

# **BA-2000 Series LED Baseball Scoreboards**

## **Display Manual**

ED-16961

Rev 4 – 19 November 2010

# **DAKTRONICS**

Models	
BA-2001	BA-2002
BA-2008	BA-2009
BA-2018	



*Please fill in the information below to use for reference when calling Daktronics for assistance.*

**Display Serial No.** \_\_\_\_\_

**Display Model No.** \_\_\_\_\_

**Date Installed** \_\_\_\_\_

## **DAKTRONICS, INC.**

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# Section 1: Introduction

This manual explains the installation of Daktronics BA-2000 series LED baseball scoreboards and provides details for maintenance and troubleshooting. For additional information regarding the safety, installation, operation, or service of this system, refer to the telephone numbers listed in **Section 5.13**. This manual is not specific to a particular installation.

## 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.

Project-specific information takes precedence over any other general information found in this manual.

## 1.1 Resources

**Figure 1** 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 C-325405	
00	SCALE: NONE		

**Figure 1: Daktronics Drawing Label**

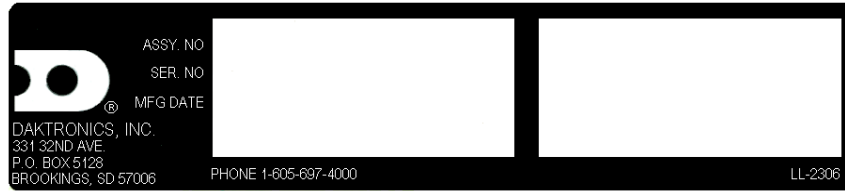
### Reference Drawing:

System Riser Diagram ..... **Drawing C-325405**

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 **ED-16961**.

## 1.2 Daktronics Nomenclature

Serial and model numbers can be found on the ID label on the display as shown in **Figure 2**.



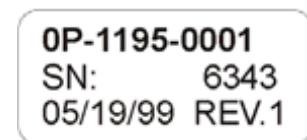
**Figure 2:** Scoreboard ID Label

Please list the model number, display serial number, and the date this display became operational in the blanks provided on the second page of this manual. When calling Daktronics customer service, please have this information available to ensure the request is serviced as quickly as possible.

Most components within this display carry a white label that lists the part number of the unit. If a component is not found in the Replacement Parts List in **Section 5.12**, use the label to order a replacement. **Figure 3** illustrates a typical label. The part number is in bold.

<b>Main Component Labels</b>	
<b>Part Type</b>	<b>Part Number</b>
Individual circuit board	<b>0P-XXXX-XXXX</b>
Assembly; a collection of circuit boards	<b>0A-XXXX-XXXX</b>
Wire or cable	<b>W-XXXX</b>
Fuse	<b>F-XXXX</b>
Transformer	<b>T-XXXX</b>
Metal part	<b>M-XXX</b>
Fabricated metal assembly	<b>0S-XXXXXX</b>
Specially ordered part	<b>PR-XXXXX-X</b>

<b>Accessory Labels</b>	
<b>Component</b>	<b>Label</b>
Termination block for power or signal cable	<b><u>TBXX</u></b>
Grounding point	<b><u>EXX</u></b>
Power or signal jack	<b><u>JXX</u></b>
Power or signal plug for the opposite jack	<b><u>PXX</u></b>



**Figure 3:** Typical Label

Following the Replacement Parts List is the Daktronics Exchange Policy and the Repair & Return Program. Refer to these instructions if replacing or repairing any display component.



### 1.3 Model Number

Daktronics scoreboards are differentiated by their model numbers and two-letter prefixes for each sport. Most Daktronics scoreboards also carry a two-number suffix that refers to the type of power supply and digit color. Refer to the following tables:

<b>BA</b>	Baseball
-----------	----------

<b>-11</b>	120 V, with red digits
<b>-21</b>	120 V, with amber digits
<b>-12</b>	240 V, with red digits
<b>-22</b>	240 V, with amber digits

### 1.4 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)**

This control console manual is available online at [www.daktronics.com/manuals](http://www.daktronics.com/manuals).

### 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: Specifications

The chart on the following pages details all of the mechanical specifications, circuit specifications and power requirements for each display in this manual. Models are listed in alphanumeric order.

**Notes:**

- 1) All displays require a 120 V AC, 15 A circuit. Displays with a 240 V A C power requirement are also available.
- 2) Signal wire must be minimum of 22 AWG with shield. Daktronics recommends W-1234.
- 3) TNMC LEDs are the same color as the LED digits on the scoreboard.

Model & Options	Number of Sections	Dimensions: Height (H), Width (W), Depth (D)	Weight	Watts	Amps 120 / 240 V AC	Driver # & Address
<b>BA-2001</b>	1 Total	H 7'-0", W 28'-0", D 8" (2134 mm, 8534 mm, 203 mm)	640 lb (291 kg)	900 W	7.5 A / 3.75 A	A1 67 A2 68 A3 69
w/ TNMC	(same)	(same)	720 lb (327 kg)	1200 W	10 A / 5 A	TNMC 221
<b>BA-2002</b>	2 Total	H 9'-4", W 36'-0", D 8" (2845 mm, 10973 mm, 203 mm)	1116 lb (506 kg)	900 W	7.5 A / 3.75 A	A1 67 A2 68 A3 69
	Top	H 4'-0", W 36'-0", D 8" (1219 mm, 10973 mm, 203 mm)				
	Bottom	H 5'-4", W 36'-0", D 8" (1626 mm, 10973 mm, 203 mm)				
w/ TNMC	(same)	(same)	1236 lb (561 kg)	1200 W	10 A / 5 A	TNMC 221
<b>BA-2008</b>	1 Total	H 7'-0", W 28'-0", D 8" (2134 mm, 8534 mm, 203 mm)	640 lb (291 kg)	1200 W	10 A / 5 A	A1 67 A2 68 A3 69 A4 11
w/ TNMC	(same)	(same)	720 lb (327 kg)	1500 W	12.5 A / 6.25 A	TNMC 221
<b>BA-2009</b>	2 Total	H 9'-4", W 36'-0", D 8" (2845 mm, 10973 mm, 203 mm)	1236 lb (561 kg)	1200 W	10 A / 5 A	A1 67 A2 68 A3 69 A4 11
	Top	H 4'-0", W 36'-0", D 8" (1219 mm, 10973 mm, 203 mm)				
	Bottom	H 5'-4", W 36'-0", D 8" (1626 mm, 10973 mm, 203 mm)				
w/ TNMC	(same)	(same)	1356 lb (615 kg)	1500 W	12.5 A / 6.25 A	TNMC 221

Model & Options	Number of Sections	Dimensions: Height (H), Width (W), Depth (D)	Weight	Watts	Amps 120 / 240 V AC	Driver # & Address
<b>BA-2018</b>	4 Total	H 13'-0", W 42'-0", D 8" (3962 mm, 12802 mm, 203 mm)	2530 lb (1148 kg)	1200 W	10 A / 5 A	A1 66
	Top Left	H 7'-6", W 23'-0", D 8" (2438 mm, 7010 mm, 203 mm)				A2 65
	Bottom Left	H 5'-6", W 23'-0", D 8" (2134 mm, 7010 mm, 203 mm)				A3 64
	Top Right	H 7'-6", W 19'-0", D 8" (2438 mm, 5791 mm, 203 mm)				A4 01
	Bottom Right	H 5'-6", W 19'-0", D 8" (2134 mm, 5791 mm, 203 mm)				
w/ TNMC	(same)	(same)	2730 lb (1238 kg)	1600 W	13.5 A / 6.7 A	TNMC 221

## Section 3: Mechanical Installation

Mechanical installation consists of installing concrete footing and steel beams and mounting the scoreboard and accompanying ad panels to the beams.

### 3.1 Footings & Beams

The installation specification drawings in **Appendix A** show the recommended number of beams and spacing between them for each scoreboard in this manual. The drawings also indicate the size of beams required to support the scoreboard at different heights and at various wind speeds. Use the following table to determine which drawings provide the installation specifications for each model:

Models	Drawing Title	Number
BA-2001, BA-2008	28' Width Scoreboard Installation Specs	<b>A-316971</b>
BA-2002, BA-2009	36' Width Scoreboard Installation Specs	<b>A-317277</b>
BA-2018	Shop DWG, BA-2018, Pole Mount	<b>B-223556</b>
	Shop DWG, BA-2018, Horiz Tubes	<b>B-222672</b>

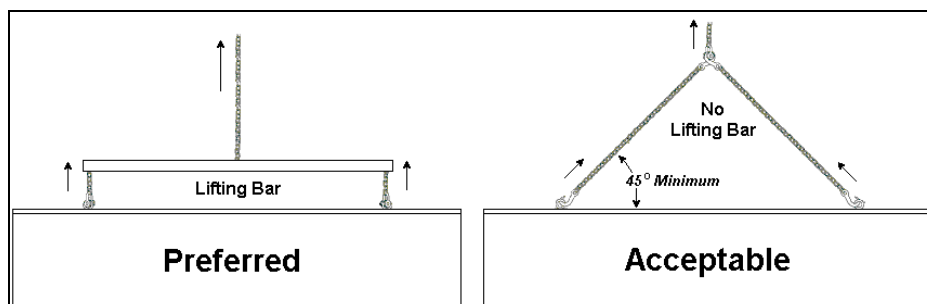
The column and footing size dimensions are to assist with estimating installation costs. They are estimates only and are not intended for actual construction purposes. Be sure that the installation complies with local building codes and is suitable for the particular soil and wind conditions. The columns, 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.

### 3.2 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 a  $\frac{1}{8}$ " aluminum plate or steel nut plate.

**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.



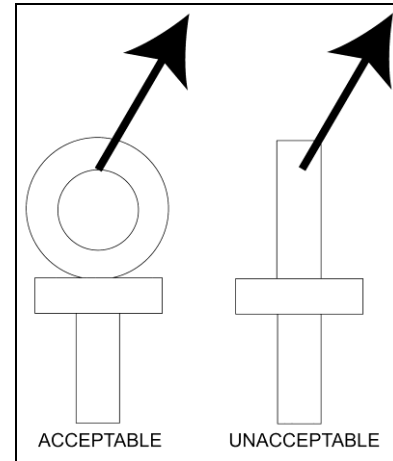
**Figure 4: Lifting Methods**

**Figure 4** 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 4**, 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 degrees.

Do NOT attempt to lift the display if the angle is less than 45 degrees. 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 5**.



**Figure 5: Eyebolt Plane Load**

**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.

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.

### 3.3 Scoreboard Mounting

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. There are cables extending from the top of the lower section. Guide these cables into the hole in the bottom of the upper section for later connection. Refer to **Section 4.5** for more information on the power/signal connections between sections.

Scoreboard models in this manual are typically mounted in one of two ways:

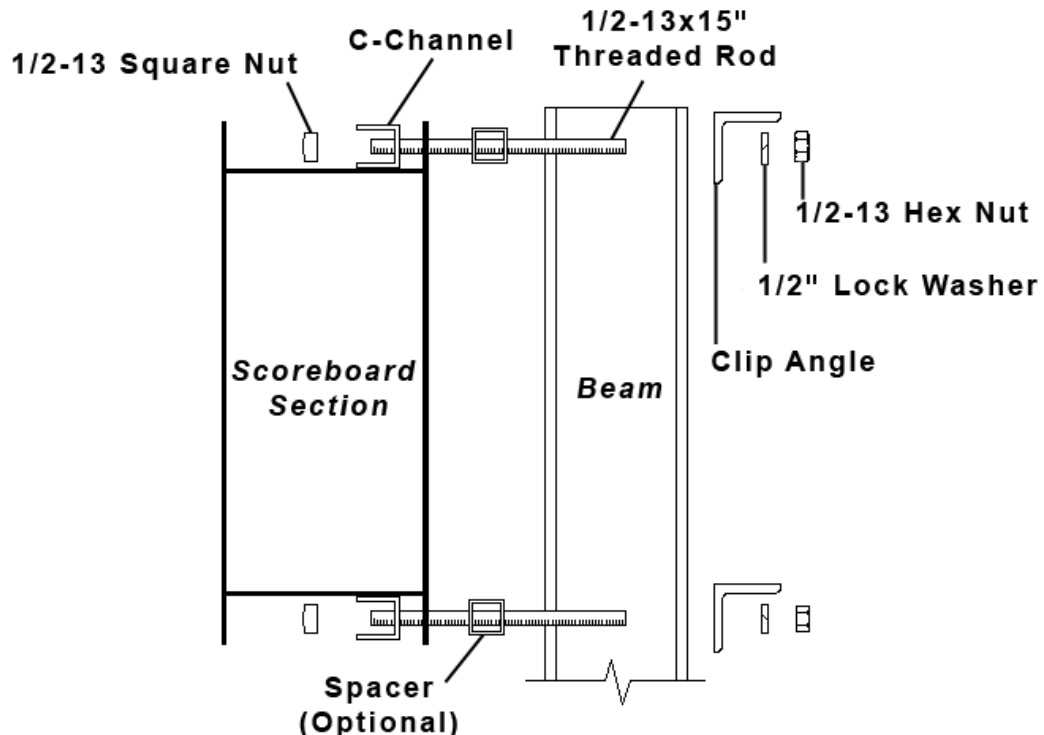
- 1) clamped to vertical beams using mounting angles and long, threaded rods or
- 2) permanently welded to tubular horizontal supports.

## Clamping to Verticals

An inverted channel mounting installation uses C-channels; clip angles; 1/2-13" threaded rods; and 1/2" square nuts, hex nuts, lock washers, and optional spacers. Refer to **Figure 6** and **Drawing A-55101** in **Appendix A**.

Mount the scoreboard as follows:

1. Place the C-channel against the upper and lower rear flanges of the scoreboard.
2. Use the width of the beam to determine the appropriate hole combination to use for the bolts. The bolts should be kept as close to the beam as possible.
3. With the C-channel as a template, use a 9/16" bit to drill holes in the upper and lower rear flanges of the scoreboard cabinet where the bolts will pass through.
4. Place the 1/2" square nuts inside the C-channel and thread the 1/2-13" rods through the C-channel, rear flange of the scoreboard cabinet, and spacer (if used).
5. Lift the scoreboard into position with the bolts still in place. Position the scoreboard at the front of the beams with the threaded rods extending from the rear flanges.
6. With the threaded rod straddling the beams, place mounting angles over each pair of bolts and secure with 1/2" lock washers and hex nuts.
7. Make final adjustments in the positioning of the scoreboard.
8. Make sure that the threaded rods are perpendicular to the scoreboard, and tighten all of the 1/2" hex nuts.



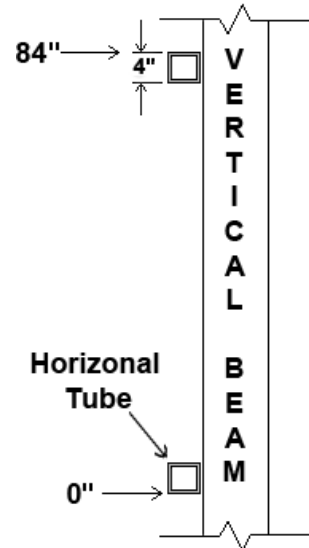
**Figure 6:** C-channel Mounting Method, Side View

## Welding to Horizontals

Steel clip angles are first bolted to the back of each scoreboard section. These clip angles are then welded on three sides to a horizontal tube, which itself has been welded to the support beams. Refer to the sections below for suggested horizontal tube spacing.

### Models BA-2001 & BA-2008

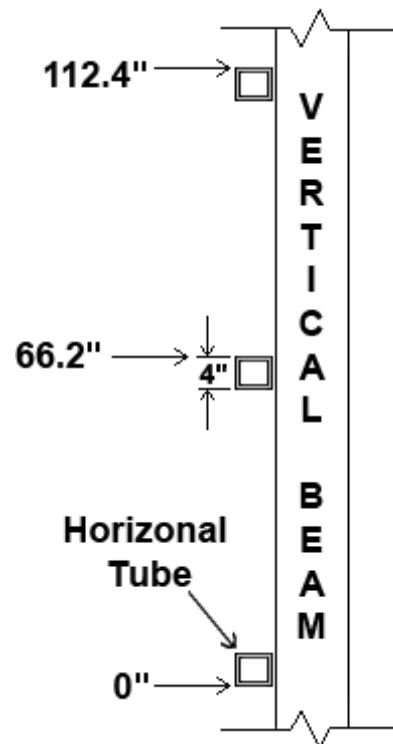
**Figure 7** shows the spacing of the horizontal tubes for BA-2001 and BA-2008 single-section scoreboards. The horizontal tubing must have a vertical dimension (height) of 4" (102 mm). The bottom of the first horizontal tube is level with the bottom of the scoreboard and is considered the zero mark for measuring the other horizontal tube. The second horizontal tube is at 84" (2134 mm), including the height of the tube, and will be flush with the top of the scoreboard. Spacing may vary depending on the installation. Refer to any project-specific shop drawings for exact tube and clip angle spacing.



**Figure 7:** Tube Spacing, BA-2001 & BA-2008

### Models BA-2002 & BA-2009

**Figure 8** shows the spacing of the horizontal tubes for BA-2002 and BA-2009 multi-section scoreboards. The horizontal tubing must have a vertical dimension (height) of 4" (102 mm). The bottom of the first horizontal tube is level with the bottom of the scoreboard and is considered the zero mark for measuring the other two horizontal tubes. The middle horizontal tube is at 66.2" (1681 mm), including the height of the tube. The top horizontal tube is at 112.4" (2855 mm), including the height of the tube, and will be flush with the top of the scoreboard. Spacing may vary depending on the installation. Refer to any project-specific shop drawings for exact tube and clip angle spacing.



**Figure 8:** Tube Spacing, BA-2002 & BA-2009



### Model BA-2018

Figure 9 shows the spacing of the horizontal tubes for BA-2018 scoreboards. The horizontal tubing must have a vertical dimension (height) of 4" (102 mm). The bottom of the first horizontal tube is level with the bottom of the scoreboard and is considered the zero mark for measuring the other two horizontal tubes. The middle horizontal tube is at 68" (1727 mm), including the height of the tube. The top horizontal tube is at 156" (3962 mm), including the height of the tube, and will be flush with the top of the scoreboard. Refer to **Drawing B-238121** in **Appendix A** or project-specific shop drawings for exact tube and clip angle spacing.

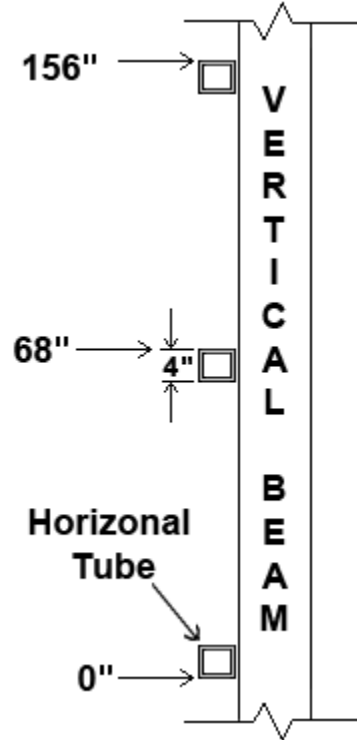


Figure 9: Beam Spacing, BA-2018

Figure 10 and Drawing A-83301 in Appendix A illustrate the mounting of the display to horizontal tubing.

1. Visually check the display structure before beginning the installation process.
  - Ensure that the structure will provide a straight and square mounting frame for the scoreboard/display.
  - Check to ensure the mounting frame will not give way at unsupported points after the scoreboard/display is mounted. If any problems are noted, take corrective action immediately.
2. Bolt the clip angles to the rear of the scoreboard sections with 1/2" hardware. Refer to project-specific shop drawings for exact locations of the clip angles.
3. Lift the display section into position. Refer to Section 3.2.
4. Adjust the clip angles as needed so that they are firmly against the horizontal tube. During the installation of the first section, carefully monitor the horizontal and vertical straightness of the display. If the mounting structure does not provide a straight or square mounting surface, it will be necessary to place shims between the display section and the mounting surface to ensure straightness.
5. Weld the three edges of each clip angle that are in contact with the horizontal tube.

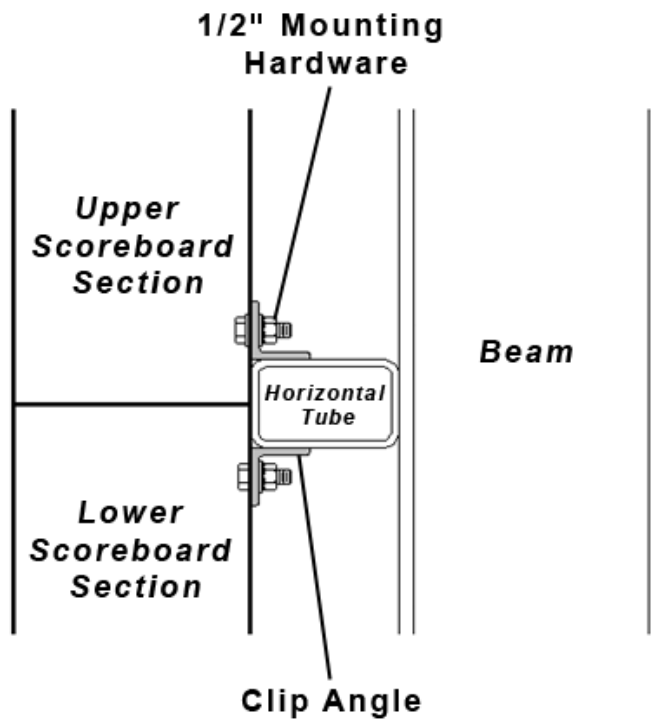


Figure 10: Scoreboard Mounting Detail, Side View

### 3.4 Ad Panel Mounting

The installation uses C-channels; clip angles; 1/2-13" threaded rods; and 1/2" square nuts, hex nuts, lock washers, and optional spacers similar to the clamping mounting method above. Refer to Figure 11 and Drawing A-52187 in Appendix A.

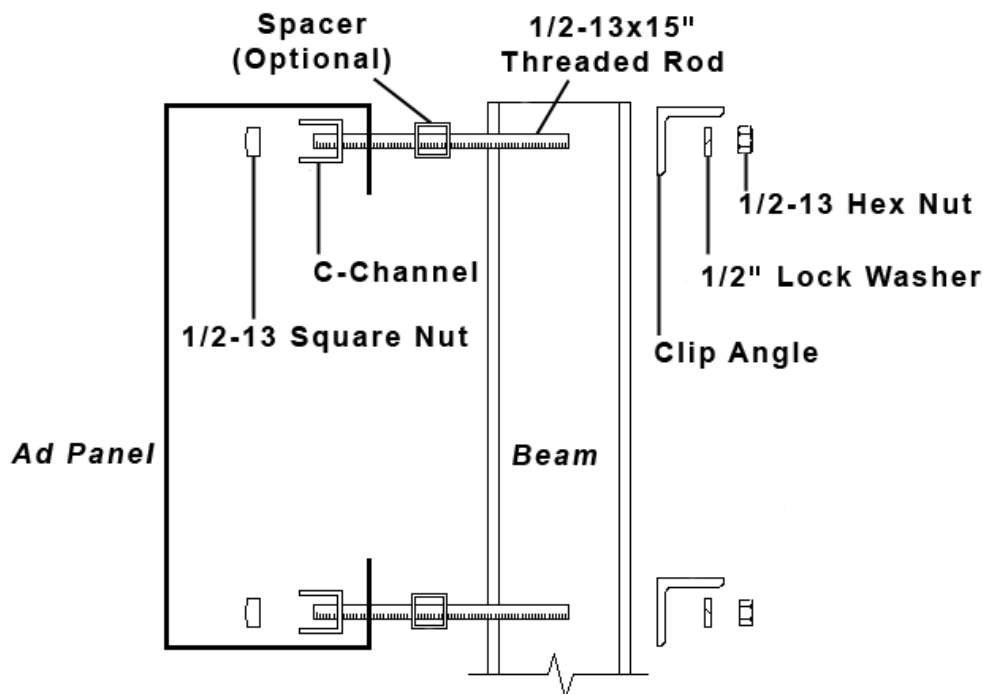


Figure 11: Ad Panel Mounting with C-channel, Side View

Mount the ad panel(s) as follows:

1. Use the width of the beam to determine which hole combination to use for the bolts. Be sure to keep the bolts as close to the beam as possible.
2. Using the clip angle as a template, use a  $9/16$ " bit to drill holes in the upper and lower rear flange of the ad panel where the C-channel supports will be placed.
3. Position the C-channel *inside* the ad panel cabinet along the upper and lower rear flanges as shown in **Figure 11**.
4. Place  $1/2$ " square nuts inside the channel and thread the  $1/2$ -13" rods through the C-channel, rear flange of the ad panel, and spacer (if used).
5. Lift the ad panel into position with the rods still in place.
6. With the threaded rod straddling the beams, place mounting angles over the ends of each pair of bolts and secure with  $1/2$ " lock washers and hex nuts.
7. Make final adjustments in the positioning of the ad panel.
8. Make sure that the threaded rods are perpendicular to the ad panel, and tighten all of the  $1/2$ " hex nuts.

Some ad panels have back sheets that must be removed before the display can be installed. After marking and drilling holes in the upper and lower rear flanges of the ad panel, remove the back sheets above and below the hole locations. Position the C-channel inside the cabinet and attach the square nuts to the threaded rods as described above. Be sure to replace the back sheets after placing the square nuts inside the channel and threading the rods through the holes in both the upper and lower rear flanges.

### 3.5 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.



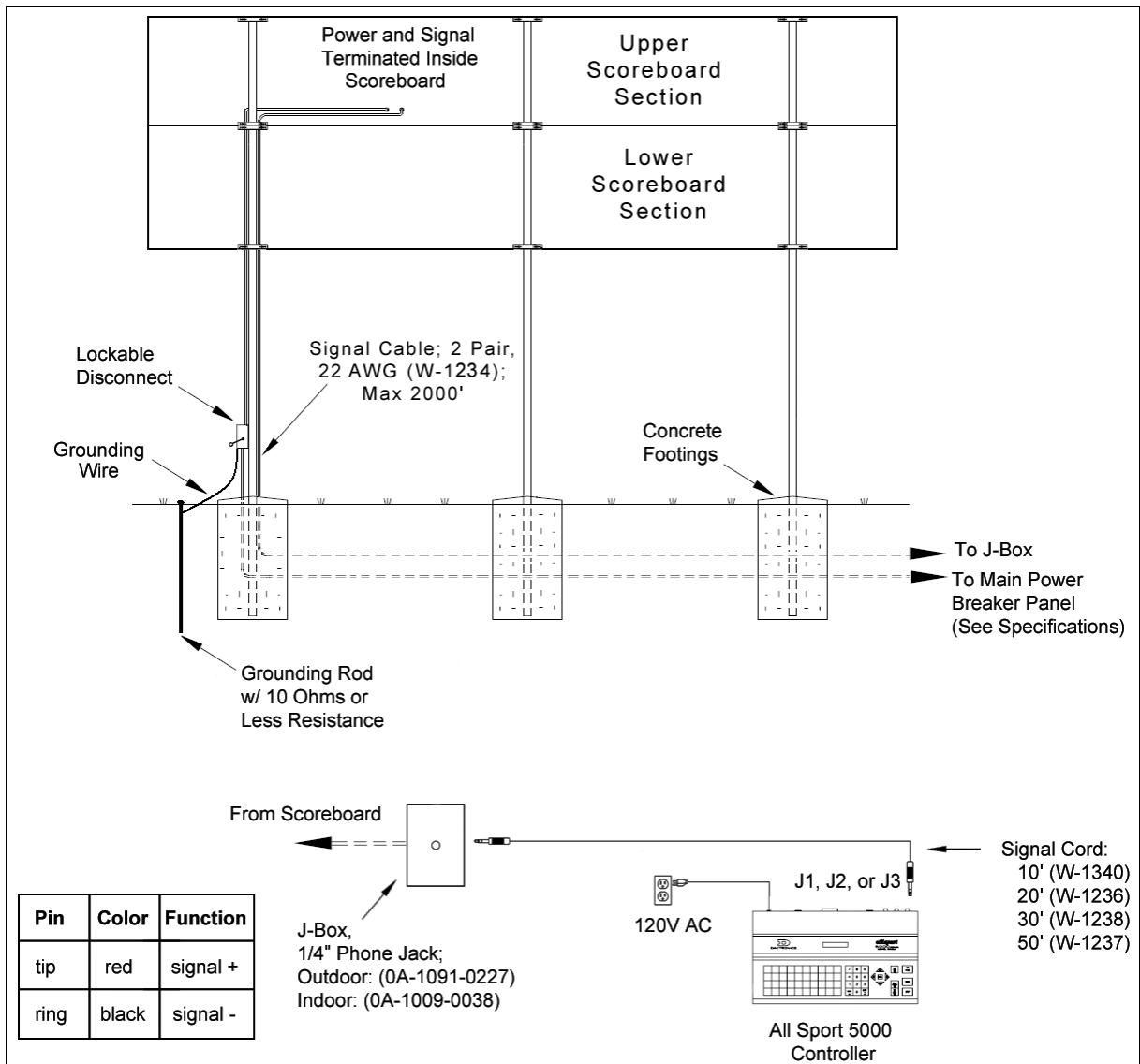
## Section 4: Electrical Installation

**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.

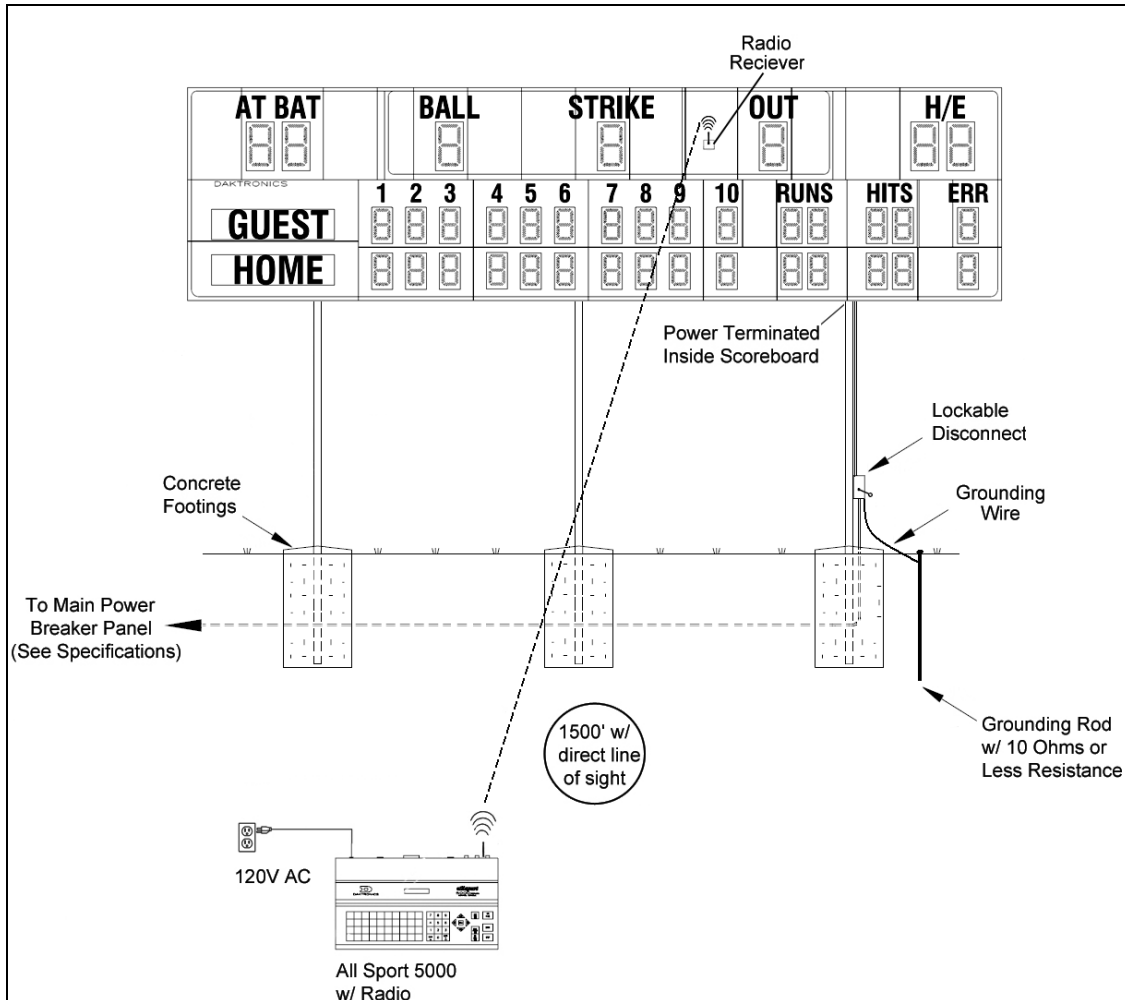
### 4.1 Installation Overview

The diagram shown in **Figure 12** illustrates a typical wired setup between a multi-section outdoor scoreboard and controller. Daktronics part numbers are shown in parentheses.



**Figure 12:** Wired Installation

The diagram shown in **Figure 13** illustrates a typical wireless setup between a multi-section outdoor scoreboard and controller. Daktronics part numbers are shown in parentheses.



**Figure 13:** Wireless Installation

## 4.2 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.

The scoreboards in this manual require a dedicated 120 V or 240 V circuit for incoming power (refer to the Specifications in **Section 2**). The display itself has no breakers or fuses.

**WARNING:** It is critical that 120 V scoreboard circuits be fused at 15 A and that all conductors used must be designed to pass a 15 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

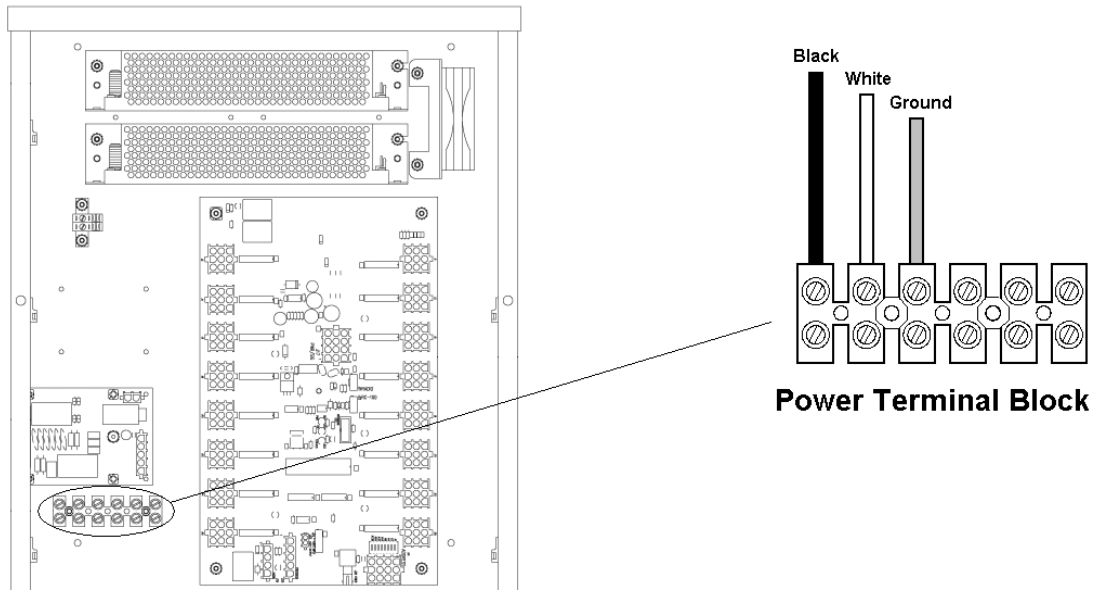
Both power and signal cabling is routed into the scoreboard from the rear through two plastic plugs for conduit connection. If no conduit knockouts are available, installers will have to drill holes into the back sheet of the scoreboard to allow entrance of power/signal wires. Note that systems with radio control do not require external signal wiring.

All power and signal wiring terminates at the master driver enclosure. Refer to the component location drawings in **Appendix A** for precise power/signal termination location for each model.

1. Look for a warning label similar to **Figure 14** to locate the appropriate front or rear access panel to the driver enclosure.
2. Loosen the screws or latches to open the access panel. Front panels are hinged and swing open. Rear access panels can be lifted up and out over the screws through keyholes.
3. Loosen the screws securing the metal cover of the driver enclosure, and lift the cover up and out over the screws through keyholes to expose the driver components.
4. Connect the appropriate wires coming through the rear of the scoreboard to the power terminal block, as shown in **Figure 15**.
5. Reattach the metal driver enclosure cover and secure the access panel.



**Figure 14:** Power Warning Label



### Driver Enclosure

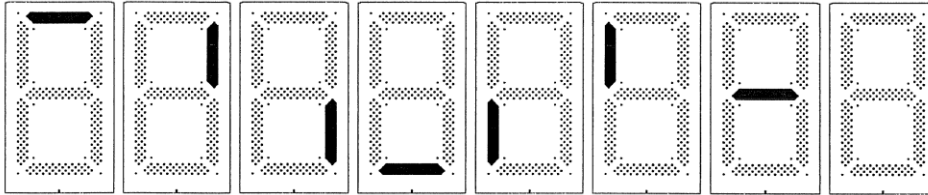
**Figure 15:** Driver Enclosure & Power Terminal Block

**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.



### 4.3 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 16** shows an example of the LED bar test pattern that each digit performs.



**Figure 16:** Digit Segment POST

#### Radio Settings

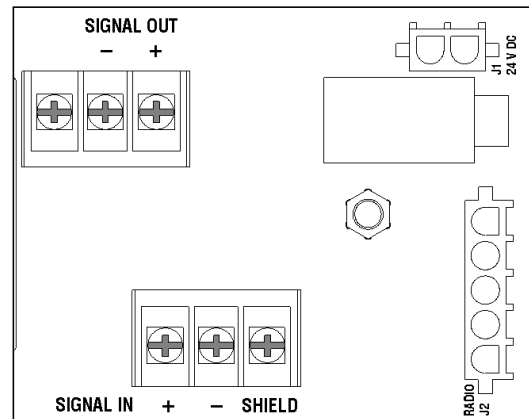
If a radio receiver is installed, the radio Broadcast and Channel settings will be displayed in on the scoreboard during the POST. These values must match the settings in the control console (refer to the manual listed in **Section 1.4**). Refer to **Section 5.9** for more information on radio installations.

### 4.4 Signal Connection

For wired setups, route signal cable through the rear of the scoreboard via conduit to the signal surge arrester card (**Figure 17**), located just above the power termination block in the driver enclosure.

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

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

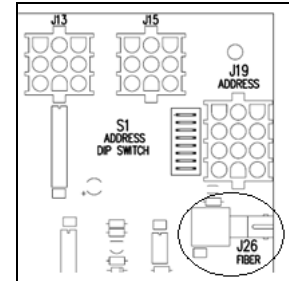


**Figure 17:** Signal Surge Arrester Card

For signal cable, Daktronics recommends, as a minimum, single-pair, shielded cable, 22 AWG (Daktronics part number 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  $\mu\text{m}$ , and 2-core fiber cable is recommended (Daktronics part number W-1242). See **Figure 18** for the location of the fiber connector on a 16-column driver. This method requires a signal converter between the All Sport console's scoreboard output and the fiber optic cable (not provided by Daktronics).



**Figure 18:** Driver Fiber Connection Location

## Multiple Driver Connections

All of the scoreboard models in this manual require multiple drivers 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 4.5**.

**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](http://www.daktronics.com/manuals), for more information about setting up an SOP system.

## 4.5 Power/Signal Connections Between Sections

Most multi-section outdoor scoreboards use a single power/signal interconnect cable between a driver in the upper section and a driver in the lower section.

Refer to the component location drawings in **Appendix A** for exact driver locations.

1. On the upper section, open the appropriate access panel to locate the bundle of interconnect cable coming from the driver.

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

2. Route the interconnect cable through the hole in the bottom of the upper cabinet through the hole in the top of the lower cabinet, and plug it into the driver.
3. With four-section scoreboards, be sure to also connect any plugs extending from the right side of the left cabinets to the corresponding jacks on the left side of the right cabinets.

## 4.6 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 5: Scoreboard Troubleshooting

### IMPORTANT NOTES:

1. Always disconnect power before doing any repair work on the scoreboard.
2. Permit only qualified service personnel to access internal display electronics.
3. Disconnect power when not using the scoreboard.

For assistance in the maintenance of team name message centers (TNMCs) or other optional scoreboard message centers, refer to **Section 6** or the service manual that accompanies those units.

### 5.1 Troubleshooting Table

The table below lists potential problems with the scoreboard and indicates possible causes and corrective actions. This list does not include every symptom that may be encountered, but it does present several of the most common situations that may occur.

Many of the solutions offered below provide references to other sections within this manual or to supplemental product manuals with further detail on how to fix the problem.

If a problem occurs that is not listed or that cannot be resolved using the solutions in the following table, contact Daktronics using the information provided in **Section 5.13**.

Problem	Possible Cause	Solution/Items to Check
Scoreboard doesn't light and console doesn't work	No power to the scoreboard	Check that the main circuit breaker for the scoreboard is on.
		Check that the scoreboard is receiving the correct 120 (or 240) V AC power (see <b>Section 2</b> ).
	No power to console	Ensure the console is plugged into a 120 (or 240) V AC power supply.
		Swap the console with one known to work correctly, and enter the proper sport code and/or radio settings to test. Replace console if necessary.
Scoreboard digits don't light, but console works	No wired signal from console	Check that the scoreboard is receiving the correct 120 (or 240) V AC power (see <b>Section 2</b> ).
		Check that the red DS2 LED on the driver lights up when sending commands from the control console (see <b>Section 5.8</b> ).
	No radio signal from console	Cycle power to the scoreboard and watch for radio receiver broadcast/channel settings (see <b>Section 5.9</b> ).

Problem	Possible Cause	Solution/Items to Check
		Check that the green POWER and amber RADIO IN RANGE indicators on the radio receiver in the scoreboard light up when the control console is powered on (see <b>Section 5.9</b> ). Keep the console between 20 to 1500 feet from the scoreboard.
		Move the console 20-30 feet from the scoreboard and test again. Verify that both the console and scoreboard antennae are securely tightened and in a vertical position.
		Replace the radio receiver.
	No signal to driver	Check that the scoreboard is receiving the correct 120 (or 240) V AC power (see <b>Section 2</b> ).
		Check that the red DS2 LED on the driver lights up when sending commands from the control console (see <b>Section 5.8</b> ).
		Swap the driver with one known to work correctly and with the same part number to verify the problem. Replace if necessary ( <b>Section 5.8</b> ).
No power to driver	Check that the green DS1 LED on the driver is always lit up when the scoreboard is powered on (see <b>Section 5.8</b> ).	
Scoreboard digits light, but not in the correct order	Incorrect sport code	Ensure the correct sport code is being used for the scoreboard model. Refer to the operation manual for the console being used (see <b>Section 1.4</b> ).
	Incorrect driver address	Check that the scoreboard driver(s) are set to the correct address(es) (see <b>Section 5.8</b> ).
Scoreboard digits light, console works, but no display on scoreboard	No wired signal from console	(See solution on previous page)
	No radio signal from console	(See solution on previous page)
	Bad/damaged field wiring	Check that the red DS2 LED on the driver lights up when sending commands from the control console (see <b>Section 5.8</b> ).
Scoreboard works, but some LEDs always stay on	Short in digit, segment, or indicator circuit	Swap the digit/segment/indicator with one known to work correctly to verify the problem. Replace if necessary (see <b>Sections 5.4-5.6</b> ).

Problem	Possible Cause	Solution/Items to Check
Scoreboard works, but some LEDs do not light or they blink	Bad connection	Verify the Mate-N-Lok connector on the back of the digit circuit board is secure (see <b>Section 5.2</b> ). Verify power/signal interconnect(s) between scoreboard sections properly connected (see <b>Section 4.5</b> )
	Bad digit or driver	Swap the digit/driver with one known to work correctly to verify the problem. Replace if necessary (see <b>Sections 5.4-5.6</b> for digits or <b>Section 5.8</b> for drivers).
Scoreboard works, but some digits do not light	Bad digit or driver	(see solution above)
	Incorrect sport code	(see solution on previous page)
	Incorrect driver address	(see solution on previous page)
	Wrong console controlling scoreboard	Another console's radio signal could be transmitting to the scoreboard. An example would be football and baseball scoreboards that are within 1500 feet of each other (see <b>Section 5.9</b> ).
	Radio interference	There may be other radio transmissions in the area that overpower the console. If it is not possible to disable the interfering device, it may be necessary to run a wired signal connection instead.

