Warnings and Disclaimers

- Ensure that all electrical work meets or exceeds all local or national electrical codes.
- Provide the required power to the display as listed on the product labels, specifications, or site-specific riser drawings. The conductor size may vary based on the length of the power run.
- Consider implementing a separate circuit for the display using an isolation transformer or dedicated transformer.
- Daktronics assumes no liability for any issues caused by line voltage fluctuations or other improper power conditions.

Required Tools

Refer to **DWG-5503026** for a description of Daktronics- and customer-provided tools and hardware.

Mechanical Installation

Note: Steel tubes are not recommended for the substructure, as metal filings can accumulate on the magnets and cause module flatness issues.

Power/Signal Input Identification & Routing

1. Identify which panels will require power and/or signal inputs. Refer to the contract-specific Shop and Riser Drawings for details.
2. Route power/signal inputs around the structure prior to panel installation. Use the designed gaps between the substructures and at the top and bottom of the display to run the cables horizontally across the display. Refer to **Figure 1** and **Figure 2.**

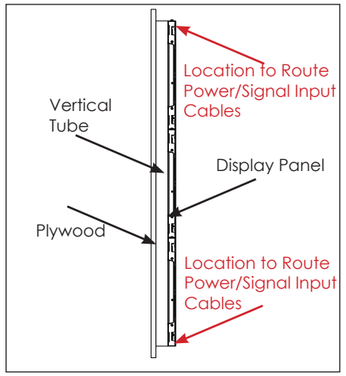

Figure 1: *Power & Signal Routing (Left View with Panels)*

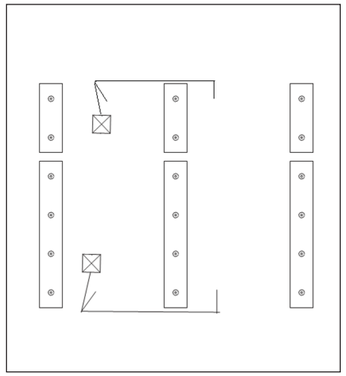

Figure 2: *Power & Signal Routing (Front View without Panels)*

First Panel Installation

Start with the bottom-center panel, which will be the foundation of other panels. Then, work outward and upward to install the rest of the panels. Refer to **Figure 3.**

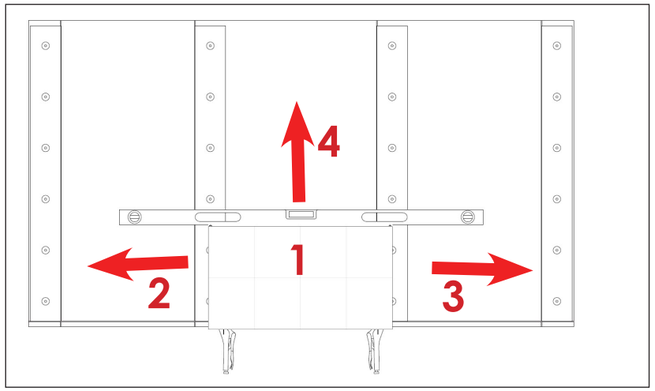

Figure 3: *Typical Cabinet Installation Order*

1. Measure and mark the correct panel location. Refer to **Figure 4.**

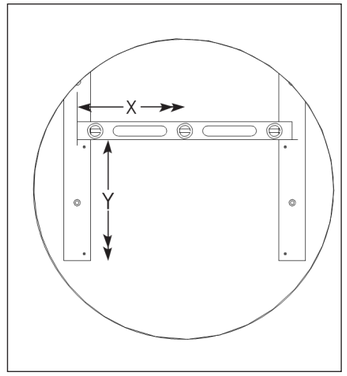

Figure 4: *Measure & Mark First Panel Location*

2. Remove the panel from its packaging.

Note: Please be careful when handling the cabinets. Do not set them onto a rough surface, to avoid scratching the rear side paint.

