

# S-BOX Installation and Connection

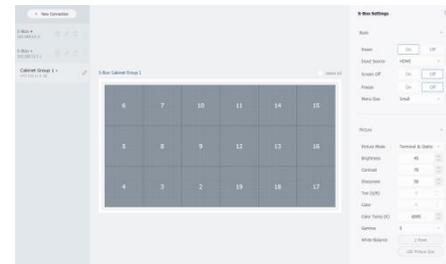
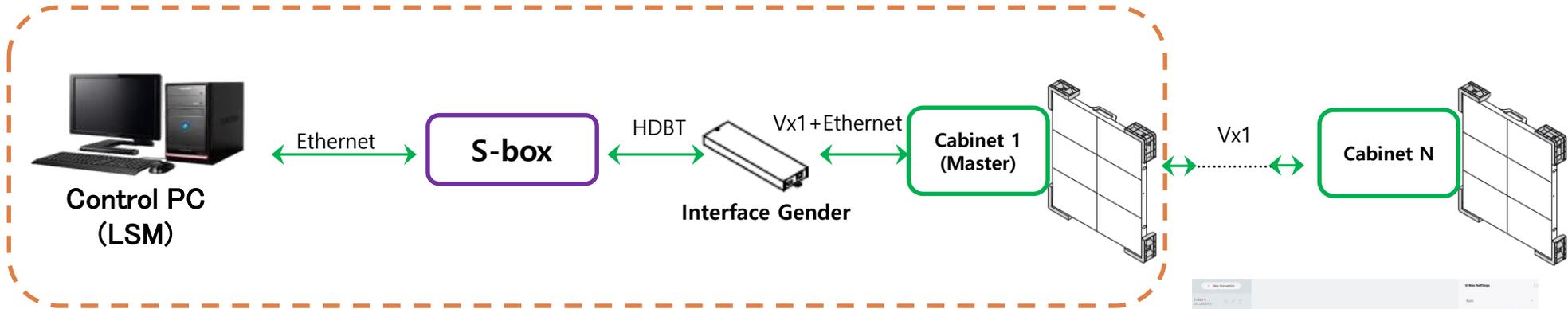
## ■ S-BOX Connection (Panel Configuration)

192.168.10.XX

### 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 1<sup>st</sup> 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 1<sup>st</sup> 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.

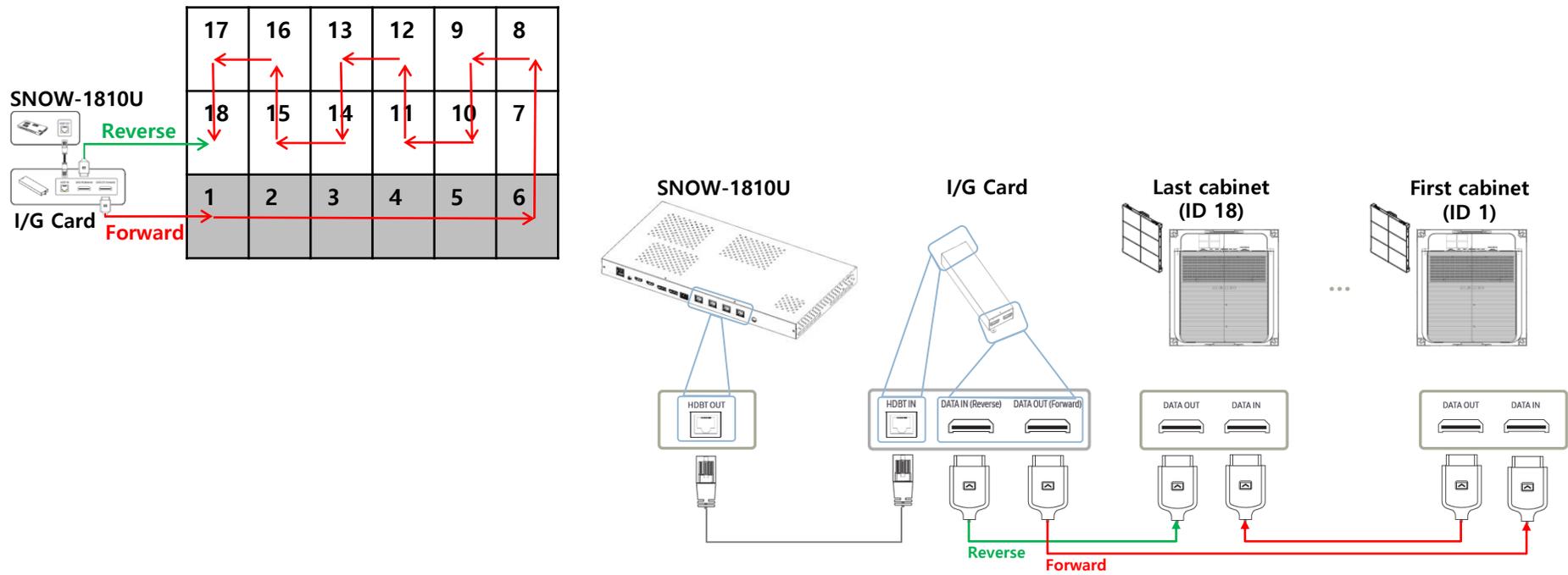


<Connected condition in LSM>

# Cable 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.



# Dehumidification

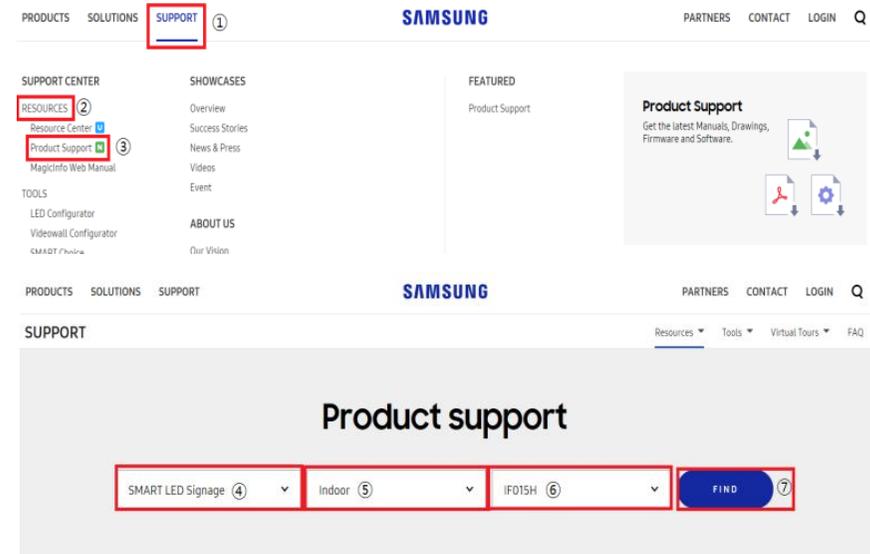
- After installation, LED defects are prevented by dehumidification
- After connecting the S-BOX, the LED display is slowly operated for 24 hours to remove humid from the LED.

