

4100 Series Digital Billboard

Installation Manual

DD1914625

Rev 8—14 September 2011

DAKTRONICS

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DAKTRONICS, INC.

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Section 1: Overview

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

1.1 Limitation of Liability

Failure to install the Daktronics digital billboard according to the steps in this manual may null and void any factory warranties. Failure to provide proper electrical service or to ground the display properly may null and void any warranties. Unauthorized modifications to the display, display cabinet, or to the control system can null and void the warranty. For the full **Daktronics Warranty and Limitation of Liability**, refer to **Appendix C** at the end of the manual.

1.2 Important Contact Information

Daktronics Network Operation Center: 1-866-DAK-HELP

Project Manager: _____

Email: Billboardtechs@daktronics.com

1.3 Display Identification









Figure 1: Daktronics Digital Billboard Display Label

This section provides label information that is helpful in understanding a Daktronics Digital Billboard Display label. Refer to the circled area in **Figure 1** while reading the table below.

DB4KG2 - 5 X 18 (40W) MOD				
DB	4K	G2	5 X 18	(40W) MOD
Digital Billboard	4000 Series	Generation 2 or 4100 Series	Display Section Size in Modules: 5 H X 14 W	Module Power

1.4 4100 Series Improvements

Component	Improvement	Image
Multi-Direction Light Sensor	Ships attached to the display	
Border	3", ships attached to the display	
Control Enclosure/Equipment	Control cabinet built into one of the rear-access doors	

Power Supplies	One power supply attached to each module instead of one power supply for a group of modules.	
Lift Eyes/Lifting	Lift eyes set in place by the factory for most displays. This allows the display to be lifted without using a spreader beam. Contact the Project Manager to verify you can lift without a spreader beam.	
Splice Plates	The 4100 Series ships with two types of splice plates. The "V" style splice plate (shown in the image) is factory installed below the lift eye locations. The flat plates need one installed on each end of the display with the remainder distributed evenly along the back of the display.	

1.5 Manual Sections

This manual is divided into 11 sections.

1. **Overview:** explains the basic information needed to use this manual along with a basic display overview. Take time to read the Overview because it explains concepts and terms used throughout the manual.
2. **Installation Preparation:** covers some guidelines for positioning the crane and truck. This section also details what should be completed before the truck arrives on site.

3. **Display Installation:** covers lifting the display and attaching the display to the structure.
4. **Section Splicing:** provides the information required for splicing display sections together on site if needed.
5. **Multi-Direction Light Sensor Relocation:** provides steps to relocate the MDLS from the factory mounted location.
6. **Webcam Mounting:** covers the procedure for mounting the webcam to the webcam arm and mounting the webcam arm to the display.
7. **Electrical Installation:** Covers the electrical installation information for Daktronics digital billboards.
8. **Control Enclosure Overview:** Covers basic control enclosure components and their function.
9. **Spare Parts Box Installation:** covers spare parts box installation information.
10. **First Time Power Up:** Covers basic display power up procedure. This section should be completed while on the phone with Daktronics NOC.
11. **Display Testing and Adjustment:** Covers basic tests to perform and adjustments that need to be made during after installing the display.

At the end of this manual are three appendices: **Appendix A: Drawings**, **Appendix B: Supplementary Manuals**, and **Appendix C: Daktronics Warranty and Limitation of Liability**. **Appendix A** contains generic display drawings. **Appendix B** contains manuals that contain useful information about installing your display and connecting the controller to the internet. **Appendix C** explains Daktronics standard warranty and liability limitations.

Figure 2 illustrates a Daktronics drawing label. The drawing number is located in the lower-right corner of a drawing. 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 **Drawing B-997767**.


 DAKTRONICS, INC. BROOKINGS, SD 57006		<small>THE CONCEPTS EXPRESSED AND DETAILS SHOWN ON THIS DRAWING ARE CONFIDENTIAL AND PROPRIETARY. NO PART HEREOF MAY BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS WITHOUT THE EXPRESS WRITTEN CONSENT OF DAKTRONICS, INC. COPYRIGHT 2000 DAKTRONICS, INC.</small>	
DO NOT SCALE DRAWING			
PROJ: 4000 SERIES COMMON COMPONENTS			
FILE: ENCLOSURE; PLR6050, BILLBOARD			
DESIGN: KSTOLZ		DRAWN: KSTOLZ	DATE: 6 APR 10
SCALE: 1 = A			
SHEET:	REV	JOB NO:	FUNC-TYPE-SIZE
1 OF 2	02	1604	E - 07 - B
			997767

Figure 2: Daktronics Drawing Label

1.6 Terms Used in this Manual

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 or door from falling.

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): low energy, high intensity lighting unit.

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

Louver: a black plastic shade positioned horizontally above each pixel row. Louvers increase the contrast level on the display.

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

Module Latch: an assembly using a rotating retainer bar to hold the module firmly to the display frame. There are two per module, one near the top and one near the bottom.

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. One power supply can power multiple modules.

Serial Advanced Technology Attachment (SATA) Cable: allows high speed signal from device to device. In digital billboards, they run signal from module to module.

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.

Uninterruptable Power Supply: Provides back up power to the control equipment if the site loses power.

VIP4060: Digital billboard control card that sends content to the display. The VIP4060 limits the display to static content and regulates content hold times.

1.7 Required Tools

The following table lists the minimum tool requirements Daktronics recommends having on site for each installation. Daktronics provides some of the specialized tools but the installer provides the majority of tools.

Daktronics Provided Tools (located in the spare parts box)	<ul style="list-style-type: none">• Splice Wrench• Torque Stick• T-handle Allen wrench: 1/8"
Customer Provided Tools	<ul style="list-style-type: none">• Allen Wrenches: Various Sizes• 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• Screw drivers: Phillips and flat head• Socket and open end wrench: 1 1/16"• Socket extension: 3"• Socket set• Tape measure• Torque Allen Wrench: 1/8"• Utility knife

1.8 Daktronics Digital Billboard Overview

Figure 3 provides a general overview of display components. Each display is different so refer to your project specific drawings for component locations.

