DB-66XX SERIES DIGITAL BILLBOARD

INSTALLATION MANUAL

P2283

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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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1 Introduction

This manual provides information to install and fire up a DB-66XX series digital billboard. Please read and understand all steps in this manual before beginning the installation process. Contact the Project Manager with questions.

Limitation of Liability

Failure to perform the following may void factory warranties:

- Install the digital billboard according to the steps in this manual
- Provide proper electrical service
- Ground the display properly

> **Note:** This applies to initial installation only. Manufacturer does not warranty relocation of displays.

Daktronics Terms and Conditions of Extended Service

The Daktronics Terms and Conditions of Extended Service document is located at the end of this manual. This document is the authority in matters of service, repair, and display operation.

Important Contact Information

Daktronics Customer Service: 1-800-DAK-TRON (325-8766)

Display Identification

This section provides information that is helpful in understanding a DB-66XX series digital billboard display label. Refer to **Figure 1** while reading the table below.

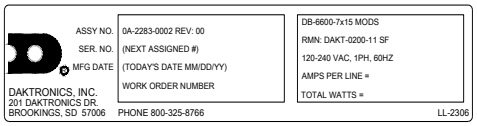
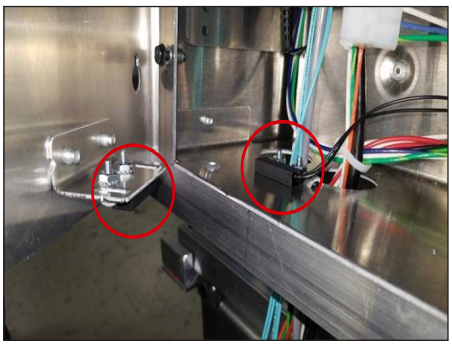
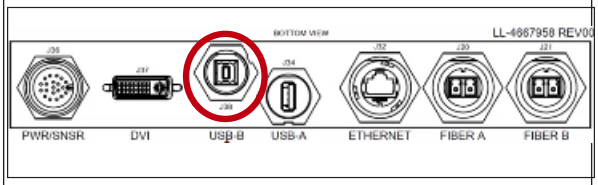
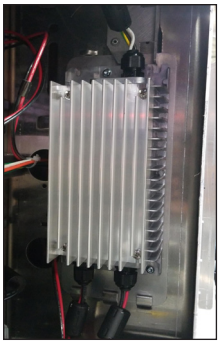
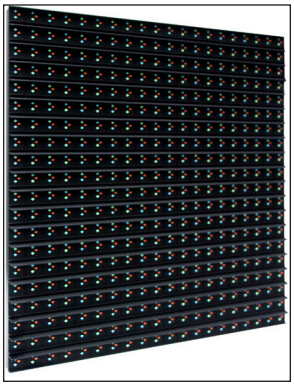


Figure 1: *66 Series Display Label*

Display Assembly Number Display Serial Number Manufacture Month/Date Year	DB-66 Modules High X Modules Wide RMN: Daktronics - 0200 - 11 Manufactured in Sioux Falls, SD 120/240 VAC, Single Phase, 60 HZ AMPS (L1/L2) = Total AMPs for the display Total Watts = Watts for the display

DB-66XX Series Improvements

Component	Improvement	Image of Change
Door Switch	Magnetic door switch	
DMP-8000	• More Memory (8GB) • Larger Hard Drive (240 GB) • CPU Boost	
VIP-5160	Accessory port added for optional use.	
Power Supply	• Low-profile power supplies • 400W power supply powers 10 modules • Power supplies are mounted to the uprights inside the display using rotating bracket • No tools needed to remove power supplies	
Module LEDs	Uses the latest LED technology	 

Terms Used in this Manual

DMP-8000: Digital billboard content player that sends content to the VIP.

Lanyard Attachment Ring: A ring found on the back of each module and on the display doors that attaches to a lanyard and prevents the module from falling.

Latch Release: Releases the latch that holds the module firmly in the display. The latches are centered near the top and bottom of the module.

Light Emitting Diode (LED): Low-energy, high-intensity lighting unit.

Line Filter: Removes electromagnetic noise that might interfere with local communication channels from the power system.

Module: Consists of a display board with LEDs, a driver board or logic card, housing, a module latch assembly, and a louver. Each module is individually removable from either the front or back of the display. Module part numbers vary by pixel pitch.

ProLink Router (PLR): The PLR takes data in and then routes that data to other areas in the sign. There is typically one PLR per display section.

Power Supply: A device that converts AC line voltage from the panel board to low DC voltage for driver boards. In the DB-66 series, one power supply powers 10 modules, one controller, or a ProLink Router (PLR).

Serial Advanced Technology Attachment (SATA) Cable: Allows high speed signal from flow from device to device. In digital billboards, they run signal from module to module and from the PLR to the modules.

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

VIP-5160: Video processor that sends video to the display and controls dimming, color settings, and test patterns.

Required Tools

The following table lists the minimum tool requirements Daktronics recommends having on site for each installation. Daktronics provides some specialized tools but it is the installer's responsibility to provide the majority of tools:

Daktronics-Provided Tools (located behind labeled doors)	• Black cable ties • L-handle hex head wrench: $^{1}/_{8}$" • Splice wrench	• T-handle hex head wrench: $^{1}/_{8}$" • Torx bit: T20
Customer-Provided Tools	• Hex head wrenches: Various sizes • Flat-head screwdriver • Phillips screw driver • Bucket truck: Customer must provide until final proof of performance • Crane • Cordless drill • Drill bits • Hammers • Ladder: 6', 8', 10'	• Laptop • Pry bar • Ratchet tie-downs/come along • Socket and open end wrench: $1^{1}/_{16}$" • Socket extension: 3" • Socket set • Tape measure • Torque Allen wrench: $^{1}/_{8}$" • Utility knife • Taglines • Fish tape

DB-66XX Series Digital Billboard Overview

Figure 2 provides a general overview of display components in a poster (11' x 22') display. Refer to display-specific drawings to identify component locations as they vary by display size.

