Outdoor Aluminum Profile LED Cabinet (960×960)

Quick Start Guide

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Applicable Models

This manual is applicable to the outdoor fixed LED display unit.

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.

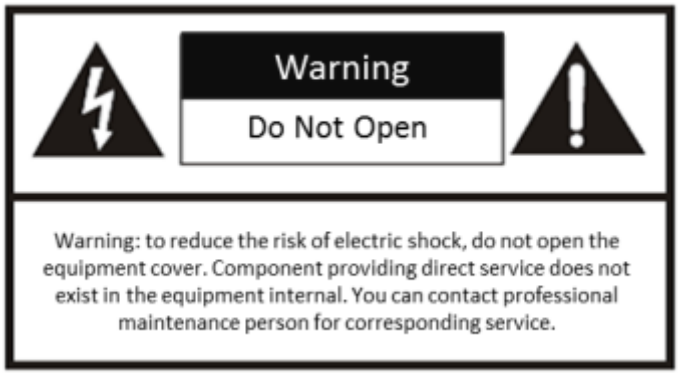
Safety Instructions

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.

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.
- ALWAYS use cabinets or stands or mounting methods recommended by the manufacturer of the device set.
- ALWAYS use furniture that can safely support the device set.
- ALWAYS ensure the device set is not overhanging the edge of the supporting furniture.
- ALWAYS route cords and cables connected to your device so they cannot be tripped over, pulled or grabbed.
- NEVER place a device set in an unstable location.
- NEVER place the device set on tall furniture (for example, cupboards or bookcases) without anchoring both the furniture and the device set to a suitable support.
- NEVER place the device set on cloth or other materials that may be located between the device set 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. Refer to datasheet for details.
- 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 device 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.
- 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 Production Introduction

1.1 Overview

Outdoor fixed LED display unit (hereinafter referred to as the device, the product, or the LED) is a high-precision product that displays clear and realistic images. It adopts aluminum profile cabinets with concise appearance. It is characterized by a wide color gamut, stable performance, long service life and strong environmental adaptability. The device is widely used in outdoor scenarios such as naked eye 3D screens, information release screens, advertising media displays, and so on.

Outdoor fixed LED display unit adopts systematic rack design, and its installation process mainly involves rack and cabinet installation. Most outdoor products use welding racks, which is highly correlated to the on-site environment. Detailed design standards can refer to the “Outdoor LED Display Installation Guide”. The following chapters describes how to install the racks and cabinets in detail.

Note

- 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.
- 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, P6.67 indicates 6.67 mm pixel pitch.

1.2 Cabinet Overview

A LED cabinet is a basic unit used to build an LED display. It consists of a metal frame (made of cast aluminum), LED modules (i.e., lamp boards), and a power supply box that contains a built-in receiving card and switching power supply.

Each cabinet is equipped with a power supply box. The power cord is already connected with the power supply box, and the network cable is already connected with the receiving card. They are both hidden in the wire hidden box after the device leaves factory.

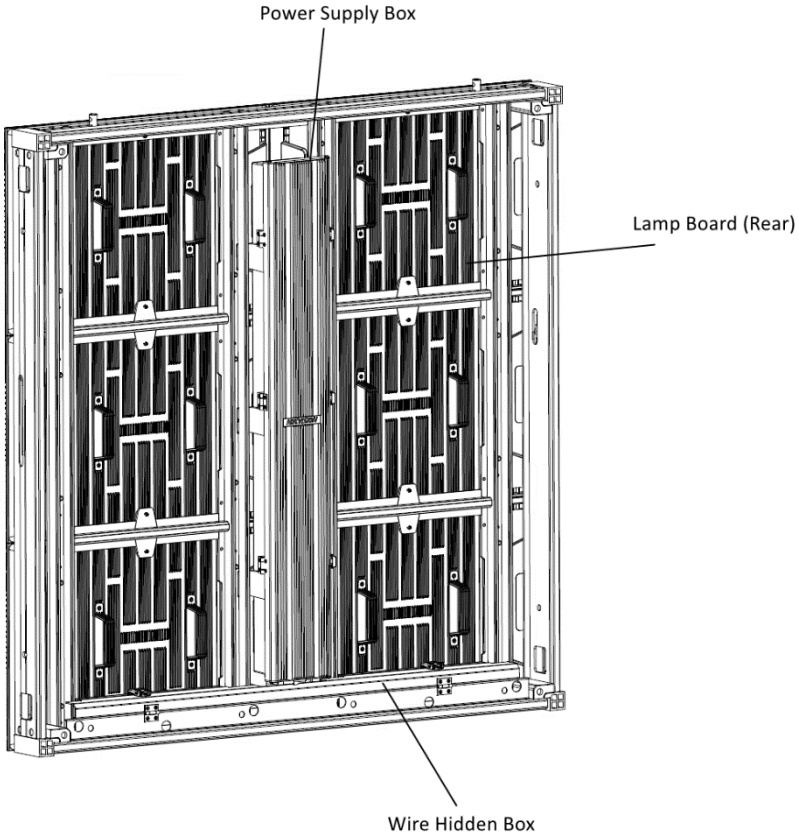

Figure 1-1 Cabinet Overview (Rear)

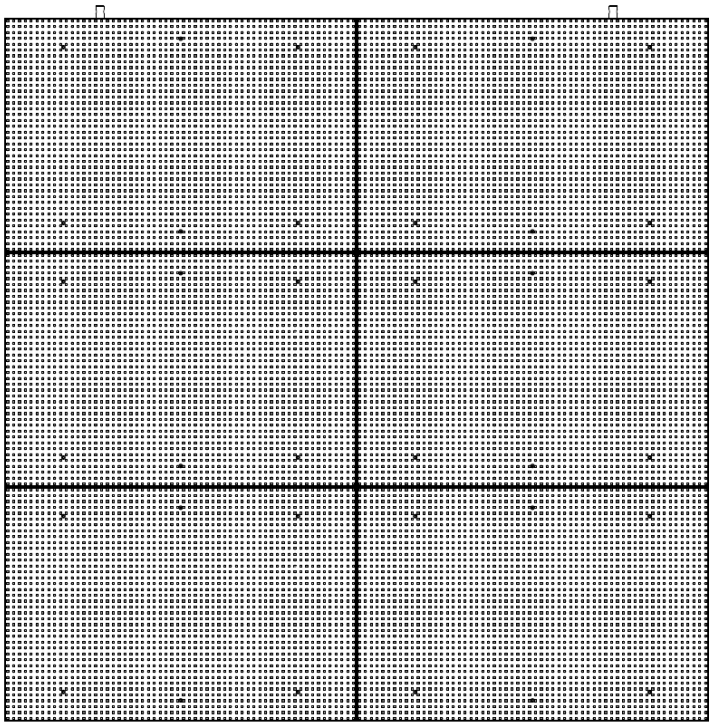

Figure 1-2 Cabinet Overview (Front)

Note

The figures are for reference only. The actual device prevails.

Chapter 2 Rack Installation

2.1 Precautions

Read the following precaution tips when you install the rack:

- All installation personnel must adhere to safety regulations by wearing protective equipment, such as safety helmets, safety belts, and reflective vests, when working at heights.
- Before using common climbing tools like scaffolding and miter ladder, it is essential to conduct a thorough inspection to ensure that these tools are in good condition and the ground is flat and stable. Climbing tools with potential safety risks should not be used.
- Verify that all connectors are firmly installed and that structural components and fasteners are in good place.
- After installing accessories, clean up all debris in the cabinets. It is prohibited to leave any metal debris.
- The overall horizontal error of the rack should be less than 3 mm, the vertical error should range from 1 mm to 3 mm. The distance error between two vertical racks should also range from 1 mm to 3 mm.
- After the installation is finished, the rack frame should keep vertical to the ground. No rack is tilted forward, inclined, or twisted.

2.2 Install the Rack

Prepare Tools and Devices

The tools and devices that may be used during the actual on-site installation are listed below.

