NEC

Installation and Maintenance manual

LED Module/LED DISPLAY

[Models for indoor use]

LED-FC009i
LED-FC012i
LED-FC015i

LED Display Kit

[Models for indoor use]

LED-FC012i-110
LED-FC015i-137
LED-FC009i-165
LED-FC012i-220
LED-FC012i-11N
LED-FC015i-13N
LED-FC009i-16N
LED-FC012i-22N

MODEL: LED-FC009i, LED-FC012i, LED-FC015i

Table of Contents

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    (2) The contents of this manual are subject to change without notice.

    (3) Great care has been taken in the preparation of this manual; however, should you notice any questionable points, errors or omissions, please contact us.

    (4) The image shown in this manual is indicative only. If there is inconsistency between the image and the actual product, the actual product shall govern.

    (5) Notwithstanding articles (3) and (4), we will not be responsible for any claims on loss of profit or other matters deemed to result from using this device.

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Important Information

Safety Precautions and Maintenance

FOR OPTIMUM PERFORMANCE, PLEASE NOTE
THE FOLLOWING WHEN SETTING UP AND
USING THE LED DISPLAY SYSTEM:

About the Symbols

To ensure safe and proper use of the product, this manual uses a number of symbols to prevent injury to you and others as well as damage to property. The symbols and their meanings are described below. Be sure to understand them thoroughly before reading this manual.

⚠ **WARNING**	**Failing to heed this symbol and handling the product incorrectly could result in accidents leading to major injury or death.**
⚠ **CAUTION**	**Failing to heed this symbol and handling the product incorrectly could result in personal injury or damage to surrounding property.**

Examples of symbols

⚡	⚠ **Indicates a warning or caution.** **This symbol indicates you should be careful of electric shocks.**
🚫	🚫 **Indicates a prohibited action.** **This symbol indicates something that must be prohibited.**
🔌	● **Indicates a mandatory action.** **This symbol indicates that the power cord should be unplugged from the power outlet.**

● Be sure to read the following before using the product to use it correctly and safely.

⚠ WARNING

🚫 Do not apply vibrations or shocks to the product.

🚫 Do not install the product to unstable locations or locations subject to vibrations.

❗ Always ask a technician to perform the installation.

🚫 Do not connect the cables with wet hands. Otherwise, it may cause an injury or an electrical shock.

🚫 Do not repair or modify the product yourself. Otherwise, it may cause an injury, a fire or an electrical shock.

🚫 In case of thunder, do not touch the power cord. Otherwise, it may cause an electrical shock.

❗ Connect the product to the correct voltage. If the product is connected to a voltage other than the specified voltage, it may lead to a fire or an electrical shock.

🚫 In case of a malfunction (nothing is displayed on the screen, etc.) or if smoke, abnormal heat, or a strange sound or odor is generated, turn the power off and immediately ask a technician or your retailer for repair.

🚫 Install the product so that the vents are not obstructed.

❗ Make sure there are enough people available to ensure safety (at least two people) when installing or moving the product. Otherwise, it may lead to an injury.

⏚ Be sure to ground the product. If the product is not grounded, there is a risk of electrical shock in case a malfunction occurs.

🚫 In case foreign matter has entered into the product, immediately disconnect the power supply and stop using the product.

❗ After the installation, if a problem such as loose screws occurs, immediately ask a technician or your retailer for repair.

🚫 Do not put objects into the product. Otherwise, it may cause a fire or an electrical shock.

🚫 In case the product is in contact with water or another liquid, immediately disconnect the power supply and stop using the product. If you continue using the product in that state, it may lead to a malfunction, a fire, or an electrical shock.

🚫 When using the power connector (WAGO), do not use it outdoors or in a humid environment. Otherwise, it may cause a fire or an electrical shock.

⚠ CAUTION

When connecting the power cord to the product's AC IN terminal, make sure the connector is fully and firmly inserted.

Do not damage the power cord. Do not put heavy objects on it, place it near heaters, pull it with excessive strength, or apply a strong force on it while it is bent.
A damaged power cord may cause a fire or an electrical shock.

Do not install the product in narrow places where heat tends to build up.

Do not use the product in an environment with low heat dissipation.
Otherwise, it may cause a malfunction.

The RJ-45 port of the product is for use with the product only. Do not connect it to a network. Connecting this port to a network that may receive over-voltage current may cause damage to the product or an electrical shock.

Do not use the product in a vehicle or another means of transportation.

Do not place the product under direct sunlight or near heaters.

This product is designed to be used indoors. Do not use it outdoors. Otherwise, it may cause a malfunction.

Do not use or store the product in the following places.
• Near heaters
• Places with lots of humidity or dust, or places subject to oily smoke
• Places where water or oil may splash
• Places with lots of corrosive gases, such as near hot springs
• Places where the product may freeze
• Do not place the product on its side, face down, or upside down.
• Places with lots of vibrations

If you will not be using the product for a long time, disconnect it from the power distributor for safety purposes.

Disconnect the power supply when performing the maintenance.

Install the product in accordance with the local laws and regulations.

Use ESD gloves when handling Pixel cards to prevent static electricity from the human body and contamination due to finger oils, perspiration salts, flaking skin, and/or other forms of human excretory secretions. The LED modules and their electrical components are sensitive to biological agents and exposure to such risks degradation of materials and performance.
Eliminate any static electricity from your body before touching the Pixel cards by touching an aluminum sash, a door knob, or some other metal object.

This product can only be serviced in the country where it was purchased.

Recommended Use & Maintenance

About the LED lamps

⚠ The surface of the pixel card is vulnerable to shocks, so do not press or hit the surface.

⚠ LED lamps are sensitive to static electricity and surge voltage, which may damage their components and decrease their reliability.
Take measures against static electricity during the installation. Do not touch the LED display areas.

⚠ When you install the product or when you use it for the first time after leaving it unused for a long time, follow the instructions below.

The LED lamps may absorb and hold moisture during the LED module installation or if not used for a long time. Therefore, in such cases, the brightness must be increased gradually during a break-in period before setting the normal brightness.
If the LED lamps are lit with 100% brightness while moisture is retained, the temperature will rise very quickly and the water inside the lamps will evaporate and expand. This will cause the encapsulating resin to expand, which may lead to separation of the boundary surface inside the LED lamps. This separation can cause the LED lamps not to light up properly.

Lamp break-in

Configure the brightness settings as shown below with a video displayed on the LED module.

After a break-in period of approximately 3 hours, the LED module can be used under normal conditions.

Time since start-up: 0 (just after start-up)   1 hour   2 hours   3 hours

Full white	Brightness value 20%	50%	70%	Normal operation
Video content	40%	60%	80%	Normal operation
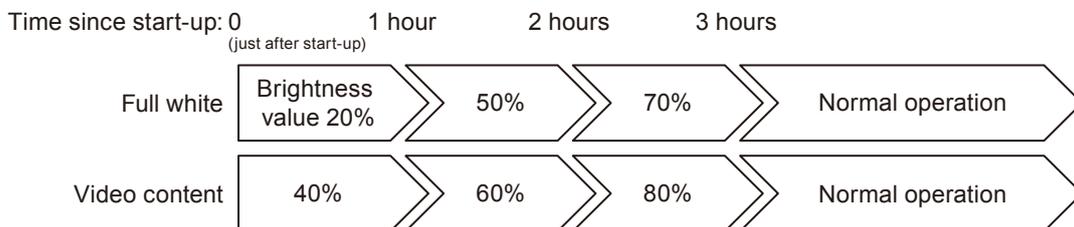
About the Pixel card

⚠ The surface of the pixel card is easily scratched, so handle it with care so as not to push or rub it with a hard object. Be careful not to stain the surface of the pixel card with your fingers. If the surface of the pixel card becomes dirty, wipe it gently with a dry cloth. Also, use a clean cloth and avoid using the same cloth repeatedly.

Parts Name

Front

Rear
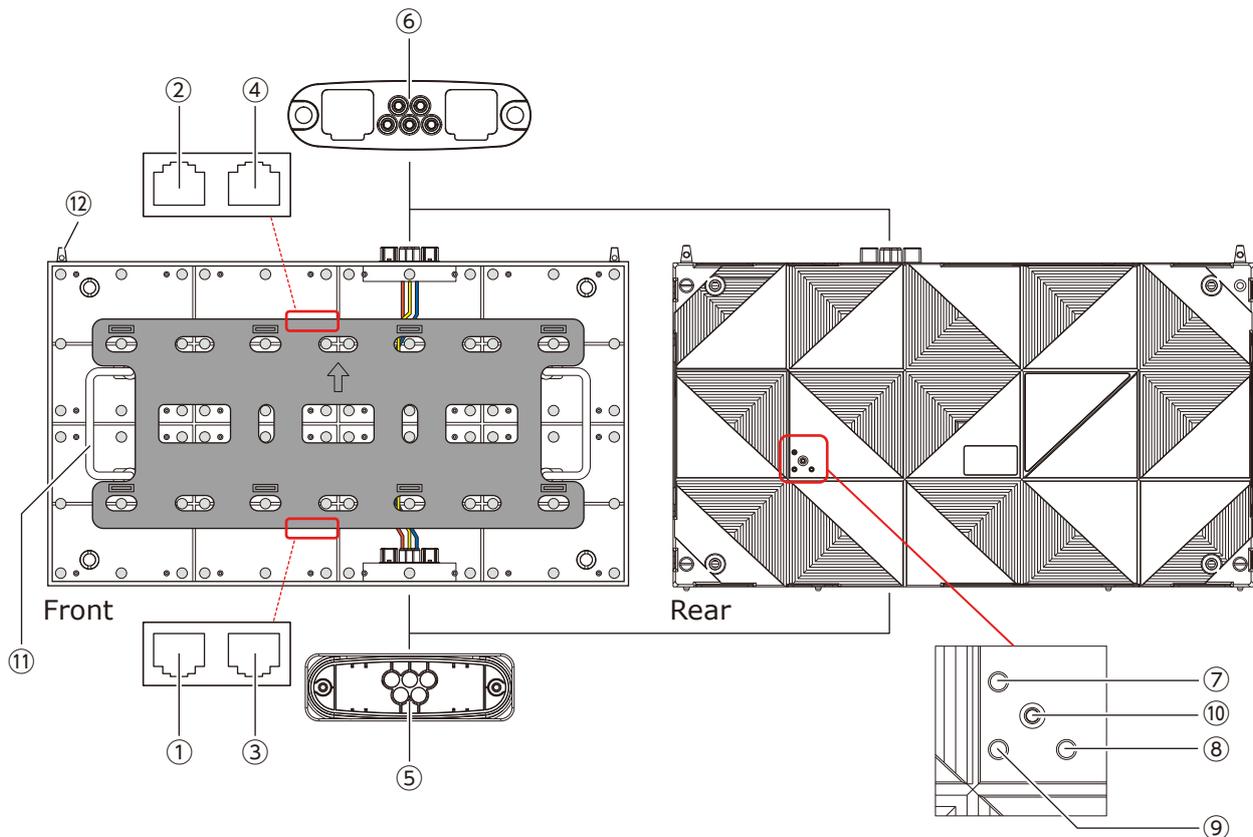
Name	Description
Interface connectors	Input and output connectors for the signal and AC power.
①② Signal input/output	To input the signal from the LED controller or the previous LED module. When a signal is input into ①, the signal is output from ②. When a signal is input into ②, the signal is output from ①.
③④ Signal input/output	Not functioning with this product.
⑤⑥ Power input (output)	When AC power is input into ⑤, AC power is output from ⑥. When AC power is input into ⑥, AC power is output from ⑤. Do not input AC power into both ⑤ and ⑥.
⑦ Status lamp (red)	Lights up when power is on.
⑧ Status lamp (blue)	Not functioning with this device.
⑨ Status lamp (green)	Flashes at intervals of approximately 4 seconds when no signal is input. Flashes at intervals of about 1 second when a signal is being input.
⑩ Test button	Used to display the test patterns. The displayed pattern changes each time the test button is pressed. The signal from the LED controller must be interrupted to display a test pattern.
⑪ Handle	Use the handles when carrying and installing the cabinet.
⑫ Guide pin	Used to align the cabinets when installing them on top of each other.

There are three types of cabinets.

(1) When using other than the top
The connectors are equipped on the top and bottom sides. There are guide pins on the top.

Power hub board

Power unit

Receiving card
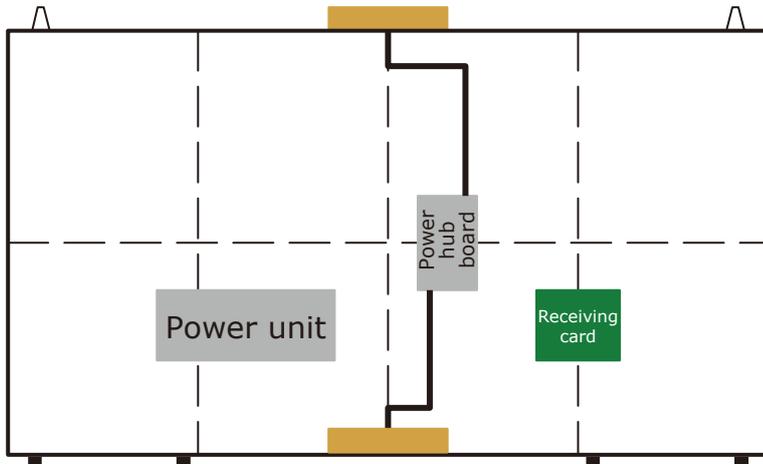
(2) When used at the top
There are no connectors on the top side. There are no guide pins.

Power hub board

Power unit

Receiving card
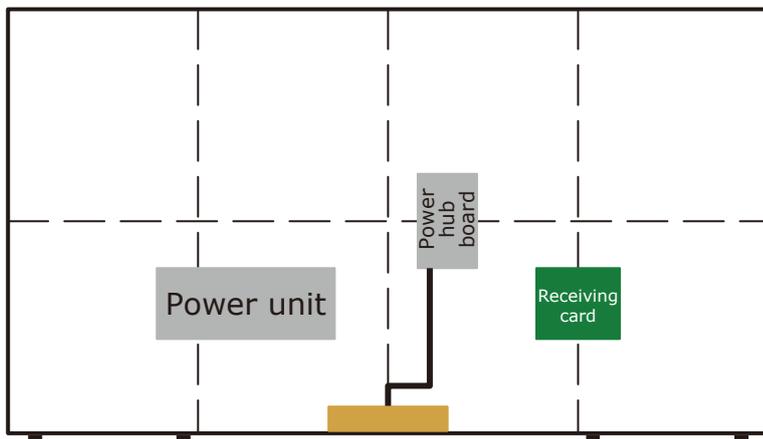
(3) When connecting a LAN cable from the middle
There is a hole for LAN cable connection on the rear.

Power hub board

Power unit

Receiving card

Data
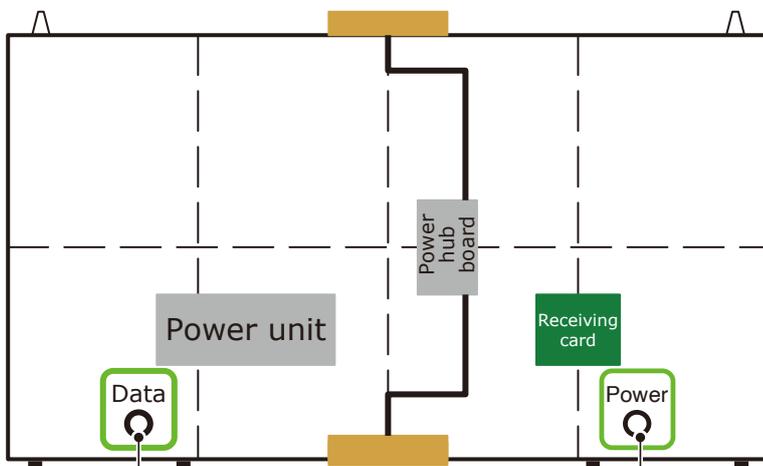
Power

Hole for LAN cable connection

Hole for power code connection

Model name list

4 x 4 frame set	LED-FC012i-110/LED-FC012i-11N
5 x 5 frame set	LED-FC015i-135/LED-FC015i-13N
6 x 6 frame set	LED-FC019i-165/LED-FC019i-16N
8 x 8 frame set	LED-FC012i-220/LED-FC012i-22N

Contents

No.	Parts	Specifications	Quantity				
			4 x 4 frame set	5 x 5 frame set	6 x 6 frame set	8 x 8 frame set	
	Pixel card pitch 0.9, 1.2, 1.5	152 x 171 mm	128	200	288	512	
	Cabinet	608 x 342 mm	16	25	36	64	
	Cabinet hanger pin	Head diameter 15 mm, thickness 5 mm, M8 external dental pattern, axis length 17 mm, stainless steel color	35 (30+5*1)	45 (40+5*1)	75 (70+5*1)	113 (108+5*1)	
1	Power bar cover plate		1	1	1	2	
2	Power bar screw (M8×20)	Hexagon socket head screw	17 (12+5*1)	21 (16+5*1)	25 (20+5*1)	29 (24+5*1)	
3	Power bar		1	1	1	2	
4	Power bar connecting part		–	–	–	1	
5	Screw for Power bar connecting		–	–	–	17 (12+5*1)	
6	Screw for corner frame bottom (M6×12)	Hexagon socket head screw	7 (2+5*1)	7 (2+5*1)	7 (2+5*1)	7 (2+5*1)	
7	Corner frame bottom (left, right)		2	2	2	2	
8	Overframe (left, right)		2	2	2	2	
9	Mounting bar		3	4	5	6	
	Washer		17 (12+5*1)	25 (20+5*1)	35 (30+5*1)	53 (48+5*1)	
10	Corner frame top (left, right)		2	2	2	2	
11	Overframe (top)		1	1	1	2	
	Slot nut		15 (10+5*1)	17 (12+5*1)	17 (12+5*1)	21 (16+5*1)	
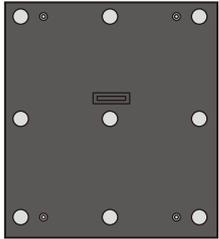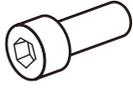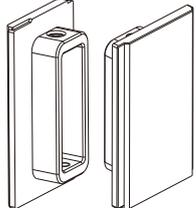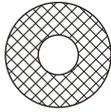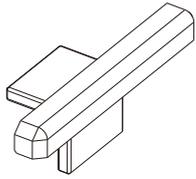
*1: Spare parts

No.	Parts	Specifications	Quantity				
			4 x 4 frame set	5 x 5 frame set	6 x 6 frame set	8 x 8 frame set	
	Screw for overframe (M4×4)	Hexagon socket head screw	8 (3+5[1])	9 (4+5[1])	9 (4+5[1])	9 (4+5[1])	
	Screw for overframe (M4×8)	Hexagon socket head screw	12 (7+5[1])	13 (8+5[1])	13 (8+5[1])	17 (12+5[1])	
	Screw for cabinet (to Power bar) (M8×16)	Hexagon socket head screw	13 (8+5[1])	15 (10+5[1])	17 (12+5[1])	21 (16+5[1])	
	Adjustment plate		10	12	14	18	
	Screw for Adjustment plates	Hexagon socket head screw (M4 x 16)	45 (40+5[1])	53 (48+5[1])	61 (56+5[1])	77 (72+5[1])	
	Screw for connecting cabinets (M8×25)		53 (48+5[1])	85 (80+5[1])	125 (120+5[1])	229 (224+5[1])	
	LAN cable for the LED modules	120 mm	12	20	18	48	
	Alignment bar		2	2	2	2	
	USB flash memory		1	1	1	1	
	Safety Manual		1	1	1	1	
	Precautions for installation sheet		1	1	1	1	
	LED controller[2]	Novastar MCTRL660 PRO	1	1	-	-	
		Novastar MCTRL4K	-	-	2	1	
	LAN cable between LED controller and module[2]	20000 mm	4	5	18	8	
		24000 mm	-	-	-	8	
	Power cord for the LED controller[2]		1	1	2	1	
	Power cord[3]		[3]	[3]	[3]	[3]	
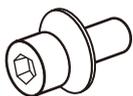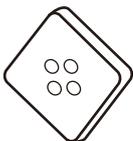
*1: Spare parts

*2: Kit model only (except for LED-FC012i-11N, LED-FC015i-13N, LED-FC009i-16N, LED-FC012i-22N)

*3: Can be ordered by optional

Four different wall-mount frames can be used depending on the system size. Ask your retailer for more details. For other configurations, the number of contents will vary. Please contact your retailer for more information.

8 x 8 frame set
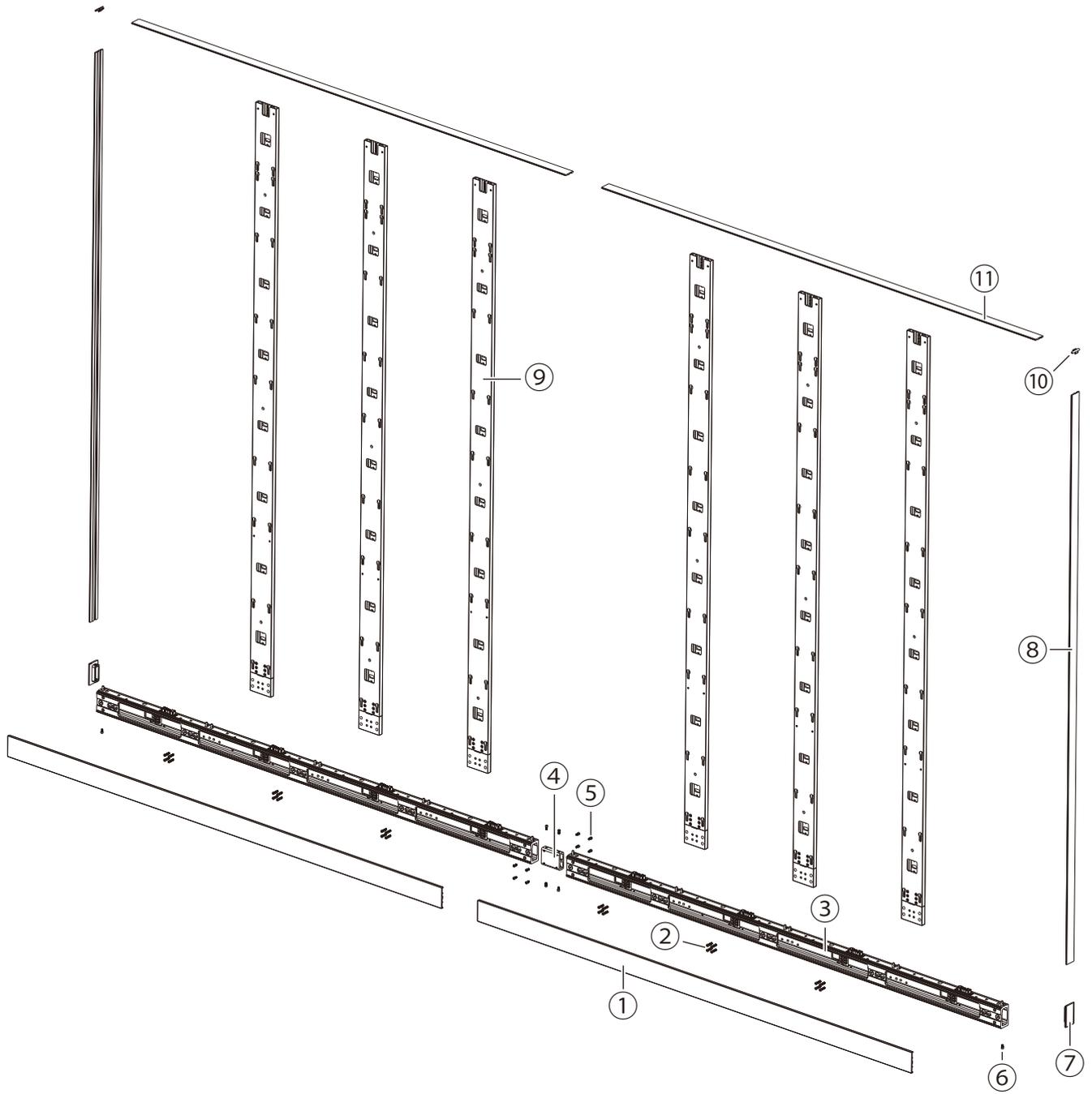
Installation Example

1. Installation location

Before the installation, be sure to review the following safety precautions to ensure proper and safe installation.

⚠ CAUTION

- Ask a technician to perform the installation.

- Make sure the product is moved and installed by enough people to ensure safety.

- Make sure that the beams or the other structures to which the product is installed have enough strength to support the weight of the product, and make sure that the product is securely fixed.

- Do not install directly the product to a surface that has not enough strength.

- When installing the product in an environment with much dust or dirt, be careful to prevent such material from adhering to the connectors on the hub board and pixel card.
  Adhesion of dust or dirt to the connectors may cause poor contact, leading to abnormalities of video display.

- When installing the product in a narrow place (in a wall, etc.), leave enough gaps around the LED screens to prevent an increase in the temperature.
  Make sure to use the product lower than the normal operating temperature.
  The top of the LED module should always be installed so that the temperature is below 40°C.
  Pay particular attention to the installation environment (heat from the external environment, direct sunlight, heat generated by the number of displays) in order to facilitate cooling of the LED modules.
  If cooling is not sufficient, take measures, such as increasing the distance from the walls or installing a forced-air cooling system.
  Ask a technician or your retailer for more details.

There is an example for setting.

In wall setting
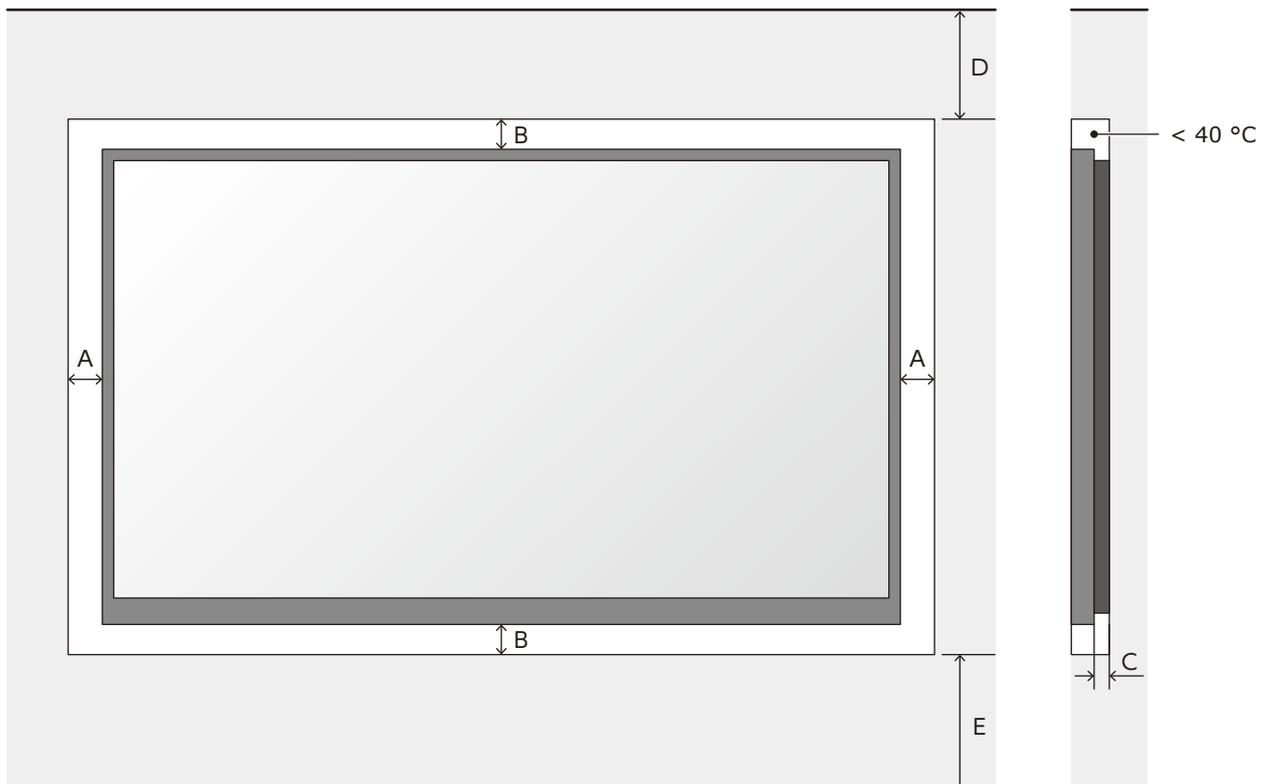
A	B	C
min. distance to sides	min. distance to top and bottom	min. distance between wall and system
60 mm	60 mm	20 mm

D	E
Recommended distance to ceiling	Recommended distance to floor
500 mm*	500 mm*

*: Depending on the temperature condition.

Wall mounting setting
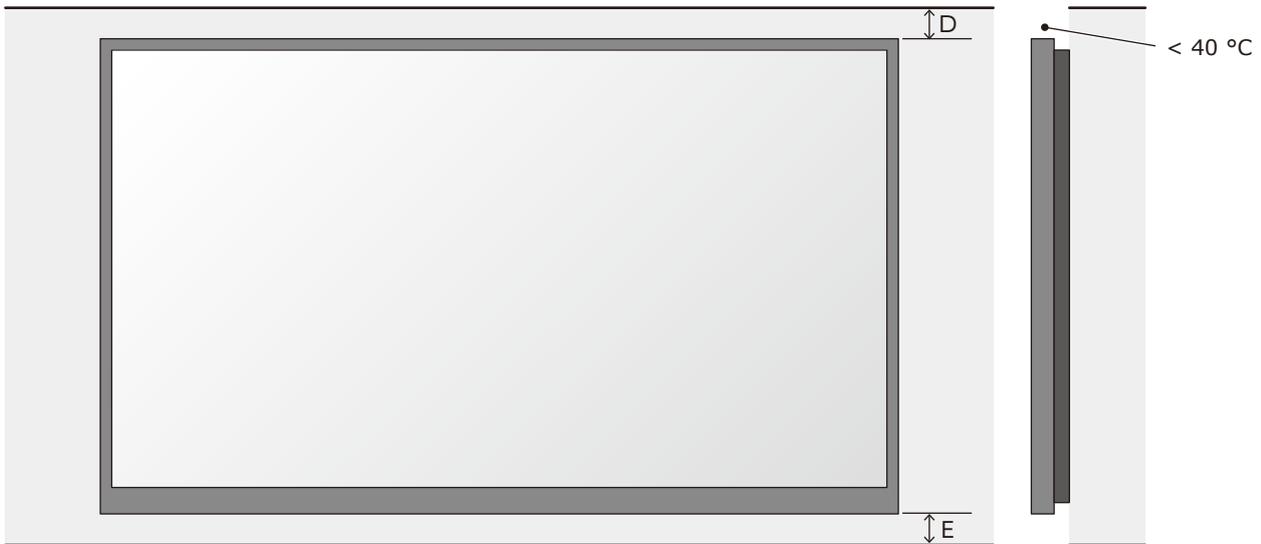
D	E
Recommended distance to ceiling	Recommended distance to floor
500 mm*	500 mm*

*: Depending on the temperature condition.

If the distances are lower than these value, the cooling might not sufficient. Take measures, such as increasing the distance from the walls or installing a forced-air cooling system.

2. Handle

Use the handles when carrying and installing the cabinet.

Put the handles in their original positions after the installation work has been completed.
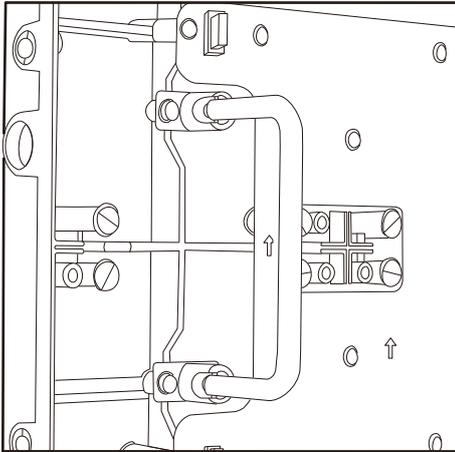
When carrying or installing the cabinet, pull out the handles on both sides.
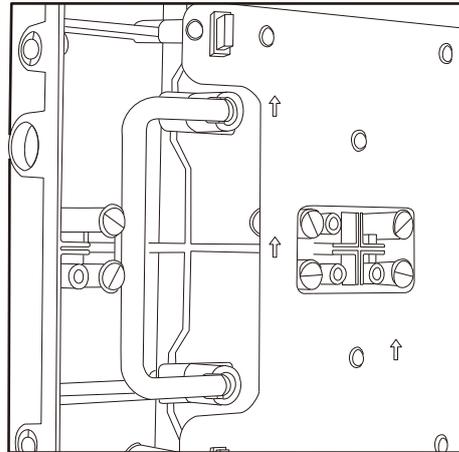
Put the handles back after the work has been completed.

3. Mark the positions of the anchor points on the wall

- Mark the positions of the holes you will make for the anchor points (refer to the figures below and the "Anchor points number and positions" table on the next page).
- Before making the holes, check the verticality of the marks using a spirit level or a laser line level. (We recommend using a laser line level is recommended for accuracy.)

Anchor points positions: 4 x 4 frame set

608 mm   608 mm

1026 mm
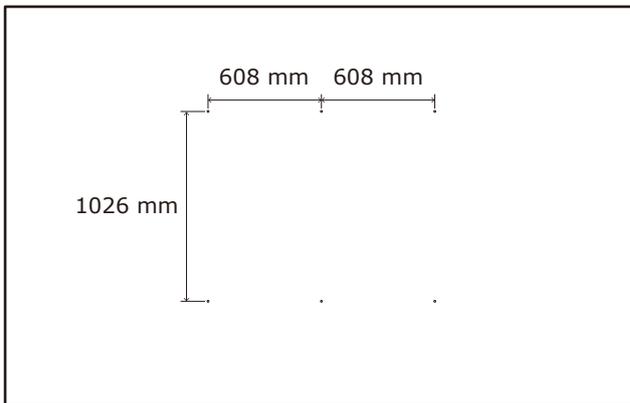
Anchor points positions: 5 x 5 frame set

608 mm   608 mm   608 mm

684 mm

684 mm
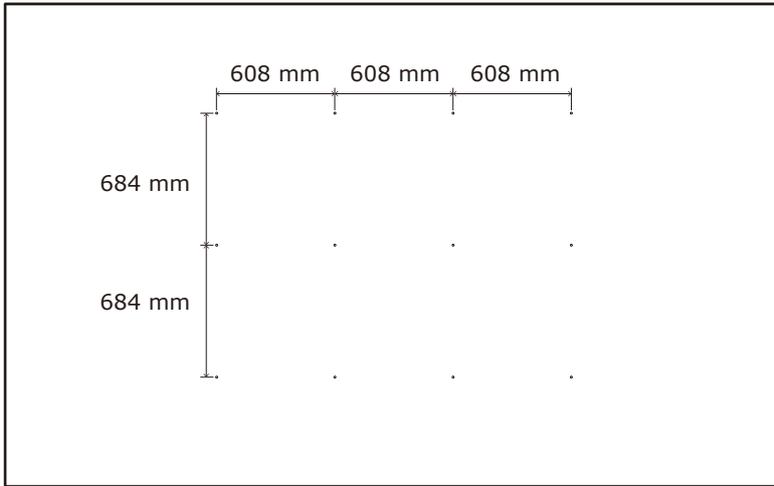
Anchor points positions: 6 x 6 frame set

608 mm   608 mm   608 mm   608 mm

1026 mm

684 mm
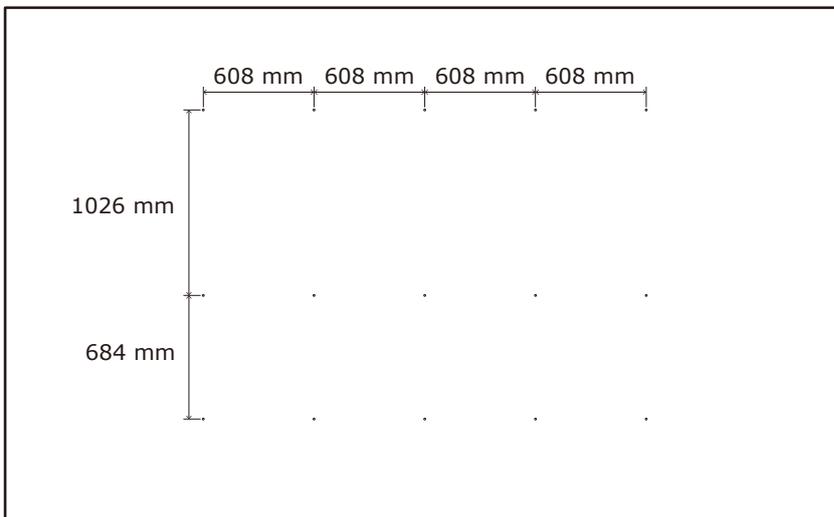
Anchor points positions: 8 x 8 frame set

608 mm 608 mm   1216 mm   608 mm 608 mm

684 mm

684 mm

684 mm

342 mm
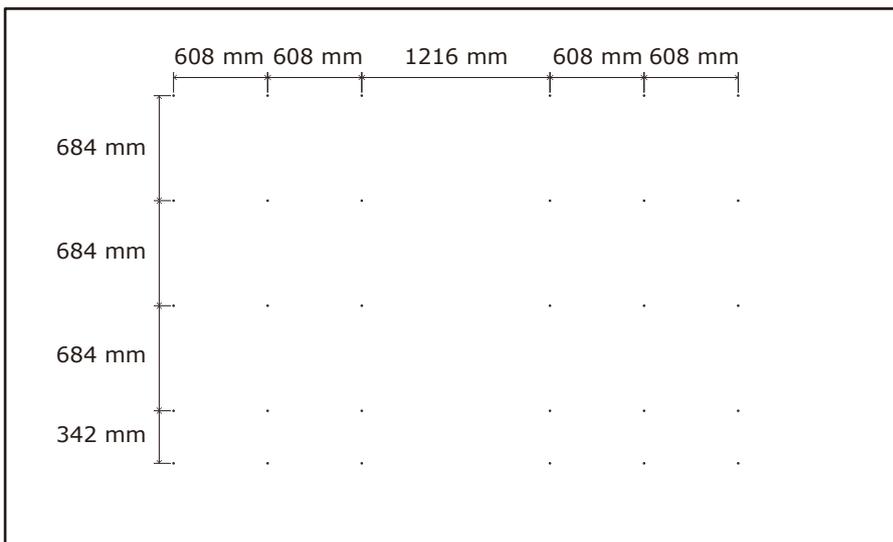
Anchor points number and positions

Frame set	4×4	5×5	6×6	8×8
Anchor points (horizontal x vertical)	3×2	4×3	5×3	6×5
Horizontal distance	608 mm	608 mm	608 mm	Distance center: 1216 mm Others: 608 equally
Vertical distance	1026 mm	684 mm equally	Distance top row – middle row: 1026 mm Distance middle row – bottom row: 684 mm	Distance Bottom row: 342 mm, others 684 mm equally
Anchor size	Ø10 mm	Ø10 mm	Ø10 mm	Ø10 mm

4. Make the holes at the anchor positions

- Make holes at the anchor positions using a suitable tool.
- Use screw anchors/anchor plugs as required.
- Remove the dust or dirt, and wipe off any drilling chips and dust.

5. Preparing mounting bar

Attaching mounting bar connector

Insert the mounting bar connector and tighten it securely with 6 screws (M6 x 14).
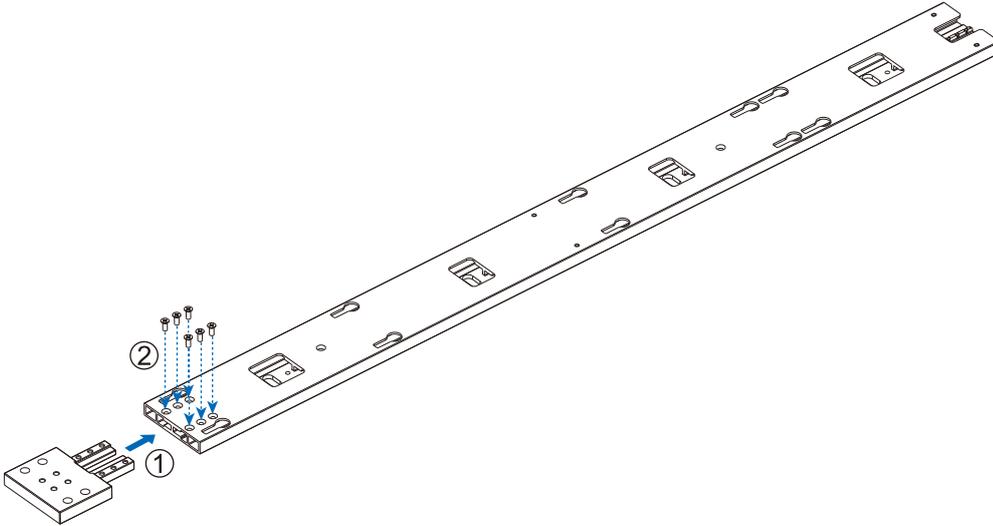
Removing mounting bar connector

Remove the 6 screws (M6 x 14) holding the mounting bar connector, and pull out the mounting bar connector.
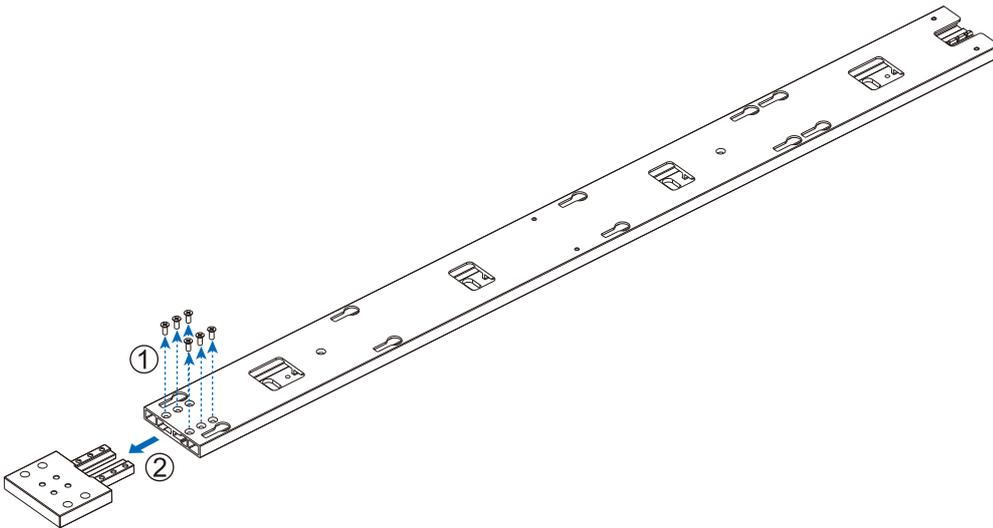
6. Install the mounting bars

(1) Install the mounting bars on the anchor points on the wall.