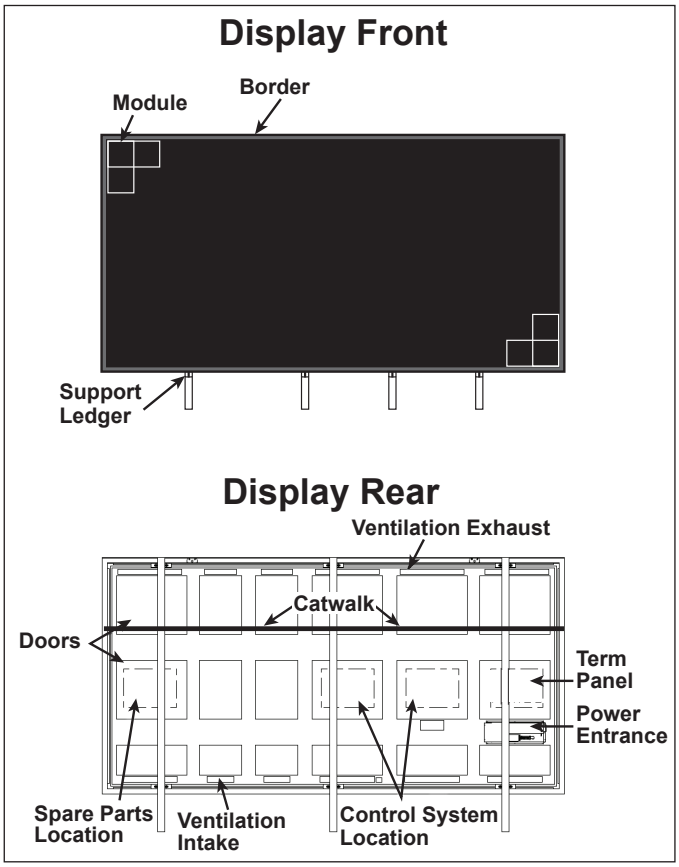


Figure 2: *66 Series Display Front and Back*

2 Installation Preparation

Installation Planning

Prior to the display arriving on site, review installation plans with the electrician, Internet Service Provider, and members of the installation crew.

Support Ledger

Ensure that the ledger brackets are mounted to the upright I-beam. All ledger brackets must be installed prior to lifting the display to the head. For ledger bracket details, refer to **DWG-988359** (use with offset mounts) and **DWG-3041598** (use without offset mounts) in **Appendix A**.

Display Inspection

When the display arrives on site, verify the packaging is in good condition. When unpacking the display, inspect it for damage and potential issues.

Photograph any damage and contact your Project Manager immediately to report issues. Failure to report and document shipping damage may void any manufacturer's warranties.

3 Display Installation

This section provides general guidelines for DB-66XX series digital billboard installation. Work closely with the Project Manager on all installations. Do not modify the display or control system in any manner without the written permission of the Project Manager. Any unauthorized modifications may void the display warranty.

Display Installation

1. Using a utility knife, carefully cut away all of the white packaging material from the display. Pay special attention when cutting around the Multi-Direction Light Sensor (MDLS) to avoid cutting cables. If possible, do not cut anywhere along the display face as it can damage the LEDs and modules.
2. Remove the wood and the wood braces from the top of every display section.
3. Locate the spare parts rack in the bottom-left end bay (when viewed from the back) and verify all installation tools and installation hardware were sent with the display. Contact the Project Manager immediately if missing installation parts.
4. Verify that the lift-eyes are installed and the lift-eye bolts and set bolts are in place. Refer to **Figure 3**. Lift eye spacing is set at Daktronics and should not be moved without the Project Manager's permission.

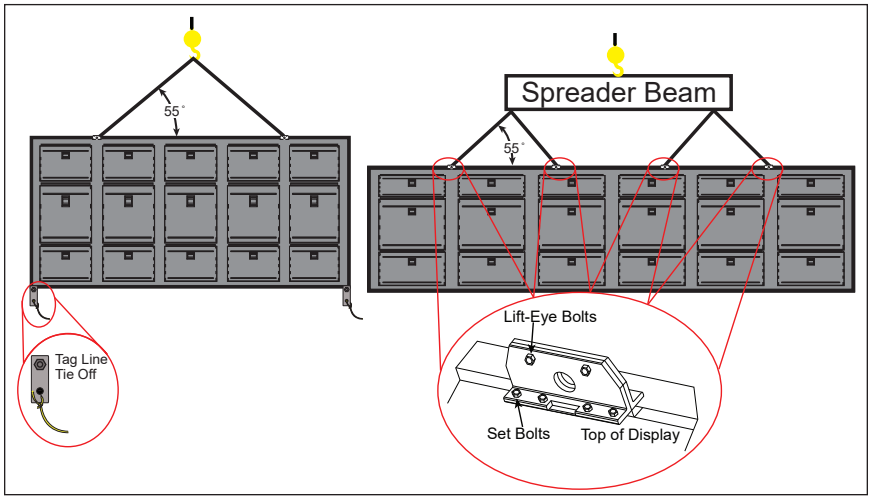


Figure 3: *Display Lifting*

5. The angle on the lift-eye straps must be greater than 55° from horizontal. If there are more than 2 lift-eyes, attach a spreader beam. Each lift-eye must have its own strap. Refer to **Figure 3**. The table shows Daktronics recommended strap lengths for common display sizes.

Display Dimensions	Minimum Strap Length (L)
14' x 48'	27'
10'6" x 36'	22'
14' x 28'	22'
11' x 22'	17'

6. Lift the display to apply some tension to the lift lines.

7. Tie tag lines to the provided tag line tie off on the bottom corners of the display. Refer to **Figure 3**.

8. Unbolt the display from the trailer by removing the shipping braces.

> **Note:** For displays that require a section splice, complete the steps in **Section Splicing (p.9)** before continuing the installation process.

9. Locate the center-line label on the back of the display.

10. From the center of the display, measure and align the display mounting components so they match the structure upright spacing. If a section splice is required, measure the spacing before splicing the display because the splice plates should not be loosened or moved after the display is spliced.

> **Note:** Do not fully tighten the mounting components at this time as it may need to be adjusted while attaching the display to the structure.

11. After aligning the mounting brackets, verify the ISP enclosure door will not experience interference during installation.

12. If the display is two sections wide and has a vertical splice, either from the factory or on site, locate the horizontal splice tube at the splice location. This tube is shipped installed and must be secured before lifting the display. This tube also acts as a mount and can engage an upright. If needed, before lifting the display, loosen and slide the splice tube until one of the alternate alignment lines aligns with the display splice. Tighten all splice tube bolts before lifting the display.

