

Mechanical Installation

Mounting Structure

Ensure that the supporting structure for the display is plumb, horizontally level, and square before installing the display sections. Refer to **Structure Alignment Check** for reference.

Display Sections

1. Uncase the display sections and check the integrity of the cabinet. Check for any obvious damage from transport.
2. Attach an angled metal section with two sections or more to the bottom of the metal structure using a C-clamp as a support for the first row. Ensure that the metal support piece is horizontally level and plumb. Refer to **Figure 1** and **Figure 2**.

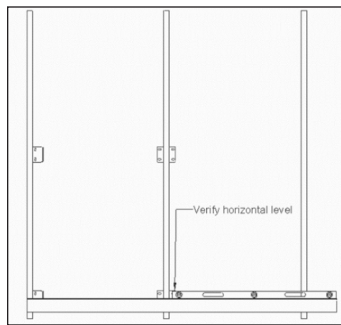


Figure 1: Angle Installed for First Row Alignment

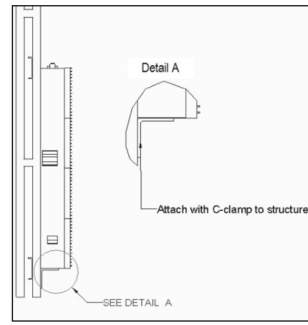


Figure 2: Angle Attachment to Structure

3. Attach clevis shackles on each of the alignment bolts in the top of each section to lift it into place. A 10 mm hole is in each of the alignment bolts. Refer to **Figure 3** and **Figure 4**. Lift only one section at a time. Install the bottom-center section (Section 202 in **Figure 5**) first unless otherwise specified.

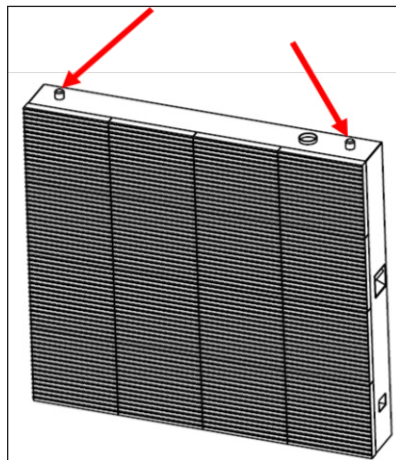


Figure 3: Alignment Bolts

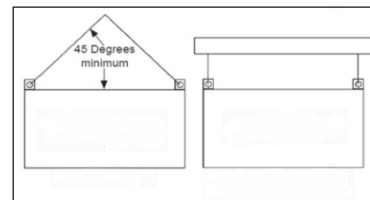


Figure 4: Lifting Methods

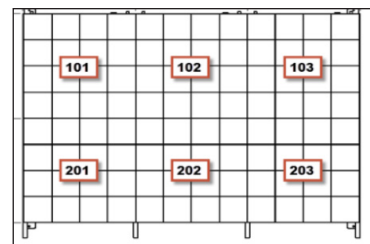


Figure 5: Section Numbering

- Bring section into position.
- Attach the attachment plates with bolts, and use a C-clamp to lock plates to structure. Repeat for all corners. Refer to **Figure 6**.
- Bring in the next section, and attach the bolts through the plates to the section.
- After installing at least 2 bolts on the attachment plates (one on each side of the structure), the C-clamp can be removed. Refer to **Figure 7**.

