



Full-Color LED Display Unit

Quick Start Guide

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Preface

Applicable Models

This guide is applicable to full-color LED display units.

Symbol Conventions

The symbols that may be found in this document are defined as follows.

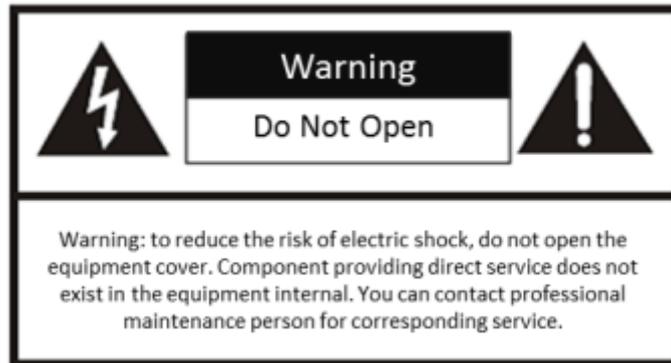
Symbol	Description
 Note	Provides additional information to emphasize or supplement important points of the main text.
 Caution	Indicates a potentially hazardous situation, which if not avoided, could result in equipment damage, data loss, performance degradation, or unexpected results.
 Danger	Indicates a hazard with a high level of risk, which if not avoided, will result in death or serious injury.

Safety Instructions

Caution

- The reduce the risk of fire or electric shock, please do not expose the device to rain or humid environment.
- The device may generate radio interference in indoor environment. Necessary precautions may be required.
- Electric discharge may last for a short period of time after the power is shut down. Please wait two minutes after the power is shut down before operating the device.
- To avoid the risk of electric shock, please do not operate when the power is on.
- Please do not plug and unplug the power cable when the power is on.
- Ensure correct voltage and wiring of the terminals for connection to mains supply.
- The device is only suitable for installation on the concrete or non-flammable surfaces, to prevent molten material from dripping to the bottom during fire caused by internal failure.
- Keep 90 degrees when moving and using the device.
- Do not place anything containing liquid on the device to avoid the risk of fire or electric shock caused by liquid-splashing.

- Install the device no more than 5 mm away from the wall or other metal racks in case of lamp board drop resulting in electric shock.
- After installation, there should be no openings around the LED module. The bottom bracket under the wire outlet position should completely cover the bottom hole only to let the wire out, to prevent the molten material from dripping to the bottom during fire caused by internal failure.
- To ensure safety, the installation parts and the wall should support four times the weight of the device.



 **Warning**

- In the use of the product, you must be in strict compliance with the electrical safety regulations of the nation and region.
- The device shall not be exposed to water dripping or splashing, and no objects filled with liquids, such as vases, shall be placed on the device.
- Provide a surge suppressor at the inlet opening of the device under special conditions such as the mountain top, iron tower, and forest.
- The protective grounding of the device should be reliably connected to the building protective grounding.
- Do not touch the bare components (such as the metal contacts of the inlets) and wait for at least 5 minutes, since electricity may still exist after the device is powered off.
- + identifies the positive terminals of the device which is used with, or generates direct current, and - identifies the negative terminal(s) of the device which is used with, or generates direct current.
- No naked flame sources, such as lighted candles, should be placed on the device.
- Install the device according to the instructions in Quick Start Guide.
- To prevent injury, this device must be securely attached to the installation surface in accordance with the installation instructions.
- Never place the device in an unstable location. The device may fall, causing serious personal injury or death.
- The additional force shall be equal to three times the weight of the device but not less than 50 N. The device and its associated mounting means shall remain secure during the installation.

After the installation, the device, including any associated mounting plate, shall not be damaged.

- The interface varies with the models. Please refer to the product datasheet for details.
- If the device needs to be wired by yourself, select the corresponding wire to supply power according to the electric parameters labeled on the device. Strip off wire with a standard wire stripper at corresponding position. To avoid serious consequences, the length of stripped wire shall be appropriate, and conductors shall not be exposed.
- Make sure that the power has been disconnected before you wire, install, or disassemble the device.
- If smoke, odor, or noise arises from the power supply or device, immediately turn off the power, unplug the power cable, and contact the service center.
- The equipment has been designed, when required, modified for connection to an IT power distribution system.
- NEVER place items that might tempt children to climb, such as toys and remote controls, on the top of the equipment.
- CAUTION: This bracket is intended for use only with LED display unit. Use with other equipment may result in instability causing injury.
- This device is suitable for mounting on concrete or other non-combustible surface only to avoid fire hazard.
- The power supply or device must be connected to an earthed mains socket-outlet.
- High voltage for the power supply. Do not disassemble it.
- An all-pole mains switch shall be incorporated in the electrical installation of the building.
- A readily accessible disconnect device shall be incorporated external to the equipment, rated 220/230/240 VAC, 6 A for each device. A single device is recommended for AC 220 V/ 230 V/ 240 V, 6 A circuit breakers. When multiple devices are superimposed, a suitable circuit breaker should be selected according to the total rated current, but it must not exceed the building equipped circuit specifications.
- To reduce the risk of electric shock, install protective shield on the exposed connector after installing LED screen.
- The power supply or device must be connected to an earthed mains socket-outlet.
- High voltage for the power supply. Do not disassemble it.
- CAUTION: This device is for use only with LED bracket. Use with other (carts, stands, or carriers) may result in instability causing injury.
- The device external wiring connected to the hazardous live terminals requires installation by an instructed person.
- To reduce the risk of electric shock, install protective shield on the exposed connector after installing LED screen.
- Disconnect the power plug before installing the protective shield.
- Disconnect the power plug before maintenance.
- Make sure the power supply is well-grounded.

- The external wire connection between device and hazardous electronic terminals should be operated by professionals.
- Please strictly follow the installation method in this guide.
- To prevent injury, the device must be securely fixed to the ground, wall, ceiling, or steel frame. The all-in-one rack should be fixed to the ground with expansion screws.
- The supporting rack can only be used with the device. Using it with other devices may cause instability and injury.
- The device can only be used with the supporting rack. Using it with other equipment (such as a cart, shelf, or handling device) may cause instability and injury.
- This is a class A product and may cause radio interference in which case the user may be required to take adequate measures.

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Chapter 1 Product Introduction

1.1 Overview

A full-color LED display unit (hereinafter referred to as the device, the product, or the LED) is a large display panel that uses an array of light-emitting diodes as dot matrix modules or pixels for information display. It has a very small pixel pitch, which indicates the shortest distance between the centers of two pixels, helping to realize the nearly seamless splicing of screens. With clear and vivid visual presentation of colors, stable performance, long service life, strong adaptability, and cost-effective, the full-color LED display unit can be widely applied to scenarios such as radio and television broadcasting, video surveillance, conference display, and information display.

1.2 Product Components

An LED control system includes sending and receiving cards. The sending card packages images and sends them to the receiving card. The receiving card unpackages and processes the images, and then displays the images on the LED display unit.

Chapter 2 Rack Installation

2.1 About Rack

There are two types of racks for installing our full-color LED products: all-in-one rack and wall-mounted rack. The wall-mounted rack is used for installing front-maintenance cabinets only. The all-in-one rack can be used for installing front-maintenance cabinets and back-maintenance cabinets.

2.2 Install the Rack

2.2.1 Precautions

- Installation personnel must wear protective gear.
- Take safety measures when working at heights.
- Make sure that the rack is mounted vertically to the flat ground without tilting or twisting.
- Check that all structural parts and fasteners are fully mounted without missing.
- After all the accessories are mounted, clean all the metal debris in the rack.

2.2.2 Install the Wall-Mounted Rack

Install the Base Frame

Use expansion bolts to fix the base frame onto the wall to keep the base frame level.



Figure 2-1 Fix the Base Frame

Install the Rack Frame

Put the rack frame on the base frame and use expansion bolts with 10 × 110 mm to fix rack frame and base frame onto the wall. Install the rack frames one by one and ensure that the rack frames are vertical to the ground.

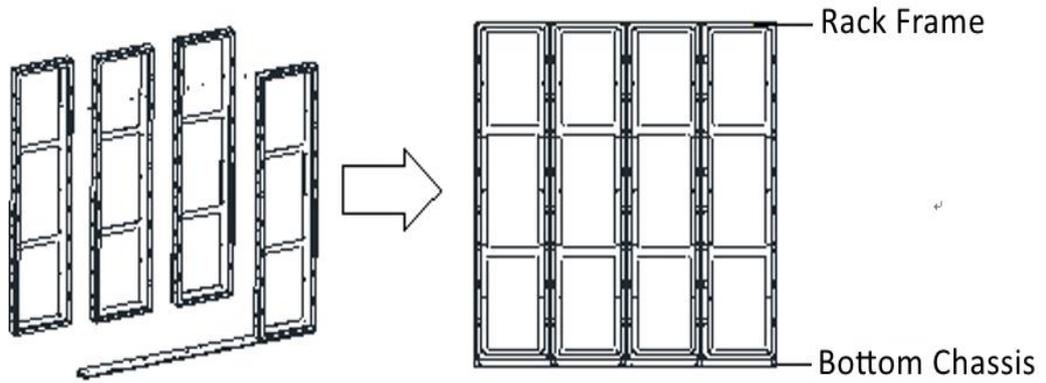


Figure 2-2 Assemble the Wall-Mounted Rack

Install Front-Maintenance Cabinets

Steps

1. Install the mounting screws through the holes on the front of the cabinet and lock with the floating nuts on the bracket frame.

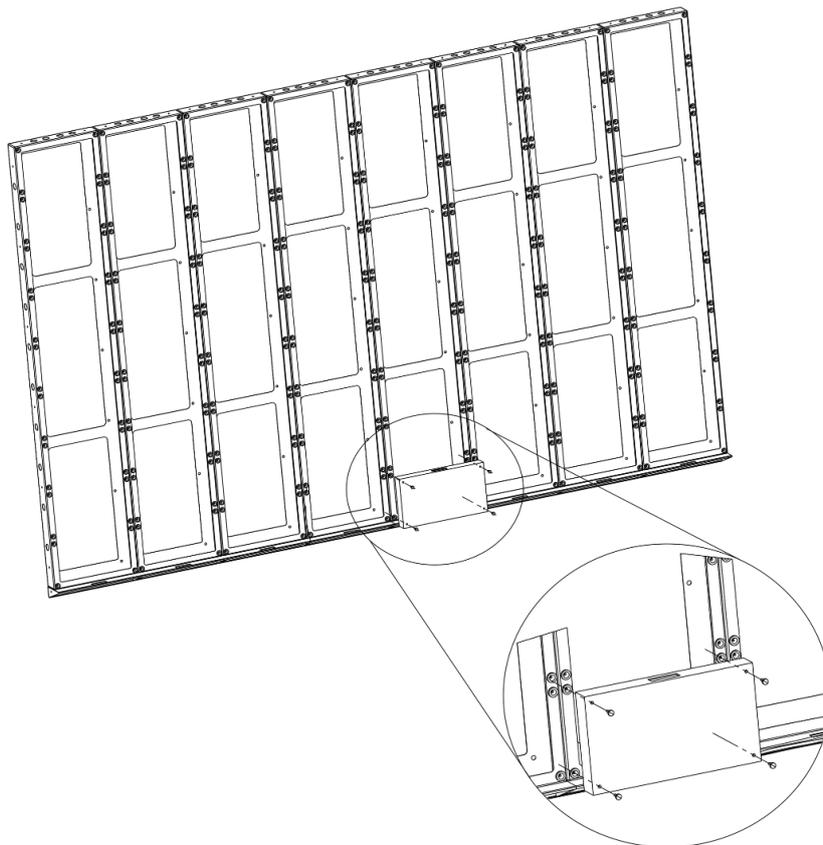


Figure 2-3 Fix the Screen

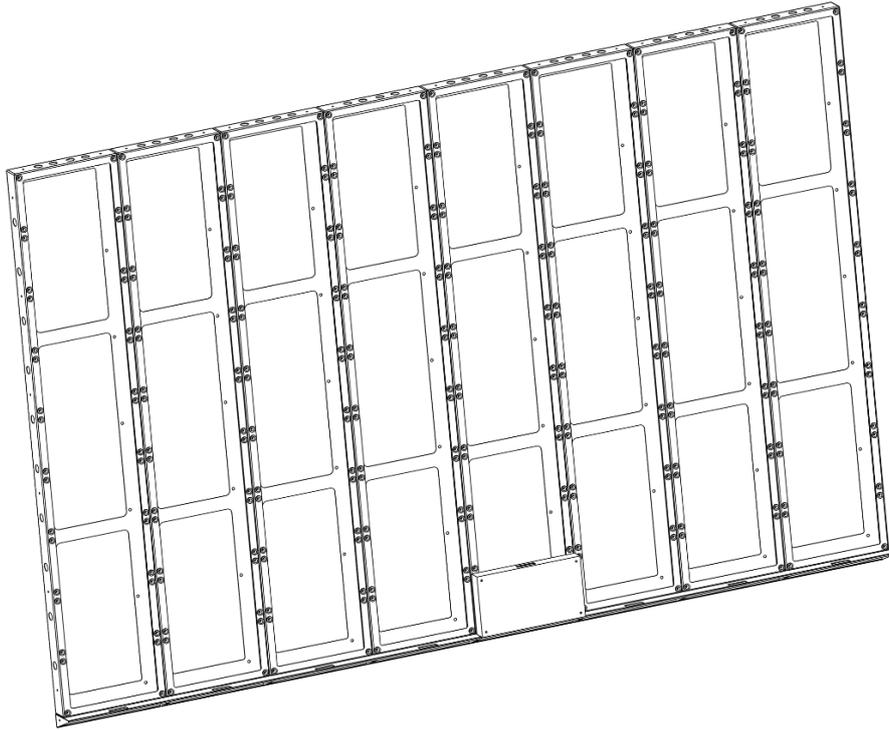


Figure 2-4 Screen Fixed

2. Install the cabinets from the center to both sides until cabinets of the first row installed.

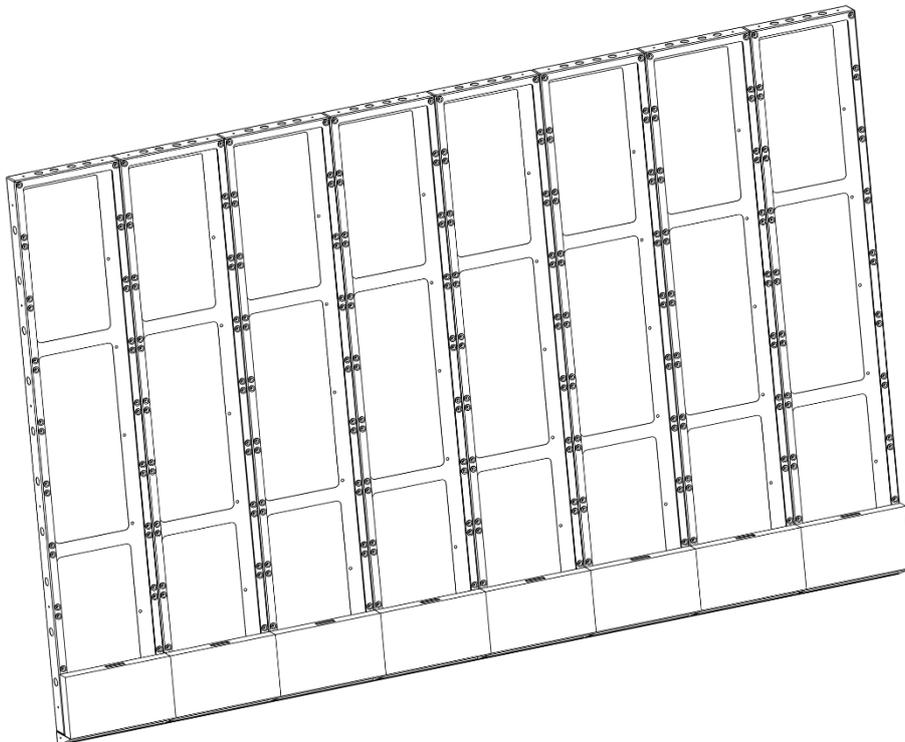


Figure 2-5 Screens Fixed

3. Install the cabinets in the above rows from bottom to top and use a level to measure and ensure that the cabinets are flat and vertical after installation.

