19.8 (V) inches (890.6 (H) x 503.2 (V) mm) | |
| AC Power Voltage & Frequency | AC 110 V ~ 120 V, 60 Hz | |
| Power Consumption | 100 W (Under 0.3 W, Stand by) | |
| Dimensions Set (W x H x D)* * Width x High x Depth | Set with Stand | 36.5 x 23.9 x 9.0 inches / 927.6 x 606.4 x 227.6 mm |
| | Set without Stand | 36.5 x 21.7 x 3.7 inches / 927.6 x 551.0 x 93.0 mm |
| Weight | Set with Stand | 24.3 lbs / 11.0 kg |
| | Set without Stand | 19.8 lbs / 9.0 kg |
| TV System | Tunning | Frequency Synthesize (Refer to detailed Frequency Table) |
| | System | ATSC & Clear QAM |
| | Sound | NTSC-M |
| 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">• RF : 20 Hz ~ 15.4 kHz• AV/Componet/HDMI : 20 Hz ~ 20 kHz | |
| Note: Dolby Digital Plus/Pulse, USB2.0, Film mode, Energy Saving, Eco sensor | | |

| Model | UN46EH50*0F | |
|--|--|--|
| Feature | | |
| <ul style="list-style-type: none">• Digital-TV, RF, 2-HDMI, 1-Component, 1-A/V, 1-USB2.0• Brightness : 350 cd/m²• High Contrast Ratio : MEGA• Response Time : 4 ms• CMR : 120 | | |
| Specifications | | |
| Item | Description | |
| LCD Panel | 46 inch FHD 60 Hz | |
| 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 | 40.3 (H) x 22.7 (V) inches (1023.0 (H) x 577.6 (V) mm) | |
| AC Power Voltage & Frequency | AC 110 V ~ 120 V, 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 with Stand | 41.7 x 26.8 x 9.0 inches / 1059.8 x 680.7 x 227.6 mm |
| | Set without Stand | 41.7 x 24.6 x 3.7 inches / 1059.8 x 625.6 x 94.3 mm |
| Weight | Set with Stand | 30.9 lbs / 14.0 kg |
| | Set without Stand | 26.5 lbs / 12. 0 kg |
| TV System | Tunning | Frequency Synthesize (Refer to detailed Frequency Table) |
| | System | ATSC & Clear QAM |
| | Sound | NTSC-M |
| 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">• RF : 20 Hz ~ 15.4 kHz• AV/Componet/HDMI : 20 Hz ~ 20 kHz | |
| Note: Dolby Digital Plus/Pulse, USB2.0, Film mode, Energy Saving, Eco sensor | | |

| Model | UN50EH50*0F | |
|--|--|--|
| Feature | | |
| <ul style="list-style-type: none">• Digital-TV, RF, 2-HDMI, 1-Component, 1-A/V, 1-USB2.0• Brightness : 350 cd/m²• High Contrast Ratio : MEGA• Response Time : 4 ms• CMR : 120 | | |
| Specifications | | |
| Item | Description | |
| LCD Panel | 50 inch FHD 60 Hz | |
| 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 | 43.1 (H) x 24.3 (V) inches (1095.8 (H) x 616.4 (V) mm) | |
| AC Power Voltage & Frequency | AC 110 V ~ 120 V, 60 Hz | |
| Power Consumption | 121 W (Under 0.3 W, Stand by) | |
| Dimensions Set (W x H x D)* * Width x High x Depth | Set with Stand | 44.8 x 28.5 x 9.0 inches / 1137.6 x 725.0 x 227.6 mm |
| | Set without Stand | 44.8 x 26.4 x 3.7 inches / 1137.6 x 669.4 x 94.5 mm |
| Weight | Set with Stand | 40.3 lbs / 18.3 kg |
| | Set without Stand | 34.6 lbs / 15.7 kg |
| TV System | Tunning | Frequency Synthesize (Refer to detailed Frequency Table) |
| | System | ATSC & Clear QAM |
| | Sound | NTSC-M |
| 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">• RF : 20 Hz ~ 15.4 kHz• AV/Componet/HDMI : 20 Hz ~ 20 kHz | |
| Note: Dolby Digital Plus/Pulse, USB2.0, Film mode, Energy Saving, Eco sensor | | |

2-1-3. Specification Comparison to Old Models

| Model | UE5L(UN**EH50*0F) | | UD5R(UN**D5500RF) | |
|------------------------|---|---|---|--|
| Design |  | |  | |
| Display Type | LED TV | | LED TV | |
| Built-in Tuner | ○ | | ○ | |
| Resolution | 1920 x 1080 | | 1920 x 1080 | |
| LCD Panel | TFT LCD Panel 60 Hz | | TFT LCD Panel 60 Hz | |
| Screen Size | 32" / 37" / 40" / 46" / 50" | | 32" / 40" | |
| Picture ratio | 16 : 9 | | 16 : 9 | |
| Power Consumption | 32" | Under 70 W (under 0.3 W, Standby) | 32" | Under 80 W (under 0.3 W, Standby) |
| | 37" | Under 79 W (under 0.3 W, Standby) | | |
| | 40" | Under 100 W (under 0.3 W, Standby) | | |
| | 46" | Under 110 W (under 0.3 W, Standby) | 40" | Under 100 W (under 0.3 W, Standby) |
| | 50" | Under 121 W (under 0.3 W, Standby) | | |
| Dimensions (W x H x D) | 32" | 29.1 x 19.6 x 7.5 inches / 738.3 x 498.2 x 191.7 mm_with stand | 32" | 30.2 x 20.9 x 9.4 inches_with stand |
| | | 29.1 x 17.5 x 3.7 inches / 738.3 x 444.9 x 93.2 mm_without stand | | |
| | 37" | 34.1 x 19.6 x 9.0 inches / 866.5 x 575.5 x 227.6 mm_with stand | | 30.2 x 18.4 x 1.2 inches_without stand |
| | | 34.1 x 22.7 x 3.7 inches / 866.5 x 519.2 x 93.0 mm_with stand | | |
| | 40" | 36.5 x 23.9 x 9.0 inches / 927.6 x 606.4 x 227.6 mm_with stand | 40" | 37.6 x 25.1 x 10.0 inches_with stand |
| | | 36.5 x 21.7 x 3.7 inches / 927.6 x 551.0 x 93.0 mm_without stand | | |
| | 46" | 41.7 x 26.8 x 9.0 inches / 1059.8 x 680.7 x 227.6 mm_with stand | | 37.6 x 22.6 x 1.2 inches_without stand |
| | | 41.7 x 24.6 x 3.7 inches / 1059.8 x 625.6 x 94.3 mm_without stand | | |
| | 50" | 44.8 x 28.5 x 9.0 inches / 1137.6 x 725.0 x 227.6 mm_with stand | | |
| | | 44.8 x 26.4 x 3.7 inches / 1137.6 x 669.4 x 94.5 mm_without stand | | |

| Model | UE5L(UN**EH50*0F) | | UD5R(UN**D5500RF) | |
|-------------------------|--------------------------|-----------------------------------|--------------------------|-------------------------|
| Weight | 32" | 14.55 lbs / 6.6 kg_with stand | 32" | 21.91 lbs_with stand |
| | | 13.01 lbs / 5.9 kg_without stand | | |
| | 37" | 22.5 lbs / 10.2 kg_with stand | 32" | 15.88 lbs_without stand |
| | | 17.6 lbs / 8.0 kg_without stand | | |
| | 40" | 24.25 lbs / 11.0 kg_with stand | 40" | 31.59 lbs_with stand |
| | | 19.84 lbs / 9.0 kg_without stand | | |
| | 46" | 30.86 lbs / 14.0 kg_with stand | | 24.38 lbs_without stand |
| | | 26.46 lbs / 12.0 kg_without stand | | |
| Brightness | 32" | 40.3 lbs / 18.3 kg_with stand | | |
| | | 34.6 lbs / 15.7 kg_without stand | | |
| | | | | |
| | 37" | 370 cd/m ² | | 330 cd/m ² |
| | 40" | 300 cd/m ² | | |
| Contrast Ratio | 46" | 340 cd/m ² | 40" | 330 cd/m ² |
| | 46" | 315 cd/m ² | | |
| | 50" | 350 cd/m ² | | |
| Picture Enhancer | MEGA | | MEGA | |
| Wide Color Enhance Plus | HyperReal Engine (X9N) | | HyperReal Engine (X5/X9) | |
| Equalizer | Wide Color Enhance Plus | | Wide Color Enhance Plus | |
| Auto Volume Control | 5 Band | | 5 Band | |
| Surround Sound | O | | O | |
| Speaker Output | Dolby Digital Plus/Pulse | | Dolby Digital Plus | |
| PIP | 10 W x 10 W | | 10 W x 10 W | |
| Function | X | | O | |
| Caption | Jog function | | Touch function | |
| Game Mode | O | | O | |
| Energy Saving | O | | O | |
| Network | O | | O | |
| Anynet+ | X | | DLNA | |
| Antenna | X | | O | |
| | 1(Cable/Air) | | 1(Cable/Air) | |

2.2. Detail Factory Option

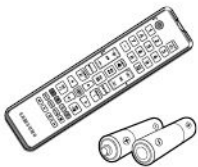




NOTE

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 | | | UN32EH50*0F | UN37EH50*0F | UN40EH50*0F | UN46EH50*0F | UN50EH50*0F |
|------------|------------------|----------------------|--------------|-------------|--------------|-----------------------------|-------------|
| Panel | Vendor | | AML | CHILIN | AML | CHILIN AMLCD | CHILIN |
| | Code | | BN95-00586A | BN07-01194A | BN95-00587A | BN07-01102A BN95-00589A | BN07-01140A |
| | Spec. | | LTJ320HN07-V | DE370BGA-C1 | LTJ400HM08-W | DE460BGM-C1 LTJ460HN05-V | DE500BGM-C1 |
| SMPS | Vendor | | SEM | SEM | SEM | SEM | HANSOL |
| | Code | | BN44-00493A | BN44-00496A | BN44-00496A | BN44-00497A | BN44-00499A |
| | Spec. | | PSLF570A04A | PSLF760C04A | PSLF760C04A | PSLF860C04A | PD55AV1_CHS |
| Byte | Item | Chassis Ass'y | BN91-06352B | BN91-08831V | BN91-08843D | BN91-06352D | BN91-08831R |
| 0 | Factory Reset | PBA Ass'y code | BN94-04577B | BN94-05764V | BN94-05569D | BN94-04577D | BN94-05764R |
| 1 | Type | | 32A6AF0D | 37P6AF0D | 40A6AF0D | 46P6AF0D 46A6AF0D | 50P6AF0D |
| 2 | Model | | E5000 | E5000 | E5000 | E5000 | E5000 |
| 3 | SVC Model | | 5000 | 5000 | 5000 | 5000 | 5000 |
| 4 | Local Set | | Other | Other | Other | Other | Other |
| 5 | Tuner | | SI_ATC2 | SI_ATC2 | SI_ATC2 | SI_ATC2 | SI_ATC2 |
| 6 | Ch Table | | SAMEX | SAMEX | SAMEX | SAMEX | SAMEX |
| 7 | Front Color | | U-S-C-5K | U-S-C-5K | U-S-C-5K | U-S-C-5K | U-S-C-5K |

2.3. Accessories

| Product | Description | Code. No | Remark |
|---|---------------------------------------|-------------|---------------------------------------|
|  | Remote Control Batteries (AAA x 2) | AA59-00600A | Samsung Electronics Service center |
|  | Power Cord | 3903-000599 | |
|  | Owners Manual | BN68-03956A | |

3. Disassembly and Reassembly

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


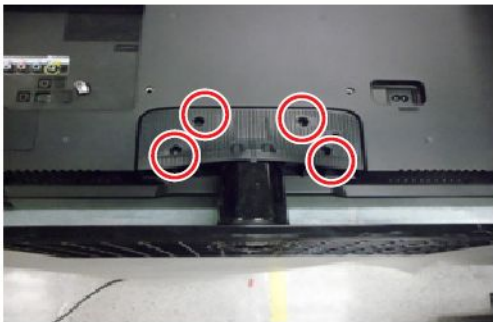










This LED TV contains electrostatically sensitive devices. Use caution when handling these components.

3.1. Disassembly and Reassemble



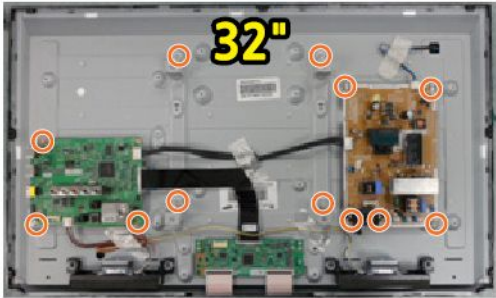

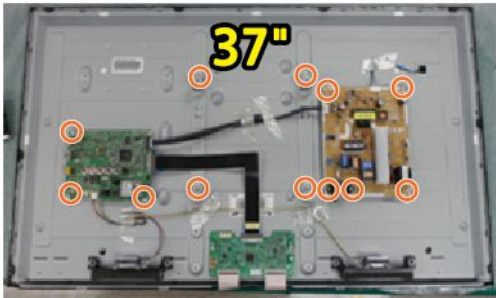
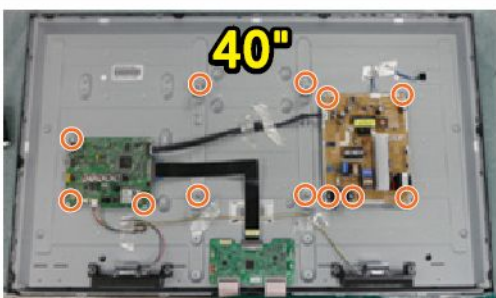
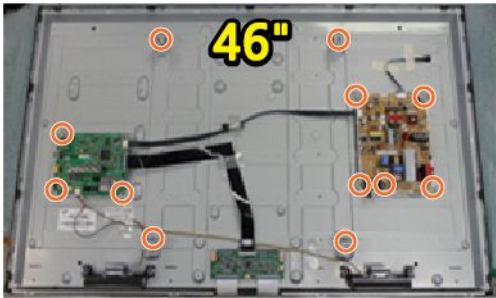
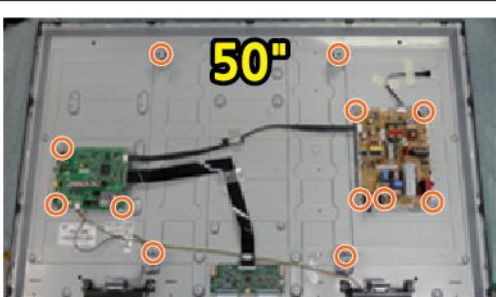
1. Disconnect the LED TV from the power source before disassembly.
2. Follow these directions carefully; never use metal instruments to pry apart the cabinet.
3. If there is no additional coment, it is same for all inches.

