Outdoor LED Scoreboards

Service Manual

DD2124597 ***Rev 6 – 19 December 2014***

DAKTRONICS

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DAKTRONICS

Single-Section Models					
	BA-618		BA-2718		RO-2010
	BA-624		CR-2002		RO-2011
*	BA-2004		CR-2003		SO-918
	BA-2005		FB-824		SO-2008
	BA-2010		FB-4005		SO-2013
	BA-2014		FB-2030		SO-2918
	BA-2017		MS-915		TI-218
	BA-2019		MS-918		TI-2003
	BA-2022		MS-2002		TI-2010
	BA-2023		MS-2004		TI-2012
	BA-2024		MS-2006		TI-2015
	BA-2030		MS-2012		TI-2019
	BA-2515		MS-2024		TI-2024
	BA-2518		MS-2025		TI-2032
	BA-2618	*	MS-2026		
	BA-2715		MS-3918		

Multi-Section Models					
	BA-1518		FB-2020		MS-2009
	BA-2025		FB-2021		MS-2918
	BA-2026		FB-2022		SO-2011
	BA-2027		FB-2023		SO-2018
	BA-2028		FB-2024		SO-2019
	BA-2029		FB-2025		SO-2021
	BA-2125		FB-2026		SO-2023
	BA-2127		FB-2027		SO-2043
	FB-2018		FB-2028		
	FB-2019		FB-3010		

Modular Football Scoreboards			
	FB-2500 Series		FB-2600 Series

* Discontinued

Tennis Models			
	TN-2601		TN-2650
	TN-2603		TN-2651
	TN-2604		TN-2652
	TN-2605		TN-2653
	TN-2606		TN-2654
	TN-2607		TN-2655
			TN-2656
			TN-2657

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Product 1164, 1647 & 1753
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DAKTRONICS, INC.

Table of Contents

Section 1: Introduction

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

IMPORTANT SAFEGUARDS:

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

1.1 Specifications Label

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

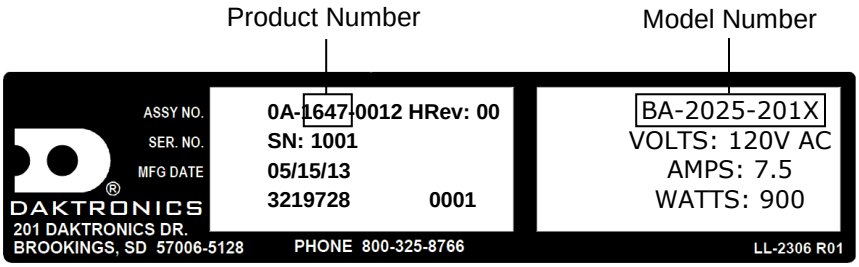

Figure 1: *Specifications Label*

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

1.2 Resources

Figure 2 illustrates a Daktronics drawing label. The drawing number is located in the lower-right corner of a drawing. This manual refers to drawings by listing the last set of digits and the letter preceding them. In the example, the drawing would be referred to as **Drawing C-325405**.

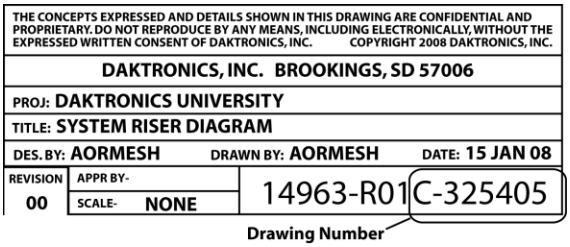

Figure 2: *Daktronics Drawing Label*

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 **DD2124597**.

1.3 Daktronics Nomenclature

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 2.10,** use the label to order a replacement. **Figure 3** illustrates a typical label. The part number is in bold.

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

Accessory Labels	
Component	***Label***
Termination block for power or signal cable	**TBXX**
Grounding point	**EXX**
Power or signal jack	**JXX**
Power or signal plug for the opposite jack	**PXX**

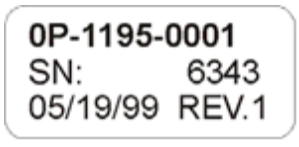

Figure 3: *Typical Label*

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.

1.4 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: 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.**

Note: For assistance in the maintenance of team name message centers (TNMCs), electronic captions, or other optional scoreboard message centers, refer to **Section 3** or the service manual that accompanies those units.

2.1 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 4**.

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) VAC power (see **Appendix A**).
	No power to console	Ensure the console is plugged into a 120 (or 240) VAC 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) VAC power (see **Appendix A**).
		Check that the red DS2 LED on the driver lights up when sending commands from the control console (see **Section 2.6**).
	No radio signal from console	Cycle power to the scoreboard and watch for radio receiver broadcast/ channel settings (see **Section 2.8**).

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 **Section 2.8**). 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) VAC power (see **Appendix A**).
		Check that the red DS2 LED on the driver lights up when sending commands from the control console (see **Section 2.6**).
		Swap the driver with one known to work correctly and with the same part number to verify the problem. Replace if necessary (see **Section 2.6**).
	No power to driver	Check that the green DS1 LED on the driver is always lit up when the scoreboard is powered on (see **Section 2.6**).
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.
	Incorrect driver address	Check that the scoreboard driver(s) are set to the correct address(es) (see **Section 2.6**)
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 **Section 2.6**)
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 **Sections 2.3-2.5**).

Problem	Possible Cause	Solution/Items to Check
Scoreboard works, but some LEDs do not light or they blink	Bad connection	Verify the connector on the back of the digit circuit board is secure (see **Sections 2.3-2.5**).
	Bad digit or driver	Swap the digit/driver with one known to work correctly to verify the problem. Replace if necessary (see **Sections 2.3-2.5** for digits or **Section 2.6** 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 **Section 2.8**).
	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.
	Bad breakout board on segmented digit (white digits only)	Replace the breakout board with one known to work correctly to verify the problem. Replace if necessary (see **Section 2.4**).
	Blown fuse(s) on power supply circuit board (white digits only)	Replace the fuse(s) on the circuit board (see **Section 2.7**).
Scoreboard works, but a certain section of digits do not light	Bad multi-section connection	Verify power/signal interconnect(s) between scoreboard sections properly connected. Refer to appropriate scoreboard installation manual and/or schematic drawings.
	Bad power supply	Swap the power supply with one known to work correctly to verify the problem. Replace if necessary (see **Section 2.7**).
	Bad power supply circuit board (white digits only)	Swap the circuit board with one known to work correctly to verify the problem. Replace if necessary (see **Section 2.7**).
Speed of Pitch (SOP) digits do not light	No signal to SOP driver	Ensure there is a separate signal run connected to the SOP driver from a dedicated All Sport console using code **5500**. Refer to schematic drawings and **ED-12224**.

2.2 Component Locations & Access

Component location varies with each scoreboard model. Refer to the component location drawings attached to the product specification sheets listed in **Appendix A**. For component locations of scoreboards with white digits and Modular Football Scoreboards, refer to the tables in **Appendix A**.

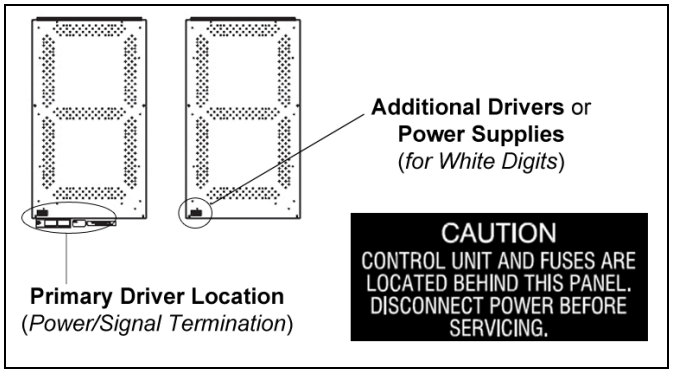

Figure 4: *Component Location Labeling*

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

Look for labels similar to those shown in **Figure 4** to access primary scoreboard components. Note that the same labels are on both front and rear access panels.

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 5.**

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.

   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.

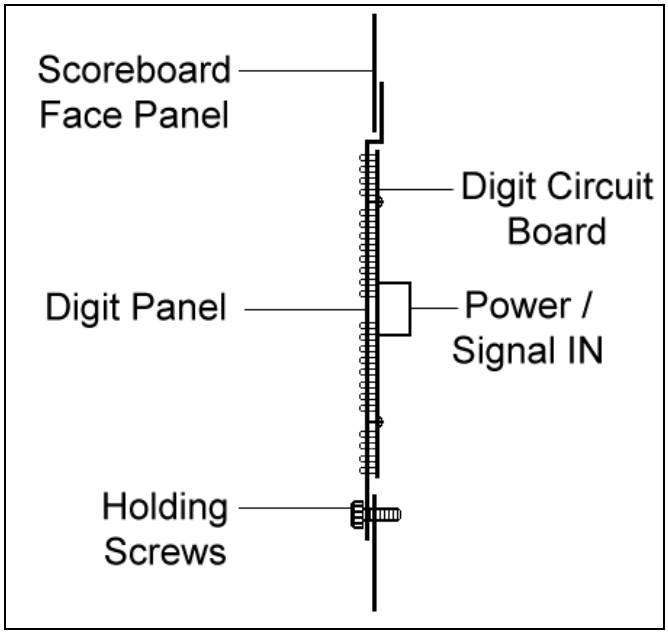

Figure 5: *LED Digit Panel*

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 a digit or access panel, make sure all screws/latches are holding it firmly in place to prevent moisture and debris from entering the scoreboard.

2.3 Replacing Digits

Digits that are 18" or smaller have LEDs embedded on a single circuit board that is mounted to the back of a digit panel, as shown in **Figure 6**. Newer weather-sealed digits consist of a digit circuit board mounted to a black polycarbonate tray and encased in protective gel as shown in **Figure 7**. Multiple digits may also be secured to a single face panel. 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 2.2**.
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 $^{9}/_{32}$" 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. ***Weather-sealed digits do not require spacers.***
5. Tighten the nuts.
6. 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.