- ① Begin dehumidification after cabinets installation and S-BOX connection.
- ② Download archived file. (Refer the below 'How to download execution file'.)
- ③ After extracting the file to USB, plug USB in S-Box.
- ④ It begins automatically, pattern is changed to the brighter one every two hour.  
(After setting current time, brightness of each pattern is shown in the right table.)
- ⑤ After 24 hours, Dehumidification process completed then, remove USB

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

## ✂ How to download execution file

- Move to <https://displaysolutions.samsung.com/>
- Select SUPPORT<sup>①</sup> → RESOURCES<sup>②</sup> → Product Support<sup>③</sup>
- SMART LED Signage<sup>④</sup> → Indoor<sup>⑤</sup> → Model<sup>⑥</sup> → FIND<sup>⑦</sup>
- Select 'LED Signage Installation Manual(De-humidification execution)' file and download it.



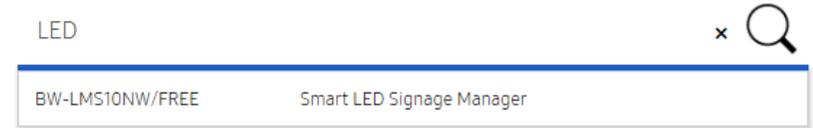
# How to configure IP addresses for S-Box

- Five IP addresses must be acquired from IT manager of the installation site.
- Five IP addresses for S-Box and 4 master cabinets.
- IP address can be configured by initial setting or by ‘Network IP Setting Tool’
- The below sequence is for initial setting.
  - Connect a monitor to S-Box through service the port of S-Box.
  - Turn on S-Box.
  - Go to ‘Wired Connection’ menu and set network information by IP Settings like the right pic.
  - After finishing initial setting, go to home and change communication type to RJ45 from RS232C.

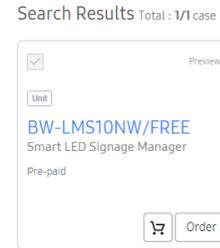


# How to configure IP addresses for S-Box

- In order to set network information by ‘Network IP Setting Tool’, you need to download LSM (LED Signage Manager) and follow the below steps.
  - Connect to SLM server (http://www.seclm.com/)
  - Type LED in search window of <Fig.1>.
  - You can find out BW-LMS10NW/FREE of <Fig.2>.
  - You have to fill out form of ‘Create Order’ to download it.



<Fig.1>



<Fig.2>

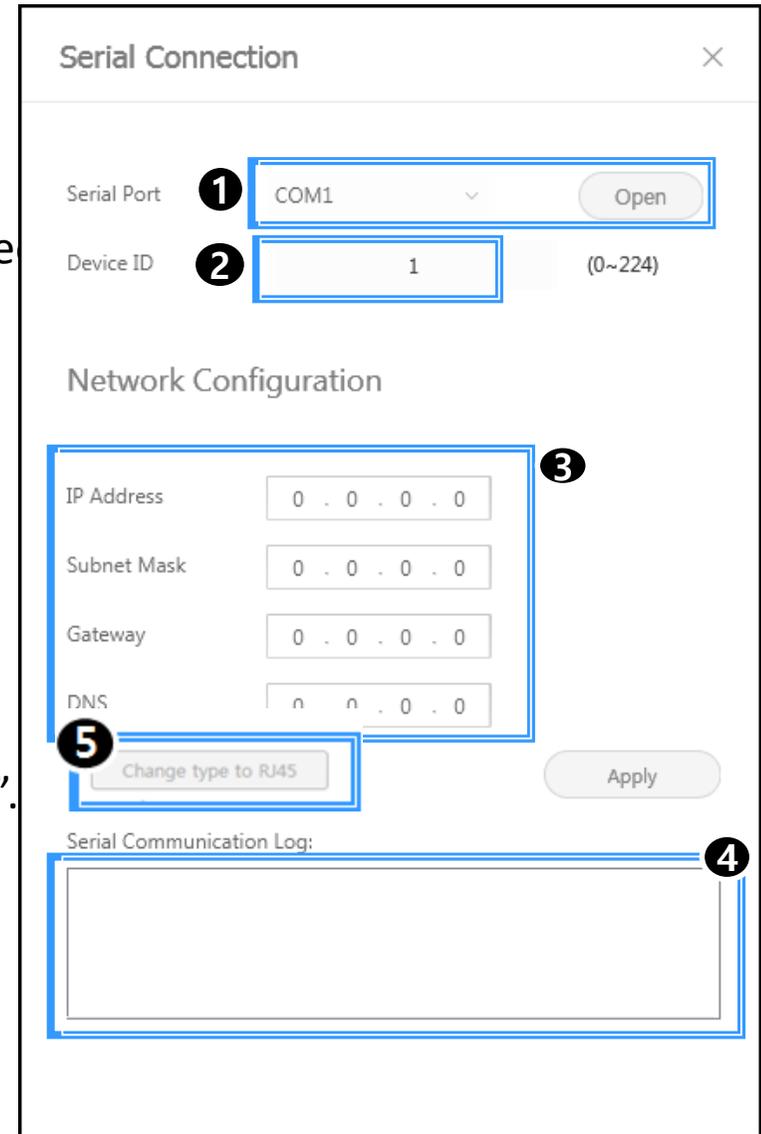
# How to configure IP addresses for S-Box

'Network IP Setting Tool'

▪ **The below sequence is for software tool.**

- Execute : [Start] – Program – Samsung – LED Signage Manager – Network Configuration
- Connect PC and S-Box with RS232C Cable, select connection and click “open” button.
- Default ID of S-Box is 1.
- Enter IP, Subnet Mask, Gateway, DNS of S-box, and click “Apply” button.
- Check the result of connection and status of MDC Protocol.
- When IP address is setup correctly, “Change Type to RJ45” button appears. If LSM and S-Box are connected successfully, click “Change Type to RJ45” button and changed to RJ45 from RS232.