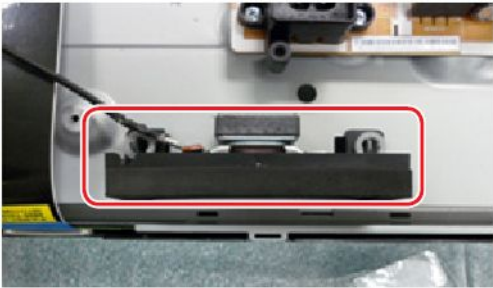
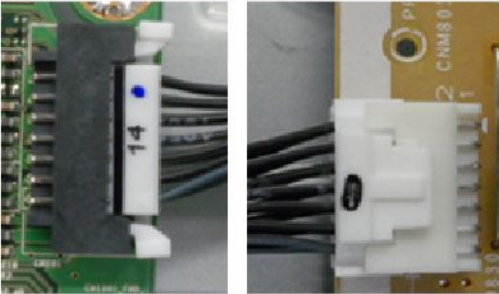


| Description | Picture Description | Screws |
|--|--|--|
| 1 Place TV face down on cushioned table. |  | |
| 2 Remove 4 screws from the Stand. |  |  6003-001782 |
| 3 Remove Stand. |  | |


| Description | Picture Description | Screws |
|--|--|---|
| <p>4 Remove the 1 screw of Cover Jack.</p> <p>Remove 10 screws of Cover-Middle.</p> |   |  <p>6003-001782</p>  <p>6003-002755</p> |
| <p>5 Remove the Cover Jack.</p> <p>Remove the Cover-Middle.</p> |   | |

| Description | Picture Description | Screws |
|---|---------------------|-----------------|
| 6 Disconnect the Function Assy Cable. | | |
| | | |
| 7 Remove the screws of Rear-Cover. <ul style="list-style-type: none">• 32" : 12 EA• 37"/40" : 13 EA• 46"/50" : 17 EA | | 6003-001782 |
| | | 6003-002755 |
| | | |

| Description | Picture Description | Screws |
|--------------------------|---------------------|--------|
| 8 Remove the Rear-Cover. | | |
| | | |

| Description | Picture Description | Screws |
|---|--|---|
| <div>9</div> <div>Remove the screws of Main Board and SMPS Board and Panel.</div> <div><div>• 32" : 12 EA</div><div>• 37" : 12 EA</div><div>• 40" : 12 EA</div><div>• 46" : 12 EA</div><div>• 50" : 12 EA</div></div> |  | <div></div> <div>6001-002756</div> |
| |  | |
| |  | |
| |  | |
| |  | |

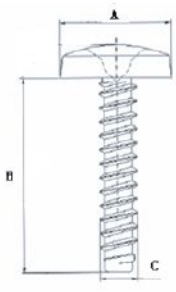
| Description | Picture Description | Screws |
|---|--|--------|
| 10 Remove the Speakers and Power Cables. |  | |
| |  | |
| 11 Remove the LVDS Cable and Panel Drive Cable. |  | |
| |  | |

| Description | Picture Description | Screws |
|----------------------------------|--|--------|
| 12 Completed disassembly. |  | |

**NOTE**

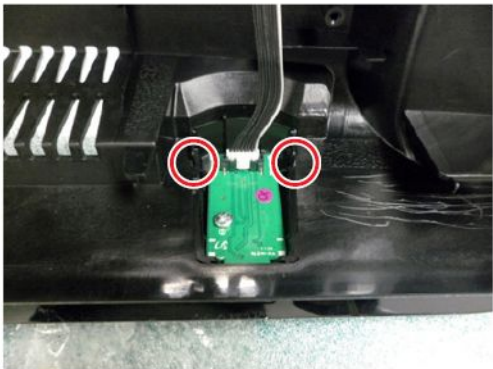
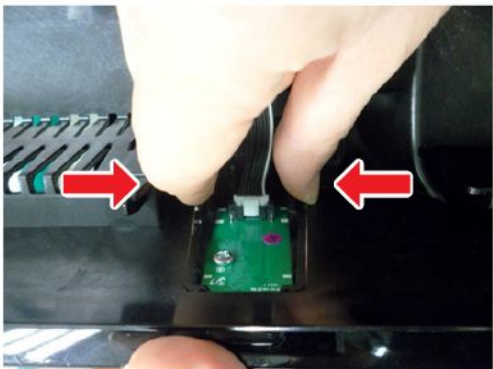
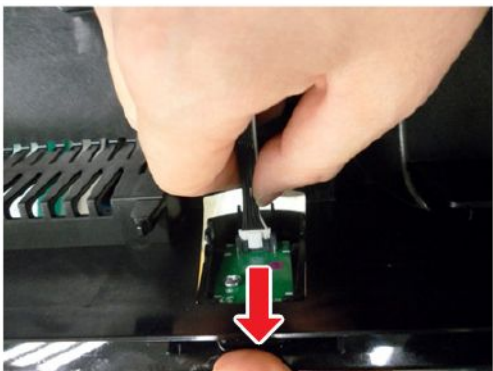
Reassembly procedures are in the reverse order of disassembly procedures.

■ 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 | 32" : 13 EA 37" : 13 EA 40" : 14 EA 46" : 18 EA 50" : 18 EA | |
| 6001-002755 | BLACK | 7.1~7.5 | 5.7~6.0 | 2.98~3.02 | 32" : 4 EA 37" : 4 EA 40" : 4 EA 46" : 12EA 50" : 12EA | |
| 6001-002756 | WHITE | 7.1~7.5 | 5.7~6.0 | 2.98~3.02 | 12 EA | |

3.2. Assy Board P-Jog Switch & Ir

■ How to disassembly

| Description | Picture Description | Refer |
|---------------------------------------|--|-------|
| 1 Check the 2 Locking Holders. |  | |
| 2 Press both holders. |  | |
| 3 Remove the Function Assy. |  | |

■ How to assembly

| Description | Picture Description | Refer |
|--|--|-------|
| 1 Check the locking hole. |  | |
| 2 Combine the function assy to locking hole. |  | |
| 3 Press the function assy to TV. |  | |

When you want to ignore the funtion key actions

Option

Control

SVC

Expert

ADC/WB

Advanced




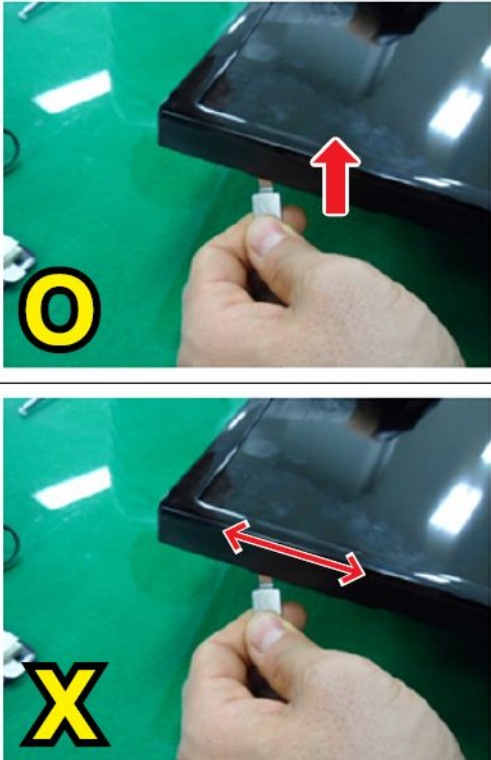
Config Option




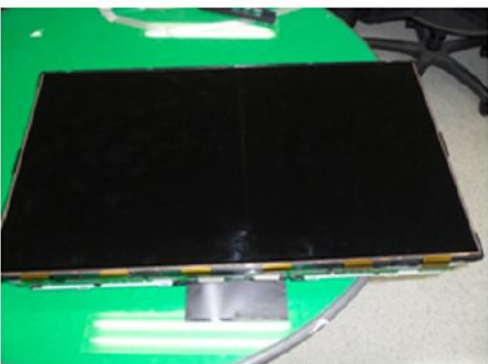
Navigation Key Func

0 : New Function (Naviagtion) Key [Default]
1 : Old Function (Touch) Key
2 : Do not work Function key




3.3. Disassembly(PTC)

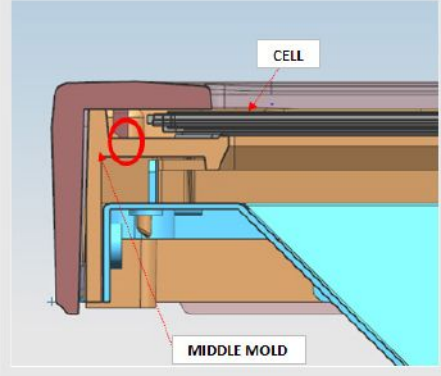

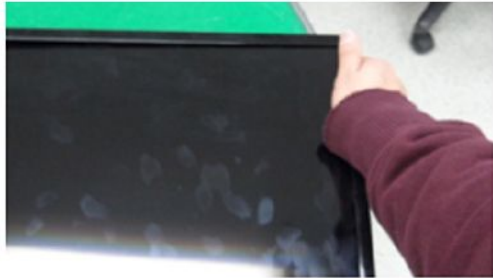



■ How to disassembly


| Description | Picture Description | Refer |
|---|--|-------|
| 1 Place TV face up on cushioned table. |  | |
| 2 Remove the ASSY Function assy. |  | |
| 3 Spread the both sides of PTC upper (marked "▼") by use the tool. <div data-bbox="213 1272 651 1402"> <p>! CAUTION</p> <p>Do not scratch on both side by use tool. Gate Cof will be damaged.</p> </div>  |  | |

| Description | Picture Description | Refer |
|--|--|-------|
| 4 Separate the left and right side of the PTC as shown. |  | |
| 5 Separate the Bottom of the PTC as shown |  | |
| 6 Raise up the PTC Bottom. |  | |
| 7 Disassembly is complete. |  | |

■ How to reassembly

| Description | Picture Description | Refer |
|--|--|-------|
| <div>1</div> <div>Attach the PTC Bottom first to the Panel.</div> |  | |
| |  | |
| <div>2</div> <div>Secure the plastic latch on the left and right side of the PTC as shown.</div> |  | |

| Description | Picture Description | Refer |
|--|--|-------|
| <p>3 Visually inspect the spacing between the PTC and the Panel for equal clearance.</p> <p>! CAUTION Combine to stick the PTC Rib into the middle mold.</p>  |  | |
| |  | |
| |  | |
| |  | |
| |  | |

| Description | Picture Description | Refer |
|--------------------------------|--|-------|
| 4 Assembly is complete. |  | |

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

| GenoaS | GenoaS FRC Post | Picture | Problem |
|--------|-----------------|---------|--------------------------------------|
| OK | OK | NG | Main Board or Signal Source |
| NG | OK | NG | Main Board |
| NG | NG | NG | Main or LVDS cable or T-con or Panel |

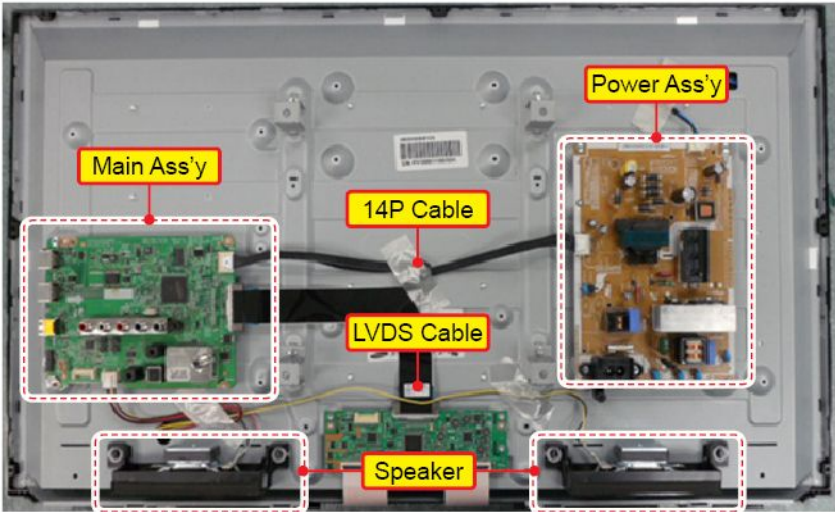
Only for HDMI mode (additional check)

| 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 GenoaS 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)