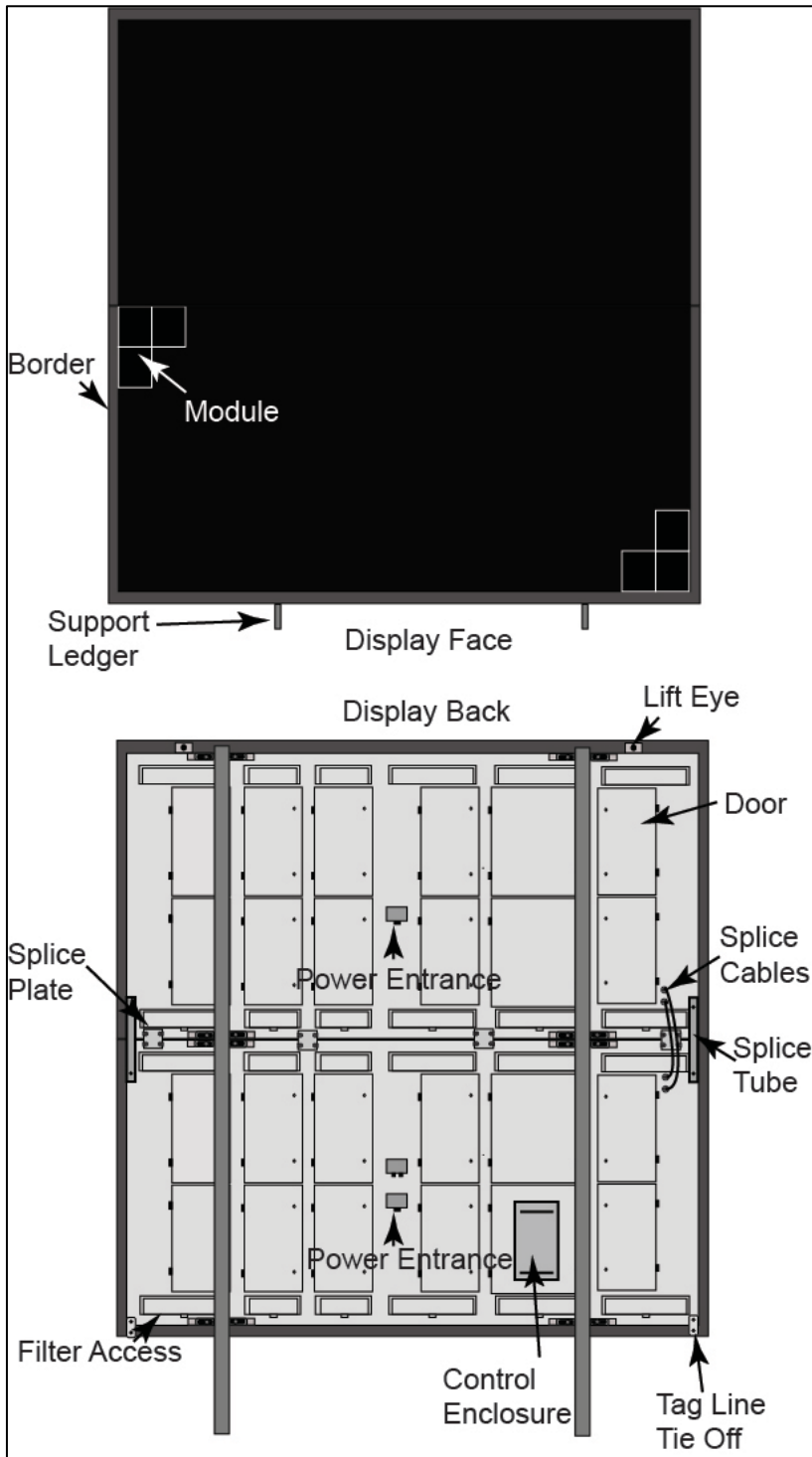


Figure 3: 4100 Series Display Installation Component Overview

Section 2: Installation Preparation

2.1 Installation Planning

Prior to the display arriving on site, review installation plans with the electrician, the ISP provider, and other member of the installation crew.

2.2 Crane

Position the crane so it can easily access the display and the structure without hitting buildings or other obstructions.

2.3 Display Inspection

As soon as the display arrives on site, verify that the packaging is in good condition. When unpacking the display, inspect the display 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 null and void any manufacturer's warranties.

2.4 Support Ledger

Before the display arrives on site, 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 A-988359** in **Appendix A**. Refer to **Figure 4**.



Figure 4: Installed Ledger Bracket

Section 3: Display Installation

This section provides general guidelines for DB-4100 display installation because installations can vary greatly depending on the display, structure, and local regulations. 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 as any unauthorized modifications may null and void the display warranty.

3.1 Display Installation

1. Using a utility knife, carefully cut away all of the white packaging material from the display and the spare parts box. Be particularly careful when cutting around the multi-direction light sensor to avoid cutting cables. If possible, do not cut anywhere along the display face as it can damage the LEDs and modules.
2. Lift the spare parts box off of the trailer and set in a location near the installation site as it contains tools, parts, and documents that are needed during the installation process.



Figure 5: Open Spare Parts Box

3. Open the spare parts and verify the installation tools and hardware were sent with the display.
4. Verify that the lift-eyes are installed. Also verify the set bolts and the lift-eye bolts are in place. Refer to **Figure 6**. The lift eye spacing is set at Daktronics and should not be moved without the Project Managers permission.

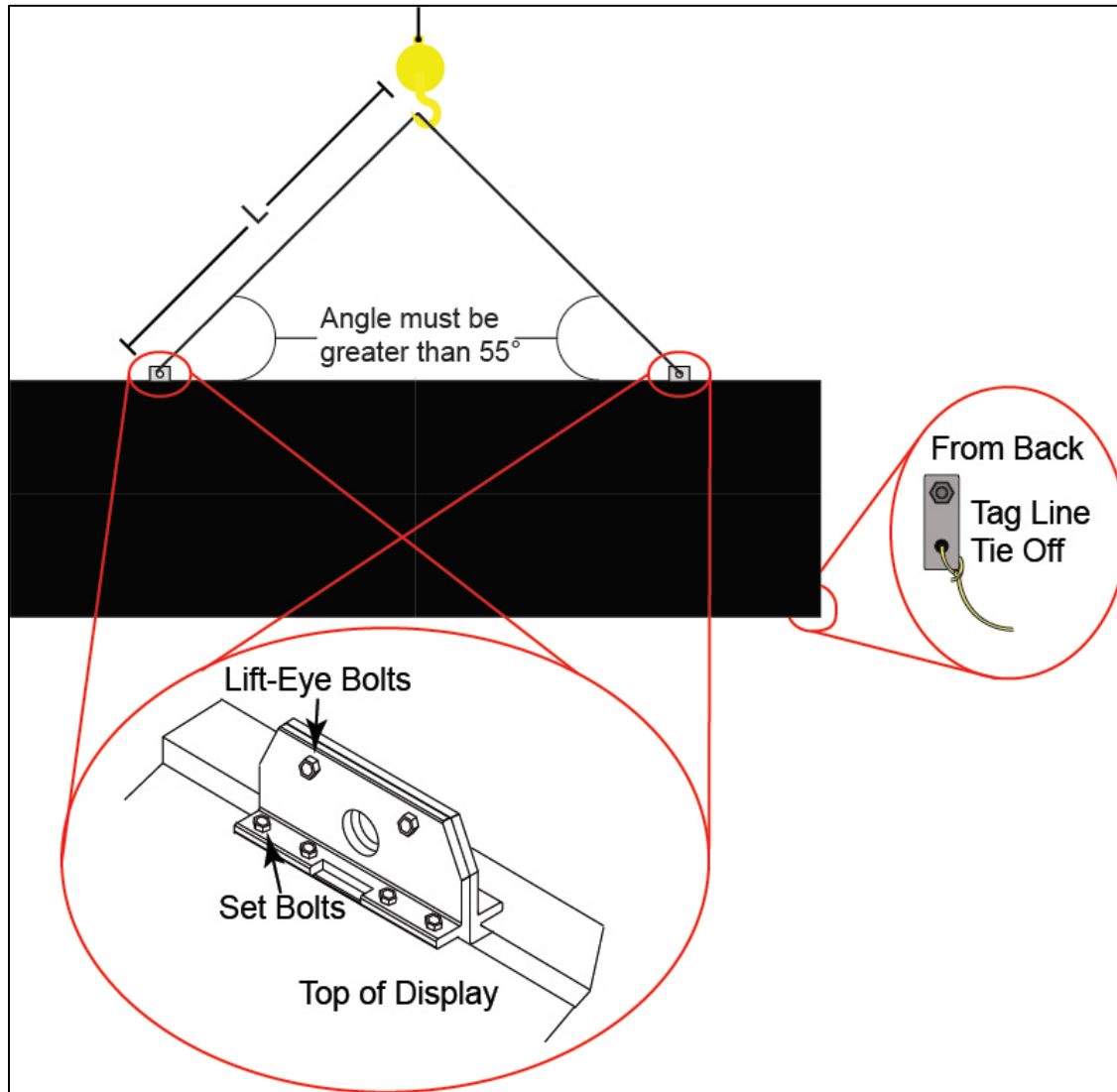


Figure 6: Display Lifting Illustration

- Attach a lift lines to the lift eyes.

Note: Ensure the angle between the top of the display and the lifting strap is greater than 55°. Refer to **Figure 6**. The table below shows Daktronics recommended strap lengths for some common display sizes.

Display Dimensions	Minimum Strap Length (L)
14' x 48'	25'
10'6" x 36'	20'
14' x 28'	20'
11' x 22'	15'

- Lift the display to apply some tension to the lift lines.
- Unbolt the display from the shipping braces.

Note: For displays that require a section splice, complete the steps in **Section 4** for section splice instructions before continuing the installation process.

- Tie tag lines to the provided tag line tie offs on the bottom corners of the display. Refer to **Figure 6**.
- Remove the shipping braces from the display.
- Locate the center line label on the back of the display.
- From the center of the display, measure and align the offset extrusion until it matches the structure upright spacing.

Note: Do not tighten the offset extrusion at this time because it may need to be adjusted when attaching the display to the structure.

