

SAMSUNG

Gaming Monitor

Chassis	Model
LK00	LC27G7*T LC32G7*T

SERVICE Manual

Gaming Monitor



G75T

Contents

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

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

Contents

1. Precautions

1-1. Safety Precautions.....	1-1
1-1-1. Servicing the Product.....	1-1
1-1-2. Fire and Shock Hazard	1-1
1-1-3. Product Safety Notices.....	1-2
1-2. Servicing Precautions	1-3
1-2-1. General Servicing Precautions.....	1-3
1-3. Static Electricity Precautions.....	1-4
1-4. Installation Precautions	1-5

2. Product specifications

2-1. Model Comparison	2-1
2-2. Feature & Specifications	2-2
2-3. Specification Comparison to Old Models	2-3
2-4. Accessories.....	2-5
2-5. About New Features	2-6
2-5-1. Picture Mode.....	2-6
2-5-2. Screen scanning rate	2-7
2-5-3. Adaptive-Sync.....	2-7
2-5-4. FreeSync.....	2-9
2-5-5. Core Lighting.....	2-11
2-5-6. MPRT	2-12
2-5-7. MGA Calibration	2-14

3. Disassembly and Reassemble

3-1. Disassembly.....	3-1
-----------------------	-----

4. Troubleshooting

4-1. Previous check.....	4-1
4-2. How to check fault symptom.....	4-2
4-2-1. When the Power Does Not Turn On.....	4-2
4-2-2. When a blank screen is displayed (HDMI1).....	4-4
4-2-3. When a blank screen is displayed (DisplayPort 1)	4-6
4-2-4. When a blank screen is displayed (DisplayPort 2)	4-8
4-3. Error Examples and Actions.....	4-10
4-4. Adjustment	4-11
4-4-1. Changing the Service Menu Settings.....	4-11
4-4-2. Service Function	4-12
4-4-3. Entering WIN DDC Data	4-14

5. Wiring Diagram

5-1. Wiring Diagram	5-1
5-2. Block Diagram.....	5-2
5-3. Board Connection	5-3
5-4. Connector Functions.....	5-5



GSPN (GLOBAL SERVICE PARTNER NETWORK)

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

This Service Manual is a property of Samsung Electronics Co.,Ltd.

Any unauthorized use of Manual can be punished under applicable International and/or domestic law.

© 2020 Samsung Electronics Co.,Ltd.
All rights reserved.
Printed in Korea

1. Precautions

1-1. Safety Precautions

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



Warning

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

1-1-1. Servicing the Product

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

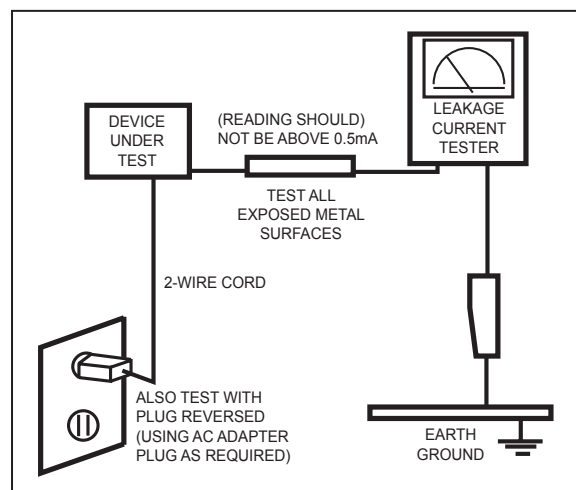
1-1-2. Fire and Shock Hazard

- Before returning the product to the user, perform the following safety checks:
- Inspect each lead dress to make certain that the leads are not pinched or that hardware is not lodged between the chassis and other metal parts in the product.
 - Inspect all protective devices such as nonmetallic control knobs, insulating materials, cabinet backs, adjustment and compartment covers or shields, isolation resistor/capacitor networks, mechanical insulators, etc.
 - Leakage Current Hot Check:



Warning

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



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

1-1-3. Product Safety Notices

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



Warning

- Wear protective equipment(gloves, safety goggles, etc) to prevent injuries and electrical shock that may occur during product disassembly/repair.

1-2. Servicing Precautions



Warning

- An electrolytic capacitor installed with the wrong polarity might explode.



Caution

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



Note

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



Note

- Following the repair by a non-authorised service provider, self-repair or non-professional repair of the product, Samsung is not liable for any damage to the product, any injury or any other product safety issue caused by any attempt to repair the product which does not carefully follow these repair and maintenance instructions. Any damage to the product caused by an attempt to repair the product by any person other than a Samsung certified service provider will not be covered by the warranty.

1-2-1. General Servicing Precautions

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

1-3. Static Electricity Precautions

- Some semiconductor (solid state) devices can be easily damaged by static electricity. Such components are commonly called Electrostatically Sensitive Devices (ESD). Examples of typical ESD are integrated circuits and some field-effect transistors. The following techniques will reduce the incidence of component damage caused by static electricity.
1. Immediately before handling any semiconductor components or assemblies, drain the electrostatic charge from your body by touching a known earth ground. Alternatively, wear a discharging wrist-strap device. To avoid a shock hazard, be sure to remove the wrist strap before applying power to the product.
 2. After removing an ESD-equipped assembly, place it on a conductive surface such as aluminum foil to prevent accumulation of an electrostatic charge.
 3. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ESDs.
 4. Use only a grounded-tip soldering iron to solder or desolder ESDs.
 5. Use only an anti-static solder removal device. Some solder removal devices not classified as “anti-static” can generate electrical charges sufficient to damage ESDs.
 6. Do not remove a replacement ESD from its protective package until you are ready to install it.
Most replacement ESDs are packaged with leads that are electrically shorted together by conductive foam, aluminum foil or other conductive materials.
 7. Immediately before removing the protective material from the leads of a replacement ESD, touch the protective material to the chassis or circuit assembly into which the device will be installed.



Caution

- Be sure no power is applied to the chassis or circuit and observe all other safety precautions.

8. Minimize body motions when handling unpackaged replacement ESDs. Motions such as brushing clothes together, or lifting your foot from a carpeted floor can generate enough static electricity to damage an ESD.

1-4. Installation Precautions

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

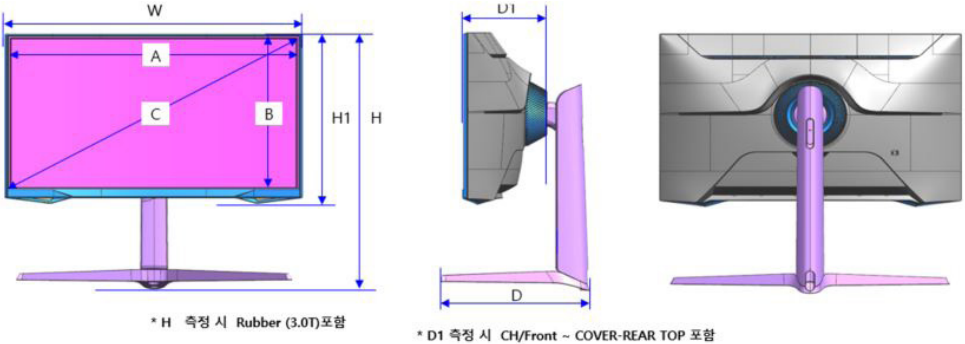


Caution

- Risk of explosion if battery is replaced by an incorrect type dispose of used batteries according to the instructions.
- Do not dispose of batteries in a fire.
- Do not short circuit, disassemble or overheat the batteries.
- Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type.
- Do not be exposed to excessive heat such as sunshine, fire or the like.

2. Product specifications

2-1. Model Comparison

Front View			
Detail View	 * H 측정 시 Rubber (3.0T) 포함 * D1 측정 시 CH/Front ~ COVER-REAR TOP 포함		
Front Color	Silver		
Dimensions (W x H x D) / Weight	27"	Without Stand	614.6 x 382.8 x 171.0 mm / 5.5kg
		With Stand	614.6 x 576.0 x 305.2 mm / 7.2 kg
	32"	Without Stand	710.1 x 439.1 x 187.1 mm / 6.5 kg
		With Stand	710.1 x 594.5 x 305.9 mm / 8.2 kg
Panel Type	LCM / LED BLU / VA		
Internal Memory	None		
DDR	None		
Feature	240Hz, FreeSync 2.0, QD Color, MPRT 1ms, Lighting		

2-2. Feature & Specifications

Model Name	C27G7*T* / C32G7*T*
Features	
- Strengthening the experience of gaming immersion by applying the world's first highest curvature 1000R - The higher the curve curvature, the lower the fatigue of the eyes. : Flat > 4000R > 3000R > 2000R > 1000R - By reducing the fatigue of the eyes through 1000R curvature and increasing the field of view (FOV) Enables you to grasp the game screen at a glance • Applying the best gaming performance (Refresh rate 240 Hz, Response time 1 ms (GTG)) - Buttery, Silky, Smooth of the screen through 240Hz Refresh rate - To minimize the afterimage effect Provide natural game screen • QLED provides clearer game image quality by applying HDR 600 - Brighter places are brighter, darker places are darker → In game play, the intended color expression of the original producer Maximize immersion by possible - Provide clearer image quality by applying QLED → Provide quick visibility to enemies in mini maps, etc. • G-Sync Compatible and Freesync Application - GPU ↔ panel synchronization allows smooth gameplay - No tearing/ stuttering	

2-3. Specification Comparison to Old Models

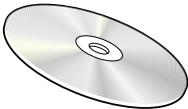
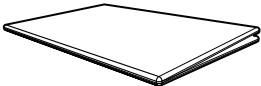
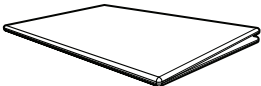
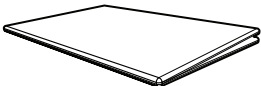
• O : Supported / X : Not Supported

Item	CHG7 (C27HG7)	G75T (C27G7*T* / C32G7*T*)
Design		
Screen size	27" (3840x2160)	27" (2560x1440) / 32" (2560x1440)
Screen ratio	16:9	16:9
Curvature	1800R	1000R
input	HDMI x 2 / DisplayPort x 1	HDMI x 1 / DisplayPort x 2
response speed	MPRT 1ms (Fastest Mode)	1ms (GtG)(Fastest Mode)
Viewing angle	178° / 178° (CR>10)	178° / 178° (CR>10)
Brightness	350 cd/m ²	350 cd/m ²
power consumption	36W	27inches : 56W / 32inches :56.3W DPMS : 0.45W, Same regardless of inches
C/R	3000:1 (Typ.)	2500:1 (Typ.)
Stand Function	Tilt, Pivot, HAS	Tilt, Swivel, Pivot, HAS
special features	FreeSync2.0, 144hz 지원	NVIDIA G-Sync Compatible, 240Hz 지원
Brightness(Typ.)	350cd/m2	350cd/m2
Contrast Ratio(Static)	3000:1(Typ),2400:1(Min)	2,500:1(Typ.)
HDR	VESA DisplayHDR 600	VESA DisplayHDR 600
Response Time (ms)	1(MPRT)	1ms(GtG)
Color Gamut (DCI Coverage)	Typ 95%, Min 88%	Typ 95%, Min%
Nano Crystal	Yes	QLED
Refresh Rate (Hz)	144Hz	240Hz
Factory Report	N/A	Yes
Picture-in-Picture	N/A	Yes

Item	CHG7 (C27HG7)	G75T (C27G7*T* / C32G7*T*)
Picture-by-picture	N/A	Yes
FreeSync2	Yes	Yes(HDMI: 48~144Hz, DP: 48~240Hz)
G-Sync	N/A	NVIDIA G-Sync Compatible
Auto Source Switch	-	Yes
# of Displayport Input	1	2
Version of Displayport Input	1.2	1.4
# of HDMI Input	2	1
Version of HDMI Input	1.4	2.0
Headphone	1	1
USB Hub	1	Yes
Version of USB	3.0	3.0
# of USB Down Port	2	2
Type (Internal/External)	External	27inches : 100W External Adaptor/ 32inches: 140W External Adaptor
Label Rating (LED Sticker/TCO/Epeat/ Energy Star)	No	NVIDIA G-Sync FreeSync
USB 3.0 Up Cable	Yes	Yes (1.5m)

2-4. Accessories

■ LC27* / LC32*

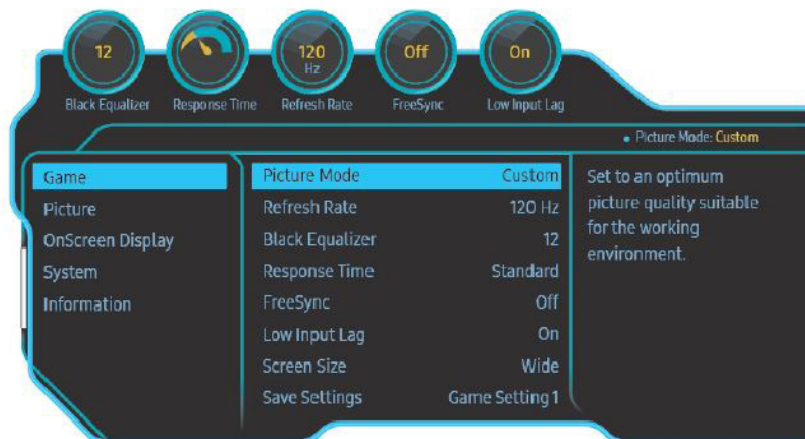
Product	Description	Code. No	Remark
	Power cord	Reference Electrical Parts List in Exploded View	Samsung Electronics Service Center
	USB Cable		
	DP Cable		
	Adaptor		
	CD User Manual		
	Warranty guide		
	Regulatory guide		
	Quick Setup Guide		

2-5. About New Features

2-5-1. Picture Mode

Provides an optimal screen suitable for a variety of working environments.

- Unavailable menu when eye protection mode is set.
- This menu is not available when an echo saving plus is set.



■ PC mode

- User adjustment: The user can fine-tune the contrast and brightness.
- FPS: Image quality mode optimized for enemy visibility during FPS game by increasing brightness in dark areas of FPS game screen.
- RTS: Image quality mode that emphasizes color temperature and contrast ratio to improve visibility of RTS game screen and mini map.
- RPG: It is an image quality mode optimized for 3D graphic and character conversation of RPG game screen.
- AOS: Image quality mode that emphasizes contrast ratio to provide optimized image quality on AOS game screen.
- sRGB: Adjust the color system to sRGB mode. Standard mode for this monitor.
- AOS: Image quality mode that emphasizes contrast ratio to provide optimized image quality on AOS game screen.
- Video contrast control: This mode is used to balance brightness through automatic contrast control.

■ AV mode

By connecting external input via HDMI / DP and setting PC / AV mode to AV, screen mode provides four screen modes (clear screen, standard screen, soft screen, user adjustment). Set to the desired screen mode among clear screens, standard screens, soft screens, and user adjustments.

- Clear screen: A suitable mode when you want a clearer image than standard screen mode.
- Standard screen: Suitable mode when the surroundings are bright. A clear image is provided.
- Soft screen: Suitable mode when the surroundings are dark. It has a power saving effect and reduces eye fatigue.
- User Adjustment: A mode in which you can adjust the screen settings value according to your preference.

2-5-2. Screen scanning rate

Change the screen scan rate on the screen. High screen scanning rate reduces eye fatigue.

- HDMI : 60Hz / 120 Hz/ 144HZ
- DisplayPort1, DisplayPort2: 60Hz / 120 Hz/ 144HZ / 240Hz
 - This menu is not available when Adaptive-Sync is set.
 - When the screen scan rate is changed by the graphics card specification of the PC, screen blinking may occur.
 - The feature can be used in a pc equipped with a graphics card that can change the screen scan rate. It is not available on devices with fixed screen scanning rates (e.g., AV devices). If this feature is applied, the screen may malfunction.

2-5-3. Adaptive-Sync

The Adaptive-Sync technique is a solution that eliminates screen tear without general delay and latency. This technology improves the game environment by eliminating screen tearing and delays during games. Depending on the compatibility with the product model and the NVIDIA graphics card, the adaptive sync menu items displayed in the product may be different.

- Off: The Adaptive-Sync function is turned off.
- On: Use additional synchronization at a higher screen frame rate. This mode reduces screen tear. However, intermittent screen flashes may occur during game play.

When using this feature during a game, the following symptoms may occur.

