# LCD TV 09' Project
# TRAINING MANUAL

*550/650/750*

*LA32B55*/65**
*LA37B65**
*LA40B55*/65*/75**
*LA46B55*/65*/75**
*LA52B55*/75**
*LA55B65**

# Agenda

I. Inside of A&C Model

II. Board description

III. Disassembly

IV. Trouble Shooting

V. Attachment

# □. Inside of A&C Model

## Inside of A&C Model

# □. Inside of A&C Model

## Introduction

- Specification
- Control & Connection
  (LB550, LB570 : 3 HDMI)
- A & C Block Diagram
- Picture Enhance function
- SMD ( Smooth Motion Driver)
- Smart UI

# □. Inside of A&C Model

| Items | | Specification |
|---|---|---|
| Model Name | | LA32B65*/LA37B65*/LA40B65*/LA46B65*/LA55B65* |
| General | Size (W*D*H) with Stand (inches) | 32":802.9 * 239.0 * 601.0 / 37":926.7 * 255.0 * 668.2 / 40”:995.1 * 255.0 * 705.9<br>46”: 1126.1 * 277.0 * 783.4 / 55” : 1310.8 * 308 * 894.8 |
| | Weight with Stand (kg) | 32“ : 14.2 / 37“ : 17.4 / 40": 19.1 / 46": 25 |
| | Panel Resolution | 1920*1080 |
| | A/V | 2 AV |
| | LAN | O (LB5K : X) |
| | DVD | 2 component (480i/p,720p,1080i/p) |
| | PC | 1 Dsub |
| | HDMI | 4 HDMI (3 HDMI : LB5K) |
| | Tuner | 1 PAL/SECAM/NIM/QAM/Cable tuner (LB670, LB570 : T/C/S tuner) |
| | Sound Output | 8 ohm, 10W |
| | PIP | O |
| | Sound option | SRS TruSurround HD |
| | DNIe | O |
| | Headphone | O |
| | Response time | < 8ms |
| | Luminance [cd/m2, typical] | 500 |
| | C/R [typical] | 50000 |
| | Anynet+ | O |
| | View Angle(H/V) | 178/178 |
| | Power Supply | AC 110~264V,50/60Hz |
| | Power Consumption (W) | |
| | Color System | PAL/SECAM/NT4.43 |
| | Sound System | BG/DK/NICAM/MPEG1/AC-3 |

# □. Inside of A&C Model

## Spec Comparison (LB650 Vs. Amber)

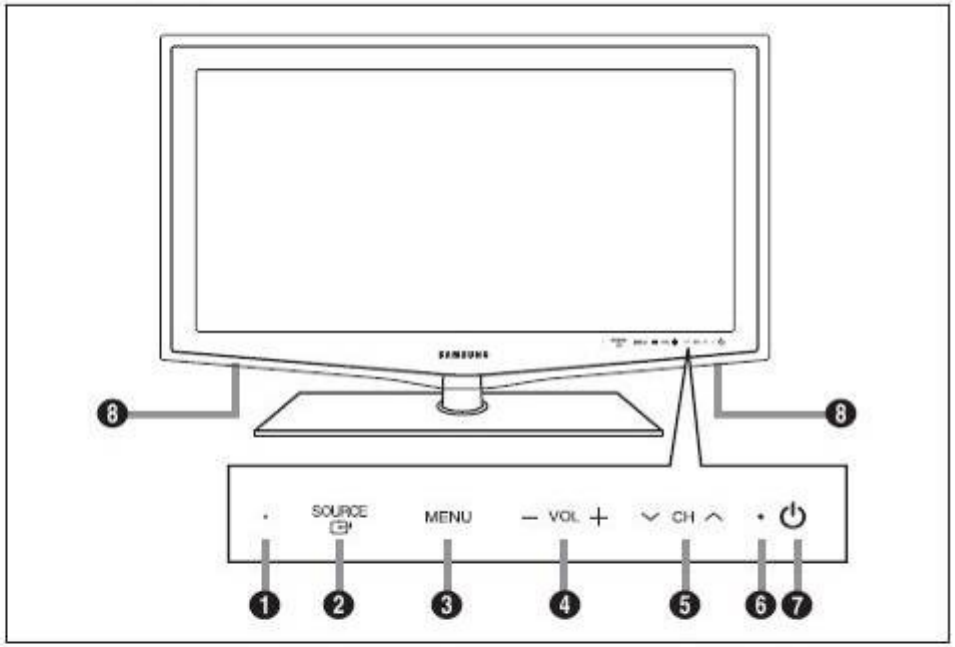
| Model | | SAMSUNG (LB650 40") LA40B65*T | SAMSUNG (Amber 40") LA40A65*A |
|---|---|---|---|
| Design | |  |  |
| Set | Size | 43.08*11.41*26.59 Inches(W stand) | 39.24*11.81*27.01 inches (W stand) |
| Panel | Frame rate | 100Hz | 100Hz |
| | Resolution | 1920 x 1080 | 1920 x 1080 |
| | Viewing angle | H : 178 V : 178 | H : 178 V : 178 |
| Color System | | PAL | PAL |
| HDMI | | 4 HDMI | 4 HDMI |
| Tuner | | 1 | 1 |
| Function | Contrast (cd/㎡) | 500 | 500 |
| | CR (typical) | 50000 : 1 | 3000 : 1 |
| | MJC(Motion Judder Canceller) | O | O |
| Power & Function keys | | Touch pad | Touch pad |
| Speaker | | 2.2CH | 2.2CH |

# □. Inside of A&C Model

## Control & Connection

### Viewing the Control Panel

- The product colour and shape may vary depending on the model.
- The front panel buttons can be activated by touching it with your finger.




❶ **REMOTE CONTROL SENSOR**
Aim the remote control towards this spot on the TV.

❷ **SOURCE**
Toggles between all the available input sources. In the on-screen menu, use this button as you would use the **ENTER** button on the remote control.

❸ **MENU**
Press to see an on-screen menu of your TV's features.

❹ **– VOL +**
Press to increase or decrease the volume.
In the on-screen menu, use the **– VOL +** buttons as you would use the ◄ and ► buttons on the remote control.

❺ **CH**
Press to change channels. In the on-screen menu, use the **CH** buttons as you would use the ▼ and ▲ buttons on the remote control.

❻ **POWER INDICATOR**
Blinks and turns off when the power is on and lights up in stand-by mode.

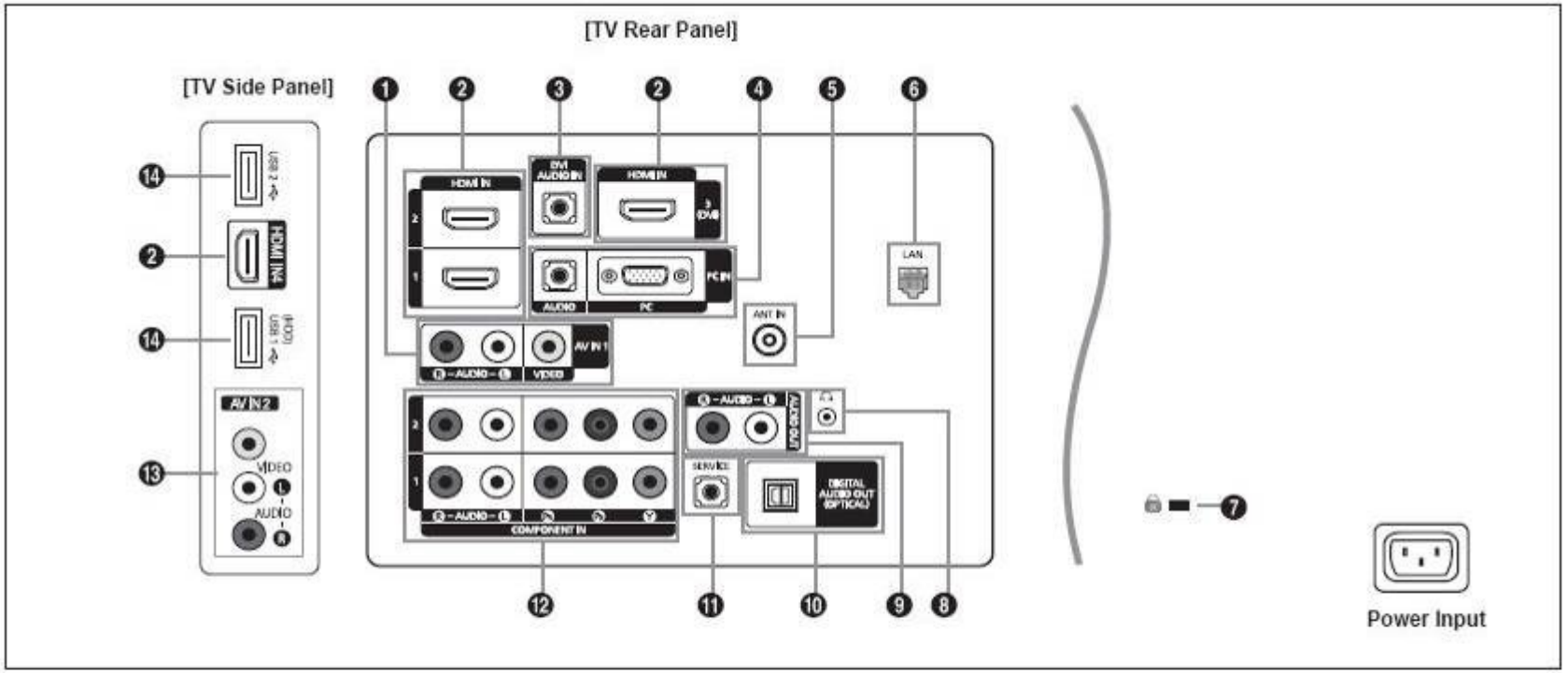
❼ **(POWER)**
Press to turn the TV on and off.

❽ **SPEAKERS**

# □. Inside of A&C Model

## Control & Connection

### Viewing the Connection Panel




- The product colour and shape may vary depending on the model.
- Whenever you connect an external device to your TV, make sure that power on the unit is turned off.
- When connecting an external device, match the colour of the connection terminal to the cable.

❶ **AV IN 1 [VIDEO] / [R-AUDIO-L]**

- Connect RCA cable to an appropriate external A/V device such as VCR, DVD or Camcorder.
- Connect RCA audio cables to **[R-AUDIO-L]** on your set and the other ends to corresponding audio out connectors on the A/V device.

# □. Inside of A&C Model

## Control & Connection

❷ **HDMI IN 1, HDMI IN 2, HDMI IN 3, HDMI IN 4**

- Supports connections between HDMI-connection-enabled AV devices (Set-Top Boxes, DVD players)
- No additional Audio connection is needed for an HDMI to HDMI connection.
- When using an HDMI / DVI cable connection, you must use the **HDMI 3** jack.

What is HDMI?

'High Definition Multimedia interface' allows the transmission of high definition digital video data and multiple channels of digital audio.

The HDMI / DVI terminal supports DVI connection to an extended device with the appropriate cable (not supplied).

The difference between HDMI and DVI is that the HDMI device is smaller in size, has the HDCP (High Bandwidth Digital Copy Protection) coding feature installed, and supports multi - channel digital audio.

The TV may not output sound and pictures may be displayed with abnormal colour when DVD players / Cable Boxes / Satellite receivers supporting HDMI versions older than 1.3 are connected. When connecting an older HDMI cable and there is no sound, connect the HDMI cable to the **HDMI 3** jack and the audio cables to the **DVI IN (AUDIO)** jacks on the back of the TV. If this happens, contact the company that provided the DVD player / Cable Box / Satellite receiver to confirm the HDMI version, then request a firmware update. HDMI cables that are not 1.3 may cause annoying flicker or no screen display.

Supported modes for HDMI / DVI and Component.

| | 480i | 480p | 576i | 576p | 720p | 1080i | 1080p |
|---|---|---|---|---|---|---|---|
| HDMI / DVI 50Hz | X | X | X | O | O | O | O |
| HDMI / DVI 60Hz | X | O | O | X | O | O | O |
| Component | O | O | O | O | O | O | O |

❸ **DVI IN (AUDIO)**

- DVI audio outputs for external devices.

❹ **PC IN [PC] / [AUDIO]**

- Connect to the video and audio output jack on your PC.

❺ **ANT IN**

- To view television channels correctly, a signal must be received by the set from one of the following sources: An outdoor aerial / A cable television network

❻ **LAN**

- Connect a LAN cable to this port to connect to the Network.

# □. Inside of A&C Model

## Control & Connection

❼ **KENSINGTON LOCK** (depending on the model)
- The Kensington Lock (optional) is a device used to physically fix the system when used in a public place.
- If you want to use a locking device, contact the dealer where you purchased the TV.
- The location of the Kensington Lock may be different depending on its model.

❽ **(HEADPHONE)**
- Headphone may be connected to the headphone output on your set. While the head phone is connected, the sound from the built-in speakers will be disabled.
- Using the sound function is restricted when connecting headphones to the TV.
- Prolonged use of headphones at a high volume may damage your hearing.
- You will not hear sound from the speakers when you connect headphones to the TV.
- The headphone volume and TV volume are adjusted separately.

❾ **AUDIO OUT [R-AUDIO-L]**
- Connect RCA audio cables to **AUDIO OUT [R-AUDIO-L]** on the rear of your set and the other ends to corresponding audio in connectors on the Amplifier or DVD Home Theatre.

❿ **DIGITAL AUDIO OUT (OPTICAL)**
- Connects to a Digital Audio component.
- When a Digital Audio System is connected to the **DIGITAL AUDIO OUT (OPTICAL)** jack: Decrease the volume of the TV and adjust the volume level with the system's volume control.
- 5.1CH audio is possible when the TV is connected to an external device supporting 5.1CH.

⓫ **SERVICE**
- Connector for service only.

⓬ **COMPONENT IN 1, 2**
- Connect component video cables (optional) to component connector ($P_R$, $P_B$, Y) on the rear of your set and the other ends to corresponding component video out connectors on the DVD.
- If you wish to connect both the Set-Top Box and DVD, you should connect the Set-Top Box to the DVD and connect the DVD to component connector ($P_R$, $P_B$, Y) on your set.
- The $P_R$, $P_B$ and Y connectors on your component devices DVD are sometimes labeled Y, B-Y and R-Y or Y, Cb and Cr.
- Connect RCA audio cables (optional) to **[R-AUDIO-L]** on the rear of your set and the other ends to corresponding audio out connectors on the DVD.

⓭ **AV IN 2 [VIDEO] / [R-AUDIO-L]**
- Connect RCA cable to an appropriate external A/V device such as VCR, DVD or Camcorder.
- Connect RCA audio cables to **[R-AUDIO-L]** on your set and the other ends to corresponding audio out connectors on the A/V device.

⓮ **USB1(HDD) / USB2**
- Connector for software upgrades and Media Play, etc.
- You can connect to Samsung's network wirelessly using the 'Samsung Wireless LAN Adapter' (Sold separately).
- For USB HDD, use the USB1 (HDD) port.