 **Note**

- Do not fix the screws between the connectors and cabinets too tight for future adjustments.
- Pay attention to the leveling of frames and front lamp boards also need to be fine-tuned according to the actual situation to ensure that lamp boards are adjusted horizontally and seams are even and the joint distance is within the required range.

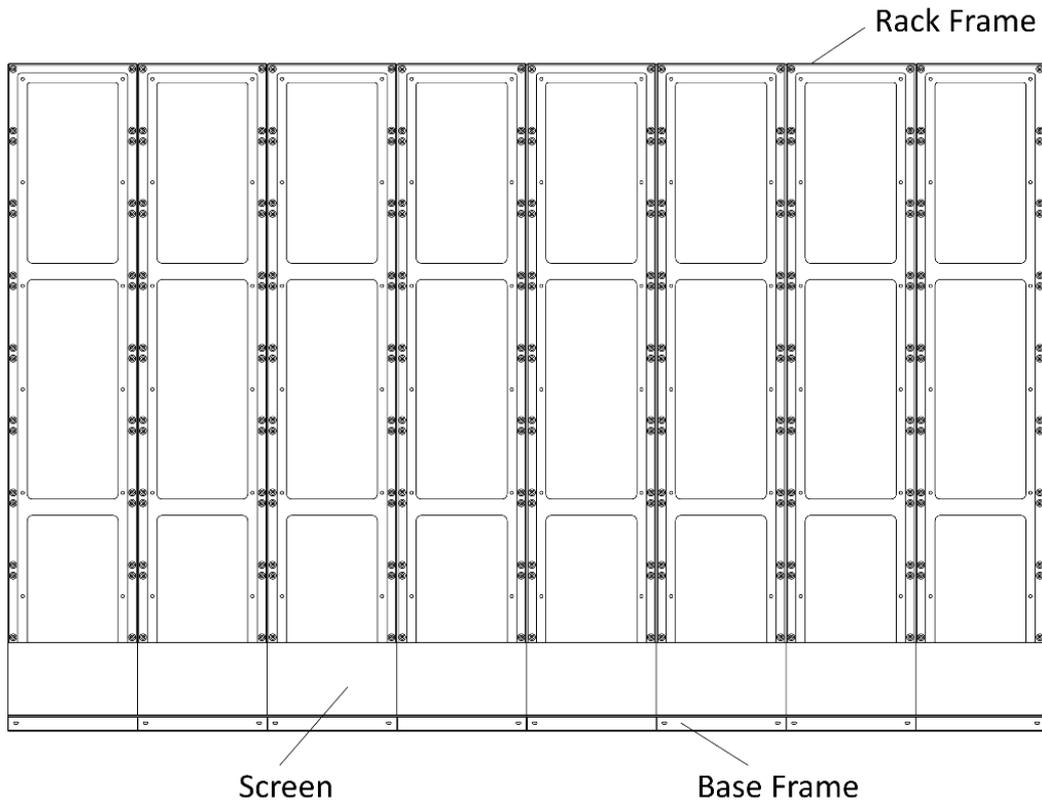


Figure 2-6 Screens of the First Row Fixed

 **Note**

- For details about cabinet stitching, see 3.2.2 Stitch Cabinet Frames.
- For details about lamp boards installation, see 3.2.3 Stitch Lamp Boards.

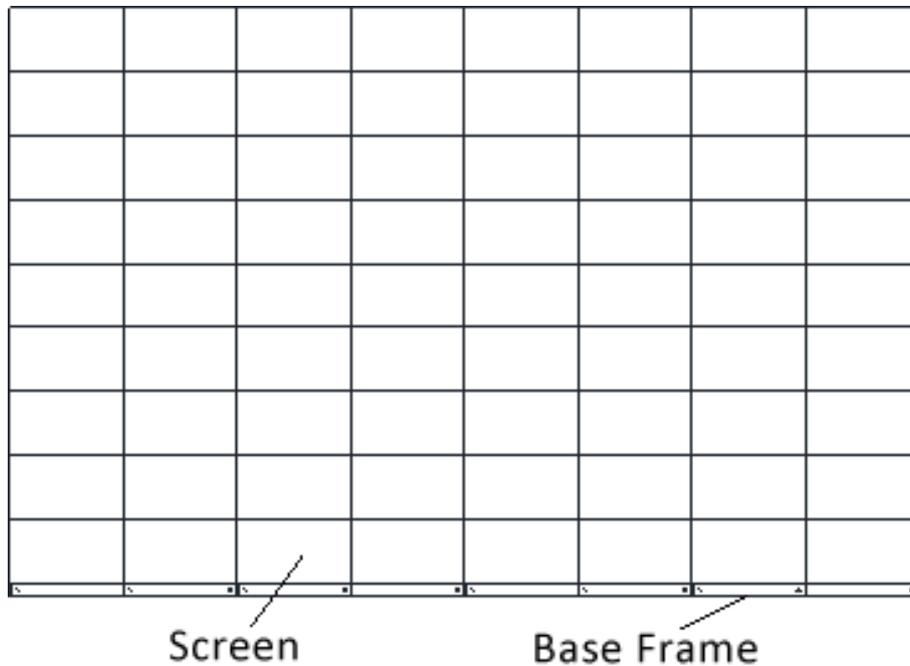


Figure 2-7 Screen Installation Finished

 **Note**

- Install the device no more than 5 mm away from the wall or other metal racks in case of lamp board drop resulting in electric shock.
- After installation, there should be no openings around the LED module. The bottom bracket under the wire outlet position should completely cover the bottom hole only to let the wire out, to prevent the molten material from dripping to the bottom during fire caused by internal failure.
- To ensure safety, the installation parts and the wall should support four times the weight of the device.

2.2.3 Install the All-in-One Rack

Install the Bottom Chassis

Steps

1. Fix the anchor bolts to the bottom chassis and stitch the bottom chassis.

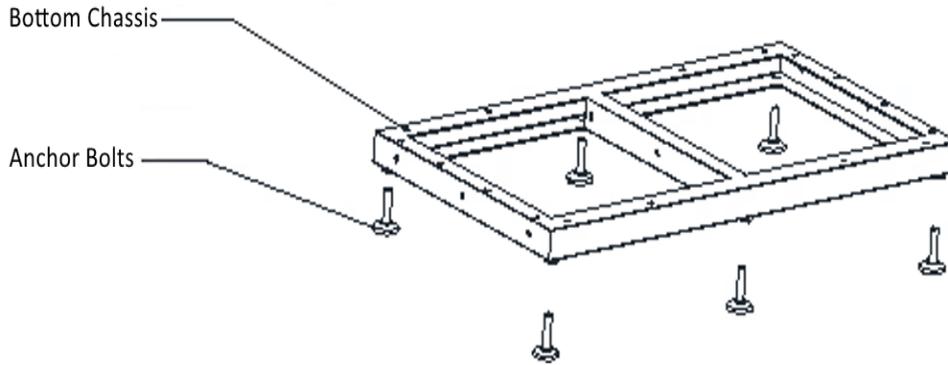


Figure 2-8 Stitch the Bottom Chassis

2. Level the bottom chassis and then tighten the bolts.



Figure 2-9 Level the Bottom Chassis

 **Note**

If you want to fix the all-in-one rack, insert 10 × 110 mm expansion bolts to fasten the rack frame.