(2) Check the distance between the mounting bars using the alignment bars.

4 x 4 frame set

5 x 5 frame set

6 x 6 frame set

Alignment bar

608 mm

608 mm

608 mm

608 mm

Alignment bar

8 x 8 frame set

Alignment bar

608 mm

608 mm

1216 mm

608 mm

608 mm
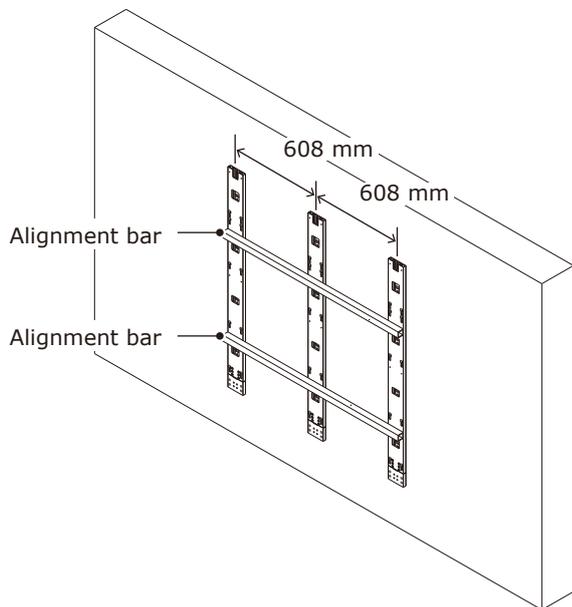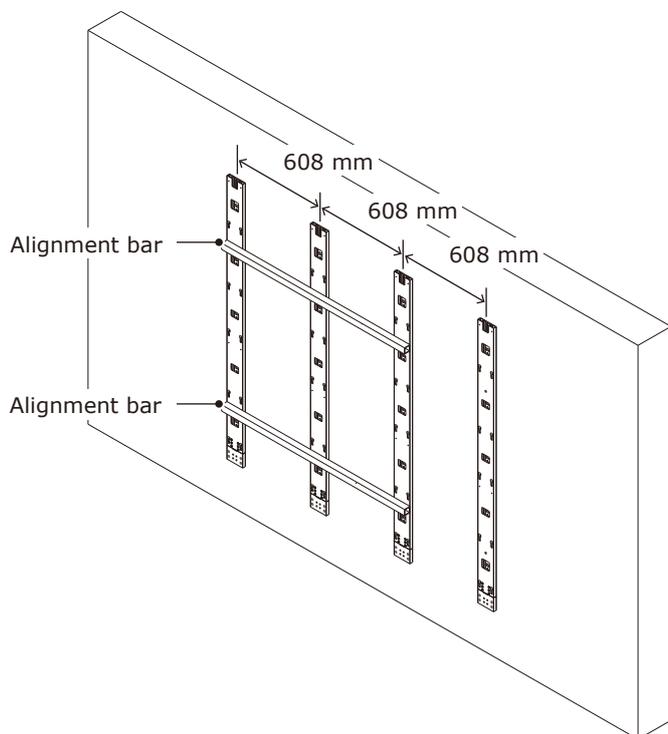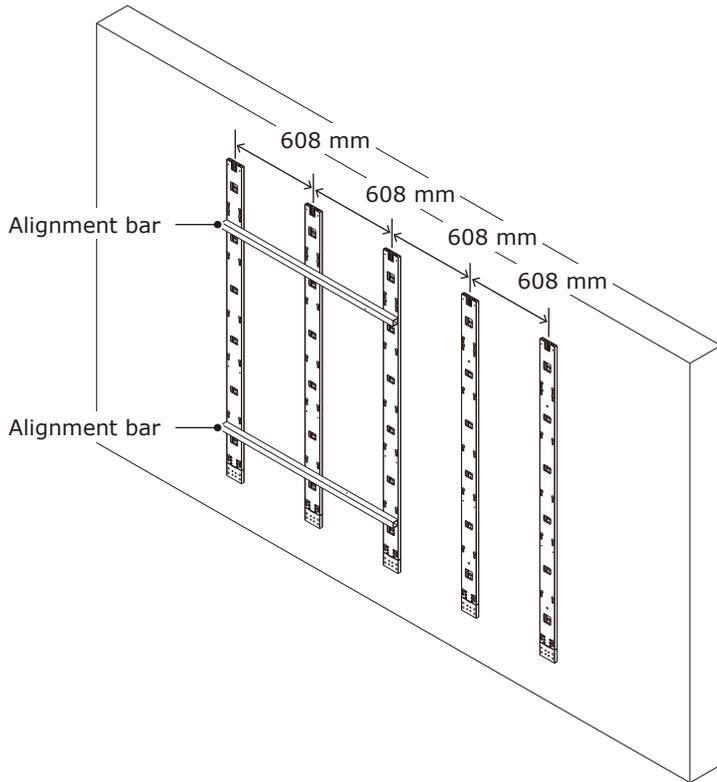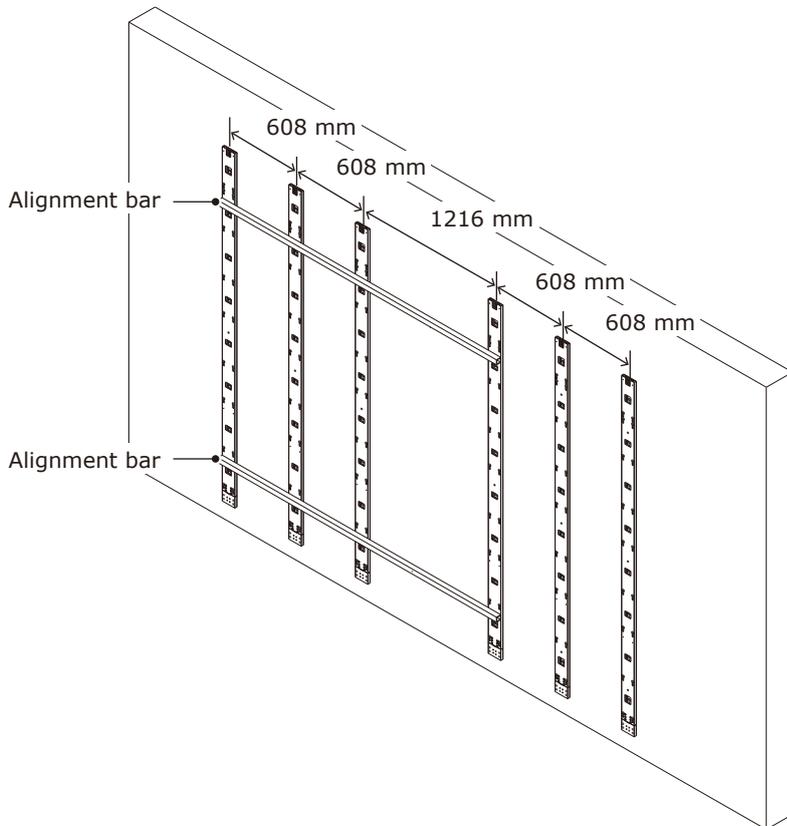
Alignment bar

(3) Check the evenness using a spirit level or a laser line level and the alignment bars together. Adjust the positions if required.

Wall mounted: Mounting bar installation (4 x 4 frame set)

M10 screws
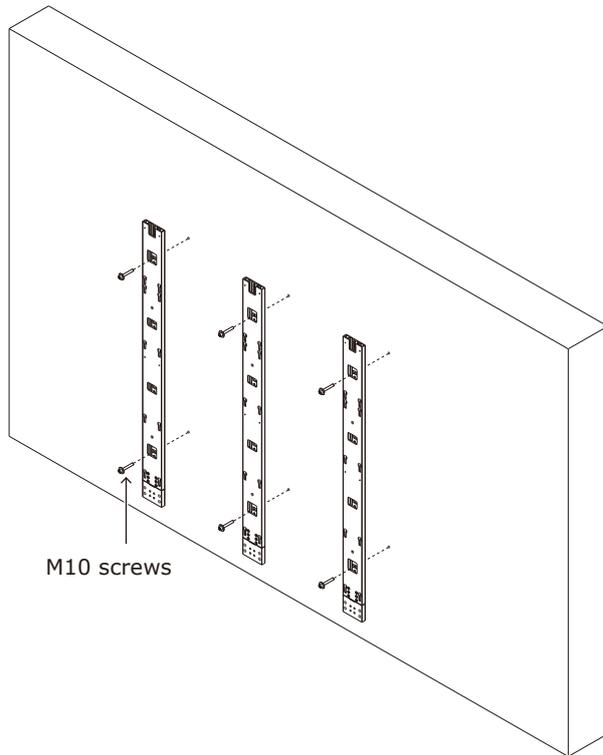
7. Install the power bar

Remove the power bar cover and install the power bar using Power bar screw (M8) screws.

How to remove the power bar cover
Sliding the power bar cover for removing. Power bar cover can slide left or right.

Power bar screw (M8)   Power bar
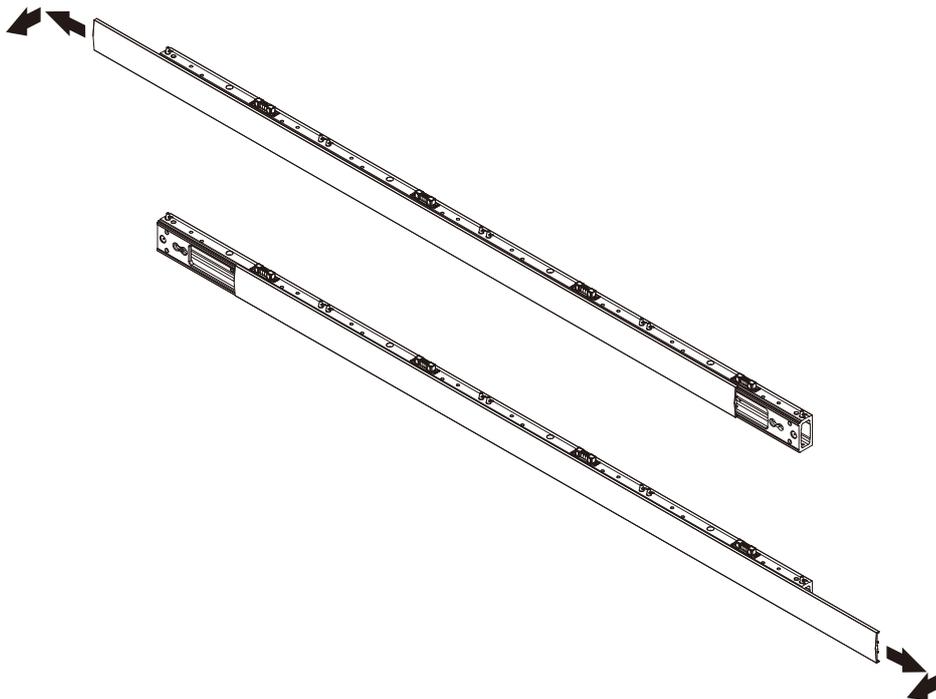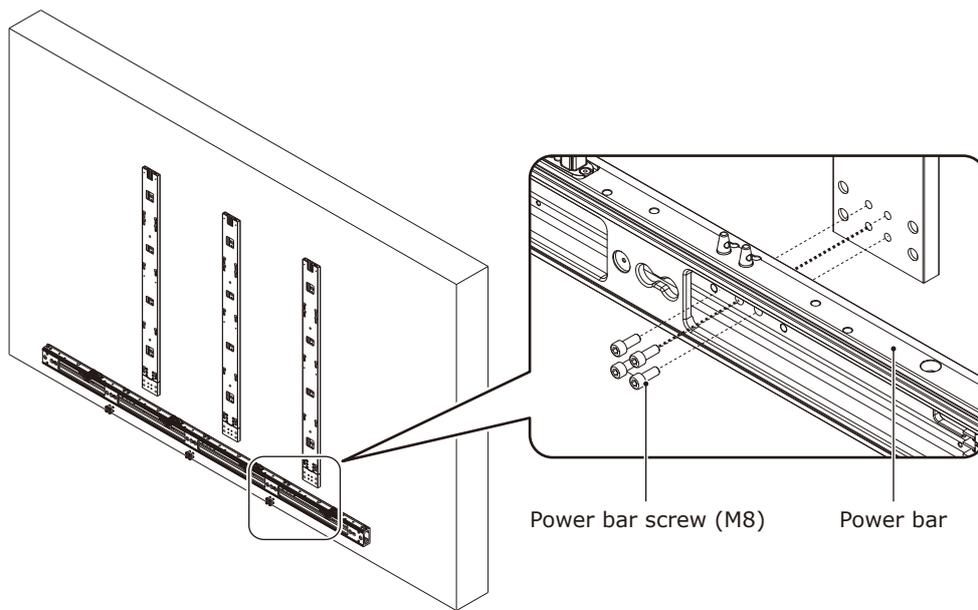
When using the 8 x 8 frame set, use the power bar connecting part to install the power bar.
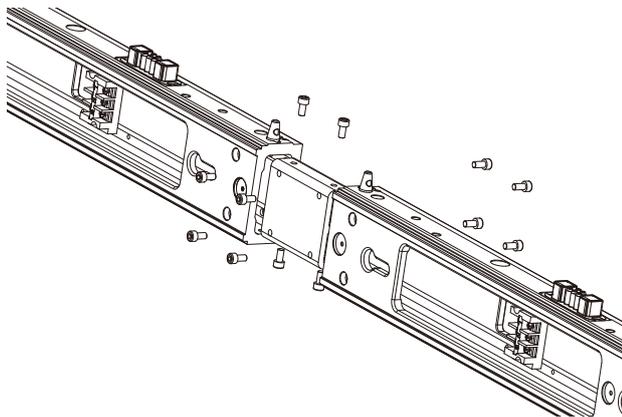
8. Install the cabinet hanger pins to the back of the cabinets

The following drawings indicate where Hangar pins are required. Insert the Hangar pins until the pitch of the screws is no longer visible.

Hanger pin

LED cabinet

Hanger pin

M8

8 mm
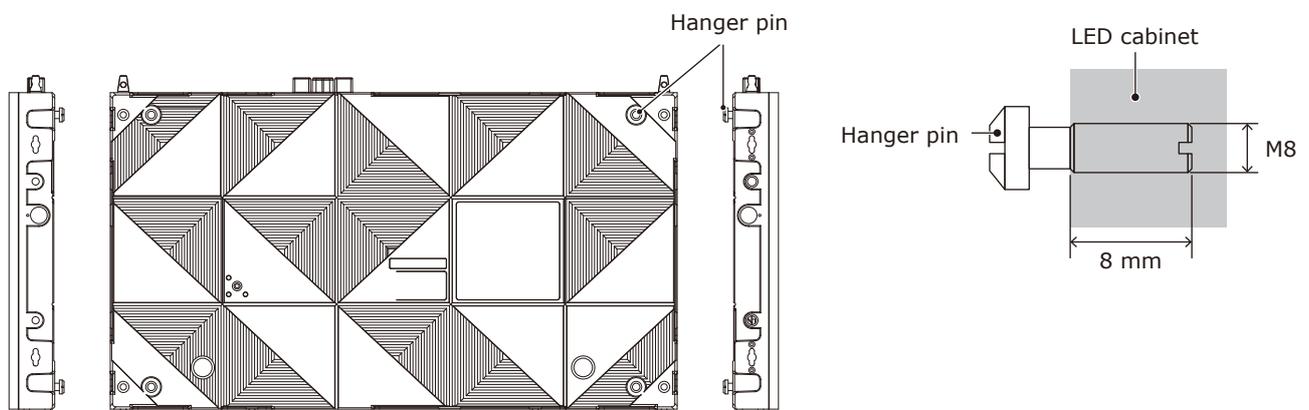
Cabinet hanger pins installation position

4 x 4 frame set

Cabinet

Mounting bar

Power bar   Positions for Cabinet hanger pins

5 x 5 frame set

Cabinet   Mounting bar

Power bar   Positions for Cabinet hanger pins

6 x 6 frame set

Cabinet   Mounting bar

Power bar   Positions for Cabinet hanger pins

8 x 8 frame set

Cabinet   Mounting bar   Mounting bar

Power bar   Positions for Cabinet hanger pins
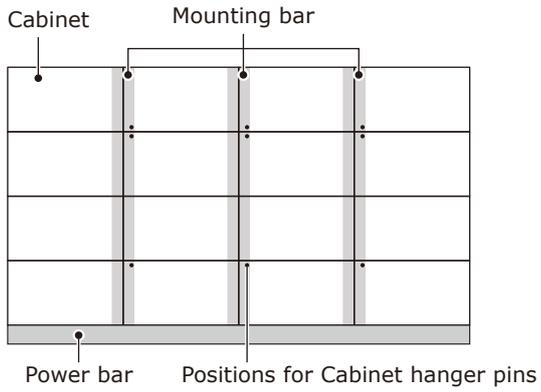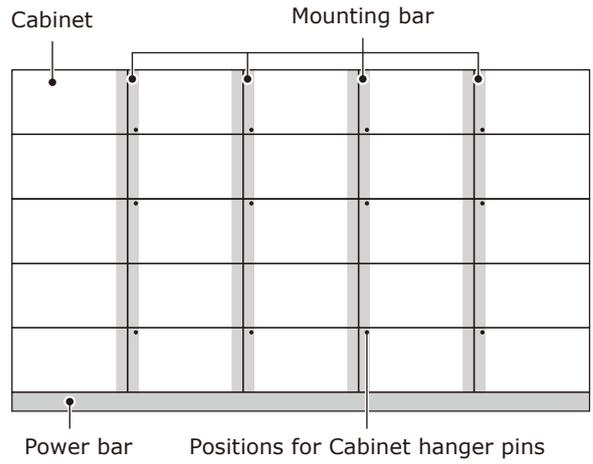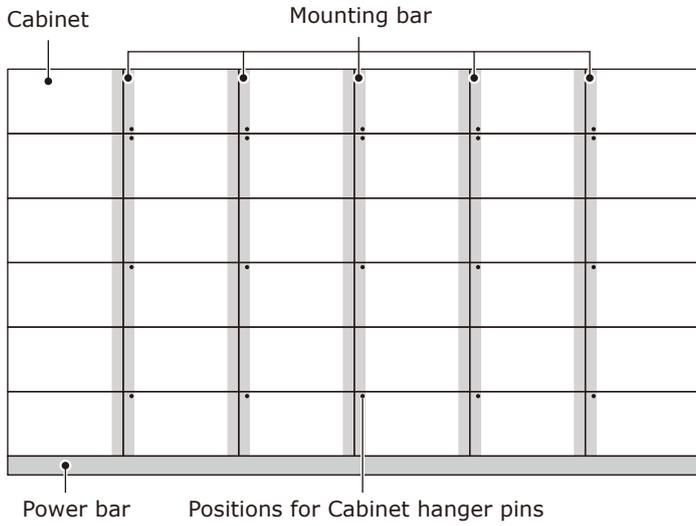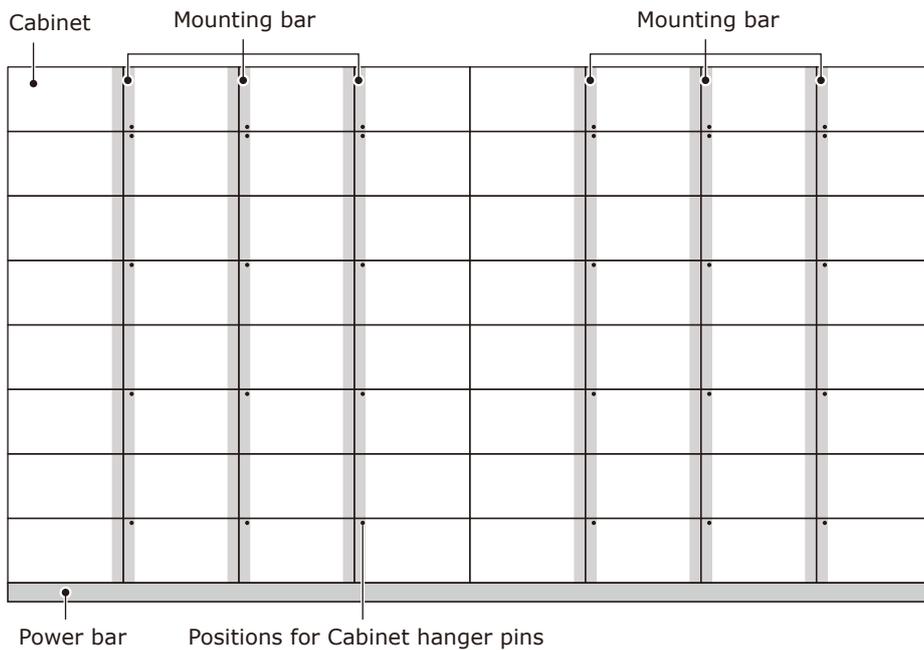
9. Install the cabinets

Hook the hanger pins, which have been inserted into the cabinets, into the holes on the mounting bars starting from the lowest row.
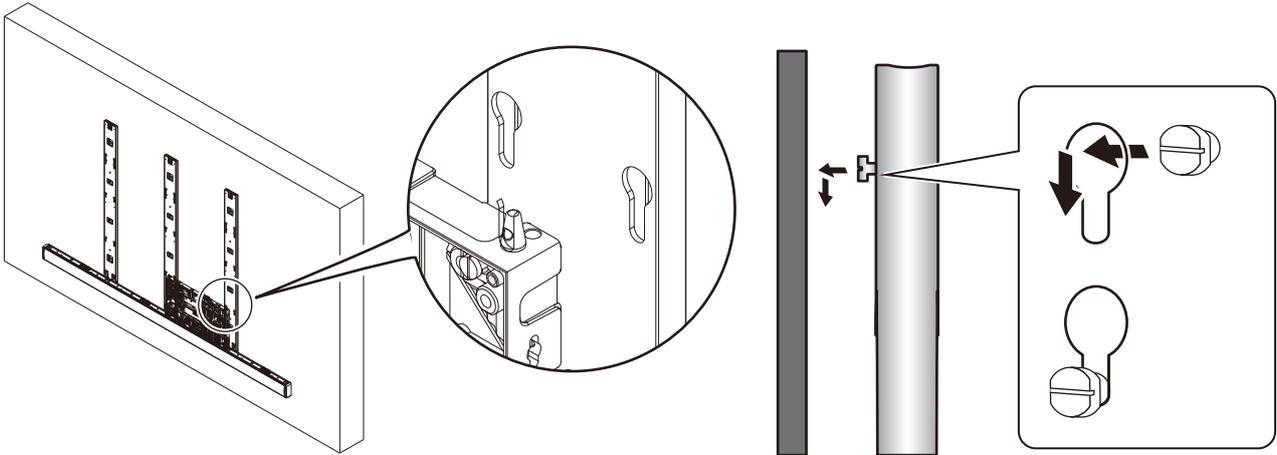
Fix temporarily the cabinets of the first row to the power bar.

Check that the top edges of any two adjacent cabinets in the first row are flush with each other.

OK

Adjustment required
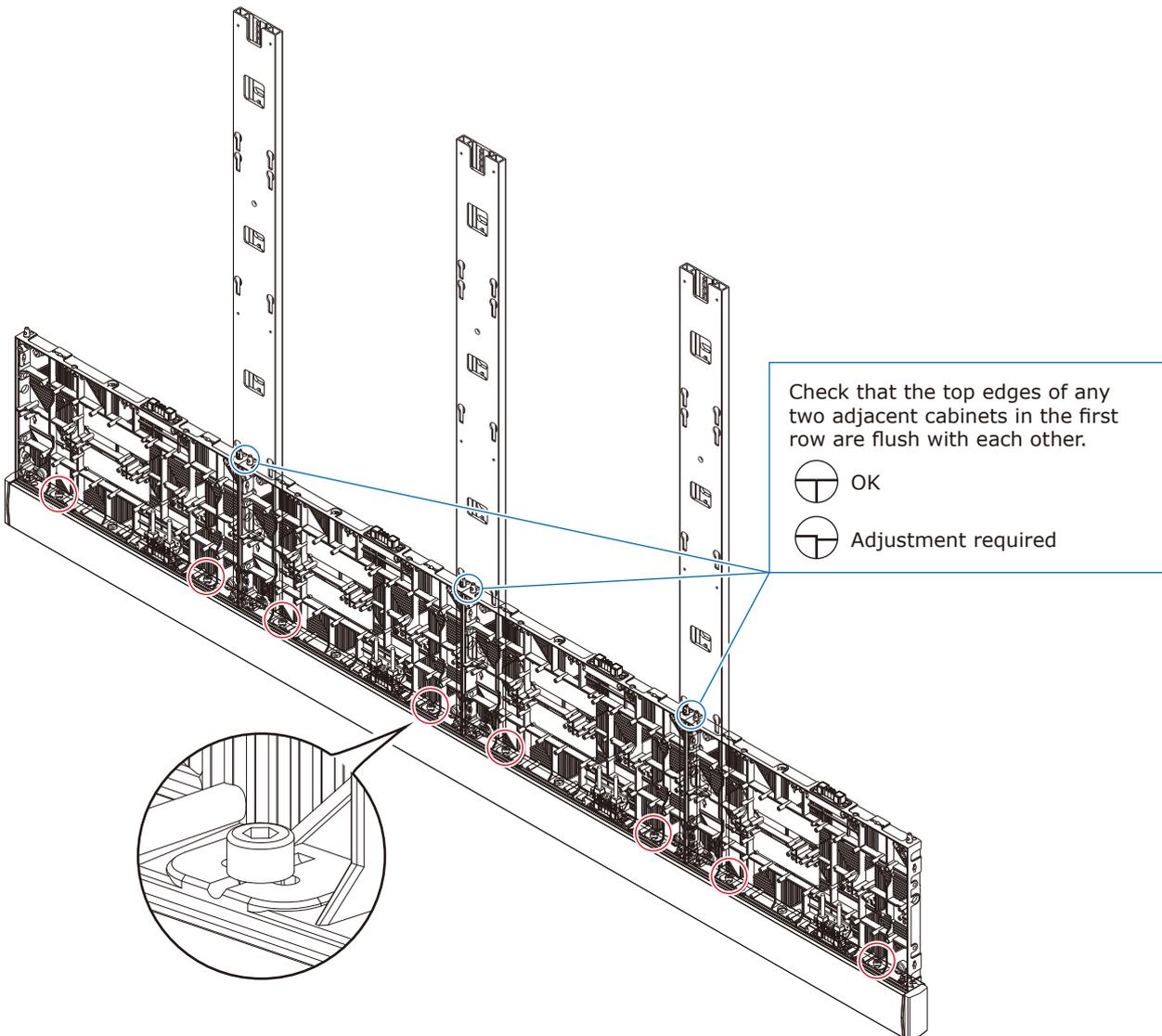
Hook the hanger pins of the cabinets of the second row to the mounting bars.

Secure the LED cabinets together using screws for connecting cabinets. Do not tighten the screws completely.
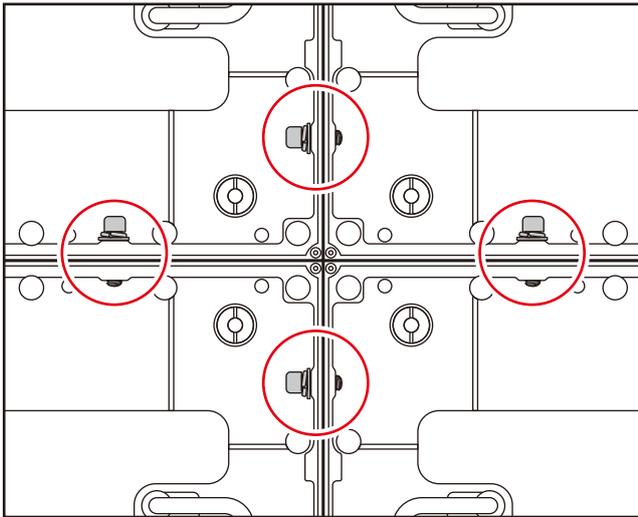
After you have installed two rows of cabinets, align the surfaces of the cabinets using the Adjustment plates.
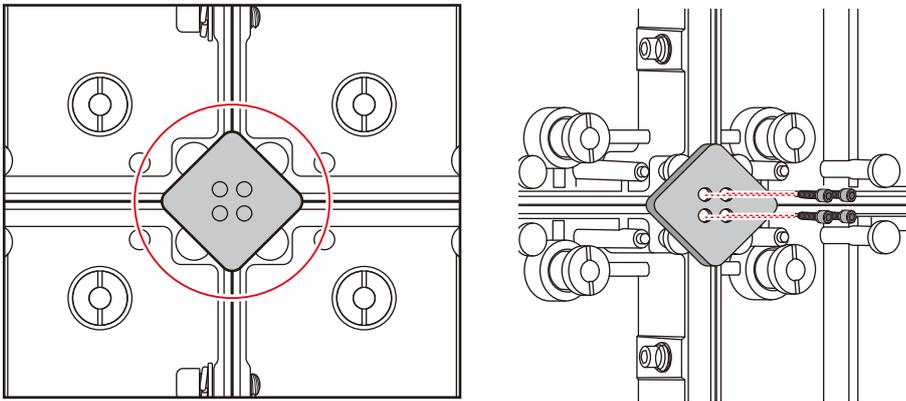
Adjust the position of the cabinet by turning the vertical alignment screw and the back in the center of the vertical alignment screw (cabinet hanger pin) with a flathead screwdriver.

Vertical alignment screw   Cabinet hanger pin
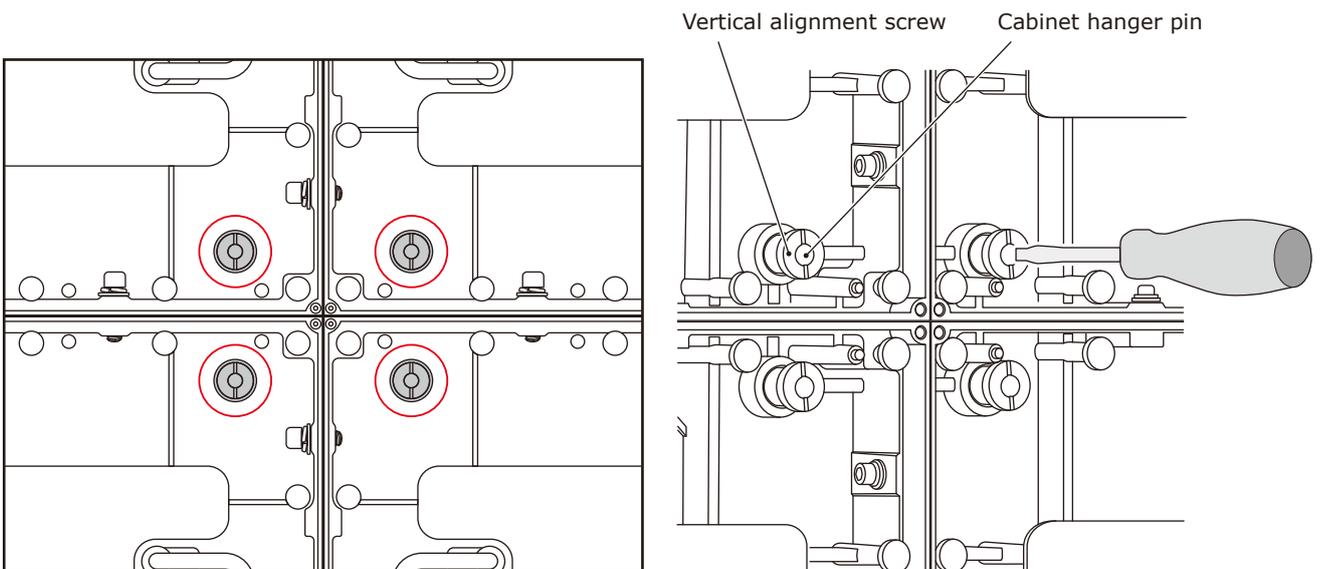
When the cabinets' surfaces are aligned, securely tighten the cabinets of the first row to the power bar, the cabinets of the first row together, as well as the cabinets of the first row with the cabinets of the second row.

Remove the Adjustment plates after the screws have been tightened.

Follow the same procedure to install the next row of cabinets and align their surfaces.

Connect the power cord and the LAN cable from the opening at the back of the power bar.

How to connect the power cord
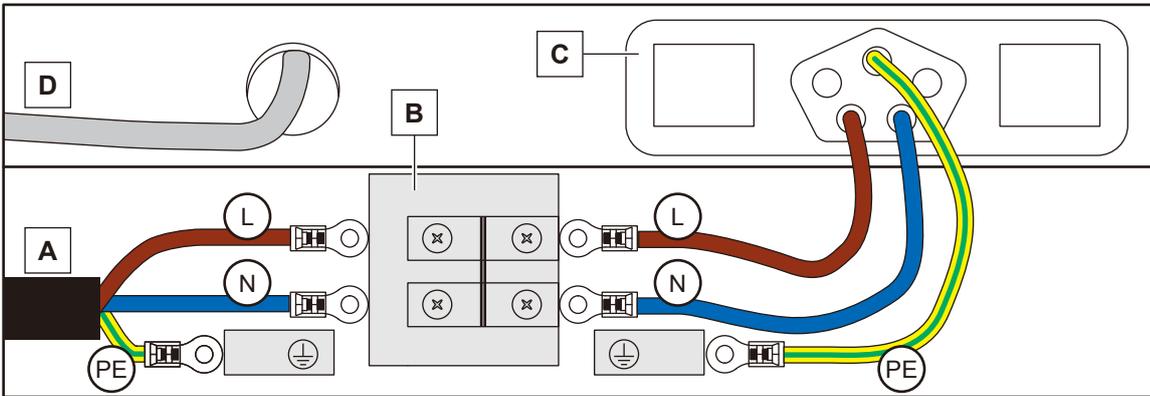
A	External power input
B	Terminal in Power bar
C	Power supply socket in Power bar
D	Data cable

⚠ WARNING

Pay attention to the wire colors of the power cord when connecting the cord. If the cables are not connected correctly, it may lead to a fire or an electrical shock.

   Blue (N)
   Brown (L)
   Yellow green (Ground)

⚠ CAUTION:

When attaching two cables with one screw, place the ring terminals of the cables back to back.

OK   **NG**
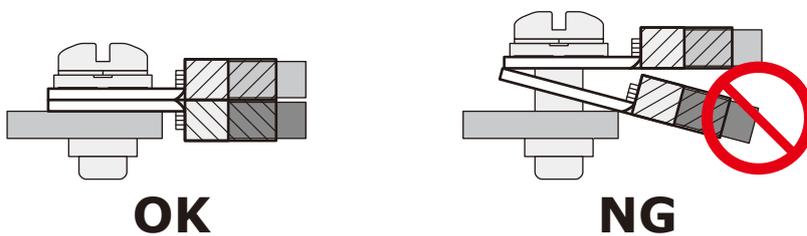
Install the power bar cover.
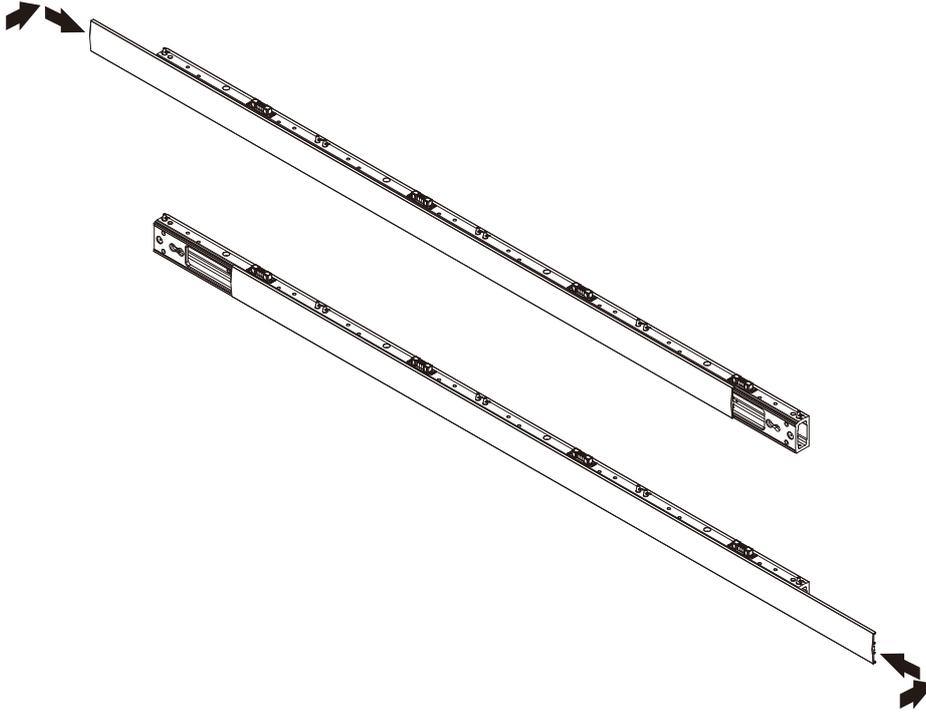
Insert the slot nut into the overframe and align it with the marking line and fix them with screw for overframe screws. Use overframe screws (M4 x 4) for the right side and overframe screws (M4 x 8) for the rest.
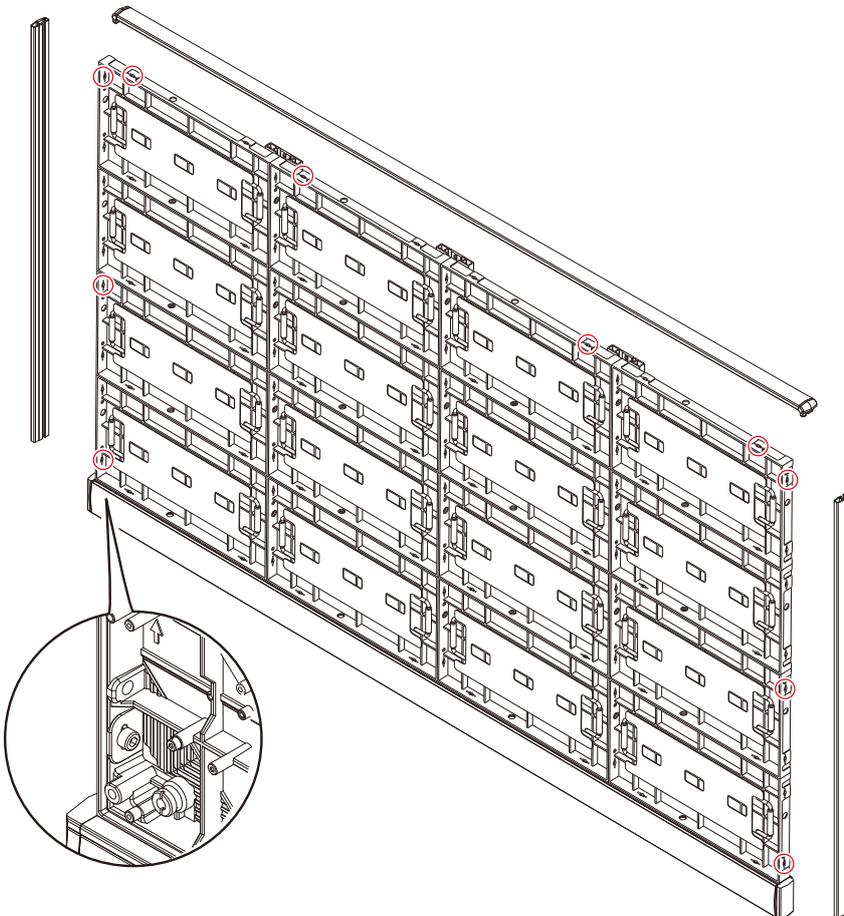
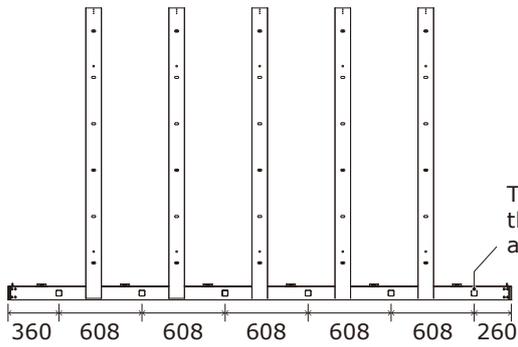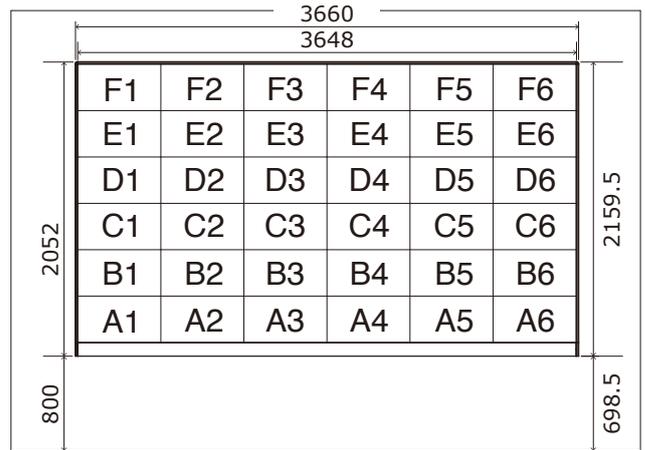Install the corner parts to the corner frame top and install it on the top of the cabinets.

