SyncMaster 460DX (LH46BPP)
SyncMaster 520DX (LH52BPP)
Training Manual

SAMSUNG ELECTRONICS CO.,LTD
Visual Display Division
LCD Monitor Group

Index


Overview
Introduction
Block Diagram
Main Board Part
Service Mode Part
Troubleshooting
DDC Entry
What To Do after Board Replacement
SAMSUNG DIGITall
everyone's invited™

1. Background of Development

- ▶ To expand the large LCD product market (Public facilities like Airport, Theater, etc.)
- ▶ To enhance image quality, and additional functions
  comparing with the existing model
- ▶ To provide more convenience for user
- ▶ To achieve competitive power by improving optional network function

2. Product Features

- ▶ VMB (Vertical Marketing Business) Model
- ▶ MFM (Multi Function Monitor) :
  Receives diverse support other than PC (DVI, HDMI, AV, S-video, Component)
- ▶ Response Time 8ms SPVA adopted
- ▶ Sound function reinforced by adopting SRS Trusurround
- ▶ RS232 Remote Control (MDC software provided)
- ▶ Video input: PC(D_SUB,DVI), BNC, DVI, HDMI, Component, AV, S-Video
- ▶ Audio input: PC(D_SUB,DVI) Stereo, Video(AV, S-Video), Component, BNC, HDMI
- ▶ Image & sound output: PC, BNC, AV, S-Video, Component out, speaker out
- ▶ 10W x 2 speaker
- ▶ PIP automatic switch timer function: PIP automatically pops-up when setting time
- ▶ PIP, OSD menu transparency control
- ▶ Sleep timer (automatic switch-off) function
- ▶ Wall & Ceiling Mounting (Optional VESA Wall Mount Kit)

3. Specifications

	LH40MST / LH46MST
Model Name	SyncMaster 400UXn / 460UXn
Panel	AMLCD 46” (LTI460AA01-V01) AMLCD 52” (LTI520AA01-V01)
Optimum Resolution	1366 x 768 (WXGA) 60Hz
Display Size	46” / 52” (16:9)
Brightness	700cd/m^2
Contrast Ratio	1200:1
Response Time	8 ms
Viewing Angle	Left/Right/Up/Down : 89/89/89/89
PC Input	D-SUB, DVI
Video System	AV, S-Video, Component
Supported Resolution (Component)	1080I(50/60), 480I, 480P, 576I, 576P, 720P(50/60)
Power Consumption	Less than 240 W(40”), 340 W(46”)
DPMS	1 W
Sound Output	Max. 10W x 2

Introduction (Front)

Viewing the Control Panel

1. **MENU**
2. **Navigate button (Up-Down button)**
3. **Adjust button (Left-Right button)**
   Volume button
4. **ENTER**
5. **SOURCE**
6. **PIP**
7. **Power button**
8. **Power indicator**
9. **Remote Control Sensor**

MENU :
Use this button to open the on-screen menu and exit from the menu screen or close screen adjustment menu.

Up/Down button :
Moves from one menu item to another vertically or adjusts selected menu values.

Adjust / Volume button :
Moves from one menu item to another horizontally or adjusts selected menu values. Also adjusts the audio volume.

ENTER : Activates a highlighted menu item.

SOURCE :
Changing the source is allowed only in external devices that are connected to the monitor at the time. To switch Screen modes:
[PC] -> [BNC] -> [DVI] -> [AV] -> [S-Video] -> [Component] -> [HDMI] -> [MagicNet]

PIP :
Push the PIP button to turn PIP screen On/Off.
More than one PIP couldn't be overlapped on screen as BNC and the component use the same terminal.

- **PC / DVI** : AV / S-Video / Component Mode
- **BNC**: AV / S-Video Mode
- **AV / S-Video** : PC / BNC / DVI Mode
- **Component**: PC / DVI Mode

POWER : Use this button to turn the monitor on and off.

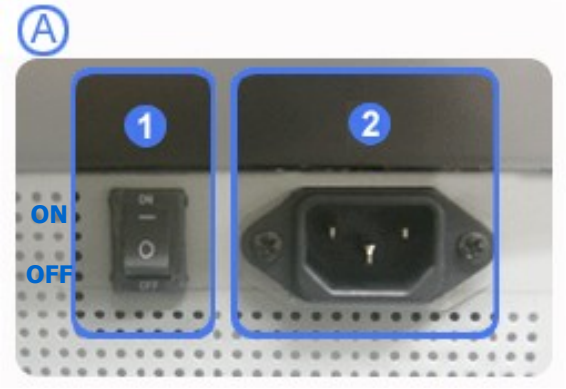
LED : Power Indicator shows Power Saving mode by green blinking.

Remote Control Sensor : Aim the remote control towards this spot on the Monitor.

Introduction (Rear)

Rear

Connection Terminal



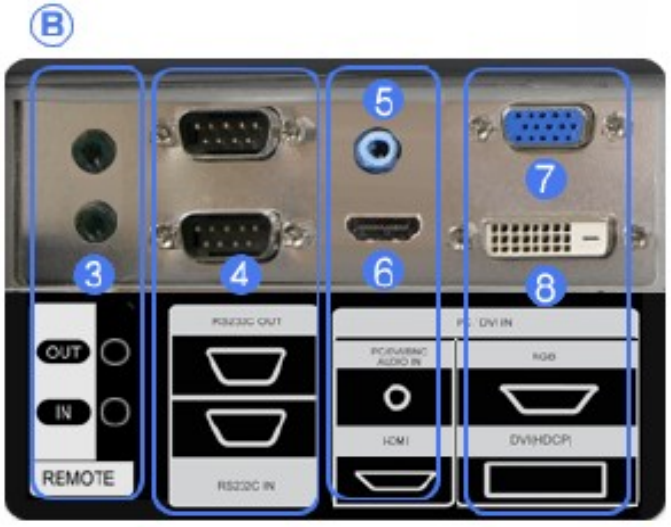
1. POWER S/W

2. POWER IN

Introduction (Rear)

Rear

Connection Terminal



3. REMOTE OUT/IN (Remote Control Port)

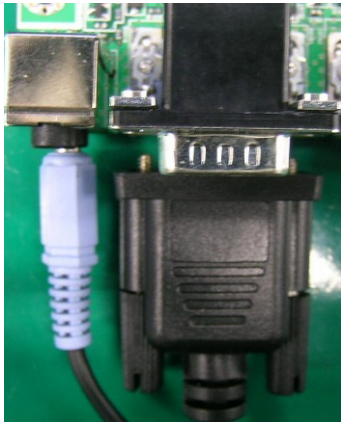
4. RS232C OUT/IN (RS232C Serial Port)
: MDC(Multiple Device Control) Program Port

5. PC/DVI/BNC AUDIO IN
(PC/DVI/BNC Audio Connection Terminal(Input))

6. HDMI IN(HDCP)

7. PC IN(RGB) (PC Video Connection Terminal)
: Using D-Sub (15 Pin) Cable - PC Mode (Analog PC)

8. DVI IN (PC Video Connection Terminal)
: Using DVI Cable (DVI-D to DVI-D) - DVI Mode (Digital PC)



Introduction (Rear)

Rear

Connection Terminal

9. COMPONENT AUDIO IN [L-AUDIO-R]
(Component Audio Connection Terminal (Input))

10. BNC/COMPONENT OUT
(BNC/Component Connection Terminal (Output))
- BNC (Analog PC) Connection :
connecting R, G, B, H, V port
- Component Connection :
connecting Pr, Y, Pb port

11. BNC/COMPONENT IN
(BNC/Component Connection Terminal (Input))

BNC

COMPONENT

Introduction (Rear)

Rear

Connection Terminal

12. AV AUDIO IN [L-AUDIO-R]
(Monitor Audio Connection Terminal (Input))

13. AV OUT [VIDEO] (Video Connection Terminal)
: AV mode (Output)

14. AV IN [VIDEO] (Video Connection Terminal)
: AV mode (Input)

15. AV OUT [S-Video] (S-Video Connection Terminal)
: S-Video mode (Output)

16. AV IN [S-Video] (S-Video Connection Terminal)
: S-Video mode (Input)

17. EXT SPEAKER(8 Ω) (EXT Speaker Connection Terminal)

18. AUDIO OUT [L-AUDIO-R]
(Monitor Audio Connection Terminal (Output))
: MONITOR OUT is the terminal for sound output of PC, DVI or BNC

Introduction (Rear)

Rear

Connection Terminal

19. LAN(LAN Connection Terminal)
MS Internet Explorer

20. USB (USB Connection Terminal)
Keyboard, Mouse, Mass Storage Device Compatible

Introduction (Rear)

Rear

Connection Terminal

21. Kensington Lock
The Kensington lock is a device used to physically fix the system when using it in a public place.

Introduction (Remote Controller)

1. ON / OFF
2. MAGICNET
3. MDC
4. LOCK
5. MagicNet buttons
6. +100 -/--
7. VOL
8. MUTE
9. TTX/MIX
10. MENU
11. ENTER
12. M/B P.MODE
13. AUTO
14. PRE-CH
15. CH/P
16. SOURCE
17. INFO
18. EXIT
19. Up-Down Left-Right buttons
20. S.MODE
21. STILL
22. FM RADIO
23. P.SIZE
24. SRS
25. DUAL/MTS
26. PIP
27. SOURCE
28. SWAP
29. SIZE
30. REW
31. STOP
32. PLAY/PAUSE
33. FF

ON/OFF Turns the LCD display On/Off.

MagicNet MagicNet Quick Launch Button.

MDC MDC Quick Launch Button.

LOCK Activates or deactivates all function keys on both remote control and the LCD except for the Power and LOCK buttons.

MagicNet buttons Used for MagicNet.

-. Alphanumeric : Used to enter the Internet address.

-. DEL : Function as the backspace.

-. SYMBOL : Used to enter the symbols. (., O. _, -, :, /)

-. ENTER : Used to enter values.

VOL Adjusts the audio volume.

MUTE Pauses (mutes) the audio output temporarily.

MENU Opens the OSD menu and exits from menu or closes the screen adjustment menu.

ENTER Activates a highlighted menu item.

P. MODE Changes the available preconfigured picture mode.

AUTO Adjusts the screen display automatically in PC mode.

SOURCE Changes the video source.

INFO The current picture information is displayed in the top left corner of the screen.

EXIT Exits from the menu screen.

Up-Down Left-Right buttons Moves from one menu item to another horizontally, vertically or adjusts selected menu values.

S.MODE Changes the available preconfigured sound mode.

STILL Press the button once to freeze the screen. Press it again to unfreeze.

P.SIZE Press to change the screen size.

SRS SRS Trusurround XT

Unpacking

Accessories

15pin D-sub cable	BN39-00244B
Adaptor Connector	3705-001504

Quick Setup Guide

Warranty Card
(Not available in all locations)

User's Guide, MDC software,
Natural Color software,
MagicNet software

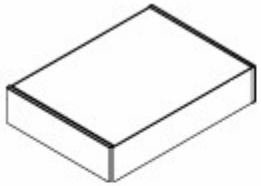
D-Sub Cable

Power Cord

BNC to RCA
Adapter
Jack

Unpacking

Accessories(Sold Separately)



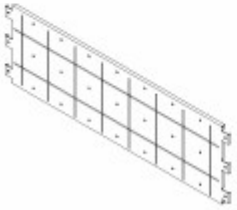
Wall Mount KIT

Speaker Set

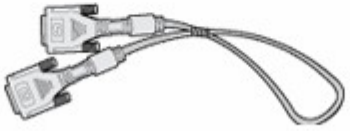
RS232C Cable

Remote Control

Semi Stand



VESA Bracket



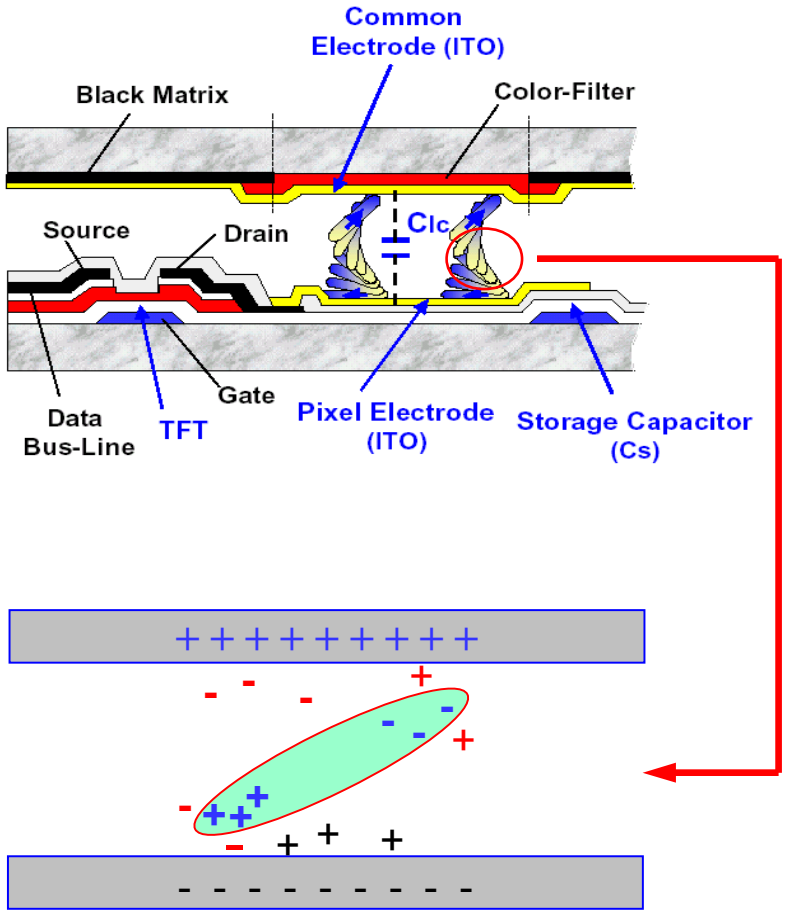
DVI Cable

LAN Cable

Speaker wire

Protection of Image Retention

Image retention may not occur when a LCD panel is operated under normal conditions.
Normal conditions are defined as continuously changing video patterns.
When the LCD panel is operated for a long time with a fixed pattern (over 12 hours), there may be slight difference in voltage between electrodes that work the liquid crystal (LC) in a pixel. The voltage difference between electrodes increases with time, forcing the liquid crystal to lean. When this occurs,
the previous image may be seen when the pattern is changed. To prevent this, the accumulated voltage difference must be decreased.



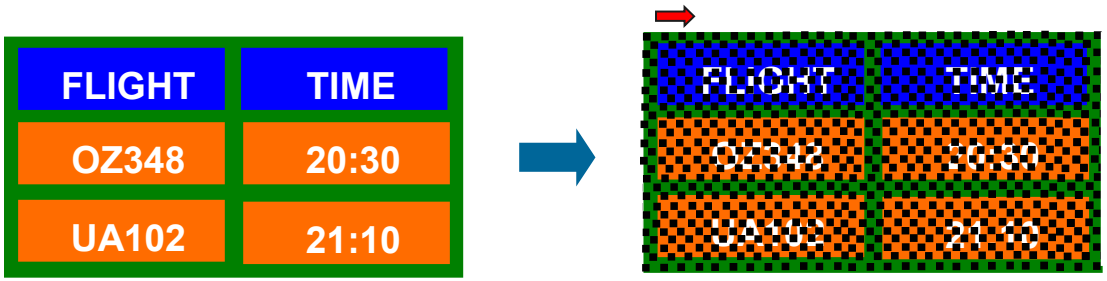
Safety Screen

- Type 1. Screen Scroll : Screen is automatically scrolled

Interval : 1 ~ 10 hour (Recommend : 1)

Second : 1 ~ 5 second (Recommend : 5)

- Type 2. Pixel : One dot on/off and move

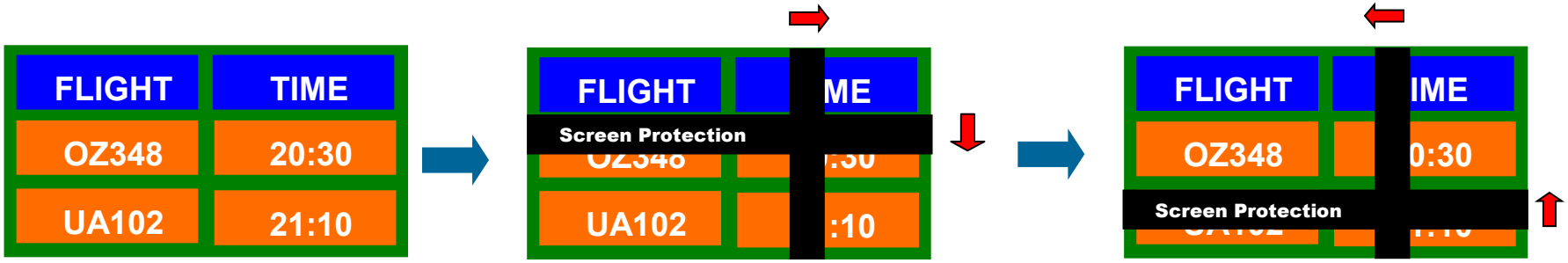


Interval : 1 ~ 10 hour (Recommend : 1)

Second : 10 ~ 50 second (Recommend : 50)

Safety Screen

- Type 3. Bar : 2 bars move with crossing each other



Interval : 1 ~ 10 hour (Recommend : 1)

Second : 10 ~ 50 second (Recommend : 50)

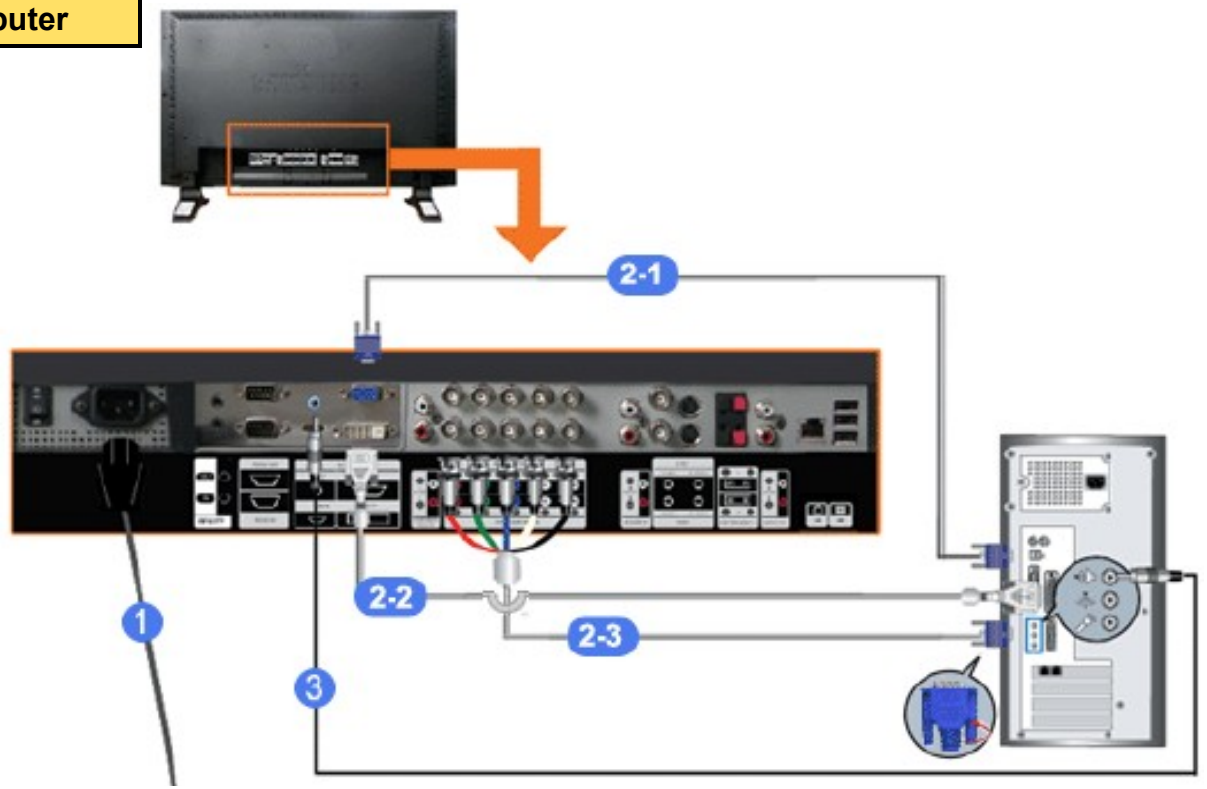
- Type 4. Eraser : 2 blocks move with erasing the display

Interval : 1 ~ 10 hour (Recommend : 1)

Second : 10 ~ 50 second (Recommend : 50)

Connecting the Monitor

Connecting to a Computer



1. Connect the power cord for your monitor to the power port on the back of the monitor. Turn on power switch.
2. There are 3 ways to connect the signal cable to your monitor. Choose one of the followings :

2-1. Using the D-sub (Analog) connector on the video card.
Connect the signal cable to the **15 pin D-sub Port** on the back of your monitor.

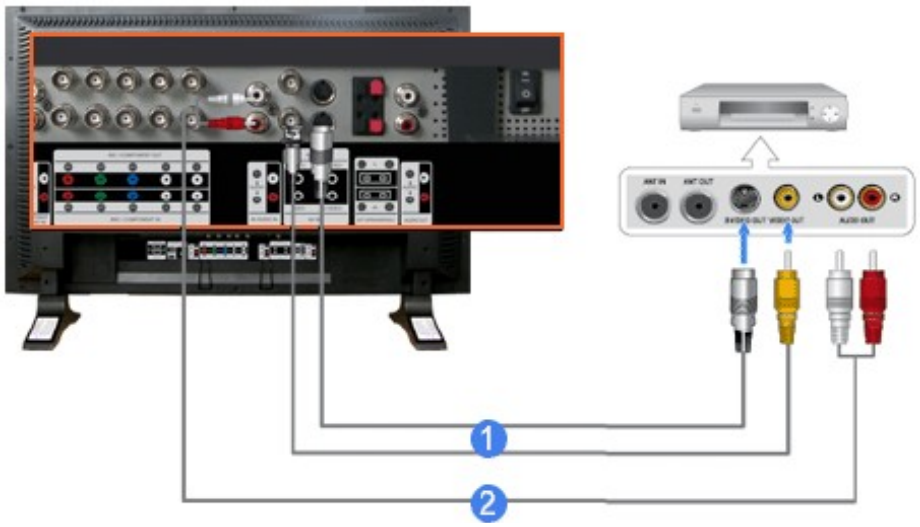
2-2. Using the DVI (Digital) connector on the video card.
Connect the DVI Cable(DVI-D + DVI-D) to the **DVI Port** on the back of your Monitor.

2-3. Using the BNC (Analog) connector on the video card.
Connect the BNC Cable to the **BNC/COMPONENT IN - R, G, B, H, V port** on the back of your Monitor and the **15 pin D-sub Port** on the computer.

3. Connect the audio cable for your monitor to the audio port on the back of your computer.
4. Turn on both your computer and the monitor.

Connecting the Monitor

Connecting to a VCR



1. AV input devices like VCRs or Camcorders are connected to the **AV IN [VIDEO]** or **AV IN [S-VIDEO]** of the monitor using the S-VHS or BNC cable.

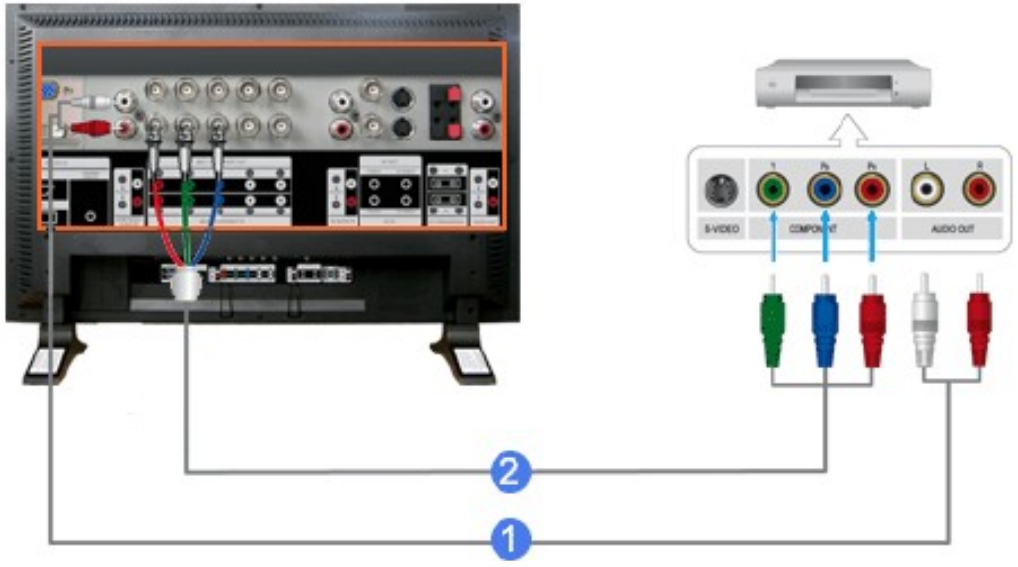
2. Connect the Audio (L) and Audio (R) terminals of a VCR or Camcorders to the monitor's **AV IN [L-AUDIO-R]** using audio cables.

3. Select **AV** or **S-Video** that is connected to a VCR or Camcorders using the Source button on the monitor's front or remote control.

4. Then, start the VCR or Camcorders with a tape inserted.

Connecting the Monitor

Connecting to a DVD Player



1.Connect a set of audio cables between the **COMPONENT AUDIO IN [L-AUDIO-R]** on the Monitor and the AUDIO OUT jacks on the DVD player.

2. Connect a Component cable between the **BNC/COMPONENT IN - Pr, Y, Pb port** on the Monitor and the PR, Y, PB jacks on the DVD player.

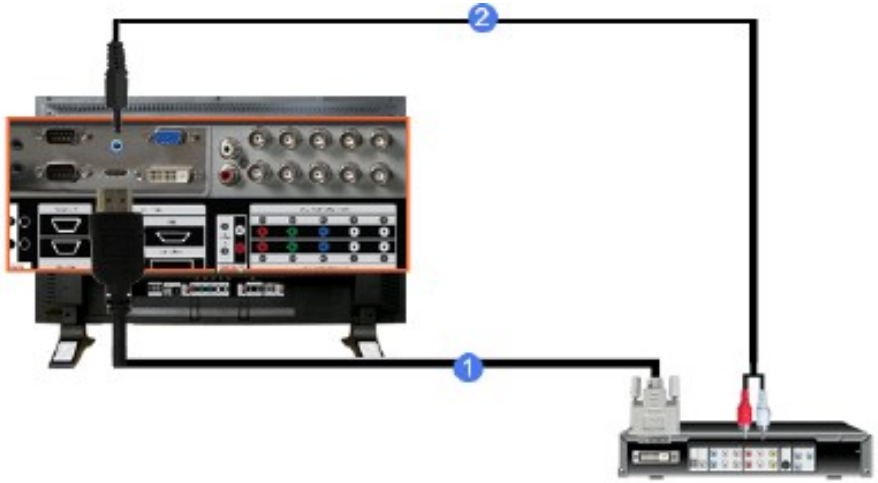
3. Select **Component** that is connected to a DVD player using the Source button on the monitor's front or remote control.

4. Then, start the DVD Player with a DVD disc inserted.

Connecting the Monitor

Connecting HDMI

1. Input devices such as digital DVD are connected to the **HDMI IN** terminal of the monitor using the HDMI cable.

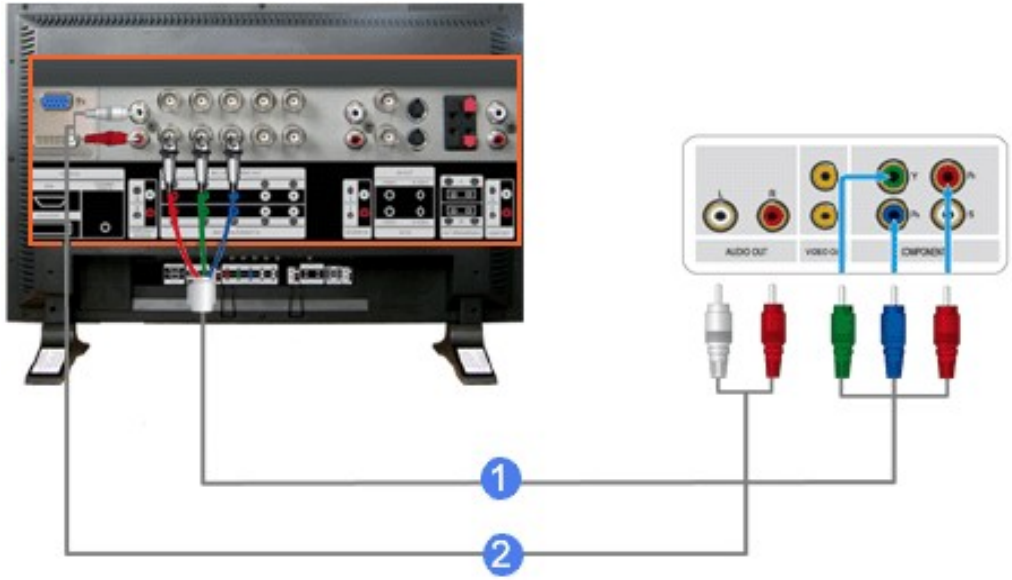


1. Connect the DVI output terminal of a digital output device to the **HDMI IN** terminal of the monitor using a DVI to HDMI cable.
2. Connect the red and white jacks of an RCA to stereo (for PC) cable to the same colored audio output terminals of the digital output device, and connect the opposite jack to the **HDMI / PC / DVI-D AUDIO IN** terminal of the monitor.

When connecting with Peripherals by HDMI, Monitor supports HDCP.

Connecting the Monitor

Connecting to DTV Set Top Box



1. Connect a set of audio cables between the **COMPONENT AUDIO IN [L-AUDIO-R]** on the LCD Display and the AUDIO OUT jacks on the Set Top Box.
2. Connect a Component cable between the **BNC / COMPONENT IN – Pr, Y, Pb** port on the LCD Display and the Pr, Y, Pb jacks on the Set Top Box.
3. Select **Component** for the connection to a DTV Set Top Box using the Source button on the front of the LCD Display or on the remote control.

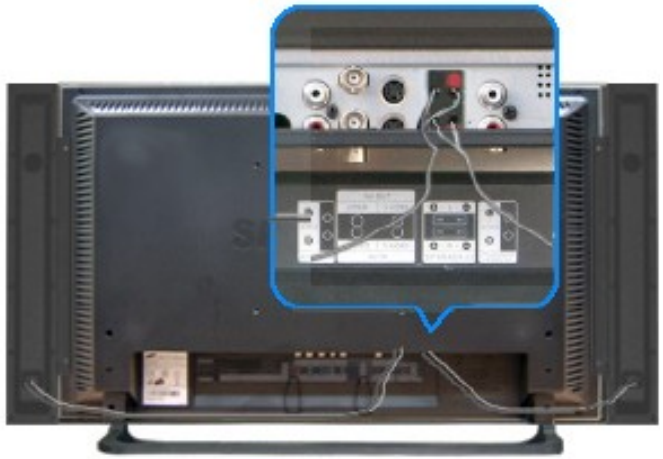
□ When connecting component of DVD or STB terminal, Y, Pb, Pr color must be distinguished for normal color to appear.

□ DVD or STB terminal also has separate input and output, so output terminal must be connected to monitor.

□ Set terminals must be connected with clear distinction of input and output.

Connecting the Monitor

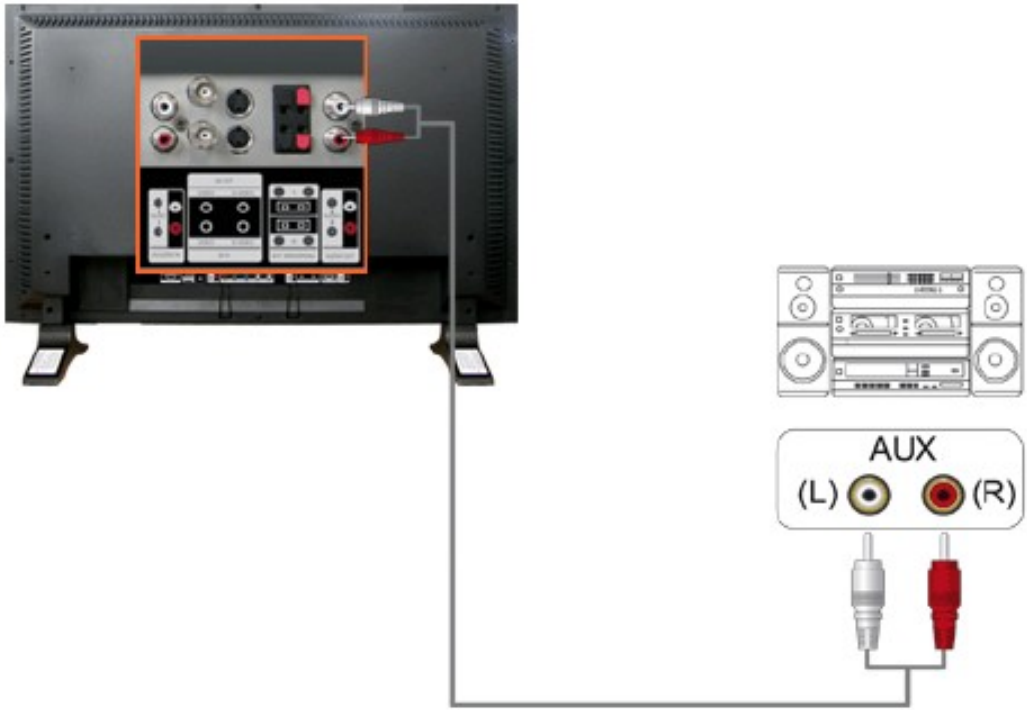
Connecting Speakers



* Connect the speaker connection cable between the speaker connection cable jack on the rear of the SET and the speaker connection jack on the rear of the speaker.

Connecting the Monitor

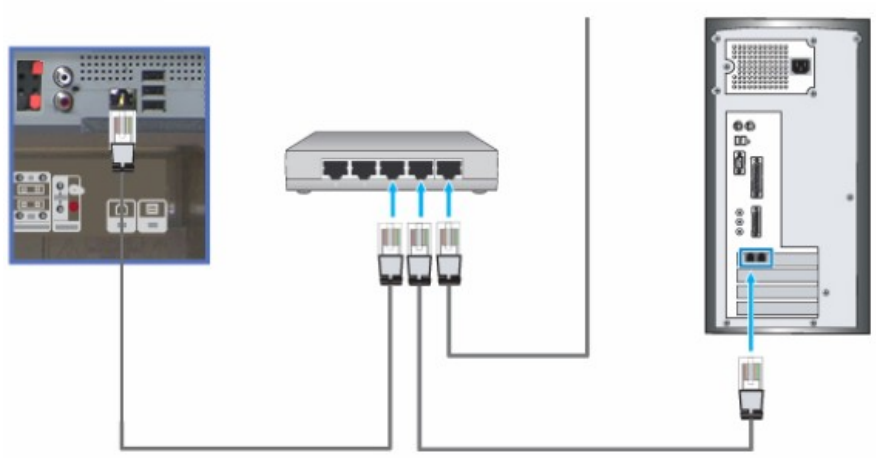
Connecting to an Audio System



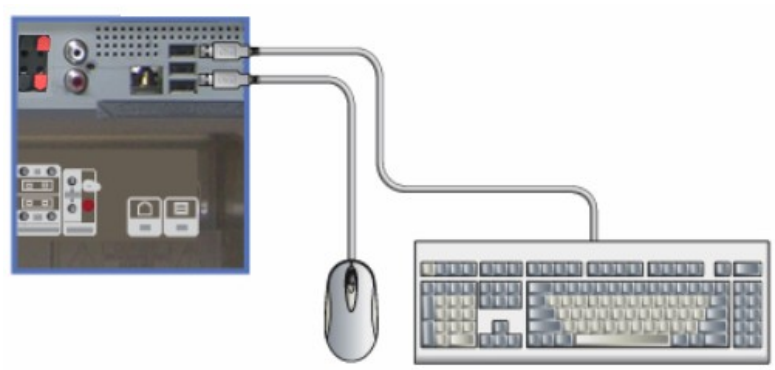
Connect a set of audio cables between the AUX L, R jacks on the AUDIO SYSTEM and the MONITOR [L-AUDIO-R] on the Monitor.

Connecting the Monitor

Connecting to LAN Cable / USB



Connect the LAN cable.



Connect USB devices such as a mouse or keyboard.

Installing Stand Kit

Installing the Semi Stand

1. A 'Cover-Protector' is used to protect the hole at the bottom of the monitor, where the stand is inserted. Be sure to remove the 'Cover-Protector' when attaching the provided Semi Stand or stand kit (sold separately) and cover the hole using the 'Cover-Hole' when attaching the wall mount kit.
2. Set up the left and right stands respectively.
3. Put the stand into the hole at the bottom of the monitor.
   Insert screw into the hole indicated and tighten. (M4 × L15)

The Semi Stand is provided only for screen adjustment before the stand kit or wall mount kit (sold separately) is attached. The Semi Stand is not intended for use as a regular stand and Samsung Electronics is not responsible for any problems caused by using it instead of the regular products. Never use the Semi Stand as the regular stand.

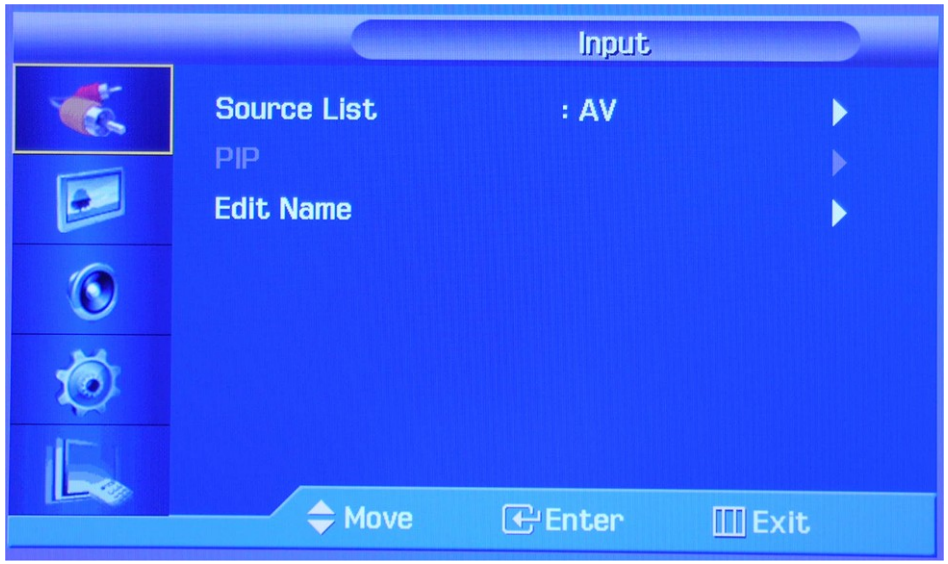
PC Compatibility

Graphic Card

Chip Maker	Card Name	Overall Test Result
ATI	RADEON 9200	OK
	RADEON X550	OK
	RADEON 1600Pro HDMI	OK
	RADEON 9700 Pro	OK
NVIDIA	Geforce 7300GS	OK
	Geforce 6600GT	OK
	Geforce 5900	OK
MATROX	Parhelia	OK
INTEL	945G	OK
▫ LAB TEST	RADEON X300 / MZ50	OK
	RADEON X300 / MQ50	OK
	GEFORCE FX5200 / MZ40	OK
	GEFORCE4 MX440 / MF20	OK
	INTEL I915G /SEBS X20	OK

Check List

Adjusting Your Monitor(Input)



Source List

Use to select PC, BNC or other external input source connected to the Monitor.

PIP

When external A/V devices such as VCRs or DVDs are connected to the monitor, PIP allows you to watch video from those devices in a small window super-imposed on the PC Video signal. (Off/On)

1) PIP

Off / On: Turn the PIP Screen on or off.

2) Source
: PC/DVI, BNC, AV/S-Video, Component, HDMI, MagicNet

: Select the input source for the PIP.

3) Swap : Swap the main picture with PIP picture

4) Size : Change the Size of the PIP window.

5) Position: Change the Position of the PIP window.

6) Transparency : Control the transparency of PIP picture

Edit Name

Name the input device connected to the input jacks to make your input source selection easier.

Adjusting Your Monitor(Picture : PC/BNC/DVI)

MagicBright™

MagicBright™ is a new feature providing the optimum viewing environment depending on the contents of the image you are watching.
Currently four different modes are available: Entertain, Internet, Text and Custom.

Custom :Change the contrast and brightness according to personal preference.

1) Contrast : Adjust the contrast.

2) Brightness : Adjust the brightness.

Color Tone

The tone of the color can be changed : Cool, Normal, Warm, and Custom

Color Control

1) Red 2) Green 3) Blue

Adjust the individual R, G, B color controls.

