Indoor Full-color LED Display Unit Rack

Quick Start Guide

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Applicable Models

This manual is applicable to the Indoor Full-color LED Display Unit Rack.

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.

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Chapter 1 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.

1.1 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.

1.2 Install the Wall-Mounted Rack

Step 1 Use a gradienter to determine the mounting position of the rack.

Step 2 Install the M6 × 60 expansion bolts into the wall and tighten the nuts in order to fix the rack onto the wall.

Wall-mounted Installation Holes
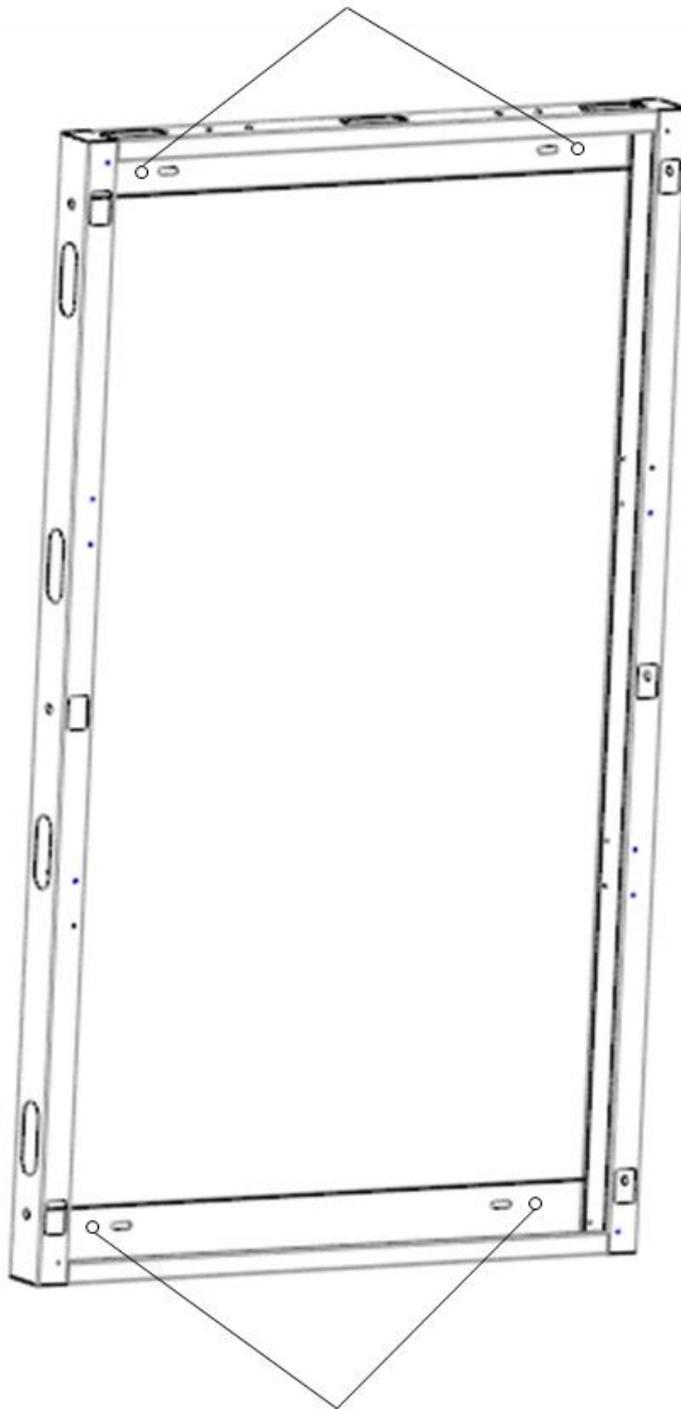
Wall-mounted Installation Holes

Figure 1-1 Wall-mounted Installation Holes on the Rack
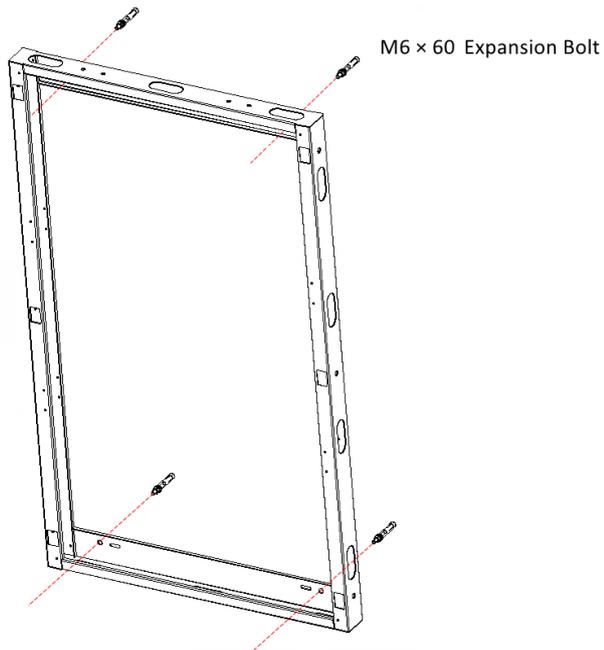
M6 × 60 Expansion Bolt

Figure 1-2 Install Wall-Mounted Rack onto the Wall

Step 3 Repeat step 1 and step 2 to install the remaining racks onto the wall.

Step 4 Use M6 × 20 screws to connect the adjacent racks. Align the horizontal or vertical installation holes with the same holes on the adjacent racks and then adjust the seams between the racks.
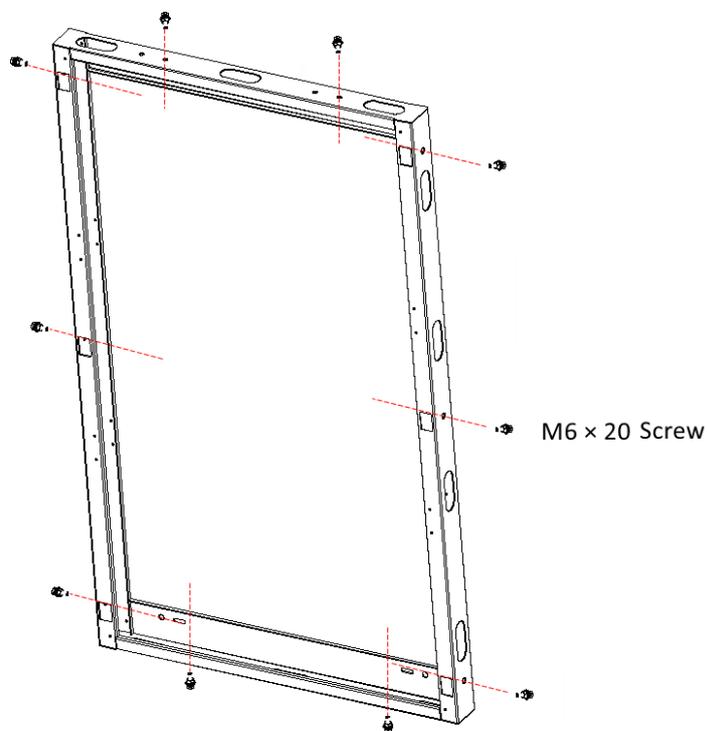

M6 × 20 Screw

Figure 1-3 Horizontal and Vertical Installation Holes of the Rack
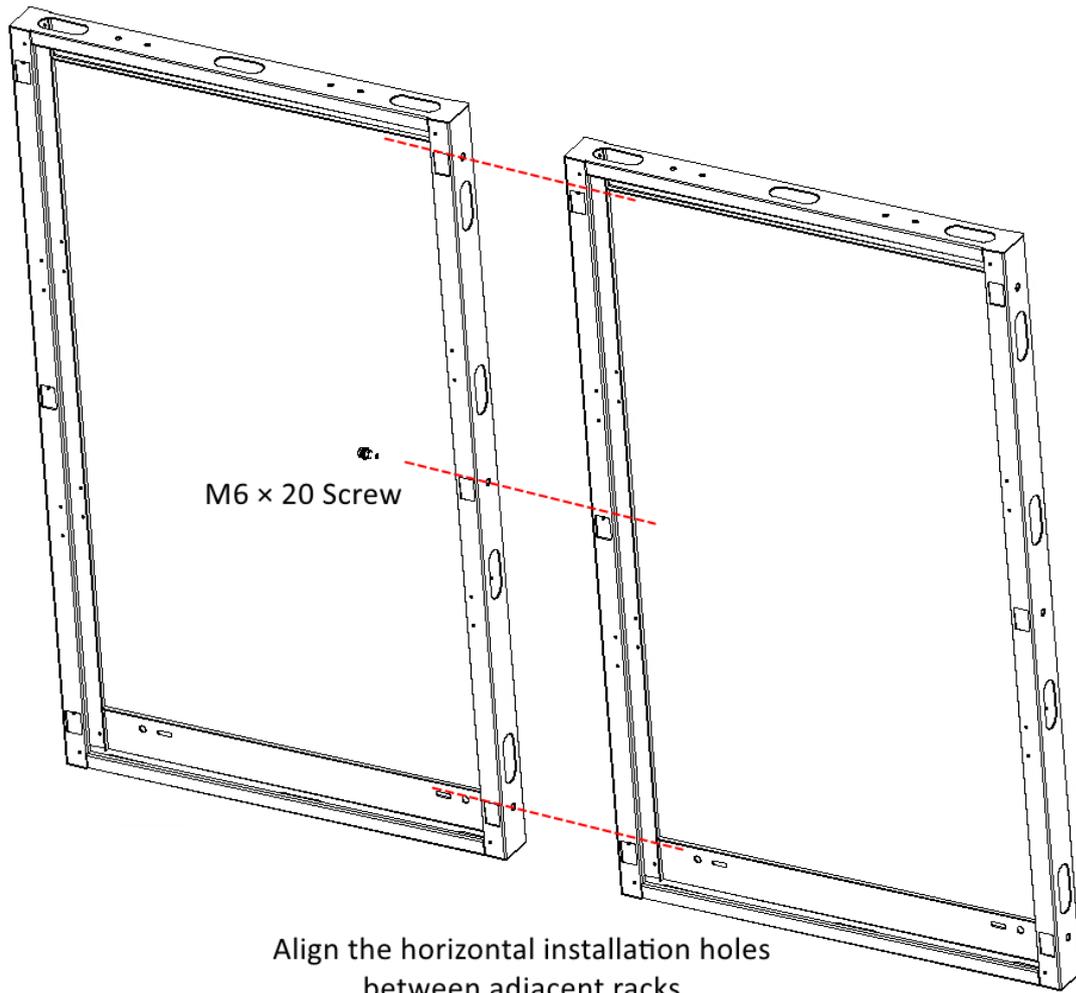
Figure 1-4 Stitch the Adjacent Racks Horizontally

M6 × 20 Screws

Align the vertical installation holes
between adjacent racks
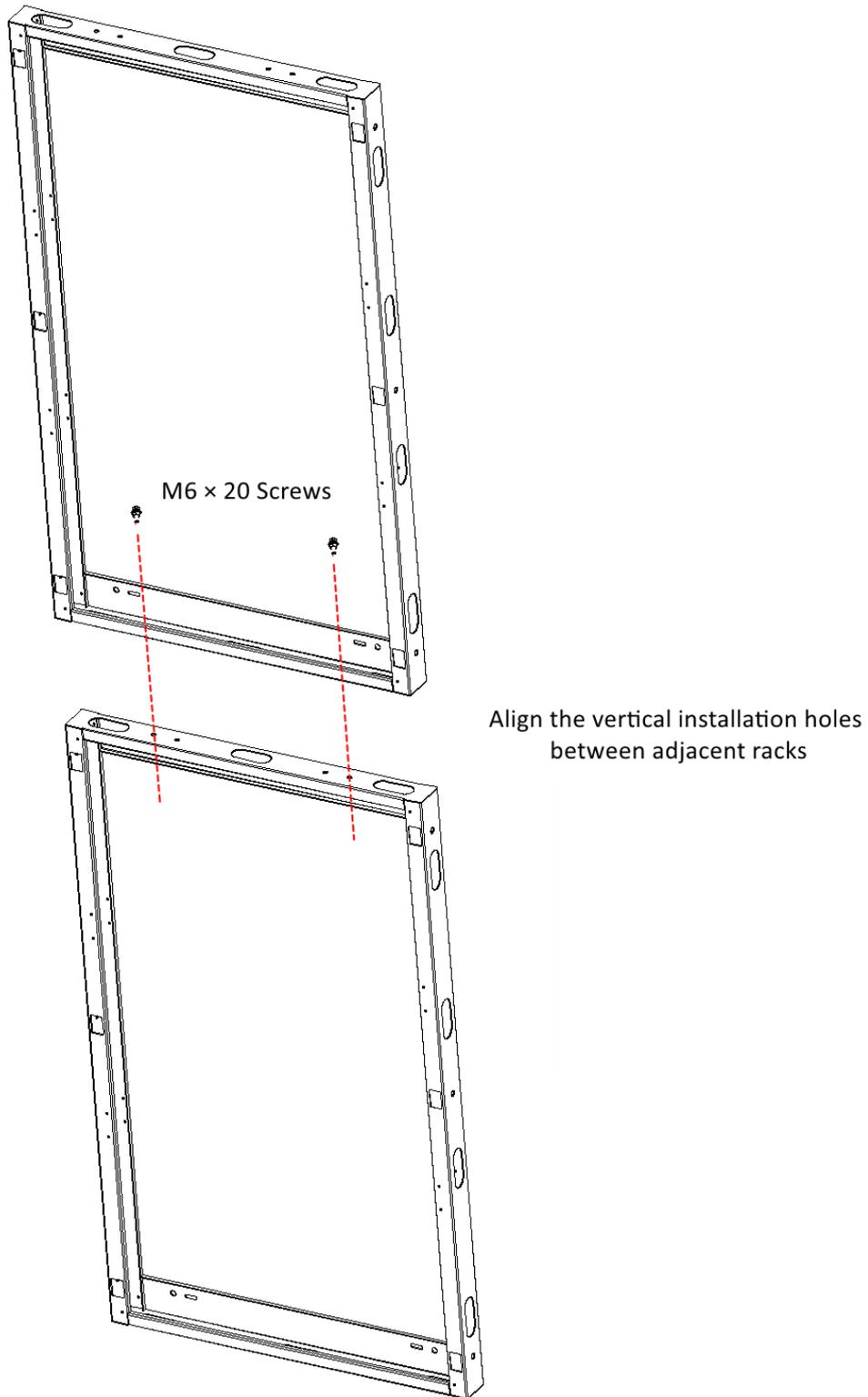
Figure 1-5 Stitch the Adjacent Racks Vertically