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

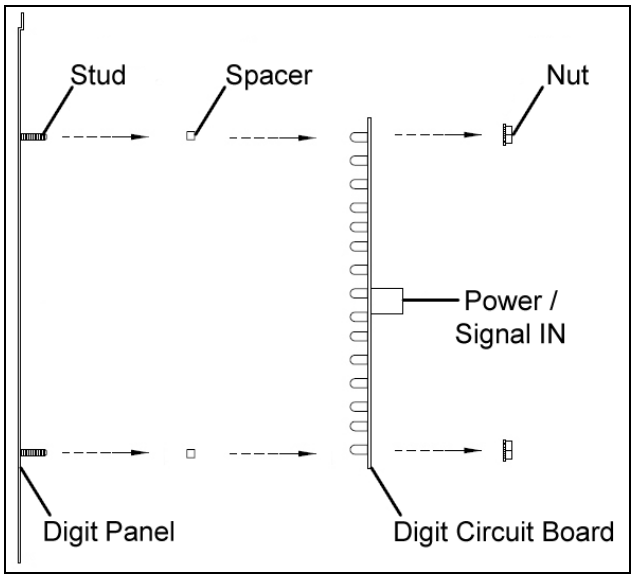

Figure 6: *Digit Panel Assembly*

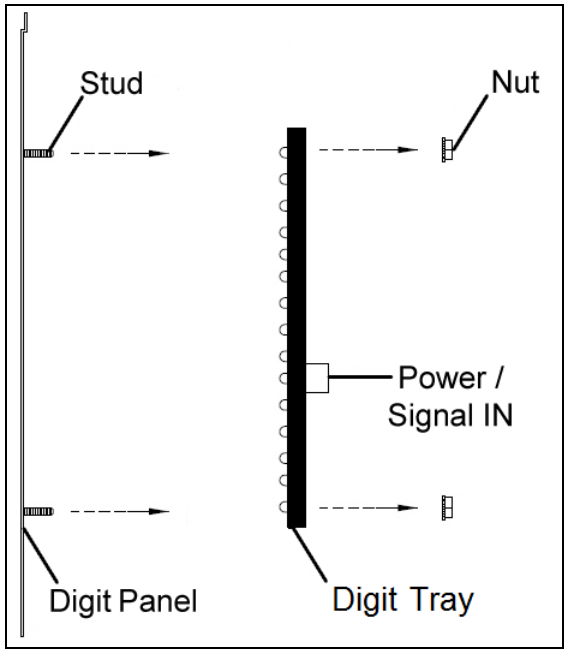

Figure 7: *Weather-Sealed Digit Panel Assembly*

2.4 Replacing Digit Segments

Digits that are 24" or larger are composed of seven circuit board segments. As with smaller digits, the digit segment circuit boards are mounted to the back of the digit panel (**Figure 8)**. Do not attempt to remove individual LEDs; it may be possible to make repairs by removing just the defective segment.

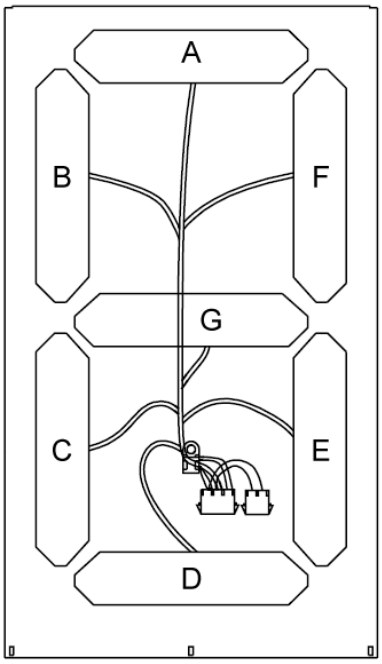

Figure 8: *Digit Segments & Panel*

To replace a digit segment:

1. Open the digit panel as described in **Section 2.2**.
2. Disconnect the 2- or 4-pin power/signal connectors from the back of the digit segment by squeezing together the locking tabs and pulling the connector free.
3. Use a $^{9}/_{32}$" nut driver to remove the nuts securing the digit segment to the inside of the panel, and then lift the digit segment off the standoff studs.
4. Position a new digit segment over the studs, making sure the rubber side of the rubber-backed spacer is facing the digit circuit board. ***Weather-sealed digit segments do not require these spacers.***
5. Tighten the nuts.
6. 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.

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

Some LED digit segments are connected to a breakout board (**Figure 9**). If all the segments of an entire digit do not work, it may be necessary to replace the breakout board instead. Breakout boards are replaced in the same manner as a digit segment.

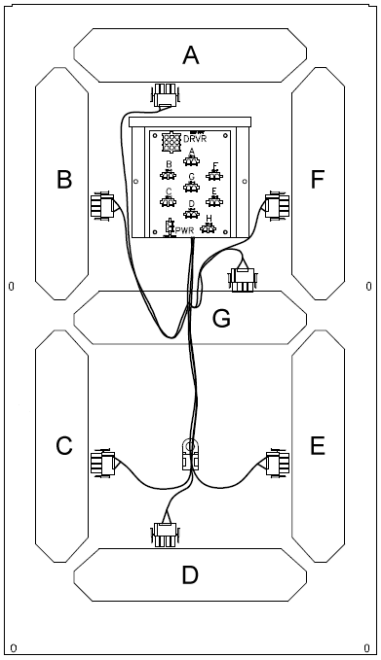

Figure 9: *Breakout Board Enclosure (Cover Removed)*

2.5 Replacing Colons, Decimals & Indicators

Colons, decimals, and other indicators are replaced in the same manner as a digit segment. Some indicators will be connected to a breakout board (**Figure 9**). If no indicators work, it may be necessary to replace the breakout board instead. Breakout boards are replaced in the same manner as a digit segment.

2.6 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 10** to view the location and components of a driver enclosure.

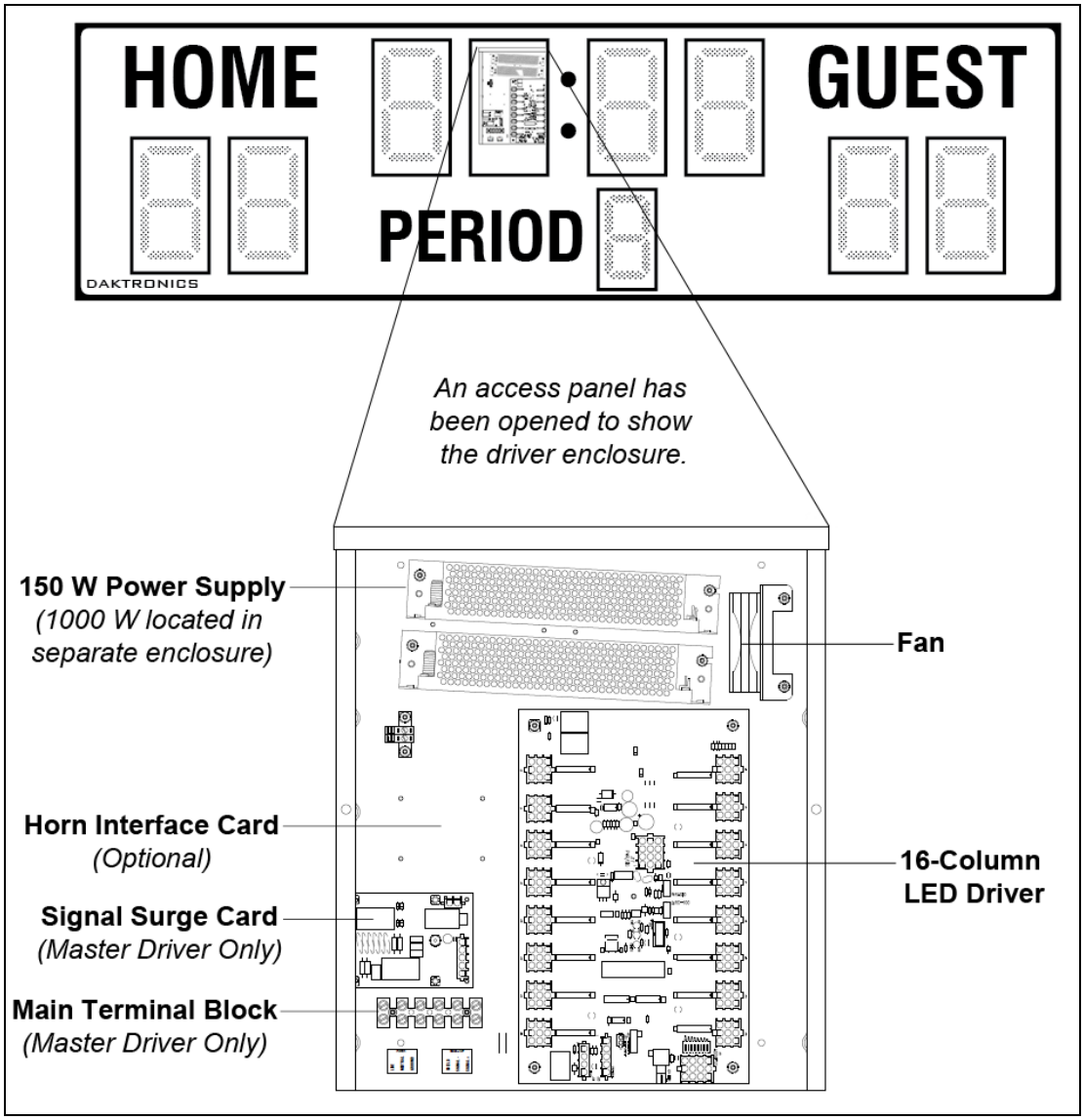

Figure 10: *Driver Enclosure Components (Cover Removed)*

Most scoreboard models use 16-column drivers (**Figure 11**), while smaller models use 8-column drivers. Several scoreboard models also contain more than one driver to accommodate all of the digits and indicators. Refer to the component location drawings in **Appendix A** to determine the type and number of drivers for a particular scoreboard model. Also refer to **Appendix B** to locate the appropriate schematic drawings.

When troubleshooting driver problems, three LEDs labeled **DS1**, **DS2**, and **DS3** in **Figure 11**, 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.

