Full-Color LED Display Unit

Installation Manual

Legal Information

About this Manual

The Manual includes instructions for using and managing the Product. Pictures, charts, images and all other information hereinafter are for description and explanation only. The information contained in the Manual is subject to change, without notice, due to firmware updates or other reasons. Please find the latest version of this Manual at the Hikvision website (*https://www.hikvision.com/*).

Please use this Manual with the guidance and assistance of professionals trained in supporting the Product.

Trademarks

HIKVISION and other Hikvision's trademarks and logos are the properties of Hikvision in various jurisdictions.

Other trademarks and logos mentioned are the properties of their respective owners.

HDMI™: The terms HDMI and HDMI High-Definition Multimedia Interface, and the HDMI Logo are trademarks or registered trademarks of HDMI Licensing Administrator, Inc. in the United States and other countries.

Disclaimer

YOU AGREE TO USE THIS PRODUCT IN COMPLIANCE WITH ALL APPLICABLE LAWS, AND YOU ARE SOLELY RESPONSIBLE FOR ENSURING THAT YOUR USE CONFORMS TO THE APPLICABLE LAW. ESPECIALLY, YOU ARE RESPONSIBLE, FOR USING THIS PRODUCT IN A MANNER THAT DOES NOT INFRINGE ON THE RIGHTS OF THIRD PARTIES, INCLUDING WITHOUT LIMITATION, RIGHTS OF PUBLICITY, INTELLECTUAL PROPERTY RIGHTS, OR DATA PROTECTION AND OTHER PRIVACY RIGHTS. YOU SHALL NOT USE THIS PRODUCT FOR ANY PROHIBITED END-USES, INCLUDING THE DEVELOPMENT OR PRODUCTION OF WEAPONS OF MASS DESTRUCTION, THE DEVELOPMENT OR PRODUCTION OF CHEMICAL OR BIOLOGICAL WEAPONS, ANY ACTIVITIES IN THE CONTEXT RELATED TO ANY NUCLEAR EXPLOSIVE OR UNSAFE NUCLEAR FUEL-CYCLE, OR IN SUPPORT OF HUMAN RIGHTS ABUSES.

IN THE EVENT OF ANY CONFLICTS BETWEEN THIS MANUAL AND THE APPLICABLE LAW, THE LATTER PREVAILS.

Regulatory Information

FCC Information

Please take attention that changes or modification not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

FCC compliance: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

FCC Conditions

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.

2. This device must accept any interference received, including interference that may cause undesired operation.

EU Conformity Statement

This product and - if applicable - the supplied accessories too are marked with "CE" and comply therefore with the applicable harmonized European standards listed under the EMC Directive 2014/30/EU, the LVD Directive 2014/35/EU, the RoHS Directive 2011/65/EU.

2012/19/EU (WEEE directive): Products marked with this symbol cannot be disposed of as unsorted municipal waste in the European Union. For proper recycling, return this product to your local supplier upon the purchase of equivalent new equipment, or dispose of it at designated collection points. For more information see: www.recyclethis.info

2006/66/EC (battery directive): This product contains a battery that cannot be disposed of as unsorted municipal waste in the European Union. See the product documentation for specific battery information. The battery is marked with this symbol, which may include lettering to indicate cadmium (Cd), lead (Pb), or mercury (Hg). For proper recycling, return the battery to your supplier or to a designated collection point. For more information see: www.recyclethis.info

Industry Canada ICES-003 Compliance

This device meets the CAN ICES-3 (A)/NMB-3(A) standards requirements.

Applicable Models

This manual is applicable to the models listed in the following table.

Series	Model
DS-D42XXFI-GW	DS-D4212FI-GW
	DS-D4215FI-GW
	DS-D4219FI-GW
DS-D42XXFI-CW	DS-D4225FI-CW

Symbol Conventions

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

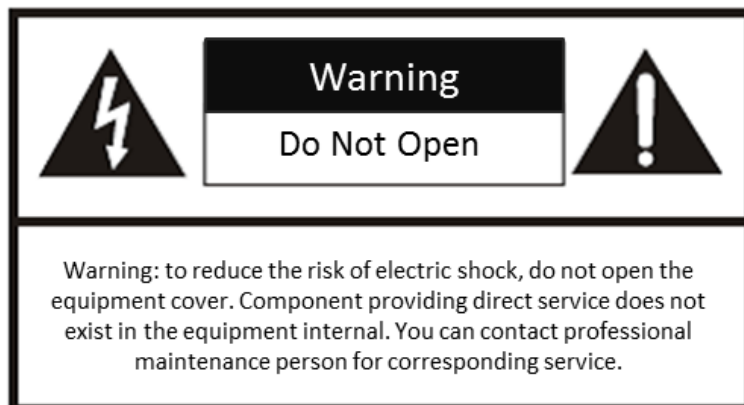| Symbol	Description
NOTE	Provides additional information to emphasize or supplement important points of the main text.
WARNING	Indicates a potentially hazardous situation, which if not avoided, could result in equipment damage, data loss, performance degradation, or unexpected results.
DANGER	Indicates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

Safety Instructions

For safety concerns, the device has been strictly tested before shipment. However, incorrect installation or usage may lead to hazardous results such as electric shock and fire. To ensure the service life and best performance of the device, please read the notice and plate signs carefully and follow the safety instructions. Keep this guide properly for later use.

⚠ **WARNING**

- To ensure safety, the installation parts and the wall should support four times the weight of the device.
- 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.
- One power cable should not loop more than 5 devices at a time.
- Please set the brightness of the LED display within 500 nits to avoid power overload.
- The device may generate radio interference in indoor environment. Necessary precautions may be required.
- To reduce the risk of fire or electric shock, please do not expose the device to rain or humid environment.
- 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.
- 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.
- The socket should be near the device and easily reached.

	Warning	
	Do Not Open	

Warning: to reduce the risk of electric shock, do not open the equipment cover. Component providing direct service does not exist in the equipment internal. You can contact professional maintenance person for corresponding service.

⚠ **DANGER**

- Do not let children climb onto the device.
- Keep small accessories away from children.

TABLE OF CONTENTS

Chapter 1 Overview

1.1 Introduction

A full-color LED display unit (hereafter referred to as "device" or "product") 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 stitching 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 well applied to scenarios such as radio and television broadcasting, video security, conference display, and information display.

1.2 Product Components

Our full-color LED display units are cabinet products. A 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.

The center distance between two pixels is called pixel pitch. The smaller pixel pitch results in higher pixel density per unit area, higher resolution and higher cost. For example, P1.2 indicates 1.2 mm pixel pitch.

Our products are rack-mount system, so the installation process mainly involves rack installation and cabinet installation. The following sections describe how to install the rack and cabinet in details.

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 mount rack. The wall mount rack is used for installing front-maintenance cabinets only. The rack models vary depending on the project scale and installation environment, so the rack illustrations in this manual are for reference only.

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 debris in the rack and avoid metal debris being remained.

2.2.2 Install the All-in-One Rack

All-in-one racks are used for mounting cabinet products.

Install Bottom Plates

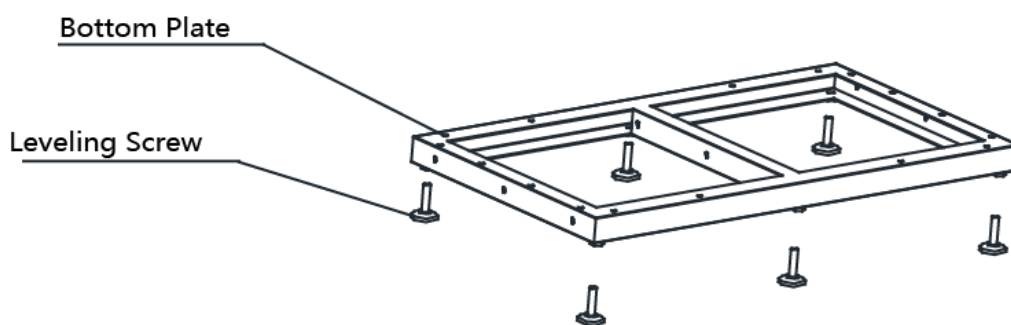Step 1 Position the leveling screws into the bottom plates and assemble the plates.

Figure 2-1 Assemble the Bottom Plates

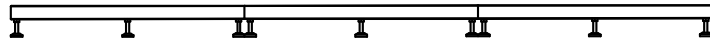**Step 2** Use a gradienter to adjust the bottom plates and then tighten the screws.

Figure 2-2 Leveled Bottom Plate

Install Rack Frames and Lower Rails

Step 1 Position the rack frames on the bottom plate and secure the rack frames. Use the gradienter to measure each vertical component and ensure they are vertical and on the same plane.
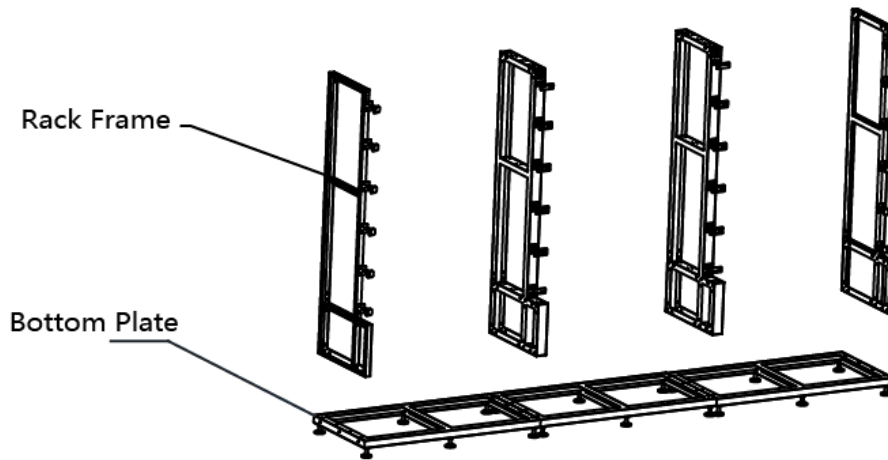

Figure 2-3 Install the Rack Frames

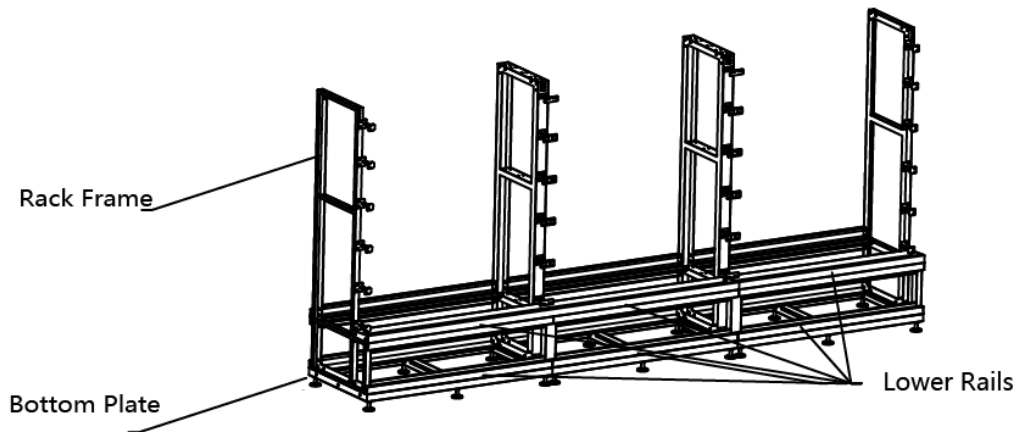**Step 2** Fix the lower rails onto the bottom plate and rack frames respectively.

