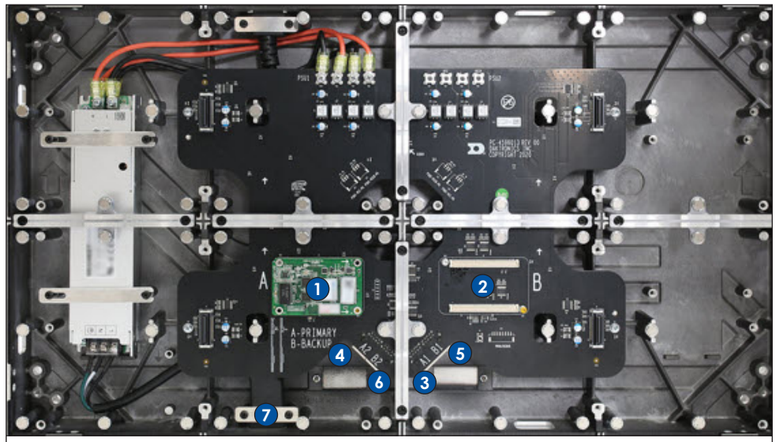
Refer to the **NPN-X200/X400 Series 1x4 Vertical Tube Substructure and Panel Quick Guide (DD4824308)** and **NPN-X200/X400 Series Speed Frame Substructure and Panel Quick Guide (DD5075265)** for details on how to install the substructure and panels.

Electrical Install



1: Primary card
2: Secondary card
3: Primary Port A1
4: Primary Port A2
5: Backup Port B1
6: Backup Port B2
7: Power connector

Figure 1: *Panel*

Power and Signal Input

The power input is located on the bottom of each panel. The supplied power cable can be plugged directly into this input as shown in **Figure 2**. Refer to the contract-specific Riser Diagram for part numbers.

Figure 2: *Power Input*

The signal input is located on the bottom of the hub board as shown in **Figure 3**. Refer to the contract-specific Riser Diagram for part numbers.

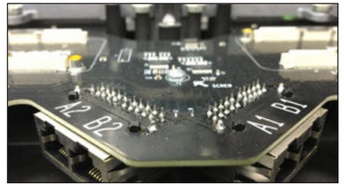


Figure 3: *Signal Input*

Power Connection

NPN-X200/X400 panels are designed for vertical power interconnection only. Plug the power from the lower panel into the panel above it as shown in **Figure 4**. Refer to the contract-specific Riser Diagram for specific routing details.

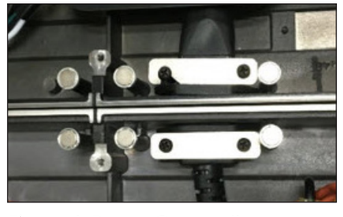


Figure 4: *Power Connection*

Signal Connection

If the display uses panel-embedded PLRs, identify the PLR panels using the two "**PLR**" labels. Refer to **Figure 5**.

Use the three cable ends to connect the fiber and Cat 6 cables. Refer to **Figure 6**. The two fiber cables will be labeled '**A**' and '**B**'. The third cable connects a Cat 6 cable to **Port B** of the PLR. Use the contract-specific Signal Interconnect Drawing for cable routing instructions.

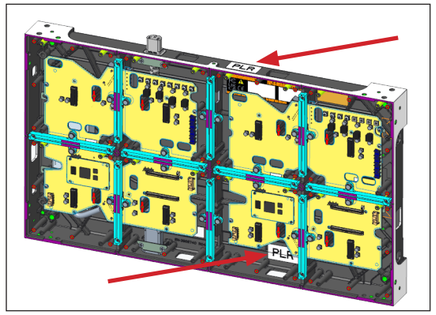


Figure 5: *Panel Identified With PLR Labels*

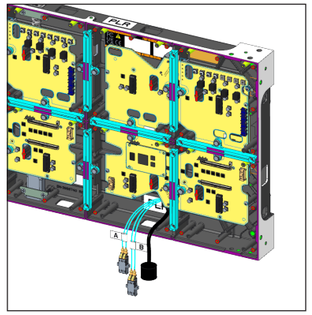
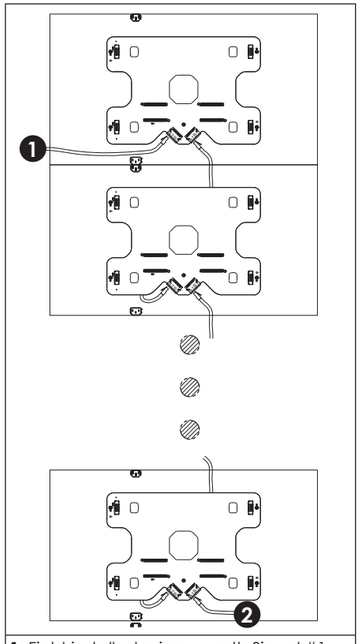


Figure 6: *PLR Cables*

Signal can be routed horizontally or vertically with the supplied Cat 6 cables. Refer to the contract-specific Riser Diagram for specific routing details.