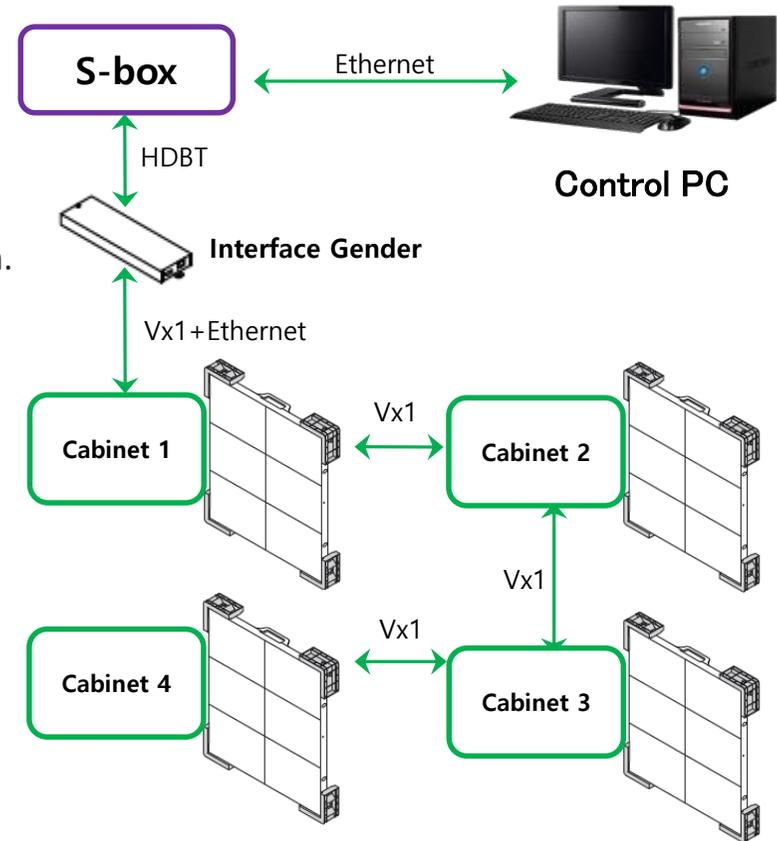
**[★ Cautions!] Recommend to use static IP address for the S-Box. If DHCP is used, IP address is changed automatically and LSM can be disconnected. The 192.168.10.x band is used for internal communication of the LED Cabinet. Please use IP another IP band (except 192.168.10.x band) Do not assign the temporary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



# Control Program for PCs

## ■ LSM(LED Signage Manager)

- Software that adjusts the LED Cabinet Layout in Remote
- Check the steps to configure LED screen by LSM.
  - PC and S-box should be connected through Ethernet connection.
  - S-box is connected to Interface Gender using HDB-T Lan Cable
  - Interface Gender is connected to the first LED Cabinet using OCM cable.
  - LED cabinets are connected in daisy chain method using OCM cable.

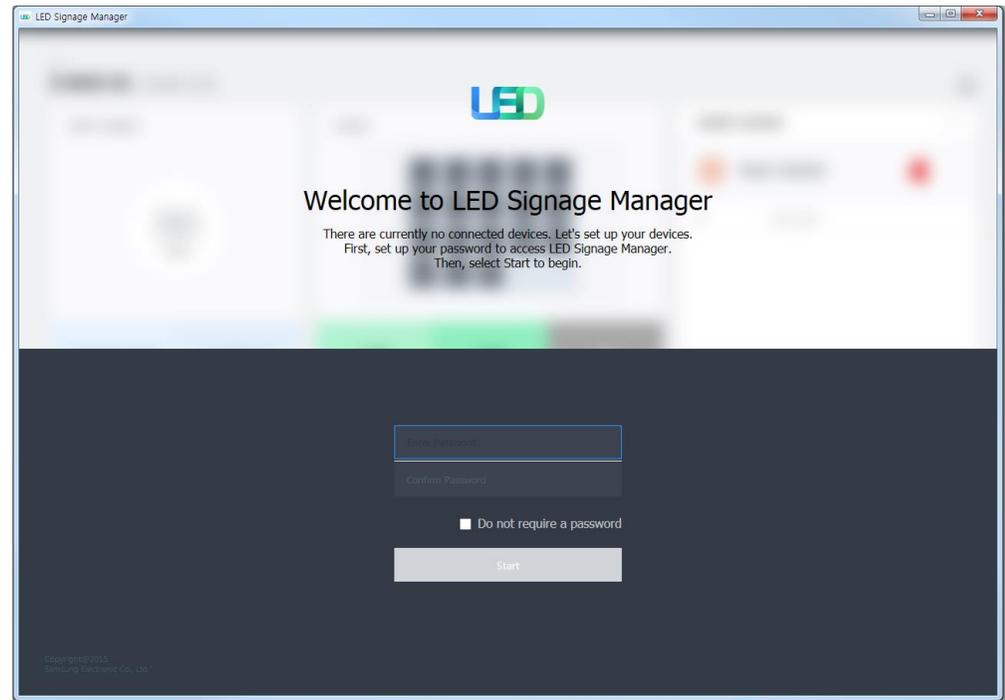


# Control Program for PCs

## ■ LSM(LED Signage Manager)

### - Start – Login Page

- If the LSM gets operated for the first time, the page to set the password will appear.
- To set the password, users have to input the same password two times and then click the “Start” button.
- 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.

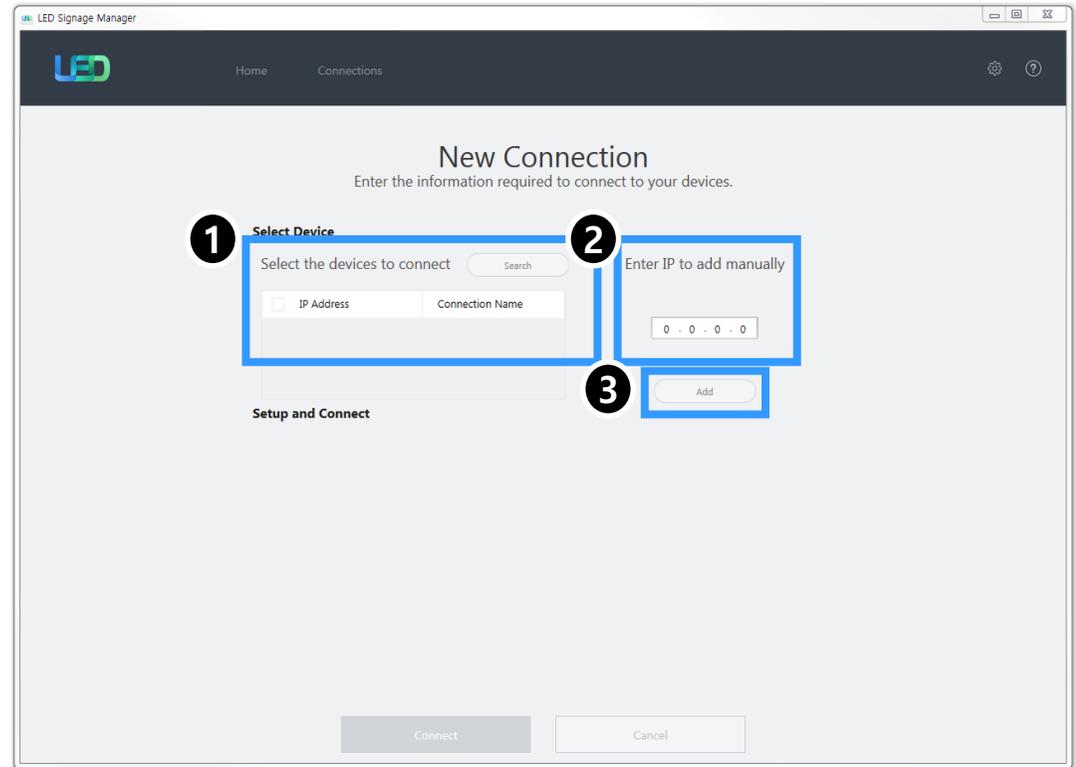


# Control Program for PCs

## ■ LSM(LED Signage Manager)

### - New Connection

- 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. - ①  
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 two Model Types (Without Cabinet IP / With Cabinet IP(UHD)).



