

Indoor Full-Color LED Display Unit

Quick Start Guide

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Preface

Applicable Models

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

Symbol Conventions

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

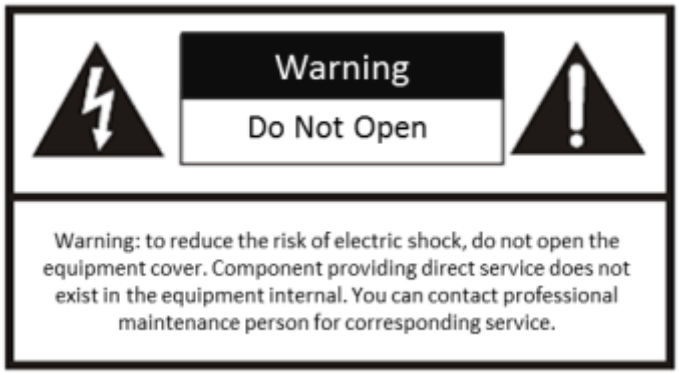
Symbol	Description
Note	Provides additional information to emphasize or supplement important points of the main text.
Caution	Indicates a potentially hazardous situation, which if not avoided, could result in equipment damage, data loss, performance degradation, or unexpected results.
Danger	Indicates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

Safety Instructions

Danger

- In the use of the product, you must be in strict compliance with the electrical safety regulations of the nation and region.
- CAUTION: If the fuse of the device can be replaced, replace it only with the same model to reduce the risk of fire or electric shock.
- 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.
- For the permanently connected device without a disconnect equipment, a readily accessible disconnect equipment shall be incorporated into the electrical installation of the connected building.
- For the permanently connected device without an overcurrent protection equipment, an overcurrent protection equipment shall be incorporated into the electrical installation of the connected building. The specifications of the overcurrent protection equipment shall not exceed that of the building.
- For the permanently connected device without an all-pole mains switch, an all-pole mains switch shall be incorporated into the electrical installation of the connected building.

- For the device with the sign ϟ indicating hazardous live, the external wiring connected to the terminals requires installation by an instructed person.
- Never place the device in an unstable location. The device may fall, causing serious personal injury or death.
- If the device supports wall mounting or ceiling mounting, the mounting surface shall be able to withstand the additional force of 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. Refer to technical specifications for details.
- ALWAYS use cabinets or stands or mounting methods recommended by the manufacturer of the device.
- ALWAYS use furniture that can safely support the device.
- ALWAYS ensure the device is not overhanging the edge of the supporting furniture.
- ALWAYS route cords and cables connected to your television so they cannot be tripped over, pulled or grabbed.
- NEVER place a device in an unstable location.
- NEVER place the device on tall furniture (for example, cupboards or bookcases) without anchoring both the furniture and the device to a suitable support.
- NEVER place the device on cloth or other materials that may be located between the device and supporting furniture.
- NEVER place items that might tempt children to climb, such as toys and remote controls, on the top of the device or furniture on which the device is placed.



Caution

- If the ingress protection level is lower than IPx4, 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.
- If the device is powered by terminals connected to the power cord, ensure correct voltage and wiring of the terminals for connection to mains supply.

- No naked flame sources, such as lighted candles, should be placed on the device.
- For the device with ventilation openings, the ventilation openings should not be impeded by covering the ventilation openings with items, such as newspapers, table-cloths, and curtains. The openings shall never be blocked by placing the device on a bed, sofa, rug, or other similar surface.
- This device is suitable for mounting on concrete or other non-combustible surface only to avoid fire hazard.
- For the device with sticker  or 

, pay attention to the following cautions:
- CAUTION: Hot parts! Do not touch. Burned fingers when handling the parts. Wait one-half hour after switching off before handling the parts.
- The power supply unit for the equipment must be placed in a restricted area to prevent unauthorized access.
- If the device installation is needed,

  1. Install the device according to the instructions in Quick Start Guide.

  2. To prevent injury, this device must be securely attached to the installation surface in accordance with the installation instructions. Refer to Quick Start Guide for details.
- Keep vertical when moving or using the device.
- CAUTION: If the bracket is designed for a specific device model of our company, use the bracket with the corresponding device only. Use with other devices may result in instability and cause injury.
- CAUTION: If the device needs to be installed with a specific bracket of our company, use the corresponding bracket only. Use others (such as carts, stands, and carriers) may result in instability and cause injury. Refer to the device datasheet for bracket model details. Refer to Quick Start Guide for details.
- The interface varies with the models. Please refer to the product datasheet for details.
- If the device is not released with a power adapter, and you need to wire the bare cables of the device:
  - The device external wiring connected to the hazardous live terminals requires installation by an instructed person.
  - Make sure that the power has been disconnected before you wire, install, or disassemble the device.
  - The power supply or device must be connected to an earthed mains socket-outlet.
  - High voltage for the power supply. Do not disassemble it.
  - 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.
  - 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.

- A circuit breaker shall be provided for the device externally. For a single device, an AC 220 V/230 V/240 V, 6 A circuit breaker is recommended. When multiple devices are stacked, select a circuit breaker of appropriate rating based on the total rated current, but this shall not exceed the rating of the circuit breaker provided for the building.

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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

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. Scan the QR code below to view the Quick Start Guide of racks.



Figure 2-1 QR Code of Quick Start Guide of LED Rack

Chapter 3 Cabinet Installation

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 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 Stitch Cabinet Frames

3.2.1 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.