3. Mark the mounting holes in the panel for pre-drilling. Refer to **Figure 5.**

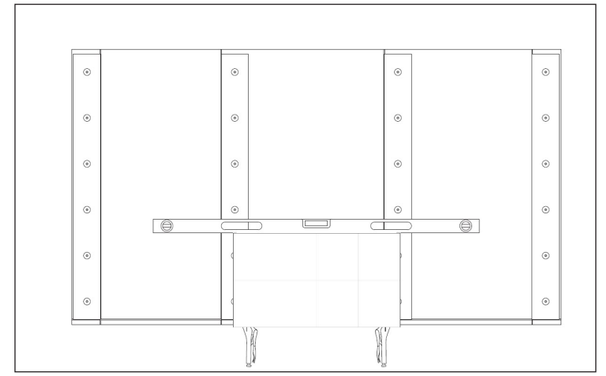

Figure 5: *Mark Mounting Holes in First Panel*

a. Slide the panel positioning jigs into the bottom of the mounting tubes with the jigs on the inside edge of the tube. Refer to **Figure 5**. The panel will sit on the punched edge of the positioning jig, using the bottom of the tube to set the location. Refer to **Figure 6** and **Figure 7.**

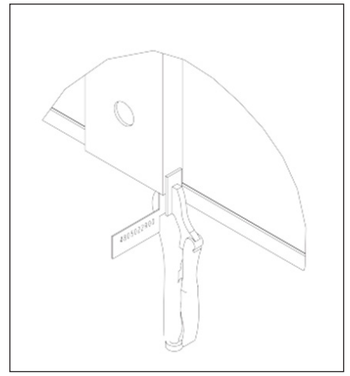

Figure 6: *Slide Jigs into Bottom of Mounting Tubes*

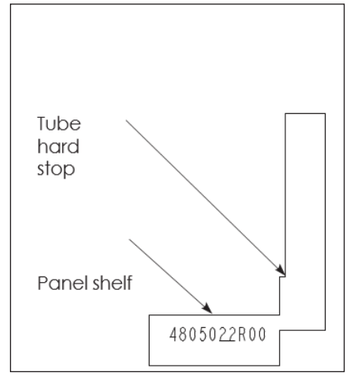

Figure 7: *Set Panel Location*

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b. Use C-clamps to secure the bottom of the installation jigs to the bottom of the mounting tubes. Refer to **Figure 8.**

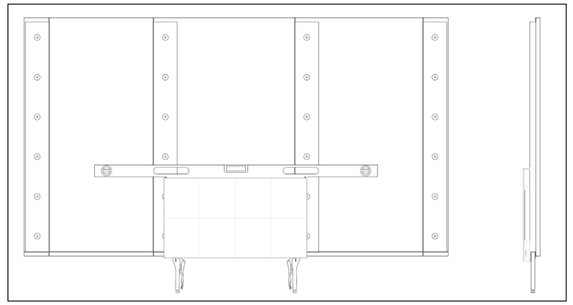

Figure 8: *Secure Installation Jigs to Mounting Tube*

c. Level the jigs and adjust as needed.

d. Lift the panel into place.

e. Align the panel to the marked location and verify the location is leveled.

f. Hold the panel in place and mark the screw locations through the mounting screw holes with a punch.

g. Remove the panel and set it aside to keep it clear of metal filings.

4. Pre-drill $^{1}/_{8}$" [3 mm] holes into the tube at the marked mounting locations. Refer to **Figure 9.**

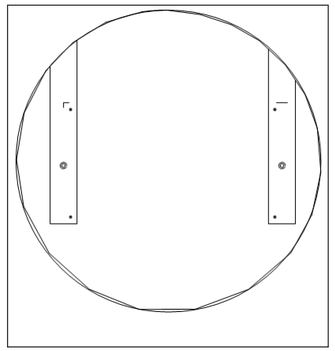

Figure 9: *Pre-Drill Holes into Tube*

5. Identify where power will enter the display prior to panel installation.

6. Route the male end of the AC power input cable through the rectangular cutout in the panel prior to placing the panel if installing a panel where power needs to land. Refer to **Figure 10.**

> **Note:** Depending on the structure and access to the rear of the display, it may be very difficult or impossible to route power cables into the panel after the panel is secured to the tube.

