Basics

Display Accessories

Standard display accessories include the following:

- Power input cable
- Power jumper cable
- Signal input cable
- Signal jumper cable

Figure 1: *Power Input Cable*

Figure 2: *Power Jumper Cable*

Figure 3: *Signal Input Cable*

Figure 4: *Signal Jumper Cable*

Storage & Shipping

Panels are stored and shipped in flight cases. Refer to **Figure 5**, **Figure 6**, and **Figure 7** for dimensions.

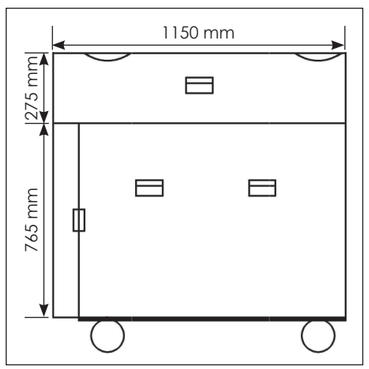

Figure 5: *Flight Case (Front View)*

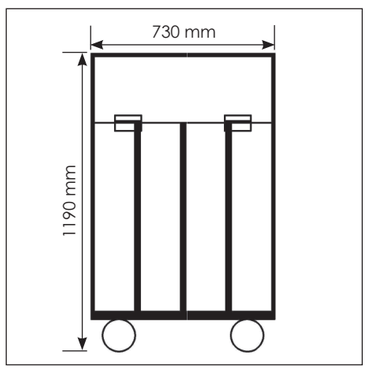

Figure 6: *Flight Case (Side View)*

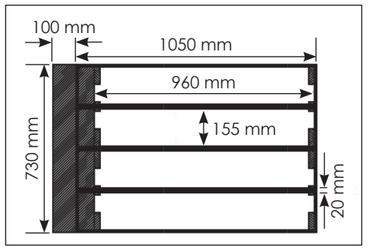

Figure 7: *Flight Case (Top View)*

Wheels nest in the top of the flight case below when cases are stacked. Refer to **Figure 8**. Cases can be stacked two- or three-high as shown in **Figure 9**.

Figure 8: *Nested Wheels*

Figure 9: *Stacked Flight Cases*

Mechanical Installation

Panel Installation

Note: Two people are required for the steps in this section.

1. Disengage the latches securing the top of the flight case and remove the top. Refer to **Figure 10**.

Figure 10: *Remove Flight Case Top*

Figure 11: *Remove Locking Pins*

2. Use the side handles on the panel to remove the panel from the case.
3. Use the side handles on the panel to hold the panel upright and then remove the locking pin from each leg of the foot structure. Refer to **Figure 11**.
4. Unfold each leg of the foot structure downward and extend the stiffeners. Refer to **Figure 12** and **Figure 13**.

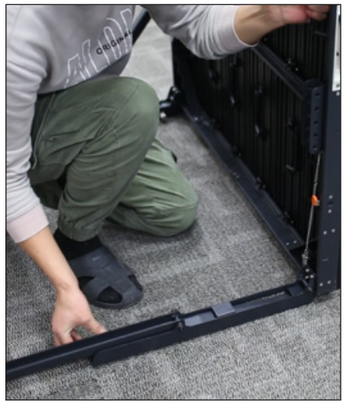

Figure 12: *Unfold Legs*

Figure 13: *Extend Stiffeners*

5. Slide the toes outward to stabilize the panel. Refer to **Figure 14**.

Figure 14: *Slide Toes Outward*

Figure 15: *Adjust Angle of Panel*

6. Adjust the angle of the panel if desired. Remove the locking pin from each leg of the foot structure and adjust the position of the stiffeners within the brackets. The bottom bracket adjusts the panel to 90°, and each slot provides an additional 5° of adjustment. When the panel is set at the desired angle, ensure the stiffeners remain in position within the brackets and replace the locking pins. Refer to **Figure 15**.
7. Repeat **Steps 3-7** for any additional panels.

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Panel-to-Panel Connection

1. Place two panels side-by-side and engage the two quick latches on the rear left side of each panel, ensuring the panels are seated properly. Refer to **Figure 16**.

Figure 16: *Engage Quick Latches*

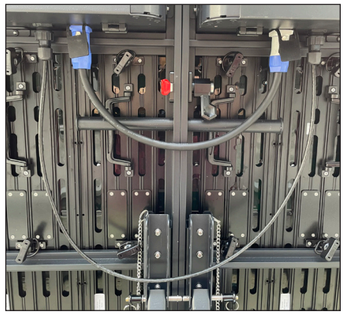

Figure 17: *Route Cables Left to Right*

2. Route power and signal cables between panels from left to right (when viewing the display from the rear). Refer to **Figure 17**.

