NPN-4100 SERIES

DAKT-0203-12

DISPLAY MANUAL

P2035

DD3918319
Rev 01
16 May 2019

201 Daktronics Drive
Brookings, SD 57006-5128
www.daktronics.com/support
800.325.8766

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FCC Statement

Supplier Declaration of Conformity (SDoC)

This product complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Warning: The user is cautioned that changes and modifications made to the equipment without the approval of manufacturer could void the user's authority to operate this equipment.

Industry Canada Regulatory Information

This Class B digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

Inquiries

Contact Daktronics with any questions regarding our product compliance.

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1 Introduction

How to Use This Manual

This manual explains the installation, maintenance, and troubleshooting of this video display system. For additional information regarding the safety, installation, operation, or service of this system, refer to the telephone numbers listed in **Daktronics Exchange and Repair & Return Programs (p.7)**. This manual contains only generic installation topics and is not specific to a particular installation. Contract-specific information takes precedence over any general information found in this manual.

Daktronics identifies manuals by the DD number located on the cover page of each manual. For example, this manual would be referred to as **DD3918319**.

Numbering Conventions

Drawing Numbers

Figure 1 illustrates a Daktronics drawing label. This manual refers to drawings by listing the last set of digits. In the example, the drawing would be referred to as **DWG-3818317**.

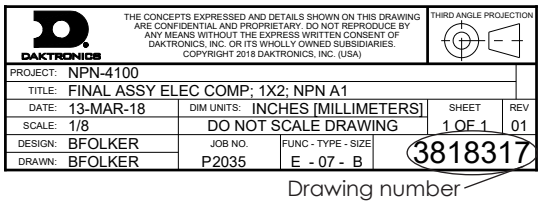

Figure 1: *Drawing Label*

All references to drawing numbers, appendices, figures, or other manuals are presented in bold typeface, as shown in the example below:

> Refer to **DWG-3818317** in **Section B: Reference Drawings (p.13)** for the locations of internal display components.

Part Numbers

Most display components within a display carry a white label that lists the part number. The component part number uses the following format: 0A-XXXX-XXXX (multi-component assembly) or 0P-XXXX-XXXX (display interface board). **Daktronics Exchange and Repair & Return Programs (p.7)** contains the Daktronics Exchange Policy as well as the Repair & Return Program. Refer to these instructions if any display components need replacing or repairing. If an interface board or assembly is not found in the replacement parts list in **Replacement Parts List (p.7)**, use the label to order a replacement. **Figure 2** illustrates a typical label. The part number is in bold.

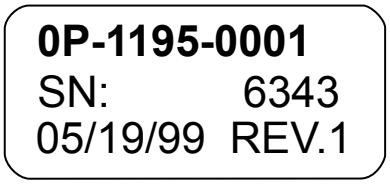

Figure 2: *Typical Label*

Part Type	Part Example	Part Number
Assembly	Display interface board and its mounting plate or bracket	0A-XXXX-XXXX
Individual display interface board	ProLink Router (PLR)	0P-XXXX-XXXX
Wire or cable	SATA cable	W-XXXX

Module Numbers

Figure 3 explains the module labeling method in more detail, and **Figure 4** illustrates how Daktronics numbers modules on a video display.

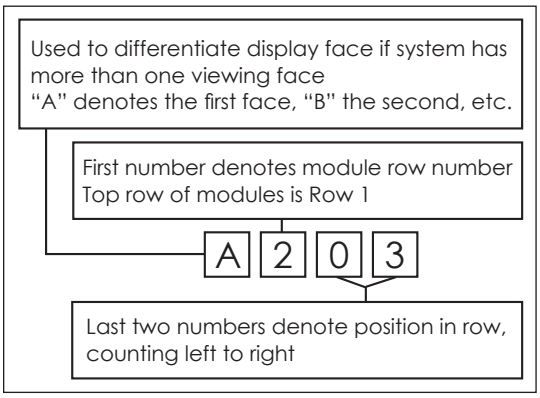

Figure 3: *Module Numbering Breakdown*

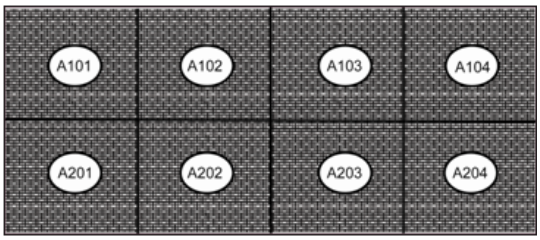

Figure 4: *Module Numbering*

Model Numbers

Each video display system has a model number that explains the display specifications.

NPN-4100-1.9/2.5MN-HHHxWWW		
NPN	=	Product series
4100	=	Product generation
1.9/2.5MN	=	Pixel pitch/layout
HHH	=	Matrix height
WWW	=	Matrix width

Important Safeguards

- Read and understand the installation instructions before beginning the installation process.
- Do not drop the control equipment or allow it to get wet.
- Do not disassemble the control equipment or electronic controls of the display; failure to follow this safeguard will make the warranty null and void.
- Disconnect the display power when not in use or when servicing.
- Disconnect the display power before servicing the power supplies to avoid electrical shock. The power supplies run on high voltage and may cause injury if touched while powered.

2 Warnings/Disclaimers

Review the reference documents and drawings in **Section A: Reference Documents (p.11)** and **Section B: Reference Drawings (p.13)** prior to installation as well as during the installation process.

Display

Daktronics engineering staff must approve any changes that may affect the strength or protective integrity of the display frame or enclosures. If any modifications of this nature are made, detailed drawings of the change(s) must be submitted to Daktronics engineering staff for evaluation and approval, or the warranty will be null and void.

Displays must be lifted appropriately to ensure the display sections will not be damaged. It is the installer's responsibility to ensure the installation meets all local codes and standards. All hardware processes used during display installation must meet the approved, stamped drawings from a professional engineer.

This display is intended to be installed in accordance with the requirements of Article 600 of the National Electrical Code and/or other applicable local codes. This includes proper grounding and bonding of the sign.

Only qualified individuals should access the electrical components of this display and its associated equipment.

Structure

It is the installer's responsibility to ensure the mounting structure and hardware are built per the stamped engineering drawings and are capable of supporting the display prior to beginning the installation.

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3 Glossary

Lanyard attachment ring: a ring found on the back of each module. The lanyard attaches to the ring to keep the module from falling to the ground.

Latch release: a device that holds the module firmly to the display frame. There are four latch devices per module.

Light emitting diode (LED): a low energy, high intensity lighting unit.

Line filter: a device that removes electromagnetic noise from the power system to avoid interference with local communications channels. Line filters sometimes mount on brackets with power supplies. Other times they may mount alone on a bracket.

Mask: a plastic grid on the 2.5 mm module that increases contrast and helps protect the LEDs from damage.

Module: multiple LED tiles magnetically attached to a die-cast aluminum housing. The housing has steel plates that attach to magnets in the panel. The logic card connects to each LED tile via ribbon cable. Modules with the housing, LED tiles, and logic card can be removed from the front of the panel with a Daktronics-specific module removal tool.

Pixel: the smallest single point of light on a display that can be turned on and off. For LED displays, a pixel is the smallest block of light emitting devices that can generate all available colors.

Power supply: a device that converts AC line voltage from the termination panel to low DC voltage for one or more module driver boards. One power supply may power multiple modules.

ProLink Router (PLR): a display interface board that passes display data from the control system to modules and other PLRs. The ratio of PLRs to modules varies with display application.

Termination block: an electrical point usually used to connect internal power and signal wires to wires of the same type coming into the display from an external source.

Tile: an LED display board. There are six LED tiles per module. LED tiles can be removed from the front of the housing with a Daktronics-specific LED tile removal tool.

Video Image Processor (VIP): an interface that drives video to the display while also dimming, providing gamma and color controls, and displaying test patterns.

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4 Replacement Parts

Replacement Parts List

Part Description	Part Number
Logic card	0P-2036-1000
Module	0A-2068-8000 (1.9 mm) 0A-2036-8000 (2.5 mm)
Power supply	A-3769580
ProLink Router (PLR)	0A-1525-6053

Daktronics Exchange and Repair & Return Programs

To serve customers' repair and maintenance needs, Daktronics offers both an exchange program and a repair & return program.

Exchange Program

Daktronics unique Exchange Program is a quick service for replacing key parts in need of repair. If a part requires repair or replacement, Daktronics sends the customer a replacement, and the customer sends the defective part to Daktronics. This decreases display downtime.

Before contacting Daktronics, identify these important part numbers:

Display Serial Number: _____

Display Model Number: _____

Contract Number: _____

Installation Date: _____

Sign Location: _____

Daktronics Customer ID Number: _____

To participate in the Exchange Program, follow these steps:

1. **Call Daktronics Customer Service.**

Market Description	Customer Service Number
Schools (primary through community/junior colleges), religious organizations, municipal clubs, and community centers	877-605-1115
Universities and professional sporting events, live events for auditoriums, and arenas	866-343-6018
Financial institutions, petroleum, sign companies, gaming, and wholesale/retails establishments	866-343-3122
Department of Transportation, mass transits, airports, and parking facilities	800-833-3157

2. **Mail the old part to Daktronics when the new exchange part is received.**

   If the replacement part fixes the problem, send in the problem part which is being replaced.

   a. Package the old part in the same shipping materials in which the replacement part arrived.

   b. Fill out and attach the enclosed UPS shipping document.

   c. Ship the part to Daktronics.

   Daktronics will charge for the replacement part immediately, unless a qualifying service agreement is in place. In most cases, the replacement part will be invoiced at the time it is shipped.

3. **Return the part within 30 working days if the replacement part does not solve the problem, or Daktronics will charge the full purchase price.**

   If the part is still defective after the exchange is made, please contact Daktronics Customer Service immediately. Daktronics expects immediate return of an exchange part if it does not solve the problem. Daktronics also reserves the right to refuse parts that have been damaged due to acts of nature or causes other than normal wear and tear.

Repair & Return Program

For items not subject to exchange, Daktronics offers a Repair & Return Program. To send a part for repair, follow these steps:

1. **Call Daktronics Customer Service.**

   Refer to the telephone number listed on the previous page.

2. **Receive a Return Materials Authorization (RMA) number before shipping.**

   Refer to the telephone number listed on the previous page.

3. **Package and pad the item carefully to prevent damage during shipping.**

   Electronic components, such as printed circuit boards, should be placed in an antistatic bag before boxing. Daktronics does not recommend packing peanuts when shipping.

4. **Enclose the following information:**

   - Name
   - Address
   - Phone number
   - RMA number
   - Clear description of symptoms

Shipping Address

Daktronics Customer Service
600 E 54th St N
Sioux Falls, SD 57104
Case #

Warranty & Limitation of Liability

The Daktronics Warranty & Limitation of Liability statement is located in **Section C: Daktronics Warranty & Limitation of Liability (p.15)**. The warranty is independent of extended service agreements and is the authority in matters of service, repair, and display operation.

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A Reference Documents

Use the following documents in the order listed:

- **NPN-410X/ZPN-1000 Series Substructure Quick Guide (DD3922077)**
- **NPN-4100 Series Panel Basics Quick Guide (DD3851280)**
- **NPN-4100 Series Sectional Installation & Service Quick Guide (DD3830324)**
- **NPN-410X Series Border Installation Quick Guide (DD3838321)**

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The standard NPN-410X/ZPN-1000 display substructure is vertical aluminum tubing with mounting pass-through holes and shims for attachment to a wall or equivalent structure. The panels are self-drilled into the vertical tubes at four points per panel. The tubes must be vertically level, or plumb, on the face and sides, horizontally level on the top/bottom across multiple tubes, vertically flat along each tube, and horizontally flat across multiple tubes.

Tubes come in two different types (panel-to-panel tubes and narrow tubes for the far-left and far-right edges of the display face) in nine different sizes ranging from one panel high to a maximum of nine panels high. Refer to **Figure 1**. Each panel height has two mounting pass-through holes.

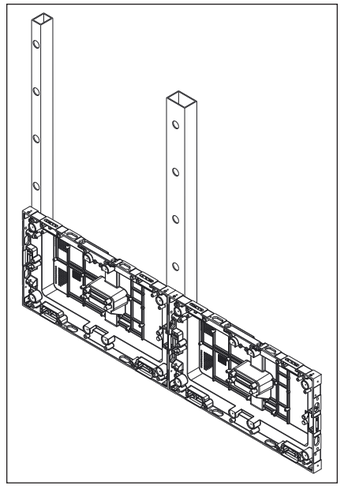


Figure 1: *Tube Type*

1. Attach $^{3}/_{4}$" plywood to the wall before substructure attachment if the holes in the tubes do not line up with studs on the wall. Other wall materials such as concrete should not require the $^{3}/_{4}$" plywood, but refer to the contract-specific Shop Drawing for verification.

2. Check the wall for flatness and levelness with a laser level (or a level and string if a laser level is not available). Refer to **Figure 2**.

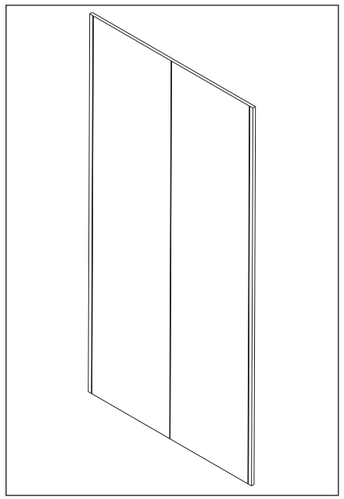
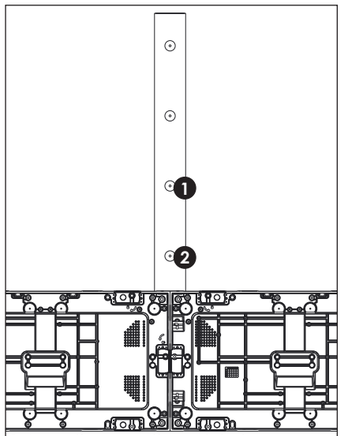


Figure 2: *Marked Tube Positions*



1: Mounting pass-through hole
2: Additional mounting pass-through hole for seismic-affected regions

Figure 3: *Attach Tube*

   a. A three-plane laser level is preferred. Set the Z-plane a set distance from the wall. Mark the tube positions and make note of the high and low points of the wall along the tube screw position.

   b. A string level can be used if a laser level is unavailable. Mark the tube positions and install all vertical tubes. Mount each tube to the wall with one screw and secure a string line taut across all vertical tubes. It is recommended to run two string lines per vertical tube. This method will show the highest point of the wall. Shim all remaining tubes to touch the string line.

3. Fill the required hole(s) in the tubes. Refer to **Figure 3**. In seismic-affected regions, two holes per panel height must be filled. In all other regions, only one hole per panel height is required. Refer to the contract-specific Shop Drawing for details on how many holes to fill.

4. Attach the tube (center tube first) and use a large level to ensure the side of the tube is level. Refer to **Figure 4**. Tubes will recess $^{1}/_{4}$" from both the top and bottom of the display. Refer to **Figure 5**.

   Ensure the tube is positioned vertically within $^{1}/_{4}$" of the specifications on the Shop Drawing. Start the tube mounting hardware through the tube into the wall, but do not tighten down.

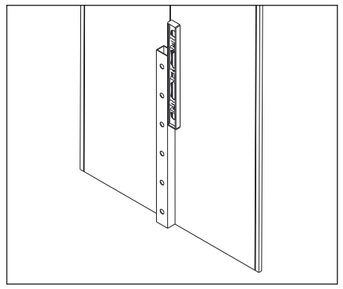


Figure 4: *Verify Plumb First Tube*

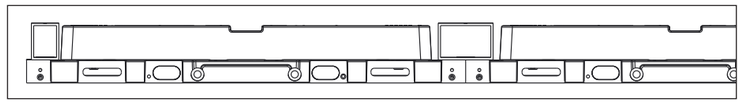


Figure 5: *Tube on Panel (Top View)*

5. Add shims on the started hardware between the tube and the wall and use a level to ensure the tube remains plumb to the wall and flat over the entire length of the tube. Refer to **Figure 6**. If the appropriate amount of shims is not used, the wall anchors can bow.

   Note: The shims on the left and right tubes should be oriented so the tail/tag sticks out behind the display and out of sight when the display is fully installed. Refer to **Figure 7**.

Figure 6: *Verify Plumbness*

Figure 7: *Shim Orientation*

6. Repeat **Steps 1-5** to attach the remaining tubes to the right and left of the center tube. Level each tube separately. Refer to **Figure 8** and **Figure 9**. Place shims between the wall and the tube until the tube is plumb. Each individual tube should be level within $^{1}/_{4}$" from the lowest to highest point along the entire vertical length of the display tube(s).

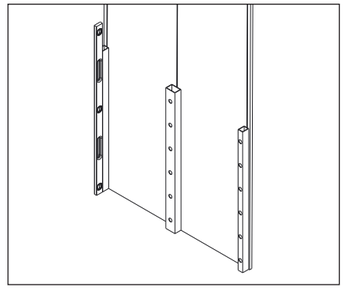


Figure 8: *Check Plumbness*

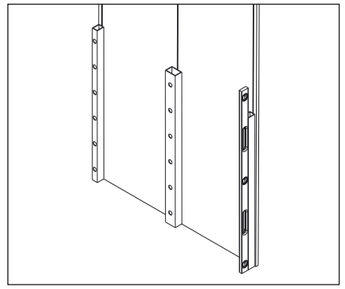


Figure 9: *Check Plumbness*

7. Check the flatness at the top and bottom of the tubes (**Figure 10**), along the height of the tubes (**Figure 11**), and diagonally across the tubes (**Figure 12**), measuring across three tubes at a time, to ensure it does not exceed the max out of flat of $^{1}/_{16}$" and there is no rocking. Each individual tube should be level within $^{1}/_{4}$" from the lowest to highest point along the entire vertical length of the display tube(s). If the tube does not meet the level with a gap greater than $^{1}/_{4}$" or if there is rocking, add shims to the affected tubes to bring them into spec.

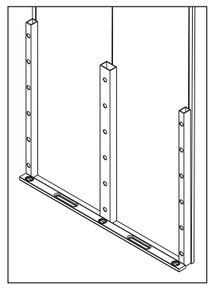


Figure 10: *Check Flatness*

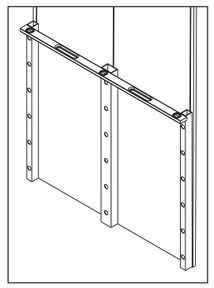


Figure 11: *Check Flatness*

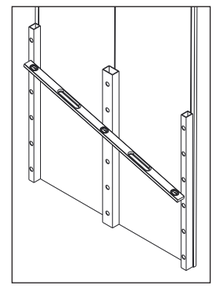


Figure 12: *Check Flatness*

8. Re-level any individual vertical tube that was adjusted but do not remove the shims that were added to make the tube faces flat to each other. Repeat this step, incrementing one tube to the right or left so all tubes in the display are plumb, level to each other, and flat to each other. After this has been verified, tighten down the tube hardware to the wall.