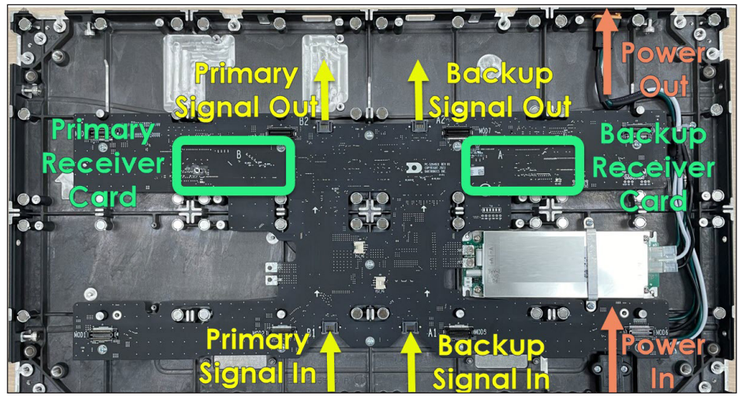

Figure 10: *Panel Overview (Receiver Card is on Rear of the Hub Board.)*

a. Use 8 mm hex wrenches to remove the M5 nuts securing the appropriate cover on the inside of the cabinet. Refer to **Figure 11.**

Figure 11: *Remove Nuts from Cover*

b. Install the power input cable through the rear of the panel and plug in the cable. Re-attach the two screws. Refer to **Figure 12.**

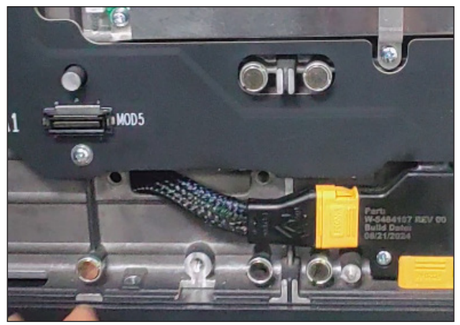

Figure 12: *Install Power Input Cable*

7. Secure the panel to the tubes with a $^{1}/_{4}$" TEK screw through all four corner mounting locations. Refer to **Figure 13.**

8. Level the panel. Refer to **Figure 14.**

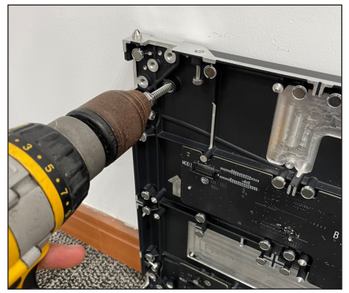

Figure 13: *Secure Panel with Screws*

Figure 14: *Ensure Panel Is Level & Vertically Flatness*

9. Use a 3 mm Allen wrench and select a suitable location to adjust the jacking hardware and correct any flatness issue. Refer to **Figure 15.**

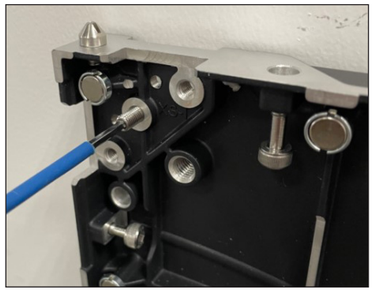

Figure 15: *Adjust the Jacking Hardware*

Panel-to-Structure Adjustment

Only make small adjustments to the jacking and securing hardware.

Pull Panel Corner to Structure

1. Loosen the jacking hardware. This may pull the panel closer to the structure.
2. Tighten the securing hardware. This pulls the panel closer to the structure until it contacts the panel adjustment screws on the rear of the panel.

Push Panel Corner from Structure

1. Loosen the securing hardware. This may push the panel away from the structure.
2. Tighten the jacking hardware. This pushes the panel away from the structure until it touches the head of the securing hardware.

