

Single-Section Outdoor LED Scoreboards

Service Manual

DD1552971

Rev 7 – 22 March 2013

DAKTRONICS

Models					
*	BA-515		BA-2019		SO-918
*	BA-518		BA-2022		SO-2008
	BA-618		CR-2003		SO-2013
	BA-624	*	CT-2001	*	SO-2031
*	BA-718		FB-824	*	TI-215
*	BA-1018	*	FB-2005	*	TI-418
	BA-2003	*	FB-2410		TI-2024
*	BA-2004		MS-918		
	BA-2005		MS-2002		
	BA-2010	*	MS-2003		
*	BA-2011		MS-2004		
	BA-2014		MS-2006		
*	BA-2016	*	MS-2011		
	BA-2017		MS-2012		

* Discontinued

DD1552971
Product 1192
Rev 7 – 22 March 2013

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Section 1: Introduction

This manual explains the troubleshooting of single-section outdoor 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**.

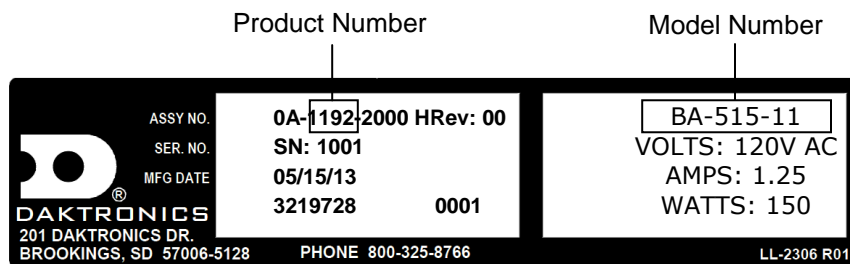


Figure 1: Specifications Label

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**.

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

Drawing Number

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 **DD1552971**.

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

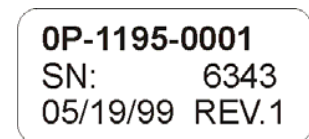


Figure 3: Typical Label

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) 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).
	No signal to driver	Check that the red DS2 LED on the driver lights up when sending commands from the control console (see Section 2.6).
	No signal to driver	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).
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 appropriate 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 & 60" digits only)	Replace the breakout board with one known to work correctly to verify the problem. Replace if necessary (see Section 2.4).
Scoreboard works, but a certain section of digits do not light	Blown fuse(s) on power supply circuit board (white & 60" digits only)	Replace the fuse(s) on the circuit board (see Section 2.7).
	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 & 60" digits only)	Swap the circuit board with one known to work correctly to verify the problem. Replace if necessary (see Section 2.7).

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**.

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.

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.

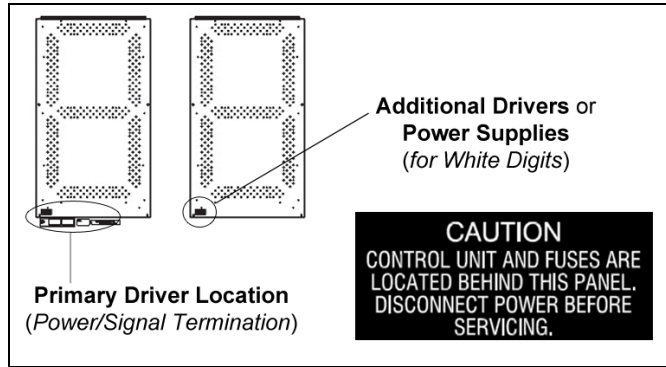


Figure 4: Component Location Labeling

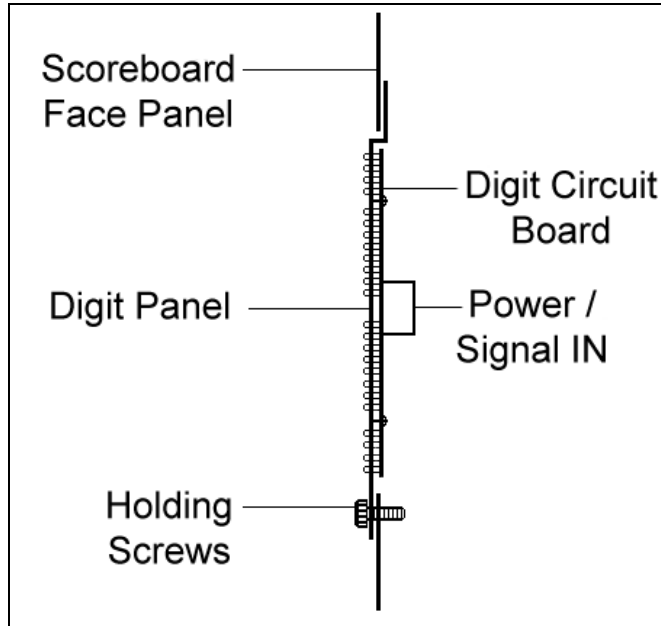


Figure 5: LED Digit Panel

2.3 Replacing Digits

LEDs are embedded in a circuit board that is mounted to the back of the digit panel, as shown in **Figure 6**. 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.

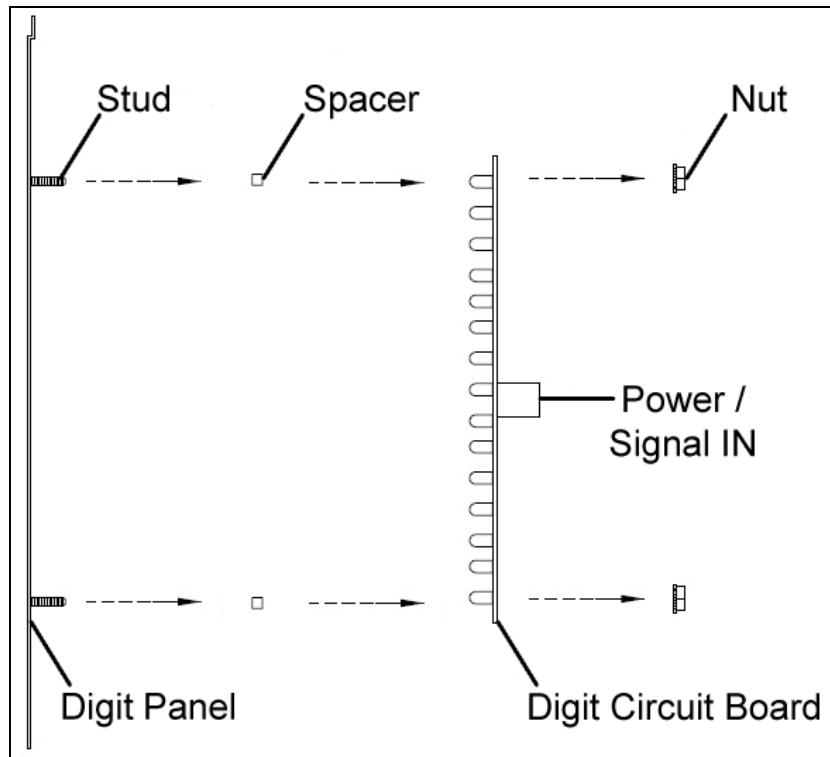


Figure 6: Digit Panel Assembly

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 $\frac{9}{32}$ " 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.