9. Repeat **Steps 1-8** if additional rows of tubes are required. Space the tubes approximately $^{1}/_{2}$" apart vertically. Refer to **Figure 13**. Tighten down the hardware and quality check the plumbness and flatness.

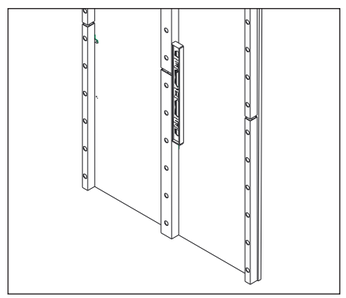


Figure 13: *Install Second Row*

After the tube hardware is tightened down and the tubes are level and flat, begin panel installation. Refer to the appropriate Installation & Service Quick Guide: NPN-4100 (**DD3830324**), NPN-4101 (**DD4133945**), NPN-4102 (**DD4174150**), or ZPN-1000 (**DD4175845**).

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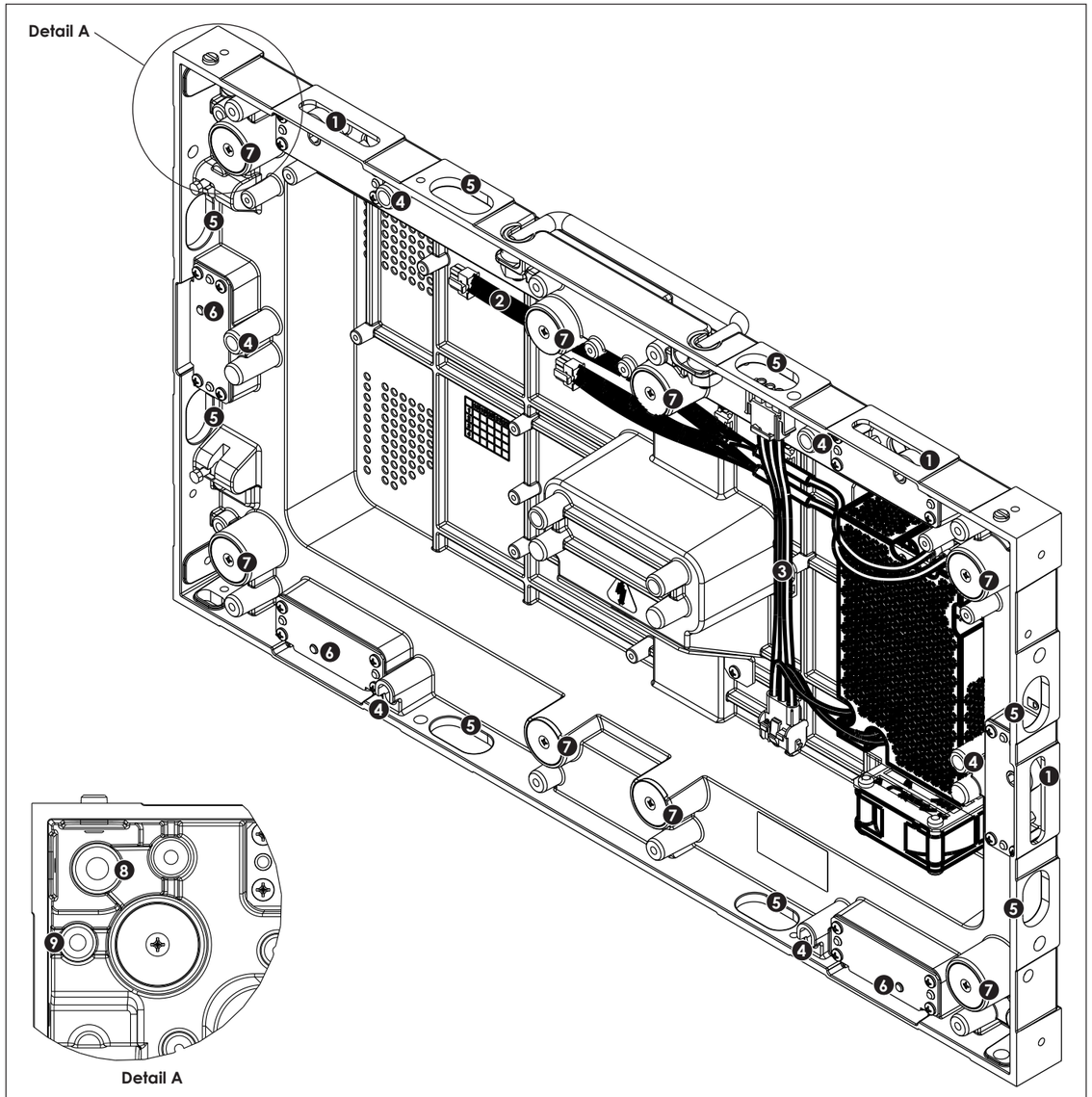
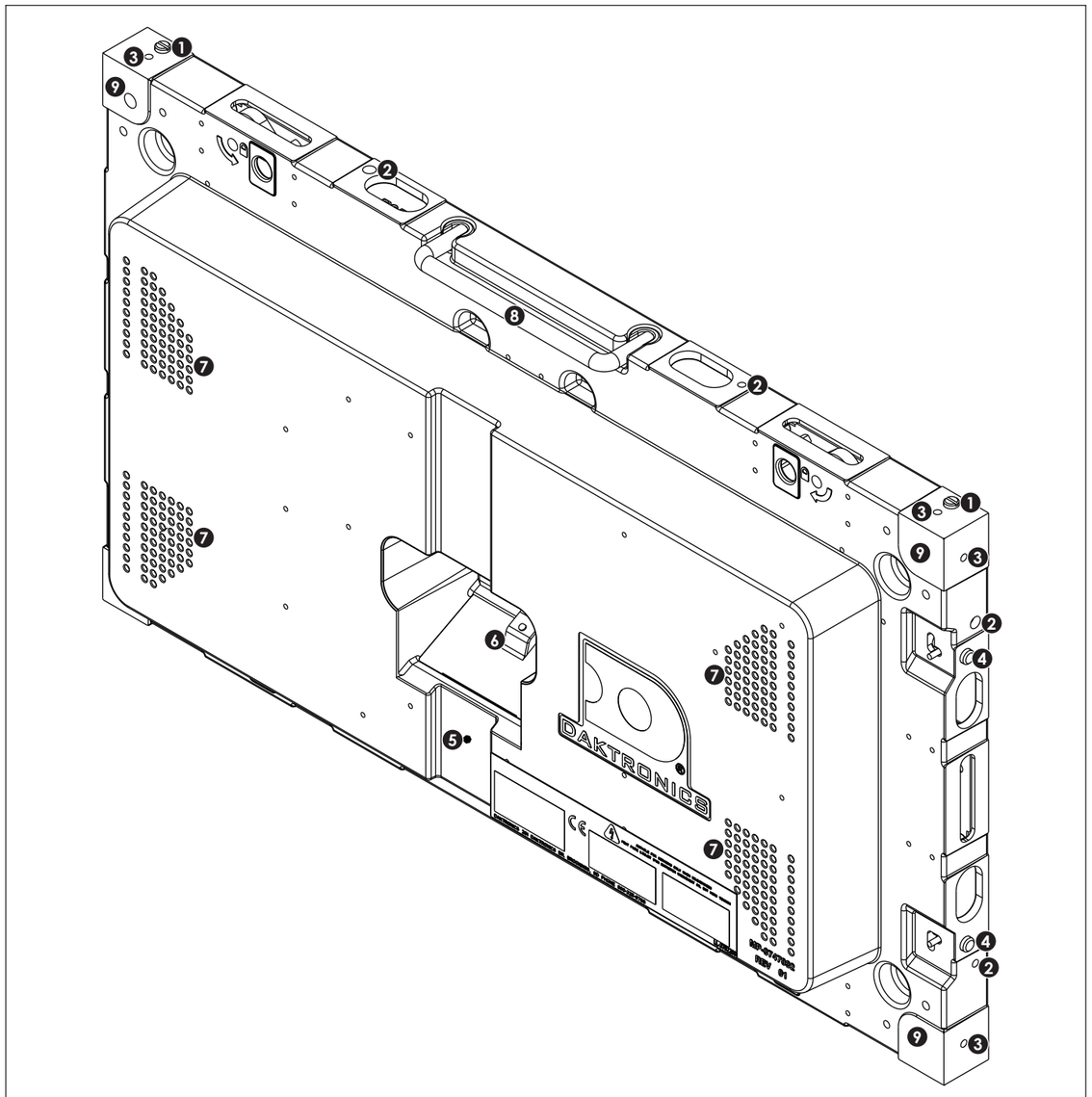
Figure 1 (rotated front view) and **Figure 2** (rotated rear view) show the basic features of a typical NPN-4100 series display panel.



1: Rotating draw latch @ 3 per panel
2: Module power harness (black & red)
3: Panel-to-panel power harness (black, green, & white)
4: Module alignment hole @ 8 per panel
5: Internal electrical pass-through hole @ 8 per panel
6: Draw latch pin @ 3 per panel
7: Module-to-panel magnet @ 8 per panel
8: Panel mounting hole @ 4 per panel
9: Panel adjustment hardware hole @ 4 per panel

Figure 1: *Display Panel (Rotated Front View)*



1: Top alignment pin (removable) @ 2 per panel
2: Stitch bolt hole @ 8 per panel
3: Border attachment hole @ 8 per panel
4: Spring-loaded side alignment pin (retractable) @ 2 per panel
5: Cable raceway
6: Power entrance, signal entrance, or blank plate
7: Vent hole @ 4 per panel
8: Folding handle
9: Mounting surface @ 4 per panel

Figure 2: *Display Panel (Rotated Rear View)*

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Mechanical

Refer to the **NPN-4100 Series Border Installation Quick Guide (DD3838321)** before installing the first panel to determine when to install borders.

Install First Panel

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

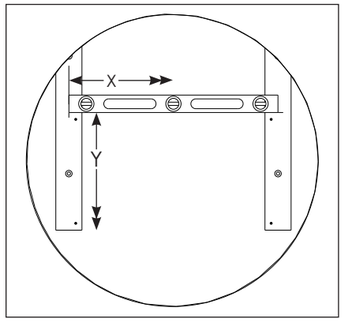

Figure 1: *Measure & Mark First Panel Location*

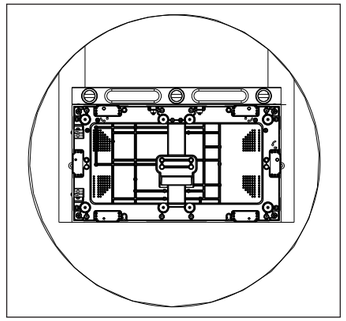

Figure 2: *Mark Mounting Hole Locations in First Panel*

2. Remove the panel from its packaging.
3. Mark the mounting holes in the first panel for pre-drilling. Refer to **Figure 2**.
   a. Lift the panel into place.
   b. Align the panel to the marked location and verify the panel is level.
   c. Hold the panel in place and mark the screw locations through the mounting screw holes.
   d. Remove the panel and return it to its packaging.
4. Pre-drill holes into the tube at the marked mounting locations. Refer to **Figure 3**.

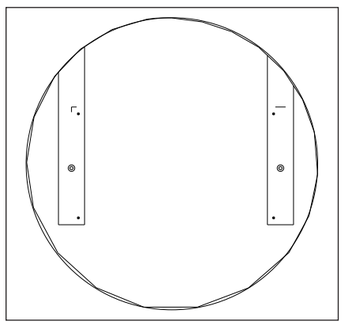

Figure 3: *Pre-Drill Holes into Tube*

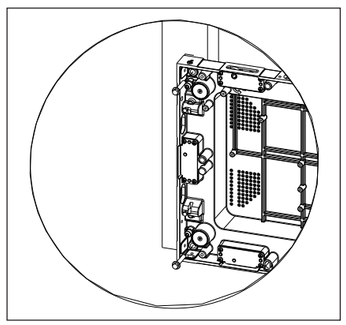

Figure 4: *Secure Panel to Tubes*

5. Secure the panel to the tubes through all four corner mounting locations. Refer to **Figure 4**.
6. Ensure the panel is level and vertically plumb. Refer to **Figure 5**. Adjust the jacking hardware to correct any plumbness issues. Refer to **Figure 6**.

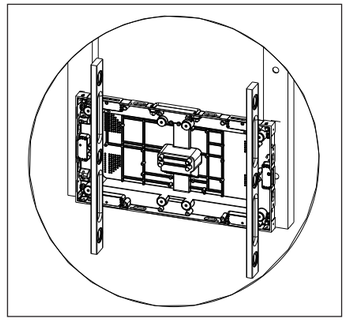

Figure 5: *Ensure Panel Is Level & Vertically Plumb*

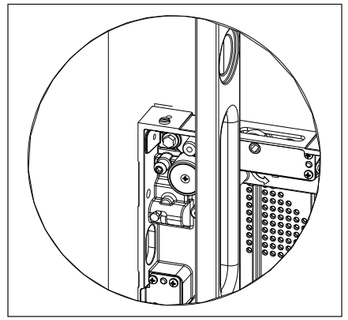

Figure 6: *Adjust Jacking Hardware*

Adjust Panel Hardware

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 or 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 contacts the head of the securing hardware.

Secure Panel Corner Spacing

Secure the corner in place to prevent movement after the desired depth is achieved.

1. Tighten both bolts until they contact the panel or tube.

Connect Top-to-Bottom Panels

1. Remove the panel from its packaging.
2. Place the panel on top of the existing panel, fitting the alignment pins into the recesses. Refer to **Figure 7**.

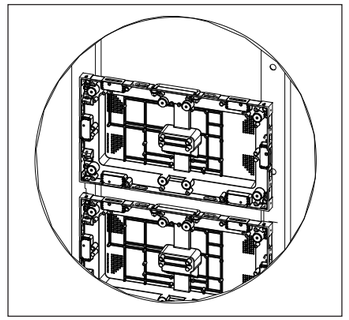

Figure 7: *Set Panel in Place*

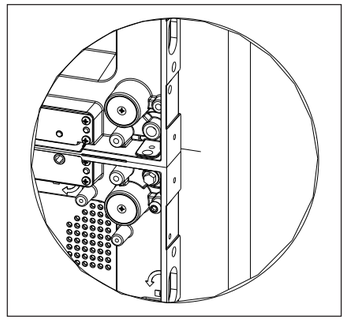

Figure 8: *Align Panel Faces*

3. Ensure the front edges of the panels align completely. Refer to **Figure 8**.
4. Clamp the panels together. Refer to **Figure 9**.

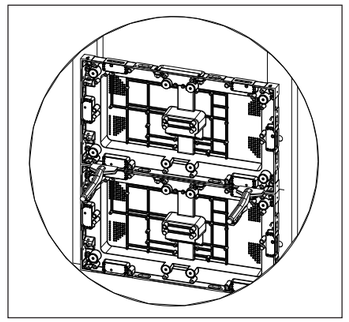

Figure 9: *Clamp Panels Together*

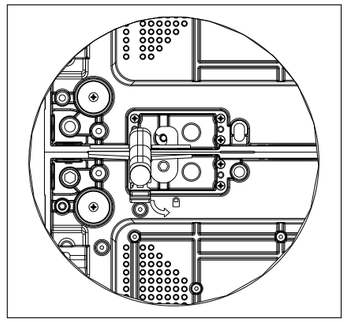

Figure 10: *Engage Draw Latches*

5. Engage the draw latches. Refer to **Figure 10**.
6. Tighten the jacking hardware next to the existing panel until the panel is firmly seated against the tube. Refer to **Figure 11**. Tighten the remaining adjustment hardware until it contacts the tube.

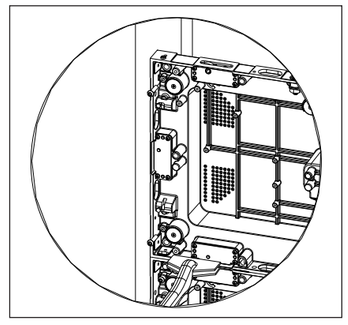

Figure 11: *Tighten Jacking Hardware*

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7. Secure the panel to the tubes through all four corner mounting locations. Refer to **Figure 12**.

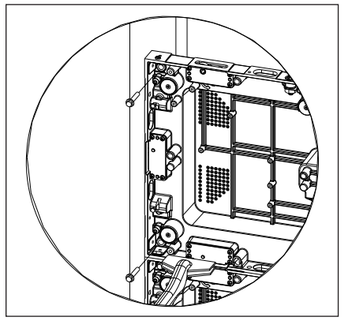


Figure 12: *Secure Panel to Tube*

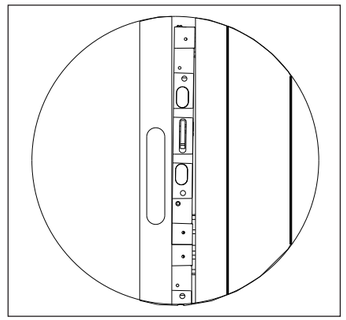


Figure 13: *Verify Flatness*

8. Ensure the panel is flush and flat to all adjacent panels.
   a. Verify flushness by checking the seams.
   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 13**.
   c. Adjust the jacking hardware as needed to modify the depth on the four corners of the panel.

Connect Side-to-Side Panels

1. Remove the panel from its packaging.
2. Place the panel beside the existing panel. Refer to **Figure 14**.

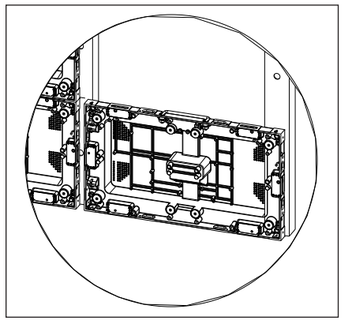


Figure 14: *Set Panel in Place*

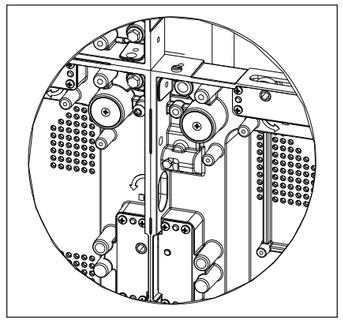


Figure 15: *Engage Alignment Pin*

3. Release the side alignment pins at connection and allow the pins to slide into the recesses of the other panel. Refer to **Figure 15**.
4. Ensure the front edges of the panels align completely. Refer to **Figure 16**.