Step 5 Install the first cabinet from the center of the bottom row, and fix the cabinet onto the rack
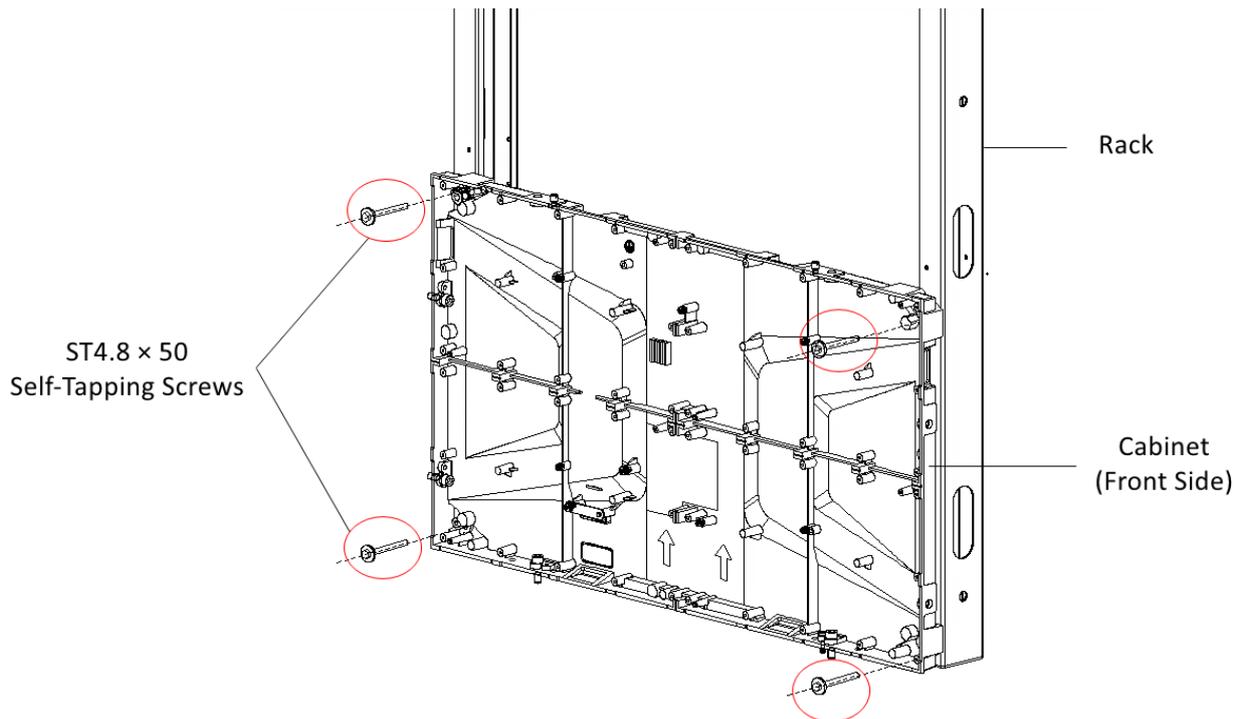by using four ST4.8 × 50 self-tapping screws.

**ST4.8 × 50
Self-Tapping Screws**

Rack

Cabinet
(Front Side)

Figure 1-6 Fix the Cabinets with the Rack

Step 6 Install the remaining cabinets onto the racks from middle to both sides and from top to bottom. Use a gradienter to measure and ensure that the cabinets are flat and vertical after installation.

[i] **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.

● 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.

1.3 Install the All-in-One Rack

1.3.1 Install the Bottom Chassis

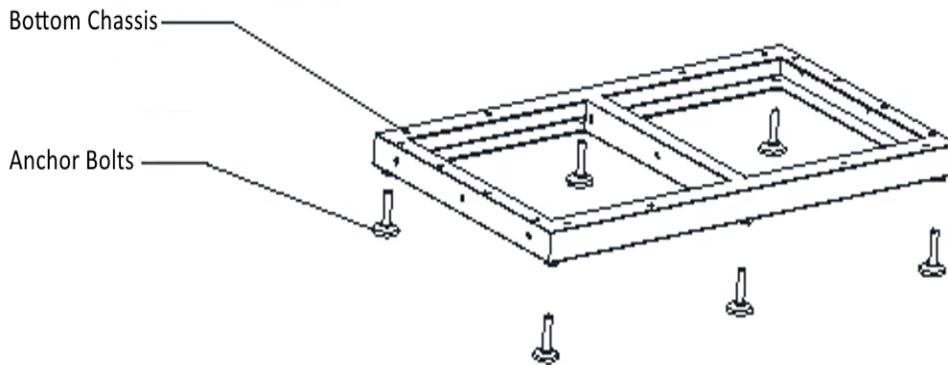Step 1 Fix the anchor bolts to the bottom chassis and stitch the bottom chassis.

Figure 1-7 Stitch the Bottom Chassis

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

Figure 1-8 Level the Bottom Chassis

[i] **Note**

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

1.3.2 Install the Rack Frame and Base Frame

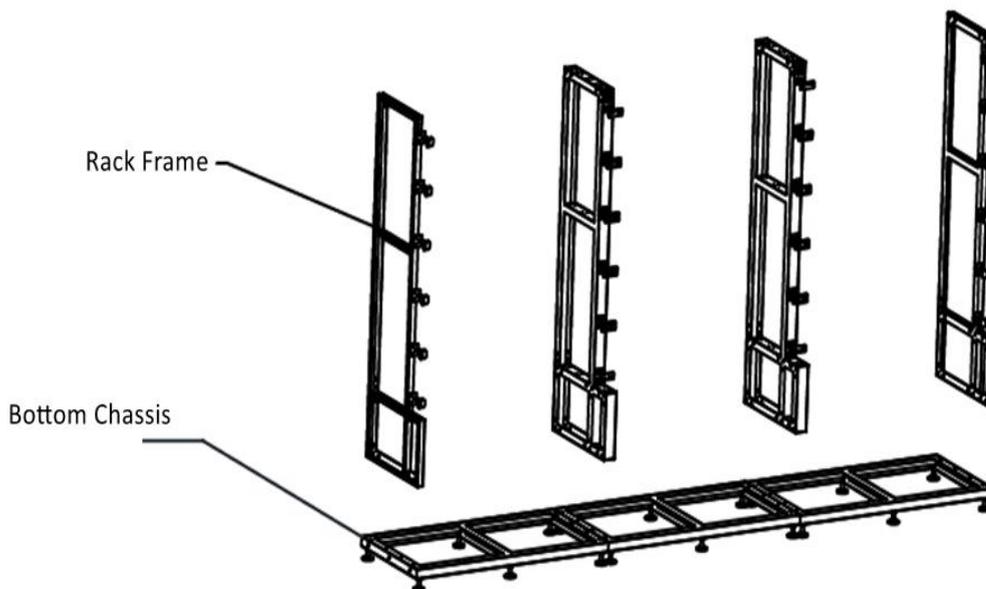Step 1 Put the rack frame on the bottom chassis and then fasten the rack frame.

Figure 1-9 Fix the All-in-One Rack Frame

Step 2 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.

Step 3 Fasten the bottom base frame into the bottom chassis and rack frame respectively.
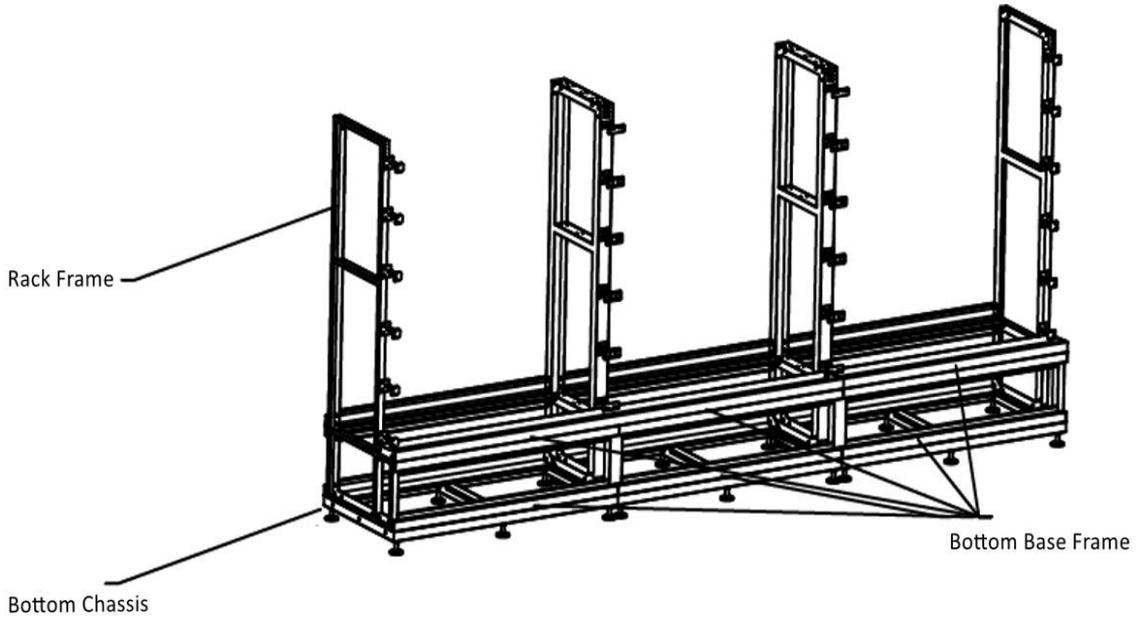
Figure 1-10 Fix the Bottom Base Frame

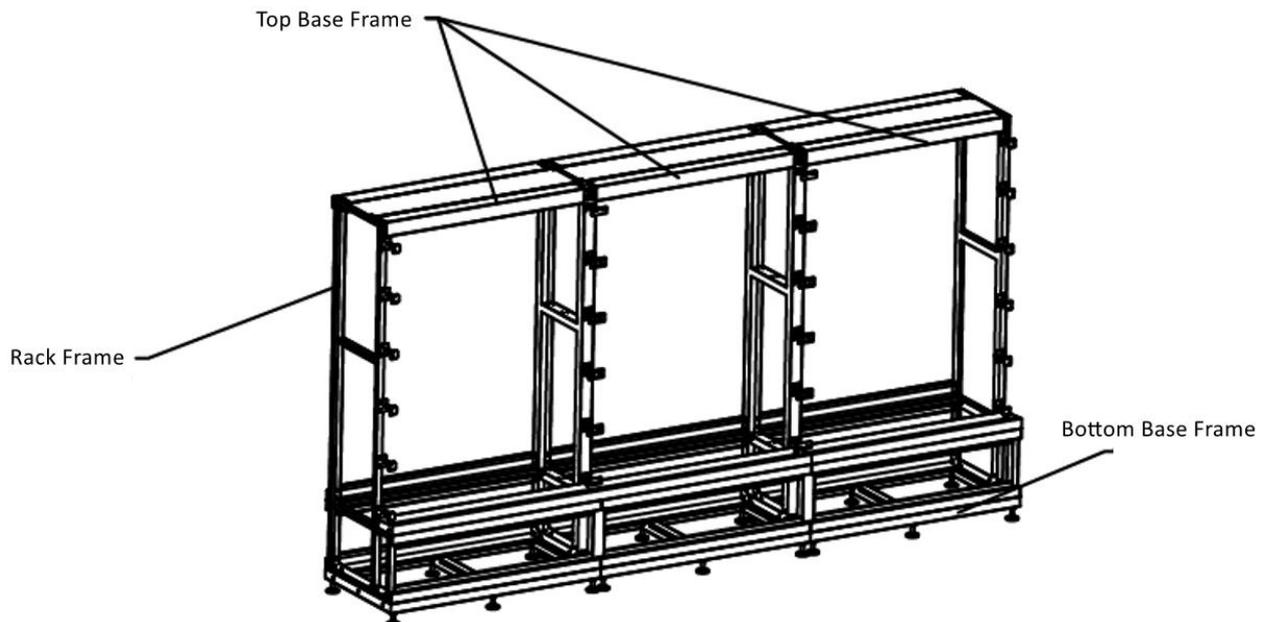Step 4 Connect the top base frame with rack frame and tighten the bolts.
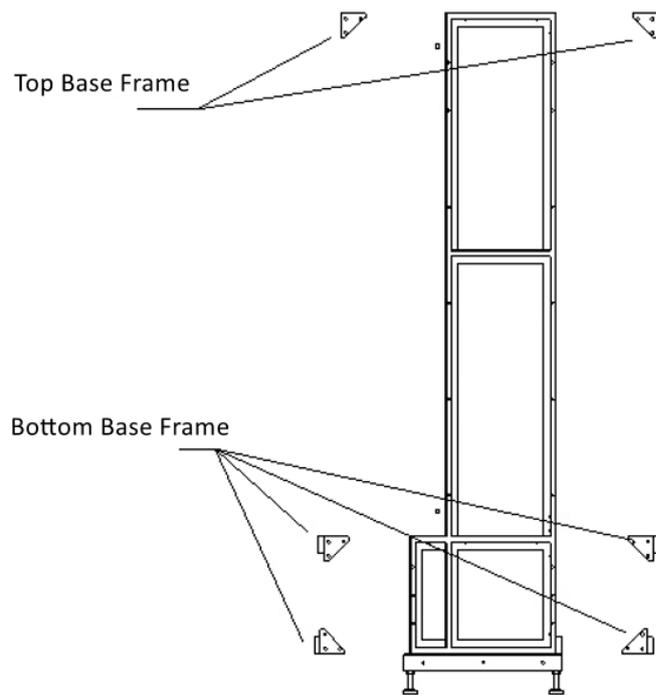

Figure 1-11 Fix the Top Base Frame

Figure 1-12 Side View of Base Frames Installation (Top and Bottom)

1.3.3 Install the Bottom Filler Strip

Step 1 Connect the filler strips with the rack frames according to the length and fix them by the screws.