Rear Cover Installation (Optional)

1. Remove the locking pin from each leg of the foot structure and fold the stiffeners down into the foot structure. Refer to **Figure 18** and **Figure 19**.

Figure 18: *Remove Locking Pin from Stiffener*

Figure 19: *Fold Stiffener Down into Foot Structure*

2. Line the cover up on the rear of the display, ensuring the bottom of the cover sits inside of the lip at the top and bottom of the display. Refer to **Figure 20**.

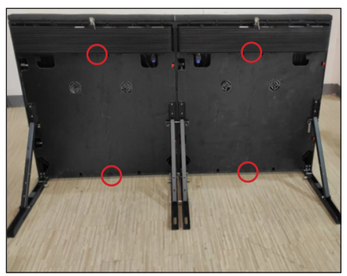

Figure 20: *Ensure Cover Sits Inside Lip at Top & Bottom of Display*

Ballast Installation

1. Place a customer-supplied ballast on each leg of the foot structure at the rear of the panel. Refer to **Figure 21**.

Figure 21: *Install Ballast*

Wind Speed	Required Ballast Weight Per Panel
40 mph [64.37 kph]	29 lb [13.15 kg]
50 mph [80.58 kph]	37 lb [16.78 kg]
60 mph [96.56 kph]	128 lb [58.06 kg]
70 mph [112.65 kph]	192 lb [87.09 kg]

2. Refer to the table above and ensure the combined weight of the ballasts will prevent the display from being overturned by the wind.

Electrical Installation

Signal Connection

A DVI cable connects a computer located in the control room to a sending box. Some sending boxes may have additional signal input options, such as HDMI and SDI. The sending box passes signal via a Cat 5e/Cat 6 cable into the receiver card located inside the first panel. Each panel has a receiver card, and Cat 5e/Cat 6 cables daisy-chain the receiver cards together. The last panel can connect back to the sending box for redundant data to the receiver cards if desired.

1. Connect the sending box to the computer with a DVI cable. Refer to **Figure 22** and **Figure 23**.

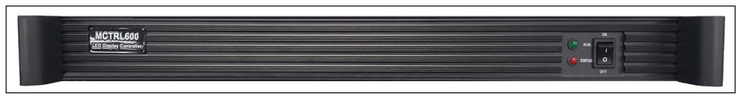

Figure 22: *Sending Box (Front)*

Figure 23: *Sending Box (Rear)*

2. Connect a Cat 5e/Cat 6 cable from the sending box RJ45 output jack to the RJ45 quick-connect jack in the first panel. Refer to the contract-specific Riser Diagram.

Note: The maximum cable distance from the sending box to the first receiver card is 328.08' [100 m]. For installations exceeding this distance, use a fiber converter to convert the Cat 5e/Cat 6 cable to a fiber cable, which offers an additional 984.25' [300 m] with multi-mode fiber or up to 9.32 mi [15 km] with single-mode fiber. Two fiber converters can be used to convert the cable to a fiber cable and then back to a Cat 5e/Cat 6 cable. The cable can connect to the first panel. Use additional cables to connect to the next panel. Refer to **Figure 24** and **Figure 25**.

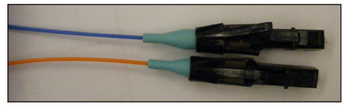

Figure 24: *Fiber Cable*

Figure 25: *Fiber Converter*

3. Route the Cat 5e/Cat 6 cable from the signal output jack to the signal input jack on the next panel. Refer to **Figure 26** and the Riser Diagram.

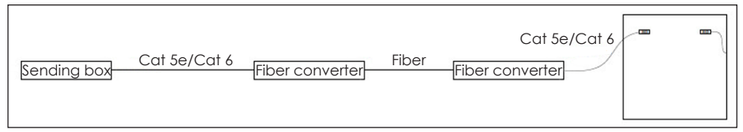

Figure 26: *Route Cables*

Note: Routing may vary based on converter type.

4. Connect the last panel back to the sending box for redundant signal connection if desired.
5. Refer to the **NovaStar® LED Display Control System M3 User's Manual** for details on how to configure the system and run the display.

Refer to **Figure 27** for an example of six panels connected together.