# Control Program for PCs

## ■ LSM(LED Signage Manager)

- New Connection-Connect
  - 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”.
  - 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.

**[★ 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.**

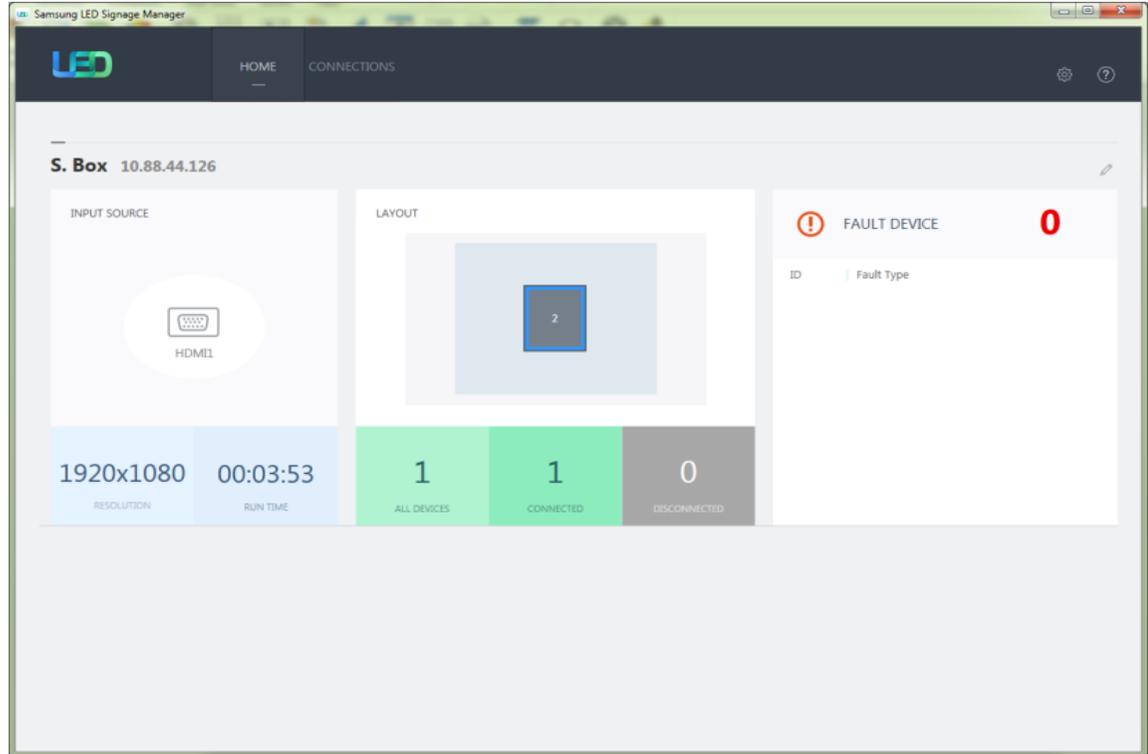
The screenshot shows three instances of the 'Setup and Connect' dialog box. The top instance is for 'Without Cabinet IP'. The middle instance is for 'With Cabinet IP (UHD)' and features a red warning triangle with the word 'IMPORTANT' below it. The bottom instance is for 'With Cabinet IP (FHD)'. In the middle panel, the IP address fields for Group 1 and Group 2 are highlighted with a green box, and the 'Cabinets' dropdown for Group 1 is highlighted with a red box. Red annotations with asterisks are placed below the bottom panel: '\* Same S-box IP' and '\* Different setting from S-box IP & Different Setting from each Group'.

# Control Program for PCs

## ■ LSM(LED Signage Manager)

- Main Window-Home Window
  - Home Screen : Information of the connected device, input source, cabinet composition, and error device are shown.

**[★ Cautions!]**  
The network port 1515, 48484, 48485 and 58585 are used for internal communication between S-BOX, LED Cabinet and PC for LSM.  
It should be include the firewall or network exception if customer used secured network.

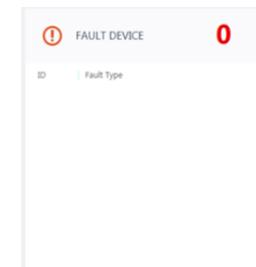
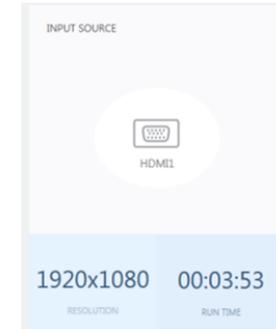


# 10-1 Control Program for PCs

## ■ LSM(LED Signage Manager)

### - Main Window-Home Window

- Input source: Input source, resolution, connection time of S-BOX are shown.
- Cabinet Layout : Layout, number of units, number of connections and number of disconnections in all LED cabinets are shown.
- Faulty device: ID of the LED cabinet in error status and the content of the error are shown.