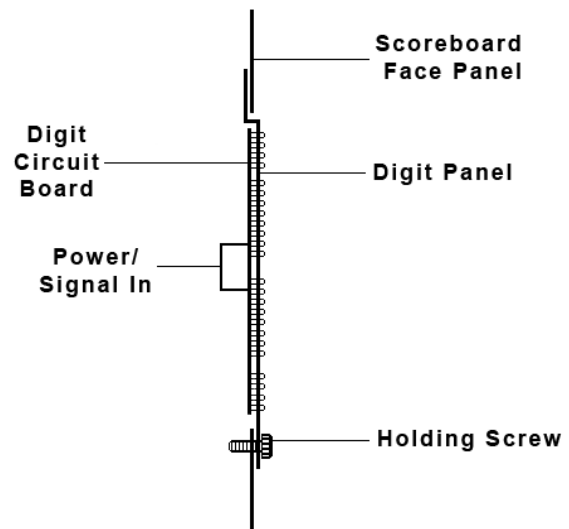
## 5.2 Component Access

All internal electronic components are reached by opening an access door or a digit panel on the display.

Digit panels are held in place on the scoreboard face by an offset flange across the top and by screws at the bottom, as shown in **Figure 19**.

To open a digit panel:

1. Hold the digit panel in place by putting hand pressure on it and remove the holding screws.
2. Carefully lift the panel away from the scoreboard, sliding it out and down.



**Figure 19:** LED Digit Panel

**Note:** If the panel is not held in place when the screws are removed, it could drop and possibly damage LEDs or the digit harness.

With a non-digit access panel, simply remove the top, side and bottom screws holding it in place. Some panels are hinged and swing open when the screws are removed or loosened. Rear access panels can be lifted up and out over the screws through keyholes.

**Note:** When closing the access panel, make sure all latches/screws are holding the door firmly in place to prevent moisture and debris from entering the scoreboard.

## 5.3 Component Locations

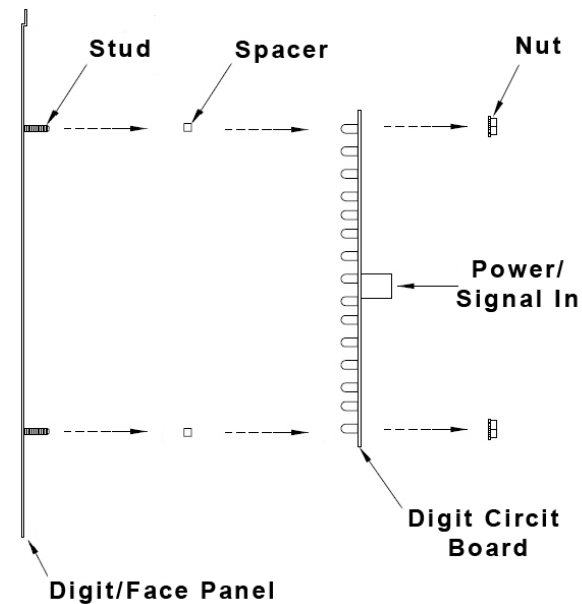
Component location varies with each scoreboard model. Refer to the component location drawings in **Appendix A**. Drivers and power and signal components are typically mounted inside the scoreboard behind a digit or access panel.

## 5.4 Replacing Digits

LEDs are embedded in a circuit board that is mounted to the back of the digit panel, as shown in **Figure 20**. Do not attempt to remove individual LEDs. In the case of a malfunctioning LED or digit segment, replace the entire digit circuit board.

To replace a digit circuit board:

1. Open the digit panel as described in **Section 5.2**.
2. Disconnect the power/signal plug from the back of the digit by squeezing together the locking tabs and pulling the connector free.
3. Use a  $\frac{9}{32}$ " nut driver to remove the nuts securing the digits to the inside of the panel, and then lift the digit off the standoff studs.
4. Position a new digit over the studs, making sure the rubber side of the rubber-backed spacer is facing the digit circuit board.
5. Tighten the nuts.
6. Reconnect the power/signal connector.



**Figure 20:** Digit Assembly

**Note:** This is a keyed connector and it will attach in one way only. Do not attempt to force the connection.

7. Close and secure the digit panel, then power up and test the scoreboard to see if changing the digit has resolved the problem.

## 5.5 Replacing Digit Segments

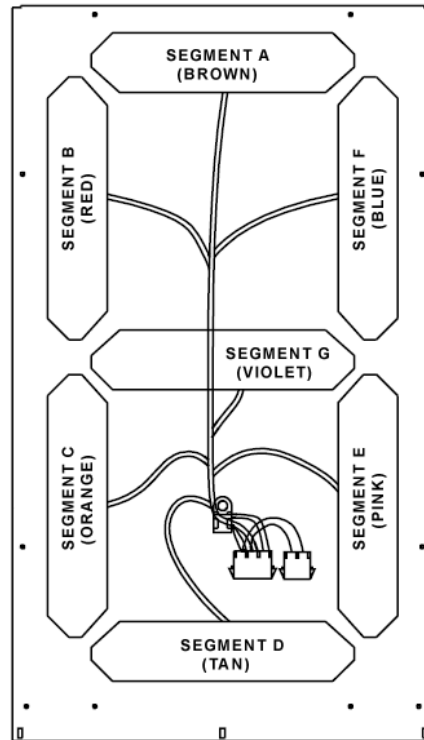
Some larger digits (24"/30") are constructed with individual circuit board segments. As with smaller digits, the digit segment circuit boards are mounted to the back of a digit panel (**Figure 21**). It may be possible to make repairs by removing just the defective segment. Do not attempt to remove individual LEDs.

To replace a digit segment:

1. Open the digit panel as described in **Section 5.2**.
2. Disconnect the 2- or 4-pin power/signal connector from the back of the digit segment by squeezing together the locking tabs and pulling the connector free.
3. The digit segments are secured to the inside of the panel with fixed machine screws, spacers, and push nuts. The push nuts can be removed in several ways, but a  $9/32$ " nut driver is recommended. Remove the nuts and lift the segment off the standoff studs.
4. Position a new segment over the screws and tighten the nuts.
5. Reconnect the power/signal connector.

**Note:** This is a keyed connector and it will attach in one way only. Do not attempt to force the connection.

6. Close and secure the digit panel, then power up and test the scoreboard to see if changing the digit segment has resolved the problem.



**Figure 21:** Digit Segments & Panel (Rear View)

## 5.6 Replacing Colons, Decimals & Indicators

Colons, decimals, and other indicators are replaced in the same manner as a digit segment.

## 5.7 Power Supplies

Scoreboards with 16-column driver enclosures require a dual power supply assembly.

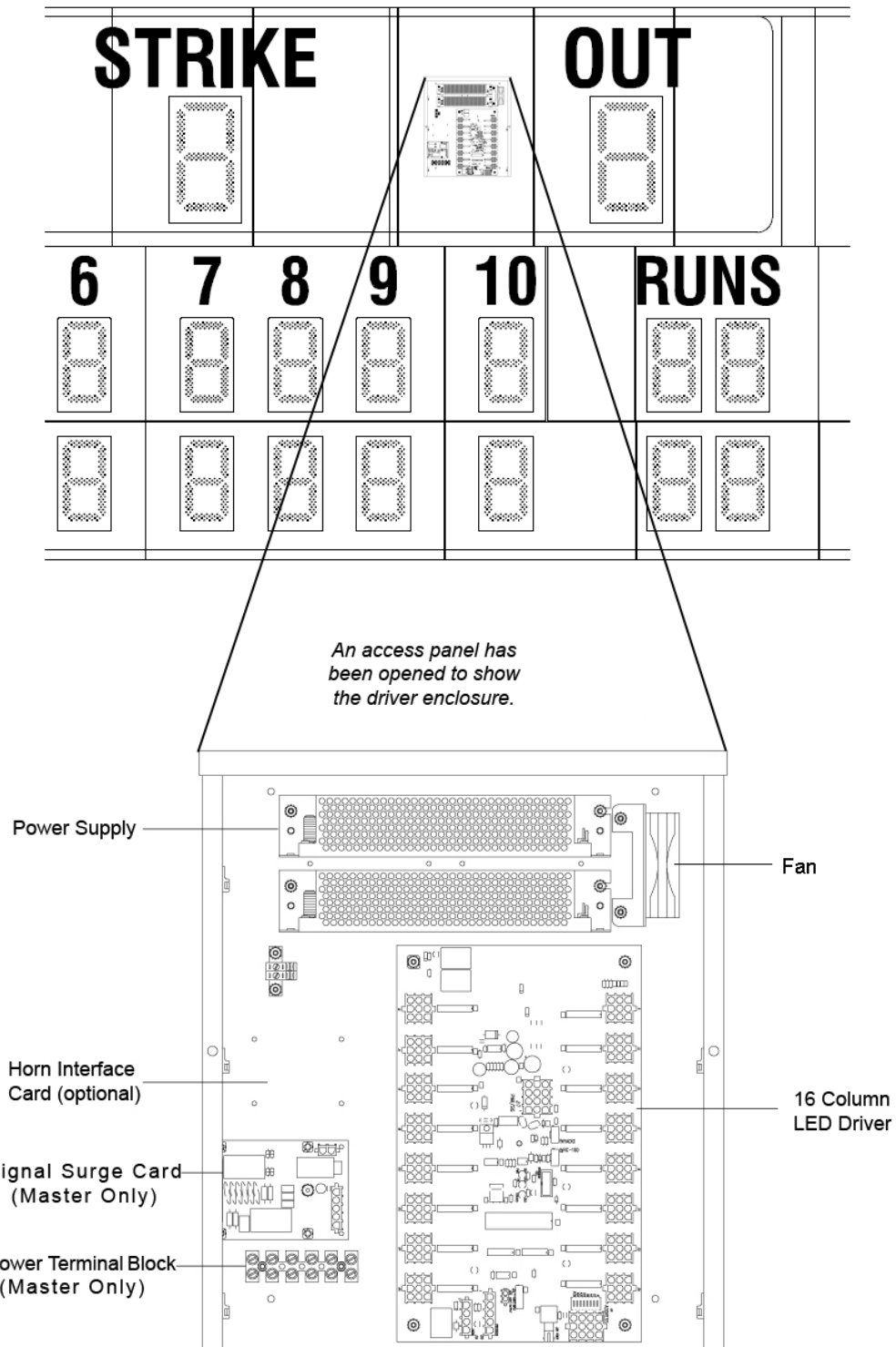
### Replacing a Power Supply

To remove a power supply:

1. Open the access panel as described in **Section 5.2**.
2. Remove the metal cover from the driver enclosure.
3. Locate and disconnect all wires connected to the power supply (**Figure 22**).
4. Use a  $9/32$ " nut driver to remove the hardware securing the power supply.
5. Fasten the new power supply in place and reconnect all wires.

## 5.8 LED Drivers

The LED drivers perform the task of switching digits on and off within the scoreboard. LED drivers are located inside of a driver enclosure. Refer to **Figure 22** to view the location and components of a driver enclosure.



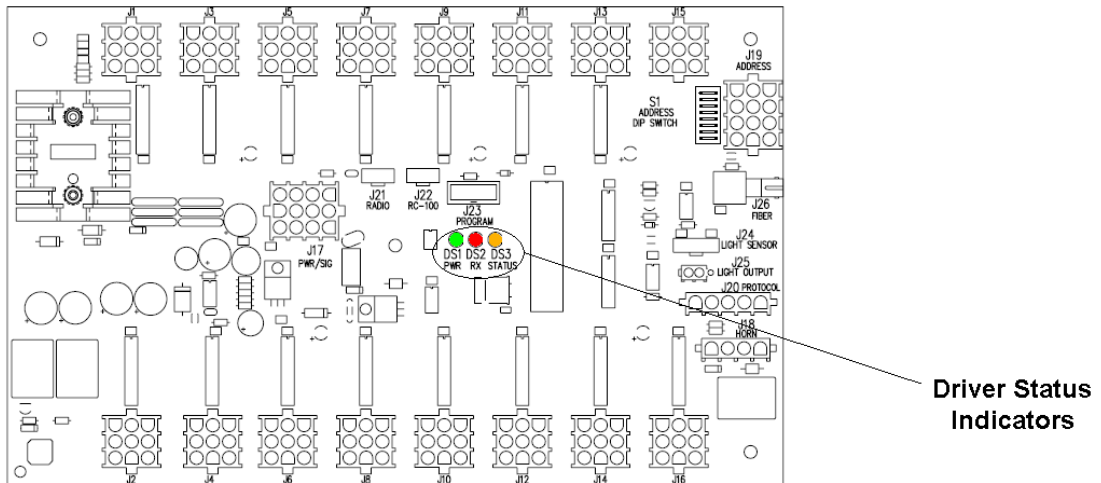
**Figure 22:** Driver Enclosure Location & Components



When troubleshooting driver problems, three LEDs labeled **DS1**, **DS2**, and **DS3** in **Figure 23**, provide the following diagnostic information:

LED	Color	Function	Operation	Summary
DS1	Green	Power	Steady on	DS1 will be on and steady to indicate the driver has power.
DS2	Red	Signal RX	Steady on or blinking	DS2 will be on or blinking when the driver is receiving a signal and off when there is no signal.
DS3	Amber	Status	Blinking	DS3 will be blinking at one second intervals to indicate the driver is running.

**Note:** While it is necessary to have the scoreboard powered on to check the LED indicators, always disconnect scoreboard power before servicing.



**Figure 23:** Driver Status Indicators

### Replacing a Driver

1. Open a digit or access panel as described in **Section 5.2**.
2. Remove the metal cover from the driver enclosure.
3. Disconnect all connectors from the driver by squeezing together the locking tabs and pulling the connectors free.

**Note:** It may be helpful to label the cables to know which cable goes to which connector when reattaching the driver.

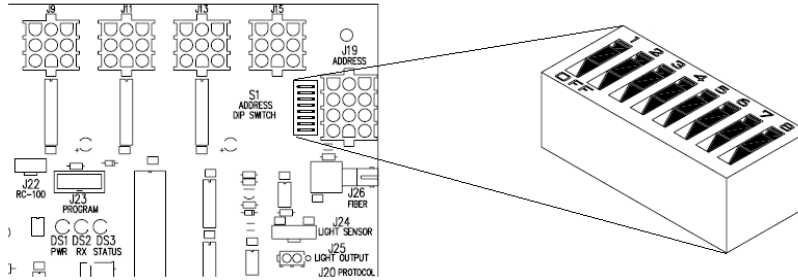
4. Remove the screws or nuts securing the driver to the inside of the enclosure.
5. Carefully lift the driver from the display and place it on a clean, flat surface.
6. Position a new driver over the screws and tighten the nuts.
7. Reconnect all power/signal connectors.

**Note:** The connectors are keyed and will attach in one way only. Do not attempt to force the connections.

8. Ensure the driver is set to the correct address (refer to **Setting the Driver Address**).
9. Close and secure the digit panel, then power up and test the scoreboard to see if changing the driver has resolved the problem.

### Setting the Driver Address

Since the same LED drivers can be used for many scoreboard models, each driver must be set to receive the correct signal input, or address, for the model being used. Addresses are set through the S1 dip switch on the driver (**Figure 24**) using a pen or small, pointed object.



**Figure 24:** Driver Address Dip Switch

Refer to the specifications table in **Section 2** to determine the correct address setting of the driver(s) in a particular scoreboard model and see **Drawing A-290261** in **Appendix A** for addressing information for driver addresses 1 – 128.

Another method of setting the driver address using the J19 address plug is available. This address is set with jumper wires in a 12-pin plug which mates with a jack on the driver. Refer to **Drawing A-115078** for a listing of the wire/pin connections for driver addresses 1 – 128. When using an address plug, it will not be possible to set the address with the S1 dip switch.

### Multiple Drivers

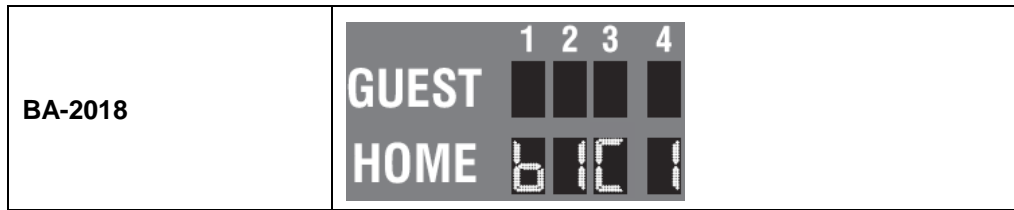
All of the scoreboards in this manual have multiple drivers and operate using a master/slave driver configuration. If it appears as though only a certain group of digits on the scoreboard is not functioning, there may be a problem with the slave driver(s) or the power/signal connection from the other driver(s).

## 5.9 Radio Connections

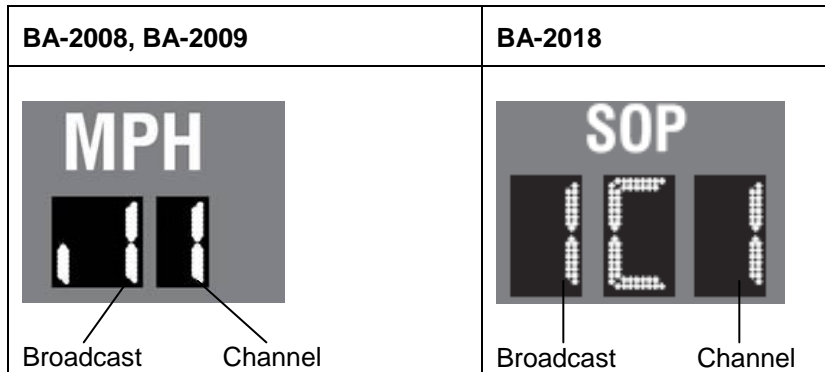
To determine the settings for radio connections between the scoreboard and control console:

1. Cycle power to the scoreboard.
2. After approximately seven seconds, the radio settings will be displayed in the different digits, depending on the scoreboard model.

<p><b>BA-2001, BA-2002</b></p>	<p><b>AT BAT</b>      <b>BALL</b>      <b>STRIKE</b></p> <p>61      0      1</p>
<p><b>BA-2008, BA-2009</b> (channel settings only)</p>	<p><b>MPH</b>      <b>BALL</b>      <b>STRIKE</b></p> <p>       0      1</p>



Scoreboards capable of displaying speed of pitch may also have separate radio settings for the second All Sport console controlling those digits:



**Note:** If these settings do not appear, the radio receiver(s) may need to be repaired/replaced.

The first values are the broadcast settings (“b1”), and the second are the channel settings (“C1”). These values must match the settings within the console. The speed of pitch controller must be set to a different channel than the main scoreboard controller.

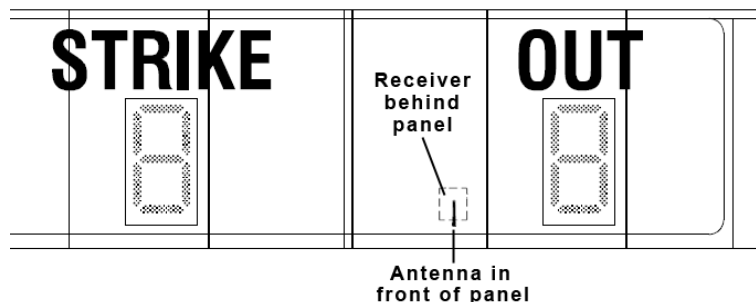
To make sure the current radio settings match the receiver in the scoreboard, refer to the operation manual of the particular control console being used (see **Section 1.4**).

### Radio Interference

If it has been determined that a nearby scoreboard’s radio signal is interfering, the broadcast and channel settings of the radio receiver inside the scoreboard(s) must be changed.

For more information, refer to the **Gen V Radio Installation Manual ED-13831**, available online at [www.daktronics.com/manuals](http://www.daktronics.com/manuals).

1. To locate the radio receiver, look for the antenna sticking out the front of the scoreboard, typically between the STRIKE and OUT digits (**Figure 25**).
2. Open the access panel to which the receiver is attached as described in **Section 5.2**.



**Figure 25:** Radio Receiver Location

3. The radio receiver has a plastic cover. Three status indicator LEDs are visible (**Figure 26**).

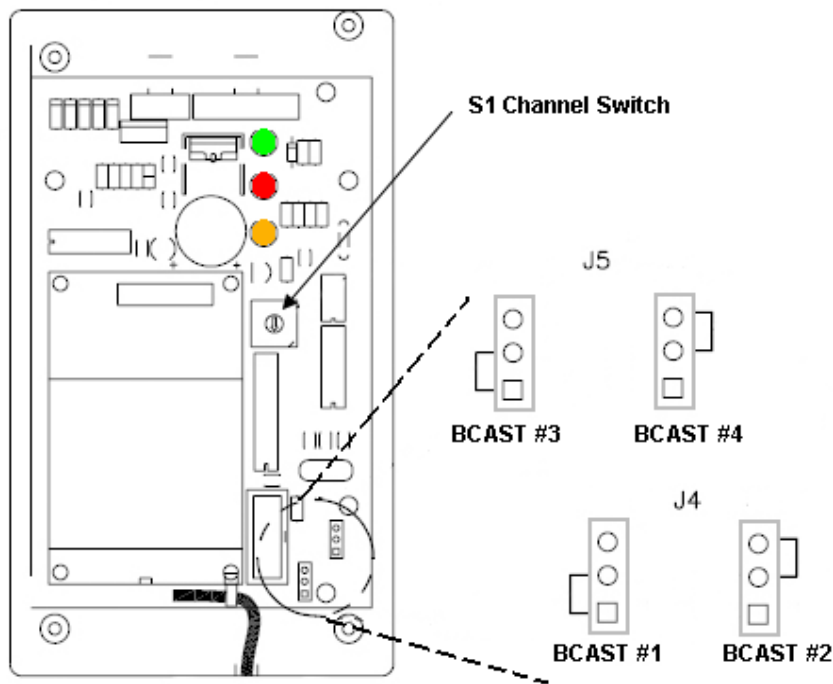
**Note:** While it is necessary to have the scoreboard powered on to check the LED indicators, always disconnect scoreboard power before servicing.

4. Remove the four screws using a #2 Philips screwdriver and lift off the cover.
5. Inside the receiver are a channel switch (S1) and two broadcast jacks (J4, J5) with a jumper.



**Figure 26:** Radio Receiver w/ Cover

**Figure 27** shows the different configurations for the small jumper wire that sets the radio broadcast (BCAST) mode. Move the jumper wire to the desired broadcast location.



**Figure 27:** Radio Receiver w/o Cover

6. Use a small flathead screwdriver to set the S1 switch to the desired channel (1-8).
7. Screw the cover back on and securely close the access panel.
8. Enter the correct sport code and new radio settings into the console to test the radio control (refer to the appropriate scoreboard controller manual).

## 5.10 Segmentation and Digit Designation

In each digit, certain LEDs always go on and off together. These groupings of LEDs are called segments. **Drawing A-38532** in **Appendix A** details which connector pin is wired to each digit segment and the wiring color code used throughout the display.

The component location drawings in **Appendix A** also specify the driver connectors controlling the digits. Numbers shown in hexagons in the upper half of each digit indicate which connector is wired to that digit.

## 5.11 Schematics

For advanced scoreboard troubleshooting and repair, it may be necessary to consult the schematic drawings. These drawings, located in **Appendix A**, show detailed power and signal wiring diagrams of internal display components such as drivers and transformers as well as optional components like TNMCs and radio receivers. Use the following table to determine the driver schematics for a particular model:

Model	Schematic Drawing #
BA-2001 (w/o TNMC)	<b>A-179541</b>
BA-2001 (w/ TNMC)	<b>A-180081</b>
BA-2002 (w/ or w/o TNMC)	<b>A-179593</b>
BA-2008 & BA-2009 (w/ or w/o TNMC)	<b>B-204725</b>
BA-2018 (w/ or w/o TNMC)	<b>B-242532</b>

## 5.12 Replacement Parts

Refer to the following table for common Daktronics scoreboard replacement parts:

Description	Location	Daktronics Part #
J-Box, 1/4" phone, Indoor	Signal	0A-1009-0038
J-Box, 1/4" Phone, outdoor	Signal	0A-1091-0227
Signal surge board	Driver enclosure	0P-1110-0011
Digit, 15", 7-seg outdoor LED, red	Scoreboard	0P-1192-0200
Digit, 18", 7-seg outdoor LED, red	Scoreboard	0P-1192-0202
Digit segment, 24" outdoor LED, red (vertical)	Scoreboard	0P-1192-0204
Digit segment, 24" outdoor LED, red (horizontal)	Scoreboard	0P-1192-0205
Digit segment, 30" outdoor LED, red (vertical)	Scoreboard	0P-1192-0206
Digit segment, 30" outdoor LED, red (horizontal)	Scoreboard	0P-1192-0207
Digit, 15", 7-seg outdoor LED, amber	Scoreboard	0P-1192-0214
Digit, 18", 7-seg outdoor LED, amber	Scoreboard	0P-1192-0216
Digit segment, 24" outdoor LED, amber (vertical)	Scoreboard	0P-1192-0218

Description	Location	Daktronics Part #
Digit segment, 24" outdoor LED, amber (horizontal)	Scoreboard	0P-1192-0219
Digit segment, 30" outdoor LED, amber (vertical)	Scoreboard	0P-1192-0220
Digit segment, 30" outdoor LED, amber (horizontal)	Scoreboard	0P-1192-0221
Driver, 16 col, outdoor, LED	Driver enclosure	0P-1192-0383
Power supply, 24 V, 150W (120 V AC)	Driver enclosure	A-1720
Power Supply; 24 V, 150W (240 V AC)	Driver enclosure	A-1733
Fan, 32 cfm, 24 V DC, 3.15 sq. in	Driver enclosure	B-1030
Plug, 1/4" phone	Signal	P-1003
Signal cord; 1/4" phone 20'	Signal	W-1236
Signal cord; 1/4" phone 50'	Signal	W-1237
Signal cord; 1/4" phone 30'	Signal	W-1238

## 5.13 Daktronics Exchange and Repair & Return Programs

### Exchange Program

The Daktronics Exchange Program is a quick, economical service for 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 not only saves money but also decreases equipment downtime. Customers who follow the program guidelines explained below will receive this service.

### *Before Contacting Daktronics*

Identify these important numbers:

Display Serial Number: \_\_\_\_\_

Display Model Number: \_\_\_\_\_

Contract Number: \_\_\_\_\_

Date 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 (primary through community/junior colleges), religious organizations, municipal clubs and community centers	877-605-1115
Universities and professional sporting events, live events for auditoriums and arenas	866-343-6018

2. **When the new exchange part is received, mail the old part to Daktronics.**  
If the replacement part fixes the problem, send in the problem part which is being replaced.
  - a. Package the old part in the same shipping materials in which the replacement part arrived.
  - b. Fill out and attach the enclosed UPS shipping document.
  - c. Ship the part to Daktronics.
3. A charge will be made for the replacement part immediately, unless a qualifying service agreement is in place. In most circumstances, the replacement part will be invoiced at the time it is shipped.

If the failed part or replacement part is not returned to Daktronics within 3 weeks of the ship date, Daktronics will assume that the customer is purchasing the replacement part and will send an invoice for the value of the new sale part. If the part or parts are returned within 2 weeks of the second invoice date, Daktronics will credit the customer for the second invoice.

If after 2 weeks Daktronics has still not received the parts back, the customer must pay the second invoice and will not be credited for the return of the failed 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.

## **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 number in the chart listed on the previous page.
2. **Receive a Return Materials Authorization (RMA) 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 RMA number
  - a clear description of symptoms

### *Shipping Address*

Daktronics Customer Service  
RMA #  
201 Daktronics Drive, Dock E  
Brookings, SD 57006

**Fax:** 605-697-4444

### **Daktronics Warranty and Limitation of Liability**

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



# Section 6: TNMC Troubleshooting & Maintenance – Models BA-2001/2002/2008/2009

## IMPORTANT NOTES:

1. Always disconnect scoreboard power before doing any repair/maintenance work on the message centers.
2. Permit only qualified service personnel to access internal display electronics.
3. Disconnect power when not using the scoreboard.

## 6.1 Team Name Message Center System Overview

Team name message centers (TNMCs) use amber, red, or white LEDs to display team names (home and guest) in place of vinyl captions (Figure 38). TNMCs for Models BA-2001/2002/2008/2009 are available with two different pixel dimensions: 8x32 and 8x48. Characters are shown on one line using single- or double-stroke fonts up to 10" high (254 mm) and 14" (355 mm) for 34 mm and 46 mm TNMC units, respectively.

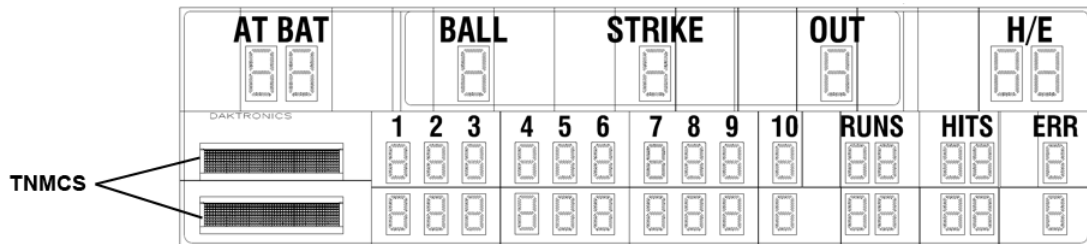


Figure 28: Team Name Message Centers

Matrix Size	# of modules	Pixel Spacing	Active Display Area	Weight*
8x32	4	34 mm (1.3")	10.6" x 42.5" (269 mm x 1080 mm)	40 lb (18 kg)
8x48	6	34 mm (1.3")	10.6" x 63.8" (269 mm x 1621 mm)	60 lb (27 kg)
8x32	4	46 mm (1.8")	14.4" x 57.6" (366 mm x 1463 mm)	50 lb (23 kg)
8x48	6	46 mm (1.8")	14.4" x 86.4" (366 mm x 2195 mm)	70 lb (32 kg)

\* TNMCs are typically installed in pairs; double this value to find the total added weight.

## 6.2 Initialization Information at Startup

Every time the display is powered up and there is no All Sport<sup>®</sup> signal present, the display will run through an initialization process, during which it will test all LEDs and addresses. First, the message center will display the proper address number.

If the entire TNMC display fails at startup, power may not be properly connected, or the address setting may not be correct on the TNMC driver. Check both in the event of a failure.

## 6.3 TNMC Troubleshooting Table

The table below lists potential problems with the display and indicates possible causes and corrective actions. This list does not include every symptom that may be encountered, but it does present several of the most common situations that may occur.

Many of the solutions offered below provide references to other sections within this manual with further detail on how to fix the problem.

If a problem occurs that is not listed or that cannot be resolved using the solutions in the following table, contact Daktronics using the information provided in **Section 5.13**.

Symptom/Condition	Possible Remedy
One or more LEDs on a single module fails to light	Check/replace the ribbon cables on the module.
	Replace the module. See <b>Section 6.7</b> .
One or more LEDs on a single module fails to turn off	Check/replace the ribbon cables on module.
	Replace the module. See <b>Section 6.7</b> .
A section of the display not working; section extends all the way to the right side of the display	Check/replace the ribbon cables running to the first module that is not working.
	Replace the first module/driver on the left side of the first module that is not working. See <b>Section 6.7</b> .
	Replace the second module that is not working. See <b>Section 6.7</b> .
	Replace the power supply assembly on the first module that is not working. See <b>Section 6.8</b> .
One row of modules does not work or is garbled	Replace the first module. See <b>Section 6.7</b> .
	Replace the TNMC driver. See <b>Section 6.6</b> .
A group of modules that share the same power supply assembly fails to work	Replace the power supply assembly. See <b>Section 6.8</b> .
Entire display fails to work	Check for proper line voltage into the power termination panel.
	Check/replace the ribbon cable from the TNMC driver to the modules.
	Check the voltage settings on the power supplies.
	Check/replace the signal cable to the driver.
	Repair/replace the driver. See <b>Section 6.6</b> .

## 6.4 Power & Signal Summary

### Reference Drawings:

Schematic, Amber TNMC, GEN IV .....	<b>Drawing A-252645</b>
Schematic, Red TNMC, GEN IV .....	<b>Drawing A-252681</b>
Schematic; 832 / 848 / 864 Red TNMC GEN IV, 240V.....	<b>Drawing A-294858</b>
Schematic; 832 / 848 / 864 Amber GEN IV, 240V .....	<b>Drawing A-294919</b>
Schematic, OD, 3500, 34mm TNMC, Red/Amb .....	<b>Drawing B-783938</b>
Schematic, OD, 3500, 34mm TNMC, Wht.....	<b>Drawing B-906385</b>
Schematic, OD, 3500, 46mm, Amb/Wht.....	<b>Drawing B-923940</b>
Schematic, OD, 3500, 46mm, Red/Amb.....	<b>Drawing B-923941</b>
Schematic, OD, 3500, 46mm, Wht .....	<b>Drawing B-1036125</b>

Refer to **Drawings B-783938, B-906385, B-923941, or B-1036125** for detailed schematics about TNMC power and signal routing.

### Notes:

- 1) For TNMCs built before September 2009, refer instead to **Drawings A-252645, A-252681, A-294858, or A-294919**.
- 2) For amber 46mm TNMCs built between September 2009 and November 2010, refer to Drawing **B-923940**.

Signal routing for the TNMC can be summarized as follows:

1. Data from the All Sport<sup>®</sup> controller travels via cable harness into the scoreboard.
2. The signal travels to the driver/power enclosure through the J1 connector on the signal surge arrestor card.
3. Data exits at J42 via current loop harness, and connects with P43 at the TNMC driver assembly. A power/signal interconnect (ribbon cable) carries the signal to the first module, and the signal relays from module to module, in daisy-chain style, until it reaches the last module on the message center.

Power routing for the TNMC can be summarized as follows:

1. Incoming power terminates at the terminal block in the scoreboard driver enclosure. Using the same harness and J42-P43 connections as signal, power is then routed to the TNMC driver where it then travels to the power supply assembly.
2. From the power supply assembly, power is relayed to the first module, and then from module to module.
3. The modules and TNMC driver draw their power directly from the power supply assemblies (3-12.5 VDC). The power supply voltage is set by a resistor loaded on the module (via J4).

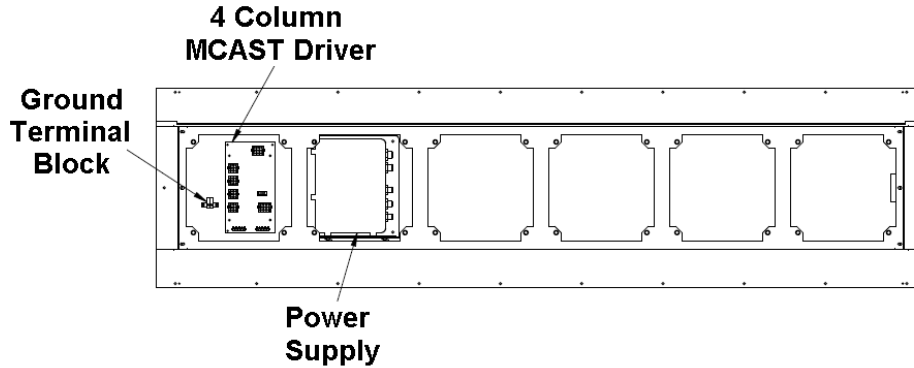
**Note:** In TNMCs built before September 2009, modules draw their power directly from the power supply assemblies (6.5 V for red LED modules, 9 V for amber), while the TNMC driver receives 16 V power from a transformer on the driver tray.

## 6.5 Component Locations & Access

### Reference Drawings:

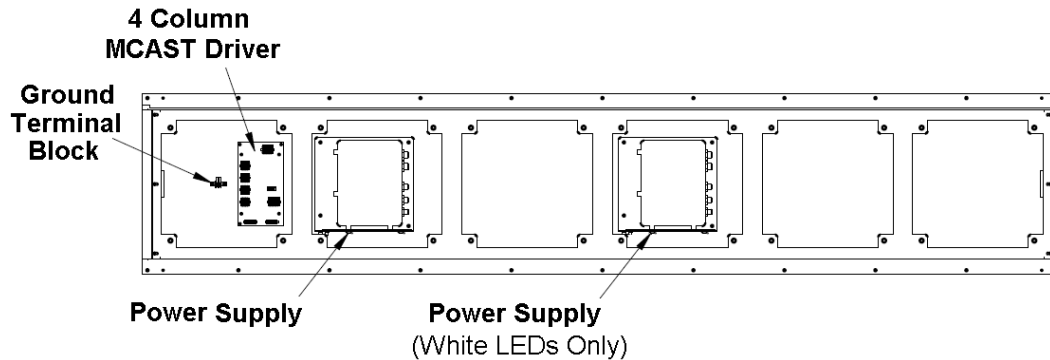
- Component Locations; 832/848/864 Red/Amb LED, TNMC, G4 .....**Drawing A-257029**
- Component Loc.; 34mm Red/Amb/Wht LED TNMC G4 .....**Drawing B-975100**
- Component Loc.; 46mm Red/Amb/Wht LED TNMC G4 .....**Drawing B-975635**

**Figure 29** illustrates the component locations of an 8x48-34mm TNMC with all modules removed. This layout will be similar for 8x32-34mm cabinets as well. The 8x64-34mm cabinets require an additional power supply behind the sixth module. Refer to **Drawing B-975100**.



**Figure 29:** 8x48-34 TNMC with Modules Removed

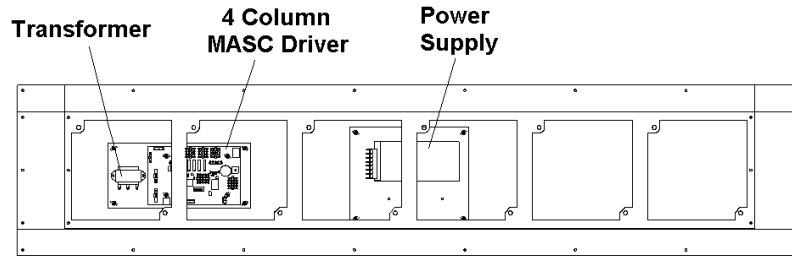
**Figure 30** illustrates the component locations of an 8x48-46mm TNMC, and this layout will also be similar for 8x32-46mm cabinets. Note that 8x48-46mm TNMCs featuring white LEDs require an additional power supply behind the fourth module. Refer to **Drawing B-975635**.



**Figure 30:** 8x48-46 TNMC with Modules Removed

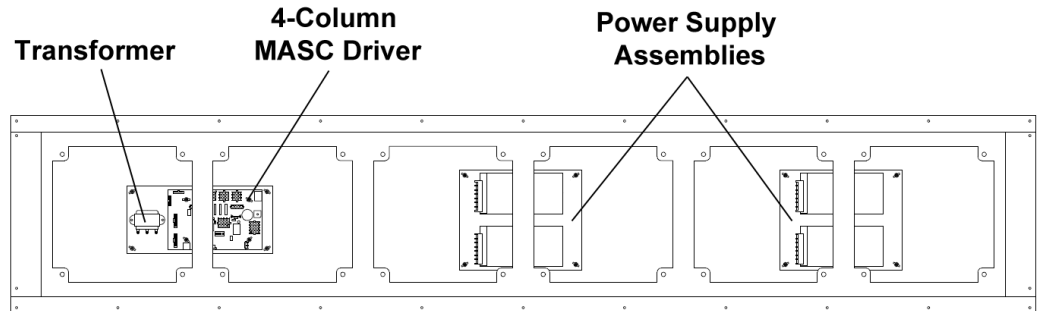
## For TNMCs Built Before September 2009

Figure 31 illustrates the component locations of an older 8x48-34mm TNMC, and this layout will also be similar for 8x32-34mm and 8x64-34mm cabinets. Refer to **Drawing A-257029**.



**Figure 31:** Discontinued 8x48-34mm TNMC with Modules Removed

Figure 32 illustrates the component locations of an older 8x48-46mm TNMC. The 8x32-46mm cabinets only include a single power supply assembly.

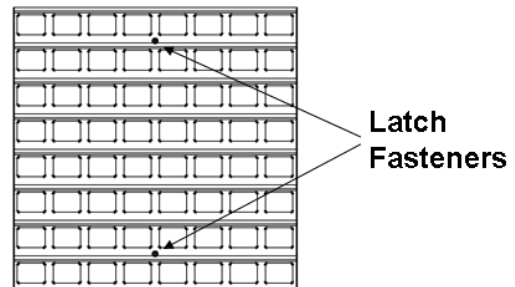


**Figure 32:** Discontinued 8x48-46mm TNMC with Modules Removed

Standard Daktronics outdoor LED scoreboards are typically front-accessible, but some models may be ordered with rear service access. For that reason, Daktronics TNMCs have been designed so that they may be accessed from both the front and rear.

### Front Access

1. Loosen the latch fasteners on the front face the LED module using a 1/8" hex wrench (or 7/32" nut driver for displays installed prior to 11/29/05). One latch fastener is centered below the top row of pixels and one is centered above the bottom row (Figure 33).
2. Turn each fastener a quarter-turn counter-clockwise (if using a nut driver, turn the top latch clockwise and the bottom latch counterclockwise).



**Figure 33:** TNMC Module, Front View

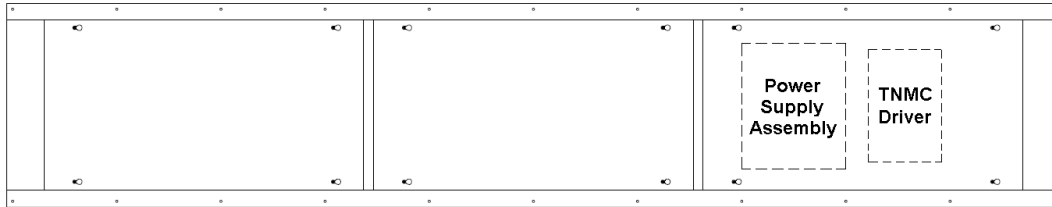
**Note:** Do not over turn the fastener!

Carefully remove the module from the face of the message center.

## Rear Access

1. To access the internal components from the rear, remove the appropriate rear-access panel from the TNMC by loosening all four of the screws.
2. Slide the access panel sideways to the larger part of the keyhole and carefully lift it off the TNMC.

**Note:** Be careful when removing and handling the access panels as internal TNMC components may still be attached to them.



**Figure 34:** TNMC Cabinet Rear Access

The TNMC driver and primary power supply will always be located behind the first access panel on the right, when viewing the display from behind. Any additional power supplies are noted in the appropriate component location drawings.

**Note:** In TNMCs built before September 2009, the TNMC driver is located behind the first access panel and the primary power supply is located behind the second access panel.

## 6.6 TNMC Drivers

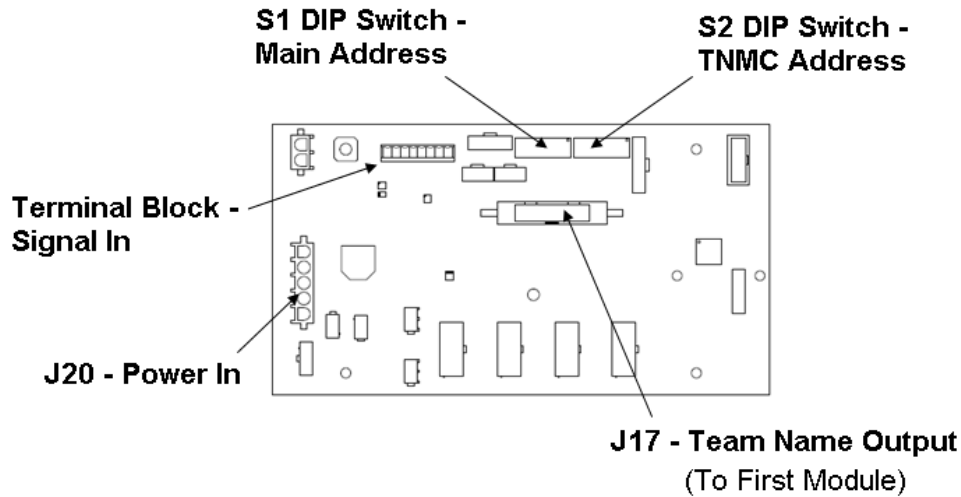
### Reference Drawings:

- 4 Column MASC LED Driver Specifications ..... **Drawing A-166216**
- Specifications; Driver, MCAST, 4 Col..... **Drawing A-793970**

The TNMC driver receives signal from the control console via a signal surge arrestor card and sends data to the modules. Refer to **Section 6.4** for more information on signal routing. The driver itself is detailed in **Drawing A-793970** in **Appendix A**. **Figure 35** illustrates some of the primary jacks and switches on the 4 Column MCAST driver used for TNMC functions.