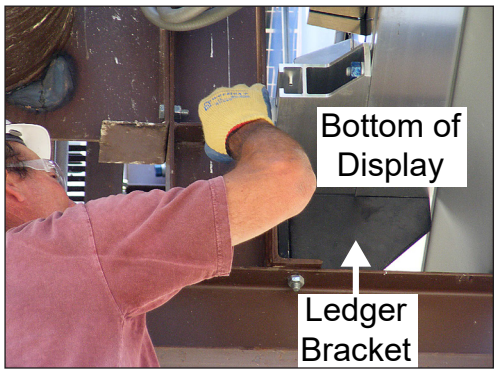


Figure 4: *Display Resting on Ledger*

13. Lift the display off of the truck.

14. Slowly lift the display to the structure head and guide into place with tag lines.

15. Lower the display along the uprights until it rests on the ledger brackets.

16. Verify the display is resting on all ledger brackets. If the display is not resting on all ledger brackets, shim the ledger bracket until it is in contact with the display. Refer to **Figure 4**.

> **Note:** The support ledger is provided by the customer prior to display installation. Refer to **Figure 2** and **Figure 4**.

17. Slide the rocker clamps over until they engage the upright flanges. Refer to **Figure 5**.

Figure 5: *Rocker Clamp Engaging Upright*

18. Use an impact wrench and the torque stick to tighten rocker clamp hardware to 75 ft-lbs.

> **Note:** If the backer channel for the rocker clamp or the optional offset extrusion aligns with an opening in the display perimeter, shift the entire display left or right until the U-channel is at least 1" from the opening. Refer to **Figure 6**.

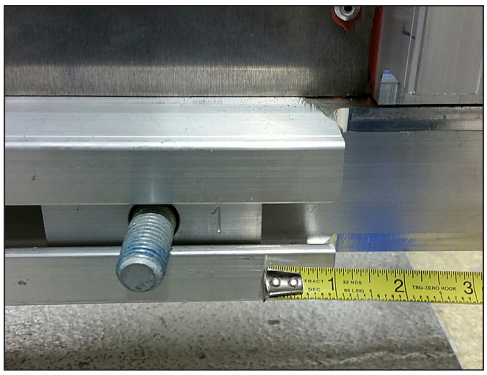


Figure 6: *Display Offset*

19. Tighten all of the nuts on the rocker clamps or offset extrusion bolts to 75 ft-lbs with an impact wrench and the torque stick.
20. Place and tighten all remaining mounting assemblies to 75 ft-lbs.
21. Remove the crane support.
22. Disconnect the tag lines.
23. Locate the top border cover caps, when equipped, that are fixed to the border cover for shipping. Required screws are taped to the cover.
24. Use supplied Tek screws to install the border caps over the lift eye locations.

4 Section Splicing

Display Section Numbering

For displays with multiple sections, each section is numbered for easy installation. For a two-section display, the bottom section is BX and the top section is TX. Refer to **Figure 7**.

For four-section displays, when looking from the front, the lower-left display section is BL and the section to the right is BR; the second row of sections are TL on the left and TR on the right. Refer to **Figure 8**.

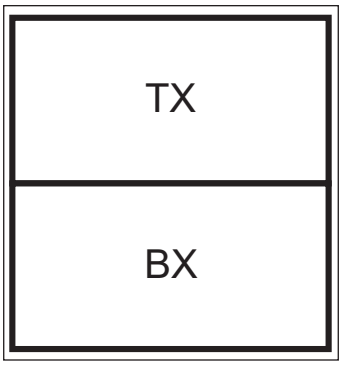


Figure 7: *Two-Section Display Section Numbering*

Display Splicing

Note: Always splice horizontal sections together first. Then splice vertical sections together to prevent seams, as shown in **Figure 9**.

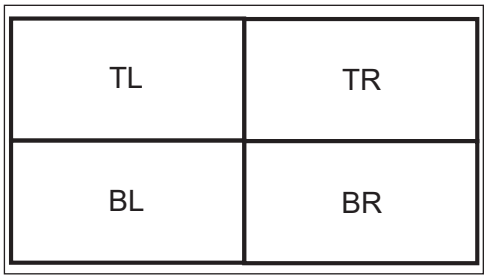


Figure 8: *Four-Section Display Section Numbering*

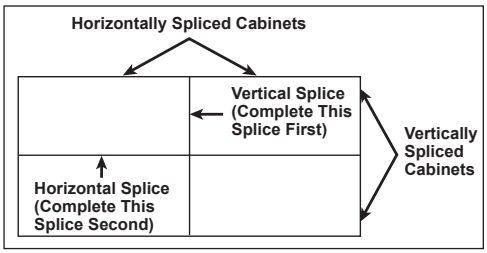


Figure 9: *Splicing Display Sections*

1. Ensure the splice key is in the splice channel and the alignment brackets are installed as shown on the bottom display section. Refer to **Figure 10** and **Figure 11**.
2. Lift the display top section off of the truck.
3. Slowly lower the display top section until it rests above the bottom section.
4. Continue lowering the display until it rests on the display bottom sections and the splice key is inside the display top section splice channel.
5. Starting at one end of the display, insert the top lip of the splice wrench into the top section mounting channel. Refer to **Figure 12**.
6. Rest the bottom lip of the splice wrench against the back of the bottom section mounting channel.
7. Firmly pull down on the splice wrench until the back of both display sections align and the splice key is fully engaged in the top and bottom section splice channels.
8. Repeat **Steps 5–7** approximately every foot along the back of the display.
9. Verify the LEDs in the display top section and the display bottom section align with each other.

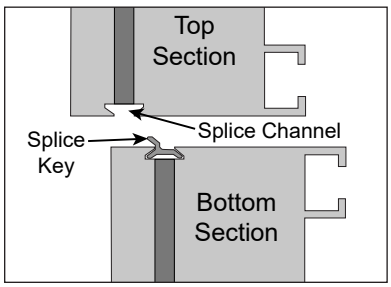


Figure 10: *Installed Splice Key*

Figure 11: *Alignment Bracket*

LED Alignment
Verify LEDs align in all directions between splices. If the LEDs are more than 1/4 of an LED out of alignment, adjust until properly aligned.

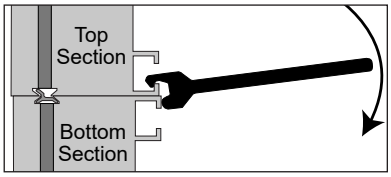


Figure 12: *Aligning Sections with Splice Tool*

10. Ensure the display sections align from front to back.

11. Starting at one end of the display, place the flat splice plates over the bolts and place a nut and washer on each bolt. Refer to **Figure 13**.

> **Note:** Evenly distribute the splice plates along the back of the display. Ensure there is a flat splice plate near each end of the display. Refer to **Figure 14**.