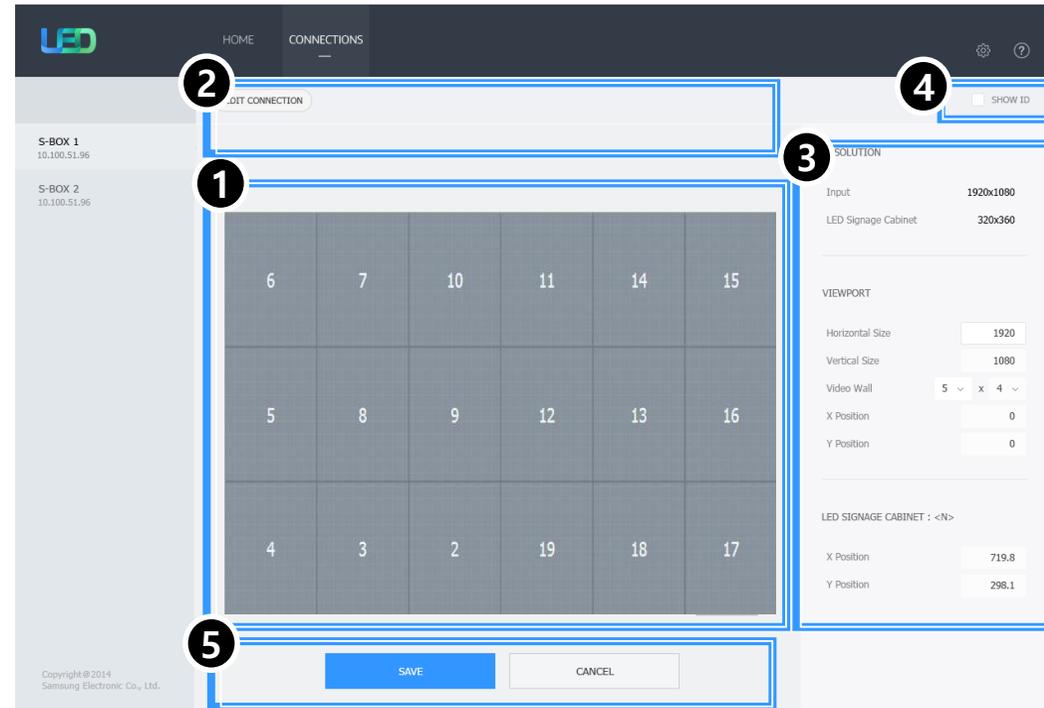


# 10-1 Control Program for PCs

## LSM(LED Signage Manager)

### Main Window-Edit Connection Layout Window

- Connection layout: The location and the layout of each LED cabinet are adjusted in the output source area of the S-BOX. - ①
- Feature View: Edit button to modify the connection information and LED cabinet automatic alignment function, etc. are provided. - ②
- Device Information/Setting View: The LED cabinet information is shown for in three different categories below: - ③
  - (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
- Show ID: IDs of each will be shown in all connected LED cabinets when this option is selected. - ④
- Save/Apply and Cancel - ⑤

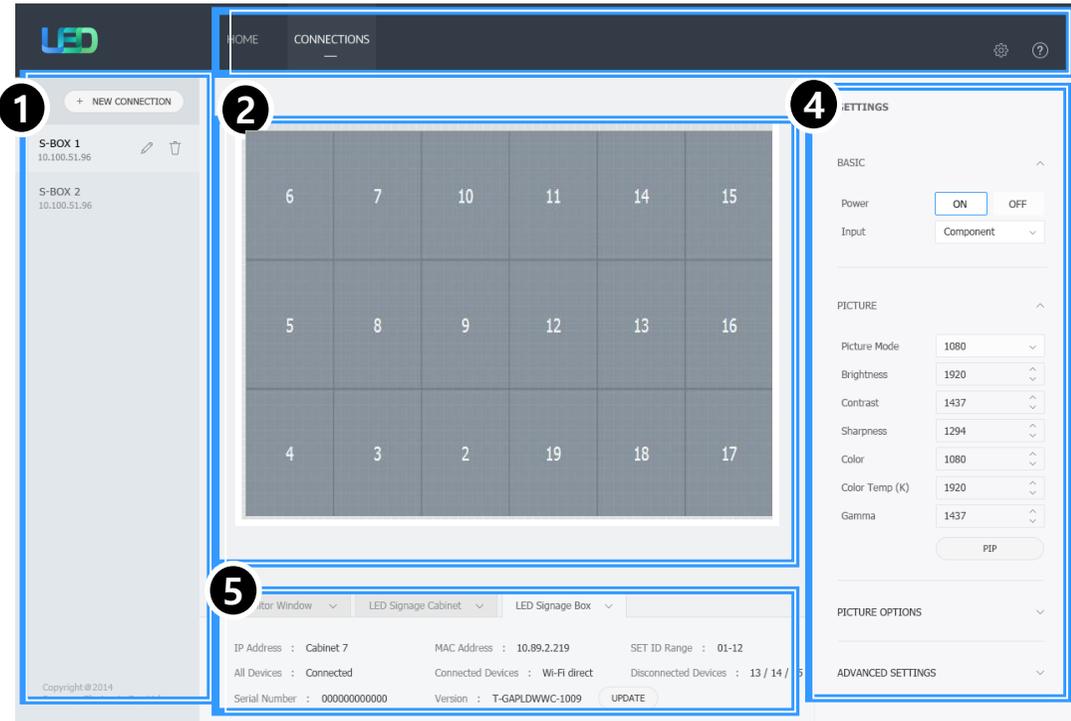


# 10-1 Control Program for PCs

## ■ LSM(LED Signage Manager)

### - Main Window-Connection Window

- Device connection list view:  
Check S-BOX composition, modify and delete S-BOX connection, show by each LED Cabinet Group - ①
- Connection layout (View Port):  
Check the location and layout of each LED cabinet - ②
- Category View:  
Home / Connections tab and settings - ③
- Device Information/Setting View:  
Change S-BOX settings (screen settings, etc.) - ④
- Sub Information View: Displays:  
Monitoring log, S-BOX and LED cabinet information. - ⑤

