

LED Display Installation Manual

LH015I ***** (P1.5)

LH020I ***** (P2.0)

LH025I ***** (P2.5)

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1. Specification

1-1 Product Concept

1. LED Display of high-brightness for Indoors

- Product's lineup consist of 1.5mm ,2.0mm and 2.5mm pixel pitch.
- High brightness product for Indoor display(1.5mm/2.0mm 800nit, 2.5mm 2000nit)
- Various sizes of screen configuration
 - : Users can configure multiple size of screen by LED cabinet unit



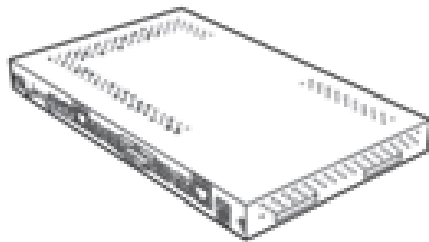
[Leeum, Samsung Museum of Art, P1.5 8x4]

1. Specification

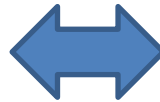
1-1 Product Concept

2. S-BOX solution for Picture Quality Enhancement and various video input

- Support various modes
- Able to adjust picture quality (Brightness, Contrast, etc.,)
- Support HDBT input and output for long distance video signals and control transmission
- Various input port : DP, HDMI, DVI, USB, RJ45



LED Signage BOX



LED Display

1. Specification

1-2 Specification

Category		P1.5 Cabinet	P2.0 Cabinet	P2.5 Cabinet
LED Cabinet	Pixel Pitch	1.5mm	2.0mm	2.5mm
	LED Package	RGB 3 In 1 1010	RGB 3 In 1 1010	RGB 3 In 1 2121
	Pixel	320x360	240x270	192x216
	Size	480x540x96.3mm	480x540x96.3mm	480x540x96.7mm
	Area	0.26m ²	0.26m ²	0.26m ²
	Aspect Ratio	8:9	8:9	8:9
	Weight	9.2kg	9.2kg	9.2kg
	Brightness (max) Min : 25% of max	800nits	800nits	2,000nits
	C/R	3,000:1	3,000:1	5,000:1
	Brightness Level	15.5bit	15.5bit	15.5bit
	Power Consumption	210W	210W	150W
	Name of Work Temp	0~40℃	0~40℃	0~40℃
	FHD Size	133.1"(3x6)	173.5"(4x8)	216.8"(5x10)

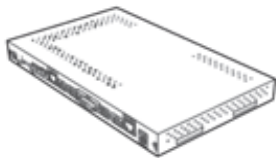
1. Specification

1-2 Specification

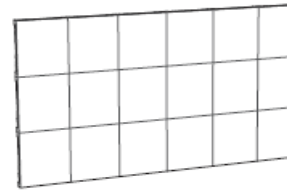
Cabinet Composition and the Number of Cabinets
in the standard of Full HD

Model	Cabinet	SBB-IS08E
LH015I***** (Pitch 1.5)	3 x 6 (18 units)	1 unit
LH020I***** (Pitch 2.0)	4 x 8 (32 units)	1 unit
LH025I***** (Pitch 2.5)	5 x 10 (50 units)	1 unit

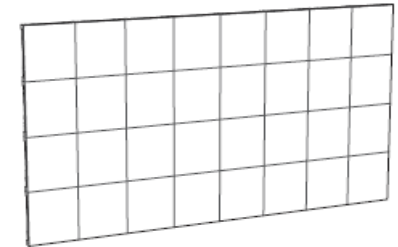
SBB-IS08E Reference Picture
(LED Signage Box)



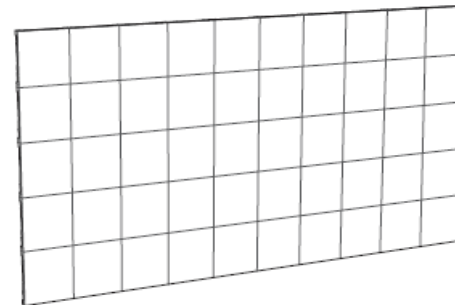
IL015E



IL020E

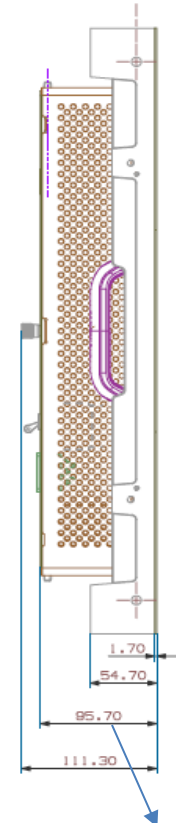
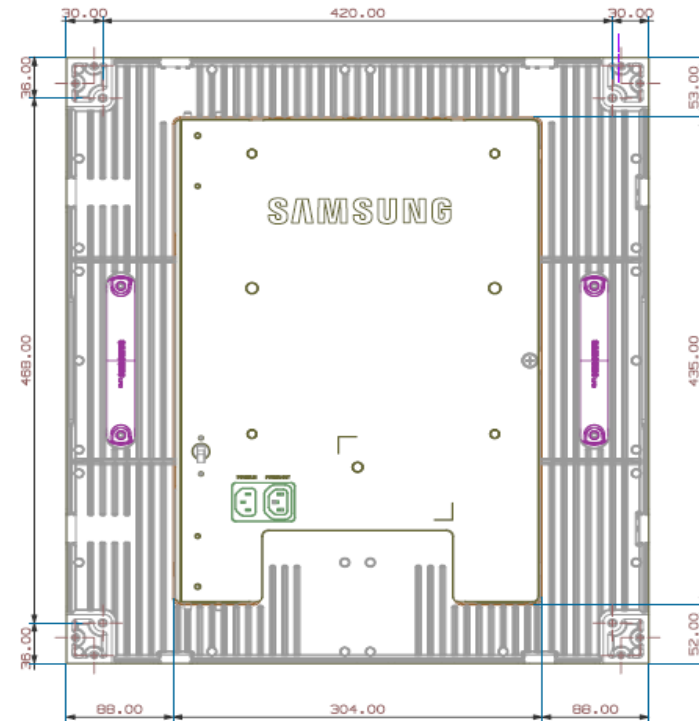
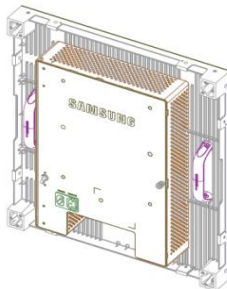
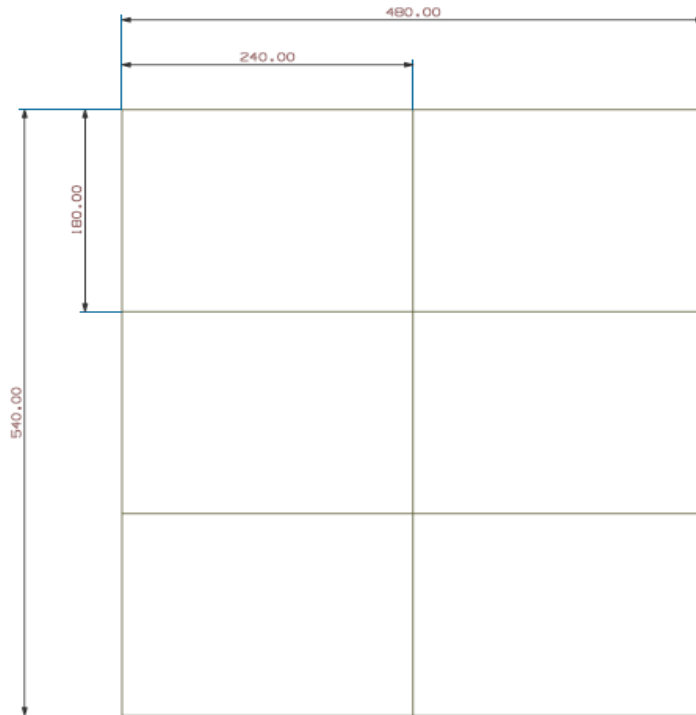


IL025E



1. Specification

1-3 Dimension spec (unit : mm)

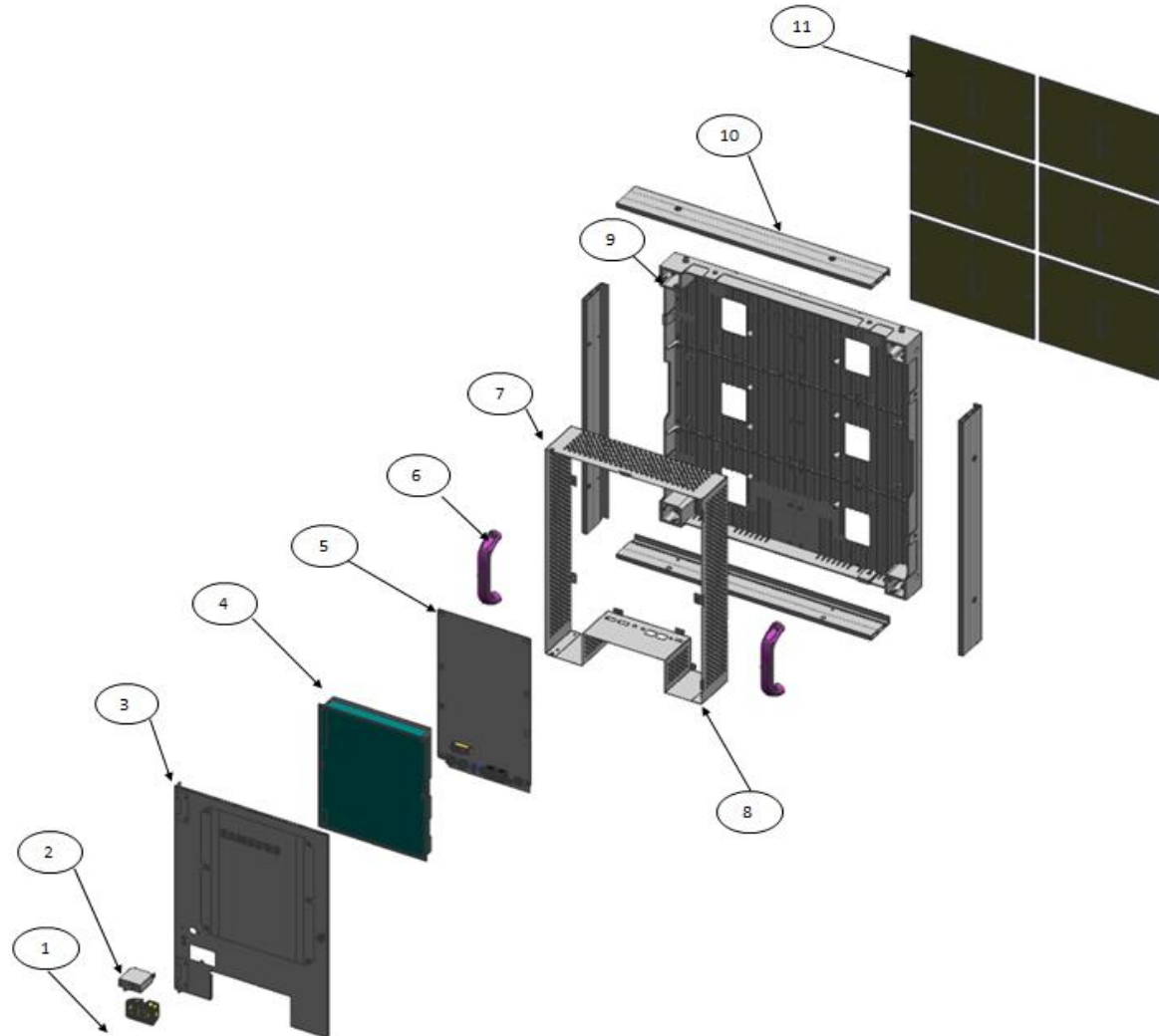


[except the depth of LED]
P1.5/P2.0: 0.6mm
P2.5 : 1.0mm

1. Specification

1-4 Exploded View

No.	Item	Qty.
1	POWER INLET	1
2	CIRCUIT BREAKER	1
3	ASSY COVER P-REAR	1
3.1	COVER REAR	1
3.2	HINGE	2
3.3	CAPTIVE SCREW	1
3.4	SHEET INSULATOR	1
4	SMPS	1
5	MAIN PCB	1
6	COVER HANDLE	2
7	COVER FRAME TOP	1
8	COVER FRAME BOTTOM	1
9	ASSY BRACKET P-FRONT	1
9.1	BRACKET-FRONT	1
9.2	INLAY TERMINAL	1
9.3	HOLDER-WIRE	2
9.4	HOLDER MAGNET	48
9.5	MAGNET	48
10	COVER-TOP BOTTOM LEFT RIGHT	4
11	LED MODULE	6



1. Specification

1-5 Viewing the Connection



Connector	Description
DP OUT	Use it when connect DP IN signal of the other LED cabinet
DP IN	Use it when connect DP OUT signal of the other LED cabinet
HDBT OUT	Use it when connect HDBT IN signal of the other LED cabinet
HDBT IN	Use it when connect HDBT OUT signal of the other LED cabinet
UART OUT	Use it when connect UART IN signal of the other LED cabinet
UART IN	Use it when connect UART OUT signal of the other LED cabinet
SWITCH	Use it for change the source of HDBT and DP
LIGHT SENSOR	Use it for connect the external brightness sensor

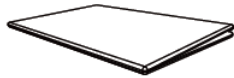


1. Specification

1-6 Accessory [Components]

Components may vary based on the country.

1



Quick Setup Guide

2



Warranty card
(Not available in some locations)

3



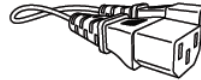
Regulatory guide

4



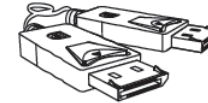
Power cord

5



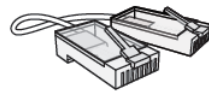
Power extension cable

6



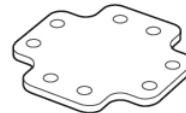
DP cable

7



HDBT Cable

8



Bracket Align

9



Bracket Half Align (2EA)

10



Guide Pin (M6, 2EA)

11



Screw (M4L8, 8EA)

12



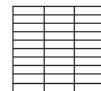
Screw (M6L16, 4EA)

13



Screw (M6L15, 4EA)

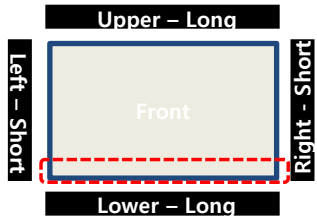
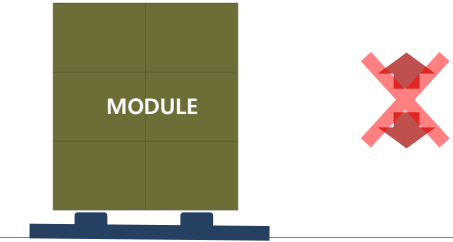
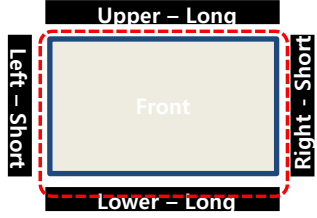
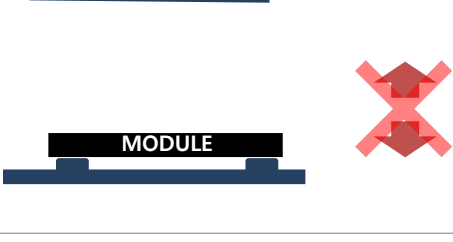
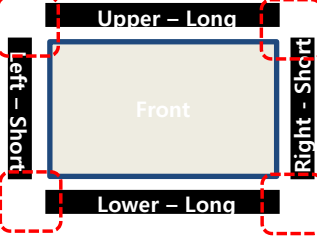
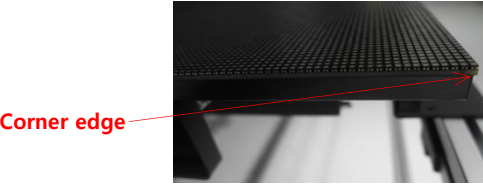
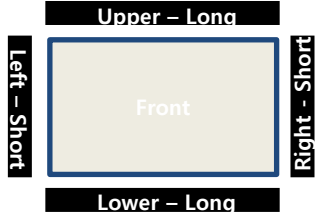
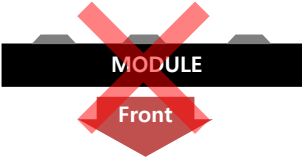
14



Spacer Pad (30EA)

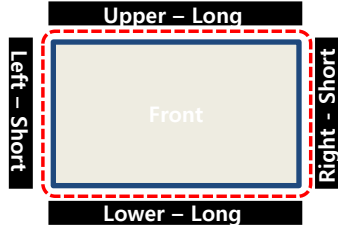
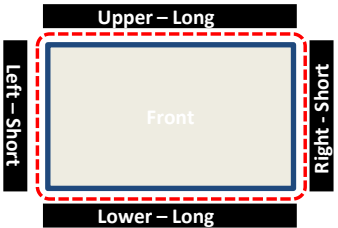
2. How to Install

2-1 How to Handle (Warning / Caution)

Location	Picture	Cautions	Estimated Failure Issue
		[No Vibration, Shock or Drop] ▶ Do not give shocks to the LED side or drop the SET after uncovering the protection from the product before .	LED cracked
		▶ Beware not to lay the product over a vibrating subject or drop the set on the back side of the product.	LED cracked
		[Caution for Corner Damage] ▶ Beware of corner damage on the LED module particularly, due to contacts on the exterior.	LED cracked
		[Do not let panel face down] ▶ Do not lay the product having the LED side as the bottom side after uncovering the protection from the product before	LED cracked

2. How to install

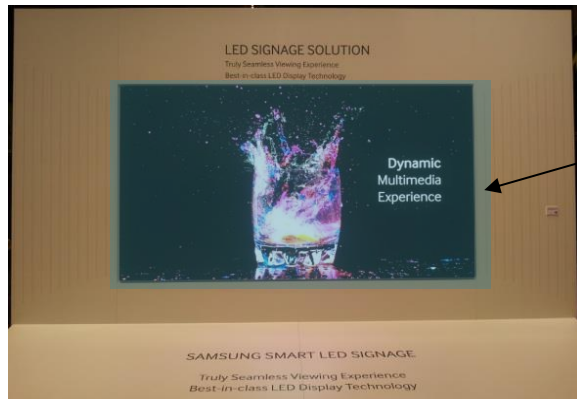
2-1 How to Handle (Warning / Caution)

Location	Picture	Cautions	Estimated Failure Issue
		[Beware of LED Damage due to Static] ▶ Do not work on the LED surface with hands not wearing antistatic glove	LED cracked
		[Beware of LED Damage due to Attachment of Metal Substances] ▶ There is magnetic on the front side of LED. Beware not to have any metal substances be attached to the surface. ▶ When any metal substances are attached, use air gun or magnetic to remove them. When you use magnetic to remove the substances, the module may be unlocked. So determine whether to remove after separating it or having it attached depending on the attachment status.	LED damage in the shape of magnetic goods that were used during the damage

2. How to install

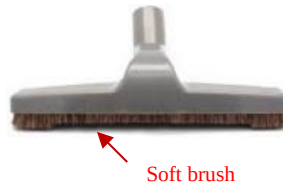
2-1 How to Handle (Cleaning metal dust)

1. If LED display area is under construction, you should cover the LED surface with protection sheet to prevent dust (metal dust) stick to LED surface.



LED surface must be cover if display area is under construction

2. Clean dust on the LED surface with Cleaner machine (must use a soft brush head)

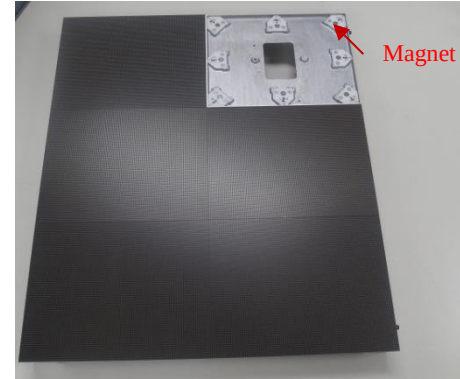


Soft brush

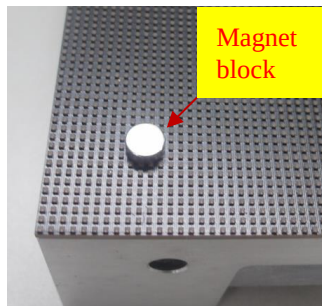
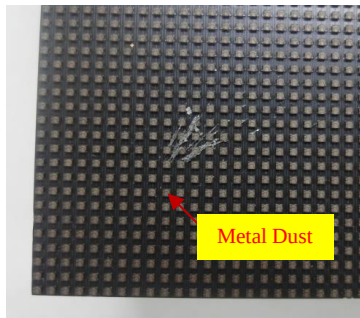
2. How to install

2-1 How to Handle (Cleaning metal dust)

3. Each LED Module have 8 magnet positions (picture 1)
So depend on environment , the metal dust may stick to LED surface.
So have to check the LED surface again at Magnet position.
Incase of Metal Dust stick to LED surface, we can remove it by
- Remove LED module with metal dust (Refer to page 45)
 - Putting a magnet clock on LED surface
 - Slowly move it around the metal dust area.
 - Metal Dust will stick to Magnet Block.
 - Remove Magnet Block and clean it for next times using.



[Picture 1]



2. How to install

2-2 Installation Requirements (Circuit)

- 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.

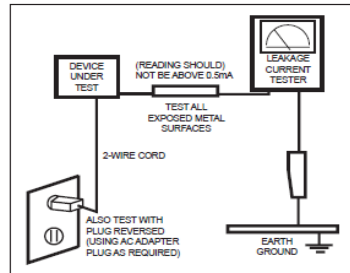
1-1-2. Fire and Shock Hazard

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

1-2. Servicing Precautions



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.

1-2-1. General Servicing Precautions

- 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.
- 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.
- 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.
- Check the insulation between the blades of the AC plug and accessible conductive parts (examples: metal panels, input terminals and earphone jacks).
- 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.
- 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.

2. How to install

2-2 Installation Requirements (Circuit)

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.

2. How to install

2-2 Installation Requirements (Circuit)

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. How to install

2-2 Installation Requirements (Software)

- Desktop or Notebook PC installed with Operating System of below:
 - Windows 7 32bit/64bit
 - Windows 8 32bit/64bit
- Software
 - .Net Framework 4.5 or above

2. How to install

2-2 Installation Requirements (Mechanical)

- Support structure for Product Installation

The types of support structure may vary, because it is determined differently according to the customers' taste and needs. Thus, spec all differs. Below items should be considered in detail before is carried out.

1. Weight tolerances : Check whether the SET structure gets to be supported by the floor or to be hung on a wall. Installation should be done considering the weight of the product.
2. Environmental conditions : If the level of humidity and temperatures are high in the surroundings, those conditions should be considered.
3. Locations : This product is for indoors, and should be located in a place where the product is not likely to be affected by direct sunlight.
4. Ground stability
5. Front clearances: Check whether there are enough space and viewing angle in front of the display to provide the most optimal impact to viewers.
6. Rear clearances : Needs to secure enough space to a worker in all kinds of structure.
7. Local regulations should be considered for each type of

2. How to install

■ 2-2 Installation Requirements

- Make sure to have enough space at least 60cm from the rear of set, when a support structure is installed on the floor, to accommodate a worker and a tool, for a example, ladder, etc. When the height of a structure is too high, Samsung recommend to install ' Cat Walk' at the rear of set and a lift in the front of set so that workers can work easily in a high area.



2. How to install

2-2 Installation Requirements : Wall Mount Type

- When the support structure is fixed on the wall, make a big hole at the back of the wall so that a worker can work at rear of set.
- When it is difficult to make a hole in the wall, apply a separate structure (ex: wheel, hydraulic cylinder) on the set to enable moving the Cabinet.
- Check the status of the wall (Types, Thickness, Floor Plan)
- If the wall to have flat display installed is not flat, after , appearance quality may become poor because the gap between the set widens.
- When the structure is installed in a pocket shape, the surrounding temperature should be maintained below 35C degree and it is recommended to make more than 10cm of space from the wall.

2. How to install

2-2 Installation Requirements : Thermal condition

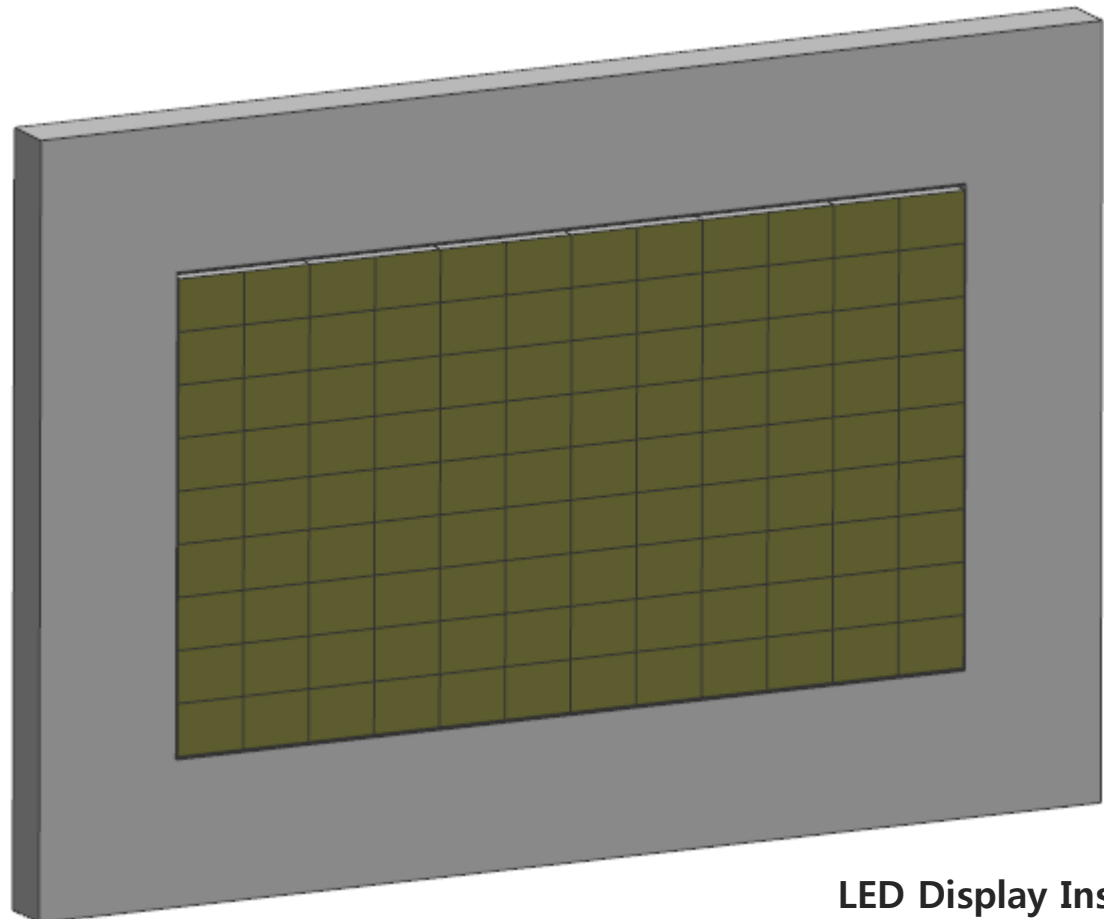
- Operation Ambient Temperature in the standard of one product unit : 0~40℃
- If less than three stores vertically in LED Cabinet, recommended external temperature below 35℃
If exceed over three stores vertically in LED Cabinet, recommended external temperature below 30℃.
- If impossible to secure enough space for absorption/emission of air as recommended below,
install Fan or Air-Conditioner and have the backside area of LED Cabinet not exceed 40℃ at maximum.

Do not close the upper side of the back in the SET.

The 30mm point at the central back area of the SET to be managed below Max 40℃.

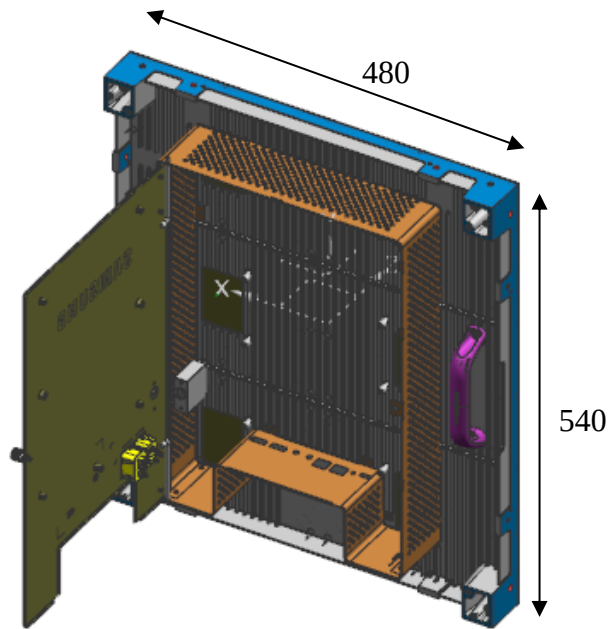
Secure space for absorbing air at the back under area of the SET.

Secure enough working space and heat rejection area at the back area of the SET.

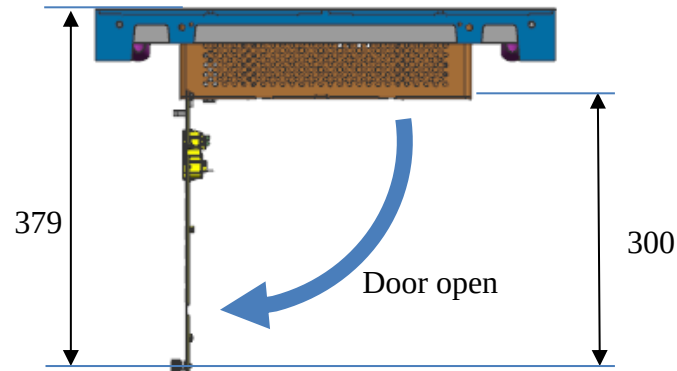


2. How to install

2-2 Installation Requirements : Free space behind the Set

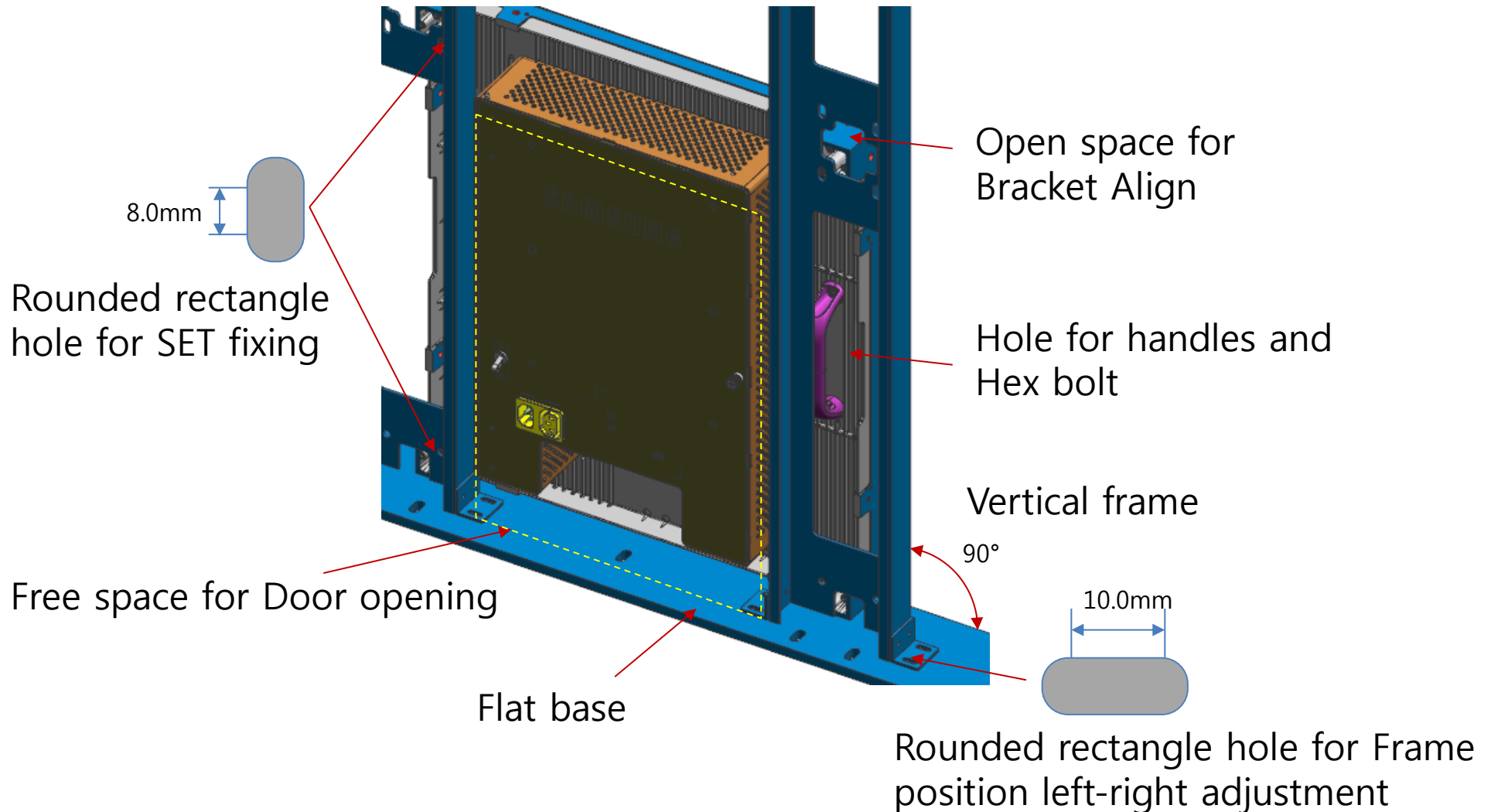


Door open: 480*540*379mm
=> FREE SPACE behind Cabinet should be over 300mm for door opening space.



