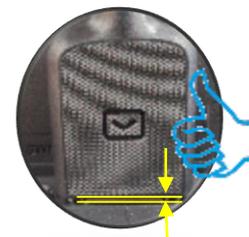
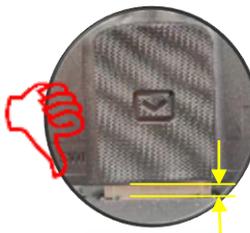
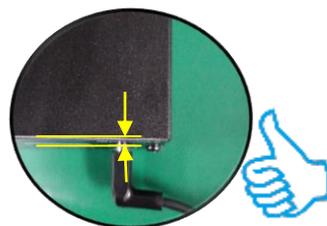
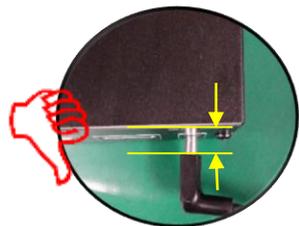


LED Display Installation Manual

S-Box : SBB-SNOWRAF

Check first before Installation

- All Power cables and OCM cables must be connected firmly.



- Install SNOW-RAF with the appropriate Cabinet.

※ Please check below Cabinet and S-Box compatibility table information.

S-Box	SNOW-RAF	SNOW-1810U	SNOW-JMU
Cabinet	IE025R, IE025R-F, IE040R, IE040R-F	IF015H, IF020H, IF025H, IF025H-D, IF040H-D, IF060H-D, IF012J, IW008J	IF015H, IF020H, IF025H, IF025H-D, IF040H-D, IF060H-D, IF012J, IW008J



IMPORTANT

Components

Samsung Electronics

Checking the Components

1



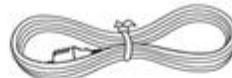
Simple User Guide

2



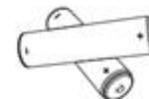
Warranty card
(Not available in
some locations)

3



Power cord

4



Batteries (AAA x 2)
(Not available in
some locations)

5



Remote Control

6



RS232C adapter

7



AC/DC adapter

8



OCM cable

9



HDMI-DVI cable

10



External IR cable

11



External ambient
light sensor

Compare

		18Y LED Signal Box (SBB-SNOWJAU(SNOW-1810U))	19Y LED Signal Box (SBB-SNOWRAF/EN)
Design	Design		
H/W	Platform	KANT_M2e+ SE18S + FPGA	KANT_M2e + FPGA
	Resolution	3840*2160 @60Hz	1920*1080 @60Hz
	Input	DP, 2 HDMI, LAN, USB, RS232 In Out external IR, Power 19V	HDMI, LAN, USB, RJ-45, RS232 In external IR, Eco sensor, Power 14V
	Output	HDBT 4EA SPDIF OUT	DVI, OCM, SPDIF OUT
	Tuner	X	X
	Speaker	X	X
	media player	O	O
	Network	O	O
	Consumption	MAX 55W, Typical : 50 W	MAX 23.1W, Typical : 21 W
	Power	AC 100 to 240(50Hz/60Hz)	AC 100 to 240(50Hz/60Hz)
Special Feature	Special Feature	<ul style="list-style-type: none"> - UHD Resolution Support - Maximum 100m image transmission through HDBT transmission - LED HDR – ITM, Color Mapping, DRE, DP Support - Picture mode and image quality for The Wall support - HDR10, IPv6 Support - S-Box Grouping (Framelock) Support 	<ul style="list-style-type: none"> - FHD Resolution Support - S-Box Grouping (Framelock) not supported - Maximum 3m image transmission through direct connection of OCM cable - LED HDR – FHD Dynamic peaking only - HDR10, IPv6 Support

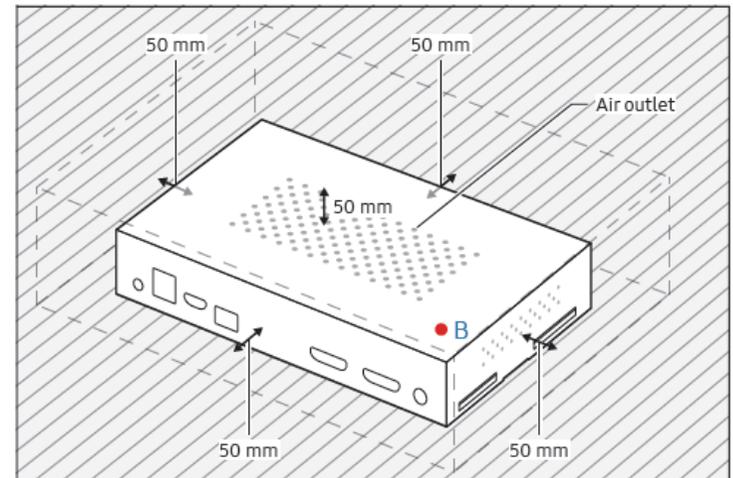
- 1. S-BOX Installation and Connection**
- 2. Settings and How to Use**
- 3. Issue and Solution**

[Appendix] S-BOX Wall Installation

1. S-BOX Installation and Connection

• S-BOX Installation Precautions

- ① Do NOT install the device upside down,
- ② Make sure the vent is not blocked to prevent the device from overheating.
- ③ If installing the device close to wall, make sure that there is a space of at least 50mm between the wall and the four sides of the device to ensure good ventilation.
- ④ Keep the ambient temperature below 35 degrees.
- ⑤ Exercise caution to ensure that no foreign material enters the vent on top of the device.



A Minimum 50 mm

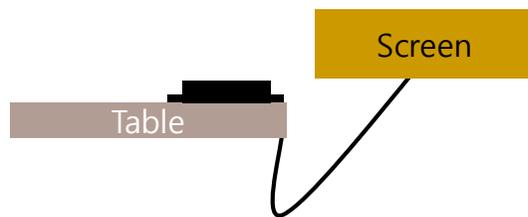
B Ambient temperature: Under 35 °C

1. S-BOX Installation and Connection

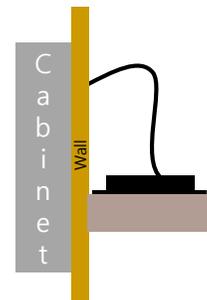
• S-BOX Installation Precautions

- ⑥ Be careful not to pull the cable tight during installation.
 - OCM Cable (BN39-02210A) provided by SBB-SNOWRAF is 3m length,
 - OCM Cable (BN39-02209B) provided for connection between LED cabinets is 2m length.
 - ※ SBB-SNOWRAF provides one OCM 3M cable.
 - If signal redundancy is required, it is limited to within 2m by using 2m cable provided in the last cabinet.
- ⑦ Install the product in accessible place to facilitate operation and maintenance.
- ⑧ Expected installation cases are shown below.
 - When installed in a wall, it maintains a space above S-Box length (153.8m) + ventilation space (50mm).
 - Install it considering the length of the OCM Cable.