Install the Rack Frame and Base Frame

Steps

1. Position the rack frame into the bottom chassis and then fasten the rack frame.

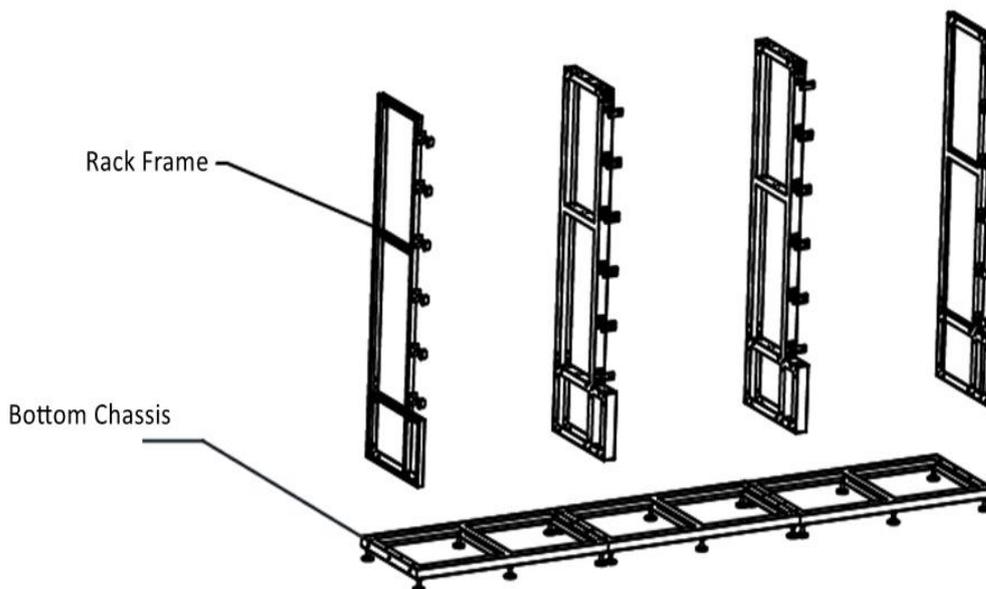


Figure 2-10 Fix the All-in-One Rack Frame

2. Fasten the bottom base frame into the bottom chassis and rack frame respectively.

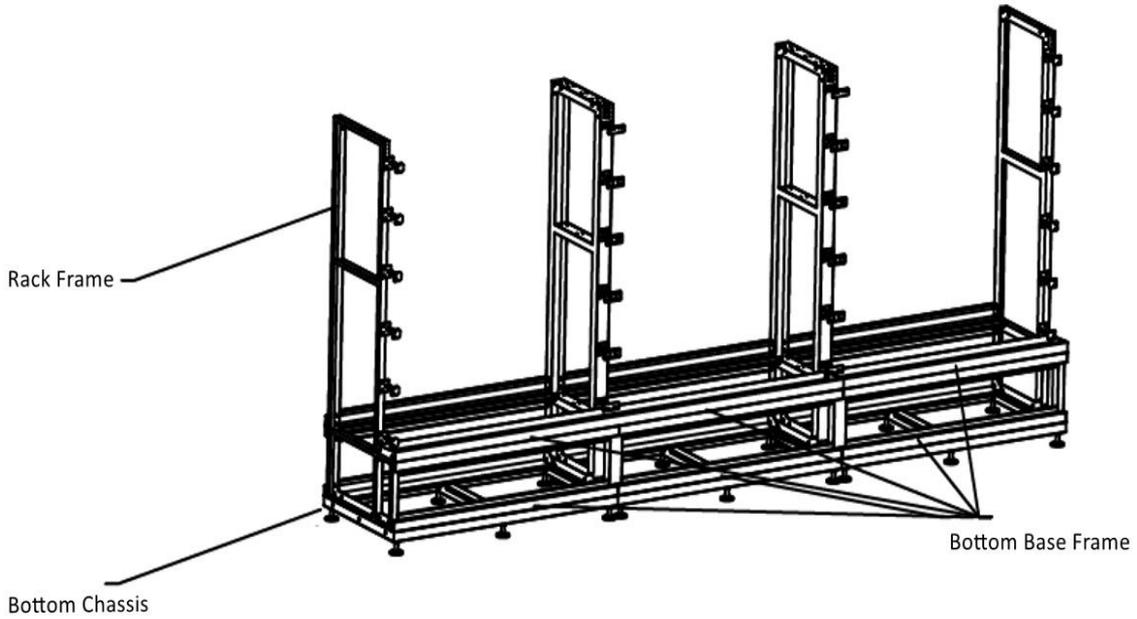


Figure 2-11 Fix the Bottom Base Frame

3. Connect the top base frame with rack frame and tighten the bolts.

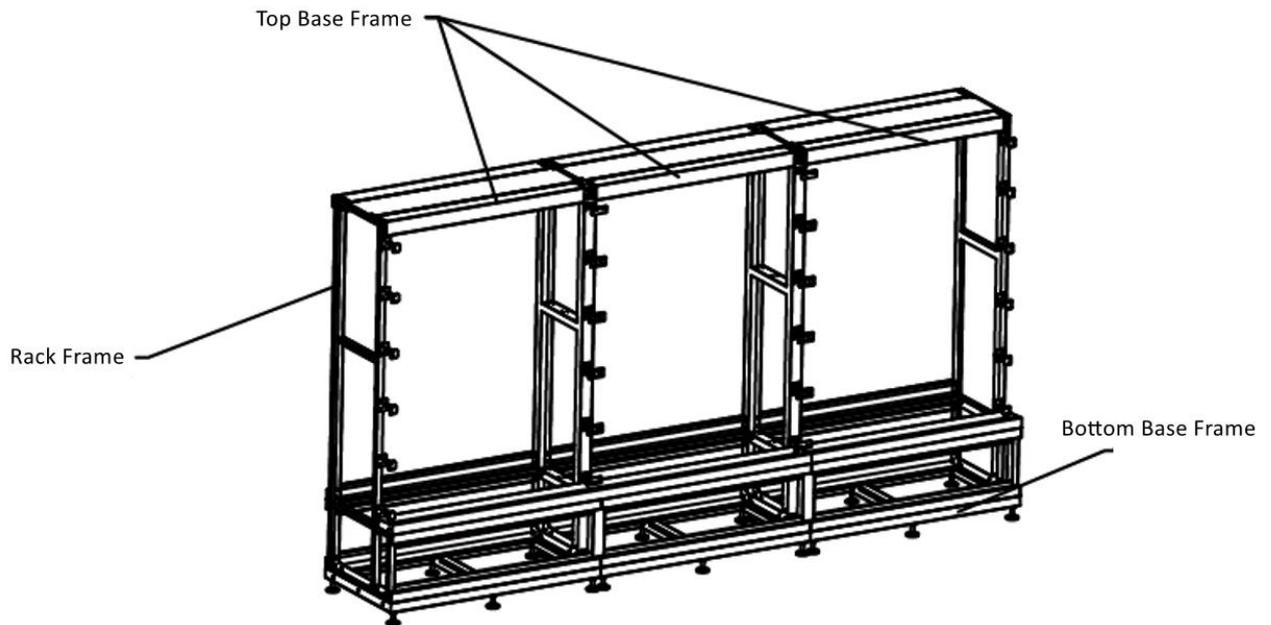


Figure 2-12 Fix the Top Base Frame

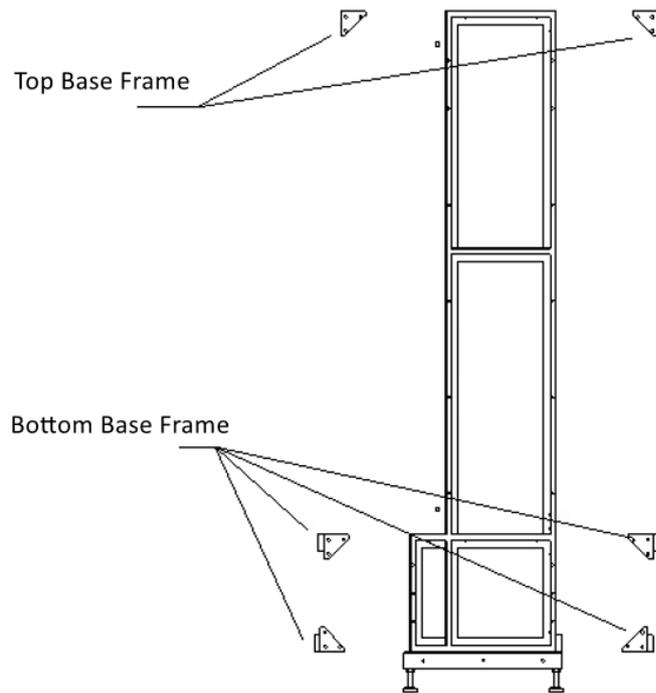


Figure 2-13 Side View of Base Frames Installation (Top and Bottom)

Install the Bottom Filler Strip

Steps

1. Connect the filler strips with the rack frames according to the length and fix with the screws.
2. Tighten the screws after the installation is flush.

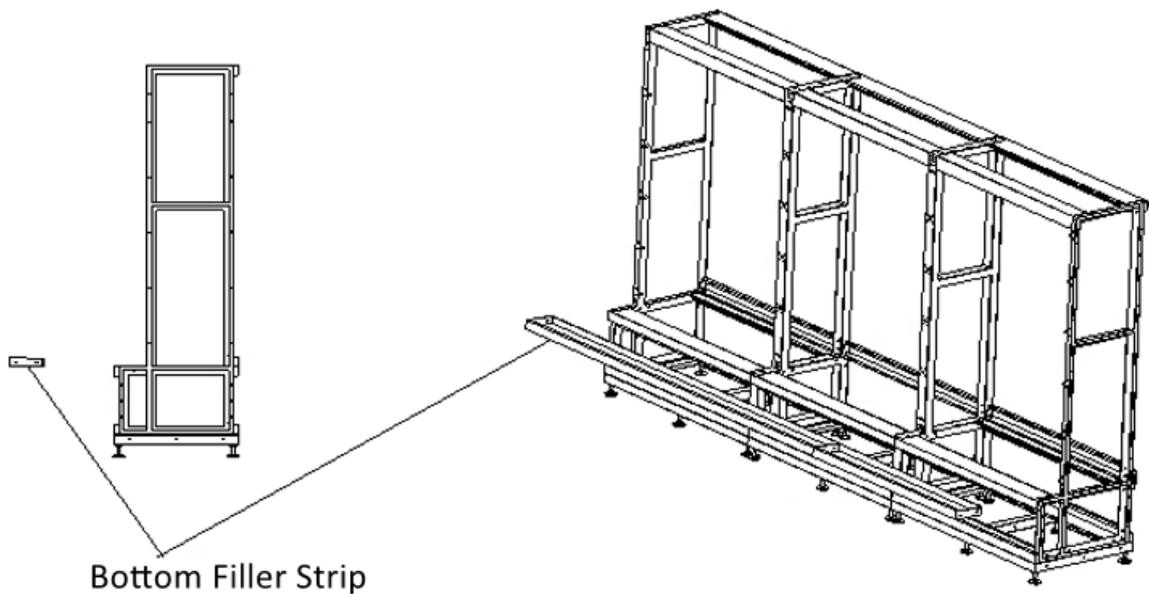


Figure 2-14 Install the Bottom Filler Strip

Install the Connectors

Connector can be divided into three types: left and right, top and bottom, central connectors.

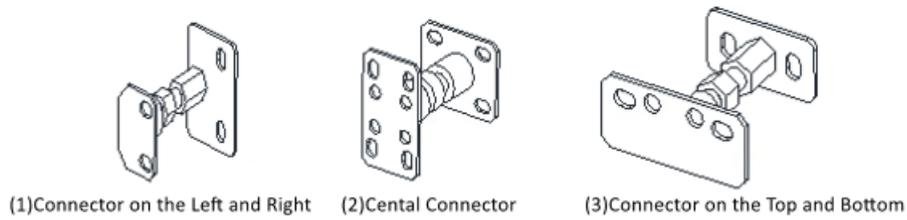


Figure 2-15 Connectors

Steps

1. Install the connectors on the rack frames according to the corresponding position.
 - The left and right connectors are installed on the both sides of the rack frames.
 - The central connectors are installed in the middle of the rack frames.
 - The top and bottom connectors are installed on the both ends of the central rack frames.

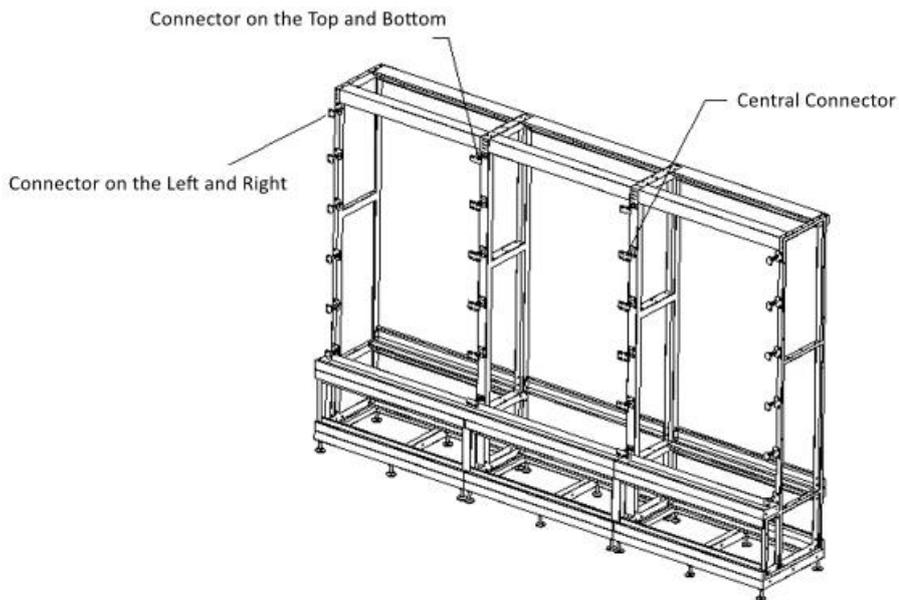


Figure 2-16 Install the Connectors

2. Use screws to connect rack frames and connectors and tighten the screws.

Install the Screen

Steps

1. After the rack frames are installed, use a lifting hammer to measure whether each part is vertical or not and ensure that those are on the same level.
2. Fasten the connectors on the vertical rack frames of the screen in accordance with the

requirement of locating size of the cabinet installation.

3. The screen adjacent to the connector is threaded through the connector using screws and secured to the fixing holes on the back of the screen. The screens that are not connected to the connectors are fixed with joint pieces.

Note

- The screens should be fixed from the bottom to top and from the middle to both sides.
- The screen should be concave 3 mm inward than the lower filler strip.

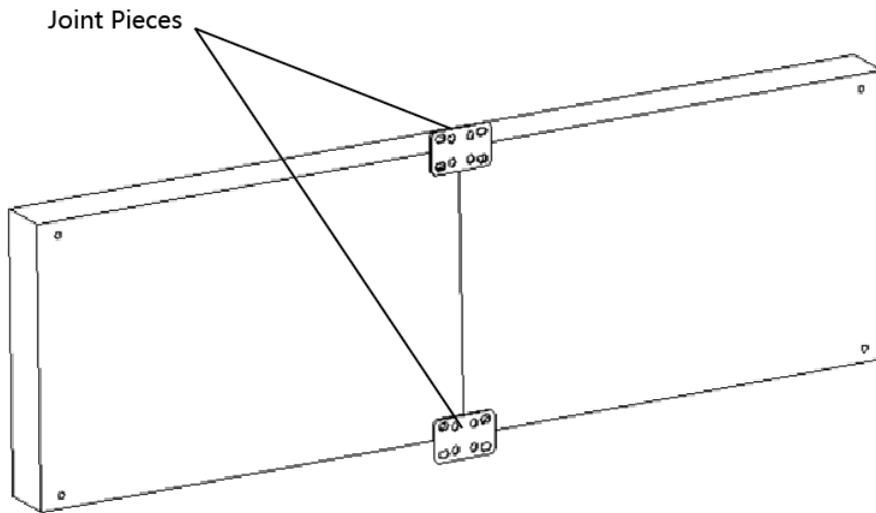


Figure 2-17 Fix the Screen with the Joint Pieces

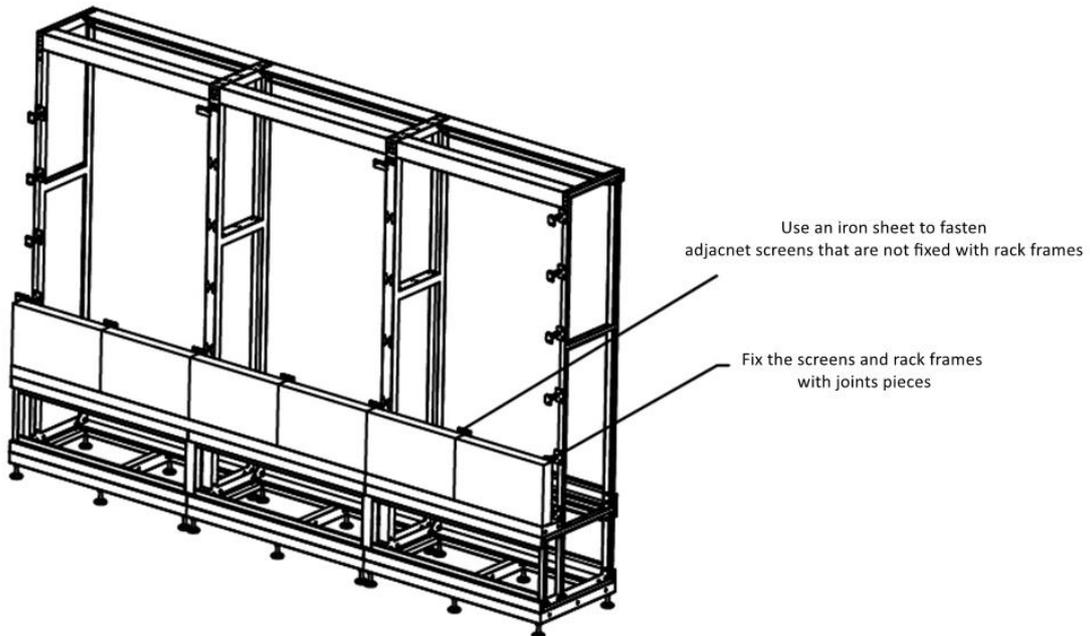


Figure 2-18 Lower Screen Installed

4. Install the first cabinet from the lower middle part. Use a level to measure and ensure that the cabinets are flat and vertical. Level and secure the cabinet to the connectors on the rack frame. For the screens do not have connectors near the rear, use joint pieces to fix.

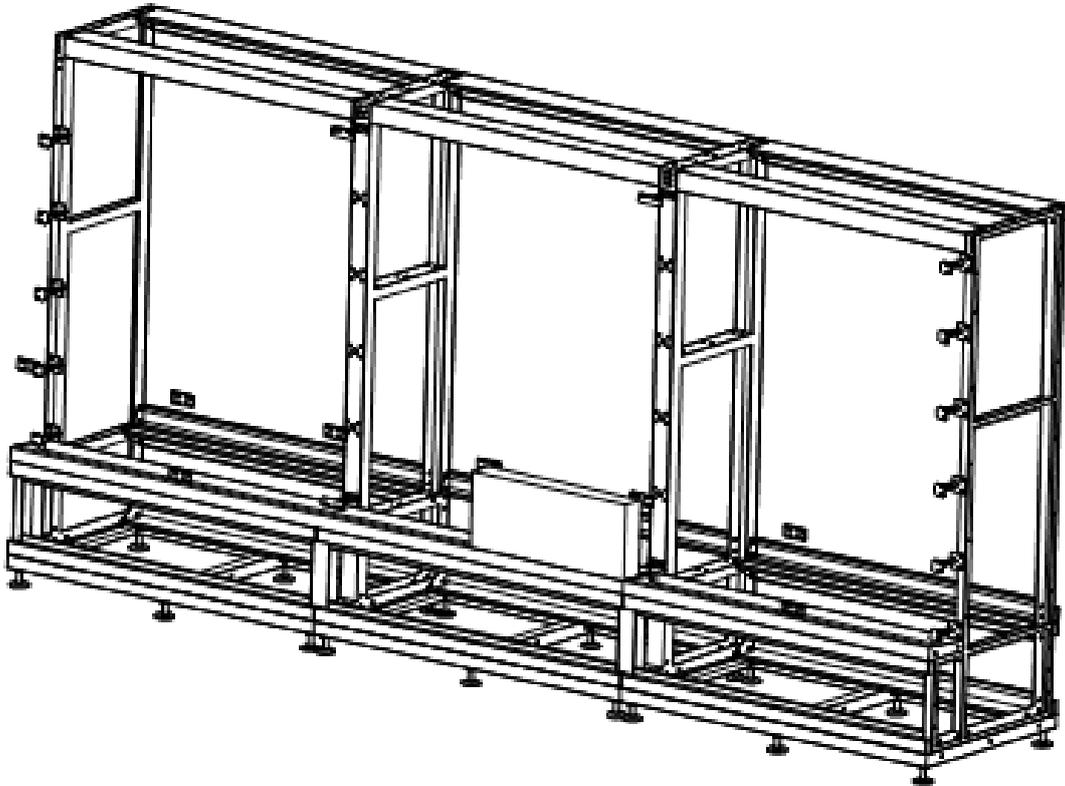


Figure 2-19 Install the Screen in the Middle of the Rack Frame

 **Note**

- Do not fix the screws between the connectors and cabinets too tight for future adjustment.
 - In normal cases, you should lock out LED lamp boards after they are adjusted horizontally and vertically because the boards will probably be moved during the installation of other lamp boards.
 - Ensure that the screen is flat and without evident gap. Otherwise, make some adjustments.
5. Install the cabinets from the middle to the sides to finish the installation of cabinet in the first row.

