Samsung Electronics

LED Display
Installation Manual

LH012IFJ*** (P1.2)
SBB-SNOWJ3U

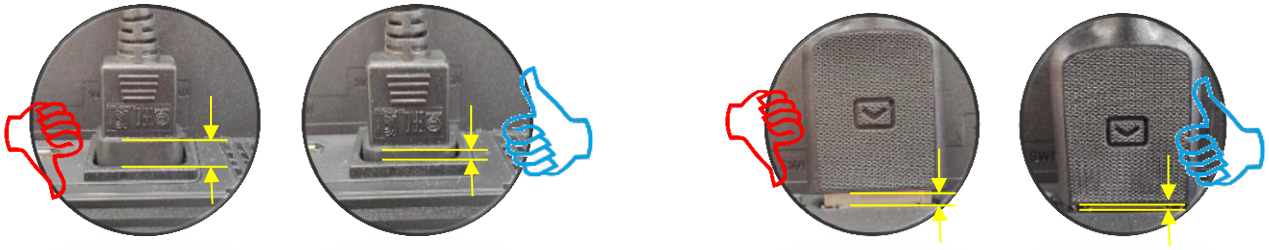
Ver. 1.1

IMPORTANT

Check first before Installation (1/2)

Samsung Electronics

- All Power cables and OCM cable must be connected firmly



- IFJ (LH012IFJTVS) Doesn't Power On without Signal Inputs.
  Examination without S-Box connection, Please Plug in the Service key In Port DATA IN.
  (Do not Use Service Key for IFH, IFH-D Series models,
  After prechecking, remove key before installation)

- For HDBT signal stability, use the cable above CAT6 *STP, *FTP level. (Length 15m~100m)
  "CAT6 UTP can not be allowed"
  - Do not use "comb" or "pinstripe" cable.

- Do not mix cabinet which have different Project number, each cabinet have its own project number.

IMPORTANT

Check first before Installation (2/2)

- IFJ(LH012IFJTVS*) Does not Compatible with previous S-box (SNOW-1703U).

  IFJ(LH012IFJTVS*) Does not Compatible with previous Interface Gender.
- Install the device using SNOW-1703ULD and its supplied IG.

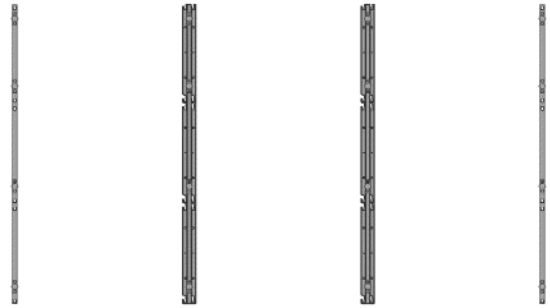
Sbox	SNOW-1703U (SBB-SNOWH3U)	SNOW-1703ULD (SBB-SNOWJ3U)
IG	BN91-19100A	BN91-19993A
Cabinet	IF015H, IF020H, IF025H, IF025H-D, IF040H-D, IF060H-D	IF015H, IF020H, IF025H, IF025H-D, IF040H-D, IF060H-D, **IF012J**

Table of Contents

1. Product Information and Precautions for Installation

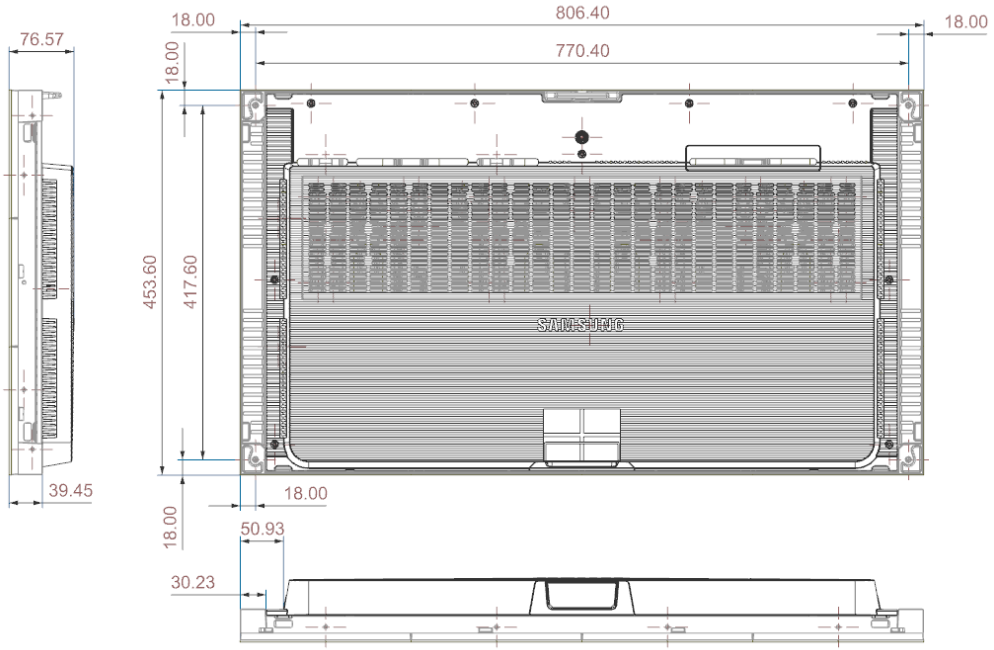
◇ Frame Kit Composition (Refer to Page 14)

Frame Kit	Composition	Note
VG-LFJ32SWW	3*2 (6 Set)	
VG-LFJ33SWW	3*3 (9 Set)	P1.2 FHD Installation



<3*3 Frame>

◇ Cabinet Product Information



◇ SBB-SNOWJ3U (S-Box, I/G)

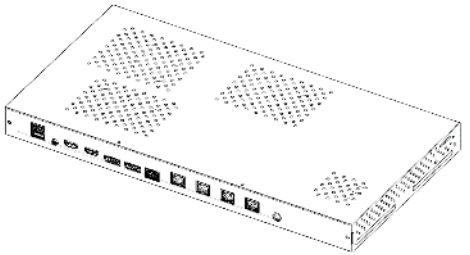


Fig.3 S-Box

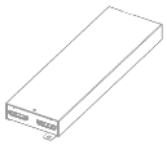
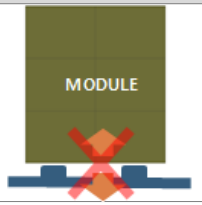
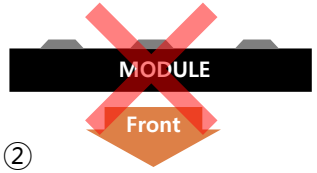
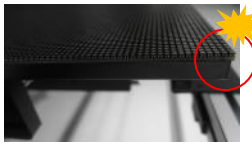
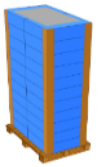
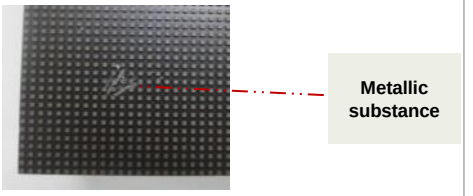
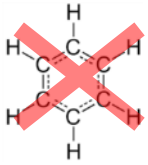


Fig.4 I/G
(Interface Gender)

1. Product Information and Precautions for Installation

• Precautions for Installation (LED damage)

주의 사항	이미지
[Beware of Outside Impact, Fall] ① Beware not to cause any impact on the LED screen or drop the product on the floor after the protection gets taken off for installation. ② Beware not to put the LED side headed downwards to the floor after the protection gets taken off for installation. ③ Beware not to have the corner area of LED module be damaged due to the contact with the outside. ④ Beware not to put more than 12 layers.	 ①  ②  ③ ④ 
[Beware of LED Damage due to Static Electricity] ▶ Beware not to touch LED screen with bare hands without putting gloves on.	 
[Beware of LED Damage due to Metallic Substances]  ▶ Beware not to have metallic substances pulled in to the surface due to the magnetic force on the front side of the LED. ▶ If any metallic substances get drawn in on the surface, please disassemble the module and then remove the pollutants by using a magnet.	
[Beware of LED Damage due to chemicals.] ▶ Beware not to contact water, waxes, benzene, thinners, mosquito repellents, lubricants, cleaners or chemicals containing alcohols, solvents or surfactants on LED. ▶ When installing on the construction site, it should be installed after construction & cleaning. ▶ If the installation site requires construction work, the product is covered with a curtain and operated 50% white or video for 2 hours every day.	  

1. Product Information and Precautions for Installation

- **Preparations for Installation**

10.0mm Wrench

Electric Driver

(-) (+) Driver

LED MODULE JIG
(model name: **VG-LJJNAWS**)

Service JIG
(BH81-00001A)

Holder Magnet Tool

Plier

Antistatic Glove

2. Check Point about the Radiant Heat

※ Written under 'Full white, (back light 7)' standard
Written under 'Video, (back light 10)' standard

◇ Ventilation Guide

▪ Standard and condition for indoor installation

- Standard for using 'SAMSUNG WALL MOUNT' (Fulfill ADA)

※ ADA(American's with Disabilities Act

  · The gap between the front of a product and a wall: 99.4mm

  · The gap between the back of a product and a wall: 22.7mm

- When sunlight enters

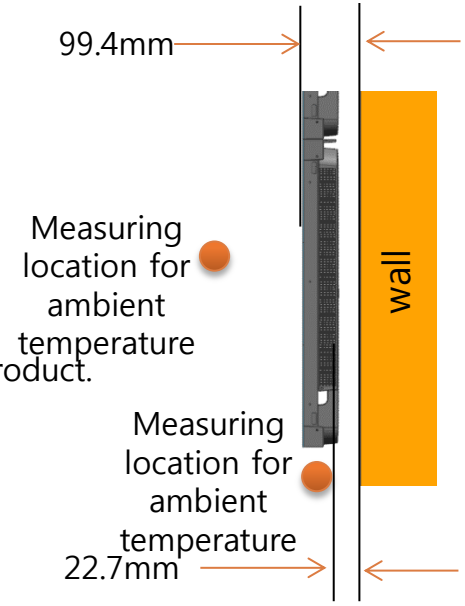
  · If a sunlight enters through a window or outside walls of a building,
  an additional inquiry is needed.

- The effect of warm/cold air from a duct system

  · Make sure the warm/cold breeze(especially warm air) from a duct system not to affect a product.

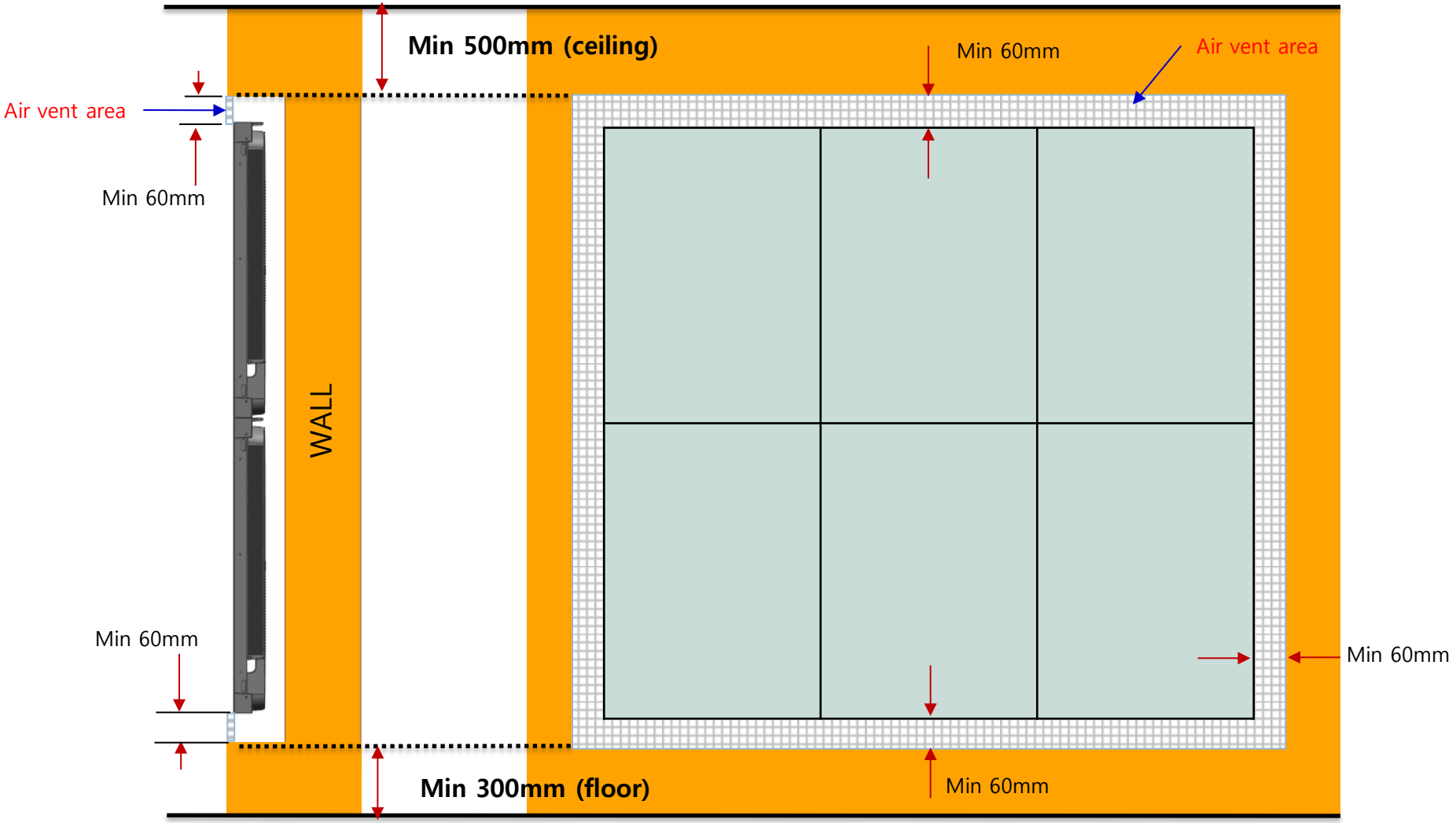
- The measuring location for ambient temperature

  · Either right in the center of a product or Air inlet part



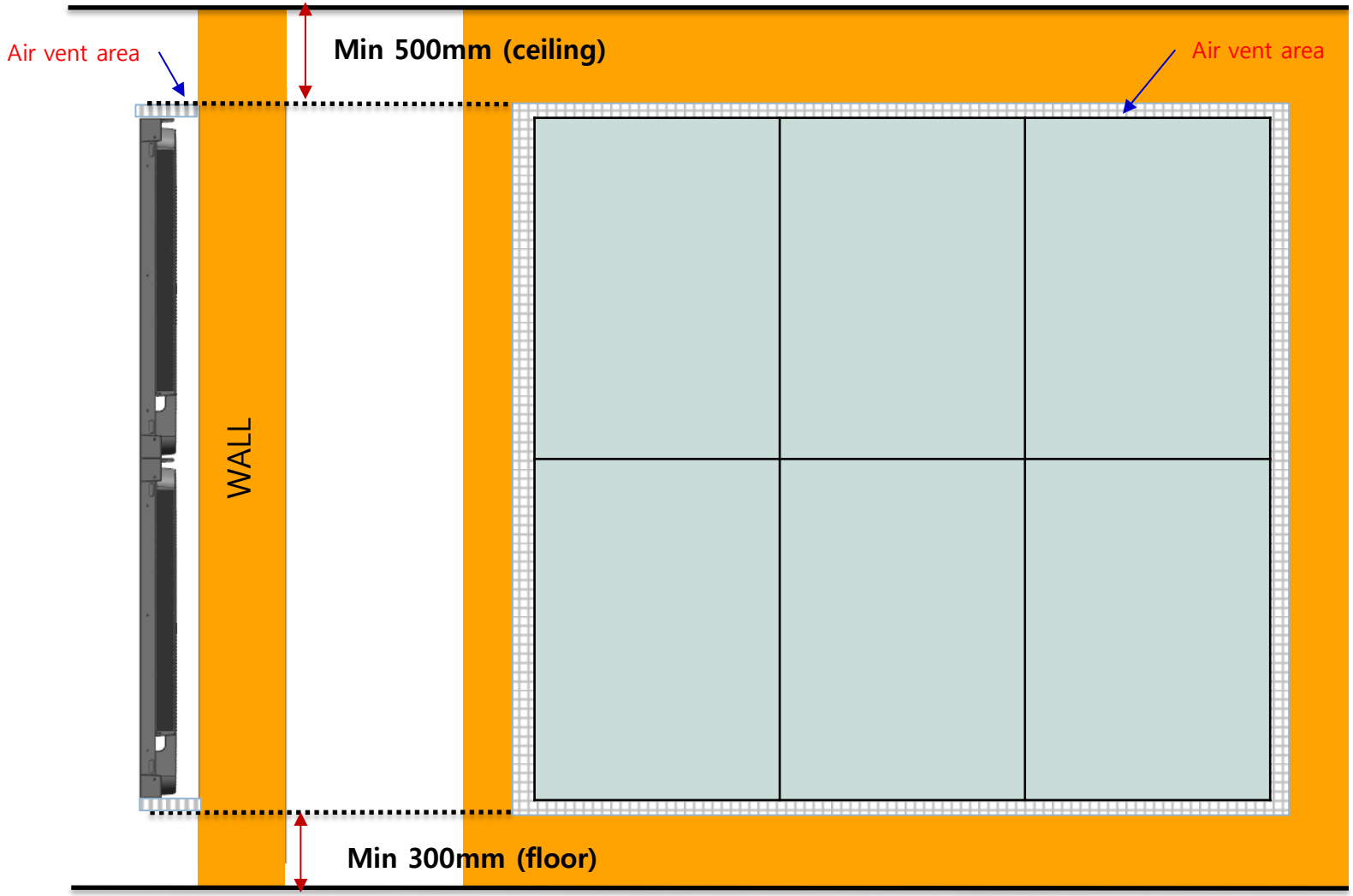
2. Check Point about the Radiant Heat

➢ **Minimum spacing for landfill installation** (No Fan, Using SAMSUNG WALL MOUNT / DECO FRAME)



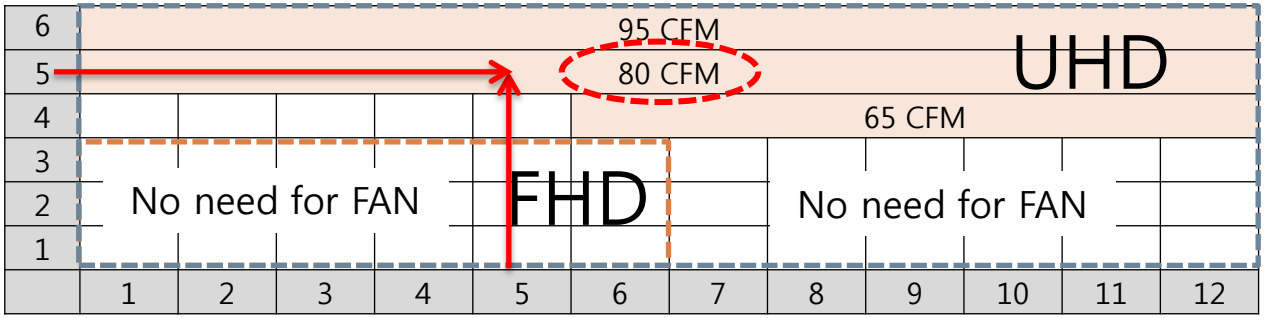
2. Check Point about the Radiant Heat

➢ **Minimum spacing for wall mounting** (No Fan, Using SAMSUNG WALL MOUNT / DECO FRAME)



2. Check Point about the Radiant Heat

◇ Axial FAN(selection example)



※ Example) Total CFM? (Outdoor temperature 30℃ , Cabinet (5x5) on condition.)

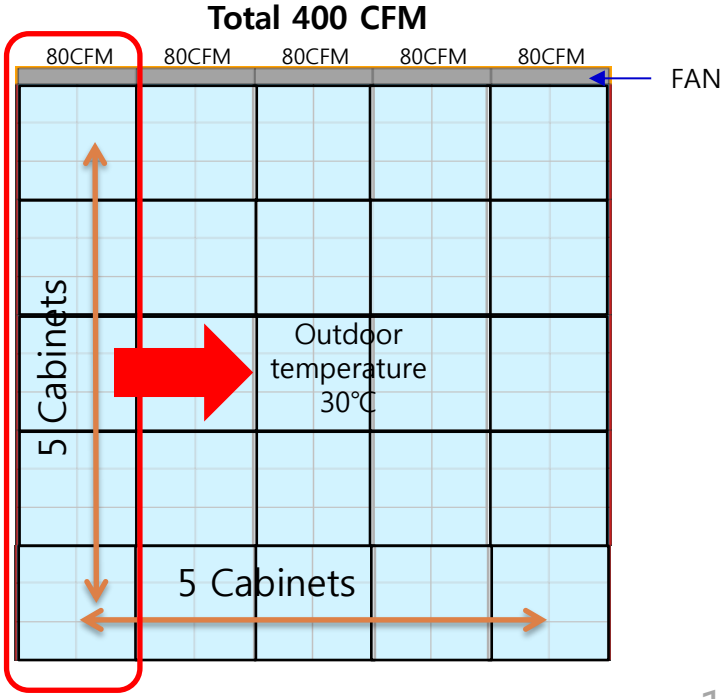
→ 80CFM x 5 = **400CFM**

※ FAN flow rate is not a MAX, but a real flow rate.

- Ebm papst : http://www.ebmpapst.com
  - Model name : 614 J/2 HHP Size : 60*60*32
  - Flow rate : MAX 48.3 CFM FAN : 3ea per column
  - delta-fan : http://www.delta-fan.com
  - Model Name : AFB0612HHE Size : 60*60*38
  - Flow rate : MAX 54.5 CFM FAN : 3ea per column

※ Fan Margin for the pressure drop / flow reduction

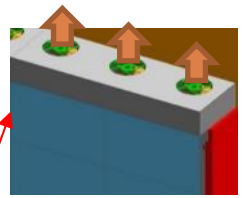
※ Fan Margin for the pressure drop / flow reduction

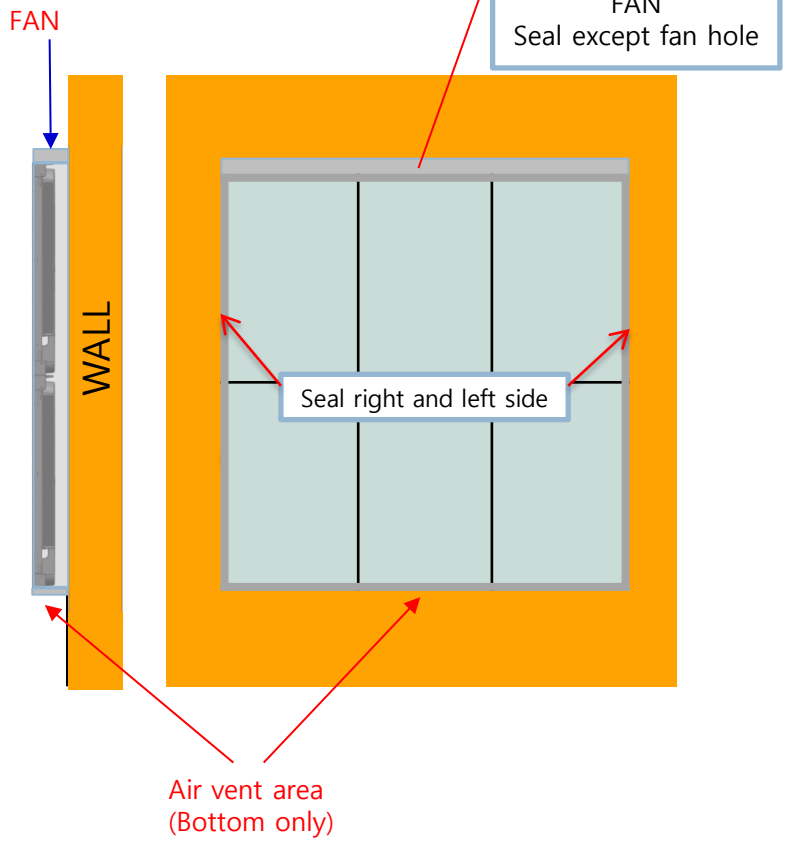


2. Check Point about the Radiant Heat

◇ FAN Using condition

- Air Vent : install at bottom
- Top: Seal except fan hole

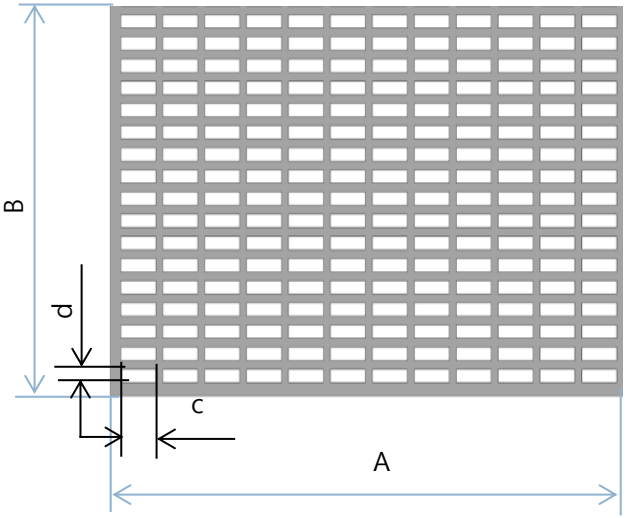




◇ Vent specification

▪ **Using over 60% open ratio vent**

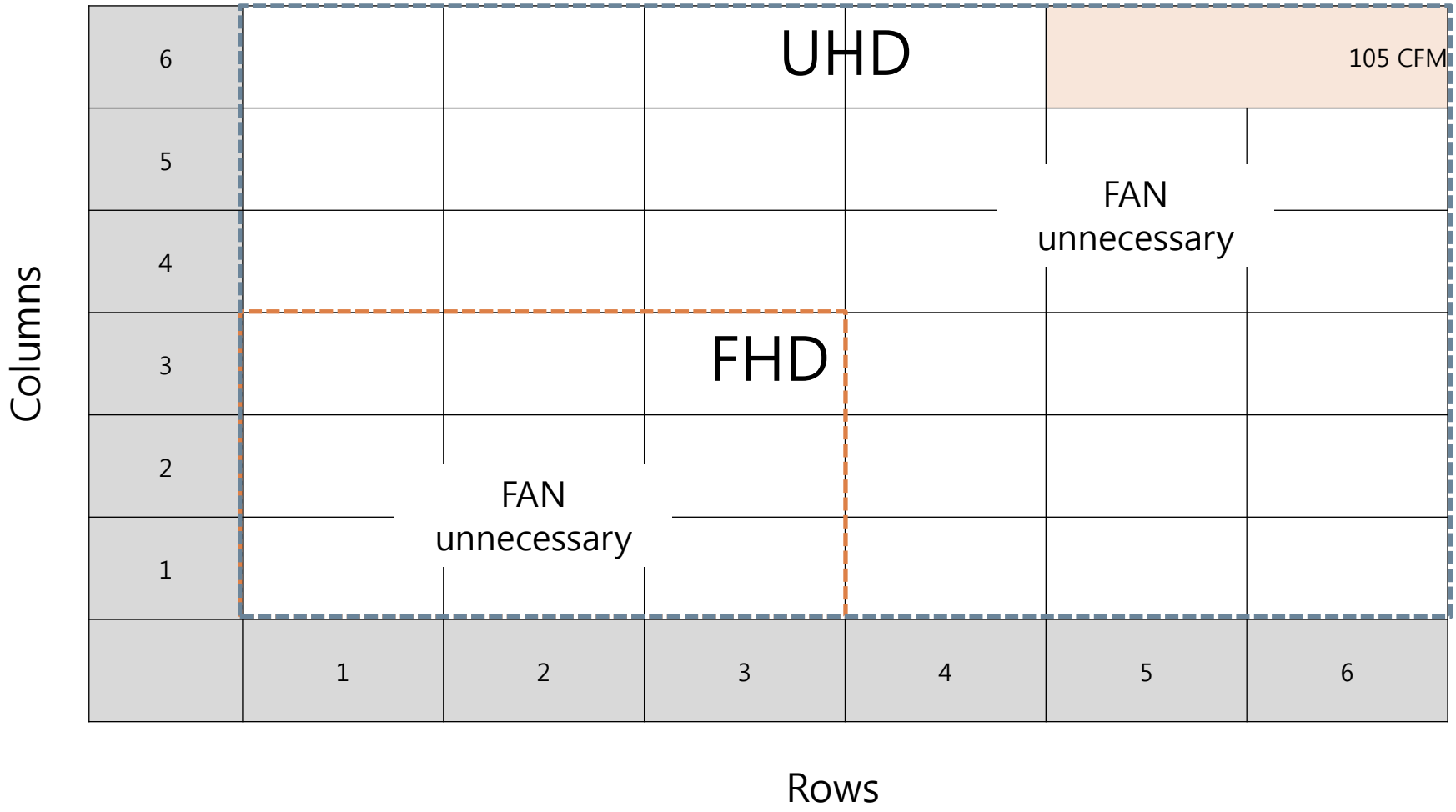
- Open ratio (%) = $\frac{(c\ X\ d)X\ No.\ of\ vent\ hole}{A\ X\ B}$