Figure 2-4 Install the Lower Rails

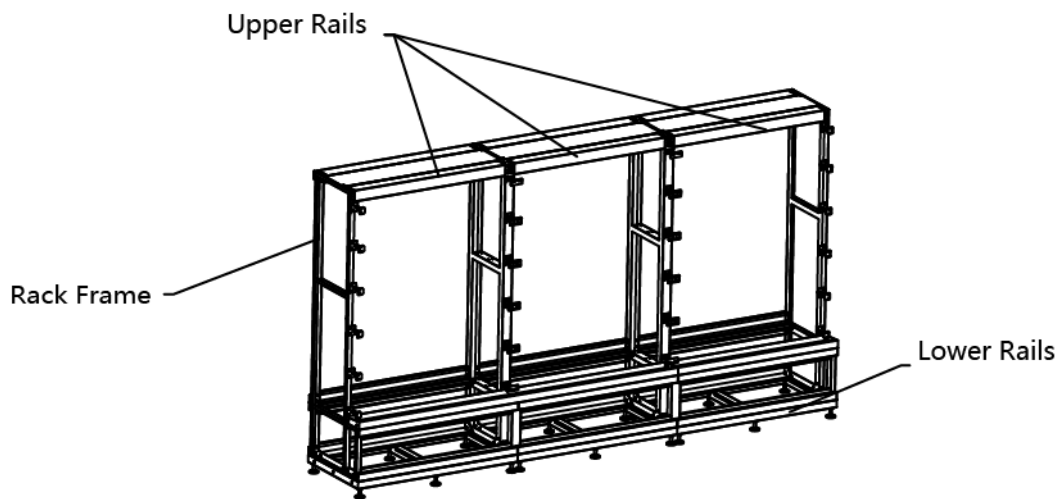**Step 3** Fix the upper rails onto the rack frames.
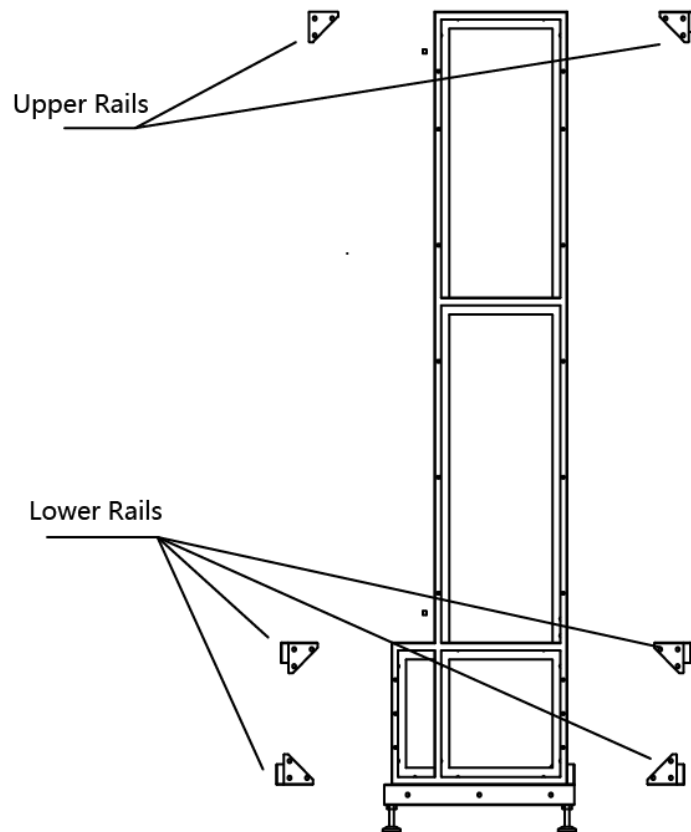
Figure 2-5 Install the Upper Rails

Figure 2-6 Side View of Rail Installation

Install the Lower Filler Strips

Step 1 Connect the lower filler strips to the rack frames and fix them with screws.

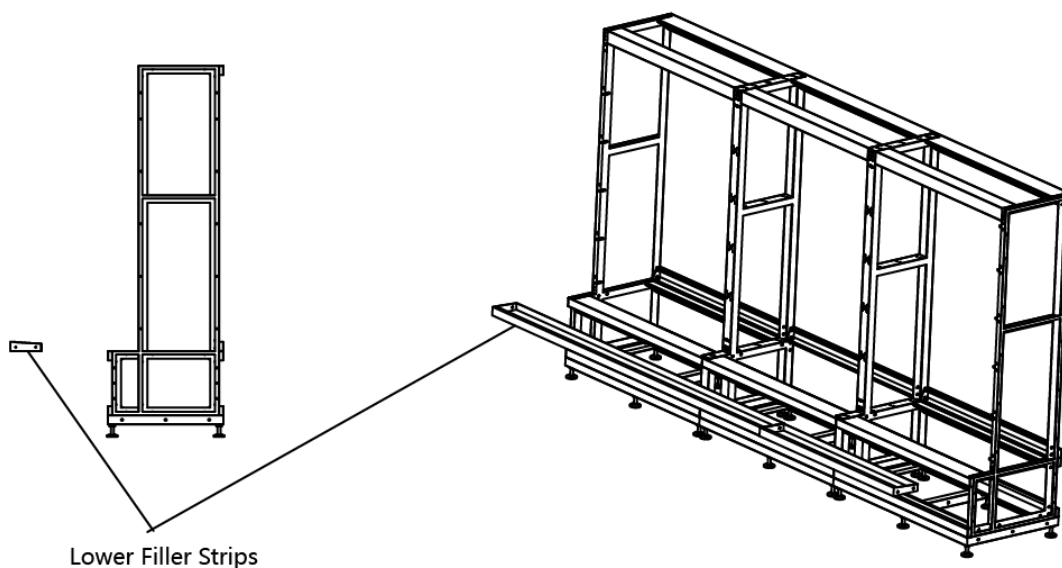Step 2 Align the filler strips and tighten the screws.

Figure 2-7 Install the Lower Filler Strips

Install the Connectors

The following three types of connectors are used for connecting the rack frames. Type A is used for connecting the rack frames on the two sides. Type B is used for the inner parts of the two middle rack frames, while type C is used for the outer parts located on the top and bottom sides.

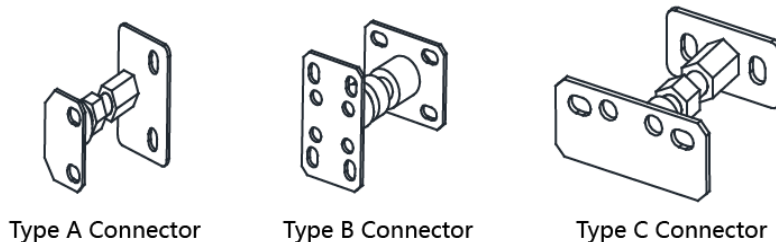Type A Connector   Type B Connector   Type C Connector

Figure 2-8 Connectors

Step 1 Install the three types of connectors onto the rack frames by following the instructions above.
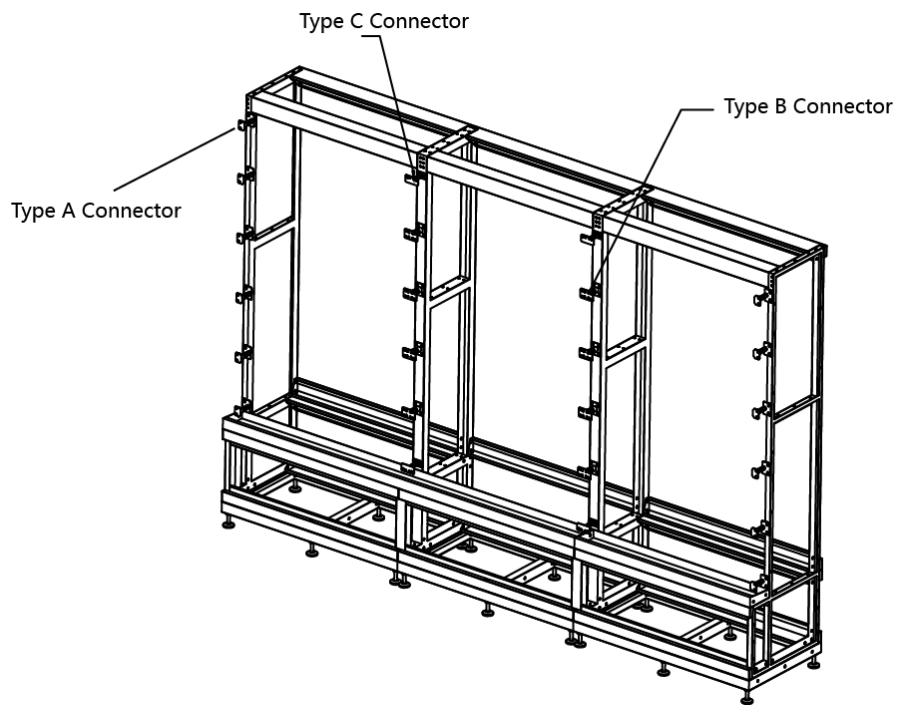
Figure 2-9 Install the Connectors

Step 2 Secure the connectors to the rack frames with screws.