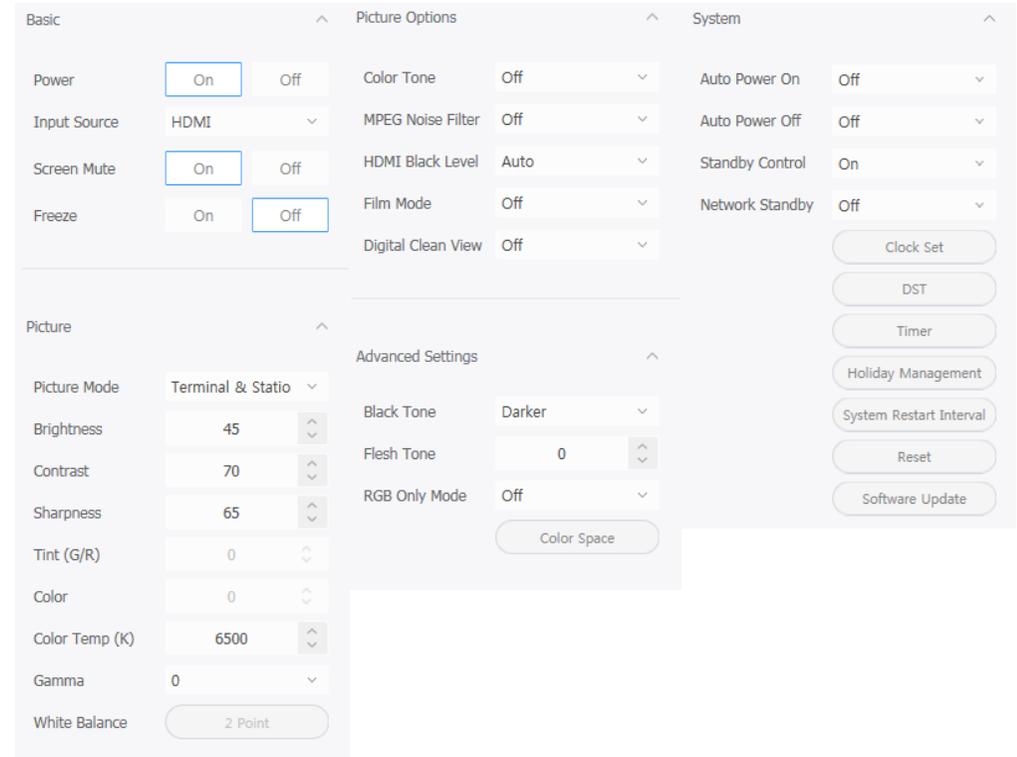


# 10-1 Control Program for PCs

## ■ LSM(LED Signage Manager)

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

- Basic :
  - . Power On/Off, Change input source, Screen Mute / Freeze
- Picture
  - . Change Picture Mode, Brightness / Contrast / Sharpness, Color, Tint(G/R), Color Temp(K), Gamma, White Balance adjustment
- Picture Options
  - . Color Tone, HDMI Black Level, Film Mode, etc.
- Advanced Settings
  - . Adjust Black Tone, Flesh Tone, Color Space, etc.
- System
  - . Auto Power On/Off, Standby Control Clock, Timer, System Restart Interval Software Update function



# 10-1 Control Program for PCs

## ■ LSM(LED Signage Manager)

- Picture – LED Picture size
  - You can control the output resolution of Sbox to fit the physical LED screen resolution.

### LED Picture Size

☰ MENU → Picture → LED Picture Size → ☒

Set the details of the picture size.

### Output Resolution

Provides optimized pictures according to the LED screen resolution.

- **UHD / FHD**

⌵ The **Video Wall** function is not supported when **Picture → LED Picture Size → Output Resolution** is set to **FHD**.

### LED Picture Size

Choose size and aspect ratio picture displayed on screen.

To manually adjust the LED picture size, select **Custom**.

- **Original**: Display images in the original picture quality.
- **Custom**: Changes the resolution to suit the user's preferences.

### Resolution

Set the width and height of the LED picture. (Max : 3840 x 2160)

HDMI UHD Color	Width x Height	
	Max	Min
Off	1920 x 1080	182 x 182
On	3840 x 2160	408 x 408

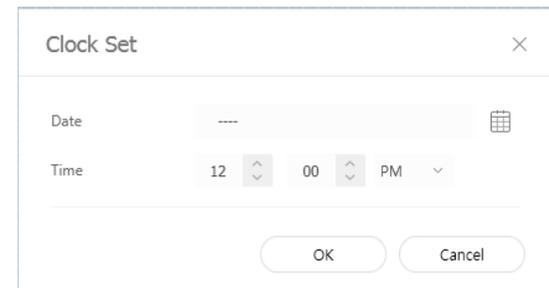
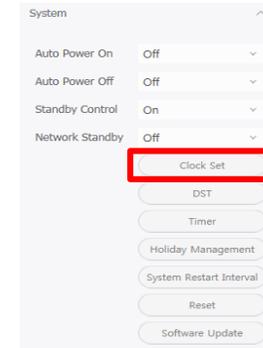
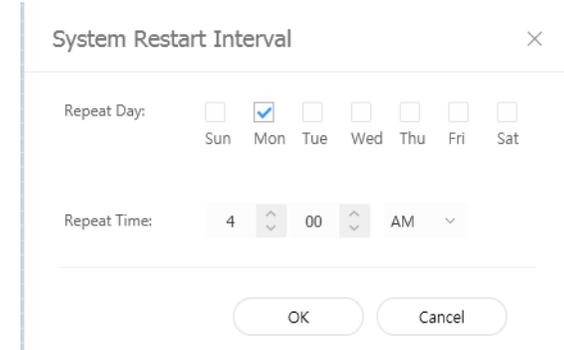
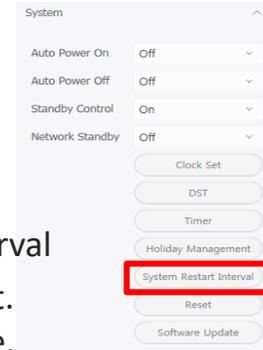
⌵ Available only when **LED Picture Size** is set to **Custom**.

# Control Program for PCs

## LSM(LED Signage Manager)

### - System - System Restart Interval (Cont'd)

- To stabilize the S-box(SBB-SNOWJ3U), execute a reboot automatically at a weekly time.
- Default setting : 4:00am, Monday.  
(Reboot will be executed 4:00am.~5:00am actually.)
- Reboot time can be changed by LSM - System restart Interval
- Check whether the clock setting of S-box is correct, or not.  
If clock is not correct, S-box may reboot at undesired time.

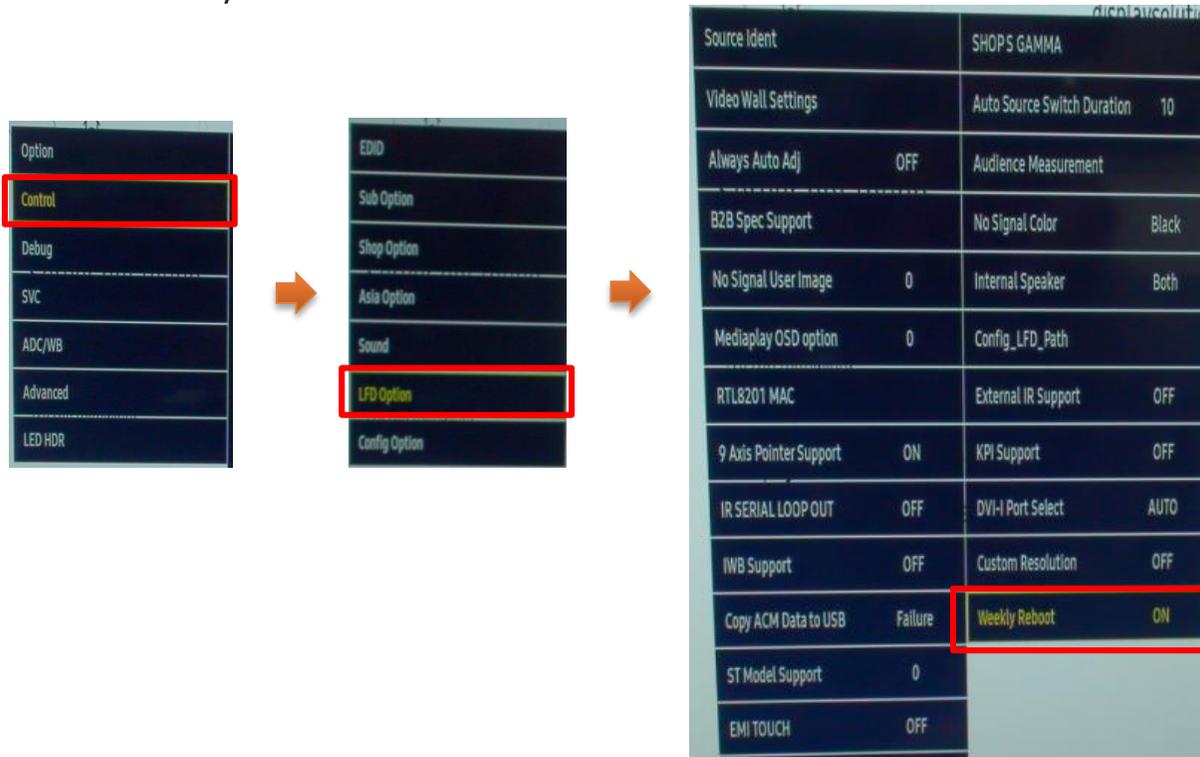


# Control Program for PCs

## LSM(LED Signage Manager)

### - System - System Restart Interval

- If you don't want to reboot S-Box once a week, you must change the option of factory menu.
- Factory – Control – LFD Option – Weekly Reboot : ON → OFF
- How to access Factory menu : Refer to P. 19



