Samsung Electronics

LED Display
Installation Manual

LH008IWJ* (P0.84)**
LH012IWJ* (P1.26)**
LH016IWJ* (P1.68)**
SNOW-1810U

Ver. 2.0 (2020.03.20)

Revision History

Version	Date (Y/M/D)	Description
2.0	2020/03/20	New Release

Dehumidification guidance – during installation

- **When humidity get into LED package because of high humidity, it is possible to cause 'Line defect' by electrical short in side of LED Package.**
- **For keeping quality of products during installation, please refer below cautions.**

- If one of below case meet before installation, MUST do dehumidification process.
  - Case when vacuum packaging is broken before unpacking.
  - Case when environment condition is exceed Samsung recommended operation condition. (Please refer Operation condition from User manual)
  - Case when period between unpacking and turning on the power of products is spent more than 7days, even though it is under Samsung recommended storage condition.
  - Case when production date on the label is exceed more than 6 months, even though vacuum packaging is no problem.
- When Volatile chemicals such as oil paint, solvent are used or operation condition is exceed around of products installed place, MUST play video more than 2 hours everyday.
- If it is not meet with upper cases, it is helpful to play video more than 2 hours everyday for protection for humidity getting into LED Package.

Dehumidification guidance – during operation

- **Electrical short in package is possible to happen during products are working.**
- **For keeping quality of products during installation, please refer below cautions.**

  - If one of below case meet during operation, MUST do dehumidification process.
    - Case when environment condition is exceed operation condition.
    - Case when products are not working more than 1 month, even though environment condition is under operation condition.
  - When environment condition is exceed operation condition, products are out of warranty. Please check environment condition.
  - Even products are operating, if the installed place have extra construction such as interior modification, MUST do dehumidification following installation condition.
  - It is possible to happen dew condensation on surface of products, even though working on operating condition. When happening dew condensation, MUST operate after cleaning the dew condensation & dehumidification.

Dew condensation due to overcooling

- **Even though meet with Samsung recommended operation condition, dew condensation is possible to happen when surface of products is colder than environment temperature or hot & humid air blow to cooled surface of products.**
  (cf : Principle of happening dew on surface of glass which have ice)

- **Case when dew condensation is happen on products, it is possible to be the root of defect. In this case, it is possible to be out of warranty.**

Guidance of latest firmware

▪ When install products, please update latest firmware on online

- You can download latest firmware from SLM site.
  - URL of SLM Page : https://www.secslm.com
  - After login → Help → Download Center에서 Download
  - Before you download firmware, you MUST check same firmware of model (marked red letter in below) & upper number of version (marked blue in below).

Cabinet : Main - L-xxxMWWAC-nnnn.n → xxx = Pan name, nnnn.n = version
FPGA - aabbb_ddddd → aa = pixel pitch, bbb = LED package type, ddddd= version

Example : IER P2.5 → Cabinet : L-IERMWWAC-1003.1, FPGA : 25252-31046

S-box : TB-KTM2SBMDWWC_100x.x

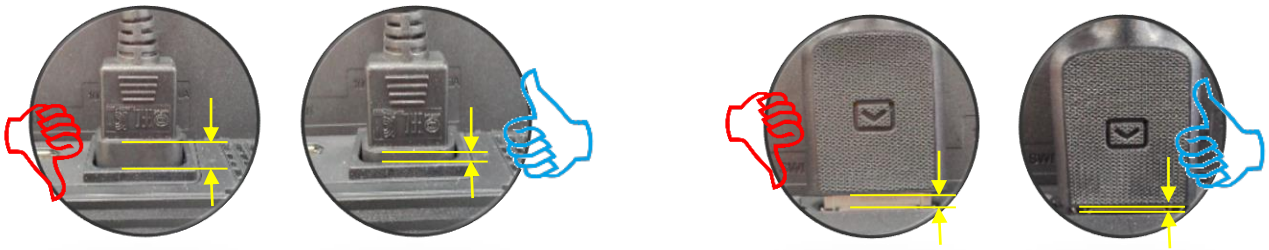
- You can update firmware through LSM.
  - Please refer '7-1 PC control program' for the way to update firmware.

IMPORTANT

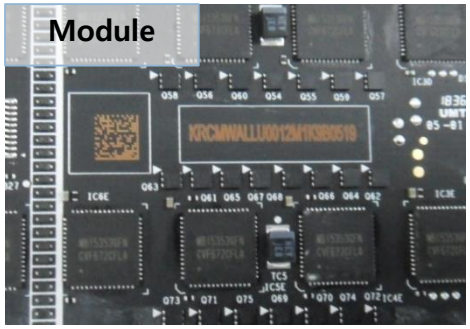
Check first before Installation (1/2)

Samsung Electronics

- All Power cables and OCM cable must be connected firmly



- 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)

- Install the device only using **SNOW-1810U** and its supplied IG.

  ※ Please check below Cabinet and S-box compatibility table information

S-Box	SNOW-1810U	SNOW-1703ULD	SNOW-1703U
I/G	**BN91-20525A**	BN91-19993A	BN91-19100A
Cabinet	IF015H, IF020H, IF025H, IF025H-D, IF040H-D, IF060H-D, IF012J, **IW008J** **IW012J** **IW016J**	IF015H, IF020H, IF025H, IF025H-D, IF040H-D, IF060H-D, IF012J	IF015H, IF020H, IF025H, IF025H-D, IF040H-D, IF060H-D

Table of Contents

1. Product Information and Precautions for Installation

◇ Cabinet Infomation

		IW008J (P0.84)	IW012J (P1.26)	IW016J (P1.68)
Basic Spec.	Pitch	0.84 mm	1.26 mm	1.68 mm
	Cabinet Resolution	960 X 540	640 X 360	480 X 270
Color Spec.	Brightness (Max)	1600-nit/500-nit	1600-nit/800-nit	1400-nit/1000-nit
	Contrast Ratio	10,000:1		
	Viewing angle (H/V)	145°/155°	140°/160°	135°/155°
	Refresh rate	1920 Hz ~ 3840 Hz		
Power Spec.	Input Power	100~240 VAC, 50/60 Hz		
	Power consumption (Max)	190 (W/Cabinet)	192 (W/Cabinet)	180 (W/Cabinet)
Operation Spec.	Working Temperature	0℃~+40℃/10~80%RH		
	IP Rating	IP20		
	Power Daisy Chain (220V / 110V)	4sets / 3sets		
Certification Spec.	Safety	60950-1		
	EMC	Class B		

1. Product Information and Precautions for Installation

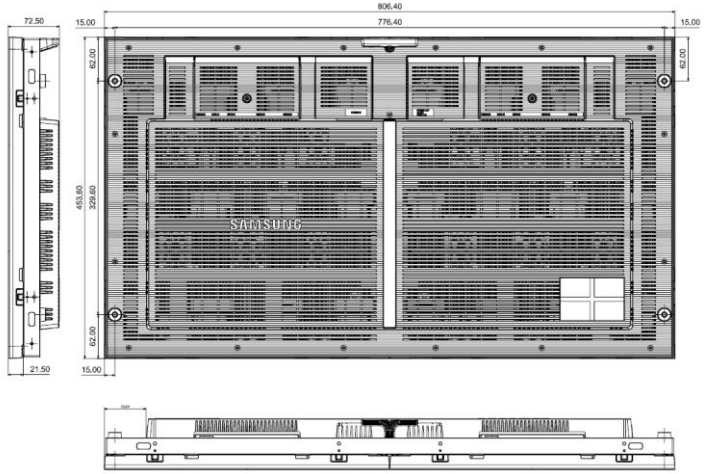
◇ Screen configuration by model (Pitch) (Refer to page 22 for frame kit)

Specification			IWJ		
			P0.84	P1.26	P1.68
Cabinet	Cabinet Size		806.4 x 453.6 x 72.2	806.4 x 453.6 x 72.2	806.4 x 453.6 x 72.8
	Module Size		201.6 mm x 151.2 mm		
	Weight		12.5kg	12.2kg	12.5kg
Screen	FHD	Cabinet Q'ty	2x2 (4set)	3x3 (9set)	4x4 (16set)
		I/G Q'ty	1	1	1
		Size	1612.8mm X 907.2mm	2419.2mm X 1360.8mm	3225.6mm X 1814.4mm
		Frame Kit	VG-LFJ08FWW	VG-LFJ08TWW	VG-LFJ08UWW
		Bezel	IWJPA-WP008D2X2	IWJPA-WP008D3X3	IWJPA-WP008D4X4
	UHD	Cabinet Q'ty	4x4 (16set)	6x6 (36set)	8x8 (64set)
		I/G Q'ty	4	4	4
		Size	3225.6mm X 1814.4mm	4838.4mm X 2721.6mm	6451.2mm X 3628.8mm
		Frame Kit	VG-LFJ08UWW	VG-LFJ08TWW x4	VG-LFJ08UWW x4
		Bezel	IWJPA-WP008D4X4	IWJPA-WP008D3X3	IWJPA-WP008D4X4

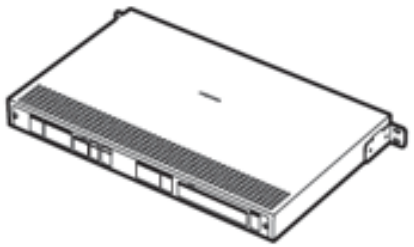
x4

x4

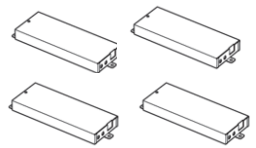
◇ Cabinet Product Information



◇ SBB-SNOWJAU (S-Box, I/G)



(S-Box)

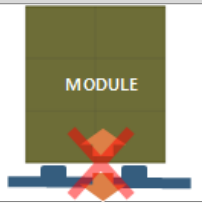
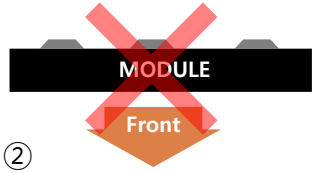
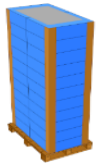
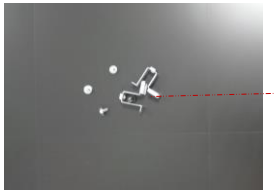
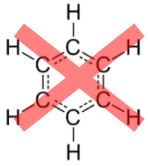


(I/G x4ea)

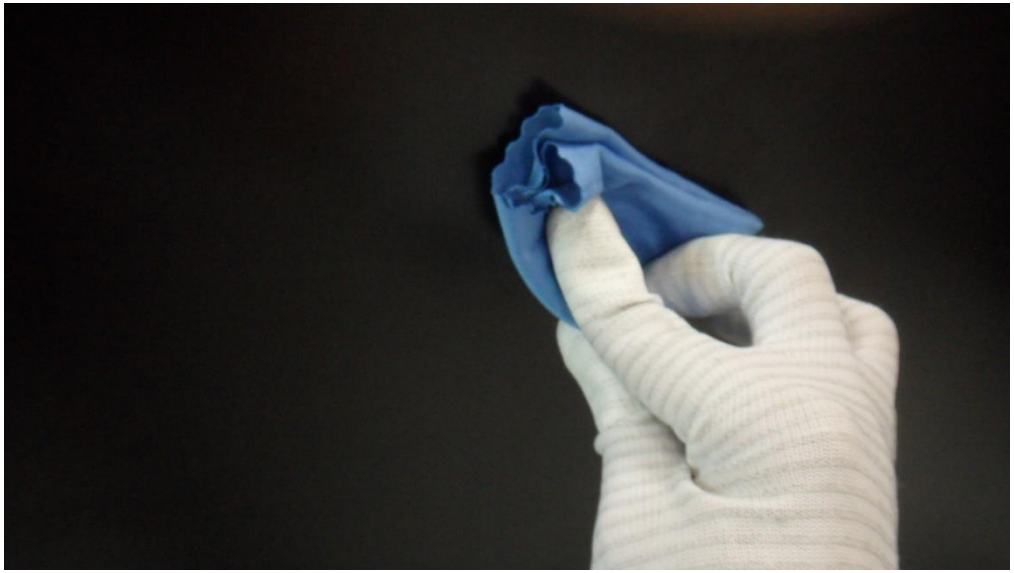
Interface Gender

1. Product Information and Precautions for Installation

• Precautions for Installation (LED damage)

Caution	Image
[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 & Film 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, 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.	  

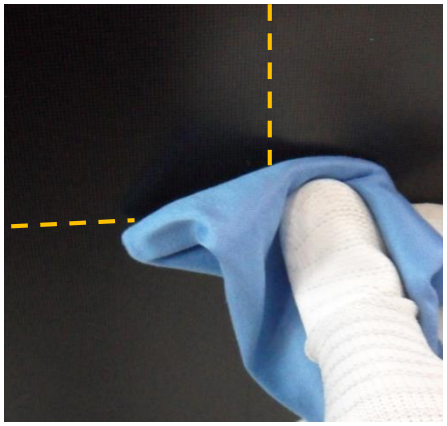
◇ Caution for cleaning screen



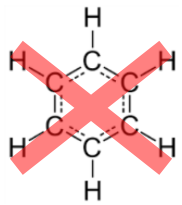
- It is recommended to wipe with a soft cleaning cloth provided with the product. If there is a contamination area that is not removed well, a small amount of glass detergent of the surfactant component is sprayed on the cleaning cloth provided. (However, do not spray the glass detergent directly on the screen)

- Hard stuff on screen surface can damage LED chip and film during cleaning.
  Clear screen surface before cleaning

★Caution★



- Watch out for damage when cleaning gap between Half-Cabinets
- Watch out for damage when cleaning gap between Modules
- Do not insert any cleaning tool or spay cleaner directly into the gap



- Do not wipe the LED surface with hard materials such as paper towels, brushes comb or brush, acrylic or steel.
- Do not use chemicals such as wax, benzene, cinna, mosquito repellent, air freshener, lubricant, and detergent in products

1. Product Information and Precautions for Installation

• Preparations for Installation

(-) (+) driver

- Provided in Frame Kit.

(BN96-48298A)

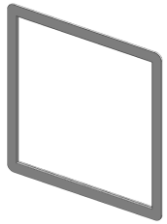
Cover-PCB
(BN63-18008A)

M3, L6
SCREW-MACHINE

M4, L6
HOLDER-SCREW
(BN61-16452B)

※ Packed in a small zipper bag

- Provided in accessory kit. (CY-WJJPWP).



PROTECTION
(BN81-17111A)

EDGE PROTECTION V/H
(BN81-17514A/BN81-17515A)

MAGNET JIG
(BN81-17114A)

GAP-TOOL
(BN81-17113A)

Adjustment tool
(BN81-17112A)

PLIER
(BN81-17541A)

Absorber
(BN81-17124A) x4

Glove
(RA00400E-002539)

- Provided in Frame Kit. (VG-LFJ08*WW).

Hex Wrench
2mm, 6mm

2. Check Point about the Radiant Heat

▪ Standard and condition for indoor installation

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

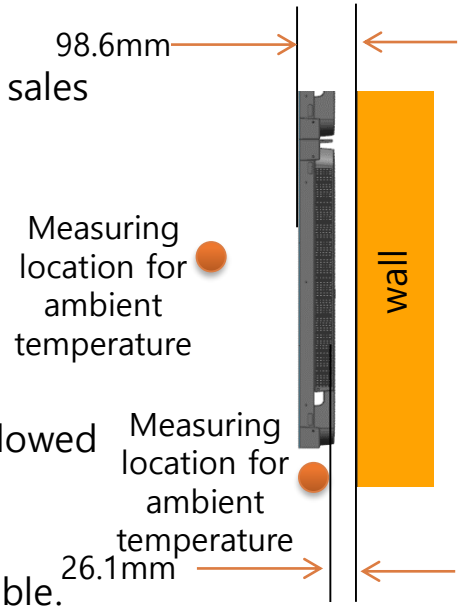
- Standard for using 'SAMSUNG WALL MOUNT' (Fulfill ADA) ※ ADA(American's with Disabilities Act
- Ceiling installation, outdoor installation, cannot be installed where there is vibration

  It is not possible to install it in a special case, and it is necessary to consult technical sales separately.
- In principle, solar window direct radiation condition installation is avoided.
- Window side, adjacent installation

  . A weak solar scan of the time zone except for the noon time zone during work is allowed

  . If surface temperature rise is minor (1 ~ 2 degrees) allowed

  . Use UV blocking / light blocking film when installation of window adjacent is inevitable.



- Room temperature is recommended to be 0 ~ 25 ℃
- Effect of Cold / Hot Wind on Air Conditioning System

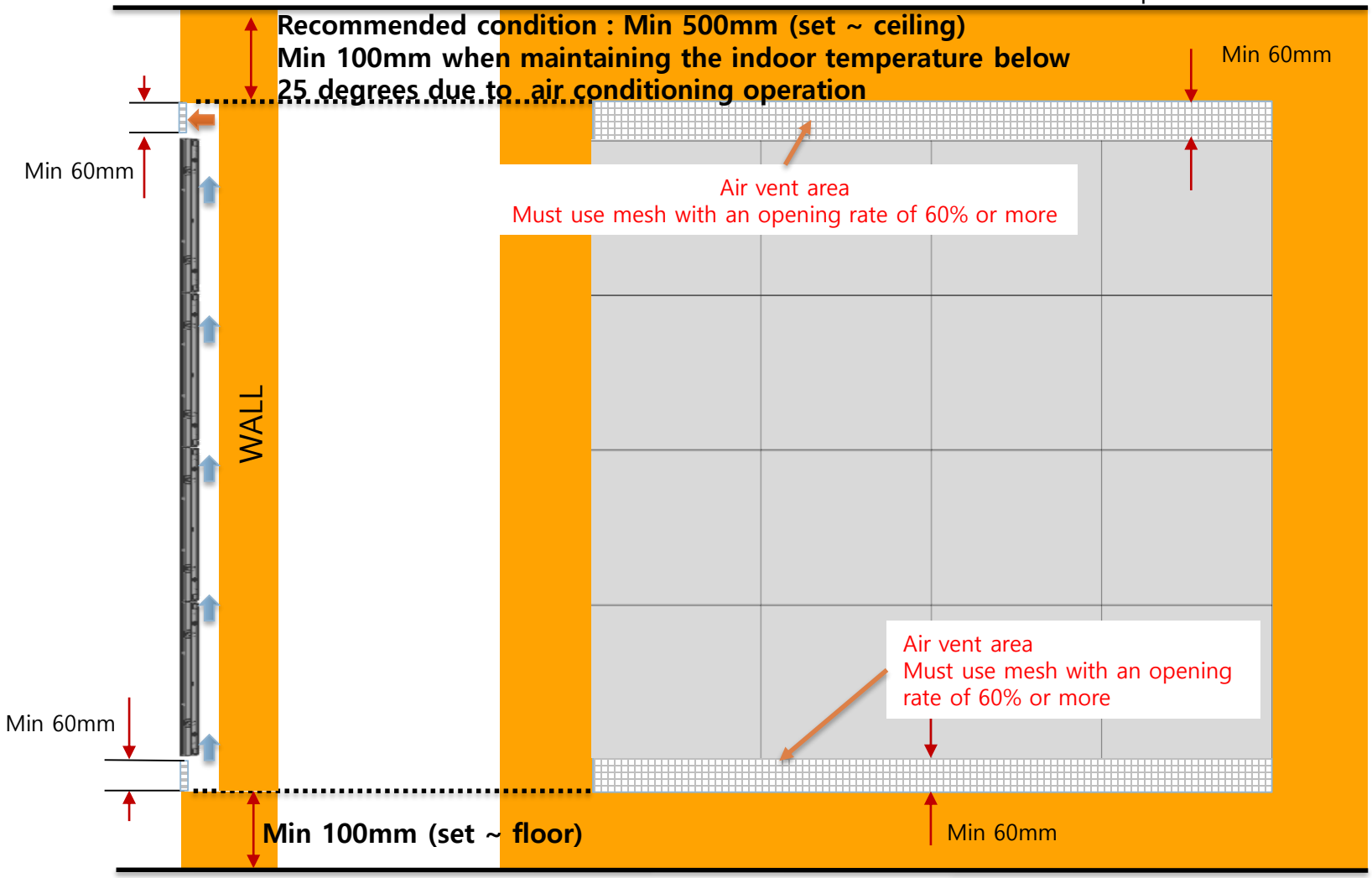
  . If the cold or hot air is the same air conditioning system, be careful not to affect the product.
- Air temperature measurement position

  . Based on product center or air let part

2. Check Point about the Radiant Heat– without Fan

➢ Minimum spacing for buried installation

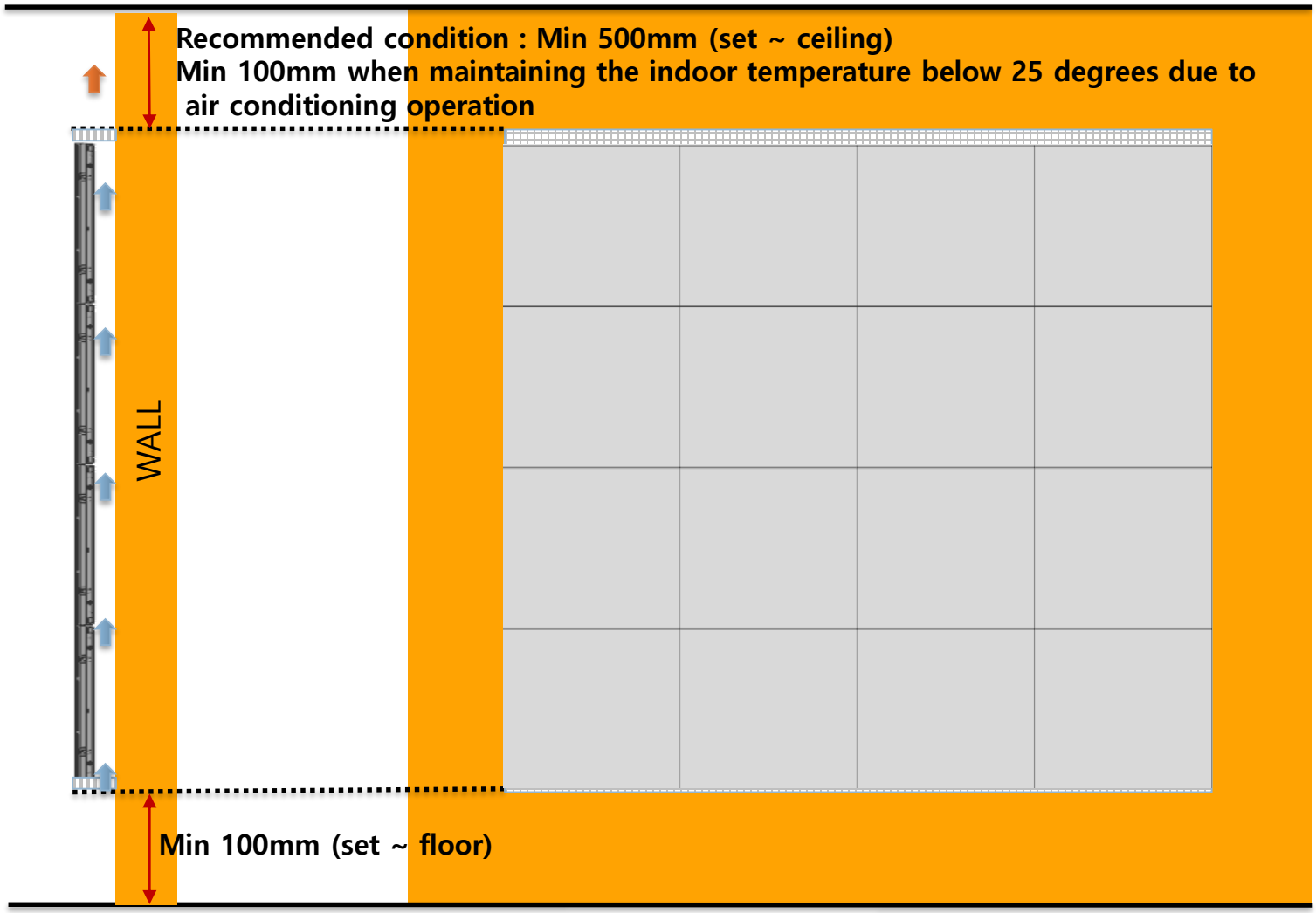
※ At least 60mm installation space required for upper, lower, left, and right
All interior finishes proceed after screen installation



※ Vent and interior finishing work will proceed after screen installation

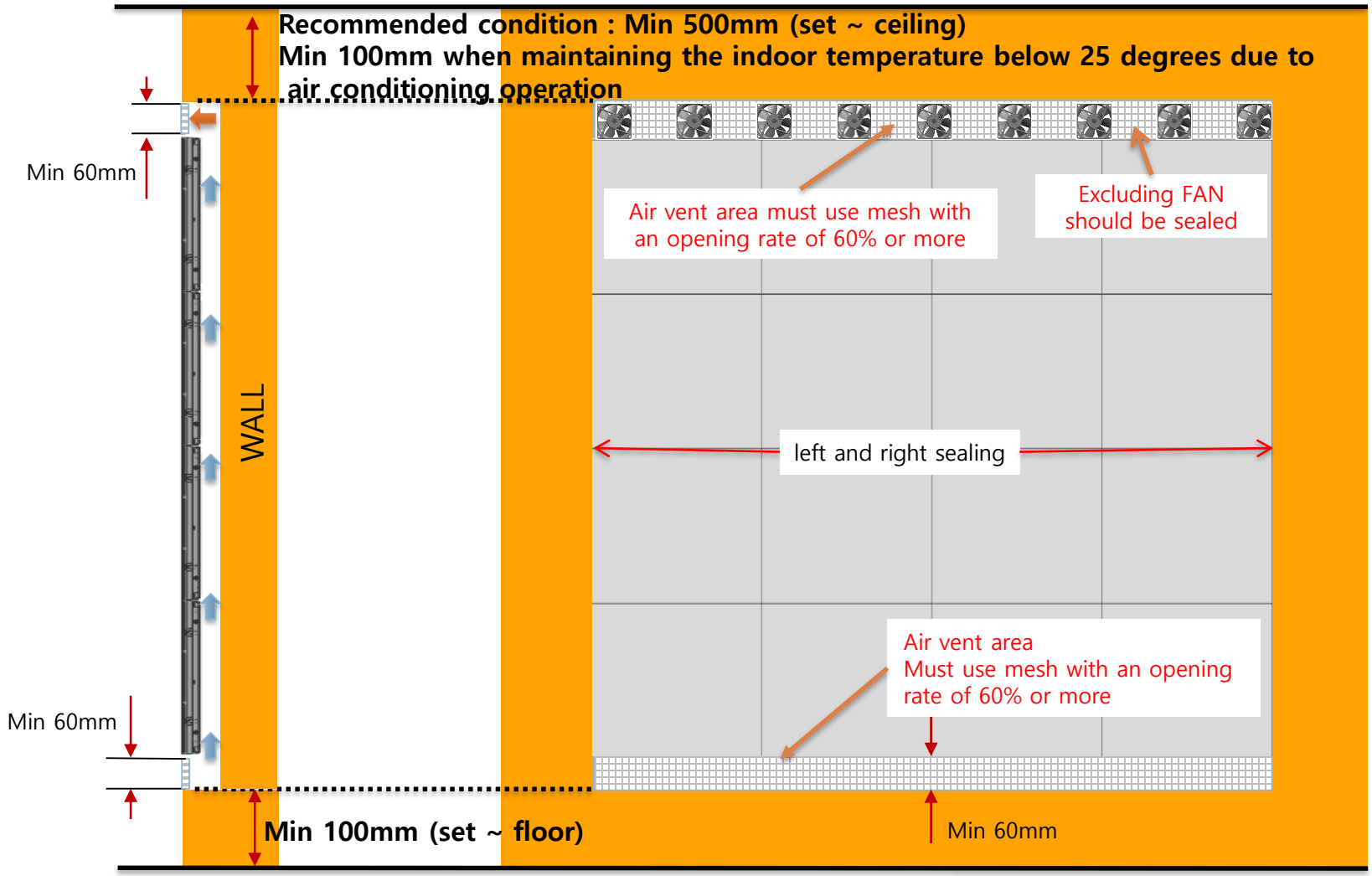
2. Check Point about the Radiant Heat– without Fan

➢ Minimum spacing for buried installation



2. Check Point about the Radiant Heat– with Fan

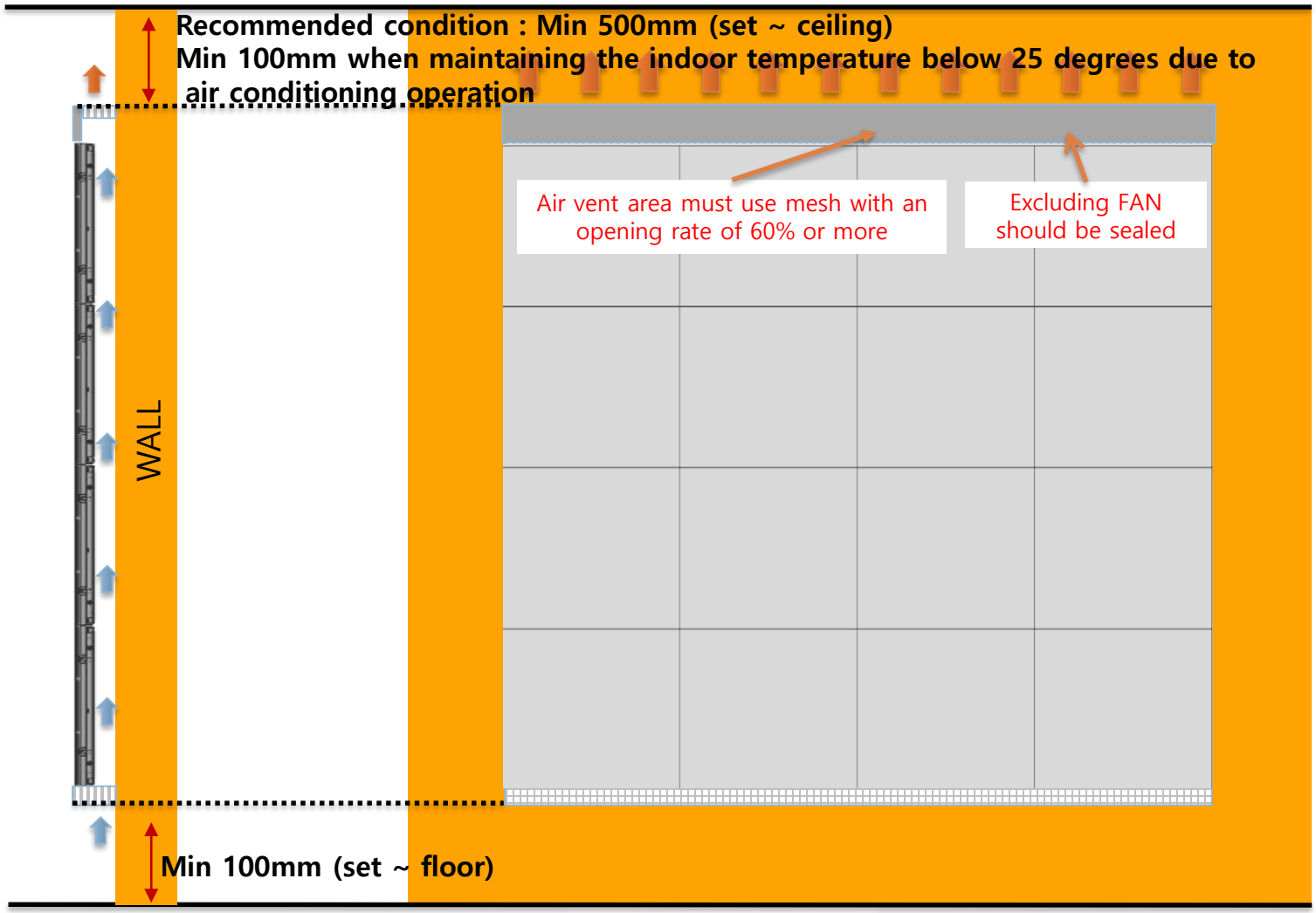
➢ Example of minimum spacing and placement during landfill installation



※ Vent and interior finishing work will proceed after screen installation

2. Check Point about the Radiant Heat– with Fan

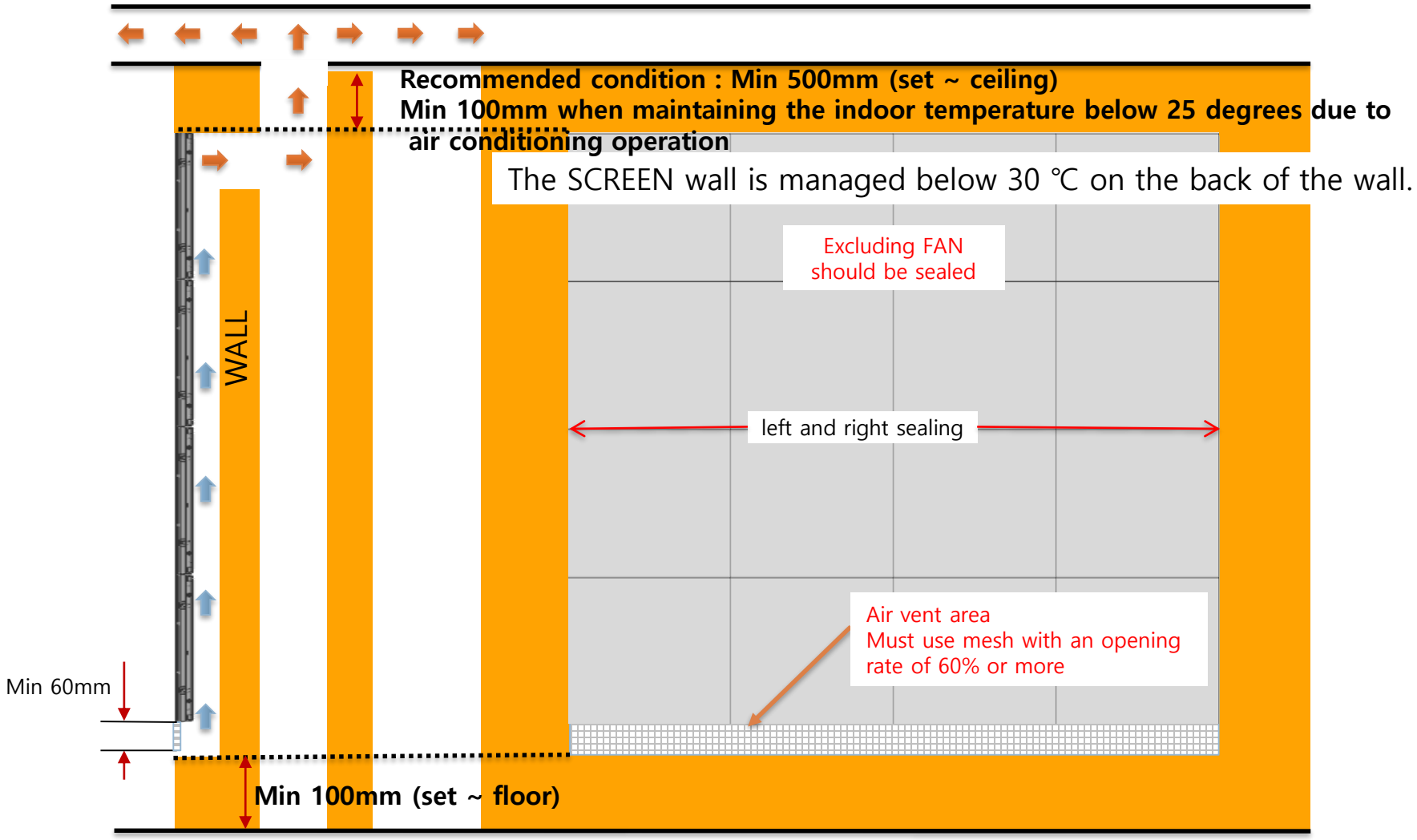
➢ Example of minimum spacing and placement when installing walls



※ Vent and interior finishing work will proceed after screen installation

2. Check Point about the Radiant Heat– with Fan

➢ Example of minimum spacing and placement during rear exhaust



※ Vent and interior finishing work will proceed after screen installation

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 Check whether there is any abnormality on the screen by connecting the power cable.(Fig.3)

※ Process of Screen check (Page.21)

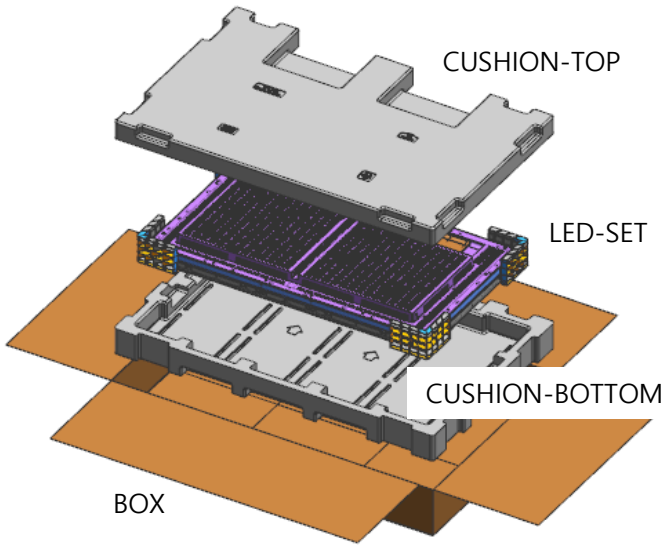


Fig.1 Packing & Product

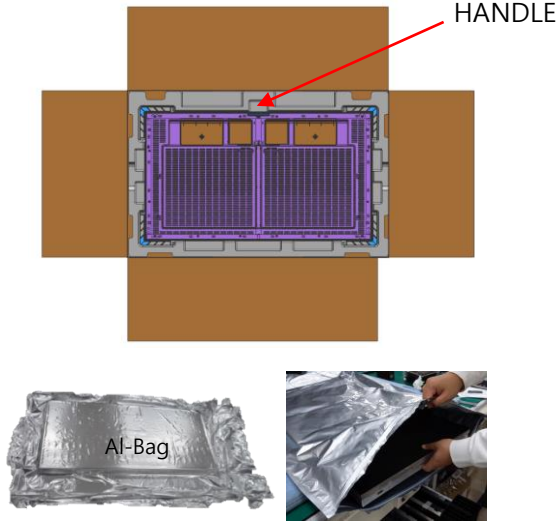


Fig. 2 Remove Al-Bag

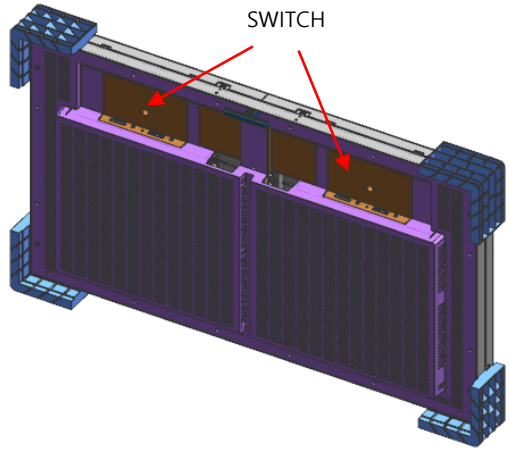


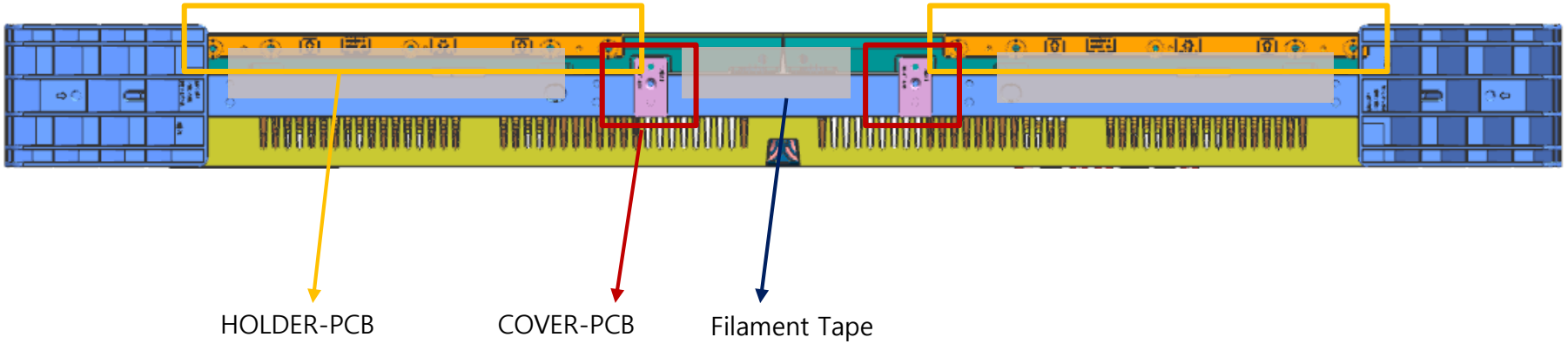
Fig.3 Check the Screen

3. Preparation for Cabinet Installation

④ 18ea Holder-PCB fixing screws and 4 Cover-PCB fixing screws are released.