Primary signal is connected to **Port A2 (In)** from the control room/rack and **Port A1 (Out)** back to the control room/rack. Refer to **Figure 7** for an example of vertical signal routing.

Note: NPN-6X00 panels have a pre-installed Cat 6 cable in the cabinet for easy connection in the field. The cable for the first panel in the signal path may be pre-installed from the factory in Port A2. It can be removed to allow for the primary incoming signal from the control room/rack. This cable can be set aside and used as a spare. Cables in subsequent panels can be plugged in as normal.



1: Field-installed primary path Signal #1
2: Field-installed return path Signal #1

Figure 7: *Primary Vertical Signal Connection*

Note: When routing Cat 6 cable, ensure that loops are not bent too tightly. Refer to **Figure 8**.

Redundant signal is connected to Port B1 and Port B2 and is only used in fully redundant systems. Refer to **Figure 9** and **Figure 10**.

Refer to **Module Installation (p.2)** to install the modules.

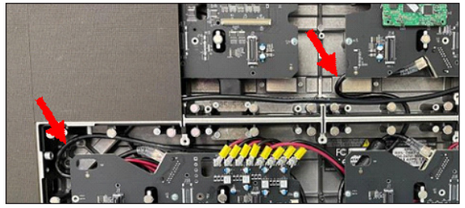


Figure 8: *Cat 6 Cable Routing*

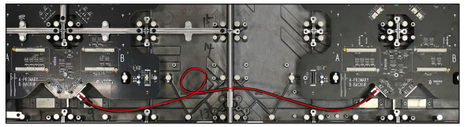


Figure 9: *Redundant Horizontal Signal Connection*

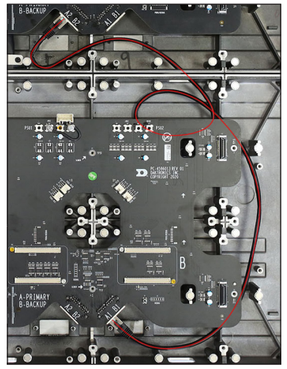


Figure 10: *Redundant Vertical Signal Connection*

3R Remote Power (Optional)

For installations using 3R remote power, install the power entrance (**Figure 11**) at the power entrance location (**Figure 12**). Refer to the **NPN-6X00 3R Remote Power Quick Guide (DD5132012)** and contract-specific Riser Diagram for details on how to install 3R remote power.

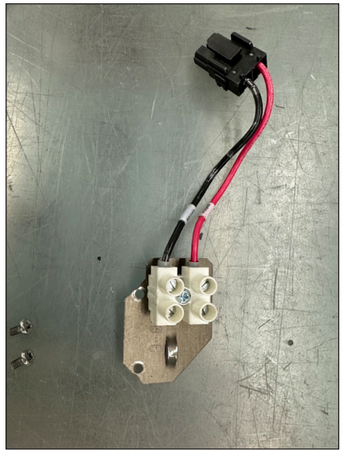


Figure 11: *Power Entrance*

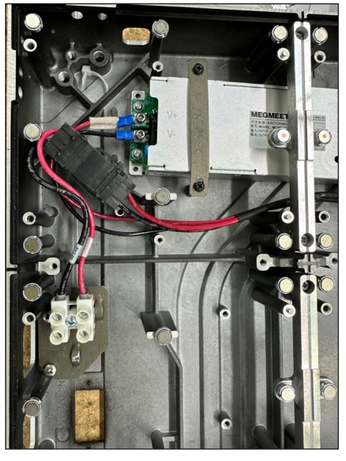


Figure 12: *Power Entrance Location*

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DAKTRONICS

Tether Installation (Optional)

In some instances, a module tether (Daktronics part number HS-5253269) is required to secure the module to the display. If a tether is required, attach the tether to the module prior to installing the module:

1. Place the module face down on a soft surface, taking care not to damage the LEDs, and place a tether next to the module Refer to **Figure 13**.
2. Note the four 0.203" x 0.750" slots in the magnet plate, as these will be used to secure the tether to the module. There are two different magnet plate shapes depending on the size of the module. Refer to **Figure 14**.
3. Slide the narrow end of the tether through one of the slots. Refer to **Figure 15**.
4. Fold the tether over itself. Refer to **Figure 16**.
5. Push the narrow end of the tether through the slit in the wide end of the tether until small bulges catch in the slit. Refer to **Figure 17**.