Install the Cabinets

Install the cabinets from bottom up, from the middle to the sides. Cabinets must be carefully installed, see *Chapter 3 Cabinet Installation* for the instructions.
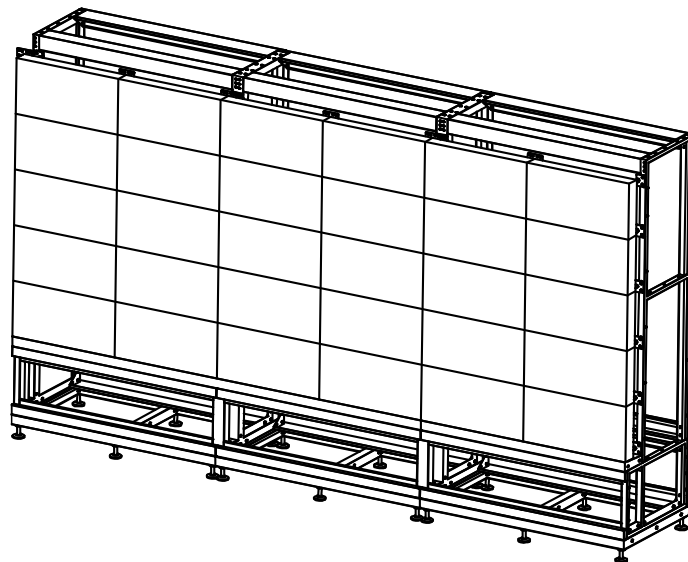

Figure 2-10 Cabinet Screens Installed

Install the Upper Filler Strips

Step 1 Connect the upper filler strips to the rack frames and fix them with screws.

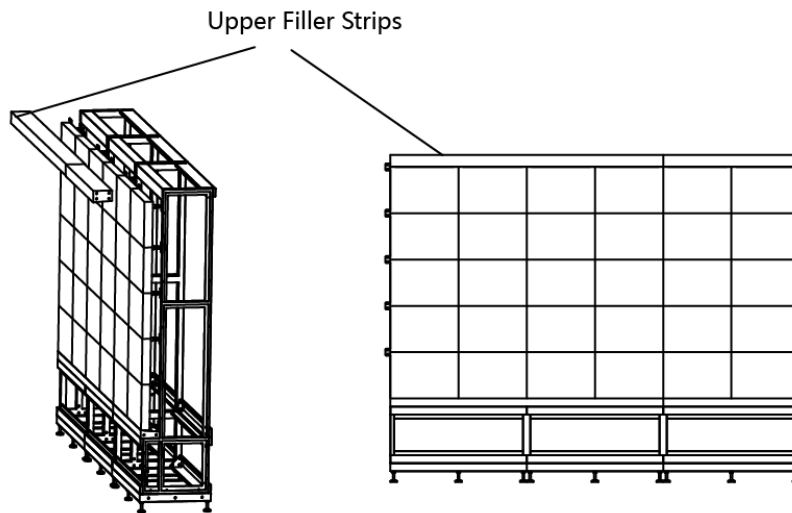Step 2 Align the filler strips and tighten the screws.

Figure 2-11 Install the Upper Filler Strips

Install the Scaffold Planks (for Large-scale Project)

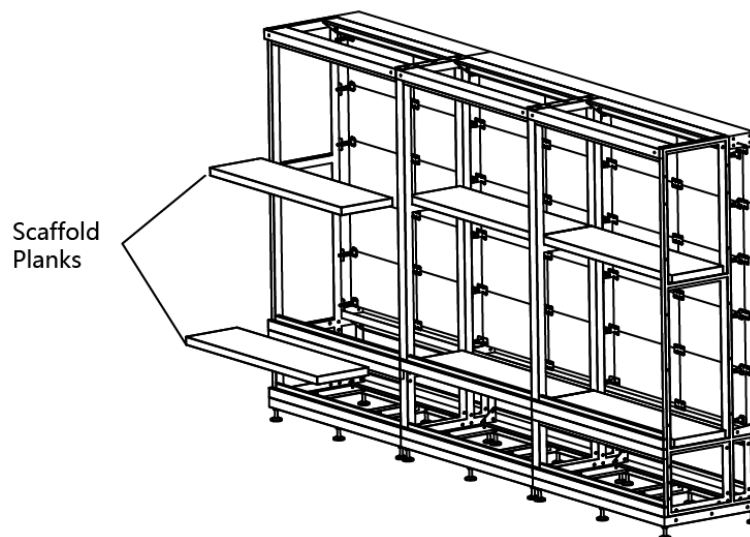Use screws to connect the scaffold planks to the rack frames and tighten the screws.

Figure 2-12 Install the Scaffold Planks

🛈 NOTE

If your project requires tall LED screens, install the scaffold planks first and then the LED screens.

Install the Cover Plates

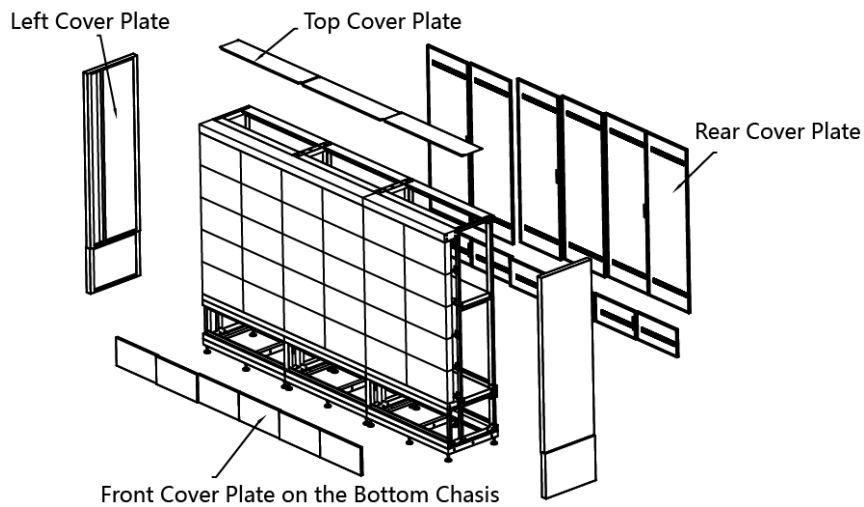Install the left, right, front, rear, and top cover plates respectively.

Figure 2-13 Install the Cover Plates

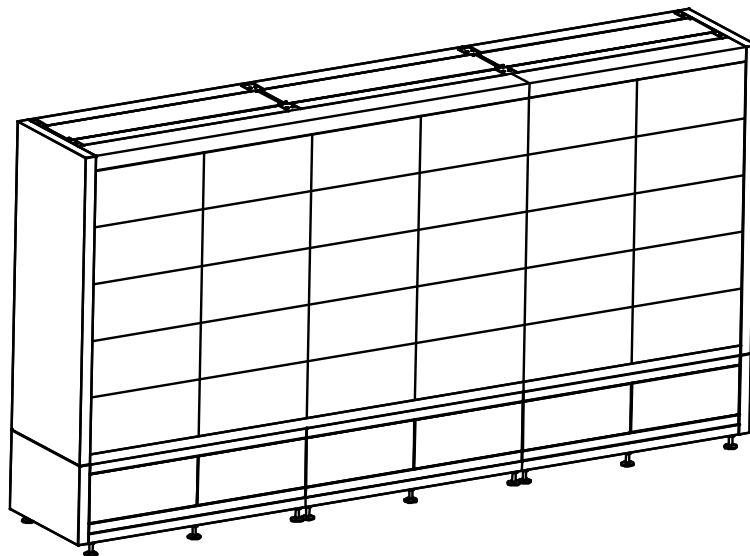The following figure shows a LED display unit that is well installed.

Figure 2-14 Screen Installation Finished

2.2.3 Install the Wall Mount Rack

The wall mount rack is used for installing front-maintenance cabinet LED screens only.

Step 1 Install the base rails. Secure the base rails to the wall with expansion bolts and keep the base rails flat and level.

Mounting hole for expansion bolts

Figure 2-15 Install the Base Rails

Step 2 Install the rack frames.

Position a rack frame on the base rail and secure the rack frame to the base rail and then to the wall. Then repeat the steps to install all the other rack frames. Keep the rack frame vertical after installation.
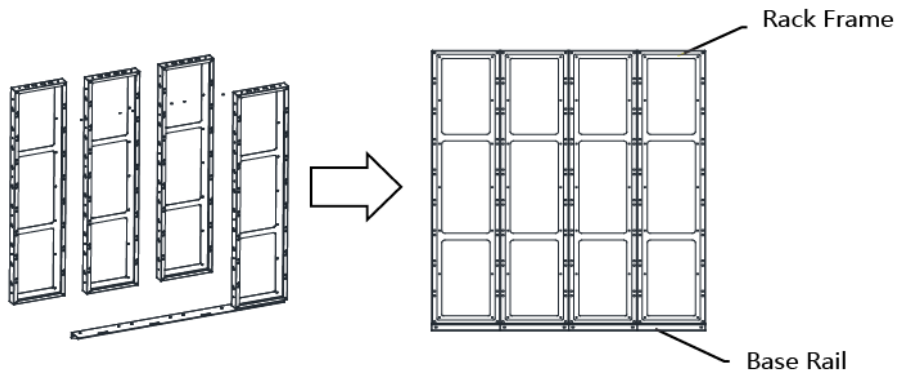
Rack Frame

Base Rail

Figure 2-16 Install the Rack Frames

Step 3 Install front-maintenance cabinets.

Install the LED screens from bottom up, row by row. Penetrate the mounting screws into the through-holes on the front of the screen, and secure the screws to the floating nuts on the rack frames. Adjust the flatness after each row of screens are installed.

⌈**i**⌋ **NOTE**

- Do not screw too tight for future adjustment.
- During installation, always pay attention to the flatness. Ensure that the frame racks are flat, and adjust slightly the lamp boards on the front as well so that lamp boards are all flat with even and standard seams.
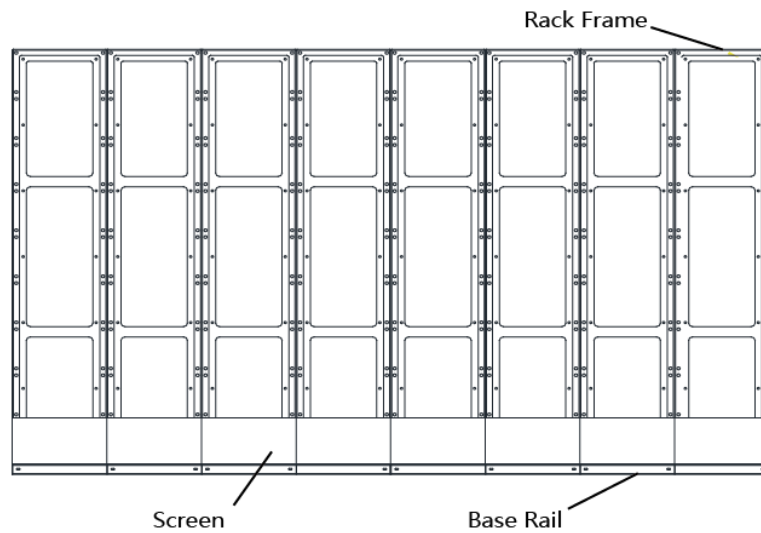

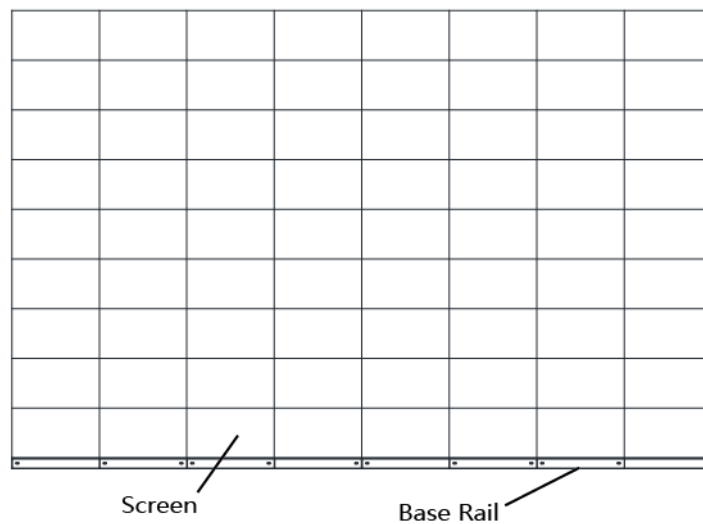Figure 2-17 First Row of Screens Installed

Figure 2-18 Screen Installation Finished

Chapter 3 Cabinet Installation

3.1 Introduction

3.1.1 About the 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.

3.1.2 Apperance

The following figure shows the apperance of a cabinet.