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Secure Panel Corner Spacing

1. Achieve the desired depth to match adjacent panels.
2. Secure the corner in place to prevent movement.
3. Tighten both bolts until they touch the panel or tube.

Panel-to-Panel Adjustment

1. Remove the panel from its packaging.
2. Place the panel beside the existing panel.
3. Remove the panel positioning jig from the right side of the first panel to use on the left side of the new panel.
4. Install the panel positioning jigs adjacent to the first panel and use a level across the jigs.
5. Place a panel on top of each of the two existing panels.
6. Use a 5 mm Allen wrench and socket-head stitch screws (circled in yellow) to attach the panels together, but do not tighten the screws. Refer to **Figure 16.**

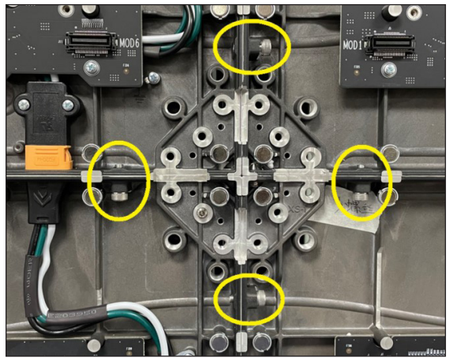

Figure 16: *Assemble Panels with Screws*

7. Use a 5 mm Allen wrench and socket-head stitch screws (circled in red) to attach the panels together. Refer to **Figure 17.**

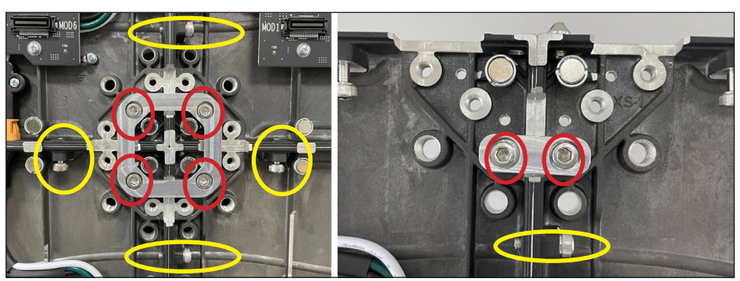

Figure 17: *Align Panel Faces*

8. Install the top and side interconnect hardware.
9. Use a 3 mm Allen wrench to tighten the jacking hardware next to the existing panel until the panel is firmly seated against the tube. Refer to **Figure 18**. Tighten the remaining adjustment hardware until it touches the tube.

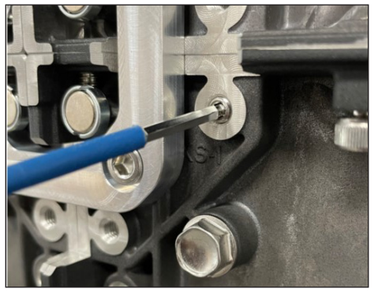

Figure 18: *Adjust the Jacking Hardware*

10. Mark the screw locations through the mounting screw holes with a punch. Pre-drill $^{1}/_{8}$" [3 mm] holes into the tube at the marked mounting locations. Refer to **Figure 9.**
11. Secure the panel to the tubes with a $^{1}/_{4}$" TEK screw through all four corner mounting locations. Refer to **Figure 13.**
12. Ensure the panel is flush and flat to the lower panels:
    a. Check seams to verify flatness.
    b. Verify flatness by laying a 4' level across the face to ensure the combined face of both panels is straight and flat. Check both ends of the panel. Refer to **Figure 19.**
    c. Use a 3 mm Allen wrench to adjust the jacking hardware as needed to modify the four corners of panel depth. Refer to **Figure 18.**