Slot nut installation locations
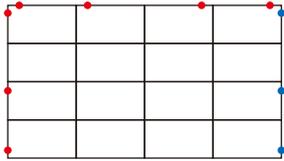
4 x 4 frame set
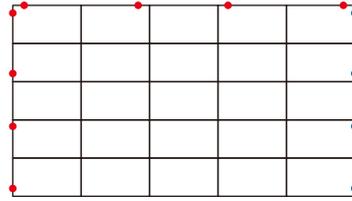
5 x 5 frame set
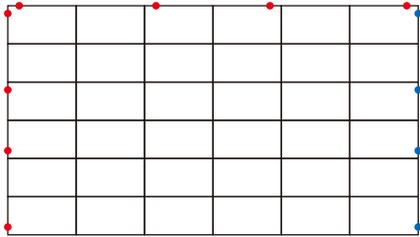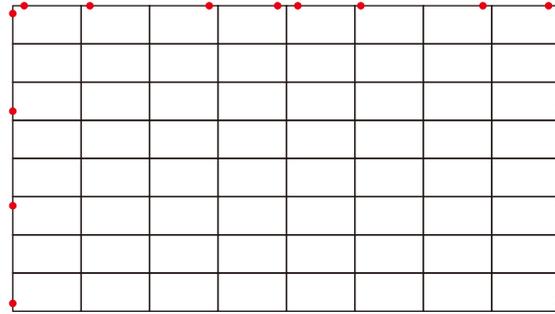
6 x 6 frame set

8 x 8 frame set

🔴 Screw for overframe M4×4
🔵 Screw for overframe M4×8

10. Assembly diagrams

4 x 4 frame set

5 x 5 frame set

6 x 6 frame set

F1	F2	F3	F4	F5	F6
E1	E2	E3	E4	E5	E6
D1	D2	D3	D4	D5	D6
C1	C2	C3	C4	C5	C6
B1	B2	B3	B4	B5	B6
A1	A2	A3	A4	A5	A6
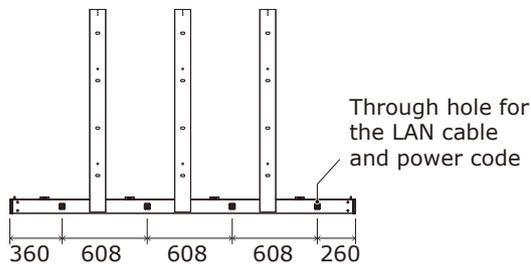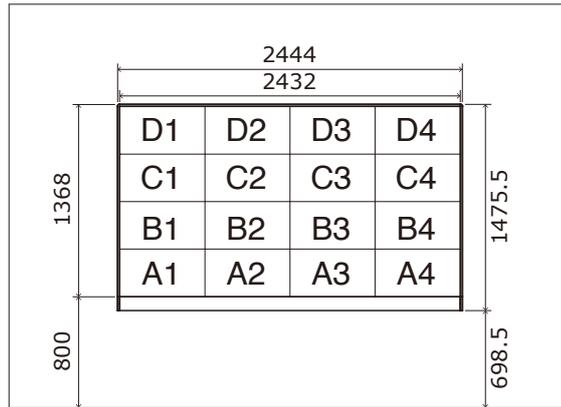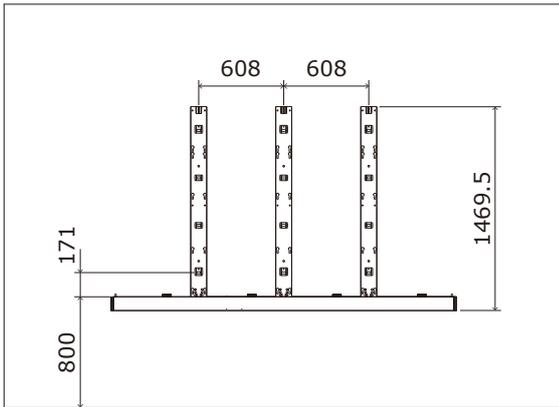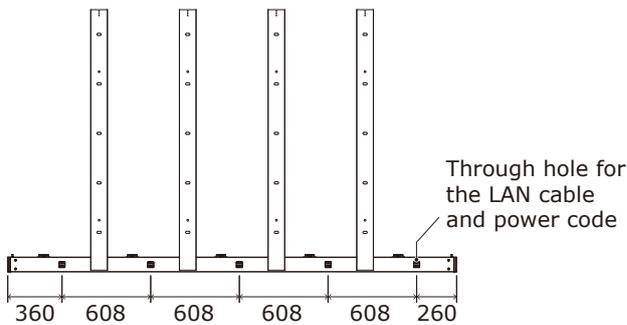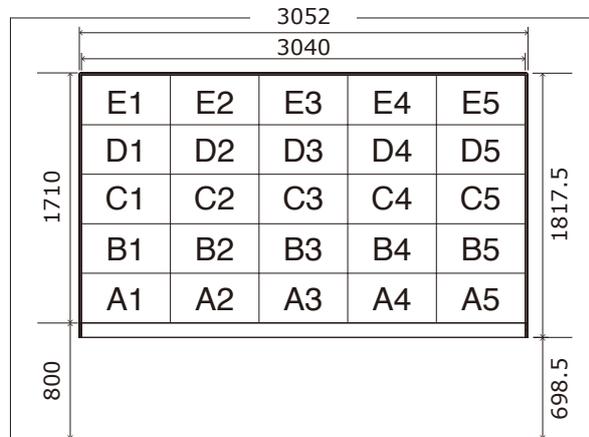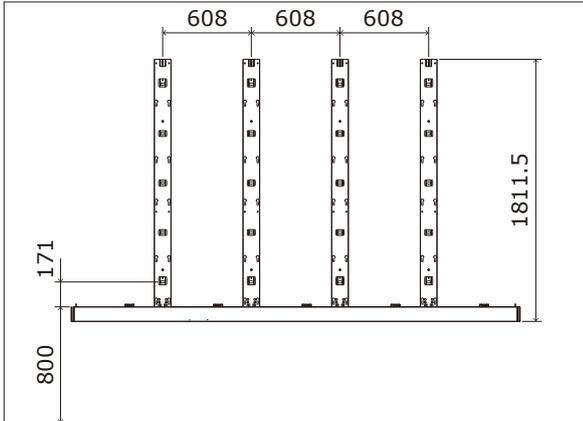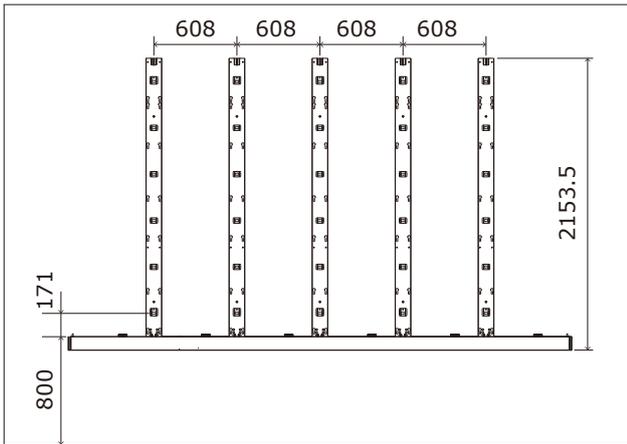
Through hole for the LAN cable and power code

8 x 8 frame set

H1	H2	H3	H4	H5	H6	H7	H8
G1	G2	G3	G4	G5	G6	G7	G8
F1	F2	F3	F4	F5	F6	F7	F8
E1	E2	E3	E4	E5	E6	E7	E8
D1	D2	D3	D4	D5	D6	D7	D8
C1	C2	C3	C4	C5	C6	C7	C8
B1	B2	B3	B4	B5	B6	B7	B8
A1	A2	A3	A4	A5	A6	A7	A8

Through hole for the LAN cable and power code

English - 28
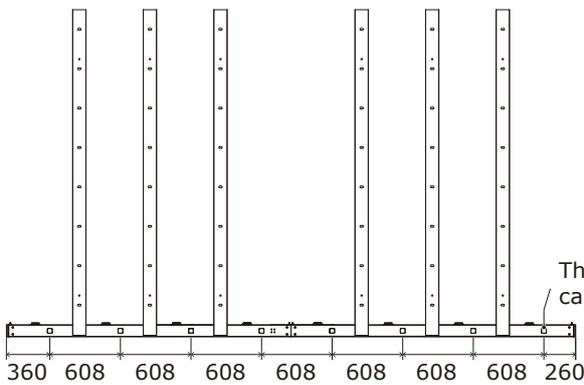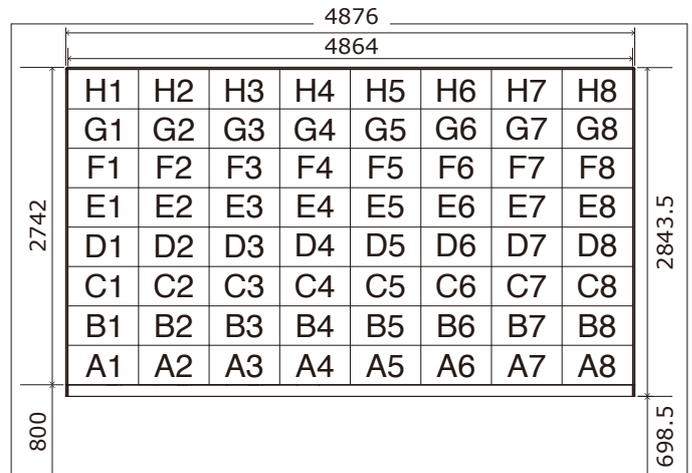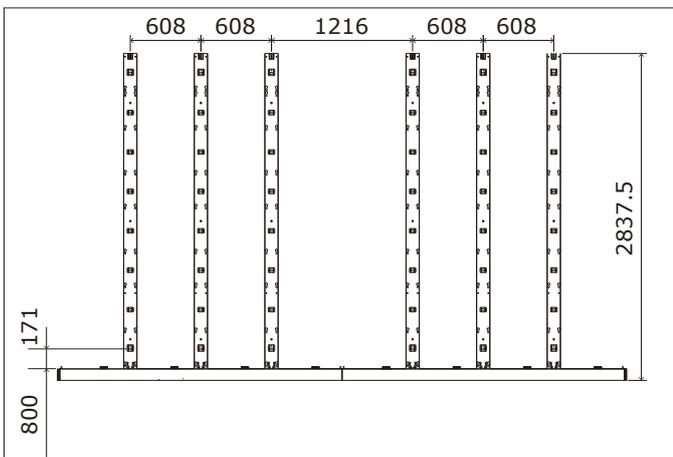
11. Installation without a frame set

A recommended example of installation when using the brackets is shown below. Please prepare the bracket by yourself. Ask a technician or your retailer for the installation procedure when not using the brackets.

Install the brackets to the frame as shown in the figure below.

Use screws with a length adapted to the cabinet thickness (30 mm). Use also brackets with a sufficient thickness to hold the screws.

Installation example

*: Please check Diagram (English-100) for dimensions.

Adjust the horizontality of the lowest row.
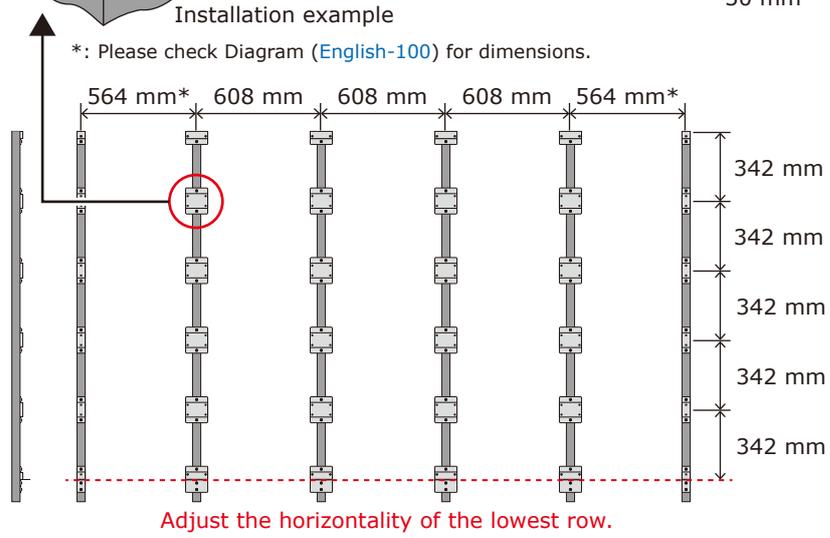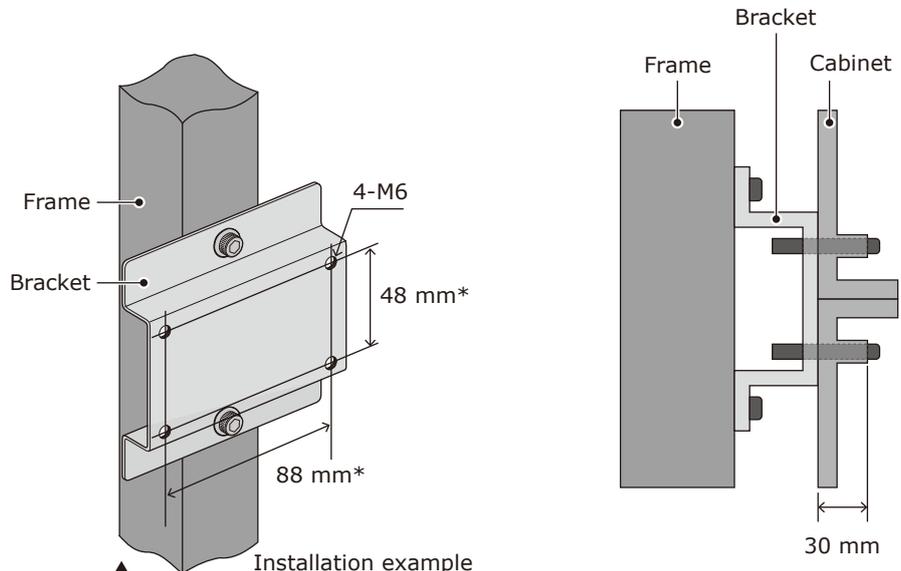
For installation, please refer to the "9. Install the cabinets".

12. Wiring

(1) Maximum number of signal connections

The maximum number of connections per LAN cable is shown below.

Product name	Maximum number of connections
LED-FC009i	2 modules
LED-FC012i	5 modules
LED-FC015i	7 modules

⚠ CAUTION

The maximum number of connections may differ depending on the connected LED controller. Therefore, check the specifications of the LED controller you are using.
Ask a technician or your retailer for more details.

(2) Maximum number of power connections

⚠ CAUTION

Exceeding the maximum capacity may generate smoke or cause a fire.
Check the voltage used and do not exceed the connection limits shown below.

Product name	100 - 120 V AC	200 - 240 V AC
LED-FC009i	20 modules	40 modules
LED-FC012i	20 modules	40 modules
LED-FC015i	20 modules	40 modules

(3) Connection when using a wall-mount frame

This connection is an example of connection when using the maximum capacity.

The power cable corresponding to the yellow part needs to be prepared by the customer.

Please connect considering the capacity of the switchboard and the inrush current specification.

4 x 4 frame set
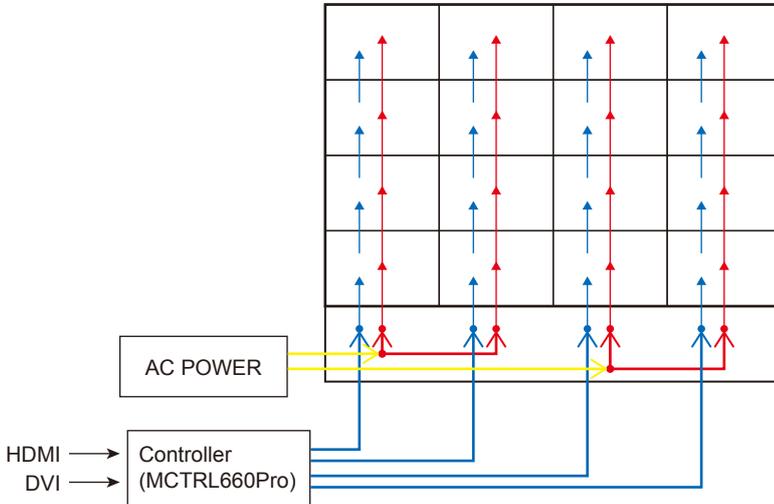
4×4 frame set		AC 100V	AC 200V
Number of power system		2	2
Current rating	per 1 module	1.0 A	0.5 A
	per power system	8.0 A (2 Systems)	4.0 A (2 Systems)
	per frame set	16.0 A	8.0 A
Inrush current 25°C Cold start Pulse width: 3ms	per 1 module	50 A	100 A
	per power system	400 A (2 Systems)	800 A (2 Systems)
	per frame set	800 A	1600 A

5 x 5 frame set

5 x 5 frame set		AC 100V	AC 200V
Number of power system		2	2
Current rating	per 1 module	1.0 A	0.5 A
	per power system	15.0 A (3 Systems) 10.0 A (2 Systems)	7.5 A (3 Systems) 5.0 A (2 Systems)
	per frame set	25.0 A	12.5 A
Inrush current 25°C Cold start Pulse width: 3ms	per 1 module	50 A	100 A
	per power system	750 A (3 Systems) 500 A (2 Systems)	1500 A (3 Systems) 1000 A (2 Systems)
	per frame set	1250 A	2500 A

6 x 6 frame set
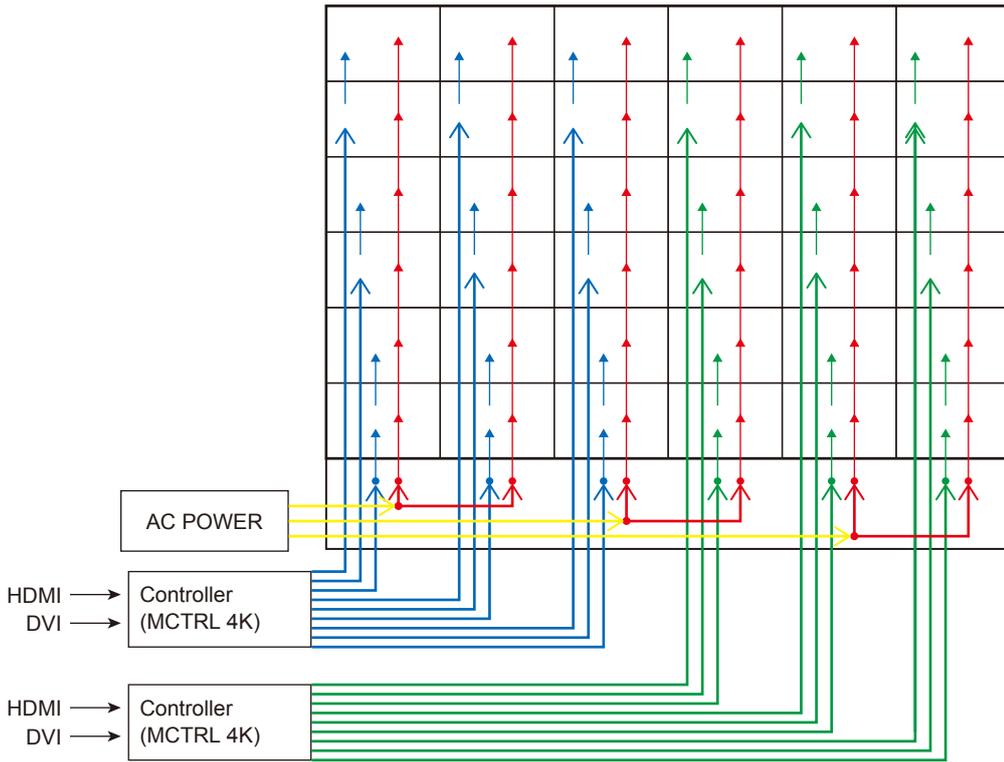
6 x 6 frame set		AC 100V	AC 200V
Number of power system		3	3
Current rating	per 1 module	1.0 A	0.5 A
	per power system	12.0 A (2 Systems)	6.0 A (2 Systems)
	per frame set	36.0 A	18.0 A
Inrush current 25°C Cold start Pulse width: 3ms	per 1 module	50 A	100 A
	per power system	600 A (2 Systems)	1200 A (2 Systems)
	per frame set	1800 A	3600 A

8 x 8 frame set
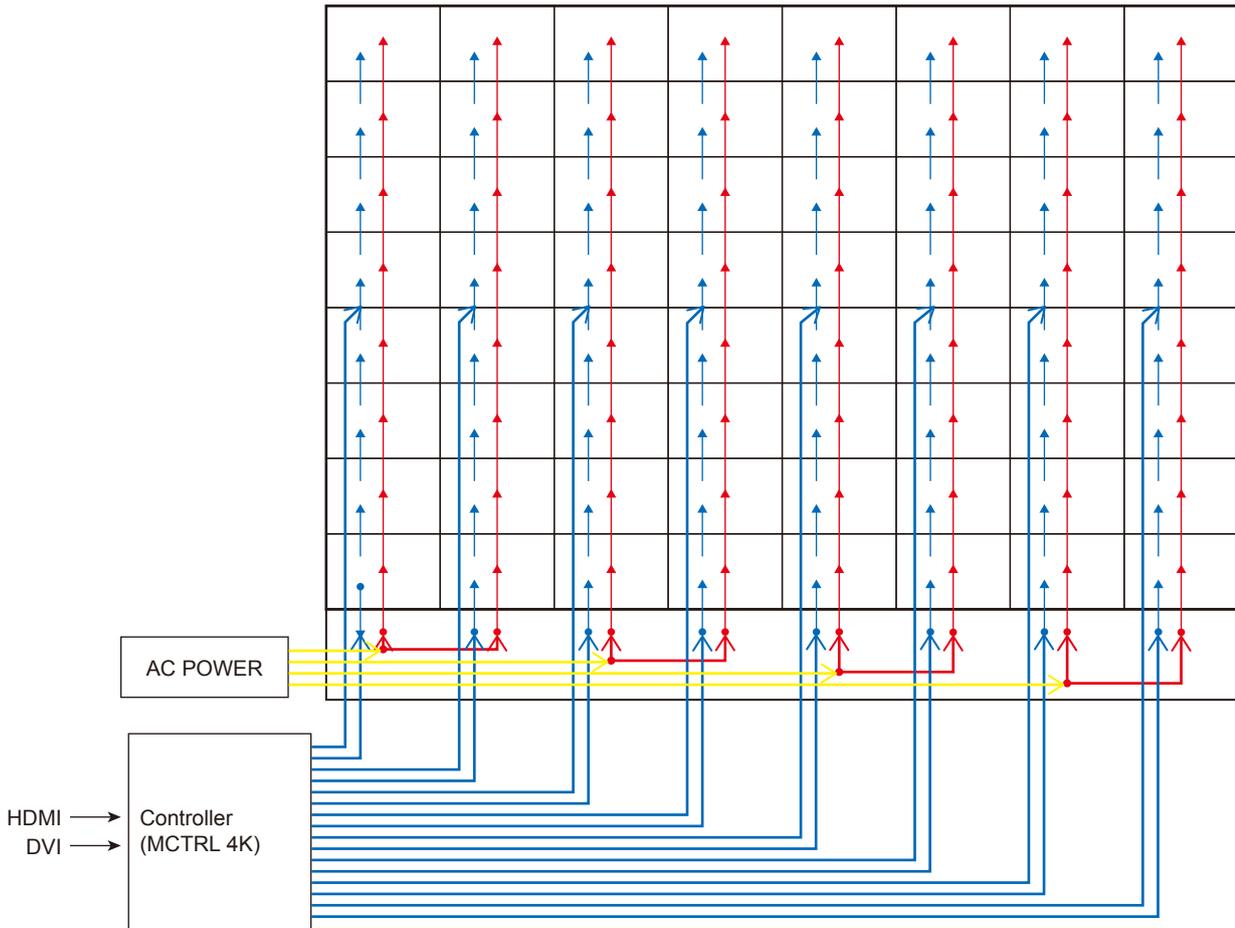
8 x 8 frame set		AC 100V	AC 200V
Number of power system		4	4
Current rating	per 1 module	1.0 A	0.5 A
	per power system	16.0 A (2 Systems)	8.0 A (2 Systems)
	per frame set	64.0 A	32.0 A
Inrush current 25°C Cold start Pulse width: 3ms	per 1 module	50 A	100 A
	per power system	800 A (2 Systems)	1600 A (2 Systems)
	per frame set	3200 A	6400 A

Backside hole cabinet

Back view
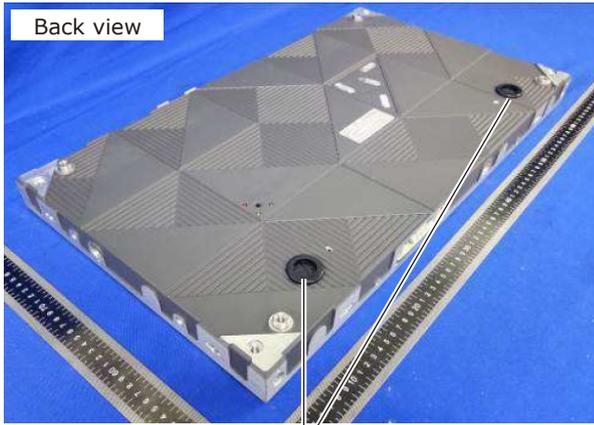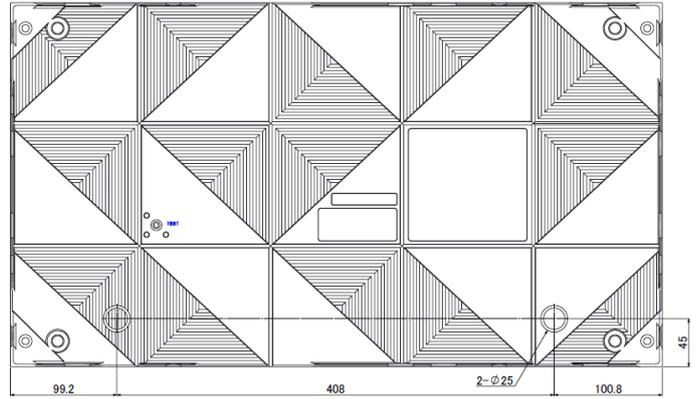
Backside hole

* Backside hole size : Φ25 mm

Connect Power cable & LAN cable to use the following components.

Option parts : LED-FAFE2-BHCK

| Cable feed sleeve | Cable fastening buckle | Screw (M3 x 8) | Cable fastening tie lap |
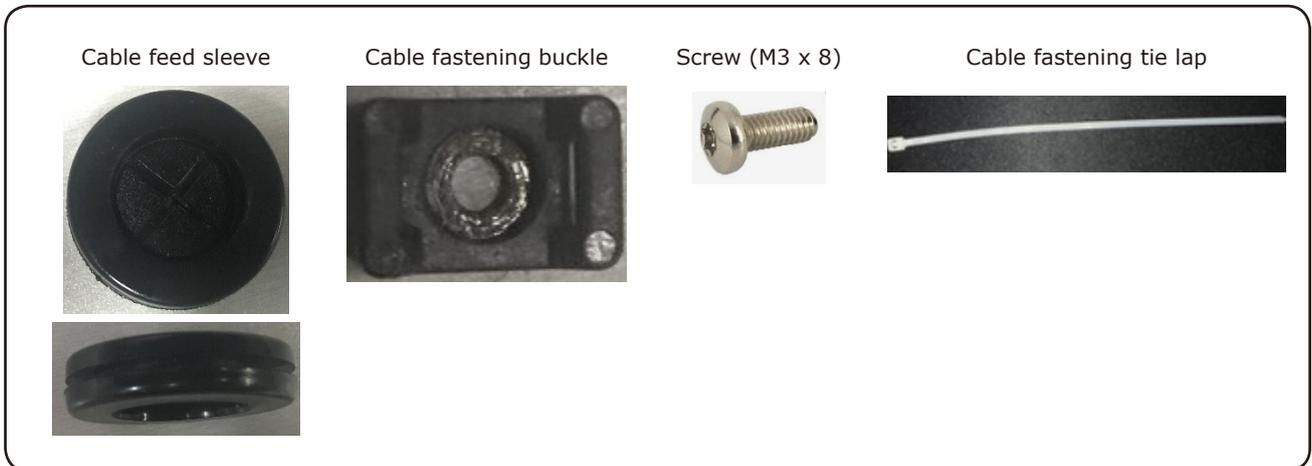
Connection method

Step 1)　　Attach the feed sleeve to the cabinet.
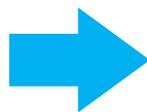
Step 2)   Insert the cables

Power cable   LAN cable

Step 3)   Attach the buckle by screw.

Step 4)   Through the fastening tie lap

Step 5)   Fix the cable to use fastening tie lap

Front view
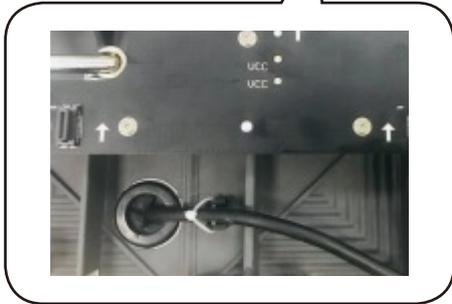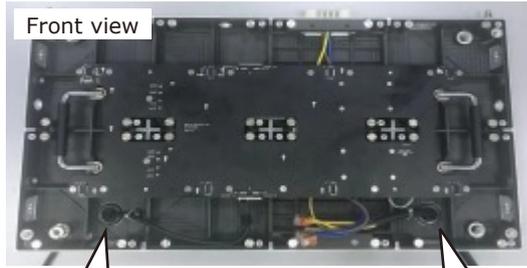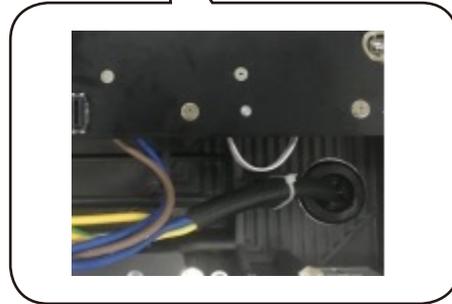
LAN cable   Power cable

Step 6)   Connect the Power cable (inside & outside) like bellows.

Precautions on use of the power connector (WAGO)

When using the power cord connector (WAGO's product, WFR Series (WAGO 221), Models WFR-2 and WFR-3), respect the following precautions.

WAGO 221

* Visiting WAGO's homepage for more details is recommended.

⚠ WARNING

• Always use the connector indoors (in a location not affected by moisture).

• Use the connector by respecting the installation precautions. If the connector is not used correctly, it may lead to a fire or an electrical shock.

Installation precautions

• Wire sheath peeling

⚠ CAUTION	⚠ CAUTION
Be sure to peel off the wire sheath over the specified length.	Do not use the connector with the core wires being sinuous.
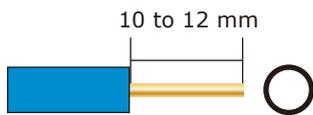
10 to 12 mm
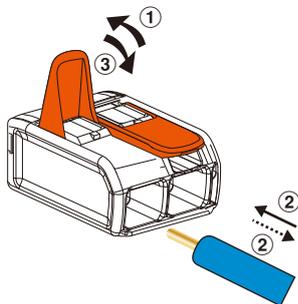
Lever operation is necessary even for connection of a solid core wire.

• Wire sizes

Wire sizes compatible with the power connector (WAGO) are as follows.

Solid core:	φ1.6 to 2.0 mm
IV 7-stranded core:	2.0 to 3.5 mm^2
Flexible stranded core:	2.0 to 3.5 mm^2

• When reconnecting a wire once disconnected, cut off the wire end and newly peel off the sheath.

⚠ CAUTION

• When reconnecting a wire once disconnected, cut off the wire end and newly peel off the sheath.

• If the disconnected wire is reconnected without this processing, it may heat up and burn out.

Newly peel off the sheath.	End of disconnected wire: More or less damaged.

How to connect the power cord

(1) Raise the lever.
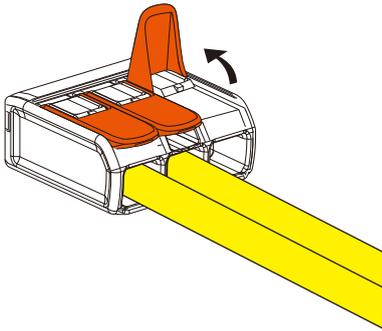
(2) Insert the wire.
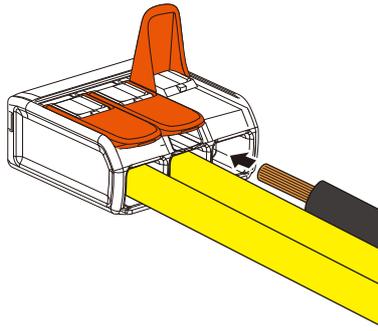
(3) Return the lever to its previous position.
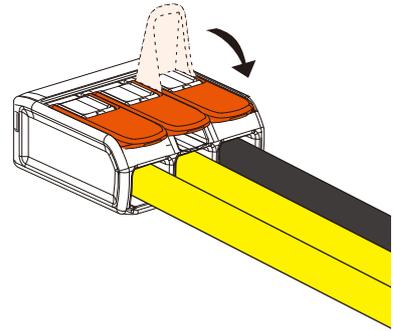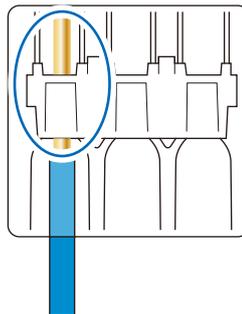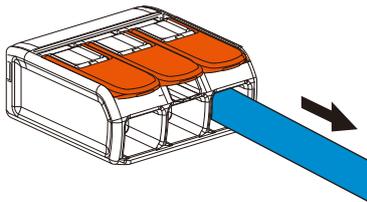
⚠ CAUTION

Insufficient insertion may cause poor electricity conduction and heat generation.

Power code connection checking

• Perform checking for correct and proper connection.
    Lightly pull on the wires one by one to check that they will not be pulled out.

Check visually

⚠ WARNING

Pay attention to the wire colors of the power cord when connecting the cord. If the cables are not connected correctly, it may lead to a fire or an electrical shock.
    Blue (N)
    Brown (L)
    Yellow green (Ground)

(4) LAN cable connection

Connect the LAN cables for the signal between the LED modules. Use the through holes to pass the cables between the modules.

Four through holes for the LAN cables
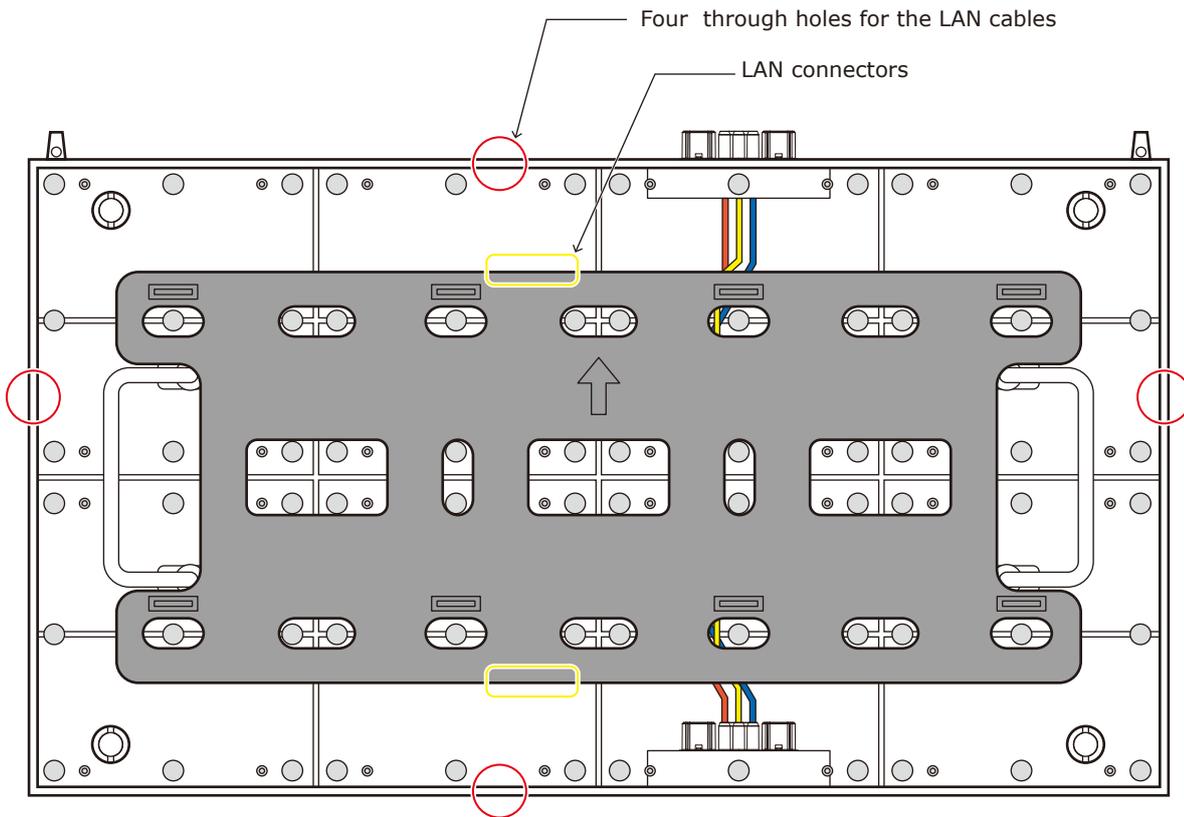
LAN connectors

[Connection example] Connecting from bottom to top using multiple ports
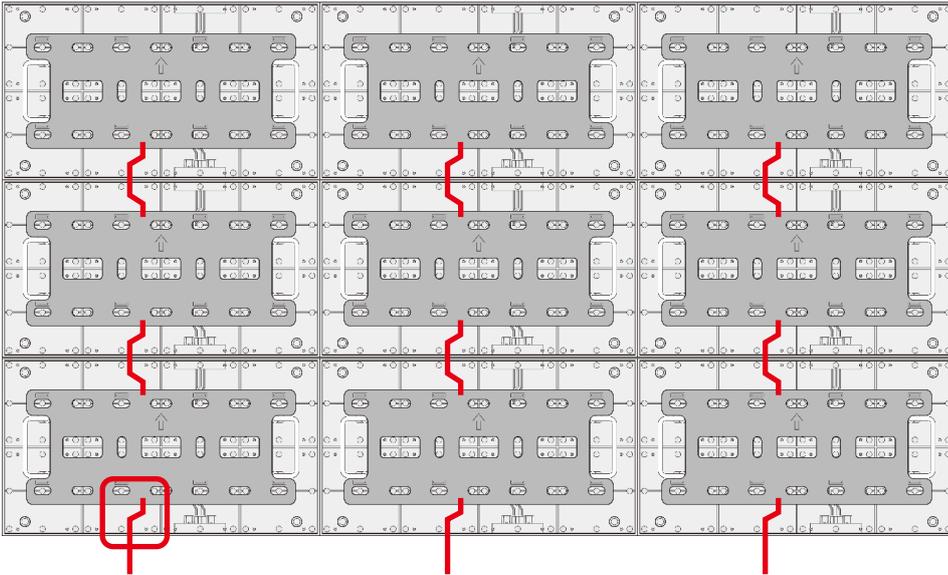
LAN cable from the LED controller
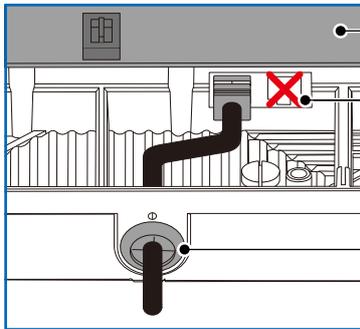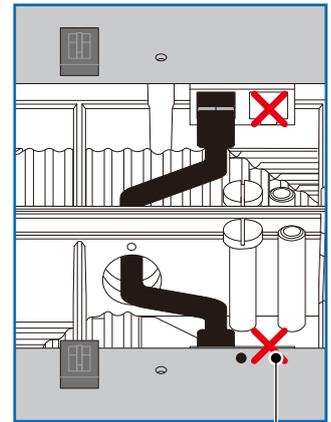
Hub board

Connect the cable to the LAN connector on the left.