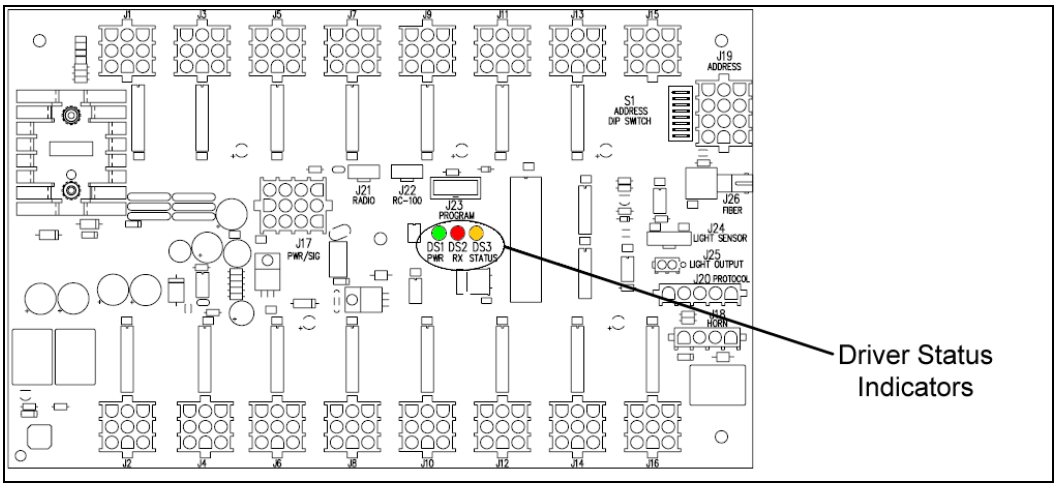

Figure 11: *Driver Status Indicators (16-Column)*

Replacing a Driver

1. Open the digit panel or scoreboard face panel as described in **Section 2.2**.
2. Loosen the screws securing the metal cover to the driver enclosure, and then lift it up and off the keyholes.
3. Disconnect all connectors from the driver by squeezing together the locking tabs and pulling the connectors free. 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 12**) using a pen or small, pointed object.

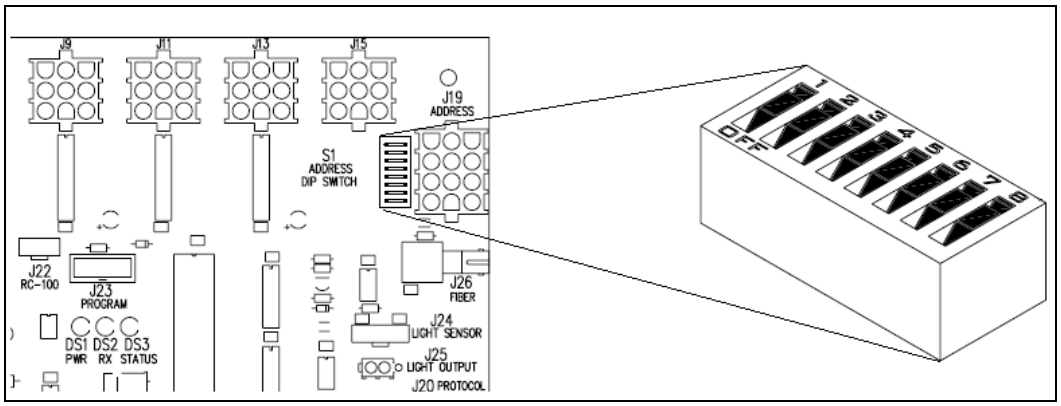

Figure 12: *Driver Address Dip Switch*

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

Single-Section Scoreboards

Model		Driver # & Address	
BA-618 **BA-624** **BA-2010** **BA-2017**	**BA-2515** **BA-2518** **BA-2618**	A1	61
BA-2715	**BA-2718**	A1	62
BA-2004 **BA-2005** **BA-2014**	**BA-2019** **BA-2030**	A1 A2 A3	72 70 71
BA-2022		A1 A2	64 70
BA-2023	**BA-2024**	A1	3
CR-2002		A1	12
CR-2003		A1 A2	12 13
FB-2030		A1 A2	1 10
FB-824 **FB-4005** **MS-915** **MS-918** **MS-2002**	**MS-2006** **MS-2025** **MS-3918** **SO-918** **SO-2918**	A1	11

Model		Driver # & Address	
MS-2004	**MS-2012**	A1 A2	74 75
MS-2024		A1 A2 A3	72 73 71
MS-2026		A1	17
RO-2010	**RO-2011**	A1	12
SO-2008		A1/A2*	17
SO-2013		A1 A2	13 14
TI-218 **TI-2003** **TI-2010**	**TI-2015** **TI-2024**	A1	2
TI-2012 **TI-2019**	**TI-2032**	A1	1

* Additional driver(s) only for models with white digits.

Multi-Section Scoreboards

Model	Driver # & Address
BA-1518	A1/A2* 63
BA-2025 **BA-2125**	A1 72 A2 70 A3/A4* 71
BA-2026	A1 72 A2/A3* 70 A3/A4*/A5* 71
BA-2027 **BA-2127**	A1 72 A2 70 A3/A4* 71 A4/A5* 01
BA-2028	A1 72 A2/A3* 70 A3/A4*/A5* 71 A4/A6* 01
BA-2029	A1 72 A2/A3* 70 A3/A4*/A5* 71 A4/A6* 01
FB-3010	A1 10 A2 1
MS-2009	A1 72 A2 71 A3* 73

Model	Driver # & Address
FB-2018 **SO-2018** **FB-2019** **SO-2019** **FB-2020** **SO-2021** **FB-2021** **SO-2023** **FB-2022** **FB-2023** **FB-2024** **FB-2025** **FB-2026** **FB-2027**	A1 15 A2 19
FB-2028	A1/A2 (top): Red/Amber 32 White 12 A3/A4 (bottom): 19
MS-2918	A1 72 A2 73 A3 71
SO-2011	A1 11 A2 17
SO-2043	A1 28 A2 29

* Additional driver(s) only for models with white digits (excluding BA-2125 & BA-2127).

Modular Football Scoreboards

Information Shown	Driver # & Address
Clock	A1 15
HOME / GUEST; DOWN / TO GO; BALL ON / QTR	A1 19

Note: For modular scoreboards built prior to September 2013, HOME & GUEST sections use address 15.

Tennis Scoreboards

Refer to **Drawing B-1054089** in **Appendix C** for addressing information for up to 12 courts.

Multiple Drivers

Scoreboards with multiple drivers 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). Refer to the appropriate scoreboard installation manual for more information about the connections between scoreboard sections.

2.7 Power Supplies

Scoreboards with 8-column drivers use a single 150 W power supply assembly, while 16-column driver enclosures require a dual 150 W power supply assembly. Most scoreboards with white digits will also have at least one 1000 W power supply in addition to, or in place of, the power supplies in the driver enclosure. The 1000 W power supplies are located in a separate enclosure. If a certain group of digits is not lighting up, the power supply they are all connected to may need to be replaced.

Replacing a Power Supply

To remove a 150 W power supply:

1. Use the component location drawings attached to the product specification sheets listed in **Appendix A** to locate the enclosure.
2. Open an access panel as described in **Section 2.2**.
3. Loosen the screws to remove metal cover from the enclosure.
4. Locate the power supply (**Figure 10**) and disconnect all wires connected to it.
5. Use a 9/32" nut driver to remove the hardware securing the power supply.
6. Fasten the new power supply in place and reconnect all wires.

To remove a 1000 W power supply:

1. Use the component location drawings in **Appendix A** to locate the enclosure. Refer also to **Drawing B-274431** in **Appendix C** for a detailed view of the enclosure assembly.
2. Open an access panel as described in **Section 2.2**.
3. Loosen the screws to remove metal cover from the enclosure.
4. Remove the mounting plate secured to the enclosure, remove the circuit board attached to the power supply, and detach the power supply from the mounting plate.
5. Attach the circuit board to the new power supply and secure both to the mounting plate.

   Note: If replacing the 1000 W power supply (Daktronics part # A-1856R) does not seem to resolve the problem, try replacing its circuit board (part # 0P-1337-2000). This circuit board also contains individual fuses for each output jack. If a single digit doesn't work, a fuse may be blown. Replace the fuse(s) as needed with part # F-1058.

2.8 Radio Connections

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

1. Power off any radio-equipped consoles in the area.
2. Cycle power to the scoreboard, and watch for the radio settings. These settings appear in different locations based on the scoreboard layout:

   - When using the All Sport 5000 controller, the scoreboard will display "bX CY" where X is the Broadcast group number and Y is the Channel number. The default is b1C1.
     - If there is a clock, the settings appear in the first four clock digits (**Figure 13**).

Figure 13: *All Sport Radio Settings (Clock)*

- If there is no clock, the settings should appear in the Home and Guest score digits, but this may vary by scoreboard model.
- Scoreboards capable of displaying speed of pitch may also have separate radio settings for the second All Sport console controlling those digits.

- When using the RC-100 controller, the scoreboard will display "CXX", where the XX is a channel from 01-15 (**Figure 14**). The default is channel 01.

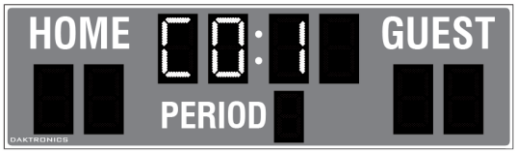

Figure 14: *RC-100 Radio Settings (Clock)*

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

To make sure the console radio settings (**Figure 15**) match the receiver in the scoreboard, refer to the appropriate control console manual.

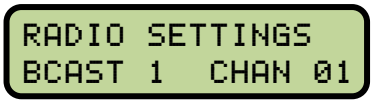

Figure 15: *Radio Settings (Console)*

Radio Interference

If it has been determined that a nearby scoreboard's radio signal is interfering, the settings of the wireless base station or radio receiver inside the scoreboard(s) must be changed.

1. To locate the radio receiver or base station, simply look for the black antenna sticking out the front of the scoreboard. Component location drawings also show the exact position where the radio receiver will be mounted.
2. Open the access panel to which the receiver is attached as described in **Section 2.2**.

The channel selection process varies depending on whether the scoreboard is equipped with or a radio receiver (All Sport 5000) or a base station (RC-100).

Radio Receiver (All Sport 5000)

1. The radio receiver has a plastic cover with a window to view status indicators (**Figure 16**).

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

2. Remove the four screws in each corner using a #2 Philips screwdriver and lift off the cover.

3. The process of changing the radio settings depends on the generation of the radio. Refer to the instructions below and **Figure 17**.

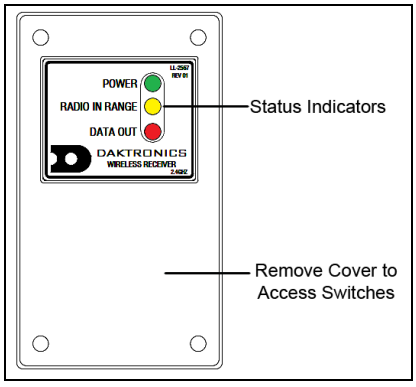

Figure 16: *Radio Receiver w/ Cover*

- **Gen V (blue label):** Use a small flathead screwdriver to set the CHAN switch to a new channel (1-8). Move the jumper wire on the J4 or J5 BCAST jacks to a new broadcast group (1-4) as needed.
- **Gen VI (gray label):** Use a small flathead screwdriver to set the CHAN and BCAST switches to a new channel and broadcast group (1-8) as needed. Be sure to always leave FUNC set to "1".