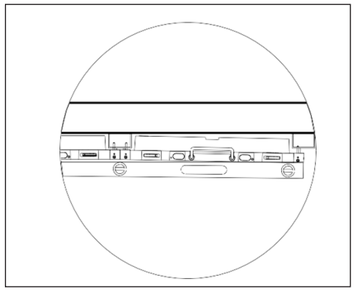

Figure 19: *Verify Flatness*

Side-to-Side Panel Connection X-axis and Y-axis Adjustment

1. Remove the panel from its packaging.
2. Place the panel on top of the existing panel, fitting the alignment pins into the recesses.
3. Use a 5 mm Allen wrench and socket-head stitch screws to attach the panels together, but do not tighten the screws. Refer to **Figure 20.**
4. Use a 5 mm Allen wrench to attach the flattening plate to the front of the panels, and ensure the panel faces are completely flush. Refer to **Figure 21**, **Figure 22**, and **Figure 23.**

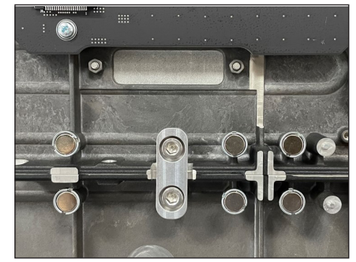

Figure 20: *Assemble Panels*

Figure 21: *Attach Flattening Plate*

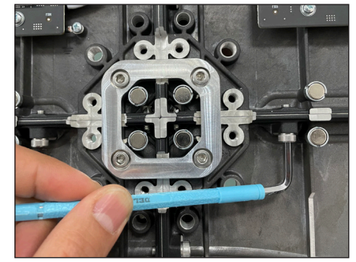

Figure 22: *X-axis Adjustment*

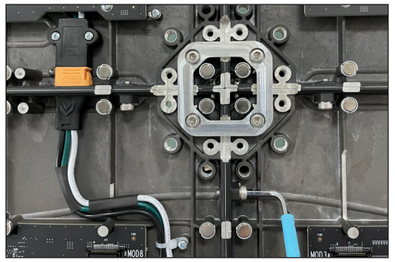

Figure 23: *Y-axis Adjustment*

> **Note:** Use a 5 mm Allen wrench to tighten the socket-head screws, but do not remove the flattening plate.

5. Use a 3 mm Allen wrench to tighten the jacking hardware next to the existing panel until the panel is firmly seated against the tube. Refer to **Figure 18**. Tighten the remaining adjustment hardware until it touches the tube.
6. Secure the panel to the tubes through all four corner mounting locations. Refer to **Figure 13** and **Figure 24.**

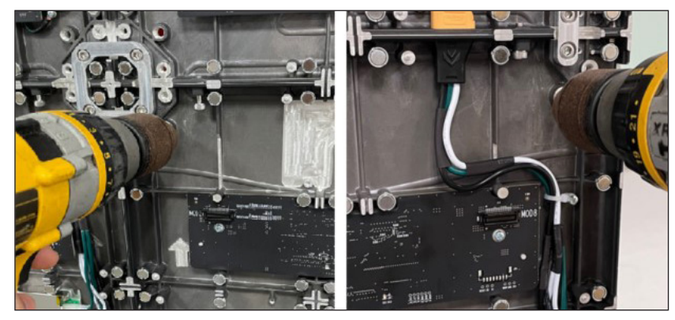

Figure 24: *Secure Panel to Tube in Corners*

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7. Ensure the panel is flush and flat to all adjacent panels.
   - **a.** Check seams to verify flatness.
   - **b.** Verify flatness by laying a 4' level across the face horizontally, vertically, and diagonally to ensure the combined face of both panels is straight and flat. Check both ends of the panel. Refer to **Figure 25.**
   - **c.** Use a 3 mm Allen wrench to adjust the jacking hardware as needed to modify the depth on the four corners of the panel. Refer to **Figure 18** and **Figure 19.**
   - **d.** Check flatness or alignment at all joints. Refer to **Figure 20**, **Figure 21**, **Figure 22**, **Figure 23**, and **Figure 26.**