2. Check Point about the Radiant Heat

- **IFJ P1.2 (under 25℃) Guidance**

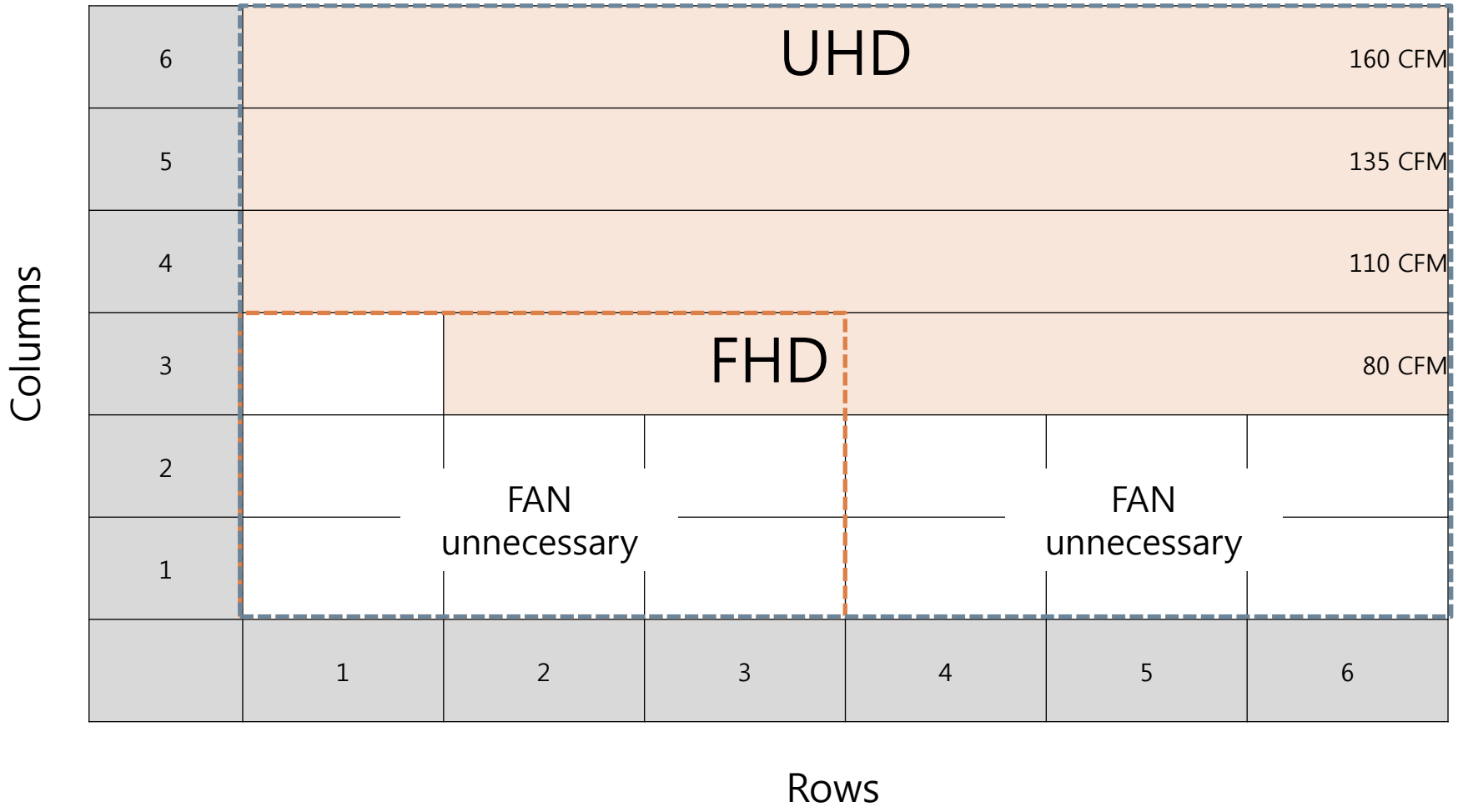
※ SAMSUNG WALL MOUNT , Full white, back light 7, VENT 60%



2. Check Point about the Radiant Heat

- **IFJ P1.2 (25~30℃)**

※ SAMSUNG WALL MOUNT , Full white, back light 7, VENT 60%



3. Preparation for Cabinet Installation

- **Preparations Before Installation**

① Remove the Box tape at the upper area and then open up the box. (Fig.2)

② Remove the Top–Cushion and hold the handle inside PE-Bag and pull out the set then remove PE bag. (Fig.2)

③ Assemble four(4) Sliding Screw for installation at the hole located at the outermost part of the Corner. (Fig.3)

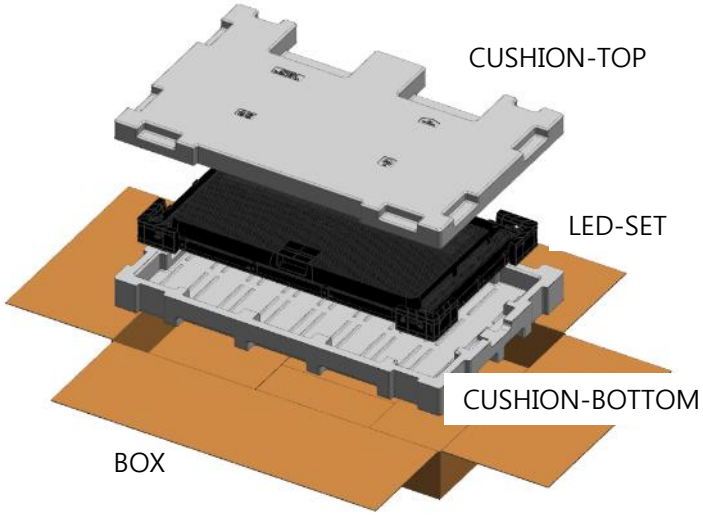


Fig.1 Packing & Product

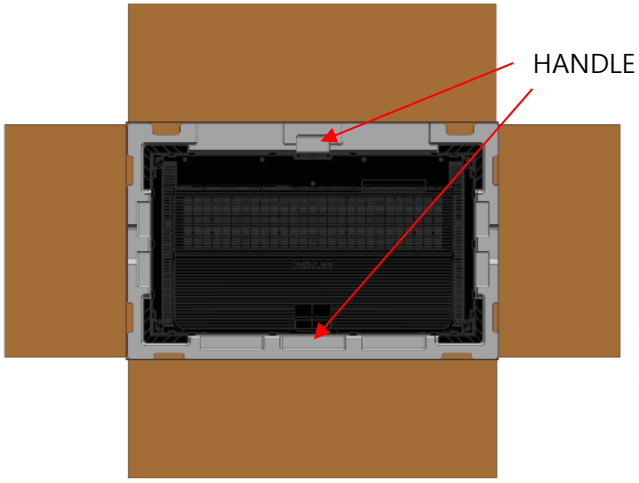


Fig. 2 Opening up

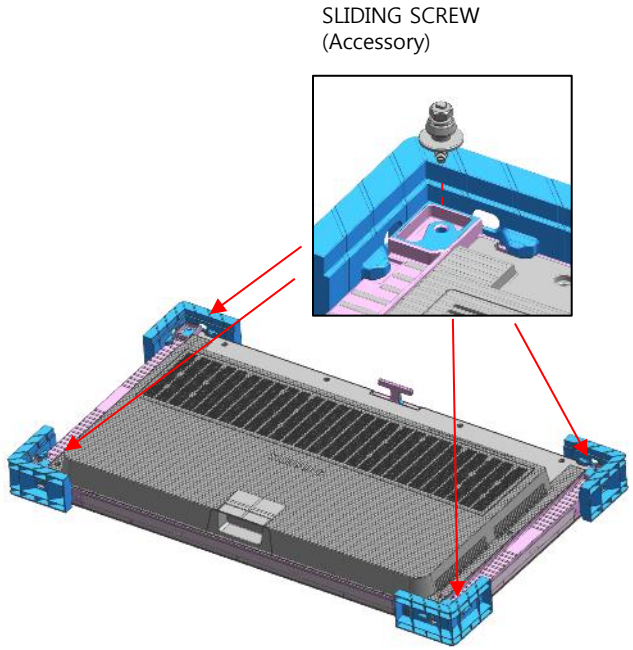


Fig.3 Bolt Assembly

3. Preparation for Cabinet Installation

④ Connect the power supply and check the screen for any abnormality.

※ How to check whether there is a screen error (Page.13)

⑤ Place the cabinet on the CUSHION-TOP with the LED side facing up and use the magnet jig to check if the module is locked. (Fig.4)

⑤ Unscrew COVER-CORNER Screw (total 4EA). (Fig.5)

⑥ Remove the protective sheet in order. (Side -> Vertical -> Horizontal) (Fig.6)

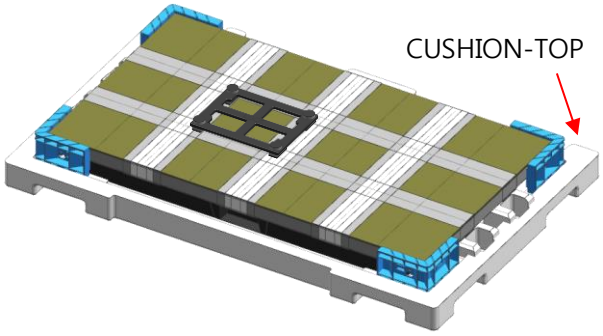


Fig.4 Cabinet Storage

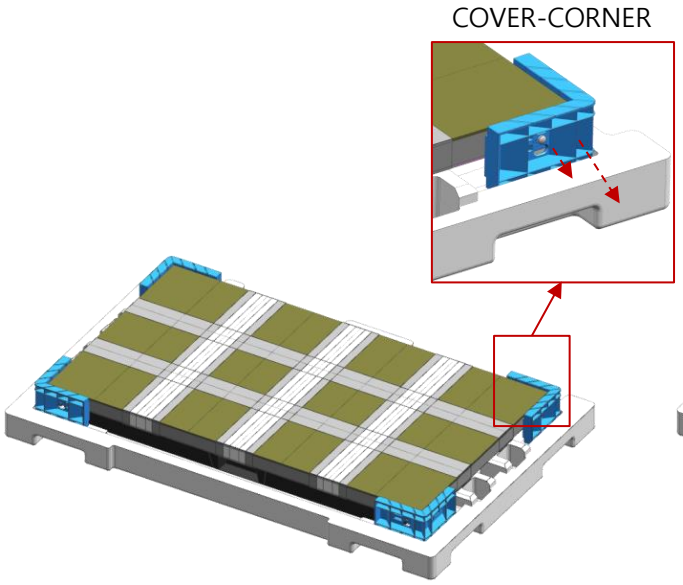


Fig.5 Removal of COVER-CORNER

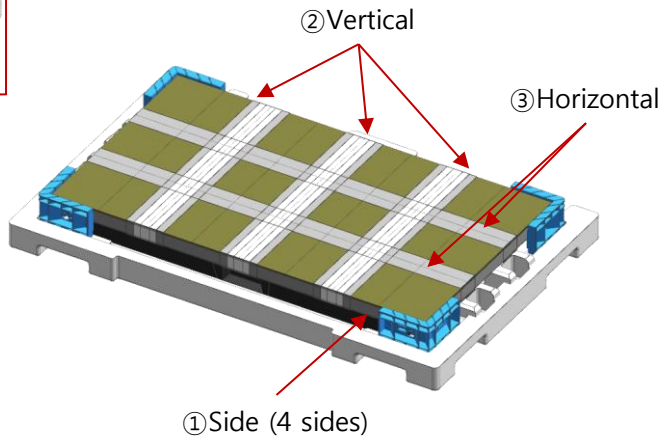
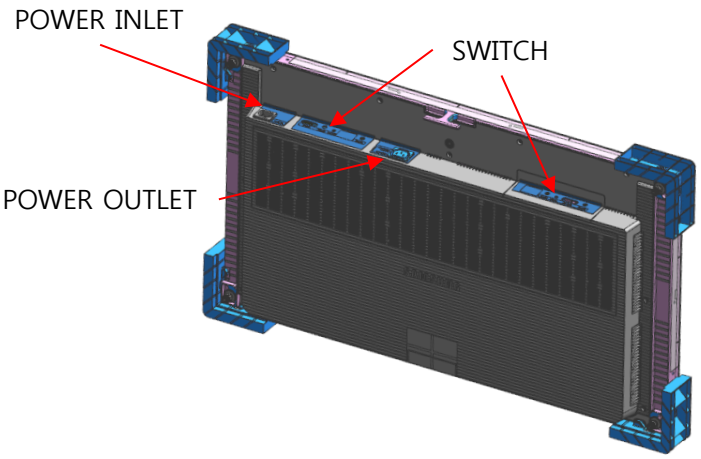
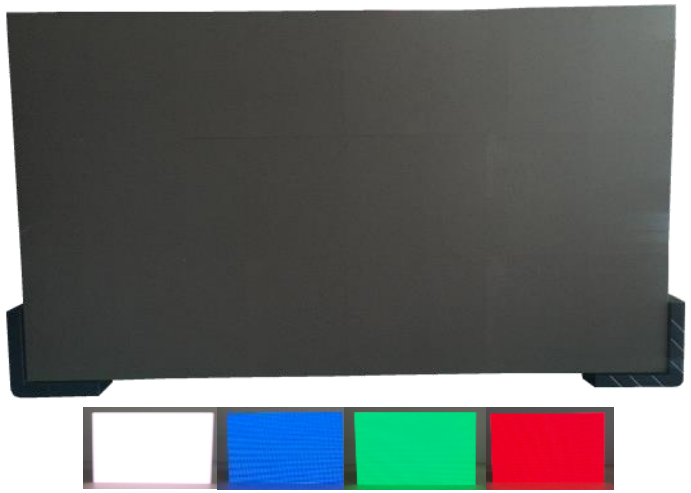


Fig.6 Removing the protective sheet

3. Preparation for Cabinet Installation

◈ Reference : Process of Screen check





Check the picture of the screen

◇ Connect Power Cable to SET.
Use internal pattern to check dead pixel or any damage with screen

※ Internal white pattern :

IMPORTANT

- After turn on Power, Press the 'Switch' button for five(5) seconds.
- If the information screen comes out, push the 'Switch' button one more time.
- When the color screen is displayed, check the defective LED by sequentially pressing Switch.

(color rotation : White → Blue → Red → Green)

- Push button for 5 seconds again to exit factory OSD

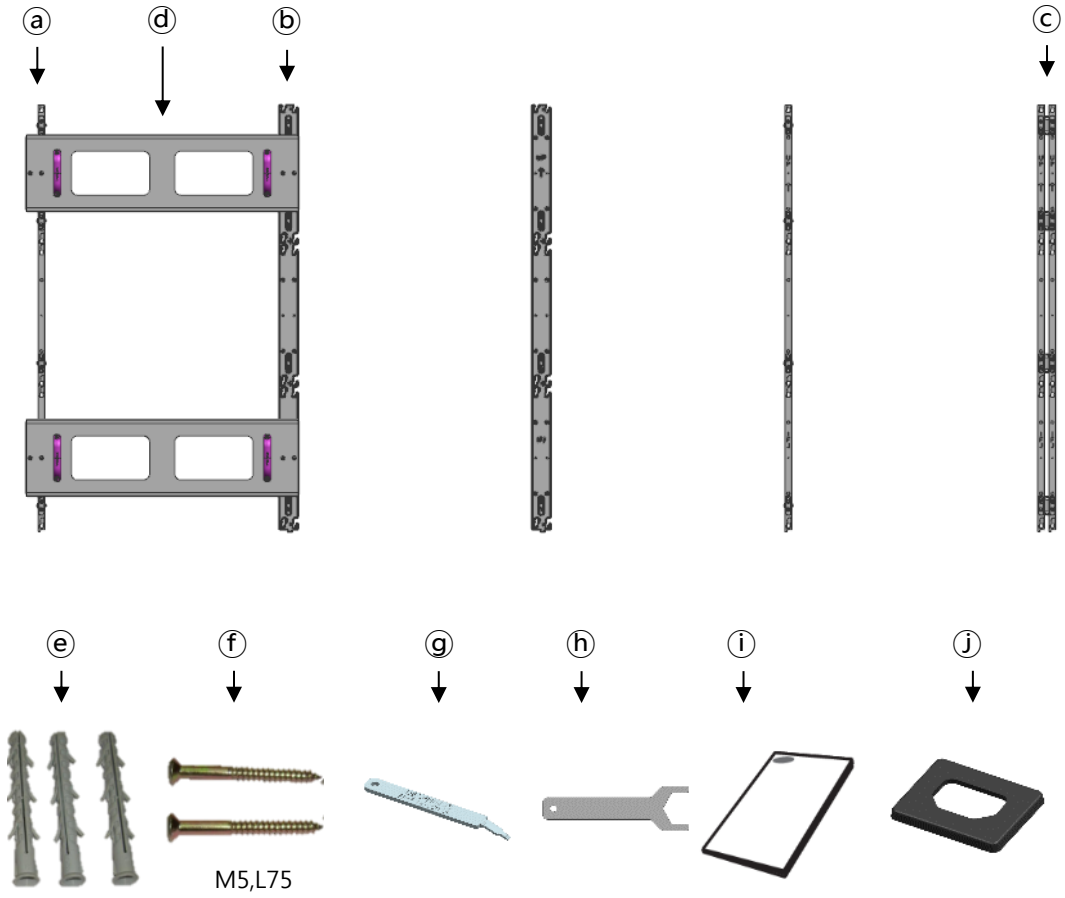
※ Caution: IFJ (LH012IFJTVS Doesn't Power On without Signal Inputs. Examination without S-Box connection, Please Plug in the Service key In Port (DATA IN).
(Do not Use Service Key for IFH, IFH-D Series models.)

4. Frame Installation

① Check Frame Kit Composition.

※ ⓒ Use ASSY BRACKET CENTER when screen is extended to more than 2 set of FRAME KITS

No.	Item	VG-LFJ32SWW	VG-LFJ33SWW
		3x2	3X3
		Units	Units
ⓐ	ASSY BRACKET SIDE	2	2
ⓑ	ASSY BRACKET MIDDLE	2	2
ⓒ	ASSY BRACKET CENTER	1	1
ⓓ	ASSY BRACKET JIG	2	2
ⓔ	Anchor	15	20
ⓕ	SCREW (M5,L65)	15	20
ⓖ	SVC-JIG	1	1
ⓗ	HEX-WRENCH	1	1
ⓘ	MANUAL-INSTALL	1	1
ⓙ	COVER-CAP	3	3
Size of the Installation Screen(mm)		2419.2*907.2	2419.2*1360.8



4. Frame Installation

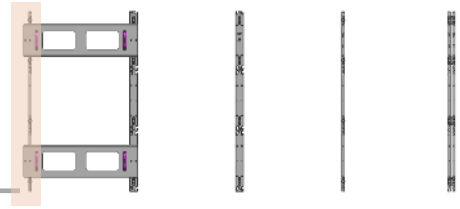


Fig.3 (Location of Components)

② Put the ⓐBracket Side the end of the left side and then fasten the screws to install. (Fig.3)

※ After fastening one(1) screw, use the device for vertical positioning to set up straight vertical alignment.

Then fasten up the remaining holes. (Refer to Page 18 for the Precautions for fixing the Screws)

Order of Fastening the Screws (No. 1 → No. 2 → No. 3). (Fig.1)

ⓐ Bracket Side is located at 7mm of the end line of the screen. (Fig.4)

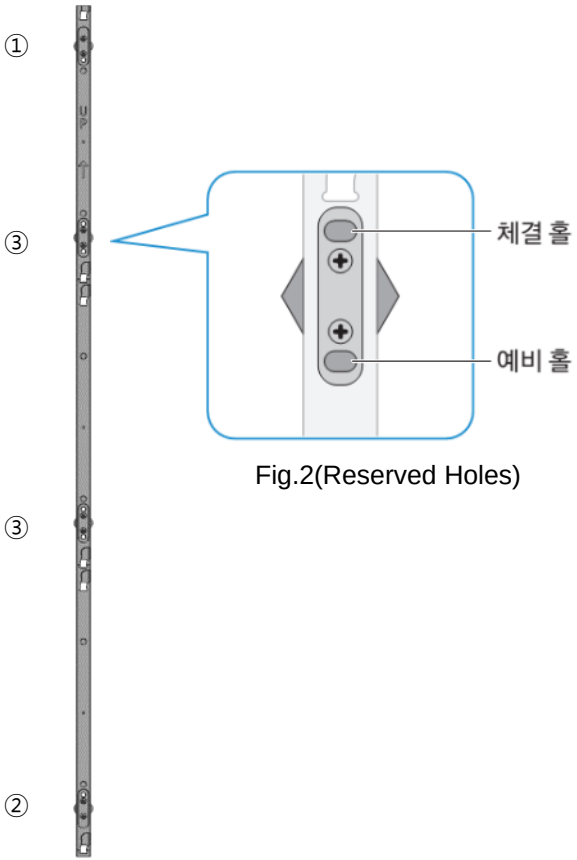


Fig.1 (Order of Work)

Fig.2(Reserved Holes)

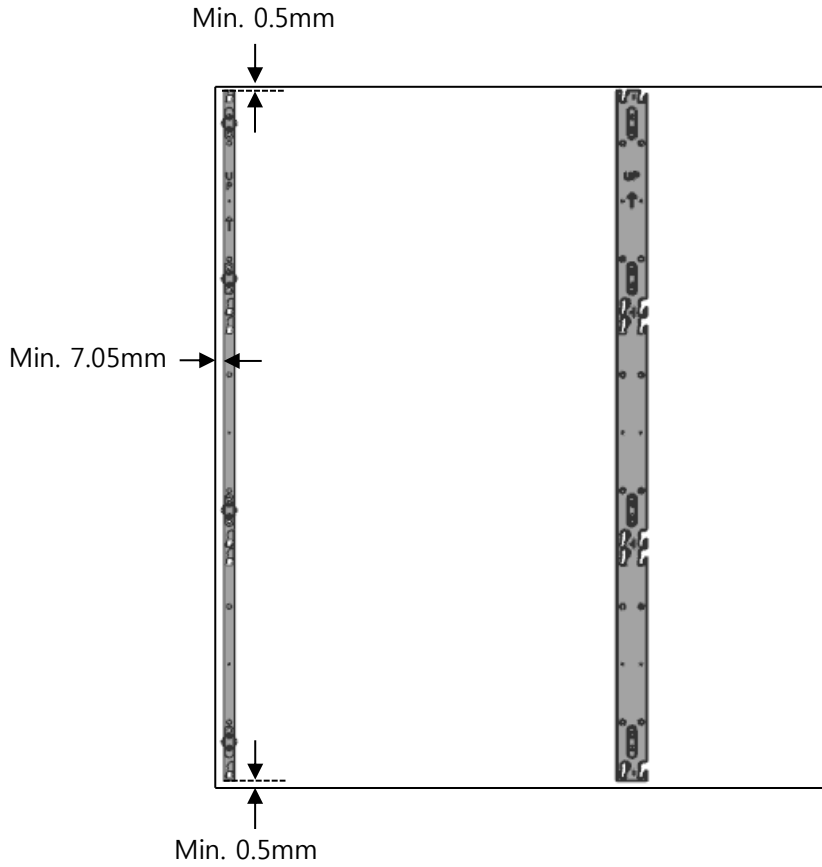


Fig.4 (Fastening position of the screen reference)

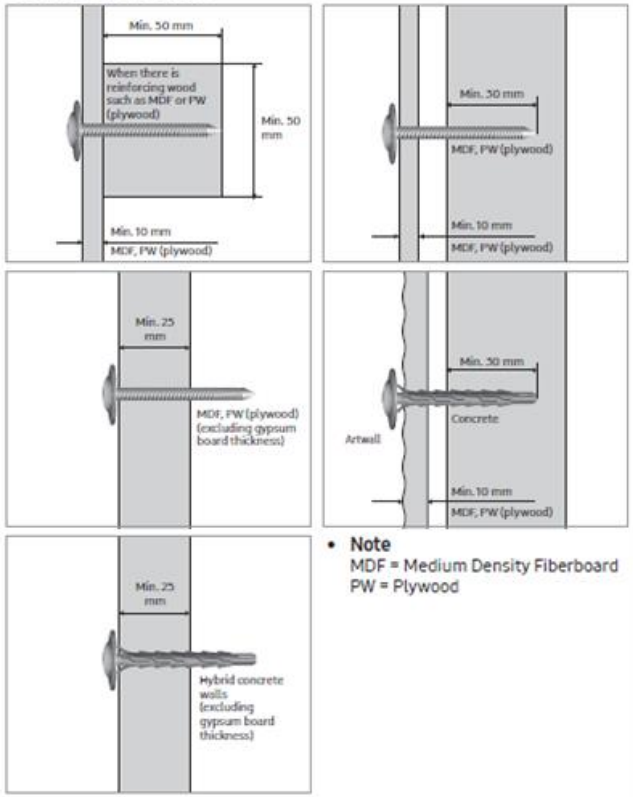
4. Frame Installation

※ Precautions for Fastening the Screws

Standard Installation Requirements by Wall Type

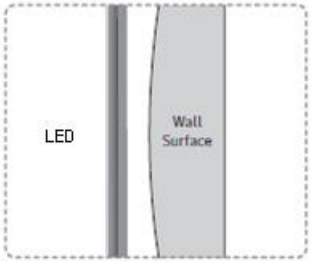
⚠ Check the wall type before installing.

- Can only be mounted on a concrete or interior wall of sufficient thickness. See the diagrams below.