- Depending on the type of graphics card, game option settings, or playing video, the screen may blink. Take the following steps. Reduce the game settings value or visit the NVIDIA website to check the version of the graphics driver and update it with the latest version.
- When using the Adaptive-Sync function, there may be screen blinking due to changes in the output frequency of the graphics card.
- The response rate during a game can vary with resolution. The higher the resolution, the lower the response rate.
- The sound quality of the product can be lowered.

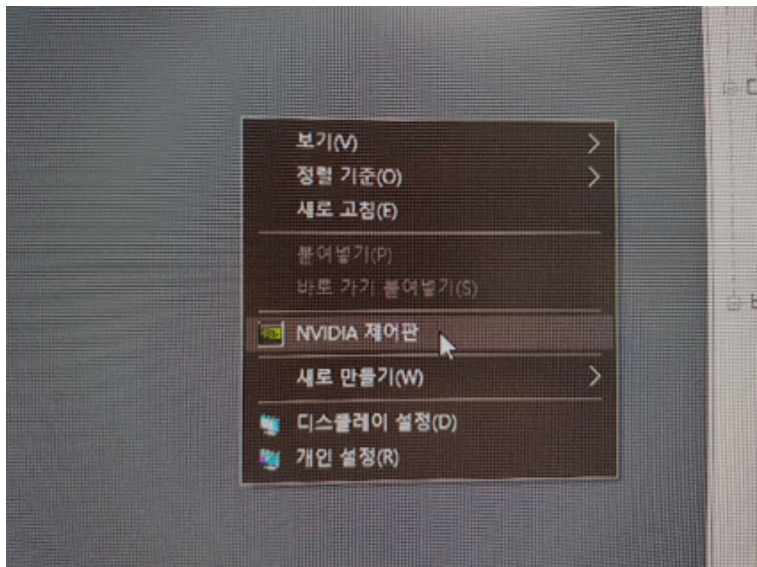
■ Graphics card model supporting Adaptive-Sync function

The Adaptive-Sync feature is available only for specific NVIDIA graphics card models. Refer to the following list for supported graphics cards.

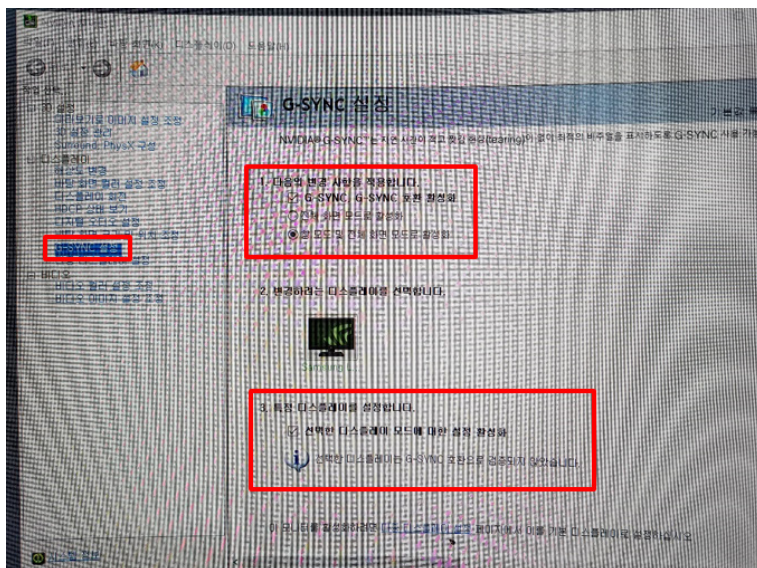
- GeForce GTX 10 series
- GeForce RTX 29 series

※ When using Adaptive-Sync for the first time, update the NVIDIA driver to the latest.
If Adaptive-Sync (G-Sync settings) cannot be automatically set after updating,
set it as described below and use it..

1.Click the NVIDIA control panel on the desktop.



2. Enter the 'G-SYNC Settings' item and check the item as shown below.



When you connect the Adaptive Sync menu to an AMD graphic, it changes to Free Sync..

2-5-4. FreeSync

FreeSync is a technology that eliminates screen cracking without common delays or latency.

This feature removes screen crashes or delays while the game is running. Improve your game environment.

Depending on the model you purchased, the FreeSync menu of the monitor OSD may be different because it is compatible with the AMD graphics card.

- If the concurrent screen mode is set to Active, it is not supported.
- If you turn on the FreeSync function, the sound quality of the monitor may be lowered.
- Release: Does not support FreeSync when selecting a release.
- Default Engine: Supports FreeSync basic features of AMD graphics card when selecting the default engine.

Ultimate engine: When selecting Ultimate engine, screen frame speed and screen break phenomenon (synchronization error between content and monitor) is slightly more Supports complementary FreeSync functionality. However, Flicker phenomenon may occur intermittently in some games.

We recommend using optimal resolution when using the FreeSync feature.

- FreeSync function is activated only in HDMI1, DP1, and DP2.

To use the FreeSync feature, use the HDMI / DP / MINI DP cable provided by the product manufacturer

Using the FreeSync feature during the game may cause the following phenomena.

- Depending on the type of graphics card or the video that is set or played by game, the blinking may occur. Lower or enable options for game settings . Set the in-progress FreeSync mode as the default engine, log on to AMD homepage to check the latest graphics driver version and update it.
- When using FreeSync, screen blinking may occur due to output frequency fluctuations in graphics cards.
- The response rate may vary depending on the resolution. If set to high resolution, the response speed is slow.

■ List of graphics cards that support FreeSync functionality

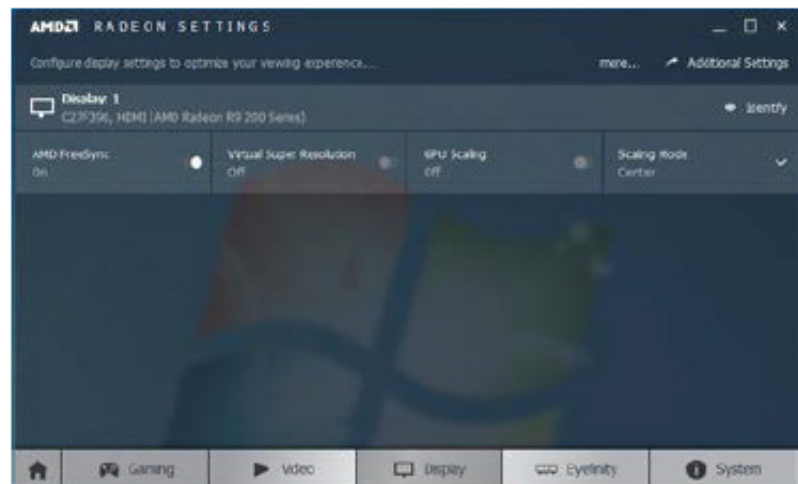
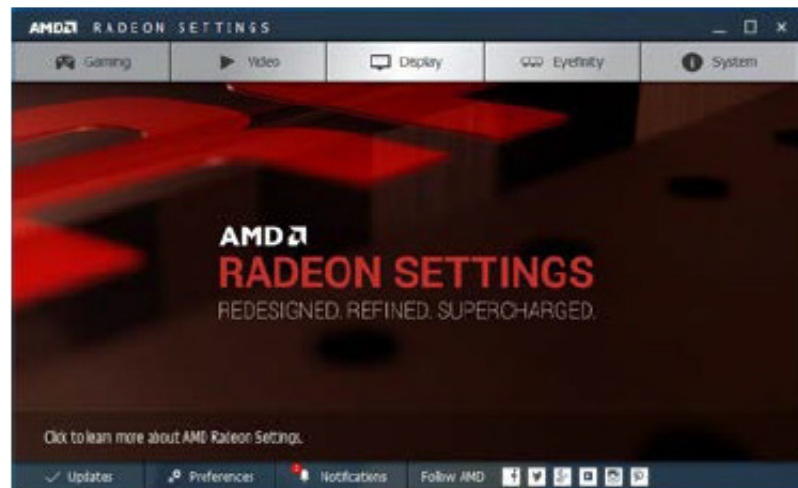
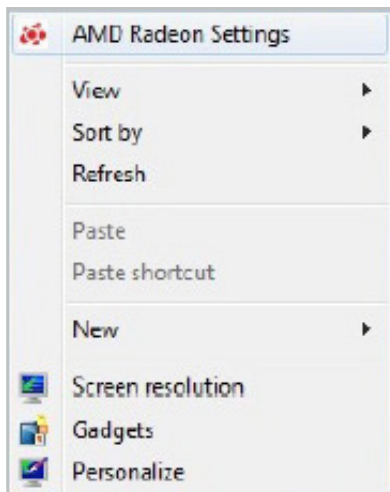
Only some AMD graphics cards can use the FreeSync feature. The list of graphics cards that you support is as follows.

Ensure that AMD's latest graphics driver is installed that supports FreeSync functionality.

- For AMD graphics cards that support the FreeSync function above, please refer to AMD's official homepage.
- Other graphics cards do not support the function, so please set it to FreeSync release.
- Applying the FreeSync feature through the HDMI interface may not work properly due to bandwidth limitations on certain AMD display cards.
 - AMD Radeon R9 300 Series (370/370X Exception)
 - AMD Radeon R9 Fury X
 - AMD Radeon R7 360
 - AMD Radeon R9 295X2
 - AMD Radeon R9 290X
 - AMD Radeon RX 500 series
 - AMD Radeon R9 290
 - AMD Radeon R9 285
 - AMD Radeon R7 260X
 - AMD Radeon R7 260
 - AMD Radeon RX 400 Series
 - AMD Radeon Vega series

■ How to set FreeSync

1. On the OSD menu, set FreeSync as the default or Ultimate engine.
2. Set FreeSync in AMD Radeon Settings. Right-click → AMD Radeon Settings → Display
The AMD FreeSync function must be set to 'On'. If not, set to 'On'.



2-5-5. Core Lighting

You can turn the LED behind the screen on or off. System - You can select ON / OFF. .

- If you select ON, it appears to be in motion, and you can select a color from the color menu.



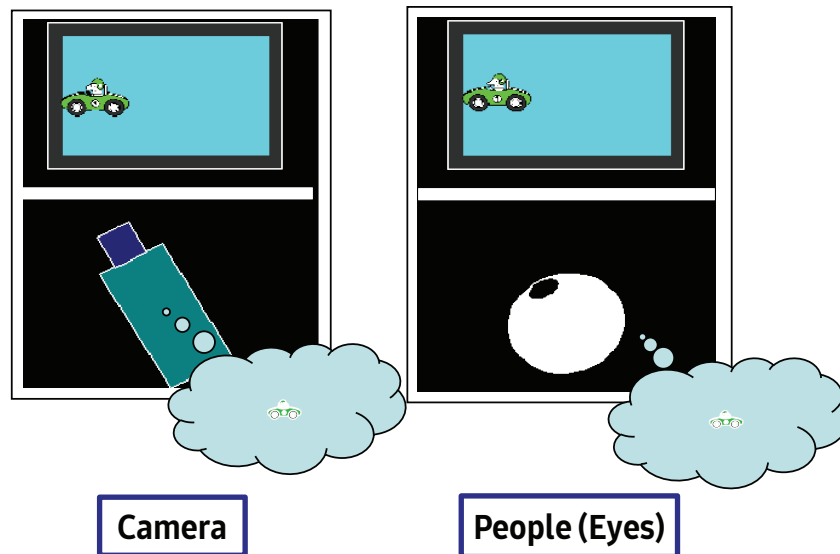
- On the Lighting menu, you can select Off, Front, Back, and Back.
- On the Light Effect menu, monochrome fixation, rainbow, blinking. Quick blinking, can be selected during breath.
- In the Color menu, a variety of color selections are available, as shown in the figure on the right.

2-5-6. MPRT

■ Basic principles of MPRT

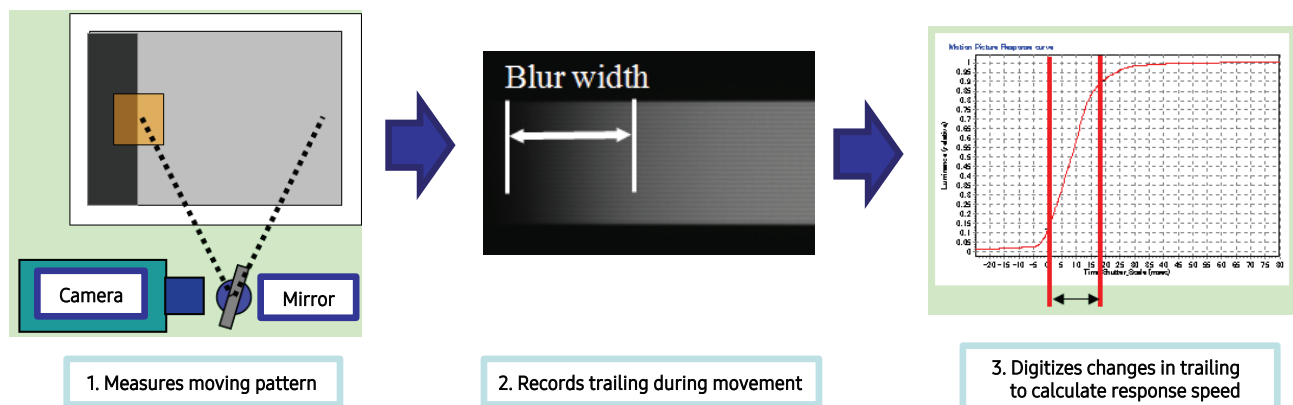
MPRT (motion picture response time) video response speed

- A video response measurement technique in which a camera mirror is moved at the same speed as a pattern moving at a set speed like a person's eyes following a video to measure the trailing level of the image moving on the camera to calculate response speed



How to measure MPRT

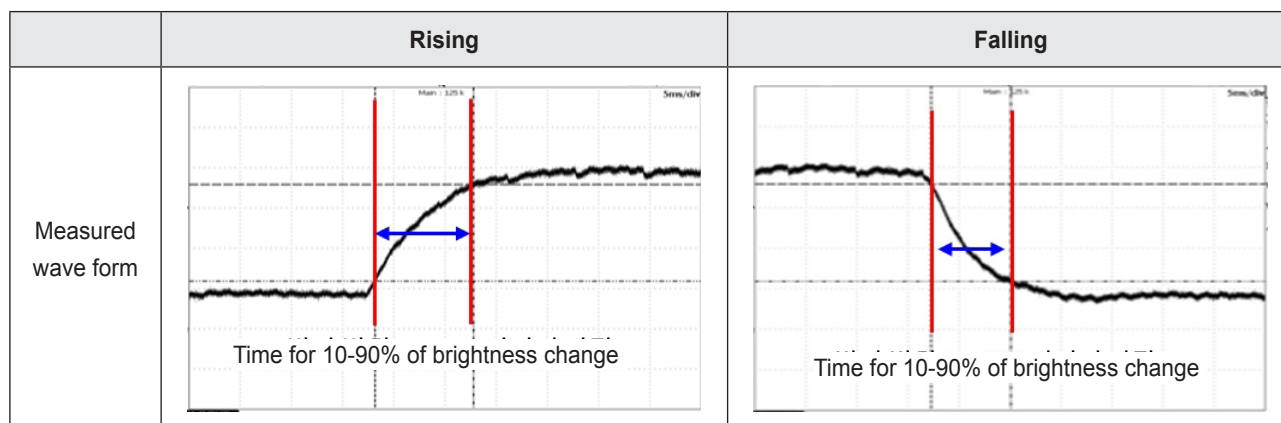
- Measures the trailing level of a pattern moving through the camera and mirror as a brightness change value to measure changes from 10-90% and time as response speed



■ Static image (G to G) response speed

What is gray to gray response speed?

- It is a technology that measures brightness changes from various tones of black to white via a camera to show screen brightness changes as signal wave forms to measure the response speed of panel liquid crystals as time for 10-90% of change.



■ MPRT vs G to G response speed

MPRT technology for the game monitor (impulsive scanning)

- This is a technology that analyzes the liquid crystal action timing of VA panels used in Samsung curved monitors in detail to improve sharpness and trailing during quickly-moving games and realizes impulsive scanning only in intervals without trailing for panel back light unit operation to provide users with a sharp picture without trailing.
 - TN panels, the most advantageous for LCD liquid crystal speed, can also trail during fast video, but during impulsive scanning, the back light for the trailing part of the liquid crystal is off so trailing is reduced and the picture is sharp.
- Response Time Spec

Response Time	Response rate	Brightness
Standard	4.x ms (G to G)	350cd/m ²
Faster	2.x ms (MPRT Mode)	250cd/m ²
Fastest	1.x ms (MPRT Mode)	200cd/m ²

■ software update

Updates software to an update file with a USB device.