Table 2-1 List of Tools and Devices

Tools and Devices	Function
Steel cutting machine	Cutting steel pipe
Welding machine	Welding bracket
Drill/Electric drill	Drilling
Electric hammer	Punching
Infrared levels/lifting hammers	Structural component testing and calibration
Adjustable wrench/Allen wrench	Fixing fasteners and bolts
Aerial Vehicle	Using in aerail work area
Crane	Lifting devices

Rack Installation Flowchart and Steps

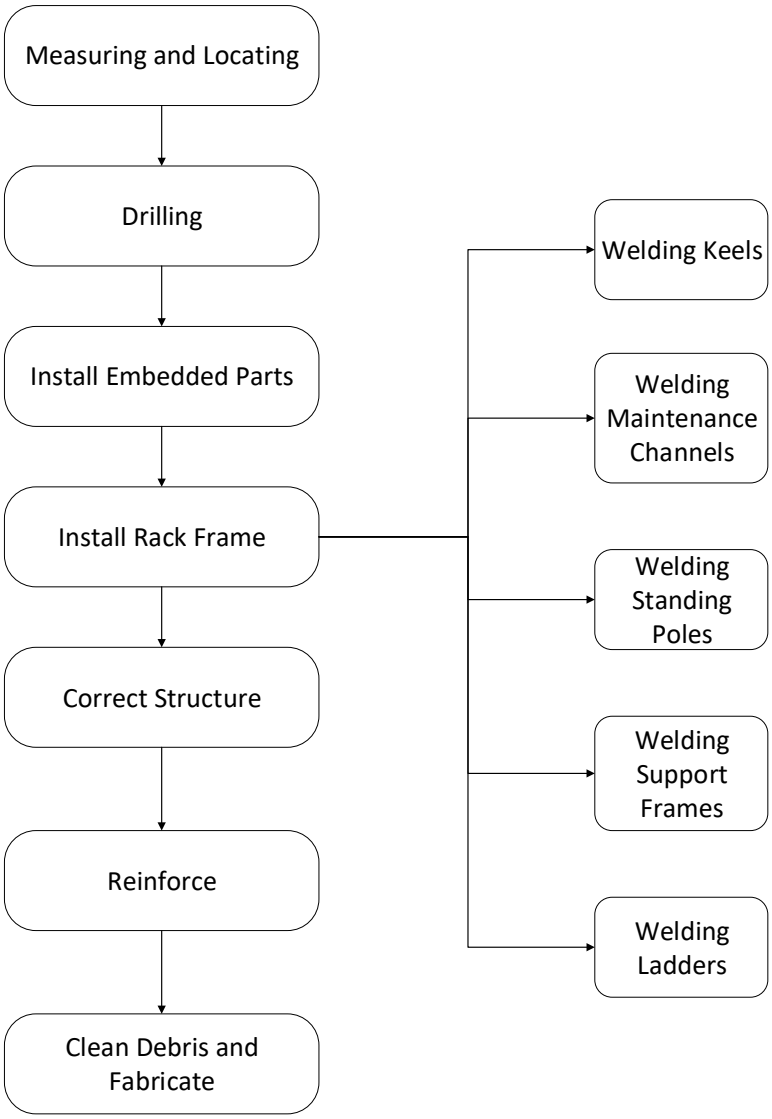

Figure 2-1 Rack Installation Flowchart

Make a welding rack installation plan based on the installation site and LED display dimensions.

Step 1 Materials and devices preparation. Cut and weld the steels to make rack frames including horizontal rack, vertical rack, and maintenance channel.

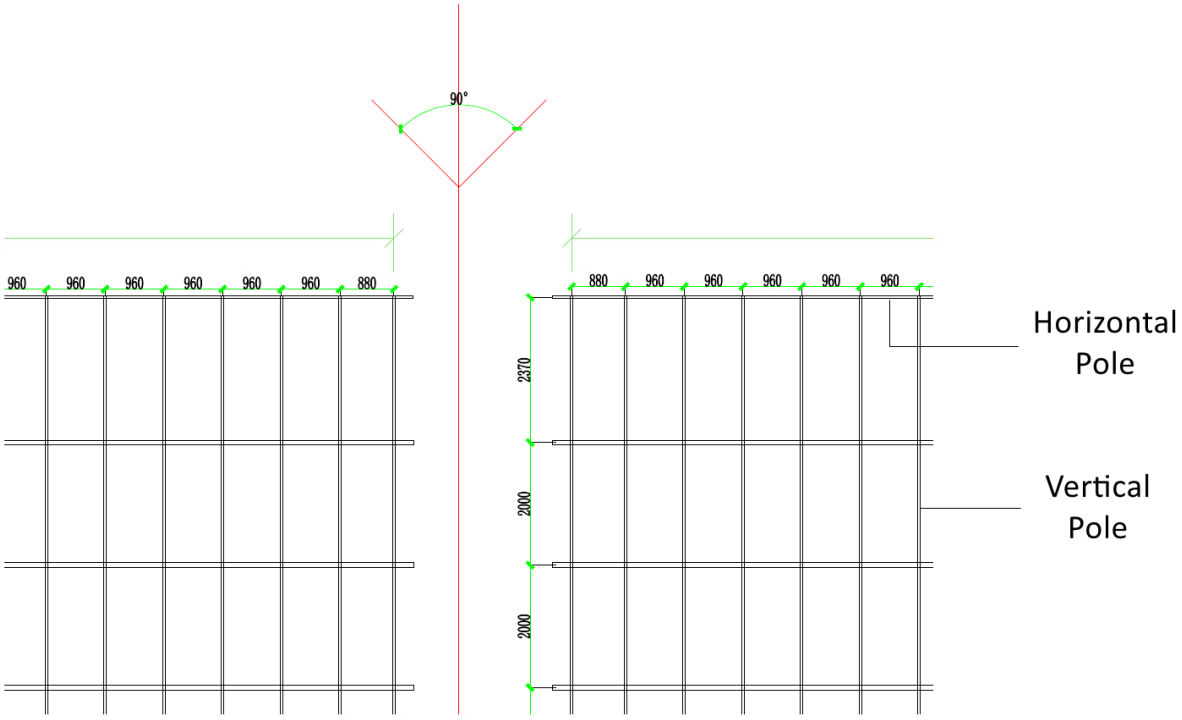

Figure 2-2 Rack Frame (Front View)

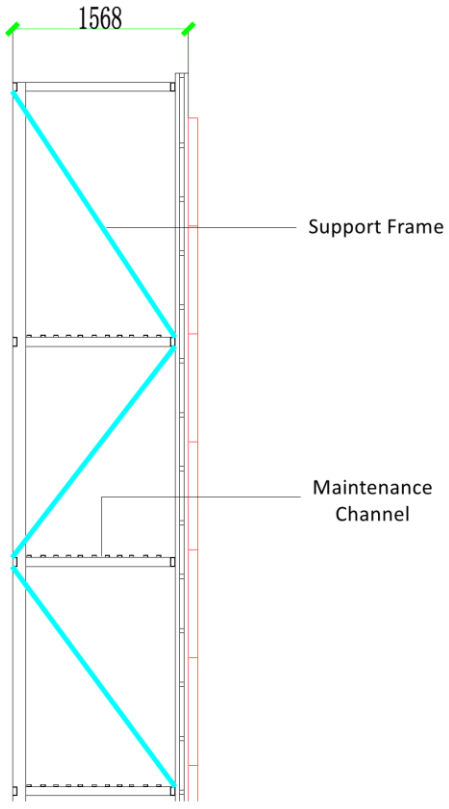

Figure 2-3 Rack Frame (Side View)

Step 2 Fix the rack frame to the wall.

- The rack frame can be welded and assembled on the ground before using a crane to lift it into the reserved place if the site condition is allowed.
- If hoisting installation is not allowed, it is needed to design a specialized installation plan based on the actual situation by the construction team.