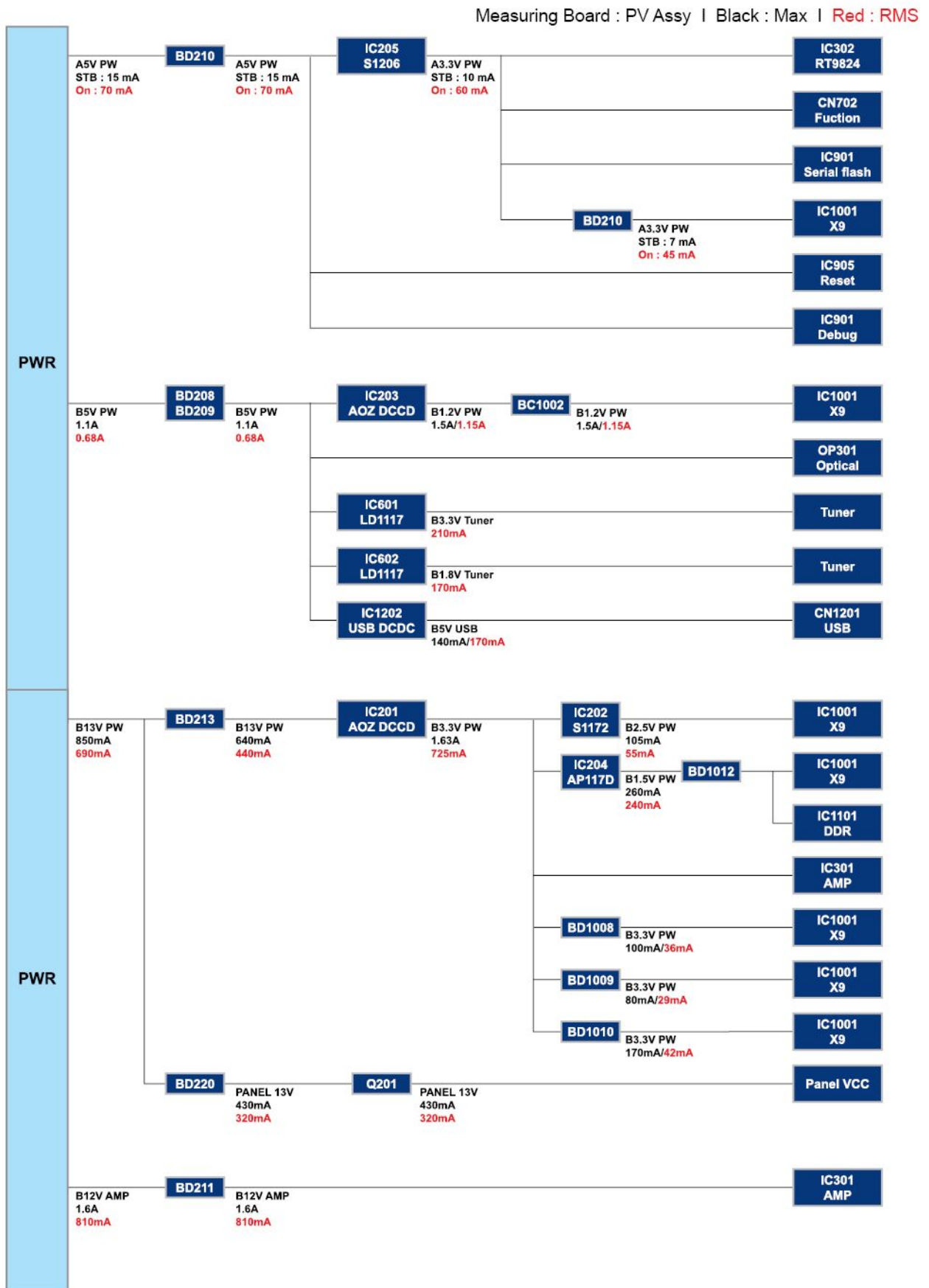
■ Inside View



| Main Assy (CN201) | | | | Power Assy (CMN803) | | | |
|-------------------|-------|----|--------|---------------------|-------|----|--------|
| 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 | B13V | 11 | B13V | 12 | B13V |
| 13 | B13V | 14 | B13V | 13 | B13V | 14 | B13V |

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

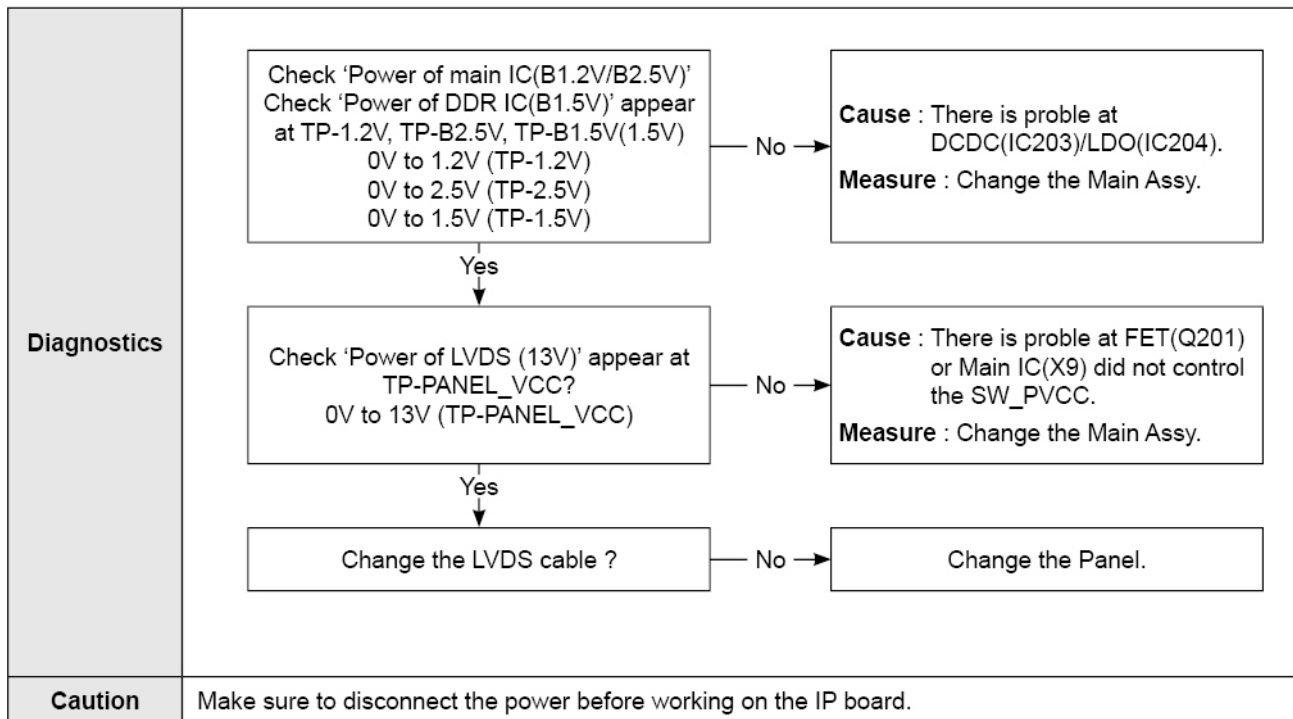
■ Power-Tree(X9 NonOS)



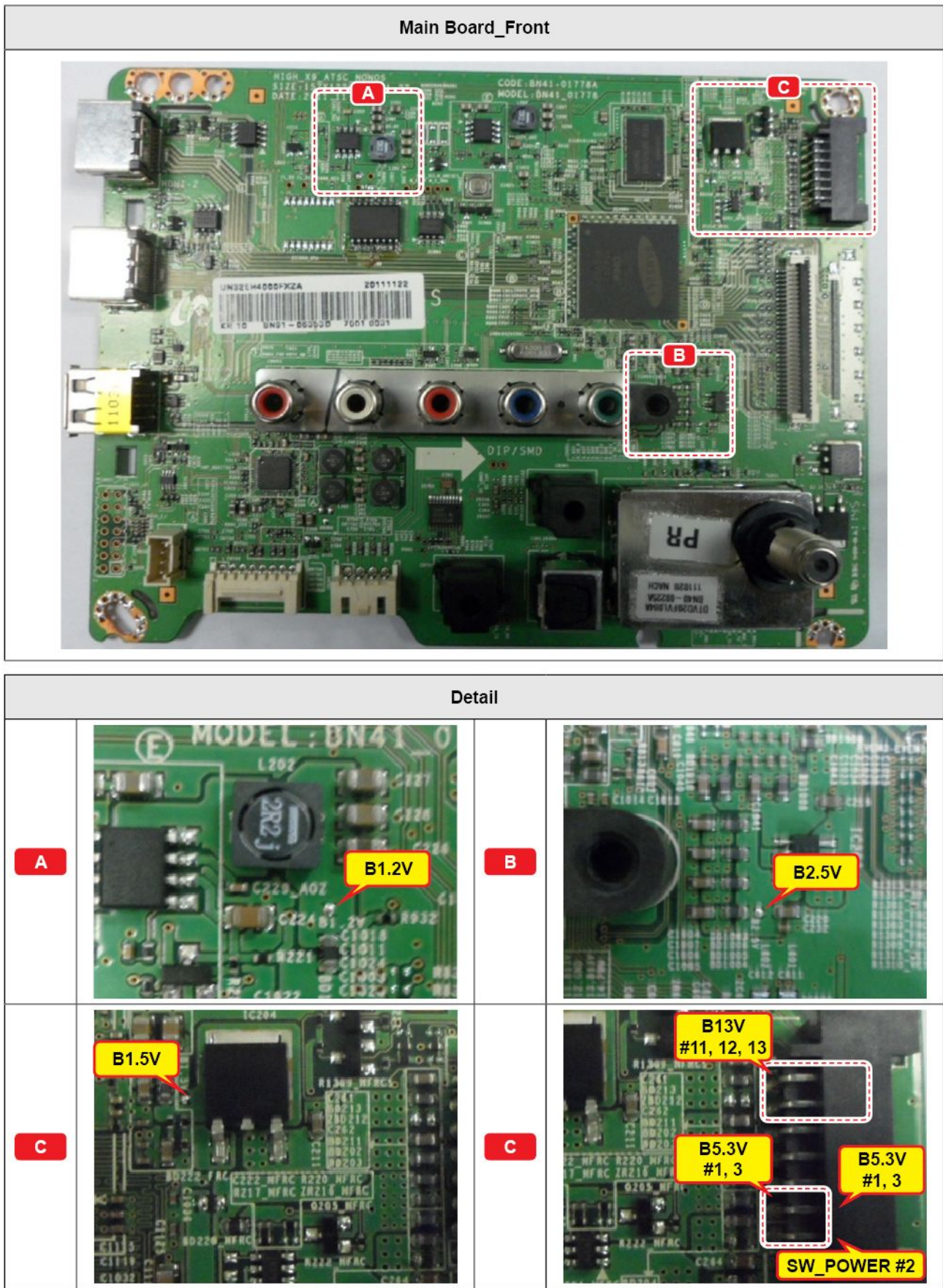
4.2. How to check fault symptom

■ NO Power and No Video

| | |
|--------------------------|---|
| Symptom | <ul style="list-style-type: none"> 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 | <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"> 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 | <pre> graph TD Start[Power cord on.] -- Yes --> Check1[Check 'Stand-By A5.3V' 5.3V appear at BD210? 0V to 5.3V (CN201 #4)] Check1 -- No --> Cause1[Cause : There did not supply the power from SMPS. Measure : Change 14p power cable and SMPS.] Check1 -- Yes --> SetOn[Set On.] SetOn -- Yes --> Check2[Check 'SW_POWER' more than 3.3V appear at CN201(#2) ? 0V to 3.3V↑ (CN201 #2)] Check2 -- No --> Cause2[Cause : Main IC(X9) did not control the SW_Power. Measure : Change the Main Assy] Check2 -- Yes --> 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 #11,12,13) 0V to 5.3V (CN201 #1,3)] Check3 -- No --> Cause3[Cause : There did not supply the power from SMPS. Measure : Change 14p power cable and SMPS.] Check3 -- Yes --> End[] </pre> <p>The flowchart starts with 'Power cord on.'. If 'Yes', it checks if 'Stand-By A5.3V' 5.3V appears at BD210 (CN201 #4). If 'No', the cause is 'There did not supply the power from SMPS' and the measure is 'Change 14p power cable and SMPS.'. If 'Yes', it proceeds to 'Set On.'. If 'Set On.' is 'Yes', it checks if 'SW_POWER' more than 3.3V appears at CN201(#2). If 'No', the cause is 'Main IC(X9) did not control the SW_Power' and the measure is 'Change the Main Assy'. If 'Yes', it checks the 'Power input of Main Ass'y' (DC B13V, B5.3V) at CN201 pins #11,12,13 (B13V) and #1,3 (B5.3V). If 'No', the cause is 'There did not supply the power from SMPS' and the measure is 'Change 14p power cable and SMPS.'. If 'Yes', the process ends.</p> |



■ Location of Parts

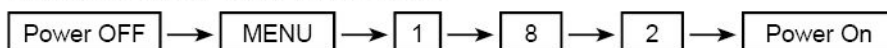


4.3. Factory Mode Adjustments

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 | T-MX5FAUSC(FHD)/T-MX5HAUSC(HD) SW Ver, |
|----------|--|
| Control | DTP-LP3-0023-1 |
| SVC | DTP-LP3-App-0023-1 |
| Expert | OPTION:**P6AH0D,OTHER,4000,SAMEX |
| ADC/WB | FactoryCS:***** |
| Advanced | ADC : HDMI 0 COMP 0 PC / AV0 |
| | EDID : SUCCESS |
| | HDCP : SUCCESS |
| | Current Flash : Flash 0 |
| | BuildDate : **_**_**** |
| | Date Of Purchase : **/**/** |