Step 2 Tighten the screws.
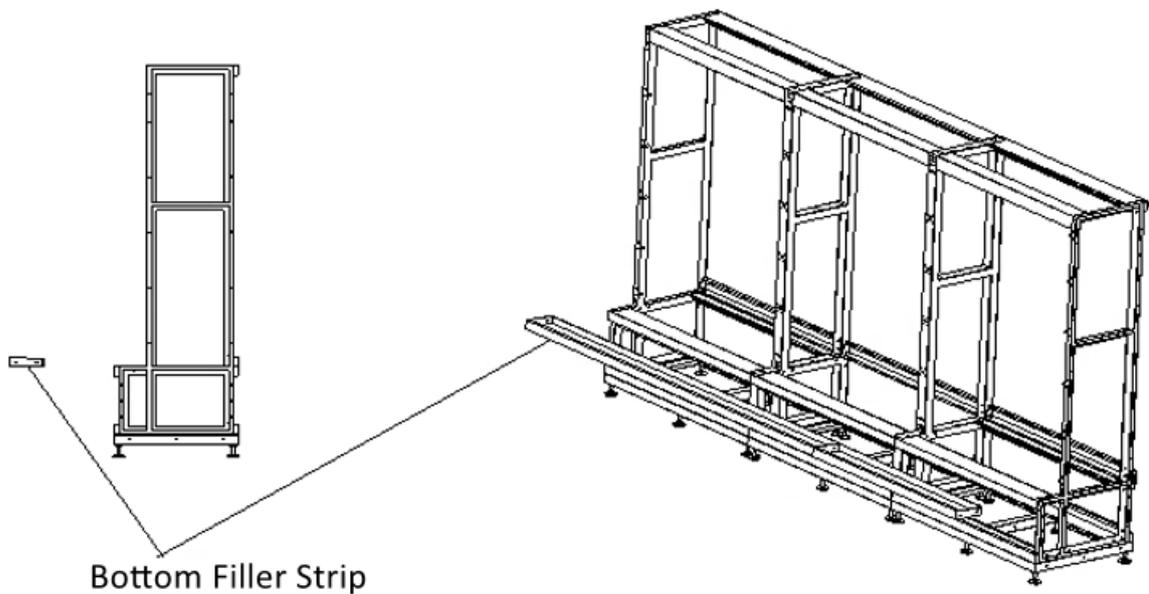
Figure 1-13 Install the Bottom Filler Strip

1.3.4 Install the Connectors
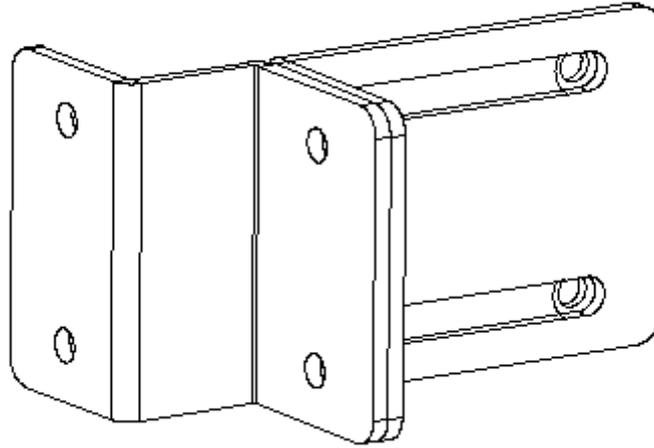
Connector is shown in the figure below.

Figure 1-14 Connector

Step 1 Install the connectors on the rack frames according to the corresponding position.
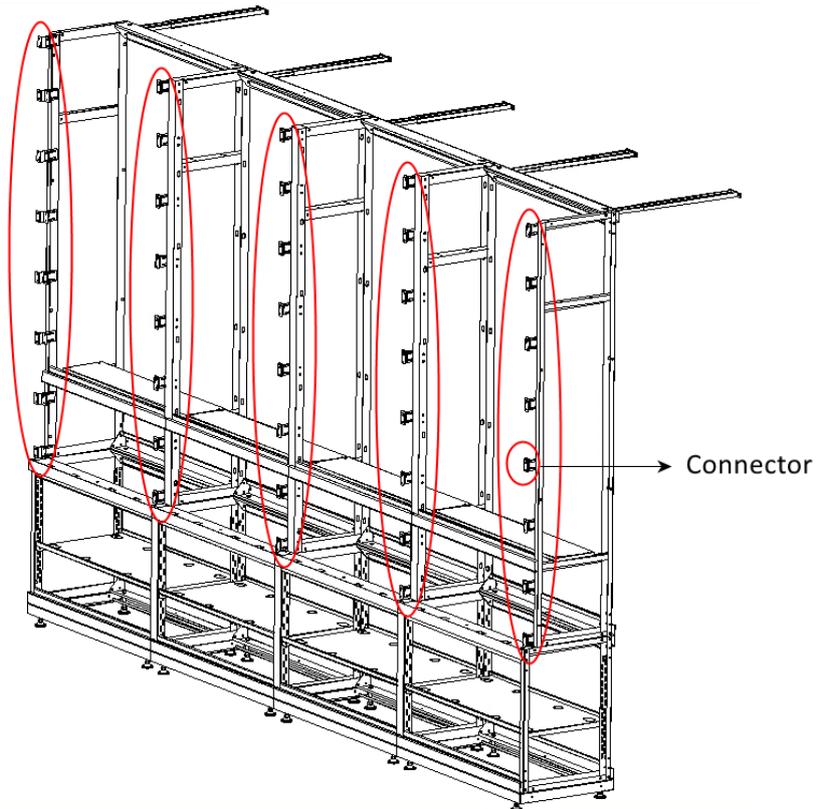

Connector

Figure 1-15 Install the Connector

Step 2 Connect rack frames and connectors and tighten the screws.

1.3.5 Install the Cabinet

Step 1 Install the first cabinet from the lower middle part of the rack frame, insert the M8 screw from the front to the back to secure the cabinet to the connector.

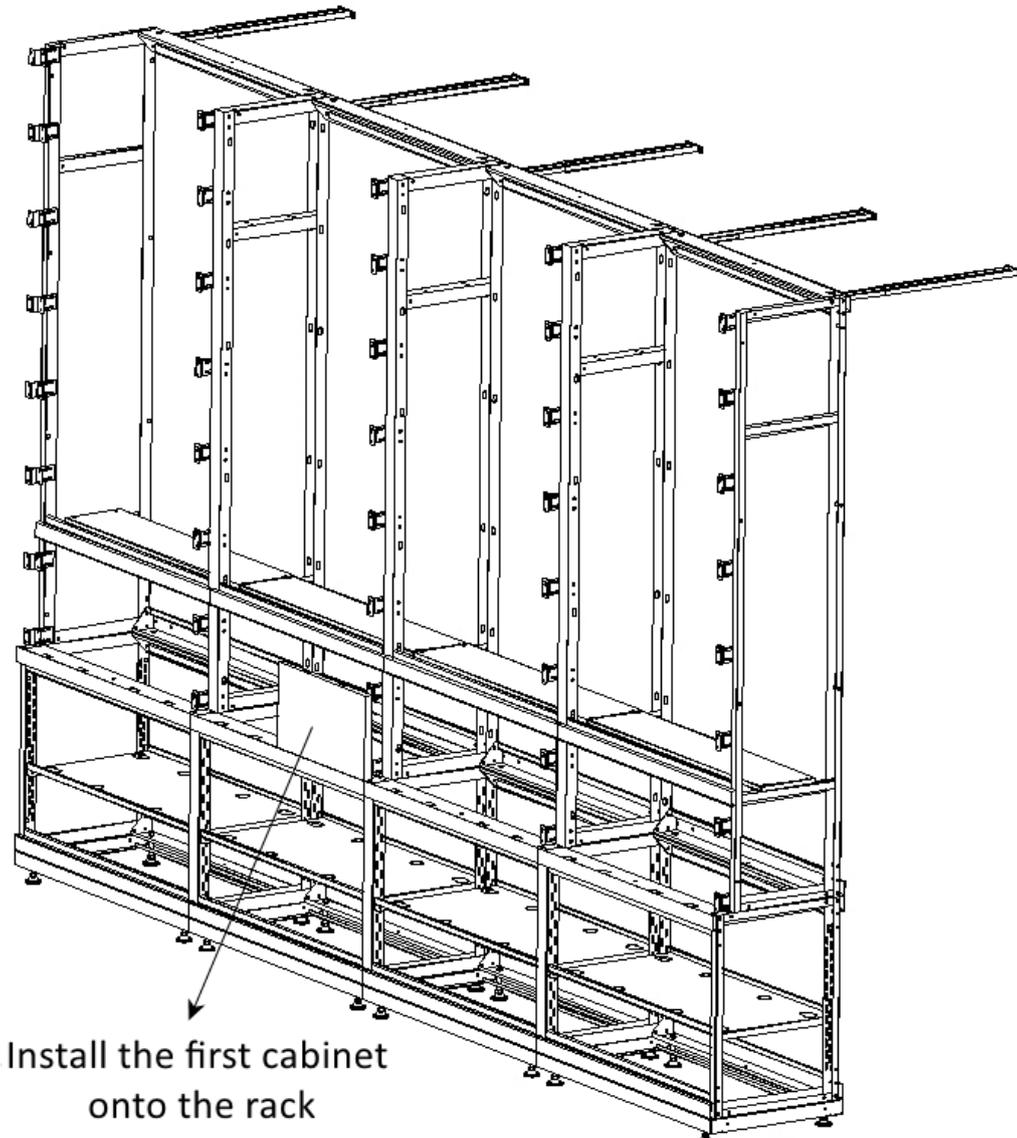Install the first cabinet
onto the rack

Figure 1-16 Install the First Cabinet

Step 2 If there is no connector on the back of the adjacent cabinets, use a joint piece to interlock the two cabinets. Put the joint piece on the mounting holes on the back of the adjacent cabinets, insert M8 screws from back to front, and fix the joint piece to the cabinet in turn.
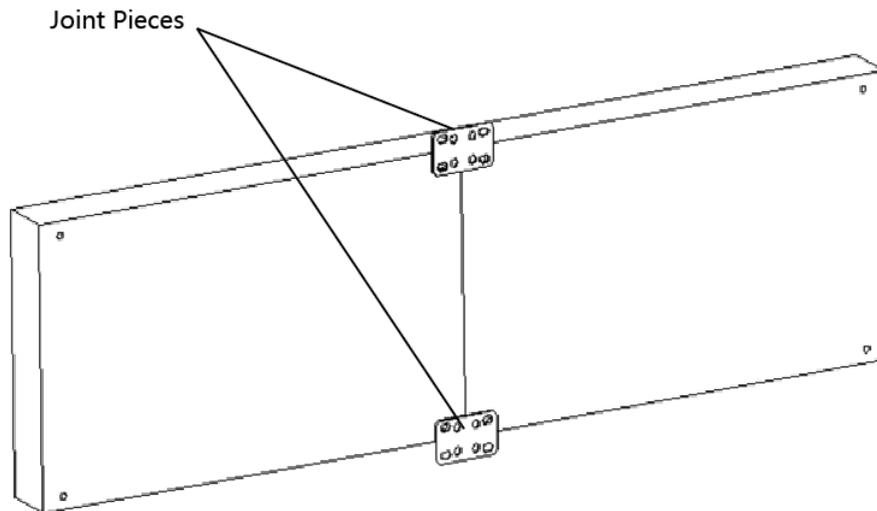
Figure 1-17 Fix the Cabinet with Joint Pieces

Step 3 Install the remaining cabinets from middle to both sides and from bottom to top.

📖**Note**

- Fasten the connectors on the vertical rack frames of the screen in accordance with the requirement of locating size of the cabinet installation.
- The cabinets should be fixed from bottom to top and from middle to both sides.
- The cabinet should be concave 3 mm inward than the lower fill strip.
- 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.

Step 4 Use a level to measure and ensure that the cabinets are flat and vertical.

📖**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 5 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.
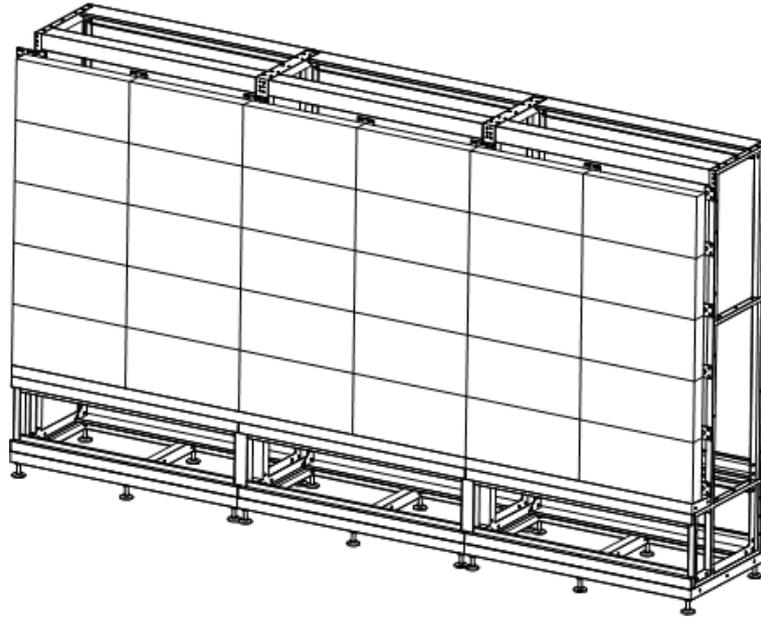
Figure 1-18 Cabinets Installed

1.3.6 Install the Top Filler Strip

Step 1 Install the filler strips on the rack frames according to their length and fix them with screws.
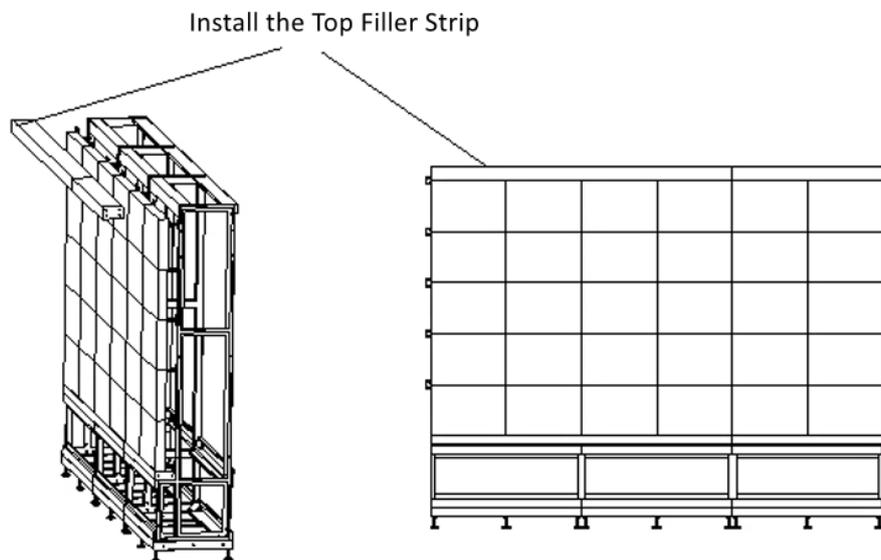
Step 2 Tighten the screws.