- If the display has a vertical splice, either from the factory or on-site, locate the 78" splice tube at the splice location. Refer to **Figure 7**. This tube is shipped installed and needs to be secure before lifting the display. This tube also acts as offset extrusion and can engage an upright. If needed, before lifting the display, you can loosen and slide the splice tube until one of the alternate alignment lines align with the display splice. Tighten all splice tube bolts before lifting the display.

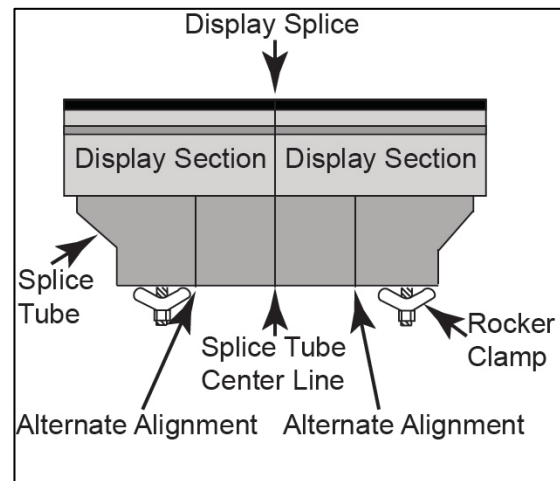


Figure 7: Universal Splice Tube

13. Measure the embedded control enclosure and determine where it aligns with the uprights on the structure. If it appears the structure will interfere with opening the control enclosure door, the enclosure can be moved using the steps provided in the DD1895077 in **Appendix B**.
 14. Lift the display off the truck.
 15. Slowly lift the display to the structure head while guiding into place with tag lines.
 16. Lower the display along the upright until it rests on the ledger bracket.
- Note:** The support ledger is provided and installed by the customer prior to display installation. Refer to **Figure 4**.
17. 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 contact with the display.
 18. On each end of the display, slide the pre-assembled offset extrusion and the rocker clamps over until they engage the upright flanges.

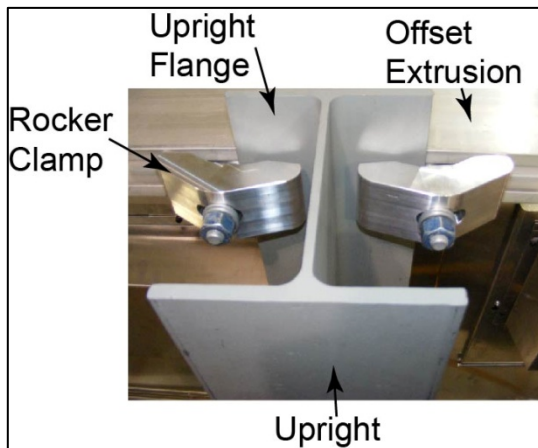


Figure 8: Attached Rocker Clamps

19. Use an impact wrench and the torque stick provided in the spare parts box to tighten the nut on the rocker clamp bolt to 75 ft-lbs.
- Note:** If the U-Channel mounted to the offset extrusion bolt aligns with an opening in the mounting channel, shift the entire display left or right until the U-channel is at least 1" from the opening.
20. Slide the right rocker mount into the end of the offset extrusion.
 21. Use an impact wrench and the torque stick provided in the spare parts box to tighten the nut on the rocker clamp bolt to 75 ft-lbs.
 22. Tighten all of the nuts on the offset extrusion bolts to 75 ft-lb with an impact wrench and the torque stick.

23. Place and tighten all remaining mounting assemblies to 75 ft-lbs.
24. Remove crane support.
25. Disconnect the tag lines.
26. Locate the top border cover caps.
27. Using tek screws, install the border caps over the lift eye locations.

Section 4: Section Splicing

4.1 Display Sections Numbering

For displays with multiple sections, each section is numbered for ease of installation. For a two section display the bottom section will be section 100 and the top section is 200. Refer to **Figure 9**.

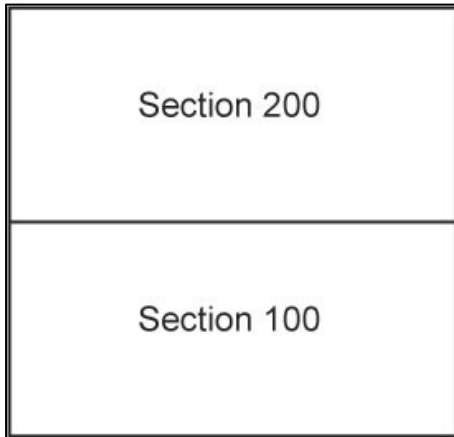


Figure 9: Two Section Display Section Numbers

For four section displays, when looking from the front, the lower-left display section would be 101 and the section to the right would be section 102; the second row of sections would be 201 on the left and 202 on the right. Refer to **Figure 10**.

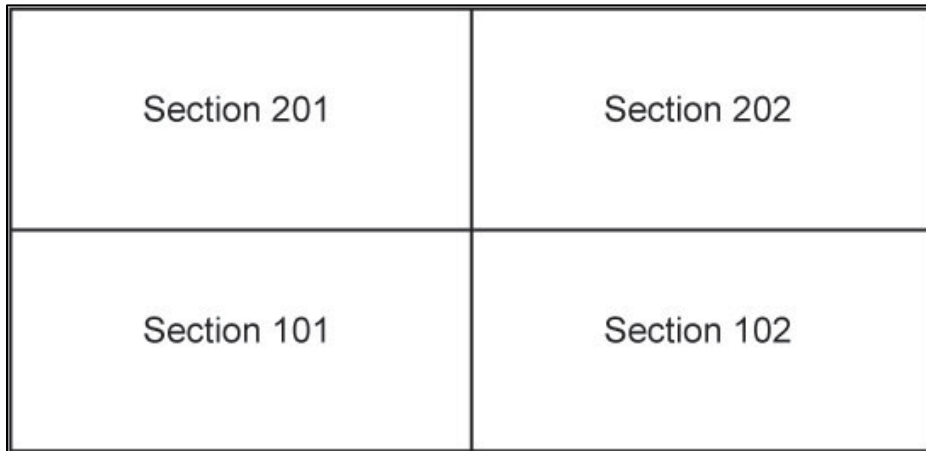


Figure 10: Four Section Display Section Numbers

4.2 Display Splicing

1. Ensure the splice key is in the splice channel and the alignment brackets are installed on the bottom display section. Refer to **Figure 11**.

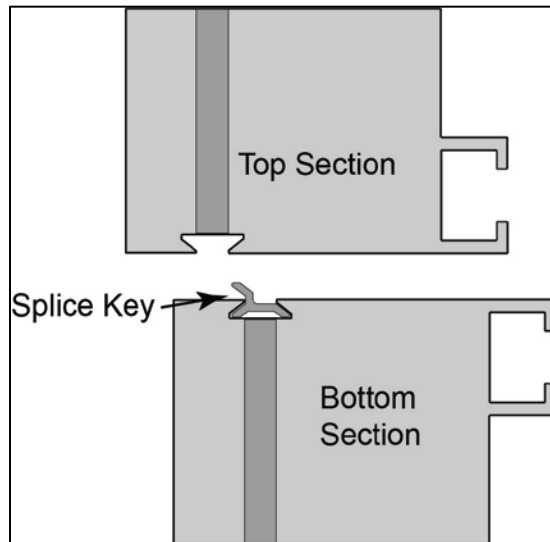


Figure 11: Lowering Top Section

2. Lift the display top section off of the truck.
3. Slowly lower the display top section until it rests slightly above the bottom section.
4. Continue lowering the display until it rests on the display bottom sections until 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**.