⑤ Remove the filament tape attached to the top / bottom / left / right.

Fig.4 Holder-PCB & Cover-PCB & Protective Sheet Removal



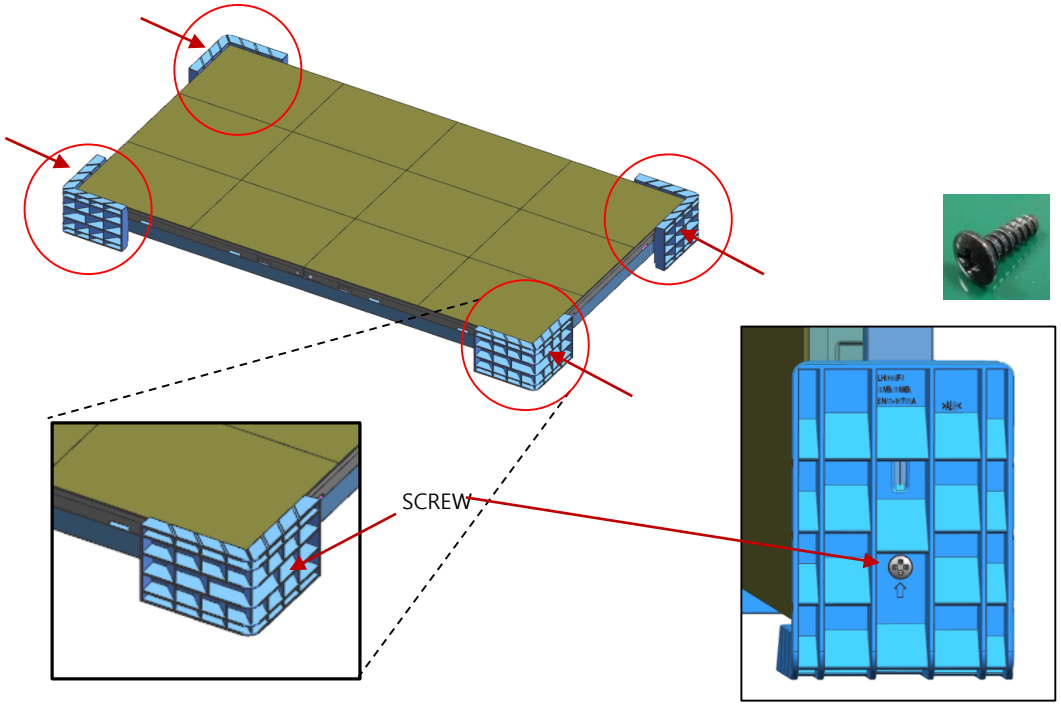
X18 SCREW-MACHINE (6003-000133, M4,L8)

X4 SCREW-MACHINE (6003-001501, M3,L6)

※ Remove Cover-PCB and screws and keep them separately.
It is required when working on the back.
※ The Cover-PCB, Screw, and Bolt are included in the accessory of the Cabinet

3. Preparation for Cabinet Installation

⑥ Unfasten the 4 screws on the Cover Corner area to separate those screws and Remove the protective sheet attached to the two sides (Top/Bottom). (Fig.4)



X4 SCREW-MACHINE (6003-000133, M4L8)

Fig.4 Cover Corner Removal

3. Preparation for Cabinet Installation

- Using Spacer-PET

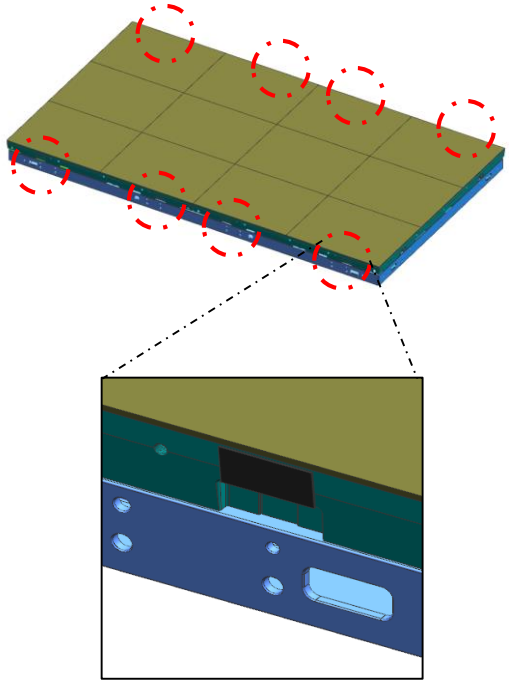
⑦ When Black Seam occurs, remove the Spacer-PET of the point.

※ Spacer-PET should not protrude more than module

⑧ If necessary, attach Spacer-PET. (Fig.5)

※ Check the gap between the module and the Bracket-Sub using a gap gauge.

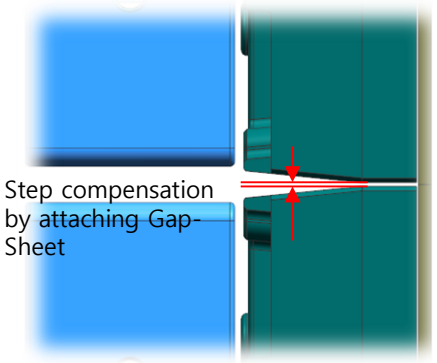
※ If the step is 0.06mm or more, attach Spacer-PET (0.05t / 0.1t).

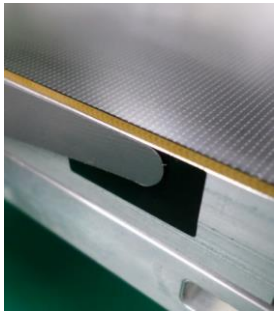


※ **Spacer-PET** :

- In order to minimize the load applied to the module during large size installation,
  Attach it to the Bracket-Sub to minimize the gap between the module and the Bracket-Sub.

- Cabinet 8poiont attached to Spacer-PET





Using Gap gauge

Fig.5 Check the difference between the module and B / SUB

3. Preparation for Cabinet Installation

◈ Dehumidification

① In order to protect LED devices, the following items must be dehumidified.

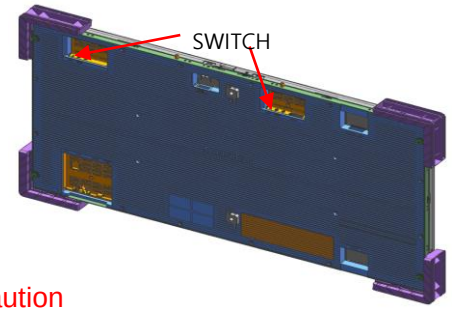
[Dehumidification when Installed]
- If it is installed after more than 6 months in vacuum-packed condition after factory shipment.
- Storage for more than one week should be performed without vacuum treatment.

[Dehumidification during Use]
- Dehumidification is performed in an environment of 40 ℃ / 80% or less for 30 days or more. (Refer to LSM dehumidification, page 102page)

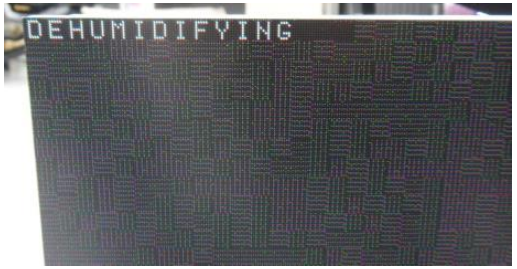
② How to dehumidify before installation

- Press the button for 3 seconds after the cabinet is turned on.
  ※ When the initial AC power is turned on, time required for operation of AM3352 IC is required.
  Wait about 30 seconds and let it go.
  When the button is released, Dehumidifying Mode is executed. (Display the module at the top left)

- Aging with 24 hours on.



3초



Aging 24 hours

※ Caution

♦ The normal installation mode of operating IWJ (LH008IWJMWS, LH012IWJMWS, LH016IWJMWS) is “ STB ” mode (switch).
Please use "O" mode only for cabinet landing inspection and change it to "STB" mode after inspection.

♦ The switch that performs the factory dehumidification mode and factory reset function is the same. If you press 3 seconds, you enter dehumidification mode. If you press 10 seconds or more, the factory reset is performed.

3. Preparation for Cabinet Installation

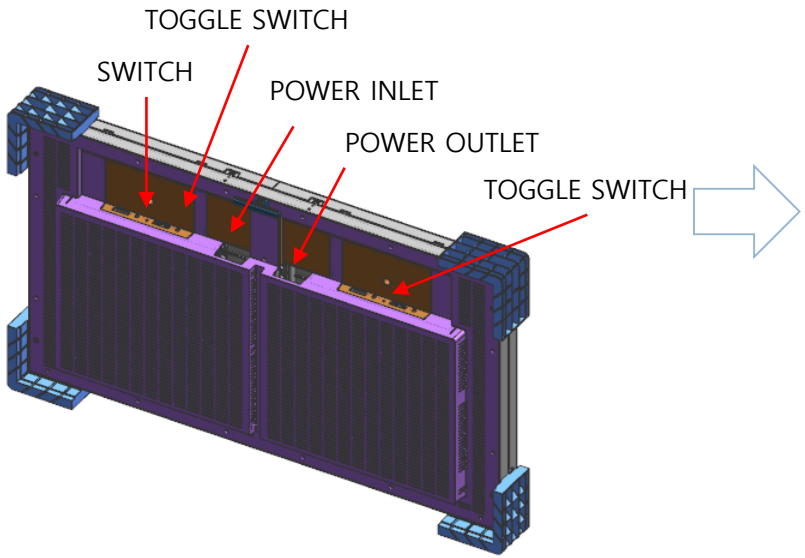
◈ Process of Dehumidification

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

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

3. Preparation for Cabinet Installation

◈ Reference : Process of Screen check



Check the picture of the screen

◈ Internal white pattern

IMPORTANT

1. After turn on power, press the toggle switch button for five seconds
2. Dehumidification screen comes out, push the toggle switch twice
3. when the white screen is displayed, check the defective LED by sequentially pressing toggle switch

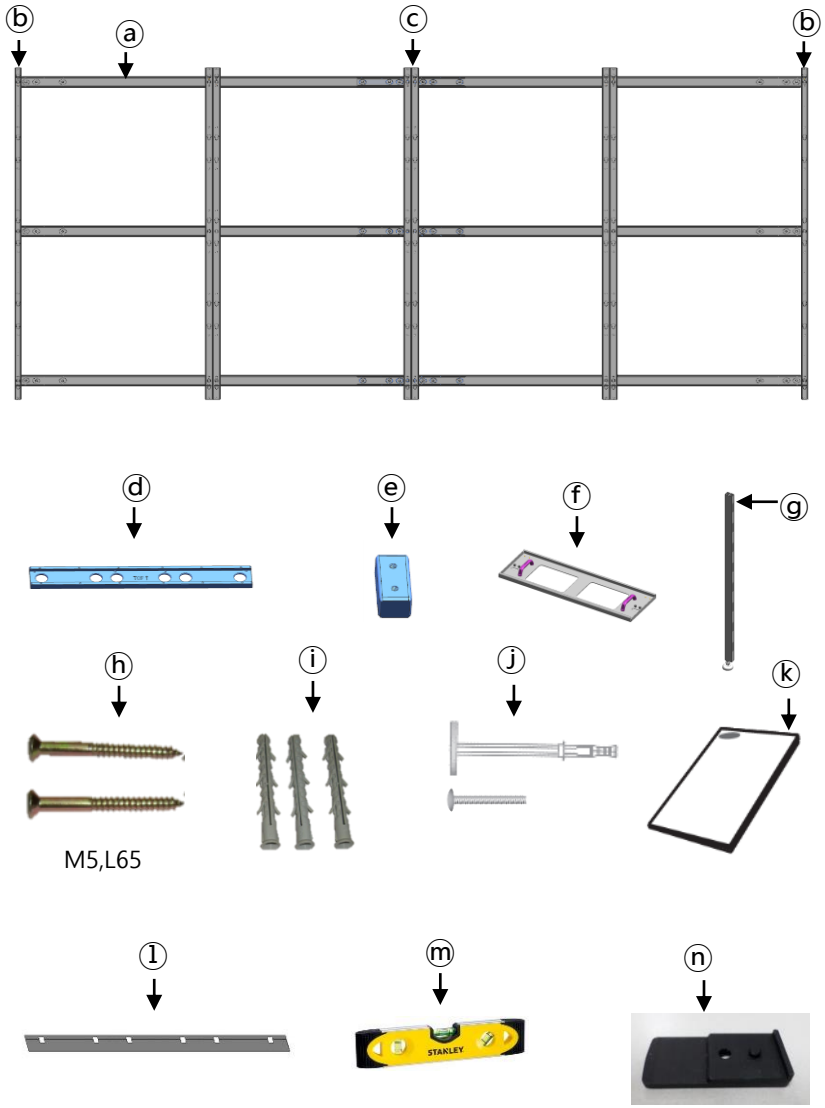
* Do not turn on the white pattern over 10 seconds before dehumidification

4. if you need more brighter pattern, push ‘toggle switch’ button for three(3) seconds in white pattern
5. push toggle switch for three(3) seconds again to exit factory OSD

4. Frame Installation

◇ Frame Kit Composition.

No	Item	VG-LFJ08SWW	VG-LFJ08FWW	VG-LFJ08TWW	VG-LFJ08UWW
		1x1	2x2	3x3	4x4
		Units	Units	Units	Units
ⓐ	BRACKET H (horizontal)	2	2	2	6
ⓑ	BRACKET SIDE (vertical)	2	2	2	2
ⓒ	BRACKET MIDDLE (vertical)	-	2	3	4
ⓓ	JOINT H	2	2	2	3
ⓔ	JOINT V	2	4	6	8
ⓕ	BRACKET JIG	1	1	1	1
ⓖ	LEVELER	-	2	2	2
ⓗ	SCREW	4	6	6	15
ⓘ	Anchor	4	6	6	15
ⓙ	DRY WALL SCREW	4	6	6	15
ⓚ	MANUAL-INSTALL	1	1	1	1
ⓛ	ALIGN JIG	-	-	1	1
ⓜ	LEVEL	-	1	1	2
ⓝ	HOLDER PCB	15	30	45	60
Installation Screen Size (mm)		806.4x453.6	1612.8x907.2	2419.2*1360.8	3225.6*1814.4



4. Frame Installation

① Assemble Bracket Side/Middle with Bracket H.

- First insert ⓐBracket H to assembled Joint H and Bracket H. (Fig.1)
- Second put 3 groups of Bracket H on ground. And insert Bracket Side/Middle to Bracket H. (Fig.2)
  . ⓑ Bracket Side used at side position, ⓒ Bracket Middle used at middle position.
- Then fasten up the screws. (Fig.3)

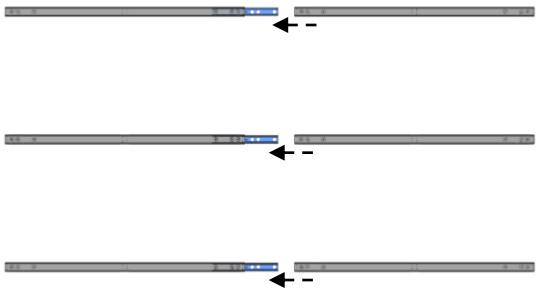


Fig.1 Insert Bracket H

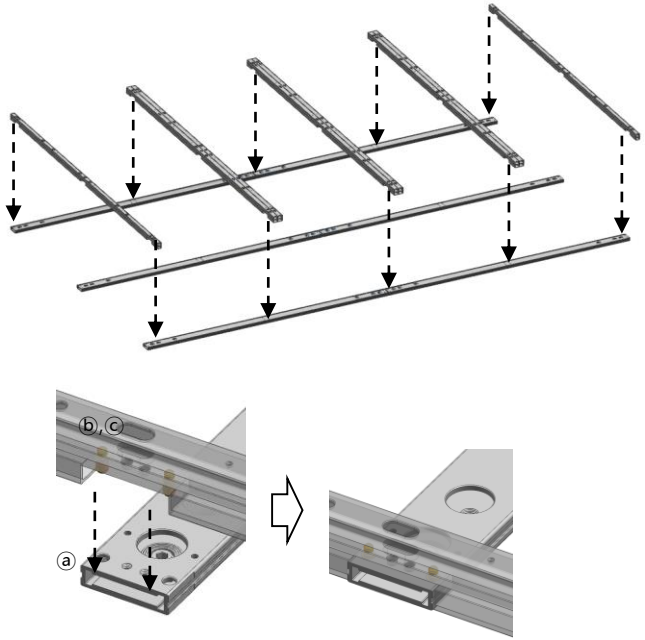


Fig.2 Insert Bracket V to Bracket H

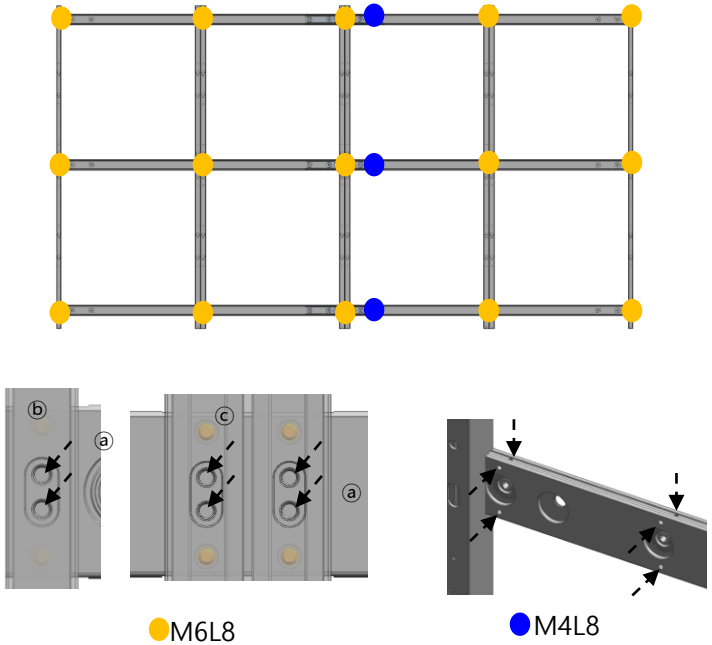


Fig.3 Fix Bracket with screw

4. Frame Installation

② Assemble Leveler on the Bracket Side at required height position.

- Put Leveler on Bracket side at required height position with moving up and down. (Fig.1)

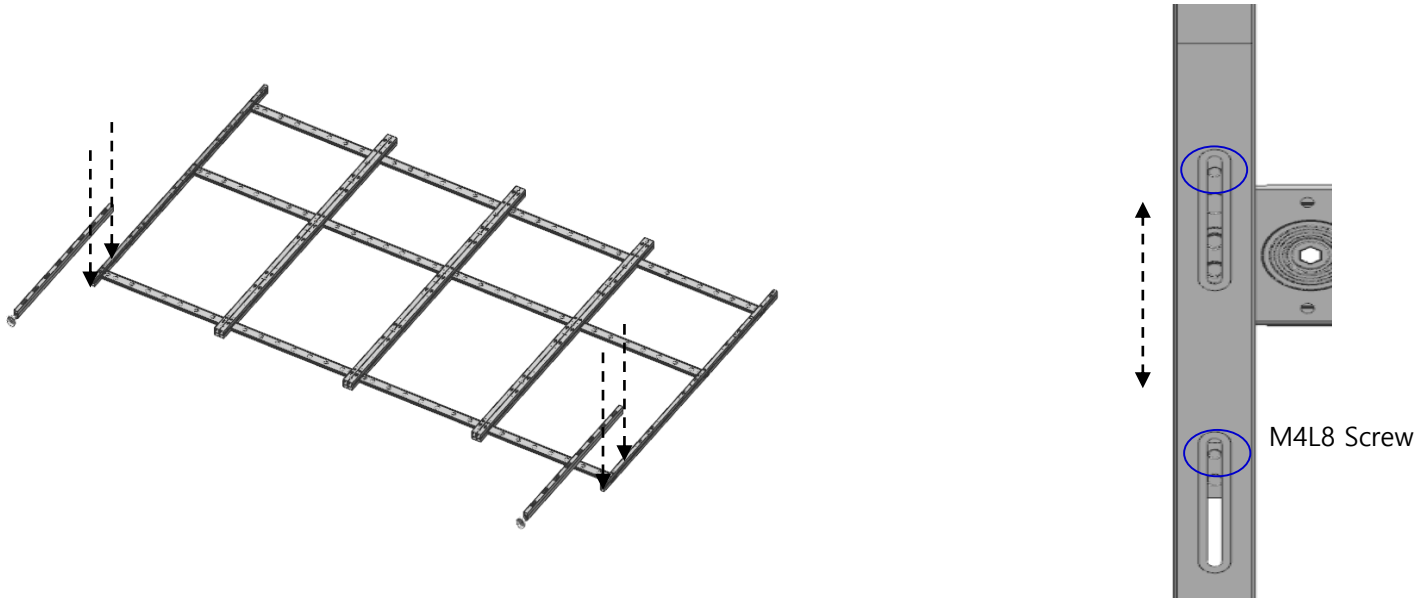


Fig.1 Assemble Leveler

4. Frame Installation

③ Install assembled Frame on the wall.

- Place the assembled frame on the wall, align it with the desired height and level, and fasten one place at the top center. (Fig.1)
- When attaching the frame to the wall, use the 6mm hexagonal wrench to correct the gap with the leveling bolt. (Fig.2
- If the leveling bolt is not enough to attach to the wall, add Tape Wash to reinforce it. (Fig.3)

In the above way, make sure that the frame does not follow the flat wall.

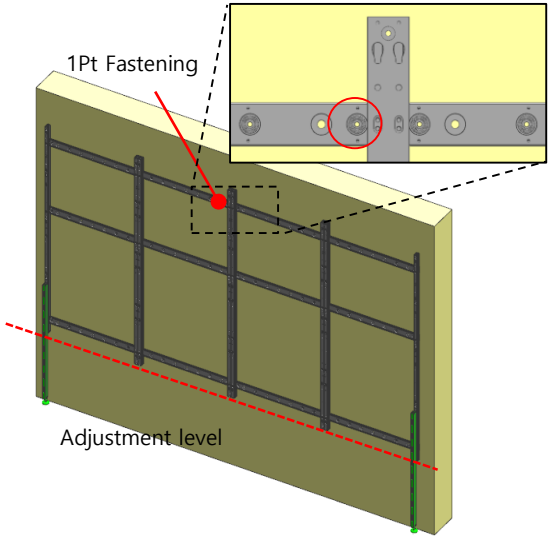


Fig.1 Make horizontal and Fasten 1point

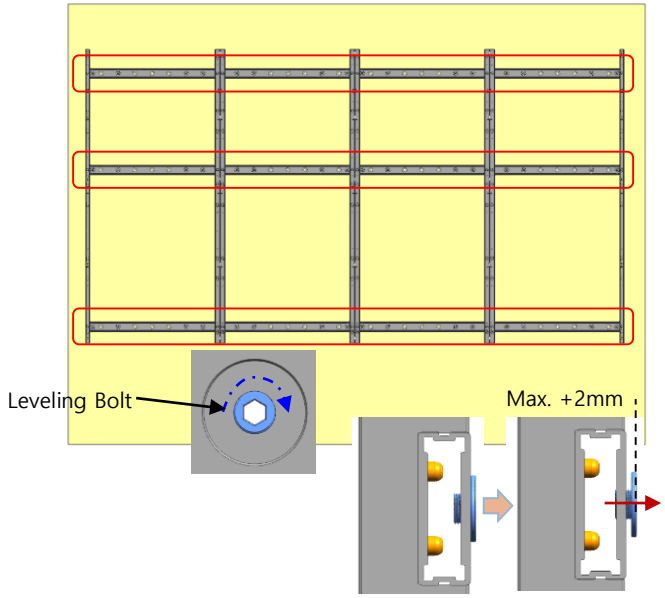


Fig.2 Adjust leveling bolt

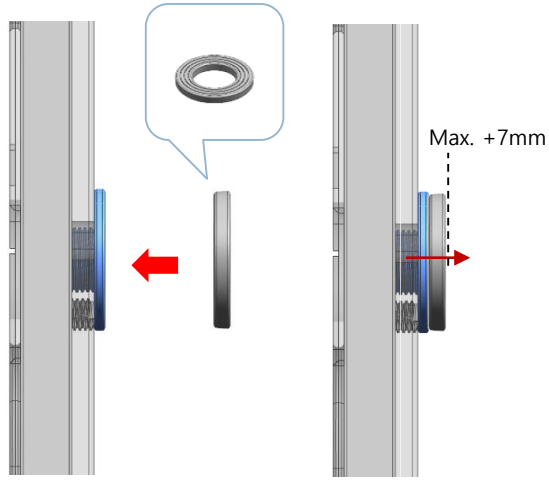
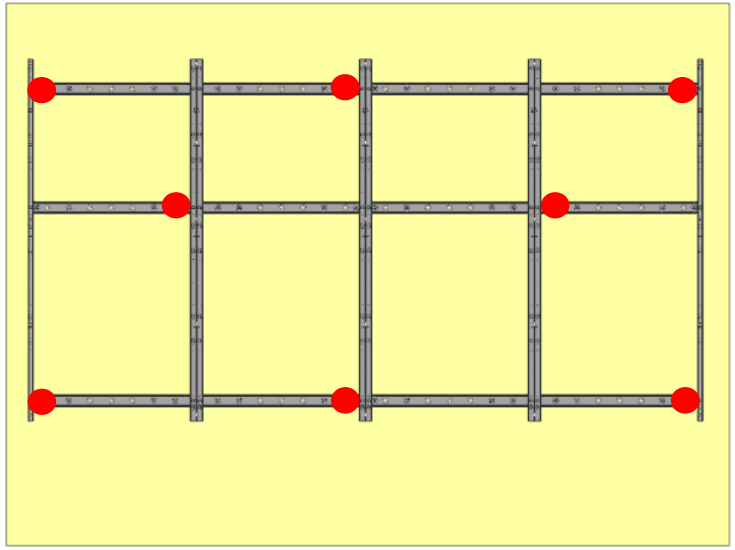


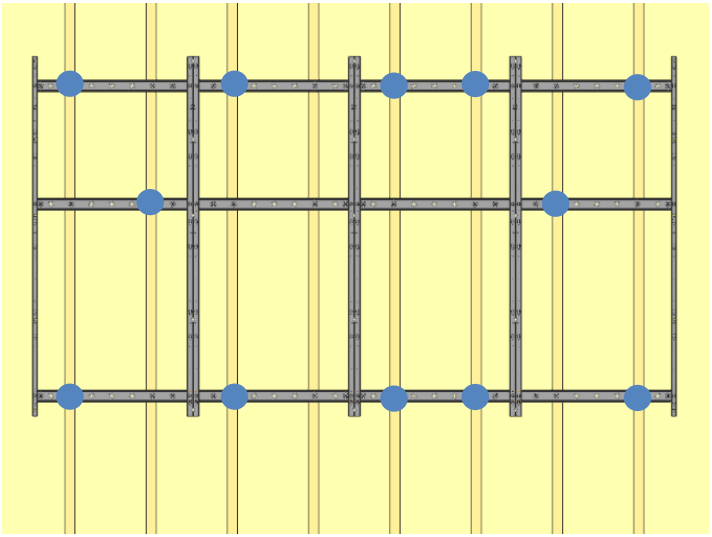
Fig.3 Attachment of Tape Washer

4. Frame Installation

- When the leveling work is completed, additional frame and wall should be fastened according to the guide below. (Fig.3)
- Fix the fastening position closest to the bracket side / lid among the fastening holes of the bracket H.
- Additional screws may be required depending on the wall status.
- After the wall is fastened, remove the leveler.



Concrete Wall



Wood Stud Wall

Fig.3 Fix Frame with screw

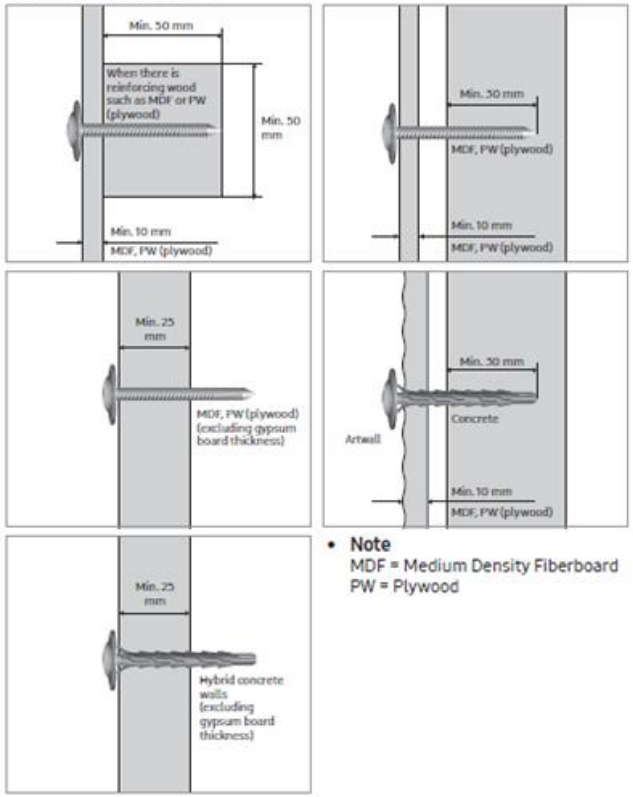
4. Frame Installation

※ Precautions for Fastening the Screws

Standard Installation Requirements by Wall Type

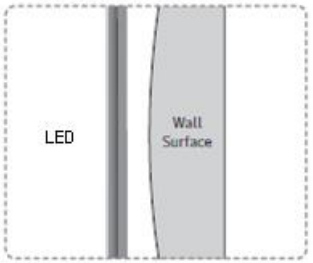
⚠ Check the wall type before installing.

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



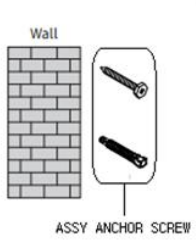
- **Note**
  MDF = Medium Density Fiberboard
  PW = Plywood

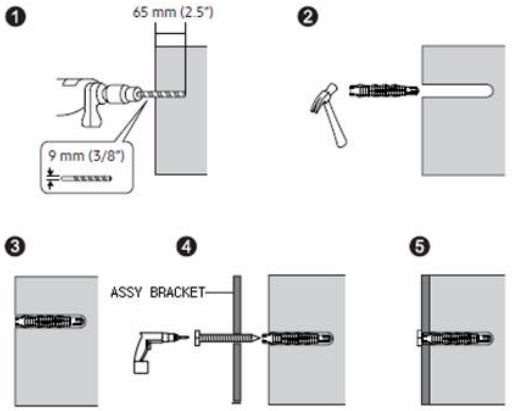
- First, check the status of the wall (type, thickness, flatness).



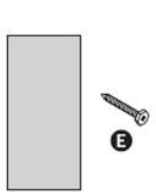
If the wall surface is not completely flat, gaps may form after installation.

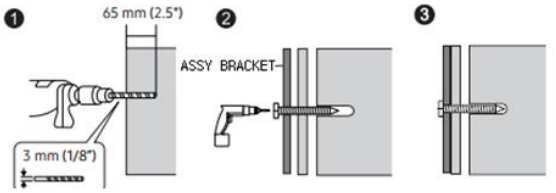
① Walls made of thick enough concrete

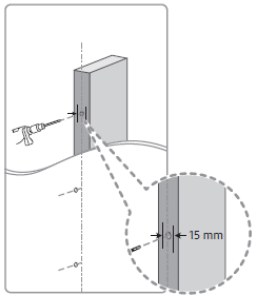




② Walls made of gypsum board with wood studs or MDF







Installation Requirements

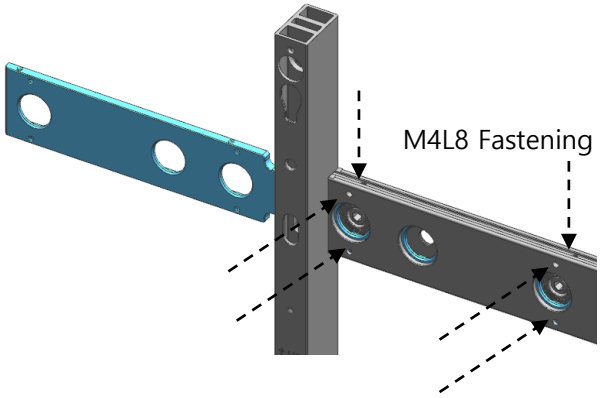
- Be sure to check the location of wooden studs in the wall before installing screws.
- Minimum wood stud size: 51 x 102 mm (2 x 4 in) Make holes (3 mm) first before installing screws.
- Holes for screws must be made at the center of studs.

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

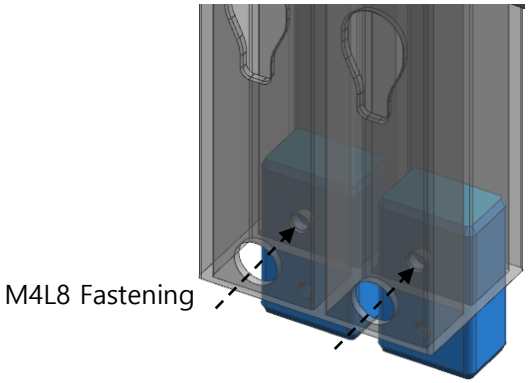
4. Frame Installation

※ Extent Frame Installation to Horizontal / Vertical.

- Assemble Joint C / Joint V into second assembled Frame.