2. How to install

2-2 Installation Requirements : Standard Installation Frame



2. How to install

2-2 Installation Requirements : Tool for Installation

Wrench 10.0mm



OR



socket ratchet

Phillips head crew driver



LED MODULE JIG
(model name: CY-LJFNAS)



Flat head crew driver



Pliers



Rubber
hammer



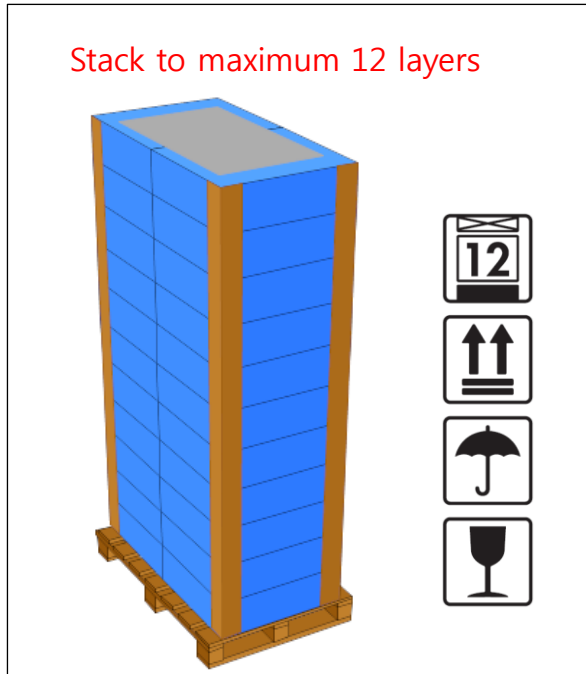
Antistatic
Glove



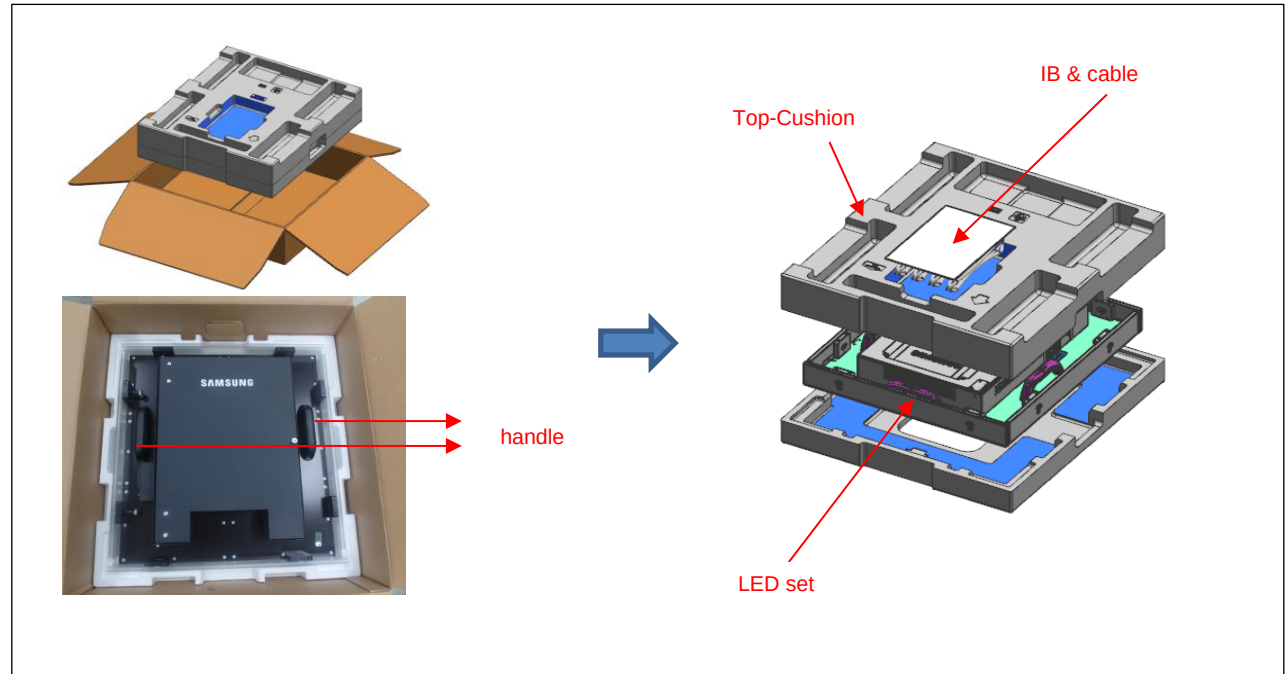
2. How to install

2-3 Physical Installation : Open Packaging

[Before Unpacking]



[Unpacking]



- 1) Remove the tape from the upper side of the box, and then open up.
- 2) Remove the Top-Cushion
- 3) Take out the set while **holding the handle** inside the PE-Bag, and then remove the PE-bag

*** Do not keep the LED display face down to ground**

2. How to install

2-3 Physical Installation: Check the SET Condition



Connect Power Cable to SET

Use internal pattern to check dead pixel or any damage with screen

* Internal white pattern :

- Turn on Power
- Push Source button 5 seconds and release,
- Wait for display, push one more times. (color rotation : W -> R-> G -> B)

2. How to install

2-3 Physical Installation: Illumination Intensity Sensor Introduction



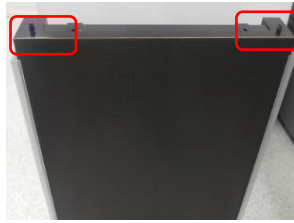
If the sensor for illumination intensity is needed, secure enough space for the location of sensor and the place for assembly, and have it be attached on the edge of the display.

(As the sensor area has magnetic properties, able to be attached on the metallic objects.

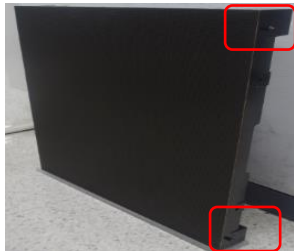
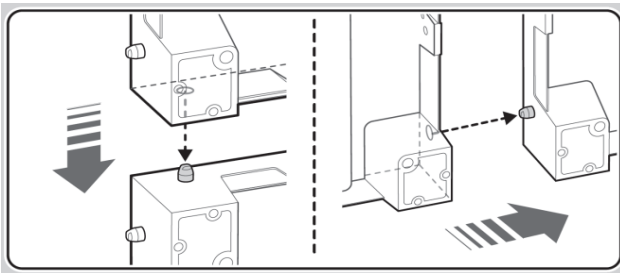
Illumination Intensity Sensor is included in LED Signage Box accessory)

2. How to install

2-3 Physical Installation: Stud-Guide Introduction

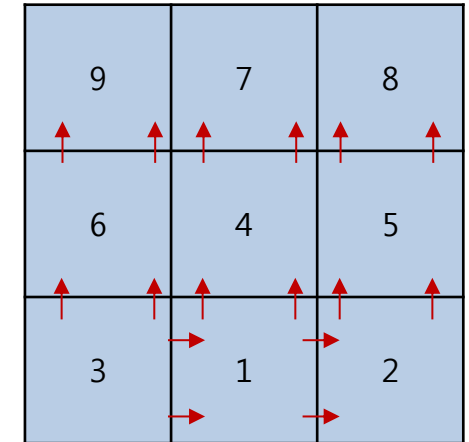


From 2nd row: Top use



Bottom row: side use

Example: 3*3 cabinets



Stud guide used to **guide position** between 2 cabinets. (tolerance 0.2mm)

- For bottom row use them on side(Left-right)
- From the second row use it on Top (refer example picture)

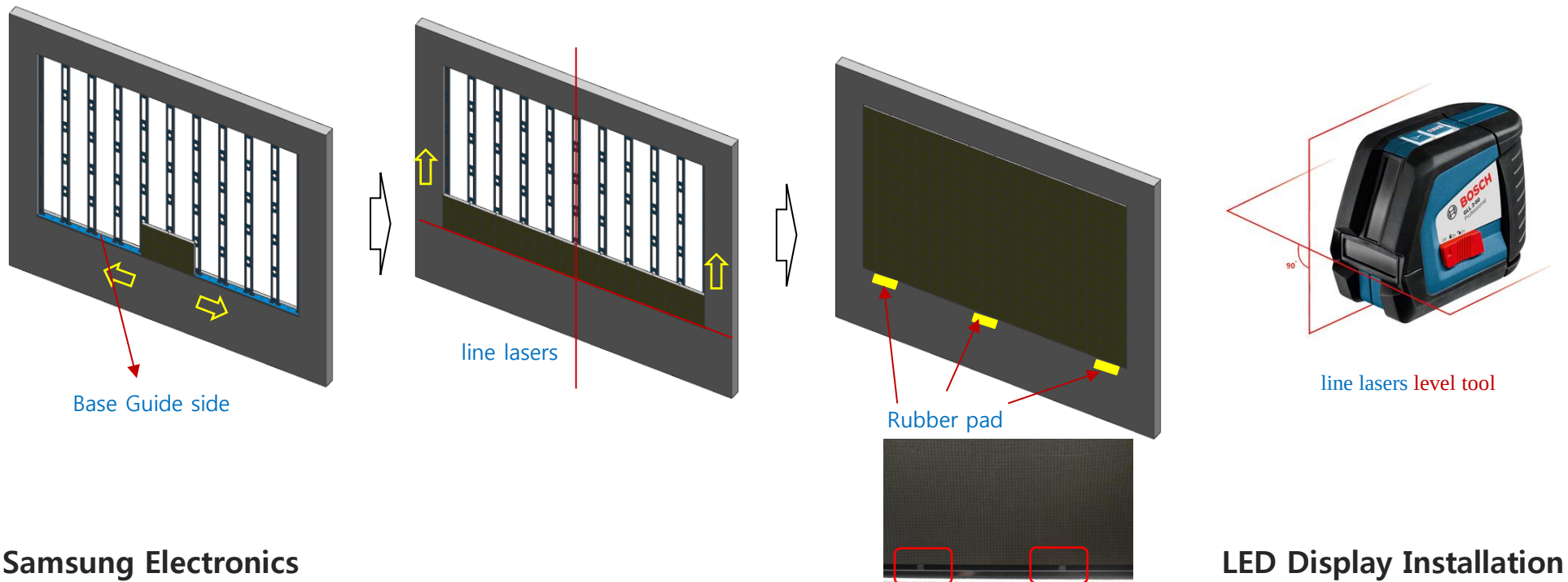
Tool : Plier

2. How to install

2-3 Physical Installation: Base Guide

It is more convenient to install from the bottom to the top side when the sets are to be installed on a floor.

- First row alignment is most important
- Must use line lasers level tool to align Vertical / Horizontal
- When rubber pad or a bracket is input between bottom of LED module and a cover-frame, it can reduce a gap of module~module by preventing a sagging of LED module.
(Refer to the bottom figure and page 70)

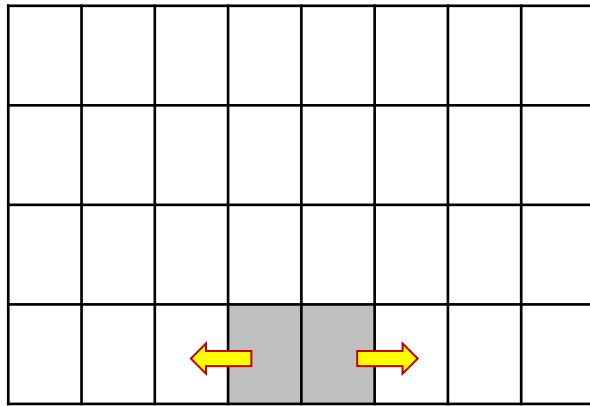


2. How to install

2-3 Physical Installation: Installation Baseline

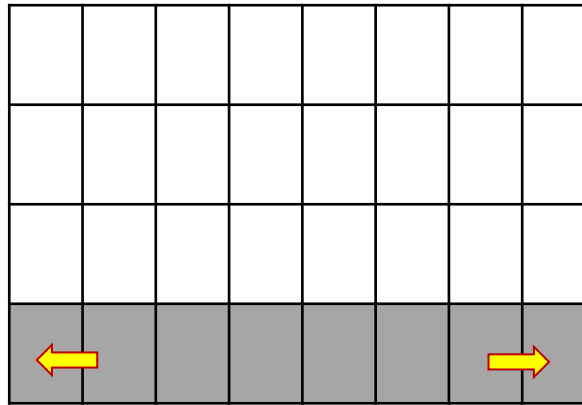
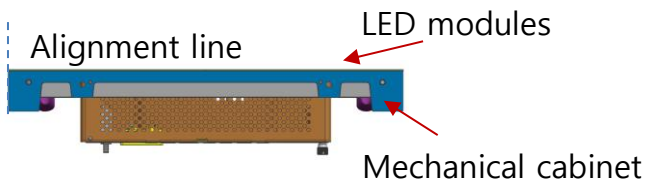
The order of installation to minimize Seam, follow these rules:

- Install from bottom to top
- Install from center to side
- Must align all LED modules after install each cabinet



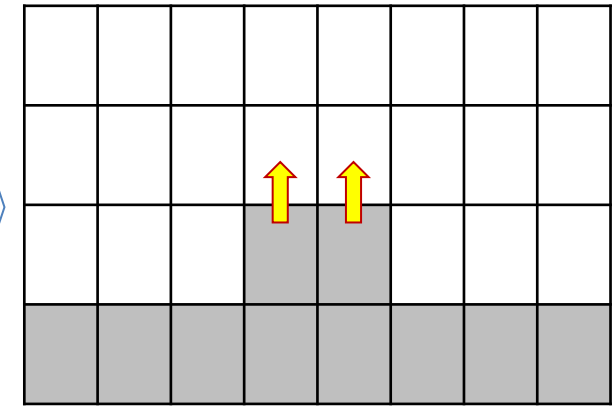
Install first cabinet from center

For first cabinet : Align LED module with mechanical cabinet



1st row, from center to side

From 2nd cabinet : Align LED modules of new cabinet with around cabinets



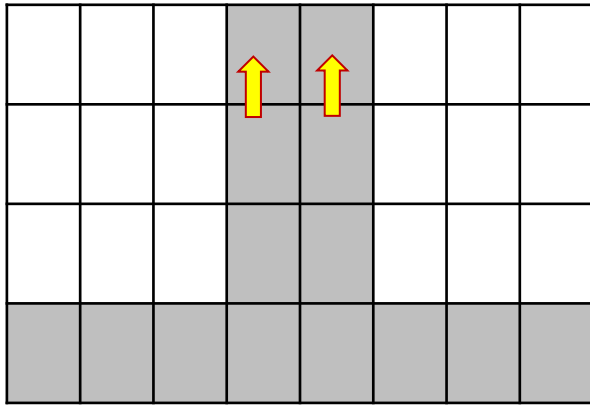
2nd row, install from center

2. How to install

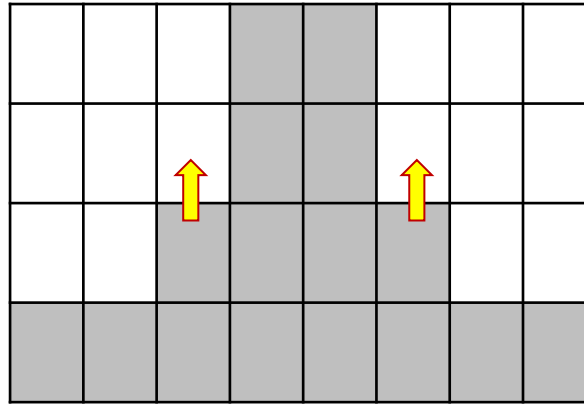
2-3 Physical Installation: Installation Upper line

The order of installation to minimize Seam, follow these rules:

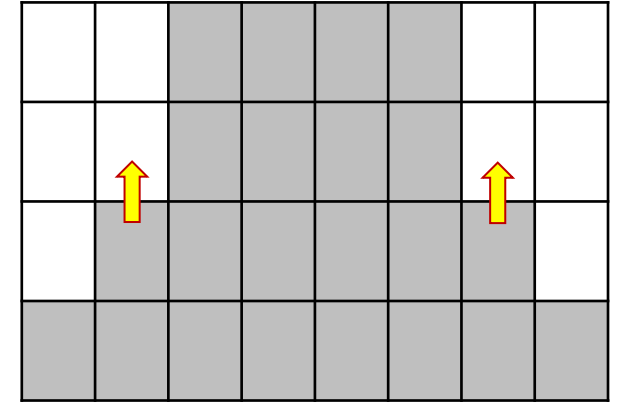
- Install from bottom to top
- Install from center to side
- Must align all LED modules after install each cabinet



Center column from bottom to top



Next column from bottom to top

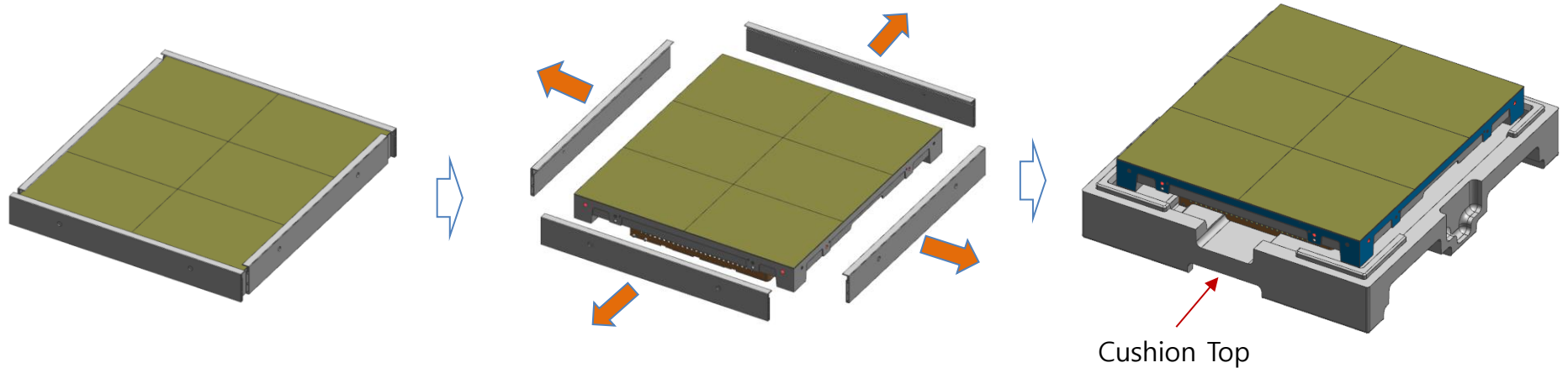


Next column from bottom to top

2. How to install

2-3 Physical Installation: Remove Protection Material

PROTECTION (item : BN63-15047A, COVER-TOP BOTTOM LEFT RIGHT)



Put Cabinet on BOX, LED module face up

Remove all of the Cover-Protection

Keep Cabinet on Cushion Top

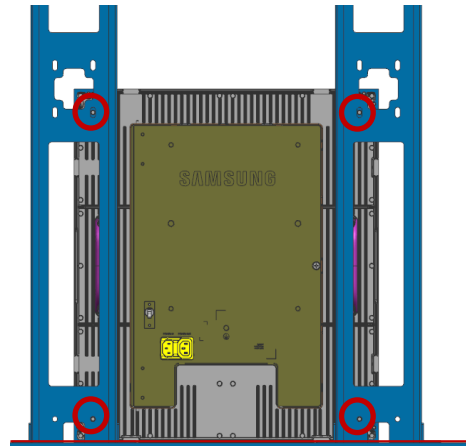
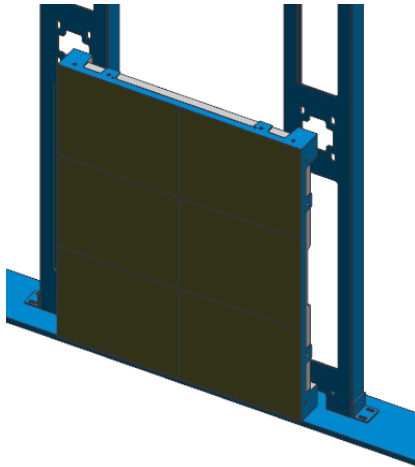
Tool: screw driver

2. How to install

2-3 Physical Installation: Base row

Fix 1st cabinet to Wall-frame

- Check cabinet horizontal alignment
- Use M6 screws, Fix 4 points on back side



M6 Screw



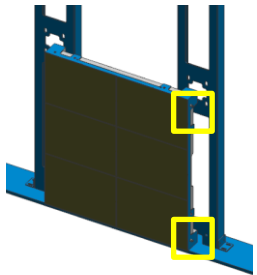
Horizontal alignment is most important

2. How to install

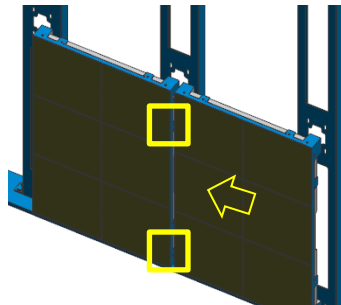
2-3 Physical Installation: Base row

Attach 2nd cabinet to Wall-frame

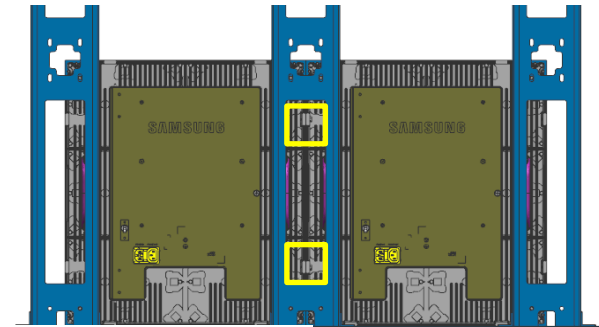
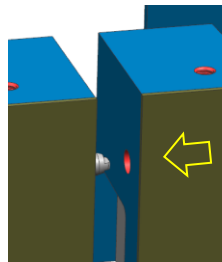
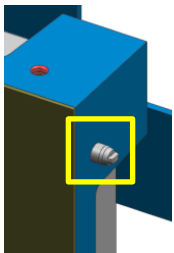
- Assemble "Stud Guide" on side area
- Slightly fix 2nd cabinet to Wall-frame
- Reduce gap between Cabinets by tighten M6 Hex bolt



Assemble Stud guide

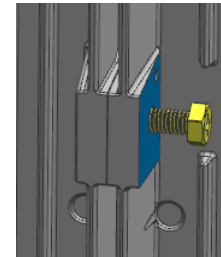
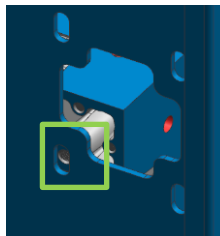


Slide 2nd cabinet to 1st cabinet



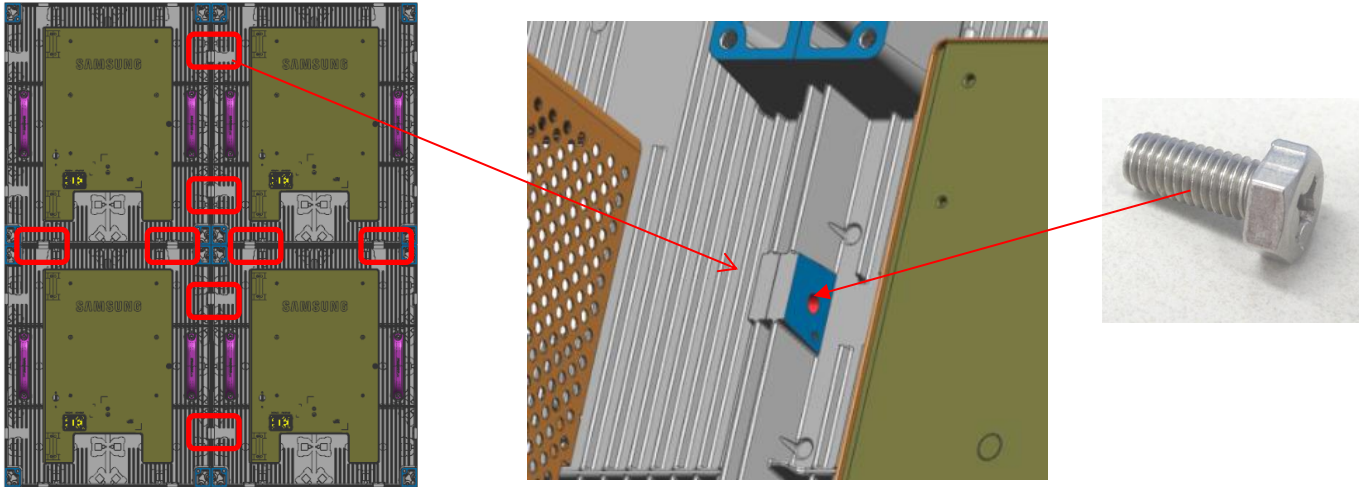
Slightly fix cabinet to Frame (4points)

Tighten Hex bolt to reduce gap



2. How to install

2-3 Physical Installation: Hex-Bolt Introduction



Hex bolt used to connect cabinet & cabinet, **reduce gap** between 2 cabinets

Tool: Wrench 10.0mm

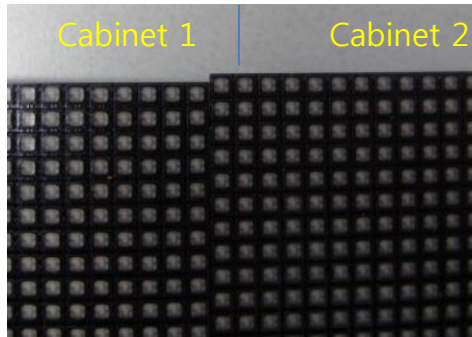
2. How to install

2-3 Physical Installation: Base row

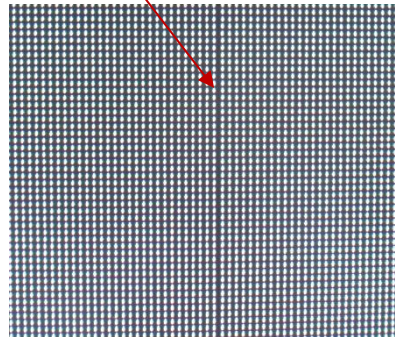
Check 2nd cabinet position follow these rules

- LED (cabinet 1)–LED (cabinet 2) is **correctly alignment**
- **No black line** in full white condition *
- LED modules are **removable** with Module JIG

Ex: miss alignment case



Ex: Black line in full white condition case



LED module removable



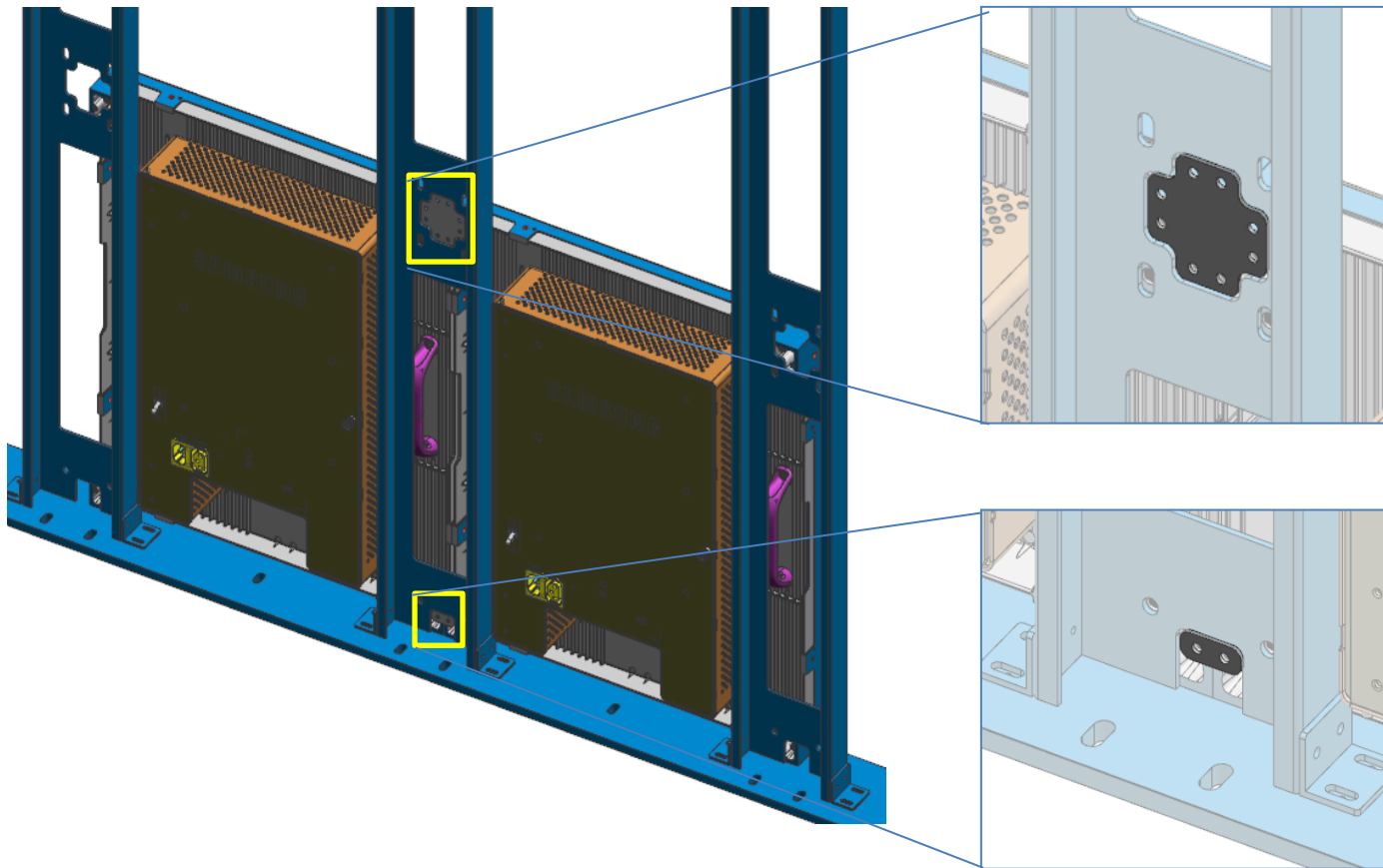
*Internal white pattern : turn on Power, Push Source button 3 seconds and release, wait for display, push one more times.

