RTX-11X3/18X3 SERIES
DAKT-0200-10

DISPLAY MANUAL

P1866

DD3329910
Rev 01
24 June 2020

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DAKTRONICS

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 A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense.

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

Inquiries

Contact Daktronics with any questions regarding our product compliance.

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Table of Contents

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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.31)**. This manual contains only general information 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 **DD3329910**.

Numbering Conventions

Drawing Number

Figure 1 illustrates a Daktronics drawing label. This manual refers to drawings by listing the last set of digits and the letter preceding them. In the example, the drawing would be referred to as **DWG-3144351**.

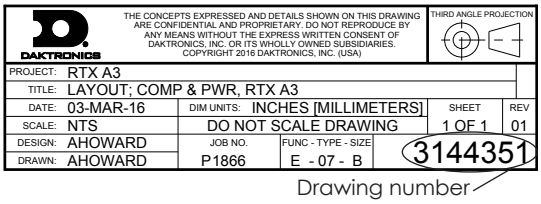

Figure 1: *Drawing Label*

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

> Refer to **DWG-3144351** in **Appendix B: Reference Drawings (p.35)** for the locations of internal display components.

Part Number

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.31)** contains the Daktronics Exchange Policy as well as details on the Repair & Return Program. Refer to these instructions if any display components need replacing or repairing. If a display interface board or assembly is not found in the replacement parts list in **Replacement Parts List (p.31)**, use the label to order a replacement. **Figure 2** illustrates a typical label. The part number is in bold.

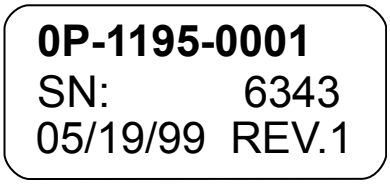

Figure 2: *Typical Label*

Part Type	Part Example	Part Number
Assembly	Display interface board & plate or bracket to which it mounts	0A-XXXX-XXXX
Individual display interface board	ProLink router (PLR)	0P-XXXX-XXXX
Wire or cable	SATA cable	W-XXXX

Module Number

Figure 3 illustrates how Daktronics numbers modules on a ribbon display.

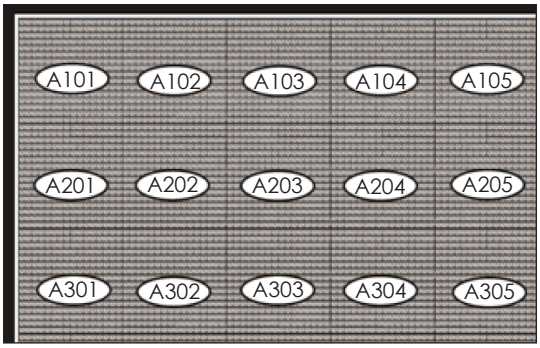

Figure 3: *Module Number (Front View/Display Face)*

Section Number

Figure 4 illustrates how Daktronics numbers sections on a ribbon display.

101	102	103	104

Figure 4: *Section Number (Front View/Display Face)*

Model Number

RTX-11X3-13/15HD-HHHxWWW RTX-11X3-16/20MT-HHHxWWW RTX-18X3-10/15MN-HHHxWWW		
RTX	=	Product series
11X3/18X3	=	Product generation
13/15HD 10/15MN 16/20MT	=	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 physical injury if touched while powered.

2 Mechanical Installation

All decisions regarding display mounting must conform to the specifications and guidelines in this section. Read both the mechanical and electrical installation sections before beginning any installation procedures.

Site Overview

During the site overview, a contractor surveys for as-built conditions of the structure or mounting location through the following procedures: measuring for elevation differences, measuring the structural dimensions, and checking for variation in the face location.

After completing the initial site survey, the installer compares the results to the contract-specific Shop Drawing. If any variations or discrepancies exist between the plan dimensions and the site survey, contact the project manager and the general contractor for the best course of action.

The installer is responsible for ensuring the mounting structure and hardware are built per the stamped engineering drawings and are capable of supporting the display. Daktronics is not responsible for display mounting decisions made by others.

Refer to the contract-specific Shop Drawing to determine the clip elevation and mark the clip angle placement locations with a chalk line or laser level. The clip elevation must remain level and constant and may be independent of the support structure.

Place the upper wall clips per the contract-specific Shop Drawing. Refer to **Figure 5**. Use appropriate shims to ensure all clips are both plumb and level across the entire fascia before hanging any sections. The height variation in any 4' section may not exceed $^{1}/_{4}$". If a variation of more than $^{1}/_{4}$" is encountered, contact the mechanical systems engineer.

Place the lower wall clips per the contract-specific Shop Drawing. Refer to **Figure 5**.

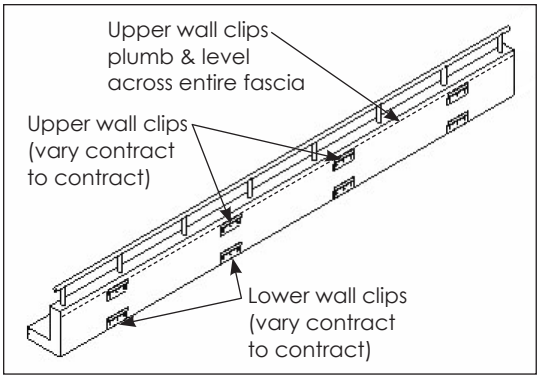

Figure 5: *Place Clips*

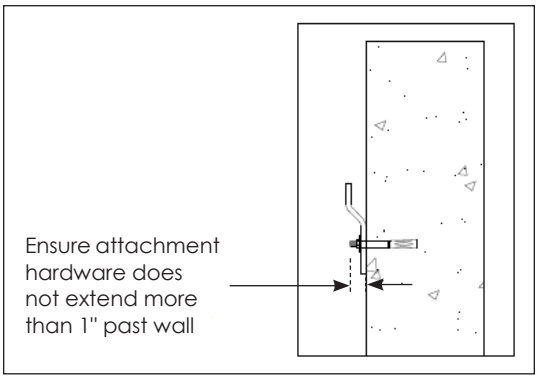

Figure 6: *Wall Clip Attachment Hardware*

Ensure the attachment hardware for the upper and lower wall clips does not extend more than 1" past the wall. Refer to **Figure 6**. The hardware may need to be trimmed if it is too long.

Verify all power drop locations per the contract-specific Shop Drawing and Riser Diagram.

Display Receiving

The toolkit and the border box are attached to the first shipping frame of each task/display face. The toolkit is attached to the top of the frame, and the border box is attached to the front. Refer to **Figure 7**.

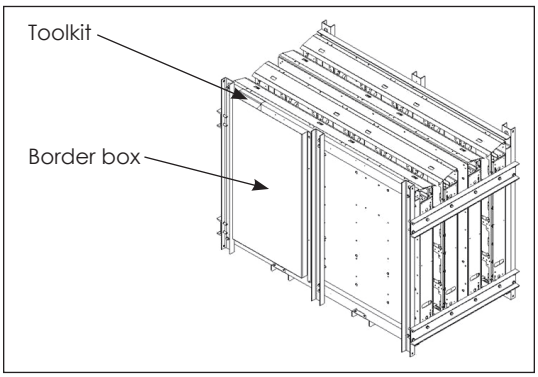

Figure 7: *Toolkit & Border Box*

1. Lift the display from transport on-site per the instructions in the **Ribbon Board Cabinet Lifting Instructions Quick Guide (DD1402020)** in **Appendix A: Reference Documents (p.33)**.
2. Examine all display packaging during receiving to determine if the display sections were damaged during shipping. If any of the packaging appears damaged, open the affected sections and examine for damage. Contact the project manager immediately for replacement or repair instructions.
3. Stage the sections sequentially based on the pre-determined starting location.
4. Ensure all sections are secured to prevent tipping.
5. Locate the toolkits, borders, and any additional parts shipped separately.

Display Preparation

Display preparation may occur immediately prior to display installation.

- Ensure all unpackaged sections remain secured when removing transportation packaging to prevent damage to the display.
- Verify the cabinet borders (flanges and caps) as shown on the contract-specific Shop Drawing.
- Refer to **Corner or Gap Mounting (p.8)** for details on installing sections on either side of a corner or gap.

Display or Display Section Lifting

Single Section

Daktronics equips each section with two lift lugs for lifting the sections into position. To expose these lift lugs, use the $^{1}/_{4}$" nutdriver (Daktronics part number TH-1042) and $^{5}/_{16}$" hex security bit (TH-1170) supplied in the toolkit to release all beverage shroud latches and open the beverage shroud. Refer to **Figure 8** and **Figure 9**.

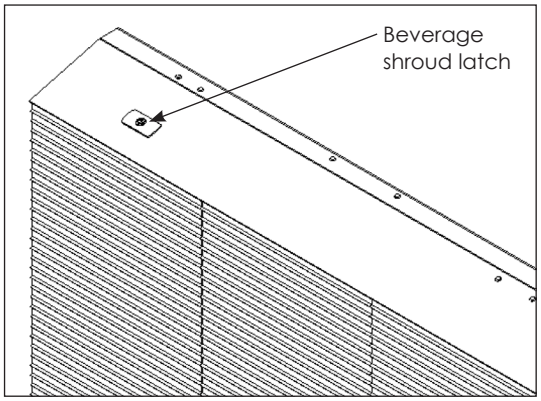

Figure 8: *Closed Beverage Shroud*

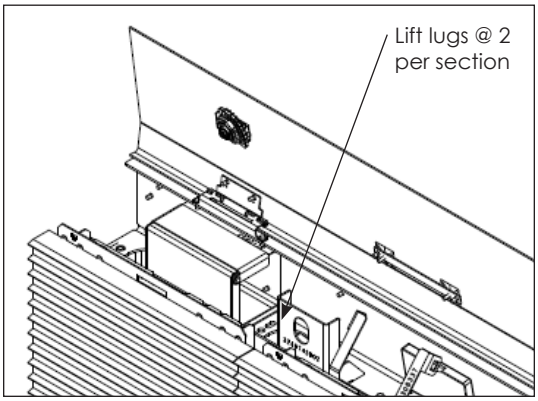

Figure 9: *Open Beverage Shroud*

Remove the beverage shrouds prior to lifting the sections to prevent damage to the shrouding.

The lift lugs are located one to two module widths inward, depending on the section size, from each end of the section.

Figure 10 illustrates two correct methods for lifting a display or display section. Always use every lifting point provided.

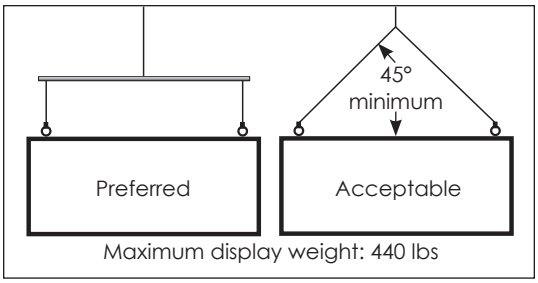

Figure 10: *Lift Display*

Weight Approximations

This table lists the weight approximations for the section sizes.

Shell Size	RTX-11X3 (2:1 Module-to-Power Supply Ratio)	RTX-18X3 (1:1 Module-to-Power Supply Ratio)
2x3	141	132
2x4	185	173
2x5	221	206
2x5 Wing	220	205
2x6	253	235
2x7	284	264
2x8	316	292
3x3	181	167
3x4	237	220
3x5	286	263
3x5 Wing	274	263
3x6	330	304
3x7	376	344
3x8	440	405
4x3	220	203
4x4	290	260
4x5	351	321
4x5 Wing	350	321
4x6	408	373

Display Mounting

This manual covers only general mounting topics. Refer to the contract-specific Shop Drawing for specific mounting instructions.

It is the installer's responsibility to ensure the installation meets local codes and standards. All hardware installation processes must meet the approved, stamped drawings from a professional engineer.

Carefully read all bullet points on the next page before proceeding with the installation steps.

- While installing, keep in mind these critical points:
- Ensure the display attachments will support the entire weight of the display and any additional weight.
- Do not set the unpackaged sections on the ground.
- Wipe any dust or debris off the top of the sections before lifting the display.
- Use a clean rag to carefully brush any debris from the module faces and quickly inspect the display to ensure all modules are securely latched before lifting the display.

The following information and illustrations provide general guidance on mounting the individual sections to a support structure as shown in **Figure 11**.

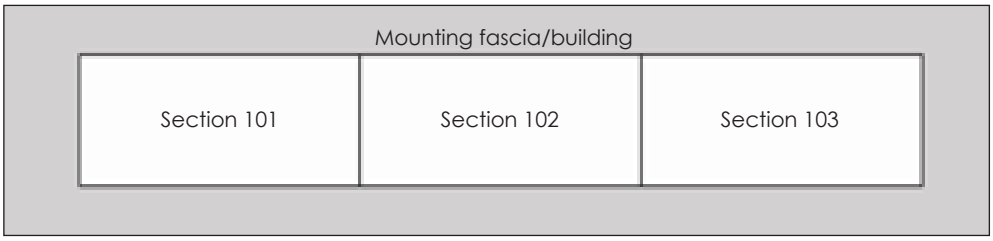

Figure 11: *Mounted Sections*

To mount a ribbon display, follow these steps:

1. Verify all rear section clips are securely attached from the factory before lifting each section. In most cases, each section should have two rear section clip locations. These clips should align with the pre-installed wall clips on the structure. Refer to **Figure 12** and **Figure 13**.

   Note: Some rear section clip adjustment may be necessary.

Figure 12: *Mount Display to Wall*

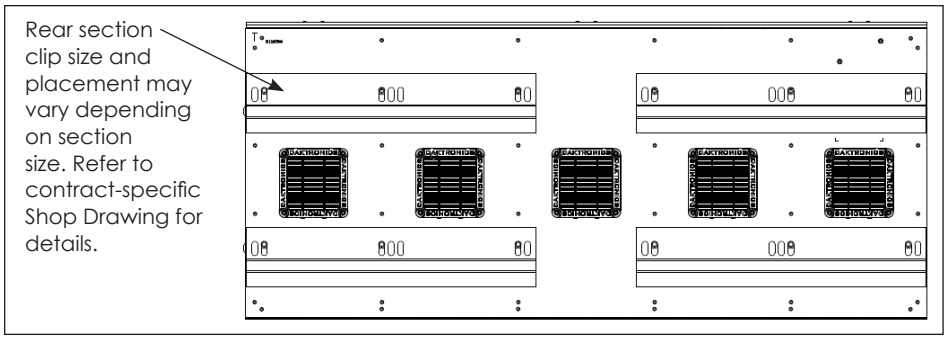

Figure 13: *Rear Section Clips*

2. Bring the first display section into position. Ensure it is both vertically plumb and horizontally level, as all other sections rely on this section's position.

> **Note:** This may require lowering the section to the ground and adjusting the upper wall clips or rear section clips. Ensure the section sits completely in the upper wall clips without the upper and lower wall clips extending horizontally past the rear section clips. If the rear section clips need to be moved horizontally, contact Structural Engineering. Refer to the contract-specific Shop Drawing for all attachment details. A typical installed section should look like **Figure 14**.

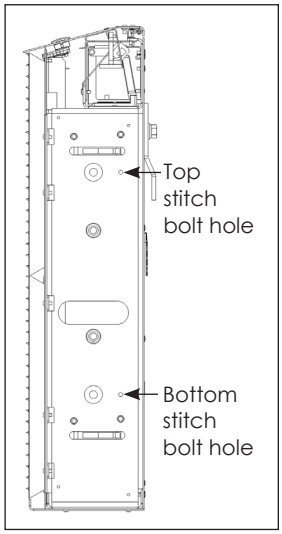

Figure 14: *Display Attached to Wall*

3. Lift the next section and position it beside the previous section. Refer to **Corner or Gap Mounting (p.8)** for corner or gap installation details.

4. Engage the top and bottom latches located in the far right bay of each section. Refer to **Figure 15** and **Figure 16** for latch access locations. Rotate the latches toward the front of the cabinet (clockwise for the top latch and counterclockwise for the bottom latch) as shown in **Figure 15** and **Figure 16**.

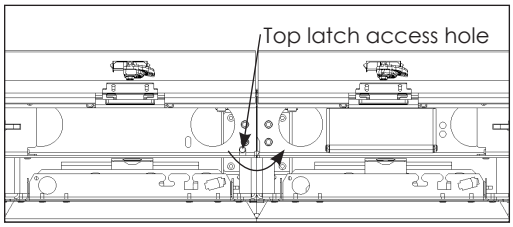

Figure 15: *Access Top Latch*

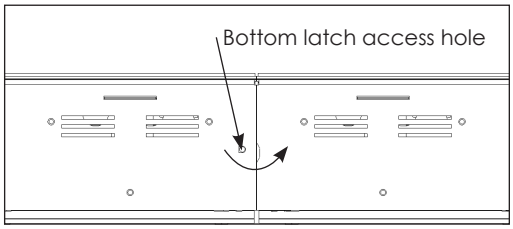

Figure 16: *Access Bottom Latch*

> **Note:** Activate all latches immediately after positioning the section to ensure the display sections fit snugly together. If necessary, adjust the display mounting so the second section is plumb and level. Ensure the modules at the vertical section splice are the same distance apart as the modules on the interior of the display. There should be no distinguishable seams between the modules at any section splices. This may require unlatching, repositioning the sections, and reengaging the latches. After latching the two horizontal display sections together, do not lift or move these sections.

Section-to-section seam tolerance should be +/- 5% of the pixel pitch (e.g. pixel pitch = 20 mm, seam tolerance = +/- 1 mm or .040"). If the seam is out of tolerance, use the interconnect hardware provided in the toolkit before attaching the subsequent sections. The interconnect connection points are located within the vertical perimeters toward the top and bottom. Refer to **Figure 17**. Remove the modules or module column on each side of the seam to insert the hardware. Refer to **Figure 18**.

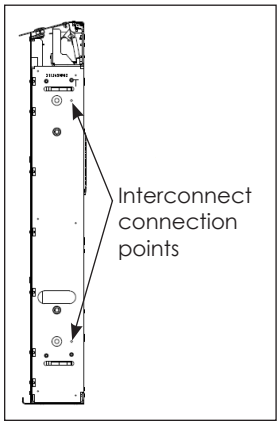

Figure 17: *Interconnect Connection Points*

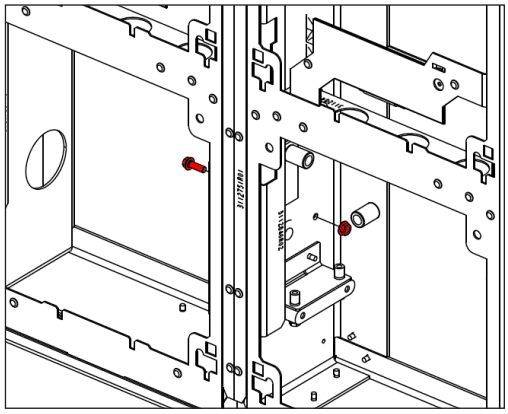

Figure 18: *Insert Interconnect Hardware*

Depending on location, some contracts may require the display to be attached to the lower wall clips with two self-drilling screws per section for uplift protection; module removal is necessary for attachment. Refer to the contract-specific Shop Drawing for the specific method of uplift protection.

5. Repeat **Step 3** and **Step 4** to install the entire display.
6. Inspect the display carefully for any penetration points that may allow liquid to seep into the display. Reattach, close, and latch the beverage shrouds after installation is complete.

Corner or Gap Mounting

Assembled Corner or Gap

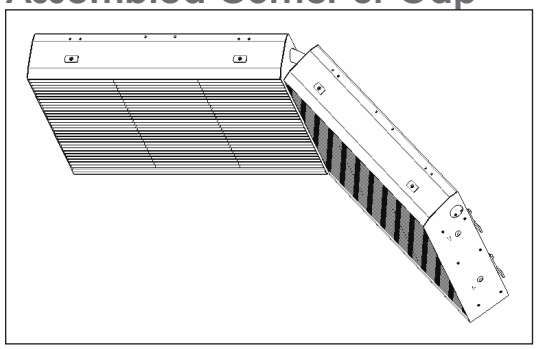

Figure 19: *Assembled Corner*

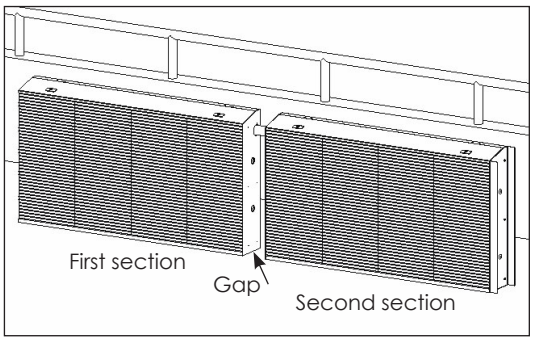

Figure 20: *First & Second Section*

Mounting

To mount a corner or gap, follow these steps while referring to **Figure 21**:

1. Open or remove the wing beverage shroud on each section that will be on either side of the gap.
2. Locate the transition caps with pass-through holes (located in the border box attached to the front of the first shipping frame of each task/display face) and use the $^{5}/_{16}$" hollow-shaft nutdriver (Daktronics part number TH-1156) supplied in the toolkit to secure the #10 self-tapping screws (HC-1186), attaching the caps to the sections on either side of the gap.
3. Lift and attach the two sections in place. Ensure the second section is vertically plumb and horizontally aligned with the previous section before attaching the section to the wall.
4. Feed the appropriate wires from one cabinet into the next cabinet. Refer to the Block Diagrams in **Appendix B: Reference Drawings (p.35)** and the contract-specific Config Drawing and Riser Diagram.

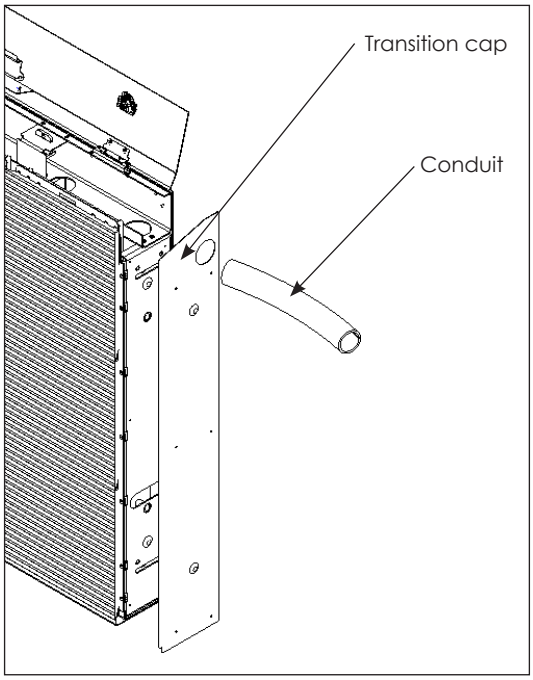

Figure 21: *Mount Corner*

5. Use the flexible conduit (EC-1252) located in the far right bay of the sections to the left of the gap to cover the cables in the gap by opening the slit on the 2" flexible conduit and sliding the conduit over the cables.
6. Slide the conduit down the wires and through the holes in the transition caps until at least 2" of conduit is sticking into each section. Ensure the split in the conduit faces down. Trim any excess conduit from the section if needed.
7. Close or reinstall the beverage shrouds and secure with the beverage shroud latches.

Wing Section Installation

To install a wing section, follow these steps:

1. Open or remove the wing beverage shroud. Refer to **Figure 22**.

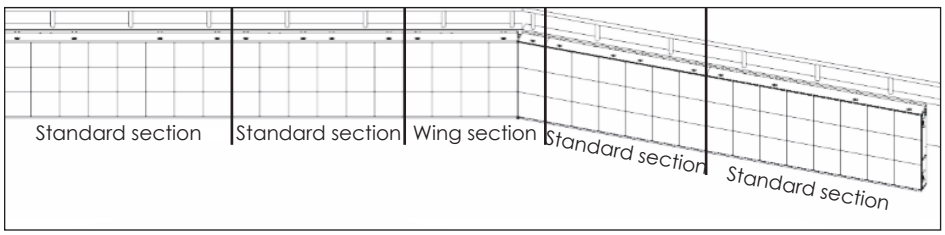

Figure 22: *Open Wing Beverage Shroud*

2. Loosen the retainer nuts from the upper and lower support brackets and release the latches holding the wing to the shell. Refer to **Figure 23** and **Figure 24**. The wing section is now free to rotate.

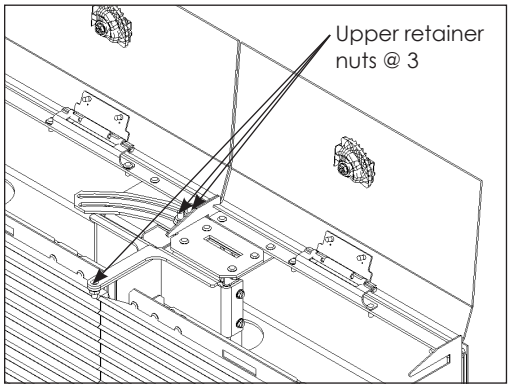

Figure 23: *Loosen Upper Retainer Hardware*

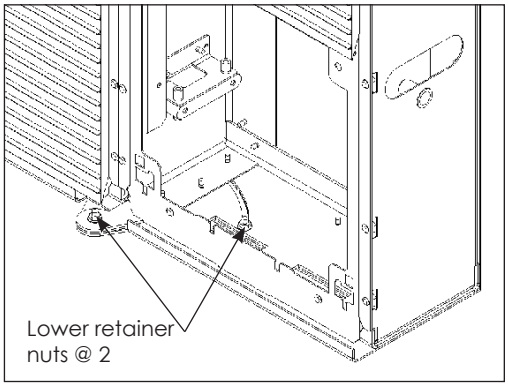

Figure 24: *Loosen Lower Retainer Hardware*

3. Set the wing at the necessary angle to engage the left and right sections. The hinge adds a gap (seam) between the module columns, which is necessary for top-access module removal via the module pan sliders. Refer to **Figure 25**.

4. Secure the retainer nuts in the upper and lower support brackets into the left vertical of the wing to keep the wing from rotating. The required torque is 20 ft-lbs. Refer to **Figure 26** and **Figure 27**.

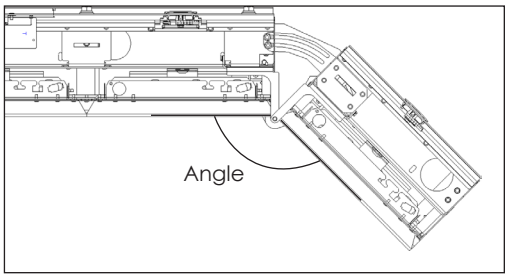

Figure 25: *Set Wing at Appropriate Angle*

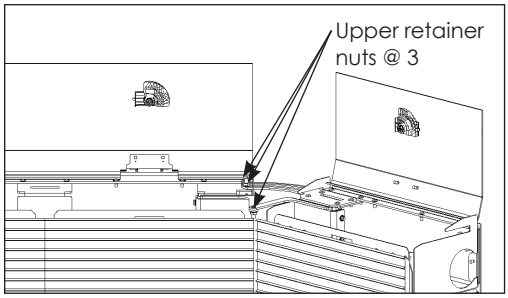

Figure 26: *Secure Upper Retainer Hardware*

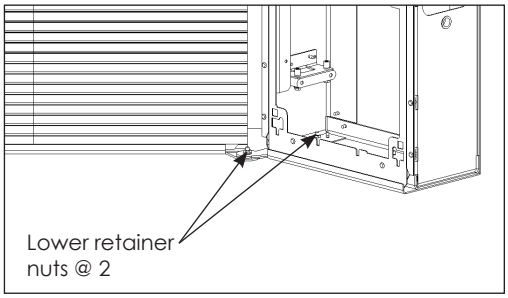

Figure 27: *Secure Lower Retainer Hardware*

5. Remove the self-tapping screws securing the top hinge into place and remove the top hinge. This needs to be removed to allow the beverage shrouds to close completely and the module pans to slide out. Refer to **Figure 28** and **Figure 29**.

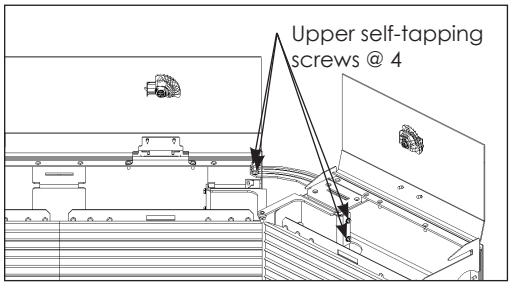

Figure 28: *Remove Top Hinge*

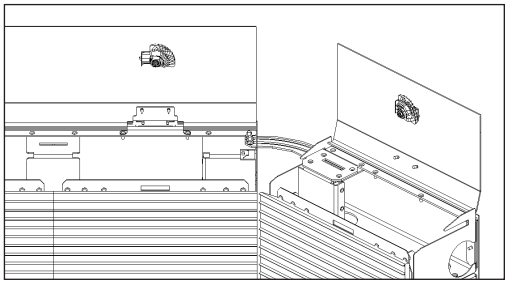

Figure 29: *Top Hinge Removed*

6. Close or reinstall the beverage shroud and secure with the beverage shroud latches.

Border Attachment

To attach a border, follow these steps:

1. Attach the borders (located in the border box attached to the front of the first shipping frame of each task/display face) as necessary. Refer to the contract-specific Shop Drawing for proper placement.

   End/transition cap: Use the $^{5}/_{16}$" hollow-shaft nutdriver (Daktronics part number TH-1156) supplied in the toolkit to secure the #10 self-tapping screws (HC-1554) at a quantity of six, attaching the end cap or transition cap. Refer to **Figure 30** and **Figure 31**.

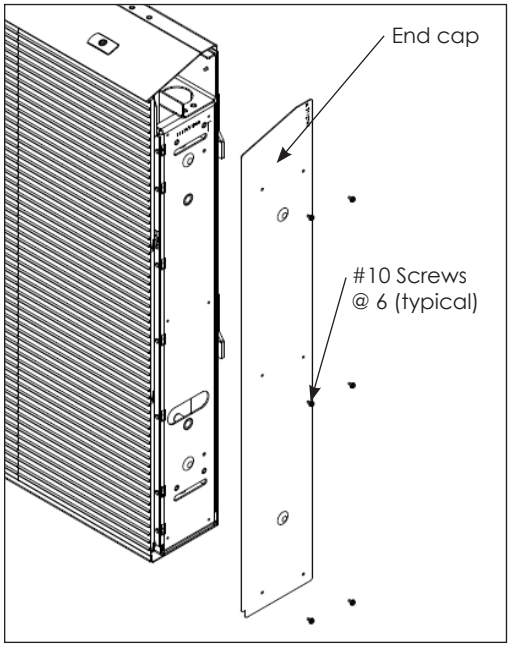

Figure 30: *Attach End Cap*

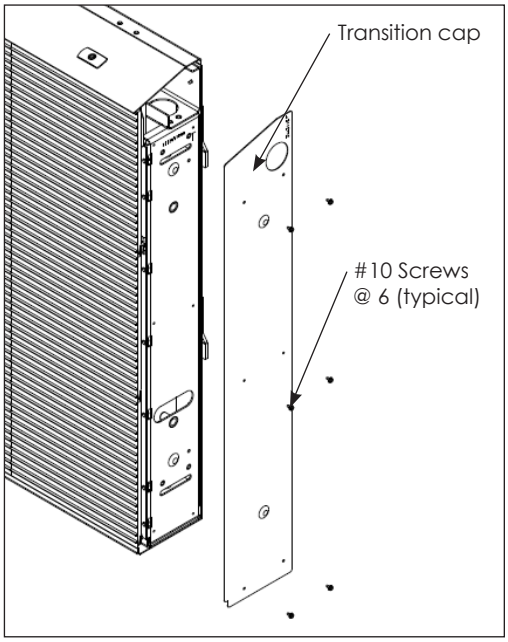

Figure 31: *Attach Transition Cap*

   Flange border: Use the $^{5}/_{16}$" hollow-shaft nutdriver (TH-1156) supplied in the toolkit to secure the #10 self-tapping screws (HC-1554) at a quantity of six, attach the border. Refer to **Figure 32**.