12. Use an impact wrench, the torque stick, and a $^{11}/_{16}$" socket to tighten all of the nuts on the mounting plate to 75 ft-lb.

Figure 13: *Attaching Splice Plate*

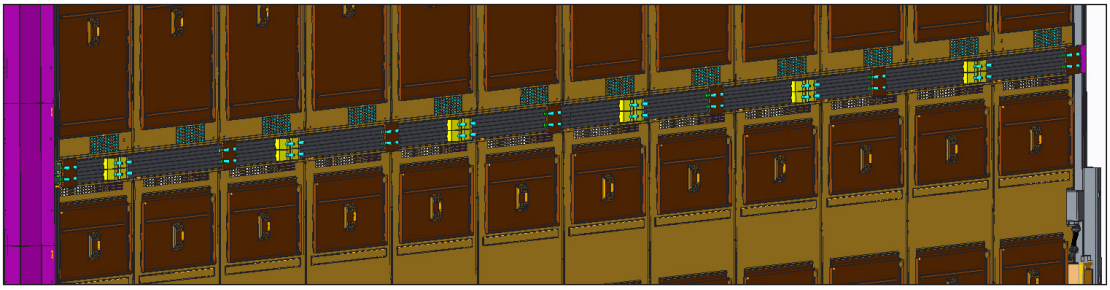


Figure 14: *Splice Plate Installation Locations*

13. Loosen the nuts that hold the vertical splice tube, located at the end of the display, in place. Refer to **Figure 15**.

14. Slide the vertical splice tube so it is split evenly between the top and bottom display sections.

15. Tighten the vertical splice tube nuts to secure the splice tube in place to 75 foot-pounds.

16. Repeat Steps 15 - 16 for all vertical splice tubes.

17. Slide the border splice plates, shown in **Figure 17**, and covers, shown in **Figure 18**, when equipped, into place and attach with supplied nuts and Tek screws.

Figure 15: *Aligning and Installing the Vertical Splice Tubes*

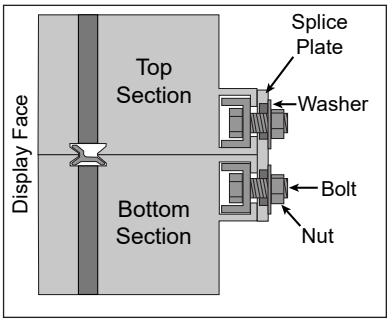


Figure 16: *Installed Flat Splice Plate*

Figure 17: *Attached Border Splice Plate*

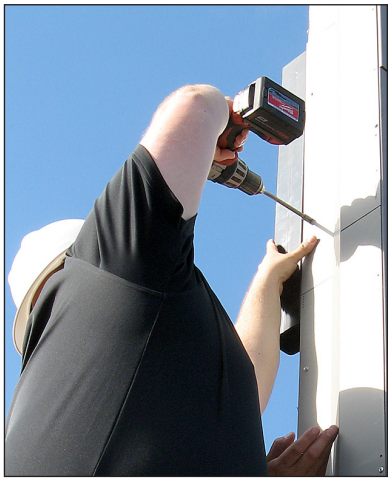


Figure 18: *Attaching Vertical Splice Cover*

18. Complete the steps in **Display Installation (p.6)** to install the billboard.

19. In multi-section displays, connect the power splice cable, located in the top sections, to the power interconnect jacks in each bottom section term panel.

20. Connect the signal splice cables from the display top section by passing them through the conduit sleeve. Refer to **Figure 19**.

- **a.** Connect Signal A on the top section PLR to signal A of the internal fiber patch panel in the section below.
- **b.** Connect Signal B on the top section PLR to signal B of the internal fiber patch panel in the section below.

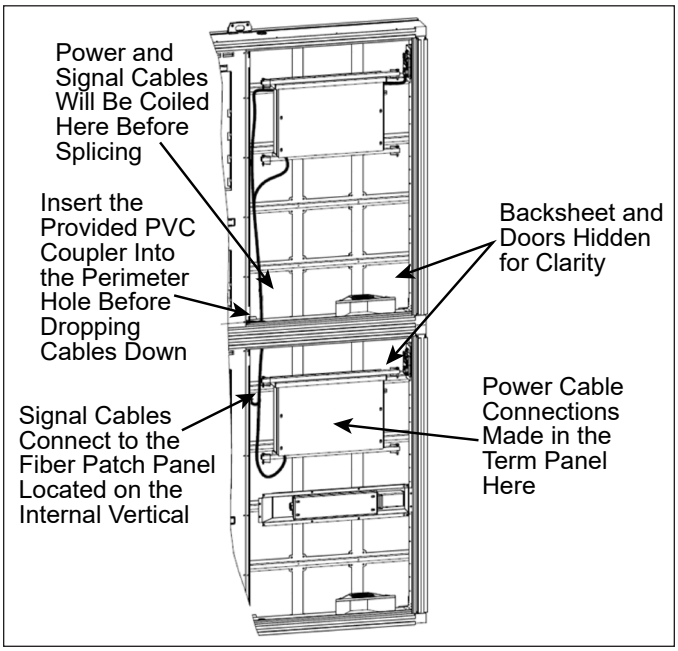


Figure 19: *Power and Signal Splice Connections*

21. Refer to interconnect drawing, **DWG-4270493,** in **Appendix A** for PLR fiber routing.

5 Multi-Direction Light Sensor Relocation

The Multi-Direction Light Sensor (MDLS) ships attached to the display borders in a location provided by the Project Manager. If needed, use the following steps to move the MDLS to a location that receives the same light as the display face.

Multi-Direction Light Sensor Relocation

1. From the back of the display, disconnect the cable that connects the MDLS to the display.
2. Carefully cut the zip ties that secure the cables to the anchor locations on the display back.
3. Loosen the attachment bolts that hold the MDLS assembly to the MDLS mounting arm. Refer to **Figure 20** and **Figure 21**.
4. Lift the MDLS assembly off of the MDLS mounting arm.
5. Remove the two tek screws that secure the MDLS mounting arm to the border. Refer to **Figure 20** and **Figure 21**.
6. Remove the MDLS mounting arm from the border.
7. Rotate the MDLS mounting arm vertically 180 degrees until the MDLS assembly can be reattached to the MDLS mounting arm.
8. Place the MDLS assembly on the MDLS mounting arm.
9. Use the attachment bolts and nuts to secure the MDLS assembly to the mounting arm.
10. Use tek screws to secure the MDLS mounting arm and MDLS assembly to the border at the new location.