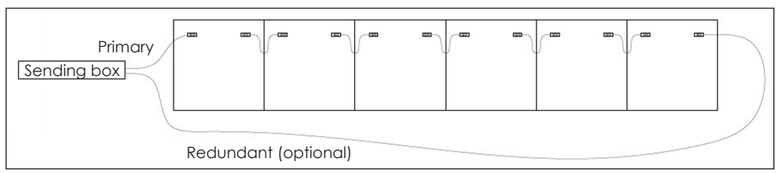

Figure 27: *Connect Signal*

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Power Connection

Standard panels come with power quick connects with pre-terminated connectors at each end.

The gender is different for the power input and output ends. Power interconnect cables are shipped with the displays. Typically, every six panels needs a new power input cable. Refer to the contract-specific Riser Diagram for more details.

The main power input cable has a pre-terminated connector at one end and bare wires at the other end. Horizontal interconnects are available. Refer to **Figure 28**.

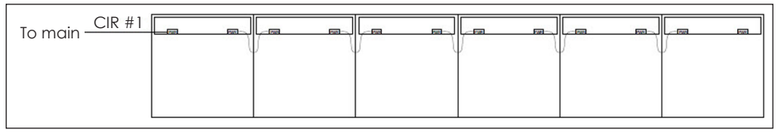

Figure 28: *Route Power Cables*

Service

Note: Avoid exposing the contents of the power/signal box to moisture, as the components are not sealed for water exposure.

Module Removal

1. Disconnect power to the display.
2. Grasp the handles on the rear of the module and then unlock the four latches securing the module to the panel. Refer to **Figure 29**, **Figure 30**, and **Figure 31**.

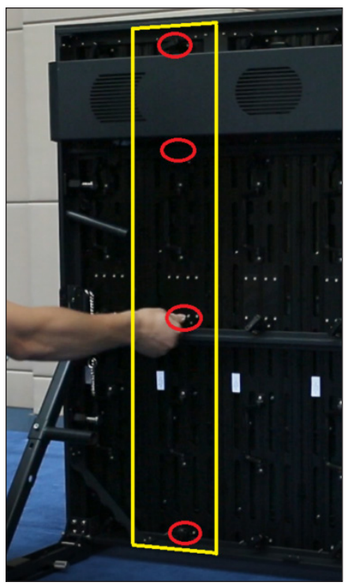

Figure 29: *Unlock Module Latches*

Figure 30: *Fully Locked Module Latch Position*

Figure 31: *Unlocked Module Latch Position*

3. Push the module through the front of the display while still grasping the handles on the rear of the module. Refer to **Figure 32**. Rotate it to an angle that allows it to be pulled back through the opening at the rear of the display. Refer to **Figure 33**.

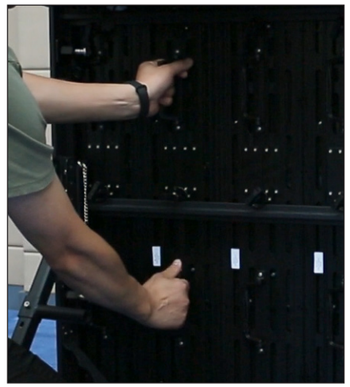

Figure 32: *Grasp Handles on Rear of Module*

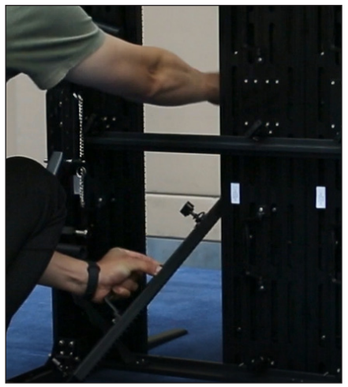

Figure 33: *Rotate Module & Pull through Opening*

Reverse these steps to install a module, aligning the connector and locator pins on the module with the corresponding slots and connector on the panel. Refer to **Figure 34**.

Figure 34: *Connector & Locator Pins on Module Rear*

Receiver Card Removal

1. Disconnect power to the display.
2. Disengage the three latches on the power box to open the box. Refer to **Figure 35**.

