TUFF SPORT®
INDOOR LED SCOREBOARDS

SERVICE MANUAL

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Rev 11
10 June 2022

Models				
BB-2101	BB-2119	BB-2147	H-2108	TI-2102
BB-2102	BB-2121	BB-2152	H-2109	TI-2103
BB-2103	BB-2122	BB-2153	H-2111	TI-2200
BB-2104	BB-2123	BB-2154	H-2112	TN-2501
BB-2105	BB-2124	BB-2155	H-2114	TN-2503
BB-2106	BB-2125	BB-2156	H-2115	TN-2504
BB-2107	BB-2126	CU-2001	SD-2101	TN-2505
BB-2108	BB-2130	H-2101	SD-2102	TN-2560
BB-2109	BB-2131	H-2102	SD-2103	TN-2561
BB-2111	BB-2132	H-2103	SD-2104	TN-2562
BB-2114	BB-2142	H-2104	SD-2106	TN-2563
BB-2115	BB-2143	H-2105	SQ-2001	VB-2101
BB-2116	BB-2144	H-2106	TI-2030	
BB-2117	BB-2146	H-2107	TI-2101	

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FCC Statement

Supplier Declaration of Conformity (SDoC)

This product complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense.

Warning: The user is cautioned that changes and modifications made to the equipment without the approval of manufacturer could void the user's authority to operate this equipment.

Industry Canada Regulatory Information

This Class A digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

Inquiries

Contact Daktronics with any questions regarding our product compliance.

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1 Introduction

This manual explains the troubleshooting and service of Daktronics Tuff Sport® Indoor LED Scoreboards, Game/Shot Clocks, Statistics Panels, and Timing Displays. For additional information regarding safety, installation, operation, or service, refer to the telephone numbers listed in **Section 4: Daktronics Exchange and Repair & Return Programs (p. 21)**. This manual is not specific to a particular installation.

Important Safeguards

- **Read and understand all instructions before servicing the display.**
- **Disconnect the display power when not in use or when servicing.**
- **Disconnect the 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 structure or attach any panels or coverings to the display without the express written consent of Daktronics.**
- **Do not disassemble control equipment or electronic controls of the display; failure to follow this safeguard will make the warranty null and void.**
- **Do not drop the control equipment or allow it to get wet.**

Specifications Label

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

> **Note:** If something mounted above the display obscures this label, a copy of this label can be found behind the PRIMARY DRIVER access panel.

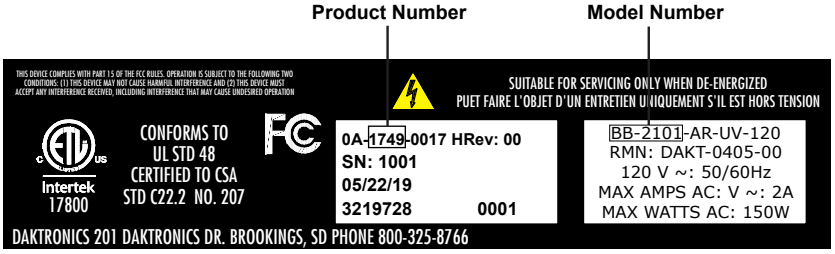


Figure 1: *Specifications Label*

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 displays that have the same model number.

Resources

Figure 2 illustrates a Daktronics drawing label. This manual refers to drawings by listing the last set of digits. In the example, the drawing would be referred to as **DWG-1007804**. All references to drawing numbers, appendices, figures, or other manuals are presented in bold typeface.

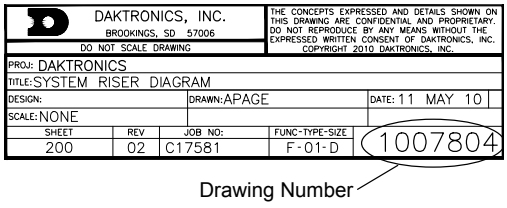


Figure 2: *Drawing Label*

Any drawings referenced in a section are listed at the beginning of it as shown below:

Reference Drawings:
System Riser Diagram **DWG-1007804**

Daktronics identifies manuals by the DD or ED number located on the cover page.

Listed below are drawing types commonly used by Daktronics, along with the information typically provided. All drawings referenced in this manual are found in the appendices.

- **Schematic Drawings:** describe internal power and signal wiring as well as interconnections between display sections; they may also include digit designations and driver addressing information
- **Shop Drawings:** describe mounting methods to structural elements, access method (front or rear), and power and signal entrance points
- **System Riser Diagrams:** describe power/signal connections between components and the control location; they may also include control room layout and schematic
- **Final Assembly Drawings:** describe internal display component locations and detailed product appearance with part numbers and quantities

Project-specific information takes precedence over any other general information found in this manual. Ensure all applicable materials have been gathered before servicing. Contact a Daktronics sales coordinator or project manager.