- On the table



- In the wall

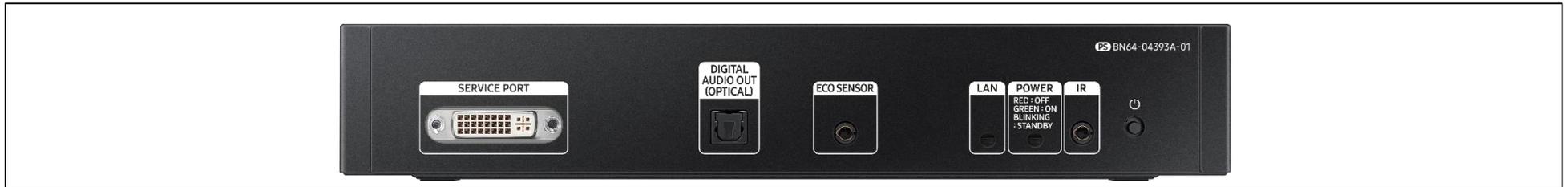


- ⑨ Unavailable place to install
 - The space in the wall is less than 203.8mm
 - Place with poor ventilation
 - Inaccessible place

1. S-BOX Installation and Connection

- S-BOX Product Picture

SNOW-RAF Front



SNOW-RAF Rear

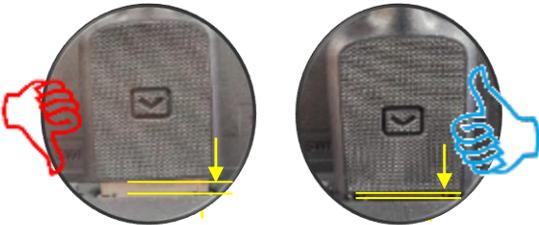


1. S-BOX Installation and Connection

• S-BOX Connection

- ① Input the video signal to the S-Box. (Input terminal : HDMI, USB)
- ② Connect from DATA OUT port of S-BOX to DATA IN port of the first cabinet using OCM Cable.
- ③ SNOW-RAF displays the screen starting from the upper left cabinet.
To view the screen, connect the OCM cable to the DATA OUT port on S-Box.
- ④ Only one model cabinet can be supported for one S-Box at the same time.
Be careful not to mix cabinet models when installing the product.


IMPORTANT



1. S-BOX Installation and Connection

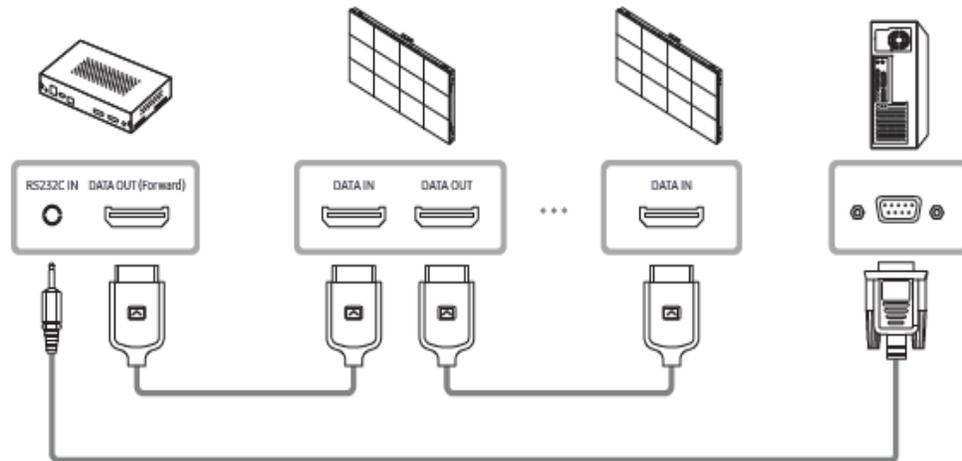
• S-BOX Connection

Connection

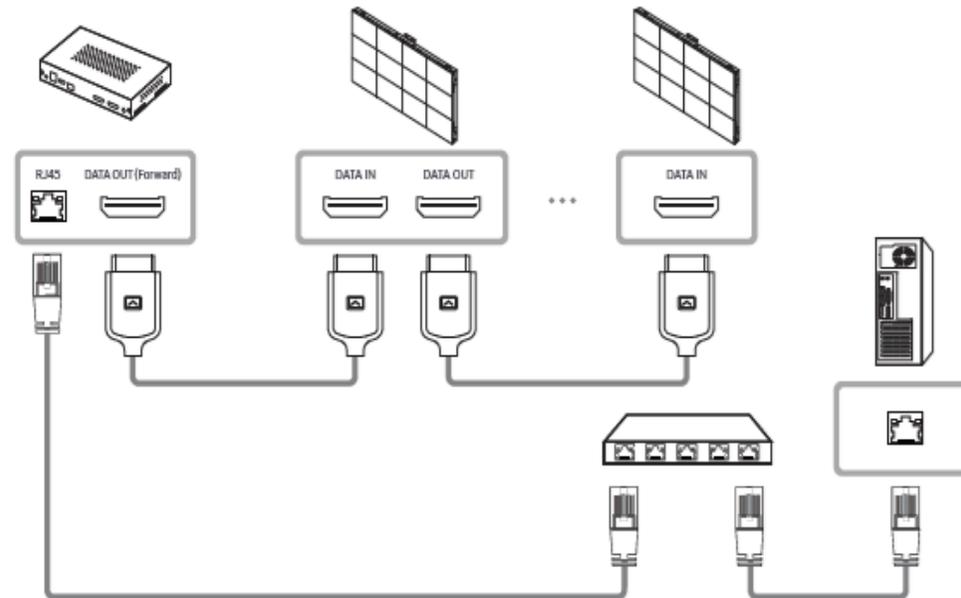
 Depending on the connection method, some MDC features may be restricted. Connection with RJ45 is recommended.

- Connection 1

 Ensure that you connect the RS232C(IN) adapter to the RS232C IN port on the product.



- Connection 2



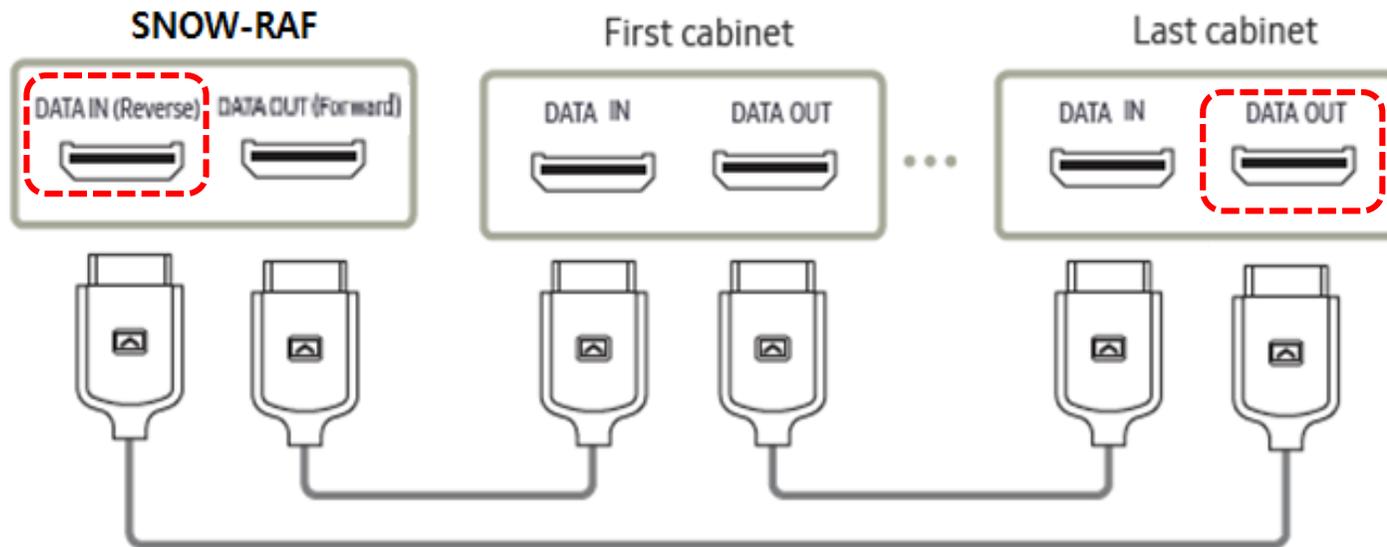
1. S-BOX Installation and Connection

- **S-BOX Connection (Redundancy)**

① If Redundant Spec should be used,

Connect from DATA IN(Reverse) port of S-Box to DATA OUT port of the last cabinet by using OCM Cable.