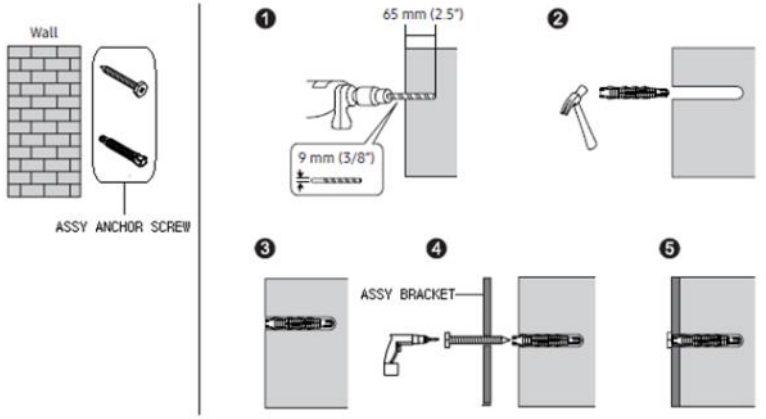
- **Note**
  MDF = Medium Density Fiberboard
  PW = Plywood

- First, check the status of the wall (type, thickness, flatness).

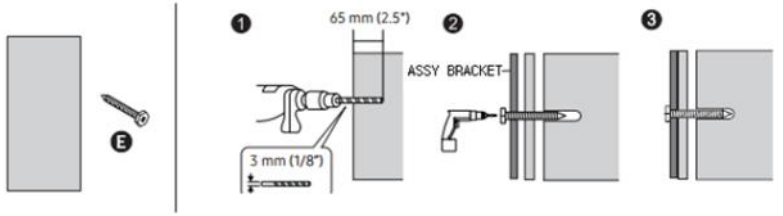


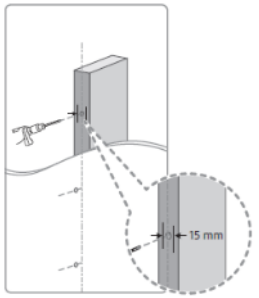
If the wall surface is not completely flat, gaps may form after installation.

① Walls made of thick enough concrete



② Walls made of gypsum board with wood studs or MDF





Installation Requirements

- Be sure to check the location of wooden studs in the wall before installing screws.
- Minimum wood stud size: 51 x 102 mm (2 x 4 in) Make holes (3 mm) first before installing screws.
- Holes for screws must be made at the center of studs.

⚠ Samsung is not responsible for problems that arise when the installation guide is not followed.

4. Frame Installation

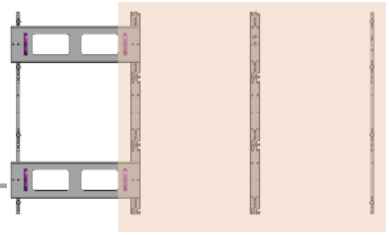


Fig.3 (Location of Components)

③ Install ⓑASSY BRACKET MIDDLE.

※ First, check the Hole to fix the ⓓ JIG. [Fig.1]

※ Second, Mount the ⓓ JIG inside the Bracket Hole and fasten up four(4) Screws [Fig.2]

※ Third, fasten the ⓑ ASSY BRACKET MIDDLE using Screws. [Fig.3]

※ Warning. ⓐ,ⓑand ⓓ sides should be attached,

and the three(3) sides of Wall/ ⓐ,ⓑ side/ ⓓ side should be parallel.[Fig.4]

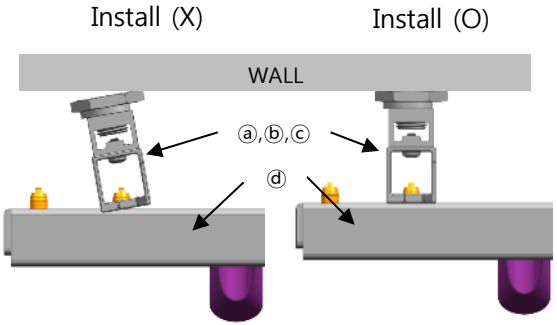


Fig4. Maintain the Parallel Frame

④ Install ⓑBracket Middle in the same way (from left to right)

※ Install Bracket Center at the center of Frame KIT.

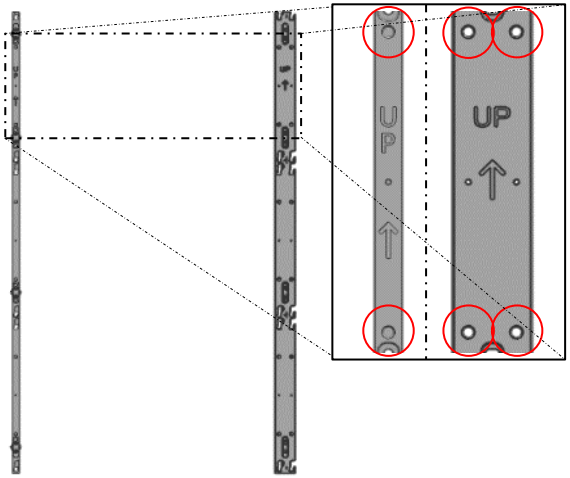


Fig1. Check the Hole

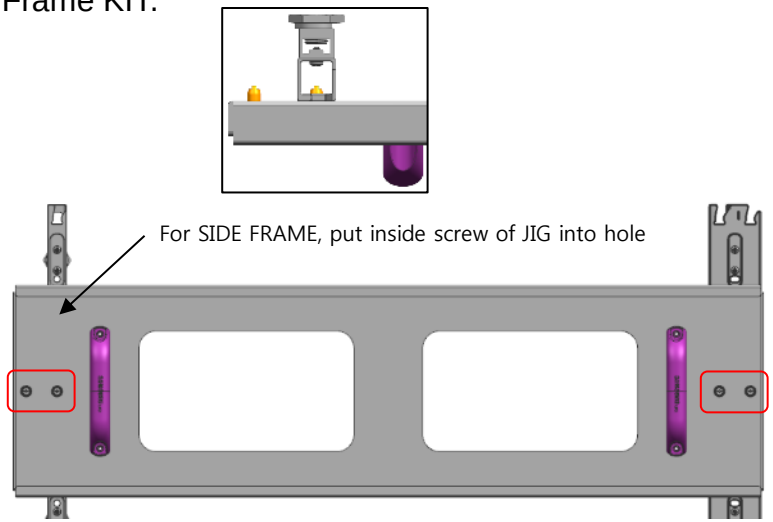


Fig2. Fix the Jig (Screw)

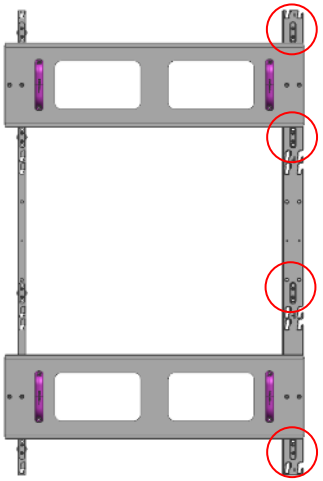


Fig3. Fasten the Screw

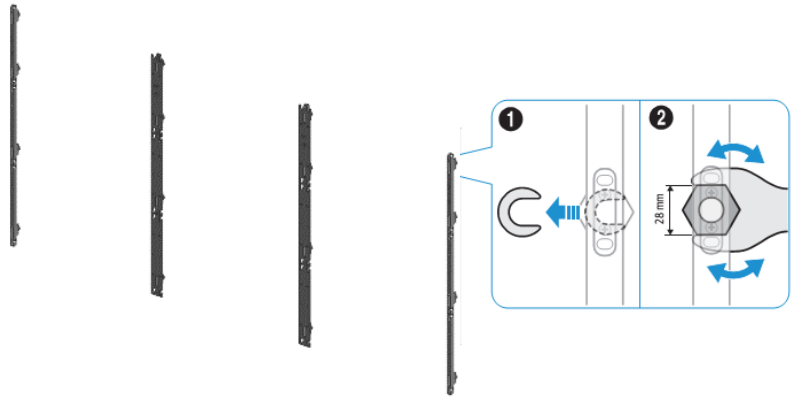
4. Frame Installation

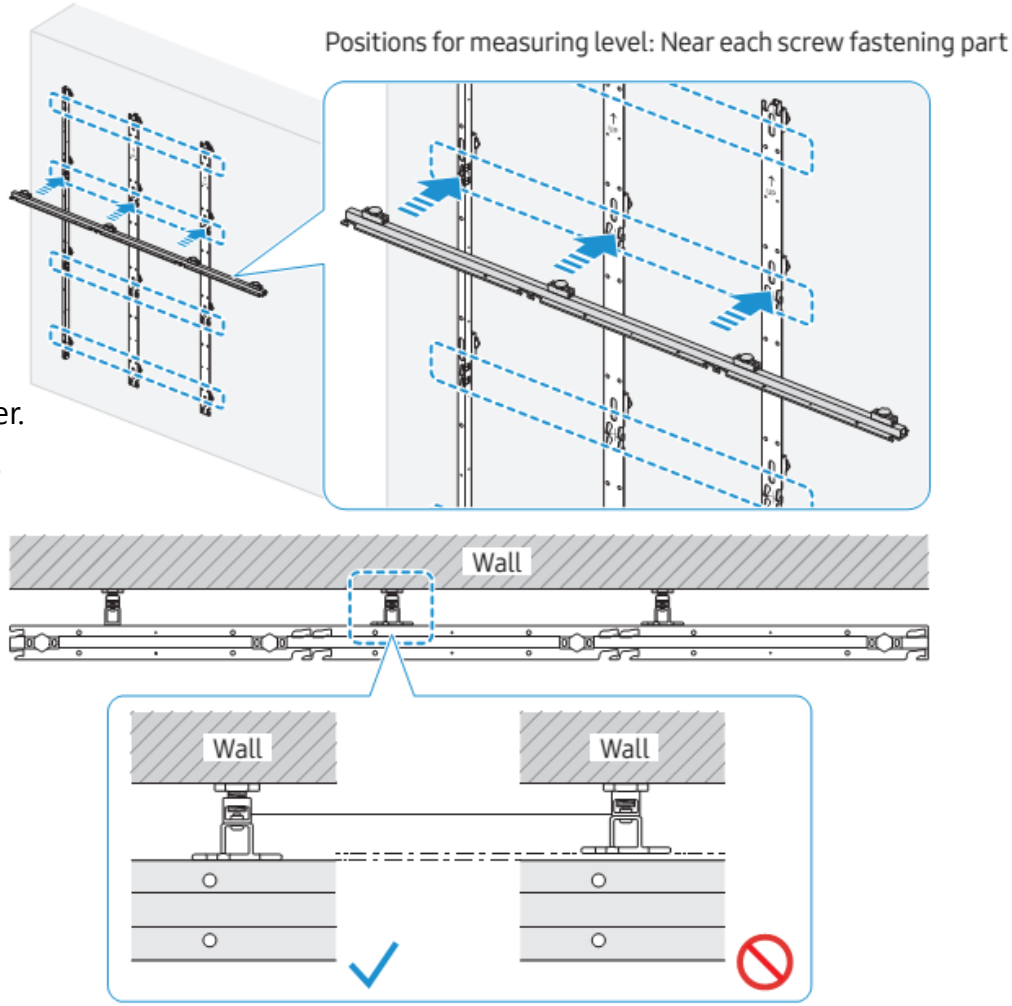
※ When installing three or more ASSY BRACKETs, adjust their levels because they may be distorted by walls or structures.

– After installing three or more ASSY BRACKETs, place another ASSY BRACKET horizontally on them and measure if there is a height difference among them. If a height difference is found, adjust the Z-Bolt heights of ASSY BRACKETs to make them level with each other.

– Adjusting the heights

1. To adjust the Z-Bolt height of the frame, first remove the washer.
2. After removing the washer, use a wrench (28 mm) to adjust the Z-Bolt height.





4. Frame Installation

In case of installation of connecting two or more FRAME KITS using ASSY BRACKET CENTER.

⑤ Install the ⓒASSY BRACKET CENTER instead of the ⓐASSY BRACKET SIDE on the right side.

⑥ Install cabinet from the bottom row. [Fig.5]

⑦ After completed installation of cabinet, Check the flushes between LED Module and both end cabinet by pushing the LED Modules towards the center.

⑧ Make the left and right flushes equal, and then adjust the flushes according to the following criteria. [Fig.7]

- If the flush is more than 0.5 mm, move the Frame outward.
- If the flush is less than 0.0 mm, move the Frame inward.
- Adjust the flush each time you install a cabinet additionally. If the flush is 0.0 to 0.5 mm, you don't need to adjust.

⑨ Finally, Install ⓐASSY BRACKET SIDE and ⓑASSY BRACKET MIDDLE. [Fig.8]

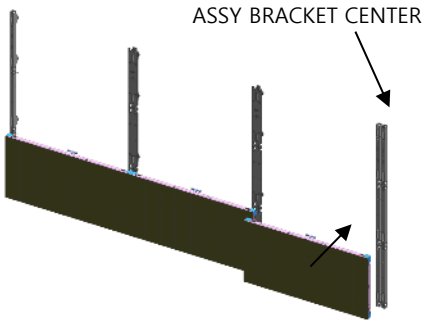


Fig5. Install cabinets

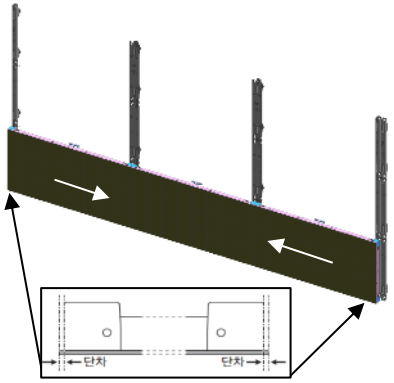


Fig6. Check flushes

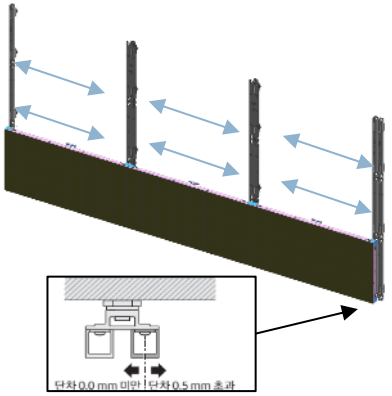


Fig7. Adjust flushes

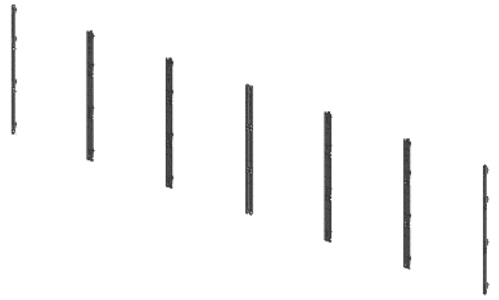


Fig8. (ex.) Installation of 6x3

5. Cabinet + Frame Installation

• Fix I/G Location

① Install I/G first on the back side of the Cabinet of each Type. (Fig.1)

※ Location to Install: Locate the I/G at the point 35~40mm below, which is the standard for carving at the right side of the frame, and then fasten the screws.(Fig.2)

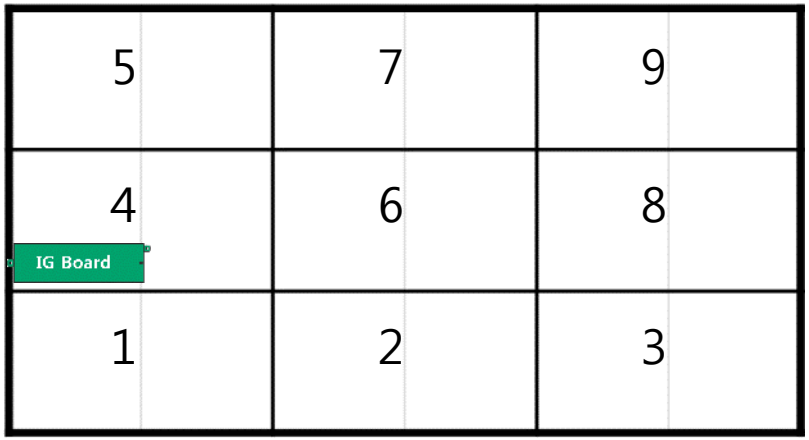


Fig1. Location to Fix the I/G and Order of Installing the Cabinet

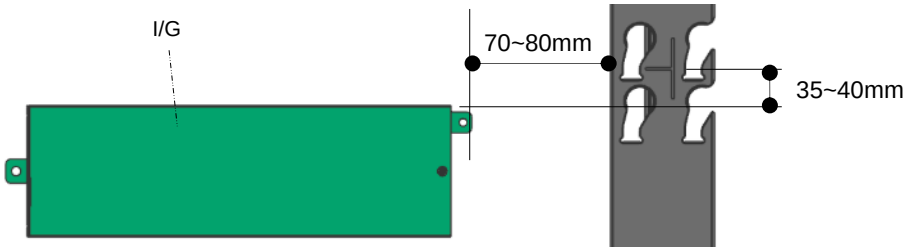


Fig2. Location to Fix I/G

5. Cabinet + Frame Installation

② Adjust the Corners of the Cabinet to each of the cravings to be closer to the Frame.

※ Order of Cabinet Installation (56 Page)

※ Check whether all the four(4) bolts are put into the frame. (Fig.1)

③ Assemble to slide below diagonal line by pressing the upper side of the Frame. (Fig.2)

④ From the layers above the second floor, insert the Service Jig between each Cabinet, remove the Service Jig, slowly lower the Cabinet. (Fig.3)

※ Beware not to have the Service Jig touch the LED Module.

※ Check whether the gap between each module widens, whether the size of the pitch differs every time of installation.

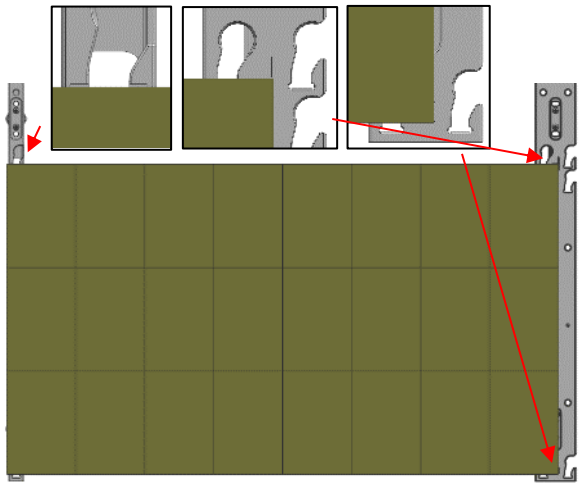


Fig.1

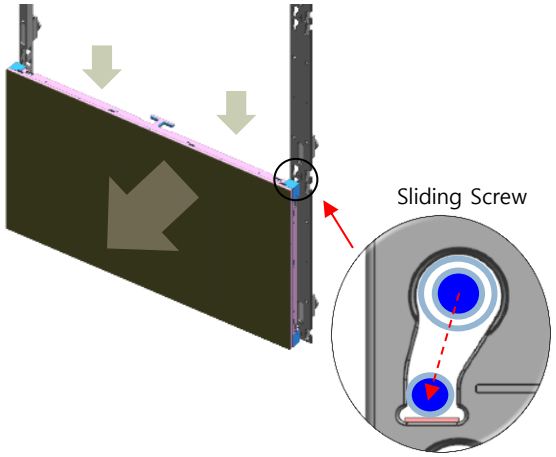


Fig.2

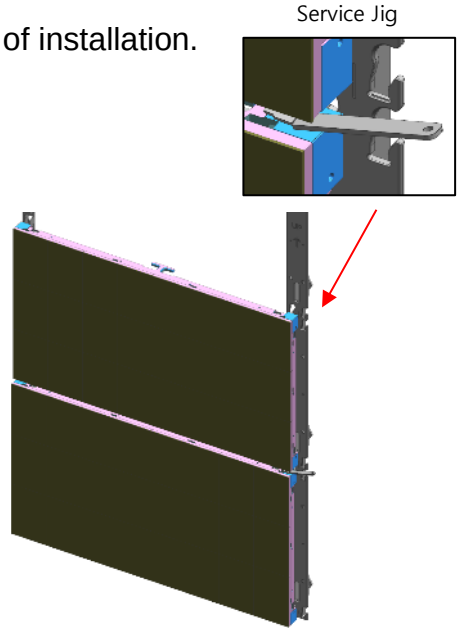


Fig.3

5. Cabinet + Frame Installation

※ If the modules are too tight, it may be difficult to detach the module. Therefore, install some modules by sampling some modules during the installation process. (Fig.1)

※ When not using the ASSY BRACKET CENTER If the space between the cabinets is wide open after installation, push or pull the cabinet according to the center cabinet to clear the gap and continue installation. (Fig.2)

※ If there is a gap between the cabinets after moving the module and moving the cabinet, loosen the screws slightly on the wall of the installation frame and move the frame to the left and right to remove the gap. (Fig.3) Moves the entire frame by the same distance when moving the frame, and confirms whether it has been tilted using leveler after the movement. (Fig.4)

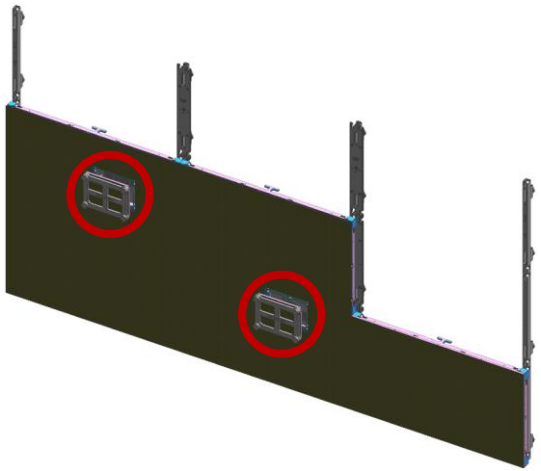


Fig.1 Module detachment inspection

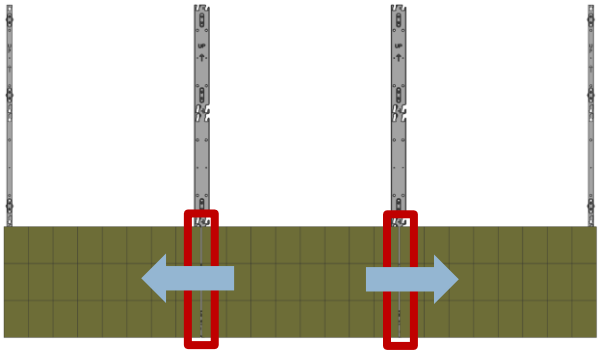


Fig.2 Adjusting the cabinet gap (moving cabinet)

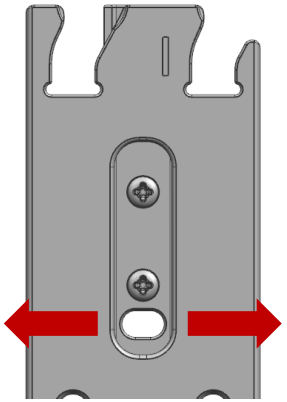


Fig.3 Moving frame

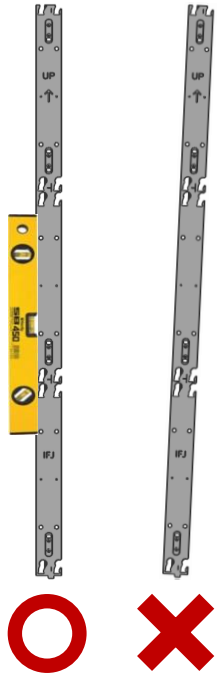
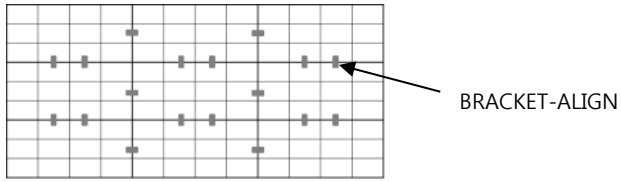


Fig.4 Vertical check after moving frame

5. Cabinet + Frame Installation

⑥ Insert the BRACKET-ALIGN which connects Cabinet between the Cabinets

- Put it in the middle 2 points in the horizontal direction of the surface where Cabinet meets each other, and 1 point in the vertical direction.
- 3*3 FHD standard used 18pcs



[3*3 FHD]

BRACKET-ALIGN

※ BRACKET-ALIGN coupling method

1) Separate the BRACKET-SUB+LED MODULEs from the parts requiring the BRACKET-ALIGN. (Fig.1)
   * Detaching the UNLOCK part of the magnet jig by showing.
2) Place the BRACKET-ALIGN such that the flat portion is downward and the height stepped portion is upward.(Fig.2)
3) Fix the BRACKET-ALIGN with a screw. (Fig.3)
   * If the height difference of the frame occurs more than 0.5mm even after the screw is fixed
     : Turn over the BRACKET-ALIGN so that the thick side contacts the high side and the screw is fastened. And then Check the steps again. (Fig.5)
4) Assembly the module to its place. (Fig.4)
   * Fixed the LOCK part of the magnet jig by showing.

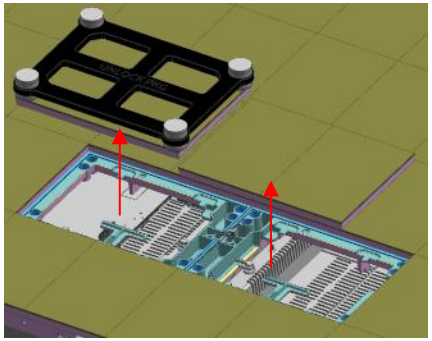


Fig.1

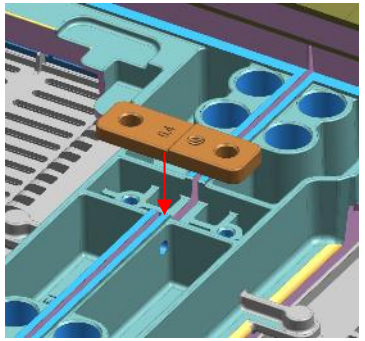


Fig.2

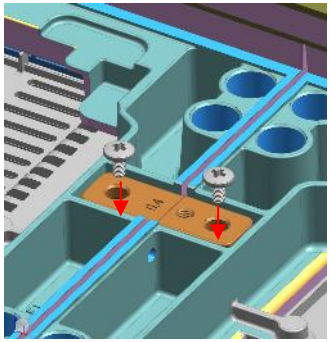


Fig.3

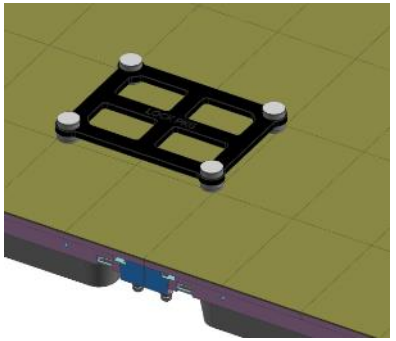


Fig.4

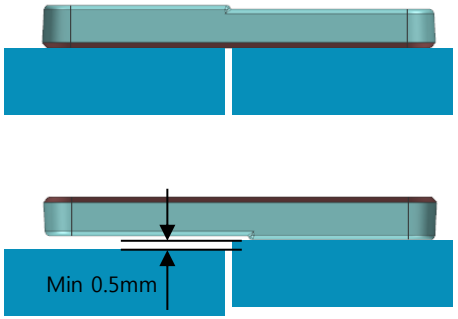


Fig.5

5. Cabinet + Frame Installation

⑦ Attach the PET Sheet and assemble Cover PCB for the Cabinet that is located at the exterior.