Daktronics Nomenclature

Most display components have a white label that lists the part number (**Figure 3**). Part numbers will also appear on certain drawings. If a component is not found in the **Replacement Parts (p. 14)**, use the label to order a replacement. Refer to **Section 4: Daktronics Exchange and Repair & Return Programs (p. 21)** if replacing or repairing any display component.

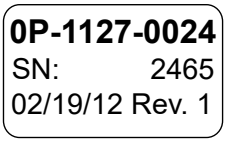


Figure 3: *Part Label*

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	0M-XXXXXXX
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

Product Safety Approval

Daktronics indoor displays are ETL-listed, tested to CSA standards, and CE-labeled. Contact Daktronics with any questions regarding testing procedures.

2 Troubleshooting

Disconnect power before doing any repair or maintenance work on the display. Permit only qualified service personnel to access internal display electronics. Disconnect power when not using the display.

Troubleshooting Table

This section lists potential problems with the system, indicates possible causes, and suggests corrective action. This list does not include every possible problem, but it does represent some of the more common situations that may occur.

Problem	Possible Cause	Solution/Items to Check
Display does not light, and console does not work	No power to the display	Check that the main circuit breaker for the display is on.
		Check that the display is receiving 100, 120, or 240 VAC power.
	No power to the control console	Ensure the console is plugged into a 100, 120, or 240 VAC power supply.
		Exchange the console with a working one, and enter the correct sport code and/or radio settings to test. Replace console if necessary.
Display digits do not light, but console works	No wired signal from control console	Check that the display is receiving 100, 120, or 240 VAC power.
		Check that the red DS5 LED on the driver lights up when sending commands from the controller; see **LED Drivers (p. 7)**.
	No radio signal from control console	Verify that both the console and display antennas are securely tightened and in a vertical position.
		Keep the console 20–500' (6–152 m) away from the display. Check that the green **POWER** and amber **RADIO IN RANGE** indicators on the radio receiver in the display light up when the control console is powered on. Move the console 20–30' (6–9 m) from the display and test again.
		Replace the radio receiver.
	No signal to driver	Check that the display is receiving 100, 120, or 240 VAC power.
		Check that the red DS5 LED on the driver lights up when sending commands from the controller. See **LED Drivers (p. 7)**.
		Exchange the driver with a working one of the same part #. Replace if necessary. See **LED Drivers (p. 7)**.
	No power to driver	Check that the red DS8 LED on the driver remains lit up when the display is powered on. See **LED Drivers (p. 7)**.

Problem	Possible Cause	Solution/Items to Check
Display digits light, but not in the correct order	Incorrect sport code	Ensure the correct sport code is being used for the display model. Refer to the appropriate console operation manual.
	Incorrect driver address	Ensure all drivers are set to the correct address. See **Setting the Driver Address (p. 9)**.
Digits light, console works, but nothing displays	No wired signal from control console	(see solution on previous page)
	No radio signal from control console	(see solution on previous page)
	Bad/damaged field wiring	Check that the red DS5 LED on the driver lights up when sending commands from the controller. See **LED Drivers (p. 7)**.
Display works, but some LEDs always stay on	Short in digit or indicator circuit	Exchange the digit/indicator with a working one of the same part # to verify the problem. Replace if necessary. See **Replacing Digits (p. 5)**.
Display 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.
	Bad digit or driver	Exchange the digit or driver with a working one of the same part # to verify the problem. Replace if necessary. See **Replacing Digits (p. 5)** or **LED Drivers (p. 7)**.
Display works, but some digits do not light	Bad digit or driver	(see solution above)
	Incorrect sport code	(see solution above)
	Incorrect driver address	(see solution above)
	Wrong console controlling the scoreboard	Another console's radio signal may be transmitting to the display. For example, two basketball scoreboards in different gyms that are within 500' (152 m) of each other. Change the radio settings as described in **Radio Connections (p. 11)**.
	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.
Display works, but one section of digits does not light	Bad multi-section connection	Verify power/signal interconnects between display sections are properly connected. Refer to appropriate schematic drawings.
	Bad transformer	Exchange the transformer with a working one of the same part # to verify the problem. Replace if necessary.

Component Locations and Access

All internal electronic components and digits are reached by opening a digit panel on the front of the display.

Digit panels are typically held in place on the display face by screws. To remove a digit, simply unfasten the screws and carefully lift it from the cabinet. The power/signal plug can then be removed from the connector on the back of the digit to completely free the digit and access internal components.