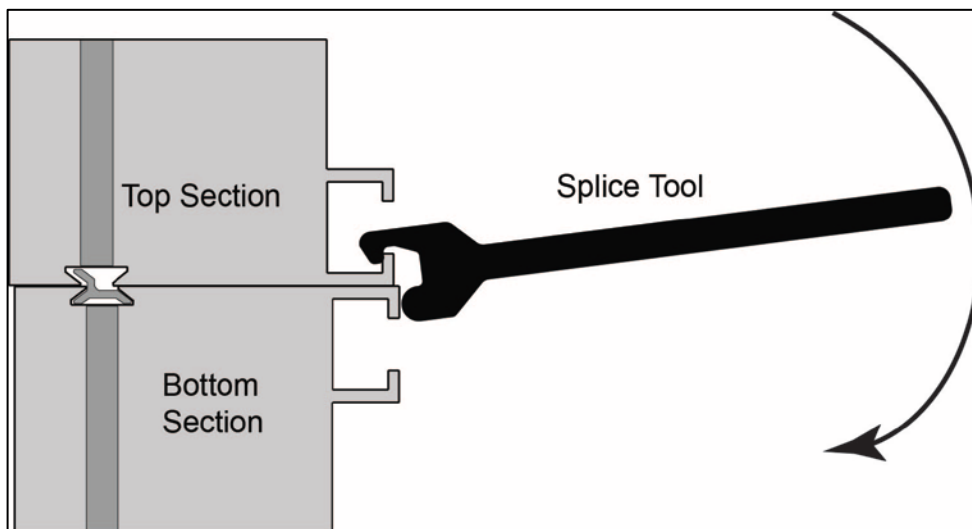


Figure 12: Pulling Display Sections Flush

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 0-7** 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. Refer to **Figure 13**.

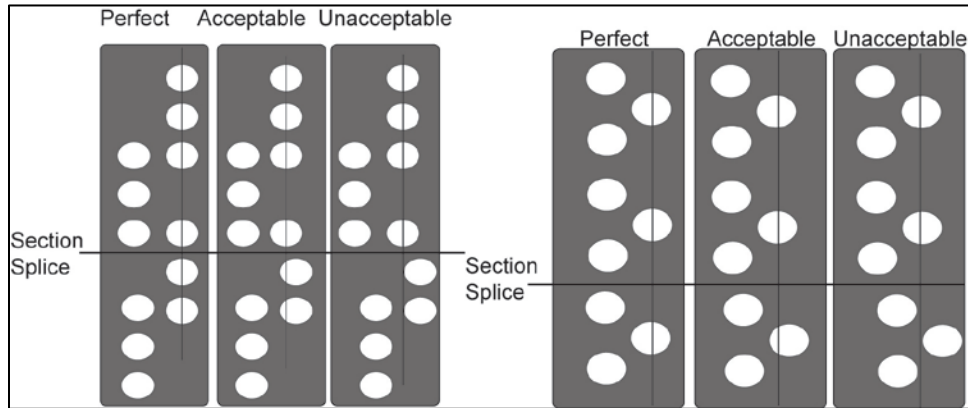


Figure 13: LED Alignment (OT and MT)

10. Ensure the display sections align 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 14**.
- Note:** There are two different styles of splice plates shipped on the display. The flat splice plates need to be distributed along the back of the display and placed on each end of the display. The “V” style splice plate provides support to the bottom display section when lifting and is shipped installed directly below the lift eyes. Refer to **Figure 15**.
12. Using an impact wrench, tighten all of the nuts on the mounting plate. Refer to **Figure 14**.

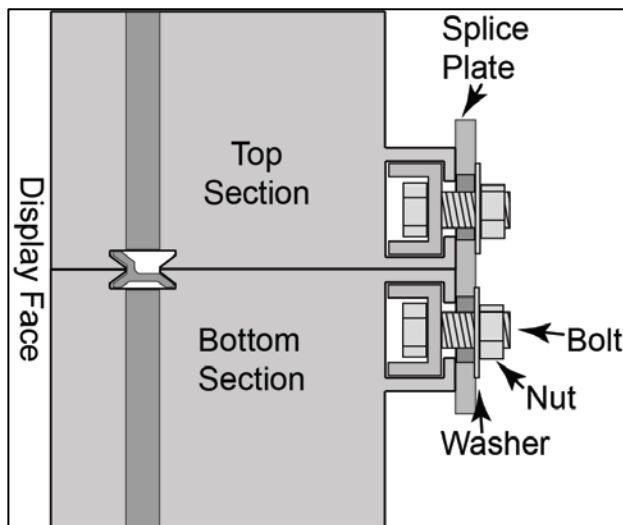


Figure 14: Completed Splice Plate Installation

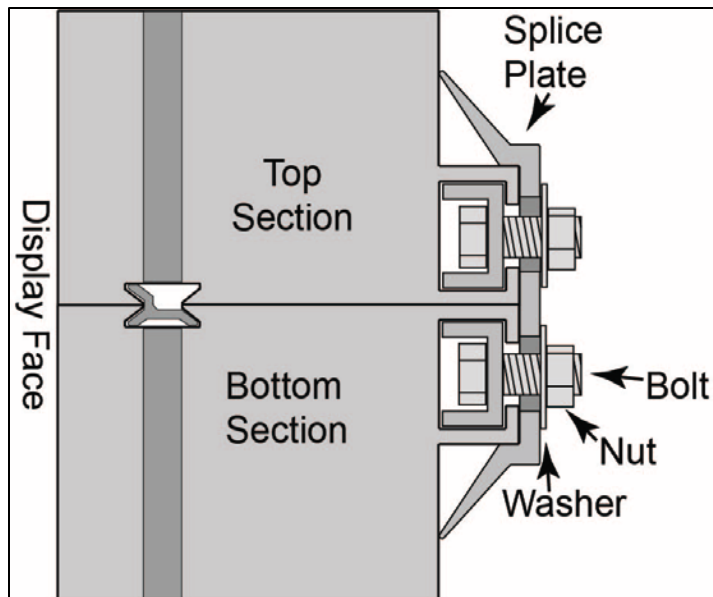


Figure 15: "V" Style Splice Plate

13. Attach and secure all mounting plates along the section splice. Place one splice plate on each end and evenly distribute the remaining splice plates along the back of the display.
14. Remove the alignment brackets from the bottom display sections.

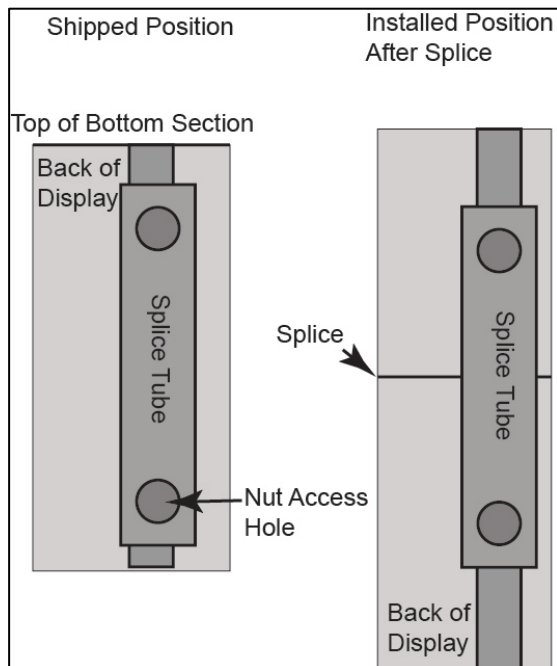


Figure 16: Vertical Splice Tube Installation

15. Loosen the nuts that hold the vertical splice tube in place. Refer to **Figure 16**.
16. Slide the splice tube until it evenly aligned over the top and bottom display sections.
17. Tighten the splice tube nuts into place.
18. Repeat **Steps 0-17** for all vertical splice tubes.
19. Using the section splice cable located in the installation tools box, connect the signal from the display bottom section to the display top section by connecting Signal A to Signal A and Signal B to Signal B on the back of the display. Connect the signal cables between the display sections. Refer to **Figure 3**.
20. Locate the border splice plate. Refer to **Figure 17**.
21. Slide the splice plates over the bolts on the top and bottom border section.
22. Install the nuts onto the bolts. Refer to **Figure 17**.
23. Locate the border covers caps.
24. Using tek screws, secure the border over the section splice opening on each end of the display. Refer to **Figure 19**.
25. Complete the steps in **Section 3** to install the billboard.