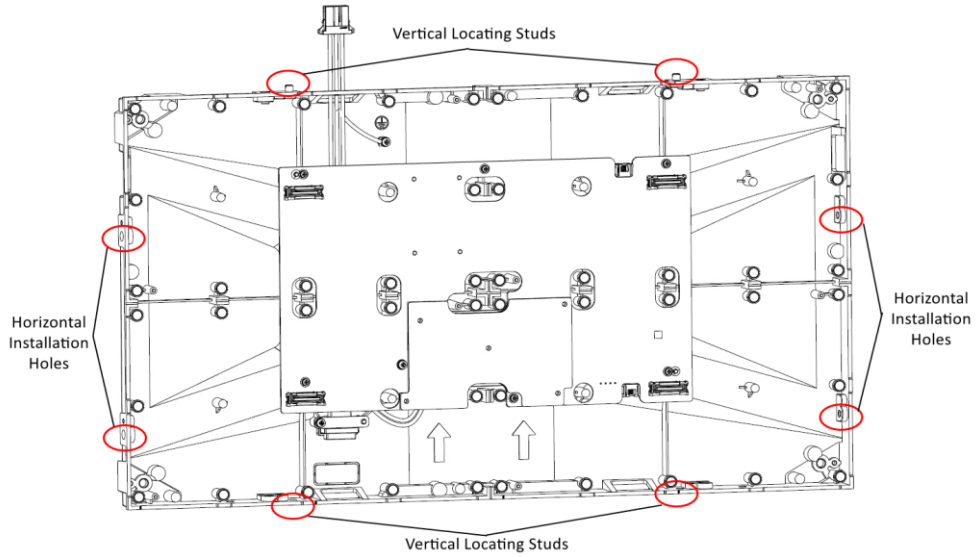


Figure 3-1 Locating Studs, Locating Holes and Installation Holes

3.2.2 Stitch Cabinet Frames Horizontally

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

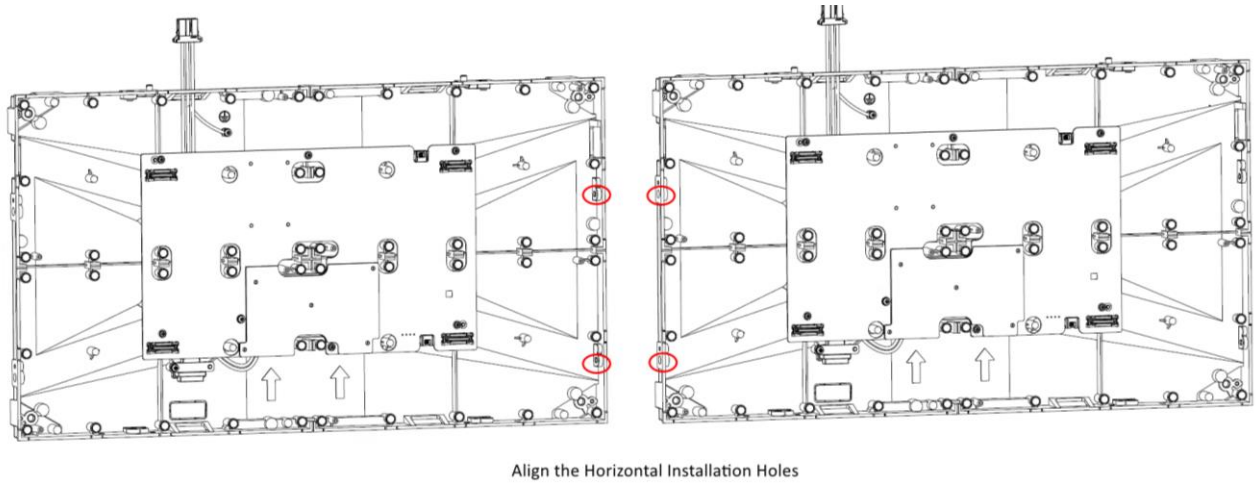


Figure 3-2 Align the Horizontal Installation Holes

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

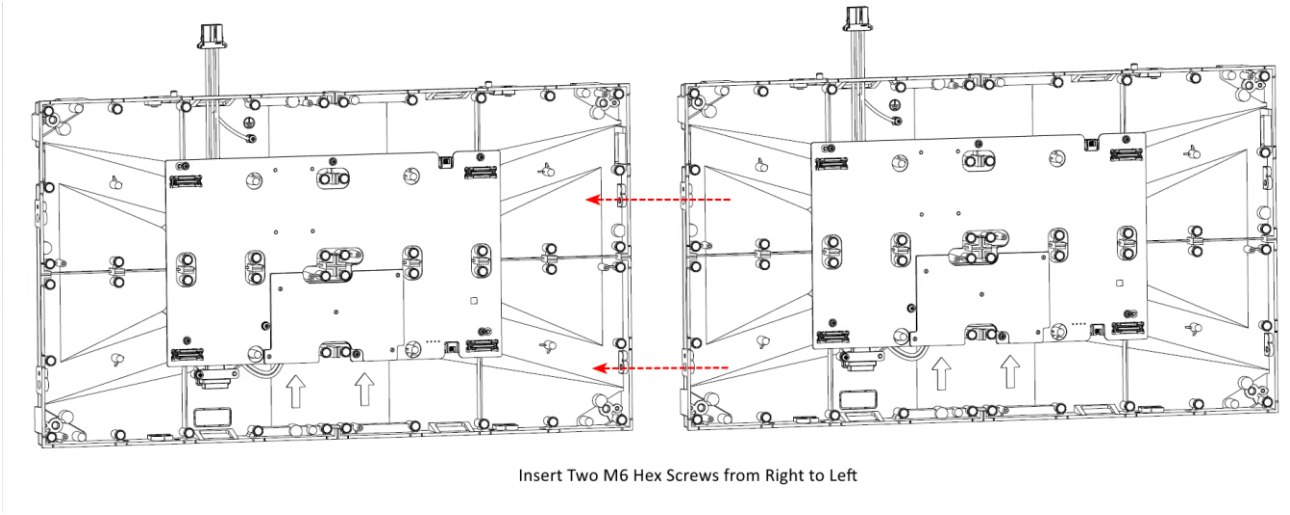


Figure 3-3 Stitch Cabinet Frames Horizontally

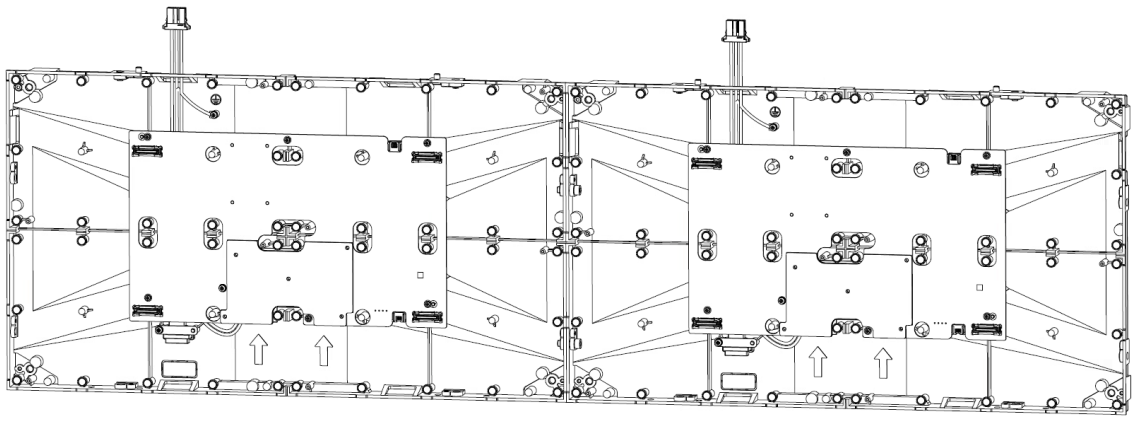


Figure 3-4 Cabinets Stitched

3.2.3 Stitch Cabinet Frames Vertically

Step 1 Align the locating studs in the vertical direction of the two adjacent cabinet frames with the locating holes, and adjust the cabinet frames to the relative level.

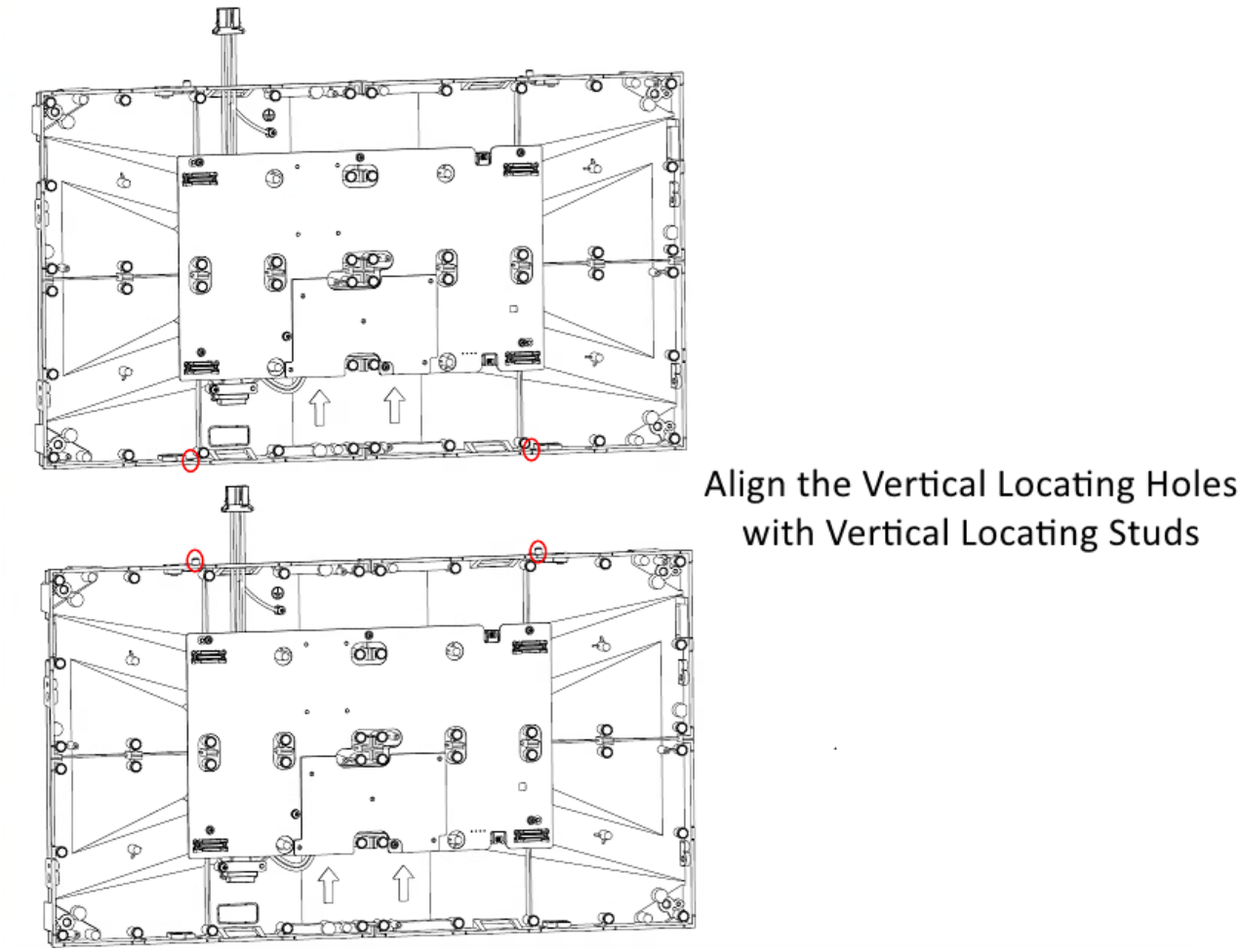


Figure 3-5 Align the Locating Holes with the Locating Studs Vertically

Step 2 Insert two M6 hex screws into the adjacent installation holes from top to bottom only.