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.

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 7**). Do not attempt to remove individual LEDs; it may be possible to make repairs by removing just the defective segment.

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 $\frac{9}{32}$ " 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.
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 will be connected to a breakout board (**Figure 8**). 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.

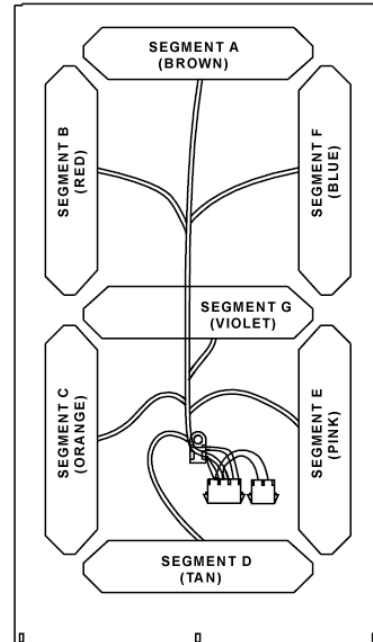


Figure 7: Digit Segments & Panel

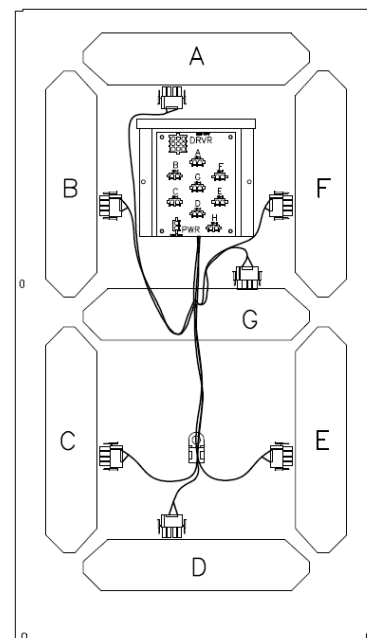


Figure 8: Breakout Board Enclosure (Cover Removed)

2.5 Replacing Colons, Decimals & Indicators

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

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

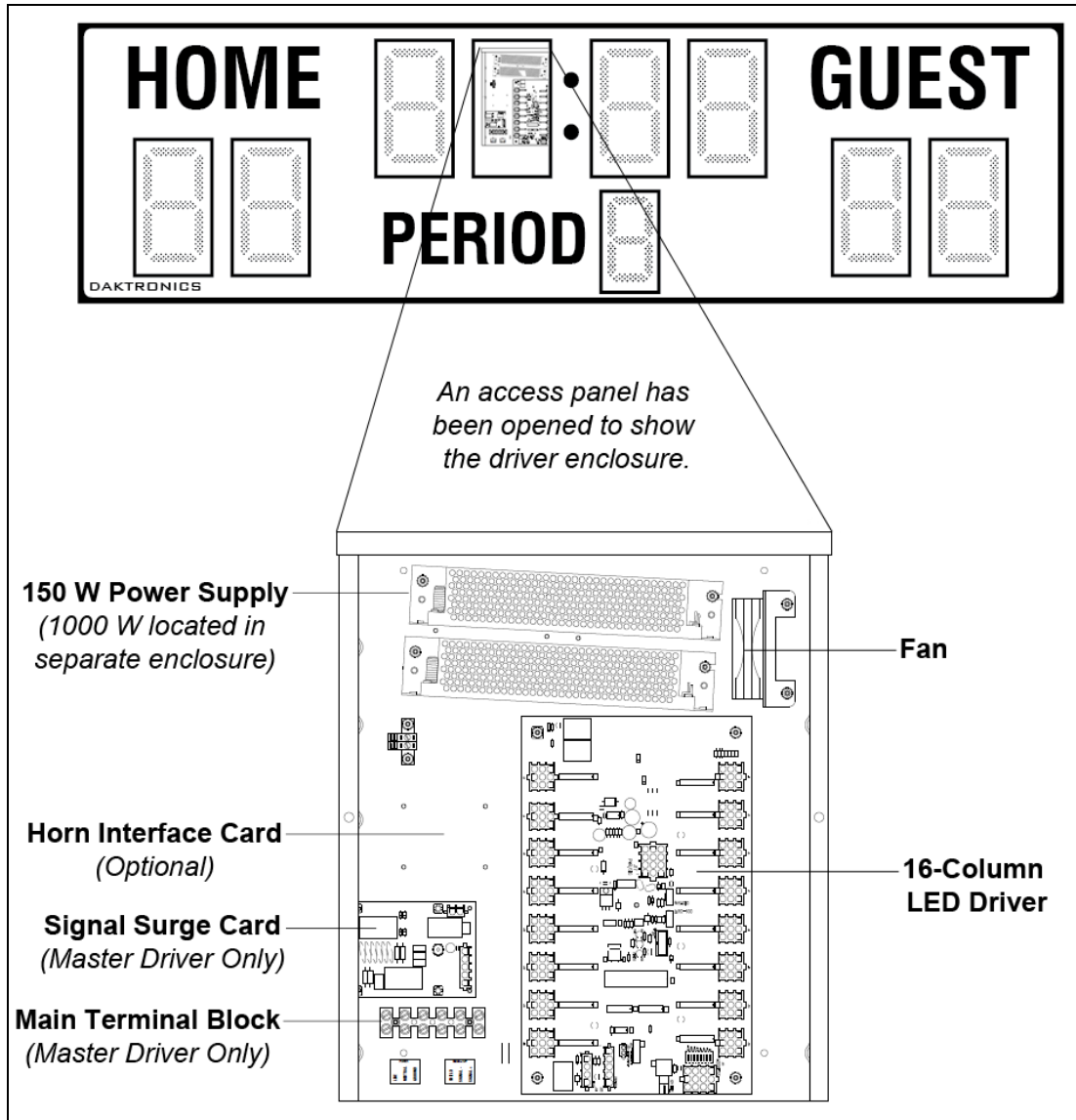


Figure 9: Driver Enclosure Components (Cover Removed)

Most scoreboards use either 8- or 16-column drivers (**Figure 10**), while smaller timers use 4-column drivers. Several scoreboard models also contain more than one driver to accommodate all of the digits and indicators. Refer to the specifications 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 10**, 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.