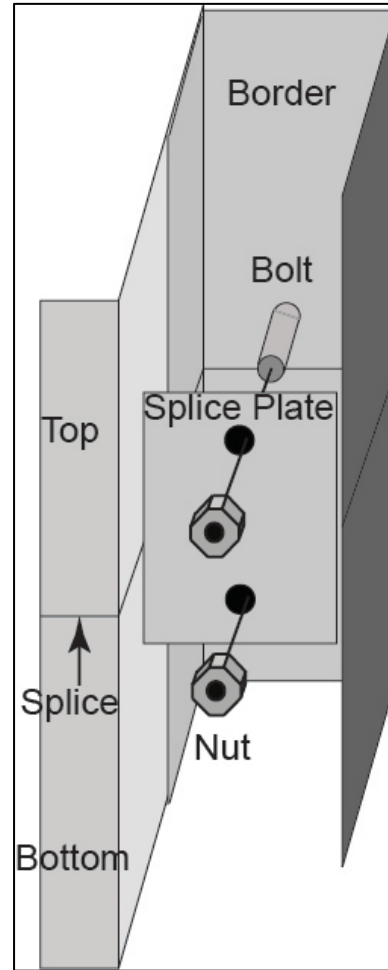


Figure 17: Border Splice Plate Detail

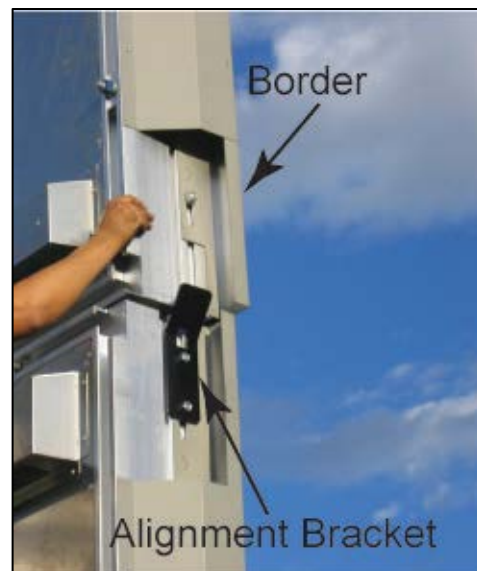


Figure 18: Splicing with Border Opening

Section 5: Multi-Direction Light Sensor Relocation

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

5.1 Multi-Direction Light Sensor Relocation

1. From the back of the display, disconnect the cable that connects the multi-direction light sensor to the display.
2. Carefully cut the zip ties that secure the cables to the back of the display.
3. Loosen the attachment bolts that hold the MDLS assembly to the MDLS mounting arm. Refer to **Figure 19**, **Figure 20**, **Figure 21**, and **Figure 22**.

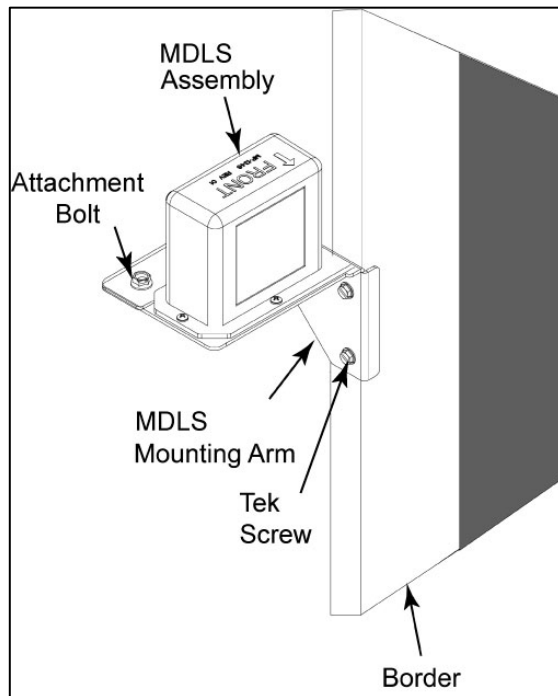


Figure 19: Left (from face) Multi-Direction Light Sensor Assembly

4. Lift the MDLS assembly off of the MDLS mounting arm.



Figure 20: MDLS Installed Left of Display Face

5. Remove the tek screws that hold the MDLS mounting arm to the border.
6. Remove the MDLS mounting arm from the border.
7. Rotate the MDLS mounting arm vertically 180° until the MDLS assembly can be reattached to the MDLS mounting arm.

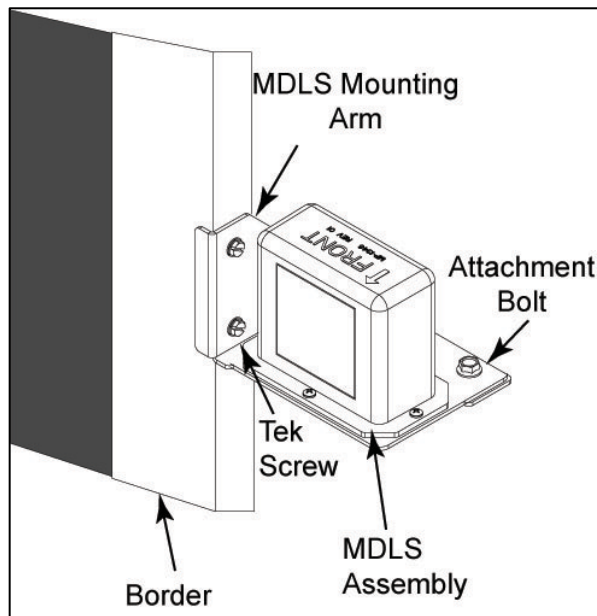


Figure 21: Right (from face) Multi-Direction Light Sensor Assembly

8. Place the MDLS assembly on the photocell mounting arm.



Figure 22: MDLS Installed Right of Display Face

9. Use the attachment bolts and nuts to secure the MDLS assembly to the MDLS mounting arm.
10. On the opposite end of the display that the multi-direction light sensor was mounted, use tek screws to secure the MDLS mounting arm and photocell assembly to the border.

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

11. Connect the multi-direction light sensor cable to the Light Sensor connection on the back of the display.

Note: If, after moving the MDLS, the cable is not long enough, there is either a 30' or 100' extension cable located in the spare parts box. Connect the extension cable to the photocell cable and to the back of the display.

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

Section 6: Webcam Mounting

This section provides instructions on mounting the webcam arm to a Daktronics Digital Billboard display. Depending on the size of the display, your display will either be shipped with a fixed length webcam arm or a retractable webcam arm. If your display has a catwalk mounted retractable webcam arm, please refer to **DD1583763** in **Appendix B**. For additional mounting or assembly details, refer to the arm specific drawings located in **Appendix A**.

6.1 Mounting the Webcam to the Arm

1. Locate and identify all webcam mounting components.
2. Insert the webcam mounting bolt through the hole in the middle of the top tube saddle. Refer to **Figure 23**.

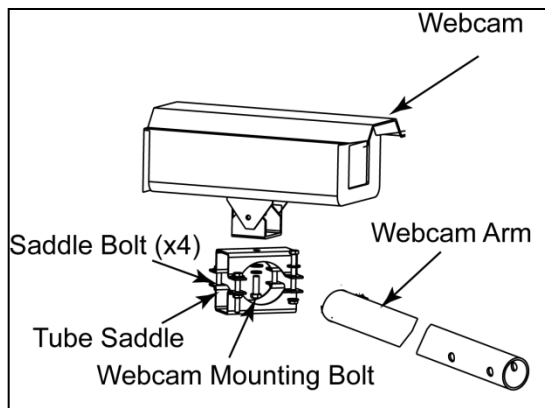


Figure 23: Webcam on End of Arm

3. Place the webcam on the webcam mounting bolt coming out of the top of the tube saddle.
4. Secure the webcam to the tube saddle by installing and tightening a nut on the webcam mounting bolt. Refer to **Figure 23**.
5. Using the wire shipped in the webcam arm, pull the power and signal cables through the webcam arm.

Note: Ensure there is enough excess cable to allow the webcam arm to pivot if needed.

6. Tighten all four saddle bolts.

6.2 Rotating Webcam Arm Installation

Daktronics ships a webcam with an adjustable length arm with all displays less than 15'. The maximum length for the webcam arm is adjustable from 10' – 15'. The reason for this is that, for every foot of display height, the webcam must be an equal number of feet from the display face. For example, a display 14' tall must have the webcam approximately 14' from the display face. A 20' webcam arm is shipped with all displays taller than 15'.