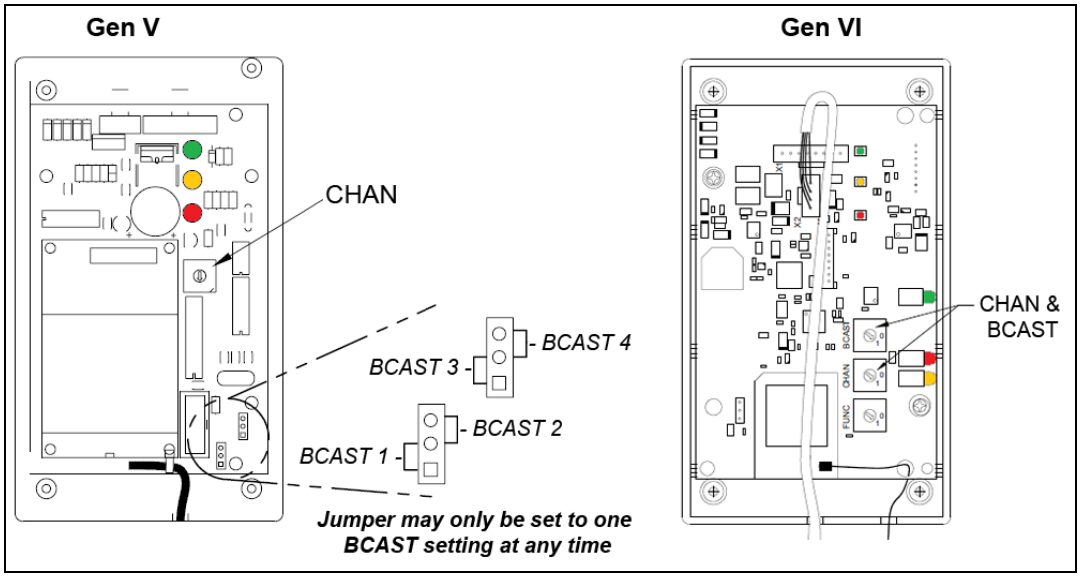

Figure 17: *Radio Receiver Switches*

4. Screw the cover back on and securely close the access panel.
5. Enter the correct sport code and new radio settings into the console to test the radio control (refer to the appropriate control console manual).

Refer to the **Gen V Radio Installation Manual** (**ED-13831**) or the **Gen VI Radio Installation Manual** (**DD2362277**) for more information.

Base Station (RC-100)

1. Use a small flathead screwdriver to set the S1 switch (**Figure 18**) to the desired channel (1-15).
2. Securely close the scoreboard access panel.
3. Enter the correct channel setting and sport code into the RC-100 handheld controller to test the radio connection.

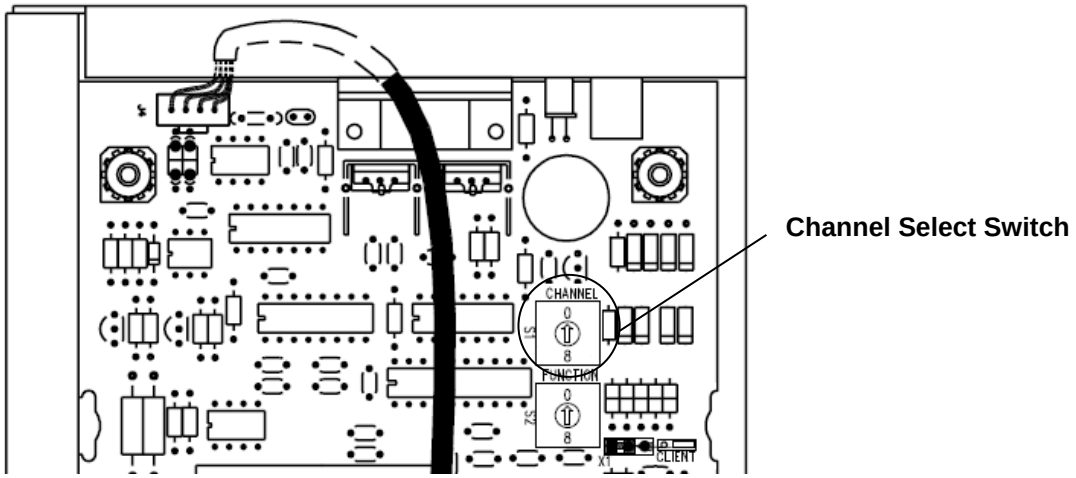

Figure 18: *Channel Select Switch (Internal Receiver)*

For more information, refer to the **Remote Control System RC-100 All Sport Operation Manual** (**ED-15133**).

2.9 Trumpet Horns

For scoreboards that include clocks and have trumpet horns installed, refer to the **Trumpet Horn Installation Manual** (ED-10006).

2.10 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 C** details which connector pin is wired to each digit segment and the wiring color code used throughout the display.

The component location drawings 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.

2.11 Schematics

For advanced scoreboard troubleshooting and repair, it may be necessary to consult the schematic drawings. These drawings, listed in **Appendix B**, show detailed power and signal wiring diagrams of internal display components such as drivers and transformers as well as optional components like TNMCs, radio receivers, and trumpet horns.

2.12 Replacement Parts

Refer to the following table for 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
Large possession indicator assembly, red*	Scoreboard	0A-1192-4416
Large possession indicator assembly, amber*	Scoreboard	0A-1192-4417
Large possession indicator assembly, white*	Scoreboard	0A-1192-4418
Left small possession indicator assembly, red*	Scoreboard	0A-1192-4419
Left small possession indicator assembly, amber*	Scoreboard	0A-1192-4420
Left small possession indicator assembly, white*	Scoreboard	0A-1192-4421
Right small possession indicator assembly, red*	Scoreboard	0A-1192-4422
Right small possession indicator assembly, amber*	Scoreboard	0A-1192-4423
Right small possession indicator assembly, white*	Scoreboard	0A-1192-4424
Digit, 10", 7-seg outdoor LED, red	Scoreboard	0A-1192-5120
Digit, 15", 7-seg outdoor LED, red	Scoreboard	0A-1192-5130
Digit, 18", 7-seg outdoor LED, red	Scoreboard	0A-1192-5140
Digit segment, 24" outdoor LED, red (vertical)	Scoreboard	0A-1192-5150

Description	Location	Daktronics Part #
Digit segment, 24" outdoor LED, red (horizontal)**	Scoreboard	0A-1192-5151
Digit segment, 30" outdoor LED, red (vertical)	Scoreboard	0A-1192-5160
Digit segment, 30" outdoor LED, red (horizontal)	Scoreboard	0A-1192-5161
2" indicator, red	Scoreboard	0A-1192-5190
4" indicator, red	Scoreboard	0A-1192-5191
Digit, 10", 7-seg outdoor LED, amber	Scoreboard	0A-1192-5220
Digit, 15", 7-seg outdoor LED, amber	Scoreboard	0A-1192-5230
Digit, 18", 7-seg outdoor LED, amber	Scoreboard	0A-1192-5240
Digit segment, 24" outdoor LED, amber (vertical)	Scoreboard	0A-1192-5250
Digit segment, 24" outdoor LED, amber (horizontal)**	Scoreboard	0A-1192-5251
Digit segment, 30" outdoor LED, amber (vertical)	Scoreboard	0A-1192-5260
Digit segment, 30" outdoor LED, amber (horizontal)	Scoreboard	0A-1192-5261
2" indicator, amber	Scoreboard	0A-1192-5290
4" indicator, amber	Scoreboard	0A-1192-5291
Digit, 10", 7-seg outdoor LED, white	Scoreboard	0A-1192-5420
Digit, 15", 7-seg outdoor LED, white	Scoreboard	0A-1192-5430
Digit, 18", 7-seg outdoor LED, white	Scoreboard	0A-1192-5440
Digit segment, 24" outdoor LED, white (vertical)	Scoreboard	0A-1192-5450
Digit segment, 24" outdoor LED, white (horizontal)**	Scoreboard	0A-1192-5451
Digit segment, 30" outdoor LED, white (vertical)	Scoreboard	0A1192-5460
Digit segment, 30" outdoor LED, white (horizontal)	Scoreboard	0A-1192-5461
2" indicator, white	Scoreboard	0A-1192-5490
4" indicator, white	Scoreboard	0A-1192-5491
Signal surge board	Driver enclosure	0P-1110-0011
Driver, 4 col, MASC	Driver enclosure	0P-1192-0068
Digit, 18" ones, 7-seg outdoor LED, red	Scoreboard	0P-1192-0203
Digit segment, 36" outdoor LED, red (vertical)	Scoreboard	0P-1192-0208
Digit segment, 36" outdoor LED, red (horizontal)	Scoreboard	0P-1192-0209
Digit segment, 48" outdoor LED, red (vertical)	Scoreboard	0P-1192-0212
Digit segment,48" outdoor LED, red (horizontal)	Scoreboard	0P-1192-0213
Digit, 18" ones, 7-seg outdoor LED, amber	Scoreboard	0P-1192-0217
Digit segment, 36" outdoor LED, amber (vertical)	Scoreboard	0P-1192-0222
Digit segment, 36" outdoor LED, amber (horizontal)	Scoreboard	0P-1192-0223

Description	Location	Daktronics Part #
Digit segment, 48" outdoor LED, amber (vertical)	Scoreboard	0P-1192-0226
Digit segment, 48" outdoor LED, amber (horizontal)	Scoreboard	0P-1192-0227
3" arrow, red *(tennis scoreboards prior to Oct 2013)*	Scoreboard	0P-1192-0249
3" arrow, amb *(tennis scoreboards prior to Oct 2013)*	Scoreboard	0P-1192-0250
Breakout board, 8 segment	Scoreboard	0P-1192-0326
Driver, 16 col, outdoor, LED	Driver enclosure	0P-1192-0383
Driver, 8 col, outdoor, LED	Driver enclosure	0P-1192-0391
Digit segment, 36" outdoor LED, white (vertical)	Scoreboard	0P-1192-0415
Digit segment, 48" outdoor LED, white (vertical)	Scoreboard	0P-1192-0416
Digit segment, 48" outdoor LED, white (horizontal)	Scoreboard	0P-1192-0417
Digit, 18" ones, 7-seg outdoor LED, white	Scoreboard	0P-1192-0423
Digit segment, 36" outdoor LED, white (horizontal)	Scoreboard	0P-1192-0426
DC out circuit board	Power enclosure	0P-1337-2000
Power supply, 24 V, 150W (120 VAC)	Driver enclosure	A-1720
Power supply; 24 V, 150W (240 VAC)	Driver enclosure	A-1733
Power supply; 24 V, 1000W	Power enclosure	A-1856R
Power supply; 12 V 90-264VAC *(after Aug 2014)*	Backlit captions	A-3143
Fan, 35 CFM, 24 VDC	Driver enclosure	B-1030
15 W spiral fluorescent lamp *(prior to Aug 2014)*	Backlit captions	DS-1563
Strip lighting; LED, white *(after Aug 2014)*	Backlit captions	DS-1763
Fuse; ATM-15, 32V, 15A	Power enclosure	F-1058
Plug, 1/4" phone	Signal	P-1003
Cable, 20' with ¼" Male phone plugs	Signal	W-1236
Cable, 50' with ¼" Male phone plugs	Signal	W-1237
Cable, 30' with ¼" Male phone plugs	Signal	W-1238
RFI Filter	Multi-Court Breaker	Z-1007

* The complete possession indicator assemblies are required to replace football-shaped or circular (soccer) indicators.