■ information

You can view the input source mode, frequency and resolution, and current product versions that are currently in use.

■ Full initialization

Return all settings for the product to the settings at the time of purchase.

2-5-7. MGA Calibration

■ Samsung MGA Calibration

MGA Calibration

- This is a Samsung calibration technology which means that although there are differences in actual picture even with the same picture settings depending on the part distribution of monitor panels and mainboards, this settings distribution can be analyzed in advance. Calculated corrective values are reflected in picture values measured with an instrument during production so the picture is made uniform and stable.
- We plan to use MGA calibration in 7, 8, and 9 series monitors in 2016 (currently used for TV, LFD)

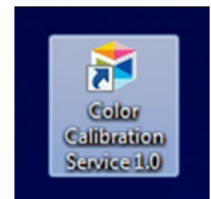
■ Samsung Color Calibration Service 1.0

Samsung Color Calibration Service 1.0

- Calibration Service Tool for Samsung Electronics service for image quality correction and calibration report reissue after product panel / main board replacement service according to MGA calibration application from 2016 monitor (7 series or more)
 - MGA Calibration SW is connected to the image quality meter (I1 display Pro) of Samsung Service Center to correct the image quality and reflect the result value in the set.

Service system

1. service PC
 - Samsung Color Calibration Service 1.0 설치
2. Connected Cable: Cable for PC and monitor communication.
(RS-232 to Phone jack, USB DONGLE IMK)
3. Image quality instrument: I1 Display Pro
4. Service target monitor
(16 years 7 series or more model, including rear service terminal)



RS-232 to Phone jack



USB DONGLE IMK

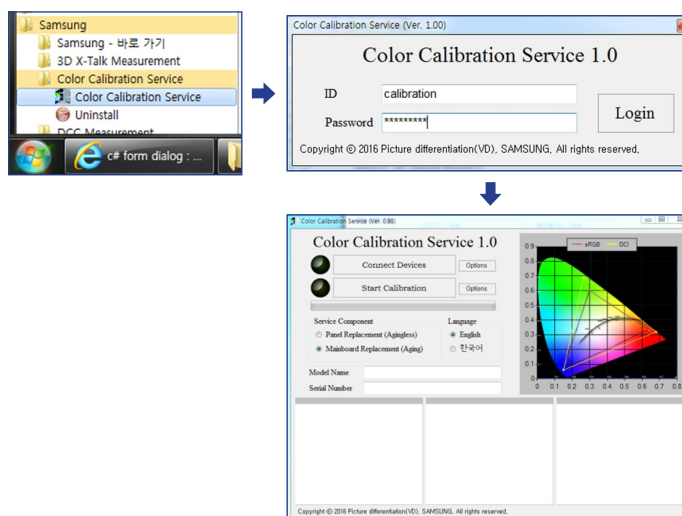


Calibration execution method

1. Open the Setup file, then run Color Calibration Service, then enter your ID and PW.

ID : **samsungsvc**

PW : **svc3366**



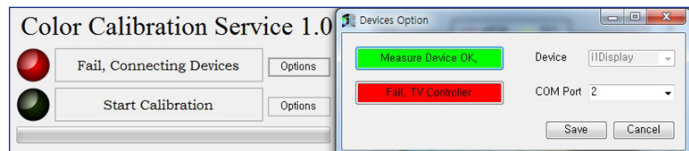
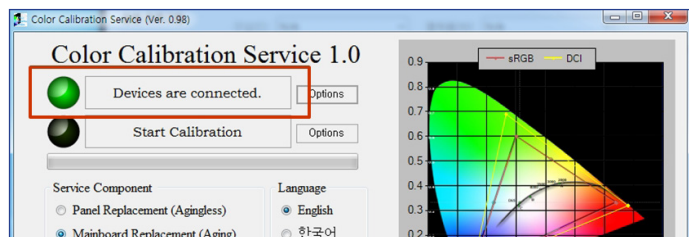
2. Connect the RS-232 port of the PC and the service jack of the product to the cable.
 - You must connect the USB high-speed charging terminal to the Service Jack. (No DP / HDMI signal connection)
3. Connect Samsung Electronics Service Image Quality Measurement (I1 Display Pro) to USB of PC.
 - In SW, the instrument connection information is automatically recognized.



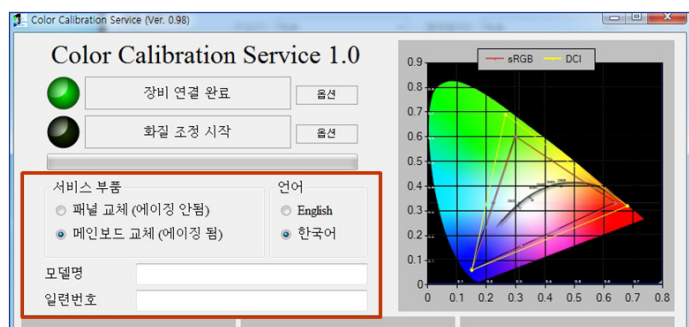
4. Attach the image quality meter to the center of the monitor screen.



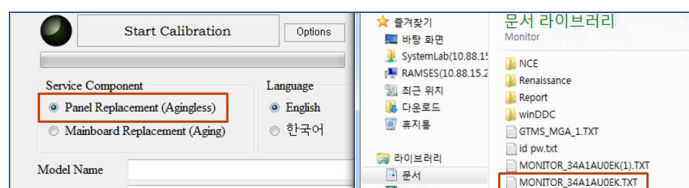
- Run Connect Device to connect the set with the PC.
The connection is completed when the green light is turned on and the connected message is displayed as shown below. (Within 10 seconds)
In case of connection failure, click the Options button to check which equipment is the problem and reconnect.



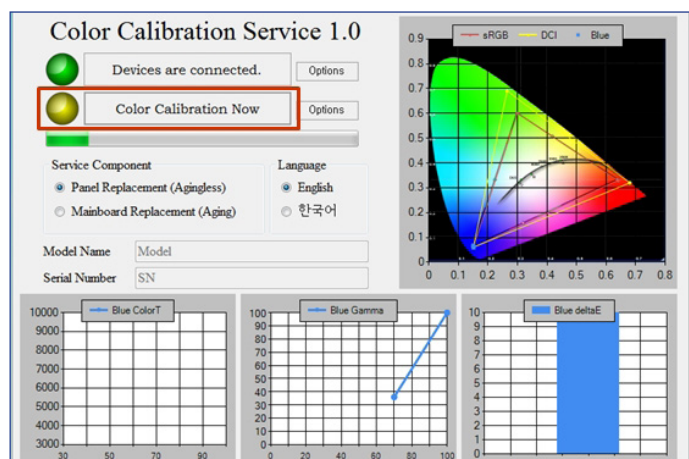
- Select the service option (panel replacement or main board replacement) and UI and report issuing language. Enter the monitor model name and SN.



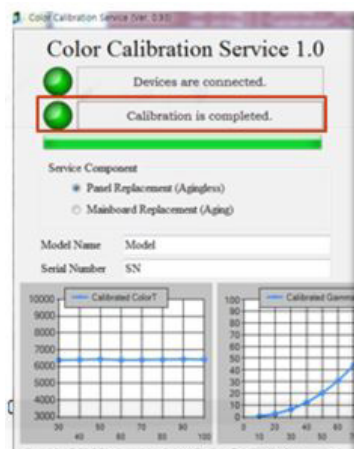
- If you select to replace the panel, select the file with the Calibration Setting value entered.



- When Start Calibration is executed, Calibration is executed. (2 ~ 3 minutes).



9. When all the adjustments are completed, complete by showing the “Calibration is Completed” message as below.
- When the “Fail” message occurs, check the connection status of the instrument or the status of the set.



10. After calibration adjustment is completed, Calibration Report is provided in the OSD menu of set.
- Menu > Picture > Calibration Report.

INPUT LAG

DEFINITION AND MEASUREMENT METHOD OF INPUT LAG

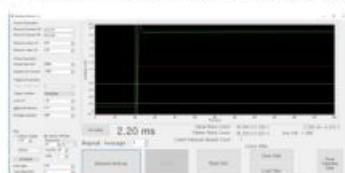
- INPUT LAG DEFINITION : Input delay occurs between the input signal and output from the device.
- INPUT LAG MEASURING METHOD :



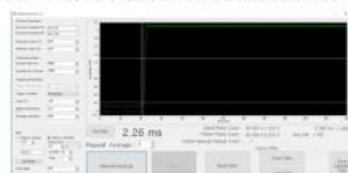
1. The G75T monitor is set to 240 Hz.
2. With the signal generator, enter the TEST SIGNAL where the white BOX blinks as shown in the figure next to it.
3. On the screen of the monitor, INPUT LAG is measured by measuring the time difference between input blinking and output blinking with the optical sensor.



G75T 27" INPUT LAG Measurement result : 2.2ms



G75T 32" INPUT LAG Measurement result : 2.26ms



3. Disassembly and Reassemble



Warning

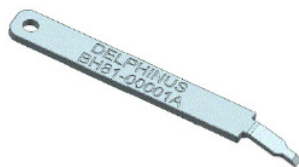
- As this monitor has parts that are sensitive to static electricity, be careful when handling them.



Caution

- Disconnect the product from the power source before disassembly.
- Follow these directions carefully; never use metal instruments to pry apart the cabinet.
- When disassembling the product, do not use any metal tools except for the provided jig.

- For information about purchasing arts and jigs for EU region, please visit <http://www.samsung.com/support>
Samsung ASC can purchase listed Jigs on GSPN.

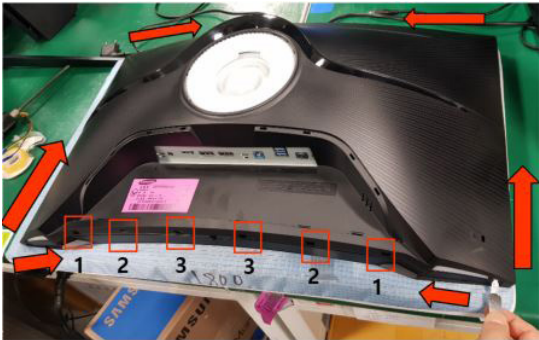


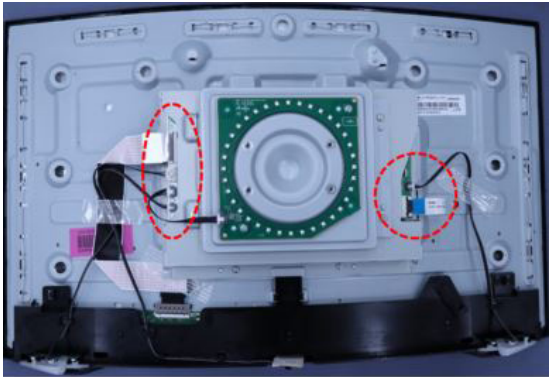
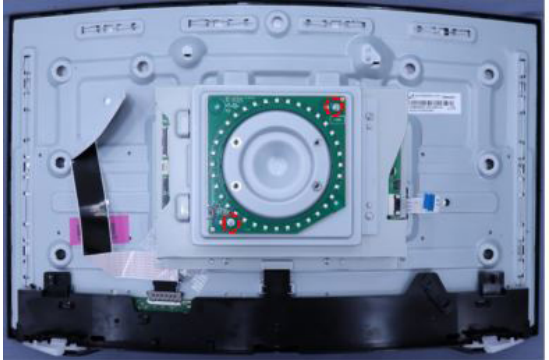
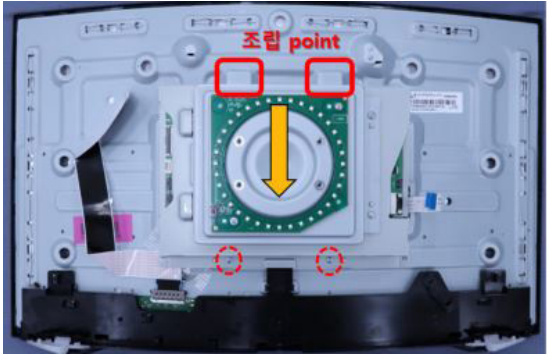
BH81-00001A

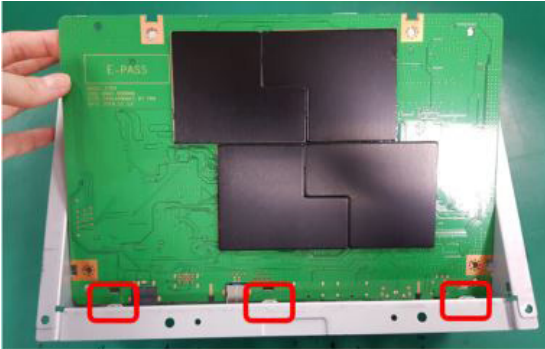
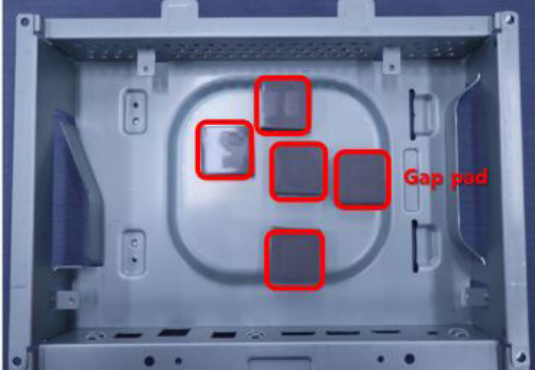
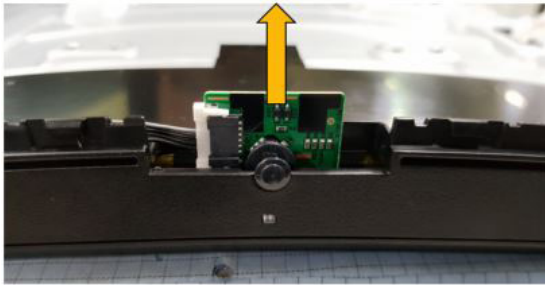
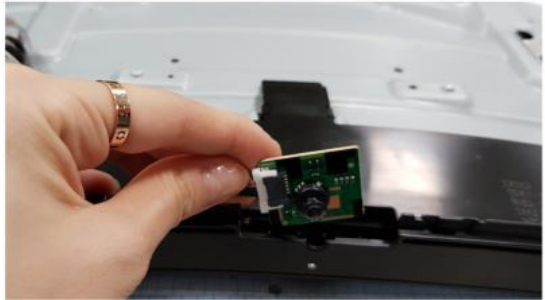
3-1. Disassembly

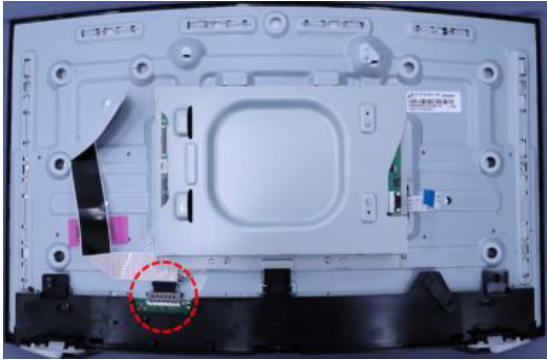
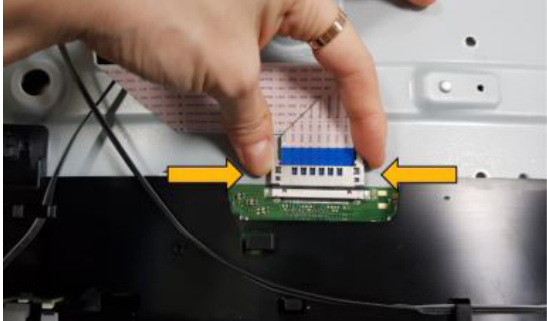
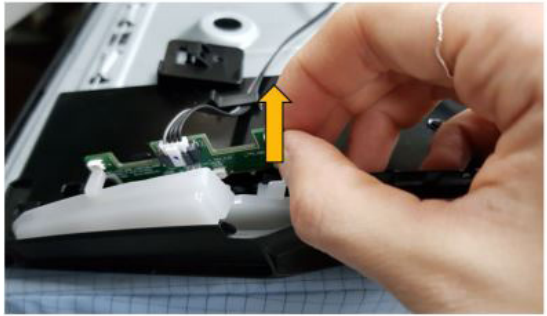
Description	Picture Description	Screws
1 [ARENA LENS DISASSEMBLY] Hold the ARENA LENS with two hands and turn it counterclockwise.		
2 Lift it slightly, pull it from side to side, and disassemble it.		