2. Refer to the contract-specific Shop Drawing if extra shrouding is necessary.

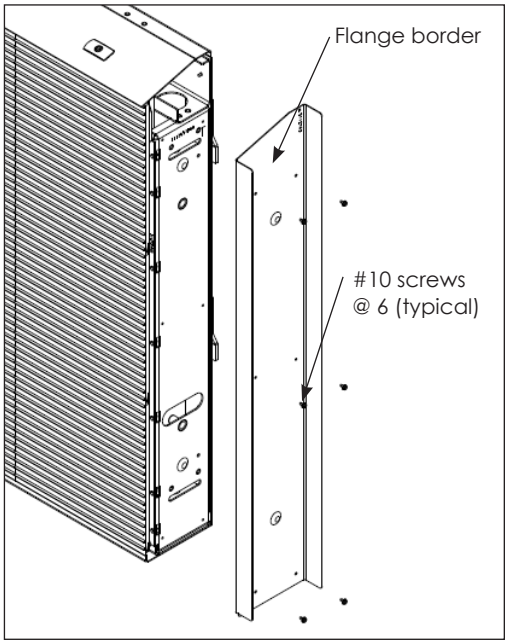

Figure 32: *Attach Flange Border*

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3 Electrical Installation

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.

This display is suitable for wet locations. Daktronics engineering staff must approve any changes that may affect the weather tightness of the display. If *any* modifications are made to the weather tightness of the display, detailed drawings of the changes *must* be submitted to Daktronics engineering staff for evaluation and approval, or the warranty will be null and void.

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

Power Summary

Power from the termination panel breaker routes to the Power In jack on the power supplies. From there, power routes to the individual modules. ProLink Routers (PLRs) are powered off the closest available module. Refer to the contract-specific Riser Diagram for detailed power information.

Refer to the **RTX-11X3/18X3 Series Power Numbers Quick Guide (DD3322986)** in **Appendix A: Reference Documents (p.33)** for power specifications.

Signal Summary

Depending on display application and control room design, display data may route from the control room to the display by a number of different pieces of equipment. The most common are the ProLink6 control system, the A/B transmitter interface, and the Video Image Processor (VIP) interface itself.

The Block Diagrams and Layout; Comp & Pwr Drawing in **Appendix B: Reference Drawings (p.35)** illustrate the signal layout of each display section. The contract-specific Config Drawing and Riser Diagram illustrate the signal connections from the control room to the ProLink Routers (PLRs) in the display or from section to section. This is done to some extent in all RTX displays.

Data from the control system routes via fiber-optic cable to the J5 (Data In) connector on the VIP. Refer to the **VIP-5000 Series Operation Manual (DD2773152)**. The VIP may be located in the control room or in a remote location. The data then routes via fiber-optic cable to the appropriate PLRs. Refer to the appropriate contract-specific Config Drawing and Riser Diagram for more routing information. Refer to the Fiber Routing Drawing and Power Entrance Drawings in **Appendix B: Reference Drawings (p.35)** for fiber termination information.

The Fiber Routing Drawing in **Appendix B: Reference Drawings (p.35)** and the contract-specific Config Drawing illustrate the fiber layout from section to section of the display.

The Block Diagrams and Layout; Comp & Pwr Drawing in **Appendix B: Reference Drawings (p.35)** also illustrate how data passes from one PLR to the modules and depict power harnessing and component placement.

Each PLR sends data to the modules within the display; refer to the Block Diagrams and Layout; Comp & Pwr Drawing in **Appendix B: Reference Drawings (p.35)** for routing information. Signal exits via fiber-optic cable from Fiber Port B on the PLR and routes to Fiber Port A on the next PLR. Refer to **Figure 33**, as it illustrates a typical signal routing layout. Refer to the contract-specific Config Drawing for further information.

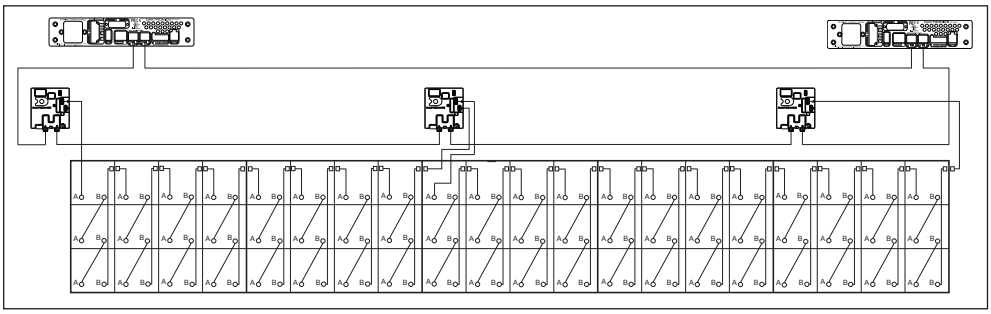

Figure 33: *Signal Routing (Full-Data Redundancy)*

Common Connectors

When pulling a connector plug from a jack, do not pull the wire or cable; detach the jack itself. Pulling the wires may damage the connector. These connectors are not found in every display.

Water-Tight SATA Cable Connector

Daktronics uses a wide variety of SATA cables and SATA cable connectors. **Figure 34** illustrates one of the most commonly used SATA cable connectors. To disconnect the SATA cable connector, squeeze the locking clips inward and pull the plug out of the jack.

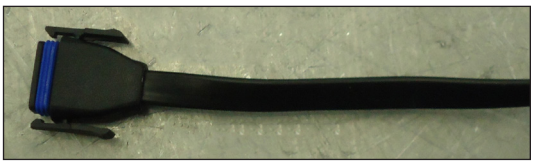

Figure 34: *SATA Cable Connector*

Fiber-Optic Connector

LC connectors are square. To remove an LC connector, depress the small clip on the jack and gently remove. Refer to **Figure 35**.

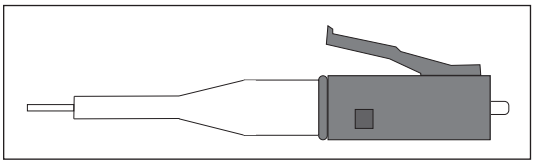

Figure 35: *LC Fiber-Optic Connector*

Control Cable

Refer to the contract-specific Riser Diagram for specifications on signal and power cable runs. Refer to the **VIP-5000 Series Operation Manual (DD2773152)** for information on the Video Image Processor (VIP).

The minimum bend radius for this fiber-optic cable is 15 times the outside diameter of the cable or 7". Refer to the contract-specific Riser Diagram for the outside diameter of the cable in this system. All fiber-optic runs must be continuous, except where noted on the Riser Diagram.

Display Power

All display grounding, power routing, and termination must meet or exceed local codes and standards.

Correct power installation is imperative for display operation. These subsections give details on display power installation. Only qualified individuals should attempt the electrical installation; untrained personnel should not attempt to install displays or any of the electrical components. Improper installation could result in serious equipment damage and could be hazardous to personnel.

Ensure all external overcurrent protection meets all local and national electrical codes and is sized appropriately to the load of the sections it is terminating.

Refer to contract-specific documentation to determine who is responsible for providing conduit and pulling cable through the conduit.

Grounding

The display must be properly grounded according to the National Electrical Code and any other local or national codes, or the warranty will be null and void.

The display system must have proper earth-ground connection. Proper grounding is necessary for reliable equipment operation, as it protects the equipment from destructive electrical disturbances and lightning.

The material of an earth-ground electrode differs from region to region and varies with conditions present at the site. Consult local grounding codes. Daktronics does not recommend using the support structure as an earth-ground electrode; concrete, primer, corrosion, and other factors make the support structure a poor ground.

> **Note:** The support structure may be used as an earth-ground electrode if designed to do so. A qualified inspector must approve the support structure and grounding methods.

Power Installation

This display uses a three-phase (three conductors, neutral and ground) installation.

Three-Phase Installation

To install a three phase, follow these steps:

1. Connect the grounding electrode cable at the local disconnect, never at the termination panel.
2. Use a disconnect that opens all ungrounded phase conductors.

This display uses one power termination method. Refer to the Power Entrance Drawings in **Appendix B: Reference Drawings (p.35)** and **Figure 36** for installation details. It is the electrical installation contractor's responsibility to ensure all electrical work performed on-site meets or exceeds all local and national electric codes for wiring and specifications. Refer to the contract-specific Riser Diagram.

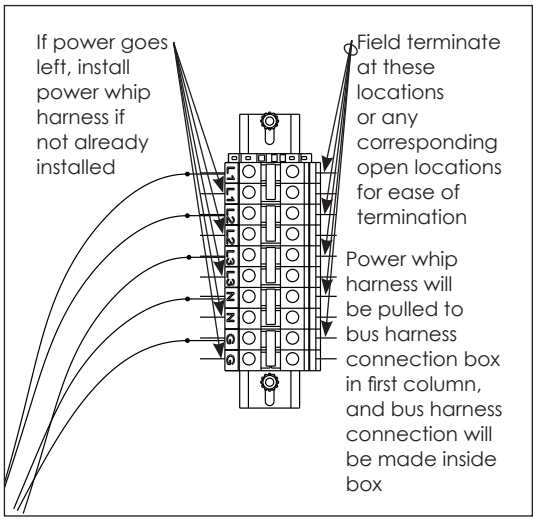

Figure 36: *Power Installation*

Main Disconnect

Refer to the contract-specific Riser Diagram to determine who must supply a fused main distribution/disconnect, surge suppressor, and the necessary wiring for power distribution to multiple display termination panels.

The disconnect mechanism must be located in direct line of sight from the display it controls. This allows workers to keep the disconnect mechanism in view while performing display maintenance.

Power disconnects capable of locking in the open position may be located in an out-of-sight location.

The customer or contractor is responsible for conduit and wire unless stated otherwise on the contract-specific documentation.

Power Termination at the Termination Panel(s)

All power routing and termination must comply with local and national codes and standards. Display grounding must agree with local and national codes and standards.

Route power from the main disconnect to the termination panel in conduit supplied and sized by the customer or contractor unless otherwise stated on the contract-specific documentation. Refer to the contract-specific Riser Diagram for specific termination points.

When terminating power at the termination panel, the individual power phases must balance as evenly as possible. Current draw per line, as noted on the contract-specific Riser Diagram, is stated as the high leg current draw.

Refer to the Power Entrance Drawings in **Appendix B: Reference Drawings (p.35)** for power termination information.

Display Wiring

Power

Route the interconnect power wire as needed through the interconnect holes based on the contract-specific Config Drawing and Riser Diagram.

When making the bus harness interconnects, it is imperative that the labels and colors of each connector match to ensure proper phase balancing of the overall power system.

Signal

Route the fiber and SATA cable based on the contract-specific Config Drawing and Riser Diagram. Refer to the Routing Drawings in **Appendix B: Reference Drawings (p.35)** for fiber and SATA routing information.

Display Continuity Check

Before turning on power to the display, perform a continuity check to ensure no short circuits occurred due to shipping vibration.

> **Caution:** Before performing these steps, ensure all breakers are off.

To perform a display continuity check, follow these steps:

1. Remove the cover from the termination panel.
2. Use an ohmmeter and place one probe on the neutral terminal and another probe to each of the taps on the breaker wire terminal. Repeat the same test for each breaker.

3. Place one probe to the earth ground and one to each of the breaker wire terminals and repeat for each breaker.

All tests should result in a reading of infinity or indicate an open circuit.

Display Power Up

To power up a display, follow these steps:

1. Turn on the main disconnect to power up the display.
2. Power up the control system to ensure it is fully operational before proceeding.
3. Run an initialization/power up script or animation/logo on the display.

Signal Redundancy

Full-Data Redundancy

Full-data redundancy provides primary and redundant Video Image Processors (VIPs), ProLink Routers (PLRs), and SATA connections throughout the entire display to protect the system from signal failure. If any signal component, cabling, or connection fails, its counterpart takes over and limits the signal failure to as little of the display as possible. Refer to **Figure 33** for layout details.

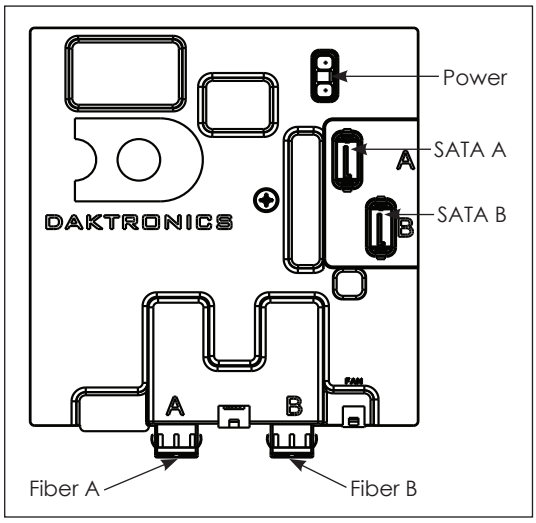

Figure 37: *PLR Connectors*

Full-Data Redundancy Testing

To test the full-data redundancy wiring, use the contract-specific Config Drawing to verify where the PLRs are located. Disconnect the SATA cable from SATA Port A on each PLR individually and verify all modules still display content correctly; reconnect the SATA cable. Disconnect the SATA cable from the redundant PLR and verify all modules still display content correctly; reconnect the SATA cable. Refer to **Figure 37** for details on the PLR ports.

PLR Redundancy Testing

To test the PLR redundancy, use the contract-specific Config Drawing to verify where the PLRs are located. Disconnect the fiber cable from Fiber Port A on the first PLR and verify all modules still display content correctly; reconnect the fiber cable. Disconnect the fiber cable from Fiber Port B on the last PLR in the chain and verify all modules still display content correctly; reconnect the fiber cable. Refer to **Figure 37** for details on the PLR ports. Another method is to unplug the fiber cable from Fiber Port A on the primary VIP or the fiber cable from Fiber Port B on the backup VIP and verify all modules still display content correctly. Refer to **Figure 38** for details on the VIP ports.

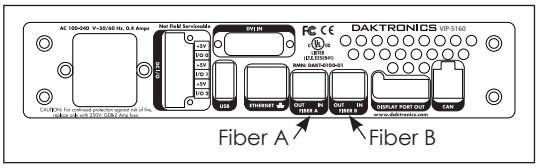

Figure 38: *VIP Connectors*

VIP Redundancy Testing

To test the VIP redundancy, log into the primary and redundant VIPs, make the primary inactive and the redundant active, and verify all modules still display content correctly. Refer to the **VIP-5000 Series Operation Manual (DD2773152)**. For normal operation, the redundant VIP is set to inactive and only passes redundant signal from the primary VIP to the last PLR. Return the redundant VIP to inactive and the primary VIP to active. If available, Intelligent Device Management (IDM) can also verify the system is working as intended. Refer to the **IDM User Manual (DD2097912)**.

4 Maintenance & Troubleshooting

Turn off display power before performing any repair or maintenance work. Only qualified service personnel may access internal electronics.

Daktronics product management staff must approve any changes that may affect the display's structural integrity. This includes, but is not limited to, border shrouding, back sheets, and filler panels. If any changes are made to the display, submit detailed drawings to Daktronics product management staff for evaluation and approval, or the warranty will be null and void.

Recommended Tools

When performing maintenance work on the display, Daktronics recommends using these tools and placing them in a convenient, easily accessible location:

Tool	Part Number	Use
Module safety lanyard	0A-1175-9000	Prevents modules from falling and breaking
Module pan safety lanyard	HS-2057	Prevents module pans from falling and breaking
$^{1}/_{4}$" Nutdriver	TH-1042	Opens beverage shrouds
$^{3}/_{8}$" Hollow-shaft nutdriver	TH-1068	Interconnects sections
$^{5}/_{16}$" Allen wrench	TH-1088	Activates latches between sections
$^{5}/_{16}$" Hollow-shaft nutdriver	TH-1156	Attaches borders and removes components
$^{5}/_{16}$" Hex security bit	TH-1170	Works with $^{1}/_{4}$" nutdriver to open beverage shrouds
$^{1}/_{8}$" Allen wrench	TH-1172	Removes RTX-11X3 modules
$^{7}/_{16}$" Hollow-shaft nutdriver	TH-1202	Interconnects sections
Module access tool	TH-1212	Removes RTX-18X3 modules

These tools are found in the toolkit (Daktronics part number 0A-1866-0001) located in the accessory compartment attached to the bottom of the first shipping frame of each task/display face. Toolkits include other items not on this list and additional replacement tools may be ordered directly from Daktronics. Refer to **Replacement Parts List (p.31)**.

Components

Line Filter

Figure 39 illustrates a line filter. Line filters remove electromagnetic noise that might otherwise interfere with local communication channels from the power system. The line filter is mounted to the sectional termination panel.

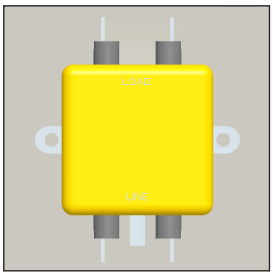

Figure 39: *Line Filter*

Power Supply

Figure 40 illustrates a typical power supply, also referred to as a power module. RTX-11X3 displays use a 2:1 power supply-to-module ratio with the power supply mounted directly behind the module. RTX-18X3 displays use a 1:1 power supply-to-module ratio with the power supply mounted directly to the module as shown in **Figure 47**. The power harnesses connected to the unit vary depending on type and overall display application. The power LED (DS1) illuminates when the unit is receiving power.

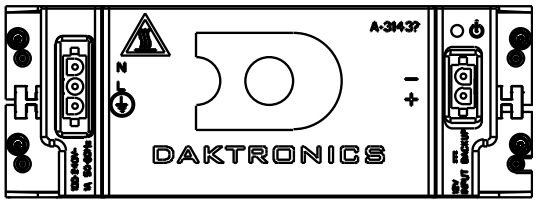

Figure 40: *Power Supply*

> **Caution:** Disconnect display power before servicing the power supplies to avoid electrical shock. The power supplies run on high voltage and may cause physical injury if touched.

VIP

Figure 41 illustrates a Video Image Processor (VIP). A VIP is an interface that drives video to the display while also dimming, providing gamma and color controls, and displaying test patterns. Refer to the **VIP-5000 Series Operation Manual (DD2773152)** for further information.

Figure 41: *VIP*

PLR

Figure 42 illustrates a ProLink Router (PLR). A PLR is a display interface board that passes display data from the ProLink6 control system modules and other PLRs. Refer to the **ProLink Router 6X5X (PLR6X5X) Installation and Maintenance Manual (DD1735784)** for further information.

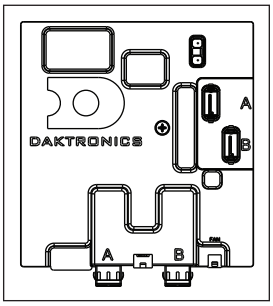

Figure 42: *PLR*

Display Access

RTX displays are designed for either front or top access, depending on site requirements and customer preference. The displays require removing modules from the front or top of the display to gain access. Refer to **Display Access (p.20)**.

Top-access displays allow a technician to access internal components from a platform on the rear of the section at the top of the display. The module pans slide vertically out of position, allowing access into the sections. Refer to **Figure 43** and **Figure 44**.

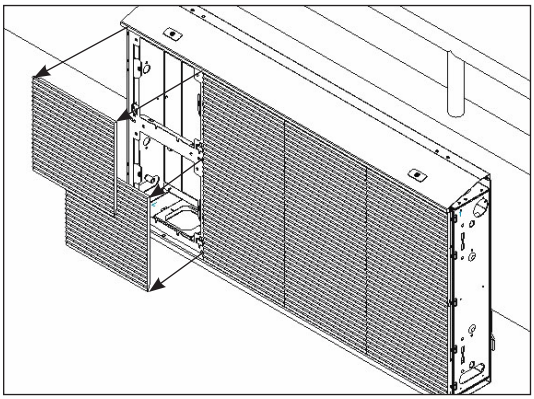

Figure 43: *Remove Modules from Front*

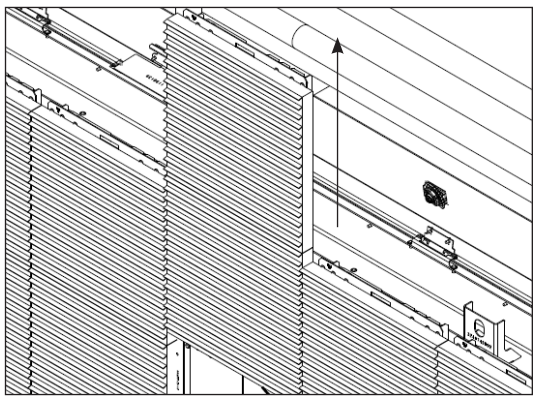

Figure 44: *Remove Module Pan*

Service & Diagnostics

This section addresses the display components that may be encountered during routine servicing. The Layout; Comp & Pwr Drawing in **Appendix B: Reference Drawings (p.35)** and **Figure 45** show the locations of most internal components.

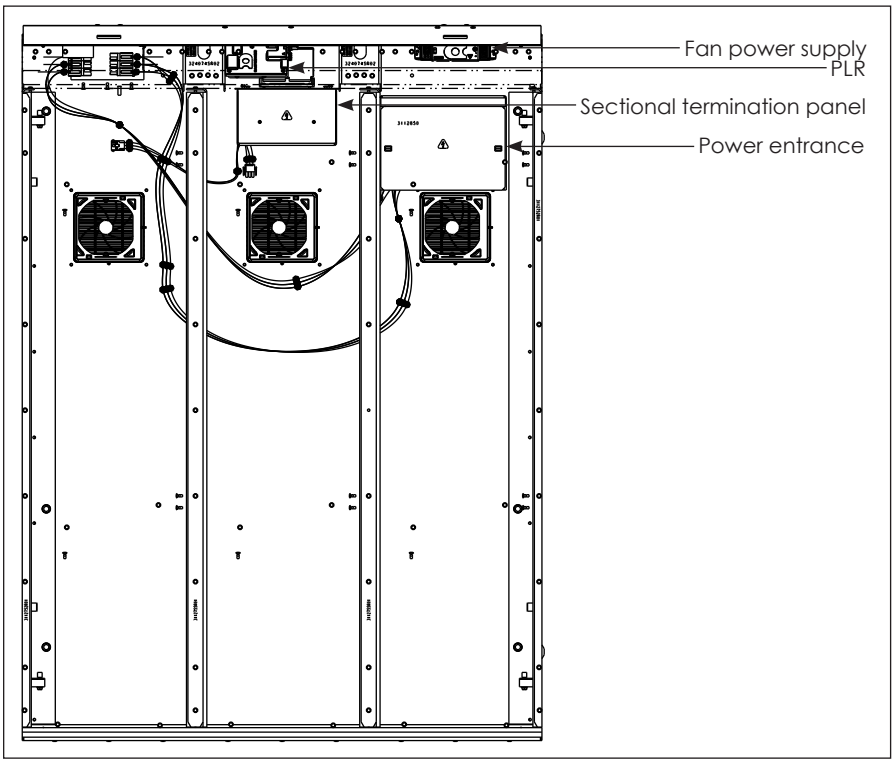

Figure 45: *Typical Component Layout (Front View)*

Module Pan

RTX displays have a unique module pan, also referred to as a pan or a mod pan, that allows for removal of the modules as well as some internal components from both the front and top of the display. If unobstructed, each module pan is fully removable from the top of the sections. Each pan contains modules and power supplies.

Figure 46 and **Figure 47** illustrate front and rear views of a module pan.

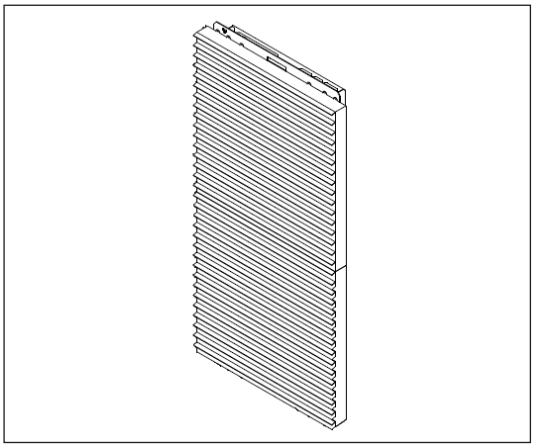

Figure 46: *Module Pan Front*

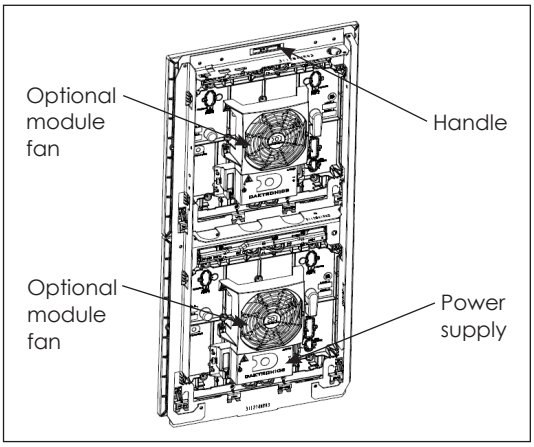

Figure 47: *Module Pan Rear*

Top-access displays require removing the module pans from a position behind the top of the display. Pay special attention to the following instructions to avoid damaging any connectors or other components.

To remove a module pan from a display, follow these steps:

1. Disconnect power to the display.
2. Use the $^{1}/_{4}$" nutdriver (Daktronics part number TH-1042) and $^{5}/_{16}$" hex security bit (TH-1170) supplied in the toolkit to release the beverage shroud security latches. The beverage shroud may be left on in a flipped-up position or removed by rotating it up and unhooking the spring-loaded hinge pins. Refer to **Figure 48** and **Figure 49**.

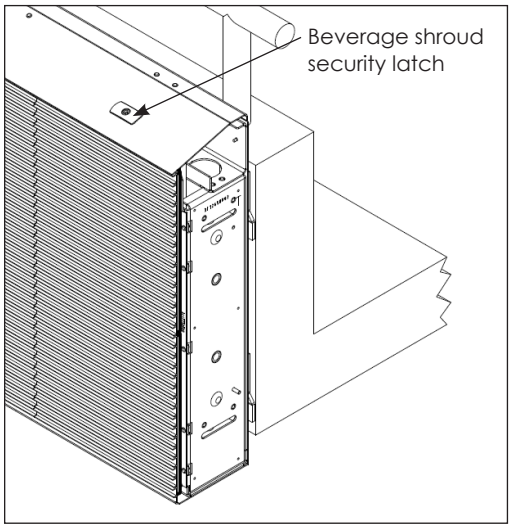

Figure 48: *Beverage Shroud Security Latch*

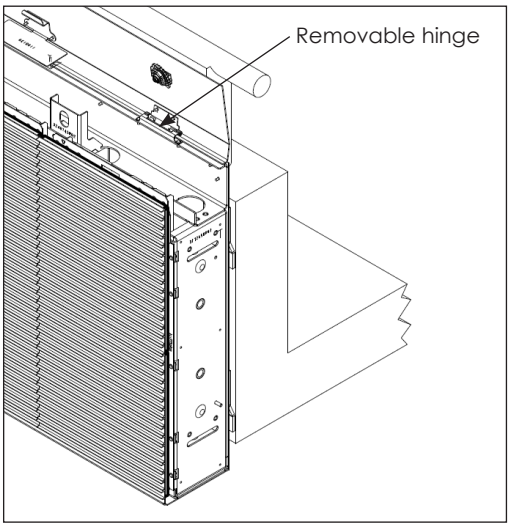

Figure 49: *Beverage Shroud Removable Hinge*

3. Clip one end of the module pan safety lanyard (HS-2057) supplied in the toolkit to the closest lift lug in the top perimeter and the other end into the SATA cable pass-through hole of the module pan in need of service. Refer to **Figure 50** and **Figure 51**.

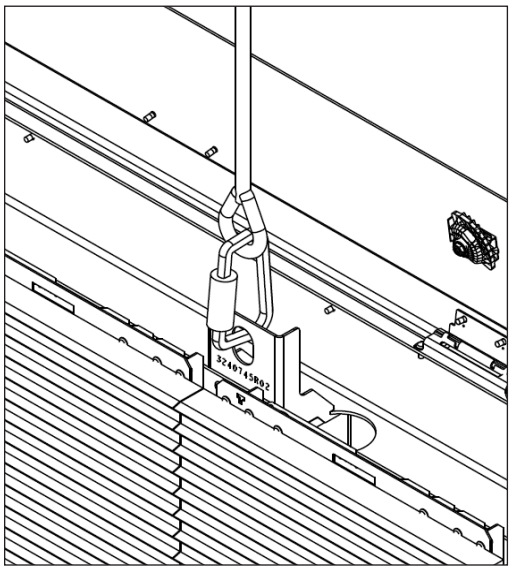

Figure 50: *Lift Lug*

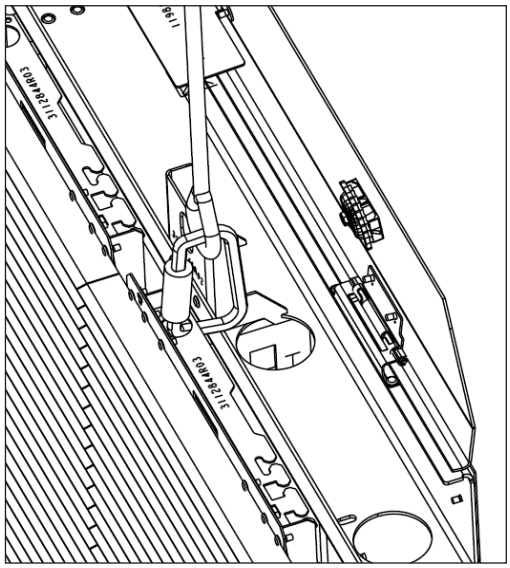

Figure 51: *Module Pan Handle*

4. Disconnect all SATA and power cables from the top of the module pan handle after the lanyard is properly attached. If there is a ProLink Router (PLR) in the column, remove the power cable from the module pan handle. Refer to **Figure 52** and **Figure 53**.

Figure 52: *Disconnected Cables*

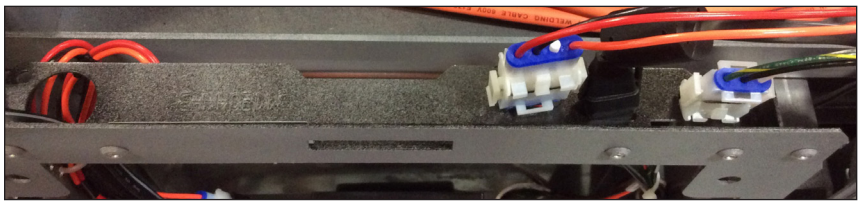

Figure 53: *Connected Cables*

5. Ensure all cables are unplugged and then raise the module pan carefully until free of the track and over the rail into a safe position. The module pan should now be ready for servicing, and the lanyard may now be unhooked. Refer to **Figure 44**.

Reverse these steps to install a module pan in a display.

Module

RTX-11X3 Module

Figure 54 and **Figure 55** show front and rear views of an RTX-11X3 module.

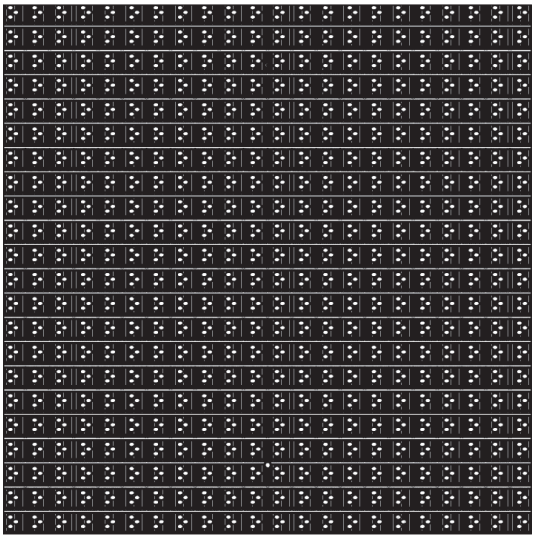

Figure 54: *RTX-11X3 Module Front*

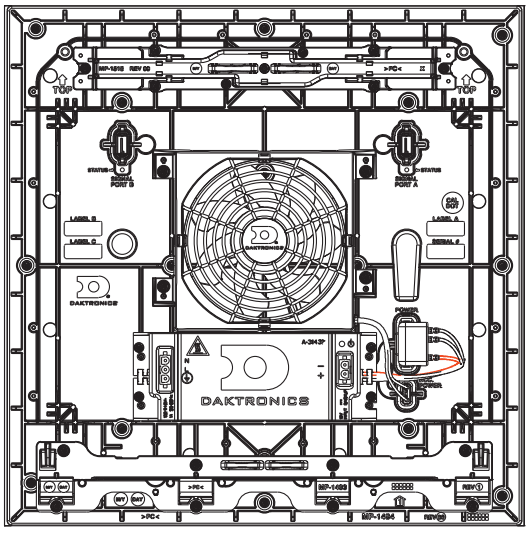

Figure 55: *RTX-11X3 Module Rear*

To remove an RTX-11X3 module from a display, refer to **Figure 56** while following these steps:

1. Disconnect power to the display.
2. Access the module.

   Front access: Use the $^{1}/_{8}$" Allen wrench (TH-1172) supplied in the toolkit to turn the top latch release a $^{1}/_{4}$ turn counterclockwise. Refer to **Figure 57**.

