

P1647 Multi-Section Outdoor LED Scoreboards

Installation Manual

DD1969938

Rev 6 – 11 June 2013

DAKTRONICS

Models			
	BA-1518	FB-2021	MS-2009
	BA-2025	FB-2022	MS-2918
	BA-2026	FB-2023	SO-2011
	BA-2027	FB-2024	SO-2018
	BA-2028	FB-2025	SO-2019
	BA-2029	FB-2026	SO-2021
	FB-2018	FB-2027	SO-2023
	FB-2019	FB-2028	SO-2043
	FB-2020	FB-3010	

DD1969938
Product 1647
Rev 6 – 11 June 2013

DAKTRONICS, INC.

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Section 1: Introduction

This manual explains the installation of Daktronics Multi-Section Outdoor LED Scoreboards (Product 1647). For additional information regarding the safety, installation, operation, or service of this system, refer to the telephone numbers listed in **Section 4**. This manual is not specific to a particular installation. Project-specific information takes precedence over any other general information found in this manual.

IMPORTANT SAFEGUARDS:

- Please read and understand all instructions before beginning the installation process.
- Do not drop control equipment or allow it to get wet.
- Do not disassemble control equipment or electronic controls of the display; failure to follow this safeguard will make the warranty null and void.
- Disconnect display power when not in use or when servicing.
- Disconnect display power before servicing power supplies to avoid electrical shock. Power supplies run on high voltage and may cause physical injury if touched while powered.
- Do not modify the scoreboard structure or attach any panels or coverings to the scoreboard without the express written consent of Daktronics, Inc.

1.1 Scoreboard Controllers

Daktronics outdoor scoreboards are designed for use with the All Sport® 5000 series control consoles. This console uses keyboard overlays (sport inserts) to control numerous sports and scoreboard models. Refer to the following manual for operating instructions:

- **All Sport 5000 Series Control Console Operation Manual (ED-11976)**

The scoreboard controller manual is available online at www.daktronics.com/manuals.

Sport Codes

At right is a table of common sport codes. Note that many scoreboards are capable of scoring multiple sports. Refer to the Operation Manuals for a complete listing of sport codes.

Sport	Common Code(s)
	<i>All Sport 5000</i>
Baseball	5501
Pitch & Speed	5500
Football	6601
Lacrosse/ Field Hockey	4601
Soccer	7701
Track	8601 (manual timing)

1.2 Troubleshooting

For an extensive troubleshooting guide and instructions on how to replace scoreboard components, refer to the following manual:

- **Outdoor LED Scoreboards Service Manual (DD2124597)**

The service manual is available online at www.daktronics.com/manuals.

1.3 Specifications Label

Power specifications as well as serial and model number information can be found on an ID label on the display, similar to the one shown in **Figure 1**.

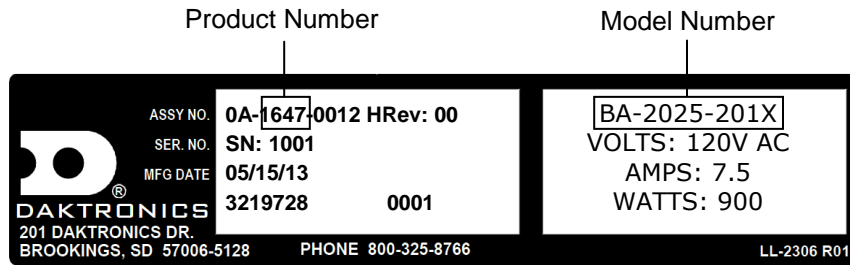


Figure 1: Specifications Label

Please have the assembly number, model number, and the date manufactured on hand when calling Daktronics customer service to ensure the request is serviced as quickly as possible. Knowing the facility name and/or job number will also be helpful. Note that the Product Number(s) are sometimes used to distinguish different generations of the scoreboards having the same model number.

1.4 Resources

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 C-325405**.

THE CONCEPTS EXPRESSED AND DETAILS SHOWN IN THIS DRAWING ARE CONFIDENTIAL AND PROPRIETARY. DO NOT REPRODUCE BY ANY MEANS, INCLUDING ELECTRONICALLY, WITHOUT THE EXPRESSED WRITTEN CONSENT OF DAKTRONICS, INC. COPYRIGHT 2008 DAKTRONICS, INC.			
DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: DAKTRONICS UNIVERSITY			
TITLE: SYSTEM RISER DIAGRAM			
DES. BY: AORMESH		DRAWN BY: AORMESH	DATE: 15 JAN 08
REVISION	APPR BY-	14963-R01	
00	SCALE- NONE	C-325405	

Figure 2: Daktronics Drawing Label

Daktronics identifies manuals by the DD or ED number located on the cover page of each manual. For example, this manual would be referred to as **DD1969938**.

1.5 Product Safety Approval

Daktronics outdoor scoreboards are ETL listed and tested to CSA standard for outdoor use. Contact Daktronics with any questions regarding testing procedures.

Section 2: Mechanical Installation

Mechanical installation consists of installing concrete footing and steel beams and mounting the scoreboard and accompanying ad panels to the beams. The product specification sheets listed in **Appendix A** include installation specification drawings that show the recommended number of beams and spacing between them. The drawings also indicate the size of beams required to support the scoreboard at different heights and at various wind speeds.

The column and footing size dimensions are to assist with estimating installation costs. They are estimates only and are not intended for actual construction purposes. Be sure that the installation complies with local building codes and is suitable for the particular soil and wind conditions. The columns, footings, and all connection details must be designed and certified by a professional engineer licensed to practice in the state of the scoreboard installation.

Note: Daktronics does not assume any liability for any installation derived from the information provided in this manual or installations designed and installed by others.

2.1 Lifting the Scoreboard

Larger scoreboard sections and message centers are shipped equipped with eyebolts used to lift them. The eyebolts are located along the top of the cabinet for each scoreboard or scoreboard section. Daktronics scoreboards use $\frac{1}{2}$ " and $\frac{5}{8}$ " shoulder-type eyebolts mounted to the top of each scoreboard section.

Daktronics strongly recommends using a spreader bar, or lifting bar, to lift the display. Spreader bars ensure the force on the eyebolts remains straight up, minimizing lifting stress.

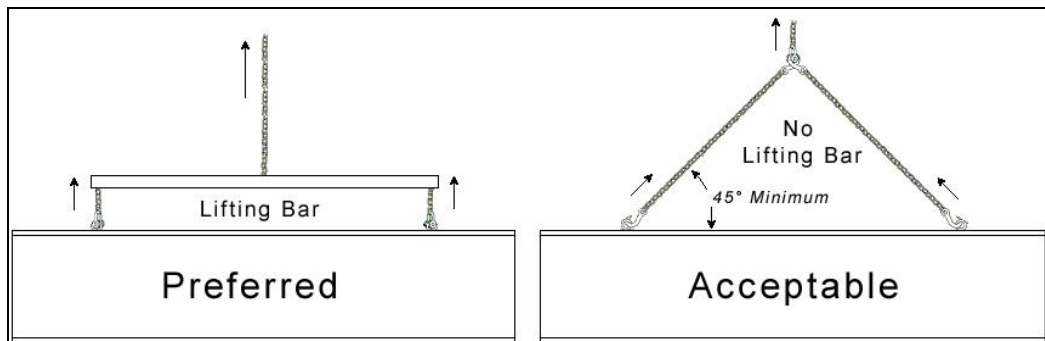


Figure 3: Lifting Methods

Figure 3 illustrates the preferred scoreboard lifting method on the left and an acceptable alternative lifting method on the right. When lifting the display:

- Use a spreader bar if possible.
- Use every lifting point provided.

Cables and chains attached to the eyebolts and directly to a center lifting point, as shown in the right-hand example in **Figure 3**, can create a dangerous lateral force on the eyebolts and may cause the eyebolts to fail. The smaller the angle between the cable and the top of the display, the lighter the sign must be to safely lift it. If this method must be used, ensure a minimum angle between the chain and scoreboard of at least 45°.

Do NOT attempt to lift the display if the angle is less than 45°. Exceeding load angles or weight limits could cause the bolts in the scoreboard cabinet to buckle, resulting in serious damage to the scoreboard or injury to personnel. Also, loads should be applied directly in the plane of the eyebolt as shown in **Figure 4**.

Note: Daktronics assumes no liability for damages resulting from incorrect setup or lifting methods. Eyebolts are intended for lifting only. Do not attempt to permanently support the display by the eyebolts.

In typical multi-section installations, the lower scoreboard is installed first and secured to the support beams. The upper section is then placed atop or above the lower section and attached to the beams. Refer to **Section 3.5** for more information on the power/signal connections between sections.

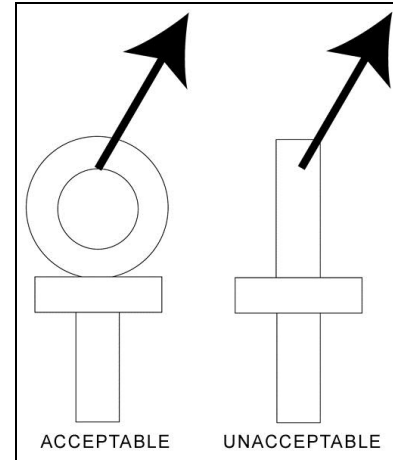


Figure 4: Eyebolt Plane Load

If installers remove the eyebolts, plug the holes with bolts and the rubber washers that are used with the eyebolts. Apply silicone or another waterproof sealant to the eyebolt openings. Also inspect the top and sides of the display for any other holes or openings that may allow moisture to enter the display and plug and seal those openings.

2.2 Scoreboard Mounting

Two standard mounting methods are available for Daktronics outdoor scoreboards. Both methods require spring nuts to be inserted into the rear channel of the scoreboard:

1. Insert spring nuts into the top and bottom scoreboard channels. Twist the spring nuts until they are perpendicular to the scoreboard channel (**Figure 5**).

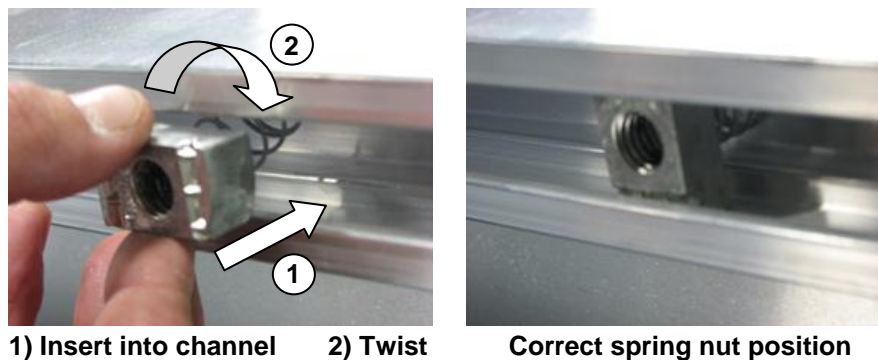


Figure 5: Spring Nut Insertion

Note: Each scoreboard section require four spring nuts per beam (two at the top and two at the bottom).

2. Measure the beam spacing and position a spring nut on either side of the beams.

Once the spring nuts are in place, refer to the appropriate section below for the type of mounting hardware provided with the scoreboard.

I-Beam Clamps

This mounting method is used to mount a scoreboard to I-beams with a flange thickness of $\frac{1}{4}$ " - $\frac{3}{4}$ ". If flange thickness is greater than $\frac{3}{4}$ ", longer bolts will be required at additional expense.

Mounting hardware includes I-beam clamps, $\frac{1}{2}$ -13 x 3" bolts, $\frac{1}{2}$ " flat washers, and $\frac{1}{2}$ " lock washers. Refer to **Figure 6** and **Drawing A-1052565** in **Appendix B**.

1. Position a scoreboard section at the front of the beams, and lift it to the desired height.
2. Slide a lock washer, flat washer, and I-beam clamp onto the bolt, and loosely screw the bolt into the spring nut.
3. Position each I-beam clamp assembly as close to the I-beam flanges as possible.
4. Make final adjustments in the positioning of the scoreboard section to ensure it is flush and level, and firmly tighten all of the bolts.
5. Repeat steps 1-4 with all scoreboard sections.