Description	Picture Description	Screws
3 [Stand DISASSEMBLY] Release four SCREW points, Disassemble the stand and the torso. At this time, SCREW is not decomposed and is fixed to Standby with release. ※ Zig available for Cover Rear disassembly: Delphinus (BH81-00001A)		 6001-003016
4 Unlock one SCREW. , Decompose the stand torso and Neck.		
5 Lift it slightly up, disconnect the stand.		
6 Stand decomposition complete.		

Description	Picture Description	Screws
7 [Cover Rear DISASSEMBLY] Put the JIG into the SET left / right bottom decomposition groove (red circle notation position) and lift it until you hear the decomposition sound to disassemble some of the snaps. 8 Lift JIG to secure space.	lower left section  lower right section 	 BH81-00001A (Delphinus Jig)
9 [COVER-REAR DISASSEMBLY] Use a jig to lift the locking point on the side. 10 Lift it in the direction of the arrow, and completely disassemble the COVER REAR.	 	 BH81-00001A (Delphinus Jig)

Description	Picture Description	Screws
11 [Main PCB DISASSEMBLY] Disassemble the 6 CABLE plugs on the MAIN PCB.		 6001-003016
12 You can unscrew two screws to disassemble the LED PCB.		
13 Disassemble the two screws to disconnect the MAIN Bracket, and then lift the assembly point of the MAIN Bracket in the direction of the arrow.		
14 Turn the separated MAIN Bracket over. , Disassemble the three screws.		

Description	Picture Description	Screws
15 After lifting the top portion of the board, disassemble the terminal part attached to the bottom. 16 Check the attachment status of the GaP pad during decomposition. decomposition complete. ※ GAP PAD imprints must be carefully assembled when reassembling. Heat generation may occur during misassembly.	 	
17 [JOG PCB DISASSEMBLY] Disassemble FUNCTION by lifting it in the direction of the arrow.	 	

Description	Picture Description	Screws
18 [COVER REAR BOTTOM DISASSEMBLY] Disassemble one CABLE plugged into the source PCB. 19 Disassemble the cable while pressing the corresponding arrow portion.	 	
20 [BOTTOM LED PCB DISASSEMBLY] Disassemble the bottom LED PCB in the direction of the arrow. (Monitor left / right)	 	

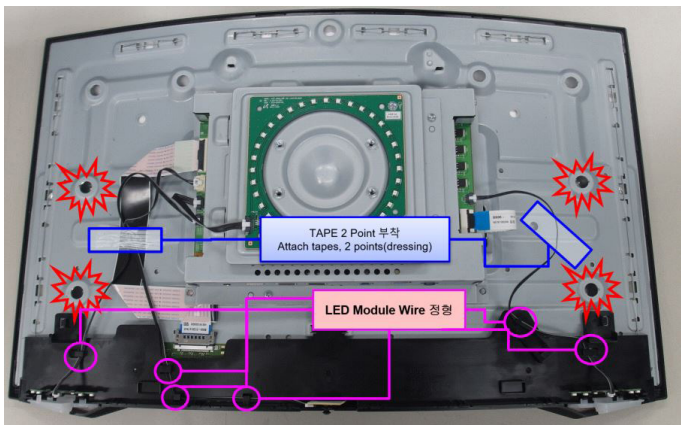
Description	Picture Description	Screws
21 [BOTTOM CASE DISASSEMBLY] Lift the BOTTOM CASE from both ends and disassemble it.		
22 decomposition complete		



Note

- Reassembly procedures are in the reverse order of disassembly procedures.
- The exterior may differ depending on the product.

Focus Management Items for Work



- Hang the wire on the specified Guide Rib for 6 points.
- Attach TAPE to Wire at 2 points.

4. Troubleshooting

4-1. Previous check

1. Set custom mode as follows before beginning a repair.

Persuasive	H-frequency	HDMI : 30 ~ 214 kHz
		Display Port : 30 ~ 214 kHz
	V-frequency	HDMI : 50 ~ 144 Hz
		Display Port : 50 ~ 240 Hz
Resolution	Optimal Resolution	HDMI : 2560 x 1440 @ 144 Hz
		Display Port : 2560 x 1440 @ 144 Hz
	Maximum resolution	HDMI : 2560 x 1440 @ 144 Hz
		Display Port : 2560 x 1440 @ 144 Hz

2. If the screen is blank, check whether the power cord is connected correctly.
3. Circuit that needs to be checked
 - When nothing is displayed on screen: Function PBA, Main PBA
 - When Function light turns on but LED Backlight doesn't come on: LED Driver
 - When Backlight turns on but W/R/G/B Test Pattern is displayed: LVDS Cable
4. Press the MENU button and change the brightness and contrast to 0, then press the "JOG button (Enter)" for more than 5 seconds. Monitor will be automatically reset to factory mode.

4-2. How to check fault symptom

4-2-1. When the Power Does Not Turn On

Symptom	The LED on the front panel of the monitor does not work when the power is connected and the Power button is pressed.
Major checkpoints	- Check power fuse of IC202, and output voltage. - Check connection between CN201 and Main board. - Check the Main board Power.
Diagnostics	<pre> graph TD A[Check the connection status of the single cable.] -- Yes --> B[Is DC 22V measured at Pin 2 of IC202?] B -- No --> C[Check the circuits related to CN201 and IC202.] B -- Yes --> D[When DC 22V is measured at Pin2, are DC 5V measured at TP_5V?] D -- No --> E[Check the circuits around to IC202.] D -- Yes --> F[Is appropriate power supplied to each power ICs of the board?] F -- No --> G[Check the circuits around IC201, IC301, IC302, Q302, Q301.] F -- Yes --> H[Check the panel and replace the main board.] </pre>
Caution	Make sure to disconnect the power before working on the Main board.

■ Location of Parts

Main Board

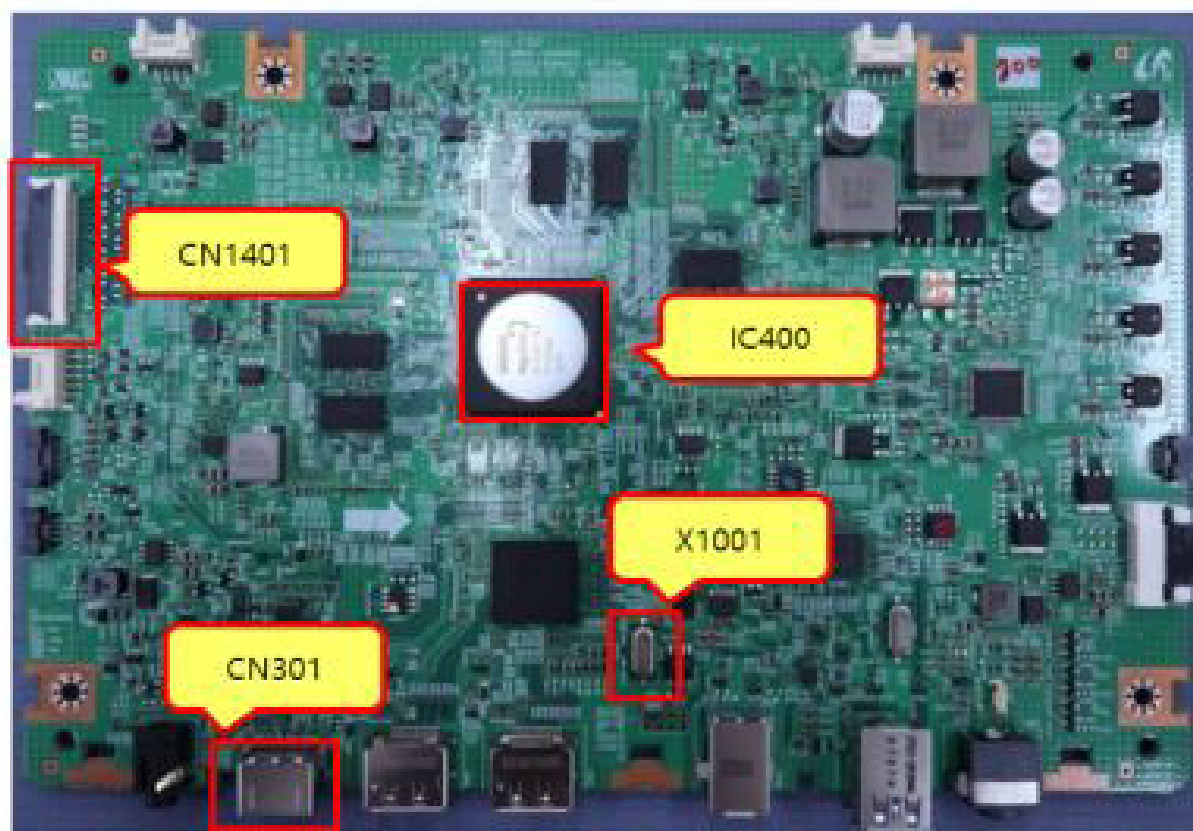


4-2-2. When a blank screen is displayed (HDMI1)

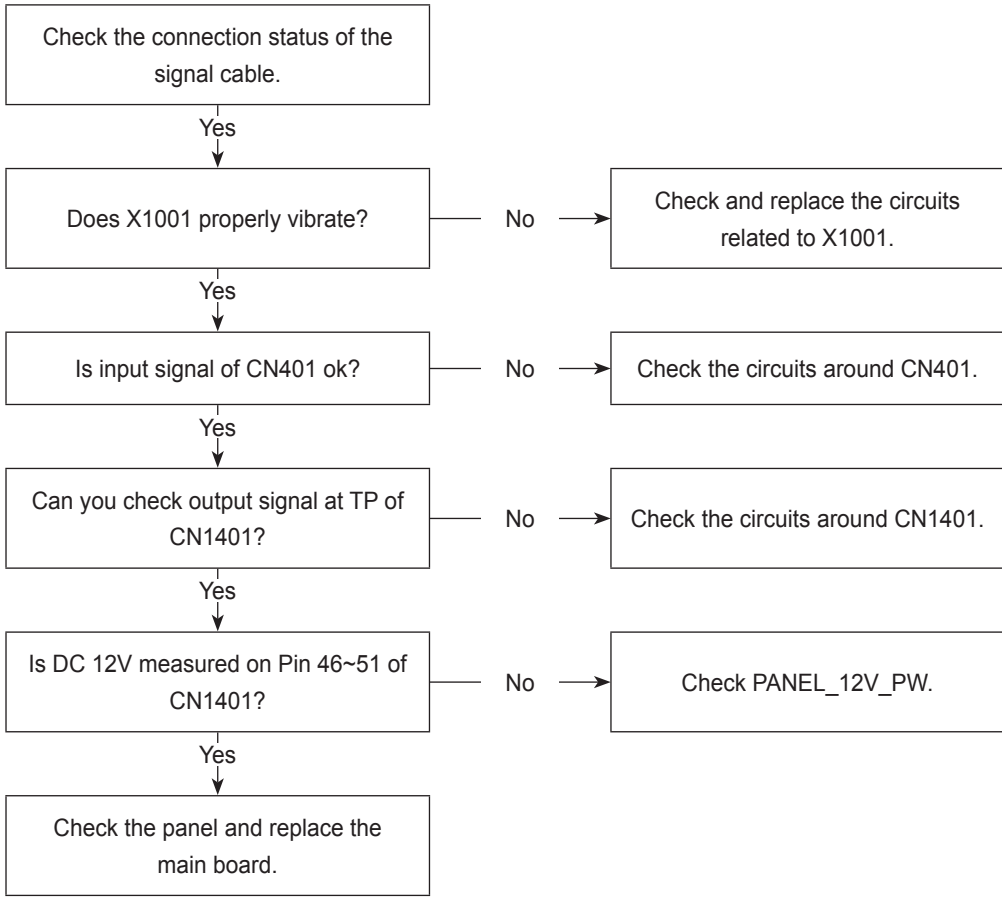
Symptom	Even though the LED power turns on, the screen is blank when connecting the HDMI cable
Major checkpoints	- Check the HDMI cable connections. - Check if the eDP cable is properly connected to the panel. - Check if the ramp connector in the panel is properly connected to the main board.
Diagnostics	<pre> graph TD A[Check the connection status of the signal cable.] -- Yes --> B[Does X1001 properly vibrate?] B -- No --> C[Check and replace the circuits related to X1001.] B -- Yes --> D[Is Pin 18 of CN301 generate correct voltage?] D -- No --> E[Check CN301's connection cable..] D -- Yes --> F[Check output signal of R418_H1 ~ R425_H1?] F -- No --> G[Check the circuits around IC400.] F -- Yes --> H[Is DC 12V measured at Pin 46 ~ 51 of CN1401?] H -- No --> I[Check PANEL_12V_PW.] H -- Yes --> J[Check the panel and replace the main board.] </pre>
Caution	Make sure to disconnect the power before working on the Main board.

■ Location of Parts

Main Board



4-2-3. When a blank screen is displayed (DisplayPort 1)

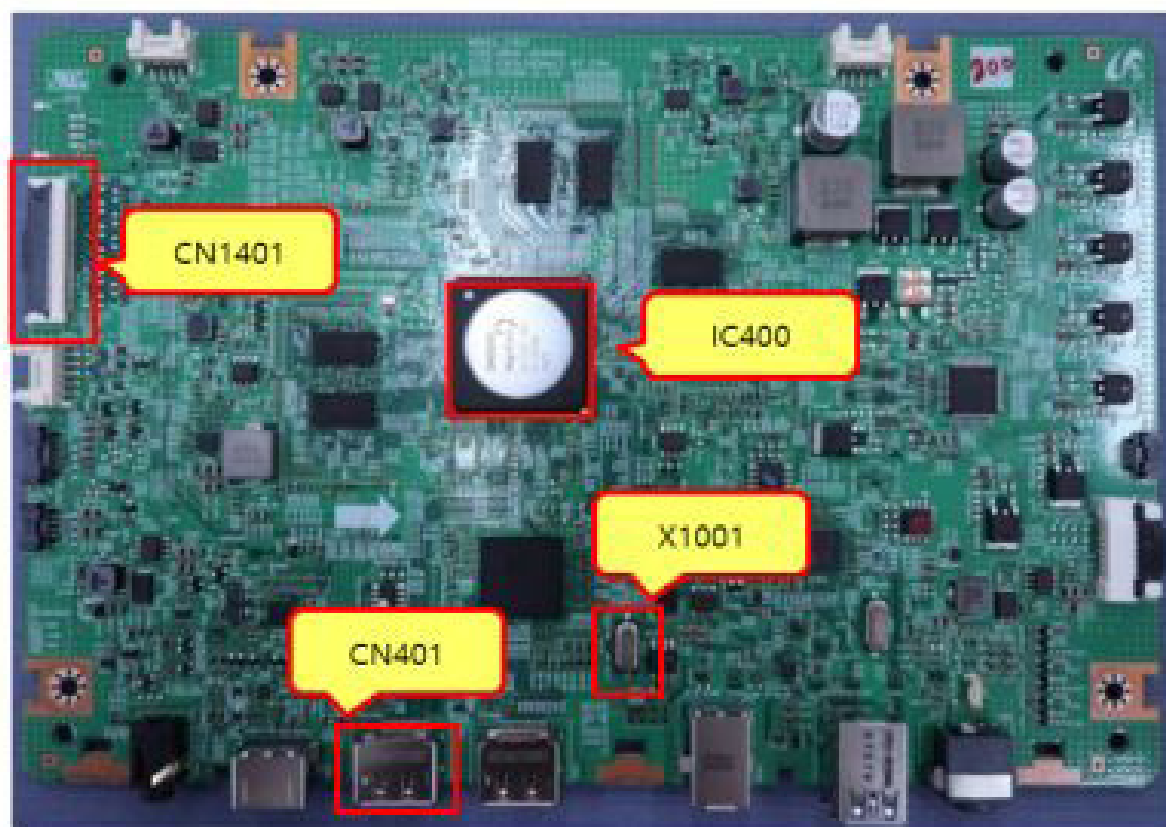
Symptom	Even though the LED power turns on, the screen is blank when connecting the DP cable
Major checkpoints	- Check the DisplayPort cable connections. - Check whether the LVDS cable is connected correctly to the panel. - Check whether the lamp connector of the panel is connected correctly to the Main board.
Diagnostics	 <pre> graph TD A[Check the connection status of the signal cable.] -- Yes --> B[Does X1001 properly vibrate?] B -- No --> C[Check and replace the circuits related to X1001.] B -- Yes --> D[Is input signal of CN401 ok?] D -- No --> E[Check the circuits around CN401.] D -- Yes --> F[Can you check output signal at TP of CN1401?] F -- No --> G[Check the circuits around CN1401.] F -- Yes --> H[Is DC 12V measured on Pin 46~51 of CN1401?] H -- No --> I[Check PANEL_12V_PW.] H -- Yes --> J[Check the panel and replace the main board.] </pre>
Caution	Make sure to disconnect the power before working on the Main board.