The S2 DIP switch controls Home and Guest display. When the #5 switch is ON, the TNMC sends guest team information to the matrix display. In the opposite message center, the switch would be set to OFF, and home information would be displayed.

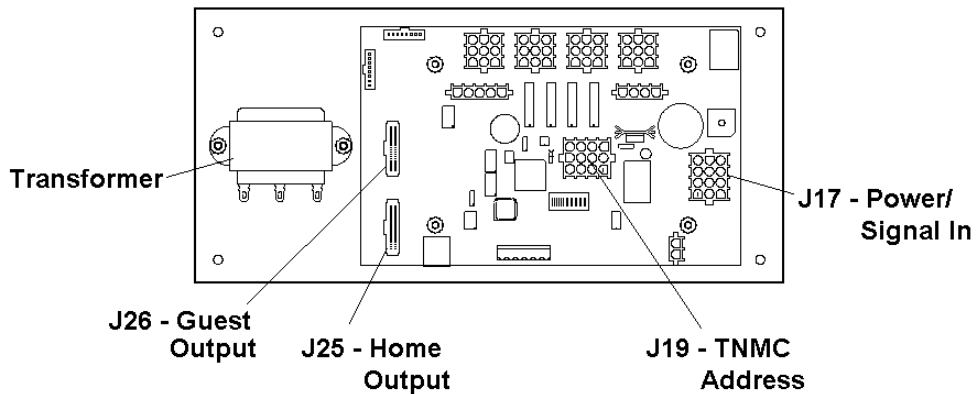
Note that the S2 DIP switch is also the component for setting the address (switches #1-4). With switches 1-4 off, the address setting for a TNMC is preset at "221". (There may be other address settings if the TNMC is used to display messages other than team names.)



**Figure 35:** 4 Column MCAST Driver

### For TNMCs Built Before September 2009

The TNMC driver receives signal from the control console via a signal surge arrestor card and sends data to the modules. Refer to **Section 6.4** for more information on signal routing. The driver itself is detailed in **Drawing A-166216** in **Appendix A**. **Figure 42** illustrates a TNMC control assembly with a 4-column MASC driver.



**Figure 36:** TNMC Control Assembly (4 Column MASC Driver)

Connectors J25 and J26 control Home and Guest displays. When the ribbon cable is plugged into J25, the TNMC displays home team information. In the opposite message center, the signal cable should be plugged into the J26 connector to display guest information.

J19 is the connector for the address plug. The address setting for a TNMC will always be 221. (There may be other settings if the TNMC is used to display messages other than team names.)

## Diagnostic LEDs

The following table explains the functions of the primary diagnostic LEDs on the 4 Column MASC/MCAST drivers:

LED Name	Color	Illumination Summary
(CL) RX	Red	Steady on or blinking when the driver is receiving signal and off when there is no signal
(CL) TX	Green	Steady on or blinking when the driver is transmitting and off when there is no signal
Power	Green	Steady on to indicate the driver has power
Status	Amber	Blinking to indicate driver is running

## Replacing a Driver

1. Access the internal components using the appropriate **Front/Rear Access** method described in **Section 6.5**.
2. Disconnect all power and signal connectors from the driver by squeezing together the locking tabs and pulling the connectors free.

**Note:** It may be helpful to label the cables to know which cable goes to which connector when reattaching a driver.

3. Remove the four nuts holding the driver in place.
4. Position a new driver over the screws and tighten the nuts.
5. Reconnect all power/signal connectors.
6. Ensure the driver is set to the correct address for the TNMC function.
7. Power up and test the scoreboard message center to see if changing the driver has resolved the problem.

## 6.7 Modules

Each module assembly is made up of a module housing (containing LEDs and the driver) and a louver assembly. Individual components such as louvers can be removed for service, but Daktronics recommends that the module be kept intact and that the entire assembly be sent in for repair or replacement.

### Replacing Modules

To replace a module from the front:

1. Follow the steps in the **Front Access** method described in **Section 6.5**.
2. Carefully disconnect all power and signal cables. It may be helpful to label the cables to know which cable goes to which connector when reattaching.
3. Position a new module on the front of the TNMC frame and reconnect all power and signal cables.
4. Re-latch the fasteners.
5. Power up and test the scoreboard message center to see if changing the module has resolved the problem.

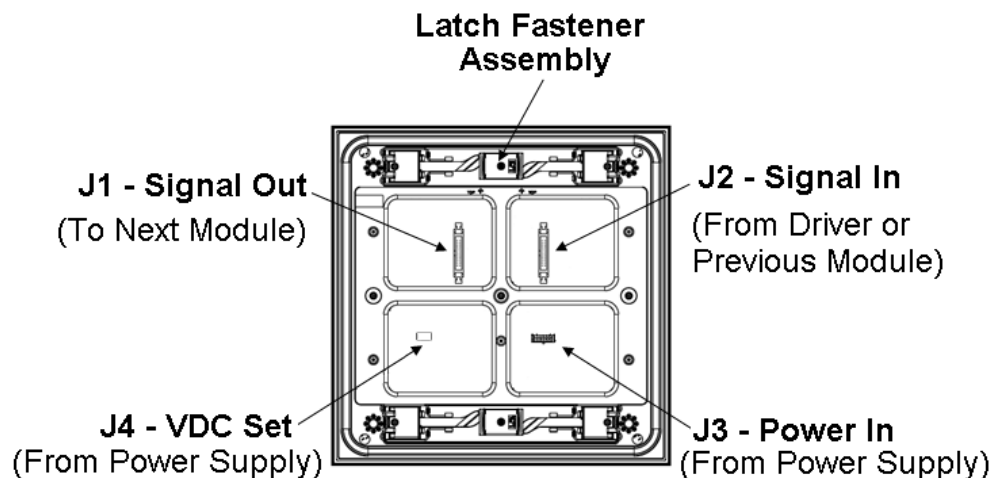


To replace a module from the rear:

1. Follow the steps in the **Rear Access** method described in **Section 6.5**.
2. Use a 1/8" hex wrench or 7/32" nut driver to loosen the latch fastener assembly (**Figure 43**). Turn each fastener a quarter-turn clockwise (if using a nut driver, turn the top latch counter-clockwise and the bottom latch clockwise).

**Note:** Do not over turn the fastener!

3. While holding onto the module, push it out and turn it in such a manner (generally a sideways, diagonal turn) that it can be pulled back through the frame opening.
4. Carefully disconnect all power and signal cables. It may be helpful to label the cables to know which cable goes to which connector when reattaching.
5. Reconnect all power and signal cables to the new module and push it back through and out the front of the TNMC frame.
6. Re-latch the fasteners.
7. Power up and test the scoreboard message center to see if changing the module has resolved the problem.



**Figure 37:** TNMC Module, Rear View

### Weather-stripping

To ensure that the display is waterproof, weather-stripping has been installed around each module. It is important that the weather-stripping is attached properly at all times, or water may leak into the display and damage the components.

When installing a new module, take note of the following points:

- The weather-stripping on the back edge of the module must be intact and in good condition to prevent water from seeping into the display.
- The module latches must be fully engaged to create a watertight seal around the edge of the module. The module should be firmly seated against the display when the latches are fully engaged.

## 6.8 Power Supplies

Power supply configurations will vary depending on the number and/or color of modules.

### Replacing a Power Supply

To remove a power supply from the display:

1. Access the internal components using the appropriate **Front/Rear Access** method described in **Section 6.5**.
2. Disconnect all the wires connected to the power supply.
3. Loosen the screw securing the power supply and slide it out of the display cabinet.

**Note:** In TNMCs built before September 2009, use a 9/32" nut driver to remove the hardware securing the power supply.

4. Fasten the new power supply in place and reconnect all wires.

## 6.9 TNMC Maintenance

Complete a yearly inspection to maintain safe and dependable display operation.

This inspection should address the following issues:

- **Loose Hardware:** Verify that fasteners, such as bolts and rivets, have not come loose. Check and tighten or replace fasteners as required.
- **Excessive Dust Buildup:** It may be necessary to occasionally vacuum the inside of the display cabinet to remove dust/dirt buildup that may interfere with airflow.
- **Water Intrusion – Water stain marks:** Water can enter the display where weather-stripping has come loose or deteriorated; where fasteners have come loose, allowing gaps in the panels; or where moisture may be entering around hardware. Check electronic components for corrosion.
- **Corrosion:** Check the paint, and look for possible corrosion, especially at footings, structural tie points, and ground rods and other types of grounding electrodes.

**Note:** If any of the preceding conditions are discovered, make the necessary repairs or take corrective action immediately.

## 6.10 Replacement Parts List

The following tables contain TNMC components that may have to be replaced. Many of the components within the display itself have attached part number labels.

Part Description	Part Number
Module; 8X8-34, Red	0A-1208-5005
Module; 8X8-34, Red <i>(Sep 2009 – Nov 2010 only)</i>	0A-1208-5002
Module; 8X8-34, Amber	0A-1208-5008
Module; 8X8-34, White	0A-1208-5004
Module; 8X8-46, Red	0A-1541-5005
Module; 8X8-46, Amber	0A-1541-5009
Module; 8X8-46, Amber <i>(Sep 2009 – Nov 2010 only)</i>	0A-1541-5007
Module; 8X8-46, White	0A-1541-5006
Driver; MCAST, 4 Column	0P-1388-0201
Power Supply; 3-6.5V, 90-264V AC <i>(all 34mm LED colors, amber 46mm after Nov 2010 &amp; red 46mm after Sep 2009)</i>	A-2307
Power Supply; 8.5-12.5V, 90-264V AC <i>(white 46mm, amber 46mm between Sep 2009 – Nov 2010)</i>	A-2481
Cable; 20 pos, Ribbon, 36"	W-1495
Cable; 20 pos, Ribbon, 18"	W-1387
Electrical contact lubricant (CaiLube®)	CH-1019

## For TNMCs Built Before September 2009

Part Description	Part Number
Ribbon Cable, 18" (module to module)	0A-1000-0015
Ribbon Cable, 30" (TNMC driver to first module)	0A-1000-0017
4-col MASC Driver	0P-1192-0068
<ul style="list-style-type: none"> <li>▪ Transformer; 115/230 V pri, 16 V sec @ 2 A</li> </ul>	T-1063
Power Supply Assembly; Red TNMC	0A-1192-3160
<ul style="list-style-type: none"> <li>▪ Power Supply; 6.5V, 15A, 85-264 V AC</li> </ul>	A-1591
Power Supply Assembly; Amber TNMC	0A-1192-3161
<ul style="list-style-type: none"> <li>▪ Power Supply; 9V, 17A, 85-265 V AC</li> </ul>	A-1633
Red 8x8 34mm Module Assembly	0A-1208-4004
Amber 8x8 34mm Module Assembly	0A-1208-4005
Red 8x8 46mm Module Assembly	0A-1342-4004
Amber 8x8 46mm Module Assembly	0A-1342-4005

See **Section 5.13** for information on Daktronics Exchange and Repair and Return program.

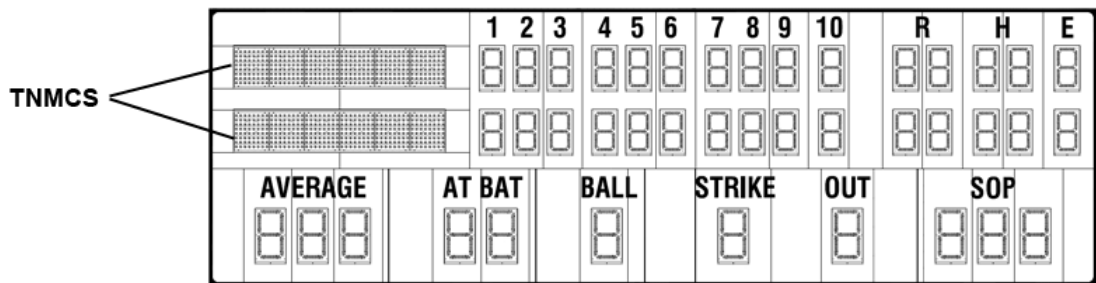
# Section 7: TNMC Troubleshooting & Maintenance – Model BA-2018

## IMPORTANT NOTES:

1. Always disconnect scoreboard power before doing any repair/maintenance work on the message centers.
2. Permit only qualified service personnel to access internal display electronics.
3. Disconnect power when not using the scoreboard.

## 7.1 Team Name Message Center System Overview

Team name message centers (TNMCs) use amber or red LEDs to display team names (home and guest) in place of vinyl captions (**Figure 38**). TNMCs for BA-2018 scoreboards are available with 8x48 pixel dimensions. Characters are shown on one line using single- or double-stroke fonts up to 20" (508 mm) high.



**Figure 38:** Team Name Message Centers

Matrix Size	# of modules	Pixel Spacing	Active Display Area	Weight*
8x48	6	64 mm (2.5")	20" x 120" (508 mm x 3048 mm)	100 lb (45 kg)

\* TNMCs are typically installed in pairs; double this value to find the total added weight.

## 7.2 Initialization Information at Startup

Every time the display is powered up and there is no All Sport<sup>®</sup> signal present, the display will run through an initialization process, during which it will test all LEDs and addresses. First, the message center will display the proper address number.

If the entire TNMC display fails at startup, power may not be properly connected, or the address setting may not be correct on the TNMC driver. Check both in the event of a failure.

## 7.3 TNMC Troubleshooting Table

The table below lists potential problems with the display and indicates possible causes and corrective actions. This list does not include every symptom that may be encountered, but it does present several of the most common situations that may occur.

Many of the solutions offered below provide references to other sections within this manual with further detail on how to fix the problem.

If a problem occurs that is not listed or that cannot be resolved using the solutions in the following table, contact Daktronics using the information provided in **Section 5.13**.

Symptom/Condition	Possible Remedy
One or more LEDs on a single module fails to light	Check/replace the ribbon cables on the module.
	Replace the module. See <b>Section 7.7</b> .
One or more LEDs on a single module fails to turn off	Check/replace the ribbon cables on module.
	Replace the module. See <b>Section 7.7</b> .
A section of the display not working; section extends all the way to the right side of the display	Check/replace the ribbon cables running to the first module that is not working.
	Replace the first module/driver on the left side of the first module that is not working. See <b>Section 7.7</b> .
	Replace the second module that is not working. See <b>Section 7.7</b> .
	Replace the power supply assembly of the first module that is not working. See <b>Section 7.8</b> .
One row of modules does not work or is garbled	Replace the first module. See <b>Section 7.7</b> .
	Replace the TNMC driver. See <b>Section 7.6</b> .
A group of modules that share the same power supply assembly fails to work	Replace the power supply assembly. See <b>Section 7.8</b> .
Entire display fails to work	Check for proper line voltage into the power termination panel.
	Check/replace the ribbon cable from the TNMC driver to the modules.
	Check the voltage settings on the power supplies.
	Check/replace the signal cable to the driver.
	Repair/replace the driver. See <b>Section 7.6</b> .

## 7.4 Power & Signal Summary

Refer to **Drawings B-188553** or **B-190140** in **Appendix A** to view detailed schematics about power and signal routing for red and amber TNMC cabinets, respectively.

Signal routing for the TNMC can be summarized as follows:

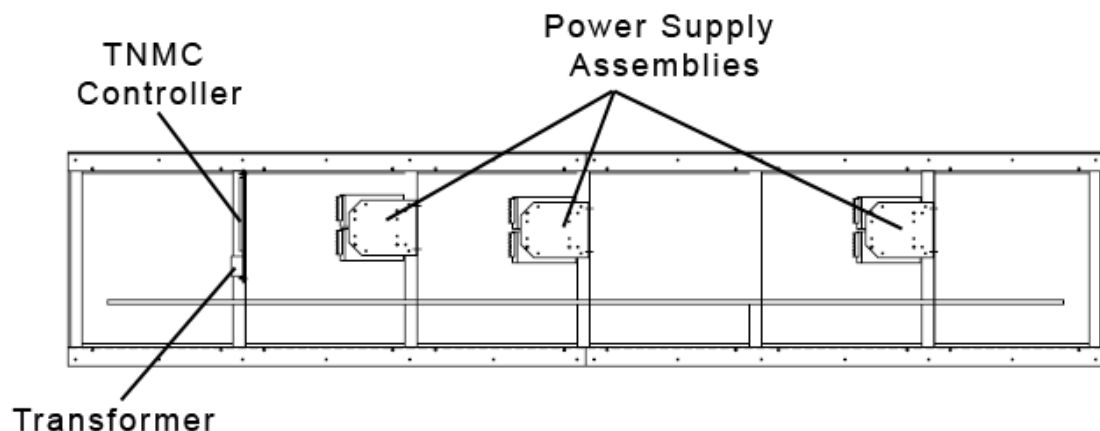
1. Data from the All Sport<sup>®</sup> controller travels via cable harness into the scoreboard.
2. The signal travels to the driver/power enclosure through the J1 connector on the signal surge arrestor card.
3. Data exits at J42 via current loop harness, and connects with P43 at the TNMC driver assembly. A power/signal interconnect (ribbon cable) carries the signal to the first module, and the signal relays from module to module, in daisy-chain style, until it reaches the last module on the message center.

Power routing for the TNMC can be summarized as follows:

1. Incoming power terminates at the terminal block in the scoreboard driver enclosure. Using the same harness and J42-P43 connections as signal, power is then routed to the TNMC driver where it then travels to the power supply assembly.
2. From the power supply assembly, power is relayed to the first module, and then from module to module.
3. The modules draw their power directly from three power supply assemblies with 12 V per power supply for red LED modules and 24 V for amber, while the TNMC driver receives 16 V power from a transformer on the driver tray.

## 7.5 Component Locations & Access

**Figure 39** illustrates the component locations of an 8x48-64mm TNMC. Refer also to **Drawings B-219923** and **B-219932** in **Appendix A** to view component locations for red and amber TNMC cabinets, respectively. TNMC cabinets have been designed so that they may be accessed from both the front and rear.

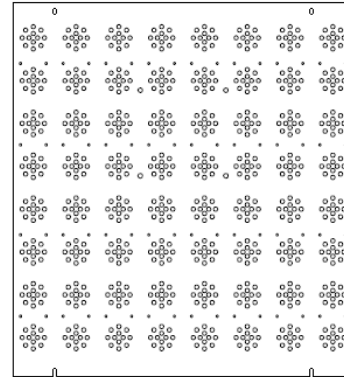


**Figure 39:** 8x48-64mm TNMC Cabinet with Modules Removed

## Front Access

1. Use a Philips screwdriver to remove the four screws securing the module face panel to the TNMC cabinet (**Figure 40**).
2. Carefully remove the module from the face of the message center.

**Note:** Do not hang the module by its power/signal cable!



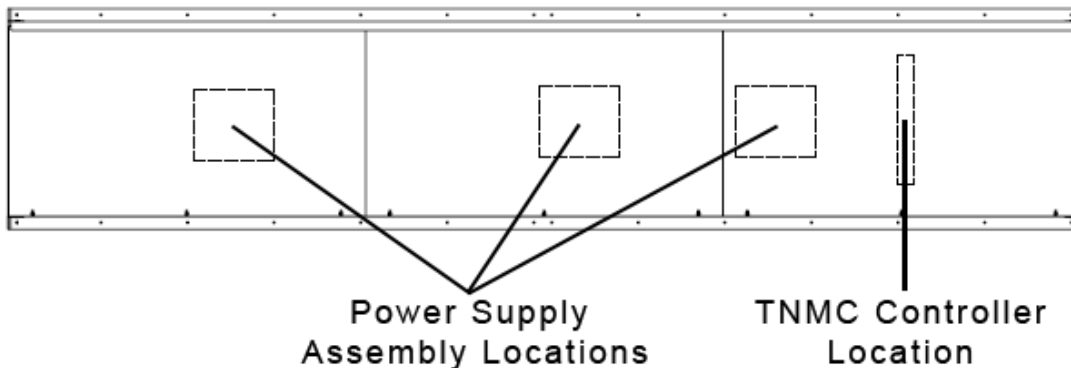
**Figure 40:** TNMC Module, Front View

## Rear Access

1. To access the internal components from the rear, remove the appropriate rear-access panel from the TNMC by loosening the three bottom screws.
2. Slide the access panel up to the larger part of the keyhole and carefully lift it out and then down away from the TNMC cabinet.

**Note:** Be careful when removing and handling the access panels as internal TNMC components may still be attached to them.

The TNMC driver will always be located behind the first access panel on the right, along with one power supply assembly. An additional power supply assembly is located behind each of the other two access panels. Refer to **Figure 41**.



**Figure 41:** TNMC Cabinet Rear Access Panels



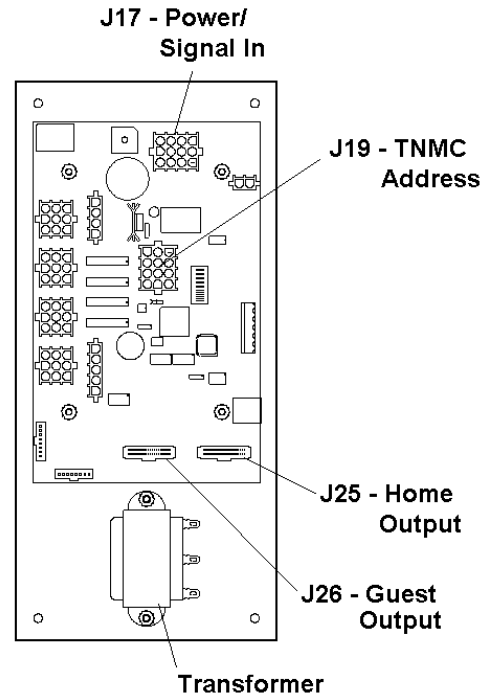
## 7.6 TNMC Drivers

The TNMC driver receives signal from the control console via a signal surge arrestor card and sends data to the modules. Refer to **Section 7.4** for more information on signal routing.

**Figure 42** illustrates a TNMC control assembly with a 4-column MASC driver. In **Appendix A**, refer to **Drawings A-166216** and **A-165028** for more information about the driver.

Connectors J25 and J26 control Home and Guest displays. When the ribbon cable is plugged into J25, the TNMC displays home team information. In the opposite message center, the signal cable should be plugged into the J26 connector to display guest information.

J19 is the connector for the address plug. The address setting for a TNMC will always be 221. (There may be other settings if the TNMC is used to display messages other than team names.) Refer to **Drawing A-115079** in **Appendix A** for addressing information.



**Figure 42:** TNMC Control Assembly (4 Column MASC Driver)

### Diagnostic LEDs

The following table explains the functions of the primary diagnostic LEDs on the 4 Column MASC drivers:

LED Name	Color	Illumination Summary
(CL) RX	Red	Steady on or blinking when the driver is receiving signal and off when there is no signal
(CL) TX	Green	Steady on or blinking when the driver is transmitting and off when there is no signal
Power	Green	Steady on to indicate the driver has power
Status	Amber	Blinking to indicate driver is running

### Replacing a Driver

1. Access the internal components using the appropriate **Front/Rear Access** method described in **Section 7.5**.
2. Disconnect all power and signal connectors from the driver by squeezing together the locking tabs and pulling the connectors free.

**Note:** It may be helpful to label the cables to know which cable goes to which connector when reattaching a driver.

3. Remove the four nuts holding the driver in place.
4. Position a new driver over the screws and tighten the nuts.
5. Reconnect all power/signal connectors.
6. Ensure the driver is set to the correct address for the TNMC function.
7. Power up and test the scoreboard message center to see if changing the driver has resolved the problem.

## 7.7 Modules

Each module assembly is made up of a module face plate, 16 LED segments, and a driver. Individual components can be removed for service, but Daktronics recommends that the module be kept intact and that the entire assembly be sent in for repair or replacement.

### Replacing Modules

1. Follow the steps in the **Front Access** method described in **Section 7.5**.
2. Carefully disconnect any signal ribbon cables from the INPUT (J2) and OUTPUT (J1) jacks as well as the power cable from J11 on the module driver.
3. Reconnect all power and signal cables to the replacement module.
4. Securely fasten the module face plate to the TNMC cabinet with the four screws.
5. Power up and test the scoreboard message center to see if changing the module has resolved the problem.

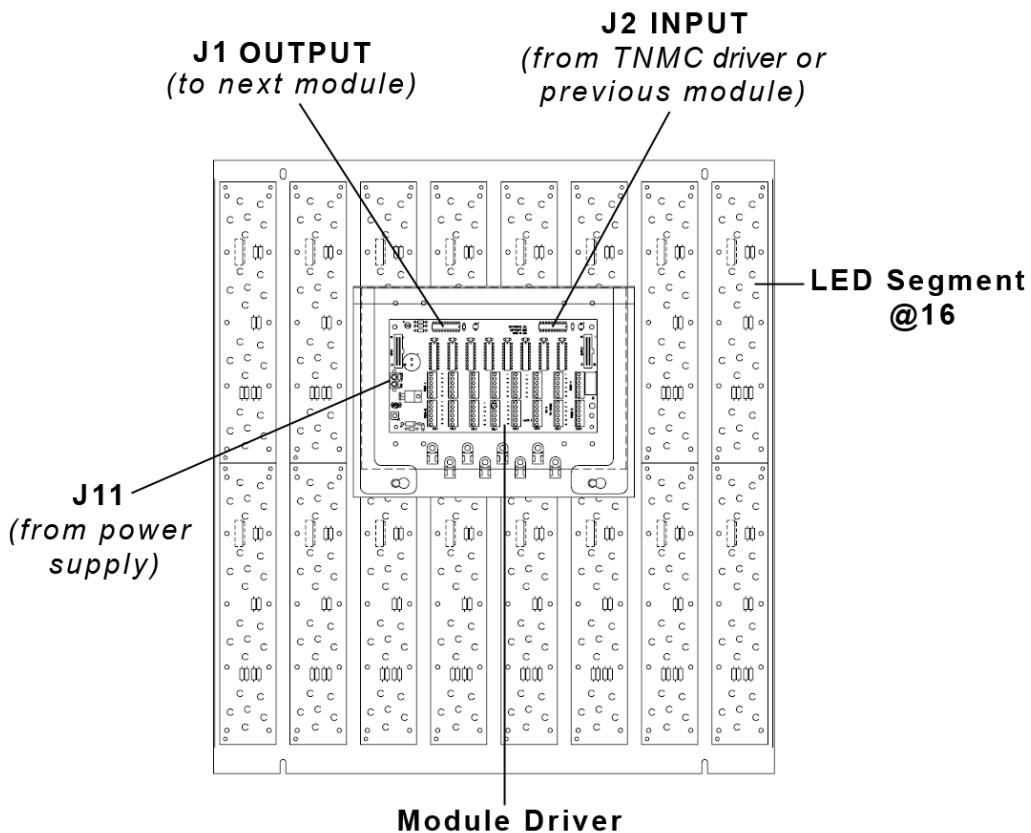


Figure 43: TNMC Module, Rear View

## 7.8 Power Supplies

Power supply configurations will vary depending on the number and/or color of modules.

### Replacing a Power Supply

To remove a power supply from the display:

1. Access the internal components using the appropriate **Front/Rear Access** method described in **Section 7.5**.
2. Disconnect all the wires connected to the power supply.
3. Use a 9/32" nut driver to remove the hardware securing the power supply.
4. Fasten the new power supply in place and reconnect all wires.

## 7.9 TNMC Maintenance

Complete a yearly inspection to maintain safe and dependable display operation.

This inspection should address the following issues:

- **Loose Hardware:** Verify that fasteners, such as bolts and rivets, have not come loose. Check and tighten or replace fasteners as required.
- **Excessive Dust Buildup:** It may be necessary to occasionally vacuum the inside of the display cabinet to remove dust/dirt buildup that may interfere with airflow.
- **Water Intrusion – Water stain marks:** Water can enter the display where weather-stripping has come loose or deteriorated; where fasteners have come loose, allowing gaps in the panels; or where moisture may be entering around hardware. Check electronic components for corrosion.
- **Corrosion:** Check the paint, and look for possible corrosion, especially at footings, structural tie points, and ground rods and other types of grounding electrodes.

**Note:** If any of the preceding conditions are discovered, make the necessary repairs or take corrective action immediately.

## 7.10 Replacement Parts List

The following tables contain TNMC components that may have to be replaced. Many of the components within the display itself have attached part number labels.

Part Description	Part Number
Ribbon Cable, 30" (TNMC driver to first module)	0A-1000-0017
Ribbon Cable, 36" (module to module)	0A-1000-0018
TNMC Driver Assembly	0A-1192-2549
TNMC Driver Assembly (240 V)	0A-1192-3388
▪ 4-col MASC Driver	0A-1192-0068
▪ Transformer; 115/230 V pri, 16 V sec @ 2 A	T-1063
Power Supply Assembly; Amber TNMC	0A-1192-2551

<b>Part Description</b>	<b>Part Number</b>
▪ Power Supply; 12 V, 8.5 A, 85-265 V AC	A-1555
Power Supply Assembly; Red TNMC	0A-1192-2655
▪ Power Supply; 12 V, 8.5 A, 85-265 V AC	A-1555
Red 8x8-2.5" LED Module Assembly	0A-1192-2673
Amber 8x8-2.5" LED Module Assembly	0A-1192-2674
Final Assembly; 8X48-2.5" (64 mm) Red TNMC	0A-1192-2871
Final Assembly; 8X48-2.5" (64 mm) Amber TNMC	0A-1192-2872

See **Section 5.13** for information on Daktronics Exchange and Repair and Return program.

## Section 8: Additional Scoreboard Options

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### 8.1 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.

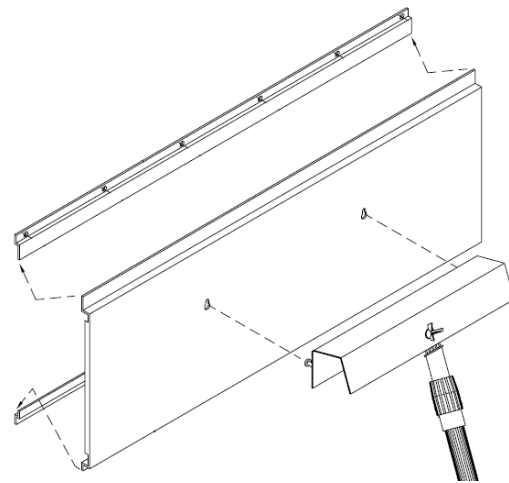
The radio transmitter and receiver are not standard. This setup requires a control console equipped with radio output as well as a radio receiver plugged into the power terminal block in the driver/power enclosure and mounted internally to the front panel of the scoreboard.

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)**, available online at [www.daktronics.com/manuals](http://www.daktronics.com/manuals).

### 8.2 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.



**Figure 44:** Changing Scoreboard Captions

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 44**).
3. Take the screws on the caption changing pole out of the keyholes.
4. 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.



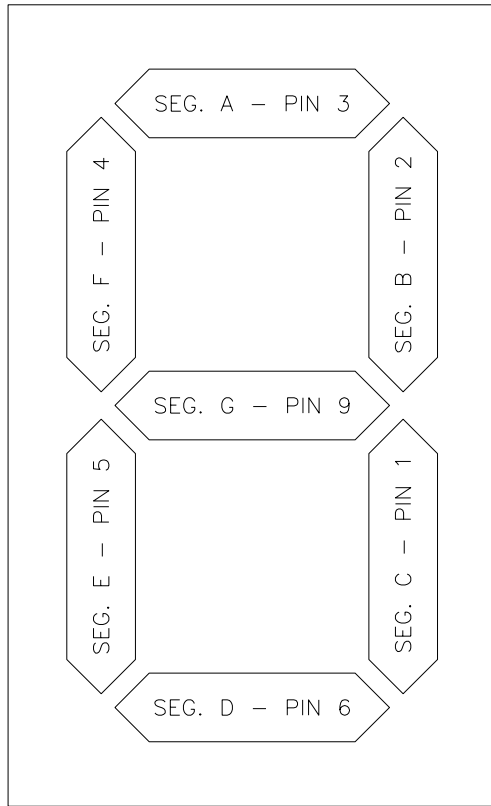
## Appendix A: Reference Drawings

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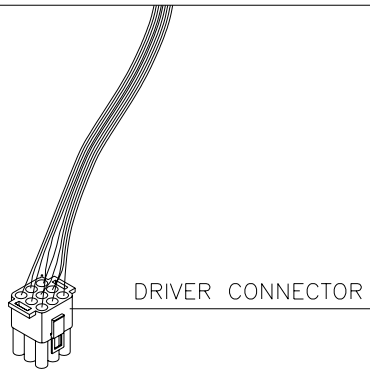
Segmentation, 7 Segment Bar Digit .....	Drawing A-38532
Ad Panel Mounting.....	Drawing A-52187
Scoreboard Mounting .....	Drawing A-55101
Steel Clip Angle Mounting.....	Drawing A-83301
Address Table, 1 Through 128 .....	Drawing A-115078
Address Table, 129 Through 255 .....	Drawing A-115079
Component Locations; BA-2002-11.....	Drawing A-158731
Schematic, Multipurpose LED DRVR .....	Drawing A-165028
4 Column MASC LED Driver Specifications .....	Drawing A-166216
Schematic; Gen III & Gen IV OD LED, 3 Drv Display.....	Drawing A-179541
Schematic; Gen III & Gen IV, 3 Drv, Multi-sec /w TNMC .....	Drawing A-179593
Schematic; Gen III & IV, 3 Drv w/ TNMC.....	Drawing A-180081
Component Locations; BA-2001-11/-21, G3.....	Drawing A-180359
Component Locations; BA-2009-11/-21 w/TNMC, G3 .....	Drawing A-185787
Component Locations; BA-2008-11/-21 .....	Drawing A-185855
Schematic; 2.5" Red/Org, LED TNMC, Gen III.....	Drawing B-188553
Schematic; 2.5" Amber LED TNMC, Gen III.....	Drawing B-190140
Schematic, Baseball G4 w/ SOP & Opt. TNMC & TOD .....	Drawing B-204725
F. Assy, 8x48-2.5" LED TNMC, Red.....	Drawing B-219923
F. Assy, 8x48-2.5" LED TNMC, Amber .....	Drawing B-219932
Component Location, BA-2018-11/21 .....	Drawing A-222578
Shop DWG, BA-2018, Horiz Tubes .....	Drawing B-222672
Shop DWG, BA-2018, Pole Mount .....	Drawing B-223556
Clip DWG; BA-2018-11/21 – G3.....	Drawing B-238121
Schematic; BA-2018 Gen IV.....	Drawing B-242532
Schematic, Amber TNMC, GEN IV.....	Drawing A-252645
Schematic, Red TNMC, GEN IV.....	Drawing A-252681
Component Locations; 832/848/864 Red/Amb LED, TNMC, G4 .....	Drawing A-257029
Specifications; LED Driver IV, 16 Col .....	Drawing A-288137
Address Table 1; GEN IV Driver Address Dip Switch.....	Drawing A-290261
Schematic; 832 / 848 / 864 Red TNMC GEN IV, 240V .....	Drawing A-294858
Schematic; 832 / 848 / 864 Amber GEN IV, 240V.....	Drawing A-294919
28' Width Scoreboard Installation Specs .....	Drawing A-316971
36' Width Scoreboard Installation Specs .....	Drawing A-317277
Address Table: Driver- MCAST G2- TNMC Switch .....	Drawing A-328274
Schematic, OD, 3500, 34mm TNMC, Red/Amb .....	Drawing B-783938
Specifications; Driver, MCAST, 4 Col .....	Drawing A-793970
Schematic, OD, 3500, 34mm TNMC, Wht .....	Drawing B-906385
Schematic, OD, 3500, 46mm, Amb/Wht .....	Drawing B-923940
Schematic, OD, 3500, 46mm, Red/Amb .....	Drawing B-923941
Component Loc.; 34mm Red/Amb/Wht LED TNMC G4 .....	Drawing B-975100
Component Loc.; 46mm Red/Amb/Wht LED TNMC G4 .....	Drawing B-975635
Schematic, OD, 3500, 46mm, Wht.....	Drawing B-1036125





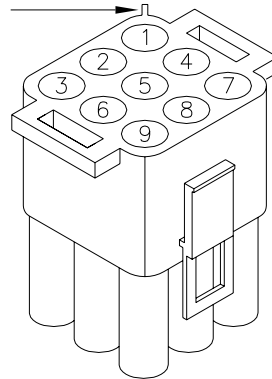


7 SEGMENT BAR DIGIT  
FRONT VIEW



COLOR CODE		
PIN NO.	WIRE COLOR	DRIVER SEGMENT
1	ORN	C
2	RED	B
3	BRN	A
4	BLU	F
5	PNK	E
6	TAN	D
7	BLK	COM.
8	GRY	H
9	VIO	G

CONNECTOR PIN NUMBERING  
NOTE SPLINE NEAR NO. 1



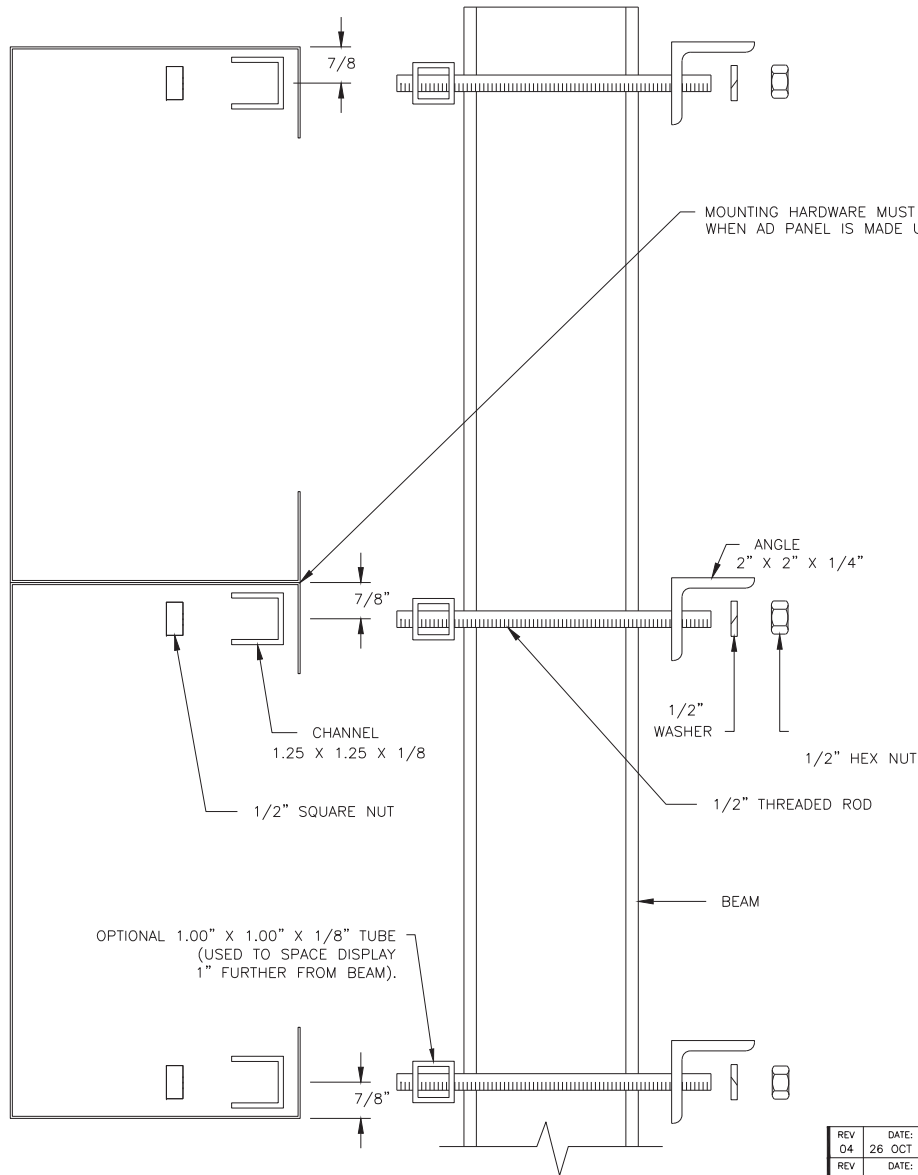
NOTE: "H" SEGMENT, GRAY WIRE IS NOT USED ON 7 SEGMENT BAR DIGIT.

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DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: BASKETBALL
TITLE: SEGMENTATION, 7 SEGMENT BAR DIGIT
DES. BY: _____ DRAWN BY: HEIDERSCHIEDT DATE: 5 JUN 89
REVISION 02 APPR. BY: AVB SCALE: 1=4
1009-R04A-38532

REV.	DATE	DESCRIPTION	BY	APPR.
2	30 APR 97	ADDED SEGMENT DESIGNATIONS TO DIGIT FIGURE.	AVB	AVB
1	2 JAN 92	CHANGED FROM B-SIZE TO A-SIZE DWG.	C FICK	



**MOUNTING INSTRUCTIONS:**

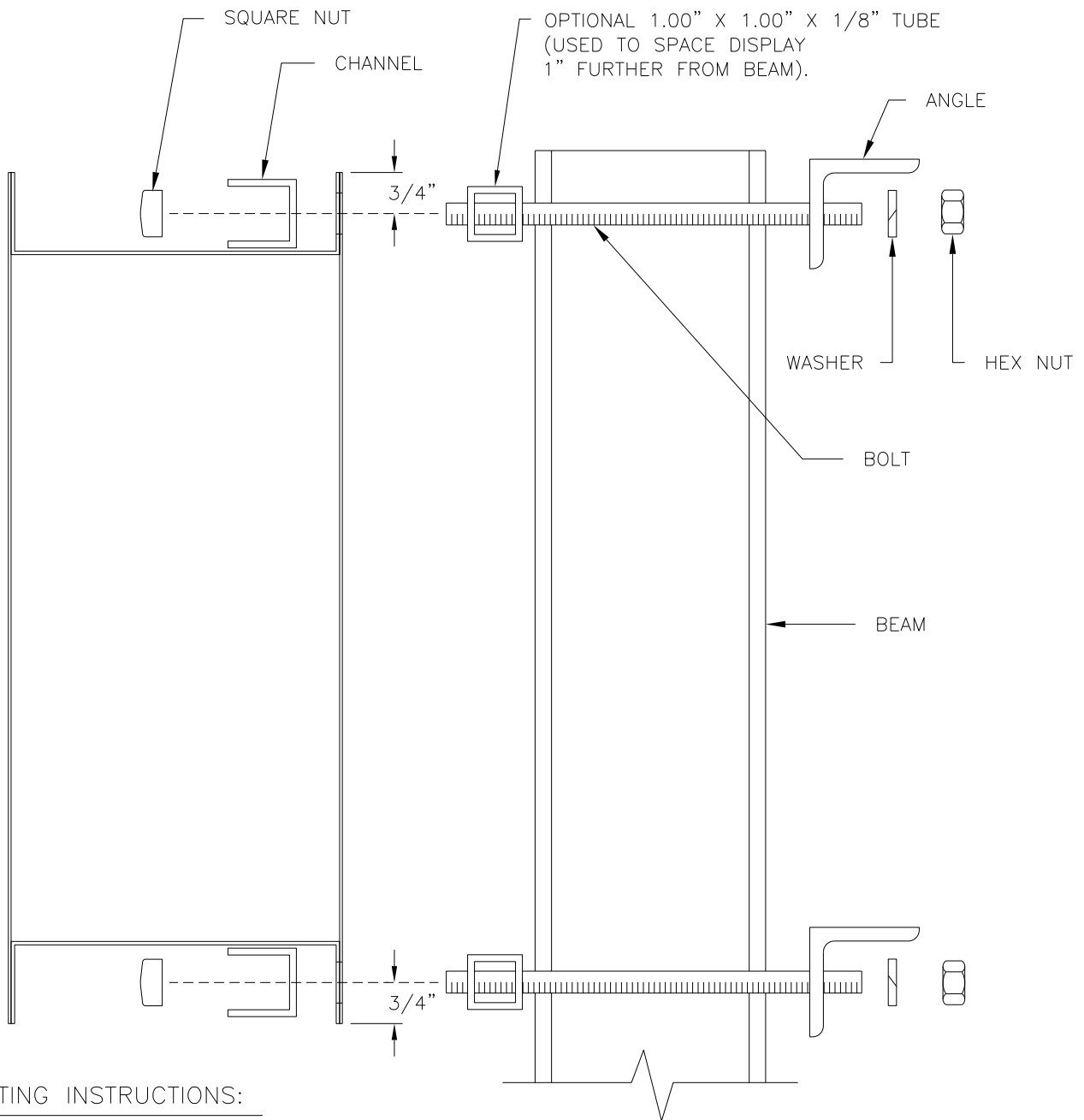
1. USE THE MOUNTING CHANNEL TO DETERMINE WHICH HOLE COMBINATION SHOULD BE USED. BE SURE TO KEEP THE BOLTS AS CLOSE TO THE BEAM AS POSSIBLE.
2. USING THE MOUNTING CHANNEL AS A TEMPLATE, DRILL 9/16" HOLES IN THE UPPER AND LOWER REAR FLANGE OF AD PANEL WHERE THE SUPPORTS WILL GO.
3. PLACE SQUARE NUTS INSIDE CHANNEL AND THREAD BOLTS THROUGH.
4. LIFT AD PANEL INTO POSITION WITH BOLTS STILL IN PLACE.
5. PLACE MOUNTING ANGLES OVER EACH PAIR OF BOLTS AND SECURE WITH LOCK WASHERS AND HEX NUTS.
6. WHEN PANEL IS ADJUSTED TO FINAL DESIRED POSITION, TIGHTEN HEX NUTS FIRMLY.