※ PET Sheet & Cover PCB should be at the boundary of whole screen. **(Blue area at the exterior of Fig.1)**

※ Attach PET Sheet as shown below.(Fig.2), The areas where there is no tape should guide the LED module.

※ Assemble the Cover PCB as shown below.(Fig.3)

3X3

7	4	7
3		4
7	4	7

Fig.1 Attach point of Sheet PET and Cover PCB

* Number : assembly quantity of Cover PCB

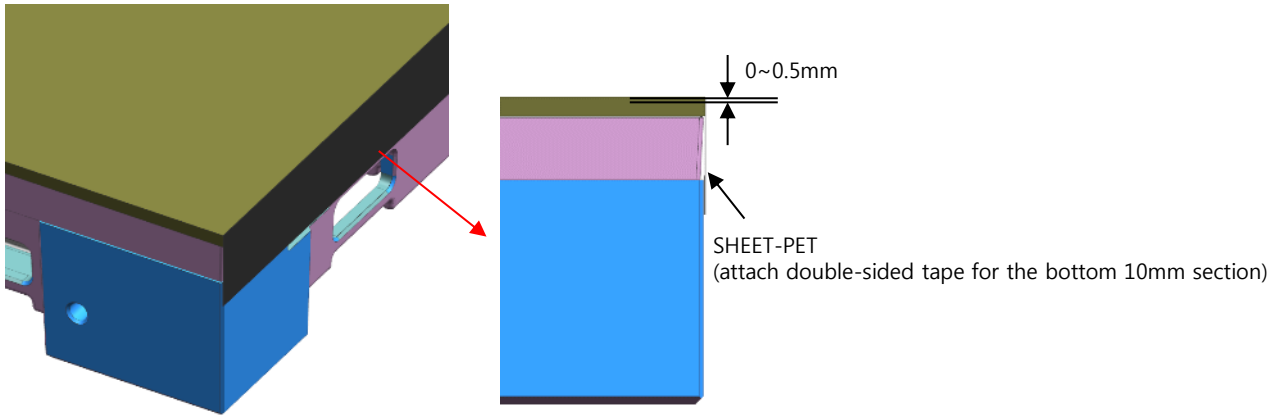


Fig.2

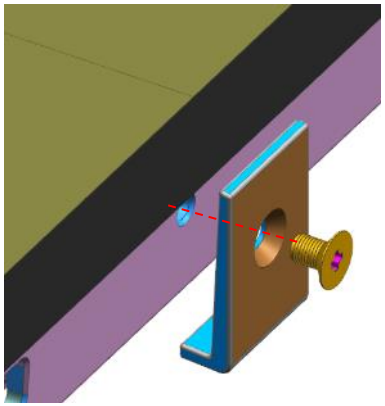


Fig.3

5. Cabinet + Frame Installation

◇ **Protection of I/G**

· To prevent unexpected removing IG box, the Protection Bracket should be attached on left / right side of the display (Fig.1)

* In case of pocket installation, do not need to attach the protection.

* Keep free space on Top and Bottom for ventilation

Recommended specification for Protection Bracket :

① Material: Aluminum plate or iron plate with thickness of 1.0mm ~ 2.0mm coated with black

② Dimension: Width 50mm, Length 906.2mm (3*2), 1359.8 (3*3) (same with Frame, Fig.2)

③ Screw hole position: 235mm from top screw first. The upper first screw is positioned 90.5mm from the upper end. (Fig.3)

④ Screw: M4*0.7mm , length 6mm.

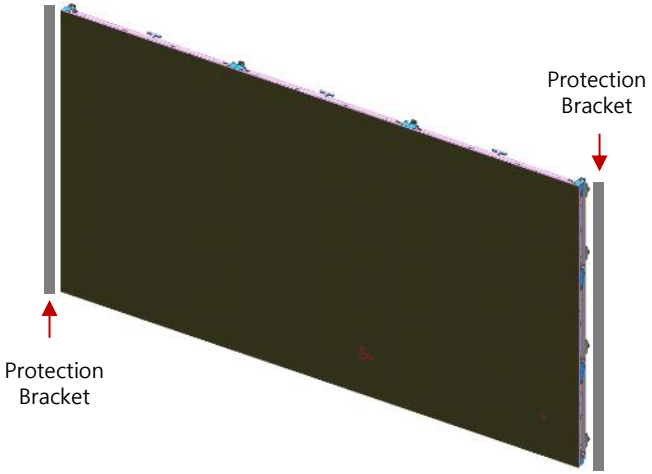


Fig.1 Protection Bracket

	VG-LFJ32SWW (3*2)	VG-LFJ33SWW (3*3)
Width (mm)	50	50
Length (mm)	906.2	1359.8

Fig.2 Dimension of protection Bracket

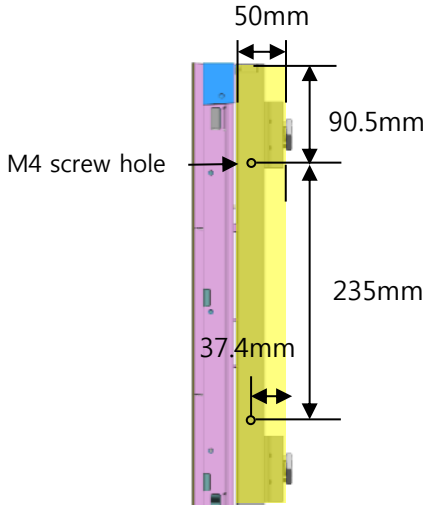
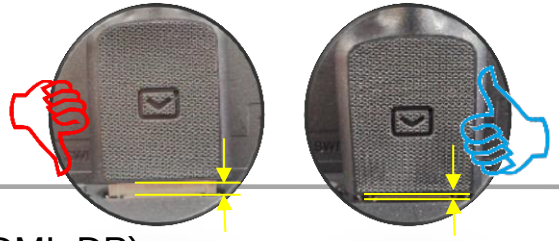


Fig.3 Screw location

6. S-BOX Connection

IMPORTANT



① Input the video signal to the S-BOX. (Input terminal : HDMI, DP)

② Check the signal input from SOURCE STATUS.(RED : HDMI1 , GREEN : HDMI2, Blue : DISPLAY PORT)

③ Connect from the HDBT OUT port of S-BOX to HDBT IN port of Interface Gender using LAN cable.

④ Connect from DATA OUT port of Interface Gender to DATA IN port of the first cabinet using OCM Cable.

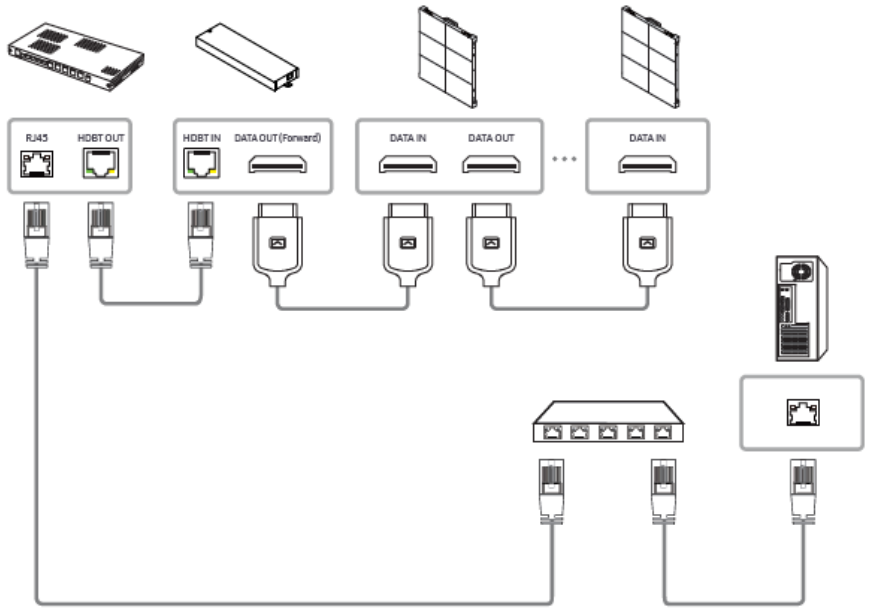
⑤ When HDMI UHD Color is set to On, up to the 3840 x 2160 @ 60 Hz resolution is supported by S-BOX. When HDMI UHD Color is set to Off, up to 1920 x 1080 @ 60 Hz resolution is supported.

※ Menu – Picture – Advanced Settings – HDMI UHD Color : ON

(Default: OFF, S-BOX will be reboot when it is changed.)

⑥ One SNOW-1703U supports only one type of LED pitch cabinets. Do not connect different types of LED pitch cabinets.

⑦ SNOW-1703U displays the screen starting from the upper left cabinet. To view the screen, connect the HDBT cable to the HDBT OUT 1 port on S-BOX.



- For HDBT signal stability, use the cable above CAT6 *STP, *FTP level. (Length 15m~100m)
  - Do not use "comb" or "pinstripe" cable.

IMPORTANT

6. S-BOX Connection

⑧ **The Instructions for handling Cable**

IMPORTANT

- For HDBT signal stability, use the cable above CAT6 *STP, *FTP level. (Length 15m~100m)

  - Do not use "comb" or "pinstripe" cable.

★ Orderly Rolled (Recommend)

★ Random Rolled (Not Recommend)

- In case of cables in a bundle, permissable number of cables depends on a length and a type of cable.

  - If you mix more than 6-cables per bundle may affect the HDBT signal integrity due to EMI or signal interference between the cables.

Table 4: HDBaseT Cabling - Permissable Number of Cables in a Bundle

Type	30m	50m	70m	100m
CAT6a	6	6	6	6

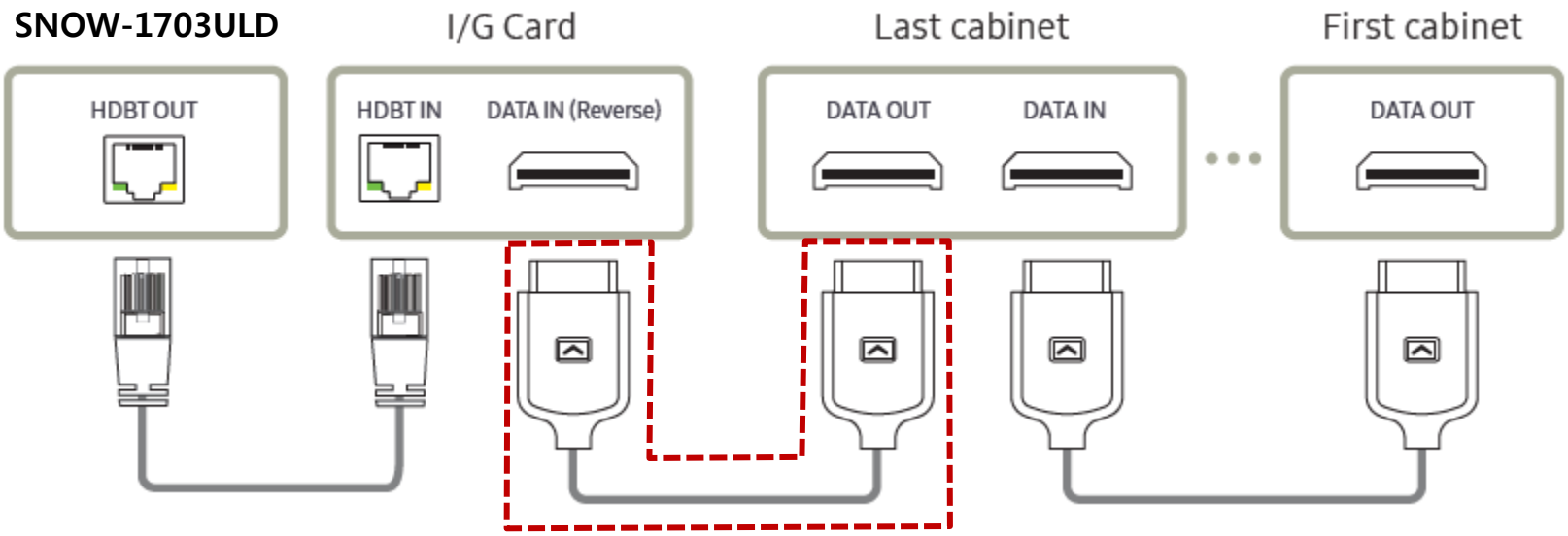
- Don't overbend your cables for cable integrity.
- Keep your cables away from power sources.

  - Cables should be kept at a distance of at least 12 inches from power cables. In an environment prone to high EMI, it is best to use shielded cables.

6. S-BOX Connection (Redundancy)

① If Redundant Spec should be used,

Connect from DATA IN port of Interface Gender to DATA OUT port of the last cabinet by using OCM Cable.



- For HDBT signal stability, use the cable above CAT6
  *STP, *FTP level. (Length 15m~100m)
  - Do not use "comb" or "pinstripe" cable.

IMPORTANT

6. S-BOX Connection (Pre-Heating)

- **When LED display is installed after 3 months from the date of shipment, defects are prevented by pre-heating.**
- **After connecting the S-BOX, the LED display is slowly operated for 24 hours to remove moisture from the LED.**

① It should be done after cabinets installation and S-BOX connection.

② After inserting the USB containing the Pre-Heating file into the S-Box, execute the file.

The pre-heating process progresses automatically for 24 hours as the brightness increases gradually.

③ When the pre-heating is completed, the USB should be removed.

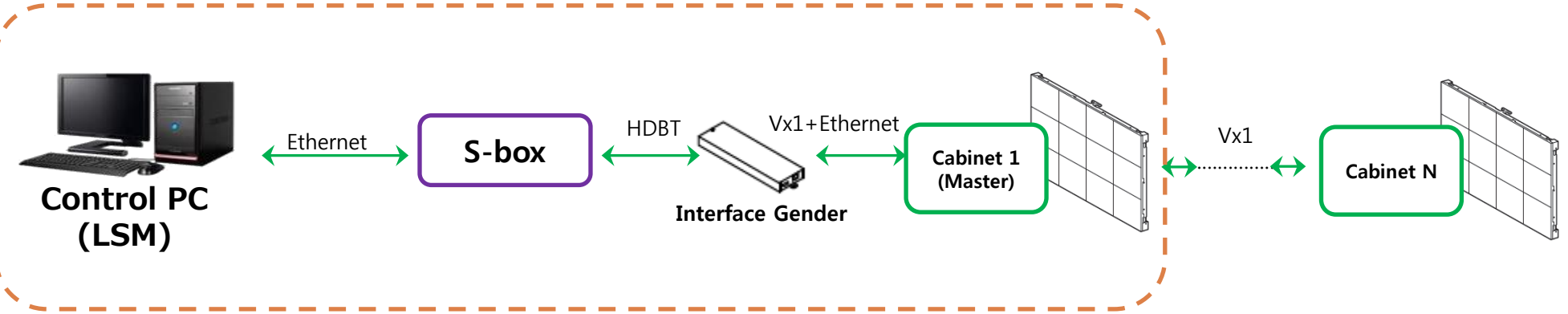
Step	condition	Brightness	Time
1	Lighting up display with 10 gray scale	5%	2 hr
2	Lighting up display with 20 gray scale	8%	2 hr
3	Lighting up display with 30 gray scale	10%	2 hr
4	Lighting up display with 40 gray scale	15%	2 hr
5	Lighting up display with 50 gray scale	20%	2 hr
6	Lighting up display with 70 gray scale	25%	2 hr
7	Lighting up display with 90 gray scale	35%	2 hr
8	Lighting up display with 120 gray scale	45%	2 hr
9	Lighting up display with 150 gray scale	60%	2 hr
10	Lighting up display with 180 gray scale	70%	2 hr
11	Lighting up display with 200 gray scale	80%	2 hr
12	Lighting up display with 255 gray scale	100%	2 hr

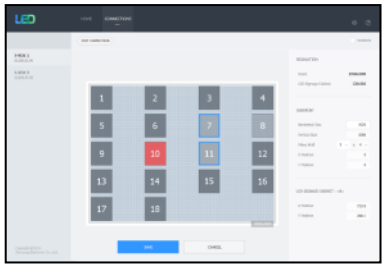
6. S-BOX Connection (Panel Configuration)

① S-Box Picture Setting according to model

- The default picture configurations are optimized for LH015IFH in Samsung factory.
- The picture configurations will be configured automatically when you finish the installation.
- Fo the best picture quality, Please connect S-Box and LED displays via LSM software properly.
- The 1st LED Display(I/G) must be connected to HDBT port #1 in S-Box
- The Picture configuration will be set base on the model of the 1st Master LED display which is connected to HDBT port #1 in S-Box.

* If the S-Box and LED Displays are not connected properly by LSM, the picture quality might not be correct.





<Connected condition in LSM>

6. S-BOX Connection (Grouping)

- **S-Box Grouping is a function used to configure a single screen using multi S-Box.**

If you configure one screen with a single S-Box, do not use this function !!

When S-Box Grouping is set up, the quality improvement function(LED HDR) does not work.

① Factory menu setting

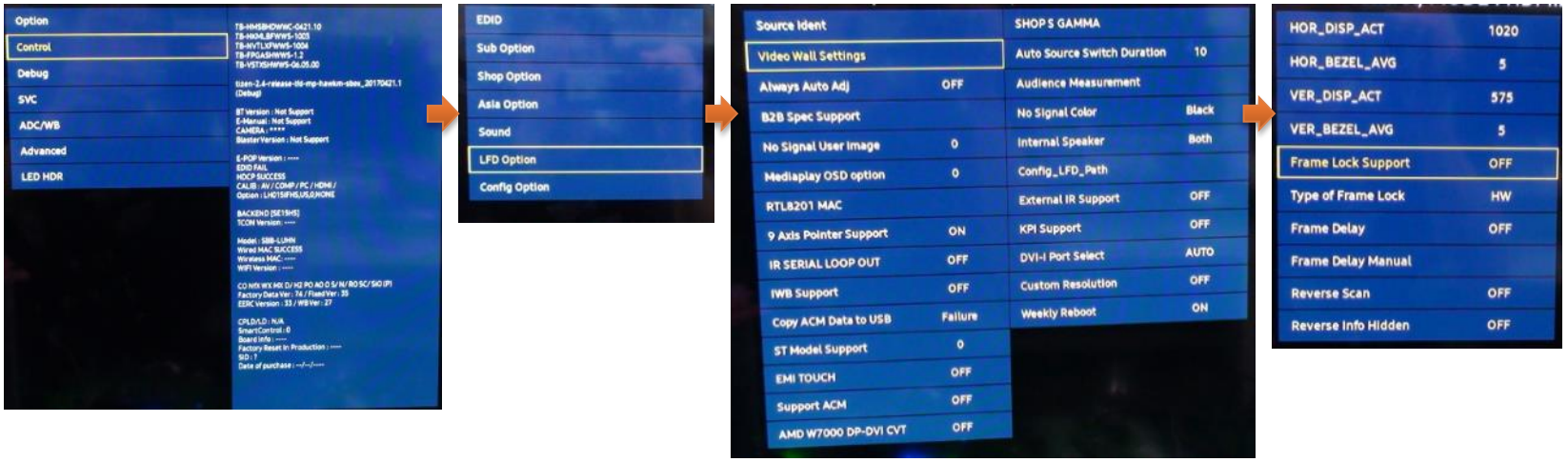
[1] Access path by remocon

- General remocon : Power OFF → MUTE → 1 → 8 → 2 → Power ON
- Factory remocon : Info → Factory

[2] Turn on the function

- Control → LFD Option → Video Wall Settings → Frame Lock Support
- Change the Frame Lock Support : OFF → ON

[★ Warning!] If another menu setting is changed, s-box can not work normally.

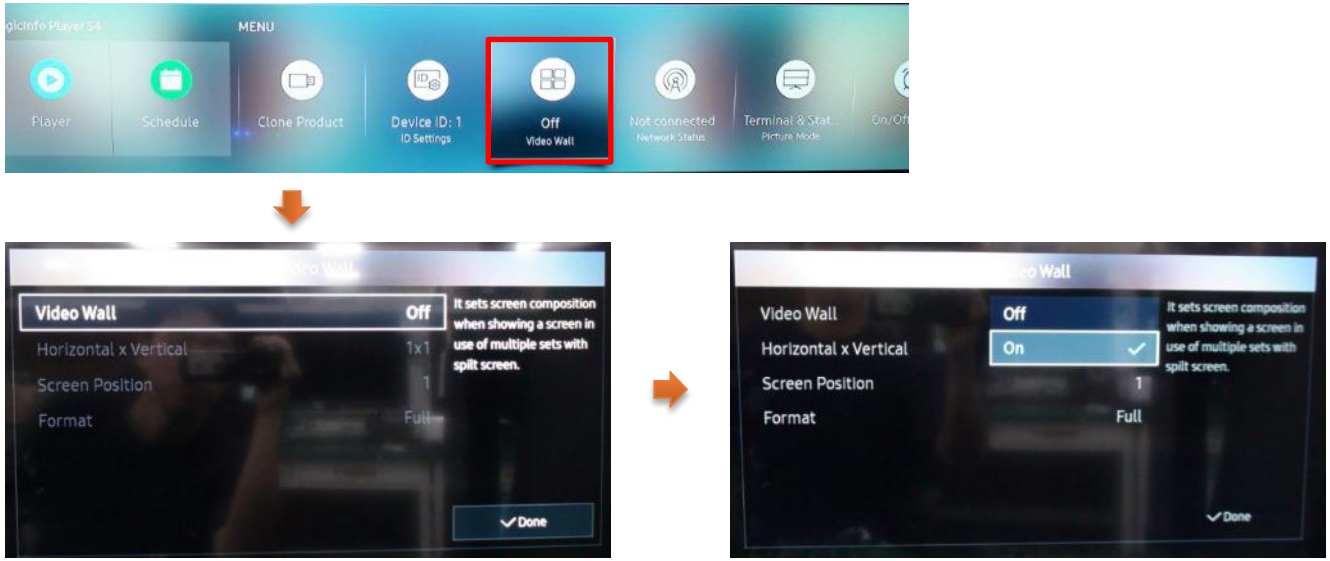


- Turn off the power after you change the setting of item. S-box grouping function will apply from next booting.

6. S-BOX Connection (Grouping)

② Enable S-Box Grouping

- Home → Video Wall : OFF → On



[Cautions!!]

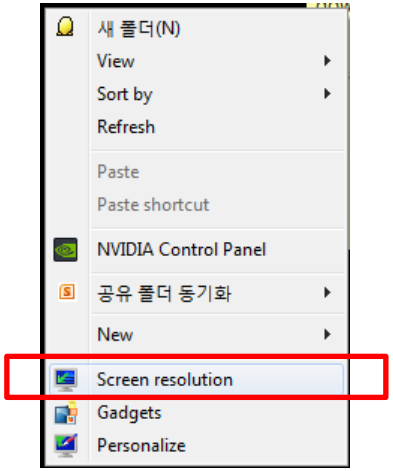
1) Setup supported resolution for grouping before the grouping function of multi s-box is run by LSM.
2) It can cause the noise of picture or blackout, if resolution is not supported.
   Please change the Video Wall is to OFF, and setup the resolution to supported timing.
   Refer to the next page for supported resolution.

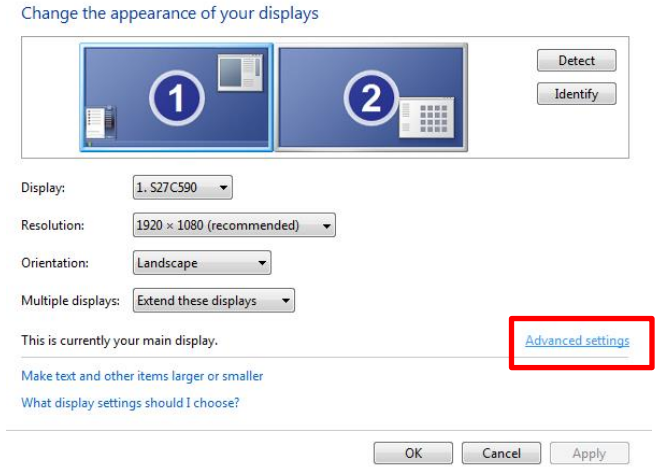
※ From '17.06, LSM support S-Box Grouping. Check the latest LSM version.