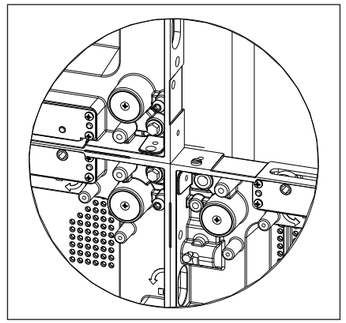


Figure 16: *Align Panel Faces*

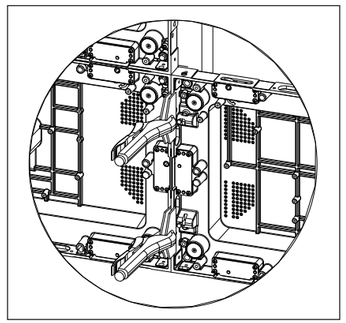


Figure 17: *Clamp Panels Together*

5. Clamp the panels together. Refer to **Figure 17**.
6. Engage the draw latches. Refer to **Figure 18**.

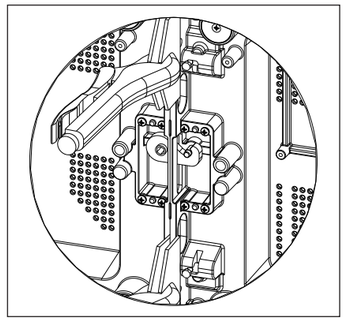


Figure 18: *Engage Draw Latches*

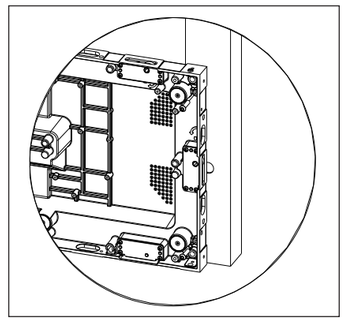


Figure 19: *Tighten Jacking Hardware*

7. Tighten the jacking hardware next to the existing panel until the panel is firmly seated against the tube. Refer to **Figure 19**. Tighten the remaining jacking hardware until it contacts the tubes.
8. Secure the panel to the tubes through all four corner mounting locations. Refer to **Figure 20**.

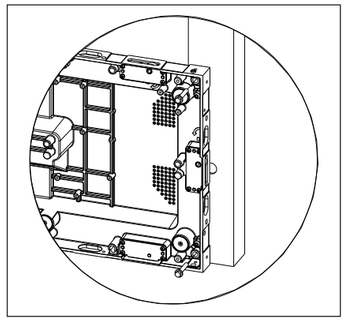


Figure 20: *Secure Panel to Tubes*

9. Ensure the panel is flush and flat to the lower panels.
   a. Verify flushness by checking the seams.
   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 21**.
   c. Adjust the jacking hardware as needed to modify the four corners of panel depth.

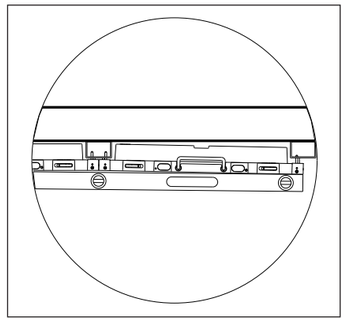


Figure 21: *Verify Flatness*

Electrical

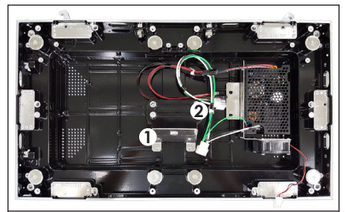
Land Field Power/Signal

There are two power entrance types: plug and terminal block. Refer to the contract-specific Riser Diagram to determine power entrance type.

Power Plug Entrance

1. Refer to the contract-specific Riser Diagram for field power and signal locations on the display.
2. Select a panel for field power connection. Use a Phillips screwdriver to remove the hardware in the power entrance plate and then remove the plate. Refer to **Figure 22**. When installing the panel onto the display, bring the field SJOOW flexible cable through the opening in the panel.

   If a panel also needs signal, bring field fiber through the panel opening with the SJOOW flexible cable.



1: Power entrance plate
2: Zip tie location

Figure 22: *Panel*

Figure 23: *Three-Pin Plug*

3. Terminate the three-pin plug (Daktronics part number P-1351) onto the field SJOOW flexible cable. Installation instructions are located on the plug package. Refer to **Figure 23**.
4. Cut the zip tie at the location in **Figure 22**.

Power Terminal Block Entrance

1. Refer to the contract-specific Riser Diagram for field power and signal locations on the display.
2. Select a panel for field power connection. Use a Phillips screwdriver to remove the hardware in the power entrance plate and then remove the plate. Refer to **Figure 22**. When installing the panel onto the display, bring the field power cable through the opening in the panel.

   If a panel also requires signal, bring field fiber through the panel opening with the field power cable.
3. Cut the zip tie at the location in **Figure 22**.

Install Z-Filter Assembly

Z-Filter Plug Assembly

1. Complete the steps in **Power Plug Entrance (p.2)**.
2. Use a Phillips screwdriver to attach the electrical component plate to the panel with the supplied hardware (Daktronics part number HC-1012 @ 3) at the locations shown in **Figure 25**. Hand-tighten to 5 in-lbs.
3. Connect the three-pin plug (P-1351) to the panel mount jack on the Z-filter assembly and push the plug through the panel opening.
4. Use a Phillips screwdriver to attach the power entrance plate to the panel with the supplied hardware (HC-1012 @ 2) at the locations shown in **Figure 25**. Hand-tighten to 5 in-lbs.

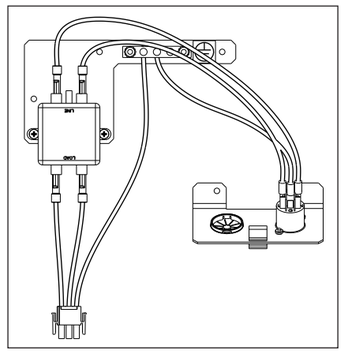
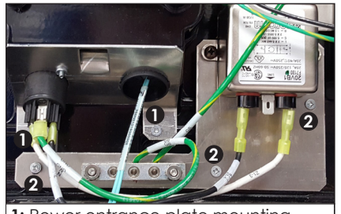


Figure 24: *Plug Z-Filter Assembly*

Z-Filter Terminal Block Assembly

1. Complete the steps in **Power Terminal Block Entrance (p.3)**.
2. Use a Phillips screwdriver to attach the power entrance plate to the panel with the supplied hardware (Daktronics part number HC-1012 @ 2). Hand-tighten to 5 in-lbs. Drill the PWR conduit hole to match the size of the fitting used. Refer to **Figure 25** and **Figure 26**.



1: Power entrance plate mounting locations
2: Electrical component plate mounting locations

Figure 25: *Plate Mounting Points*

Figure 26: *PWR Conduit Hole*

Note: MC (metal clad) cable with an MC fitting is recommended to connect AC power to the display. A straight-through or 90° fitting can be used to connect through the rear of the panel in the provided conduit hole. Refer to **Figure 27**, **Figure 28**, and **Figure 29**.

Figure 27: *Straight-Through MC Fitting*

Figure 28: *90° MC Fitting*

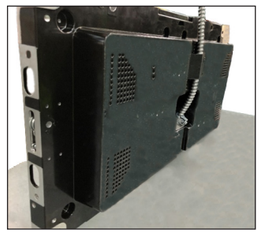


Figure 29: *AC Connection (Display Rear)*

3. Install the cable.
   a. Cut the metal protection ~3" to allow enough room for the wires to route to the terminals. Refer to **Figure 30**.
   b. Strip the wires ~$^{1}/_{4}$". Refer to **Figure 30**.
   c. Feed the MC wire through the rear of the fitting and into the case. When the MC wire is in the correct location, tighten the screw(s) on the MC fitting to secure the fitting.
   d. Terminate the white and black wires to the four-position plastic terminal block. Tighten the wires into place with a flathead screwdriver. Refer to **Figure 31**.
   e. Terminate the green (ground) wire to the three-position metal terminal block. Use a $^{1}/_{8}$" Allen wrench to tighten the wires into place. Refer to **Figure 31**.
   f. Tuck the wires so they do not press against the rear of the module when the panel is assembled.

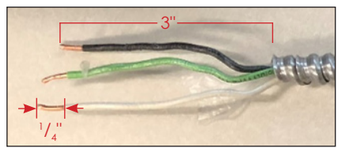
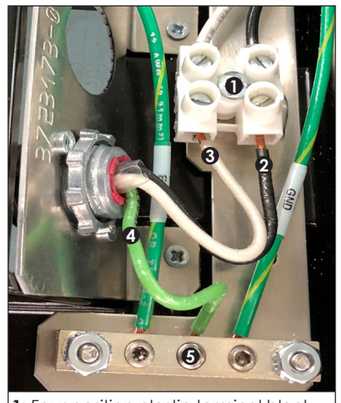


Figure 30: *MC Cable*



1: Four-position plastic terminal block
2: Black wire
3: White wire
4: Green (ground) wire
5: Three-position metal terminal block

Figure 31: *Power Entrance*

Interconnect Internal Power

Refer to the contract-specific Riser Diagram for potential horizontal interconnects.

1. Ensure power is disconnected from the display.
2. Connect the internal AC harness and route the harness vertically through the pass-through holes as shown in **Figure 32**. Power routes internally to the display after field power is landed. Refer to **Land Field Power/Signal (p.2)**. Interconnects should route horizontally.
3. Route horizontal interconnects where needed after internal vertical connections are complete.
4. Zip tie the cables in the panel to ensure the modules install flat.

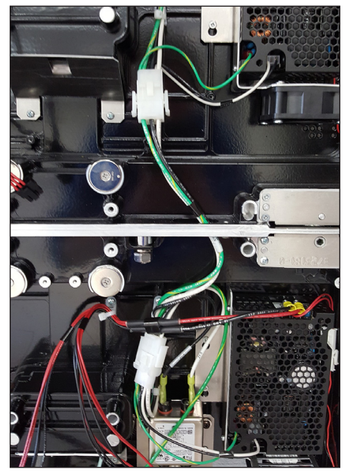


Figure 32: *Connect Vertical Power*

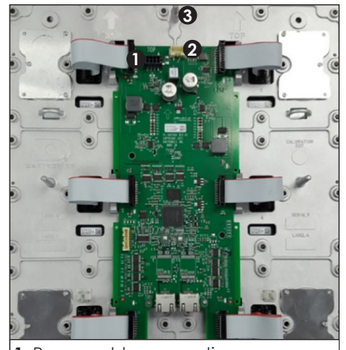
Install PLR

Refer to the contract-specific Signal Interconnect Drawing for ProLink Router (PLR) locations.

1. Use a Phillips screwdriver and the supplied hardware (Daktronics part number HC-1012 @ 3) to install the PLRs. Hand-tighten to 5 in-lbs. Refer to **Figure 33**.

1: Power cable connection

Figure 33: *Install PLR*



1: Power cable connection
2: Accessory cable connection
3: Top alignment pin

Figure 34: *Module Rear*

2. Connect the power cable (W-3758419) to the PLR. Refer to **Figure 33** and **Figure 34**.

Reverse these steps to remove a PLR.

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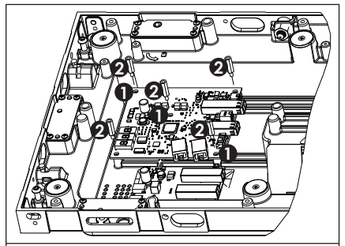
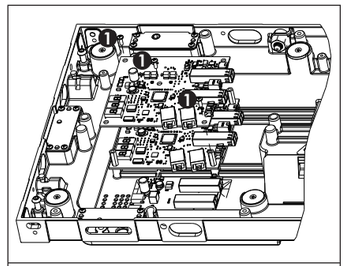
Dual PLRs are required at the end of fiber runs on 1.9 mm panels. Refer to **DWG-3903563** and the steps below for installation details.

1. Use a Phillips screwdriver to remove the hardware (Daktronics part number HC-1012 @ 3) securing the existing PLR and set the hardware aside for **Step 3**. Refer to **Figure 35**.



1: Hardware removed from existing PLR @ 3
2: Standoff @ 5

Figure 35: *Remove Hardware*



1: Hardware removed from existing PLR @ 3

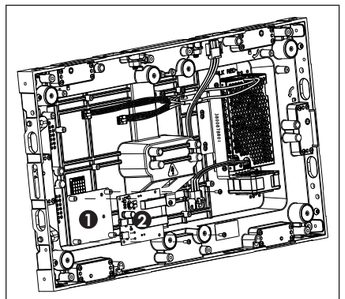
Figure 36: *Secure Second PLR*

2. Use a $^{1}/_{4}$" socket or nutdriver to secure the supplied standoffs (HE-1262) in the existing PLR. Hand-tighten to 5 in-lbs. Refer to **Figure 35**.
3. Position the second PLR on top of the existing PLR. Use a Phillips screwdriver to secure the hardware (HC-1012 @ 3) set aside from **Step 1** into the second PLR. Hand-tighten to 5 in-lbs. Refer to **Figure 36**.

Install Fiber Converter

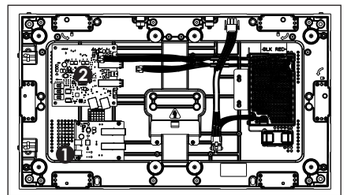
Refer to **DWG-3886297** and the steps below for installation details.

1. Use a Phillips screwdriver and the supplied hardware (Daktronics part number HC-1012 @ 2) to attach the fiber converter bracket (OS-3806526) to the panel. Refer to **Figure 37**. Hand-tighten to 5 in-lbs.



1: Fiber converter bracket
2: Fiber converter assembly

Figure 37: *Install Fiber Converter*



1: Power jack
2: PLR

Figure 38: *Connect Harness*

2. Use a Phillips screwdriver and the supplied hardware (HC-1012 @ 4) to attach the fiber converter assembly to the bracket. Refer to **Figure 37**. Hand-tighten to 5 in-lbs.
3. Connect the harness (W-3881316) to the fiber converter assembly and the PLR power jack (if a PLR is installed in the panel). Refer to **Figure 38**.

Interconnect Internal Fiber

Refer to the contract-specific Signal Interconnect Drawing and **Figure 39** for fiber routing locations.

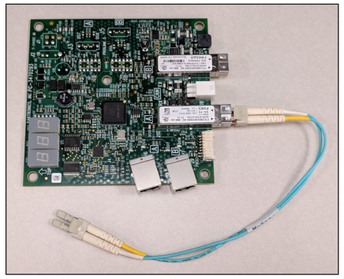


Figure 39: *PLR with Fiber*

Interconnect Internal Module Signal

Three signal cable assemblies are used: 18" cable assembly (Daktronics part number W-3768425) for signal connection from ProLink Router (PLR) to first module, 24" cable assembly (W-3768426) for horizontal signal connection from module to module, and 36" cable assembly (W-3768427) for vertical signal connection from module to module or module to PLR.

Refer to the contract-specific Signal Interconnect Drawing and **Figure 40** for signal routing locations.

1. Ensure power is disconnected from the display.

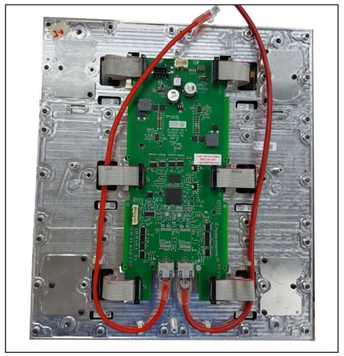
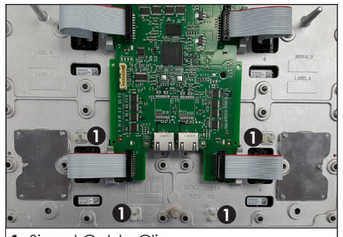


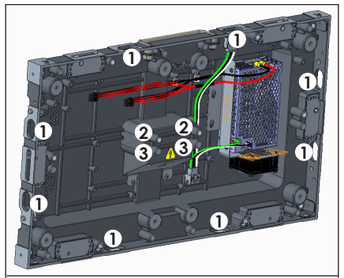
Figure 40: *Route Signal Cable*



1: Signal Cable Clip

Figure 41: *Clip Locations*

2. Insert the signal cable into the logic card and then attach the cable into the clips on the rear of the module. Refer to **Figure 41**.
3. Route the signal cable through the internal pass-through holes to the next module or within the panel. Refer to **Figure 42**. When routing the 24" cable assembly (W-3768426) horizontally from module to module, ensure the cable routes either between the top and bottom pegs or below the bottom pegs. Refer to **Figure 42**.



1: Signal Cable Pass-Through Hole
2: Top Peg
3: Bottom Peg

Figure 42: *Signal Cable*

Install Module

> **Note:** Handle the module with care. Ensure all four magnet switches on the module removal tool are disengaged before placing the tool on the module. If the tool is not properly attached prior to removing the module, the module can come free and drop.

The module removal tool is required for installation and removal of any module. Refer to **Figure 43**.

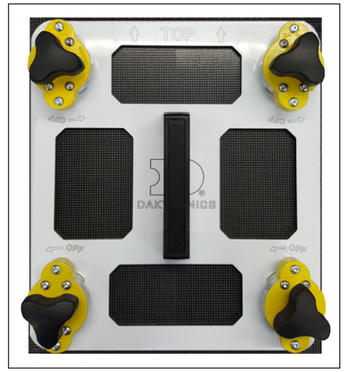


Figure 43: *Module Removal Tool*

Install horizontal signal cables onto the module before installation. Refer to **Interconnect Internal Module Signal (p.4)** and the contract-specific Signal Interconnect Drawing for signal routing locations.

1. Disconnect power from the display.
2. Place the module removal tool gently on the face of the LEDs with a single column of LEDs around the perimeter of the tool and TOP pointing toward the top of the module. Refer to **Figure 43**. Module orientation is visible on the rear of the module.
3. Turn each of the four magnet switches clockwise to engage the magnetic latches. An audible click sounds when the magnetic latches are engaged. If no click sounds, press and spin the switch counterclockwise, reposition, and then repeat. Ensure all four corners are engaged before installing the module.
4. Remove the masking tape from the magnets on the panel.
5. Connect the appropriate signal cables to the corresponding jacks on the rear of the module and push the signal cables into the clips on the rear of the module. Refer to the contract-specific Signal Interconnect Drawing and **Figure 41**.
6. Hold the module near the panel and connect and/or route the signal cables from the module:
   - For horizontal connections, route the cables horizontally through the notch in the center of the panel.
   - For vertical connections, route the cables vertically through the cutouts in the panel.
7. Connect the power cable to the power connector on the rear of the module:
   - If the module is on the left side of the panel, connect the longer cable from the power supply to the module.
   - If the module is on the right side of the panel, connect the shorter cable from the power supply to the module.

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8. Connect the ProLink Router (PLR) cable to the accessory jack on the rear of the module (if necessary) to provide power to the PLR.
9. Connect the fan power harness to the accessory cable connection when installing the right module (when viewed from the front). Refer to **Figure 34**.
10. Guide the module into position on the panel, aligning with the top and bottom pegs. Refer to **Figure 42**.
11. Verify the module is seated correctly on all sides and no cables interfere with the seating of the module before disengaging the module removal tool.
12. Turn each of the four magnet switches, one at a time, counterclockwise while the module is attached to the panel to disengage the magnetic latches.

Adjust Z-Axis Seam

1. Fire up the display to ensure it is functioning properly and the fiber and signal are routing correctly.
2. Mark which tiles need to be adjusted on a sheet of paper.
3. Disconnect power to the display and follow the steps in **Remove Tile (p.6)** to remove the tile from the module.
4. Turn the adjustment screw a $^{1}/_{2}$ turn counterclockwise with a $^{3}/_{32}$" Allen wrench until the screw touches the tile.