**MOUNTING INSTRUCTIONS: FOR AD PANELS WITH BACKSHEETS.**

1. USE THE MOUNTING CHANNEL TO DETERMINE WHICH HOLE COMBINATION SHOULD BE USED. BE SURE TO KEEP THE BOLTS AS CLOSE TO THE BEAM AS POSSIBLE.
2. USING THE MOUNTING CHANNEL AS A TEMPLATE, DRILL 9/16" HOLES IN THE UPPER AND LOWER REAR FLANGE OF AD PANEL WHERE THE SUPPORTS WILL GO.
3. REMOVE BACKSHEETS IN AREAS ABOVE AND BELOW HOLES DRILLED IN STEP 2.
4. PLACE SQUARE NUTS INSIDE CHANNEL AND THREAD BOLTS THROUGH.
5. REPLACE BACKSHEETS REMOVED IN STEP 3.
6. LIFT AD PANEL INTO POSITION WITH BOLTS STILL IN PLACE.
7. PLACE MOUNTING ANGLES OVER EACH PAIR OF BOLTS AND SECURE WITH LOCK WASHERS AND HEX NUTS.
8. WHEN PANEL IS ADJUSTED TO FINAL DESIRED POSITION, TIGHTEN HEX NUTS FIRMLY.

REV 04	DATE: 26 OCT 11	ADDED NOTE FOR USING MOUNTING HARDWARE AT AD PANEL SPLICES	BY: MBC
REV 03	DATE: 12 APR 10	ADDED 1" TUBE SPACER	BY: KDD
REV 02	DATE: 13 AUG 97	INCLUDED INSTRUCTIONS FOR AD PANELS WITH BACKSHEETS	BY: JAA
REV 01	DATE: 26 MAY 93	ADDED DESCRIPTION TEXT TO PARTS.	BY: MGG

		<b>DAKTRONICS, INC.</b> BROOKINGS, SD 57006 DO NOT SCALE DRAWING		<small>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.</small>	
<b>PROJ: OUTDOOR INCANDESCENT SCOREBOARDS</b>					
<b>TITLE: AD PANEL MOUNTING</b>					
DESIGN: MGG			DRAWN: MGUNDEPERSON		DATE: 09 JUL 92
SCALE: NONE					
SHEET 04		REV 04		JOB NO: P1091	
				FLUNC-TYPE-SIZE: R-10-B	
					<b>52187</b>

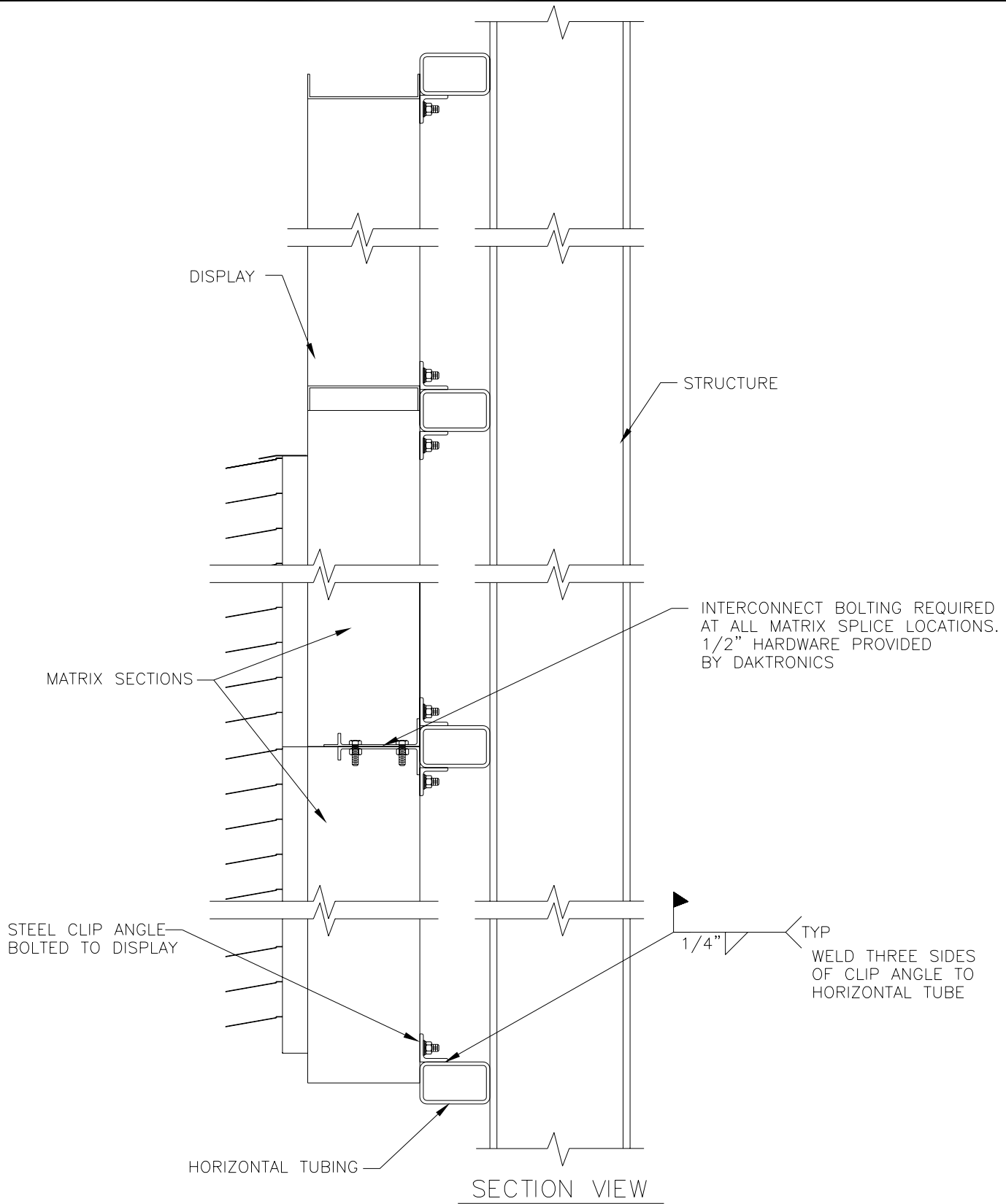


MOUNTING INSTRUCTIONS:

1. USE THE MOUNTING CHANNEL TO DETERMINE WHICH HOLE COMBINATION SHOULD BE USED. BE SURE TO KEEP THE BOLTS AS CLOSE TO THE BEAM AS POSSIBLE.
2. USING THE MOUNTING CHANNEL AS A TEMPLATE, DRILL 9/16" HOLES IN THE UPPER AND LOWER REAR FLANGE OF SCOREBOARD WHERE THE SUPPORTS WILL GO.
3. PLACE SQUARE NUTS INSIDE CHANNEL AND THREAD BOLTS THROUGH.
4. LIFT SCOREBOARD INTO POSITION WITH BOLTS STILL IN PLACE.
5. PLACE MOUNTING ANGLES OVER EACH PAIR OF BOLTS AND SECURE WITH LOCK WASHERS AND HEX NUTS.
6. WHEN SCOREBOARD IS ADJUSTED TO FINAL DESIRED POSITION, TIGHTEN HEX NUTS FIRMLY.

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DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: OUTDOOR INCANDESCENT SCOREBOARDS			
TITLE: SCOREBOARD MOUNTING			
DES. BY:	DRAWN BY: A VANBEMMEL	DATE: 10FEB93	
REVISION	APPR. BY:	1091-R10A-55101	
01	SCALE: NONE		

01	12 APR 10	ADDED 1" TUBE SPACER	KDD	
REV.	DATE	DESCRIPTION	BY	APPR.



MOUNTING INSTRUCTIONS:

1. LIFT DISPLAY SECTION INTO POSITION.
2. ADJUST CLIP ANGLES AS NEEDED, SO THEY ARE FIRMLY AGAINST HORIZONTAL TUBE.
3. BOLT ANY MATRIX SPLICES.
4. WELD THE THREE SIDES OF EACH CLIP ANGLE THAT ARE IN CONTACT WITH THE HORIZONTAL TUBE.

DAKTRONICS, INC. BROOKINGS, SD 57006	
PROJ: OUTDOOR SCOREBOARDS	
TITLE: STEEL CLIP ANGLE MOUNTING	
DES. BY: BPETER	DRAWN BY: BPETER
DATE: 30JAN97	
REVISION	APPR. BY:
	SCALE: 1=10
1173-E07A-83301	

REV.	DATE	DESCRIPTION	BY	APPR.
1	09OCT97	ADDED MATRIX SPLICE DETAIL ADDED NOTE 3	BDP	



KEY: 0 = WIRE NOT CONNECTED 1 = WIRE IS CONNECTED

DECIMAL ADDRESS	PIN 12	PIN 11	PIN 9	PIN 8	PIN 6	PIN 5	PIN 3	PIN 2
129	1	0	0	0	0	0	0	1
130	1	0	0	0	0	0	1	0
131	1	0	0	0	0	0	1	1
132	1	0	0	0	0	1	0	0
133	1	0	0	0	0	1	0	1
134	1	0	0	0	0	1	1	0
135	1	0	0	0	0	1	1	1
136	1	0	0	0	1	0	0	0
137	1	0	0	0	1	0	0	1
138	1	0	0	0	1	0	1	0
139	1	0	0	0	1	0	1	1
140	1	0	0	0	1	1	0	0
141	1	0	0	0	1	1	0	1
142	1	0	0	0	1	1	1	0
143	1	0	0	0	1	1	1	1
144	1	0	0	1	0	0	0	0

DECIMAL ADDRESS	PIN 12	PIN 11	PIN 9	PIN 8	PIN 6	PIN 5	PIN 3	PIN 2
161	1	0	1	0	0	0	0	1
162	1	0	1	0	0	0	1	0
163	1	0	1	0	0	0	1	1
164	1	0	1	0	0	1	0	0
165	1	0	1	0	0	1	0	1
166	1	0	1	0	0	1	1	0
167	1	0	1	0	0	1	1	1
168	1	0	1	0	1	0	0	0
169	1	0	1	0	1	0	0	1
170	1	0	1	0	1	0	1	0
171	1	0	1	0	1	0	1	1
172	1	0	1	0	1	1	0	0
173	1	0	1	0	1	1	0	1
174	1	0	1	0	1	1	1	0
175	1	0	1	0	1	1	1	1
176	1	0	1	1	0	0	0	0

DECIMAL ADDRESS	PIN 12	PIN 11	PIN 9	PIN 8	PIN 6	PIN 5	PIN 3	PIN 2
193	1	1	0	0	0	0	0	1
194	1	1	0	0	0	0	1	0
195	1	1	0	0	0	0	1	1
196	1	1	0	0	0	1	0	0
197	1	1	0	0	0	1	0	1
198	1	1	0	0	0	1	1	0
199	1	1	0	0	0	1	1	1
200	1	1	0	0	1	0	0	0
201	1	1	0	0	1	0	0	1
202	1	1	0	0	1	0	1	0
203	1	1	0	0	1	0	1	1
204	1	1	0	0	1	1	0	0
205	1	1	0	0	1	1	0	1
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208	1	1	0	1	0	0	0	0

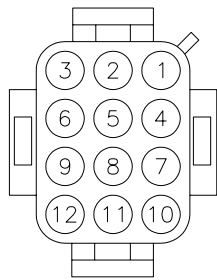
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226	1	1	1	0	0	0	1	0
227	1	1	1	0	0	0	1	1
228	1	1	1	0	0	1	0	0
229	1	1	1	0	0	1	0	1
230	1	1	1	0	0	1	1	0
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236	1	1	1	0	1	1	0	0
237	1	1	1	0	1	1	0	1
238	1	1	1	0	1	1	1	0
239	1	1	1	0	1	1	1	1
240	1	1	1	1	0	0	0	0

DECIMAL ADDRESS	PIN 12	PIN 11	PIN 9	PIN 8	PIN 6	PIN 5	PIN 3	PIN 2
145	1	0	0	1	0	0	0	1
146	1	0	0	1	0	0	1	0
147	1	0	0	1	0	0	1	1
148	1	0	0	1	0	1	0	0
149	1	0	0	1	0	1	0	1
150	1	0	0	1	0	1	1	0
151	1	0	0	1	0	1	1	1
152	1	0	0	1	1	0	0	0
153	1	0	0	1	1	0	0	1
154	1	0	0	1	1	0	1	0
155	1	0	0	1	1	0	1	1
156	1	0	0	1	1	1	0	0
157	1	0	0	1	1	1	0	1
158	1	0	0	1	1	1	1	0
159	1	0	0	1	1	1	1	1
160	1	0	1	0	0	0	0	0

DECIMAL ADDRESS	PIN 12	PIN 11	PIN 9	PIN 8	PIN 6	PIN 5	PIN 3	PIN 2
177	1	0	1	1	0	0	0	1
178	1	0	1	1	0	0	1	0
179	1	0	1	1	0	0	1	1
180	1	0	1	1	0	1	0	0
181	1	0	1	1	0	1	0	1
182	1	0	1	1	0	1	1	0
183	1	0	1	1	0	1	1	1
184	1	0	1	1	1	0	0	0
185	1	0	1	1	1	0	0	1
186	1	0	1	1	1	0	1	0
187	1	0	1	1	1	0	1	1
188	1	0	1	1	1	1	0	0
189	1	0	1	1	1	1	0	1
190	1	0	1	1	1	1	1	0
191	1	0	1	1	1	1	1	1
192	1	1	0	0	0	0	0	0

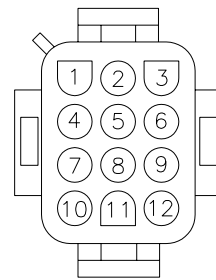
DECIMAL ADDRESS	PIN 12	PIN 11	PIN 9	PIN 8	PIN 6	PIN 5	PIN 3	PIN 2
209	1	1	0	1	0	0	0	1
210	1	1	0	1	0	0	1	0
211	1	1	0	1	0	0	1	1
212	1	1	0	1	0	1	0	0
213	1	1	0	1	0	1	0	1
214	1	1	0	1	0	1	1	0
215	1	1	0	1	0	1	1	1
216	1	1	0	1	1	0	0	0
217	1	1	0	1	1	0	0	1
218	1	1	0	1	1	0	1	0
219	1	1	0	1	1	0	1	1
220	1	1	0	1	1	1	0	0
221	1	1	0	1	1	1	0	1
222	1	1	0	1	1	1	1	0
223	1	1	0	1	1	1	1	1
224	1	1	1	0	0	0	0	0

DECIMAL ADDRESS	PIN 12	PIN 11	PIN 9	PIN 8	PIN 6	PIN 5	PIN 3	PIN 2
241	1	1	1	1	0	0	0	1
242	1	1	1	1	0	0	1	0
243	1	1	1	1	0	0	1	1
244	1	1	1	1	0	1	0	0
245	1	1	1	1	0	1	0	1
246	1	1	1	1	0	1	1	0
247	1	1	1	1	0	1	1	1
248	1	1	1	1	1	0	0	0
249	1	1	1	1	1	0	0	1
250	1	1	1	1	1	0	1	0
251	1	1	1	1	1	0	1	1
252	1	1	1	1	1	1	0	0
253	1	1	1	1	1	1	0	1
254	1	1	1	1	1	1	1	0
255	1	1	1	1	1	1	1	1



ADDRESS PLUG  
WIRE SIDE

WIRING DIAGRAM  
ADDRESS PLUG  
WITH ALL WIRES  
CONNECTED



BOTTOM VIEW

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ:  
TITLE: ADDRESS TABLE, 129 THROUGH 255  
DES. BY: AVB DRAWN BY: A VANBEMMEL DATE: 28 APR 99

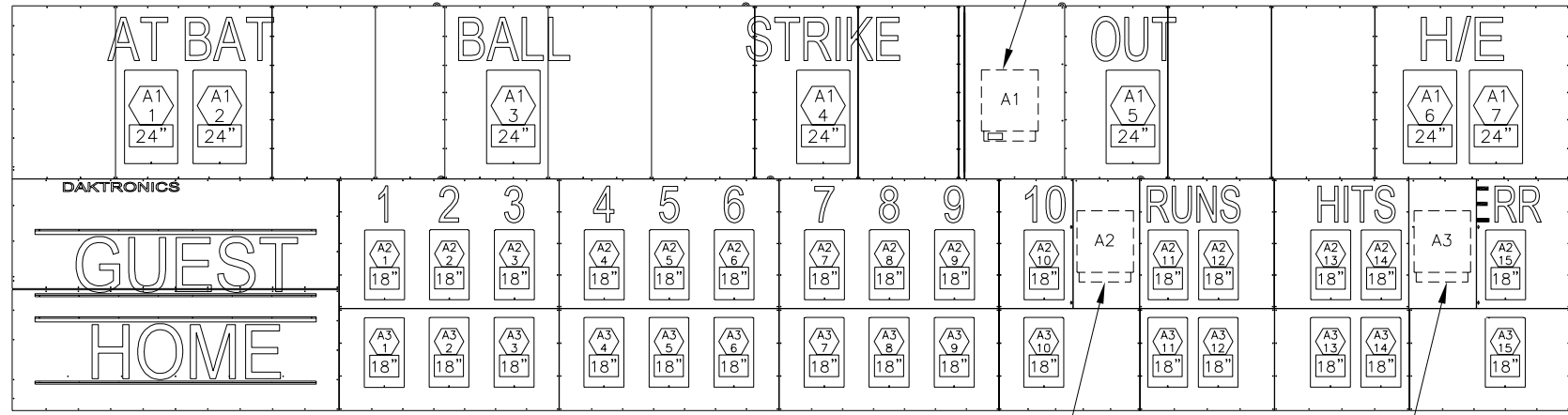
REVISION 01 APPR. BY: SCALE: NONE 1150-R04A-115079

REV.	DATE	DESCRIPTION	BY	APPR.
01	08 MAR 05	ADDED BOTTOM VIEW	KQB	

REV.	02	ADDED KNOCKOUTS	MOOPL	BY	APPR.
01	25FEB02	MOVED MASTER DRIVER FROM A2 TO A1	MOOPL		
DATE	27NOV01	DESCRIPTION			

BA-2002-11

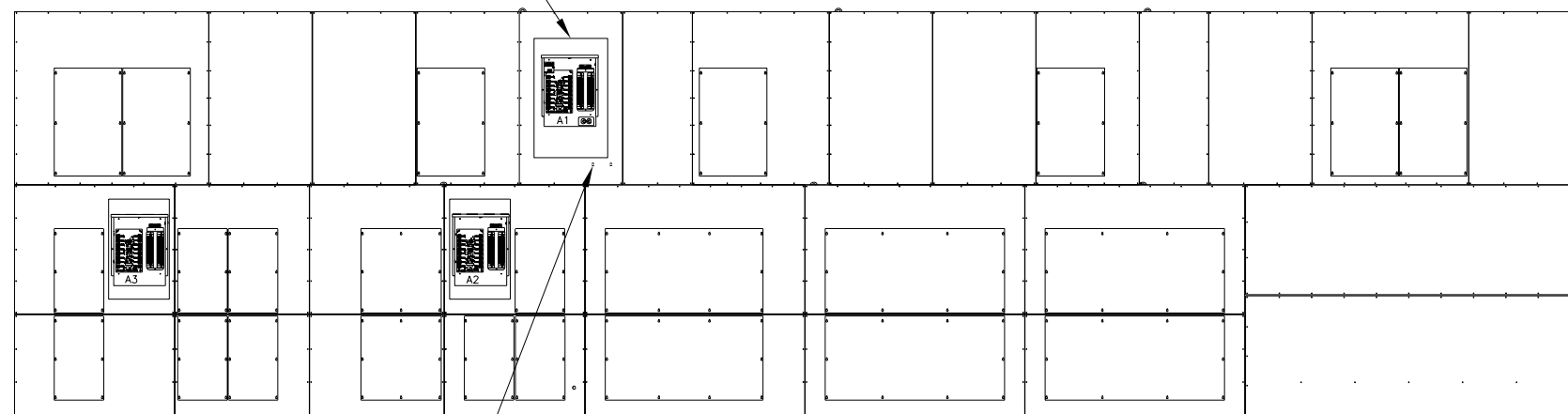
ENCLOSED 16 COLUMN MASTER LED DRIVER AND POWER/SIGNAL ENCLOSURE @1. (THE COVER HAS BEEN REMOVED TO SHOW THE ENCLOSURE COMPONENT DETAIL).



ENCLOSED 16 COLUMN SLAVE LED DRIVER AND POWER/SIGNAL ENCLOSURE @2. (THE COVER HAS BEEN REMOVED TO SHOW THE ENCLOSURE COMPONENT DETAIL).

REMOVEABLE ACCESS PANELS HAVE BEEN REMOVED

FRONT VIEW



KNOCKOUTS FOR 1/2" CONDUIT

REAR VIEW

= LAMP DRIVER NUMBER & LAMP DRIVER CONNECTOR WIRED TO THAT DIGIT.

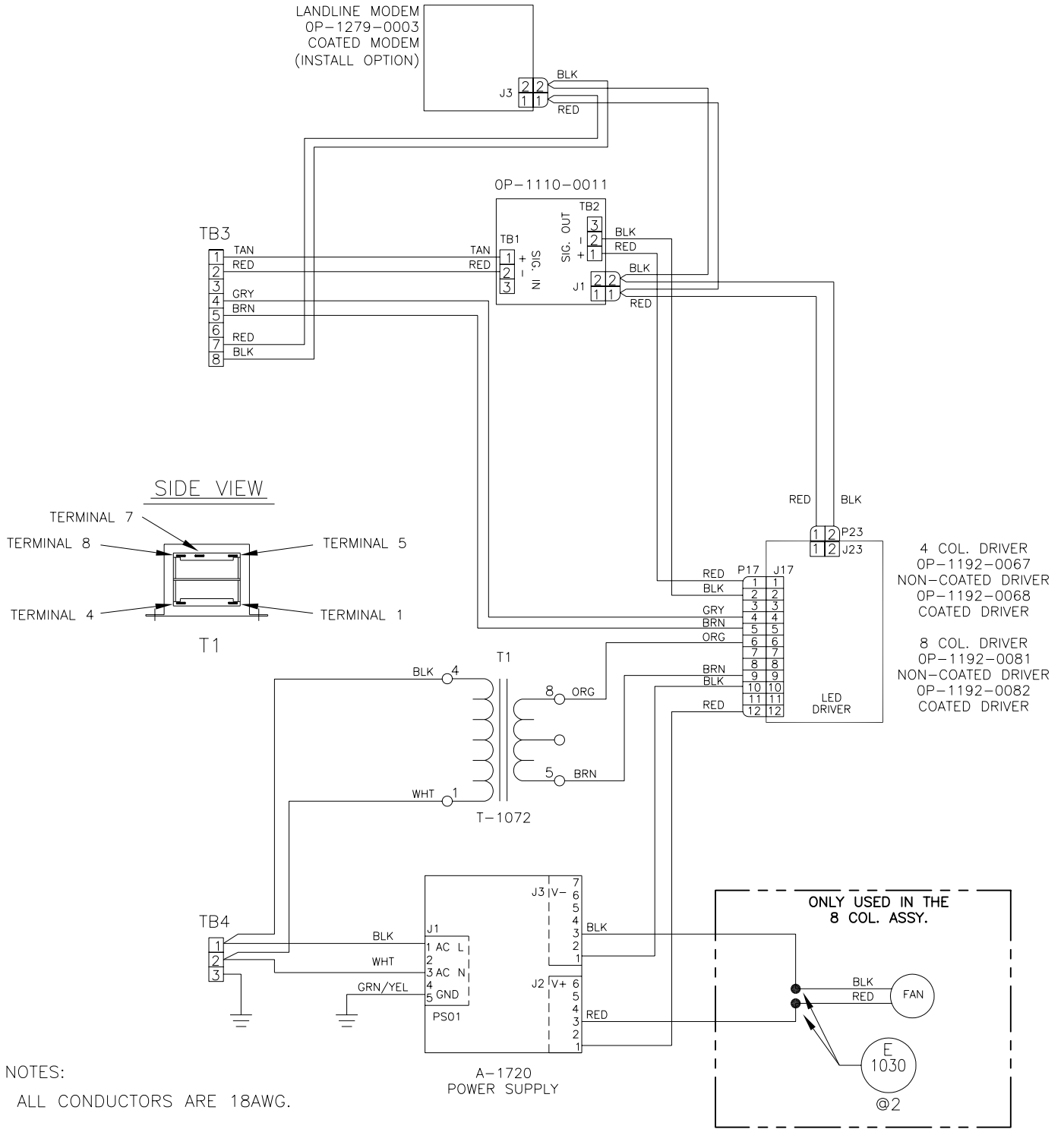
= DIGIT SIZE

HINGED ACCESS DOORS REMOVED TO SHOW THE LED DRIVER AND THE POWER/SIGNAL ENCLOSURE.

PROJ: OUTDOOR LED SCOREBOARDS  
 TITLE: COMPONENT LOCATIONS: BA-2002-11  
 DES. BY: MCOPLAN  
 DRAWN BY: MCOPLAN  
 DATE: 11NOV01  
 REVISION  
 APPR. BY: MCOPLAN  
 SCALE: 1=50  
 1192-E07A-158731

DAKTRONICS, INC. BROOKINGS, SD 57006

LANDLINE MODEM  
OP-1279-0003  
COATED MODEM  
(INSTALL OPTION)



4 COL. DRIVER  
OP-1192-0067  
NON-COATED DRIVER  
OP-1192-0068  
COATED DRIVER

8 COL. DRIVER  
OP-1192-0081  
NON-COATED DRIVER  
OP-1192-0082  
COATED DRIVER

NOTES:  
ALL CONDUCTORS ARE 18AWG.

A-1720  
POWER SUPPLY

08	17 DEC 03	CHANGED WIRE COLORS OF T1 CONNECTIONS. ADDED SIDE VIEW OF T1.	JBS	
07	29 APR 03	ADDED T1, FOR TIMING.	TAS	MWM
06	24 FEB 03	CHANGED J3 ON POWER SUPPLY TO 7 PINS PER ECO-27985.	AVB	
05	14 JAN 03	CHANGED THE BLU TEXT TO RED ON TB3 CONNECTOR	CME	
04	24 OCT 02	CHANGED 12V DC WIRING CONNECTIONS FROM MASC DRIVER TO SIGNAL SURGE PROTECTOR, LANDLINE MODEM AND TERMINAL BLOCK	JBS	
03	29MAY02	MOVED WIRES GOING INTO PIN 6 & 9 OF P17 TO PIN 10 & 12 OF P17	NMB	
02	06 MAY 02	CHANGED WIRE COLORS FOR TB3 CONNECTIONS	MWM	
01	24APR02	ADDED TB3-7 & 8 CONNECTIONS TO 4 COL. LED DRIVER. ADDED P22 AND J22 ALSO.	THS	
REV.	DATE	DESCRIPTION	BY	APPR.

0A-1279-0086  
MULTI PURPOSE HARNESS ASSY.

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DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: DATA TIME LED DISPLAYS

TITLE: SCHEMATIC; MULTIPURPOSE LED DRVR

DES. BY: MMILLER

DRAWN BY: MMILLER

DATE: 08 APR 02

REVISION  
08

APPR. BY:  
SCALE: 1=1

1279-R03A-165028



OP-1192-0067 UNCOATED OR OP-1192-0068 COATED  
4 COLUMN MASC LED DRIVER

J-27 RS232 COM	
PIN	FUNCTION
1	RX-P
2	TX-P
3	GND-N
4	+12V -P
5	DCD-P
6	RESET-P

J19 ADDRESS	
PIN	FUNCTION
1	GND-N
2	ADD0-N
3	ADD1-N
4	GND-N
5	ADD2-N
6	ADD3-N
7	GND-N
8	ADD4-N
9	ADD5-N
10	GND-N
11	ADD6-N
12	ADD7-N

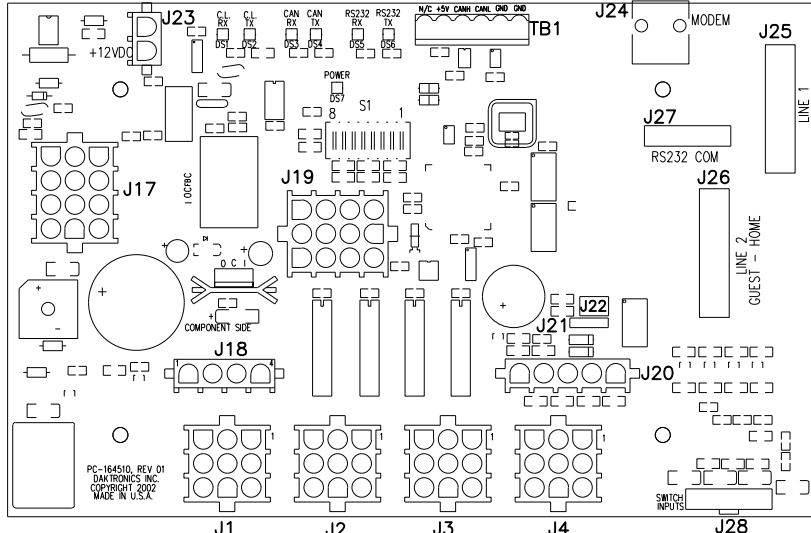
TB1 CAN	
PIN	FUNCTION
1	N/C
2	+5V-P
3	CANH-P
4	CANL-P
5	GND-N
6	GND-N

J24	
PIN	FUNCTION
1	MODEM_RTS-P
2	MODEM_RESET-P
3	MODEM_TX-P
4	GND-N
5	MODEM_RX-P
6	MODEM_DCD-P

J23 +12VDC	
PIN	FUNCTION
1	+12VDC-P
2	GND-N

J17 MAIN	
PIN	FUNCTION
1	CLIN-P
2	CLIN-N
3	232IN-P
4	CLOUT-P
5	CLOUT-N
6	16VAC-P
7	GND-N
8	N/C
9	16VAC-N
10	GND-N
11	N/C
12	+VBB-P

J18 RELAY	
PIN	FUNCTION
1	HORNOUT-N
2	AUXOUT2-N
3	120SW1-N
4	120SW1-P



J25			
FUNCTION	PIN	PIN	FUNCTION
L1_ID0-P	1	20	RED1-P
L1_ID1-P	2	19	GRN1-P
GND-N	3	18	L1_LATCH-P
GND-N	4	17	L1_DIM-P
GND-N	5	16	RED2-P
GRN2-P	6	15	RED3-P
GND-N	7	14	L1_CLK-P
GND-N	8	13	GRN3-P
L1_ID2-P	9	12	RED4-P
L1_ID3-P	10	11	GRN4-P

J26			
FUNCTION	PIN	PIN	FUNCTION
L2_ID0-P	1	20	RED1-P
L2_ID1-P	2	19	GRN1-P
GND-N	3	18	L2_LATCH-P
GND-N	4	17	L2_DIM-P
GND-N	5	16	RED2-P
GRN2-P	6	15	RED3-P
GND-N	7	14	L2_CLK-P
GND-N	8	13	GRN3-P
L2_ID2-P	9	12	RED4-P
L2_ID3-P	10	11	GRN4-P

J1-4 DIGIT	
PIN	FUNCTION
1	SEGC-N
2	SEGB-N
3	SEGA-N
4	SEGF-N
5	SEGE-N
6	SEGD-N
7	+VBB-P
8	SEGH-N
9	SEGG-N

J20 PROTOCOL	
PIN	FUNCTION
1	GND
2	PRO-N
3	PR1-N
4	PR2-N
5	PR3-N

J21 ISP	
PIN	FUNCTION
1	VFP-P
2	BKD-P
3	GND-N
4	RESET-P

J28 SWITCH	
PIN	FUNCTION
1	SWITCH1-P
2	SWITCH1-N
3	SWITCH2-P
4	SWITCH2-N
5	SWITCH3-P
6	SWITCH3-N
7	SWITCH4-P
8	SWITCH4-N

J22 ISP	
PIN	FUNCTION
1	BKD-P
2	GND-N
3	N/C
4	RESET-P
5	VFP-P
6	+5V-P

NOTE:

- RED LED CL RX WILL BE ON OR BLINKING WHEN THE DRIVER IS RECEIVING SIGNAL AND OFF WHEN THERE IS NO SIGNAL WITH CL
- GREEN LED CL TX WILL BE ON OR BLINKING WHEN THE DRIVER IS RECEIVING SIGNAL AND OFF WHEN THERE IS NO SIGNAL WITH CL
- RED LED CAN RX WILL BE BLINKING WHEN THE DRIVER IS RECEIVING SIGNAL AND ON WHEN THERE IS NO SIGNAL WITH CAN
- GREEN LED CAN TX WILL BE BLINKING WHEN THE DRIVER IS RECEIVING SIGNAL AND ON WHEN THERE IS NO SIGNAL WITH CAN
- IF THERE IS NOT A CAN DEVICE CONNECTED TO TB1, CAN RX AND TX LEDS WILL BE ON AND STEADY.
- RED LED RS232 RX WILL BE ON OR BLINKING WHEN THE DRIVER IS RECEIVING SIGNAL AND OFF WHEN THERE IS NO SIGNAL WITH RS232
- GREEN LED RS232 TX6 WILL BE ON OR BLINKING WHEN THE DRIVER IS RECEIVING SIGNAL AND OFF WHEN THERE IS NO SIGNAL WITH RS232
- GREEN LED POWER INDICATES THE DRIVER HAS POWER

REV	DATE:	CORRECTED S1 PINOUT	BY:
04	01 FEB 13		RBN
3	27 NOV 04	UPDATE DRIVER J-27 FOR CORRECT PIN OUT	BY:
2	16 MAY 03	UPDATE DRIVER FOR LATEST REVISION OF MASC DRIVER.	BY:
1	06 JUN 02	ADDED LED LABELS ADDED NEW NOTES	BY:

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	PROJ: <b>OUTDOOR LED SCOREBOARDS</b> TITLE: <b>4 COLUMN MASC LED DRIVER SPECIFICATIONS</b>	
DESIGN:	DRAWN: <b>JSPAHR</b>	DATE: <b>29 APR 02</b>
SCALE: <b>1=2</b>		
SHEET	REV	JOB NO:
	<b>04</b>	<b>P1192</b>
FUNC -TYPE-SIZE		
<b>R - 07 - A</b>		
<b>166216</b>		

REV.	DATE	DESCRIPTION	BY	APPR.
02	09 NOV 06	UPDATED DRAWING TO SHOW GEN III OR IV DESIGN.	MMM	
01	20 FEB 03	CORRECTED SPELLING ON NEUT ADDED 16 COL. WIDE PART NUMBER	MMM	

PROJ:	OUTDOOR LED SCOREBOARDS
TITLE:	SCHEMATIC; GEN III & IV OD LED, 3 DRVYR DISPLAY
DES. BY:	MILLER
APPR. BY:	MILLER
DATE:	04 DEC 02
REVISION	SCALE: NONE
02	1192-R10A-179541

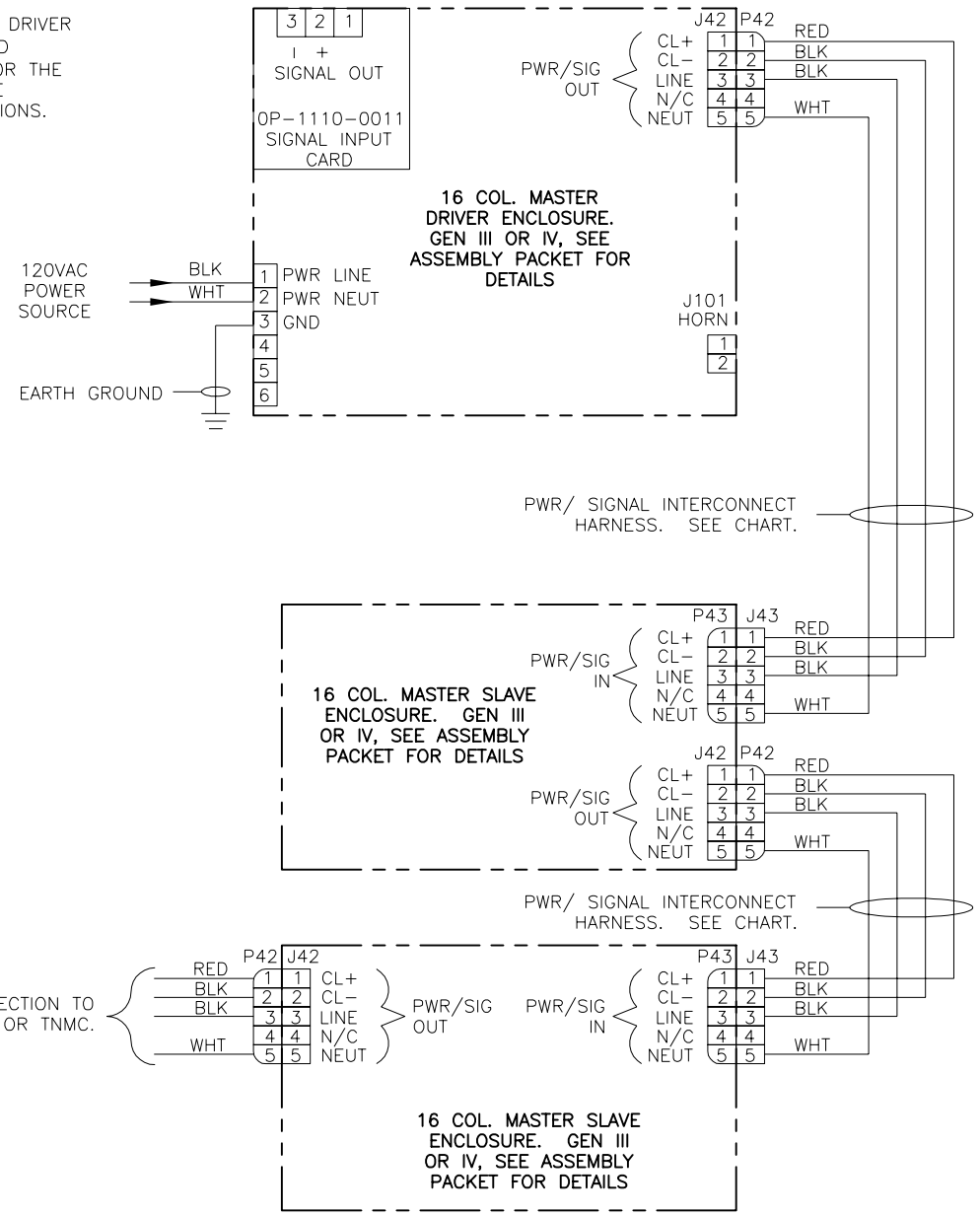
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THIS SCHEMATIC REPRESENTS THE INTERCONNECT OF THE MASTER DRIVER TO OTHER DRIVERS/TNMC'S IN A MULTI DRIVER SCOREBOARD CONFIGURATION. SEE THE PRE-PAINT ASSEMBLY DRAWING AND/OR THE FINAL ASSEMBLY DRAWING FOR THE PART NUMBERS OF THE INTERCONNECT HARNESSES NEEDED AND INSTALLATION INSTRUCTIONS.

PWR/SIG INTERCONNECT HARNESS

PART NUMBER	LENGTH
0A-1192-1028	4'
0A-1192-1029	8'
0A-1192-1030	10'
0A-1192-1031	12'
0A-1192-1032	16'
0A-1192-1033	22'
0A-1192-1034	26'
0A-1192-1083	30'
0A-1192-1084	35'

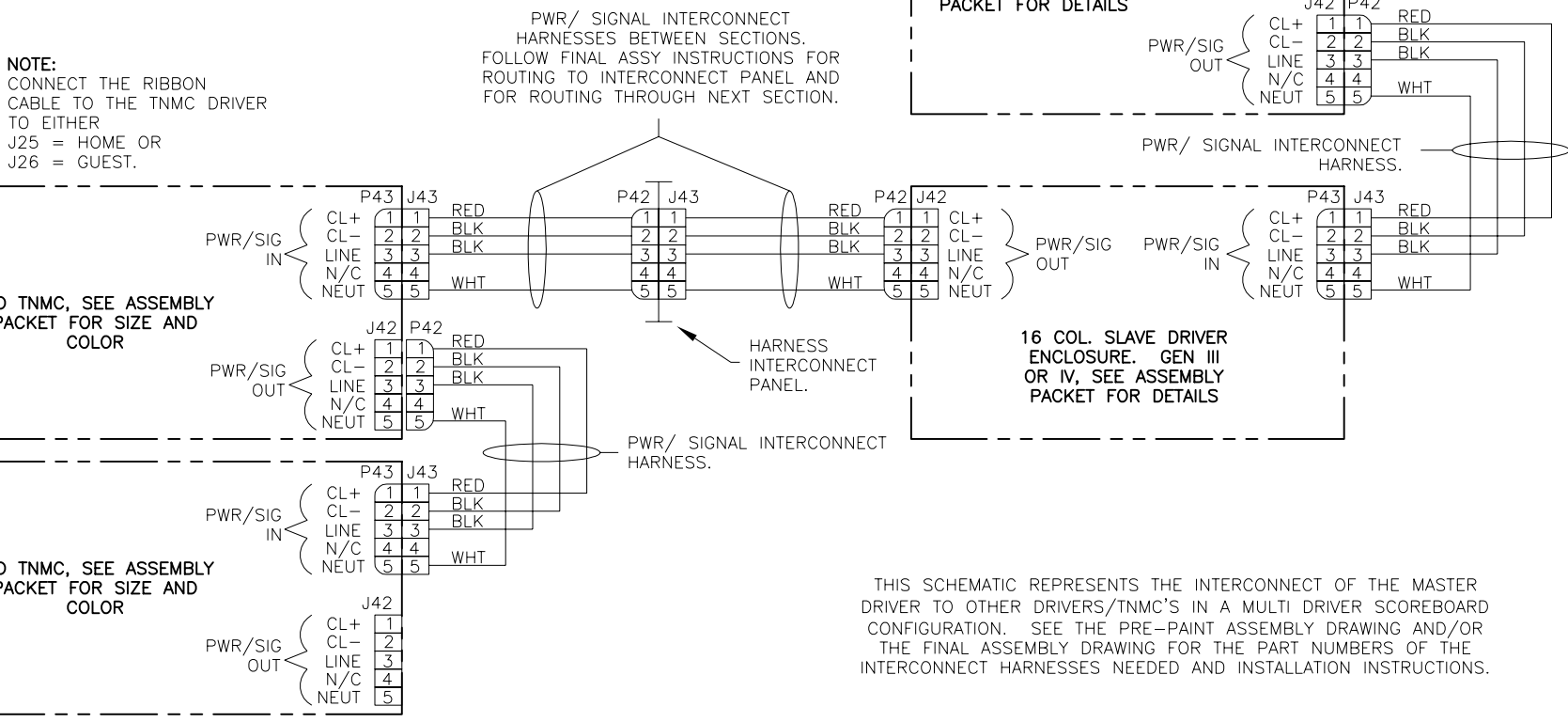
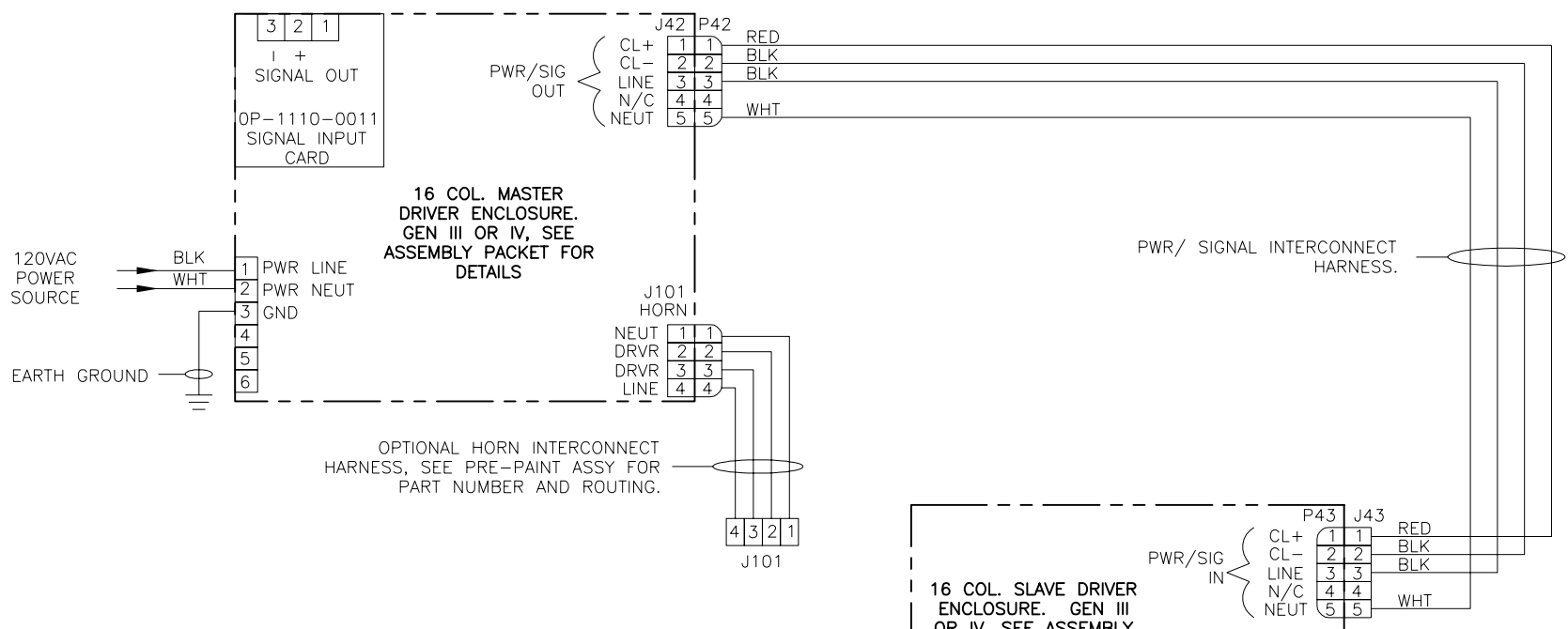


PWR/ SIGNAL INTERCONNECT HARNESS. SEE CHART.