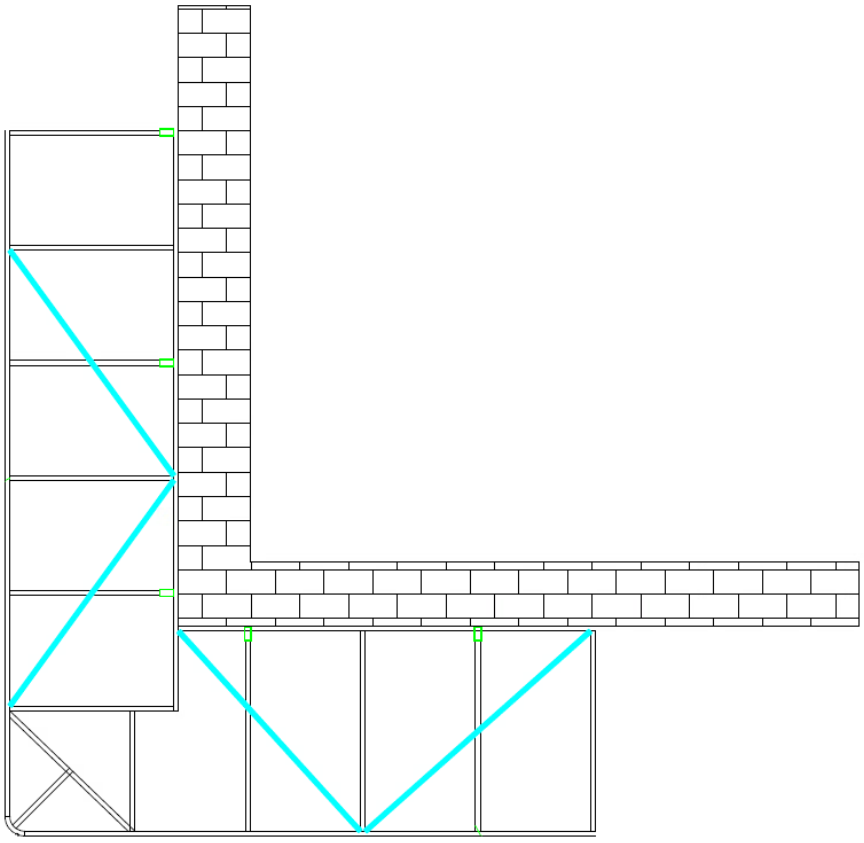

Figure 2-4 Fix the Rack Frame to the Wall (Top View)

Chapter 3 Cabinet Installation and Maintenance

3.1 Precautions

Read the following precaution tips 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 and unplug the power cord when the power is on.
- You need to wear anti-static gloves when installing the modules to avoid leaving sweat stains, handprints, etc. on the screen.
- After the installation is completed, it is necessary to check whether the appearance of module is smooth, whether there is any obvious gap or wrong light, whether the color difference of the whole screen is consistent, whether the display effect is normal, and whether there is any dead spot, color block, dropped cables, ect., which can cause the display not to be lightened.
- Waterproof treatment should be done between the cabinets, and between the cabinets and decorative cladding. The overall structure of display should pass the waterproof test.
- When installing the cabinet, it is necessary to pay attention to keep the flatness of the splices of two adjacent cabinets, and there is no obvious breakage when touching with fingers.

3.2 Stitch Cabinet Frames

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

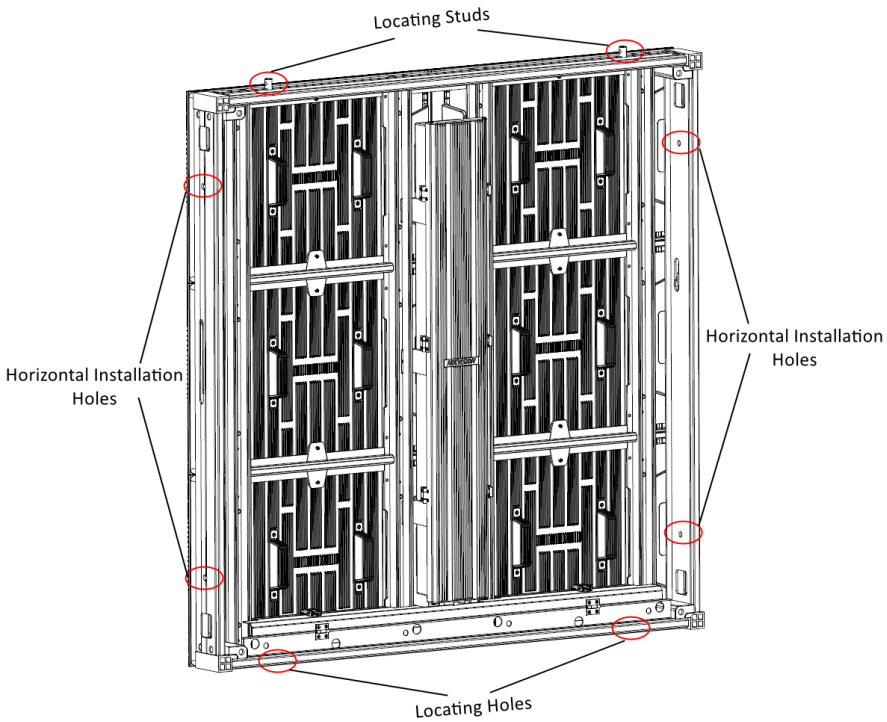

Figure 3-1 Cabinet Frame Locating

3.2.1 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.

Step 2 Insert two M8 bolts and into the installation holes, and fasten the screws with M8 nuts.

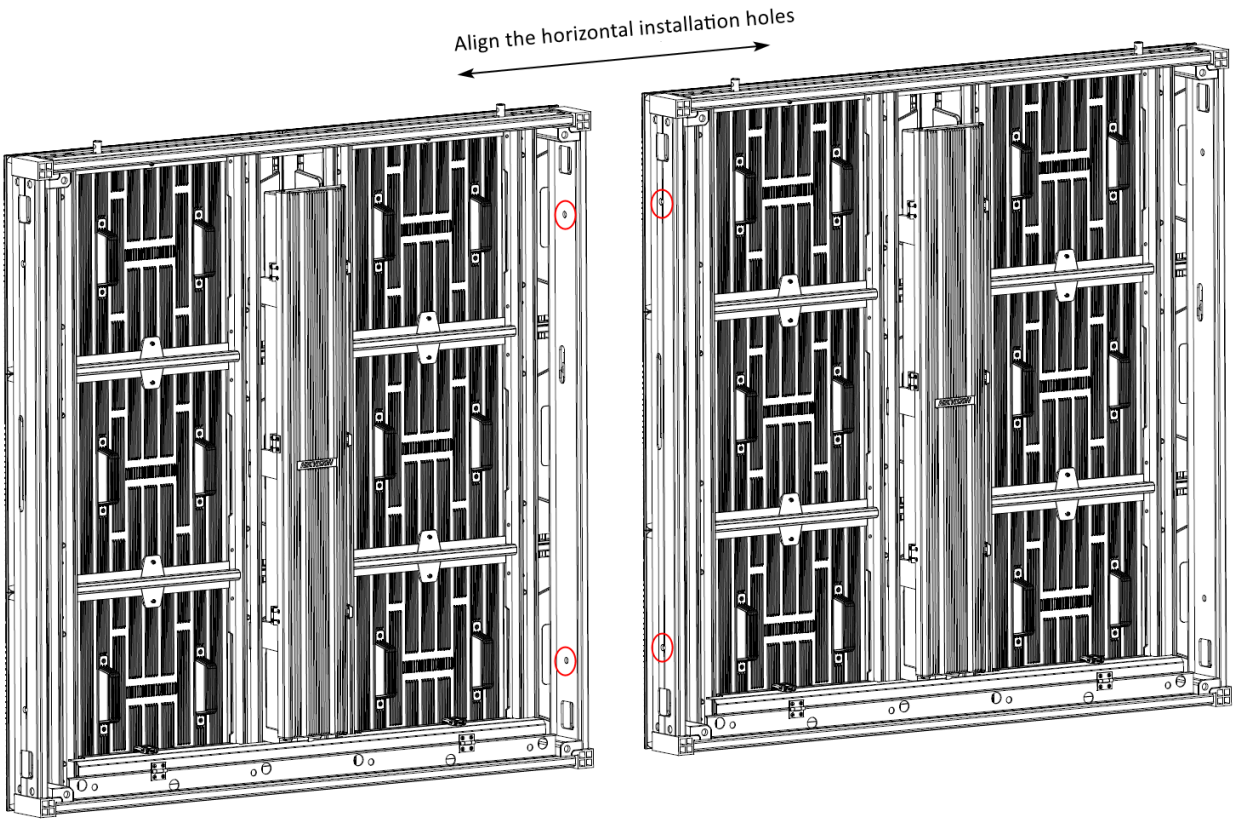

Figure 3-2 Stitch Cabinet Frames Horizontally

3.2.2 Stitch Cabinet Frames Vertically

Step 1 Align the locating studs in the vertical direction of the two adjacent cabinet frames to the locating holes, and adjust the cabinet frames vertically against each other.