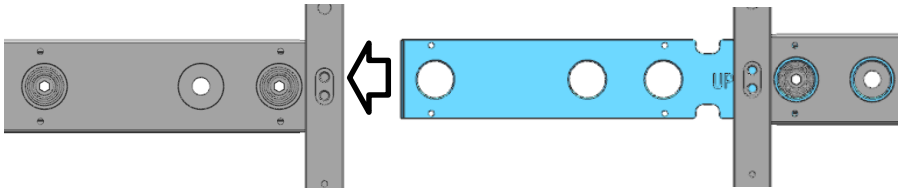


<Horizontal Extension>

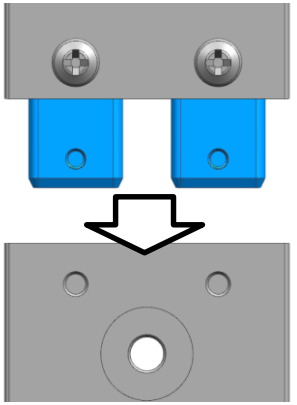


<Vertical Extension>

- Insert the second FRAME to first FRAME.



<Horizontal Extension>

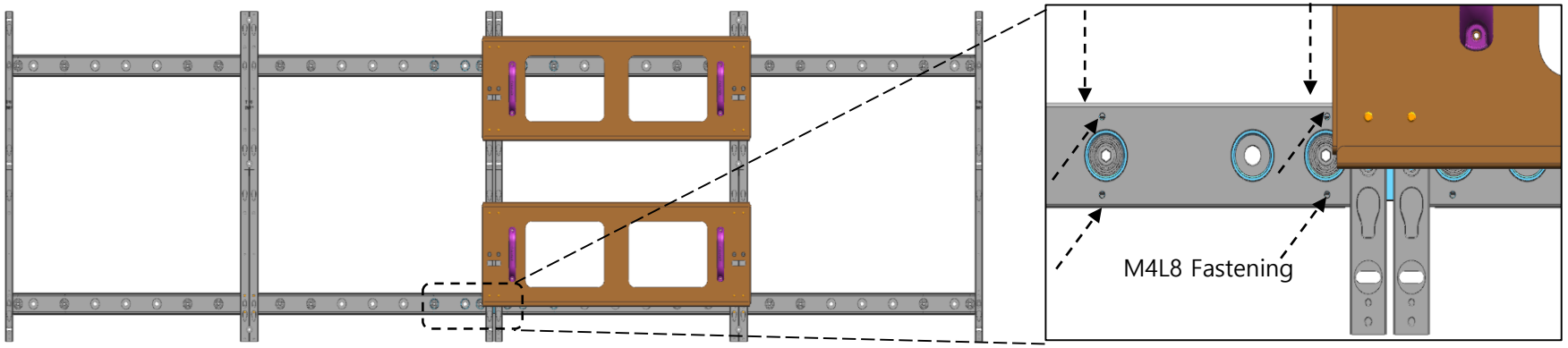


<Vertical Extension>

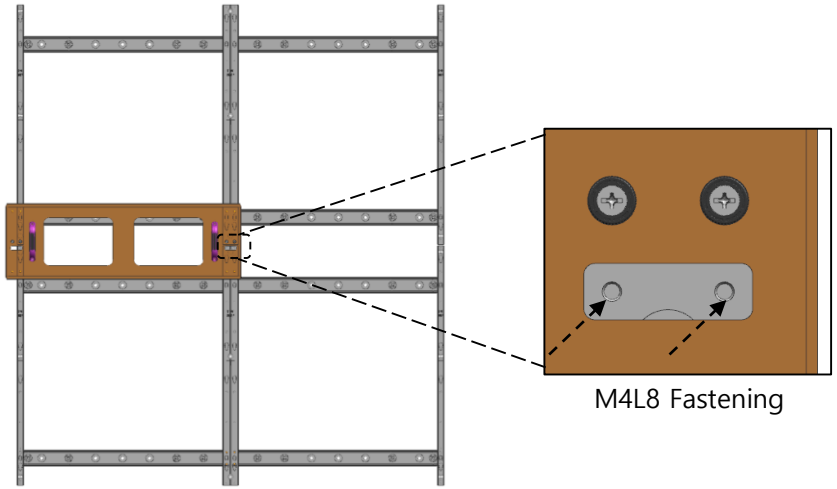
4. Frame Installation

※ Frame extension in horizontal / vertical direction

- The joints of the frames to be extended are inserted into the existing frames and the jig is inserted to correct position.
- After the Jig fastening, fasten the screws between the frames..



<Horizontal Extension>



<Vertical Extension>

5. Cabinet + Frame Installation

• Fix I/G Location

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

※ Installation location: Align the I / G to the point below 50 ~ 55mm on the right frame and fasten the screws. (Fig.2)
※ In the future service, I / G must be able to be released through the cabinet and must be installed in the corresponding location.
※ Depending on the screen size, I / G can be placed outside the screen for convenience of work.

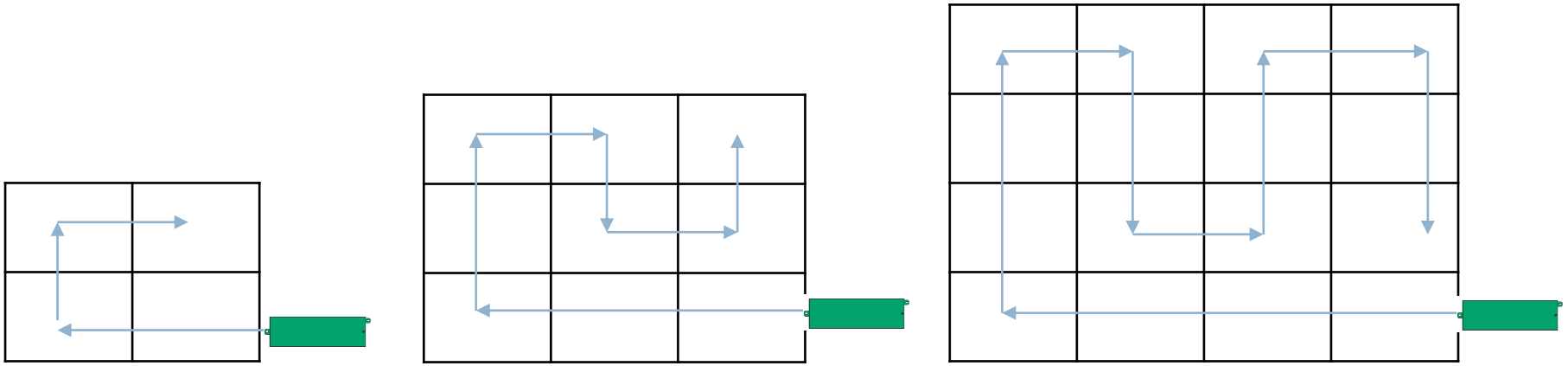


Fig1. Location to Fix the I/G and Order of OCM cable

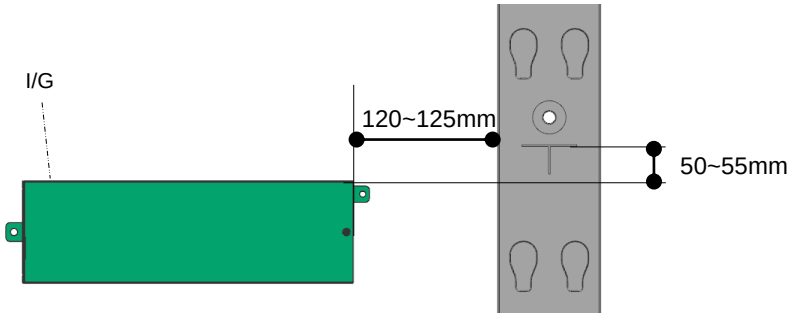


Fig2. Location to Fix I/G

5. Cabinet + Frame Installation

◇ Cabinet Installation

① After installing Frame and I/G, install cabinets on the bottom line first.

※ Cabinet installation should be performed from the bottom to the top, left end → right end or right end → left end direction. (Fig.1)

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

③ Press the upper side of the Frame and assemble so that it slides towards downward. (Fig.3)

57	58	59	60	61	62	63	64
49	50	51	52	53	54	55	56
41	42	43	44	45	46	47	48
33	34	35	36	37	38	39	40
25	26	27	28	29	30	31	32
17	18	19	21	21	22	23	24
9	10	11	12	13	14	15	16
1	2	3	4	5	6	7	8

Fig.1 Installation sequence of the Cabinet

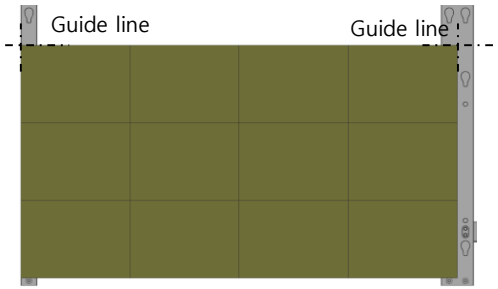


Fig.2 Adjust the corners to guide line

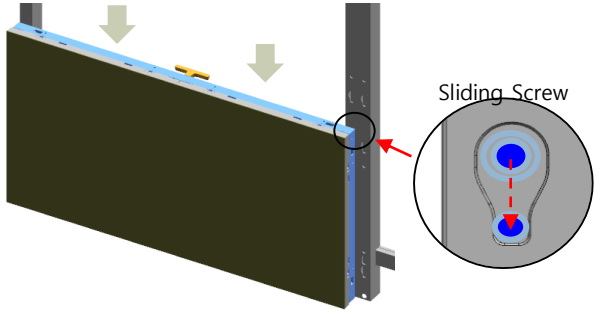


Fig.3 Sliding cabinet to Frame

5. Cabinet + Frame Installation

◇ Cabinet Installation

③ After installing the I / G, install the cabinet from the end of the first floor. (Fig.3-1)

※ Install the Align Jig and fasten the screw after attaching it to the cabinet. (Fig.3-2)

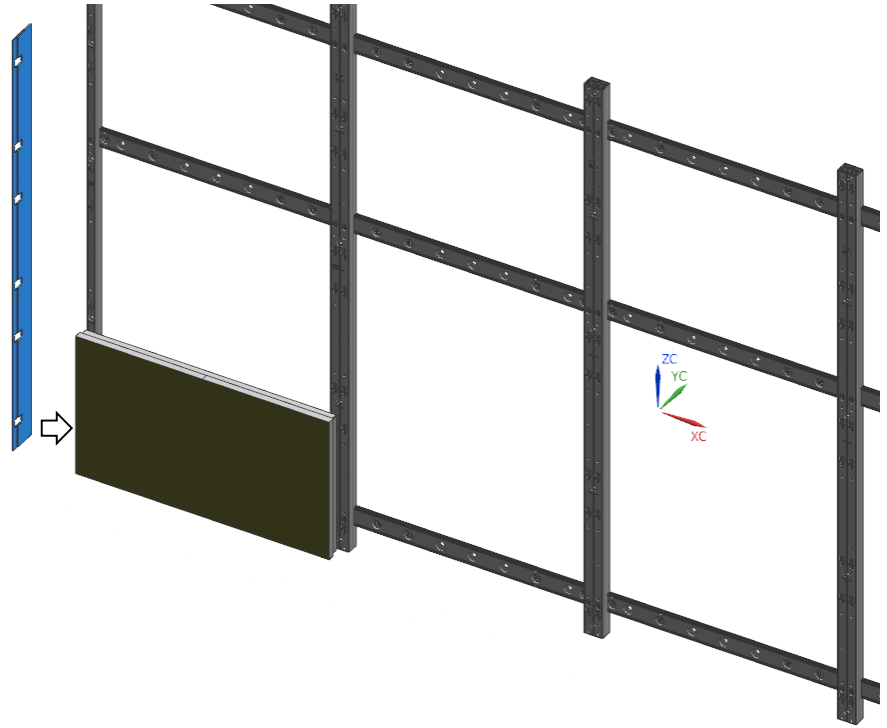


Fig.3-1 Cabinet Installation

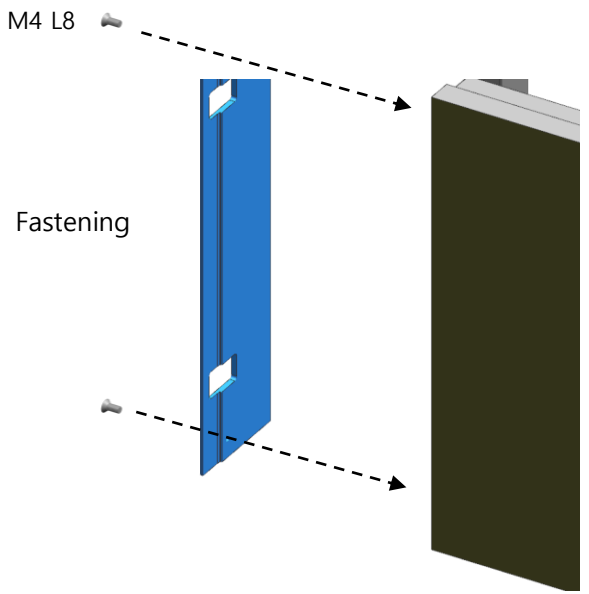


Fig.3-2 Screw fastening

5. Cabinet + Frame Installation

◇ Cabinet Installation

④ Install the first stage based on the cabinet installed according to the Align jig. (Fig.4)

⑤ When installing the second stage, fasten the screw after attaching it to the Align jig in the same way as the first stage installation method. (Fig.5)

⑥ Install the 3 and 4 steps in the same order. (Fig.6)

※ After installing each unit, make sure that the switch on the back of the cabinet is in the " STB " mode

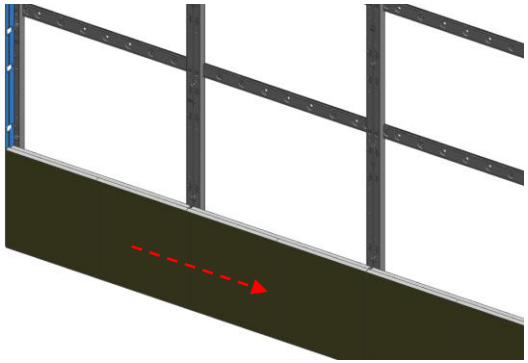


Fig.4 Installing the first stage of the Cabinet

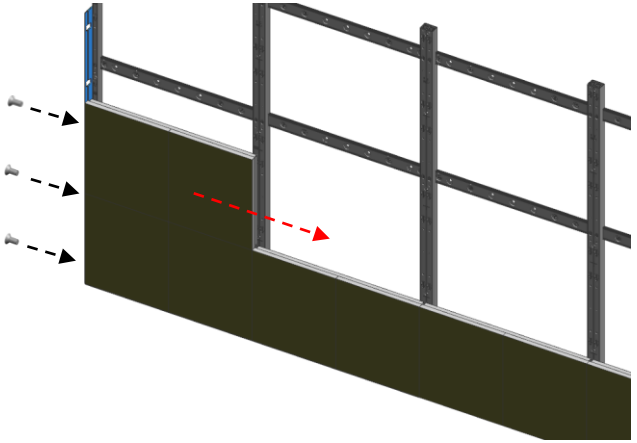


Fig.5 Fasten the screw with Align jig when installing the 2nd stage of the Cabinet.

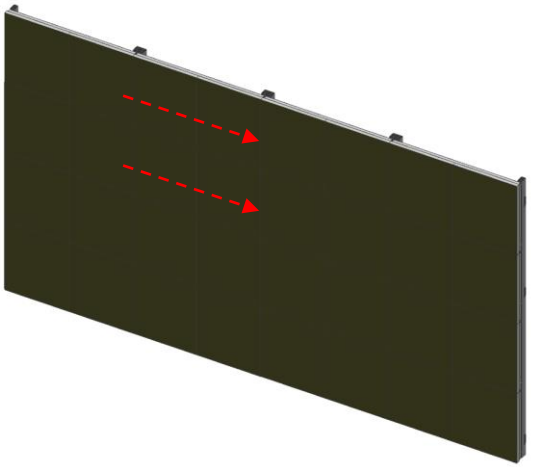


Fig.6 Installing of the 3th and 4th stage of the Cabinet

5. Cabinet + Frame Installation

◇ Cabinet Installation

1. When installing the second cabinet after the first, in order not to collide between modules
   - Push the ① and ② modules to the side.
   - Attach the edge protection jig V to the corner. (Fig.1)
   - Push the module ③ and ④ of the cabinet to be installed in the opposite direction.
   - Be careful not to collide with the modules. Slide the cabinet as shown in ⑤. (Fig.2)

   ※ When pushing the module, push the metal material on the side and be careful not to touch the front module.

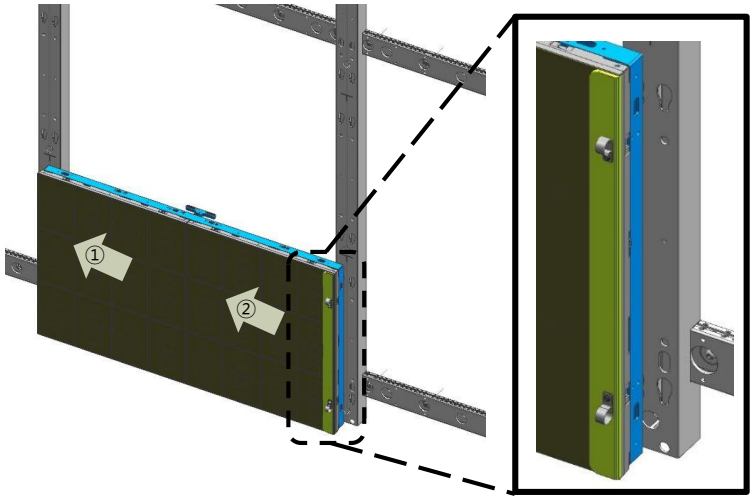


Fig.1 Attachment the edge protection Jig

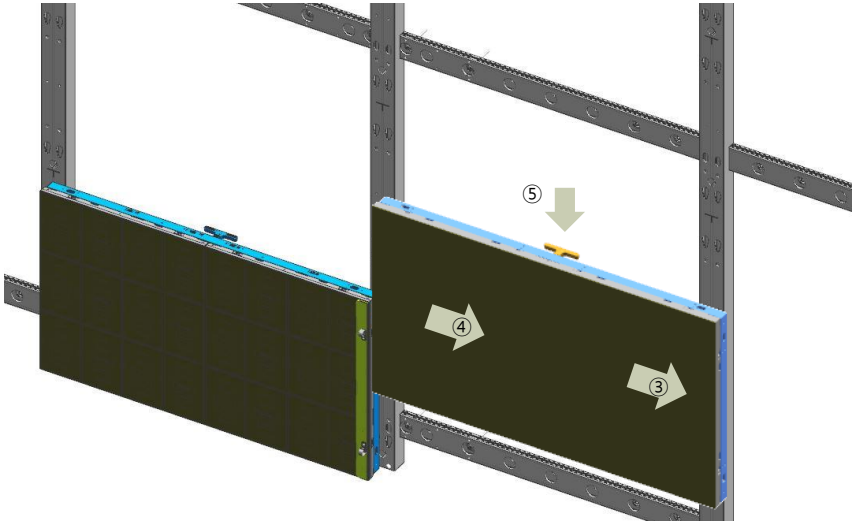


Fig.2 Installing 2nd stage of the cabinets

5. Cabinet + Frame Installation

◇ **Cabinet Installation**

2. When installing the second stage cabinet after installing the first stage, in order not to collide with the modules

- Push the ① and ② modules to the side.
- Attach the Edge Protection Jig H and the Edge Protection Jig V. (Fig.3)
- Push the module ③ and ④ of the cabinet to be installed in the opposite direction.
- Be careful not to collide with the modules. Slide the cabinet as shown in ⑤. (Fig.4)

※ The remaining 3 and 4 stages are also installed in the same way.

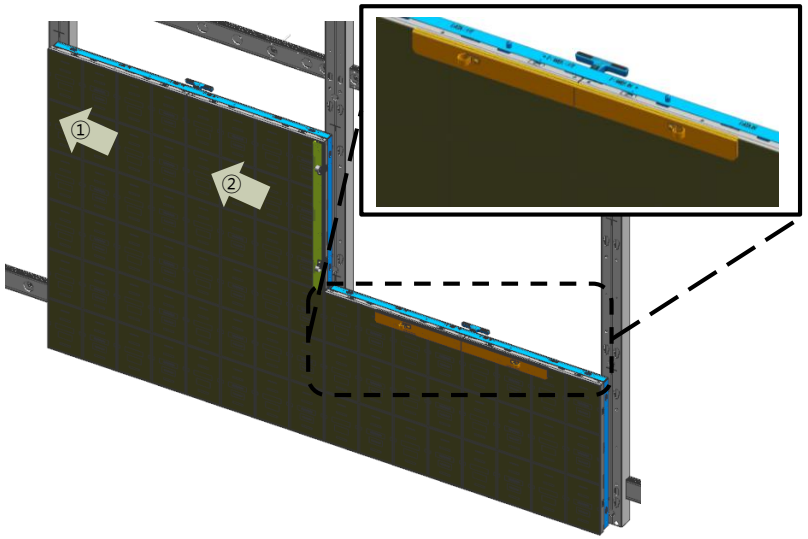


Figure .3 Attaching H / V for Edge Protection during 2nd Stage Installation

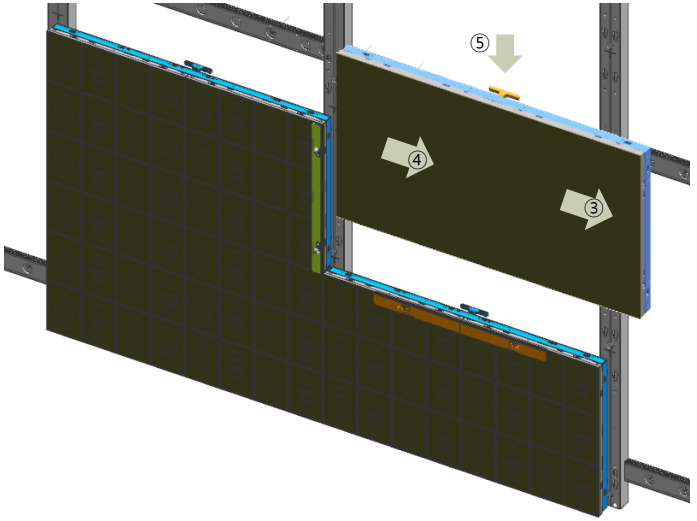


Fig.4 Installation of the 2nd cabinet in the 2nd stage

5. Cabinet + Frame Installation

◇ **Half-cabinet Z-step adjustment**

- Each Half-Cabinate has eight height controls. (4 corners / 4 sides)
- Two Half-Cabinet Z-Step adjustments are as follows

① Check the corner of the Half-Cabette to check if there is a difference.

② If the necessary part is the outer part, turn the exposed sawtooth to adjust the step.

③ If the internal part of Half-Cabinet needs adjustment, move left and right to secure space for adjustment.

Up, left, and right 2mm can be moved between each half-cabinet.

④ Adjust the step by turning the sawtooth using the step control jig. It is possible to flow 1mm in one lap.

※ The product in the shipment state can no longer be lowered because the module is located on the lowest cross section and can be adjusted by raising the height..

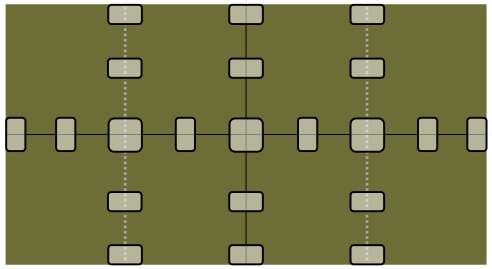


Fig.1 Step check point (2x2 case)

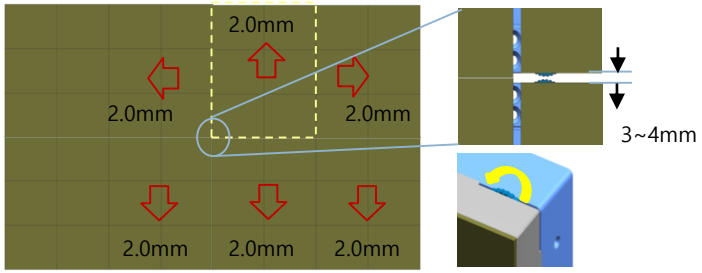
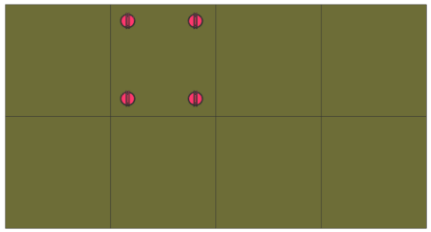


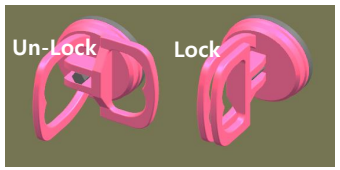
Fig.2 Securing the space between modules when controlling the step

5. Cabinet + Frame Installation

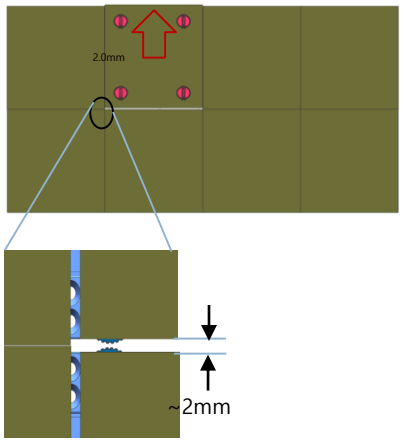
- **Adjust Z-leveling between modules.**

1. Attach Suction-Pad

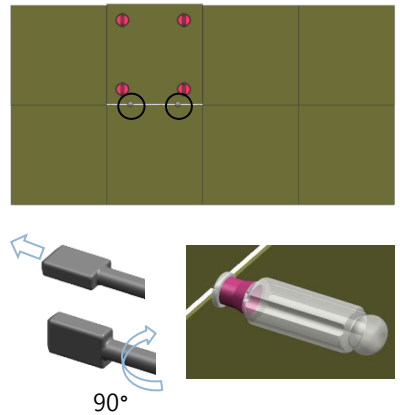




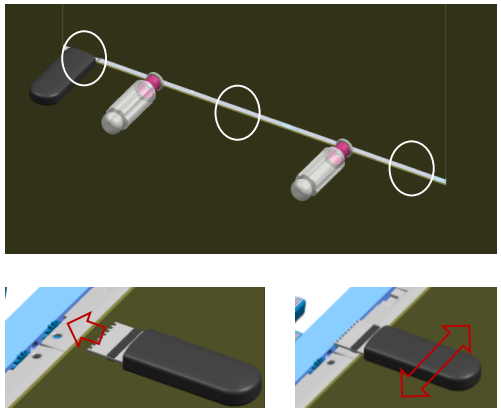
2. Move Module 2.0mm

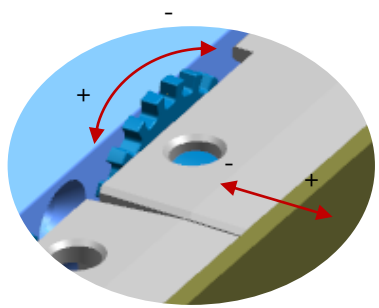


3. Insert Gap-Tool
Turn Gap-Tool 90degree



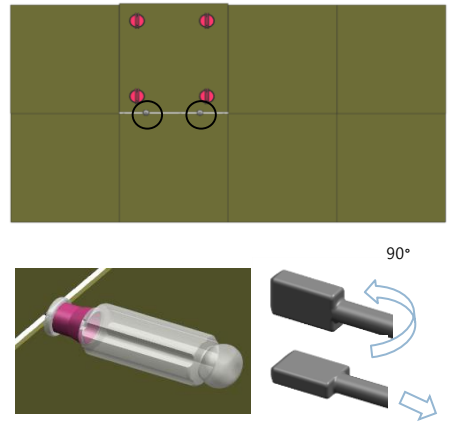
4. Insert Adjusment-Tool
Turn Holder Magnet





+ : counter clockwise -> module move forward
- : clockwise -> module move backward
Turn Holder 360° -> Module move 1.0mm

5. Hold Module by Hand
Turn Gap-Tool 90degree, Remove Gap-Tool
Check Flatness, Repeat process if needed



5. Cabinet + Frame Installation

- Assemble the cover PCB at the bottom of the cabinet after the first row cabinet installation.
- After assembling the Cover PCB, tighten the braid bolts to align the module pixels.

  * After installing each unit, make sure that the switch on the back of the cabinet is in the “ STB ” mode

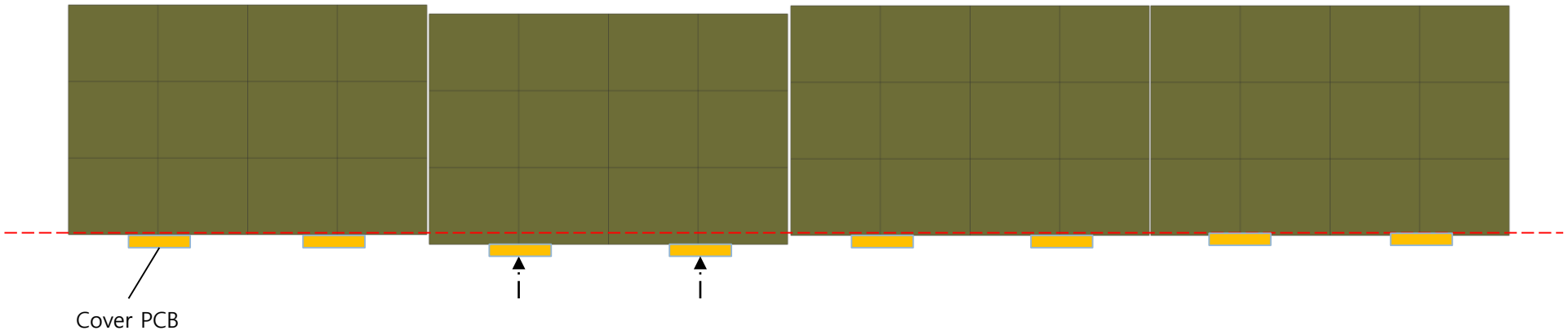
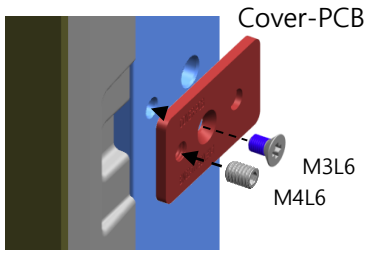
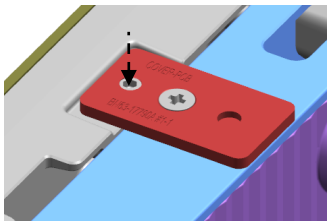


Fig.1 Fastening screw from Cover PCB to adjust pixel alignment





5. Cabinet + Frame Installation

◇ Align modules in X,Y direction

- Install the cover PCB on each border to align the module.

※ The module alignment must be performed after the step operation is completed.

① Assemble the Cover PCB in the upper left and right corners of the screen. M4L5 tanning bolts are assembled only 1 ~ 2mm and later. Additional tightening during alignment operation

② After assembling the Cover PCB, fasten the bandbolt from the left and right to work so that the vertical alignment between the central reference pixels is correct.

③ To meet the horizontal alignment of the central standard, slowly fasten the lowest tanning bolts.

④ After the alignment operation, the line that shows the gap on the screen removes the gap by tightening the blind bolt of the line.

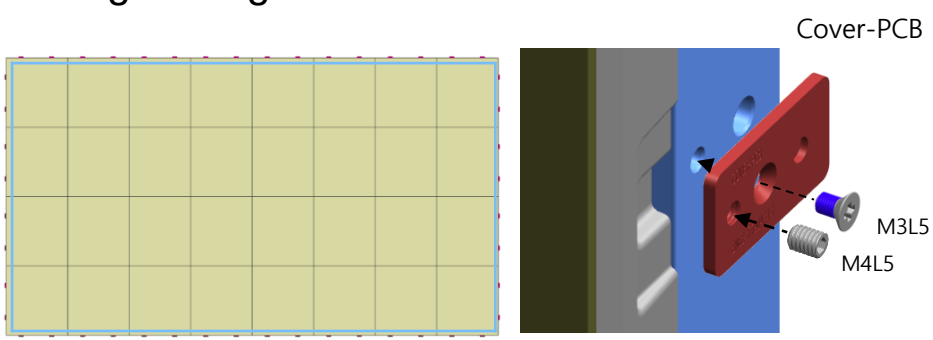


Fig.1 Cover PCB assembly point

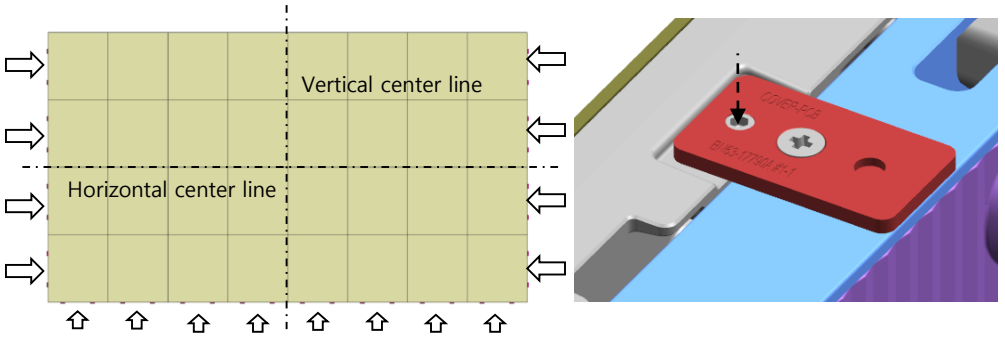


Fig.2 Push LED Module to center

5. Cabinet + Frame Installation

◇ Align modules in X,Y direction

- After installing the cover PCB on each border, install the Holder PCB.
  ※ Holder PCB is a device to prevent the gap between modules.
  ① Complete all alignment work using Cover PCB and install it.
  ② Assemble the holder PCB on the outer surface of the screen.
  ③ Fasten using the M4L6 dish head bolt.
  ④ Install one Holder PCB on the outer surface of all modules located on the outskirts of the top.

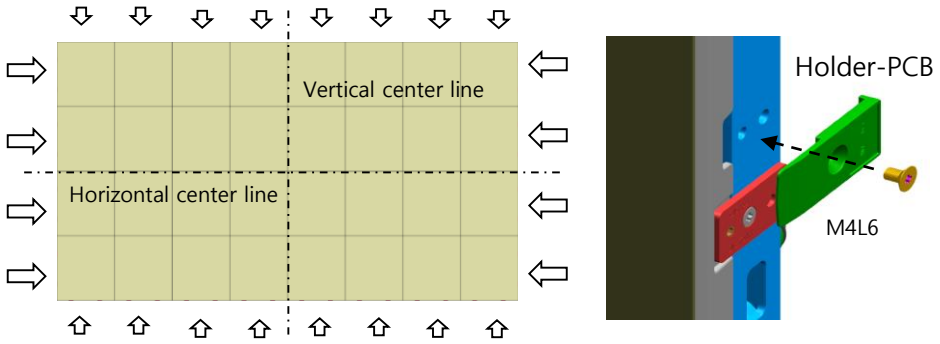


Fig.1 HOLDER PCB Assemby

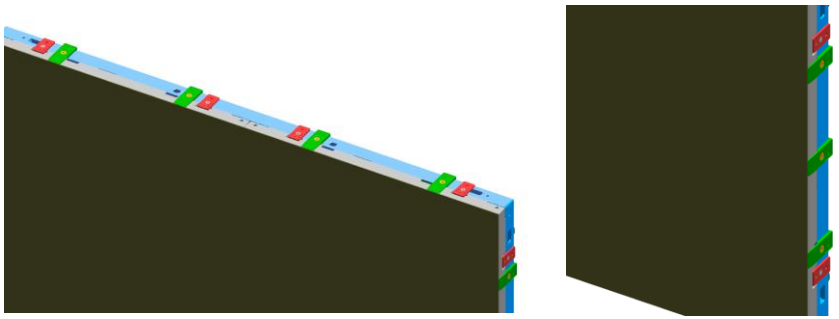
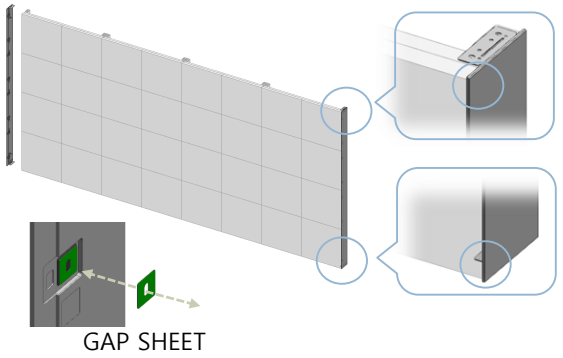


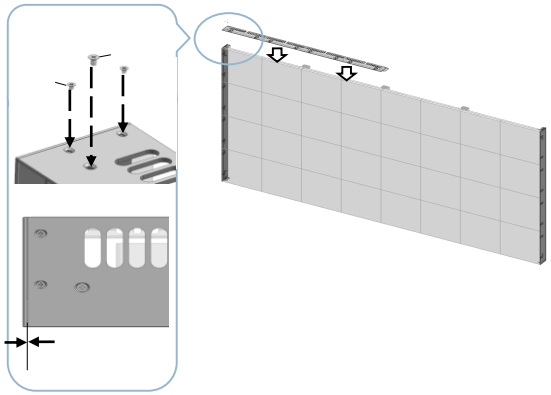
Fig.2 Holder PCB position each set

6. Disassembly & Front Service

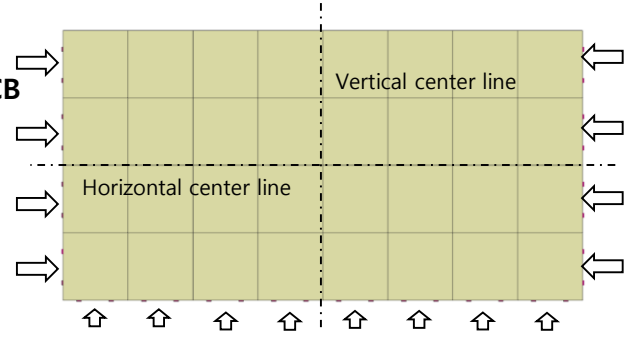
◇ **Remove bezel and remove Cover / Holder PCB**

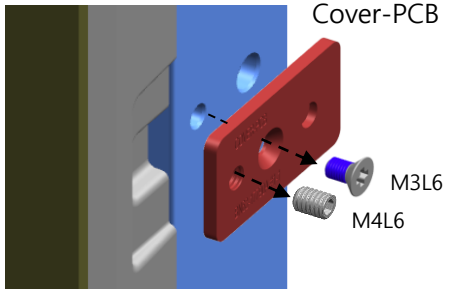
Remove bezel

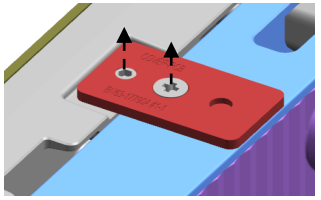


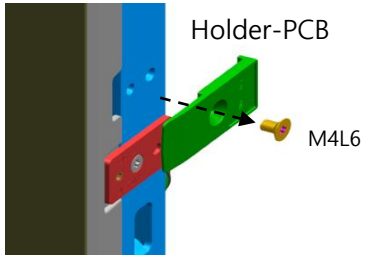


Remove bezel and Cover / Holder PCB









6. Disassembly & Front Service

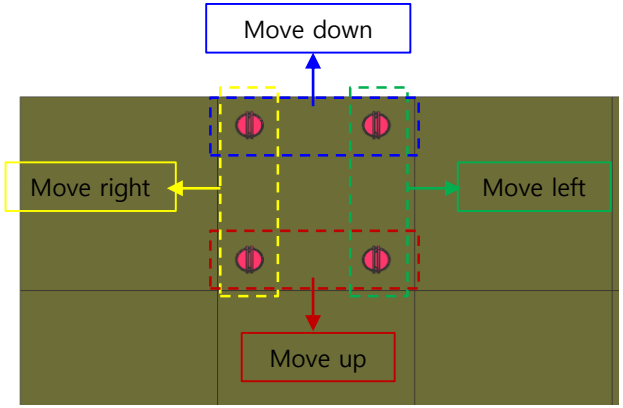
Absorber

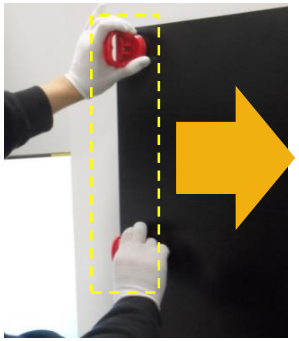
※ **Absorber** : Handle type tool that fixed on cabinet front side(LED side) to prevent damage to LED Modules while assembly/disassembly, moving half-cabinets.