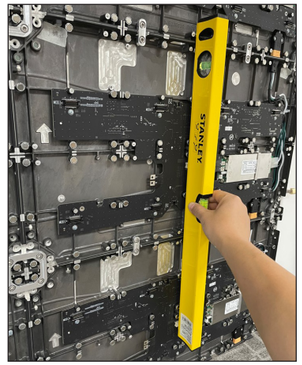

Figure 25: *Verify Flatness with Level*

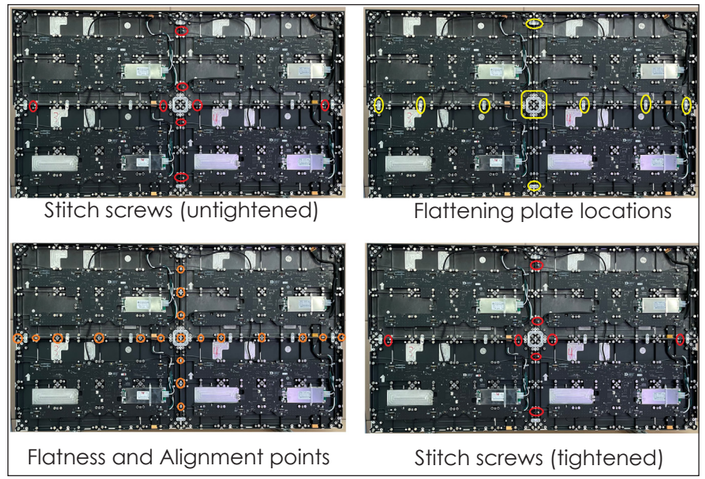

Figure 26: *Flattening Plate Locations*

Electrical Installation

Power & 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 27**. Refer to the contract-specific Shop and Riser Drawings for part numbers.

The signal input is located on the bottom of the hub board. Refer to **Figure 28.** Refer to the contract-specific Shop and Riser Drawings for part numbers.

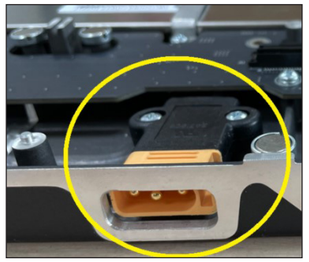

Figure 27: *Power Input*

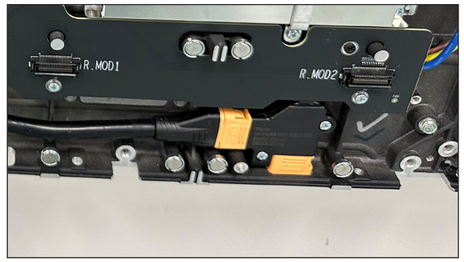

Figure 28: *Signal Input*

Power Connection

The panels are designed for vertical power interconnection only. Plug the power from the lower panel into the panel above it. Refer to **Figure 29.** Refer to the contract-specific Shop and Riser Drawings for specific routing details. Ulitize the table below to determine wire colors:

Service Connections		Wire Colors
AC/L	AC/L1	Brown
AC/N	AC/L2	Blue
GND	GND	Green/Yellow

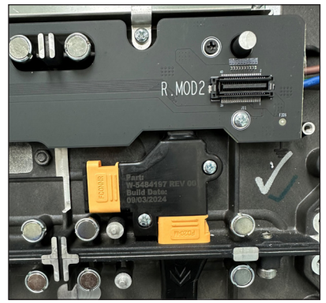

Figure 29: *Power Connection*

Signal Connection

Signal can be routed horizontally or vertically with the supplied Cat 5e cables. Primary signal is connected to Port L PB and Port R PB. Refer to **Figure 30** and **Figure 31.** Refer to the contract-specific Shop and Riser Drawings for specific routing details.