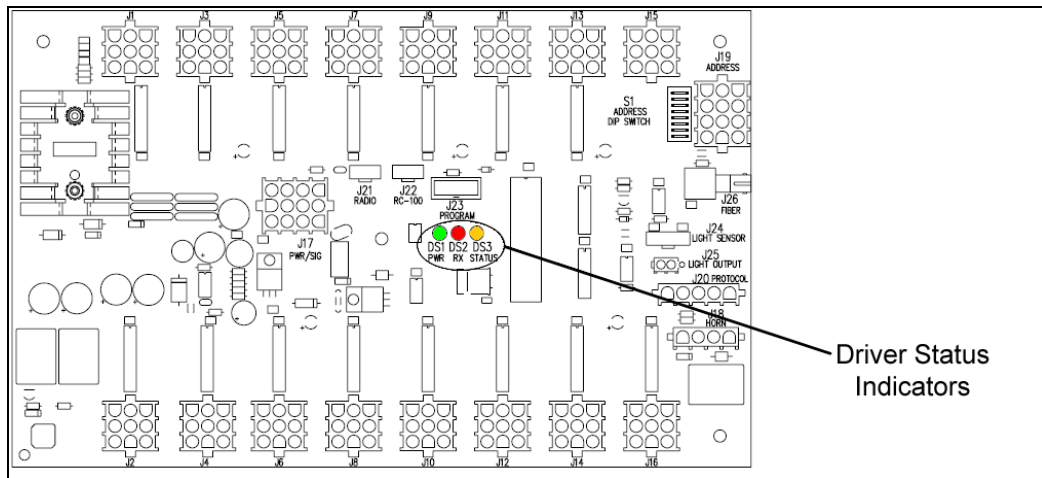


Figure 10: Driver Status Indicators (16-Column)

Replacing a Driver

1. Open the digit panel or scoreboard face panel as described in **Section 2.2**.
2. Loosen the wing nuts to remove metal cover from the driver enclosure.
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 11**) using a pen or small, pointed object.

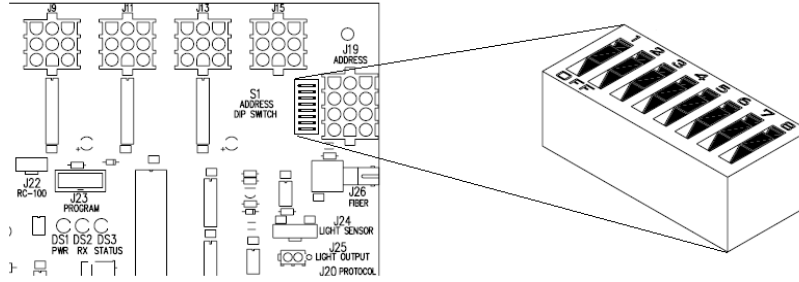


Figure 11: Driver Address Dip Switch

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.

Model	Driver # & Address
BA-515 BA-518 BA-618	BA-624 BA-2010 BA-2017 A1 61
BA-718	A1 62
BA-2004 BA-2005	BA-2014 BA-2019 A1 72 A2 70 A3 71
BA-2022	A1 64 A2 70
BA-1018	A1 12
CR-2003	A1 12 A2 13
BA-2011	A1 67 A2 68 A3 69 A4 1
BA-2016	A1 12 A2 11
CT-2001 FB-2410	TI-418 A1 1

Model	Driver # & Address
BA-2003 FB-824 FB-2005 MS-918 MS-2002	MS-2003 MS-2006 MS-2011 SO-918 A1 11
MS-2004	MS-2012 A1 74 A2 75
SO-2008	A1 17
SO-2013	A1 13 A2 14
SO-2031	A1 17 A2 11
TI-215	TI-2024 A1 2

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).

2.7 Power Supplies

Scoreboards with 4- or 8-column drivers use a single 150 W power supply assembly, while 16-column driver enclosures require a dual 150 W power supply assembly. The FB-2410 along with the FB-824 and TI-2024 with white digits will also have at least one 1000 W power supply 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 9**) 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. Open an access panel as described in **Section 2.2**.
2. Loosen the screws to remove metal cover from the enclosure.
3. 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.
4. 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 # OP-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:
 - If there is no clock, the settings should appear in the Home and Guest score digits (**Figure 12**), but this may vary by scoreboard model.

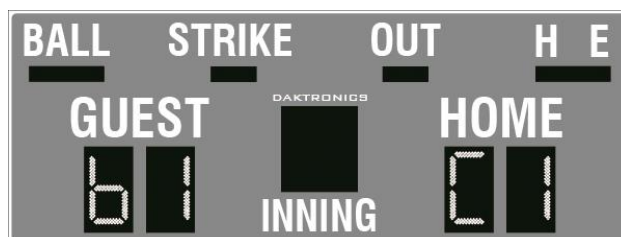


Figure 12: Radio Settings (Home/Guest)

- If there is a clock, the settings appear in the clock digits (**Figure 13**).

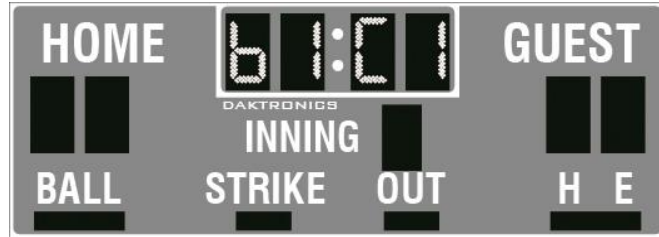


Figure 13: Radio Settings (Clock)

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.

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

To make sure the console radio settings (**Figure 14**) match the receiver in the scoreboard, refer to the [appropriate control console manual](#).



Figure 14: Radio Settings (Console)

Radio Interference

If it has been determined that a nearby wireless scoreboard or other radio signal in the area is interfering, the broadcast and channel settings of the radio receiver inside the scoreboard(s) must be changed. Refer to the **Gen V Radio Installation Manual (ED-13831)** or the **Gen VI Radio Installation Manual (DD2362277)** for more information.