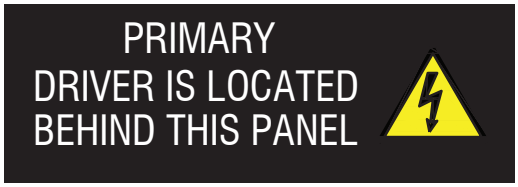


Figure 4: *Power Warning Label*

Component location varies with each model, but drivers and power and signal components are typically mounted inside the cabinet behind a digit panel. To locate the driver(s), look for a warning label similar to that shown in **Figure 4**.

Replacing Digits

LEDs are embedded in a circuit board that is mounted to the back of the digit panel. Do not attempt to remove individual LEDs. In the case of a malfunctioning LED or digit segment, replace the entire digit circuit board. The process of replacing digits varies by whether it is a PanaView digit or UniView digit (**Figure 5**).

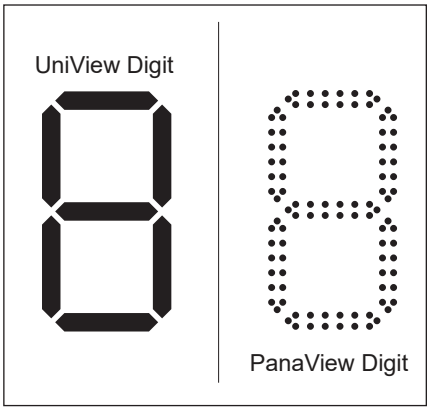


Figure 5: *Digit Types*

PanaView

To replace a PanaView digit circuit board (**Figure 6**):

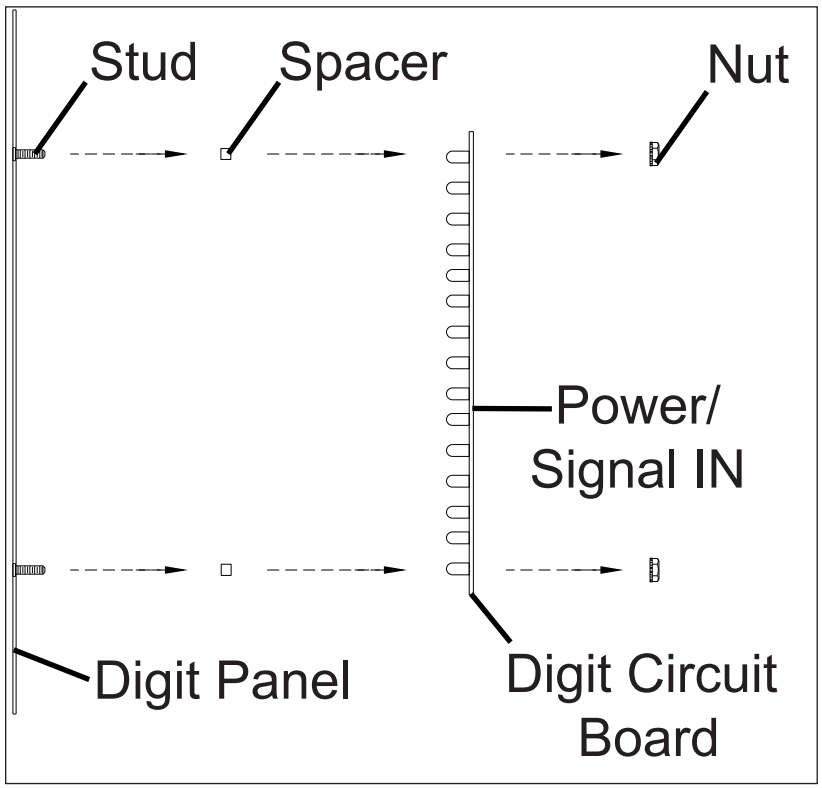


Figure 6: *PanaView Digit Assembly*

1. Open the digit panel as described in **Component Locations and Access (p. 5)**.
2. Disconnect the 9-pin plug from the back of the digit by squeezing the locking tabs together 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 stud inserts.
4. Position a new digit over the studs (making sure the small plastic spacers are still in place), and then tighten the nuts.
5. Reconnect the 9-pin plug. This is a keyed connector and it will attach in one way only. Do not force the connection.
6. Secure the digit panel to the display face with the screws, and then power up and test the display to verify the issue has been resolved.