Connecting cables for redundancy

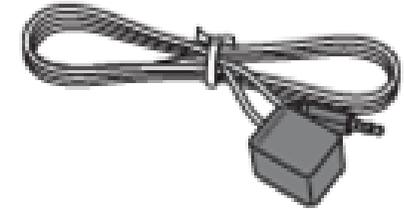


— Cabinets connected to the same network can only be controlled.

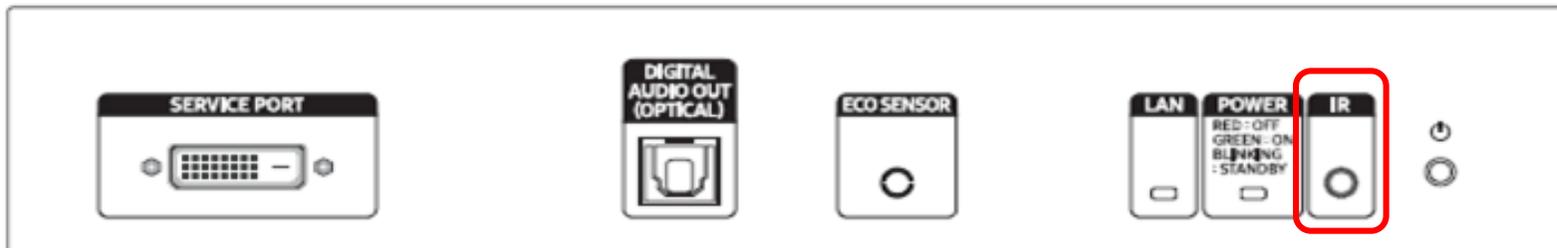
1. S-BOX Installation and Connection

• S-BOX Connection (External IR Receiver)

- Connect the provided IR receiver to the IR terminal on the front of the S-Box.
- ※ Only one external IR receiver is provided for a set.
- ※ Turn off the S-Box and connect it.
- ※ Be careful not to obscure the front of the IR receiver.



BN39-01899A



1. S-BOX Installation and Connection

• S-BOX Connection (External Ambient Light Sensor) – If necessary

- Connect the provided external ambient light sensor to the Eco Sensor terminal on the front of the S-Box.

※ Only one external ambient light sensor is provided for a set.

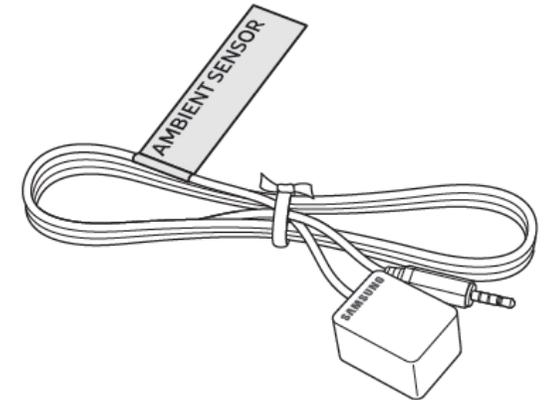
※ Turn off the S-Box and connect it.

※ Be careful not to obscure the front of the external ambient light sensor.

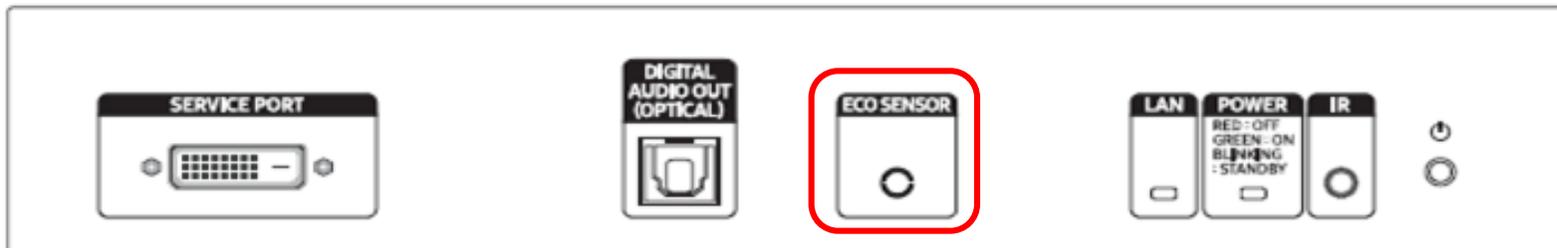
- [Execute] : Menu → System → Eco solution

→ Change the Eco sensor to On.

→ Set the lowest luminance by adjusting Minimum Backlight.



BN96-39535B



1. S-BOX Installation and Connection

• S-BOX Connection (RS232C) – If necessary

- Connect the RS232C adapter provided on the RS232C IN terminal on the rear of the S-Box.
- If necessary, connect to PC and use it for initial network setting or debug.

※ Only one RS232C adapter is provided for a set.

※ Turn off the S-Box and connect it.

- Enter Factory mode for RS232C Read.

[Execute]

Factory remote control: i(info) → ■ (factory)

remote control : Power Off → MUTE → 1 → 8 → 2 → Power On

→ Control → Sub Option → RS-232 Jack

→ Change from UART to Debug.



BN39-01545B



1. S-BOX Installation and Connection

Network IP Setting Tool

※ Be sure to connect the cabinet and S-Box to the OCM cable.

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

1. Connect PC and S-Box with RS232C Cable, select connected SerialPort(COM*). And click "open" button.
2. Default ID of S-Box 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 S-Box 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.

The screenshot shows the 'Serial Connection' window of the Network IP Setting Tool. It is divided into two main sections: 'Serial Connection' and 'Network Configuration'.
1. In the 'Serial Connection' section, the 'Serial Port' dropdown is set to 'COM1' and the 'Open' button is visible. The 'Device ID' is set to '1'.
2. The 'Network Configuration' section contains input fields for 'IP Address', 'Subnet Mask', 'Gateway', and 'DNS', all of which are currently set to '0 . 0 . 0 . 0'.
3. Below the network configuration fields, there is a 'Change type to RJ45' button and an 'Apply' button.
4. At the bottom, there is a 'Serial Communication Log' area which is currently empty.
5. The 'Change type to RJ45' button is highlighted with a blue box.