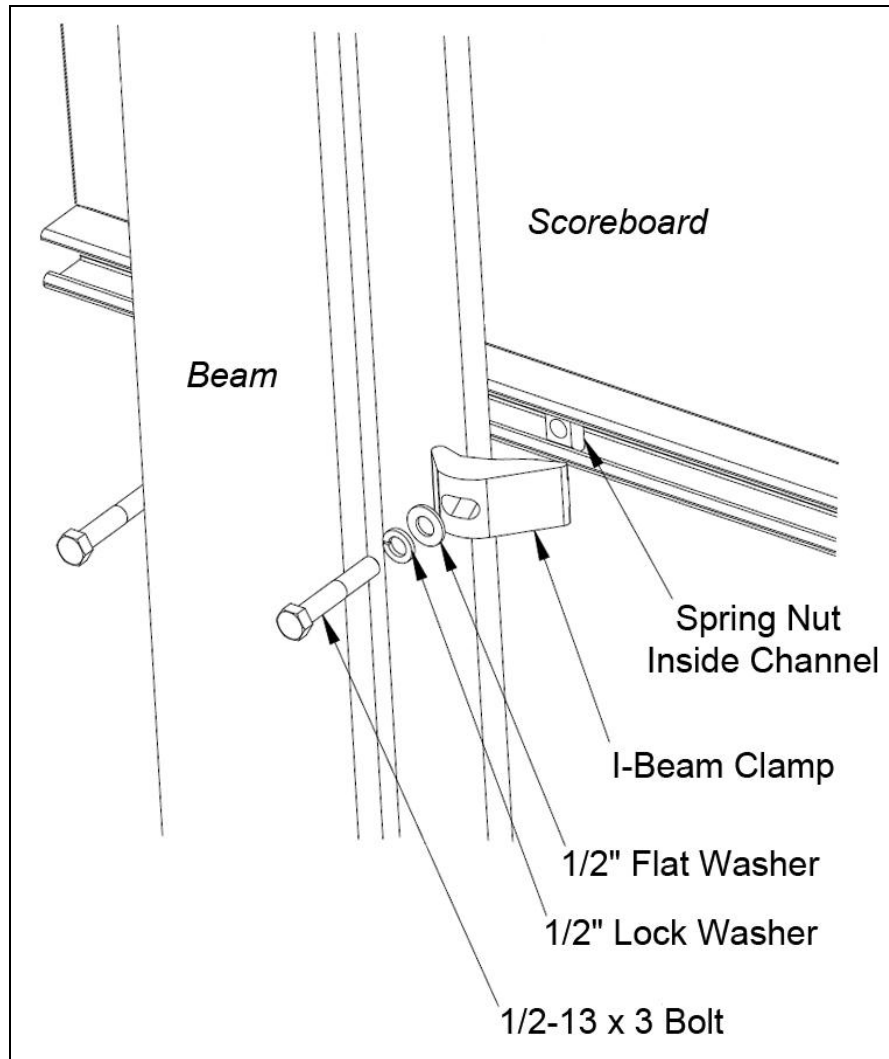


Figure 6: I-beam Clamp Mounting Method, Rear Isometric View

Note: For four-section scoreboards mounting to three beams, mounting straps are required along the middle beam to join the horizontal scoreboard sections together. Refer to **Drawing A-1115341** in **Appendix B** for more information.

Clamping Angles

This mounting method may be used to mount a scoreboard to I-beams or any beam/pole that does not have flanges.

Mounting hardware includes rear clamping angles; 1/2-13 x 24" threaded rods; and 1/2" nuts, flat washers, and lock washers. Refer to **Figure 7** and **Drawing A-1048184** in **Appendix B**.

Note: The threaded rods do not pass through the beams; they run along both sides.

1. Screw a threaded rod into each of the spring nuts as far as it will go.
2. Position a scoreboard section at the front of the beams with the threaded rods extending from the rear of the spring nuts, straddling the beams.
3. Lift the scoreboard section to the desired height.
4. Slide clamping angles over the ends of the rods and loosely install the washers and nuts.
5. Make final adjustments in the positioning of the scoreboard section to ensure it is flush and level, and firmly tighten all of the 1/2" hex nuts.
6. Repeat steps 1-5 for all scoreboard sections.

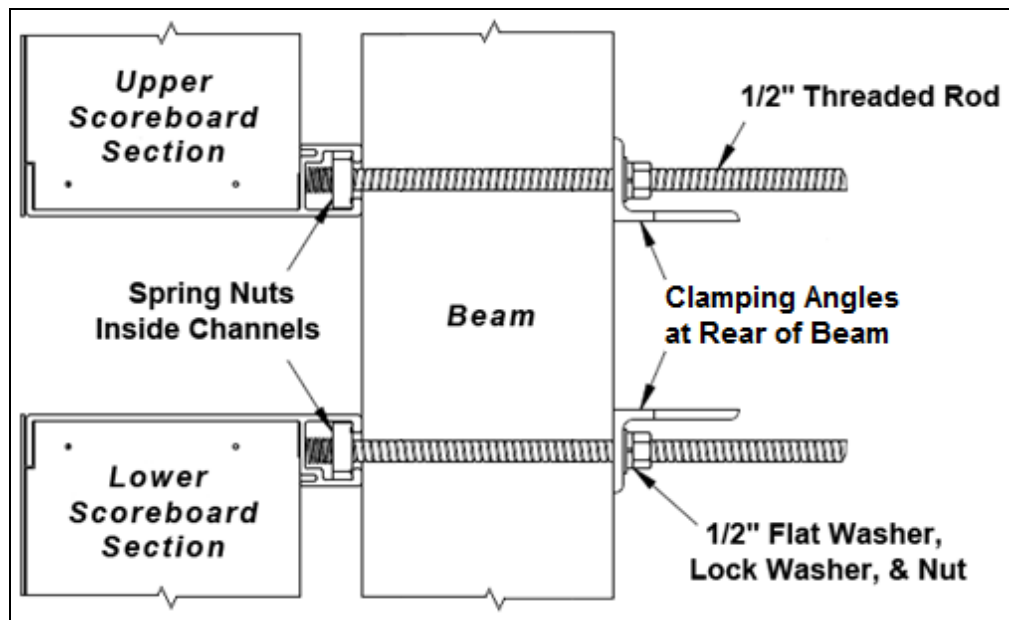


Figure 7: Clamping Angle Mounting Method, Side View

2.3 Ad Panel Mounting

Unistrut Attachment

1. Using the backup channel as a template, drill four $\frac{7}{16}$ " holes in the upper and lower rear flanges of the ad panel where the beams will be located.

Note: Try to ensure that the two center holes will be within the width of the beam.

2. If the ad panel has backsheets, remove them as needed to access the ad panel interior.
3. Attach the piece of unistrut to the ad panel with the included hardware, as shown in **Figure 8**.

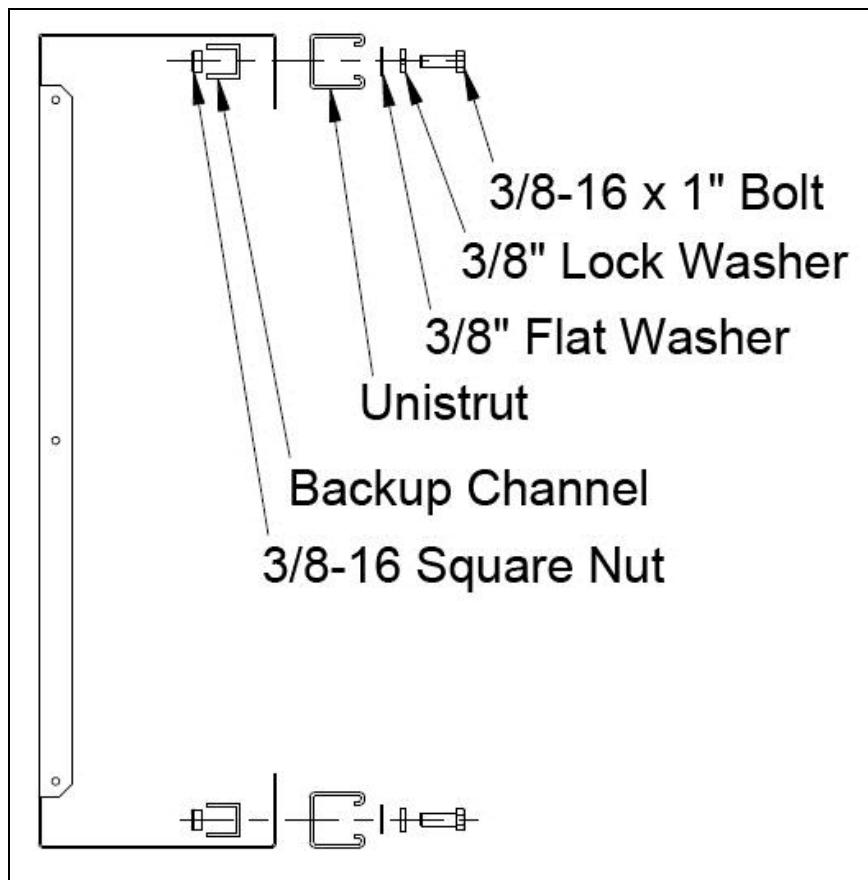


Figure 8: Unistrut Attachment, Side View

4. If any backsheets were removed, put them back on at this time.
5. Place spring nuts into the unistrut. Twist the spring nuts until they are perpendicular to the unistrut channel (refer to **Figure 5** from **Section 2.2**).

Once the unistrut is attached and the spring nuts are in place, refer to the appropriate section below for the type of mounting hardware provided with the ad panel.

I-Beam Clamps

Mounting hardware includes I-beam clamps, $1/2$ -13 x 3" bolts, $1/2$ " flat washers, and $1/2$ " lock washers. Refer to **Figure 9** and **Drawing A-1052539** in **Appendix B**.

Note: I-beams must have a flange thickness of $1/4$ " - $3/4$ ". If flange thickness is greater than $3/4$ ", longer bolts will be required at added expense.

1. Position the ad panel at the front of the beams, and lift it to the desired height.
2. Slide a lock washer, flat washer, and I-beam clamp onto the bolt, and loosely screw the bolt into the spring nut.
3. Position each I-beam clamp assembly as close to the I-beam flanges as possible.
4. Make final adjustments in the positioning of the ad panel to ensure it is flush and level, and firmly tighten all of the bolts.

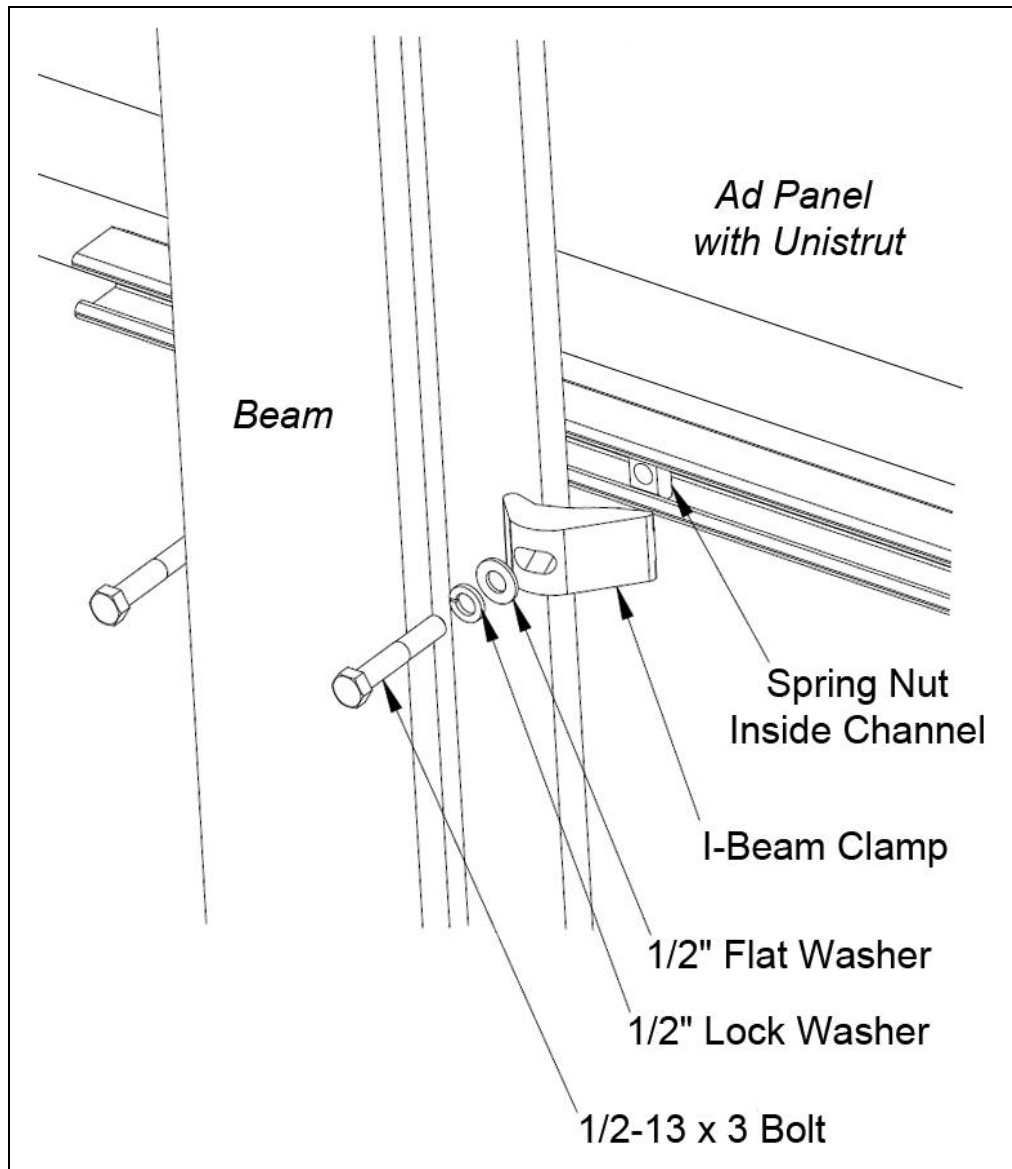


Figure 9: Ad Panel Mounting with I-beam Clamps, Rear Isometric View

Clamping Angles

Mounting hardware includes rear clamping angles; 1/2-13 x 24" threaded rods; and 1/2" nuts, flat washers, and lock washers. Refer to **Figure 10** and **Drawing A-1052388** in **Appendix B**.