Installation

1. Determine the side of the display to mount the arm. The webcam should be mounted 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 and the mounting U-channel from the assembly.
3. Slide two of the mounting U-channels and bolts into the horizontal Valo®Mount channel on the display back. Refer to **Figure 24**.

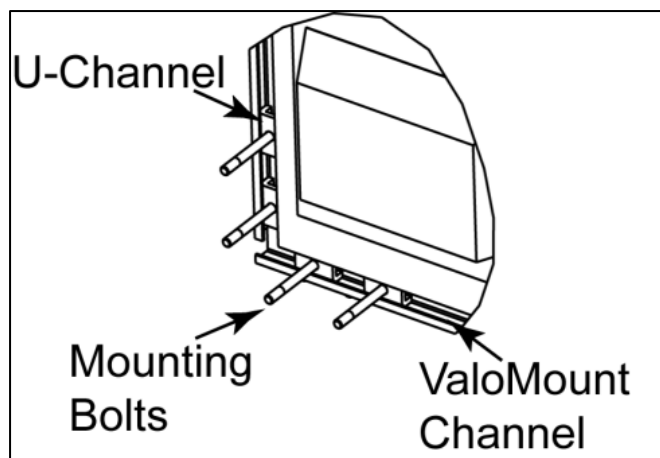


Figure 24: U-Channel in ValoMount Channel

4. Slide the two remaining U-channels into the vertical Valo®Mount channel on the display back.

5. Place the bolting template over the bolts in the U-Channel. The bolting template is important as it makes mounting the arm mounting 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. Refer to **Figure 26**.
7. Place a washer on each of the mounting bolts.
8. Securely fasten a nut on each of the mounting bolts.
9. Fasten a second nut on each of the mounting bolts. 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. Refer to **Figure 27**.

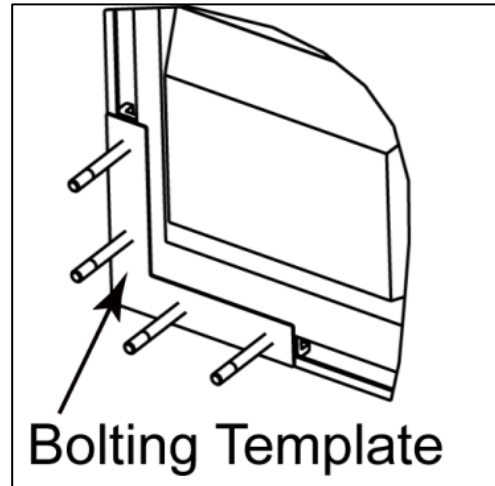


Figure 25: Bolting Template

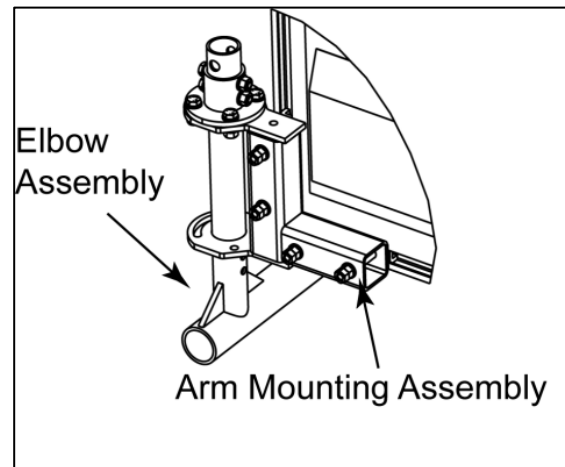


Figure 26: Elbow Assembly on the Display

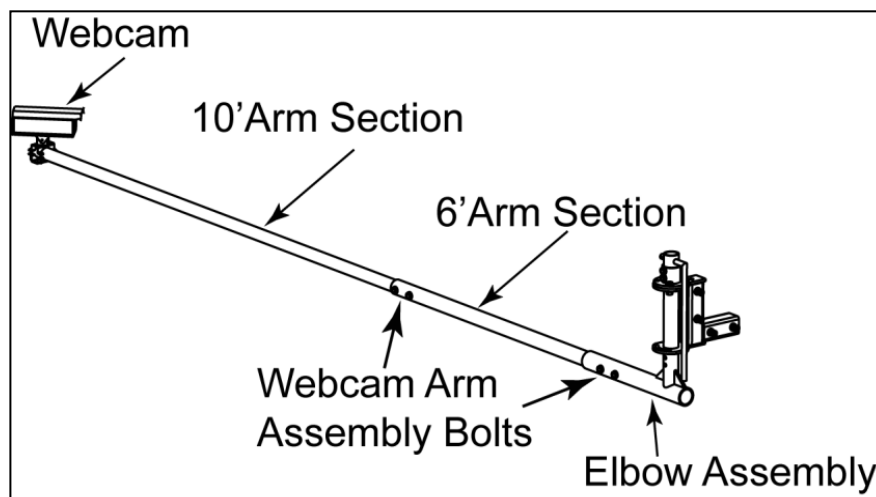


Figure 27: 15' Webcam Arm Assembly

11. Ensure the webcam is on the top of the webcam arm and tighten the arm set bolts.
 - For a 10' arm, the webcam arm bolts must feed through the pivoting arm, the 6' arm section and the 10' arm section. This should set the webcam at 10' from the display face.
 - For a 15' arm, insert one set of bolts through the pivoting arm and the 6' arm section. A second set of bolts is inserted on the end of the 6' arm section away from the display face and at the base of the 10' arm section. This should set the webcam 15' from the display face.
12. Tighten all mounting and webcam assembly bolts.
13. Insert the handle to the top of the vertical tube and fasten with a clevis pin. Refer to **Figure 28**.

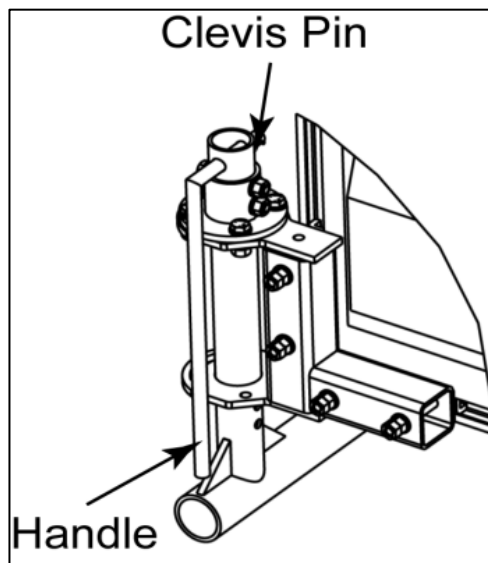


Figure 28: *Handle in Webcam*

14. Connect the power and signal cables to the connections on the bottom of the remote enclosure.
15. Neatly secure excess power and signal cables with cable ties.
16. Ensure all webcam arm and webcam mounting bolts are secure prior to hanging the display.
17. After hanging the display, call Daktronics NOC and have a technician verify they can detect the video server. If the video server is not detected, ensure the power and signal cables are securely attached to the camera and display. Make sure the video server has power and is connected with Cat-5e cable to the network switch on the router.
18. Work with the NOC to ensure the camera is aligned properly. If adjustment is required, pivot the arm to the display face and adjust as needed.

Retracting the Webcam Arm

1. To retract the webcam arm, remove the three short bolts from the top of the elbow assembly. Refer to **Figure 29**.

Note: Do not remove the long bolts.

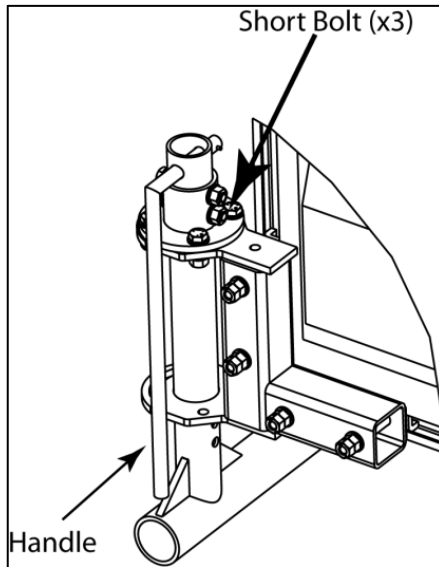


Figure 29: Elbow Assembly

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

Note: Verify that the power and signal cables are not getting pinched when pivoting the webcam arm.