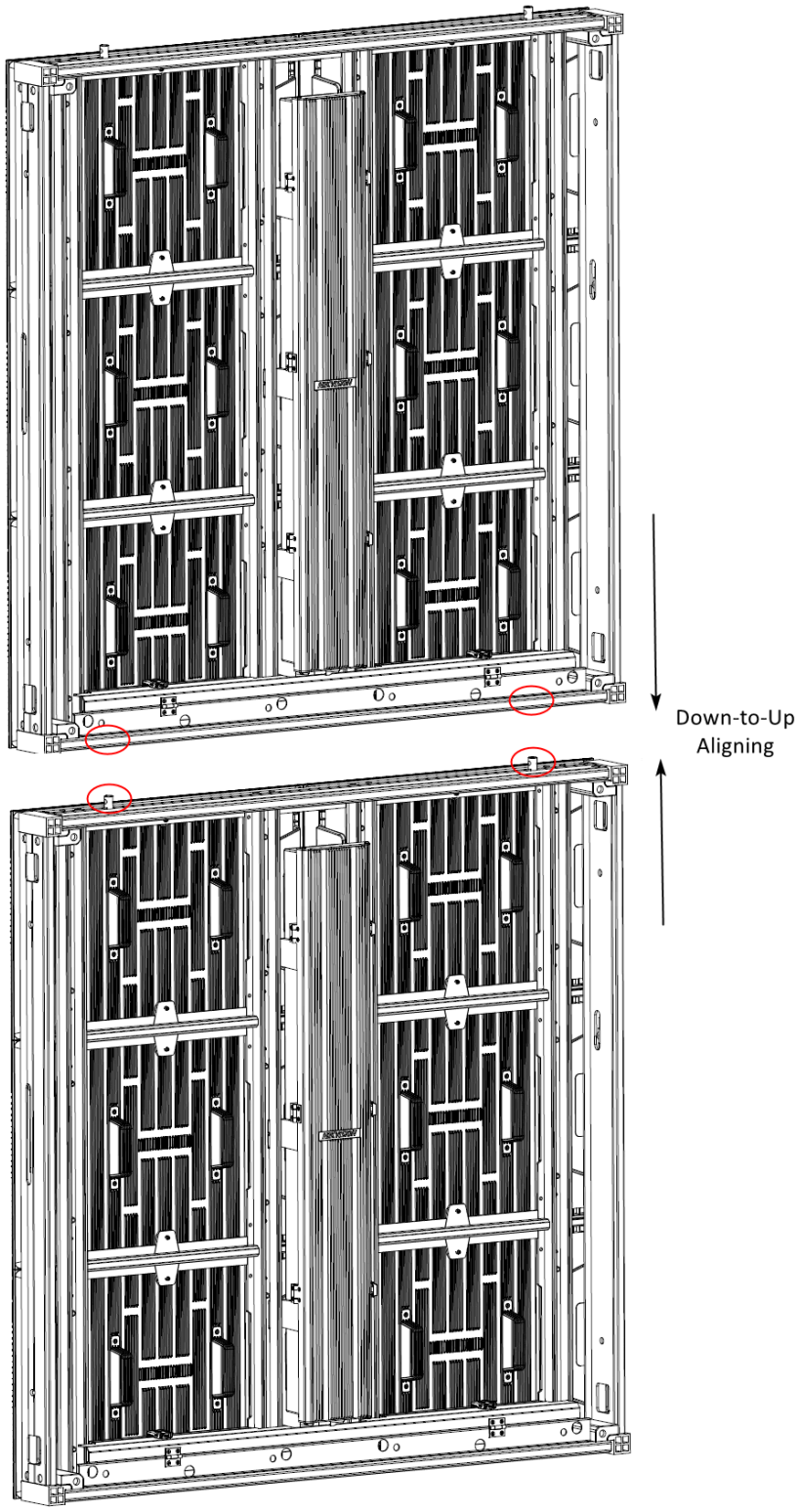

Figure 3-3 Stitch Cabinet Frames Vertically

Step 2 Insert two M8 bolts into the vertical installation holes from top to bottom to secure the adjacent cabinet frames with M8 nuts.

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

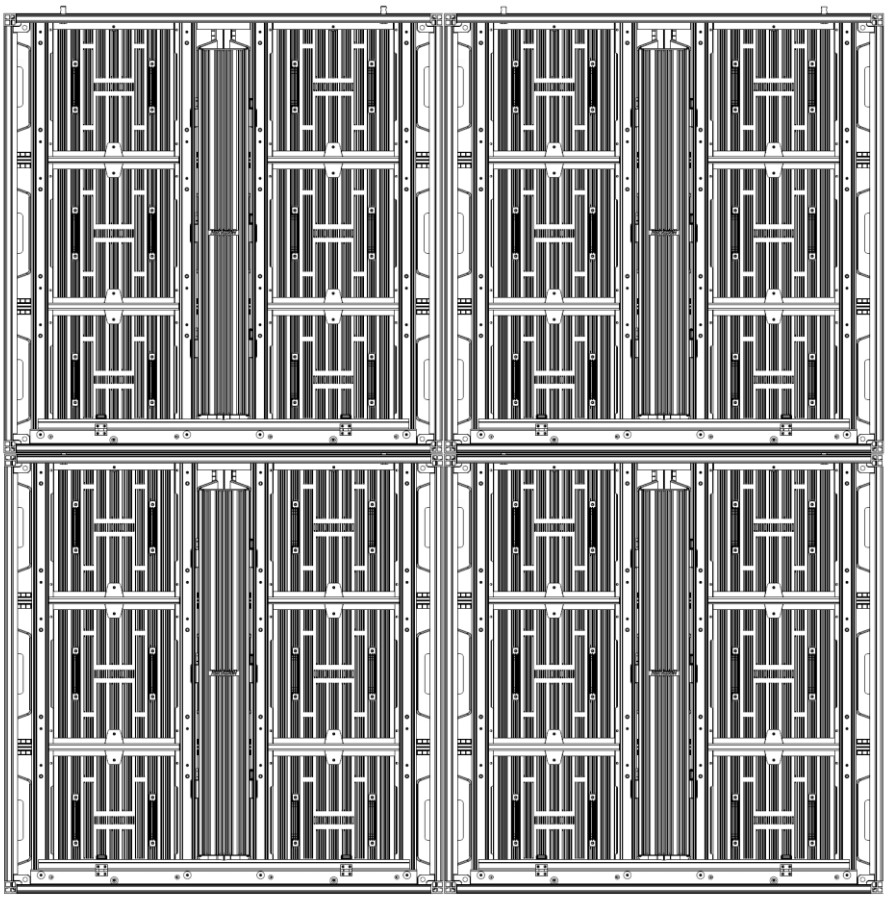

Figure 3-4 Cabinets Stitched

3.3 Connect Power Cord and Network Cable

3.3.1 Connect Power Cord

- Each cabinet is equipped with a power input cord and a power output cord internally. The internal power cords can be connected in cascade in each row, and the external power cords are needed according to the load capacity of the external 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.

Step 1 Unlock the two buckles on the wire hidden box to open it for each cabinet.

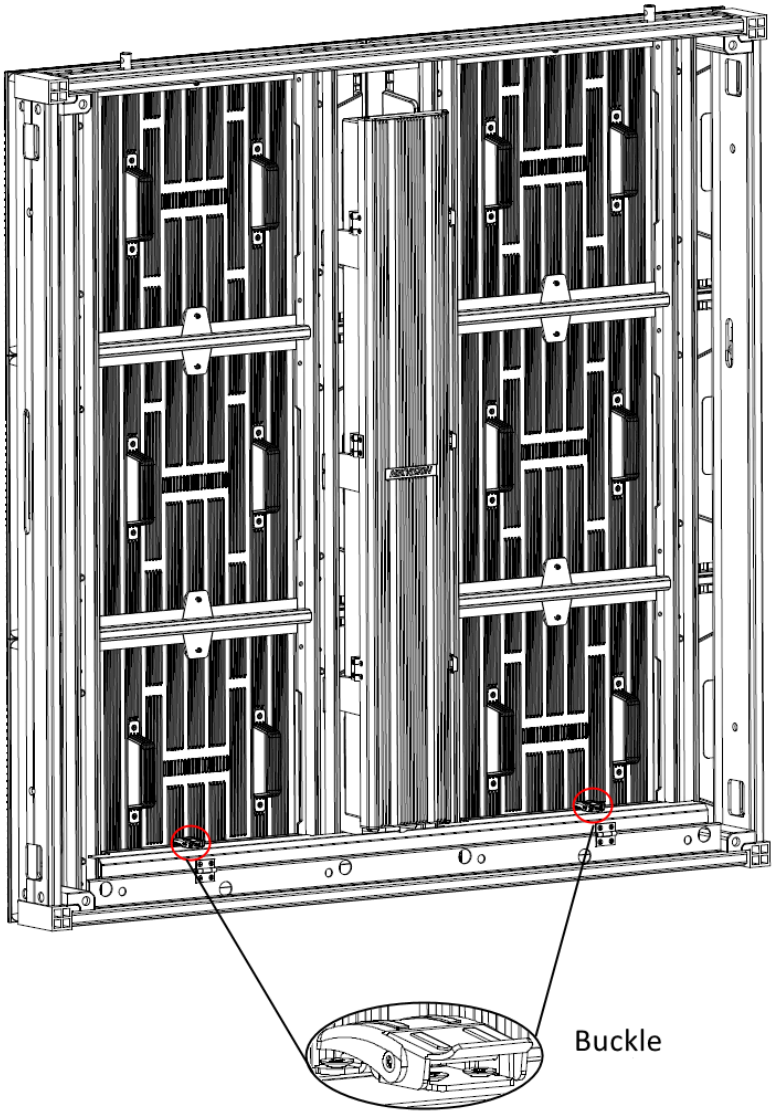

Figure 3-5 Open the Wire Hidden Box

Step 2 Connect the external power supply to the power input interface of the first cabinet in each row.