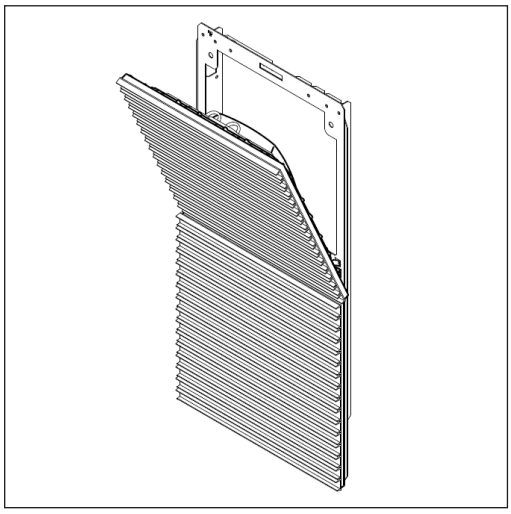

Figure 56: *Remove Module*

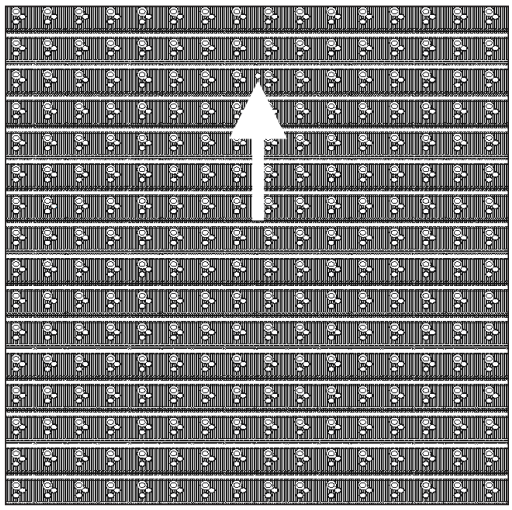

Figure 57: *Access Module Latch*

   Top access: Remove the module pan. Refer to **Module Pan (p.21)** for instructions.

3. Pull the module from the display just far enough to reach around to the back of the unit.

> **Note:** When performing this step, take care not to damage the louvers by tilting the module at too much of an angle. Refer to **Figure 58**.

4. Attach one end of the module safety lanyard (0A-1175-9000) supplied in the toolkit to the rings on either the top or bottom of the module and the other end to a secure location within the display to prevent the module from falling if dropped.
5. Disconnect the power and signal cables from the rear of the module.

Reverse these steps to install an RTX-11X3 module in a display.

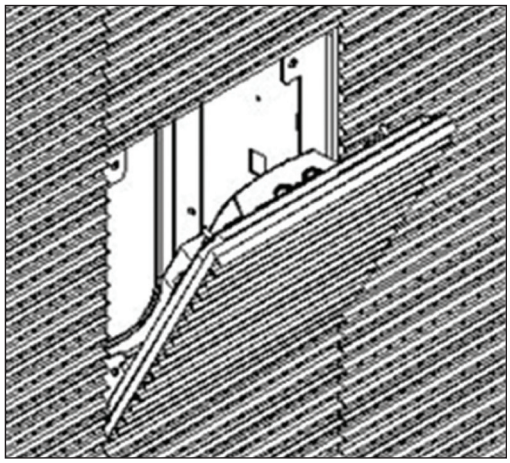

Figure 58: *Front-Access Angle*

RTX-18X3 Module

Figure 59 and **Figure 60** show front and rear views of an RTX-18X3 module.

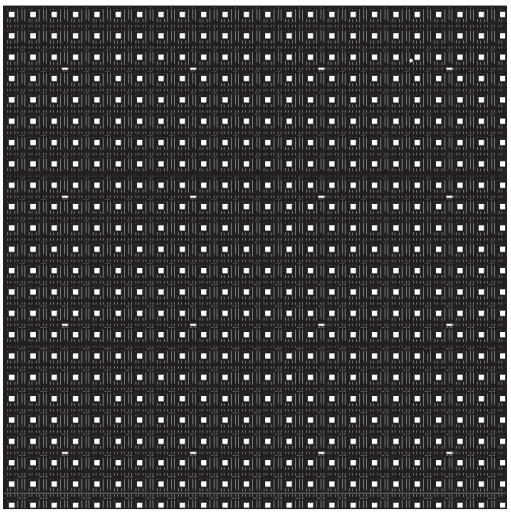

Figure 59: *RTX-18X3 Module Front*

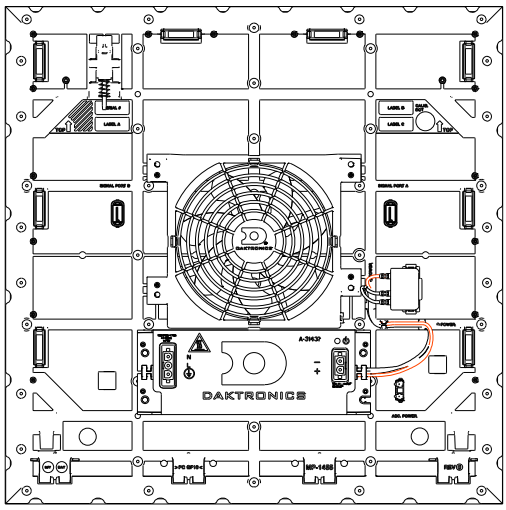

Figure 60: *RTX-18X3 Module Rear*

To remove an RTX-18X3 module from a display, refer to **Figure 56** while following these steps:

1. Disconnect power to the display.
2. Access the module.

   Front access: Position the module access tool (Daktronics part number TH-1212) supplied in the toolkit so the arrows on the handle point up. Use slight thumb pressure to insert the tool into the upper-right corner of the module until it clicks. Refer to **Figure 61** and **Figure 62**.

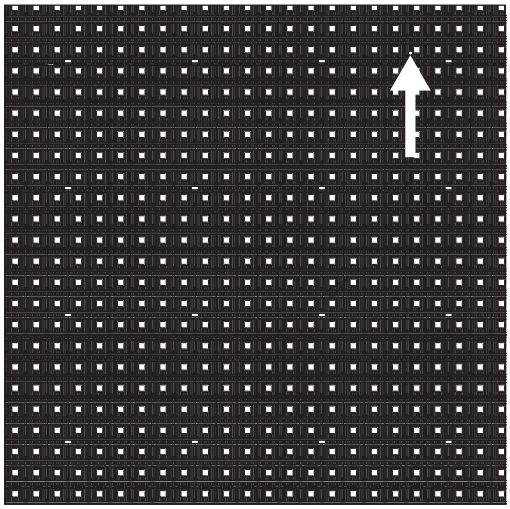

Figure 61: *Access Module Latch*

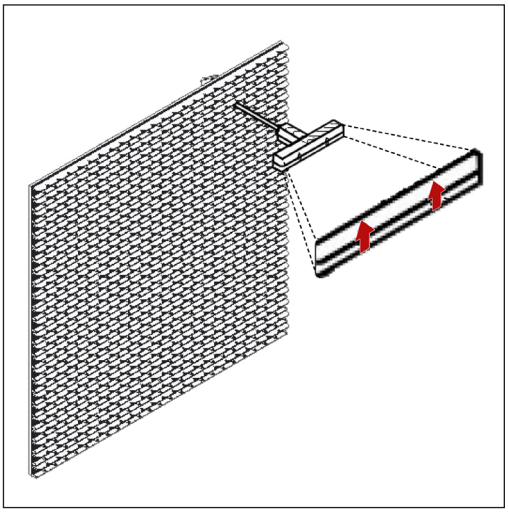

Figure 62: *Use Module Access Tool*

   Top access: Remove the module pan. Refer to **Module Pan (p.21)** for instructions.

3. Pull on the handle to remove the module from the display just far enough to reach around to the back of the unit. Turn the module access tool so the arrows on the handle point down and remove it from the module.

> **Note:** When performing this step, take care not to damage the louvers by tilting the module at too much of an angle. Refer to **Figure 58**.

4. Attach one end of the safety lanyard (Daktronics part number 0A-1175-9000) supplied in the toolkit to the rings on the top of the module and the other end to a secure location within the display to prevent the module from falling if dropped.
5. Disconnect the power and signal cables from the rear of the module.

Reverse these steps to install an RTX-18X3 module in a display.

PLR

To remove a ProLink Router (PLR) from a display, follow the steps below:

1. Disconnect power to the display.
2. Use the $^{1}/_{4}$" nutdriver (Daktronics part number TH-1042) and $^{5}/_{16}$" hex security bit (TH-1170) supplied in the toolkit to release the beverage shroud security latches. The beverage shroud may be left on in a flipped-up position or removed by rotating it up and unhooking the spring-loaded hinge pins.
3. Unplug SATA Port A and SATA Port B, the fiber transmit and receive dual LC connections, and the two-pin power jack from the PLR.
4. Use a Phillips screwdriver to remove the three screws holding the PLR to the plate or remove the hinge, plate, and PLR together by rotating the hinge up and unhooking the spring-loaded hinge pins. Refer to **Figure 63**.

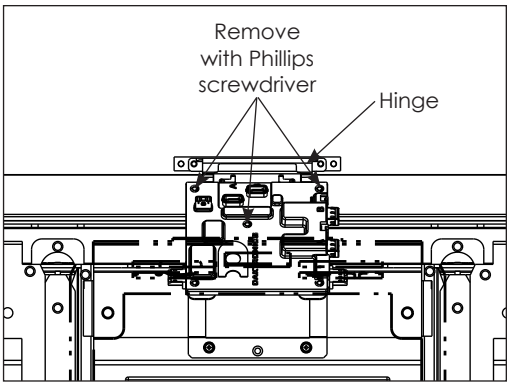

Figure 63: *Remove PLR*

Reverse these steps to install a PLR in a display.

Troubleshooting

This table lists problems that may be encountered while operating the display. Next to each problem are troubleshooting steps that may help to resolve it.

Display Problem	Troubleshooting Steps
Module is blank or garbled.	Check the power status LEDs on all power supplies and modules connected to the module. Check the SATA cable input into the module and the output from the previous module or ProLink Router (PLR). Perform a module self-test.
Section of display is blank.	Ensure the section is receiving power and all breakers are turned on. Ensure the power status LEDs on the modules, power supplies, and PLRs in the blank section are on. Ensure the connections to the PLR are secure. Change the connections with one another to test. Ensure the fiber-optic signal is connected to the PLR or patch panel. Perform a PLR loopback test to test the PLRs in the section. Refer to the **ProLink Router 6X5X (PLR6X5X) Installation and Maintenance Manual (DD1735784)** for instructions.

Display Problem	Troubleshooting Steps
Entire display is blank.	Ensure the display is receiving power and all breakers are turned on. When power is applied to the display, power supply LEDs should turn on. Ensure the Video Image Processor (VIP) is not blank. Ensure the fiber-optic signal cable is connected to the VIP. The input signal should be locked. If the input signal is not locked, check the fiber connections.
Entire display is garbled or uncontrollable.	Use the test patterns to check the VIP status LEDs and ensure the board is receiving power. Refer to the **VIP-5000 Series Operation Manual (DD2773152)** for instructions. Verify the controller/content player configuration and restart the display service. Ensure the fiber-optic signal cable is connected to the VIP. The input signal should be locked. If the input signal is not locked, check the fiber connections.

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5 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 two per module, one on the top and one on the bottom.

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.

Louver: a plastic shade positioned horizontally above each pixel row. Louvers increase the contrast level on the display face and direct LED light for easier viewing.

Module: a display board with LEDs, a driver board or logic card, a black plastic housing, and a module latch assembly. Each module is individually removable from either the front or the rear of the display.

Module Latch: an orange latch located in the upper-left corner from the rear of the module.

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 ProLink6 control system 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.

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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6 Replacement Parts

Replacement Parts List

Part Description	Part Number
Toolkit	0A-1866-0001
ProLink Router (PLR)	0P-1525-0004
Power supply	A-3143
Cabinet fan	B-1072
Module	Contract-specific

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 #

A Reference Documents

- **Ribbon Board Cabinet Lifting Instructions Quick Guide (DD1402020)**
- **RTX-11X3/18X3 Series Power Numbers Quick Guide (DD3322986)**
- **RTX-11X3/18X3 Series Sectional Installation & Service Quick Guide (DD3329925)**
- **LED Matrix Display Face Cleaning Quick Guide (ED-14158)**

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Ribbon Board Crated Cabinet Lifting Instructions Quick Guide

Aluminum Crate Displays

Crane Unloading with Spreader Beam (Recommended)

Attach a spreader beam to all four points provided in the upper corner of the aluminum crate vertical members. Maintain a minimum angle of 45° between the strap or chain and the horizon. Refer to **Figure 1**.

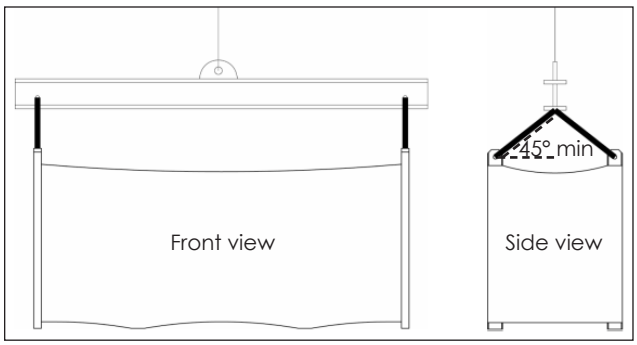

Figure 1: *Crane Unloading with Spreader Beam*

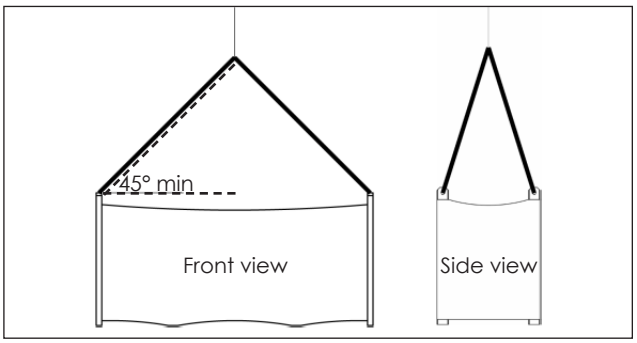

Figure 2: *Crane Unloading without Spreader Beam*

Crane Unloading without Spreader Beam

Attach lifting chains to all four points provided in the upper corner of the aluminum crate vertical members. Using two double-chain slings to lift from these locations is recommended. Maintain a minimum angle of 45° between the strap or chain and the horizon.

Note: Stacked shipping frames may be lifted from the truck as a connected pair.

Forklift Unloading

A forklift may only be used for display crates no more than 14' in length and designed with forklift pockets. Align the forklift pockets with the mid-line of the crate at the forklift pocket locations. Refer to **Figure 3**.

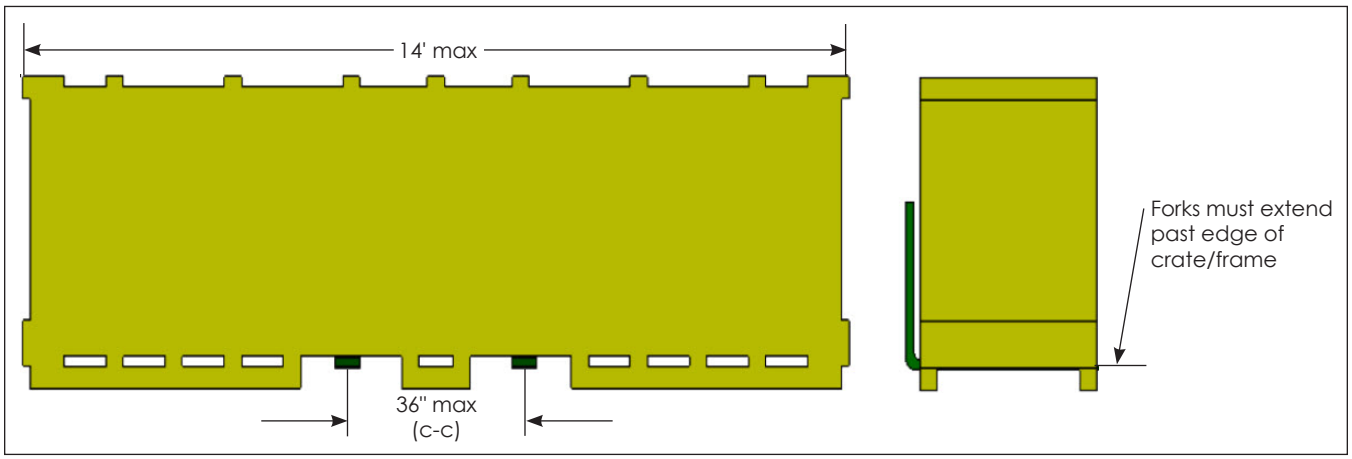

Figure 3: *Forklift-Unloading Configurations*

Note: Maximum fork center-to-center (c-c) spacing must not exceed 36".

Using a forklift for overhead lifting is acceptable only in crane-unloading configurations. Refer to **Figure 1** or **Figure 2**.

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Wooden Crate Displays

Crane Unloading with Spreader Beam (Recommended)

Place the lifting straps under the double-bottomed kickboard. Maintain a minimum angle of 45° and a maximum angle of 85° between the strap and the horizon (when viewed from the front). Maintain a minimum angle of 45° between the strap and the horizon (when viewed from the side). Refer to **Figure 4**.

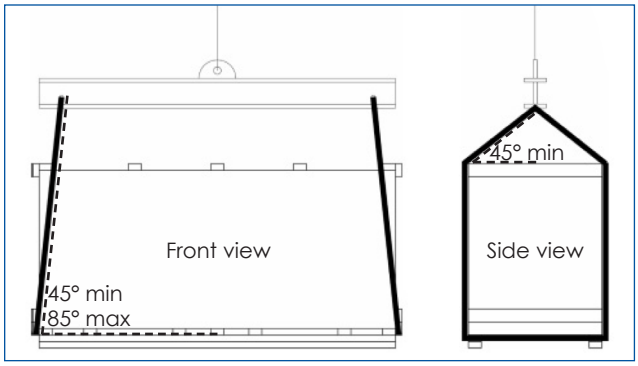

Figure 4: *Crane Unloading with Spreader Beam*

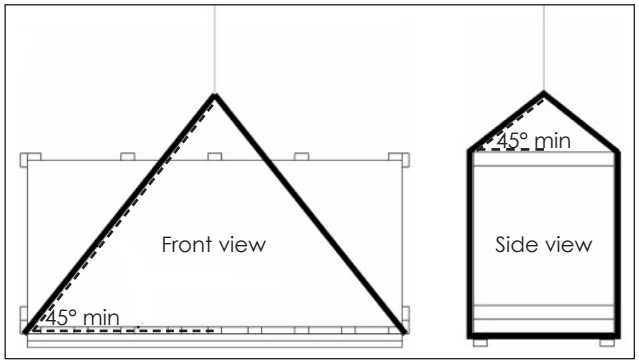

Figure 5: *Crane Unloading without Spreader Beam*

Crane Unloading without Spreader Beam

Place the lifting straps under the double-bottomed kickboard. Maintain a minimum angle of 45° between the strap and the horizon. Refer to **Figure 5**.

Forklift Unloading

Bottom lifting is allowed at forklift pocket sleeve assembly locations.

Note: Maximum fork center-to-center (c-c) spacing must not exceed 36".

Using a forklift for overhead lifting is acceptable only in crane-unloading configurations. Refer to **Figure 4** and **Figure 5**.

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RTX-11X3/18X3 Series Power Numbers Quick Guide

Domestic

These tables list the power numbers for the standard section sizes.

RTX-11X3-13HD	Bus 120 V ~ 60 Hz 2 W + GND	
Section	**Watts**	**L1 Amps**
2x3 – 56x84	264	2.2
2x4 – 56x112	348	2.9
2x5 – 56x140	432	3.6
2x6 – 56x168	516	4.3
2x7 – 56x196	600	5.0
2x8 – 56x224	684	5.7
3x3 – 84x84	384	3.2
3x4 – 84x112	504	4.2
3x5 – 84x140	624	5.2
3x6 – 84x168	756	6.3
3x7 – 84x196	876	7.3
3x8 – 84x224	996	8.3
4x3 – 112x84	504	4.2
4x4 – 112x112	660	5.5
4x5 – 112x140	828	6.9
4x6 – 112x168	984	8.2

RTX-11X3-15HD	Bus 120 V ~ 60 Hz 2 W + GND	
Section	**Watts**	**L1 Amps**
2x3 – 48x72	264	2.2
2x4 – 48x96	348	2.9
2x5 – 48x120	432	3.6
2x6 – 48x144	516	4.3
2x7 – 48x168	600	5.0
2x8 – 48x192	684	5.7
3x3 – 72x72	384	3.2
3x4 – 72x96	504	4.2
3x5 – 72x120	624	5.2
3x6 – 72x144	756	6.3
3x7 – 72x168	876	7.3
3x8 – 72x192	996	8.3
4x3 – 96x72	504	4.2
4x4 – 96x96	660	5.5
4x5 – 96x120	828	6.9
4x6 – 96x144	984	8.2

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RTX-11X3-16MT	Bus 120 V ~ 60 Hz 2 W + GND	
Section	**Watts**	**L1 Amps**
2x3 – 44x66	264	2.2
2x4 – 44x88	348	2.9
2x5 – 44x110	432	3.6
2x6 – 44x132	516	4.3
2x7 – 44x154	600	5.0
2x8 – 44x176	684	5.7
3x3 – 66x66	384	3.2
3x4 – 66x88	504	4.2
3x5 – 66x110	624	5.2
3x6 – 66x132	756	6.3
3x7 – 66x154	876	7.3
3x8 – 66x176	996	8.3
4x3 – 88x66	504	4.2
4x4 – 88x88	660	5.5
4x5 – 88x110	828	6.9
4x6 – 88x132	984	8.2

RTX-11X3-20MT	Bus 120 V ~ 60 Hz 2 W + GND	
Section	**Watts**	**L1 Amps**
2x3 – 36x54	264	2.2
2x4 – 36x72	348	2.9
2x5 – 36x90	432	3.6
2x6 – 36x108	516	4.3
2x7 – 36x126	600	5.0
2x8 – 36x144	684	5.7
3x3 – 54x54	384	3.2
3x4 – 54x72	504	4.2
3x5 – 54x90	624	5.2
3x6 – 54x108	756	6.3
3x7 – 54x126	876	7.3
3x8 – 54x144	996	8.3
4x3 – 72x54	504	4.2
4x4 – 72x72	660	5.5
4x5 – 72x90	828	6.9
4x6 – 72x108	984	8.2

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RTX-18X3-8MN	Bus 120 V ~ 60 Hz 2 W + GND	
Section	**Watts**	**L1 Amps**
2x3 – 90x270	480	4.0
2x4 – 90x360	636	5.3
2x5 – 90x450	792	6.6
2x6 – 90x540	948	7.9
2x7 – 90x630	1104	9.2
2x8 – 90x720	1260	10.5
3x3 – 135x270	708	5.9
3x4 – 135x360	936	7.8
3x5 – 135x450	1164	9.7
3x6 – 135x540	1392	11.6
3x7 – 135x630	1632	13.6
3x8 – 135x720	1860	15.5
4x3 – 180x270	924	7.7
4x4 – 180x360	1236	10.3
4x5 – 180x450	1548	12.9
4x6 – 180x540	1848	15.4

RTX-18X3-10MN	Bus 120 V ~ 60 Hz 2 W + GND	
Section	**Watts**	**L1 Amps**
2x3 – 72x108	480	4.0
2x4 – 72x144	636	5.3
2x5 – 72x180	792	6.6
2x6 – 72x216	948	7.9
2x7 – 72x252	1104	9.2
2x8 – 72x288	1260	10.5
3x3 – 108x108	708	5.9
3x4 – 108x144	936	7.8
3x5 – 108x180	1164	9.7
3x6 – 108x216	1392	11.6
3x7 – 108x252	1632	13.6
3x8 – 108x288	1860	15.5
4x3 – 144x108	924	7.7
4x4 – 144x144	1236	10.3
4x5 – 144x180	1548	12.9
4x6 – 144x216	1848	15.4

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RTX-18X3-15MN	Bus 120 V ~ 60 Hz 2 W + GND	
Section	**Watts**	**L1 Amps**
2x3 – 48x72	480	4.0
2x4 – 48x96	636	5.3
2x5 – 48x120	792	6.6
2x6 – 48x144	948	7.9
2x7 – 48x168	1104	9.2
2x8 – 48x192	1260	10.5
3x3 – 72x72	708	5.9
3x4 – 72x96	936	7.8
3x5 – 72x120	1164	9.7
3x6 – 72x144	1392	11.6
3x7 – 72x168	1632	13.6
3x8 – 72x192	1860	15.5
4x3 – 96x72	924	7.7
4x4 – 96x96	1236	10.3
4x5 – 96x120	1548	12.9
4x6 – 96x144	1848	15.4

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International

These tables list the power numbers for the standard section sizes.

RTX-11X3-13HD	Bus 240 V ~ 50 Hz 2 W + GND	
Section	**Watts**	**L1 Amps**
2x3 – 56x84	250	1.0
2x4 – 56x112	342	1.4
2x5 – 56x140	410	1.7
2x6 – 56x168	501	2.1
2x7 – 56x196	592	2.5
2x8 – 56x224	660	2.8
3x3 – 84x84	364	1.5
3x4 – 84x112	478	2.0
3x5 – 84x140	615	2.6
3x6 – 84x168	729	3.0
3x7 – 84x196	843	3.5
3x8 – 84x224	979	4.1
4x3 – 112x84	499	2.1
4x4 – 112x112	665	2.8
4x5 – 112x140	832	3.5
4x6 – 112x168	998	4.2

RTX-11X3-15HD	Bus 240 V ~ 50 Hz 2 W + GND	
Section	**Watts**	**L1 Amps**
2x3 – 48x72	250	1.0
2x4 – 48x96	342	1.4
2x5 – 48x120	410	1.7
2x6 – 48x144	501	2.1
2x7 – 48x168	592	2.5
2x8 – 48x192	660	2.8
3x3 – 72x72	364	1.5
3x4 – 72x96	478	2.0
3x5 – 72x120	615	2.6
3x6 – 72x144	729	3.0
3x7 – 72x168	843	3.5
3x8 – 72x192	979	4.1
4x3 – 96x72	499	2.1
4x4 – 96x96	665	2.8
4x5 – 96x120	832	3.5
4x6 – 96x144	998	4.2

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RTX-11X3-16MT	Bus 240 V ~ 50 Hz 2 W + GND	
Section	**Watts**	**L1 Amps**
2x3 – 44x66	250	1.0
2x4 – 44x88	342	1.4
2x5 – 44x110	410	1.7
2x6 – 44x132	501	2.1
2x7 – 44x154	592	2.5
2x8 – 44x176	660	2.8
3x3 – 66x66	364	1.5
3x4 – 66x88	478	2.0
3x5 – 66x110	615	2.6
3x6 – 66x132	729	3.0
3x7 – 66x154	843	3.5
3x8 – 66x176	979	4.1
4x3 – 88x66	499	2.1
4x4 – 88x88	665	2.8
4x5 – 88x110	832	3.5
4x6 – 88x132	998	4.2

RTX-11X3-20MT	Bus 240 V ~ 50 Hz 2 W + GND	
Section	**Watts**	**L1 Amps**
2x3 – 36x54	250	1.0
2x4 – 36x72	342	1.4
2x5 – 36x90	410	1.7
2x6 – 36x108	501	2.1
2x7 – 36x126	592	2.5
2x8 – 36x144	660	2.8
3x3 – 54x54	364	1.5
3x4 – 54x72	478	2.0
3x5 – 54x90	615	2.6
3x6 – 54x108	729	3.0
3x7 – 54x126	843	3.5
3x8 – 54x144	979	4.1
4x3 – 72x54	499	2.1
4x4 – 72x72	665	2.8
4x5 – 72x90	832	3.5
4x6 – 72x108	998	4.2

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RTX-18X3-8MN	Bus 240 V ~ 50 Hz 2 W + GND	
Section	**Watts**	**L1 Amps**
2x3 – 90x270	455	1.9
2x4 – 90x360	615	2.6
2x5 – 90x450	751	3.1
2x6 – 90x540	911	3.8
2x7 – 90x630	1048	4.4
2x8 – 90x720	1207	5.0
3x3 – 135x270	683	2.8
3x4 – 135x360	888	3.7
3x5 – 135x450	1116	4.6
3x6 – 135x540	1344	5.6
3x7 – 135x630	1549	6.5
3x8 – 135x720	1776	7.4
4x3 – 180x270	927	3.9
4x4 – 180x360	1236	5.1
4x5 – 180x450	1545	6.4
4x6 – 180x540	1853	7.7

RTX-18X3-10MN	Bus 240V~ 50Hz 2W + GND	
Section	**Watts**	**L1 Amps**
2x3 – 72x108	455	1.9
2x4 – 72x144	615	2.6
2x5 – 72x180	751	3.1
2x6 – 72x216	911	3.8
2x7 – 72x252	1048	4.4
2x8 – 72x288	1207	5.0
3x3 – 108x108	683	2.8
3x4 – 108x144	888	3.7
3x5 – 108x180	1116	4.6
3x6 – 108x216	1344	5.6
3x7 – 108x252	1549	6.5
3x8 – 108x288	1776	7.4
4x3 – 144x108	927	3.9
4x4 – 144x144	1236	5.1
4x5 – 144x180	1545	6.4
4x6 – 144x216	1853	7.7

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RTX-18X3-15MN	Bus 240 V ~ 50 Hz 2 W + GND	
Section	**Watts**	**L1 Amps**
2x3 – 48x72	455	1.9
2x4 – 48x96	615	2.6
2x5 – 48x120	751	3.1
2x6 – 48x144	911	3.8
2x7 – 48x168	1048	4.4
2x8 – 48x192	1207	5.0
3x3 – 72x72	683	2.8
3x4 – 72x96	888	3.7
3x5 – 72x120	1116	4.6
3x6 – 72x144	1344	5.6
3x7 – 72x168	1549	6.5
3x8 – 72x192	1776	7.4
4x3 – 96x72	927	3.9
4x4 – 96x96	1236	5.1
4x5 – 96x120	1545	6.4
4x6 – 96x144	1853	7.7

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Mechanical

Site Preparation

1. Level the upper wall clips. Refer to **Figure 1** and the contract-specific Shop Drawing for details. All upper wall clips must be plumb and level before hanging any sections.

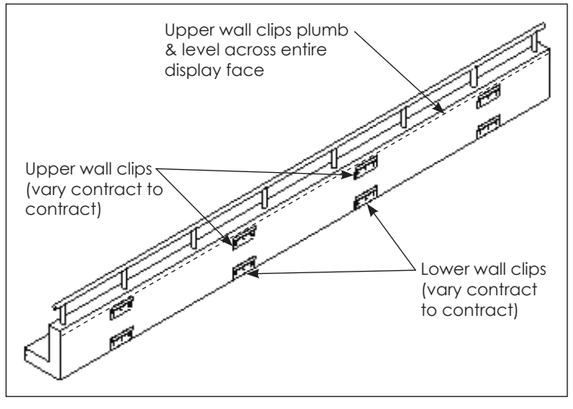

Figure 1: *Level Upper Wall Clips*

2. Verify the lower wall clips are installed per the contract-specific Shop Drawing if applicable. Refer to **Figure 1**.

Standard Section Installation

1. Use the $^{1}/_{4}$" nutdriver (Daktronics part number TH-1042) and $^{5}/_{16}$" hex security bit (TH-1170) supplied in the toolkit to release the beverage shroud latches by rotating them counterclockwise.
2. Open the beverage shroud by rotating upward. Refer to **Figure 3**.