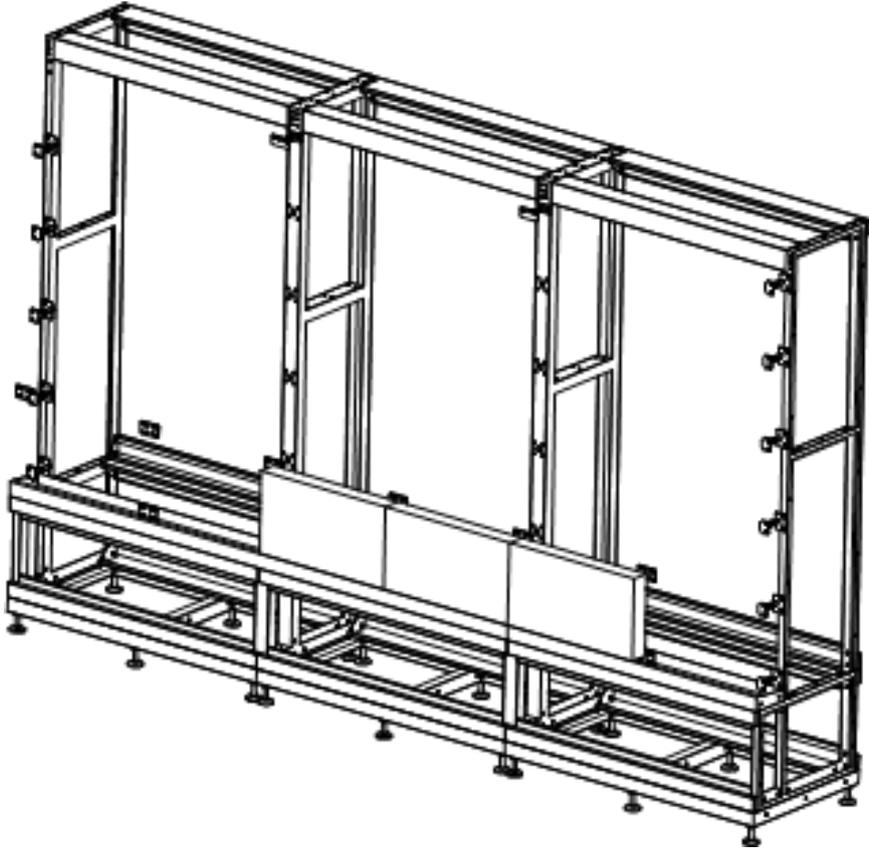


Figure 2-20 Install the Screen from the Middle to Both Sides

6. Use a level to measure and ensure that the cabinets are flat and vertical.

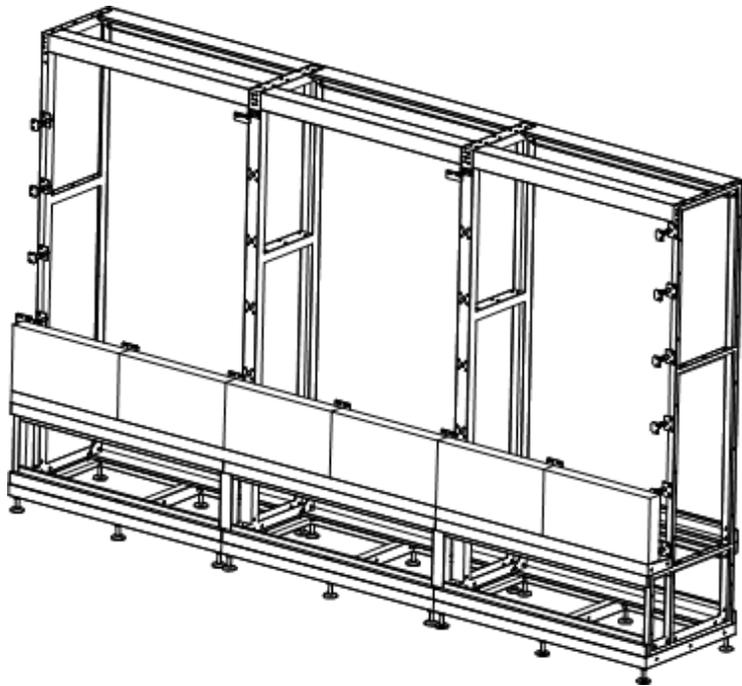


Figure 2-21 Fix the Screens

 **Note**

When there is a deviation in height, simply place a thin iron sheet under the bottom. Do not try to resolve the deviation by hitting the cabinets on the top because it will result in larger deviation later.

7. Repeat the above steps to complete the installation of other cabinets.

Ensure that all the cabinets are flat and vertical and the seams between the cabinets are even. Then tighten the anchor bolts to complete the installation.

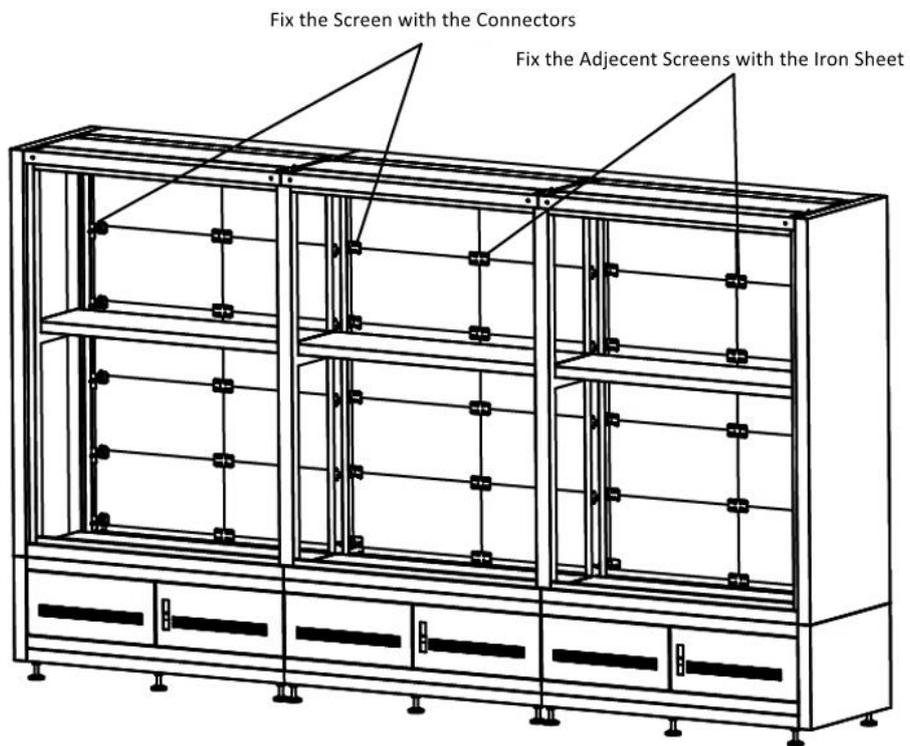


Figure 2-22 Fix the Screen

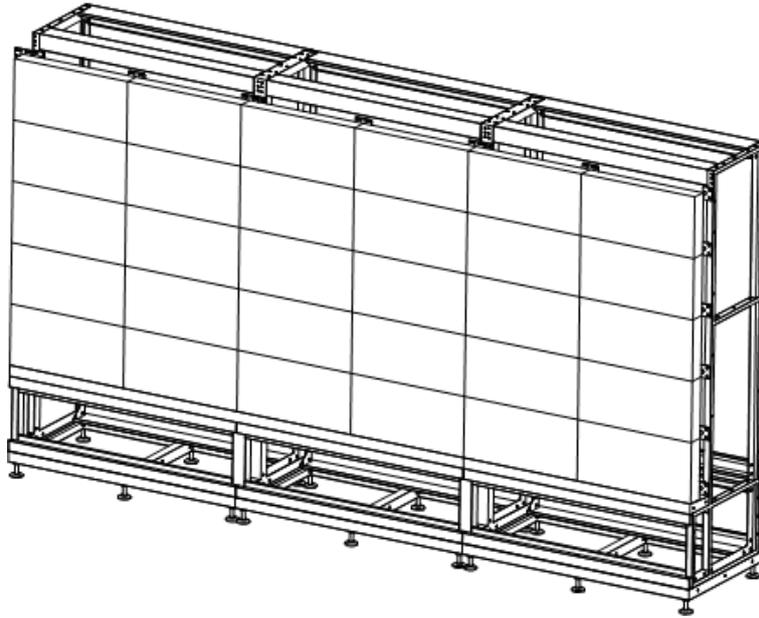


Figure 2-23 Screen Installation Finished

 **Note**

- For details about cabinet stitching, see ***Stitch Cabinet Frames***.
- For details about lamp board installation, see ***Stitch Lamp Boards***.

Install the Top Filler Strip

Steps

1. Connect the filler strips with the rack frames according to their length and fix them with screws.
2. Tighten the screws after the installation is level.

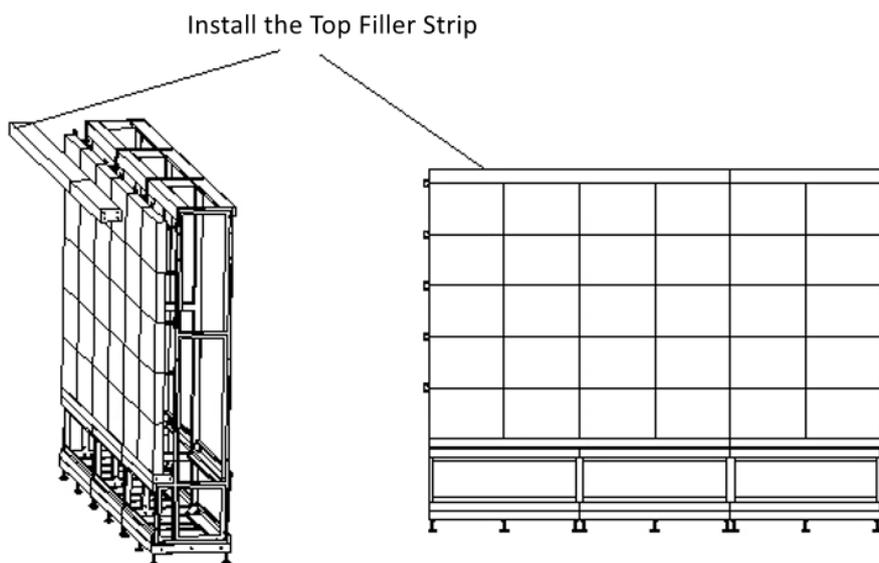


Figure 2-24 Install the Top Filler Strip

Install the Aisle Pedals (for Large-scale Projects)

Steps

1. Put the aisle pedals on the middle of the rack frames.
2. Use the screws to connect the aisle pedals with the rack frames and then tighten the screws.

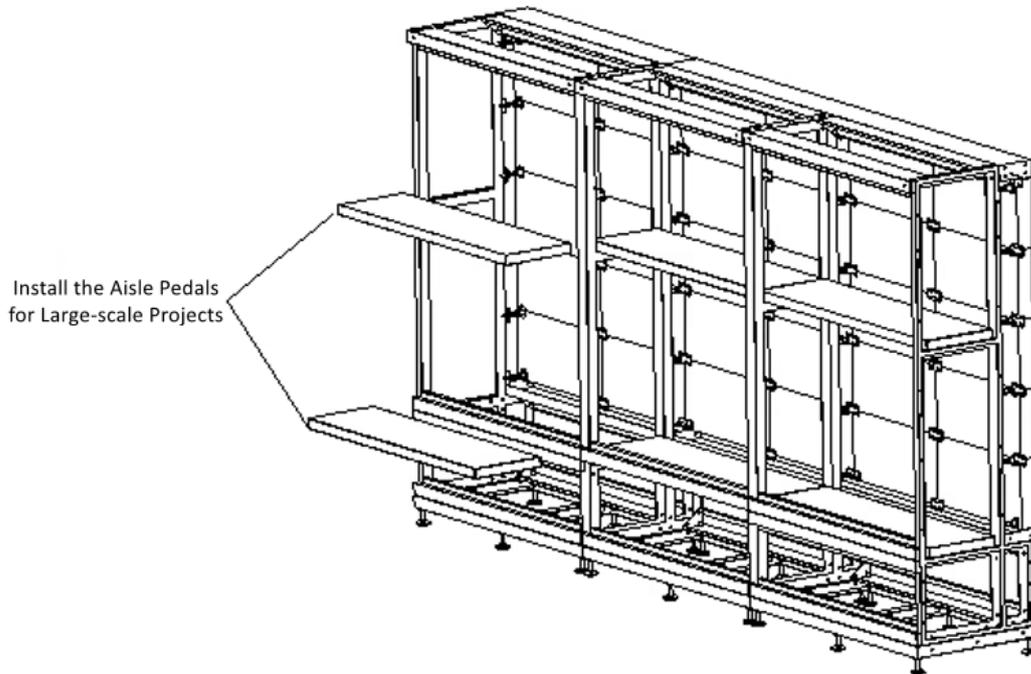


Figure 2-25 Fix the Aisle Pedals

Note

If the splicing scale of the screen is too high, install the aisle pedals first for the convenience of screen installation.

Install the Cover Plates

Install the left cover plates, right cover plates, front cover plates, back cover plates, and top cover plates respectively.