Step 3 Connect the internal power cords within the max load. Connect the power output interface of one cabinet to the power input interface of the adjacent cabinet horizontally through the wiring holes in each row.

As the figure shown below, the left cabinet is the first cabinet in the row. Connect the external power supply to interface 1, connect interface 2 to 3, and connect interface 4 to another power input interface of another cabinet in the row.

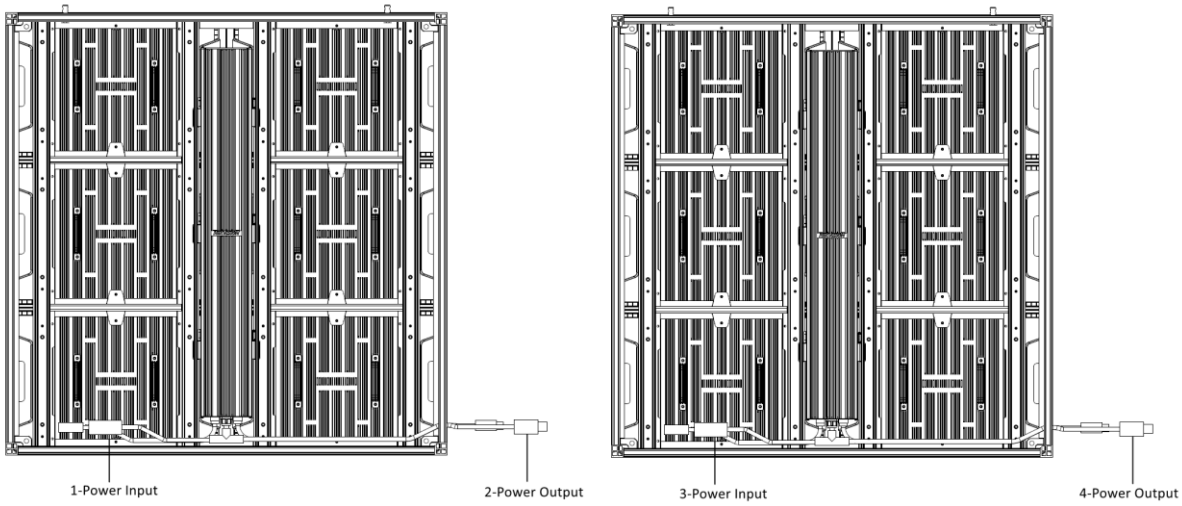

Figure 3-6 Connect Power Cord

Step 4 (Optional) If the actual number of cabinets exceeds the max load of the power cord, connect the power input interface of the overloaded cabinet in each row to another external power cord through the wiring holes.

The figures below take 2 rows × 3 columns cabinets (within the max. load of the power cord) and 2 rows × 7 columns cabinets (2 rows × 3 columns within the max. load and 2 rows × 7 columns beyond the max. load of the power cord) for example.

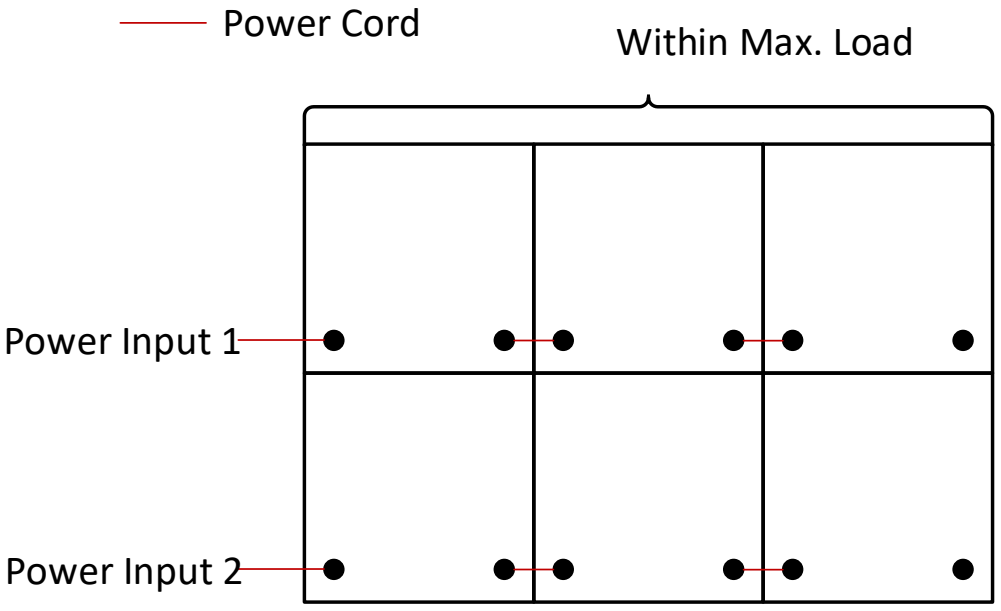

Figure 3-7 Power Cord Connection Diagram (Within Max.Load)

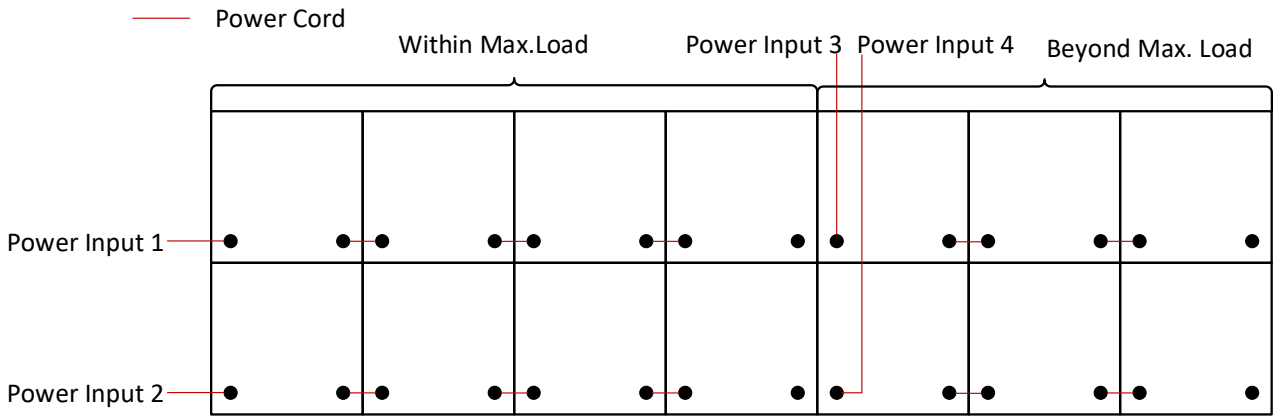

Figure 3-8 Power Cord Connection Diagram (Beyond Max.Load)

3.3.2 Connect Network Cable

- Each cabinet is equipped with a network input cable and a network output cable internally. The internal network cables can be connected in cascade in each row, and the external network cables for sending card connections are needed according to the load capacity of the network interfaces of the sending card.
- 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.

Step 1 Connect the network interface of the first cabinet in each row to the network interface of the sending card through the wiring holes.

Step 2 Connect the internal network cables within the max load. Connect the network interface of one cabinet to the network interface of the adjacent cabinet horizontally through the wiring holes in each row.