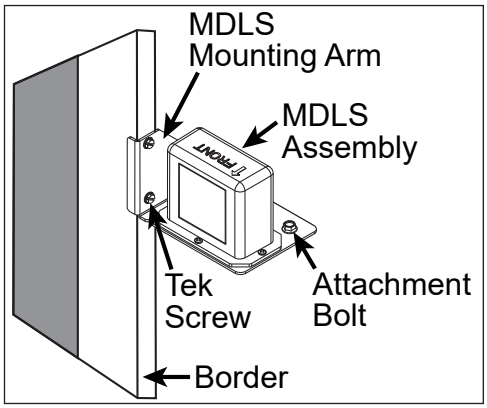


Figure 20: *MDLS on Right Side of Display (From Front)*

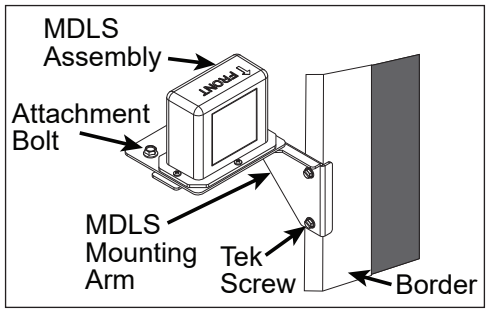


Figure 21: *MDLS on Left Side of Display (From Front)*

> **Note:** Ensure the front label on the MDLS assembly is on top, the arrows are facing away from the display face, and all three light sensor windows are free from obstruction. If you have any questions about the MDLS mounting, contact the Project Manager or Daktronics help desk.

11. Connect the MDLS cable to the Light Sensor connection in the Internet and webcam connections location (third bay from the right).

> **Note:** If after moving the MDLS the cable is not long enough, request an extension cable from the project manager. Connect the extension cable to the MDLS cable and to the back of the display.

12. Secure any excess cable to the provided anchor points on the back of the display.

6 Webcam Mounting

The display ships with a fixed length webcam arm unless the optional retractable webcam arm is requested. For additional mounting or assembly details, refer to the arm-specific drawings located in **Appendix A**.

Mount the Webcam to the Arm

1. Locate the webcam assembly inside the display behind a door labeled Webcam Located Here.
2. Identify all webcam mounting components.
3. Using the wire shipped in the webcam arm, pull the Ethernet and ground cables through the webcam arm.
4. Verify there is enough excess cable to allow the webcam arm to pivot if needed.
5. Slide the webcam arm between the top and bottom tube saddles until the webcam assembly is two inches from the end of the webcam arm. Refer to **Figure 22**.

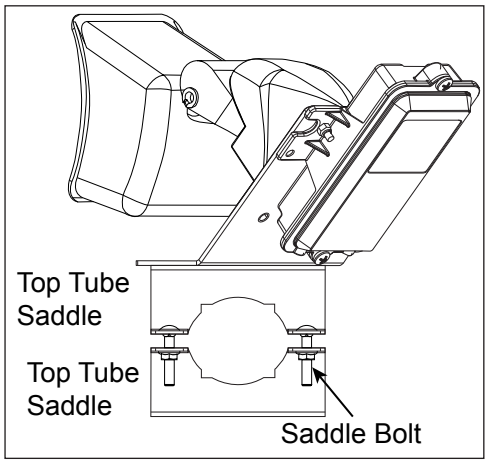


Figure 22: *Mobotix Webcam Mounting*

6. Tighten all four saddle bolts.
7. If necessary, turn the webcam assembly until it will face the display when mounted.

Standard 10-Foot Fixed Webcam Arm Installation

Standard 10-foot fixed webcam arms are used on display less than or equal to 10 modules high and less than or equal to 33 modules wide.

1. The webcam arm ships with all hardware and arm components. Remove the $^{5}/_{8}$" nuts and washers from the arm assembly before installing the webcam arm. Refer to **Figure 23**.
2. Before hanging the display, slide both mounting channels with the bolts into the horizontal mounting channel.

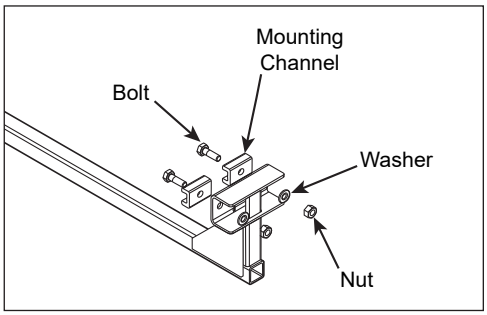


Figure 23: *Fixed Webcam Arm Mounting*

3. Align and slide the webcam mounting assembly over the mounting channel assembly bolts.
4. Place a washer on each $^{5}/_{8}$" bolt.
5. Attach the $^{5}/_{8}$" nuts to the bolts to secure the mounting assembly to the display. Tighten hardware to 75 ft-lb.
6. Using fish tape, feed the webcam cables through the webcam arm tube.
7. Connect the webcam cable to the Primary Webcam connection on the back of the display.
8. Secure the green webcam grounding wire to the groundling lug near either end of the display back.
9. Neatly secure excess power grounding with cable ties.

Standard 10-20 Foot Adjustable-Length Webcam Arm Installation

A 10-15-foot adjustable webcam arm is used on displays less than or equal to 15 modules high and less than or equal to 48 modules wide.

A 20-foot adjustable webcam arm is used on displays less than or equal to 17 modules high and less than or equal to 50 modules wide.

The reason for the adjustable length is that, for every foot of display height, the webcam must be an equal number of feet from the display face to be able to view all of the modules on the display face. Refer to **DWG-1142216** and **DWG-1142217** in **Appendix A** while following the installation instructions.

Installation

1. Determine which side of the display to mount the arm. Mount the webcam on the side of the display away from oncoming traffic. This ensures the view of the display is not inhibited.
2. Remove the mounting bolts, the mounting channel, and the bolt template from the webcam arm assembly.
3. Slide two of the mounting channels and bolts into the horizontal mounting channel on the display back. Refer to **Figure 24**.
4. Slide the two remaining channels into the vertical mounting channel on the display back.