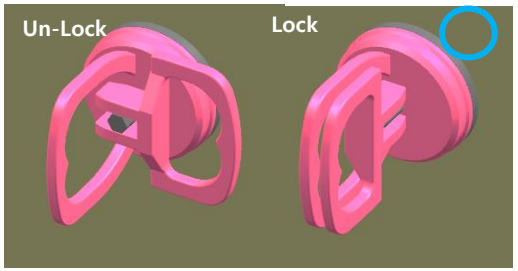
※ grasp as direction of push or pull.

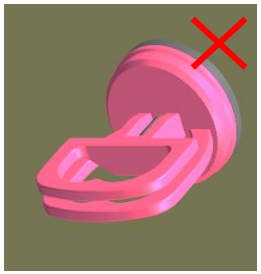
※ attachment location: about 5cm inside from corner of Half-Cabinet.

※ Location can be change according to the direction to move Half-cabinet

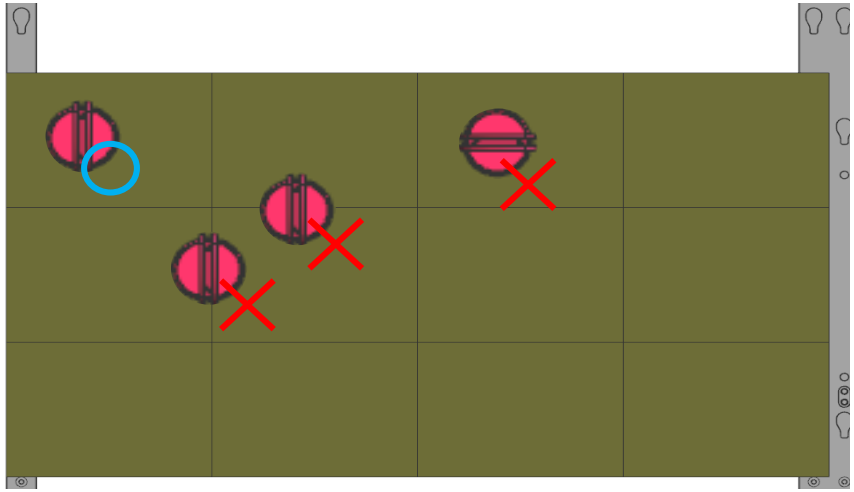








※ Handle should be locked in vertical.



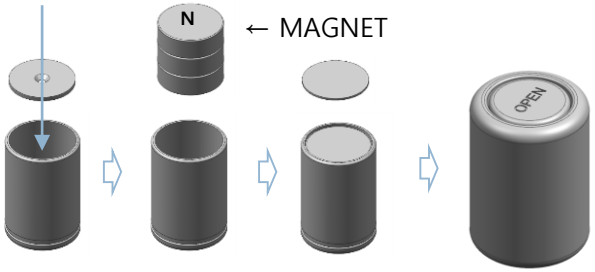
★Caution★ **Absorber must not be attached across the Module line.**

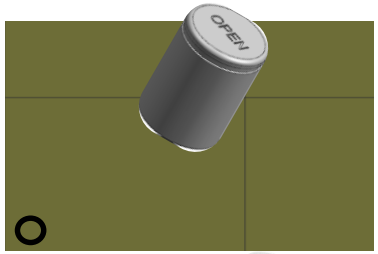
6. Disassembly & Front Service

- Magnet Jig

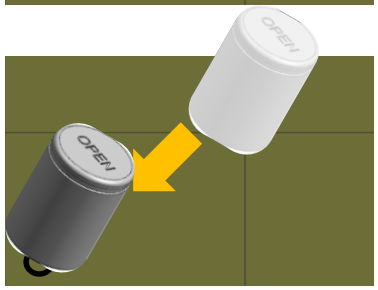
★Caution★ Cannot use Magnet JIG of other LED display model. (weak magnetic force)
Use proper Magnet JIG matching with specification.

※ MAGNET JIG (model name: CY-WJJPWP)

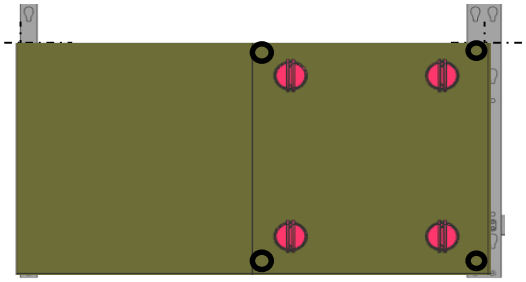




1. Access carefully on 45° not to damage modules.
   (Do not contact Jig to module, 1cm apart)



2. Access to magnet-locking, from center of module to corner.



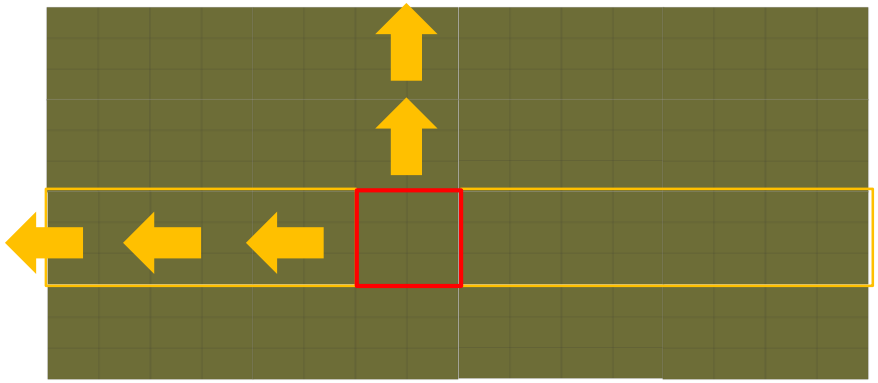
○ Magnet Lock location

3. Raise the jig vertically and carefully touch module.
   It makes 'Tak' sound when it's done.

★Caution★ Be careful not to damage module

6. Disassembly & Front Service

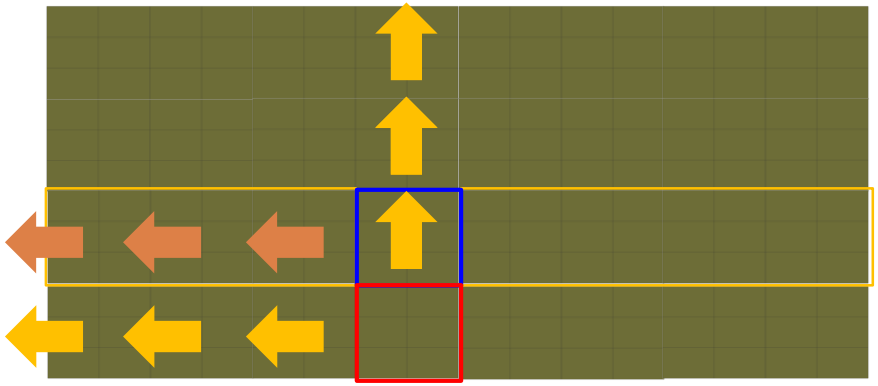
- **Half-Cabinet disassembly**



※ UHD Screen (16Cabinet / 32 half-cabinet)

Repairing Half- Cabinet

① Based on the Half-Cabinets to be replaced, the Half-cabinets on the left/right and top should be pushed outward.
(Edge Protection is needed. Refer to the Next)



※ UHD Screen (16Cabinet / 32 half-cabinet)

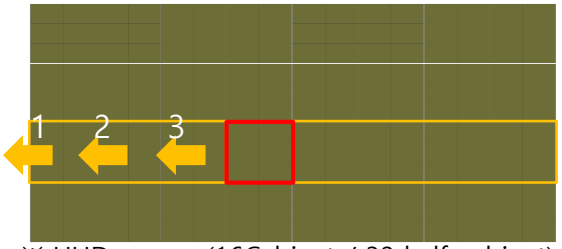
Repairing Half- Cabinet

Dissembled first before taking out repairing half-cabinet

② In case of bottom line cabinet, right upper side of half-cabinet should be disassembled with method of and cut off everything.

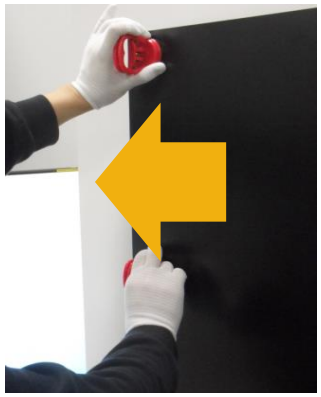
6. Disassembly & Front Service

- **Edge Protection**



※ UHD screen (16Cabinet / 32 half-cabinet)

Repairing Half-cabinet

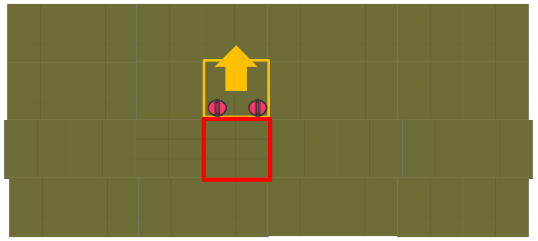


Push cabinets toward outside to get 2mm gap that located on same vertical line with repairing Half-cabinet

※ Cover PCB should be removed.

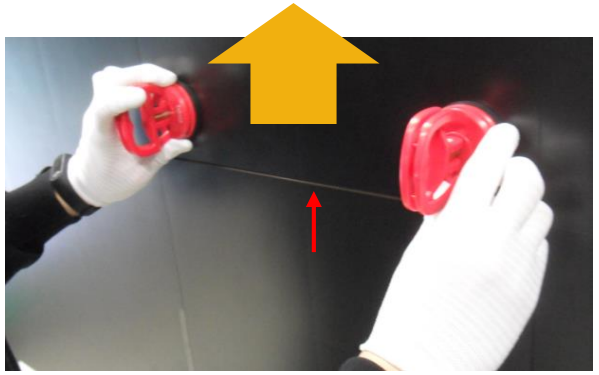
※ pushing order is important. Follow the numbers on left picture.

※ Use absorbers when you push to keep module from damaged.



※ UHD screen (16Cabinet / 32 half-cabinet)

Repairing Half-cabinet



② Push cabinet to upper side to get 2mm gap that located right above repairing Half-cabinet.
Hold it until next step..

※ Cover PCB should be removed.

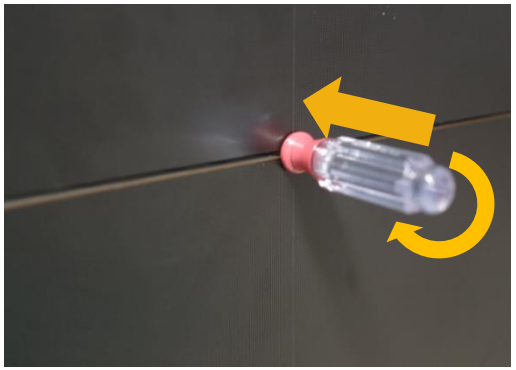
※ Use absorbers when you push to keep module from damaged.

★Caution★ Be careful not to damage module

6. Disassembly & Front Service

- **Edge Protection**

A/S-ASSY GAP TOOL
(BN81-17113A)



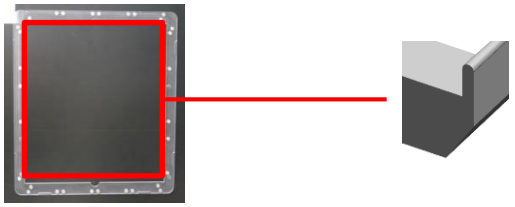
A/S-ASSY COVER PROTECTION
(BN81-17111A, Edge Protection)

★Caution★ Be careful not to damage module

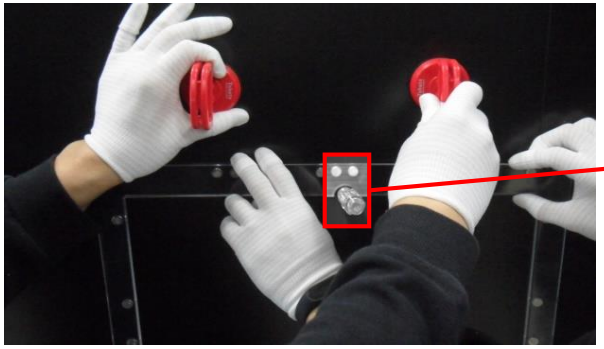
③ Insert GAP Tool at middle of Top/Bottom edge of half-cabinet to fix gap.

※ Insert horizontally, turn vertically and fix.

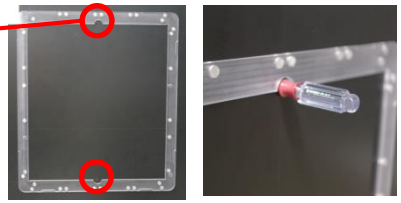
※ You have to lift repairing-half-cabinet to insert GAP Tool at bottom edge



※ Edge Protection : There is module protection blade on the edge.
Attach it with blade inserted into the gap.



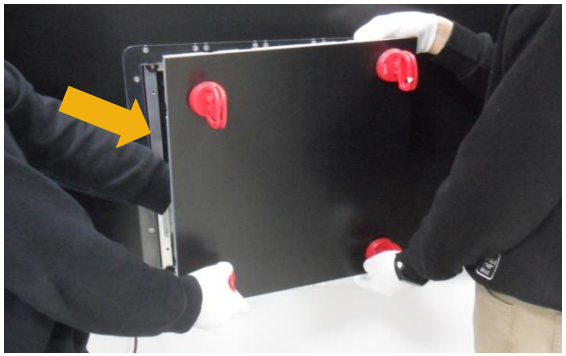
④ Attach edge protection to repairing half-cabinet and remove GAP Tool



※ Edge protection has room for GAP Tool.

6. Disassembly & Front Service

- **Removing cable and disassemble Half-Cabinet**



⑤ Identify location of cables need to be removed.

※ Refer to the TCON board picture. (top : Master / bottom : Slave)

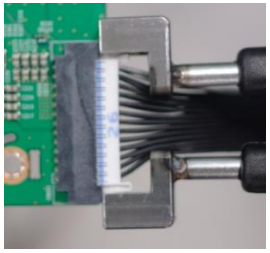
※ Remove the cables close to each other.

★Caution★ Do not apart Half-cabinet too far. Cable can be damaged. (recommending distance : 8cm)

⑥ Remove* 4 cables and disassemble Half-Cabinet.

※ For power cable, press side locking on both side of connector with **PLIER JIG**..

※ Leave edge protection attached for assembly of the new Half-Cabinet



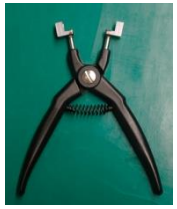
*** Cables need to be removed (4 kinds)**

- Daisy Chain FFC Cable
- Redundancy Power Cable
- SMPS Power Cable
- OCM Cable

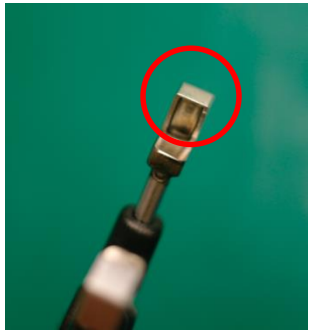
★Caution★ Be careful not to damage connector pin when remove Cable.
Be careful not to damage cabinet next to.

6. Disassembly & Front Service

- **Removing cable and disassemble Half-Cabinet – Using PLIER JIG**

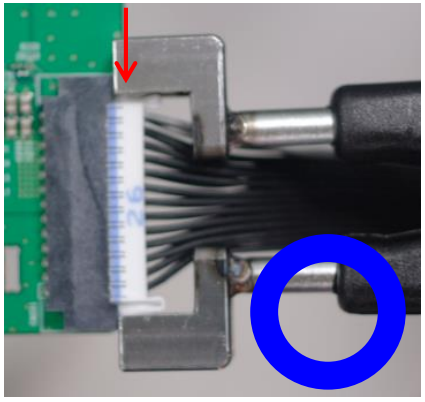


A/S-ASSY PLIER JIG

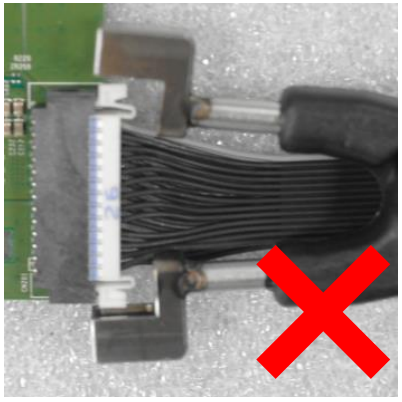


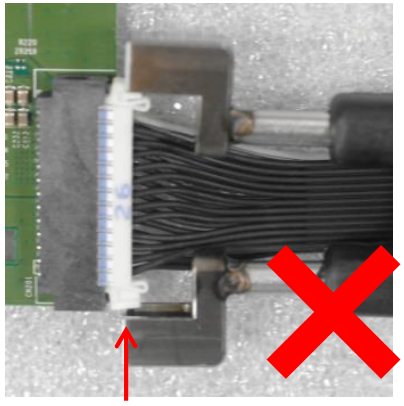
■ Using PLIER JIG, remove 26P Power Cable(SMPS, Redundancy)

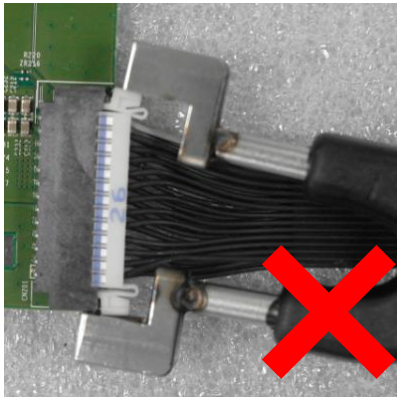
※ There is a groove that takes locking on the top head.
※ Locking can slip if it does not get to the groove correctly



※ Fix the JIG to take entire side-lock





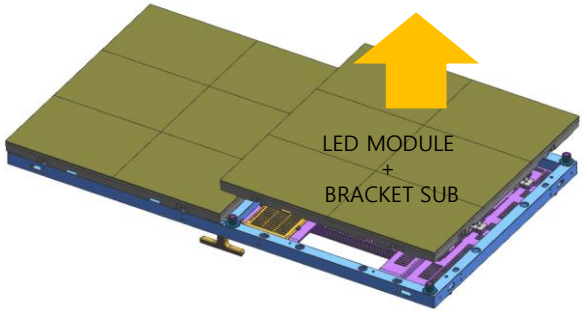


※ wrong case : only clipping end of side-lock

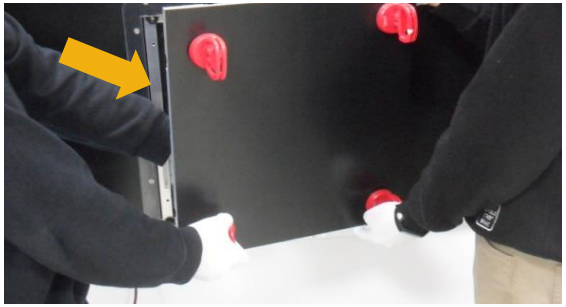
★Caution★ Be careful not to damage connector pin when remove Cable.
Be careful not to damage cabinet next to.

6. Disassembly & Front Service

- **Changing to new Half-Cabinet** ※ New cabinet must be changed after conduct Dehumidifying mode Aging. (Refer to page 100)

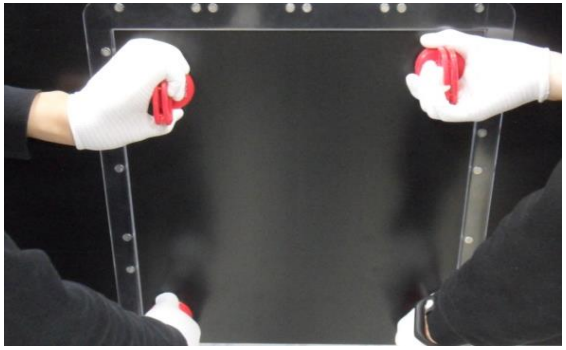


⑦ Remove Cover corner from Buffer Cabinet laid on the floor and lift up half-cabinet with absorber attached. Remove the Half-Cabinets and insert them between edge protection and connect cables of ⑦.

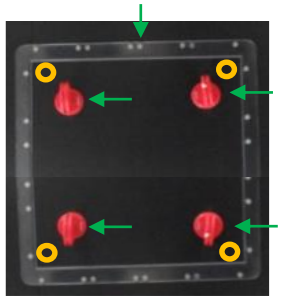


★Caution★ Be careful not to damage module

⑧ Put new half-cabinet with into the edge protection and lock with magnet jig. Pull out edge protection after locked



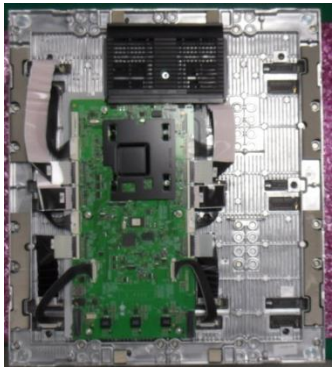
Location of magnet locking
Remove absorbers and edge protection



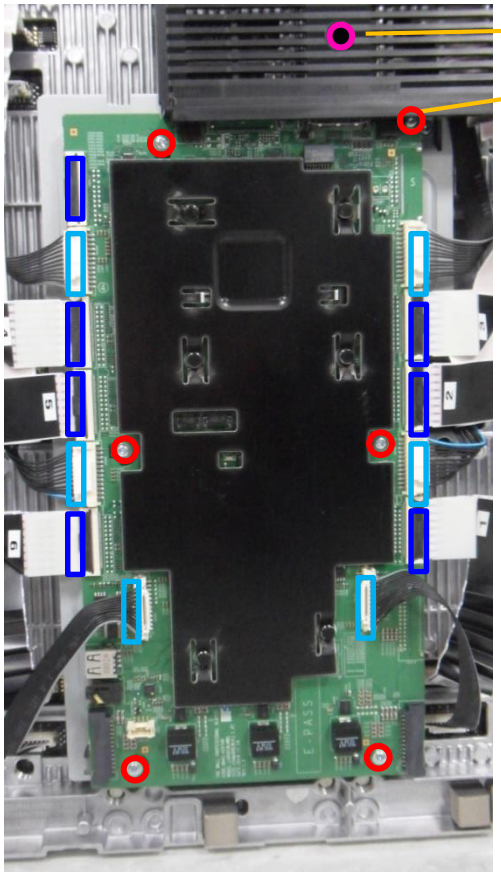
⑨ Push back moved Half-cabinets and assemble Cover PCB and bezel.

6 Disassembly & Front Service

- **Remove Cable and screw**



※ rear side of half-cabinet

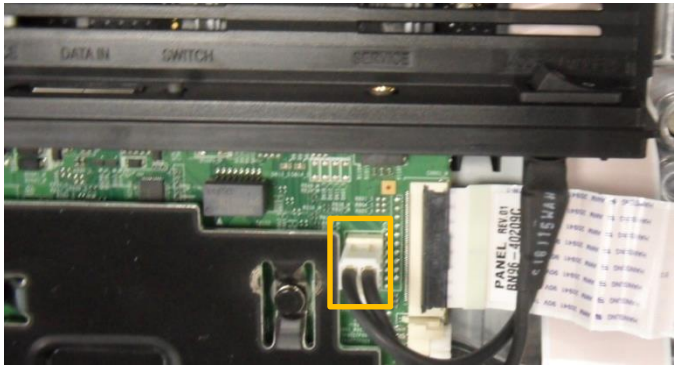


① Remove Cover Terminal.

Cover terminal Screw point

Remove Cover Terminal first since this screw Point is concealed.

※ Note that Master Cover terminal has switch on it.



x1 SCREW-MACHINE [6001-002755] (M3,L6)

x6 SCREW-MACHINE [6001-003016] (M3,L5)

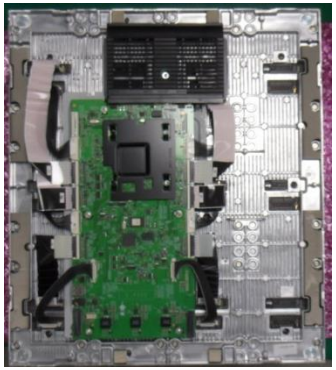
Screw point (6 + 1)

FFC Cable (6 or 7)

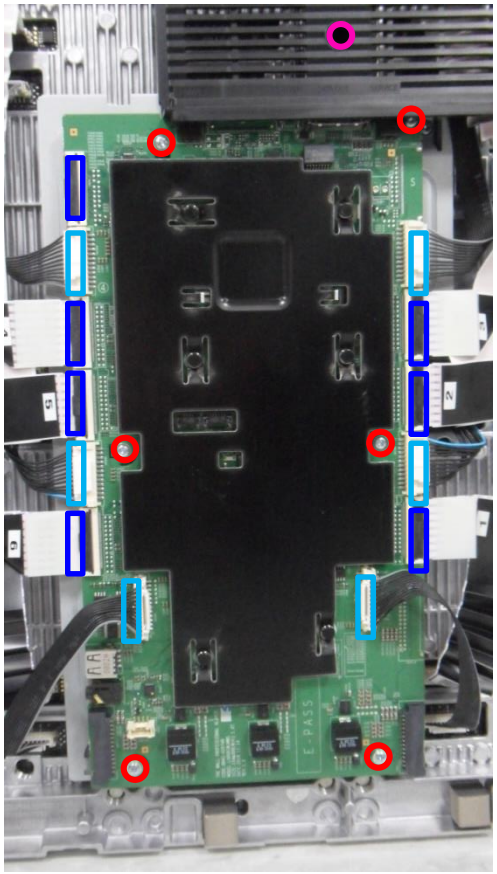
Power Cable (6)

6. Disassembly & Front Service

- **Remove Cable and screw**



※ rear side of half-cabinet



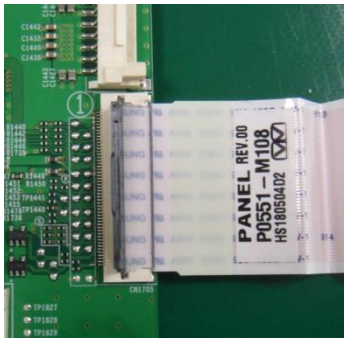
x1 SCREW-MACHINE [6001-002755] (M3,L6)

x6 SCREW-MACHINE [6001-003016] (M3,L5)

Screw point (6 + 1)
FFC Cable (6 or 7)
Power Cable (6)

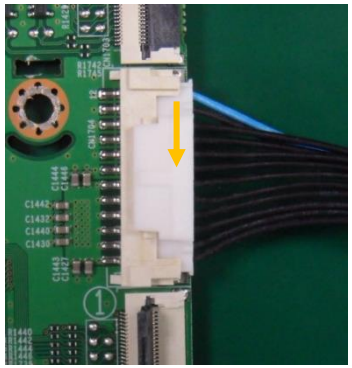
② Remove cable and screw of TCON Board.

※ FFC Cable



Lift up lock and pull out to remove cable.

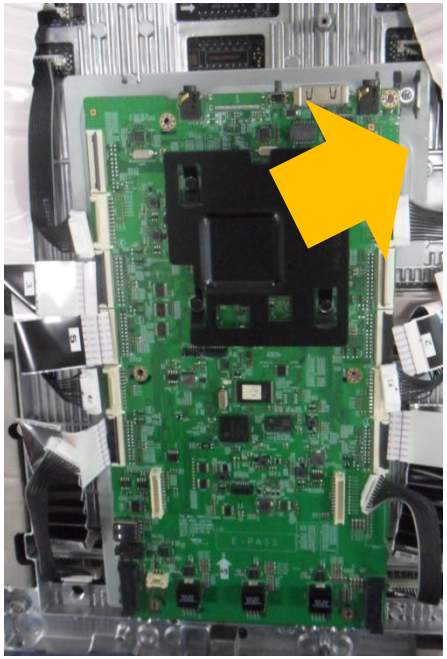
※ Power Cable



Pushing down the lock at the top, pull out to remove cable.

6. Disassembly & Front Service

- **Remove and Change TCON Board**



Bracket-PCB

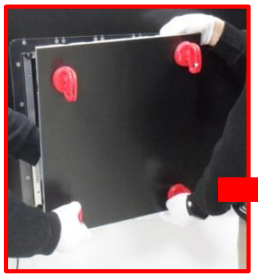
③ Remove TCON Board and replace it.

④ Assembly is reverse order of disassembly.

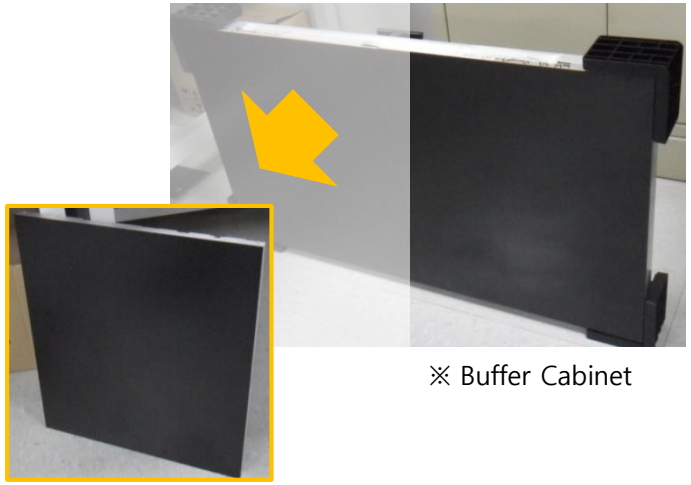
※ The Gap pad is attached to the TCON or Bracket-PCB, so don't skip when replacing new board.

6. Disassembly & Front Service

- **Module (Half-cabinet Module) Store & Packaging**



※ Repairing Half-Cabinet

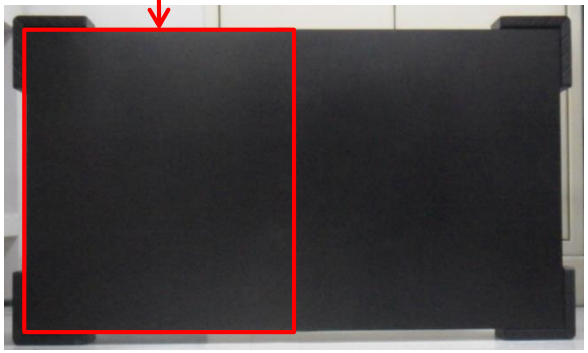


※ Buffer Cabinet

※ New Half-Cabinet → attach to Screen

① Repairing Half-cabinet should be stored with buffer cabinet.
Dissemble Half-Cabinet from existing Buffer Cabinet
Change it with Repairing Half-cabinet

※ Repairing Half-Cabinet

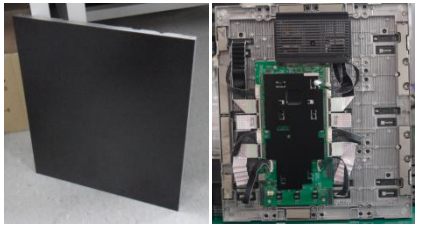


※ Buffer Cabinet changed half with repairing half-cabinet

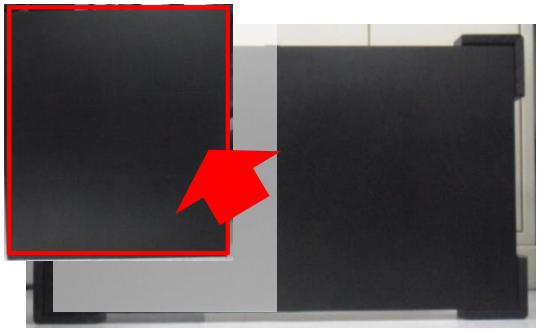
② Repairing Half - Cabinets will be packed and changed by a service engineer in charge.

6. Disassembly & Front Service

- **Module (Half-cabinet Module) Store & Packaging**



※ Module (Half-Cabinet module) (front/rear)



※ Remove repairing half-cabinet from buffer cabinet

③ ※ Remove repairing half-cabinet from stored buffer cabinet.

※ The Wall LED Module BOX

④ Package Half-cabinet in The Wall LED Module BOX.

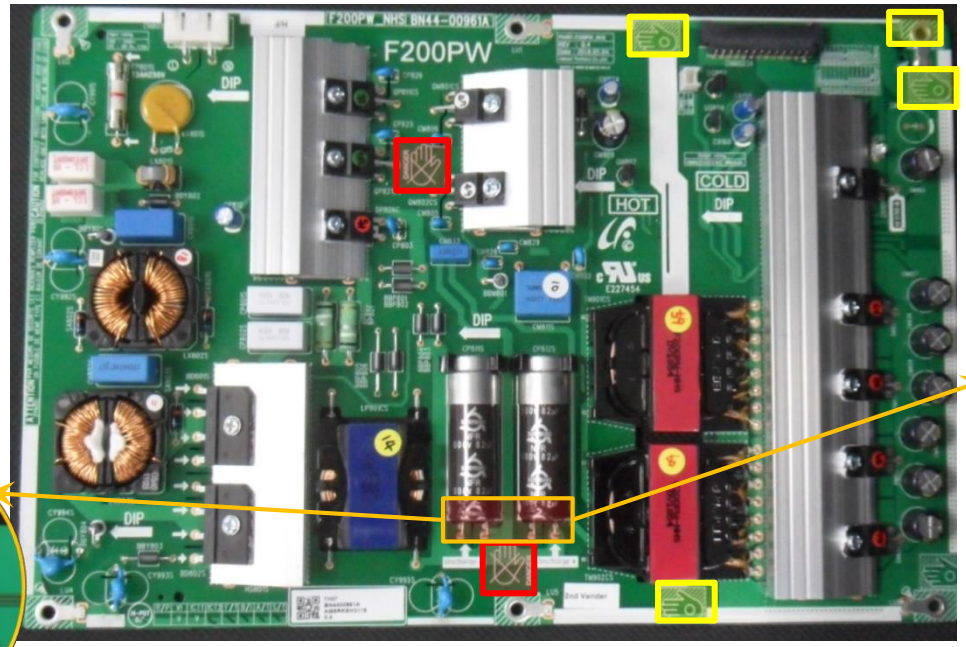
※ Package with EPE(protective material) in the box.

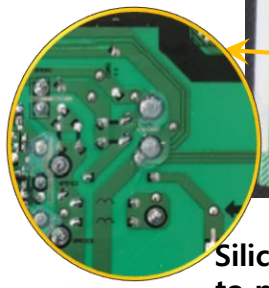
※ Pack in the box like the image.