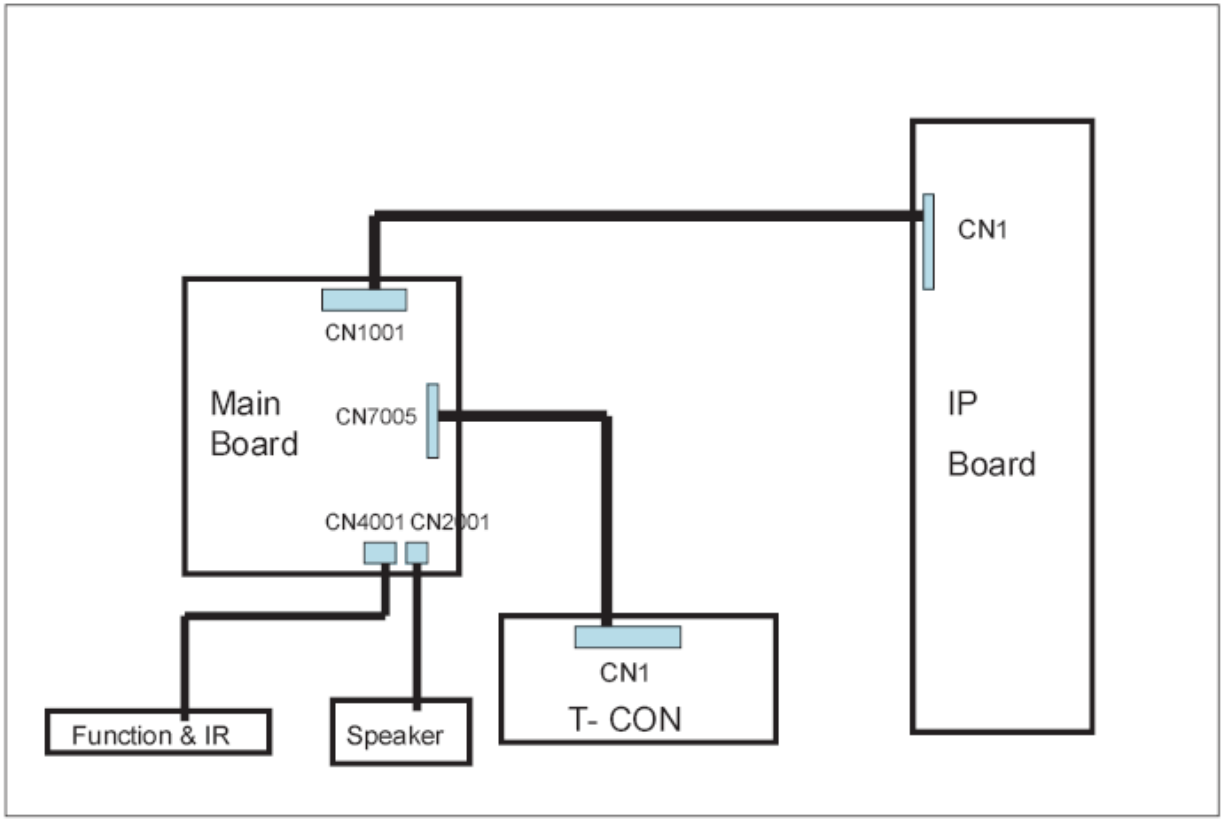
# □. Inside of A&C Model

LB650/550/750

Difference : T/C Tuner

# □. Inside of A&C Model

## Wiring Diagram



# □. Inside of A&C Model

## Wiring Diagram

CN7005 (to Panel)

| | | | |
|---|---|---|---|
| 1 | PDP Start_Opt | 26 | EVEN_TX0+ |
| 2 | PDP Logic_TX | 27 | EVEN_TX0- |
| 3 | SW_PVCC | 28 | GND |
| 4 | SDA4 | 29 | ODD_TX4+ |
| 5 | GND | 30 | ODD_TX4- |
| 6 | SCL4 | 31 | ODD_TX3+ |
| 7 | GND | 32 | ODD_TX3- |
| 8 | PDP Logic_RX | 33 | GND |
| 9 | NC | 34 | ODD_TXCLK+ |
| 10 | T-CON-Check | 35 | ODD_TXCLK- |
| 11 | EVEN_TX5+ | 36 | GND |
| 12 | EVEN_TX5- | 37 | ODD_TX2+ |
| 13 | GND | 38 | ODD_TX2- |
| 14 | EVEN_TX4+ | 39 | ODD_TX1+ |
| 15 | EVEN_TX4- | 40 | ODD_TX1- |
| 16 | EVEN_TX3+ | 41 | ODD_TX0+ |
| 17 | EVEN_TX3- | 42 | ODD_TX0- |
| 18 | GND | 43 | GND |
| 19 | EVEN_TXCLK+ | 44 | ODD_TX5+ |
| 20 | EVEN_TXCLK- | 45 | ODD_TX5- |
| 21 | GND | 46 | NC |
| 22 | EVEN_TX2+ | 47 | 12V |
| 23 | EVEN_TX2- | 48 | 12V |
| 24 | EVEN_TX1+ | 49 | 12V |
| 25 | EVEN_TX1- | 50 | 12V |
| | | 51 | 12V |

CN1001 (POWER)

| | | | |
|---|---|---|---|
| 1 | GND | 16 | 5V |
| 2 | GND | 17 | 5V |
| 3 | DET_5V | 18 | 5V |
| 4 | NC | 19 | GND |
| 5 | PWM_DIMMING | 20 | GND |
| 6 | GND | 21 | GND |
| 7 | SW_INVERTER | 22 | GND |
| 8 | ANA_DIMMING | 23 | 12VS |
| 9 | 13V | 24 | 12VS |
| 10 | 13V | 25 | GND |
| 11 | 13V | 26 | GND |
| 12 | GND | 27 | A5V |
| 13 | GND | 28 | GND |
| 14 | GND | 29 | SW_POWER |
| 15 | 5V | 30 | FRC_M_SYND |

CN3004_EU(to Component)

| | |
|---|---|
| 1 | GND |
| 2 | COMP_IDENT |
| 3 | COMP_Y |
| 4 | GND |
| 5 | COMP_PB |
| 6 | COMP_PB |
| 7 | GND |
| 8 | COMP_PR |
| 9 | COMP_PR |

CN3005_EU(to Component)

| | |
|---|---|
| 1 | GND |
| 2 | COMP_SR_IN |
| 3 | COMP_SL_IN |
| 4 | GND |
| 5 | COMP_SL_IN |
| 6 | COMP_SR_IN |

CN3013(to HDMI)

| | | | |
|---|---|---|---|
| 1 | HDMI1_RX2+ | 12 | HDMI1_RXCLK- |
| 2 | GND | 13 | NC |
| 3 | HDMI1_RX2- | 14 | NC |
| 4 | HDMI1_RX1+ | 15 | HDMI1_DDC_SCL |
| 5 | GND | 16 | HDMI1_DDC_SDA |
| 6 | HDMI1_RX1- | 17 | GND |
| 7 | HDMI1_RX0+ | 18 | IDENT_HDMI1 |
| 8 | GND | 19 | HDMI_HOT_PLUG |
| 9 | HDMI1_RX0- | 20 | GND |
| 10 | HDMI1_RXCLK+ | 21 | GND |
| 11 | GND | | |

CN3016(to HDMI2)

| | | | |
|---|---|---|---|
| 1 | HDMI2_RX2+ | 12 | HDMI2_RXCLK- |
| 2 | GND | 13 | NC |
| 3 | HDMI2_RX2- | 14 | NC |
| 4 | HDMI2_RX1+ | 15 | HDMI2_DDC_SCL |
| 5 | GND | 16 | HDMI2_DDC_SDA |
| 6 | HDMI2_RX1- | 17 | GND |
| 7 | HDMI2_RX0+ | 18 | IDENT_HDMI2 |
| 8 | GND | 19 | HDMI_HOT_PLUG |
| 9 | HDMI2_RX0- | 20 | GND |
| 10 | HDMI2_RXCLK+ | 21 | GND |
| 11 | GND | | |

# □. Inside of A&C Model

## Wiring Diagram

CN3010 (to HDMI4)

| | | | |
|---|---|---|---|
| 1 | HDMI4_RX2+ | 12 | HDMI4_RXCLK- |
| 2 | GND | 13 | NC |
| 3 | HDMI4_RX2- | 14 | NC |
| 4 | HDMI4_RX1+ | 15 | HDMI4_DDC_SCL |
| 5 | GND | 16 | HDMI4_DDC_SDA |
| 6 | HDMI4_RX1- | 17 | GND |
| 7 | HDMI4_RX0+ | 18 | IDENT_HDMI4 |
| 8 | GND | 19 | HDMI_HOT_PLUG |
| 9 | HDMI4_RX0- | 20 | GND |
| 10 | HDMI4_RXCLK+ | 21 | GND |
| 11 | GND | | |

CN3015(to HDMI3)

| | | | |
|---|---|---|---|
| 1 | HDMI3_RX2+ | 12 | HDMI3_RXCLK- |
| 2 | GND | 13 | NC |
| 3 | HDMI3_RX2- | 14 | NC |
| 4 | HDMI3_RX1+ | 15 | HDMI3_DDC_SCL |
| 5 | GND | 16 | HDMI3_DDC_SDA |
| 6 | HDMI3_RX1- | 17 | GND |
| 7 | HDMI3_RX0+ | 18 | IDENT_HDMI3 |
| 8 | GND | 19 | HDMI_HOT_PLUG |
| 9 | HDMI3_RX0- | 20 | GND |
| 10 | HDMI3_RXCLK+ | 21 | GND |
| 11 | GND | | |

CN3011(to PC)

| | | | |
|---|---|---|---|
| 1 | PC_RED | 9 | 5V |
| 2 | PC_GREEN | 10 | PC_IDENT |
| 3 | PC_BLUE | 11 | GND |
| 4 | GND | 12 | SDA |
| 5 | GND | 13 | PC_HS |
| 6 | GND | 14 | PC_VS |
| 7 | GND | 15 | SCL |
| 8 | GND | | |

CN3006( to Sound Output)

| | |
|---|---|
| 1 | GND |
| 2 | MONITOR_SL_OUT |
| 3 | MONITOR_SL_OUT |
| 4 | GND |
| 5 | MONITOR_SR_OUT |
| 6 | MONITOR_SR_OUT |

CN2001(Speaker Out)

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

OP3001(Optical Jack)

| | |
|---|---|
| 1 | VIN |
| 2 | VCC |
| 3 | GND |

CN3009(to Video)

| | |
|---|---|
| 1 | GND |
| 2 | VIDEO_SL_IN |
| 3 | VIDEO_SR_IN |
| 4 | GND |
| 5 | VIDEO_SR_IN |
| 6 | VIDEO_SL_IN |
| 7 | GND |
| 8 | VIDEO_IDENT |
| 9 | VIDEO_CVBS |

CN3014 (to Service Jack)

| | |
|---|---|
| 1 | GND |
| 2 | RX |
| 3 | TX |
| 4 | RX |
| 5 | RX |
| 6 | TX |
| 7 | TX |

CN7006(USB1)

| | |
|---|---|
| 1 | VCC |
| 2 | DM |
| 3 | DP |
| 4 | GND |

CN7002_650(USB2)

| | |
|---|---|
| 1 | VCC |
| 2 | DM |
| 3 | DP |
| 4 | GND |

CN4001(to Function)

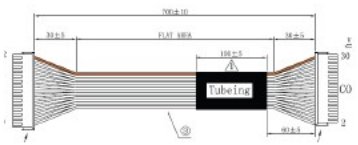
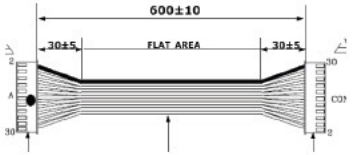
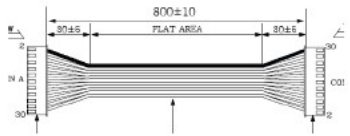
| | |
|---|---|
| 1 | IR |
| 2 | GND |
| 3 | A3.3V |
| 4 | LED_STB |
| 5 | BUZZER |
| 6 | KEY_INPUT1 |
| 7 | KEY_INPUT2 |
| 8 | MSDA_5V |
| 9 | A5V |
| 10 | MSCL_5V |
| 11 | LED_CNTR |
| 12 | A5V |

# □. Inside of A&C Model

## Cabl es

| Connector | Functions |
|---|---|
| Panel <-> CN7005 | The LVDS signal transfered Panel to Main Board.<br>* defective symptom : No pcture but normal sound |
| IP, SMPS <-> CN1001 | Supply dimming and main power from IP,SMPS to Main Board.<br>* defective symptom : No pcture, repeat power On/Off |

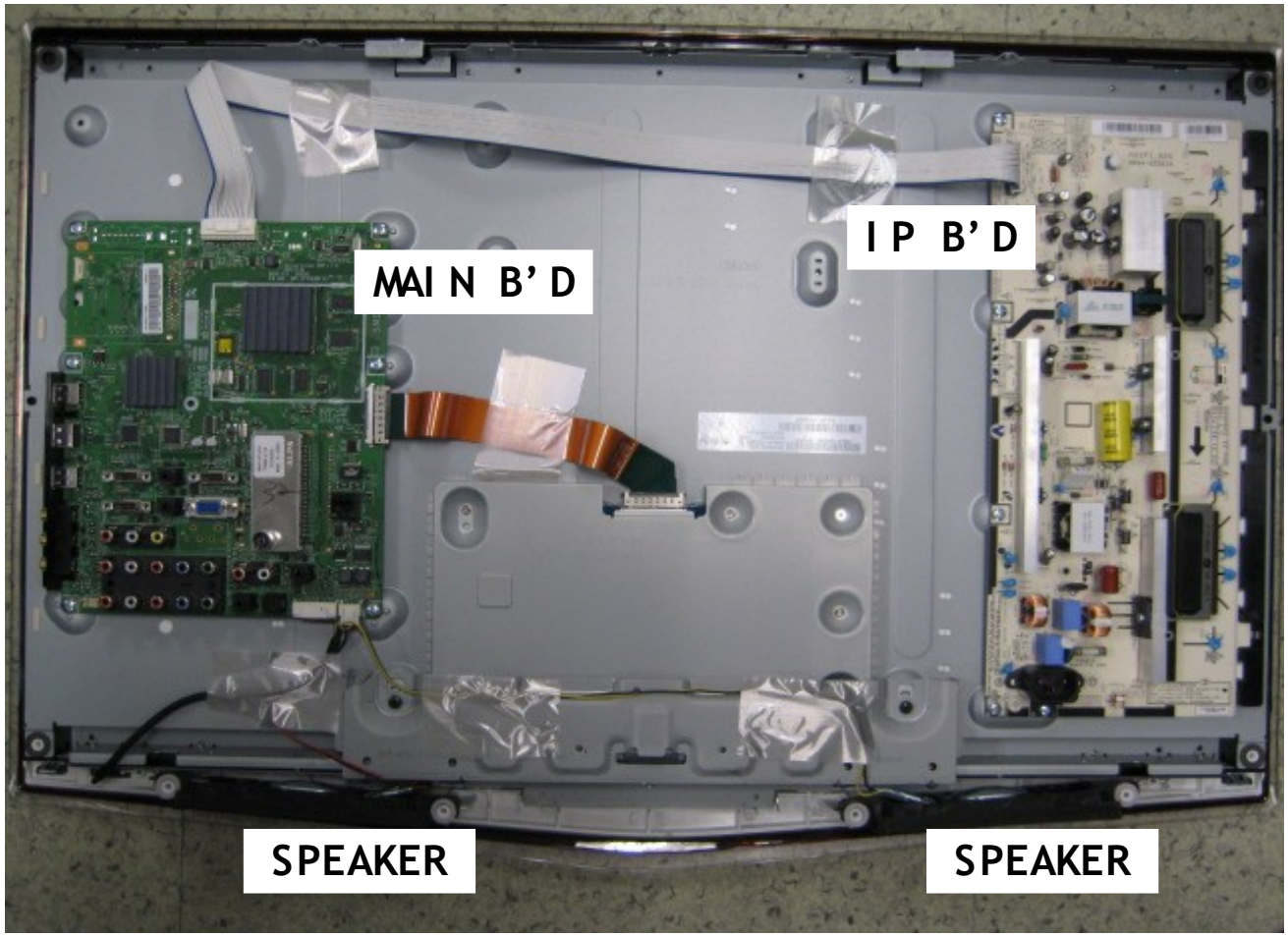
### 6-4. Cables

| | | | |
|---|---|---|---|
| Code | BN96-10077A(LVDS_32) | BN96-10076A(LVDS_37,40) | BN96-10075A(LVDS_46) |
| Photo |  |  |  |
| Code | BN96-10074A(LVDS_55) | BN39-01099K(37,40,46_30Pin) | BN39-01099J(32_30Pin) |
| Photo |  |  |  |
| Code | BN39-01099B(55_30Pin) | | |
| Photo |  | | |

# □. Inside of A&C Model

## Inner Feature of A&C

- Power(SMPS), Main Board, Panel



# □. Inside of A&C Model

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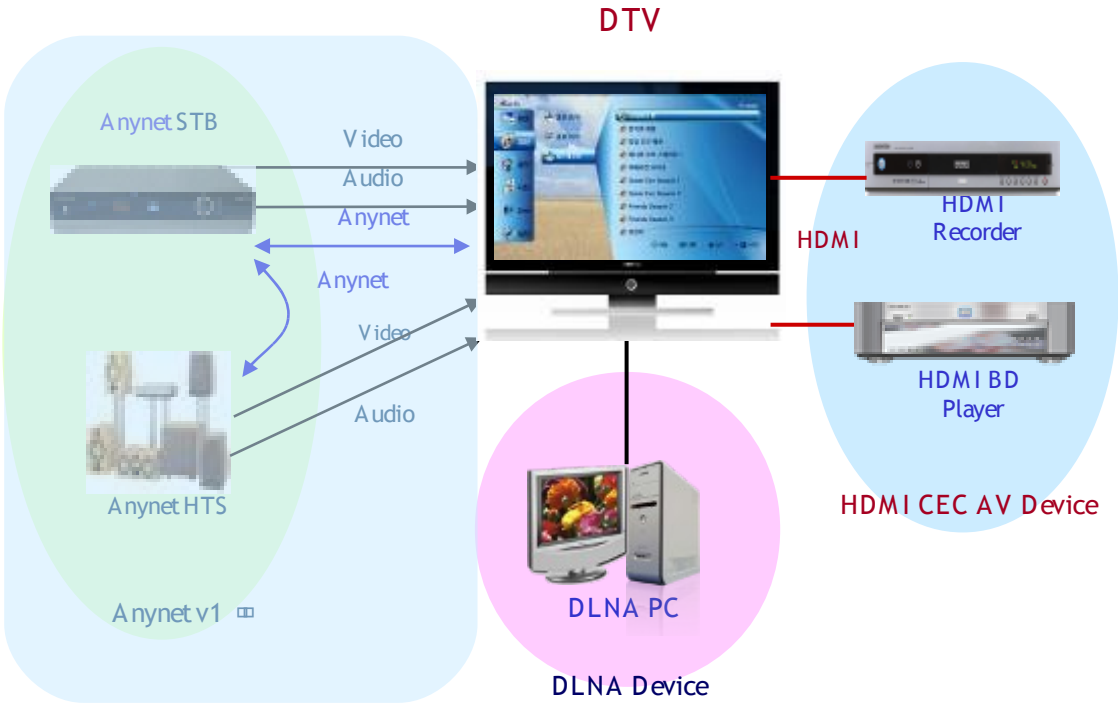
## Some Functions of A&C

❑ HDMI CEC




- Basic function
  - auto play, reserved record, power auto Off

# □. Inside of A&C Model

## Some Functions of A&C

**- HDMI-CEC**

**Easy connection and control with a single remote control**


By HDMI cable's simplicity connection

Easy control AV devices.