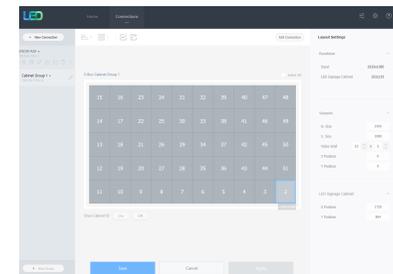
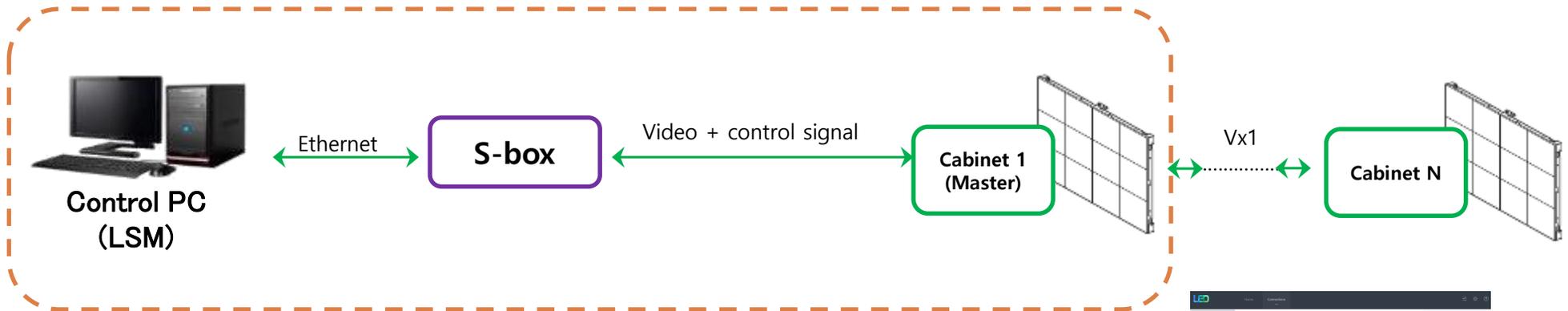
1. S-BOX Installation and Connection

• S-BOX Connection (Panel Configuration)

① S-Box Picture Setting according to model

- The LED display model to be installed and the optimized image quality setting are automatically set after LSM connection is set.
- For the best picture quality, make sure to connect/register S-Box and LED display with LSM SW.
- The LED Display must be connected to OCM.
- The Picture configuration will be set base on the model of the 1st Master LED display which is connected to DATA OUT in S-Box.

* LSM connection is required for LED specialized function use and cabinet control.



< Connected condition in LSM >

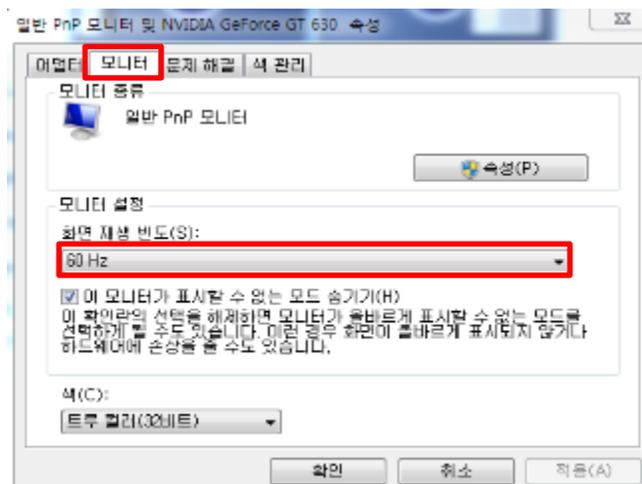
1. S-BOX Installation and Connection

② 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

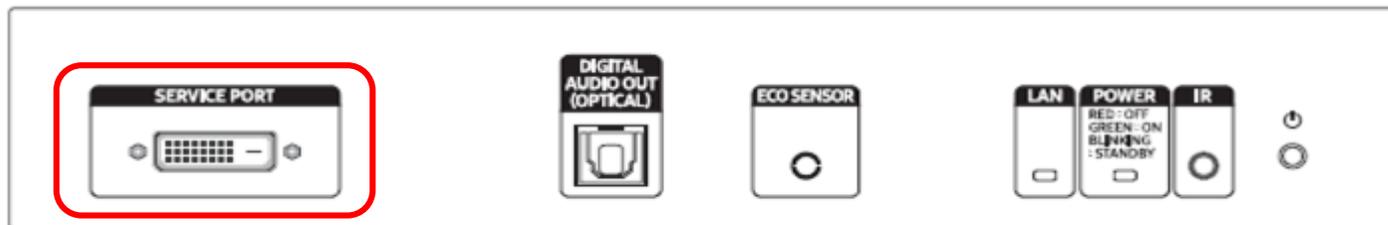
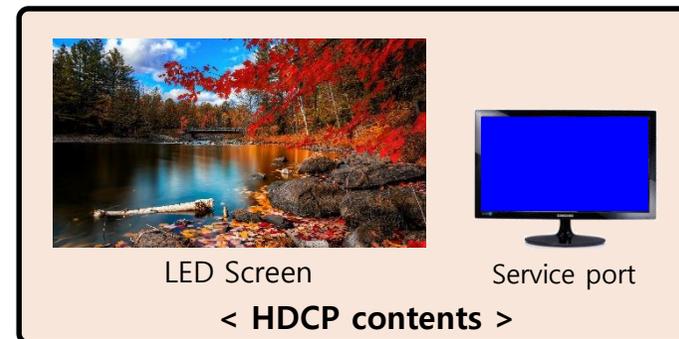


1. S-BOX Installation and Connection

• 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 Service port can't be used for regular video transmission.
- ④ Depending on the HDCP presence/ absence of the input content, the output of the service port screen is limited.

When entering HDCP contents, the blue pattern is displayed as shown below.



2. Settings and How to Use

2-1. Control Program for PCs

LSM(LED Signage Manager)

- LSM Download Path : GSBN - SLM - Display solution download -> "LED SIGNAGE MANAGER" or "LSM"
- GSBN : <http://v3.samsungsbn.com/ep>

SLM
Display Solution Download Center

Hide Search Options ^

Category	VD	Post Date	<input type="text"/> ~ <input type="text"/>
Title	LED SIGNAGE MANAGER	Contents	<input type="text"/>
Level 1	-- Select --	Level 2	-- Select --
Level 3	-- Select --	Display Order	descending Total Download

List

No	Category Name	Title	Level 1	Level 2	Level 3	Attached file	Total Download	Registered By	Registered On
3319	VD	LED Signage Manager(LSM) [A-LEDMGDSP-1009.02]	LFD	Software		2	207	Kim 김석범 Seokbeor	2017-12-18
1074	VD	LED Signage Manager (A-LEDMGDSP-1002.02)	LFD	Software		2	190	Kim 김석범 Seokbeor	2016-04-28
1589	VD	[User Manual] LED Signage Manager user manual	LFD	Manuals		2	178	Kim 김석범 Seokbeor	2016-11-09
3622	VD	LED Signage Manager(LSM) [A-LEDMGDSP-1011.02]	LFD	Software		2	148	Kim 김석범 Seokbeor	2018-05-10
2519	VD	LED Signage Manager(LSM) [A-LEDMGDSP-1007.03]	LFD	Software		2	134	Kim 김석범 Seokbeor	2017-08-02
1292	VD	LED Signage Manager (A-LEDMGDSP-1003.03)	LFD	Software		2	102	Kim 김석범 Seokbeor	2016-07-29
3503	VD	LED Signage Manager(LSM) [A-LEDMGDSP-1010.04]	LFD	Software		2	102	Kim 김석범 Seokbeor	2018-03-22
1984	VD	LED Signage Manager(LSM) [A-LEDMGDSP-1005.00]	LFD	Software		2	89	Kim 김석범 Seokbeor	2017-03-14
2883	VD	LED Signage Manager(LSM) [A-LEDMGDSP-1008.03]	LFD	Software		2	74	Kim 김석범 Seokbeor	2017-10-24
1739	VD	LED Signage Manager (A-LEDMGDSP-1004.02)	LFD	Software		2	69	Kim 김석범 Seokbeor	2016-12-09