Note: The adjustment screw breaks free from the thread lock patch on the initial turn and will stick until it releases from the patch.

5. Turn the adjustment screw in $^{1}/_{8}$-turn increments until the alignment is satisfactory. Each $^{1}/_{8}$ turn adjusts the screw 0.1 mm.
6. Reverse the steps in **Remove Tile (p.6)** to install the tile in the module.
7. Fire up the display and verify all seam issues are resolved. If further adjustment is needed, repeat **Steps 2-6**.

Adjust X/Y Axis Seam

1.9 mm X/Y Axis Seam

Jigs are used for X/Y axis seam adjustment on 1.9 mm displays.

1. Fire up the display to ensure it is functioning properly and the fiber and signal are routing correctly.
2. Disconnect power to the display.
3. Place the first supplied jig (Daktronics part number TH-3926637) two rows below the center line (CL) (starting point) on the left side of the display. Align the jig with the corners of the tiles to be adjusted and snap the jig into place on the display face. Refer to **Figure 44**.

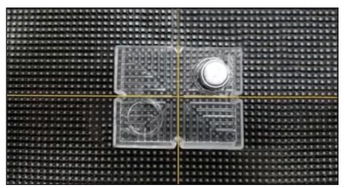


Figure 44: *Place Jig*

4. Install jigs in the first column from the starting point upward to the top of the display. Refer to **Figure 45**.

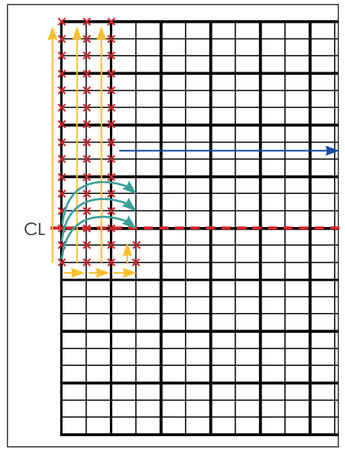


Figure 45: *Use Jigs for XY Axis Seam Adjustment*

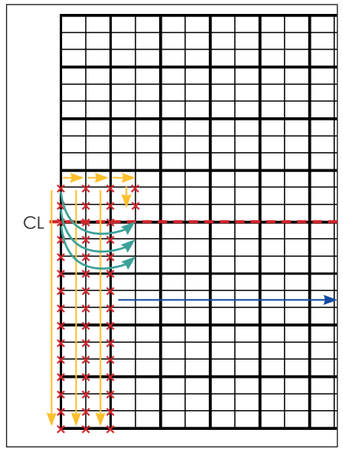


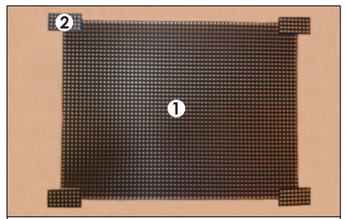
Figure 46: *Use Jigs for XY Axis Seam Adjustment*

5. Install a second column of jigs from the starting point upward to the top of the display. Refer to **Figure 45**.
6. Install a third column of jigs from the starting point upward to the top of the display. Refer to **Figure 45**.
7. Install two jigs in the fourth column of the display at the starting point. Refer to **Figure 45**.
8. Move the jigs from the first column to the fourth column, working from the starting point upward to the top of the display. Refer to **Figure 45**.
9. Use **Steps 4-8** to continue across the display. Refer to **Figure 45**.
10. Repeat **Steps 4-9**, working from two lines above the CL downward to the bottom of the display. Refer to **Figure 46**.

2.5 mm X/Y Axis Seam

Tile masks are used for X/Y axis seam adjustment on 2.5 mm displays.

1. Turn off power to the display.
2. Position a mask (Daktronics part number MP-4021294) over a tile. Refer to **Figure 47**. Ensure the mask does not span across a tile seam.
3. Press the mask onto the tile in all four corners, keeping the pressure uniform to minimize stress on the LEDs.



1: Mask
2: Mask jigging piece

Figure 47: *Tile Mask & Jigging Pieces*

Note: Do not slide fingers across the mask, as this can transfer skin cells and oils and leave a white streak on the face of the display.

4. Place the supplied mask roller (TH-4063718) firmly against the tile and slowly and consistently roll across the tile at a 45° angle. Refer to **Figure 48**. If the tile bends or deflects, reduce the pressure. Work from left to right, reverse the angle by 90°, and roll back from right to left.

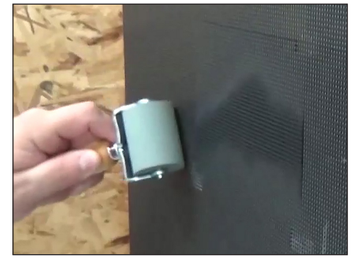


Figure 48: *Roll at 45° Angle*

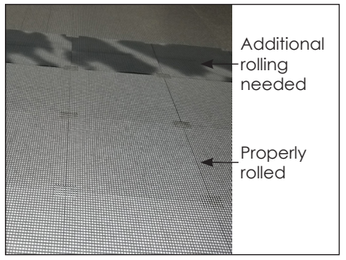


Figure 49: *Rolled Tile Mask*

5. Look at the display face from above or below the display and locate any bubbles in the mask. Refer to **Figure 49**. No bubbles should be visible when viewed from approximately a 10° angle. Roll out any bubbles.
6. Repeat **Steps 2-5** for each tile.
7. Power on the display and play standard content or a test pattern to check for any tile, module, or pixel issues.
8. Complete the steps in **Adjust Z-Axis Seam (p.5)**.
9. Locate the center of the display and visually divide the display into four quadrants. Refer to **Figure 50**.

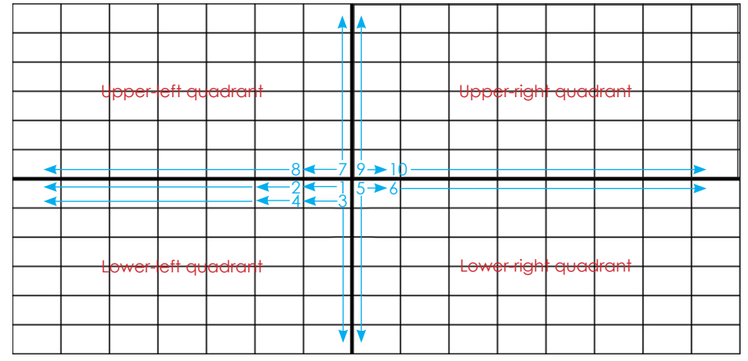


Figure 50: *Divide Display into Four Quadrants*

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10. Place mask jigging pieces (MP-4021293) in the corners of the tile spanning between four tiles. There should be a $^1/_2$ pixel space between the main mask and the jigging mask. Refer to **Figure 51**. Do not place jigging pieces around the perimeter of the display.

> **Note:** Do not use excessive force to apply the jigging pieces, as this can shear LEDs off if the tiles are not aligned enough.

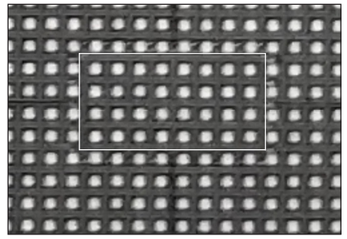


Figure 51: *Tile Mask Jigging Piece*

11. Place jigging pieces one by one from left to right in the lower-left quadrant. Refer to **Figure 50**.
12. Shift down a row and place jigging pieces one by one from left to right. Refer to **Figure 50**.
13. Repeat **Step 10** and **Step 11** for the other quadrants, always starting at the center of the display and working toward the left or right and then toward the top or bottom. Refer to **Figure 50**.
14. Cut a mask jigging piece (MP-4021293) in half horizontally or vertically with a scissors and remove the middle rib to create two top or bottom pieces. Repeat this step until there is a sufficient amount of pieces.
15. Cut a mask jigging piece (MP-4021293) in half horizontally and vertically with a scissors and then in half again horizontally and vertically to create four corner pieces.
16. Start at the vertical center seam and place the top perimeter jigging pieces. Repeat this step for the bottom perimeter jigging pieces.
17. Start at the horizontal center seam and place the left perimeter jigging pieces. Repeat this step for the right jigging pieces.
18. Place the corner jigging pieces.

Service

Remove Module

1.9 mm Module

Reverse the steps in **Install Module (p.4)** to remove a 1.9 mm module.

2.5 mm Module

1. Disconnect power to the display.
2. Locate the module to be removed and use the tile removal tool to remove the 10 mask jigging pieces between the tiles around the perimeter of the module. Refer to **Step 2** in **Remove Tile (p.6)**.

> **Note:** It might be necessary to rock the tile removal tool back and forth to disengage the jigging pieces.

3. Remove the tile with the tile mask from the display. Refer to **Remove Tile (p.6)**.
4. Reverse the steps in **Install Module (p.4)** to remove the module after all 10 jigging pieces are removed from the perimeter of the module.

Remove Tile

The tile removal tool is required for installation and removal of any tile. Each module has six tiles as shown in **Figure 52**. Ensure the tool is turned fully counterclockwise when not in use and when placing on the module face. Refrain from attaching the tile tool to any highly magnetic objects, as it is difficult to disengage the tool from these objects.

1. Disconnect power to the display.
2. Use the tile removal tool to remove the tile from the display.

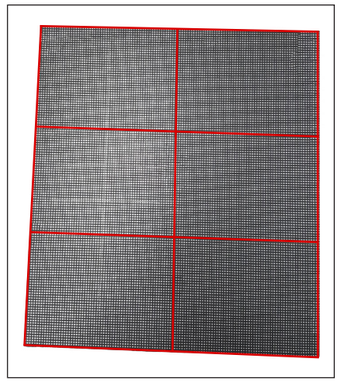


Figure 52: *Tiles on Module*

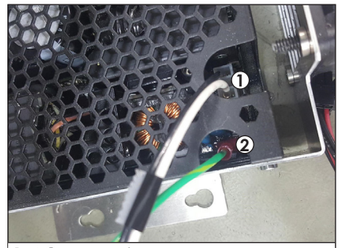
Figure 53: *Tile Removal Tool on Module*

   a. Place the disengaged tile tool flush on the tile to be removed and slowly turn the tool handle clockwise until fully depressed. Refer to **Figure 53**.
   b. Pull the tool straight off of the tile face slowly after the tool is fully engaged.
3. Remove the ribbon cable from the rear of the tile.

Reverse these steps to install a tile.

Remove Power Supply

1. Disconnect power to the display.
2. Remove the module on the right side of the panel (when viewed from the front) and disconnect the power and signal cables from the module. Refer to **Remove Module (p.6)**.
3. Pull the cables gently and rock the AC connector back and forth to disconnect the connector from the power supply. Refer to **Figure 54**.



1: AC connector
2: Female quick-disconnect connector

Figure 54: *Disconnect AC Connector & Female Quick-Disconnect Connector*

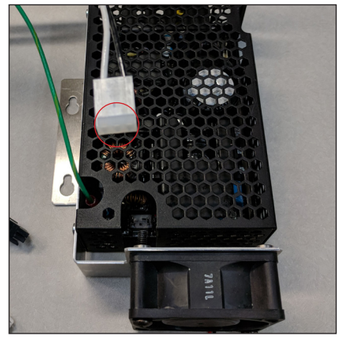
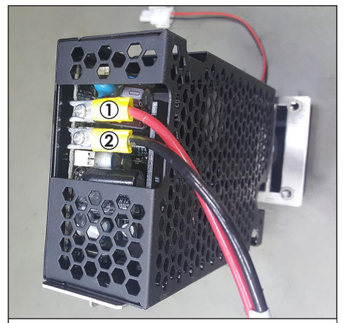


Figure 55: *Tab Orientation*

> **Note:** Take note of the tab orientation on the connector. The tab should be oriented toward the bottom of the power supply (when viewed from the front) during installation. Refer to **Figure 55**.

4. Disconnect the female quick-disconnect connector from the power supply. Refer to **Figure 54**.
5. Route the cabling away from the power supply.
6. Use a Phillips screwdriver to loosen the screws securing the power supply to the panel.
7. Slide the power supply assembly up on its keyed bracket to release from the panel. Lift the power supply slightly to access the terminal connectors.
8. Hold the power supply in place and use a Phillips screwdriver to loosen the terminal screws. Remove the terminal connectors and take note of the positive and negative connections. Refer to **Figure 56**.
9. Remove the power supply from the panel.
10. Use a Phillips screwdriver to remove the M3 screws securing the power supply to the bracket.



1: Positive 12 V
2: Negative 12 V

Figure 56: *Remove Terminal Connectors*

Reverse these steps to install a power supply.

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Flat Border

Tools

Part	Part Description
Cordless screw gun	Attaches borders to section
Flat-head bit or screwdriver	Removes top alignment pins
T-25 TORX® bit (Daktronics part number TH-1118)	Attaches borders

Identify Part

There are six different border sizes for the NPN-410X display series: one-, two-, three-, and four-module-high borders and two- and four-module-wide borders. The part numbers are etched into the metal on each border for identification purposes. Refer to the table below for part numbers and to **Figure 1** for a visual.

Figure 1: *Flat Border*

Part Number	Part Description
0M-3807592	Flat Border, Side, 1-High
0M-3807594	Flat Border, Side, 2-High
0M-3807596	Flat Border, Side, 3-High
0M-3807598	Flat Border, Side, 4-High
0M-3807600	Flat Border, Top/Bottom, 2-Long
0M-3807602	Flat Border, Top/Bottom, 4-Long

Install Border

Borders are attached either before the display is mounted to the structure or after if site conditions allow for tool clearance around the mounted display. If the borders must be installed before the sections, only one-module-high (Daktronics part number 0M-3807592) and two-module-wide (0M-3807600) borders are available. Borders longer than one module high or two modules wide must be installed after the display sections are mounted to the structure.

1. Remove the top alignment pins from the top row of panels. Refer to **Figure 2**.
2. Select the correct border size according to the Shop Drawing.
3. Use a clean rag to wipe off the perimeter of the panel receiving the border.

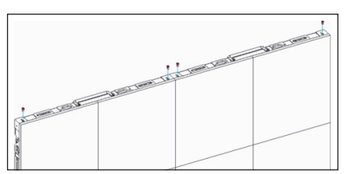

Figure 2: *Prepare Top Row of Panels*

4. Bring the border into position. The holes should be oriented toward the front of the display to align with the threaded holes in the panels. Refer to **Figure 3**.

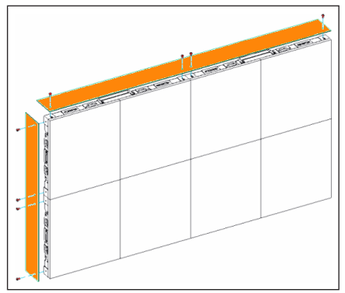

Figure 3: *Install Flat Border*

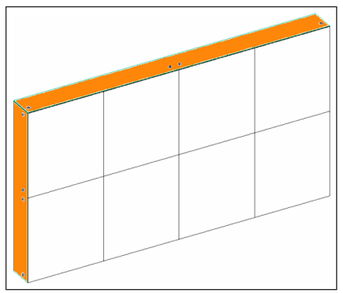

Figure 4: *Attached Flat Border*

5. Use a $^{1}/_{4}$" T-25 TORX® bit (TH-1118) to remove the M5-0.8 x 10 mm machine screws (HC-3809581) to fasten the border to the panel perimeter in all pre-punched hole locations on the border. Each panel has threaded holes for borders on all four sides. Refer to **Figure 4** for the finished appearance.

Light Sensor

Install Mounting Bracket

Border modifications are required for light sensors. Drill a 0.5" diameter hole 1" from the front of the border and either 9.132" from the top of the border or 4.375" from the bottom. Refer to **Figure 5** and **DWG-3898915** for details.

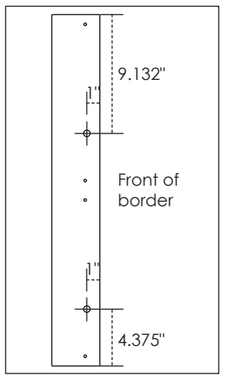

Figure 5: *Modify Border for Light Sensor*

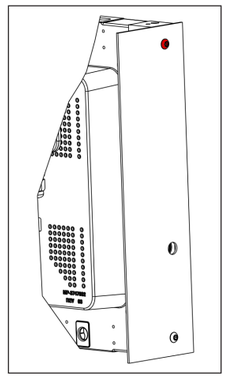

Figure 6: *Remove Machine Screw*

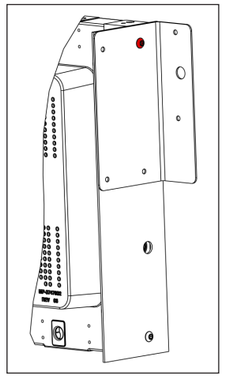

Figure 7: *Position Mounting Bracket*

1. Use a $^{1}/_{4}$" T-25 hex bit (TH-1118) to remove the M5-0.8 x 10 mm machine screw (Daktronics part number HC-3809581) above the panel mount location and set the screw aside for **Step 2**. Refer to **Figure 6**.
2. Position the mounting bracket on the border, aligning the top-right hole of the bracket with the hole on the border where the screw was removed in **Step 1**. Use a $^{1}/_{4}$" T-25 hex bit (TH-1118) to secure the M5-0.8 x 10 mm machine screw (HC-3809581) from **Step 1** into the hole. Refer to **Figure 7**.
3. Use a $^{5}/_{16}$" socket/driver to install a #10-16 x 0.75 TEK screw (HC-1530) through the bottom-right hole in the bracket. Refer to **Figure 8**.

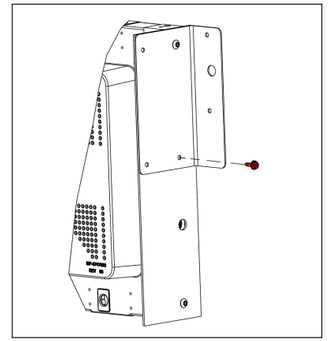

Figure 8: *Install TEK Screw*

Install Light Sensor

Refer to **DWG-3898915**, **DWG-3887723**, and the steps below for installation details.

1. Ensure the display is physically mounted with power and signal installed.
2. Ensure power is disconnected from the display.
3. Mount the light sensor in a suitable location.
   a. Use a Phillips screwdriver to remove the two #8-32 x 0.500 machine screws (HC-1144) in the light sensor and set the screws aside for **Step 3.b**. Refer to **Figure 9**.