** Use these 24" horizontal digit segments to replace individual pieces of the large and small possession indicators.

See **Section 4** for information on Daktronics Exchange and Repair and Return program.

Section 3: TNMC & Electronic Caption Troubleshooting & Maintenance

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.**

3.1 Display Overview

Team Name Message Centers (TNMCs) are programmable LED displays that allow users to show custom Home and Guest names or messages of about 15 characters on the scoreboard in place of static vinyl captions. TNMCs are typically ordered factory-installed, but they may also be field-mounted after the scoreboard is in place. TNMCs are available in three different pixel arrangements: 8x32, 8x48, and 16x80 (34 mm only). Characters are shown on one line using single- or double-stroke fonts 10" (254 mm) and 14" (355 mm) high for 34 mm and 46 mm TNMC units, respectively. The 16x80-34mm units display 20" (508 mm) high fonts.

Electronic captions, on the other hand, are pre-programmed to only show specific labels to match the captions for a particular sport mode, making it much simpler to switch between sports. Characters are shown on one line using single-stroke fonts.

Both TNMCs and electronic captions are available with amber, red, or white LEDs.

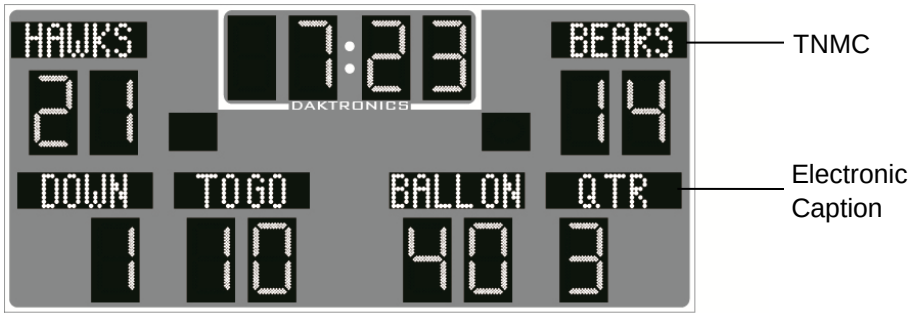

Figure 19: *Football Scoreboard with TNMCs and Electronic Captions*

Matrix Size	Weight*	Number of Modules	Active Display Area	Pixel Spacing
8x32	40 lb (18 kg)	4	10.6" x 42.5" (269 mm x 1080 mm)	34 mm (1.3")
8x48	60 lb (27 kg)	6	10.6" x 63.8" (269 mm x 1621 mm)	
16x80	120 lb (54 kg)	20	21.2" x 106" (538 mm x 2692 mm)	
8x32	50 lb (23 kg)	4	14.4" x 57.6" (366 mm x 1463 mm)	46 mm (1.8")
8x48	70 lb (32 kg)	6	14.4" x 86.4" (366 mm x 2195 mm)	

** TNMCs are typically installed in pairs; double this value to find the total added weight.*
FB-2028 electronic captions come in 2 pairs of 8x32 46mm and 1 set of 8x32 34mm.

3.2 Initialization Information at Startup

Every time the display is powered up and there is no All Sport® 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 display fails at startup, power may not be properly connected, or the address setting may not be correct on the display driver. Check both in the event of a failure.

3.3 Display 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 4**.

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 **Section 3.7)**.
One or more LEDs on a single module fails to turn off	Check/replace the ribbon cables on module.
	Replace the module (see **Section 3.7**).
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 **Section 3.7**).
	Replace the second module that is not working (see **Section 3.7**).
	Replace the power supply assembly on the first module that is not working (see **Section 3.8**).
One row of modules does not work or is garbled	Replace the first module (see **Section 3.7**).
	Replace the display driver (see **Section 3.6**).
A group of modules that share the same power supply assembly fails to work	Replace the power supply assembly (see **Section 3.8**).
Entire display fails to work	Check for proper line voltage into the power termination panel.
	Check/replace the ribbon cable from the display 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 **Section 3.6**).

3.4 Power & Signal Summary

Reference Drawings:

Schematic, OD, 3500, 34mm TNMC, Red/Amb ..... **Drawing B-783938**
Schematic, OD, 3500, 34mm TNMC, Wht..... **Drawing B-906385**
Schematic, OD, 3500, 46mm, Red/Amb..... **Drawing B-923941**
Schematic, OD, 3500, 46mm, Wht ..... **Drawing B-1036125**
Schematic; OD, 3500 TNMC, 16x80 34mm, R/A/W ..... **Drawing C-1092559**
Wiring Detail; FB-2534 or 2541 for TNMC Type Options ..... **Drawing A-1092840**

Refer to **Drawing B-783938**, **B-906385**, **B-923941**, **B-1036125**, or **C-1092559** in **Appendix B** for detailed schematics about display power and signal routing.

> **Note:** 16x80-34mm TNMCs are capable of receiving power and signal directly via terminal block in the cabinet. Refer to **Drawing A-1092840** in **Appendix C**.

Display signal routing can be summarized as follows:

1. Data from the All Sport® controller (or DakTennis™ software) 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 driver assembly. A power/signal interconnect (ribbon cable) carries the signal from J17 on the display driver 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.

4. Electronic captions use multiple J42-P43 connections between drivers to relay the signal to every display. Refer to the schematic drawings in **Appendix B** for precise connections of a particular scoreboard.

Display power routing 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 display 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 display 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).

3.5 Component Locations & Access

Reference Drawings:

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 TNMC, 16x80 34mm, R/A/W .....**Drawing C-1092559**

Figure 20 illustrates the component locations of an 8x48-34mm display with all modules removed. This layout will be similar for 8x32-34mm cabinets as well. Note that 8x48-34mm cabinets with white LEDs require an additional power supply behind the fourth module. Refer to **Drawing B-975100** in **Appendix C**.

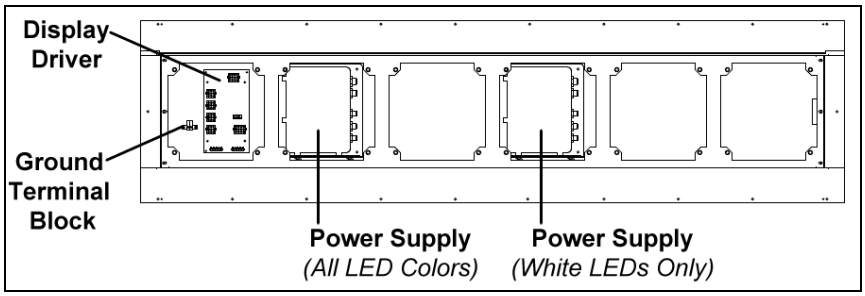

Figure 20: *8x48-34mm Display with Modules Removed*

Figure 21 illustrates the component locations of a 16x80-34mm display with all modules removed. Note that cabinets do not have four power supplies; this is a composite illustration that shows the possible locations for all LED colors. Refer to **Drawing C-1092559**.

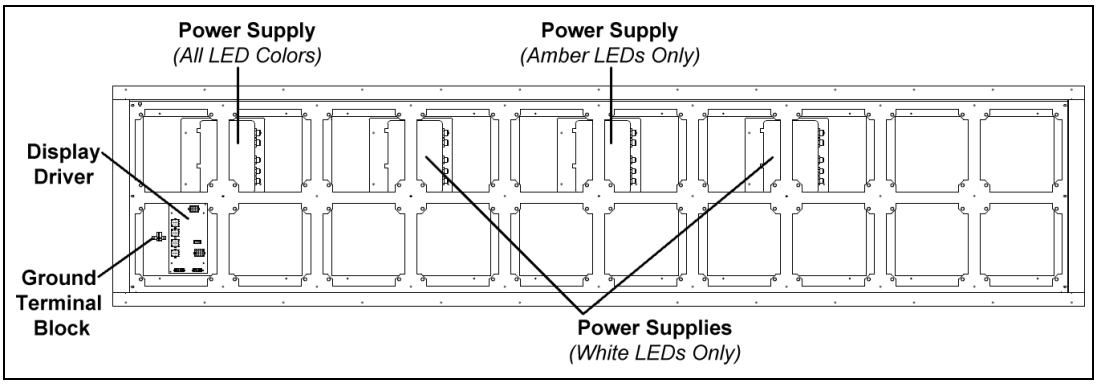

Figure 21: *16x80-34 Display with Modules Removed*

Figure 22 illustrates the component locations of an 8x48-46mm display, and this layout will also be similar for 8x32-46mm cabinets. Note that 8x48-46mm displays with white LEDs require an additional power supply behind the fourth module. Refer to **Drawing B-975635**.

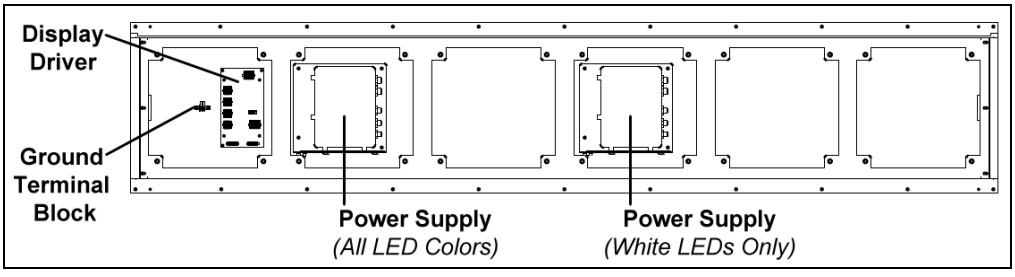

Figure 22: *8x48-46mm Display with Modules Removed*

Standard Daktronics outdoor LED scoreboards are typically front-accessible, but some models may be ordered with rear service access. For that reason, TNMCs and electronic captions 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. One latch fastener is centered below the top row of pixels and one is centered above the bottom row (**Figure 23**).