Note: The threaded rods do not pass through the beams; they run along both sides.

1. Screw a threaded rod into each of the spring nuts as far as it will go.
2. Position the ad panel at the front of the beams, and lift it to the desired height.
3. Slide clamping angles over the ends of the rods and loosely install the washers and nuts.
4. Make final adjustments in the positioning of the ad panel to ensure it is flush and level, and firmly tighten all of the 1/2" hex nuts.

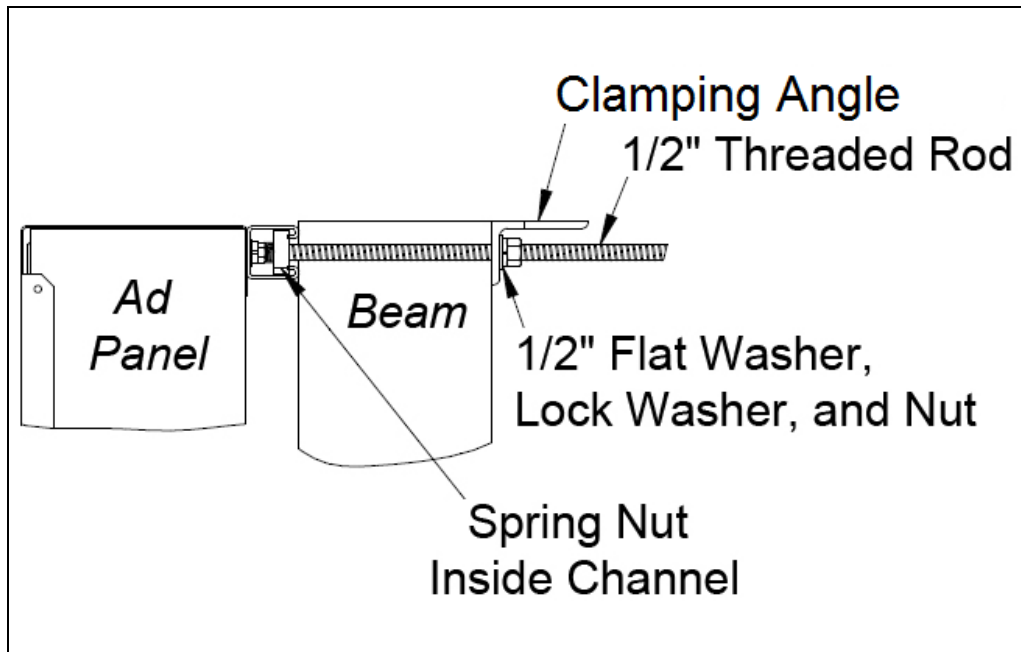


Figure 10: Ad Panel Mounting with Clamping Angles, Side View

2.4 Scoreboard Protective Devices

Daktronics makes optional protective devices, including screens and netting, to help prevent damage to the scoreboard due to normal ball impacts.

Note: Some users install devices to protect the scoreboard from projectiles. Scoreboard protection devices not provided by Daktronics must be approved by Daktronics prior to installation. Failure to follow this approval procedure will void the scoreboard warranty.

Section 3: Electrical Installation

CAUTION: Only qualified individuals should terminate power and signal cable and access the electrical components of the display and its associated equipment. It is the responsibility of the electrical contractor to ensure that all electrical work meets or exceeds local and national codes.

Daktronics engineering staff must approve all changes or the warranty will be void.

3.1 Installation Overview

The diagram shown in **Figure 11** illustrates a typical wired setup between a multi-section outdoor scoreboard and controller. Daktronics part numbers are shown in parentheses.

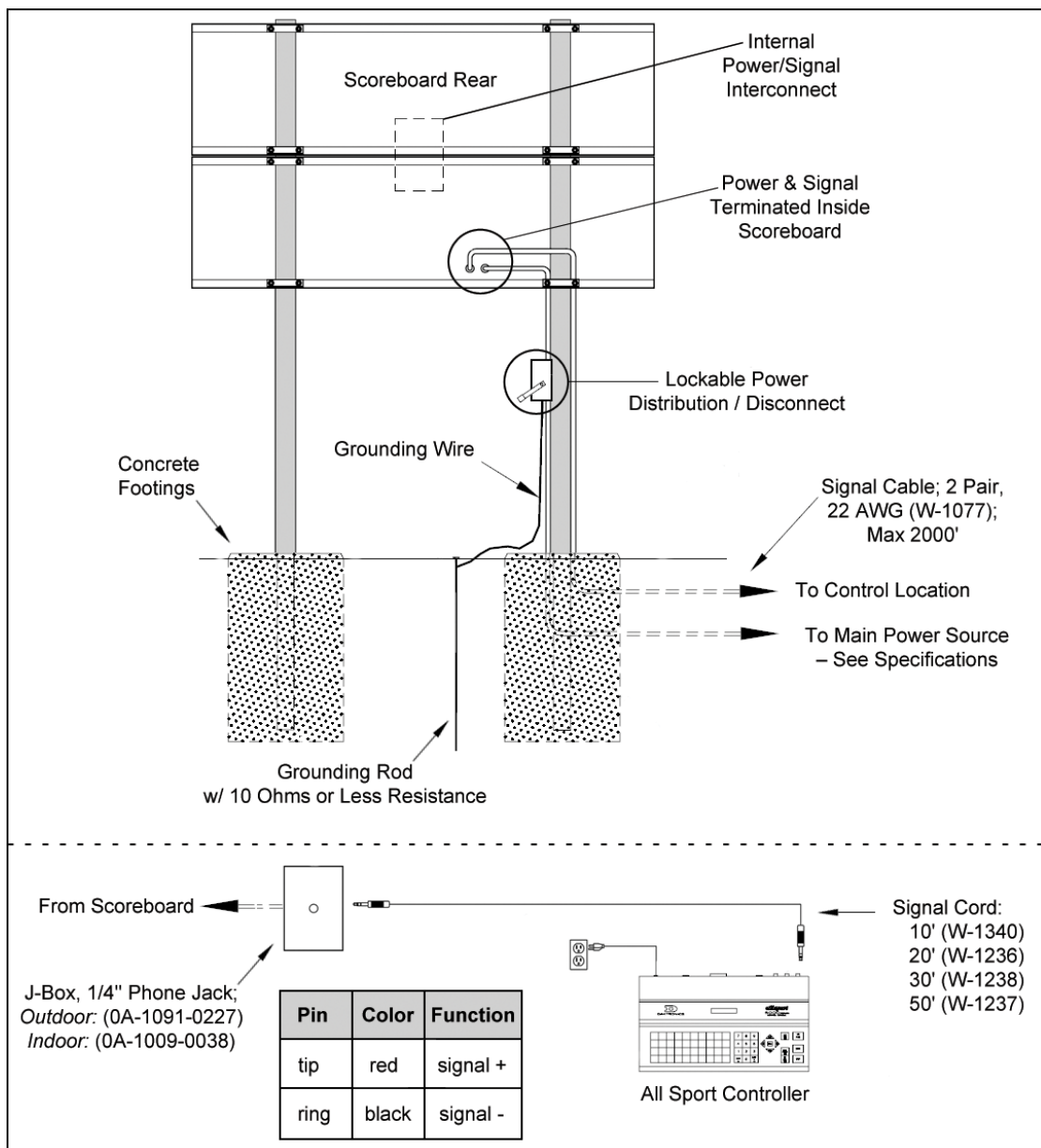


Figure 11: Wired Installation Example

The diagram shown in **Figure 12** illustrates a typical wireless setup between a multi-section outdoor scoreboard and controller.

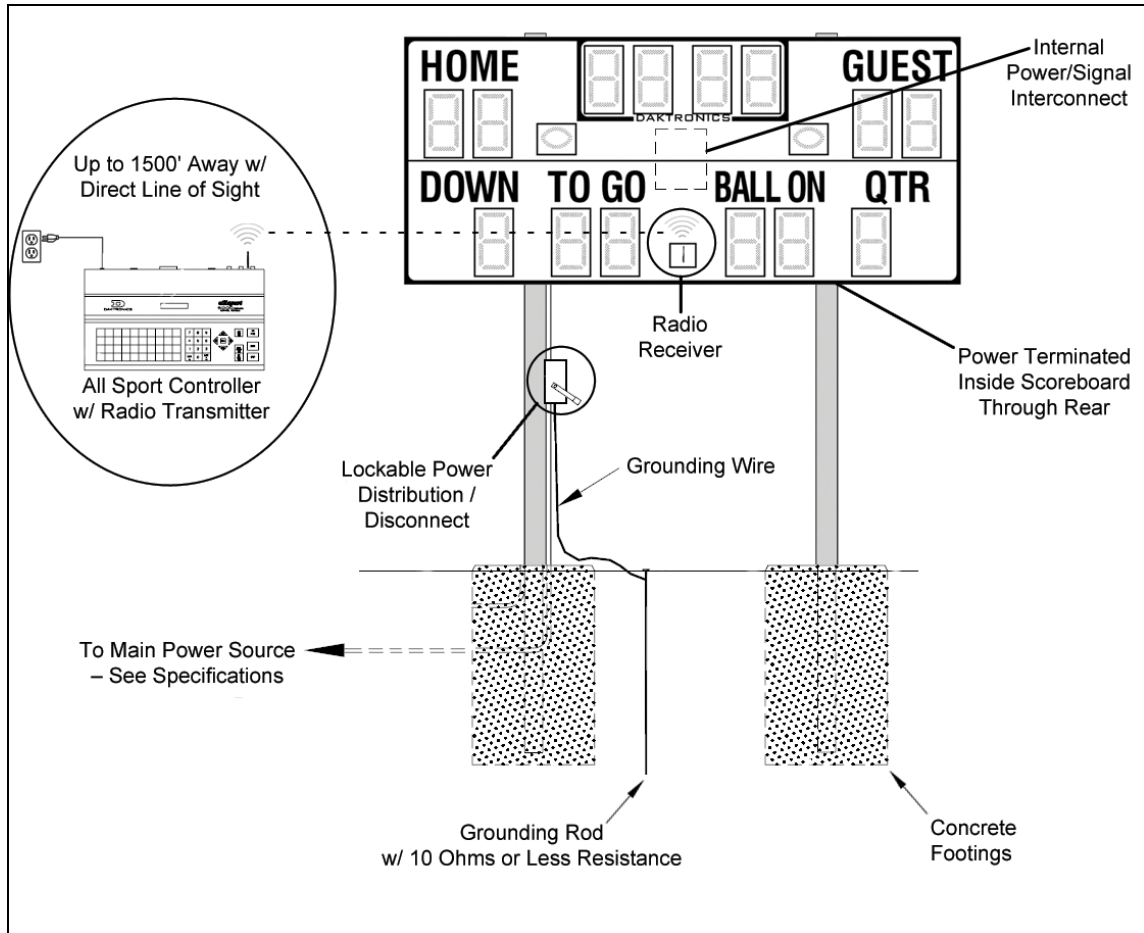


Figure 12: Wireless Installation Example

3.2 Power

Correct power installation is imperative for proper display operation. The subsections that follow give details of display power installation. Only qualified individuals should attempt to complete the electrical installation; untrained personnel should not attempt to install these displays or any of the electrical components. Improper installation could result in serious damage to the equipment or injury to personnel.

Multi-section outdoor scoreboards require a dedicated 120 V (or 240 V for international use) circuit for incoming power (refer to **Appendix A**). The display itself has no breakers or fuses.

WARNING: It is critical that 120 V scoreboard circuits be fused at 20 A and that all conductors used must be designed to pass a 20 A current in normal operation. For 240 V scoreboards, consult local electrical codes. Failure to meet wiring and overcurrent protection device requirements will void the scoreboard warranty.

Grounding

The display must be properly grounded according to local and national codes or the warranty will be void. Proper grounding is necessary for reliable equipment operation and protects the equipment from damaging destructive disturbances and lightning.

Daktronics recommends a resistance-to-ground of 10 ohms or less. The electrical contractor performing the electrical installation can verify ground resistance. Daktronics Sales and Service personnel can also provide this service.

The display system must be earth-ground. The material for an earth-ground electrode differs from region to region and may vary according to conditions present at the site. Consult local and national electrical 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 only if designed to do so. A qualified inspector must approve the support structure and grounding methods.

There are two types of power installation: installation with ground and neutral conductors provided, and installation with only a neutral conductor provided. These two power installations differ slightly, as described in the following paragraphs:

Installation with Ground and Neutral Conductors Provided

For this type of installation, the power circuit must contain an isolated earth-ground conductor. In this circumstance, do not connect neutral to ground at the disconnect or at the display as this would violate electrical codes and void the warranty.

Use a disconnect so that all ungrounded lines can be disconnected. The National Electrical Code requires the use of a lockable power disconnect within sight of or at the display.