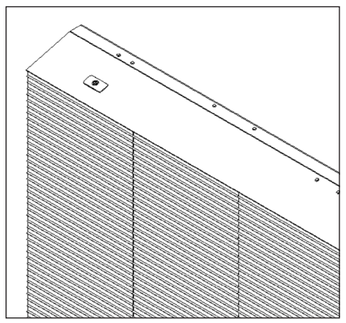

Figure 2: *Closed Beverage Shroud*

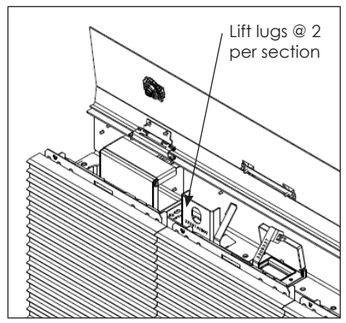

Figure 3: *Open Beverage Shroud*

> **Note:** Remove the beverage shrouds prior to lifting the sections to prevent damage.

3. Lift the display sections from the shipping crate using every lifting point provided. Refer to **Figure 4** and the **RTX Shipping Frame Instructions (DD1944253)** for details. The sections may tip forward when lifting. *Do not set the sections on the ground.*

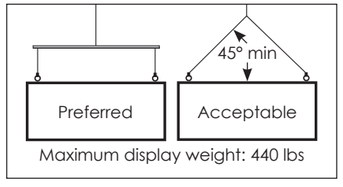

Figure 4: *Lift Display*

4. Use the rear section clips to mount the display section to the wall. Refer to **Figure 5** and **Figure 6**. Ensure the section sits completely in the upper wall clips without the upper and lower wall clips extending past the end or edges of the rear section clips. If the rear section clips need to be moved (other than being adjusted up or down), contact Structural Engineering.

> **Note:** The display must mount directly to a non-combustible surface.

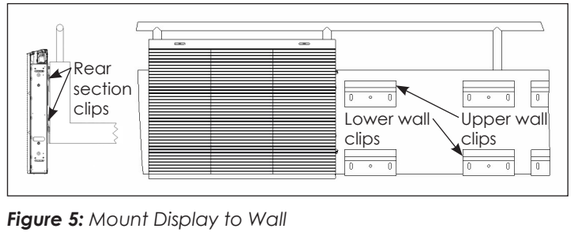

Figure 5: *Mount Display to Wall*

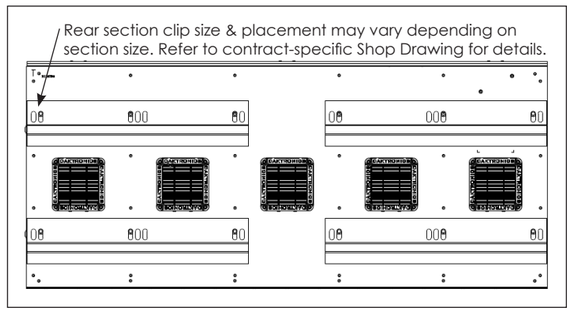

Figure 6: *Rear Section Clips*

5. Ensure the section is plumb, level, and parallel to the wall. The alignment of the first section is crucial, as it determines the alignment of the entire display. Refer to **Figure 7**.
6. Repeat **Steps 1-5** to hang the next section. Ensure the sections are flush in all planes to the adjoining section.

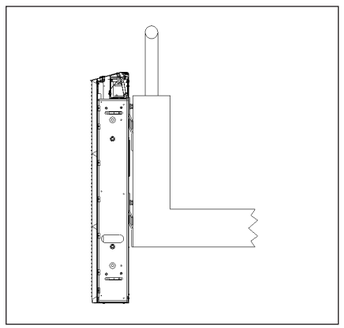

Figure 7: *Display Attached to Wall*

7. Engage both the top and bottom latches located in the far right bay of each section. Refer to **Figure 8** and **Figure 9** for latch access locations. Rotate the latches toward the front of the cabinet (clockwise for the top latch and counterclockwise for the bottom latch) as shown in **Figure 8** and **Figure 9**.

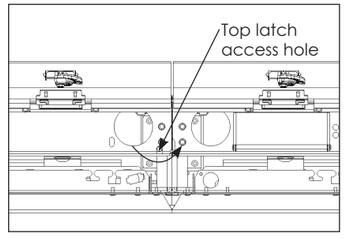

Figure 8: *Access Top Latch*

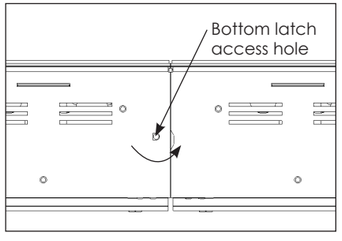

Figure 9: *Access Bottom Latch*

> **Note:** Section-to-section seam tolerance should be +/- of the pixel pitch (e.g. pixel pitch = 20 mm, seam tolerance = +/- 1 mm or .040"). If the seam is out of tolerance, use the interconnect hardware supplied in the toolkit before attaching the subsequent sections. The interconnect connection points are located within the vertical parameters toward the top and bottom. Refer to **Figure 10**. Remove the modules or module column on each side of the seam to insert the hardware. Refer to **Figure 11**.

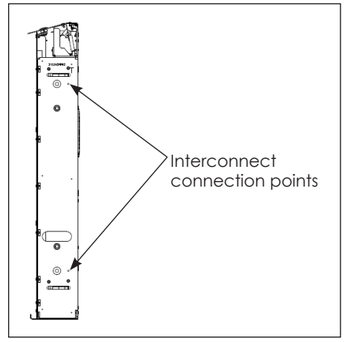

Figure 10: *Interconnect Connection Points*

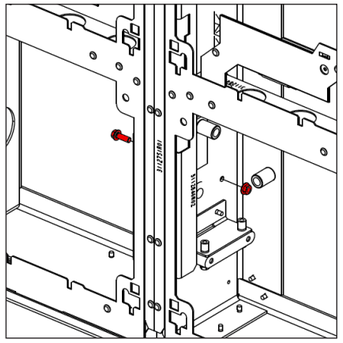

Figure 11: *Insert Interconnect Hardware*

> **Note:** Depending on location, some contracts may require the display to be attached to the lower wall clips with two self-drilling screws per section for uplift protection; module removal is necessary for attachment. Refer to the contract-specific Shop Drawing for the specific method of uplift protection.

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8. Attach the borders as necessary. Refer to the contract-specific shop Drawing for proper placement.

Cap: Use the $^{5}/_{16}$" hollow-shaft nutdriver (TH-1156) supplied in the toolkit to secure the #10 self-tapping screws (HC-1186) at a quantity of six, attaching the end cap or transition cap. Refer to **Figure 12** and **Figure 13**.

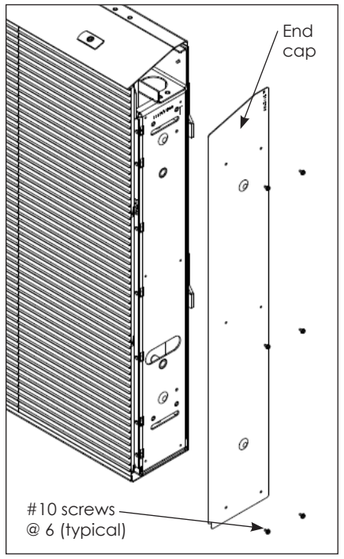

Figure 12: *Attach End Cap*

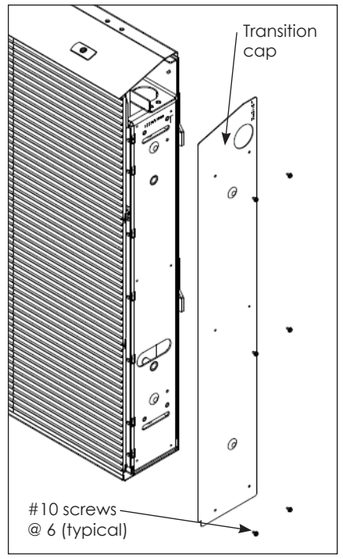

Figure 13: *Attach Transition Cap*

Flange border: Use the $^{5}/_{16}$" hollow-shaft nutdriver (TH-1156) supplied in the toolkit to secure the #10 self-tapping screws (HC-1186) at a quantity of six, attaching the border. Refer to **Figure 14**.

9. Close the beverage shroud and use the $^{1}/_{4}$" nutdriver (TH-1042) and $^{5}/_{16}$" hex security bit (TH-1170) supplied in the toolkit to secure the beverage shroud latches.

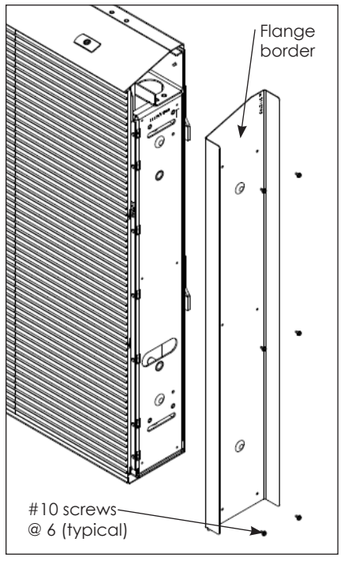

Figure 14: *Attach End Cap*

Assembled Corner

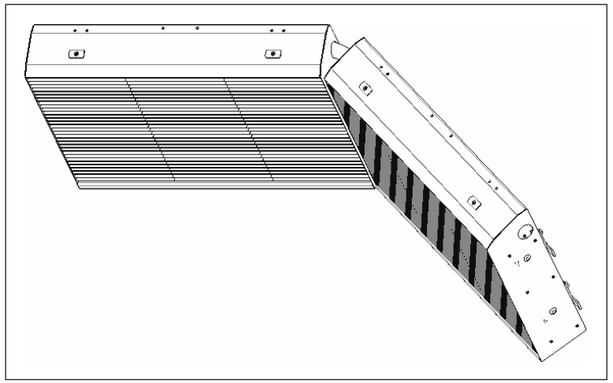

Figure 15: *Assembled Corner*

Corner or Gap Mounting

Corner and gap locations and details are noted on the contract-specific Shop Drawing.

Complete **Steps 1-8** while referring to **Figure 16**.

1. Open or remove the wing beverage shroud on each section that will be on either side of the gap.

2. Locate the transition caps with pass-through holes (located in the border box attached to the front of the first shipping frame of each task/display face) and use the $^{5}/_{16}$" hollow-shaft nutdriver (Daktronics part number TH-1156) supplied in the toolkit to secure the #10 self-tapping screws (HC-1186), attaching the caps to the sections on either side of the gap.

3. Lift and attach the two sections in place. Repeat **Steps 1-5** in **Standard Section Installation (p.1)** to mount the sections. Ensure the second section is vertically plumb and horizontally aligned with the previous section before attaching to the wall.

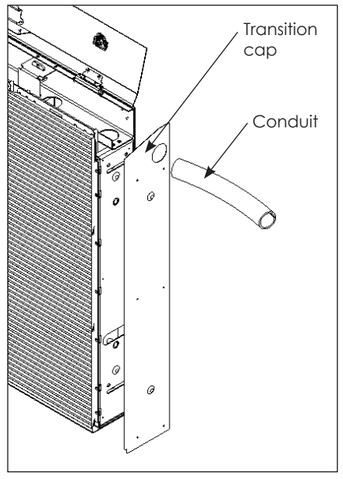

Figure 16: *Mount Corner or Gap*

4. Feed the appropriate wires from one cabinet into the next cabinet. Refer to **DWG-3114301**, **DWG-3114620**, **DWG-3114633**, **DWG-3115513**, **DWG-3115521**, **DWG-3115821**, **DWG-3115868**, **DWG-3115873**, and the contract-specific Config Drawing and Riser Diagram.

5. Use the flexible conduit (EC-1252) located in the far right bay of the sections to the left of the gap to cover the cables in the gap by opening the slit on the 2" flexible conduit and sliding the conduit over the cables.

6. Slide the conduit down the wires and through the holes in the transition caps until at least 2" of conduit is sticking into each section. Ensure the split in the conduit faces down. Trim any excess conduit from the section if needed.

7. Close or reinstall the beverage shrouds and secure with the beverage shroud latches.

Wing Section Installation

1. Open or remove the wing beverage shroud. Refer to **Figure 17**.

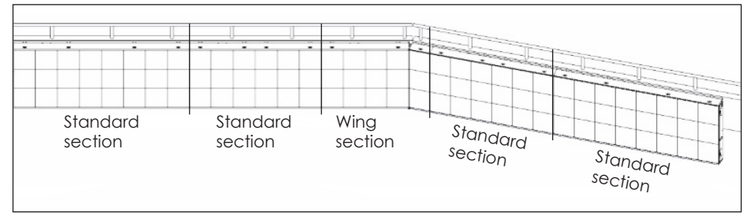

Figure 17: *Open Wing Beverage Shroud*

2. Loosen the retainer nuts from the upper and lower support brackets and release the latches holding the wing to the shell. Refer to **Figure 18** and **Figure 19**. The wing section is now free to rotate.

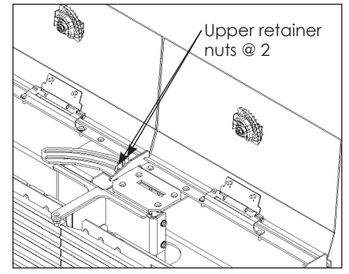

Figure 18: *Loosen Upper Retainer Hardware*

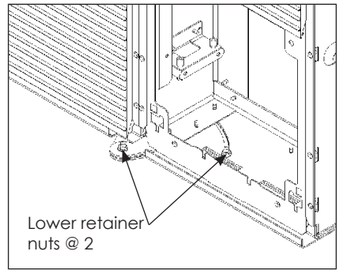

Figure 19: *Loosen Lower Retainer Hardware*

3. Set the wing at the necessary angle to engage the left and right sections. The hinge adds a gap (seam) between the module columns, which is necessary for top-access module removal via the module pan sliders. Refer to **Figure 20**.

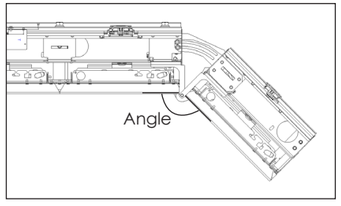

Figure 20: *Set Wing at Appropriate Angle*

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4. Secure the retainer nuts in the upper and lower support brackets into the left vertical of the wing to keep the wing from rotating. The torque required is 20 ft-lbs. Refer to **Figure 21** and **Figure 22**.

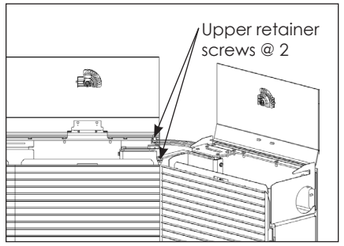


Figure 21: *Secure Upper Retainer Hardware*

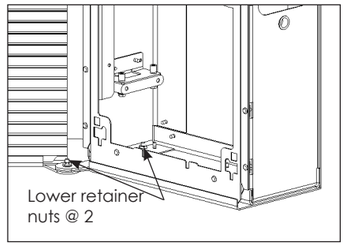


Figure 22: *Secure Lower Retainer Hardware*

5. Remove the self-tapping screws securing the top hinge into place and remove the top hinge. This needs to be removed to allow the beverage shrouds to close completely and the module pans to slide out. Refer to **Figure 23** and **Figure 24**.

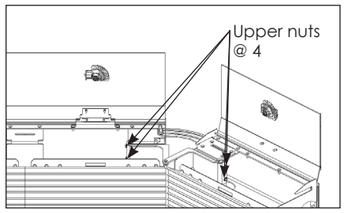


Figure 23: *Remove Top Hinge*

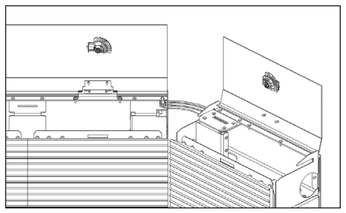


Figure 24: *Top Hinge Removed*

6. Close or reinstall the beverage shrouds and secure with the beverage shroud latches.

Electrical

The fiber, SATA, and power connections shown in this guide serve as an example only. Refer to the contract-specific Config Drawing and System Riser Diagram for specific routing information.

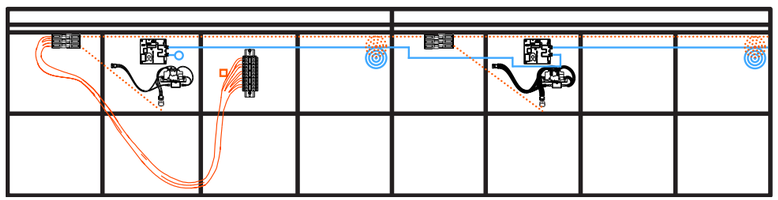
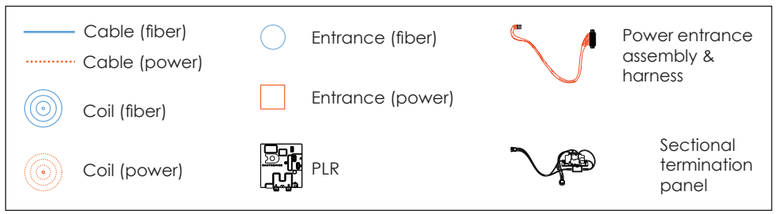


Figure 25: *Signal Routing (Front View)*



To bring power to the display, follow these steps:

1. Ensure power to the display is off.
2. Route the power cable through conduit to the termination panels inside the display at the sections specified on the contract-specific Riser Diagram. Refer to **DWG-3195292**, **DWG-3196409**, and **Figure 26**.
3. Route the coiled power cables from section to section, connecting to the bus harness in the next section. Refer to **Figure 27**.
4. Route the SATA cables from section to section and connect to the module input. Refer to **DWG-3170241**, **Figure 28**, and **Figure 29**.

Figure 26: *Bus Harness*

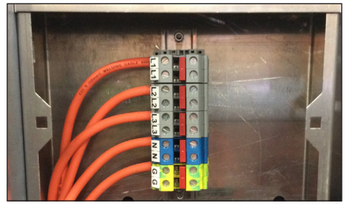


Figure 27: *Termination Panel*

Figure 28: *SATA Cable*

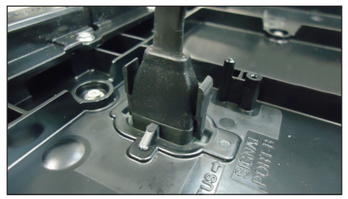


Figure 29: *SATA Connection*

To bring signal to the display, follow these steps:

1. Route the fiber cable through conduit to the fiber patch panel inside the display at the sections specified on the contract-specific Riser Diagram. Refer to **DWG-3177983**, **DWG-3196409**, **Figure 30**, and **Figure 31**.

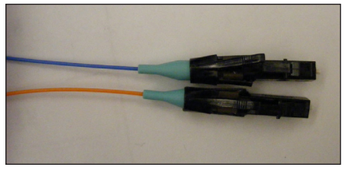


Figure 30: *Fiber Cable*

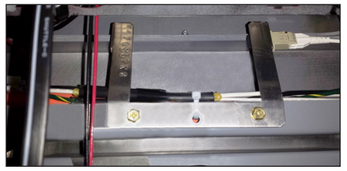


Figure 31: *Fiber Patch Panel*

2. Route the coiled fiber cables to the next section, connecting at the fiber patch panel or PLR. Refer to **DWG-3170241**, **Figure 31**, and **Figure 32**.

Figure 32: *PLR Connections*

Service

Component Locations

- **Fiber patch panel:** second column from left (front view)
- **Module:** face of display
- **Power entrance:** third column from left (front view)
- **Power supply:** directly behind module (RTX-11X3) or on module (RTX-18X3)
- **ProLink router (PLR):** under beverage shroud
- **Termination panel:** second column from left (front view)

Module

RTX-11X3 Module

To remove an RTX-11X3 module from a display, follow these steps:

1. Disconnect power to the display.
2. Access the module.

   Front access: Use the $^{1}/_{8}$" Allen wrench (Daktronics part number TH-1172) supplied in the toolkit to turn the top latch release a $^{1}/_{4}$ turn counterclockwise. Refer to **Figure 33**.

   Top access: Remove the module pan. Refer to **Module Pan (p.4)** for instructions.

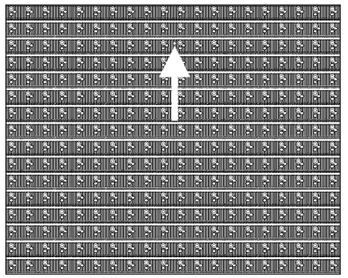


Figure 33: *Module Latch*

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3. Pull the module from the display just far enough to reach around to the back of the unit.

> **Note:** When performing this step, take care not to damage the louvers by tilting the module at too much of an angle. Refer to **Figure 34**.

4. Attach one end of the module safety lanyard (0A-1175-9000) supplied in the toolkit to the rings on either the top or bottom of the module and the other end to a secure location within the display to prevent the module from falling if dropped.

5. Disconnect the power and signal cables from the rear of the module.

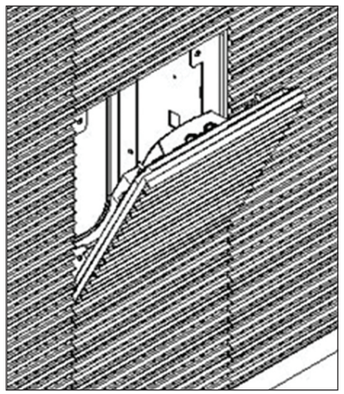

Figure 34: *Front-Access Angle*

Reverse these steps to install an RTX-11X3 module in a display.

RTX-18X3 Module

To remove an RTX-18X3 module from a display, follow these steps:

1. Disconnect power to the display.

2. Access the module.

Front access: Position the module access tool (Daktronics part number TH-1212) supplied in the toolkit so the arrows on the handle point up. Use slight thumb pressure to insert the tool into the upper-right corner of the module until it clicks. Refer to **Figure 35** and **Figure 36**.

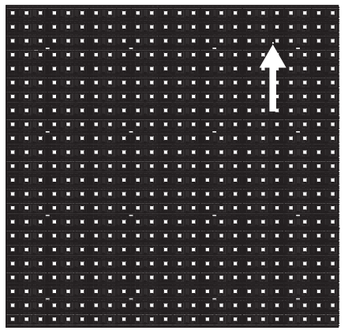

Figure 35: *Module Latch*

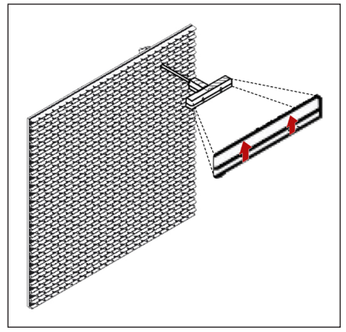

Figure 36: *Use Module Tool*

Top access: Remove the module pan. Refer to **Module Pan (p.4)** for instructions.

3. Pull on the handle to remove the module from the display just far enough to reach around to the back of the unit. Turn the access tool so the arrows on the handle point down and then remove the tool from the module.

> **Note:** When performing this step, take care not to damage the louvers by tilting the module at too much of an angle. Refer to **Figure 34**.

4. Attach one end of the module safety lanyard (0A-1175-9000) supplied in the toolkit to the rings on the top of the module and the other end to a secure location within the display to prevent the module from falling if dropped.

5. Disconnect the power and signal cables from the rear of the module.

Reverse these steps to install an RTX-18X3 module in a display.

Module Pan

Pay special attention to the following instructions to avoid damaging any connectors or components.

To remove a module pan from a top-access display, follow these steps:

1. Disconnect power to the display.

2. Use the $^{1}/_{4}$" nutdriver (Daktronics part number TH-1042) and $^{5}/_{16}$" hex security bit (TH-1170) supplied in the toolkit to release the beverage shroud security latches. The beverage shroud may be left on in a flipped-up position or removed by rotating it up and unhooking the spring-loaded hinge pins. Refer to **Figure 37** and **Figure 38**.

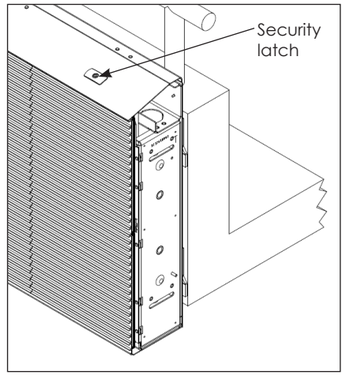

Figure 37: *Beverage Shroud Security Latch*

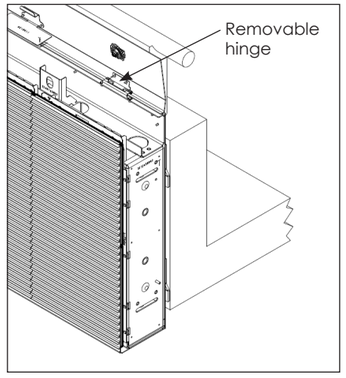

Figure 38: *Beverage Shroud Removable Hinge*

3. Clip one end of the module pan safety lanyard (HS-2057) supplied in the toolkit to the closest lift lug in the top perimeter and the other end into the SATA cable pass-through hole of the module pan in need of service. Refer to **Figure 39** and **Figure 40**.

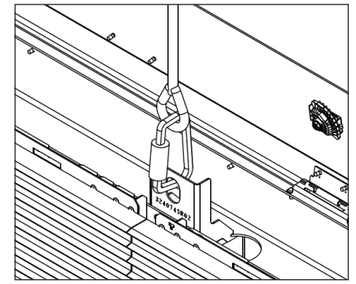

Figure 39: *Lift Lug*

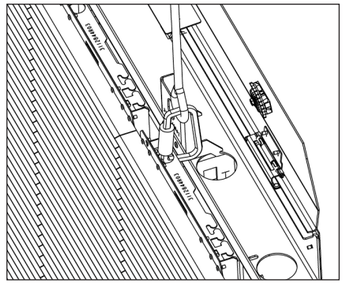

Figure 40: *Module Pan Handle*

4. Unplug the cables from the top of the module pan after the lanyard is properly attached.

Disconnect all SATA and power cables from the top of the module pan handle. If there is a ProLink Router (PLR) in the column, remove the power cable from the module pan handle. Refer to **Figure 41** and **Figure 42**.

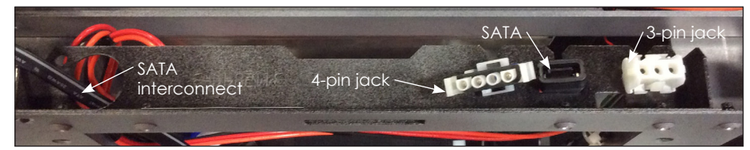

Figure 41: *Disconnected Cables*

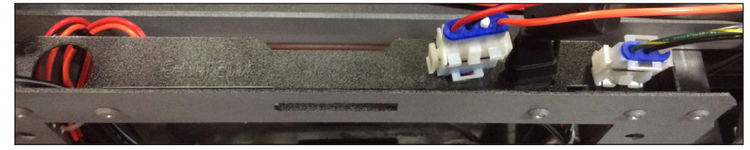

Figure 42: *Connected Cables*

5. Ensure all cables are unplugged and then raise the module pan carefully until free of the track and over the rail into a safe position. The module pan should now be ready for servicing, and the lanyard may be unhooked. Refer to **Figure 43**.

> **Note:** Cables may get snagged on internal components when the module pan is removed or inserted. If this occurs, be sure to free the cables of all obstructions before continuing to remove or insert the module pan.

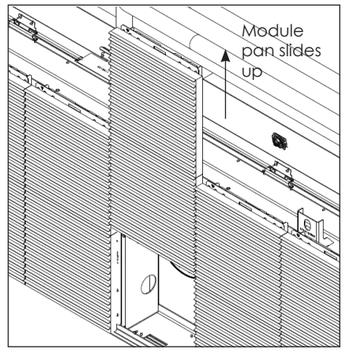

Figure 43: *Remove Module Pan*

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LED Matrix Display Face Cleaning Quick Guide

This document outlines materials and methods used to clean all Daktronics LED matrix displays. Due to occasional document updates, please check www.daktronics.com before proceeding.

Outdoor Cleaning Method

Note: Do not use this method on indoor displays.

Using only deionized (DI) water without a cleaner is not recommended, as it does not remove oils and provides inadequate results.

Cleaning Supplies

- Five-gallon [20-liter] bucket
- Car wash concentrate (not a wash and wax):
  - Armor All® car wash concentrate (1:128 soap-to-water ratio)
  - Crystal Simple Green® car wash concentrate (1:30 soap-to-water ratio)
  - Rain-X® high-foaming car wash concentrate (1:128 soap-to-water ratio)
- Cold, relatively soft water (potable, municipal tap water)
- Soft, automotive-washing bristle brush: 4-8' [1-2 m] telescoping handle and a 10"-wide [25 cm] soft-to-medium-head brush with 4" [10 cm] light-to-medium rigidity bristles
  - Detailer's Choice® tri-level flow-through brush with 6' [2 m] handle (Walmart® item #4B360)
  - Ettore® Extend-a-Flo flow-thru wash brush with 6' [2 m] handle (Do-It Best Center item #59072)
  - TOUGH GUY® aluminum flow-through brush with 70" [2 m] handle (Grainger item #491R25)
  - Soft-bristle scrub brush with 42-72" [1-2 m] handle (McMaster-Carr item #6140T41)

  If more detailed cleaning is required, a TOUGH GUY® scrub brush with 8" handle (Grainger item #1DU76) can be used.

Do not use car wash and wax concentrates (wax leaves residue on LEDs), deck brushes (bristles damage LEDs and louvers, spotting-agent rinses (chemicals leave residue on LEDs), or power washers (high pressure damages LEDs and louvers).

Cleaning Process

1. Turn off power to the display.
2. Mix the car wash concentrate and cold water in the five-gallon [20-liter] bucket at the manufacturer's recommended concentration for general cleaning.
3. Dip the brush in the soapy water.

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4. Use horizontal brush strokes to loosen and remove dirt and grime on the display, washing from top-to-bottom in vertical columns. Refer to **Figure 1**. Use light pressure to avoid damaging the LEDs. Clean an area that is safely within reach from a lift or stage, and then move on to the next section of modules. Wash in small sections that can be rinsed before the soapy water dries.

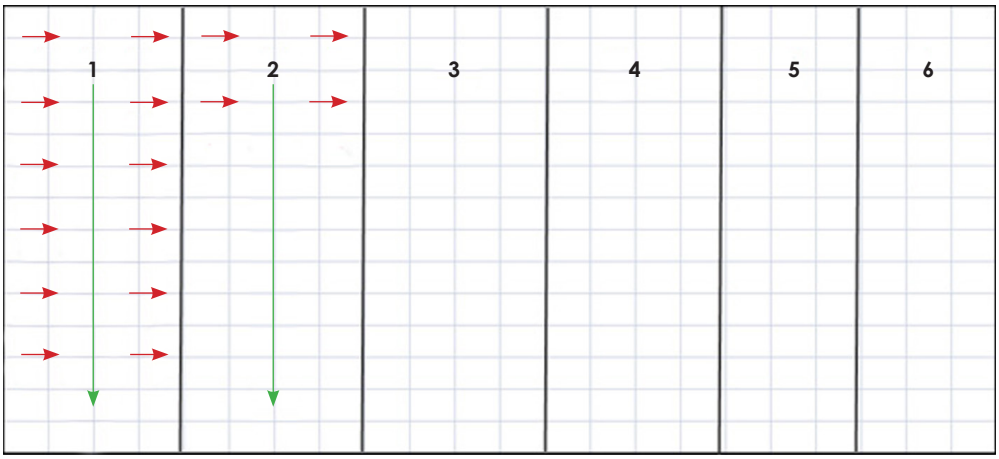

Figure 1: *Wash Display Top-to-Bottom*

> **Note:** Take care not to catch the cloth on the LEDs or plastic louvers, as this may damage them.

5. Rinse the display face with a generous amount of low pressure cold water *before the soapy water dries*. Soap may dry on the display faster or slower depending on weather conditions.

> **Note:** It is important to flush all excess soap residue off the display face with low water pressure.

6. Allow the display to air dry completely before reviewing the cleanliness.
7. Dispose any leftover soapy water in an environmentally safe manner.

Indoor Cleaning Method

Dry Indoor Method

Cleaning Supplies

> **Note:** Do not use chemicals or solvents.

- Automotive dusting brush or other dusting-type cloth/mop without border (cut off if present) or loops: lint-free with a very short or non-existent pile similar to velour, microsuede, or velvet
  - California Car Duster® dust mop (not recommended for 4 mm pitch displays or smaller)
  - MoozikPro polishing cloth (Amazon® item #10766752 - preferred cloth)
  - Microfiber polishing wipe (McMaster-Carr item #7716T3)
  - Microfiber suede polishing cloth (Zoro® item #G7118419)

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Cleaning Process

1. Wipe the display face horizontally with the duster, using light pressure to prevent LED damage. Horizontal strokes follow the path of the LEDs and are best for removing dirt. It may take several passes to remove all dust and grime.
2. Shake out or replace the duster as needed to maintain effectiveness.