6. S-BOX Connection (Grouping)

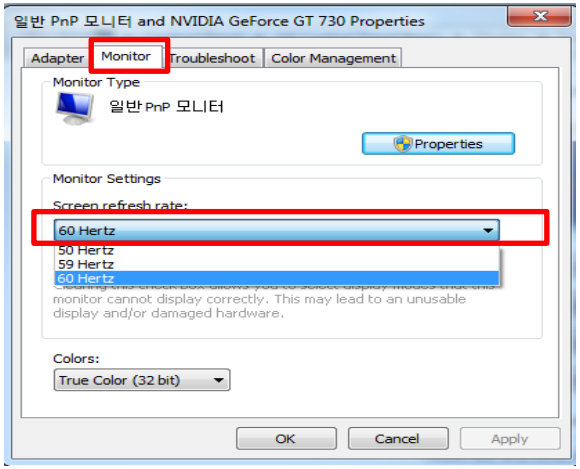
③ Setup the resolution of input PC

- **PC: Click the right button of mouse → Click Screen resolution → Click Advanced settings**





- **Click "Monitor" tap → Monitor Settings → Setup "Screen refresh rate" to 60Hz**



6. S-BOX Connection (Grouping)

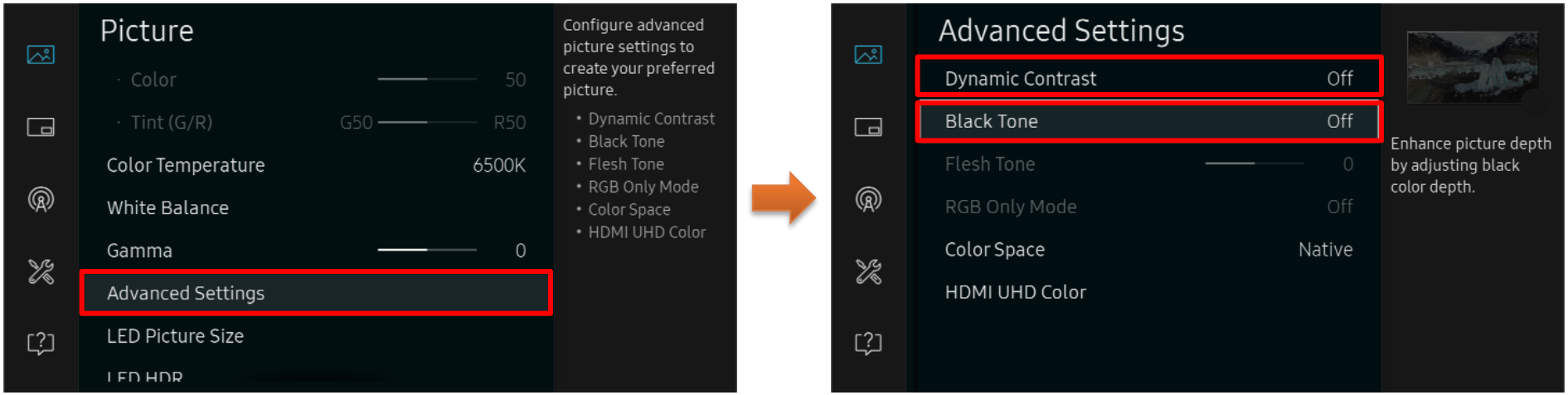
④ Supported resolution for S-box grouping

Resolution	Horizontal Frequency (kHz)	Vertical Frequency (Hz)	Pixel Clock (MHz)	Sync Polarity (H/V)	S-Box Grouping Supported
VESA, 640 x 480	37.861	72.809	31.500	-/-	-
VESA, 640 x 480	37.500	75.000	31.500	-/-	-
VESA, 800 x 600	35.156	56.250	36.000	+/+	-
VESA, 800 x 600	37.879	60.317	40.000	+/+	-
VESA, 800 x 600	48.077	72.188	50.000	+/+	-
VESA, 800 x 600	46.875	75.000	49.500	+/+	-
VESA, 1024 x 768	48.363	60.004	65.000	-/-	O
VESA, 1024 x 768	56.476	70.069	75.000	-/-	-
VESA, 1024 x 768	60.023	75.029	78.750	+/+	-
VESA, 1152 x 864	67.500	75.000	108.000	+/+	-
VESA, 1280 x 720	45.000	60.000	74.250	+/+	-
VESA, 1280 x 800	49.702	59.810	83.500	-/+	-
VESA, 1280 x 1024	63.981	60.020	108.000	+/+	O
VESA, 1280 x 1024	79.976	75.025	135.000	+/+	-
VESA, 1366 x 768	47.712	59.790	85.500	+/+	-
VESA, 1440 x 900	55.935	59.887	106.500	-/+	-
VESA, 1600 x 900	60.000	60.000	108.000	+/+	O
VESA, 1680 x 1050	65.290	59.954	146.250	-/+	-
VESA, 1920 x 1080	67.500	60.000	148.500	+/+	O
VESA, 3840 x 2160	67.500	30.000	297.000	+/+	-
VESA, 3840 x 2160	135.000	60.000	594.000	+/+	O

6. S-BOX Connection (Grouping)

⑤ Picture menu setting

- Both "Dynamic Contrast" and "Black Tone" should be off when using S-Box Grouping, since it may causes a color difference between S-Box.
- Menu → Picture → Advanced Settings,
  - Dynamic Contrast : default "Medium" → Off
  - Black Tone : default "Darker" → Off



6. S-BOX Connection (Using Service Port)

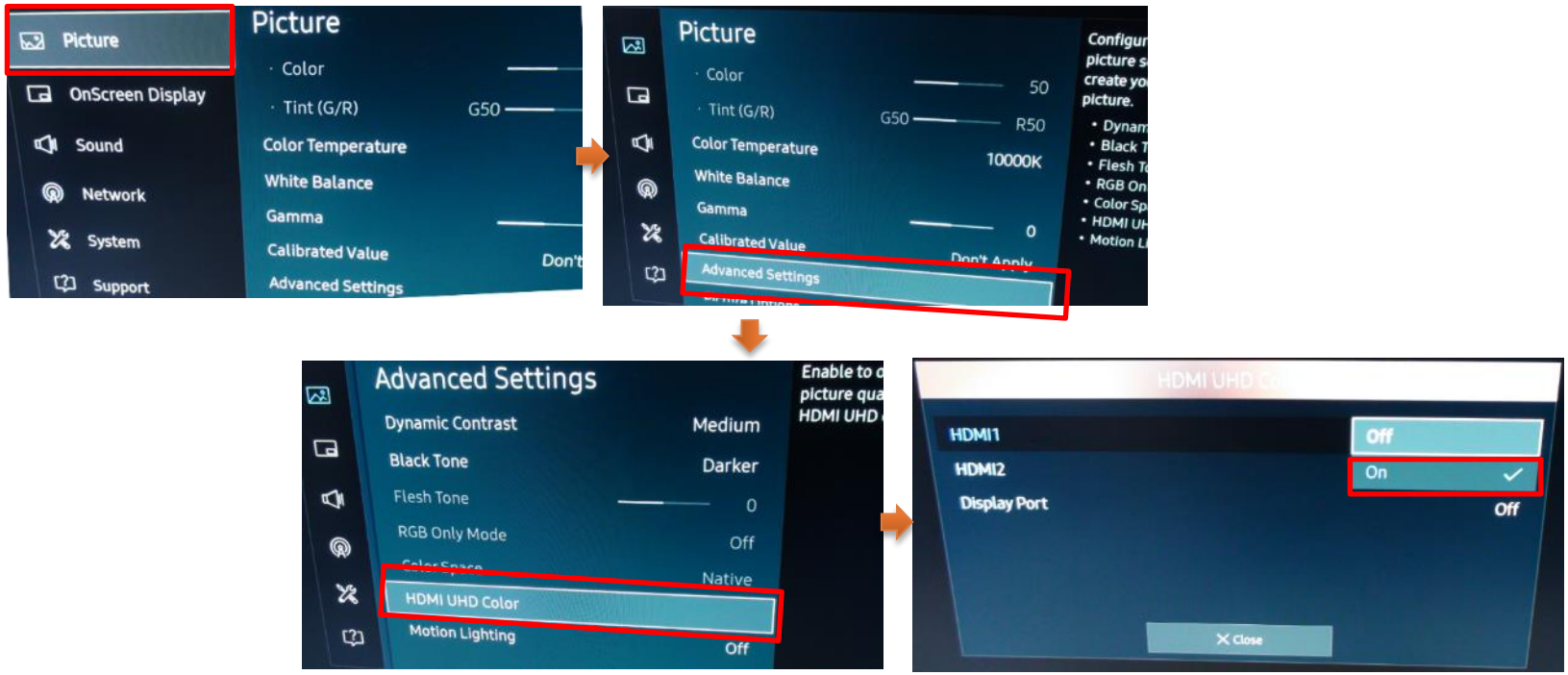
- **Service Port is used to check full screen, when working of S-box is not abnormal.**

  Refer to the available monitors as below,

■ **Available monitors for service port: LH**PMF, LH**PHF, LU28E590DS , LU24E590DS**

[Cautions!] This port is for servicing only and has no user function.
Do not connect a cable to this port.

※ LHPMF, LH**PHF : Change the "HDMI UHD Color" to "On" on OSD.**



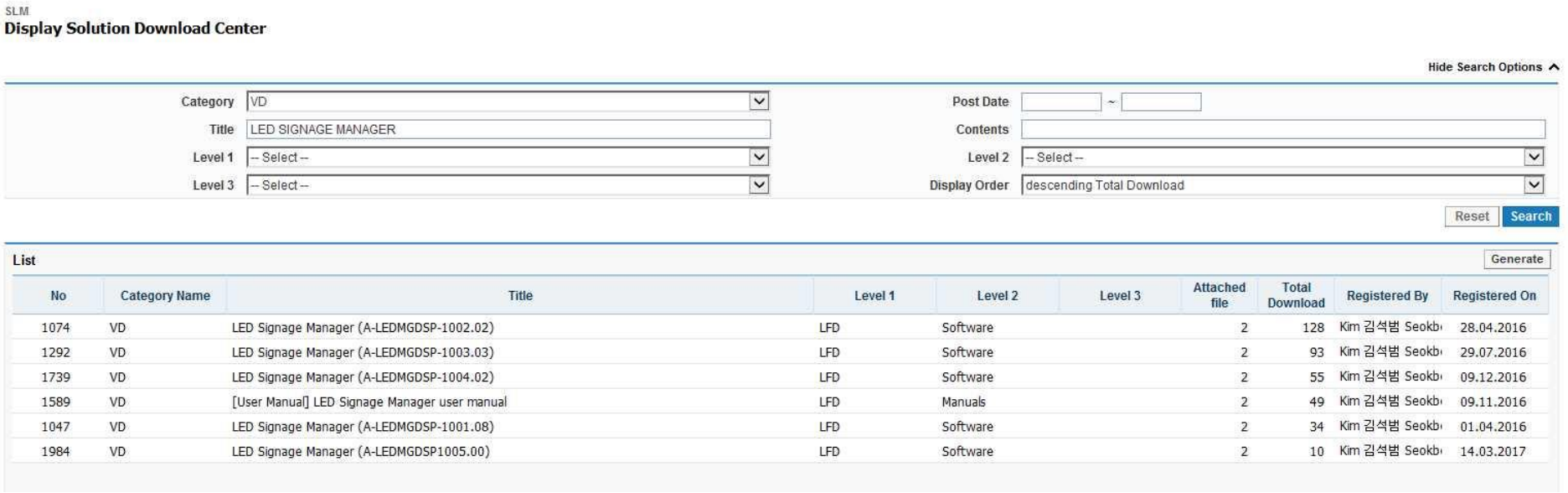
7. Settings and How to Use

7-1 Control Program for PCs

LSM(LED Signage Manager)

- **LSM Download Path : GSBN - SLM - Display solution download -> "LED SIGNAGE MANAGER" or "LSM"**

  - GSBN : http://v3.samsunggsbn.com/ep



No	Category Name	Title	Level 1	Level 2	Level 3	Attached file	Total Download	Registered By	Registered On
1074	VD	LED Signage Manager (A-LEDMGDSP-1002.02)	LFD	Software		2	128	Kim 김석범 Seokb	28.04.2016
1292	VD	LED Signage Manager (A-LEDMGDSP-1003.03)	LFD	Software		2	93	Kim 김석범 Seokb	29.07.2016
1739	VD	LED Signage Manager (A-LEDMGDSP-1004.02)	LFD	Software		2	55	Kim 김석범 Seokb	09.12.2016
1589	VD	[User Manual] LED Signage Manager user manual	LFD	Manuals		2	49	Kim 김석범 Seokb	09.11.2016
1047	VD	LED Signage Manager (A-LEDMGDSP-1001.08)	LFD	Software		2	34	Kim 김석범 Seokb	01.04.2016
1984	VD	LED Signage Manager (A-LEDMGDSP1005.00)	LFD	Software		2	10	Kim 김석범 Seokb	14.03.2017

7. Settings and How to Use

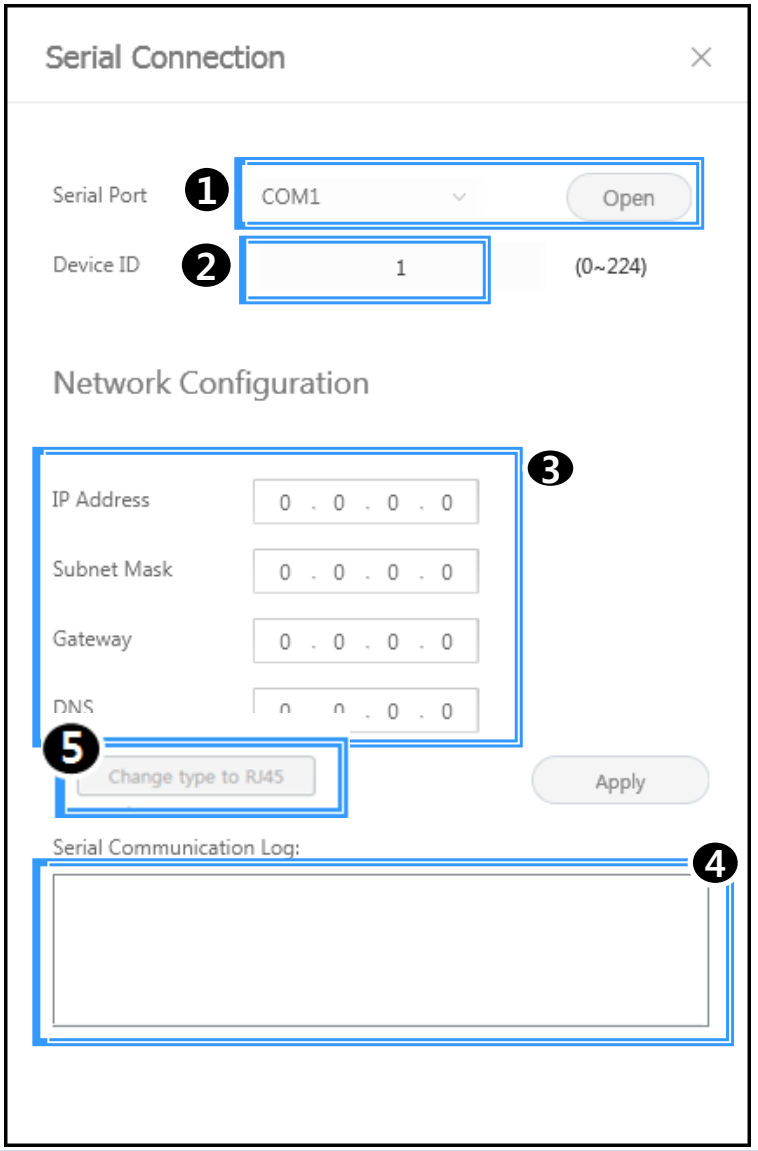
7-1 Control Program for PCs

Network IP Setting Tool

Execute : [Start] – Program – Samsung – LED Signage Manager – Network Configuration

1. **Connect PC and Sbox with RS232C Cable, select connected SerialPort(COM*). And click "open" button.**
2. **Default ID of SBox is 1.**
3. **Enter IP, SubnetMask, Gateway, DNS of S-box, and click "Apply" button.**
4. **Check the result of connection and status of MDC Protocol.**
5. **When IP address is normally setup, "Change Type to RJ45" button is appear. If LSM and SBox is connected successfully, click "Change Type to RJ45". Then, PC connection with s-box is changed to RJ45 from RS232.**

[★ Cautions!] Recommend to use static IP address for the S-Box.
If DHCP is used, IP address is changed automatically and LSM can be disconnected.
The 192.168.10.x band is used for internal communication of the LED Cabinet.
Please use IP another IP band (except 192.168.10.x band)
Do not assign the temporary IP, assign the S-Box IP (1 EA) through IT manager.

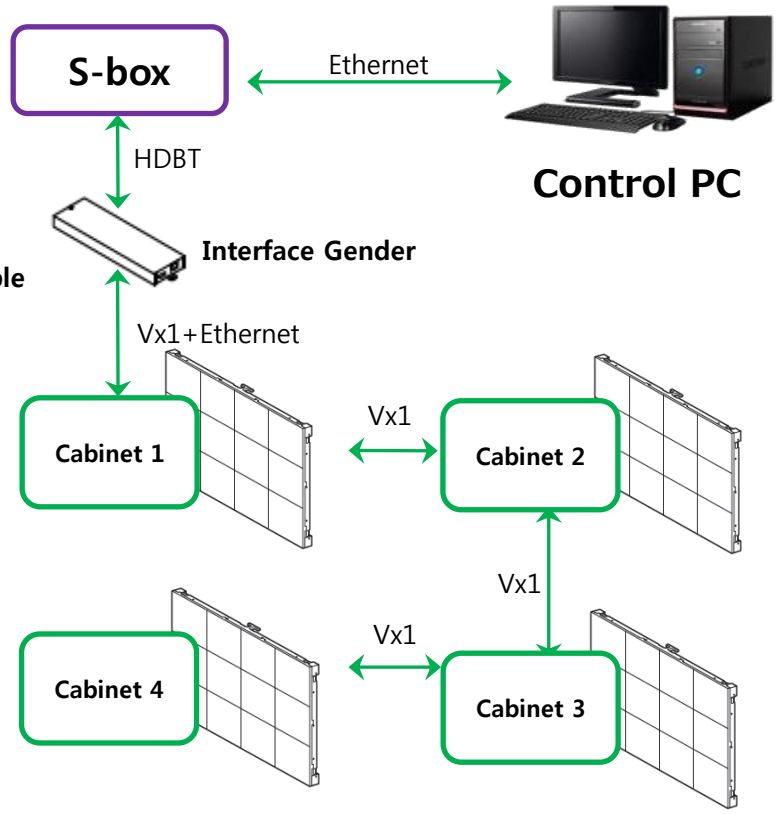


7-1 Control Program for PCs

LSM(LED Signage Manager)

- **Software that adjusts the LED Cabinet Layout in Remote**

1. PC and S-box should be connected through Ethernet connection.
2. S-box is connected to Interface Gender using HDB-T Lan Cable
3. Interface Gender is connected to the first LED Cabinet using OCM cable
4. LED cabinets are connected in daisy chain method using OCM cable.

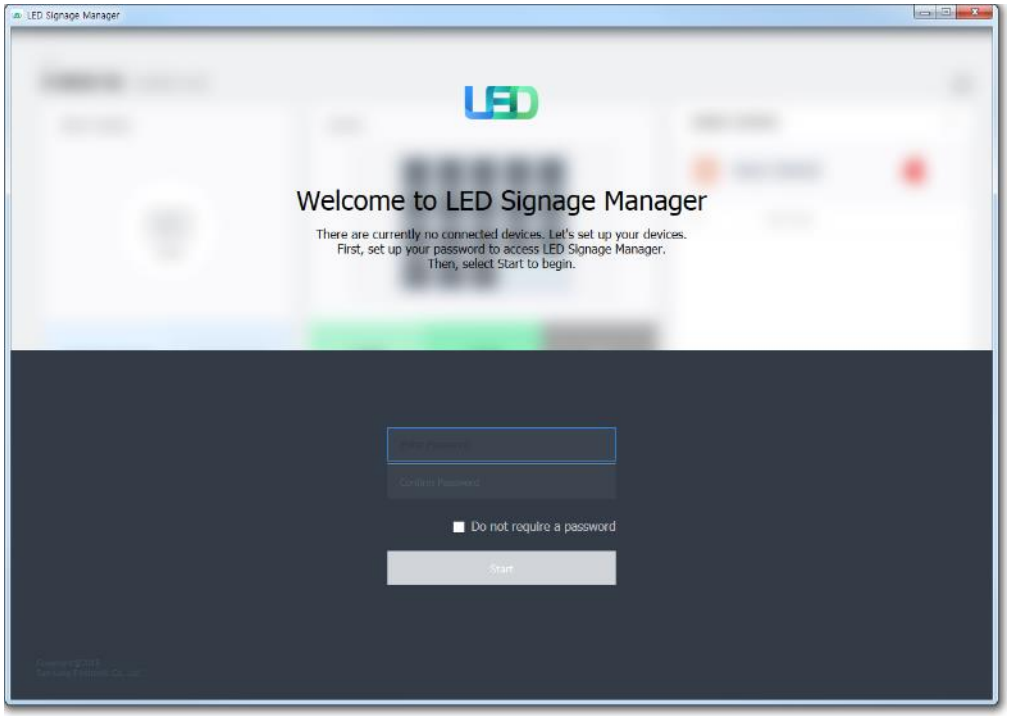


7-1 Control Program for PCs

LSM(LED Signage Manager)

- **Start– Login Page**

1. If the LSM gets operated for the first time, the page to set the password will appear.
2. To set the password, users have to input the same password two times and then click the “Start” button.
3. If the user does not want to use a password, then please select “Don’t use password” option. Then, password input would no longer be required whenever the LSM gets operated.

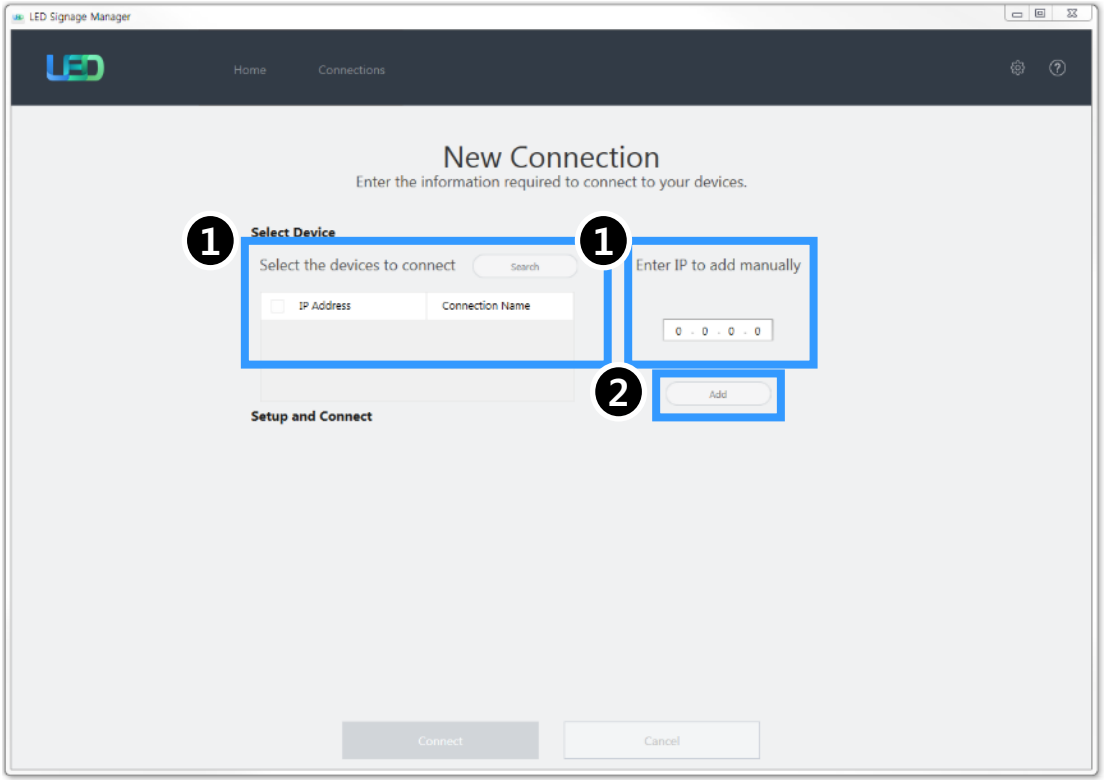


7-1 Control Program for PCs

LSM(LED Signage Manager)

- **New Connection**

1. To add connection information, you can either use Search function or input the IP address by yourself. If you click on the Search button, the IP addresses available on S-BOX in the same network will appear. If you know the IP address of the S-BOX, then you can input the address by yourself.
2. If you click Add button, the relevant connection information will be added on Setup and Connect.
3. Users can select the Model Type of S-Box. There are three(3) Model Types (Without Cabinet IP / With Cabinet IP(FHD) / With Cabinet IP(UHD)).



7-1 Control Program for PCs

LSM(LED Signage Manager)

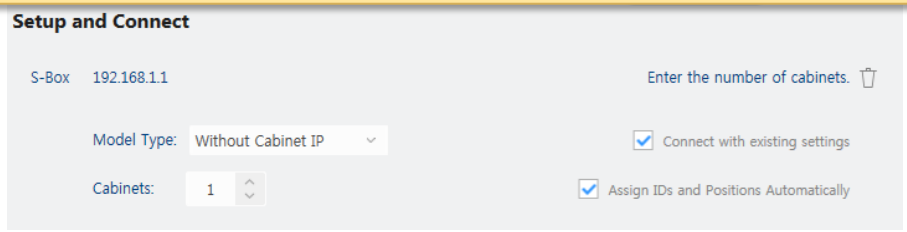
[★ Cautions!] Recommend to use static IP address for the LED devices.
If DHCP is used, IP address is changed automatically and LSM can be disconnected.
The 192.168.10.x band is used for internal communication of the LED Cabinet.
Please use IP another IP band (except 192.168.10.x band)
Do not assign the temporary IPs, assign the LED IPs (4 EA) through IT manager.

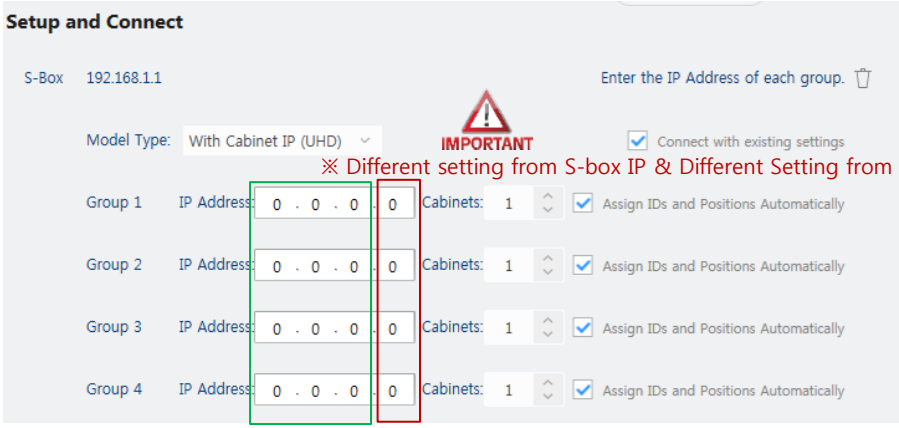
- **New Connection-Connect**

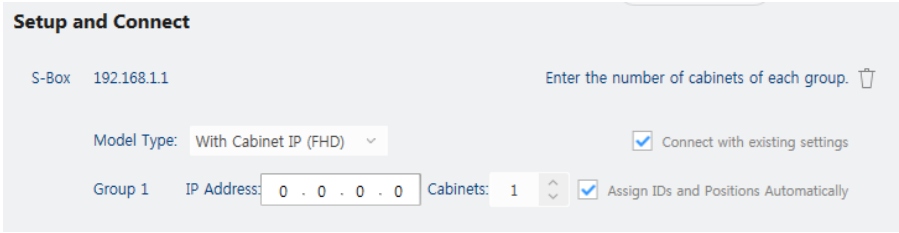
1. When you are using the previous version of S-BOX, select “Without Cabinet IP” option.
2. If you are using UHD S-BOX, select “With Cabinet IP (UHD)” option. You should designate the IP Address of the LED Cabinet by each port. Set the number of units connected, and then click “Connect”.
3. If you are using FHD S-BOX, select “With Cabinet IP(FHD)”. Set the IP Address and the number of units connected in LED Cabinet, and then click “Connect”.

※ If you have already set the IP on the Cabinet, check “Connect with existing settings” option.

※ For the case of UHD, if you are going to use only some of the four(4) ports, input the IP Address only for that particular Group relevant with your use.







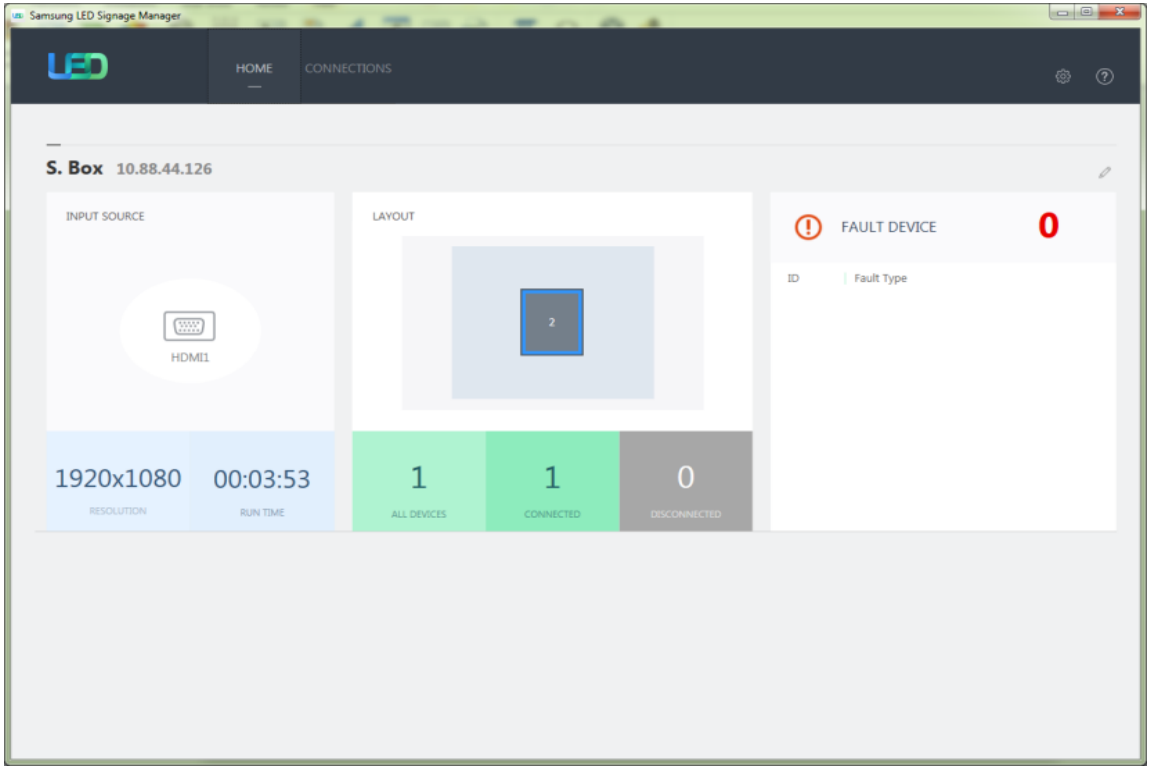
7-1 Control Program for PCs

LSM(LED Signage Manager)

[★ Cautions!]
The network port 1515 and 48485 are used for internal communication between S-BOX and LED Cabinet.
It should be include the firewall or network exception if customer used secured network.