# Control Program for PCs

## ■ LSM(LED Signage Manager)

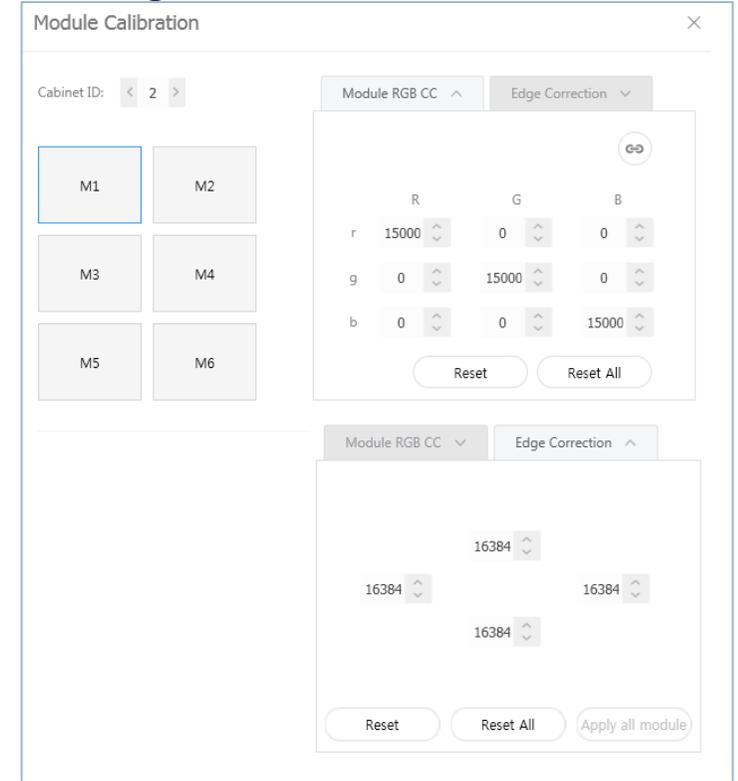
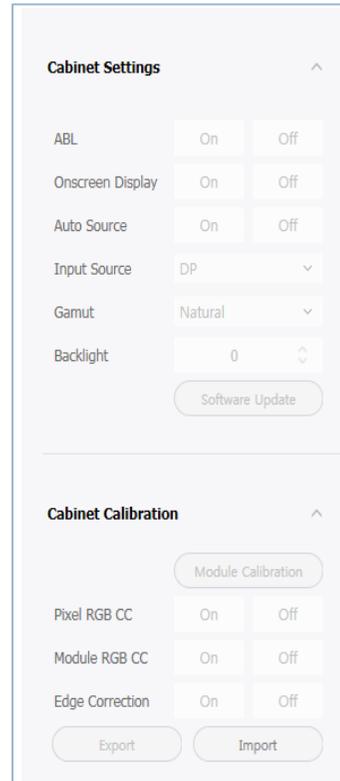
### - Main Window-Connection Window - Device Information/Setting View

#### - Cabinet Settings

- . ABL, Gamut, Backlight
- . Software Update function (FPGA, Calibration data, etc.)

#### - Cabinet Calibration

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



# Control Program for PCs

## ■ LSM(LED Signage Manager)

### - Main Window-Connection Window - Sub Information View

- Monitor Window:
  - √ Checking MDC communication log and connected device information available, able to be extracted via file
- LED Signage Cabinet:
  - √ IC information and Power information of LED cabinet
- LED Signage Box:
  - √ IP address, MAC address, ID range of LED cabinet, number of LED cabinet. (all/connected/not connected), serial number, version information

The image displays three screenshots of the LSM (LED Signage Manager) software interface, illustrating the 'Sub Information View' for different components.

**Top Screenshot: Monitor Window - LED Signage Cabinet**  
 This view shows the 'Communications' tab selected. It displays a log of events for the LED Signage Cabinet (S. Box(10.88.44.126)). The log includes messages such as 'Failed to connect', 'Connection cancelled', and power status reports (e.g., 'ID 2: Power Status - FPGA OK, STM ERROR, PW Detector ERROR, 13V OK, 5V OK, 3.3V ERROR, 1.8V ERROR, 1.2V OK'). A temperature report for ID 2 is also shown: 'Temperature - 0(°C)'. There are 'Clear' and 'Export' buttons on the right.

**Middle Screenshot: Monitor Window - LED Signage Cabinet**  
 This view shows the 'LED Signage Cabinet' tab selected. It displays a table of IC and Power information:

IC		Power	
FPGA	: Available	5W	: Available
STM32	: Not Available	3.3W	: Available
Power Detect IC	: Available	1.8W	: Available
		1.2W	: Available

**Bottom Screenshot: Monitor Window - LED Signage Box**  
 This view shows the 'LED Signage Box' tab selected. It displays key information for the LED Signage Box (IP Address: 10.88.44.126, MAC Address: 90:F1:AA:72:EF:BE, SET ID Range: 2-19). It also shows the number of devices: All Devices: 1, Connected Devices: 1, and Disconnected Devices: 0. The version is T-GFSLDWWC-1025.2, and there is an 'UPDATE' button.