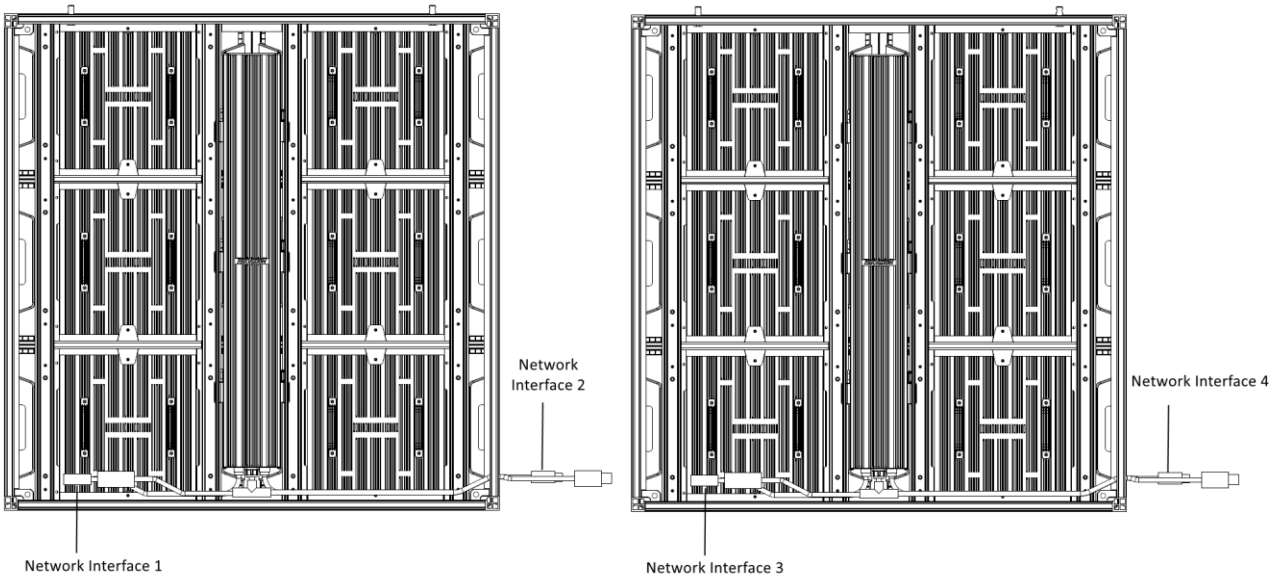

Figure 3-9 Connect Network Cable

Step 3 (Optional) If the actual number of cabinets exceeds the max load of the network interface, connect the network interface of the overloaded cabinet in each row to another network interface of the sending card via an external network cable through the wiring holes.

The figures below take 4 rows × 4 columns cabinets (within the max. load of the network cable) and 4 rows × 12 columns cabinets (4 rows × 4 columns within the max. load and 4 rows × 12 columns beyond the max. load of the power cord) for example.

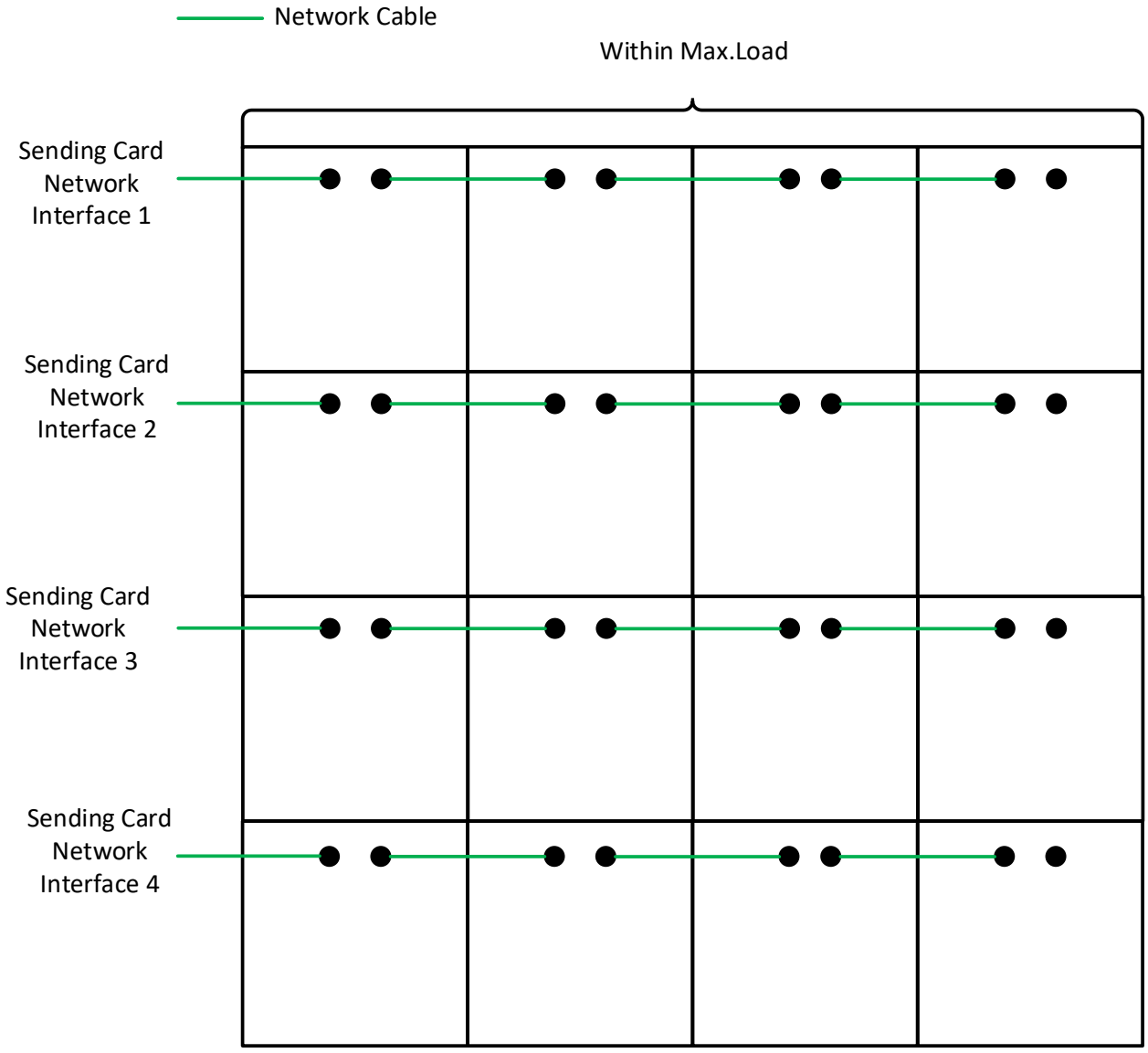

Figure 3-10 Network Cable Connection (Within Max. Load)

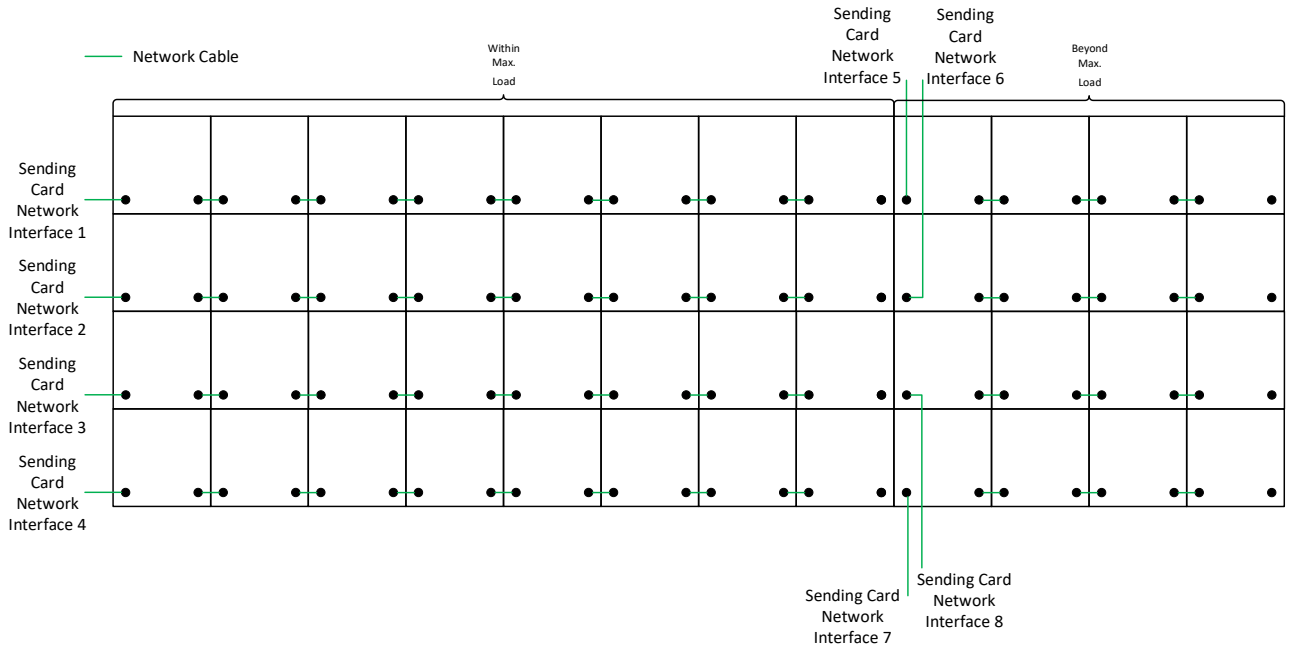

Figure 3-11 Network Cable Connection (Beyond Max. Load)

Note

The figures above are for reference. The actual connection can be flexibly adjusted according to your needs, so long as every single network interface is not overloaded.