- **GAP must be adjusted when install each cabinet.**
After install all cabinets it's Hard to modify Gap.
- FLUSH can be modify later after installation

2. How to install

2-3 Physical Installation: Bracket Align Introduction

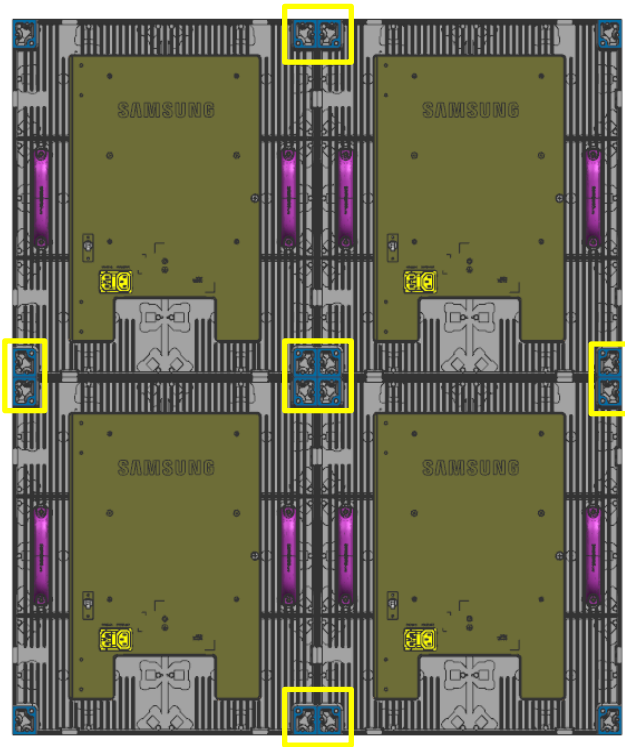
Use Bracket Align to flatten Cabinet-Cabinet , fix by M4 screws.



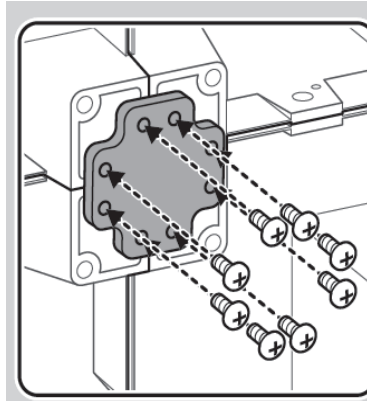
2. How to install

2-3 Physical Installation : Bracket Align Introduction

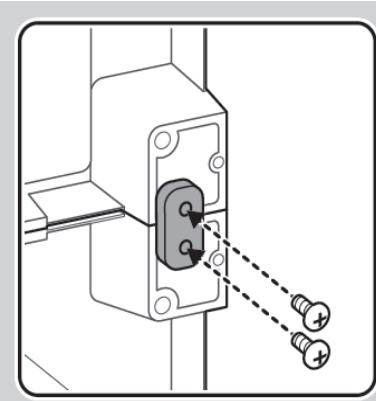
Example: 2*2 cabinets



4 points alignment



2 points alignment



Bracket Align used to flatten /align position between 2 cabinets.

- Use M4 screws to fix Bracket Align with Cabinet

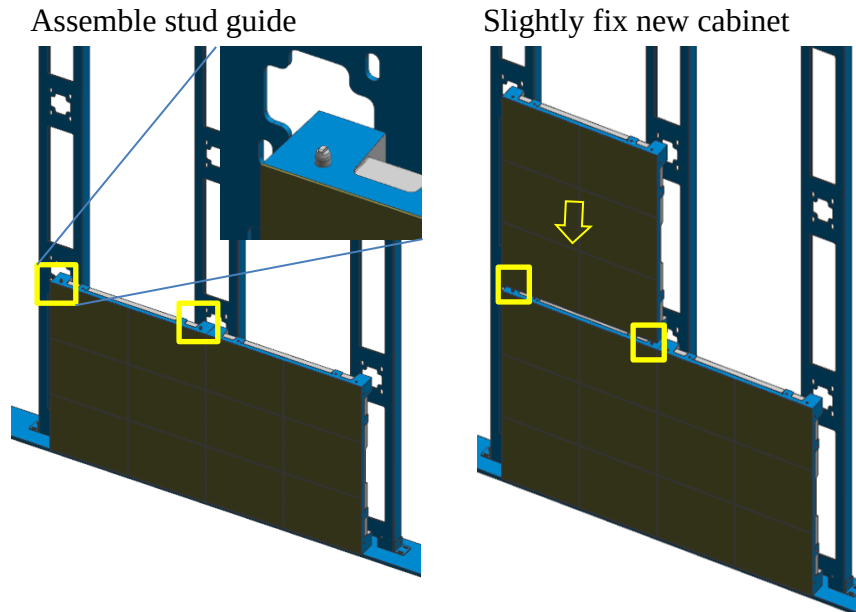
Tool: Screw driver, M4L8 screw

2. How to install

2-3 Physical Installation: over 2nd row

From 2nd row: install from center to side

- Assemble Stud guide on top of center cabinet.
- Put the cabinet on top of center cabinet, slightly fix the cabinet to Wall-frame using M6 screws.
- Reduce gap between Cabinets by tighten M6 Hex bolt
- Gap/ flush adjustment like previous steps.



Check top-bottom LED module alignment

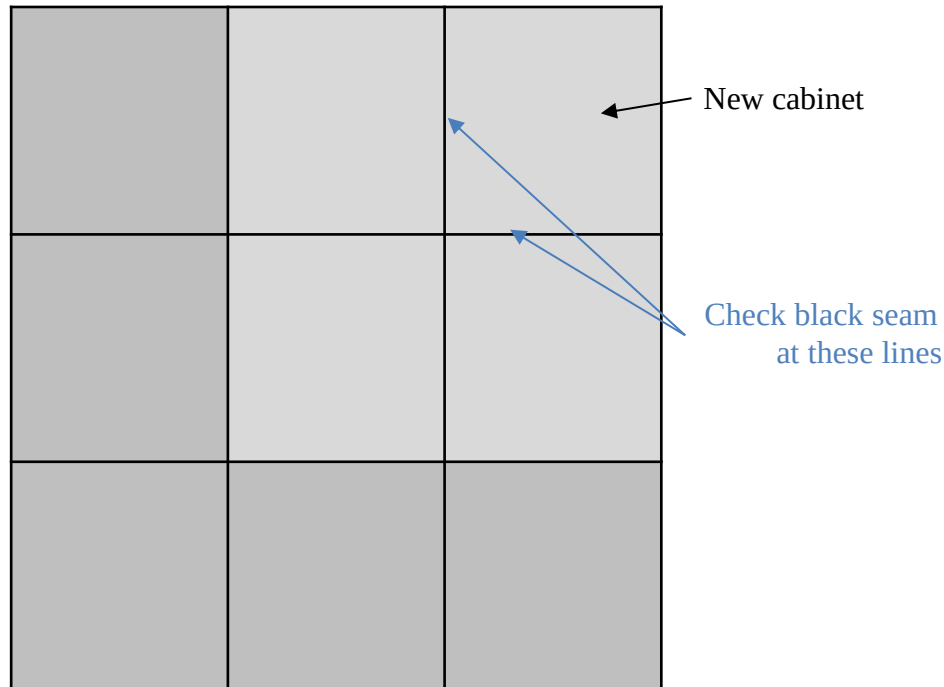
If can not adjust alignment => Remove Stud Guide

2. How to install

2-3 Physical Installation: Installation in detail

Check the gap between cabinet for each cabinet installation:

- Turn on internal white pattern of new cabinet and around cabinets.
- Tight M6 bolt to reduce the gap until it has no black seam between cabinets.



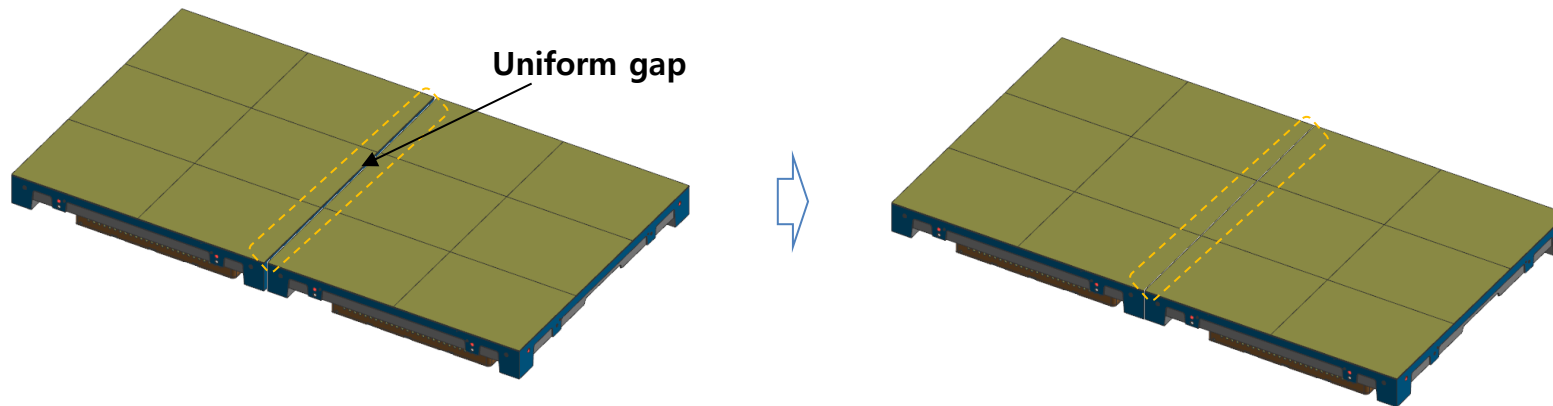
Rules:

- New cabinet and around Cabinets are **correctly alignment**
- **No black line** in full white condition
- LED modules are **removable** with Module JIG

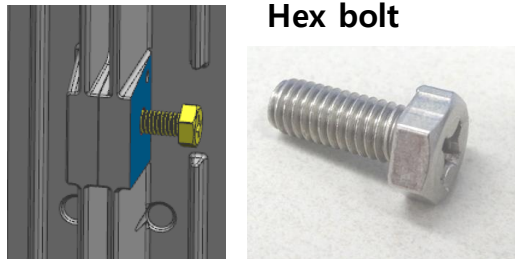
2. How to install

2-3 Physical Installation: Adjust GAP between cabinets

Case 1 : uniform GAP between 2 Cabinets



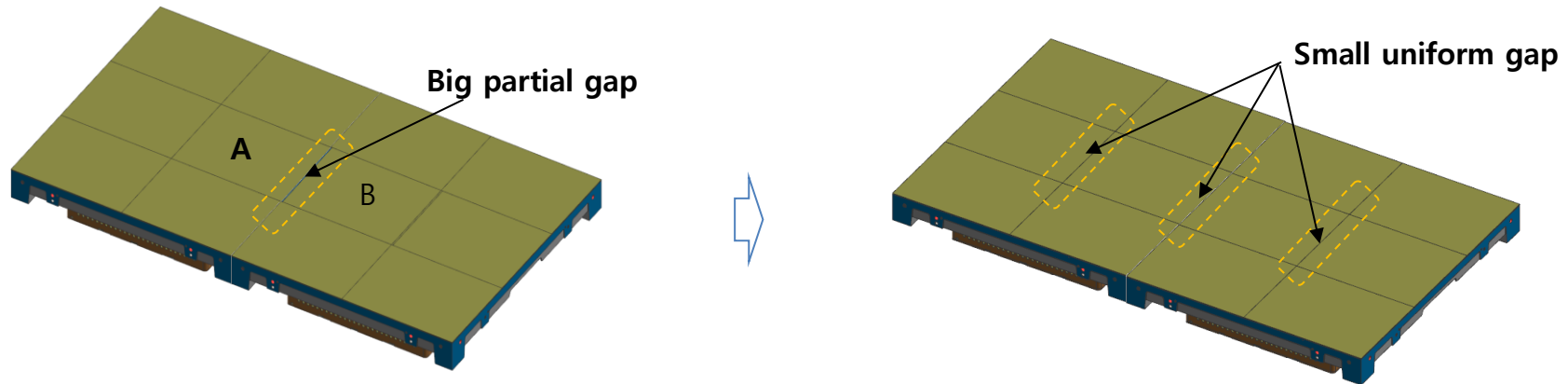
Solution: tighten M6 HEX bolt more to reduce the gap between cabinets



2. How to install

2-3 Physical Installation: Adjust gap between LED modules

Case2: partial GAP between 2 cabinet



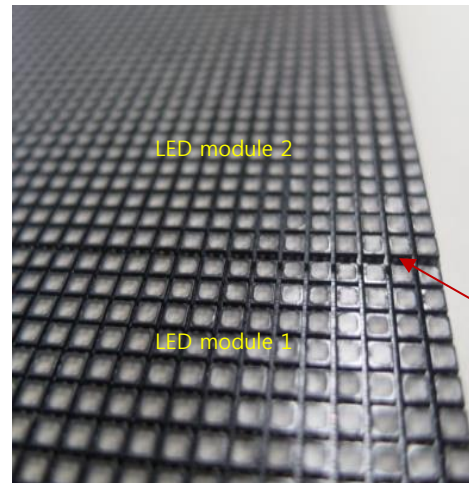
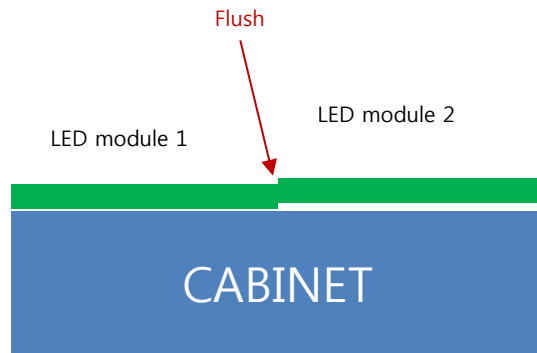
Solution : slightly move module A and B together to reduce the gap
By hand between them. Try to change from 1 big gap to 3 uniform small gap.

2. How to install

2-3 Physical Installation: Adjust Flush between LED modules

Specify the "Flush" position (LED module 2 a little pop up)

Flush: in white pattern mode , from one direction you will see black line, and from another direction you will see white line



Guide spec

1) module Flush : 0.07mm ↓

2) module gap : 0.05mm ↓

2. How to install

2-3 Physical Installation: Adjust Flush between LED modules

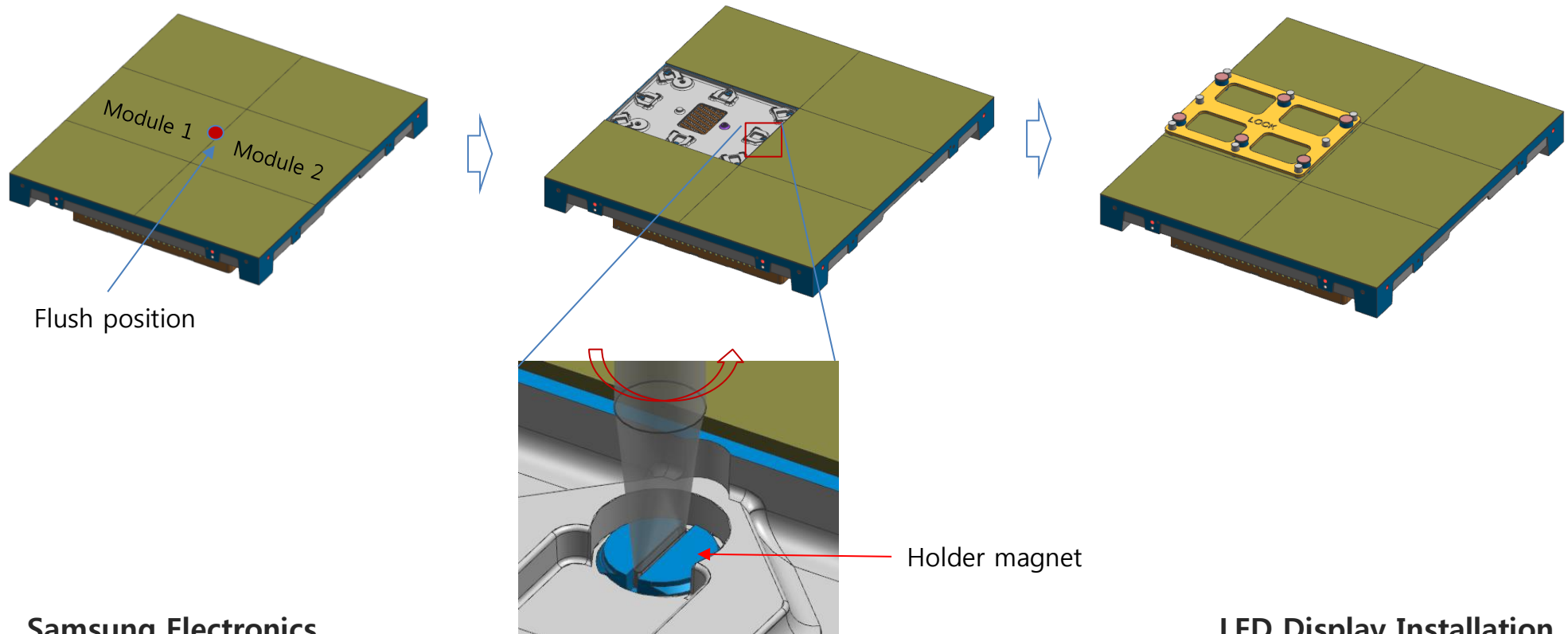
Remove the **LED MODULE 1** using Magnetic JIG

* Refer the next page for detail of LED module JIG user guide

Use Flat screw driver to counterclockwise turn Magnet Bolt

* Turn Magnet Bolt counterclockwise 1 circle it will go up 1.0mm

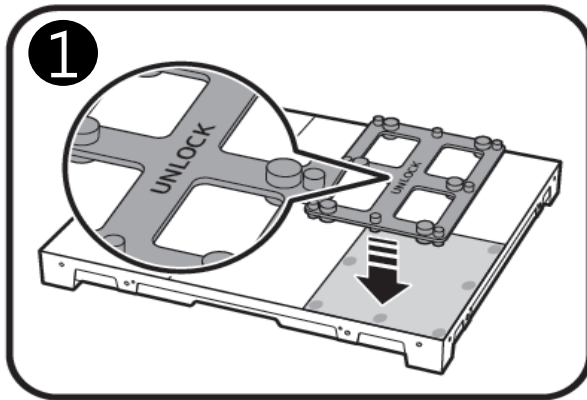
Put back LED Module to check the flush, fix LED module position with JIG



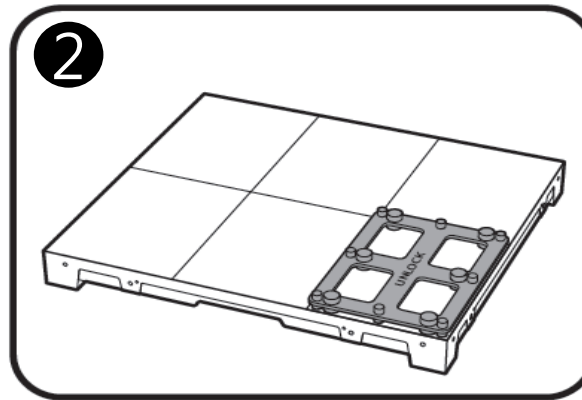
2. How to install

2-3 Physical Installation: Module JIG User Guide (replace Module)

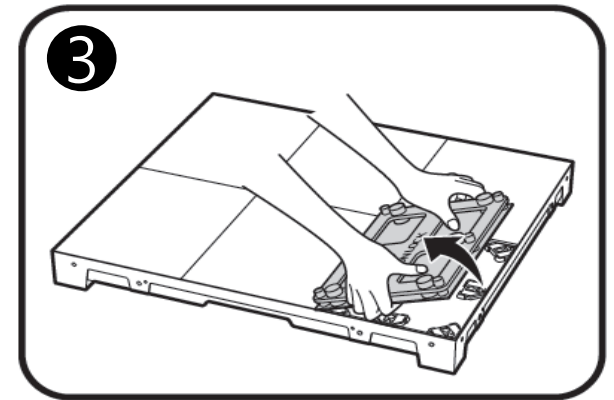
Unlock face up for remove Module



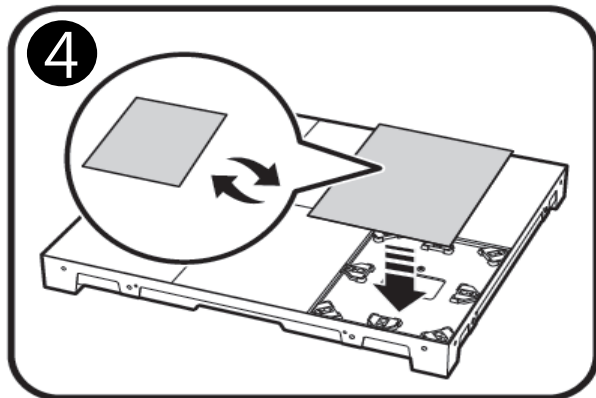
Put JIG on LED Module



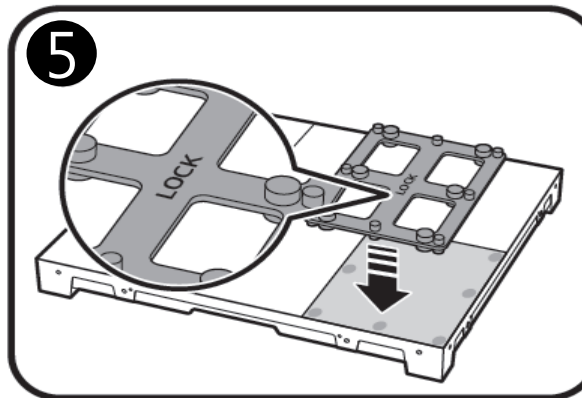
Remove JIG together with Module



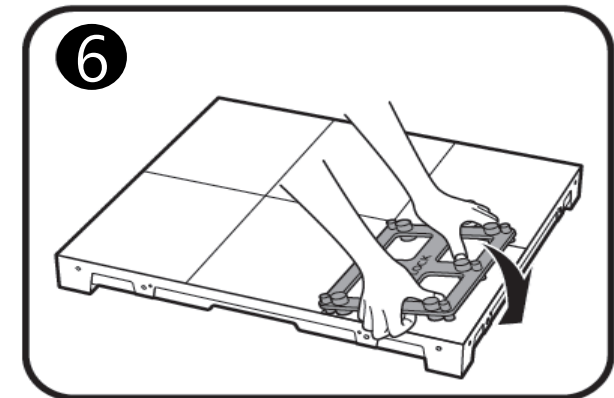
Put the module back with Unlock JIG



Turn Jig to Lock mode



Remove JIG after lock Module



2. How to install

2-3 Physical Installation: cable connection



- 1) Using LAN cable, connect the HDBT-out
1) port of LSB and HDBT-in port of the first cabinet.
 - 2) Connect HDBT OUT of the first LED Cabinet and HDBT IN of the second LED Cabinet. Then repeat.
 - 3) Connect the power using power cords and power extension cables.
- ※ For details on the cabling method, please refer to 2-4 Data Cabling.

2. How to install

2-3 Physical Installation: cable connection

1. In case of cable bundling, the allowed number of cables is different according to the cable length and type. There can be a signal quality issue, if it doesn't follow below recommendation.

HDBaseT Cabling - Permissible Number of Cables in a Bundle

Type	30m	50m	70m	100m
CAT5e/6	6	4	2	1
CAT6a/7	6	6	6	6

2. The signal quality is different according to the rolled condition of cable.
In case of the random rolled condition, we recommend 50m with CAT5e type.



Orderly Rolled (3rd experiment)



Random Rolled (2nd experiment)

3. Use an unfolded cable for HDBT signal quality.

2. How to install

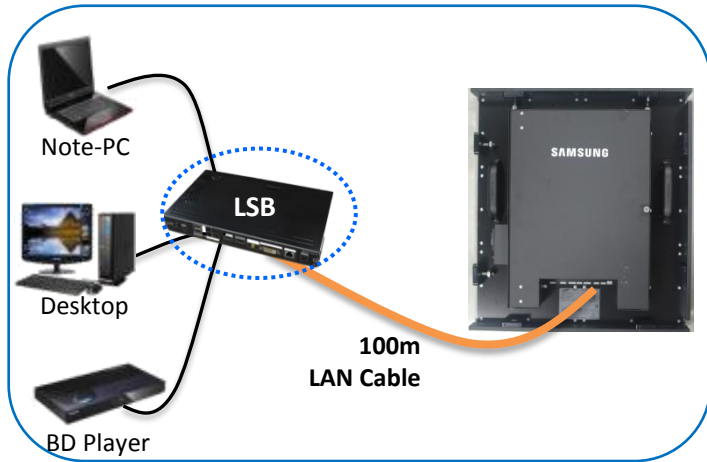
2-3 Physical Installation: cable connection for over FHD resolution

- Choice of HDBT cable
 - Specification
 - * Use the cable which is below 50m in length and of a level higher than CAT6, FTP with stand alone wiring.
 - Supplier
 - * LSIS (Korea)
 - * Crestron (Overseas)
- Check the HDBT Signal level
 - Use the Valens tool and check the HDBT signal level for all cabinet.
 - Rx Side MSE – less than 18dB level is OK, Tx Side MaxErr less than 0.8 is OK
- Guideline for input equipment
 - Recommend the HDMI certification equipment (Do not use the equipment of CRESTIE)
 - If do not use the HDMI certification equipment, recommend DVI to DVI connection

2. How to install

2-3 Physical Installation: Connect LED signage box

LED Signage Box Connection



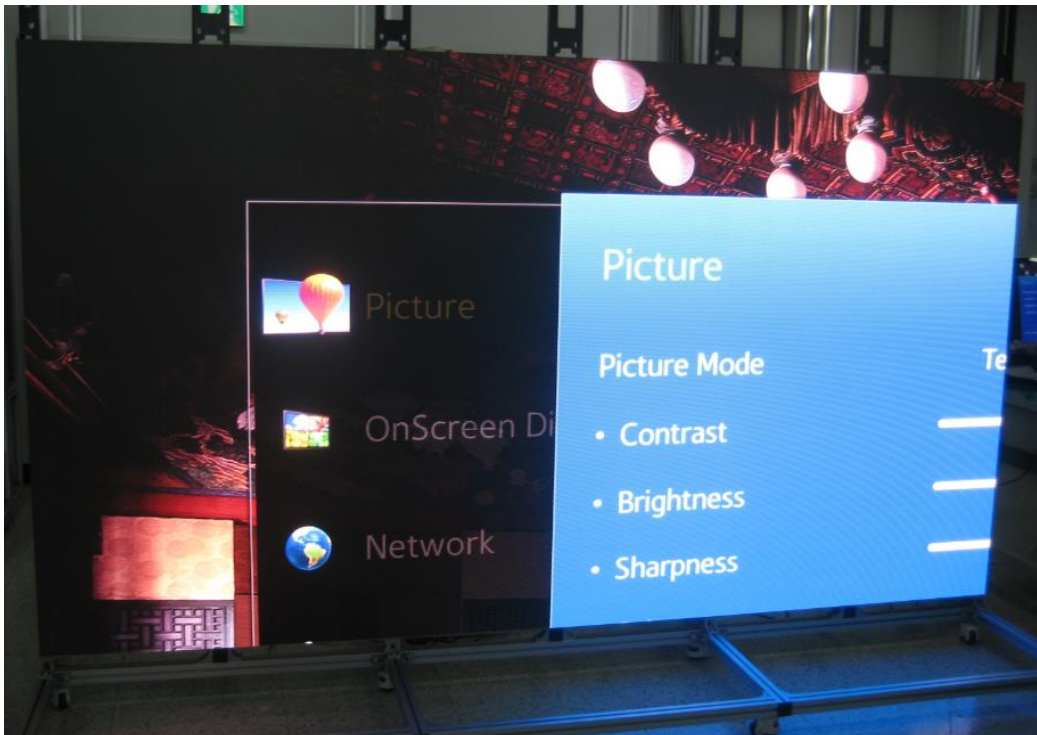
- 1) Input the Video Signal to LSB. (Input Source : DVI, HDMI, DP, USB)
- 2) Check the input signal through the input status on LED.
(Green: DVI, Red: HDMI, Blue: DP)
- 3) Connect from HDBT Out Port of LSB and HDBT IN Source of Cabinet using LAN Cable.
- 4) Check whether the input source of the first cabinet is HDBT or not.
(Check source transition button of the Cabinet)

2. How to install

2-3 Physical Installation: Check Screen status

While the Screen is being operated, check whether there is any defect on the LED and whether there is any abnormality on the screen.

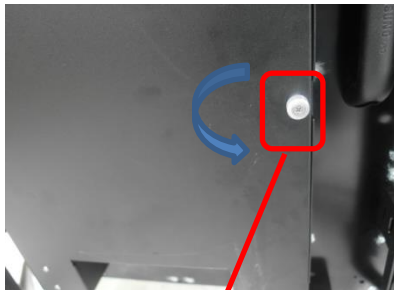
Check whether the connection of DP cables is normal when some monitors are off Sometimes.



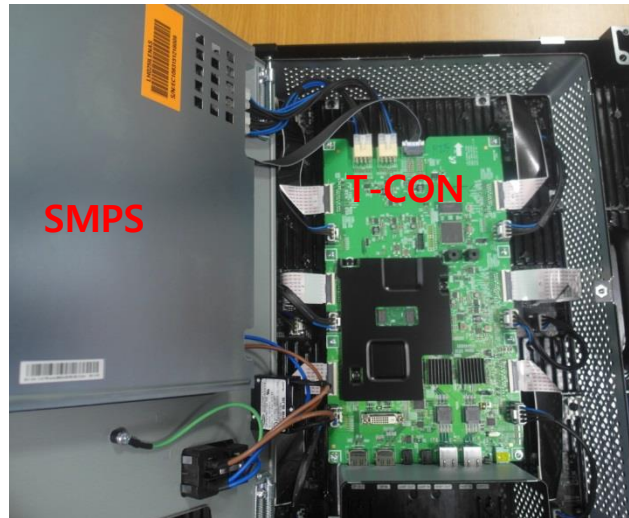
2. How to install

2-3 Physical Installation: T-CON PCB replacement

If you must change or repair T-CON and SMPS, open the door using hand + driver turning Captive screw to the left (counterclockwise) that is attached to door.