Figure 1-19 Install the Top Filler Strip

1.3.7 Install the Aisle Pedals (for Large-scale Projects)

Step 1 Put the aisle pedals on the middle of the rack frames.

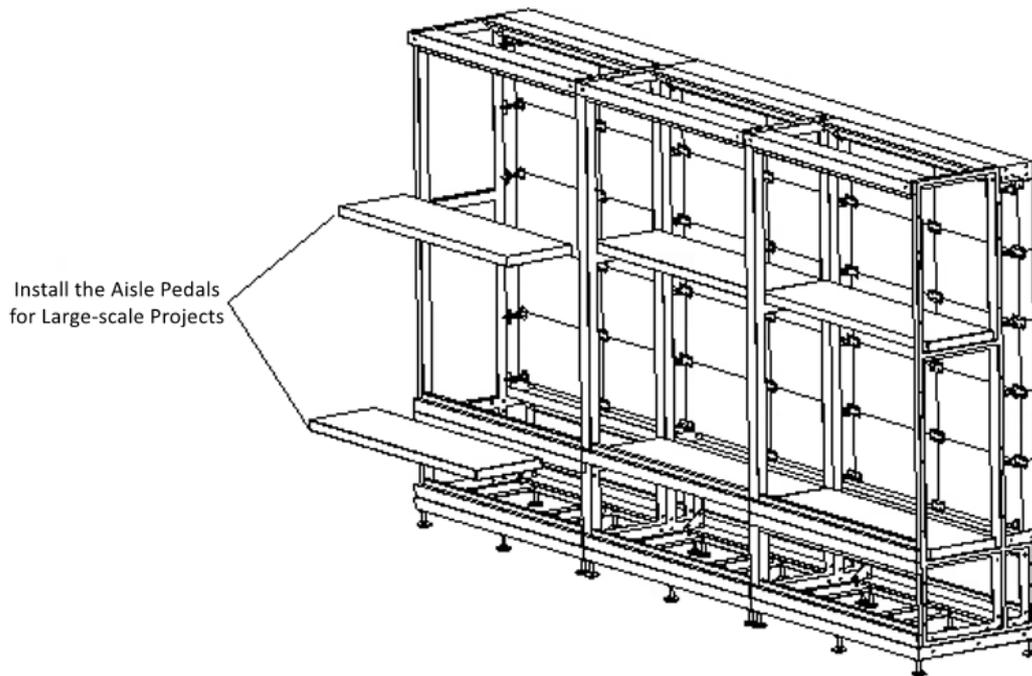Step 2 Use the screws to connect the aisle pedals with the rack frames and then tighten the screws.

Figure 1-20 Fix the Aisle Pedals

ℹ️ **Note**

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

1.3.8 Install the Cover Plates

Install the left cover plates, right cover plates, front cover plates, back cover plates, and top cover plates respectively.
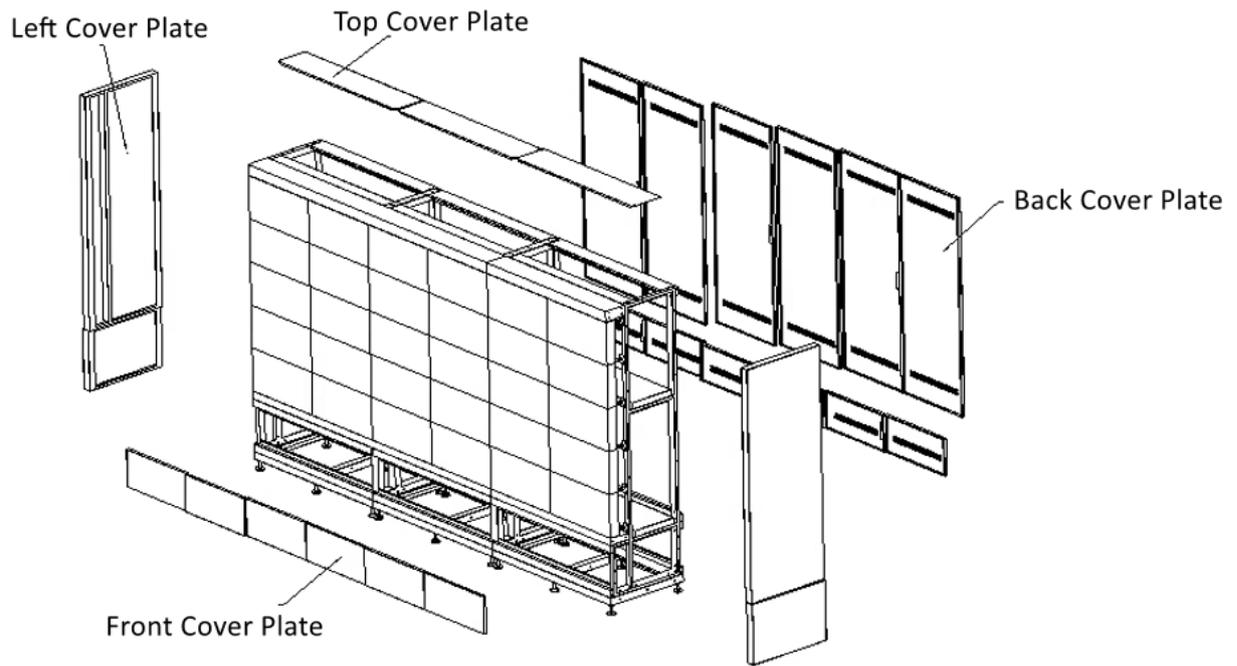
Figure 1-21 Fix the Cover Plates

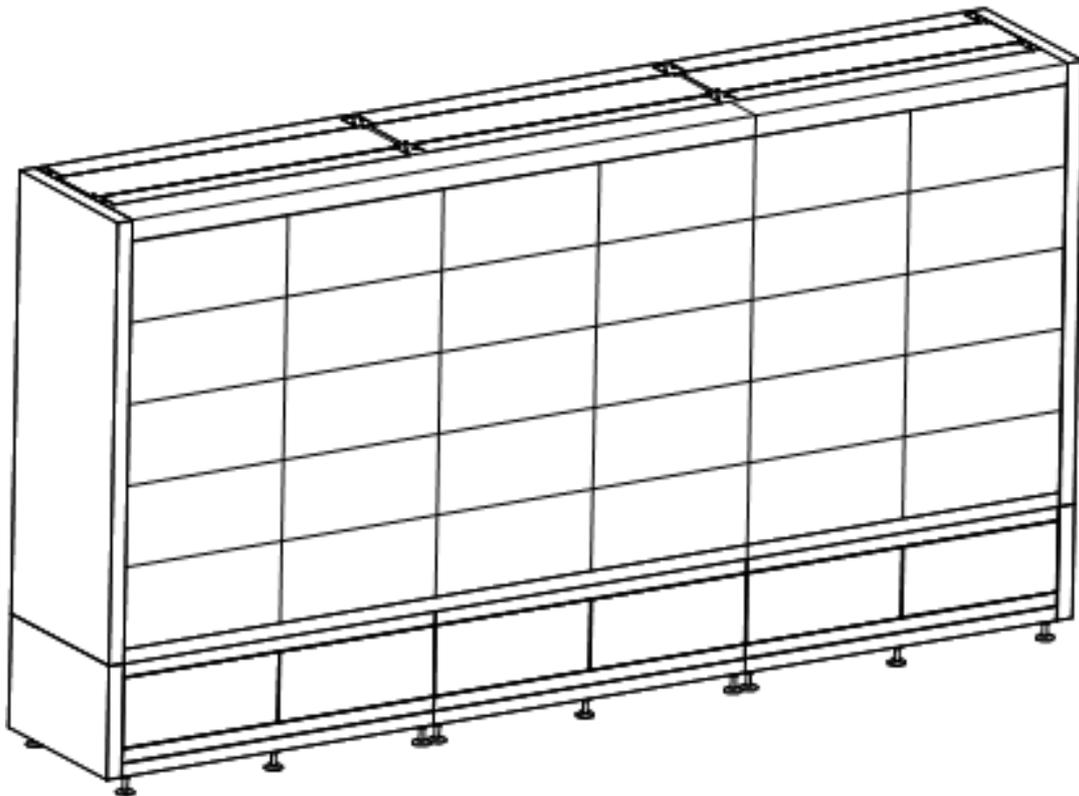The figure is shown as follows after the installation is finished.

Figure 1-22 Screen Installed

📖**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.

1.4 Install the Modular Wall-Mounted Bracket

Accessories

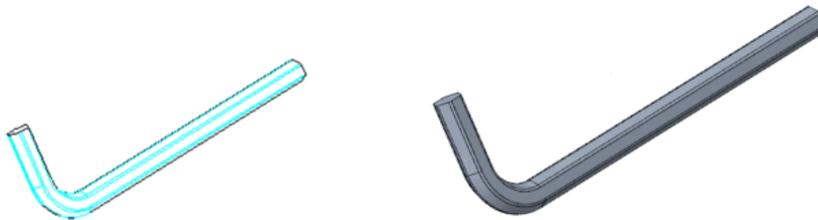1. Allen Wrench: Used for connecting the stator and cabinet with Allen screws.

Figure 1-23 Allen Wrench

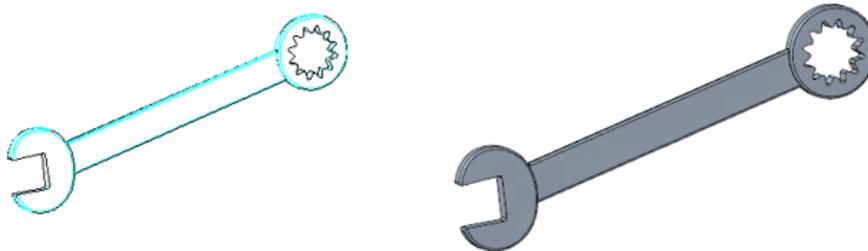2. Combination Wrench: Used for T-shape screws.

Figure 1-24 Combination Wrench

3. Connector: Used for fixing position and avoiding displacement of cabinet frames.
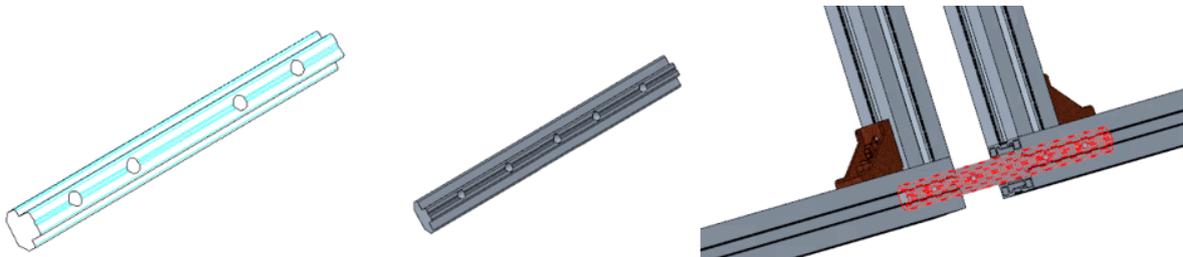

Figure 1-25 Connector

4. Four cabinet fixing pieces (fixation pieces): Fix the cabinet in the middle of the 2 × 2 frame; As a temporary tray when you mount the first row cabinet to avoid falling of the first line.
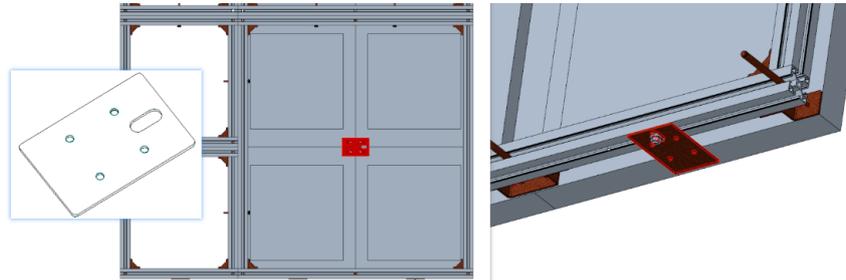

Figure 1-26 Four Cabinet Fixing Piece

5. Two-point cabinet fixing piece (Middle fixed piece): Fasten the cabinet to the cabinet.
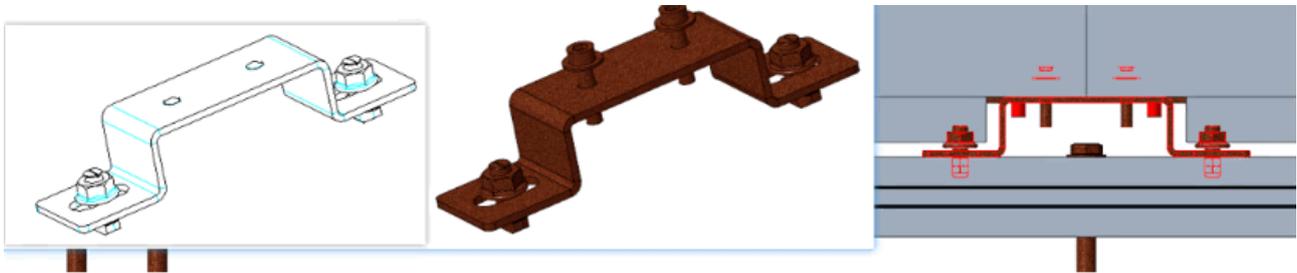

Figure 1-27 Two-point Cabinet Fixing Piece

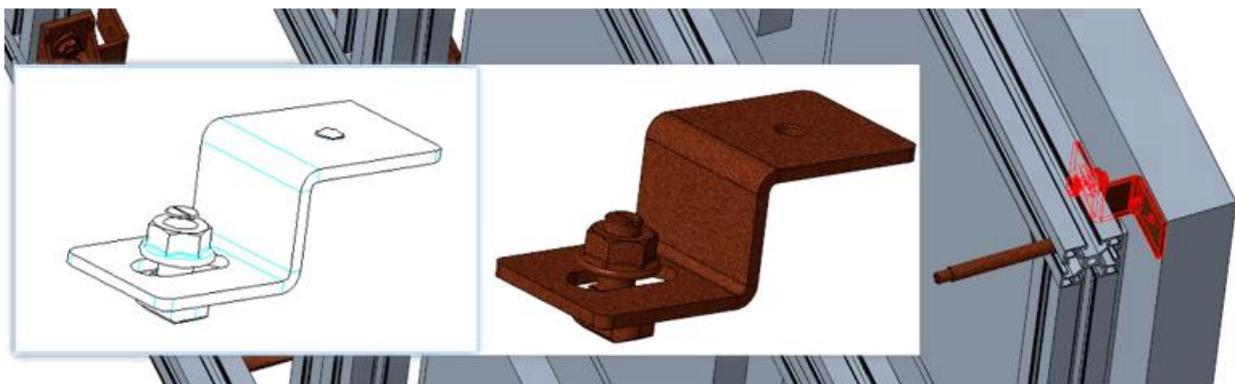6. Single-point cabinet fixing piece (Corner fixed piece): Fasten the cabinet to the frame.