UniView

To replace a UniView digit circuit board (**Figure 7**):

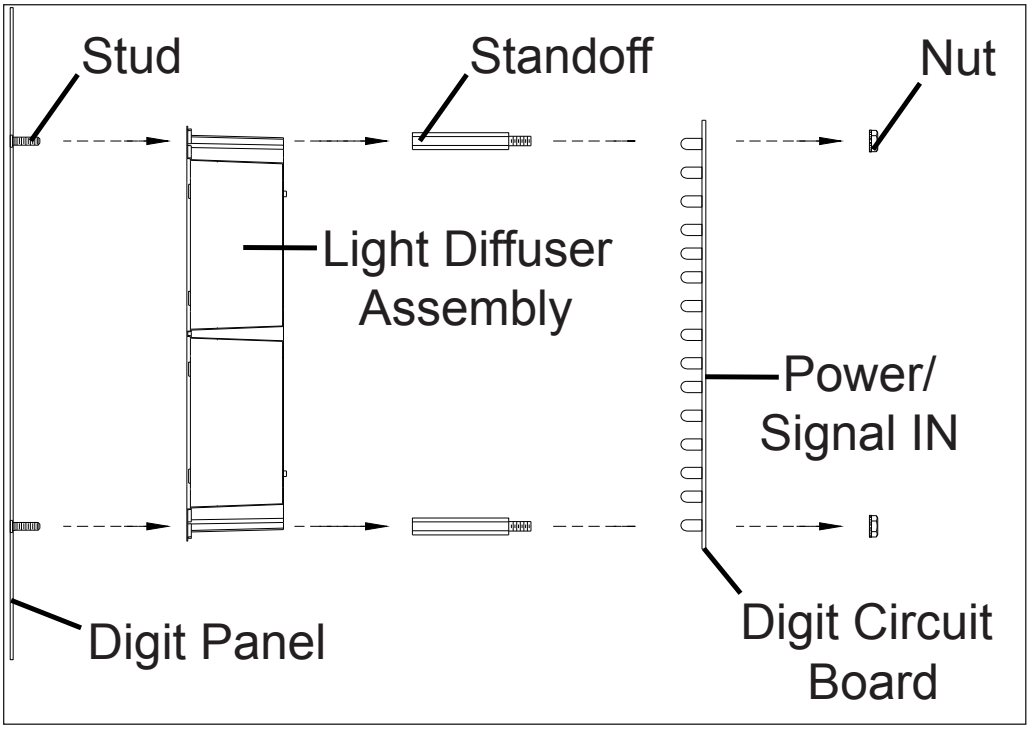


Figure 7: *UniView Digit Assembly*

1. Open the digit panel as described in **Component Locations and Access (p. 5)**.
2. Disconnect the 9-pin plug from the back of the digit by squeezing the locking tabs together and pulling the connector free.
3. Use a 9/32" nut driver to remove the nuts securing the digits to the aluminum standoffs, and then lift the digit off the standoff/diffuser assembly.
4. Position a new digit over the standoffs, and then tighten the nuts. It may be necessary to also tighten the standoffs if they became loose while removing the nuts.
5. Reconnect the 9-pin plug. This is a keyed connector and it will attach in one way only. Do not force the connection.
6. Secure the digit panel to the display face with the screws, and then power up and test the display to verify the issue has been resolved.

LED Drivers

LED drivers perform the task of switching digits on and off within the display. LED drivers are mounted to a driver tray. Refer to **Figure 8** to view the location and components of a driver tray.