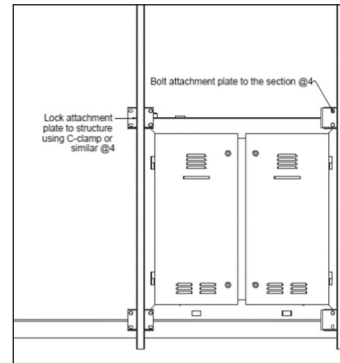


Figure 6: First Section Installation

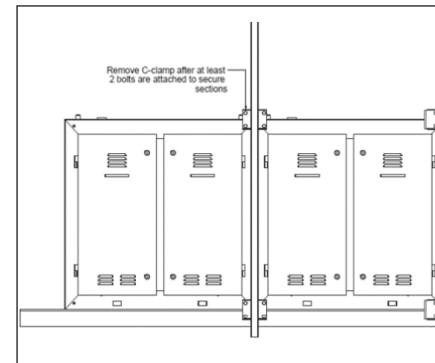


Figure 7: First Two Sections Installation

4. Ensure the first section installed is plumb and horizontally level before continuing to the next section. Refer to **Section-to-Section Connections** for connection details.
5. Ensure the alignment of the first row before proceeding to top-to-bottom connections, using **Step 4** if needed.

Note: The vertical structure should be located only at cabinet seams. Other locations will block door access, which is required for installation and service. A minimum clearance of 3 inches (75 mm) is required behind vents if both intake and exhaust vents are covered.

6. Shim as needed to ensure that the display sections are flushed and aligned. Seams between sections may not be greater than 0.6 mm. Refer to **Figure 8** and **Figure 9**.

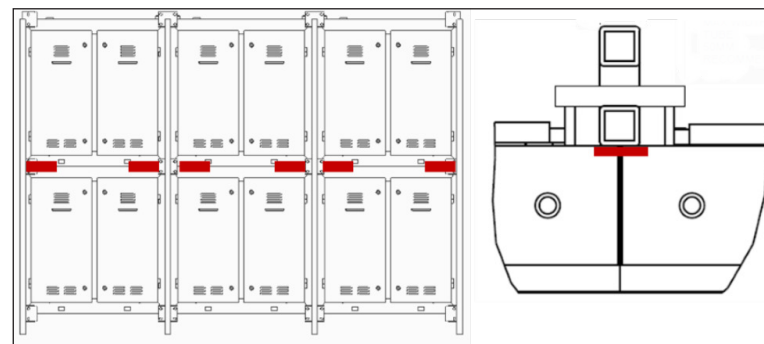


Figure 8: Shim Locations for Seam Adjustment

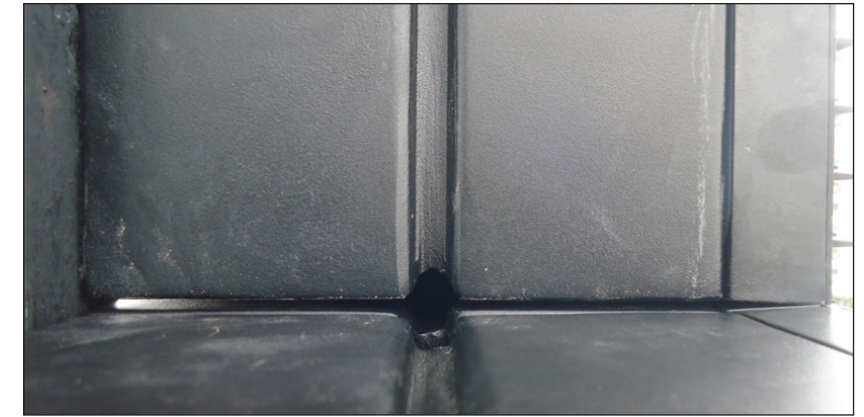


Figure 9: Section with Shim

7. Place a 1 m or larger level at both ends and at the middle of the display seam (when possible) to ensure the display faces are flush, plumb, and flat to all adjacent sections. If they are not aligned, loosen attachment plates as needed and repeat **Steps 4-6**.

Section-to-Section Connections

Connect the sections from side-to-side before making any top-to-bottom connections.

1. Place the sections side-by-side or top-to-bottom, ensuring that display faces are as flush and aligned as possible.

Note: If performing top-to-bottom connections, ensure that bottom section lifting bolts are correctly secured to the bottom holes in the upper sections. Refer to **Figure 10**.