6. Disassembly & Front Service

◆ Caution : SMPS Discharge

- Before you touch or remove the SMPS, touch the two discharge points using a discharge Jig to verify the SMPS is full discharged.





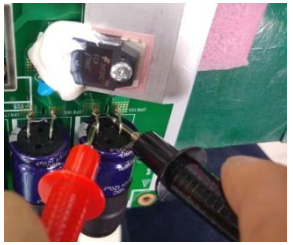
Silicon Coating
to prevent from electric shocking
(Back side)

Grab point :
Touchable Area without additional discharging process)

Do not grab point :
(Not touchable Area without additional discharging process)

※ Before you disassemble SMPS, you have to **discharge SMPS.**
If you don't have any discharge jig, use Digital-Multimeter OR wait sufficient time for being discharge.

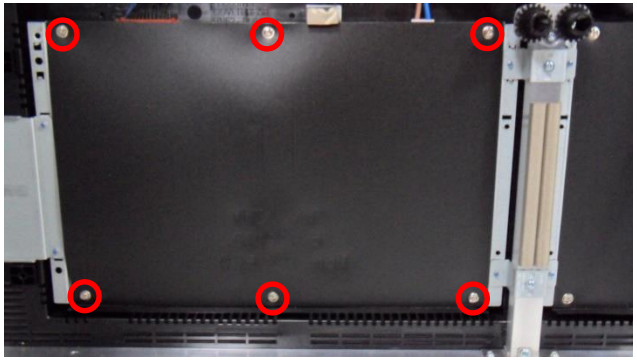
Main cap Discharge point



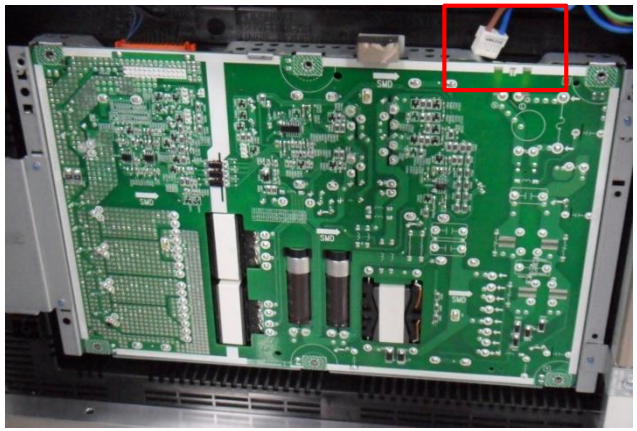
1. Put Multi-meter in test mode.
2. Contact the cap with a prove.
3. When the cap is discharged, the current does not flow.

6. Disassembly & Front Service

- **SMPS disassembly**



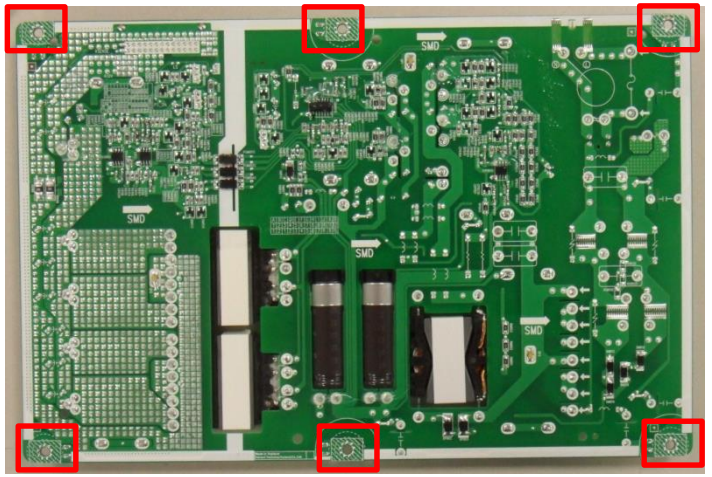
x6 SCREW-MACHINE [6001-002781]
(M3,L8)



① Remove screws over the insulator on SMPS. (6EA)

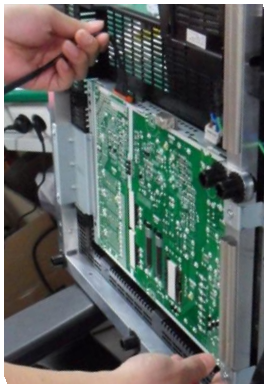
② Remove AC INLET Cable connected to SMPS.
(Do not remove 26pin Power Cable yet)

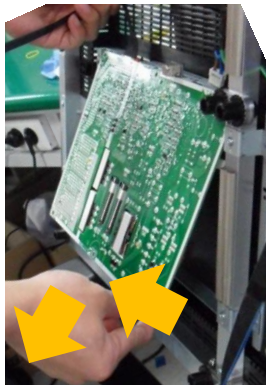
★ Caution ★ **Do not touch except marked spot.**



6. Disassembly & Front Service

- **SMPS disassembly**





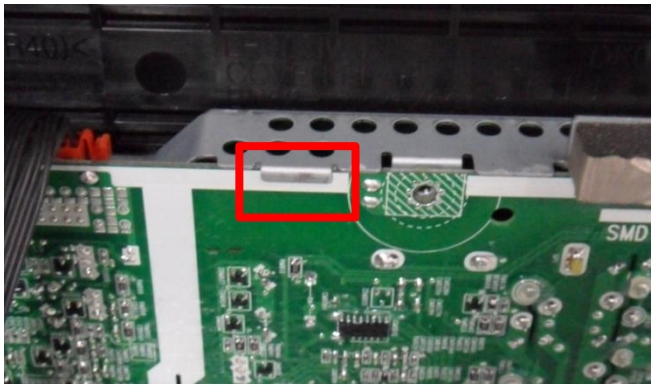
※ Hold 26pin Power Cable and bottom of SMPS and lift bottom and pull down.

③ Hold 26pin Power Cable and bottom of SMPS.

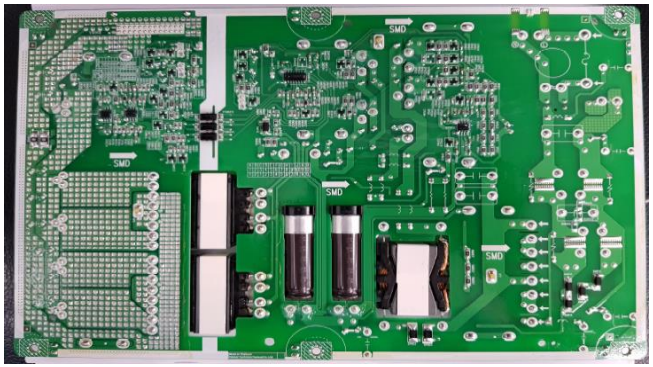
④ Lift up the bottom part and pull down to separate.
Be careful of protruding part at top of SMPS shield.

★ Caution ★**Be careful of falling SMPS down when removing from SMPS shield**

⑤ Assembly is done in reverse order.

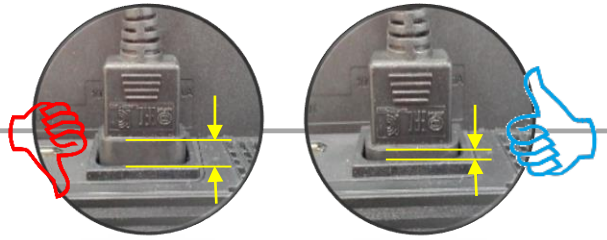


※ Protruding part at top of shield to fix SMPS



※ SMPS service SEC code : BN44-00961A (Master/Slave same)

7. Cable Connection

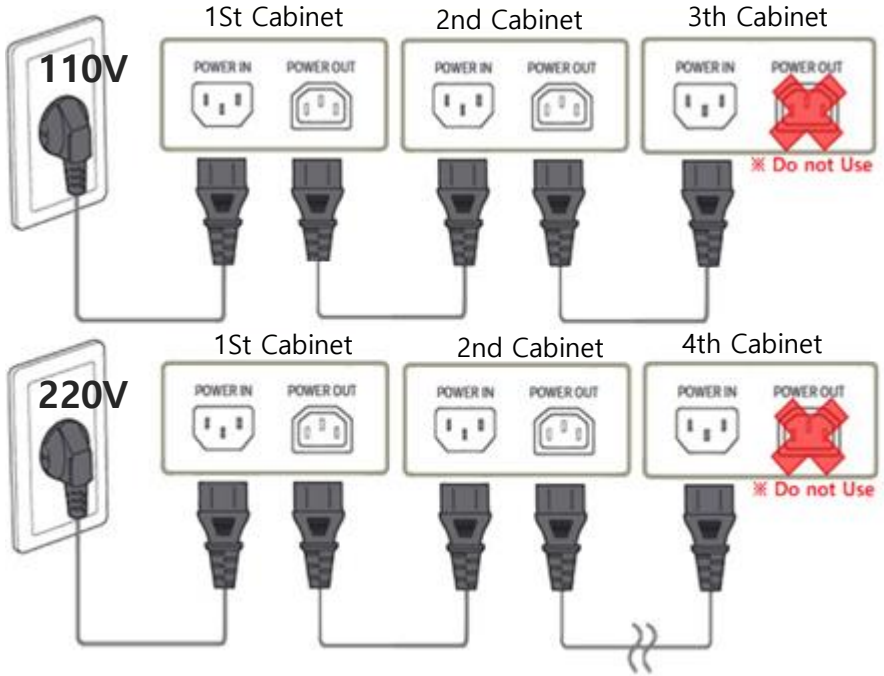


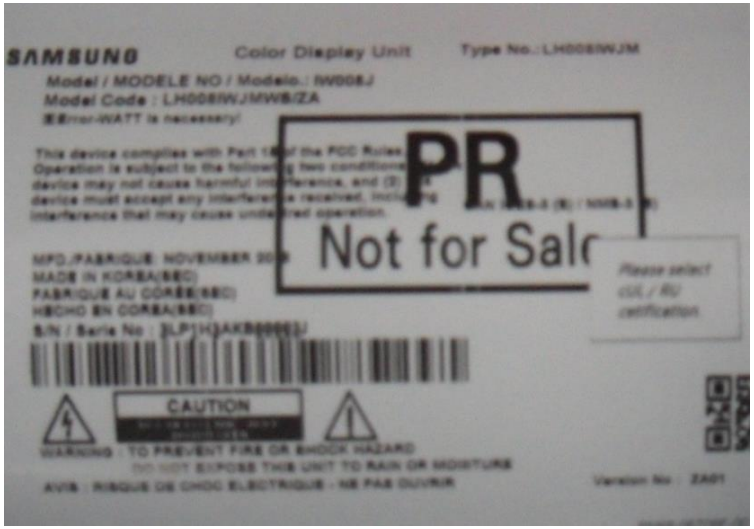
7-1 Cable Connection

IMPORTANT

- When using 110V power, up to 3 power connections including Master Cabinet are allowed.
- When using 220V power, up to 4 power connections including Master Cabinet are allowed.
- **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.

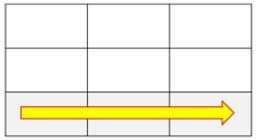




7. Cable Connection

7-2. The caution for Cabinet installation and Cable connection(Full Front)

1) The installation order proceeds from the left or right end to the other end.
→ Cabinet installation order and cable connection order may be different.



2) After installing one line of cabinet, check the OCM / Power Cable connection before installing the next line.

3) If you want to connect the OCM cable in the upper direction, connect it to the lower cabinet first and then connect it to the upper cabinet.

4) The two OCM connectors of Interface Gender (I / G board) must be connected to the first and last cabinets of Screen configuration, respectively.

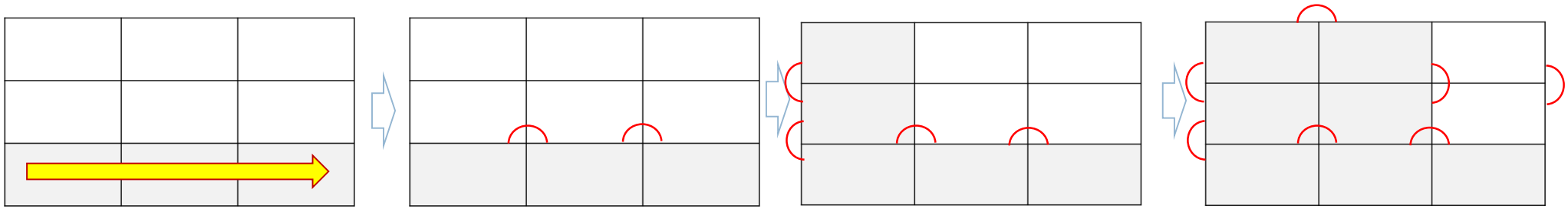
7. Cable Connection

7-3 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

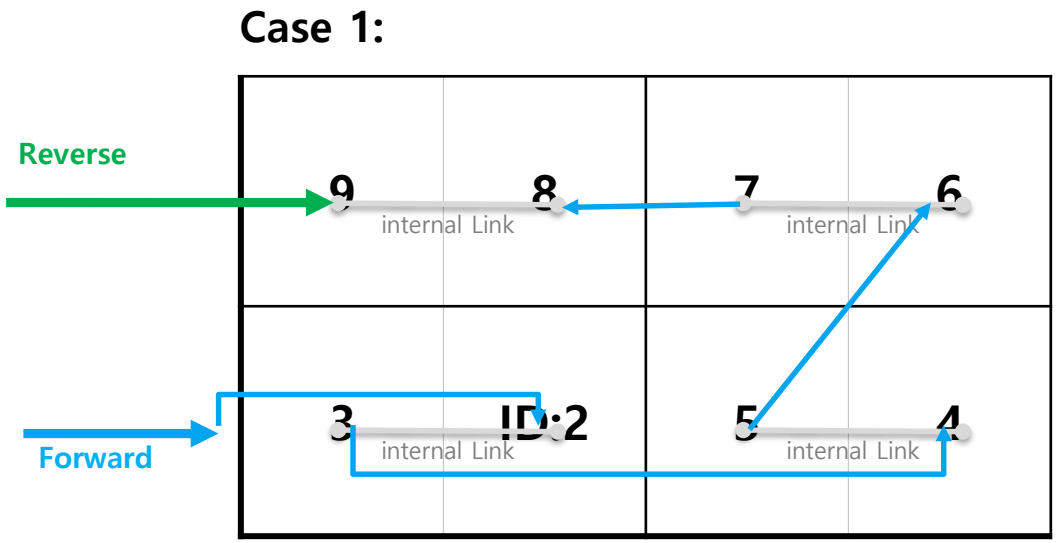
3) 2nd row : Bottom to top

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

4) Same way

7-4 Cable Connection : Data flow standard [FHD]

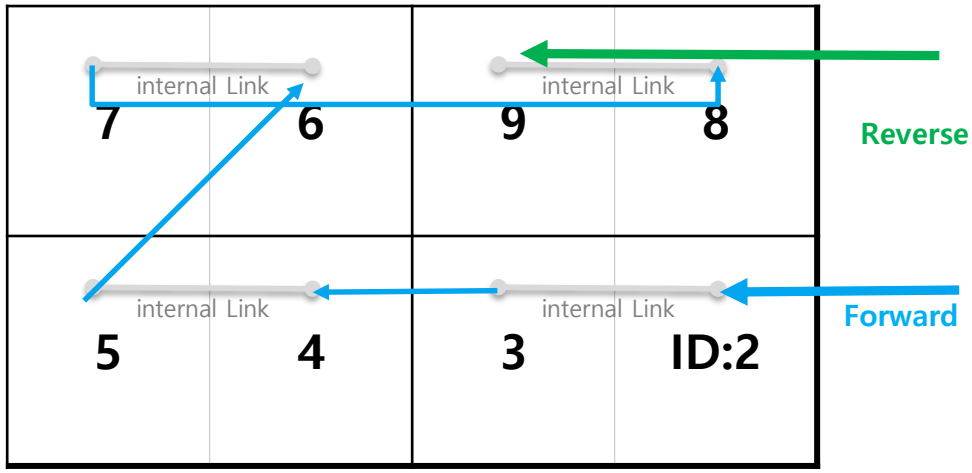
◎ IW008J : Connect OCM cable Forward direction



7-4 Cable Connection : Data flow standard [FHD]

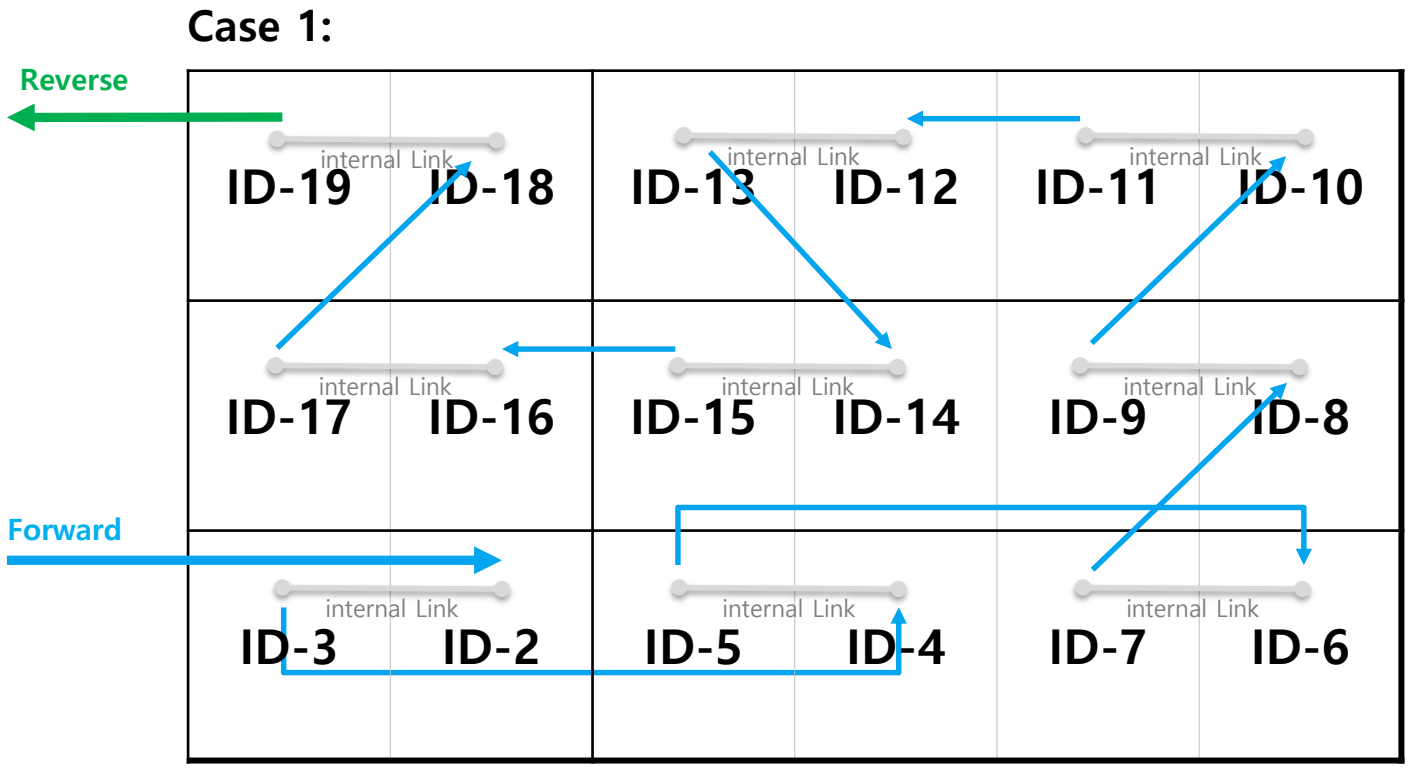
◎ IW008J : Connect OCM cable Forward direction

Case 2:



7-4 Cable Connection : Data flow standard [FHD]

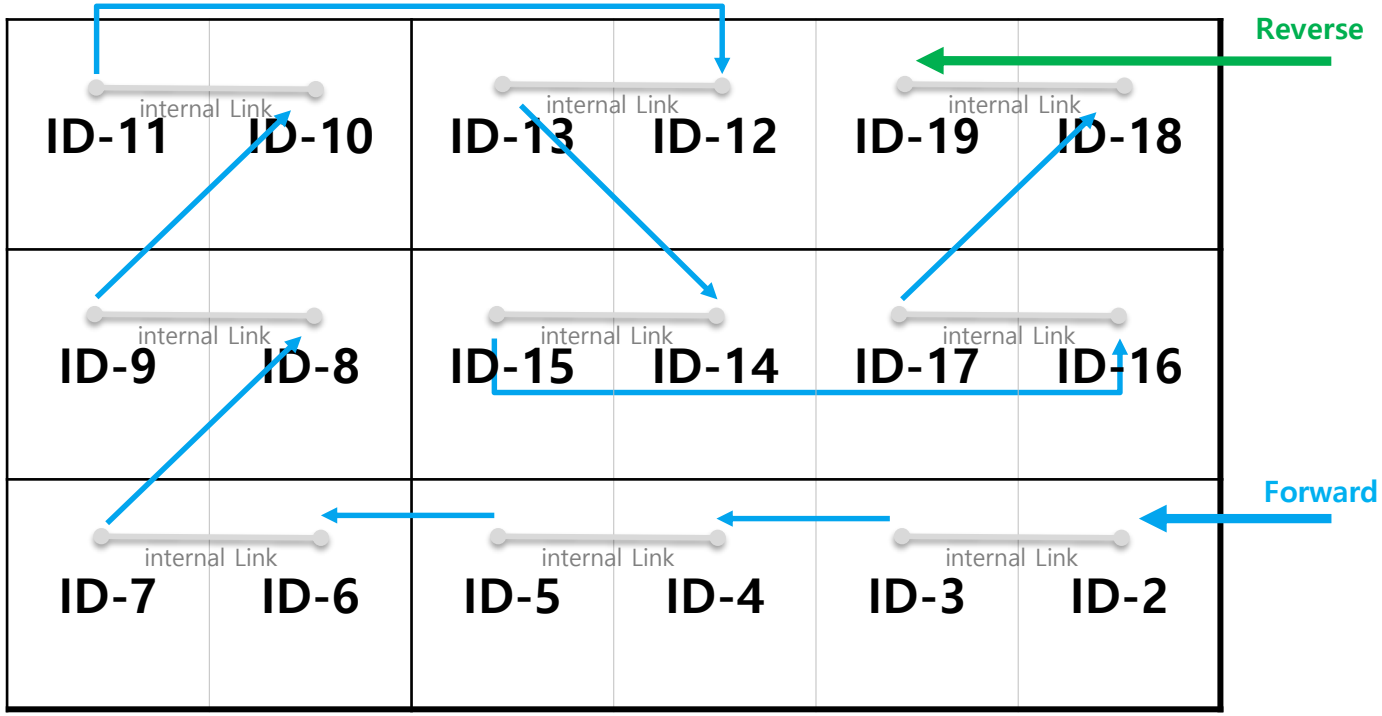
◎ IW012J : Connect OCM cable Forward direction



7-4 Cable Connection : Data flow standard [FHD]

◎ IW012J : Connect OCM cable Forward direction

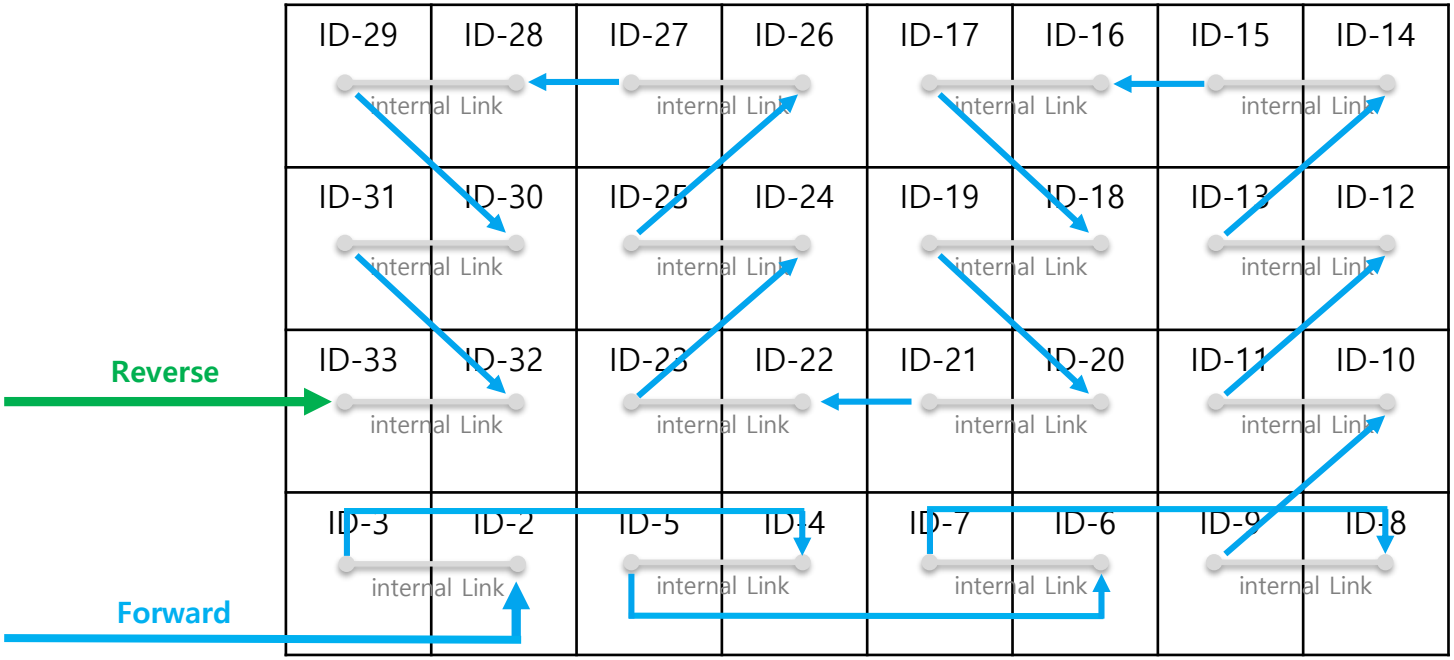
Case 2:



7-4 Cable Connection : Data flow standard [FHD]

◎ IW016J : Connect OCM cable Forward direction

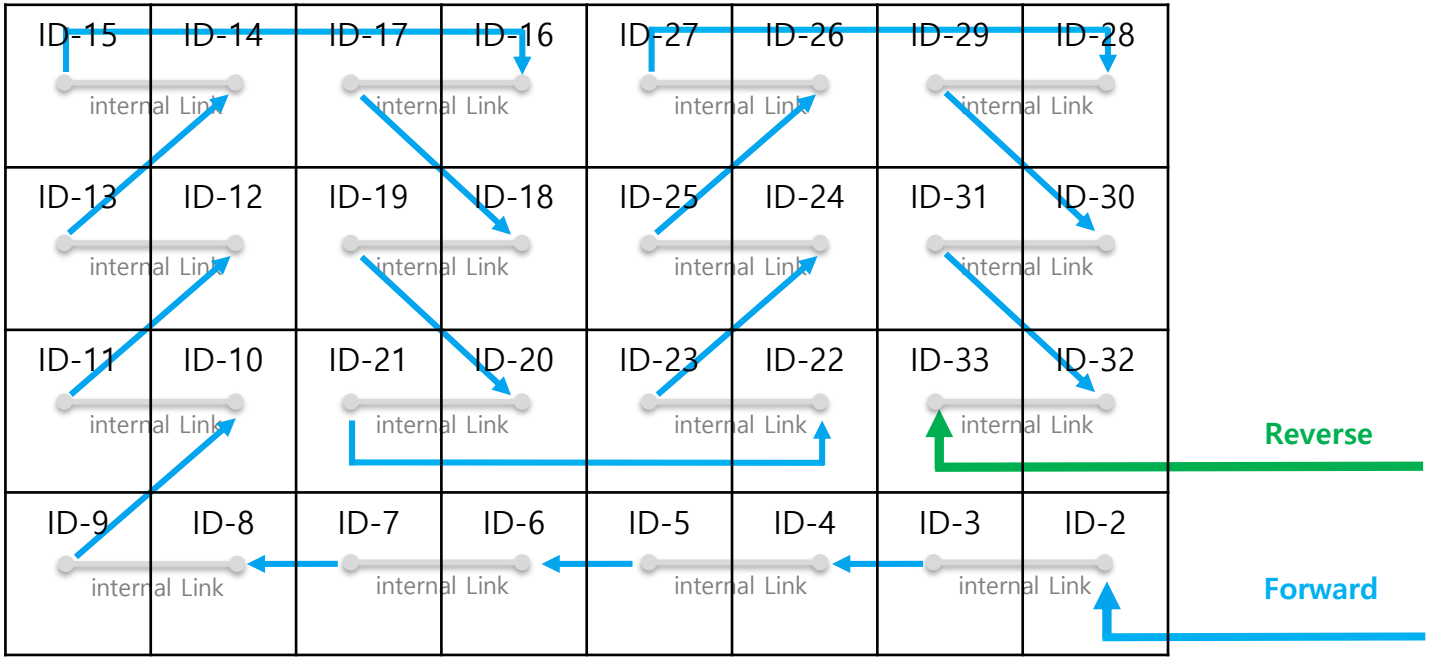
Case 1:



7-4 Cable Connection : Data flow standard [FHD]

◎ IW016J : Connect OCM cable Forward direction

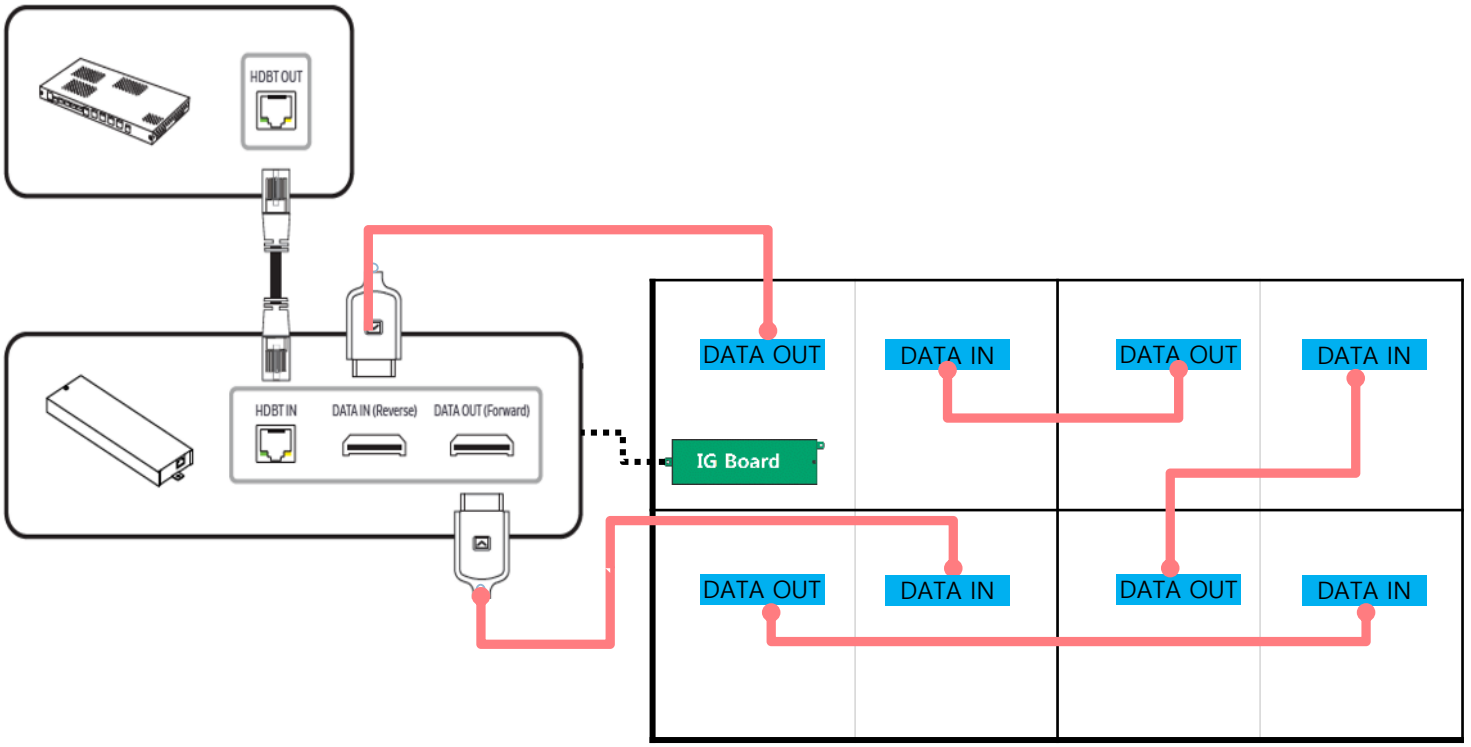
Case 2:



7-5 Cable Connection : OCM cable installation standard

◎ Cable connection required after cabinet installation

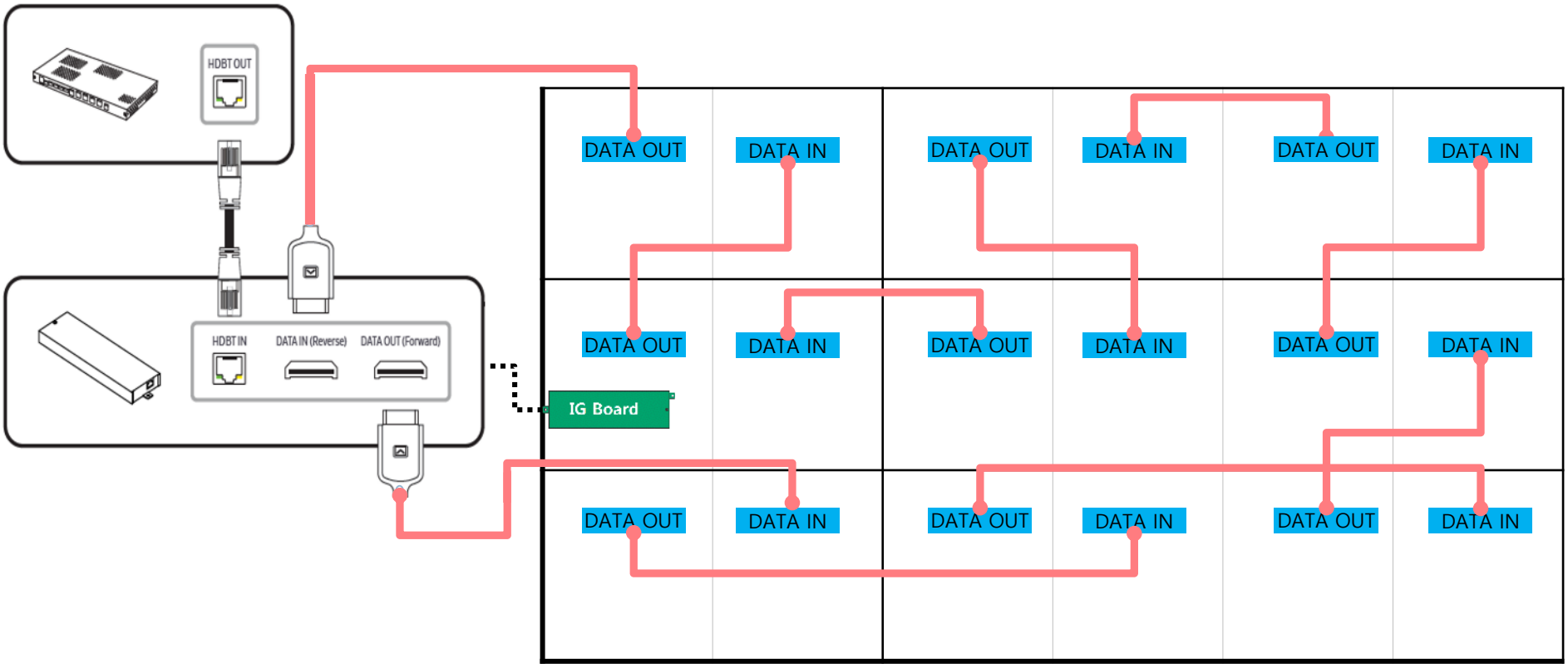
- 2x2 Connection (FHD IW008J)