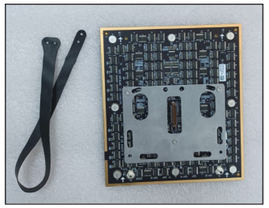

Figure 13: *Tether and Module*

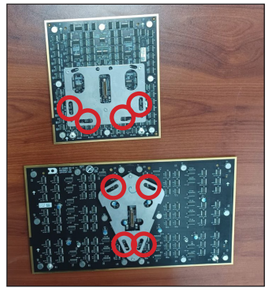

Figure 14: *Tethering Slots*

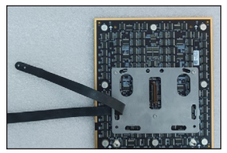

Figure 15: *Slide Tether Through Slot*

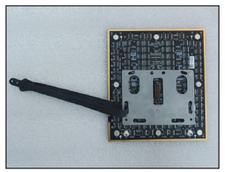

Figure 16: *Fold Tether*

Figure 17: *Tether Slit*

6. Lay the tether flat across the back of the module, in the opposite direction from the edge of the magnet plate on which the slot is located.
7. Position the module close to its location on the display and slip the narrow end of the tether over one of the magnet posts in the display to secure the module to the panel. Refer to **Figure 18** and **Figure 19**.
8. Place the module onto the panel, ensuring the tether lays flat behind the module and does not interfere with any components or prevent the module from fully seating on the panel. Some adjustments may be required to ensure proper alignment/seating. Refer to **Figure 20**.

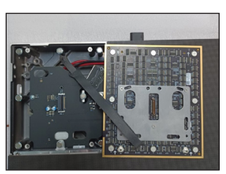

Figure 18: *Module Tethered to Chassis*

Figure 19: *Magnet Post*

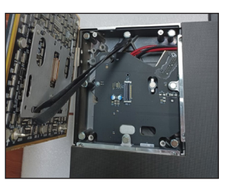

Figure 20: *Keep Tether Clear of Components*

Module Installation

1. Ensure power and signal connections are completed prior to module installation.
2. Power on the display and verify LEDs light up on the receiver cards throughout entire display. Refer to **Callout 1** in **Figure 1**.

> **Note:** If any receiver cards do not have LEDs lit, verify power connections and troubleshoot prior to installing modules.

3. Disconnect power to the display.
4. Install modules using the module removal tool, picking up a module with the tool from the box. Refer to **Figure 21** and **Figure 22**. Consider magnet alignment and carefully place the modules into the display. Refer to **Module Removal (p.2)** for detailed instructions.

Figure 21: *Magnetic Removal Tool*

Figure 22: *Removing Module from Box*

Z-Axis Seam Adjustment

If a module is lower than adjacent modules, remove the module and turn the magnet out for adjustment. Use a notched sheet metal tool (0M-5018247) or notched screwdriver (TH-4176465) to loosen the magnet, then turn the magnet by hand. Refer to **Figure 23**.

If a module is higher than adjacent modules, remove the adjacent modules and adjust the appropriate magnets until the modules are flush. This may take several attempts.

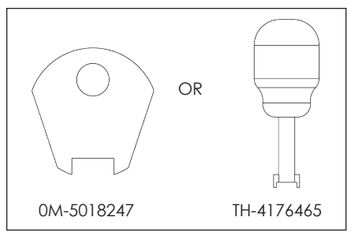

Figure 23: *Turn Magnet Options for Z-axis Adjustment*

X/Y-Axis Seam Adjustment

When modules are installed on a display, all modules should be pushed toward the center of the display until all PCBs touch or nearly touch each other. When the display is turned on, there should be many bright seams but no dark seams. If dark seams are present, adjust the seams to be bright. Software will be used later to remove bright seams.

Service

Module Removal

1. Disconnect power to the display.
2. Ensure the face of the supplied magnetic removal tool is free of dust and metal filings that can damage the modules and LEDs. Refer to **Figure 21**.
3. Tilt and place the magnetic removal tool at an angle on the center of the module to be removed. Refer to **Figure 24**.
4. Hold the magnetic removal tool with two hands and pull the module directly out. Do not tilt the module as this can result in broken LEDs.

Figure 24: *Using Magnetic Removal Tool*

> **Note:** Avoid setting down modules with LEDs facing down.

Refer to **Module Installation (p.2)** to install a module. Complete all power and signal connections prior to module installation.

Receiver Card Removal

1. Disconnect power to the display.
2. Remove the lower-left module. Refer to **Module Removal (p.2)**.
3. Pull the receiver card from the hub board. Refer to **Figure 25**.