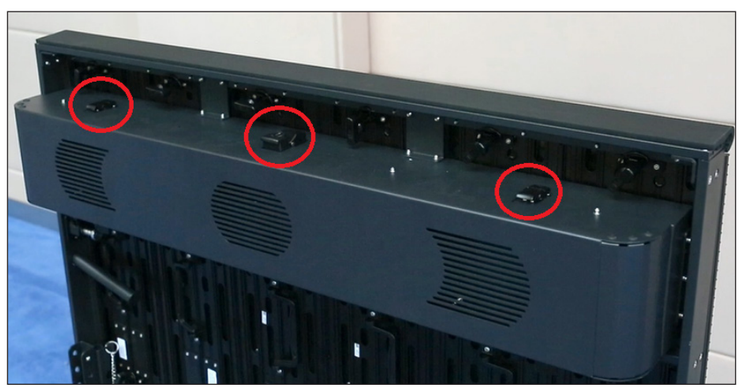

Figure 35: *Power Box*

3. Remove the screws securing the receiver card to the hub board. Refer to **Figure 36**.

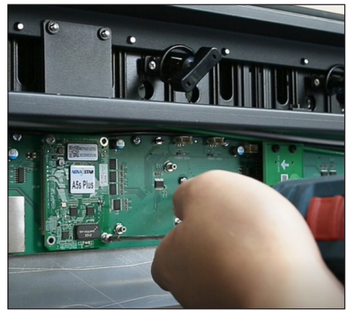

Figure 36: *Remove Screws Securing Receiver Card to Hub Board*

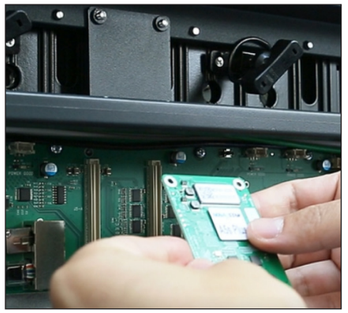

Figure 37: *Remove Receiver Card from Hub Board*

4. Pull the receiver card gently outward to remove the card from the hub board. Refer to **Figure 37**.

Reverse these steps to install a receiver card, sending the config file from the sending box after the new receiver card is installed.

Hub Board Removal

1. Disconnect power to the display.
2. Disengage the three latches on the power box to open the box. Refer to **Figure 35**.
3. Remove the screws securing the jumper board to the hub board. Refer to **Figure 38** and **Figure 39**.

Figure 38: *Remove Screws Securing Jumper Board to Hub Board*

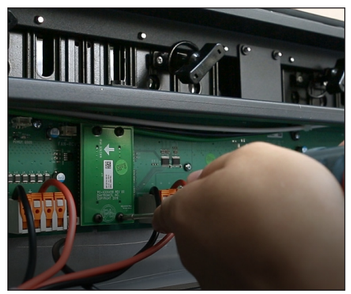

Figure 39: *Remove Screws Securing Jumper Board to Hub Board*

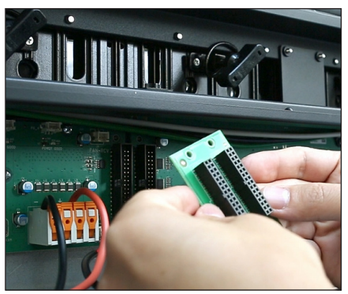

Figure 40: *Remove Jumper Board Connecting Hub Boards Together*

4. Remove the jumper board connecting the hub boards together. Refer to **Figure 40**.
5. Remove the receiver card. Refer to **Step 3** and **Step 4** in **Receiver Card Removal (p.3)**.

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6. Disconnect the power and signal cables from the hub board and remove the terminal block with the cables. Refer to **Figure 41**.

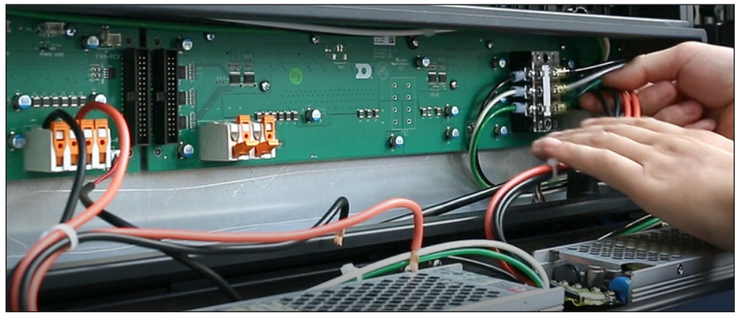

Figure 41: *Disconnect Power & Signal Cables from Hub Board*

7. Remove the screws securing the hub board to the power box. Refer to **Figure 42**.

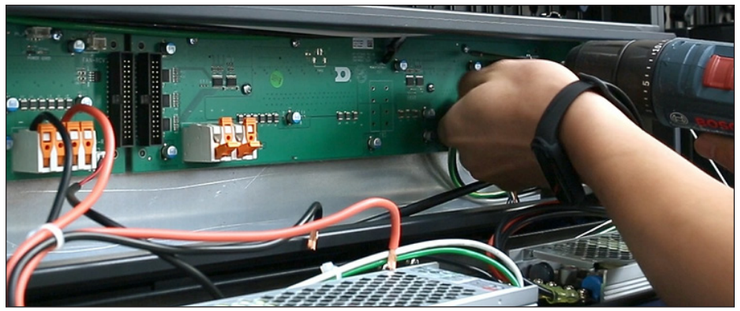

Figure 42: *Remove Screws Securing Hub Board to Power Box*

8. Pull the hub board gently outward to remove it from the power box.

Reverse these steps to install a hub board.