• Graphics Card List

No.	Manufacturer	Product Name
1	AMD	HD7970/R9 290X/R7 260X
2	nVIDIA	GTX780/GTX680/GTX960
3	Intel	HD4600/HD4000
4	APPLE	MacPro D300/D700

■ Location of Parts

Main Board

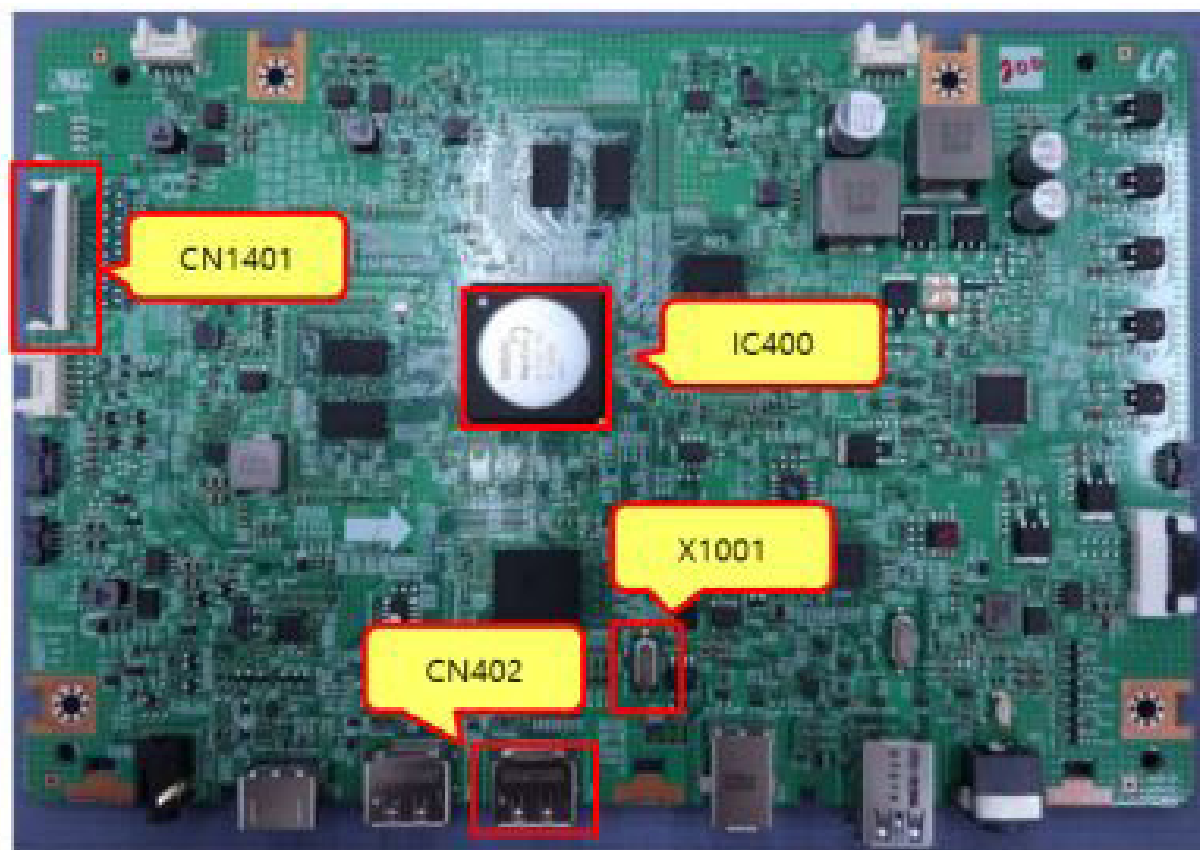


4-2-4. When a blank screen is displayed (DisplayPort 2)

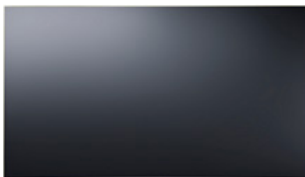
Symptom	Even though the LED power turns on, the screen is blank when connecting the DP cable
Major checkpoints	- Check the DisplayPort cable connections. - Check whether the LVDS cable is connected correctly to the panel. - Check whether the lamp connector of the panel is connected correctly to the Main board.
Diagnostics	<pre> graph TD A[Check the connection status of the signal cable.] -- Yes --> B[Does X1001 properly vibrate?] B -- No --> C[Check and replace the circuits related to X1001.] B -- Yes --> D[Is input signal of CN401 ok?] D -- No --> E[Check the circuits around CN402.] D -- Yes --> F[Can you check output signal at TP of CN1401?] F -- No --> G[Check the circuits around CN1401.] F -- Yes --> H[Is DC 12V measured on Pin 46~51 of CN1401?] H -- No --> I[Check PANEL_12V_PW.] H -- Yes --> J[Check the panel and replace the main board.] </pre>
Caution	Make sure to disconnect the power before working on the Main board.

■ Location of Parts

Main Board



4-3. Error Examples and Actions

Error Appearance	Symptoms and Actions		Remarks
	Symptom	When monitor's power is on, nothing is displayed on the screen regardless of the signal.	Refer to training manual for DDC input method
	Cause	External adapter's power is not connected, or contact failure of internal function cable.	
	Action	Connect external adapter's power, and re-connect or replace the internal function cable.	
	Symptom	When monitor is turned on, the display is black regardless of the signal.	Full Black Pattern is typical symptom when there is no video supply.
	Cause	This error occurs due to connection failure of LVDS cable which only supplies lamp power to the panel and not the video signal.	
	Action	Re-connect or replace the LVDS cable so that video signal can be supplied to the panel.	
	Symptom	Screen noise occurs when a DVD is connected.	Refer to training manual for input method.
	Cause	No HDCP Key input.	
	Action	Input HDCP Key	

4-4. Adjustment

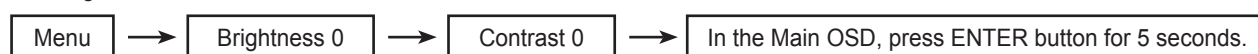
4-4-1. Changing the Service Menu Settings

■ Precautions when configuring the service menu settings

1. Check that the equipment used for configuring the settings is working normally.
2. Ensure you have ample space to disassemble the set.
3. Prepare a cushioned surface on which to put the set to be disassembled.

■ Entering the Service Mode

Entering the mode :



Exiting the mode :

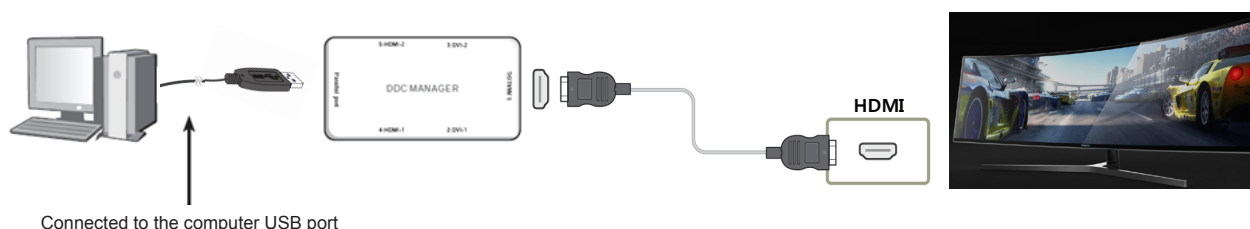


■ Mandatory checklist after replacing the MAIN PBA

1. Check the color adjustment status of the PC.
 2. Input DDC (including all HDMI).
 3. Check if proper MCU code for the model has been entered.
 4. Enter Service mode to select reset and turn off the monitor
- * Be aware that when resetting in service mode, all data is reset. The user's saved game settings 1/2/3 are deleted. (In general OSD modes, users' saved game settings 1/2/3 are not deleted.)
 → Service mode reset: Set OSD menu brightness to 0, then hold the enter key for 5 sec.

■ DDC EDIT Data Input

1. Use when updating the AD board code.
2. Download the WinDDC program, DDC Input program, and Hex and DDC files appropriate to the model through the Quality Control department of Samsung Electronics. Install the jig and input the data, as shown in the figure.



- Using DDC Manager (must be connected to the Power adaptor) PC connected to the Mainboard
 - Firmware Update : HDMI Port Connection
 - EDID Update : HDMI(for HDMI EDID)
- Use WINDDCU program

4-4-2. Service Function

■ Checking the Code Version

1. Input SVC mode and check the MCU code version and checksum.
2. Enter SVC mode.
 - Set the Brightness and Contrast ratio to '0'.
 - Press and hold the Enter button for 5 seconds.
 - SVC Function OSD is displayed.
 - Turn off the power to end SVC function.
3. Safe Mode
 - When the input signal is higher than the supported frequency of the product, safe mode gives users some time (one minute) to change the video card settings to the Recommended Mode settings.

Service Function		
Monitor	On Time : X Hr	
Panel	Ch. No. : 0	← Panel information
	On Time : X Hr	
	Cycle : X	
Pixelshift	: Off	← Select the PixelShift option.
Country	: English	← Country
HotPlug Time	: 0	
Power Off		
Scaler-MCU	: MSTAR MST9804	← Counting equipment dealers
Version	: M-F7724CCAA-XXXX.X	← Micom version
Checksum	: 13AF	← Micom checksum

■ When replacing the panel

1. After replacing the panel, move to the Panel item and hold down the LEFT button for five (5) seconds.
2. The Ch. No is incremented by 1 and then both the On Time and Cycle are set to 0.

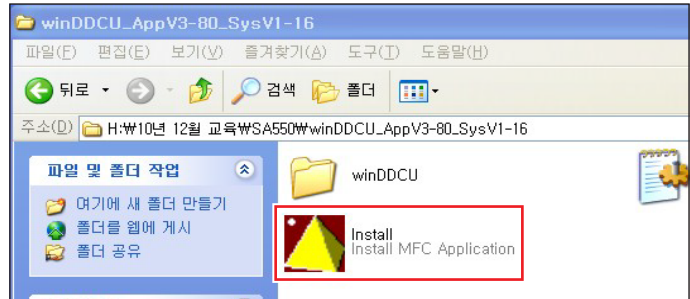
Service Function		
Monitor	On Time	: X Hr
Panel	Ch. No.	: 0
	On Time	: X Hr
	Cycle	: X
Pixelshift		: Off
Country		: English
HotPlug Time		: 0
Power Off		:
		:
Scaler-MCU		: MSTAR MST9804
Version		: M-F7724CCAA-XXXX.X
Checksum		: 13AF

← This number is incremented by 1.

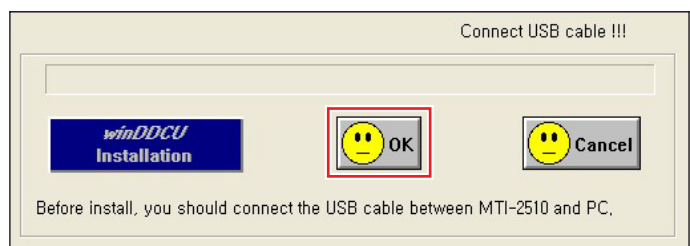
4-4-3. Entering WIN DDC Data

■ Installing WIN DDC and Checking/Changing the Version

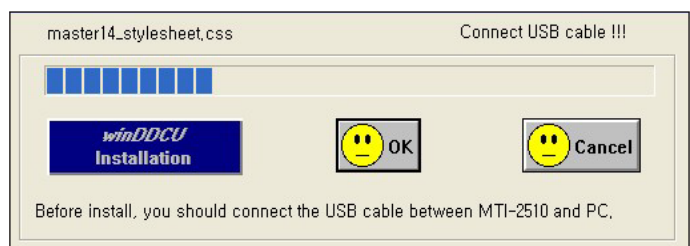
1. Download the "WINDDCU" file.
2. Click the "INSTALL" file.



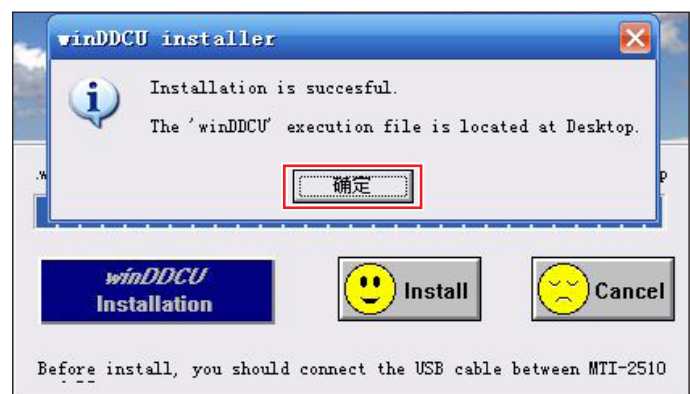
3. Click "OK".



4. The installation file is executed.



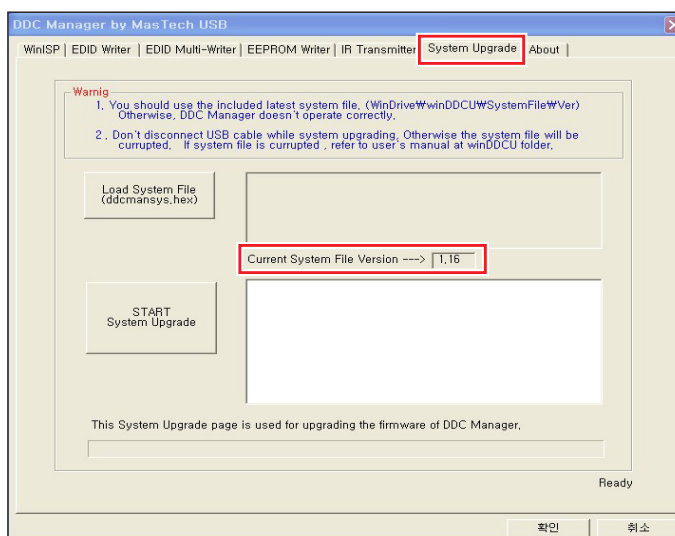
5. Click "OK" to finish the installation process.



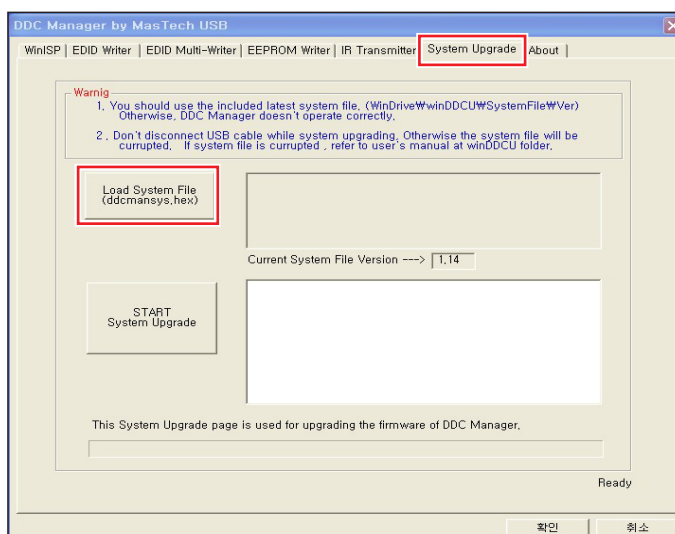
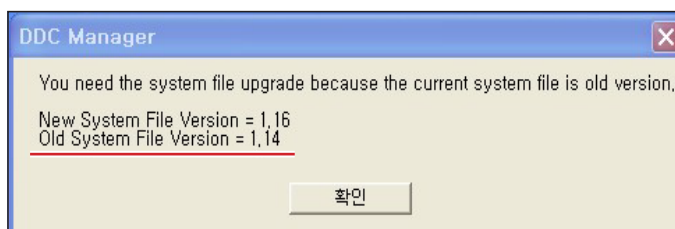
6. Connect MTI-2510 to the monitor using a USB cable.
Next, click the "winDDCU" icon to start the program.