Figure 1-28 Single-point Cabinet Fixing Piece

7. Cabinet leveling gasket: Put on the expansion bolts, and pad between the frame and the wall, so that the frame is flat and will not bend.
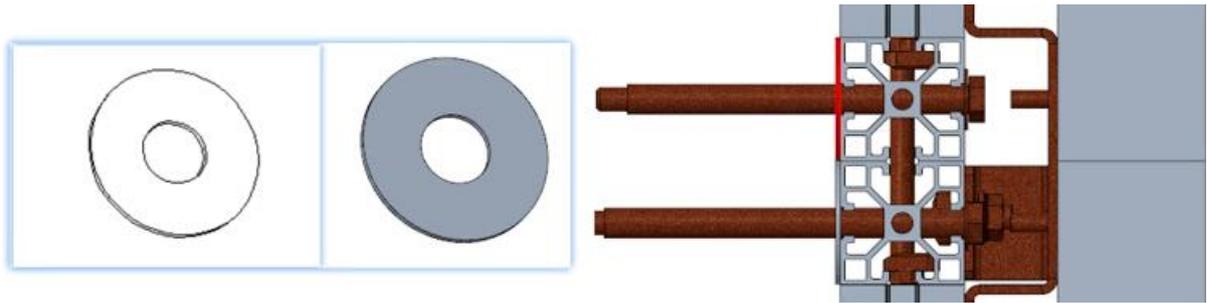
Figure 1-29 Cabinet Leveling Gasket

8. Hexagon socket screws: Used to connect the cabinet with three kinds of fixing pieces when the cabinet is installed from front side.

Figure 1-30 Hexagon Socket Screws

9. Inner expansion bolt: Fix the frame to the wall.

Figure 1-31 Inner Expansion Bolt

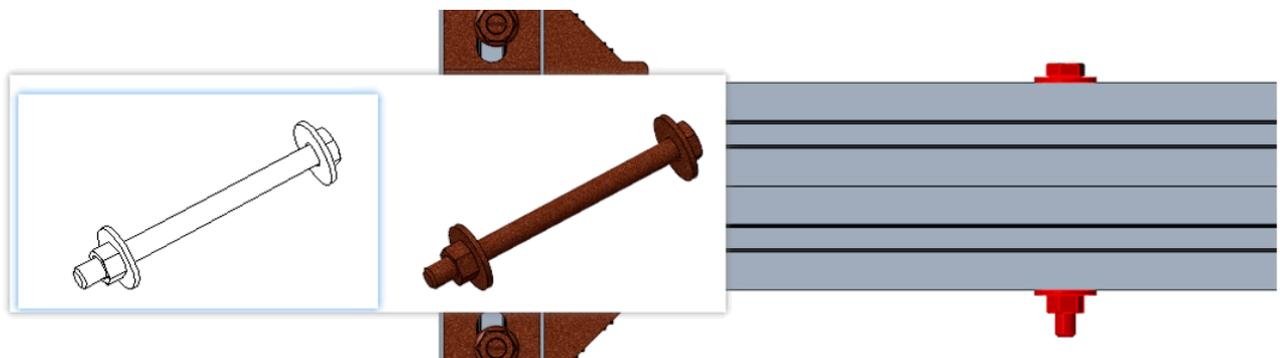10. Long screws: Contains two gaskets for the mutual connection between frames.

Figure 1-32 Long Screws
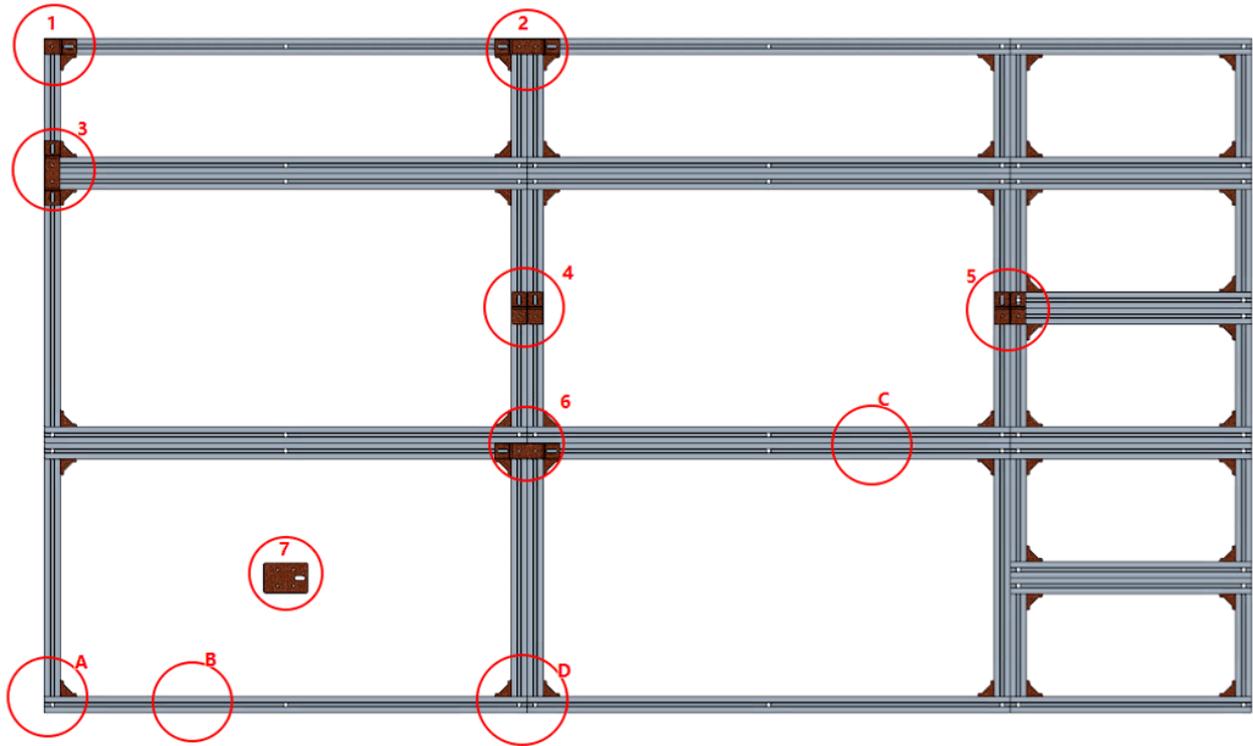
Installation Diagram

Figure 1-33 Installation Diagram

Step 1 When you mount the frame, if the wall is uneven, you can use a cabinet leveling gasket between the wall and frame to ensure that the frames are at the same surface, see part A in the diagram.

Step 2 Use the inner expansion bolt to fix the frame to the wall, see part A in the diagram.

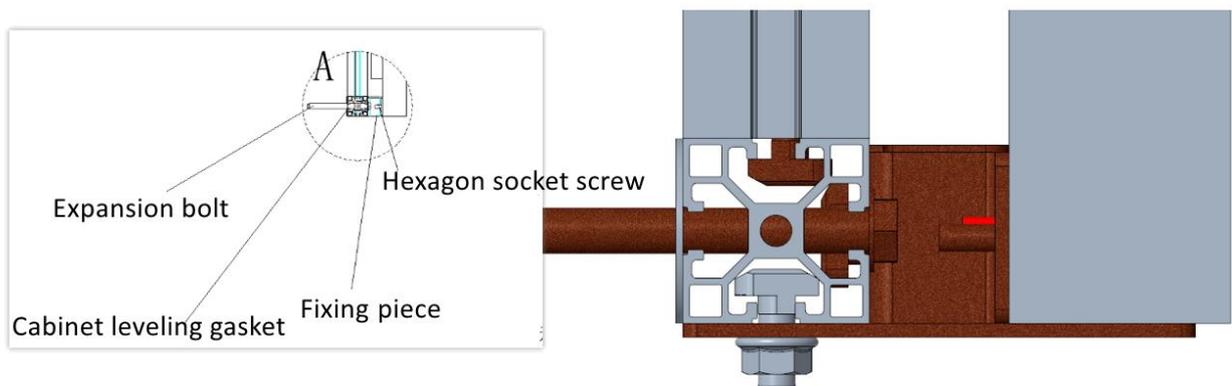Step 3 Use hexagon socket screws to fix the cabinet to the fixing pieces.

Figure 1-34 Fix the Cabinet

Step 4 Use long screws to connect the frame together, see part C in the diagram.
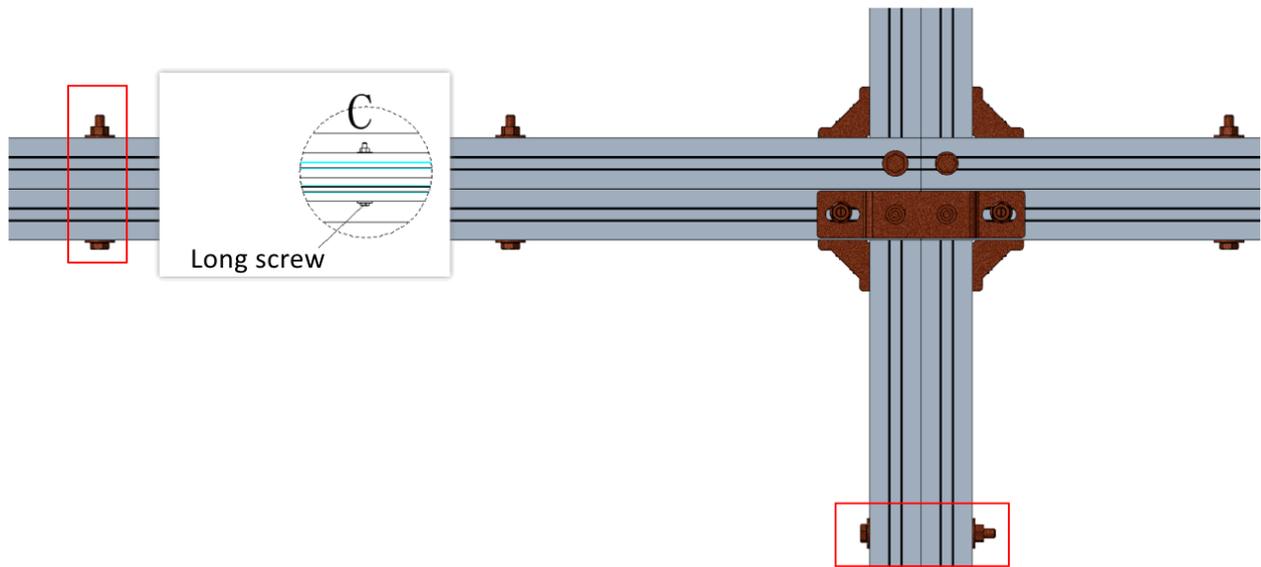
Figure 1-35 Connect the Frame

Step 5 When you mount frames, you can use the connector to limit the frame's movement, see part D in the diagram.
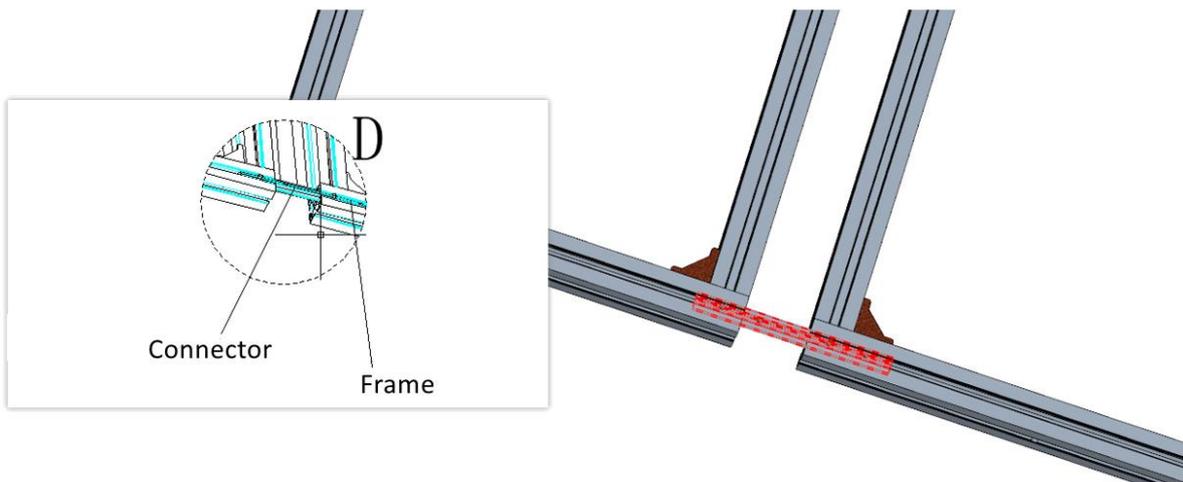

Figure 1-36 Connect the frame

Step 6 To install the first row of cabinets, you need to use four cabinet fixing pieces as the temporary base support. After the first row is installed, the temporary base support can be removed, see part B in the diagram.
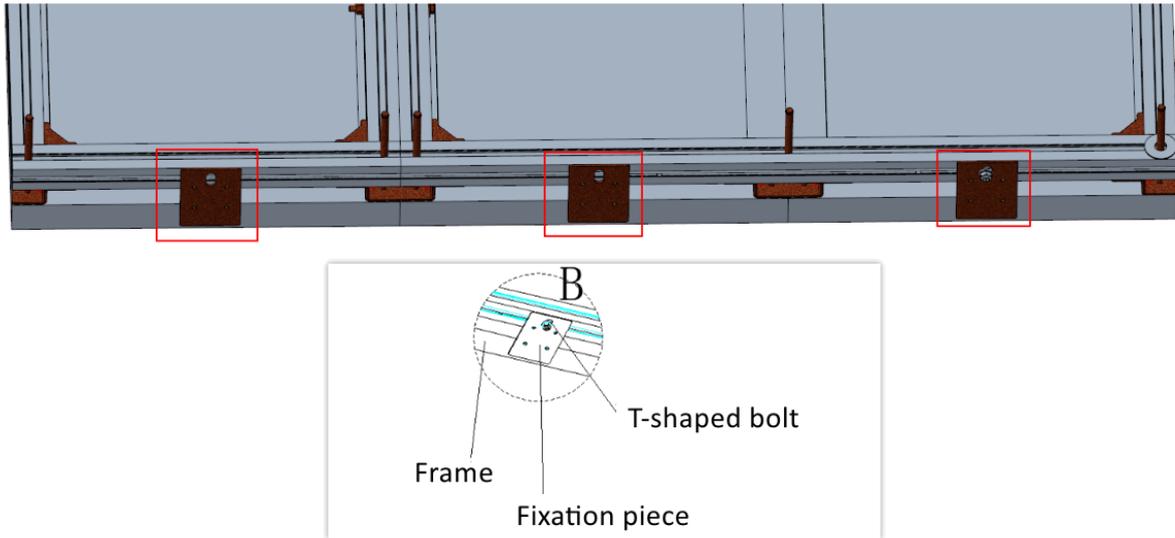
Figure 1-37 Install the Fixation Piece

Step 7 Use the bolts or mechanisms to interlock and fully tighten the cabinets to prevent the cabinet from falling from the wall.