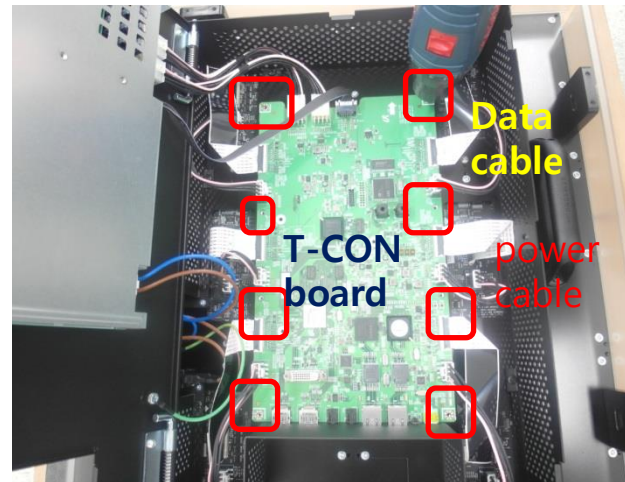
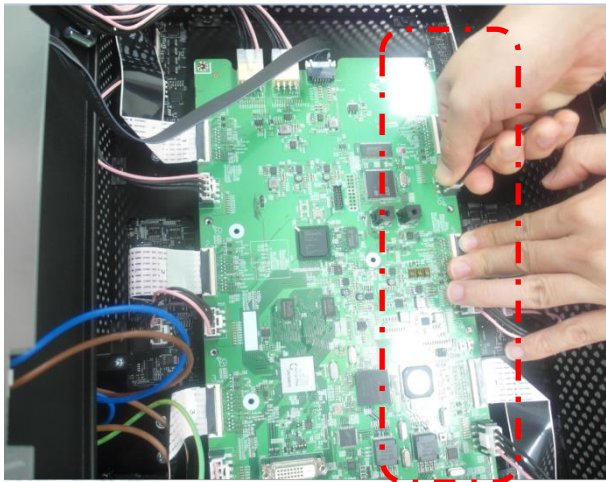
Captive screw



2. How to install

2-3 Physical Installation: T-CON PCB replacement

1. Separate Data Cable and Power Cable of T-CON.
2. Remove 8 Points of Screw that are holding T-CON.

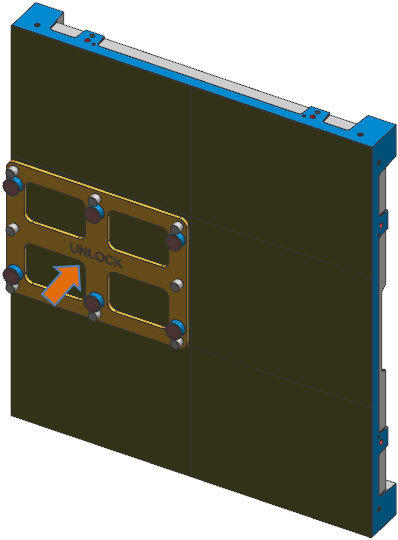


2. How to install

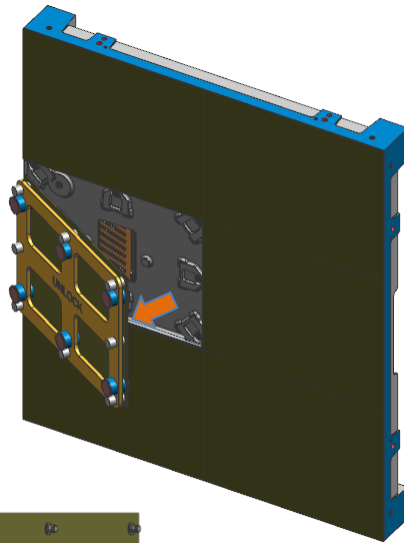
2-3 Physical Installation: LED module replacement

1. If LED Module needs to be replaced, use jig exclusively for the purpose. Have the letter that says "Unlock" marked on the jig to be shown, and then put it on the LED surface. Pull the jig and then the LED will be disassembled.
2. Disassemble the data cable and power cable that are connected to each other.

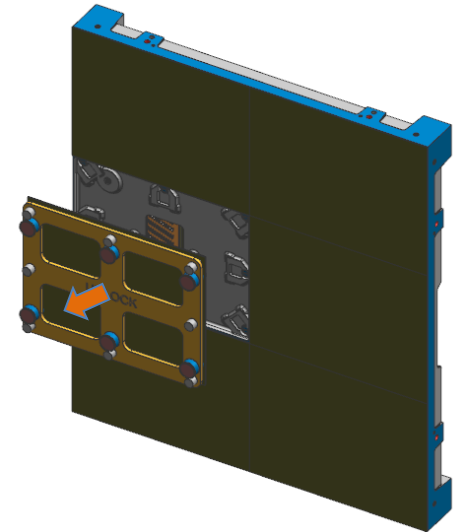
Put on Lock Jig on Module



Remove Module, disassemble cable



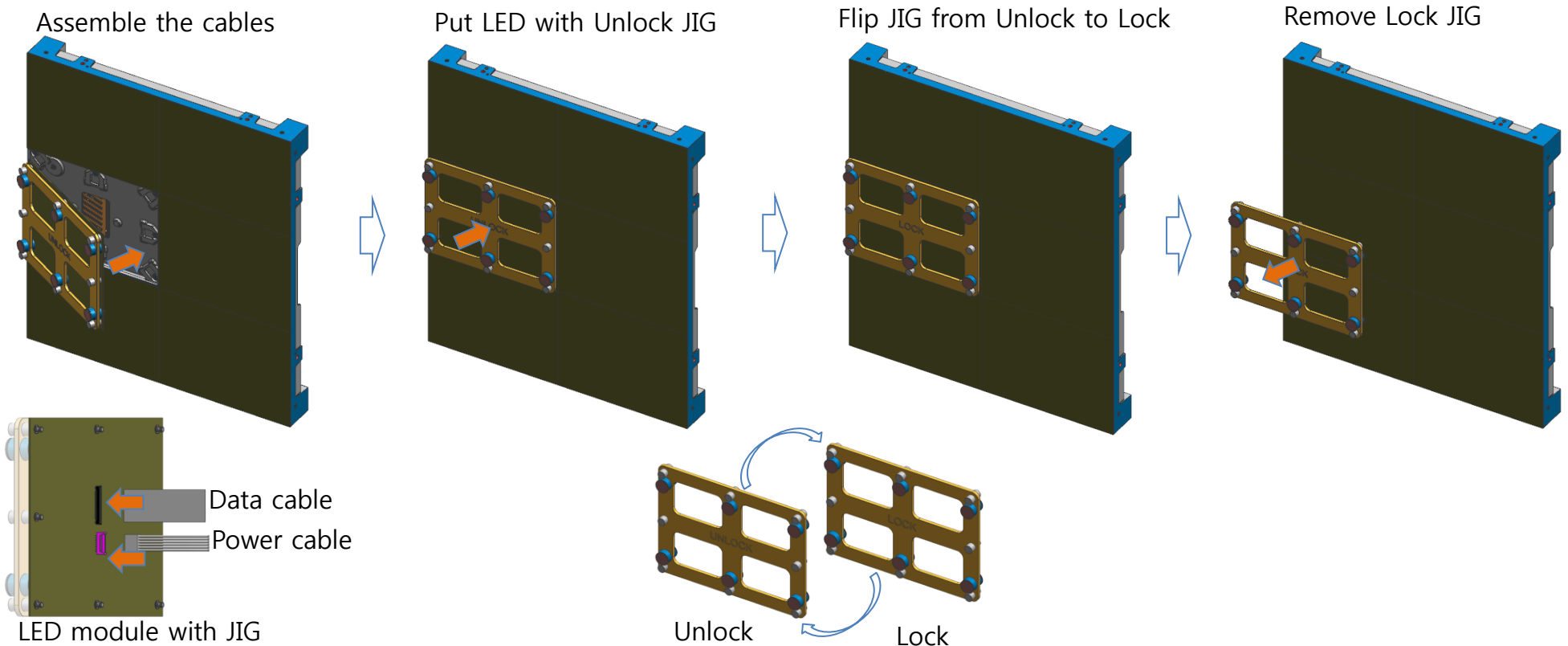
Remove Module with Unlock JIG



2. How to install

2-3 Physical Installation: LED module replacement

1. When combining LED module, connect to cable and then put on the LED side so that the word "Unlock" can be shown, and then flip it and put on the LED side again to have the word "Lock" be shown.
2. When flipping the jig, support with finger so that LED module may not fall out.

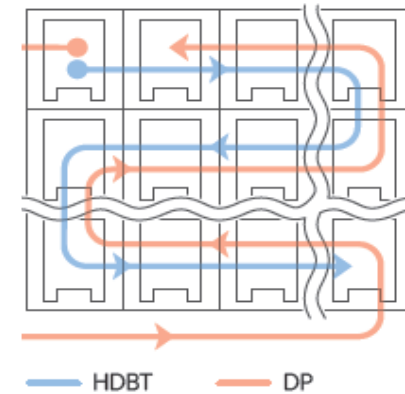


2. How to install

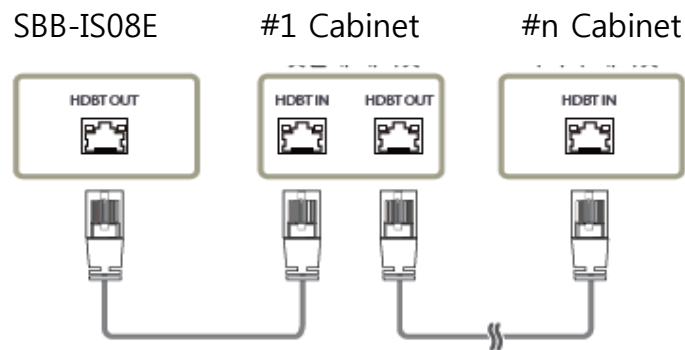
2-4 Data cabling

Connect Cabinets

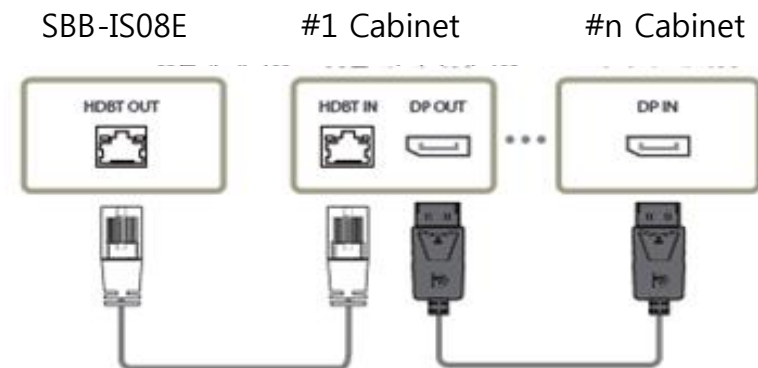
- After connecting an outside device with SBB-IS08E, connect with IL(S)015, 020, 025.
- The connection area may differ depending on the products.
 - Connect the power cable after all cables are completed being connected.
 - If power cable is connected before connecting with an outside device, please separate the connection.
 - After connecting HDBT cable, connect DP or Stereo Cable in the following order.



How to Connect HDBT signal



How to Connect DP signal

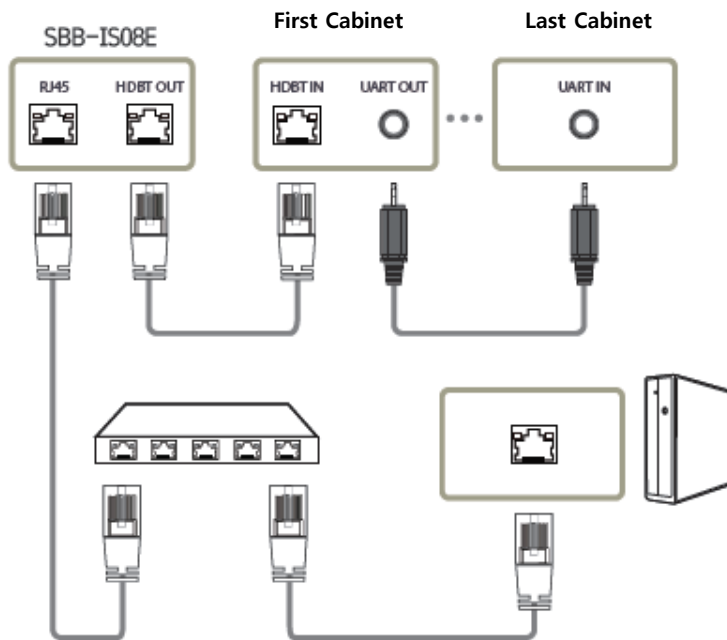


- When connecting DP OUT source of the cabinet with other displays, the screen may not appear normally.
- DP source is a source that is supported for redundancy if there is a cabinet where abnormality has occurred while being connected to HDBT.

2. How to install

2-4 Data cabling

RS232C Redundancy Connection



Only the cabinets connected with the same web can be controlled.

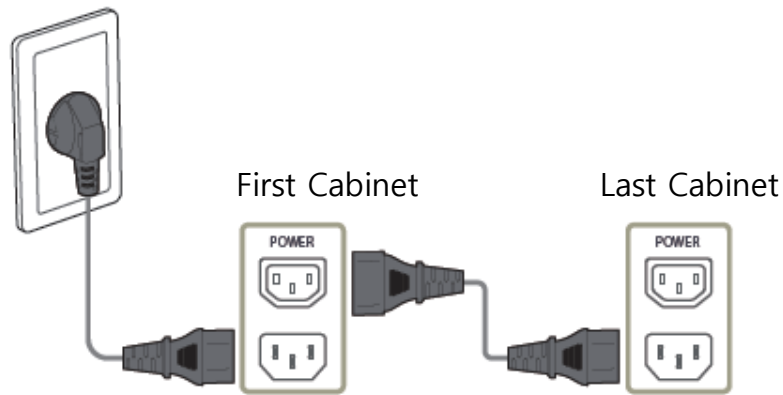
2. How to install

2-5 Power cabling

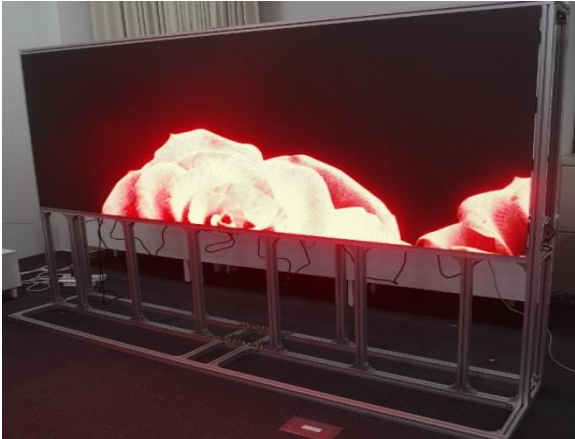
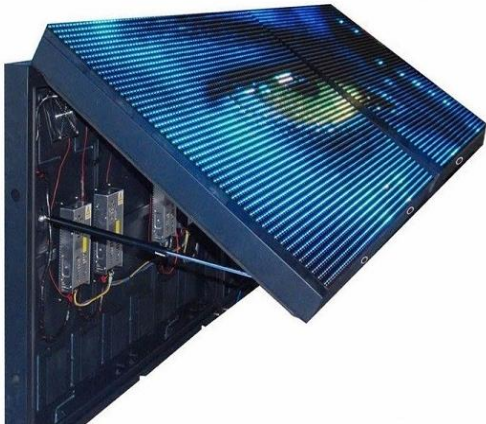
Power Connection method for Each Input Voltage

- For 110V, IL(S)015 should be below 3 units, IL(S)020 should be below 3 units, and IL(S)025 should be below 4 units.
- For 220V, All sets should be below 4 units

If connected more than recommended, circuit breaker of the product may get tripped due to overload of electricity.



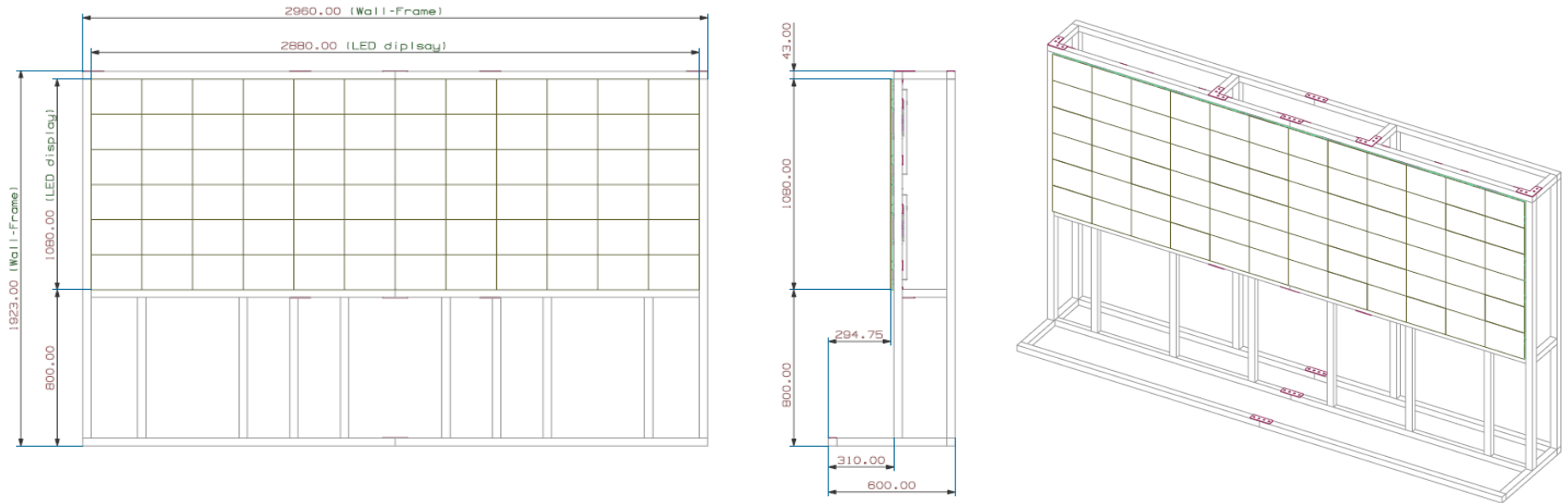
3. Example of Installation

Floor type	Ceiling type	Wall mounting type
		
		

3. Example of Installation

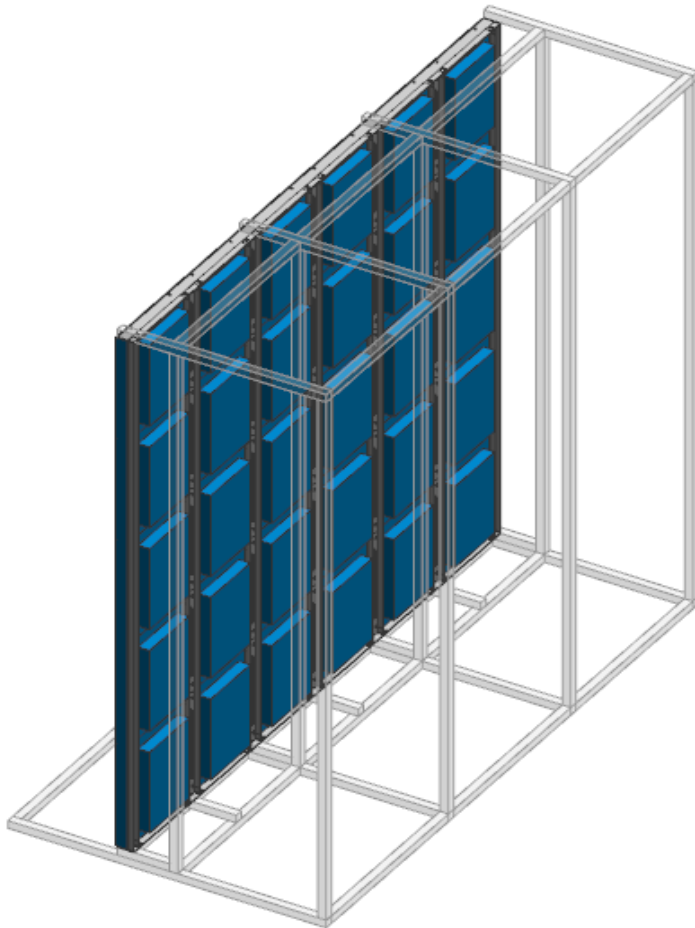
3-1 Floor type

- Example of support structure (2 rows x 6 columns matrix)
- The support structure in the below example is typical example for 2R x 6C display. Several variants of support structures are possible for the same size. Contact Samsung for more information.

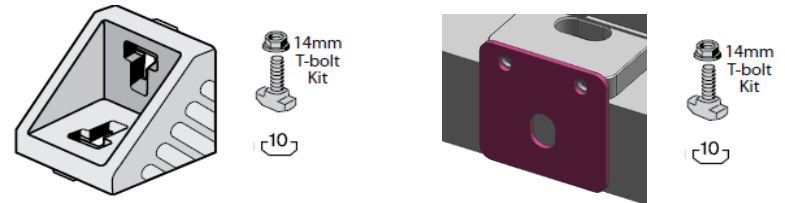


3. Example of Installation

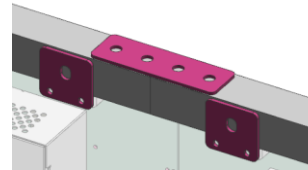
3-1 Floor type : Example of (5 columns x 6 rows matrix)



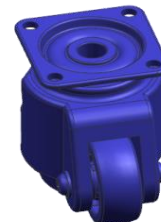
Component for Assembly
: Die-casting gusset + bolt + nut



Assy Frame L & R connecting bracket

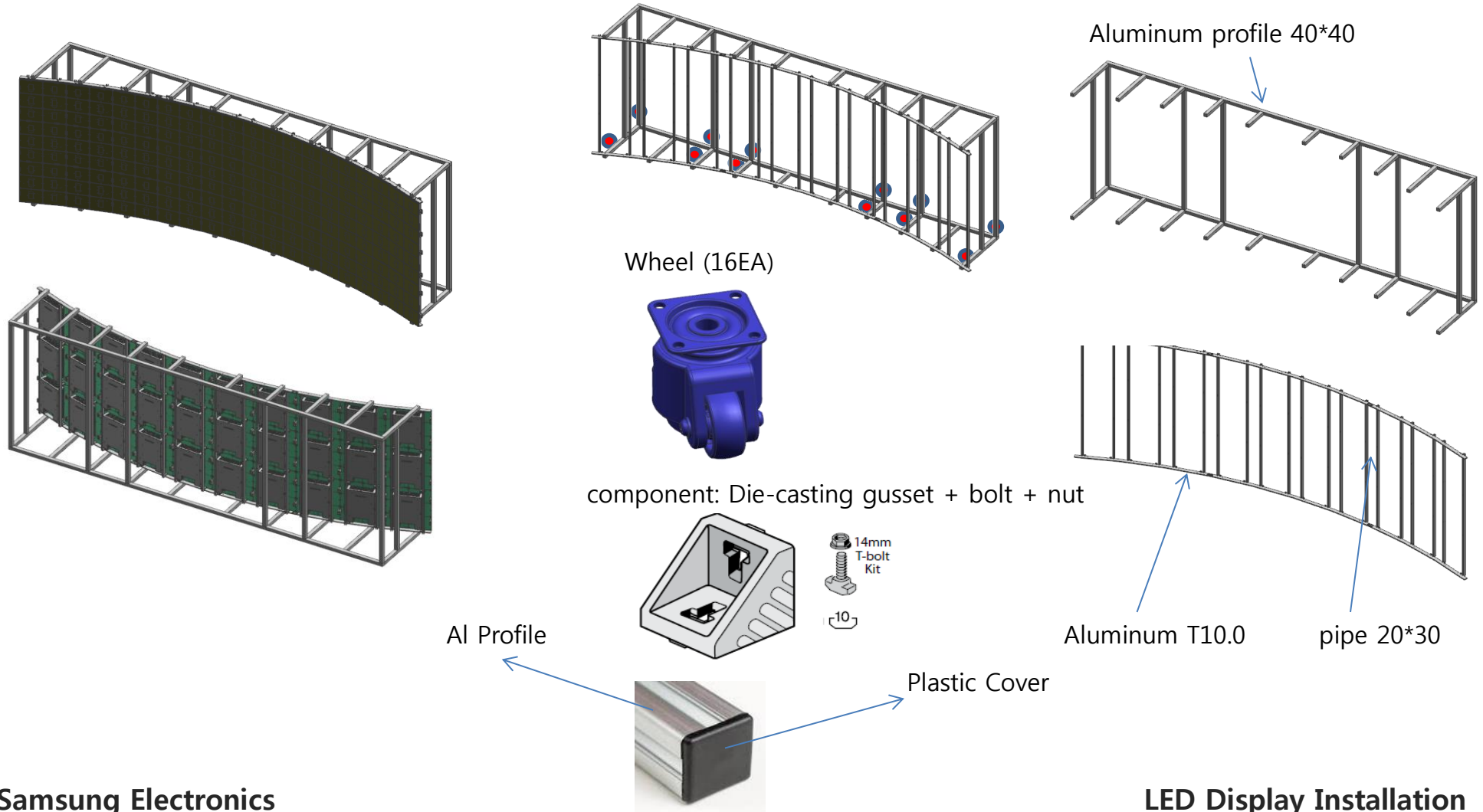


Wheel



3. Example of Installation

3-1 Floor type : Example of 3columns x 10rows matrix, Curve R6000

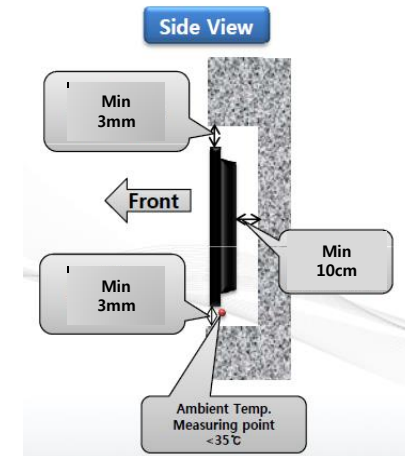


3. Example of Installation

3-2 Wall-mount type

Wall Mount & Pocket Structure

Wall Mount
with Swivel Structure
Applied



Hydraulic Cylinder

Hydraulic Cylinder



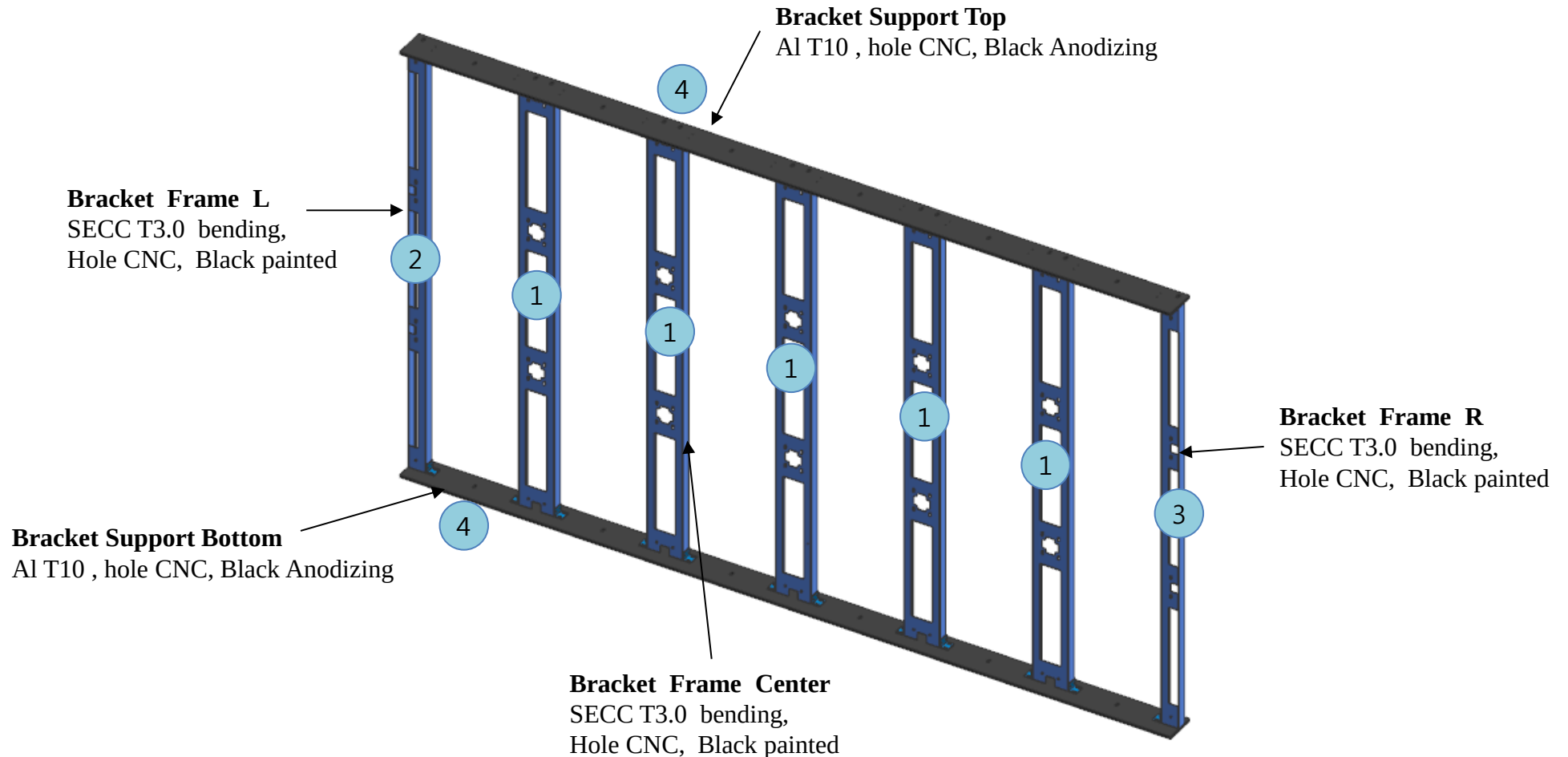
Open Wall Structure

Make a hole on the
wall and carry out
work in the rear area

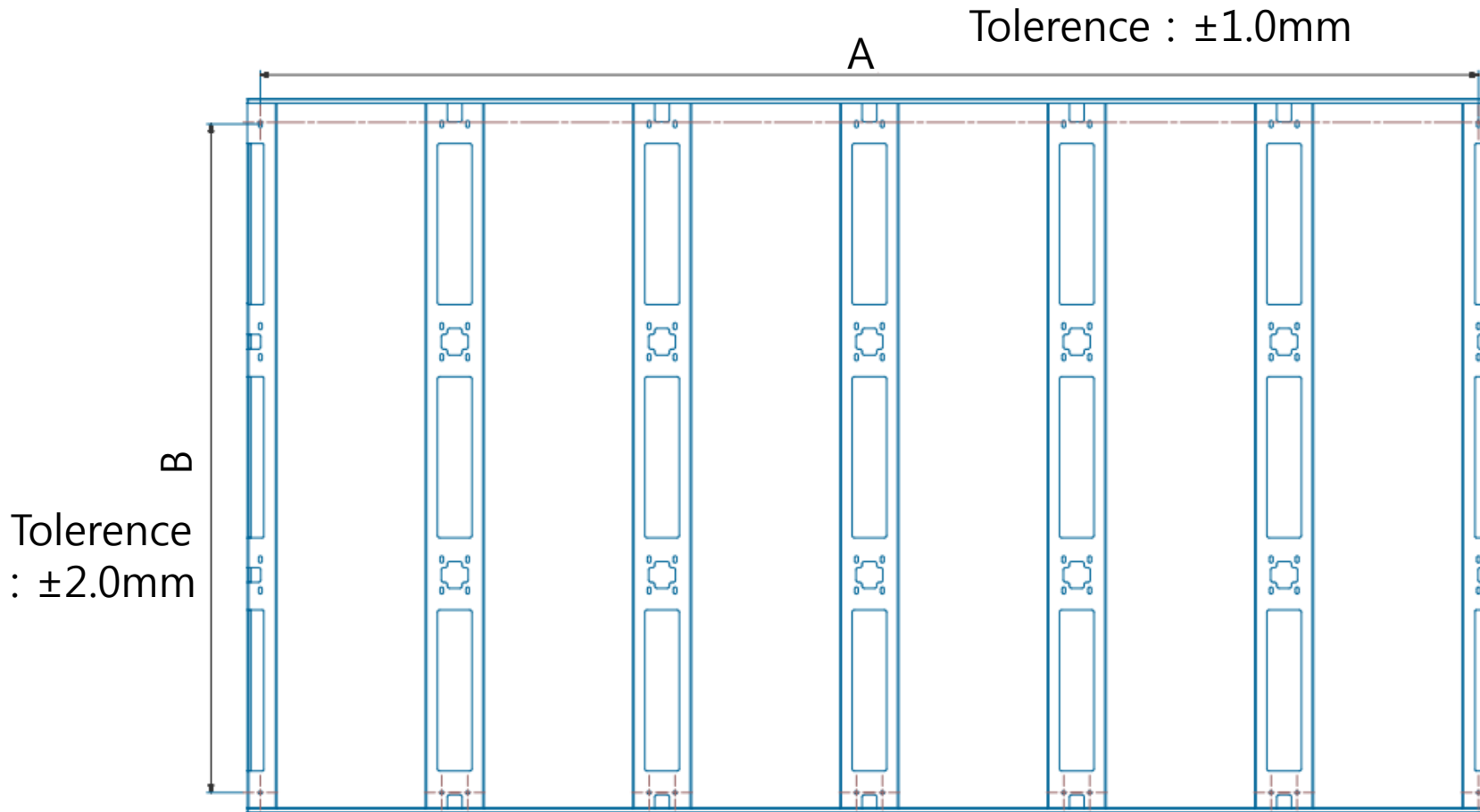


3. Example of Installation

3-3 Frame example (3 rows x 6 columns)