PWR/ SIGNAL INTERCONNECT HARNESS. SEE CHART.

OPTIONAL CONNECTION TO NEXT DRIVER OR TNMC.

REV.	DATE	DESCRIPTION	BY	APPR.
02	08 MAY-03	CHANGED TNMC TEXT TO NEW GEN 3 AND ADDED NOTE	TAS	MMM
01	20 FEB 03	CORRECTED THE SPELLING FOR NEUT. ADDED 16 COL. WIDE PART NUMBERS.	MMM	



**NOTE:**  
CONNECT THE RIBBON CABLE TO THE TNMC DRIVER TO EITHER  
J25 = HOME OR  
J26 = GUEST.

THIS SCHEMATIC REPRESENTS THE INTERCONNECT OF THE MASTER DRIVER TO OTHER DRIVERS/TNMC'S IN A MULTI DRIVER SCOREBOARD CONFIGURATION. SEE THE PRE-PAINT ASSEMBLY DRAWING AND/OR THE FINAL ASSEMBLY DRAWING FOR THE PART NUMBERS OF THE INTERCONNECT HARNESSES NEEDED AND INSTALLATION INSTRUCTIONS.

PROJ: OUTDOOR LED SCOREBOARDS  
TITLE: SCHEMATIC; GEN III & IV, 3 DRY, MULTI-SEC /W TNMC  
DES. BY: MILLER  
DRAWN BY: MILLER  
DATE: 06 DEC 02

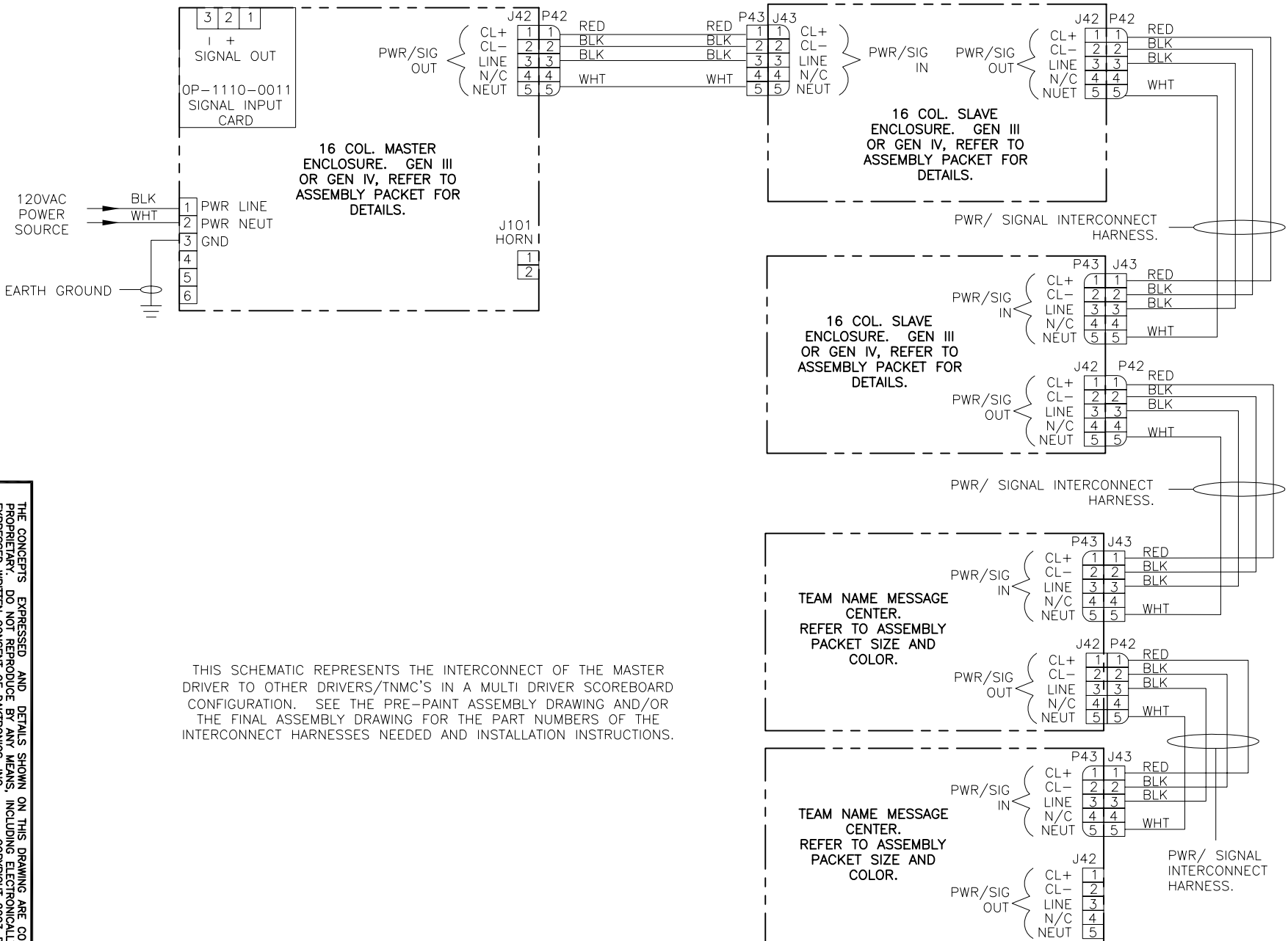
REVISION 02  
APPR. BY: NONE  
SCALE: NONE

1192-R10A-179593

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DAKTRONICS, INC. BROOKINGS, SD 57006

REV.	DATE	DESCRIPTION	BY	APPR.
01	20 FEB 03	CORRECTED SPELLING ON NEUT ADDED 16 COL. WIDE PART NUMBERS.	MMM	
02	08 MAY-03	CHANGED TNMC TEXT TO NEW GEN 3 AND ADDED NOTE.	TAS	MMM



THIS SCHEMATIC REPRESENTS THE INTERCONNECT OF THE MASTER DRIVER TO OTHER DRIVERS/TNMC'S IN A MULTI DRIVER SCOREBOARD CONFIGURATION. SEE THE PRE-PAINT ASSEMBLY DRAWING AND/OR THE FINAL ASSEMBLY DRAWING FOR THE PART NUMBERS OF THE INTERCONNECT HARNESSES NEEDED AND INSTALLATION INSTRUCTIONS.

**NOTE:**  
CONNECT THE RIBBON CABLE TO THE TNMC DRIVER TO EITHER  
J25 = HOME OR  
J26 = GUEST.

PROJ: OUTDOOR LED DIGIT SCOREBOARDS  
TITLE: SCHEMATIC; GEN III & IV, 3 DRV W/ TNMC  
DES. BY: ALINDHO  
DRAWN BY: ALINDHO  
DATE: 18 DEC 02

REVISION 02  
APPR. BY: NONE  
SCALE: NONE  
1192-R10A-180081

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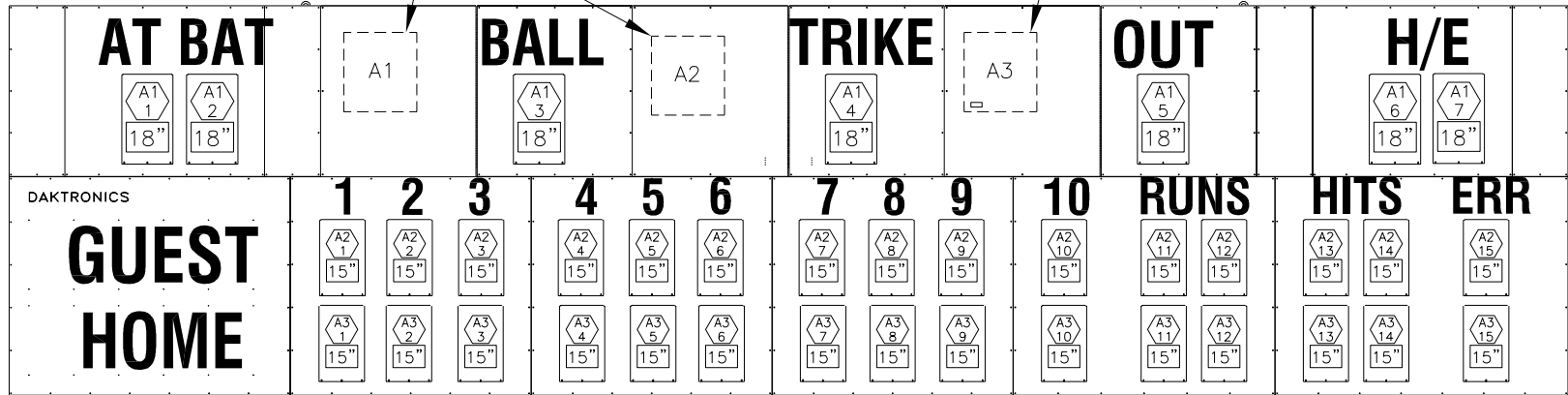
DAKTRONICS, INC. BROOKINGS, SD 57006

REV. DATE DESCRIPTION BY APPR.

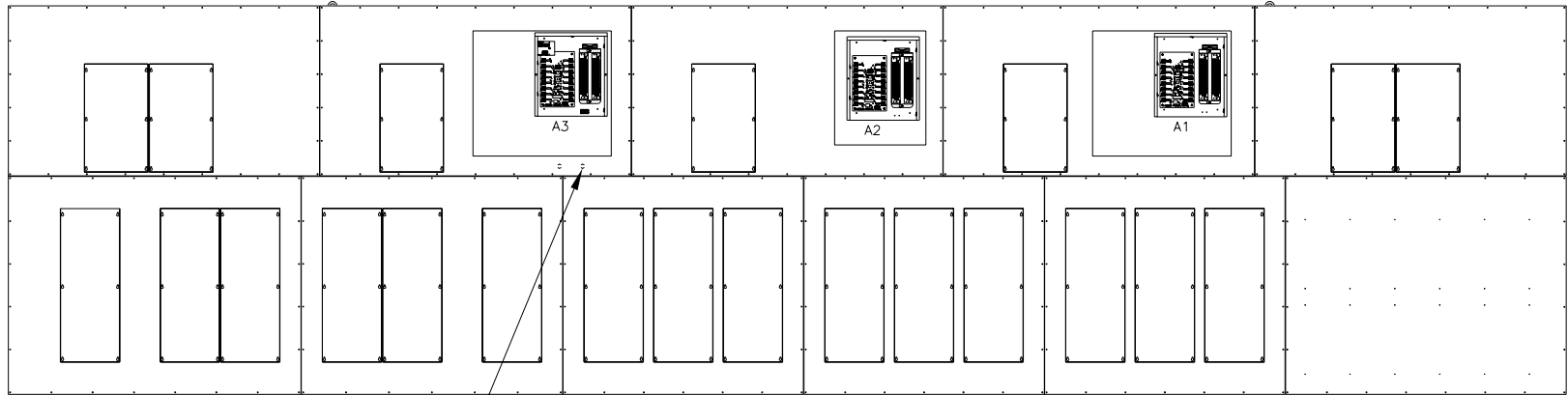
BA-2001-11/-21

ENCLOSED 16 COLUMN SLAVE LED DRIVER AND POWER/SIGNAL ENCLOSURE @2. (THE COVER HAS BEEN REMOVED TO SHOW THE ENCLOSURE COMPONENT DETAIL).

ENCLOSED 16 COLUMN MASTER LED DRIVER AND POWER/SIGNAL ENCLOSURE @1. (THE COVER HAS BEEN REMOVED TO SHOW THE ENCLOSURE COMPONENT DETAIL).



FRONT VIEW



REAR VIEW

18" = DIGIT SIZE

A1 1 = LED DRIVER NUMBER & LED DRIVER CONNECTOR WIRED TO THAT DIGIT.

REAR ACCESS COVERS REMOVED TO SHOW THE LED DRIVER AND THE POWER/SIGNAL ENCLOSURE.

PROJ: OUTDOOR LED SCOREBOARDS  
 TITLE: COMPONENT LOCATIONS; BA-2001-11/-21, G3  
 DES. BY: MCOPLAN  
 DRAWN BY: MCOPLAN  
 DATE: 26DEC02

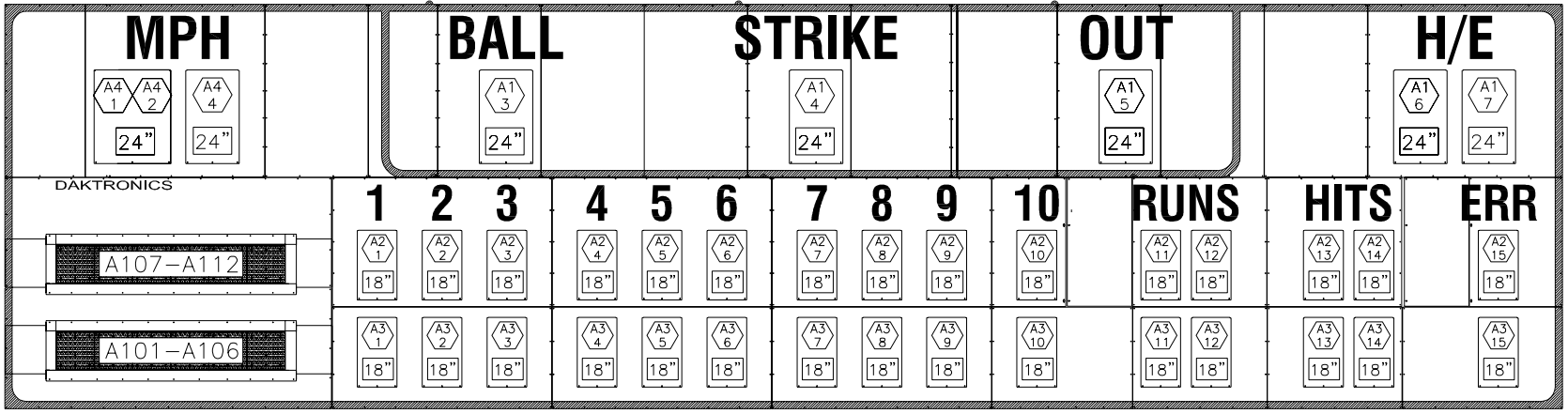
REVISION  
 APPR. BY:  
 SCALE: 1=40

1192-R08A-180359

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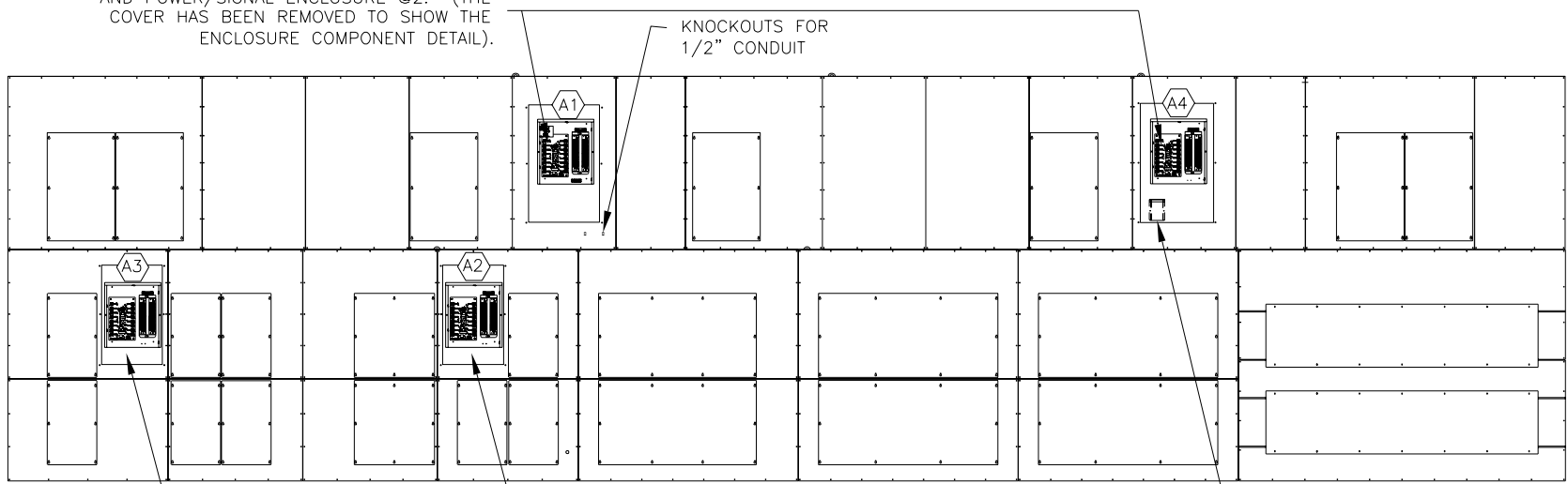
DAKTRONICS, INC. BROOKINGS, SD 57006

BA-2009-11/-21 W/ TNMC



FRONT VIEW

ENCLOSED 16 COLUMN MASTER LED DRIVER AND POWER/SIGNAL ENCLOSURE @2. (THE COVER HAS BEEN REMOVED TO SHOW THE ENCLOSURE COMPONENT DETAIL).



REAR VIEW

ENCLOSED 16 COLUMN SLAVE LED DRIVER AND POWER/SIGNAL ENCLOSURE @2. (THE COVER HAS BEEN REMOVED TO SHOW THE ENCLOSURE COMPONENT DETAIL).

SOP SIGNAL ENCLOSURE

REAR ACCESS DOORS REMOVED TO SHOW THE LED DRIVER AND POWER/SIGNAL ENCLOSURE.

A1 1 = LED DRIVER NUMBER & LED DRIVER CONNECTOR WIRED TO THAT DIGIT.

18" = DIGIT SIZE

REV. DATE DESCRIPTION BY APPR.

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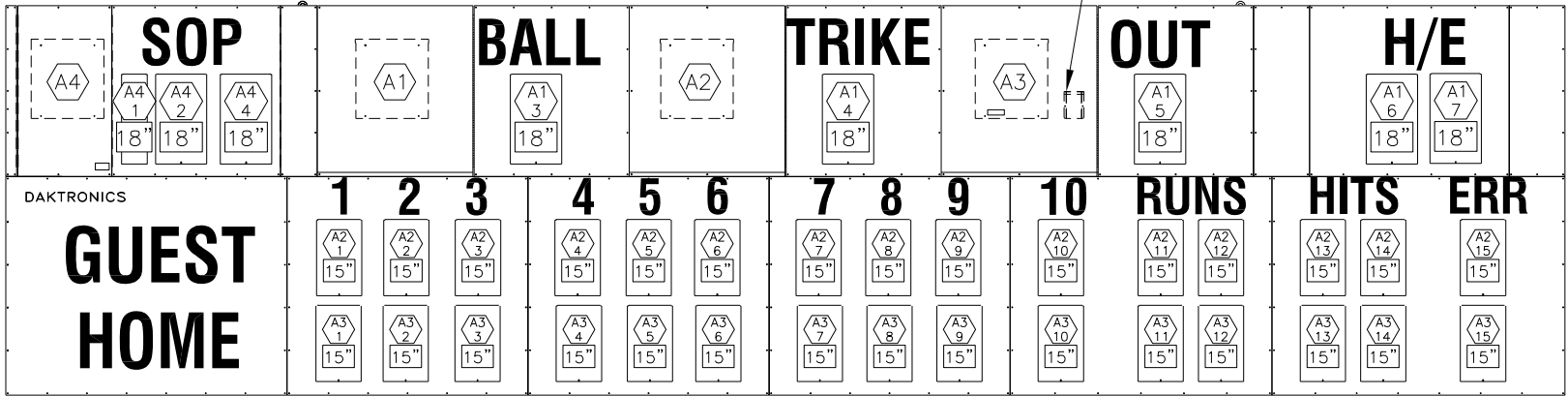
DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: OUTDOOR LED SCOREBOARDS  
 TITLE: COMPONENT LOCATIONS; BA-2009-11/-21 W/ TNMC, G3  
 DES. BY: MCOPLAN DRAWN BY: MCOPLAN DATE: 28MAR03

REVISION APPR. BY: DATE: 1192-R08A-185787  
 SCALE: 1=50

BA-2008-11/-21

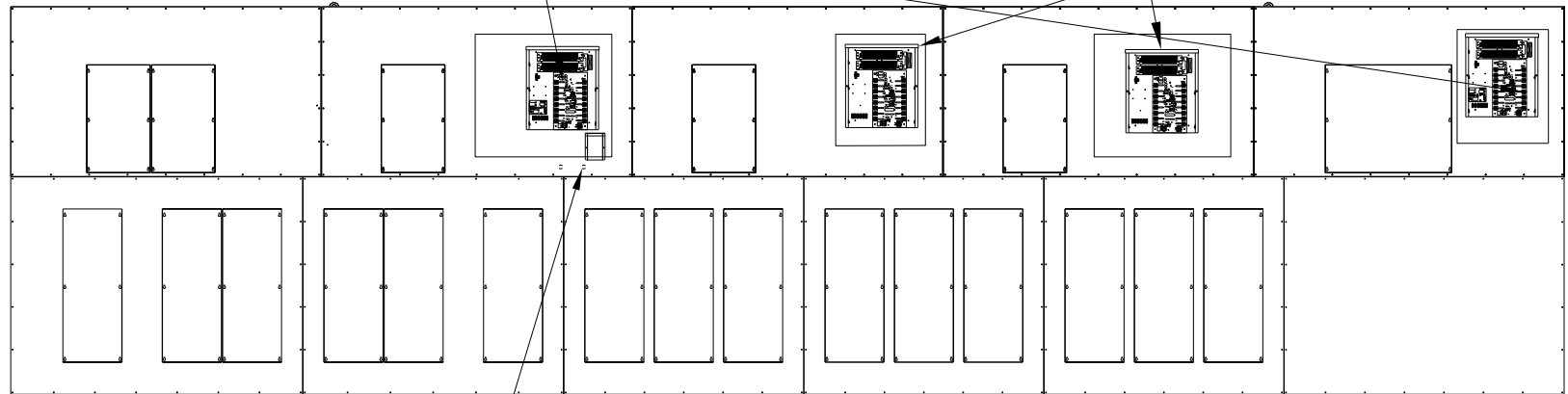
SOP SIGNAL ENCLOSURE



FRONT VIEW

ENCLOSED 16 COLUMN MASTER LED DRIVER AND POWER/SIGNAL ENCLOSURE @2. (THE COVER HAS BEEN REMOVED TO SHOW THE ENCLOSURE COMPONENT DETAIL).

ENCLOSED 16 COLUMN SLAVE LED DRIVER AND POWER/SIGNAL ENCLOSURE @2. (THE COVER HAS BEEN REMOVED TO SHOW THE ENCLOSURE COMPONENT DETAIL).



KNOCKOUTS FOR 1/2" CONDUIT

REAR VIEW

18" = DIGIT SIZE

A1 1 = LED DRIVER NUMBER & LED DRIVER CONNECTOR WIRED TO THAT DIGIT.

REAR ACCESS DOORS REMOVED TO SHOW THE LED DRIVER AND POWER/SIGNAL ENCLOSURE.

REV.	02	16 FEB 10	UPDATED DRIVERS AND SOP SIGNAL ENCLOSURE	DESCRIPTION	BY	APPR.
	01	30 MAR 07	UPDATED SOP XI DIGIT DESIGNATION		MMM	

PROJ.	OUTDOOR LED SCOREBOARDS
TITLE	COMPONENT LOCATIONS - BA-2008-11/-21 - G3
DES. BY	MCOPLAN
REVISION	02
SCALE	1=40
DATE	31MAR03
APP. BY	
APP. BY	
DATE	
APP. BY	
DATE	

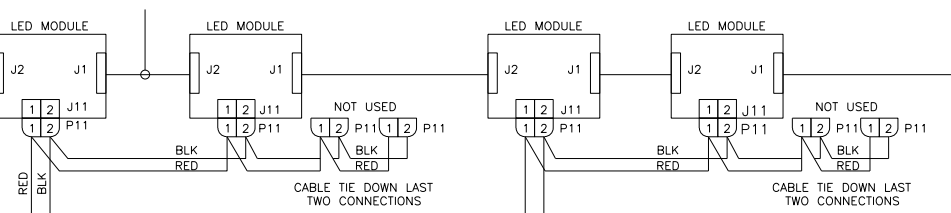
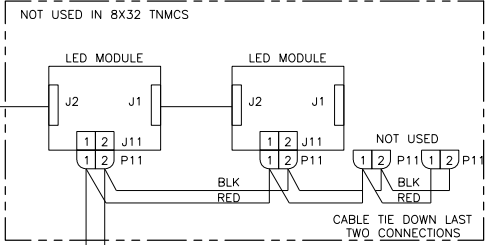
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1192-R08A-185855

OA-1192-2653 - 8X32 2.5" RED LED TNMC, GEN III & GEN IV  
 OA-1192-2575 - 8X48 2.5" RED LED TNMC, GEN III & GEN IV

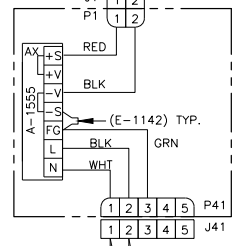
OA-1000-0018  
 36" RIBBON CABLE TYP.  
 FOR ALL MODULE TO MODULE  
 CONNECTIONS



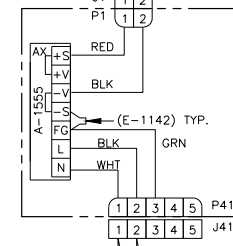
OA-1213-2012, 4  
 MOD. HARNESS

OA-1213-2012, 4  
 MOD. HARNESS

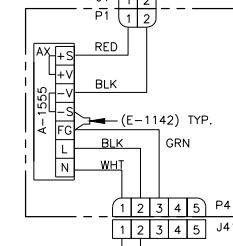
OA-1213-2012, 4  
 MOD. HARNESS



OA-1192-2655  
 SINGLE PWR  
 SUPPLY ASSY.



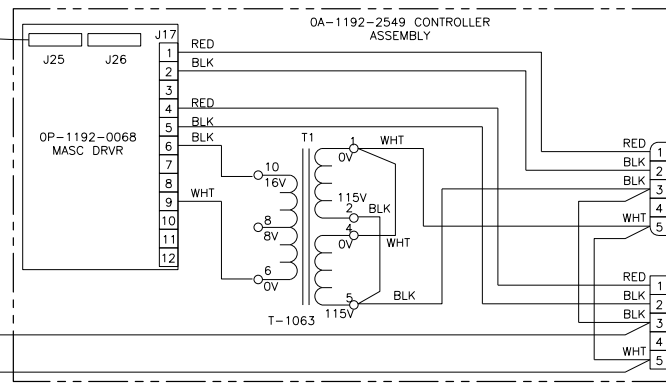
OA-1192-2655  
 SINGLE PWR  
 SUPPLY ASSY.



OA-1192-2655  
 SINGLE PWR  
 SUPPLY ASSY.

OA-1192-2317  
 HARNESS; PWR  
 INTRCNCT.

OA-1000-0017, 30"  
 RIBBON CABLE



OA-1192-2549 CONTROLLER  
 ASSEMBLY

OP-1192-0068  
 MASC DRVR

T1

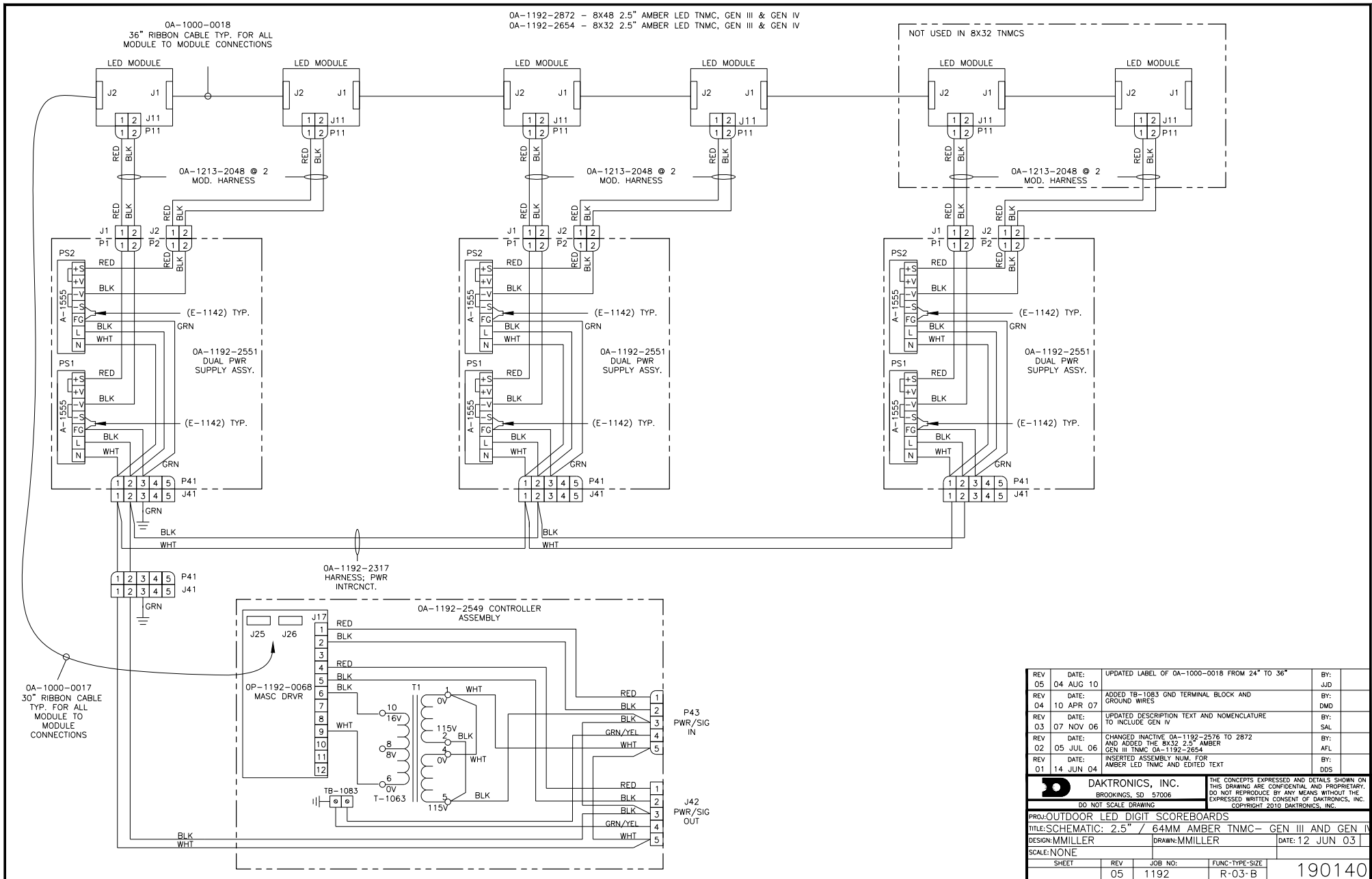
T-1063

P43  
 PWR/SIG  
 IN

P42  
 PWR/SIG  
 OUT

REV 02	DATE: 04 AUG 10	UPDATED LABEL AND CHANGED OA-1000-0018 FROM 24" TO 36"	BY: JJD
REV 01	DATE: 07 NOV 06	ADDED 64 MM TO THE TITLE BLOCK AND ADDED GEN IV TO THE DESCRIPTION	BY: SAL
DAKTRONICS, INC. BROOKINGS, SD 57006		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 2010 DAKTRONICS, INC.	
DO NOT SCALE DRAWING			
PROJ: OUTDOOR LED DIGIT SCOREBOARDS			
TITLE: SCHEMATIC: 2.5" / 64MM RED/ORG- TNMC GEN III AND IV			
DESIGN: MMILLER		DATE: 13 MAY 03	
SCALE: NONE			
SHEET	REV 02	JOB NO: 1192	FLUNC-TYPE-SIZE R-03-B
			188553





REV 05	DATE: 04 AUG 10	UPDATED LABEL OF OA-1000-0018 FROM 24" TO 36"	BY: JJD
REV 04	DATE: 10 APR 07	ADDED TB-1083 GND TERMINAL BLOCK AND GROUND WIRES	BY: DMD
REV 03	DATE: 07 NOV 06	UPDATED DESCRIPTION TEXT AND NOMENCLATURE TO INCLUDE GEN IV	BY: SAL
REV 02	DATE: 05 JUL 06	CHANGED INACTIVE OA-1192-2576 TO 2872 AND ADDED THE 8X32 2.5" AMBER GEN III TNMC OA-1192-2654	BY: AFL
REV 01	DATE: 14 JUN 04	INSERTED ASSEMBLY NUM. FOR AMBER LED TNMC AND EDITED TEXT	BY: DDS

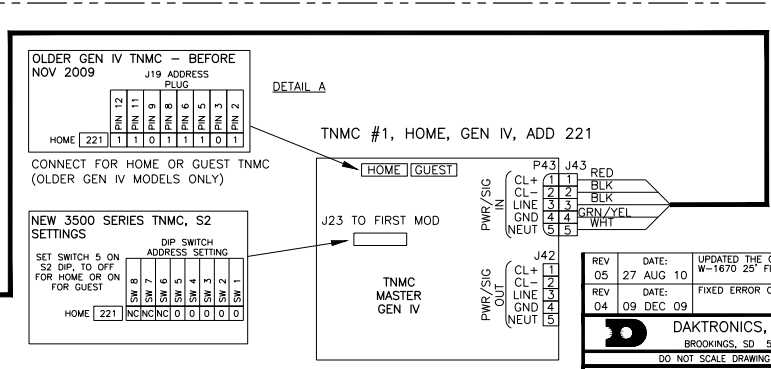
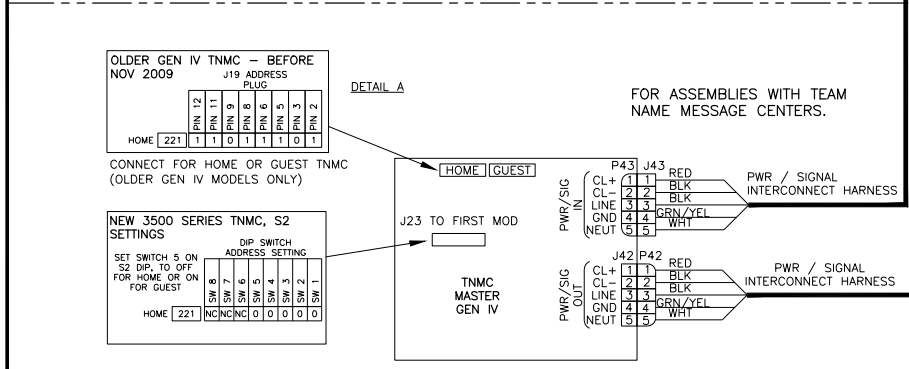
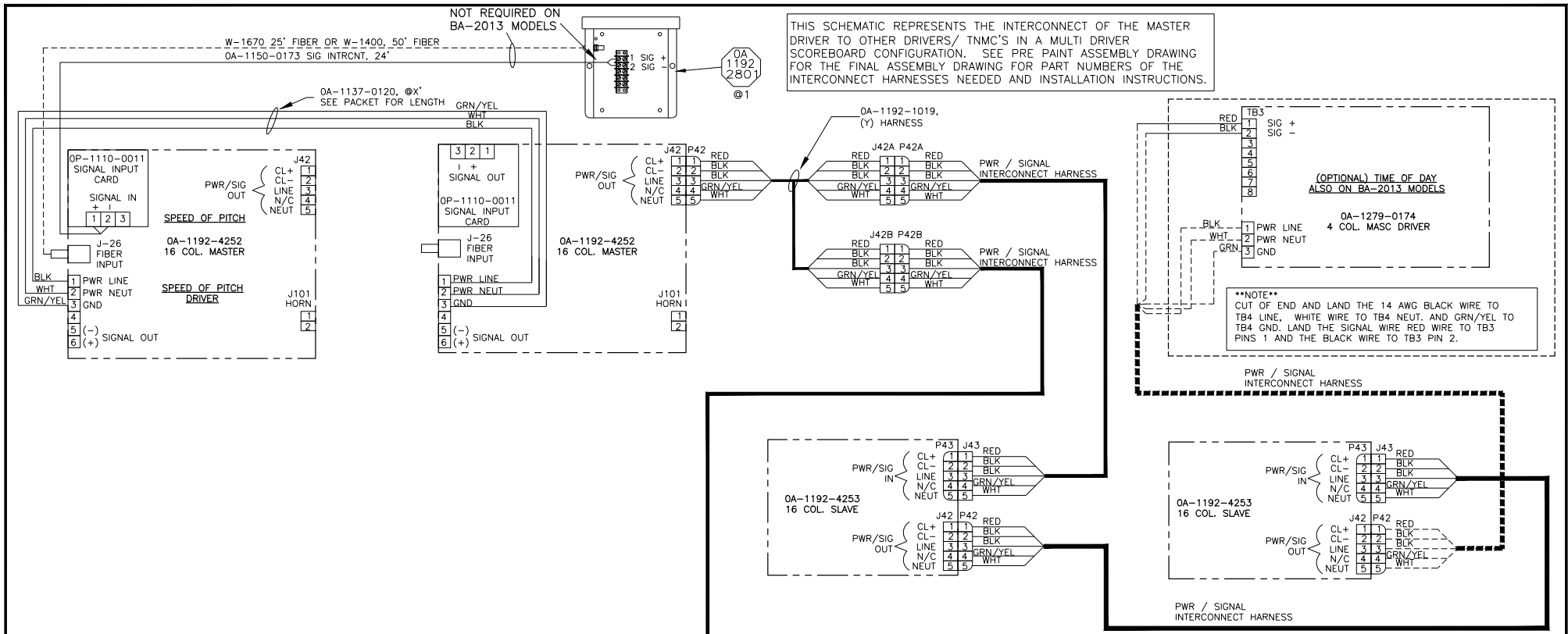
**DAKTRONICS, INC.**  
BROOKINGS, SD 57006

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DO NOT SCALE DRAWING

PROJ: OUTDOOR LED DIGIT SCOREBOARDS  
TITLE: SCHEMATIC: 2.5" / 64MM AMBER TNMC - GEN III AND GEN IV  
DESIGN: MILLER      DRAWN: MILLER      DATE: 12 JUN 03

SCALE: NONE	SHEET	REV 05	JOB NO: 1192	FLWC-TYPE-SIZE: R-03-B	190140
-------------	-------	--------	--------------	------------------------	--------



TNMC #2, GUEST, GEN IV, ADD 221

REV	DATE	DESCRIPTION	BY
03	05 FEB 09	UPDATED PWR/SIG HARNESSING FLOW.	MMH
02	20 OCT 08	UPDATE RISER TO SHOW BETTER PWR/SIGNAL FLOW WITH OPTIONAL TIME OF DAY.	MMH
01	18 JAN 08	ADDED TIME OF DAY OPTION.	DWD

REV	DATE	DESCRIPTION	BY
05	27 AUG 10	UPDATED THE OPTION OF USING W-1400 50' FIBER OR W-1670 25' FIBER	JJD
04	09 DEC 09	FIXED ERROR ON Y HARNESS	K2B

DAKTRONICS, INC.  
BROOKINGS, SD 57006

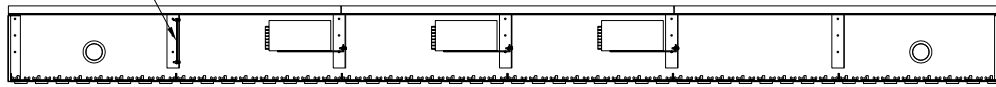
DO NOT SCALE DRAWING

PROJ: OUTDOOR LED SCOREBOARD  
TITLE: SCHEMATIC, BASEBALL G4 W/ SOP & OPT. TNMC & TOD  
DESIGN: MMILLER DRAWN: SLOWWAG DATE: 07 NOV 06  
SCALE: NONE

SHEET	REV	JOB NO.	FLWC-TYPE-SIZE
05	1192	R-03-B	204725

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LOCATION OF MDC

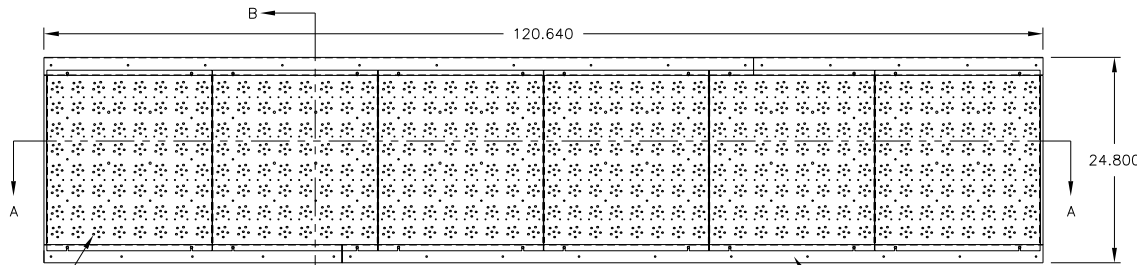


VIEW A-A

	221	1	1	0	1	1	1	0	1
		PN 12	PN 11	PN 9	PN 8	PN 6	PN 5	PN 3	PN 2

SET AD PLUG TO 221

APPLY A BEAD OF SILICONE TO THE TOP OF SHROUD TO PREVENT WATER FROM ENTERING SHELL BETWEEN SPOT-WELDED PARTS



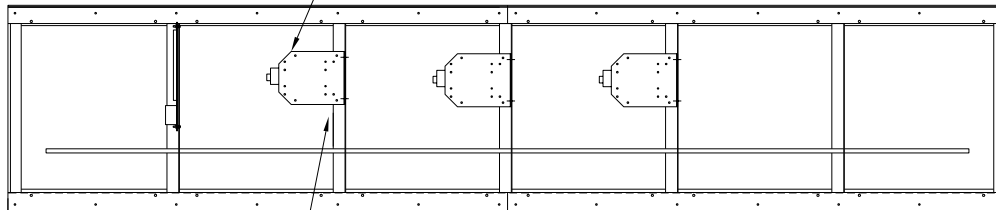
FRONT VIEW

8x8-2.5" RED/ORG MOD  
OA 1192 2673  
@6

RIVET  
HC 1125  
@28

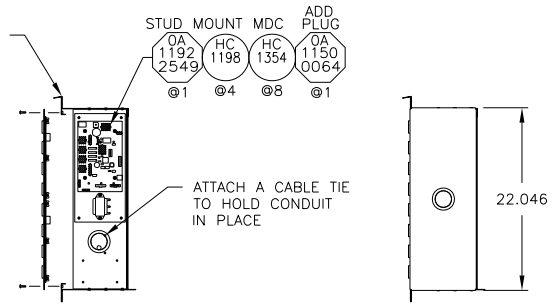
USE HOLES TO ATTACH SHELL TO THE TNMC SECTION OF THE SCOREBOARD, ATTACH WITH RIVETS.