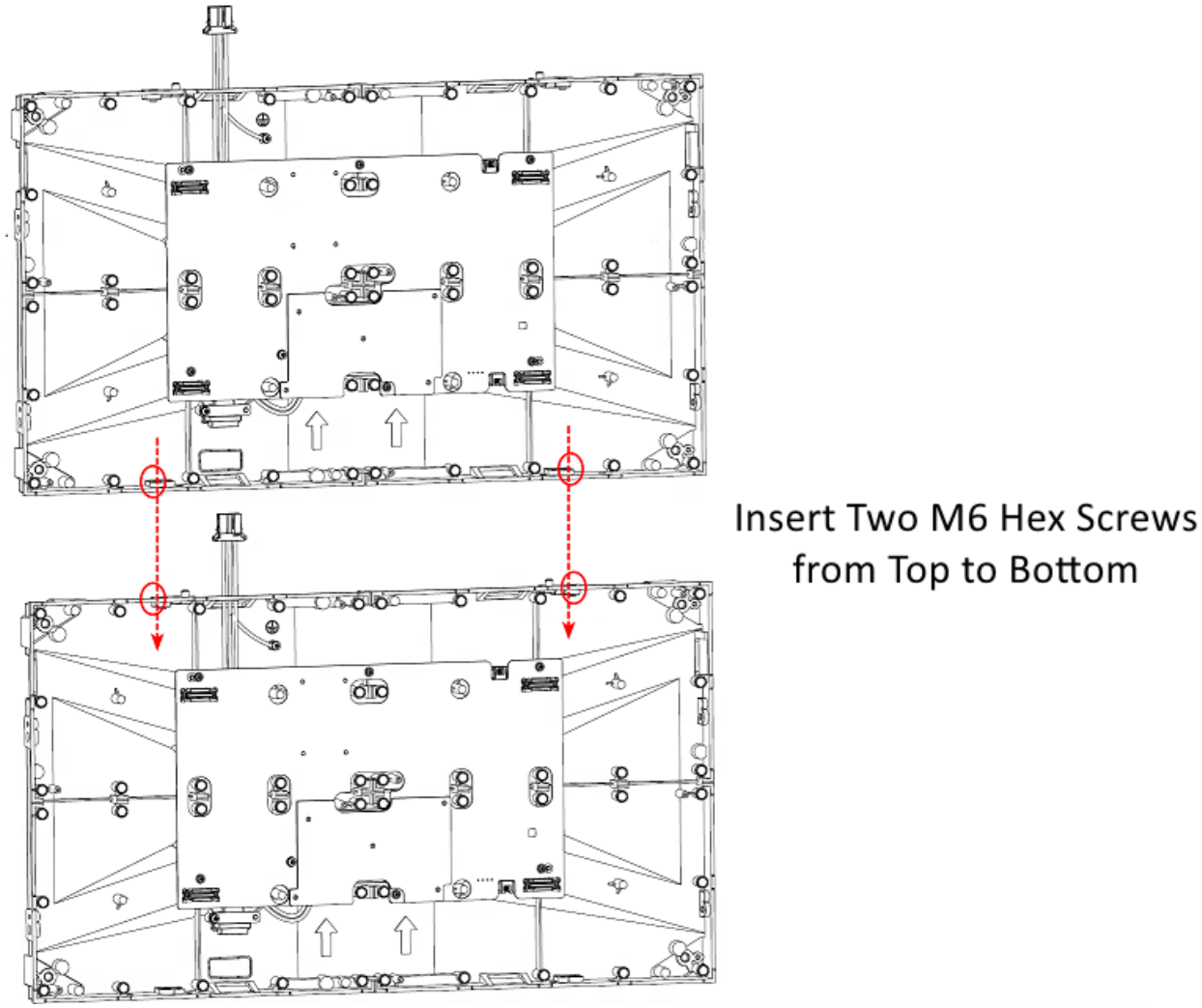


Figure 3-6 Stitch Cabinet Frames Vertically

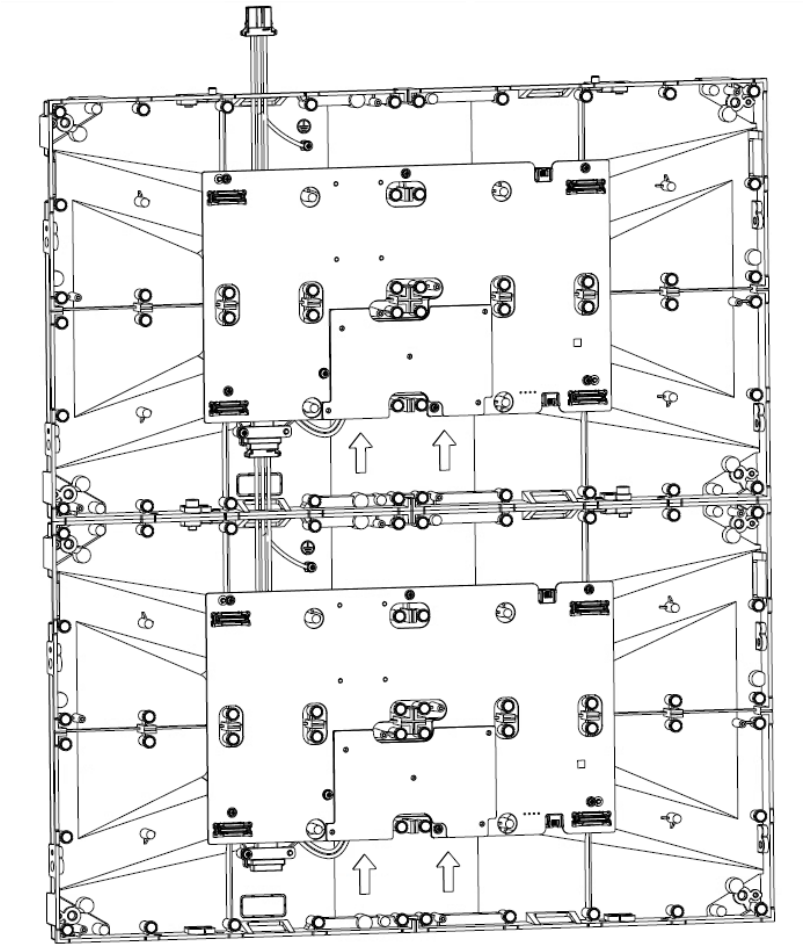


Figure 3-7 Cabinets Stitched

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

3.3 Install the Cabinet onto the Rack

3.3.1 Install the Cabinet onto the Rack (Front)

Before you start

Before installing the cabinet, disconnect the external power switch. After completing the cabinet installation, reconnect it to the external power supply.

Step 1 When installing the custom-made rack, set a reasonable distance between adjacent racks based on the size of the module.

Step 2 After the rack is installed, install the cabinets row by row from bottom to top and from the middle to both sides.

Note

A trial installation of the cabinet and lamp board must first be performed for the first row at the bottom and column in the middle to set as a reference position for the entire display installation. This prevents accumulated dimensional deviations between the cabinets and lamp boards as the number of rows and columns increases, which may otherwise result in failure to install lamp boards at the screen edges.

Step 3 Install the cabinets for the first row at the bottom.

1) Place a cabinet near the square tube of the rack and put it at the center of the bottom section. Place another cabinet horizontally adjacent to it. Stitch the two cabinet horizontally without initially tightening the M6 hex screws with nuts.
2) Place a connector between the top joint of the two cabinets and the square tube. Align the bolt holes on the connector with the mounting holes on the top joint of the cabinets.
3) Insert one M5 self-tapping screw from front to back to secure the connector to the square tube.
4) Insert two M6 × 18 bolts from front to back to fasten the cabinets with the connector.
5) Repeat the steps above to complete the horizontal stitching of the remaining cabinets in the first row at the bottom from the middle to both sides.
6) Perform a trial installation of the lamp boards onto the cabinets in the first row to ensure each lamp boards can be properly attached. If not, adjust the flatness and gaps between the cabinets by inserting fine-adjustment screws from right to left. After adjustment, tighten the M6 hex screws with nuts.

Step 4 Install the cabinet in the middle column.

1) Refer to the cabinet installation of the first row at the bottom, vertically stitch the cabinet from bottom to top at the center of the entire screen.
2) Perform a trial installation of the lamp boards and adjust the flatness and gaps between cabinets.
3) Tighten the M6 hex screws between cabinets.