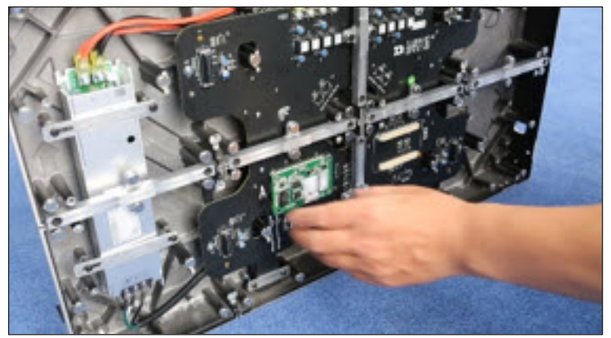

Figure 25: *Remove Receiver Card*

Reverse these steps to install a receiver card. Ensure the receiver card is firmly pressed into the hub board and the jacks are fully seated. Reinstall the module after the receiver card is replaced. Refer to **Module Installation (p.2)**.

Refer to the contract-specific Riser Diagram for specific routing details.

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Hub Board Removal

1. Disconnect power to the display.
2. Remove the four modules from the panel being serviced. Refer to **Module Removal (p.2)**.
3. Disconnect the DC power harness from the top of the hub board.
4. Remove the receiver card. Refer to **Receiver Card Removal (p.2)**.
5. Remove the eight screws (circled in yellow in **Figure 26**) on the support bars.

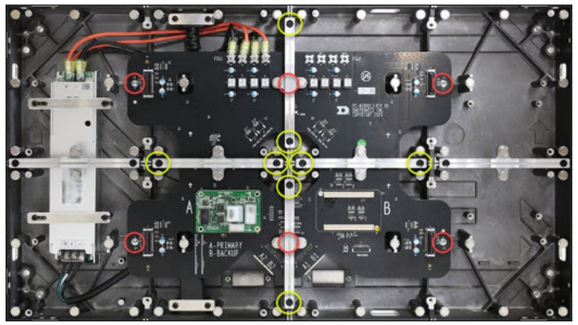

Figure 26: *Remove Hub Board*

6. Remove the six screws (circled in red in **Figure 26**) securing the hub board, and then remove the hub board.

Power Supply Removal

1. Disconnect power to the display.
2. Remove the three screws (circled in orange in **Figure 27**) for the AC harness.

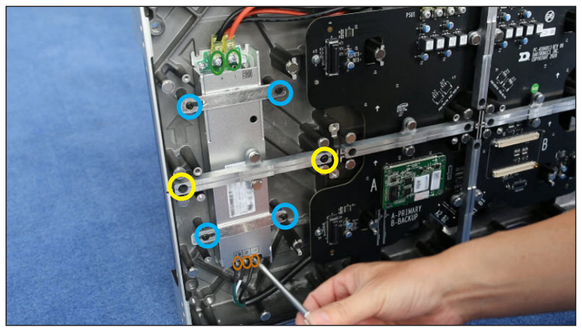

Figure 27: *Remove Power Supply*

3. Remove the two screws (circled in green in **Figure 27**) for the DC harness.

> **Note:** The UHP power supply option will have four screws to remove.

4. Remove the two screws (circled in yellow in **Figure 27**) securing the support bar.
5. Remove the four screws (circled in blue in **Figure 27**) securing the power supply strips and bridge bracket, and then remove the power supply.

Reverse these steps to install a power supply.

Panel-Embedded PLR Removal

1. Disconnect power to the display.
2. Remove the support bar(s) from the right half of the panel.

> **Note:** Only one support bar needs to be removed if using a full 4-module hub board.

3. If using a half hub board, remove the 6 screws from the right half of the hub board.
4. Disconnect the cables from the PLR and remove the 4 screws that attach the PLR to the plate (circled in red in **Figure 28**).

Reverse these steps to install a new PLR.

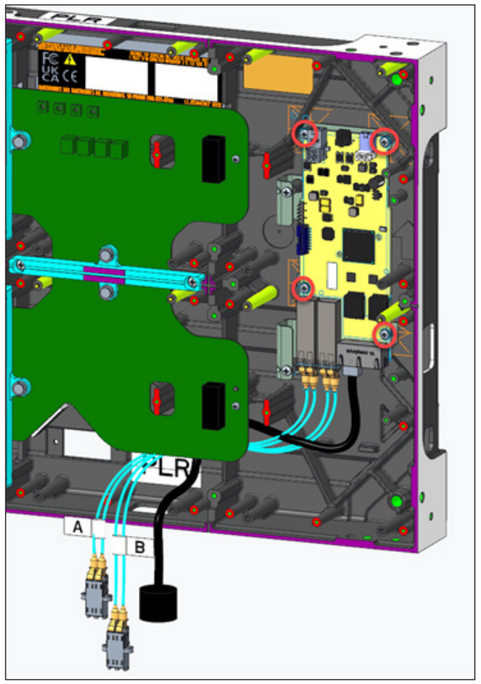

Figure 28: *Embedded PLR Removal*

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