1. To locate the radio receiver, 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**.
3. The radio receiver has a plastic cover with a window to view status indicators (**Figure 15**).

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

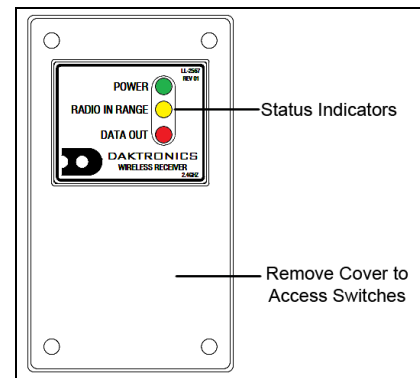


Figure 15: Radio Receiver w/ Cover

4. Remove the four screws in each corner using a #2 Philips screwdriver and lift off the cover.
5. The process of changing the radio settings depends on the generation of the radio. Refer to the instructions below and **Figure 16**.
 - **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”.
6. Screw the cover back on and securely close the access panel.
7. Enter the correct sport code and new radio settings into the console to test the radio control (refer to the [appropriate control console manual](#)).

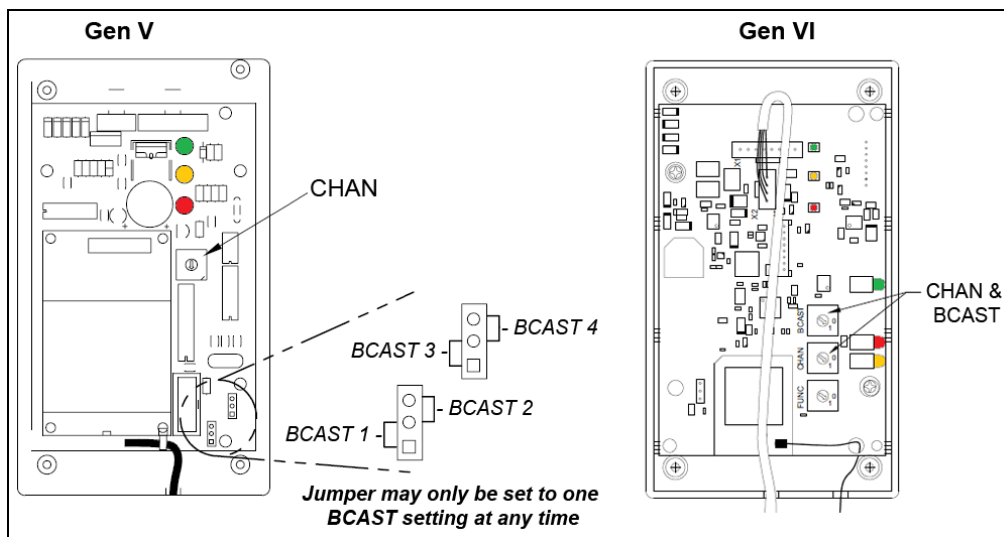


Figure 16: Radio Receiver Switches

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
Signal surge board	Driver enclosure	0P-1110-0011
Driver, 4 col MASC, outdoor, LED	TI-215	0P-1192-0068
Digit, 15", 7-seg outdoor LED, red	Scoreboard	0P-1192-0200
Digit, 18", 7-seg outdoor LED, red	Scoreboard	0P-1192-0202
Digit, 18" ones, 7-seg outdoor LED, red	Scoreboard	0P-1192-0203
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 segment, 36" outdoor LED, red (vertical)	Scoreboard	0P-1192-0208
Digit segment, 36" outdoor LED, red (horizontal)	Scoreboard	0P-1192-0209
Digit, 15", 7-seg outdoor LED, amber	Scoreboard	0P-1192-0214
Digit, 18", 7-seg outdoor LED, amber	Scoreboard	0P-1192-0216
Digit, 18" ones, 7-seg outdoor LED, amber	Scoreboard	0P-1192-0217
Digit segment, 24" outdoor LED, amber (vertical)	Scoreboard	0P-1192-0218
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
Digit segment, 36" outdoor LED, amber (vertical)	Scoreboard	0P-1192-0222
Digit segment, 36" outdoor LED, amber (horizontal)	Scoreboard	0P-1192-0223
Indicator, 2" circular, outdoor LED, red	Scoreboard	0P-1192-0228
Indicator, 2" circular, outdoor LED, amber	Scoreboard	0P-1192-0229
Indicator, 4" circular, outdoor LED red	CR-2003, FB-2410	0P-1192-0244
Indicator, 4" circular outdoor LED amber	CR-2003, FB-2410	0P-1192-0245
Digit, 10", 7-seg outdoor LED, red	Scoreboard	0P-1192-0255
Digit, 10", 7-seg outdoor LED, amber	Scoreboard	0P-1192-0256
60" Red Hor Half Seg	FB-2410	0P-1192-0280
60" Red Vert Half Seg	FB-2410	0P-1192-0281

Description	Location	Daktronics Part #
60" Amber Hor Half Seg	FB-2410	0P-1192-0282
60" Amber Vert Half Seg	FB-2410	0P-1192-0283
Breakout board, 8 segment	FB-2410 & 24"+ white digits	0P-1192-0326
Driver, 16 col, outdoor, LED	Driver enclosure	0P-1192-0383
Driver, 8 col, outdoor, LED	Driver enclosure	0P-1192-0391
Digit, 15", 7-seg outdoor LED, white	Scoreboard	0P-1192-0406
Digit, 18", 7-seg outdoor LED, white	Scoreboard	0P-1192-0407
Digit segment, 24" outdoor LED, white (vertical)	Scoreboard	0P-1192-0408
Digit segment, 24" outdoor LED, white (horizontal)	Scoreboard	0P-1192-0409
Digit segment, 30" outdoor LED, white (vertical)	Scoreboard	0P-1192-0410
Digit segment, 30" outdoor LED, white (horizontal)	Scoreboard	0P-1192-0411
Digit, 10", 7-seg outdoor LED, white	Scoreboard	0P-1192-0413
Indicator, 2" circular, outdoor LED, white	Scoreboard	0P-1192-0414
Digit segment, 36" outdoor LED, white (vertical)	Scoreboard	0P-1192-0415
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 V AC)	Driver enclosure	A-1720
Power Supply; 24 V, 150W (240 V AC)	Driver enclosure	A-1733
Power supply; 24 V, 1000W	Power enclosure	A-1856R
Fan, 32 cfm, 24 V DC, 3.15 sq. in	Driver enclosure	B-1030
Fuse; ATM-15, 32V, 15A	Power enclosure	F-1058
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

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

Section 3: Team Name Message Center 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 Team Name Message Center System 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 two different pixel arrangements: 8x32 and 8x48. Characters are shown on one line using single- or double-stroke fonts 10" high (254 mm) and 14" (355 mm) high for 34 mm and 46 mm TNMC units, respectively.