Fan Removal

1. Disconnect power to the display.
2. Remove the screws securing the fan cover to the power box and then remove the cover. Refer to **Figure 43**.

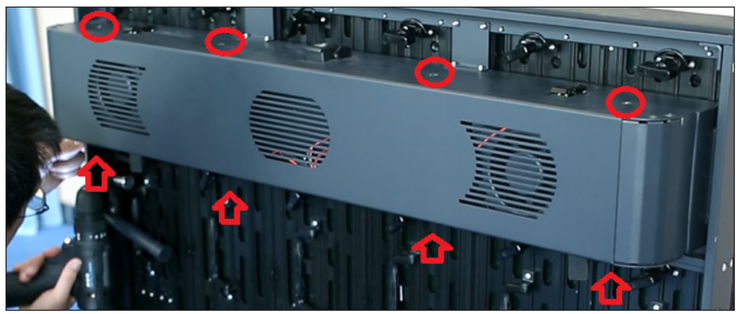

Figure 43: *Remove Screws Securing Fan Cover to Power Box & Remove Cover*

3. Disconnect the fan cable from the connector. Refer to **Figure 44**. The fan is mounted to the right hub board.

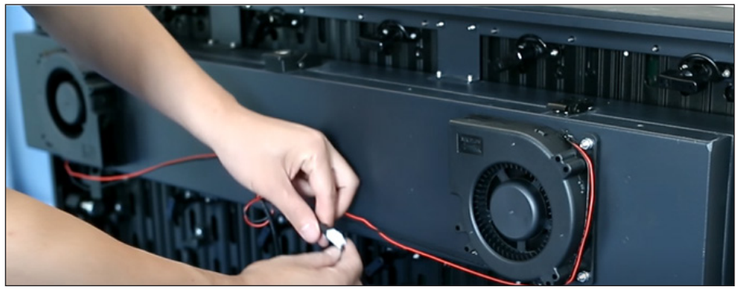

Figure 44: *Disconnect Fan Cable from Connector*

4. Remove the screws securing the fan to the power box. Refer to **Figure 45**.
5. Pull the fan gently outward to remove it from the power box.

Figure 45: *Remove Screws Securing Fan to Power Box*

Reverse these steps to install a fan.

Power Supply Removal

1. Disconnect power to the display.
2. Disengage the three latches on the power box to open the box. Refer to **Figure 35**.
3. Locate the power supply to be removed. Refer to **Figure 46**. The power supply on the left (from the rear of the display) runs the left two modules, hub board, and receiver card, the power supply in the middle runs the middle two modules, and the power supply on the right runs the right two modules.

Figure 46: *Power Supplies in Power Box*

4. Remove the cables and mounting hardware from the power supply. Refer to **Figure 47** and **Figure 48**.

Figure 47: *Remove Cables from Power Supply*

Figure 48: *Remove Hardware from Power Supply*

5. Remove the nuts securing the power supply to the power box and then remove the power supply. Refer to **Figure 49**.

Figure 49: *Remove Nuts from Power Supply*

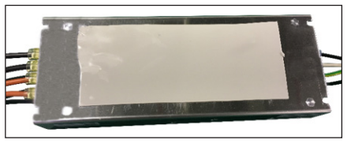

Figure 50: *Thermal Pad on Power Supply*

Reverse these steps to install a power supply, placing a thermal pad on the rear of the new power supply before mounting. Refer to **Figure 50**.

Top Pad Removal

1. Detach the top pad from the display frame by hand. Refer to **Figure 51**.

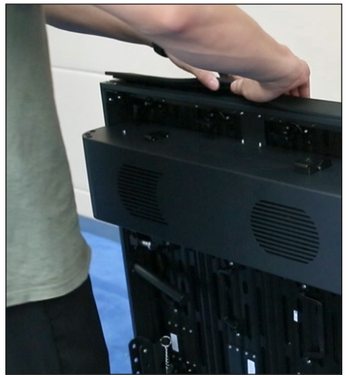

Figure 51: *Remove Top Pad*

Figure 52: *Top Pad Seated Properly*

2. Install a new pad by hand, ensuring the top and front lip of the pad catch in the slot at the top of the display frame. Refer to **Figure 52**.

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