Wet Indoor Method

Module masks can accumulate grime and grease during installation, which can greatly reduce image quality. To ensure premium performance, follow the steps in this section.

Cleaning Supplies

- 99% isopropyl rubbing alcohol
- Soft, smooth cloth without a border (cut off if present) or loops: lint-free with a very short or non-existent pile similar to velour, microsuede, or velvet
  - MoozikPro polishing cloth (Amazon® item #10766752 - preferred cloth)
  - Microfiber suede cloth (Microfiber Wholesale item #MSC1414)
  - Microfiber suede polishing cloth (Zoro® item #G7118419)

Cleaning Process

1. Turn off power to the display.
2. Pour isopropyl rubbing alcohol into a squirt bottle and squirt the microfiber cloth twice to moisten it. Refer to **Figure 2**.

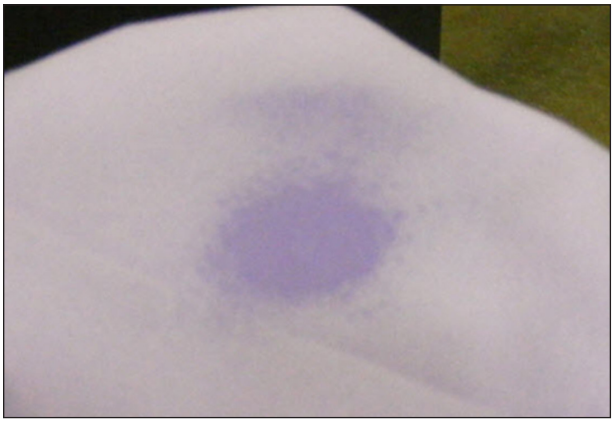

Figure 2: *Moisten Cloth*

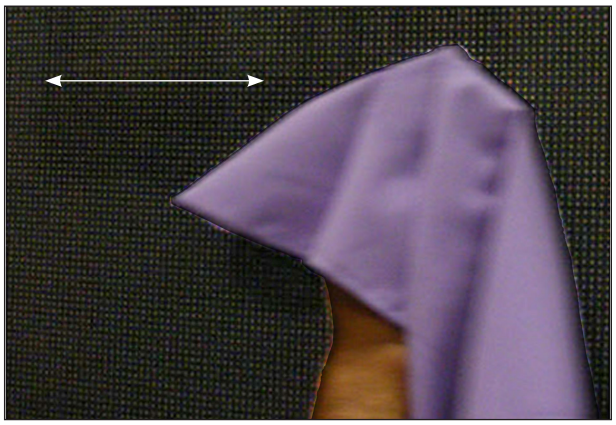

Figure 3: *Wipe Module Up-and-Down*

3. Apply light, even pressure with two or three fingers and steadily wipe the module in an up-and-down motion, covering about 1" of width with each wipe. Refer to **Figure 3**.

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4. Repeat **Step 2** and **Step 3** in a left-to-right motion. Refer to **Figure 4**.

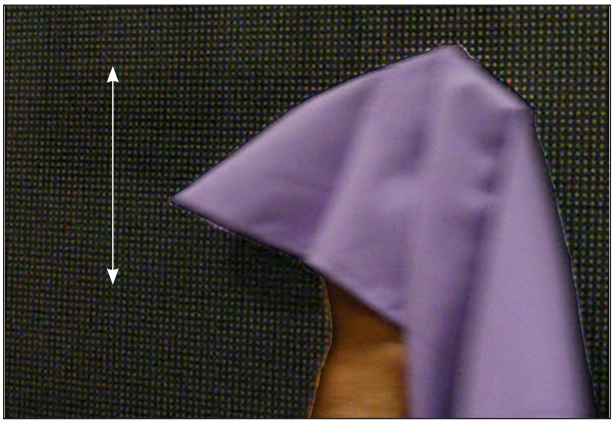

Figure 4: *Wipe Module Up-and-Down*

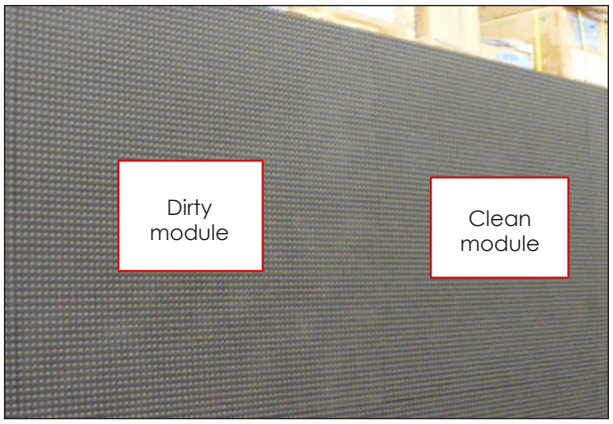

Figure 5: *Examine Display*

> **Note:** Never wipe diagonally and be careful not to snag or catch the cloth on the corners of the LEDs.

5. Examine the display and touch up areas as needed. Refer to **Figure 5**.

Spray Paint Removal

If a display has been spray painted, inadvertently or as an act of vandalism, there are two options for removing spray paint: a soft cloth with isopropyl alcohol (IPA) or a soft cloth with ethanol.

> **Note:** Use the IPA method first. Do not wipe the surface hard or use strong chemical materials that can cause damage to the LEDs.

1. Use IPA and a soft cloth to gently wipe the painted surface and then gently wipe the surface again.
2. Use a clean cloth dipped in pure water to gently wipe the surface.

Metal Dust Removal

If ferrous particles are stuck to magnet locations on the face of the module, follow the steps in this section.

1. Wrap a handheld magnet in a towel.
2. Hold the magnet in a towel and slowly and gently pass the magnet over the affected surfaces, picking up metal shavings and dust from the module.

> **Note:** Keep the magnet from touching the module face to prevent damage to the LEDs or module mask.

3. Hold the towel over a waste receptacle and remove the magnet from the towel. Shake out the towel to discard particles. Refer to **Figure 6**.

Figure 6: *Magnetic Dust*

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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 RTX-11X3/18X3 series displays and are listed in numeric order. Any contract-specific drawings take precedence over the general drawings.

Module Splice Alignment; Install Manual **DWG-0183181**
Louver Alignment; Install Manual..... **DWG-0183182**
Block Diagram; RTX A3, 4-High (2:1) **DWG-3114301**
Block Diagram; RTX A3, 3-High (2:1) **DWG-3114620**
Block Diagram; RTX A3, 2-High (2:1) **DWG-3114633**
Block Diagram; RTX A3, Primary/Signal, 4-High (1:1) **DWG-3115513**
Block Diagram; RTX A3, Primary/Signal, 3-High (1:1) **DWG-3115521**
Block Diagram; RTX A3, Primary/Signal, 2-High (1:1) **DWG-3115536**
Block Diagram; RTX A3, Secondary, 4-High (2:1) **DWG-3115821**
Block Diagram; RTX A3, Secondary, 3-High (2:1) **DWG-3115868**
Block Diagram; RTX A3, Secondary, 2-High (2:1) **DWG-3115873**
Layout; Comp & Pwr, RTX A3 ..... **DWG-3144351**
RTX SATA Routing Options..... **DWG-3170241**
RTX A3 Fiber Routing..... **DWG-3177983**
Layout; Mod Pan Wiring, RTX A3..... **DWG-3194288**
Power Entrance; Field Termination Detail..... **DWG-3195292**
Power Entrance; Field Conduit Location, RTX A3 ..... **DWG-3196409**

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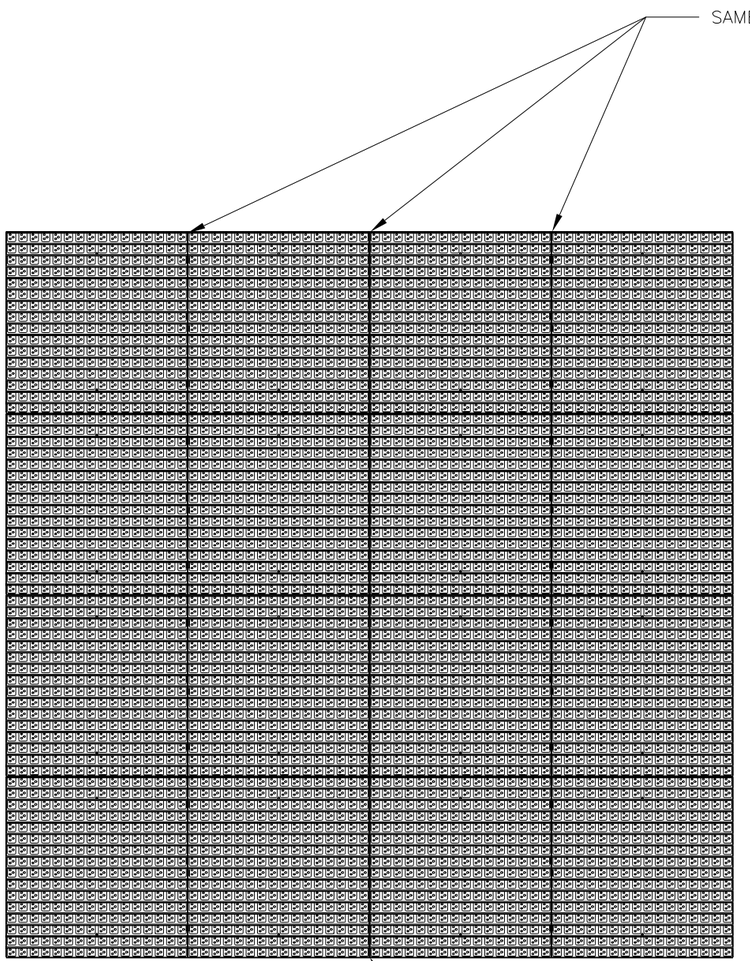
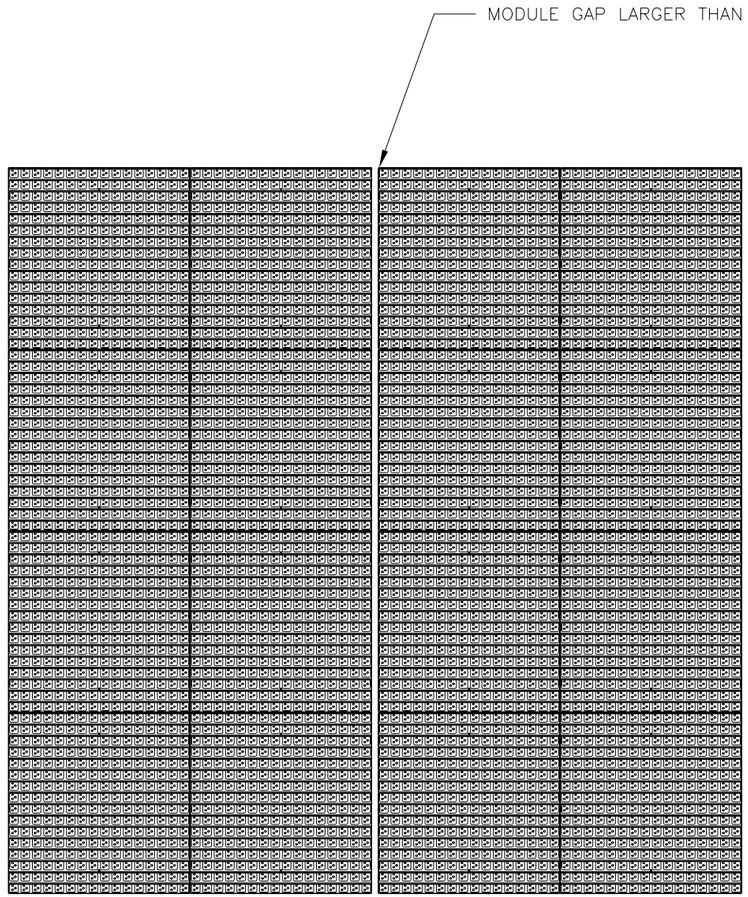
NOTES:

CHECK TO ENSURE THAT THE DISTANCE BETWEEN MODULES AT THE SPLICE IS IDENTICAL TO THE DISTANCE BETWEEN MODULES ON THE INTERIOR OF THE DISPLAY.



PROPER ALIGNMENT



IMPROPER ALIGNMENT

REV.	DATE	DESCRIPTION	BY	APPR.

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: INSTALL MANUAL

TITLE: MODULE ALIGNMENT; INSTALL MANUAL

DES. BY: ASTOEBNER DRAWN BY: ASTOEBNER DATE: 12 FEB 03

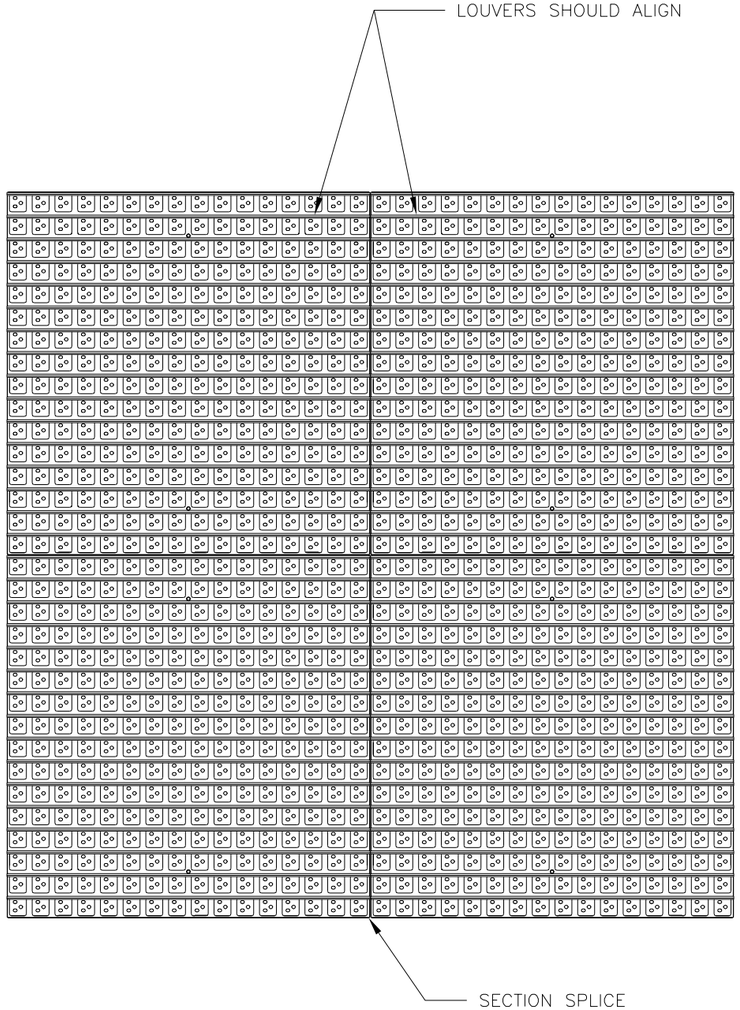
REVISION APPR. BY:

SCALE: 1"=1'

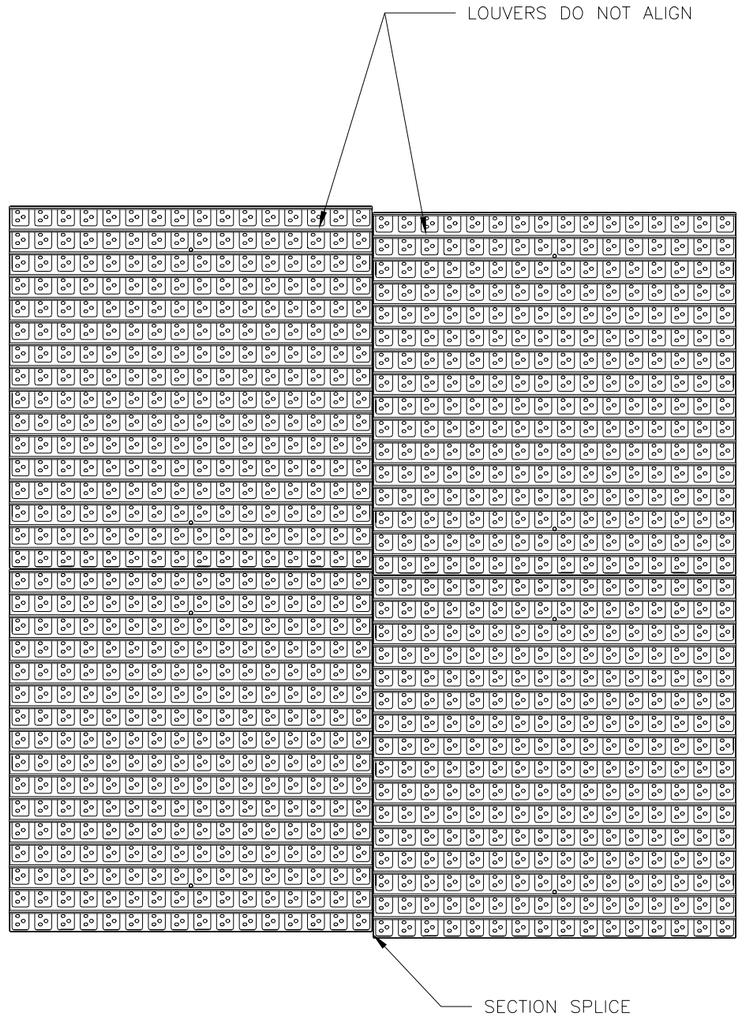
1199-E10B-183181

NOTES:

CHECK TO ENSURE THAT THE LOUVERS ARE PROPERLY ALIGNED WITH EACH OTHER AT THE SECTION SPLICE.



PROPER ALIGNMENT



IMPROPER ALIGNMENT

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: INSTALL MANUAL

TITLE: LOUVER ALIGNMENT; INSTALL MANUAL

DES. BY: ASTOEBNER DRAWN BY: ASTOEBNER DATE: 12 FEB 03

REVISION	APPR. BY:	1199-E10B-183182
	SCALE: 2"=1'	

REV.	DATE	DESCRIPTION	BY	APPR.

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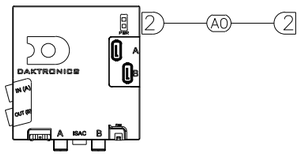
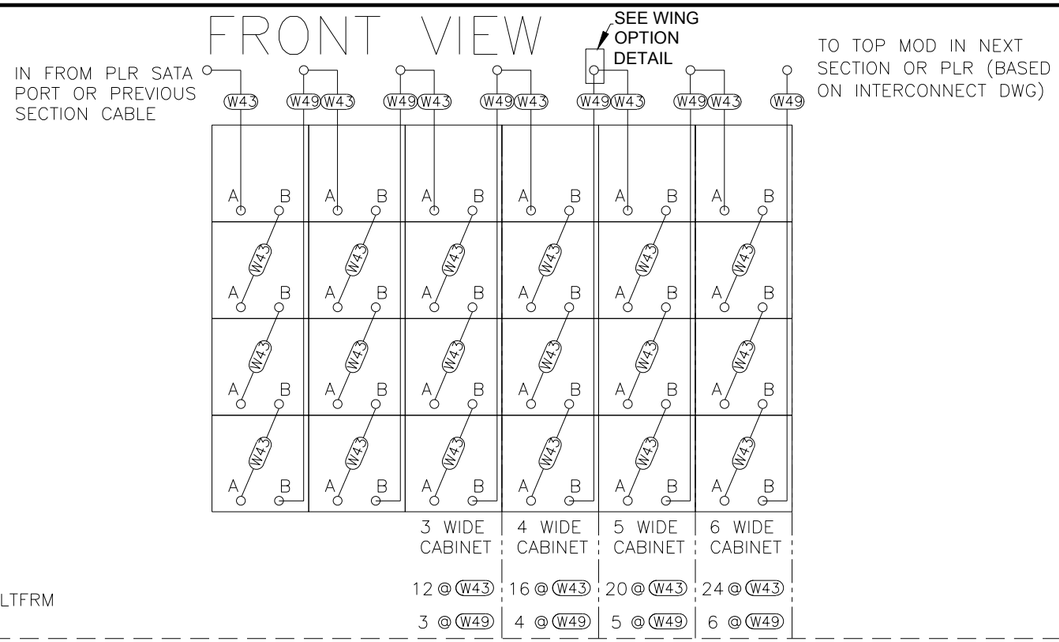
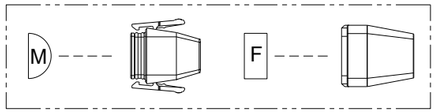


1 @ (A0) W-2152
CABLE; SLC PLUG TO SLC PLUG, 36", 18AWGPLTFRM

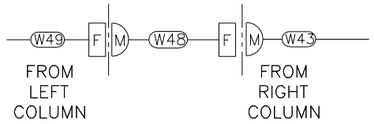
FRONT VIEW





WING OPTION DETAIL

FRONT VIEW



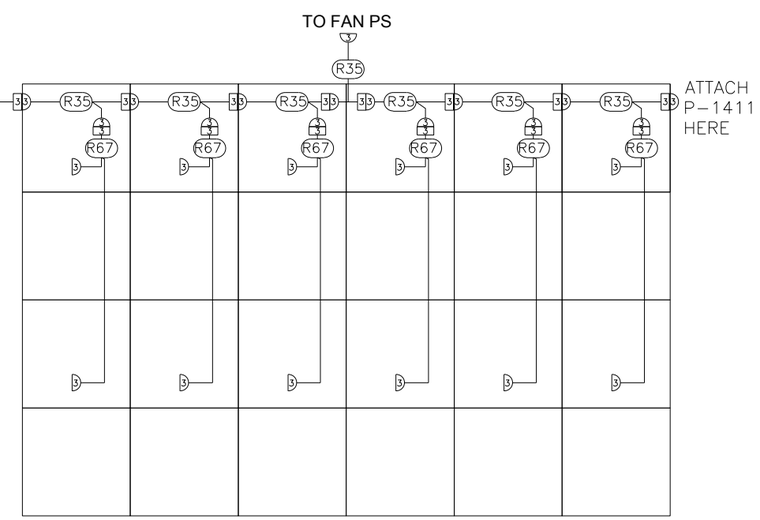
(W48) W-2893
CABLE, DAK SATA, M TO F, 48IN, BLK, STR8, DRAINS C

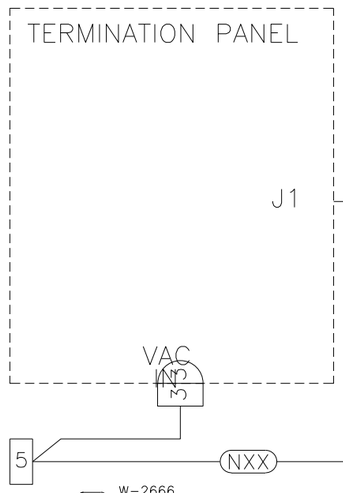
(W43) W-2885
CABLE; DAK SATA, M TO M, 33IN, BLK, XOVER, DRAINS

(W49) W-2894
CABLE, DAK SATA, M TO F, 62IN, BLK, STR8, DRAINS C

POWER

FRONT VIEW





(N26) W-2666
HARNESS; 158" 3PH BUS W/ GND LUG, 6AWG

(N25) W-2266
HARNESS; 143" 3PH BUS W/ GND LUG, 6AWG

(N20) W-2186
HARNESS; 128" 3PH BUS W/ GND LUG, 6AWG

(N21) W-2187
HARNESS; 113" 3PH BUS W/ GND LUG, 6AWG

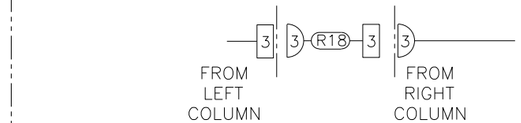
(N22) W-2188
HARNESS; 98" 3PH BUS W/ GND LUG, 6AWG

(N23) W-2189
HARNESS; 83" 3PH BUS W/ GND LUG, 6AWG

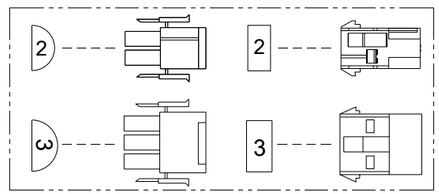
(N24) W-2190
HARNESS; 68" 3PH BUS W/ GND LUG, 6AWG

WING OPTION DETAIL

FRONT VIEW



(R18) W-2565
HARN; 15" 3 PIN M MNL TO 3 PIN F MNL RVS GENDER, SEALED



(R35) W-2667
HARNESS; PWR, AC, TOP RUN, 3P MNL, 1 WHIP, SEALED

(R67) W-3061
HARNESS, PWR, AC, VERT DROP, 3P MNL, 2 PS, SEALED

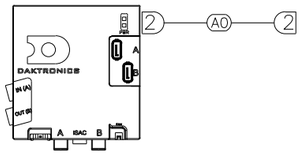
REV	DATE:		BY:
01	10 MAR 16	PER EC-20616 ADDED W-2190 AND CHANGED SATA INTERCONNECT	ADH

THIRD ANGLE PROJECTION

PROJECT:	RTX A3 (2:1)			
TITLE:	BLOCK DIAGRAM; RTX A3, 4-HIGH			
DATE:	11 AUG 15	DIM UNITS: INCHES [MILLIMETERS]	SHEET	REV
SCALE:	NTS	DO NOT SCALE DRAWING		01
DESIGN:	AHOWARD	JOB NO. P1866	FUNC - TYPE - SIZE F - 01 - B	3114301
DRAWN:	AHOWARD			

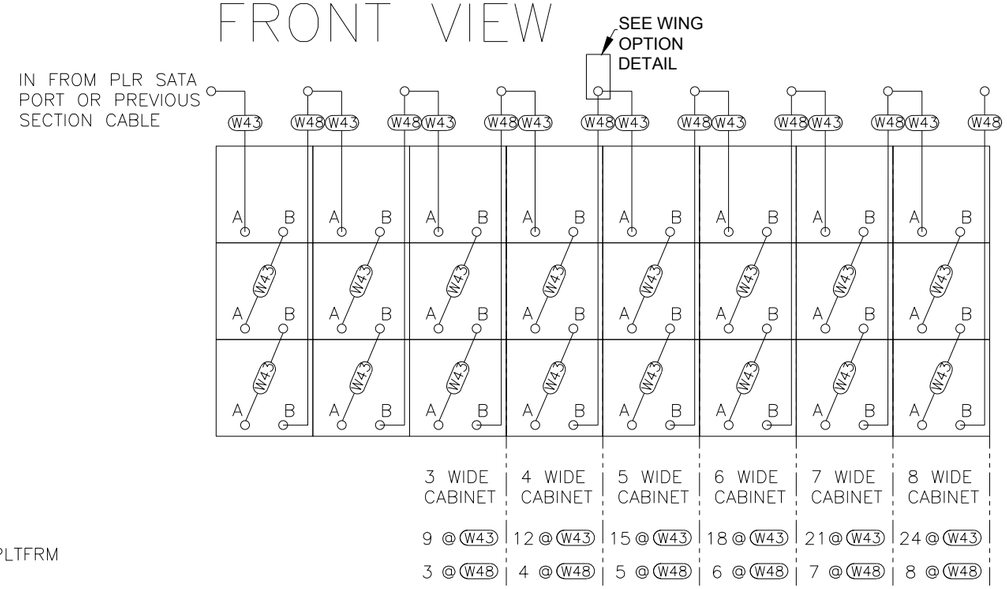
Part # - DWG-03114301 | Version - 01.2 | Description - N B BLOCK DIAGRAM; RTX A3, 4-HIGH | Lifecycle State - Full Production | Last Modified By - ahoward | Last Modified - 2016-03-10

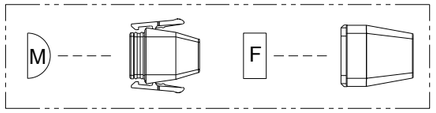
SIGNAL



1 @ A0 W-2152
CABLE; SLC PLUG TO SLC PLUG, 36", 18AWGPLTFRM

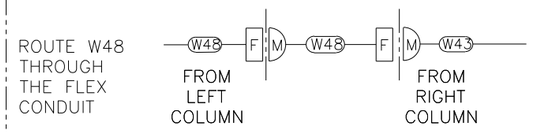
FRONT VIEW





WING OPTION DETAIL

FRONT VIEW

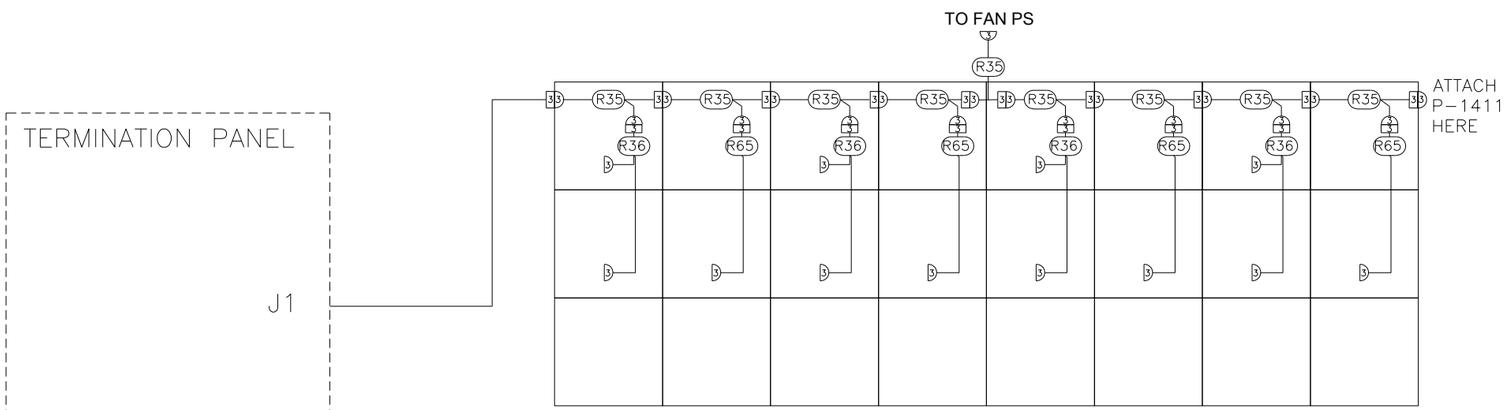


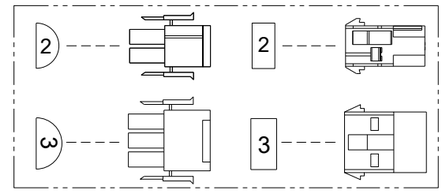
W43 W-2885
CABLE; DAK SATA, M TO M, 28IN, BLK, XOVER, DRAINS

W48 W-2893
CABLE, DAK SATA, M TO F, 48IN, BLK, DRAINS CNCTD

POWER

FRONT VIEW





N26 W-2666
HARNESS; 158" 3PH BUS W/ GND LUG, 6AWG

N25 W-2266
HARNESS; 143" 3PH BUS W/ GND LUG, 6AWG

N20 W-2186
HARNESS; 128" 3PH BUS W/ GND LUG, 6AWG

N21 W-2187
HARNESS; 113" 3PH BUS W/ GND LUG, 6AWG

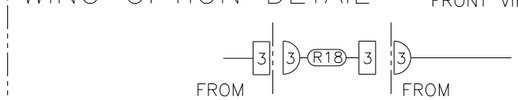
N22 W-2188
HARNESS; 98" 3PH BUS W/ GND LUG, 6AWG

N23 W-2189
HARNESS; 83" 3PH BUS W/ GND LUG, 6AWG

N24 W-2190
HARNESS; 68" 3PH BUS W/ GND LUG, 6AWG

WING OPTION DETAIL

FRONT VIEW



R18 W-2565
HARN; 15" 3 PIN M MNL TO 3 PIN F MNL
RVS GENDER, SEALED

R35 W-2667
HARNESS; PWR, AC, TOP RUN, 3P MNL, 1 WHIP, SEALED

R36 W-2668
HARNESS, PWR, AC, VERT DROP, 3P MNL, 2 MOD, SEALED

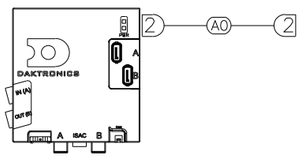
R65 W-3055
HARNESS, PWR, AC, VERT DROP, 3P MNL, 1 PS, SEALED