3. Return the webcam arm to the original position when done servicing the webcam.
4. Replace and tighten the three short bolts.
5. Work with Daktronics NOC to verify the webcam is focused and functioning properly.

6.3 Fixed Webcam Arm Installation

1. The webcam arm is shipped with all hardware and arm components attached. Remove the $\frac{5}{8}$ " nuts and washers from the arm assembly before installing the webcam arm. Refer to **Figure 30**.
2. Before hanging the display, slide both mounting channels with the bolts into the horizontal ValoMount channel.
3. Align and slide the webcam mounting assembly over the mounting channel assembly bolts.

4. Place a washer on each $\frac{5}{8}$ " bolt.
5. Attach the $\frac{5}{8}$ " nuts to the bolts to secure the mounting assembly to the display.

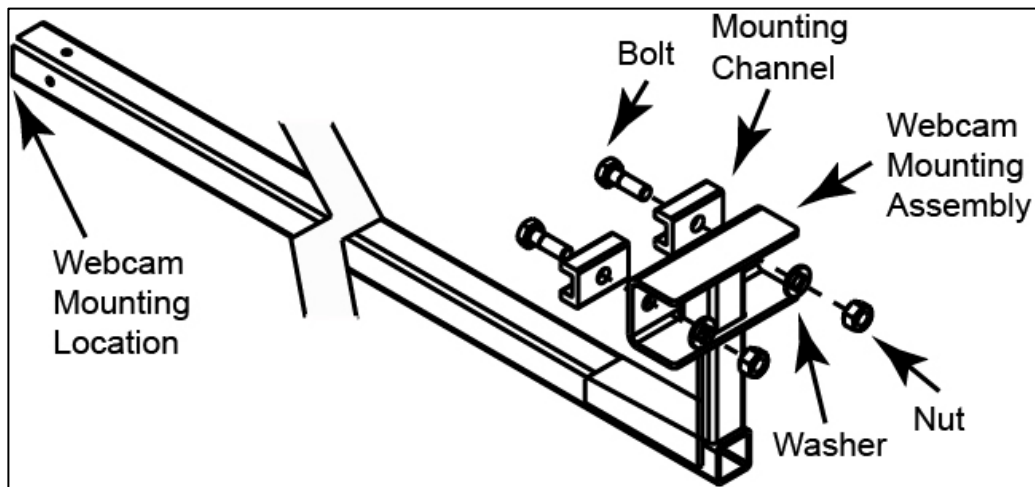


Figure 30: Fixed Webcam Arm Installation

6. Using fish tape, feed the signal and power cables through the webcam arm tube.
7. Use the steps in **Section 6.1** to mount the webcam to the end of the arm.

Section 7: Electrical Installation

This section provides general guidelines for connecting power to a 4100 series Daktronics digital billboard. For display specific power requirements, refer to the display specific riser diagram or contact the Project Manager. It is very important to provide the site required power to the display as a low or poor power can result in dim content, parts of the display out, module flickering, or display damage. It is also important to test the display ground to verify it is grounded to 10 ohms or less. Failure to properly ground the display can result in display damage and may null and void any warranties.

7.1 Electrical Installation

1. Locate and refer to the display riser diagram for site required power.
2. Run conduit from the main distribution (provided by customer) to each display power entrance. On a single section display there is only one power entrance. On multiple section displays there is a power entrance for each level. Refer to **Figure 32**.
3. Remove the four screws that attach the power entrance door.
4. Remove the Myers hub at the bottom of the power entrance box.
5. Feed power cable from the conduit into the power entrance box.
6. Connect the ground wire to the appropriate tap (green wire). Refer to **Figure 31**.

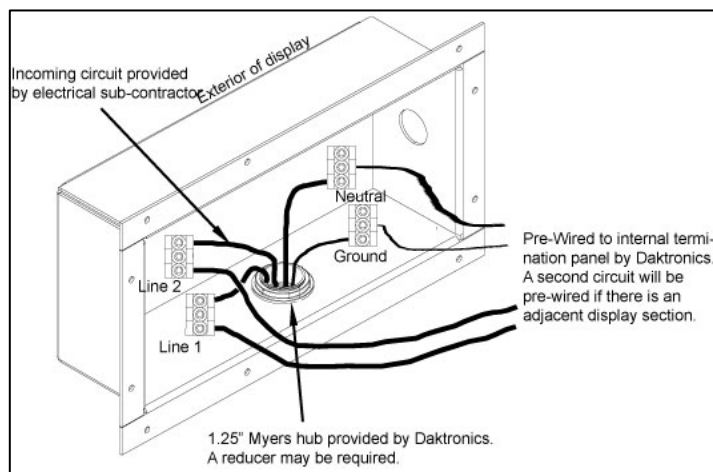


Figure 31: Meyers Hub Connection Diagram

7. Connect power line 1 (L1) to the appropriate (red tape on cable) tap.
8. Connect power line 2 (L2) to the appropriate (black tape on cable) tap.
9. Connect the neutral to the appropriate (white tape on cable) tap.

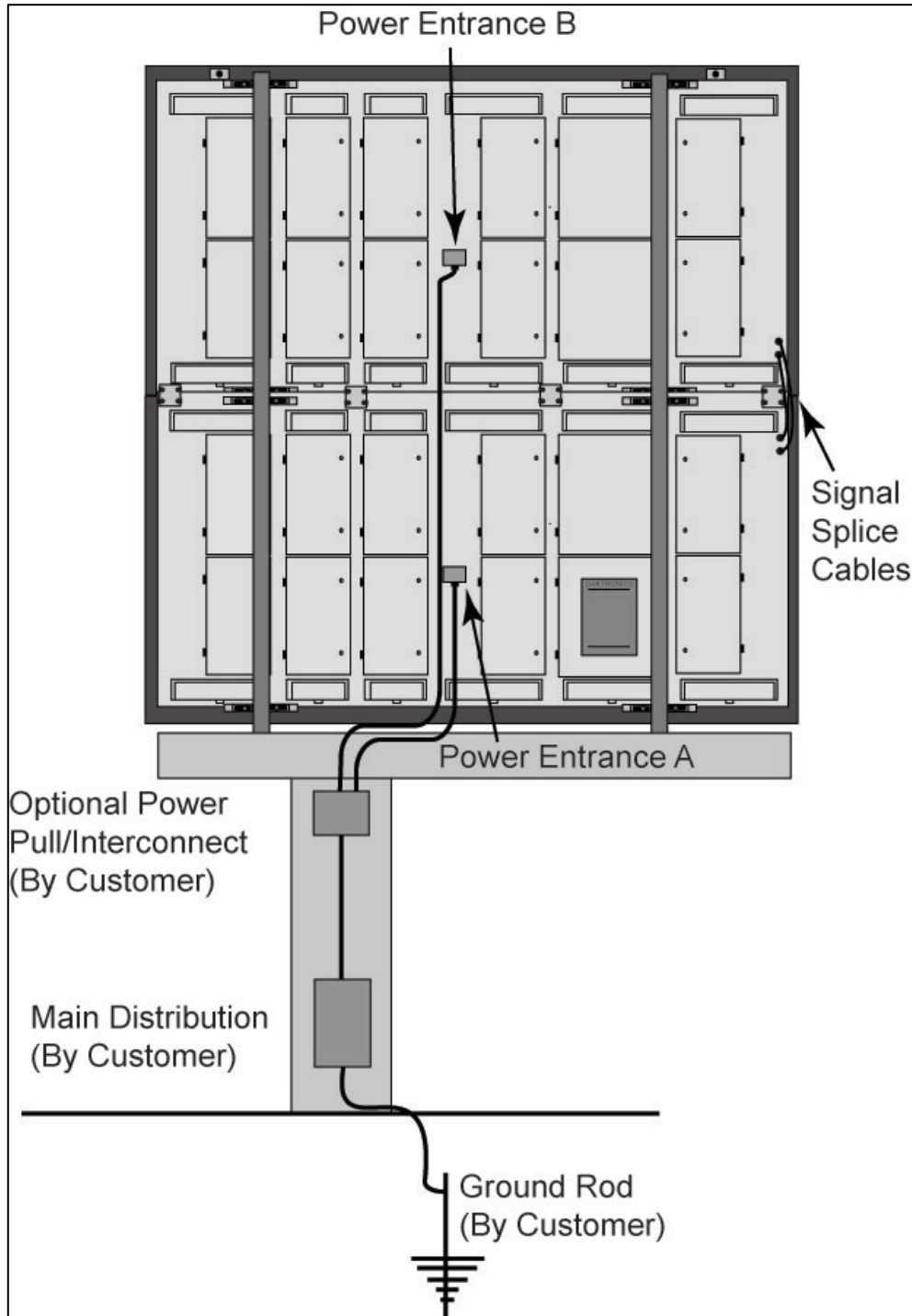


Figure 32: Billboard Electrical Installation Overview

10. After the all signal and power connections have been made, apply power to site.

Section 8: Control Enclosure Overview

This section provides basic information on the equipment located in a Daktronics digital billboard control enclosure.