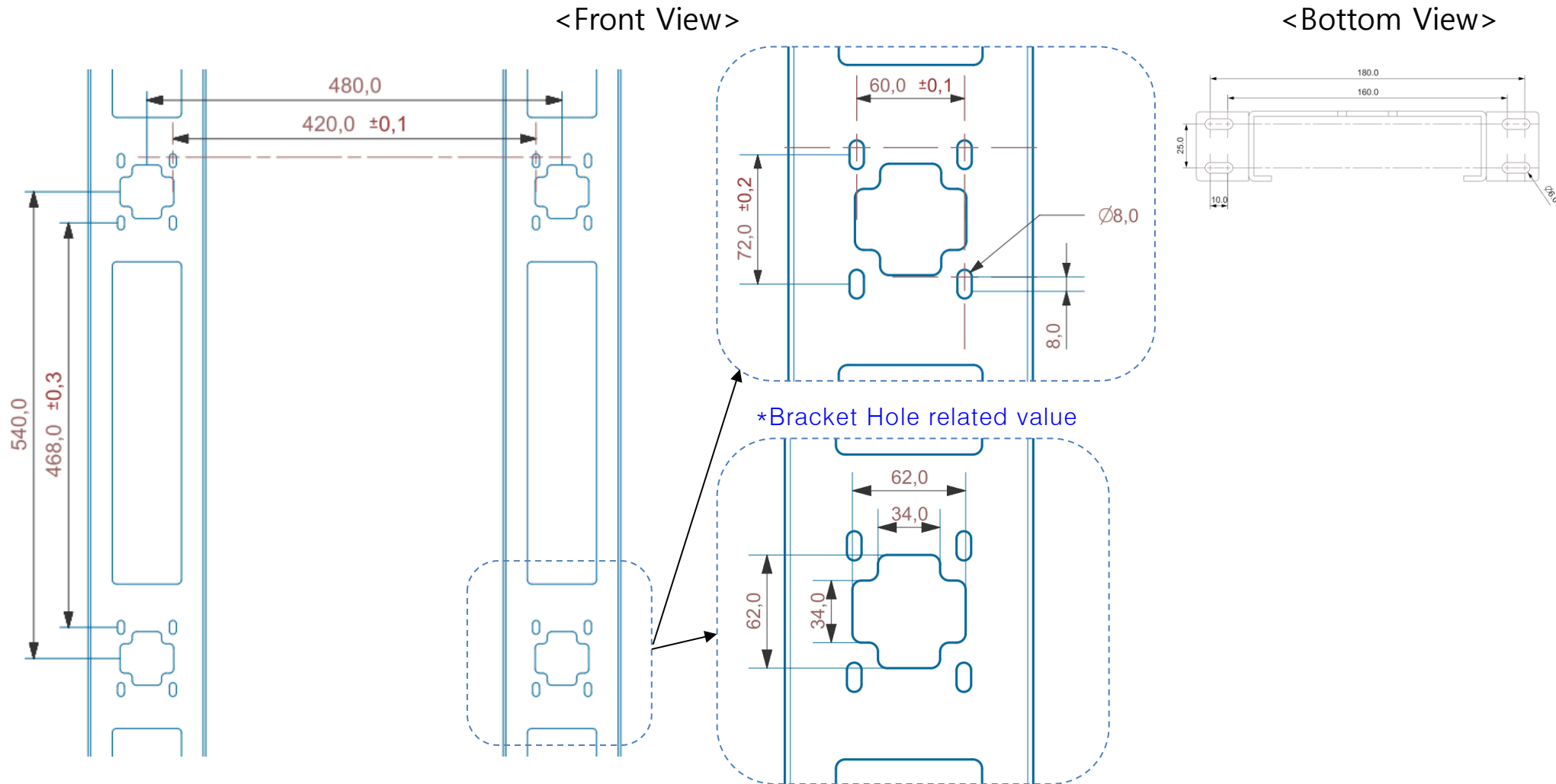


3. Example of Installation



3. Example of Installation

1 Bracket Frame center dimension Guide



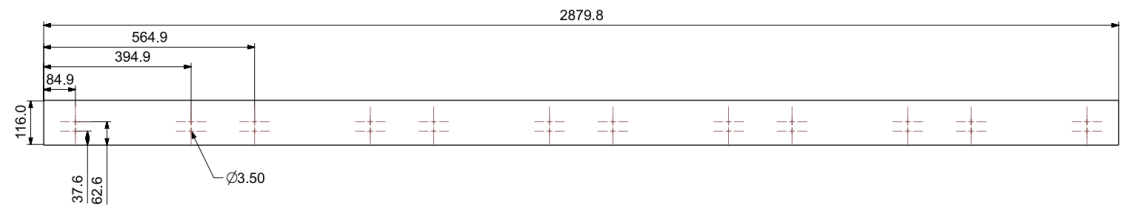
3. Example of Installation

2 3 Bracket Frame L/R dimension

*hole dimension is same with Bracket Frame Center



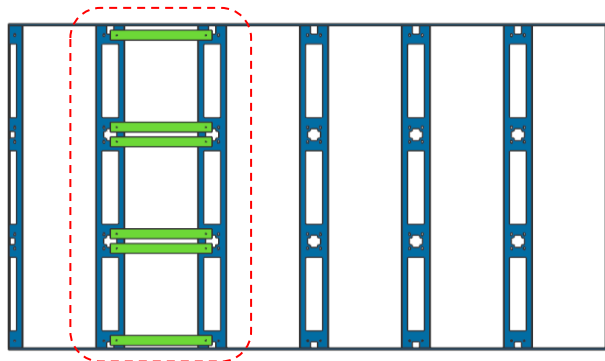
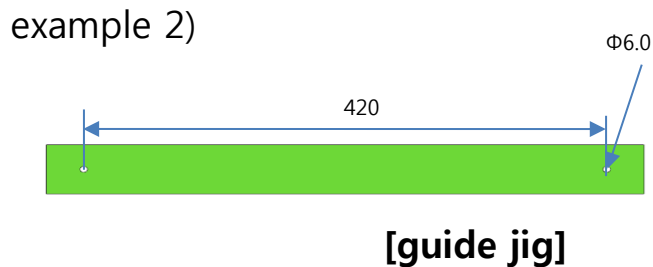
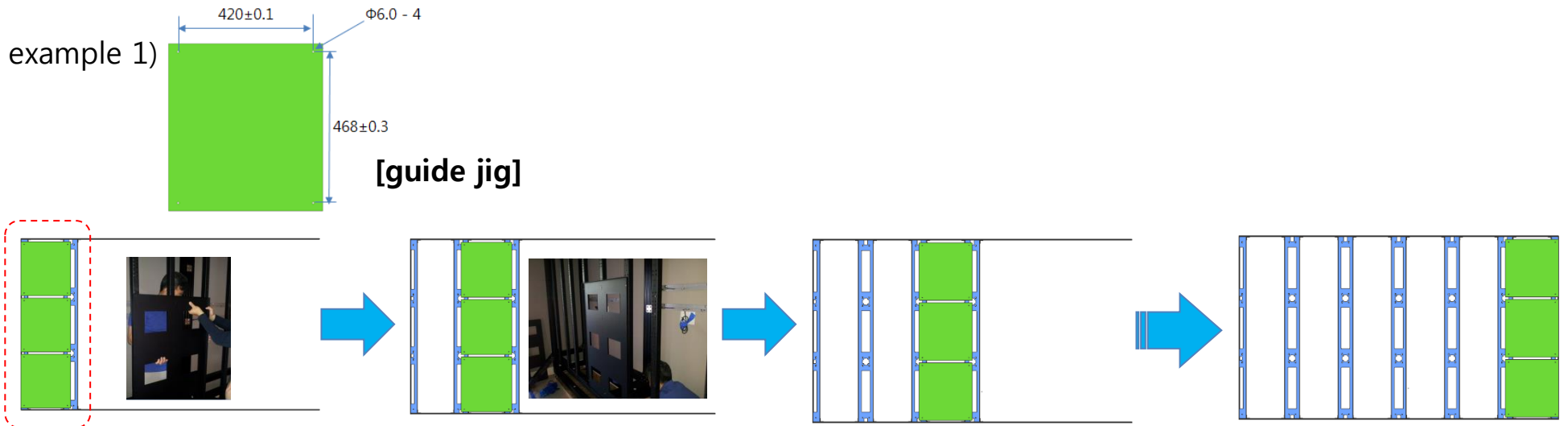
4 Bracket Support Top/Bottom dimension



3. Example of Installation

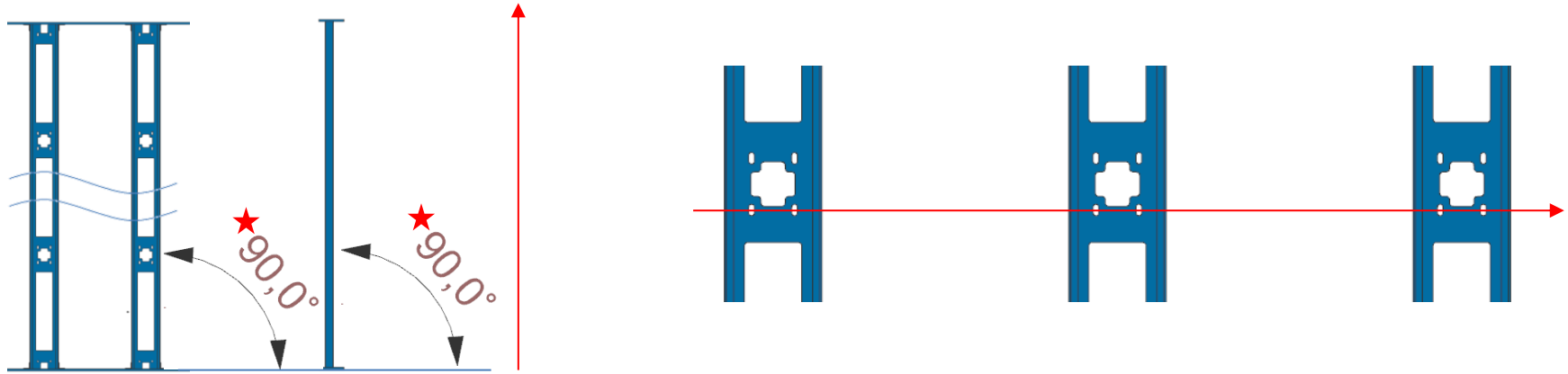
3-4 Frame Assembly

1. Bracket-Frame is matched by special guide jig.
(dimension between hole: horizontal 420mm, vertical 468mm)

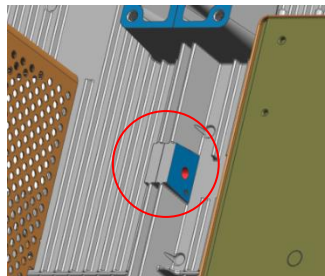
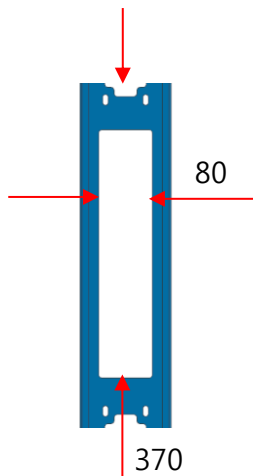


3. Example of Installation

2. Checking the status of bending of frame , degree between Frame and Base structure as 90 degree.



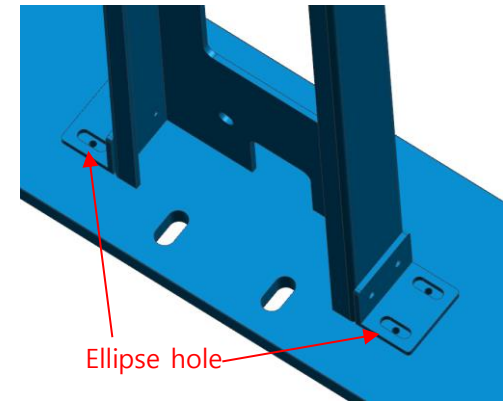
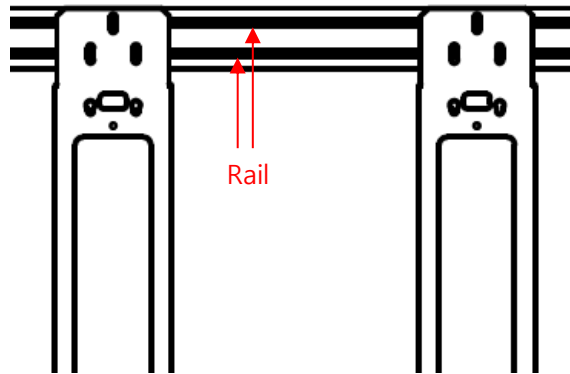
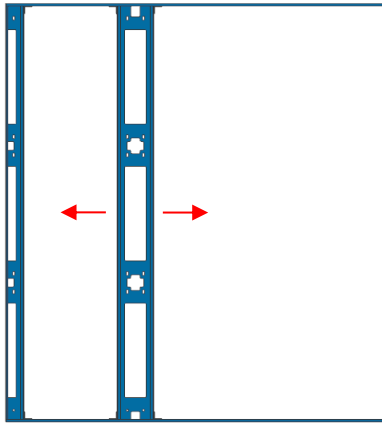
3. There should be 80x370mm hole on the frame for having space to join each cabinet.



<Front View>

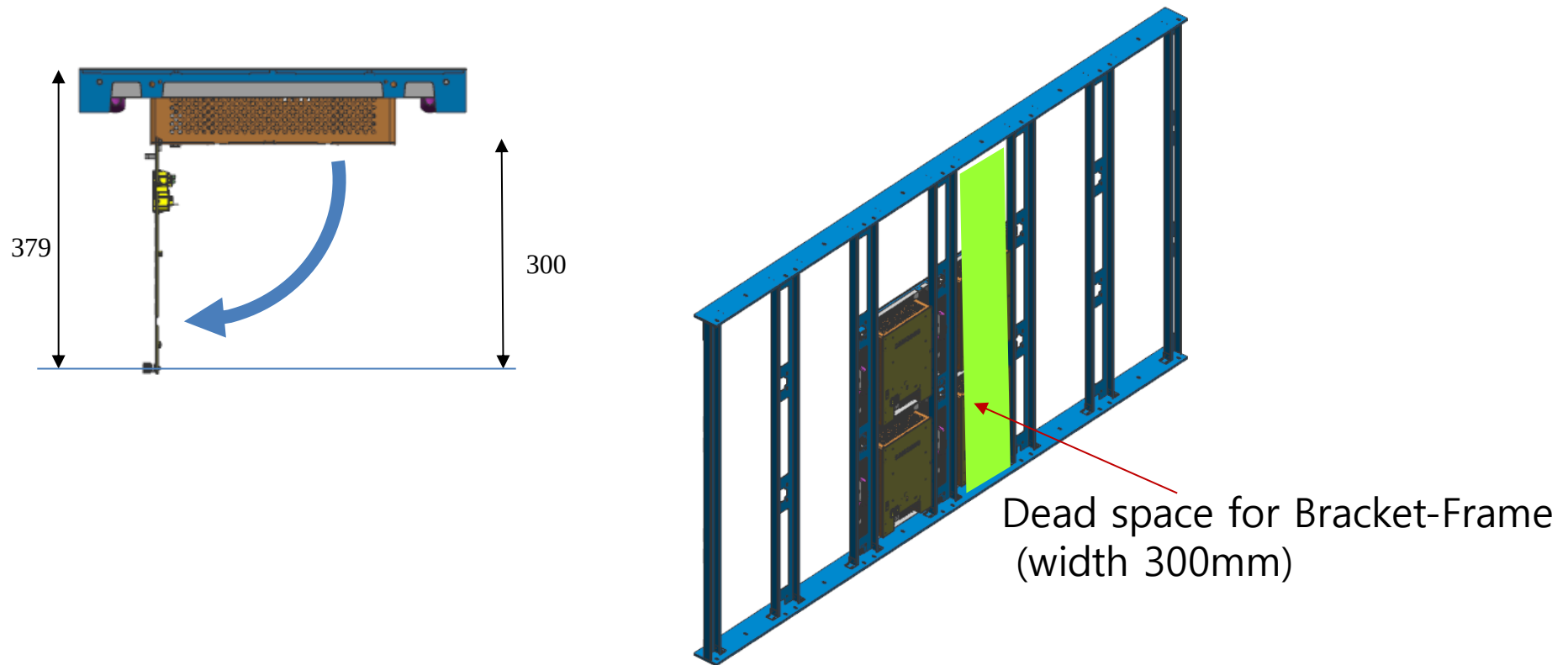
3. Example of Installation

4. Frames can be moved horizontal by a rail structure.



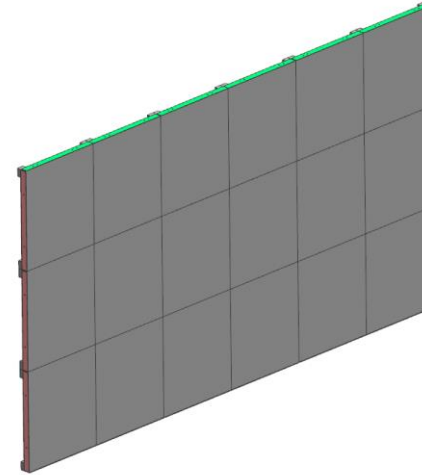
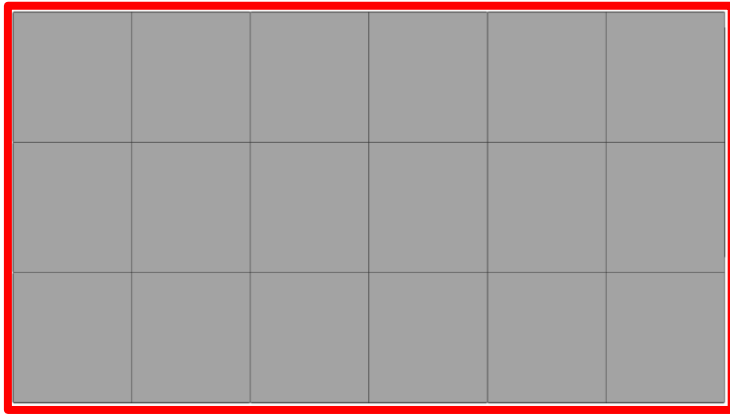
3. Example of Installation

5. It needs enough space at rear of cabinet for opening the door.



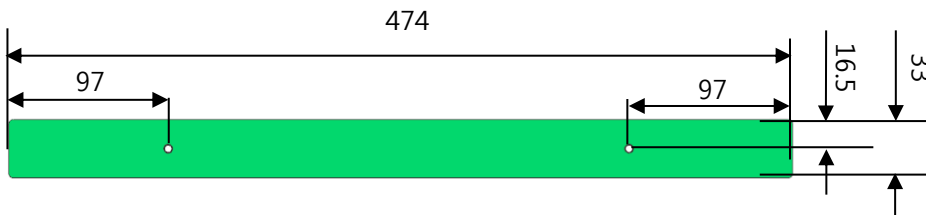
3. Example of Installation

6. It needs a Bracket Cover at border of the display to prevent making a seam by a sagging or a moving of LED module.

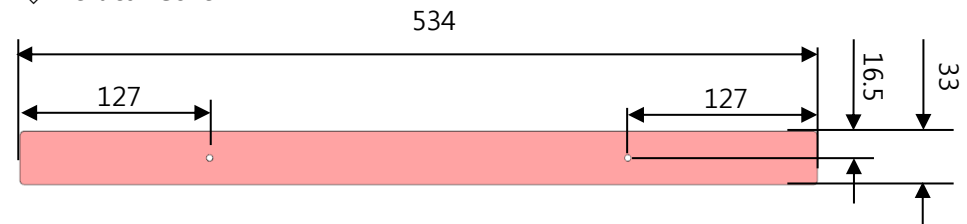


© Cover Spec (material : Steel , thickness 1.0, tolerance ± 0.2) – non provide

◇ Horizontal Cover



◇ Vertical Cover



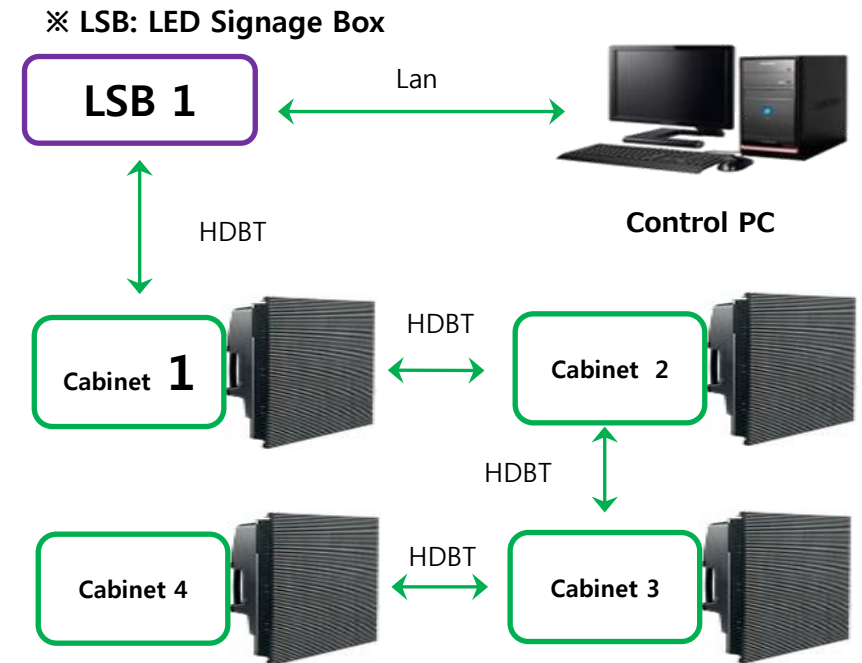
4. Feature

4-1 PC Control Program

LSM(LED Signage Manager)

- SLSM software remotely controls layout of LED modules.

1. PC should be connected to LSB via Ethernet connection (LAN).
2. LSB is connected to the first LED cabinets via HDBT.
3. LED cabinets are connected in daisy chain method via HDBT IN and HDBT OUT ports.



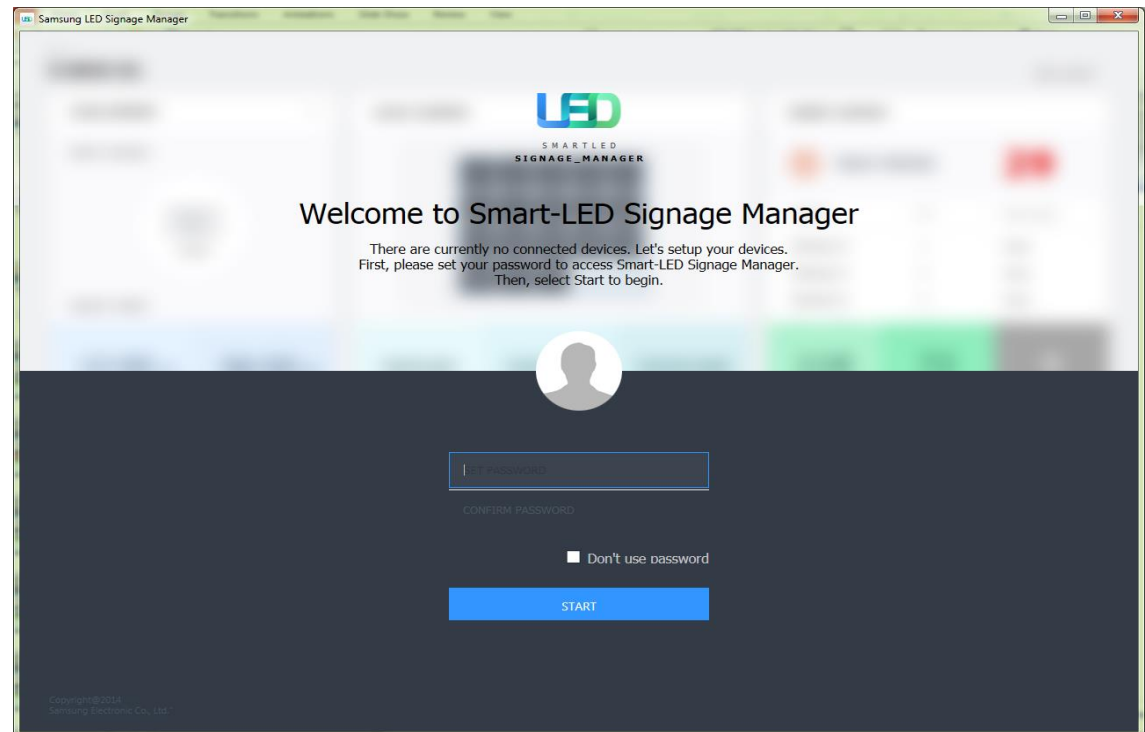
4. Feature

4-1 PC Control Program

● LSM(LED Signage Manager)

- Start– Login Page

1. When LSM application is launched for the first time, the page to set user password will appear.
2. To set up a password, users need to enter a password two times and click “Start” button.
3. If the user does not want to set any password, check “Don’t use password” option in the checkbox. In this case, when LSM application gets launched, it will no longer require password to log in.



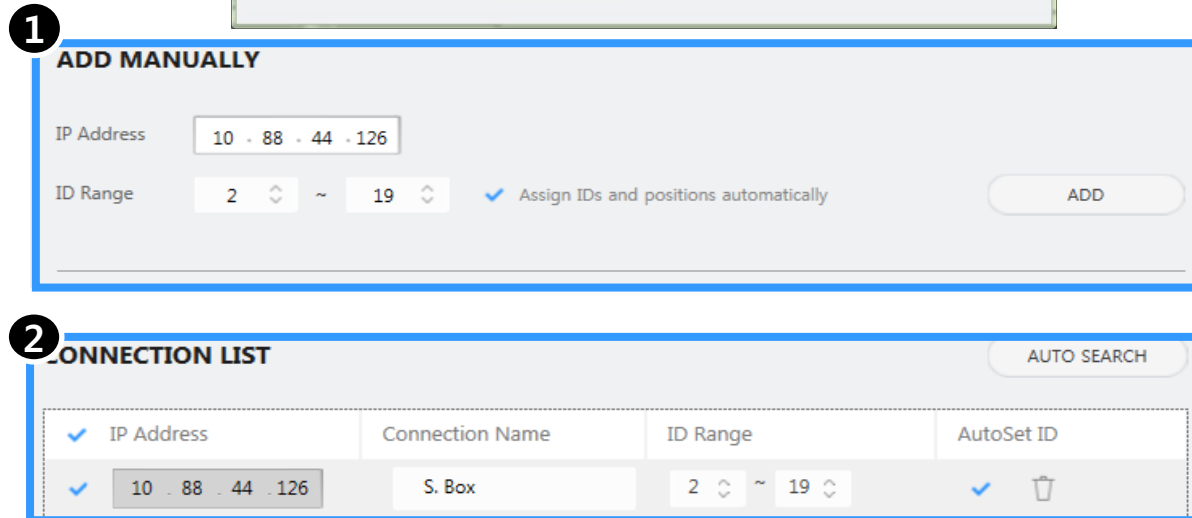
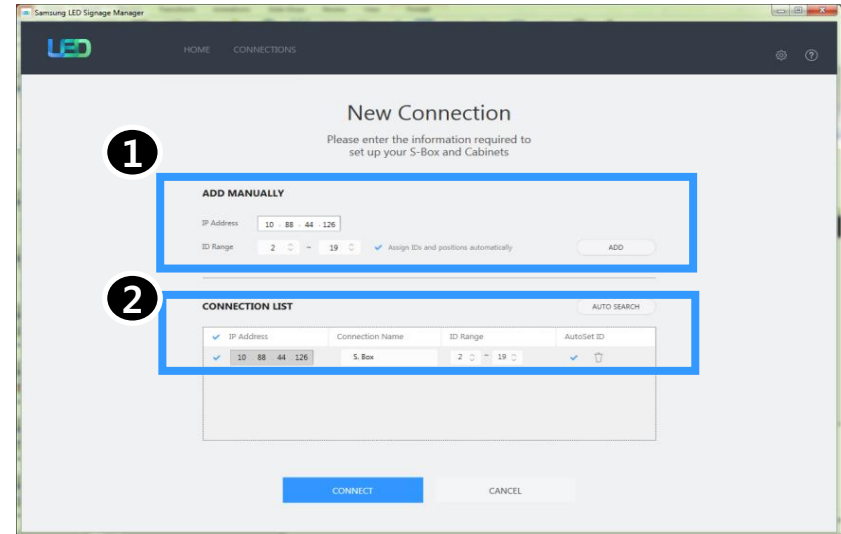
4. Feature

4-1 PC Control Program

LSM(LED Signage Manager)

- New Connection-Add Manually

1. To add connection information manually, please write down IP address on the IP address field.
2. Set range of IDs of LED cabinet in ID Range input field.
3. To set IDs and position of each automatically, click check box that reads, "Assign IDs and positions automatically."
4. If you press "Add" button, the connection setting information will be added to the Connection List.
5. In Connection list, users can edit connection name, ID Range, AutoSet ID options and Delete the relevant connection information from the Connection List.
6. Press "Connect" button to connect all or select connection in Connection List



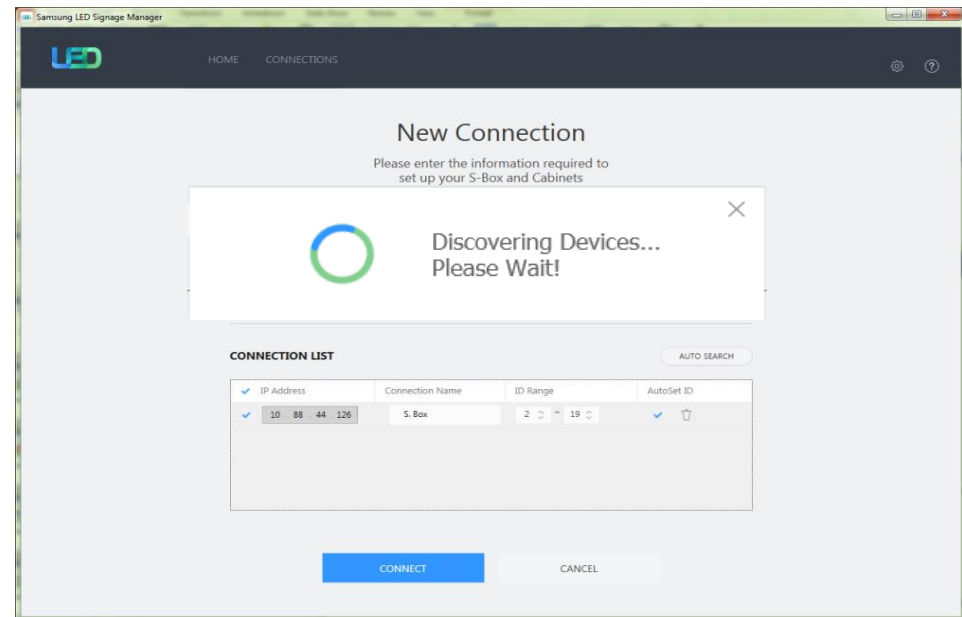
4. Feature

4-1 PC Control Program

LSM(LED Signage Manager)

- New Connection-Add AutoSearch

1. Auto Search will automatically search for the connection information of the LSB that exists in the same network.
2. All the available connection will be displayed in the Connection List.
3. In Connection list, users can edit connection name, ID Range, AutoSet ID options and Delete the relevant connection information from the Connection List.
4. Press “Connect” button to connect all or select connection in Connection List



CONNECTION LIST				AUTO SEARCH
✓ IP Address	Connection Name	ID Range	AutoSet ID	
✓ 10 . 88 . 44 . 126	S. Box	2 ~ 19	✓	✕

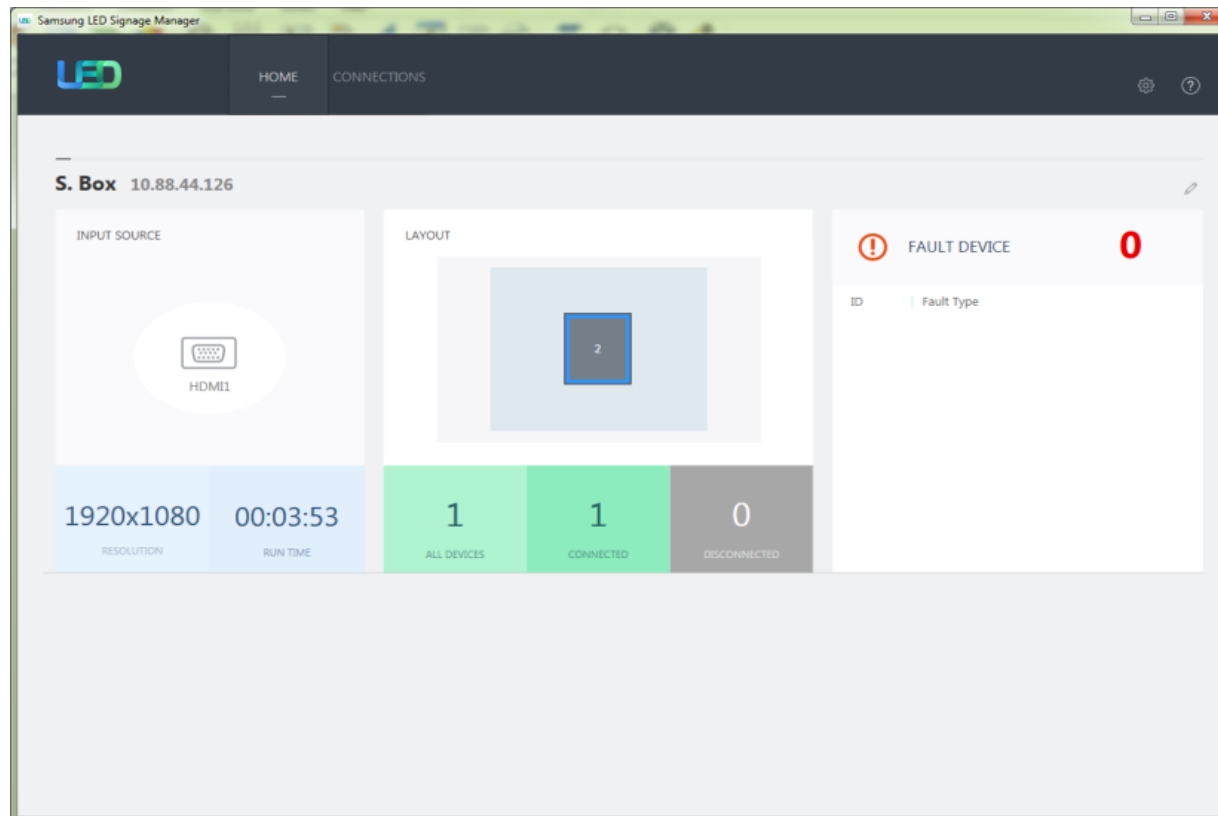
4. Feature

4-1 PC Control Program

● LSM(LED Signage Manager)

- Main Window-Home Window

1. Home Screen : Displays information of connected devices, Input source, Layout and Faulty devices.



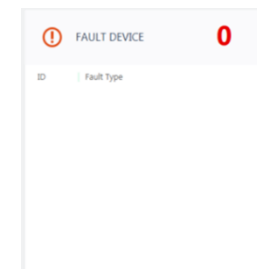
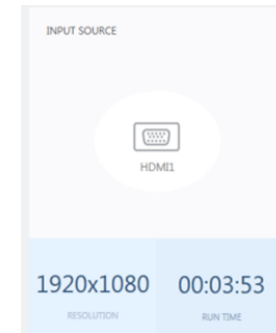
4. Feature

4-1 PC Control Program

LSM(LED Signage Manager)

- Main Window-Home Window

1. Input source: Displays information regarding LSB input source type, resolution and connection time.
2. Cabinet Layout : Displays layout of all LED cabinets, number of cabinets, number of connected cabinets and number of disconnected cabinets.
3. Faulty device: Displays the ID of the LED cabinet in Error and the contents of error.