- **Main Window-Home Window**

1. **Home Screen : Information of the connected device, input source, cabinet composition, and error device are shown.**



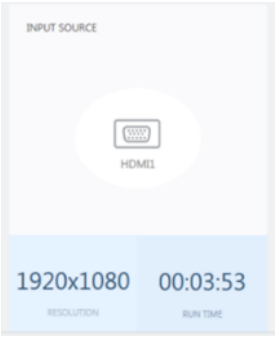
7. Settings and How to Use

7-1 Control Program for PCs

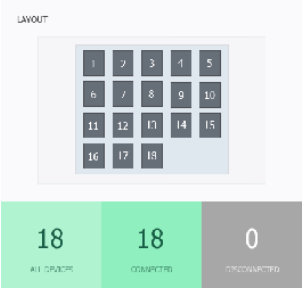
LSM(LED Signage Manager)

- **Main Window-Home Window**

1. Input source: Input source, resolution, connection time of S-BOX are shown.



2. Cabinet Layout : Layout, number of units, number of connections and number of disconnections in all LED cabinets are shown.



3. Faulty device: ID of the LED cabinet in error status and the content of the error are shown.

7-1 Control Program for PCs

LSM(LED Signage Manager)

- **Main Window-Edit Connection Layout Window**

1. Connection layout: The location and the layout of each LED cabinet are adjusted in the output source area of the S-BOX.

2. Feature View: Edit button to modify the connection information and LED cabinet automatic alignment function, etc. are provided.

3. Device Information/Setting View:
   The LED cabinet information is shown for in three different categories below:

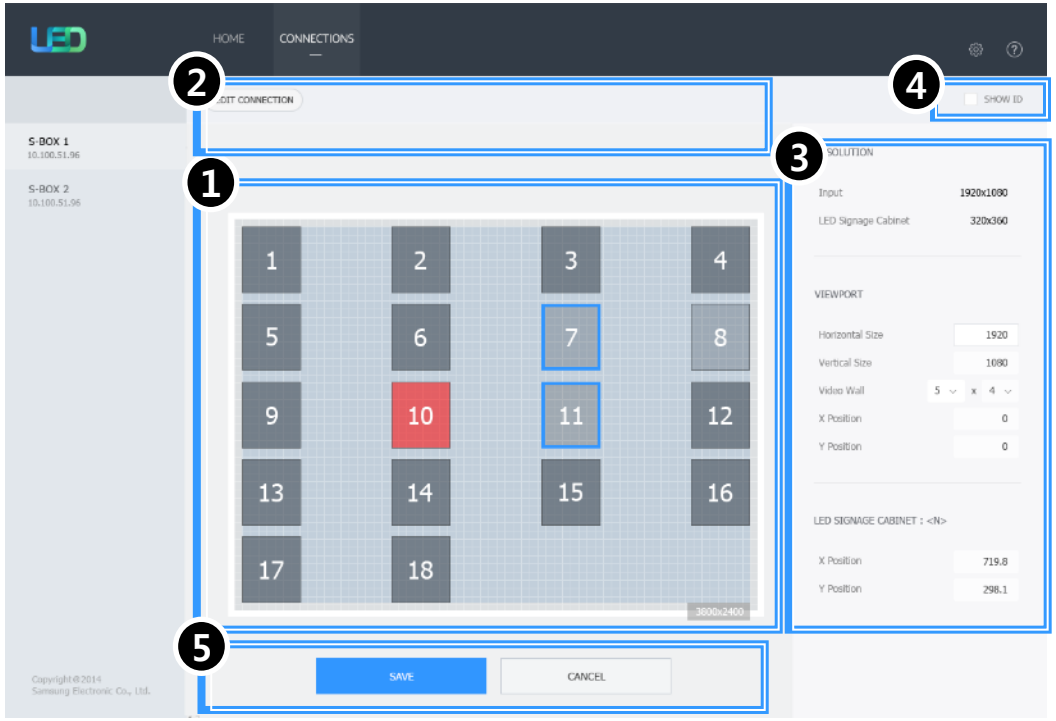
   (i) Resolution: Resolution information of the input source

   (ii) View Port: Width/Length size, Video wall matrix, x/y coordinate settings

   (iii) LED Signage Cabinet: x, y location of LED cabinet

4. Show ID: IDs of each will be shown in all connected LED cabinets when this option is selected.

5. Save/Apply and Cancel



7-1 Control Program for PCs

LSM(LED Signage Manager)

- **Main Window-Connection Window**

1. **Device connection list view:**
   Check S-BOX composition, modify and delete S-BOX connection, show by each LED Cabinet Group

2. **Connection layout (View Port):**
   Check the location and layout of each LED cabinet

3. **Category View:**
   Home / Connections tab and settings

4. **Device Information/Setting View:**
   Change S-BOX settings (screen settings, etc.)

5. **Sub Information View: Displays:**
   Monitoring log, S-BOX and LED cabinet information

7-1 Control Program for PCs

LSM(LED Signage Manager)

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

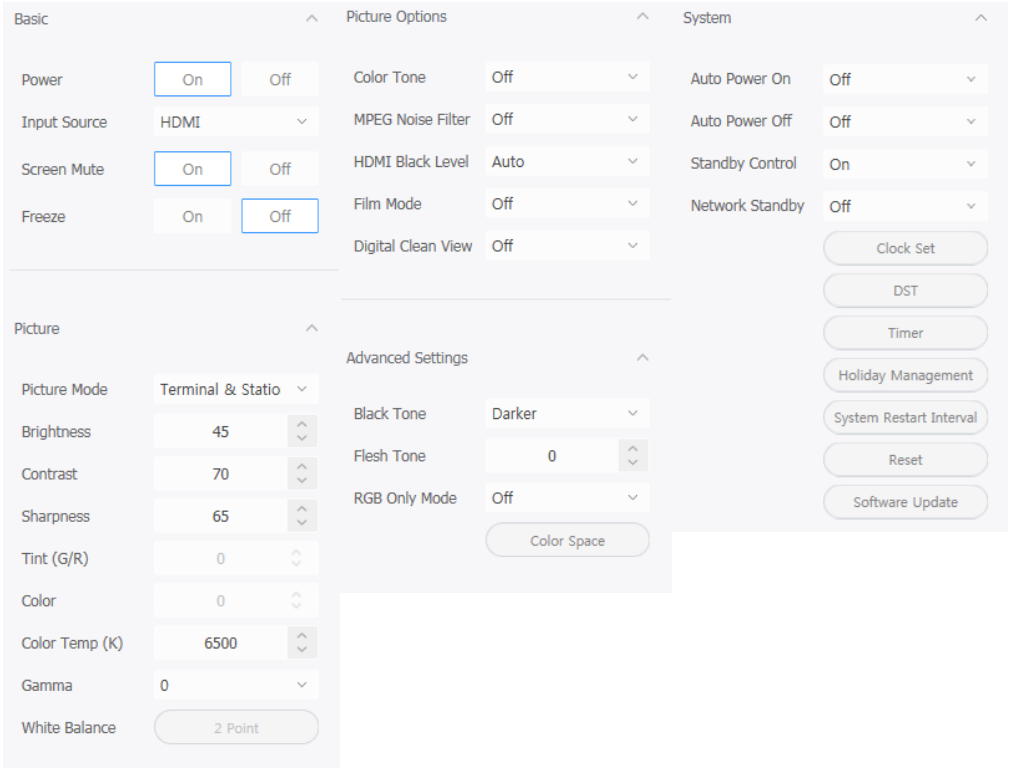
1. **Basic :**
   . Power On/Off, Change input source, Screen Mute / Freeze

2. **Picture**
   . Change Picture Mode, Brightness / Contrast / Sharpness, Color, Tint(G/R), Color Temp(K), Gamma, White Balance adjustment

3. **Picture Options**
   . Color Tone, HDMI Black Level, Film Mode, etc.

4. **Advanced Settings**
   . Adjust Black Tone, Flesh Tone, Color Space, etc.

5. **System**
   . Auto Power On/Off, Standby Control Clock, Timer, System Restart Interval Software Update function



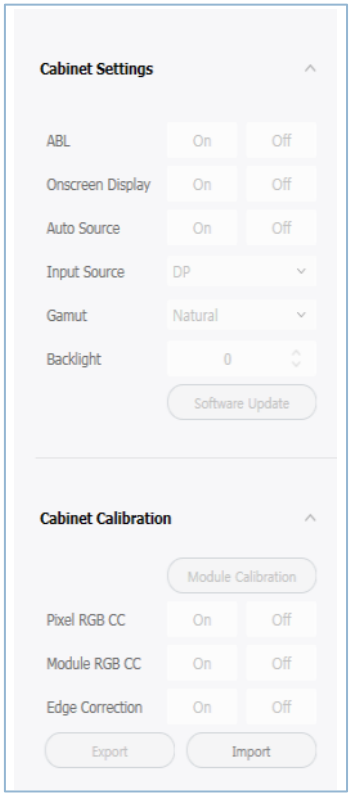
7-1 Control Program for PCs

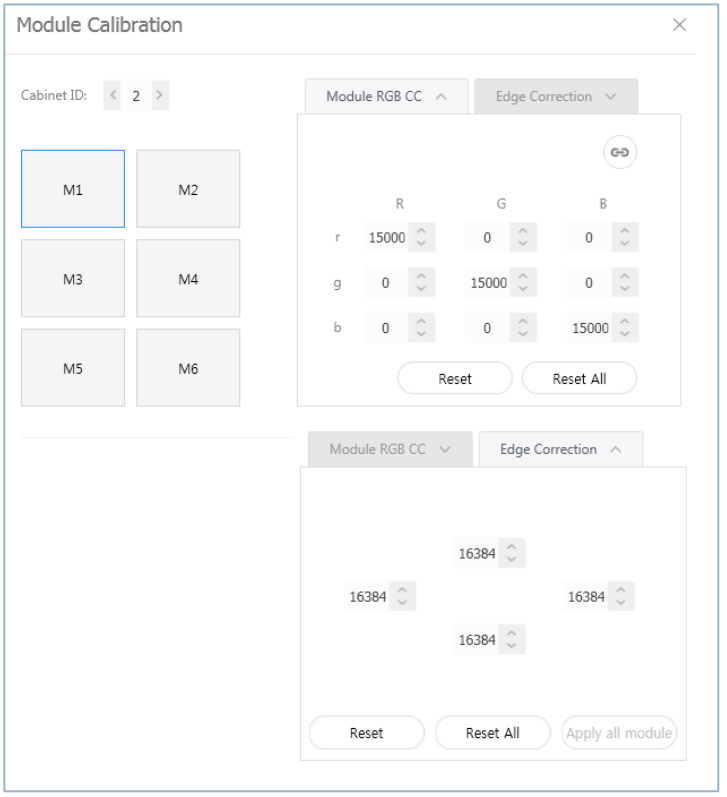
LSM(LED Signage Manager)

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

6. **Cabinet Settings**
   . ABL, Gamut, Backlight
   . Software Update function (FPGA, Calibration data, etc.)

7. **Cabinet Calibration**
   . RGB CC Calibration of each Module
   . Edge Correction of each Module
   . CC On/Off and Edge On/Off
   . Batch Upload/Download of module calibration data available through Import / Export





7-1 Control Program for PCs

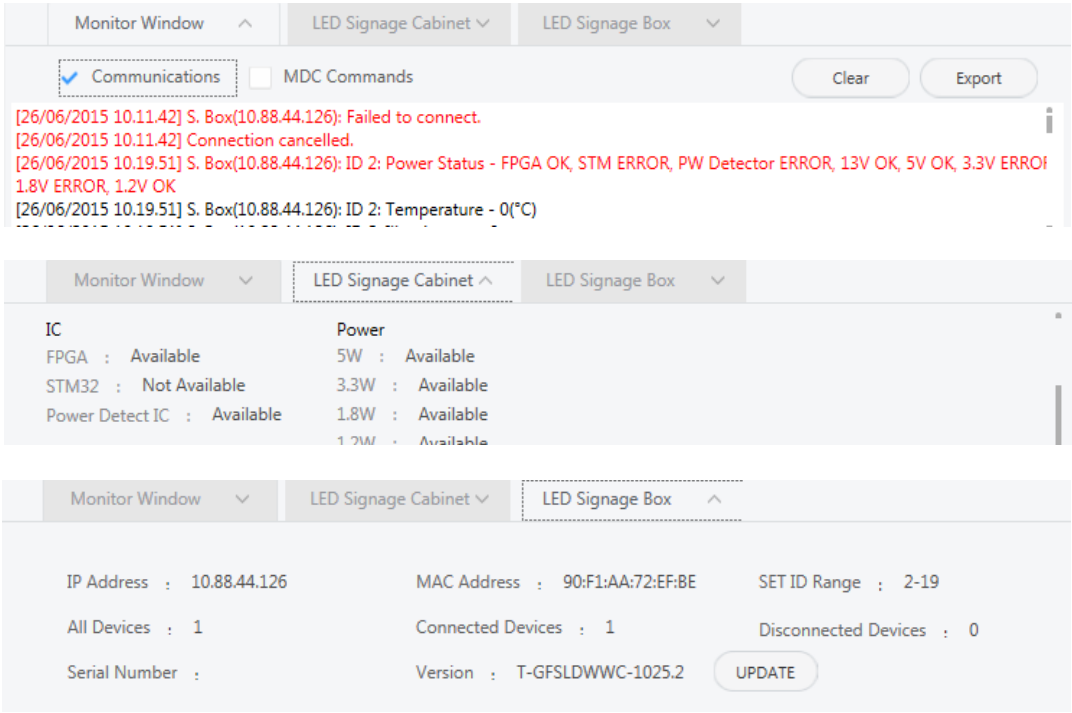
LSM(LED Signage Manager)

- **Main Window-Connection Window - Sub Information View**

1. **Monitor Window:**
   Checking MDC communication log and connected device information available, able to be extracted via file

2. **LED Signage Cabinet:**
   IC information and Power information of LED cabinet

3. **LED Signage Box:**
   IP address, MAC address, ID range of LED cabinet, number of LED cabinet (all/connected/not connected), serial number, version information



7-1 Control Program for PCs

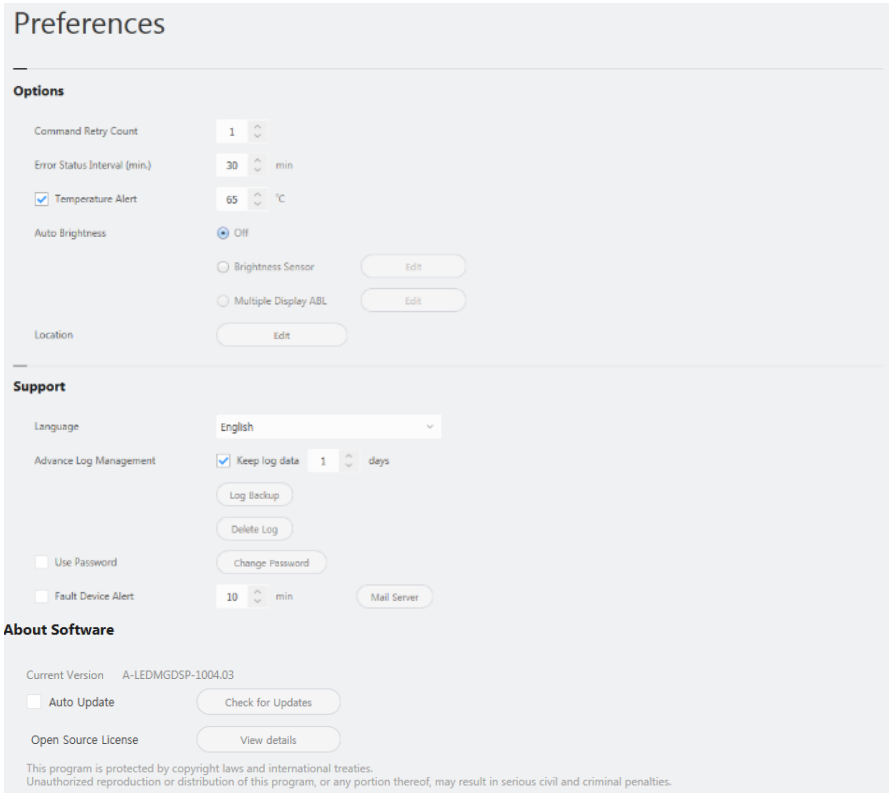
LSM(LED Signage Manager)

- **Main Window-Preference**

1. **Options**
   number of times the command retried
   interval of checking error status
   alarm temperature warnings

2. **Support**
   program language
   Log data management
   notify device error through Mail
   Password settings option

3. **About Software**
   the current version of LSM and update function



Problem Case 1

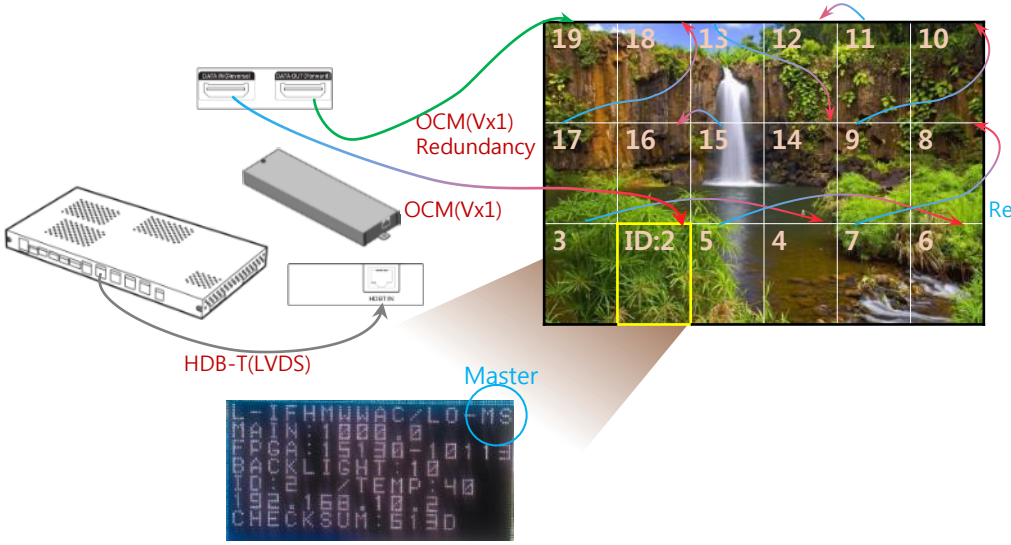
Rule 1: The 1st Cabinet from I/G board must be ID #2 for the LSM Setup

Rule 2: The 1st Cabinet from I/G board must be set as Master. The 2nd Master cabinet is not allowed for the LSM connection.

Situation: After changing Main board or Cabinet, If the original Master cabinet is move the other place,

LSM configuration will be fail because of violation of rule 1.

during the LSM setup it cause a network fail because the 1st cabinet is not ID #2.



9	8	13	12	15	14
19	18	3	ID:2	17	16
11	10	7	6	5	4

1st Cabinet's ID: 10
Violation of Rule #1

LSM Connection Fail because 1st cabinet is not ID 2

Solution: Do LSM SETUP again to Set ID.

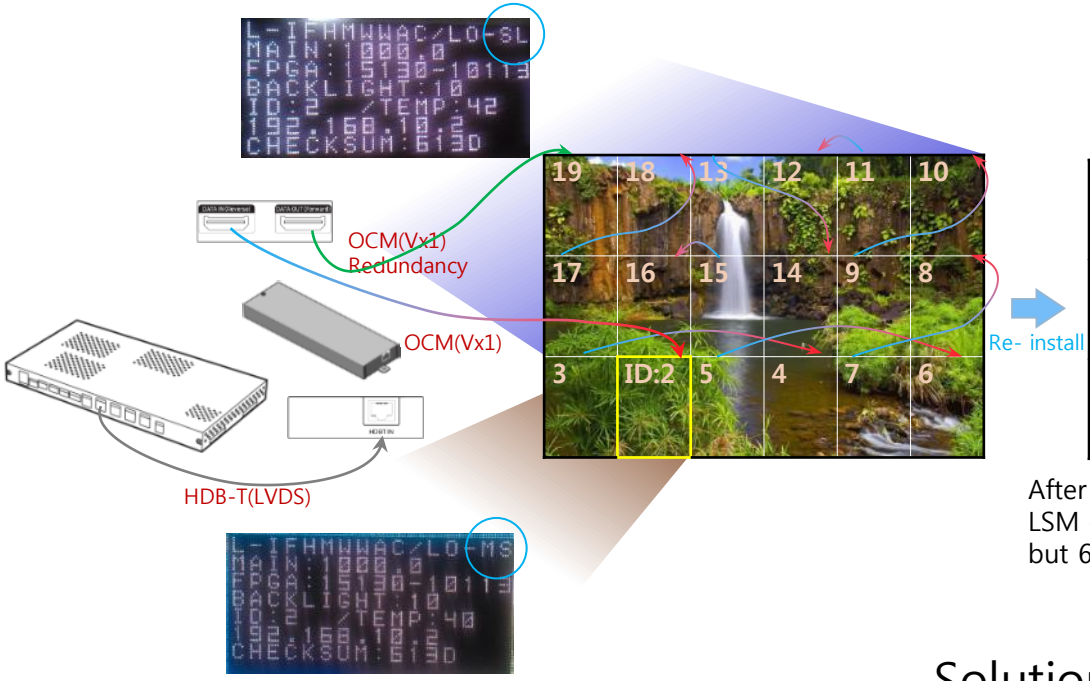
Problem Case 2

Rule 1: The 1st Cabinet from I/G board must be ID #2 for the LSM Setup

Rule 2: The 1st Cabinet from I/G board must be set as Master. The 2nd Master cabinet is not allowed for the LSM connection.

Situation: After changing Main board or Cabinet, If the original Master cabinet is move to slave cabinet area.

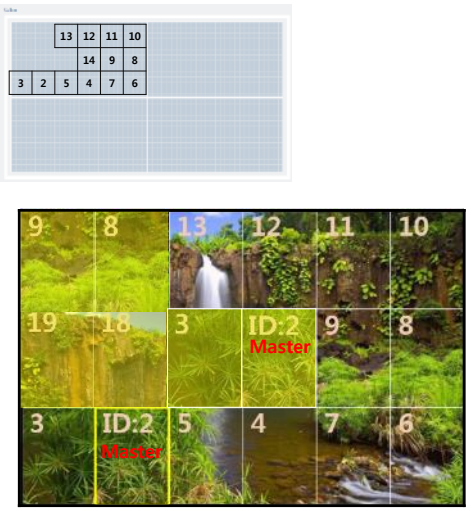
Although the 1st cabinet is set as a Master after doing factory reset, LSM configuration will be still fail because of violation of rule 2. LSM setup can be start, but can't be complete because of the 2nd Master cabinet.



Re- install

9	8	13	12	15	14
19	18	3	ID:2	17	16
11	10	7	6	5	4

After Re Setup LSM From ID 2 to ID13, the LSM connection will be OK.
but 6th cabinet will be connection fail.



Over 6th cabinet the picture might be not correct. Because of 2nd Master cabinet

Solution: Do Factory Reset the 2nd Master Cabinet

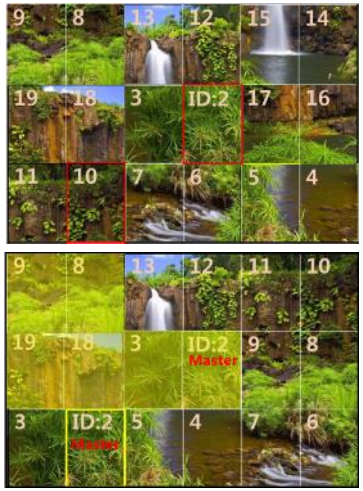
8. Issue and Solution

How to do Factory Reset

After checking cable connection order, the cabinet which is not display the proper picture position will be Wrong positioned Master cabinet. In this case, Do factory reset to change to slave cabinet .

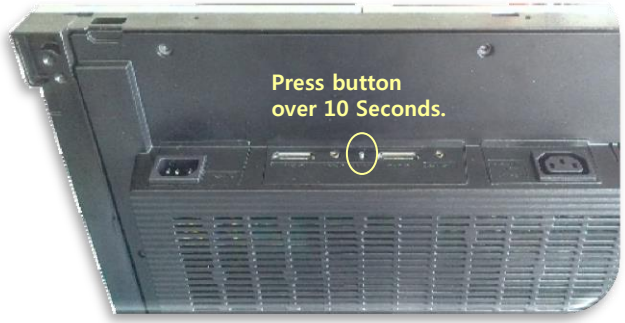
Refer the below guide to do factory reset in front side and backside.

The 1st cabinet is not ID number 2. Because all cabinets connection are failed.



The 14th cabinet which is displaying the not proper picture position might be wrong positioned Master cabinet.

Factory Reset in back side

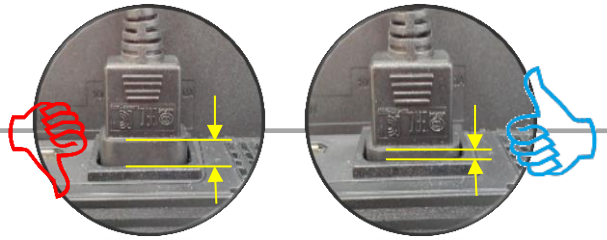


Remove Top Right-side one module in the front

Factory Reset in front side

Set LSM again.