7-5 Cable Connection : OCM cable installation standard

◎ Cable connection required after cabinet installation

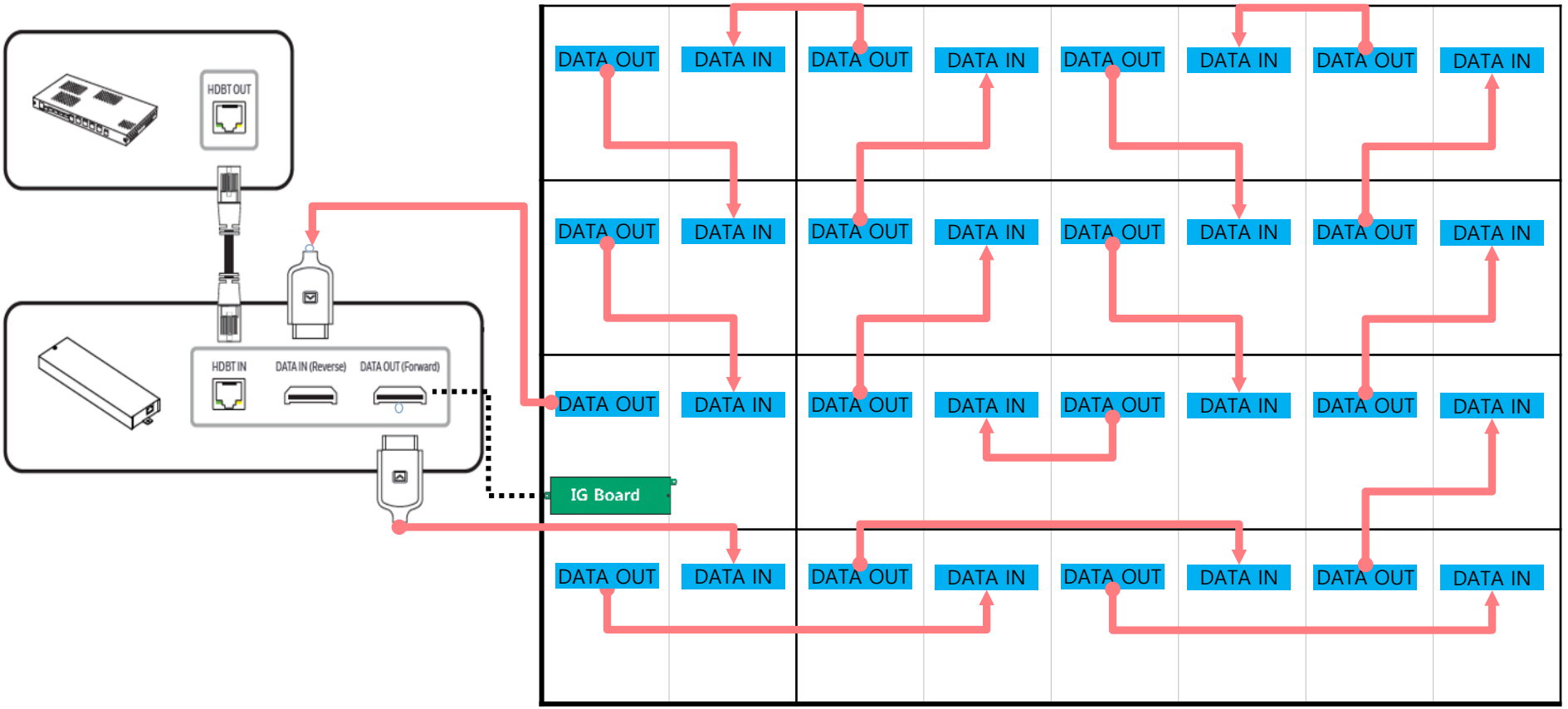
- 3x3 Connection (FHD IW012J)



7-5 Cable Connection : OCM cable installation standard

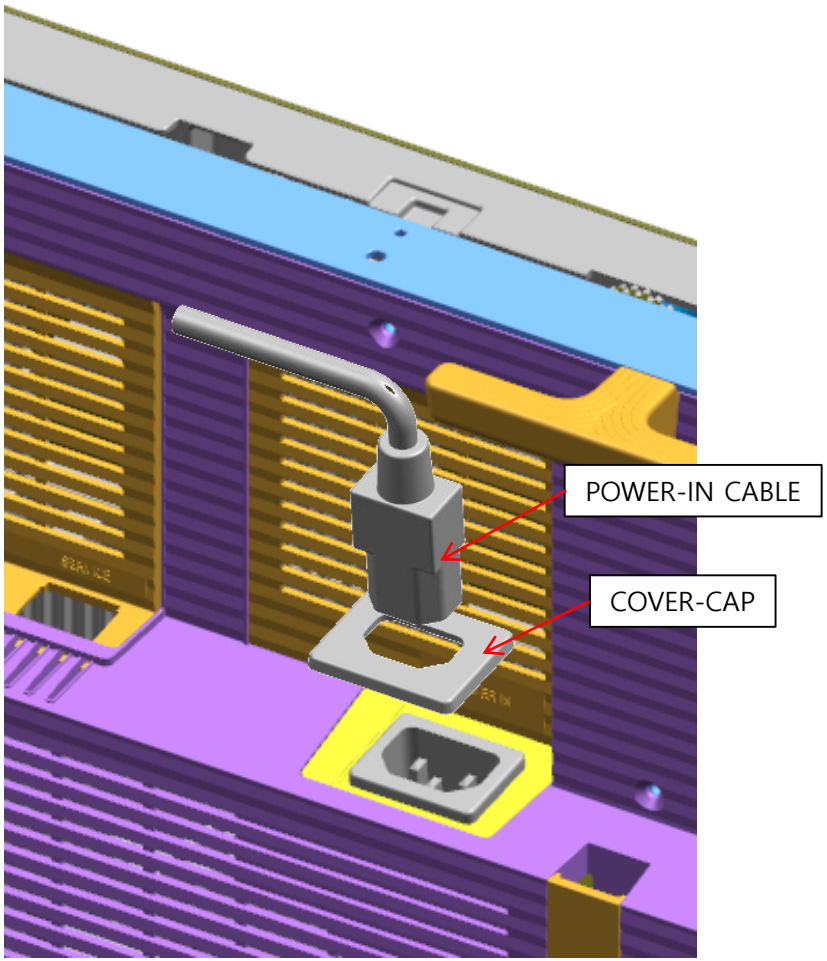
◎ Cable connection required after cabinet installation

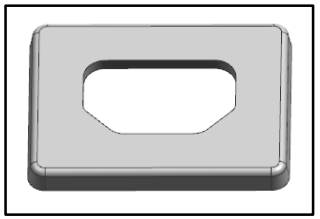
- 4x4 Connection (FHD IW016J)



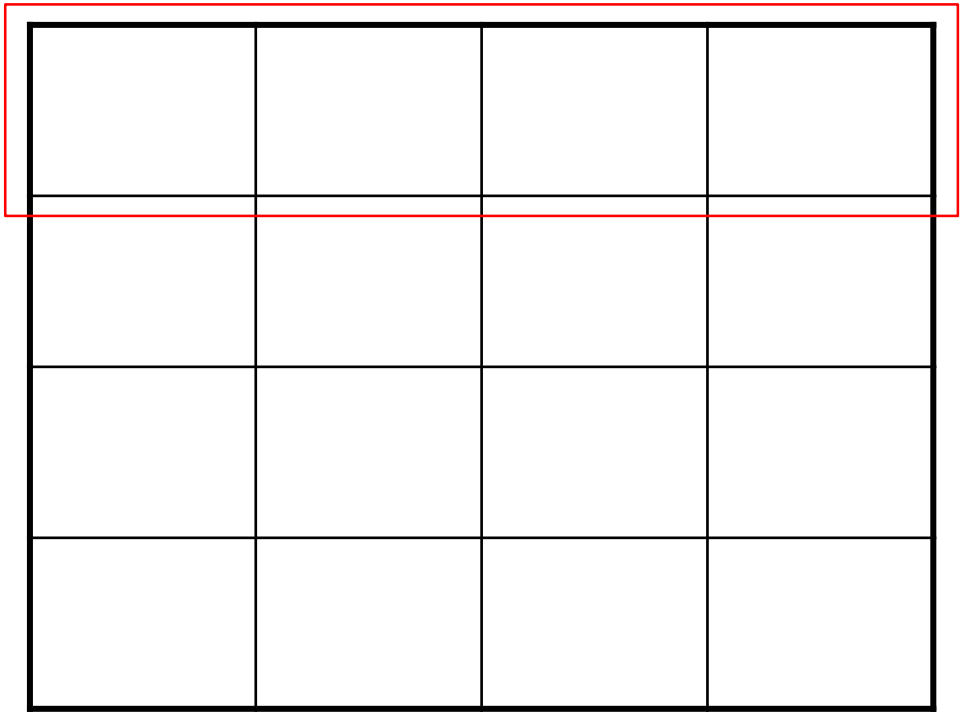
7. Cable Connection

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





COVER-CAP



4*4 (Example)

8. S-BOX Installation and Connection

• S-BOX Installation Precautions

① Product recommend installing this product in a standard 19-inch server rack.

※ When connecting two or more times for the purpose of using multi-link HDR, install it on the ground shielded rack and use it. (SBB-SNOWJMU model)

② Install ventilation opening, do not install the vent by turning it sideways or upside down

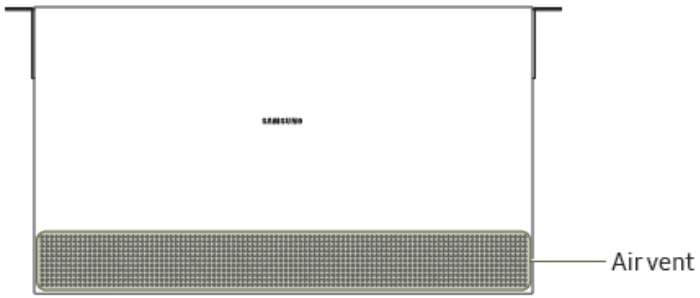
③ When installing the product, do not block the air vent on the top to prevent the product from overheating

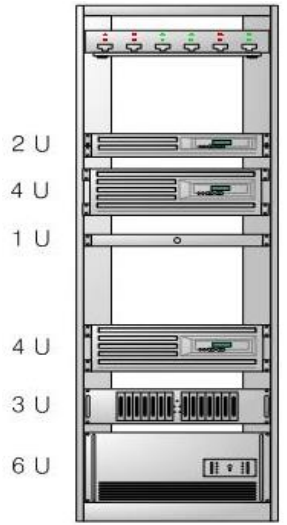
④ When installing multiple Sbox, Install at least 1U (44.45mm) or more apart from the ventilation openings on the top of the product

⑤ When installing on a wall, keep all distances between the wall and the top, bottom, left, right sides of the product at least 10 mm, and also keep the distance between the wall and the ports on the back of the product at least 50 mm for cable connection.

⑥ Make sure that the ambient temperature inside the rack mount does not exceed 35°.

⑦ Take care not to allow liquid foreign objects to enter the ventilation openings on the top of the product





8. S-BOX Installation and Connection

• S-BOX Connection

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.

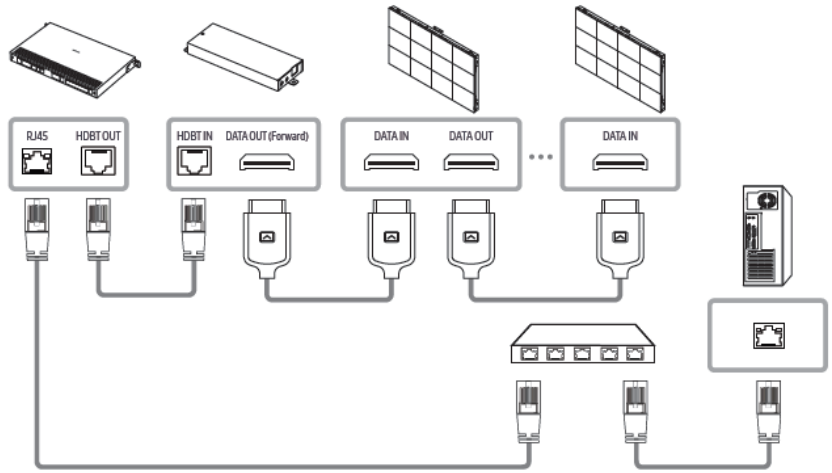
⑤ When HDMI UHD Color is set to On, up to the 3840 x 2160 @ 60 Hz resolution is supported by S-BOX. When HDMI UHD Color is set to Off, up to 1920 x 1080 @ 60 Hz resolution is supported.

※ Menu – Picture – Advanced Settings – Input Signal Plus : ON

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

⑥ One SNOW-1810U supports only one type of LED pitch cabinets. Do not connect different types of LED pitch cabinets.

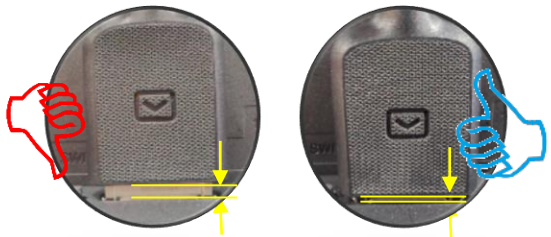
⑦ SNOW-1810U displays the screen starting from the upper left cabinet. To view the screen, connect the HDBT cable to the HDBT OUT 1 port on S-BOX.



IMPORTANT

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

IMPORTANT



8. S-BOX Installation and Connection

⑧ Instruction for handling HDBase-T cable

★ Orderly Rolled (Recommend)

IMPORTANT

★ Random Rolled (Not Recommend)

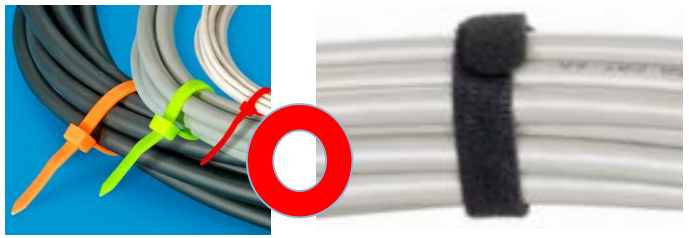
- Do not use "comb" or "pinstripe" cable

- Use HDBase-T cables with 15 meter long at minimum and 100 meter long at maximum.

- Use only HDBase-T Alliance recommended Cables as described below.
  HDBase-T Alliance Site : https://hdbaset.org/hdbaset-recommended-cables/

- Do not over bend HDBase-T cables for cable integrity.

- Do not tie HDBase-T cables tightly in bundling



- Do not bundle HDBase-T cables with any AC power cable.

8. S-BOX Installation and Connection

⑧ Instruction for handling HDBase-T cable

- EMI sources: Keep the cable away from electromagnetic interference environments such as high-voltage electrical cables, electric motors (such as elevators or refrigerators), fluorescent, light-fixtures and so on
- Minimum distance between HDBase-T and AC power cables
  : Keep the cable at a distance of at least 12" (=30.48cm) from AC power cables
- HDBase-T cables can be bundled with up to 4 cables from single S-BOX.
- Do not use RJ45 coupler

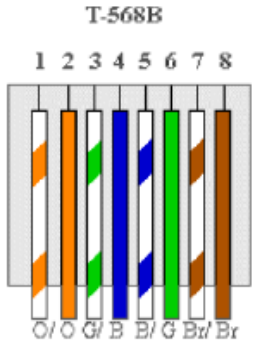
RJ45 coupler

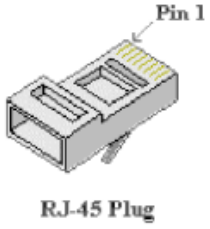
8. S-BOX Installation and Connection

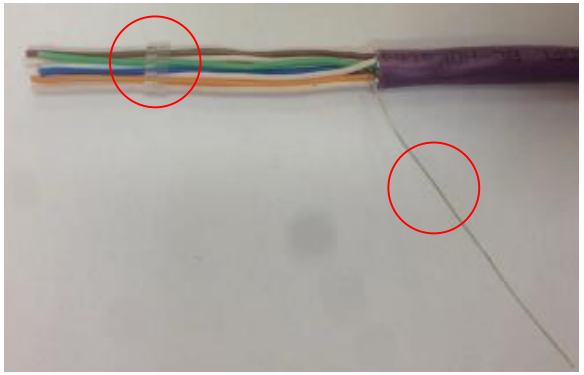
⑨ Instruction for trimming HDBase-T cable on site.

- **STP RJ45 shielded Plug**. RJ45 Connector should be CAT6 or CAT7 shielded RJ45 and load bar.

- **Insert conductors into the plastic loader :** Using the standard wiring scheme shown here (T-568B), insert the conductors into the plastic loader piece of the R-J45 connector. The plastic loader is necessary because the thickness of CAT 6 cable does not allow it to sit flat in an RJ-45 connector like in normal CAT 5.







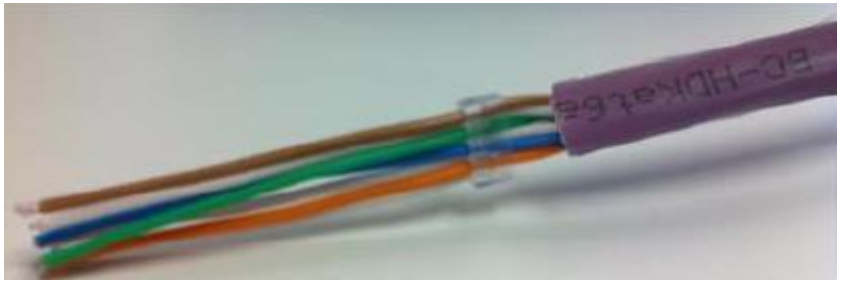
Load bar and Drain wire

Wires aligned with Load bar

8. S-BOX Installation and Connection

⑩ Instruction for trimming HDBase-T cable on site.

- **Slide the plastic loader down the cable :** Slide the plastic loader down the cable as close to the base as possible.

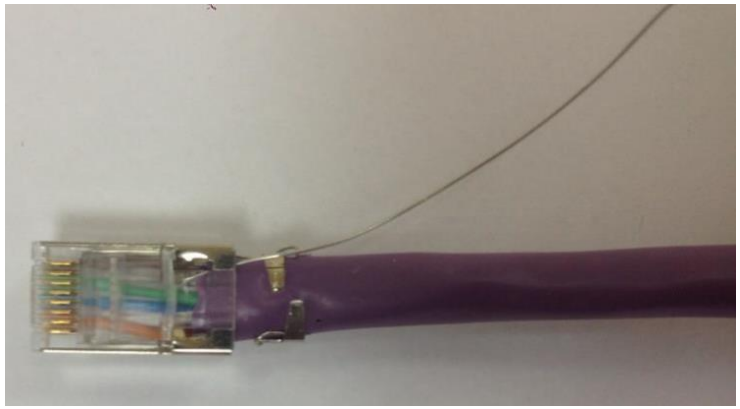


- **Cut all conductors** Using the wire cutters, cut all conductors leaving approximately 0.5" remaining.

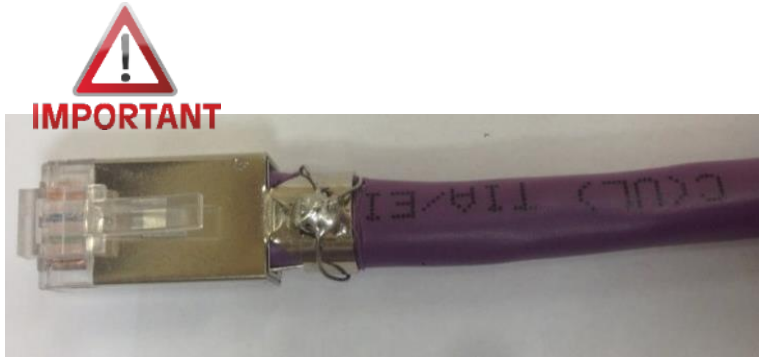
8. S-BOX Installation and Connection

⑩ Instruction for trimming HDBase-T cable on site.

- **Flip the drain wire up onto the RJ-45 connector** Flip the drain wire up onto the RJ-45 connector. Clamp the strain relief down on the purple jacket of the BC-HDKat6a cable using the pair of pliers.



- **Solder the drain wire to the metal casing of the RJ-45 connector :** Solder the drain wire to the metal casing of the RJ-45 connector and cut off the excess using the wire cutters. Verify the continuity of the conductors and the shield using a cable tester.



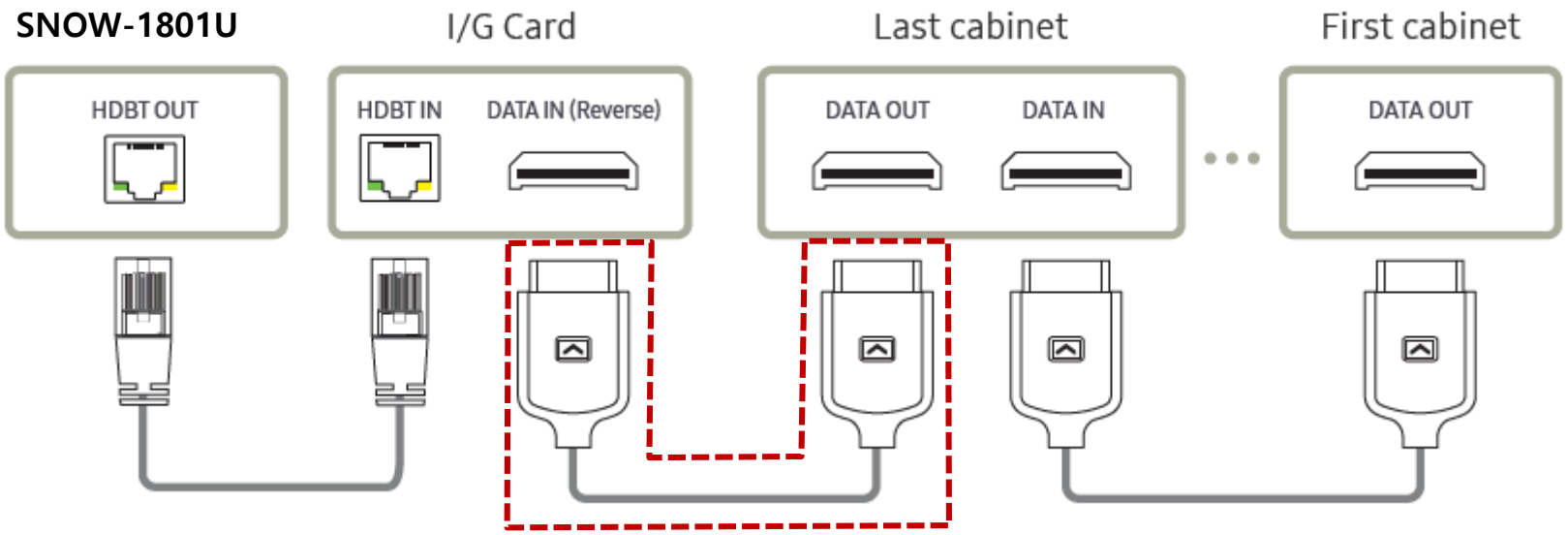
Recommended) Drain wire soldering + Cooper foil

8. S-BOX Installation and Connection

• 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

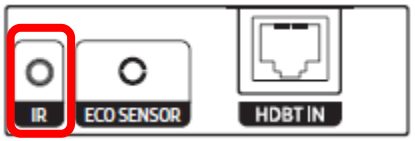
8. S-BOX Installation and Connection

• S-BOX Connection (External IR Receiver)

※ One IR receiver is provided per set.

- IR receiver can be connected to S-Box or I / G Card (Interface Card).

OR



※ If you want to connect to the I / G card, you must set Network Standby – "On" in the setting and then connect.

- System → Power Control → Network Standby → "On"

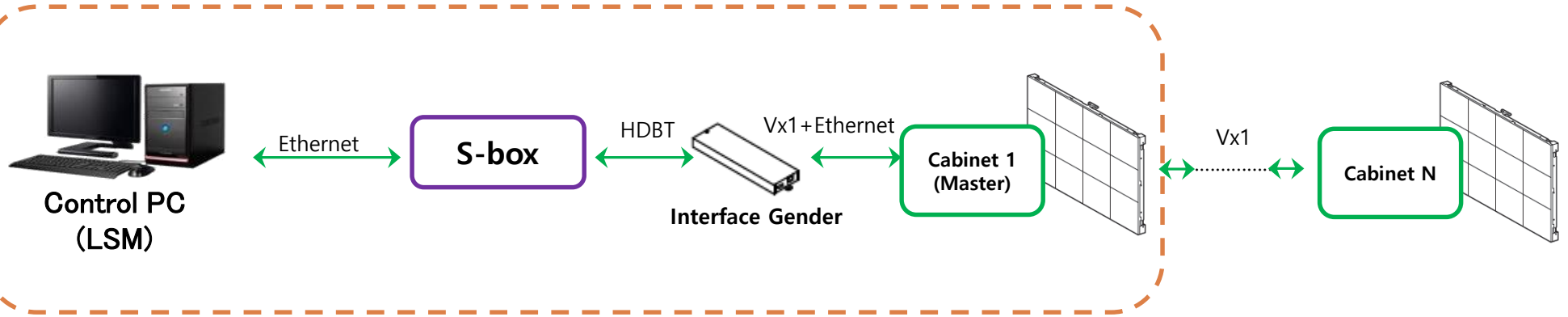
8. S-BOX Installation and Connection

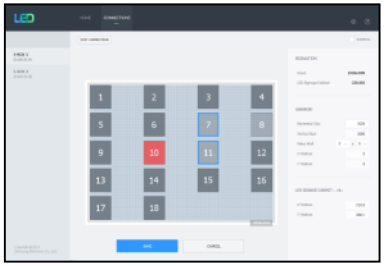
• S-BOX Connection (Panel Configuration)

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.
- For 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.





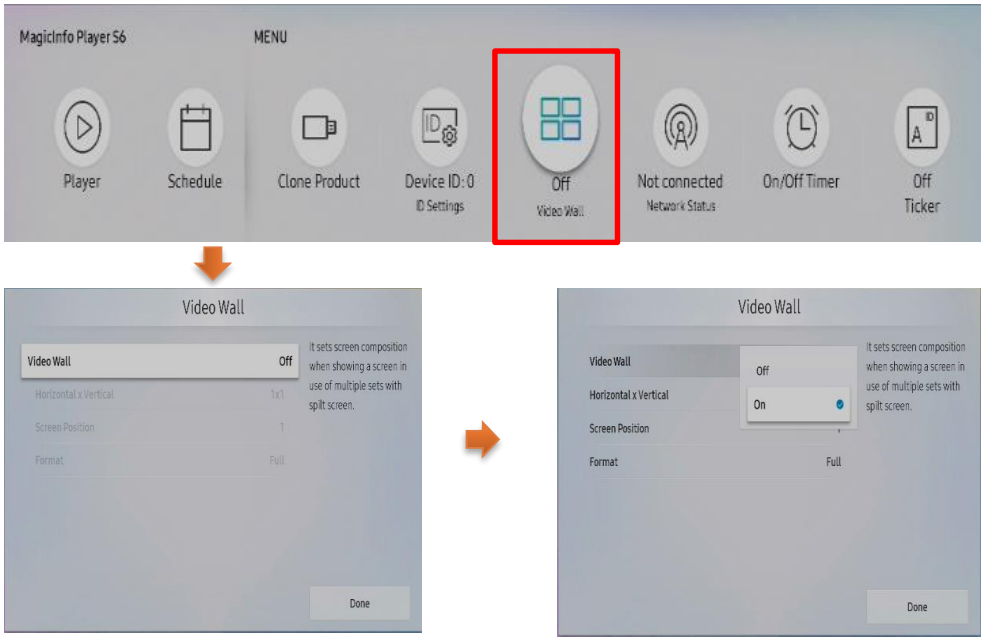
<Connected condition in LSM>

8. S-BOX Installation and Connection

• S-BOX Connection (Grouping)

① Enable S-Box Grouping

▪ Home → Video Wall : OFF → On



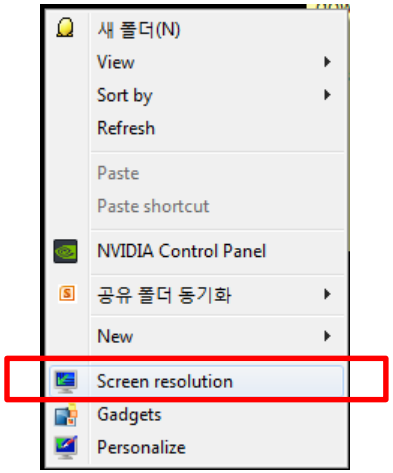
[Cautions!!]

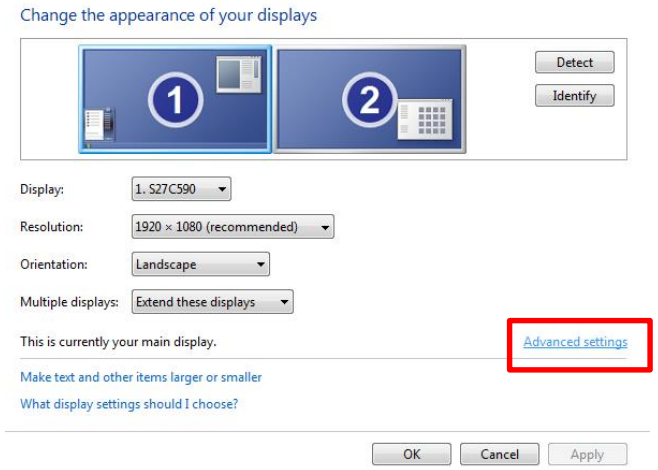
1) Before executing S-Box Grouping in LED Signage Manager (LSM), make sure to set the resolution of the input source equipment to S-Box Grouping supported resolution..
2) When entering a resolution that does not support, the screen may not be visible or noise may occur on the screen. After turning off the Video Wall function, change the frequency of the video output source to 50 Hz or 60 Hz.
3) **※ LSM support S-Box Grouping.**

8. S-BOX Installation and Connection

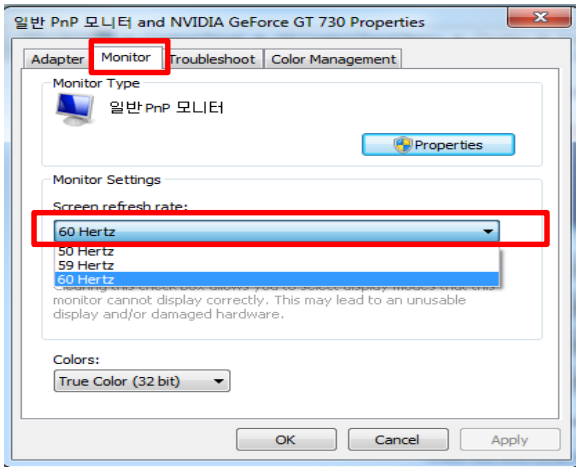
③ Setup the resolution of input PC

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





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



8. S-BOX Installation and Connection

④ Supported resolution for S-box grouping (1/2)

Resolution	Horizontal Frequency (kHz)	Vertical Frequency (Hz)	Pixel Clock (MHz)	Sync Polarity (H/V)	S-Box Grouping Supported
IBM/VESA, 640 x 480	31.469	59.940	25.175	N / N	-
Mac, 640 x 480	35.000	66.667	30.240	N / N	-
VESA, 640 x 480	37.861	72.809	31.500	N / N	-
VESA, 640 x 480	37.500	75.000	31.500	N / N	-
IBM, 720 x 400	31.469	70.087	28.322	N / P	-
VESA, 800 x 600	35.156	56.250	36.000	P / P	-
VESA, 800 x 600	37.879	60.317	40.000	P / P	-
VESA, 800 x 600	48.077	72.188	50.000	P / P	-
VESA, 800 x 600	46.875	75.000	49.500	P / P	-
Mac, 832 x 624	49.726	74.551	57.284	N / N	-
VESA, 1024 x 768	48.363	60.004	65.000	N / N	O
VESA, 1024 x 768	56.476	70.069	75.000	N / N	-
VESA, 1024 x 768	60.023	75.029	78.750	P / P	-
VESA, 1152 x 864	67.500	75.000	108.000	P / P	-
Mac, 1152 x 870	68.681	75.062	100.000	N / N	-
VESA, 1280 x 720	45.000	60.000	74.250	P / P	O
VESA, 1280 x 800	49.702	59.810	83.500	N / P	-
VESA, 1280 x 1024	63.981	60.020	108.000	P / P	O
VESA, 1280 x 1024	79.976	75.025	135.000	P / P	-
VESA, 1366 x 768	47.712	59.790	85.500	P / P	-
VESA, 1440 x 900	55.935	59.887	106.500	N / P	-

8. S-BOX Installation and Connection

④ Supported resolution for S-box grouping (2/2)

VESA, 1600 x 900	60.000	60.000	108.000	P / P	O
VESA, 1680 x 1050	65.290	59.954	146.250	N / P	-
VESA, 1920 x 1080	67.500	60.000	148.500	P / P	O
VESA CVT, 1920 x 1080	66.587	59.934	138.500	P / N	-
VESA CVT, 2560 x 1440	88.787	59.951	241.500	P / N	-
VESA CVT, 3840 x 2160	133.313	59.997	533.250	P / N	-
CTA-861 VIC 3, 720 x 480	31.469	59.940	27.000	N / N	-
CTA-861 VIC 4, 1280 x 720	45.000	60.000	74.250	P / P	O
CTA-861 VIC 5, 1920 x 1080i	33.750	60.000	74.250	P / P	-
CTA-861 VIC 16, 1920 x 1080	67.500	60.000	148.500	P / P	O
CTA-861 VIC 18, 720 x 576	31.250	50.000	27.000	N / N	O
CTA-861 VIC 19, 1280 x 720	37.500	50.000	74.250	P / P	O
CTA-861 VIC 20, 1920 x 1080i	28.125	50.000	74.250	P / P	-
CTA-861 VIC 31, 1920 x 1080	56.250	50.000	148.500	P / P	O
CTA-861 VIC 32, 1920 x 1080	27.000	24.000	74.250	P / P	-
CTA-861 VIC 33, 1920 x 1080	28.125	25.000	74.250	P / P	-
CTA-861 VIC 34, 1920 x 1080	33.750	30.000	74.250	P / P	-
CTA-861 VIC 93, 3840 x 2160	54.000	24.000	297.000	P / P	-
CTA-861 VIC 94, 3840 x 2160	56.250	25.000	297.000	P / P	-
CTA-861 VIC 95, 3840 x 2160	67.500	30.000	297.000	P / P	-
CTA-861 VIC 96, 3840 x 2160	112.500	50.000	594.000	P / P	O
CTA-861 VIC 97, 3840 x 2160	135.000	60.000	594.000	P / P	O

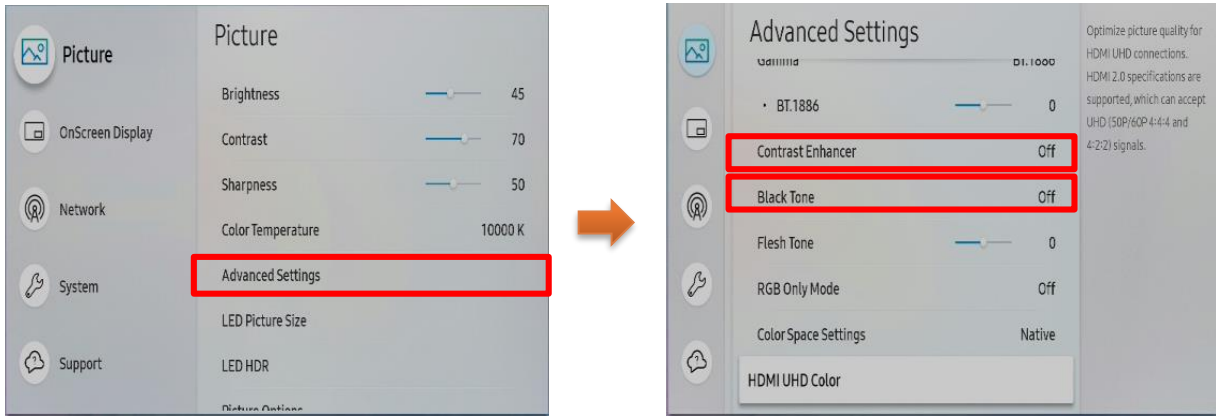
8. S-BOX Installation and Connection

⑤ Picture menu setting

- When using S-Box grouping, you must set Picture mode to Calibration. Calibration mode deactivates Dynamic Contrast, Black Tone, Auto Motion plus function so that there is no screen difference between S-Box.
- In addition, in other picture modes, screen disruption due to image quality processing may occur, and in unavoidable cases, Dynamic Contrast and Black Tone function and Auto Motion plus should be turned off to minimize it.

- Menu→ Picture → Advanced Settings,
  - Dynamic Contrast : Off
  - Black Tone : Off

- Menu→ Picture → Picture Options,
  - Auto Motion plus : Off



- If Multi link HDR is used, the picture mode must be set as shown below. (SBB-SNOWJMU)
  - Menu→ Picture → Picture Mode : Calibration
  - Menu→ Picture → LED HDR, Echo Image Enhancer : Off

8. S-BOX Installation and Connection

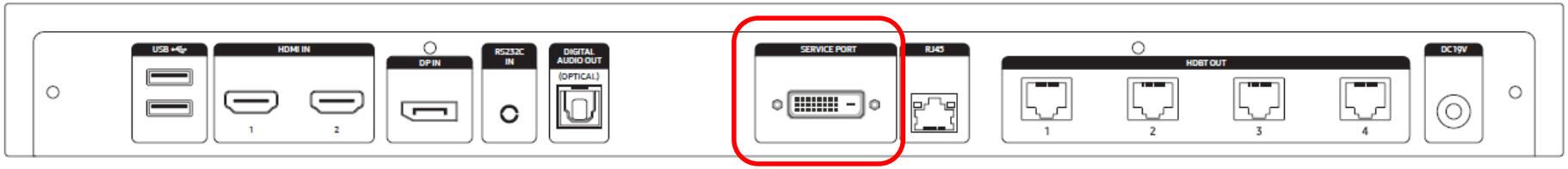
• S-BOX Connection (Service port)

① The service port is dedicated port for monitoring to check the usage of OSD and the source being played at the initial installation of the S-BOX

② Service port has FHD (1920*1080 @60Hz) resolution.

③ When inputting UHD resolution source to S-BOX, screen flickering and break may occur, but the corresponding port output is due to 2:1 down scaling without specific scaling algorithm and is independent of actual LED cabinet screen output

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



8. S-BOX Installation and Connection

- **Simple wall mode operation**
  - **If the user does not use the product and does not want the black screen output, it simply allows the wallpaper to be displayed and used.**
  - **If Screen resolution is below S-Box output resolution, you can turn on Simple wall mode in Factory menu**

① Execute the following order to enter the Factory Menu.

- Connect the external IR cable to the S-box.