REV	DATE:		BY:
04	28 AUG 17	CHANGED W-51 TO W-48, W-3312491 TO W-2893 PER CN 41663	AHH
03	8 SEP 16	UPDATED HARNESS LENGTHS PER EC-22463	BLF
02	29 APR 16	REPLACED W-2893 W/ W-3312491 FOR WING OPTION PER EC-21197	ADC
01	10 MAR 16	PER EC-20616 ADDED W-2190 AND CHANGED SATA INTERCONNECT	ADH

THIRD ANGLE PROJECTION

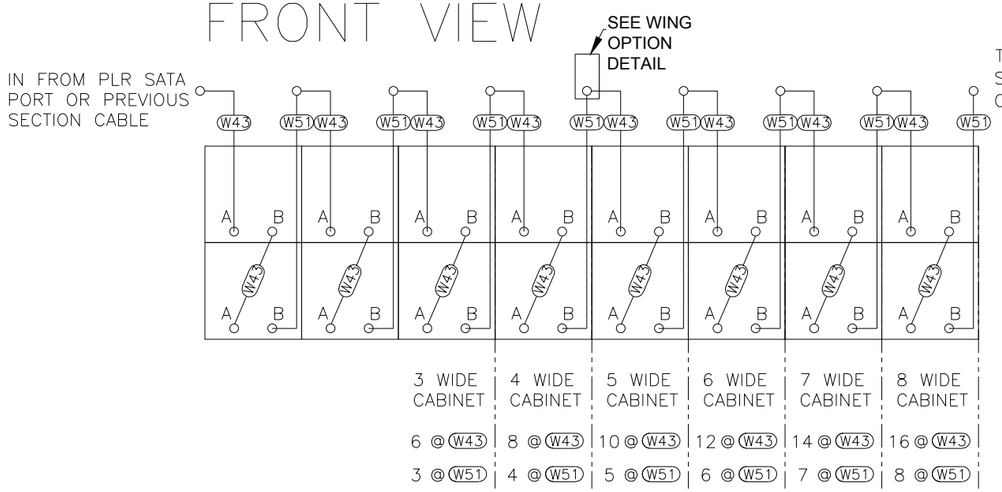
PROJECT:	RTX A3 (2:1)			
TITLE:	BLOCK DIAGRAM; RTX A3, 3-HIGH			
DATE: 11 AUG 15	DIM UNITS: INCHES [MILLIMETERS]		SHEET	REV
SCALE: NTS	DO NOT SCALE DRAWING			04
DESIGN: AHOWARD	JOB NO.	FUNC - TYPE - SIZE	3114620	
DRAWN: AHOWARD	P1866	F - 01 - B		

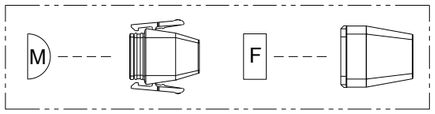
SIGNAL



1 @ (A0) W-2152
CABLE; SLC PLUG TO SLC PLUG, 36", 18AWGPLTFRM

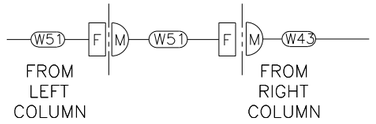
FRONT VIEW





WING OPTION DETAIL

FRONT VIEW

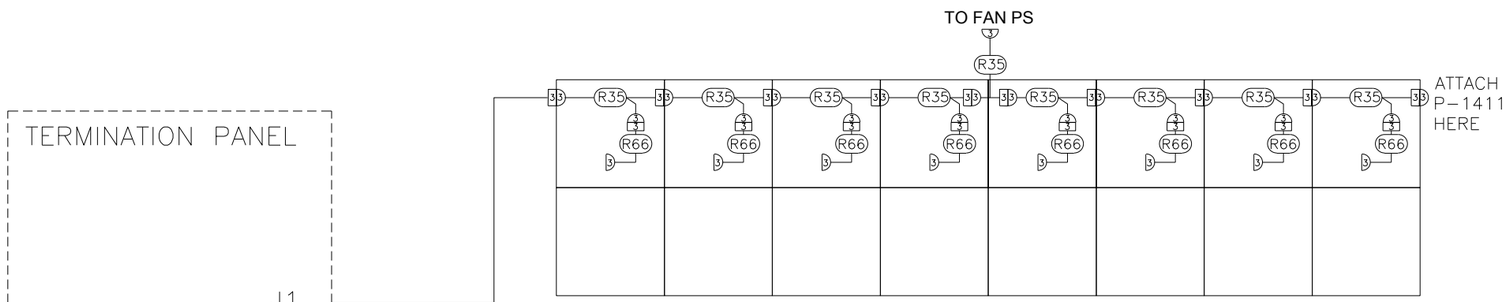


(W43) W-2885
CABLE; DAK SATA, M TO M, 28IN, BLK, XOVER, DRAINS

(W51) W-3312491
CABLE, DAK SATA, M TO F, 36IN, BLK, DRAINS CNCTD

POWER

FRONT VIEW



(N26) W-2666
HARNESS; 158" 3PH BUS W/ GND LUG, 6AWG

(N25) W-2266
HARNESS; 143" 3PH BUS W/ GND LUG, 6AWG

(N20) W-2186
HARNESS; 128" 3PH BUS W/ GND LUG, 6AWG

(N21) W-2187
HARNESS; 113" 3PH BUS W/ GND LUG, 6AWG

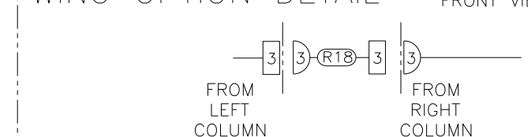
(N22) W-2188
HARNESS; 98" 3PH BUS W/ GND LUG, 6AWG

(N23) W-2189
HARNESS; 83" 3PH BUS W/ GND LUG, 6AWG

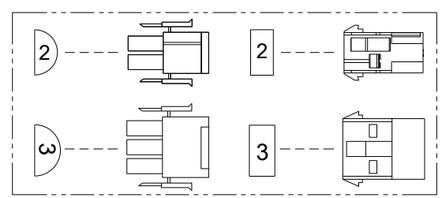
(N24) W-2190
HARNESS; 68" 3PH BUS W/ GND LUG, 6AWG

WING OPTION DETAIL

FRONT VIEW



(R18) W-2565
HARN; 15" 3 PIN M MNL TO 3 PIN F MNL RVS GENDER, SEALED



(R35) W-2667
HARNESS; PWR, AC, TOP RUN, 3P MNL, 1 WHIP, SEALED

(R66) W-3050
HARNESS, PWR, AC, VERT DROP, 3P MNL, 1 PS, SEALED

REV	DATE:		BY:
02	29 APR 16	REPLACED W-2893 W/ W-3312491 FOR WING OPTION PER EC-21197	ADC
01	10 MAR 16	PER EC-20616 ADDED W-2190 AND CHANGED SATA INTERCONNECT	ADH

THIRD ANGLE PROJECTION

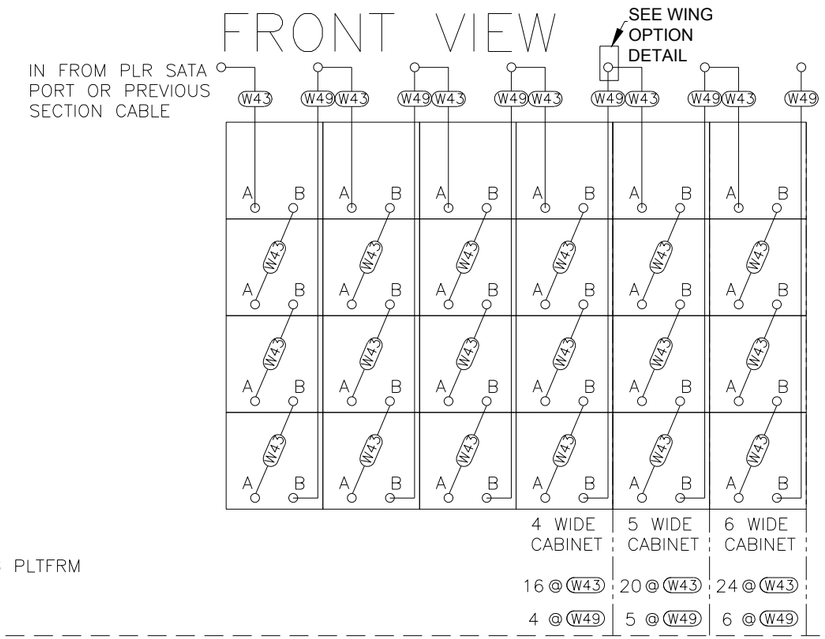
PROJECT:	RTX A3 (2:1)			
TITLE:	BLOCK DIAGRAM; RTX A3, 2-HIGH			
DATE: 11 AUG 15	DIM UNITS: INCHES [MILLIMETERS]		SHEET	REV
SCALE: NTS	DO NOT SCALE DRAWING			02
DESIGN: AHOWARD	JOB NO. P1866	FUNC - TYPE - SIZE F - 01 - B	3114633	
DRAWN: AHOWARD				

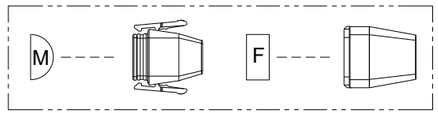
Part # - DWG-03114633 | Version - 02.2 | Description - N B BLOCK DIAGRAM; RTX A3, 2-HIGH | Lifecycle State - Full Production | Last Modified By - acampbe | Last Modified - 2016-04-29

SIGNAL

1 @ (A0) W-2152
CABLE; SLC PLUG TO SLC PLUG, 36", 18AWG PLTFRM

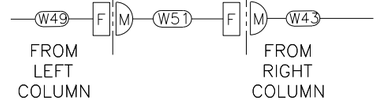
FRONT VIEW





WING OPTION DETAIL

FRONT VIEW



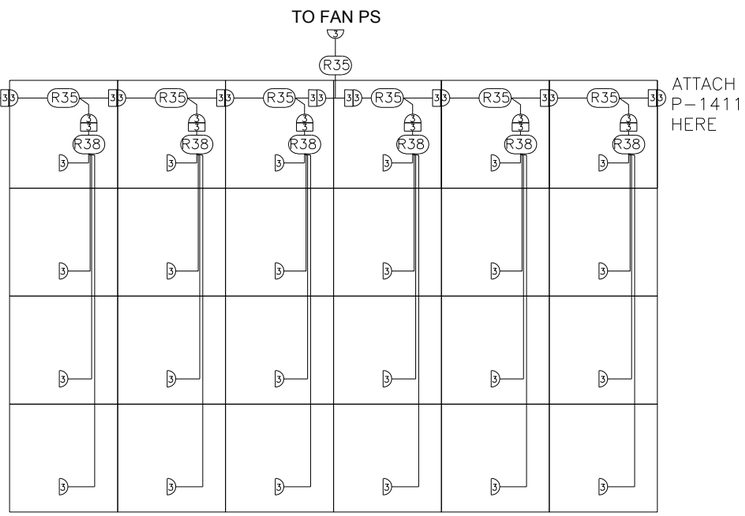
(W51) W-3312491
CABLE, DAK SATA, M TO F, 36IN, BLK, DRAINS CNCTD

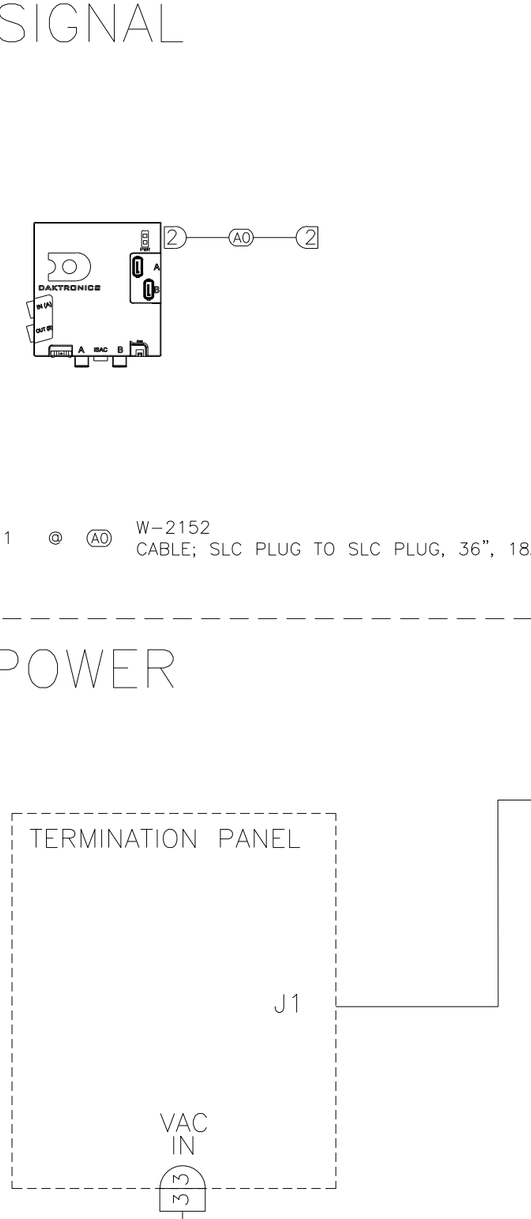
(W43) W-2885
CABLE; DAK SATA, M TO M, 28IN, BLK, XOVER, DRAINS

(W49) W-2894
CABLE, DAK SATA, M TO F, 62IN, BLK, STR8, DRAINS C

POWER

FRONT VIEW





(N26) W-2666
HARNESS; 158" 3PH BUS W/ GND LUG, 6AWG

(N25) W-2266
HARNESS; 143" 3PH BUS W/ GND LUG, 6AWG

(N20) W-2186
HARNESS; 128" 3PH BUS W/ GND LUG, 6AWG

(N21) W-2187
HARNESS; 113" 3PH BUS W/ GND LUG, 6AWG

(N22) W-2188
HARNESS; 98" 3PH BUS W/ GND LUG, 6AWG

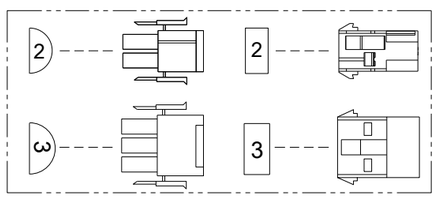
(N23) W-2189
HARNESS; 83" 3PH BUS W/ GND LUG, 6AWG

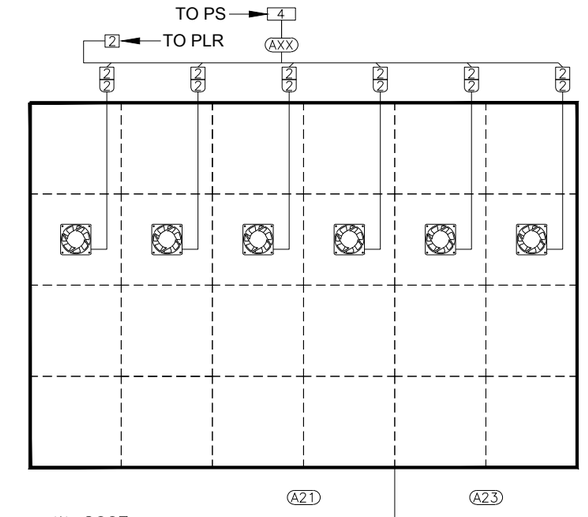
(N24) W-2190
HARNESS; 68" 3PH BUS W/ GND LUG, 6AWG

WING OPTION DETAIL

FRONT VIEW

(R18) W-2565
HARN; 15" 3 PIN M MNL TO 3 PIN F MNL
RVS GENDER, SEALED





(R35) W-2667
HARNESS; PWR, AC, TOP RUN, 3P MNL, 1 WHIP, SEALED

(R38) W-2670
HARNESS, PWR, AC, VERT DROP, 3P MNL, 4 MOD, SEALED

(A23) W-3056
HARN; 4PIN F MNL TO 7 SLC PLUGS

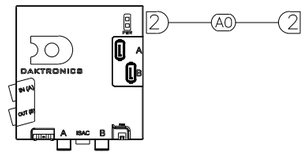
(A21) W-2948
HARN; 4PIN F MNL TO 5 SLC PLUGS

REV	DATE:		BY:
02	29 APR 16	REPLACED W-2893 W/ W-3312491 FOR WING OPTION PER EC-21197	ADC
01	10 MAR 16	PER EC-20616 ADDED W-2190 AND CHANGED SATA INTERCONNECT	ADH

THIRD ANGLE PROJECTION

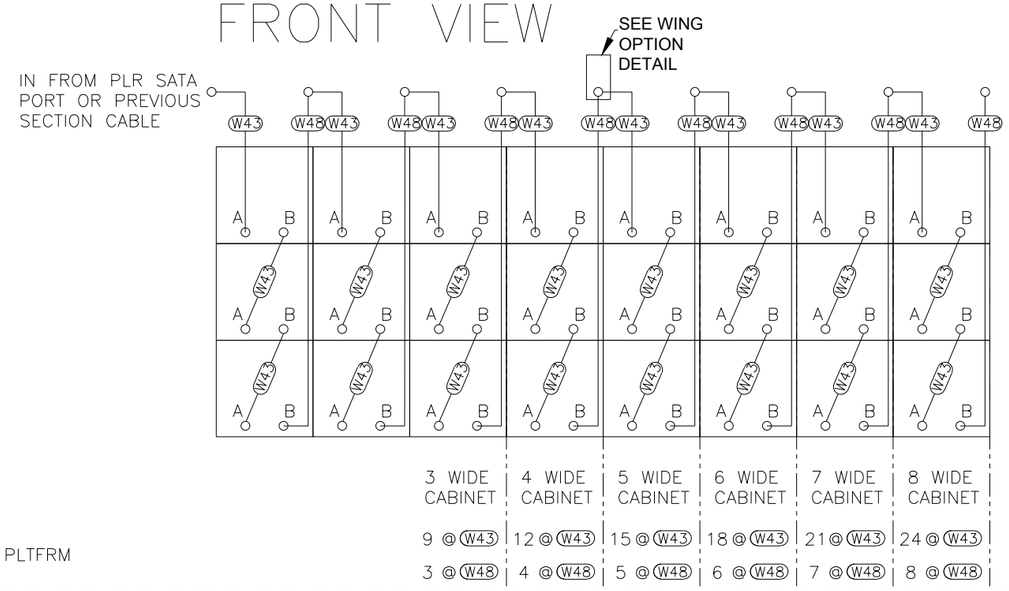
PROJECT:	RTX A3 (1:1)			
TITLE:	BLOCK DIAGRAM; RTX A3, PRIMARY/SIGNAL, 4HIGH			
DATE:	12 AUG 15	DIM UNITS: INCHES [MILLIMETERS]	SHEET	REV
SCALE:	NTS	DO NOT SCALE DRAWING		02
DESIGN:	AHOWARD	JOB NO.	FUNC - TYPE - SIZE	3115513
DRAWN:	AHOWARD	P1866	F - 01 - B	

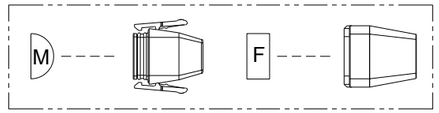
SIGNAL



1 @ (A0) W-2152
CABLE; SLC PLUG TO SLC PLUG, 36", 18AWG PLTFRM

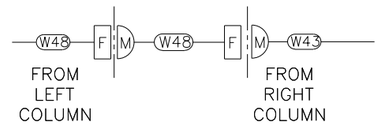
FRONT VIEW





WING OPTION DETAIL

FRONT VIEW

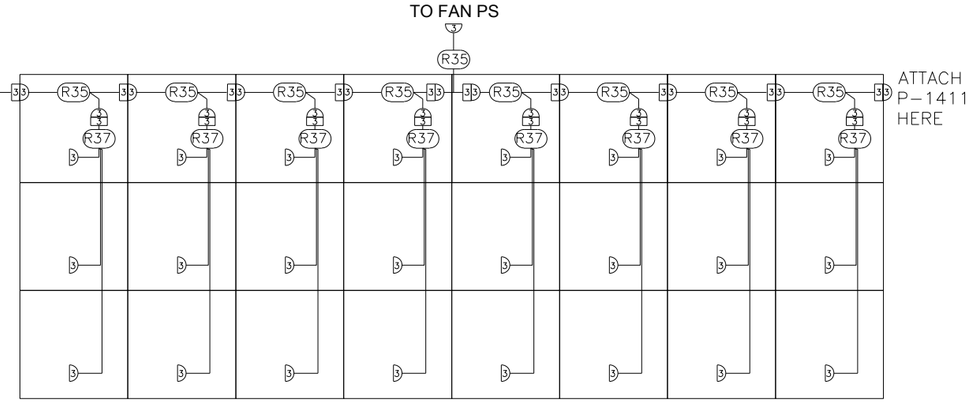


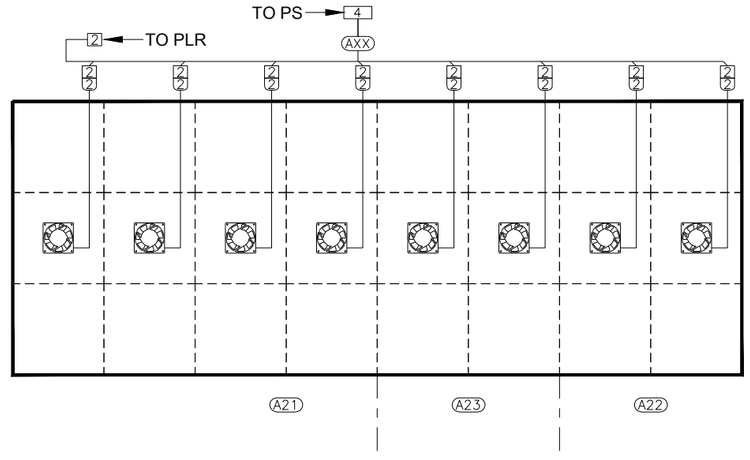
(W43) W-2885
CABLE; DAK SATA, M TO M, 28IN, BLK, XOVER, DRAINS

(W48) W-2893
CABLE, DAK SATA, M TO F, 48IN, BLK, DRAINS CNCTD

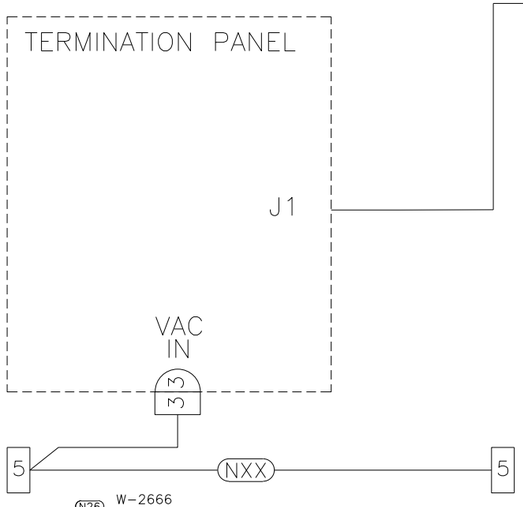
POWER

FRONT VIEW





TERMINATION PANEL



(N26) W-2666
HARNESS; 158" 3PH BUS W/ GND LUG, 6AWG

(N25) W-2266
HARNESS; 143" 3PH BUS W/ GND LUG, 6AWG

(N20) W-2186
HARNESS; 128" 3PH BUS W/ GND LUG, 6AWG

(N21) W-2187
HARNESS; 113" 3PH BUS W/ GND LUG, 6AWG

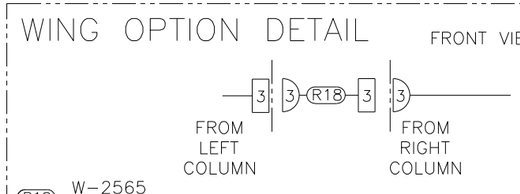
(N22) W-2188
HARNESS; 98" 3PH BUS W/ GND LUG, 6AWG

(N23) W-2189
HARNESS; 83" 3PH BUS W/ GND LUG, 6AWG

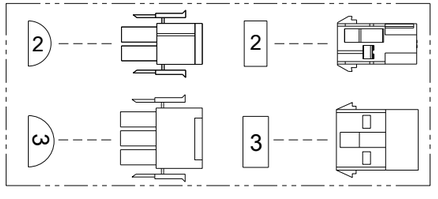
(N24) W-2190
HARNESS; 68" 3PH BUS W/ GND LUG, 6AWG

WING OPTION DETAIL

FRONT VIEW



(R18) W-2565
HARN; 15" 3 PIN M MNL TO 3 PIN F MNL RVS GENDER, SEALED



(R35) W-2667
HARNESS; PWR, AC, TOP RUN, 3P MNL, 1 WHIP, SEALED

(R37) W-2669
HARNESS, PWR, AC, VERT DROP, 3P MNL, 3 MOD, SEALED

(A22) W-3054
HARN; 4PIN F MNL TO 9 SLC PLUGS

(A23) W-3056
HARN; 4PIN F MNL TO 7 SLC PLUGS

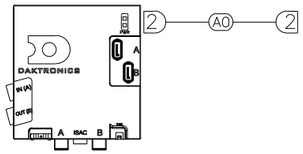
(A21) W-2948
HARN; 4PIN F MNL TO 5 SLC PLUGS

REV	DATE:		BY:
03	28 AUG 17	UPDATED W-51 TO W-48, W-3312491 TO W-2893 PER CN 41663	AHH
02	29 APR 16	REPLACED W-2893 W/ W-3312491 FOR WING OPTION PER EC-21197	ADC
01	10 MAR 16	PER EC-20616 ADDED W-2190 AND CHANGED SATA INTERCONNECT	ADH

THIRD ANGLE PROJECTION

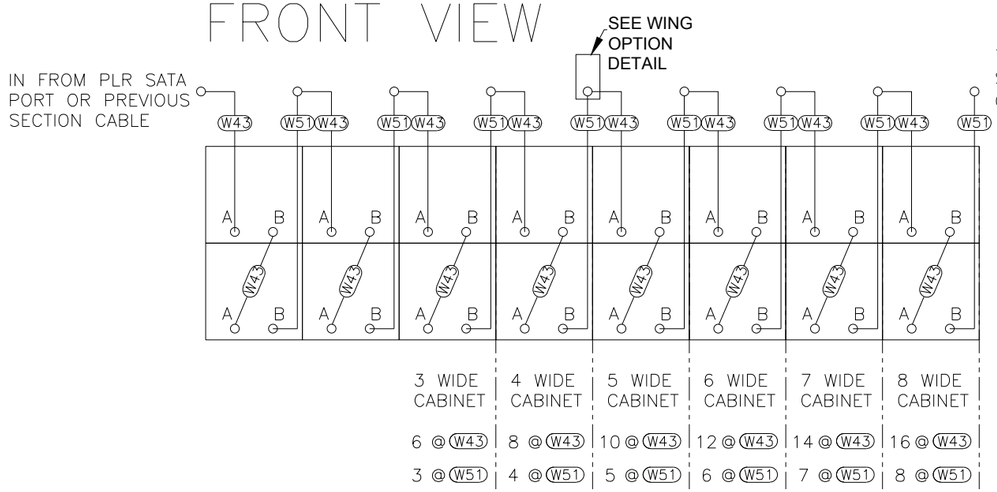
PROJECT:	RTX A3 (1:1)			
TITLE:	BLOCK DIAGRAM; RTX A3, PRIMARY/SIGNAL, 3-HIGH			
DATE:	12 AUG 15	DIM UNITS: INCHES [MILLIMETERS]	SHEET	REV
SCALE:	NTS	DO NOT SCALE DRAWING		03
DESIGN:	AHOWARD	JOB NO. P1866	FUNC - TYPE - SIZE F - 01 - B	3115521
DRAWN:	AHOWARD			

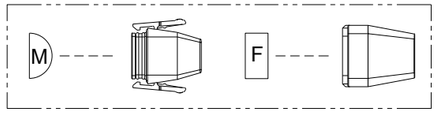
SIGNAL



1 @ (A0) W-2152
CABLE; SLC PLUG TO SLC PLUG, 36", 18AWG PLTFRM

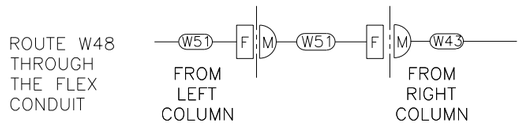
FRONT VIEW





WING OPTION DETAIL

FRONT VIEW

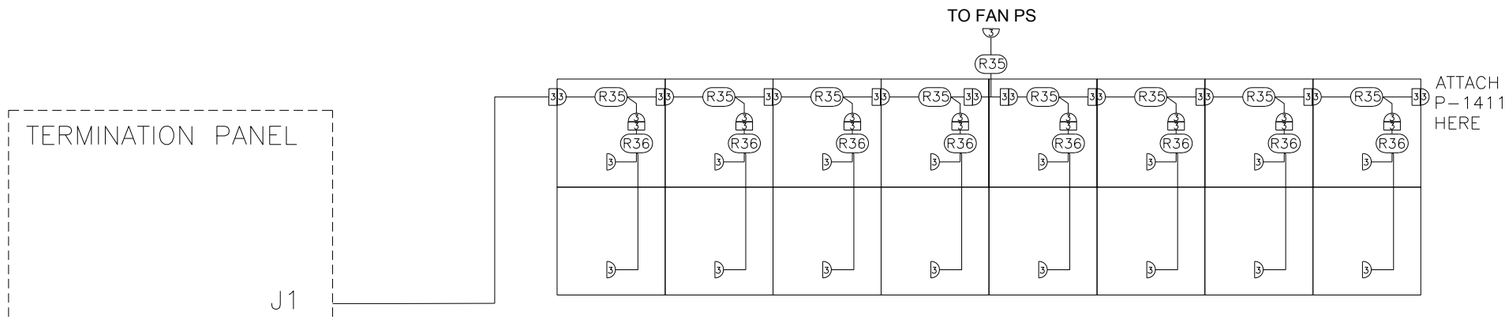


(W43) W-2885
CABLE; DAK SATA, M TO M, 33IN, BLK, XOVER, DRAINS

(W51) W-3312491
CABLE, DAK SATA, M TO F, 36IN, BLK, DRAINS CNCTD

POWER

FRONT VIEW



(N26) W-2666
HARNESS; 158" 3PH BUS W/ GND LUG, 6AWG

(N25) W-2266
HARNESS; 143" 3PH BUS W/ GND LUG, 6AWG

(N20) W-2186
HARNESS; 128" 3PH BUS W/ GND LUG, 6AWG

(N21) W-2187
HARNESS; 113" 3PH BUS W/ GND LUG, 6AWG

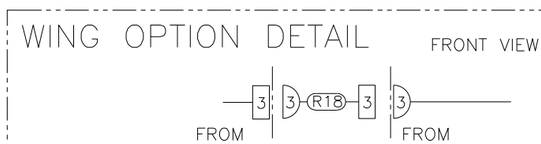
(N22) W-2188
HARNESS; 98" 3PH BUS W/ GND LUG, 6AWG

(N23) W-2189
HARNESS; 83" 3PH BUS W/ GND LUG, 6AWG

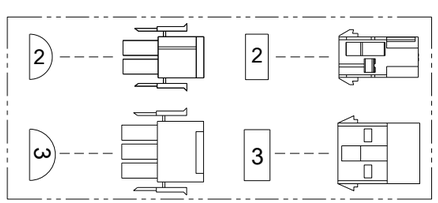
(N24) W-2190
HARNESS; 68" 3PH BUS W/ GND LUG, 6AWG