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 | Key |
|-------------------|----------|--|---------------------|---------------|
| Factory Reset | - | | | |
| Type | 32A6AF0D | - | use to change panel | |
| | 37A6AF0D | | | |
| | 40A6AF0D | | | |
| | 46P6AF0D | | | |
| | 46A6AF0D | | | |
| | 50A6AF0D | | | |
| Model | UE5000 | E4000/E5000/E6000/E420/ E4080/E5080 | | |
| SVC Model | 5000 | | | |
| Local Set | Other | | | info+ factory |
| Tuner | SI_ATSC2 | | do not change | |
| Ch Table | SAMEX | | | |
| Front Color | U-S-C-5K | NONE/S-C-BLK/S-R-BLK/S- BLK/T-R-BLK/T-C-BLK/S-B- BLK | | |

■ Control

| Factory Menu Name | Data | Range | Remark | Key |
|-------------------|------|------------------|-----------------------|-----|
| EDID | | | | |
| EDID ON/OFF | Off | On/Off | | |
| EDID WRITE ALL | | Success/Failure | use to write the EDID | |
| EDID WRITE PC | | Success/Failure | | |
| EDID WRITE DVI | | Success/Failure | | |
| EDID WRITE HDMI1 | | Success/Failure | | |
| EDID WRITE HDMI2 | | Success/Failure | | |
| EDID WRITE HDMI3 | | Success/Failure | | |
| EDID WRITE HDMI4 | | Success/Failure | | |
| EDID VERSION | | HDMI 1.3/HDMI1/2 | | |

| Factory Menu Name | Data | Range | Remark | Key |
|--------------------|----------|------------------------|-------------------------|---------------|
| Sub Option | | | | |
| Mute Time(VIDEO) | 4 | 0~10 | | info+ factory |
| ready | Off | On/Off | | info+ factory |
| HotPlug | On | | | info+ factory |
| Hotplugcontrol | On | | | info+ factory |
| Spread Spectrum | | | | info+ factory |
| Spread Spectrum | On | On/Off | | info+ factory |
| Period | 60K | 40K/50K/60K | | info+ factory |
| Amplitude | 2 | 0/0.5/1/1.5/2 | | info+ factory |
| DDR Spread | 2% | Off/1%/2% | | info+ factory |
| Auto Power | On | | | info+ factory |
| Mirror | ON | ON/ OFF | | info+ factory |
| HDMI EQ1 | Middle | Low/Middle/High/Strong | use to solve HDMI Noise | info+ factory |
| HDMI EQ2 | Middle | Low/Middle/High/Strong | | info+ factory |
| HDMI EQ3 | Middle | Low/Middle/High/Strong | | info+ factory |
| HDMI EQ4 | Middle | Low/Middle/High/Strong | | info+ factory |
| EER Count | - | | | info+ factory |
| WM Calib | | | | info+ factory |
| Panel Enter Key | | | | info+ factory |
| Panel Display Time | 9Hr | | | |
| Checksum | XXXX | | | info+ factory |
| View Log | | | | info+ factory |
| Font Data Viewer | | | | info+ factory |
| Dimm Type | EXT | | | |
| Carrier Mute | Off | On/Off | | info+ factory |
| Anynet+ | Off | On/Off | | info+ factory |
| HPD Polarity | | | | info+ factory |
| High Devi | Off | On/Off | | info+ factory |
| Hot Plug Delay | 12 | 0~63 | | info+ factory |
| HP Ident | High | High/Low | | info+ factory |
| PC Ident | On | On/Off | | info+ factory |
| Watchdog | On | On/Off | | |
| LVDS Format | JEIDA | JEIDA / VESA | | |
| OSD Resolution | 1366*768 | | | info+ factory |
| Bus Stop | | | | info+ factory |
| OTA Code | | | | info+ factory |
| OTA Duration Test | | | | info+ factory |

4. Troubleshooting

| Factory Menu Name | Data | Range | Remark | Key |
|-----------------------|----------|-------------------|---------------------------|---------------|
| Alternate Del | | | | info+ factory |
| Ignore VCT Version | On | On/Off | | info+ factory |
| HDMI Sync | DE | DE/HV | use to solve HDMI problem | info+ factory |
| Watch Dog Count | 0 | - | | info+ factory |
| PDP Option | | | | info+ factory |
| Hotel Option | | | | |
| Shop Option | | | | |
| Shop Mode | OFF | ON/OFF | | |
| USB DEMO ON(SEC) | | | | |
| USB DEMO OFF(SEC) | | | | |
| Exhibition Mode | OFF | ON/OFF | | |
| Sound | | | | |
| Audio Amp | NTP7412s | NTP7412s/NTP7411s | do not change | info+ factory |
| Volume Curve | NT | NT/EU/EA | do not change | info+ factory |
| A2K Prescale | 20 | 0~40 | | info+ factory |
| BTSC Mono Prescale | 25 | 0~40 | | info+ factory |
| BTSC stereo Prescale | 47 | 0~40 | | info+ factory |
| SAP Prescale | 43 | 0~40 | | info+ factory |
| BTSC M2S Threshold | 0x20 | 0xA0~0x9F | | info+ factory |
| BTSC S2M Threshold | 0x15 | 0xA0~0x9F | | info+ factory |
| BTSC Stereo On Thr | 0x20 | 0xA0~0x9F | | info+ factory |
| BTSC Stereo Off Thr | 0x26 | 0xA0~0x9F | | info+ factory |
| SAP Amp On Thr | 0x56 | 0xA0~0x9F | | info+ factory |
| SAP Amp Off Thr | 0x48 | 0xA0~0x9F | | info+ factory |
| SAP NSR On Thr | 0x35 | 0xA0~0x9F | | info+ factory |
| SAP NSR Off Thr | 0x7F | 0xA0~0x9F | | info+ factory |
| Carrier NSR On Thr | 0x20 | 0xA0~0x9F | | info+ factory |
| Carrier NSR Off Thr | 0x29 | 0xA0~0x9F | | info+ factory |
| MP3 Level | -6dB | -12dB~0dB | | info+ factory |
| Audio Delay | 20ms | 0~150ms | | |
| Main Amp Master Vol | 199 | | | info+ factory |
| Center Amp Master Vol | | | | info+ factory |
| Main Amp PWM Mod | 142 | | | info+ factory |
| Center Amp PWM Mod | 103 | | | info+ factory |
| Woofer Amp PWM Mod | 103 | | | info+ factory |
| Woofer Type | | | | info+ factory |

| Factory Menu Name | Data | Range | Remark | Key |
|----------------------|------|--------------------------------------|--------|---------------|
| Main Speaker EQ | On | | | |
| Center Speaker EQ | | | | |
| Main EQ CheckSum | - | | | info+ factory |
| Center EQ CheckSum | - | | | info+ factory |
| Woofer EQ CheckSum | - | | | info+ factory |
| Config Option | | | | info+ factory |
| Num of AV | 1 | 0~3 | | info+ factory |
| Num of SVIDEO | 0 | 1~3 | | info+ factory |
| Num of Comp | 1 | 1~3 | | info+ factory |
| Num of HDMI | 2 | 0~4 | | info+ factory |
| Num of SCART | 0 | | | info+ factory |
| DVI Sound | 0 | 0~1 | | info+ factory |
| Number of HeadPhone | 0 | 0~1 | | info+ factory |
| Num of USB Port | | | | info+ factory |
| Num of SPDIF OUT | 1 | 0~1 | | info+ factory |
| LNA SUPPORT | Off | On/Off | | info+ factory |
| Navigation Key Func | 0 | 0 : New function(Navigation jog) Key | | info+ factory |
| | | 1 : Old function (Touch) Key | | info+ factory |
| | | 2 : don't work function | | info+ factory |
| Eco Sensor Support | Off | On/OFF | | info+ factory |
| MFT OFFSET | | | | info+ factory |

■ SVC

| Factory Menu Name | Data | Range | Remark | Key |
|---------------------------|------|-------|--------|---------------|
| Test pattern | | | | info+ factory |
| T-CON USB Download | | | | info+ factory |

■ ADC/WB

| Factory Menu Name | Data | Range | Remark | Key |
|-------------------|---------|-------------------|--------|-----|
| ADC | | | | |
| AV Calibration | Success | Success / Failure | | |
| Comp Calibration | Success | Success / Failure | | |
| PC Calibration | Success | Success / Failure | | |
| HDMI Calibration | Success | Success / Failure | | |
| ADC Target | | | | |
| 1st_AV_Low | 18 | 0~255 | | |

4. Troubleshooting

| Factory Menu Name | Data | Range | Remark | Key |
|--------------------|------|-------|--------|-----|
| 1st_AV_High | 220 | 0~255 | | |
| 1st_AV_Delta | 1 | 0~255 | | |
| 1st_COMP_Low | 16 | 0~255 | | |
| 1st_COMP_High | 235 | 0~255 | | |
| 1st_COMP_Delta | 1 | 0~255 | | |
| 1st_PC_Low | 2 | 0~255 | | |
| 1st_PC_High | 235 | 0~255 | | |
| 1st_PC_Delta | 1 | 0~255 | | |
| 2nd_Low | 1 | 0~255 | | |
| 2nd_High | 235 | 0~255 | | |
| 2nd_Delta | 1 | 0~255 | | |
| ADC Result | | | | |
| 1st_AV_Gain | 121 | | | |
| 1st_AV_Offset | 141 | | | |
| 1st_Comp_Gain | 70 | | | |
| 1st_Comp_Gain_Cb | 70 | | | |
| 1st_Comp_Gain_cr | 70 | | | |
| 1st_Comp_Offset | 127 | | | |
| 1st_Comp_Offset_Cb | 127 | | | |
| 1st_Comp_Offset_Cr | 127 | | | |
| 1st_PC_R_Gain | 94 | | | |
| 1st_PC_G_Gain | 93 | | | |
| 1st_PC_B_Gain | 94 | | | |
| 1st_PC_R_Offset | 127 | | | |
| 1st_PC_G_Offset | 127 | | | |
| 1st_PC_B_Offset | 127 | | | |
| 2nd_R_Offset | 113 | 0~255 | | |
| 2nd_G_Offset | 113 | 0~255 | | |
| 2nd_B_Offset | 113 | 0~255 | | |
| 2nd_R_Gain | 144 | 0~255 | | |
| 2nd_G_Gain | 144 | 0~255 | | |
| 2nd_B_Gain | 144 | 0~255 | | |
| WB | | | | |
| Sub Brightness | 128 | 0~255 | | |
| R_Offset | 128 | 0~255 | | |
| G_Offset | 128 | 0~255 | | |
| B_Offset | 128 | 0~255 | | |

| Factory Menu Name | Data | Range | Remark | Key |
|-------------------|------|-------|--------|-----|
| Sub Contrast | 128 | 0~255 | | |
| R_Gain | 128 | 0~255 | | |
| G_Gain | 128 | 0~255 | | |
| B_Gain | 128 | 0~255 | | |
| Movie R Offset | 133 | 0~255 | | |
| Movie B Offset | 129 | 0~255 | | |
| Movie R Gain | 131 | 0~255 | | |
| Movie B Gain | 64 | 0~255 | | |

■ Advanced

| Factory Menu Name | Data | Range | Remark | Key |
|-------------------|-------|--------|--------|---------------|
| PBE | | | | info+ factory |
| WM Movie | | | | info+ factory |
| Mode | Off | On/Off | | info+ factory |
| Color Mode | Movie | | | info+ factory |
| Color Tone | Cool | | | info+ factory |
| Msub Brigh | 128 | | | info+ factory |
| Msub Contr | 128 | | | info+ factory |
| W1_RGAIN | 138 | | | info+ factory |
| W1_BGAIN | 104 | | | info+ factory |
| W1_ROFFS | 130 | | | info+ factory |
| W1_BOFFS | 127 | | | info+ factory |
| W2_RGAIN | 131 | | | info+ factory |
| W2_BGAIN | 64 | | | info+ factory |
| W2_ROFFS | 133 | | | info+ factory |
| W2_BOFFS | 129 | | | info+ factory |
| W3_RGAIN | 128 | | | info+ factory |
| W3_BGAIN | 128 | | | info+ factory |
| W3_ROFFS | 128 | | | info+ factory |
| W3_BOFFS | 128 | | | info+ factory |
| N_RGAIN | 131 | | | info+ factory |
| N_BGAIN | 122 | | | info+ factory |
| N_ROFFS | 128 | | | info+ factory |
| N_BOFFS | 129 | | | info+ factory |
| Movie Countr | 100 | | | info+ factory |
| Movie Brigh | 45 | | | info+ factory |
| Movie Color | 55 | | | info+ factory |