3.4 Maintenance

3.4.1 Maintain Lamp Board

You can maintain the lamp boards from the front or rear side.

Front Maintenance

Before you start

Disconnect the power plug before maintenance.

Step 1 Insert a hex wrench to the installation hole on the front of the lamp board, and rotate it counterclockwise to unlock the screws on the front of the lamp board.

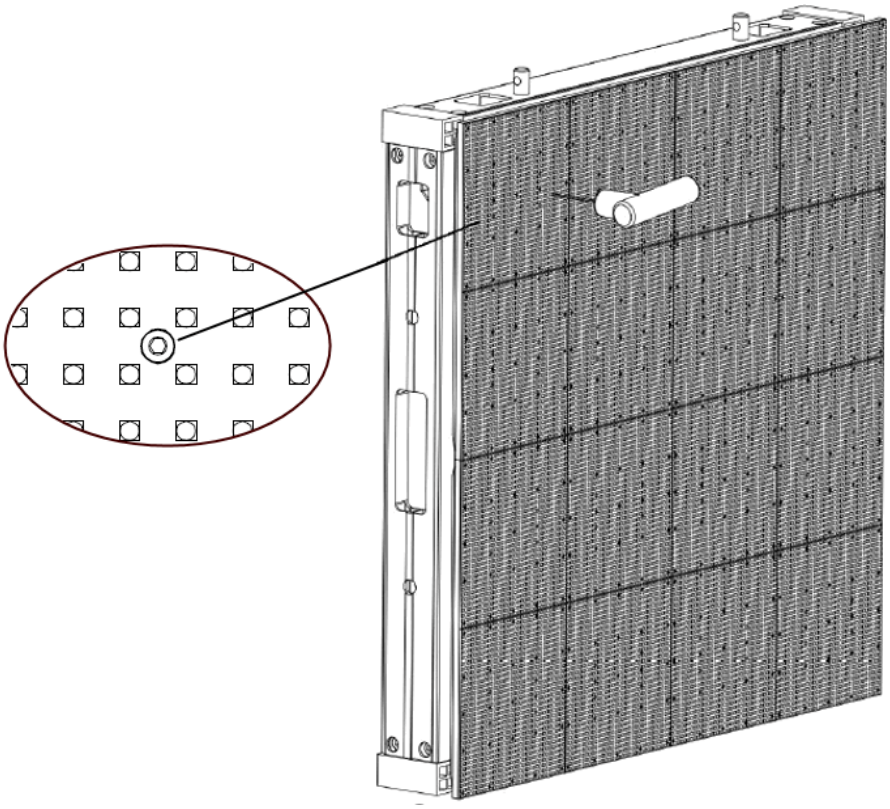

Figure 3-12 Disassemble Lamp Board with Hex Wrench

Step 2 Unlock other five screws on the lamp board.

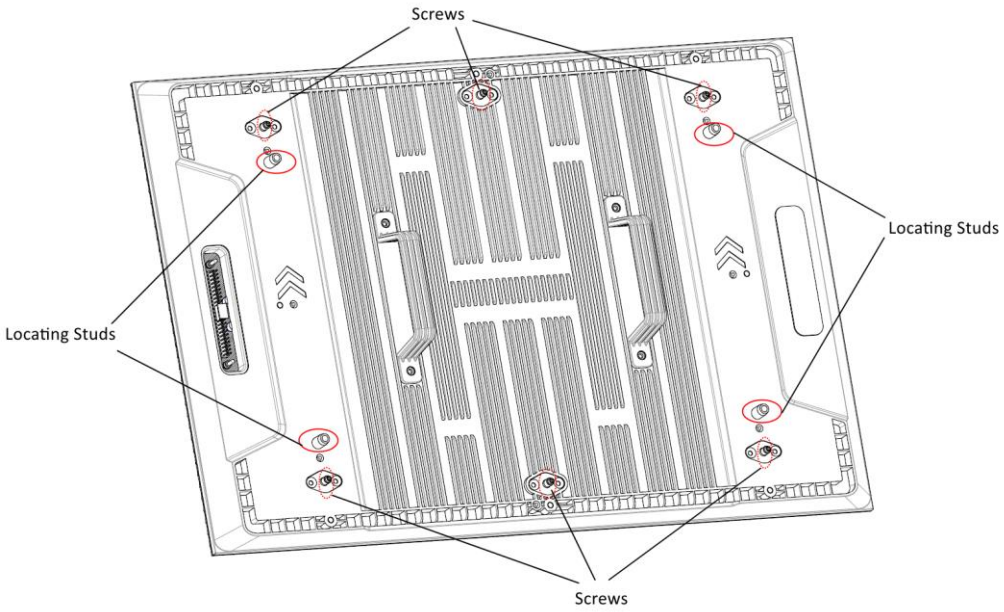

Figure 3-13 Rear View of Lamp Board

Step 3 Pull out the lamp board with force.

Step 4 Repeat the steps above to disassemble other lamp boards.

Step 5 After the maintenance, assemble the lamp boards back.

1) According to the arrow direction on the rear of the lamp board, align the locating studs on the rear of the lamp board to the locating holes on the cabinet frame, and install the lamp board slowly.
2) Insert a hex wrench to the installation hole on the front of the lamp board, and rotate it clockwise to lock screws.
3) Repeat the steps above to assemble other lamp boards.

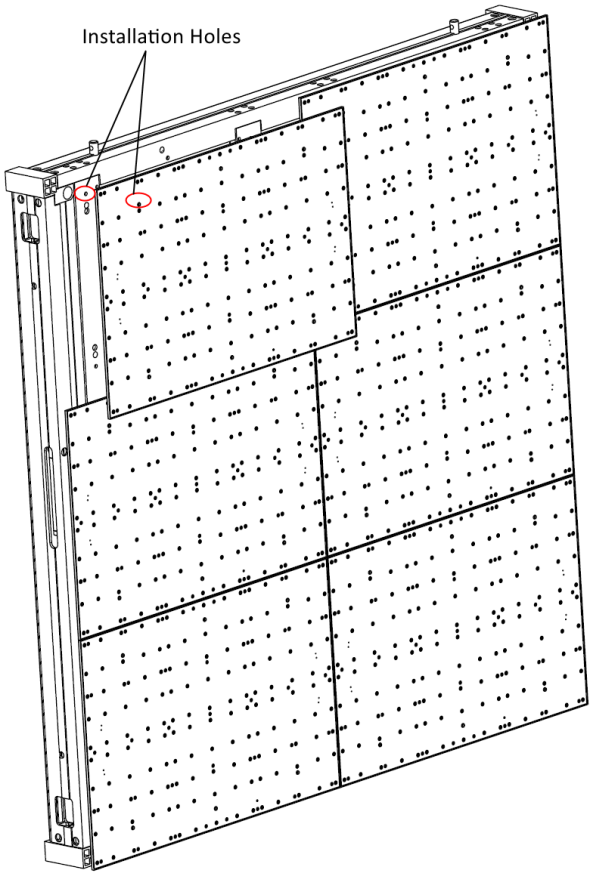

Figure 3-14 Assemble the Lamp Board Back

Rear Maintenance

Note

For the upper-level lamp boards maintenance, follow the steps to disassemble the lower-level lamp boards first, and then disassemble the upper-level lamp boards and detach them from the lower-level cabinet frames to maintain. After the maintenance, follow the steps to assemble the upper-level lamp boards first, and then assemble the lower-level lamp boards.