MOUNT POWER SUPPLY SO IT CAN BE SERVICED FROM THE FRONT OR REAR BASED ON SCOREBOARD ACCESS. SEE F.ASSY DWG OF SCOREBOARD. (REAR ACCESS SHOWN)



FRONT VIEW (SHOWN WITH FRONT OPEN)

STUD MOUNT POWER SUPPLY  
HC 1198 HC 1354 OA 1192 2655  
@6 @12 @3



VIEW B-B

SIDE VIEW

STUD MOUNT MDC ADD PLUG  
OA 1192 2549 HC 1198 HC 1354 OA 1150 0064  
@1 @4 @8 @1

ATTACH A CABLE TIE TO HOLD CONDUIT IN PLACE

22.046

SCHEMATIC: 8x48-2.5" LED TNMC  
1192-R03B-188553

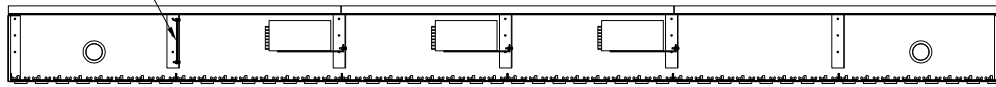
PRE-PAINT ASSY: 8x48-2.5" LED TNMC  
1192-E10B-219768

OTHER ASSY PACKETS NOT SHOWN:  
.0A-1192-0391..PRE-PAINT ASSY, 8x48-2.5" LED TNMC

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DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: OUTDOOR LED DIGIT SCOREBOARDS			
TITLE: F. ASSY, 8X48-2.5" LED TNMC, RED			
DES. BY: KBRICKER	DRAWN BY: CCAIN	DATE: 29 JUL 04	
REVISION	APPR. BY:	SCALE: 1=15	
00		1192-E10B-219923	

REV.	DATE	DESCRIPTION	BY	APPR.

LOCATION OF MDC

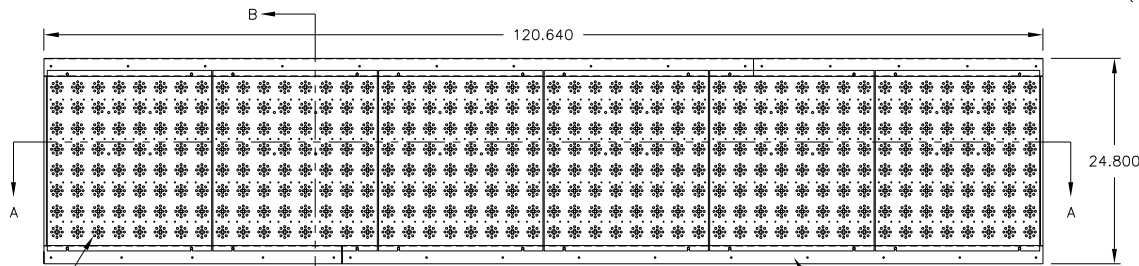


VIEW A-A

	PIN 12	PIN 11	PIN 9	PIN 8	PIN 6	PIN 5	PIN 3	PIN 2
221	1	1	0	1	1	1	0	1

SET AD PLUG TO 221

APPLY A BEAD OF SILICONE TO THE TOP OF SHROUD TO PREVENT WATER FROM ENTERING SHELL BETWEEN SPOT-WELDED PARTS. (POST-PAINT)

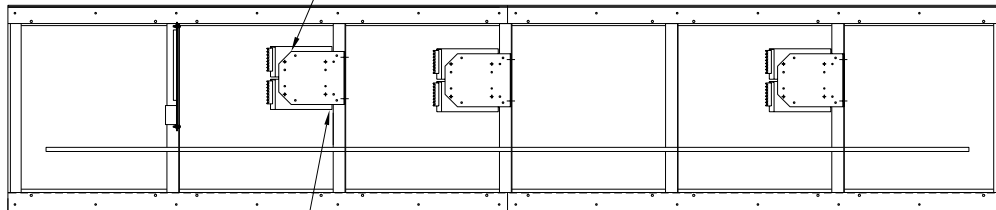


FRONT VIEW

8x8-2.5" AMB MOD  
OA 1192 2674  
@6

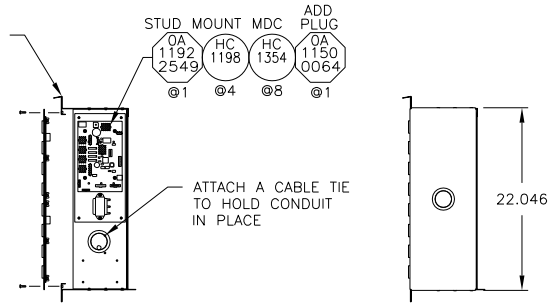
RIVET HC 1125 @28  
USE HOLES TO ATTACH SHELL TO THE TNMC SECTION OF THE SCOREBOARD, ATTACH WITH RIVETS.

MOUNT POWER SUPPLY SO IT CAN BE SERVICED FROM THE FRONT OR REAR BASED ON SCOREBOARD ACCESS. SEE F.ASSY DWG OF SCOREBOARD. (REAR ACCESS SHOWN)



FRONT VIEW (SHOWN WITH FRONT OPEN)

STUD MOUNT POWER SUPPLY  
HC 1198 HC 1354 OA 1192 2551  
@6 @12 @3



VIEW B-B

SIDE VIEW

SCHEMATIC: 8x48-2.5" AMBER LED TNMC  
1192-R03B-190140

PRE-PAINT ASSY: 8x48-2.5" LED TNMC  
1192-E10B-219768

OTHER ASSY PACKETS NOT SHOWN:  
OA-1192-0391..PRE-PAINT, 8x48-2.5" LED TNMC

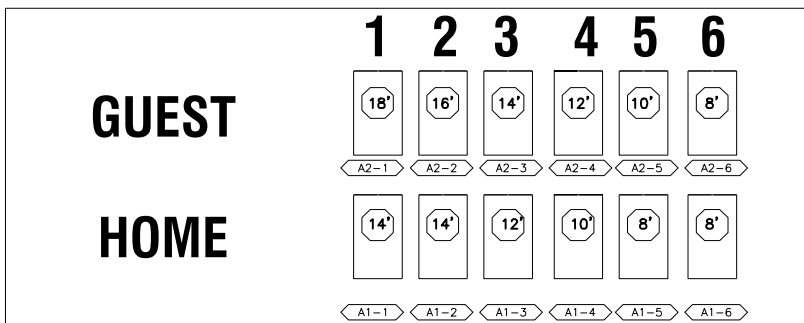
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DAKTRONICS, INC. BROOKINGS, SD 57006	
PROJ: OUTDOOR LED DIGIT SCOREBOARDS	
TITLE: F. ASSY, 8X48-2.5" LED TNMC, AMBER	
DES. BY: KBRICKER	DATE: JUL 29 04
REVISION 00	APPR. BY: CCAIN

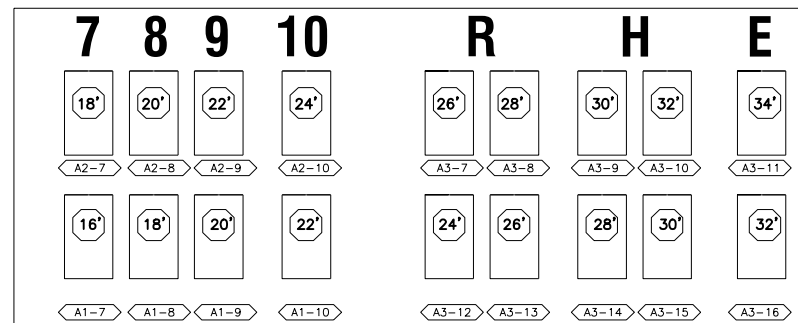
REV.	DATE	DESCRIPTION	BY	APPR.	SCALE: 1=15	1192-E10B-219932
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BA-2018-11/21

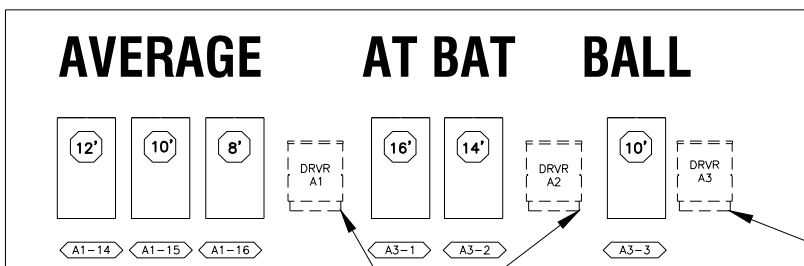
TOP LEFT



TOP RIGHT



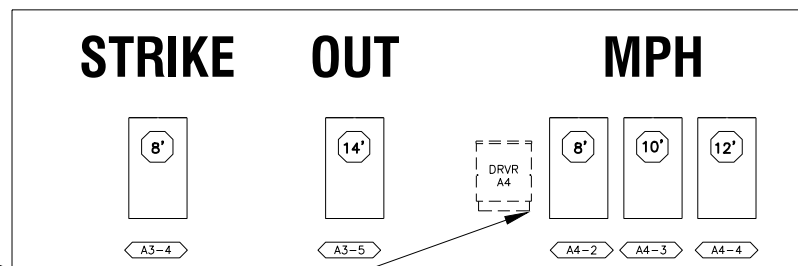
AVERAGE AT BAT BALL



BOTTOM LEFT

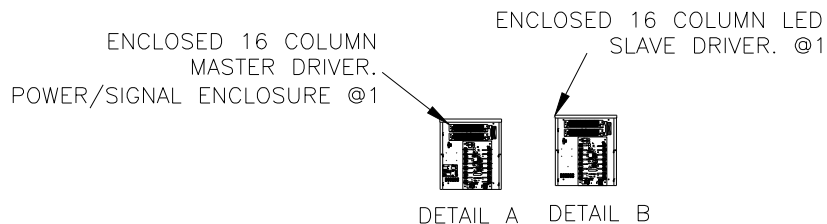
SEE DETAIL B (SLAVE DRIVER) @2

STRIKE OUT MPH



BOTTOM RIGHT

SEE DETAIL A (MASTER DRIVER) @2



**A2-7** = LED DRIVER NUMBER AND LED DRIVER CONNECTOR WIRED TO DIGIT.

**16'** = HARNESS LENGTH



**DAKTRONICS, INC.**  
BROOKINGS, SD 57006

DO NOT SCALE DRAWING

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PROJ: OUTDOOR LED SCOREBOARDS

TITLE: COMPONENT LOCATION - BA-2018-11/21

DESIGN: KBRICKER

DRAWN: CCAIN

SCALE: NONE

DATE: 31 AUG 04

REV 01 DATE: 20 JUL 11 UPDATED DRIVER NOTES

BY: MBJ

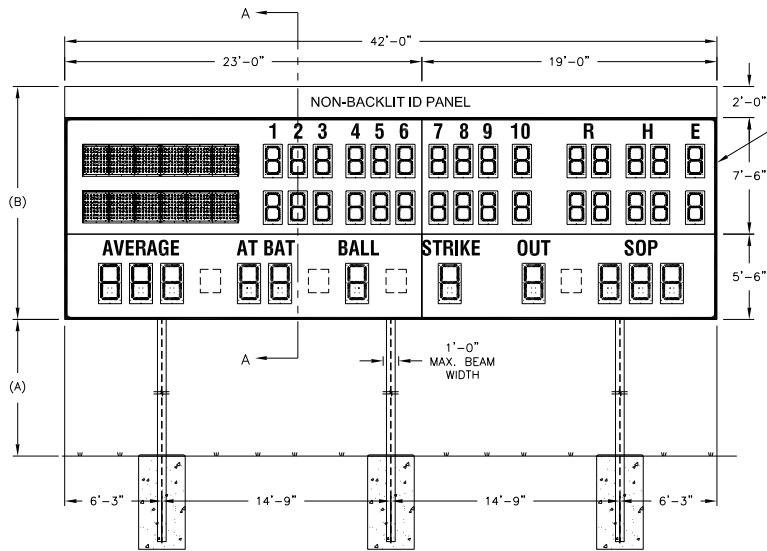
SHEET

REV 01

JOB NO: 1192

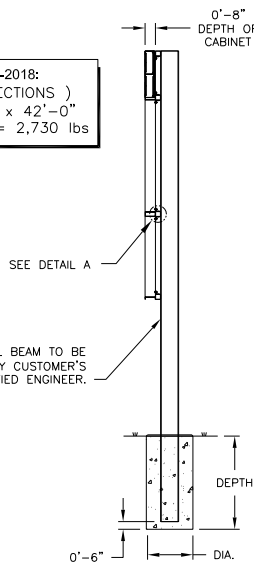
FUNC-TYPE-SIZE E-10-A

222578

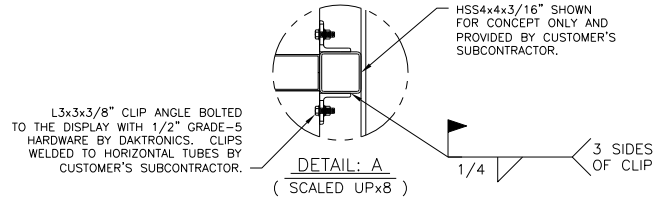


FRONT VIEW

BA-2018:  
( 4 SECTIONS )  
13'-0" x 42'-0"  
WEIGHT = 2,730 lbs



VIEW A-A



BA-2018 BEAMS & FOOTINGS						
VERTICAL DISTANCE (A)	AD PANEL HEIGHT	COMBINED HEIGHT (B)		DESIGN WIND VELOCITY		
				70 MPH	80 MPH	100 MPH
10 FT	NONE	13'-0"	BEAM	W10x39	W12x40	W12x50
			FOOTING	3.0'x8.5'	3.0'x9.5'	3.0'x11.0'
	2 FT	15'-0"	BEAM	W12x40	W12x50	W12x58
			FOOTING	3.0'x9.0'	3.0'x10.0'	3.0'x12.0'
14 FT	NONE	13'-0"	BEAM	W12x45	W12x50	W14x61
			FOOTING	3.0'x9.0'	3.0'x10.0'	3.0'x12.0'
	2 FT	15'-0"	BEAM	W12x50	W12x58	W14x68
			FOOTING	3.0'x9.5'	3.0'x10.5'	3.0'x13.0'
18 FT	NONE	13'-0"	BEAM	W12x53	W14x61	W14x74
			FOOTING	3.0'x9.5'	3.0'x10.5'	3.0'x13.0'
	2 FT	15'-0"	BEAM	W14x61	W14x68	W14x90
			FOOTING	3.0'x10.5'	3.0'x11.5'	3.0'x14.0'
4 FT	17'-0"	BEAM	W14x68	W14x74	W14x109	
		FOOTING	3.0'x11.0'	3.0'x12.0'	3.0'x15.5'	

FOOTING = DEPTH X DIAMETER

NOTES:

1. DISPLAY SECTIONS ARE OF ALL ALUMINUM CONSTRUCTION.
2. DISPLAY IS FRONT OR REAR ACCESS FOR ALL ELECTRONICS WITH THE EXCEPTION OF THE LOAD CENTER & SIGNAL TERM PANEL WHICH ARE REAR ACCESS ONLY.
3. REMOVABLE LEFT EYES ARE PROVIDED IN TOP OF EACH DISPLAY SECTION.

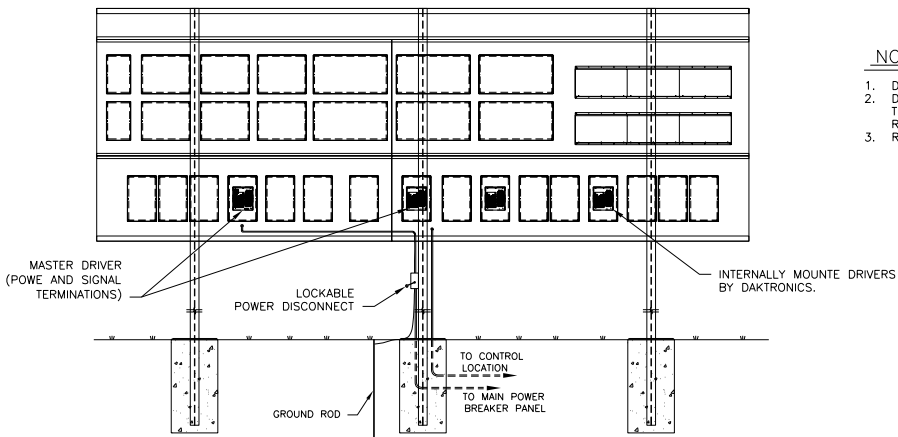
FOOTING DIMENSIONS ARE SUGGESTIONS ONLY, PROVIDED TO ASSIST WITH ESTIMATING INSTALLATION COSTS, AND ARE NOT INTENDED FOR CONSTRUCTION PURPOSES.

ACTUAL FOOTING DEPTH AND DIAMETER FOR A PARTICULAR INSTALLATION MUST BE DETERMINED USING DATA FROM A SOIL SAMPLE TEST AT THE SITE. BOTH COLUMNS AND FOOTINGS MUST BE DESIGNED BY A STATE LICENSED ENGINEER.

DAKTRONICS DOES NOT ASSUME ANY LIABILITY FOR ANY INSTALLATIONS DERIVED FROM THIS INFORMATION OR DESIGNED AND INSTALLED BY OTHERS.

A NOTE ABOUT BEAM NOMENCLATURE:

FOR A TYPICAL BEAM, W12X30 FOR EXAMPLE, "W" STANDS FOR "WIDE-FLANGE BEAM". THE FIRST NUMBER (12) IS THE APPROXIMATE FRONT TO REAR DIMENSION OF THE BEAM IN INCHES. THE SECOND NUMBER (30) IS THE WEIGHT PER FOOT IN POUNDS.



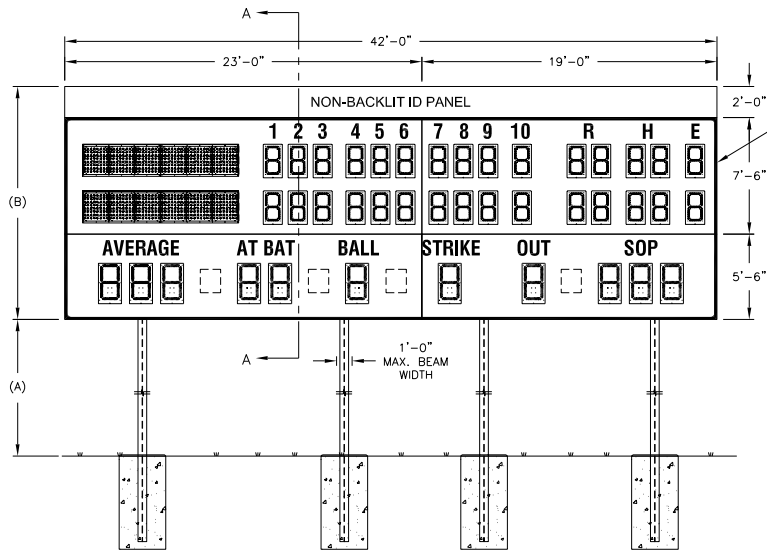
REAR VIEW

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DAKTRONICS, INC. BROOKINGS, SD 57006  
 PROJ: OUTDOOR LED SCOREBOARDS  
 TITLE: SHOP DWG, BA-2018, HORIZ TUBES  
 DES. BY: KBRICKER DRAWN BY: KBRICKER DATE: 01SEP04

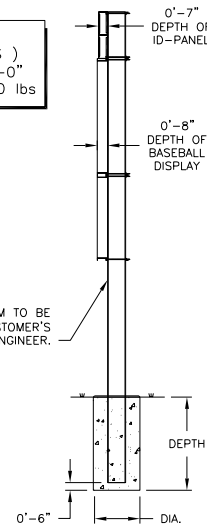
REV.	DATE	DESCRIPTION	BY	APPR.
00				

REVISION APPR. BY: SCALE: 1/8"=1' 1192-E10B-222672

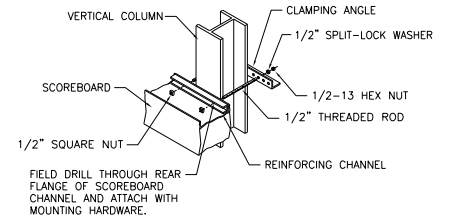


FRONT VIEW

BA-2018:  
( 4 SECTIONS )  
13'-0" x 42'-0"  
WEIGHT = 2,730 lbs



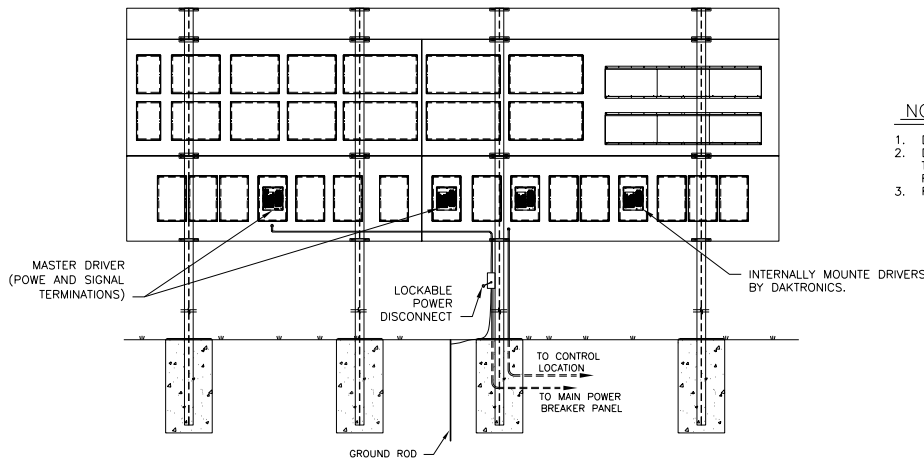
VIEW A-A



ID PANEL MTG HARDWARE:  
PROVIDED BY DAKTRONICS

BA-2018 BEAMS & FOOTINGS						
VERTICAL DISTANCE (A)	AD PANEL HEIGHT	COMBINED HEIGHT (B)		DESIGN WIND VELOCITY		
				60 MPH	80 MPH	100 MPH
10 FT	NONE	13'-0"	BEAM	W_x_x	W_x_x	W_x_x
			FOOTING	x_x_x	x_x_x	x_x_x
	2 FT	15'-0"	BEAM	W_x_x	W_x_x	W_x_x
			FOOTING	x_x_x	x_x_x	x_x_x
14 FT	NONE	13'-0"	BEAM	W_x_x	W_x_x	W_x_x
			FOOTING	x_x_x	x_x_x	x_x_x
	2 FT	15'-0"	BEAM	W_x_x	W_x_x	W_x_x
			FOOTING	x_x_x	x_x_x	x_x_x
18 FT	NONE	13'-0"	BEAM	W_x_x	W_x_x	W_x_x
			FOOTING	x_x_x	x_x_x	x_x_x
	2 FT	15'-0"	BEAM	W_x_x	W_x_x	W_x_x
			FOOTING	x_x_x	x_x_x	x_x_x
4 FT	17'-0"	BEAM	W_x_x	W_x_x	W_x_x	
		FOOTING	x_x_x	x_x_x	x_x_x	

FOOTING = DEPTH X DIAMETER



REAR VIEW

NOTES:

1. DISPLAY SECTIONS ARE OF ALL ALUMINUM CONSTRUCTION.
2. DISPLAY IS FRONT OR REAR ACCESS FOR ALL ELECTRONICS WITH THE EXCEPTION OF THE LOAD CENTER & SIGNAL TERM PANEL WHICH ARE REAR ACCESS ONLY.
3. REMOVABLE LEFT EYES ARE PROVIDED IN TOP OF EACH DISPLAY SECTION.

A NOTE ABOUT BEAM NOMENCLATURE:

FOR A TYPICAL BEAM, W12X30 FOR EXAMPLE, "W" STANDS FOR "WIDE-FLANGE BEAM". THE FIRST NUMBER (12) IS THE APPROXIMATE FRONT TO REAR DIMENSION OF THE BEAM IN INCHES. THE SECOND NUMBER (30) IS THE WEIGHT PER FOOT IN POUNDS.

FOOTING DIMENSIONS ARE SUGGESTIONS ONLY, PROVIDED TO ASSIST WITH ESTIMATING INSTALLATION COSTS, AND ARE NOT INTENDED FOR CONSTRUCTION PURPOSES.

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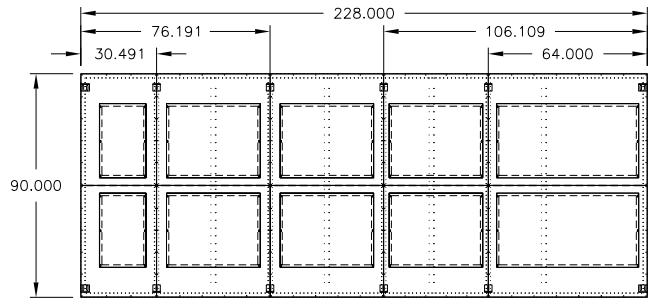
PROJ: OUTDOOR LED SCOREBOARDS

TITLE: SHOP DWG, BA-2018, POLE MOUNT

DES. BY: KBRICKER DRAWN BY: KBRICKER DATE: 17SEP04

REVISION APPR. BY: 00 SCALE: 1/8"=1' 1192-E10B-223556

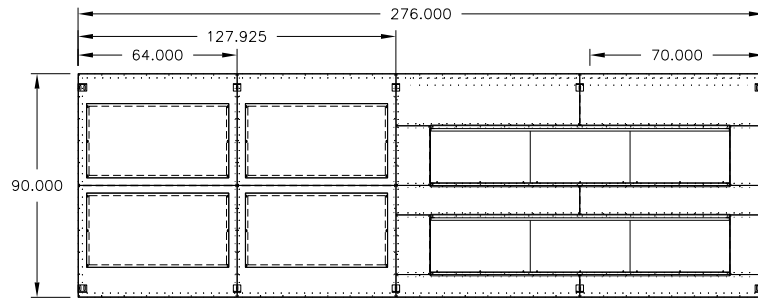
REV.	DATE	DESCRIPTION	BY	APPR.
00				



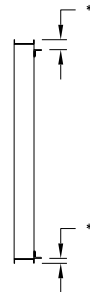
REAR VIEW



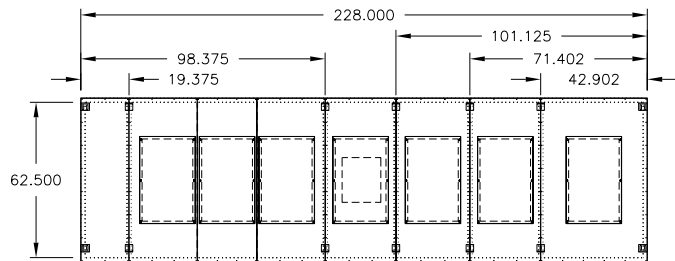
SIDE VIEW



REAR VIEW



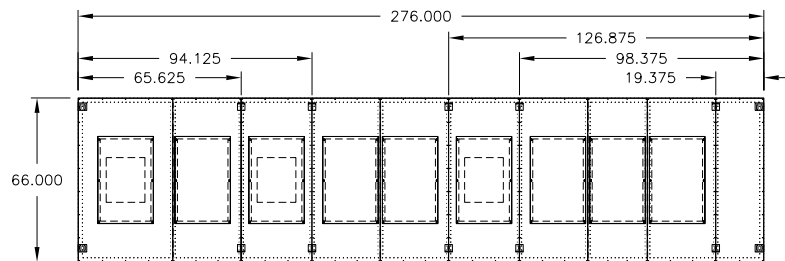
SIDE VIEW



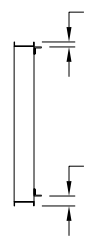
REAR VIEW



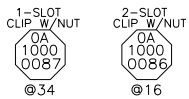
SIDE VIEW



REAR VIEW



SIDE VIEW



NOTES:

- DIMENSIONS TO CLIPS ARE TO THE CENTER OF THE CLIP.
- USE 2-SLOT CLIPS ON THE DISPLAY ENDS, AND 1-SLOT CLIP ANGLES BETWEEN THEM.
- LOCATION OF CLIP ANGLES IS VERTICALLY CRITICAL.

\* CONTACT PROJECT ENGINEER FOR CLIP ANGLE DIMENSIONS. REFER TO PROJECT BOM FRONT PAGE FOR THE PE.

OA-1157-1567...MTG HDWE; BA-2018, 3-HORIZ. POLES

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DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: OUTDOOR INTEGRATED SCOREBOARDS

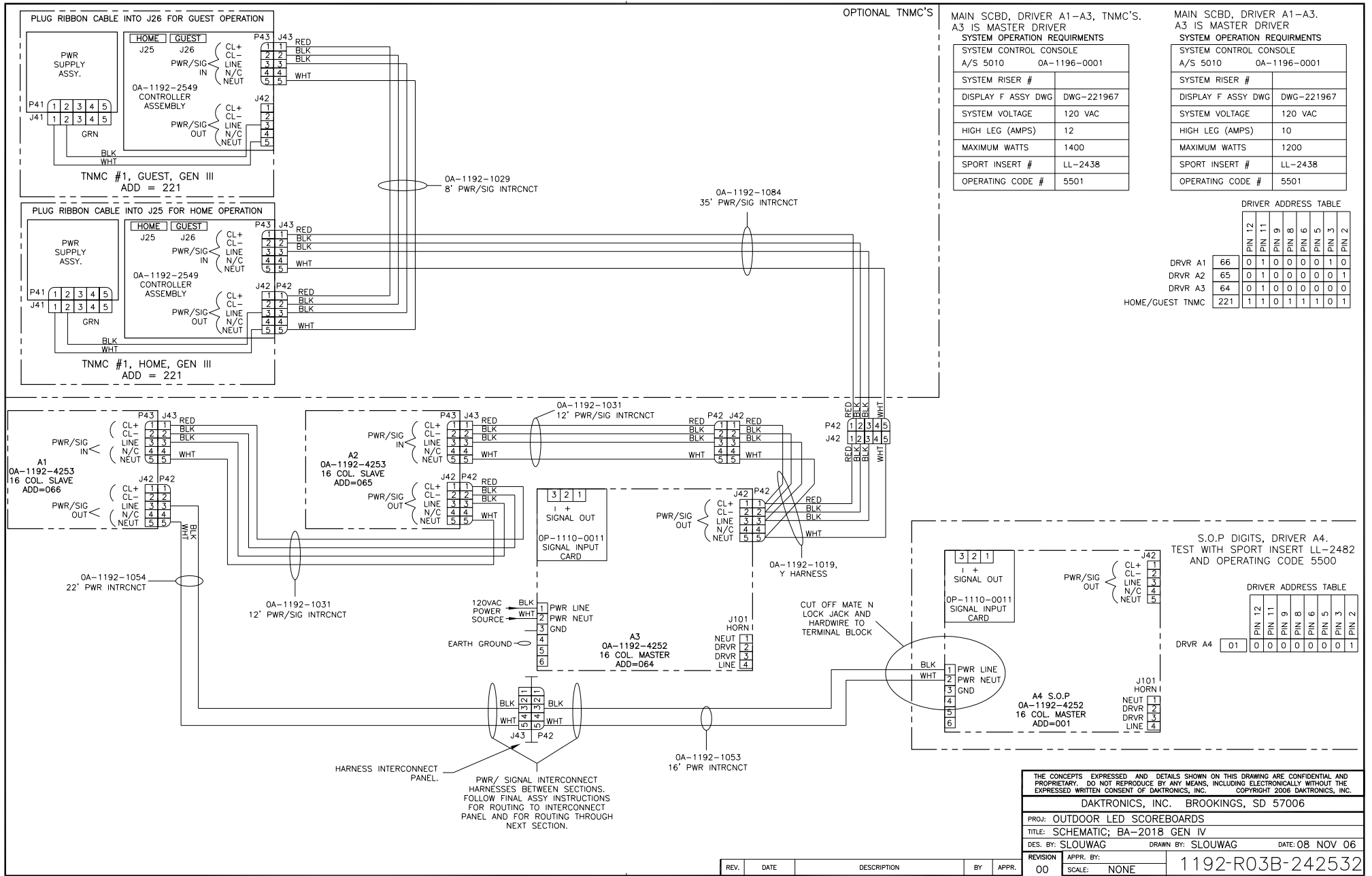
TITLE: CLIP DWG: BA-2018-11/21- G3

DES. BY: KBRICKER DRAWN BY: KBRICKER DATE: 04APR05

REV.	DATE	DESCRIPTION	BY	APPR.
01	16 APR 10	REMOVED OA-1159-0298 @2	CJH	

REVISION	APPR. BY:	1157-E10B-238121
01	SCALE: 1=50	





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DAKTRONICS, INC. BROOKINGS, SD 57006

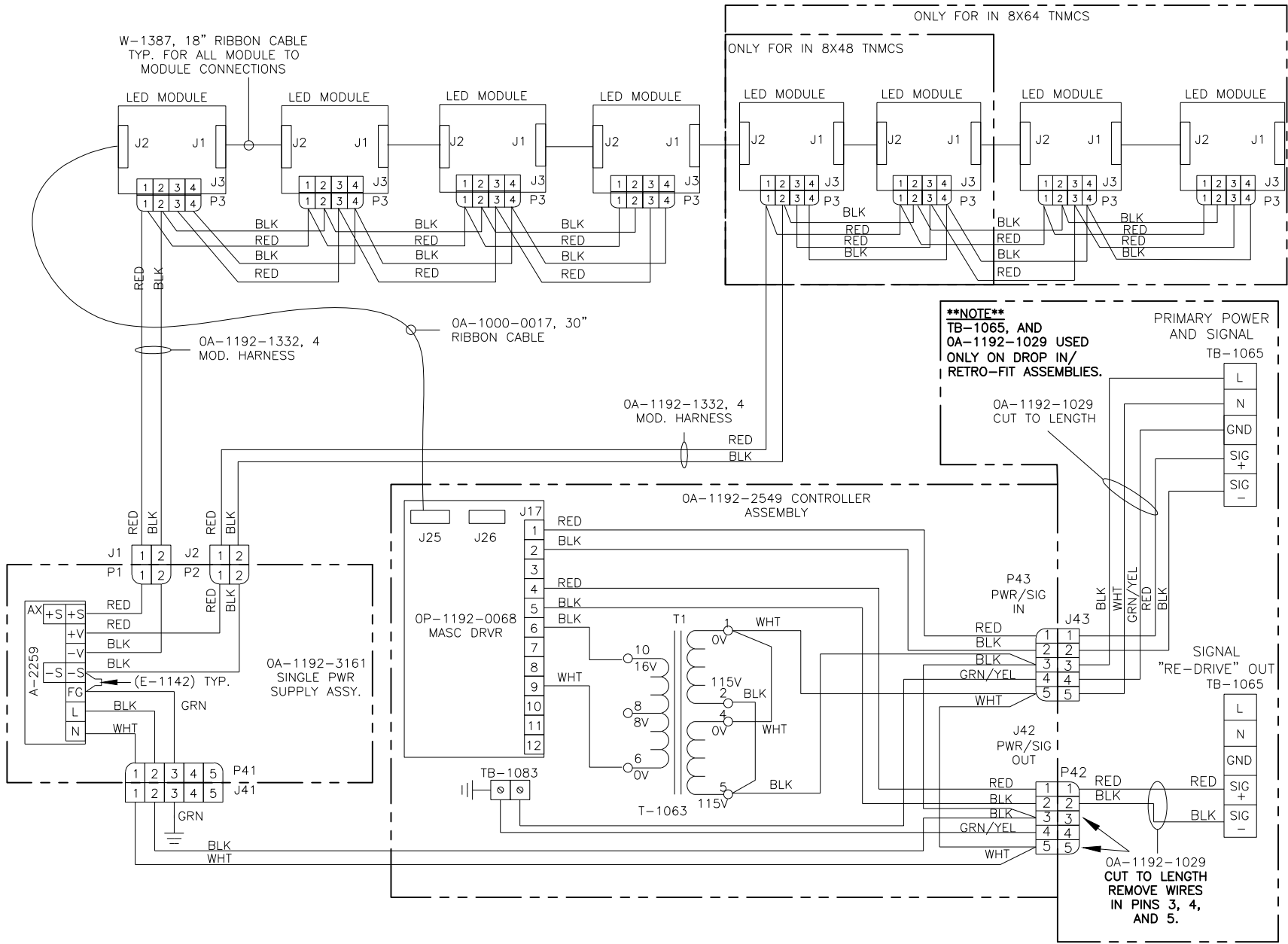
PROJ: OUTDOOR LED SCOREBOARDS

TITLE: SCHEMATIC; BA-2018 GEN IV

DES. BY: SLOUWAG DRAWN BY: SLOUWAG DATE: 08 NOV 06

REVISION	APPR. BY:	SCALE:	1192-R03B-242532
00		NONE	

REV.	DATE	DESCRIPTION	BY	APPR.



- OA-1192-3165 8X32 34MM AMBER TNMC G4
- OA-1192-3167 8X48 34MM AMBER TNMC G4
- OA-1192-XXX 8X64 34MM AMBER TNMC G4
- OA-1192-3229 8X32 34MM DROP IN/RETROFIT TNMC G4
- OA-1192-3231 8X48 34MM DROP IN/RETROFIT TNMC G4
- OA-1192-XXXX 8X64 34MM DROP IN/RETROFIT TNMC G4

REV	DATE	DESCRIPTION	BY	CHKD
REV 06	10 JUN 16	PER EC-2142, REPLACED A-1633 W/ A-2259	BY: KEO	
REV 05	16 SEP 09	ADDED MORE DETAIL TO POWER SUPPLY PER ECO 96884	BY: MWM	
REV 04	10 APR 07	ADDED TB-1065 GND TERMINAL BLOCK AND GROUND WIRES	BY: DMD	
REV 03	07 NOV 06	UPDATED TITLE TO INCLUDE 34 MM	BY: SAL	
REV 02	14 FEB 06	UPDATED PART NUMBERS AND EXPANDED DRAWING TO COVER 8MM OPTION	BY: MWM	
REV 01	01 DEC 05	CHANGED MOD PWR HARNESS FROM 2 PIN TO 4 PIN HARNESS	BY: SAC	

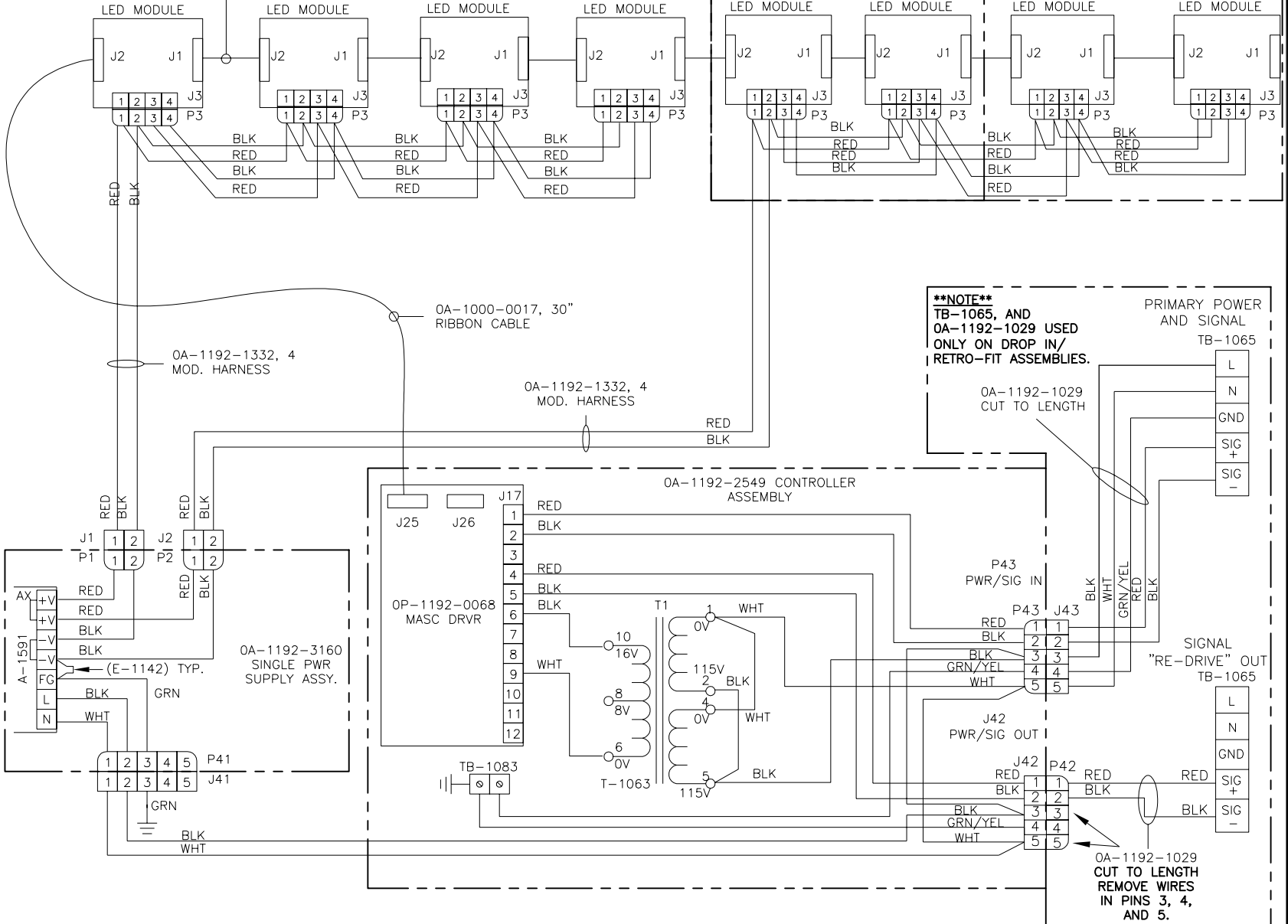
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THIRD ANGLE PROJECTION

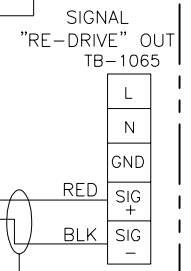
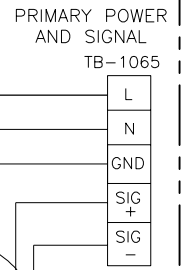
<b>PROJECT: OUTDOOR LED DIGIT SCOREBOARDS</b>			
<b>TITLE: SCHEMATIC: 34 MM AMBER TNMC GEN IV</b>			
DATE: 31 AUG 05	DIM UNITS: INCHES [MILLIMETERS]	SHEET	REV
SCALE: NONE	DO NOT SCALE DRAWING		06
DESIGN: MMILLER	JOB NO. P1192	FUNC - TYPE - SIZE R-01-A	
DRAWN: DDINING			252645

- 0A-1192-3164 8X32 34MM RED TNMC G4
- 0A-1192-3166 8X48 34MM RED TNMC G4
- 0A-1192-XXX 8X64 34MM RED TNMC G4
- 0A-1192-3228 8X32 34MM DROP IN/RETROFIT TNMC G4
- 0A-1192-3230 8X48 34MM DROP IN/RETROFIT TNMC G4
- 0A-1192-XXXX 8X64 34MM DROP IN TNMC G4

W-1387, 18" RIBBON CABLE  
TYP. FOR ALL MODULE TO  
MODULE CONNECTIONS



**\*\*NOTE\*\***  
TB-1065, AND  
OA-1192-1029 USED  
ONLY ON DROP IN/  
RETRO-FIT ASSEMBLIES.



OA-1192-1029  
CUT TO LENGTH  
REMOVE WIRES  
IN PINS 3, 4,  
AND 5.