<< < Records from 1 to 10 of 12 > >> Page 1 10 rows per page

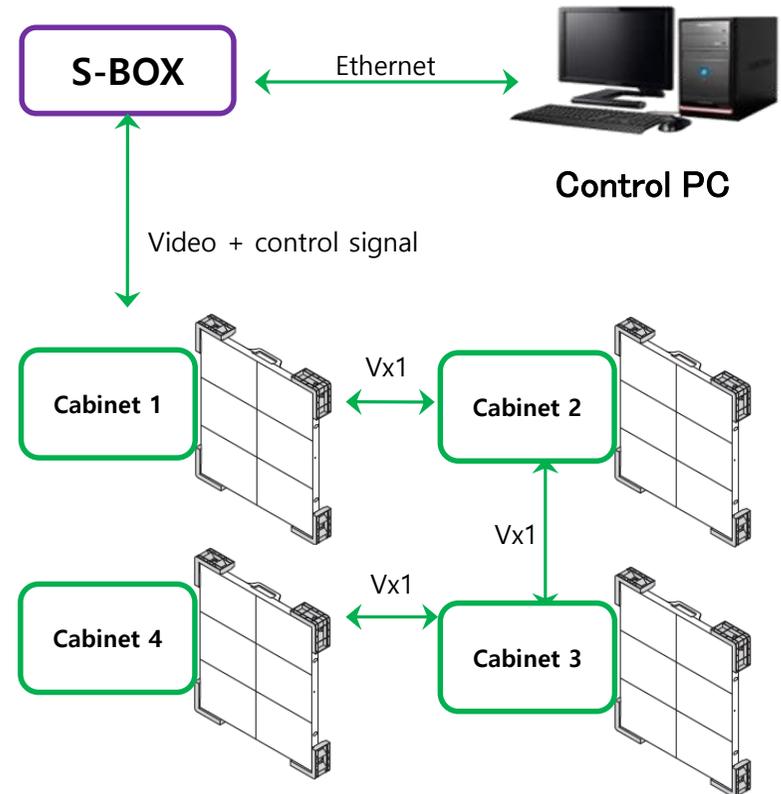
2. Settings and How to Use

2-1 PC용 컨트롤 프로그램

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 the first LED Cabinet using OCM cable.
3. LED cabinets are connected in daisy chain method using OCM cable.



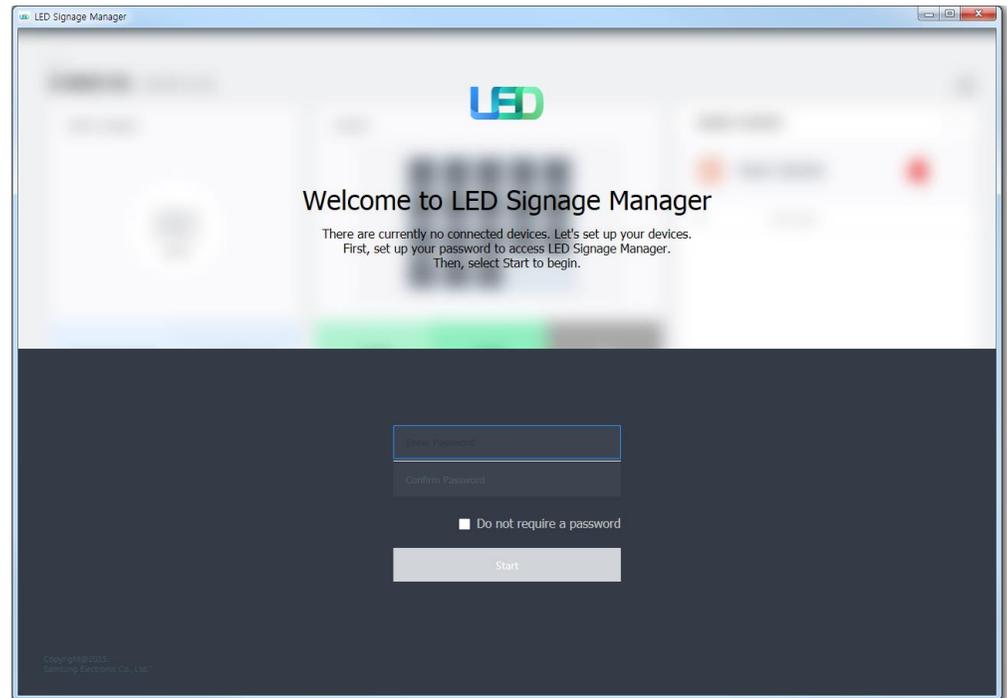
2. Settings and How to Use

2-1. Control Program for PCs

LED 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.



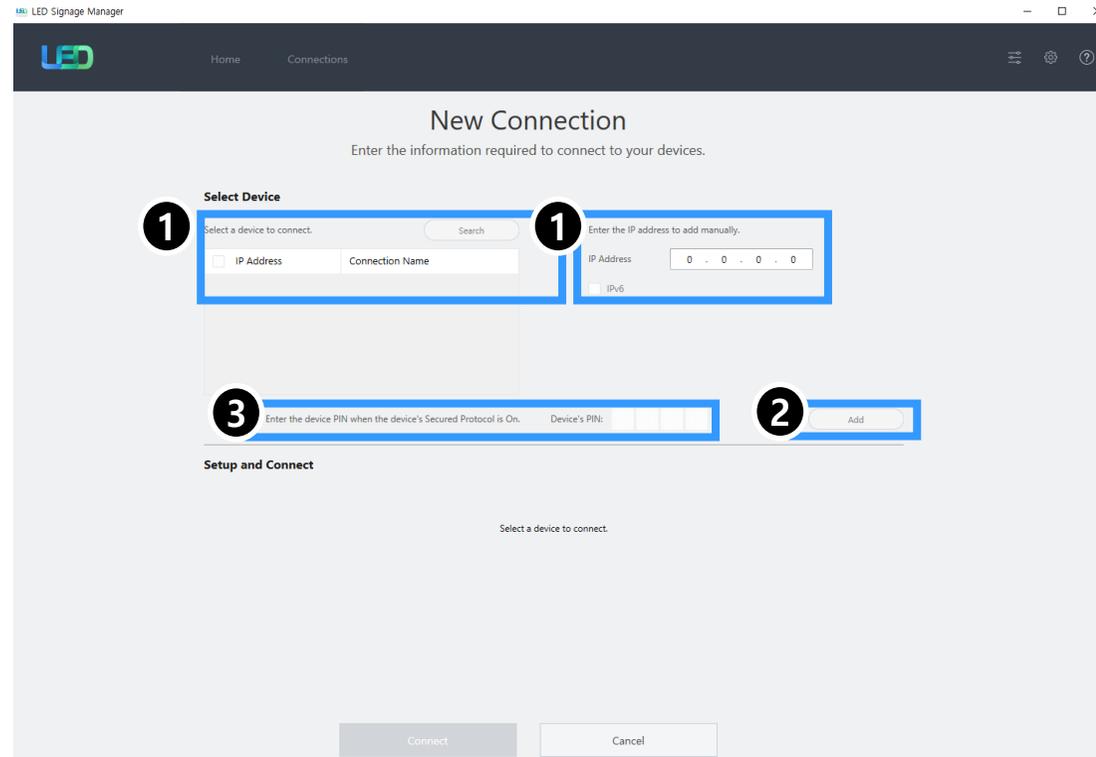
2. Settings and How to Use

2-1. 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 address of S-Box on the same network is automatically retrieved. It is possible to add S-Box connected to IPv6 through IPv6 checkbox.
2. If you click Add button, the relevant connection information will be added on Setup and Connect.
3. If the Secured Protocol setting of S-Box is ON, enter the Pin number and press the Add button to connect the product.



2. Settings and How to Use

2-1. Control Program for PCs

LSM(LED Signage Manager)

- New Connection-Connect

4. Connection information of S-Box is generated in Setup and Connect. You can select the S-Box type to use by selecting the Model Type.

5. Model Type is provided with a total of 4. (Without Cabinet IP / With Cabinet IP (FHD) / With Cabinet IP (UHD) / The Wall Luxury)

After selecting according to the S-BOX product you use, you must specify the IP address of the LED cabinets connected to each port.