Do not use the LAN connector on the right.

Insert the LAN cable into the through hole and connect it to the LAN connector on the left.

13. Installing the pixel card

⚠ CAUTION

- The pixel cards contain powerful magnets. If magnetic cards come close to the pixel cards, the data contained within may be damaged. Therefore, do not carry any magnetic card when installing the pixel cards.

- When installing the pixel cards, pay attention not to damage them against the pixel cards already installed or other objects. Otherwise, the video may not be displayed properly.

- Take measures against static electricity when installing the pixel card. Do not touch the LED display areas and the back of the pixel card.

- Check that the power supply to the LED modules is cut before starting the work.

- Before installing or removing pixel cards, please ensure the wall has been powered off for 1 or 2 hours. Otherwise the thermal expansion of pixel cards increases the risk of damaging them during removal or insertion.

- Please install according to the order of the pixel cards in the attached "Precautions for installation".

- If installation is not successful, please use the maintenance tool. (see English-63)

The arrows (↑) at the back of the pixel cards indicate the upper side.

Install the pixel card into the cabinet with the two guide holes of the pixel card aligned with the four guide pins of the cabinet (two pins for each pixel card). The pixel card is secured by the 9 magnets on each pixel card.

2 guide pins

2 guide holes

Insert into the guide holes

9 magnet interfaces

9 magnets
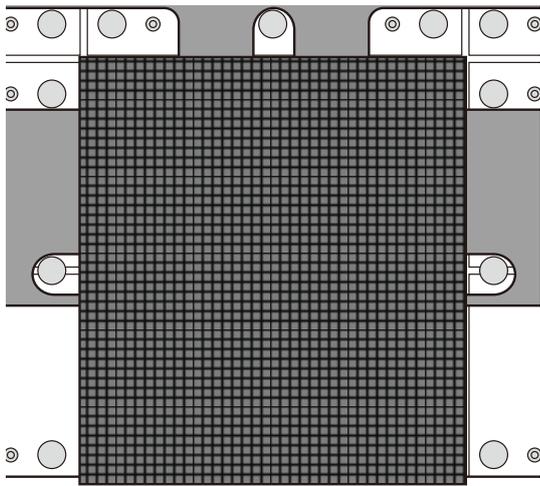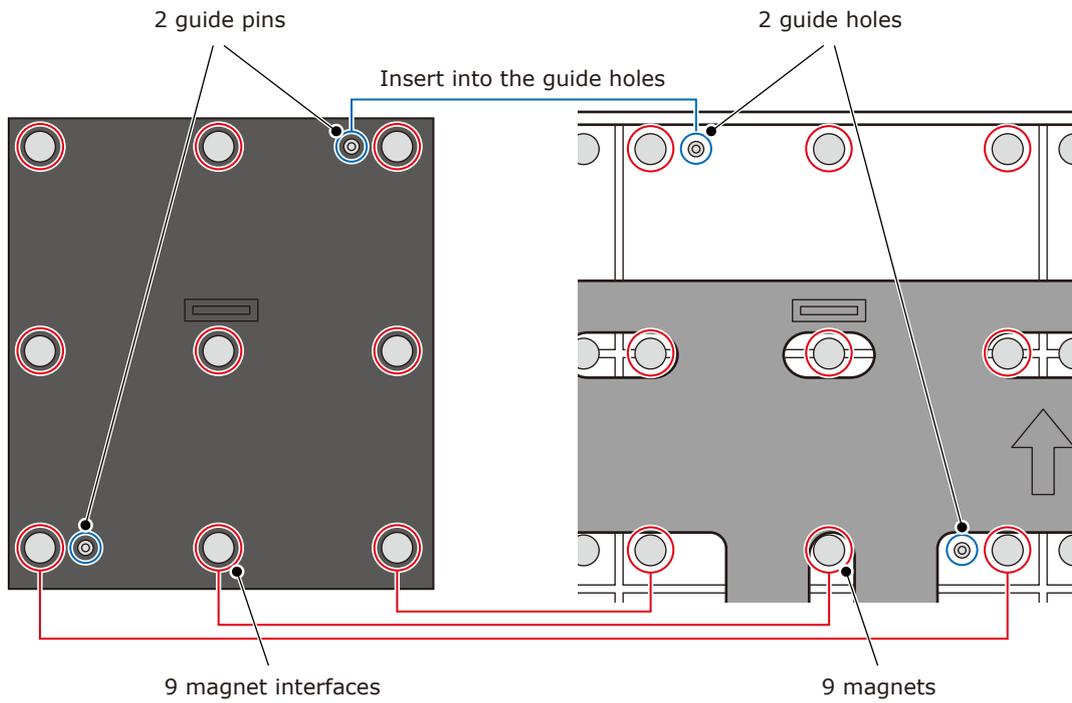
Screen Configuration

Check that all the connections are completed, and then turn on the LED modules and the LED controller.
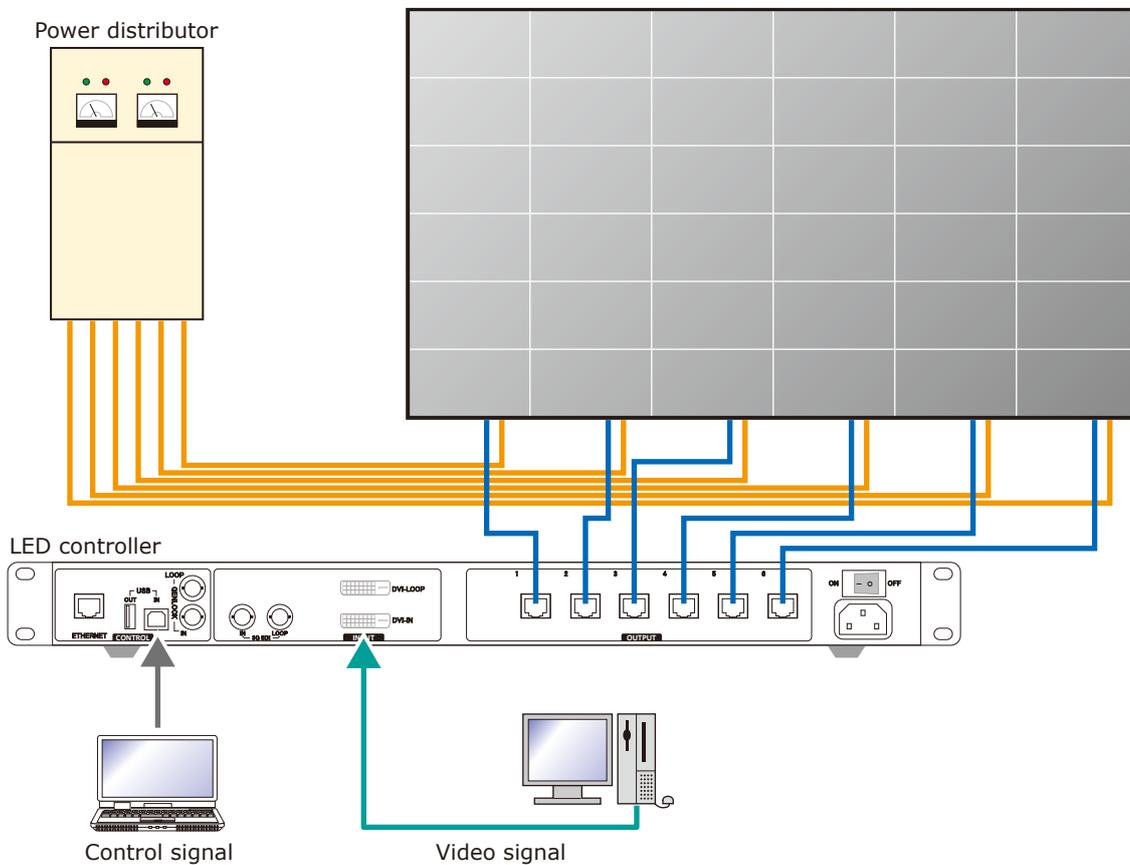
Power distributor

LED controller

Control signal   Video signal

⚠ **WARNING**

Pay attention to the wire colors of the power cord when connecting the cord. If the cables are not connected correctly, it may lead to a fire or an electrical shock.

    Blue (N)
    Brown (L)
    Yellow green (Ground)

⚠ **CAUTION**

When using LAN cables of 60 m to 100 m in length, the product may not operate correctly depending on the quality of the cables. In such a case, it is recommended to use optical-fiber cables.
Ask a technician or your retailer for more details.

Preparingfor using NovaLCT software

Perform the setting using the NovaLCT control software by Novastar.

Connect the supplied USB memory to the computer. Start NovaLCT*.exe.

After it has started, install it following the software instructions.

The NovaLCT preparation is complete.

⚠ CAUTION

For NovaLCT*.exe, be sure to use the file contained in the supplied USB drive.

Using a NovaLCT*.exe file different than the one in the supplied USB drive may lead to malfunction.

Log in with the administrator privileges.

Display the login screen as follows: User(U) → Advanced Synchronous System UserLogin(A).

Enter the password ("admin" by default) to log in with the administrator privileges.

To change the password, go to User(U) → Change Password(U) with the administrator privileges.

⚠ CAUTION

Do not forget the new password after it has been changed.

Enter the screen configuration menu

(1) Click "Screen Configuration" (a).
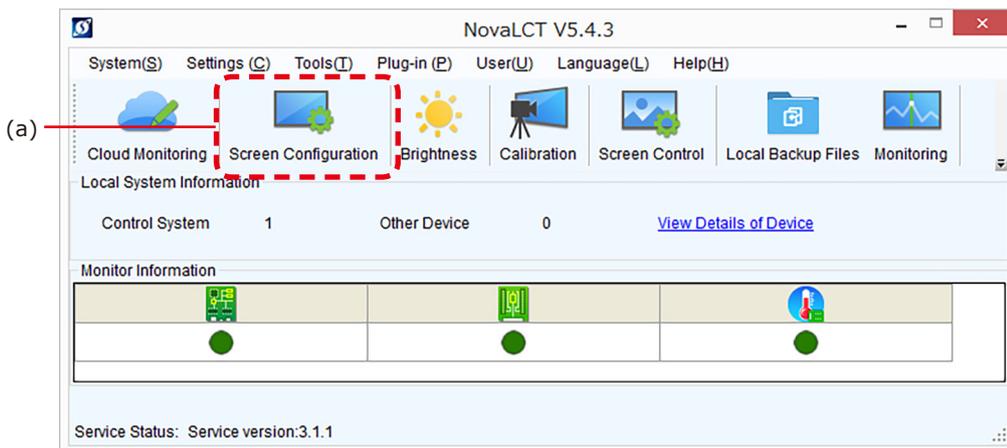
(2) Check the port in "Select Communication Port", and then click the "Next" button (b).

English - 45
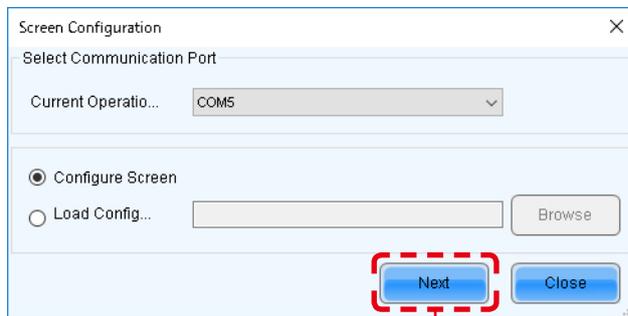
Module connection settings

Start NovaLCT and log in with the administrator privileges.

In the Screen Configuration screen that is displayed, select the "Screen Connection" tab (a).
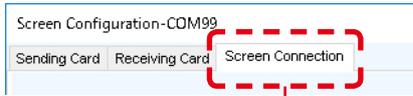
(a)

⚠ CAUTION

Do not change the settings in the "Receiving Card" tab.
Otherwise, the video may not be displayed properly.

Select "Standard Screen" under "Screen Type" (b).

The settings in "Sending Card Number" (c) and "Ethernet Port No." (d) vary depending on the connected LED controller.
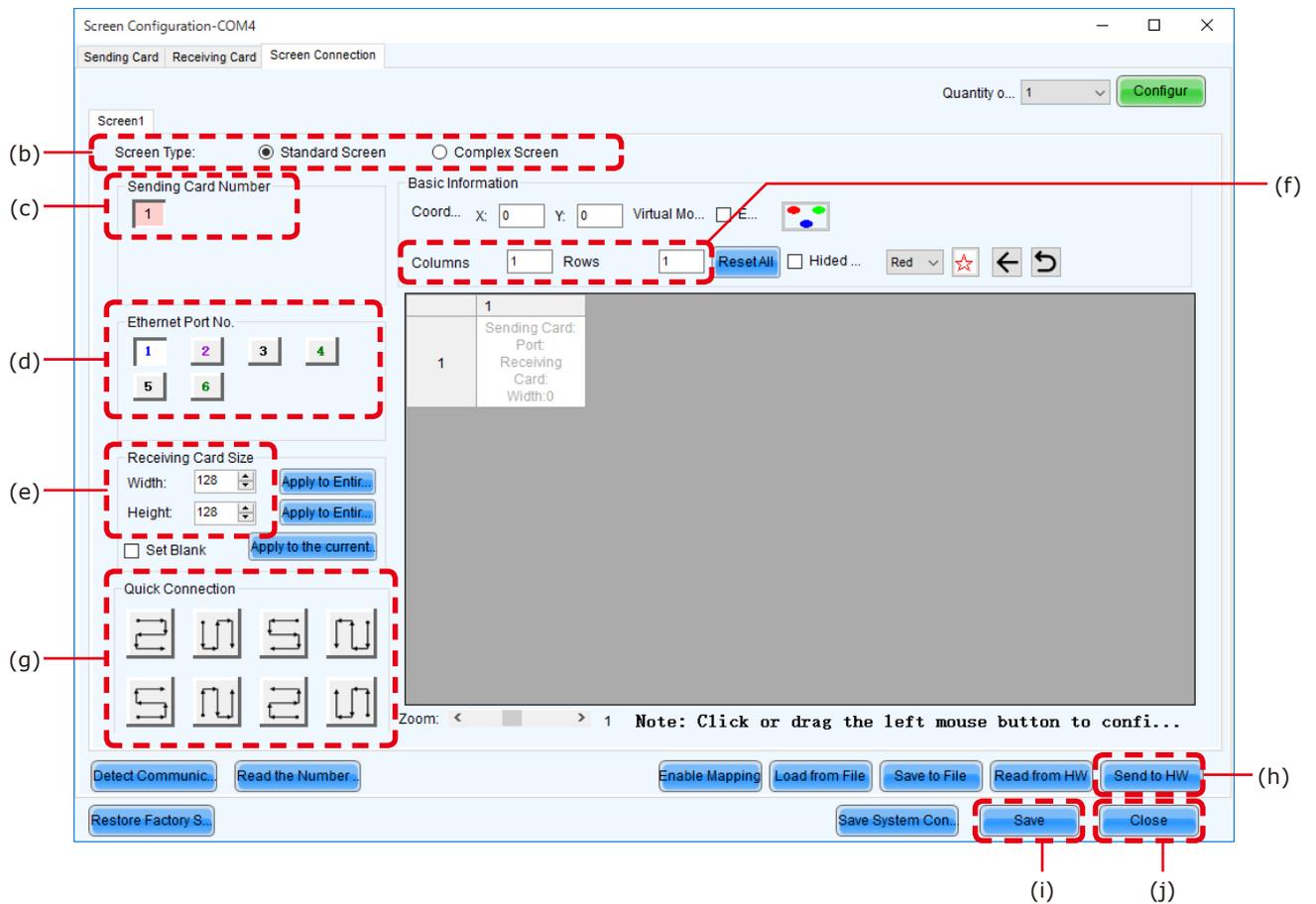
Enter the value in the table below under "Receiving Card Size" (e).

Product name	LED-FC009i	LED-FC012i	LED-FC015i
Pixel pitch	0.9 mm	1.2 mm	1.5 mm
Number of displayed pixels (resolution/module)	Width 640 Height 360	Width 480 Height 270	Width 384 Height 216

[Columns/Rows] Enter the number of installed screens under "Columns/Rows" (f) (the number of vertically installed screens in Columns, and the number of horizontally installed screens in Rows).

[Configuration example]

The setting values are given for the following example where 16 are installed in a 4 (columns) x 4 (rows) configuration connecting from bottom to top using multiple ports.
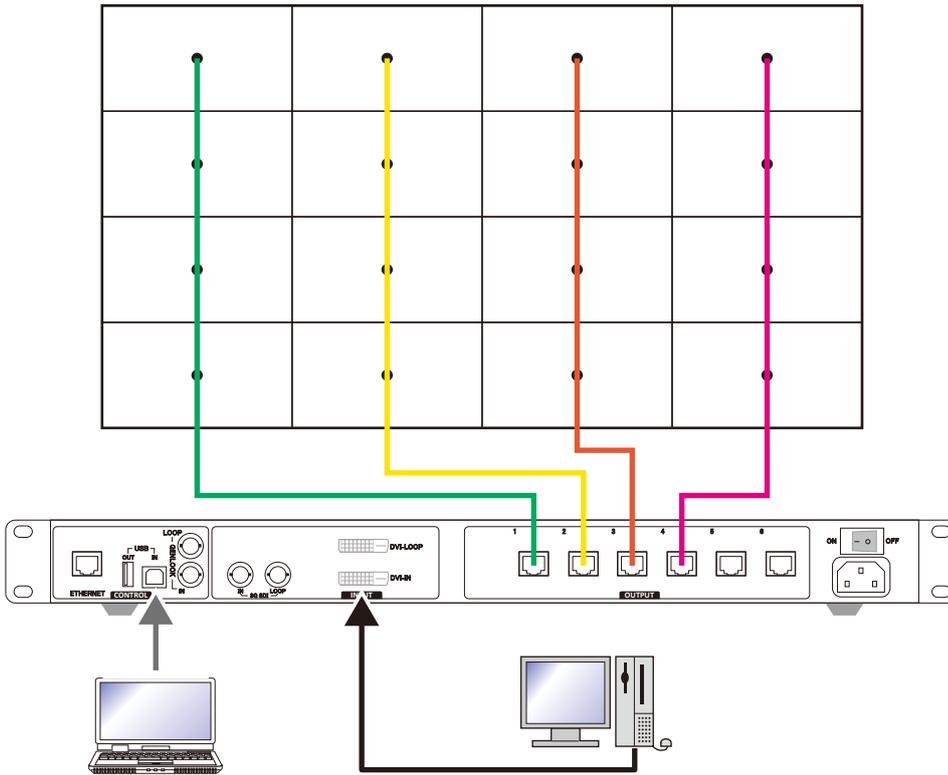
(1) With a pixel pitch of 1.25 mm, enter Width=480 and Height=270 under "Receiver Card Size" (e). Do not use the buttons located next to the values.

(2) Since the configuration is 4 (columns) x 4 (rows), enter Columns=4 and Rows=4. A 4 (columns) x 4 (rows) screen configuration is displayed.
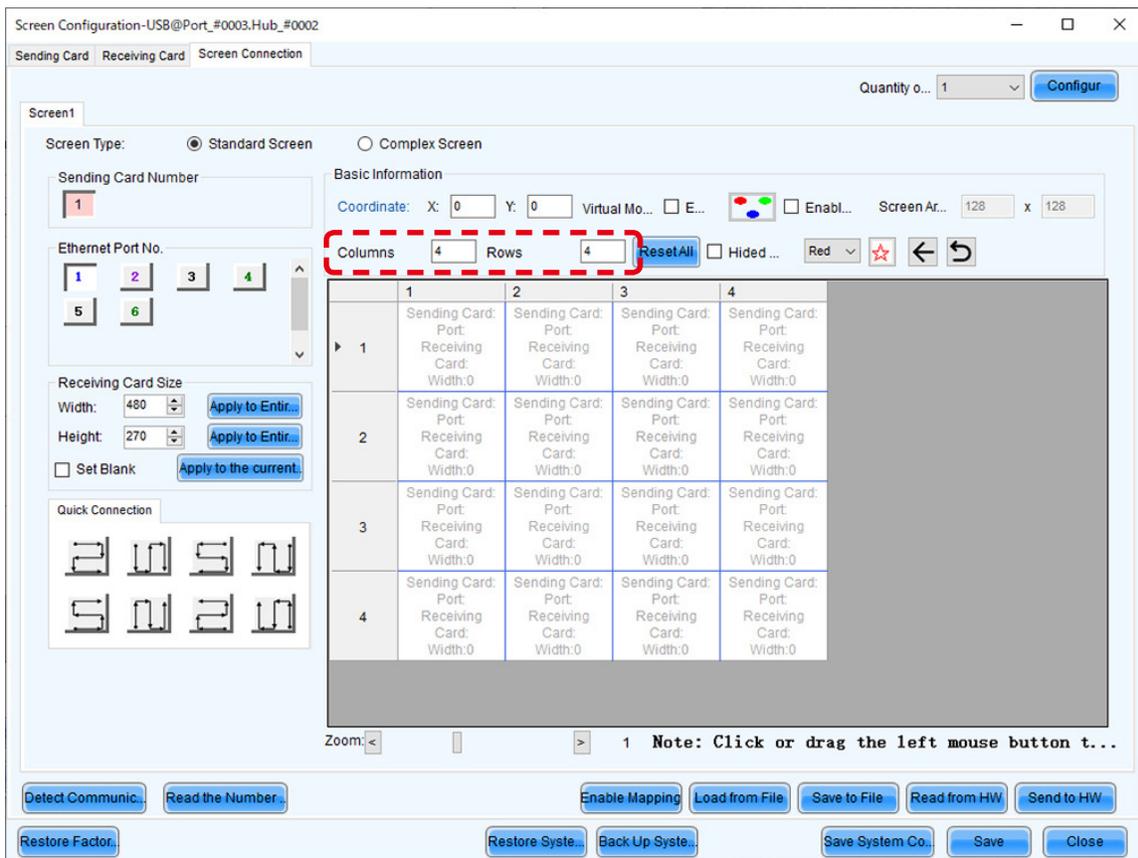
(3) If multiple LED controllers are used, select the number of the connected LED controllers.
Since only one controller is used in this example, it is not necessary to set "Sending Card Number" (c).

(4) Configure the connection.

The system is connected to port 1 of the LED controller.

Select "1" (port 1) under "Ethernet Port No." (d).

Select the cabinet at the bottom left with the mouse, and then select the other cabinets up to the top cabinet.

Then select Port2 and select the cabinets from the bottom to the top as you did for Port1.
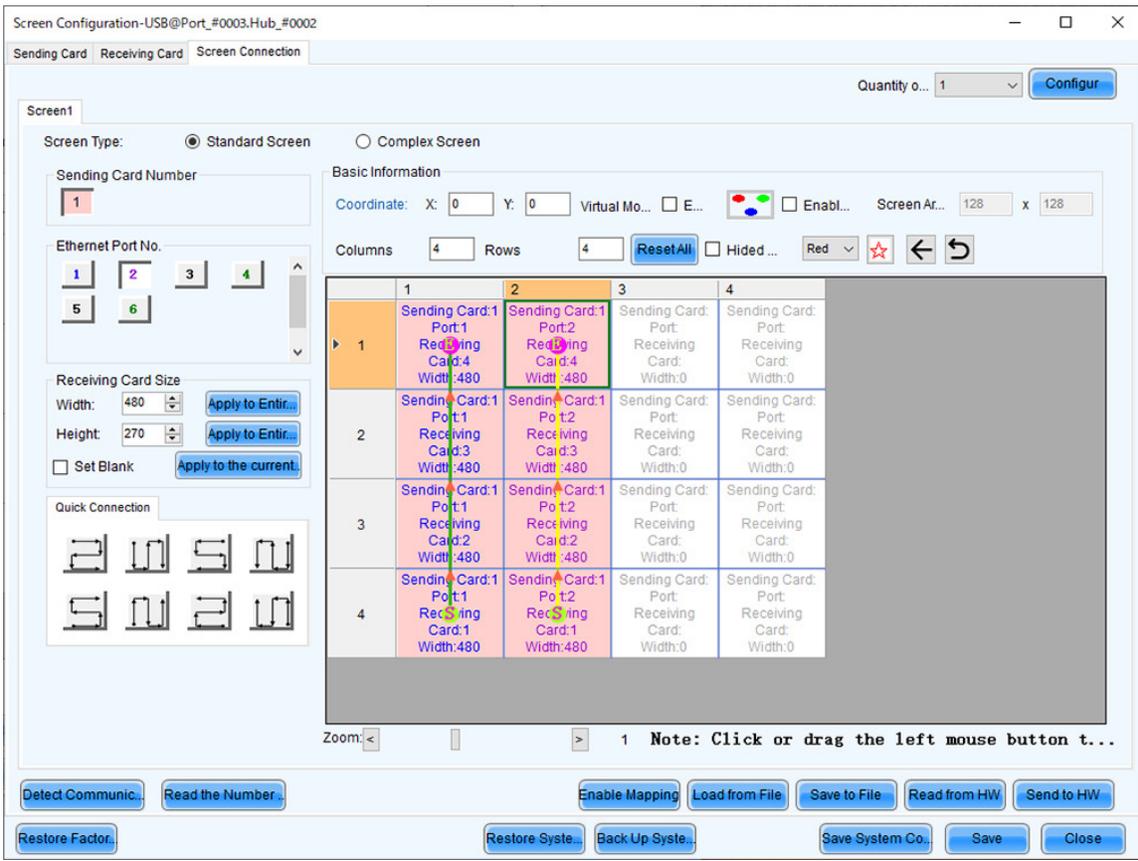
Follow the same procedure for Port3 and Port4.
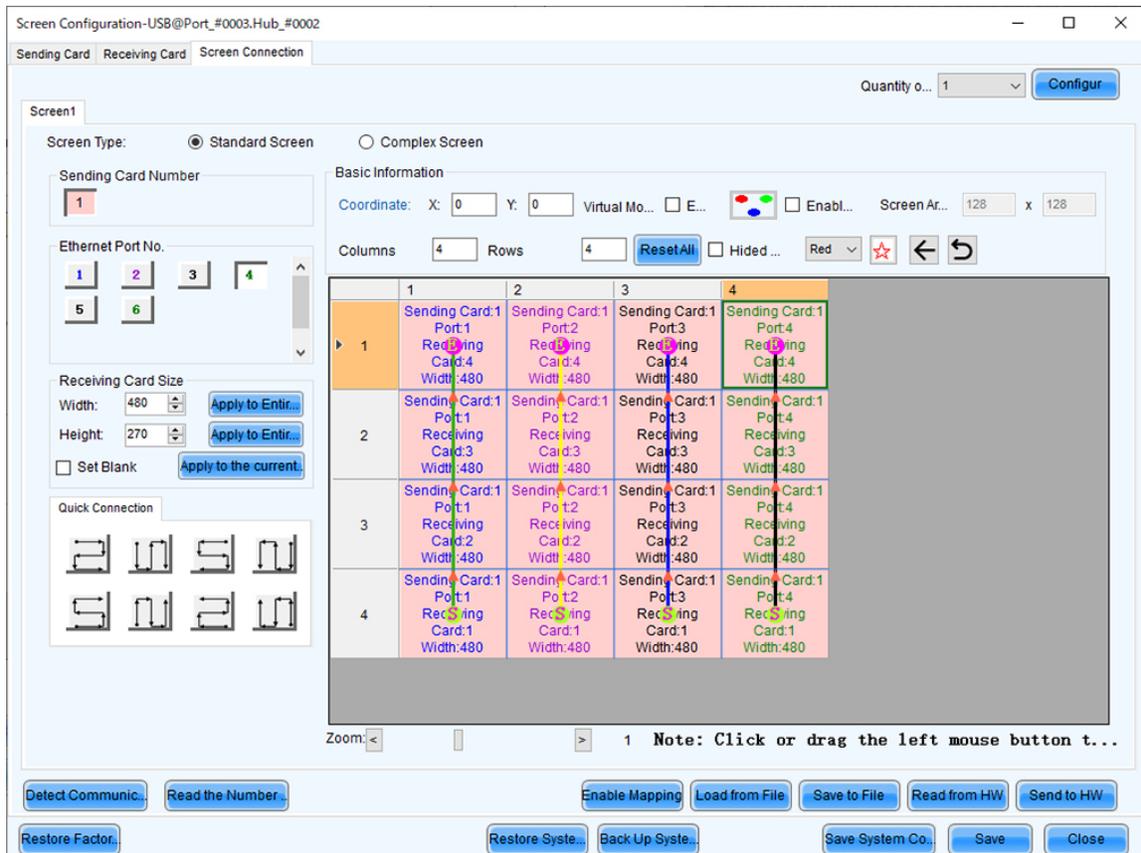
(5) Save the settings.

    (a) Click the "Send to HW" button (h). When the dialog box indicating that the process finished successfully is displayed, click OK.

    (b) Check that the image is correctly displayed, and then click the "Save" button (i). When the screen indicating that the process finished successfully is displayed, click OK.

The setting of the screen configuration is complete. Click the "Close" button (j) to close the Screen Configuration screen.

Receiving card settings

(1) The Screen Configuration screen is displayed. Select the "Receiving Card" tab (a).

(2) Click "Load from File" (b).

(3) Select the configuration file (rcfgx file) you want to load to the receiving card.
A screen like the following appears when the loading process is complete.
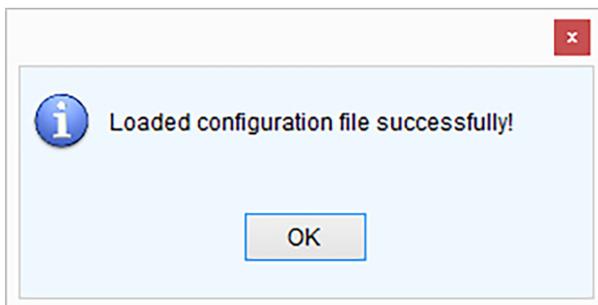
(4) Click "Send to Receiving Card" (c).

(5) Click "Save" (d). Loading of the configuration file is complete.

Update the Calibration Data

(1) Login as Advanced User.

(2) Click the "Calibration" button (a). Start calibration menu.
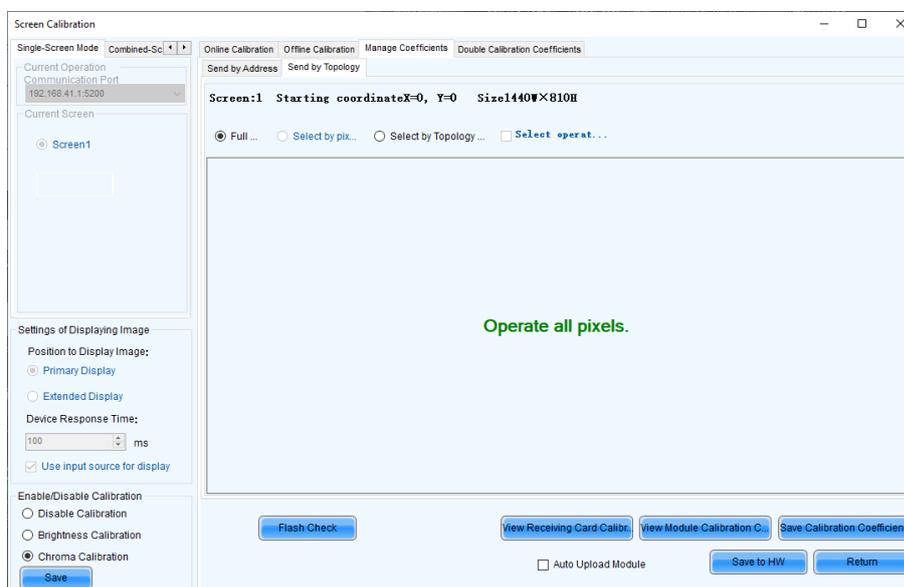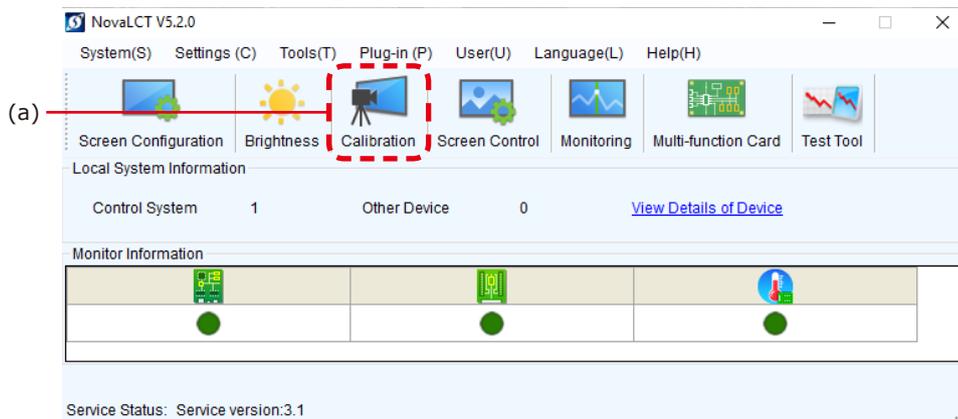
(3) Select the "Screen1" radio button.

(4) Click on the "Manage Coefficients" tab (b).
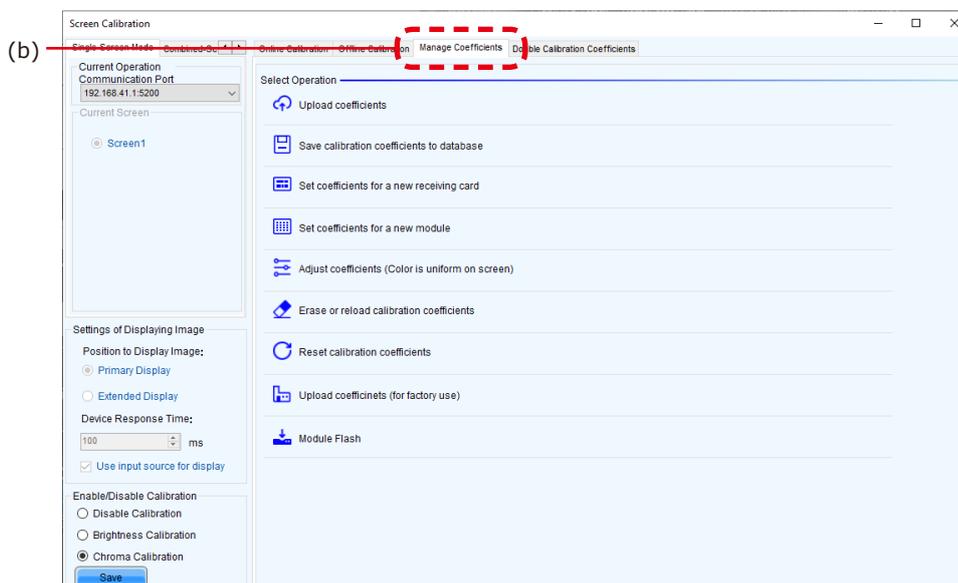
(5) Click on "Module Flash".
     <u>Result:</u> The module flash options will appear.
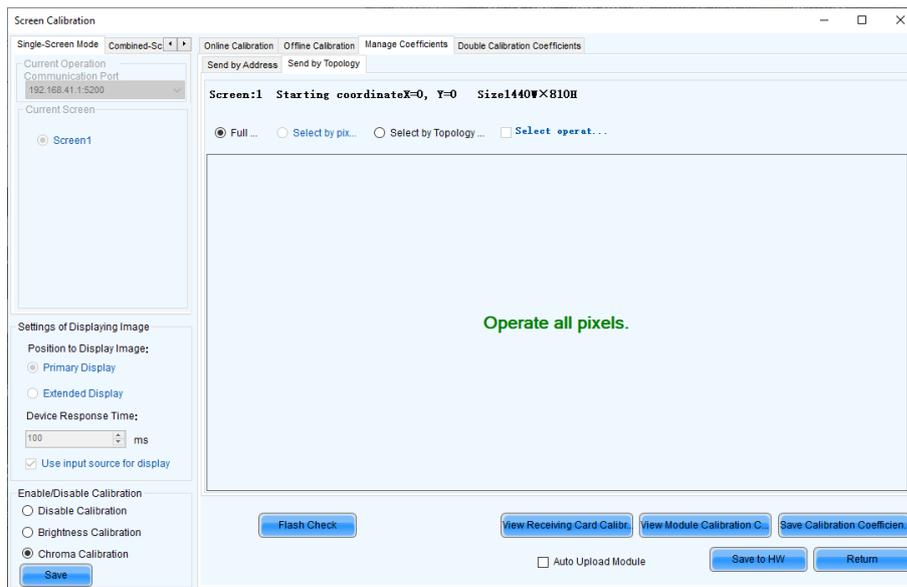
Select whether you want the entire screen or individual modules.

Full screen: Select this option when installing.

Module Flash (Select by Topology or list): Select this option when replacing pixel cards, etc.

If "Line calibration" or "Adjusting the colors on a part of the screen" has been performed on the area set for Module Flash, please perform it again after Module Flash.

(6) Click the "View Module Calibration Coefficients" button.
     <u>Result:</u> Pop-up message opens.
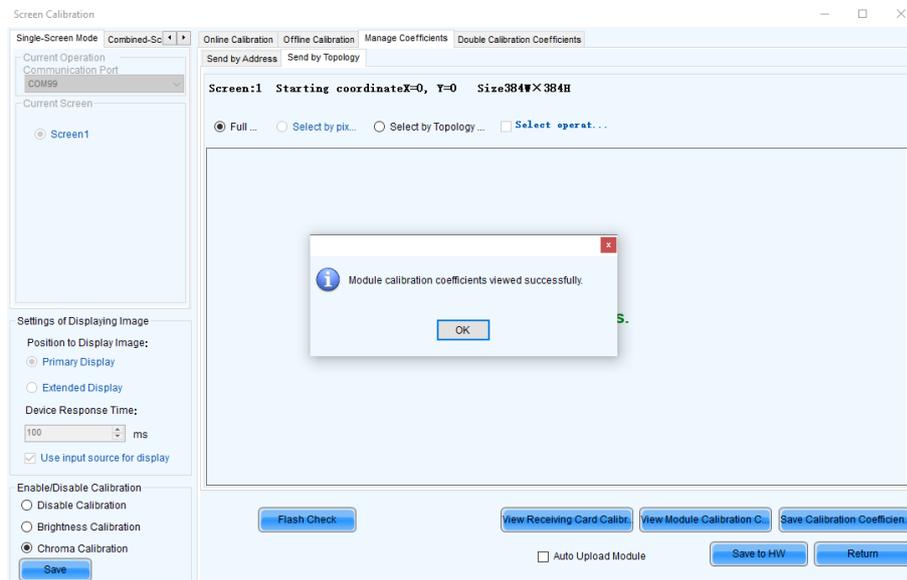
(7) Click "Save Calibration Coefficients to Receiving Card".
The pop-up message, that the data has been successfully stored to the Receiving cards, will appear.
Result: The screen with the exchanged Pixel cards should look calibrated now.
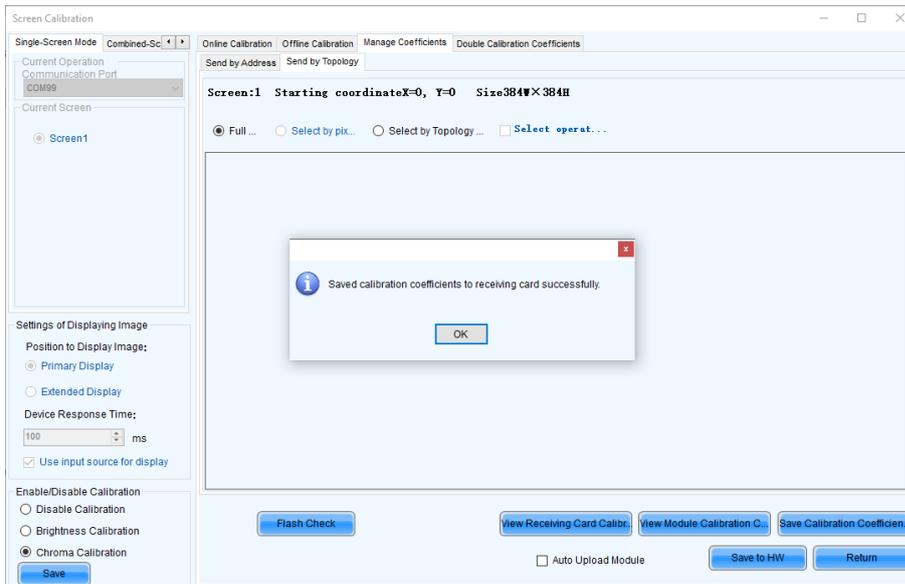
(8) Click on "Save to HW" button and go back to main window by clicking "X" button.