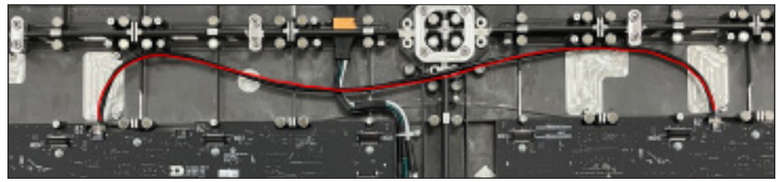

Figure 30: *Horizontal Signal Connection*

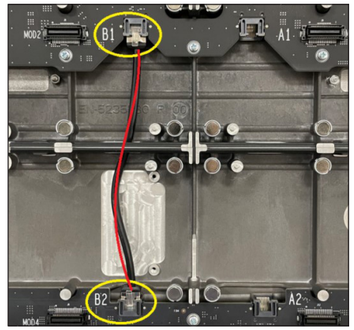

Figure 31: *Vertical Signal Connection*

Z-Axis Seam Adjustment

If a module is lower than adjacent modules, remove the module and turn the magnet out for adjustment. Refer to **Figure 32 and Figure 33**. Use a magnetic adjustment tool to loosen the magnet, then turn the magnet by hand.

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 32: *Magnetic Adjustment Tool*

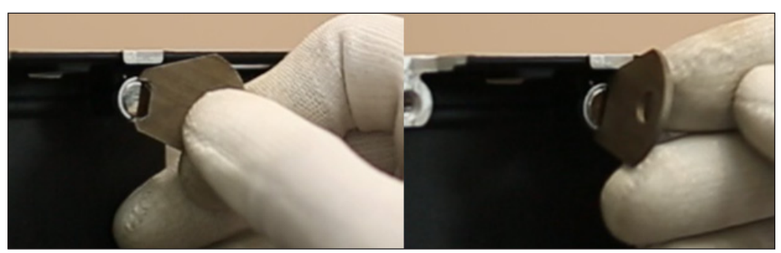

Figure 33: *Using Magnetic Adjustment Tool*

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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.

Module Installation

1. Always wear gloves while handling modules. Refer to **Figure 34.**

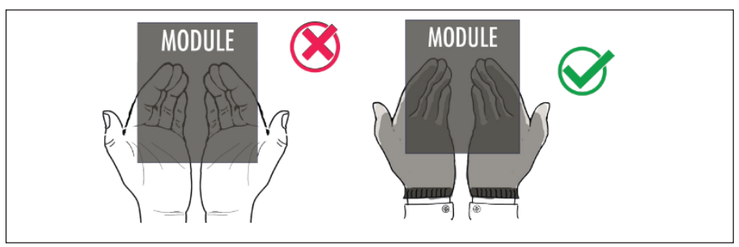

Figure 34: *Wear Gloves while Handling Modules*

2. Start in the bottom middle of the display and then install left and right. Then move up one row. Refer to **Figure 35.**

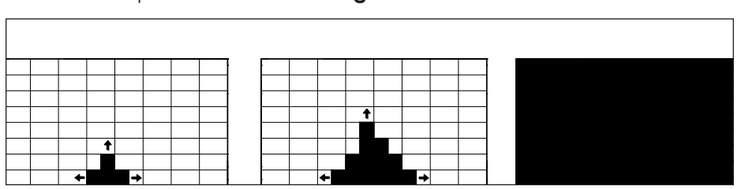

Figure 35: *Module Installation Sequence*

3. Avoid pushing modules on the tiles edges. Refer to **Figure 36.**

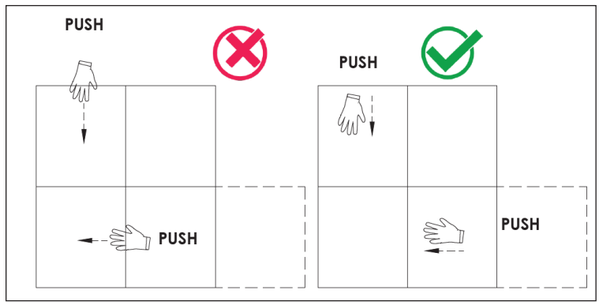

Figure 36: *Avoid Pushing on Modules Edges*

> **Note:** To install modules with safety lanyard, refer to the **NPN-6600 Series Service Quick Guide (DD5530948)**.

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