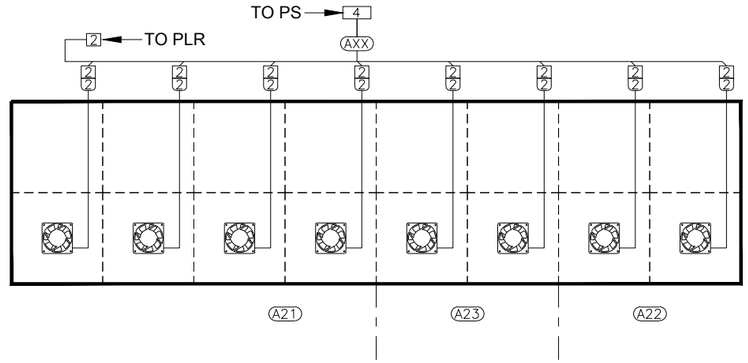
WING OPTION DETAIL

FRONT VIEW



(R18) W-2565
HARN; 15" 3 PIN M MNL TO 3 PIN F MNL RVS GENDER, SEALED





(R35) W-2667
HARNESS; PWR, AC, TOP RUN, 3P MNL, 1 WHIP, SEALED

(R36) W-2668
HARNESS, PWR, AC, VERT DROP, 3P MNL, 2 MOD, SEALED

(A22) W-3054
HARN; 4PIN F MNL TO 9 SLC PLUGS

(A23) W-3056
HARN; 4PIN F MNL TO 7 SLC PLUGS

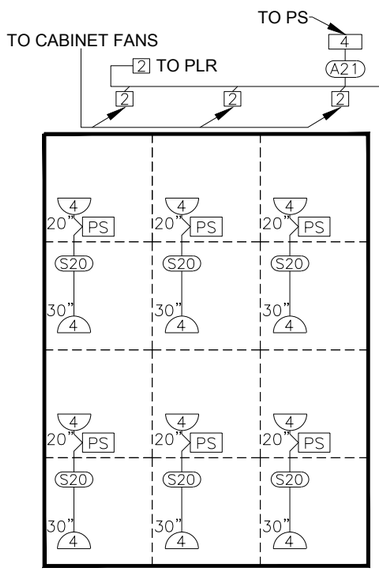
(A21) W-2948
HARN; 4PIN F MNL TO 5 SLC PLUGS

REV	DATE:		BY:
02	29 APR 16	REPLACED W-2893 W/ W-3312491 FOR WING OPTION PER EC-21197	ADC
01	10 MAR 16	PER EC-20616 ADDED W-2190 AND CHANGED SATA INTERCONNECT	ADH

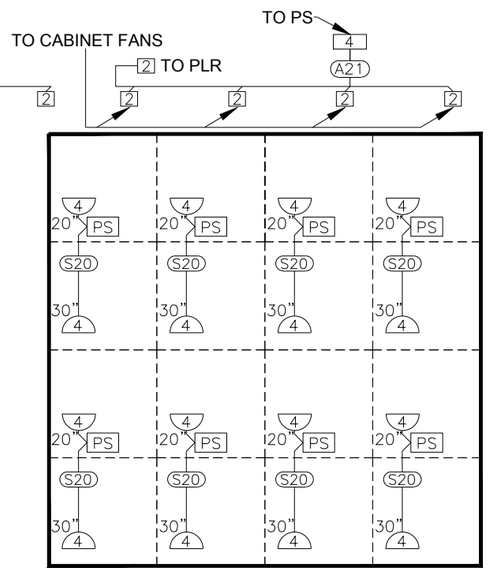
THIRD ANGLE PROJECTION

PROJECT:	RTX A3 (1:1)				
TITLE:	BLOCK DIAGRAM; RTX A3, PRIMARY/SIGNAL, 2-HIGH				
DATE:	12 AUG 15	DIM UNITS:	INCHES [MILLIMETERS]	SHEET	REV
SCALE:	NTS		DO NOT SCALE DRAWING		02
DESIGN:	AHOWARD	JOB NO.	FUNC - TYPE - SIZE	3115536	
DRAWN:	AHOWARD	P1866	F - 01 - B		

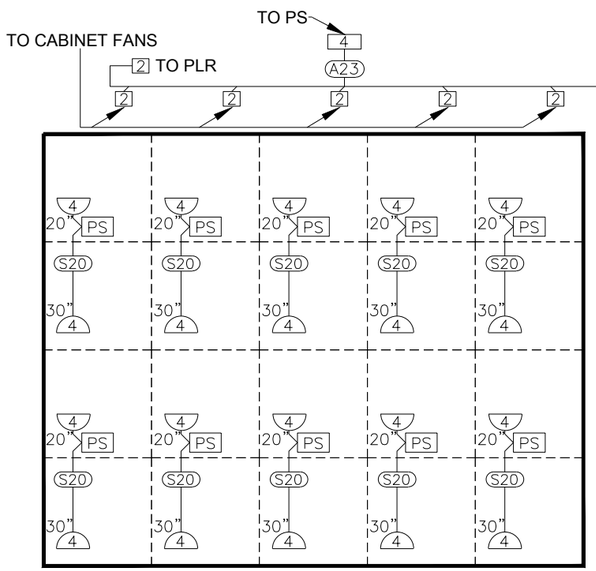
3 WIDE



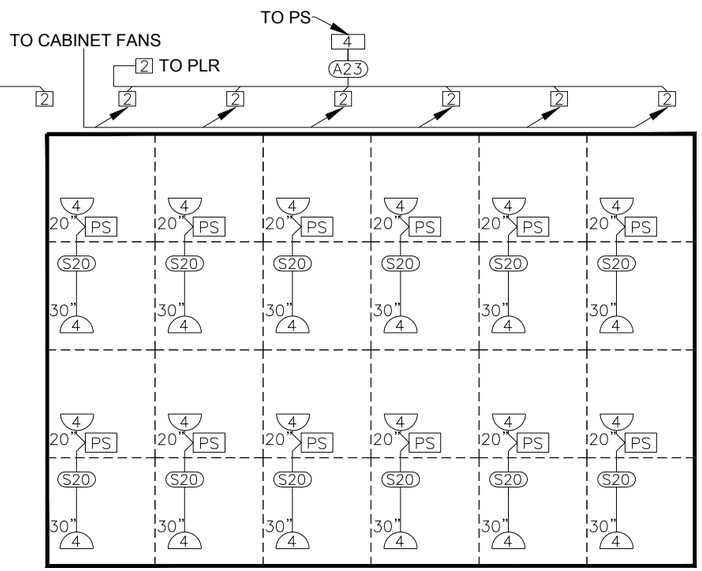
4 WIDE



5 WIDE



6 WIDE



LEGEND

(S20) W-2505
HARN; 4P MNL F TO 4P MNL M @2 SEALED, 20" & 30"

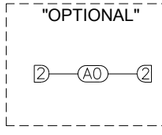
(A22) W-3054
ASSY; HARNESS, CABINET FAN @ 8

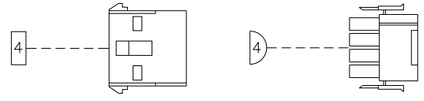
(A23) W-3056
ASSY; HARNESS, CABINET FAN @ 6

(A21) W-2948
HARN; 4PIN F MNL TO 5 SLC PLUGS

(A0) W-2152
CABLE; SLC PLUG TO SLC PLUG, 36", 18AWG, PLATFORM

"OPTIONAL"





ALL MODULES HARN MUST BE SECURED TO MODULE STIFFENERS

TIE BACK EXCESS HARNESS & ATTACH J-1585 TO UNUSED PLUG

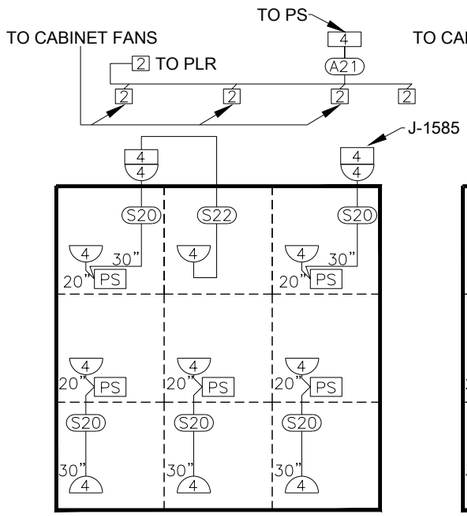
REV	DATE:		BY:
01	16 MAR 17	CHANGED A20 TO A23 AND UPDATED NOTES PER EC-23751	BTA

THIRD ANGLE PROJECTION

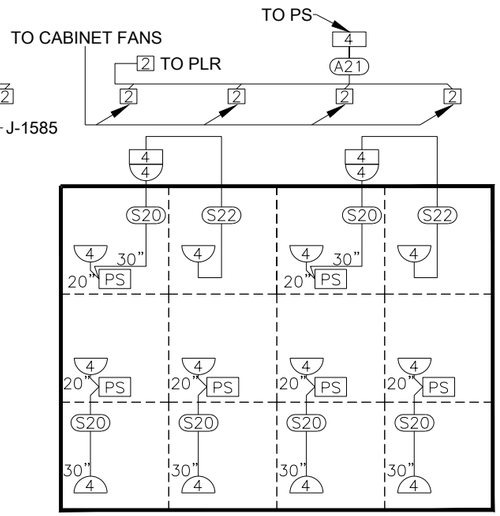
PROJECT:	RTX A3 (2:1)			
TITLE:	BLOCK DIAGRAM; RTX A3, SECONDARY, 4-HIGH			
DATE:	13 AUG 15	DIM UNITS: INCHES [MILLIMETERS]	SHEET	REV
SCALE:	NTS	DO NOT SCALE DRAWING		01
DESIGN:	AHOWARD	JOB NO. P1866	FUNC - TYPE - SIZE F - 01 - B	3115821
DRAWN:	AHOWARD			

Part # - DWG-03115821 | Version - 01.2 | Description - N B BLOCK DIAGRAM; RTX A3, SECONDARY, 4-HIGH | Lifecycle State - Full Production | Last Modified By - barboga | Last Modified - 2017-03-20

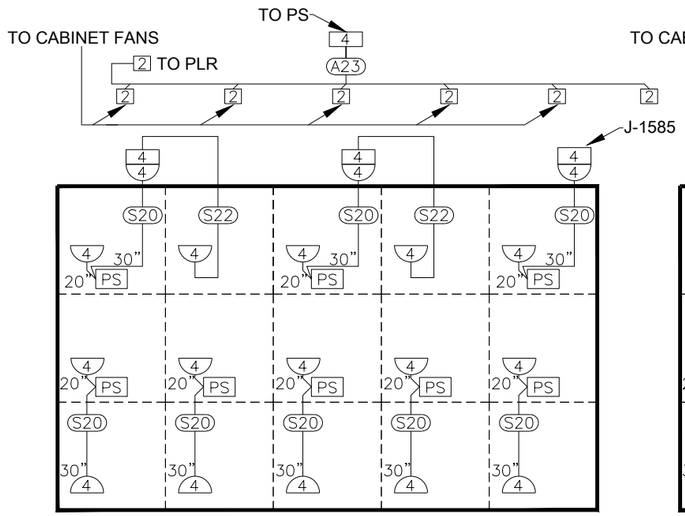
3 WIDE



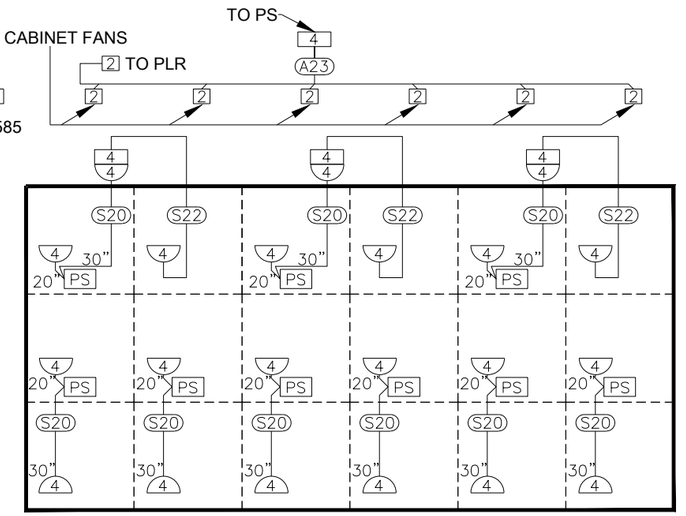
4 WIDE



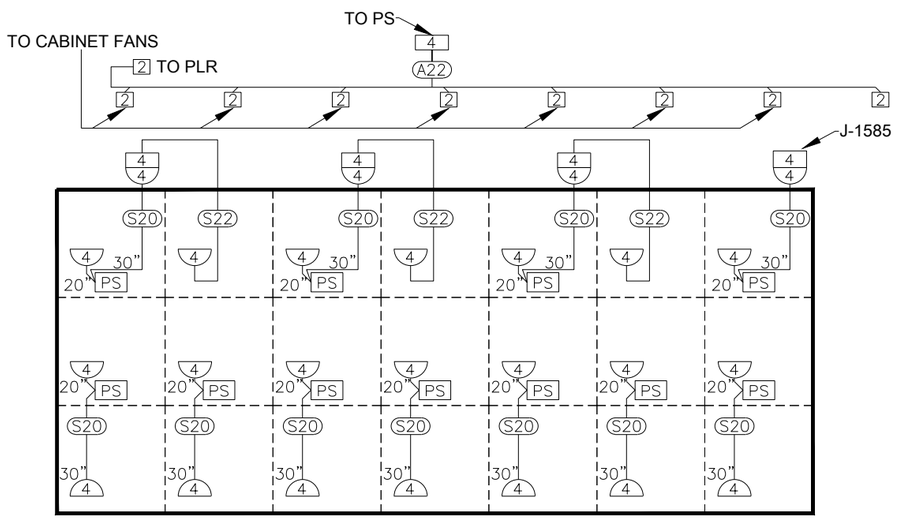
5 WIDE



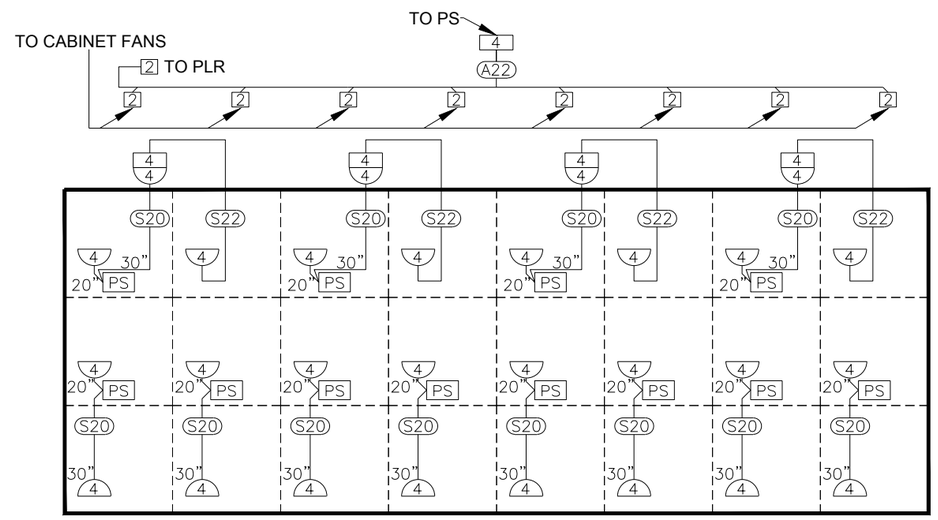
6 WIDE



7 WIDE

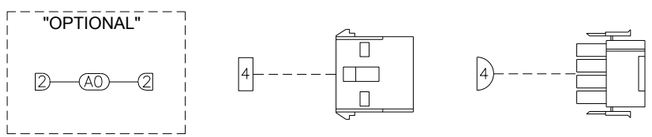


8 WIDE



LEGEND

- (S22) W-3051 HARN; 4PIN F MNL TO 4PIN M MNL
- (S20) W-2505 HARN; 4P MNL F TO 4P MNL M @2 SEALED, 20" & 30"
- (A22) W-3054 ASSY; HARNESS, CABINET FAN @ 8
- (A23) W-3056 ASSY; HARNESS, CABINET FAN @ 6
- (A21) W-2948 HARN; 4PIN F MNL TO 5 SLC PLUGS
- (A0) W-2152 CABLE; SLC PLUG TO SLC PLUG, 36", 18AWG, PLATFORM



ALL MODULES HARN MUST BE SECURED TO MODULE STIFFENERS

TIE BACK EXCESS HARNESS & ATTACH J-1585 TO UNUSED PLUG

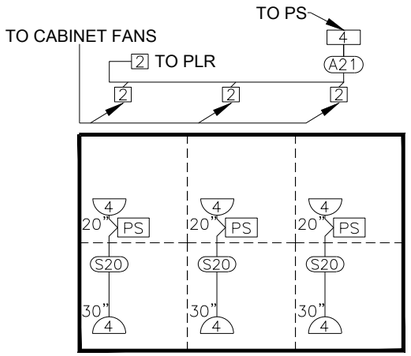
REV	DATE:	CHANGED NOTES ON A22 AND A23 PER EC-23751	BY:
01	16 MAR 17		BTA

THIRD ANGLE PROJECTION

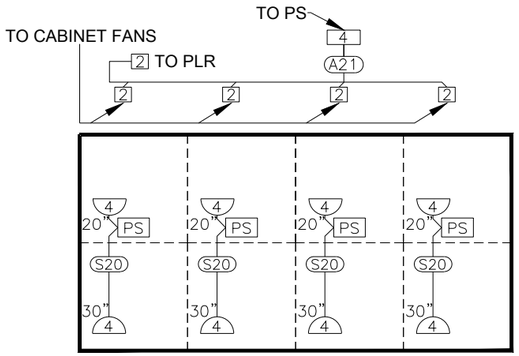
PROJECT:	RTX A3			
TITLE:	BLOCK DIAGRAM; RTX A3, SECONDARY, 3-HIGH			
DATE:	13 AUG 15	DIM UNITS: INCHES [MILLIMETERS]	SHEET	REV
SCALE:	NTS	DO NOT SCALE DRAWING		01
DESIGN:	AHOWARD	JOB NO.	FUNC - TYPE - SIZE	3115868
DRAWN:	AHOWARD	P1866	F - 01 - B	

Part # - DWG-03115868 | Version - 01.2 | Description - N B BLOCK DIAGRAM; RTX A3, SECONDARY, 3-HIGH | Lifecycle State - Full Production | Last Modified By - barboga | Last Modified - 2017-03-20

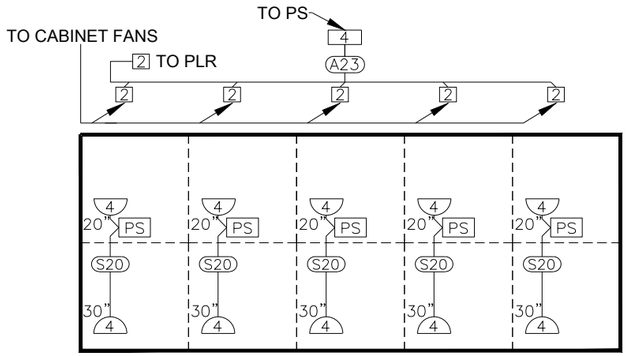
3 WIDE



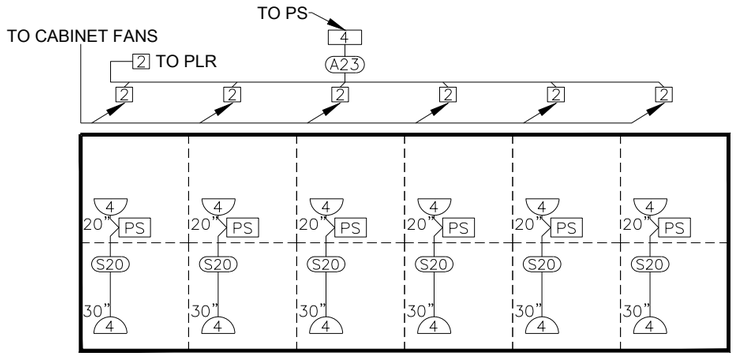
4 WIDE



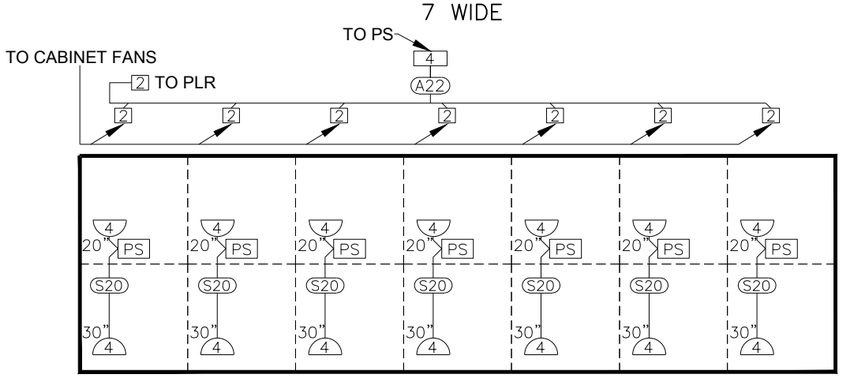
5 WIDE



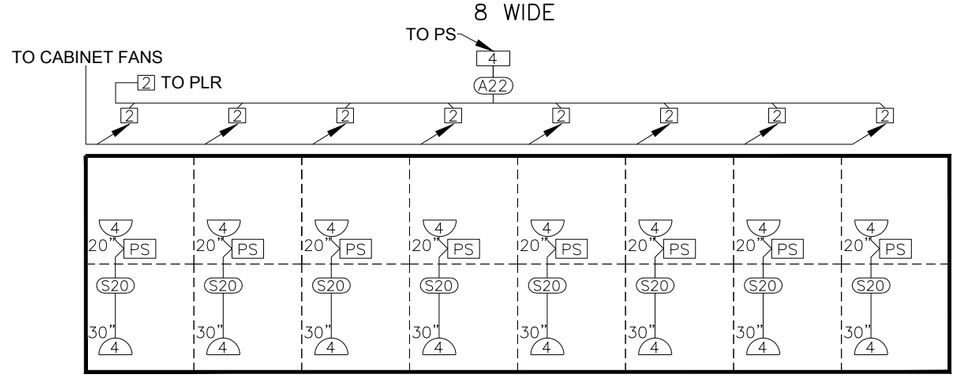
6 WIDE



7 WIDE

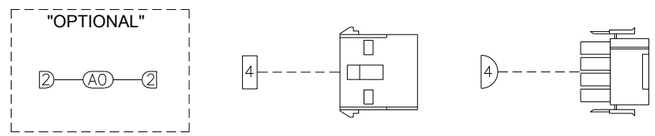


8 WIDE



LEGEND

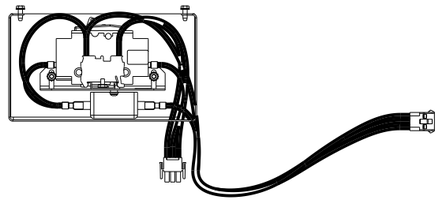
- (S20) W-2505 HARN; 4P MNL F TO 4P MNL M @2 SEALED, 20" & 30"
- (A22) W-3054 HARN; 4PIN F MNL TO 9 SLC PLUGS
- (A23) W-3056 HARN; 4PIN F MNL TO 7 SLC PLUGS
- (A21) W-2948 HARN; 4PIN F MNL TO 5 SLC PLUGS
- (A0) W-2152 CABLE; SLC PLUG TO SLC PLUG, 36", 18AWG, PLATFORM



ALL MODULES HARN MUST BE SECURED TO MODULE STIFFENERS

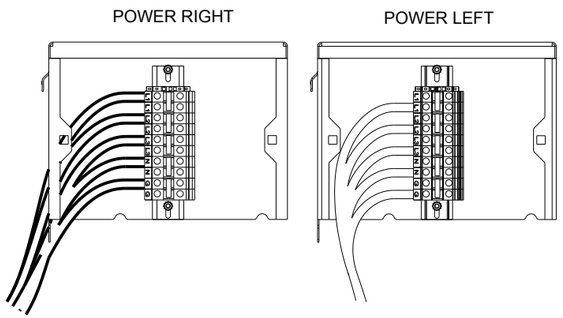
TIE BACK EXCESS HARNESS & ATTACH J-1585 TO UNUSED PLUG

PROJ: RTX A3 (2:1)				
TITLE: BLOCK DIAGRAM; RTX A3, SECONDARY, 2-HIGH				
DESIGN: AHOWARD		DRAWN: AHOWARD	DATE: 13 AUG 15	
SCALE: NTS				
SHEET	REV	JOB NO:	FUNC - TYPE - SIZE	3115873
	00	P1866	F - 01 - B	



TB1

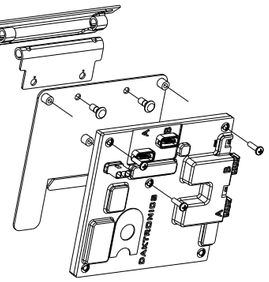
SECTIONAL TERM PANEL
0A-1487-6787 (DOMESTIC)
0A-1487-6788 (INTERNATIONAL)
MOUNT USING HC-1763 @ 2 (27.5 IN-LBS)



PE1

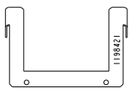
POWER ENTRANCE
0A-1487-6789/6790
MOUNT USING HC-1763 @ 1 (27.5 IN-LBS)

IF POWER GOES LEFT,
INSTALL W-3053 (39 IN-LBS)
W-3053 WILL BE PULLED TO THE BUS HARNESS CONNECTION BOX IN FIRST COLUMN AND THE BUS HARNESS CONNECTION WILL BE MADE INSIDE OF THAT BOX

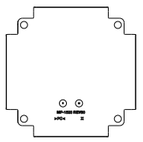


PLR1

ATTACH HS-1816 @ 1 TO BEVERAGE SHROUD
USING HC-1354 @ 2 (25 IN-LBS)
ATTACH 0S-3282599 @ 1 TO HS-1816
USING HC-1435 @ 2
ATTACH PLR (SEE BOM FOR PART #) @ 1 TO 0S-3282599
USING HC-1014 @ 3 (5 IN-LBS)
ORIENT PLR SO SATA PORTS ARE TOWARDS TOP



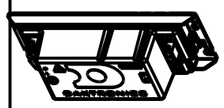
FIBER PLATE / PLR SLIDER
0M-3308337 @ 1
ATTACH USING HC-1763 @ 2 (25 IN-LBS)
REFER TO DWG-03177983 FOR
J-1435 PLACEMENT & FIBER ROUTING OPTIONS



FANS

B-1072 @ 1 PER COLUMN

FAN ORIENTED SO AIRFLOW IS TOWARDS MODPAN (IN TO THE CABINET)



PS 1

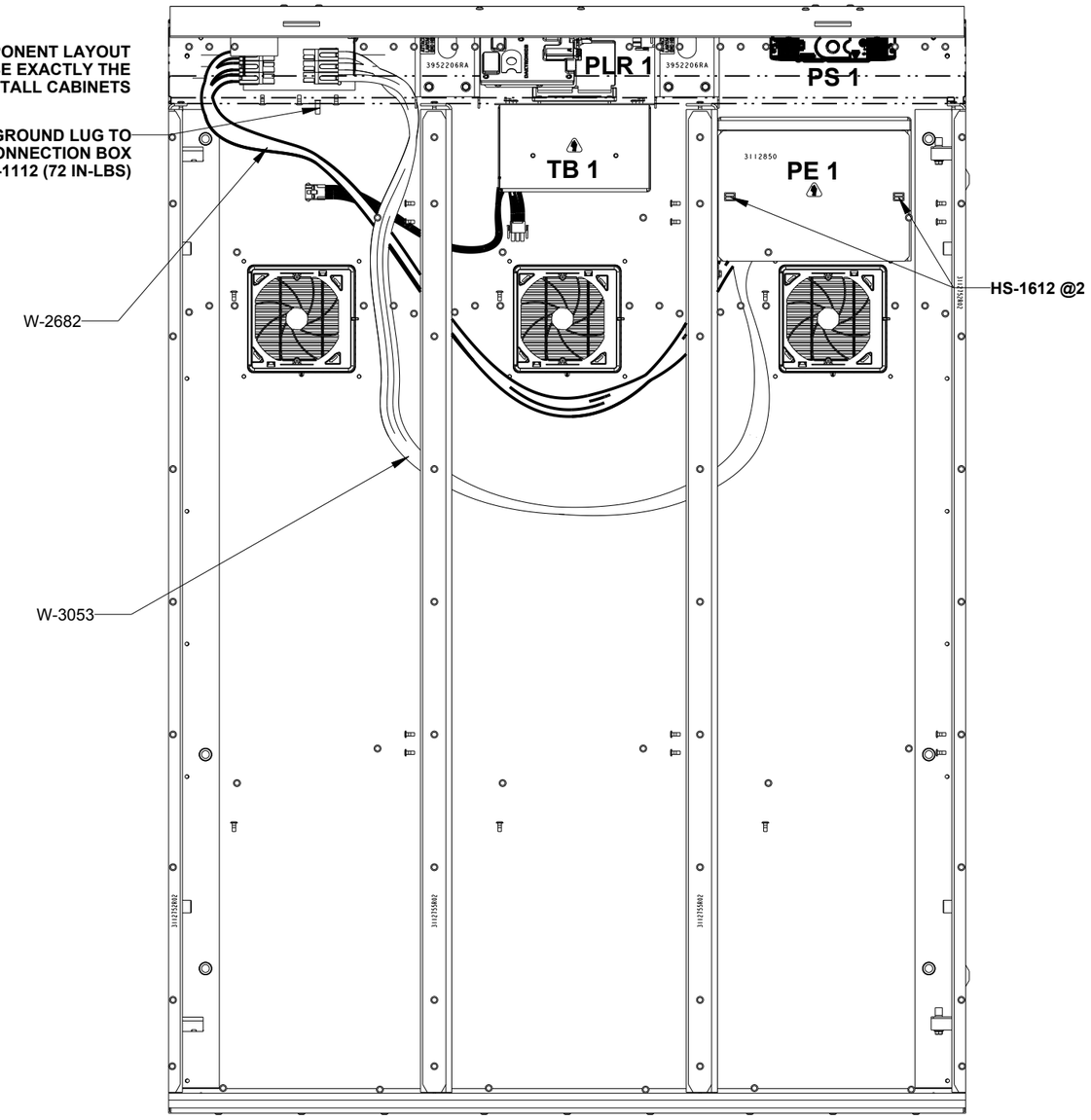
FAN POWER SUPPLY

COMPONENT LAYOUT WILL BE EXACTLY THE SAME FOR 3, 4, 5, 6, 7 & 8 WIDE CABINETS

COIL BUS HARNESS & FIBER IN RIGHT MOST BAY FOR ALL CABINET WITDTHS

COMPONENT LAYOUT WILL BE EXACTLY THE SAME FOR 2, 3 & 4 TALL CABINETS

ATTACH BUS HARNESS GROUND LUG TO STUD UNDERNEATH BUS HARNESS CONNECTION BOX W/ HC-1112 (72 IN-LBS)



REV	DATE:		BY:	
04	14 JAN 19	PER CN-67532; REMOVED PLR PART NUMBER REPLACED WITH "SEE BOM FOR PART #"	MJR 8089	
03	05 OCT 17	PER CN-42684; ADDED NOTES TO CALL OUT HARNESS PART NUMBERS	DJB 18638	

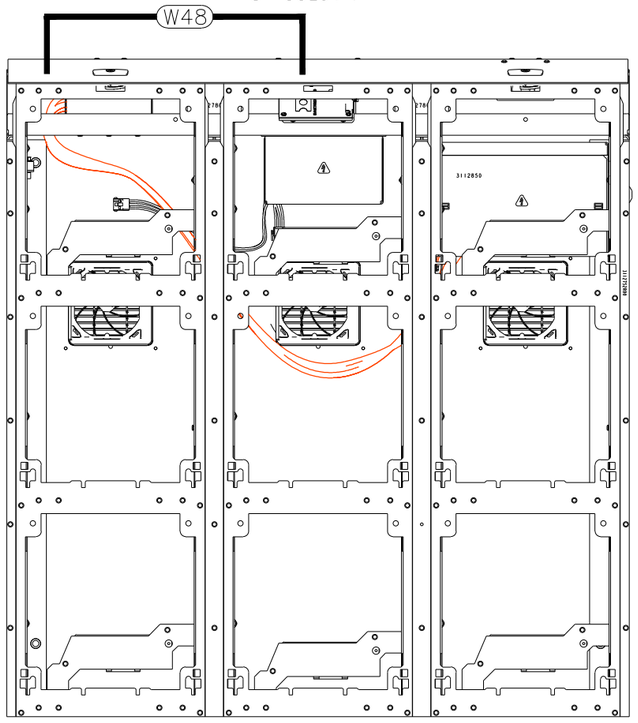
THIRD ANGLE PROJECTION

PROJECT:	RTX A3			
TITLE:	LAYOUT; COMP & PWR, RTX A3			
DATE: 11-JAN-19	DIM UNITS: INCHES [MILLIMETERS]		SHEET 1 OF 1	REV 04
SCALE: 133/3600	DO NOT SCALE DRAWING			
DESIGN: AHOWARD	JOB NO. P1866	FUNC - TYPE - SIZE E - 07 - B	3144351	
DRAWN: AHOWARD				