4. Troubleshooting

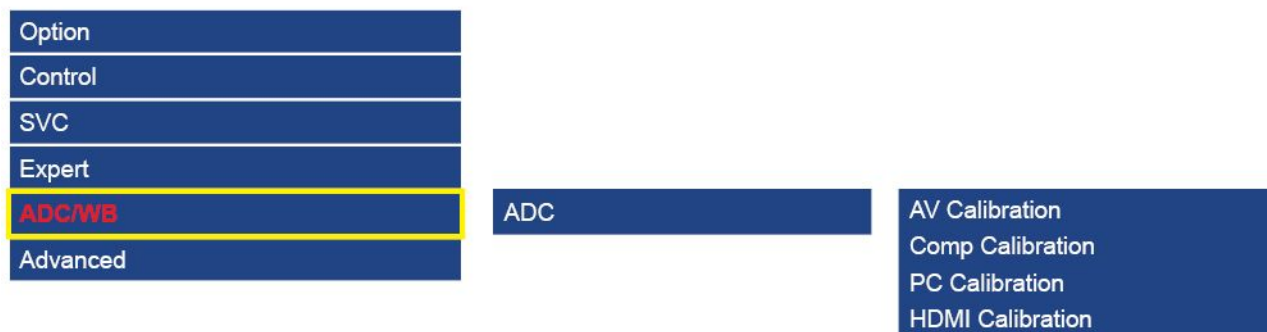
| Factory Menu Name | Data | Range | Remark | Key |
|---------------------|-----------|-------------------------------------|--------|---------------|
| Movie Sharp | 55 | | | info+ factory |
| Movie Tint | 50 | | | info+ factory |
| Movie BkLight | 10 | | | info+ factory |
| M.Gamma | Off | | | info+ factory |
| M_Sub Gamma | 0 | | | info+ factory |
| EPA Standard | | | | info+ factory |
| Std Contr | 100 | 0~100 | | info+ factory |
| Std Bright | 45 | 0~100 | | info+ factory |
| Std Sharp | 50 | 0~100 | | info+ factory |
| Std Color | 50 | 0~100 | | info+ factory |
| Std Tint | 50 | 0~100 | | info+ factory |
| Std Backlight | 8 | 0~10 | | info+ factory |
| ADJUST | | | | info+ factory |
| Dynamic Dimming | Off | On/Off | | info+ factory |
| Power Key Protects | Off | On/Off | | info+ factory |
| UART Select | Auto Wall | Auto Wall/Debug/MDC/On1/On2 | | info+ factory |
| Debug Mode | Debug Off | Debug Off/Debug Smart/Debug RunTime | | info+ factory |
| Back End Mute | | | | info+ factory |
| PDP FRC | | | | info+ factory |
| VisualTEST Plus | Disable | | | info+ factory |
| Standby Mode Time | 45 Min | 2 Min/45 Min | | info+ factory |
| Delete alt.ver | 1 Flash | | | info+ factory |
| OTA confirm Time | 90 Min | 3 Min/90 Min | | info+ factory |
| OTA limit Time | 3 Hour | 3 Min/3Hour | | info+ factory |
| Dynamic CE | Off | On/Off | | info+ factory |
| FWC | Off | On/Off | | info+ factory |
| 1080p 48Hz | On | On/Off | | info+ factory |
| PWM Max | 100 | 1~100 | | info+ factory |
| PWM Max2 | 95 | 1~100 | | info+ factory |
| PWM Mid | 10 | 0~10 | | info+ factory |
| PWM Min | 0 | 0~10 | | info+ factory |
| COMP PHASW | 110 | | | info+ factory |
| Quick Start | | | | info+ factory |
| DTV LNA | Auto | On/Off | | info+ factory |
| HDCP Download | Off | On/Off | HDCP | info+ factory |
| USB Download | Off | On/Off | | info+ factory |

| Factory Menu Name | Data | Range | Remark | Key |
|-------------------|------|--------|--------|---------------|
| LED Peak OnOFF | | | | info+ factory |
| COLOR MAPPING | | | | info+ factory |
| WCE | | | | info+ factory |
| SHARPNESS | | | | info+ factory |
| ENHANCE | | | | info+ factory |
| LNA_Plus | | | | info+ factory |
| FCC | | | | info+ factory |
| PC_Picture | | | | info+ factory |
| FRC | | | | info+ factory |
| PQ OTHERS | | | | info+ factory |
| 7.5 IRE NTSC | OFF | ON/OFF | | info+ factory |
| 7.5 IRE OFFSET | 16 | 0~60 | | info+ factory |
| PQ Others | | | | info+ factory |
| YC_Delay | | | | info+ factory |
| PAL BG | 1 | 0~3 | | info+ factory |
| PAL DK | 1 | 0~3 | | info+ factory |
| PAL I | 1 | 0~3 | | info+ factory |
| SECAM BG | 4 | 0~3 | | info+ factory |
| SECAM DK | 4 | 0~3 | | info+ factory |
| SECAML | 4 | 0~3 | | info+ factory |
| NTSC 358 | 1 | 0~3 | | info+ factory |
| NTSC 443 | 0 | 0~3 | | info+ factory |
| AV PAL | 1 | 0~3 | | info+ factory |
| AV SECAM | 4 | 0~3 | | info+ factory |
| AV NT358 | 1 | 0~3 | | info+ factory |
| AV NT443 | 1 | 0~3 | | info+ factory |
| AV PAL60 | 1 | 0~3 | | info+ factory |
| EEPROM RESET | | | | info+ factory |
| EEPROM RESET | OFF | ON/OFF | | info+ factory |
| NVR ALL CLEAR | OFF | ON/OFF | | info+ factory |

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.



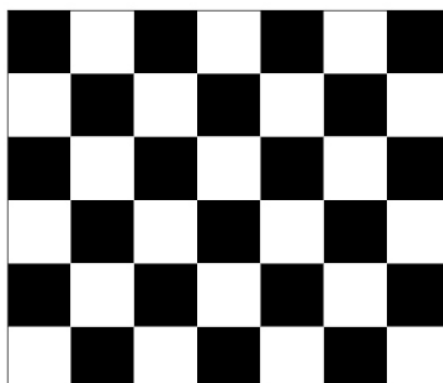
4-4-2. Service Adjustment

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)

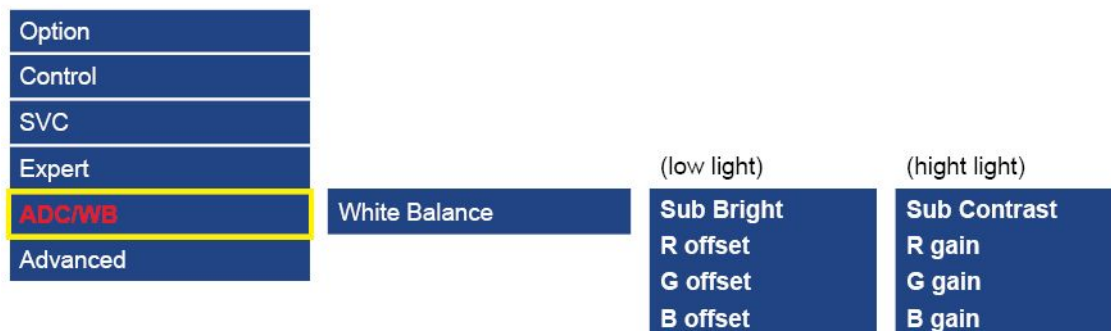
1. Apply the 720p Lattice (N0. 6) pattern signal to the Component IN 1 port.
2. Press the Source key to switch to "Component1" mode.
3. Enter Service mode.
4. Select the "ADC" menu.
5. Select the "Comp Calibration" menu.
6. In "Comp Calibration Off" status, press the "▶" key to perform Calibration.
7. 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 (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.

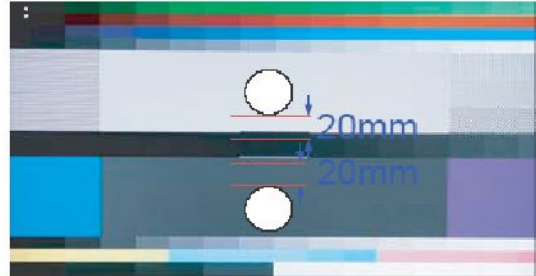
4-4-3. Adjustment

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



Note

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

White Balance Manual adjustment

- UN32EH50*0F

| 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 | 128 | G-Gain | 128 | B-Gain | 128 |
| R-Offset | 128 | G-Offset | 128 | B-Offset | 128 |

- UN37EH50*0F

| 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 | 128 | G-Gain | 128 | B-Gain | | 128 | | |
| R-Offset | 128 | G-Offset | 128 | B-Offset | | 128 | | |

- UN40EH50*0F

| 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 | 128 | G-Gain | 128 | B-Gain | | 128 | | |
| R-Offset | 128 | G-Offset | 128 | B-Offset | | 128 | | |

- UN46EH50*0F (CHILIN, AMLCD)

| 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 | 128 | G-Gain | 128 | B-Gain | 128 |
| R-Offset | 128 | G-Offset | 128 | B-Offset | 128 |

- UN50EH50*0F

| 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 | 128 | G-Gain | 128 | B-Gain | 128 |
| R-Offset | 128 | G-Offset | 128 | B-Offset | 128 |

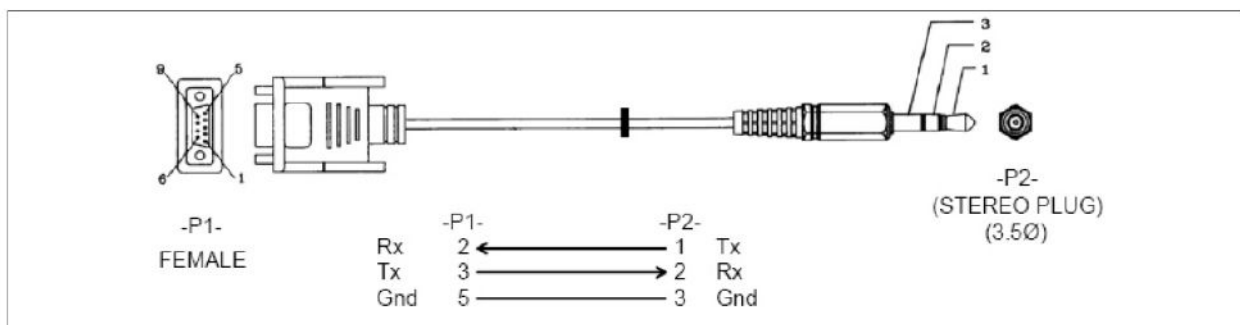
4.6. RS-232C

1. RS232C Control

- Port : COM#(Serial)
- Bit rate : 9600
- 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. AV Control Table

| Control Item | | | | Cmd1 | Cmd2 | Cmd3 | Value | |
|--------------|--------|--------|------------|------|------|------|---------|------|
| General | Power | Power | | 0x00 | 0x00 | 0x00 | 0x00 | |
| | | Off | | | | | 0x01 | |
| | | On | | | | | 0x02 | |
| | Volume | Direct | | 0x01 | 0x00 | 0x00 | (0~100) | |
| | | Up | | | | 0x01 | 0x00 | |
| | | Down | | | | 0x02 | 0x00 | |
| | Mute | | | 0x02 | 0x00 | 0x00 | 0x00 | |
| | | Ch. | Direct | | 0x04 | - | | |
| | | | Continuous | Up | 0x03 | 0x00 | 0x01 | 0x00 |
| Down | | | | 0x02 | | | 0x00 | |

| Control Item | | | | Cmd1 | Cmd2 | Cmd3 | Value |
|--------------|-------------|-----------|------------|------|------|------|-------|
| Input | Source List | TV | | 0x0a | 0x00 | 0x00 | 0x00 |
| | | AV | AV1 | | | 0x01 | 0x00 |
| | | | AV2 | | | | 0x01 |
| | | | AV3 | | | | 0x02 |
| | | S-Video | S-Video1 | | | 0x02 | 0x00 |
| | | | S-Video2 | | | | 0x01 |
| | | | S-Video3 | | | | 0x02 |
| | | Component | Component1 | | | 0x03 | 0x00 |
| | | | Component2 | | | | 0x01 |
| | | | Component3 | | | | 0x02 |
| | | PC | PC1 | | | 0x04 | 0x00 |
| | | | PC2 | | | | 0x01 |
| | | | PC3 | | | | 0x02 |
| | | HDMI | HDMI1 | | | 0x05 | 0x00 |
| | | | HDMI2 | | | | 0x01 |
| | | | HDMI3 | | | | 0x02 |
| | | | HDMI4 | | | | 0x03 |
| | | DVI | DVI1 | | | 0x06 | 0x00 |
| | | | DVI2 | | | | 0x01 |
| | | | DVI3 | | | | 0x02 |

Not Support

| Control Item | | | | Cmd1 | Cmd2 | Cmd3 | Value |
|--------------|------|--------------------|--|------|------|------|-------|
| PICTURE | Mode | Dynamic(Entertain) | | 0x0b | 0x00 | 0x00 | 0x00 |
| | | Standard | | | | | 0x01 |
| | | Movie | | | | | 0x02 |
| | | Natural | | | | | 0x03 |
| | | CAL-NIGHT | | | | | 0x04 |

| Control Item | | | | Cmd1 | Cmd2 | Cmd3 | Value |
|--------------|-----------------------|------------------|---------------|------|------|------|----------|
| | | CAL-DAY | | | | | 0x05 |
| | | BD Wise | | | | | 0x06 |
| | | Relax | | | | | 0x07 |
| | BackLight (CellLight) | | 0~20 | | 0x01 | 0x00 | (0~20) |
| | Contrast | | 0~100 | | 0x02 | 0x00 | (0~100) |
| | Brightness | | 0~100 | | 0x03 | 0x00 | (0~100) |
| | Sharpness | | 0~100 | | 0x04 | 0x00 | (0~100) |
| | Color | | 0~10 | | 0x05 | 0x00 | (0~100) |
| | Tint | G/R | | | 0x06 | 0x00 | (0~100) |
| | Advanced Settings | Black Tone | Off | | 0x07 | 0x00 | 0x00 |
| | | | Dark | | | | 0x01 |
| | | | Darker | | | | 0x02 |
| | | | Darkest | | | | 0x03 |
| | | Dynamic Contrast | Off | | | 0x01 | 0x00 |
| | | | Low | | | | 0x01 |
| | | | Medium | | | | 0x02 |
| | | | Hlgh | | | | 0x03 |
| | | Shadow Detail | -2 ~ 2 | | | 0x02 | (-2~2) |
| | | Gamma | -3 ~ 3 | | | 0x03 | (-3~3) |
| | | RGB Only Mode | Off | | | 0x05 | 0x00 |
| | | | Red | | | | 0x01 |
| | | | Green | | | | 0x02 |
| | | | Blue | | | | 0x03 |
| | | Color Space | Auto | | | 0x06 | 0x00 |
| | | | Native | | | | 0x01 |
| | | | Custom | | | | 0x02 |
| | | White Balance | R-Offset(LCD) | | | 0x07 | (0~50) |
| | | White Balance | G-Offset(LCD) | | | 0x08 | (0~50) |
| | | White Balance | B-Offset(LCD) | | | 0x09 | (0~50) |
| | | White Balance | R-Gain(LCD) | | | 0x0a | (0~50) |
| | | White Balance | G-Gain(LCD) | | | 0x0b | (0~50) |
| | | White Balance | B-Gain(LCD) | | | 0x0c | (0~50) |
| | | White Balance | Reset(LCD) | | | 0x0d | 0x00 |
| | | Flesh Tone | -15 ~ 15 | | | 0x0e | (-15~15) |
| | | Edge Enhancement | Off | | | 0x0f | 0x00 |
| | | | On | | | | 0x01 |