- One touch play / record
- One touch home theater
- One touch system stand-by
- Remote control pass Through

# □. Inside of A&C Model

## Auto Motion Plus 100Hz

**Removes drag from fast scenes with a lot of movement to provide a clearer picture.**

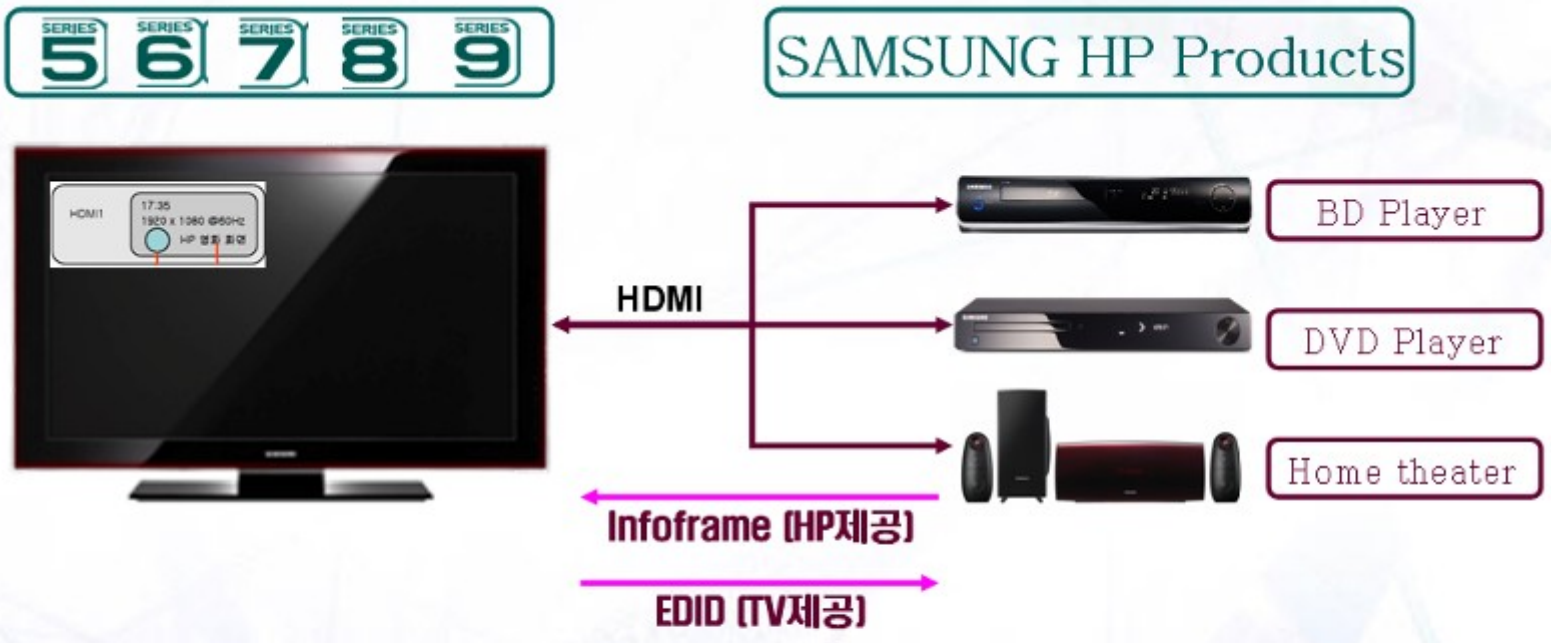
| Function (OSD) | 100Hz FRC | Judder reduction (only 24p source) | Blur reduction |
|---|---|---|---|
| Off | Off (repeat) | Off | Off |
| Clear | ON (interpolation) | Off | High |
| Standard | ON (interpolation) | Medium | Medium |
| Smooth | ON (interpolation) | High | High |
| Custom | Level variable (0~10) | | |
| Demo | Demo (Standard/off) | | |

* If you enable Auto Motion Plus 100Hz, noise may appear on the screen. If this occurs, set Auto Motion Plus 100Hz to Off.

# □. Inside of A&C Model

## HP (Home Platform)

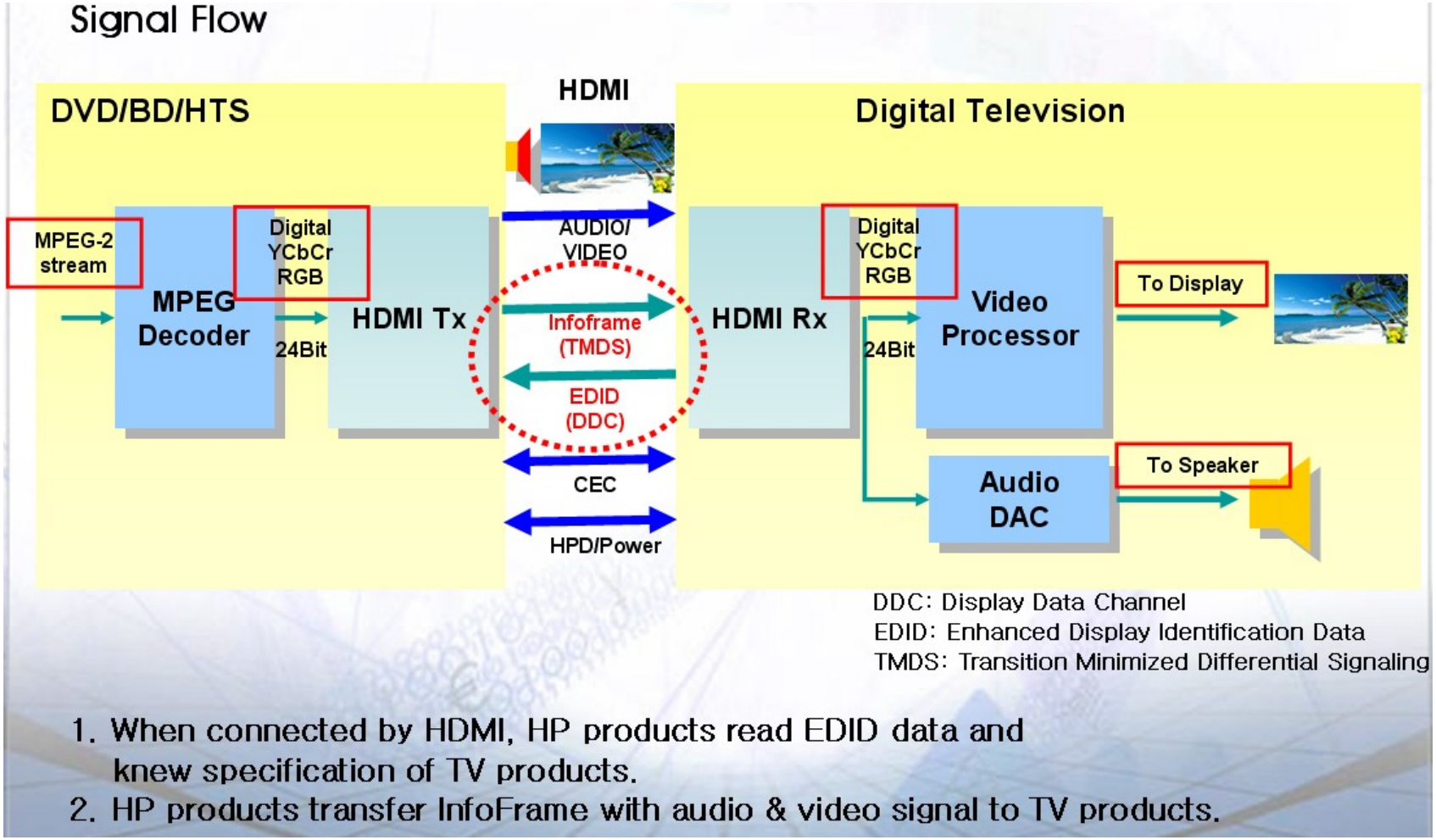
■ BD Wise description




- When connected HP products, offered different picture quality.
- When Samsung HP products & Samsung TV linked by HDMI, changed best picture quality automatically

# □. Inside of A&C Model

## HP (Home Platform)



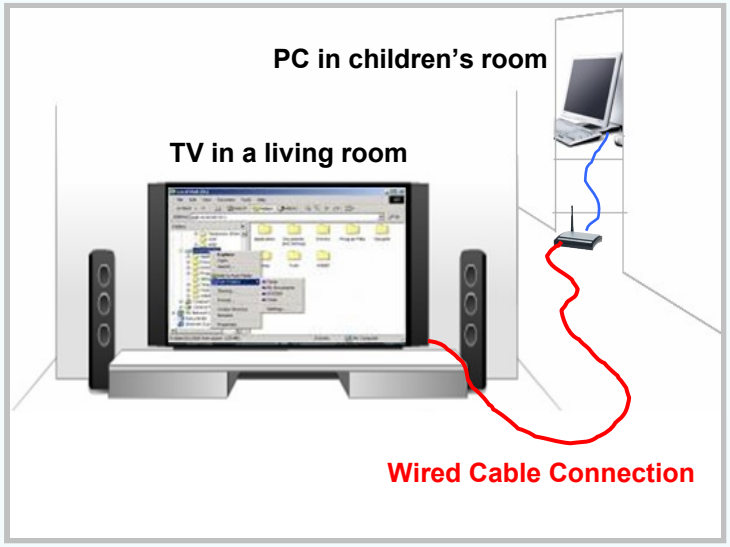
# □. Inside of A&C Model

## Wireless DLNA

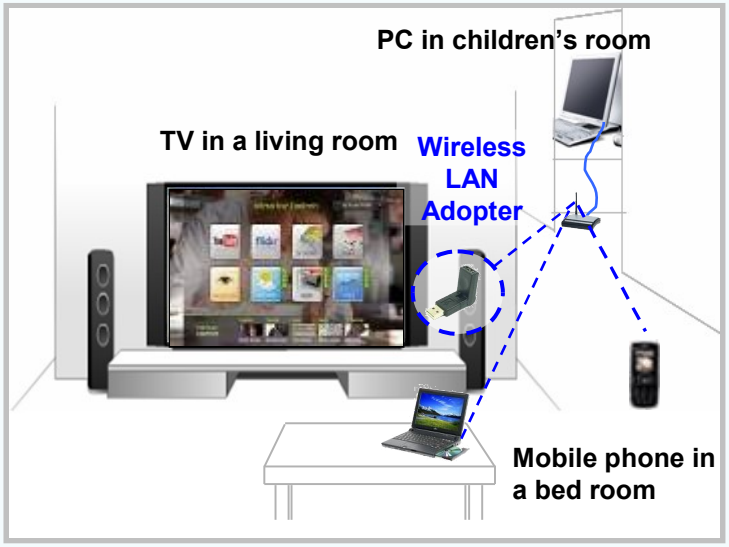
✓ **Enjoy multimedia in PC or any DMS on TV without cable connection.**

- You can see movies, music and pictures in your PC on TV wirelessly
- You can watch movies and pictures that you take with DLNA mobile phone
- It is fine to connect one TV with multiple PCs, or one PC with multiple TVs

[ DLNA ]




[ Wireless DLNA ]



# □. Inside of A&C Model

## Media Play(USB & DLNA)

**Media Play_USB**


This fuction enables you to view and listen to photo(JPEG), audio files(MP3) and movie (MPEG) saved on a USB Mass Storage Class (MSC) device.

# □. Inside of A&C Model

## Media Play(USB & DLNA)



You can connect DLNA to your TV after setting up a network in your house.
You must install DLNA software on your PC in order to share stored content on your TV.

# Media Play(USB & DLNA)

- **Supported Format vs. '08**

| | | | 08 model | 09 model |
|---|---|---|---|---|
| Image Category | | | 5 category | 3 category |
| Wireless Ready | | | X | O |
| Seek function | | | X | O |
| Sub_Title | | | SMI | SMI,SRT,SUB,TXT,TTXT |
| Supported Format | Image | Progressive JPEG | X | O |
| | Audio | | Same | |
| | Video | | 5 File extension | over 9 File extension |

## '08 Video format

| File Extention | Container | Video Decoder | Resolution | Audio codec |
|---|---|---|---|---|
| *.avi | AVI | Xvid | 800x600 | PCM |
| | | | | ADPCM |
| | | H.264 MP | 1920 X 1088 | AC3 |
| | | MPEG4 SP | 800 X 600 | PCM |
| | | | | ADPCM |
| | | MPEG4 ASP | 800 X 600 | ADPCM |
| | | MJPEG | 800 X 600 | PCM |
| *.mp4 | MP4 | H.264 BP | 1920 X 1088 | AAC |
| | | H.264 MP | 1920 X 1088 | PCM |
| | | | | AAC |
| *.mpg | PS | MPEG2 | 1920 X 1088 | AC3 |
| *.vro, *.vob | VRO | MPEG2 | 1920 X 1088 | AC3 |

- There are some technical differences between USB(local play) and DLNA(network play).

So DLNA may have some limitations of functions such as play, seek, jump in unusual case.