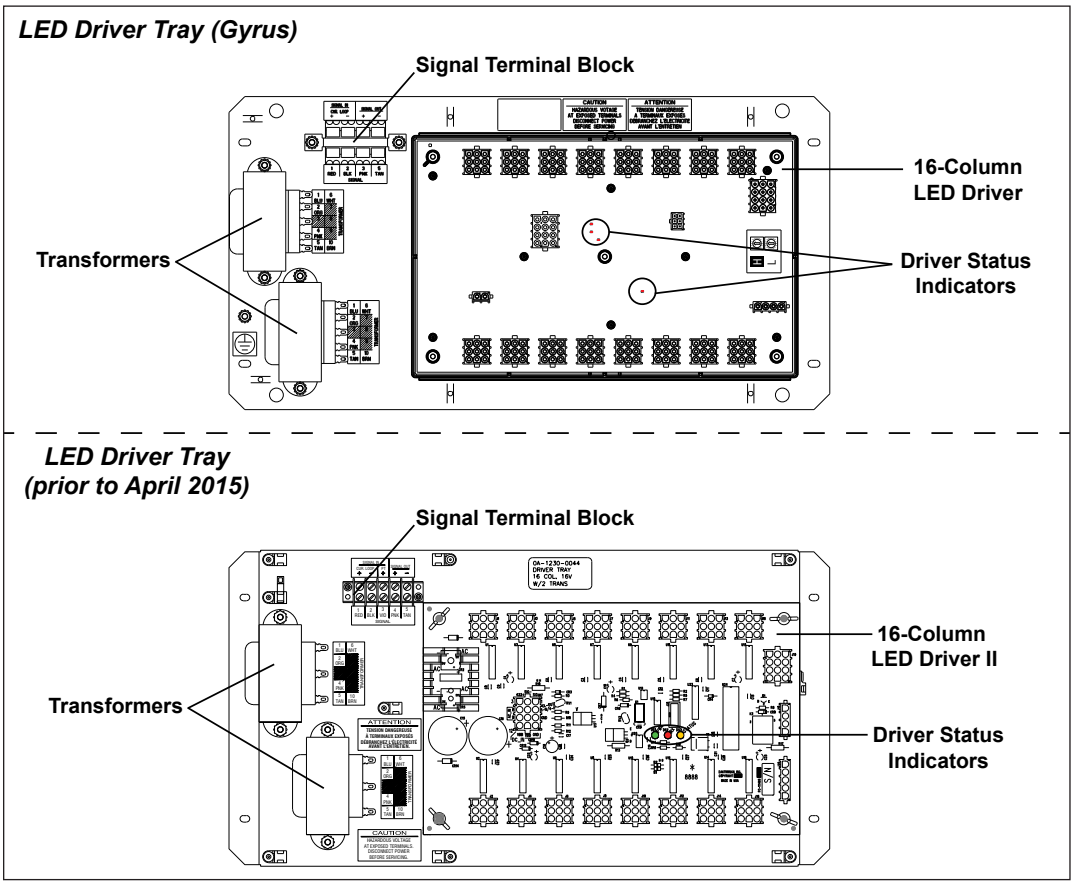


Figure 8: *Driver Tray Components*

All Tuff Sport displays use 16-column drivers, while some smaller displays use 4-column drivers. Several models contain more than one driver to accommodate all of the digits and indicators. Refer to the drawings attached to the product specification sheets listed in **Appendix A** to determine the type and number of drivers for a particular scoreboard model. Also refer to **Appendix B** for schematic drawings.

Note: For 19 VDC scoreboard driver tray components, refer to **Figure 9**.

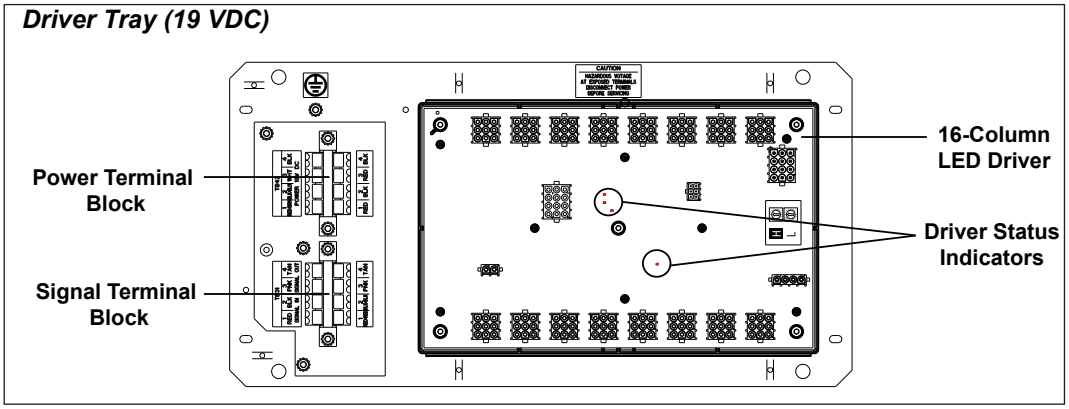


Figure 9: *16-Column Driver Tray Components (19 VDC)*

When troubleshooting driver problems, several LEDs provide diagnostic information. The number of LEDs and their function depends on the driver type.

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

16-Column "Gyrus" Drivers

LED	Function	Operation	Summary
DS1	Radio/ RS-232 RX	Blinking or off	DS1 will be blinking when the driver is receiving radio signal and off when there is no signal.
DS2	Status	Blinking	DS2 will be blinking at one second intervals to indicate the driver is running.
DS5	Signal RX	Blinking or off	DS5 will be blinking when the driver is receiving current loop signal and off when there is no signal.
DS8	Power	Steady on	DS8 will be on and steady to indicate driver has power.

16-Column Drivers (prior to April 2015) & 4-Column Drivers

LED	Color	Function	Operation	Summary
DS1 DS2 DS7	Green	Power	Steady on	DS1 (16-column) / DS2 (4-column) / DS7 (4-column MASC) will be on and steady to indicate the driver has power.
DS2 DS1 DS8	Red	Signal RX	Steady on or blinking	DS2 (16-column) / DS1 (4-column) / DS8 (4-column MASC) 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 (**not available on 4-column LED drivers**).