Installation with Only a Neutral Conductor Provided

Installations where no grounding conductor is provided must comply with Article 250-32 of the National Electrical Code. If the installation in question meets all of the requirements of Article 250-32, the following guidelines must be observed:

- Connect the grounding electrode cable at the local disconnect, never at the display driver/power enclosure.
- Use a disconnect that opens all of the ungrounded phase conductors.

Connection

Both power and signal cables are routed into the scoreboard from the rear via separate conduits. All power and signal wiring terminates at the master driver enclosure. Note that systems with radio control do not require external signal wiring.

Look for a warning label similar to **Figure 13** to locate the front access panel to the driver enclosure. Remove the screws or loosen the latches to open the access door panel. Remove the metal cover of the driver enclosure to expose the driver components (**Figure 14**).



Figure 13: Power Warning Label

Refer to the component location drawings attached to the product specification sheets listed in **Appendix A** for precise power/signal termination location for each model.

Connect the appropriate wires coming through the rear of the scoreboard to the main terminal block, as shown in **Figure 14**. Note that SIGNAL OUT connects here as well.

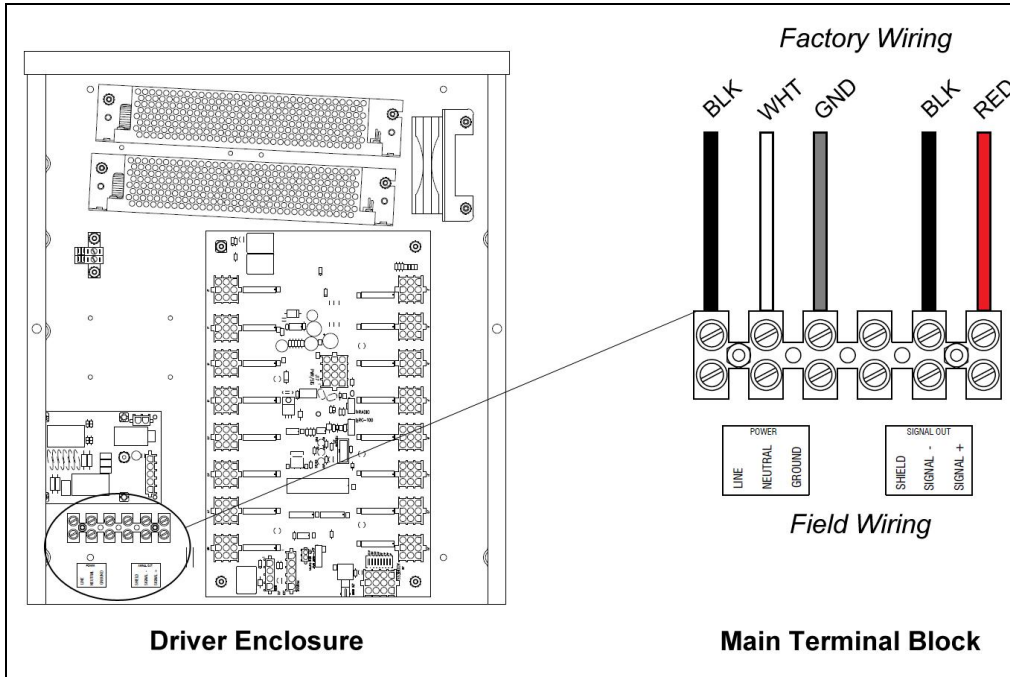


Figure 14: Driver Enclosure & Power Terminal Block

Note: If a power receptacle is needed to operate the control console at the scoreboard for troubleshooting, Daktronics recommends that an installation electrician provides a 120 V outlet close to the disconnect box specifically for this purpose.

3.3 Power-On Self-Test (POST)

The scoreboard performs a self-test each time that power is turned on and the control console is powered off or not attached to the scoreboard. If the control console is attached and powered on, the self-test does not run, and data from the control console is displayed on the scoreboard after a brief period of time. Each scoreboard self-test pattern will vary depending on the scoreboard model, the number of drivers and types of digits. **Figure 15** shows an example of the LED bar test pattern that each digit performs.

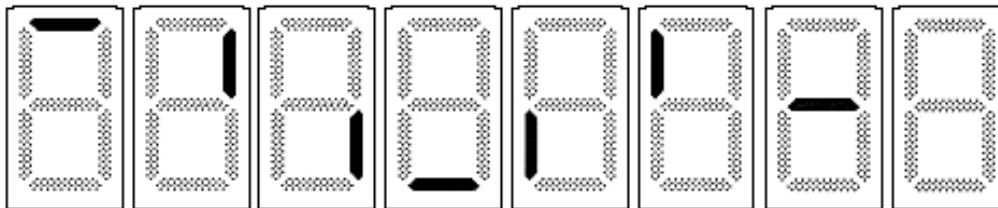


Figure 15: Digit Segment POST

Radio Settings

If a radio receiver is installed (see **Section 5.3**), the radio Broadcast settings (“b1”) and Channel settings (“C1”) will be displayed in the clock digits or Home and Guest scores during the POST (**Figure 16**). These values must match the settings in the control console (refer to **Figure 17** and the manual listed in **Section 1.1**).

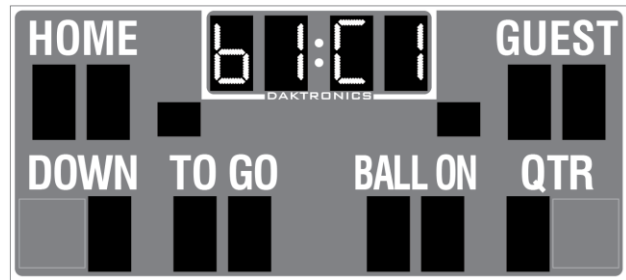


Figure 16: Radio Settings (Clock)



Figure 17: Radio Settings (Console)

3.4 Signal Connection

For wired setups, route signal cable through the conduit knockout on the rear of the scoreboard to the signal surge arrestor card (**Figure 18**), located just above the power termination block in the driver enclosure.

At the SIGNAL IN terminal block, connect red signal wire to positive (+) and black signal wire to negative (-).

Note: Be sure to properly connect the shield (silver) wire to the SHIELD terminal.

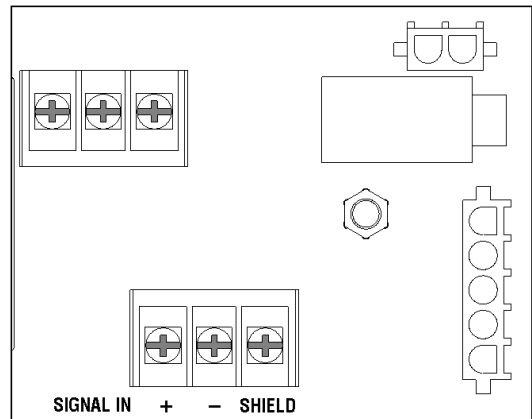


Figure 18: Signal Surge Arrestor Card

To connect signal to auxiliary displays, such as delay of game clocks, route signal wire from SIGNAL OUT on the main terminal block (**Figure 14**) of the primary scoreboard to SIGNAL IN on the signal card of the auxiliary scoreboard.

For signal cable, Daktronics recommends, as a minimum, single-pair, shielded cable, 22 AWG (part # W-1077). Two-pair shielded cable (part # W-1234) is preferred.

Fiber Optic

Another common signal communication method is fiber optic cabling. A minimum cabling of multi-mode, 62.5/125 um, and 2-core fiber cable is recommended (part # W-1242). The fiber optic cable is terminated to a male ST-type connector and plugged into the mating J26 FIBER jack on the driver (**Figure 19**). This method requires a signal converter between the All Sport console’s scoreboard output and the fiber optic cable (not provided by Daktronics).

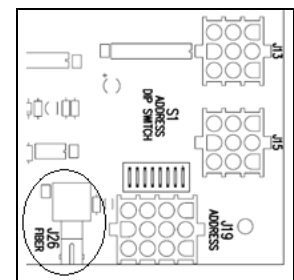


Figure 19: Driver Fiber Connection Location

Multiple Driver Connections

Some models in the multi-section outdoor scoreboard line require multiple drivers in each scoreboard section and use a master/slave driver system. Master and slave drivers function identically, but slave units lack the power termination block and signal surge suppression card. When one section has multiple drivers, they simply plug into one another, and this is done at the factory. Drivers between sections, however, require additional on-site connection as described in **Section 3.5**.

Note: Scoreboards capable of displaying speed of pitch (SOP) have an additional master driver. These models also require a separate signal connection (either wired or radio) from a dedicated speed of pitch All Sport 5000 console. Refer to the **Baseball Speed of Pitch Systems Configuration Manual (ED-12224)**, available online at www.daktronics.com/manuals, for more information about setting up an SOP system.

3.5 Power/Signal Connections Between Sections

Refer to the component location drawings attached to the product specification sheets listed in **Appendix A** for exact driver locations when connecting multiple scoreboard sections.

Two-Section Models

Open the appropriate access panel on the bottom section to locate the coiled bundle of interconnect cable coming from the driver, then route and connect the cables as described below and shown in **Figure 20**.

Note: Additional panels may be opened for easier access when routing the cable.

Route the 5-pin interconnect cable from the Bottom Section up into the Top Section, and connect the J43 jack to the P43 plug.

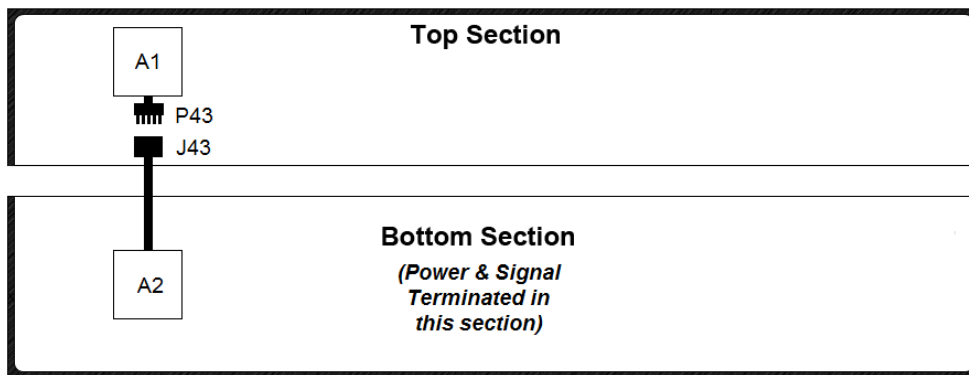


Figure 20: Power/Signal Connection – Two Sections, Excluding BA (Front View)

Note: In the MS-2009 and FB-3010, the top section driver is A2. In the MS-2918, the top section driver is A3.

- For the FB-3010, MS-2009, SO-2011, and SO-2043 only, route the interconnect cable from the Top Section down into the Bottom Section, and connect the P42 plug to the J42 jack.
- For the BA-2025 and BA-2027, route the 5-pin interconnect cable from the Bottom Section up into the Top Section, and connect the P42 plug to the J42 jack (**Figure 21**).

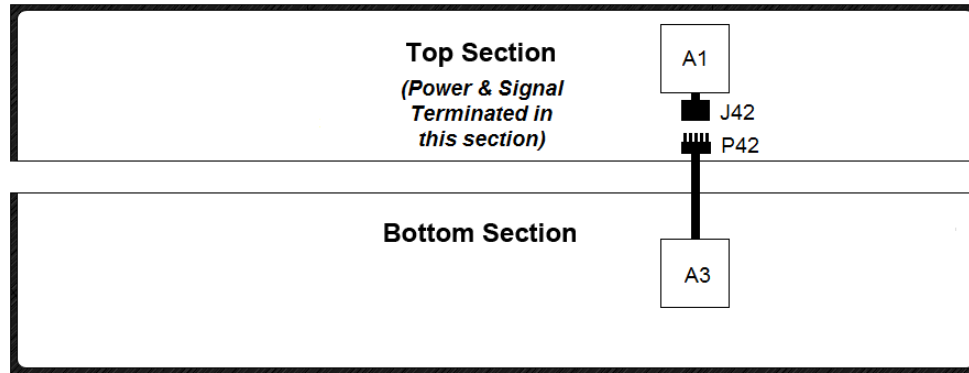


Figure 21: Power/Signal Connection – Two Sections, BA-2025 & BA-2027 (Front View)

- For the BA-1518 with red/amber digits, there are five 9-pin digit harnesses (P1–P4 & P15) in the upper section that must be routed down into the bottom section and plugged into the mating jacks (J1–J4 & J15) on the A1 driver. For the BA-1518 with white digits, there is a single 5-pin interconnect cable coiled in the upper section that must be routed down into the bottom section and connected to the J42B jack on a Y-cable coming from the A2 driver.

Four-Section Models

BA-2026 & BA-2028

Open the appropriate access panel on the bottom-left cabinet (Section C) to locate the coiled bundles of interconnect cable coming from the driver, then route and connect the cables as described below and shown in **Figure 22**.

Note: Additional panels may be opened for easier access when routing the cable.