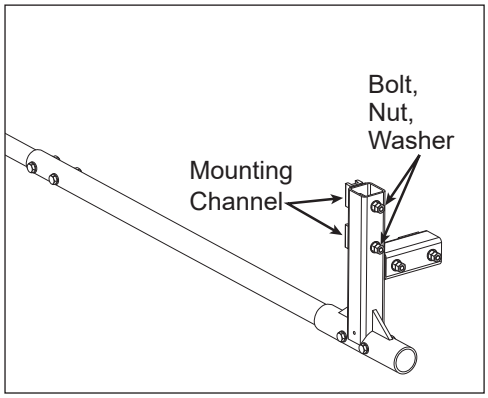


Figure 24: *10-20' Fixed Webcam Arm Mounting*

5. Place the bolting template over the bolts in the channel. The bolting template is important as it makes mounting the arm assembly easier. Refer to **Figure 25**.
6. Mount the elbow assembly to the back of the display by sliding the mounting bolts through the arm mounting assembly.
7. Place washers on all four mounting bolts.
8. Securely fasten a nut on each mounting bolt. Torque to 75 ft lbs.
9. Fasten a second nut on each mounting bolt. The second nut serves as a lock nut to secure the first nut.
10. Slide the webcam arm into the lower part of the elbow arm assembly. The webcam arm slides 12" into the elbow assembly.

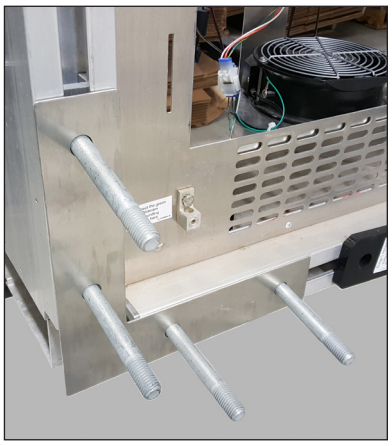


Figure 25: *Webcam Bolting Template*

11. Ensure the webcam is on the top of the webcam arm and tighten the arm set bolts.

    Refer to **DWG-1142216** for 10-15' for adjustable web camera arms

    a. For a 10' arm, slide the 6' round pipe into the 4-point display mount and then slide the 10' round pipe into the 6" round pipe until all three parts holes align in the 4-point display mount. Install bolts through all three parts. This sets the web camera 10' from the display face.

b. For a 15' arm, slide the 6' round pipe into the 4-point display mount, align holes, and install bolts. On the other end of the 6' pipe, slide the 10' round pipe into and align holes between the two parts and install bolts. This sets the web camera 15' from the display face.

Refer to **DWG-1142217** for 20' web camera arms

12. Tighten all mounting hardware to 75 ft.-lbs. and webcam assembly bolts to 25 ft.-lbs.

13. Connect the webcam cable to the Primary Webcam connection, located on the signal entrance plate on the third bay from the right on the back of the display.

14. Secure the green webcam grounding wire to the grounding lug near the end of the display back. Refer to **Figure 26**.

15. Neatly secure excess grounding wire with cable ties.

16. Ensure all webcam and webcam mounting bolts are secure prior to hanging the display.

17. Work with the NOC to ensure the camera is aligned properly.

Figure 26: *Webcam Ground Lug*

Optional Retracting the Webcam Arm

1. To retract the webcam arm, remove the two short bolts from the top of the elbow assembly.

> **Note:** Do not remove the long bolts.

2. Use the handle to carefully pivot the webcam arm to the front catwalk.

> **Note:** Verify that the power and signal cables do not get pinched when pivoting the webcam arm.

3. Return the webcam arm to the original position when done servicing the webcam arm.

4. Replace and tighten the two short bolts.

5. Work with Daktronics NOC to verify the webcam is focused and functioning properly.

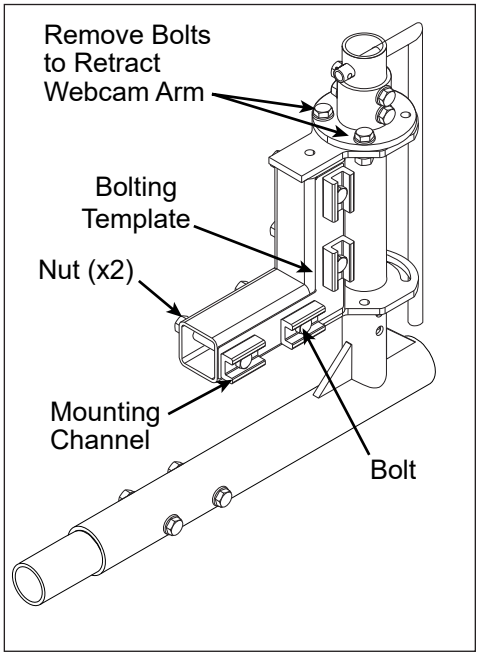


Figure 27: *Pivoting Webcam Arm Base*

7 Electrical Installation

This section provides general guidelines for connecting power to a DB-66XX series digital billboard. For display-specific power requirements, refer to the riser diagram or contact the Project Manager.

> **Note:** Provide the site-required power to the display as listed on the system riser drawing. Low or poor power can result in dim content, parts of the display out, module flickering, or display damage.

Main Disconnect

Daktronics requires using a power disconnect switch with the display. Use a disconnect so that all ungrounded conductors can be disconnected near the point of power connection.

Locate the disconnecting means either in a direct line of sight from the display or so it can be locked in the open position. This ensures that power is not reconnected while service personnel work on the display.

Electrical Installation

1. Refer to the display **Riser Diagram** for site-required power.
2. Run conduit from the main distribution panel (provided by customer) to the display power entrance(s).
3. Route power to the display through a disconnect switch.
4. Loosen the four screws that secure the power entrance cover and lift it off of the power entrance. Refer to **Figure 28**.
5. Feed power cable through the conduit into the power entrance.
6. Connect the ground wire to the ground lug on the left side in the power entrance box (green wire) and tighten to 45 in-lbs with a $^{3}/_{16}$" hex head wrench. Refer to **Figure 29**.
7. Connect power line 1 (L1) to Line 1 of the tap and use a $^{3}/_{16}$" hex head wrench to tighten to 57 in-lbs.
8. Connect power line 2 (L2) to Line 2 of the tap and use a $^{3}/_{16}$" Hex head wrench to tighten to 57 in-lbs, as shown in **Figure 30**.
9. Connect the neutral line to the neutral tap and use a $^{3}/_{16}$" Hex head wrench to tighten to 57 in-lbs.
10. Verify the breakers for the control equipment and surge suppressor are on.