Figure 3-1 Cabinet Front View

Figure 3-2 Cabinet Rear View

3.1.3 Load Capability

The following table lists the load capability of a single network interface of the sending card for different screen types.

Table 3-1 Cabinet Load Capability

Screen Type	Number of Cabinet Connections for an Input of 220 V Power Supply	Max Load of a Single Network Interface
P1.2	5 cabinets	4 cabinets
P1.5	5 cabinets	7 cabinets
P1.9	5 cabinets	10 cabinets
P2.5	5 cabinets	16 cabinets

If one-to-two power cable is provided on site, assign one one-to-two power cable to each two columns (with standard 5 rows).

3.2 Install the Cabinets

3.2.1 Precautions

Read the following precaution tips before you install the LED screens:

● Install the LED screens after the decoration construction is completed.

● Avoid humid or high-pH environment to prevent damage to the LED lamps.

● Do not expose the device to rain or humid environment to reduce the risk of fire or electric shock.

● 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 cable delivered with the device. Contact authorized dealer to purchase power cable with same specifications.

● Please do not frequently plug and unplug the power cable when the power is on.

3.2.2 Install Cabinets into the Rack Frames

After the rack frames and connectors are well installed (see *Chapter 2 Rack Installation* for details), perform the following steps to install the cabinets into the rack frames:

Step 1 Install the first cabinet from the lower middle part.

Use a gradienter to adjust the flatness and verticality and then secure the cabinet to the connectors on the rack frames. For some parts of the screen that do not have connectors near the rear, use joint pieces to fix the screen.
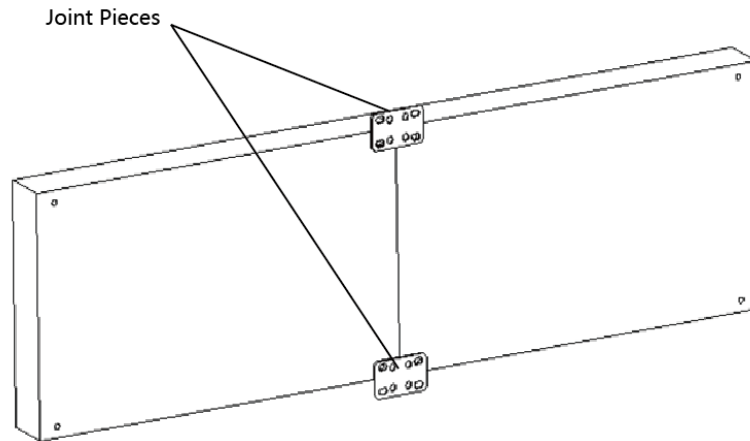
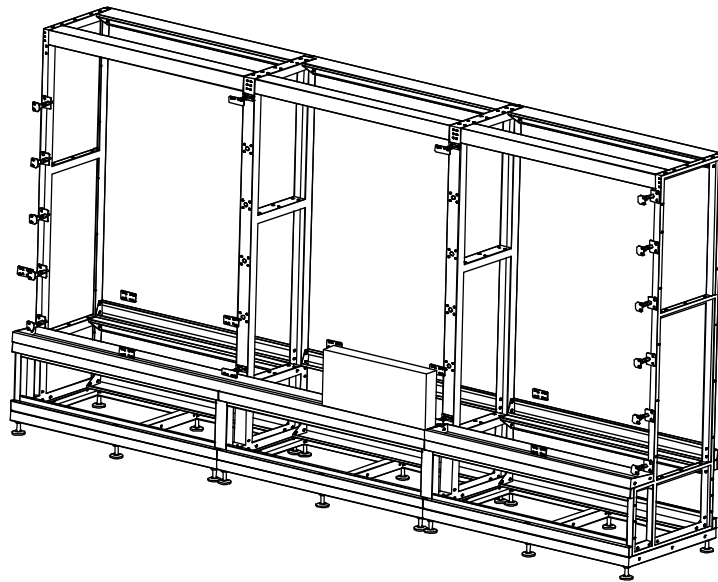Figure 3-3 Fix the Screen with Joint Pieces

Figure 3-4 Fix the Screen in the Middle of Rack Frames

NOTE

- Install the cabinets from the bottom to the top, from the middle to the sides.
- Sink the screen into the lower filler strips by 3 mm.
- Do not fix the screws between the connectors and cabinets too tight for future adjustment.
- In normal cases, 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 seam and flatness between cabinets conform to the standard after each cabinet is installed. Otherwise, make some adjustments.

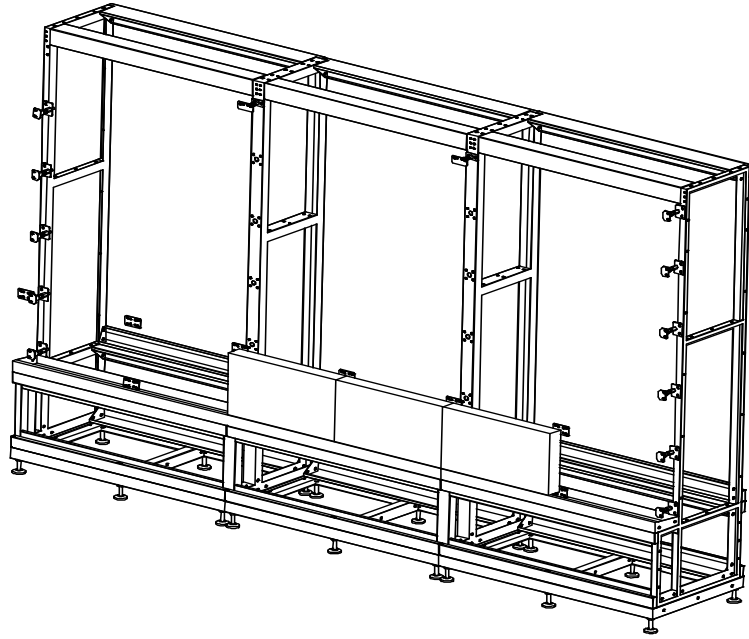Step 2 Repeat the above steps to install the other cabinets in the lowest row.

Figure 3-5 Install Screens from Middle to Sides

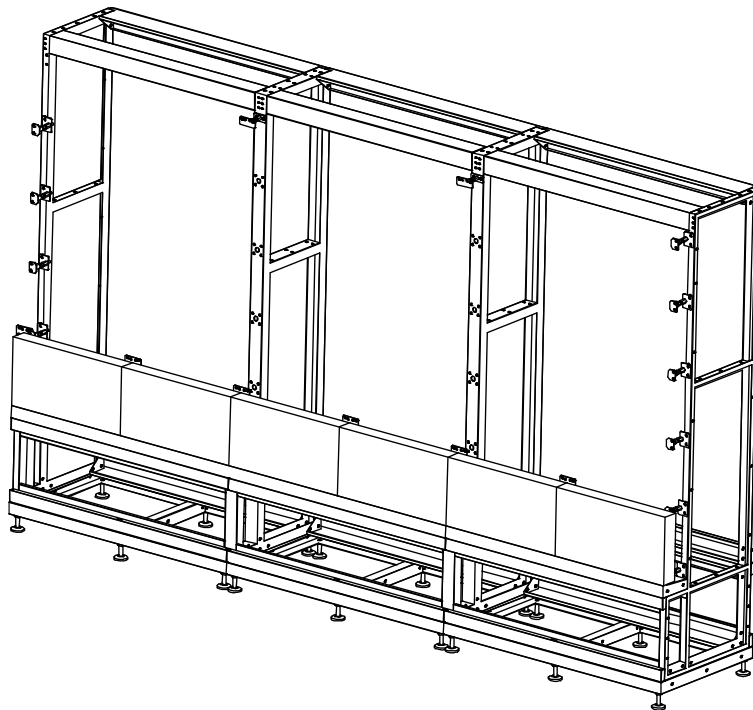Step 3 Use the gradienter to measure and ensure that the cabinets are flat and vertical.

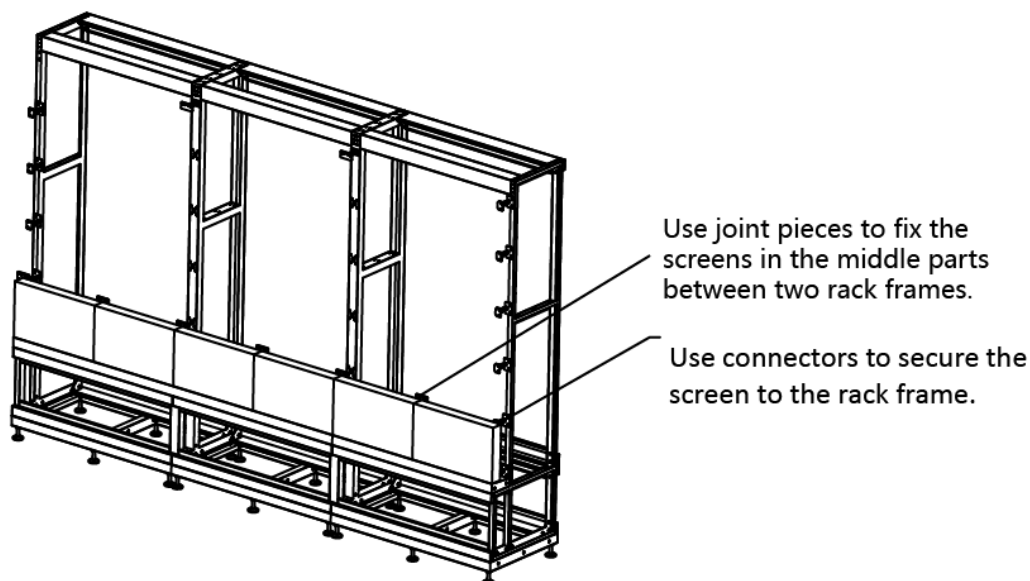

Figure 3-6 Installation of the Lowest Row Finished

Use joint pieces to fix the screens in the middle parts between two rack frames.