1. There are four 9-pin digit harnesses (P8–P11) in the upper-right cabinet (Section B) that must be routed into the upper-left cabinet (Section A) and connected to the mating J8–J11 jacks on the A1 driver. For scoreboards with white digits, 2-pin cables must also be routed and connected to the mating J8–J11 jacks on the PS1 power supply.
2. There are also two separate interconnect cables in Section C:
 - a. Route the 5-pin interconnect cable with the P42 plug up into Section A, and connect it to the J42 jack on the A1 driver.
 - b. Route the 5-pin interconnect cable with the J43 jack over into the bottom-right cabinet (Section D), and connect it to another interconnect cable with the P42 plug.

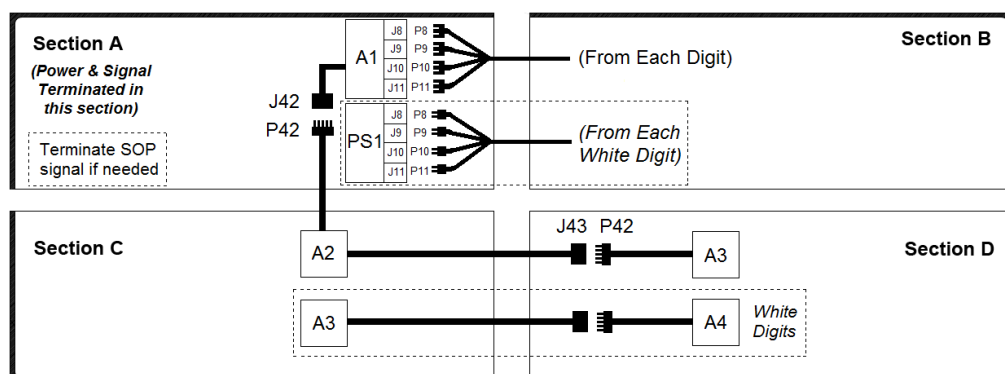


Figure 22: Power/Signal Connection – Four Sections, BA-2026 & BA-2028 (Front View)

BA-2029

Open the appropriate access panel on the bottom-left cabinet (Section C) to locate the coiled bundles of interconnect cable coming from the driver, then route and connect the cables as described below and shown in **Figure 23**.

Note: Additional panels may be opened for easier access when routing the cable.

1. There are seven 9-pin digit harnesses (P1–P7) in the upper-left cabinet (Section A) that must be routed into the upper-right cabinet (Section B) and connected to the mating J1–J7 jacks on the A1 driver. For scoreboards with white digits, 2-pin cables must also be routed and connected to the mating J1–J7 jacks on the PS1 power supply.
2. There are two separate interconnect cables in Section C:
 - a. Route the 5-pin interconnect cable with the P42 plug up into Section A first then over into Section B, and connect it to the J42 jack on the A1 driver.
 - b. Route the 5-pin interconnect cable with the J43 jack over into the bottom-right cabinet (Section D), and connect it to another interconnect cable with the P42 plug.

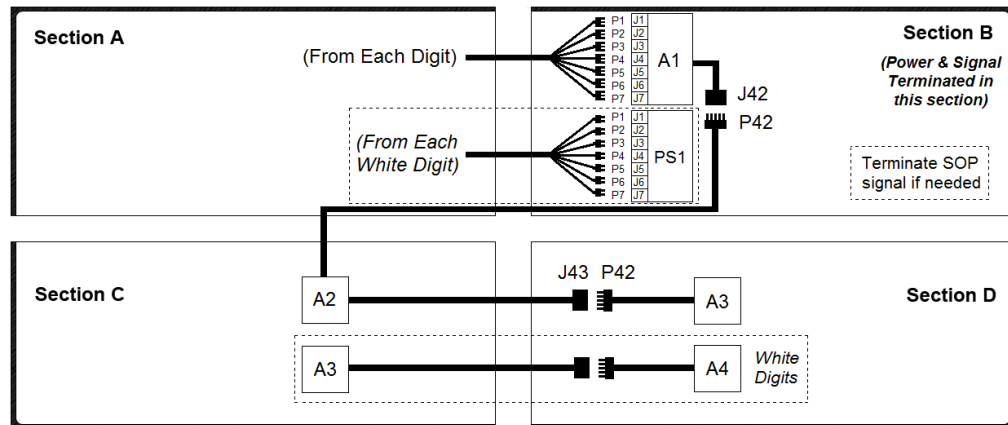


Figure 23: Power/Signal Connection – Four Sections, BA-2029 (Front View)

FB-2028

Open the appropriate access panels on the upper-left (Section A) and bottom-left cabinet (Section C) to locate the coiled bundles of interconnect cable coming from the drivers. Refer to **Figure 24**.

Note: Additional panels may be opened for easier access when routing the cable.

1. Route the 5-pin interconnect cable with the J43 jack from Section C over into the bottom-right cabinet (Section D) and connect it to the P43 plug on the A4 driver.
2. There will also be two separate interconnect cables in Section A:
 - a. Route the 5-pin interconnect cable with the J43 jack over into the upper-right cabinet (Section B) and connect it to the P42 plug on another interconnect cable coming from the A2 driver.
 - b. Route the 5-pin (two wire, signal only) cable with the P42 plug down into Section C, and connect it to the J42A jack on a Y-cable coming from the A3 driver.

Note: The FB-2028 can be thought of as two scoreboards stacked on top of each other. Both the A1 and A3 drivers require power termination, while only A3 requires signal termination from the control location. Refer to **Section 3.2** and **Section 3.4**.

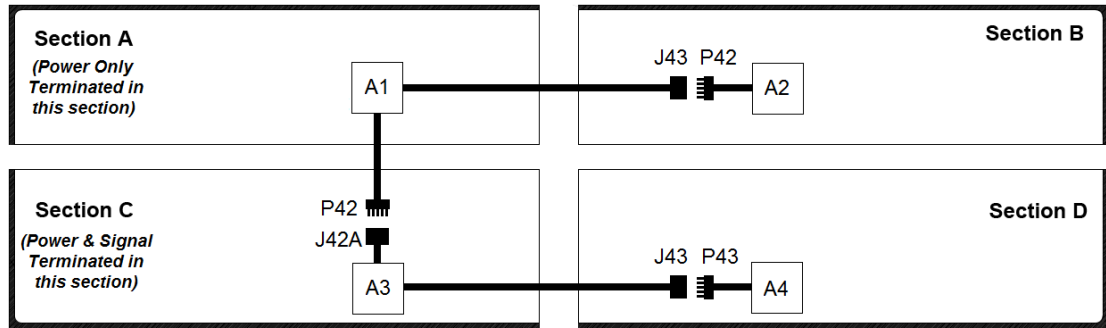


Figure 24: Power/Signal Connection – FB-2028 (Front View)

3.6 Lightning Protection

The use of a disconnect near the scoreboard to completely cut all current-carrying lines significantly protects the circuits against lightning damage. In order for this system to provide protection, the power must be disconnected when the scoreboard is not in use.

The control console should also be disconnected from power and from the signal junction box when the system is not in use. The same surges that may damage the scoreboard’s driver can also damage the console’s circuitry.

Section 4: Daktronics Exchange and Repair & Return Programs

4.1 Exchange Program

The Daktronics Exchange Program is a service for quickly replacing key components in need of repair. If a component fails, Daktronics sends a replacement part to the customer who, in turn, returns the failed component to Daktronics. This decreases equipment downtime. Customers who follow the program guidelines explained below will receive this service.

Before Contacting Daktronics

Identify these important numbers:

Display Assembly Number: _____
Display Model Number: _____
Job/Contract Number: _____
Date Manufactured/Installed: _____
Daktronics Customer ID Number: _____

To participate in the Exchange Program, follow these steps:

1. Call Daktronics Customer Service.

Market Description	Customer Service Number
Schools (including 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

2. When the exchange part is received, mail the old part to Daktronics.

If the replacement part fixes the problem, send in the problem part 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.

3. The defective or unused parts must be returned to Daktronics within 5 weeks of initial order shipment.

If any part is not returned within five (5) weeks, a non-refundable invoice will be presented to the customer for the costs of replenishing the exchange parts inventory with a new part.

Daktronics reserves the right to refuse parts that have been damaged due to acts of nature or causes other than normal wear and tear.

4.2 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 or fax Daktronics Customer Service:**
Refer to the appropriate market phone number in the chart on the previous page.
Fax: 605-697-4444
2. **Receive a case number before shipping.**
This expedites repair of the part.
3. **Package and pad the item carefully to prevent damage during shipment.**
Electronic components, such as printed circuit boards, should be placed in an antistatic bag before boxing. Daktronics does not recommend using packing 'peanuts' when shipping.
4. **Enclose:**
 - name
 - address
 - phone number
 - the case number
 - a clear description of symptoms

Shipping Address

Daktronics Customer Service
[Case #]
201 Daktronics Drive, Dock E
Brookings, SD 57006

4.3 Daktronics Warranty and Limitation of Liability

The Daktronics Warranty and Limitation of Liability is located in **Appendix C**. The Warranty is independent of Extended Service agreements and is the authority in matters of service, repair, and display operation.

Section 5: Scoreboard Options

5.1 Team Name Message Centers (TNMCs)

Team Name Message Centers (TNMCs) are programmable LED displays that allow users to show custom Home and Guest names. TNMCs are typically ordered factory-installed but can be field-mounted after the scoreboard is in place.

For more information about TNMCs, contact a Daktronics representative or refer to the service manual listed in **Section 1.2**.

5.2 Trumpet Horns

Trumpet horn options are available for installation only on scoreboards that have clocks. There are two types of optional trumpet horns:

- Internally mounted 120 V trumpet horn
- Externally mounted 12 VDC trumpet horn

A 120 V trumpet horn cannot be installed on a 240 V model scoreboard. For more information about trumpet horns, contact a Daktronics representative or refer to the **Trumpet Horn Installation Manual (ED-10006)**, available online at www.daktronics.com/manuals.

5.3 Radio Control

Radio control is an option for all Daktronics outdoor LED scoreboards. The system provides scoreboard control via a 2.4 GHz, extra-high frequency FM signal.

The radio transmitter and receiver are not standard. This setup requires a control console equipped with radio output as well as a radio receiver plugged into the primary driver and mounted internally to the front panel of the scoreboard.

For additional information about this option, contact a Daktronics representative; for complete information on setting up radio communication control, refer to the **Gen V Radio Installation Manual (ED-13831)** or the **Gen VI Radio Installation Manual (DD2362277)**, both available online at www.daktronics.com/manuals.

5.4 Time Outs Left (T.O.L) Digits

Certain scoreboards have the option to add a time outs left (TOL) digit for both the home and guest teams. These digits are installed by simply unscrewing the blank face panel, connecting and securing the digit panel, and manually applying the "T.O.L." vinyl caption.

The following scoreboard models in this manual have optional T.O.L. digits:

- 15" tall digits - FB-2018, FB-2019, FB-2020
- 18" tall digits - FB-2021, FB-2022

5.5 Changeable Caption Kits

Caption kits contain hardware for one caption only and consist of an upper caption retainer, a lower caption retainer, a changeable caption panel and screws.

The standard HOME and GUEST captions are applied directly to the face of the scoreboard. Team name captions are on changeable panels that fit into retainers mounted above and below the HOME and GUEST captions. If these retainers are not already present, attach the retainers included with the caption kit.

Other caption kits are available to show different information for different sports.

To install a changeable panel:

1. Insert the screws on the caption changing pole (Daktronics part # 0F-1091-0099) into the keyholes on the panel.
2. Lift the panel all the way up into the upper retainer and then insert the bottom of the panel into the lower retainer (**Figure 25**).
3. Take the screws on the caption changing pole out of the keyholes.

Reverse this procedure to remove the caption panel.

The caption changer pole is extendable. Loosen the ring tightener and extend the pole to the desired length, and then tighten the ring before lifting the caption.

CAUTION: The aluminum caption changer can conduct electricity. Do not use it within 20-feet of power lines. Also be careful when using the caption changer in high or gusting winds. Wind may catch the panel and unhook it from the changer or make it difficult to maintain a grip on the pole. Hold the pole tightly in windy conditions.

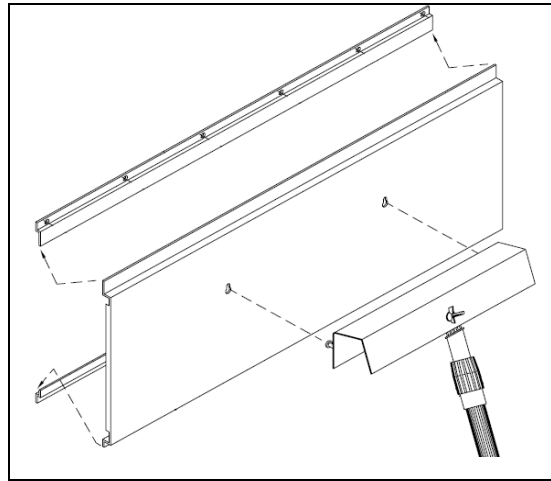


Figure 25: Changing Scoreboard Captions

Appendix A: Specifications

All of the product specification sheets for the scoreboards in this manual are listed below. Product-specific installation and component location drawings are included with each spec sheet.

Note: Refer to **Figure 1** to determine a scoreboard’s model number.