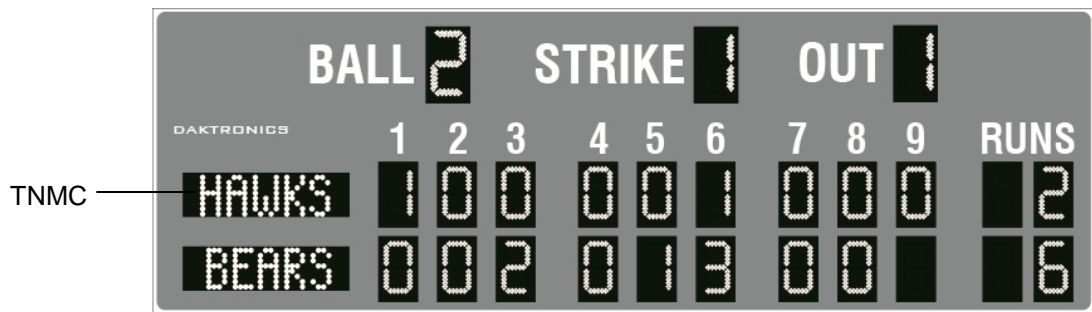


Figure 17: Baseball Scoreboard with Team Name Message Centers

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)	
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.

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 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.

3.3 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 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 TNMC 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 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 Section 3.6 .

3.4 Power & Signal Summary

Reference Drawings:

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

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[®] 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.

3.5 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 18 illustrates the component locations of an 8x48-34mm TNMC 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**.

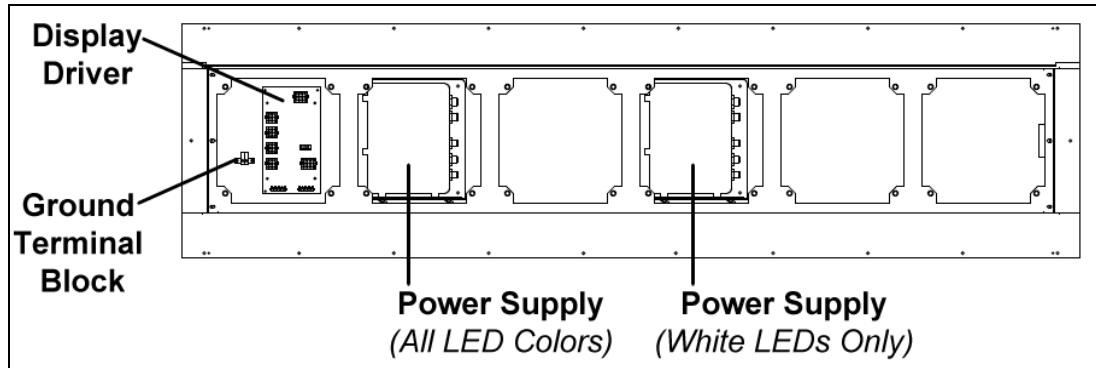


Figure 18: 8x48-34mm TNMC with Modules Removed

Figure 19 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**.

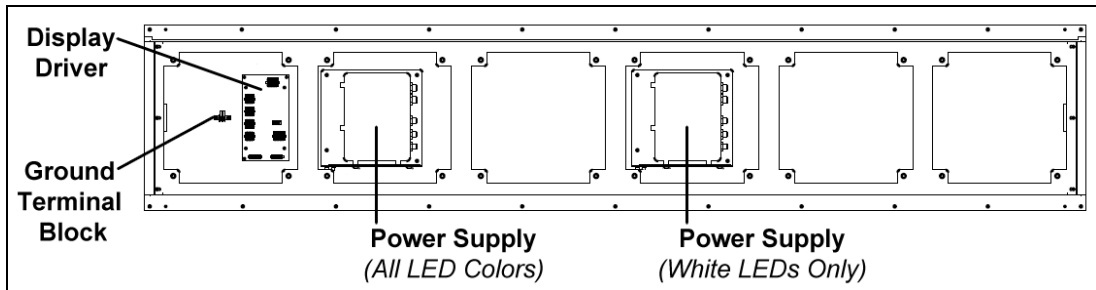


Figure 19: 8x48-46mm TNMC with Modules Removed

For TNMCs Built Before September 2009

Figure 20 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**.

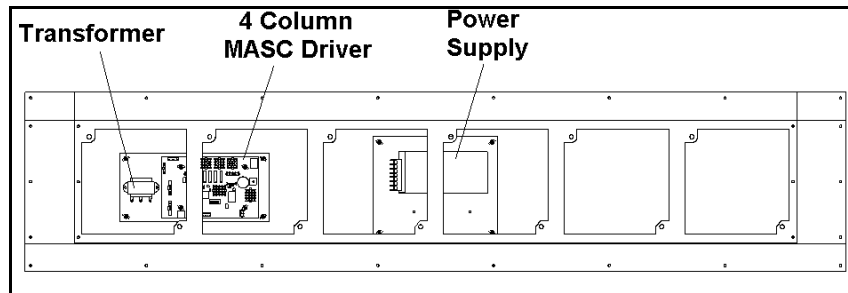


Figure 20: Discontinued 8x48-34mm TNMC with Modules Removed

Figure 21 illustrates the component locations of an older 8x48-46mm TNMC. The 8x32-46mm cabinets only include a single power supply assembly.