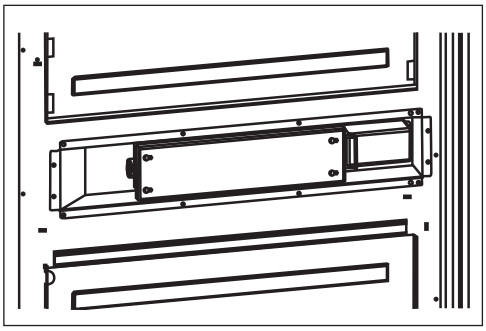


Figure 28: *Power Entrance Box*

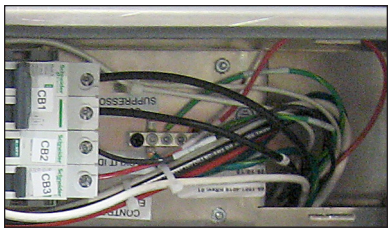


Figure 29: *Connect Ground Wire*

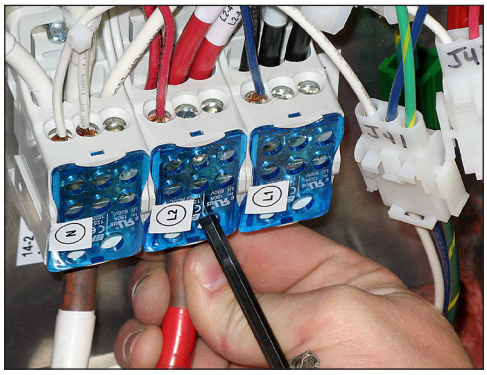


Figure 30: *Connect Power Lines*

11. Verify the breaker for the Backlit ID is off unless there is a backlit ID.

12. Replace and secure the power entrance cover.

Display Grounding

All components of a display system—including but not limited to displays, control equipment, and connected peripheral equipment—must be electrically grounded. Only qualified individuals may perform electrical work, including verification of ground resistance. Daktronics is not responsible for improper grounding or damage incurred as a result of improper grounding.

Grounding methods must meet the provisions of all applicable local and national codes. Inspect and verify all grounding methods meet the provisions of all applicable local and national codes.

Proper grounding is necessary for reliable equipment operation and general electrical safety. Failure to properly ground the display system may void the warranty, disrupt operation, damage equipment, and cause bodily harm or death.

8 Spare Parts Rack Location

Find spare parts and specialized tools behind the door in the bottom-left bays of the display.

Included in the spare parts rack are:

- Modules
- ISP Enclosure Filters
- Splice Wrench
- Hex Head Wrench - $^{1}/_{8}$" (L- and T-Handle)
- Torx Bit: T-20
- Power Supply

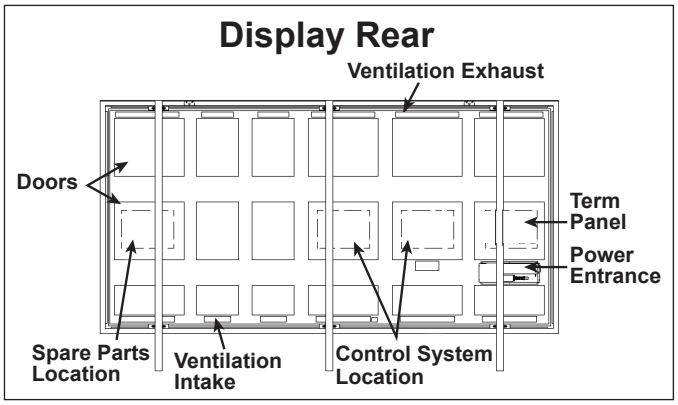


Figure 31: *Spare Parts Rack in Display*

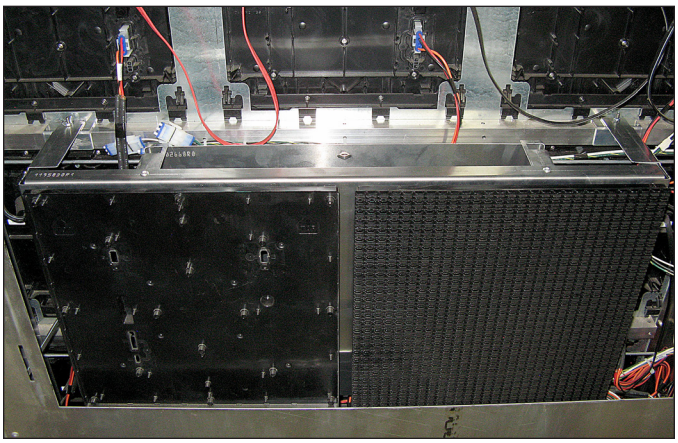


Figure 32: *Spare Parts Rack - Closed Position*

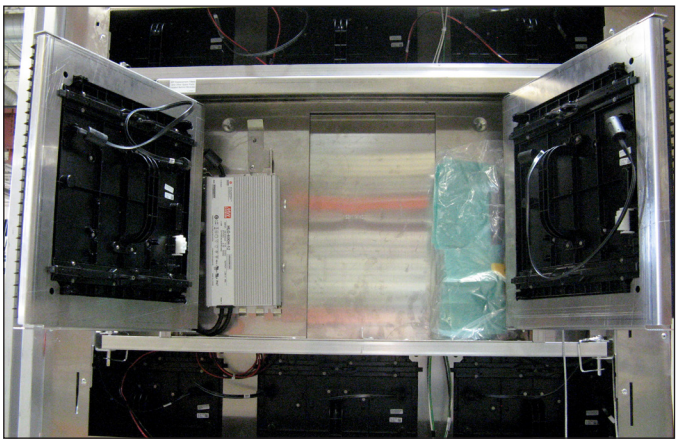


Figure 33: *Spare Parts Rack - Open Position*

9 Control System Overview

DB-66XX series digital billboard control components are enclosed in the display.

Fully Embedded Control System

DB-66XX series digital billboards have two major components. The ISP enclosure, located behind the third door from the right; and the SmartLink™, mounted inside the first or second door from the right. Display back sheets are labeled with component locations to make finding components easy. The table below describes each control system. Refer to **Figure 34** and **Figure 35** and the component descriptions below.