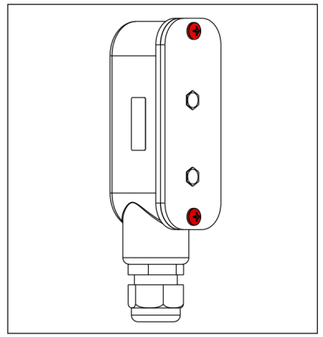

Figure 9: *Remove Light Sensor Screws*

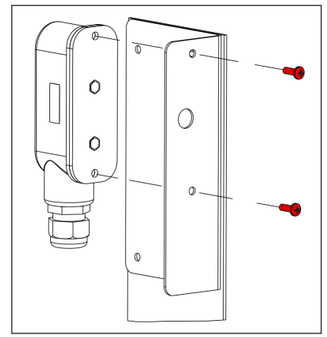

Figure 10: *Position Light Sensor on Mounting Bracket*

   b. Position the light sensor on the flange of the mounting bracket and secure the sensor in place with the two screws from **Step 3.a**. Refer to **Figure 10**.
4. Locate the PLR closest to the light sensor mounting location and connect the light sensor. Only one light sensor can be connected to each PLR.
   a. Connect the four-pin plug (W-3884831) to the PLR.
   b. Mount the panel mount M12 jack (W-3884831) per **DWG-3898915**. Wrap and secure the excess cable.
5. Connect the light sensor harness (W-2532) to the panel mount M12 jack installed in **Step 4**. Refer to **Figure 11**.
6. Secure the cables as needed.

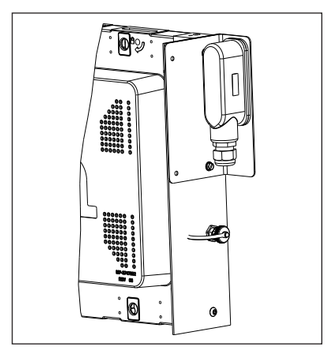

Figure 11: *Connect Light Sensor to Panel Mount Jack*

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B Reference Drawings

Refer to **Numbering Conventions (p.1)** for information regarding how to read the drawing number.

These drawings offer general information pertaining to most NPN-4100 series displays and are listed in numeric order. Any contract-specific drawings take precedence over the general drawings.

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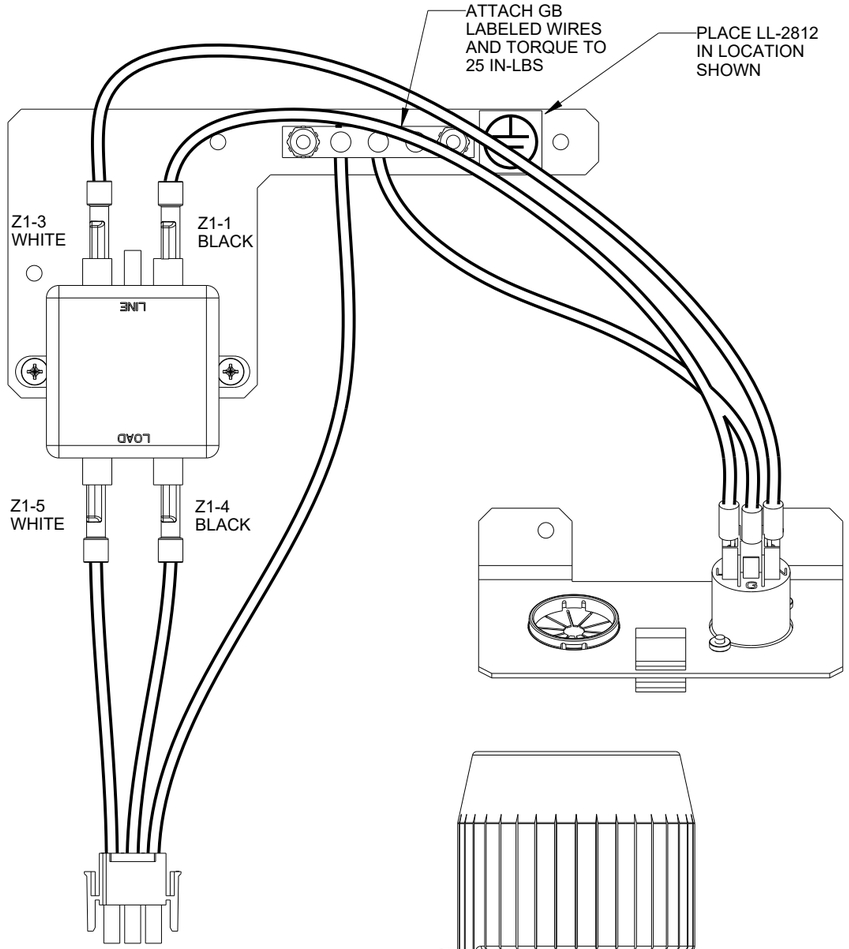
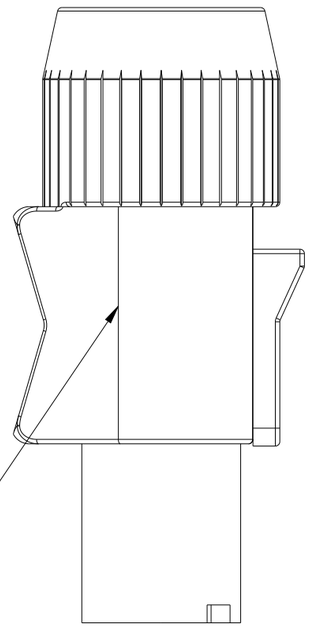
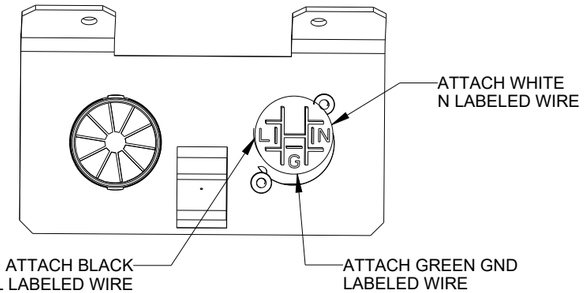
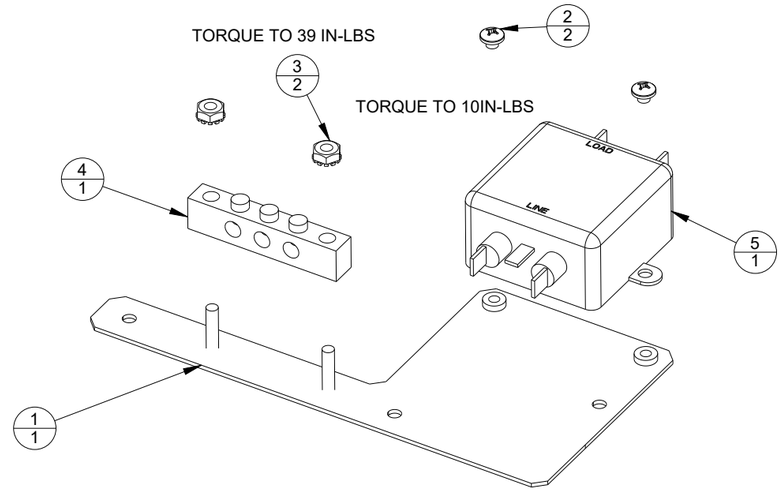
0A-2035-7005 ASSEMBLY



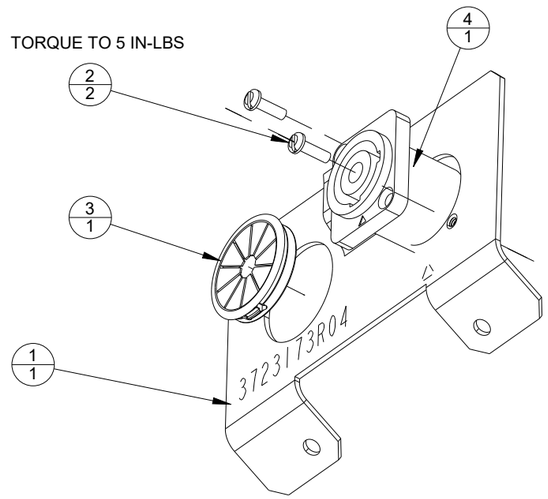


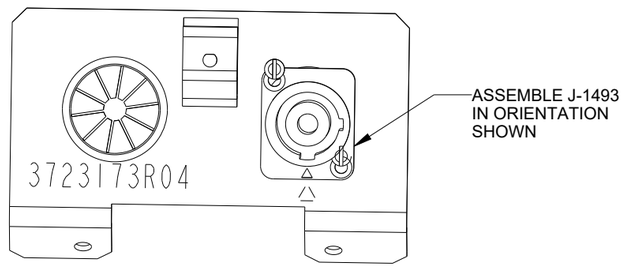
**SHIP P-1351 @ 1
AND HC-1012@3
WITH
0A-2035-7005**





NPN_4100_POWER_ENTER_ASM			
INDEX	NAME	QTY	DESCRIPTION
1	0S-3747250	1	ELEC COMP PLATE; NPN-A1
2	HC-1195	2	MACH SCR; #8-32 X 0.125, PHIL PAN HD, BLK ZN PLTD
3	HC-1375	2	NUT; #8-32 HEX KEPS, 18-8 SS
4	TB-1203	1	GROUND BAR, WS #6TO14, SLOTTED SET SCREW,3POS,WET
5	Z-1007	1	FILTER; RFI LINE, B SERIES 20 AMP





NPN_4100_POWER_ENTER_ASM			
INDEX	NAME	QTY	DESCRIPTION
1	0S-3723175	1	POWER ENTRANCEPLATE; DVN-I1
2	HC-1004	2	MACH SCR, #4-40 X 0.375, PHIL PAN HEAD, ZN PLTD
3	HE-3770201	1	HEYCO BUSHING, 1.093" DIA, BLACK
4	J-1493	1	JACK; 3 PIN FEM, CIRC, POWERCON, NEUTRIK, POWER IN

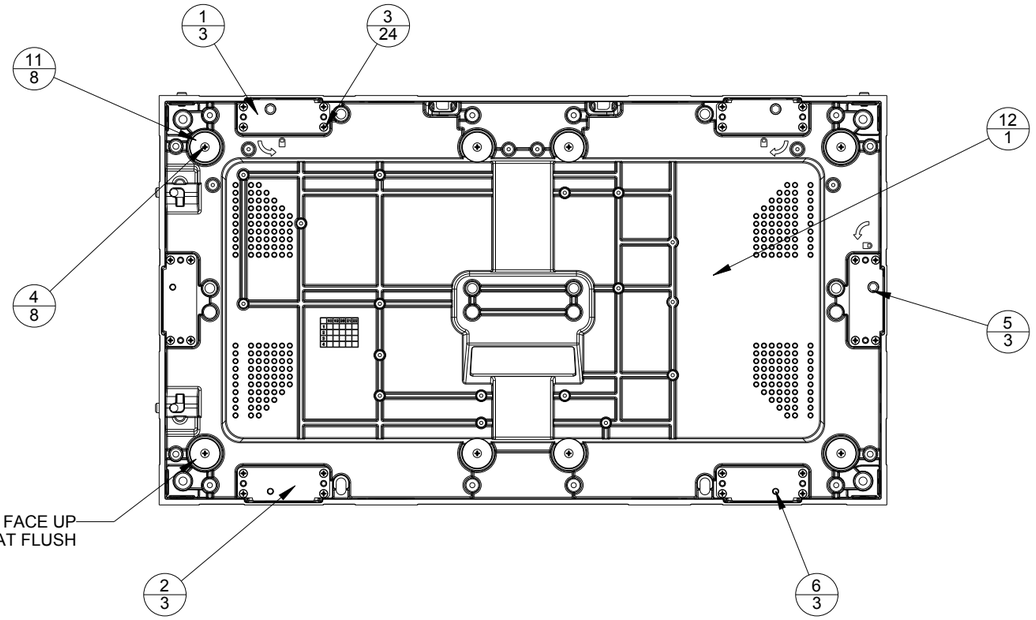
REV	DATE:		BY:
01	27 MAR 18	EC-51974 UPDATED NOTES FOR WIRE PLACEMENT TO ALSO SHOW WIRE COLOR	BLF

THIRD ANGLE PROJECTION

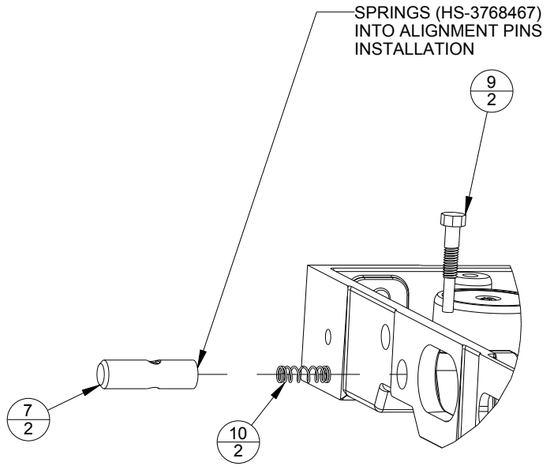
PROJECT:	NPN-4100			
TITLE:	NPN 4100 POWER ENTRY ASSEMBLY			
DATE:	22-MAR-18	DIM UNITS: INCHES [MILLIMETERS]	SHEET	REV
SCALE:	VARIES	DO NOT SCALE DRAWING	1 OF 1	01
DESIGN:	BFOLKER	JOB NO. / FUNC - TYPE - SIZE		
DRAWN:	BFOLKER	P2035 / E - 07 - B	3796624	

Part # - DWG-03796624 | Version - 01.2 | Description - NPN 4100 POWER ENTRY ASSEMBLY | Lifecycle State - Full Production | Last Modified By - bshort | Last Modified - 2019-08-05

0A-2035-0112			
INDEX	NAME	QTY	DESCRIPTION
1	0M-3723181	3	DRAW LATCH COVER; DVN I1
2	0M-3723183	3	DRAW PIN COVER; DVN I1
3	HC-1012	24	MACH SCR, #6-32 X 0.375, PHIL PAN HEAD, ZN PLTD
4	HC-1447	8	MACH SCR, #6-32 X 0.500, PHIL FLAT HEAD, SS,
5	HS-3768461	3	LATCH, ROTATING DRAW LATCH, ZNC PLTD
6	HS-3768463	3	LATCH PIN; NPN A1
7	HS-3768464	2	SIDE ALIGNMENT PIN; NPN A1
8	HS-3768465	2	TOP ALIGNMENT PIN; NPN A1
9	HS-3768466	2	SIDE ALIGNMENT PIN HANDLE; NPN A1
10	HS-3768467	2	SPRING, COMPRESSION, 0.75" L X 0.181" OD SS
11	MA-3746420	8	MAGNET, RING, 1" OD, 0.125" THICK, POLYMAGNET 1002090
12	MP-3747032	1	PANEL; 1X2; NPN A1

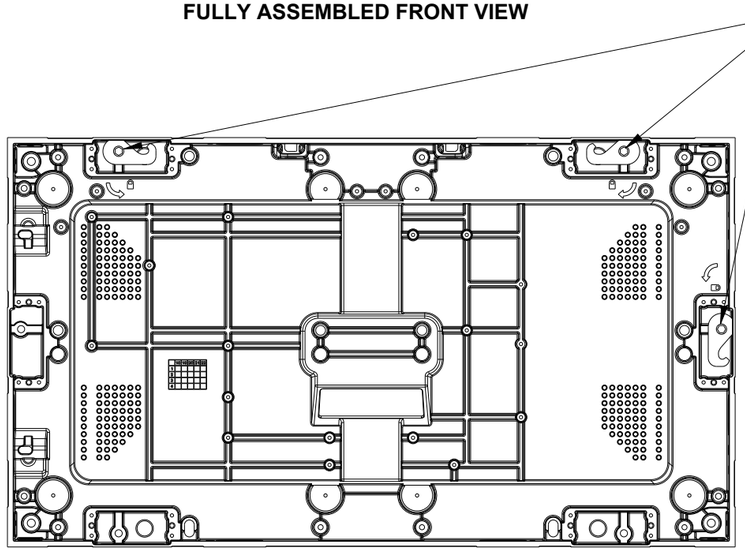


FULLY ASSEMBLED FRONT VIEW

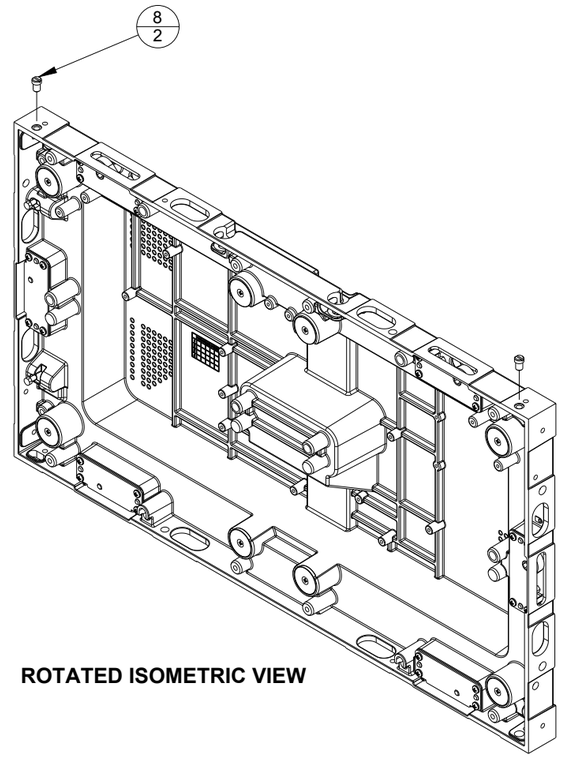


DETAIL B
SCALE 3/5

SIDE ALIGNMENT SPRING PIN ASSEMBLY



DRAW LATCH ORIENTATION FRONT VIEW



ROTATED ISOMETRIC VIEW

PART #	TORQUE
HC-1012	15 IN/LBS
HC-1447	5 IN/LBS
HS-3768465	15 IN/LBS
HS-3768466	5 IN/LBS

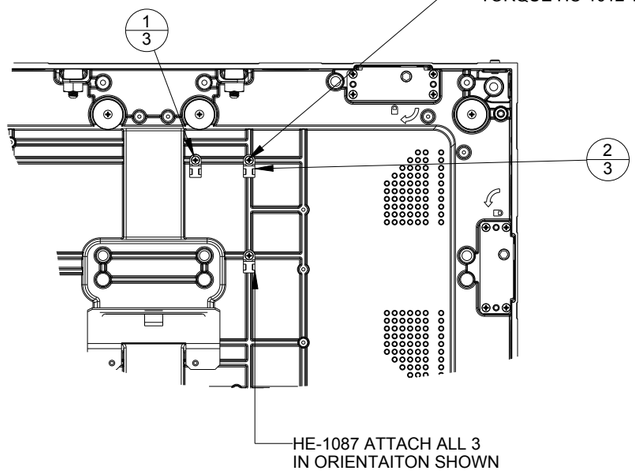
REV	DATE:		
04	1 MAR 19	CN-74272: MOVED JACKING HARDWARE BACK TO PBOM	KRM
03	31 MAY 18	CN-57245: REMOVED THE HANDLE (HS-3768462) FROM THE ASSEMBLY	KRM
02	27 MAR 18	CN-52209: ADDED JACKING HARDWARE HC-3802592 TO 0A AND REMOVED FROM PBOM	KRM