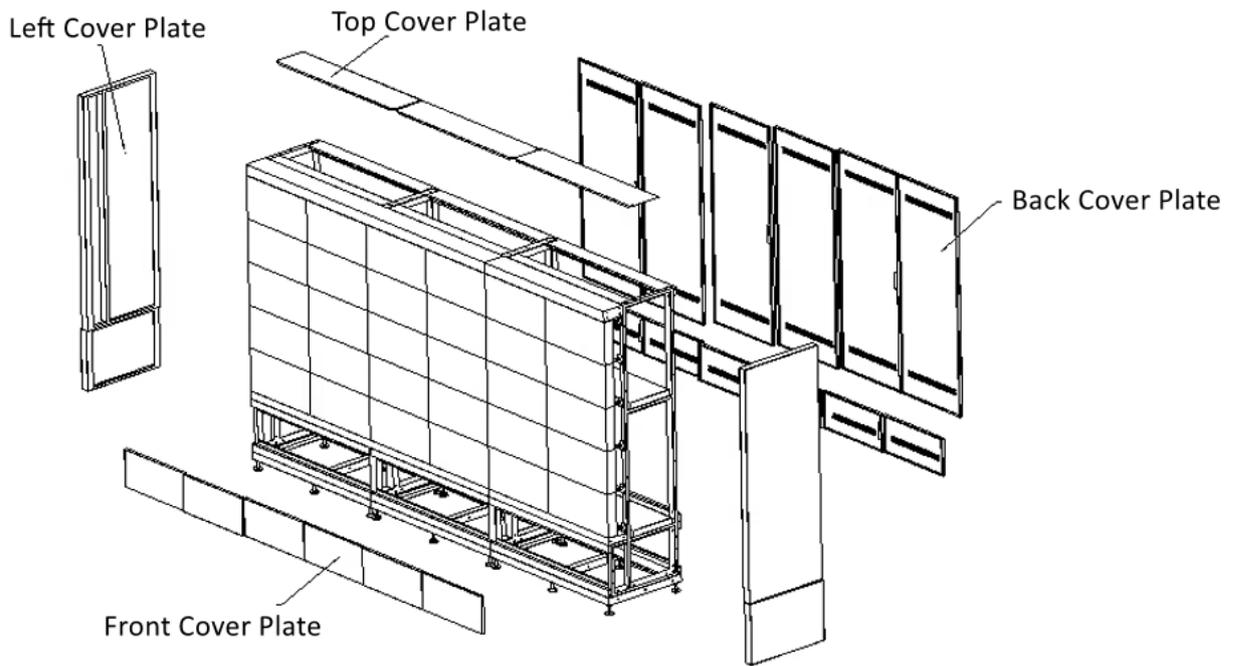


Figure 2-26 Fix the Cover Plates

The figure shows as follows after the installation is finished.

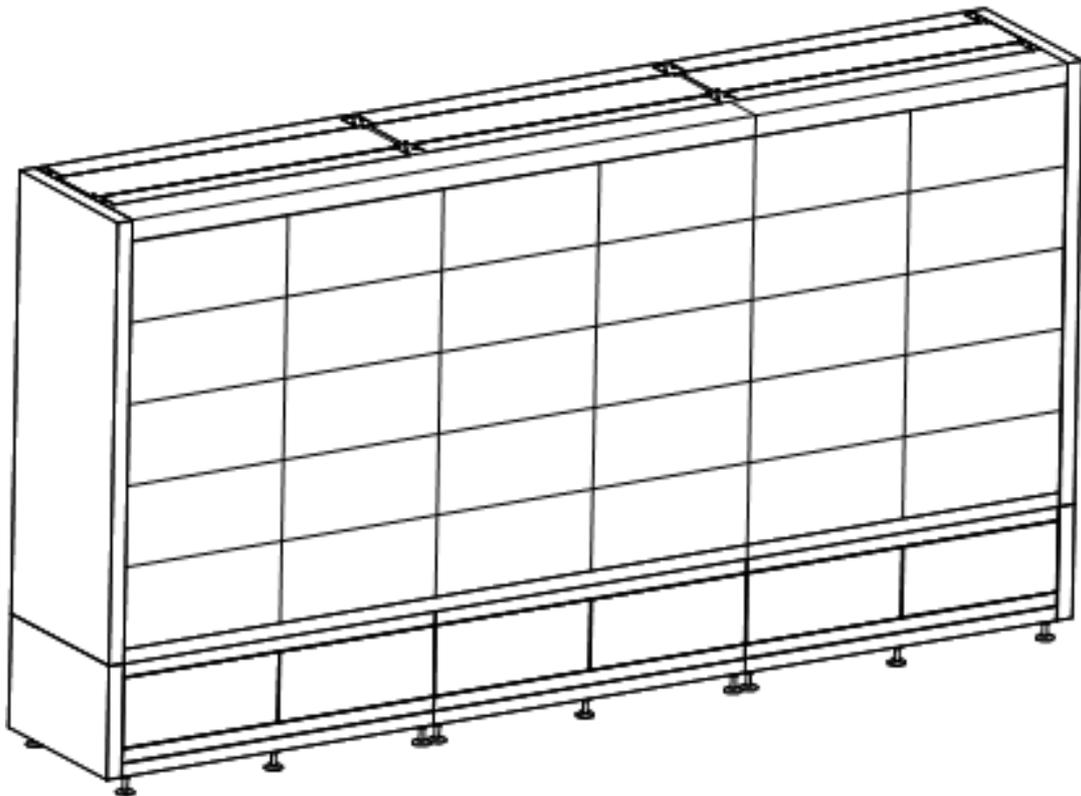


Figure 2-27 Screen Installation Finished

 **Note**

- Install the device no more than 5 mm away from the wall or other metal racks in case of lamp board drop resulting in electric shock.
- The all-in-one rack should be fixed to the ground with expansion screws.
- The device is only suitable for installation on the concrete or non-flammable surfaces, to prevent molten material from dripping to the bottom during fire caused by internal failure.

Chapter 3 Cabinet Installation

3.1 Introduction

3.1.1 About Cabinet

A cabinet is a basic unit for LED engineering installation in which LED modules are neatly mounted on a metal sheet (cast aluminum) box, with a built-in independent receiving card and switching power supply, an engineering installation structure, and independent display.



Note

Because the product has different models, the following description takes one model as an example. The actual model prevails when the product is not marked.

3.1.2 Load Capability of Cabinet

Load Capability of Network Interfaces

The load capability of a single network interface of the sending card is limited. You can calculate the max load of a single network interface by the following formula.

$$\text{Max Load of a Network Interface} = \text{Pixel Capacity of a Network Interface} / \text{Cabinet Resolution}$$

Example

If equipped with a sending card of 650,000 pixels, the max load of a single network interface for a P1.2 cabinet of 480 × 270 resolution is 5 cabinets.



Note

- The load capability of a single network interface can be calculated by the following formula.
- If the 3D function is enabled or a 10-bit single network port is connected, the load capacity will drop.

$$\text{Max Load of a Network Interface} = 125 \times 10^6 \times 94.8\% / A / B / \text{Cabinet Resolution}$$

A indicates the bit depth of the access image, such as access to an 8-bit image, A=3, access to an 10-bit image, A=4. B indicates the refresh rate of the signal source, such as access to a 60 Hz signal source, B=60, access to 3D image, B=120.

Load Capability of Power Cords

The load capability of a single power cord is limited. You can calculate the max load of a single power cord by the following formula.

$$\text{Max Load of a Single Power cord} = \text{Power of the Cord} / \text{Power of the Cabinet}$$

Note

You can choose power cords and cabinets of different specifications, and calculate the load capability by the formula.

3.2 Install Cabinet

3.2.1 Precautions

Read the following precautions before you install the device:

- Electric discharge may last for a short period of time after the power is shut down. Please wait two minutes after the power is shut down to operate the device.
- Only use the original power cord delivered with the device. Contact authorized dealer to purchase power cord with same specifications.
- Please do not frequently plug or unplug the power cord when the power is on.
- To reduce the risk of fire or electric shock, please do not expose the device to rain or humid environment.
- Avoid humid or high-PH environment to prevent damage to the LED lamps.

3.2.2 Stitch Cabinet Frames

Locate Cabinet Frame

Align two cabinet frames with the locating studs, locating holes, and installation holes. Each cabinet frame is equipped with two vertical locating studs, two vertical locating holes, and two sets of horizontal installation holes.

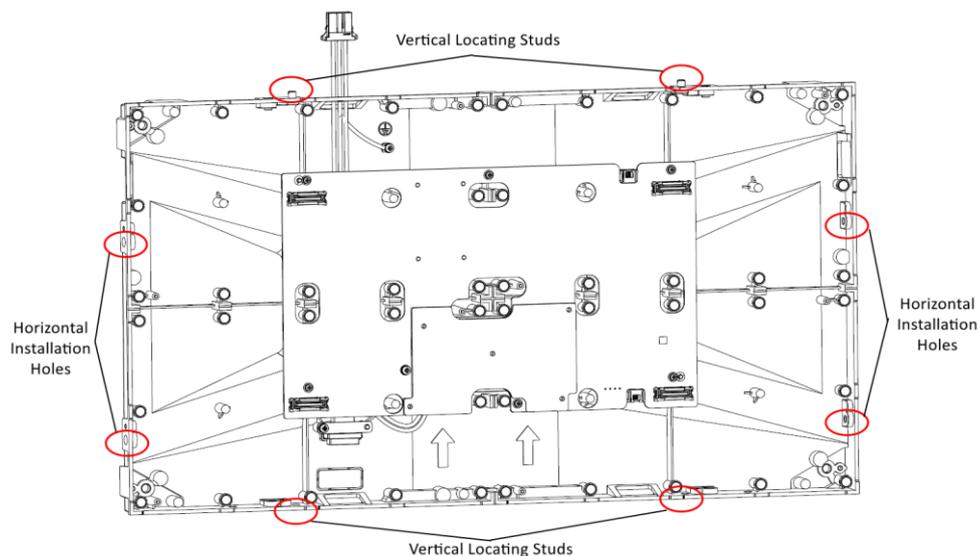


Figure 3-1 Locating Studs, Locating Holes and Installation Holes

Stitch Cabinet Frames Horizontally

Steps

1. Align the installation holes in the horizontal direction of the two adjacent cabinet frames, and adjust the cabinet frames to the relative height.

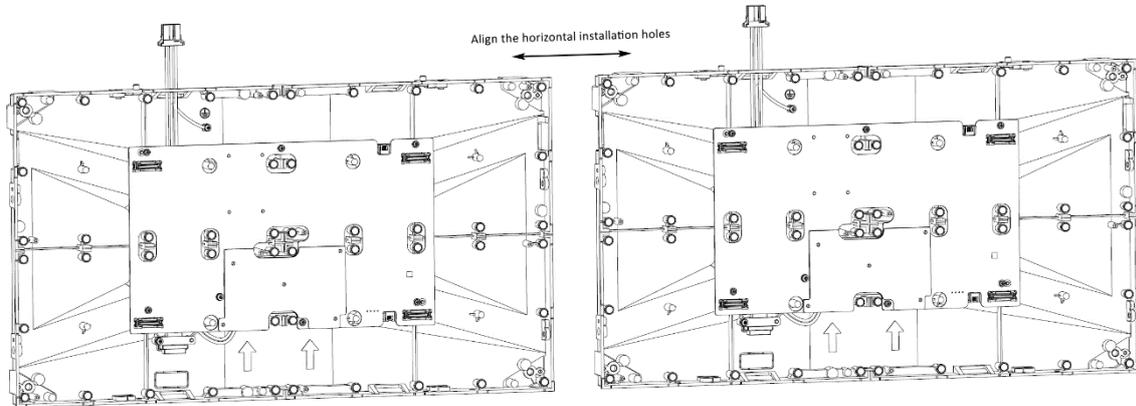


Figure 3-2 Align the Horizontal Installation Holes

2. Insert two M6 hex screws into the installation holes from right to left only. Do not fasten the screws with nuts.

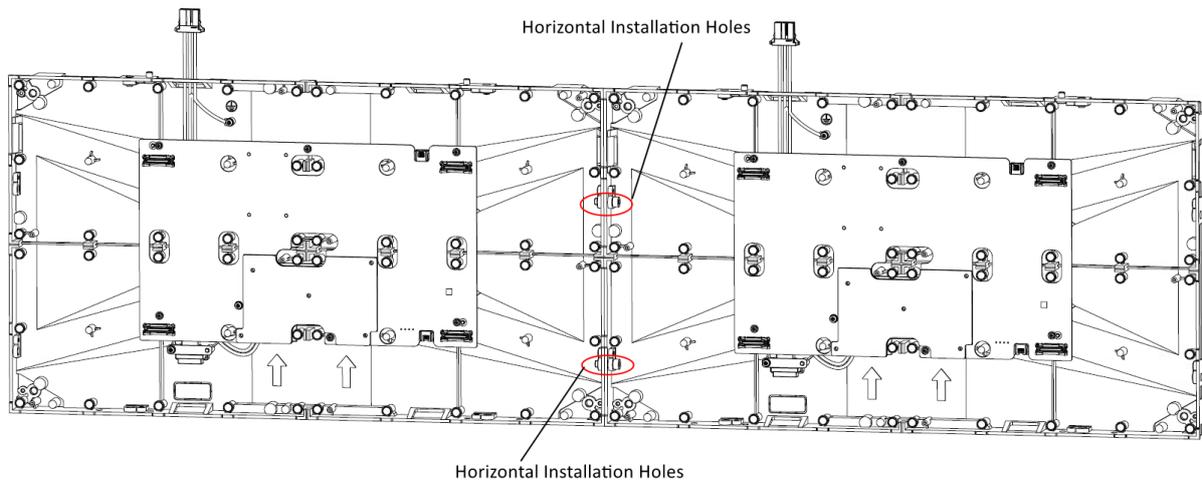


Figure 3-3 Stitch Cabinet Frames Horizontally

Stitch Cabinet Frames Vertically

Steps

1. Align the locating studs in the vertical direction of the two adjacent cabinet frames to the

locating holes, and adjust the cabinet frames to the relative level.