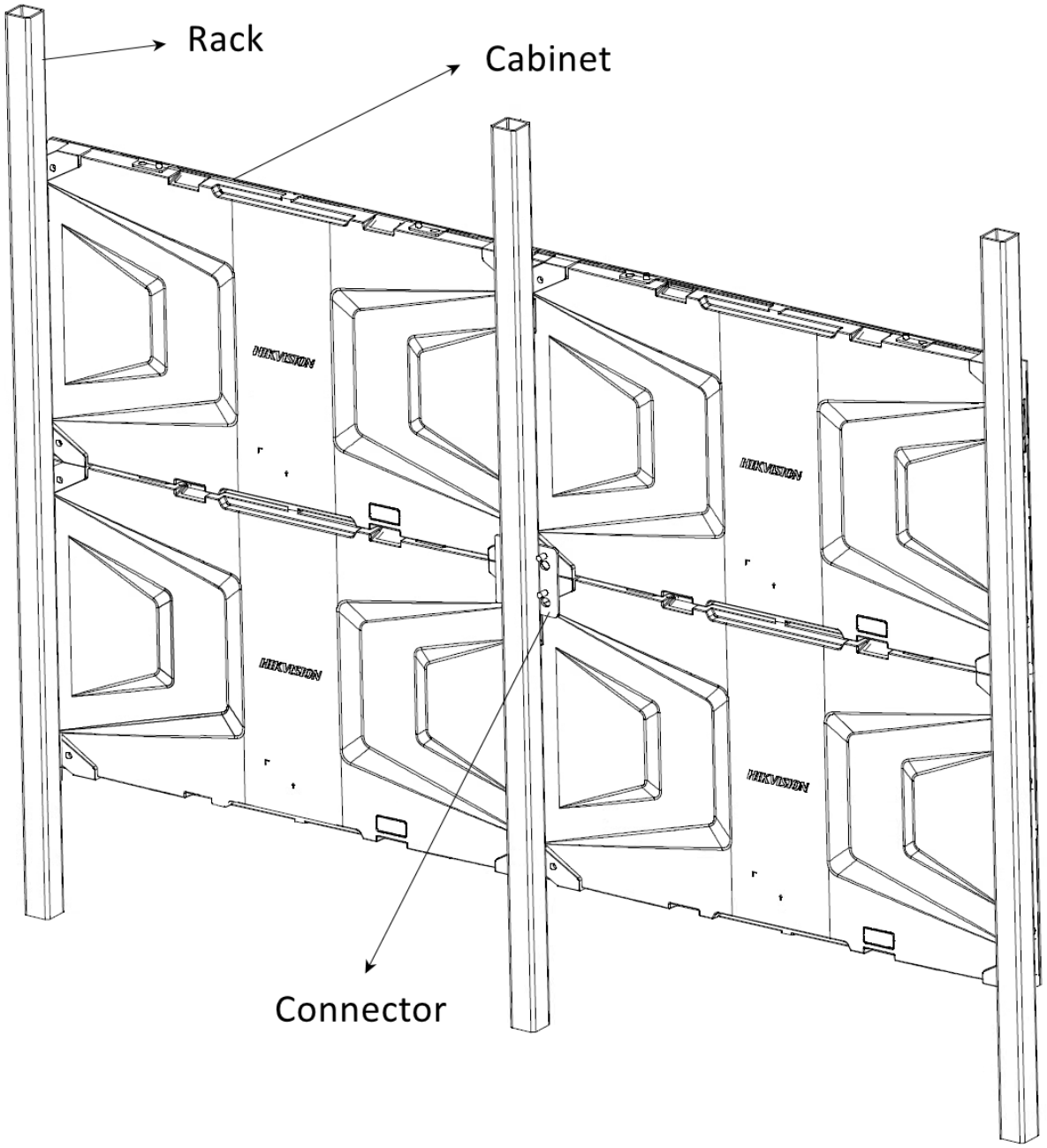


Figure 3-8 Fix the Cabinet, Connector and Rack (Rear View)

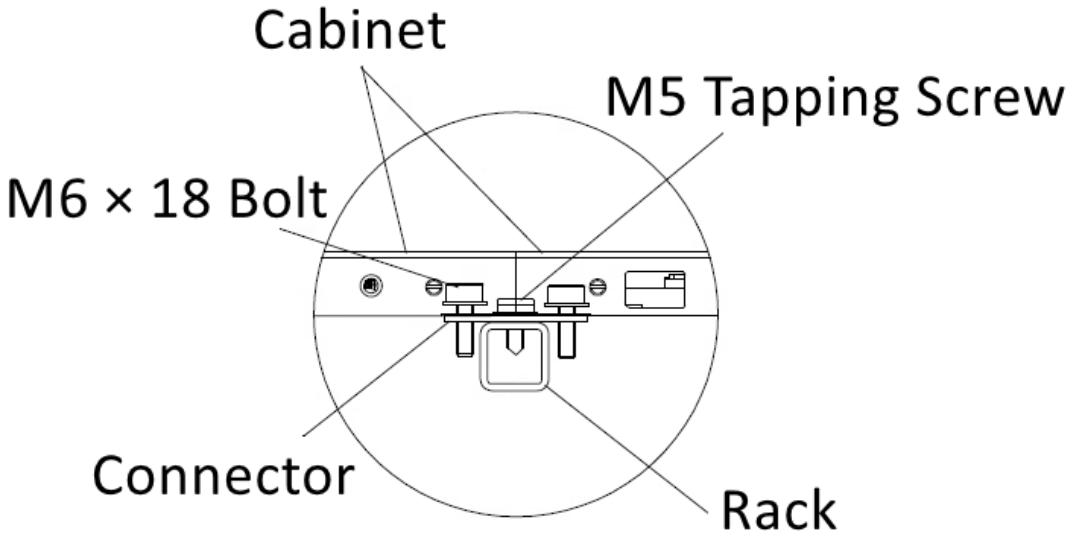


Figure 3-9 Fix the Cabinet, Connector and Rack (Top View)

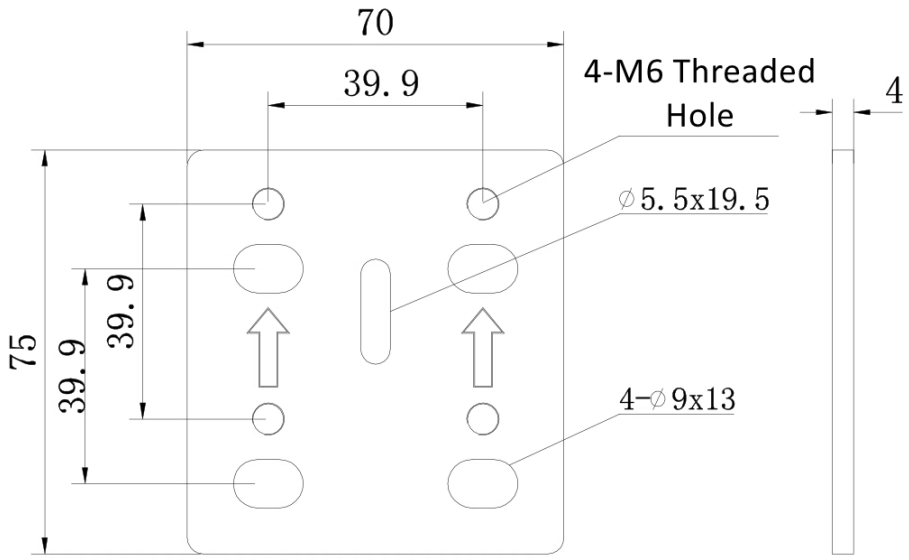


Figure 3-10 Bolt Holes and Dimension of the Connector

Step 5 Install the remaining cabinets sequentially from bottom to top and from the middle to both sides.

3.3.2 Install the Cabinet onto the Rack (Rear)

Before you start

Before installing the cabinet, disconnect the external power switch. After completing the cabinet installation, reconnect it to the external power supply.

Step 1 When installing the custom-made rack, set a reasonable distance between adjacent racks based on the size of the module.

Step 2 After the rack is installed, install the cabinets row by row from bottom to top and from the middle to both sides.

Note

A trial installation of the cabinet and lamp board must first be performed for the first row at the bottom and column in the middle to set as a reference position for the entire display installation. This prevents accumulated dimensional deviations between the cabinets and lamp boards as the number of rows and columns increases, which may otherwise result in failure to install lamp boards at the screen edges.

Step 3 Install the cabinets for the first row at the bottom.

1) Place a cabinet near the square tube of the rack and put it at the center of the bottom section. Place another cabinet horizontally adjacent to it. Stitch the two cabinet horizontally without initially tightening the M6 hex screws with nuts.
2) Place a connector behind the square tube of the rack. Align the bolt holes on the connector with the mounting holes on the top joint of the cabinets.
3) Insert two M8 × 40 long bolts from the back to the front, securing the connector, square tube, and cabinets in sequence.
4) Repeat the steps above to complete the horizontal stitching of the remaining cabinets in the first row at the bottom from the middle to both sides.
5) Perform a trial installation of the lamp boards onto the cabinets in the first row to ensure each lamp boards can be properly attached. If not, adjust the flatness and gaps between the cabinets by inserting fine-adjustment screws from right to left. After adjustment, tighten the M6 hex screws with nuts.