THIRD ANGLE PROJECTION

PROJECT:	NPN A1 (4100)		
TITLE:	HARDWARE ASSY; 1X2; NPN A1		
DATE:	01-MAR-19	DIM UNITS: INCHES [MILLIMETERS]	SHEET 1 OF 1 / REV 04
SCALE:	1/5	DO NOT SCALE DRAWING	
DESIGN:	KMOORE	JOB NO. P2035 / FUNC - TYPE - SIZE E - 07 - B	3818316
DRAWN:	KMOORE		

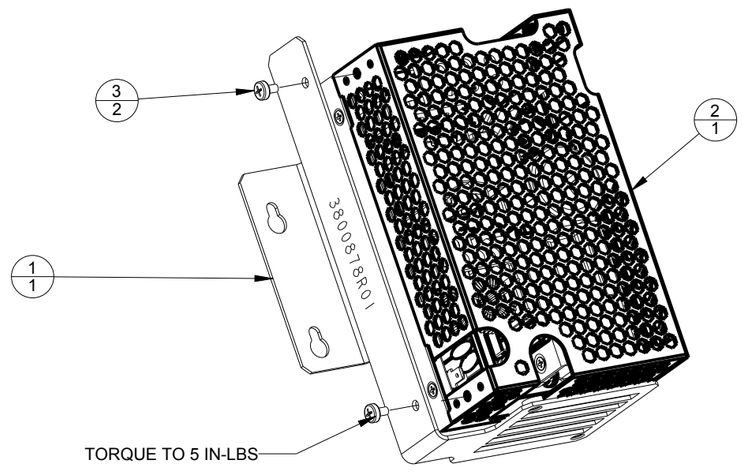
Part # - 0A-2035-0112 | Version - 00.10 | Description - HARDWARE ASSY; 1X2; NPN A1 | Lifecycle State - Full Production | Last Modified By - khemill | Last Modified - 2019-03-01

ZIP TIE ANCHOR ATTACHMENT



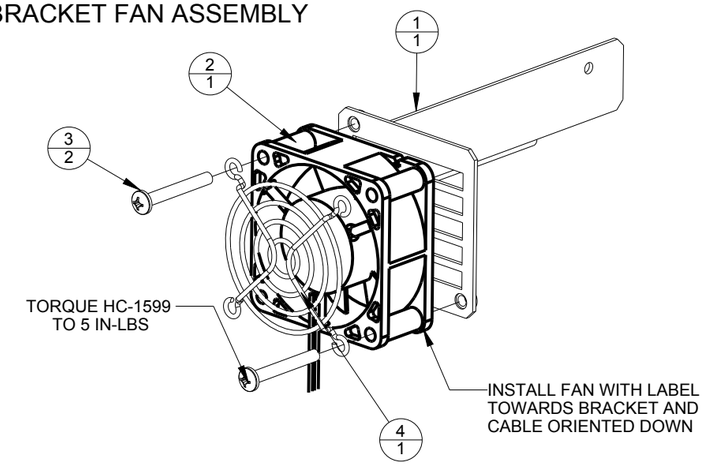
0A-2035-2112			
INDEX	NAME	QTY	DESCRIPTION
1	HC-1012	3	Screw; 6-32x3/8 Phillips Pan Head, Plated
2	HE-1087	3	CABLE TIE ANCHOR, MOUNTS ALL SIZES OF

BRACKET ATTACHMENT



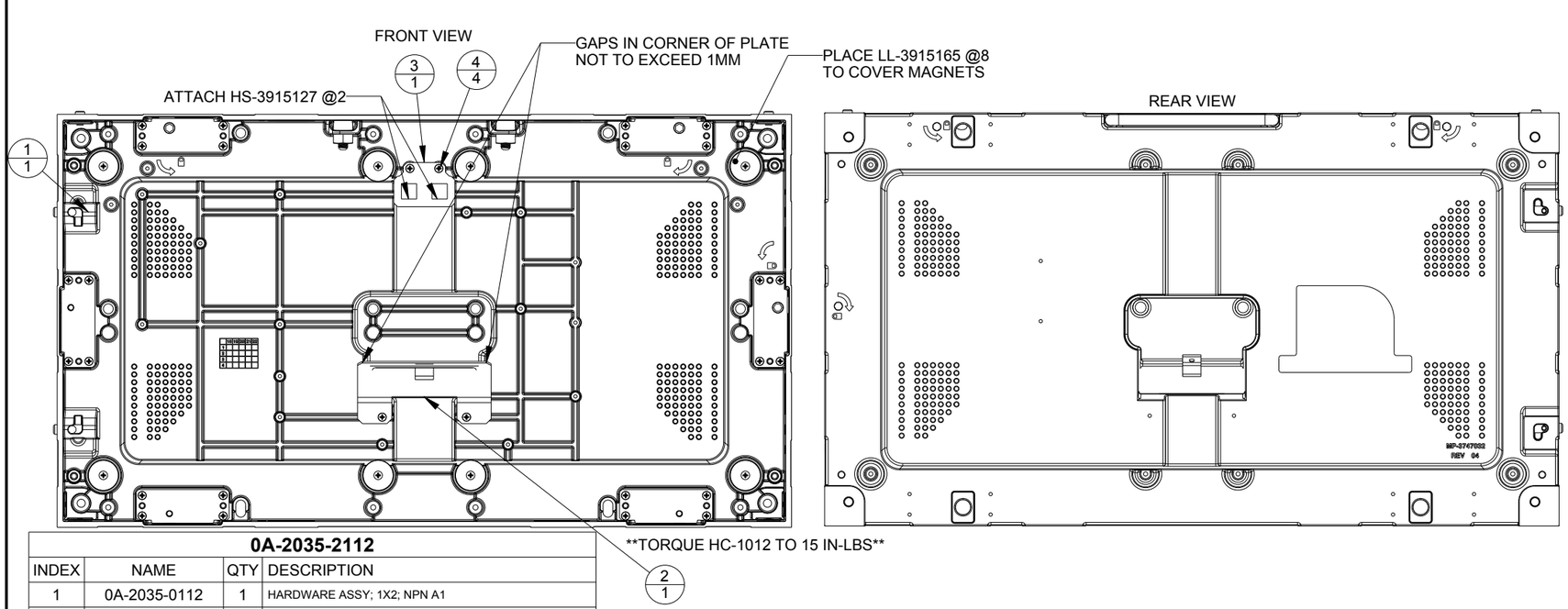
0A-2035-2112			
INDEX	NAME	QTY	DESCRIPTION
1	0S-3800879	1	PWR SUP PLATE W/ FAN; NPN A1
2	A-3769580	1	POWER SUPPLY; 12V 90-264VAC, 400W
3	HC-3809582	2	MACH SCR, M3-0.5 X 5, PHIL PAN HEAD, ZN PLTD

BRACKET FAN ASSEMBLY



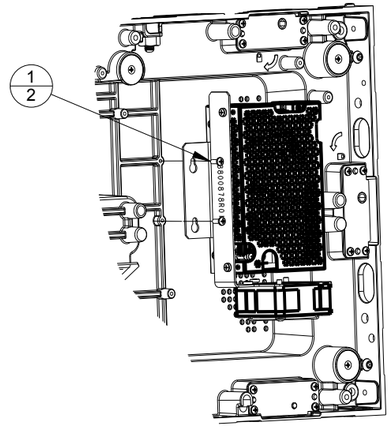
0A-2035-2112			
INDEX	NAME	QTY	DESCRIPTION
1	0S-3800879	1	PWR SUP PLATE W/ FAN; NPN A1
2	B-1103	1	AXIAL FAN;60X60X25,14CFM,12VDC, .085A,ENCAPSULATED
3	HC-1599	2	MACH SCREW, #8-32 X 1.250, PHIL PAN HD ZN PLTD
4	HS-2356	1	FINGER GUARD; FOR 60X60 FANS, BLACK PWDR CTD

PANEL BLANK POWER/SIGNAL & LANYARD PLATE ASSEMBLY



0A-2035-2112			
INDEX	NAME	QTY	DESCRIPTION
1	0A-2035-0112	1	HARDWARE ASSY; 1X2; NPN A1
2	0M-3802728	1	BLANK ENTRANCE PLATE; NPN A1
3	0M-3842400	1	LANYARD ATTACHMENT BRKT; NPN A1
4	HC-1012	4	Screw; 6-32x3/8 Phillips Pan Head, Plated
5	LL-3915165	8	ADHESIVE PROTECTIVE COVER
6	HS-3915127	2	LANYARD, CLIP-CLIP, 300MM, COATED, SS304

POWER SUPPLY ASSEMBLY ATTACHMENT TO PANEL



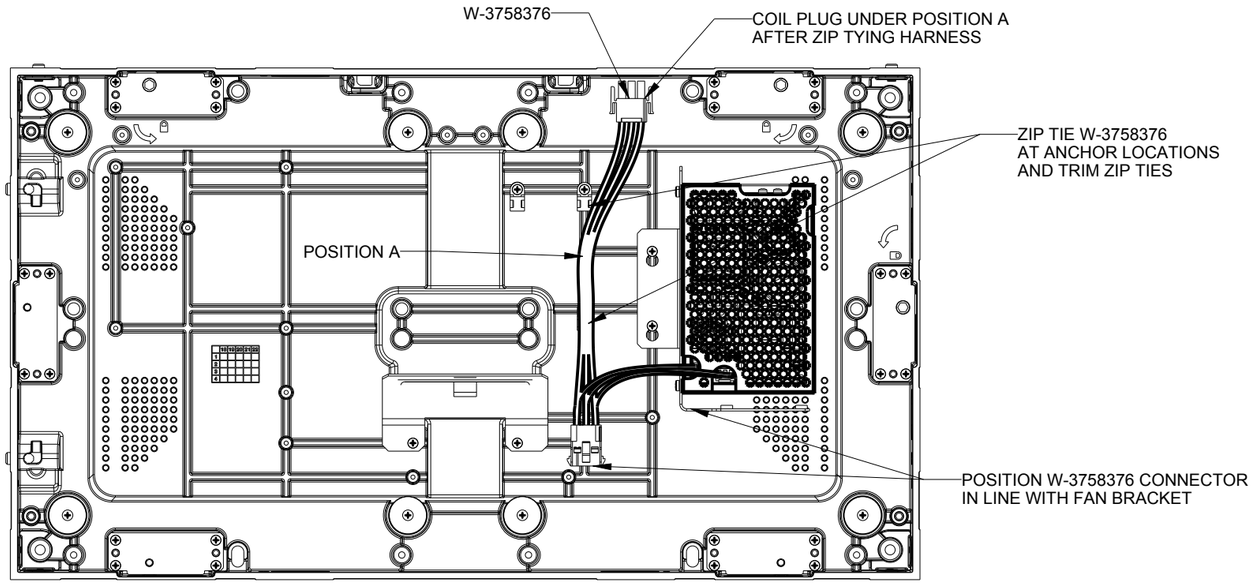
0A-2035-2112			
INDEX	NAME	QTY	DESCRIPTION
1	HC-1012	2	Screw; 6-32x3/8 Phillips Pan Head, Plated

REV	DATE	DESCRIPTION	BY
02	21 MAY 18	CN-56720 ADDED LANYARDS AND MAGNET COVERS	KRM
REV 01	DATE: 27 MAR 18	CN-51436: CHANGED FAN AND ZIP TIE ANCHOR TORQUES AND UPDATED FAN INSTALL TO USE TWO SCREWS VS FOUR	BY: KRM

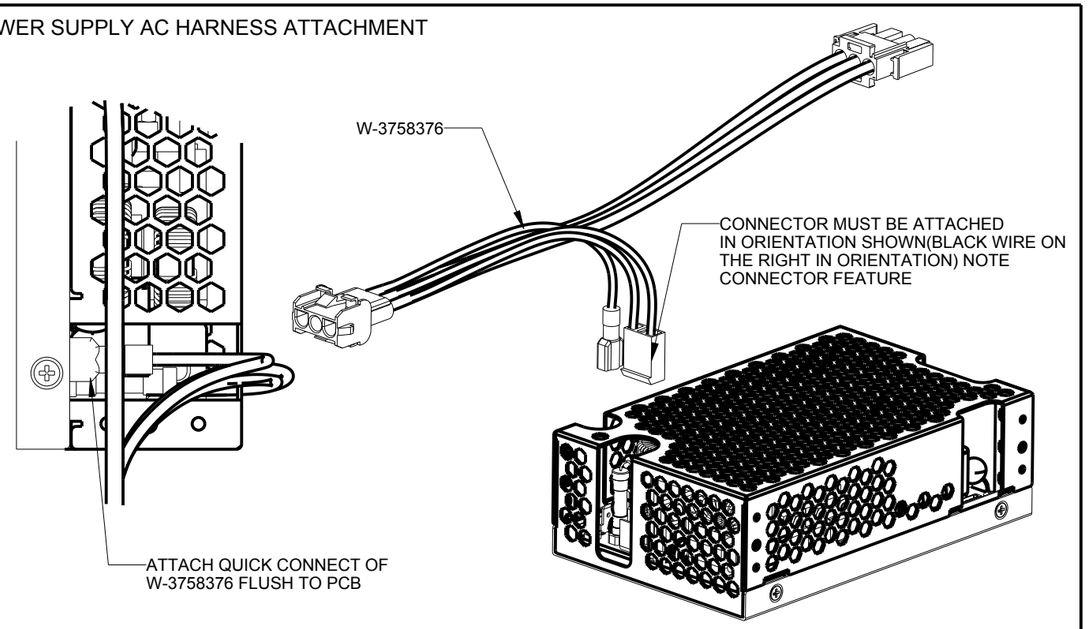
THIRD ANGLE PROJECTION

PROJECT:	NPN-4100		
TITLE:	FINAL ASSY ELEC COMP; 1X2; NPN A1		
DATE: 21-MAY-18	DIM UNITS: INCHES [MILLIMETERS]	SHEET	REV
SCALE: 1/8	DO NOT SCALE DRAWING	1 OF 1	02
DESIGN: BFOLKER	JOB NO. P2035	FUNC - TYPE - SIZE E - 07 - B	3818317
DRAWN: BFOLKER			

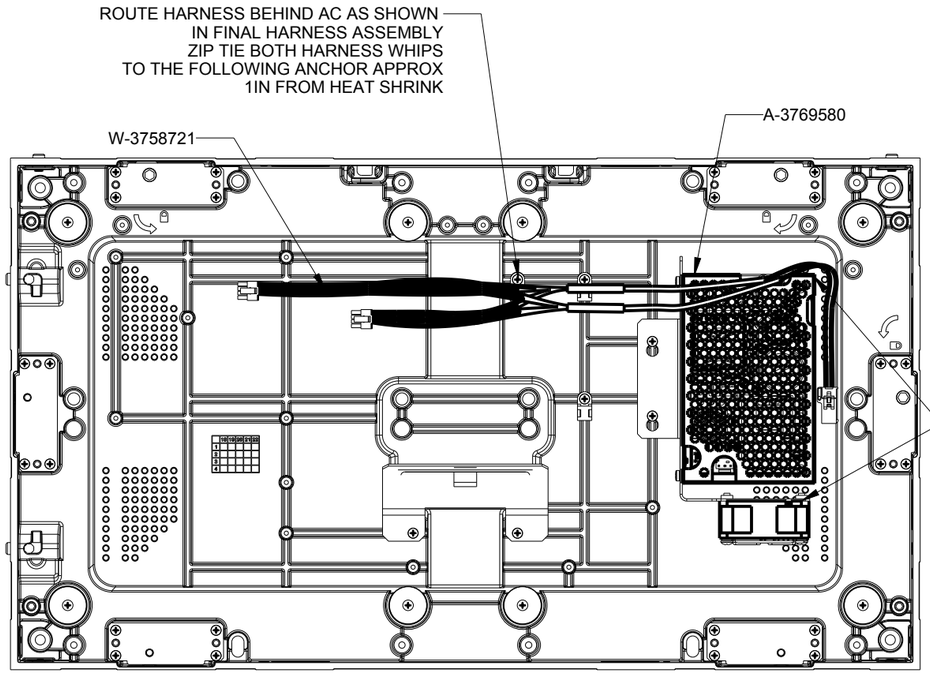
AC HARNESS ATTACHMENT TO PANEL



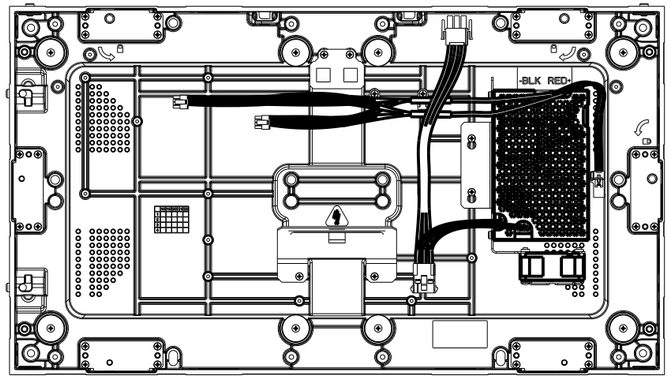
POWER SUPPLY AC HARNESS ATTACHMENT



DC HARNESS ATTACHMENT TO PANEL AND FAN HARNESS ROUTING

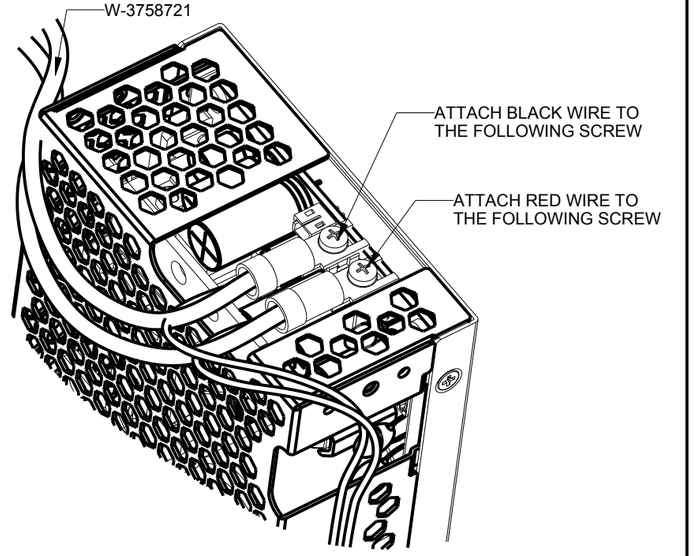


FINAL HARNESS ASSEMBLY



POWER SUPPLY DC HARNESS ATTACHMENT

TORQUE SCREW TO 5 IN-LBS



REV	DATE:		BY:
02	11 JUN 18	CN-57682 CHANGED OUT DC HARNESS W-3758721 TO INCLUDE FAN HARNESS. REMOVED OLD FAN HARNESS.	JWW
01	27 MAR 18	EC-51974UPDATED NOTES FOR WHERE TO ZIP TIE AC HARNESS ADDED VIEW FOR FINAL WIRING TO SHOW WHERE DC HARN NEEDS TO BE ROUTED	BLF