Model	Spec Sheet	Model	Spec Sheet	Model	Spec Sheet
BA-1518	DD2118098	FB-2021	DD2167297	MS-2009	DD2167425
BA-2025	DD1969963	FB-2022	DD2167302	MS-2918	DD2167437
BA-2026	DD1972163	FB-2023	DD2167306	SO-2011	DD2167461
BA-2027	DD1972393	FB-2024	DD2167351	SO-2018	DD2167482
BA-2028	DD1972415	FB-2025	DD2167356	SO-2019	DD2167485
BA-2029	DD1972427	FB-2026	DD2167363	SO-2021	DD2167495
FB-2018	DD2167274	FB-2027	DD2167369	SO-2023	DD2167513
FB-2019	DD2167276	FB-2028	DD1972444	SO-2043	DD1956444
FB-2020	DD2167285	FB-3010	DD2196899		

Viewing Product Specifications Online

If a specification sheet is incorrect or missing, they are all available for download online.

- When viewing the digital version of this manual, simply click a link above to open it.
- When referencing the printed version of this manual, open an Internet browser and go to <http://www.daktronics.com/Web%20Documents/HSPR-Documents/DD#####.pdf> (replace “DD#####” with one of the Spec Sheet numbers shown above).

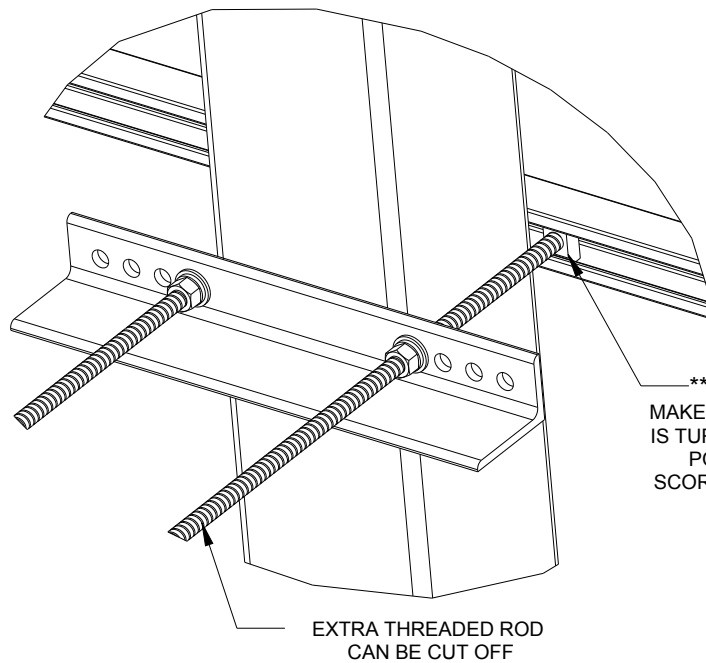
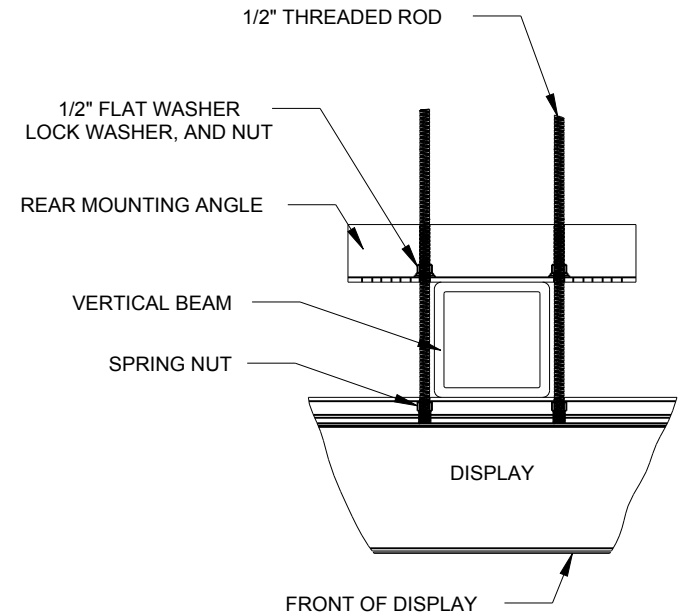
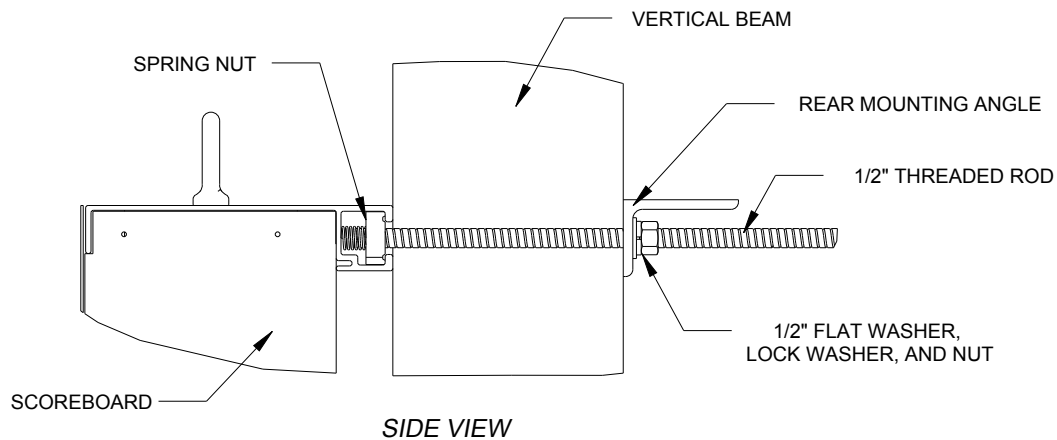
Note that the following scoreboards have different power specifications with white digits. They may also have different component location drawings, located in the Service Manual (refer to **Section 1.2**).

Model & Options	Watts	Amps 120 / 240 VAC
BA-1518	450	3.8 / 1.9
TNMCs	750	6.3 / 3.1
BA-2025	850	7.1 / 3.5
TNMCs	1150	9.6 / 4.8
BA-2026	1200	10 / 5
TNMCs	1800	15 / 7.5
BA-2027	850	7.1 / 3.5
TNMCs	1150	9.6 / 4.8
BA-2028	1250	10.4 / 5.2
TNMCs	1850	15.4 / 7.7
BA-2029	1400	11.6 / 5.8
TNMCs	1920	16 / 8
FB-2018 FB-2019 FB-2020	750	6.3 / 3.1
TNMCs	1050	8.8 / 4.4
All Electronic	1650	13.8 / 6.9
All Backlit	1650	13.8 (120 only)
FB-2021 FB-2022 FB-2023	800	6.7 / 3.3
TNMCs	1400	11.7 / 5.8
All Electronic	1920	16 / 8
All Backlit	1820	15.2 (120 only)
FB-2024 FB-2025 FB-2026 FB-2027	800	6.7 / 3.3
TNMCs	1400	11.7 / 5.8
All Electronic	1920	16 / 8
All Backlit	1920	16 (120 only)

Model & Options	Watts	Amps 120 / 240 VAC
FB-2028	<i>Top: 850</i> <i>Bottom: 350</i>	<i>Top: 7.1 / 3.5</i> <i>Bottom: 2.9 / 1.5</i>
TNMCs	<i>Top: 1450</i> <i>Bottom: 350</i>	<i>Top: 12.1 / 6</i> <i>Bottom: 2.9 / 1.5</i>
All Electronic	<i>Top: 1450</i> <i>Bottom: 1250</i>	<i>Top: 12.1 / 6</i> <i>Bottom: 10.4 / 5.2</i>
All Backlit	<i>Top: 1390</i> <i>Bottom: 1790</i>	<i>Top: 11.6</i> <i>Bottom: 14.9</i> (120 only)
FB-3010	650	5.4 / 2.7
TNMCs	950	7.9 / 4
MS-2009	1000	8.3 / 4.2
TNMCs	1600	13.3 / 6.7
All Electronic	1920	16 / 8
All Backlit	1920	16 (120 only)
SO-2011	750	6.3 / 3.1
TNMCs	1350 W	11.3 / 5.6
SO-2018 SO-2019	700	5.8 / 2.9
TNMCs	1000	8.3 / 4.2
All Electronic	1600	13.3 / 6.7
All Backlit	1600	13.3 (120 only)
SO-2021 SO-2023	800	6.7 / 3.3
TNMCs	1400	11.7 / 5.8
All Electronic	1920	16 / 8
All Backlit	1820	15.2 (120 only)
SO-2043	800 W	6.7 / 3.3
TNMCs	1400 W	11.7 / 5.8

Appendix B: Reference Drawings

<i>Drawing Title</i>	<i>Drawing Number</i>
P1647; Pole Mounting Options	A-1048184
Ad Panel Pole Mounting	B-1052388
Ad Panel I-beam Clamp Mounting.....	B-1052539
P1647; I-beam Clamp Mounting.....	A-1052565
Mtg Straps, 4 Sec SCBD on 3 Poles	A-1115341



REAR ISOMETRIC VIEW

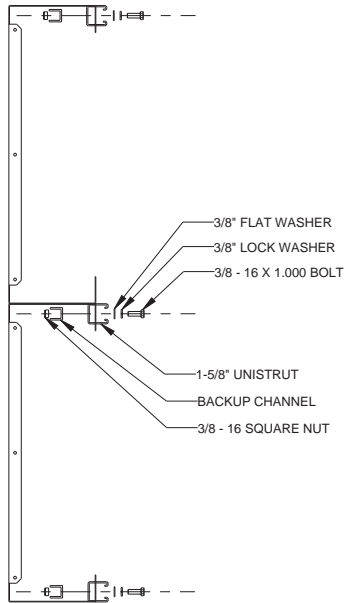
STRUCTURAL NOTES:
 - BOLT TORQUE: 30 FT-LB

NOTES:
 - THREADED RODS RUN ALONG BOTH SIDES OF BEAM
 - RODS DO NOT PASS THROUGH THE FLANGES OF THE BEAM
 - NO DRILLING NECESSARY
 - MAKE SURE SPRING NUT IS PERPENDICULAR TO CHANNEL OPENING ON SCOREBOARD

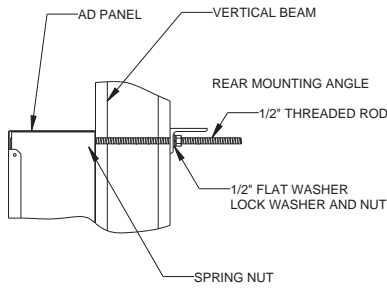
*****CRITICAL***
 DO NOT USE ANY LUBRICANT
 ON ANY MOUNTING HARDWARE
 OR WARRANTY WILL BE VOIDED**

04	22 DEC 15	ADDED LUBRICANT WARNING	PJS	
03	03 JULY 13	ADDED STRUCTURAL NOTE	TTF	
02	20 SEP 12	PER EC-7114; REMOVED CHAMFER FROM 0M-133259	LMG	
01	06 OCT 11	REPLACED VERTICAL I-BEAM WITH 6" X 6" SQUARE TUBE	JAVA	
REV	DATE:		BY:	

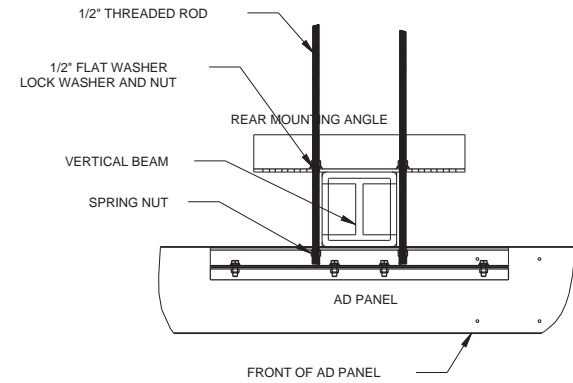
		<small>THE CONCEPTS EXPRESSED AND DETAILS SHOWN ON THIS DRAWING ARE CONFIDENTIAL AND PROPRIETARY. DO NOT REPRODUCE BY ANY MEANS WITHOUT THE EXPRESS WRITTEN CONSENT OF DAKTRONICS, INC. OR ITS WHOLLY OWNED SUBSIDIARIES. COPYRIGHT 2016 DAKTRONICS, INC. (USA)</small>			
PROJECT: OUTDOOR SCOREBOARDS					
TITLE: P1647; POLE MOUNTING OPTIONS					
DATE: 22-DEC-15		DIM UNITS: INCHES [MILLIMETERS]		SHEET 1 OF 1	
SCALE: 1/5		DO NOT SCALE DRAWING		REV 04	
DESIGN: DOPPELT		JOB NO. P1647		FUNC - TYPE - SIZE E - 10 - A	
DRAWN: DOPPELT		1048184			



EXPLODED SIDE VIEW
UNISTRUT ATTACHMENT

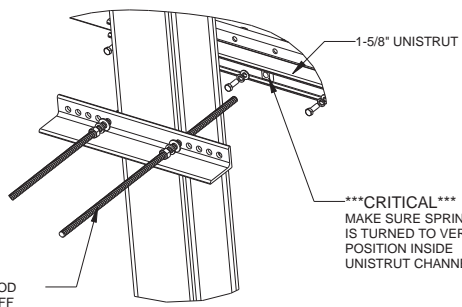


SIDE VIEW
AD PANEL ATTACHMENT



TOP VIEW
AD PANEL ATTACHMENT

*****CRITICAL***
DO NOT USE ANY LUBRICANT
ON ANY MOUNTING HARDWARE
OR WARRANTY WILL BE VOIDED**



EXTRA THREADED ROD
CAN BE CUT OFF

REAR ISOMETRIC VIEW

MOUNTING INSTRUCTIONS:

1. USING THE BACKUP CHANNEL AS A TEMPLATE, DRILL $\varnothing 7/16"$ HOLES IN THE UPPER AND LOWER REAR FLANGE OF THE AD PANEL WHERE THE VERTICAL BEAMS WILL BE LOCATED.
2. IF AD PANEL HAS BACKSHEETS, REMOVE BACKSHEETS NECESSARY AT THIS TIME TO ACCESS HARDWARE FOR UNISTRUT ATTACHMENT
3. ATTACH UNISTRUT TO AD PANEL THROUGH HOLES DRILLED IN STEP 1 AS SHOWN IN UNISTRUT ATTACHMENT SIDE VIEW
4. REPLACE BACKSHEETS REMOVED IN STEP 2
5. PLACE SPRING NUTS INTO UNISTRUT IN APPROXIMATE LOCATION OF VERTICAL BEAMS
6. THREAD THE 1/2" THREADED ROD INTO THE SPRING NUTS
7. LIFT AD PANEL INTO POSITION
8. PLACE REAR MOUNTING ANGLES OVER EACH PAIR OF THREADED RODS AND SECURE AS SHOWN IN SIDE AND TOP VIEW AD PANEL ATTACHMENT
9. MAKE SURE THE THREADED ROD IS AS CLOSE TO THE VERTICAL BEAM AS POSSIBLE
10. WHEN AD PANEL IS ADJUSTED TO FINAL DESIRED POSITION, TIGHTEN NUTS FIRMLY

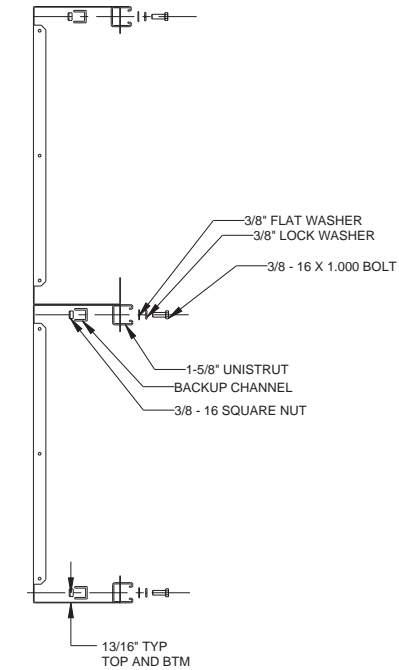
NOTES:

- THREADED RODS RUN ALONG BOTH SIDES OF BEAM
- RODS DO NOT PASS THROUGH THE FLANGE OF THE BEAM
- NO DRILLING REQUIRED
- MAKE SURE THE SPRING NUT IS PERPENDICULAR TO CHANNEL OPENING ON UNISTRUT

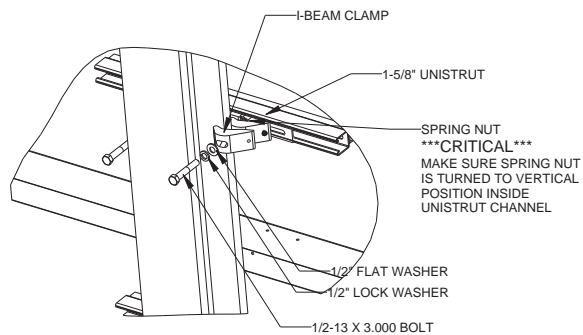
*****CRITICAL***
MAKE SURE SPRING NUT
IS TURNED TO VERTICAL
POSITION INSIDE
UNISTRUT CHANNEL**

		<small>THE CONCEPTS EXPRESSED AND DETAILS SHOWN ON THIS DRAWING ARE CONFIDENTIAL AND PROPRIETARY. DO NOT REPRODUCE BY ANY MEANS WITHOUT THE EXPRESS WRITTEN CONSENT OF DAKTRONICS, INC. OR ITS WHOLLY OWNED SUBSIDIARIES. COPYRIGHT 2016 DAKTRONICS, INC. (USA)</small>			
PROJECT: OUTDOOR SCOREBOARDS					
TITLE: AD PANEL POLE MOUNTING					
DATE: 22-DEC-15		DIM UNITS: INCHES [MILLIMETERS]		SHEET 1 OF 1	
SCALE: 1/10		DO NOT SCALE DRAWING		REV 02	
DESIGN:	MCARSRU	JOB NO.:	P1647	FUNC - TYPE - SIZE:	E - 10 - B
DRAWN:	MCARSRU	1052388			

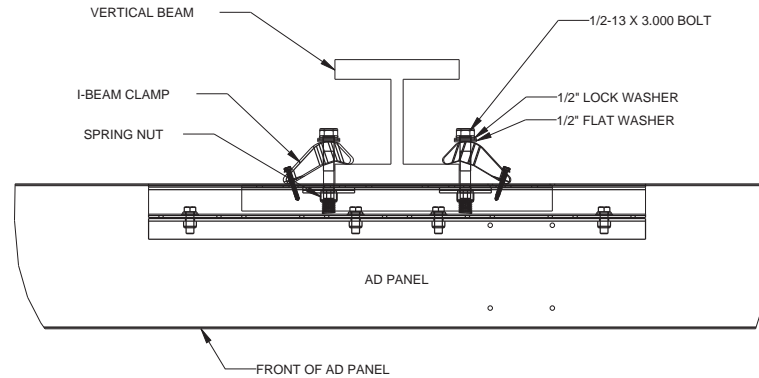
02	22 DEC 15	ADDED LUBRICANT WARNING	PJS
01	18 SEP 12	REMOVED CHAMFER FROM 0M-133259 PER EC-7114	LMG
REV	DATE:		BY:



EXPLODED SIDE VIEW
UNISTRUT ATTACHMENT



EXPLODED REAR ISOMETRIC VIEW
AD PANEL ATTACHMENT



TOP VIEW
AD PANEL ATTACHMENT
SCALE 1/6

STRUCTURAL NOTES:

ALLOWABLE LOADS PER COLUMN CONNECTION

MAX ALLOWABLE WIND LOAD: 2,400 LBS
 MAX ALLOWABLE PANEL WEIGHT: 158 LBS
 COEFFICIENT OF FRICTION: 0.03
 BOLT TORQUE: 50 FT-LB
 MIN-MAX I-BEAM FLANGE THICKNESS: 0.25"-0.75"

*****CRITICAL***
 DO NOT USE ANY LUBRICANT
 ON ANY MOUNTING HARDWARE
 OR WARRANTY WILL BE VOIDED**

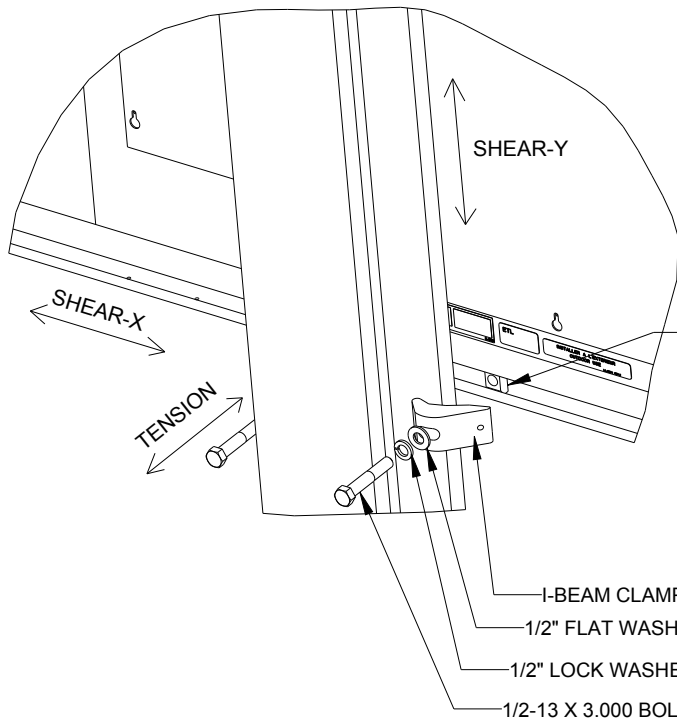
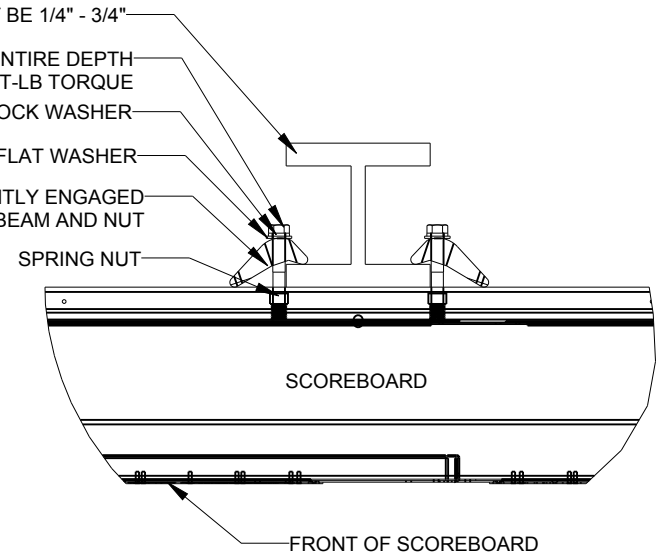
MOUNTING INSTRUCTIONS:

1. USING THE BACKUP CHANNEL AS A TEMPLATE, DRILL $\varnothing 7/16$ " HOLES IN THE UPPER AND LOWER REAR FLANGE OF THE AD PANEL WHERE THE VERTICAL BEAMS WILL BE LOCATED.
2. IF AD PANEL HAS BACKSHEETS, REMOVE BACKSHEETS NECESSARY AT THIS TIME TO ACCESS HARDWARE FOR UNISTRUT ATTACHMENT
3. ATTACH UNISTRUT TO AD PANEL THROUGH HOLES DRILLED IN STEP 1 AS SHOWN IN UNISTRUT ATTACHMENT SIDE VIEW
4. REPLACE BACKSHEETS REMOVED IN STEP 2
5. PLACE SPRING NUTS INTO UNISTRUT IN APPROXIMATE LOCATION OF VERTICAL BEAMS
7. LIFT AD PANEL INTO POSITION
8. ATTACH I-BEAM CLAMPS WITH 1/2" HARDWARE AS SHOWN IN TOP AND REAR ISOMETRIC VIEW AD PANEL ATTACHMENT
9. MAKE SURE THE 1/2-13 BOLTS ARE AS CLOSE TO THE I-BEAM FLANGES AS POSSIBLE
10. WHEN AD PANEL IS ADJUSTED TO FINAL DESIRED POSITION, TIGHTEN BOLTS FIRMLY

04	22 DEC 15	ADDED LUBRICANT WARNING	PJS		
03	17 APR 12	ADDED STACKED AD PANEL MOUNTING INSTRUCTIONS	JLR		
02	28 FEB 12	ADDED STRUCTURAL NOTES	MBC		
01	23 FEB 12	CHANGED ROCKER CLAMP/STOP TO I-BEAM CLAMP/STOP	KDD		
REV	DATE:		BY:		

		<small>THE CONCEPTS EXPRESSED AND DETAILS SHOWN ON THIS DRAWING ARE CONFIDENTIAL AND PROPRIETARY. DO NOT REPRODUCE BY ANY MEANS WITHOUT THE EXPRESS WRITTEN CONSENT OF DAKTRONICS, INC. OR ITS WHOLLY OWNED SUBSIDIARIES. COPYRIGHT 2016 DAKTRONICS, INC. (USA)</small>		<small>THIRD ANGLE PROJECTION</small>	
PROJECT: OUTDOOR SCOREBOARDS					
TITLE: AD PANEL I-BEAM CLAMP MOUNTING					
DATE: 22-DEC-15		DIM UNITS: INCHES [MILLIMETERS]		SHEET 1 OF 1	
SCALE: 1/10		DO NOT SCALE DRAWING		REV 04	
DESIGN: MCARSRU	JOB NO. P1647	FUNC - TYPE - SIZE	E - 07 - B		
DRAWN: MCARSRU	1052539				

VERTICAL BEAM - FLANGE THICKNESS MUST BE 1/4" - 3/4"
 1/2-13 X 3.000 BOLT - BOLT THREAD MUST ENGAGE ENTIRE DEPTH OF SPRING NUT. BOLT MUST BE TIGHTENED TO 40FT-LB TORQUE
 1/2" LOCK WASHER
 1/2" FLAT WASHER
 I-BEAM CLAMP - ASSURE CLAMP IS TIGHTLY ENGAGED TO I-BEAM AND NUT



SPRING NUT
 CRITICAL
 MAKE SURE SPRING NUT IS TURNED TO VERTICAL POSITION INSIDE SCOREBOARD CHANNEL

EXPLODED REAR ISOMETRIC VIEW

STANDARD MOUNTING METHOD

MOUNTING INSTRUCTIONS:

1. PLACE SPRING NUTS INTO SCOREBOARD CHANNEL IN APPROXIMATE LOCATION OF VERTICAL BEAMS
2. LIFT SCOREBOARD INTO POSITION
3. MAKE SURE THE 1/2-13 BOLTS ARE AS CLOSE TO THE I-BEAM FLANGES AS POSSIBLE
4. WHEN SCOREBOARD IS ADJUSTED TO FINAL DESIRED POSITION, TIGHTEN BOLTS FIRMLY
5. IF FLANGE THICKNESS IS MORE THAN 3/4" THICK LONGER BOLTS WILL BE REQUIRED AT THE CUSTOMER'S EXPENSE.