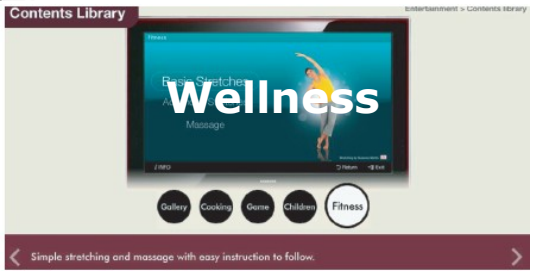
## '09 Video format

| File Extention | Container | Video Decoder | Audio codec | Resolution | Frame/sec | Mbit/sec | Comments |
|---|---|---|---|---|---|---|---|
| *.avi | AVI | Divx 5.11 | MP3 AC3 LPCM ADPCM (MULAW ALAW) | 800x600 | 6 ~ 30 | 8 | HD ready |
| | | Divx 4.x | | 800x600 | 6 ~ 30 | 8 | HD ready |
| | | Divx 5.1 | | 800x600 | 6 ~ 30 | 8 | HD ready |
| | | Divx 6.0 | | 1920x1050 | 6 ~ 30 | 20 | HD ready |
| | | XviD | | 1920x1050 | 6 ~ 30 | 20 | HD ready, GMC 1-Warping Point support |
| | | H.264 BP | | 1920x1050 | 6 ~ 30 | 25 | FMO/ASO/RS not support |
| | | H.264 MP | | 1920x1050 | 6 ~ 30 | 25 | |
| | | H.264 HP | | 1920x1050 | 6 ~ 30 | 25 | |
| | | MPEG-4 SP | | 800x600 | 6 ~ 30 | 8 | Same as DivX 4.x |
| | | MPEG-4 ASP | | 800x600 | 6 ~ 30 | 8 | GMC 1-Wrapping Point support |
| | | Motion JPEG | | 800x600 | 6 ~ 30 | 8 | Techwin MJPEG supported |
| *.mkv | MKV | Divx 5.11 | MP3 AC3 LPCM ADPCM (MULAW ALAW) AAC | 800x600 | 6 ~ 30 | 8 | HD ready |
| | | Divx 4.x | | 800x600 | 6 ~ 30 | 8 | HD ready |
| | | Divx 5.1 | | 800x600 | 6 ~ 30 | 8 | HD ready |
| | | Divx 6.0 | | 1920x1050 | 6 ~ 30 | 20 | HD ready |
| | | XviD | | 1920x1050 | 6 ~ 30 | 20 | HD ready, GMC 1-Warping Point support |
| | | H.264 BP | | 1920x1050 | 6 ~ 30 | 25 | FMO/ASO/RS not support |
| | | H.264 MP | | 1920x1050 | 6 ~ 30 | 25 | |
| | | H.264 HP | | 1920x1050 | 6 ~ 30 | 25 | |
| | | MPEG-4 SP | | 800x600 | 6 ~ 30 | 8 | Same as DivX 4.x |
| | | MPEG-4 ASP | | 800x600 | 6 ~ 30 | 8 | GMC 1-Wrapping Point support |
| | | Motion JPEG | | 800x600 | 6 ~ 30 | 8 | Techwin MJPEG supported |
| *.asf | ASF | Divx 5.11 | WMA MP3 AC3 LPCM ADPCM (MULAW ALAW) AAC | 800x600 | 6 ~ 30 | 8 | HD ready |
| | | Divx 4.x | | 800x600 | 6 ~ 30 | 8 | HD ready |
| | | Divx 5.1 | | 800x600 | 6 ~ 30 | 8 | HD ready |
| | | Divx 6.0 | | 1920x1050 | 6 ~ 30 | 20 | HD ready |
| | | XviD | | 1920x1050 | 6 ~ 30 | 20 | HD ready, GMC 1-Warping Point support |
| | | H.264 BP | | 1920x1050 | 6 ~ 30 | 25 | FMO/ASO/RS not support |
| | | H.264 MP | | 1920x1050 | 6 ~ 30 | 25 | |
| | | H.264 HP | | 1920x1050 | 6 ~ 30 | 25 | |
| | | MPEG-4 SP | | 800x600 | 6 ~ 30 | 8 | Same as DivX 4.x |
| | | MPEG-4 ASP | | 800x600 | 6 ~ 30 | 8 | GMC 1-Wrapping Point support |
| *.wmv (VC1) | | Window Media Video V9 | | 1920x1050 | 6 ~ 30 | 25 | VC1 SP/MP/AP L3 support |
| *.mp4 | MP4 (SMP4) | H.264 BP | ADPCM (HE)-AAC mp3 OGG, ALAC is not supported | 1920x1050 | 6 ~ 30 | 25 | FMO/ASO/RS not support |
| | | H.264 MP | | 1920x1050 | 6 ~ 30 | 25 | |
| | | H.264 HP | | 1920x1050 | 6 ~ 30 | 25 | |
| | | MPEG-4 SP | | 800x600 | 6 ~ 30 | 8 | Same as DivX 4.x |
| | | MPEG-4 ASP | | 800x600 | 6 ~ 30 | 8 | GMC 1-Wrapping Point support |
| | | XviD | | 1920x1050 | 6 ~ 30 | 20 | |
| *.3gp | 3GPP | H.264 BP | ADPCM (HE)-AAC AMR is not supported | 1920x1050 | 6 ~ 30 | 25 | FMO/ASO/RS not support |
| | | H.264 MP | | 1920x1050 | 6 ~ 30 | 25 | |
| | | H.264 HP | | 1920x1050 | 6 ~ 30 | 25 | |
| | | MPEG-4 SP | | 800x600 | 6 ~ 30 | 8 | Same as DivX 4.x |
| | | MPEG-4 ASP | | 800x600 | 6 ~ 30 | 8 | GMC 1-Wrapping Point support |

# Contents library

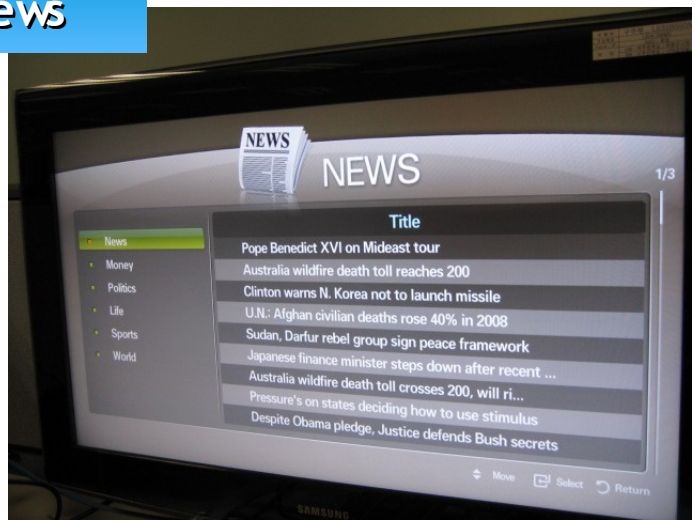




# internet@TV

## News




## Widget

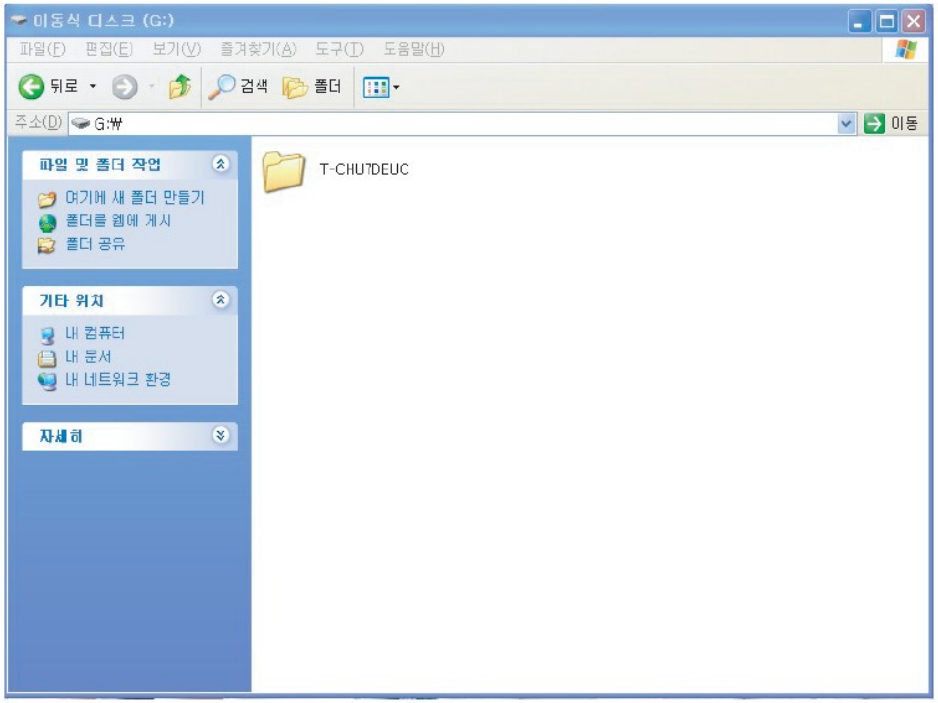

## YouTube

# How to do the USB Download

1. Insert USB drive containing the firmware upgrade into the wiselink on the side of the TV.

(USB drive make folder “T-CHL7DEUC” and this folder download micom program)

* P.S. T-CHL7DEUC is only for LB650 model.



# How to do the USB Download

You can go to “support -> Software Upgrade”

Then, Press “By USB”

Or When you insert USB into TV,

You can see the pop up window as the below.


# How to do the USB Download

It Takes a few minutes.

Wait until this message.

Then, You can check the version.

Press OK.

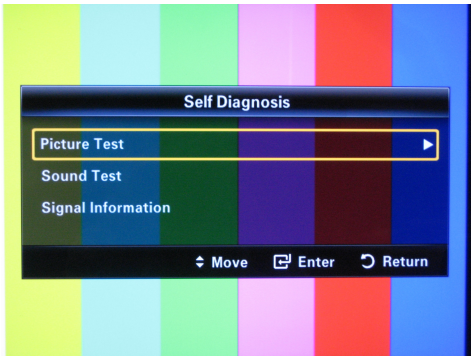
After upgrade, TV is automatically reset.



# SELF DIAGNOSIS

## Self Diagnosis


Picture Test

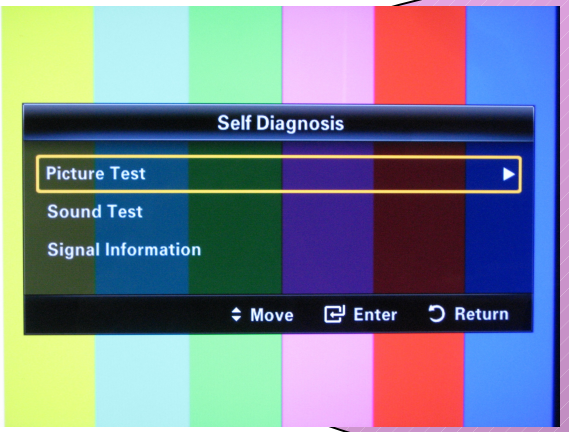



Sound Test

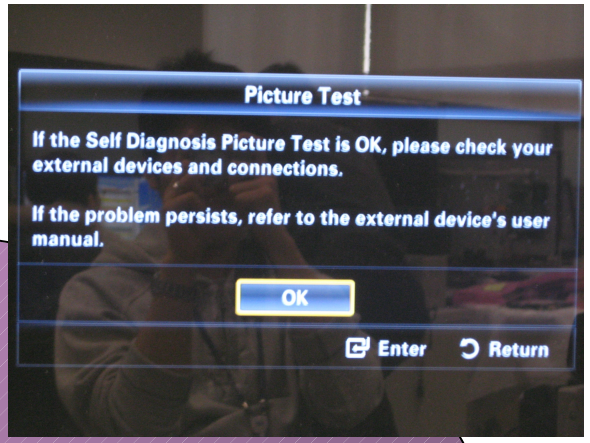

Signal Information

# SELF DIAGNOSIS

## Picture Test




Yes

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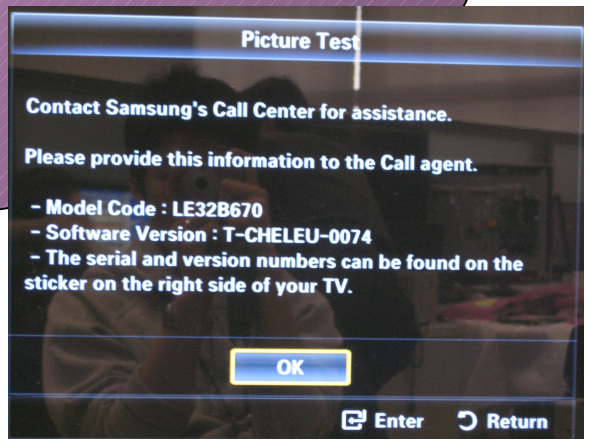
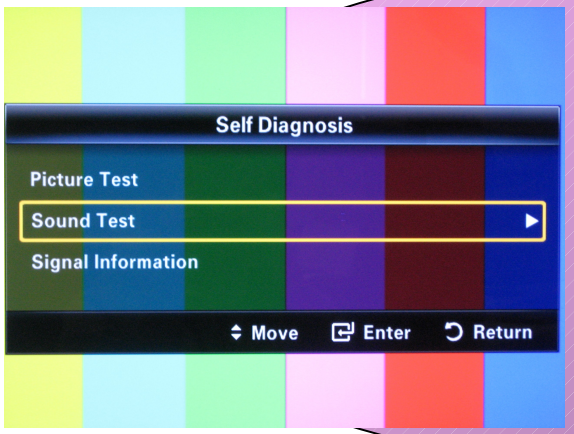


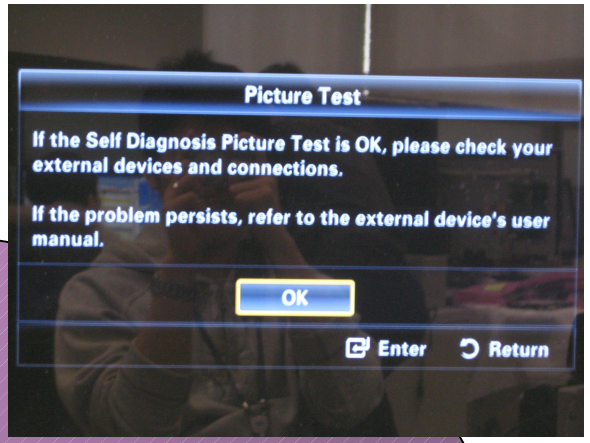
# SELF DIAGNOSIS

## Sound Test

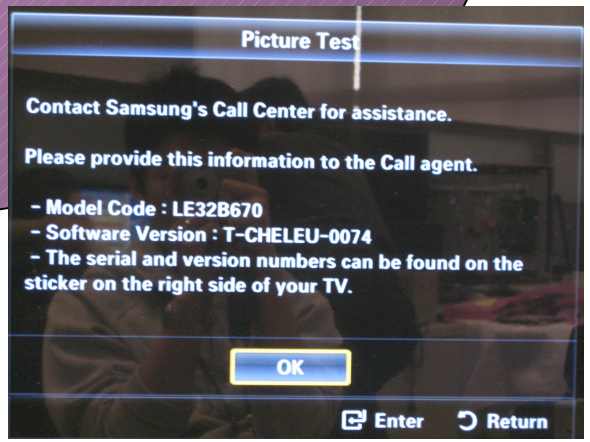




Yes




No

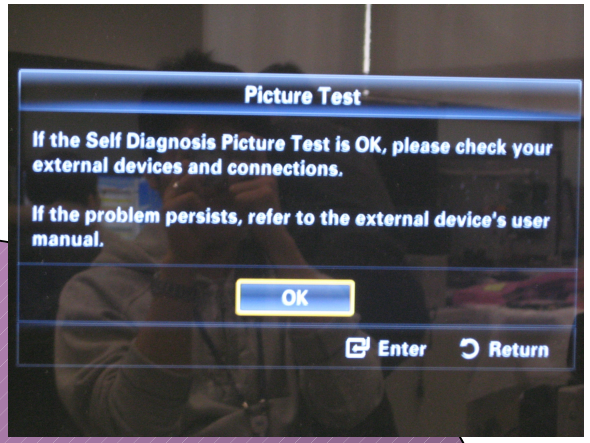


# SELF DIAGNOSIS

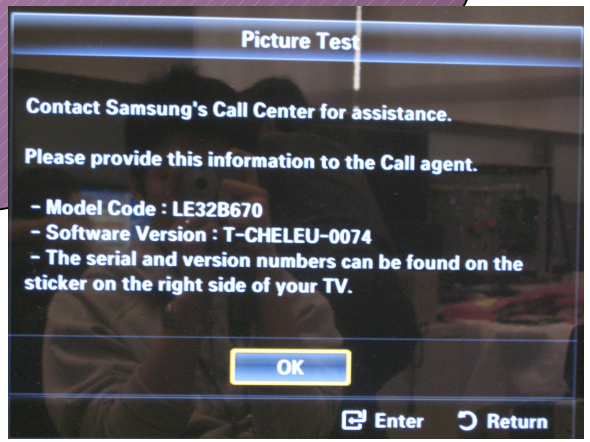
## Signal Information



Yes




No



# Alternative Software

This is the function you can replace S/W version from current one to old one.