Replacing a Driver

1. Open the digit panel nearest the driver as described in **Component Locations and Access (p. 5)**.
2. Disconnect all plugs from the driver by squeezing the locking tabs together and pulling the connectors free. It may be helpful to label the cables or take a picture to know which plug goes to which jack when connecting the replacement driver.
3. Remove the nuts securing the driver to the driver tray.
4. Carefully lift the driver from the display and place it on a clean, flat surface.
5. Position a new driver over the screws and tighten the nuts.
6. Reconnect all plugs to their mating jacks on the driver. The connectors are keyed and will attach in one way only. Do not force the connections.
7. Ensure the new driver is set to the correct address. This will be the same address of the old driver being replaced. Refer to **Setting the Driver Address (p. 9)**.
8. Close and secure the access panel, and then power up and test the display to verify the issue has been resolved.

Setting the Driver Address

Reference Drawings:

Address Table, 1 Through 128..... **DWG-115078**
Address Table; Rotary Switches H and L..... **DWG-1198765**
Power and Address Details; Indoor Tennis Scoreboards..... **DWG-3019367**

Since the same LED drivers can be used for many display models, each driver must be set to receive the correct signal input, or address, for the model in which it is being used. The way the address is set depends on the driver type:

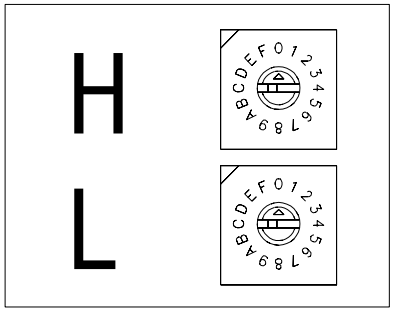


Figure 10: *Driver Address Dials*

- For 16-column "Gyrus" drivers, addresses are set through the S2 (L) and S3 (H) rotary switches on the driver (**Figure 10**) using a small flathead screwdriver. Refer to the tables below or an older driver being replaced to determine the correct address setting. Then see **DWG-1198765** in **Appendix C** for addressing information of driver addresses 1 – 255.
- For older 16-column and 4-column drivers, addresses are set with jumper wires in a 12-pin plug which mates with jack **J19** on the driver (**Figure 11**). It may be possible to reuse the same address plug from the driver that was replaced. If not, first refer to the tables below or an older driver being replaced to determine the correct address setting. Then see **DWG-115078** in **Appendix C** for a listing of the wire/pin connections for driver addresses 1 – 128.

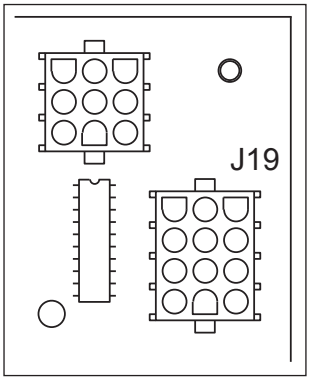


Figure 11: *J19 Address Jack*

Note: If an older 16-column driver needs replacement, it will be replaced by a new 16-column "Gyrus" driver. If it's not possible to reuse the same address plug, refer to the tables below to determine the correct address setting. Then see **DWG-1198765** in **Appendix C** for addressing information of driver addresses 1 – 255.

Model		Driver # & Address	
BB-2101	BB-2125		
BB-2102	BB-2126		
BB-2103	BB-2142		
BB-2104	BB-2143		
BB-2105	BB-2144		
BB-2106	BB-2146*	A1	17
BB-2107	BB-2147*		
BB-2108	BB-2153		
BB-2116	BB-2154		
BB-2121	BB-2155		
BB-2122	BB-2156		

Model		Driver # & Address	
BB-2109	BB-2130		
BB-2114	BB-2131	A1	1
BB-2115	BB-2152		
BB-2111	BB-2132	A1	1
		A2	2
BB-2117		A2	14
BB-2119		A2	17
BB-2123	BB-2124	A1	17
		A2	14

* These displays are composed of scoreboards and LED message centers. Refer to the message center manual for more information on specifications, operation, and servicing.

Model		Driver # & Address
SD-2101	SD-2102	Left (Home): A1 23 A2 24 Right (Guest): A1 25 A2 26
SD-2103	SD-2104	Left (Home): A1 23 A2 27 A3 24 Right (Guest): A1 25 A2 28 A3 26
SD-2106		A1 15
CU-2001		A1 11 A2 12

Model		Driver # & Address
SQ-2001		A1 11
H-2101 H-2111	H-2112	A1 71
H-2104 H-2105 H-2106	H-2107 H-2108 H-2109	A1 71 A2 72 A3 73
H-2102	H-2115	Left (Home): A2 72 Right (Guest): A3 73
H-2114		A1 74
TI-2030		A1 11
TI-2101	TI-2200	A1 1
TI-2102		A1 4
TI-2103		A1 97
VB-2101		A1 17
H-2103		N/A

Note: For addressing of tennis scoreboards for up to 18 courts, see **DWG-3019367**.