2. Turn each fastener a quarter-turn counter-clockwise.

   Note: Do not over turn the fastener!

3. Carefully remove the module from the face of the display.

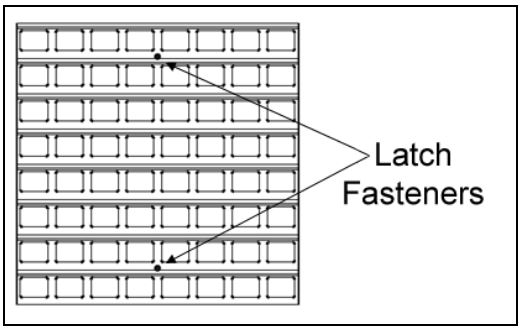

Figure 23: *Module, Front View*

Rear Access

1. To access the internal components from the rear, remove the appropriate rear-access panel from the display cabinet 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 display cabinet.

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

The display driver and primary power supply will always be located behind the first access panel on the right, when viewing the display from behind (**Figure 24**). Any additional power supplies are noted in the appropriate component location drawings.

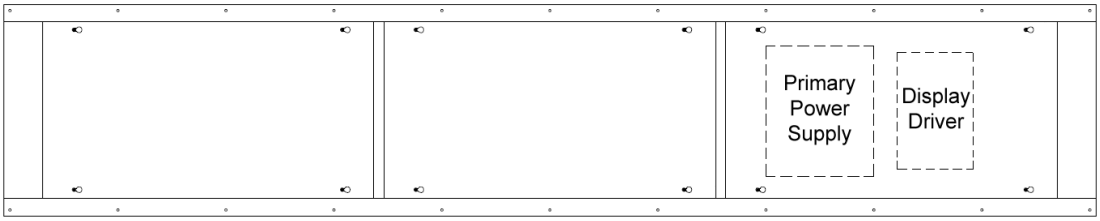

Figure 24: *Display Cabinet Rear Access (8x48-46mm Shown)*

3.6 Display Drivers

Reference Drawings:

Address Table: Driver- MCAST G2- TNMC Switch.....**Drawing A-328274**
Specifications; Driver, MCAST, 4 Col.....**Drawing A-793970**
Power and Address Details; Outdoor Tennis Scoreboards.....**Drawing B-1054089**

The display driver is detailed in **Drawing A-793970** in **Appendix C**. **Figure 25** illustrates some of the primary jacks and switches on the 4-Column MCAST driver used for TNMC and electronic caption functions.

The S2 DIP switch is the component for setting the address (switches #1-4). With switches 1-4 off, the address setting for a TNMC is preset at "221" (16x80 TNMCs use address "231" for HOME and "232" for GUEST). Multi-court tennis scoreboards (and single-court scoreboards controlled by DakTennis) with TNMCs will require different addresses. Refer to **Drawing B-1054089** in **Appendix C**.

For electronic captions, the typical driver address is "227" (exceptions: Time Outs Left captions = address "225" and MS-2009 = address "223"). Refer to **Drawing A-328274** in **Appendix C** for more information on setting the driver address.

The S2 DIP switch also 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: For 16x80 TNMCs, always leave the #5 switch OFF for both Home and Guest sides.

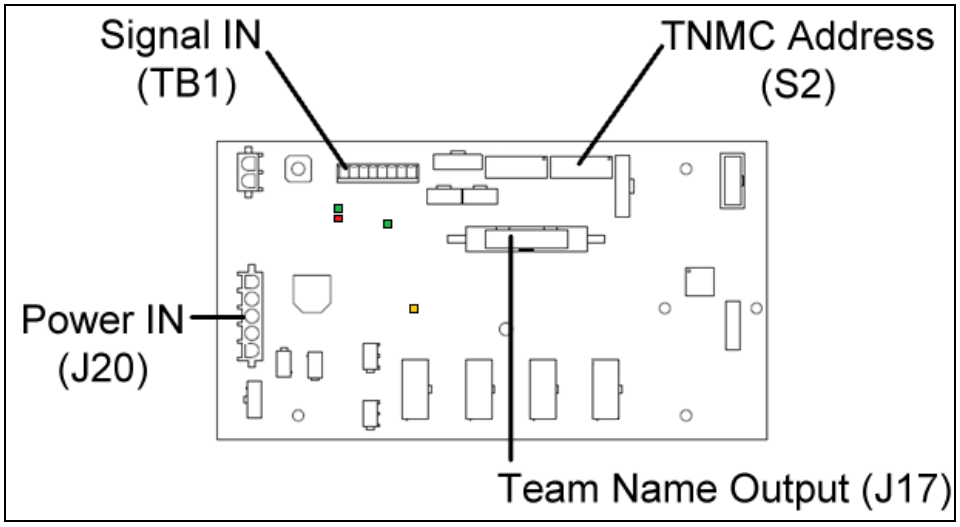

Figure 25: *4-Column MCAST Driver*

Diagnostic LEDs

The following table explains the functions of the primary diagnostic LEDs on the 4-Column 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 3.5**.
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.
7. Power up and test the scoreboard/display to see if the problem has been resolved.

3.7 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 3.5**.
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 display frame and reconnect all power and signal cables.
4. Re-latch the fasteners.
5. Power up and test the scoreboard/display to see if the problem has been resolved.

To replace a module from the rear:

1. Follow the steps in the **Rear Access** method described in **Section 3.5**.
2. Use a 1/8" hex wrench to loosen the latch fastener assembly (**Figure 26**). Turn each fastener a quarter-turn.

   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 display frame.
6. Re-latch the fasteners.
7. Power up and test the scoreboard/display to see if the problem has been resolved.

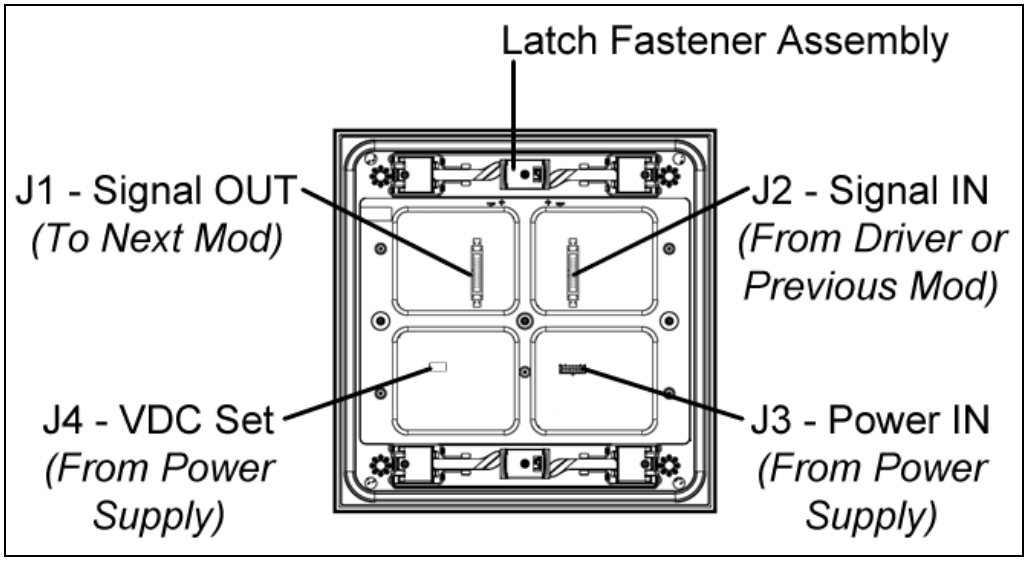

Figure 26: *Module, Rear View*

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.

3.8 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 3.5**.
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.
4. Fasten the new power supply in place and reconnect all wires.
5. Power up and test the scoreboard/display to see if the problem has been resolved.

3.9 Display 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.

3.10 Replacement Parts List

The following tables contain display 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, Amber	0A-1208-5008
Module; 8X8-34, White	0A-1208-5004
Module; 8X8-46, Red	0A-1541-5008
Module; 8X8-46, Amber	0A-1541-5009
Module; 8X8-46, White	0A-1541-5006

Part Description	Part Number
Driver; MCAST, 4 Column	0P-1388-0201
Power Supply; 3-6.5V, 90-264V AC *(all 34mm LED colors, amber 46mm & red 46mm)*	A-2307
Power Supply; 8.5-12.5V, 90-264V AC *(white 46mm)*	A-2481
Cable; 20 pos, Ribbon, 36"	W-1495
Cable; 20 pos, Ribbon, 18"	W-1387
Electrical contact lubricant (CaiLube®)	CH-1019

See **Section 4** for information on Daktronics Exchange and Repair and Return program.

Section 4: Daktronics Exchange and Repair & Return Programs

4.1 Exchange Program

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

Before Contacting Daktronics

Identify these important numbers:

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

To participate in the Exchange Program, follow these steps:

1. **Call Daktronics Customer Service.**

Market Description	Customer Service Number
Schools (including community/junior colleges), religious organizations, municipal clubs and community centers	877-605-1115
Universities and professional sporting events, live events for auditoriums and arenas	866-343-6018

2. **When the exchange part is received, mail the old part to Daktronics.**
   If the replacement part fixes the problem, send in the problem part being replaced.
   a. Package the old part in the same shipping materials in which the replacement part arrived.
   b. Fill out and attach the enclosed UPS shipping document.
   c. Ship the part to Daktronics.

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

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

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

4.2 Repair & Return Program

For items not subject to exchange, Daktronics offers a Repair & Return Program. To send a part for repair, follow these steps:

1. **Call or fax Daktronics Customer Service:**
   Refer to the appropriate market phone number in the chart on the previous page.
   Fax: 605-697-4444

2. **Receive a case number before shipping.**
   This expedites repair of the part.

3. **Package and pad the item carefully to prevent damage during shipment.**
   Electronic components, such as printed circuit boards, should be placed in an antistatic bag before boxing. Daktronics does not recommend using packing 'peanuts' when shipping.

4. **Enclose:**
   - name
   - address
   - phone number
   - the case number
   - a clear description of symptoms

Shipping Address

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

4.3 Daktronics Warranty and Limitation of Liability

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

Appendix A: Specifications

Click the links below to view scoreboard product specification sheets manual. Product-specific installation and component location drawings are included with each spec sheet.