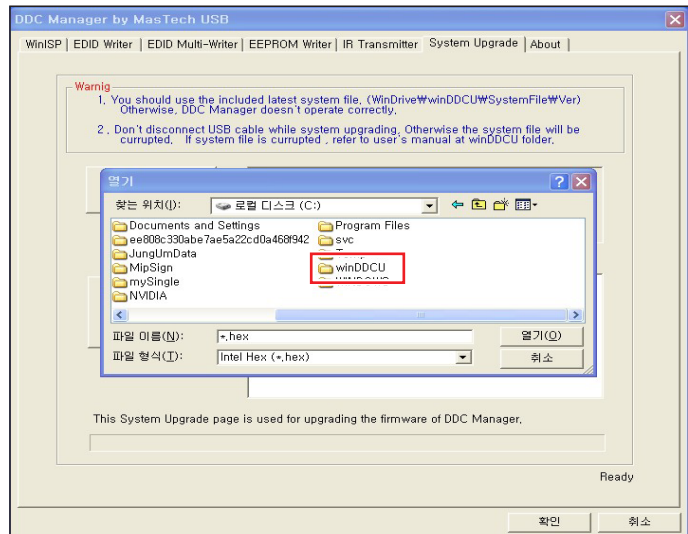
7. Click the "System Upgrade" tab and check that the "Current System File Version" is the most recent.



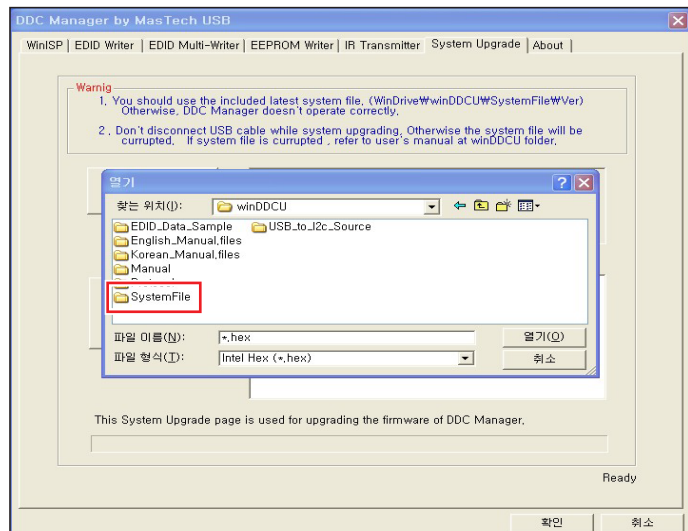
8. If winDDCU is an Old Version, go to the System Upgrade tab and click "Load System File".



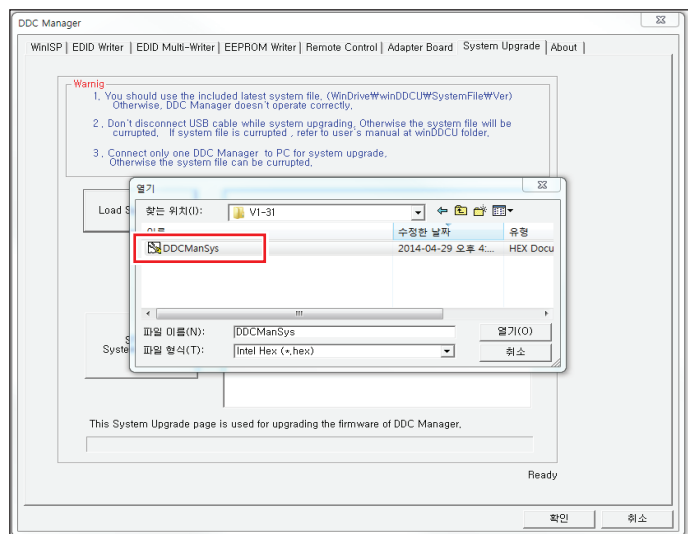
9. In the Open window displayed, select the C:\winDDCU folder.



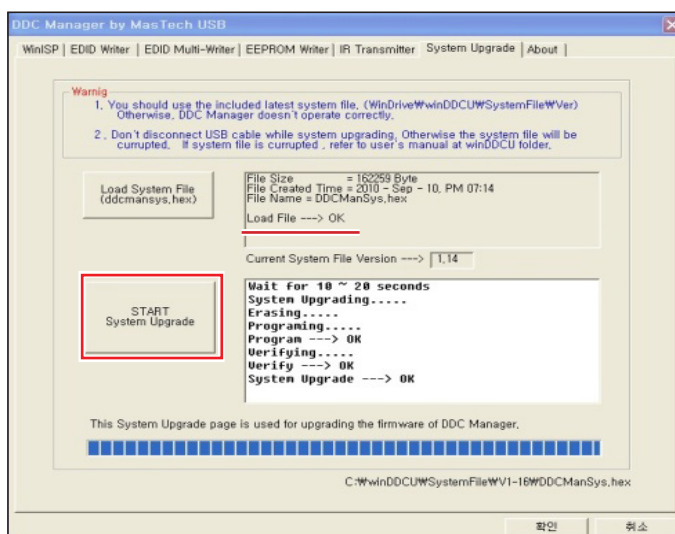
10. Select the "C:\winDDCU\SystemFile" folder.



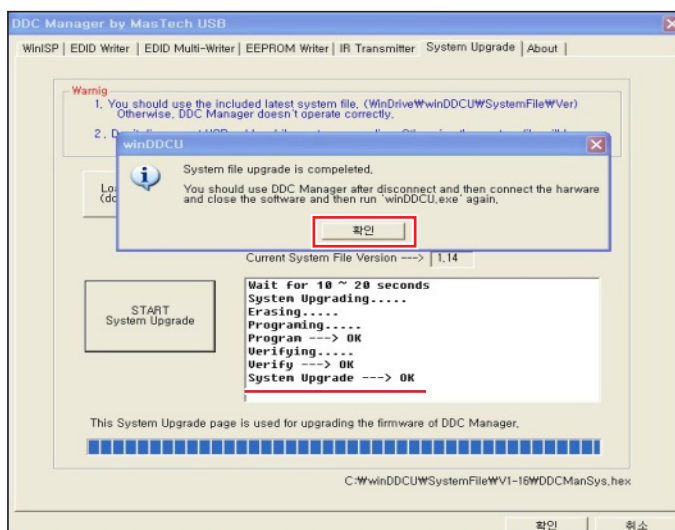
11. Open the "C:\winDDCU\SystemFile\V1-31" folder and select the DDCManSys.hex file.



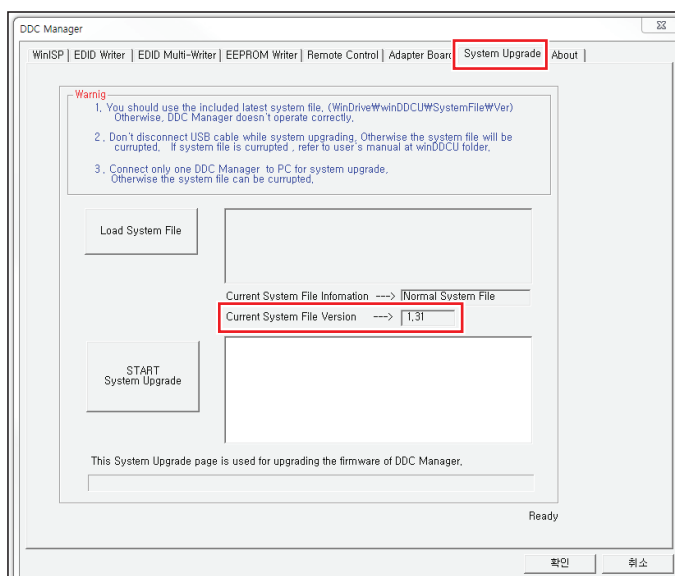
12. When "Load File → OK" is displayed, click START System Upgrade.



13. When "System Upgrade → OK" and "System File Upgrade is completed" are displayed, click OK.



14. After a system upgrade, ensure you close winDDCU and then run it again.

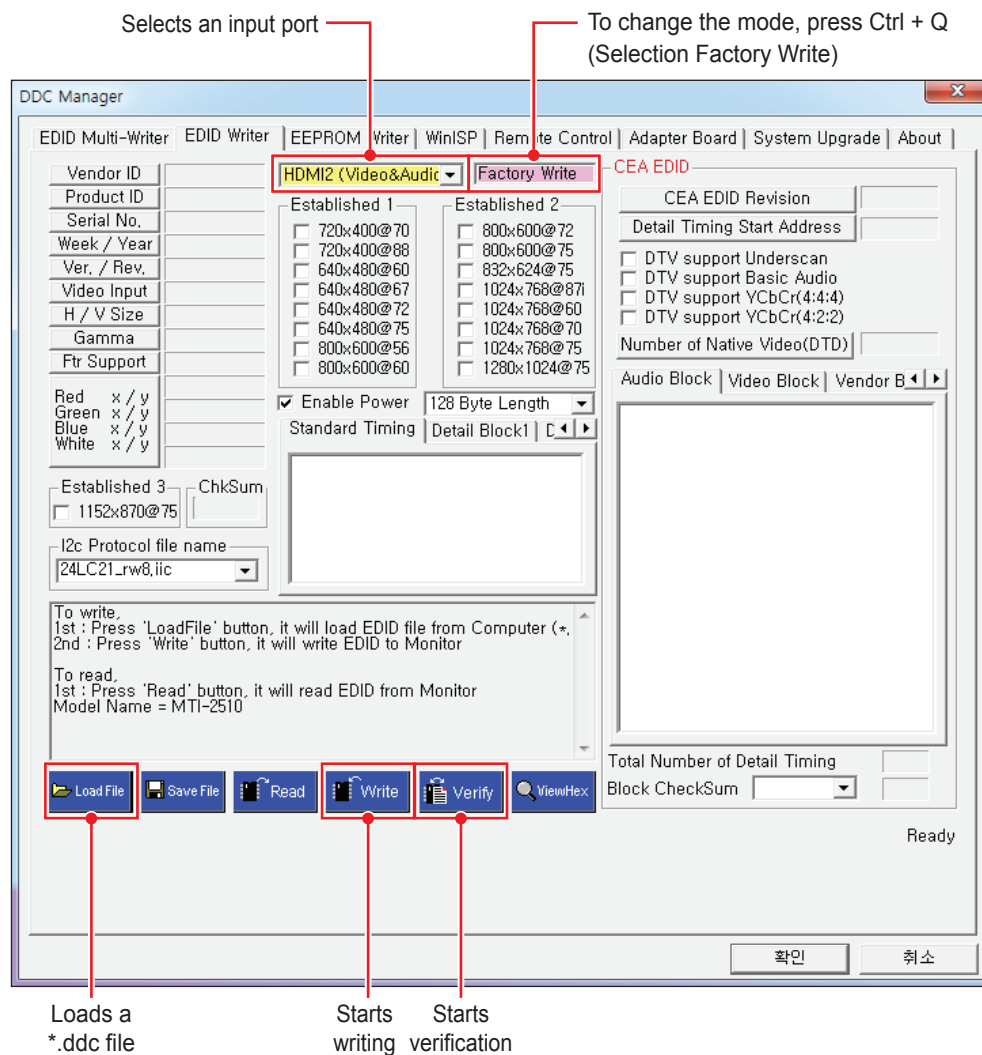


■ Entering DDC Data

winDDCU Pop-up Menus

Pop-up Menus	Instructions
EDID Writer	This option writes and verifies an EDID data (*.ddc) file on the monitor via a PC. It is mainly used to enter a single EDID data (*.ddc) file.
EDID Multi-Writer	This option is used to enter details of multiple (up to 6) EDID data (*.ddc) files at the same time.
WinISP	This option is used to perform a MICOM upgrade.
EEPROM Writer	This option is used to perform an EEPROM upgrade.
IR Transmitter	This option creates all the IR data on the PC and transmits the data to the monitor using the device MTI-2510.
System Upgrade	This option is used to upgrade or downgrade the system version using a System Hex file.

EDID Writer Menus



EDID Writer Modes

- Factory Write mode : Writes and verifies EDID data (this mode is most-frequently used)
- Quality Read mode : Performs reading data only
- Manager Edit mode : Performs all the functions of writing, reading and modifying data
- Barcode Write mode : Reads a serial number in barcode and directly performs writing

EDID Write method

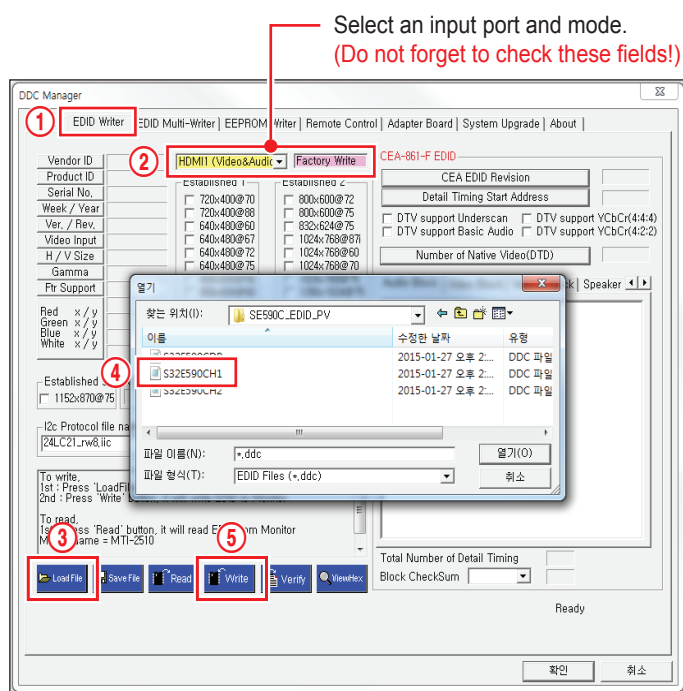
1. Click "Load File" to select input ddc file.

- EDID

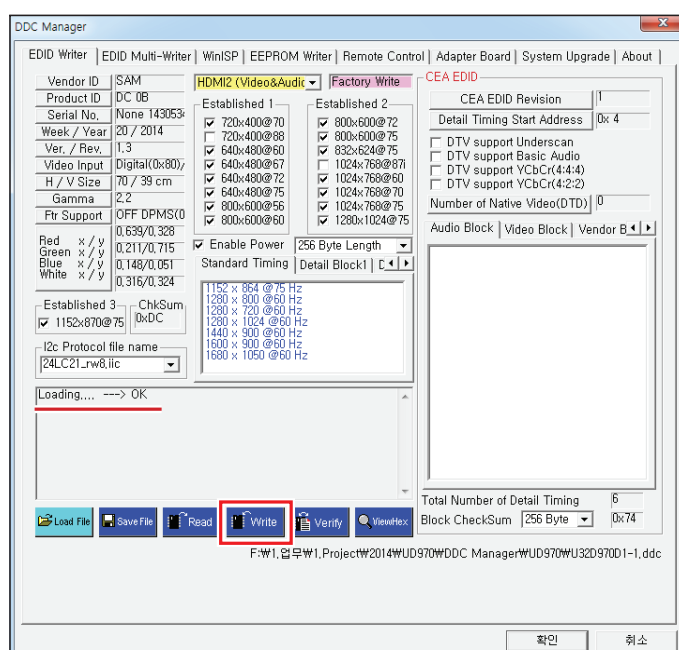
HDMI 1 : C49HG90H1.ddc

HDMI 2 : C49HG90H2.ddc

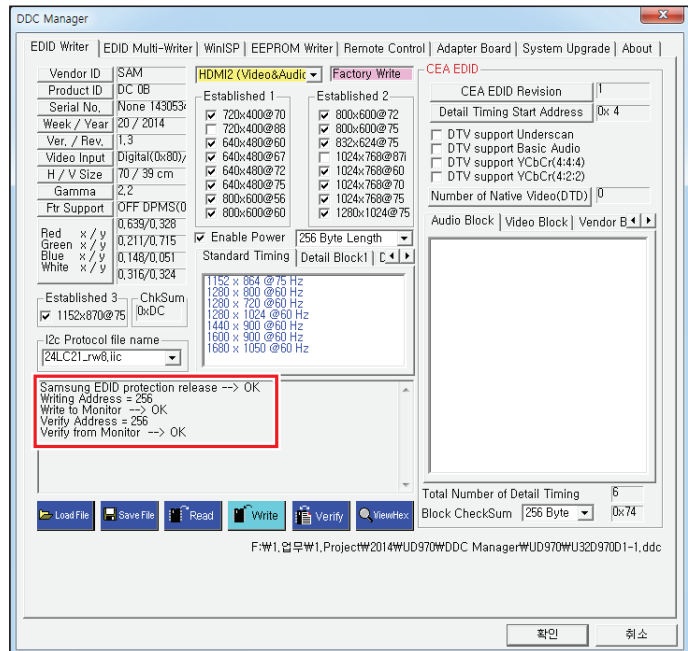
DisplayPort : C49HG90D.ddc (No extra input required)