Color Temp

Choose color tone off on the first stage and so can control color temperature.
Color Temperature Range : 5000 ~ 15000K (Step : 1000K)

Image Lock

Image Lock is used to fine-tune and get the best image by removing noise that creates unstable images with jitter and shimmer.

1) Coarse : Removes noise such as vertical stripes.

2) Fine : Removes noise such as horizontal stripes.

3) Position : Adjusts the screen location horizontally and vertically.

Auto Adjustment : The values of Fine, Coarse, position are adjusted automatically.

Signal Balance : Used to make up for the weak RGB signal which has been

Adjusting Your Monitor(Picture : PC/BNC/DVI)

Size :You can switch the Size. : 16:9 and 4:3

PIP Picture

You can adjust the PIP Screen Settings.
: Contrast, Brightness, Sharpness, Color,Tint

Adjusting Your Monitor(Picture : AV/S-Video/Component)

Mode

The Monitor has four automatic picture settings ("Dynamic", "Standard", "Movie" and "Custom") that are preset at the factory.

Custom

Change the contrast and brightness according to personal preference.

: Contrast, Brightness, Sharpness, Color, Tint

Color Tone

The tone of the color can be changed. The individual color components are also user adjustabls.

: Cool2, Cool1, Normal, Warm1, Warm2

Color Temp

Choose color tone off on the first stage and so can control color temperature.
Color Temperature Range : 5000 ~ 15000K (Step : 1000K)

Size

You can switch the Size. : 16:9, Zoom1, Zoom2, 4:3

Dynamic Contrast

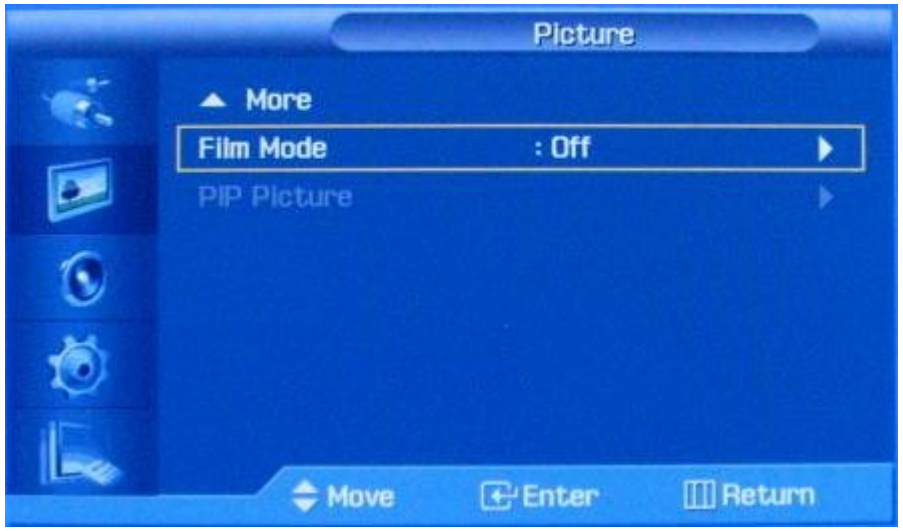
Dynamic Contrast automatically sets the most optimal contrast ratio.

: Off / On

Digital NR

Digital Noise Reduction. : Off / On

Adjusting Your Monitor(Picture : AV/S-Video/Component)



Film Mode : The Film Mode feature offers you a theater-quality viewing experience.

PIP Picture

You can adjust the PIP Screen Settings. : Contrast, Brightness

Adjusting Your Monitor(Sound)

Mode

The Monitor has a built-in high fidelity stereo amplifier.

: Standard, Music, Movie, Speech, Custom

Custom

1) Bass : Emphasize low frequency audio.

2) Treble : Emphasize high frequency audio.

3) Balance : Allows you to adjust the sound balance between the left and right speakers.

Auto volume

Each broadcasting station has its own signal conditions. This feature let you automatically adjust the volume of the desired channel.

SRS TSXT (SRS Trusurround XT)

Trusurround XT is a patented SRS technology that solves the problem of playing 5.1 multi-channel content over 2 speakers.

Sound Select

You can select either Main or Sub when PIP is On.

Adjusting Your Monitor(Setup)

Language

Select the language
English, Germany, Spanish, French, Italian, Swedish, Japanese, Russian, Chinese, Korean, Portuguese

Time

Use to choose one of 4 time settings, Clock Set, Sleep Timer, On Timer, and Off Timer.

When you select turning **Yes** the **On Timer** or **Off Timer** when **Clock Set** is undefined, a guiding message pops up: "Set the clock first.".

Menu Transparency

Changes the opaqueness of the background of the OSD. High, Medium, Low, Opaque

Safety Lock PIN

You can change the password.

Energy Saving

When this menu is on, power consumption drops under 1W by disabling RS232C communication, MDC program, and MagicNet.

Video Wall

Various monitors that are connected together, so that each screen shows a part of the whole picture or so that the same picture is repeated on each screen.

1) Full : Provides a full screen without any margin.

2) Natural : Displays a natural image with the original aspect ratio intact.

Adjusting Your Monitor(Setup)

Safety Screen

Prevent image retentions that may appear when a still picture is displayed on the screen over a long time.

1) Interval : Determines the time interval to run the safety screen operation.

2) Second : Determines the time period to run the safety screen operation.

3) Type : Scroll / Pixel / Bar / Eraser

Resolution Select

When the picture is not displayed properly on the screen when setting the graphics card resolution of the computer to 1024 x 768 @ 60Hz, 1280 x 768 @ 60Hz, 1360 x 768 @ 60Hz or 1366 x768 @ 60Hz, by using this function(Resolution Select) you can have the picture displayed on the screen in the specified resolution.

Lamp Control

Used to adjust inverter lamp in order to reduce energy consumption.

Power On Adjustment

In order to decentralize the load of power supplier when many monitors that are connected together turn on simultaneously, let some delay of power on timing .

FAN

According to the rotation of monitor, change the movement of the FAN. : Normal, Pivot

Reset

Picture parameters are replaced with the factory default values.

Adjusting Your Monitor(MDC)

ID Setup

Assigns distinctive IDs to the SET.

ID Input

Use to select the transmitter functions of the individual SET. Only a SET where the ID corresponds to the transmitter setting becomes activated.

Adjusting Your Monitor(MagicNet)

Photo

Auto, Original, Slide Show , Interval, Rotation, Zoom, Close

Music

MP3, AC3 file format is supported.

Movie : AVI, MPEG1/2, DivX 4.x, DivX 5.x file format is supported. : Play, Full Size

OFFICE/HTML : PPT(Power Point), DOC(MS Word), XLS(MS Excel), PDF, HTML, HTM, Flash files are displayed.

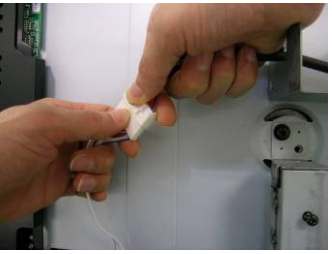
Internet : Connects to the Internet.

Setup : You can set various functions in MagicNet mode.

Schedule View, TCP/IP, Homepage, Network Setup

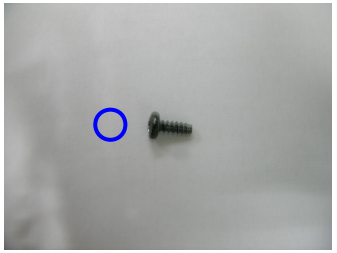
Disassembly (40”)

1. Remove 12 screws from the rear cover ,disconnect the cable of function PCB as showed left picture and lift up the rear cover.



Screw

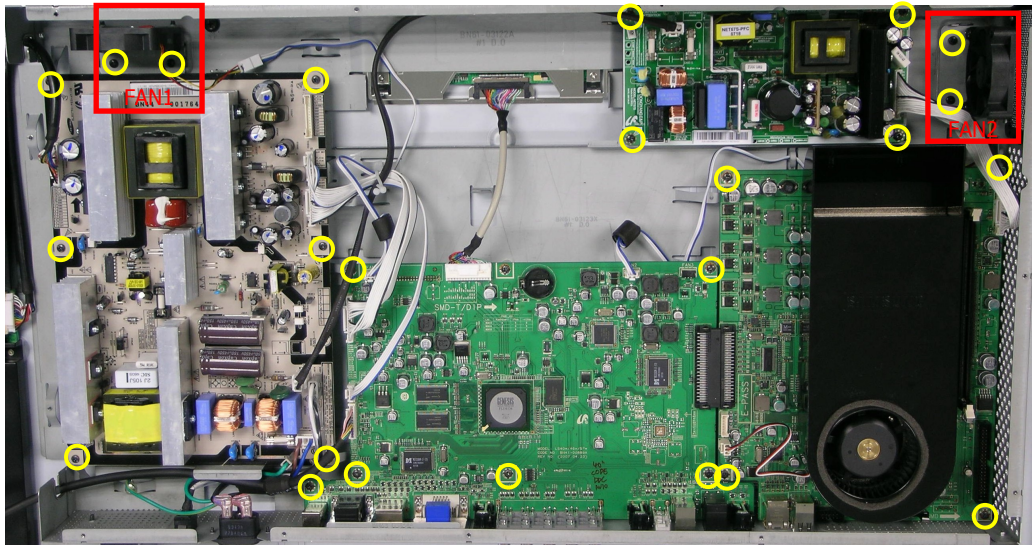
2. Remove 2 screws from the bracket and lift up the bracket side.

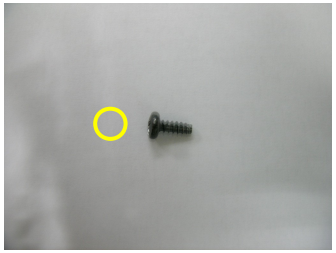


Screw

Disassembly (40”)

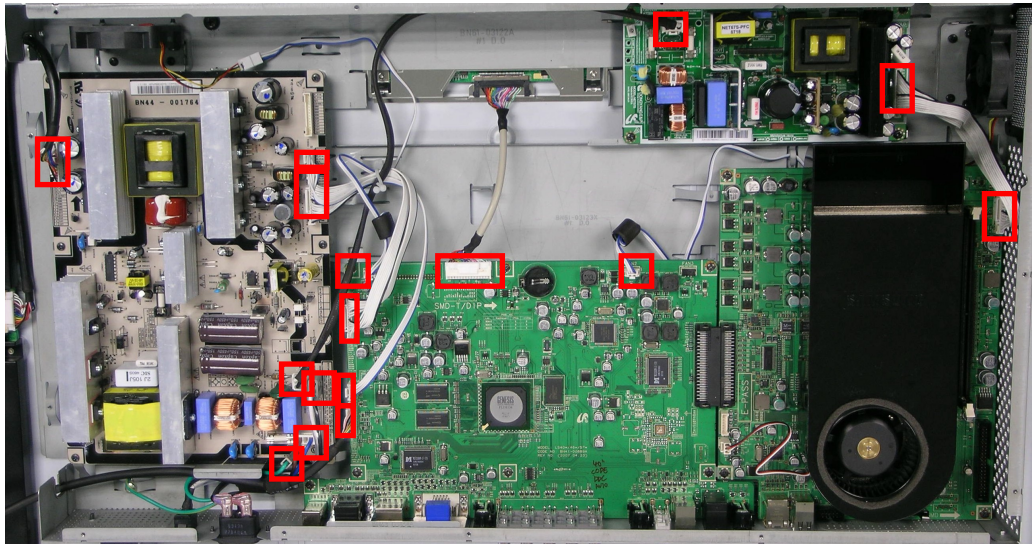
3. Remove 24 screws and FAN as showed the picture.





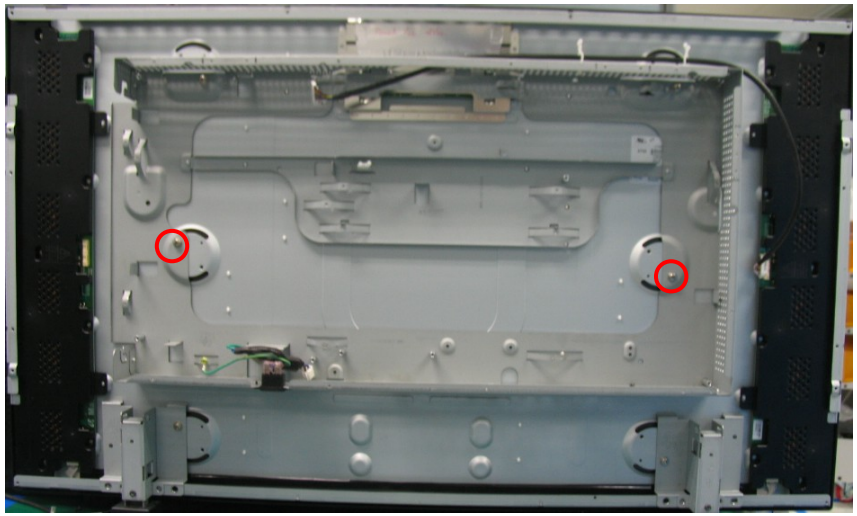
Screw

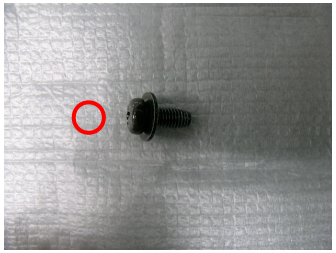
4. Remove the cables and separate the SMPS board and main board from bottom BRKT as showed the picture.



Disassembly (40”)

5. Remove 2 screws, and lift up BRKT.

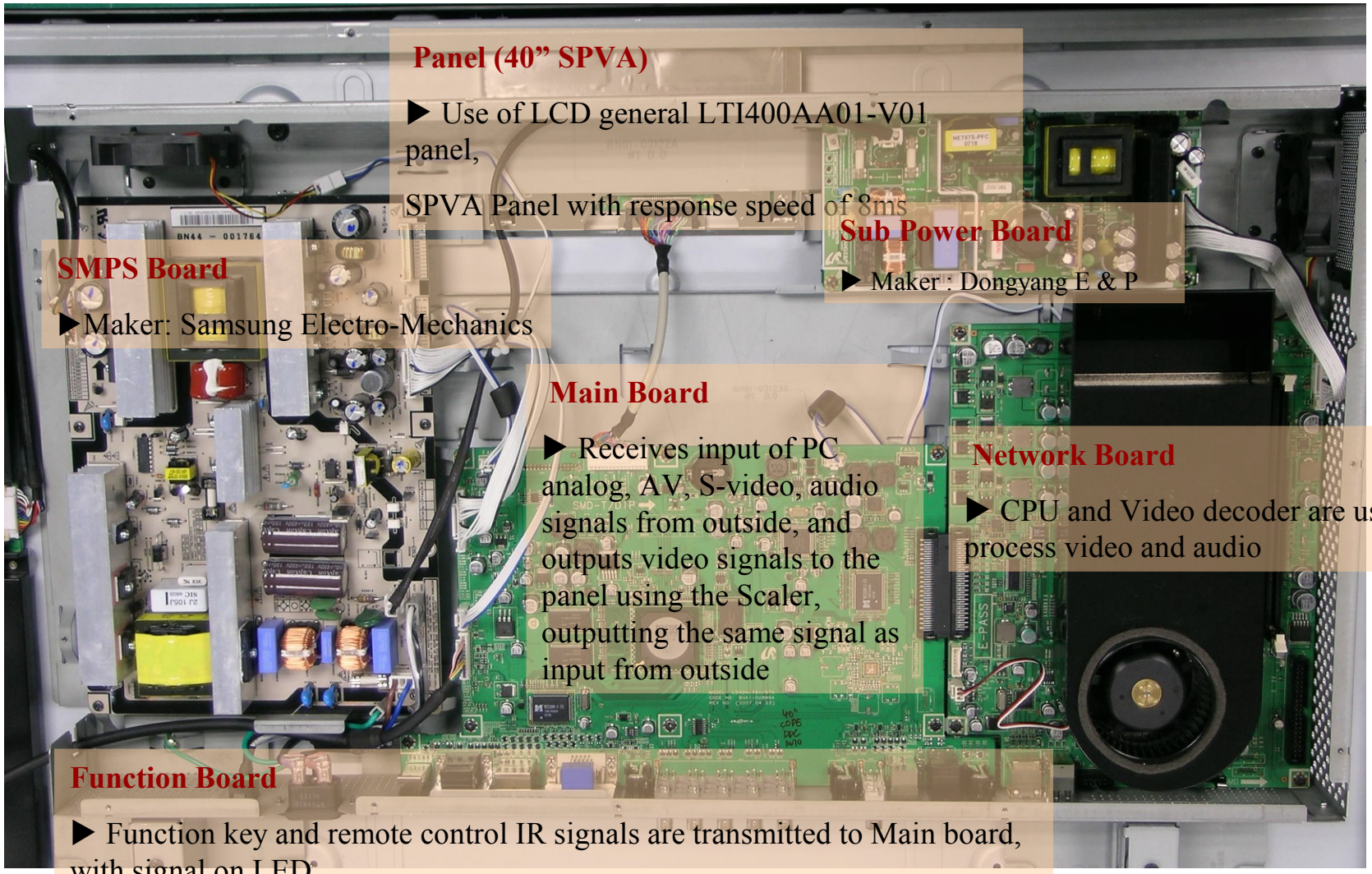




Screw

- **Reassembly procedures are in the reverse order of disassembly procedures.**

Internal View (40”)



Panel (40” SPVA)

▶ Use of LCD general LTI400AA01-V01 panel,

SPVA Panel with response speed of 8ms

SMPS Board

▶Maker: Samsung Electro-Mechanics

Sub Power Board

▶ Maker : Dongyang E & P

Main Board

▶ Receives input of PC analog, AV, S-video, audio signals from outside, and outputs video signals to the panel using the Scaler, outputting the same signal as input from outside

Network Board

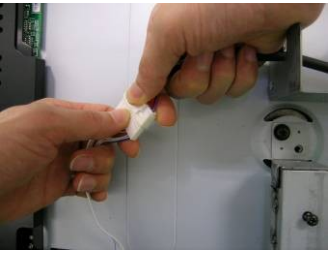
▶ CPU and Video decoder are used to process video and audio

Function Board

▶ Function key and remote control IR signals are transmitted to Main board, with signal on LED

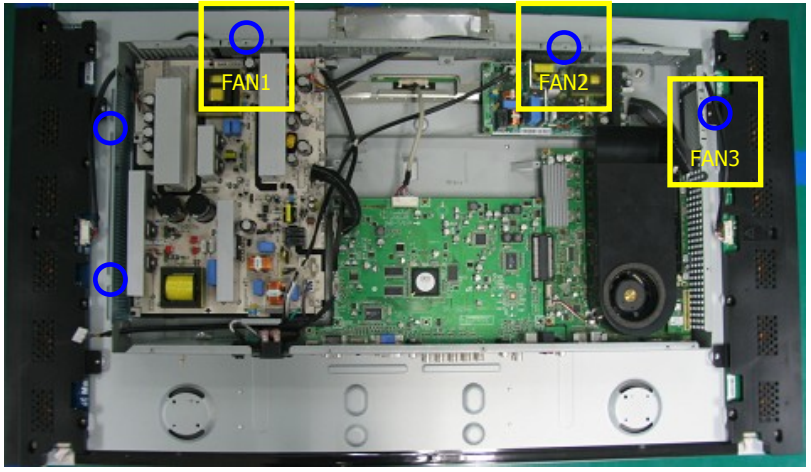
Disassembly (46”)

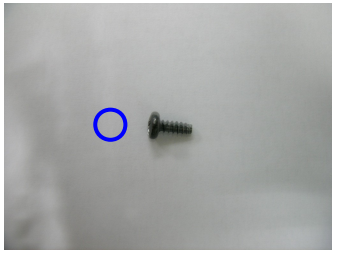
1. Remove 16 screws from the rear cover and lift up the rear cover.



Screw

2. Remove 5 screws and FAN from the bracket and lift up the bracket side.

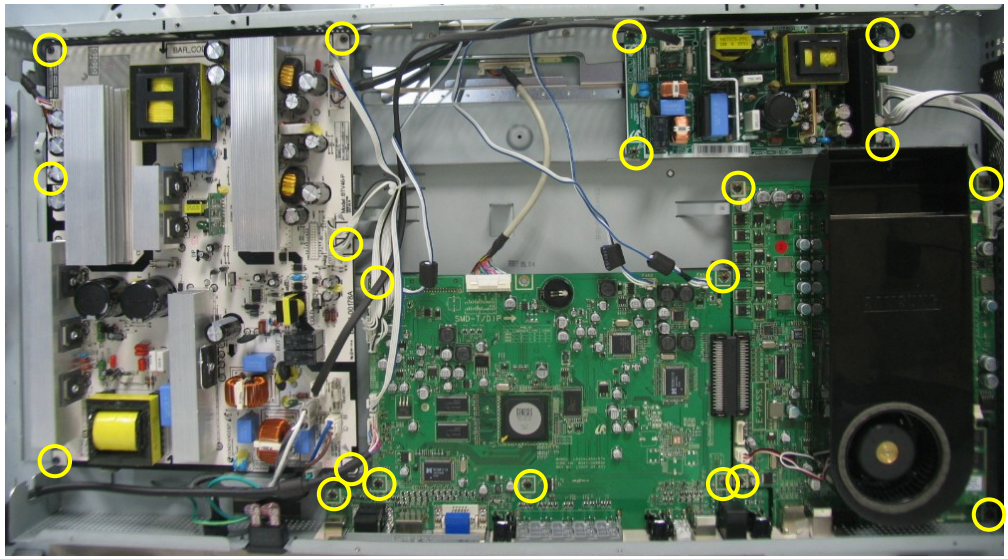


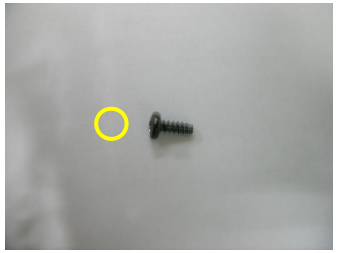


Screw

Disassembly (46”)

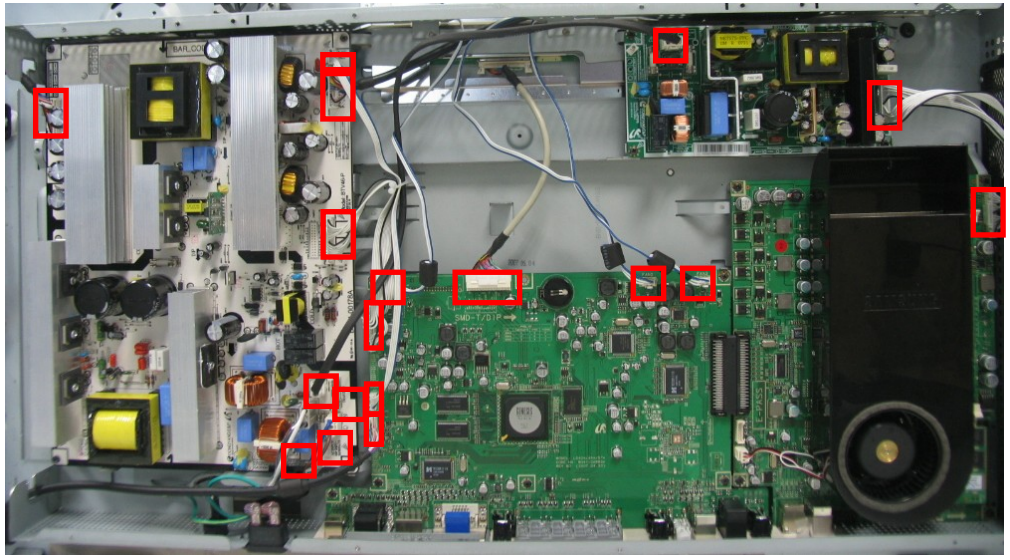
3. Remove 20 screws as showed the picture.





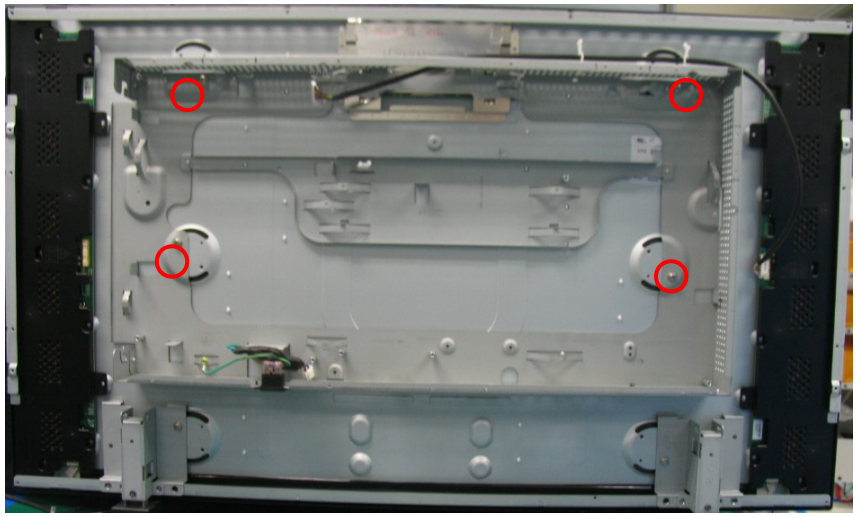
Screw

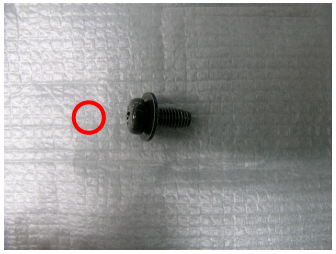
4. Remove the cables and separate the SMPS board and main board from bottom BRKT as showed the picture.



Disassembly (46”)

5. Remove 4 screws, and lift up BRKT.

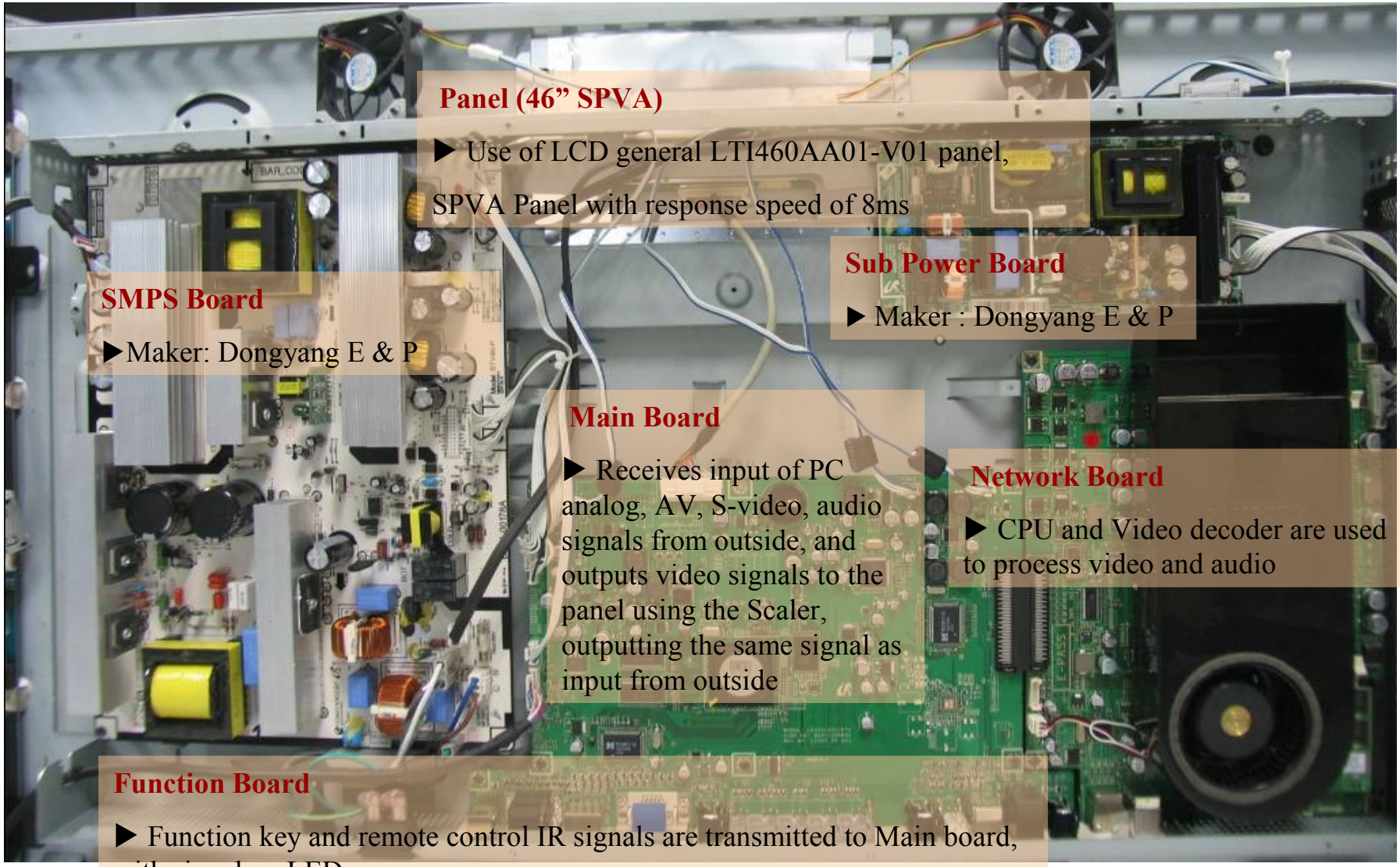




Screw

- **Reassembly procedures are in the reverse order of disassembly procedures.**

Internal View (46”)



Panel (46” SPVA)

▶ Use of LCD general LTI460AA01-V01 panel,

SPVA Panel with response speed of 8ms

Sub Power Board

▶ Maker : Dongyang E & P

SMPS Board

▶Maker: Dongyang E & P

Main Board

▶ Receives input of PC analog, AV, S-video, audio signals from outside, and outputs video signals to the panel using the Scaler, outputting the same signal as input from outside

Network Board

▶ CPU and Video decoder are used to process video and audio

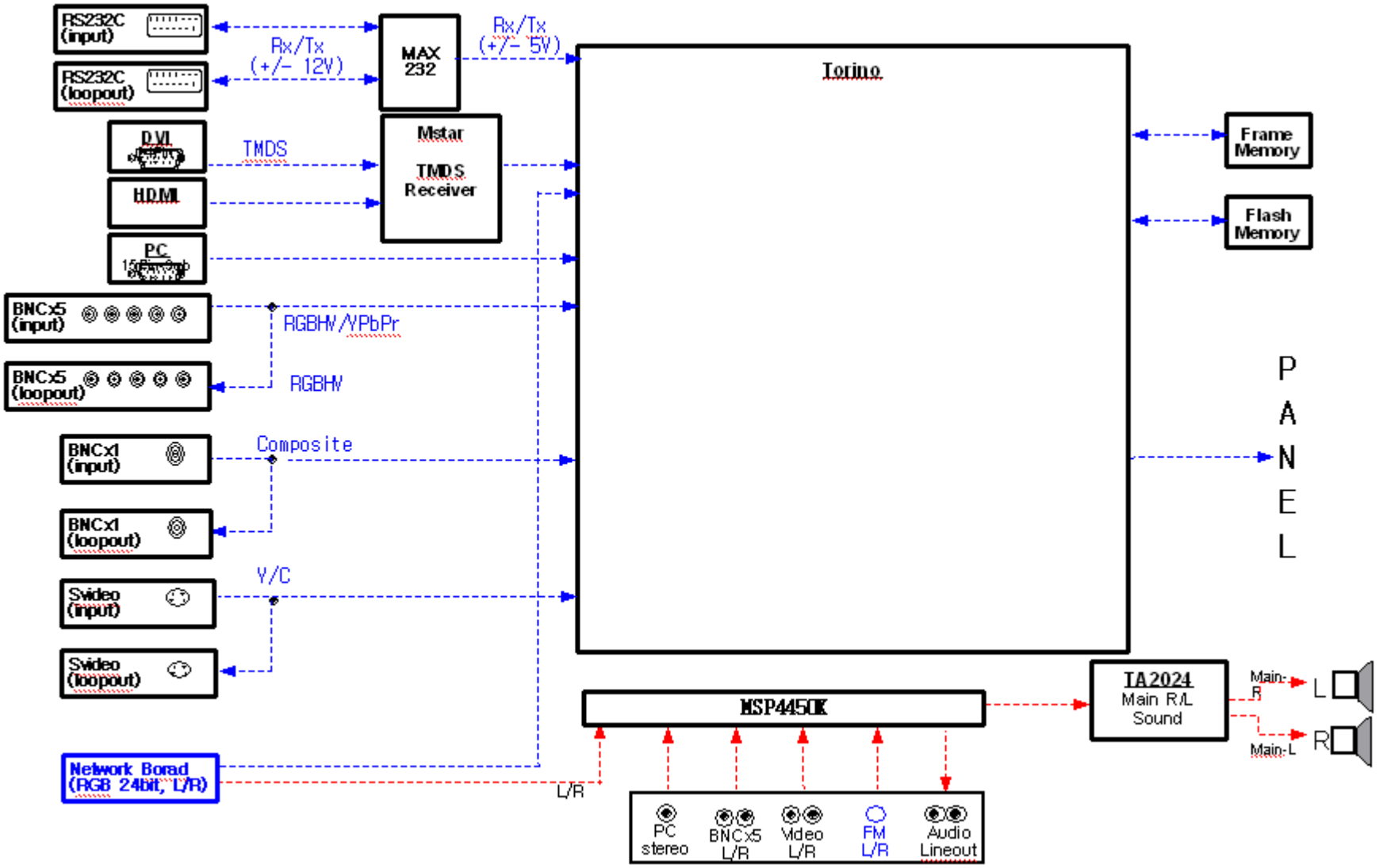
Function Board

▶ Function key and remote control IR signals are transmitted to Main board, with signal on LED

- Reassembly procedures are in the reverse order of disassembly procedures.
  - Reassembly procedures are in the reverse order of disassembly procedures.

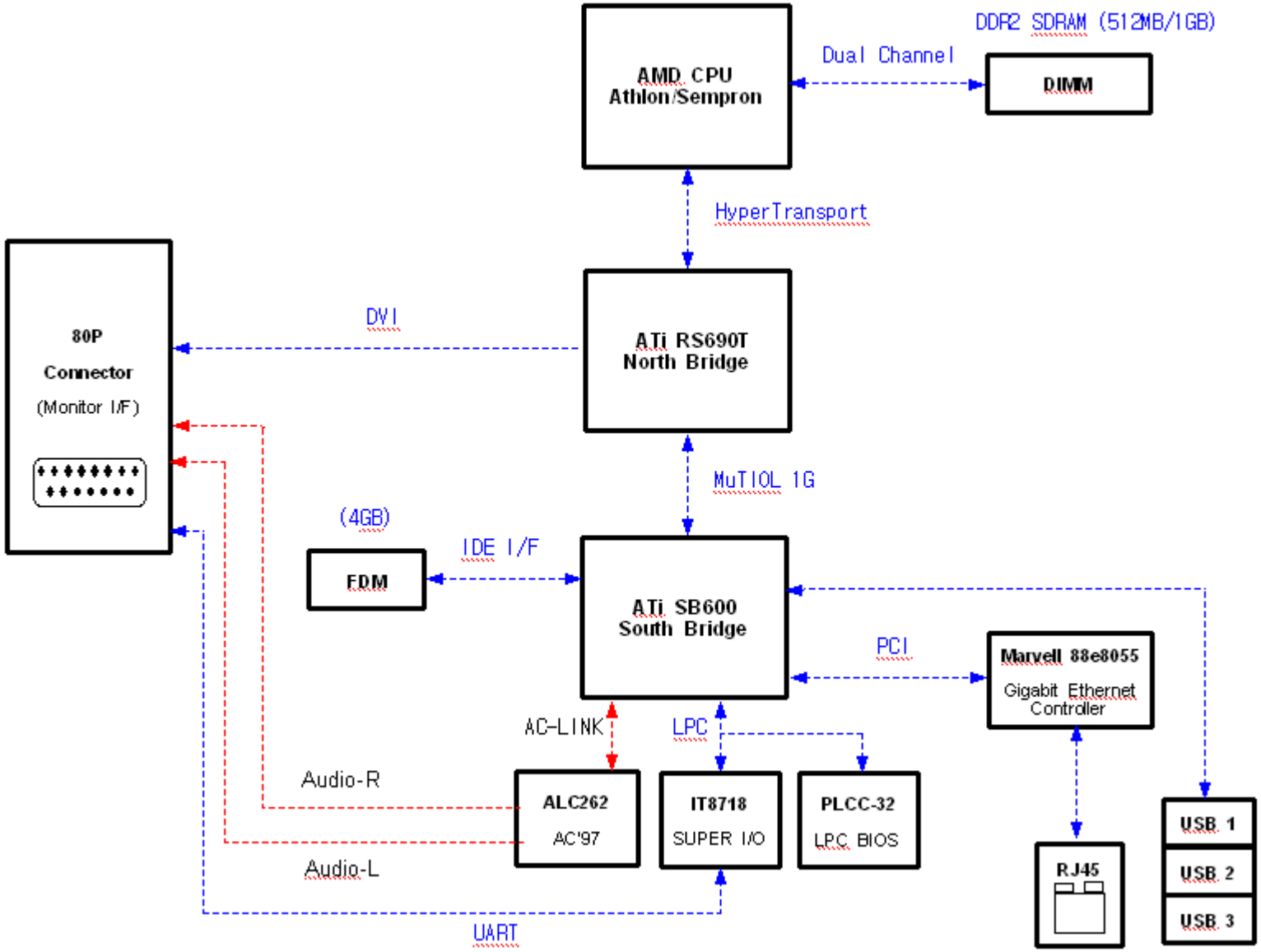
Block Diagram (Main Circuit)

Main



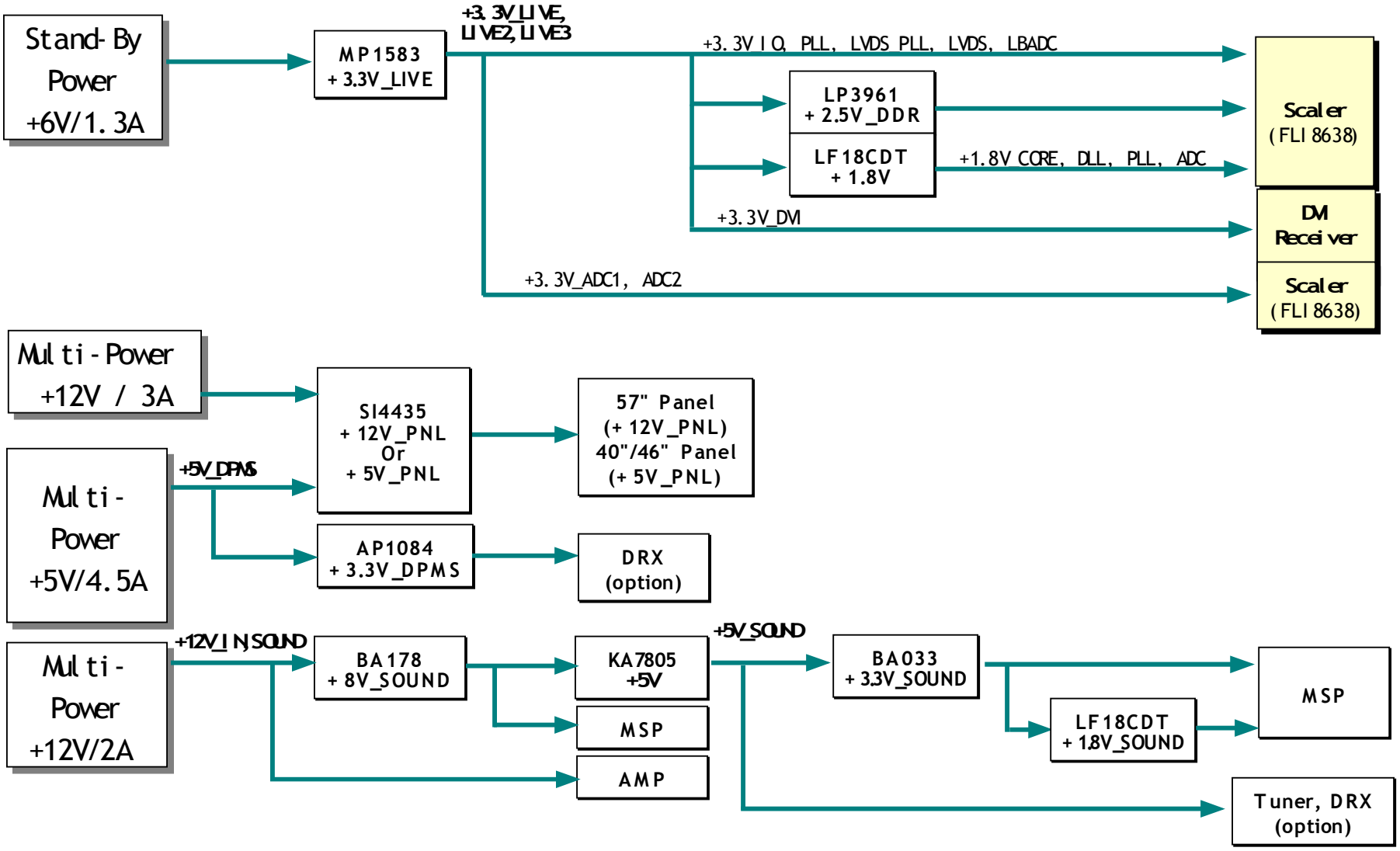
Block Diagram (Network Circuit)