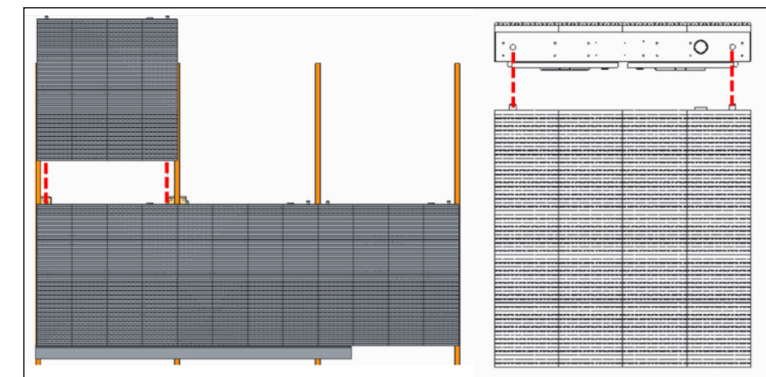


Figure 10: Top-to-Bottom Connection

2. Install attachment plates and corresponding bolts between sections. Refer to **Figure 11** and **Figure 12**.

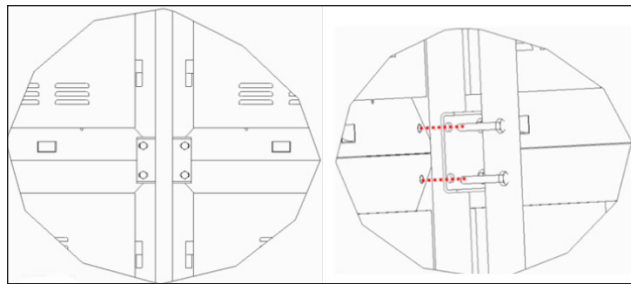


Figure 11: Attachment Plate

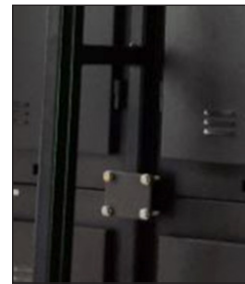


Figure 12: Attachment Plate

- Do not fully tighten the connection hardware between the attachment plate and the sections until all sections of a given cabinet are in place. Ensure that there is enough pressure to keep the sections upright.
- When sections are flush and aligned, tighten all the bolts that connect the attachment plates to the sections.

Structure Alignment Check

Drawings in this section are for illustrative purposes only. Content may be enlarged for better comprehension.

- Inspect the level of the vertical sections by taking measurements of the horizontal intervals between vertical columns. Use at least 3 horizontal measurements equally spaced. Refer to Figure 13. If possible, adjust the structure or plan ahead for section adjustments while installing the display sections if the difference between any two measurements X_i exceeds 5 mm.

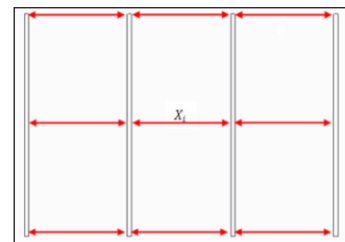


Figure 13: Vertical Level Verification (Front View)

- Inspect if the structure is plumb by placing a sufficiently long level on the top section of the frame. Refer to Figure 14. If possible, adjust the structure or plan ahead for section adjustments while installing the display sections if the value of δ at the bottom of the structure exceeds 1 mm for each 1 m of the frame's height. For example, a 10 m high structure would have a δ of 10 mm.

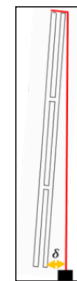


Figure 14: Plumb Verification (Side View)

- Inspect if the structure is curved by placing a horizontal reference in the vertical bar that has the furthest Z displacement when compared to the other bars. Refer to Figure 15. If possible, adjust the structure or plan ahead for section adjustments while installing the display sections if the difference between any two measurements Z_i exceeds 5 mm.

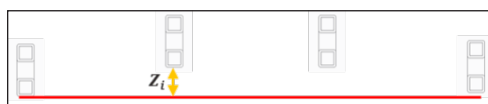


Figure 15: Flatness Verification (Top View)

Electrical Installation

- Figure 16 offers an overview of cabinet components. The L16 cabinet is shown. The J10 cabinet is similar in electrical layout and components.