(9) Check the calibration-state in the bottom left corner of Screen Calibration window: Enable/Disable Calibration.
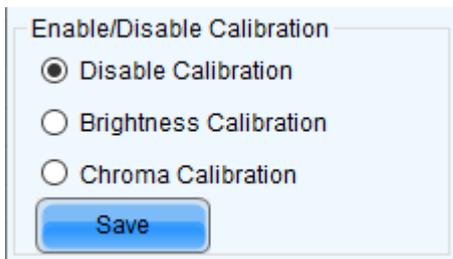
(10) If calibration-setting "Disable Calibration" is chosen, switch to "Chroma Calibration" (c) to enable calibration and click on the "Save" button (d).
Result: While switching you will already see calibration effect.
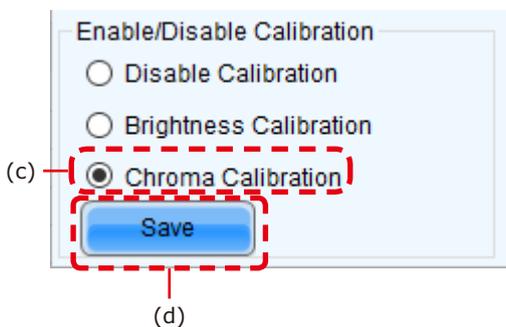
(11) Close Screen Calibration windows by clicking on the "X".
Result: The Screen Calibration has been finished for both screens.

Image Setting

You can adjust the brightness, the gamma correction value, and the color temperature.
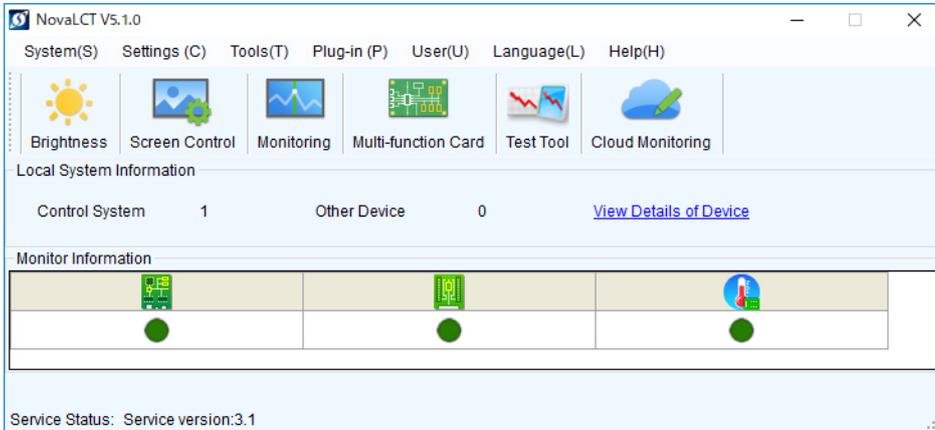
Click "Brightness" on the top screen to display the following window.

(a)
Click "Advanced Settings" to expand the screen.

(b)

(c)

(e)

(d)
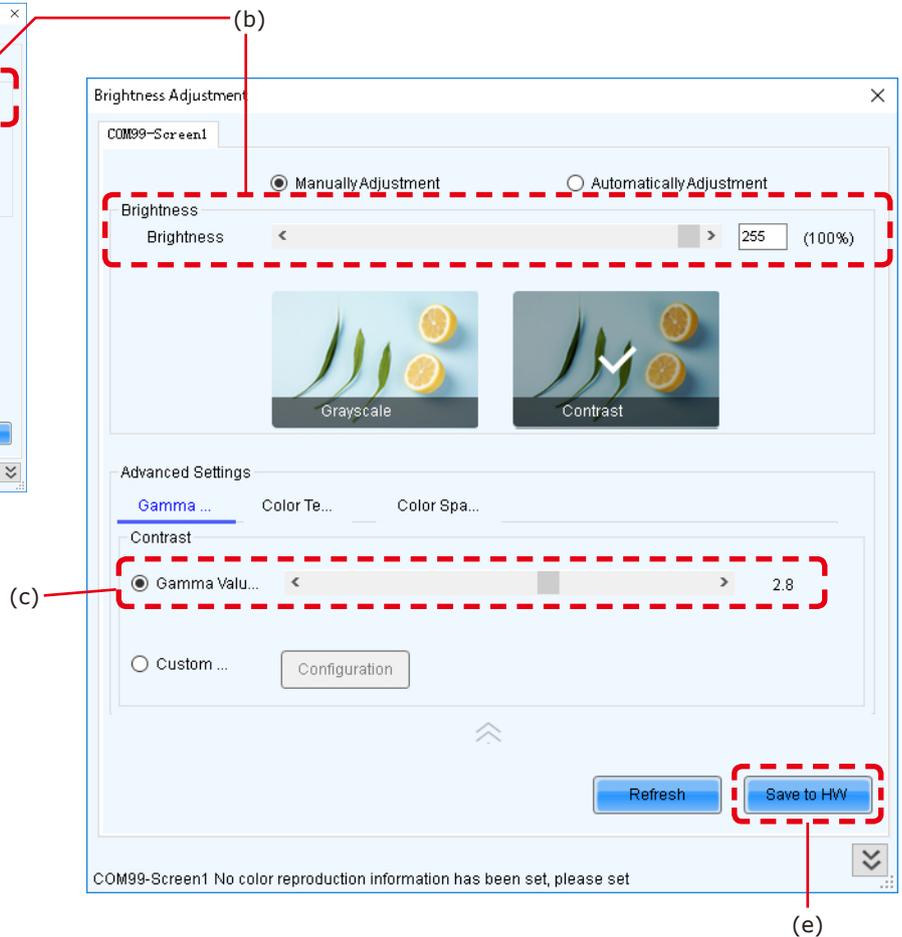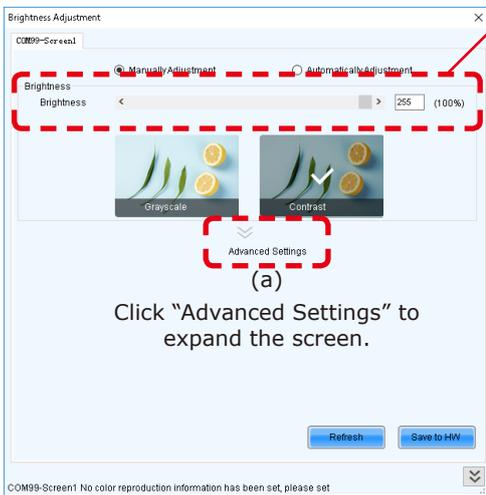
Click "Advanced Settings" (⌄) (a) to expand the setting screen.

(1) Brightness

Set the brightness of the screen using the slider (b).
Increasing the value increases the brightness.

(2) Gamma correction

Set the gamma correction value using the slider (c).
Increasing the value makes the dark parts of the screen darker.

(3) Color temperature

Set the color temperature using the slider (d).
Increasing the value makes the colors more bluish, while reducing the value makes the colors more reddish.
When the setting is complete, click the "Save to HW" button to save the settings.

Line calibration

(1) Log in with the administrator privileges (English-44).

(2) On the tabs at the top of the window, click Tools > Quickly Adjust Dark or Bright Lines > Adjust Dark or Bright Lines
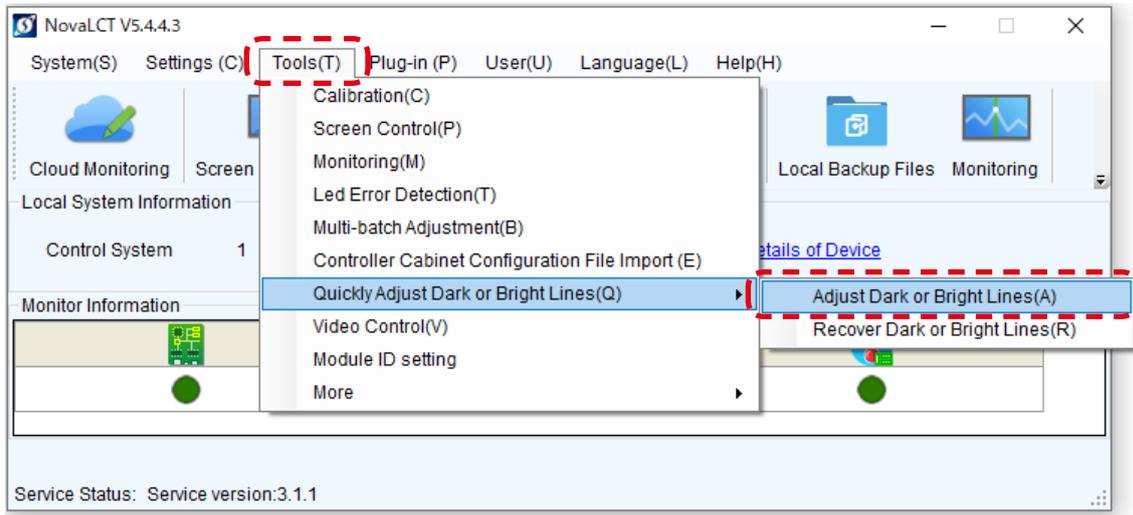
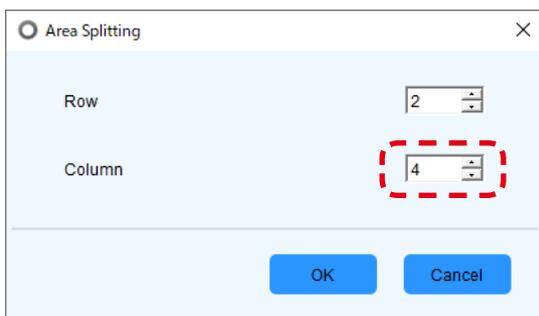(3) Click the "Quickly Adjust (New)" button on the right of the window that pops up.
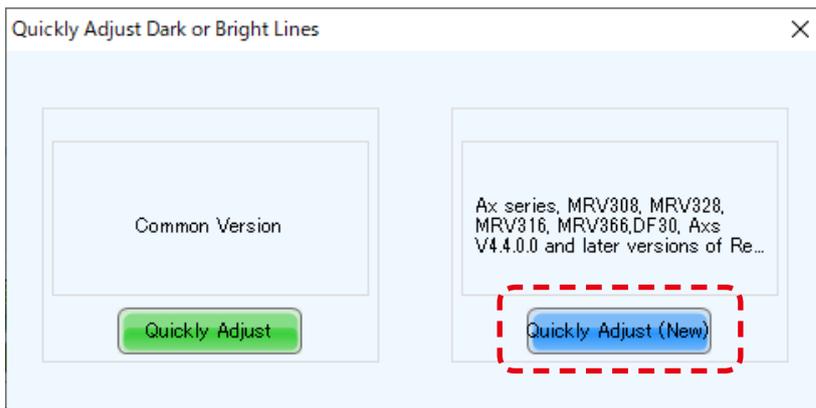
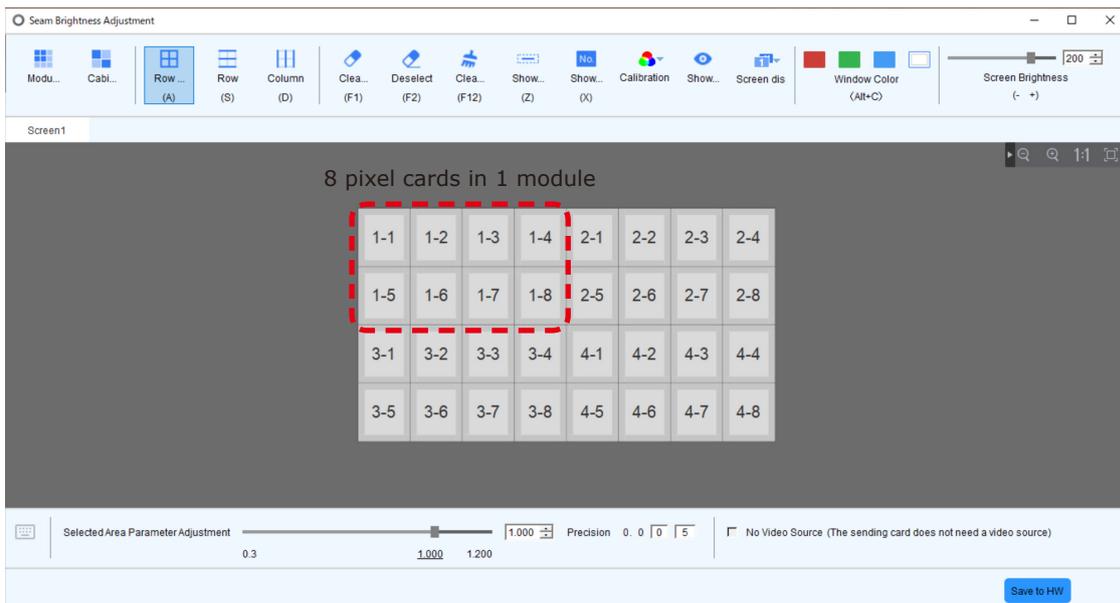(4) A screen like the figure below is displayed. Press the Shift + E keys. The gray window moves to the LED modules.
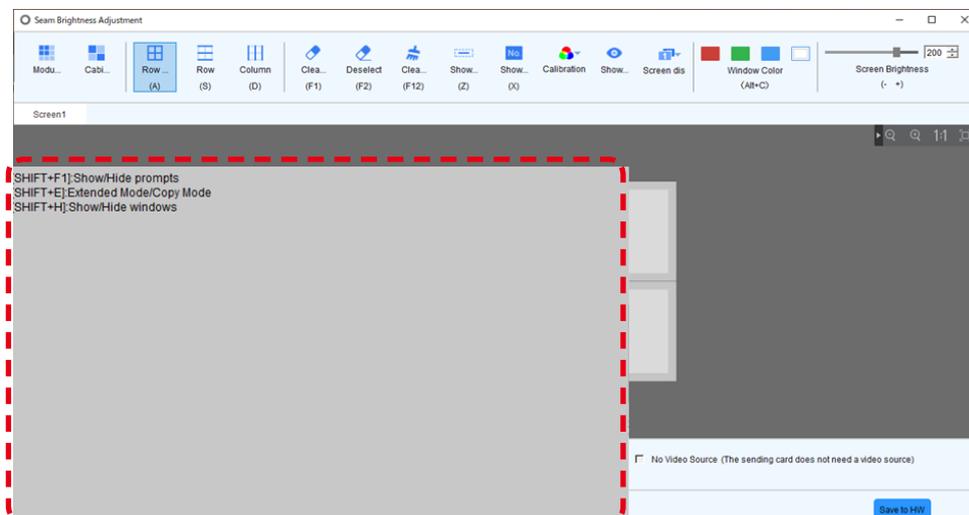
(5) Click "Module Mode" on the top left of the screen.
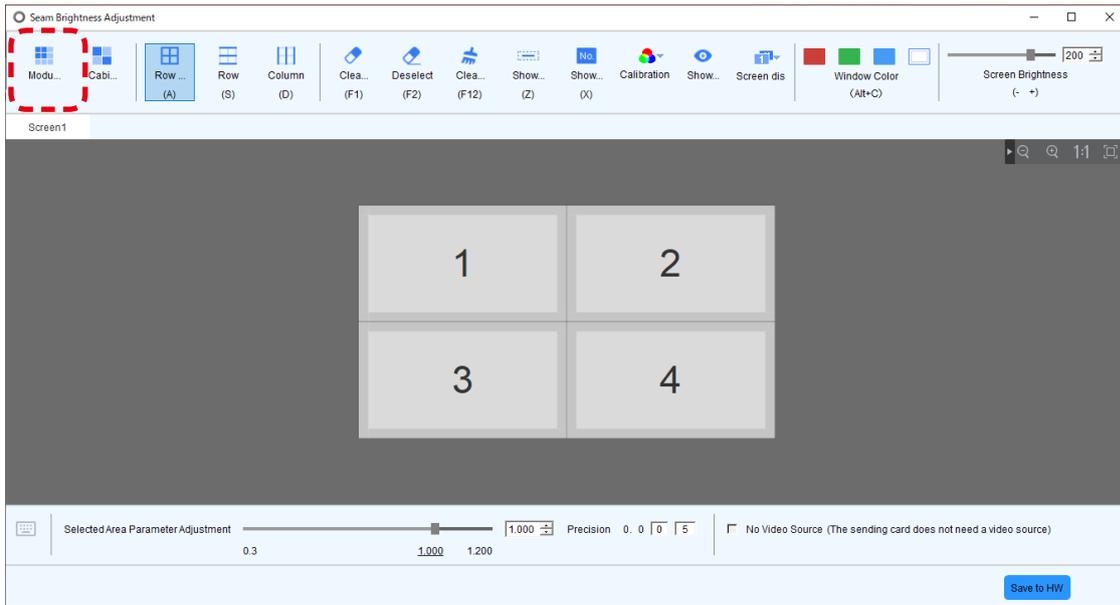
Enter the number of pixel cards inside one module on the screen that pops up, and then click "OK".

Lines separating each pixel card are displayed.

(6) Specify the border between the pixel cards for which you want to perform line calibration by clicking on it or specifying a range. You may also adjust multiple locations at the same time.
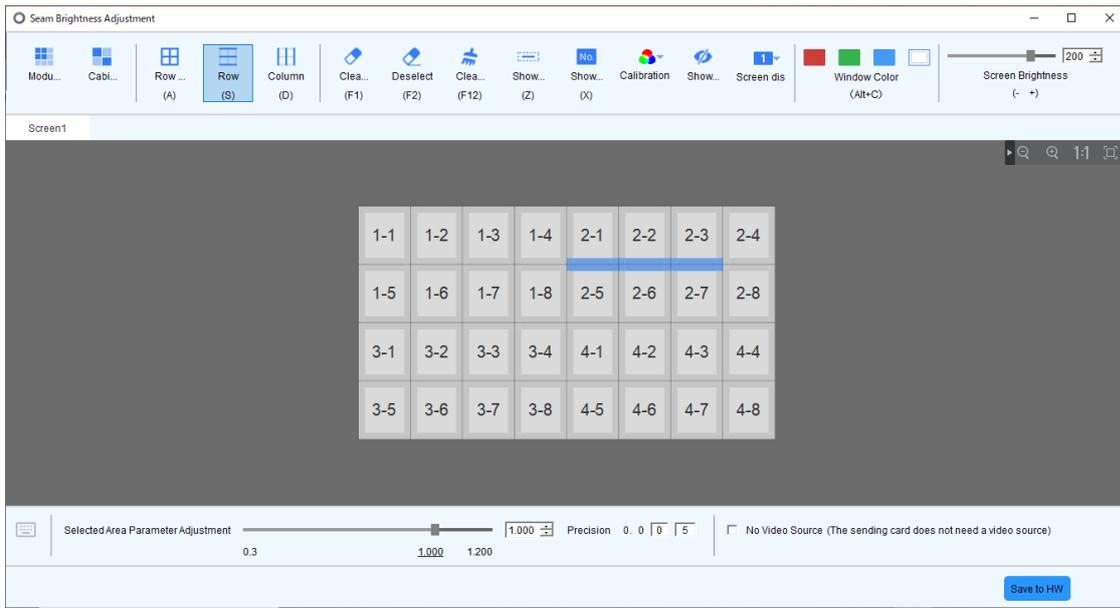
< Tool icons used to select the adjustment range >

  Clear effects: Resets the line calibration in the selected range.

  Deselect: Deselects the range currently selected.

  Clear all effects: Resets line calibration for all locations.

The selected adjustment range is also displayed on the LED modules.
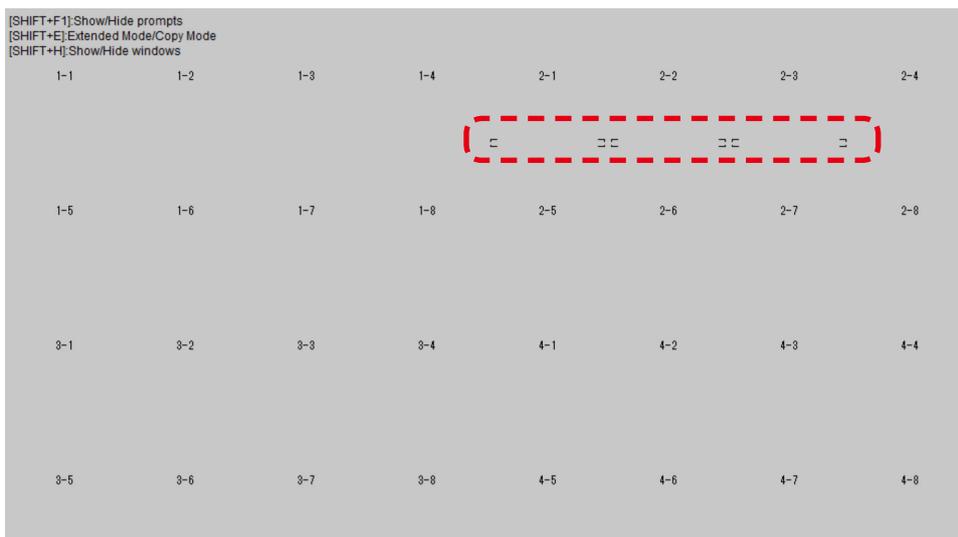
(7) Click the upward and downward arrows next to the input box at the bottom of the window to adjust the brightness of the selected locations.
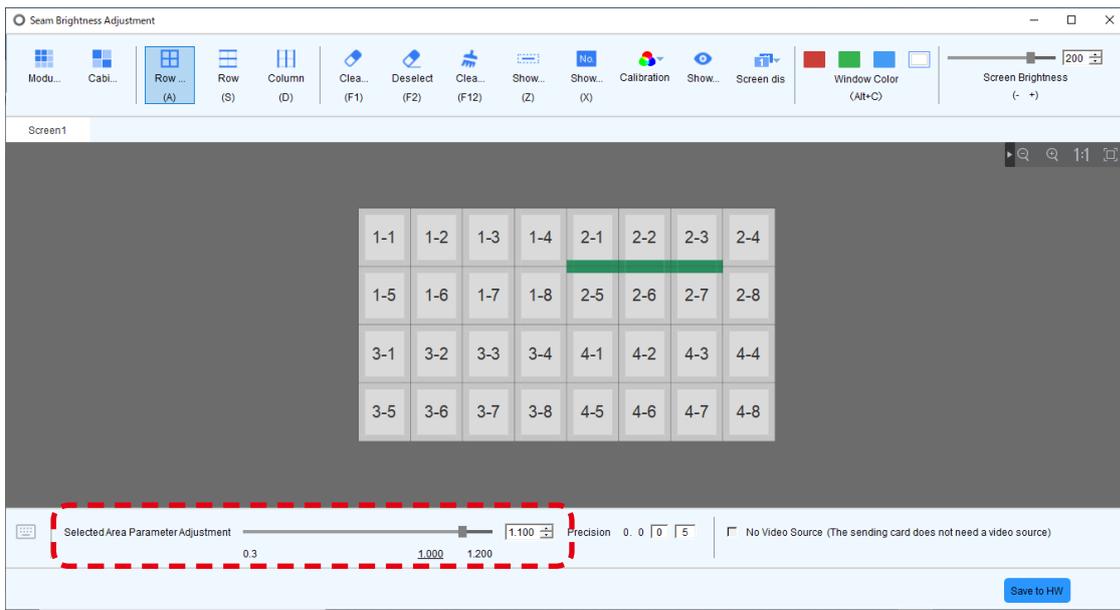
Upward arrow: Increases the brightness (makes the dark lines less noticeable)
Downward arrow: Decreases the brightness (makes the bright lines less noticeable)

(8) If you want to adjust other locations, click "Deselect" and specify again a range for the adjustment.

When the adjustment is complete, click "Save to HW" at the bottom of the screen.
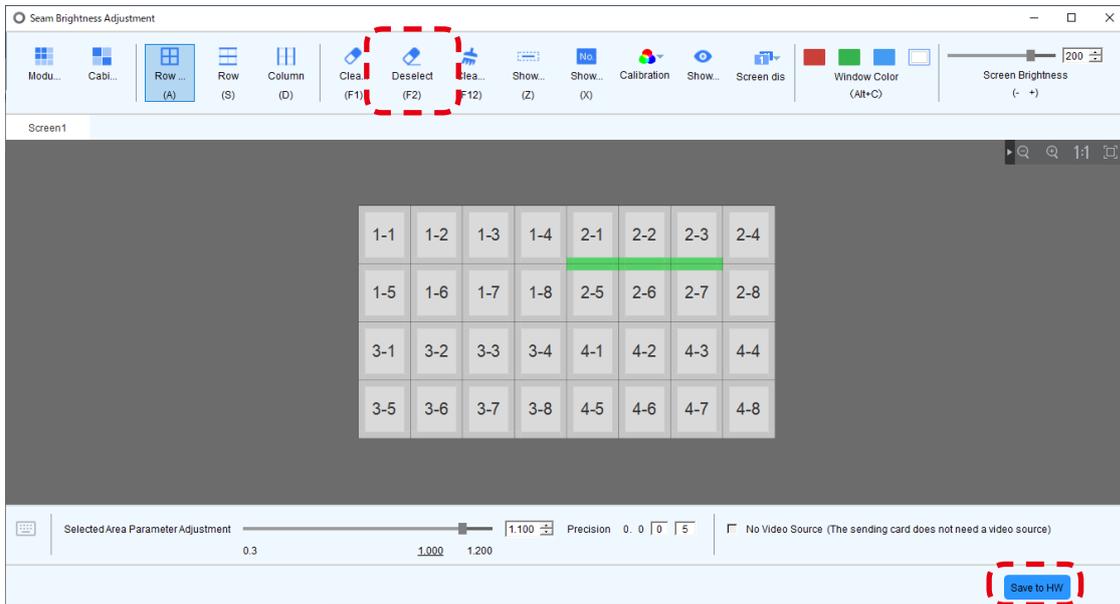
Click "Yes" on the screen that pops up.

(9) The adjustment is complete when the following screen is displayed. Click "Close" to finish.
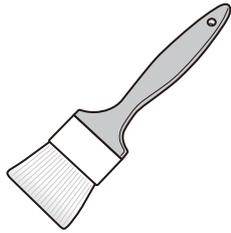
Cleaning

The screen brightness may decrease if dust or another foreign material is adhering to the surface of the pixel card.

The magnet used to install the pixel cards also attracts magnetic metal particles, such as iron powder.

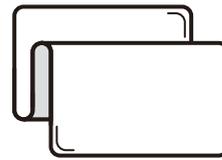Therefore, magnetic metal particles may adhere to areas near the magnet of the pixel card and the brightness homogeneity of the screen may decrease.

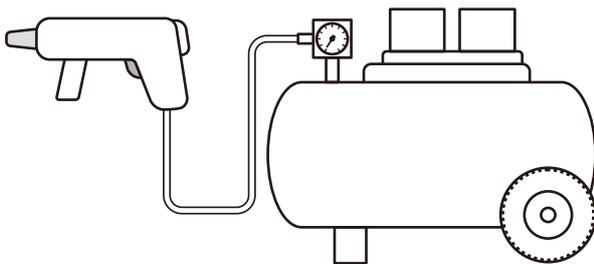Cleaning should be performed regularly depending on the installation environment.

Required tools (example).

Soft brush
(animal hair brush to prevent static electricity)

Soft cloth
(that does not generate static electricity)

Air blower (compressor)

Cleaning method
   a) Turn the LED displays off.
   b) Use the soft brush to remove any dirt on the surface of the pixel card. If these parts are very dirty, use the air blower to remove the dirt.
   c) Use the soft cloth to remove the dirt on the screen surface.
   d) Repeat the steps (b) and (c) to remove all the dirt.

⚠ CAUTION

• Do not use water or any other liquid.

• Do not use a stiff brush.

• Pay attention not to damage the surface of the pixel card when using the soft brush, the air blower, or the soft cloth.
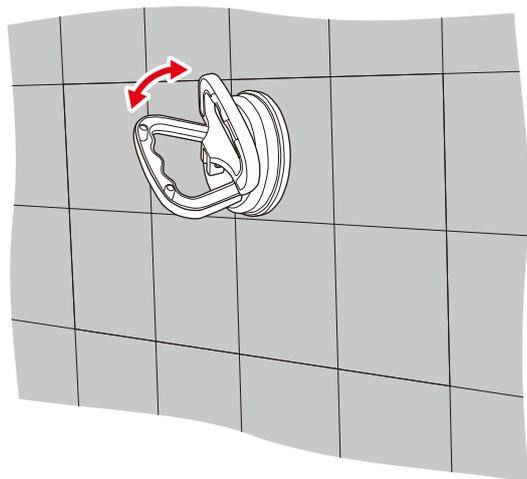
Maintenance

⚠ CAUTION

- Disconnect the power supply to the LED modules when performing the maintenance.

- Before installing or removing pixel cards, please ensure the wall has been powered off for 1 or 2 hours. Otherwise the thermal expansion of pixel cards increases the risk of damaging them during removal or insertion.

- Use the correct screwdriver for the shape of the screws when removing (loosening) or setting (tightening) the screws.
  Pay attention not to drop the screws and the other parts you have removed.
  Pay attention not to lose the removed screws since they will be reused.
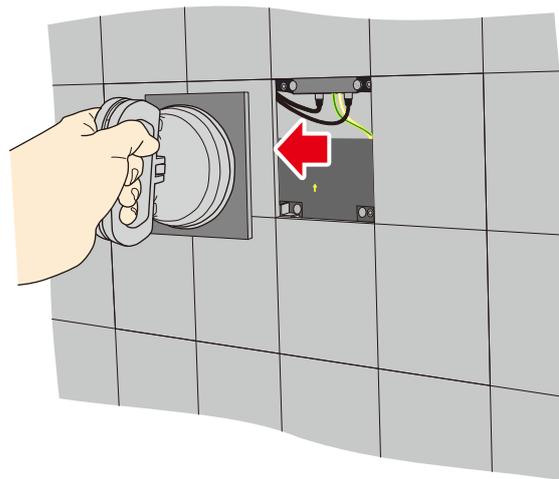
Removing a pixel card
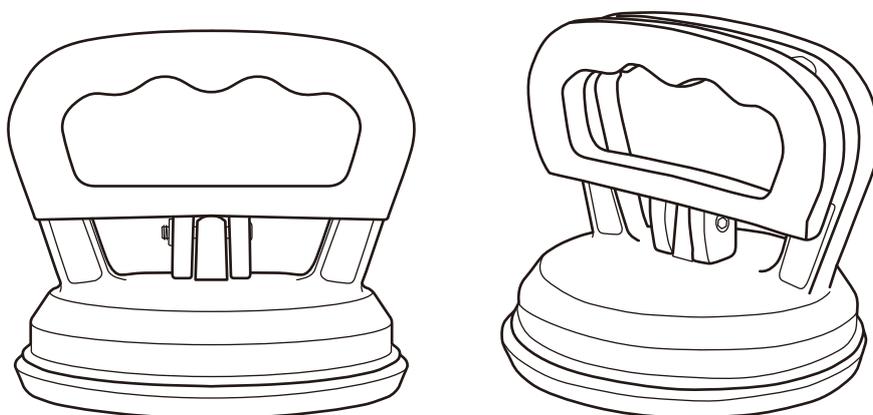
⚠ CAUTION:

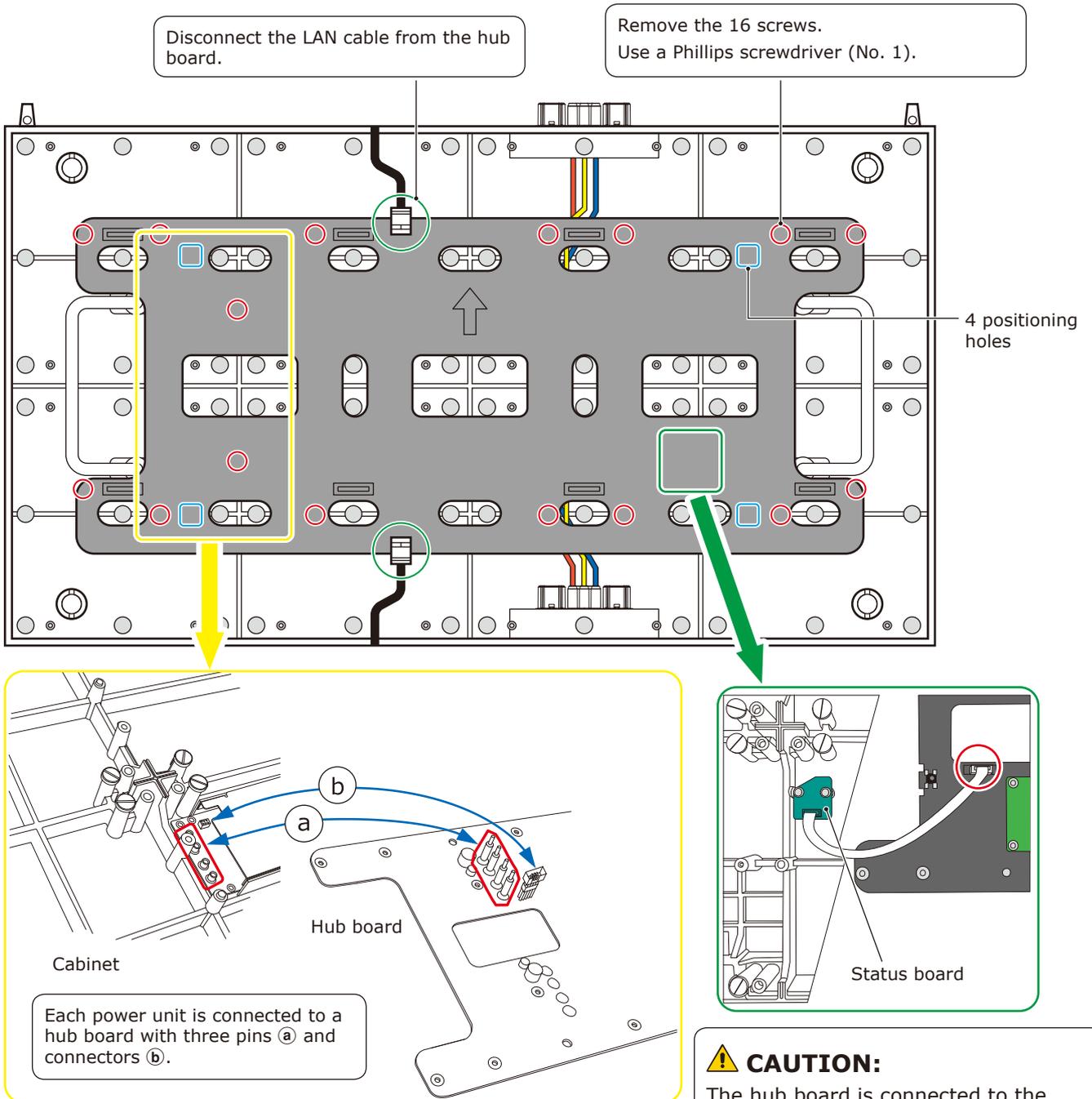Lightly hold the pixel card with your hand to prevent it from falling.

(1) Open the grips of the maintenance tool and push the maintenance tool against the pixel card. Close the grips of the maintenance tool and stick the pixel card.

(2) Pull it straight toward you to remove the pixel card.

Removing and installing the hub board

(1) Removing the hub board

    (a) Disconnect the LAN cable from the hub board

    (b) Remove the 16 screws securing the hub board with a Phillips screwdriver (No. 1).

    (c) Since the hub board is connected to the power unit with pins and connectors, remove it by raising this part, as well as the part with the positioning holes. The status board and the hub board are connected with a cable.
Pay attention not to pull the hub board.

    (d) Disconnect the cable from the hub board, and then remove the hub board.

Disconnect the LAN cable from the hub board.

Remove the 16 screws.
Use a Phillips screwdriver (No. 1).

4 positioning holes

b

a

Cabinet

Hub board

Each power unit is connected to a hub board with three pins ⓐ and connectors ⓑ.

Status board

⚠ **CAUTION:**

The hub board is connected to the status board with a flat cable. When removing the hub board, pay attention not to pull and damage the cable.

Disconnect the connector on the hub board, and then remove the hub board.

(2) Installing the hub board

Install the hub board into the cabinet following the procedure below.

(a) Connect the status board to the hub board using the cable.

(b) Install the hub board into the cabinet. Install it with the power unit pins and connectors aligned. Insert the pins and connectors completely and check that the hub board is securely attached and not bent.

(c) Tighten the 16 screws. Use a tightening torque of 3 ± 0.5 kgf•cm.

(d) Connect the LAN cable.

Replacing the power unit

The power unit dissipates heat through the cabinet. Apply some thermal paste on the back of the power unit to be replaced. Ask your retailer for more details on the types of thermal paste.

(a) Remove the hub board following the "(1) Removing the hub board" procedure on the previous page.

(b) Remove the four screws, and then remove the power hub board.

(c) Remove the two magnets and the two screws securing the power unit, and then replace the power unit.

(d) Install the power hub board, the protective sheet, and the hub board.

(e) Install the hub board following the "(2) Installing the hub board" procedure on the previous page.

Remove the four screws.
Use a Phillips screwdriver (No. 2).
Torque for installation: 3 ± 0.5 kgf•cm
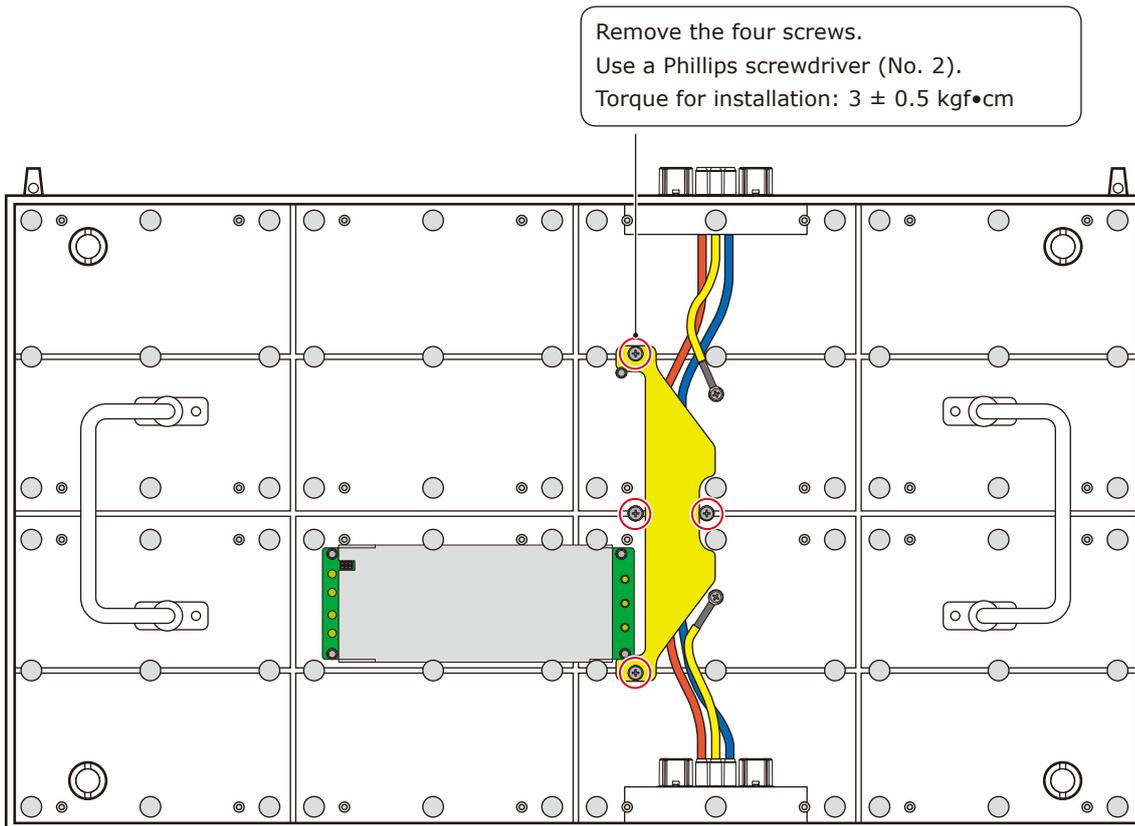
Remove the two screws securing the power unit.
Use a Phillips screwdriver (No. 2).
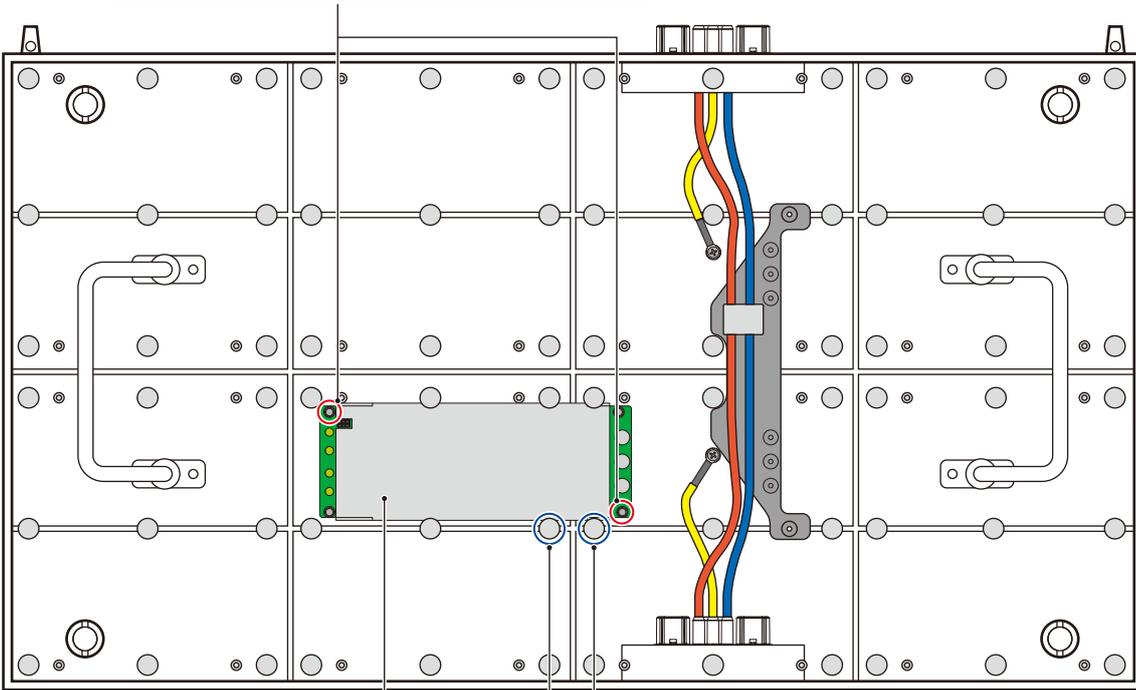
Use a pair of pliers to hold the two magnets, rotate them, and remove them.