Main



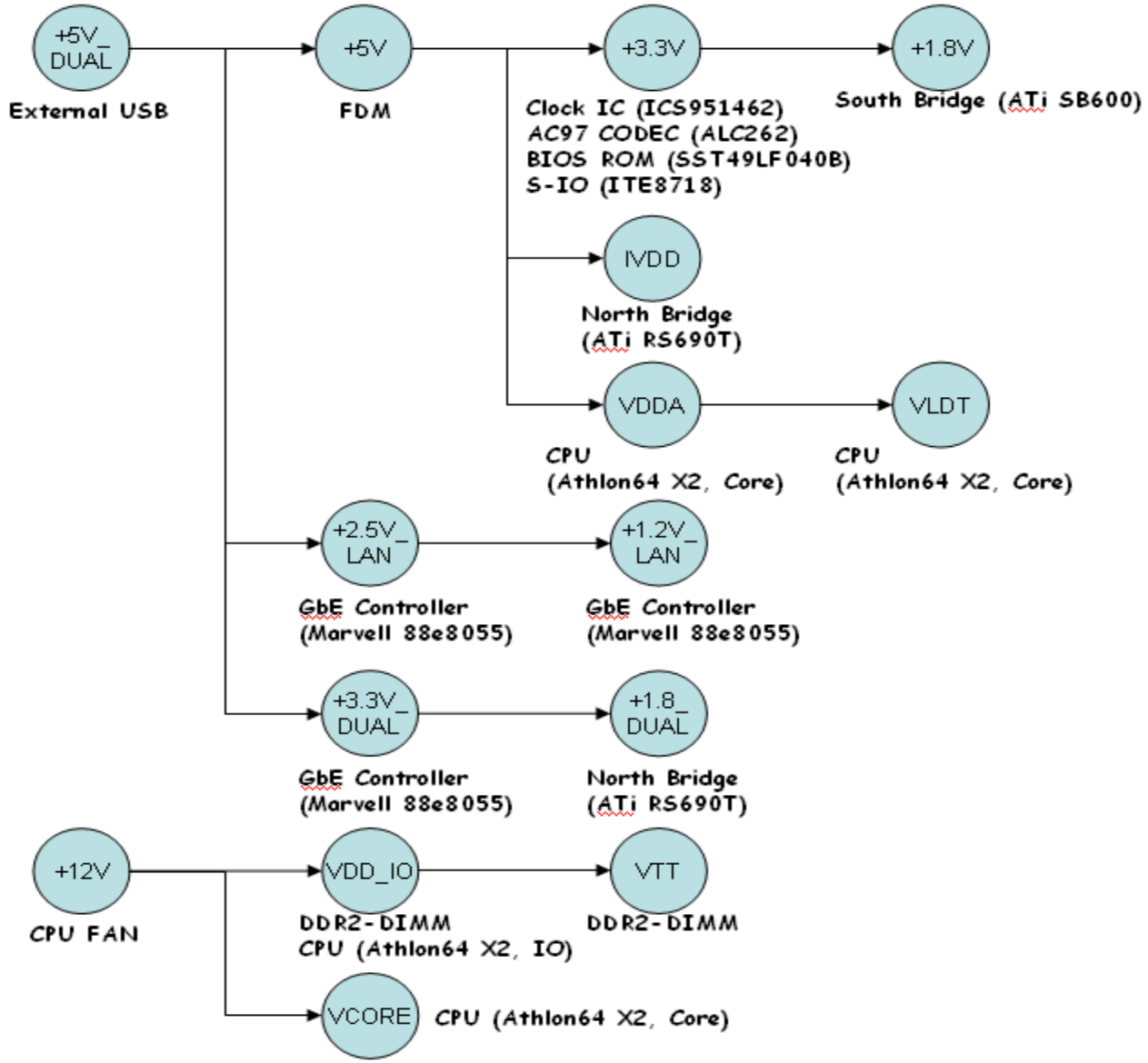
Block Diagram (Main - Power)

Main Power Tree

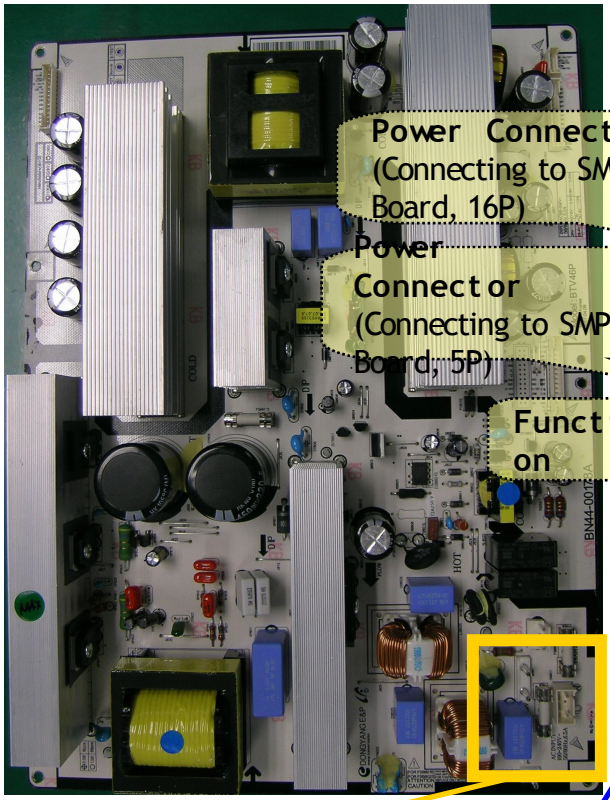


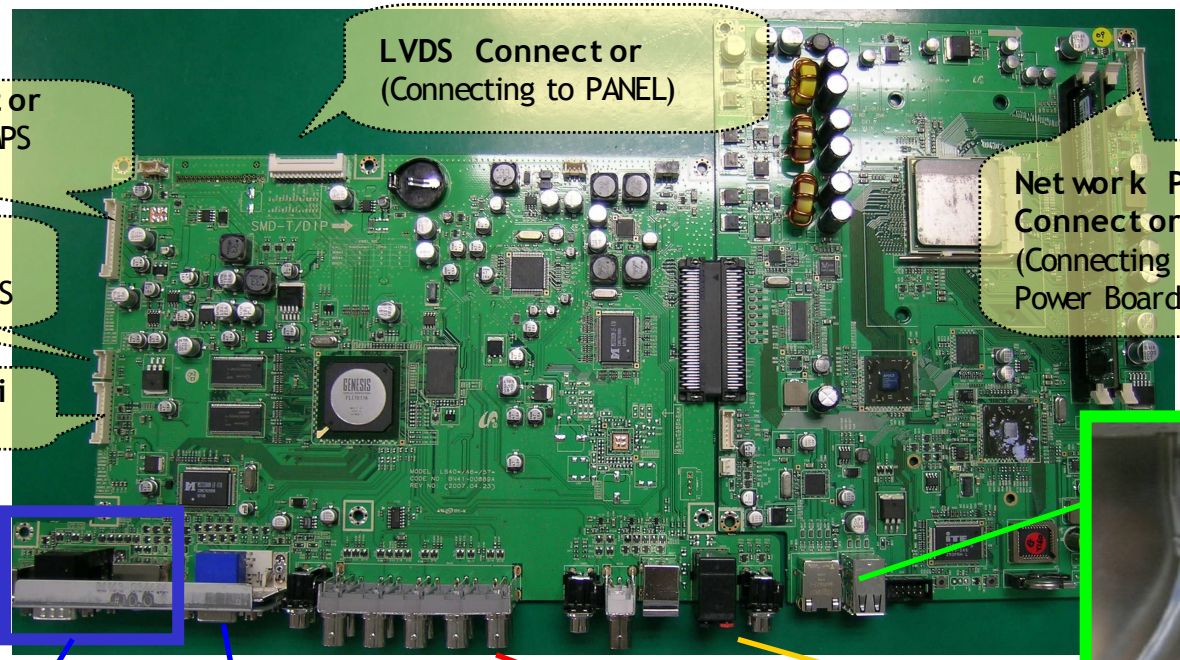
Block Diagram (Network - Power)

Network Power Tree



Board Connections – Main Board





Power Connector (Connecting to SMPS Board, 16P)

Power Connector (Connecting to SMPS Board, 5P)

Function

LVDS Connector (Connecting to PANEL)

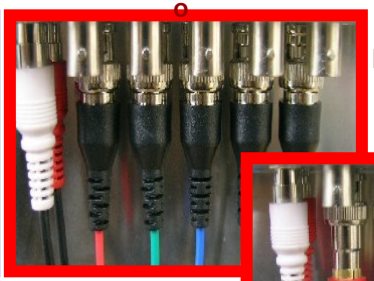
Network Power Connector (Connecting to Network Power Board)

LAN / USB

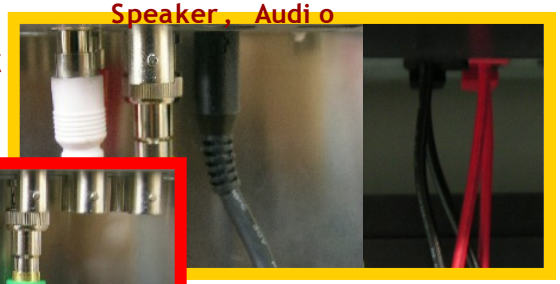
PC (D-SUB/DVI/Audio)

BNC/Component/Audio

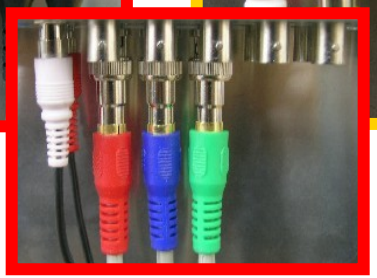
BNC



AV (Audio, Video, S-Video), Speaker, Audio



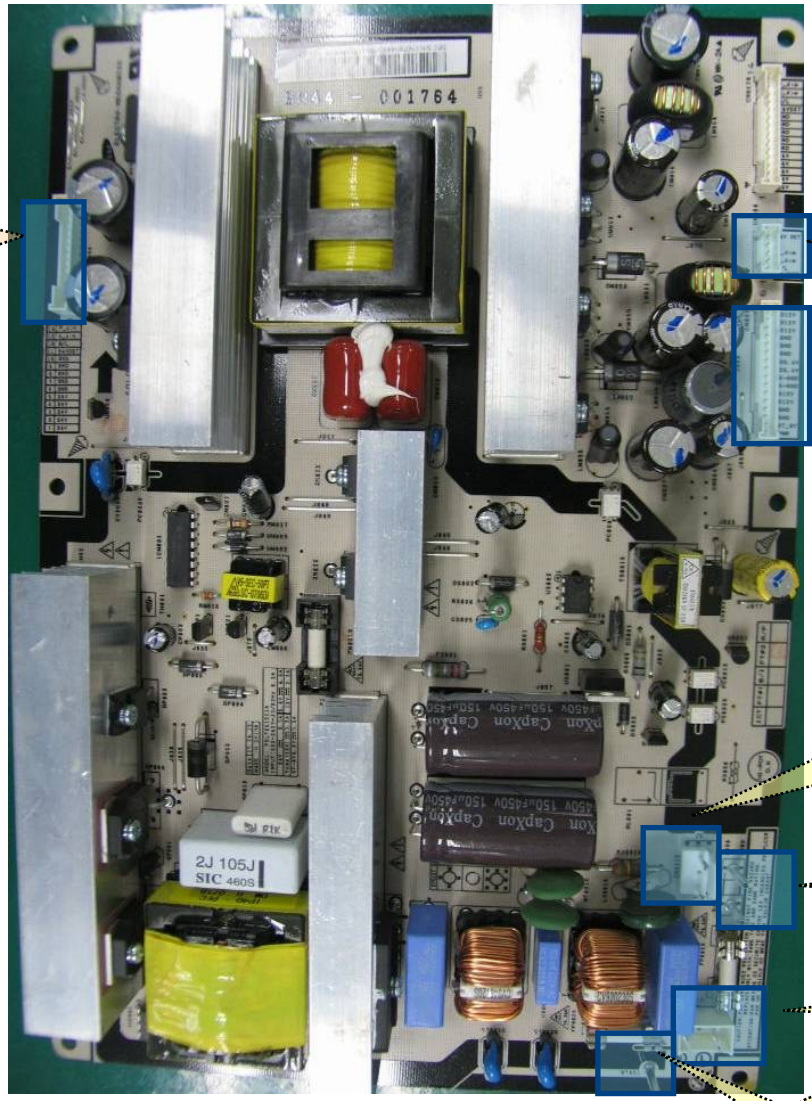
Component



AC Power

Remote, RS232

Board Connections – SMPS Board (40”)



Lamp Connector
(Connecting to panel inverter - left side)

Power Connector 5P
(Connecting to MAIN board, Relation to Lamp control)

Power Connector 16P
(Connecting to MAIN board)

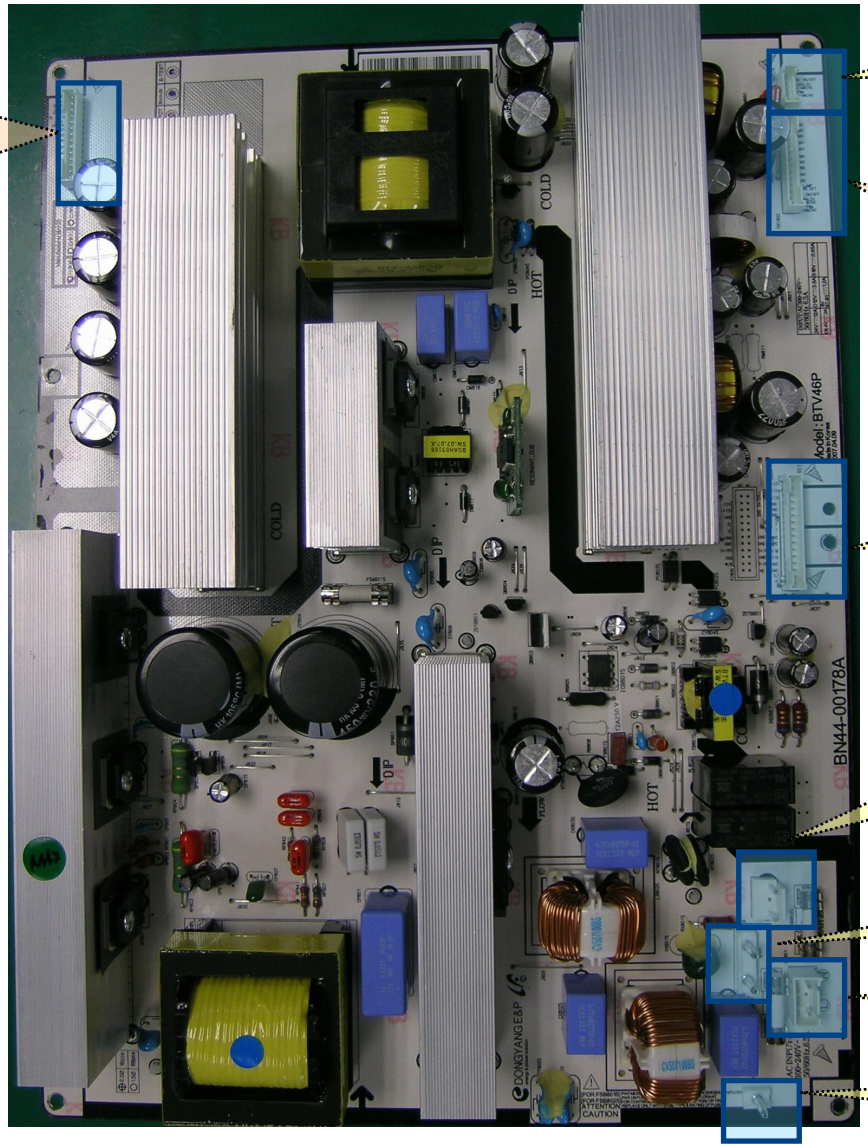
Network Connector
(Connecting to Network Power)

Connecting to Mechanical switch

Connecting to AC socket

Power GND

Board Connections – SMPS Board (46”)



Lamp Connector
(Connecting to panel inverter - left side)

Power Connector 5P
(Connecting to MAIN board, Relation to Lamp control)

Lamp Connector
(Connecting to panel inverter - right side)

Power Connector 16P
(Connecting to MAIN board)

Network Connector
(Connecting to Network Power)

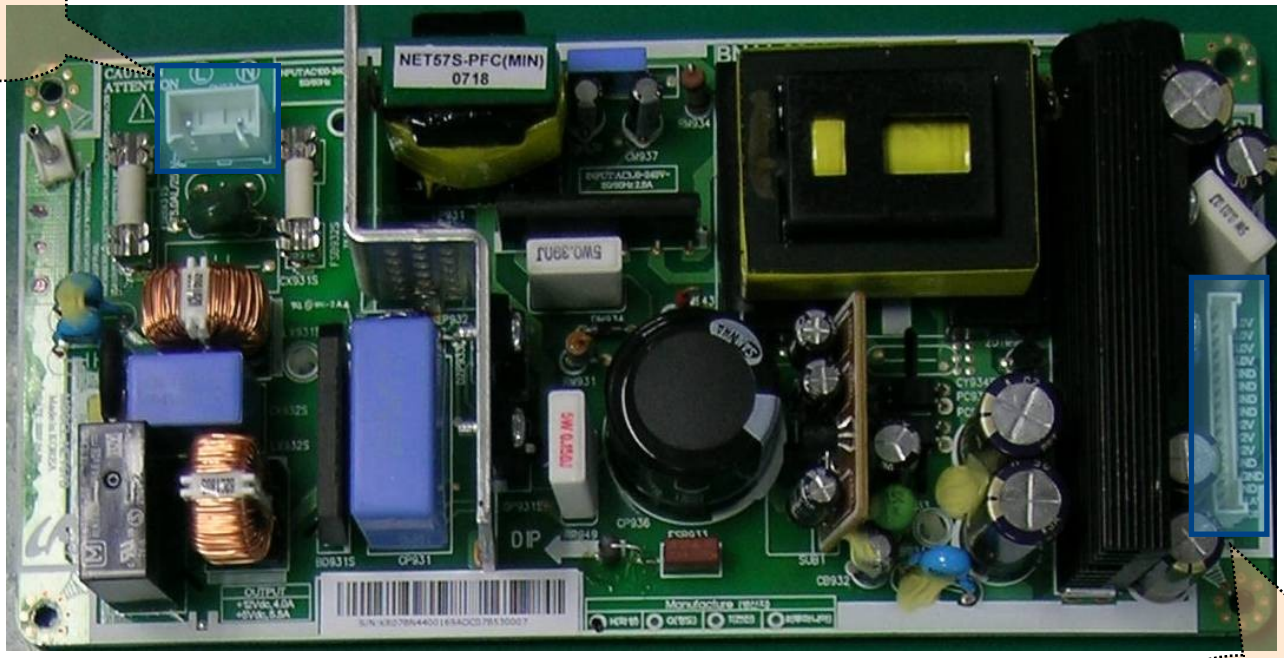
Connecting to Mechanical switch

Connecting to AC socket

Power GND

Board Connections – Network Power Board

AC Power Connector (Connecting to SMPS Board)

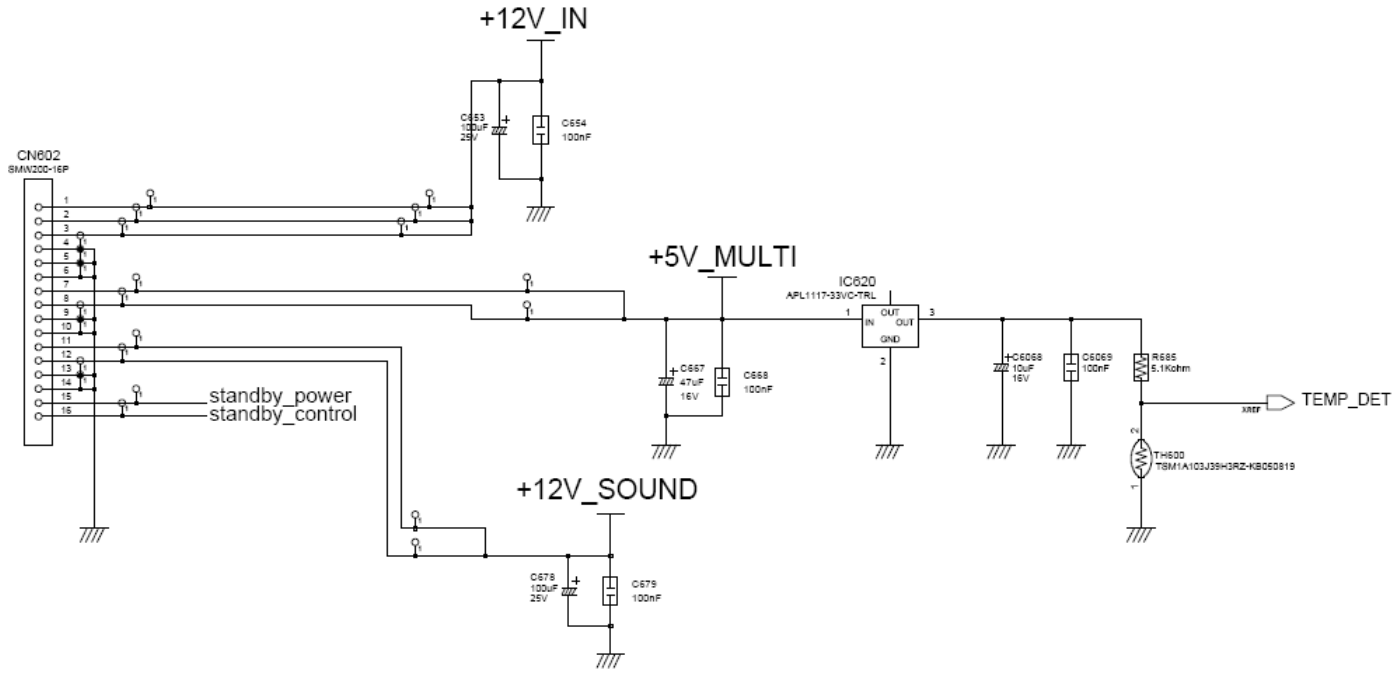


Network Connector (Connecting to Network Board)

Schematics : Power

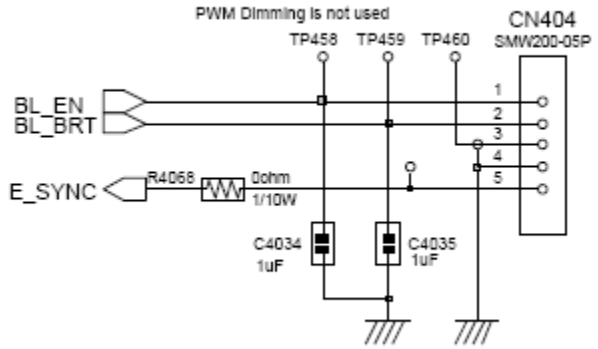
CN 602

Connecting to SMPS Board (16p)

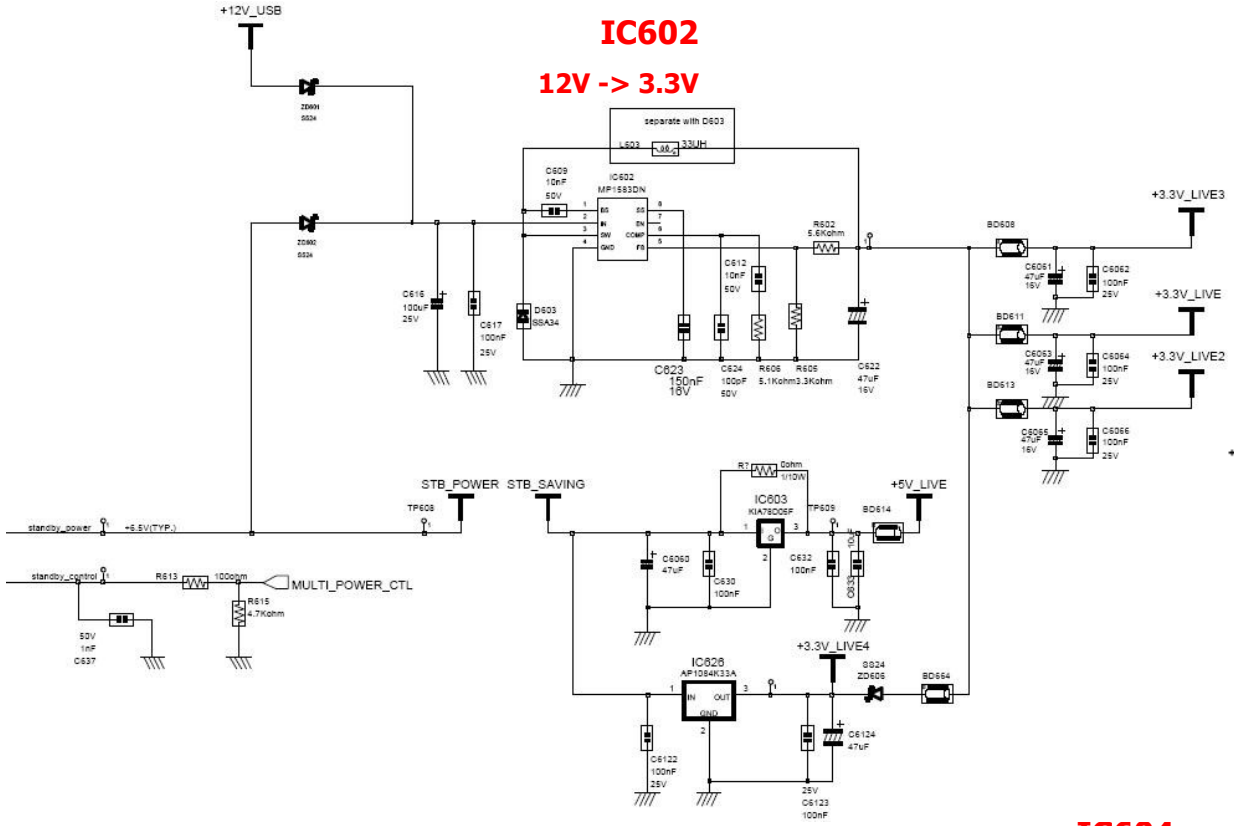


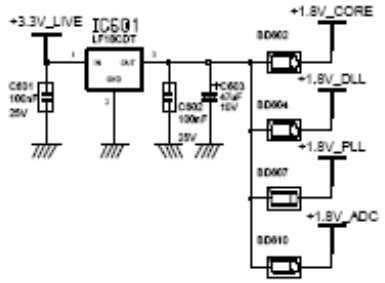
CN 404

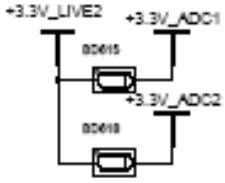
Connecting to SMPS Board (5p)

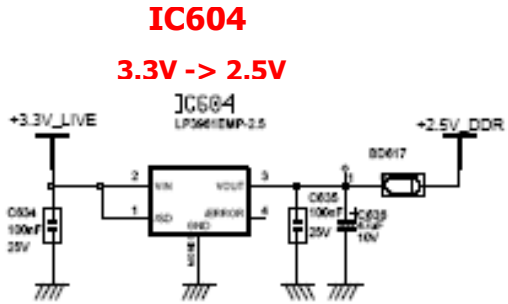


Schematics : Power

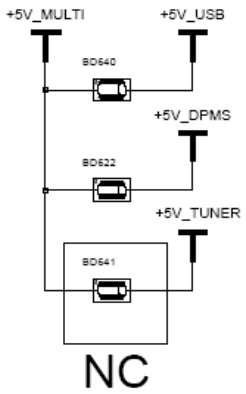




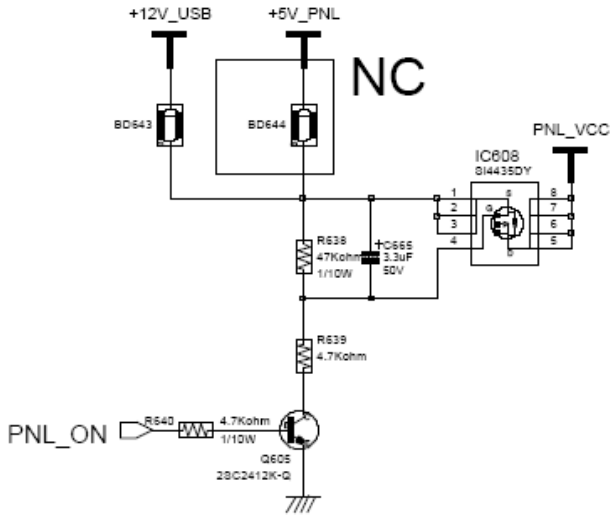


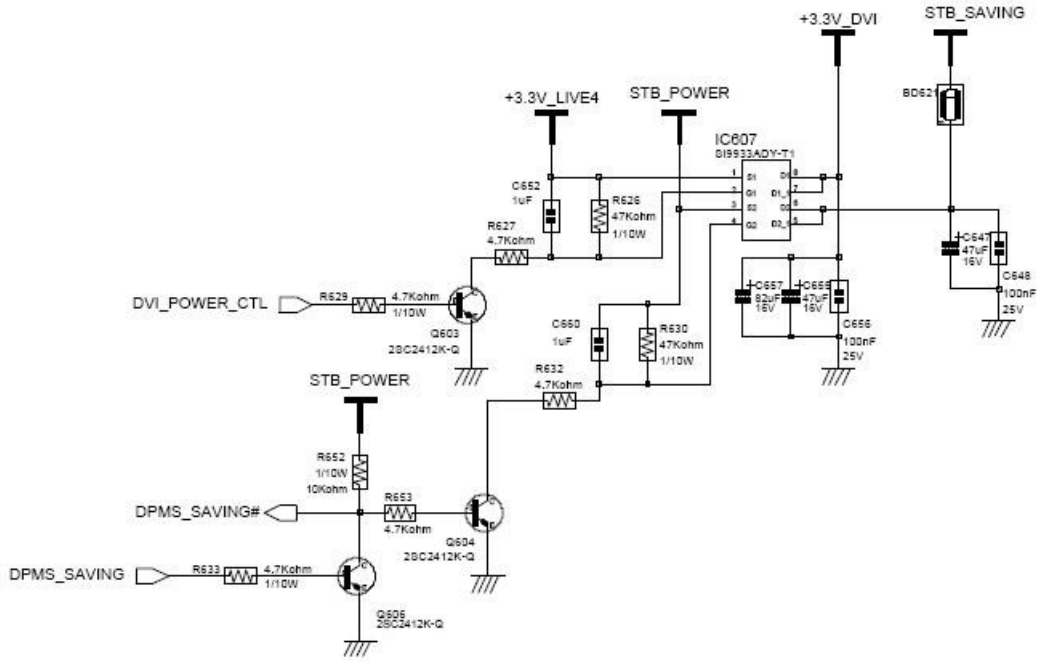


Schematics : Power



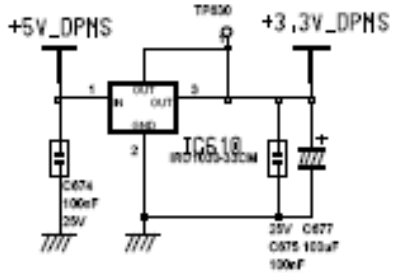
OPTION	40"	46",57"
BD 643	X	O
BD 644	O	X



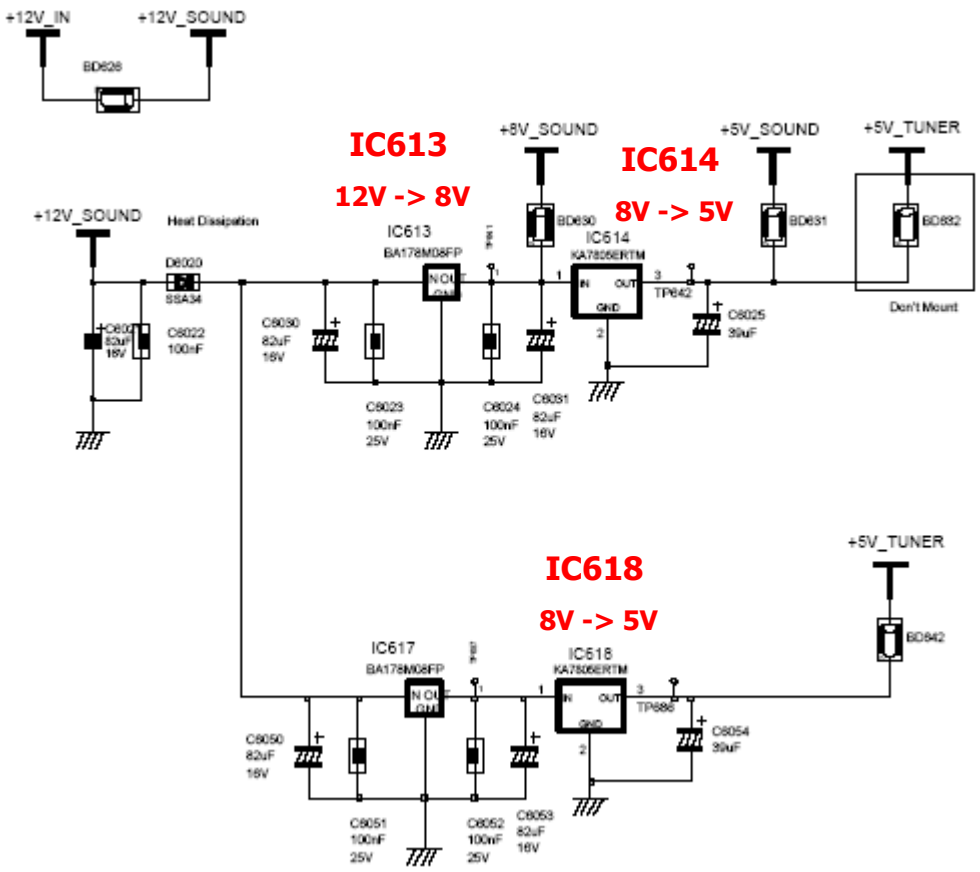


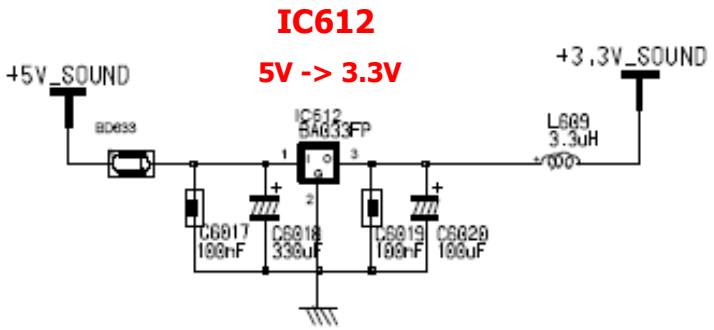
IC610

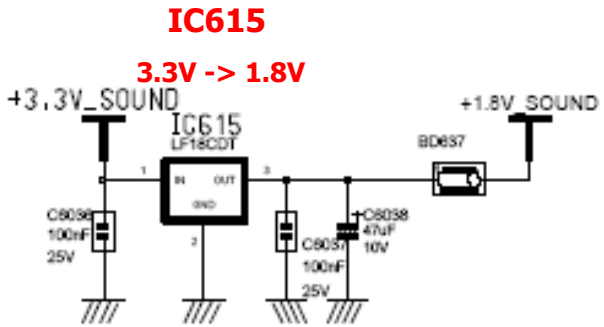
5V -> 3.3V



Schematics : Power



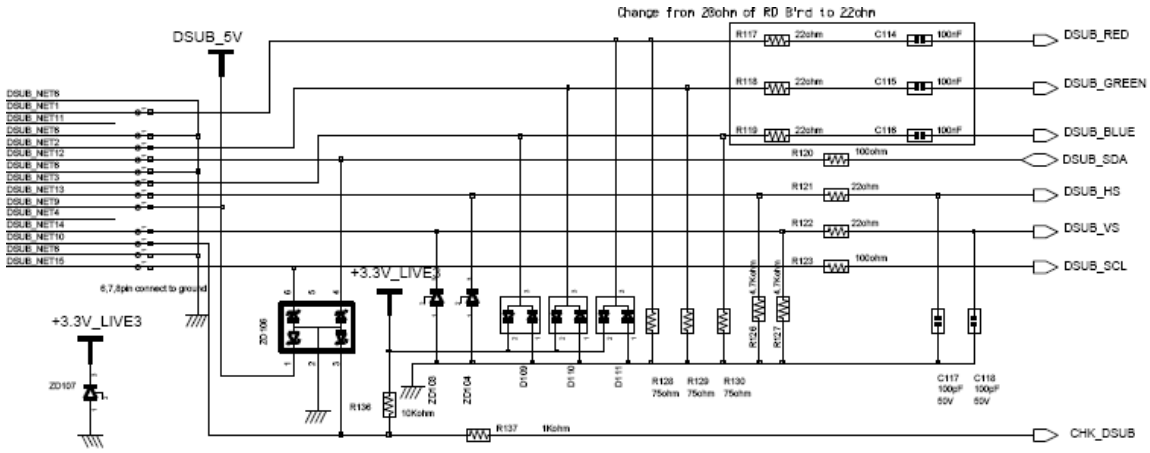




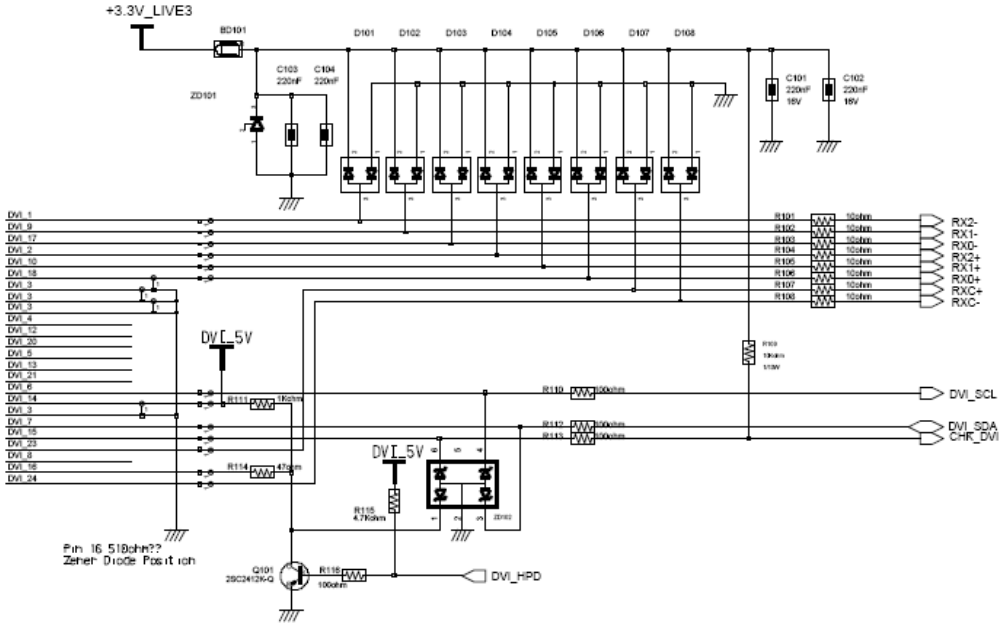
Schematics : PC / DVI Input

PC signal input

CN101



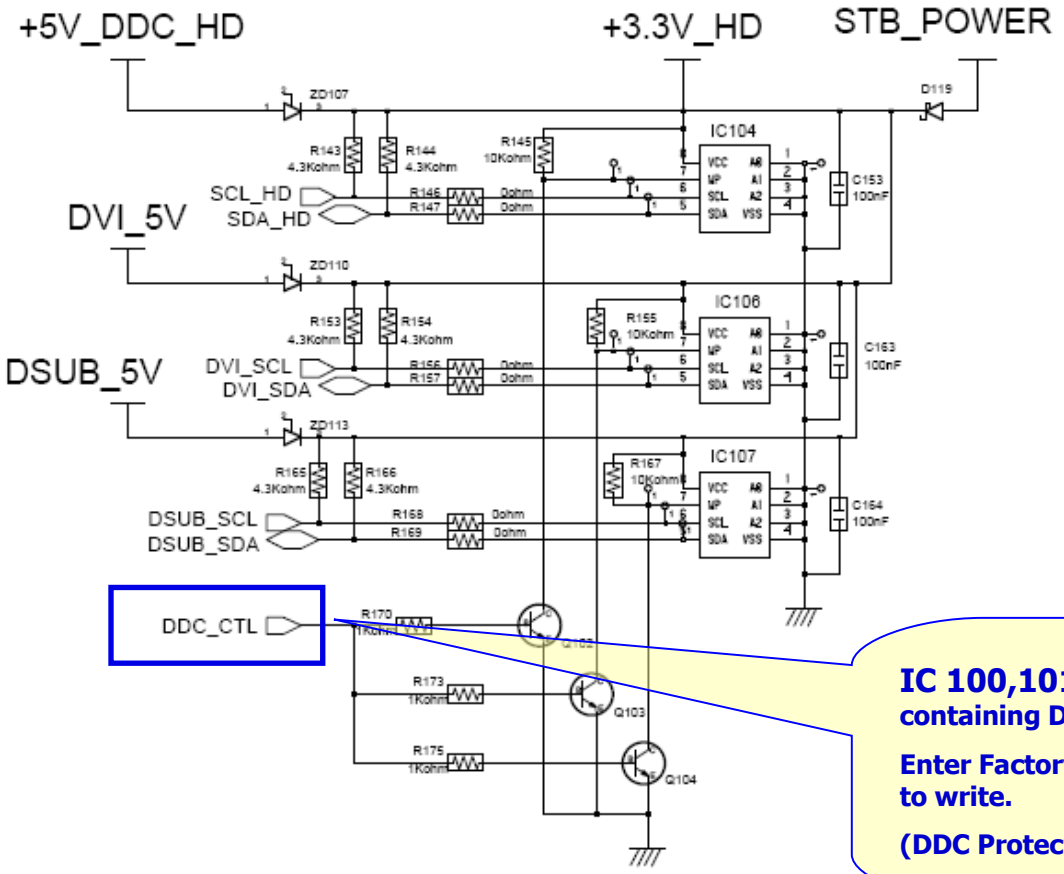
DVI signal input



Scaler
IC408

IC105
(TMDS Receiver)

Schematics : DDC



IC 100,101 : If EEPROM E_DDC_CTL signal containing DDC data is High, write cannot be done.