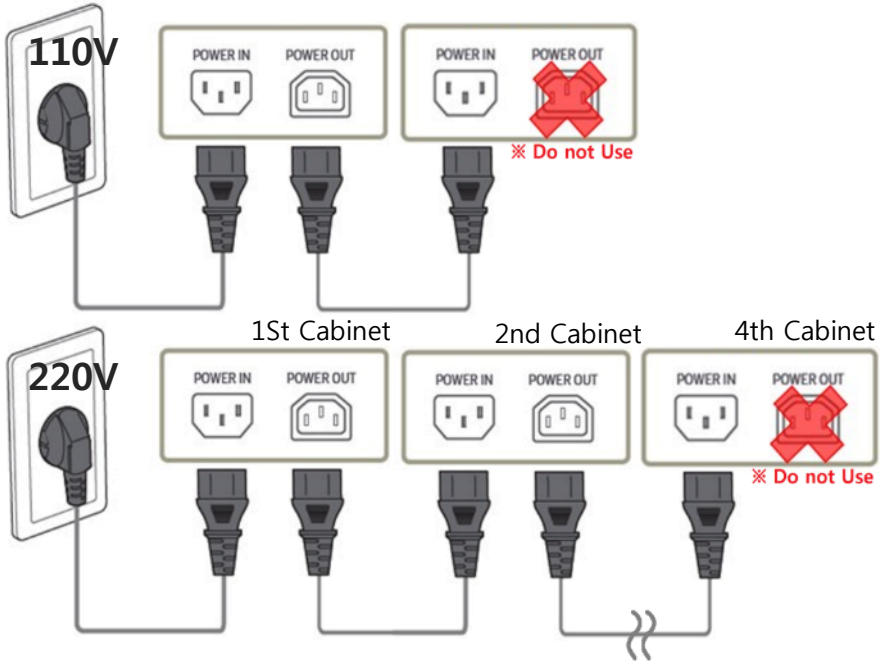
9. Cable Connection

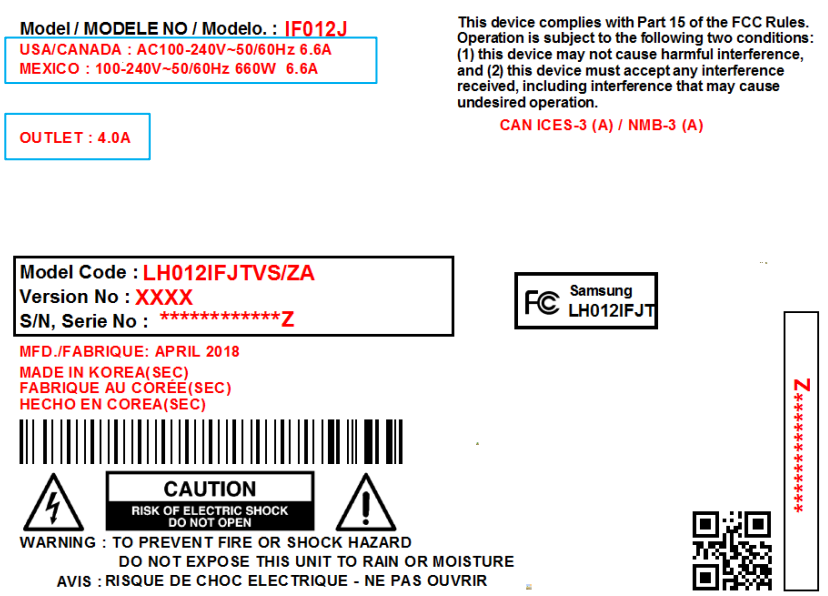


9-1 Cable Connection

IMPORTANT

- If using 110V, you can connect at most 2 IFJ(IF012J) devices.
- If using 220V, you can connect at most 4 IFJ(IF012J) devices.
- **Exceeding the recommended maximum number of devices can cause the circuit breaker of the product to trigger due to overload. must CONNECT the devices less than the recommended maximum number of devices. ※ Samsung Electronics is not responsible for AC power connecting exceed recommended maximum number of devices.**
- The label info which is attached behind product shows rated power of cabinet and rated current of outlet.

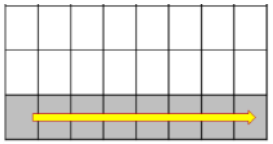




9. Cable Connection

9-2. The caution for Cabinet installation and Cable connection(Full Front)

1) The set installation order Must be Left -> Right direction. Because The structure of Wall mount hole for cabinet installation is downward diagonal direction.
→ The set installation order and The cable connection order are different.



2) After installing cabinets one line is complete, make sure the connection is OK by connecting OCM/Power cable. Then, Install next line.

3) In case of connecting OCM cable upward, Connect OCM cable to Lower set first.

4) The two output of Interface gender should be connected to First cabinet and Last cabinet each
→ Interface Gender should be installed at Left-Center side of LED wall (refer to page13)
(Within 2~4M compared to first and last cabinet for connecting OCM cable)

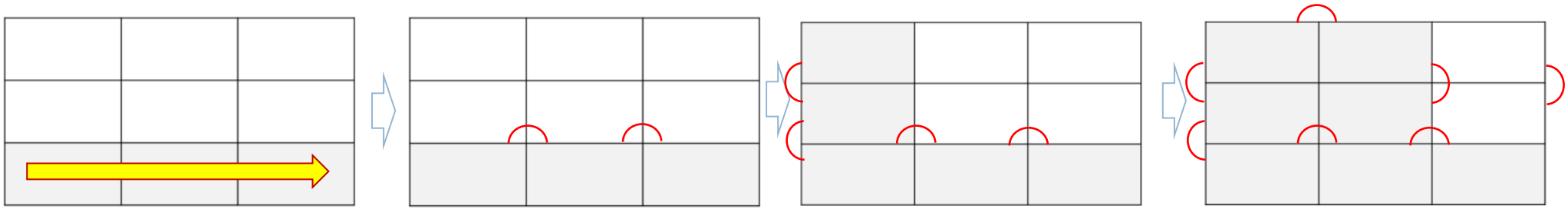
9. Cable Connection

9-3 The direction for Cabinet installation

1) Installation of First row cabinet starts at the bottom of Left-end.

2) After installing cabinets one line is complete, make sure the connection is OK by connecting OCM/Power cable. Then, Install next line.

3) From Second row, it starts from bottom to top.



1) 1st row : Install set form Left-end

Check Gap between module inside cabinet

2) Connect Power/Signal Cables

3) 2nd row : Bottom to top

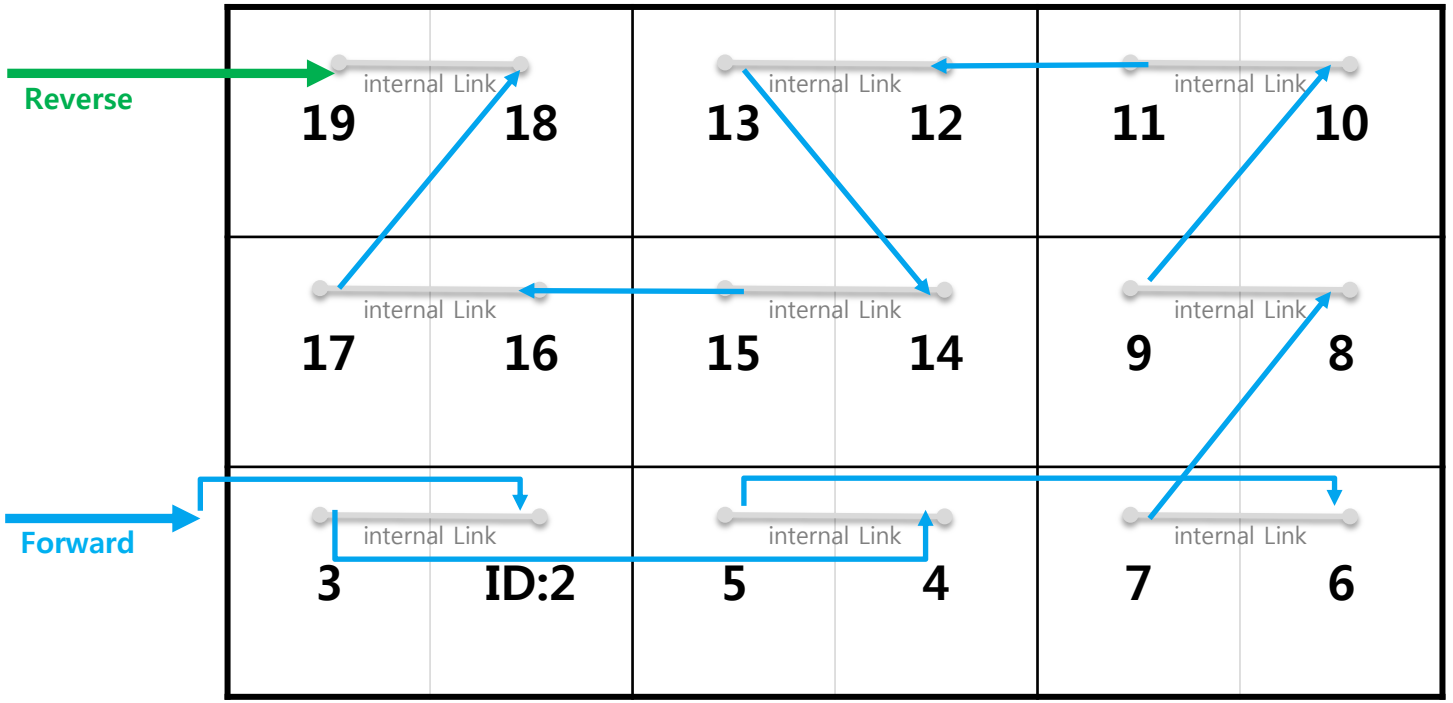
Check Gap between cabinets and whether installed in a straight direction.

4) Same way

9-4 Cable Connection : Data flow standard

◎ Connect OCM cable Forward direction

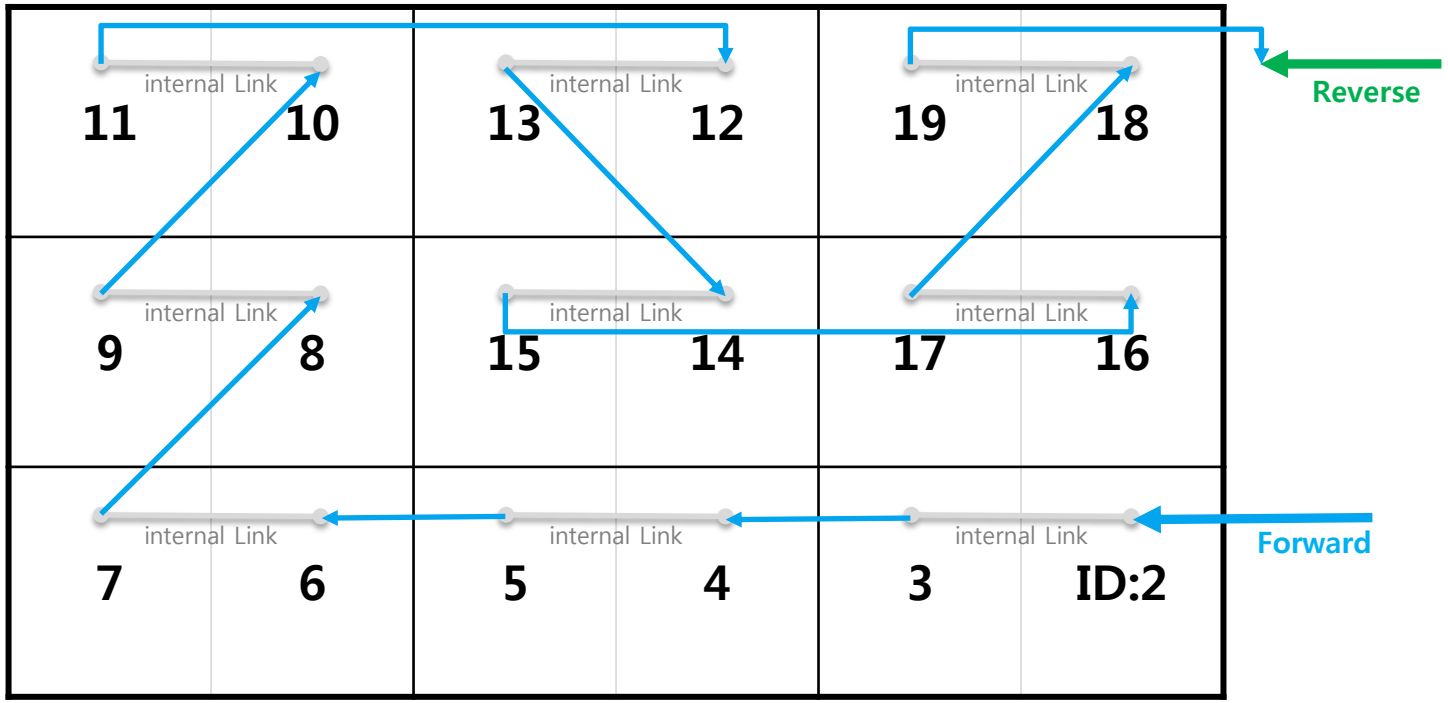
Case 1:



9-4 Cable Connection : Data flow standard

◎ Connect OCM cable Forward direction

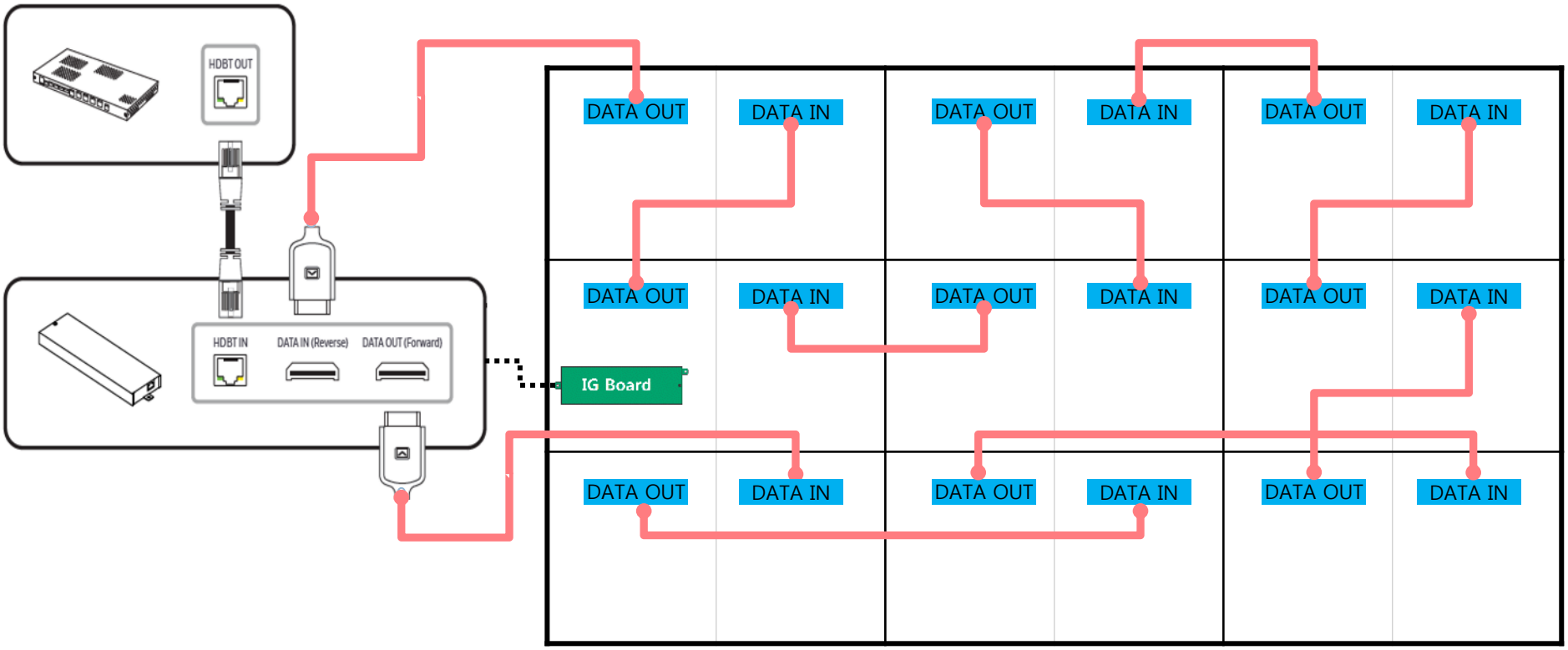
Case 2:



9-5 Cable Connection : OCM cable installation standard

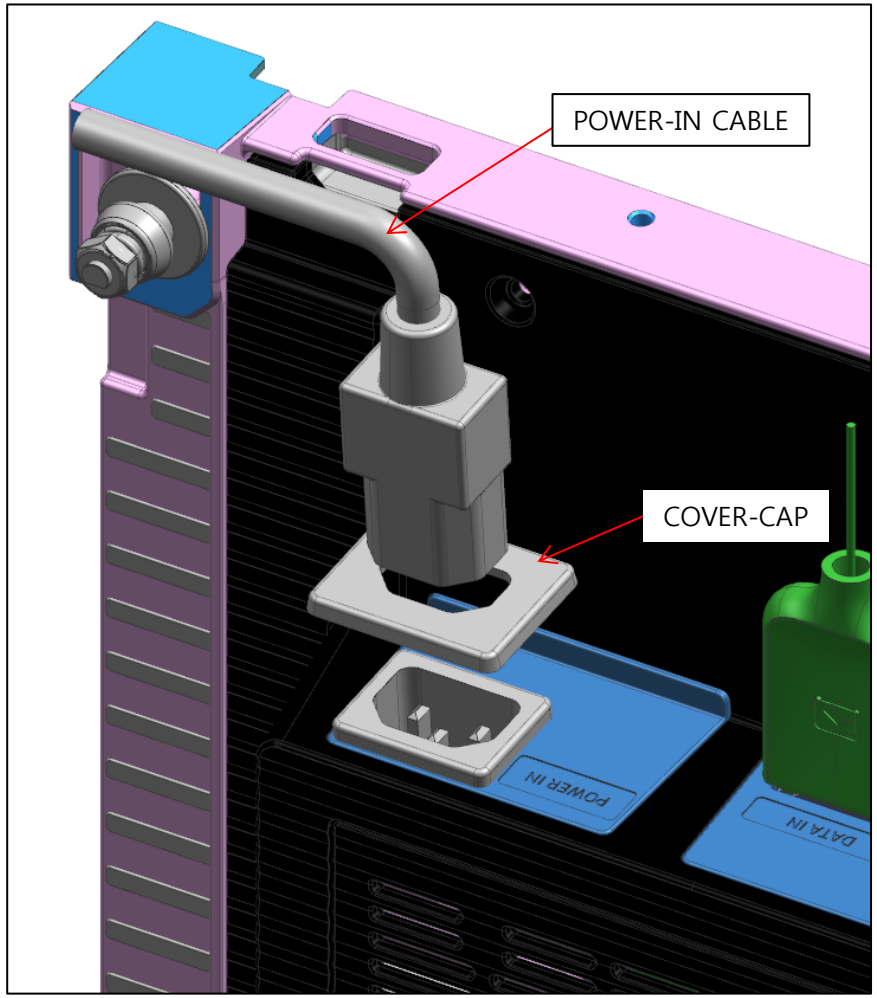
◎ Whenever one number of cabinet gets installed, connect necessary cable for each.

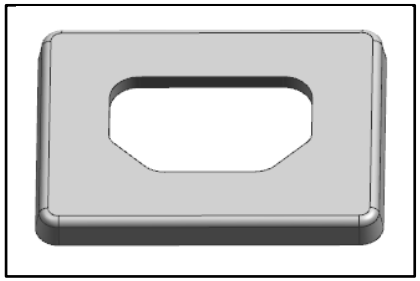
P1.26 FHD



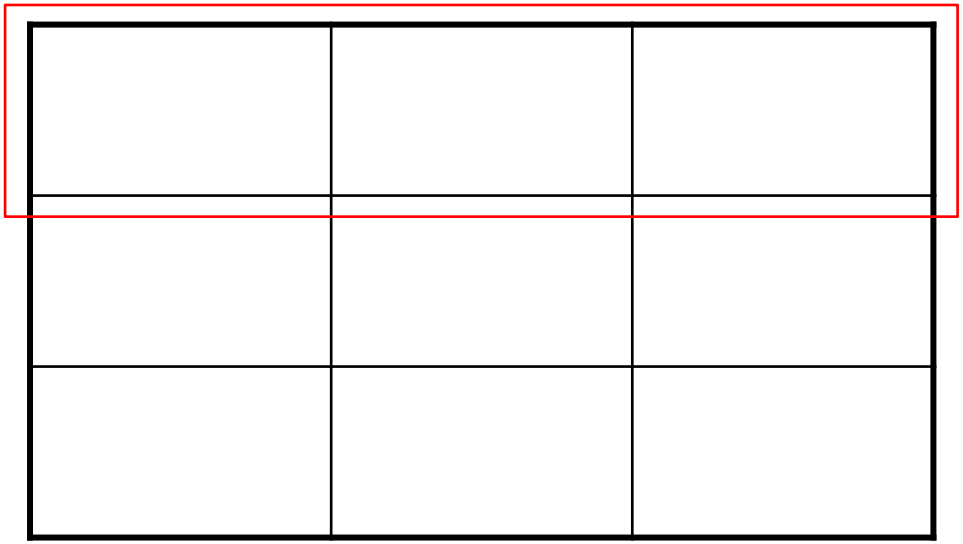
9. Cable Connection

◎ Apply COVER CAP to POWER IN CABLE of the top cabinets.





COVER-CAP



3*3 (Example)

10. Seam Adjustment

• Check and Adjust Seam

① Check whether there is any Black Line between the cabinets in White Screen. (Fig.1)

② Check whether gap, differences occur between each module. (Fig.2)

※ Gap: appears as a black line in every direction.

※ Difference: A bright white line occurs in one direction whereas a black line occurs in the opposite direction.

③ If gap occurs, use module with hand from the outermost corner.

④ If differences occur, disassemble low LED module, and spin the Holder-Magnet using tools to adjust the height.

※ If the Tool spins 0.5 rotation first, and then spins 36 degrees later, the module height will be moved by 0.1mm. (Fig.3)

※ Modules are at the lowest face at first, you can only adjust the difference by raising it.

※ If the flatness of the frame and the wall is bad, lots of modules would need adjustment.

So, it is very important to check the flatness of the wall and Frame before you install the cabinet.

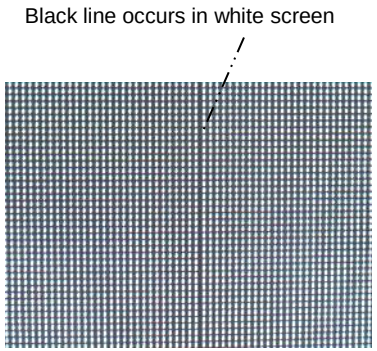


Fig.1 Black line

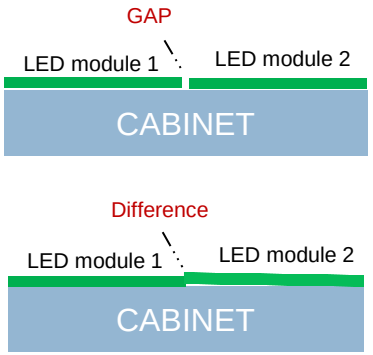


Fig.2 Gap/Difference between Modules

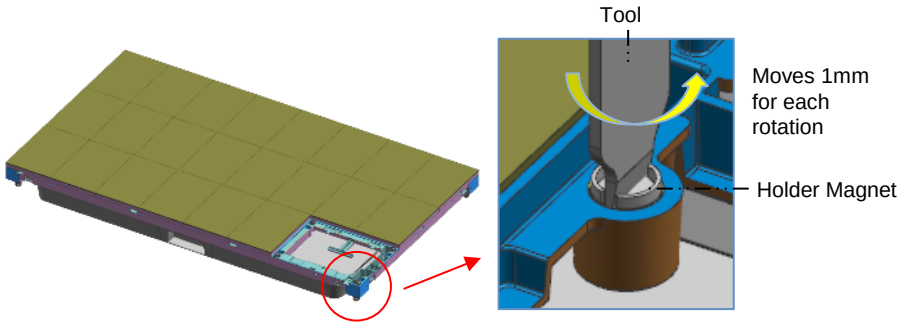
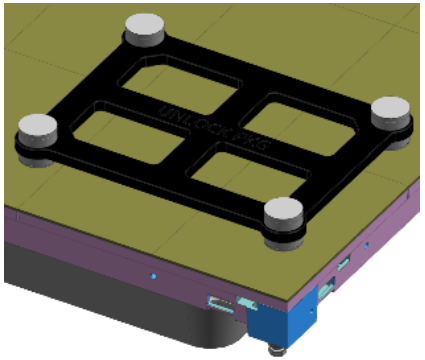


Fig.3 How to adjust Difference

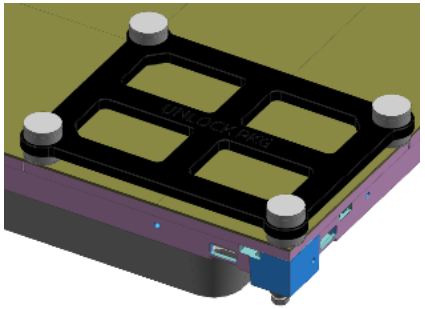
10. Seam Adjustment

• Module Disassembly/Assembly

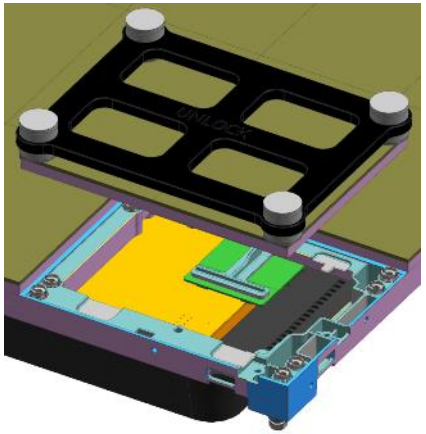
1. Have the Unlock mark head upwards.



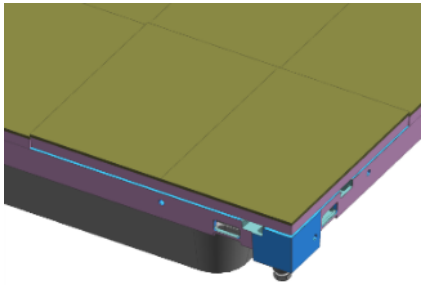
2. Place to LED module.



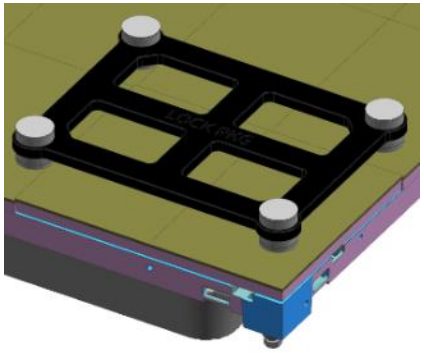
3. Separate the JIG and module at the same time.



4. Put the replaced module up on the cabinet.

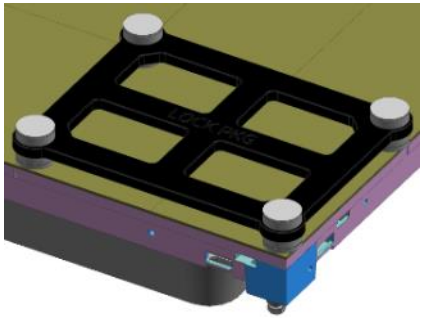


5. Have the Lock mark head upwards.

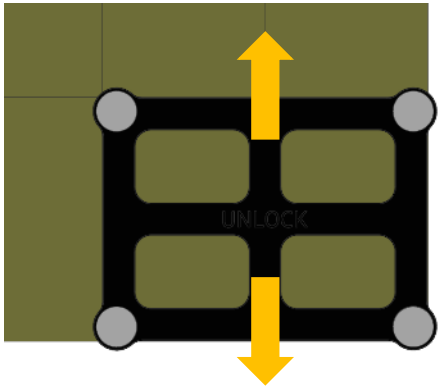


6. Lock after placing on LED module.

- Since the magnetic force of the magnet jig is strong at LOCKING, there is a concern of damage.
  So it is not completely close but only close until the sound is heard.