After setting the number of connections, click the 'Connect' button.

※ If you install it for the first time, check the "Assign Details and Acceptance" option. In this case, you automatically assign the ID of the LED cabinets on that port and then arbitrarily set the location information. The location information of the LED cabinets can then be modified.

※ If you have already set an IP in the cabinet, check the "Connect with connected addresses" option.

※ For UHD, if you want to use only some of the four ports, you only need to enter an IP address for the group.

The image displays four sequential screenshots of the 'Setup and Connect' interface in the LSM control program. Each screenshot shows a configuration panel for an S-Box with various settings.

- First Screenshot:** Shows the 'S-Box' configuration. The 'IP Address' is 192.168.176.5. The 'Model Type' is 'Without Cabinet IP'. The 'Device's PIN' is set to 0000. The 'Number of Cabinets' is 1. The checkbox 'Assign IDs and positions automatically' is checked.
- Second Screenshot:** Shows the 'S-Box' configuration. The 'IP Address' is 192.168.176.5. The 'Model Type' is 'With Cabinet IP (FHD)'. The 'Device's PIN' is set to 0000. The 'Number of Cabinets' is 1. The checkbox 'Connect with existing settings' is unchecked, and 'Assign IDs and positions automatically' is checked.
- Third Screenshot:** Shows the 'S-Box' configuration. The 'IP Address' is 192.168.176.5. The 'Model Type' is 'With Cabinet IP (UHD)'. The 'Device's PIN' is set to 0000. There are four 'Group' entries (Group 1 to Group 4), each with an IP address of 192.168.176.0 and 1 cabinet. The checkbox 'Connect with existing settings' is unchecked, and 'Assign IDs and positions automatically' is checked for all groups.
- Fourth Screenshot:** Shows the 'M-Box' configuration. The 'IP Address' is 192.168.176.5. The 'Model Type' is 'The Wall Luxury'. The 'Device's PIN' is set to 0000. There are eight 'Group' entries (Group 1 to Group 8), each with an IP address of 192.168.176.0 and 1 cabinet. The checkbox 'Connect with existing settings' is unchecked, and 'Assign IDs and positions automatically' is checked for all groups.

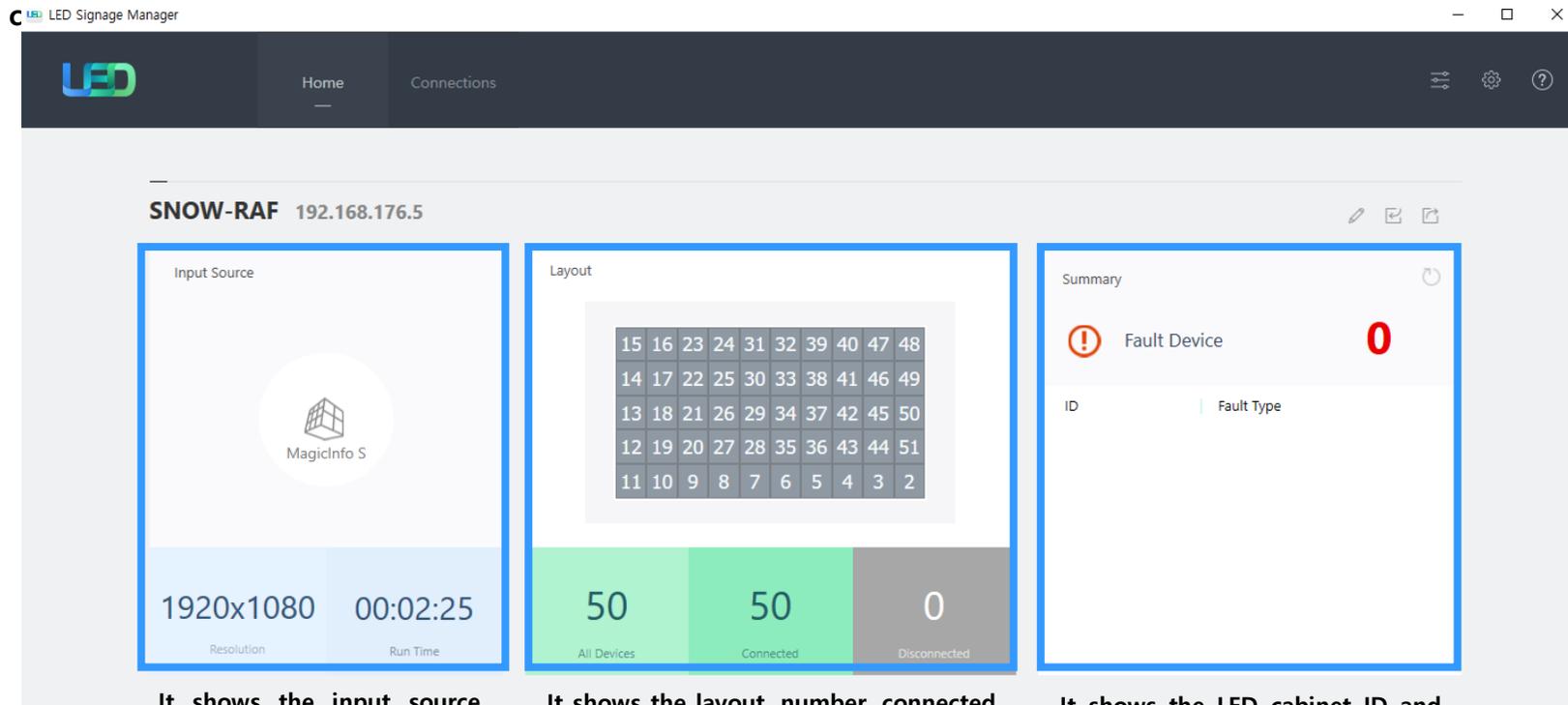
2. Settings and How to Use

2-1. Control Program for PCs

LSM(LED Signage Manager)

- Main Window-Home Window

- Home screen : Show the information of the connected device, input source,



It shows the input source, resolution, and connection time information of S-BOX.

It shows the layout, number, connected number of all LED cabinets and the number of disconnected cabinets.

It shows the LED cabinet ID and its contents in error state.