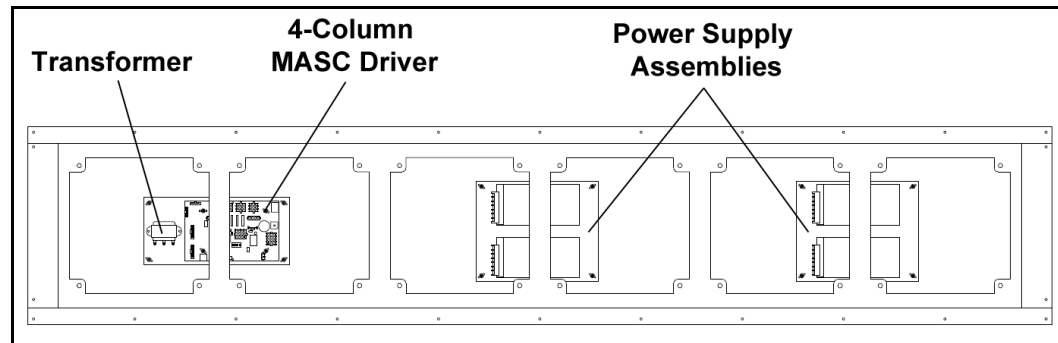


Figure 21: Discontinued 8x48-46mm TNMC with Modules Removed

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 22**).
2. Turn each fastener a quarter-turn counter-clockwise (if using a nut driver, turn the top latch clockwise and the bottom latch counterclockwise).

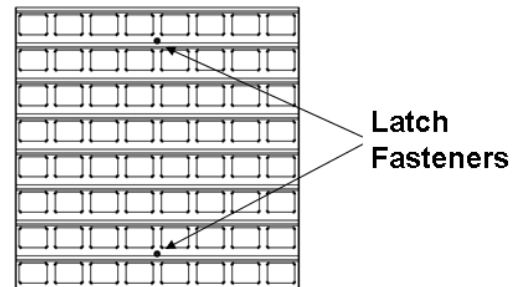


Figure 22: TNMC Module, Front View

Note: Do not over turn the fastener!

3. 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 cabinet.

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

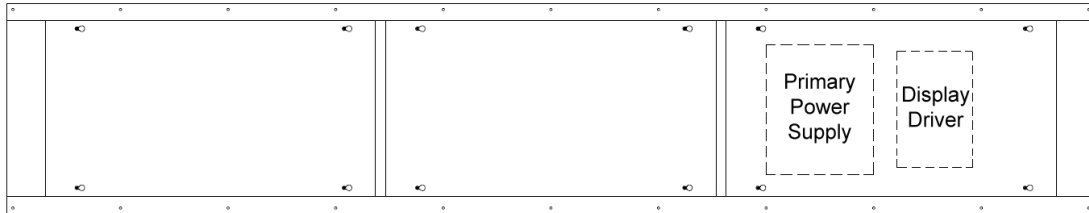


Figure 23: TNMC Cabinet Rear Access (8x48-46mm Shown)

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.

3.6 TNMC Drivers

Reference Drawings:

- 4 Column MASC LED Driver Specifications **Drawing A-166216**
- Address Table: Driver- MCAST G2- TNMC Switch **Drawing A-328274**
- Specifications; Driver, MCAST, 4 Col **Drawing A-793970**

The TNMC driver is detailed in **Drawing A-793970** in **Appendix C**. **Figure 24** illustrates some of the primary jacks and switches on the 4 Column MCAST driver used for TNMC 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". (There may be other address settings if the TNMC is used to display messages other than team names.) 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.

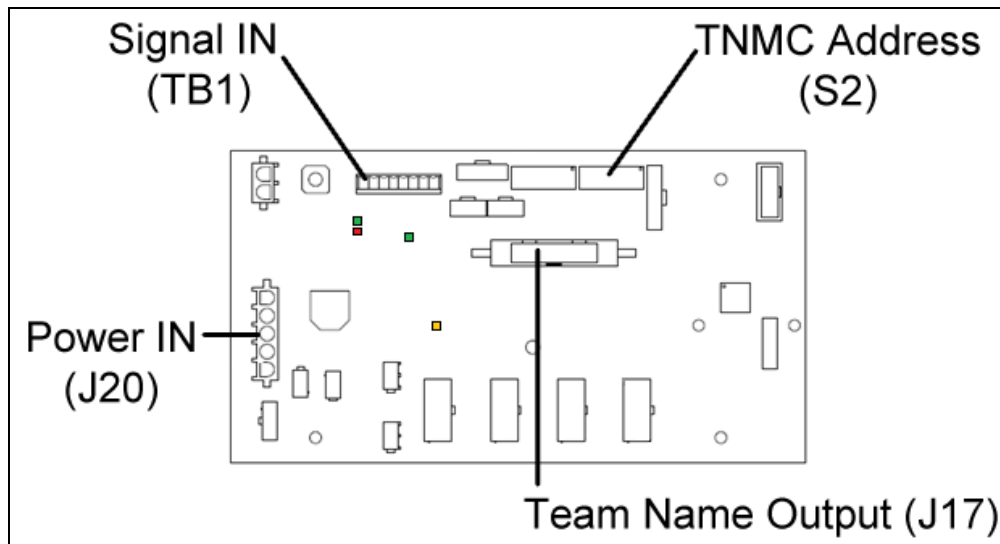


Figure 24: 4 Column MCAST Driver

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 3.4** for more information on signal routing. The driver itself is detailed in **Drawing A-166216** in **Appendix C**. **Figure 25** illustrates a TNMC control assembly with a 4-column MASC driver.

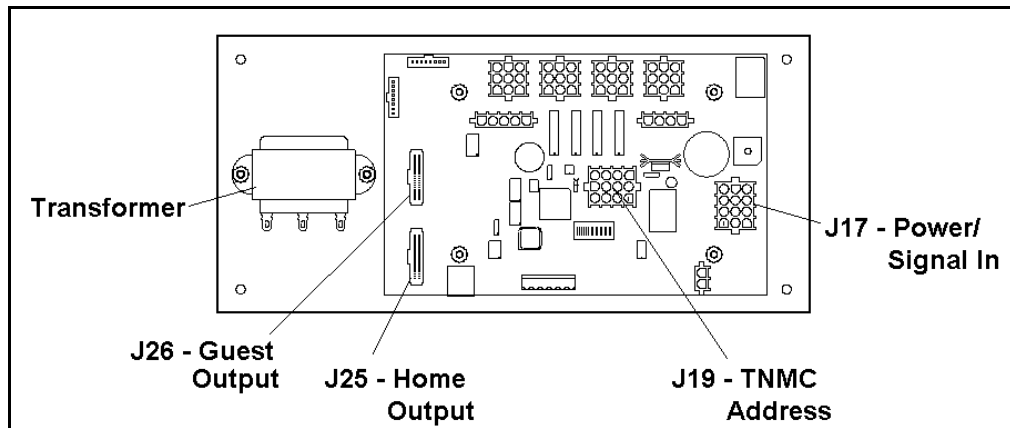


Figure 25: TNMC Control Assembly (4 Column MASC Driver)

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 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 for the TNMC function.
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 TNMC 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 or 7/32" nut driver to loosen the latch fastener assembly (**Figure 26**). 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/display to see if the problem has been resolved.