Step 8 Use the fixing piece to connect the cabinet with the frame, and then tighten the inner expansion bolt.

Requirements for the number of fastening nodes for cabinet

Single cabinet node (such as node 1) must be fastened.
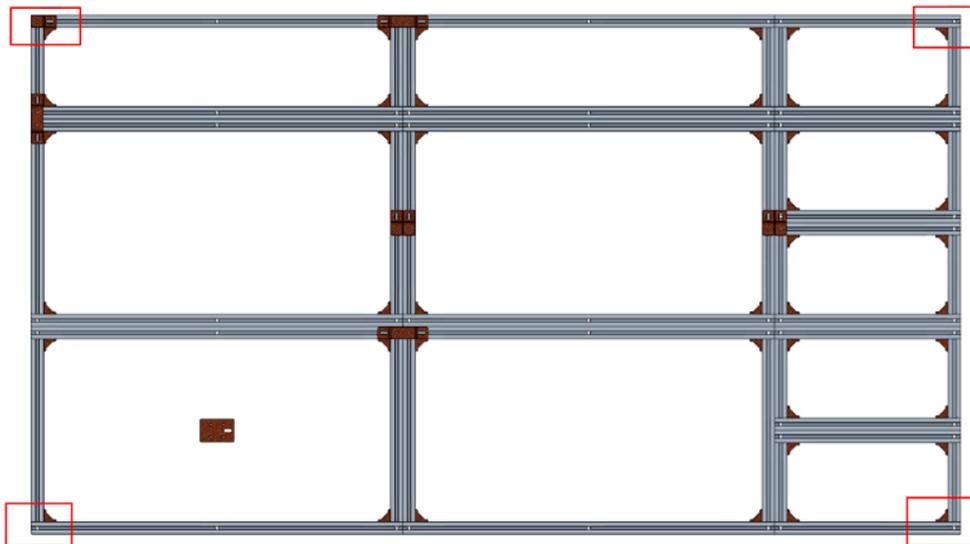

Figure 1-38 Fasten Node 1

At least one adjacent cabinet node (such as node 2 and 3) must be fastened.
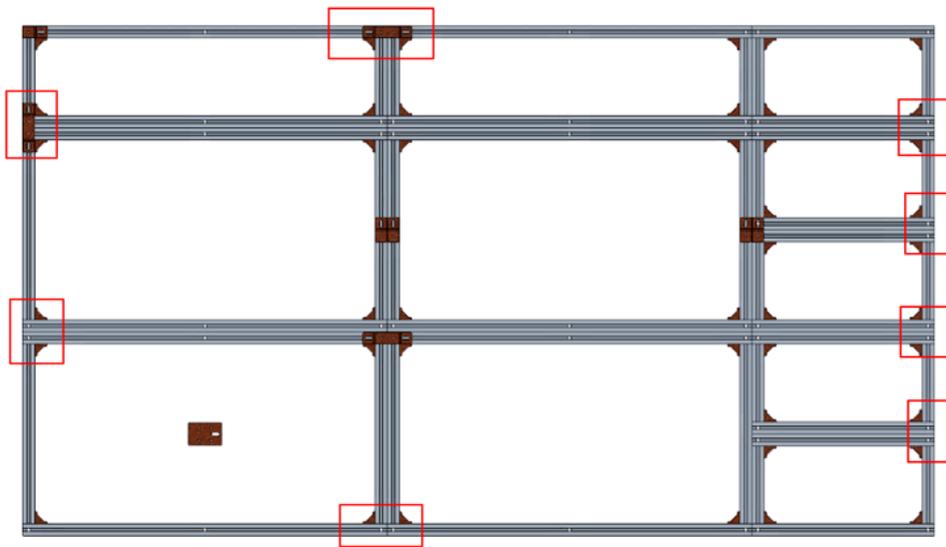
Figure 1-39 Fasten Node 2 and 3

At least two adjacent cabinet nodes (such as node 4, 6, and 7) must be fastened.
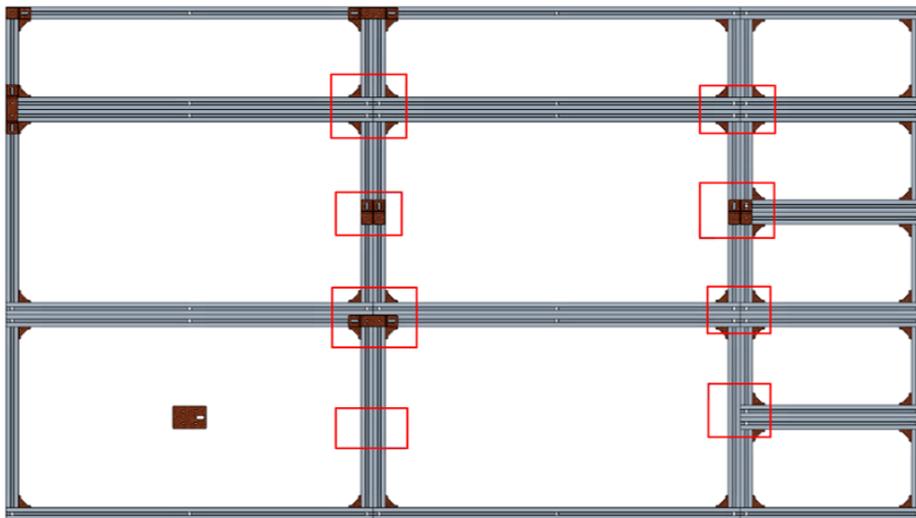
Figure 1-40 Fasten Node 4, 6 and 7

Install the Node

A single-point cabinet fixing piece is needed to install the node 1 in horizontal or vertical level.

Figure 1-41 Install Node 1

A two-point cabinet fixing piece is needed to install the node 2 in horizontal level.

Figure 1-42 Install Node 2

A two-point cabinet fixing piece is needed to install the node 3 in vertical level.

Figure 1-43 Install Node 3

Two two-single-point cabinet fixing pieces are needed to install the node 4 in vertical level.

Figure 1-44 Install Node 4

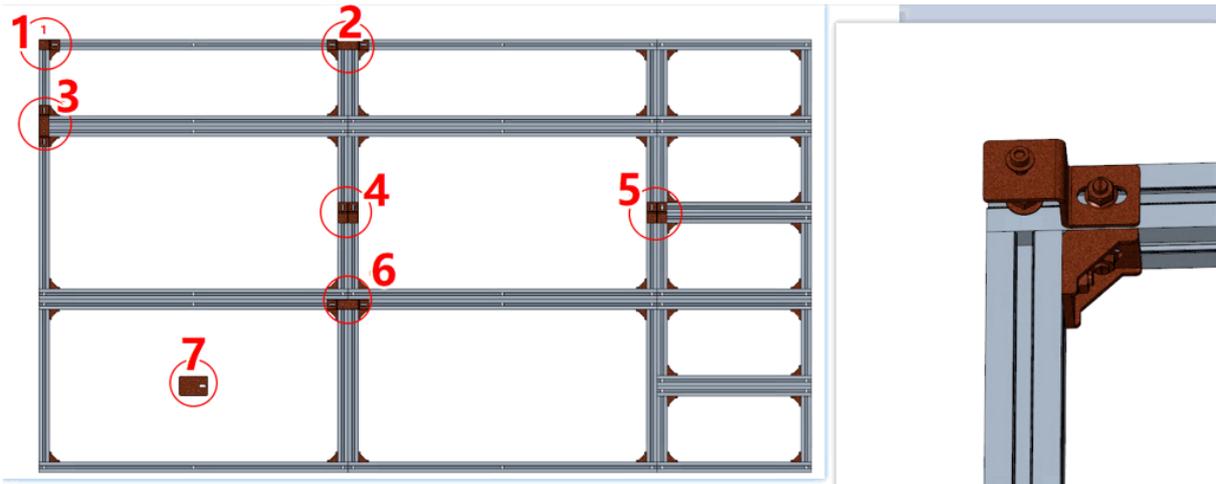Two two-single-point cabinet fixing pieces are needed to install the node 5 in horizontal or vertical level.

Figure 1-45 Install Node 5

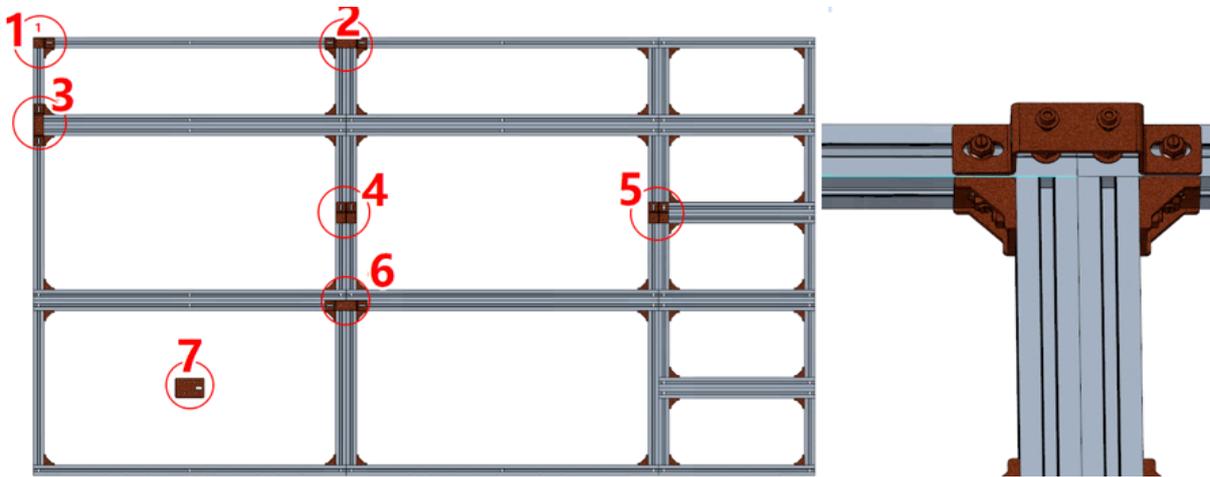A two-point cabinet fixing piece is needed to install the node 6 in horizontal level.