2. Check that "Loading → OK" is displayed, and click "Writer".

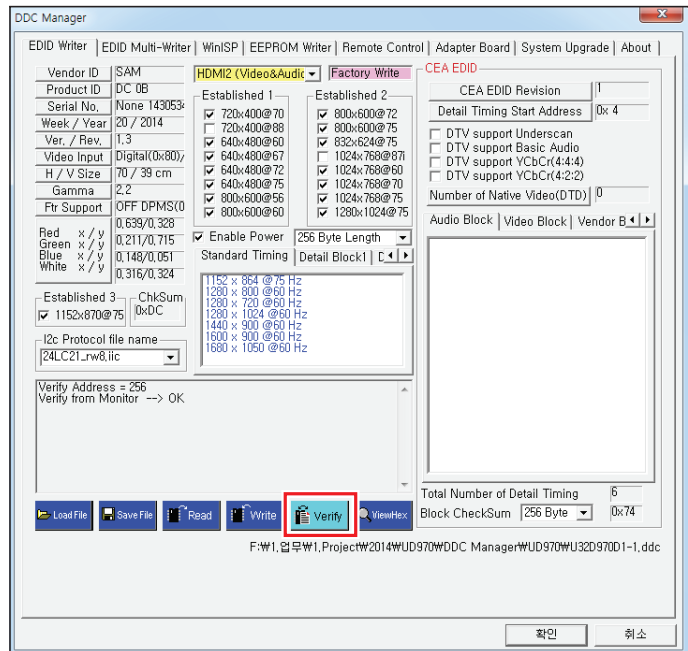


3. Write complete (which is virtually complete state)



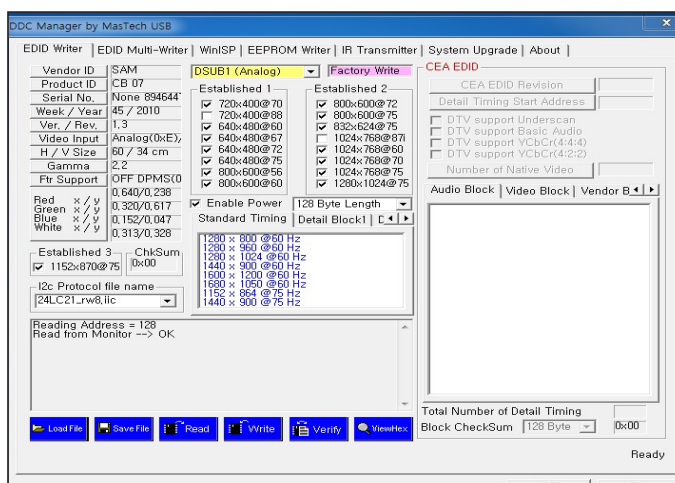
4. "Verify" Run completed.

By implementing the "Verify" You do not need to run the Write bother. (Validation procedure)

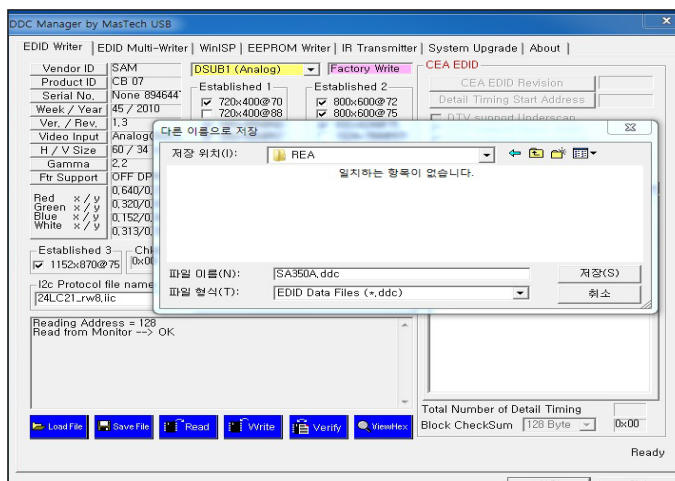


DDC Data Backup

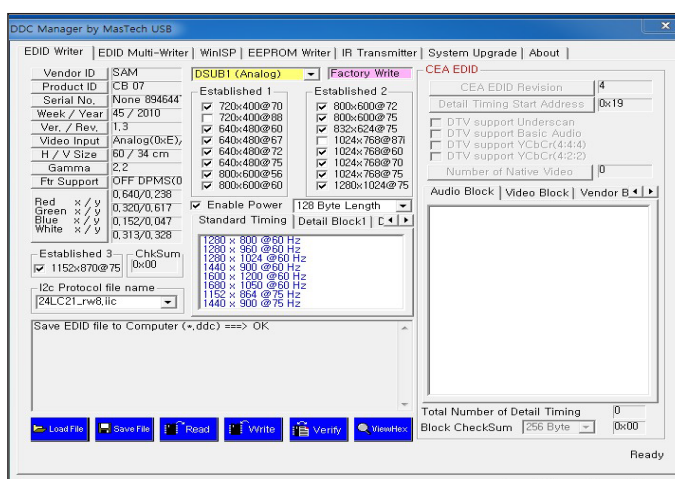
1. Select "Read" in the EDID Writer tab.



2. Enter the file name to save the backup data in.



3. The DDC data backup is complete.



Case which requires DDC Backup

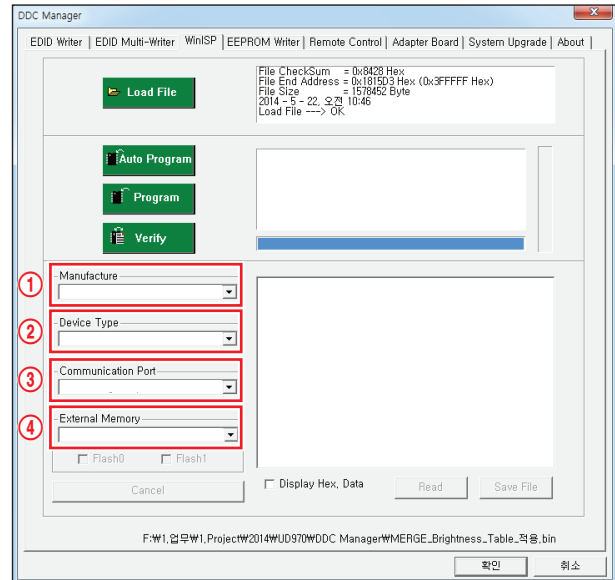
- When large number of same models are in use, check if DDC file is faulty

■ MICOM input method

WinISP Menus

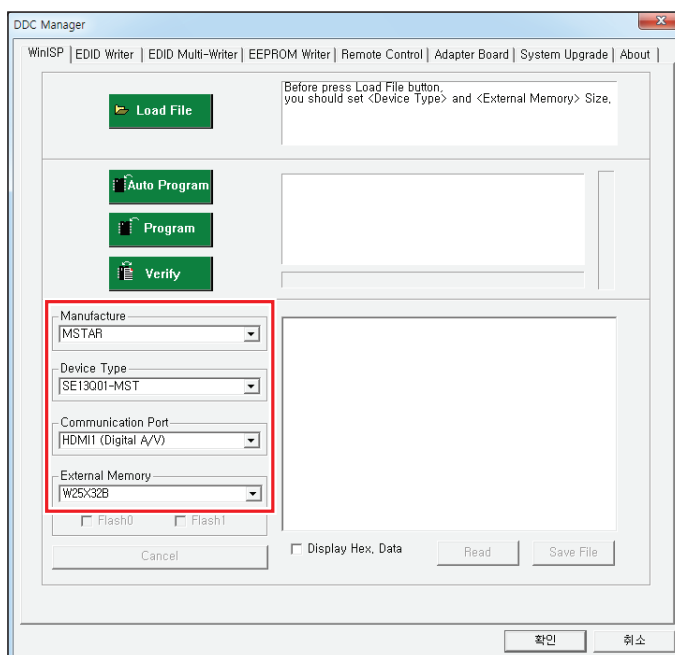
Category	Item	Setting
①	Manufacture	MSTAR
②	Device Type	SE15G01- MST
③	Communication Port	DDC manager input port
④	External Memory	W25X32B

1. Choose from MICOM manufacturer "Manufacture".
 2. Select the "Device Type".
 3. Choose your input Port.
 4. Select the amount of memory in the "External Memory".
- System will use the 1.31 version and above.

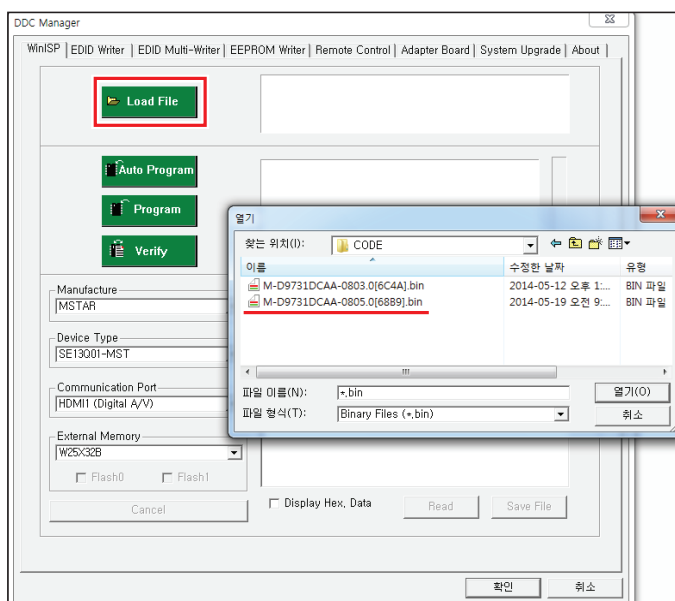


WinISP Input Method

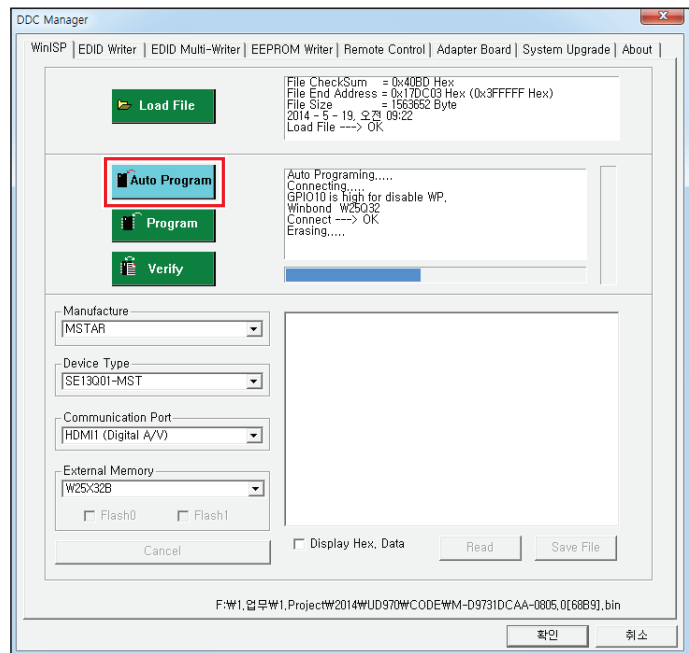
1. Double-check the item settings marked in the following picture.



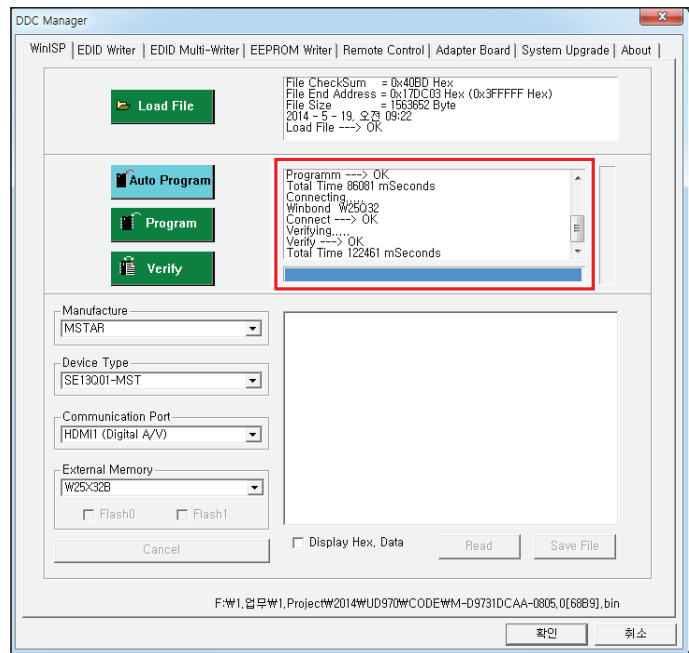
2. Select "Load File" to select Micom input file.



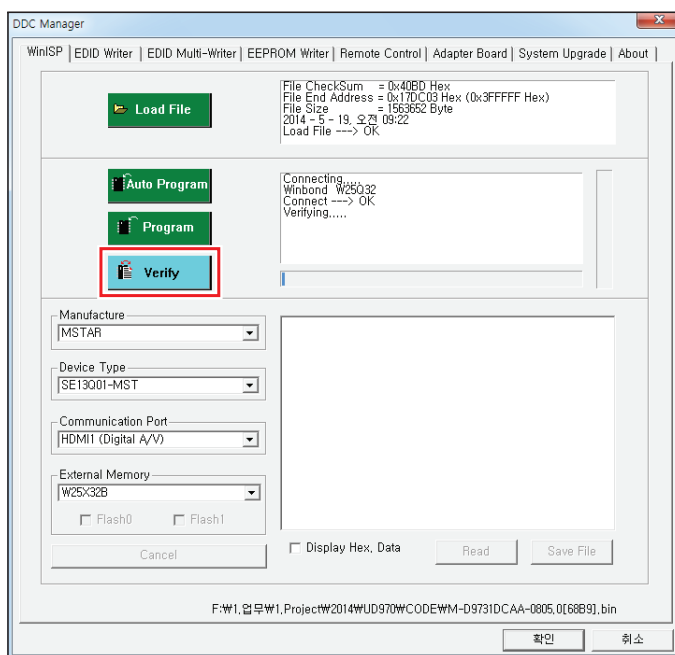
3. Execute "Auto Program".



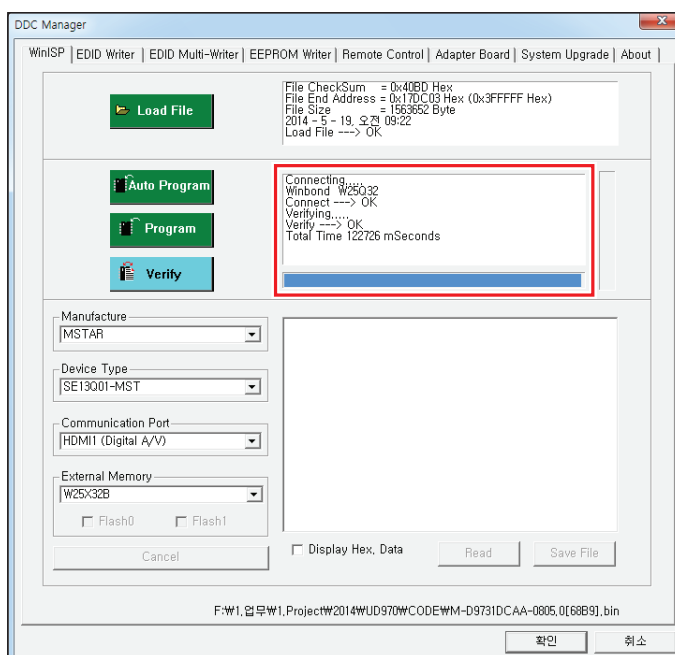
4. The WinISP input will be completed.



- Execute Verify when the input is completed.

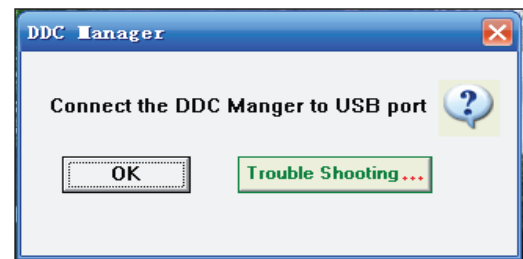


- You can check the "Verify → OK" status.