# □. Board description

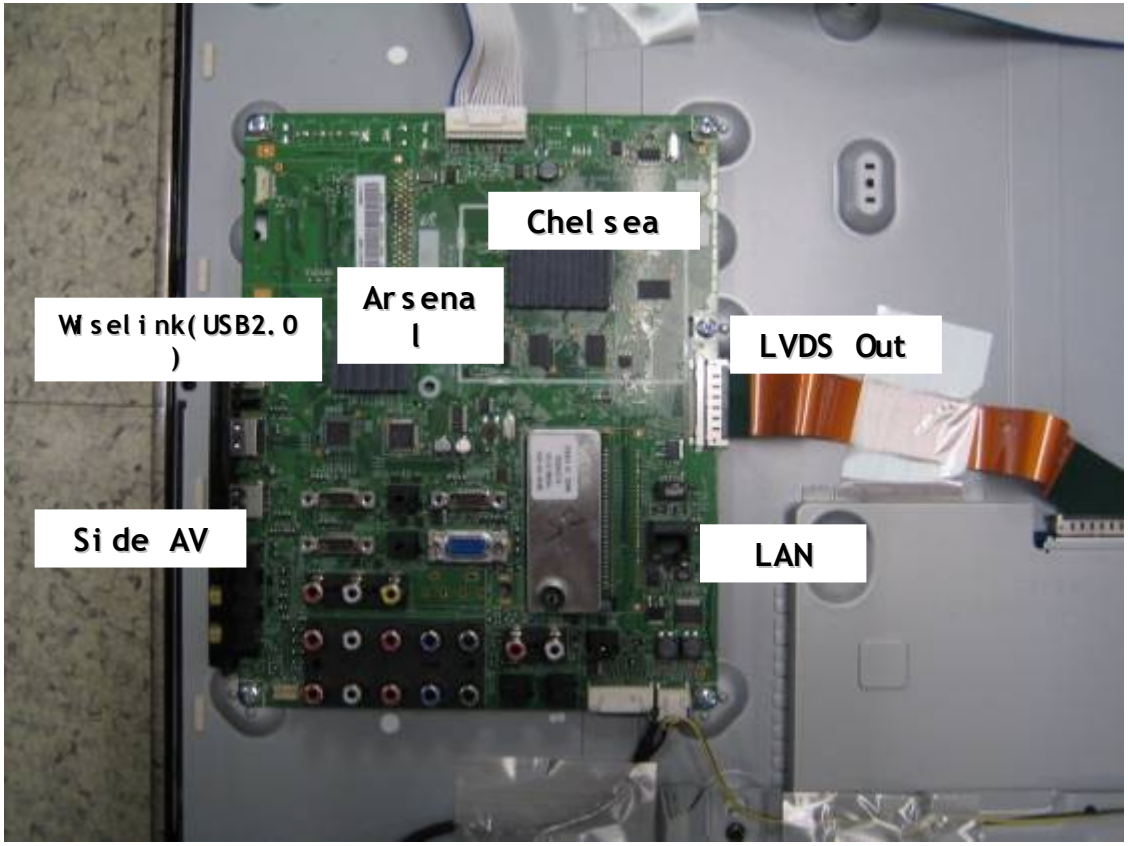
# ▫. Board description

## CONTENTS

- 32/37/40/46/52 Main B'D Layout

# □. Board description

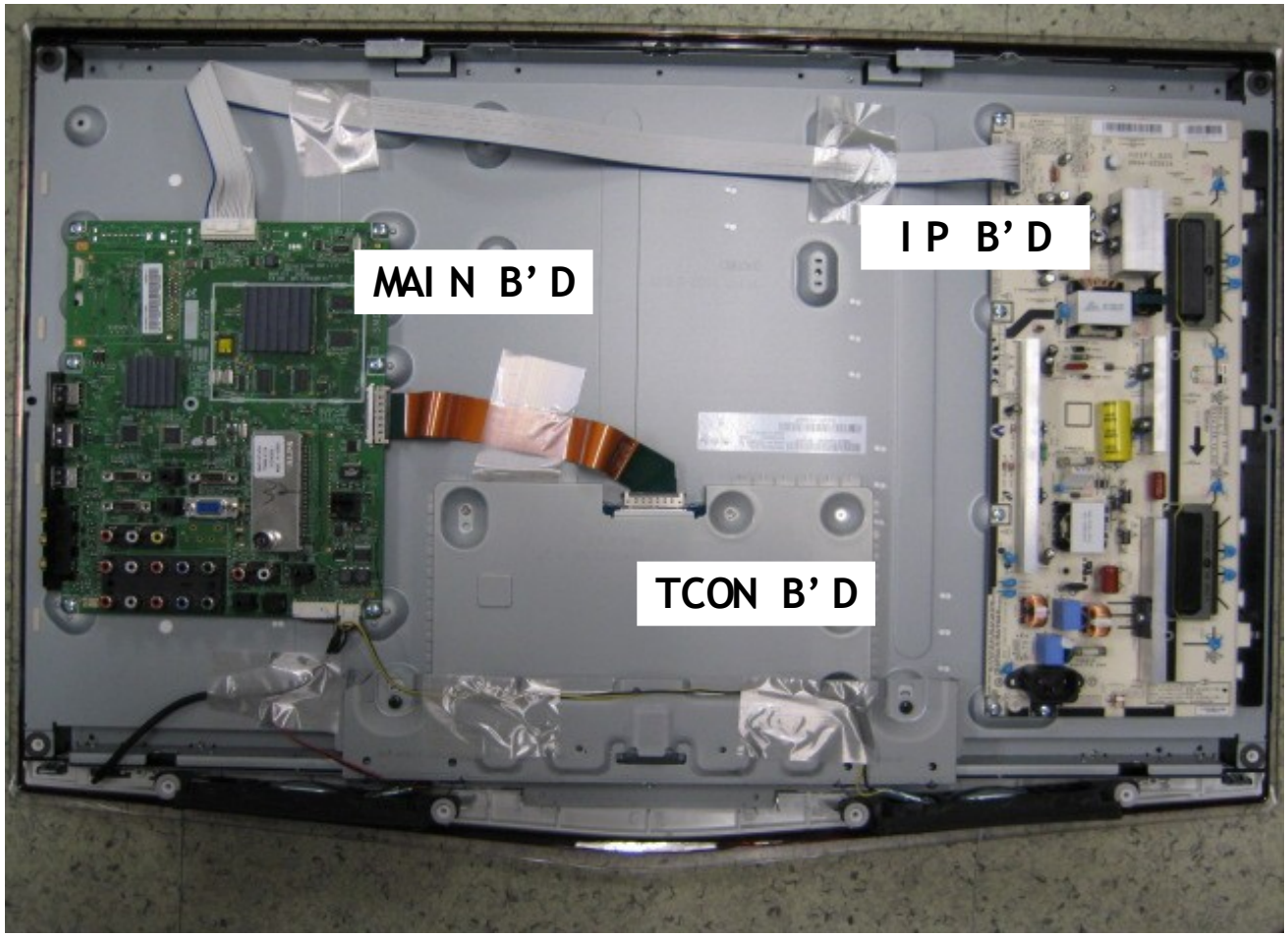
Main B'D Layout (LB6T)



# □. Board description

## Hanaro Type

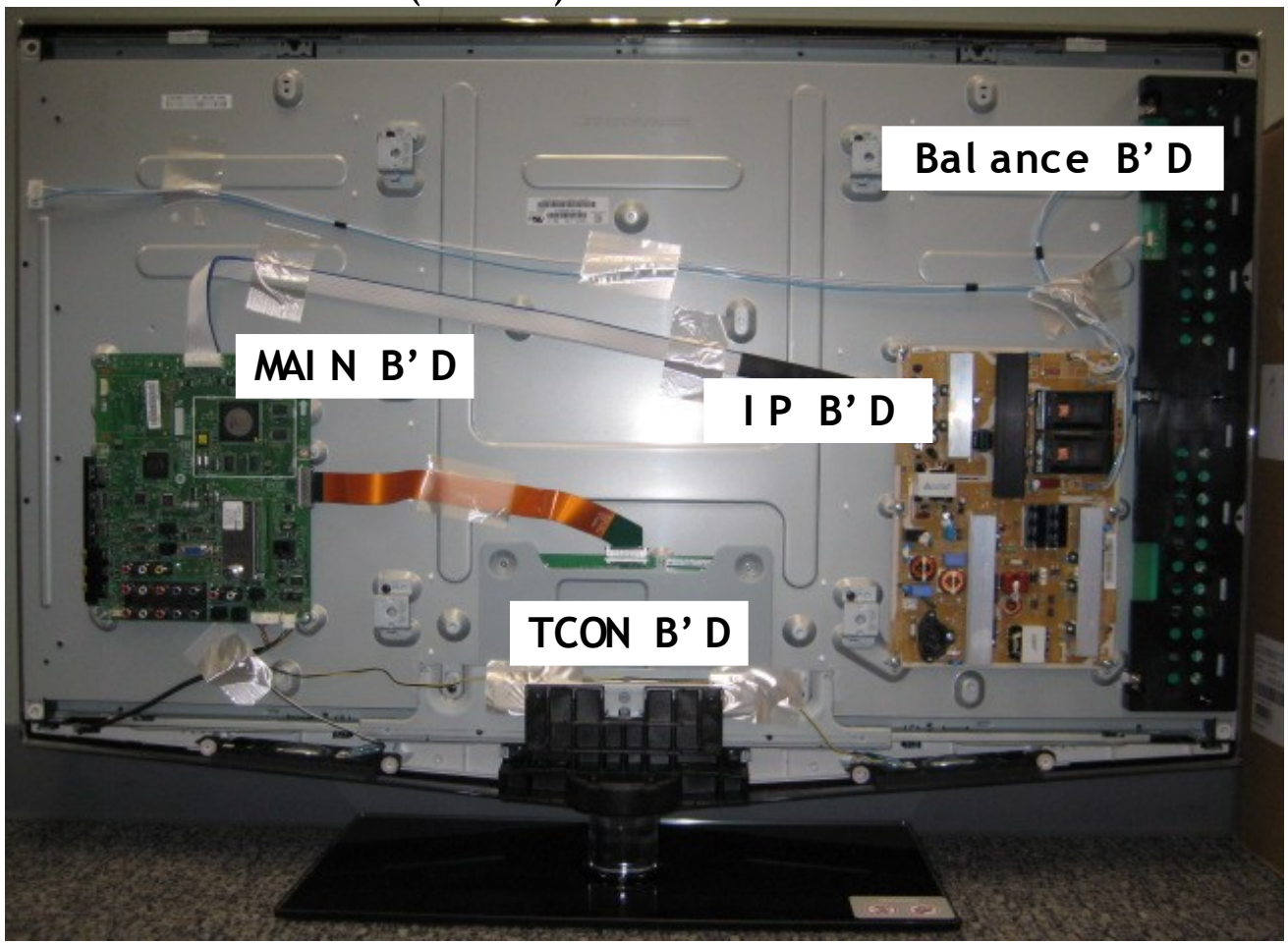
- Integrated IP and Panel (32”37”40”)



# □. Board description

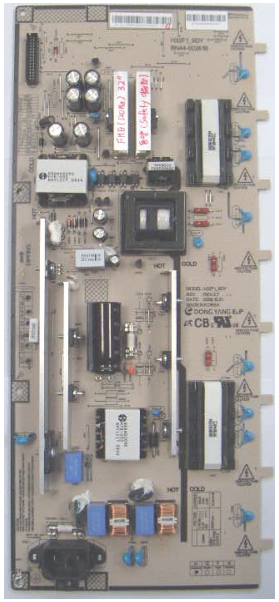
## Normal Type

- Detachable IP and Panel (46”55”)

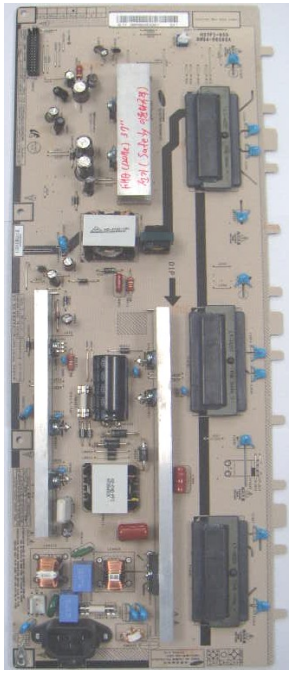


# IP BOARD

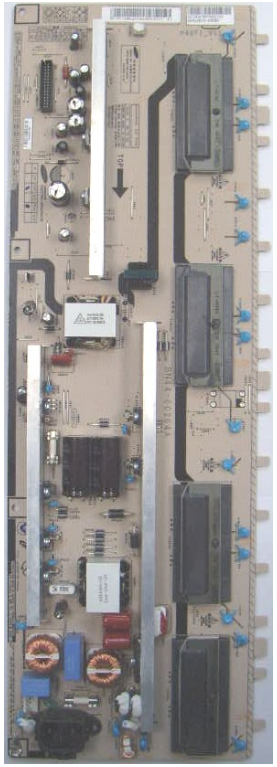
## HANARO type



32”

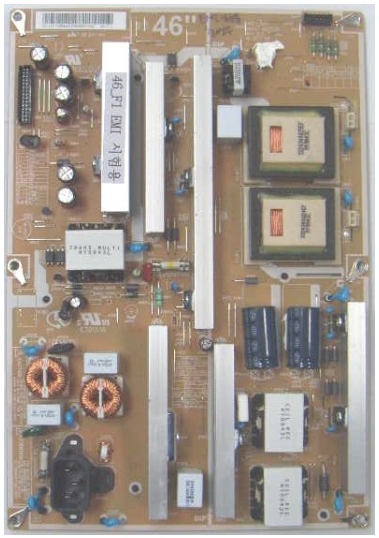


37”

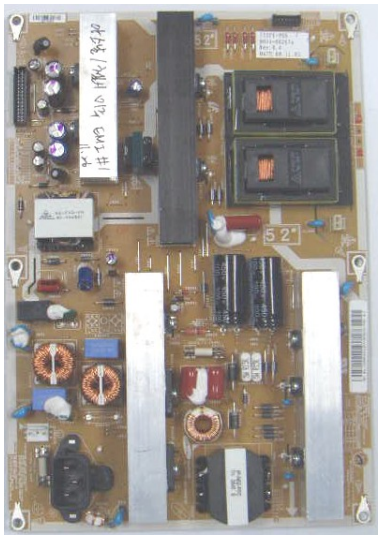


40”

## Nomal type




46”

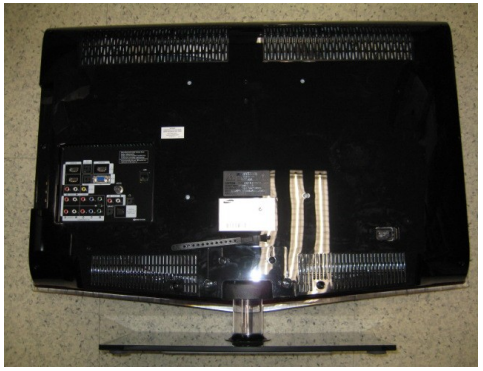


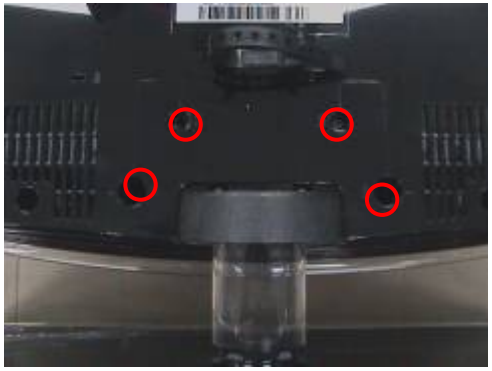
55”

# IV. Disassembly

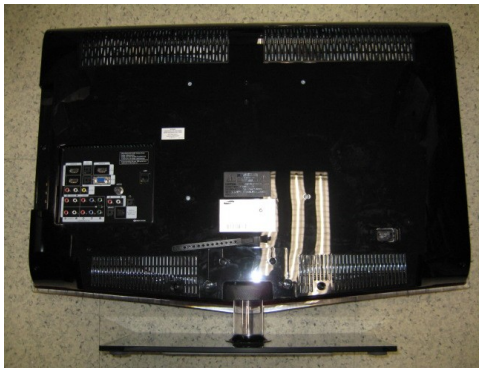
# IV. Disassembly

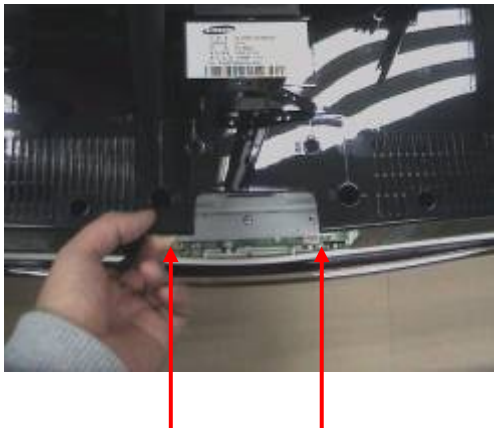
## Disassembly Amber





1. Place monitor face down on cushioned table.
   Remove screws from the Stand.
   Remove stand.





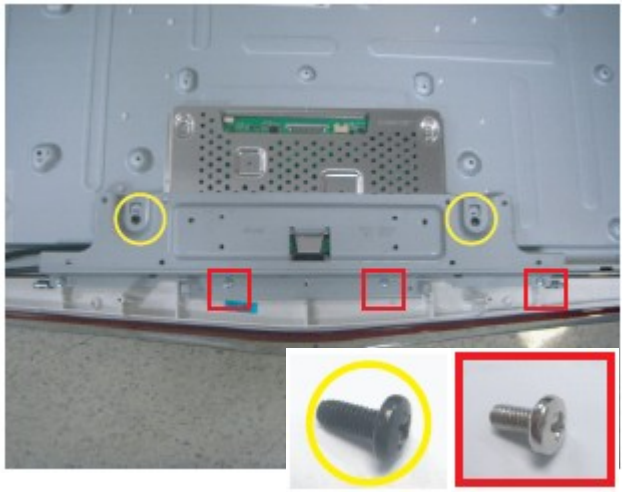
2. Remove screws from the rear-cover and lift up the rear-cover.