Figure 16: Electrical Components

- Doors are opened via 2 latches per door, and the latches are accessed with a proprietary key. See below for more information on the key, and refer to Figure 17 for Internal AC Power Routing Schematic.

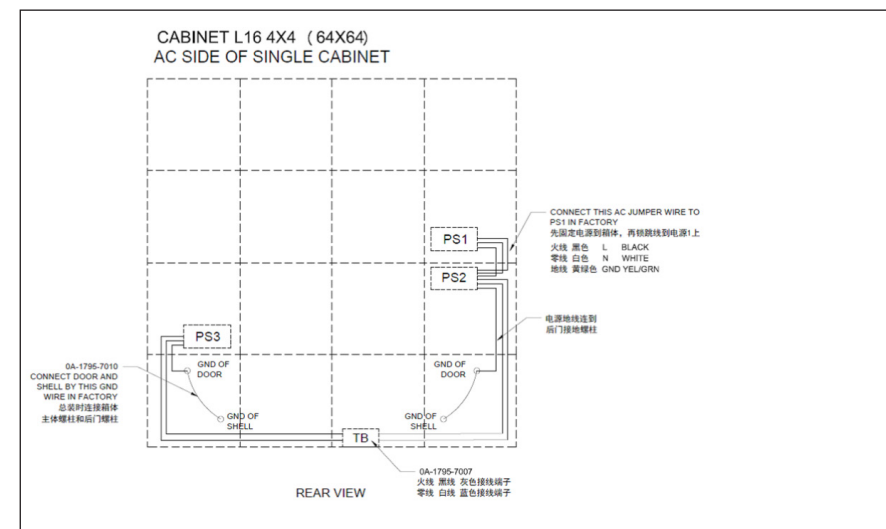


Figure 17: Internal AC Power Routing Schematic (Completed at Factory)

- Two of the grounds are on the door and the other two are inside the shell bottom perimeter. Refer to Figure 18 for ground details.

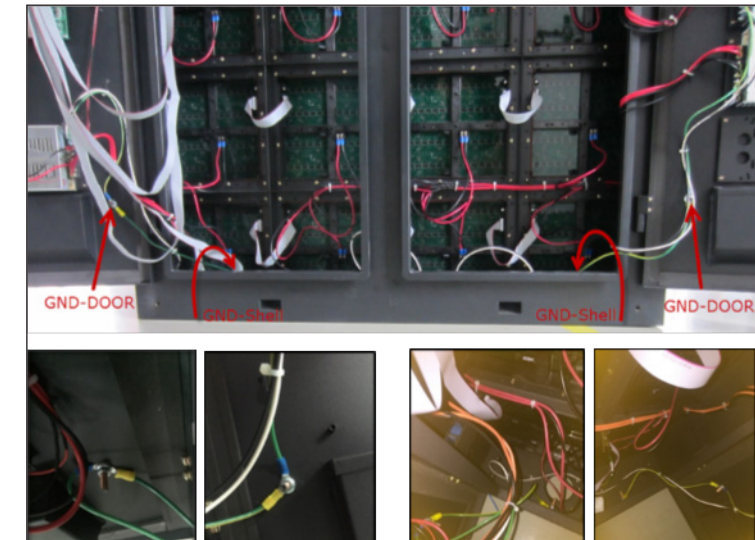


Figure 18: Ground Door (On the Door) and Ground Shell (On the Shell)

- Connect the ribbon cable from the receiver card (RC) to module. The ribbon cable is shown in Figure 19.