Replace the power unit.
Use the screws you have removed to secure the power unit.
Tightening torque: 3 ± 0.5 kgf•cm

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Replacing the receiving card

Remove the receiving card from the hub board.

Remove the four screws securing the receiving card, and then remove the receiving card from the hub board.

Hub board

Remove the four screws.
Use a Phillips screwdriver (No. 1).
Tightening torque: 3 ± 0.5 kgf•cm

Receiving card

Install the receiving card so that the arrow is orientated to the left.
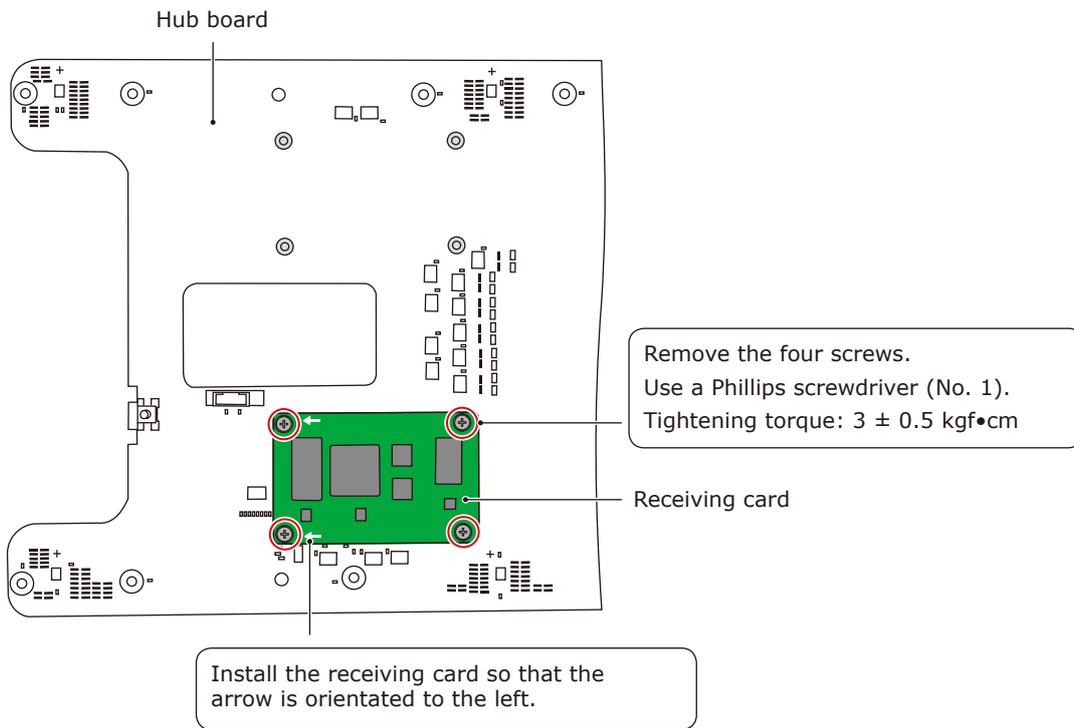
Troubleshooting

1. Display problems

| Problem	Solution
Nothing is displayed on all the LED modules.	Check that power is being supplied to the LED modules.
	Check that the LED controller is turned on.
	Check that a video signal is being input to the LED controller.
	Check that a LAN cable is correctly connected between the LED controller and the LED module.
	Check that the brightness is not set to 0% (= not lit).
Nothing is displayed on one LED module.	Check that a LAN cable is correctly connected between the LED controller and the LED module.
	The receiving card inside the LED module may be broken. → Check the status of the LED module by following the procedure in the next section "2 State monitoring using the software".
	The power unit inside the LED module may be broken. → Check the status of the LED module by following the procedure in the next section "2 State monitoring using the software".
No image is displayed on one pixel card.	Check that the contacts of the pixel card are correct (contacts of the hub board).
	The pixel card may be broken. Replace it with a spare pixel card.
Control (communication) is not possible.	Check that the communication cable is correctly connected between the computer and the LED controller.
	Check that the LED controller is turned on.
	If the communication cable is a USB cable, check that the device driver runs correctly.
The colors differ on one pixel card.	Perform the "Adjusting the colors on a part of the screen" procedure. Select the adjustment range using "Select by Pixel Area" described in (5)-2.
I want to adjust the color tone of the entire screen.	Perform the "Adjusting the colors on a part of the screen" procedure. Select the adjustment range using "Screen" described in (5)-1.
Bright lines or dark lines are visible between the pixel cards or between the modules.	Perform the "Line calibration" procedure.

2. Adjusting the colors on a part of the screen

(1) Log in with the administrator privileges (English-44).

(2) Click "Calibration" (a). Start calibration menu.
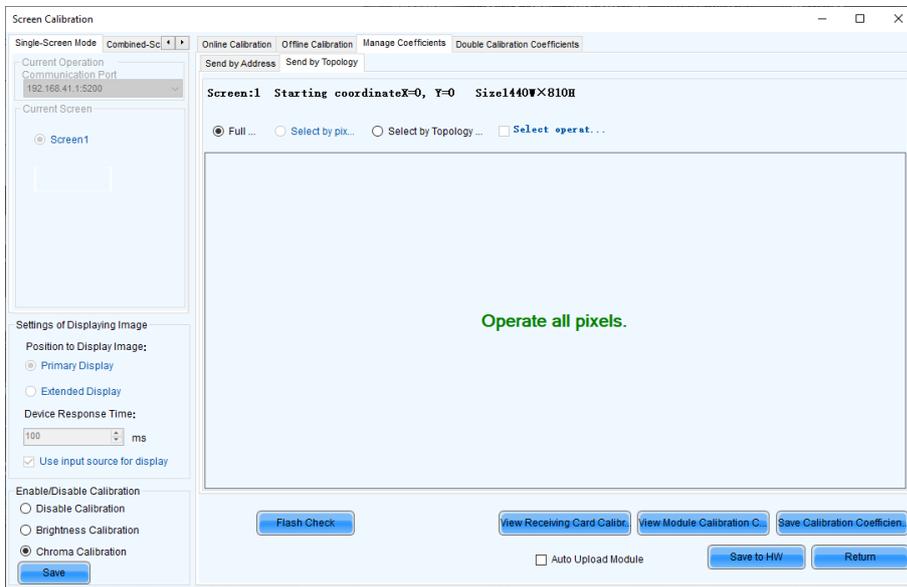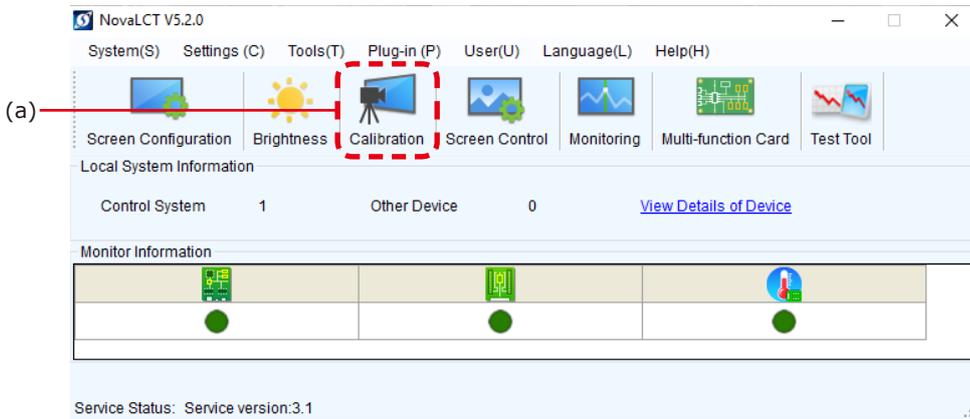
(3) Check that "Chroma Calibration" (b) is selected and click the "Manage Coefficients" tab (c).
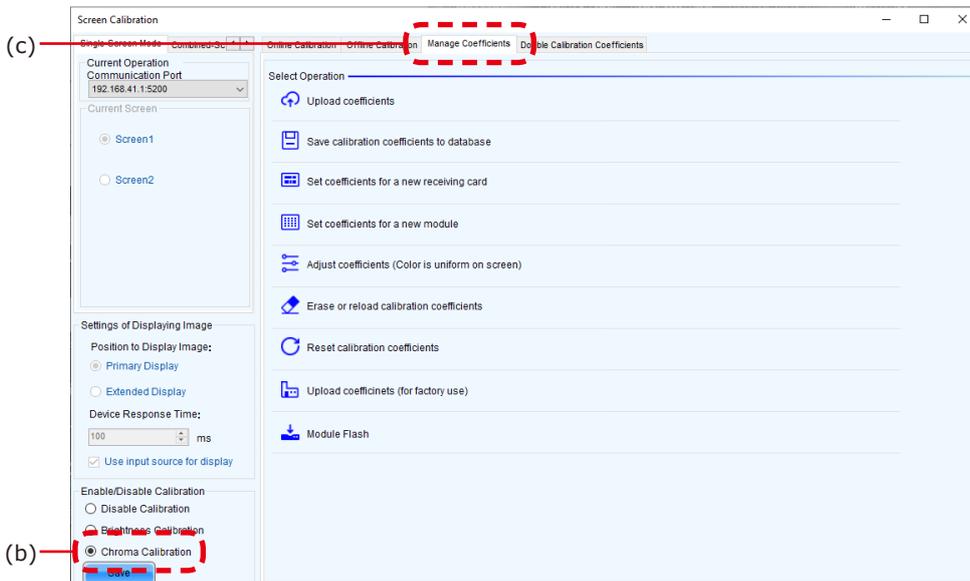
(4) Set "Extended Display" (d) under "Setting of Displaying Image", and then click "Adjust coefficients" (e).
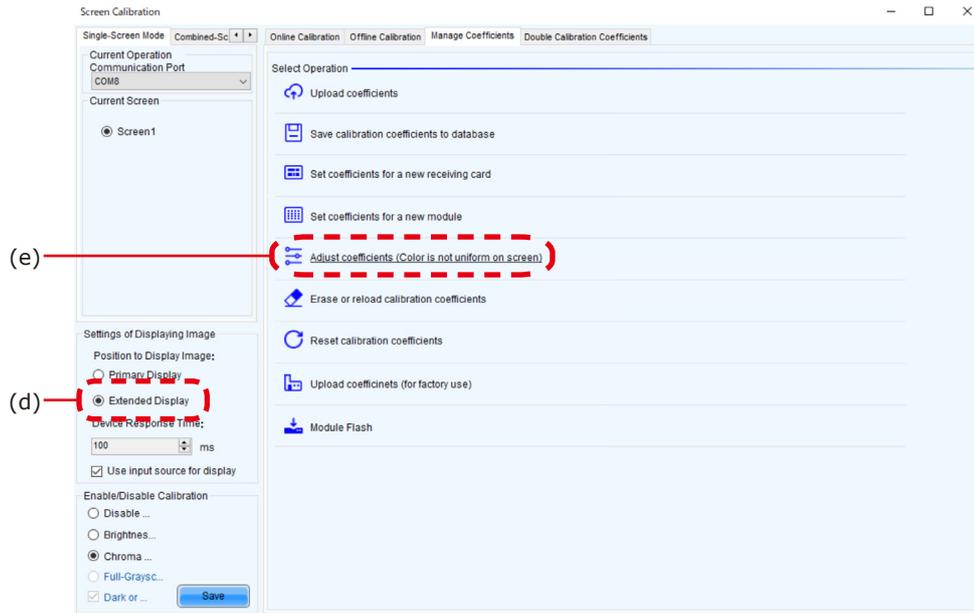
(5) Select the range specification method from the three available methods depending on the calibration range. After setting the range, click "Next" to display the "Adjust Coefficients" screen.
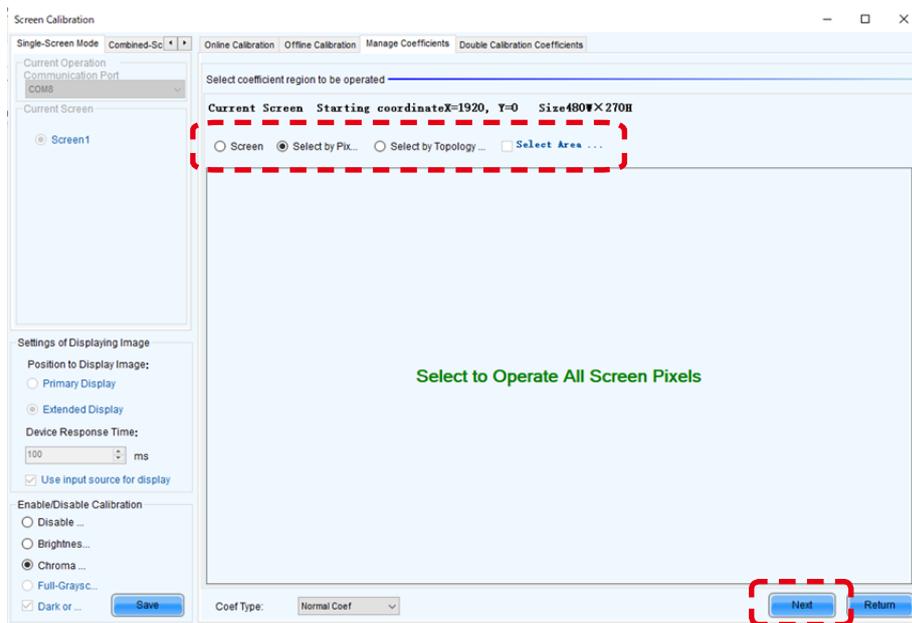
(5)-1

Screen: Adjust the entire frame set.

The calibration settings reading starts after "Next" is clicked. A fair amount of time is required to read the data.

The "Adjust Coefficients" screen is displayed when the data has been read.

(5)-2

Select by Pixel Area: Adjust by pixels.

Column Number...	480
Row Number of ...	540
Width	120
Height	135

The screen used to specify the adjustment range is displayed.

Column Number:	The position (pixel) on the horizontal axis of the starting point (top left) of the selection range
Row Number:	The position (pixel) on the vertical axis of the starting point (top left) of the selection range
Width:	The horizontal distance from the points specified with "Column Number" and "Row Number"
Height:	The vertical distance from the points specified with "Column Number" and "Row Number"

For reference: When specifying one pixel card
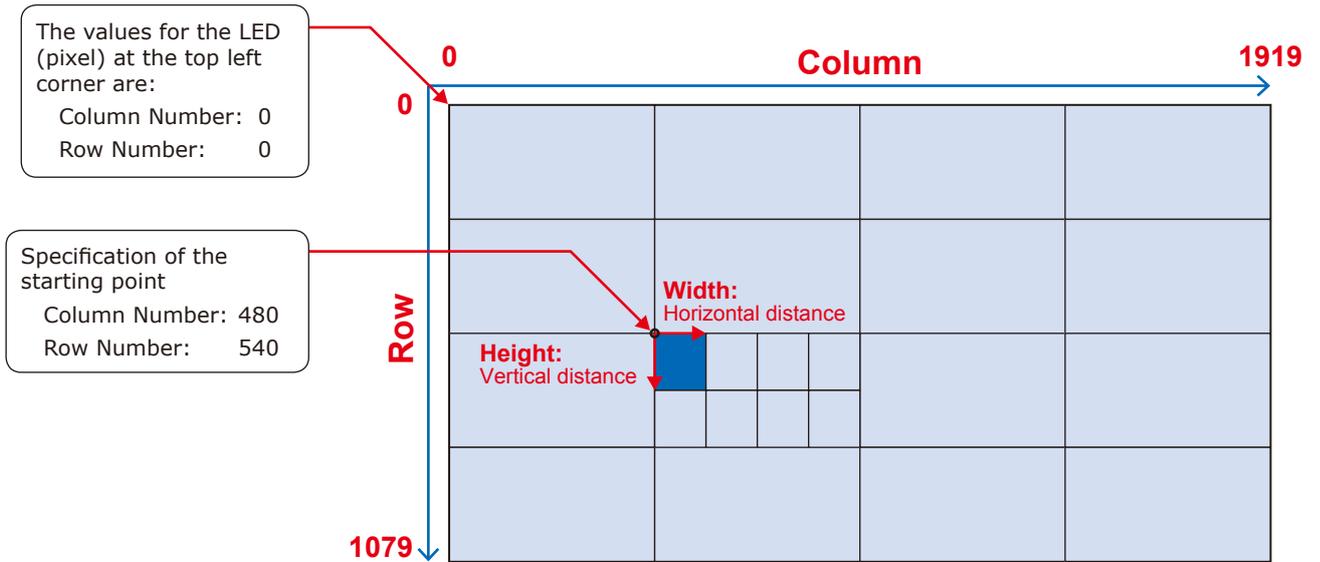
The values for the LED (pixel) at the top left corner are:

Column Number: 0

Row Number: 0

Specification of the starting point

Column Number: 480

Row Number: 540

Column

Row

0   1919

0

1079

Width: Horizontal distance

Height: Vertical distance

Product name	LED-FC009i	LED-FC012i	LED-FC015i
Pixel pitch	0.9 mm	1.2 mm	1.5 mm
Number of displayed pixels (resolution/module)	Width 640 Height 360	Width 480 Height 270	Width 384 Height 216
Number of displayed pixels (resolution/pixel card)	Width 160 Height 180	Width 120 Height 135	Width 96 Height 108

Check that "Adjust Its Own Effect" is selected and click "Next" to start the calibration settings reading process.

The "Adjust Coefficients" screen is displayed when the data has been read.
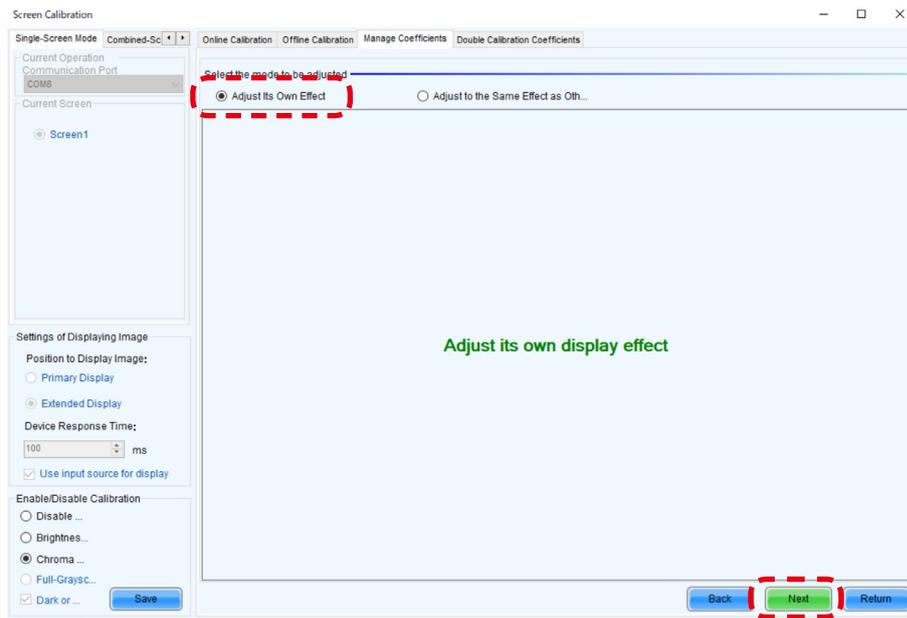
(5)-3

Select by Topology or List: Adjust multiple modules

A screen with the display configuration is displayed. Specify the range of the modules you want to adjust.
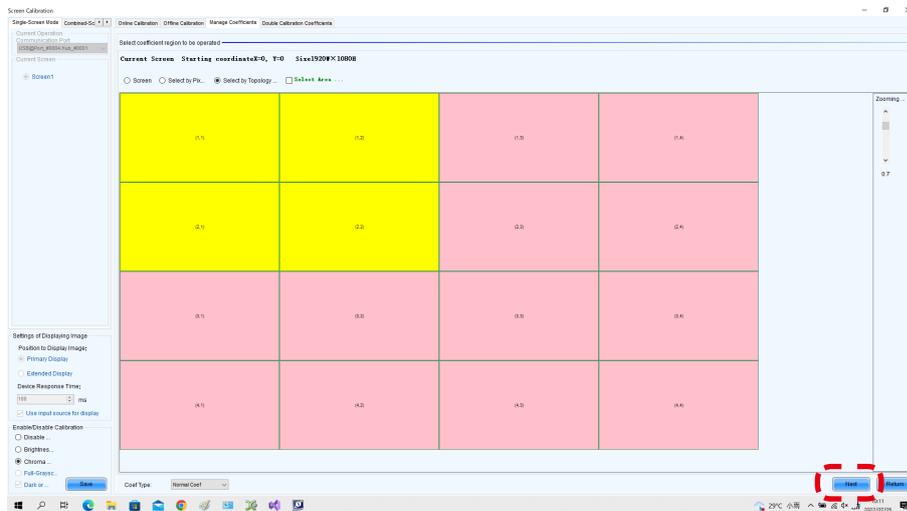
The calibration settings reading starts after "Next" is clicked.

The "Adjust Coefficients" screen is displayed when the data has been read.

(6) Adjust Coefficients screen
   Click "Advanced Adjustment".
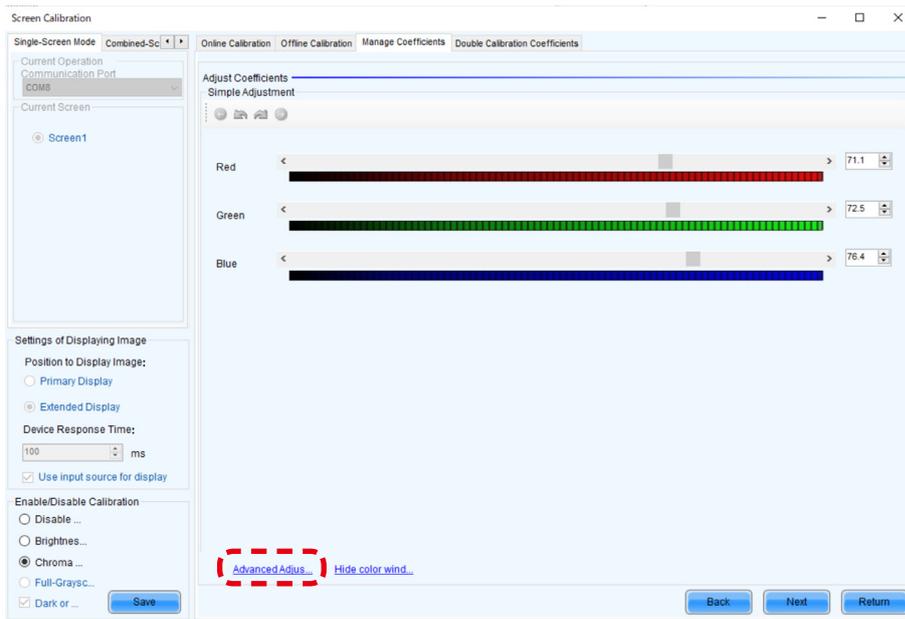
(7) Adjust the "Color adjustment of red, green and blue" parameters, and then adjust the "Color matching of red, green and blue" parameters.
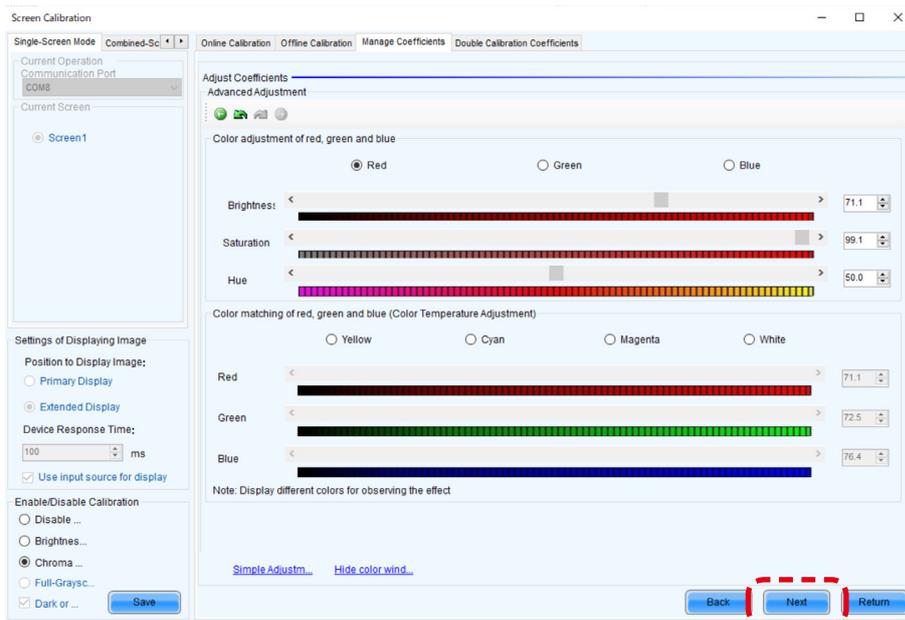
Click "Next" after you have finished the adjustment.

(8) Click "Save" to save the calibration settings you have adjusted.

(9) Click "Finish" to complete the procedure.
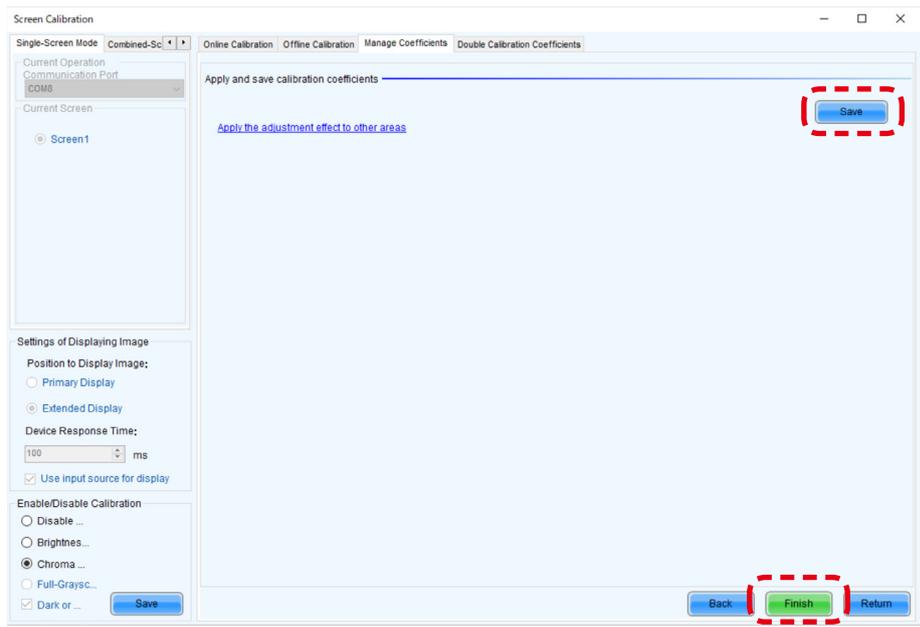
Note

To return the calibration adjustment values to their default setting, perform the "Update the Calibration Data" procedure (English-52).

3. State monitoring using the software

In case of a problem, you will be able to determine the location where it occurred by monitoring the state of the system.

3-1 Display under normal conditions

The display is green under normal conditions.
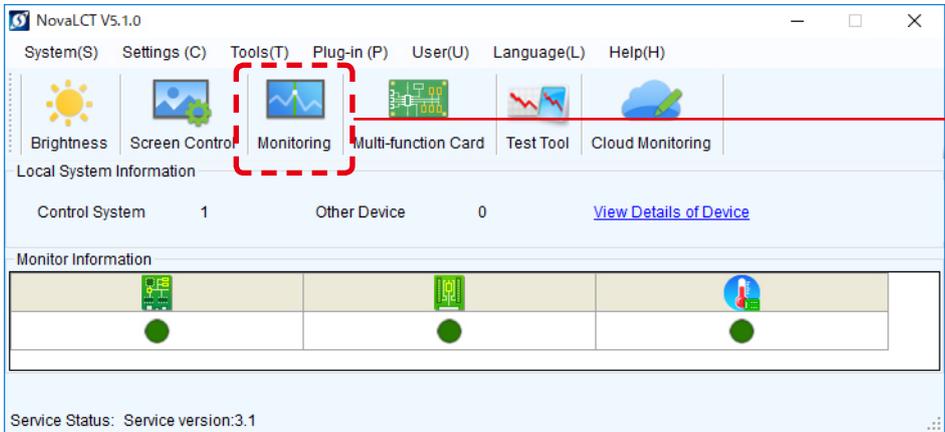
Click "Monitoring" to check
- the state of the LED controller
- the operating state of the LED modules
- the temperature of the LED modules
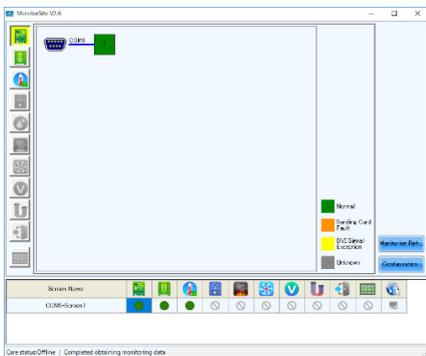
State of the LED controller
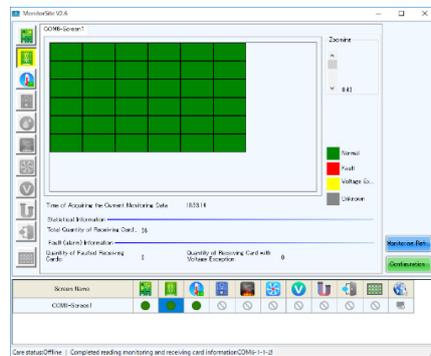
State of the LED modules
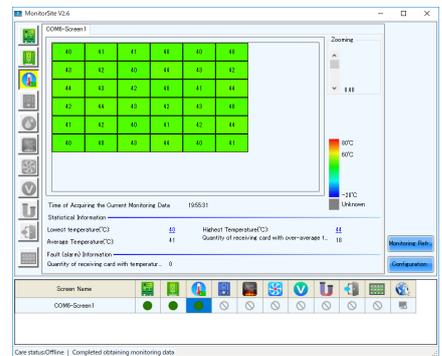
Temperature of the LED modules

3-2 Display under abnormal conditions

(1) Problem with the input signal to the LED controller
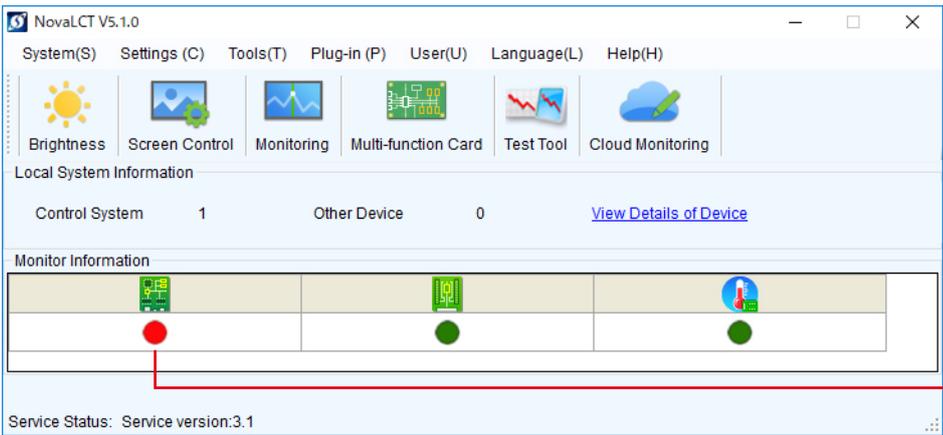
When the display is red, there is a problem with the LED controller.

To display more details, click "Monitoring", and then click "Sending card" on the screen that is displayed.
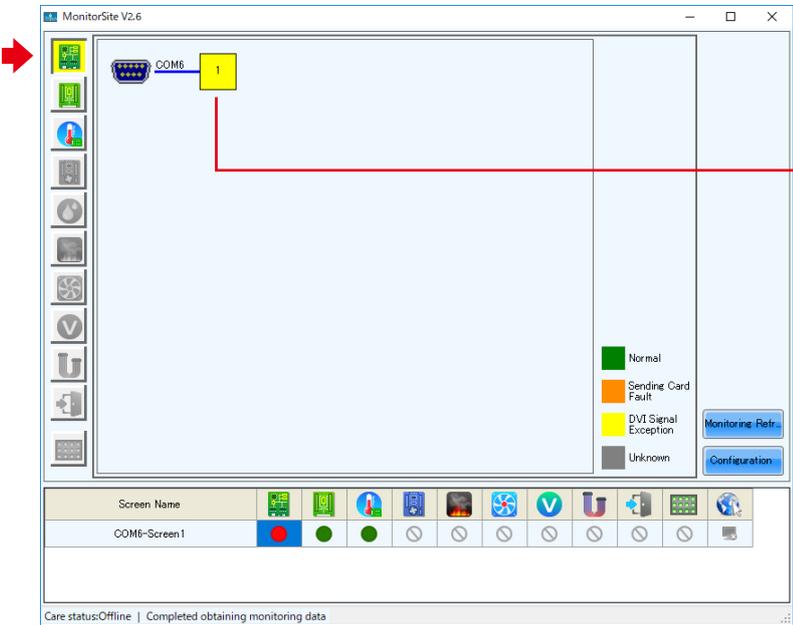
No video signal is being input to the LED controller.
- Check that the LAN cable is connected.
- Check that a video signal is being output from the video output equipment.
- If multiple signals are being input to the LED controller, check the input settings of the LED controller.

(2) Problem with the LED modules
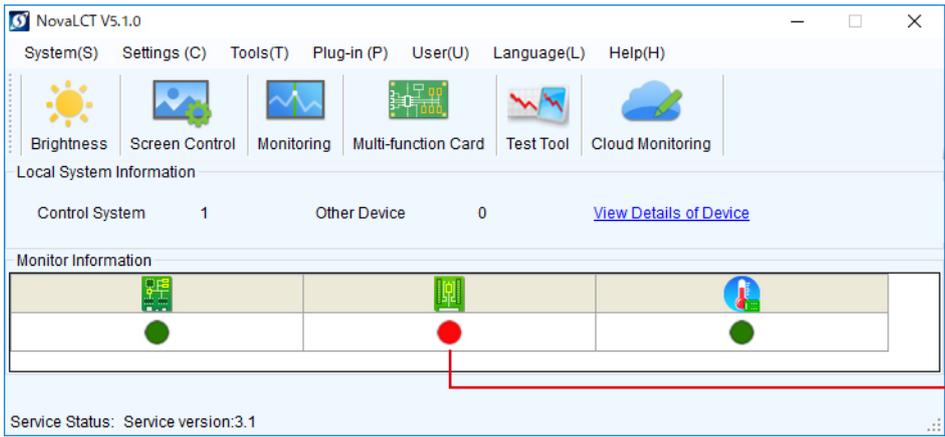

When the display is red, there is a problem with the LED module operation.

To display more details, click "Monitoring", and then click "Receiving card" on the screen that is displayed.
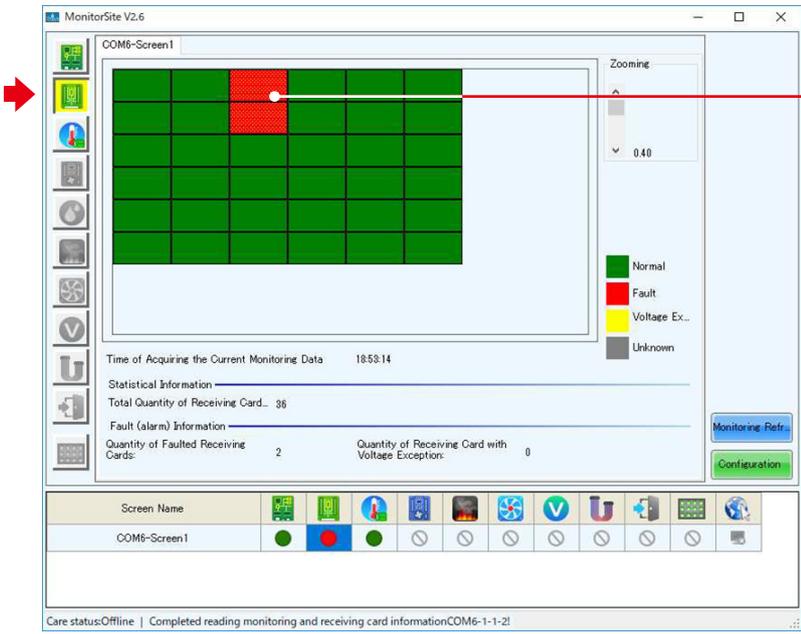
In the example shown on the left, the following problems must be considered.

- Signal loss between the screen of the 3rd row 3rd column and the screen of the 2nd row 3rd column

  → Check the internal LAN cable.

- Problem with both power units of the screen of the 2nd row 3rd column

  → Check the rear indicator (red) to see if it is lit.
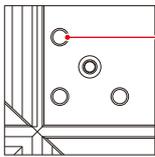
There is no problem if it is lit red.

If it is not lit, the power unit is probably broken. (Replacing the power unit)

- Problem with the receiving card of the screen of the 2nd row 3rd column

  → Check that the receiving card is securely connected. If there are no connection problems, the receiving card may malfunction. (Replacing the receiving card)

(3) Problem with the internal temperature of the LED modules
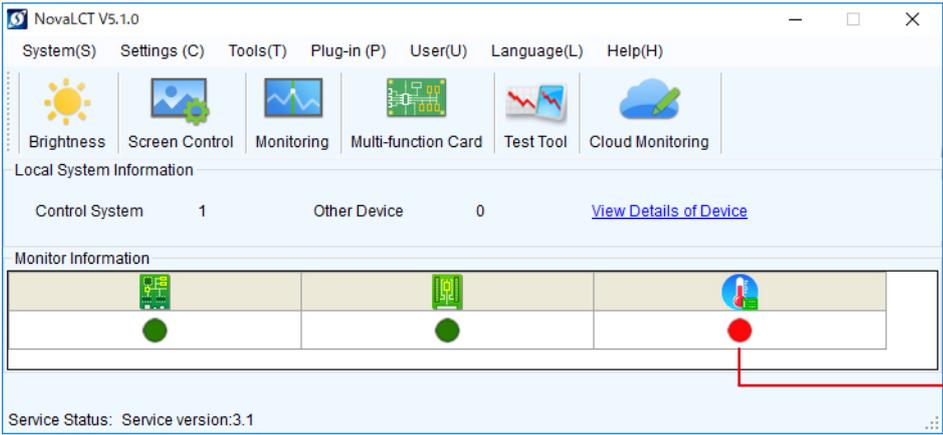
There is a problem with the LED module operation.

To display more details, click "Monitoring", and then click "Temperature" on the screen that is displayed.
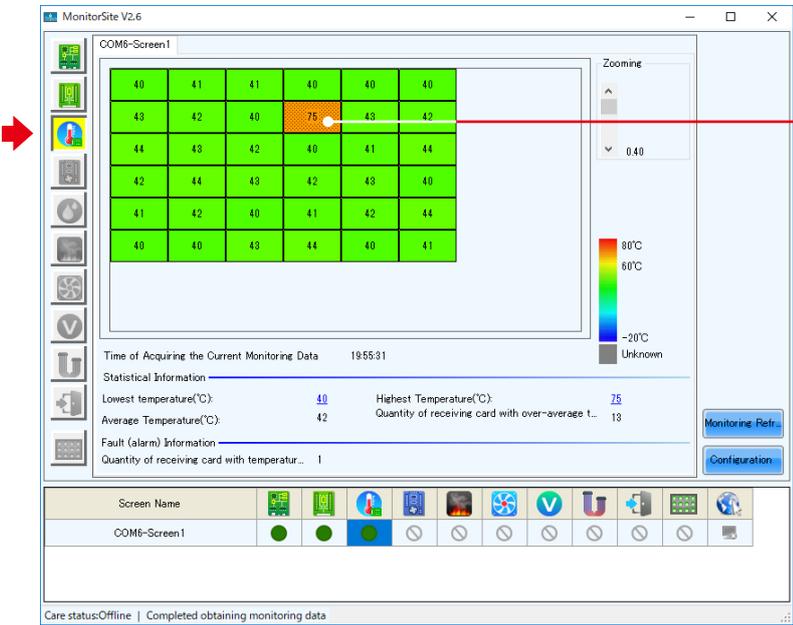
The LED modules with a high temperature are displayed in warm colors.

Since the internal temperature is high, decrease the brightness setting.

If changing the brightness setting could not solve the problem, contact your retailer or the Customer Service.