Not Support
only PDP
(2012)

Not Support

Not Support

| Control Item | | | | Cmd1 | Cmd2 | Cmd3 | Value | |
|--------------|----------------|----------------------|--------------------|------|------|------|-------|-------------|
| | | xvYCC | Off | | | 0x10 | 0x00 | |
| | | | On | | | | 0x01 | |
| | | Motion Lighting | Off | | | 0x11 | 0x00 | |
| | | | On | | | | 0x01 | |
| | | LED Motion Plus | Off | | 0x0a | 0x07 | 0x00 | |
| | | | On(Normal) | | | | 0x01 | |
| | | | Cinema | | | | 0x02 | Not Support |
| | | | Ticker | | | | 0x03 | |
| | Picture Option | Color Tone | Cool | | 0x0a | 0x00 | 0x00 | |
| | | | Standard | | | | 0x01 | |
| | | | Warm1 | | | | 0x02 | |
| | | | Warm2 | | | | 0x03 | |
| | | Digital Noise Filter | Off | | | 0x02 | 0x00 | |
| | | | Low | | | | 0x01 | |
| | | | Medium | | | | 0x02 | |
| | | | High | | | | 0x03 | |
| | | | Auto | | | | 0x04 | |
| | | | Auto Visualization | | | | 0x05 | |
| | | MPEG Noise Filter | Off | | | 0x03 | 0x00 | |
| | | | Low | | | | 0x01 | |
| | | | Medium | | | | 0x02 | |
| | | | High | | | | 0x03 | |
| | | | Auto | | | | 0x04 | |
| | | HDMI Black Level | Normal | | | 0x04 | 0x00 | |
| | | | Low | | | | 0x01 | |
| | | Film Mode | Off | | | 0x05 | 0x00 | |
| | | | Auto1 | | | | 0x01 | |
| | | | Auto2 | | | | 0x02 | |
| | | | Cinema Smooth | | | | 0x03 | |
| | | Auto Motion Plus | Off | | | 0x06 | 0x00 | |
| | | | Clear | | | | 0x01 | |
| | | | Standard | | | | 0x02 | |
| | | | Smooth | | | | 0x03 | |
| | | | Custom | | | | 0x04 | |
| | | | Demo | | | | 0x05 | |

Not Support

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| Control Item | | | | Cmd1 | Cmd2 | Cmd3 | Value |
|--------------|---------------------------|------------------|--|------|------|------|--------|
| | | 300hz | | | | 0x02 | (0~20) |
| | | 1khz | | | | 0x03 | (0~20) |
| | | 3khz | | | | 0x04 | (0~20) |
| | | 10khz | | | | 0x05 | (0~20) |
| | | Reset | | | | 0x06 | 0x00 |
| | SRS TruSurround HD (echo) | Off | | | 0x02 | 0x00 | 0x00 |
| | Virtual Surround (echo) | On | | | | | 0x01 |
| | SRS TruDialog (echo) | Off | | | 0x03 | 0x00 | 0x00 |
| | Dialog Clarify (X9) | On | | | | | 0x01 |
| | Preferred Language | English | | | 0x04 | 0x00 | 0x00 |
| | | Spanish | | | | | 0x01 |
| | | French | | | | | 0x02 |
| | | Korean | | | | | 0x03 |
| | | Japanese | | | | | 0x04 |
| | Multi-Track Sound | Mono | | | 0x05 | 0x00 | 0x00 |
| | | Stereo | | | | | 0x01 |
| | | SAP | | | | | 0x02 |
| | Auto Volume | Off | | | 0x06 | 0x00 | 0x00 |
| | | ON | | | | | 0x01 |
| | | Night | | | | | 0x02 |
| | Speaker Select | TV Speaker | | | 0x07 | 0x00 | 0x00 |
| | | External Speaker | | | | | 0x01 |
| | Sound Select | Main | | | 0x08 | 0x00 | 0x00 |
| | | Sub | | | | | 0x01 |
| | Sound Reset | Sound Reset | | | 0x09 | 0x00 | 0x00 |
| | 3D Audio | Off | | | 0x0a | 0x00 | 0x00 |
| | | Low | | | | | 0x01 |
| | | Medium | | | | | 0x02 |
| | | High | | | | | 0x03 |
| | Auto Stereo | Manual | | | 0x0b | 0x00 | 0x00 |
| | | Auto | | | | | 0x01 |

Not Support
add 2012Not Support
only KOREA
(2012)

| Control Item | | | Cmd1 | Cmd2 | Cmd3 | Value |
|--------------|-----------------------------|------|------|------|------|----------------|
| KEY | Key Generation | | 0x0d | 0x00 | 0x00 | refer to table |
| OSD | Show/Hide Control | Show | 0x0e | 0x00 | 0x00 | 0x00 |
| | | Hide | | | | 0x01 |
| Get Status | Power (On/Off) | | 0xf0 | 0x00 | 0x00 | 0x00 |
| | Volume(0~100) | | 0xf0 | 0x01 | 0x00 | 0x00 |
| | Mute (On/Off) | | 0xf0 | 0x02 | 0x00 | 0x00 |
| | Channel Number | | 0xf0 | 0x03 | 0x00 | 0x00 |
| | Source (TV/AV/.../HDMI/...) | | 0xf0 | 0x04 | 0x00 | 0x00 |
| | Picture Size | | 0xf0 | 0x05 | 0x00 | 0x00 |
| | 3D (On/Off) | | 0xf0 | 0x06 | 0x00 | 0x00 |
| | Picture Mode | | 0xf0 | 0x07 | 0x00 | 0x00 |
| | Sound Mode | | 0xf0 | 0x08 | 0x00 | 0x00 |

add 2012

| Key value | Value |
|-----------|------------|
| Up | 96 (0x60) |
| Down | 97 (0x61) |
| Left | 101 (0x65) |
| Right | 98 (0x62) |
| Menu | 26 (0x1A) |
| Internet | 147 (0x93) |
| Enter(OK) | 104 (0x68) |
| EXIT | 45 (0x2D) |

Not Support

4.8. Software Upgrade

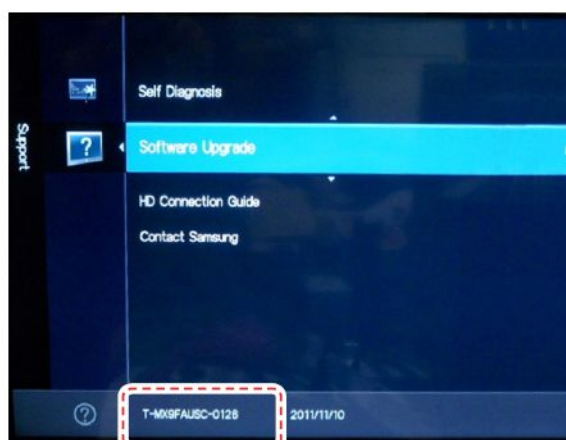
Software Upgrade can be performed by downloading the latest firmware from samsung.com to a USB memory device.

- 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 | T-MX9FAKRC(FHD)/T-MX9HAKRC(HD) SW Ver, |
| Contro | DTP-LP3-0023-1 |
| SVC | DTP-LP3-App-0023-1 |
| Expert | OPTION:**P6AH0D,OTHER,4000,SAMEX |
| ADC/WB | FactoryCS:***** |
| Advanced | ADC : HDMI 0 COMP 0 PC / AV0 |
| | EDID : SUCCESS |
| | HDCP : SUCCESS |
| | Current Flash : Flash 0 |
| | BuildDate : **_**_**** |
| | Date Of Purchase : **/**/** |

4-8-2. How to Upgrade 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-MX9FAUSC"(FHD) or "T-MX9HAUSC"(HD) 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. Click the "ENTER" key.