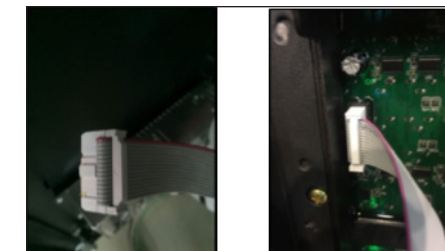
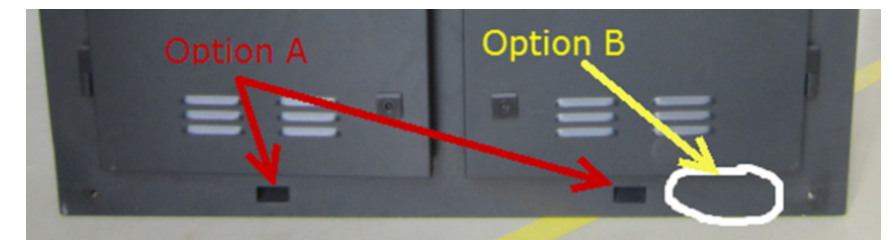


Figure 19: 16pin-Ribbon Cable

- For 220V systems, up to 4 cabinets can be connected together in parallel for a 20A. Shown below are 2 possible ways of configuring the cabinets for AC wiring. Other configurations are possible as long as the limit of 4 cabinets on one circuit is not exceeded. AC wiring may enter the cabinet via the square openings along lower area of the cabinet (Option A), or drill a hole for conduit (Option B), depending on local codes. Customer/installer is responsible for following proper local electrical codes. See figure below for an installation example.



AC Power Cabling between cabinets is provided. Cable from Main Distribution panel to the cabinets is the responsibility of the Customer/Installer.

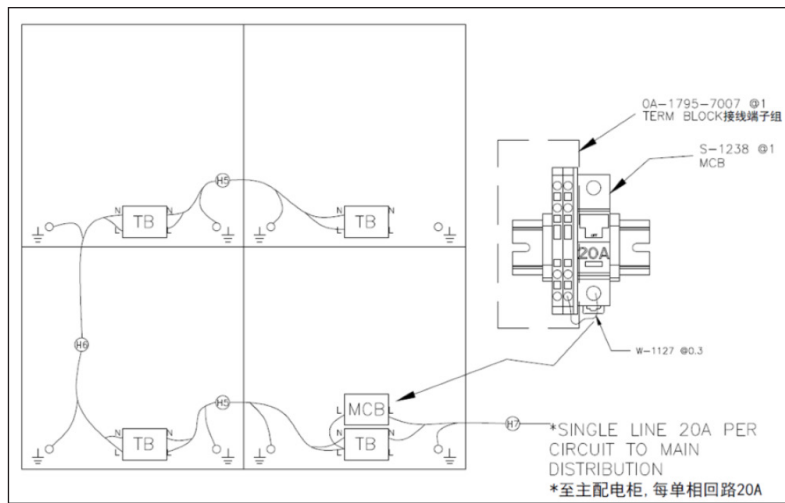


Figure 20: Option 1, 2x2 Configuration

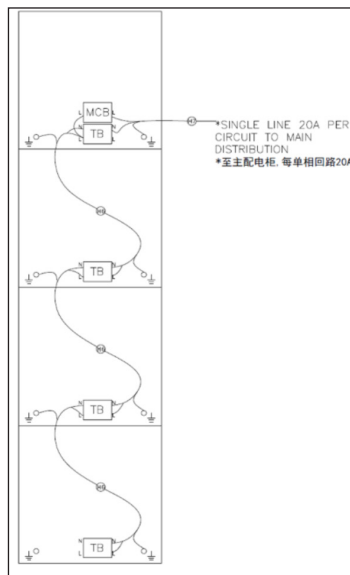


Figure 21: Option 2, 4x1 Vertical Configuration

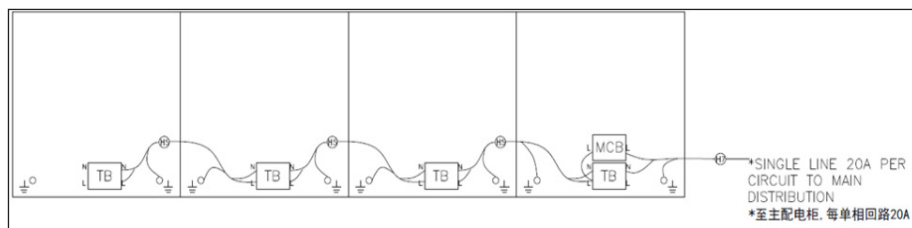


Figure 22: Option 3, 1x4 Horizontal Configuration

Route the power cable from main power distribution (MD) to the term block (TB) inside the cabinet.