Multiple Drivers

Displays that require multiple drivers operate using a primary/secondary driver configuration. The two drivers have been designed to simply plug into one another, and this is done at the factory, so no additional on-site connection is necessary.

If it appears as though only a certain group of digits on the scoreboard is not functioning, there may be a problem with the secondary driver(s) or the power/signal connection from the other driver(s).

Note: The BB-2117 and BB-2119 require an interconnect cable connected to the driver in the BB-2116. Refer to appropriate schematics listed in **Appendix B**.

Radio Connections

To determine the radio connection settings between the display and control console, first power off any radio-equipped consoles in the area, then cycle power to the display, and watch for the radio settings. These settings appear in different locations based on the scoreboard layout:

- When using an **All Sport** console, the **RC-200** hand-held controller, or the **DAK Score** mobile app, the display will show "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 12**).
    - If there is no clock, the settings should appear in the Home and Guest score digits, but this may vary by scoreboard model.
- When using the **RC-100** hand-held controller, the display will show "CXX", where the XX is a channel from 01-15 (**Figure 12**). The default is channel 01.

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

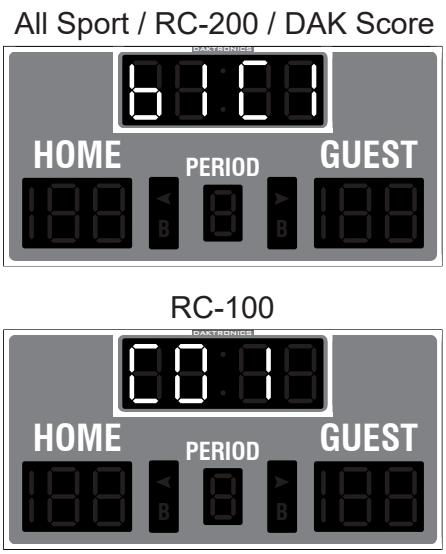
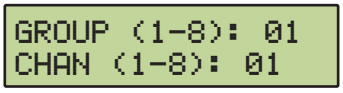


Figure 12: *Radio Settings in Clock Digits*

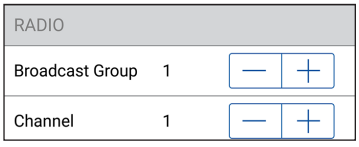
To make sure the console radio settings match the receiver in the display, refer to the appropriate control console manual.

All Sport Radio Settings



RC-200 Radio Settings

RC-100 Radio Settings



DAK Score App Settings

Radio Interference

If it has been determined that a nearby display's radio signal is interfering, the settings of the radio receiver or wireless base station inside the display(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 display. 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 **Component Locations and Access (p. 5)**.

The channel selection process varies depending on whether the display is equipped with or a radio receiver (All Sport 5000) or a wireless base station (RC-100/RC-200).

All Sport Radio Receiver

1. The radio receiver has a plastic cover with a window to view status indicators (**Figure 13**).

   Note: While it is necessary for the display to be powered on to check the indicators, always disconnect 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 14**.

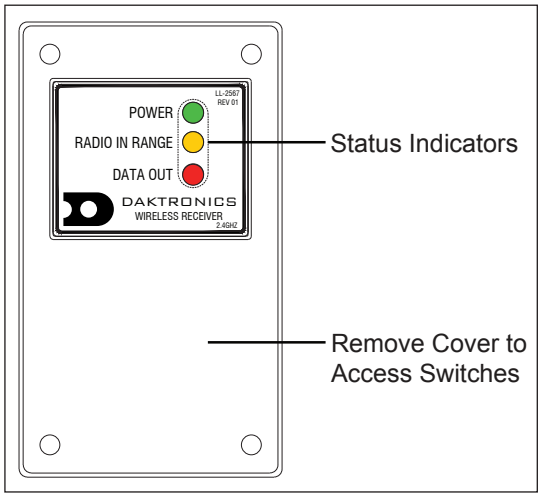


Figure 13: *Radio Receiver w/ Cover*

- 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".