Part # - 0M-1198421 | Version - 05.4 | Description - FIBER CONNECTION PLATE; RTX-1201, G1 | Lifecycle State - Full Production | Last Modified By - cfuls | Last Modified - 2017-03-26

START

PLR PORT A WILL
CONNECT W-2893 M-F SATA
CABLE TO W-2885 SATA CABLE
CONNECTED TO TOP MOD IN
1ST COLUMN

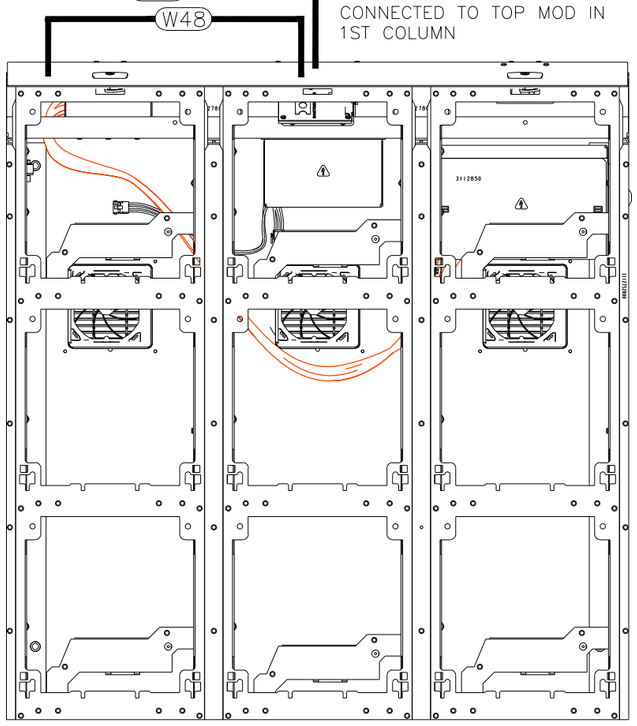


FRONT
VIEW

LEFT

PLR PORT B
WILL CONNECT
W-2889 SATA
CABLE TO
M-F SATA
CABLE IN
PREVIOUS
SECTION

PLR PORT A WILL
CONNECT W-2893 M-F SATA
CABLE TO W-2885 SATA CABLE
CONNECTED TO TOP MOD IN
1ST COLUMN

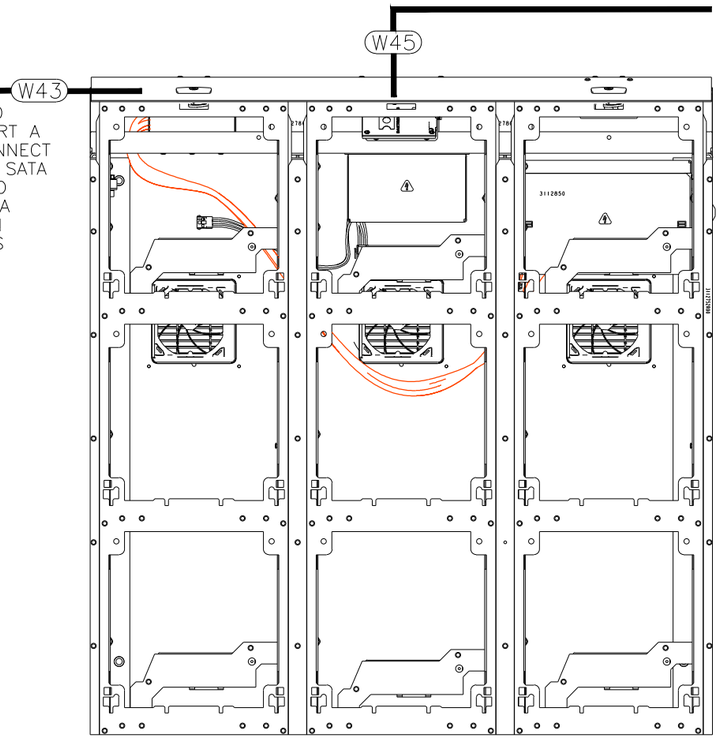


FRONT
VIEW

END

PLR PORT A WILL
CONNECT W-2890 SATA CABLE
TO M-F SATA CABLE
CONNECTED TO BOTTOM MOD IN
LAST COLUMN

TOP MOD
SATA PORT A
WILL CONNECT
W-2885 SATA
CABLE TO
M-F SATA
CABLE IN
PREVIOUS
SECTION



FRONT
VIEW

SIGNAL LEGEND

SATA CABLES

W44 W-2889
CABLE,DAK SATA,M TO M,72IN,BLK,XOVER,DRAINS CNCTD

W45 W-2890
CABLE,DAK SATA,M TO M,12FT,BLK,XOVER,DRAINS CNCTD

W43 W-2885
CABLE; DAK SATA, M TO M, 28IN, BLK, XOVER, DRAINS

W48 W-2893
CABLE, DAK SATA, M TO F, 48IN, BLK, STR8, DRAINS C

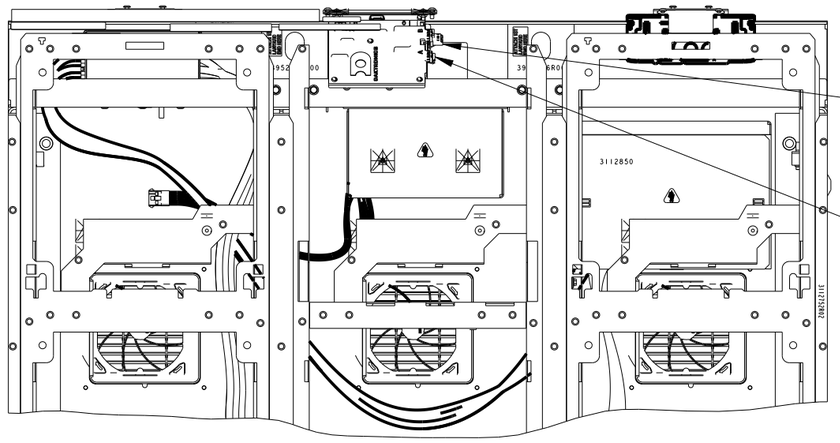
THIRD ANGLE PROJECTION

PROJECT:	RTX A3			
TITLE:	RTX SATA ROUTING OPTIONS			
DATE: 02 OCT 15	DIM UNITS: INCHES [MILLIMETERS]		SHEET	REV
SCALE: NTS	DO NOT SCALE DRAWING			01
DESIGN: AHOWARD	JOB NO. P1866	FUNC - TYPE - SIZE F - 01 - B	3170241	
DRAWN: AHOWARD				

FIBER INTERCONNECT

CONNECT FIBER FROM
PREVIOUS SECTION HERE
(LEFT JACK (J-1435))
WHEN PLR IS NOT INSTALLED

FIBER INTERCONNECT
(NO PLR)
0A-1487-6416 (W-2123 & J-1435)
RIGHT JACK TO
COILED AT END OF CABINET

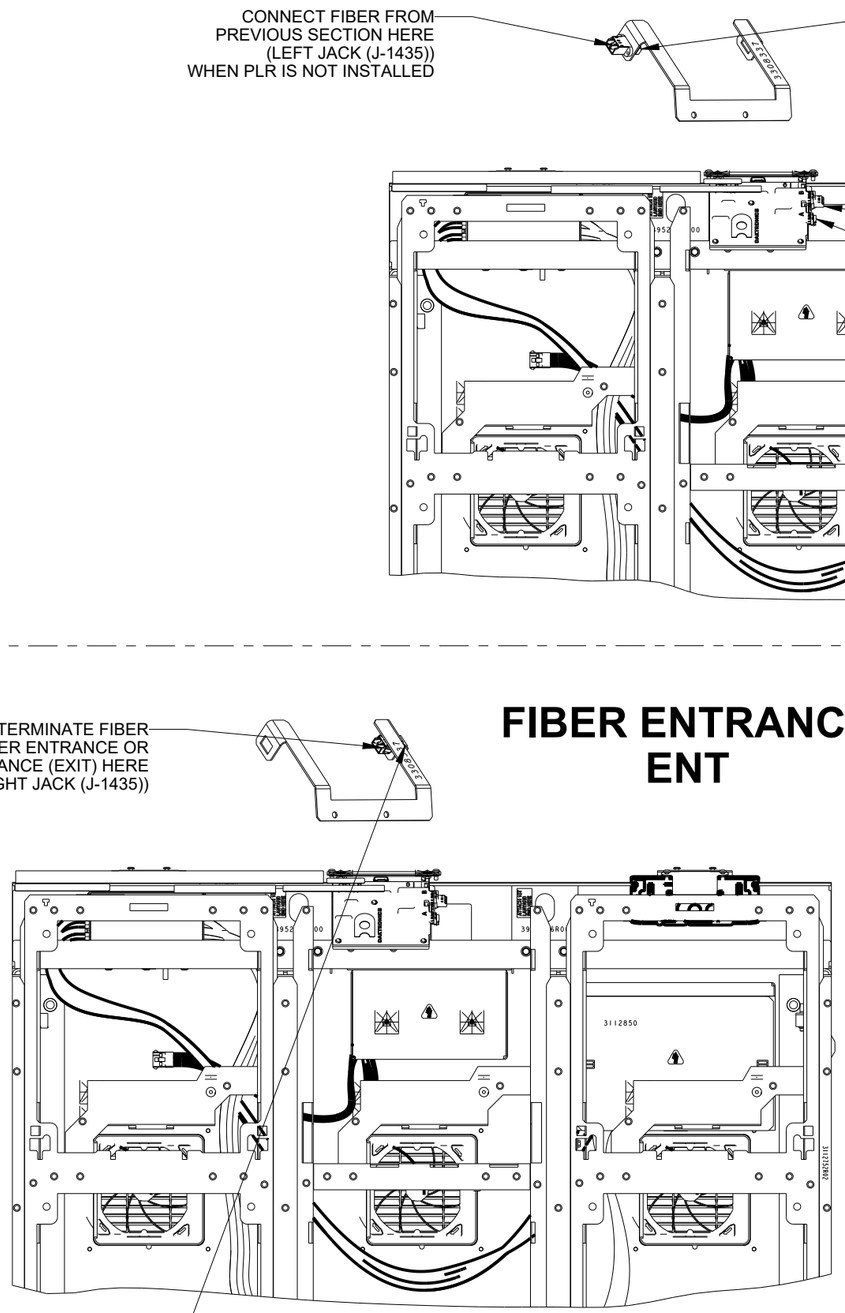


FIBER INTERCONNECT
(PLR)
0A-1487-6406 (W-2123)
PLR FIBER PORT B TO
COILED AT END OF CABINET

CONNECT FIBER FROM
PREVIOUS SECTION HERE
(PLR FIBER PORT A)
WHEN PLR IN INSTALLED

FIBER ENTRANCE ENT

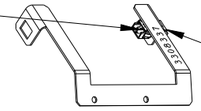
FIELD TERMINATE FIBER
FOR FIBER ENTRANCE OR
FIBER ENTRANCE (EXIT) HERE
(RIGHT JACK (J-1435))



FIBER ENTANCE
0A-1487-6414 (W-1659 & J-1435)
RIGHT JACK TO
PLR FIBER PORT A

FIBER ENTRANCE EXIT

FIELD TERMINATE FIBER
FOR FIBER ENTRANCE OR
FIBER ENTRANCE (EXIT) HERE
(RIGHT JACK (J-1435))



FIBER ENTRANCE (EXIT)
0A-1487-6414 (W-1659 & J-1435)
RIGHT JACK TO
PLR FIBER PORT B

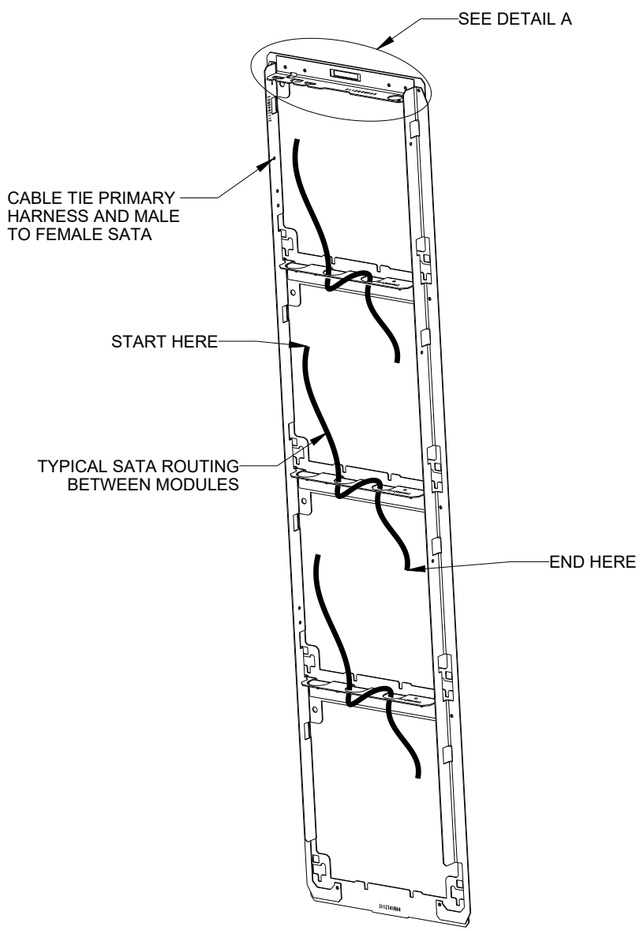
REV:	DATE:	DESCRIPTION:	BY:	
01	28 OCT 19	PER CN-90842: UPDATED FIBER CONNECTION CALLOUTS	TAN 20389	

DAKTRONICS

THIRD ANGLE PROJECTION

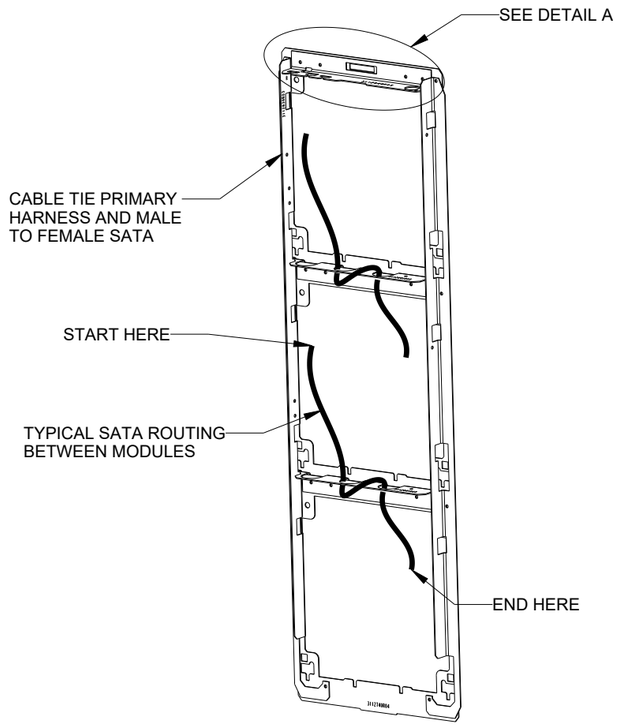
PROJECT:	RTX A3			
TITLE:	RTX A3 FIBER ROUTING			
DATE:	24-OCT-19	DIM UNITS: INCHES [MILLIMETERS]	SHEET	REV
SCALE:	53/900	DO NOT SCALE DRAWING	1 OF 1	01
DESIGN:	AHOWARD	JOB NO. / FUNC - TYPE - SIZE		
DRAWN:	AHOWARD	P1866 / F - 01 - B	3177983	

4 HIGH



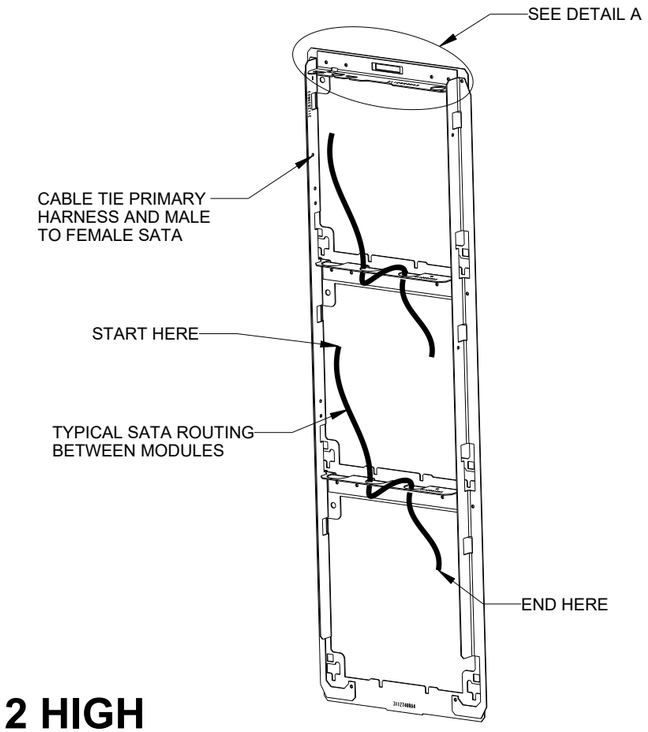
3 HIGH

2 PS (2:1)

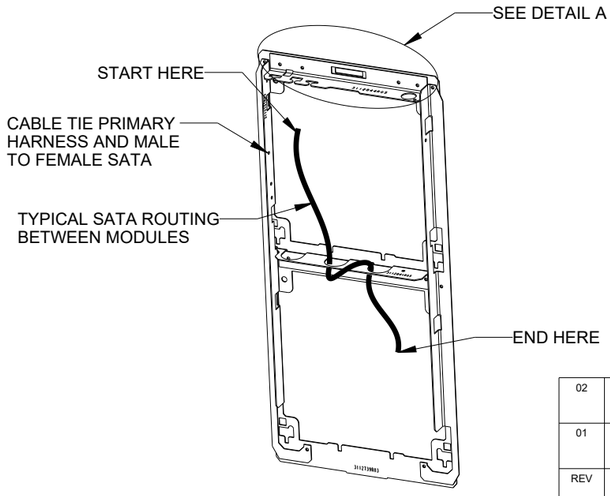


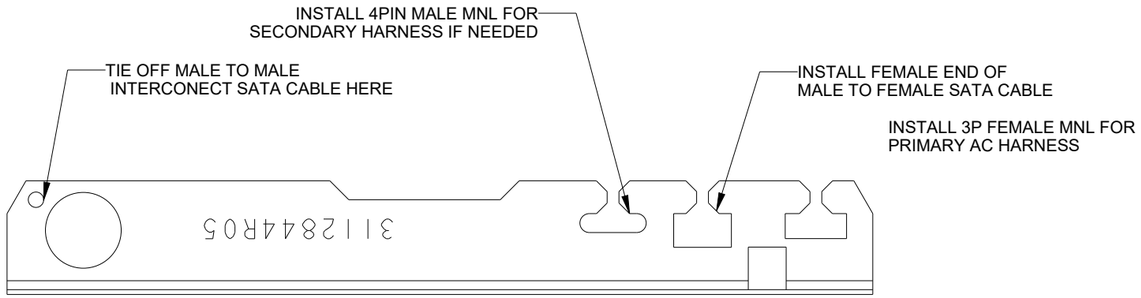
3 HIGH

1 PS (2:1)



2 HIGH



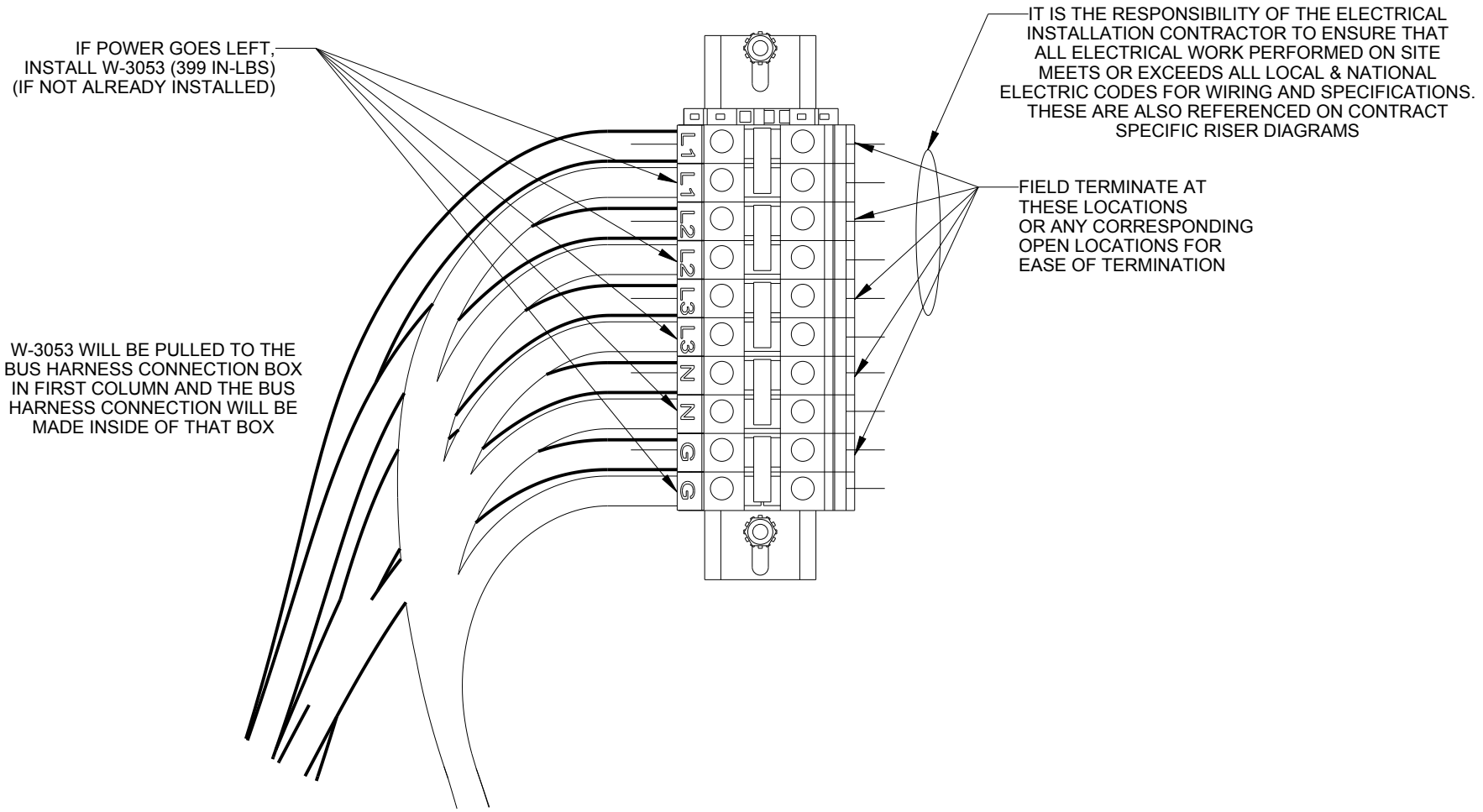


DETAIL A
SCALE 1/2

REV	DATE:		BY:	
02	25 JUN 20	CN-105384; UPDATED SATA ROUTING	MJR	
01	11 MAR 16	PER EC-20616 ADDED MULTIPLE HEIGHTS, SATA CABLE DETAIL AND UPDATED TO LATEST MODPAN REVISION	ADH	

THIRD ANGLE PROJECTION

PROJECT:	RTX A3			
TITLE:	LAYOUT; MOD PAN WIRING, RTX A3			
DATE:	25-JUN-20	DIM UNITS: INCHES [MILLIMETERS]	SHEET	REV
SCALE:	NTS	DO NOT SCALE DRAWING	1 OF 1	02
DESIGN:	AHOWARD	JOB NO. / FUNC - TYPE - SIZE		
DRAWN:	AHOWARD	P1866 / E - 07 - B	3194288	



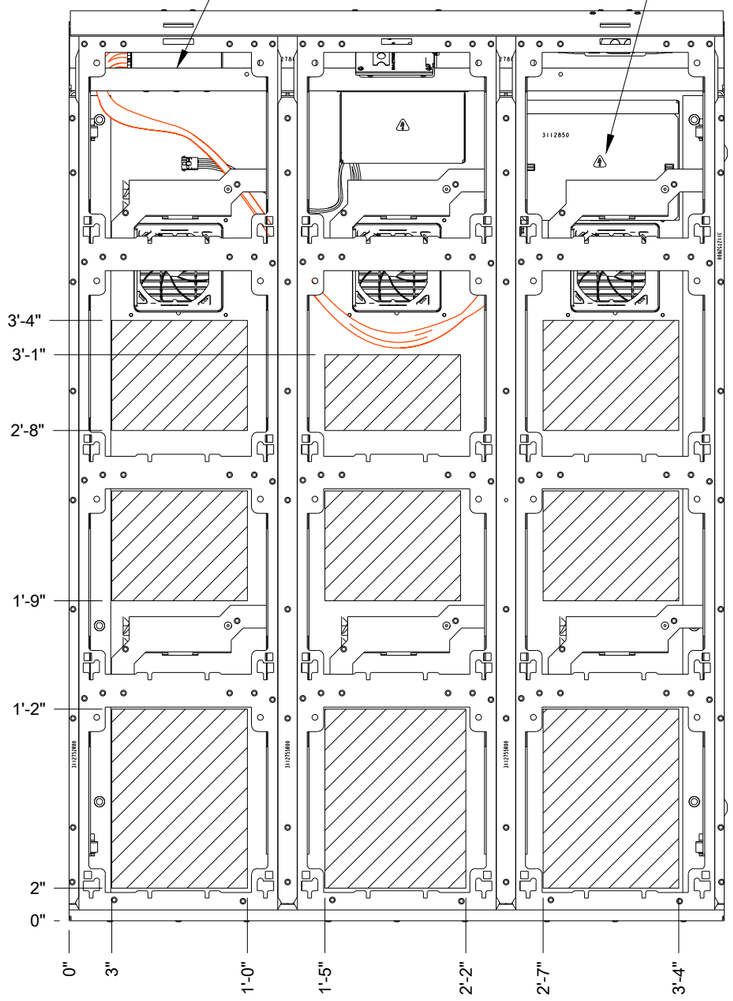
REV	DATE:		BY:	
01	28 JUL 17	PER EC-40148: CORRECTED TORQUE SPEC FROM 399 IN-LBS TO 39 IN-LBS UPDATED DRAWING FORMAT	GBB 19351	

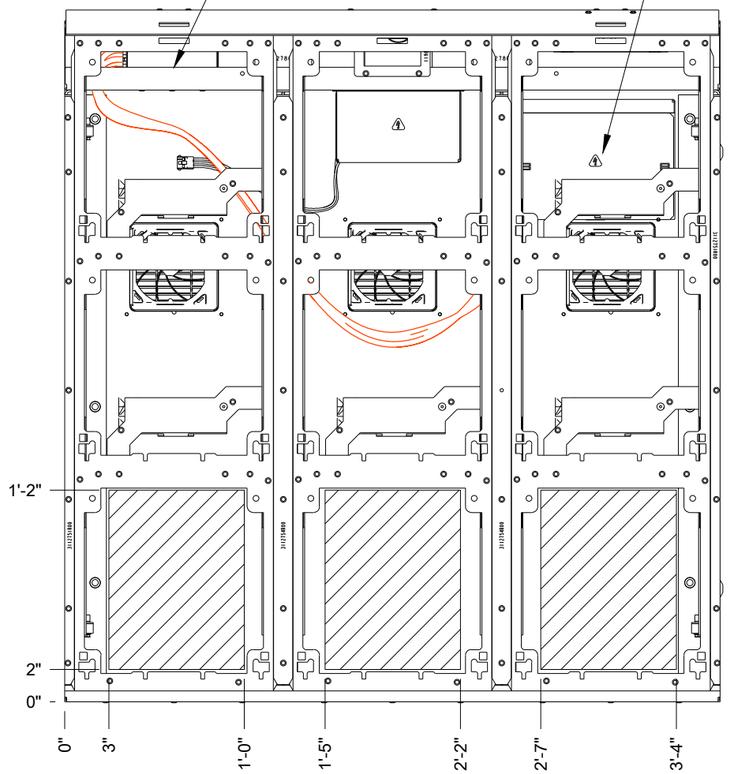
THIRD ANGLE PROJECTION

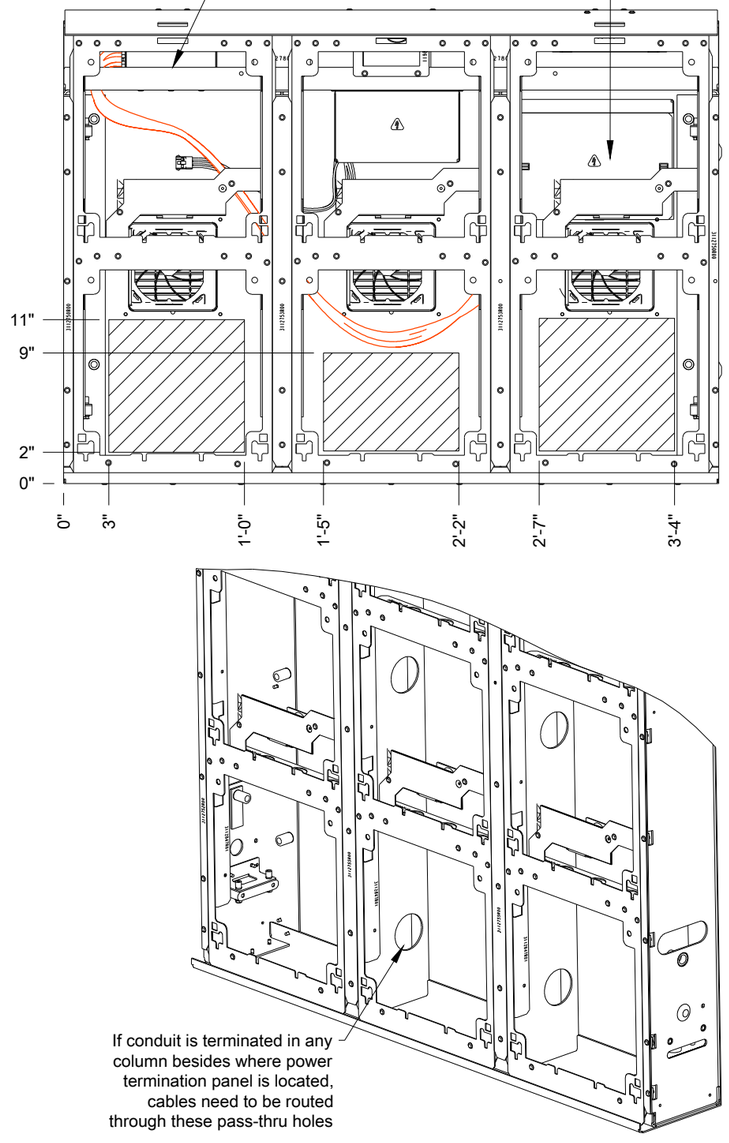
PROJECT:	RTX A3				
TITLE:	POWER ENTRANCE; FIELD TERMINATION DETAIL				
DATE:	28-JUL-17	DIM UNITS:	INCHES [MILLIMETERS]	SHEET	REV
SCALE:	53/900		DO NOT SCALE DRAWING	1 OF 1	01
DESIGN:	AHOWARD	JOB NO.	FUNC - TYPE - SIZE	3195292	
DRAWN:	AHOWARD	P1866	F - 01 - A		

Part # - DWG-03195292 Version - 01.1 Description - N A POWER ENTRANCE; FIELD TERMINATION DETAIL Lifecycle State - Full Production Last Modified By - gbollin Last Modified - 2017-07-28

FRONT VIEW







If conduit is terminated in any column besides where power termination panel is located, cables need to be routed through these pass-thru holes

PREFERRED POWER & FIBER CONDUIT LANDING LOCATION

It is the responsibility of the electrical installation contractor to ensure conduit used and electrical work performed on-site meets or exceeds all local and national electric codes for wiring and specifcations.

DAKTRONICS, INC.
BROOKINGS, SD 57006
DO NOT SCALE DRAWING

PROJ: RTX A3				
TITLE: POWER ENTRANCE; FIELD CONDUIT LOCATION, RTX A3				
DESIGN: AHOWARD		DRAWN: AHOWARD		DATE: 03 NOV 15
SCALE: 1:10				
SHEET	REV	JOB NO:	FUNC-TYPE-SIZE	3196409
	00	P1866	F - 01 - B	

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

DAKTRONICS

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