(4) Communication problem
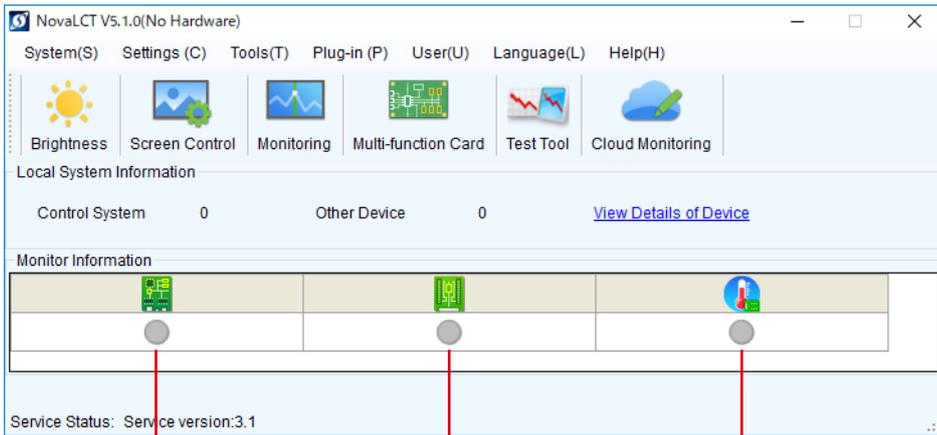
When the display is grey, the communication is not established.
→ Check that the USB cable is connected.
→ Check that the LED controller is turned on.

4. Redundancy setting method

4.1 Configuring the settings with two LED controllers connected to the PC using LAN cables

Connect the LED controllers and the LED modules with LAN cables.

Terminate the Backup system connection at the RJ-45 connector located top left on the last module in the daisy chain connection.

LED modules

LED-FE/FC

LED-E

dynabook

HUB

LED controllers
Main (Primary)

Backup

* For the MCTRL 4K LED controller, the way to make connections is similar to this example.

Start the control software NovaLCT and log in with the administrator privileges.

Display the login screen as follows: User(U) -> Advanced Synchronous System UserLogin(A). Enter the password ("admin") to log in with the administrator privileges.

Click "Screen Configuration".

Check the port in "Select Communication Port", select the Main (Primary) and Backup system LED controllers by their IP address, and then click "Next".

Configure the settings for the Main (Primary) controller and Backup controller separately.
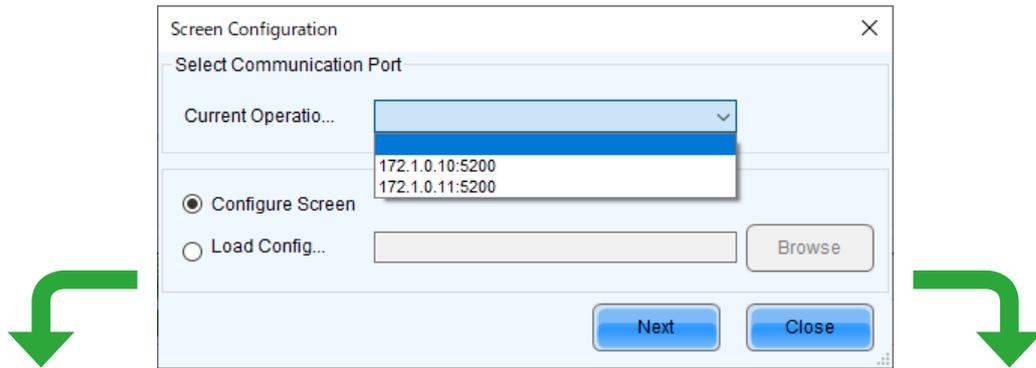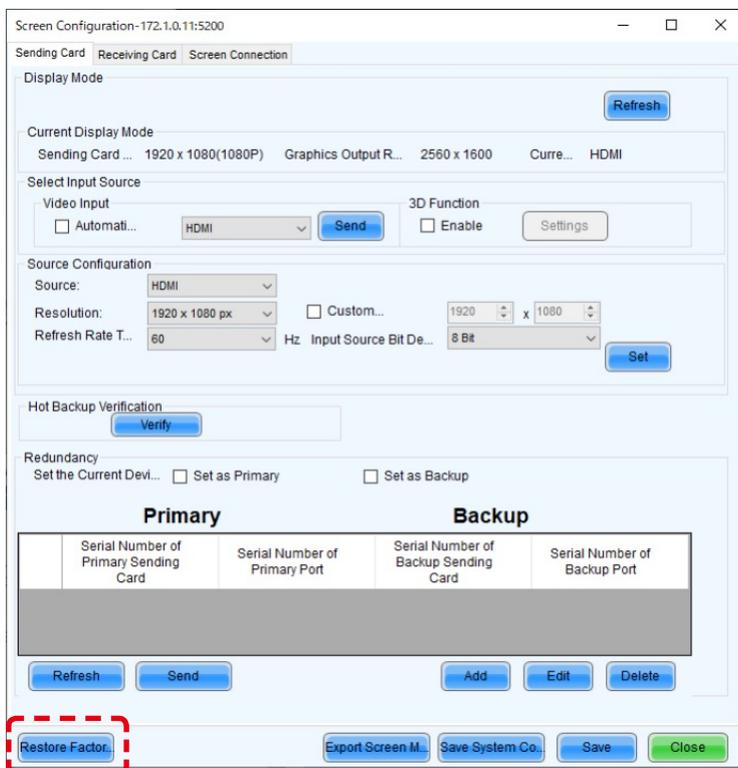

Main (Primary)
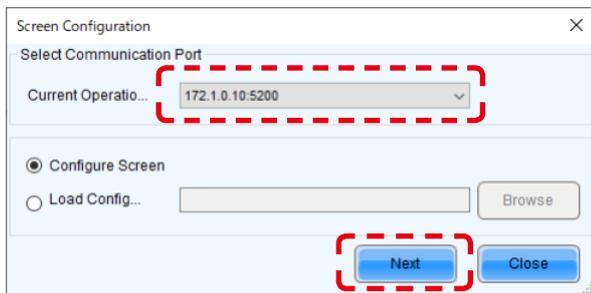
Backup
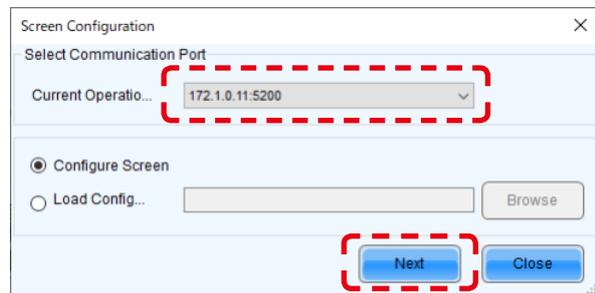
On the Main (Primary) side

Click the "Restore Factory Settings" button for initialization.

After initialization, configure the settings for "Select Input Source" and "Source Configuration".

If the factory setting is correctly configured and the device connection is the same as when the factory setting was configured, check the settings without performing initialization.
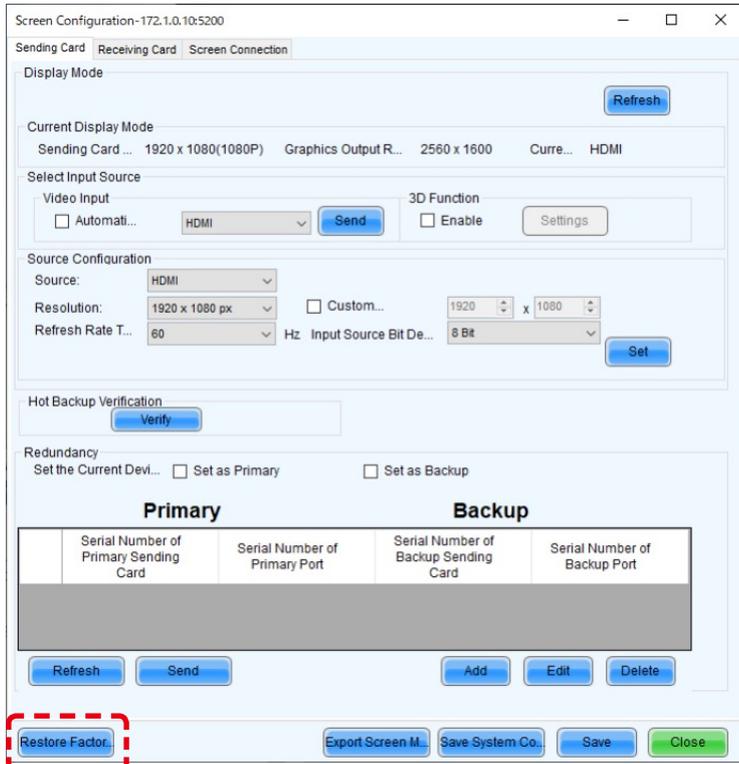
Main (Primary)

Select the Screen Connection tab.

Select/enter the value for "Screen Type", "Receiving Card Size", "Columns" and "Rows", and use "Ethernet Port No." and the screen configuration section to configure the connection.

* For details of the configuration procedure, refer to the User's Manual.

Next, select the Sending Card tab.

Go to "Redundancy", select the checkbox for "Set as Primary" and click "Save".
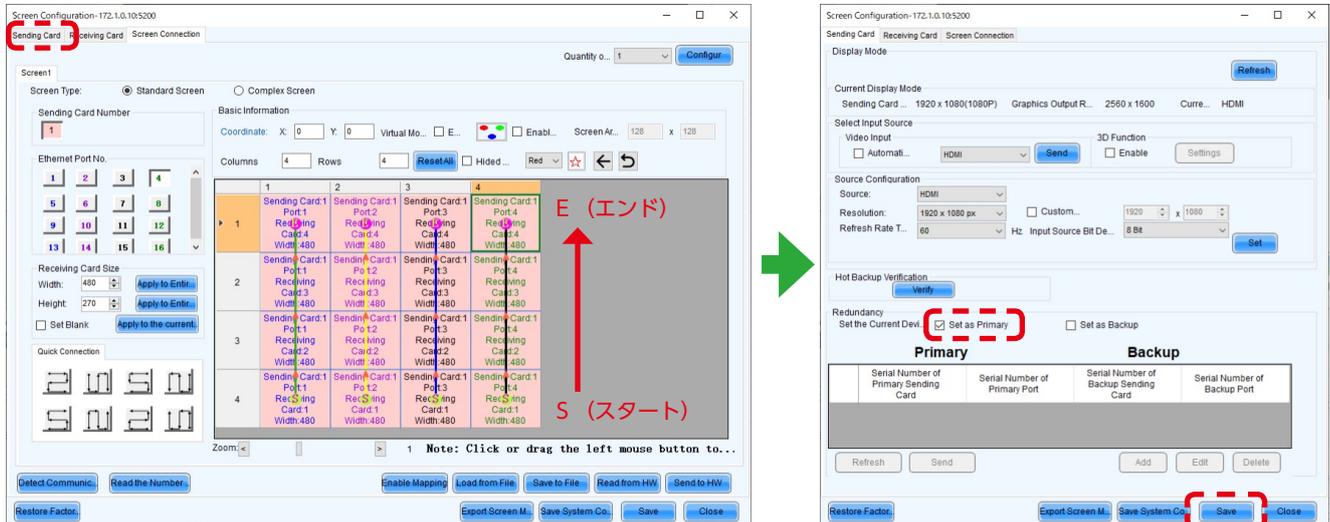
On the Backup side

Click the "Restore Factory Settings" button for initialization.

After initialization, configure the settings for "Select Input Source" and "Source Configuration".

If the factory setting is correctly configured and the device connection is the same as when the factory setting was configured, check the settings without performing initialization.

Backup

Select the Screen Connection tab.

Configure the connection in the same way as for Main (Primary).

* The direction of connection is the same as for Main (Primary).

Next, select the Sending Card tab.

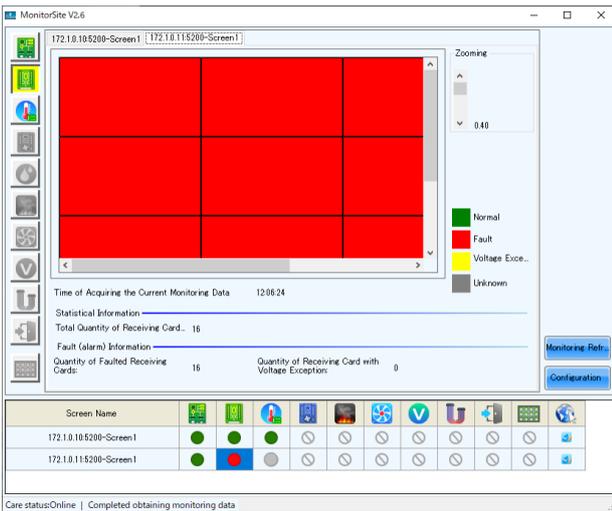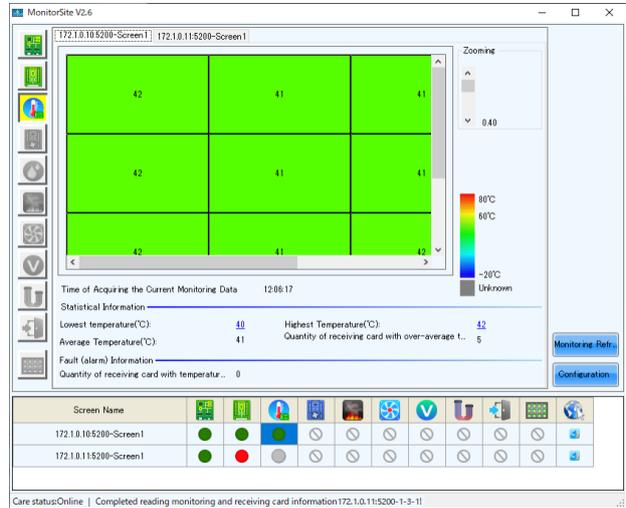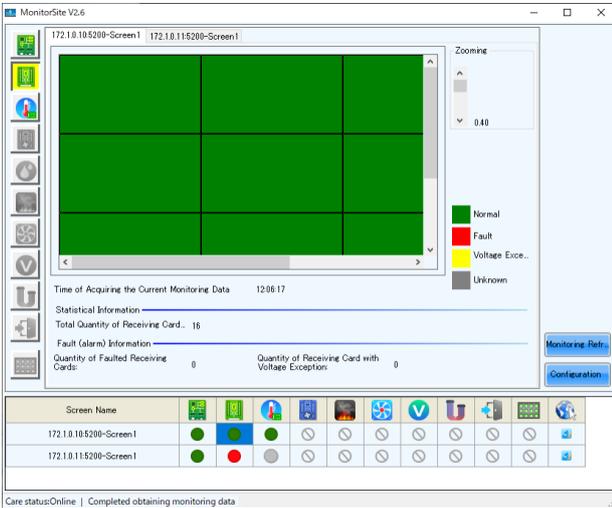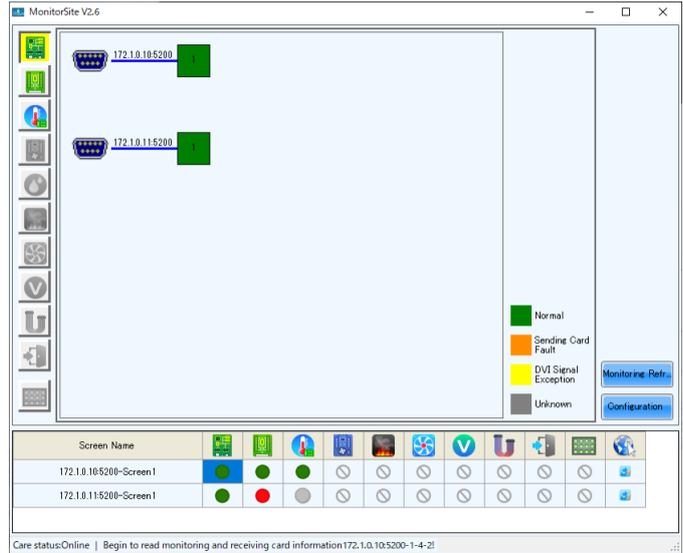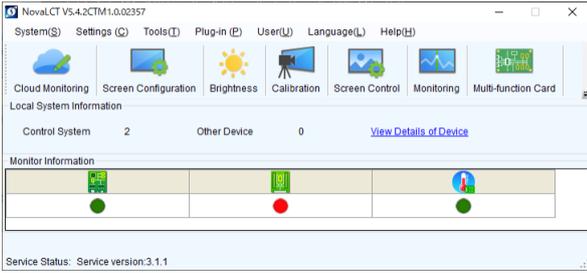Go to "Redundancy", select the checkbox for "Set as Backup" and click "Save".
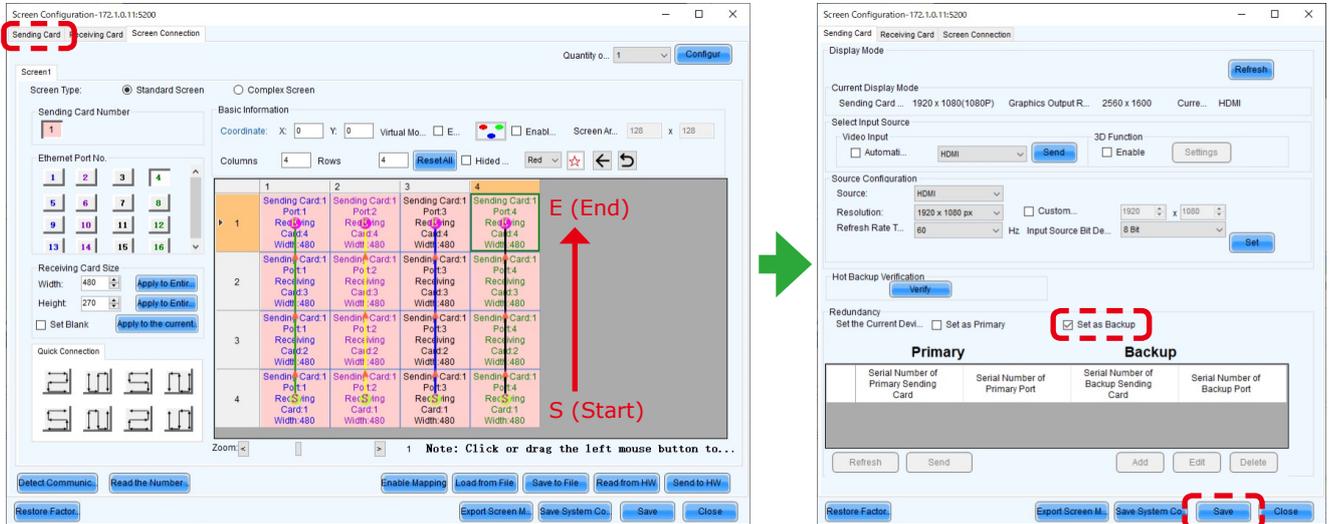
Check the current brightness setting.

Click the "Brightness" button.

In the Brightness Adjustment screen, set the desired brightness value and click the "Save to HW" button.
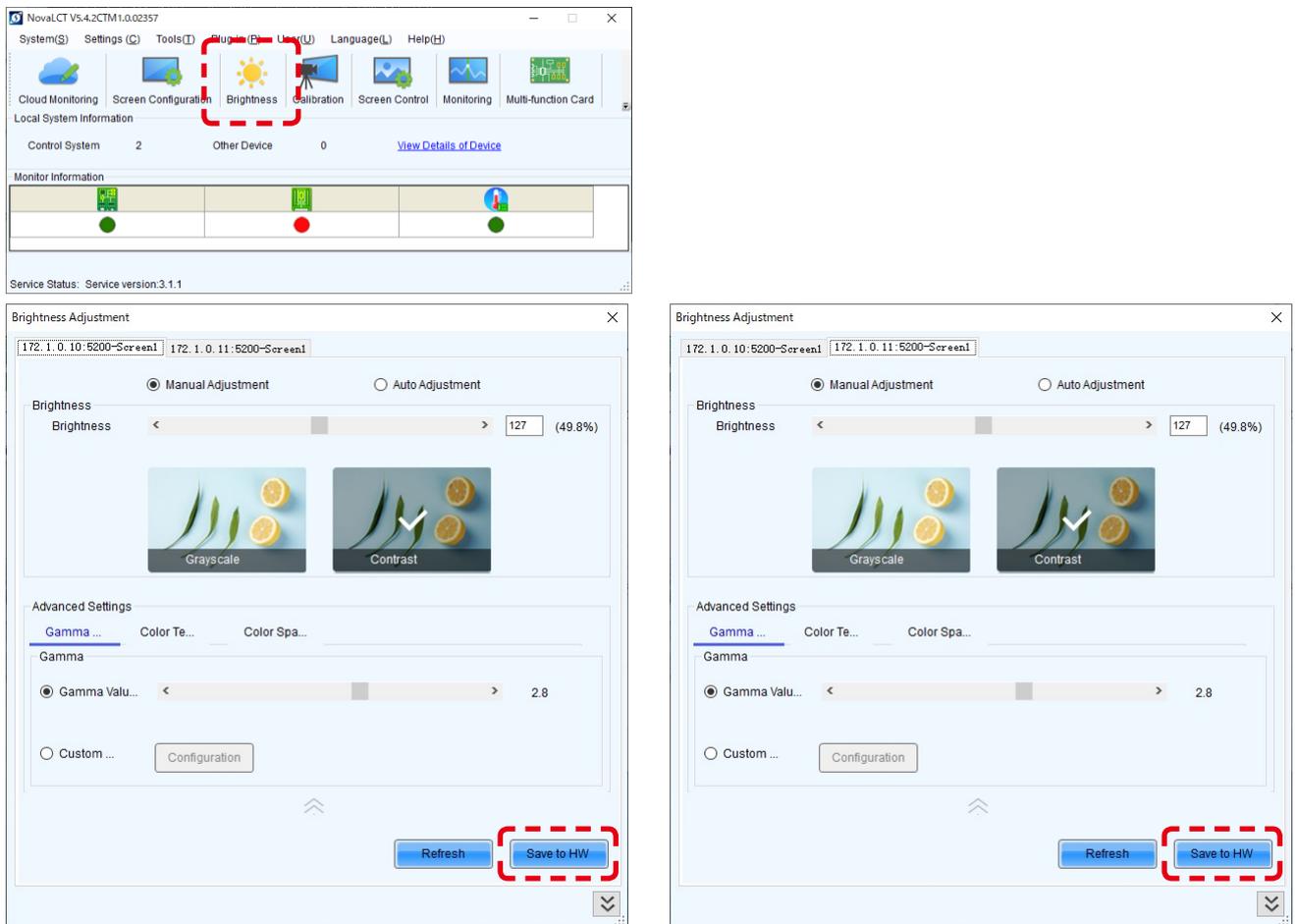
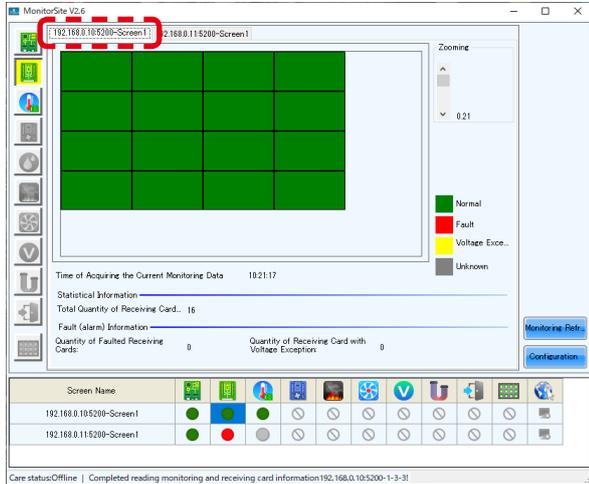The monitoring screens appear like below.
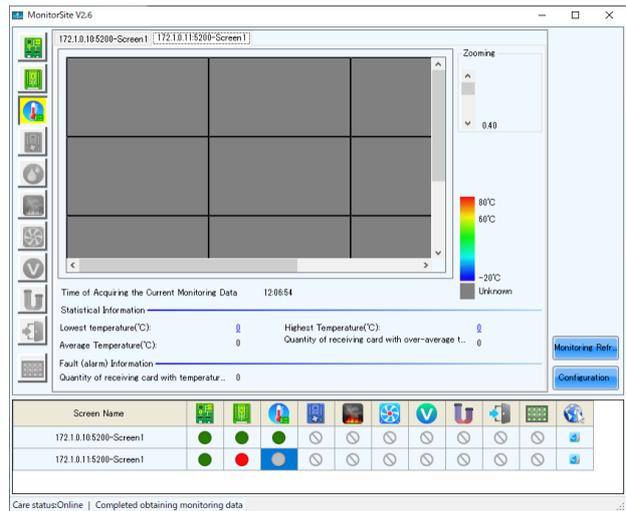
Note: On the monitoring screen, the LED modules configured as "Backup" are displayed in red color (this is not an indication of a fault).
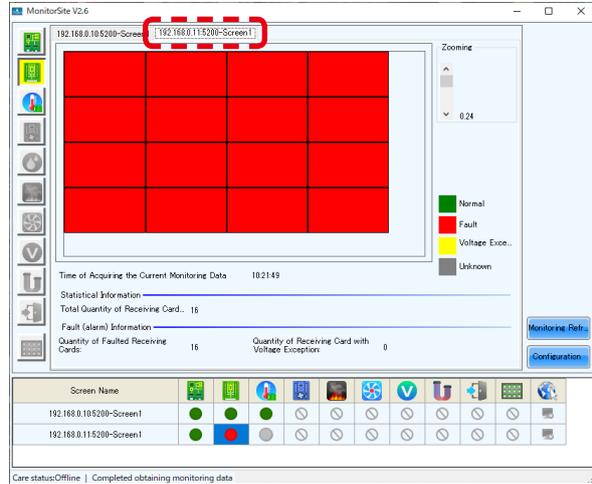
If a fault occurs on modules configured as "Main (Primary)", "Backup" modules are displayed in green color, which is an indication of normal state.

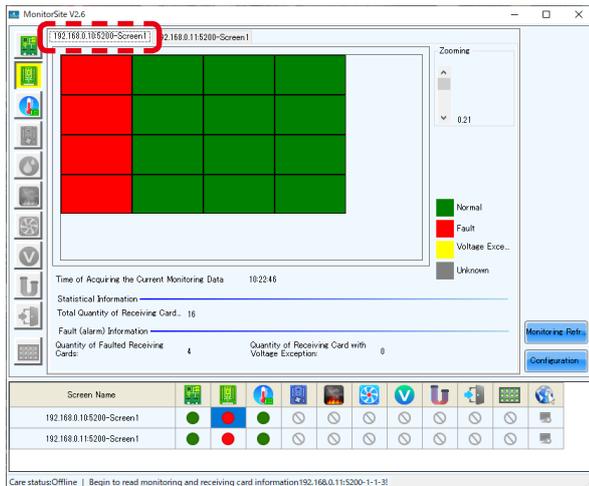"Main (Primary)" modules are operating normally

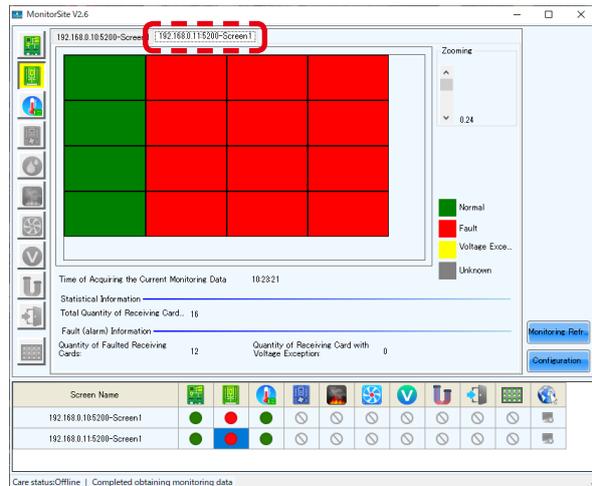Main (Primary)   Backup

Modules connected to port 1 are operating as "Backup".

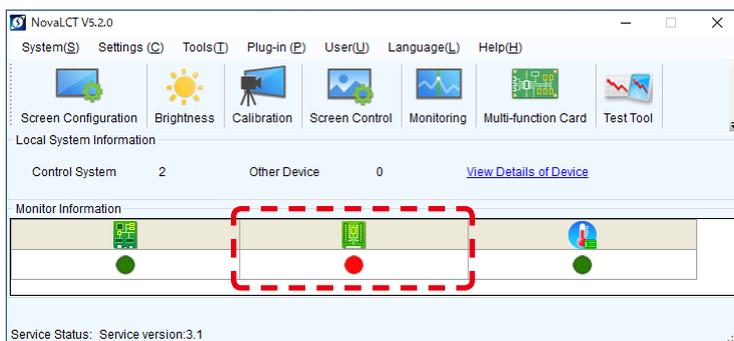Main (Primary)   Backup

In the start-up screen of NovaLCT, the status indicator circle for "Monitor Information" receiving card becomes red in color.
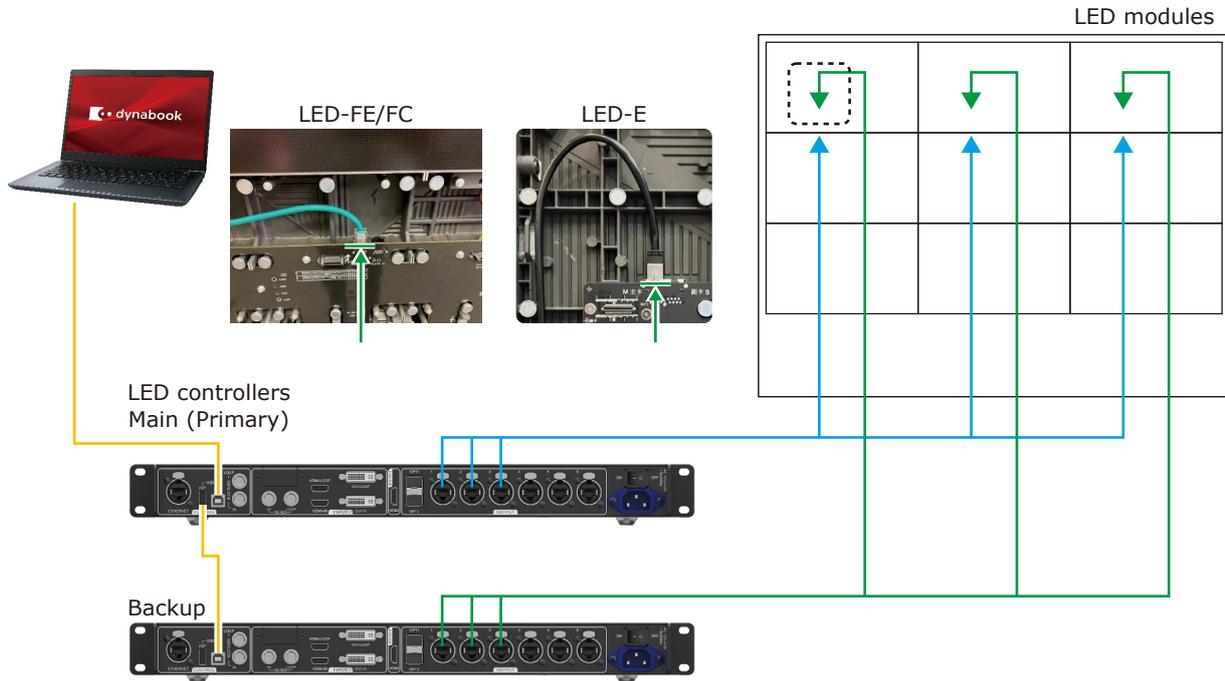
In the case of MCTRL 4K, the display of the LED controllers is as follows.
(This example display is for the case of connection using four Ethernet cables.)

  Upper: Backup
  Lower: Main (Primary)

4.2 Configuring the settings with two LED controllers connected to the PC using USB cables

Connect the LED controllers and the LED modules with LAN cables.

Terminate the Backup system connection at the RJ-45 connector located top left on the last module in the daisy chain connection.
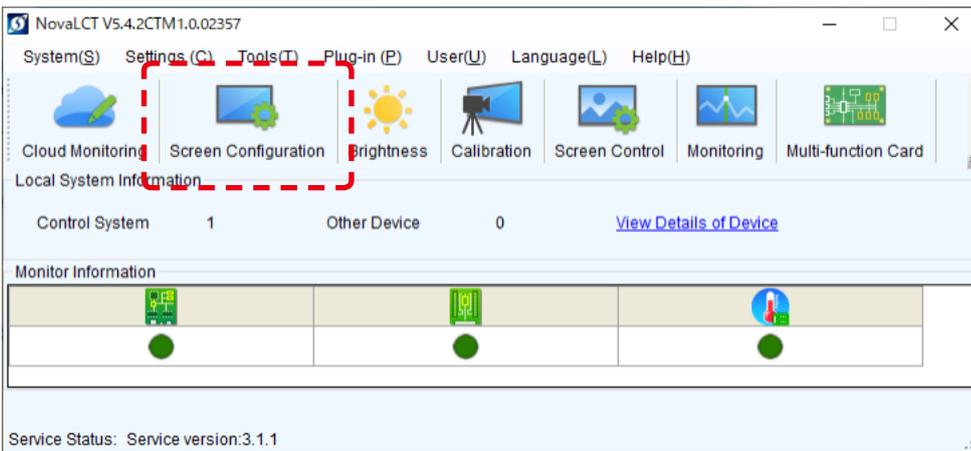

* For the MCTRL 4K LED controller, the way to make connections is similar to this example.
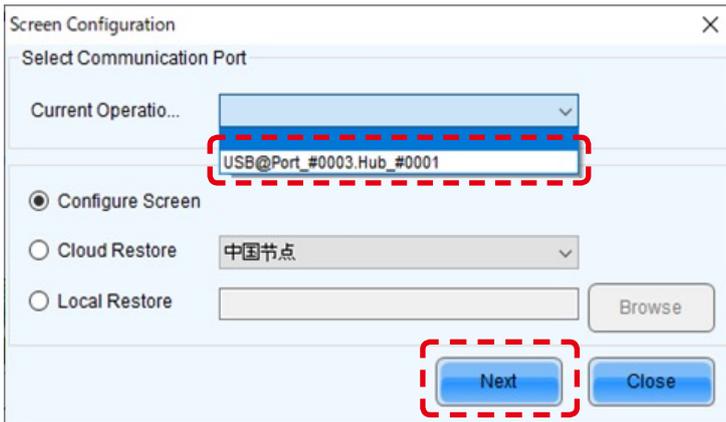
Start the control software NovaLCT and log in with the administrator privileges.

Display the login screen as follows: User(U) -> Advanced Synchronous System UserLogin(A). Enter the password ("admin") to log in with the administrator privileges.
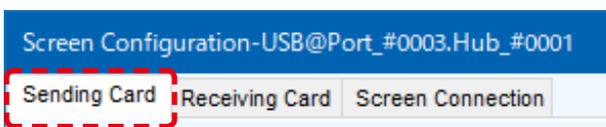
Click "Screen Configuration".

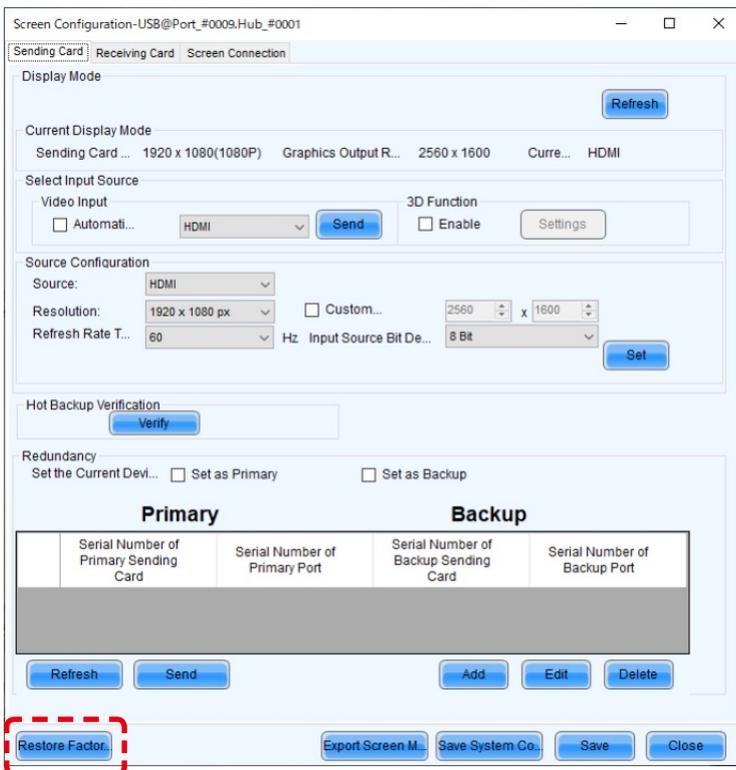Select the port in "Select Communication Port", and then click "Next".

In the Screen Configuration screen that is displayed, select the "Sending Card" tab.

Click the "Restore Factory Settings" button for initialization.

After initialization, configure the settings for "Select Input Source" and "Source Configuration".
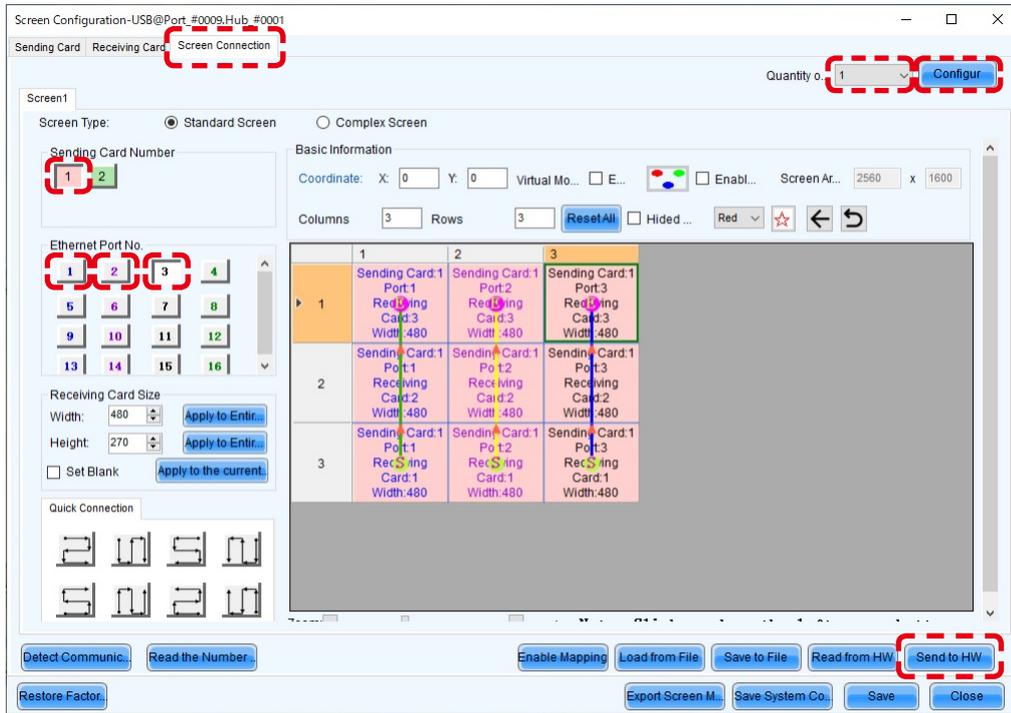
If the factory setting is correctly configured and the device connection is the same as when the factory setting was configured, check the settings without performing initialization.

Select the Screen Connection tab.

Select/enter the value for "Screen Type", "Receiving Card Size", "Columns" and "Rows", and use "Ethernet Port No." and the screen configuration section to configure the connection.

* For details of the configuration procedure, refer to the User's Manual.

Notes on the setting operation:

Perform these setting procedures prior to the redundancy settings configuration.

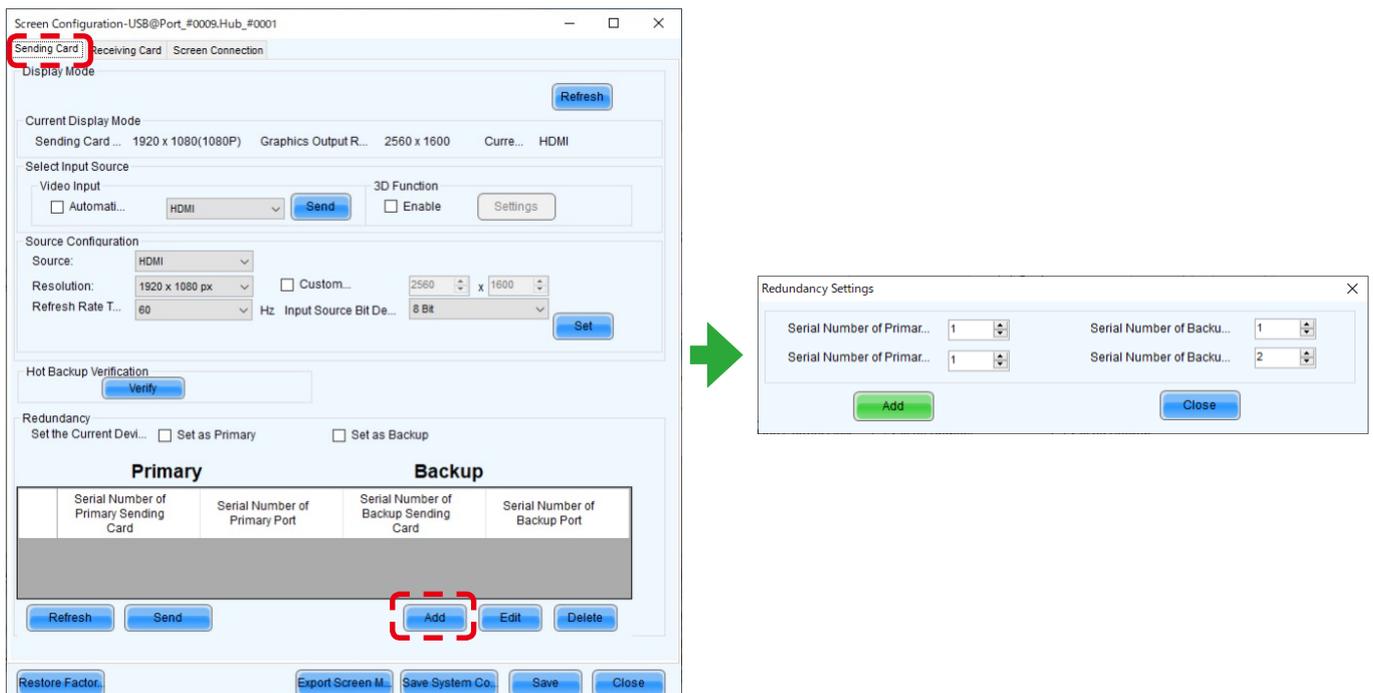Make sure that the value of "Quantity of Screens" is 1.