# Control Program for PCs

## ■ LSM(LED Signage Manager)

### - Main Window-Preference

- Options

- √ number of times the command retried
- interval of checking error status
- alarm temperature warnings

- Support

- √ program language
- Log data management
- notify device error through Mail
- Password settings option

- About Software

- √ the current version of LSM and update function

Preferences

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**Options**

Command Retry Count: 1

Error Status Interval (min): 30 min

Temperature Alert: 65 °C

Auto Brightness:  Off

Brightness Sensor [Edit](#)

Multiple Display ABL [Edit](#)

Location: [Edit](#)

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**Support**

Language: English

Advance Log Management:  Keep log data 1 days

[Log Backup](#)

[Delete Log](#)

Use Password [Change Password](#)

Fault Device Alert: 10 min [Mail Server](#)

**About Software**

Current Version: A-LEDMGDSP-1004.03

Auto Update [Check for Updates](#)

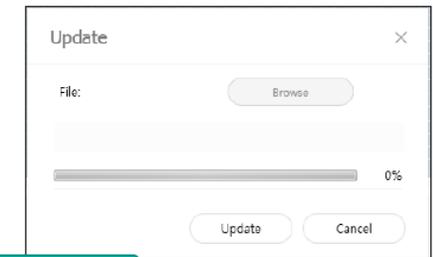
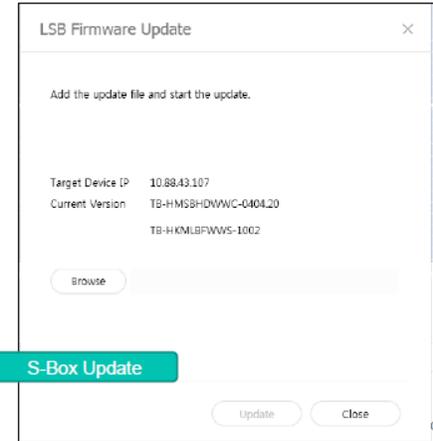
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# Control Program for PCs

## ■ LSM(LED Signage Manager)

- Steps to upgrade FW
  - Download file from SLM. (URL)
  - Extract file that include 'info.txt' and image file.
  - Run LSM and connect it to S-Box and LED cabinets.
  - LSM can update S-Box SW and Cabinet SW,
- S-Box SW
  - Go to S-Box Settings > System > Software Update menu in LSM.
  - Select correct file such as bem(Hawk M), bin(FPGA) or zip(VALENS) file.
  - Select update button.
  - Wait for the complete of update.
- Cabinet SW
  - Go to Cabinet Settings > Software Update in LSM.
  - Select correct file such as .img, bin or txt(except for info.txt).
  - Select update button.
  - Wait for the complete of update.

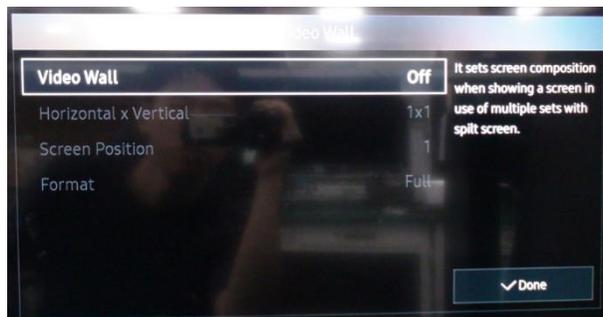


# Use Multiple S-BOX for a Screen

## ■ S-BOX Connection (Grouping)

### ① Enable S-Box Grouping

- Home → Video Wall : OFF → On



### [Cautions!!]

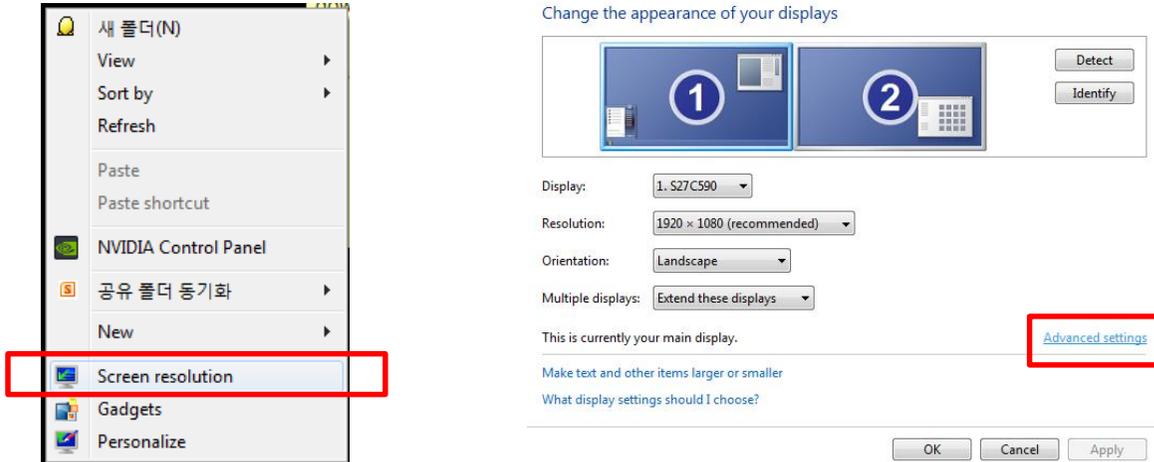
- 1) Setup supported resolution for grouping before the grouping function of multi s-box is run by LSM.
- 2) It can cause the noise of picture or blackout, if resolution is not supported.  
Please change the Video Wall is to OFF, and setup the resolution to supported timing.  
Refer to the next page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

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

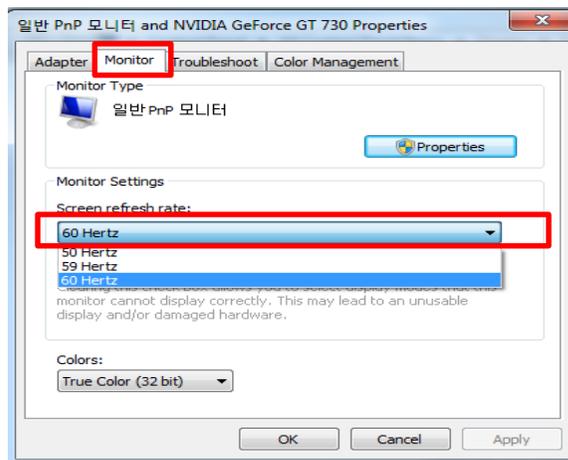
# Use Multiple S-BOX for a Screen

## 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



# Use Multiple S-BOX for a Screen

## ③ Supported resolution for S-box grouping

SNOW-1703U / SNOW-1703ULD: Normal mode

Resolution	Horizontal Frequency (kHz)	Vertical Frequency (Hz)	Pixel Clock (MHz)	Sync Polarity (H/V)	S-Box Grouping Supported
VESA, 1024 x 768	48.363	60.004	65.000	N / N	O
VESA, 1280 x 720	45.000	60.000	74.250	P / P	O
VESA, 1280 x 1024	63.981	60.020	108.000	P / P	O
VESA, 1600 x 900	60.000	60.000	108.000	P / P	O
VESA, 1920 x 1080	67.500	60.000	148.500	P / P	O
CTA-861 VIC 4, 1280 x 720	45.000	60.000	74.250	P / P	O
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 31, 1920 x 1080	56.250	50.000	148.500	P / P	O
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

SNOW-1703ULD: Live Mode

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	O
VESA CVT, 3840 x 2160	133.313	59.997	533.250	P / N	O
CTA-861 VIC 16, 1920 x 1080	67.500	60.000	148.500	P / P	O
CTA-861 VIC 97, 3840 x 2160	135.000	60.000	594.000	P / P	O