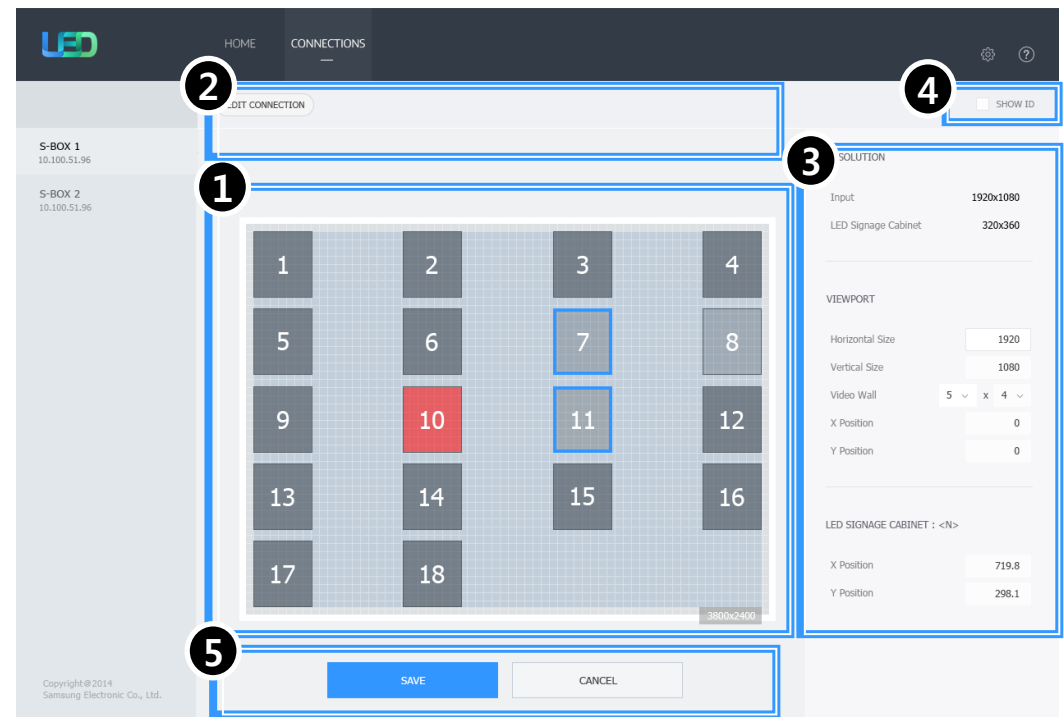
4. Feature

4-1 PC Control Program

LSM(LED Signage Manager)

• Main Window-Edit Connection Layout Window

1. Connection layout: Position and layout of each cabinet with respect to output source display from LSB.
2. Feature View: Provides Edit button which is for modifying connection information and Automatic Alignment function for LED Cabinet, and etc.
3. Device Information/Setting View: Displays LED Cabinet Information according to each of the below category:
 - (i) Resolution: Displays resolution information of the Input source.
 - (ii) View Port: Contains Horizontal size, Vertical size, Videowall Matrix, X position and Y position settings.
 - (iii) LED Signage Cabinet: X and Y position of cabinet.
4. Show ID: When checked X Position and Y Position of LED Cabinet
5. Save and Cancel setting.



4. Feature

4-1 PC Control Program

LSM(LED Signage Manager)

• Main Window-Connection Window

1. **Device Connection List view:**
Displays configuration information of LSB. User can delete, Edit LSB Connection.
2. **Connection layout (View Port):**
Check location of each LED cabinet and layout
3. **Category View:**
Home/Connections Tab and Environment Settings
4. **Device Information/Setting View:**
Change LSB Setting (Screen Setting, etc.)
5. **Sub Information View:** Displays:
Monitoring log, LSB Information and LED Cabinet information.



4. Feature

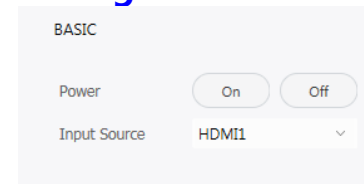
4-1 PC Control Program

LSM(LED Signage Manager)

- Main Window-Connection Window - Device Information/Setting View

1. Basic:

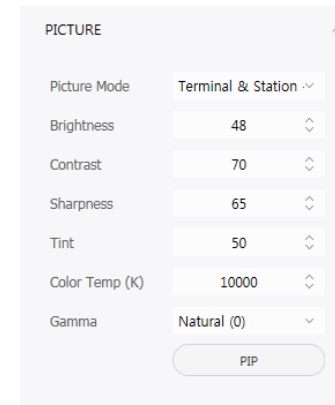
Change Power On/off, Input Source Setting.



The BASIC settings window contains two controls: a Power toggle with 'On' and 'Off' buttons, and an Input Source dropdown menu currently set to 'HDMI1'.

2. Picture:

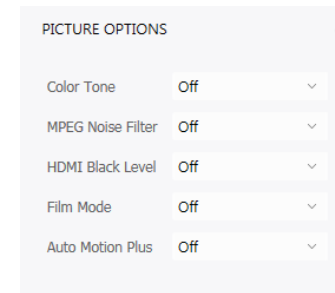
Screen Mode, Brightness, Contrast, Sharpness, Tint, Color Temperature, Gamma and PIP Setting, etc.



The PICTURE settings window includes several adjustable parameters: Picture Mode (Terminal & Station), Brightness (48), Contrast (70), Sharpness (65), Tint (50), Color Temp (K) (10000), and Gamma (Natural (0)). There is also a PIP (Picture in Picture) button at the bottom.

3. Picture Option:

Color Tone, MPEG Noise Filter, HDMI Black Level, Film Mode, etc.



The PICTURE OPTIONS settings window lists five options, all currently set to 'Off': Color Tone, MPEG Noise Filter, HDMI Black Level, Film Mode, and Auto Motion Plus.

4. Feature

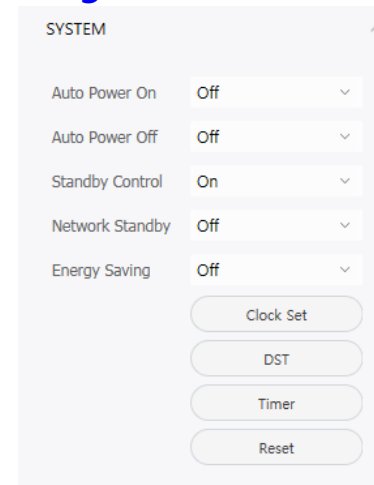
4-1 PC Control Program

LSM(LED Signage Manager)

- Main Window-Connection Window - Device Information/Setting View

4. System:

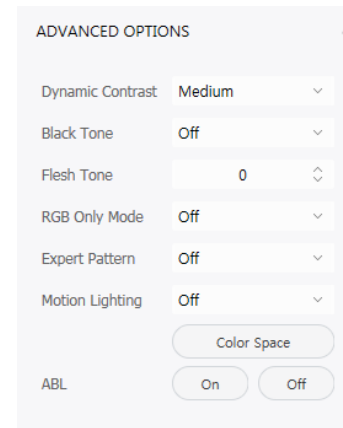
Auto Power On, Auto Power off, Standby Control, Network Standby, Energy Saving, Clock Set, DST, Timer and Reset Setting.



Auto Power On	Off	▼
Auto Power Off	Off	▼
Standby Control	On	▼
Network Standby	Off	▼
Energy Saving	Off	▼
<button>Clock Set</button>		
<button>DST</button>		
<button>Timer</button>		
<button>Reset</button>		

5. Advance Option:

Dynamic Contrast, Black Tone, Flesh Tone, RGB Mode Only, ABL Setting, etc.



Dynamic Contrast	Medium	▼
Black Tone	Off	▼
Flesh Tone	0	↕
RGB Only Mode	Off	▼
Expert Pattern	Off	▼
Motion Lighting	Off	▼
<button>Color Space</button>		
ABL	On	Off

4. Feature

4-1 PC Control Program

LSM(LED Signage Manager)

- Main Window-Connection Window - Device Information/Setting View

6. Cabinet Settings :

Cabinet backlight data (0~10), Gamut (Natural, S-RGB, Adobe RGB) ,

Input source

※ In case of using the gamut function, The using necessity over LSM version and Novatek SW version

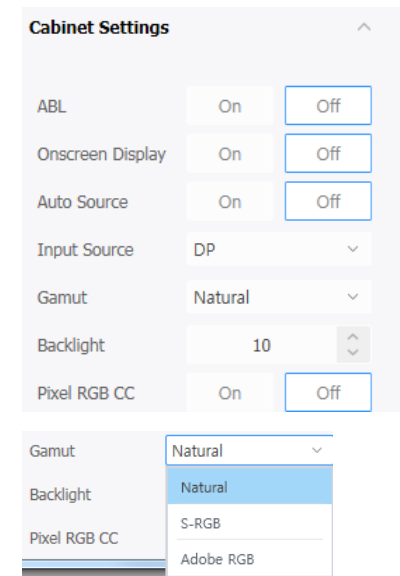
LSM Version : A-LEDMGDSP- 1003.4 ↑

Cabinet Novatek SW Version :

Basic model : L-ILEMWWAC-1005.0 ↑ / L-ILFMWWAC-1003.0 ↑ /

L-ILFMWWBC-1001.0 ↑

Step up model: L-ISFMWWAC-1002.4 ↑



4. Feature

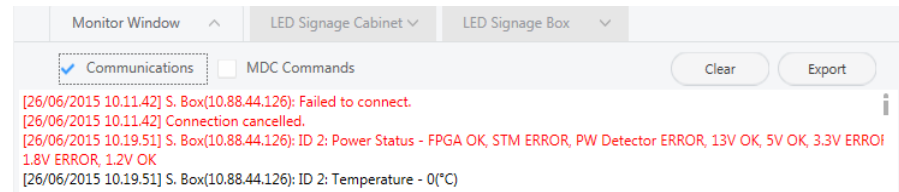
4-1 PC Control Program

LSM(LED Signage Manager)

• Main Window-Connection Window - Sub Information View

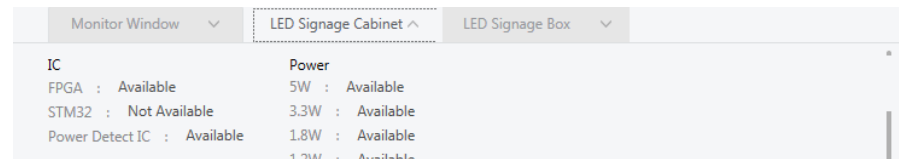
1. Monitor Window:

Able to check MCD communication log and connection device information. Able to extract in a file.



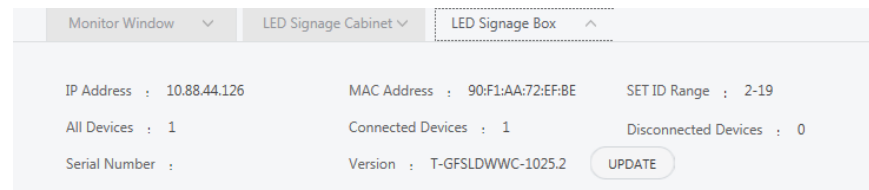
2. LED Signage Cabinet:

LED cabinet's IC and Power information



3. LED Signage Box:

IP address, MAC address, ID Range of LED Cabinet, Number of LED Cabinets (All / Connected / Not Connected), Serial Number, Version Information



4. Feature

4-1 PC Control Program

● LSM(LED Signage Manager)

- **Main Window-Preferences.**

1. **Options:**

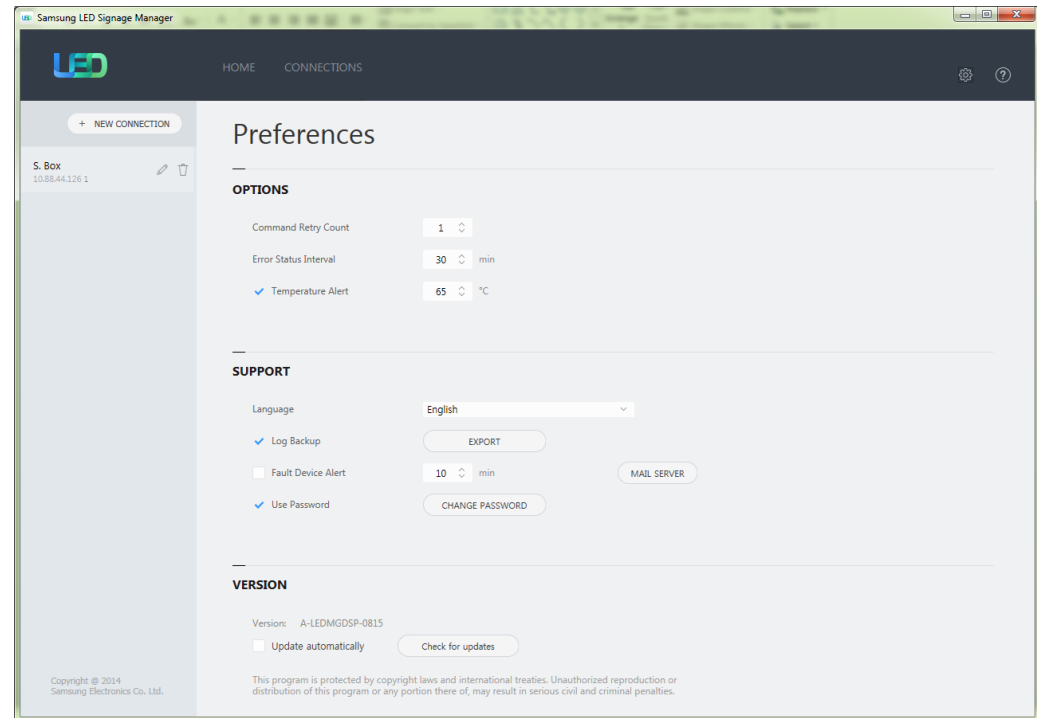
Contains Command retry count, Error status Interval(in mins) and Temperature Alter(in degree Celsius) settings.

2. **Support:**

Contains Language, Log Backup export, Faulty device Alert with Time (in mins) and Mail setting, User password settings.

3. **Version:**

Displays current version of the application, Automatic update and Check for update settings button.



4. Feature

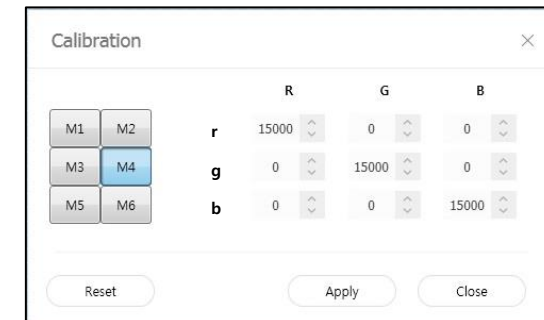
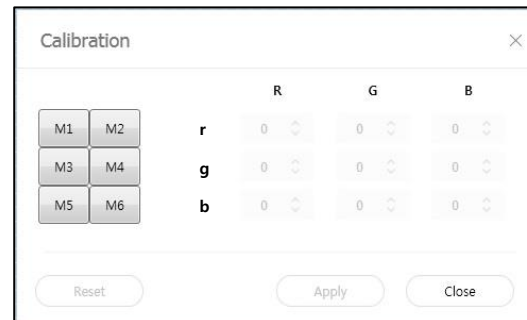
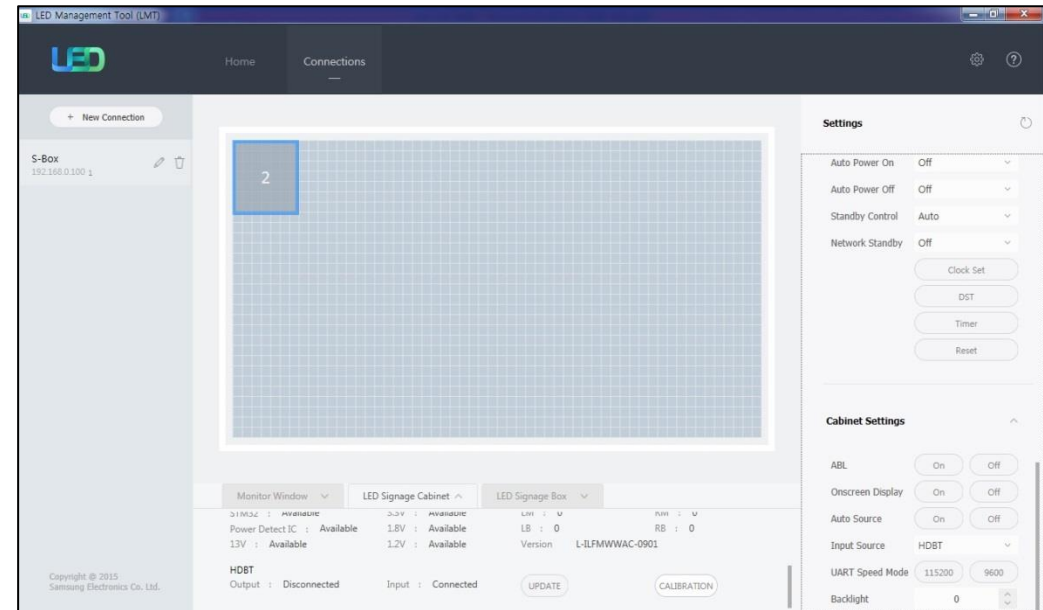
4-1 PC Control Program

LMT(LED Management Tool)

- Manual Calibration for Each Module Unit

1. Select the cabinet that need to be calibrated (Mouse Click)
 2. Select 'LED Signage Cabinet' tab below
 3. Select Calibration button and Enter in.
 4. Calibration Pop up window will be shown.(The currently calibrated data will be called as the message that reads, "Fetching data..." appears.)
 5. Check module from M1 ~ M6 that corresponds to the actual position for each Cabinet
 6. The current setting value of each module can be checked, if you select a module unit.
 7. The initial value of each item is
Rr, Gg, Bb = 15,000, Others = 0
- ※ The value for 3x3 matrix and brightness and chromaticity can be adjusted for each module unit

※ The Maximum of Each Value can be applied up to 16383



4. Settings and User Instructions

4-2 LED Color Calibration Program

#1. Install LED screen system checking

- S-Box & Cabinet connection (HDBT & Display port cable)

#2. cabinet information setting for LSM S/W

- Cabinet location
- Pixel CC off
- Backlight level 10
- S-Box picture mode "Office-Text"
- HDMI Black Level "Low"

#3. PC display setting

- Multi display (extend Monitor)
- Output signal setting (0~255 gray Level)

#4. H/W setting for color calibration

- Camera location
- Control PC

#5. Vision calibration S/W setting (Radiant program)

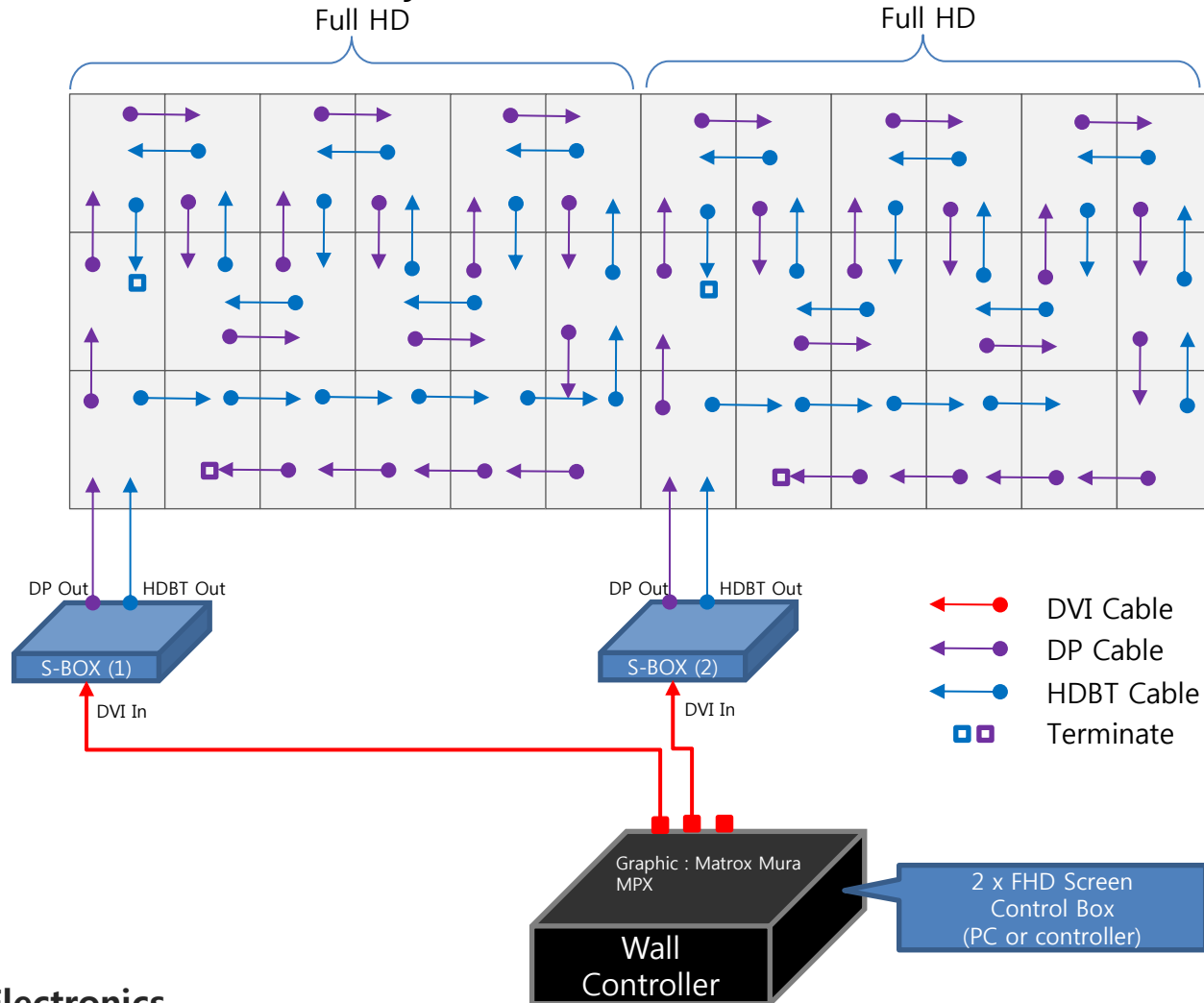
#6. Fine tuning use manual calibration (Module level C.C & edge seam correction)

#7. S-BOX Menu "Picture Mode"

4. Settings and User Instructions

4-2 LED Color Calibration Program

#1. Installed LED screen system check



4. Settings and User Instructions

4-2 LED Color Calibration Program

#2. Setting the cabinet information use LSM S/W

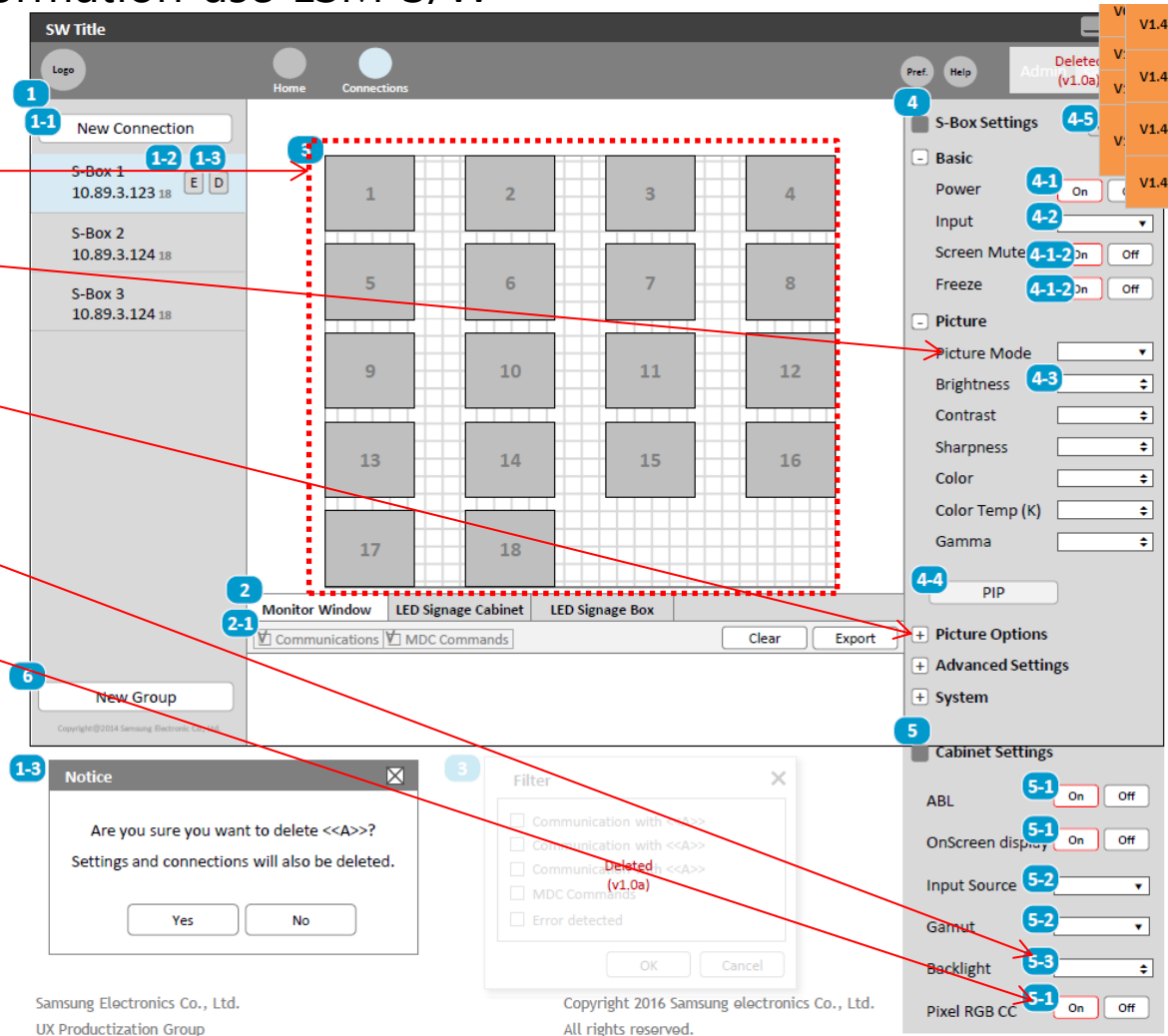
Cabinet position

S-Box Picture mode "Office-Text"

HDMI Black Level "Low"

Backlight level 10

Pixel CC off



4. Settings and User Instructions

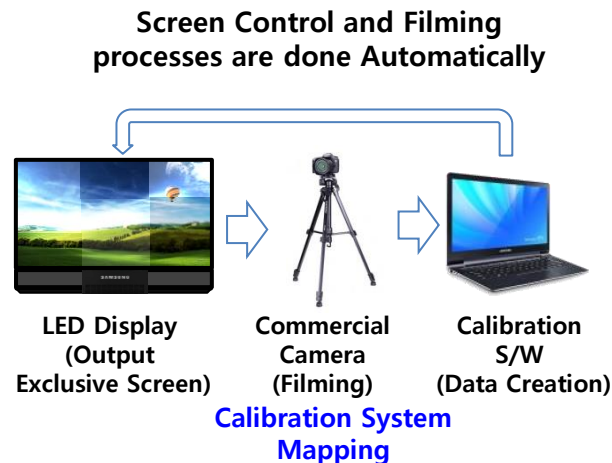
4-2 LED Color Calibration Program

#4. Color correction H/W setting

Check Out point

- : Center position in front of LED screen
- : Maintain darkroom environment
- : Calibration is possible in the FHD resolution unit.