Use connectors to secure the screen to the rack frame.

Figure 3-7 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.

Step 4 Repeat the above steps to complete the installation of other cabinets.

Screen are secured to the connectors on the rack frame.

Adjacent parts of the screens are fixed with joint pieces.
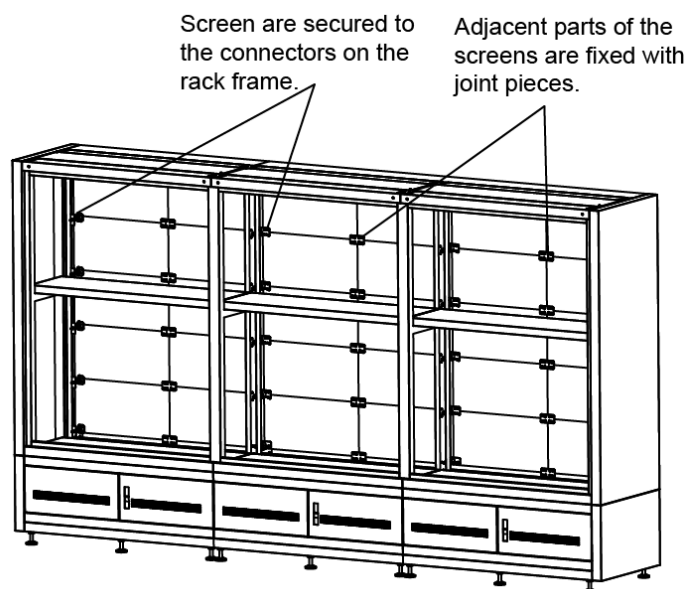
Figure 3-8 Screens Fixed

Step 5 Ensure that all the cabinets are flat and vertical and the seams between the cabinets are even. Then tighten the screws to complete the installation.
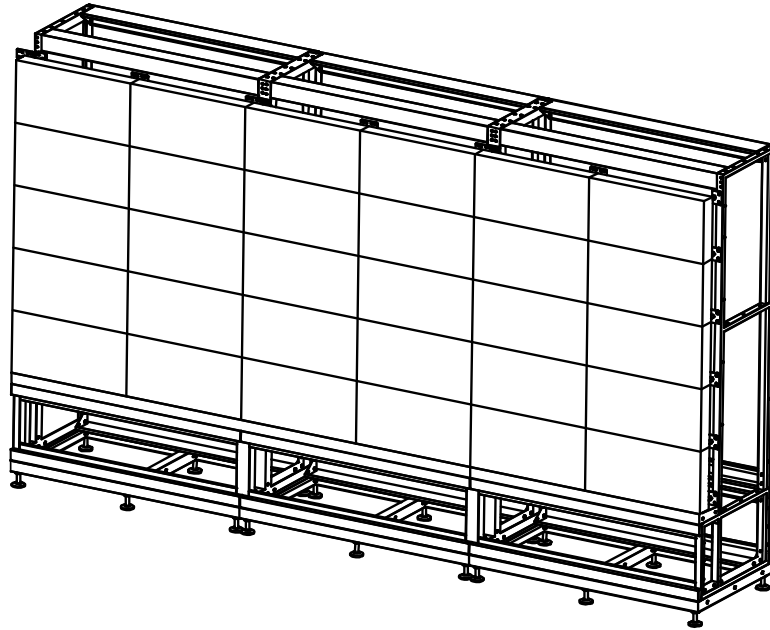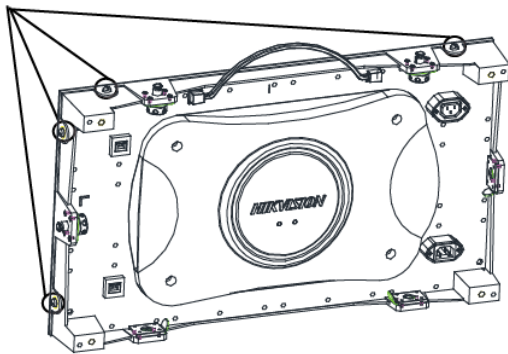
Figure 3-9 Screen Installation Finished

3.2.3 Stitch Cabinets

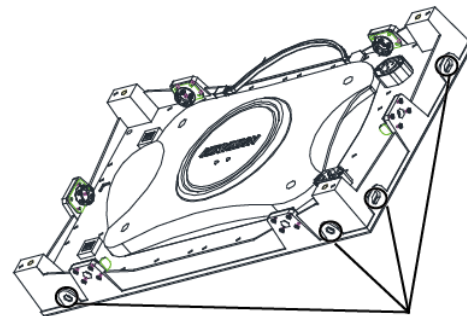Step 1 Align two cabinets with the locating studs and locating holes.

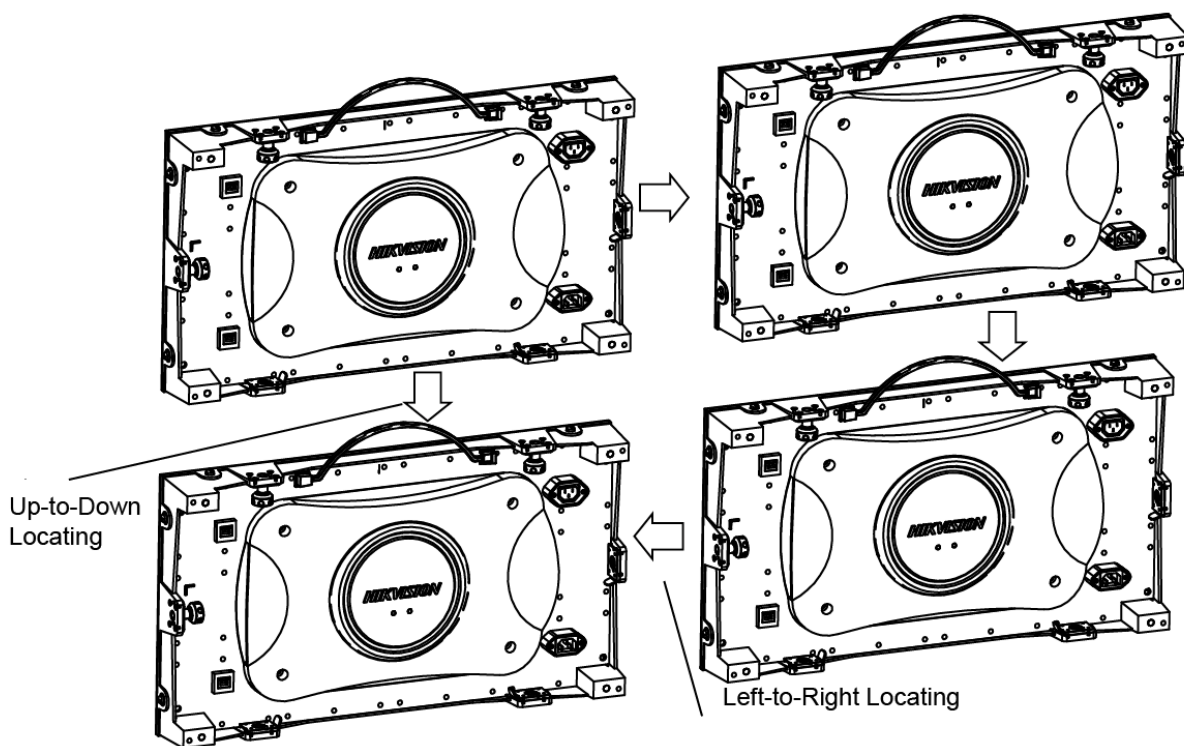Figure 3-10 Locating Studs and Locating Holes on Cabinets

Figure 3-11 Initial Cabinet Locating

Step 2 After aligning the locking parts, rotate the lock sleeves anticlockwise to the end.
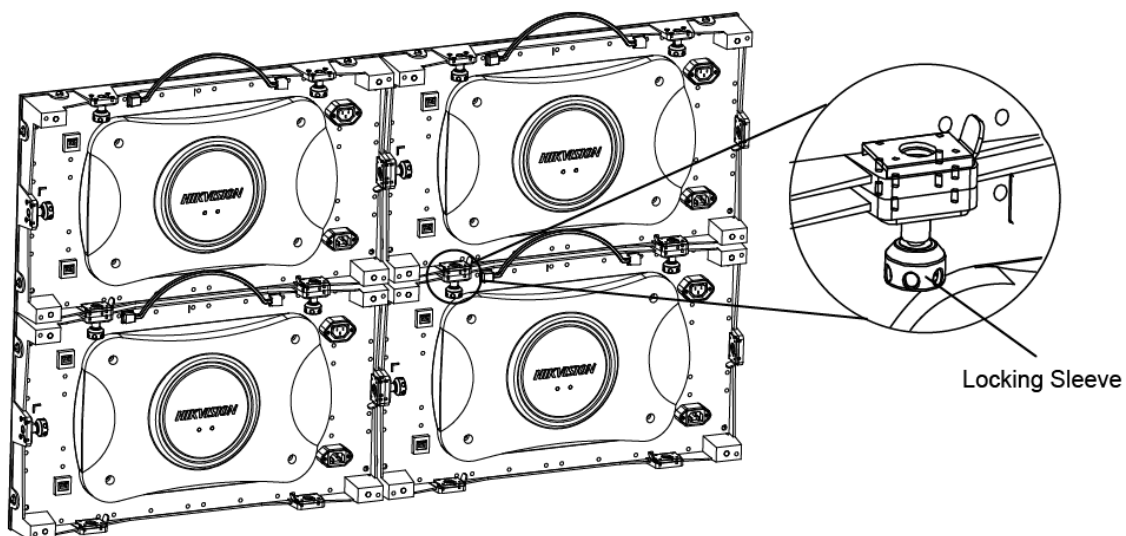