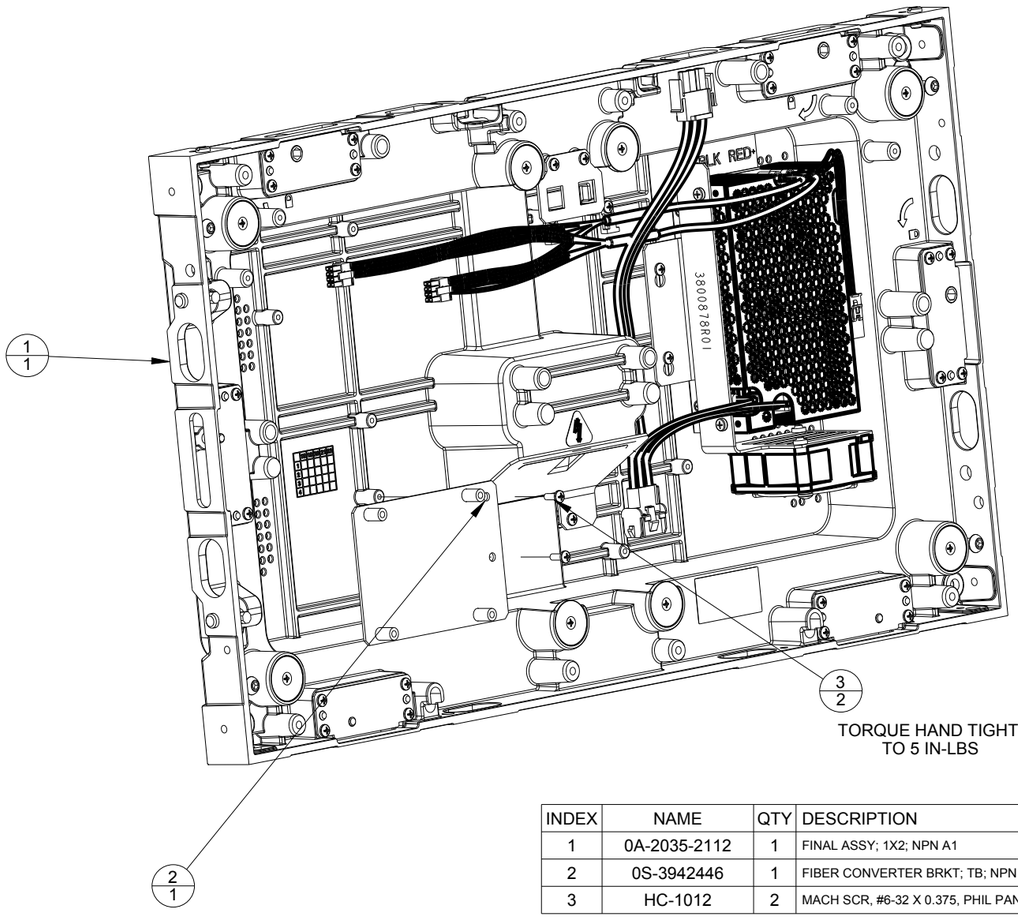
DAKTRONICS

THIRD ANGLE PROJECTION

PROJECT:	NPN-4100			
TITLE:	FINAL ASSY HARN; 1X2; NPN A1			
DATE: 11-JUN-18	DIM UNITS: INCHES [MILLIMETERS]		SHEET	REV
SCALE: 277/3600	DO NOT SCALE DRAWING		1 OF 1	02
DESIGN: BFOLKER	JOB NO.	FUNC - TYPE - SIZE	3818319	
DRAWN: BFOLKER	P2035	E - 07 - B		

NPN-FIBER CONVERTER PANEL

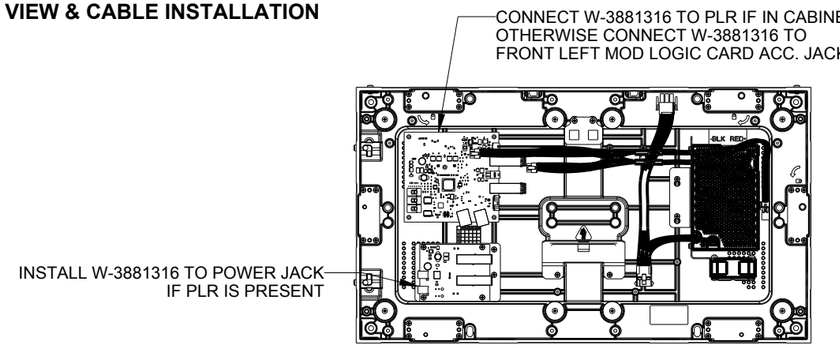
STEP 1 - COMBINE PLATE ASSEMBLY TO PANEL



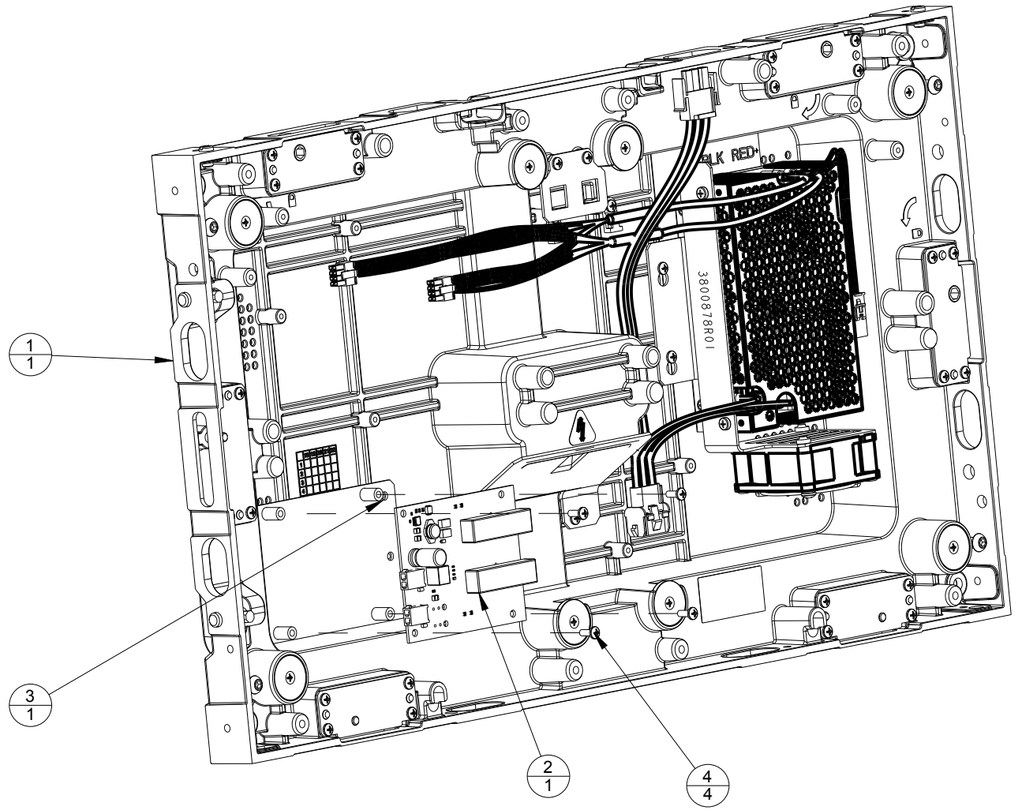
TORQUE HAND TIGHT
TO 5 IN-LBS

INDEX	NAME	QTY	DESCRIPTION
1	0A-2035-2112	1	FINAL ASSY; 1X2; NPN A1
2	0S-3942446	1	FIBER CONVERTER BRKT; TB; NPN A1
3	HC-1012	2	MACH SCR, #6-32 X 0.375, PHIL PAN HEAD, ZN PLTD

FINAL VIEW & CABLE INSTALLATION



STEP 2 - COMBINE FIBER CONVERTER ASSEMBLY TO PLATE



TORQUE HAND TIGHT
TO 5 IN-LBS

INDEX	NAME	QTY	DESCRIPTION
1	0A-2035-2112	1	FINAL ASSY; 1X2; NPN A1
2	0P-1273-0062	1	COATED; FIBER OPTIC CONVERTER
3	0S-3942446	1	FIBER CONVERTER BRKT; TB; NPN A1
4	HC-1012	4	MACH SCR, #6-32 X 0.375, PHIL PAN HEAD, ZN PLTD

REV	DATE:		BY:	

DAKTRONICS

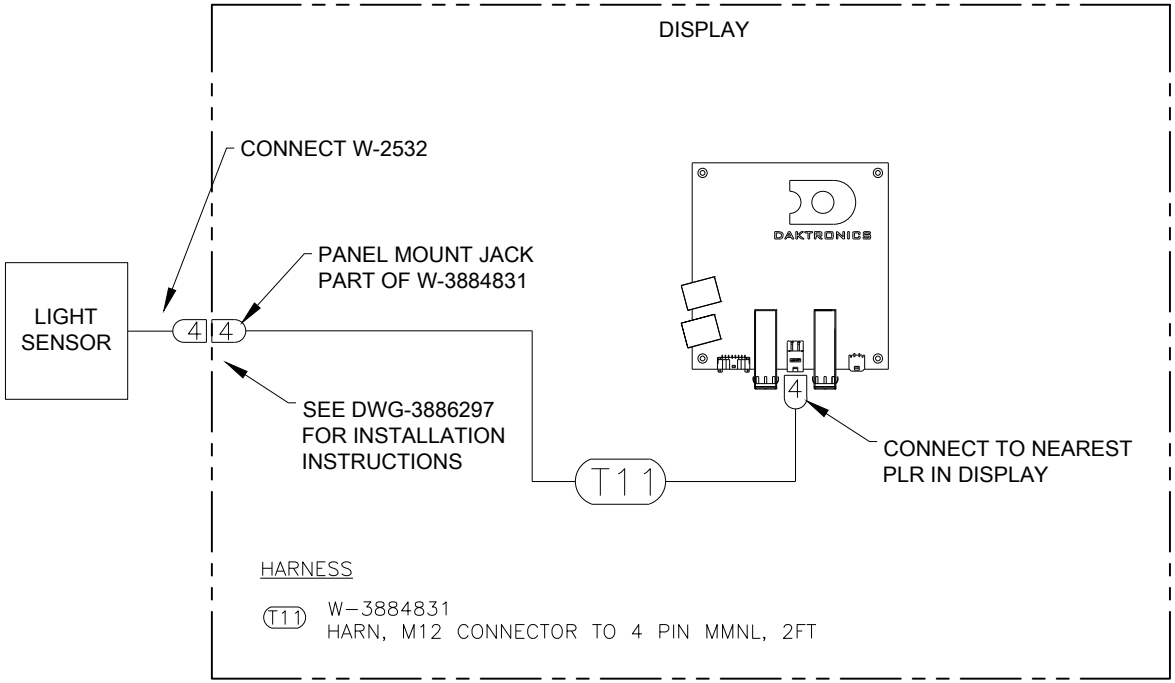
THIRD ANGLE PROJECTION

PROJECT:	NPN-4100			
TITLE:	NPN_A1_FIBER_CONVERTER_PANEL			
DATE:	05-APR-18	DIM UNITS: INCHES [MILLIMETERS]	SHEET	REV
SCALE:	NTS	DO NOT SCALE DRAWING	1 OF 1	00
DESIGN:	JWOODRA	JOB NO. / FUNC - TYPE - SIZE	3886297	
DRAWN:	JWOODRA	P2035 / E - 07 - B		

Part # - DWG-03886297 | Version - 00.1 | Description - N B NPN_A1_FIBER_CONVERTER_PANEL | Lifecycle State - Full Production | Last Modified By - jwoodra | Last Modified - 2018-04-05

INSTALLATION NOTES

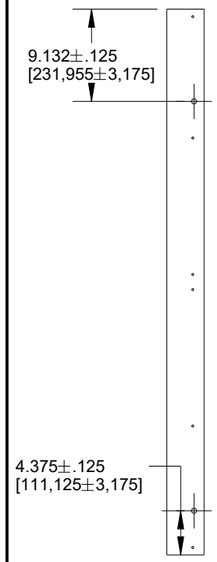
1. ENSURE DISPLAY IS PHYSICALLY MOUNTED, WITH POWER AND SIGNAL INSTALLED.
2. ENSURE POWER IS OFF BEFORE MAKING ANY ELECTRICAL AND SIGNAL TERMINATIONS.
3. CHOOSE A SUITABLE LOCATION FOR MOUNTING THE LIGHT SENSOR AND MOUNT AS NOTED (SEE MOUNTING DETAILS DRAWING).
4. LOCATE THE NEAREST PLR INSIDE OF THE DISPLAY IN REFERENCE TO THE MOUNTED LIGHT SENSOR. ONLY ONE SENSOR CAN BE CONNECTED TO EACH PLR.
5. CONNECT THE SENSOR AS DETAILED ON THIS DRAWING STARTING WITH CONNECTING W-3884831 TO THE PLR AND THEN MOUNTING THE OTHER END OF THE CABLE AS DETAILED IN THE MOUNTING DETAILS DRAWING.
6. PLUG SENSOR INTO THE PANEL MOUNTED M12 JACK INSTALLED IN STEP 5.
7. SECURE THE CABLES AS NEEDED.



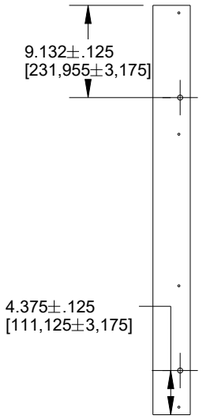
THIRD ANGLE PROJECTION

PROJECT:	NPN-4100				
TITLE:	BLOCK DIAGRAM; NPN-4100 W/ LIGHT SENSOR				
DATE:	02 APR 18	DIM UNITS:	INCHES [MILLIMETERS]	SHEET	REV
SCALE:	NTS		DO NOT SCALE DRAWING		00
DESIGN:	JWOODRA	JOB NO.	FUNC - TYPE - SIZE	3887723	
DRAWN:	JWOODRA	P2035	F - 10 - A		

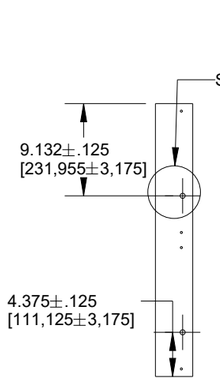
BORDER MODIFICATIONS FOR SINGLE DIRECTION LIGHT SENSOR



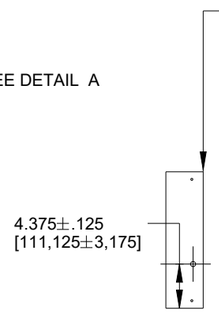
LEFT SIDE
4 HIGH BORDER



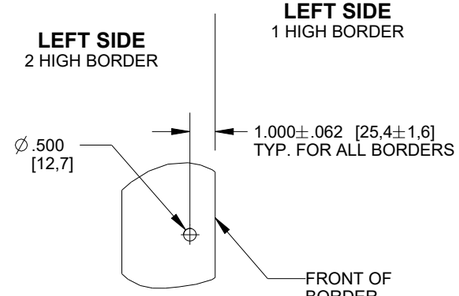
LEFT SIDE
3 HIGH BORDER



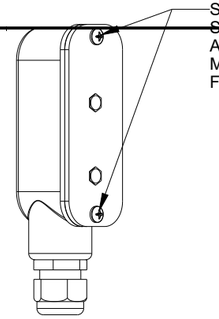
LEFT SIDE
2 HIGH BORDER

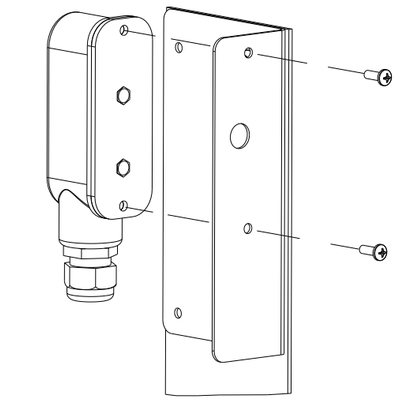


LEFT SIDE
1 HIGH BORDER

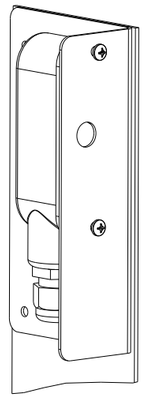


PANEL MOUNTING
DETAIL A
SCALE 1/6

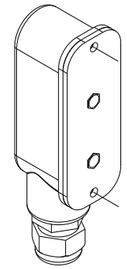




ROTATED FRONT VIEW
LIGHT SENSOR ASSEMBLY

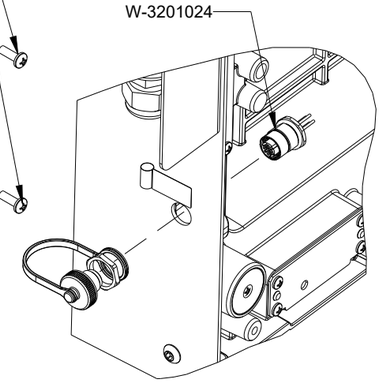


ROTATED FRONT VIEW
LIGHT SENSOR TO BRACKET EXPLODED
SCALE 1/3

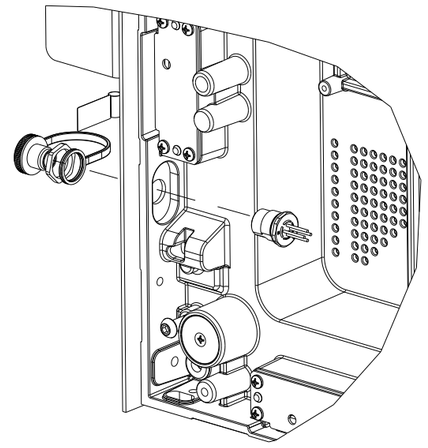


ROTATED FRONT VIEW
LIGHT SENSOR SCREW REMOVED
SCALE 1/3

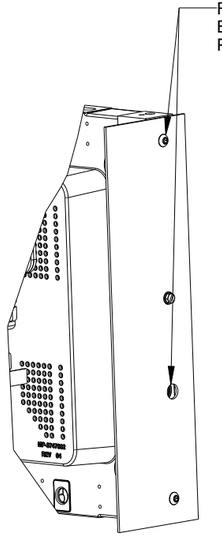
ROTATED FRONT VIEW
LIGHT SENSOR TO BRACKET ASSEMBLED
SCALE 1/3



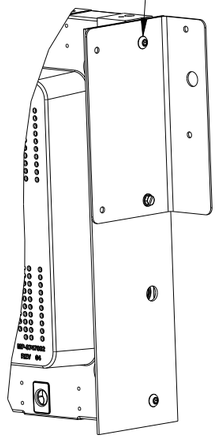
FRONT ROTATED VIEW
PANEL MOUNT JACK EXPLODED
EXTERIOR BOTTOM LEFT
SCALE 1/3



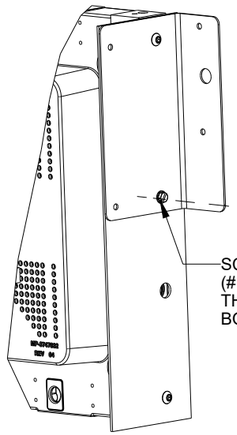
FRONT ROTATED VIEW
PANEL MOUNT JACK EXPLODED
INTERIOR BOTTOM LEFT
SCALE 1/3



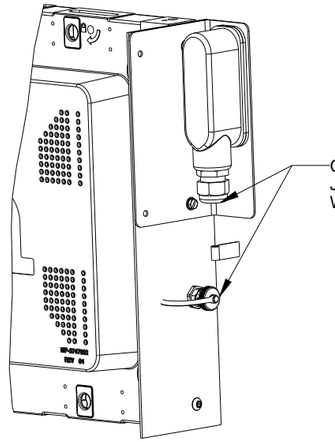
ROTATED REAR VIEW
BORDER ATTACHED
SCALE 1/5