Control PC connection

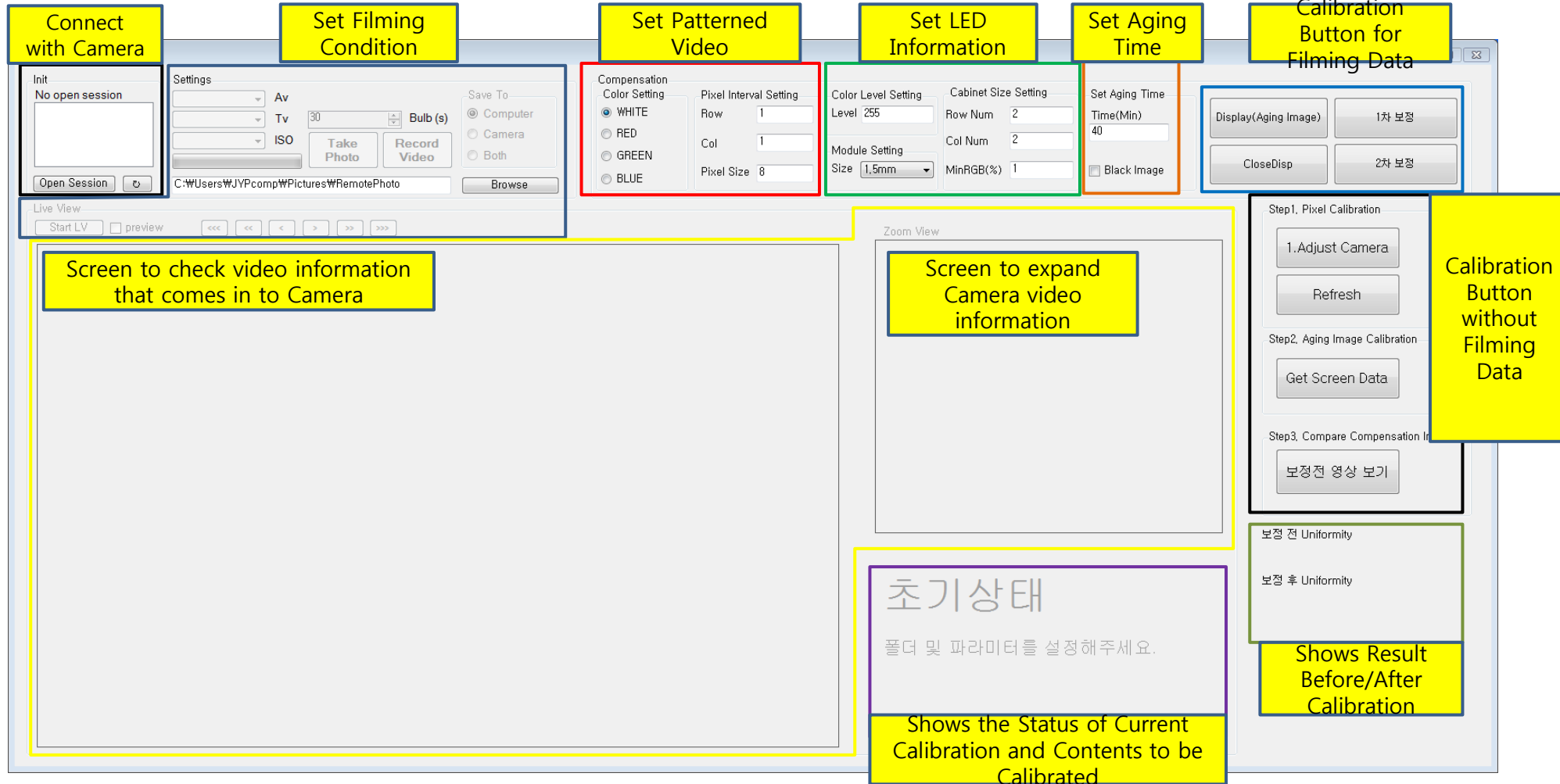


4. Settings and User Instructions

4-2 LED Color Calibration Program

#5. Vision Cal S/W setting

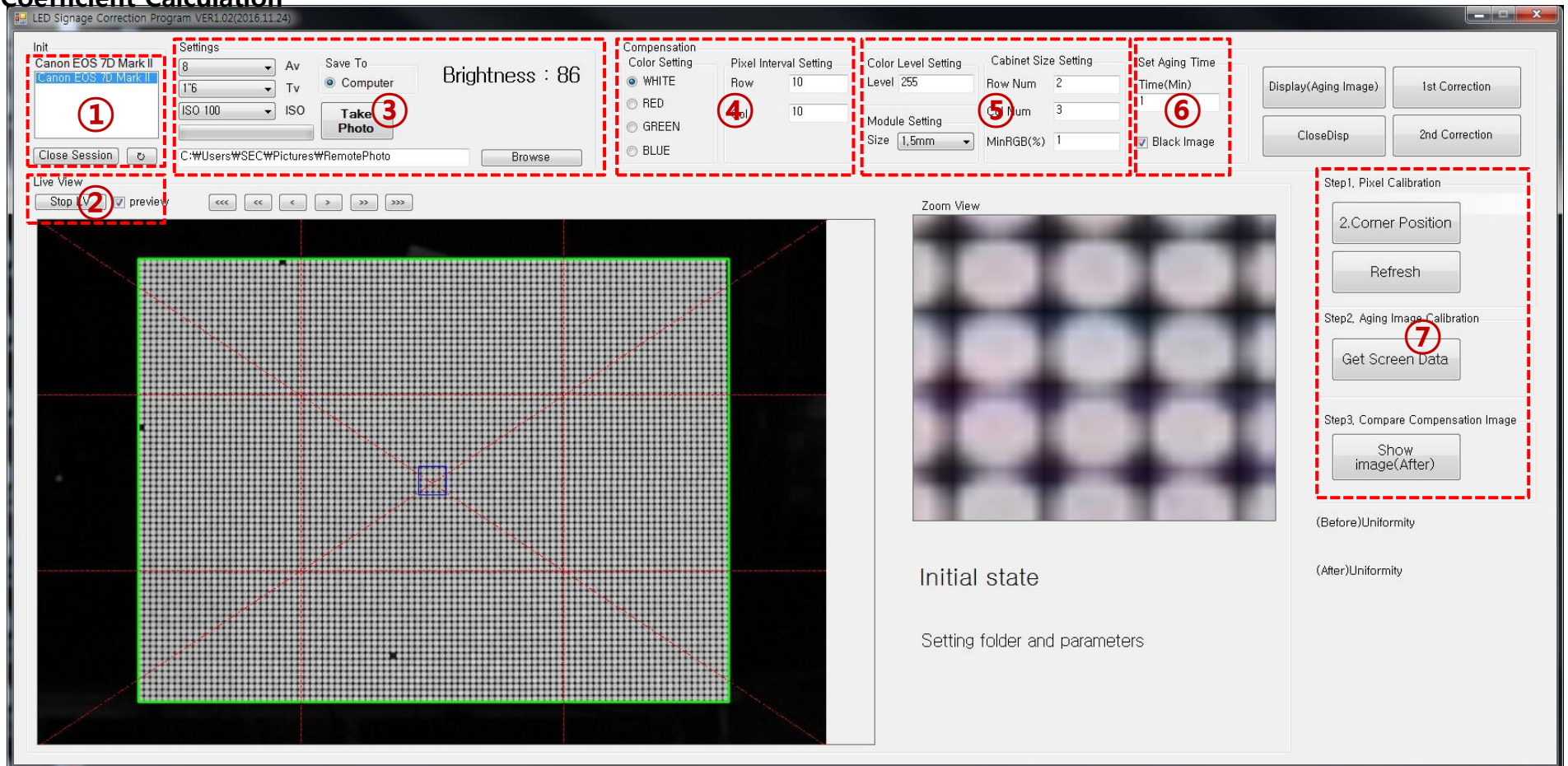
GUI of Calibration System



4. Settings and User Instructions

4-2 LED Color Calibration Program : Calibration Process 1

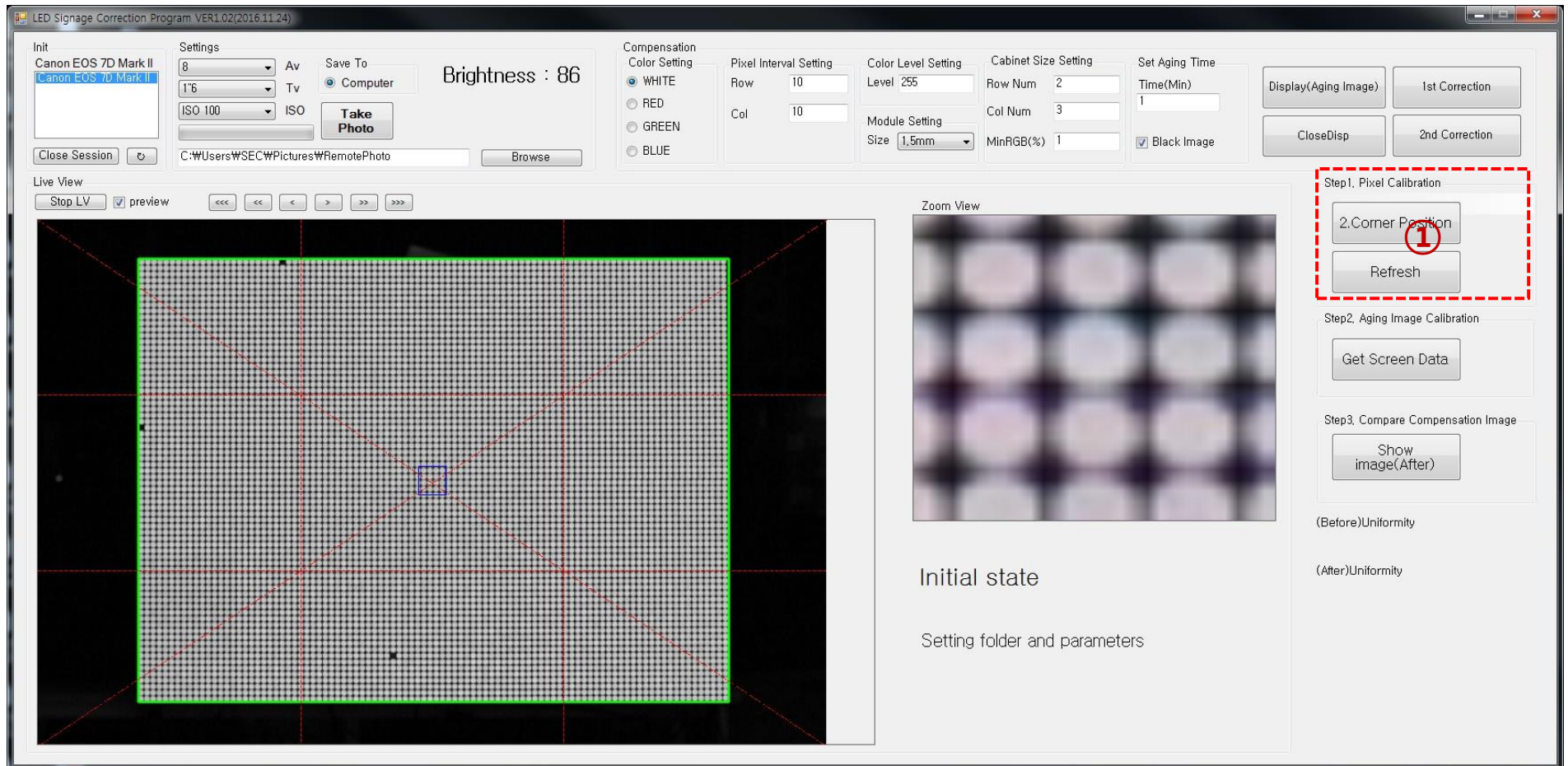
① Camera connection → ② Live View Activation → ③ Filming Condition and Saving location Setting → ④ Pattern Video Setting → ⑤ Screen Setting → ⑥ 2nd Calibration Aging Condition Setting → ⑦ Measure in sequence and Calibration Coefficient Calculation



4. Settings and User Instructions

4-2 LED Color Calibration Program : Calibration Process 2

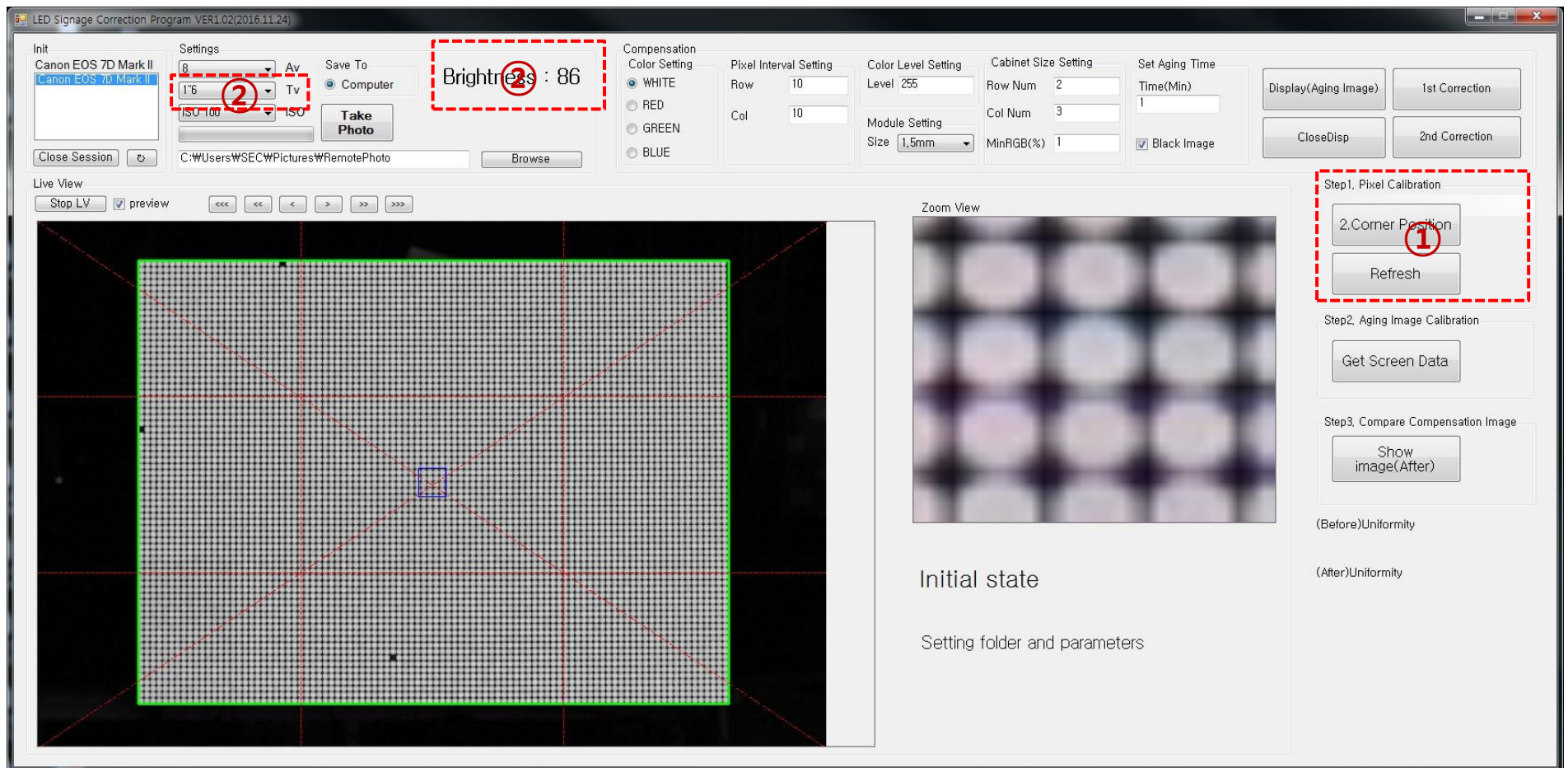
① Press the Adjust Camera button and print out the Test Pattern as shown below→ Accurate Camera location Setting → Turn the camera lens with your hand and do the defocusing level of setting (Refer to the Zoom View image)



4. Settings and User Instructions

4-2 LED Color Calibration Program : Calibration Process 2

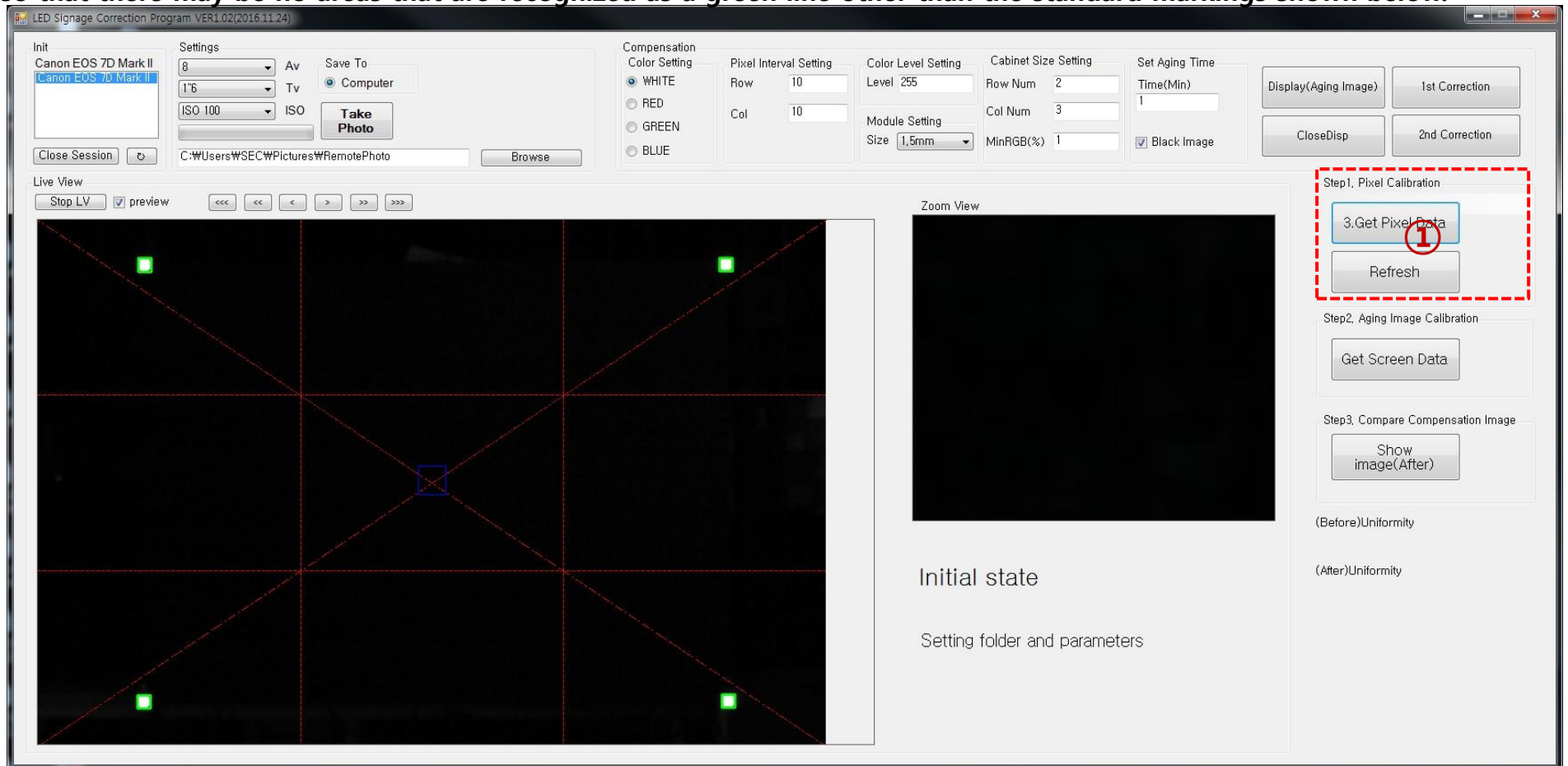
- ② Change the TV settings so that the brightness level can be in the range of 80 to 90 level, if it is hard to have more than one second on the TV, use the ND filter to carry out the Setting.



4. Settings and User Instructions

4-2 LED Color Calibration Program : Calibration Process 3

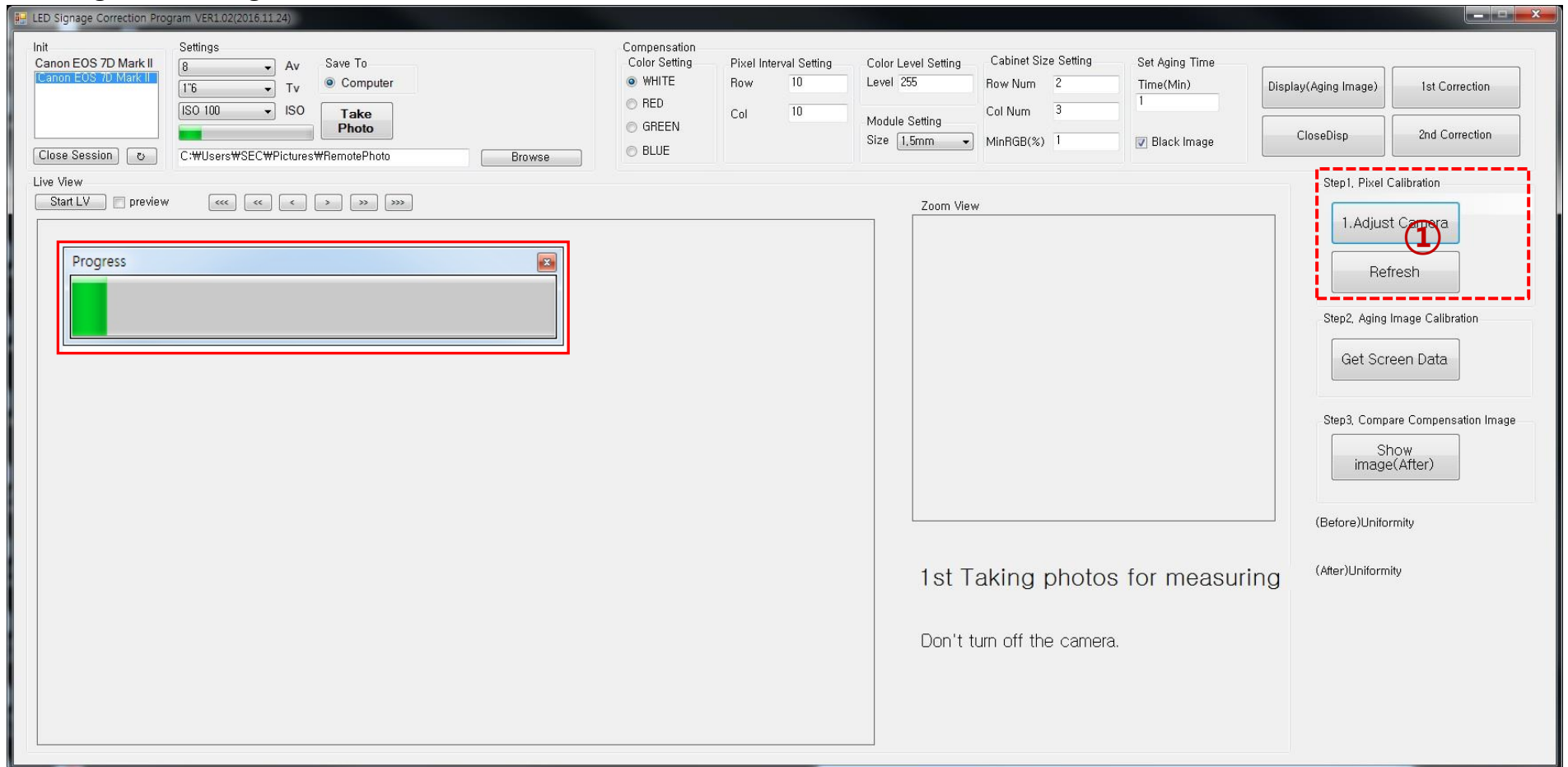
① Press the Corner Position button so as to produce the Measurement Pattern as shown below → If the parts other than the standard markings are recognized and measured, then the calibration may not be done accurately. / You should set so that there may be no areas that are recognized as a green line other than the standard markings shown below.



4. Settings and User Instructions

4-2 LED Color Calibration Program : Calibration Process 4

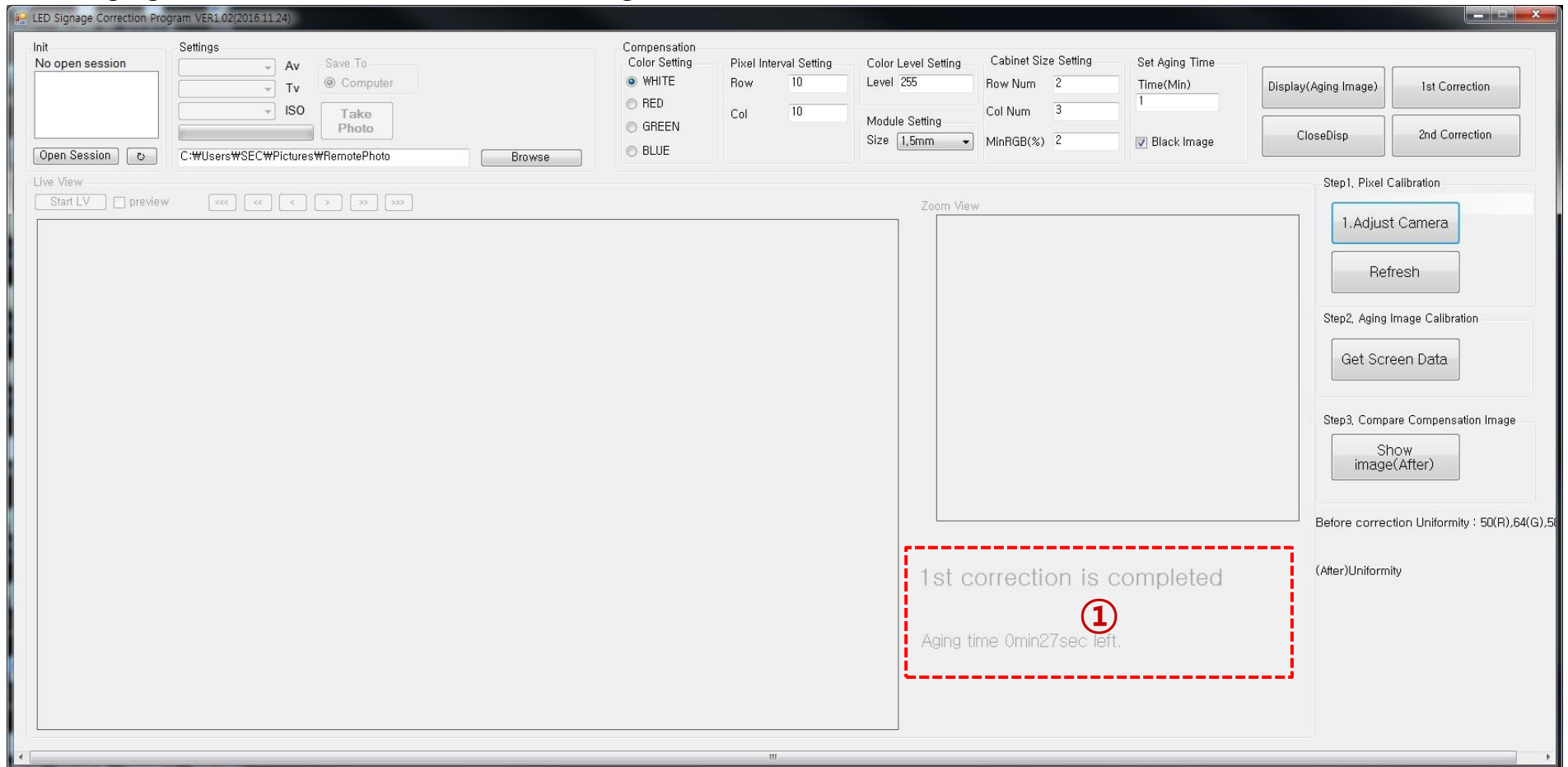
① Press “get pixel data” button and carry out the measurement → You can check the process of measurement by referring to the Progress screen



4. Settings and User Instructions

4-2 LED Color Calibration Program : Calibration Process 5

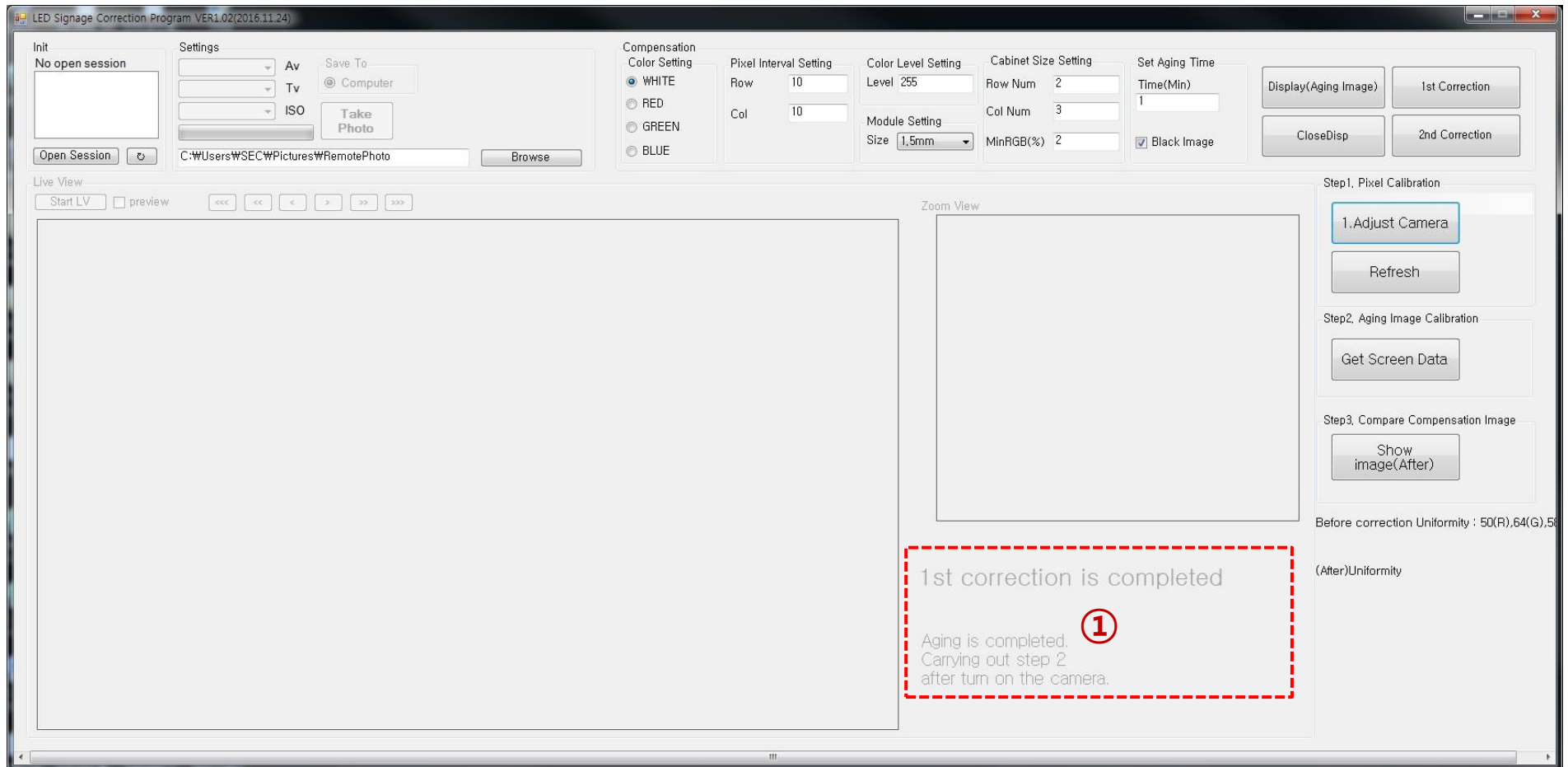
- ① If the measurement and the 1st calibration result gets calculated, the Aging will be on progress in accordance with the Aging time that has been set in the Settings.