Step 4 Install the cabinet in the middle column.

1) Refer to the cabinet installation of the first row at the bottom, vertically stitch the cabinet from bottom to top at the center of the entire screen.
2) Perform a trial installation of the lamp boards and adjust the flatness and gaps between cabinets.
3) Tighten the M6 hex screws between cabinets.

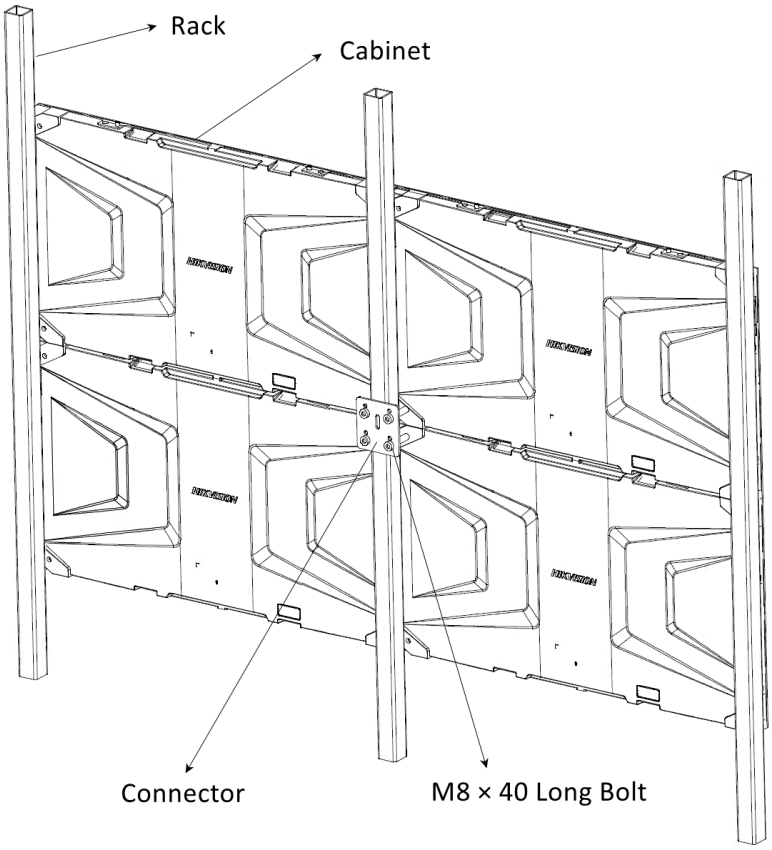


Figure 3-11 Fix the Cabinet, Connector and Rack (Rear View)

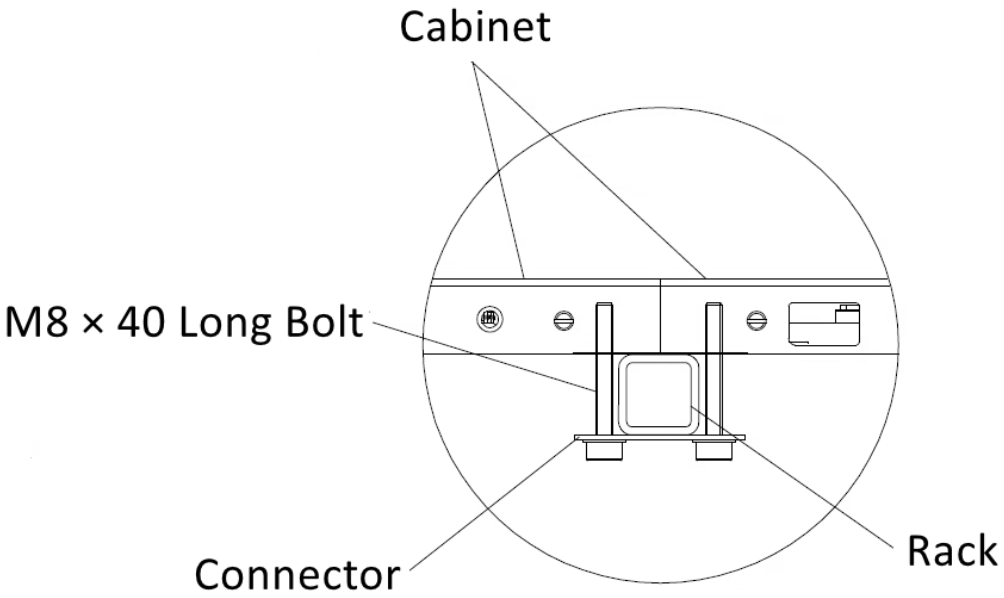


Figure 3-12 Fix the Cabinet, Connector and Rack (Top View)

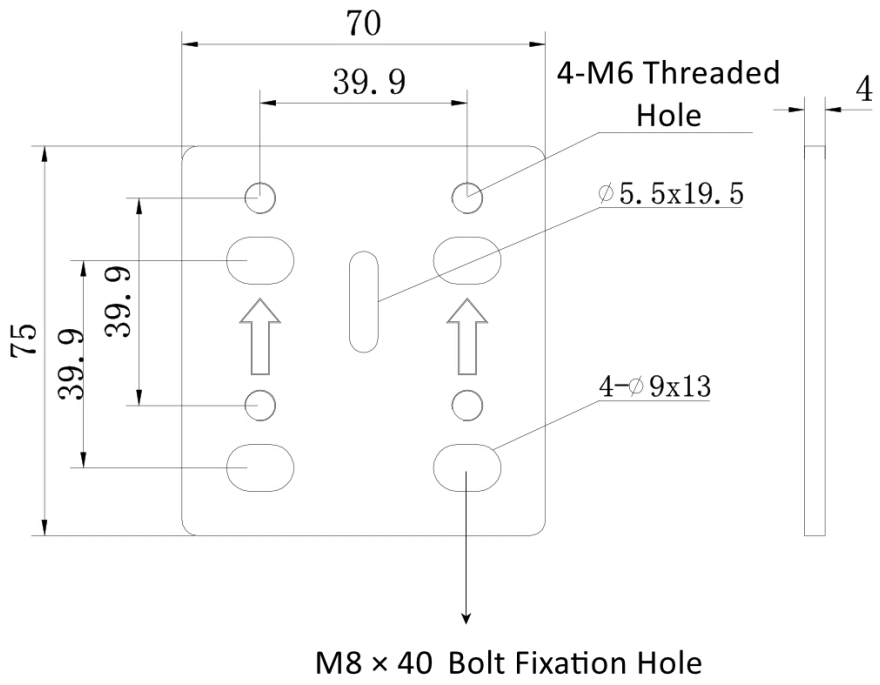


Figure 3-13 Bolt Holes and Dimension of the Connector

Step 5 Install the remaining cabinets sequentially from bottom to top and from the middle to both sides.

3.4 Connect Power Cord and Network Cable

Each cabinet is equipped with one power input interface, one power output interface, one network signal input interface and one network signal output interface.

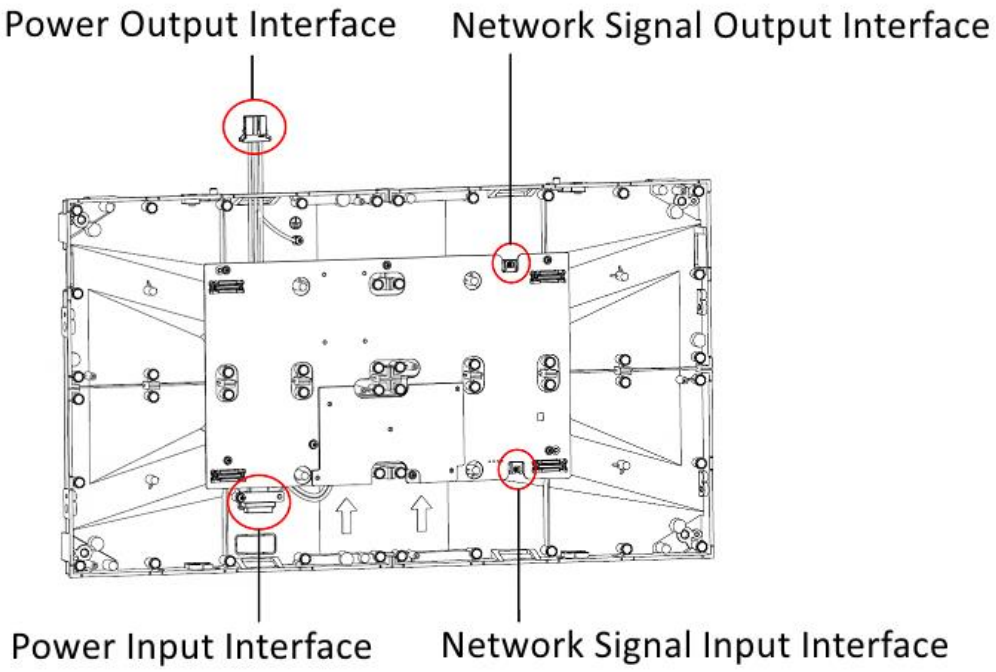


Figure 3-14 Power Interfaces and Network Interfaces

3.4.1 Connect the Power Cord and Network Cable to the Primary Cabinet

Connect an external power cord and a network cable from reserved cabling hole at the bottom of the cabinet to the power input interface and network signal input interface respectively by using a short power cord and a network cable.