04	09 APR 07	ADDED TB-1065 AND GND ON J42, & P43	DMD	APPR.
03	07 NOV 06	UPDATED TITLE TO INCLUDE 34 MM	SAL	
02	08 MAR 06	UPDATED DETAILS TO SHOW 64 LONG	MMM	
01	01 DEC 05	CHANGE POWER HARNESS TO MOD FROM 2 PIN TO 4 PIN	SJC	
REV.	DATE	DESCRIPTION	BY	

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PROJ: OUTDOOR LED SCOREBOARDS  
DAKTRONICS, INC. BROOKINGS, SD 57006

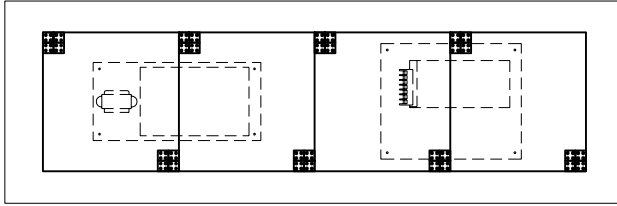
TITLE: SCHEMATIC; 34 MM RED TNMC GEN IV

DES. BY: DRAWN BY: DDINING DATE: 30 AUG 05

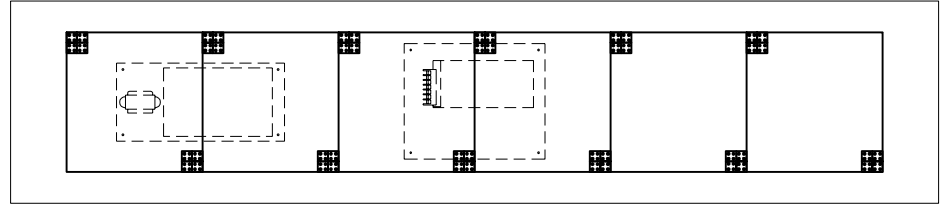
REVISION APPR. BY: SCALE: 1192-R01A-252681

REV.	01	DATE	20 DEC 07	DESCRIPTION	UPDATED DRAWING TO SHOW 864 TNMC MODELS.	BY	MMM	APPR.
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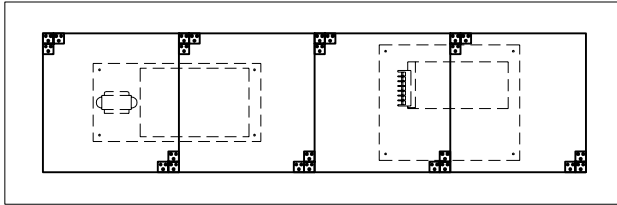
832 AMBER LED TNMC  
OA-1192-3165



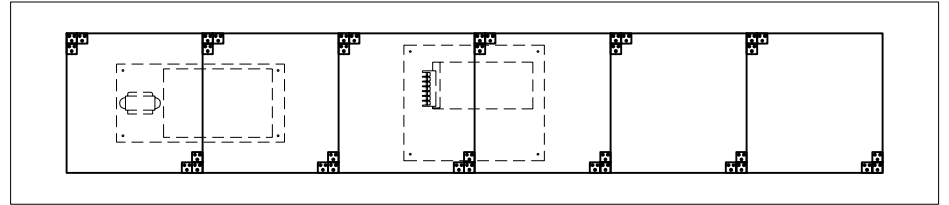
848 AMBER LED TNMC  
OA-1192-3166



832 RED LED TNMC  
OA-1192-3164

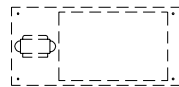
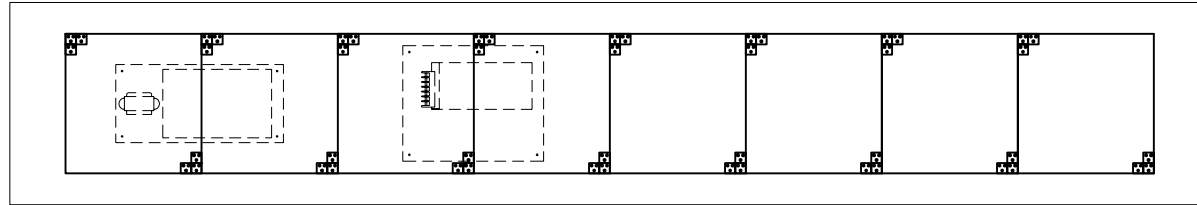


848 RED LED TNMC  
OA-1192-3167



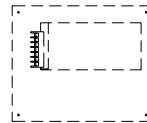
864 AMBER LED TNMC  
OA-1192-3295

864 RED LED TNMC  
OA-1192-3294



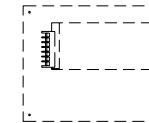
TNMC CONTROLLER  
OA-1192-2549

USED IN RED & AMBER LED TNMCs



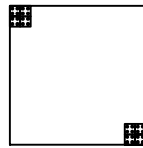
SINGLE POWER SUPPLY ASSEMBLY  
OA-1192-3161

USED IN AMBER LED TNMCs

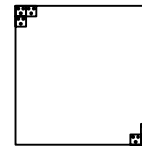


SINGLE POWER SUPPLY ASSEMBLY  
OA-1192-3160

USED IN RED LED TNMCs



AMBER LED TNMC MODULE  
OA-1208-4001  
USED IN AMBER LED TNMCs



RED LED TNMC MODULE  
OA-1208-4000  
USED IN RED LED TNMCs

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PROJ.: OUTDOOR LED SCOREBOARDS  
DAKTRONICS, INC. BROOKINGS, SD 57006

TITLE: COMPONENT LOC.: 832/842/864 RED/AMB LED TNMC G4

DES. BY: KBRICKER DRAWN BY: KBRICKER DATE: 08NOV05

REVISION 01 APPR. BY: SCALE: 1=15 1192-R08A-257029

LED DRIVER IV  
 OP-1192-0383, 16 COL  
 OP-1192-0384, 16 COL, AC

REFER TO DWGS  
 A-115078 & A-115079  
 FOR ADDRESS SETTINGS

REFER TO DWGS  
 A-290261 & A-290689

S1 ADDRESS  
 DIP SWITCH PACKAGE

**J1-16 DIGIT JACKS**

PIN	FUNCTION
1	SEGC-N
2	SEGB-N
3	SEGA-N
4	SEGF-N
5	SEGE-N
6	SEGD-N
7	+VBB-P
8	SEGH-N
9	SEGG-N

**J17 PWR/SIG**

PIN	FUNCTION
1	SIG-P
2	SIG-N (232-IN)
3	SIG 2-P(232-GND)
4	CLOUT-P
5	CLOUT-N
6	16VAC-N
7	GND-N
8	EARTH-N
9	16VAC-P
10	GND-N
11	+VDD-P
12	+VBB-P

**J22 RC-100 RADIO**

PIN	FUNCTION
1	+UNREG-P
2	GND-N
3	GND-N
4	RX_INPUT-P

**J21 2.4GHz RADIO**

PIN	FUNCTION
1	+UNREG-P
2	GND-N
3	GND-N
4	RX_INPUT-P

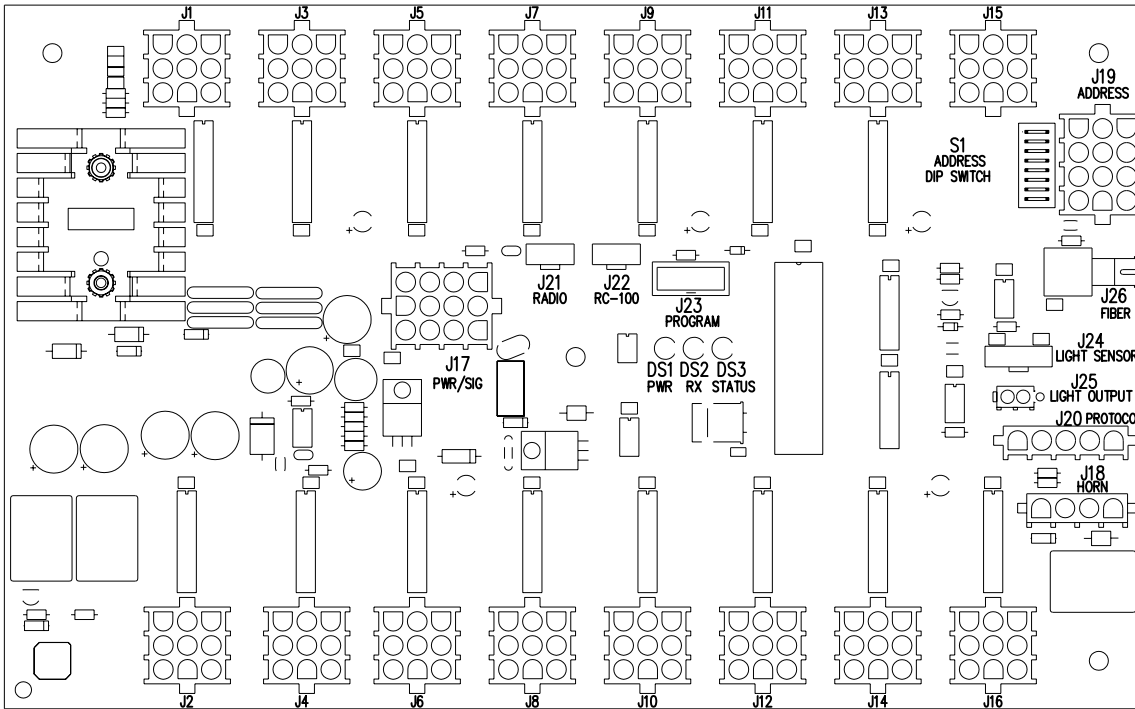
**J23 PROGRAM**

PIN	FUNCTION
1	DATA
2	/RESET
3	N/C
4	GND-N
5	CLK
6	GND-N
7	N/C
8	+5V-P
9	N/C
10	+5V-P

**J19 ADDRESS**

PIN	FUNCTION
1	GND-N
2	ADD0-N
3	ADD1-N
4	GND-N
5	ADD2-N
6	ADD3-N
7	GND-N
8	ADD4-N
9	ADD5-N
10	GND-N
11	ADD6-N
12	ADD7-N

SW #	FUNCTION
1	ADD0
2	ADD1
3	ADD2
4	ADD3
5	ADD4
6	ADD5
7	ADD6
8	ADD7



**J26 FIBER RX**

PIN	FUNCTION
1	N/C
2	+5V-P
3	GND-N
4	N/C
5	N/C
6	RX_INPUT-P
7	GND-N
8	N/C

**J24 LIGHT SENSOR**

PIN	FUNCTION
1	LIGHT_IN-P
2	LIGHT_IN-N
3	+5V-P
4	GND-N
5	GND-N
6	N/C

**J25 LIGHT OUT- NEXT DRIVER**

PIN	FUNCTION
1	LIGHT_OUT-P
2	LIGHT_OUT-N

REFER TO DWG A-115081  
 FOR PROTOCOL SETTINGS

**J20 PROTOCOL**

PIN	FUNCTION
1	GND-N
2	PRO-N
3	PR1-N
4	PR2-N
5	PR3-N (TOD)

**J18 HORN**

PIN	FUNCTION
1	HORNOUT-N
2	AUXOUT-N
3	120SW-P
4	120SW-N

**NOTES:**

- WITH NO ADDRESS SELECTED, DRIVER WILL DEFAULT TO A/S 4000 PROTOCOL.
- GREEN LED DS1 INDICATES THAT THE DRIVER HAS POWER.
- RED LED DS2 WILL FLICKER WHEN THE DRIVER RECEIVES SIGNAL.
- AMBER LED DS3 WILL BLINK WHEN THE DRIVER IS RUNNING.
- IF DS3 IS ON OR OFF CONTINUOUSLY THE MICROCONTROLLER IS NOT WORKING.
- REFER TO DRAWING A-128429 FOR CURRENT LOOP REDRIVE SPECIFICATIONS.
- REFER TO DRAWING A-115081 FOR J20 PROTOCOL SETTINGS.
- REFER TO DRAWINGS A-115078,115079 FOR J19 ADDRESS SETTINGS.

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<b>DAKTRONICS, INC. BROOKINGS, SD 57006</b>			
PROJ:	SPECIFICATIONS; LED DRIVER IV, 16 COL		
DES. BY:	DRAWN BY:	DATE:	
DES. BY:	DRAWN BY: DULSCHM	DATE: 09 OCT 06	
REVISION	APPR. BY:	<b>1192-R04A-288137</b>	
02	SCALE: 1 = 2		

REV.	DATE	DESCRIPTION	BY	APPR.
02	30 NOV 06	ADDED ADDRESS SWITCH S1 TO DRAWING	DJU	
01	26 OCT 06	RESIZED TEXT SO THAT IT WAS EASIER TO READ, AND CLARIFIED FUNCTIONS OF EACH JACK.	AFL	

DIP SWITCH ADDRESS SETTING	
DECIMAL ADDRESS	SW 8 SW 7 SW 6 SW 5 SW 4 SW 3 SW 2 SW 1
01	0 0 0 0 0 0 0 1
02	0 0 0 0 0 0 1 0
03	0 0 0 0 0 0 1 1
04	0 0 0 0 0 1 0 0
05	0 0 0 0 0 1 0 1
06	0 0 0 0 0 1 1 0
07	0 0 0 0 0 1 1 1
08	0 0 0 0 1 0 0 0
09	0 0 0 0 1 0 0 1
10	0 0 0 0 1 0 1 0
11	0 0 0 0 1 0 1 1
12	0 0 0 0 1 1 0 0
13	0 0 0 0 1 1 0 1
14	0 0 0 0 1 1 1 0
15	0 0 0 0 1 1 1 1
16	0 0 0 1 0 0 0 0

DIP SWITCH ADDRESS SETTING	
DECIMAL ADDRESS	SW 8 SW 7 SW 6 SW 5 SW 4 SW 3 SW 2 SW 1
33	0 0 0 1 0 0 0 1
34	0 0 0 1 0 0 0 0
35	0 0 0 1 0 0 1 1
36	0 0 0 1 0 0 0 0
37	0 0 0 1 0 0 1 0
38	0 0 0 1 0 0 1 1
39	0 0 0 1 0 0 1 1
40	0 0 0 1 0 1 0 0
41	0 0 0 1 0 1 0 1
42	0 0 0 1 0 1 0 0
43	0 0 0 1 0 1 0 1
44	0 0 0 1 0 1 1 0
45	0 0 0 1 0 1 1 0
46	0 0 0 1 0 1 1 0
47	0 0 0 1 0 1 1 1
48	0 0 0 1 1 0 0 0

DIP SWITCH ADDRESS SETTING	
DECIMAL ADDRESS	SW 8 SW 7 SW 6 SW 5 SW 4 SW 3 SW 2 SW 1
65	0 1 0 0 0 0 1 1
66	0 1 0 0 0 0 1 0
67	0 1 0 0 0 0 1 1
68	0 1 0 0 0 1 0 0
69	0 1 0 0 0 1 0 1
70	0 1 0 0 0 1 1 0
71	0 1 0 0 0 1 1 1
72	0 1 0 0 1 0 0 0
73	0 1 0 0 1 0 0 1
74	0 1 0 0 1 0 1 0
75	0 1 0 0 1 0 1 1
76	0 1 0 0 1 1 0 0
77	0 1 0 0 1 1 0 1
78	0 1 0 0 1 1 1 0
79	0 1 0 0 1 1 1 1
80	0 1 0 1 0 0 0 0

DIP SWITCH ADDRESS SETTING	
DECIMAL ADDRESS	SW 8 SW 7 SW 6 SW 5 SW 4 SW 3 SW 2 SW 1
97	0 1 1 0 0 0 1 1
98	0 1 1 0 0 0 1 0
99	0 1 1 0 0 0 1 1
100	0 1 1 0 0 1 0 0
101	0 1 1 0 0 1 0 1
102	0 1 1 0 0 1 1 0
103	0 1 1 0 0 1 1 1
104	0 1 1 0 1 0 0 0
105	0 1 1 0 1 0 0 1
106	0 1 1 0 1 0 1 0
107	0 1 1 0 1 0 1 1
108	0 1 1 0 1 1 0 0
109	0 1 1 0 1 1 0 1
110	0 1 1 0 1 1 1 0
111	0 1 1 0 1 1 1 1
112	0 1 1 1 0 0 0 0

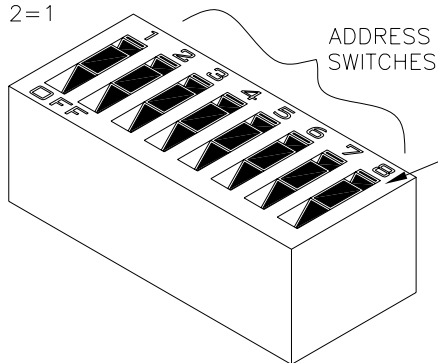
DIP SWITCH ADDRESS SETTING	
DECIMAL ADDRESS	SW 8 SW 7 SW 6 SW 5 SW 4 SW 3 SW 2 SW 1
17	0 0 0 1 0 0 0 1
18	0 0 0 1 0 0 1 0
19	0 0 0 1 0 0 1 1
20	0 0 0 1 0 1 0 0
21	0 0 0 1 0 1 0 1
22	0 0 0 1 0 1 1 0
23	0 0 0 1 0 1 1 1
24	0 0 0 1 1 0 0 0
25	0 0 0 1 1 0 0 1
26	0 0 0 1 1 0 1 0
27	0 0 0 1 1 0 1 1
28	0 0 0 1 1 1 0 0
29	0 0 0 1 1 1 0 1
30	0 0 0 1 1 1 1 0
31	0 0 0 1 1 1 1 1
32	0 0 1 0 0 0 0 0

DIP SWITCH ADDRESS SETTING	
DECIMAL ADDRESS	SW 8 SW 7 SW 6 SW 5 SW 4 SW 3 SW 2 SW 1
49	0 0 1 1 0 0 0 1
50	0 0 1 1 0 0 1 0
51	0 0 1 1 0 0 1 1
52	0 0 1 1 0 1 0 0
53	0 0 1 1 0 1 0 1
54	0 0 1 1 0 1 1 0
55	0 0 1 1 0 1 1 1
56	0 0 1 1 1 0 0 0
57	0 0 1 1 1 0 0 1
58	0 0 1 1 1 0 1 0
59	0 0 1 1 1 0 1 1
60	0 0 1 1 1 1 0 0
61	0 0 1 1 1 1 0 1
62	0 0 1 1 1 1 1 0
63	0 0 1 1 1 1 1 1
64	0 1 0 0 0 0 0 0

DIP SWITCH ADDRESS SETTING	
DECIMAL ADDRESS	SW 8 SW 7 SW 6 SW 5 SW 4 SW 3 SW 2 SW 1
81	0 1 0 1 0 0 0 1
82	0 1 0 1 0 0 1 0
83	0 1 0 1 0 0 1 1
84	0 1 0 1 0 1 0 0
85	0 1 0 1 0 1 0 1
86	0 1 0 1 0 1 1 0
87	0 1 0 1 0 1 1 1
88	0 1 0 1 1 0 0 0
89	0 1 0 1 1 0 0 1
90	0 1 0 1 1 0 1 0
91	0 1 0 1 1 0 1 1
92	0 1 0 1 1 1 0 0
93	0 1 0 1 1 1 0 1
94	0 1 0 1 1 1 1 0
95	0 1 0 1 1 1 1 1
96	0 1 1 0 0 0 0 0

DIP SWITCH ADDRESS SETTING	
DECIMAL ADDRESS	SW 8 SW 7 SW 6 SW 5 SW 4 SW 3 SW 2 SW 1
113	0 1 1 1 0 0 0 1
114	0 1 1 1 0 0 1 0
115	0 1 1 1 0 0 1 1
116	0 1 1 1 0 1 0 0
117	0 1 1 1 0 1 0 1
118	0 1 1 1 0 1 1 0
119	0 1 1 1 0 1 1 1
120	0 1 1 1 1 0 0 0
121	0 1 1 1 1 0 0 1
122	0 1 1 1 1 0 1 0
123	0 1 1 1 1 0 1 1
124	0 1 1 1 1 1 0 0
125	0 1 1 1 1 1 0 1
126	0 1 1 1 1 1 1 0
127	0 1 1 1 1 1 1 1
128	1 0 0 0 0 0 0 0

S1-ADDRESS DIP SWITCH  
SCALE 2=1



NOTES:

0 = OFF, 1 = ON.

TO TURN SWITCH ON, PRESS DOWN ON THE TOP SIDE OF THE SWITCH ROCKING IT TO THE OTHER POSITION.

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DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: OUTDOOR LED SCOREBOARDS			
TITLE: ADDRESS TABLE 1; GEN IV DRIVER ADDRESS DIP SWITCH			
DES. BY: MMILLER		DRAWN BY: MMILLER	
		DATE: 16 NOV 06	
REVISION	APPR. BY:	1192-R10A-290261	
00	SCALE: 1 = 1		

REV.	DATE	DESCRIPTION	BY	APPR.



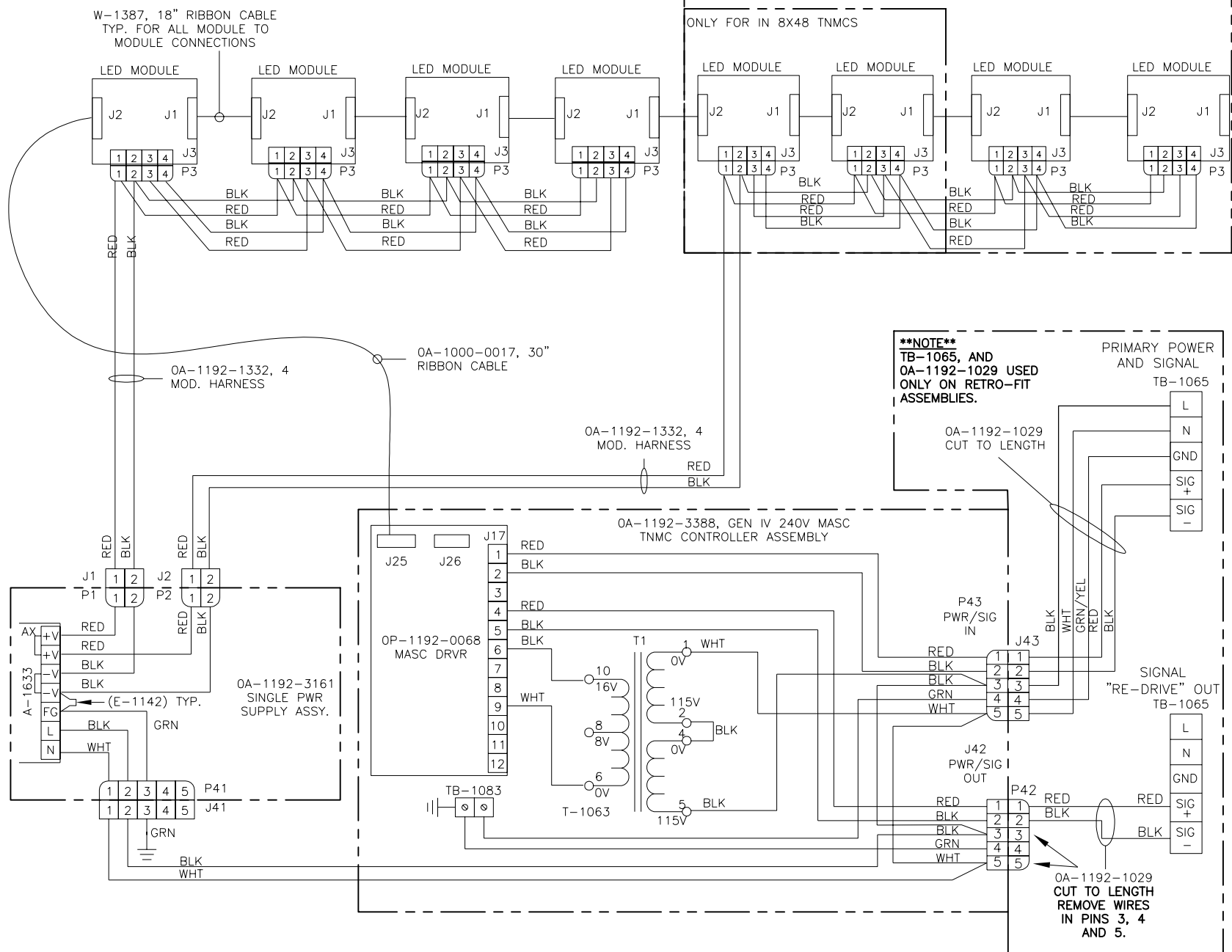
REV.	01	10 APR 07	ADDED TB-1083 GND TERMINAL BLOCK AND GROUND WIRES
DATE	02	14 NOV 07	EDITED PART NUMBERS FOR 34MM DROP-IN'S.
DESCRIPTION	BY	APPR.	
	DMD	AMG	

PROJ.	OUTDOOR LED SCOREBOARDS
TITLE	SCHEMATIC: 832 / 848 / 864 AMBER GEN IV, 240V
DES. BY	DDINING
DATE	18 JAN 07
REVISION	02
APPR. BY	NONE
SCALE	NONE
1192-R03A-294919	

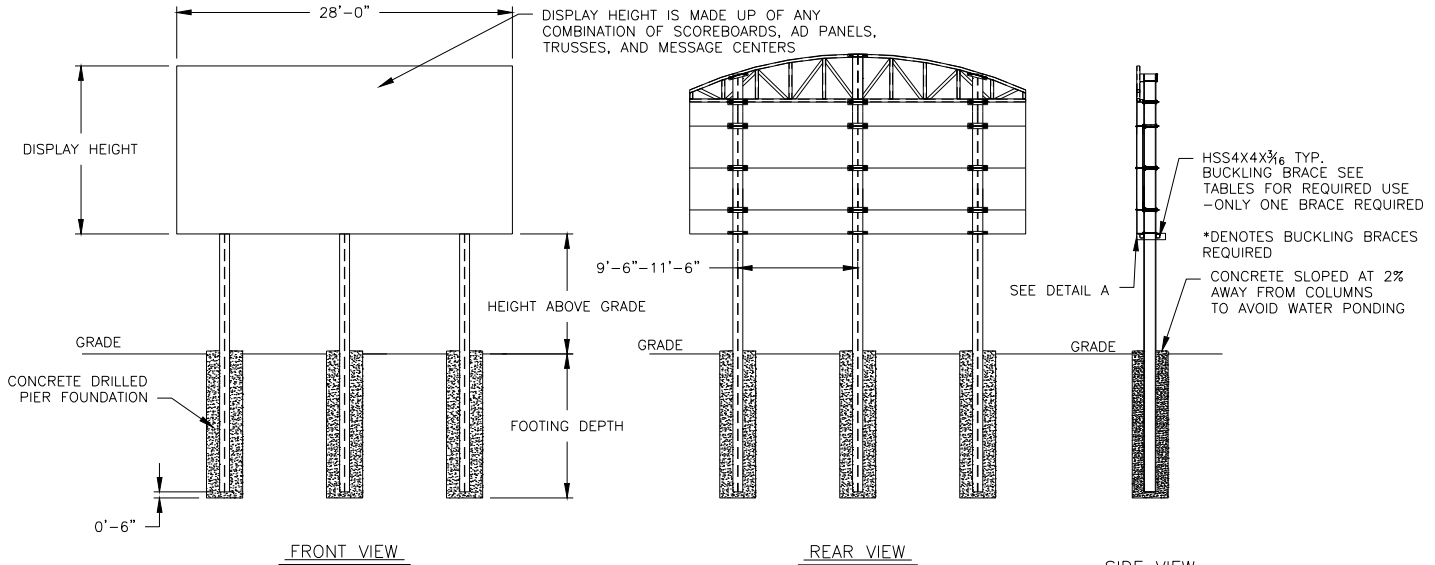
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DAKTRONICS, INC. BROOKINGS, SD 57006

- 0A-1192-3390 8X32 34MM AMBER TNMC G4
- 0A-1192-3392 8X48 34MM AMBER TNMC G4
- 0A-1192-3394 8X64 34MM AMBER TNMC G4
- 0A-1407-XXXX 8X32 34MM DROP IN TNMC G4
- 0A-1407-0105 8X48 34MM DROP IN TNMC G4
- 0A-1407-XXXX 8X64 34MM DROP IN TNMC G4







FRONT VIEW

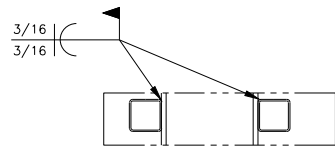
REAR VIEW

SIDE VIEW



LAYOUT VIEW

COLUMNS & FOOTING ONLY



DETAIL A  
(8 X SCALE)

TABLE A - MOUNTING

HEIGHT ABOVE GRADE = 10'					HEIGHT ABOVE GRADE = 15'				
DISPLAY HEIGHT (FT)		DESIGN WIND VELOCITY			DISPLAY HEIGHT (FT)		DESIGN WIND VELOCITY		
		90 MPH	110 MPH	130 MPH			90 MPH	110 MPH	130 MPH
8	COLUMN FOOTING	W8X24 3.0'X7.5'	W10X30 3.0'X8.5'	W10X33 3.0'X9.5'	8	COLUMN FOOTING	W8X31 3.0'X8.0'	W10X39 3.0'X9.5'	W12X45 3.0'X10.5'
10	COLUMN FOOTING	W8X28 3.0'X8.0'	W10X33 3.0'X9.5'	W12X40 3.0'X10.5'	10	COLUMN FOOTING	W10X39 3.0'X9.0'	W14X48 3.0'X10.5'	W12X53 3.0'X11.5'
12	COLUMN FOOTING	W10X33 3.0'X9.0'	W12X40 3.0'X10.0'	W12X49 3.0'X11.5'	12	COLUMN FOOTING	W10X45 3.0'X9.5'	W12X53 3.0'X11.0'	W12X65 3.0'X13.0'
14	COLUMN FOOTING	W12X39 3.0'X9.5'	W10X49 3.0'X11.0'	W12X58 3.0'X12.5'	14	COLUMN FOOTING	W16X36* 3.0'X10.5'	W14X48* 3.0'X12.0'	W21X55* 3.0'X14.5'
16	COLUMN FOOTING	W10X45 3.0'X10.0'	W12X53 3.0'X12.0'	W16X65 3.0'X14.0'	16	COLUMN FOOTING	W14X43* 3.0'X11.0'	W18X55* 3.0'X13.0'	W21X62* 3.0'X16.0'
18	COLUMN FOOTING	W10X45* 3.0'X11.0'	W12X53* 3.0'X12.5'	W14X61* 3.0'X15.5'	18	COLUMN FOOTING	W14X48* 3.0'X12.0'	W14X61* 3.0'X14.5'	W18X76* 3.0'X18.0'
20	COLUMN FOOTING	W12X49* 3.0'X11.5'	W12X58* 3.0'X14.0'	W16X67* 3.0'X17.0'	20	COLUMN FOOTING	W12X53* 3.0'X12.5'	W16X67* 3.0'X16.0'	W18X76* 3.0'X19.5'

FOOTING DIMENSIONS = DIAMETER X DEPTH  
\*DENOTES BUCKLING BRACE REQUIRED

NOTES:

- FOOTING AND COLUMN SIZES ARE SUGGESTIONS ONLY, PROVIDED TO ASSIST WITH ESTIMATING INSTALLATION COSTS AND ARE NOT INTENDED FOR CONSTRUCTION PURPOSES. THE DESIGN MUST BE CERTIFIED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF THE INSTALLATION BEFORE THEY CAN BE USED FOR FABRICATION OR ERECTION.
- INTERNATIONAL BUILDING CODE 2006 USED IN DESIGN OF COLUMNS AND FOOTINGS WITH IMPORTANCE FACTOR=1, Kzt=1.0, Kd=0.85, G=0.85. SEISMIC DESIGN WAS NOT CONSIDERED.
- FOOTING DIMENSIONS ARE BASED ON ASSUMED SOIL CLASS 4 (ALLOWABLE LATERAL BEARING PRESSURE OF 150 psf).
- STRUCTURAL STEEL IS GRADE A992 (50 ksi) STEEL. CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 2500 psi.
- THE AVERAGE DISPLAY WEIGHT FOR A LAYOUT CAN NOT EXCEED 8 PSF.
- DAKTRONICS INC. IS NOT RESPONSIBLE FOR STRUCTURES DESIGNED AND INSTALLED BY OTHERS.
- REFER TO DAKTRONICS DRAWING 1407-E07B-299257 FOR DETAILS OF DISPLAY MOUNTING TO COLUMNS.
- LOCAL BUILDING OFFICIALS SHOULD BE CONTACTED TO DETERMINE THE WIND SPEED AND EXPOSURE CATEGORY FOR THE PROPOSED SIGN LOCATION. THE EXPOSURE CATEGORIES B AND C ARE DEFINED AS:  
  
EXPOSURE B - URBAN AND SUBURBAN AREAS, WOODED AREAS, OR OTHER TERRAIN WITH NUMEROUS CLOSELY SPACED OBSTRUCTIONS HAVING THE SIZE OF SINGLE-FAMILY DWELLINGS OR LARGER. THESE CONDITIONS MUST PREVAIL FOR A DISTANCE FROM THE SIGN OF AT LEAST 2,600 FT OR 20 TIMES THE SIGN HEIGHT, WHICHEVER IS GREATER  
  
EXPOSURE C - OPEN TERRAIN WITH SCATTERED OBSTRUCTIONS HAVING HEIGHTS GENERALLY LESS THAN 30 FT. THIS CATEGORY INCLUDES FLAT OPEN COUNTRY, GRASSLANDS, AND ALL WATER SURFACES IN HURRICANE PRONE REGIONS.
- FOR SPECIFIC PRODUCT DETAILS ON WEIGHT, MOUNTING, ETC. REFER TO THE INDIVIDUAL PRODUCT SPECIFICATION SHEETS.

EXPOSURE C

HEIGHT ABOVE GRADE = 10'				HEIGHT ABOVE GRADE = 15'			
DISPLAY HEIGHT (FT)		DESIGN WIND VELOCITY		DISPLAY HEIGHT (FT)		DESIGN WIND VELOCITY	
		90 MPH	110 MPH			90 MPH	110 MPH
8	COLUMN FOOTING	W8X28 3.0'X8.5'	W10X33 3.0'X9.5'	8	COLUMN FOOTING	W10X39 3.0'X9.0'	W14X48 3.0'X10.5'
10	COLUMN FOOTING	W10X33 3.0'X9.0'	W12X40 3.0'X10.5'	10	COLUMN FOOTING	W10X45 3.0'X10.0'	W12X53 3.0'X11.5'
12	COLUMN FOOTING	W12X40 3.0'X10.0'	W12X50 3.0'X11.5'	12	COLUMN FOOTING	W12X53 3.0'X11.0'	W12X65 3.0'X13.0'
14	COLUMN FOOTING	W12X50 3.0'X11.0'	W12X58 3.0'X12.5'	14	COLUMN FOOTING	W14X48* 3.0'X12.0'	W21X55* 3.0'X14.5'
16	COLUMN FOOTING	W12X53 3.0'X11.5'	W12X65 3.0'X14.0'	16	COLUMN FOOTING	W21X48* 3.0'X12.5'	W21X62* 3.0'X16.0'
18	COLUMN FOOTING	W12X53* 3.0'X12.5'	W14X61* 3.0'X15.5'	18	COLUMN FOOTING	W14X61* 3.0'X14.0'	W18X76* 3.0'X18.0'
20	COLUMN FOOTING	W12X53* 3.0'X13.5'	W16X67* 3.0'X17.0'	20	COLUMN FOOTING	W16X67* 3.0'X15.0'	W18X76* 3.0'X19.5'

FOOTING DIMENSIONS = DIAMETER X DEPTH  
\*DENOTES BUCKLING BRACE REQUIRED

NOTE:  
-REFER TO NOTE 8 FOR EXPOSURE CATEGORY DEFINITIONS.

<p>DAKTRONICS, INC. BROOKINGS, SD 57006</p>	<p>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.</p>	
	<p>DO NOT SCALE DRAWING</p>	
<p>PROJ: OUTDOOR SCOREBOARD INSTALLATION</p>		
<p>TITLE: 28' WIDTH SCOREBOARD INSTALLATION SPECS.</p>		
<p>DESIGN: AWRUCKE</p>	<p>DRAWN: AWRUCKE</p>	<p>DATE: 20 AUG 07</p>
<p>SCALE: 1/16" = 1'</p>		
<p>SHEET</p>	<p>REV</p>	<p>JOB NO:</p>
<p>03</p>	<p>P1538</p>	<p>FUNC-TYPE-SIZE</p>
		<p>E-10-A</p>
<p>316971</p>		

REV 03	DATE: 26 OCT 11	ADDED "ONLY ONE BRACE REQUIRED" NOTE	BY: KDD
REV 02	DATE: 8 JUL 11	UPDATED EXPOSURE C, 10' OFF GRADE, 14' HEIGHT, 90 MPH COLUMN SIZE FROM 12X48 TO 12X50	BY: TJH
REV 01	DATE: 10 DEC 08	REMOVED PRODUCT TABLE AND CHANGED DRAWING TO A SIZE	BY: JKU

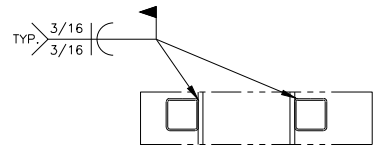
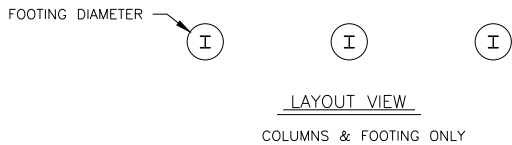
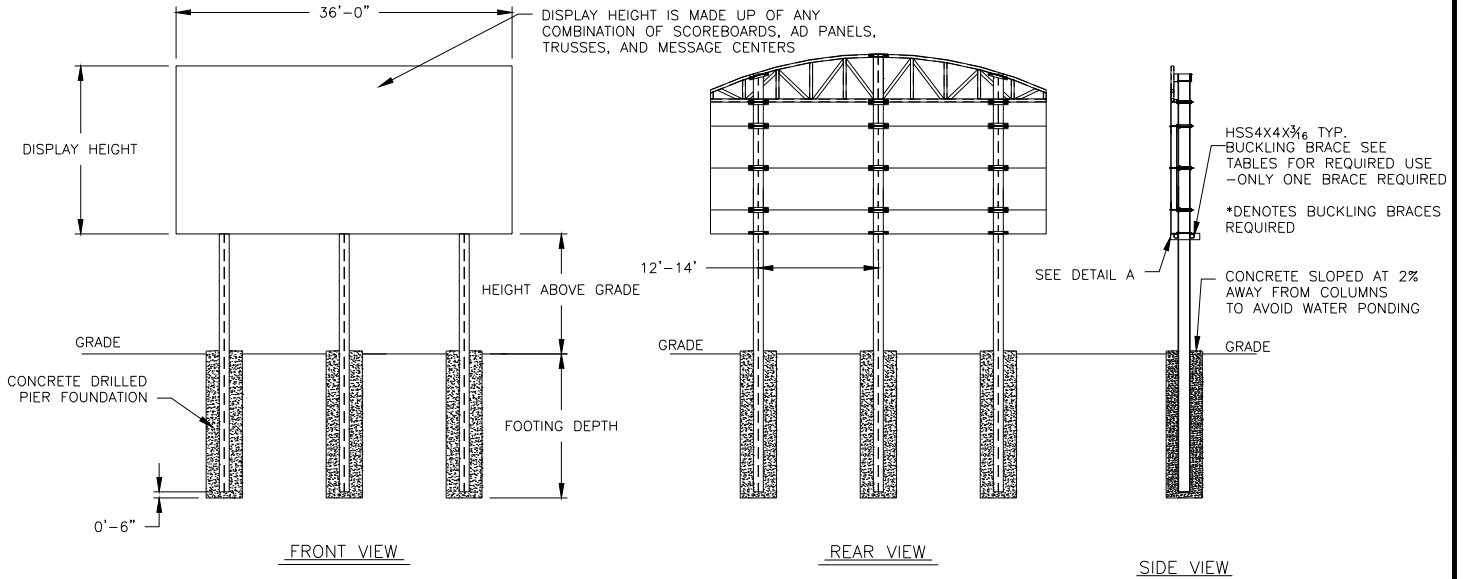


TABLE A - MOUNTING

EXPOSURE B

HEIGHT ABOVE GRADE = 10'				HEIGHT ABOVE GRADE = 15'					
DISPLAY HEIGHT (FT)		DESIGN WIND VELOCITY			DISPLAY HEIGHT (FT)		DESIGN WIND VELOCITY		
		90 MPH	110 MPH	130 MPH			90 MPH	110 MPH	130 MPH
8	COLUMN FOOTING	W12X26 3.0'X8.0'	W10X33 3.0'X9.0'	W10X39 3.0'X10.5'	8	COLUMN FOOTING	W8X35 3.0'X9.0'	W10X45 3.0'X10.5'	W12X53 3.0'X11.5'
10	COLUMN FOOTING	W8X31 3.0'X9.0'	W10X39 3.0'X10.0'	W14X48 3.0'X11.5'	10	COLUMN FOOTING	W14X43 3.0'X10.0'	W12X53 3.0'X11.5'	W14X61 3.0'X13.0'
12	COLUMN FOOTING	W10X39 3.0'X9.5'	W14X48 3.0'X11.0'	W12X58 3.0'X13.0'	12	COLUMN FOOTING	W10X49 3.0'X10.5'	W14X61 3.0'X12.5'	W14X74 3.0'X15.0'
14	COLUMN FOOTING	W10X45 3.0'X10.5'	W12X53 3.0'X12.0'	W12X65 3.0'X14.5'	14	COLUMN FOOTING	W14X43* 3.0'X11.5'	W18X55* 3.0'X14.0'	W16X67* 3.0'X17.0'
16	COLUMN FOOTING	W12X53 3.0'X11.0'	W14X61 3.0'X13.5'	W18X76 3.0'X16.5'	16	COLUMN FOOTING	W21X48* 3.0'X12.0'	W21X62* 3.0'X15.5'	W18X76 3.0'X19.0'
18	COLUMN FOOTING	W10X49* 3.0'X12.0'	W14X61* 3.0'X15.0'	W16X67* 3.0'X18.5'	18	COLUMN FOOTING	W12X58* 3.0'X13.5'	W16X67* 3.0'X17.0'	W18X86 3.0'X20.5'
20	COLUMN FOOTING	W12X53 3.0'X12.5'	W16X67* 3.0'X16.5'	W18X76* 3.0'X20.0'	20	COLUMN FOOTING	W14X61* 3.0'X14.5'	W18X76* 3.0'X18.5'	W18X106 3.0'X22.5'

FOOTING DIMENSIONS = DIAMETER X DEPTH  
\*DENOTES BUCKLING BRACE REQUIRED

EXPOSURE C

HEIGHT ABOVE GRADE = 10'			HEIGHT ABOVE GRADE = 15'				
DISPLAY HEIGHT (FT)		DESIGN WIND VELOCITY		DISPLAY HEIGHT (FT)		DESIGN WIND VELOCITY	
		90 MPH	110 MPH			90 MPH	110 MPH
8	COLUMN FOOTING	W8X31 3.0'X9.0'	W10X39 3.0'X10.5'	8	COLUMN FOOTING	W14X43 3.0'X10.0'	W12X53 3.0'X11.5'
10	COLUMN FOOTING	W10X39 3.0'X10.0'	W14X48 3.0'X12.0'	10	COLUMN FOOTING	W12X53 3.0'X11.0'	W14X61 3.0'X13.5'
12	COLUMN FOOTING	W14X48 3.0'X11.0'	W12X58 3.0'X13.0'	12	COLUMN FOOTING	W12X58 3.0'X12.0'	W18X76 3.0'X15.0'
14	COLUMN FOOTING	W12X53 3.0'X12.0'	W16X67 3.0'X15.0'	14	COLUMN FOOTING	W18X55* 3.0'X13.5'	W16X67* 3.0'X17.0'
16	COLUMN FOOTING	W14X61 3.0'X13.0'	W18X76 3.0'X16.5'	16	COLUMN FOOTING	W14X61* 3.0'X15.0'	W18X76* 3.0'X19.0'
18	COLUMN FOOTING	W14X61* 3.0'X14.5'	W16X67* 3.0'X18.5'	18	COLUMN FOOTING	W16X67* 3.0'X16.0'	W18X86* 3.0'X20.5'
20	COLUMN FOOTING	W16X67* 3.0'X15.5'	W18X76* 3.0'X20.0'	20	COLUMN FOOTING	W18X76* 3.0'X17.5'	W18X97* 3.0'X22.5'

FOOTING DIMENSIONS = DIAMETER X DEPTH  
\*DENOTES BUCKLING BRACE REQUIRED

NOTE:  
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NOTES:

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- INTERNATIONAL BUILDING CODE 2006 USED IN DESIGN OF COLUMNS AND FOOTINGS WITH, IMPORTANCE FACTOR=1, Kzt=1.0, Kd=0.85, G=0.85. SEISMIC DESIGN WAS NOT CONSIDERED.
- FOOTING DIMENSIONS ARE BASED ON ASSUMED SOIL CLASS 4 (ALLOWABLE LATERAL BEARING PRESSURE OF 150 psf).
- STRUCTURAL STEEL IS GRADE A992 (50 ksi) STEEL. CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 2500 psi.
- THE AVERAGE DISPLAY WEIGHT FOR A LAYOUT CAN NOT EXCEED 8 PSF.
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- LOCAL BUILDING OFFICIALS SHOULD BE CONTACTED TO DETERMINE THE WIND SPEED AND EXPOSURE CATEGORY FOR THE PROPOSED SIGN LOCATION. THE EXPOSURE CATEGORIES B AND C ARE DEFINED AS:  
  
EXPOSURE B - URBAN AND SUBURBAN AREAS, WOODED AREAS, OR OTHER TERRAIN WITH NUMEROUS CLOSELY SPACED OBSTRUCTIONS HAVING THE SIZE OF SINGLE-FAMILY DWELLINGS OR LARGER. THESE CONDITIONS MUST PREVAIL FOR A DISTANCE FROM THE SIGN OF AT LEAST 2,600 FT OR 20 TIMES THE SIGN HEIGHT, WHICHEVER IS GREATER  
  
EXPOSURE C - OPEN TERRAIN WITH SCATTERED OBSTRUCTIONS HAVING HEIGHTS GENERALLY LESS THAN 30 FT. THIS CATEGORY INCLUDES FLAT OPEN COUNTRY, GRASSLANDS, AND ALL WATER SURFACES IN HURRICANE PRONE REGIONS.
- FOR SPECIFIC PRODUCT DETAILS ON WEIGHT, MOUNTING, ETC. REFER TO THE INDIVIDUAL PRODUCT SPECIFICATION SHEETS.