Figure 1-46 Install Node 6

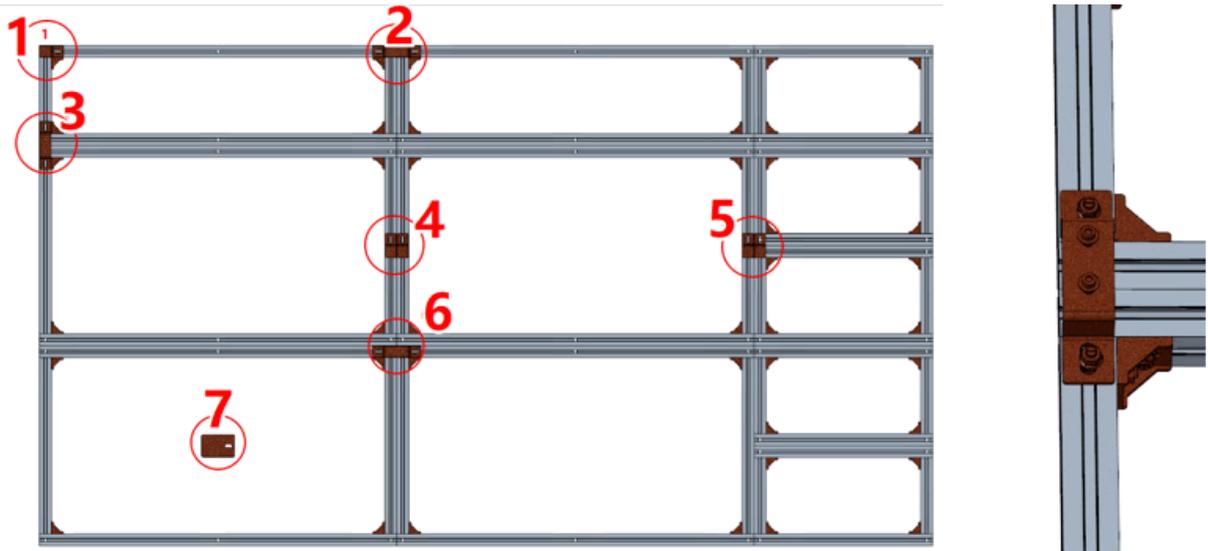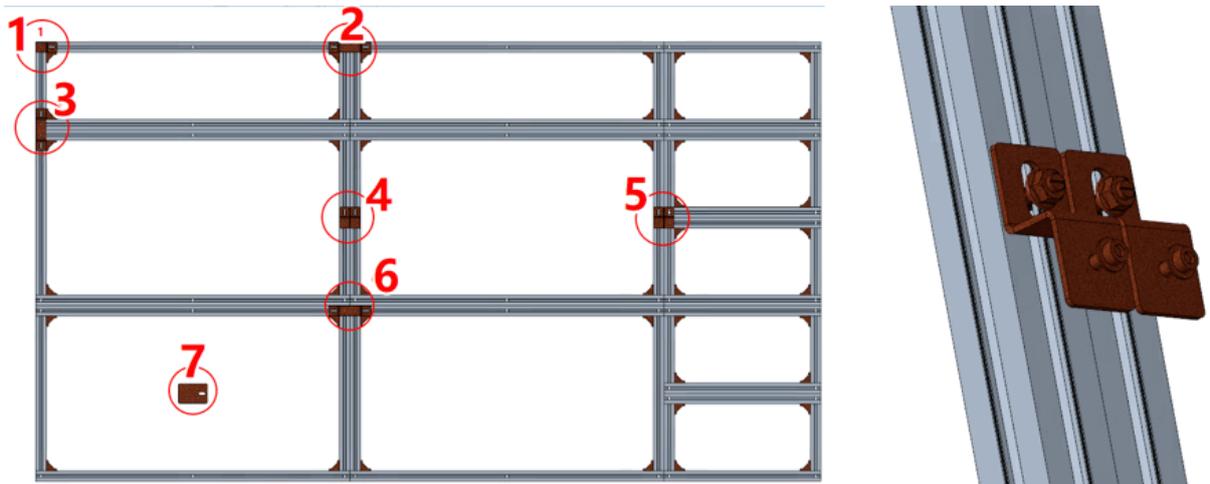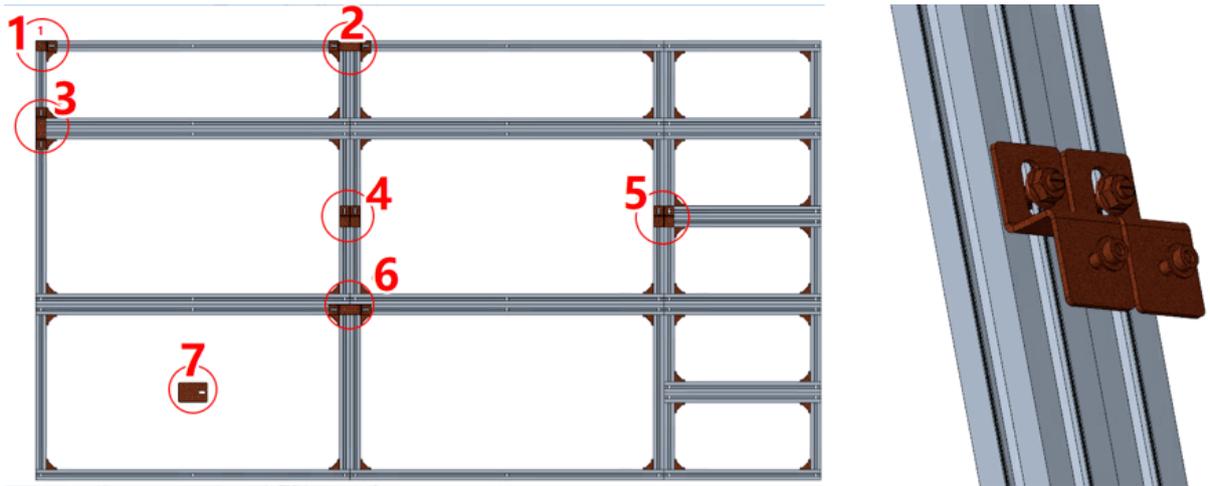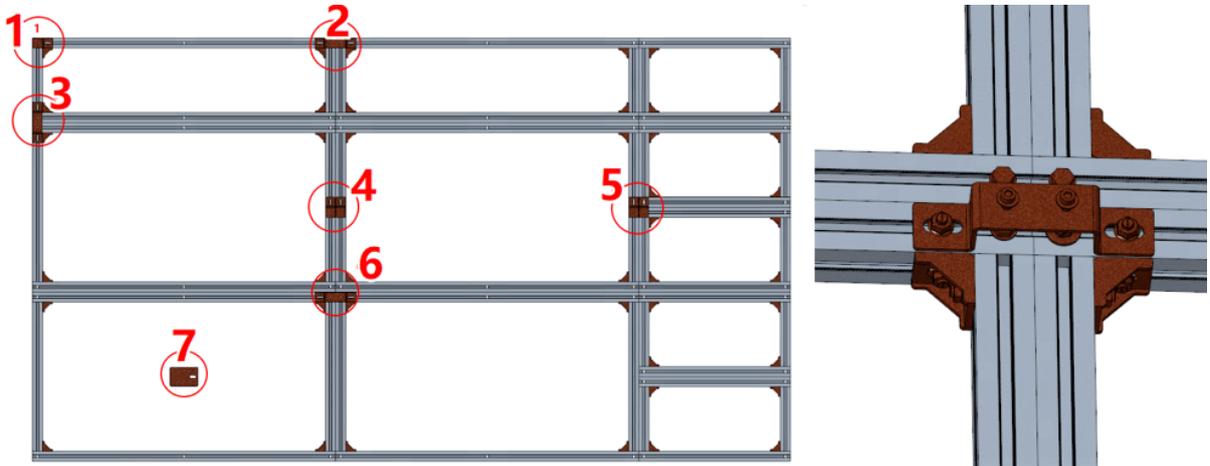A four cabinet fixing piece is needed to install the node 7 in horizontal level.
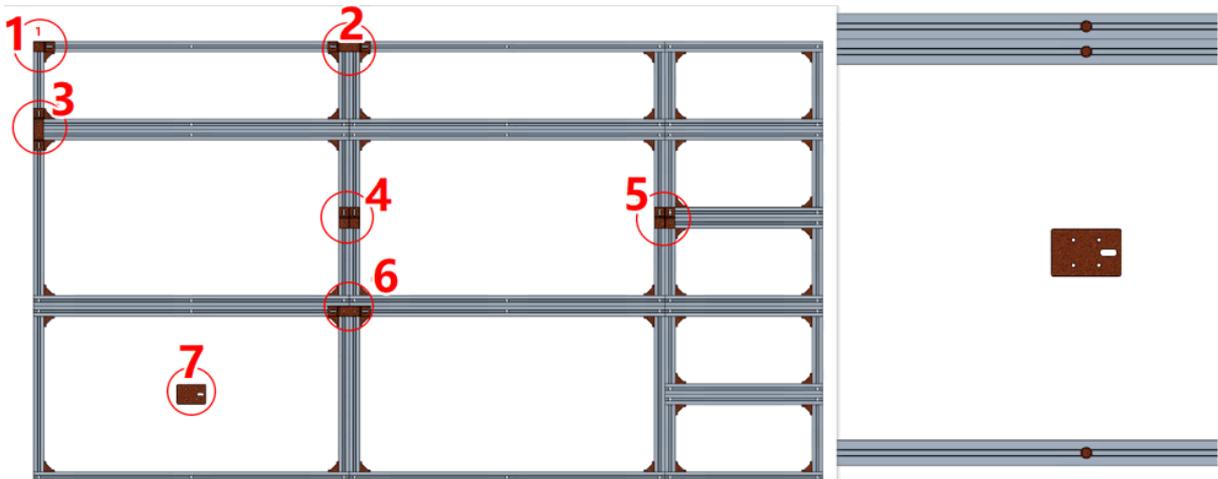

Figure 1-47 Install Node 7

1.5 Install the Display onto the Welded Rack

The welded support bracket serves as a critical load-bearing framework specifically engineered for secure installation and long-term operation of indoor/outdoor LED displays. Constructed from high-strength aluminum alloy or stainless steel through precision welding techniques, this structural component delivers exceptional load-bearing capacity, corrosion resistance, and impact resistance. Its design ensures reliable performance in demanding environments while accommodating diverse specific spatial layout requirements and complex display mounting requirements.

1.5.1 Rack Welding Procedure

```
┌─────────────────────┐
│    Measurement       │
│   and Positioning    │
└─────────────────────┘
          │
          ▼
┌─────────────────────┐
│      Anchor          │
│    Installation      │
└─────────────────────┘
          │
          ▼
┌─────────────────────┐
│     Framework        │
│      Welding         │
└─────────────────────┘
          │
          ▼
┌─────────────────────┐
│   Steel Structure    │
│     Correction       │
└─────────────────────┘
          │
          ▼
┌─────────────────────┐
│    Welded Joints     │
│    Reinforcement     │
└─────────────────────┘
          │
          ▼
┌─────────────────────┐
│   Anti-Corrosion     │
│     Treatment        │
└─────────────────────┘
```
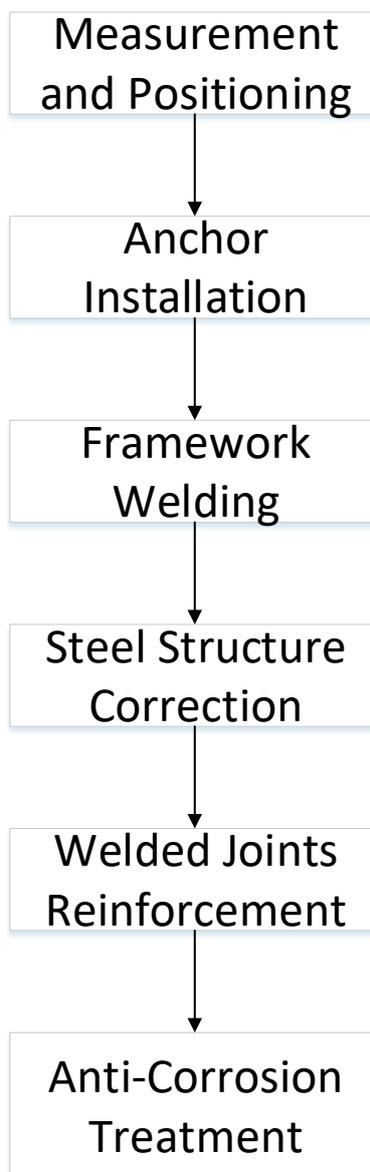
Figure 1-48 Rack Welding Procedure

- Measurement and Positioning: Mark reference positioning lines for the rack according to dimensional requirements specified in the drawings.

- Anchor Installation: Install anchors based on the drawing and pre-marked positioning points. Ensure proper drilling depth for anchor bolts. For chemical anchors, clean holes thoroughly before injecting the chemical agent.

- Frame Welding: The framework typically consists of front keel verticals, suspension verticals, diagonal bracing, walkways, and access ladders. Welding operations must be performed by professional crews. For sites with favorable conditions, pre-assemble rack frames on the ground before hoisting and welding. For constrained sites, proceed with phased construction. The welding and installation process must be adhered strictly to the designed specifications.

- Steel Structure Correction: Use correction and alignment tools to verify frame dimensions are within allowable tolerances according to the drawings.

- Welded Joints Reinforcement: Upon completing structural correction, reinforce the welded joints.

- Anti-Corrosion Treatment:

    - Slag Removal: Chip off welding slag and grind joints smooth to eliminate sharp edges.

    - Anti-Corrosion Treatment: Apply primer and paint to protect against rust, especially in humid environments.

1.5.2 Install the Welded Rack

Make an installation scheme of welding rack according to the installation location and the size of the LED display.

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

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.

If the customer does not use the provided wall-mounted rack, all-in-one rack, or modular wall-mounted brackets for installing the cabinet, and instead uses a custom-made rack for indoor or outdoor LED display installation, the following steps should be followed to install the connectors.

1.5.3 Install the Module onto the Welded Rack

Before you start

Before installing the module, disconnect the external power switch. After completing the module 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 racks are installed, fix the power supply, receiving card and other components onto the racks.

Step 3 Connect the module to the power supply and receiving card. After the connection is completed, firmly attach the four magnets on the module to the rack to secure the module.
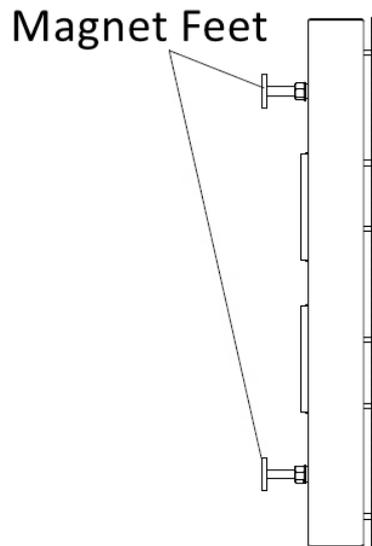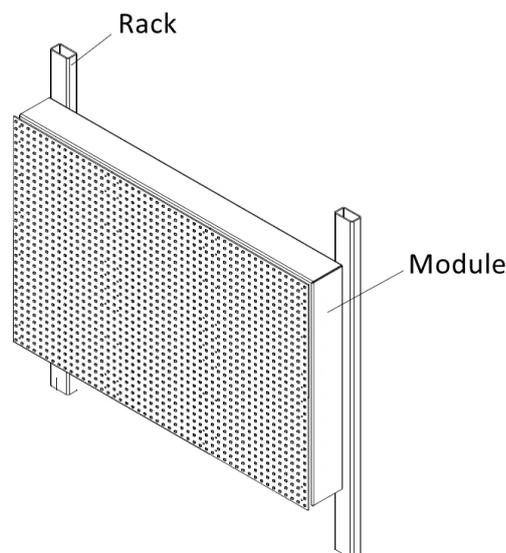

Figure 1-49 Magnet Feet on the Module

Figure 1-50 Install the Module on the Rack

1.5.4 Install the Cabinet onto the Welded 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.

Step 3 Take installing the two cabinets in the middle of the first row at the bottom as an example, first align the adjacent frames of the cabinets with the racks.

Step 4 Place a connector between the rack and cabinets. Align the two bolt fixation holes on the connector with the two installation holes on the top of the cabinets. Insert two M6 × 18 bolts from front to back.

Step 5 Insert one M5 tapping screw to fix the connector to the rack.

Step 6 When fixing the two cabinets at the same position in the second row, align the remaining two bolt fixation holes on the connector with the two installation holes on the bottom of the cabinets, and insert two M6 × 18 bolts from front to back.