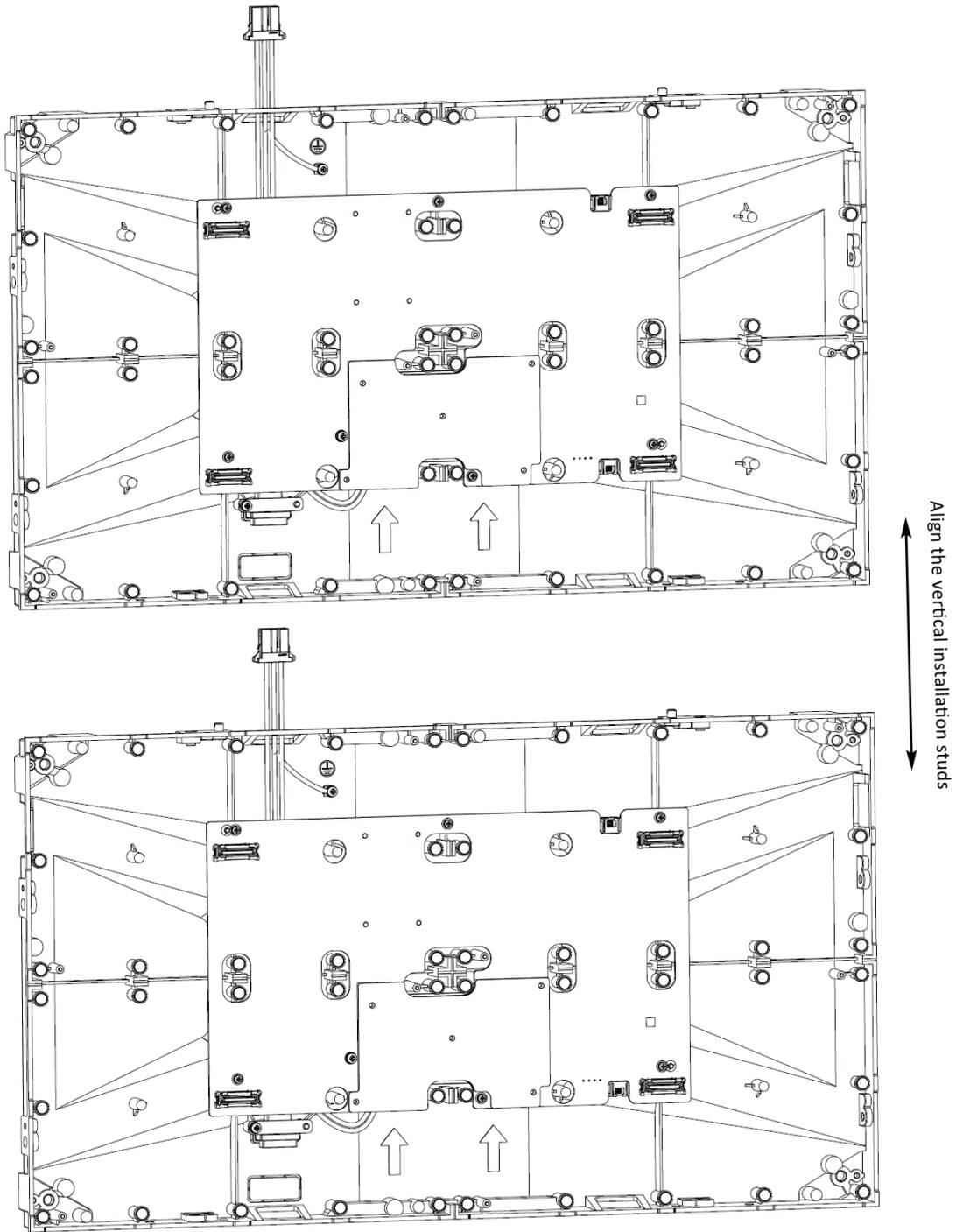


Figure 3-4 Align the Locating Holes to the Locating Studs Vertically

2. Insert two M6 hex screws into the installation holes from down to up only.

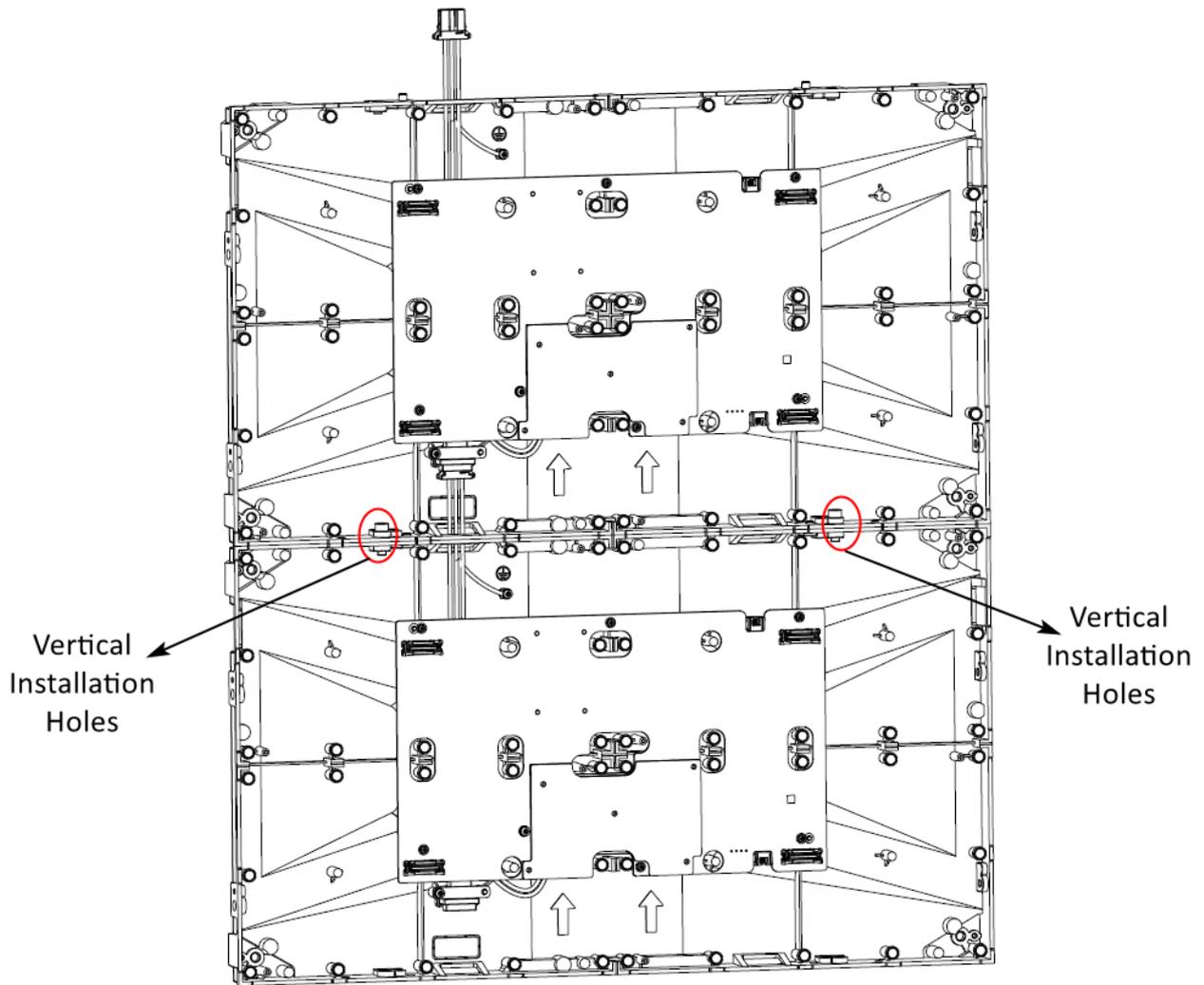


Figure 3-5 Stitch Cabinet Frames Vertically

After the horizontal and vertical stitching, a LED display unit stitching is completed.

Stitch Cabinets

Steps

1. Install the self-locking screws and do not fasten the screws.
2. Use the connectors to fix the cabinets and fasten the self-locking screws.

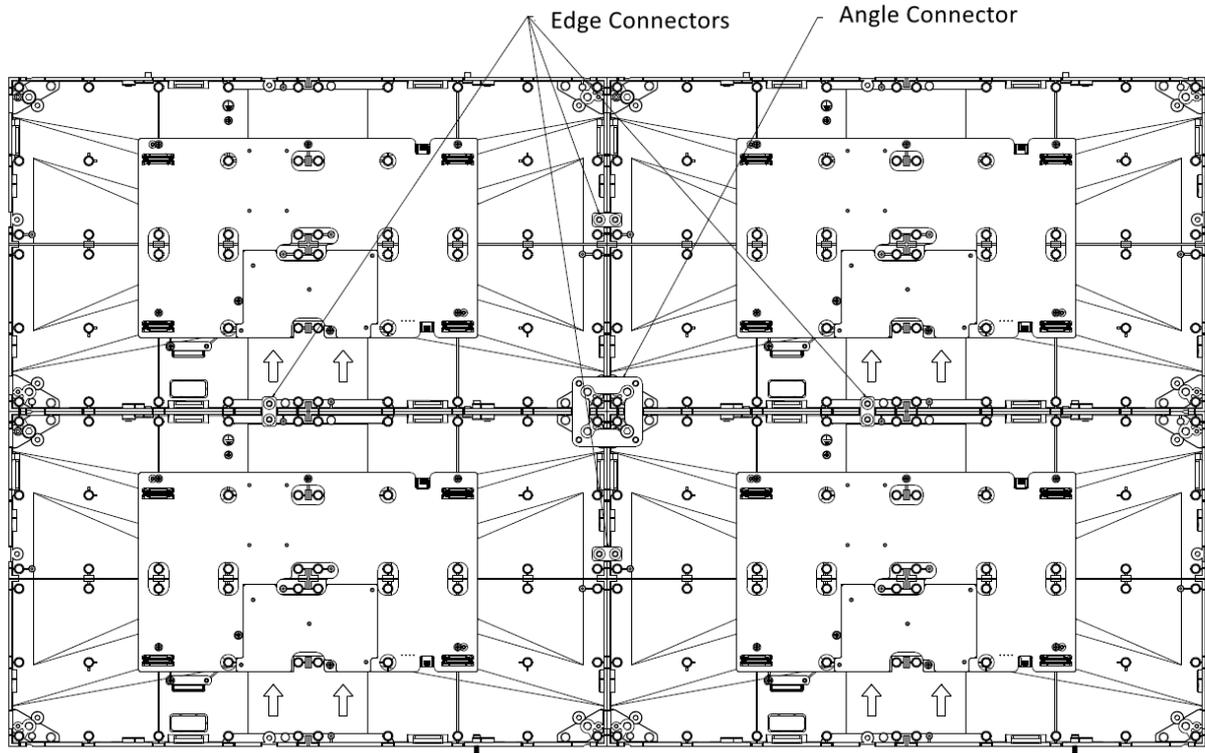


Figure 3-6 Stitch Cabinets

3.2.3 Stitch Lamp Boards

Fix the lamp board on the cabinet frames by magnetic attraction. One cabinet frame is equipped with four lamp boards.

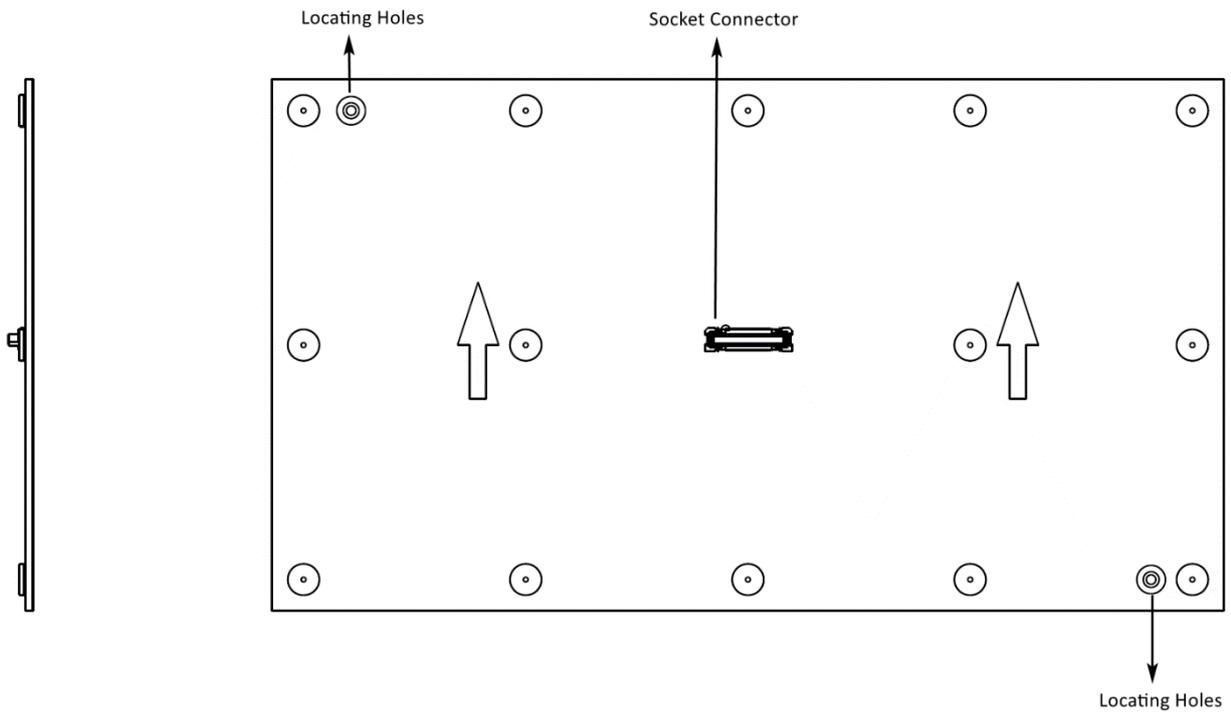


Figure 3-7 The Side and Back View of Lamp Boards

Steps

1. Place the lamp board in the front of the cabinet frames, and align the lamp board and the edge of the cabinet frame initially.

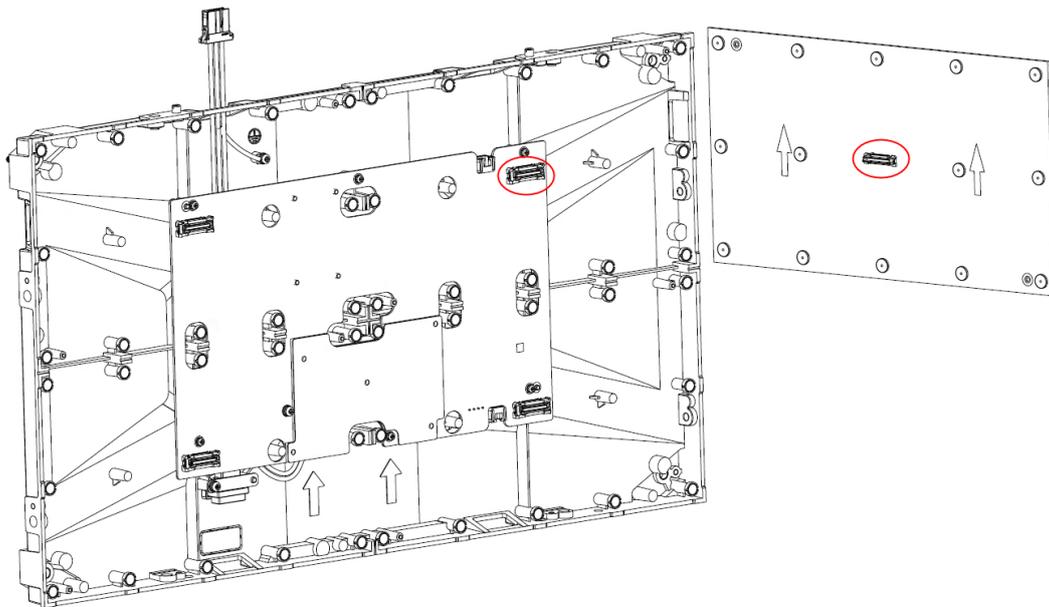


Figure 3-8 Absorb the Lamp Board

 **Note**

Please align the connector and pay attention to the direction of lamp board when absorbing the lamp board.

2. Align and absorb the lower edge of the lamp board with the cabinet frames, and then align the locating holes of the lamp board to the locating studs of the cabinets and absorb the remaining three sides of the lamp board.