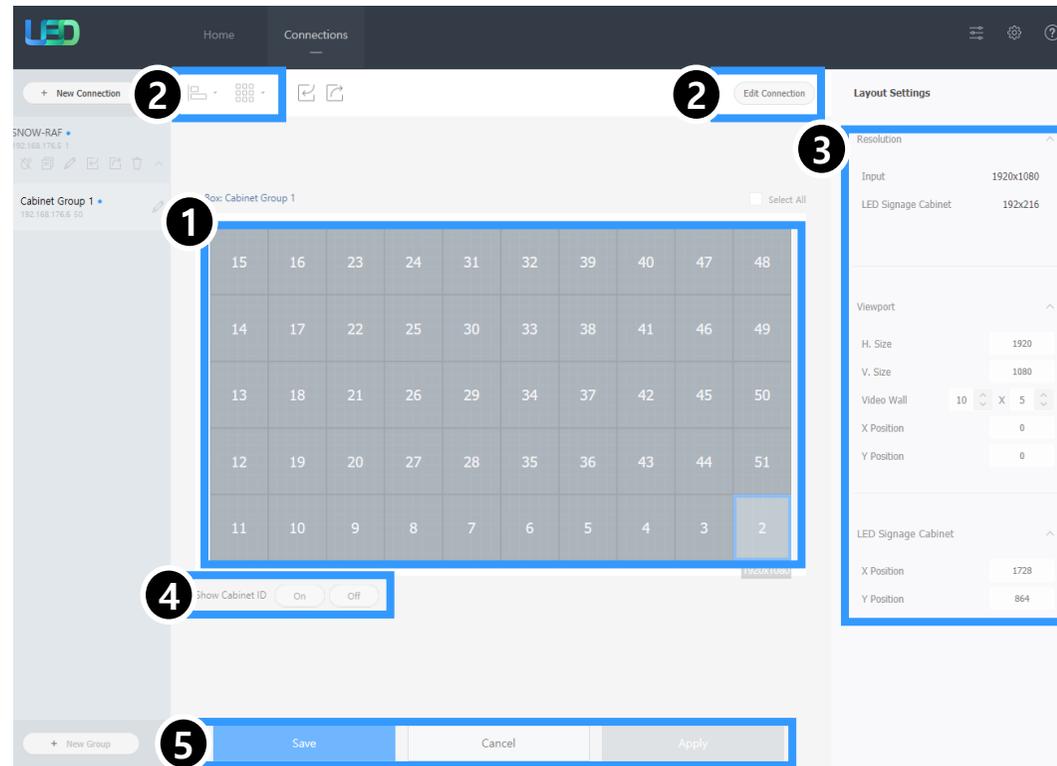
2. Settings and How to Use

2-1. Control Program for PCs

LSM(LED Signage Manager)

Main Window-Edit Connection Layout Window

1. **Connection layout:** It adjusts the position and layout of each LED cabinet in the output source of the LSB.
2. **Feature View:** It provides edit button for modifying connecting information and automatic alignment of LED cabinets.
3. **Device Information/Setting View:** It shows the LED cabinet information according to the category below.
 - (i) **Resolution:** Resolution information of the input source
 - (ii) **Viewport:** Width/ Length size, Video wall matrix, x/y position of LED cabinet
 - (iii) **LED Signage Cabinet:** x, y position of LED cabinet
4. **Show ID:** The ID of all LED cabinets can be displayed or turned off.
5. **Save/ Apply and Cancel.**



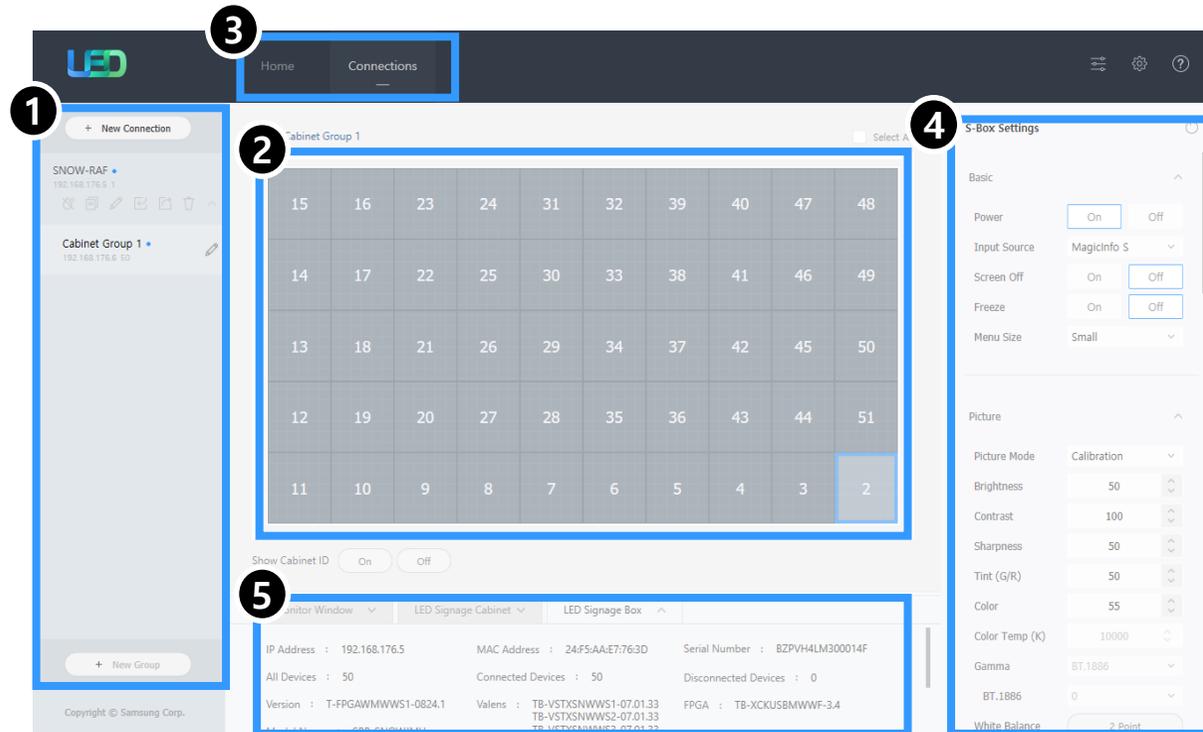
2. Settings and How to Use

2-1. Control Program for PCs

LSM(LED Signage Manager)

Main Window-Connection Window

1. Device connection list view:
Check S-BOX configuration information, modify and delete LSB connection, display by LED cabinet group
2. Connection layout (View Port):
Check the location and layout of each LED cabinet
3. Category View:
Home / Connections tap and configuration
4. Device Information/Setting View:
Change S-BOX setting (Screen setting, etc.)
5. Sub Information View: Displays:
Monitoring log, S-BOX and LED cabinet information



2. Settings and How to Use

2-1. Control Program for PCs

LSM(LED Signage Manager)

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

1. Basic :

. Power, Input Source, Screen Mute / Freeze

2. Picture

. Picture Mode, Brightness, Contrast, Sharpness, Color, Tint(G/R), Color Temp(K), Gamma, White Balance, LED Picture Size

3. Picture Options

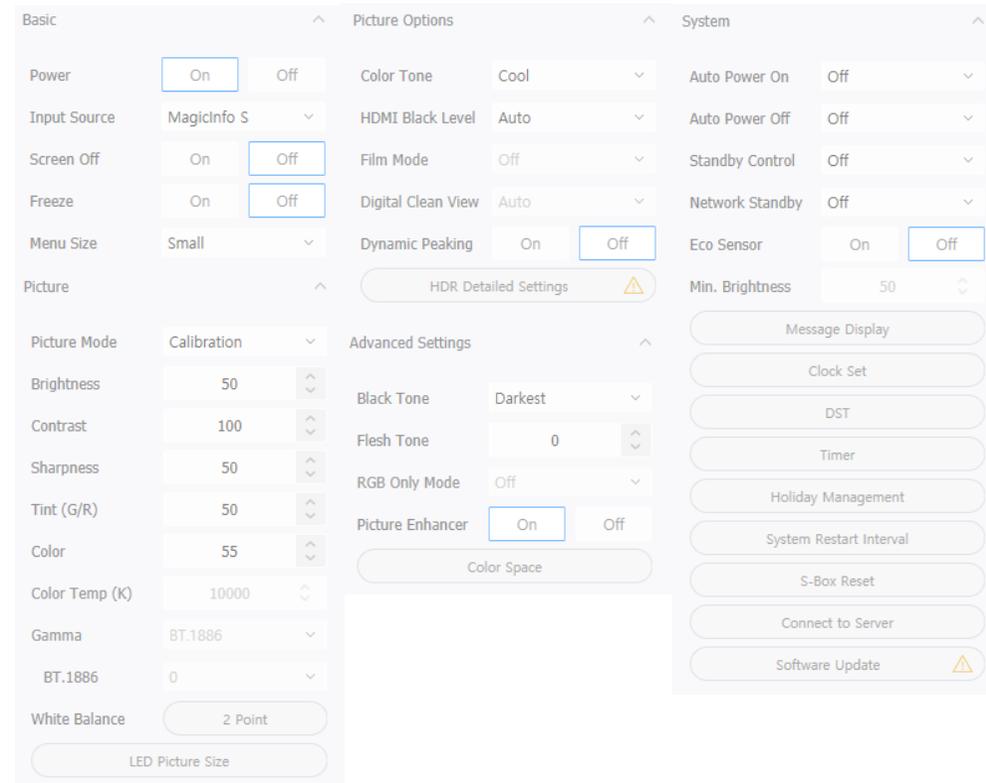
. Color Tone, HDMI Black Level, HDR Settings 등