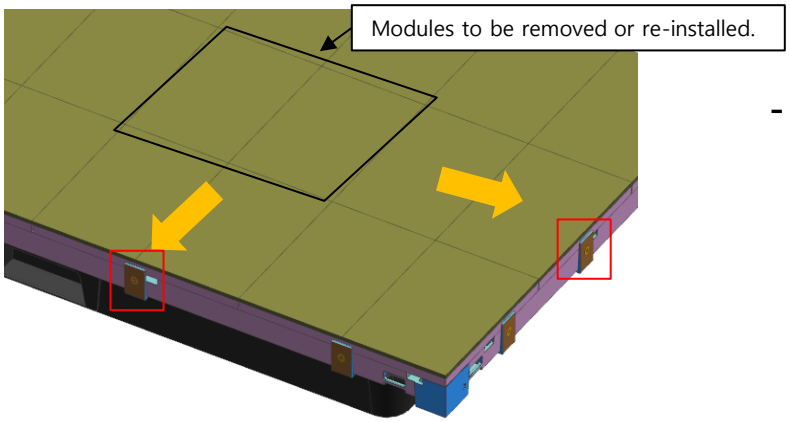


※ In the Unlock or Lock operation, there may be magnets that do not react to the magnet jigs. So, Check the magnet jig by moving it up and down.



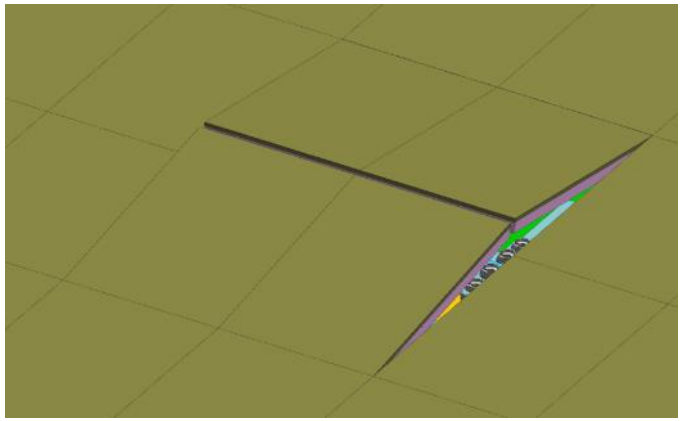
10. Seam 조정

- **In case of difficult removal or re-installing because of the narrow gap between the modules.**



- If the module to be removed or re-installed does not fall out well or does not enter the correct position.

  → The module can be moved by releasing or removing the closest horizontal or vertical COVER-PCB.



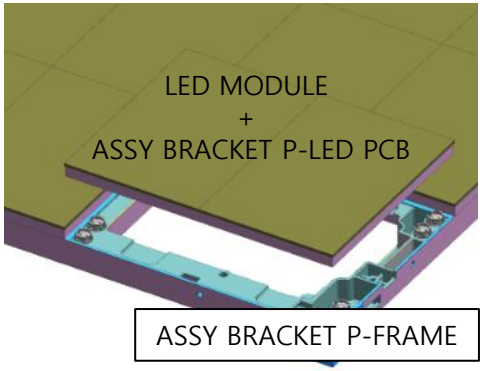
- If the module does not enter the original position when trying to reinstall.

  → ① Separate a neighboring module using a magnetic jig

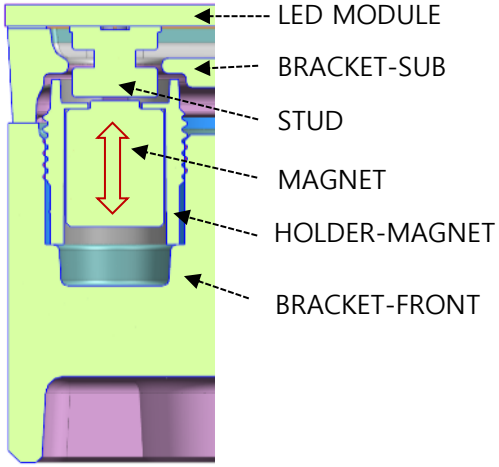
  ② Be careful of damage to the LED module, Put the module from the edge that can be re-positioned and push it at an angle like a picture.

Reference – Module Attachment Principle

Samsung Electronics

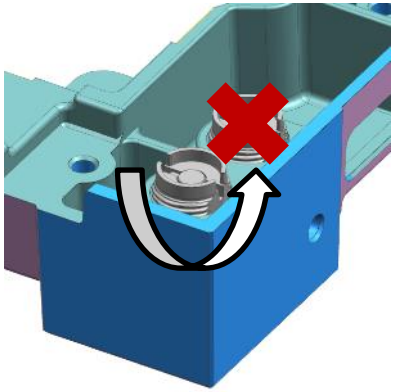


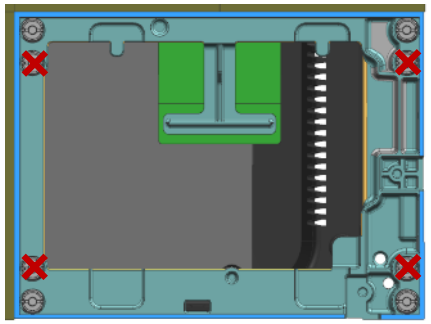
Section view



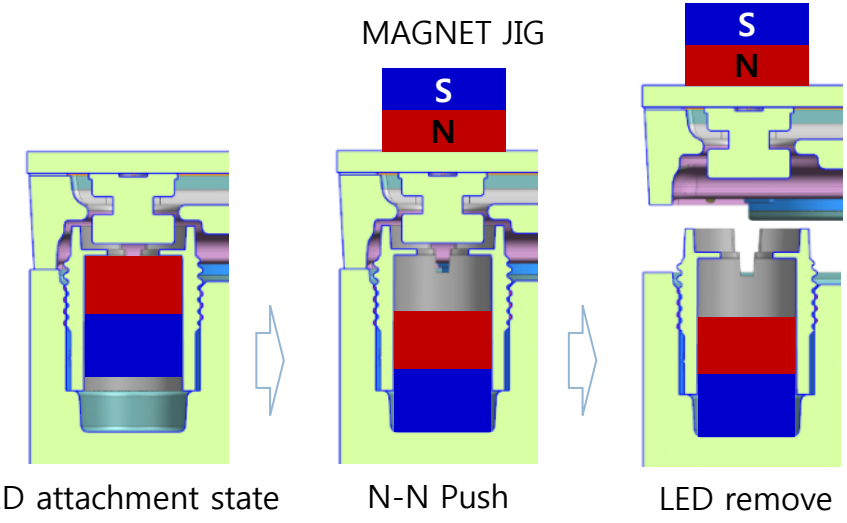
HOLDER-MAGNET

It is possible to adjust height by using driver. (4points / module)
=> Return in a counterclockwise direction. (1mm/1rotation)

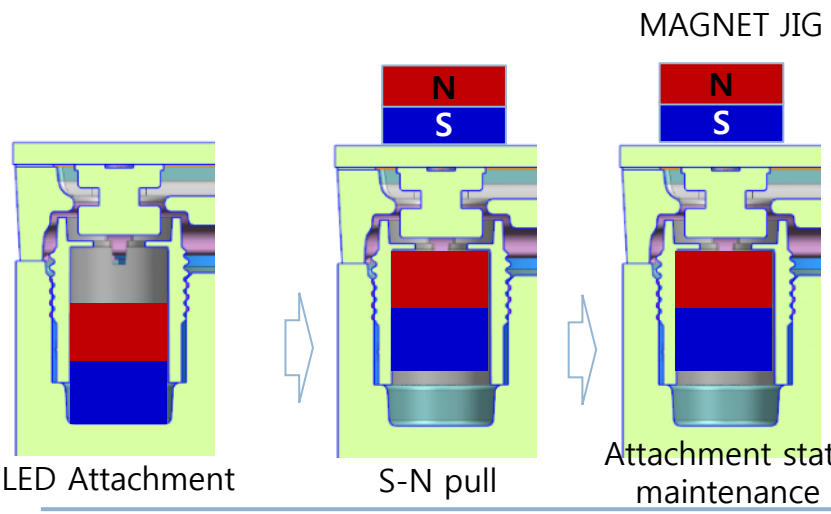




< Operating Principle >



Removal of LED MODULE



LED MODULE Attachment

Samsung Electronics

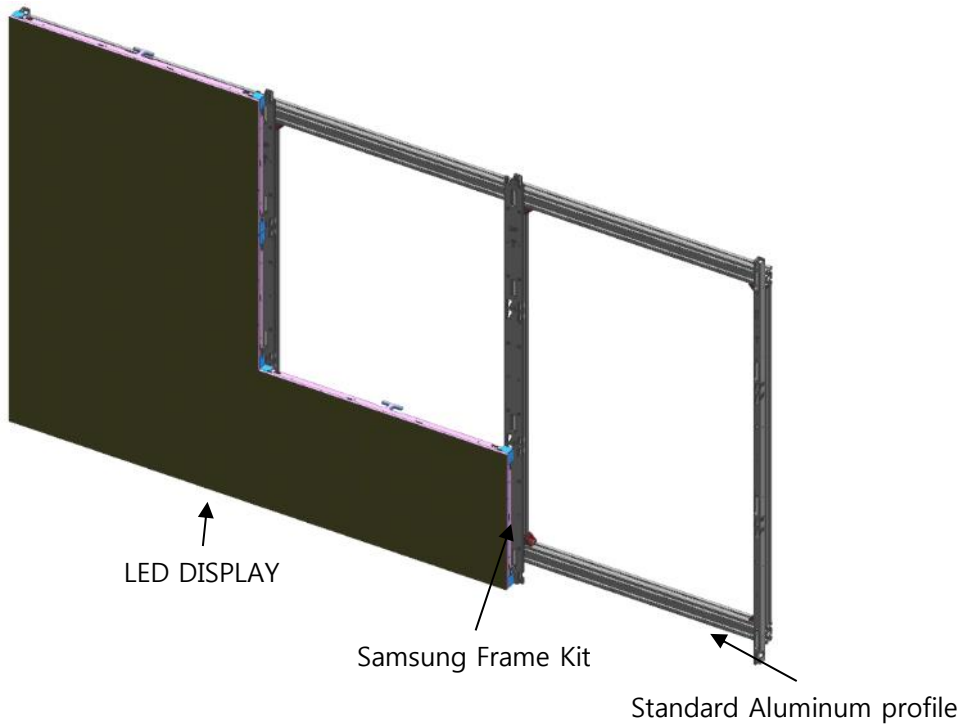
Aluminum profile & Frame Kit Installation Manual

Ver. 0.1

Contents

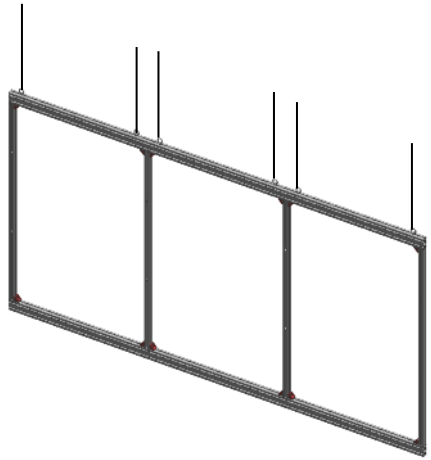
1. Product Info & Installation Guide

- **Aluminum profile & Frame Kit composition**



- **Installation example**

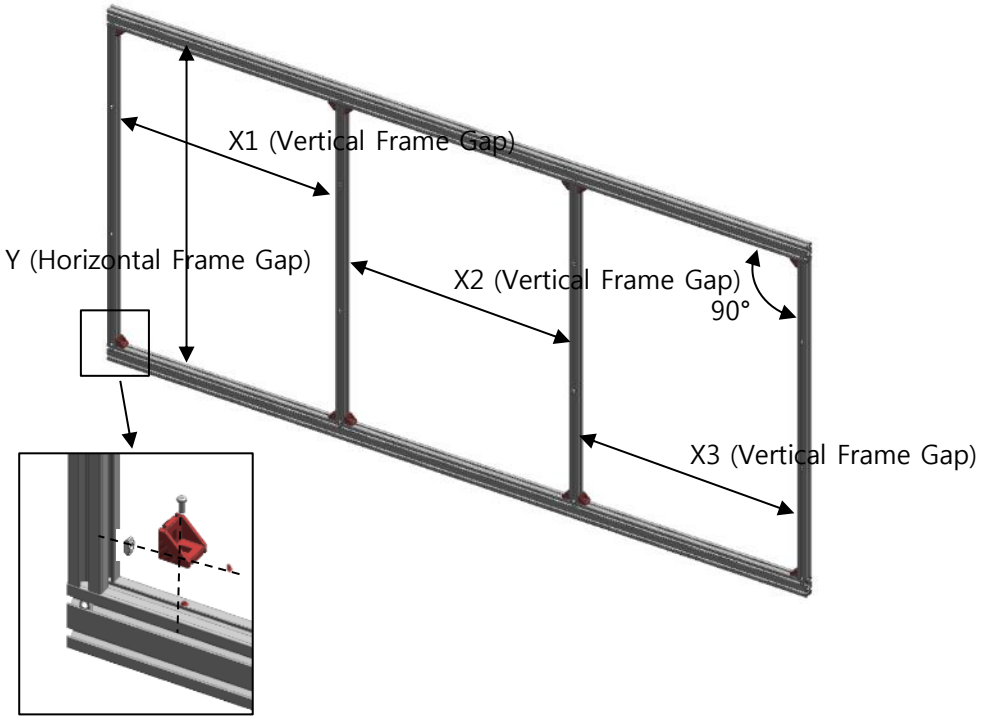
Standing Type



Hanging Type

2. Installation of Aluminum profile

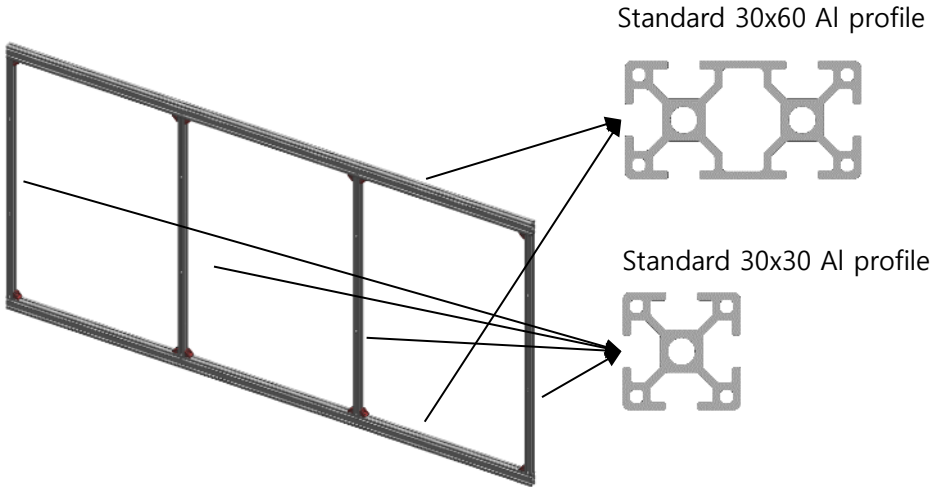
• Aluminum profile installation



1. Keep the spacing of Aluminum profiles as below.
2. When assembling, the joint angle should be 90° .

FRAME KIT	X1 (mm)	X2 (mm)	X3 (mm)	Y (mm)
3*3	758.4	776.4	758.4	1137.4

• Aluminum profile specification



• Accessories for Aluminum profile assembly

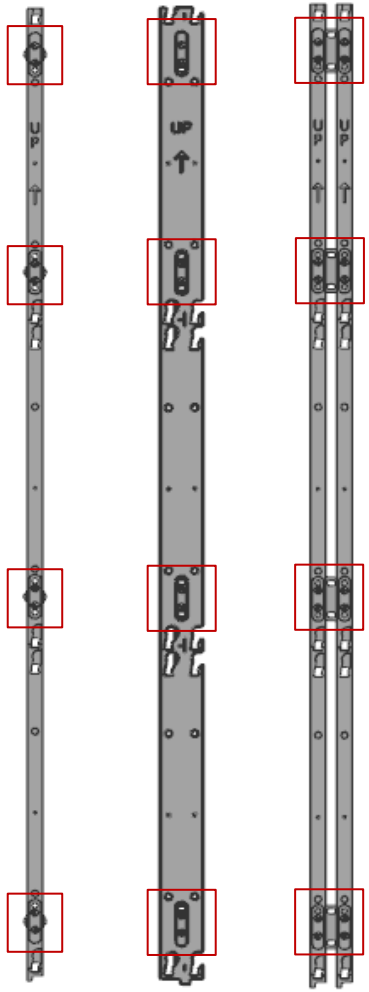
Standard 30x60 gusset

Standard slot 8, M6 Nut

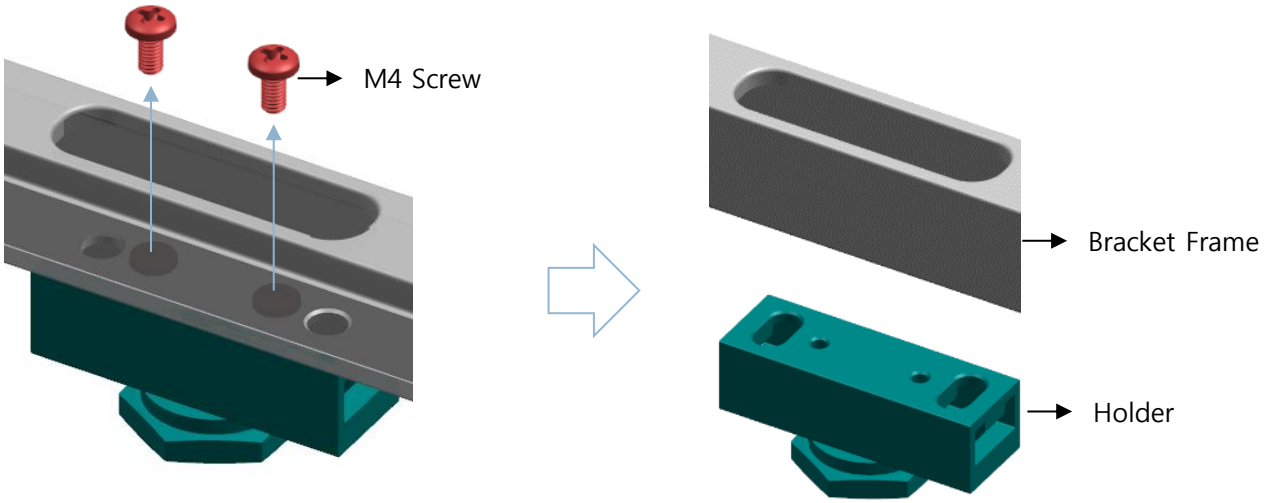
M6*L10 Screw

3. Installation of Frame kit

- **Prepare Frame Kit**



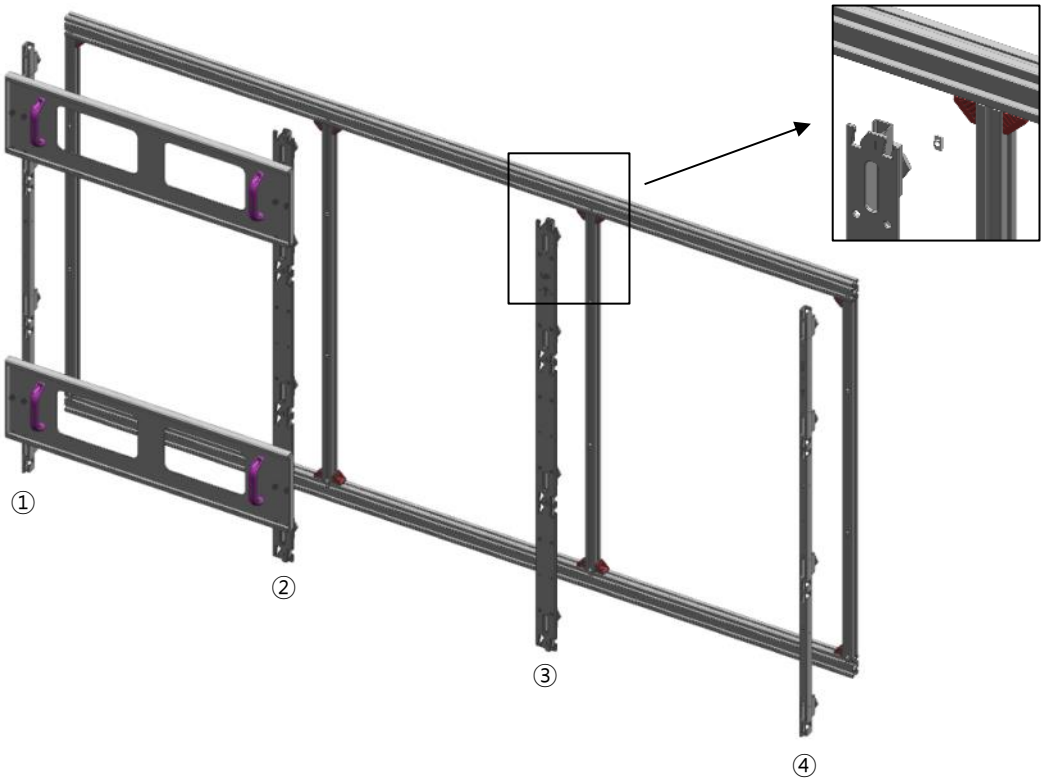
1. Disassemble holder screws for the needed area of Frame Kit.
(Relevant Frame : Holders in the side & Holders in the Middle/Center)
* When using Al profile, do not use holder.



< Holder disassemble required area>

3. Installation of Frame kit

- **Assemble Aluminum profile into Frame Kit**



< The installed image >

1. Assemble ASSY BRACKET SIDE starting from the left. (Assembly order : Left→Right)
2. For the locking, use M6 screw and nut to fix it onto Al profile.
3. After fixing BRACKET, use ASSY BRACKET JIG to fix next BRACKET to Al Profile.
4. Proceed with the right side assembly with in the same manner. (Detailed installation method → refer to 'Frame Kit Manual')

- Appendix ※ Certified Cable by HDbaseT

Samsung Electronics

Vendor	Model Name	Vendor	Model Name
SCP	HNCPRO(TM) HOME NETWORK CABLE PROFESSIONAL HNCPRO(TM) HOME NETWORK CABLE PROFESSIONAL PLUS	Trends Electronics	Cat 5E/SHLD-BLU Cat 5e/350 Mhz Cat 6 STP Cat 6/550mhz
Be;dem	West Penn Wire 4246F West Penn Wire 4246AF West Penn Wire 254246F West Penn Wire 254246AF AV6SHP AV6SHR 2183R- F/UTP 2183P- F/UTP	Vertical Cable	350-CAT5E 550-CAT6
Extron Electronics	XTP-DTP-24	Metz Connect GmbH	Cat.7A AWG 22 S/FTP
C2G	23AWGX4P	Bluestream	CAT6HDBT
Crestron	DM-CBL-8G-NP DM-CBL-8G-P DM-CBL-ULTRA-P	Leviton	Leviton Extreme 6A UTP Leviton CAT6A F/UTP
FS Cables	TruHD Cat 5E UTP 350MHz PVC TruHD Cat 5E UTP 350MHz LSZH TruHD Cat 6 UTP 500MHz PVC TruHD Cat 6 UTP 500MHz LSZH TruHD Cat 6 F/UTP 500MHz LSZH TruHD Cat 6A F/UTP 650MHz LSZH	Huaxun	CAT6 AWG23 U/UTP CAT7A AWG22 S/FTP (CMR) CAT6A AWG23 F/UTP (CM) CAT6A AWG23 F/UTP (CMR) HT-A0423AF6A- PMS-001 Cat6A F/UTP
ICE Cable Systems	ICE Cat 5e 350mhz ICE Cat 6 550mhz ICE Cat 5e Plenum ICE Cat 5e Direct Burial ICE Cat 5e Shielded ICE Cat 5e LSZH ICE Cat 6 Plenum ICE Cat 6 Direct Burial ICE Cat 6 Shielded ICE Cat 6 LSZH ICE Cat 6 Shielded LSZH ICE Cat 5e Siamese ICE Cat 6A ICE Cat 6 Outdoor ICE Cat 5e Outdoor	Black Box	GigaTrue® 650 Cat 6A, 650-MHz UTP Plenum GigaTrue® 650 Cat 6A, 650-MHz UTP PVC GigaBase® 350 Cat 5e, 350-MHz UTP Plenum GigaBase® 350 Cat 5e, 350-MHz UTP LSZH GigaTrue® 550 Cat 6, 550-MHz UTP PVC GigaTrue® 550 Cat 6, 550-MHz UTP Plenum GigaTrue® 550 Cat 6, 550-MHz UTP LSZH Black Box Cat 5e, Shielded F/UTP PVC Black Box Cat 5e, Shielded F/UTP Plenum Black Box Cat 5e, Shielded F/UTP LSZH Black Box Cat 6, Shielded F/UTP PVC Black Box Cat 6, Shielded F/UTP Plenum Black Box Cat 6, Shielded F/UTP LSZH GigaTrue® 650 Cat 6A, 650-MHz UTP LSZH Black Box Cat 6A, Shielded F/UTP PVC Black Box Cat 6A, Shielded F/UTP Plenum Black Box Cat 6A, Shielded F/UTP LSZH

- Appendix ※ Certified Cable by HDbaseT

Samsung Electronics

Vendor	Model Name	Vendor	Model Name
Kramer Electronics	BC-HDKat6a BC-UNIKat	Snap AV	SP-CAT6A-1000-BLU
IDK	CAT. 5E HDC-CABLE (SF/UTP)	Nien-Yi Industrial Corp.	NY-CAT.5E-UTP NY-CAT.6-UTP
Hitachi Cable America	Category 7 HDBaseT	Panduit	PUP6AM04 – Cat. 6A, Advanced MaTriX, U/UTP cable, Plenum (CMP) Rated PFP6X04 – Cat. 6A, F/UTP cable, Plenum (CMP) Rated
Superior Essex	10Gain XP CAT 6A PowerWise CAT 5e+ CAT 6+ F/UTP	Webro Limited	Cat5e U/UTP Cat6 U/UTP
Wonderful Hi-Tech	WONDERFUL CAT.6 LAN CABLE WONDERFUL CAT.6A LAN CABLE WONDERFUL CAT.7A LAN CABLE TSP2304SXX Cat6A FTP	Aten Internation Inc.	2L-2910
connectorCo	VELOCITY PREMIUM CAT6 UUTP VELOCITY PREMIUM C5E UUTP Maxxam_Cat6A UFTP	Absolute Acoustics	Videonet 650 – Storm Videonet 750 – Thunder
Purelink	CAT6A U/FTP	General Cable Corp	Genn Speed GS- 10 MTP CMP Cat6A F/UTP
CommScope Inc.	1291B 1091B 2091B 3091B 2291B 3291B 10GS4 10G4 10GNS4ZH-i 10GNS4 10GN4	Haiyan	CAT5E CAT6 CAT6A
		Samson	CAT5E CAT6 CAT6A