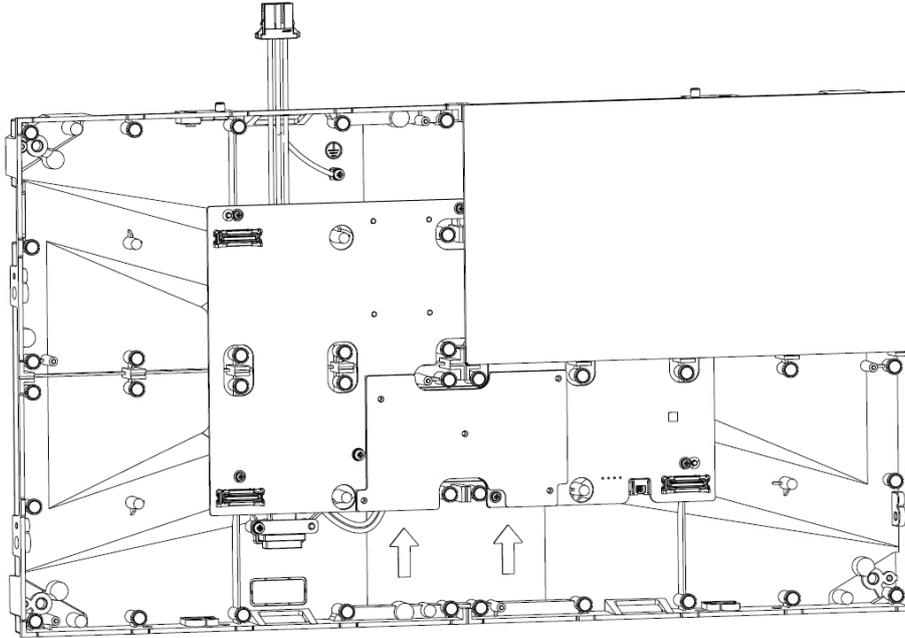


Figure 3-9 Install the First Lamp Board

3. Stitch four lamp boards one by one.

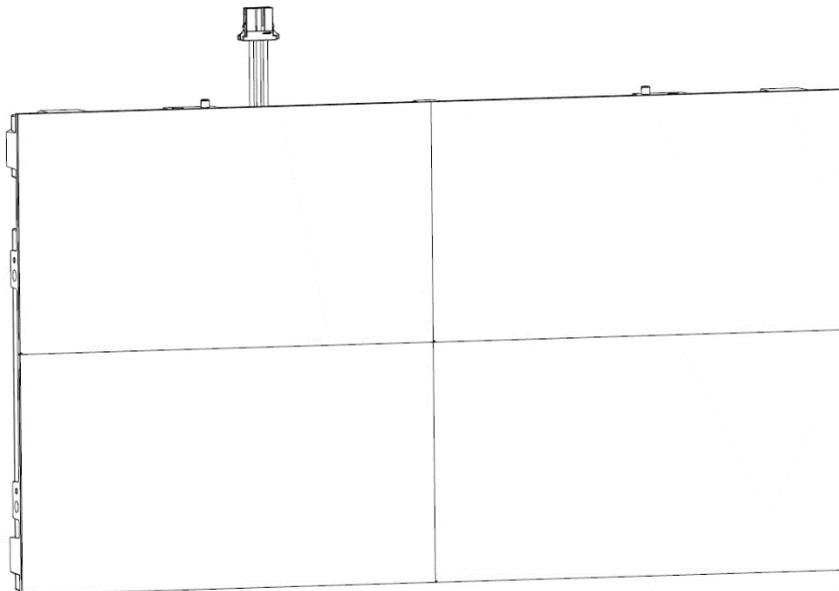


Figure 3-10 Lamp Board Installation Finished

- Optional: If you need to remove the lamp boards, remove the first lamp board by using the LED vacuum pumping tool, and remove other lamp boards with hands.

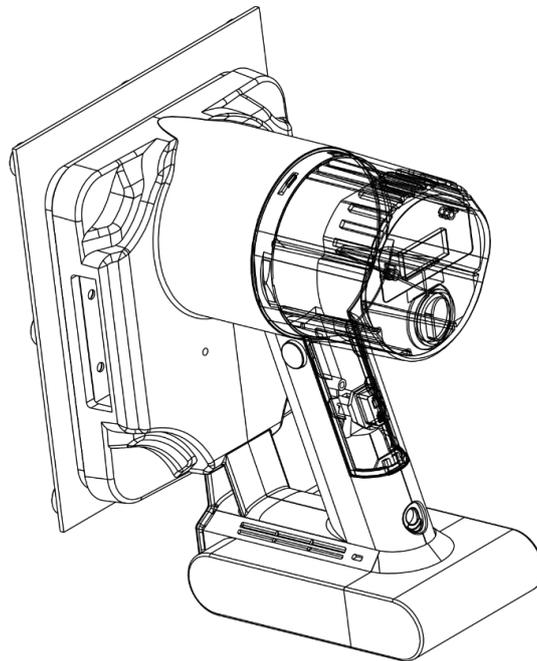


Figure 3-11 LED Vacuum Pumping Tool

Label Lamp Boards for COB Cabinet in Order

Note

- There is no requirement of installation sequence for the cabinets while the lamp boards on each cabinet must be installed in order.
- After calibration, each step must be carried out in order to ensure that the position of lamp boards on the cabinet remains the same, including installing the lamp boards on or removing from the aging frame, packaging the lamp boards. The labelling order of lamp board is shown as below.

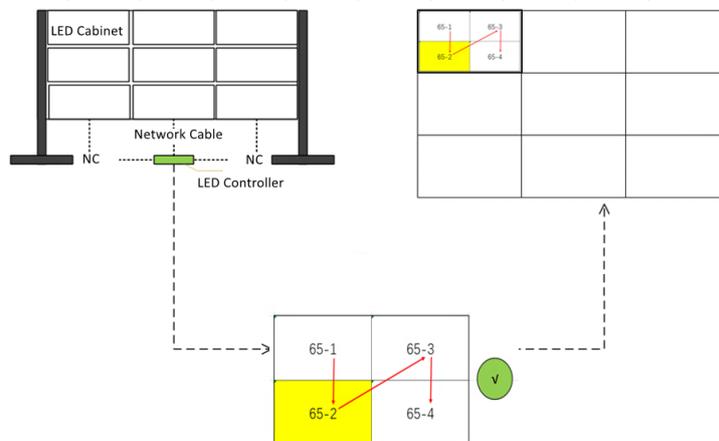


Figure 3-12 Label Lamp Boards in Order

When removing the lamp boards from the aging frame, labels will be stuck on the rear of the lamp boards on the cabinet. X indicates the ordinal number of the cabinet. For example, X=1 indicates the first cabinet, and X=2 indicates the second cabinet.

When installing on-site, cabinets can be installed arbitrarily, while lamp boards on each cabinet must be installed in order, namely, the ordinal numbers are the same in a cabinet.

Stitch Lamp Boards in Order

There is no requirement of installation sequence for the cabinets while the lamp boards on each cabinet must be installed in order.

When stitching the lamp boards on the cabinet, you need to stitch the first lamp board on the upper left or right corner of the cabinet. Then the second lamp board should be stitched on the cabinet from top to bottom.

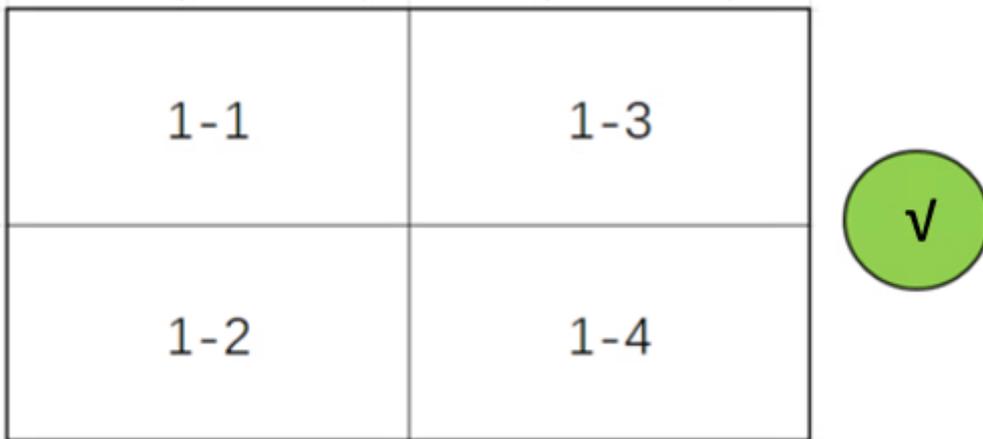


Figure 3-13 Correct Order of Stitching Lamp Boards

The following figure shows a wrong order of stitching lamp boards. In this case, you need to switch 1-2 lamp board and 1-3 lamp board.

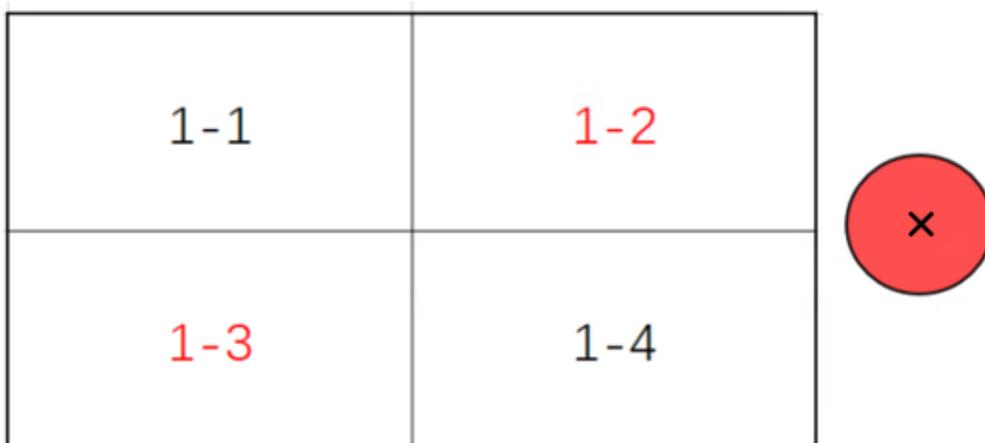


Figure 3-14 Wrong Order of Stitching Lamp Boards

The following figure shows a wrong order of stitching lamp boards. In this case, you need to change 2-3 lamp board into 1-3 lamp board.

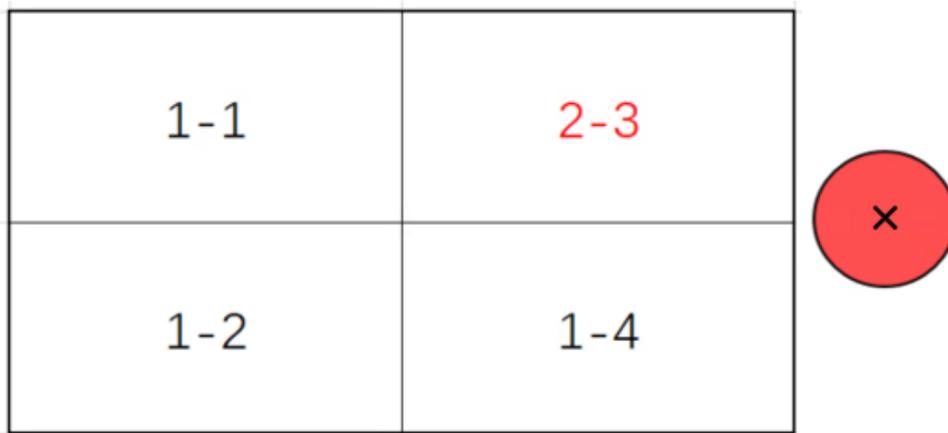


Figure 3-15 Wrong Order of Stitching Lamp Boards

Stitch COB Cabinets in Order

Labels are stuck on the COB cabinets. The letter on a label indicates the order type, and the number demonstrates the row number of cabinets when coming out from the factory. For example, A1 (or 1A) indicates the first row of the type A order in the factory.

When installing the COB cabinets, you need to install the cabinets with the same labels row by row. For example, you need to install the cabinets with A1 labels in the first row and then install the cabinets with A2 labels in the second row according to the requirement of installation sequence.

A1	A1	A1	A1	A1	A1
A2	A2	A2	A2	A2	A2
A3	A3	A3	A3	A3	A3
A4	A4	A4	A4	A4	A4
A5	A5	A5	A5	A5	A5
A6	A6	A6	A6	A6	A6

Figure 3-16 Stitch COB Cabinets in Normal Cases

If the first row of the rack can not be fully stitched with COB cabinets with A1 labels, you need to install COB cabinets with A2 labels or other labels after the cabinets with A1 labels.

A1	A1	A1	A1	A1	A2
A2	A2	A2	A2	A3	A3
A3	A3	A3	A4	A4	A4
A4	A4	A5	A5	A5	A5
A5	A6	A6	A6	A6	A6

Figure 3-17 Stitch COB Cabinets with Other Labels

3.2.4 Adjust Lamp Boards on the Cabinets Horizontally

Use a screwdriver to adjust the height of magnetic screws on the cabinet frame, which can help to adjust the height and flatness of the lamp boards after installation if they are uneven compared with the adjacent lamp boards.

The number of the adjusting points of each lamp board varies with different specification.

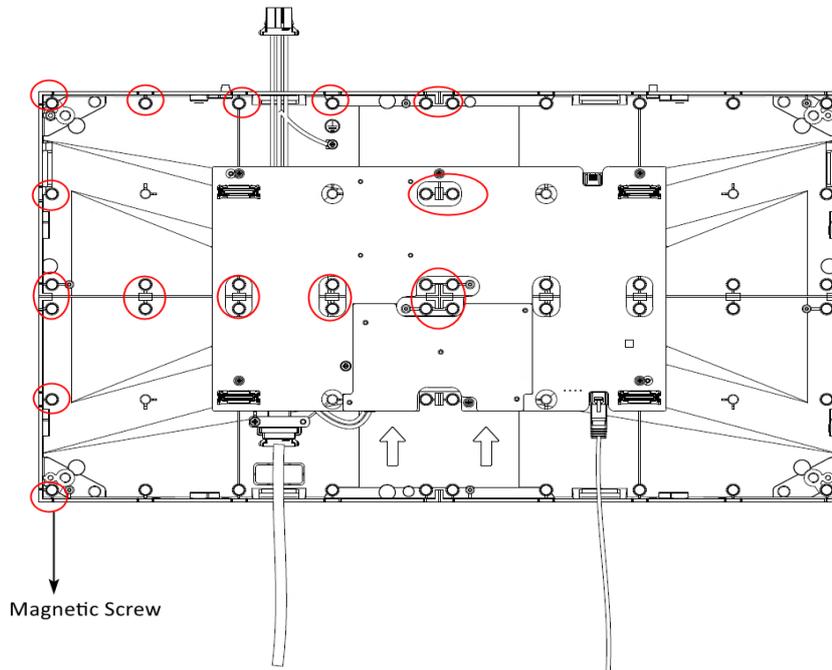


Figure 3-18 Adjusting Points of the Lamp Board

3.3 Configuration Example

Take 6 rows × 5 columns P1.2 cabinets for example, the resolution of a single cabinet is 480 × 270. The maximum load of a single network interface for P1.2 cabinet is 5 cabinets. If the power consumption of the cabinet is 150 W, a power cord can load 15 cabinets.