- Power off the remote control -> Wait 10 seconds and then press "Mute - 1 - 8 - 2" -> Click the Power on button

② Factory Menu -> Option -> MRT option -> SIMPLE WALL MODE SUPPORT -> ON

[Cautions!] Do not run Simple Wall Mode in multiple S-box configuration environments.
Wallpaper may not run simultaneously for each S-Box.

9-1. Control Program for PCs

LSM(LED Signage Manager)

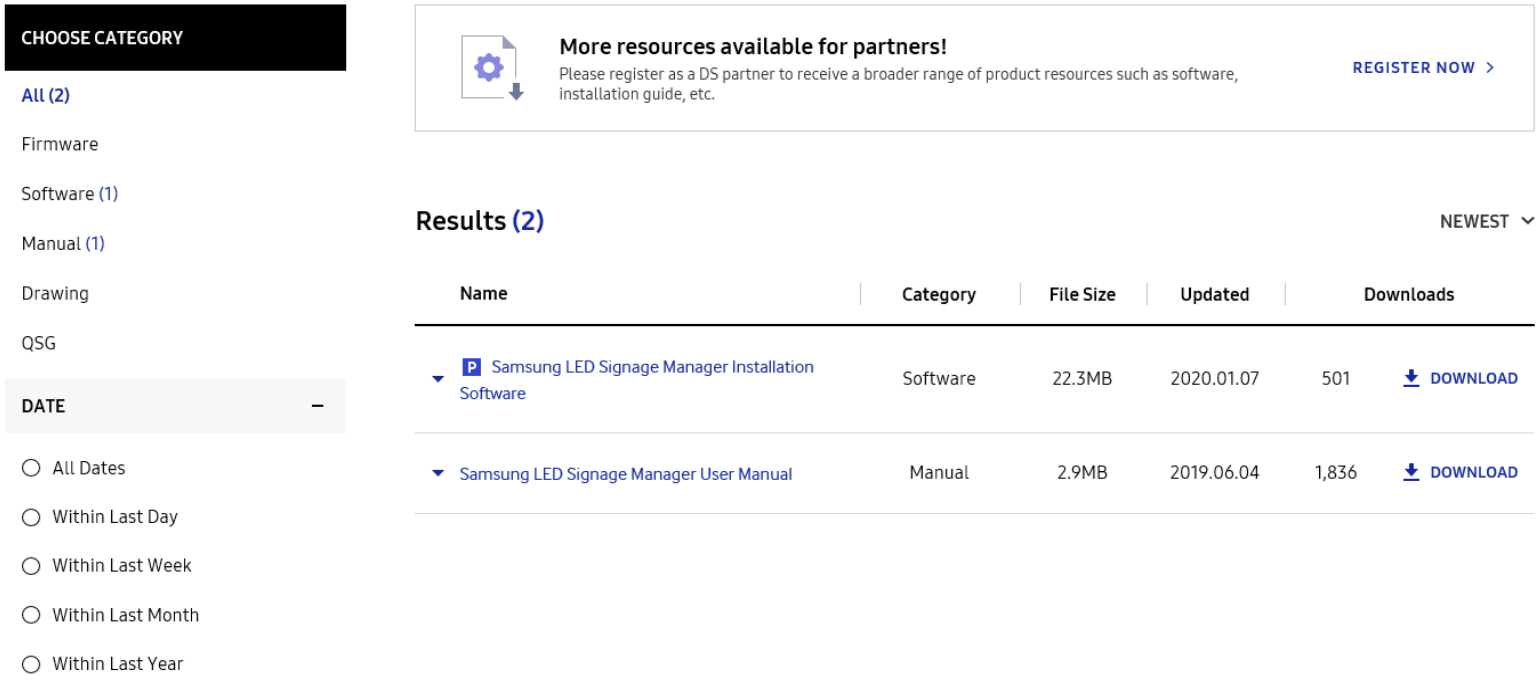
- **LSM SW download**

- **Samsung Display Solutions (https://displaysolutions.samsung.com) # authority requirement #**

  Samsung Display Solutions > SOLUTIONS > SOFTWARE SOLUTIONS > LED Signage Solution > LED Signage Manager

- **SLM (https://www.secslm.com) # authority requirement #**

  SLM > Help > Download Center > "LED Signage Manager" or "LSM"



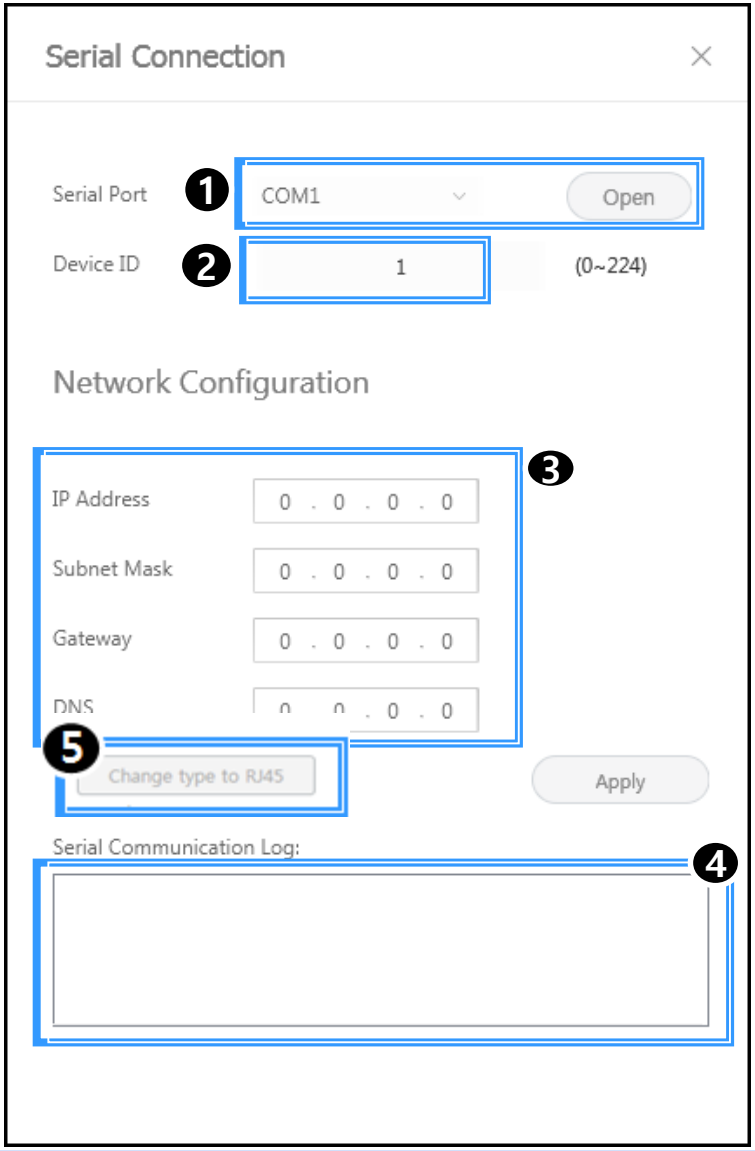
9. Settings and How to Use

9-1 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.**



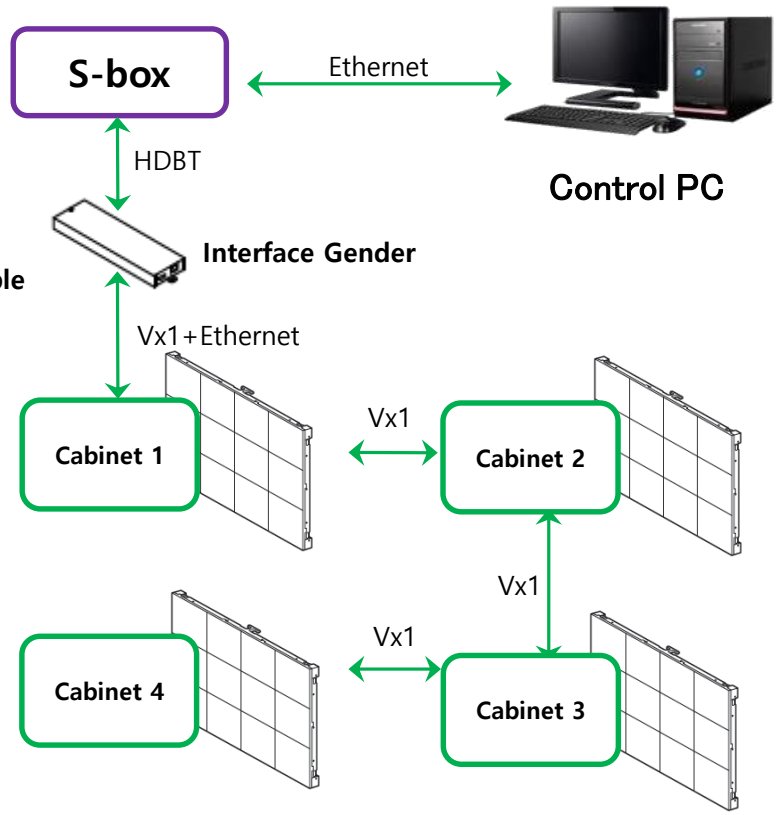
[★ Cautions!] Recommend to use static IP address for the S-Box.
If DHCP is used, IP address is changed automatically and LSM can be disconnected.
The 192.168.10.x band is used for internal communication of the LED Cabinet.
Please use IP another IP band (except 192.168.10.x band)
Do not assign the temporary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

9-1 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.

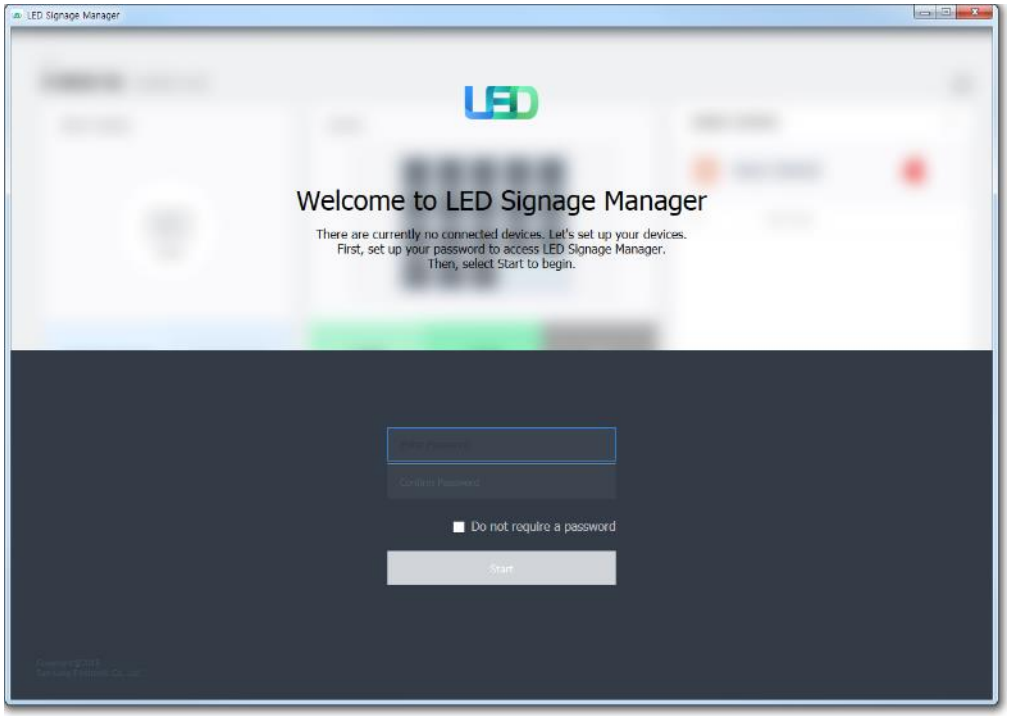


9-1 Control Program for PCs

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.

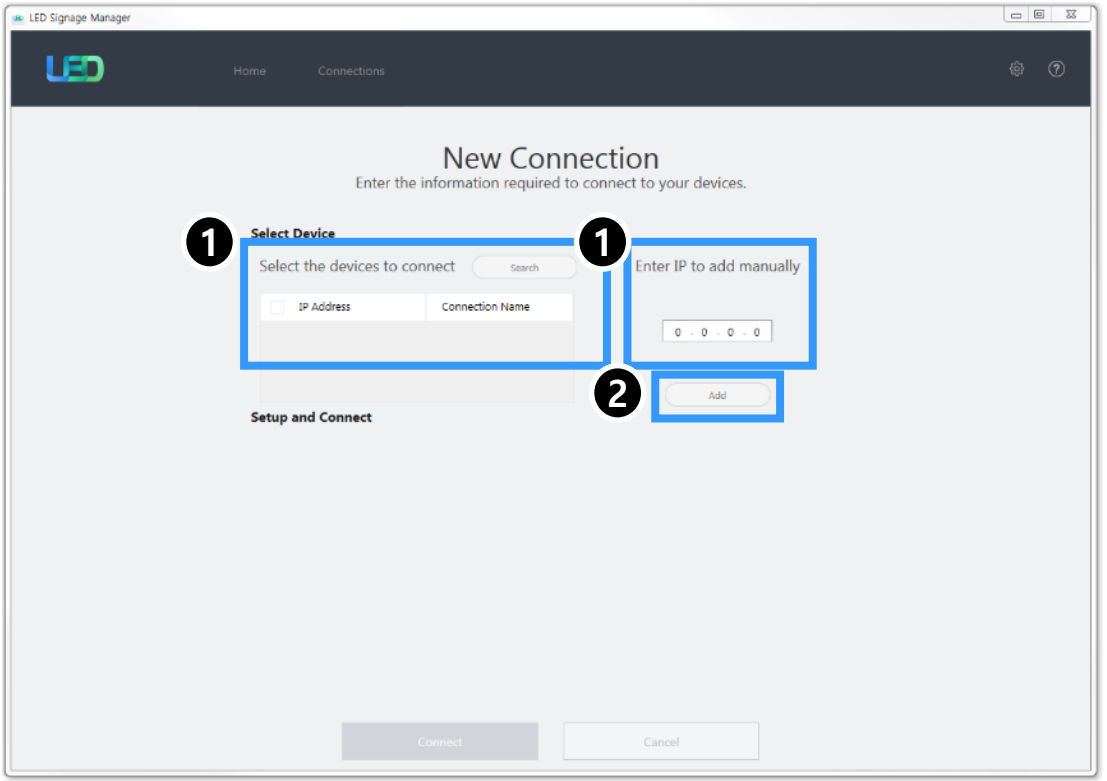


9-1 Control Program for PCs

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)).



9. Settings and How to Use

9-1 Control Program for PCs

LSM(LED Signage Manager)

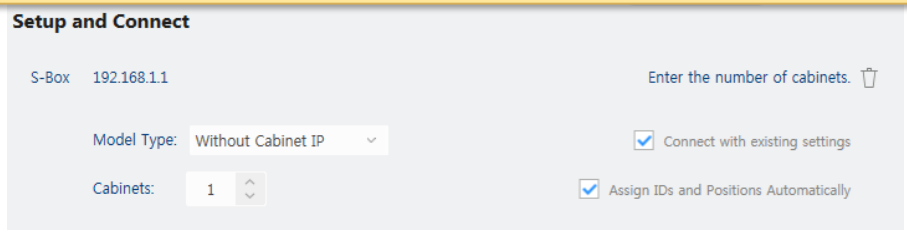
[★ Cautions!] Recommend to use static IP address for the LED devices.
If DHCP is used, IP address is changed automatically and LSM can be disconnected.
The 192.168.10.x band is used for internal communication of the LED Cabinet.
Please use IP another IP band (except 192.168.10.x band)
Do not assign the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

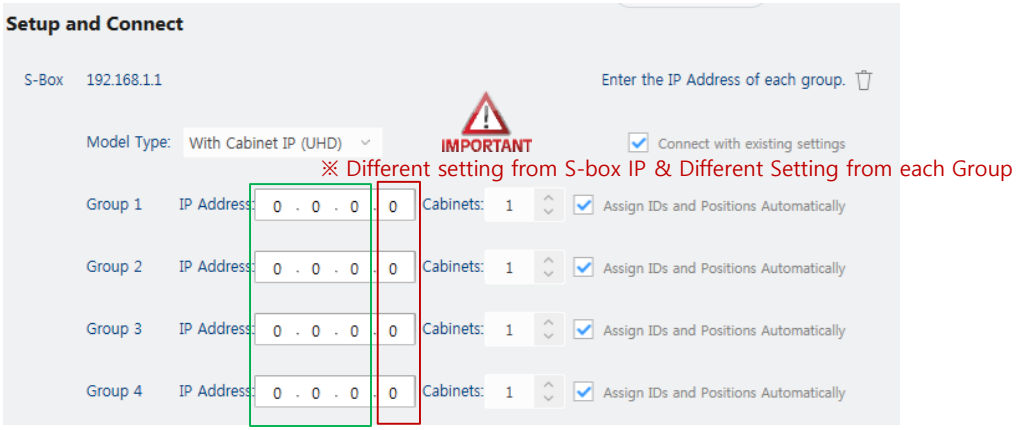
- **New Connection-Connect**

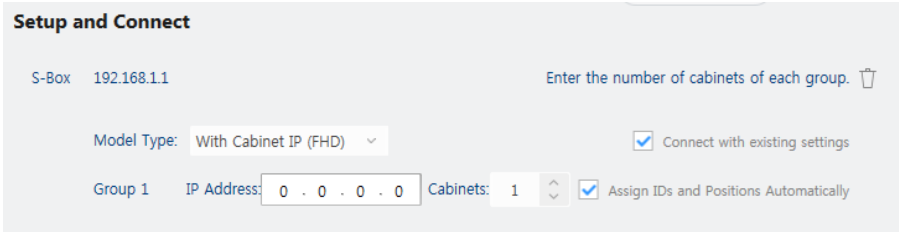
1. When you are using the previous version of S-BOX, select “Without Cabinet IP” option.
2. If you are using UHD S-BOX, select “With Cabinet IP (UHD)” option. You should designate the IP Address of the LED Cabinet by each port. Set the number of units connected, and then click “Connect”.
3. If you are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







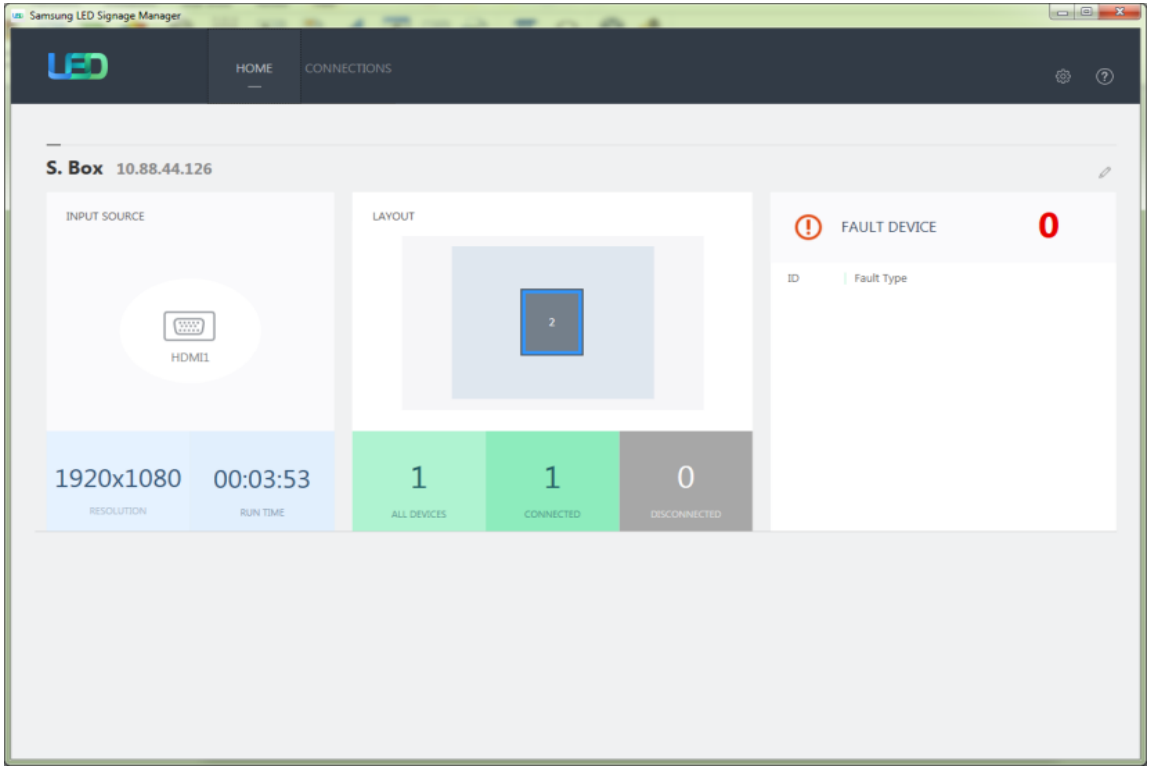
9-1 Control Program for PCs

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.**

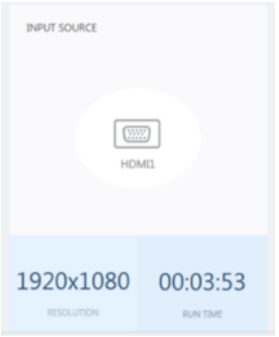


9-1 Control Program for PCs

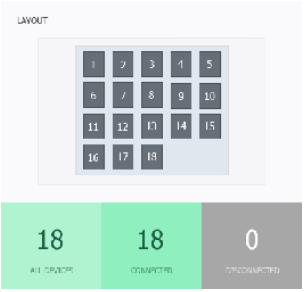
LSM(LED Signage Manager)

- **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.**

9-1 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:

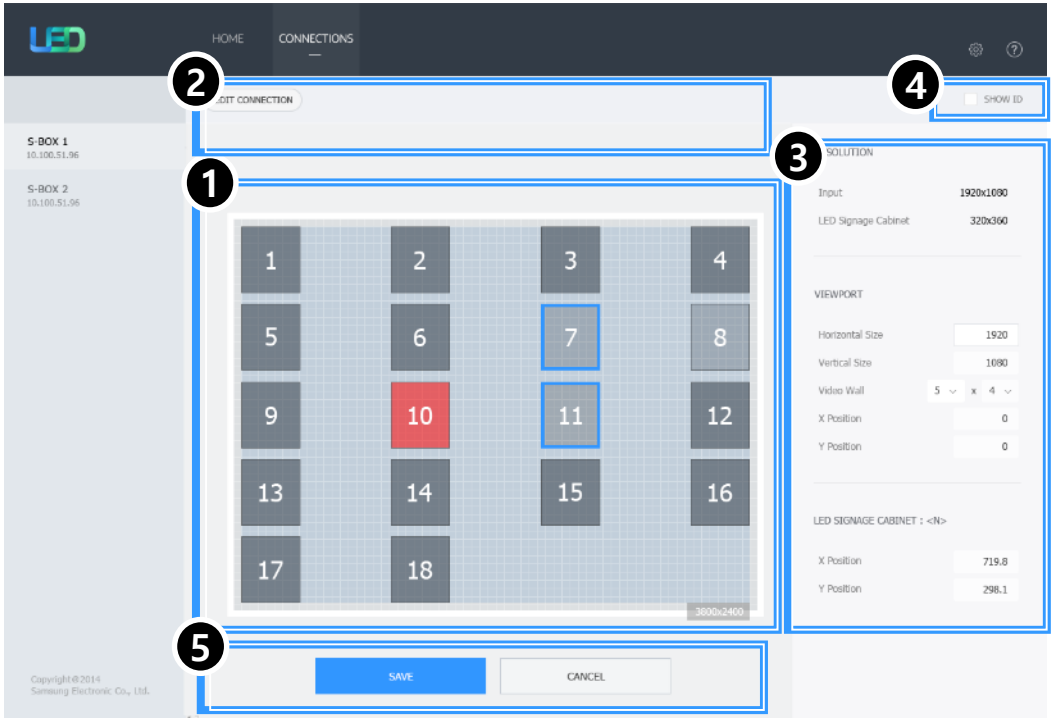
   (i) Resolution: Resolution information of the input source

   (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



9. Settings and How to Use

9-1 Control Program for PCs

LSM(LED Signage Manager)

- **Main Window-Connection Window**

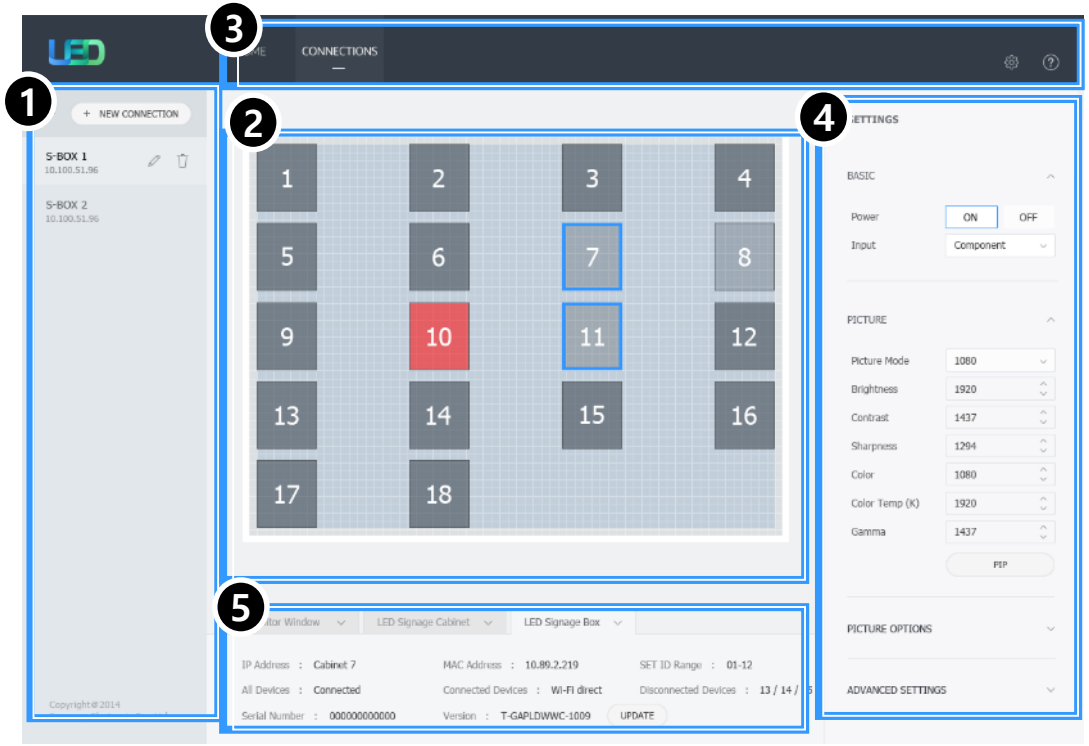
1. Device connection list view:
   Check S-BOX composition, modify and delete S-BOX connection, show by each LED Cabinet Group

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



9-1 Control Program for PCs

LSM(LED Signage Manager)

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

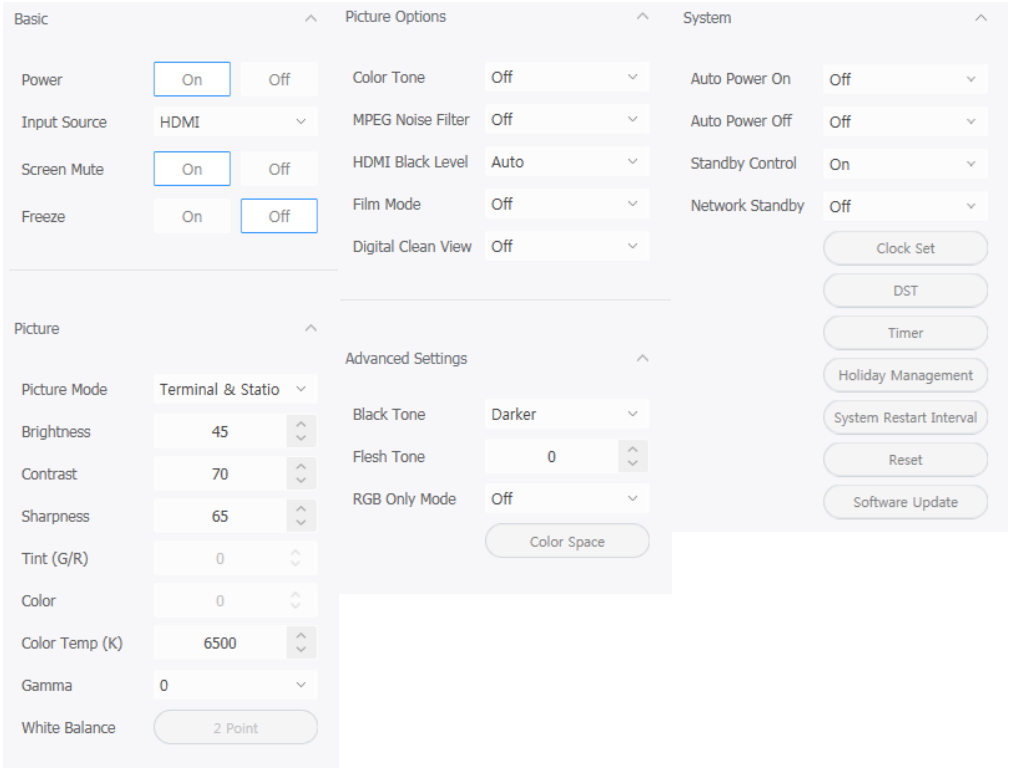
1. **Basic :**
   . SBOX power on / off, input source switch, screen mute / stop screen

2. **Picture**
   . Screen mode switching, brightness / contrast / sharpness, color, tint (G / R), color temperature (K), gamma, white balance adjustment

3. **Picture Options**
   . Color tone, HDMI black level, Film mode, etc.

4. **Advanced Settings**
   . Black Tone Adjustment, Face Tone Adjustment, Color Space Adjustment, etc.

5. **System**
   . Automatic power on / off, standby control time, timer, system restart interval software update function

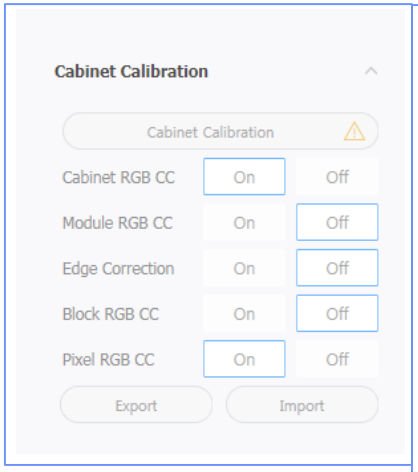


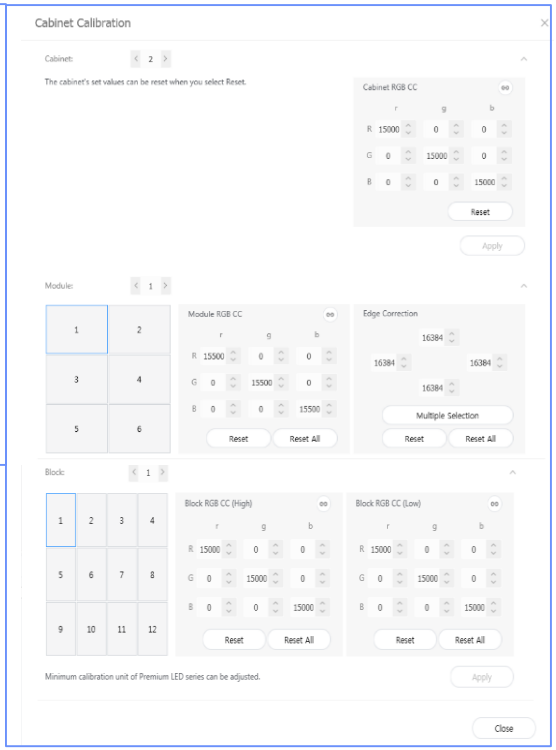
9-1 Control Program for PCs

LSM(LED Signage Manager)

- **Main Window – Connections Window – Device Information / Settings View**

6. LED Cabinet Calibration





. Cabinet Calibration

└ Cabinet RGB CC
: Correct the RGB CC Matrix in cabinet units.

└ Module RGB CC
: Correct the RGB CC matrix on the module unit..

└ Edge Correction
: Correct the brightness of each edge in module units.

└ Multiple Selection
: Correct the edge of all connected cabinets by channel at the same time.

When Offset is entered, the brightness of the selected edge is adjusted by Offset.

You can finally reflect the adjusted value with the Apply button..

└ Block RGB CC (High / Low)
: Correct the RGB CC matrix in block units. (High / Low separately)

. On / Off (Cabinet RGB, Module RGB, Edge, Block RGB, Pixel RGB)
: When Off, it becomes a picture quality state that does not reflect the calibration value..

. Export / Import
: You can extract or reflect all the values in the Cabinet Calibration item for the selected cabinet as files.

Data can be backed up or calibration values for multiple cabinets can be used in bulk.

9-1 Control Program for PCs

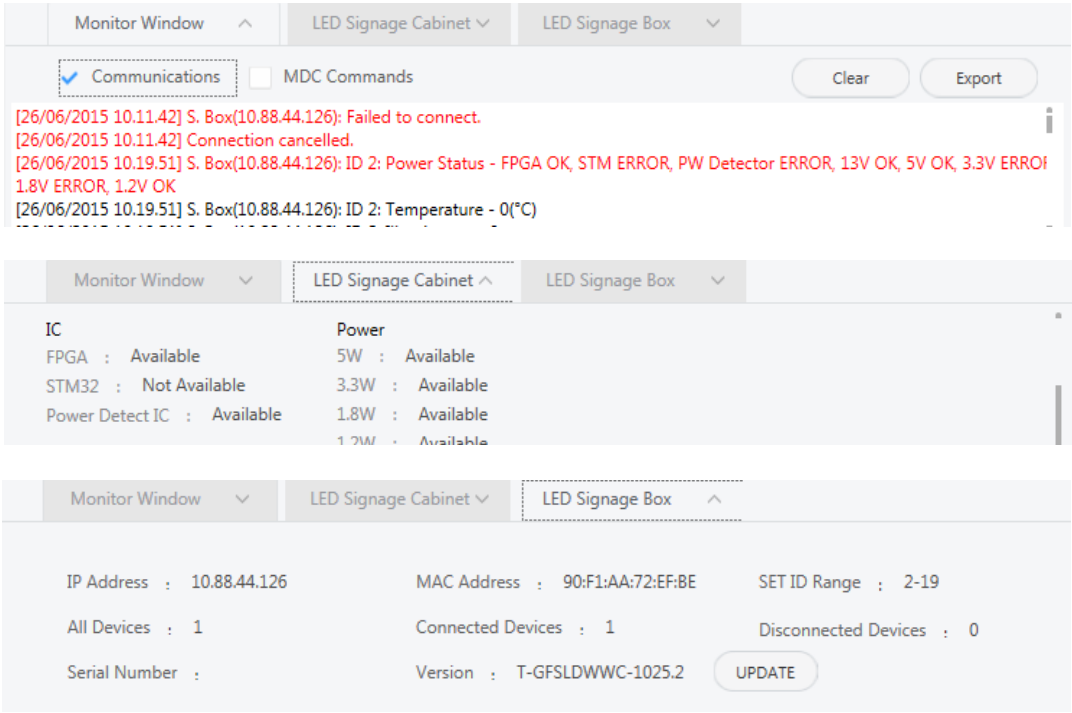
LSM(LED Signage Manager)

- **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



9-1 Control Program for PCs

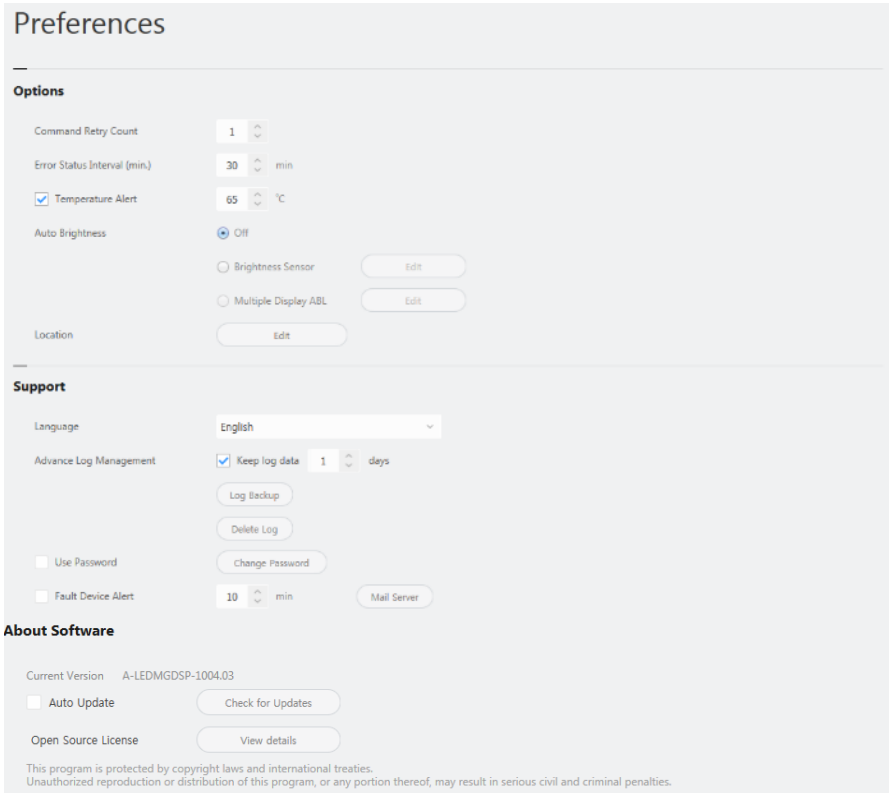
LSM(LED Signage Manager)

- **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

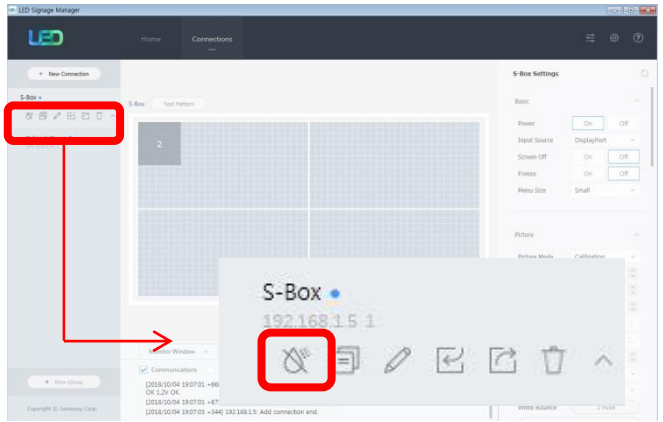


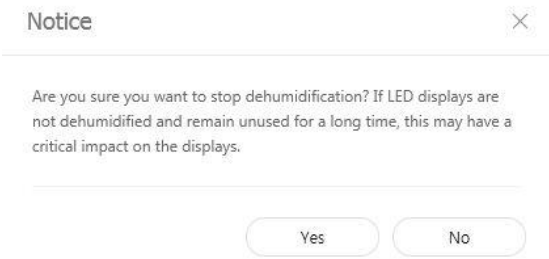
9-1 Control Program for PCs

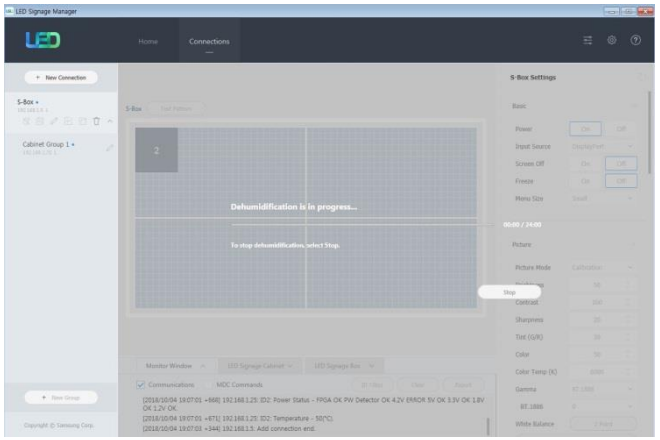
LSM(LED Signage Manager)

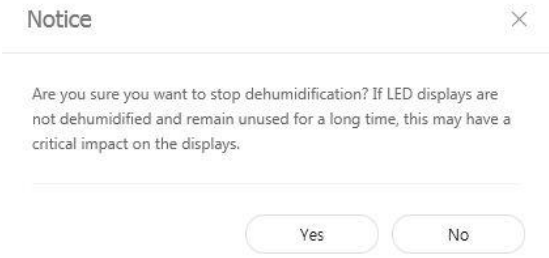
- **Dehumidification using LSM**

1. **Dehumidification button is located in S-Box menu**
2. **When you click the button, dehumidification starts**
3. **You can see how long it takes**
4. **Press ‘stop’ button if you want stop**









10. Issue and Solution

▪ S-Box Network Connection Issue with LSM

① The LSM cannot find the S-Box or the Disconnected message is displayed.