Step 1 Insert a hex wrench to the screw on the rear of the lamp board, and rotate it clockwise to unlock the screws on the rear of the lamp board.

Step 2 Hold the handles on the rear of the lamp board and push it out.

Step 3 Turn the lamp board until its short side can go through the frame diagonally.

Step 4 After the lamp board is detached from the frame, remove the lamp board.

Step 5 After the maintenance, assemble the lamp boards back.

1) Turn the lamp board until its short side can go through the frame diagonally and rotate it until the arrow direction on the rear panel is facing up.
2) Hold the handles on the back of the lamp board and align the screws and locating studs on the rear of the lamp board to the installation holes and locating holes on the cabinet frame. Push the lamp board back slowly.
3) Insert a hex wrench to the installation hole on the rear of the lamp board, and rotate it counterclockwise to lock screws.
4) Repeat the steps above to assemble other lamp boards.

Note

When you are putting the lamp boards back, check on the front to see whether the boards are in place.

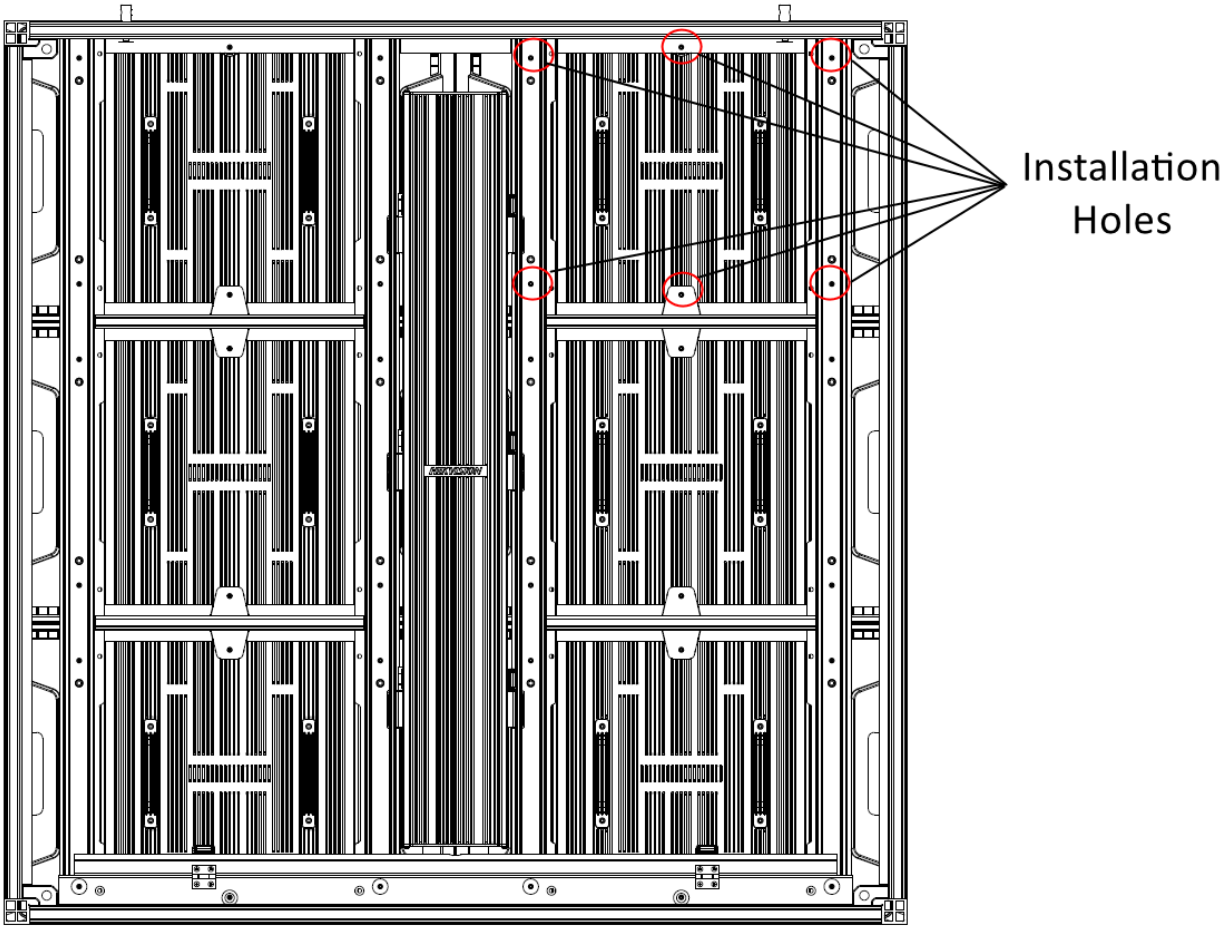

Figure 3-15 Assemble the Lamp Board Back

3.4.2 Maintain Power Supply Box

Front Maintenance

Before you start

Disconnect the power plug before maintenance.

Step 1 Disassemble the lamp boards. Refer to 3.4.1 Maintain Lamp Board.

Step 2 Unfasten the twelve screws on the power supply box to disassemble it.

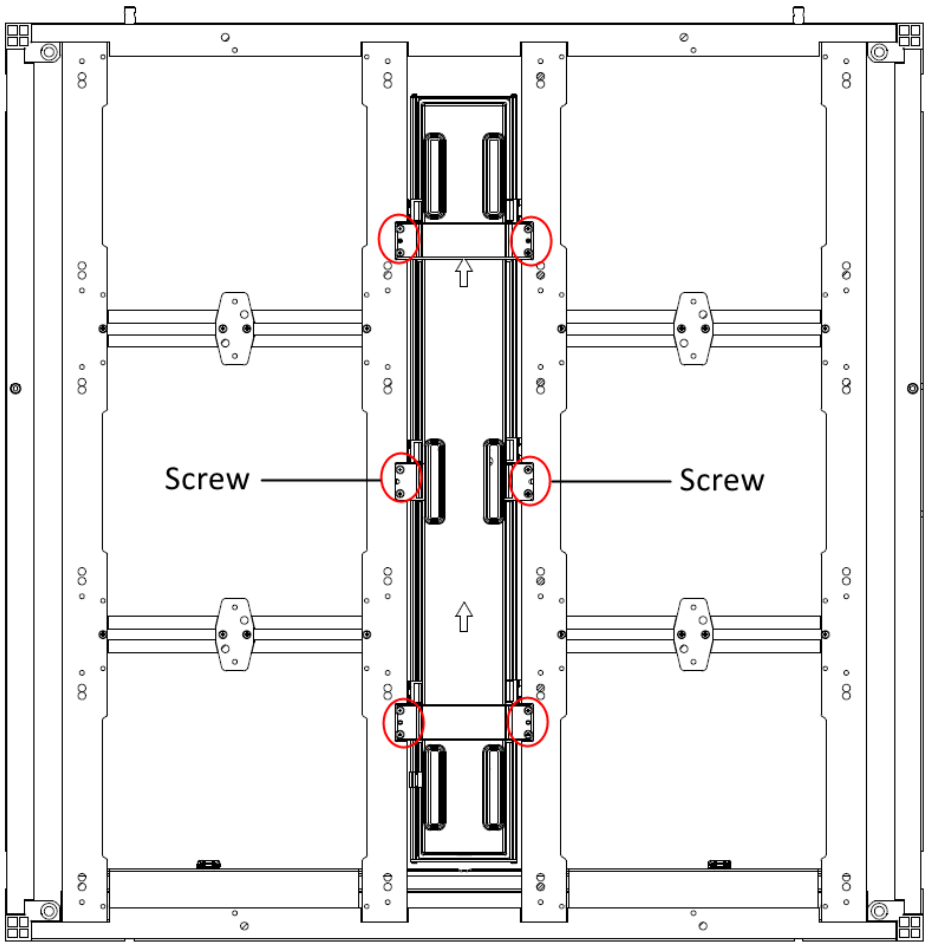

Figure 3-16 Disassemble Power Supply

Step 3 Unlock the three buckles on the power supply box to maintain the internal components.

Step 4 After the maintenance, lock the three buckles on the power supply box, and fasten the screws to fix the power supply box, and assemble the lamp boards back.

Rear Maintenance

Before you start

Disconnect the power plug before maintenance.

Step 1 Unlock the three buckles on the power supply box to maintain the internal components.

Step 2 After the maintenance, lock the three buckles.

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


See Far, Go Further