(To change a different value to 1, click the Configur" button.)

It is not necessary to configure the settings for Sending Card 2.

When the settings configuration is complete, click the "Send to HW" button.

Select the Sending Card tab and click "Add".

The Redundancy Settings screen is displayed.

In the Redundancy Settings screen, set the Port number of the Backup side LED controller (Sending Card) that matches the Port number of the Primary side LED controller (Sending Card).

After entering the value, click the "Add" button.

In the LED configuration example (English-80), the settings are as follows.

| |
|---|
| Serial Number of Primary Sending Card : 1 |
| Serial Number of Primary Port : 1 |
| Serial Number of Backup Sending Card : 2 |
| Serial Number of Backup Port : 1 |
| Serial Number of Primary Sending Card : 1 |
| Serial Number of Primary Port : 2 |
| Serial Number of Backup Sending Card : 2 |
| Serial Number of Backup Port : 2 |
| Serial Number of Primary Sending Card : 1 |
| Serial Number of Primary Port : 3 |
| Serial Number of Backup Sending Card : 2 |
| Serial Number of Backup Port : 3 |

When the settings configuration is complete, the Sending Card tab appears like below.

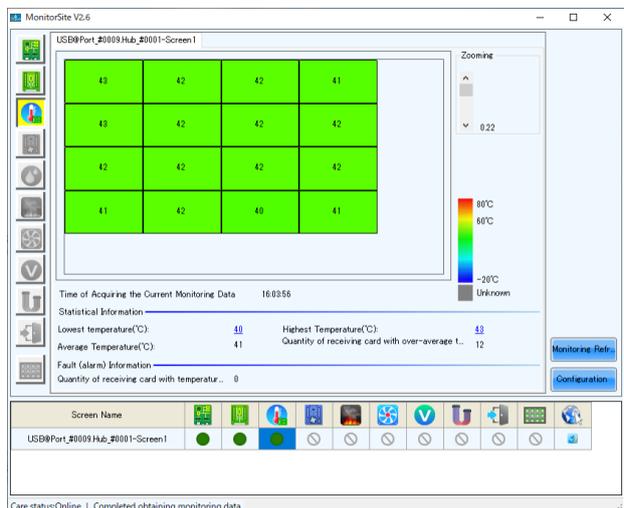Click the "Send" button.
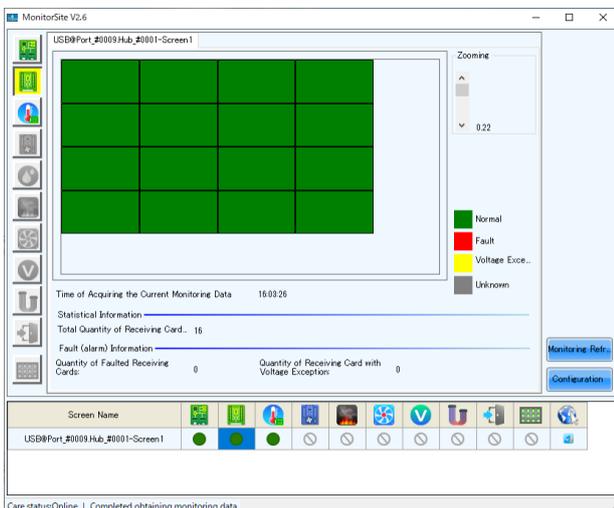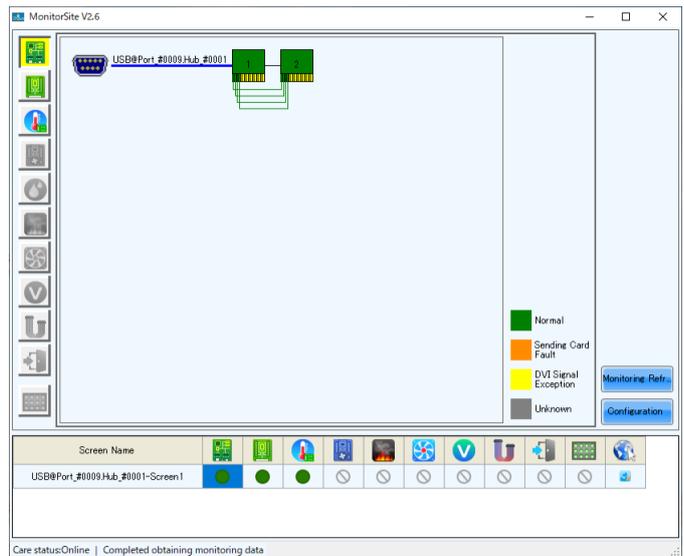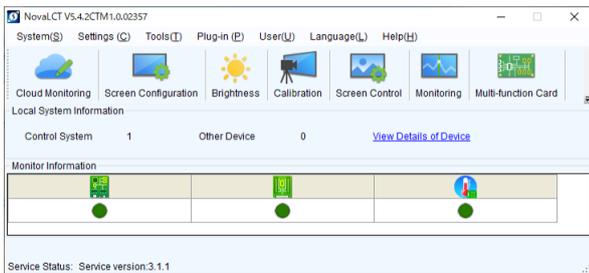
Click the "Save" button.
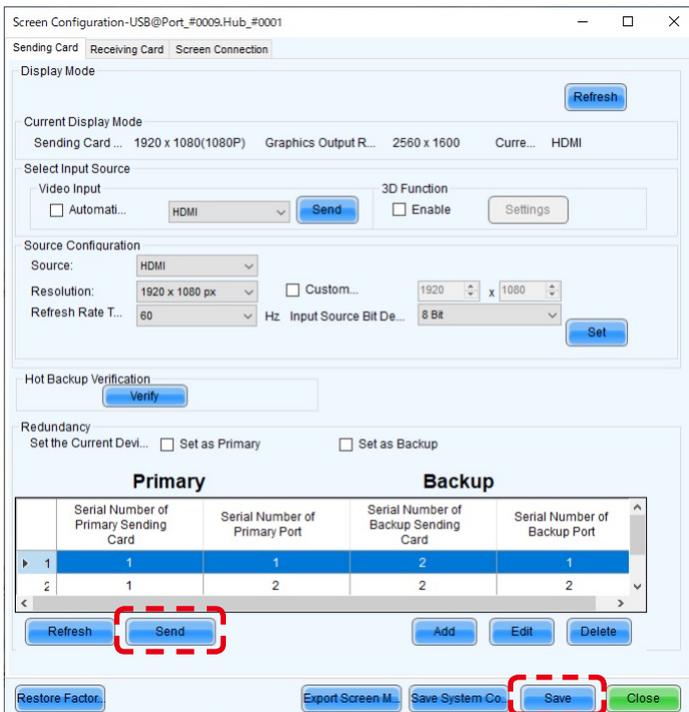
Check the current brightness setting.

Click the "Brightness" button.

In the Brightness Adjustment screen, set the desired brightness value and click the "Save to HW" button.
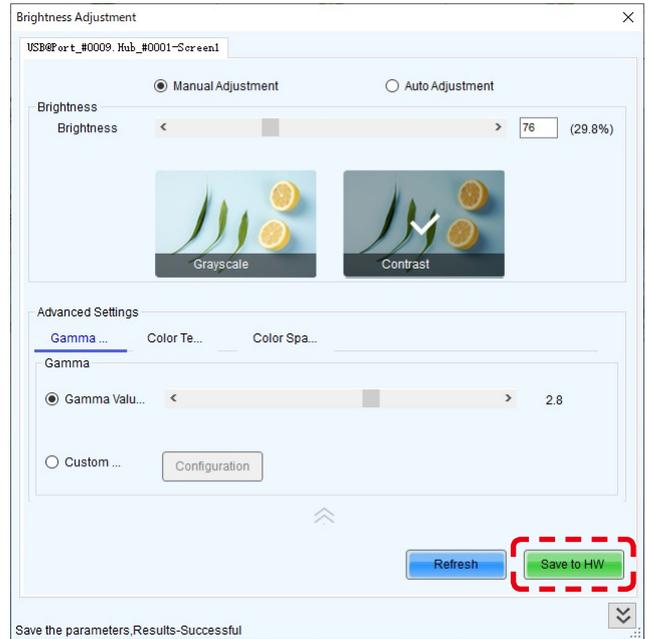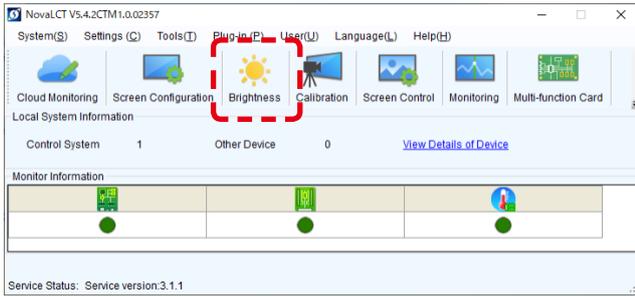
The monitoring screens appear like below.

In the case of MCTRL 4K, the display of the LED controllers is as follows.
(This example display is for the case of connection using four Ethernet cables.)
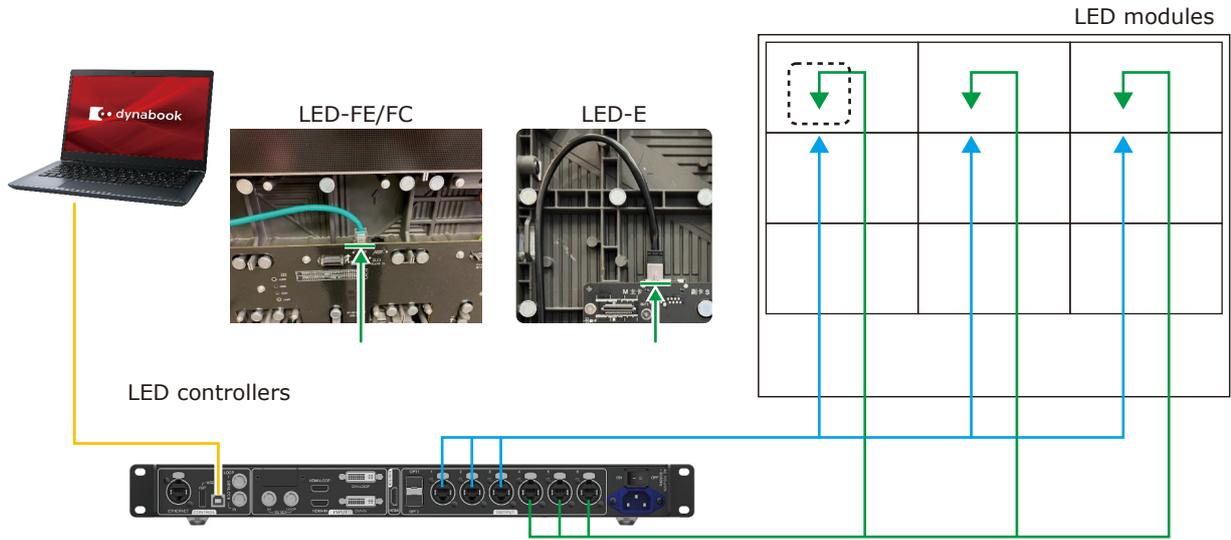
    Upper: Backup

    Lower: Main (Primary)

4.3 Configuring the settings with one LED controller connected to the PC using a USB cable

Connect the LED controllers and the LED modules with LAN cables.

Terminate the Backup system connection at the RJ-45 connector located top left on the last module in the daisy chain connection.



LED modules

LED-FE/FC

LED-E

LED controllers

* For the MCTRL 4K LED controller, the way to make connections is similar to this example.
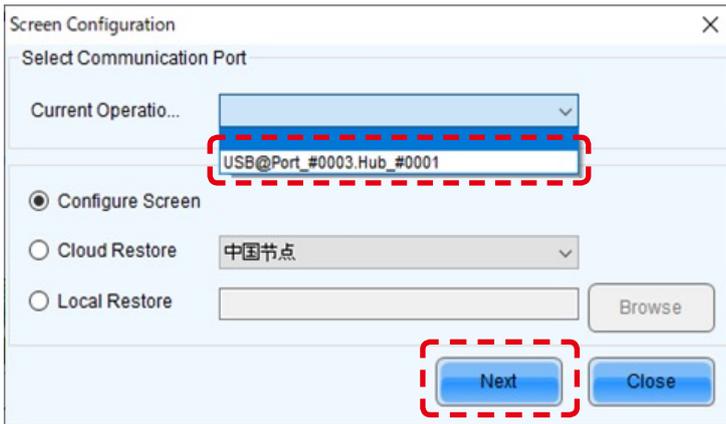
Start the control software NovaLCT and log in with the administrator privileges.

Display the login screen as follows: User(U) -> Advanced Synchronous System UserLogin(A). Enter the password ("admin") to log in with the administrator privileges.

Click "Screen Configuration".
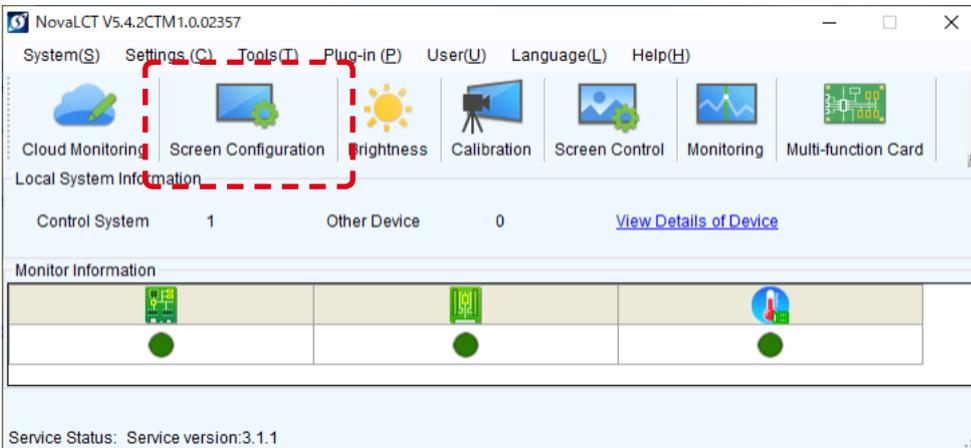
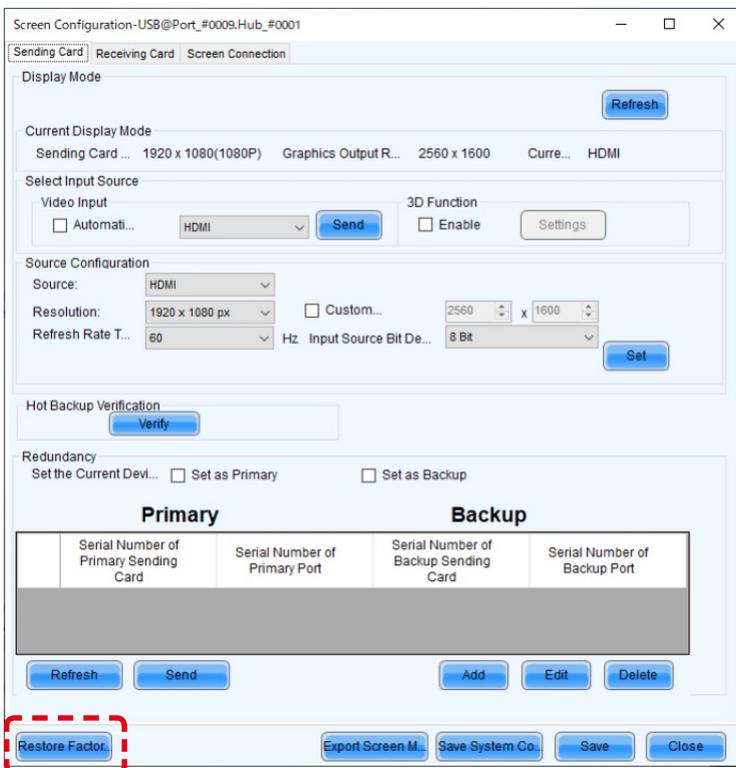Select the port in "Select Communication Port", and then click "Next".

Click the "Restore Factory Settings" button for initialization.

After initialization, configure the settings for "Select Input Source" and "Source Configuration".
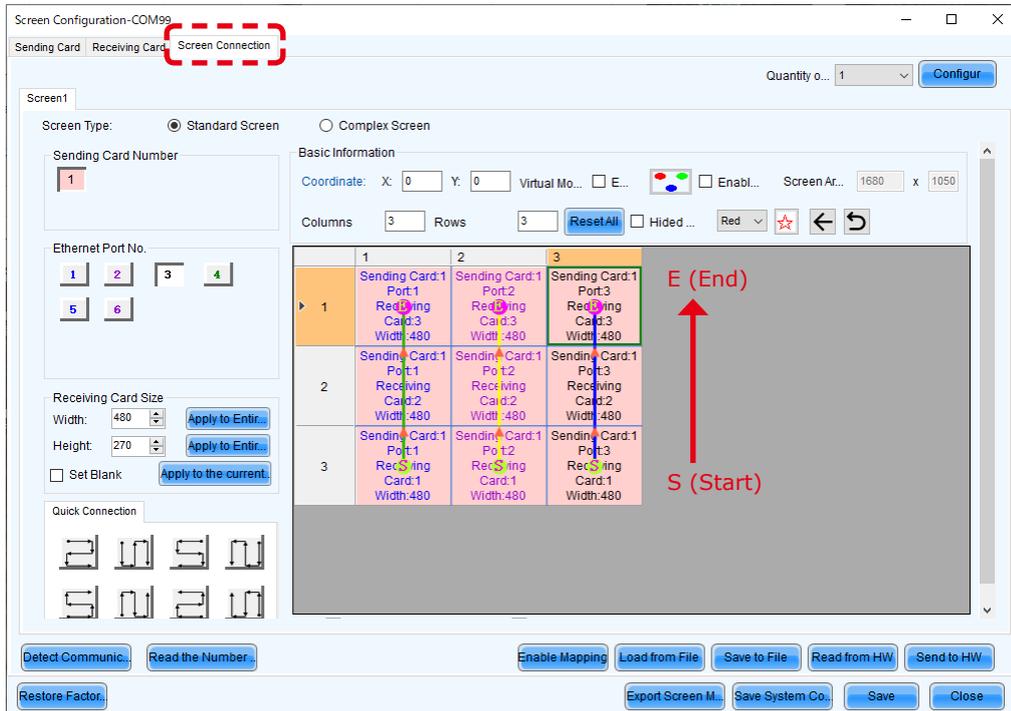
If the factory setting is correctly configured and the device connection is the same as when the factory setting was configured, check the settings without performing initialization.

Select the Screen Connection tab.

Select/enter the value for "Screen Type", "Receiving Card Size", "Columns" and "Rows", and use "Ethernet Port No." and the screen configuration section to configure the connection.

* For details of the configuration procedure, refer to the User's Manual.

Notes on the setting operation:

Perform these setting procedures prior to the redundancy settings configuration.
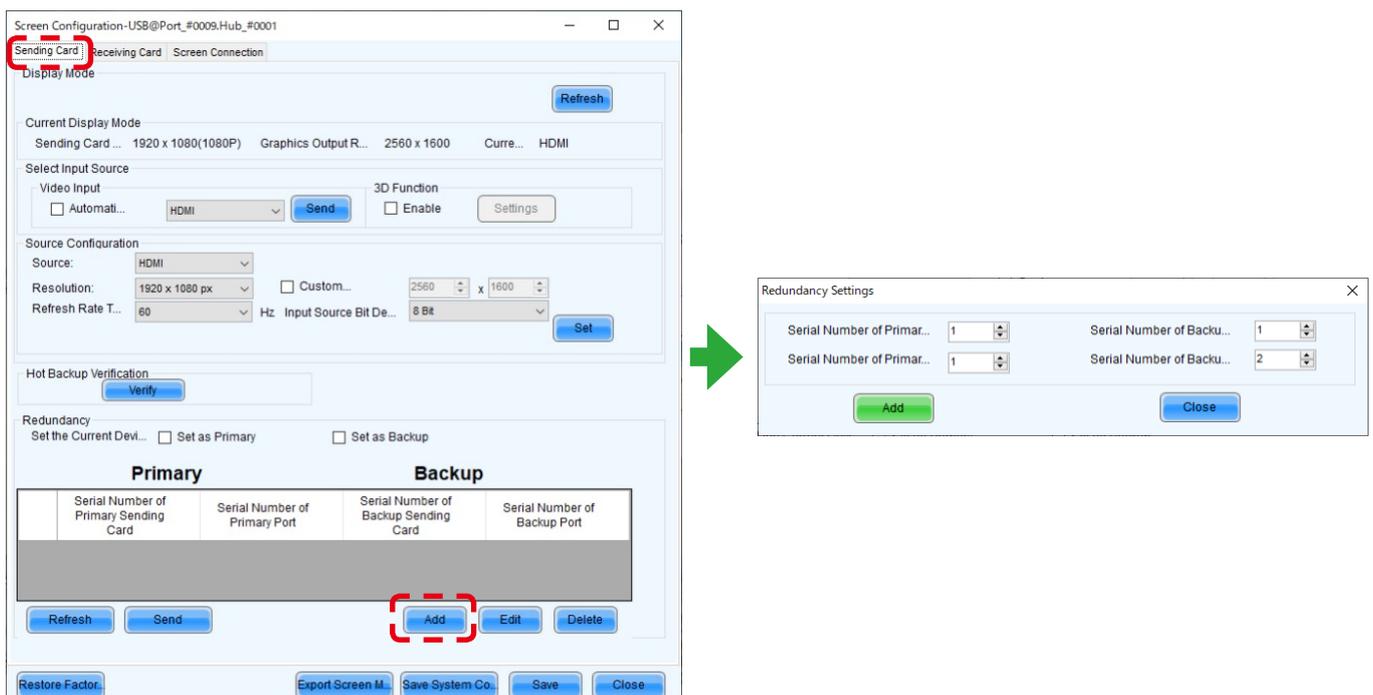
Make sure that the value of "Quantity of Screens" is 1.

(To change a different value to 1, click the Configur" button.)

It is not necessary to configure the settings for Sending Card 2.

When the settings configuration is complete, click the "Send to HW" button.


Select the Sending Card tab and click "Add".

The Redundancy Settings screen is displayed.

In the Redundancy Settings screen, set the Port to use on the LED controller.

In the LED configuration example (English-93), the settings are as follows. After entering the value, click the "Add" button.

| Serial Number of Primary Sending Card : 1 Serial Number of Primary Port : 1 Serial Number of Backup Sending Card : 1 Serial Number of Backup Port : 4	
Serial Number of Primary Sending Card : 1 Serial Number of Primary Port : 2 Serial Number of Backup Sending Card : 1 Serial Number of Backup Port : 5	
Serial Number of Primary Sending Card : 1 Serial Number of Primary Port : 3 Serial Number of Backup Sending Card : 1 Serial Number of Backup Port : 6	
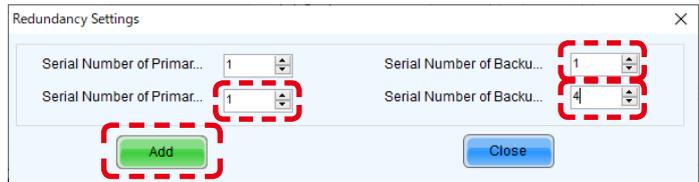
When the settings configuration is complete, the Sending Card tab appears like below.

Click the "Send" button.
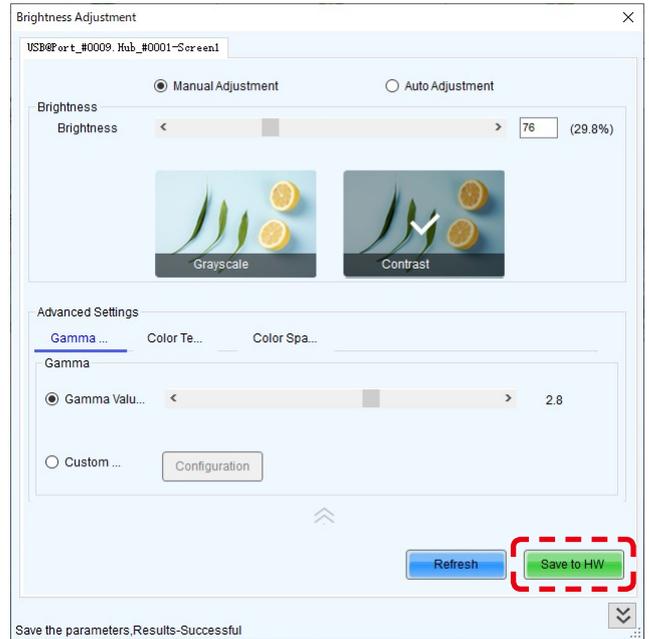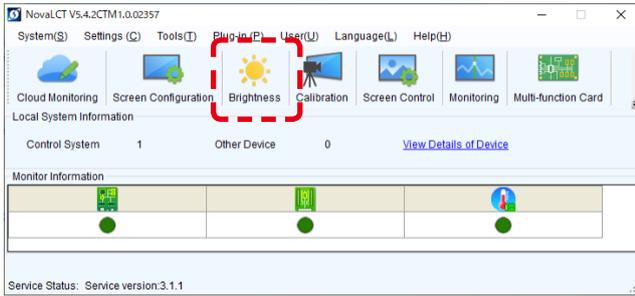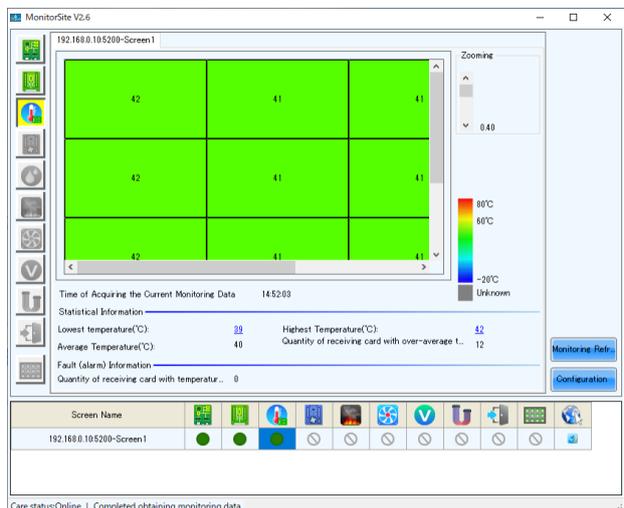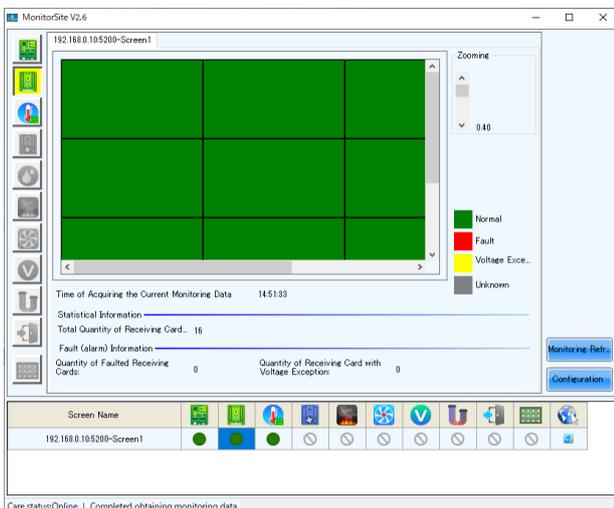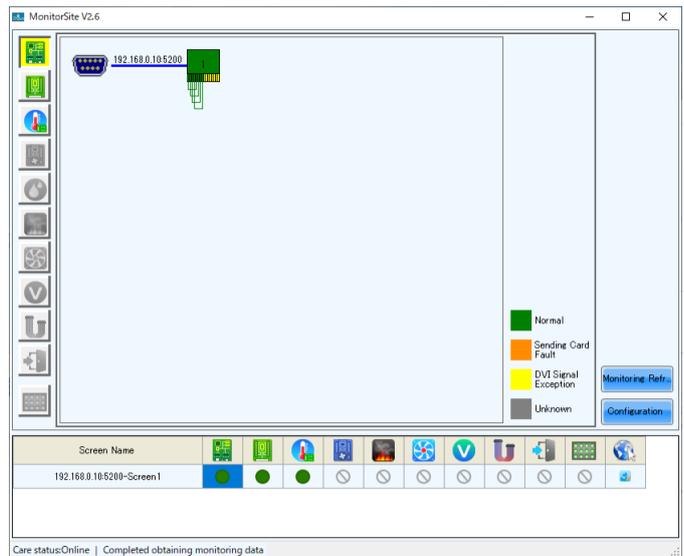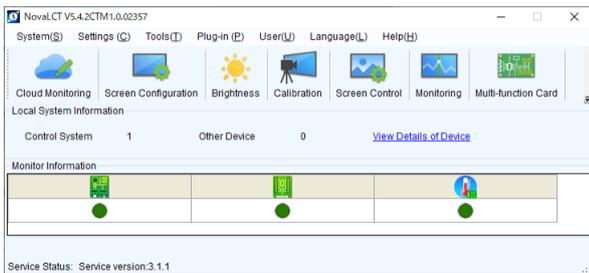
Click the "Save" button.
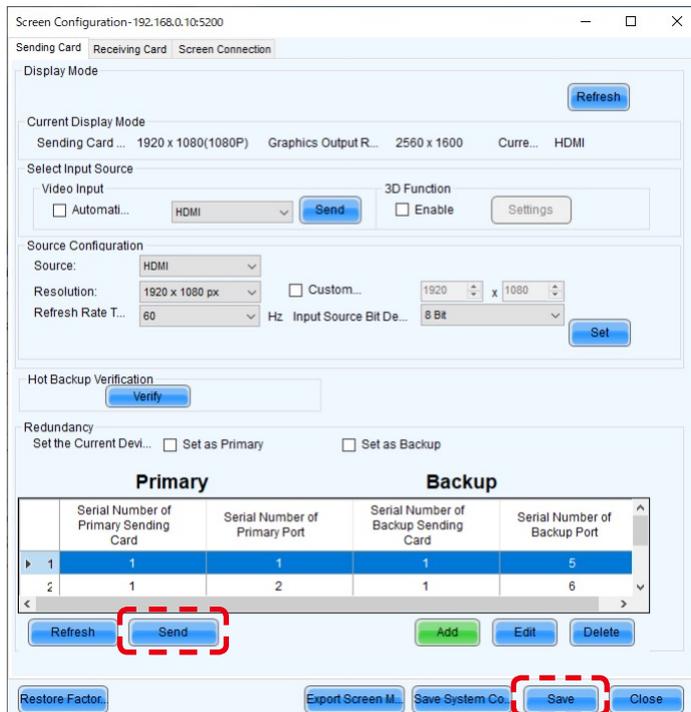
Check the current brightness setting.

Click the "Brightness" button.

In the Brightness Adjustment screen, set the desired brightness value and click the "Save to HW" button.

The monitoring screens appear like below.

Specifications

Models for indoor use

	LED-FC009i	LED-FC012i	LED-FC015i
LED configuration	Flip chip COB (chip size : 4mil*8mil)		
Pixel pitch	0.95 mm	1.26 mm	1.58 mm
Number of displayed pixels (resolution/module)	640 × 340	480 × 270	384 × 216
Brightness	800 cd/m²		
Contrast ratio	20000:1		
Brightness adjustment range	0 to 100% (256 increments)		
Gamma correction	1.0 to 4.0 (default setting: 2.8)		
Color temperature	3000 K to 9500 K (default setting: 6500 K)		
Viewing angle	Up 75°, Down 75°, Left 80°, Right 80°	Up 80°, Down 80°, Left 80°, Right 80°	
Signal interface	Signal input	1 × RJ-45		
	Signal output	1 × RJ-45		
Power supply	100 V AC to 240 V AC, 50 Hz/60 Hz		
Power consumption (all white, 100% brightness)	60 W	70 W	65 W
IP rating	Front IP40 / Rear IP20		
Maintenance	Front		
Dimensions	608 × 342 × 48.5 mm		
Weight	7.0 kg		
Operating environment	Temperature	-20 to 40°C		
	Humidity	10% to 80% (without condensation)		
	Altitude	No more than 5000 m		
Storage environment	Temperature	-20 to 45°C		
	Humidity	10% to 85% (without condensation)		

Specifications are subject to change without notice.

Models for indoor use

	LED-FC012i-110/ LED-FC012i-11N	LED-FC015i-13/ LED-FC015i-13N	LED-FC009i-165/ LED-FC009i-16N	LED-FC012i-220/ LED-FC012i-22N
Module configuration	LED-FC012i 4 × 4	LED-FC015i 5 × 5	LED-FC009i 6 × 6	LED-FC012i 8 × 8
LED configuration	Flip chip COB (chip size : 4mil*8mil)			
Pixel pitch	1.26 mm	1.58 mm	0.95 mm	1.26 mm
Number of displayed pixels (resolution/module)	1920 × 1080	1920 × 1080	3840 × 2160	3840 × 2160
Brightness	800 cd/m^2			
Contrast ratio	20000:1			
Brightness adjustment range	0 to 100% (256 increments)			
Gamma correction	1.0 to 4.0 (default setting: 2.8)			
Color temperature	3000 K to 9500 K (default setting: 6500 K)			
Viewing angle	Up 80°, Down 80°, Left 80°, Right 80°		Up 75°, Down 75°, Left 80°, Right 80°	Up 80°, Down 80°, Left 80°, Right 80°
Signal interface — Signal input	1 × RJ-45			
Signal interface — Signal output	1 × RJ-45			
Power supply	100 V AC to 240 V AC, 50 Hz/60 Hz			
Power consumption (all white, 100% brightness)	1120 W	1625 W	2160 W	4480 W
IP rating	Front IP40 / Rear IP20			
Maintenance	Front			
Dimensions	2444 × 1475.5 × 78 mm	3052 × 1817.5 × 78 mm	3660 × 2159.5 × 78 mm	4876 × 2843.5 × 78 mm
Weight	153 kg	234 kg	325 kg	543 kg
Operating environment — Temperature	-20 to 40°C			
Operating environment — Humidity	10% to 80% (without condensation)			
Operating environment — Altitude	No more than 5000 m			
Storage environment — Temperature	-20 to 45°C			
Storage environment — Humidity	10% to 85% (without condensation)			

Specifications are subject to change without notice.
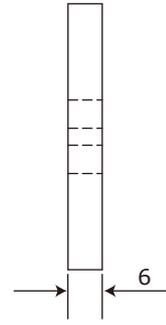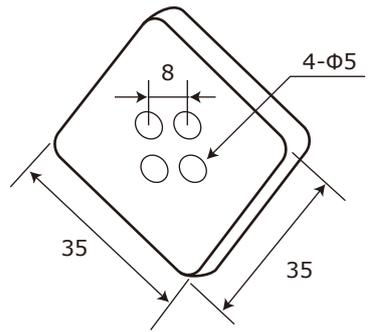
Diagram

LED-FC009i / LED-FC012i / LED-FC015i

608

48.5

342

Rear

4 x M8

18.5

24

294

24

44

520

44
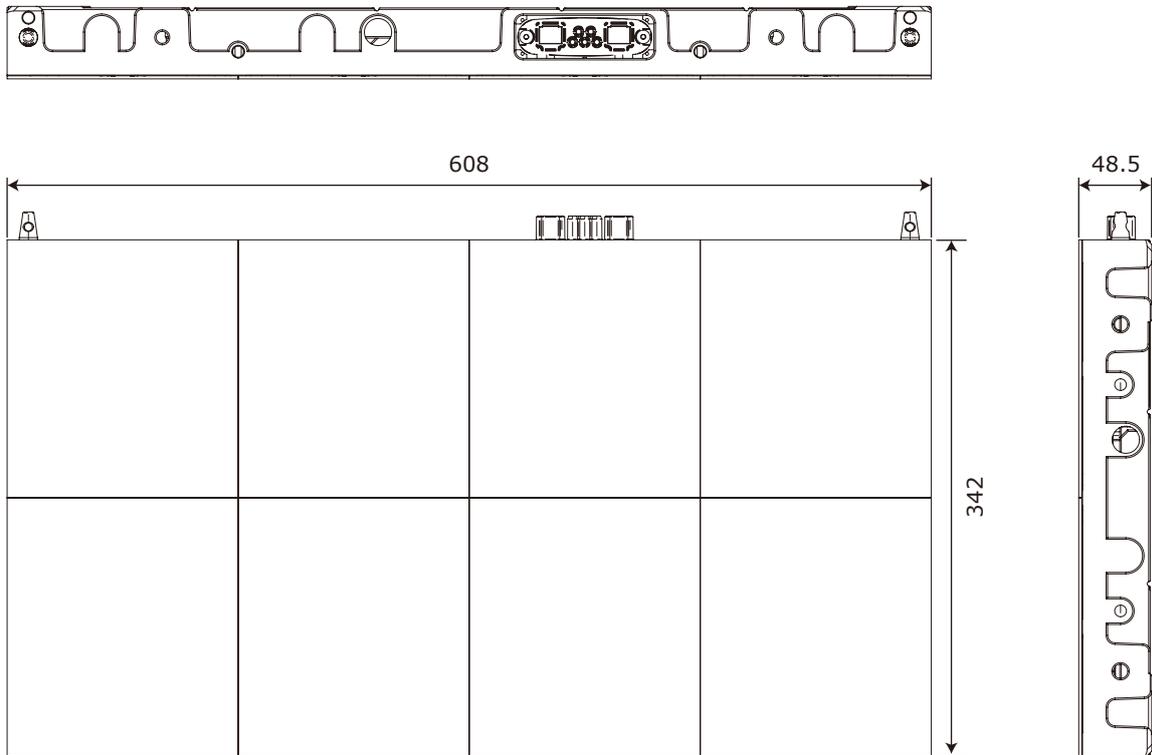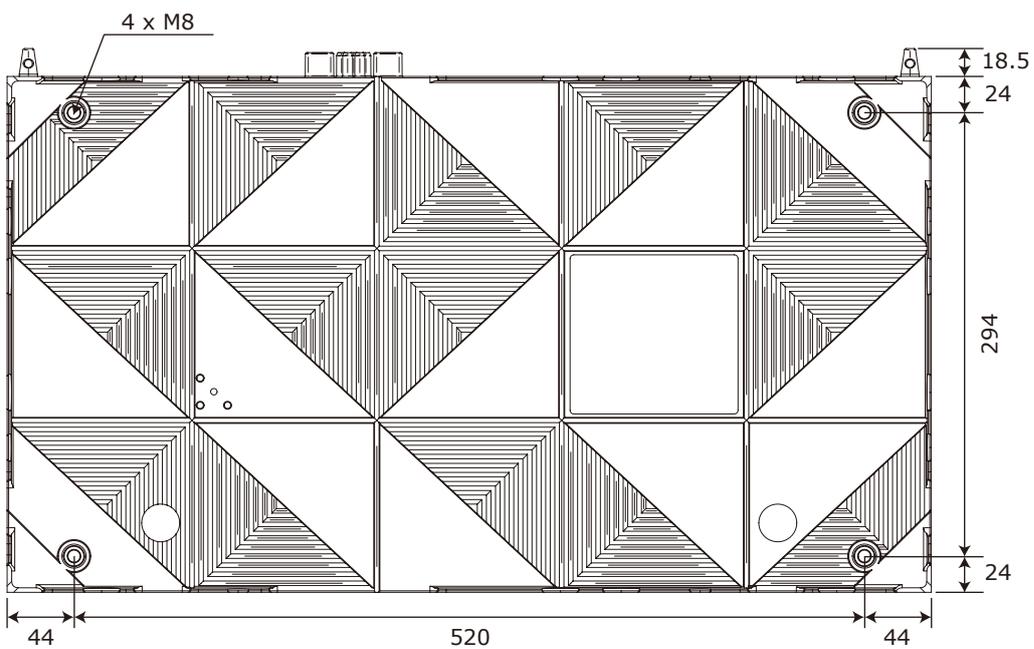
(Unit: mm)

LED-FC009i / LED-FC012i / LED-FC015i Adjustment plate

4-Φ5

8

35

35

6

(Unit: mm)