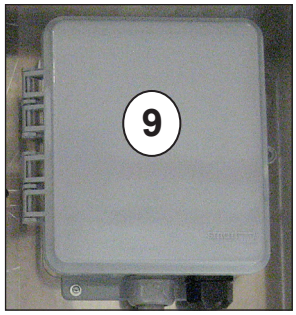


Figure 34: *SmartLink™*

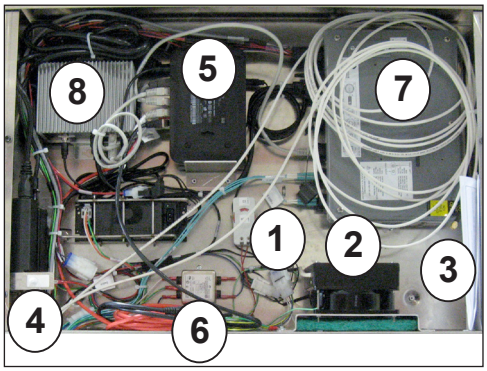


Figure 35: *ISP Enclosure*

Component	Function	Number
Thermostat	Measures the temperatures inside the ISP enclosure and turns on the fan or the heater as needed.	1
Fan/Heater	Since ISP equipment is affected by lower temperatures, a heater prevents the ISP enclosure from going below a functional range. High heat can damage some electronics, the fan cools the ISP enclosure to keep the equipment in a safe functional range.	2
Laptop and Cell Phone Location	Can be used to charge laptop or cell phones. Do not plug drills or other power tools into this outlet.	3
Door Switch	Detects if the ISP enclosure door is open. If opened, an alert is created and the content switches to predetermined content.	4
Router and POE Ethernet Switch	Connects network devices and provides webcam power. The router and POE Ethernet Switch are stacked on top of each other.	5
Z-Filter	Suppresses electrical noise in the electrical line.	6
VIP-5160	Converts DMP-8000 content to a format recognized by the display and sends the signal to the PLRs in the display. The VIP-5160 also gathers diagnostic data from the display and sends it to IDM.	7
DMP-8000	Converts content data from the content management server into a format recognized by the VIP and sends it out to the VIP-5160.	8

Component	Function	Number
SmartLink™	Remote power reboot device. Four relays control the following components: • Relay 1 - ISP equipment • Relay 2 - DMP-8000 and VIP-5160 • Relay 3 - Display • Relay 4 - Auxiliary components **Note:** Do not cycle relays on site. Call the help desk to cycle relays.	9

Open the ISP Box

To access ISP box components, complete the following steps:

1. Access the ISP box by opening the rear access door with the control equipment label.
2. Use a Phillips screw driver to loosen the screws holding the ISP door on and lift the door off. Refer to **Figure 36**.
3. Ensure ISP door and screws are secured after service to guarantee proper function of the door sensor.
4. After performing service or completing connections, replace the display door and ensure it is attached to the safety lanyard and securely mounted.

Figure 36: *Control Equipment Door*

10 First-Time Power Up

A laptop is required to communicate with the display. In the ISP enclosure, connect the red Ethernet cable with the Connect to Laptop tag to an Ethernet port on the laptop.

First-Time Power Up

1. Loosen the screws that secure the ISP enclosure cover. Refer to **Figure 36**.
2. Remove the ISP enclosure cover, including the lanyard, and set aside.
3. Install the Modem according to the ISP schematic. Ensure the modem has power and is connected to the network switch. Ensure the webcam is connected to the POE network switch.
4. For displays sharing the Internet connection, connect a Cat5 cable from port 8 on the network switch of the primary display to the router on the secondary display.

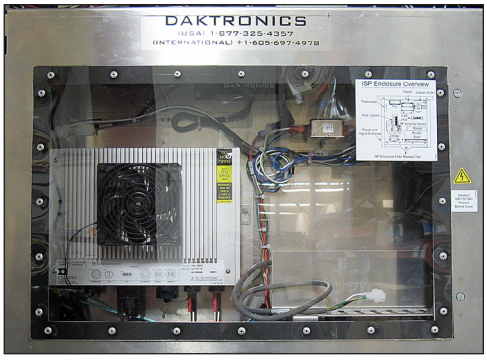


Figure 37: *ISP Box*

5. Turn on site power at the main breaker at the structure base.
6. Verify the status lights on the surge suppressor are on.
7. Check the LED indicators on the equipment in the ISP enclosure to ensure they are on.
8. Ensure the DMP-8000 and VIP-5160 LED indicators LEDs are on. The power light runs steadily and the VIP run indicator flashes.
9. Connect a laptop to the red crossover cable in the ISP enclosure.
10. Call Daktronics help desk at 1-877-DAK-HELP to verify connectivity to the display, perform a diagnostics check, activate the SmartLink™, and perform several display setting checks. The help desk technician may need the following:

Figure 38: *ICCID/MEID Number on Mezzanine Card*

    - SmartLink™ ICCID or MEID number. This number is located on the bottom of the SmartLink™ or on the mezzanine card in the SmartLink™. Refer to **Figure 38**.
    - The Meraki Router serial number.

> **Note:** Also be familiar with any **Installation Setup**, **Controller/Player Configuration** (including DMP and VIP) **Installation Completion** forms that have been sent prior to the installation.

11. After the help desk verifies the diagnostics is clean and performs their tasks, disconnect the laptop from the cross-over cable and reinstall the ISP enclosure cover.

11 Test and Adjust the Display

This section provides procedures on how to perform some final tests and adjustments on the billboard and billboard components to verify they are functioning and adjusted properly.

Diagnostics Checks

After the display is connected to the Internet and running, Daktronics NOC monitors the display and perform some checks to determine if there are any:

- Module issues
- Internet or connectivity issues
- Webcam issues
- Display temperature issues
- Light sensor (MDLS) issues
- Spare parts count

Display Image Quality

After the display is showing content, visually inspect the display for:

- Inaccurate or off color
- Module edges
- The display is too dim or bright
- Modules out
- Incorrect content transition
- Modules stuck on
- Pixels stuck on or bright

Work with Daktronics NOC to address any visual issues.

Test the Light Sensor (MDLS)

Contact Daktronics NOC and perform these steps to verify the MDLS is functioning properly. To test the photocell:

1. Carefully cover the MDLS with a heavy piece of cloth.
2. Watch the display for a few minutes to verify the display dims.
3. Have a NOC technician monitor IDM at the same time to verify the display is dimming properly.
4. Work closely with the NOC technician to correct any issues.
5. Remove the fabric from the MDLS.

A Reference Drawings

This appendix contains drawings and quick guides that are generic to Daktronics digital billboards. Project-specific documents take precedence over those listed in this section.

- When viewing a digital version of this manual, simply click a link below to open it.
- When referencing the printed version of this manual, open an Internet browser and go to **www.daktronics.com/web-documents/Drawings/#######.pdf**, or **www.daktronics.com/web-documents/Manuals/DD#######.pdf** where "#######" is a 7-digit number shown below).

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