8.1 Control Enclosure Overview

The Daktronics digital billboard control enclosure is built into one of the display rear access doors. If it is determined the control enclosure location needs to be moved after the display arrives on site, use the steps from the **Relocating an Embedded Control Enclosure Prior to Installation** guide located in **Appendix A**. Since the control enclosure can vary by customer, the image below may not be an exact representation of your control enclosure.

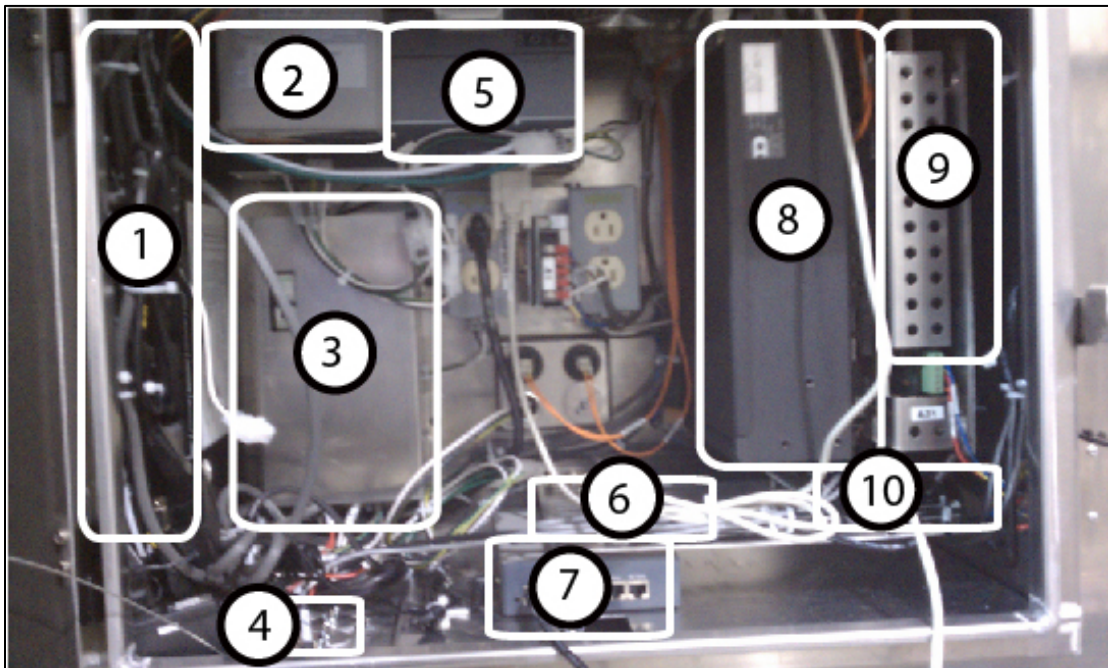


Figure 33: Inside of DB-4100 Control Enclosure

8.2 Equipment Function

This section lists each piece of equipment in the control enclosure and the function of the component. Refer to **Figure 33** while reading the table below.

Number	Component	Function
1	Uninterruptable Power Supply	Functions as a short term power source for equipment in the control enclosure.
2	Surge Suppressor	Protects electrical devices from voltage spikes and provides power monitoring.
3	Breaker Panel	Termination panel for the control enclosure.
4	Knockouts	Provide easy access for feeding network and power cables into the control enclosure.
5	iBoot Bar	Internet enabled device that allows power to be cycled to devices plugged into the iBoot Bar.
6	Webcam Video Server	Computer based device dedicated to delivering video.
7	Router	Connects two or more computer networks.
8	V-Net	Composites content onto a single video output to deliver content. This component may vary by customer.
9	VIP-4060	The VIP is the controller card for the digital billboard.
10	Network Switch	A computer networking device that connects network segments.

8.3 Connect the Laptop

Before contacting the Daktronics NOC, connect the installer's laptop to the red cross over cable in the control enclosure.

Section 9: Spare Parts Box Installation

9.1 Spare Parts Box Installation

To properly install a spare parts box:

- do not mount the box in a location that inhibits maintenance personnel from accessing the display.
- ensure the lid is on top.
- ensure the lid latch is easily accessible.
- ensure the lid opens completely.
- mount the spare parts box by welding or bolting the spare parts box feet to a catwalk.
- always lock the spare parts box when leaving the display site.



Figure 34: Spare Parts Box

Section 10: First Time Power Up

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

10.1 First-Time Power Up

1. Install the router according to the System Riser.
2. Turn on the Uninterruptable Power Supply (UPS).
3. Ensure the equipment in the remote enclosure powers up properly. Make sure that connections did not loosen during shipping.
4. After a successful boot, ensure the VIP-4060 starts.
5. Call Daktronics NOC at 1-866-DAK-HELP to verify connectivity to the display, perform a diagnostics check, and perform several display setting checks. Refer to the checklist located in the control enclosure for a list of items Daktronics checks on every installation.

Section 11: Display Testing and Adjustment

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

11.1 Daktronics IDM

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

- Module issues
- Internet of connectivity issues
- Webcam issues
- Display temperature issues
- Photocell connectivity

11.2 Display Image Quality

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

- Inaccurate or off color
- Module edges
- The display is too bright or dim
- Modules out
- Abnormal flashing
- Modules stuck on
- Pixels stuck on or bright

Work with Daktronics NOC to address any visual issues.

11.3 Test the Photocell

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

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

11.4 Focus the Webcam

After the display is operating work, with Daktronics NOC to focus the webcam. To focus the webcam:

1. Remove the four screws that hold the webcam housing cover in place.
2. Lift the webcam housing cover.
3. Work with the NOC tech to determine how to focus the webcam. You may need to adjust focus, zoom, or both. Refer to **Figure 35**.



Figure 35: Webcam Focus

4. After the webcam is focused, close the housing cover and replace the four cover screws.

Appendix A: Reference Drawings

Appendix A contains drawings specific to all Daktronics 4100 series digital billboards. For drawings specific to your display, refer to the size specific drawings.

Ledger Assy; DB-4000 Series Displays	A-988359
DB-4100 Splice/Mount Limitations	A-1038463
Billboard Fixed 10' Webcam Arm.....	A-1067554
Catwalk Mount Webcam Arm; Assy.....	B-999646
Pivoting Webcam Arm; 20' Panasonic Webcam WC	B-1000977
Pivoting Webcam Arm; 10' – 15', Panasonic WC	B-1000883
Horiz Splice Detail, DB04100.....	B-1043647

Appendix B: Reference Manuals

The Daktronics manual number is located on the front of the manual or in the lower left corner of quick guides.

Quick Guide: Digital Billboard Retractable Webcam Arm Mounting and Use ...**DD1463448**

Quick Guide: Digital Billboard Installation Tool Use**DD1473819**

Quick Guide: Digital Billboard Catwalk Mounted Webcam Arm Installation**DD1583763**

Checklist: Daktronics Digital Billboard Installation**DD1799678**

Daktronics Digital Billboard Lifting Guidelines**DD1886109**

Relocating an Embedded Control Enclosure Prior to Installation**DD1895077**

Appendix C: Warranty and Limitation of Liability

Daktronics Warranty and Limitation of Liability SL-02374