Figure 3-12 Rotate Lock Sleeves Anticlockwise

Step 3 Push the locking shaft from the bottom up to go through the two cabinets.
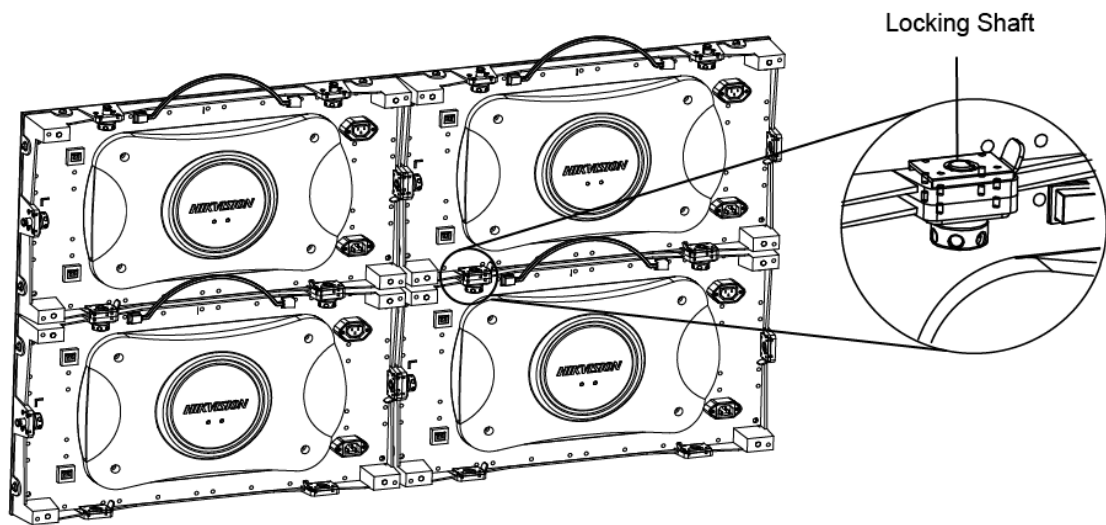
Figure 3-13 Push the Locking Shafts

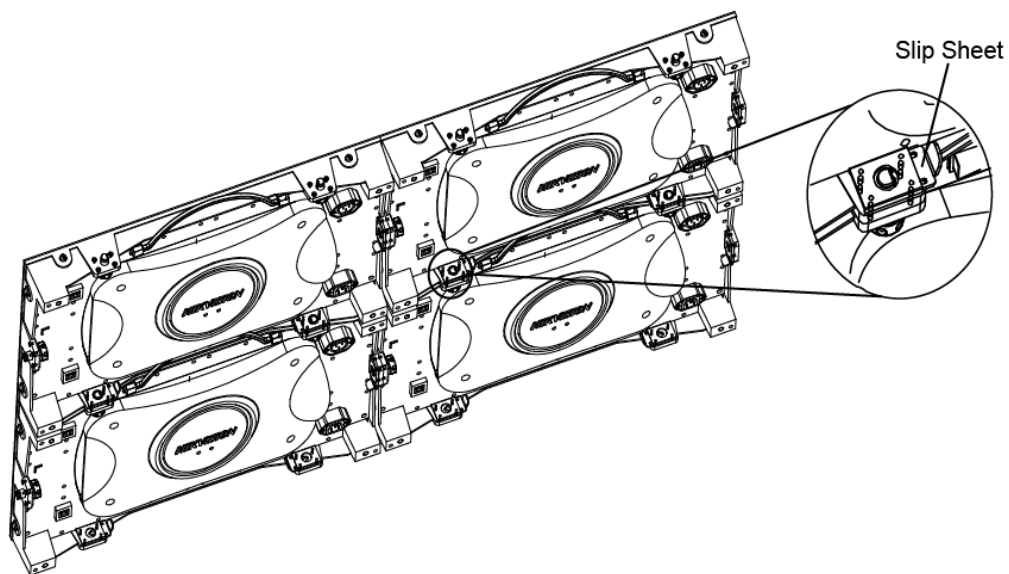Step 4 Slide the slip sheet and lock it into the groove of the locking shaft.

Figure 3-14 Slide the Slip Sheets

Step 5 Fix the two adjacent cabinets by rotating the locking sleeves clockwise with an instrument. You can control the tightness by increasing or decreasing the rotation turns.
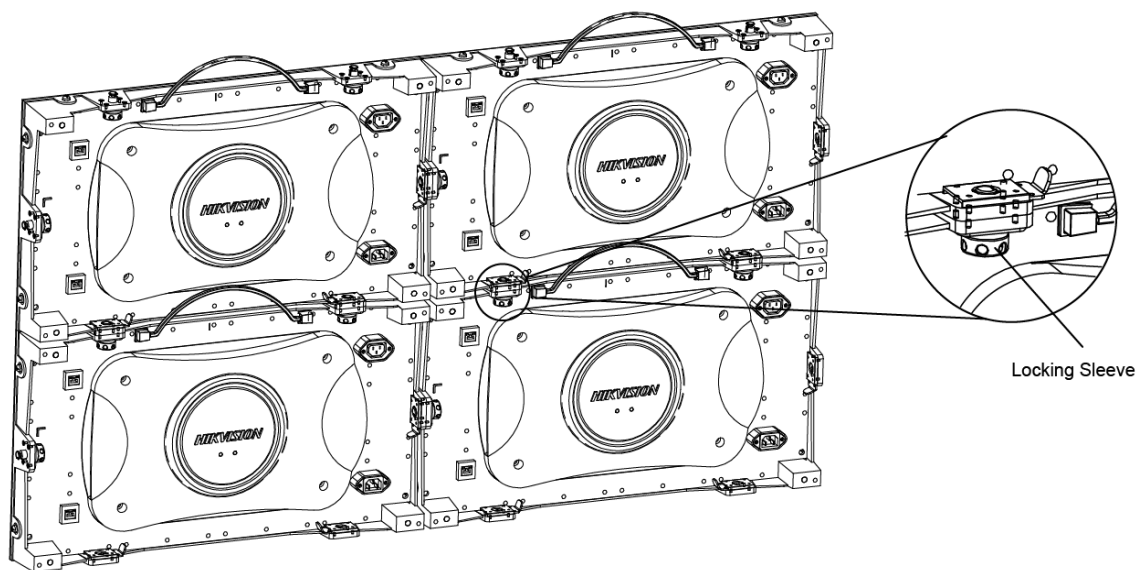
Figure 3-15 Rotate the Locking Sleeves Clockwise

3.2.4 Adjust Lamp Boards on the Cabinets Horizontally

Each LED lamp board has six adjustable points that can be used to adjust the flatness of the cabinet. In the following figure, all the circled points are adjusting points.
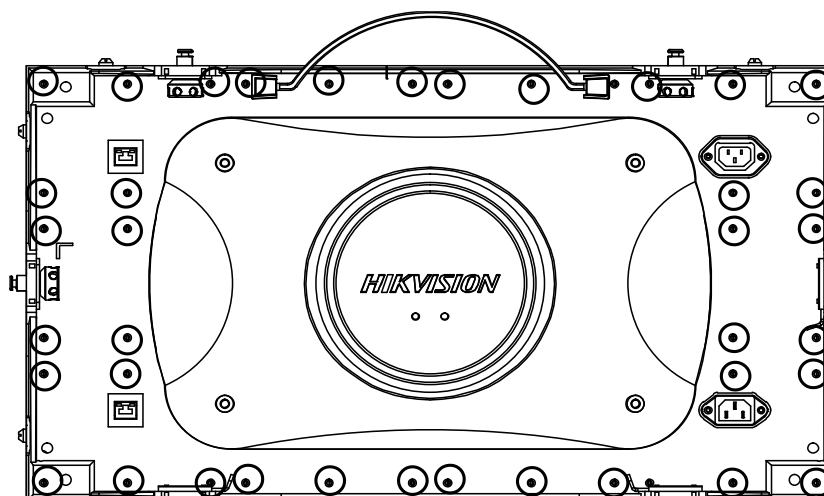

Figure 3-16 Points Adjustable on the Cabinet

Adjustment method: Rotate the screws with a word screwdriver to push the adjusting points and lamp boards out until the cabinet is level with others.

3.2.5 Remove Lamp Boards from Cabinets

● To remove lamp boards in the four corners of a cabinet, use an instrument to penetrate the four through holes as circled in the following figure to push the lamp boards out.
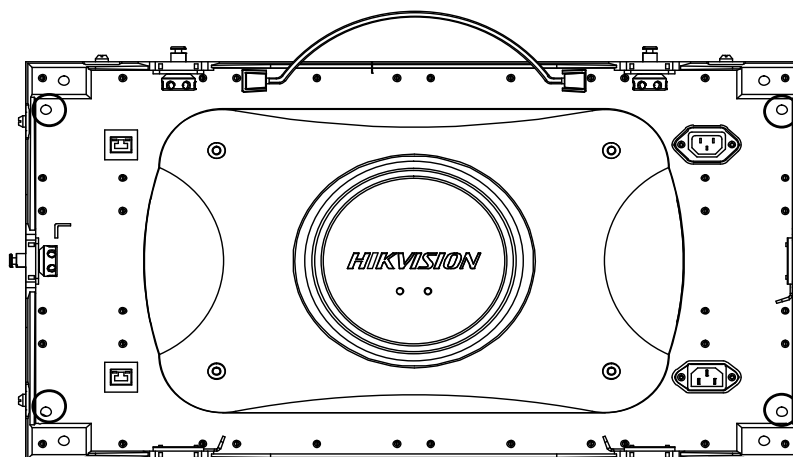
Figure 3-17 Through Holes in the Four Corners of the Cabinet

● To remove lamp boards inside a cabinet, firstly remove the back case and then use an instrument to penetrate the through holes as circled in the following figure to push the lamp boards out.
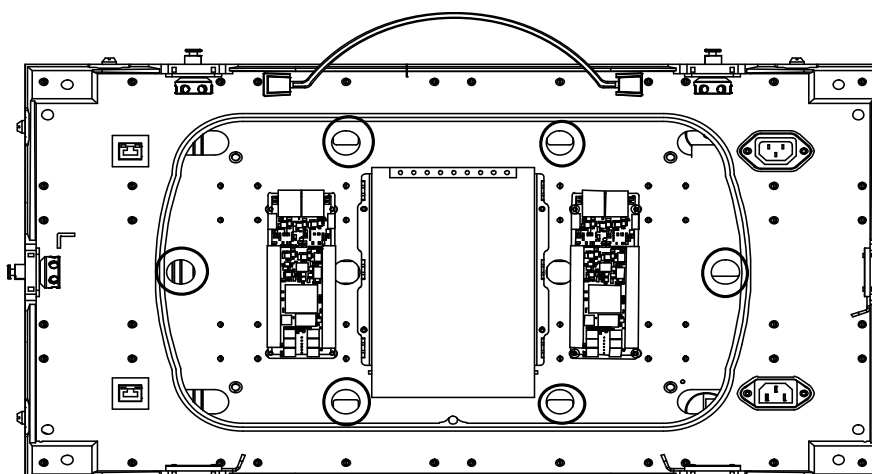

Figure 3-18 Through Holes inside the Cabinet

● To remove lamp boards from the front for some custom cabinets, use the removal instrument provided with our product. The procedure is as follows:

1. Decrease the magnetic force of the removal instrument and place the instrument closely onto the surface of the lamp board.