STRUCTURAL NOTES

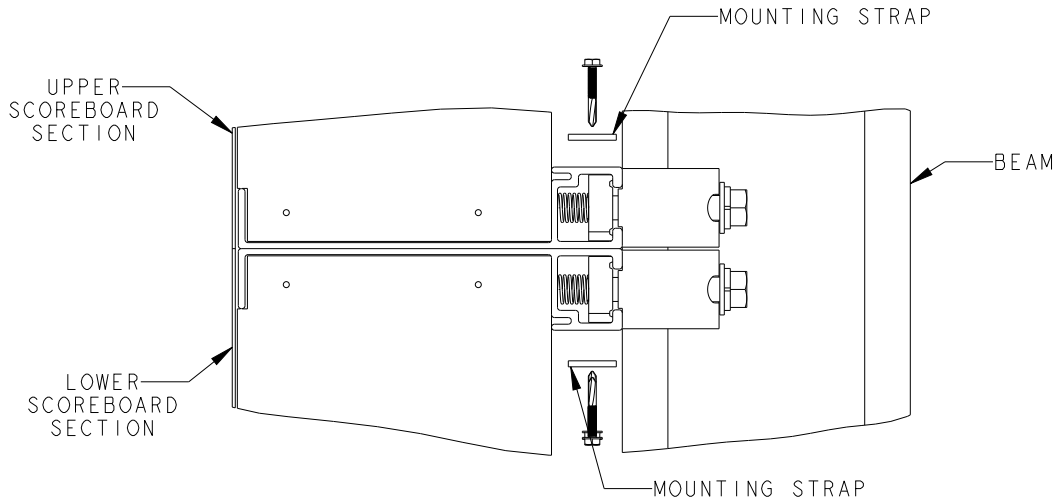
ALLOWABLE CAPACITY PER EACH CLAMP:
 SHEAR = 160 LBS
 TENSION = 2300 LBS

SHEAR AND TENSION LOAD DIRECTION ARE AS INDICATED ON REAR ISOMETRIC VIEW

CRITICAL
 DO NOT USE ANY LUBRICANT ON ANY MOUNTING HARDWARE OR WARRANTY WILL BE VOIDED

05	22 DEC 15	ADDED LUBRICANT WARNING	PJS
04	06 JAN 14	ADDED ALLOWABLE TENSION AND SHEAR CAPACITY DETAILS	JAVA
03	23 OCT 13	PER EC-12382; CHANGED BOLT TORQUE FROM 30 FT-LB TO 40 FT-LB	NJM
02	07 MAR 12	ADDED STANDARD MOUNTING METHOD NOTES	KDD
01	21 FEB 12	CHANGED ROCKER TO I-BEAM	KDD
REV	DATE:		BY:

		THE CONCEPTS EXPRESSED AND DETAILS SHOWN ON THIS DRAWING ARE CONFIDENTIAL AND PROPRIETARY. DO NOT REPRODUCE BY ANY MEANS WITHOUT THE EXPRESS WRITTEN CONSENT OF DAKTRONICS, INC. OR ITS WHOLLY OWNED SUBSIDIARIES. COPYRIGHT 2016 DAKTRONICS, INC. (USA)			
		PROJECT: OUTDOOR SCOREBOARD			
TITLE: P1647; I-BEAM CLAMP MOUNTING					
DATE: 22-DEC-15		DIM UNITS: INCHES [MILLIMETERS]		SHEET REV	
SCALE: 1/8		DO NOT SCALE DRAWING		1 OF 1 05	
DESIGN: MCARSRU		JOB NO. P1647		FUNC - TYPE - SIZE E - 07 - A	
DRAWN: MCARSRU		1052565			



SIDE VIEW
SCALE 1/4

STRAP INSTALLATION PROCEDURE FOR 3 POLE APPLICATION

AFTER CLAMPING ALL FOUR SECTIONS OF THE SCOREBOARD TO MOUNTING BEAMS, IT IS NECESSARY TO ATTACH THE TWO BOTTOM SECTIONS TO EACH OTHER AND THE TWO TOP SECTIONS TO EACH OTHER.

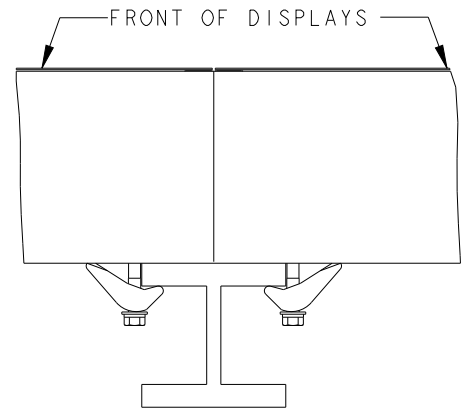
STRAPS ARE REQUIRED AT SPLICE LOCATION FOR BOTH POLE MOUNTING AND I-BEAM MOUNTING STYLES

THIS IS ACHIEVED USING FOUR MOUNTING STRAPS (1/8" X 1" X 20" LONG) AND #12 HEX HEADED SCREWS.

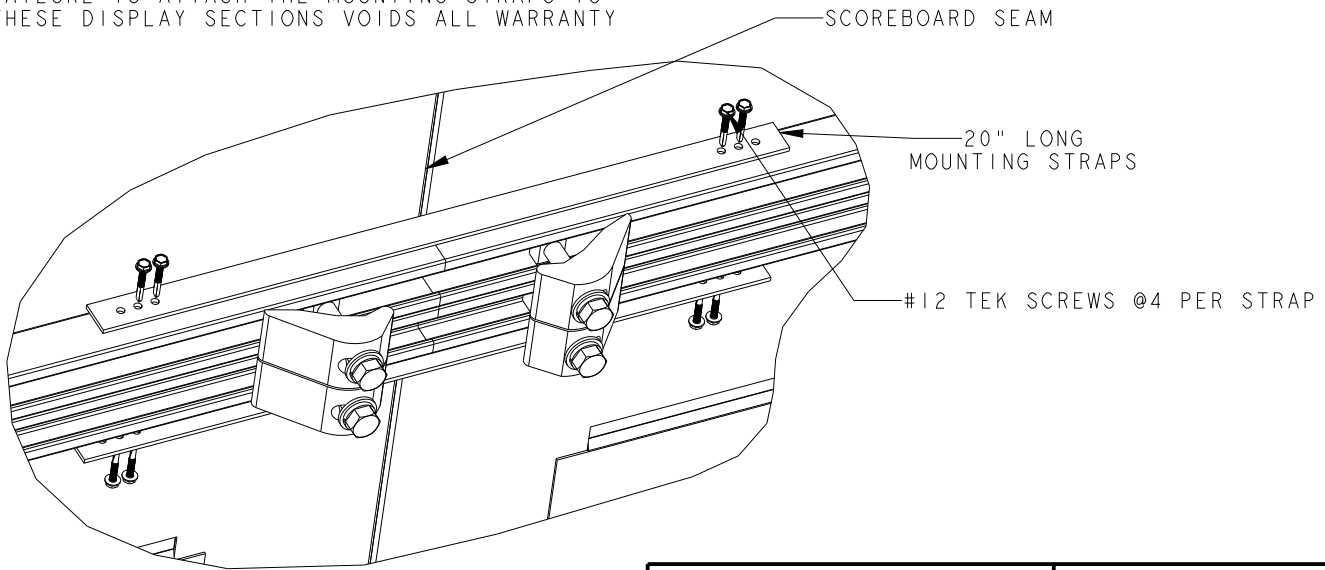
POSITION THE MOUNTING STRAPS AS SHOWN ON THIS DRAWING. ATTACH FOUR SCREWS TO ATTACH EACH STRAP. 2 SCREWS ON EACH SIDE OF THE SPLICE.

ATTACH ONE STRAP TO THE TOP & BOTTOM OF EACH LEFT & RIGHT SECTION.


FAILURE TO ATTACH THE MOUNTING STRAPS TO THESE DISPLAY SECTIONS VOIDS ALL WARRANTY



TOP VIEW
SCALE 1/8



ISOMETRIC VIEW
SCALE 1/5
SHOWN WITH OUT I-BEAM

 DAKTRONICS, INC. BROOKINGS, SD 57006 DO NOT SCALE DRAWING		THE CONCEPTS EXPRESSED AND DETAILS SHOWN ON THIS DRAWING ARE CONFIDENTIAL AND PROPRIETARY. DO NOT REPRODUCE BY ANY MEANS WITHOUT THE EXPRESSED WRITTEN CONSENT OF DAKTRONICS, INC. COPYRIGHT 2011 DAKTRONICS, INC.	
		PROJ: OUTDOOR SCOREBOARDS TITLE: MTG STRAPS, 4 SEC SCBD ON 3 POLES	
DESIGN: USER NAME		DRAWN: DOPPELT	
SCALE: AS SHOWN		DATE: 05-OCT-12	
SHEET: 1 OF 1	REV: 00	JOB NO: P 1647	FUNC-TYPE-SIZE: E-07-A
			1115341

REV	DATE:	BY:
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Appendix C: Daktronics Warranty and Limitation of Liability

**DAKTRONICS
WARRANTY AND 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 agrees to be bound by and accept these terms and conditions. All defined 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 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 Purchaser 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. 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 either Purchaser or Daktronics.

C. Daktronics shall pay ground transportation charges for the return of any defective component of the Equipment. If returned Equipment is repaired or replaced under the terms of this warranty, Daktronics will prepay ground transportation charges back to Purchaser; otherwise, Purchaser shall pay transportation charges to return the Equipment back to the Purchaser. All returns must be pre-approved by Daktronics before shipment. Daktronics shall not be obligated to pay freight for any unapproved return. Purchaser 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 this 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. The limited warranty provided by Daktronics does not impose any duty or liability upon Daktronics for partial LED pixel degradation. Nor does the limited warranty 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.

THIS LIMITED WARRANTY IS THE ONLY WARRANTY APPLICABLE TO THE EQUIPMENT AND REPLACES ALL OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OR CONDITIONS OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. SPECIFICALLY, EXCEPT AS PROVIDED HEREIN, THE SELLER UNDERTAKES NO RESPONSIBILITY FOR THE QUALITY OF THE EQUIPMENT OR THAT THE EQUIPMENT WILL BE FIT FOR ANY PARTICULAR PURPOSE FOR WHICH PURCHASER MAY BE BUYING THE EQUIPMENT. ANY IMPLIED WARRANTY IS LIMITED IN DURATION TO THE WARRANTY PERIOD. NO ORAL OR WRITTEN INFORMATION, OR ADVICE GIVEN BY THE COMPANY, ITS AGENTS OR EMPLOYEES, SHALL 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

The limited warranty provided by Daktronics does not impose any duty or liability upon Daktronics for:

A. Any 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, Purchaser assumes all risk of loss or damage, and agrees to use any shipping containers that might be provided by Daktronics and to ship the Equipment in the manner prescribed by Daktronics;

B. Any damage caused by the unauthorized adjustment, repair or service of the Equipment by anyone other than 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) a failure or sudden surge of electrical power, (iii) improper air conditioning or humidity control, 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. Any statements made about the product by salesmen, dealers, distributors or agents, 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 Purchaser and are not part of the contract of sale;

G. Any 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; or

H. Any performance of preventive maintenance.

3. **Limitation of Liability**

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.

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 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, lost data, injury to property or any damages or sums paid by Purchaser 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.

In no event shall Daktronics be liable to Purchaser or any other party 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 actually delivered to and paid for by the Purchaser. The Purchaser'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**

The Warranty contained herein extends only to the original 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. **Dispute Resolution**

Any dispute between the parties will be resolved exclusively and finally by arbitration administered by the American Arbitration Association ("AAA") and conducted under its rules, except as otherwise provided below. The arbitration will be conducted before a single arbitrator. The arbitration shall be held in Brookings, South Dakota. Any decision rendered in such arbitration proceedings will be final and binding on each of the parties, and judgment may be entered thereon in any court of competent jurisdiction. This arbitration agreement is made pursuant to a transaction involving interstate commerce, and shall be governed by the Federal Arbitration Act.

6. **Governing Law**

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. Both parties consent to the application of the laws of the State of South Dakota to govern, interpret, and enforce all of Purchaser and Daktronics 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.

7. **Availability of Extended Service Agreement**

For Purchaser's protection, in addition to that afforded by the warranties set forth herein, Purchaser 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).