4. Settings and User Instructions

4-2 LED Color Calibration Program : Calibration Process 6

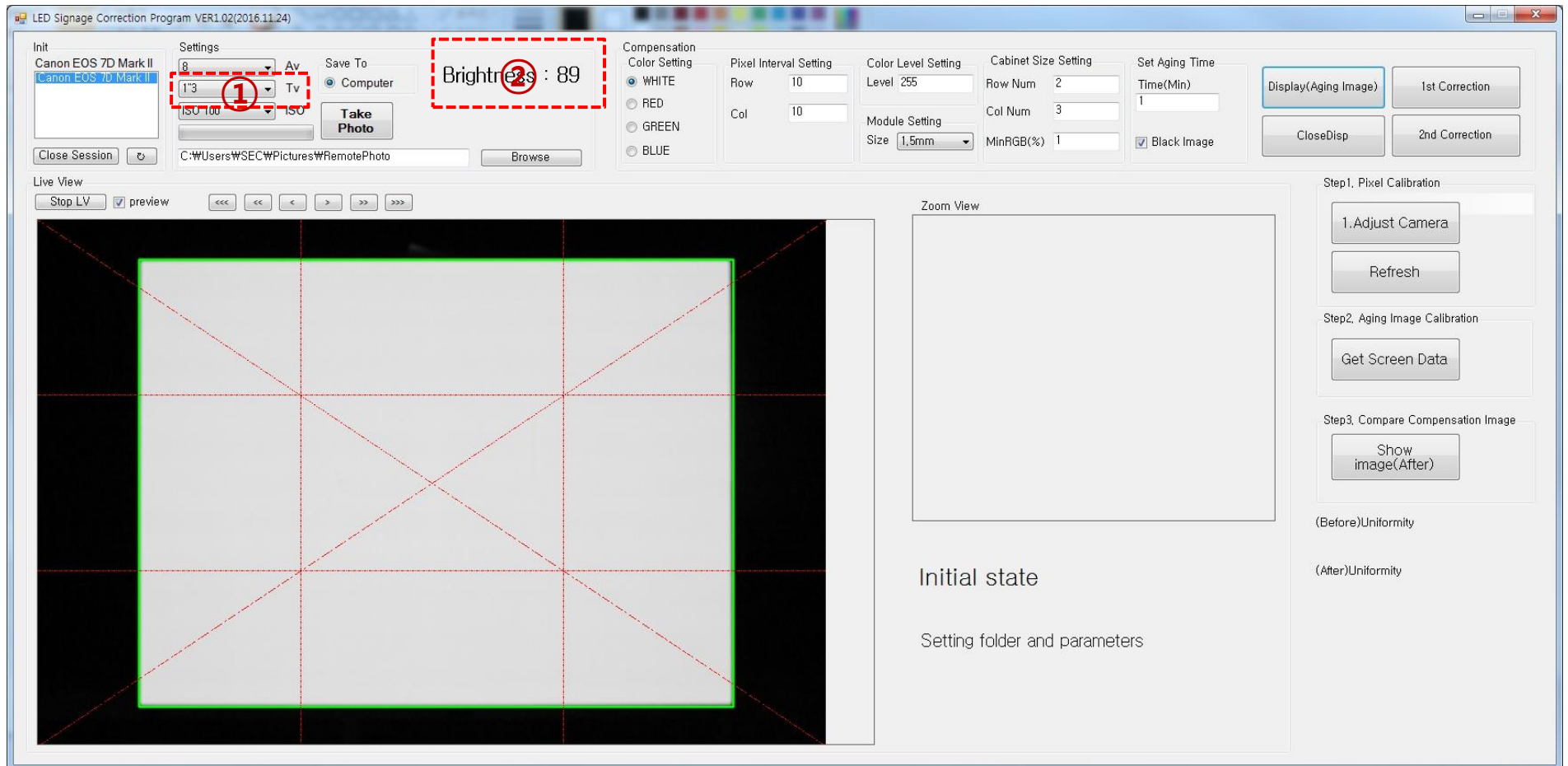
① If the message gets confirmed after the Aging process, turn on the Camera power and get ready for the 2nd calibration.



4. Settings and User Instructions

4-2 LED Color Calibration Program : Calibration Process 7

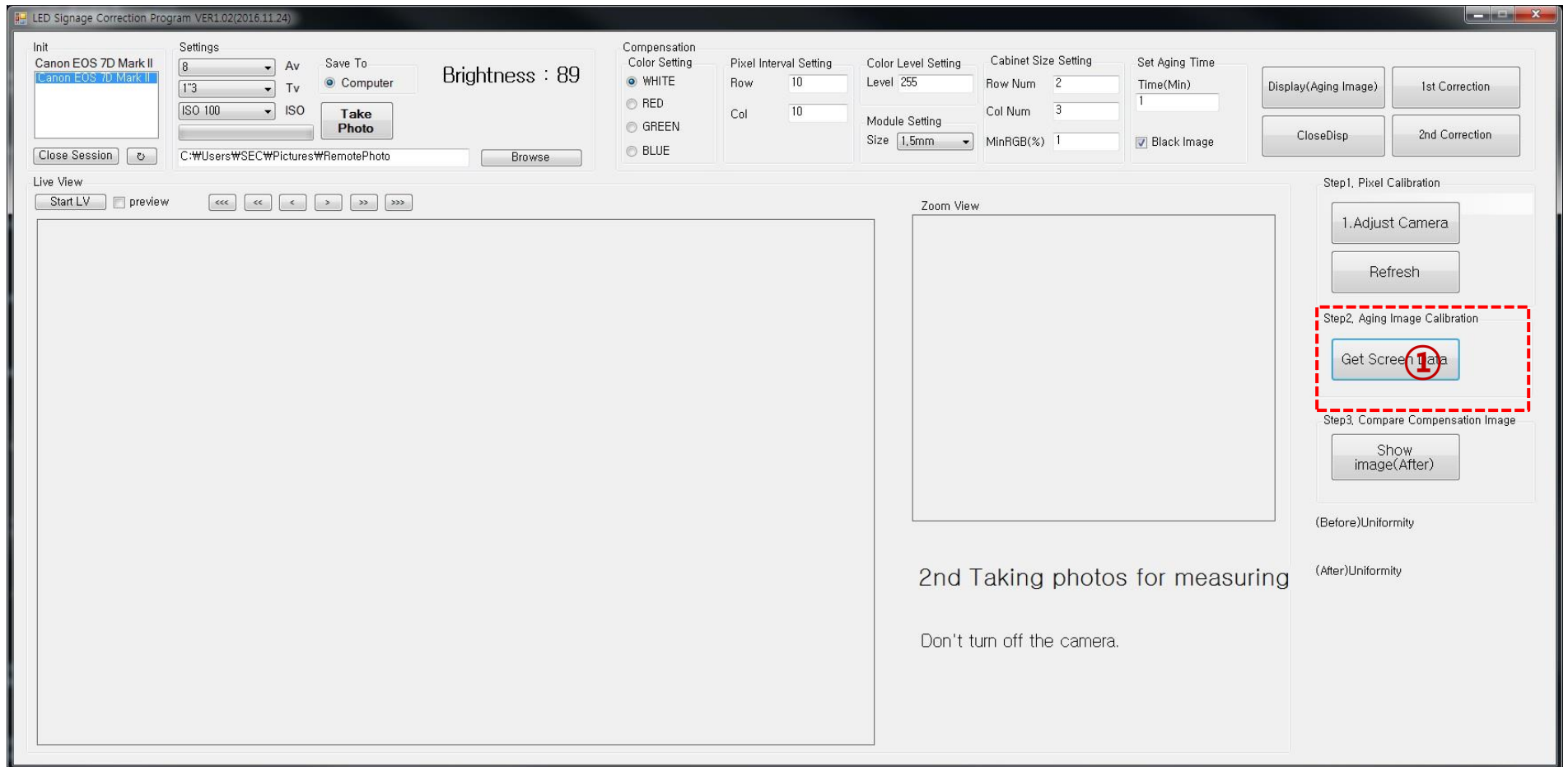
Turn on the Camera power, ① TV should be set as more than 1 second / Brightness value should not exceed 100. If necessary, use the ND filter and do the setting.



4. Settings and User Instructions

4-2 LED Color Calibration Program : Calibration Process 8

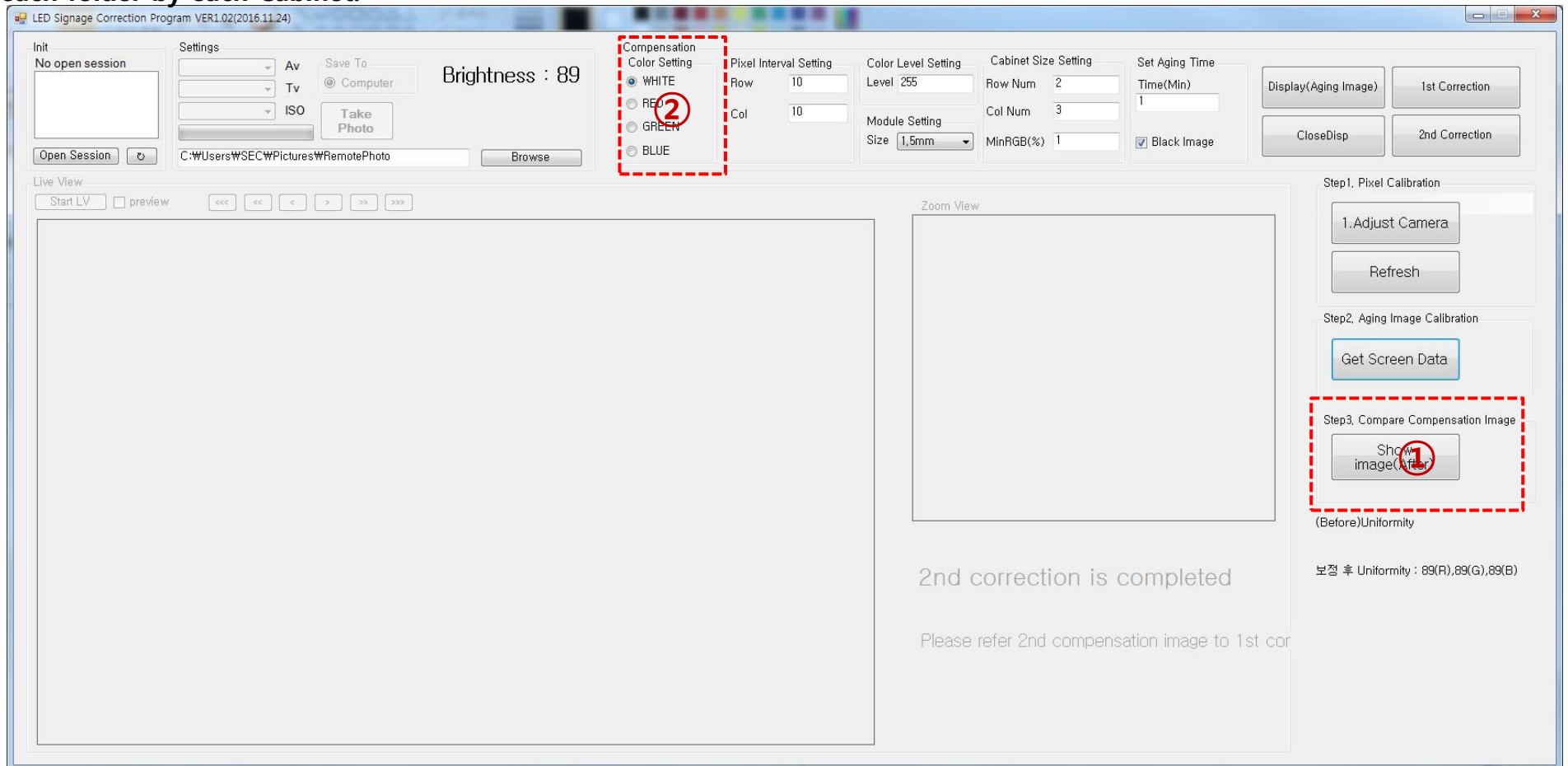
① If the setting for the 2nd Calibration gets completed, press “Get Screen Data” button and process the measurement for the 2nd Calibration.



4. Settings and User Instructions

4-2 LED Color Calibration Program : Calibration Process 9

① If the measurement gets completed, see the after/before image and ② Select WRGB color, and compare the result before/after the calibration → If there is no problem in the calibration result, save the Calibration Coefficient created in each folder by each Cabinet.



4. Settings and User Instructions

4-2 LED Color Calibration Program : Save the Calibration Coefficient by Each Cabinet

■ List of Items to be Purchased including SPI Writer

Name	SPI Writer	EXT Board	Data Cable
IMK Code	1125361500	1127793700	
Image			
Role	Records the Calibration Value using SPI Protocol	Noise Filtering	Data Transmission Cable Type
Price	₩ 200,600	₩ 65,800	

4. Settings and User Instructions

4-2 LED Color Calibration Program : Save the Calibration Coefficient by Each Cabinet

■ SPI Writer Device Basic Composition and Role

① Outside Control PC

- Writes by controlling SPI Writer Program and Fanet Communication.
- Carries out SPI Write by transporting txt file extracted after calibration.

② USB to USB Cable

- Connects PC and SPI Writer
- Delivered along with SPI Writer in an enclosed form

③ RS232 Jack Cable

- Connected to enable Fanet Communication between SET(Ctrl B'd) and PC.

④ SPI Writer

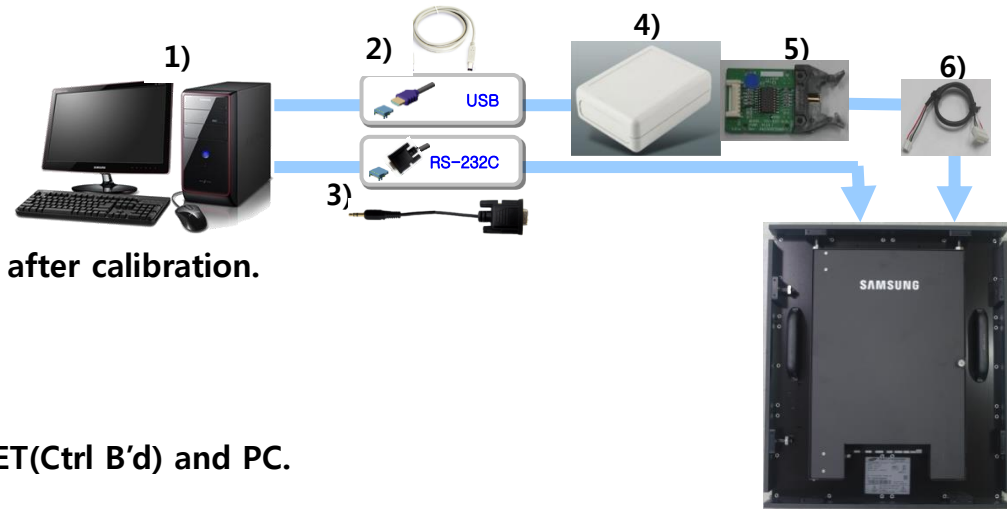
- After carrying out DEC-to-HEX conversion by using PC Control Program, Writes Calibration DATA through SPI Writer.
- Purchase Information : IMK Code 1125361500

⑤ TCC-EXT Board

- Reduces the Noise that flows in to CLK through Max CLK 10MHz (Noise Filter)
- Purchase Information : IMK Code 1127793700

⑥ SPI 4 Pin Connector

- SPI 4 Pin cable that connects SPI Writer & EXT Board and SET.
- Delivered along with TCC-EXT Board in an enclosed form



4. Settings and User Instructions

4-2 LED Color Calibration Program : Save the Calibration Coefficient by Each Cabinet

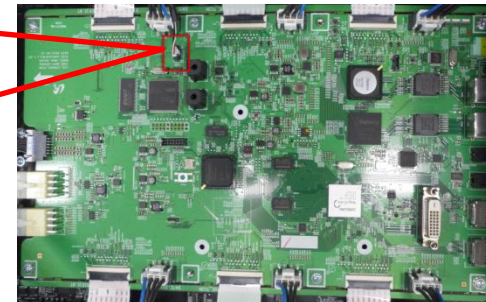
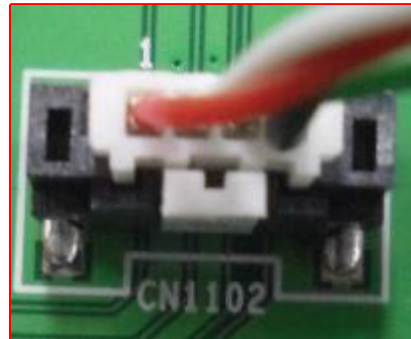
■ Device and Jig setup

① SPI Writer connection Setup

- PC USB Port – SPI Writer – EXT Board – SET (Ctrl Board) connection
 - . The cables (three types) that connect each board will all be delivered along with SPI Writer in an enclosed form. (IMK Code : 1125361500, 1127793700)
 - Refer to the pictures below to see how to connect.



PIN NO.	SIGNAL
1	CS
2	CLK
3	GND
4	DIN



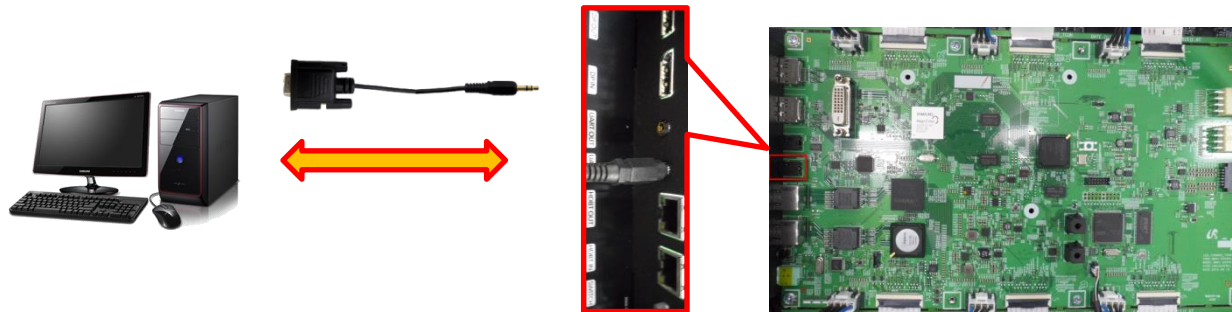
4. Settings and User Instructions

4-2 LED Color Calibration Program : Save the Calibration Coefficient by Each Cabinet

■ Device and Jig setup

② Fanet (RS232) connection Setup

- PC Serial Port – SET (Ctrl Board) UART IN Port connection
 - . The Cable that is used when inspecting the previous Main Line Renaissance.
 - Refer to the pictures below to see how to connect.

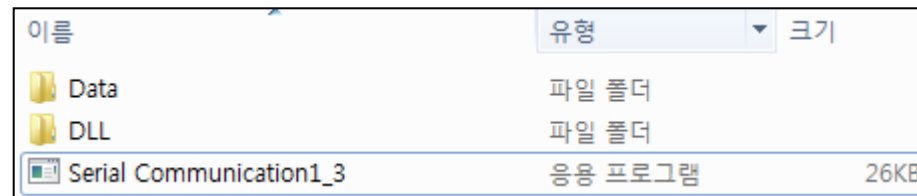


4. Settings and User Instructions

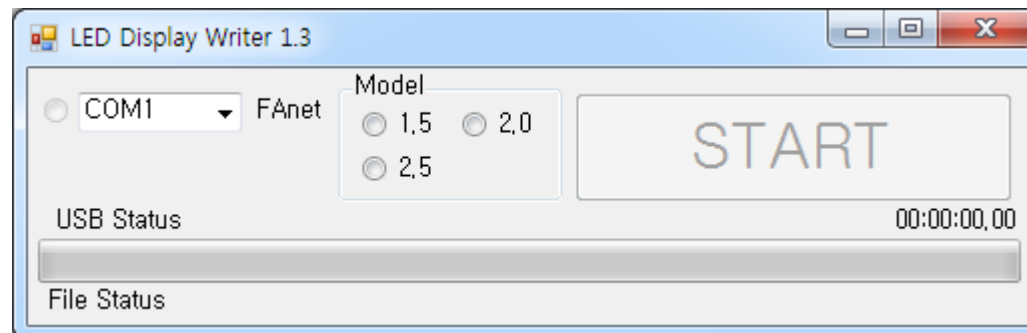
4-2 LED Color Calibration Program : Save the Calibration Coefficient by Each Cabinet

■ Write the Calibration Value

- ① The calibration coefficient txt file that is to be saved after the calibration will be copied under the Data folder that is below the folder where there is execution file.
- The name of the txt file inside the DATA folder will be fixed (6 txt file / 1 cabinet)
 - . P1.5 : RGB_P1_5_ID064_L0 ~ RGB_P1_5_ID064_R2
 - . P2.5 : RGB_P2_5_ID064_L0 ~ RGB_P2_5_ID064_R2
 - . P2.0 : RGB_P2_0_ID064_L0 ~ RGB_P2_0_ID064_R2



- ② Write the calibration value through SPI Writer SW
- Run LED Write SW → The One Click type UI of the Worker version will be called.



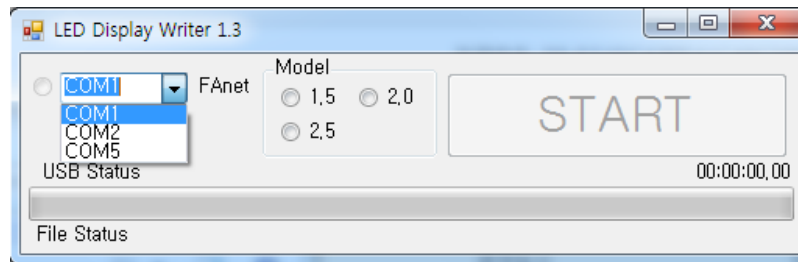
4. Settings and User Instructions

4-2 LED Color Calibration Program : Save the Calibration Coefficient by Each Cabinet

■ Write the Calibration Value

③ Comport Setting (Default COM1)

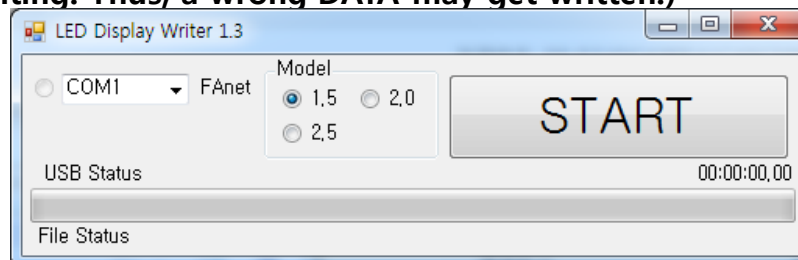
- Select the Comport with which the Fanet Communication is available.
(Before selecting Comport, another Program should be used to check whether the normal connection is available or not.)



④ Select the LED Display Model (Currently P1.5, P2.0, P2.5 are configured.)

- The START button will be activated when the model name is selected
※ The model name that corresponds to the Write SET must be selected.
(If not selected, an Error message will appear.)

However, if wrongly selected, the txt file name that corresponds to that wrongly selected model will be called for Writing. Thus, a wrong DATA may get written.)



4. Settings and User Instructions

4-2 LED Color Calibration Program : Save the Calibration Coefficient by Each Cabinet

■ Write the Calibration Value

- ⑤ Writing Complete(Takes about 30 seconds.)
 - Completion message will appear.

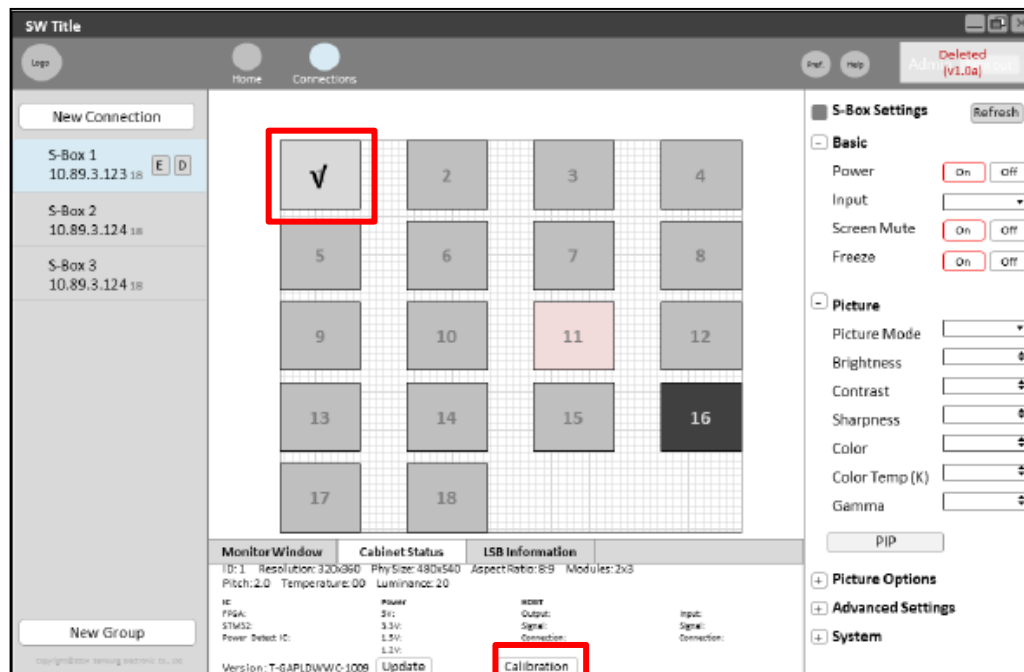


4. Settings and User Instructions

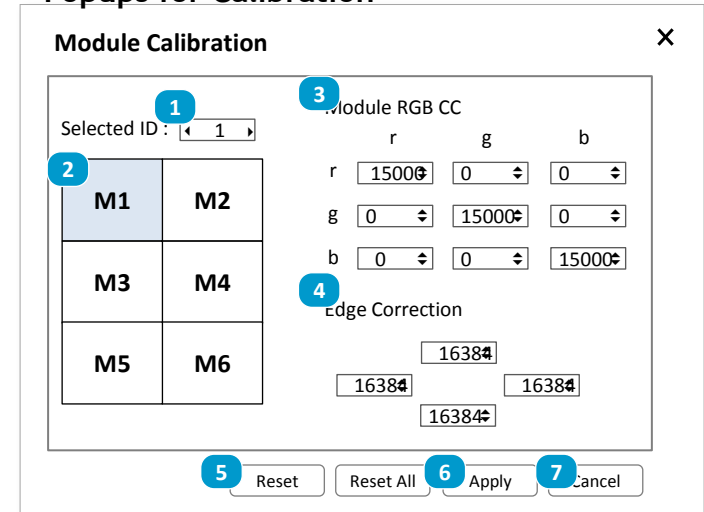
4-2 LED Color Calibration Program

#6. Fine tuning use manual calibration

Select the cabinet >> Calibration >>
enter the value in "Module Calibration window"



Popups for Calibration



	Element	Attribute
1	ID of current cabinet	- ID of Current cabinet is displayed. - Spec of arrow is same as spinner. (circulation)
2	Module	- Module is displayed form 1 to 6. - Module is button, can be selected. - Default selected module is M1.
3	Module RGB CC	- All editable area is spinner. - Default value is supported by S/W - Value Range (0~16384)
4	Edge correction	- All editable area is spinner. - Default value is supported by S/W - Value Range (0~65536)
5	Reset	- Reset : Reset selected value - Reset all : Reset All value * All reset buttons is dimmed before data is edited
6	Apply	- Apply edited data / maintain screen * Apply is dimmed before data is edited
7	Cancel	Go to device screen without saving

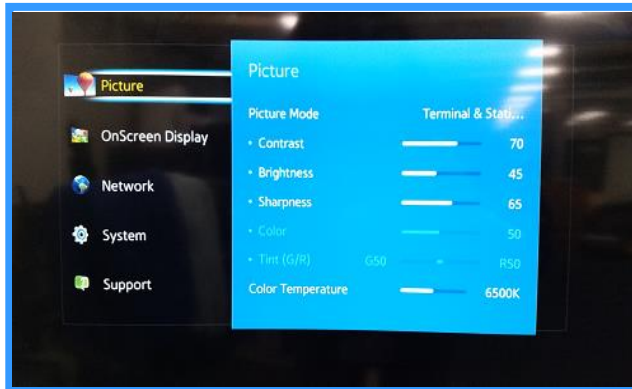
4. Settings and User Instructions

4-2 LED Color Calibration Program

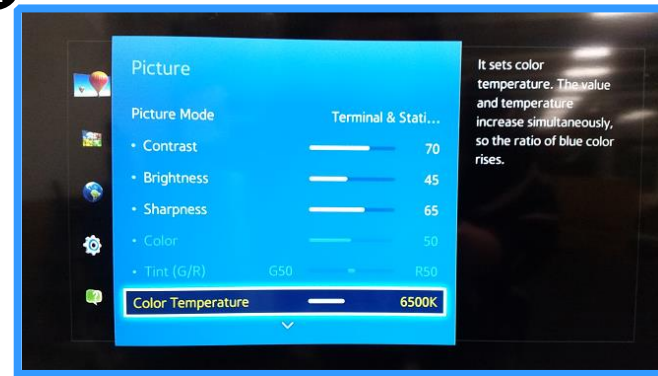
#7. S-BOX Menu "Picture Mode"

S-BOX Player connect - Select "Picture Mode" → "Color Temperature"

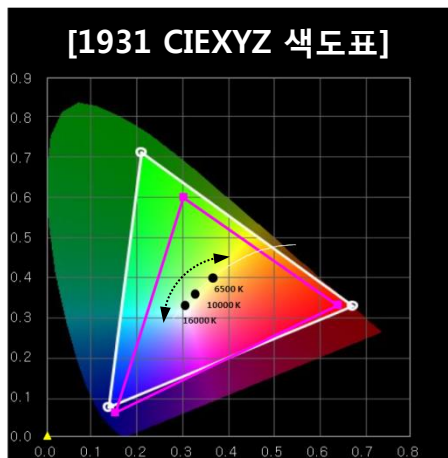
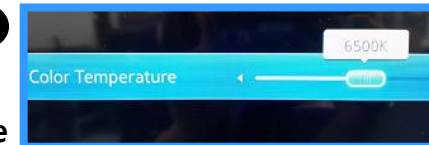
1



2



3



LED Display Color Temperature Setting

"Color Temperature" select
(Default : 6500K)

6500K ↑ : Cool color

6500K ↓ : Warm color

4. Settings and User Instructions

4-2 LED Color Calibration Program

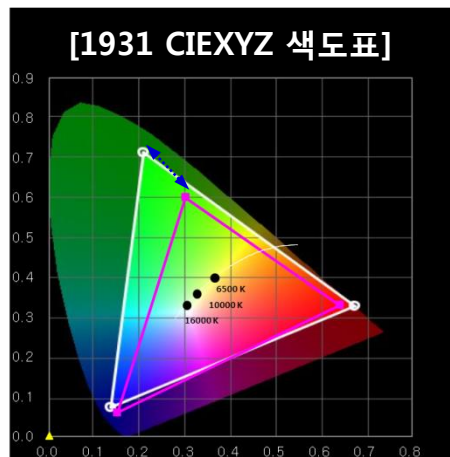
#7. S-BOX Menu "Picture Mode"

S-BOX Player connect - Select "Picture Mode" → "White Balance" → "R/G/B Gain"

1



2



LED Display White Balance Adjustment (Default: 128)

1. R-Gain 128 ↑ : Reddish , 128 ↓ : Cyanish
2. G-Gain 128 ↑ : Greenish, 128 ↓ : Magentaish
3. B-Gain 128 ↑ : Blueish, 128 ↓ : Yellowish

※Warning : It is recommended to start adjusting R/B Gain first.