If the sending card provides 16 output interfaces, the connection is shown in the following figure.

Note

The network cables are marked in blue and the power cords in red.

The maximum current of the power cable is 10 A. The power consumption of the power cord should be calculated according to the actual situation in specific region.

3.3.1 Cabling Diagram for 16 Output Interfaces

Please align the connector and pay attention to the direction of lamp boards when absorbing the lamp board.

Please connect power cords and network cables according to the following figure.

- Power cords connection: connect L/N/PE interfaces, and fix the baffle.

- Network cable connection: pass the network cable through the hole and insert into the network interfaces.

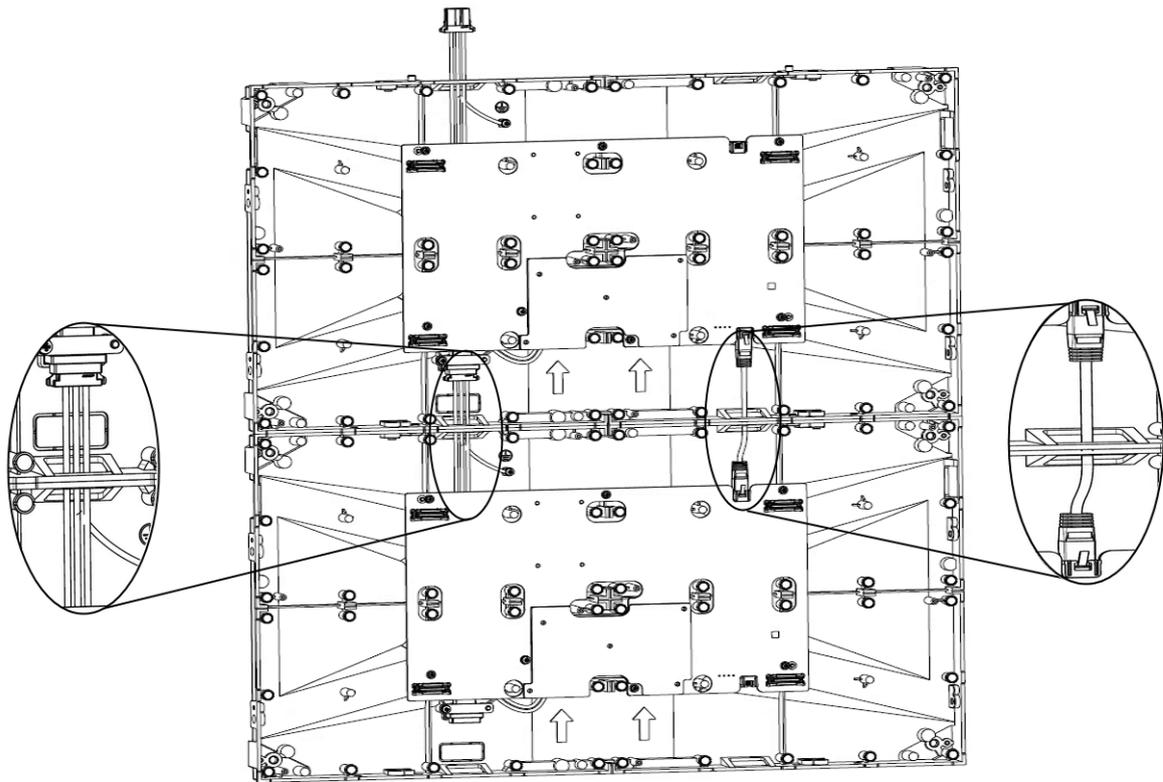


Figure 3-19 Power Cords and Network Cable Connection

If the sending card provides 16 output interfaces with 12 network interfaces used, the cabling is shown in the following figure.

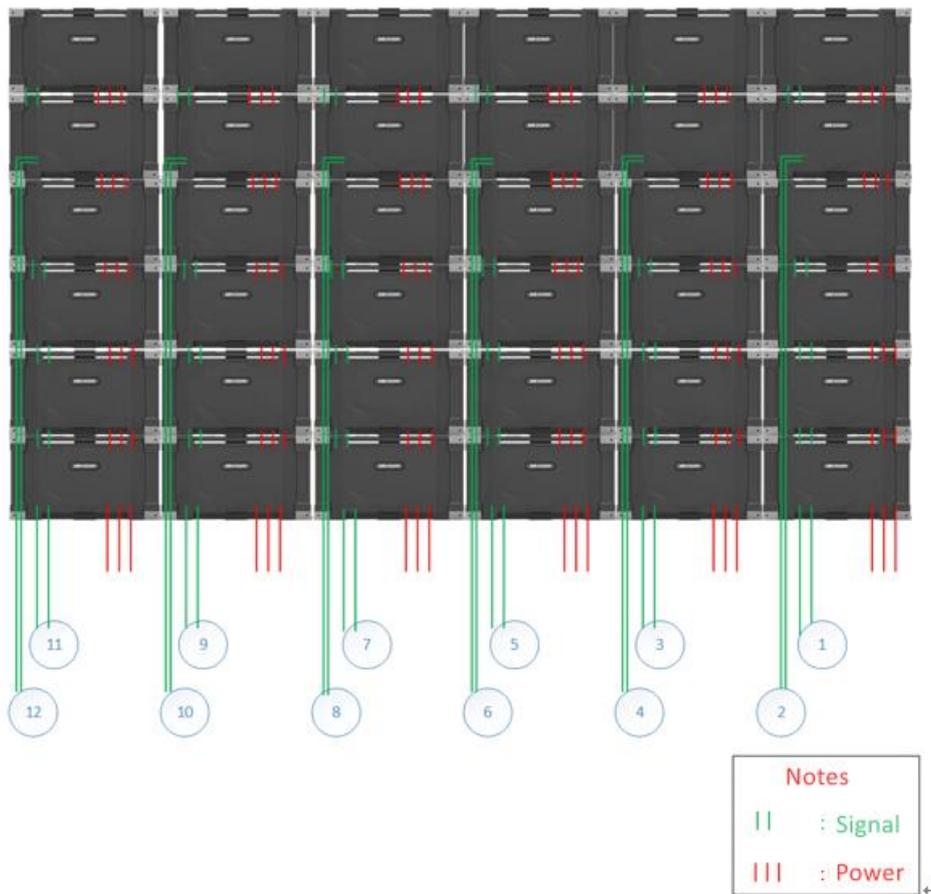


Figure 3-20 Cabling Diagram for 16 Output Interfaces

3.3.2 The Power Cord and Network Cord Connection

Please connect an external power cord and a network cord from reserved cabling hole on the bottom of the cabinet.

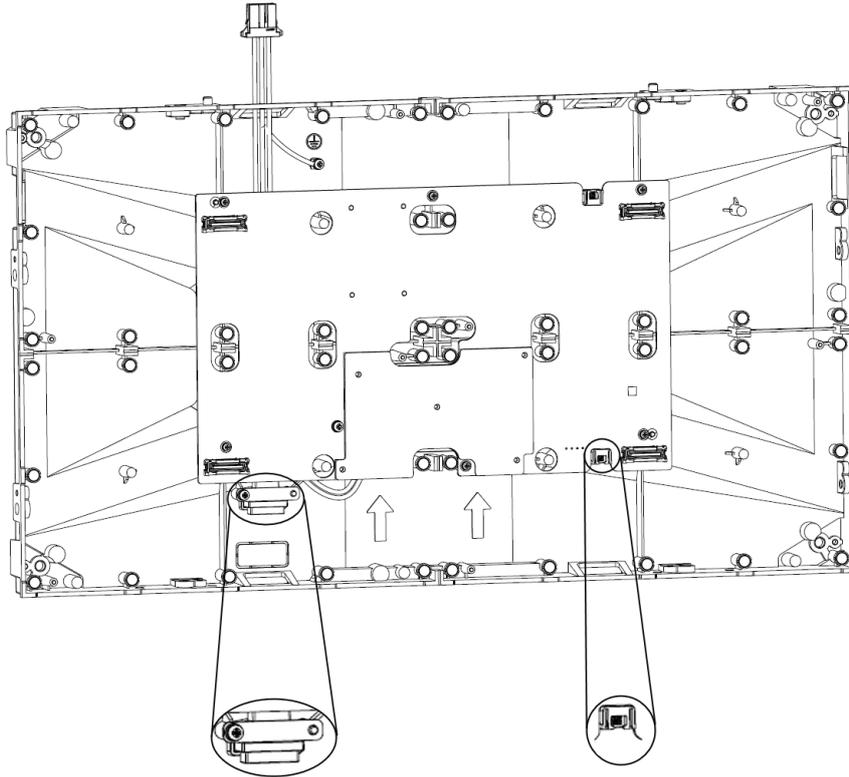


Figure 3-21 Before Connecting Power Cord and Network Cable

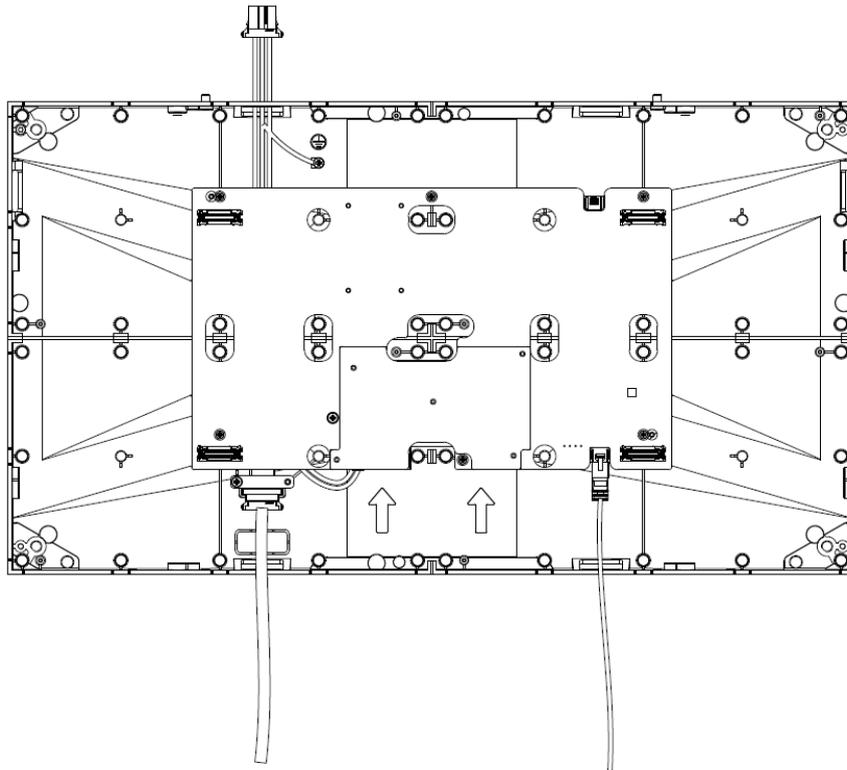


Figure 3-22 Connect External Power Cord and Network Cable from the Bottom

3.3.3 Signal Redundancy

The whole project adopts redundancy mode. Use the 16-interface sending card as an example. Client enables redundancy mode, and then the system automatically set even network interfaces (LAN) to be standby. The standby network interfaces do not need connections via client.

LANs relationship: LAN 1 corresponds to LAN 2 (standby), LAN 3 to Lan 4,, and LAN 15 to LAN 16. According to on-site project cabling, LAN 1 connects to the first cabinet while LAN 2 connects to the last cabinet of the first group.

The following figure shows the cabling diagram in signal redundancy mode connection.

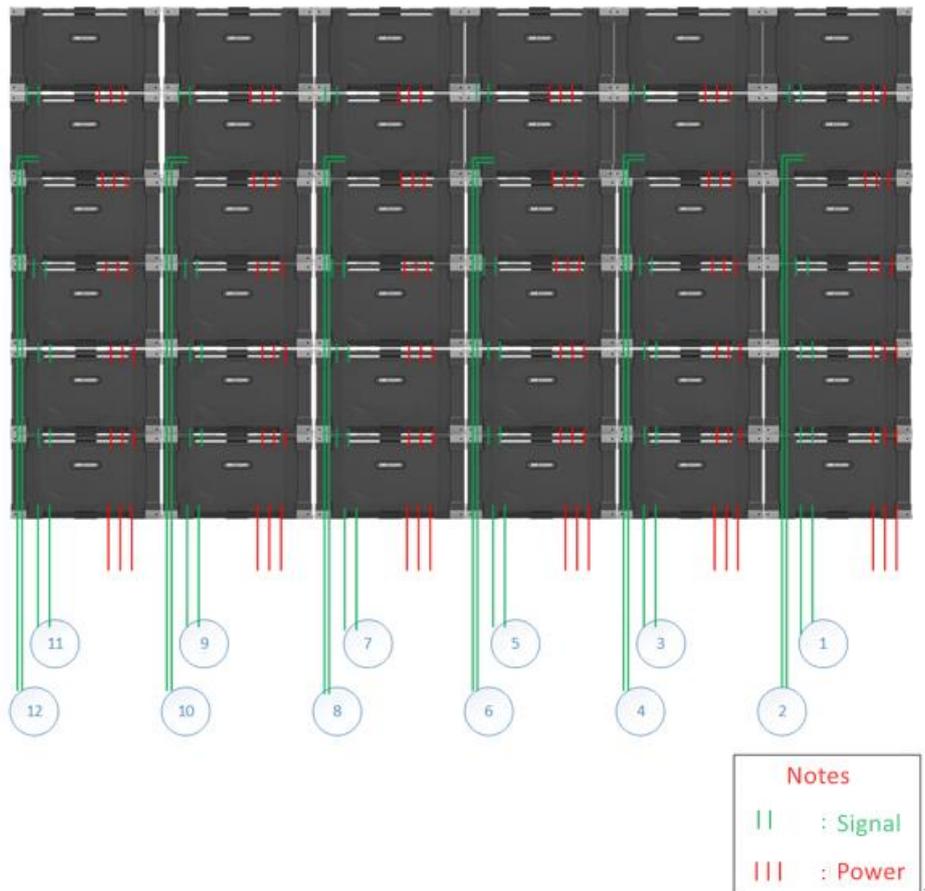


Figure 3-23 Cabling Diagram in Signal Redundancy Mode Connection

Chapter 4 Software Debugging

The device supports configuration on the client of LED display unit. For more details about the installation and configuration process, scan the QR code to get the installation guide.





See Far, Go Further