- a. Lock 12 AWG/4.0 mm2 ground wire to Ground-Shell bolt (ground bolt on shell). Refer to **Step 3**. Remove original screw from ground bolt on shell and then install ground wire with ring term or use ground lug (not supplied). Install and tighten original screw.



Figure 23: Term Block

- b. Insert 12 AWG/4.0 mm2 Neutral wire to Blue TB.
- c. Insert 12 AWG/4.0 mm2 Line wire to Gray TB.

Note: This step must be performed on project site.

Refer to **Figure 24** for spring term block installation.



Figure 24: Term Block Installation

- a. Lock 12 AWG/4.0 mm2 ground wire to Ground-Shell bolt (ground bolt on shell). Refer to **Step 3**. Remove original screw from ground bolt on shell and then install ground wire with ring term or use ground lug (not supplied). Install and tighten original screw.
- b. Insert 12 AWG/4.0 mm2 Neutral wire to Blue TB.
- c. Insert 12 AWG/4.0 mm2 Line wire to Gray TB.

Display Signal Connection

Overview: A computer located in the control room is connected to a sending box via a DVI cable. The sending box (SB) then sends signal via a Cat6 cable out to the first cabinet and into the receiver card (RC) located inside the cabinet. Each cabinet has a receiver card, and these are daisy chained together with Cat6 cables. The last cabinet can be connected back to the sending box for redundant data to the receiver cards. This is optional. The maximum cable distance from sending box to the first receiver card is 150 m. If the cable is longer, use fiber converter units to extend the distance.

1. Connect the sending box to the computer with a DVI cable. Refer to **Figure 25**.



Figure 25: Connection from Computer (Left) to Rear of Sending Box (Right)

2. Connect Cat6 cable to the receiver card. The cable and RC are shown in **Figure 26**.
 - a. Route Cat6 cable to Port A from previous cabinet or sending box.
 - b. Route Cat6 cable to Port B from next cabinet or sending box as redundancy signal (optional).

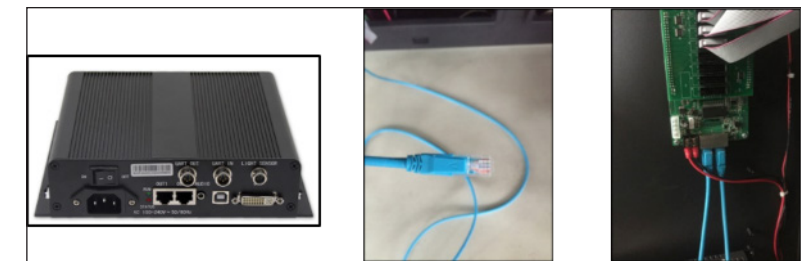


Figure 26: Sending Box (Left), Cat6 Cable (Middle), and Receiver Card (RC) (Right)