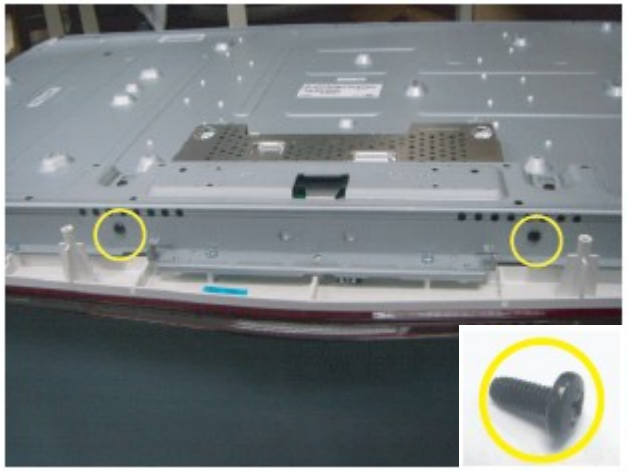
# IV. Disassembly

3. Disconnet cables from the main and power boards.

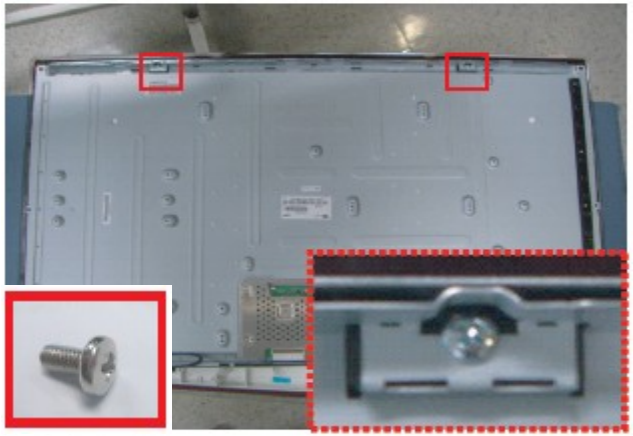
4. Remove screws from the boards and stand BRKT.

6. Remove the screws of Stand BKLT.
   Lift up the Stand BKLT.

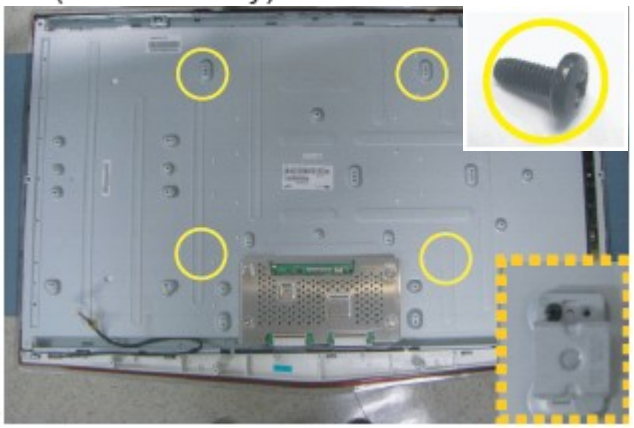




7. Remove the screw of panel top.



7-1. Remove the screw of wall bracket.
   (46” / 55” only)



# IV. Disassembly

8-1. Front

8-2. Panel

# V. Trouble Shooting

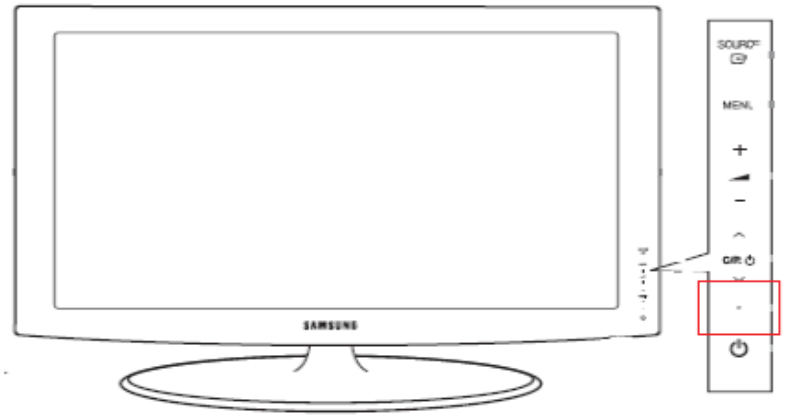
# V. Trouble Shooting Tip

## CONTENTS

# Check List for Initial operation

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. Check the Power input to the FRC(Frame Rate Conversion) Board.
   Check internal Pattern both of FRC and FBE3 if there is some picture noise.
   FRC: Factory mode(Info - MENU - MUTE - power on) -> Control ->Test Pattern -> FRC PATT_BeforeDDR / FRC PATT_AfterDDR -> Press right button of Remocon.
   FBE: Factory mode(Info - MENU - MUTE - power on_ ->Control -> Test Pattern -> FBE Pattern Sel -> Press right button of Remocon.
   Case1: FBE ok,FRC NG: change the FRC Board Case2: FBE NG: change the main Board

   Check the LED lamp for source button on front
   If this LED blank 100mS frequently then FRC board is defective(communication problem via Main board) in this case change the FRC board



# V. Trouble Shooting Tip

## 1. POWER

| | |
|---|---|
| Symptom | – The LEDs on the front panel do not work when connecting the power cord.<br>– The SMPS relay does not work when connecting the power cord.<br>– The units appears to be dead. |
| Major checkpoints | The IP relay or the LEDs on the front panel does not work when connecting the power cord if the cables are improperly connected or the Main Board or SMPS is not functioning. In this case, check the following:<br>– Check the internal cable connection status inside the unit.<br>– Check the fuses of each part.<br>– Check the output voltage of SMPS.<br>– Replace the Main Board. |
| Diagnostics |  <br> |
| Caution | Make sure to disconnect the power before working on the IP board. |

# V. Trouble Shooting Tip

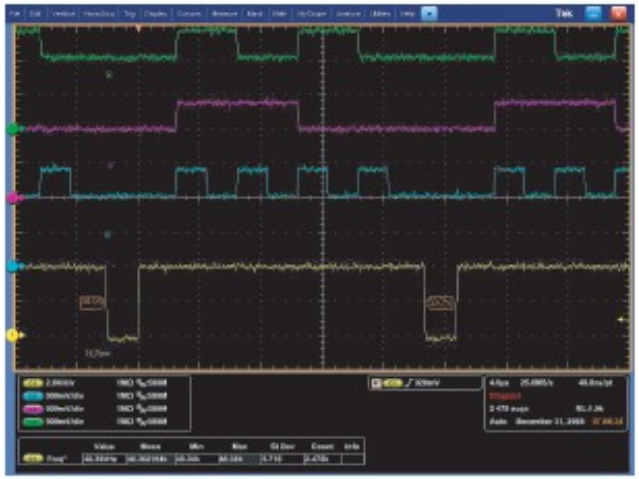
## 2. No Video (analog PC signal)

| | |
|---|---|
| Symptom | – Audio is normal but no picture is displayed on the screen. |
| Major checkpoints | – Check the PC source<br>– Check the IC6001(SDP84)<br>– This may happen when the LVDS cable connecting the Main Board and the Panel is disconnected. |
| Diagnostics |  |
| Caution | Make sure to disconnect the power before working on the IP board. |

# V. Trouble Shooting Tip

## WAVEFORMS

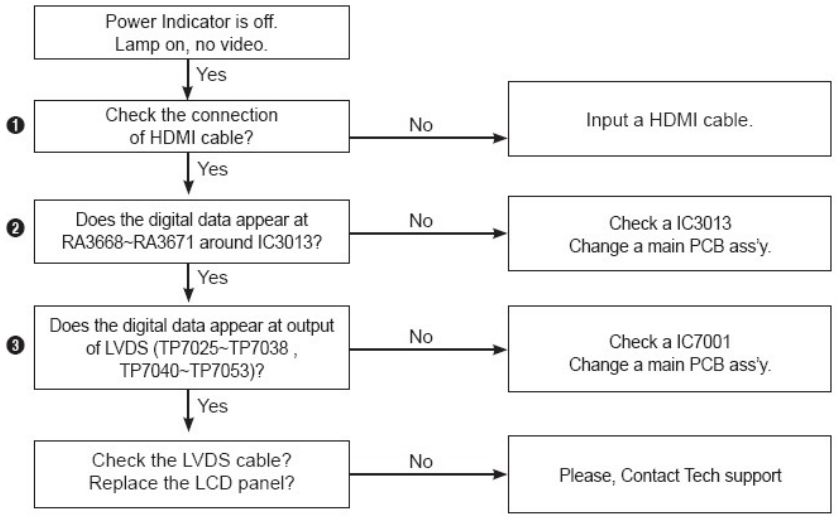
| | |
|---|---|
| ❶ | R,G,B, H_sync input signal of IC6001(SDP84) |



# V. Trouble Shooting Tip

## 3. No VIDEO (HDMI - Digital Signal)

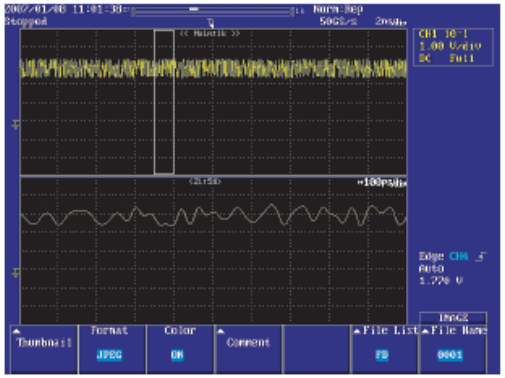
| | |
|---|---|
| Symptom | – Audio is normal but no picture is displayed on the screen. |
| Major checkpoints | – Check the HDMI source<br>– Check the IC3013<br>– This may happen when the LVDS cable connecting the Main Board and the Panel is disconnected. |
| Diagnostics |  <br> |
| Caution | Make sure to disconnect the power before working on the IP board. |



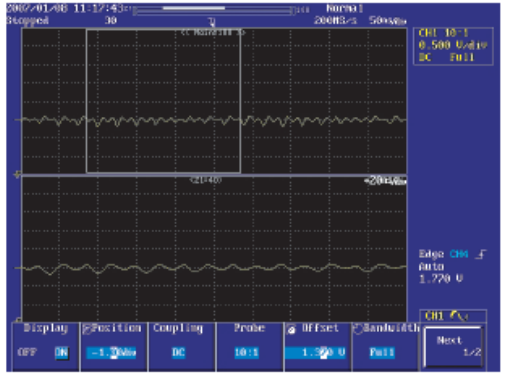
# V. Trouble Shooting Tip

## WAVEFORMS

| | |
|---|---|
| ❷ | Digital Output Data |




| | |
|---|---|
| ❸ | Signal of HDMI(Data) |



# V. Trouble Shooting Tip

## 4. No Video (Tuner_CVBS)

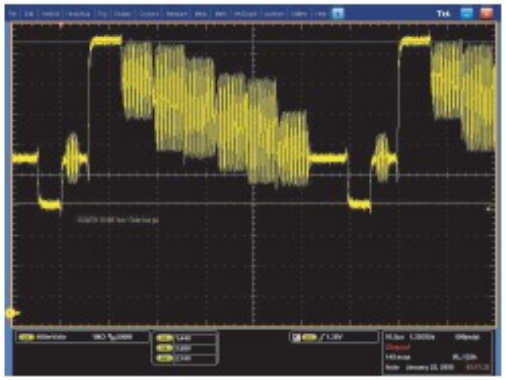
| | |
|---|---|
| Symptom | – Audio is normal but no picture is displayed on the screen. |
| Major checkpoints | – Check the Tuner CVBS source<br>– Check the IC6001(SDP84)<br>– This may happen when the LVDS cable connecting the Main Board and the Panel is disconnected. |
| Diagnostics |  <br><br>Power Indicator is off. Lamp on, no picure. — No → Connect the RF cable and check RF signal.<br>Yes ↓<br>❶ Does the signal appear at R5035? — No → Check a B+ voltage (#3 of Tuner) 5V, change a main PCB ass'y.<br>Yes ↓<br>❷ [4] Does the signal appear at pin 9 of TU5001? — No → Check a Tuner(TU5001) Change a main PCB ass'y.<br>Yes ↓<br>❸ Does the digital data appear at the output of LVDS (TP7025~TP7038 , TP7040~TP7053)? — No → Check a IC7001 Change a main PCB ass'y<br>Yes ↓<br>Check the LVDS cable? Replace the LCD panel? — No → Please, Contact Tech support. |
| Caution | Make sure to disconnect the power before working on the IP board. |

# V. Trouble Shooting Tip

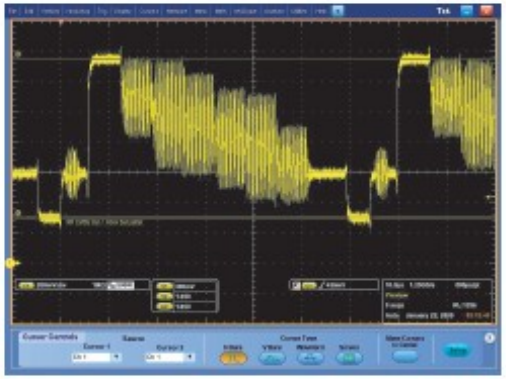
## 4. No Video (Tuner_CVBS)

### WAVEFORMS

| | |
|---|---|
| ❸ | CVBS Output Signal |



| | |
|---|---|
| ❹ | Tuner_CVBS Output Signal |



# V. Trouble Shooting Tip

## 4. No Video (Video_CVBS)

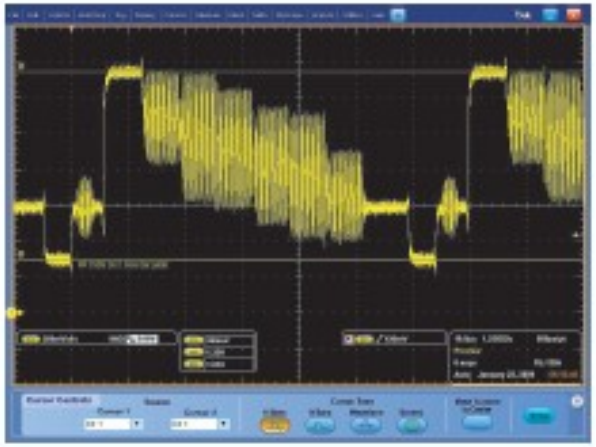
| | |
|---|---|
| Symptom | – Audio is normal but no picture is displayed on the screen. |
| Major checkpoints | – Check the Video Source<br>– Check the IC6002, IC6001(SDP84), IC7001<br>– This may happen when the LVDS cable connecting the Main Board and the Panel is disconnected. |
| Diagnostics |  <br><br>Power Indicator is off. Lamp on, no picture. → No → Check a A/V cable and video signal.<br>↓ Yes<br>❶ Does the signal appear at C6852,C6853,C6854? → No → Check a connection harness.<br>↓ Yes<br>❷ Does the digital data appear at the output of LVDS (TP7025~TP7038 , TP7040~TP7053)? → No → Check a IC7001 Change a main PCB ass'y<br>↓ Yes<br>Check a LVDS cable? Replace lcd panel? → No → Please, Contact Tech support. |
| Caution | Make sure to disconnect the power before working on the IP board. |

# V. Trouble Shooting Tip

## 4. No Video (Video_CVBS)

### WAVEFORMS

| | |
|---|---|
| ❹ | CVBS Output Signal at C6852, C6853, C6854 |



# V. Trouble Shooting Tip

## 5. No Sound

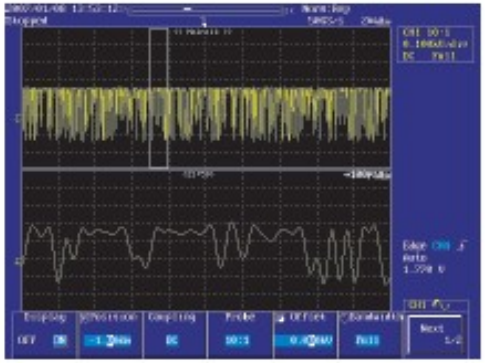
| | |
|---|---|
| Symptom | – Picture is normal But no Sound |
| Major checkpoints | – Check the RF Source<br>– Check the IC6001(SDP84)<br>– This may be happened when LVDS Cable is Connected between Panel and Main Board , But Sound cable is disconnected. |
| Diagnostics |  <br> |
| Caution | Make sure to disconnect the power before working on the IP board. |