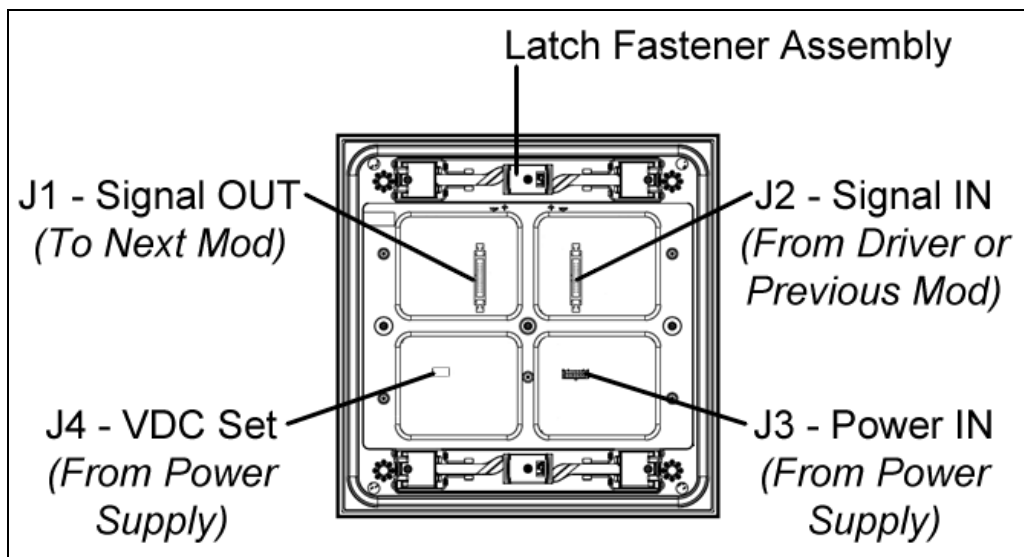


Figure 26: TNMC Module, Rear View

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.

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.

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.

3.9 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.

3.10 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

Part Description	Part Number
Module; 8X8-46, Red	0A-1541-5008
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 & 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"> ▪ Transformer; 115/230 V pri, 16 V sec @ 2 A 	T-1063
Power Supply Assembly; Red TNMC	0A-1192-3160
<ul style="list-style-type: none"> ▪ Power Supply; 6.5V, 15A, 85-264 V AC 	A-1591
Power Supply Assembly; Amber TNMC	0A-1192-3161
<ul style="list-style-type: none"> ▪ Power Supply; 9V, 17A, 85-265 V AC 	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 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 Serial Number: _____
Display Model Number: _____
Job/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 (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 the product specification sheets for the scoreboards in this 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.

Model	Spec Sheet	Model	Spec Sheet
BA-618	SL02667	FB-824	SL02234
BA-624	SL02673	MS-918	SL02671
BA-2003	SL04286	MS-2002	SL04066
BA-2004	SL04478	MS-2004	SL04093
BA-2005	SL04479	MS-2006	SL04266
BA-2010	SL04693	MS-2012	SL04694
BA-2014	SL06871	SO-918	SL02669
BA-2017	SL07594	SO-2008	SL04282
BA-2019	SL07438	SO-2013	SL06870
BA-2022	SL08404	SO-2031	SL05626
CR-2003	SL07609	TI-2024	SL07530

Note the following scoreboards that have different power specs with white digits:

Model & Options	Watts	Amps 120 / 240 V AC
BA-515 BA-518 BA-618 BA-624 BA-718	300 W	2.5 A / 1.25 A
FB-824 FB-2005	400 W	3.3 A / 1.7 A
SO-2008	600 W	5 A / 2.5 A
w/TNMC	700 W	5.8 A / 2.9 A

Discontinued Models

Model	Spec Sheet	Model	Spec Sheet
BA-515	SL02682	FB-2005	SL04684
BA-518	SL02663	FB-2410	A-274863
BA-718	SL02665	MS-2003	SL04067
BA-1018	SL02858	MS-2011	SL04711
BA-2011	SL05586	TI-215	SL06348
BA-2016	SL06684	TI-418	SL02885
CT-2001	SL03712		

Appendix B: Schematic Drawings

Use the tables below to determine the schematic drawing for a particular scoreboard model. Click the links to view the schematic drawings.

Models		Schematic Drawing		
		120 V	240 V	With TNMC
TI-215		A-165028	N/A	N/A
BA-515 BA-518 BA-618 BA-624	BA-718 BA-2003 CT-2001 TI-418	A-285881	A-324504	N/A
BA-1018 BA-2010 BA-2017 CR-2003 FB-824* FB-2005 MS-918 MS-2002	MS-2003 MS-2006 MS-2011 SO-918 SO-2008 SO-2013 TI-2024*	A-285779	A-324504	<i>Before Sept. 2009:</i> A-179790 <i>After Sept. 2009:</i> A-752372
FB-2410		A-273885	N/A	N/A
BA-2022 MS-2004	MS-2012 SO-2031	A-180637		A-752129
BA-2004 BA-2005	BA-2014 BA-2019	A-179541		<i>Before Sept. 2009:</i> A-180081 <i>After Sept. 2009:</i> A-751690
BA-2011				B-204725
BA-2016				B-210454

* Refer to **Drawing** [A-967997](#) for models with white digits.

TNMCs (After Sept. 2009)

Pixel Spacing	Schematic Drawing		
	Red/Amber	White	Amber/White
34 mm	B-783938	B-906385	N/A
46 mm	B-923941	B-1036125	B-923940 **

** TNMCs built between Sept. 2009 and Nov. 2010

TNMCs (Before Sept. 2009)

Color	Schematic Drawing	
	120 VAC	240 VAC
Amber	A-252645	A-294919
Red	A-252681	A-294858

Appendix C: Reference Drawings

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

<i>Drawing Title</i>	<i>Drawing Number</i>
Segmentation, 7 Segment Bar Digit	<u>A-38532</u>
4 Column MASC LED Driver Specifications	<u>A-166216</u>
Component Locations; 832/848/864 Red/Amb LED, TNMC, G4	<u>A-257029</u>
Enclosure: 1000W Power Supply	<u>B-274431</u>
Specifications; LED Driver IV, 16 Col	<u>A-288137</u>
Specifications; LED Driver IV, 8 Col	<u>A-288138</u>
Address Table 1; GEN IV Driver Address Dip Switch.....	<u>A-290261</u>
Address Table: Driver- MCAST G2- TNMC Switch	<u>A-328274</u>
Specifications; Driver, MCAST, 4 Col	<u>A-793970</u>
Component Loc.; 34mm Red/Amb/Wht LED TNMC G4	<u>B-975100</u>
Component Loc.; 46mm Red/Amb/Wht LED TNMC G4	<u>B-975635</u>

Appendix D: Daktronics Warranty and Limitation of Liability

**DAKTRONICS
WARRANTY AND LIMITATION OF LIABILITY**

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

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

1. Warranty Coverage

A. Daktronics warrants to the original end-user that the Equipment will be free from Defects (as defined below) in materials and workmanship for a period of one (1) year (the "Warranty Period"). The warranty period shall commence on the earlier of: (i) four weeks from the date that the equipment leaves Daktronics' facility; or (ii) Substantial Completion as defined herein. The warranty period shall expire on the first anniversary of the commencement date.