3. Refer to **Figure 27** for four cabinet connections.

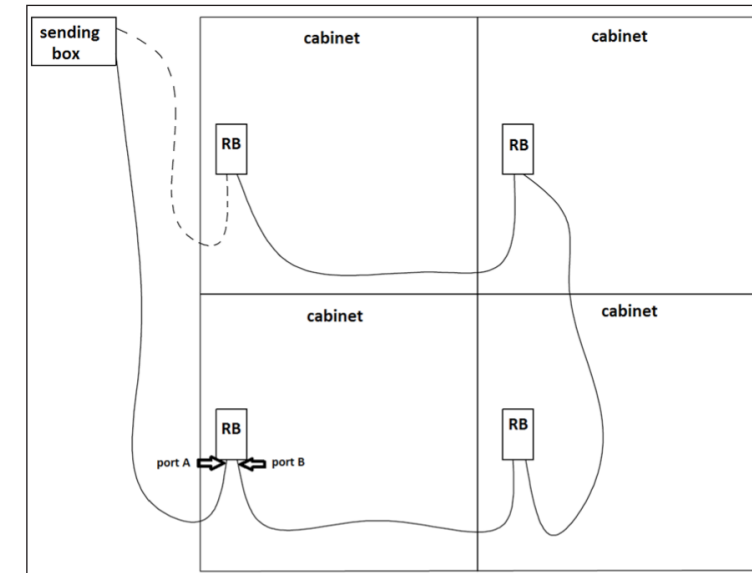


Figure 27: Four Cabinets' Signal Connection

4. The Cat6 cable is a maximum of 150 m long. For installations exceeding this length, use the Cat6/fiber box to change the Cat6 cable to fiber cable. The fiber cable can offer 850 m of additional length for the signal connection. Refer to **Figure 28**.

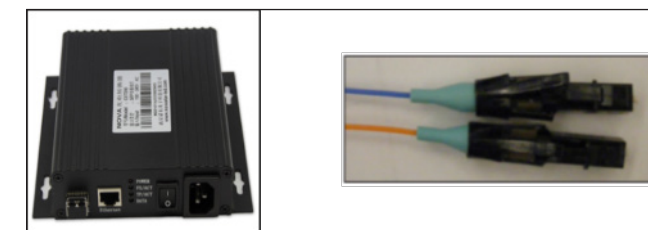


Figure 28: CAT/fiber Box and Fiber Cable

5. Two CAT5/fiber box can change Cat6 cable to fiber cable and then change back. The Cat6 cable can then connect to the RC of the first cabinet. Use additional Cat6 cables to connect to the next RC. Refer to **Figure 29**.

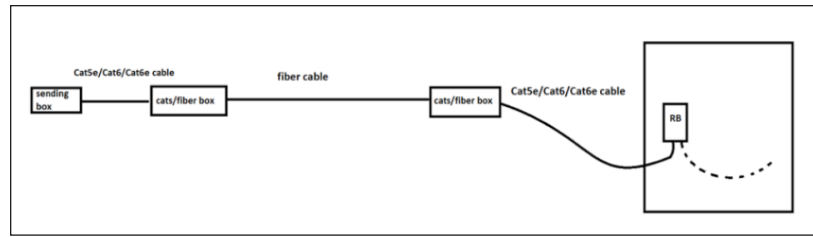


Figure 29: Cat6/fiber Converter Routing

Note: Routing may vary based on which converter is used.

- Refer to Novastar manual (**Nova M3 LED Display Control System QuickStart V2.0.0**) to configure system to run the display.
Website: www.novastar-led.com

Service and Maintenance

Rear Access

1. Disconnect power to the display.
2. Unlock door latches with key to open the display from the rear. Refer to **Electrical Installation** for more information on the door latch key.
3. Disconnect the power and signal cables from the rear of the module.
4. Loosen the screws on the modules.
5. Maintain a firm grip on the module, rotate it and pull it from the rear of the display. Reverse these steps to install a module.

Note: For the removal of the modules in the extremities of a given section, remove adjacent inner modules. Refer to **Figure 30**. B02, B03, C02 or C03, as referred to in **Figure 30**, may need to be removed to service the other modules.

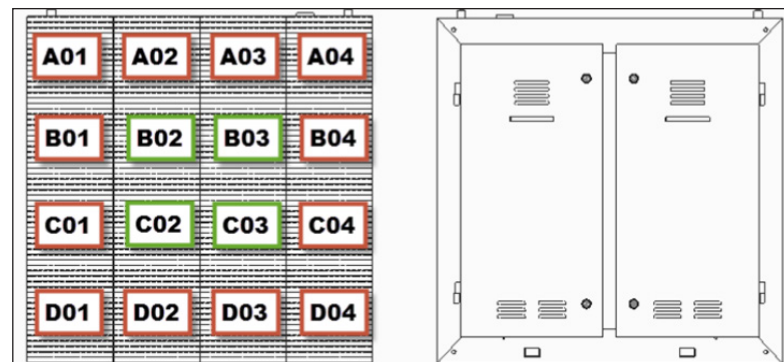


Figure 30: Module Removal