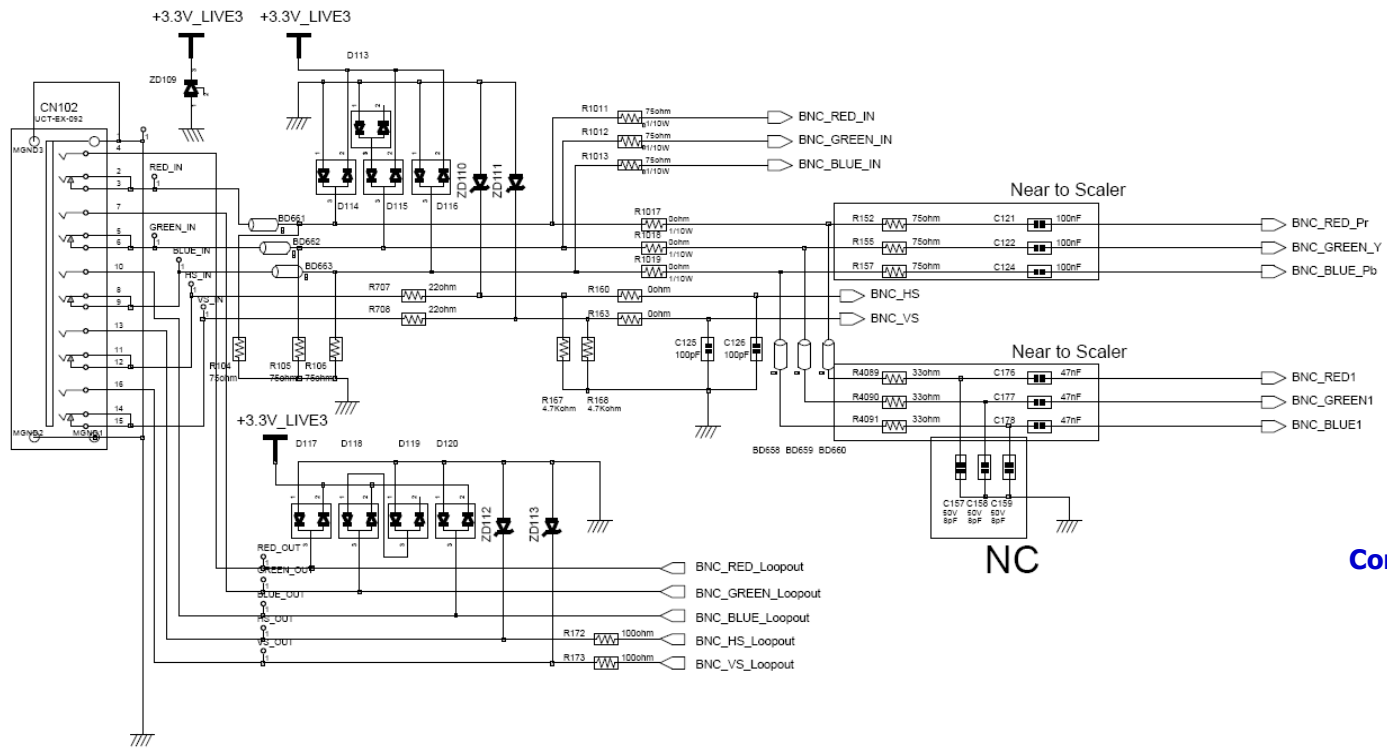
Enter Factory mode for signal to be Low to be able to write.

(DDC Protection)

Schematics : BNC / Component Input

CN 103

BNC/Component signal input



BNC

IC105

(TMDS Receiver)

Component

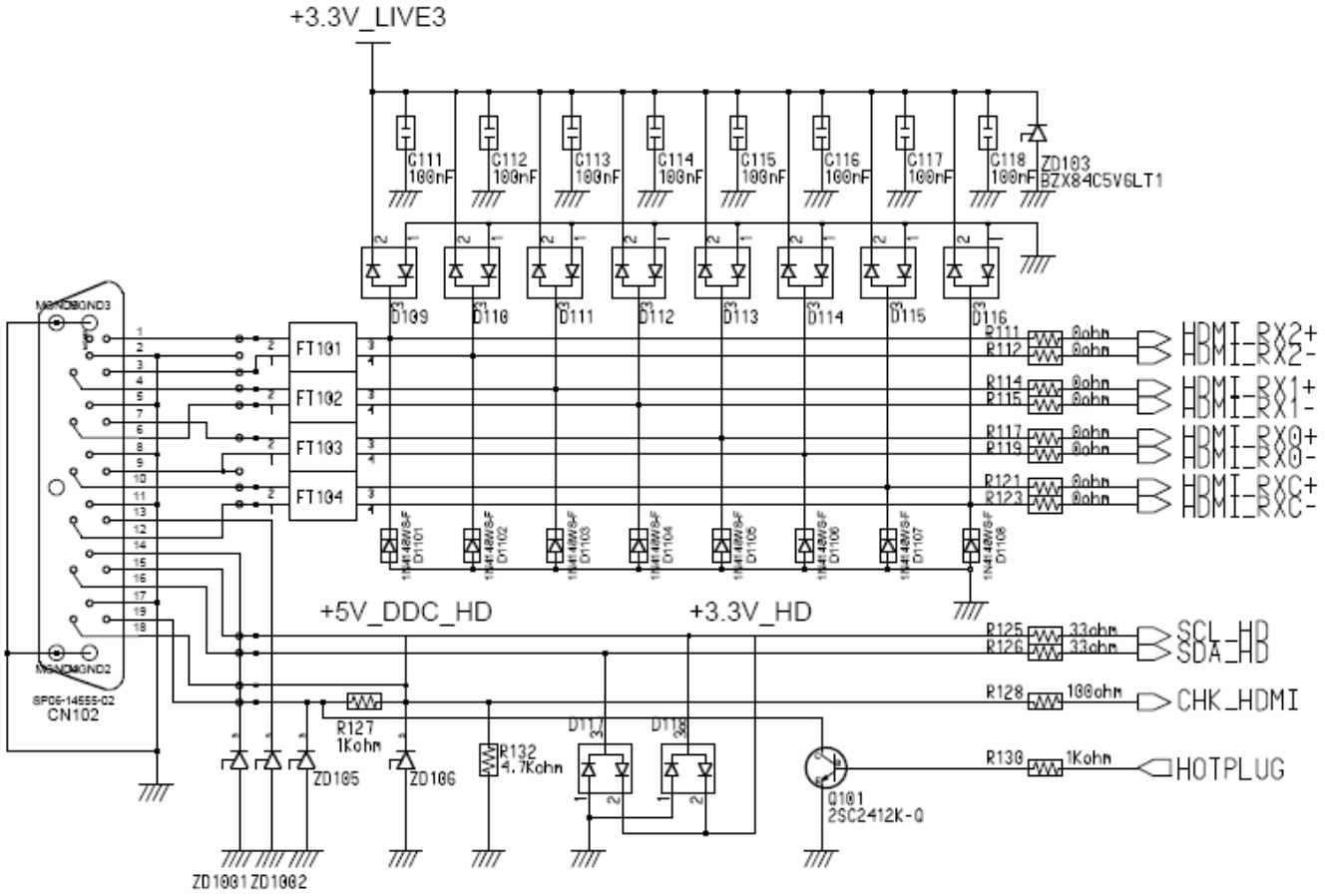
Scaler

IC408

Schematics : HDMI Input

CN 102

HDMI Signal Input



HDMI

IC105

(TMDS Receiver)

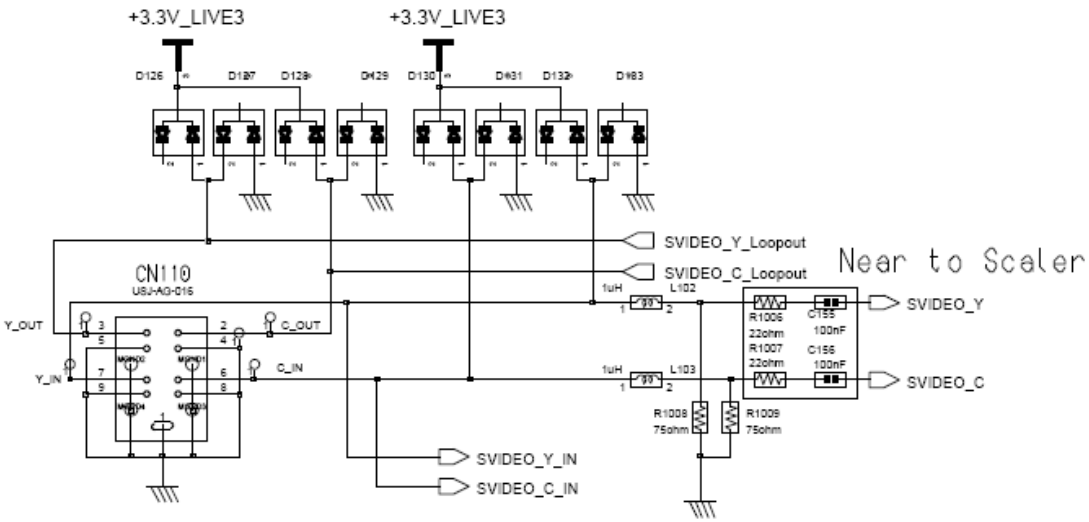
Scaler

IC408

Schematics : Video Input

CN 110

S-Video signal input

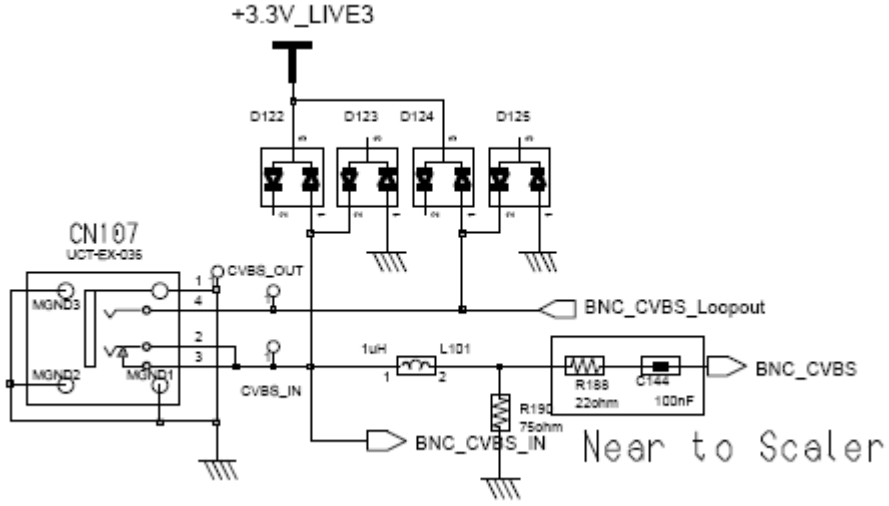


Scaler

IC408

CN 107

AV signal input



Schematics : Scaler FLI8638

DSUB R/G/B
BNC Pr/Y/Pb
S-Video Y/C
CVBS

TMDS
IC105

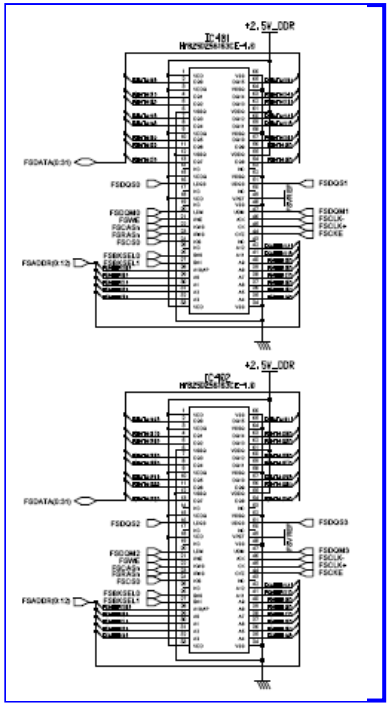
Network
R/G/B

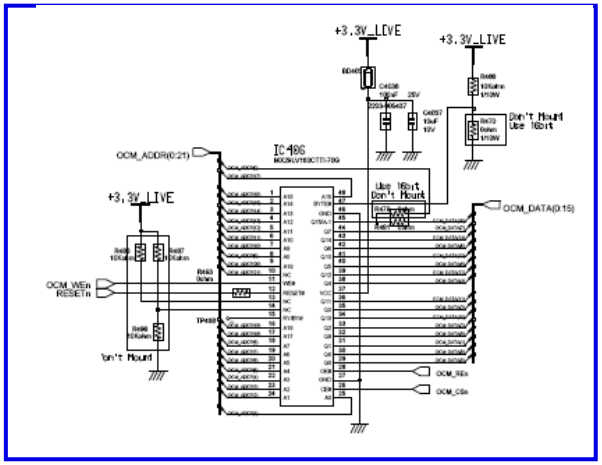
IC 408

Memory
Data/addr.
IC401,
IC402

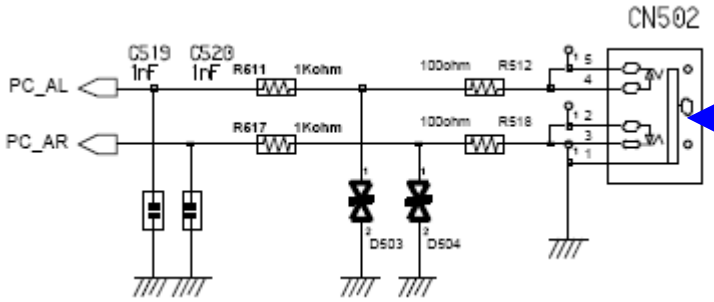
LVDS data
CN403

OCM
Data/addr.
IC406



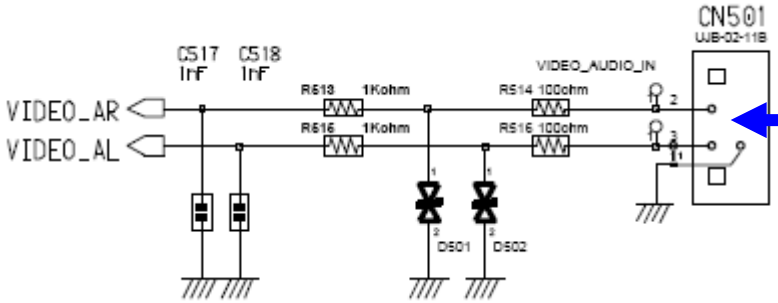


Schematics : Sound (Input)



PC sound input

CN502

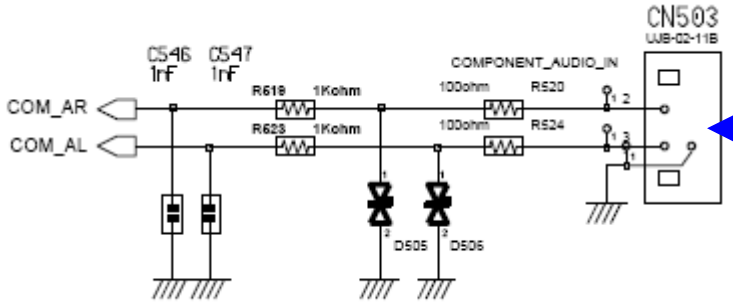


Sound Processor

IC502

Video sound input

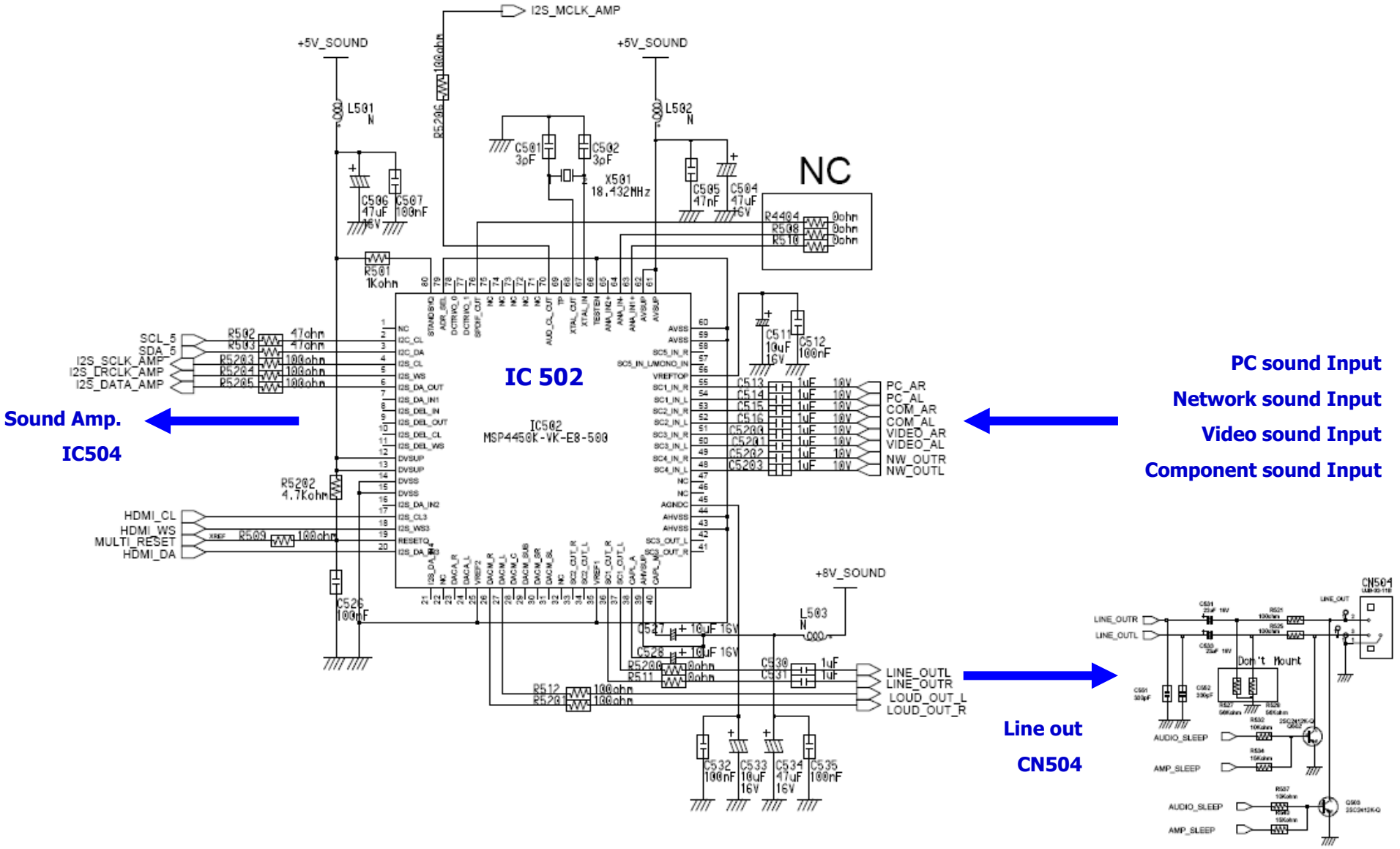
CN501



Component sound input

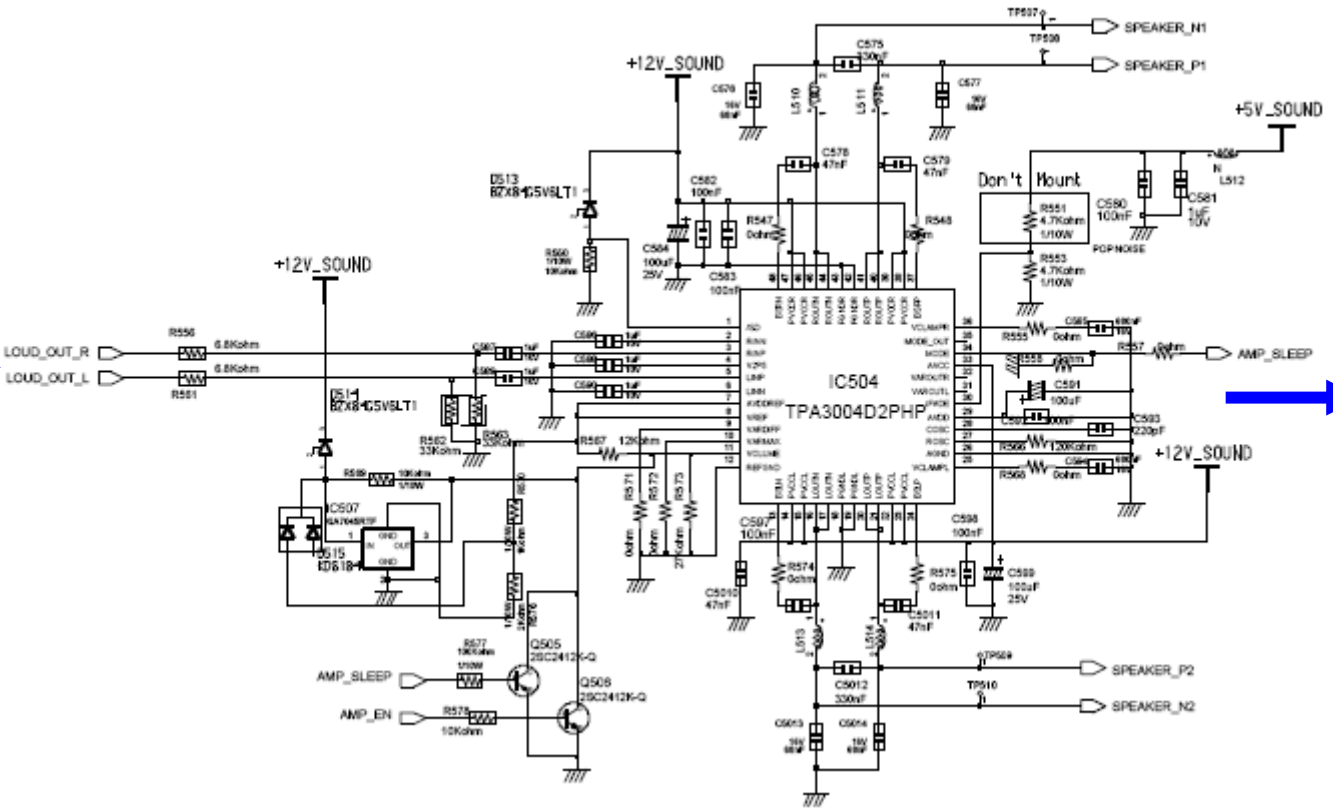
CN503

Schematics : Sound Processor



Schematics : Sound AMP

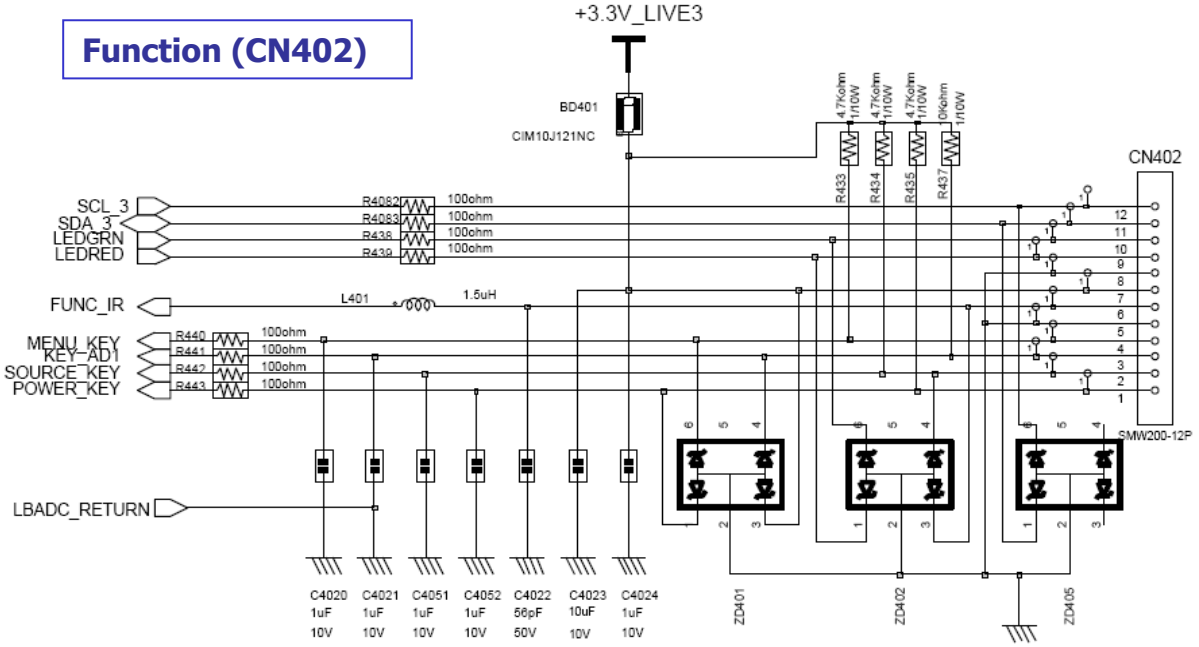
Sound Processor IC502



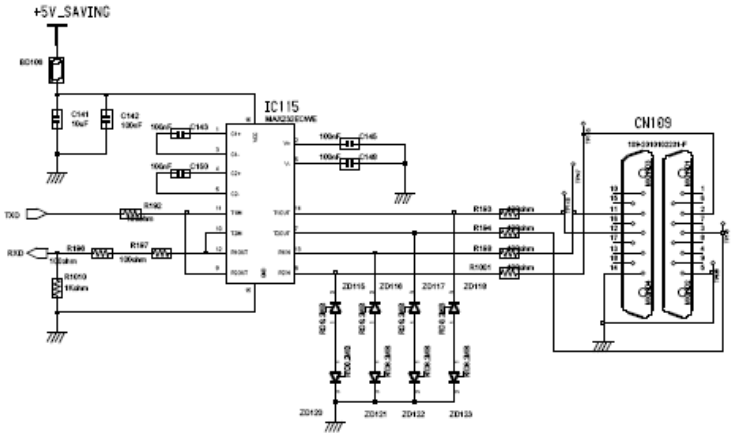
Speaker output CN506

Schematics : EPROM

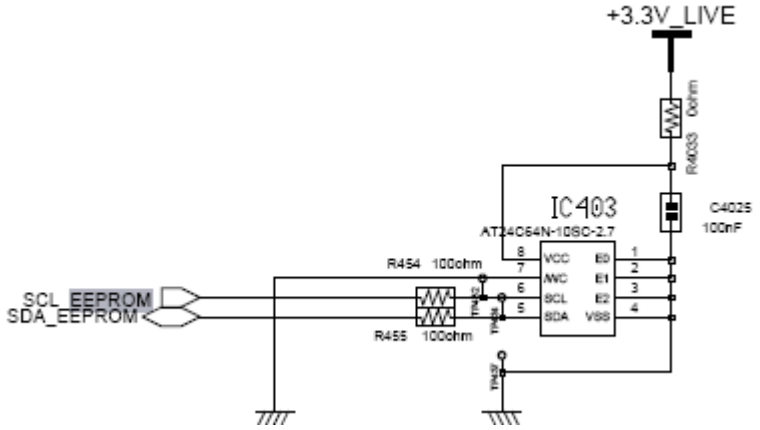
Function (CN402)



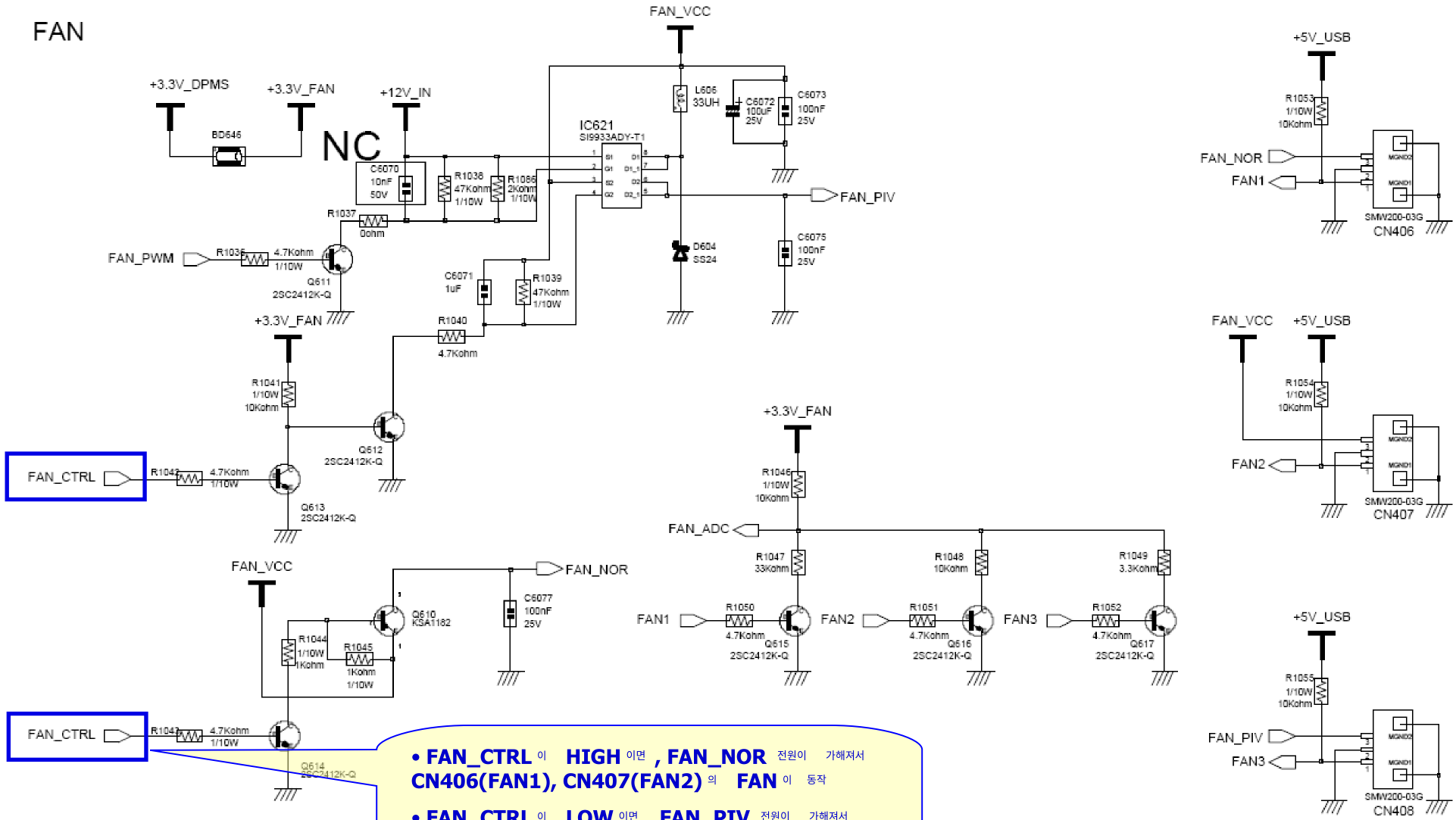
RS232 (IC109)



EEPROM (IC403)



Schematics : FAN

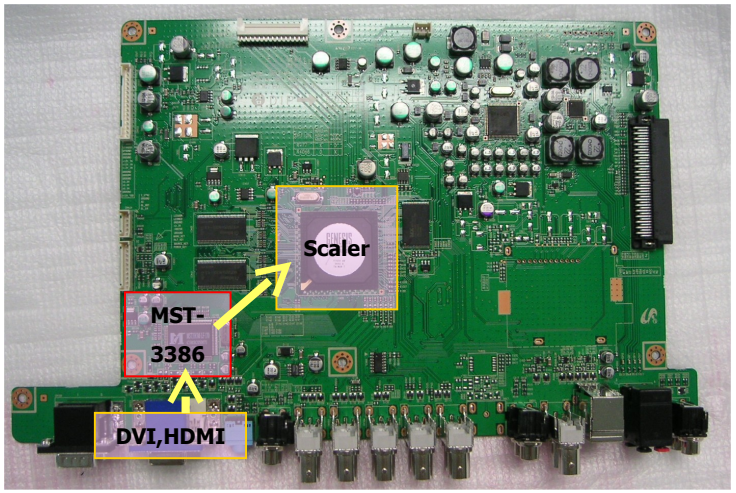


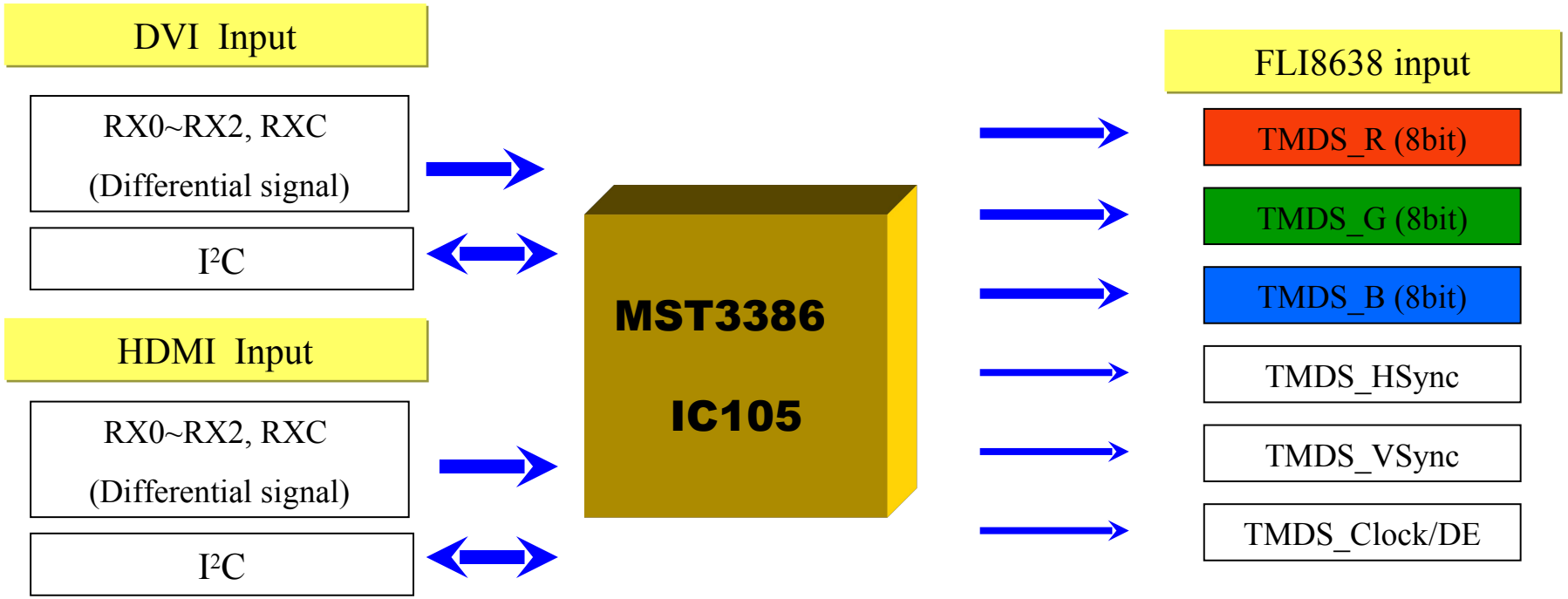
- **FAN_CTRL** 이 **HIGH** 이면 , **FAN_NOR** 전원이 가해져서 **CN406(FAN1), CN407(FAN2)** 의 **FAN** 이 동작
- **FAN_CTRL** 이 **LOW** 이면 , **FAN_PIV** 전원이 가해져서 **CN408(FAN3), CN407(FAN2)** 의 **FAN** 이 동작

Main board part

1. MST3386

- 2 * TMDS Receiver
- Converts DVI input to the TMDS signal and send to the scaler

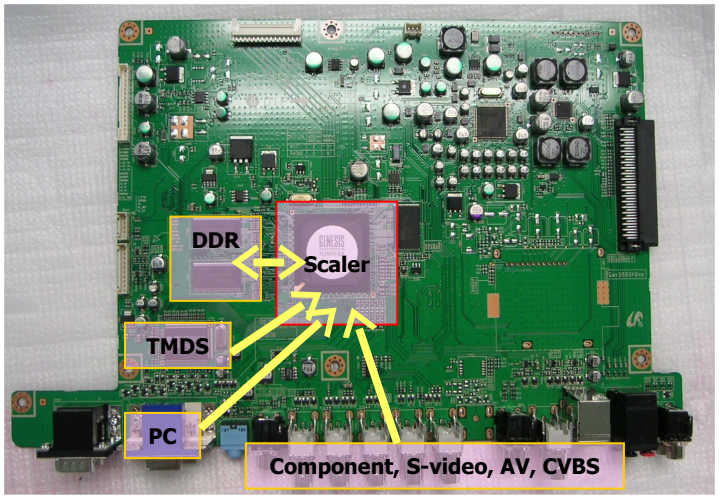


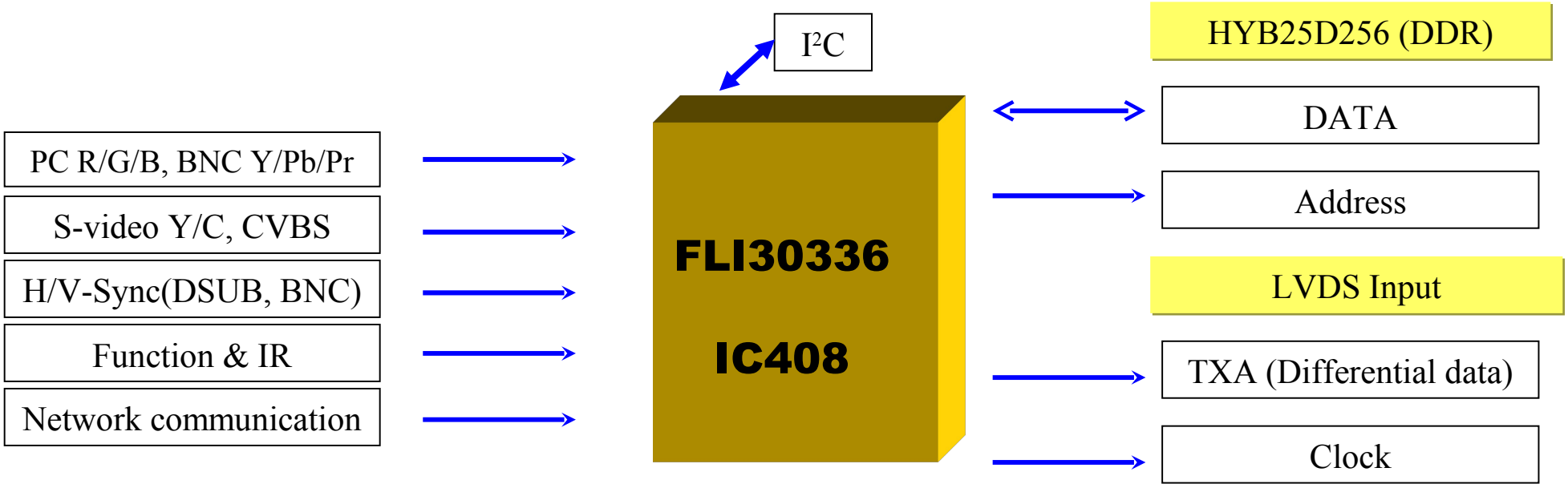


Main board part

2. FLI30336

- GENESIS Company Scaler IC
- Video decoder, micom, Image enhancer,
  3-D Comb filter functions embedded
- Supports OSD and PIP