# V. Trouble Shooting Tip

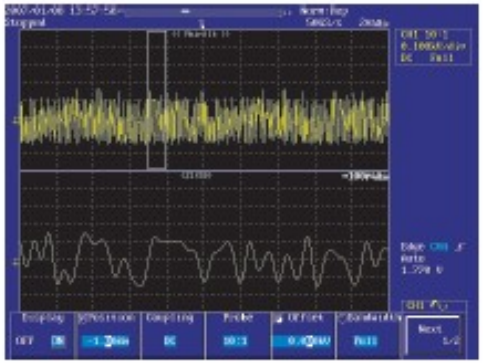
## 5. No Sound

### WAVEFORMS

| | |
|---|---|
| 6 | The Signal are Inputed to IC2002 |

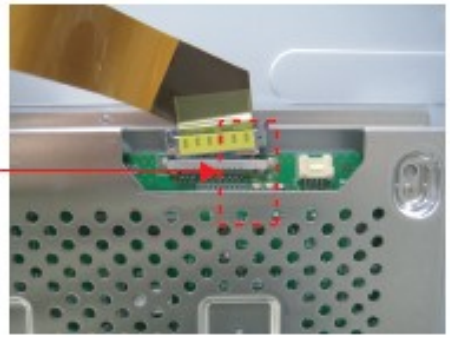


| | |
|---|---|
| 7 | The Signal are Inputed to IC2002 |



# V. Trouble Shooting Tip

## 6. Defect Analysis ahead of models

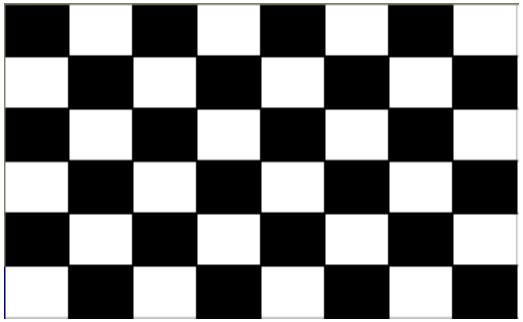
| Defective image | Defective Symptoms |
|---|---|
|  | No Picture and normal sound<br>in case of defective a Panel or a defective connector between main board and panel. |
| Another kind of defect |  <br>   <br>LVDS Connector |

# V. Trouble Shooting

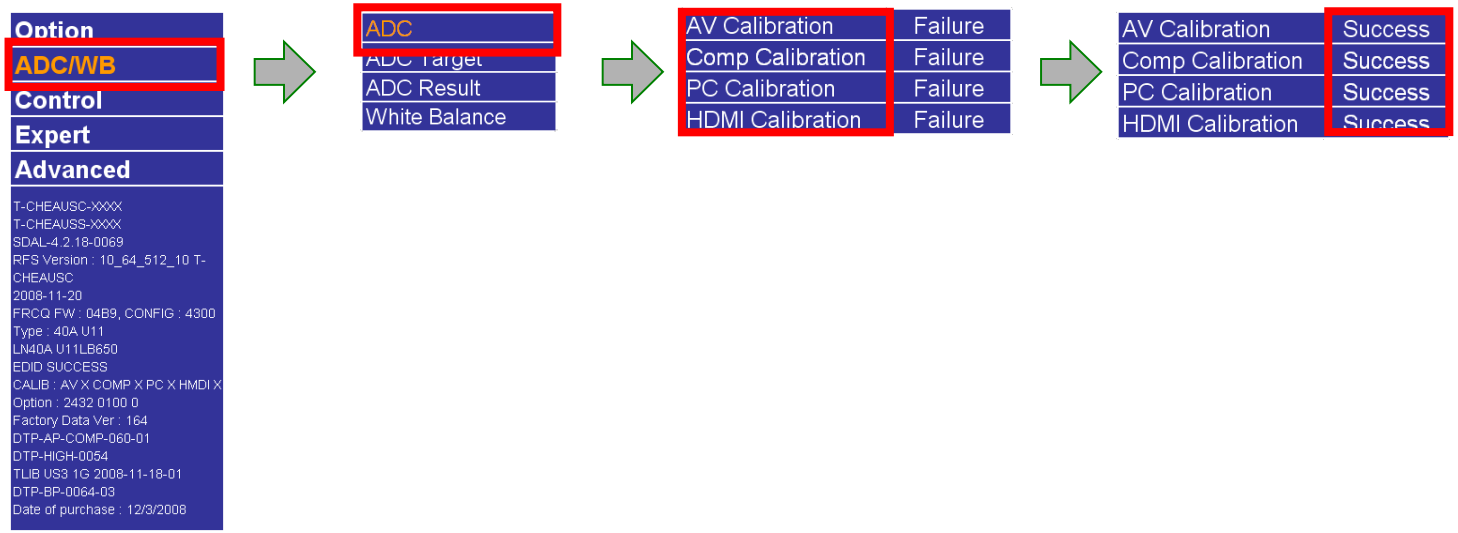
## Calibration

**Pattern : MIK K-7256 #24 'Chessboard Pattern'**
**Set Aging time : 60min↑**

- **HDMI Calibration (Time #6, 720p)**
- **COMP Calibration (Time #6, 720p)**
- **CVBS Calibration (Time #3, NTSC-J)**
- **PC Calibration (Time #21, 1024*768)**



### <Factory menu>

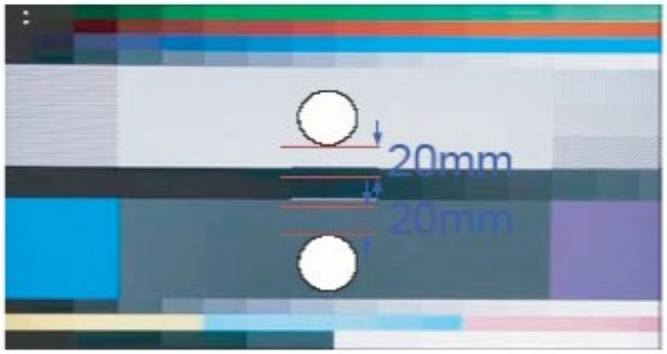


# V. Trouble Shooting

## White 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
- Use other equipment only after comparing the result with that of the Master equipment.
- Set Aging time : 60min




- Calibration and Manual setting for WB adjustment.

| | | |
|---|---|---|
| HDMI : Time #6 720P, Pattern #24 Chessboard Calibration | → | Manual adjustment #92 pattern (720p) |
| COMP: Time #6 720P, Pattern #24 Chessboard Calibration | → | Manual adjustment at #92 pattern (720p) |
| CVBS: Time #2 PAL, Pattern #24 Chessboard Calibration | → | Manual adjustment at #92 pattern (NTSC) |
| PC: Time #21 1024*768, Pattern #24 Chessboard Calibration | → | Manual adjustment at #92 pattern (NTSC) |

- If finishing in HDMI mode, adjustment coordinate is almost same in AV/COMP mode.
- White Balance Manual Adjustment

## 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

INFO → MENU → MUTE → Power on

- If you have Factory remote - control

PICTURE ON → DISPLAY → FACTORY

- The buttons are active in the service mode.

1. Remote - Control Key : Power, Arrow Up, Arrow Down, Arrow Left Arrow Right, Menu, Enter, Number Key(0~9)
2. Function - Control Key : Power, CH +, CH -, VOL +, VOL -, Menu, TV/VIDEO(Enter)

### 4-3-2 Factory Data

1. Option
2. ADC/WB
3. Control
4. Advanced

# V. Trouble Shooting

1. Option

| Item | Range | Option |
|---|---|---|
| Factory Reset | | |
| Type | Inch<br>Vendor(A:AMLCD, D:CMO, L:AUO, I:CPT)<br>Panel frequence (6:50/60Hz, 1:100/120Hz, 2:200/240Hz)<br>Panel(A:AG, T:TN U:UC)<br>Resolution (F:FHD, H:HD, U:UD)<br>Panel 1st/2nd (1st:0, 2nd:1…)<br>BLU (C:CCFL, L:LED, E:Edge LED)<br>ex) 32D1UF0E : Vendor: CMO inch: 32 120Hz FHD U/C Edge LED panel<br>40A2UF1C : Vendor: AMLCD inch: 40 240Hz U/C panel CCFL | |
| Model | LB550,LB570,UB6000,LB650,LB670,UB7000,LB750,UB8000 | |
| TUNER | ALPS,SEC_T,SEC_TC,SEC_TS,SEC_TCS | |
| Region | PANEURO,PANNORDIG,ASIA_DTV,ASIA_ATV | |
| DDR | - | |
| Light Effect | ON/OFF | |
| Ch Table | NONE,SUWON,SESK,TTSEC,SHE | |
| Medialink Type | Infolink ON,Infolink OFF | |
| Local Set | Other_1 | |

2. ADC/WB

| Item | Range | Option |
|---|---|---|
| ADC | AV CAL : SUCCESS,COMP CAL : INITIAL , PC CAL : FAIL | |
| ADC Target | Each MODE LOW,HIGH Delta(same as 08`) | |
| ADC Result | Each MODE Calibration result value (same as 08`) | |
| WB | 8(Dynamic)+4(Movie) | |

# V. Trouble Shooting

3. Control

1) EDID

| Item | Range | Option |
|---|---|---|
| EDID ON/OFF | OFF | |
| EDID WRITE ALL | SUCCESS | |
| EDID WRITE PC | SUCCESS | |
| EDID WRITE HDMI | SUCCESS | |
| EDID WRITE HDMI1 | ... | |
| EDID WRITE HDMI2 | ... | |
| EDID WRITE HDMI3 | ... | |
| EDID WRITE HDMI4 | ... | |
| EDID 1.2PORT | NONE,Not Support | |

2) Sub Option

| Item | Range | Option |
|---|---|---|
| Mute Time(VIDEO) | 2 | |
| PROTECT | on/off | |
| SUB U-COM | On/off | |
| Watchdog | 0 | |
| WD COUNT | 0 | |
| SPREAD SPECTURM | 2 | |
| HDMI AV MUTE TIME | 40 | |
| DVI/HDMI SOUND | Auto | |
| HOT PLUG OFF HOLD TIME | 1500ms | |
| HDMI LOSS TIME | 1 | |
| HDMI_PC LOSS TIME | 1 | |
| PC LOSS TIME | 1 | |
| HDMI EQ1 | MIDDLE | |
| HDMI EQ2 | MIDDLE | |
| HDMI EQ3 | MIDDLE | |
| HDMI EQ4 | MIDDLE | |
| SIDE AV | OFF | |
| PANEL DISPLAY TIME | 735hr | |
| Checksum | 0*0000 | |
| View Log | | |
| Font Data Viewer | | |

3) Hotel Option

| Item | Range | Option |
|---|---|---|
| HOTEEL MODE | OFF | |
| POWER ON CHANNEL | 3 | |
| POWER ON BAND | AIR | |
| POWER ON VOLUME | 10 | |
| MAX VOLUME | 100 | |
| PANEL BUTTOM LOCK | ON | |
| POWER ON SOURCE | TV | |

4) Shop Option

| Item | Range | Option |
|---|---|---|
| Shop Mode | OFF | |
| USB DEMO ON(SEC) | OFF | |
| USB DEMO OFF(SEC) | OFF | |

**4. Advanced**

1) FBE3

| Item | Range | Option |
|---|---|---|
| Pattern_sel | 0 | |
| BM_slope1 | 19 | |
| BM_slope2 | 36 | |
| BM_slope3 | 56 | |
| BM_slope4 | 75 | |
| BM_start | 68 | |
| BM_start_max | 110 | |
| Lfunc-basis | 70 | |
| Hfunc-basis | 80 | |
| Mean-Offset1 | 30 | |
| Mean-Offset2 | 235 | |
| Mean-Slope | 112 | |
| ACR-Offset | 10 | |
| ACR-th1 | 10 | |
| ACR-th2 | 110 | |
| Skin-Enable | ON | |
| Skin-UV | 135 | |
| Sub color | 128 | |
| M-Skin-UV | 138 | |
| M-Sub Color | 128 | |

2) WB Movie

| Item | Range | Option |
|---|---|---|
| W/B MOVIE ON/OFF | OFF | |
| MODE | Dynamic | |
| Color Tone | Cool | |
| MSub Brightness | 128 | |
| MSub Contrast | 128 | |
| W3_Rgain | 33 | |
| W3_Bgain | -99 | |
| W3_Roffset | 1 | |
| W3_Boffset | 0 | |
| W2_Rgain | 37 | |
| W2_Bgain | -64 | |
| W2_Roffset | -8 | |
| W2_Boffset | 4 | |
| W1_Rgain | 13 | |
| W1_Bgain | -39 | |
| W1_Roffset | -1 | |
| W1_Boffset | 1 | |
| Cool_Rgain | -23 | |
| Cool_Bgain | 21 | |
| Cool_Roffset | 2 | |
| Cool_Boffset | -2 | |
| Movie Contrast | 95 | |
| Movie Bright | 45 | |
| Movie Color | 50 | |
| Movie Sharpness | 20 | |
| Movie Tint | 0 | |
| Movie Backlight | 5 | |
| Movie Gamma | M2 | |
| M_Sub_Gamma | 0 | |

3) EPA Standard

| Item | Range | Option |
|---|---|---|
| Standard Contrast | 95 | |
| Standard Brightness | 45 | |
| Standard Sharpness | 50 | |
| Standard Color | 50 | |
| Standard Tint | 0 | |
| Standard Backlight | 7 | |

4) CH_VDEC

| Item | Range | Option |
|---|---|---|
| AGC_mode | 1 | |
| Gain_VCR | 0 | |
| Y_Gain_Man | 880 | |
| Saturation | 128 | |
| Hue | 0 | |
| Y_Shape_sel | 13 | |
| Y_Shape_SCM | 29 | |
| C_Shape_sel | 4 | |
| C_Shape_SCM | 4 | |
| lf_iir | 0 | |
| lf_filt_sel | 6 | |
| LTI_en | 0 | |
| LTI_level | 100 | |
| CTI_en | 0 | |
| SCM_STI_EN | 0 | |
| CTI_level | 15 | |
| ST_Beg_NTSC | 0 | |
| VS_Slice_Level | 4 | |
| HS_Slice_Level | 3 | |
| FB_Delay_adj | 0 | |
| RGB_Delay_adj | 0 | |
| h_pk_gain | 1 | |
| v_pk_gain | 1 | |
| h_pk_band | 0 | |
| 2d_pk_gain | 0 | |
| 2d_pk_band | 0 | |
| slice_mod_fine | 44 | |
| scm_fdet_lvl | 150 | |
| bl_range | 3 | |

5) YC_Delay

| Item | Range | Option |
|---|---|---|
| V_Delay_adj | 0 | |
| U_Delay_adj | 0 | |

6) AR_ADC

| Item | Range | Option |
|---|---|---|
| RED CUTOFF | 0 | |
| GREEN CUTOFF | 0 | |
| BLUE CUTOFF | 0 | |
| RED GAIN | 0 | |
| GREEN GAIN | 0 | |
| BLUE GAIN | 0 | |
| PHASE | 16 | |
| SOG_BW | 7 | |
| SSC_PC | 6 | |
| RGB_DLY | 0 | |

7) CH_DP

| Item | Range | Option |
|---|---|---|
| MNR | 0 | |
| DCR | 0 | |
| SD2HD_DCR | 0 | |
| SD2HD_DE | 0 | |
| SD2HD_SCL | 0 | |
| SD2HD_LTI | 0 | |
| SD2HD_NARS | 0 | |
| SD2HD_DUR | 50 | |
| SD2HD_Metric | - | |
| Coring_ON_OFF | 1 | |
| SD_CSC | 7094 | |
| HD_CSC | 7438 | |
| M_SD_CSC | 7094 | |
| M_HD_CSC | 7438 | |
| PC_SD_CSC | 7094 | |
| MJC_DBG | 0 | |
| MB_STEPS | 72 | |
| LIMIT_MV_STEP | 80 | |
| GLOBAL_FALLBACK | 48 | |
| LOCAL_FALLBACK | 5 | |

8) NR

| Item | Range | Option |
|---|---|---|
| OFF_Y | 20 | |
| OFF_C | 6 | |
| Noise_bias | 1 | |
| OFF_YMAX | 128 | |
| | 128 | |
| OFF_FADER | 200 | |
| LOW_Y | 60 | |
| LOW_C | 16 | |
| Noise_bias | 1 | |
| LOW_YMAX | 140 | |
| | 140 | |
| LOW_FADER | 210 | |
| MED_Y | 65 | |
| MED_C | 16 | |
| Noise_bias | 1 | |
| MED_YMAX | 150 | |
| | 150 | |
| MED_FADER | 205 | |
| HIGH_Y | 70 | |
| HIGH_C | 16 | |
| Noise_bias | 1 | |
| HIGH_YMAX | 160 | |
| | 160 | |
| HIGH_FADER | 200 | |