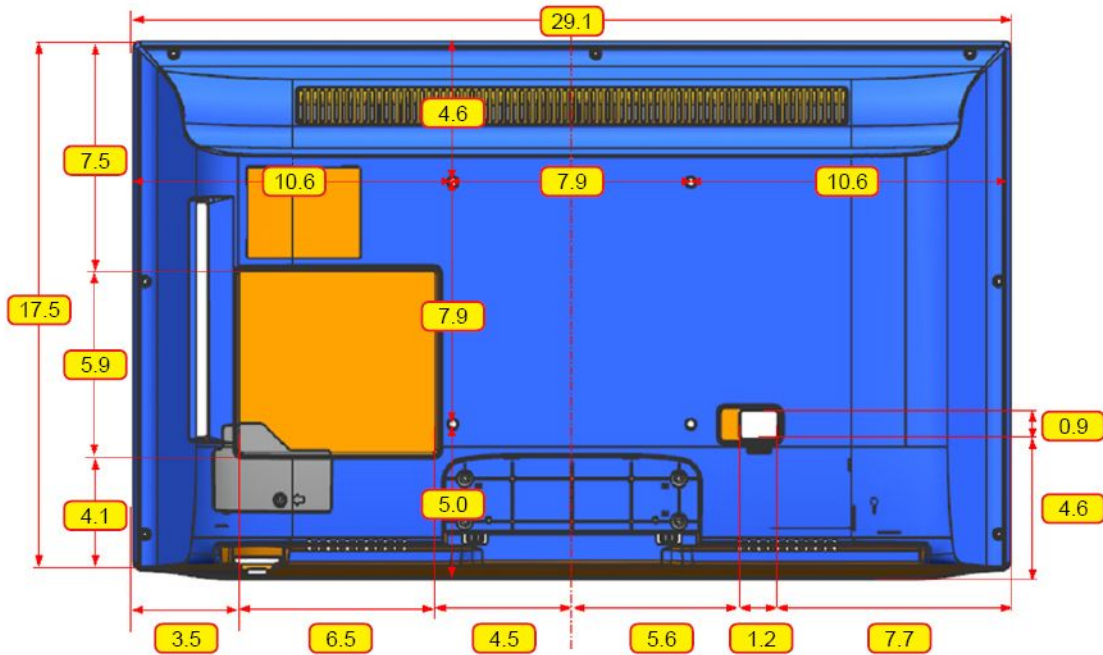


5. Click the "ENTER" key.
 - Wait for upgrade complete.
 - Check the Software Version.

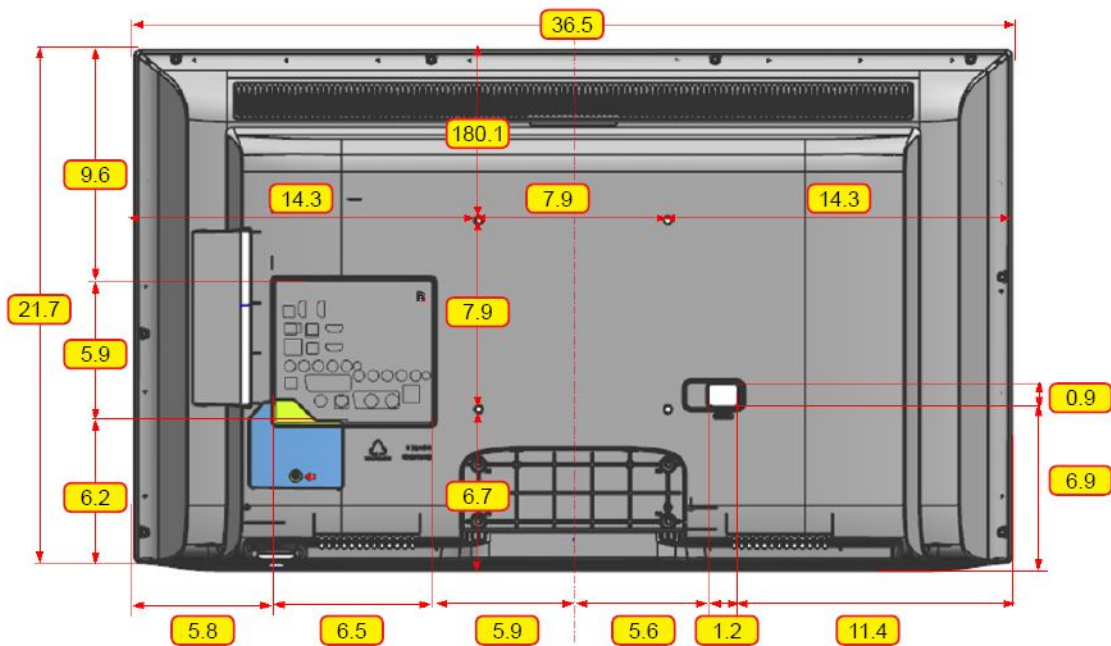


4.9. Rear Cover Dimension

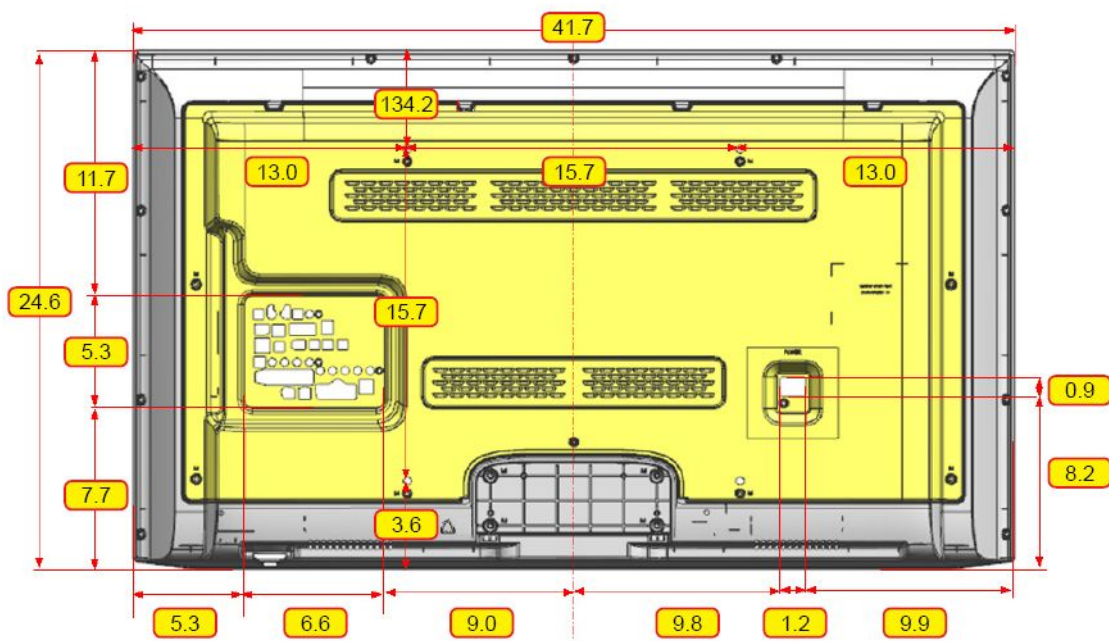
■ UN32EH50*0F



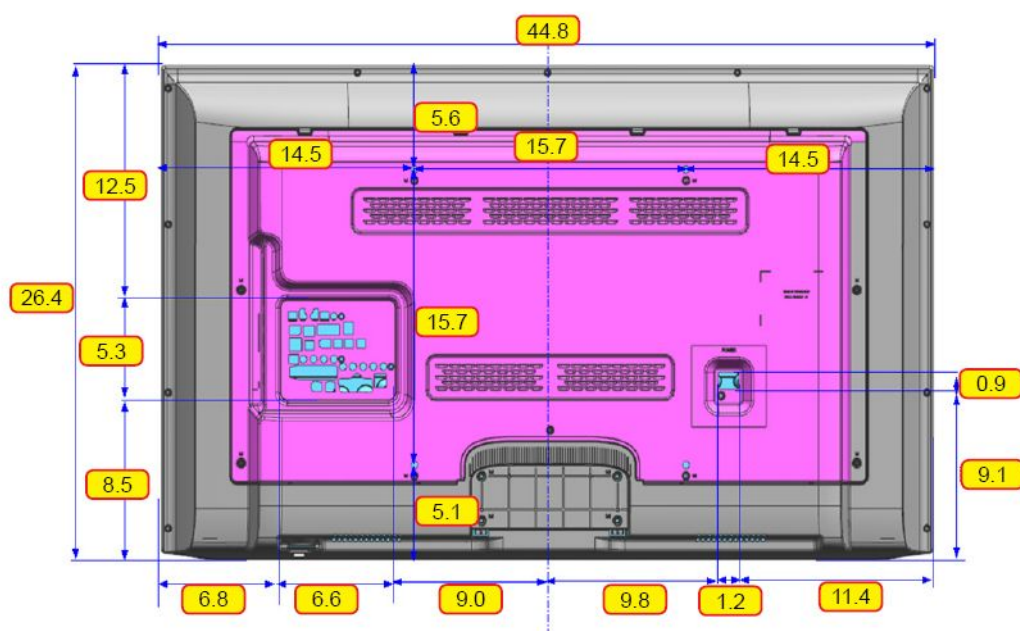
■ UN40EH50*0F



■ UN46EH50*0F




■ UN50EH50*0F



4.10. Additional service instruct

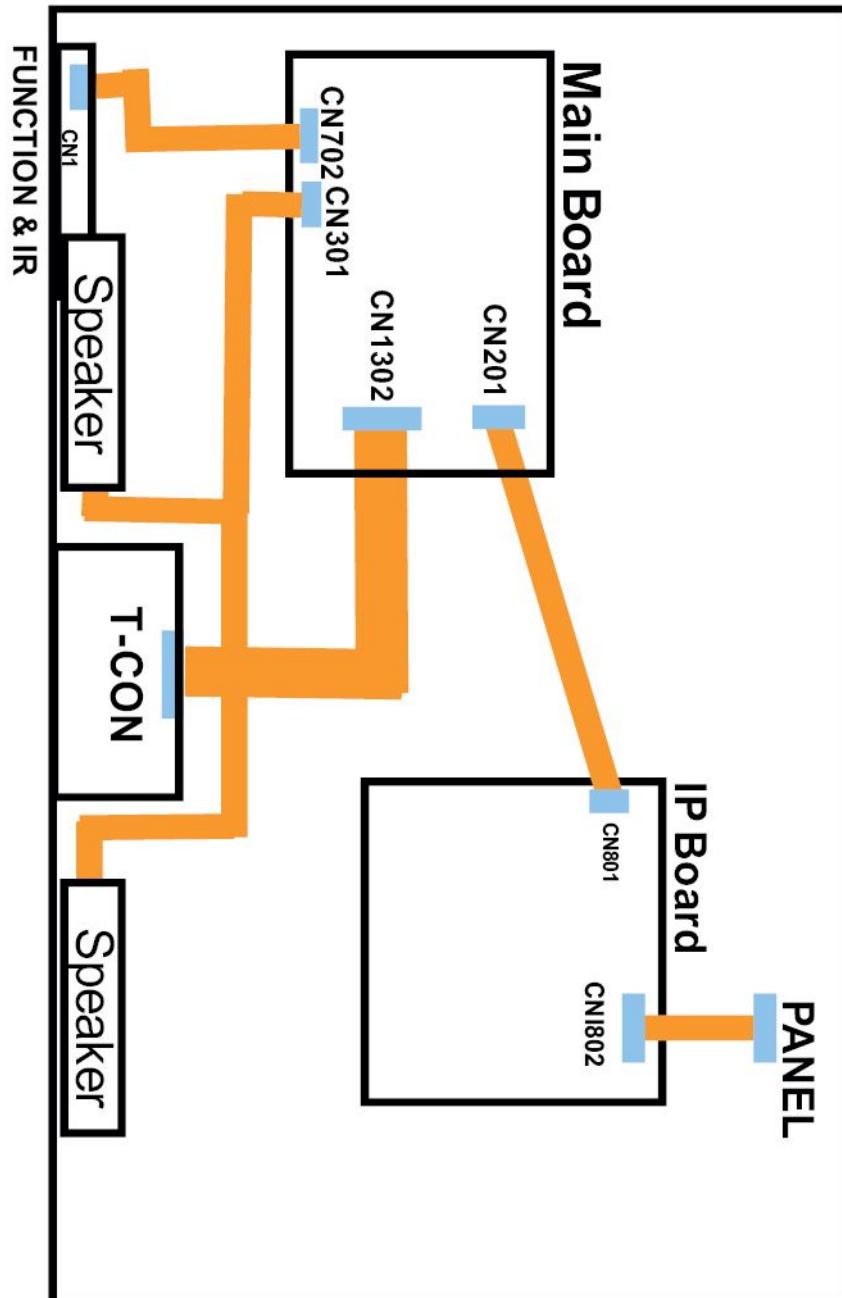
When the function assy is replaced, Checking and Upgrading S/W must be required.

: Because the ECO sensor (Ambient light sensor) was changed from NLS1006 (Nextchip) to CT802FN (TAOS), software should be upgraded for accurate operation. To get natural brightness change on Eco Sensor feature, 'Function Board' including Eco Sensor component was revised. But when replacing new 'Function Board', firmware should be upgraded with the latest version.

| Description | Picture Description | |
|--|---|--|
| 1 Check the label of function assy which you prefared for replacement. |  | |
| 2 If the color of the label is yellow, it means New ECO sensor (TAOS CT802FN) is used. | <div data-bbox="774 1055 970 1122" style="border: 1px solid red; padding: 2px; text-align: center;">Nextchip NLS1006 (OLD version)</div> | <div data-bbox="1157 1043 1305 1133" style="border: 1px solid red; padding: 2px; text-align: center;">TAOS CT802FN (NEW version)</div> |
| | <div data-bbox="774 1182 970 1249" style="border: 1px solid red; padding: 2px; text-align: center;">BN96-XXXXXX XXXXXX</div> | <div data-bbox="1150 1171 1311 1261" style="border: 1px solid red; padding: 2px; text-align: center; background-color: yellow;">BN96-XXXXXX XXXXXX TAOS:CHK SW</div> |
| 3 If the function board to replace is new, you must check the version of S/W. Also, the version of S/W is older than the specified version demonstrated in the right table, the latest version of S/W must be upgraded. Unless firmware is upgraded, the new ECO sensor won't work properly. For example, Picture on TV might get darker than normal. | <div data-bbox="948 1294 1155 1368" style="text-align: left;">T-MX9*AUSC-1014.1 T-MX9*AKRC-1010.0 T-MX9*MASC-1107.0</div> <div data-bbox="943 1397 1160 1498" style="text-align: left;">T-MST9DEUC-1015.1 T-MST9DAAC-1012.0 T-MST9IBRC-1013.0 T-MST9DTWC-1011.0</div> <div data-bbox="932 1527 1171 1628" style="text-align: left;">T-MST10PAUSC-1014.1 T-MST10PDEUC-1021.0 T-MST10PDAAC-1010.1 T-MST10PIBRC-1009.3</div> | |

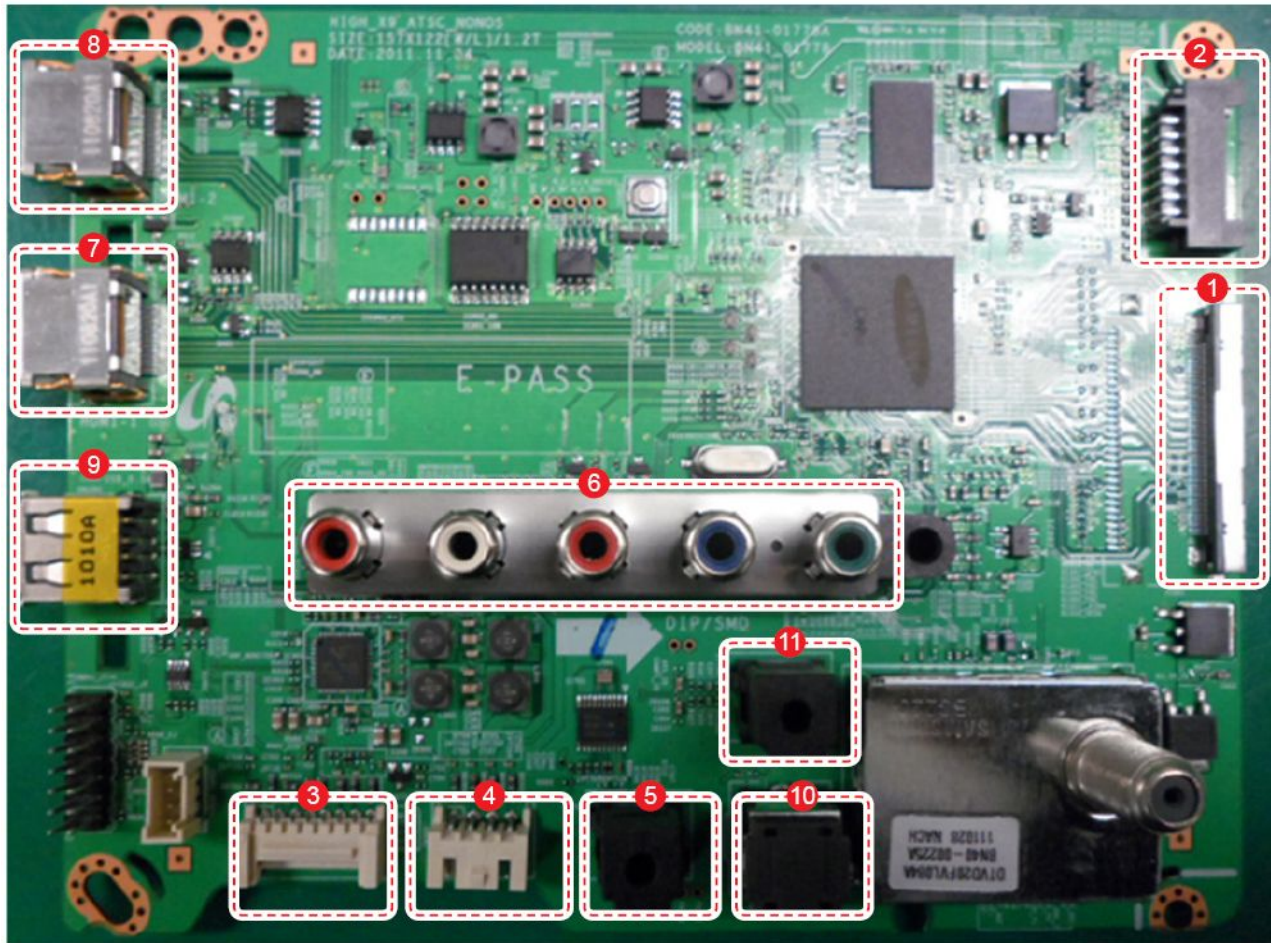
5. Wiring Diagram

5.1. Wiring Diagram



5.2. Connector

■ Main Board



① CN1301_FHD (to Panel)

| | | | |
|----|-----------|----|----------|
| 1 | NC | 14 | EVEN[4]+ |
| 2 | NC | 15 | EVEN[4]- |
| 3 | NC | 16 | EVEN[3]+ |
| 4 | NC | 17 | EVEN[3]- |
| 5 | NC | 18 | GND |
| 6 | NC | 19 | EVENCLK+ |
| 7 | FORMAT | 20 | EVENCLK- |
| 8 | SDA_Panel | 21 | GND |
| 9 | TCON_WP | 22 | EVEN[2]+ |
| 10 | NC | 23 | EVEN[2]- |
| 11 | SDA_Panel | 24 | EVEN[1]+ |
| 12 | SCL_Panel | 25 | EVEN[1]- |
| 13 | GND | 26 | EVEN[0]+ |