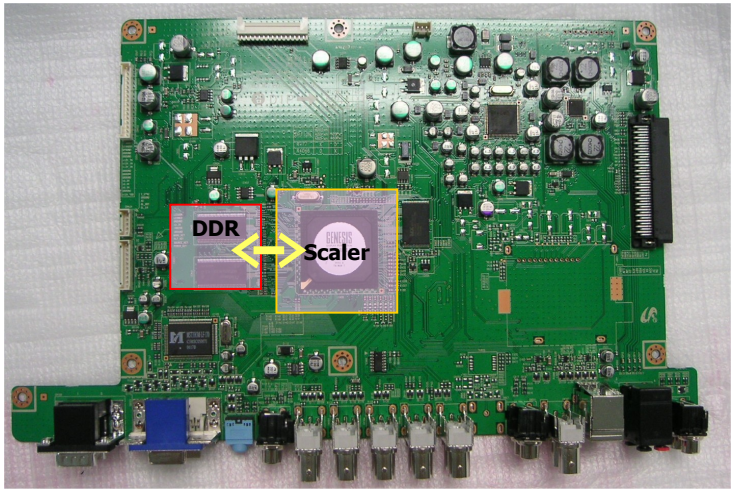


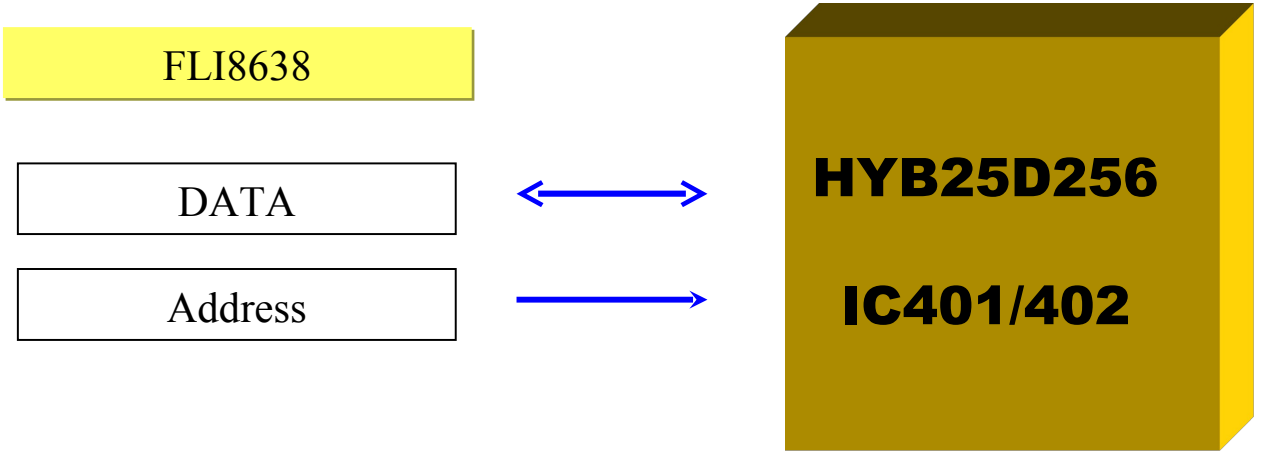


Main board part

3. HYB25D256

- 256M DDR Memory

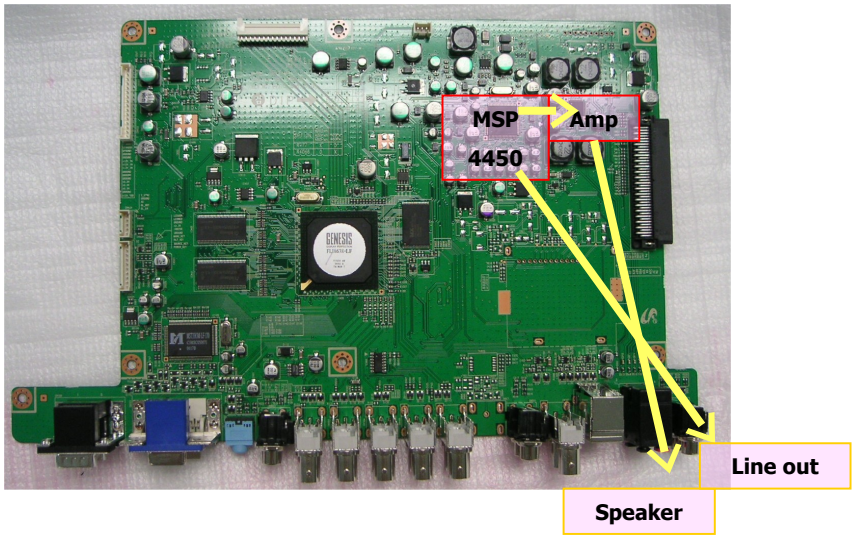




Main board part

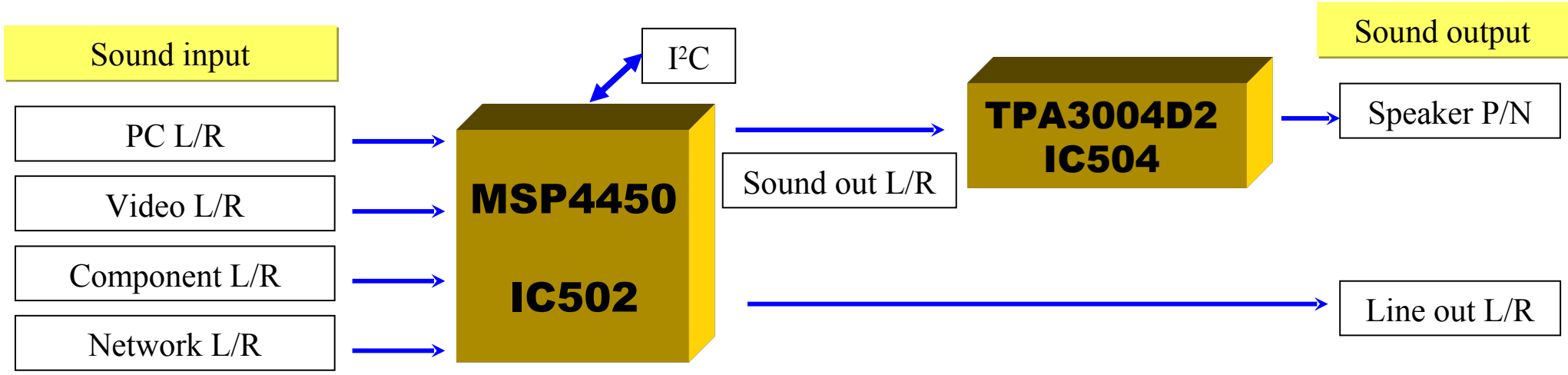
4. MSP4450

- Sound Processor
- Supports SRS Trusurround XT
- Lip Sync. function



5. TPA3004D2

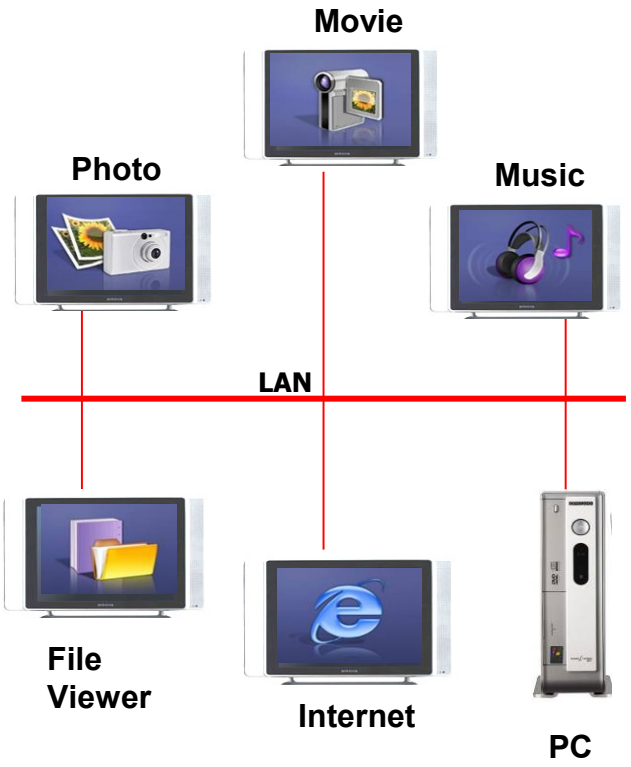
- Sound Amp.
- Amplifies the audio signal received from sound processor, and then delivers to the speaker.

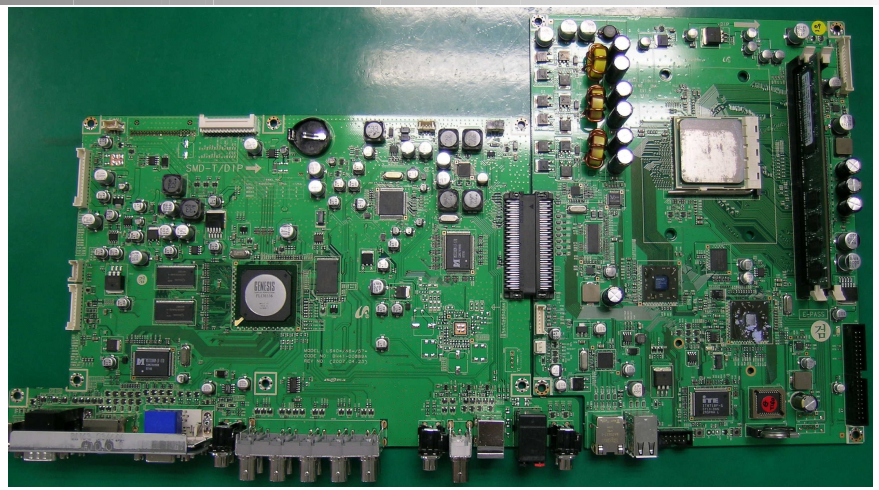


Network board part

Network Board (option)

-Support Networking via LAN





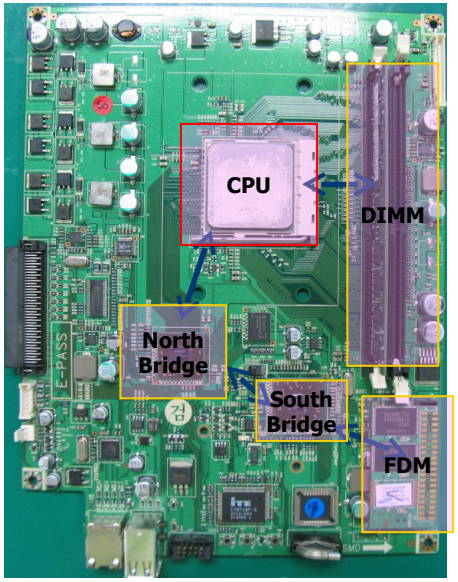
See the prior Chapter for Block diagram and power tree.

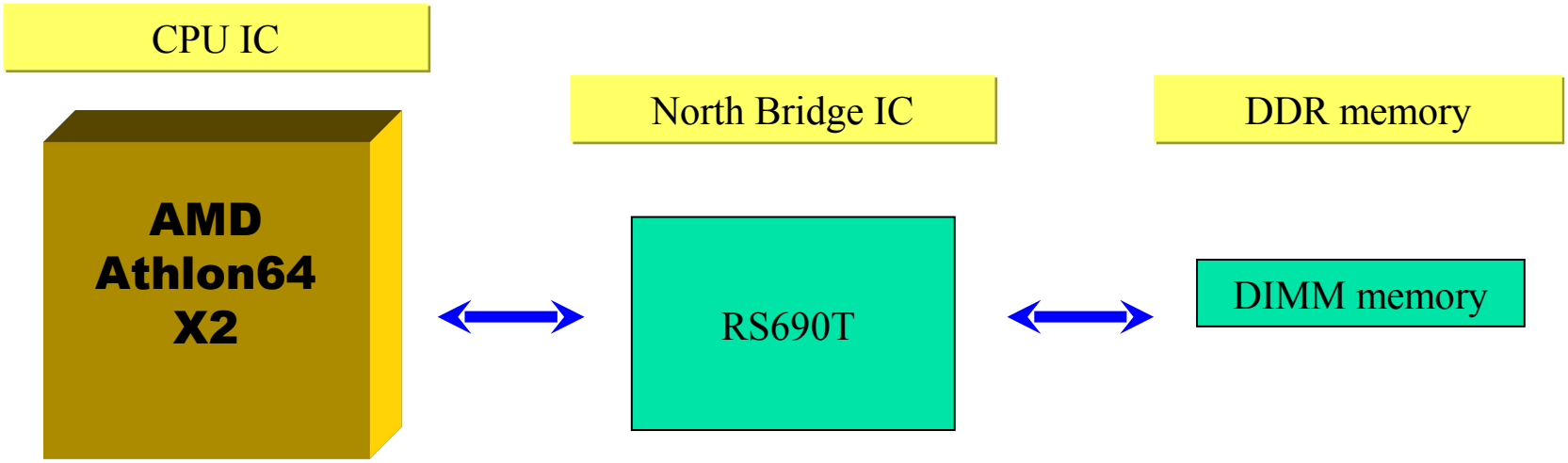
- **Movie**
  - MPEG1/2/4, DiVX, DVD
- **Photo (jpeg, bmp)**
- **Music (mp3, wma)**
- **File Viewer**
  - MS – Word, Power Point, Excel Viewer

Network board part

1. AMD Athlon64 X2

- CPU
- Supports 800MHz BUS speed
- BGA (Ball Grid Array) package

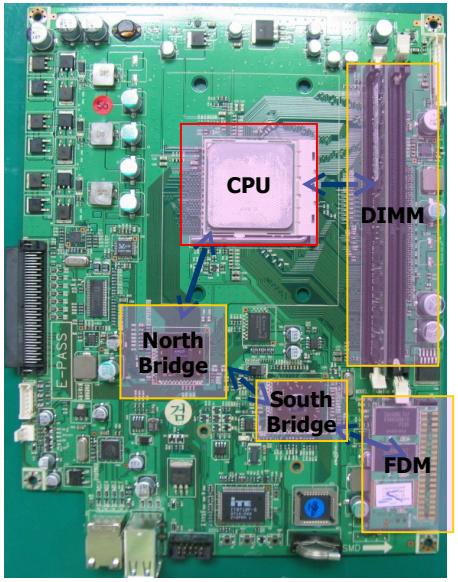




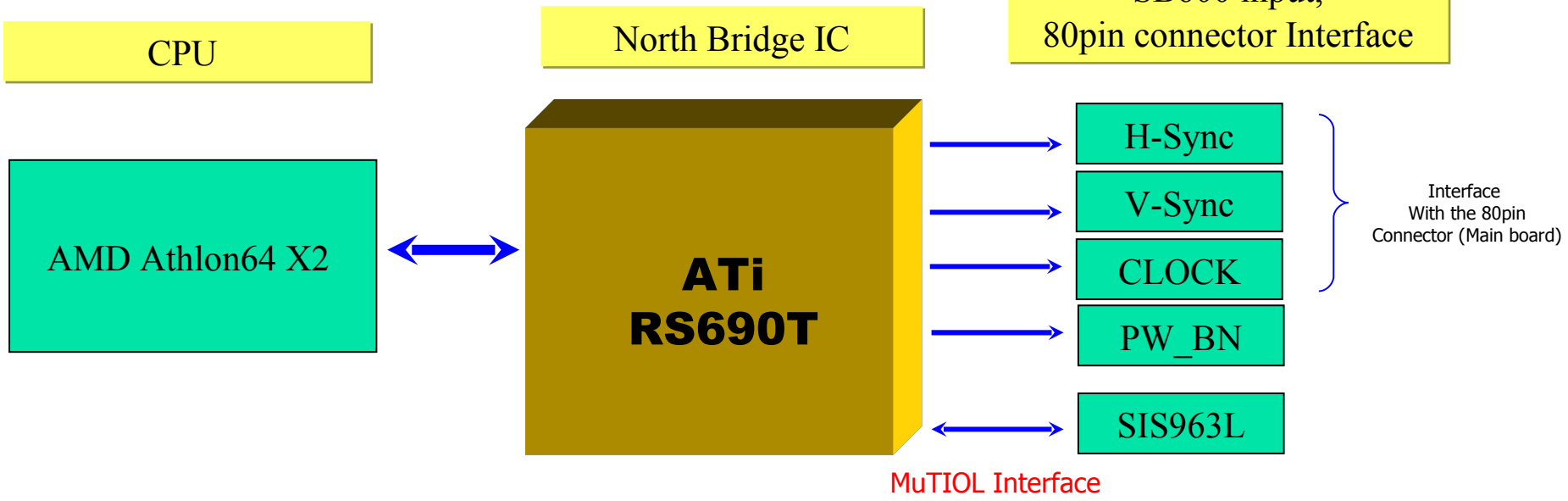
Network board part

2. ATi RS690T

- North Bridge
- Supports 800 MHz FSB(Front Side BUS) with CPU
- Supports 1G MuTIOL interface with South Bridge
- Controls graphic data



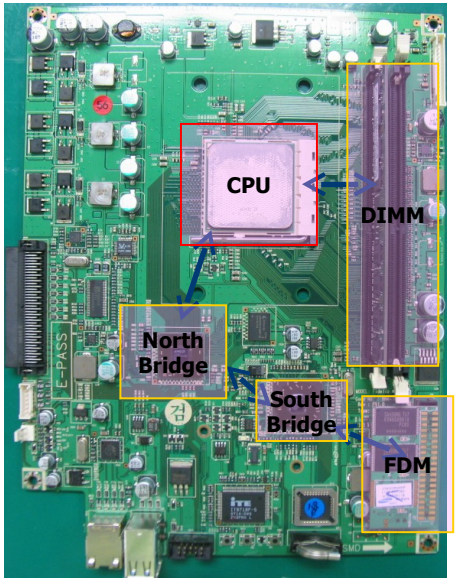
SB600 input,
80pin connector Interface

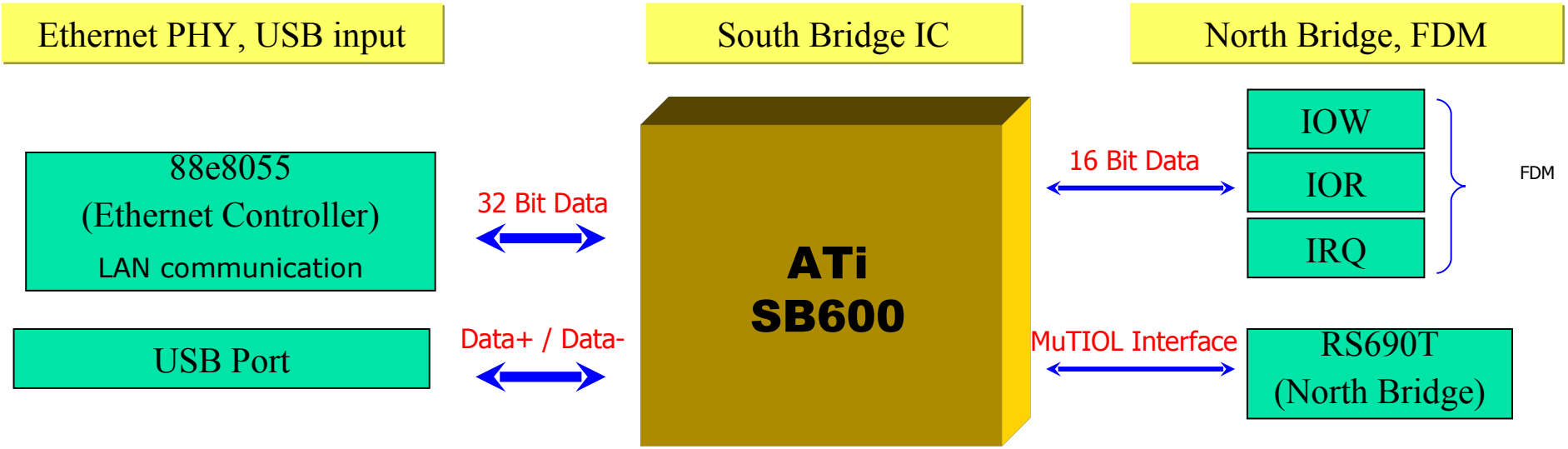


Network board part

3. ATi SB600

- South Bridge
- Supports 800 MHz FSB(Front Side BUS) with CPU
- Supports 1G MuTIOL interface with North Bridge
- Controls peripheral devices

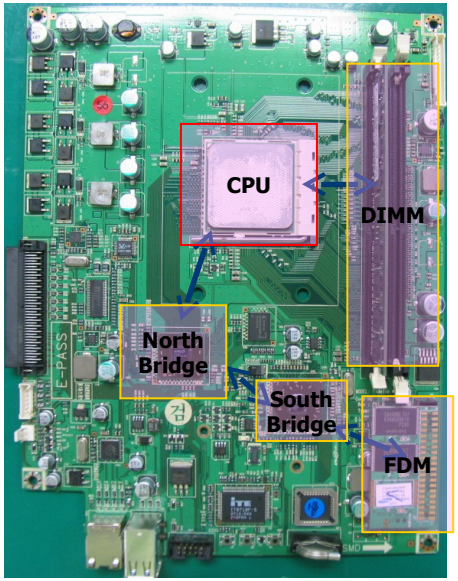


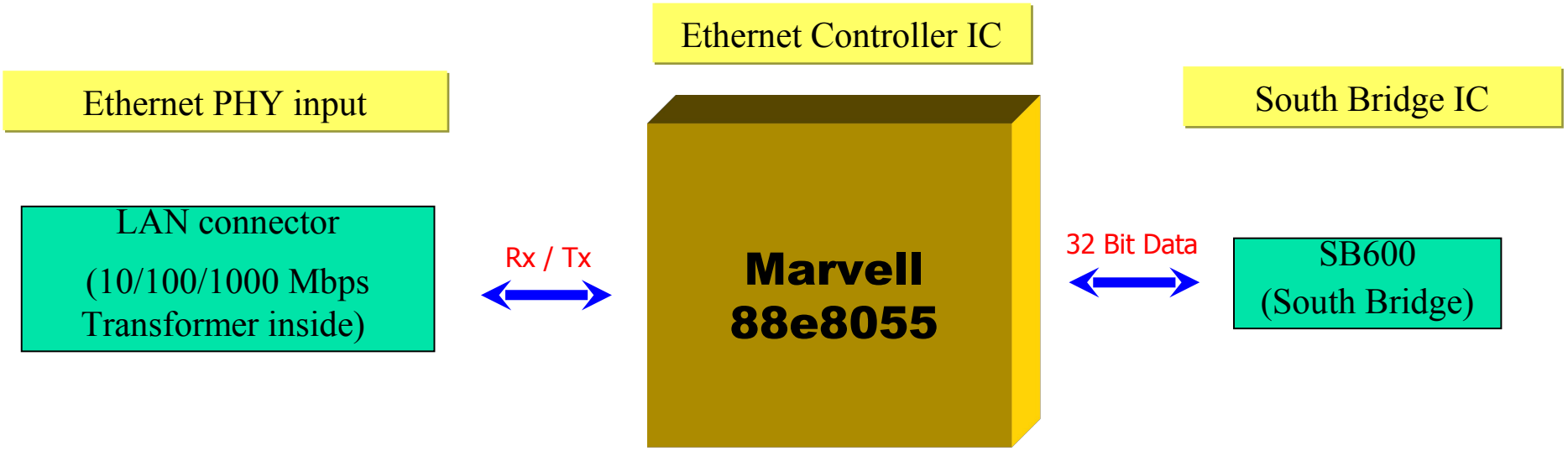


Network board part

4. Marvell 88e8055

- Ethernet Controller
- Supports 10/100/1000 Mbps LAN
- Uses MAC (Media Access Controller) Address

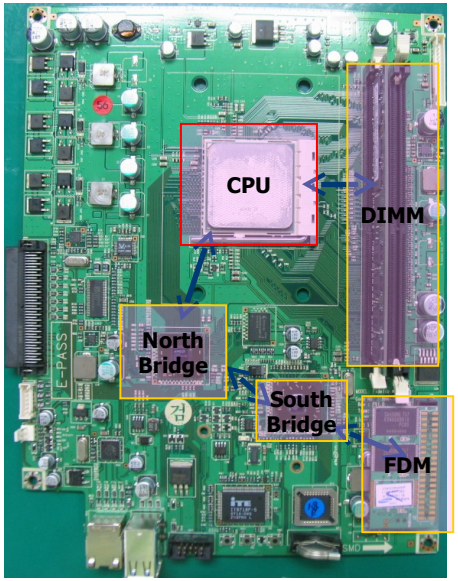


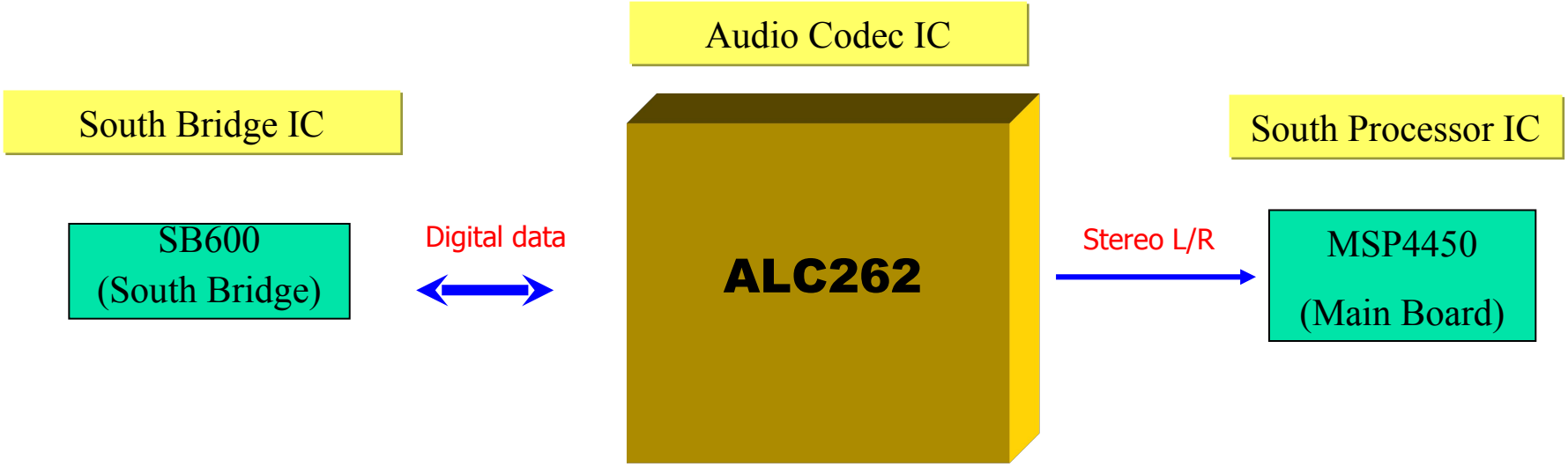


Network board part

5. ALC262

- AC'97 Audio Codec of 2 channel
- The input of ALC262 is digital data from South Bridge
- The Stereo L/R output signal delivered to Sound Processor IC on the main board

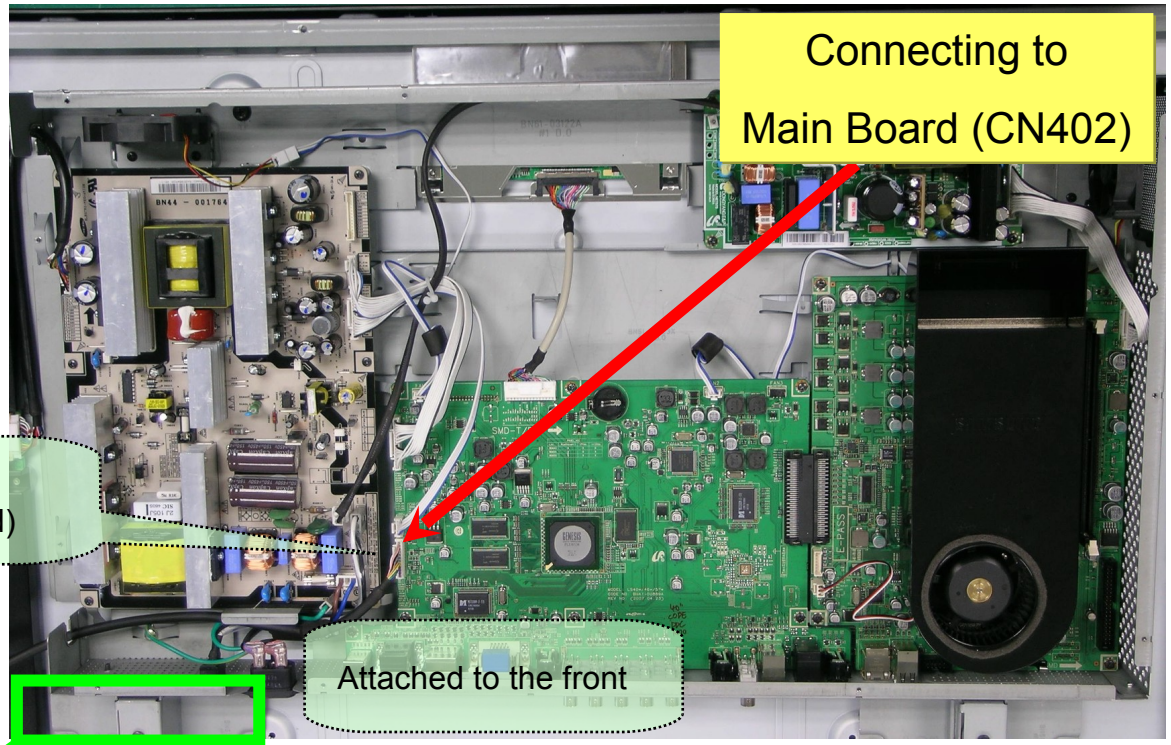


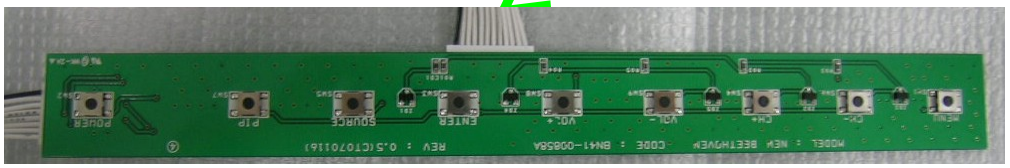


Function board part

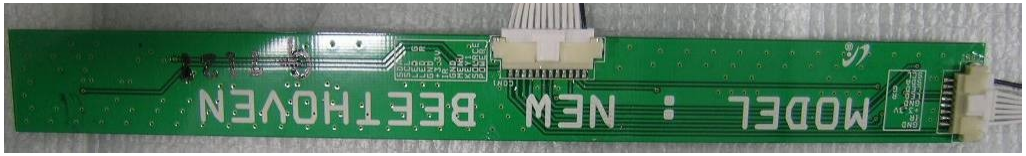
Function Board

Connect to the Main Board





Front side



Back side

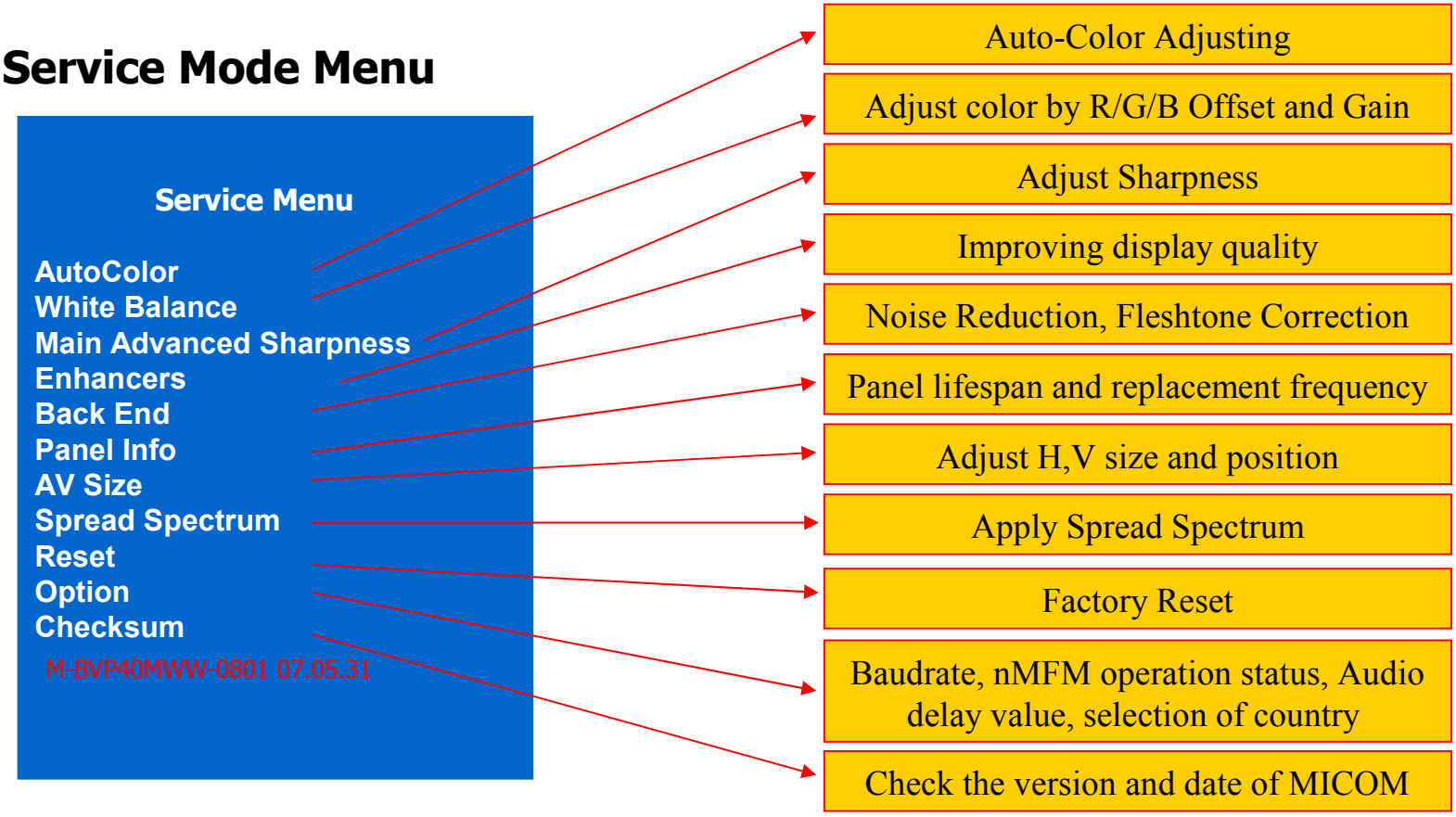
Service Mode

1. How to Enter Service Mode using REMOCON

Power Off → Mute → 1 → 8 → 2 → Power On

Info → Factory (Using Factory Remote controller)

2. Service Mode Menu

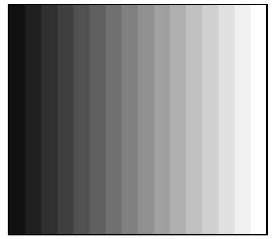


AutoColor Part

Service Menu

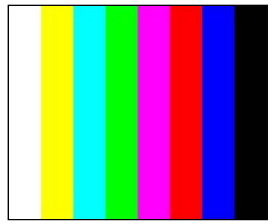
AutoColor
White Balance
Main Advanced Sharpness
Enhancers
Back End
Panel Info
AV Size
Spread Spectrum
Reset
Option
Checksum

M-BVP40MWW-0801 07.05.31



PC analog Only (1024x768@60 16gray pattern)
Color control operates normally only in certain modes of certain patterns, but in other cases, the operation may distort color. Also, color control is not normal when controlling color in a mode other than XGA 60Hz.

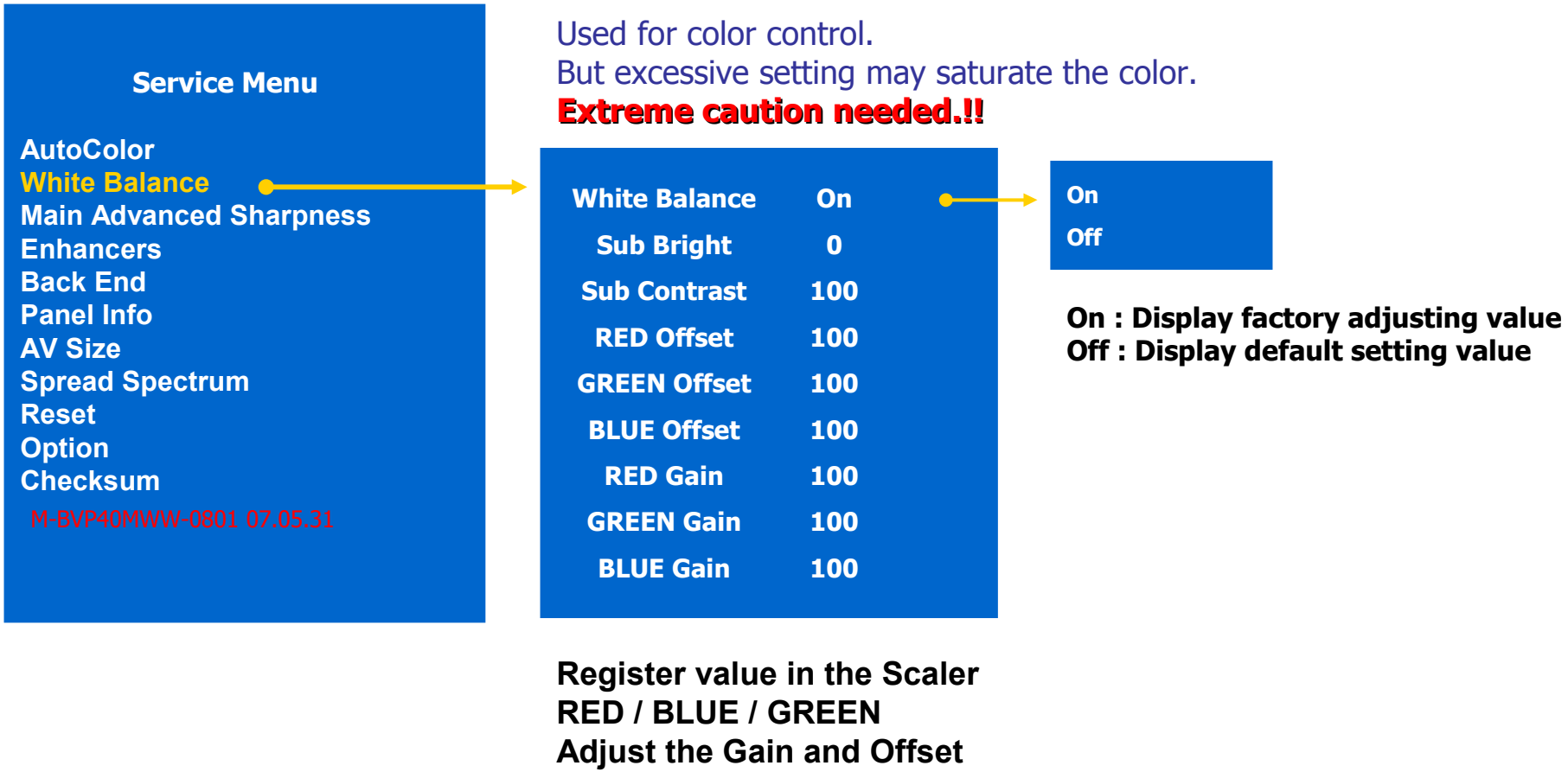
Extreme caution needed.!!



Component (720p color bar pattern)
Color control operates normally only in certain modes of certain patterns, but in other cases, the operation may distort color.

Extreme caution needed.!!

White Balance Part



Sharpness Part

Service Menu

- AutoColor
- White Balance
- Main Advanced Sharpness
- Enhancers
- Back End
- Panel Info
- AV Size
- Spread Spectrum
- Reset
- Option
- Checksum

M-BVP40MWW-0801 07.05.31

Adjusting the sharpness of displayed image.