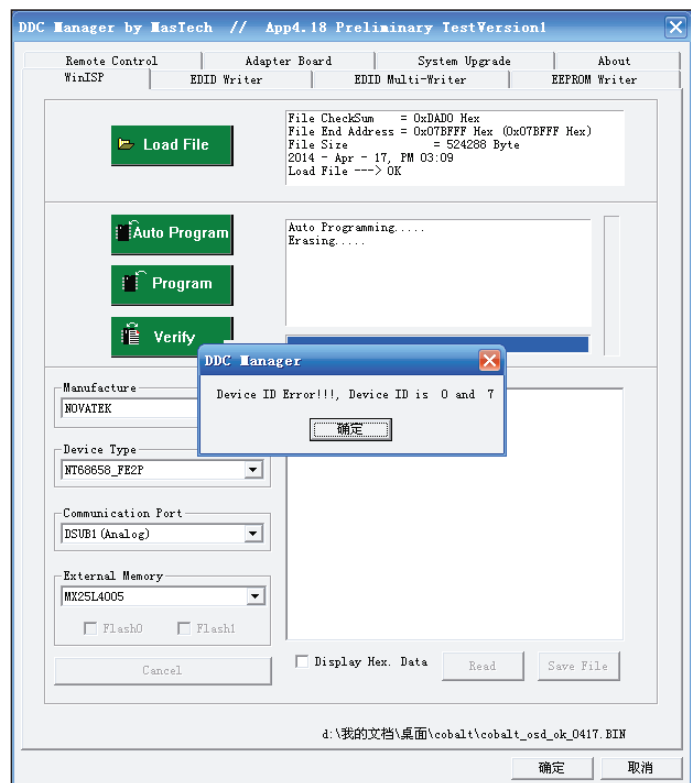


Error Messages

1. If the USB cable on MTI-2510 is disconnected or has contact failure, following message appears.



2. If the adapter or HDMI cable is not connected to the MAIN Board, following message appears..



■ Resetting MTI-2510

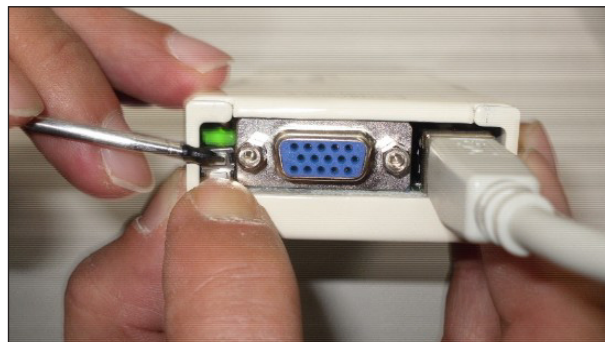
Sequence of switches



1. Connect MTI-2510 to the product using a USB cable, and press switch 2.



2. With switch 2 pressed down, press switch 1 lightly and release. Next, release switch 2.

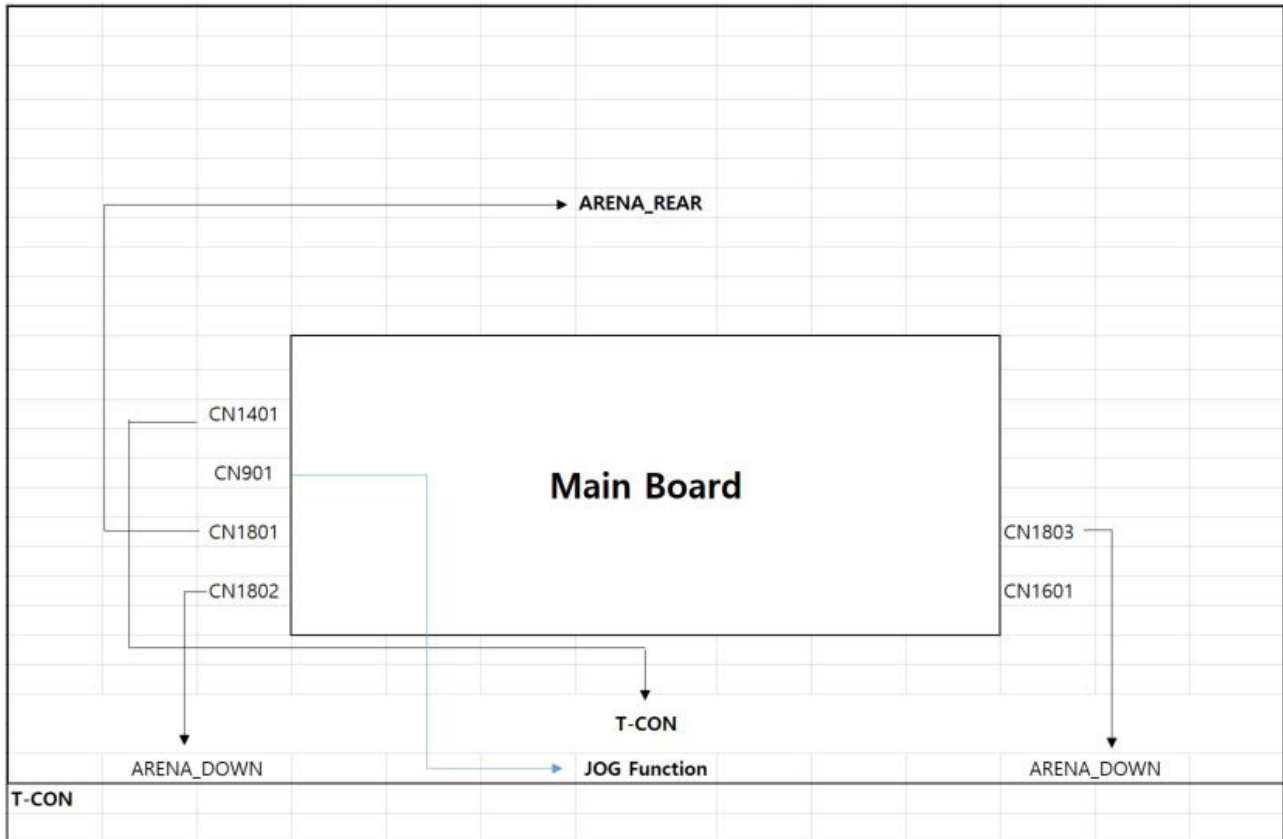


Checklist in the occurrence of an error when entering DDC data

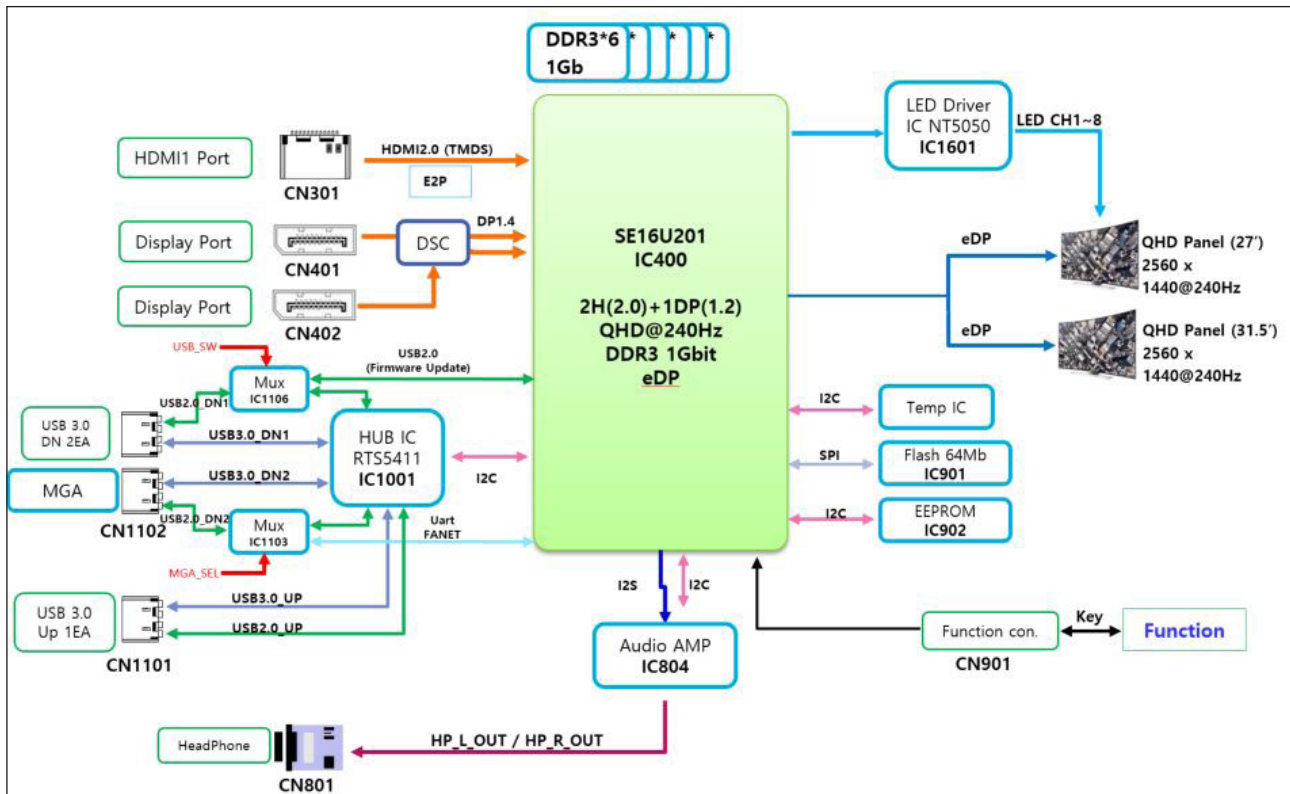
1. Check that the system version has been upgraded after resetting MTI-2510.
 - Resetting MTI-2510 always changes the winDDCU program to the factory version 1.01 automatically.
2. Check the DDC input port (Analog, DVI, HDMI).
3. Check the DDC input file (Analog, DVI, HDMI).
4. Activate the factory (service) mode, and re-enter the DDC data.

5. Wiring Diagram

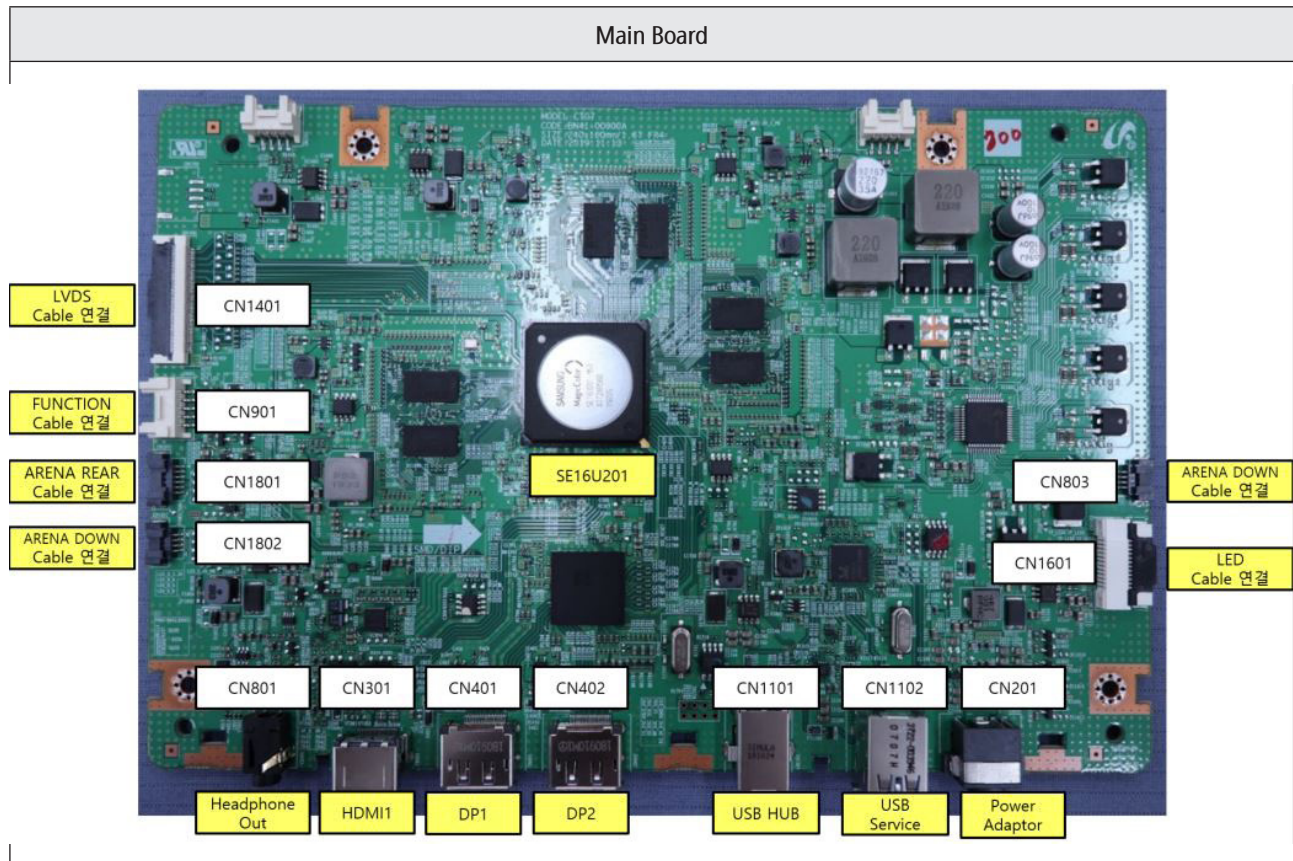
5-1. Wiring Diagram



5-2. Block Diagram



5-3. Board Connection



CN901(Function)			
1	KEY_GND	4	KEY_LED
2	KEY2	5	N.C
3	KEY1		

CN1401(LVDS)			
1	DGND	27	EDP0_TX2-
2	N.C	28	EDP0_TX2+
3	EDP_AUX+	29	DGND
4	EDP_AUX-	30	EDP0_TX1-
5	EDP1_TX3-	31	EDP0_TX1+
6	EDP1_TX3+	32	DGND
7	DGND	33	EDP0_TX0-
8	EDP1_TX2-	34	EDP0_TX0+
9	EDP1_TX2+	35	DGND
10	DGND	36	DGND
11	EDP1_TX1-	37	N.C
12	EDP1_TX1+	38	N.C
13	DGND	39	N.C
14	EDP1_TX0-	40	DGND
15	EDP1_TX0+	41	N.C
16	DGND	42	N.C
17	EHPD1	43	N.C
18	DGND	44	N.C
19	EHPD0	45	N.C
20	DGND	46	12V
21	EDP0_AUX-	47	12V
22	EDP0_AUX+	48	12V
23	DGND	49	12V
24	EDP0_TX3-	50	12V
25	EDP0_TX3+	51	12V
26	DGND		

CN1601(LED DRIVER)			
1	LED1	7	LED5
2	VLED1	8	VLED1
3	LED2	9	LED6
4	LED3	10	LED7
5	VLED1	11	VLED1
6	LED4	12	LED8

CN1801(ARENA LIGHT_REAR)			
1	3.3V	4	ARENA1_R
2	3.3V	5	ARENA1_G
3	3.3V	6	ARENA1_B

CN1801(ARENA LIGHT_DOWN)			
1	3.3V	3	ARENA2_G
2	ARENA2_R	4	ARENA2_B

CN1803(ARENA LIGHT_DOWN)			
1	3.3V	3	ARENA2_G
2	ARENA2_R	4	ARENA2_B

5-4. Connector Functions

Loc. No.	Functions
CN201	Adaptor supplies 14V to the Main Board. • If it is out of order : No Power
CN1401	The Main Board sends an LVDS signal to the panel. • If it is out of order : Blank Screen
CN1601	The LED driver circuit sends the LED drive current to the LEDs on the panel. • If it is out of order : Blank Screen error may occurred.
CN901	It is connected to the Function Board. • If it is out of order : No LED or Function failure error may occurred.
CN301	HDMI signal input connector • If it is out of order : No HDMI Output error may occurred.
CN401 CN402	DisplayPort signal input connector • If it is out of order : No DisplayPort Output error may occurred.
CN801	Headphone output connector • If it is out of order : No Headphone Output error may occurred.
CN1101	Used to connect the PC using a USB cable.
CN1102	 You can upgrade the software with a USB memory stick. : High speed charging is possible.