① CN1301_FHD (to Panel)

| | | | |
|----|----------|----|-----------|
| 27 | EVEN[0]- | 40 | ODD[1]- |
| 28 | GND | 41 | ODD[0]+ |
| 29 | ODD[4]+ | 42 | ODD[0]- |
| 30 | ODD[4]- | 43 | GND |
| 31 | ODD[3]+ | 44 | GND |
| 32 | ODD[3]- | 45 | GND |
| 33 | GND | 46 | NC |
| 34 | ODDCLK+ | 47 | Panel_VCC |
| 35 | ODDCLK- | 48 | Panel_VCC |
| 36 | GND | 49 | Panel_VCC |
| 37 | ODD[2]+ | 50 | Panel_VCC |
| 38 | ODD[2]- | 51 | Panel_VCC |
| 39 | ODD[1]+ | | |

| ② CN201 (to Powr board) | | | |
|-------------------------|----------|----|-------------|
| 1 | B5V | 8 | GND |
| 2 | SW_POWER | 9 | B13VS |
| 3 | B5V | 10 | SW_INVERTER |
| 4 | A5V | 11 | B13V |
| 5 | GND | 12 | B13V |
| 6 | GND | 13 | B13V |
| 7 | B13VS | 14 | PWM_DIMM |

| ③ CN403(Componetn) | | | |
|--------------------|-------|---|------|
| 1 | IR | 5 | MSDA |
| 2 | GND | 6 | KEY1 |
| 3 | A3.3V | 7 | KEY2 |
| 4 | MSCL | 8 | GND |

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

| ⑤ CN701(DEBUG) | | | |
|----------------|----------|---|----------|
| 1 | GND | 4 | DEBUG_TX |
| 2 | DEBUG_RX | 5 | DEBUG_TX |
| 3 | DEBUG_TX | 6 | GND |

| ⑥ CN403(COMPONETN) | | | |
|--------------------|------------|----|-----|
| 1 | GND | 9 | GND |
| 2 | COMP1_Y | 10 | GND |
| 3 | IDENT_AV | 11 | SL |
| 4 | GND | 12 | SR |
| 5 | PB | 13 | GND |
| 6 | IDENT_COMP | 14 | SR |
| 7 | GND | 15 | SL |
| 8 | PR | | |

| ⑦ CN501 (HDMI1) | | | |
|-----------------|--------------|----|--------------|
| 1 | HDMI1_RX2+ | 11 | GND |
| 2 | GND | 12 | HDMI1_RXCLK- |
| 3 | HDMI1_RX2- | 13 | HDMI_CEC |
| 4 | HDMI1_RX1+ | 14 | GND |
| 5 | GND | 15 | SCL |
| 6 | HDMI1_RX1- | 16 | SDA |
| 7 | HDMI1_RX0+ | 17 | GND |
| 8 | GND | 18 | 5V |
| 9 | HDMI1_RX0- | 19 | HPD |
| 10 | HDMI1_RXCLK+ | | |

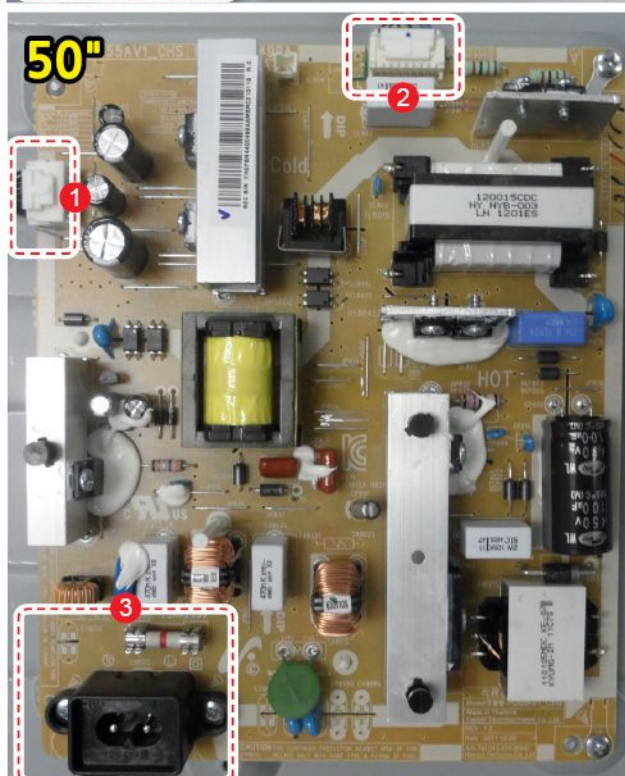
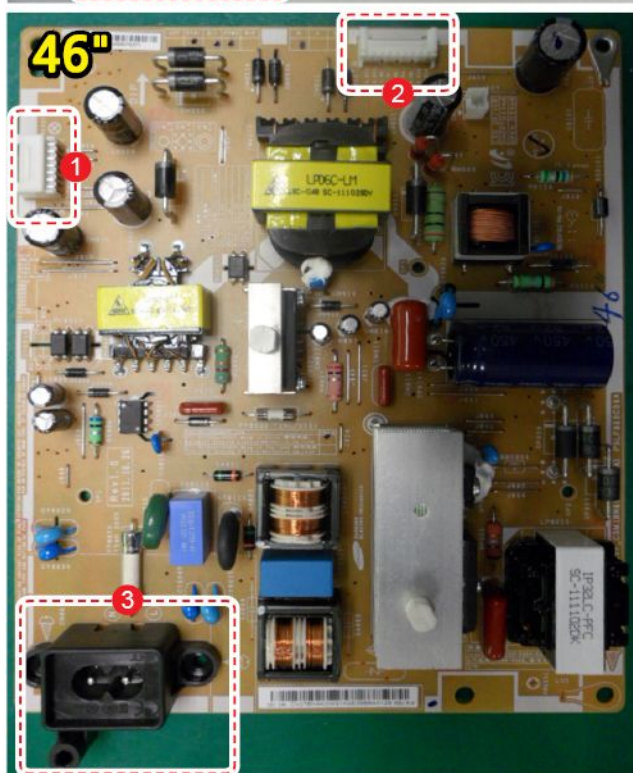
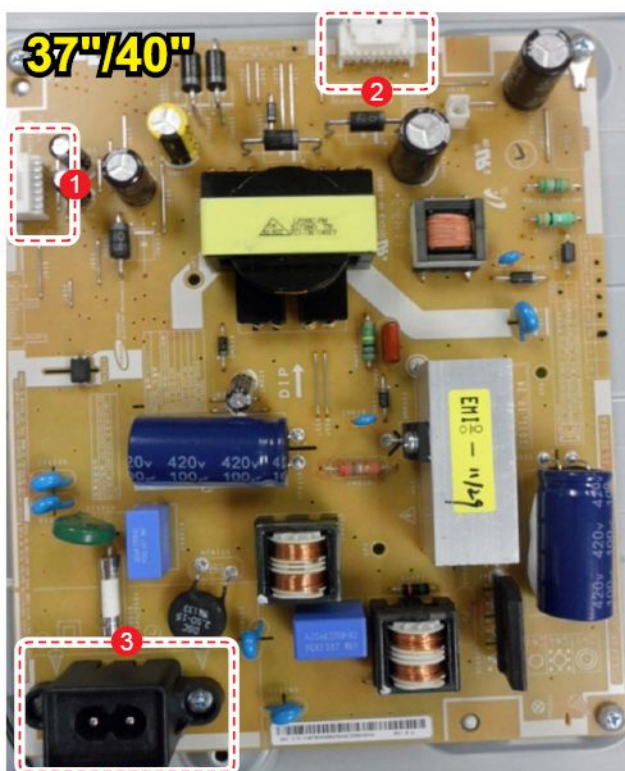
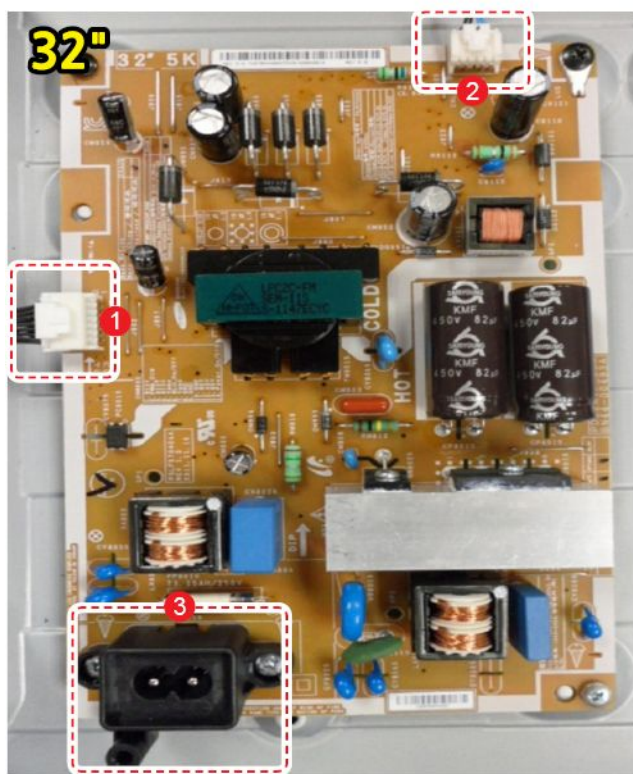
| ⑧ CN501 (HDMI1) | | | |
|-----------------|--------------|----|--------------|
| 1 | HDMI2_RX2+ | 11 | GND |
| 2 | GND | 12 | HDMI2_RXCLK- |
| 3 | HDMI2_RX2- | 13 | HDMI_CEC |
| 4 | HDMI2_RX1+ | 14 | GND |
| 5 | GND | 15 | SCL |
| 6 | HDMI2_RX1- | 16 | SDA |
| 7 | HDMI2_RX0+ | 17 | GND |
| 8 | GND | 18 | 5V |
| 9 | HDMI2_RX0- | 19 | HPD |
| 10 | HDMI2_RXCLK+ | | |

| ⑨ CN1201 (USB1) | | | |
|-----------------|---------|---|--------|
| 1 | USB_VCC | 3 | USB_DP |
| 2 | USB_DM | 4 | GND |

| ⑩ OP301 (Optical) | | | |
|-------------------|-----------|---|-----|
| 1 | SPDIF_OUT | 3 | GND |
| 2 | GND | | |

| ⑪ CN301(Monitor Out) | | | |
|----------------------|--------|---|-----|
| 1 | GND | 4 | GND |
| 2 | SR_OUT | 5 | NC |
| 3 | SL_OUT | 6 | GND |

■ SMPS



| ❶ CNM803 (to MAIN board) | | | |
|--------------------------|-------------|----|----------|
| 1 | B13V | 8 | GND |
| 2 | PWM_DIM | 9 | GND |
| 3 | B13V | 10 | GND |
| 4 | B13V | 11 | B5.3V |
| 5 | B13VS | 12 | A5.3V |
| 6 | SW_INVERTER | 13 | B5.3V |
| 7 | B13VS | 14 | SW_POWER |

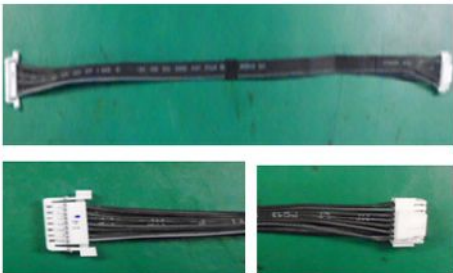
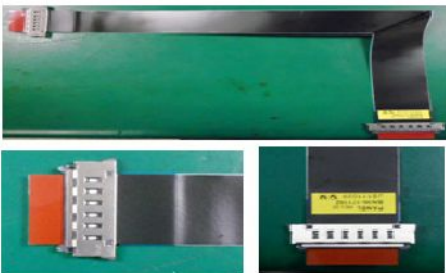
| ❷ CNL802 | | | |
|----------|-----|---|-----|
| 1 | D1+ | 4 | D1- |
| 2 | D1+ | 5 | D1- |
| 3 | NC | | |

| ❸ CN801S | | | |
|----------|---|---|---|
| 1 | N | 2 | L |

5.3. Connector Functions

| Connector | Function |
|-------------------------|---|
| CN201 ↔ IP CN801 | Supply main power and dimming signal from IP board to Main Board. |
| CN1301_FHD ↔ T-CON CNF1 | The LVDS signal transfered from Main Board to Panel. |

5.4. Cables

| Use | LEAD (Main-IP 14P) | LVDS CALBE (Main - Panel 30P) |
|----------|---|---|
| Code No. | 32" : BN39-01632B 37" : BN39-01632J 40" : BN39-01632C 46" : BN39-01632D 50" : BN39-01632F | 32" : BN96-17116Y 37" : BN96-23839E 40" : BN96-17116Z 46" : BN96-22239A 50" : BN96-22239V |
| Image |  |  |



GSPN (GLOBAL SERVICE PARTNER NETWORK)

| Area | Web Site |
|---------------------------------|---|
| Europe, MENA, CIS, Africa | https://gspn1.samsungcsportal.com |
| E.Asia, W.Asia, China, Japan | https://gspn2.samsungcsportal.com |
| N.America, S.America | https://gspn3.samsungcsportal.com |

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