4. Advanced Settings

. Black Tone, Flesh Tone, Picture Enhancer, Color Space 등

5. System

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



2. Settings and How to Use

2-1. Control Program for PCs

LSM(LED Signage Manager)

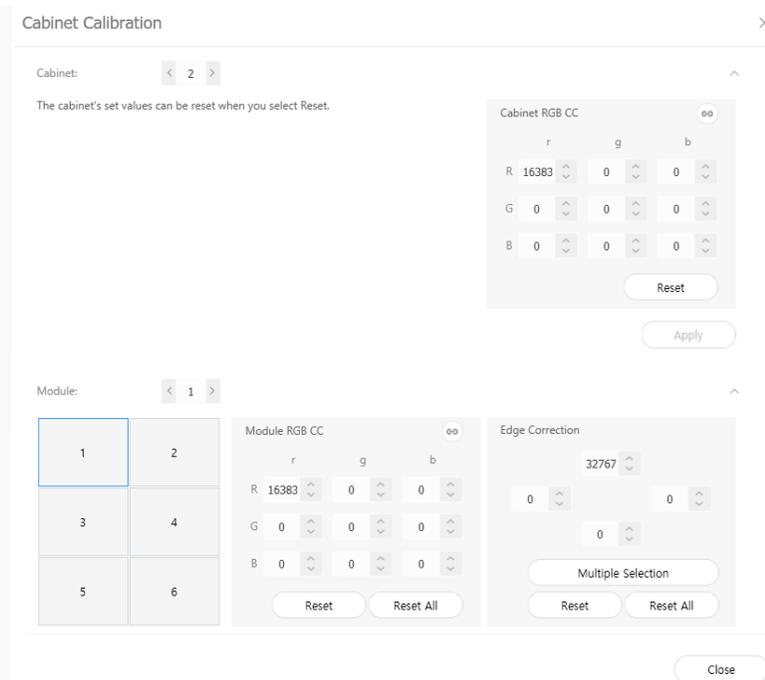
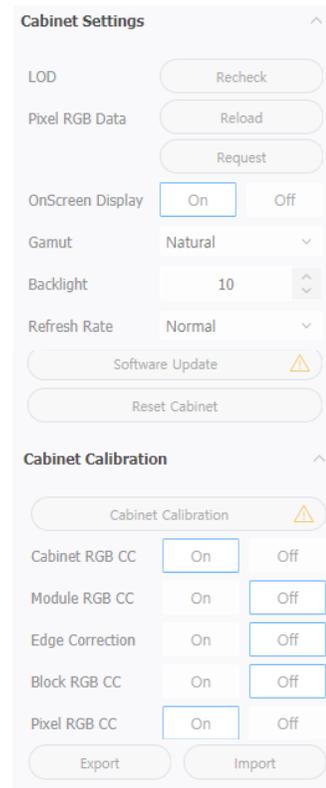
- **Main Window-Connection Window - Device Information/Setting View**

6. Cabinet Settings

- . LOD Recheck, Pixel RGB Data(Reload, Request), Onscreen Display, Gamut, Backlight, Software Update, Reset Cabinet

7. Cabinet Calibration

- . (Cabinet / Module / Block) RGB CC Calibration
- . Module Edge Correction (Single / Multiple Selection)
- . On/ Off for each CC
- . Extraction / batch application of data through import / export



2. Settings and How to Use

2-1. Control Program for PCs

LSM(LED Signage Manager)

- Main Window-Connection Window - Sub Information View

1. Monitor Window:

MDC communication log and connection device information can be extracted as a verifiable file.

2. LED Signage Cabinet:

IC information and power information of LED cabinet, Software version information

3. LED Signage Box:

IP Address, MAC Address, Number of LED cabinets (total / conneted / unconnected), S / N, Software version information

The screenshot displays the LSM software interface with three main sections:

- Monitor Window:** Shows a log of MDC communications with timestamps and device IDs (ID2 to ID6) and their status (e.g., Temperature -46°C, Power Status - FPGA OK).
- LED Signage Cabinet:** A table showing the status of various ICs and power sources. All are listed as 'Available'. It also shows LED Open Detection status for M1 through M6, all of which are '0'.
- LED Signage Box:** Displays system information including IP Address (192.168.176.5), MAC Address (24:F5:AA:E7:76:3D), Serial Number (BZPVH4LM300014F), and a list of connected and disconnected devices with their respective software versions.

2. Settings and How to Use

2-1. Control Program for PCs

LSM(LED Signage Manager)

- **Main Window-Preference**

1. **Options**

- Command Retry Count
- Error Status Interval
- Temperature Alert

2. **Support**

- Program Language
- Advanced Log Management
- Notify device error by mail
- Password setting option

3. **About Software**

- current version and update function of LSM

The screenshot shows the 'Preferences' window for the LSM software, divided into three main sections: Options, Support, and About Software.

- Options:**
 - Command Retry Count: 3
 - Error Status Interval (min.): 30 min
 - Temperature Alert: 70 °C
 - Auto Brightness: Off, Brightness Sensor (with an 'Edit' button)
 - Location: (with an 'Edit' button)
- Support:**
 - Language: English (dropdown menu)
 - Advanced Log Management: Keep Log Data 10 days, with buttons for Log Backup, Delete Log, and Change Password.
 - Use Password: (with a Change Password button)
 - Fault Device Alert: 10 min (with a Mail Server button)
- About Software:**
 - Current Version: A-LEDMGDSP-1013.06-20191120-1
 - Auto Update: (with a Check for Updates button)
 - Open Source License: (with a View details button)

At the bottom, a copyright notice states: 'This program is protected by copyright laws and international treaties. Unauthorized reproduction or distribution of this program, or any portion thereof, may result in serious civil and criminal penalties.'

▪ S-Box Network Connection Issue with LSM

① When you can't find S-Box or see disconnected message in LSM

- Check Ethernet cable connection
- Check IP setting of S-Box
- Check target IP of S-Box in LSM
- Check the connection with network test program like Ping test.
- Restart LSM program

② When you can't find cabinet connected to S-Box in LSM

- Check OCM cable connection between cabinet and IG and reconnect the cable
- Check IP address of cabinet in LSM
(Do not use band of 192.168.10.xxx, because the band is used for internal communication of cabinets)
- Check the connection with network test program like Ping test
- Reset the cabinet.
- Restart LSM program

• S-BOX Wall Installation Precautions

- ① Check the installable wall and install it using screws that fit the wall material. (Satisfied with more than 3kg of load)
- ② Install the Service Port upward as shown below.
- ③ Make sure that there is a space of at least 50mm between the wall and the four sides of the device. In the case of cable ports, a space of more than 50mm is maintained for easy cable connection.
- ④ Do not install in locations where there is a risk of vibration or shock, next to a sprinkler sensor, near high-pressure cables, near heaters.
- ⑤ If the product needs to be fastened such as bracket, use the following holes. (M4, Depth 5mm)