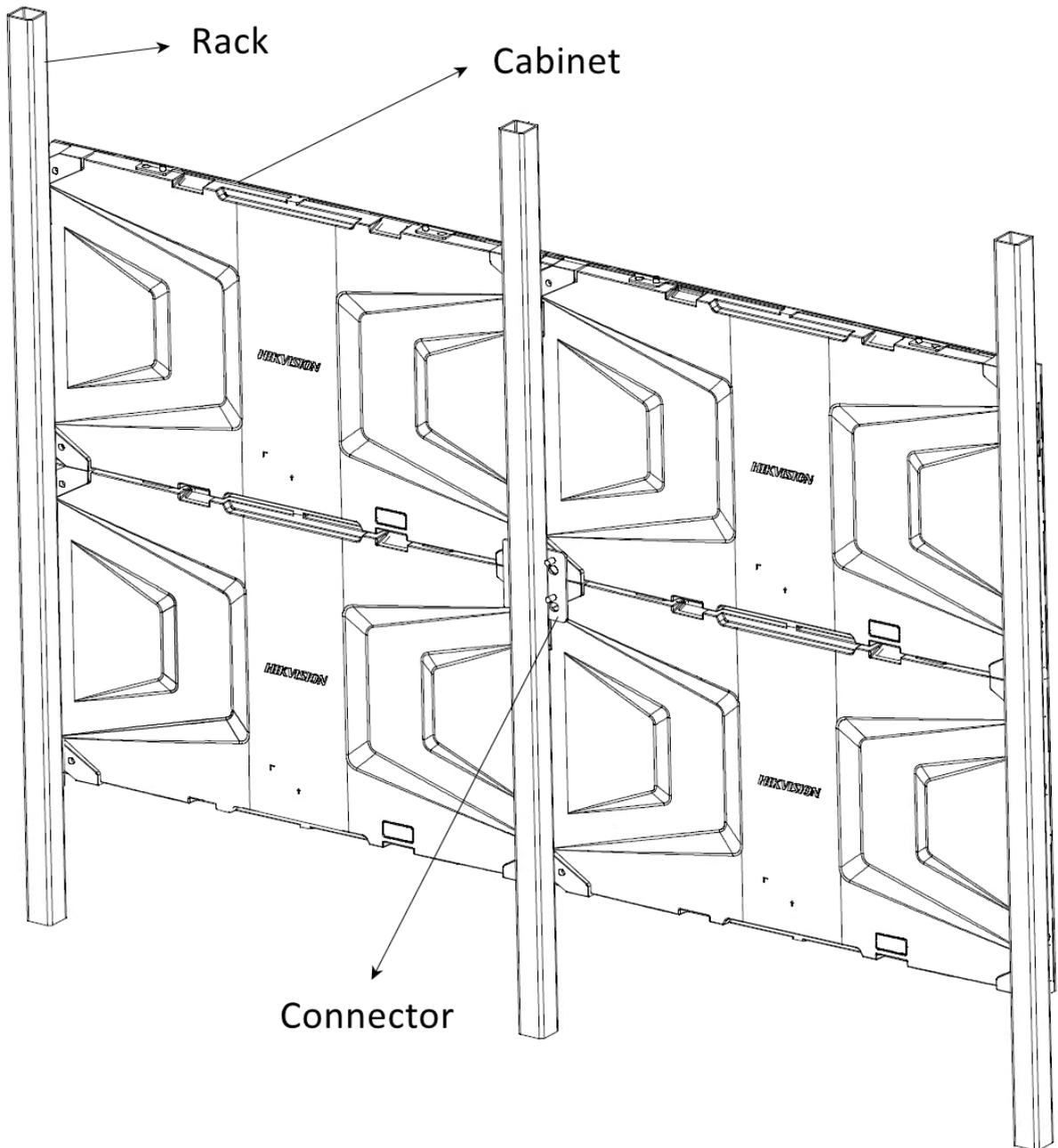Step 7 Adjust the flatness between the cabinets and tighten the bolts.

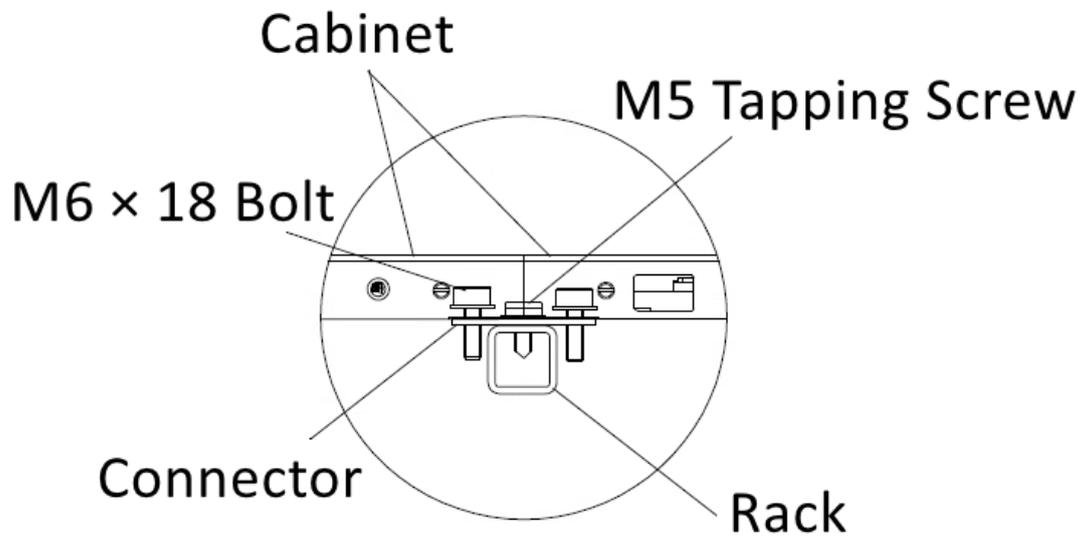Figure 1-51 Fix the Cabinet, Connector and Rack (Rear View)
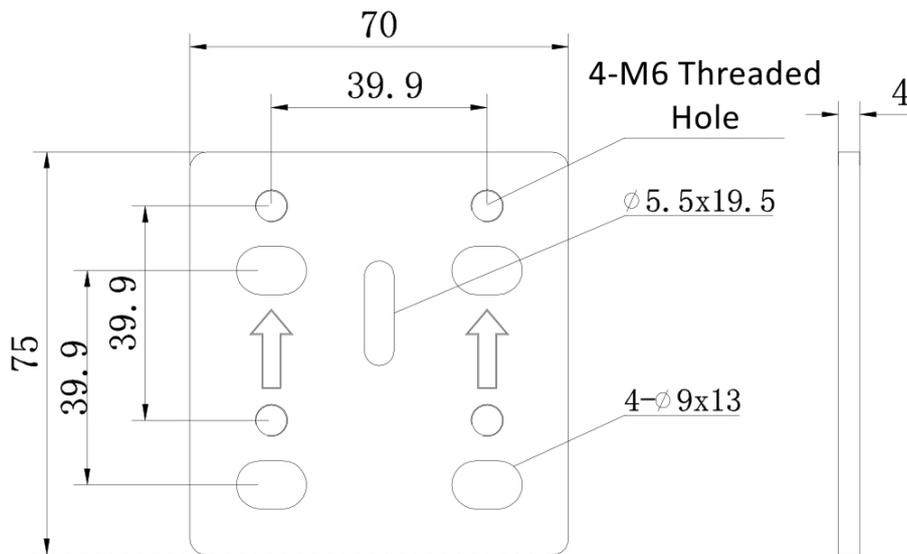
Figure 1-52 Fix the Cabinet, Connector and Rack (Top View)

Figure 1-53 Fixation Holes and Dimension of the Connector

Step 8 Repeat the above steps to install the remaining cabinets.

1.5.5 Install the Cabinet onto the Welded 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.

Step 3 Take installing the two cabinets in the middle of the first row at the bottom as an example, first align the adjacent frames of the cabinets with the racks.

Step 4 Place a connector on the back of the rack. Align the two bolt fixation holes on the connector with the two installation holes on the top of the cabinet. Insert two M8 × 40 long bolts from back to front.

Step 5 When fixing the two cabinets at the same position in the second row, align the two bolt fixation holes on the connector with the two installation holes on the bottom of the cabinets. Insert two M8 × 40 long bolts from back to front to fix the cabinets, connector, and rack sequentially.

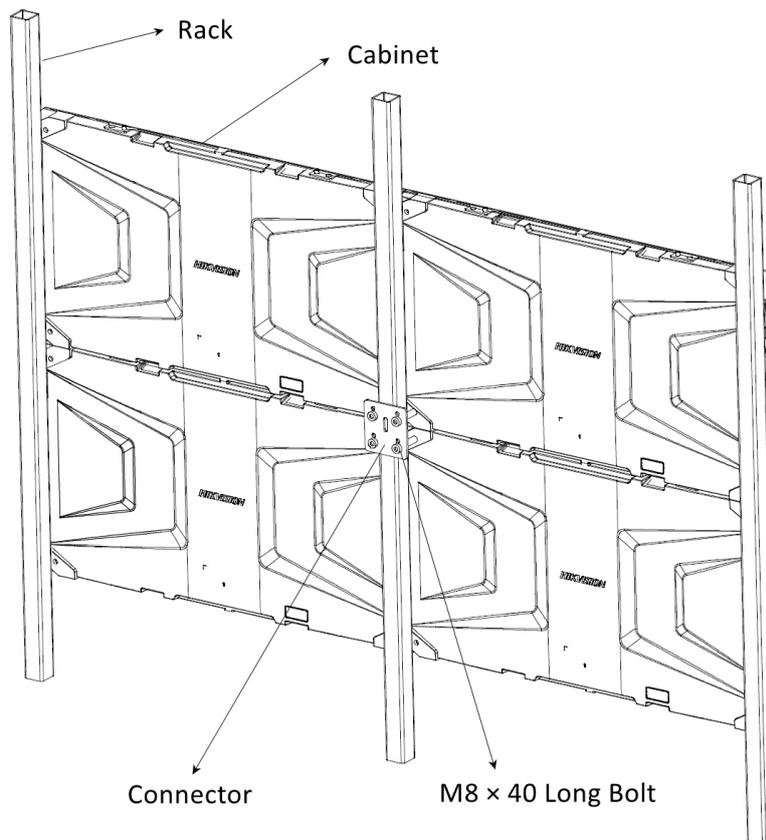Step 6 Adjust the flatness between the cabinets and tighten the bolts.

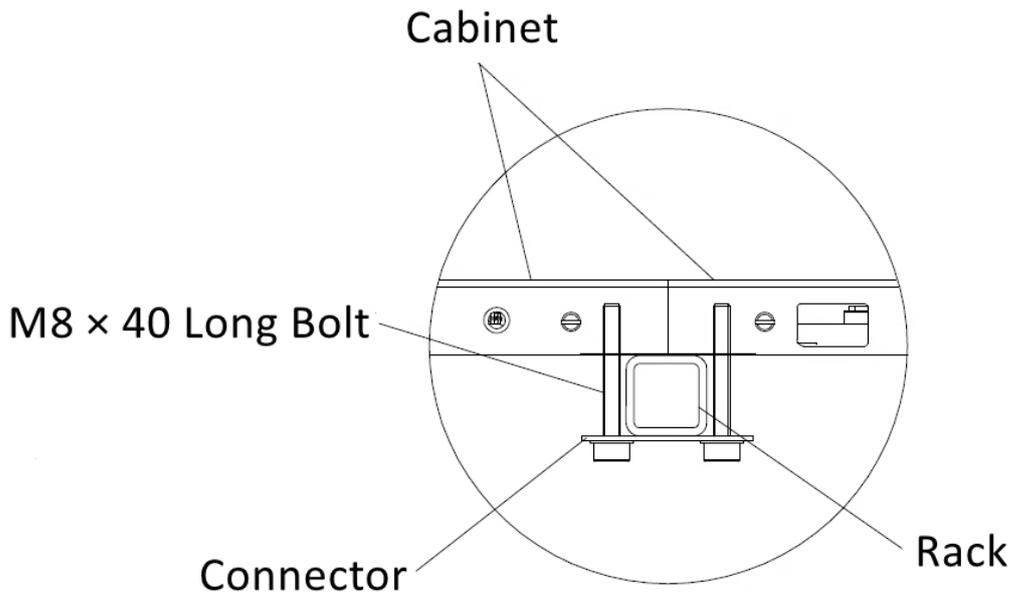Figure 1-54 Fix the Cabinet, Connector and Rack (Rear View)

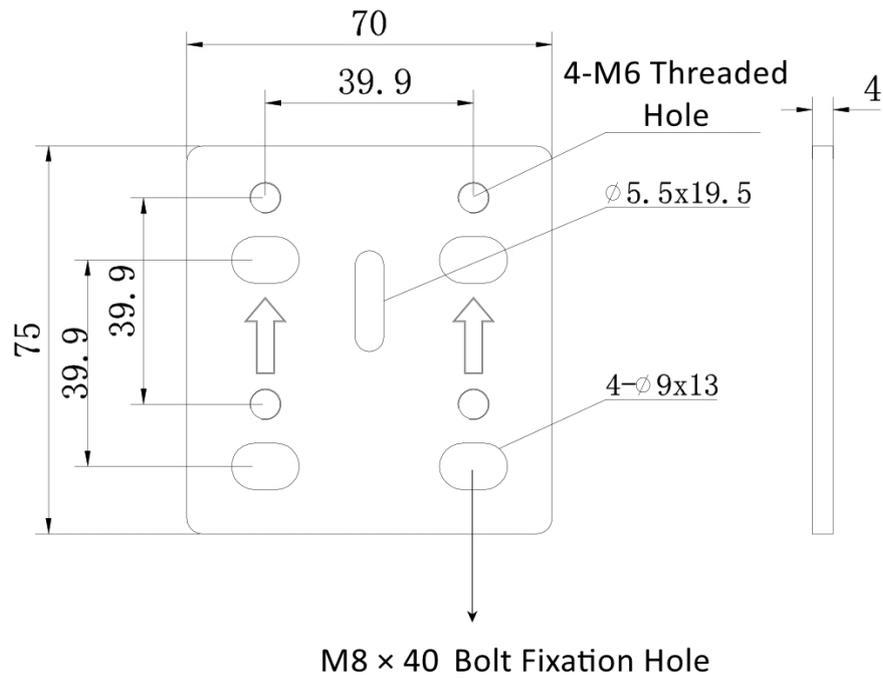Figure 1-55 Fix the Cabinet, Connector and Rack (Top View)

Figure 1-56 Fixation Holes and Dimension of the Connector

See Far, Go Further

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