-. Check the Ethernet cable connection.

-. Check the IP settings of S-Box.

-. Check if the target IP is the IP of the S-Box in the LSM.

-. Check if PC activation is " RJ45 " in S-Box

★ Remote controller에서 HOME -> Device ID -> PC Communication -> "RJ45" check

-. Check the network connection with the ping test etc.

★ PC CMD window - > Check ping xxx.xxx.xxx.xxx (S-Box IP address) communication.

-. Restart LSM.

② When the LSM cannot find a cabinet connected to the S-Box

-. Check the OCM cable connected to the I / G board and cabinet.

-. Check the cabinet IP address set by LSM. Check IP address of cabinet in LSM

(192.168.10. Do not use xxx band. Cabinet Address used for internal communication.)

-. Check the network connection with the ping test etc.

-. Restart the cabinet.

-. Restart LSM.

11. Color Calibration

■ On-Site Calibration

- Provides calibration function using measurement equipment (Colorimeter) / mobile
- Automate module unit adjustment that was adjusted with the existing naked eye by S / W
- Module / Half Cabinet / Cabinet / Screen Calibration
- Available for Install / Maintenance

  : The replacement module can be adjusted when replacing the Spare / Service Module.

	Measurement equipment (Colorimeter)			Mobile
Type	CA-210	CA-310	CA-410	Note 8 or higher
Manufacturer	Minolta			Samsung
Type	Contact			Contactless
Calibration type	RGB Lv / White Balance / Gamut Mapping			White Balance

11. Color Calibration

■ Calibration using Colorimeter

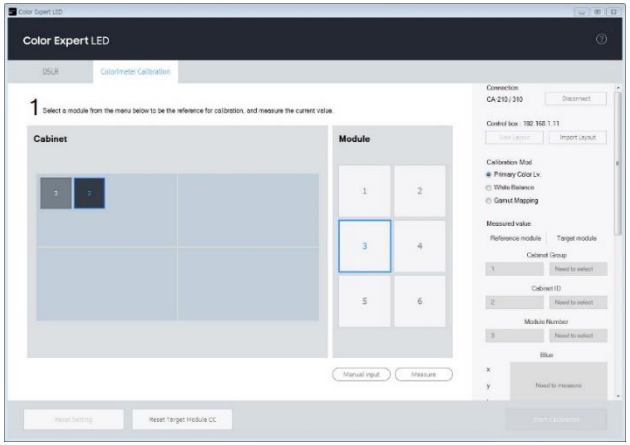
- When you install Calibration S / W (Color Expert LED for PC) on PC and connect measuring equipment, Reference / Target Module

. Color Expert LED fo PC download homepage

Samsung Display Solution (displaysolutions.samsung.com) # download permission required #

Samsung Display Solutions > SOLUTIONS > SOFTWARE SOLUTIONS > LED Signage Solution > Color Expert LED

- Reference values can be measured and input directly by the user



- PC Colorimeter Calibration Manual

cal_pc colorimeter

11. Color Calibration

■ Calibration using mobile

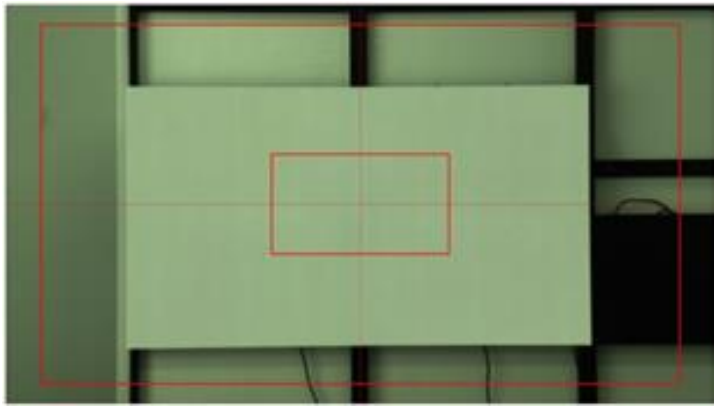
- Install Calibration S / W (Color Expert LED for Mobile) App on Mobile and run it to connect network .

  Color Expert LED download homepage

  Samsung Display Solution (displaysolutions.samsung.com) # download permission required #

  Samsung Display Solutions > SOLUTIONS > SOFTWARE SOLUTIONS > LED Signage Solution > Color Expert LED

- Calibration unit is selected from module or cabinet unit
- Specify Reference and Target
- Set camera position (based on red color guideline) and proceed with white balance

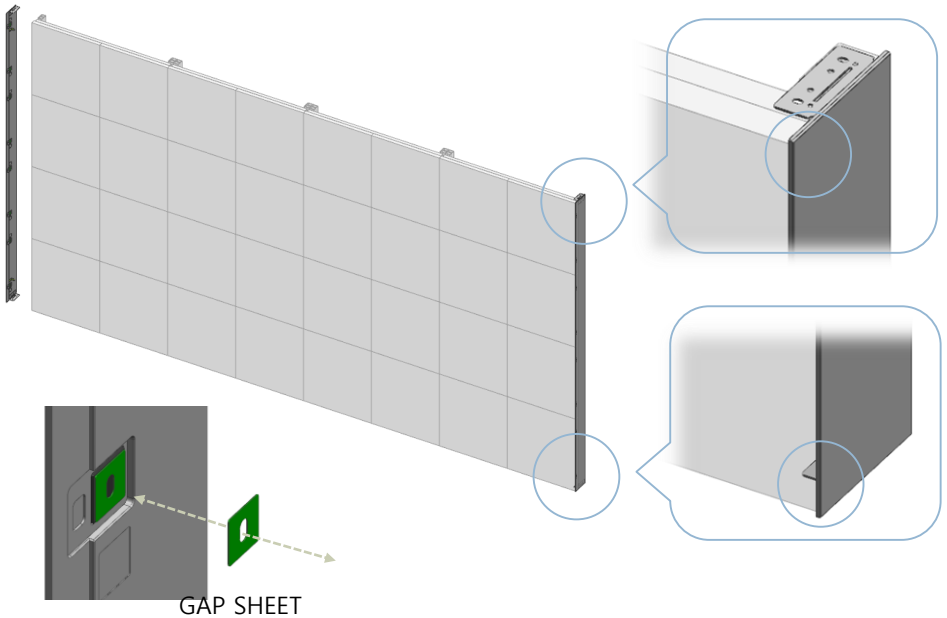


- Mobile Calibration Manual

cal_mobile

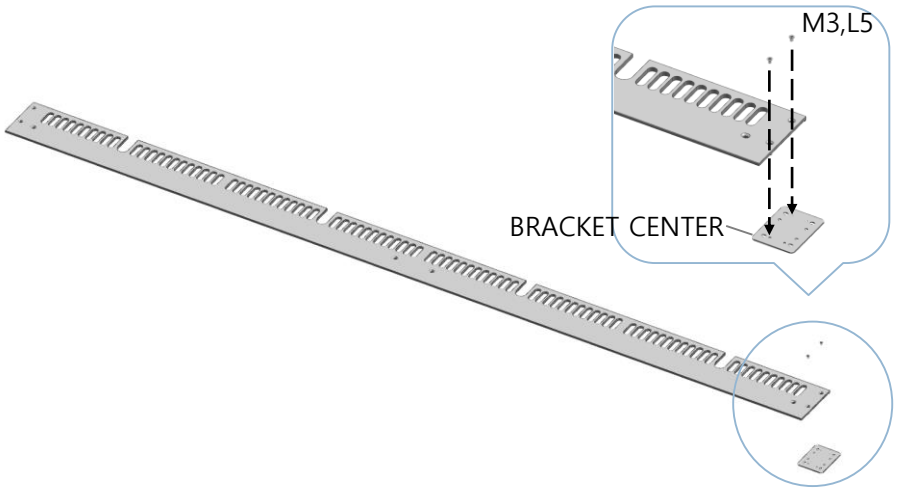
• Installing Frame Bezel

1. Attach ASSY FRAME-BEZEL SIDE to the cabinet.
   - Check for allowable gaps for the each FRAME-BEZEL SIDE.
   - If it needs to adjust gaps, it can be adjusted by attaching or detaching GAP SHEET on the magnets.
   - Check the angle of the BRACKET CORNER unit, which should be at 90˚ immediately before and after installing the FRAME-BEZEL SIDE.



12. Bezel Installation

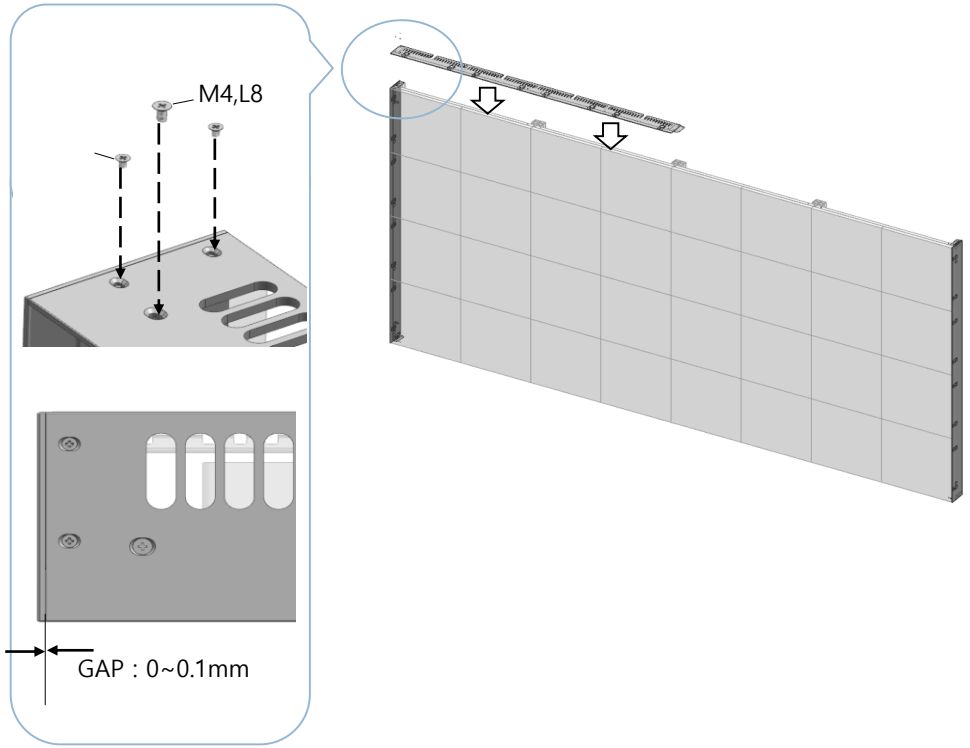
2. Use SCREW(M3,L5) to fasten the BRACKET LINK to the right side of the FRAME-BEZEL TOP BOTTOM.



12. Bezel Installation

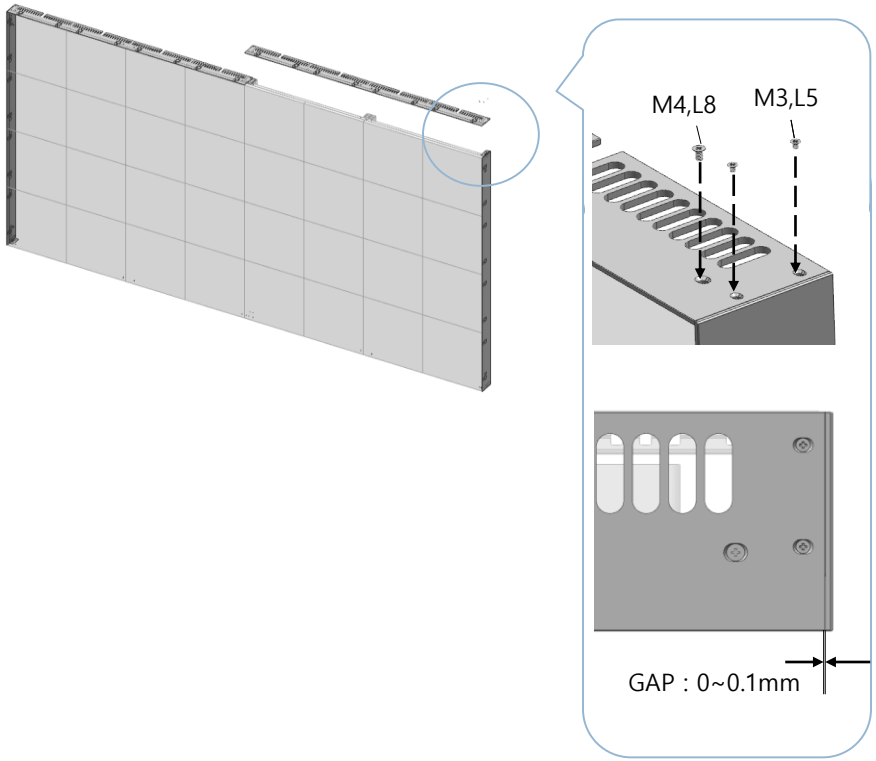
3. Place the ASSY FRAME-BEZEL TOP BOTTOM to the top left of the cabinet.

- Align the FRAME-BEZEL SIDE and FRAME BEZEL TOP BOTTOM to ensure there is no gap between them.
- Use 2 SCREW (M3, L5) to fasten the left side of the FRAME BEZEL TOP BOTTOM to the FRAME BEZEL SIDE.
- Use 1 SCREW (M4, L8) to fasten the left side of the FRAME BEZEL TOP BOTTOM to the screw hole on the cabinet.



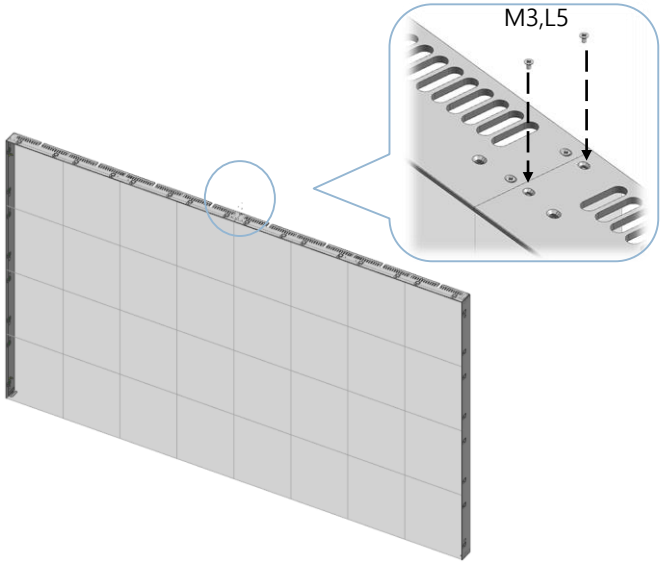
12. Bezel Installation

4. Place the FRAME-BEZEL TOP BOTTOM to the top right of the cabinet.
   - Align the FRAME BEZEL SIDE and FRAME-BEZEL TOP BOTTOM to ensure there is no gap between them.
   - Use 2 SCREW (M3, L5) to fasten the right side of the FRAME-BEZEL TOP BOTTOM to the FRAME BEZEL SIDE.
   - Use 1 SCREW (M4, L8) to fasten the right side of the FRAME-BEZEL TOP BOTTOM to the screw hole on the cabinet.

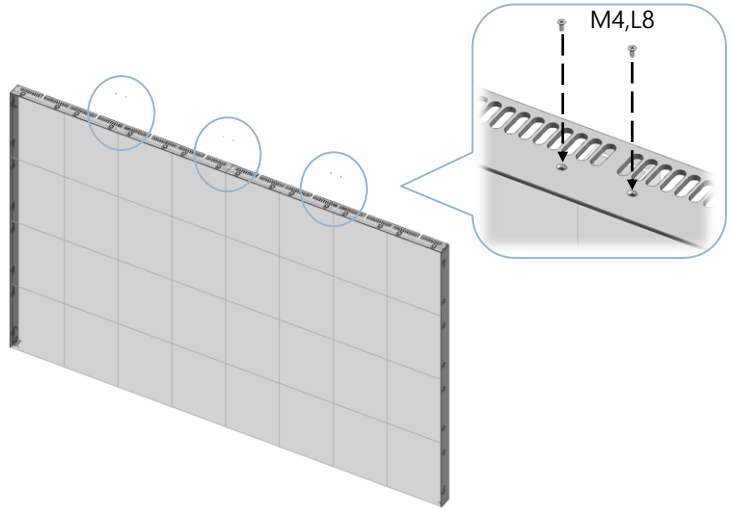


12. Bezel Installation

5. Use 2 SCREW (M3, L5) to fasten the left side of the FRAME-BEZEL TOP BOTTOM. [Fig.1]
6. Use 6 SCREW (M4, L8) to fasten the FRAME BEZEL TOP BOTTOM to the screw holes on the cabinet. [Fig.2]



[Fig.1]

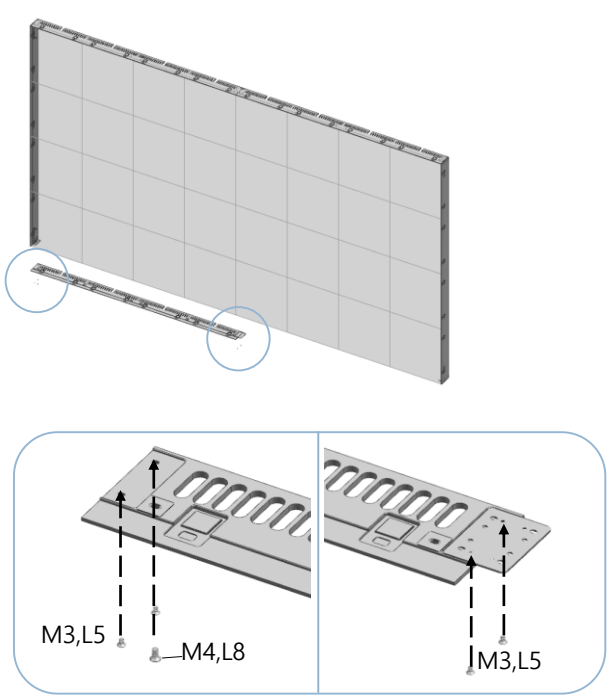


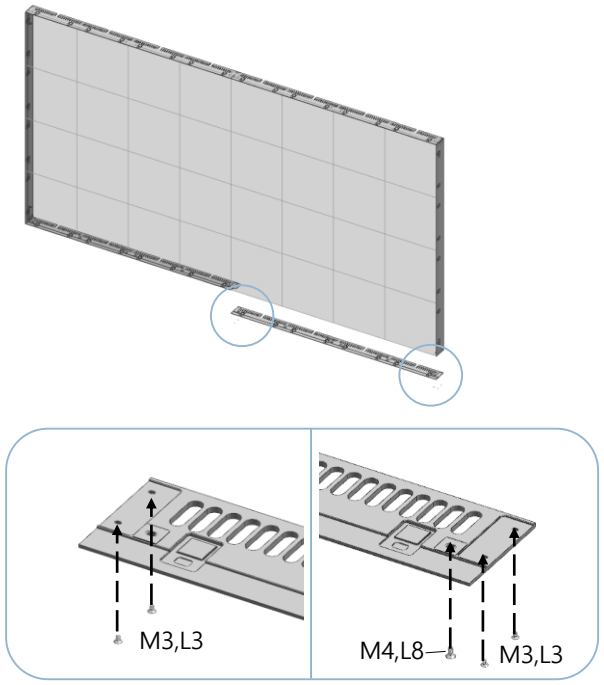
[Fig.2]

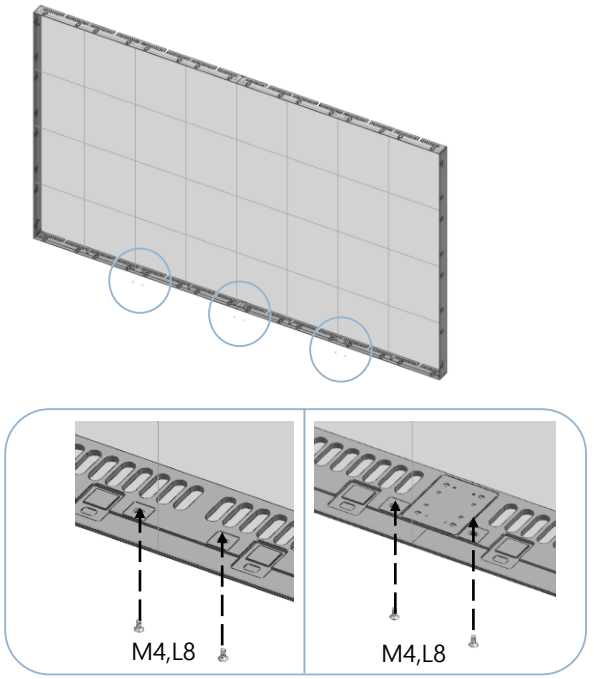
12. Bezel Installation

7. Repeat steps 2-6 to install the cabinet bottom.

* Make sure that there is no gap between the FRAME BEZEL SIDE and FRAME BEZEL TOP BOTTOM units on both ends.





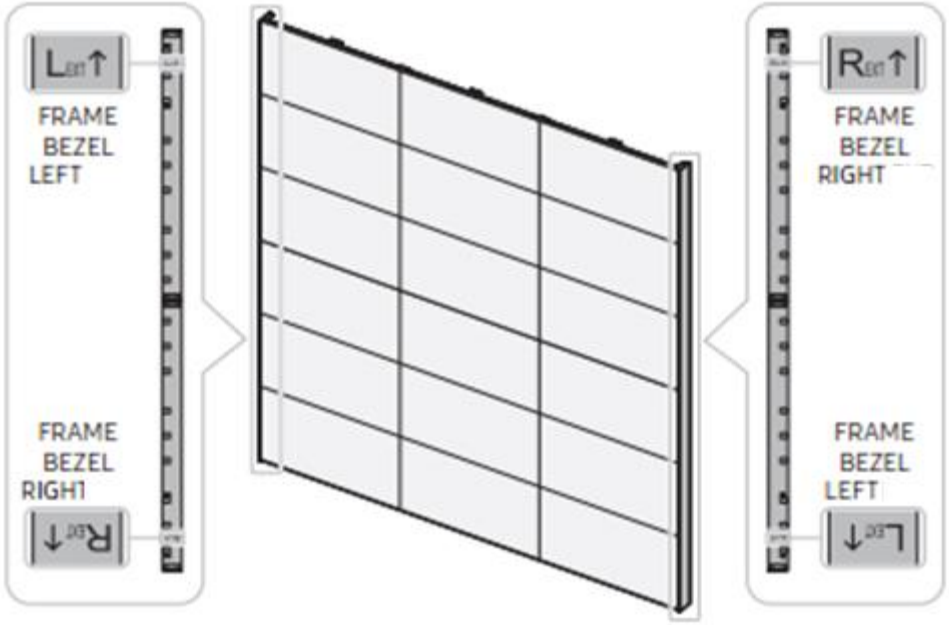


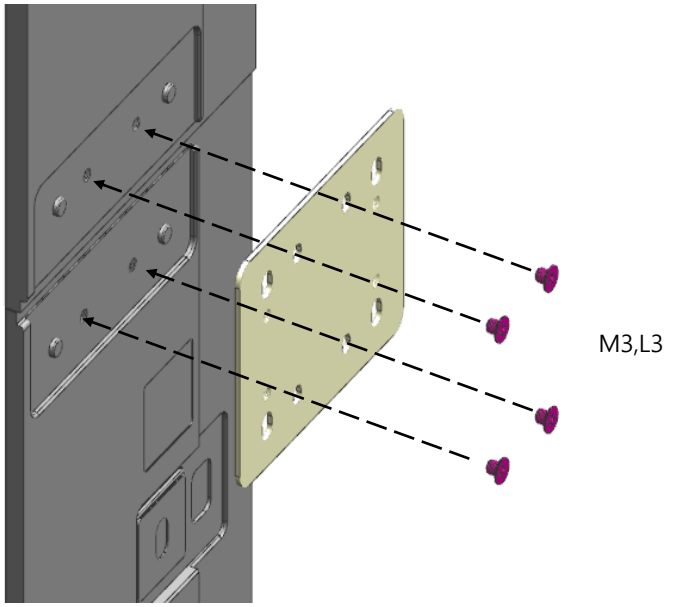
12. Bezel Installation

• Extending the FRAME BEZEL

Extending vertically

• Connect FRAME-BEZEL LEFT & RIGHT for over 5~8 cabinets high



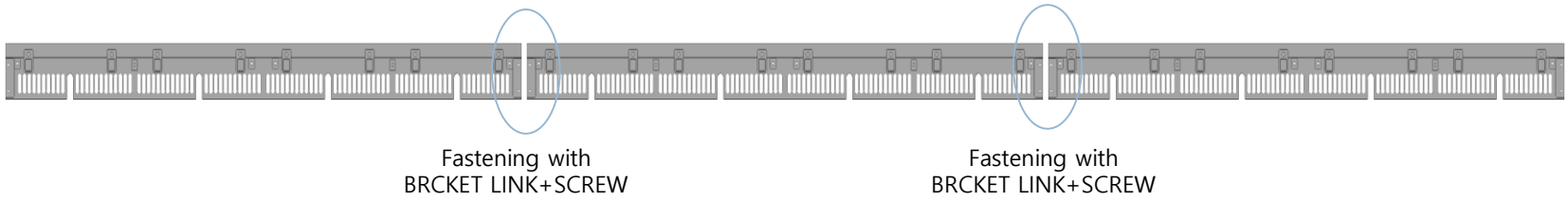


• Extending the FRAME BEZEL

Extending side by side

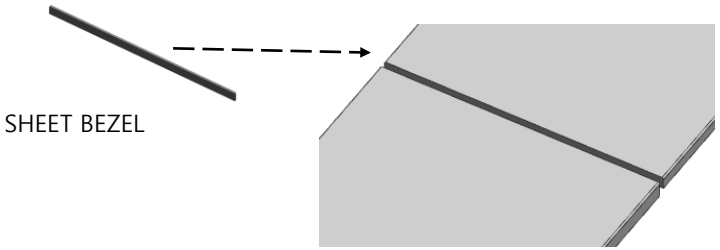
* Follow the basic installation steps and the below guidelines.

• Extending 6 cabinets side by side Connect 3 FRAME BEZEL TOP BOTTOM units.

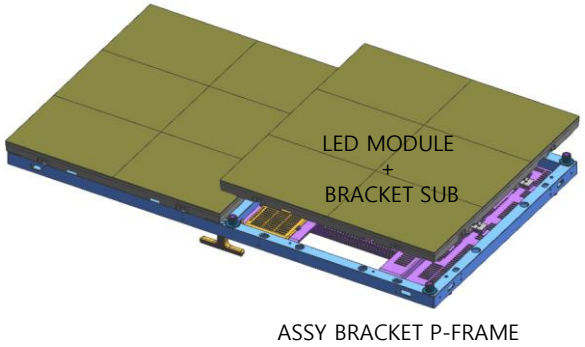


* Using SHEET BEZEL

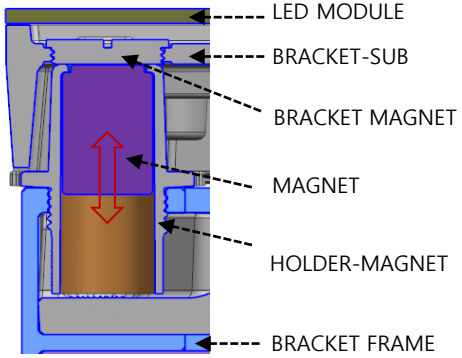
• If there is gap between bezels, attach SHEET BEZEL between bezels



13. Appendix – Module Attachment Principle

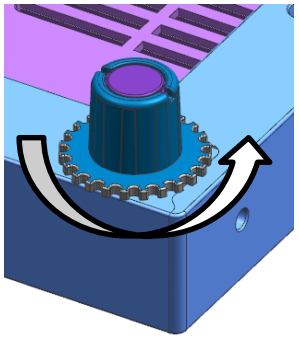


Section view

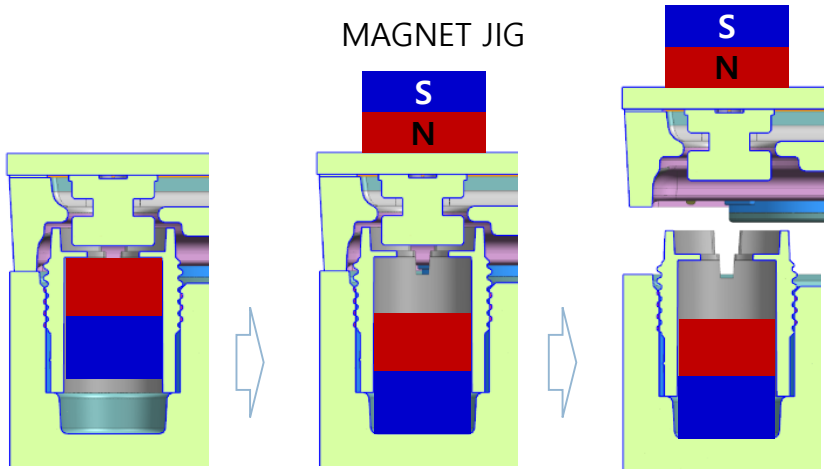


HOLDER-MAGNET

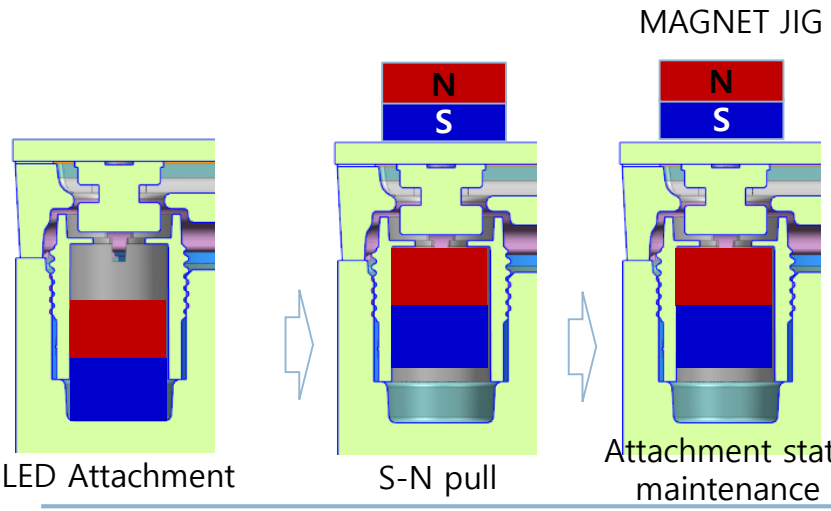
It is possible to adjust height by using driver. (4points / module) => Return in a counterclockwise direction. (1mm/1rotation)



< Operating Principle >



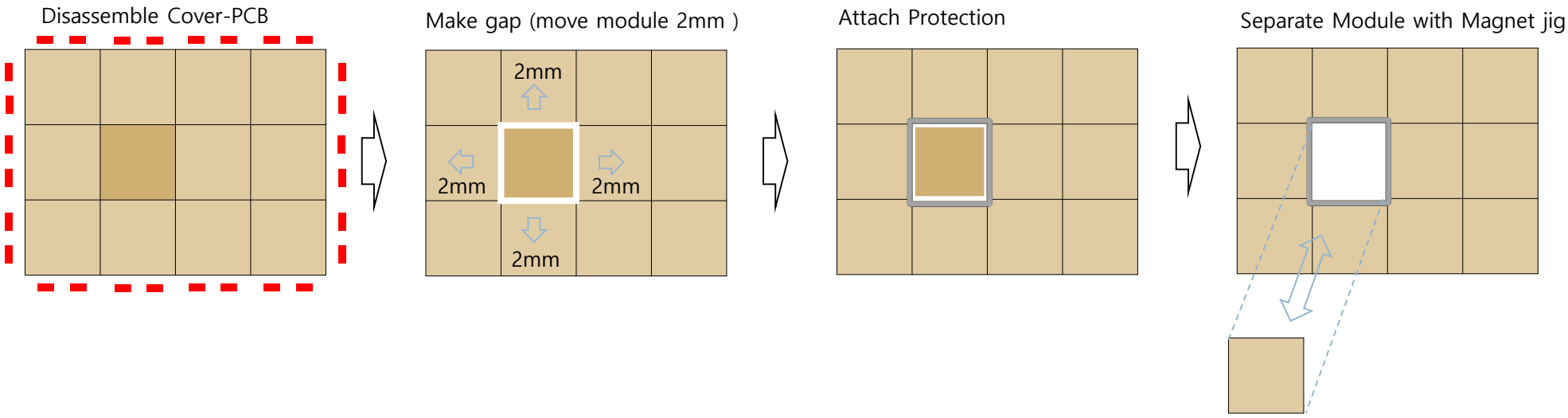
Removal of LED MODULE

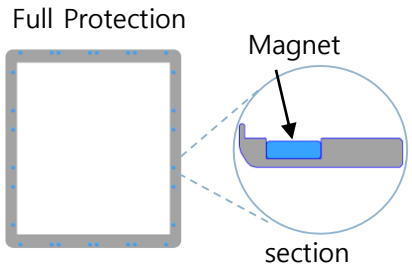


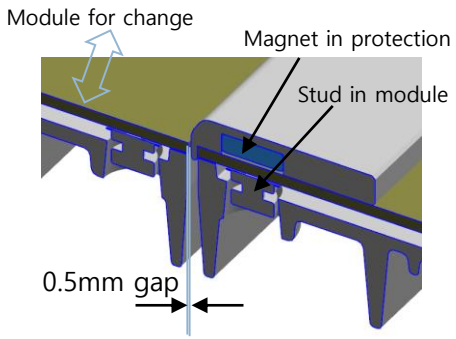
LED MODULE Attachment

13. Appendix – How to separate Module

< Edge protection >







13. Appendix ※ Certified Cable by HDbaseT

★ *For HDBT signal stability, do not use CAT5E cables even though the cables are included in the following list*

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

13. Appendix ※ Certified Cable by HDbaseT

★ *For HDBT signal stability, do not use CAT5E cables even though the cables are included in the following list*

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