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

Single-Section Scoreboards

Model	Spec Sheet	Model	Spec Sheet	Model	Spec Sheet
BA-618	DD2118104	BA-2718	DD1734740	RO-2010	DD1756861
BA-624	DD2118116	CR-2002	DD1756601	RO-2011	DD1756894
BA-2004	DD2118122	CR-2003	DD2167525	SO-918	DD2167442
BA-2005	DD2118134	FB-824	DD2167261	SO-2008	DD2167448
BA-2010	DD2121807	FB-4005	DD1734755	SO-2013	DD2167468
BA-2014	DD2118163	FB-2030	DD2190567	SO-2918	DD1734747
BA-2017	DD2118169	MS-915	DD1756705	TI-218	DD1757007
BA-2019	DD2118182	MS-918	DD2167408	TI-2003	DD1757027
BA-2022	DD2118191	MS-2002	DD2167412	TI-2010	DD1757109
BA-2023	DD1756390	MS-2004	DD2167420	TI-2012	DD1757303
BA-2024	DD1756390	MS-2006	DD2240343	TI-2015	DD1757334
BA-2030	DD2467046	MS-2012	DD2167432	TI-2019	DD1757391
BA-2515	DD1734711	MS-2024	DD1745306	TI-2024	DD2191318
BA-2518	DD1739303	MS-2025	DD1745311	TI-2032	DD1893381
BA-2618	DD1734727	MS-2026	DD1745319		
BA-2715	DD1734734	MS-3918	DD1734766		

Note that scoreboards with white digits may have different component location drawings and/or power specs as described in the table below. Click the links to view the component location drawings.

Model & Options	Watts	Amps 120 / 240 VAC	Component Location Drawing Number
BA-618	250	2 / 1	(Refer to product specs)
BA-624	250	2 / 1	**A-1066315**
BA-2023 **BA-2618** **BA-2515** **BA-2715** **BA-2518** **BA-2718**	300	2.5 / 1.25	(Refer to product specs)
FB-824	400	3.3 / 1.7	(Refer to product specs)
FB-4005	600	5 / 2.5	**A-1126584**
MS-2002	400	3.3 / 1.7	**A-1066548**
TNMCs	700	5.8 / 2.9	
MS-2004	650	5.4 / 2.7	(Refer to product specs)
MS-2012	650	5.4 / 2.7	(Refer to product specs)
MS-2006	600	5 / 2.5	**A-1086377**
TNMCs	1200	10 / 5	
MS-3918	300	2.5 / 1.25	**A-1127904**
RO-2010	200	1.7	**A-1167080**
SO-2008	400	3.3 / 1.7	**A-1073851**
TNMCs	700	5.8 / 2.9	
SO-2013	600	5 / 2.5	**A-1073748**
TI-218 **TI-2010** **TI-2015**	300	2.5 / 1.25	(Refer to product specs)
TI-2003	(Refer to product specs)		**A-1157881**
TI-2024	250	2 / 1	**A-1081754**
TI-2032	(Refer to product specs)		**A-1158062**

Component location drawings for older **Product #1162/1192/1344** scoreboards built are located below:

Model	Component Location DWG #
BA-2023	**A-331219**
BA-2024	**A-825868**
BA-2515	**A-955756**
BA-2518	**A-964294**
BA-2618	**A-955761**
BA-2715	**A-955759**
BA-2718	**A-955760**
CR-2002	**A-235279**

Model	Component Location DWG #
FB-4005	**A-955764**
MS-2024	**A-999167**
MS-2025	**A-999063**
MS-2026	**A-999163**
MS-3918	**A-955763**
RO-2010	**A-182293**
RO-2011	**A-182296**
SO-2918	**A-955762**

Model	Component Location DWG #
TI-218	**A-181701**
TI-2003	**A-182702**
TI-2010	**A-182110**
TI-2012	**A-182081**
TI-2015	**A-182176**
TI-2019	**A-182090**
TI-2032	**A-1038127**

Multi-Section Scoreboards

Model	Spec Sheet	Model	Spec Sheet	Model	Spec Sheet
BA-1518	DD2118098	FB-2020	DD2167285	MS-2009*	DD2167425
BA-2025	DD1969963	FB-2021	DD2167297	MS-2918**	DD2167437
BA-2026	DD1972163	FB-2022	DD2167302	SO-2011	DD2167461
BA-2027	DD1972393	FB-2023	DD2167306	SO-2018	DD2167482
BA-2028	DD1972415	FB-2024	DD2167351	SO-2019	DD2167485
BA-2029	DD1972427	FB-2025	DD2167356	SO-2021	DD2167495
BA-2125	DD2594524	FB-2026	DD2167363	SO-2023	DD2167513
BA-2127	DD2594535	FB-2027	DD2167369	SO-2043	DD1956444
FB-2018	DD2167274	FB-2028	DD1972444		
FB-2019	DD2167276	FB-3010	DD2196899		

For scoreboards built prior to Aug 2014 refer to Drawing* **A-1073620 *for component locations.*
***For scoreboards built prior to Aug 2014 refer to Drawing* **A-1083342** *for component locations.*

Note that scoreboards with white digits may have different component location drawings and/or power specs as described in the table below. Click the links to view the component location drawings.

Model & Options	Watts	Amps 120 / 240 VAC	Component Location Drawing Number
BA-1518	450	3.8 / 1.9	A-1067036
TNMCs	750	6.3 / 3.1	
BA-2025	850	7.1 / 3.5	A-1049435
TNMCs	1150	9.6 / 4.8	
BA-2026	1200	10 / 5	A-1049436
TNMCs	1500	12.5 / 6.25	
BA-2027	850	7.1 / 3.5	A-1049437
TNMCs	1150	9.6 / 4.8	
BA-2028	1250	10.4 / 5.2	A-1049438
TNMCs	1850	15.4 / 7.7	
BA-2029	1400	11.6 / 5.8	A-1049439
TNMCs	1920	16 / 8	
FB-2018 **FB-2019** **FB-2020**	750	6.3 / 3.1	A-1083269 A-1082997 A-1083328
TNMCs	1050	8.8 / 4.4	
All Electronic	1650	13.8 / 6.9	
All Backlit	1650	13.8 (120 only)	

Model & Options	Watts	Amps 120 / 240 VAC	Component Location Drawing Number
FB-2021 FB-2022 FB-2023	800	6.7 / 3.3	**A-1072176 A-1072178 A-1072180**
TNMCs	1400	11.7 / 5.8	
All Electronic	1920	16 / 8	
All Backlit	1820	15.2 (120 only)	
FB-2024 FB-2025 FB-2026 FB-2027	800	6.7 / 3.3	**A-1071591 A-1071624 A-1069454 A-1070989**
TNMCs	1400	11.7 / 5.8	
All Electronic	1920	16 / 8	
All Backlit	1920	16 (120 only)	
FB-2028	*Top:* 850 *Bottom:* 350	*Top:* 7.1 / 3.5 *Bottom:* 2.9 / 1.5	**A-1061234**
TNMCs	*Top:* 1450 *Bottom:* 350	*Top:* 12.1 / 6 *Bottom:* 2.9 / 1.5	
All Electronic	*Top:* 1450 *Bottom:* 1250	*Top:* 12.1 / 6 *Bottom:* 10.4 / 5.2	
All Backlit	*Top:* 1390 *Bottom:* 1790	*Top:* 11.6 *Bottom:* 14.9 (120 only)	
FB-3010	650 W	5.4 / 2.7	**A-1103134**
TNMCs	950 W	7.9 / 4	
MS-2009	1000 W	8.3 / 4.2	**A-1184306**
TNMCs	1600	13.3 / 6.7	***Note:*** *For models built before Aug 2014, see drawing* **A-1073621**
All Electronic	1920	16 / 8	
All Backlit	1920	16 (120 only)	
SO-2011	750 W	6.3 / 3.1	**A-1073506**
TNMCs	1350 W	11.3 / 5.6	
SO-2018 SO-2019	700	5.8 / 2.9	**A-1096724 A-1096726**
TNMCs	1000	8..3 / 4.2	
All Electronic	1600	13.3 / 6.7	
All Backlit	1600	13.3 (120 only)	
SO-2021 SO-2023	800	6.7 / 3.3	**A-1096702 A-1096722**
TNMCs	1400	11.7 / 5.8	
All Electronic	1920	16 / 8	
All Backlit	1820	15.2 (120 only)	
SO-2043	800 W	6.7 / 3.3	**A-1061236**
TNMCs	1400 W	11.7 / 5.8	

Modular Football Scoreboards

Click the linked drawing numbers below to view the component location drawings for a specific scoreboard model or combination of models. TBD (To Be Determined) denotes drawings that are currently unavailable.

Model	Spec Sheet
FB-2500 & FB-2600 Series	DD2216211

Information Shown	Model	Component Location Drawing (by digit color)		
		Red/Amber	*White*	*All Colors*
Clock	FB-2500	A-1086738	A-1086750	-
	FB-2501	A-1086739	A-1086751	-
	FB-2502	-	-	A-1101698
	FB-2503	TBD	TBD	-
	FB-2504	A-1177797	A-1177800	-
	FB-2505	-	-	A-1103543
	FB-2506	A-1138057	A-1138055	-
	FB-2507	B-1086780	B-1086787	
	FB-2508	-	-	A-1106891
	FB-2509	TBD	TBD	-
	FB-2510	TBD	TBD	-
	FB-2511	-	-	TBD
	FB-2513	-	-	A-1092398
HOME Score	FB-2530 w/ 2531	A-1068468	A-1068471	-
	FB-2532 w/ 2533	A-1086753	A-1086754	-
	FB-2535 w/ 2536	-	-	A-1104418
	FB-2537 w/ 2538	TBD	TBD	-
	FB-2539 w/ 2540	A-1101704	A-1101705	-
	FB-2542	-	-	TBD
	FB-2544 w/ 2545	-	-	A-1092566
	FB-2560	A-1103640	A-1103641	-
	FB-2561	TBD	TBD	-
	FB-2562	TBD	TBD	-
	FB-2563	A-1104644	A-1104645	-
	FB-2564	-	-	A-1158568
	FB-2565	-	-	TBD
	FB-2566	A-1097707	A-1097708	-
GUEST Score	FB-2570 w/ 2571	A-1068546	A-1068547	-
	FB-2572 w/ 2573	A-1086755	A-1086756	-
	FB-2574 w/ 2575	-	-	A-1104417
	FB-2576 w/ 2577	TBD	TBD	-
	FB-2578 w/ 2579	A-1101718	A-1101719	-
	FB-2580	-	-	TBD
	FB-2582 w/ 2583	-	-	A-1092550
	FB-2600	A-1103642	A-1103643	-
	FB-2601	TBD	TBD	-
	FB-2602	TBD	TBD	-
	FB-2603	A-1104651	A-1104652	-
	FB-2604	-	-	A-1158570
	FB-2605	-	-	TBD
	FB-2606	A-1097803	A-1097804	-