9) Sharpness

| Item | Range | Option |
|---|---|---|
| Pre_GainH1 | 10 | |
| Pre_GainH2 | 15 | |
| Pre_GainH3 | 15 | |
| Post_GainH1 | 10 | |
| Post_GainH2 | 15 | |
| Post_GainH3 | 15 | |
| Post_GainV1 | 30 | |
| Post_GainV2 | 50 | |
| Post_GainV3 | 40 | |
| CTI_Gain | 15 | |
| Pre_LTIH | 4 | |
| SD_TH | 100 | |
| HD_TH | 132 | |
| NORMAL_LTIH | 8 | |
| NORMAL_LTIV | 4 | |
| SD_LTIH | 16 | |
| SD_LTIV | 24 | |
| PRE_CORING | 8 | |
| POST_CORING_H | 8 | |
| POST_CORING_V | 8 | |
| Pre_TOT | 32 | |
| Post_TOT | 32 | |
| Sub Color | 59 | |

10) Sharpness_LNA

| Item | Range | Option |
|---|---|---|
| Pre_GainH1 | 7 | |
| Pre_GainH2 | 11 | |
| Pre_GainH3 | 11 | |
| Post_GainH1 | 7 | |
| Post_GainH2 | 11 | |
| Post_GainH3 | 11 | |
| Post_GainV1 | 22 | |
| Post_GainV2 | 37 | |
| Post_GainV3 | 30 | |

11) CE DIMMING

| Item | Range | Option |
|---|---|---|
| Contrast Dimming | 0x30220008 [4] = 0<br>0x30220008 [5] = 0<br>0x30220008[7] = 0<br>0x30220008[6] = 0<br>0x30220488 [12] = 0<br>0x30220680 [8] = 0 | |
| | 0x30220008 [4] = 1<br>0x30220008 [5] = 1<br>0x30220008[7] = 1<br>0x30220008[6] = 1<br>0x30220488 [12] = 1<br>0x30220680 [8] = 1 | |
| Dimming in Standard | ON(Analog PC, HDMI-PC-OFF) | |
| Dimming in Movie | ON(Analog PC, HDMI-PC-OFF) | |

12) LNA_Plus

| Item | Range | Option |
|---|---|---|
| Synctip_Noise | - | |
| dB01_th | 16 | |
| dB12_th | 48 | |
| dB23_th | 73 | |
| dB34_th | 185 | |
| dB45_th | 318 | |

13) FRC

| Item | Range | Option |
|---|---|---|
| SSC_OnOff | ON | |
| SSC_Width | 96 | |
| SSC_Freq | 240 | |
| FMD_Demo | 0 | |
| PATT_BeforeDDR | 0 | |
| PATT_AfterDDR | 0 | |
| CSB Vertical | ON | |
| CSB Horizontal | ON | |
| X_VStabStatVid | 7 | |
| X_VStabStatF | 0 | |
| X_VStabCorF | 8 | |
| X_VStabSensF | 48 | |
| X_HaloSizStatVid | 7 | |
| X_HaloSizStatF | 0 | |
| X_HaloSizCorF | 12 | |
| X_HaloSizSensF | 32 | |
| Film_Low_SD | 12 -> 32 | |
| Film_Medium_SD | 3 | |
| Film_High_SD | 0 | |
| Film_Low_HD | 12 -> 32 | |
| Film_Medium_HD | 3 | |
| Film_High_HD | 0 | |
| Video_Judder_Low | 10 -> 0 | |
| Video_Judder_Med | 5 -> 0 | |
| Video_Judder_High | 0 | |
| Hangup Detection | On | |
| Q LVDS Sequence | 0-1-2-3 | |
| Q LVDS Format | JEIDA | |
| Q LVDS bit width | 10bit | |
| SensD_Film_Low | 31 | |
| SensD_Film_Medium | 31 | |
| SensD_Film_High | 31 | |
| Rel_Start_Film | 20 | |
| Rel_Slope_Film | 3 | |
| H_Len_Start_Film | 127 | |
| H_Len_Slope_Film | 1 | |
| V_Len_Start_Film | 40 | |
| V_Len_Slope_Film | 1 | |
| SensD_Video | 0 | |
| Rel_Start_Video | 20 | |
| Rel_Slope_Video | 1 | |
| H_Len_Start_Video | 127 | |
| H_Len_Slope_Video | 1 | |
| V_Len_Start_Video | 40 | |
| V_Len_Slope_Video | 1 | |

14) PQ Others

| Item | Range | Option |
|---|---|---|
| 7.5 IRE NTSC | ON | |
| 7.5 IRE OFFSET | 60 | |
| 48Hz Enable | OFF | |

# ATTACHMENT

# CONTENTS

# What is HDMI?

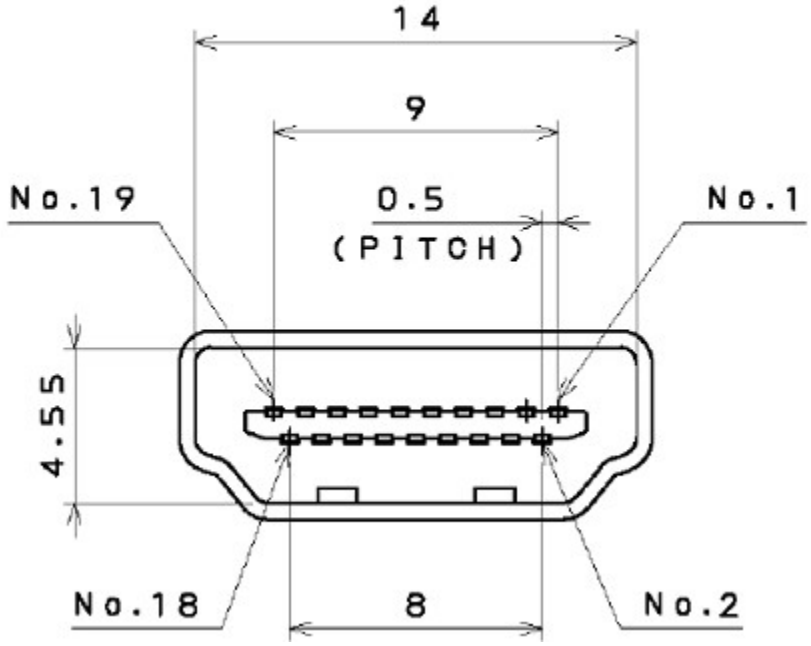
# Attachment

| ITEM | DVI | HDMI |
|---|---|---|
| DATA SPEED | 1.78G BPS | 2.2G BPS |
| AUDIO | NONE | CD OR HIGHER QUALITY DATA |
| REMOTE CONTROL | NONE | AV- LINK CAPABILITIES<br>REPLACES INFRARED REPEATERS<br>INTEGRATED REMOTE CONTROL SYSTEM |
| CONNECTOR |  |  |
| FUTURE COMPATIBILITY | NONE | ACCOMMODATES ATSC DTV FORMATS<br>SUPPORTS 8 CHANNEL AUDIO<br>SPARE BANDWIDTH FOR FUTURE APP.<br>(55% EXTRA AFTER HD TRANSMISSION) |

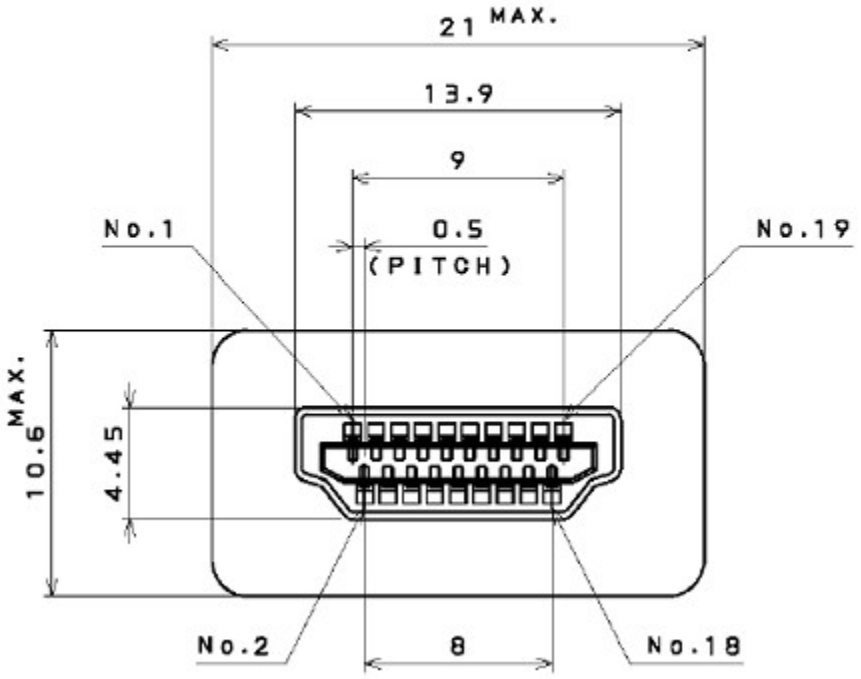
## Connector Drawings

All dimensions in millimeters

Type A Receptacle




Type A Plug



| HDMI Connector pin configuration | | | |
|---|---|---|---|
| NO | Function | NO | Function |
| 1 | D2_RX2+ | 11 | D2_RXCLK GND |
| 2 | D2_RX2 GND | 12 | D2_RXCLK |
| 3 | D2_RX2- | 13 | No connection |
| 4 | D2_RX1+ | 14 | No connection |
| 5 | D2_RX1 GND | 15 | HDMI_DDC_SCL |
| 6 | D2_RX1- | 16 | HDMI_DDC_SDA |
| 7 | D2_RX0+ | 17 | HDMI_DDC_GND |
| 8 | D2_RX0 GND | 18 | HDMI VCC (5V) |
| 9 | D2_RX0- | 19 | Ident_HDMI |
| 10 | D2_RXCLK+ | 20 | Common GND |

## Video Format Support

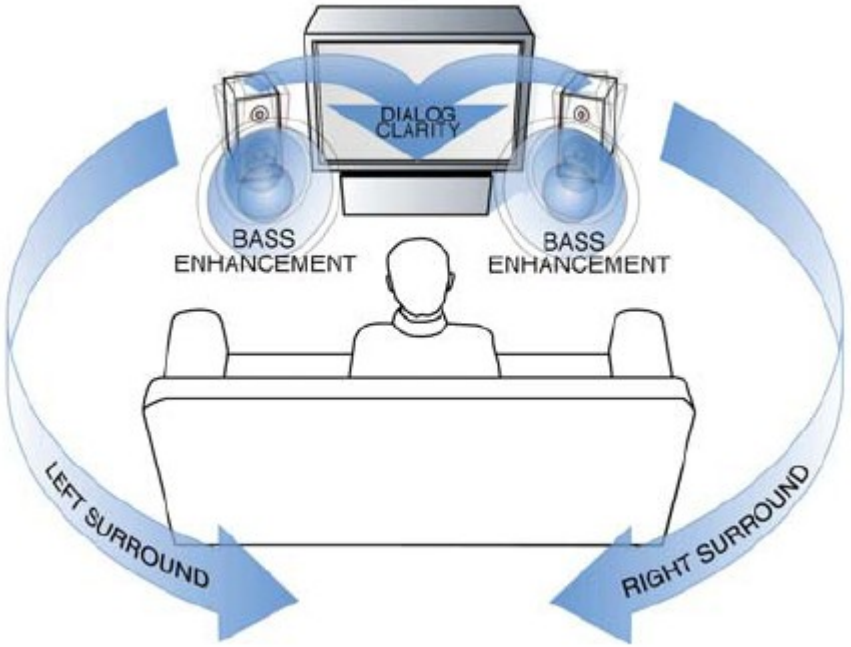
In order to provide maximum compatibility between video Sources and Sinks, specific minimum requirements have been specified for Sources and Sinks

## Primary Video Format Timings

- 640x480p @ 59.94/60Hz
- 1280x720p @ 59.94/60Hz
- 1920x1080i @ 59.94/60Hz
- 720x480p @ 59.94/60Hz
- 720(1440)x480i @ 59.94/60Hz
- 1280x720p @ 50Hz
- 1920x1080i @ 50Hz
- 720x576p @ 50Hz
- 720(1440)x576i @ 50Hz

## TruSurround HD for Virtual Surround Sound

DVD players have transformed the household into an entertainment center. While DVD owners can now enjoy 5.1 multichannel soundtracks for movies and music in the comfort of their living room or at their computer, most televisions and computer playback systems have only two speakers.




TruSurround XT bridges this gap. It processes any multichannel audio source, as is usually found on DVDs, and transforms the material into breathtaking virtual surround sound from just two speakers or headphones.

Based upon the patented TruSurround® technology from SRS Labs, which is the established standard for virtual surround sound, TruSurround XT also includes the unique features of SRS Dialog Clarity and TruBass and creates a stunning 3D sound image from standard stereo material.

## TruSurround HD features

- **TruSurround:** TruSurround is a patented SRS technology that solves the problem of playing 5.1 multichannel content over two speakers. TruSurround delivers a compelling, virtual surround sound experience through any two- speaker playback system, including internal television speakers and headphones. It is fully compatible with all multichannel formats up to 6.1 channels.

- **SRS Dialog Clarity Enhancement:** Playback of dialog often suffers due to competing signals from other speakers. In addition, feature film soundtracks are mixed specifically for cinema playback and are loaded with the latest advancements in special audio effects. When translated over home theatre or computers systems, dialog may become unintelligible. This patented SRS algorithm enhances signal clarity to address these problems, thus improving dialog intelligibility from all such source material.

## TruSurround HD features

- **TruBass:** TruBass is a patented SRS technology that enhances bass performance utilizing proprietary psychoacoustic techniques. These techniques restore the perception of fundamental low frequency tones by dynamically augmenting harmonics, which are more easily reproduced by contemporary loudspeakers.

Using TruBass, TruSurround XT takes the bass information contained within the original audio track and helps the speakers or headphones re- create it – even if it is below the speaker's low frequency limitations.

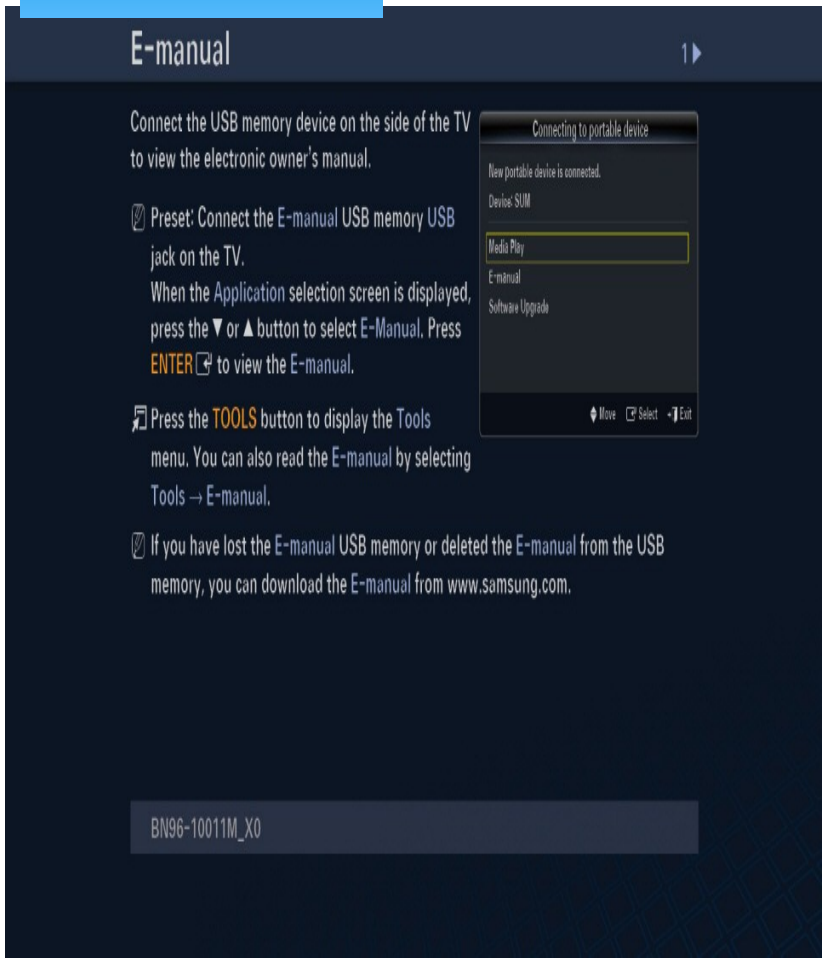
- **WOW:** WOW™ is an award winning stereo enhancement technology that significantly improves the performance of stereo (non- surround sound encoded material) signals through any two- speaker system, including headphones. It extends the sound image in both the horizontal and vertical planes well beyond the speakers themselves. In addition, WOW incorporates TruBass and SRS Dialog Clarity Enhancement.

When TruSurround XT accepts a stereo signal, WOW is enabled for a better listening experience. Wow is also used by Microsoft in their new Media Player for Windows XP and Windows Media Player 7.

# Manual

# Attachment

## Europe type




## Au/Southeast Asia type