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	<p>PROJ: OUTDOOR SCOREBOARD INSTALLATION TITLE: 36' WIDTH SCOREBOARD INSTALLATION SPECS.</p>		
<p>DESIGN: AWRUCKE</p>	<p>DRAWN: AWRUCKE</p>	<p>DATE: 22 AUG 07</p>	
<p>SCALE: 1/16" = 1'</p>	<p>SHEET</p>	<p>REV</p>	<p>JOB NO:</p>
	<p>02</p>	<p>P1538</p>	<p>FUNC-TYPE-SIZE</p>
			<p>E-10-A</p>
			<p>317277</p>

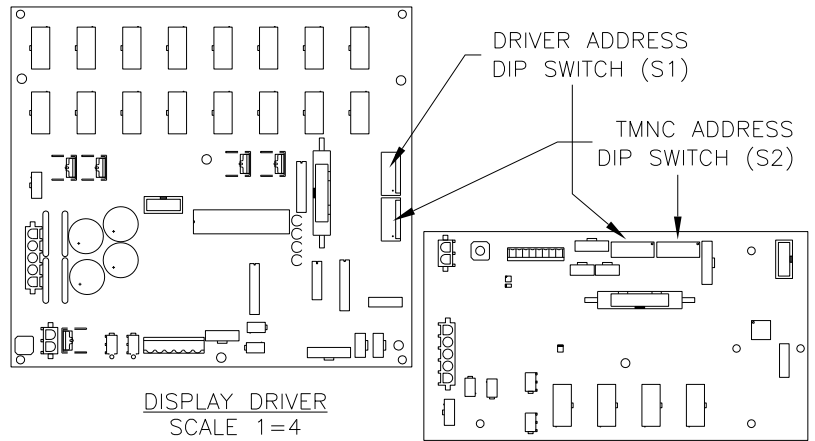
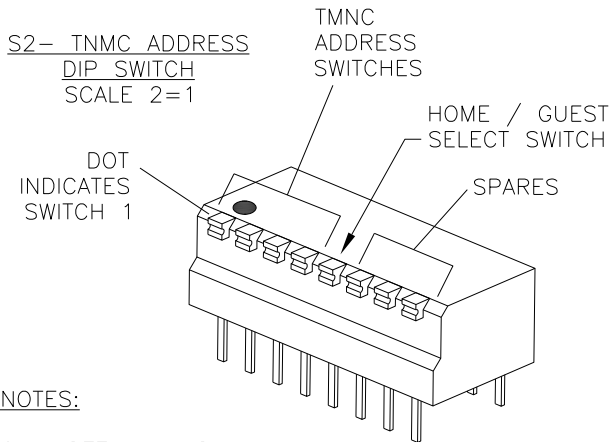
REV 02	DATE: 26 OCT 11	ADDED "ONLY ONE BRACE REQUIRED" NOTE	BY: KDD
REV 01	DATE: 10 DEC 08	REMOVED PRODUCT TABLES AND CHANGED DRAWING TO A SIZE	BY: JKU

PROTOCOL ADDRESS	SWITCH SETTING	SWITCH 4	SWITCH 3	SWITCH 2	SWITCH 1
221	0	0	0	0	0
222	1	0	0	0	1
223	2	0	0	1	0
224	3	0	0	1	1
225	4	0	1	0	0
226	5	0	1	0	1
227	6	0	1	1	0
228	7	0	1	1	1
229	8	1	0	0	0
230	9	1	0	0	1
231	10	1	0	1	0
232	11	1	0	1	1
233	12	1	1	0	0
234	13	1	1	0	1
235	14	1	1	1	0
236	15	1	1	1	1

HOME / GUEST SELECT SWITCH FUNCTION TABLE

OFF	HOME / GUEST DATA SENT TO TNMC'S
ON	GUEST / HOME DATA SENT TO TNMC'S

SPARE 1	RESERVED FOR FUTURE USE
SPARE 2	RESERVED FOR FUTURE USE
SPARE 3	RESERVED FOR FUTURE USE



NOTES:

0 = OFF, 1 = ON

REFER TO THE FOLLOWING DRAWINGS FOR ADDITIONAL ADDRESS AND SWITCH SETTINGS: ADDRESS SWITCH A-328273

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DAKTRONICS, INC. BROOKINGS, SD 57006

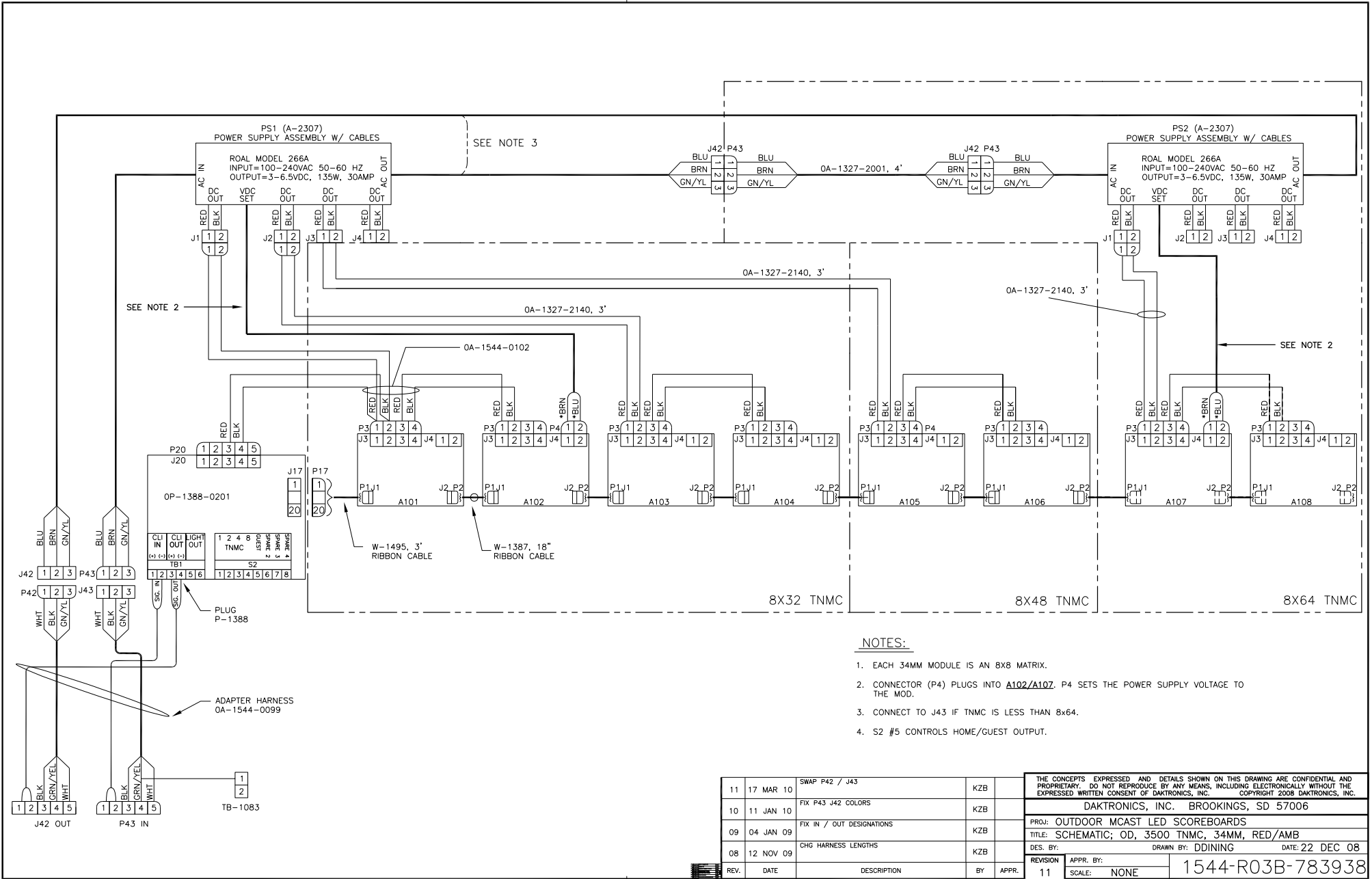
PROJ: \_\_\_\_\_

TITLE: ADDRESS TABLE: DRIVER- MCAST G2- TNMC SWITCH

DES. BY: \_\_\_\_\_ DRAWN BY: DULSCHM DATE: 18 DEC 07

REVISION	APPR. BY:	1388-R10A-328274
02	SCALE: NONE	

REV.	DATE	DESCRIPTION	BY	APPR.
02	21 SEP 09	ADDED 4 COL DRIVER DETAIL	DJU	
01	27 MAY 08	UPDATED CHARTS AND CORRECTED SWITCH DRAWING LAYOUT	DKD	



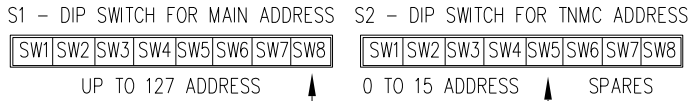
**NOTES:**

1. EACH 34MM MODULE IS AN 8X8 MATRIX.
2. CONNECTOR (P4) PLUGS INTO A102/A107. P4 SETS THE POWER SUPPLY VOLTAGE TO THE MOD.
3. CONNECT TO J43 IF TNMC IS LESS THAN 8x64.
4. S2 #5 CONTROLS HOME/GUEST OUTPUT.

REV.	DATE	DESCRIPTION	BY	APPR.
11	17 MAR 10	SWAP P42 / J43	KZB	
10	11 JAN 10	FIX P43 J42 COLORS	KZB	
09	04 JAN 09	FIX IN / OUT DESIGNATIONS	KZB	
08	12 NOV 09	CHG HARNESS LENGTHS	KZB	

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DAKTRONICS, INC. BROOKINGS, SD 57006	
PROJ:	OUTDOOR MCAST LED SCOREBOARDS
TITLE:	SCHEMATIC; OD, 3500 TNMC, 34MM, RED/AMB
DES. BY:	DDINING
DATE:	22 DEC 08
REVISION	APPR. BY:
11	SCALE: NONE
1544-R03B-783938	

DRIVER\_MCAST\_4\_COL  
OP-1388-0201



SW8 - T.O.D. ON ENABLED  
SW5 - HOME OR GUEST SELECT  
OFF = HOME  
ON = GUEST

J24 LIGHT SENSOR

PIN	FUNCTION
1	LIGHT_IN-P
2	LIGHT_IN-N
3	+5V-P
4	GND-N
5	GND-N
6	232_IN-P

TB1 SIGNAL

PIN	FUNCTION
1	SIG-P
2	SIG-N
3	CLOUT-P
4	CLOUT-N
5	LIGHT_0-P
6	LIGHT_0-N
7	232_IN-P
8	GND-N

J30 RADIO (MAIN)

PIN	FUNCTION
1	+UNREG-P
2	GND-N
3	GND-N
4	INPUT-P

J31 RADIO (AUX)

PIN	FUNCTION
1	+UNREG-P
2	GND-N
3	GND-N
4	INPUT-P

J29 SW INPUTS

PIN	FUNCTION
1	SW_IN0-P
2	GND-N
3	SW_IN1-P
4	GND-N
5	SW_IN2-P
6	GND-N
7	SW_IN3-P
8	GND-N

J19 PROGRAM JACK

PIN	FUNCTION
1	PGC
2	/MCLR
3	N/C
4	GND-N
5	PGD
6	GND-N
7	PGM
8	+5V-P
9	N/C
10	N/C

J25 (AUX 5)

PIN	FUNCTION
1	120VAC SW P
2	120VAC SW N

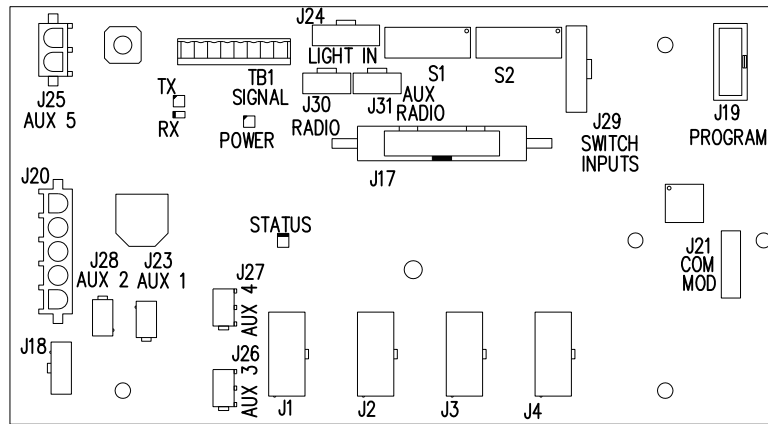
120VAC SWITCHED  
AUX OUT  
(1.25A MAX)

J20 POWER IN

PIN	FUNCTION
5	+VDD-P
4	GND-N
3	XFMR-CT
2	GND-N
1	+VBB-P

J18 PWR OUT

PIN	FUNCTION
1	20VDC
2	10VDC
3	GND-N



J21 COM MOD HEADER

FUNCTION	PIN	PIN	FUNCTION
N/C	A	1	N/C
N/C	B	2	MOD_TX
N/C	C	3	MOD_RX
GND-N	D	4	GND-N
GND-N	E	5	GND-N
+5V	F	6	N/C
N/C	H	7	+5V

J23,28 (AUX 1 - 2)

PIN	FUNCTION
1	SWITCHED AC V
2	GND-N

SECONDARY VOLTAGE  
SWITCHED GND  
200ma MAX

J26-27 (AUX 3 - 4)

PIN	FUNCTION
1	SWITCHED DC V
2	GND-N

AUX 3&4 MAX OUTPUT  
INDOOR=2A  
OUTDOOR 1.5A

J1-4 DIGITS

PIN	FUNCTION
1	SEGA-N
2	SEGB-N
3	SEGC-N
4	SEGD-N
5	SEGE-N
6	SEGF-N
7	SEGG-N
8	SEGH-N
9	+V1
10	+V2

200mA MAX / SEGMENT  
12.8A MAX LOAD FOR  
EVEN OR ODD COLUMNS

J17 TEAM NAME OUTPUT

FUNCTION	PIN	PIN	FUNCTION
GND4-P	11	10	ID3
RED4-P	12	9	ID2
GND3-P	13	8	GND-N
MTRX_CLK	14	7	GND-N
RED3-P	15	6	GRN2-P
RED2-P	16	5	GND-N
MTRX_DIM	17	4	GND-N
MTRX_LT	18	3	GND-N
GND1-P	19	2	ID1
RED1-P	20	1	ID0

NOTES:

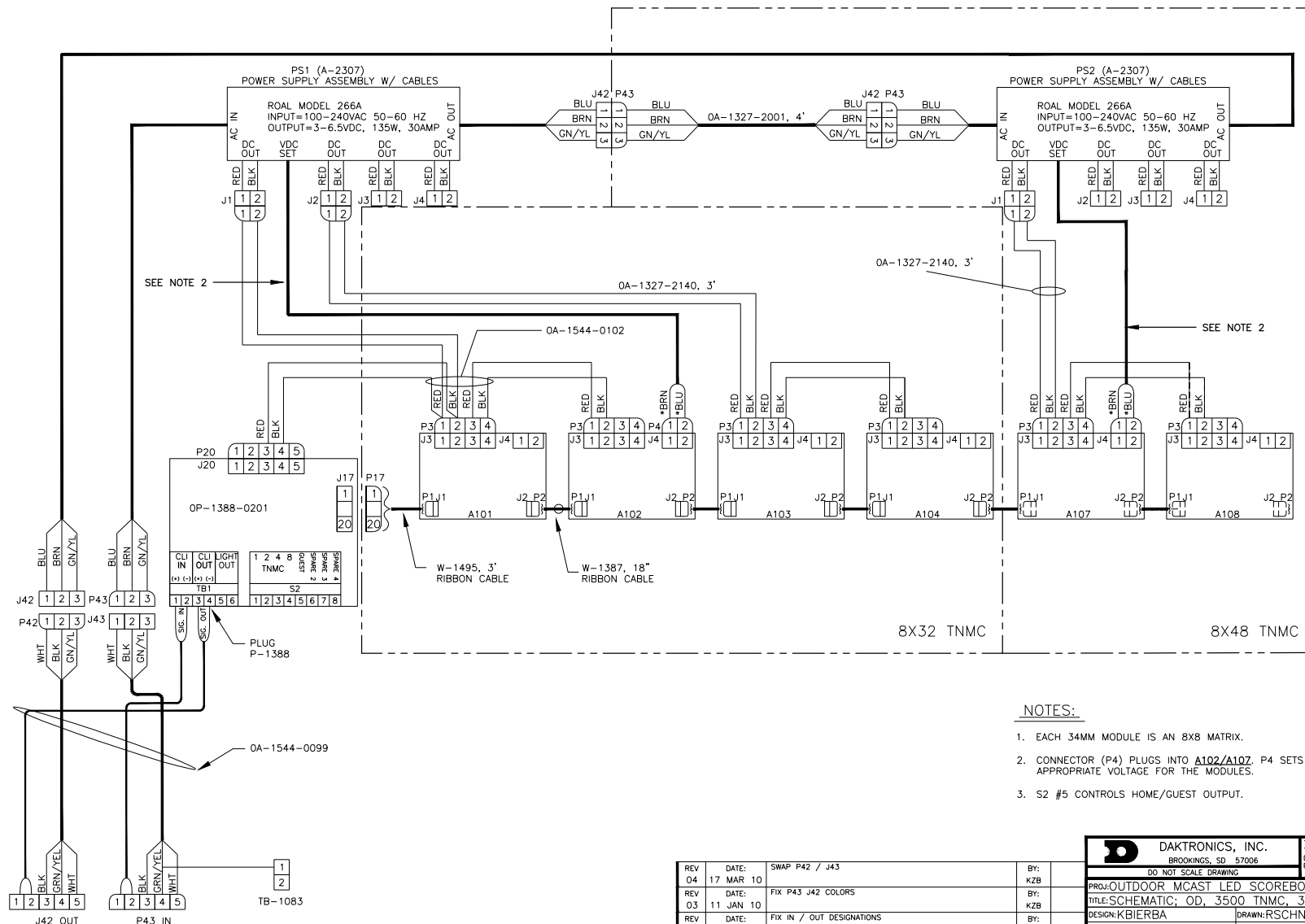
- GREEN POWER LED INDICATES THAT THE DRIVER HAS POWER.
- RED RX LED IS ON WHEN INPUT SIGNAL IS CONNECTED BUT IDLE AND BLINKS WHEN DATA IS RECEIVED. IF RED RX LED IS OFF, THERE IS NO CONNECTION.
- TX LED IS ON WHEN SIGNAL IS DISCONNECTED AND OFF WHEN INPUT IS IDLE. THE TX LED BLINKS WHEN DATA IS TRANSMITTED.
- AMBER STATUS LED WILL BLINK WHEN THE DRIVER IS RUNNING.
- IF STATUS LED IS ON OR OFF CONTINUOUSLY THE MICROCONTROLLER IS NOT WORKING.
- REFER TO THE FOLLOWING DRAWINGS FOR ADDRESS AND SWITCH SETTINGS:

ADDRESS SWITCH (S1) A-328273

TNMC ADD SWITCH (S2) A-328274

THE CONCEPTS EXPRESSED AND DETAILS SHOWN ON THIS DRAWING ARE CONFIDENTIAL AND PROPRIETARY. DO NOT REPRODUCE BY ANY MEANS, INCLUDING ELECTRONICALLY WITHOUT THE EXPRESSED WRITTEN CONSENT OF DAKTRONICS, INC. COPYRIGHT 2009 DAKTRONICS, INC.			
<b>DAKTRONICS, INC. BROOKINGS, SD 57006</b>			
PROJ:			
TITLE: SPECIFICATIONS; DRIVER, MCAST, 4 COL			
DES. BY: KKASKI		DRAWN BY: DULSCHM	
		DATE: 23 JAN 09	
REVISION	APPR. BY:	<b>1388-E07A-793970</b>	
01	SCALE: 1 = 2		

REV.	DATE	DESCRIPTION	BY	APPR.
01	21 SEP 09	UPDATED SWITCH DRAWING NUMBERS	DJU	



SEE NOTE 2

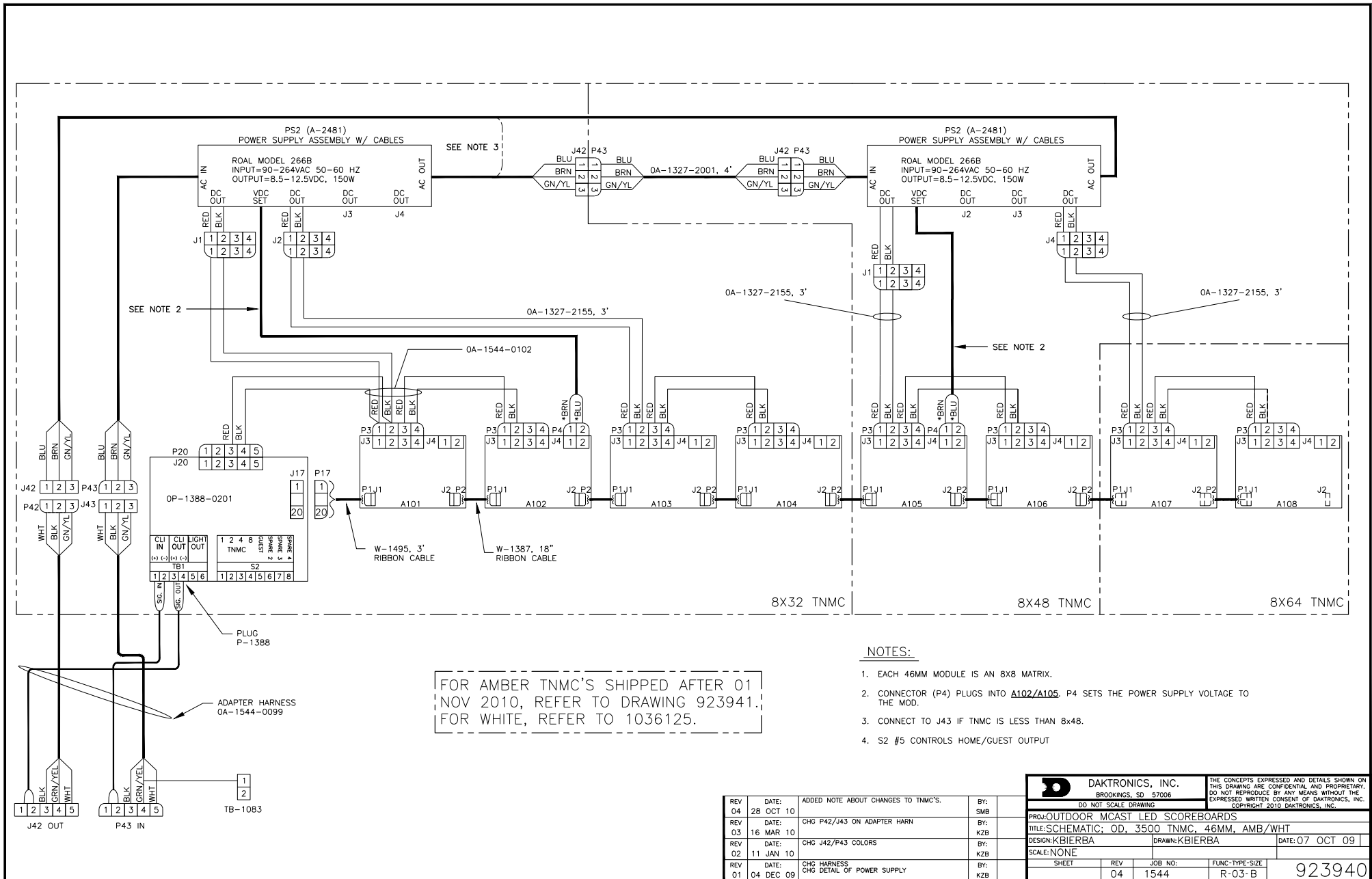
SEE NOTE 2

**NOTES:**

1. EACH 34MM MODULE IS AN 8X8 MATRIX.
2. CONNECTOR (P4) PLUGS INTO A102/A107. P4 SETS THE POWER SUPPLY TO THE APPROPRIATE VOLTAGE FOR THE MODULES.
3. S2 #5 CONTROLS HOME/GUEST OUTPUT.

REV 04	DATE: 17 MAR 10	SWAP P42 / J43	BY: KZB
REV 03	DATE: 11 JAN 10	FIX P43 J42 COLORS	BY: KZB
REV 02	DATE: 04 JAN 09	FIX IN / OUT DESIGNATIONS	BY: KZB
REV 01	DATE: 29 OCT 09	ADDED NOTE #3, P-1388	BY: KZB

<b>DAKTRONICS, INC.</b>		BROOKINGS, SD 57006	
DO NOT SCALE DRAWING			
PROJ: OUTDOOR MCAST LED SCOREBOARDS			
TITLE: SCHEMATIC; OD, 3500 TNMC, 34MM, WHT			
DESIGN: KBIERBA	DRAWN: RSCHNEI	DATE: 19 AUG 09	
SCALE: NONE			
SHEET	REV	JOB NO.	FLUNC-TYPE-SIZE
05	P1544		R-03-B
			<b>906385</b>



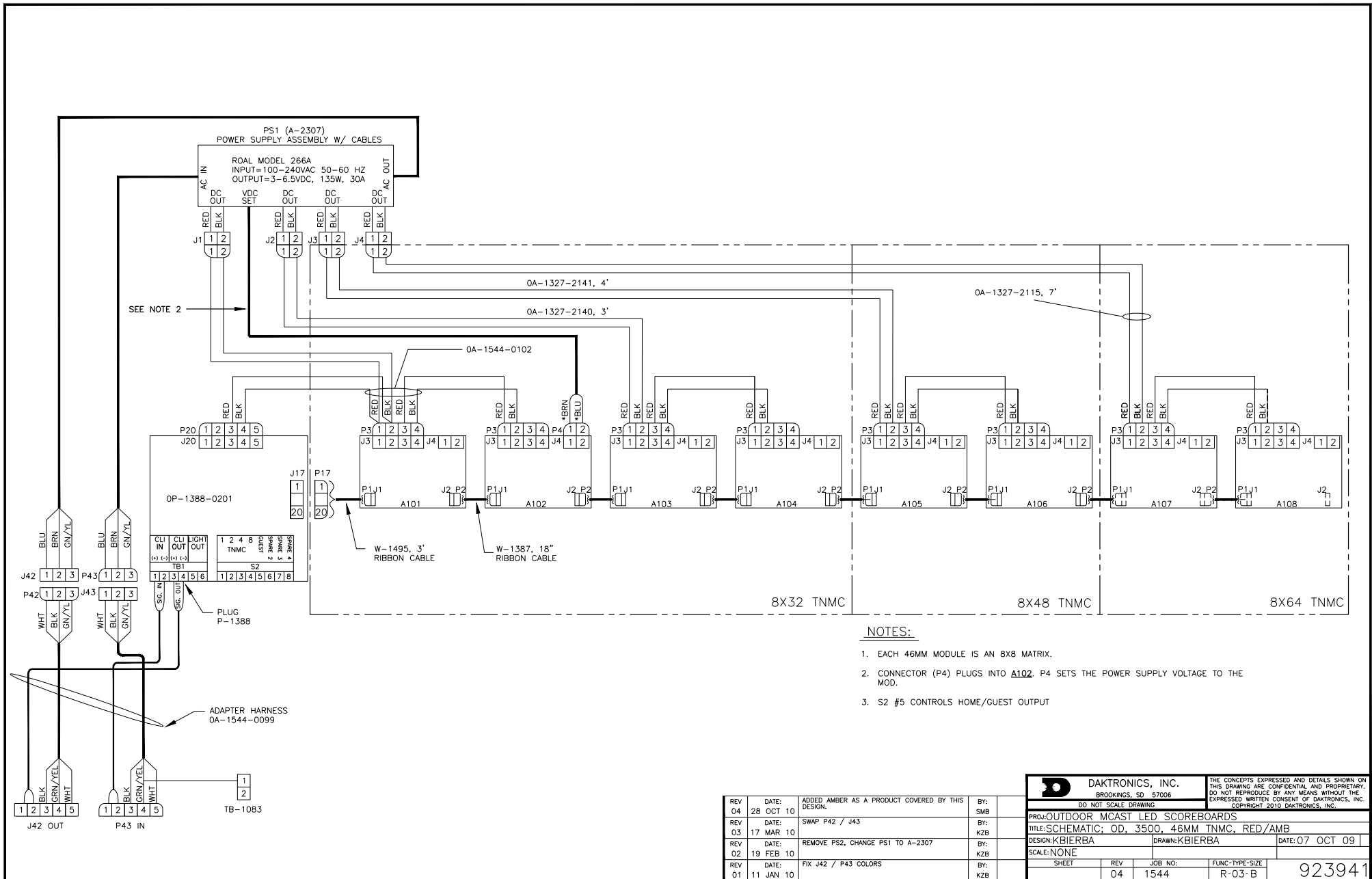
FOR AMBER TNMC'S SHIPPED AFTER 01 NOV 2010, REFER TO DRAWING 923941. FOR WHITE, REFER TO 1036125.

**NOTES:**

1. EACH 46MM MODULE IS AN 8X8 MATRIX.
2. CONNECTOR (P4) PLUGS INTO A102/A105. P4 SETS THE POWER SUPPLY VOLTAGE TO THE MOD.
3. CONNECT TO J43 IF TNMC IS LESS THAN 8x48.
4. S2 #5 CONTROLS HOME/GUEST OUTPUT

REV	DATE	ADDED NOTE ABOUT CHANGES TO TNMC'S.	BY:
04	28 OCT 10		SMB
03	16 MAR 10	CHG P42/J43 ON ADAPTER HARN	KZB
02	11 JAN 10	CHG J42/P43 COLORS	KZB
01	04 DEC 09	CHG HARNESS CHG DETAIL OF POWER SUPPLY	KZB

<b>DAKTRONICS, INC.</b> BROOKINGS, SD 57006		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 2010 DAKTRONICS, INC.
DO NOT SCALE DRAWING		
PROJ: OUTDOOR MCAST LED SCOREBOARDS		
TITLE: SCHEMATIC; OD, 3500 TNMC, 46MM, AMB/WHT		
DESIGN: KBIERBA	DRAWN: KBIERBA	DATE: 07 OCT 09
SCALE: NONE		
SHEET	REV	JOB NO.
04	04	1544
FLUNC-TYPE-SIZE		
R-03-B		
<b>923940</b>		



**NOTES:**

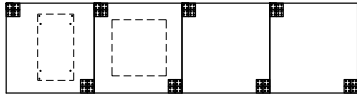
1. EACH 46MM MODULE IS AN 8X8 MATRIX.
2. CONNECTOR (P4) PLUGS INTO A102. P4 SETS THE POWER SUPPLY VOLTAGE TO THE MOD.
3. S2 #5 CONTROLS HOME/GUEST OUTPUT

REV 04	DATE: 28 OCT 10	ADDED AMBER AS A PRODUCT COVERED BY THIS DESIGN.	BY: SMB
REV 03	DATE: 17 MAR 10	SWAP P42 / J43	BY: KZB
REV 02	DATE: 19 FEB 10	REMOVE PS2, CHANGE PS1 TO A-2307	BY: KZB
REV 01	DATE: 11 JAN 10	FIX J42 / P43 COLORS	BY: KZB

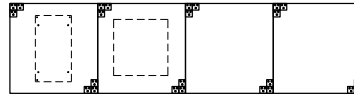
<p>DAKTRONICS, INC. BROOKINGS, SD 57006</p>	<p>THE CONCEPTS EXPRESSED AND DETAILS SHOWN ON THIS DRAWING ARE CONFIDENTIAL AND PROPRIETARY. DO NOT REPRODUCE BY ANY MEANS WITHOUT THE EXPRESSED WRITTEN CONSENT OF DAKTRONICS, INC. COPYRIGHT 2010 DAKTRONICS, INC.</p>	
	<p>DO NOT SCALE DRAWING</p>	
<p>PROJ: OUTDOOR MCAST LED SCOREBOARDS</p>		
<p>TITLE: SCHEMATIC; OD, 3500, 46MM TNMC, RED/AMB</p>		
<p>DESIGN: KBIERBA</p>		<p>DATE: 07 OCT 09</p>
<p>SCALE: NONE</p>		
SHEET	REV	JOB NO.
04	04	1544
<p>FLUNC-TYPE-SIZE</p>		<p>R-03-B</p>
<p>923941</p>		



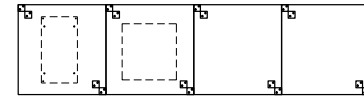
8x32- 34MM AMBER LED TNMC



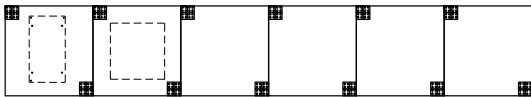
8x32- 34MM RED LED TNMC



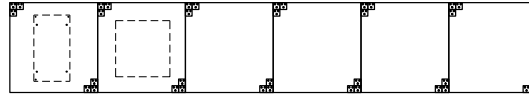
8x32- 34MM WHITE LED TNMC



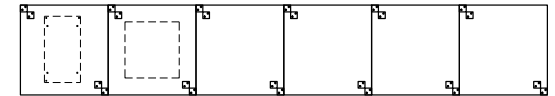
8x48- 34MM AMBER LED TNMC



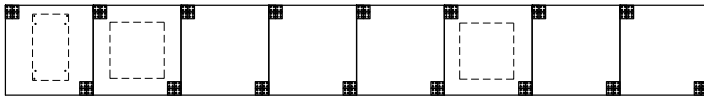
8x48- 34MM RED LED TNMC



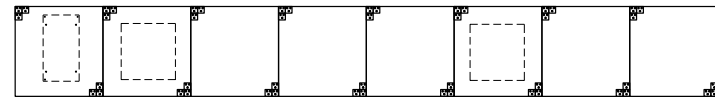
8x48- 34MM WHITE LED TNMC



8x64- 34MM AMBER LED TNMC



8x64- 34MM RED LED TNMC



AMBER LED TNMC MODULE



RED LED TNMC MODULE




WHITE LED TNMC MODULE



DRIVER



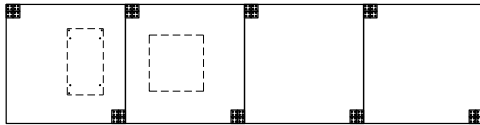
POWER SUPPLY

 <b>DAKTRONICS, INC.</b> 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 2010 DAKTRONICS, INC.				
		PROJ: OUTDOOR LED SCOREBOARDS TITLE: COMPONENT LOC.: 34MM RED/AMB/WHT LED TNMC G4 DESIGN: KDRAGT      DRAWN: KOLSON      DATE: 18 FEB 10				
SCALE: 1=15		SHEET	REV 01	JOB NO. P1544	FLUNC-TYPE-SIZE R-08-B	975100

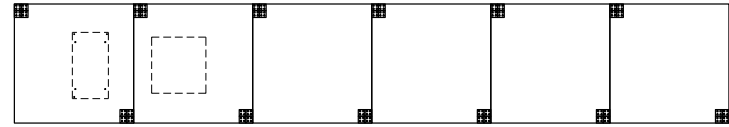
REV	DATE	MADE DRAWING GENERIC
01	04 NOV 10	

BY:	SAG
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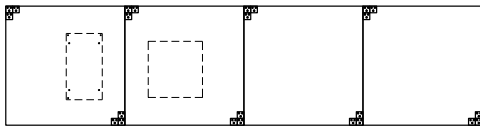
8X32- 46MM AMBER LED TNMC



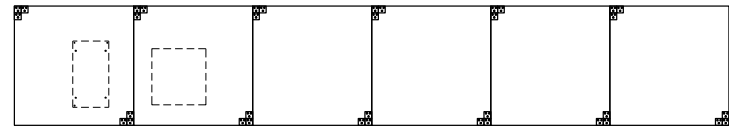
8X48- 46MM AMBER LED TNMC



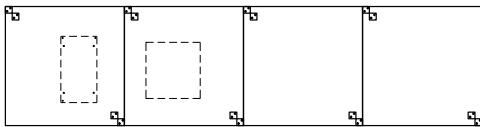
8X32- 46MM RED LED TNMC



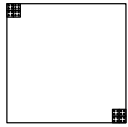
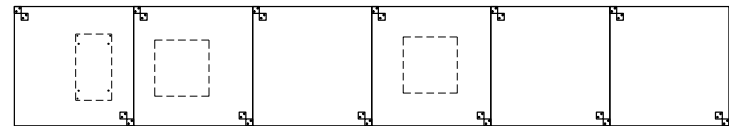
8X48- 46MM RED LED TNMC



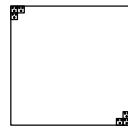
8X32- 46MM WHITE LED TNMC



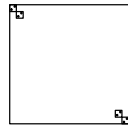
8X48- 46MM WHITE LED TNMC



AMBER LED TNMC MODULE



RED LED TNMC MODULE



WHITE LED TNMC MODULE



DRIVER

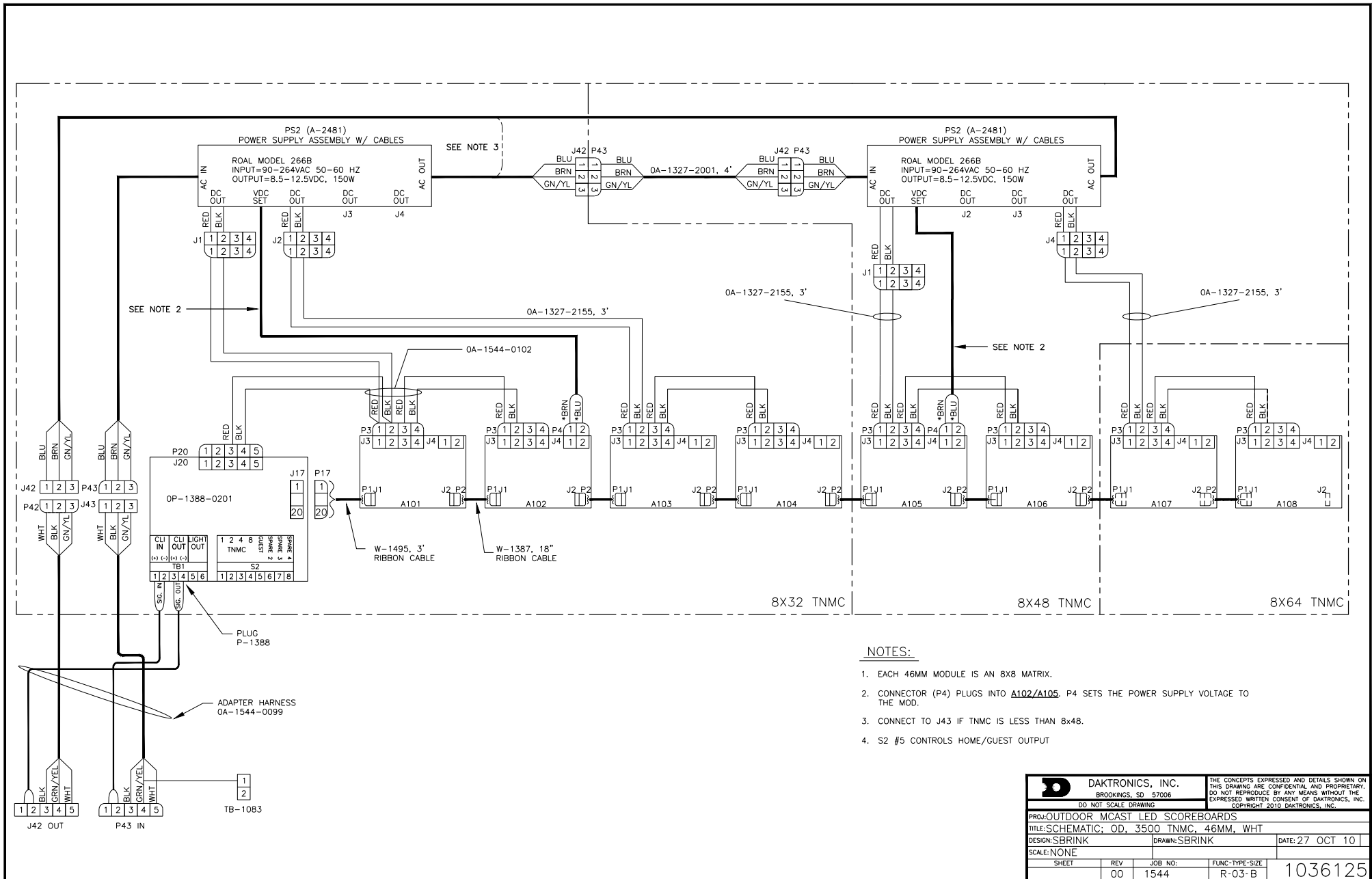


POWER SUPPLY

<b>DAKTRONICS, INC.</b> BROOKINGS, SD 57006		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 2010 DAKTRONICS, INC.	
DO NOT SCALE DRAWING			
PROJ: OUTDOOR LED SCOREBOARDS			
TITLE: COMPONENT LOC.: 46MM RED/AMB/WHT LED TNMC G4			
DESIGN: KDRAGT	DRAWN: KOLSON		DATE: 19 FEB 10
SCALE: 1=15			
SHEET	REV	JOB NO.	FLWC-TYPE-SIZE
	01	P1544	R-08-B
			975635

REV	DATE	MADE DRAWING GENERIC
01	04 NOV 10	

BY:	SAG
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<b>DAKTRONICS, INC.</b> BROOKINGS, SD 57006		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 2010 DAKTRONICS, INC.	
DO NOT SCALE DRAWING			
PROJ: OUTDOOR MCAST LED SCOREBOARDS			
TITLE: SCHEMATIC; OD, 3500 TNMC, 46MM, WHT			
DESIGN: SBRINK	DRAWN: SBRINK	DATE: 27 OCT 10	
SCALE: NONE			
SHEET	REV	JOB NO.	FLUNC-TYPE-SIZE
	00	1544	R-03-B
			<b>1036125</b>



## **Appendix B: Daktronics Warranty and Limitation of Liability**

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## 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 1-877-605-1116.