Step 1 Connect a short power cord and a network cable to the power input interface and network signal input interface on the primary cabinets at the bottom of the LED display.

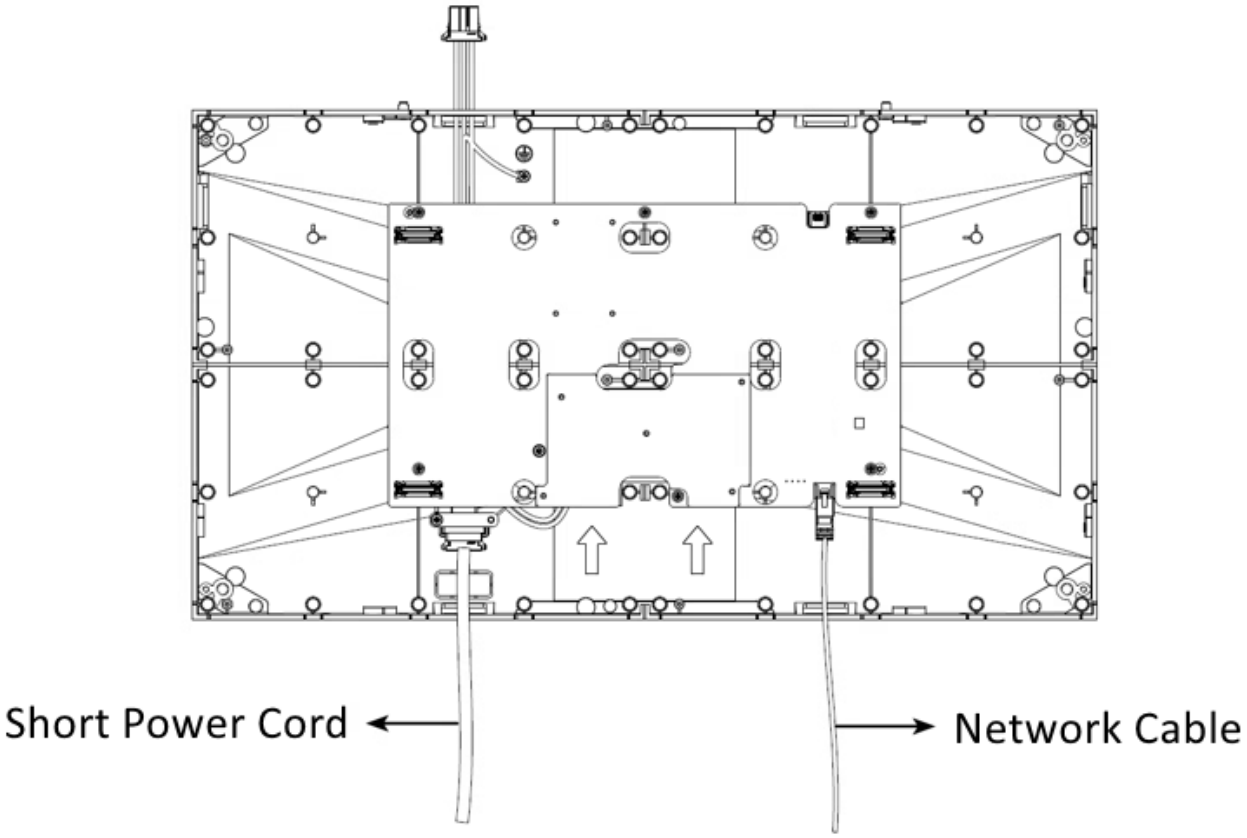


Figure 3-15 Connect the Power Cord and Network Cable to the Primary Cabinet

Step 2 Connect the cabinets to the external power supply and network.

3.4.2 Connect the Power Cord and Network Cable between Cabinets

Load Capability of Power Cords

The load capability of a single power cord is limited. You can use the HiTools Designer to calculate the maximum load capability of a single power cord. Then connect the power cord between the cabinets according to the load capability generated by the calculation.

Load Capability of Newtork Interfaces

The load capability of a single network interface of the sending card is limited. You can use the HiTools Designer to calculate the maximum load capability of a single network interface of a sending card. Then connect the network cables between the cabinets according to the load capability generated by the calculation.

Before You Start

Before connect the power cords and network cables, ensure that the device is powered off.

Step 1 Pass the power output interface of the lower cabinet through the top wiring hole. Align the power output interface with the power input interface of the adjacent upper cabinet. Ensure that the silkscreen on the power output interface faces outward and insert it into the power input interface.

Step 2 Pass the 0.3 m network cable through the wiring hole between adjacent cabinets. Connect one end of the network cable to the network input port of the upper cabinet. Connect the other end of the network cable to the network output port of the lower cabinet.

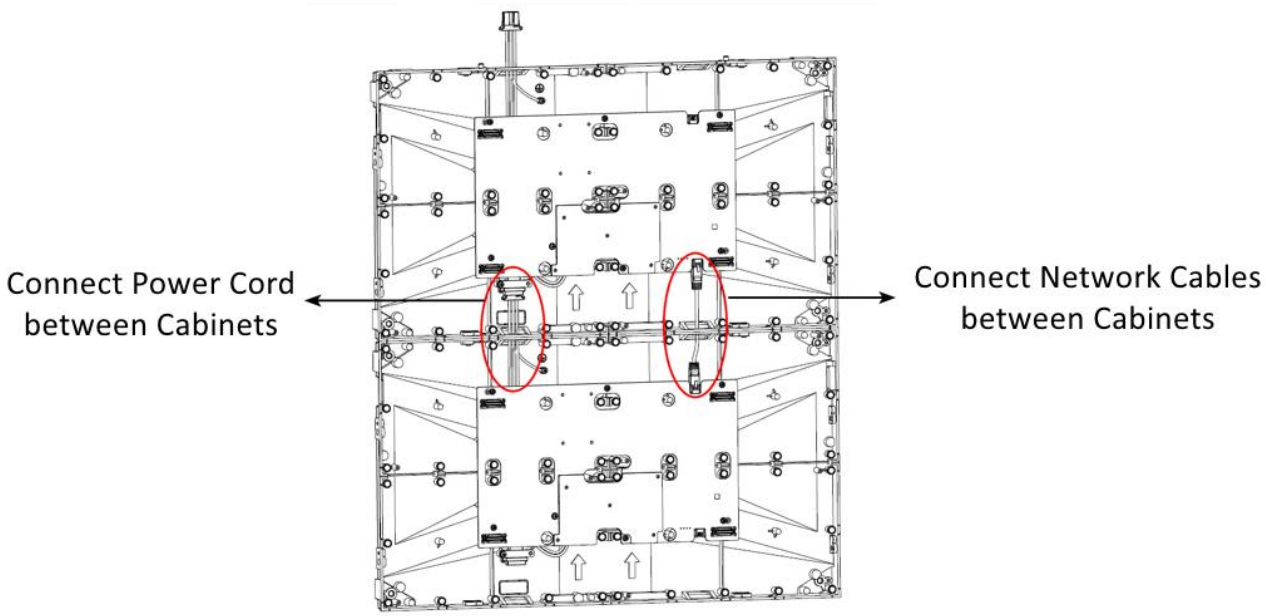


Figure 3-16 Vertical Cascading between Cabinets

Step 3 For the top cabinet within the maximum load capability of power cord, use a dual-female horizontal cascading power cord and horizontal cascading extension power cords to connect the power output interface of the left cabinet to the same-side power output interface of the right adjacent cabinet. For the bottom cabinet within the maximum load capability of power cord, use a dual-male horizontal cascading power cord to connect the power output interface of the left cabinet to the same-side power input interface of the right adjacent cabinet.

Step 4 For adjacent cabinets within the maximum load capability of network cable, use a 0.96 m horizontal cascading network cable to connect the left network port of the cabinet to the same-side network port of the right adjacent cabinet.

Step 5 After cascading the power cords and network cables between the cabinets, hide the two power output interfaces of the last cabinet within the maximum load capability of the power cord inside.