Information Shown	Model	Component Location Drawing (by digit color)		
		Red/Amber	*White*	*All Colors*
DOWN/TO GO & BALL ON/QTR	FB-2610	A-1113228	A-1113230	-
	FB-2611	A-1113229	A-1113231	-
	FB-2612	A-1097003	A-1097004	-
	FB-2613	A-1097005	A-1097006	-
	FB-2614	A-1096188	A-1096207	-
	FB-2615	A-1096189	A-1096208	-
	FB-2616	-	-	A-1104497
	FB-2617	-	-	A-1104498
	FB-2620 w/ 2618	-	-	A-1120121
	FB-2619 w/ 2621	-	-	A-1120122
	FB-2622	A-1103590	A-1103591	-
	FB-2623	A-1103617	A-1103618	-
	FB-2624	A-1121548	A-1121549	-
	FB-2625	A-1121550	A-1121551	-
	FB-2626	-	-	A-1158571
	FB-2627	-	-	A-1158572
	FB-2630 w/ 2628	-	-	A-1092493
	FB-2629 w/ 2631	-	-	A-1092527
	FB-2656	-	-	TBD
	FB-2657	-	-	TBD
	FB-2660 w/ 2658	-	-	TBD
	FB-2659 w/ 2661	-	-	TBD

Tennis Scoreboards

Model	Spec Sheet	Model	Spec Sheet
TN-2601	DD1104421	TN-2650	DD2731388
TN-2603	DD2731384	TN-2651	DD2731389
TN-2604	DD2731386	TN-2652	DD2731390
TN-2605	DD2731387	TN-2653	DD2731391
TN-2606	DD1073328	TN-2654	DD2731393
TN-2607	DD1073391	TN-2655	DD2731394
		TN-2656	DD2731397
		TN-2657	DD2731399

Appendix B: Schematic Drawings

Click the links in the tables below to view scoreboard schematic drawings.

Single-Section Scoreboards

Models	Schematic Drawing	
	120 VAC	240 VAC
BA-2024	A-165028	N/A
BA-618* BA-2515* BA-2518* BA-2618* BA-2715* BA-2718* RO-2010** RO-2011 TI-218* TI-2003 TI-2010* TI-2012* TI-2015* TI-2019 TI-2032**	A-285881	A-324504
BA-624*** BA-2010 BA-2017 BA-2023 CR-2002 FB-824**** FB-4005 MS-915 MS-918 MS-2025 MS-2026 MS-3918 SO-918 SO-2918	A-285779	A-324504

Models	Schematic Drawing
	120 / 240 VAC
MS-2002 MS-2006 TI-2024	B-1051249
BA-2022 CR-2003	A-180637
FB-2030 MS-2004 MS-2012 SO-2008 SO-2013*****	B-1075828
BA-2004 BA-2005 BA-2014 BA-2019 BA-2030	A-1066858
MS-2024	A-179541

* Refer to **Drawing** A-285779 for models with white digits.
** Refer to **Drawing** A-967997 for models with white digits.
*** Refer to **Drawing** A-930575 for models with white digits.
**** Refer to **Drawing** B-1051249 for models with white digits.
***** Refer to **Drawing** B-1076566 for models with white digits.

Multi-Section Scoreboards

Model	Schematic Drawing	
	Red/Amber Digits	*White Digits*
BA-1518	A-752372	B-1055812
BA-2025	B-1046514	B-1049838
BA-2026	B-1062736	B-1067742
BA-2027	B-1068775	B-1068776
BA-2028 BA-2029	B-1047270	B-1049840
BA-2125	B-1046514	
BA-2127	B-1068775	
FB-2018* FB-2019* FB-2020* MS-2009 MS-2918** SO-2011 SO-2018* SO-2019*	B-1062095	B-1072548
FB-2021 FB-2022 FB-2023 FB-2024 FB-2025 FB-2026 FB-2027 SO-2021 SO-2023	B-1082021	B-1082088
FB-2028	B-1050650	C-1051006
FB-3010 SO-2043	B-1055812	B-1055842

* Refer to **Drawing** B-1055812 for models without backlit/electronic captions.
** Refer to **Drawing** B-1062095 for all digit colors.

Team Name Message Centers

Pixel Spacing	Schematic Drawing	
	Red/Amber	White
34 mm	B-783938	B-906385
46 mm	B-923941	B-1036125
34mm (16x60)	C-1092559	

Modular Football Scoreboards

Model (FB-)	Schematic Drawing	
	Red/Amber Digits	*White Digits*
2500, 2501, 2503, 2504, 2506, 2507, 2509, 2510	A-285779	A-967997
2502, 2505, 2508, 2511, 2513	A-967997	A-967997
2560, 2561, 2562, 2563, 2564, 2565, 2566, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2622, 2623, 2624, 2625, 2626, 2627, 2656, 2657	B-1051249	B-1051249
2530 w/ 2531, 2532 w/ 2533, 2537 w/ 2538, 2539 w/ 2540, 2570 w/ 2571, 2572 w/ 2573, 2576 w/ 2577, 2578 w/ 2579	A-1067986	B-1068464
2535 w/ 2536 or 2545, 2542 w/ 2536 or 2545, 2544 w/ 2536 or 2545, 2574 w/ 2575 or 2583, 2580 w/ 2575 or 2583, 2582 w/ 2575 or 2583, 2619 w/ 2621, 2620 w/ 2618, 2630 w/ 2628, 2629 w/ 2631, 2660 w/ 2658, 2659 w/ 2661	B-1068464	B-1068464

Tennis Scoreboards

Model	Schematic Drawing
TN-2601 TN-2603 TN-2604 TN-2605 TN-2606 TN-2607	A-285779
TN-2650 TN-2651 TN-2654 TN-2655	B-1076663 **(top section)** C-1076660 **(middle & bottom sections)**
TN-2652 TN-2653 TN-2656 TN-2657	C-1093329 **(Sections A & B)** C-1093330 **(Sections C & D)**

Appendix C: Reference Drawings

Click the links below to view additional drawings referenced in this manual.

Drawing Title	*Drawing Number*
Segmentation, 7 Segment Bar Digit	A-38532
4 Column MASC LED Driver Specifications	A-166216
Enclosure: 1000W Power Supply	B-274431
Specifications; LED Driver IV, 16 Col	A-288137
Specifications; LED Driver IV, 8 Col	A-288138
Address Table 1; GEN IV Driver Address Dip Switch	A-290261
Address Table: Driver- MCAST G2- TNMC Switch	A-328274
Specifications; Driver, MCAST, 4 Col	A-793970
Component Loc.; 34mm Red/Amb/Wht LED TNMC G4	B-975100
Component Loc.; 46mm Red/Amb/Wht LED TNMC G4	B-975635
Power and Address Details; Outdoor Tennis Scoreboards	B-1054089
Wiring Detail; FB-2534 or 2541 for TNMC Type Options	A-1092840

Appendix D: Daktronics Warranty and Limitation of Liability

DAKTRONICS WARRANTY & LIMITATION OF LIABILITY

This Warranty and Limitation of Liability (the "Warranty") sets forth the warranty provided by Daktronics with respect to the Equipment. By accepting delivery of the Equipment, Purchaser agrees to be bound by and accept these terms and conditions. Unless otherwise defined herein, all terms within the Warranty shall have the same meaning and definition as provided elsewhere in the Agreement.

DAKTRONICS WILL ONLY BE OBLIGATED TO HONOR THE WARRANTY SET FORTH IN THESE TERMS AND CONDITIONS UPON RECEIPT OF FULL PAYMENT FOR THE EQUIPMENT.

1. **Warranty Coverage**

A. Daktronics warrants to the original end-user 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. This Warranty does not include on-site labor charges to remove or install these components. Daktronics may, at its option, provide on-site warranty service. Daktronics shall have a reasonable period of time to make such replacements or repairs and all labor associated therewith shall be performed during regular working hours. Regular working hours are Monday through Friday between 8:00 a.m. and 5:00 p.m. at the location where labor is performed, excluding any holidays observed by either Purchaser or Daktronics.

C. Daktronics shall pay ground transportation charges for the return of any defective component of the Equipment. All such items shall be shipped by Purchaser DDP Daktronics; designated facility. If returned Equipment is repaired or replaced under the terms of this warranty, Daktronics will prepay ground transportation charges back to Purchaser and shall ship such items DDP Purchaser's designated facility; otherwise, Purchaser shall pay transportation charges to return the Equipment back to the Purchaser and such Equipment shall be shipped Ex Works Daktronics designated facility. 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 the Warranty Period.

E. Defects shall be defined as follows. With regard to the Equipment (excepting LEDs), a "Defect" shall refer to a material variance from the design specifications that prohibit the Equipment from operating for its intended use. With respect to LEDs, "Defects" are defined as LED pixels that cease to emit light. 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.

EXCEPT AS OTHERWISE EXPRESSLY SET FORTH IN THIS WARRANTY, TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, DAKTRONICS DISCLAIMS ANY AND ALL OTHER PROMISES, REPRESENTATIONS AND WARRANTIES APPLICABLE TO THE EQUIPMENT AND REPLACES ALL OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OR CONDITIONS OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, ACCURACTY OR QUALITY OF DATA. 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 improper installation, 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, humidity control, or other environmental conditions outside of the Equipment's technical specifications such as extreme temperatures, corrosives and metallic pollutants, or (iv) any other cause other than ordinary use;

D. Damage caused by fire, flood, earthquake, water, wind, lightning or other natural disaster, strike, inability to obtain materials or utilities, war, terrorism, civil disturbance or any other cause beyond Daktronics' reasonable control;

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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 any salesperson, dealer, distributor or agent, unless such statements are in a written document signed by an officer of Daktronics. Such statements as are not included in a signed writing do not constitute warranties, shall not be relied upon by 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;

H. Any performance of preventive maintenance;

J. Third-party systems and other ancillary equipment including without limitation front-end video control systems, audio systems, video processors and players, HVAC equipment, batteries and LCD screens;

K. Incorporation of accessories, attachments, software or other devices not furnished by Daktronics; or

L. Paint or refinishing the Equipment or furnishing material for this purpose.

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. 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.

6. Availability of Extended Service Agreement

For Purchaser's protection, in addition to that afforded by the warranties set forth herein, Purchaser may purchase extended warranty services to cover the Equipment. The Extended Service Agreement, available from Daktronics, provides for electronic parts repair and/or on-site labor for an extended period from the date of expiration of this warranty. Alternatively, an Extended Service Agreement may be purchased in conjunction with this warranty for extended additional services. For further information, contact Daktronics Customer Service at 1-800-DAKTRONics (1-800-325-8766).

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