Main V Peaking Y	32
Main V Peaking UV	16
Main V Peaking Coring	16
Main V Peaking Region 1 Threshold	48
Main V Peaking Region 1 Gain	4
Main V Peaking Region 2 Threshold	170
Main V Peaking Region 2 Gain	4
Main H Peaking Y	32
Main H Peaking UV	16
Main H Peaking Coring	8
Main H Peaking Region 1 Threshold	48
Main H Peaking Region 1 Gain	4
Main H Peaking Region 2 Threshold	170
Main H Peaking Region 2 Gain	4
Sharpness Noise Coring	

- Adaptive
- Low
- High
- Medium
- Off

Sharpness Part

Main V Peaking Y

Main V Peaking UV

Main V Peaking Coring

Main V Peaking Region 1 Threshold

Main V Peaking Region 1 Gain

Main V Peaking Region 2 Threshold

Main V Peaking Region 2 Gain

Main H Peaking Y

Main H Peaking UV

Main H Peaking Coring

H : Horizontal
V : Vertical

Main H Peaking Region 1 Threshold

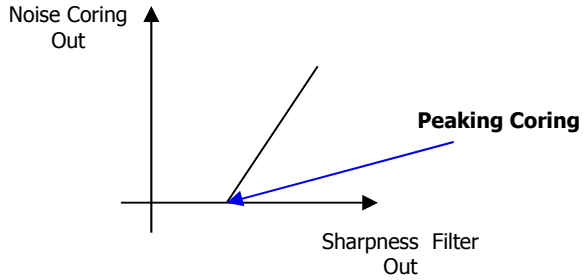
Main H Peaking Region 1 Gain

Scaling Filter Sharpness Control – Peaking Y / Peaking UV

This adjusts the sharpness of luminance(Y) and color(UV). The bigger the number is in the range of 1~127, the clearer the picture is. The bigger the number is in the range of 128~255, the more natural video is. Too high sharpness may cause the vivid noise.

Noise Coring Control – Peaking Coring

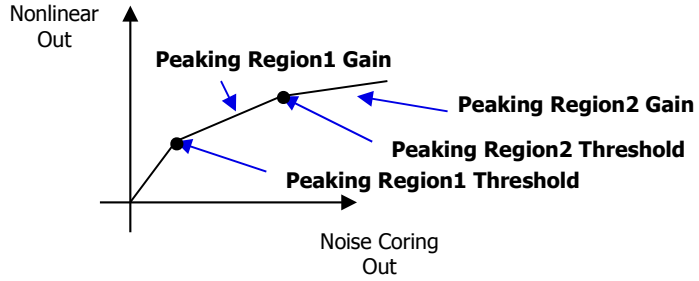
Display only the sharp large-edge without assuming the small-edge of the video as a noise and amplifying it.



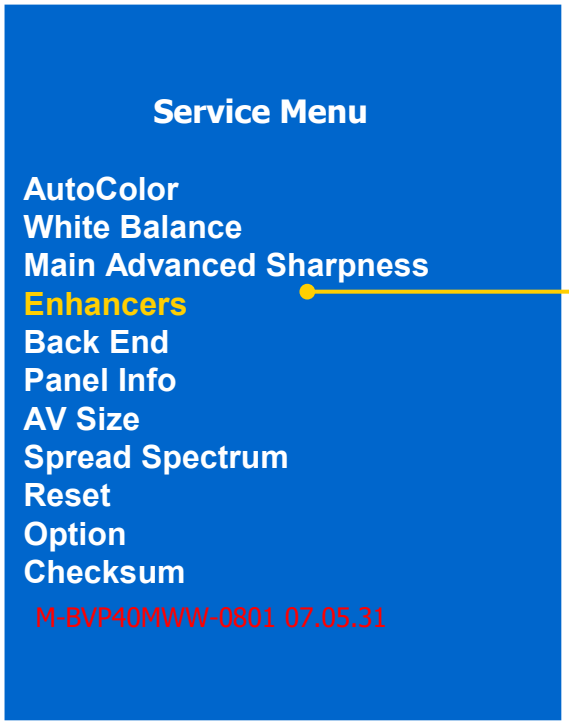
Assign the threshold value to improve the sharpness.

NonLinear Sharpness Control – Peaking Resion1/2 Threshold, Gain

Divide the frequency area and apply the different Gain for each area rather than evenly apply the sharpness level over the whole image.

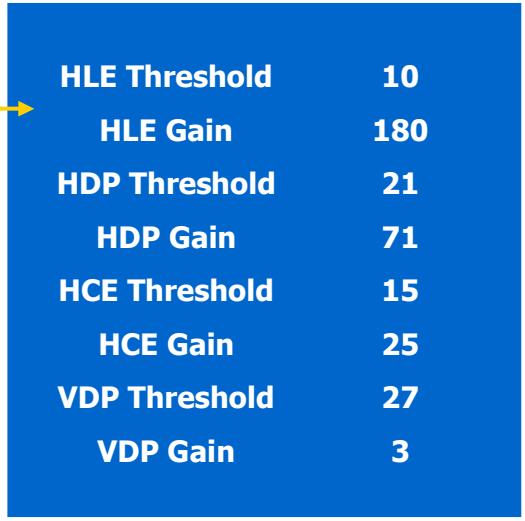


Enhancers Part



Adjust to display the clear and sharp image.

This function is used to adjust the appropriate value for each target region. Change only when it is needed.



HLE : Horizontal Large Edge Enhancer

HDP : Horizontal Detail Processor

HCE : Horizontal Chroma Enhancer

VDP : Vertical Detail Processor

Back End Part

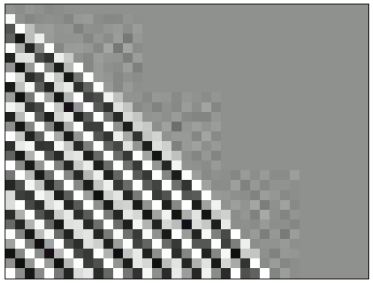
Service Menu

AutoColor
White Balance
Main Advanced Sharpness
Enhancers
Back End
Panel Info
AV Size
Spread Spectrum
Reset
Option
Checksum

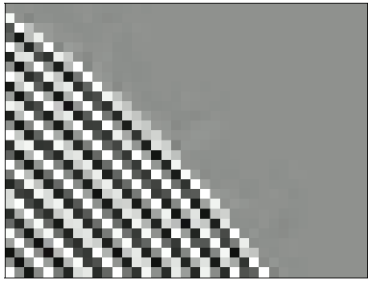
M-BVP40MWW-0801 07.05.31

The MPEG NR menu is used to reduce the Mosquito noise and Gaussian noise. The Fleshtone menu is used to display the natural skin color.

Gamma	Off
LCD Overdrive Noise Coring	Adaptive
MPEG NR Mode	MOSQ_GAUSS
MPEG NR Threshold0	28
MPEG NR Threshold1	15
MPEG NR Threshold2	40
Non ACM Fleshtone Correction	Off
Non ACM Fleshtone Correction Level	0
Non ACM Fleshtone Balance	0



Mosquito Noise



Reduced Mosquito Noise

Panel Info Part

Service Menu

AutoColor
White Balance
Main Advanced Sharpness
Enhancers
Back End
Panel Info
AV Size
Spread Spectrum
Reset
Option
Checksum

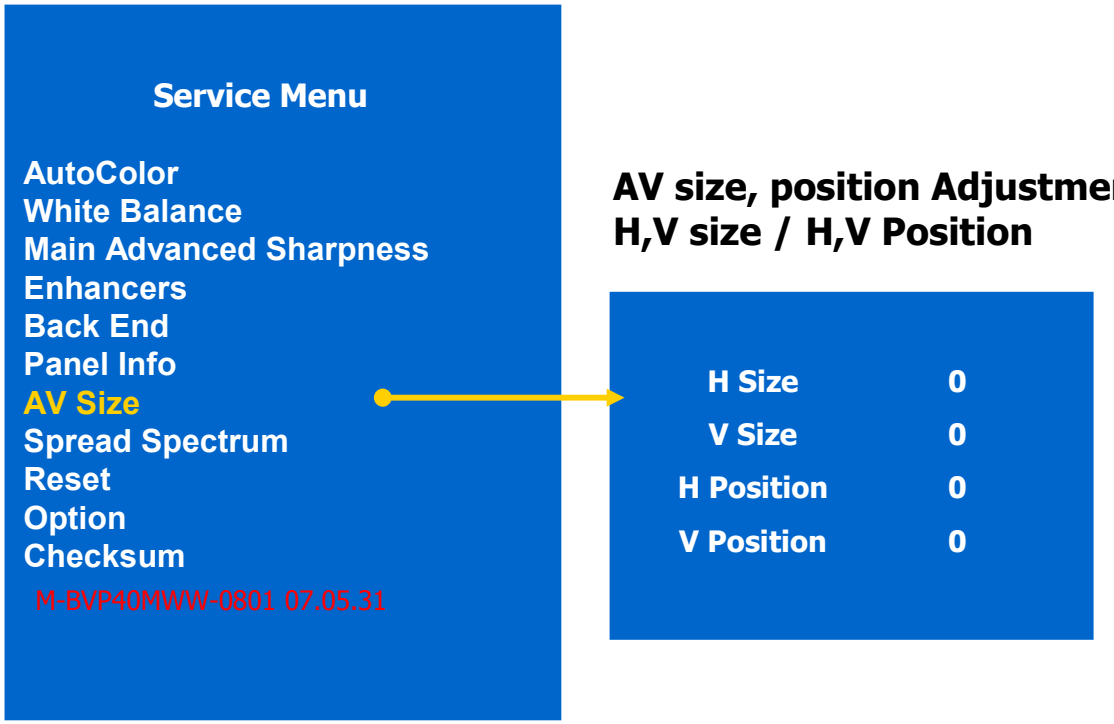
M-BVP40MWW-0801 07.05.31

Display the panel use time and the number of change.

	Time	Ch. No.
Total Hr :	0150	0

Time Reset : Press the menu button on the front panel for 5 seconds.

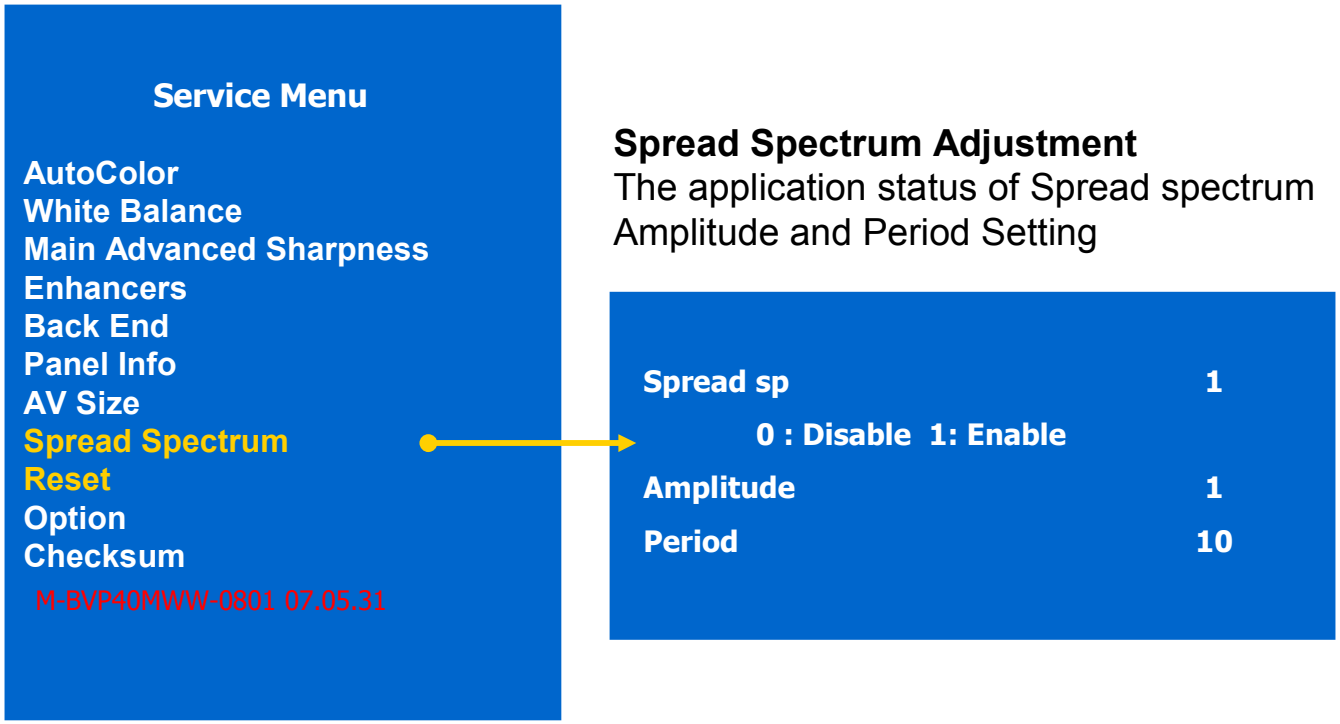
AV Size Part



AV size, position Adjustment
H,V size / H,V Position

H Size	0
V Size	0
H Position	0
V Position	0

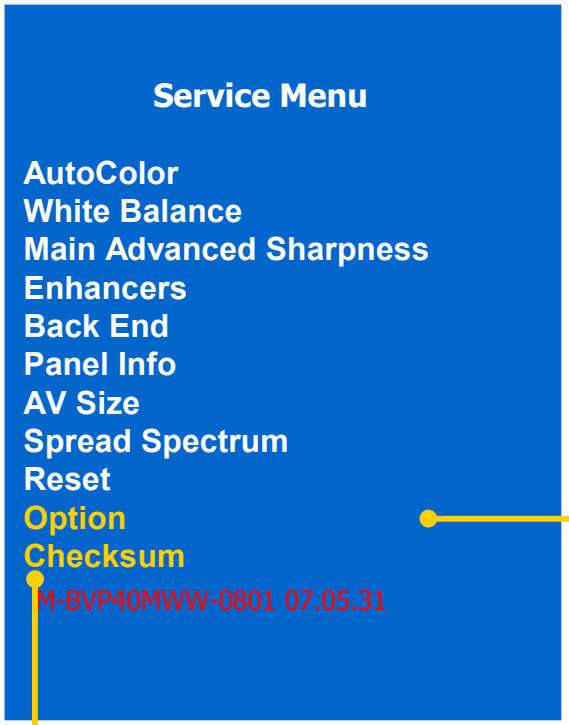
Spread Spectrum/Reset Part



Spread Spectrum Adjustment
The application status of Spread spectrum
Amplitude and Period Setting

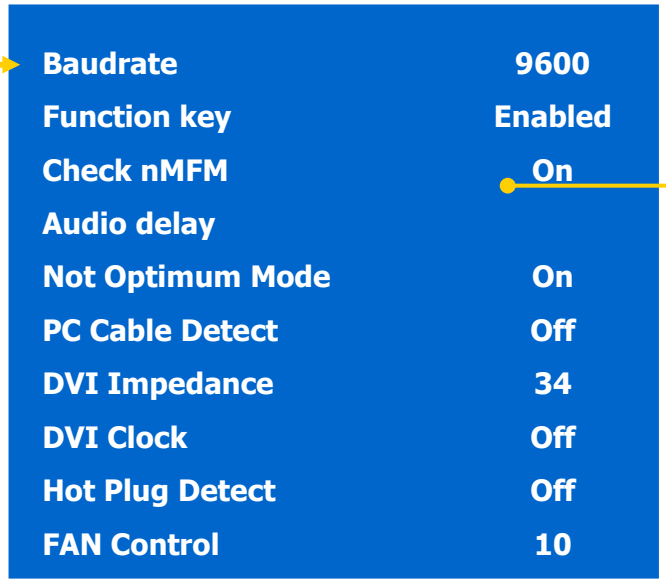
Reset : Factory Reset
Reset the setting on the Service Menu to the default setting.
Need to turn the Power On/Off after reset

Option/Checksum Part



Option Adjustment

Baudrate Speed Setting (The default value is 9600.
Change to 115200 when the code update on the main board is required.)
Function Key Setting/Unsetting
Option Setting in the Network part
Audio delay Setting (Set for the video and audio synchronization.)
The message display in the improper resolution mode Setting/Unsetting
PC cable detect Setting/Unsetting
DVI cable impedance matching setting
DVI clock reset Setting/Unsetting
DVI hot plug detect Setting/Unsetting
FAN Speed Setting



Checksum

The 4 digit serial number regarding the micom code is displayed if you select this.

Troubleshooting – No Power

Does 5.2 V appear at Pin #15 of CN602? — NO → Check the SMPS Board.

YES

Does DC 12V appear at BD643? — NO → Check the LCD Panel.

YES

Does DC 12V appear at C653? (1) — NO → Check the peripheral circuit of CN602.

YES

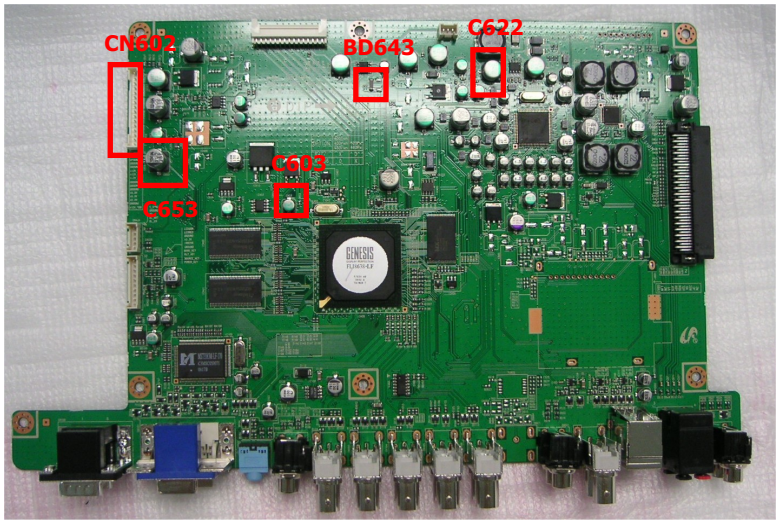
Does 3.3V appear at C622? (2) — NO → Replace IC602.

YES

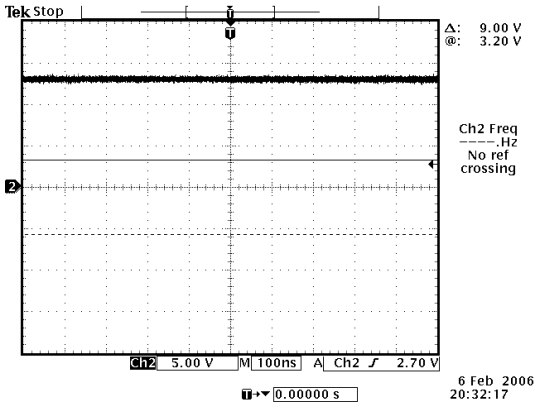
Does DC 1.8V appear at C603? (3) — NO → Replace IC601.

YES

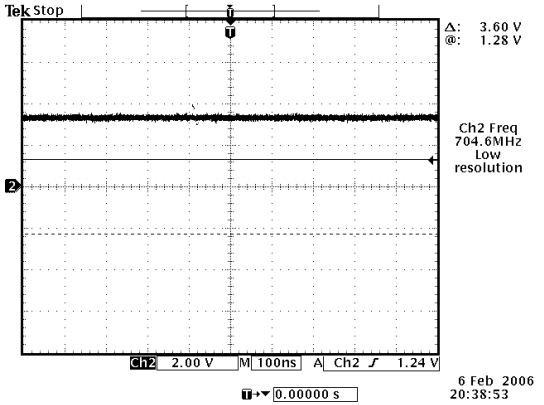
Does 3.3 V appear at Pin 16 ofCN602? (4) — NO → The Scaler(IC408) is abnormal. Replace the main board.



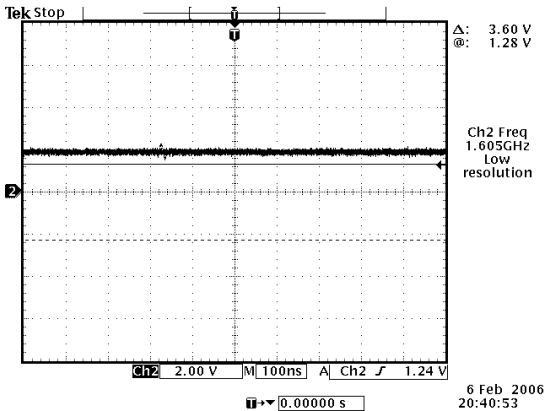
1



2 4



3



Troubleshooting – No PC(D-SUB) Video

Does the LED light up when turn on the power? — NO → Check the power port.

YES

Does 5V appear at Pin 9 of CN101 D-Sub? — NO → Check the cable connection.

YES

Does the waveform as the figure at Pin 6 (H-sync) and Pin 8 (V-sync) of IC103 appear? — NO → Replace IC103.

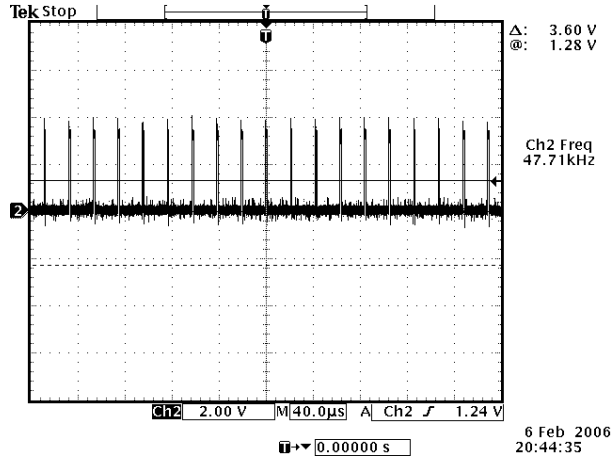
YES

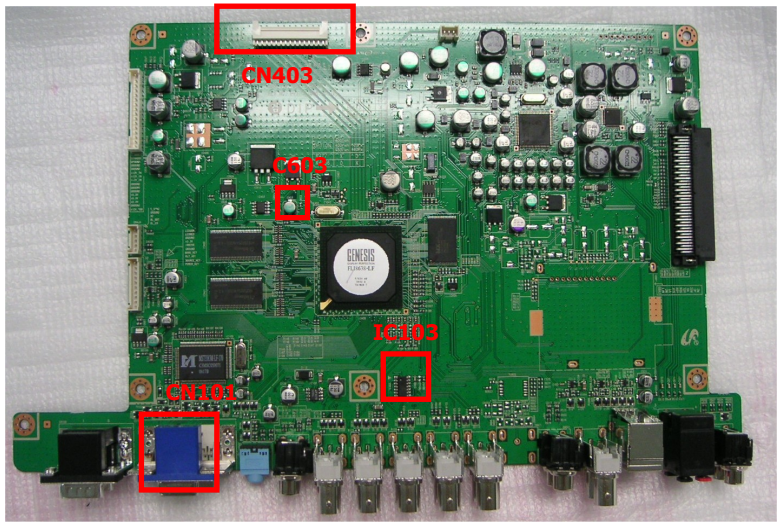
Is TX** signal sent to Pin 14 and 15 of CN403 14, 15? — NO → The Scaler(IC408) is abnormal. Replace the main board.

YES

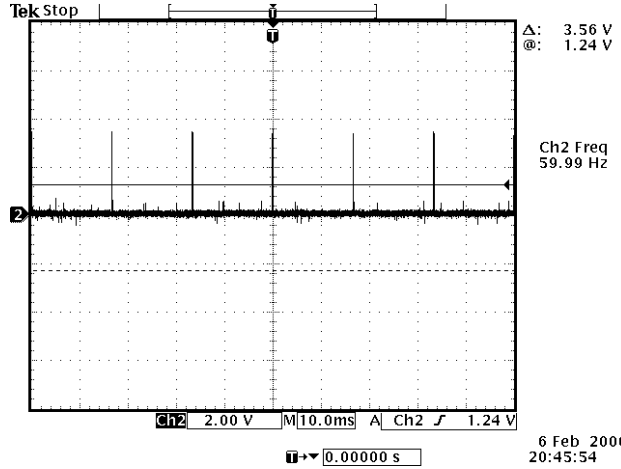
Check the cable between the main board and panel and replace the LCD panel.

5





6



Troubleshooting – No DVI Video

Does the LED light up when turn on the power?
- NO → Check the power port.
- YES ↓

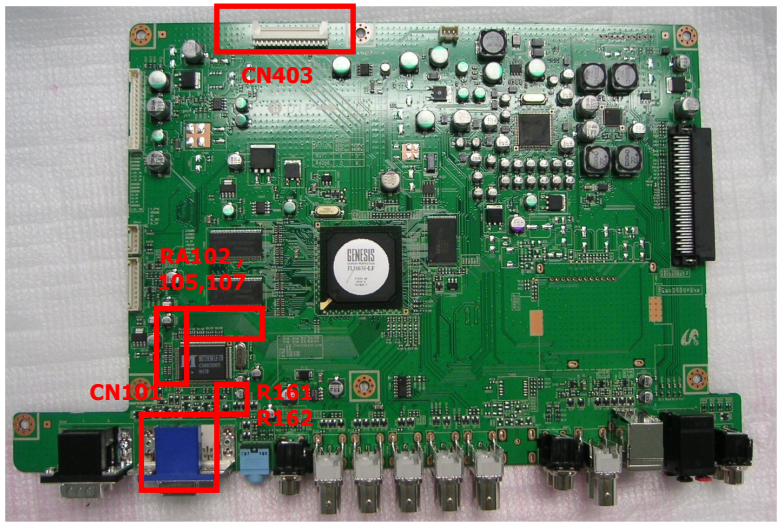
Does 5 V appear at Pin 14 and 16 of CN101 DVI port?
- NO → Check the cable connection.
- YES ↓

Does the wave form as the figure appear at R161(DVI_SCL) and R162(DVI_SDA) 8 ? 7
- NO → Replace the main board.
- YES ↓

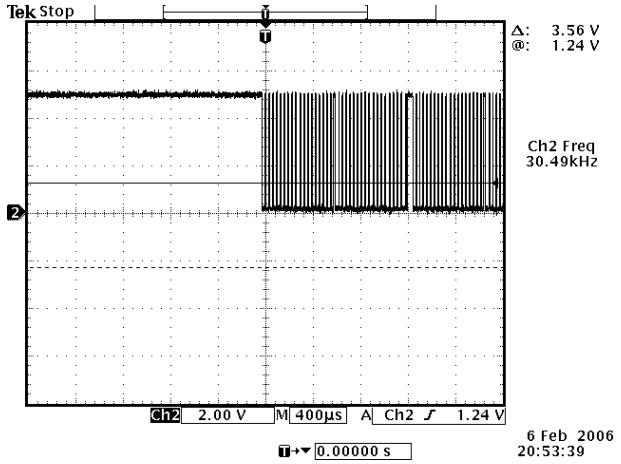
Does the signal appear at RA107(R), RA102(G), and RA105(B)?
- NO → IC105 is abnormal. Replace the main board.
- YES ↓

Does the TX** signal appear at Pin 14 and 15 of CN403?
- NO → The Scaler (IC408) is abnormal. Replace the main board.
- YES ↓

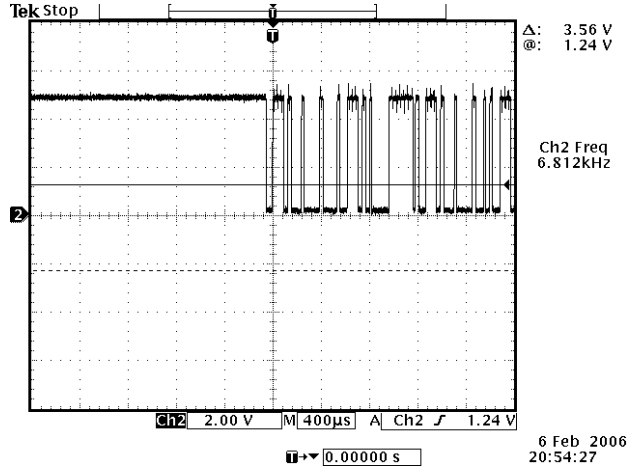
Check the cable between the main board and panel and replace the LCD panel.



7



8



Troubleshooting – No BNC Video

Does 3.3 V appear at ZD109 ~ 113?
- NO → Press the power button and check the LED.
- YES ↓

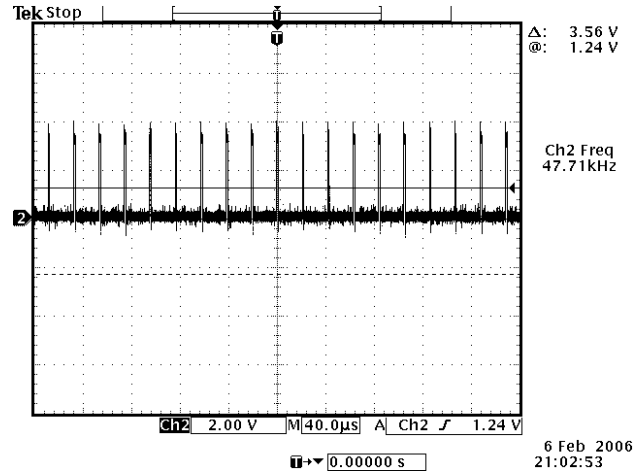
Is the cable properly connected?
- NO → Reconnect the BNC cable.
- YES ↓

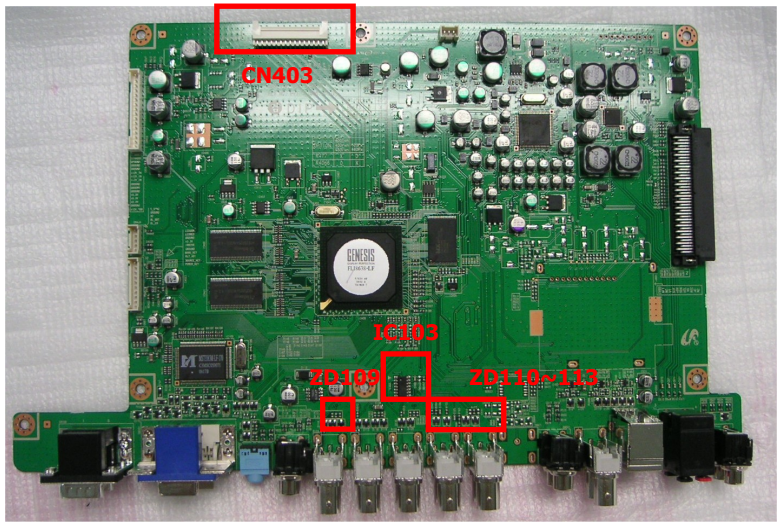
Does the wave form appear at Pin 6 (H-sync) 9 And Pin 8 (V-sync) 10 of IC103?
- NO → Replace IC103.
- YES ↓

Does the TX** signal appear at Pin 14 and 15 of CN403?
- NO → The scaler (IC408) is abnormal. Replace the main board.
- YES ↓

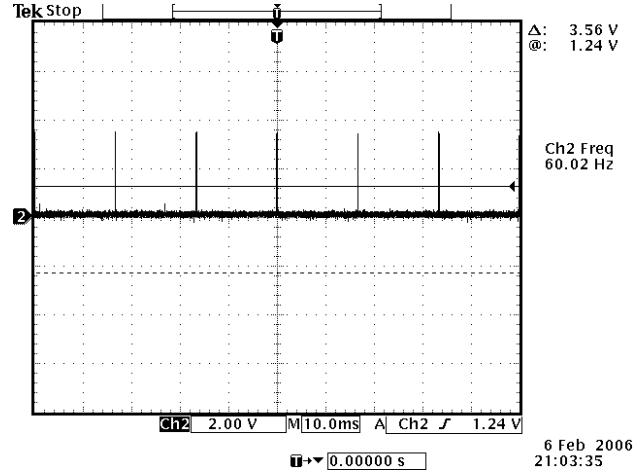
Check the cable between the main board and panel and replace the LCD panel.

9





10



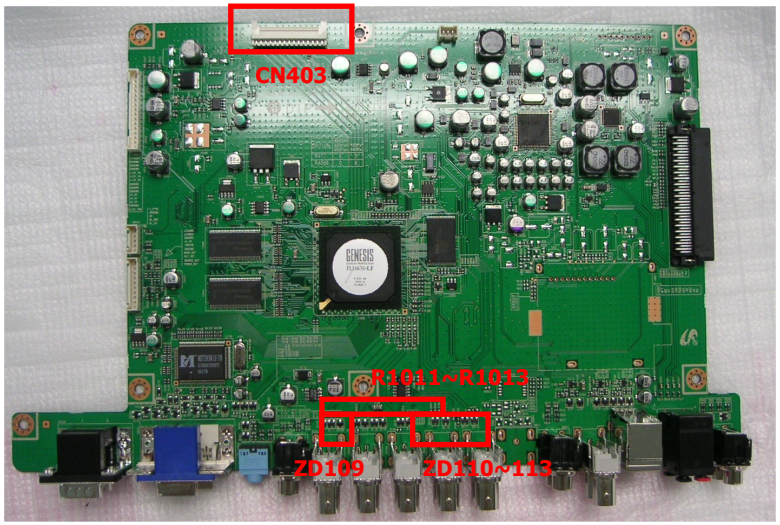
Troubleshooting – No Component Video

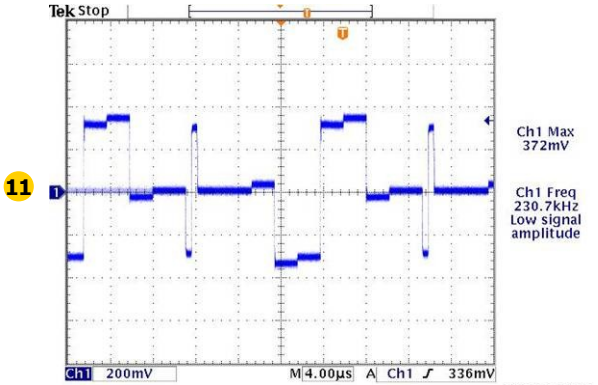
Does 3.3V appear at ZD109 ~ 113?
- NO → Press the power button and check the LED.
- YES ↓

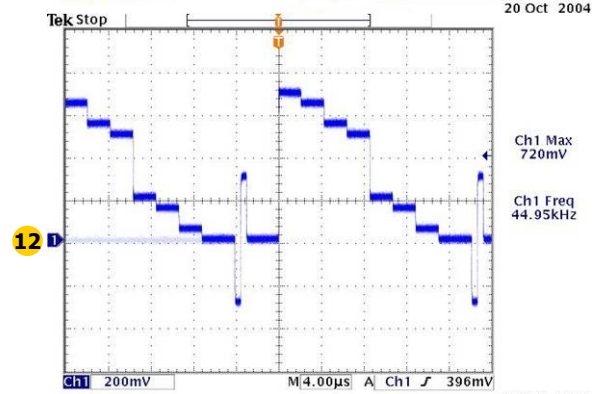
Does the waceform appear at R1011(Pr) 11 , R1012(Y) 12 , R1013 (Pb)? 13
- NO → Reconnect the component cable.
- YES ↓

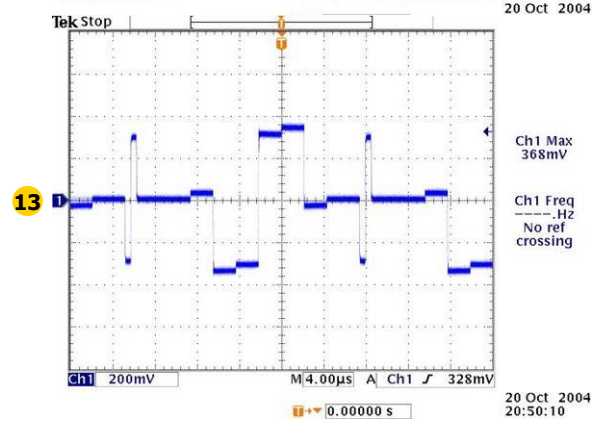
Does the TX** signal appear at Pin 14 and 15 of CN403?
- NO → The scaler (IC408) is abnormal. Replace the main board.
- YES ↓

Check the cable between the main board and panel and replace the LCD panel.









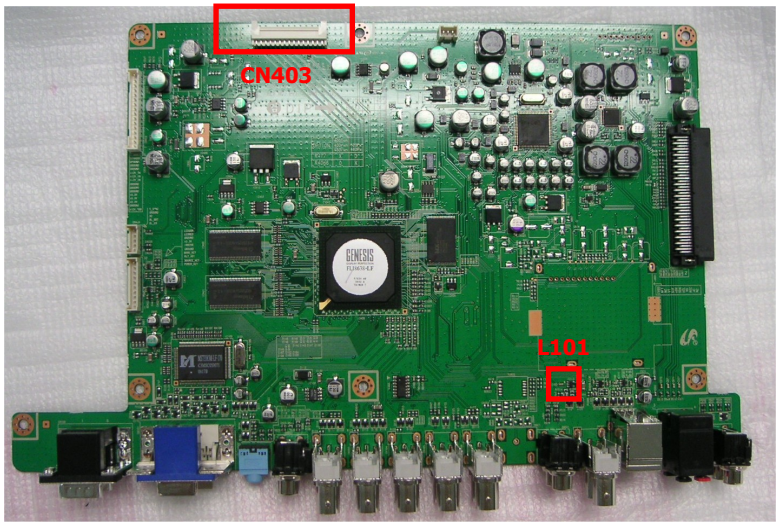
Troubleshooting – No AV Video

Does the LED light up when turn on the power?
- NO → Check the power port.
- YES ↓

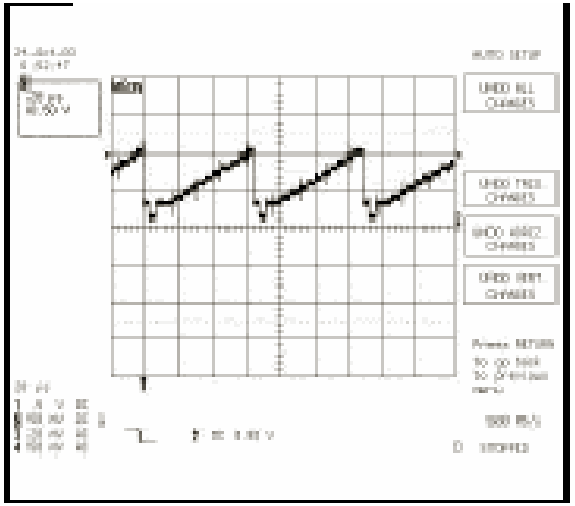
Does the waveform at L101 14?
- NO → Reconnect the cable.
- YES ↓

Does the TX** signal appear at Pin 14 and 15 of CN403?
- NO → The scaler (IC408) is abnormal. Replace the main board.
- YES ↓

Check the cable between the main board and panel and replace the LCD panel.