"Substantial Completion" means the operational availability of the Equipment to the Purchaser in accordance with the Equipment's specifications, without regard to punch-list items, or other non-substantial items which do not affect the operation of the Equipment.

B. Daktronics' obligation under this Warranty is limited to, at Daktronics' option, replacing or repairing, any Equipment or part thereof that is found by Daktronics not to conform to the Equipment's specifications. Unless otherwise directed by Daktronics, any defective part or component shall be returned to Daktronics for repair or replacement. Daktronics may, at its option, provide on-site warranty service. Daktronics shall have a reasonable period of time to make such replacements or repairs and all labor associated therewith shall be performed during regular working hours. Regular working hours are Monday through Friday between 8:00 a.m. and 5:00 p.m. at the location where labor is performed, excluding any holidays observed by either Purchaser or Daktronics.

C. Daktronics shall pay ground transportation charges for the return of any defective component of the Equipment. If returned Equipment is repaired or replaced under the terms of this warranty, Daktronics will prepay ground transportation charges back to Purchaser; otherwise, Purchaser shall pay transportation charges to return the Equipment back to the Purchaser. All returns must be pre-approved by Daktronics before shipment. Daktronics shall not be obligated to pay freight for any unapproved return. Purchaser shall pay any upgraded or expedited transportation charges.

D. Any replacement parts or Equipment will be new or serviceably used, comparable in function and performance to the original part or Equipment, and warranted for the remainder of the Warranty Period. Purchasing additional parts or Equipment from the Seller does not extend this Warranty Period.

E. Defects shall be defined as follows. With regard to the Equipment (excepting LEDs), a "Defect" shall refer to a material variance from the design specifications that prohibit the Equipment from operating for its intended use. With respect to LEDs, "Defects" are defined as LED pixels that cease to emit light. The limited warranty provided by Daktronics does not impose any duty or liability upon Daktronics for partial LED pixel degradation. Nor does the limited warranty provide for the replacement or installation of communication methods including but not limited to, wire, fiber optic cable, conduit, trenching, or for the purpose of overcoming local site interference radio equipment substitutions.

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

THIS LIMITED WARRANTY IS NOT TRANSFERABLE.

2. Exclusion from Warranty Coverage

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

A. Any damage occurring, at any time, during shipment of Equipment unless otherwise provided for in the Agreement. When returning Equipment to Daktronics for repair or replacement, Purchaser assumes all risk of loss or damage, and agrees to use any shipping containers that might be provided by Daktronics and to ship the Equipment in the manner prescribed by Daktronics;

B. Any damage caused by the unauthorized adjustment, repair or service of the Equipment by anyone other than personnel of Daktronics or its authorized repair agents;



C. Damage caused by the failure to provide a continuously suitable environment, including, but not limited to: (i) neglect or misuse, (ii) a failure or sudden surge of electrical power, (iii) improper air conditioning or humidity control, or (iv) any other cause other than ordinary use;

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

E. Failure to adjust, repair or replace any item of Equipment if it would be impractical for Daktronics personnel to do so because of connection of the Equipment by mechanical or electrical means to another device not supplied by Daktronics, or the existence of general environmental conditions at the site that pose a danger to Daktronics personnel;

F. Any statements made about the product by salesmen, dealers, distributors or agents, unless such statements are in a written document signed by an officer of Daktronics. Such statements as are not included in a signed writing do not constitute warranties, shall not be relied upon by Purchaser and are not part of the contract of sale;

G. Any damage arising from the use of Daktronics products in any application other than the commercial and industrial applications for which they are intended, unless, upon request, such use is specifically approved in writing by Daktronics; or

H. Any performance of preventive maintenance.

3. **Limitation of Liability**

Daktronics shall be under no obligation to furnish continued service under this Warranty if alterations are made to the Equipment without the prior written approval of Daktronics.

It is specifically agreed that the price of the Equipment is based upon the following limitation of liability. In no event shall Daktronics (including its subsidiaries, affiliates, officers, directors, employees, or agents) be liable for any special, consequential, incidental or exemplary damages arising out of or in any way connected with the Equipment or otherwise, including but not limited to damages for lost profits, cost of substitute or replacement equipment, down time, lost data, injury to property or any damages or sums paid by Purchaser to third parties, even if Daktronics has been advised of the possibility of such damages. The foregoing limitation of liability shall apply whether any claim is based upon principles of contract, tort or statutory duty, principles of indemnity or contribution, or otherwise.

In no event shall Daktronics be liable to Purchaser or any other party for loss, damage, or injury of any kind or nature arising out of or in connection with this Warranty in excess of the purchase price of the Equipment actually delivered to and paid for by the Purchaser. The Purchaser's remedy in any dispute under this Warranty shall be ultimately limited to the Purchase Price of the Equipment to the extent the Purchase Price has been paid.

4. **Assignment of Rights**

The Warranty contained herein extends only to the original end-user (which may be the Purchaser) of the Equipment and no attempt to extend the Warranty to any subsequent user-transferee of the Equipment shall be valid or enforceable without the express written consent of Daktronics.

5. **Dispute Resolution**

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

6. **Governing Law**

The rights and obligations of the parties under this warranty shall not be governed by the provisions of the United Nations Convention on Contracts for the International Sales of Goods of 1980. Both parties consent to the application of the laws of the State of South Dakota to govern, interpret, and enforce all of Purchaser and Daktronics rights, duties, and obligations arising from, or relating in any manner to, the subject matter of this Warranty, without regard to conflict of law principles.

7. **Availability of Extended Service Agreement**

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