2. Twist the handle of the instrument to increase the magnetic force so that the lamp board is attracted tightly by the instrument.

3. Hold tightly the instrument and pull out the lamp board.

3.3 Configuration Example

The following two figures show the connection diagrams of P1.9 cabinets. The resolution is 1080P. The signal cables are marked in green and the power cables in red.

If the power consumption of the cabinet is 300 W, the parameter of the one-to-one power cable is 100-240V, 10A, and then cabinets can be divided into groups by six.

If one-to-two power cable is provided on site, assign one power cable to each two columns (with standard six or seven rows). Add an additional row as needed in some special cases. For details, see section *3.1.3 Load Capability*.

Cabling Diagram for Eight-Interface Sending Card

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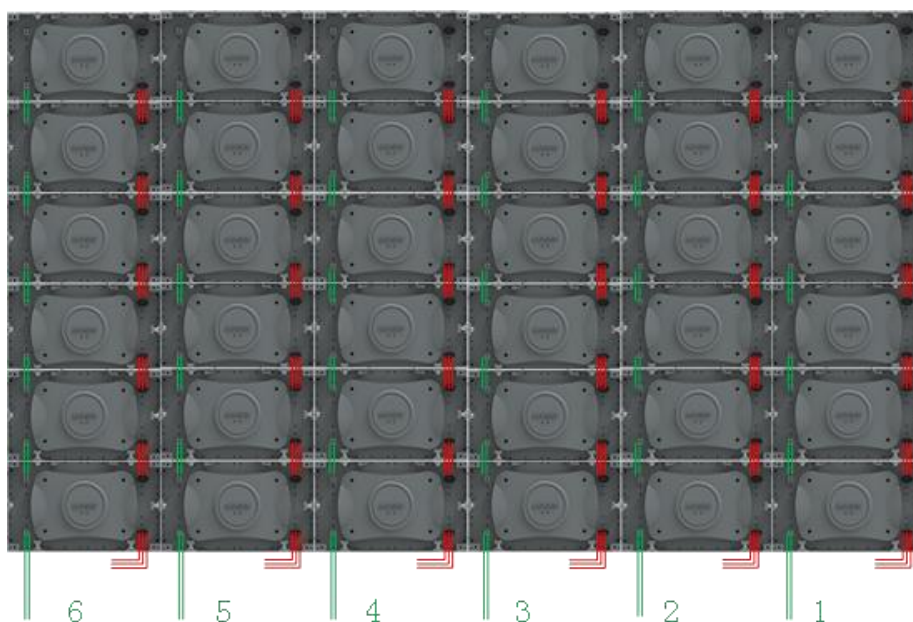

Figure 3-19 Cabling Diagram for Eight Output Interfaces

The following figure shows the related cabling diagram on the client.

Figure 3-20 Cabling Diagram for Eight Output Interfaces on the Client

Cabling Diagram for Four-Interface Sending Card

If the sending card provides four output interfaces, the cabling is shown in the following figure.
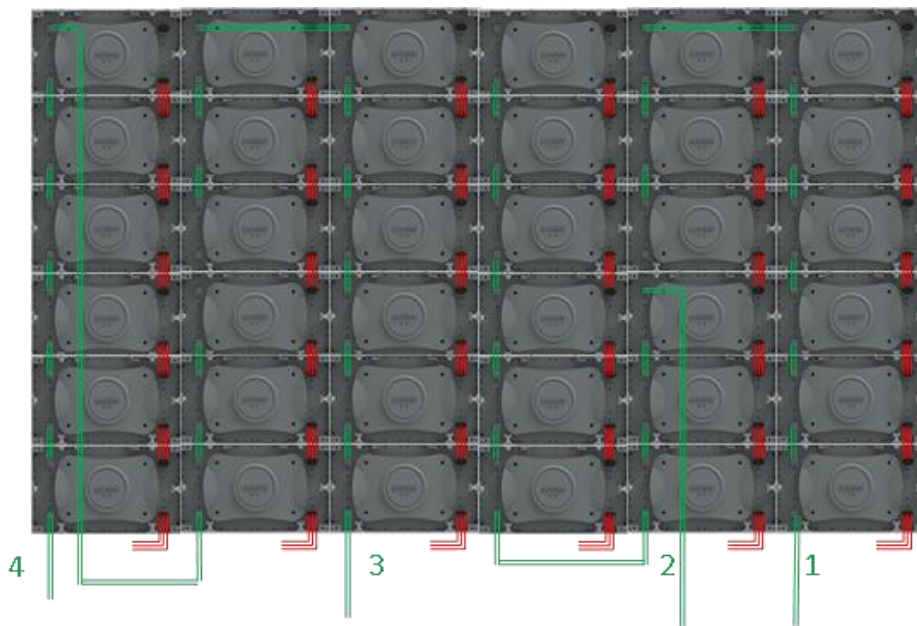

Figure 3-21 Cabling Diagram for Four Output Interfaces

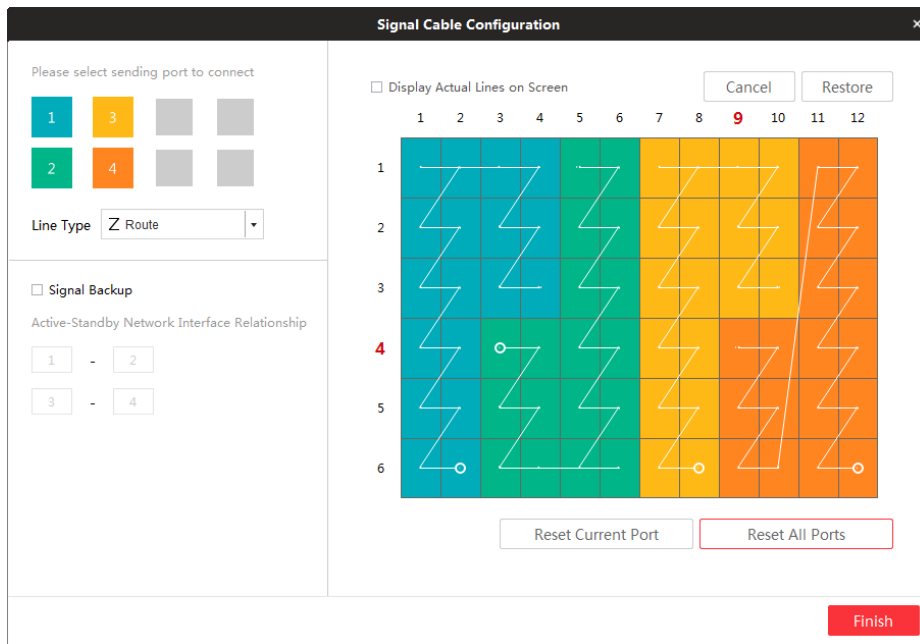The following figure shows the related cabling diagram on the client.

Figure 3-22 Cabling Diagram for Four Output Interfaces on the Client

Signal Redundancy

The whole project adopts redundancy mode. Use the 8-interface sending card as an example. Client enables redundancy mode, and then 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, LAN 5 to LAN 6, and LAN 7 to LAN 8.

According to on-site project cabling, LAN1 connects to the first cabinet while LAN2 connects to the last cabinet of the first group.
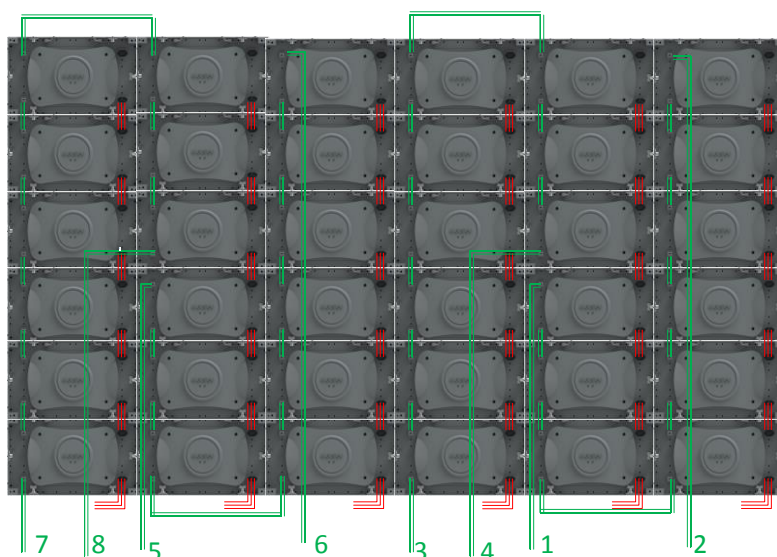