ROTATED REAR VIEW
BRACKET ATTACH
SCALE 1/5



ROTATED REAR VIEW
BRACKET SELF-DRILLING SCREW
SCALE 1/5



ROTATED REAR VIEW
LIGHT SENSOR ASSEMBLED
SCALE 1/5

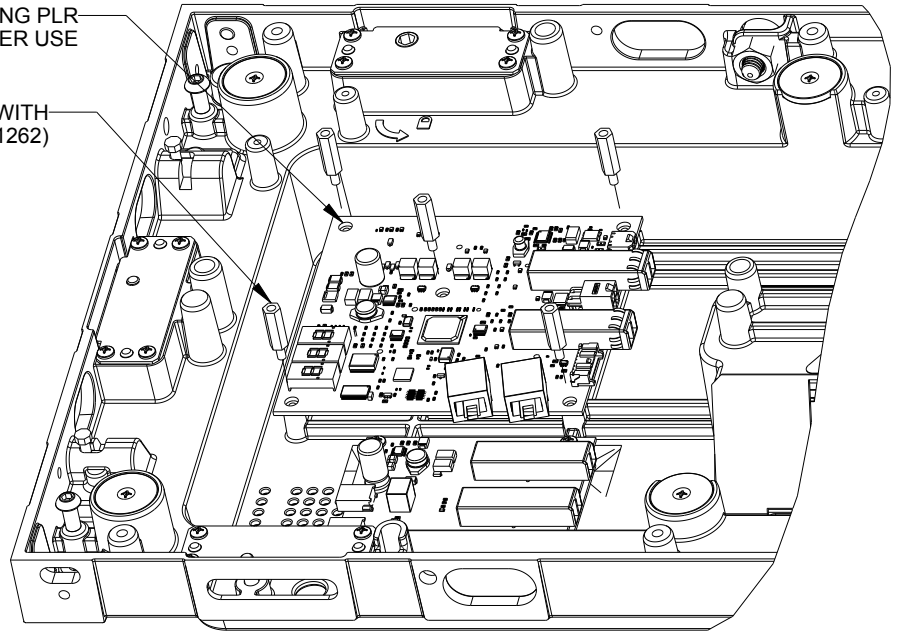
01	12 JUL 19	PER CN-84040: CHANGED LIGHT SENSOR SCREW FROM HC-1513 T0 HC-1530	TAN 20389	
REV	DATE:		BY:	

THIRD ANGLE PROJECTION

PROJECT:	NPN A1			
TITLE:	LIGHT SENSOR MTG BRACKET ATTACH			
DATE:	12-JUL-19	DIM UNITS: INCHES [MILLIMETERS]	SHEET	REV
SCALE:	1/10	DO NOT SCALE DRAWING	1 OF 1	01
DESIGN:	IFREDRI	JOB NO. / FUNC - TYPE - SIZE	3898915	
DRAWN:	IFREDRI	P2035 / E - 07 - B		

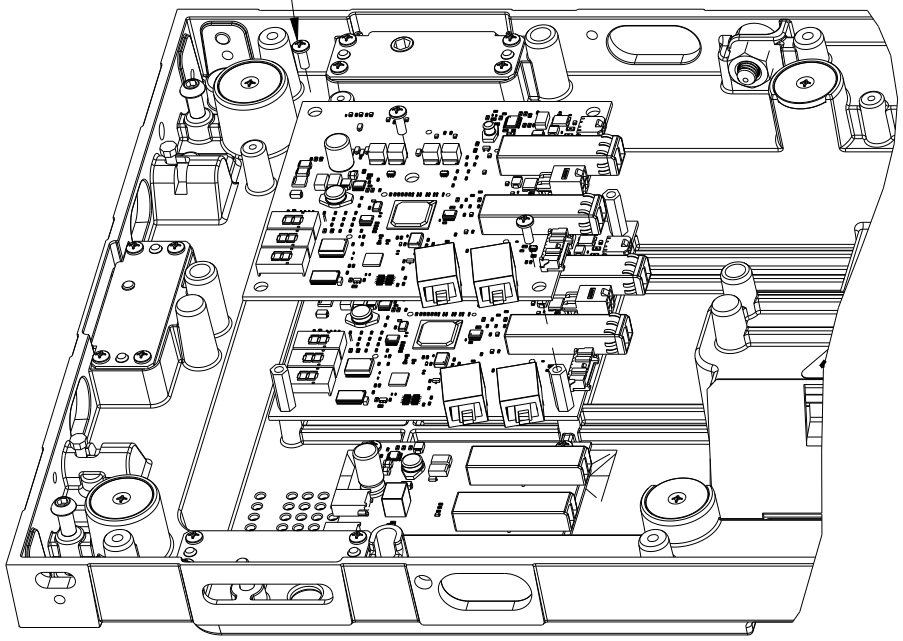
REMOVE SCREWS SECURING EXISTING PLR
& SET A SIDE FOR LATER USE

RESECURE EXISTING PLR WITH
PROVIDED STANDOFFS (HE-1262)



STEP 1: REPLACE EXISTING PLR MOUNTING HARDWARE

SECURE 2ND PLR USING SCREWS
REMOVED FROM EXISTING PLR



STEP 2: MOUNT 2ND PLR

REV	DATE:		BY:	

THIRD ANGLE PROJECTION

PROJECT:	NPN-4100				
TITLE:	INSTALL, DUAL PLR; NPN-A1				
DATE:	23-APR-18	DIM UNITS:	INCHES [MILLIMETERS]	SHEET	REV
SCALE:	1/3		DO NOT SCALE DRAWING	1 OF 1	00
DESIGN:	LHAHN	JOB NO.	FUNC - TYPE - SIZE	3903563	
DRAWN:	LHAHN	P2035	F - 10 - A		

Part # - DWG-03903563 Version - 00.1 Description - N A INSTALL, DUAL PLR; NPN-A1 Lifecycle State - Full Production Last Modified By - lhahn Last Modified - 2018-04-23

C Daktronics Warranty & Limitation of Liability

This section includes the Daktronics Warranty & Limitation of Liability statement.

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DAKTRONICS WARRANTY & LIMITATION OF LIABILITY

This Warranty and Limitation of Liability (the "Warranty") sets forth the warranty provided by Daktronics with respect to the Equipment. By accepting delivery of the Equipment, Purchaser and End User agree to be bound by and accept these terms and conditions. Unless otherwise defined herein, all terms within the Warranty shall have the same meaning and definition as provided elsewhere in the Agreement.

DAKTRONICS WILL ONLY BE OBLIGATED TO HONOR THE WARRANTY SET FORTH IN THESE TERMS AND CONDITIONS UPON RECEIPT OF FULL PAYMENT FOR THE EQUIPMENT

1. Warranty Coverage.

A. Daktronics warrants to the original end user (the "End User", which may also be the Purchaser) that the Equipment will be free from Defects (as defined below) in materials and workmanship for a period of one (1) year (the "Warranty Period"). The Warranty Period shall commence on the earlier of: (i) four weeks from the date that the Equipment leaves Daktronics' facility; or (ii) Substantial Completion as defined herein. The Warranty Period shall expire on the first anniversary of the commencement date.

"Substantial Completion" means the operational availability of the Equipment to the End User in accordance with the Equipment's specifications, without regard to punch-list items, or other non-substantial items which do not affect the operation of the Equipment

B. Daktronics' obligation under this Warranty is limited to, at Daktronics' option, replacing or repairing, any Equipment or part thereof that is found by Daktronics not to conform to the Equipment's specifications. Unless otherwise directed by Daktronics, any defective part or component shall be returned to Daktronics for repair or replacement. This Warranty does not include on-site labor charges to remove or install these components. Daktronics may, at its option, provide on-site warranty service. Daktronics shall have a reasonable period of time to make such replacements or repairs and all labor associated therewith shall be performed during regular working hours. Regular working hours are Monday through Friday between 8:00 a.m. and 5:00 p.m. at the location where labor is performed, excluding any holidays observed by Daktronics.

C. Daktronics shall pay ground transportation charges for the return of any defective component of the Equipment. All such items shall be shipped by End User DDP Daktronics designated facility per Incoterms® 2020. If returned Equipment is repaired or replaced under the terms of this Warranty, Daktronics will prepay ground transportation charges back to End User and shall ship such items DDP End User's designated facility per Incoterms® 2020; otherwise, End User shall pay transportation charges to return the Equipment back to the End User and such Equipment shall be shipped Ex Works Daktronics designated facility per Incoterms® 2020. All returns must be pre-approved by Daktronics before shipment. Daktronics shall not be obligated to pay freight for any unapproved return. End User shall pay any upgraded or expedited transportation charges

D. Any replacement parts or Equipment will be new or serviceably used, comparable in function and performance to the original part or Equipment and warranted for the remainder of the Warranty Period. Purchasing additional parts or Equipment from the Seller does not extend the Warranty Period.

E. Defects shall be defined as follows. With regard to the Equipment (excepting LEDs), a "Defect" shall refer to a material variance from the design specifications that prohibit the Equipment from operating for its intended use. With respect to LEDs, "Defects" are defined as LED pixels that cease to emit light. Unless otherwise expressly provided, this Warranty does not impose any duty or liability upon Daktronics for partial LED pixel degradation. Notwithstanding the foregoing, in no event does this Warranty include LED pixel degradation caused by UV light. This Warranty does not provide for the replacement or installation of communication methods including but not limited to, wire, fiber optic cable, conduit, trenching, or for the purpose of overcoming local site interference radio equipment substitutions.

EXCEPT AS OTHERWISE EXPRESSLY SET FORTH IN THIS WARRANTY, TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, DAKTRONICS DISCLAIMS ANY AND ALL OTHER PROMISES, REPRESENTATIONS AND WARRANTIES APPLICABLE TO THE EQUIPMENT AND REPLACES ALL OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTIES OR CONDITIONS OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR ACCURACY OR QUALITY OF DATA. OTHER ORAL OR WRITTEN INFORMATION OR ADVICE GIVEN BY DAKTRONICS, ITS AGENTS OR EMPLOYEES, SHALL NOT CREATE A WARRANTY OR IN ANY WAY INCREASE THE SCOPE OF THIS LIMITED WARRANTY.

THIS LIMITED WARRANTY IS NOT TRANSFERABLE.

2. Exclusion from Warranty Coverage

This Warranty does not impose any duty or liability upon Daktronics for any:

A. damage occurring at any time, during shipment of Equipment unless otherwise provided for in the Agreement. When returning Equipment to Daktronics for repair or replacement, End User assumes all risk of loss or damage, agrees to use any shipping containers that might be provided by Daktronics, and to ship the Equipment in the manner prescribed by Daktronics;

B. damage caused by: (i)the improper handling, installation, adjustment, use, repair, or service of the Equipment, or (ii) any physical damage which includes, but is not limited to, missing, broken, or cracked components resulting from non-electrical causes;

altered, scratched, or fractured electronic traces; missing or gauged solder pads; cuts or clipped wires; crushed, cracked, punctured, or bent circuit boards; or tampering with any electronic connections, provided that such damage is not caused by personnel of Daktronics or its authorized repair agents;

C. damage caused by the failure to provide a continuously suitable environment, including, but not limited to: (i) neglect or misuse; (ii) improper power including, without limitation, a failure or sudden surge of electrical power; (iii) improper air conditioning, humidity control, or other environmental conditions outside of the Equipment's technical specifications such as extreme temperatures, corrosives and metallic pollutants; or (iv) any other cause other than ordinary use;

D. damage caused by fire, flood, earthquake, water, wind, lightning or other natural disaster, strike, inability to obtain materials or utilities, war, terrorism, civil disturbance, or any other cause beyond Daktronics' reasonable control;

E. failure to adjust, repair or replace any item of Equipment if it would be impractical for Daktronics personnel to do so because of connection of the Equipment by mechanical or electrical means to another device not supplied by Daktronics, or the existence of general environmental conditions at the site that pose a danger to Daktronics personnel;

F. statements made about the product by any salesperson, dealer, distributor or agent, unless such statements are in a written document signed by an officer of Daktronics. Such statements as are not included in a signed writing do not constitute warranties, shall not be relied upon by End User and are not part of the contract of sale;

G. damage arising from the use of Daktronics products in any application other than the commercial and industrial applications for which they are intended, unless, upon request, such use is specifically approved in writing by Daktronics;

H. replenishment of spare parts. In the event the Equipment was purchased with a spare parts package, the parties acknowledge and agree that the spare parts package is designed to exhaust over the life of the Equipment, and as such, the replenishment of the spare parts package is not included in the scope of this Warranty;

I. security or functionality of the End User's network or systems, or anti-virus software updates;

J. performance of preventive maintenance;

K. third-party systems and other ancillary equipment, including without limitation front-end video control systems, audio systems, video processors and players, HVAC equipment, batteries and LCD screens;

L. incorporation of accessories, attachments, software or other devices not furnished by Daktronics; or

M. paint or refinishing the Equipment or furnishing material for this purpose.

3. **Limitation of Liability**

A. Daktronics shall be under no obligation to furnish continued service under this Warranty if alterations are made to the Equipment without the prior written approval of Daktronics.

B. It is specifically agreed that the price of the Equipment is based upon the following limitation of liability. In no event shall Daktronics (including its subsidiaries, affiliates, officers, directors, employees, or agents) be liable for any claims asserting or based on (a) loss of use of the facility or equipment; lost business, revenues, or profits; loss of goodwill; failure or increased cost of operations; loss, damage or corruption of data; loss resulting from system or service failure, malfunction, incompatibility, or breaches in system security; or (b) any special, consequential, incidental or exemplary damages arising out of or in any way connected with the Equipment or otherwise, including but not limited to damages for lost profits, cost of substitute or replacement equipment, down time, injury to property or any damages or sums paid to third parties, even if Daktronics has been advised of the possibility of such damages. The foregoing limitation of liability shall apply whether any claim is based upon principles of contract, tort or statutory duty, principles of indemnity or contribution, or otherwise

C. In no event shall Daktronics be liable for loss, damage, or injury of any kind or nature arising out of or in connection with this Warranty in excess of the Purchase Price of the Equipment. The End User's remedy in any dispute under this Warranty shall be ultimately limited to the Purchase Price of the Equipment to the extent the Purchase Price has been paid.

4. Assignment of Rights

A. The Warranty contained herein extends only to the End User (which may be the Purchaser) of the Equipment and no attempt to extend the Warranty to any subsequent user-transferee of the Equipment shall be valid or enforceable without the express written consent of Daktronics.

5. Governing Law; Election of Remedies

A. The rights and obligations of the parties under this Warranty shall not be governed by the provisions of the United Nations Convention on Contracts for the International Sales of Goods of 1980. The parties consent to the application of the laws of the State of South Dakota to govern, interpret, and enforce each of the parties' rights, duties, and obligations arising from, or relating in any manner to, the subject matter of this Warranty, without regard to conflict of law principles.

B. Any dispute, controversy or claim arising from or related to this Warranty, the parties shall first attempt to settle through negotiations. In the event that no resolution is reached, then such dispute, controversy, or claim shall be resolved by final and binding arbitration under the Rules of Arbitration of the International Chamber of Commerce. The language of the arbitration

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shall be English. The place of the arbitration shall be Sioux Falls, SD. A single arbitrator selected by the parties shall preside over the proceeding. If a single arbitrator cannot be agreed upon by the parties, each party shall select an arbitrator, and those arbitrators shall confer and agree on the appointed arbitrator to adjudicate the arbitration. The arbitrator shall have the power to grant any provisional or final remedy or relief that it deems appropriate, including conservatory measures and an award of attorneys' fees. The arbitrator shall make its decisions in accordance with applicable law. By agreeing to arbitration, the Parties do not intend to deprive any court of its jurisdiction to issue a pre-arbitral injunction, pre-arbitral attachment, or other order in aid of arbitration proceedings and the enforcement of any award. Without prejudice to such provisional remedies as may be available under the jurisdiction of a court, the arbitrator shall have full authority to grant provisional remedies and to direct the Parties to request that any court modify or vacate any temporary or preliminary relief issued by such court, and to award damages for the failure of any Party to respect the arbitrator's orders to that effect.

6. Availability of Extended Service Agreement

A. For End User's protection, in addition to that afforded by the warranties set forth herein, End User may purchase extended warranty services to cover the Equipment. The Extended Service Agreement, available from Daktronics, provides for electronic parts repair and/or on-site labor for an extended period from the date of expiration of this warranty. Alternatively, an Extended Service Agreement may be purchased in conjunction with this Warranty for extended additional services. For further information, contact Daktronics Customer Service at 1-800-DAKTRONics (1-800-325-8766).

Additional Terms applicable to sales outside of the United States

The following additional terms apply **only** where the installation site of the Equipment is located outside of the United States of America.

1. In the event that the installation site of the Equipment is in a country other than the U.S.A., then, notwithstanding Section 5 of the Warranty, where the selling entity is the entity listed in Column 1, then the governing law of this Warranty is the law of the jurisdiction listed in the corresponding row in Column 2 without regard to its conflict of law principles. Furthermore, if the selling entity is an entity listed in Column 1, then the place of arbitration is listed in the corresponding row in Column 3.

Column 1 (Selling Entity)	Column 2 (Governing Law)	Column 3 (Location of Arbitration)
Daktronics, Inc.	The state of Illinois	Chicago, IL, U.S.A.
Daktronics Canada, Inc.	The Province of Ontario, Canada	Toronto, Ontario, Canada
Daktronics UK Ltd.	England and Wales	Bristol, UK
Daktronics GmbH	The Federal Republic of Germany	Wiesbaden, Germany
Daktronics Hong Kong Limited	Hong Kong, Special Administrative Region of the P.R.C.	Hong Kong SAR
Daktronics Shanghai Co., Ltd.	The Peoples Republic of China	Shanghai, P.R.C.
Daktronics France, SARL	France	Paris, France
Daktronics Japan, Inc.	Japan	Tokyo, Japan
Daktronics International Limited	Macau, Special Administrative Region of the P.R.C.	Macau SAR
Daktronics Australia Pad Ltd	Australia	Sydney, Australia
Daktronics Singapore Pte. Ltd	Singapore	Singapore
Daktronics Brazil LTDA	Brazil	São Paulo, Brazil
Daktronics Spain S.L.U.	Spain	Madrid, Spain
Daktronics Belgium N. V	Belgium	Kruibeke, Belgium
Daktronics Ireland Co. Ltd.	Ireland	Dublin, Ireland