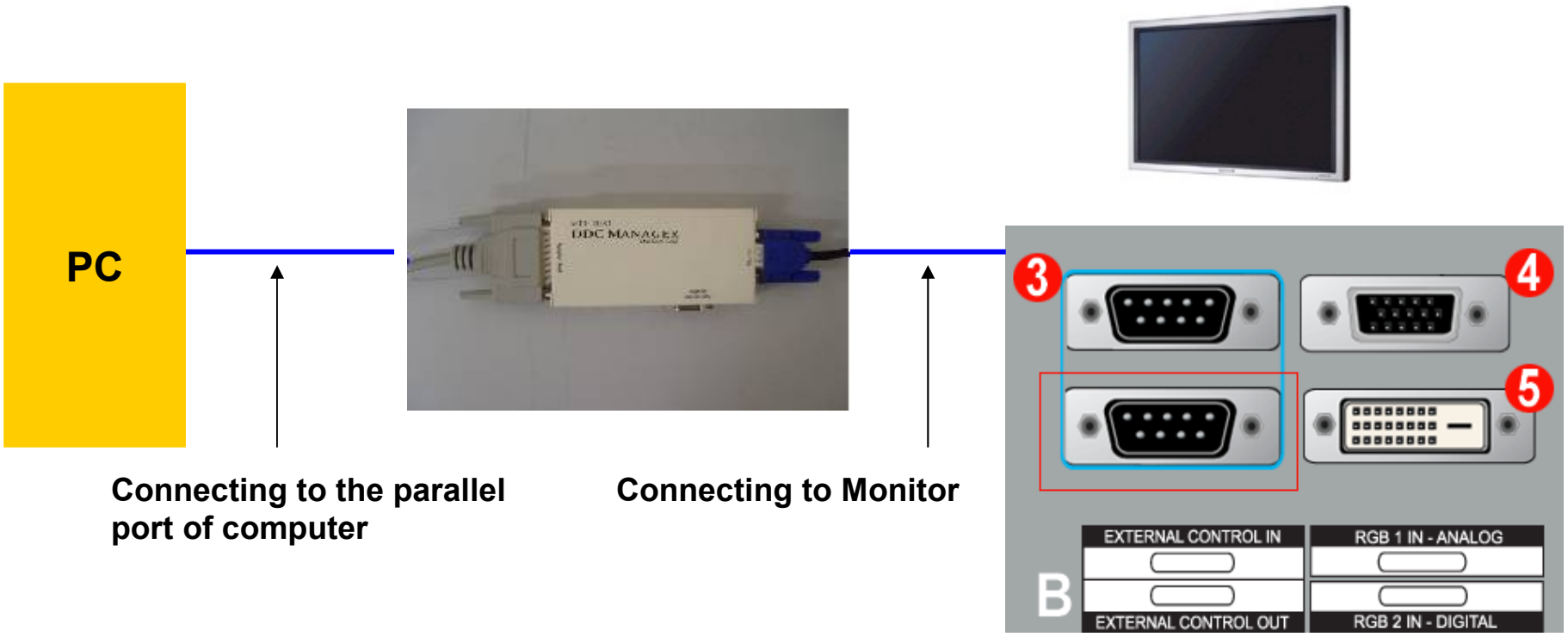


14



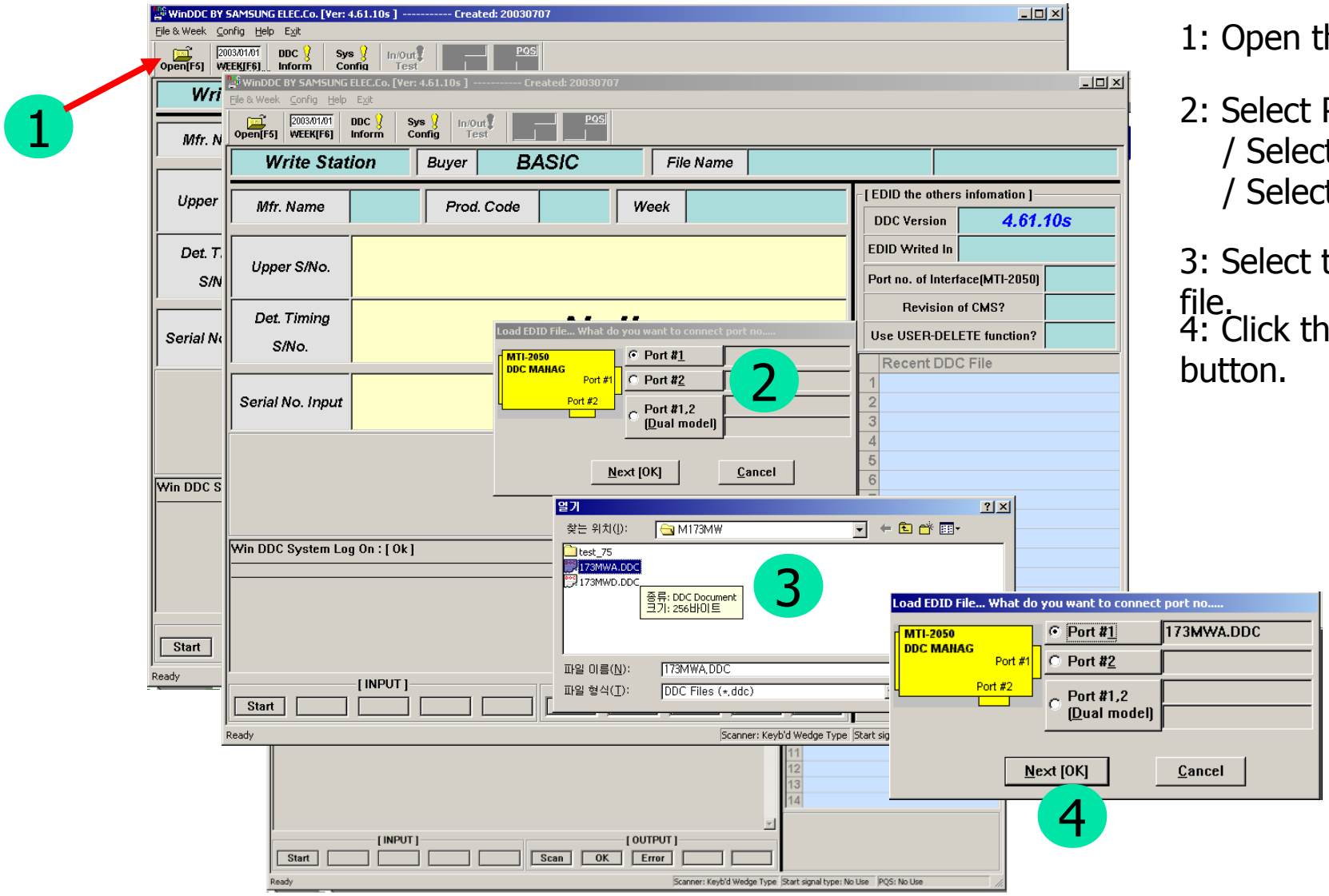
DDC Input Process

Connecting D-sub cable between the parallel port(printer port) of computer and Monitor



DDC Input Process

The DDC input is available after entering the Service Mode. : Cancel the DDC Protection.



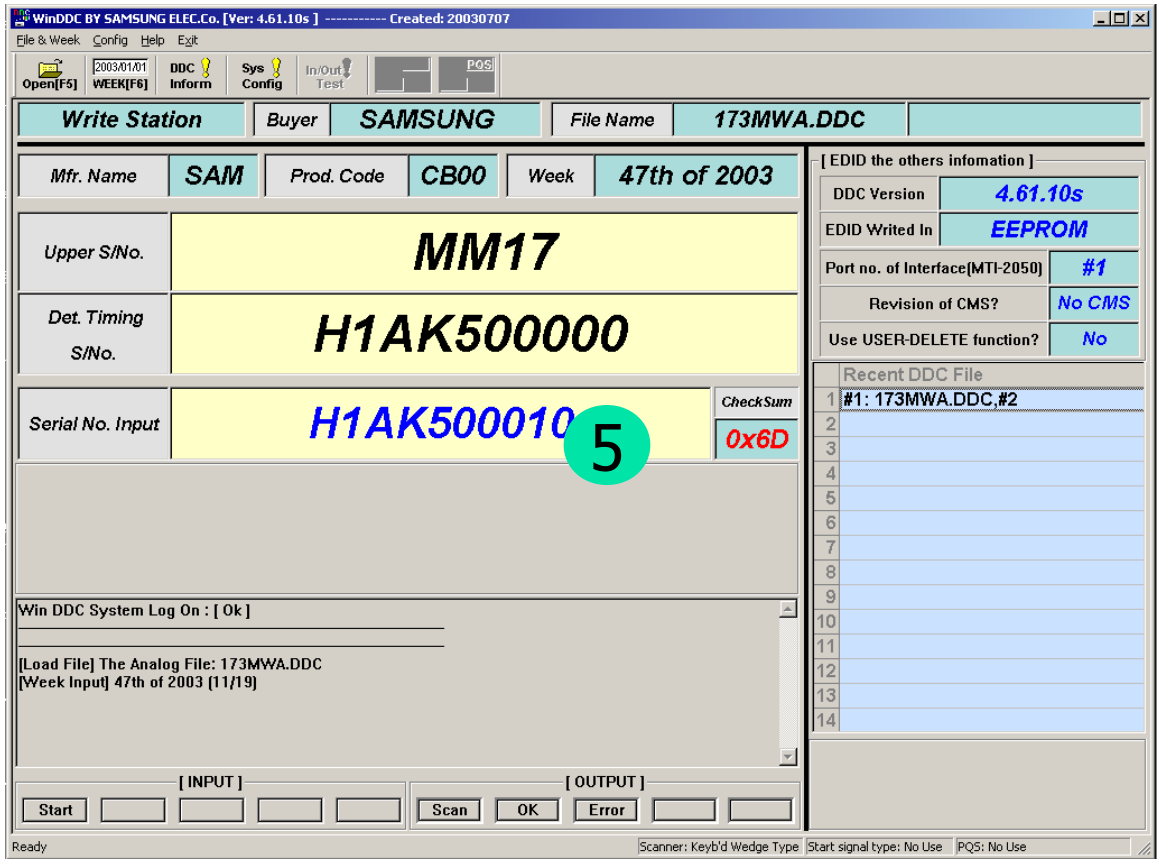
1: Open the file.

2: Select Port 1 (D-SUB)
/ Select Port 2(DVI)
/ Select Port 3(HDMI)

3: Select the DDC file.

4: Click the Next(OK) button.

DDC Input Process

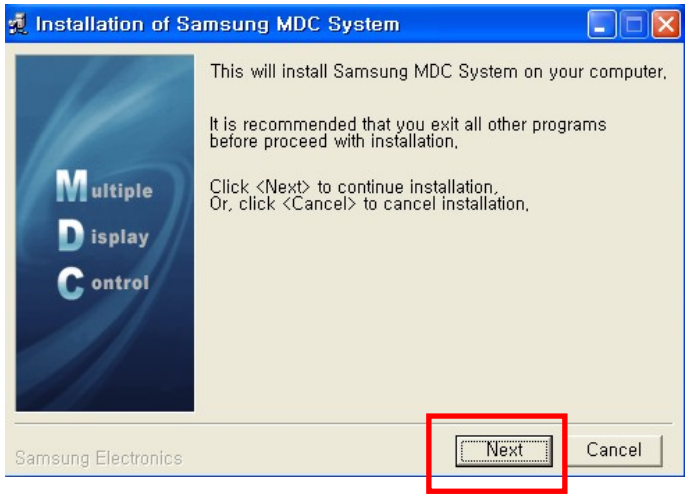


5: Input the monitor serial number and press Enter.

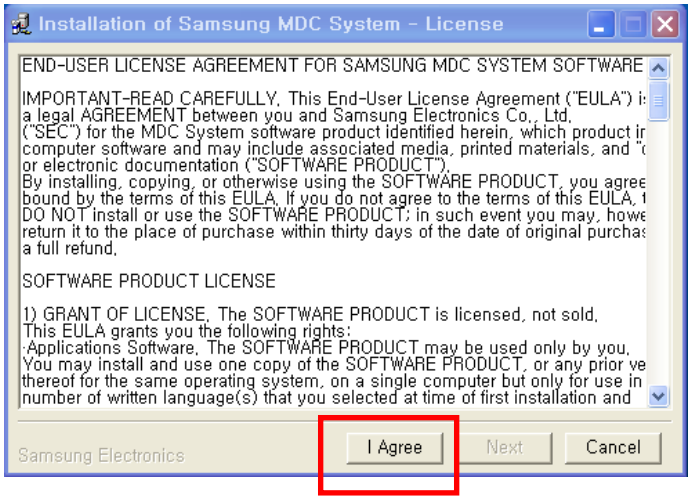
Input Analog and repeat 2~5 times when input Digital.

MDC(Multi Display Control) Program

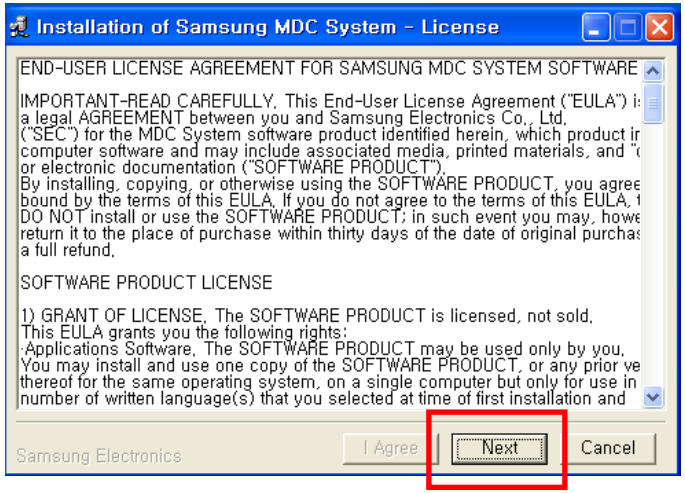
-. How to install



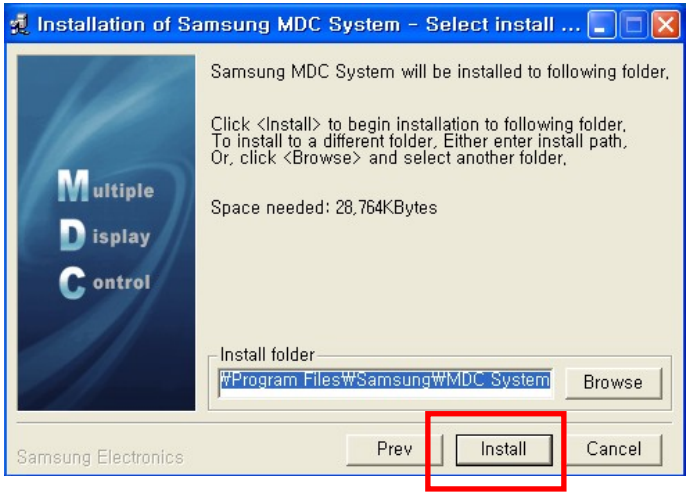
Run the SETUP. EXE file.



Select I Agree.



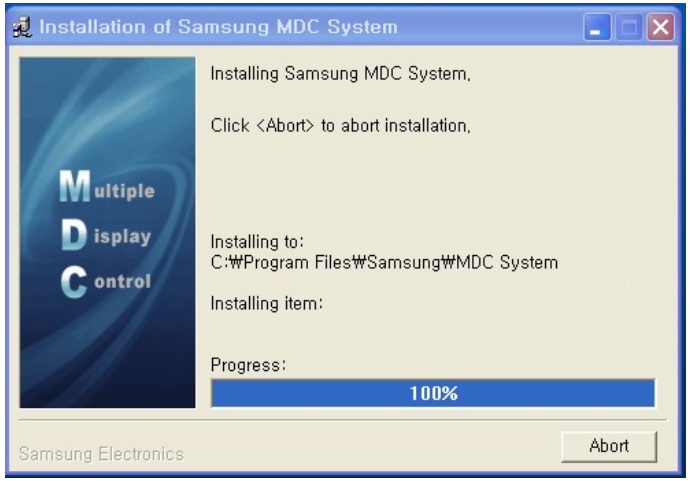
Select NEXT.

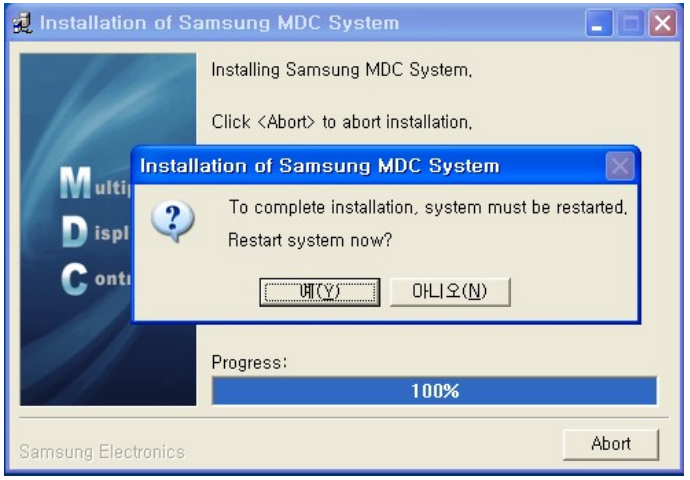


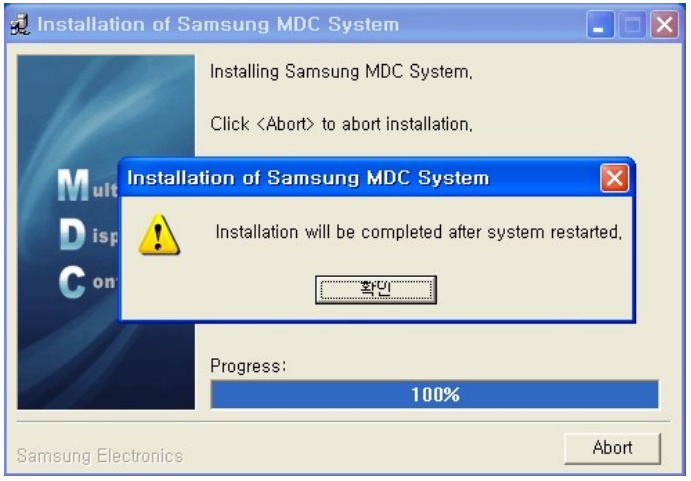
Select Install.

MDC(Multi Display Control) Program

-. How to install



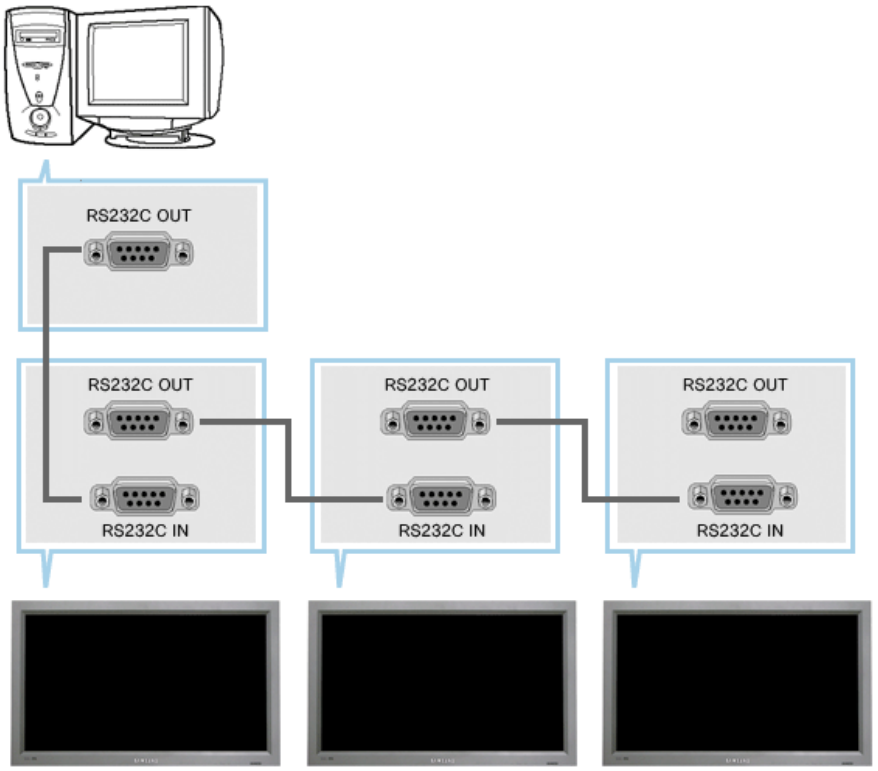




MDC(Multi Display Control) Program

-. How to use

→ Connect the serial port of the PC and Beethoven Board with the RS232C cable.
→ Option in the Factory Menu : Check if BaudRate is set to 9600.



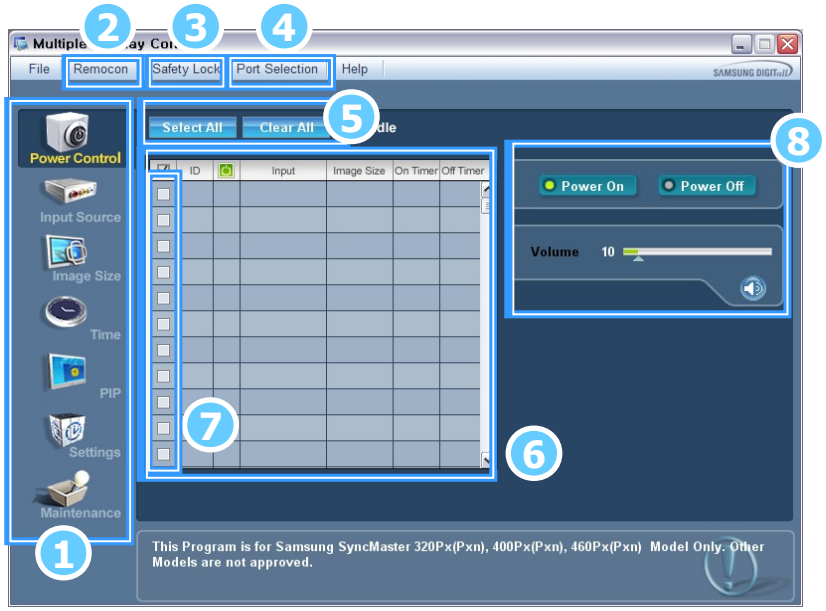
A Multiple Display Control (MDC) is an application allowing various displays to be easily and simultaneously operated on a PC. RS-232C, a standard of serial communication, is used for the communication between a PC and a display. Therefore, a serial cable should be connected between the serial port on a PC and the serial port on a display.

Refer to the diagram.

MDC(Multi Display Control) Program

Start– Main Window

- Click Start> Program>Multiple Display Control to start the program.
- Select a set to see the volume of the selected set within the slider.



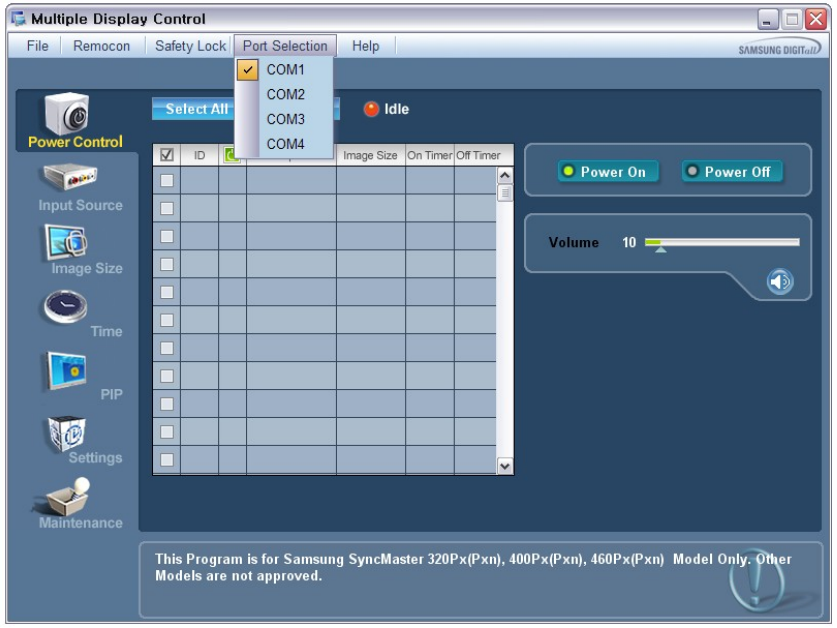
1 Main Icons
2 Remocon
3 Safety Lock
4 Port Selection
5 Safety Lock
6 Info Grid
7 Port Selection
8 Control Tools

The remote control Enable/Disable function operates whether or not the power is On/Off, and this applies to all displays connected to the MDC. However, all displays return to the default setting with the remote control receiving function enabled regardless of the status at the time the MDC is shut down.

1. Click the main icons to switch into each screen.
2. Allows you to enable or disable the remote control signal receiving function of the display unit.
3. Use to lock monitor functions.
4. Use to change the port. The default port is COM1.
5. Use Select All and Clear All buttons to select or clear all displays.
6. Use Grid to view brief information on selected display.

MDC(Multi Display Control) Program

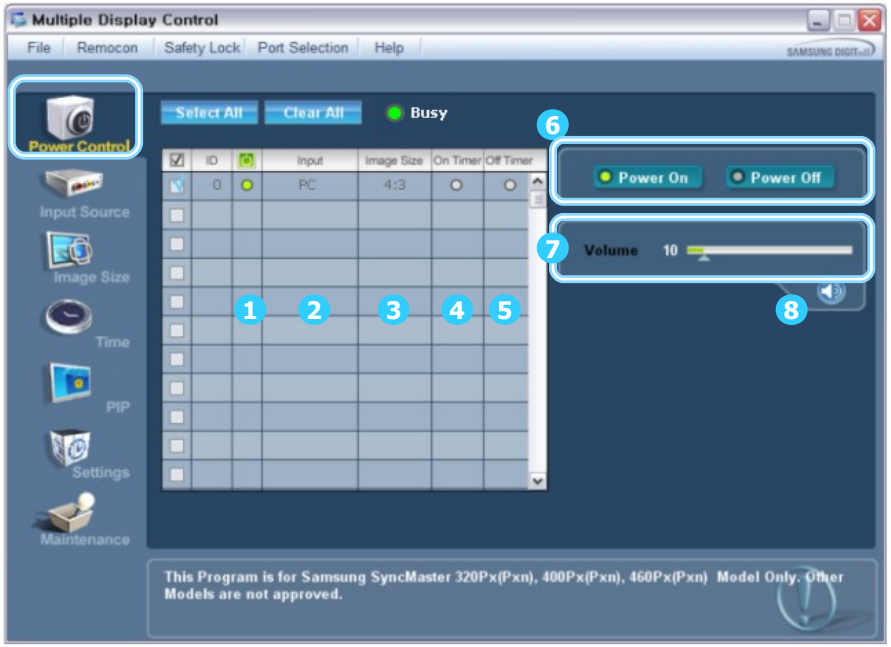
Start-Port Selection



1. Multiple Display Control is originally set to COM1.
2. If the port other than COM 1 is used, any port between COM1 to COM4 is selectable.
3. The port connected to the monitor and serial cable needs to be assigned with the correct name for the communications.
4. Once the port is selected, it is stored and used for the next program.

MDC(Multi Display Control) Program

Power Control



1. Click Power Control of the main icons to display the Power Control window.

- Info Grid shows some basic information necessary for Power Control.

1) Power Status

2) Input Source

3) Image Size

4) On Timer Status

5) Off Timer Status

2. Use the Select All button or Check Box to choose a display to control.

- ☑ Power Control allows you to control functions regarding the power of the selected display on the menu.

6) Power On/Off

Turns the power of the selected display on or off.

7) Volume

Adjust the volume of the selected display.

The appropriate volume for the selected set is displayed as you select a set.

(When you cancel the selection or choose Select All, the volume returns to the default value

8) Mute On/Off

Turns on or off the Mute function of the selected monitor. The Power Control feature is available for all connected monitors.

• The Volume Control and Mute features are available only for the displays whose power status is ON.

MDC(Multi Display Control) Program

Input Source Control

1. Click Input Source of the main icons to display the Input Source control window.

   Click Select All or use Check Box to select a display to control.

-Info Grid shows some basic information necessary to Input Source Control.

1) PC

   Changes the Input Source of the selected display to PC.

2) BNC

   Changes the Input Source of the selected display to BNC.

3) DVI

   Changes the Input Source of the selected display to DVI.

4) TV

   Changes the Input Source of the selected display to TV.

5) AV

   Changes the Input Source of the selected display to AV.

6) S-Video

   Changes the Input Source of the selected display to S-Video.

7) Component

   Changes the Input Source of the selected display to Component.

8) MagicNet

   The MagicNet input can be changed only in the MagicNet mode.

• The Input Source Control feature is available only for the display whose power status is ON.

MDC(Multi Display Control) Program

Image Size Control - PC, BNC, DVI

1. Click Image Size of the main icons to display the Image Size control window.

- Info Grid shows some basic information necessary to Image Size Control.

1) Power

Shows the power status of the current display.

2) Image Size

Shows the current Image Size of the display in use.

3) Input Source

Shows the current Input Source of the display in use.

Info Grid displays only the displays whose Input Source is PC, BNC, or DVI.

4) When you click Image Size, the PC, BNC, and DVI tabs first appear.

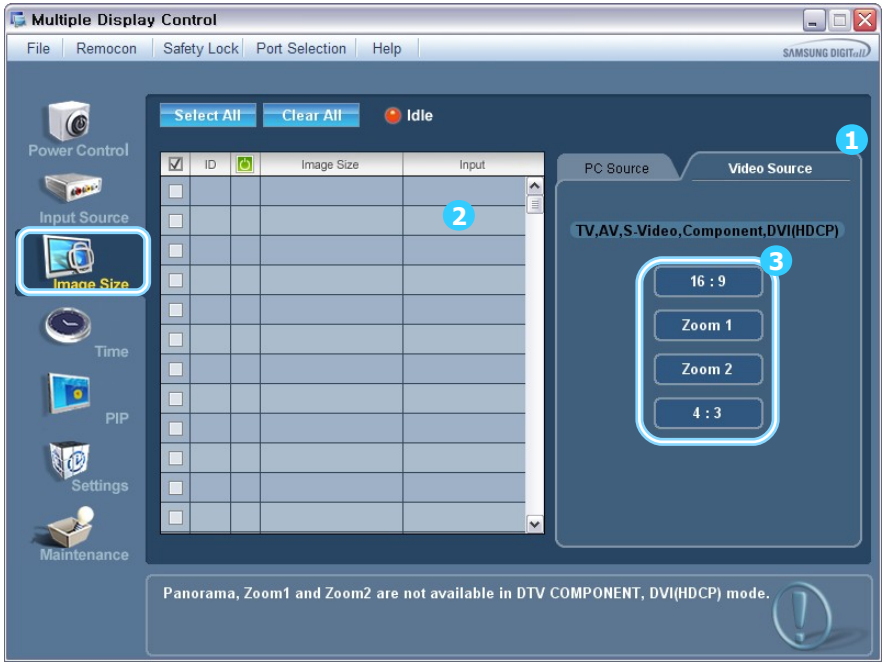
This feature allows you to control Image Size for PC, BNC, or DV.

● Image Size Control is available only for the displays for whose power status is ON.

MDC(Multi Display Control) Program

Image Size Control – Video Source

1. Click Image Size of the main icons to display the Image Size window.



- Info Grid shows some basic information necessary to Image Size Control.

1) Click the Video Source tab to adjust the Image Size of AV, S-Video, TV, Component, or DVI(HDCP). Click Select All or use Check Box to select a display to control.

2) Info Grid displays only the display having AV, S-Video, TV, Component, or DVI(HDCP) as input source

3) Adjust the Image Size of the display.

If the input signal for the component or DVI(HDCP) is 720p or 1080,

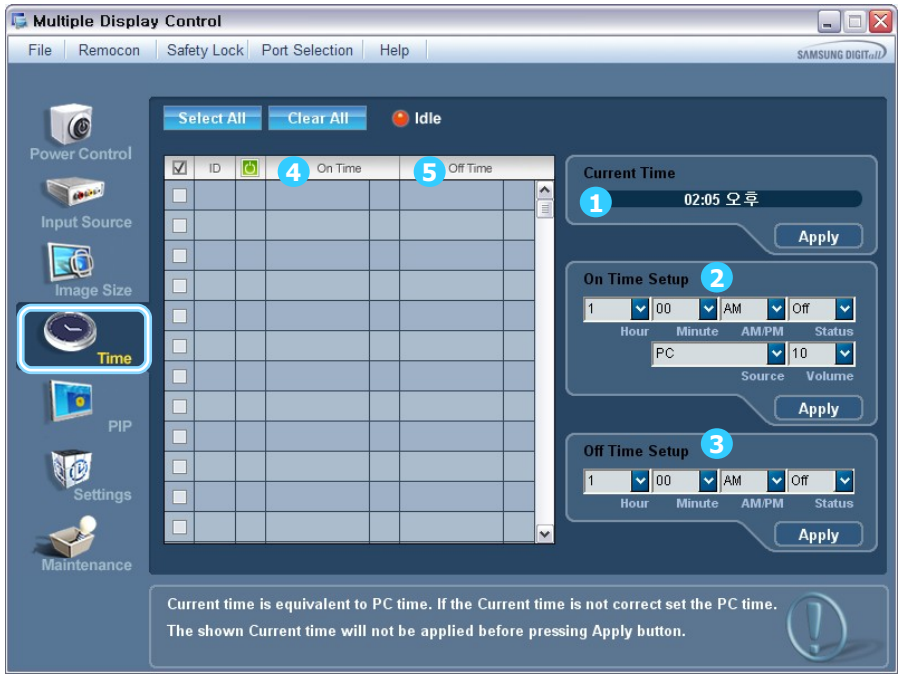
Zoom1 and Zoom are not available.

• The Image Size Control feature is available only for the displays whose power status is ON.

MDC(Multi Display Control) Program

Time Control

1. Click Time of the main icons to display the Time Control window.



- Info Grid shows some basic information necessary to Time Control.

1) Current Time

Set the current time for the selected display (PC Time).

Set the PC time before you change the current time.

2) On Time Setup

Set the hour, minute, AM/PM of On Time, Status, Source, and Volume of the selected display.

3) Off Time Setup

Set the hour, minute,, and AM/PM, and Status for Off Timer of the selected display.

4) Shows the On Timer settings.

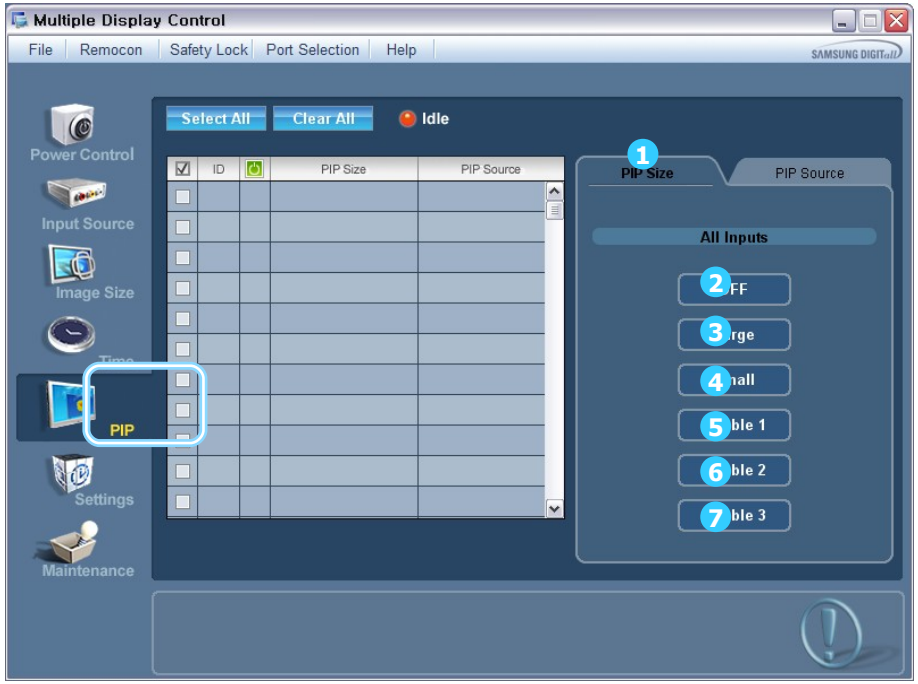
5) Shows the Off Timer settings.

• Time Control is available only for the displays for whose the power status is ON.

MDC(Multi Display Control) Program

PIP Control – PIP Size

1. Click PIP of the main icons to display the PIP control window.



-Info Grid shows some basic information necessary to PIP Size Control.

1) PIP Size

Shows the current PIP Size of the display in use.

2) OFF

Turns off the PIP of the selected display.

3) Large

Turns on the PIP of the selected display and changes the size to Large.

4) Small

Turns on the PIP of the selected display and changes the size to Small.

5) Double1

Turns on the PIP of the selected display and changes the size to Double 1.

6) Double2

Turns on the PIP of the selected display and changes the size to Double 2.

7) Double3

Turns on the PIP of the selected display and changes the size to Double 3.

- **PIP Control is available only for the displays whose power status is ON.**
- **The set with the input source Component is not displayed on Info Grid.**

MDC(Multi Display Control) Program

PIP Control – PIP Source

1. Click PIP of the main icons to display the PIP control window.

- Info grid shows some basic information necessary to PIP Source Control.

1) PIP Source

Click the PIP Source tab to display the PIP Source list.

PIP Source can be controlled only when the power of the monitor is turned on.

2) PC

Changes the PIP source of the selected display to PC.

3) BNC

Changes the PIP source of the selected display to BNC.

4) DVI

Changes the PIP source of the selected display to DVI.

5) TV

Changes the PIP source of the selected display to TV.

6) AV

Changes the PIP source of the selected display to AV.

7) S-Video

Changes the PIP source of the selected display to S-Video.

8) Component

Changes the PIP source of the selected display to Component.

Some of the PIP Sources may not be available for selection depending on the input source type of the Main Screen.

The PIP control feature is available only for the displays whose power status is ON and the PIP function is set to ON.

MDC(Multi Display Control) Program

Setting Control - Picture

1. Click Settings of the main icons to display the Settings Control screen.

-Info Grid shows some basic information necessary to Setting Control. When each function is selected, the set value of the selected function is displayed in the slide. As you select Select All, the value is returned to the default setting (50).

Changing a value in this screen will automatically change the mode to "CUSTOM."

1) Picture

Available only for TV, AV, S-Video, Component, and DVI(HDCP).

2) Contrast

Adjusts Contrast of the selected display.

3) Brightness

Adjusts Brightness of the selected display.

4) Sharpness

Adjusts Sharpness of the selected display.

5) Color

Adjusts Color of the selected display.

6) Tint

Adjusts Tint of the selected display.

7) Color Tone

Adjusts Color Tone of the selected display.

This feature is available only for the displays whose power status is ON and if no selection is made, the factory default is displayed.

MDC(Multi Display Control) Program

Setting Control – Picture PC

1. Click Setting of the main icons and select the Picture PC tab to display the Setting Control window.

- Info Grid shows some basic information necessary to Setting Control. When each function is selected, the set value of the selected function is displayed in the slide. As you select Select All, the value is returned to the default setting (50).

Changing a value in this screen will automatically change the mode to "CUSTOM."

1) Picture PC

Available only for PC, BNC, and DVI.

2) Contrast

Adjusts Contrast of the selected display.

3) Brightness

Adjusts Brightness of the selected display.

4) Red

Adjusts Red Color of the selected display.

5) Green

Adjusts Green Color of the selected display.

6) Blue

Adjusts Blue Color of he selected display.

This feature is available only for the displays whose power status is ON and if no selection is made, the factory default is displayed.

MDC(Multi Display Control) Program

Setting Control – Audio

1. Click Settings of the main icons and select the Audio tab to display the Setting Control window.

-Info Grid shows some basic information necessary to Setting Control. When each function is selected, the set value of the selected function is displayed in the slide. As you select Select All, the value is returned to the default setting (50).

Changing a value in this screen will automatically change the mode to "CUSTOM.".

1) Audio

Controls audio setting for all input sources.

2) Bass

Adjusts Bass of the selected display.

3) Treble

Adjusts Treble of the selected display.

4) Balance

Adjusts Balance of the selected display.

5) SRS TSXT

Turns the SRS Trusurround XT function of the selected display On/Off.

6) Sound Select

Select either Main or Sub when the PIP of the selected display is turned On.

This feature is available only for the displays whose power status in IN and if no selection is made, the factory default is displayed.
The MagicNet Input operates only in MagicNet models.

MDC(Multi Display Control) Program

Setting Control – Image Lock

1. Click Settings of the main icons and select the Image tab to display the Setting Control window.

- Info Grid shows some basic information necessary to Image Lock.

1) Image Lock

Available only the controls for PC and BNC.

2) Coarse

Adjusts Coarse of the selected display.

3) Fine

Adjusts Fine of the selected display.

4) Position

Adjusts Position of the selected display.

5) Auto Adjustment

Automatically adjusts the screen.

- **This feature is available only for the displays whose power status is ON.**

MDC(Multi Display Control) Program

Maintenance Control – Lamp Control

1. Click Maintenance of the main icons and select the Lamp Control tab to display the Maintenance Control window.

- Info Grid shows some basic information necessary to Maintenance Control.

1) Lamp control

Adjusts the brightness of the lamp.

2) Auto Lamp Control

Automatically adjusts the backlight of the selected display at a specified time. The Auto Lamp Control automatically turns off if you adjust using the Manual Lamp Control.

3) Manual Lamp Control

Allows you to adjust the backlight of the selected display regardless of the time.

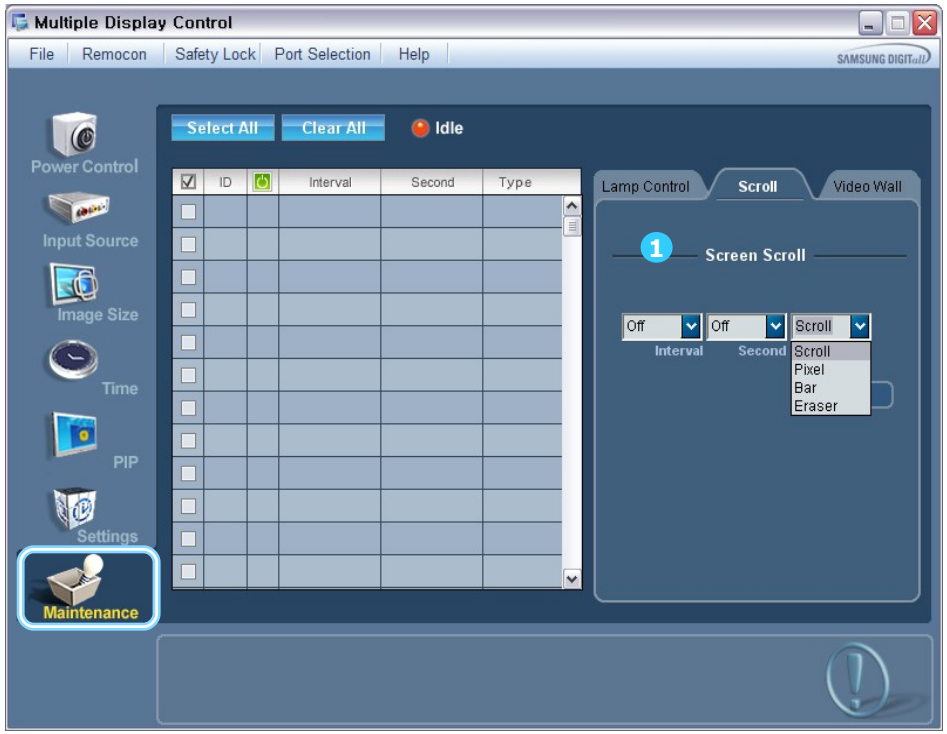
The Manual Lamp Control automatically turns off if you adjust using the Manual Lamp Control.