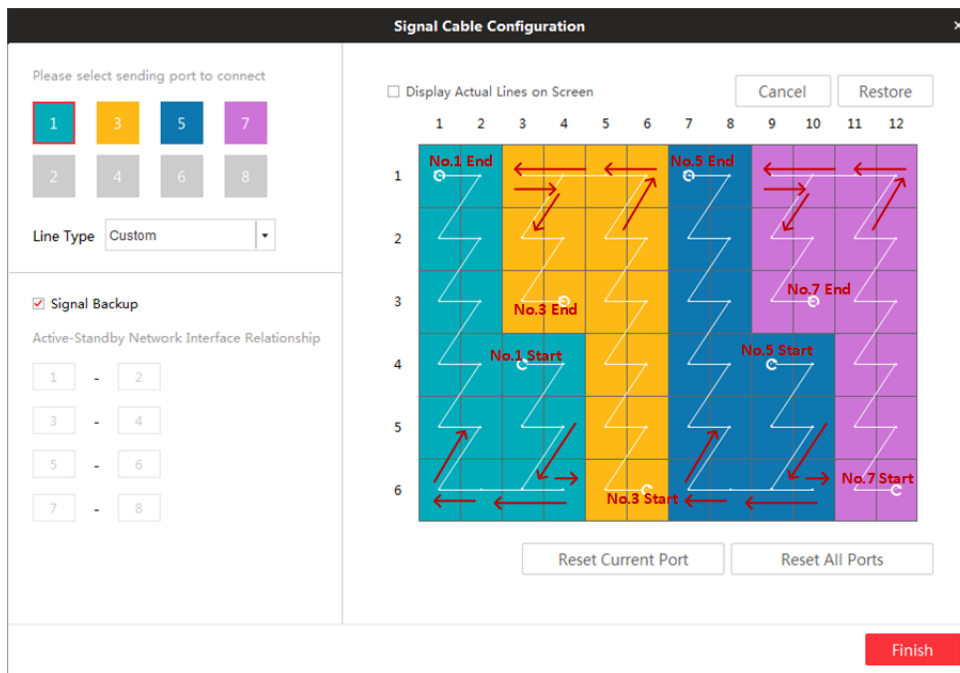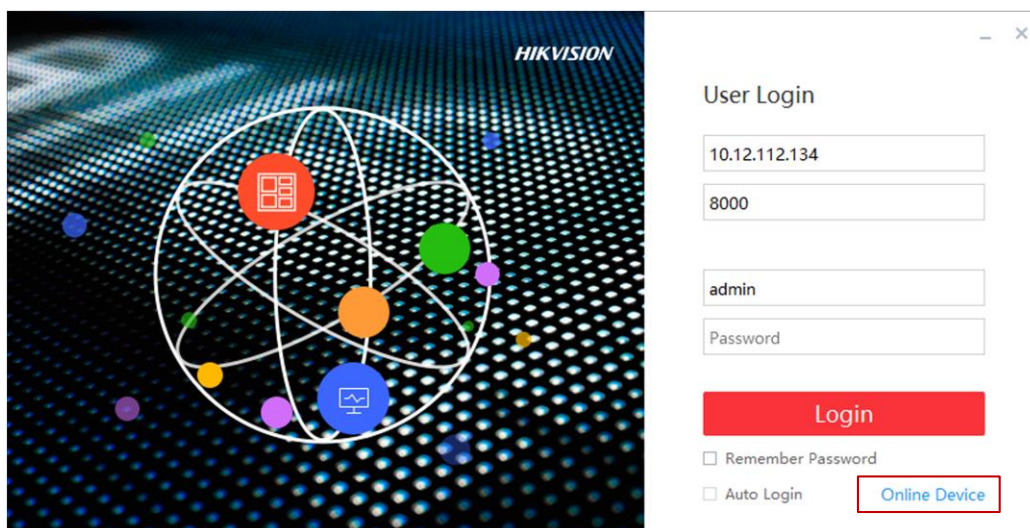Figure 3-23 Cabling Diagram in Signal Redundancy Mode

Figure 3-24 Cabling Diagram in Signal Redundancy Mode on the Client

Chapter 4 Software Debugging
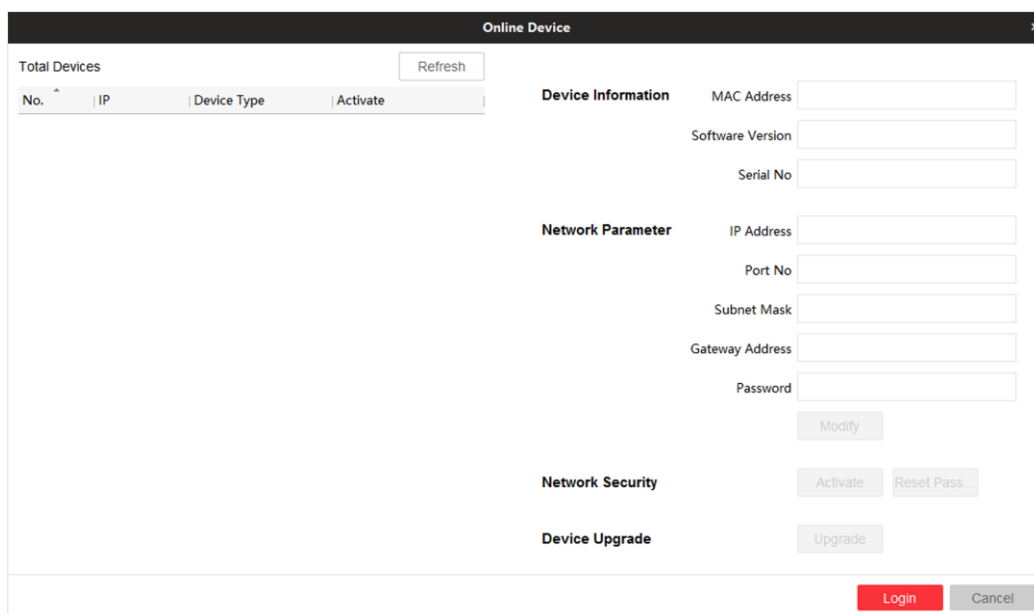
4.1 Log Into the Device

Step 1 Install and open the LED client.

Step 2 Click **Online Device** to search for online devices.

Step 3 Activate the desired online device.

- If the device is not activated, activate the device and set a password.
- If the device is activated, enter the password to log in.
- If you forget the password, reset the password using your OA account.

Step 4 Choose the device and change the IP address and gateway.

NOTE

- Ensure that the device resides on the same network segment with your PC client.
- Change your PC's IP address to the device's IP address which is displayed on the LED display controller at intervals.

Step 5 Click **Refresh**.

Step 6 Choose the device and log in.

NOTE

The default username is **admin**, password is **admin12345**, and port is **8000**.

4.2 Configure Signal Cables

Set **Screen Scale** as, for example, one row with two columns, and select the correct screen type.

Step 1 Click number one network interface which corresponds to the actual network interface.

Step 2 Click the screen on the right.

Step 3 Hold the mouse and make movements, and the system will connect cables for the signal interfaces according to the movements.
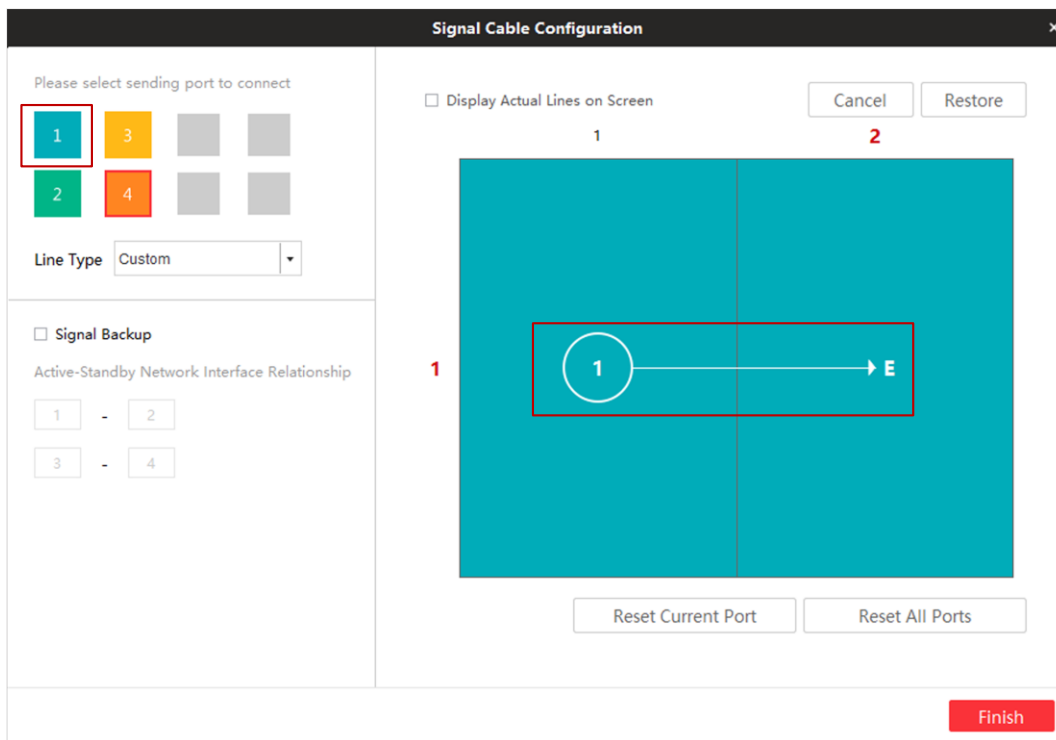
Step 4 Right click to complete the cable configuration.

Step 5 Repeat the above steps to complete cable configuration for the other network interfaces.

Step 6 Set receiving card parameters, and click **Cure Parameter** to save the configuration.
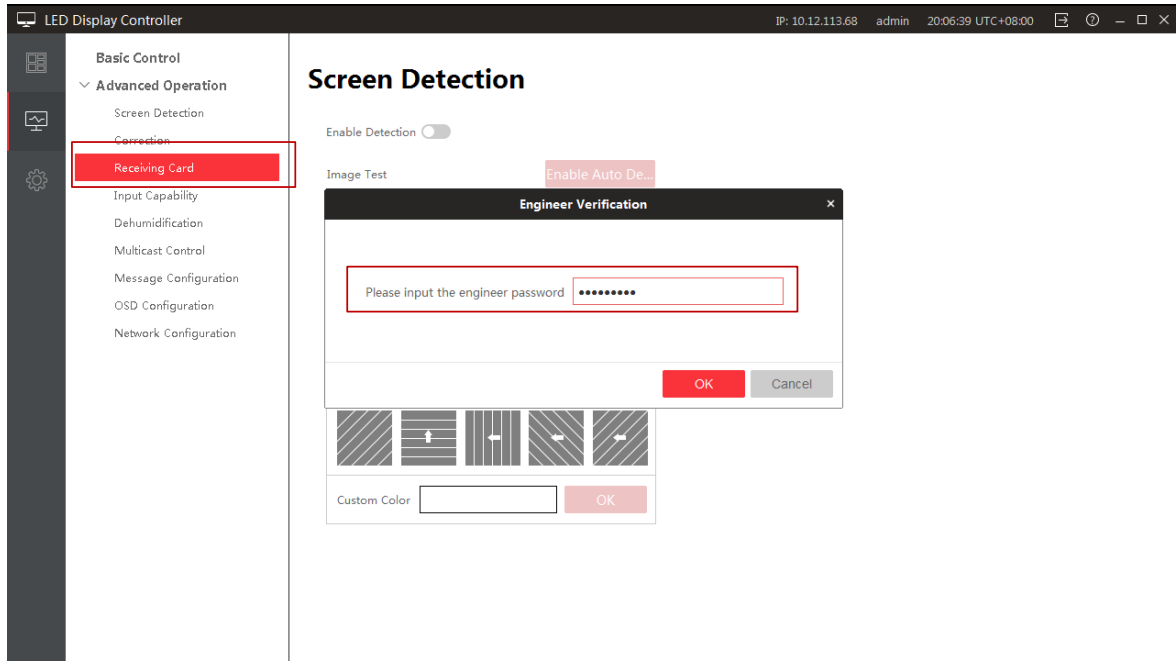
 NOTE

The engineer password is **Soft12345**.

See Far, Go Further

UD12230B-A