3.4.3 Stitch Lamp Boards

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

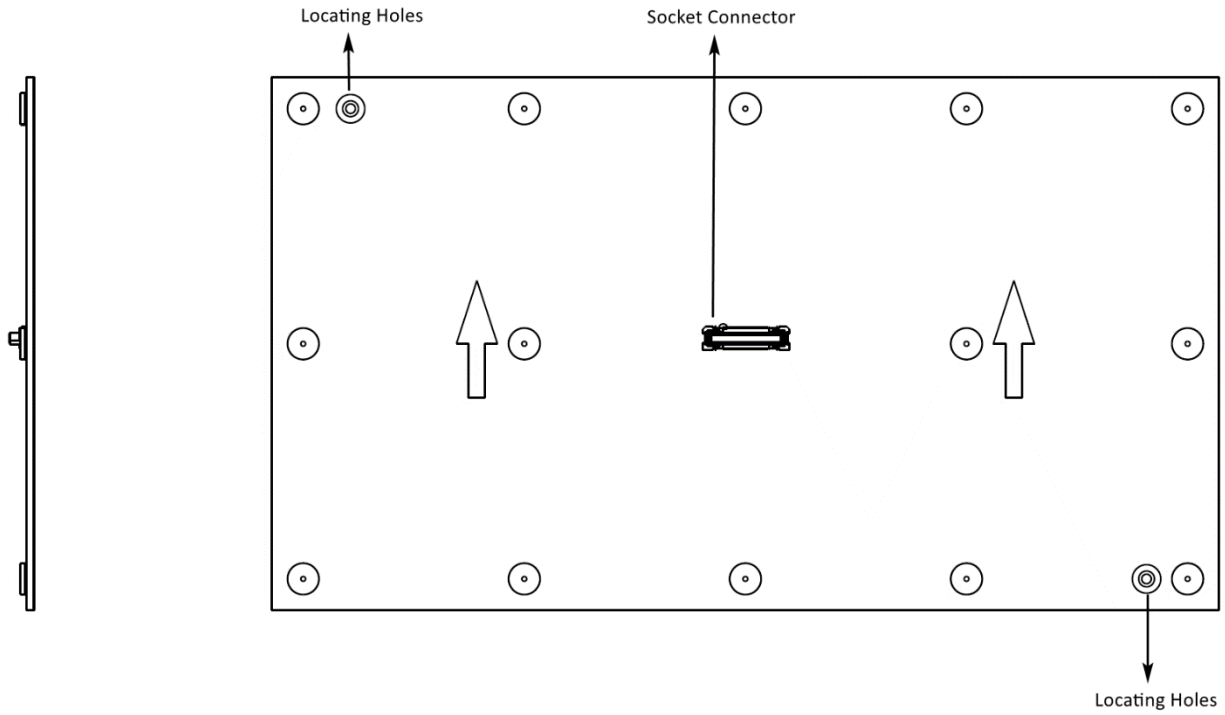


Figure 3-17 The Side and Back View of Lamp Boards

Step 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.

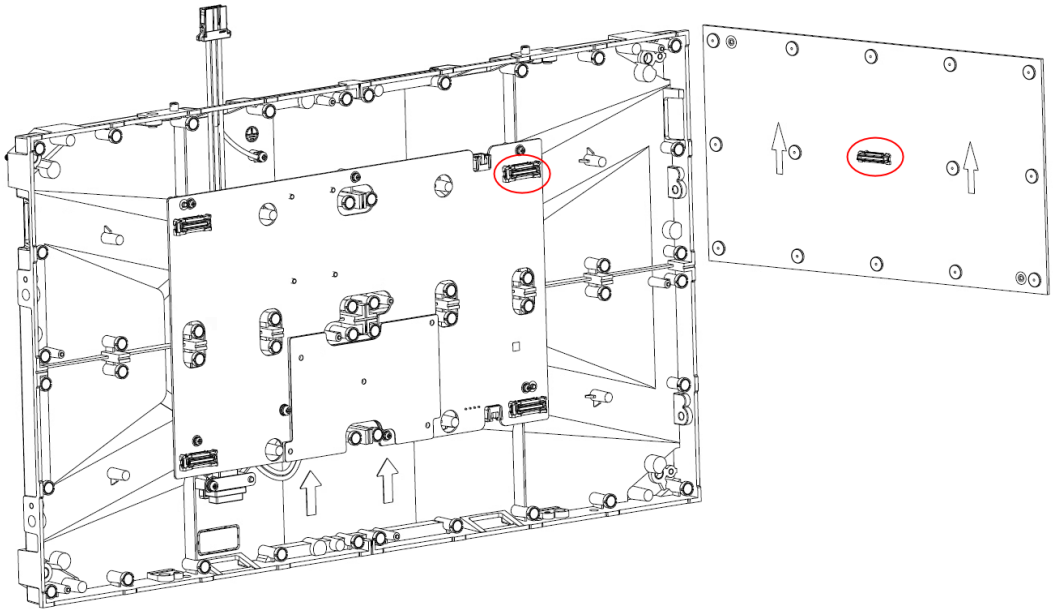


Figure 3-18 Absorb the Lamp Board

Note

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

Step 2 Align and absorb the top edge of the lamp board with the cabinet frame, and then align the locating holes of the lamp board to the locating studs of the cabinet and absorb the remaining three sides of the lamp board.

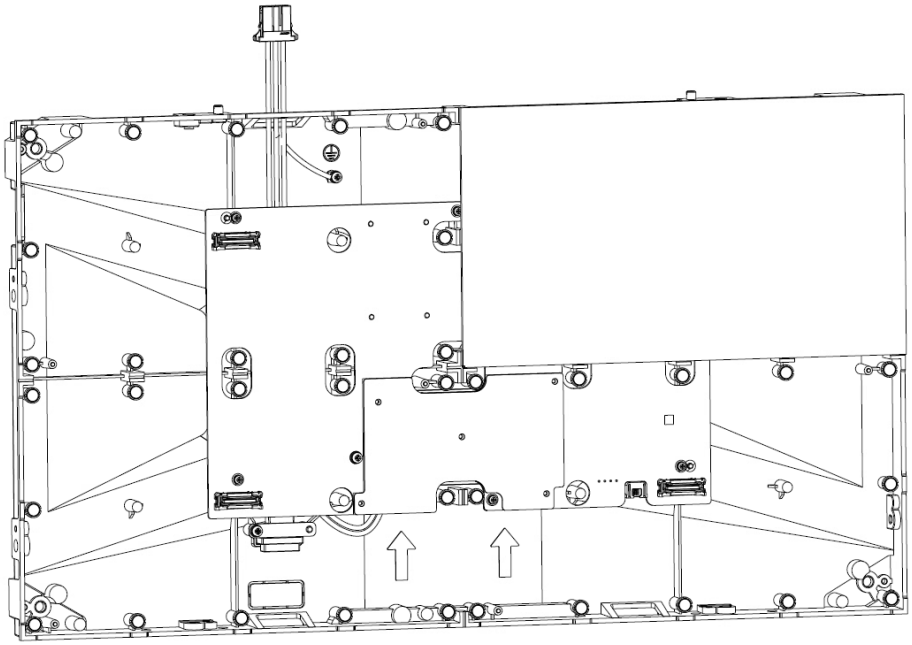


Figure 3-19 Install the First Lamp Board

Step 3 Stitch four lamp boards one by one.

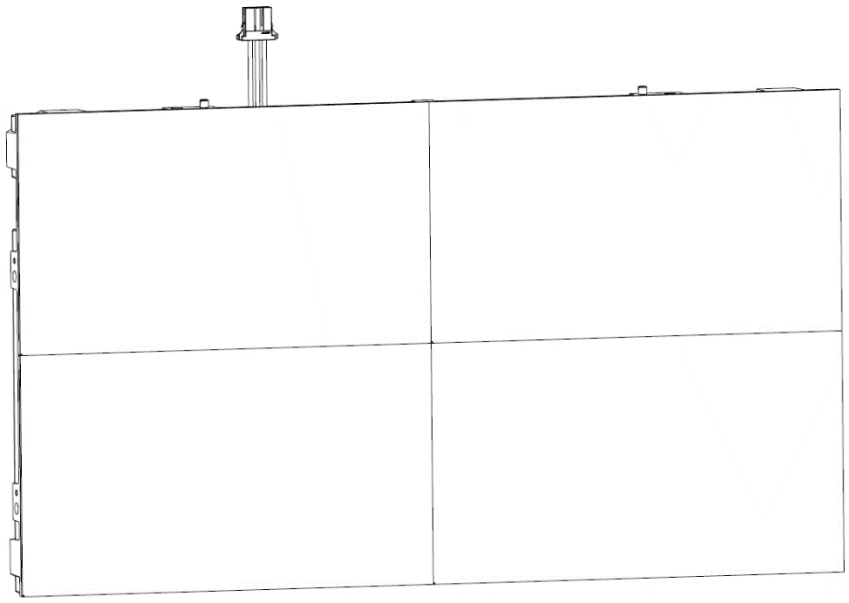


Figure 3-20 Lamp Board Installation Finished

Step 4 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.