• The Maintenance Control feature is available only for the displays whose Power Status is ON.

MDC(Multi Display Control) Program

Maintenance Control – Lamp Control

1. Click Maintenance of the main icons and select the Scroll tab to display the Maintenance Control.



1) Screen Scroll

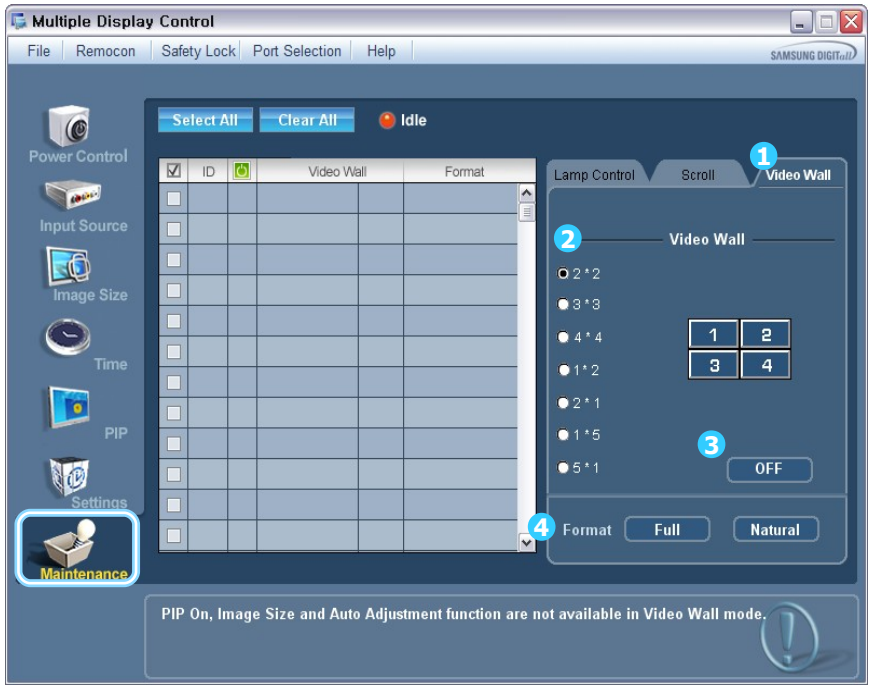
Eliminates the afterimages that can result when the still image is displayed for prolonged periods. Use Interval to set the repeat cycle by time unit and use Second to set the repeat cycle by second unit. Select one of 4 types- Scroll, Pixel, Bar, Eraser.

• The Maintenance Control feature is available only for the displays whose power status in ON.

MDC(Multi Display Control) Program

Maintenance Control – Video Wall

1. Click Maintenance of the main icons and select the Wall tab to display the Maintenance Control window.



This feature is available only for the displays whose power status in IN and if no selection is made, the factory default is displayed.
The Malignant Input operates only in MagicNet models.

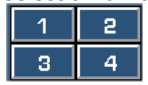
1) Video Wall

A Video Wall is a set of video screens that are connected together, so that each screen shows a part of the whole picture or so that the same picture is repeated on each screen.

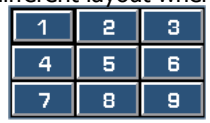
2) Video Wall (Screen Divider)

You can select a number of screens with a different layout when dividing.

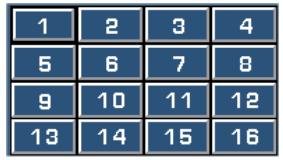
2 * 2



3 * 3



4 * 4

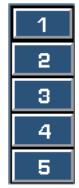


1 * 2

2 * 1

1 * 5

5 * 1



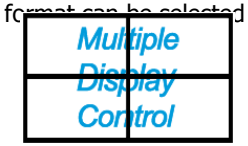
3) On / Off

Turns On or Off the Video Wall function of the selected display.

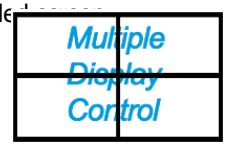
4) Format

The format can be selected to see a divided screen.

Full



Natural



MDC(Multi Display Control) Program

Troubleshooting

1) The display you wish to control does not appear on the Power Control Info Grid.

- Check the connection of RS232C. (Check if it is properly connected to the Com1 port)
- Check the displays to see if any of the other displays connected have the same ID. If more than one displays have the same ID, those displays are not properly detected by the program due to data conflict.
- Check if the Display Set ID is a number between 1 and 10. (Adjust using the Display menu)

☑ Note

- A Display Set ID must be a value between 1 and 10.
  If the value is out of the range, the MDC system cannot control the display.

2) The display you wish to control does not appear on the other Control Info Grids

- Check to see if the display power is ON. (You can check this in Power Control Info Grid)
- Check if you can change the input source of the display.

3) The dialogue box appears repeatedly.

- Check to see if the display you wish to control is selected.☑

4) Both On Timer and Off Timer have been set but different time is showing.

- Apply current time to synchronize the display clocks.

5) The remote may not function properly when you turn off the remote Function, disconnect the RS-232C cable, or exit the program in an Irregular manner. Rerun the program and turn the remote function again to Restore normal functions.

☑ Note

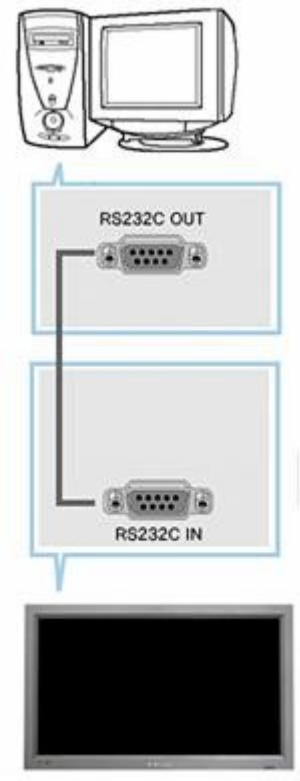
- This program may malfunction due to problems in communication circuits or interference from electronic appliances nearby.

Updating the Program - MAIN

-. How to connect

→ Connect the serial port of the PC and the input serial port of Beethoven Board with the RS232C cable.

→ Option in the Factory Menu : Check if BaudRate is set to 115200.

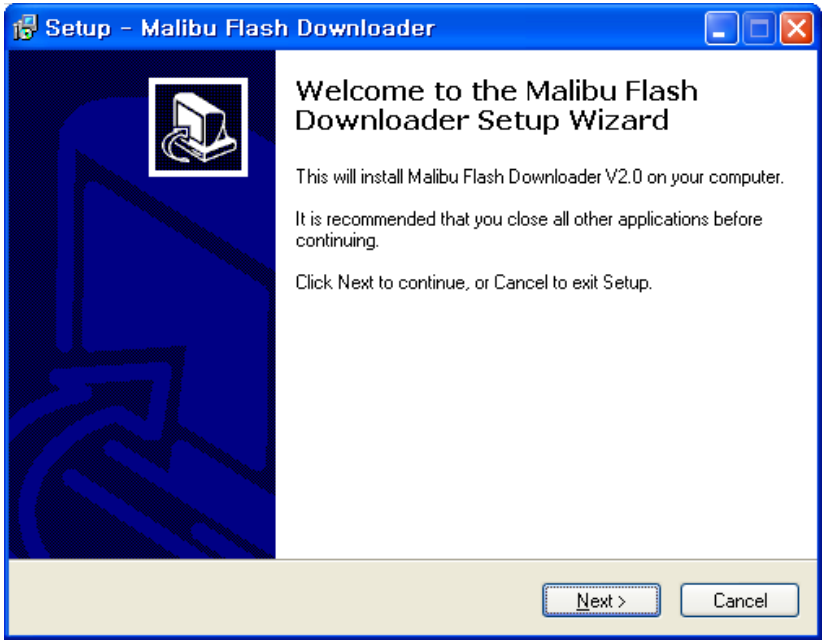


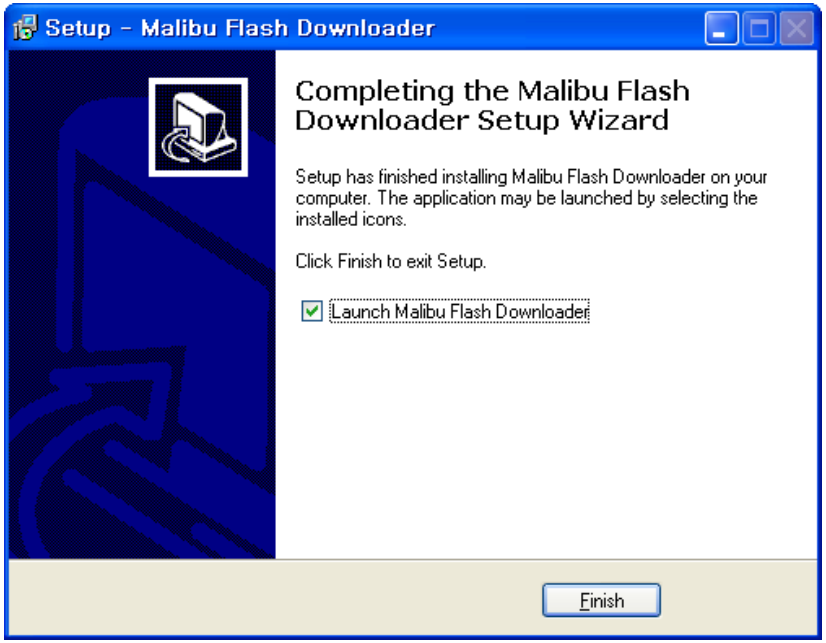
RS-232C, a standard of serial communication, is used for the communication between a PC and a display. Therefore, a serial cable should be connected between the serial port on a PC and the serial port on a display.

Refer to the diagram.

Updating the Program - MAIN

Run the .exe file and press the "OK" button, then press "Next" to complete the installation. (Attached)





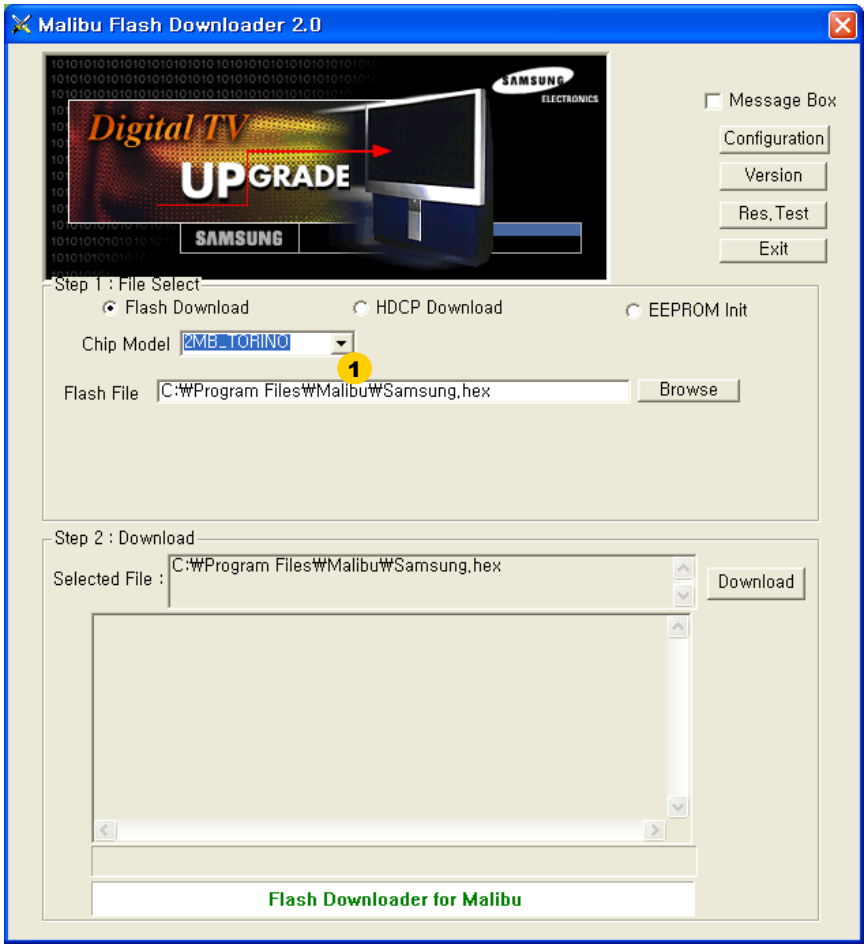
The program is not affected by Windows OS system.

When the installation is complete using the Setup.exe file, th 

ears on your desktop.

Double click the icon to run the program.

Updating the Program - MAIN

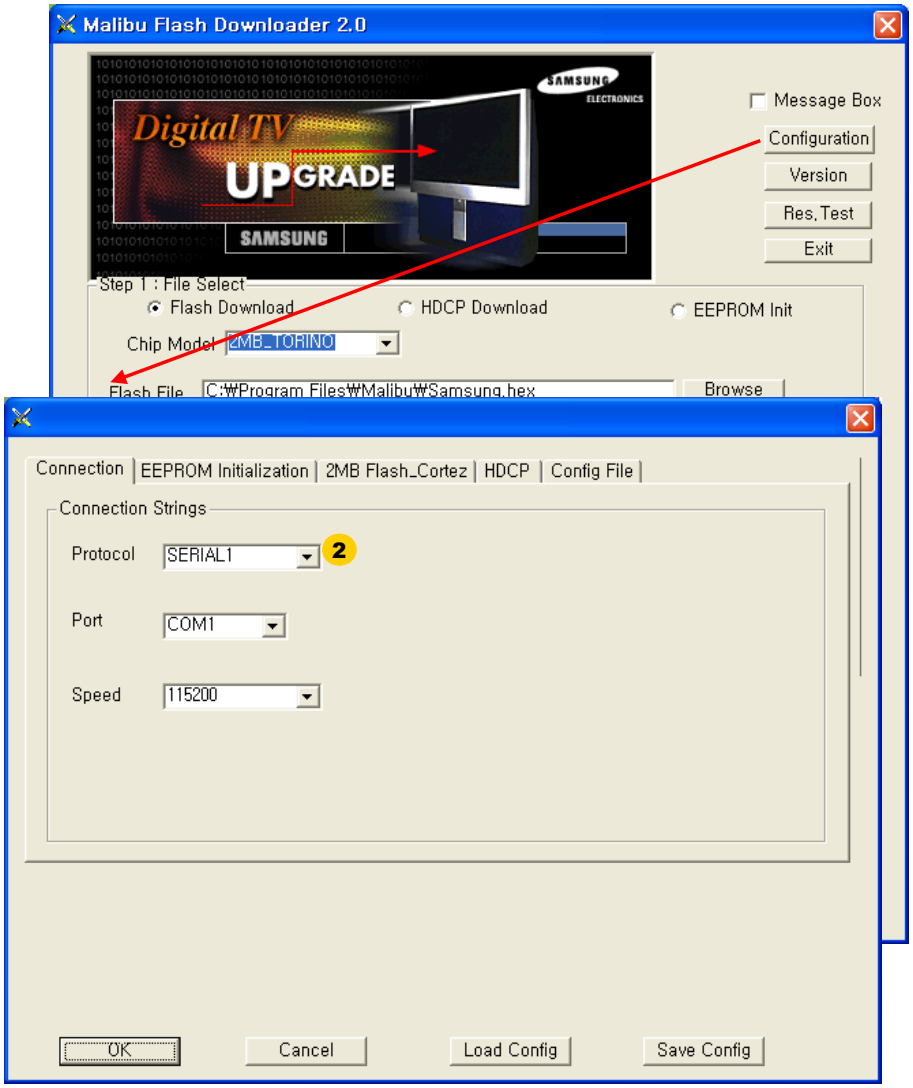


1 Flash Download in the File Select menu

Set as the figure.

Chip Model : Set 2MB_TORINO first.

Updating the Program - MAIN

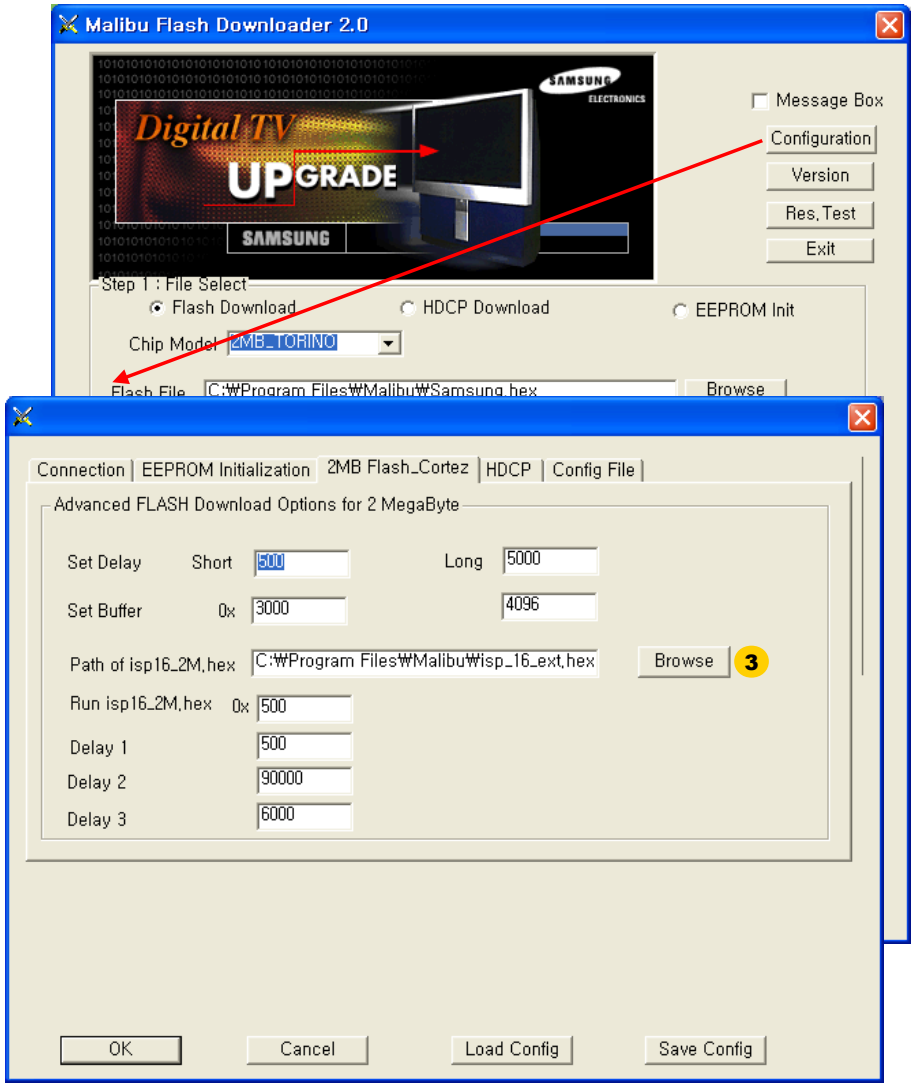


2 After the installation

Connection

→Set as the figure
SERIAL1
COM1
115200

Updating the Program - MAIN

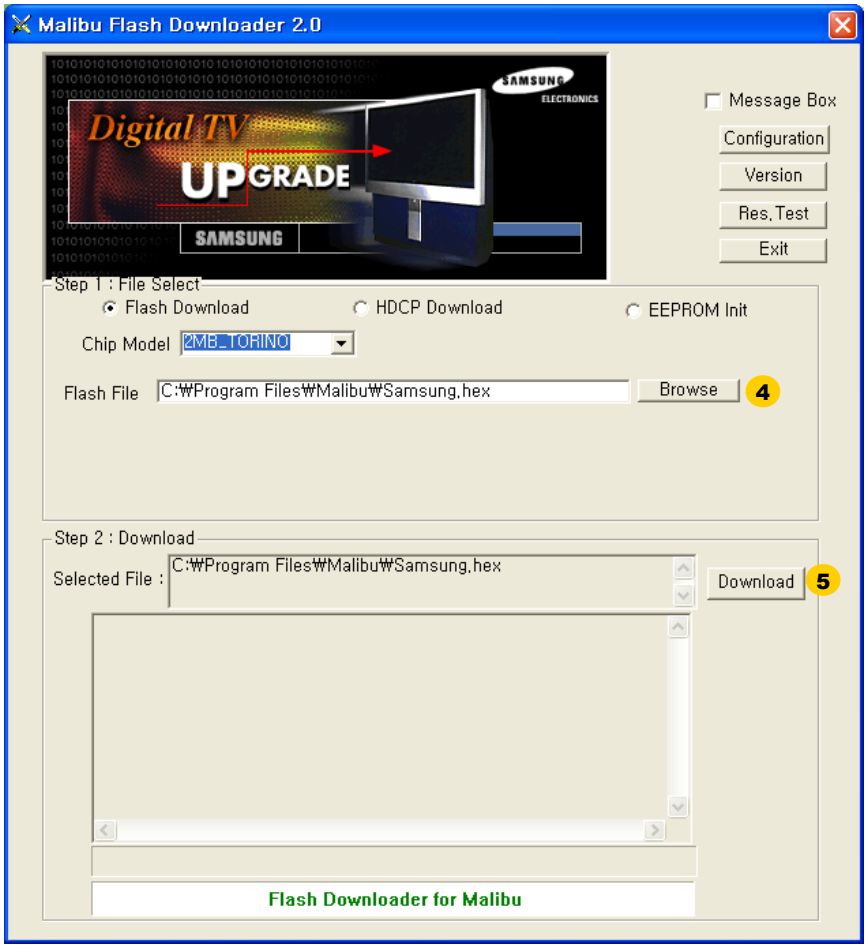


3

2MB Flash
Isp_16_ext. Hex

→ Click Load Config for the auto setting.

Updating the Program - MAIN



4 Select the file you want to download on Browse.

5 Press 5 to download.
Turn the power of the board off/on when the download success message appears.

Check the Checksum and date to see if the right code is applied in the Factory mode.

Network Board: FDM Replacement

FDM Replacement

You may replace the FDM in the same or similar cases as followings:

-.EX1) Picture is normal but the remote control or function key does not work.

-.EX2) The SAMSUNG Logo appears but cannot perform the next step.

-.EX3) Upgrading for the Software problem is in need because the problem was found after the mass production.

CN6_FDM (DM234G20H20P)
1109-001362
The programmed FDM

Disassemble the set as the picture (refer to the set disassembly diagram) and remove the current FDM from CN2000 and insert the new FDM.

▶ Use the supplied JIG or a sharp object like a tweezers to remove the FDM Holder at the corner grooves of both sides. (Note that there can be a malfunction in the monitor if the Socket is damaged.) ▶ Hold both sides and remove the FDM.

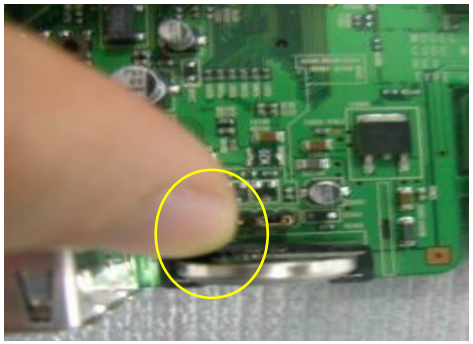
▶ Replace with the new FDM and assemble the set.

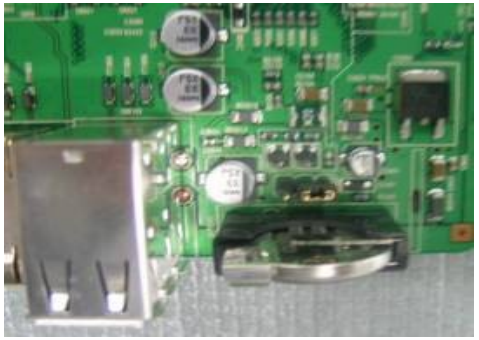
Network Board: Battery Replacement

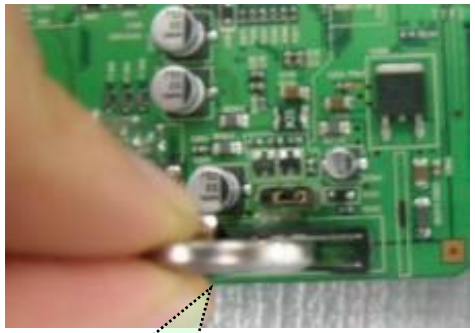
Battery Replacement

You may replace the battery in the same or similar cases as followings:

-.EX1) The required information is not properly stored when the FDM and BIOS are updated.







Battery (4301-000108)

Disassemble as the picture (refer to the Set disassembly diagram) and remove the current battery from BAT1, then insert the new battery.

- ▶ Pull back the holder on the left of the battery
- ▶ Hold both sides and remove the battery
- ▶ Replace with the new battery

Must Do's after change the Board

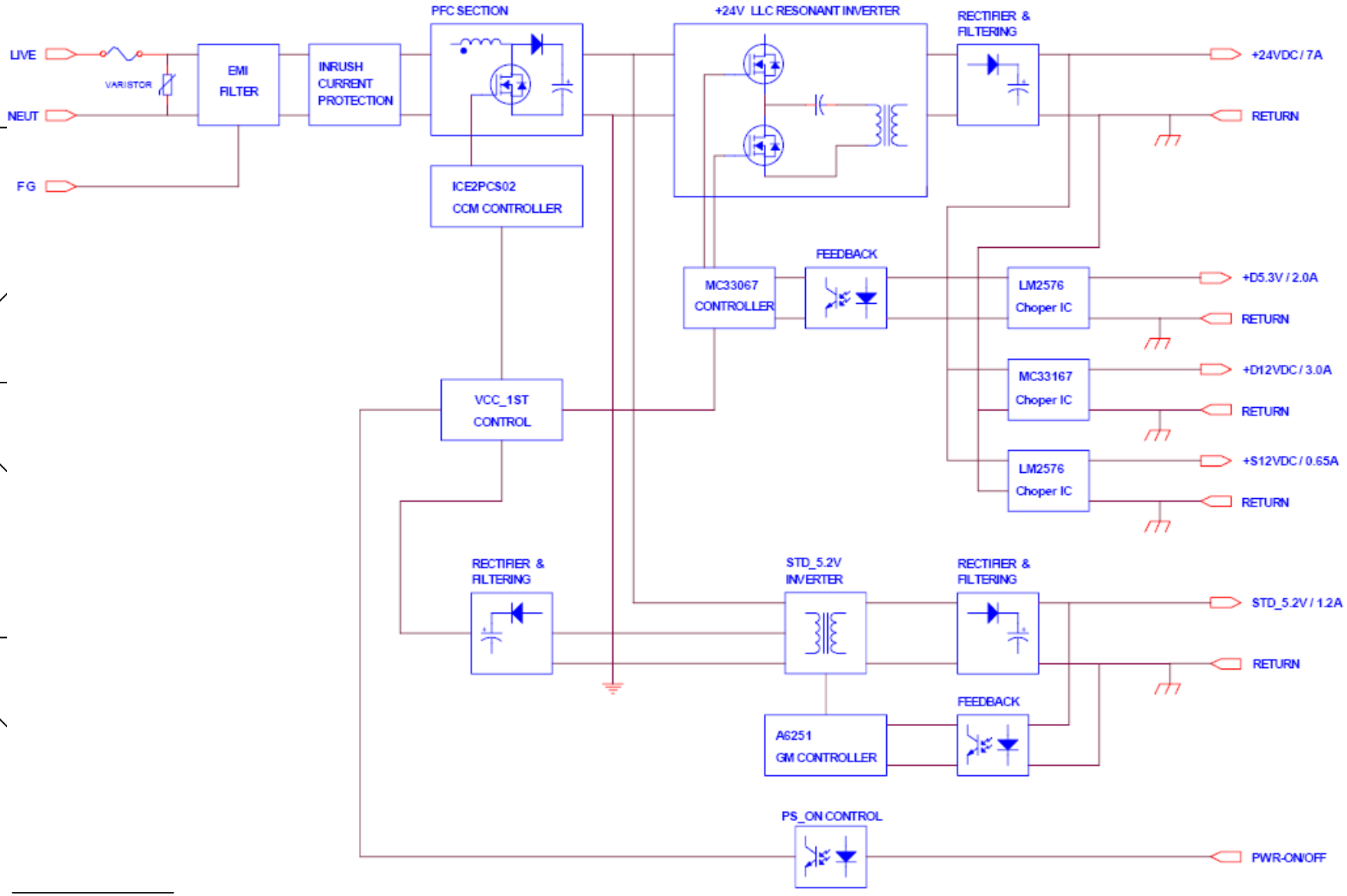
Main Board

- Check the adjusted PC color status
- DDC Input (Input both Analog and Digital)
- Reset after entering the Service mode and turn off the Hard power.

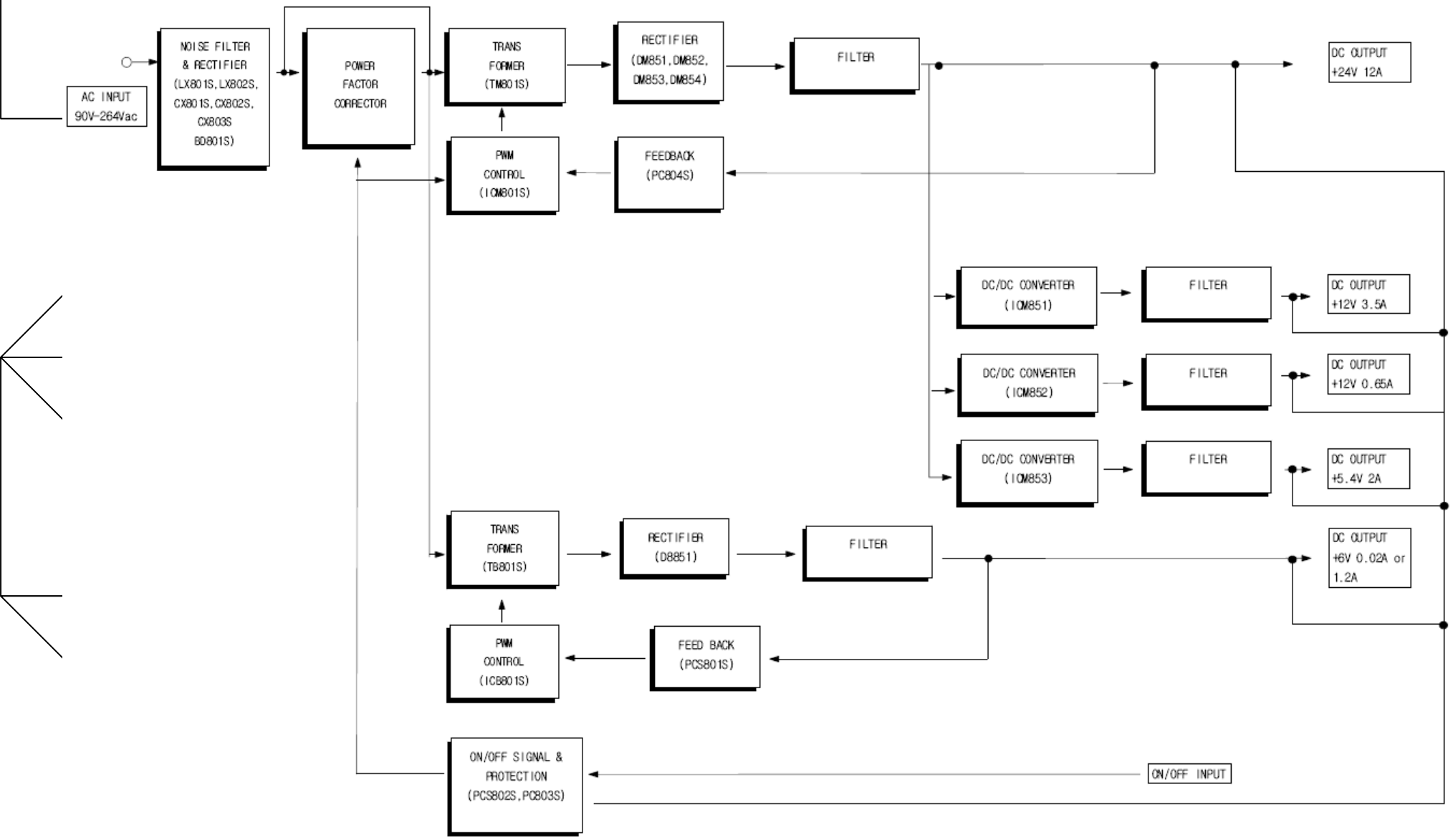
Network Board

- Press Info and check the version of Network.
- Check the versions of FDM and BIOS and see if they are the same as the version of the server program.
- If the version is different, refer to the descriptions above and upgrade the program.
- Upgrade the program and turn the power off/on.
- Check if there are DIMM memory and Battery.

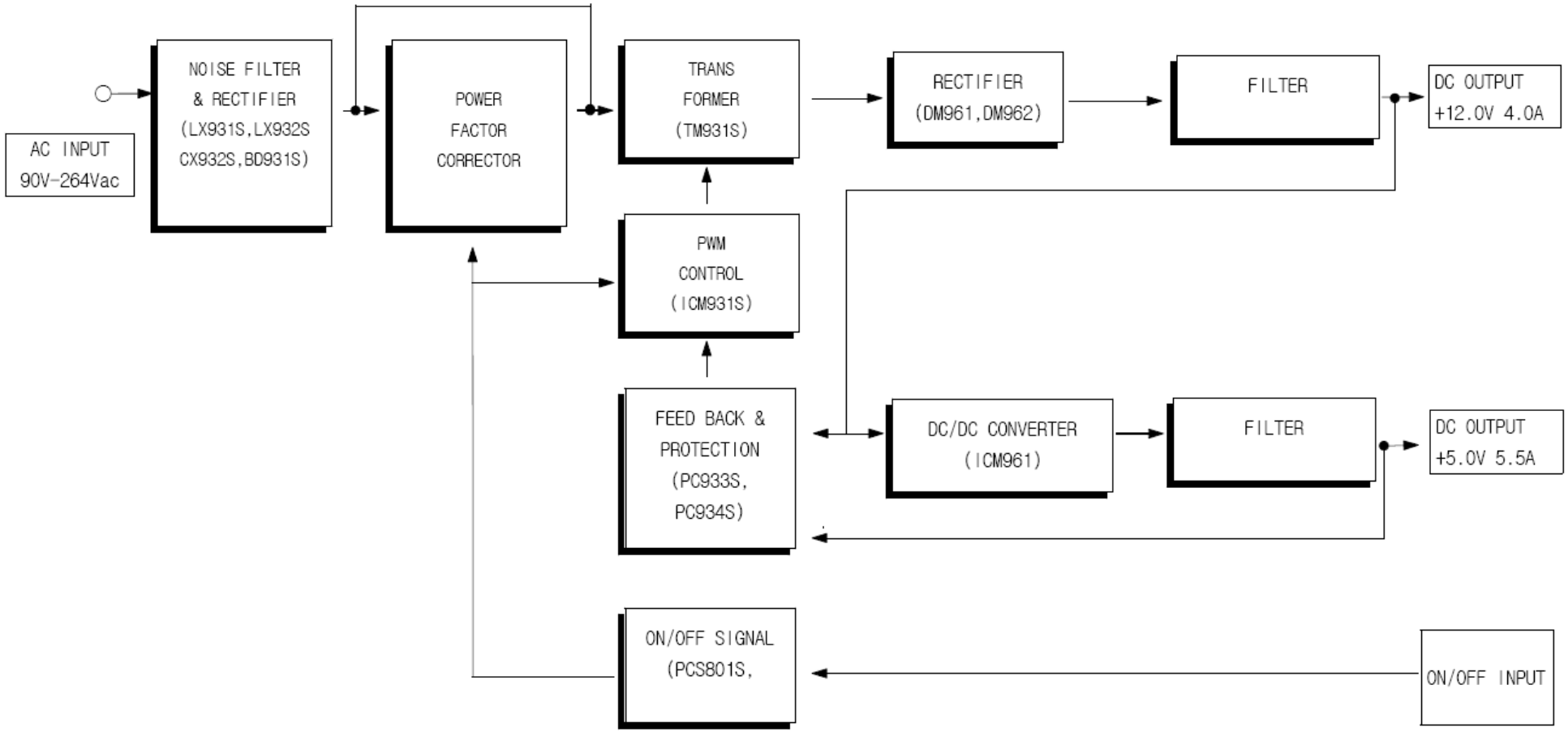
PS Board Block Diagram



PS Board Block Diagram



k Power Board Block Diagram



SMPS Board Circuit Diagram

Circuit Diagram (SMPS Board)


40" SMPS


46" SMPS

Circuit Diagram (Network Power)


Network Power

Program File

Malibu Downloader	 Malibu 2.0
Micom Code	 40" Main Code  46" Main Code
DDC Setup	 WinDDC
DDC File	 Analaog DDC  Digital DDC  HDMI DDC

Terms

Dot Pitch
The image on a monitor is composed of red, green and blue dots. The closer the dots, the higher the resolution. The distance between two dots of the same color is called the 'Dot Pitch'. Unit: mm

Vertical Frequency
The screen must be redrawn several times per second in order to create and display an image for the user. The frequency of this repetition per second is called Vertical Frequency or Refresh Rate. Unit : Hz
Ex) If the same light repeats itself 60 times per second, this is regarded as 60 Hz.

Horizontal Frequency
The time to scan one line connecting the right edge to the left edge of the screen horizontally is called Horizontal Cycle. The inverse number of the Horizontal Cycle is called Horizontal Frequency. Unit : kHz

Interlace and Non-Interlace Methods
Showing the horizontal lines of the screen from the top to the bottom in order is called the Non-Interlace method while showing odd lines and then even lines in turn is called the Interlace method. The Non-Interlace method is used for the majority of monitors to ensure a clear image. The Interlace method is the same as the used TVs.

Plug & Play
This is a function that provides the best quality screen for the user by allowing the computer and the monitor to exchange information automatically. This monitor follows the international standard VESA DDC for the Plug & Play function.

Sync Signal
Sync (Synchronized) Signals refer to the standard signals that are required to display desired colors on the monitor. They are divided into Vertical and Horizontal Sync Signals. These signals display normal color images by the set resolution and frequency.

Terms

Types of Sync Signals

Separate : This is a scheme of transmitting individual vertical sync signals to the monitor.

• Composite : This is a scheme of combining vertical sync signals into one composite signal and transmitting it to the monitor. The monitor displays the color signals by separating the composite signal into original color signals.

Resolution

The number of horizontal and vertical dots used to compose the screen image is called 'resolution'. This number shows the accuracy of the display. High resolution is good for performing multiple tasks as more image information can be shown on the screen.

Example: If the resolution is 1360 X 768 , this means the screen is composed of 1360 horizontal dots (horizontal resolution) and 768 vertical lines (vertical resolution).

Multiple Display Control (MDC)

A Multiple Display Control (MDC) is an application allowing various displays to be easily and simultaneously operated on a PC. RS-232C, a standard of serial communication, is used for the communication between a PC and a display.

Cable TV

As opposed to the traditional television broadcasting via radio waves such as KBS, MBC, and SBS, the cable is required to get Cable TV services. Purchase the Cable TV receiver to watch Cable TV.

Terms

A2 This method uses 2 carriers to transfer multi signals and Korea and Germany use this method,
BTSC Broadcast Television System Committee
The stereo method applied to the most of the countries using NTSC format including US, Canada, Chile, Venezuela, and Taiwan or the committee regarding this method

EIAJ Electronic Industries Association of Japan

Satellite Broadcasting The artificial satellite helps to view high quality picture without any trouble in receiving signals in any region.

Sound Balance This function allows you to adjust the sound balance between the left and right speakers.

Multi-sound broadcasting Korean and other foreign languages are supported and the stereo music is available.

Input Source It means that there are other sources like video, camcorder, and DVD beside TV broadcasting input

English Caption (= Caption setting) It supports captions or text information service using a broadcasting station or video tape. You can study English with AFN channels or a video tape with the CC mark on it.

Wire Broadcasting
- This is the broadcasting supports movie, entertainment, and various kinds of cultural programs that are on air via the self-operating broadcasting station of hotel, school, or building besides VHF and UHF of the main broadcasting stations. (differ from Cable TV)
- This is the system started before March 1995.
- This is restricted within the area supporting Wire Broadcasting.