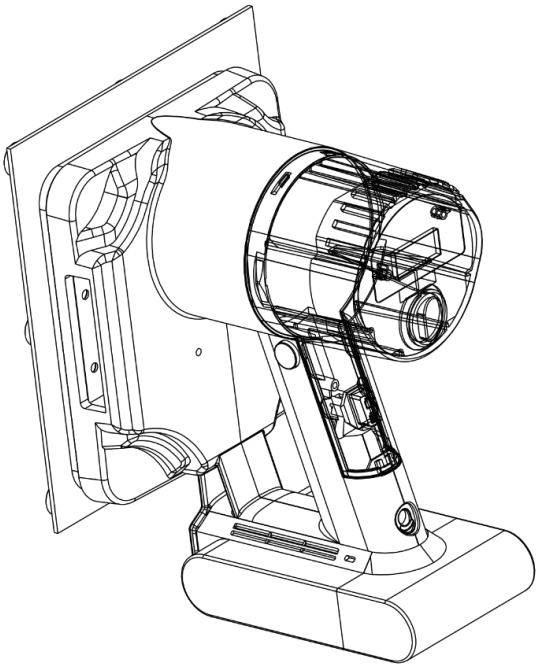


Figure 3-21 LED Vacuum Pumping Tool

3.5 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.

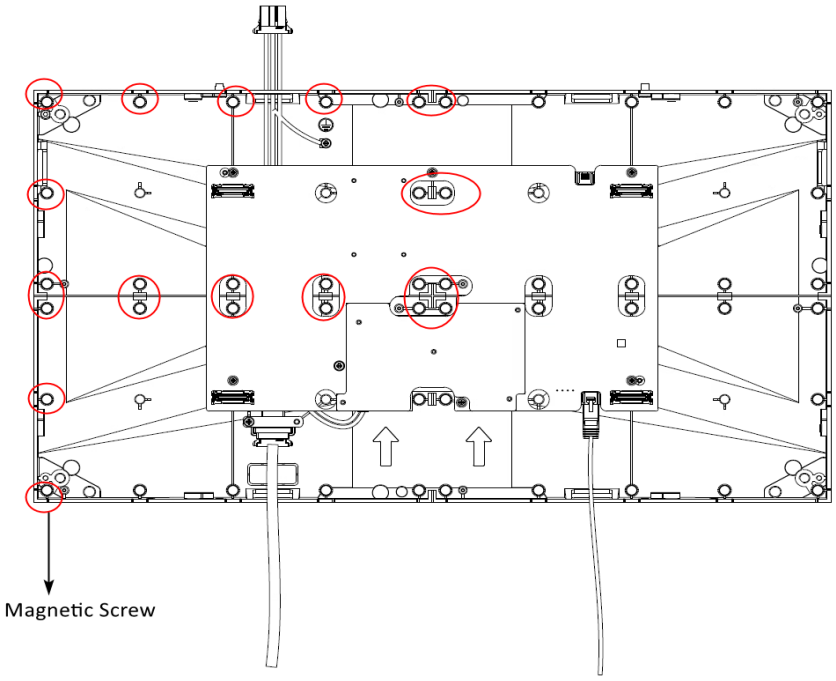


Figure 3-22 Adjusting Points of the Lamp Board

3.6 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 of a sending card for P1.2 cabinet is 5 cabinets. If the power consumption of the cabinet is 150 W, a power cord can load 15 cabinets.

Note

- The network cables are marked in green 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.

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

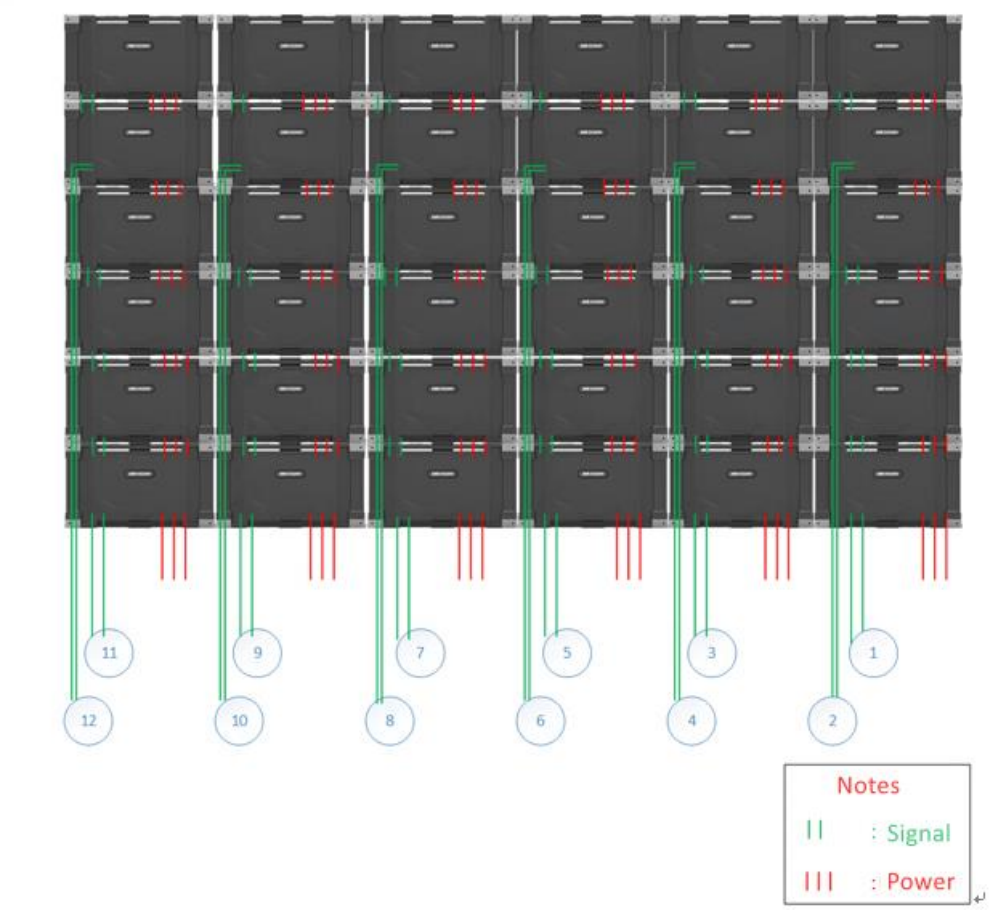


Figure 3-23 Cabling Diagram for 16 Output Interfaces

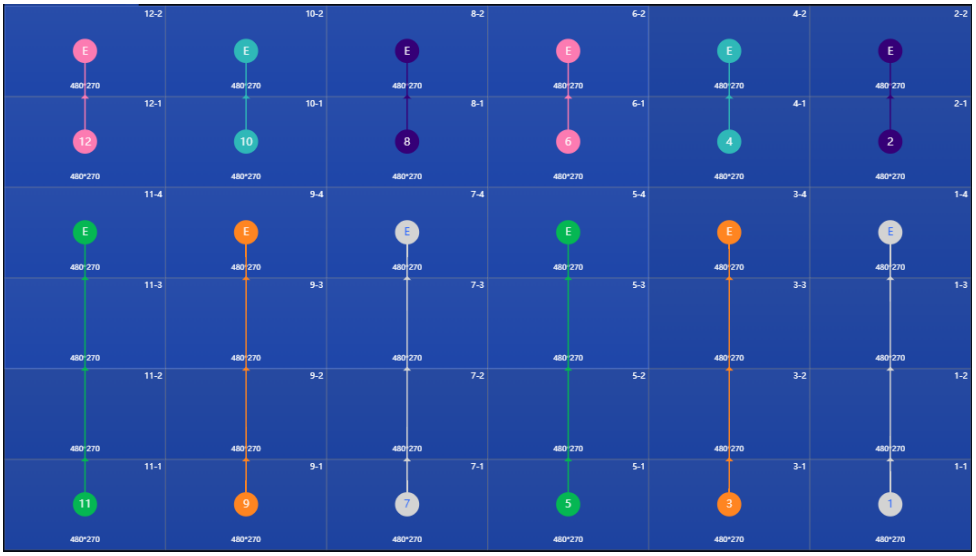


Figure 3-24 Cabling Diagram on LED Tool Client for 16 Output Interfaces

Chapter 4 Software Debugging

Use the LED Tool client to configure the device. For more details about the operating instructions, please download the LED Tool client, and then scan the QR code below to view the User Manual of the software.



Figure 4-1 QR Code of the LED Tool Client User Manual



UD36660B-D