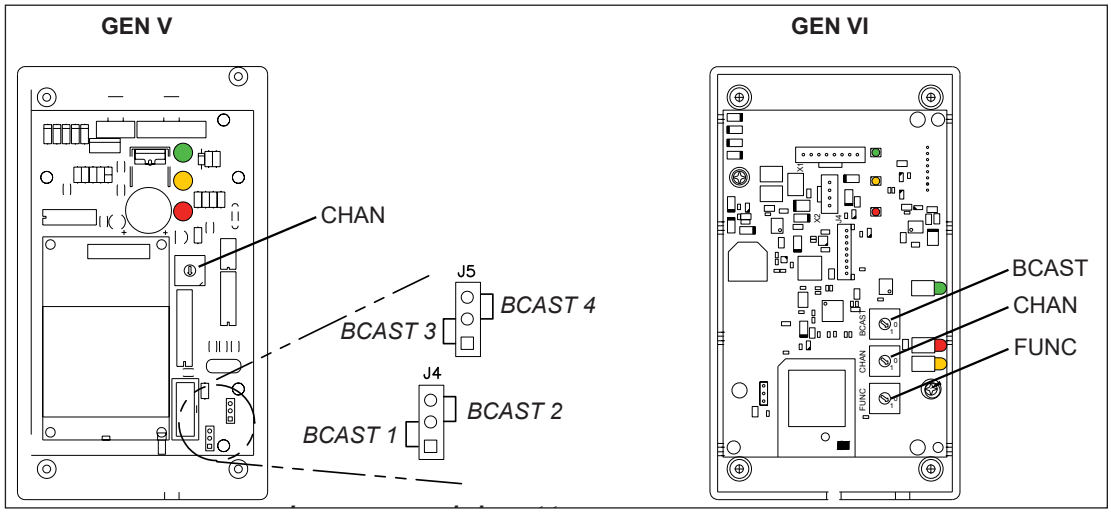


Figure 14: *Radio Receiver Switches*

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

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

RC-200 Base Station

1. The radio base station has a plastic cover with a window to view status indicators (**Figure 13**).

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

2. Remove the four screws in each corner using a #2 Philips screwdriver and lift off the cover.
3. Use a small flathead screwdriver to set the **CHAN** and **BCAST** switches to a new channel and broadcast group (1-8) as needed. The **FUNC** switch will typically be set to "2" for most scoring displays. Refer to **Figure 14**.
4. Screw the cover back on and securely close the access panel.
5. Enter the correct channel setting, broadcast group setting, and sport code into the RC-200 handheld controller to test the radio connection.

For more information, refer to the **Remote Control System RC-200 All Sport Operation Manual (**DD3572889**)**.

RC-100 Base Station

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

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

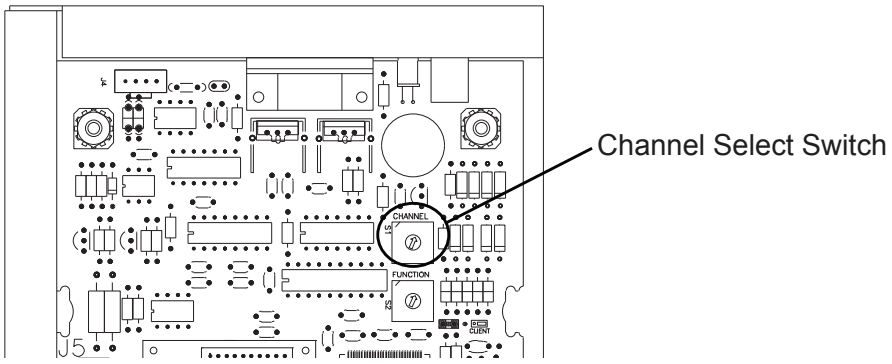


Figure 15: *Channel Select Switch (Internal Receiver)*

Segmentation and Digit Designation

Reference Drawings:

Segmentation, 7 Segment Bar Digit **DWG-38532**

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

The Electrical and Signal drawings and Component Location drawings also specify the driver connectors controlling the digits. Numbers shown in the upper half of each digit indicate which connector is wired to that digit.

Schematics

For advanced troubleshooting and repair, it may be necessary to consult the schematic drawings. Listed in **Appendix B**, schematic drawings show detailed power and signal wiring diagrams of internal display components such as drivers, horn interface cards, and transformers as well as optional components like TNMCs, radio receivers, and end of period (EOP) lighting.

Replacement Parts

The following table contains display components that may require replacement. Many of the other components will have attached part number labels.

Description	Part Number
Horn, 120V with capacitor	0A-1152-0332
16-Column LED Driver	0A-1782-0100
PanaView Digit, 5" Amber LED, 7-seg	0P-1150-0081
LED driver, 4-column (BB-2114 & TI-2103 only)	0P-1150-0130
PanaView Digit, 5" Red LED, 7-seg	0P-1150-0200
PanaView Digit, 5" Red LED, 2-seg	0P-1150-0254
16 VAC Red LED VHI	0P-1150-0267
PanaView B-Bonus Indicator, Amber LED	0P-1150-0217
PanaView Arrow, 3" Amber LED	0P-1150-0164
PanaView Arrow, 3" Red LED	0P-1150-0185
PanaView Digit, 7" White LED, 7-seg	0P-1150-0277
PanaView Digit, 10" White LED, 7-seg	0P-1150-0278
PanaView Digit, 13" White LED, 7-seg	0P-1150-0279
PanaView B-Bonus Indicator, White LED	0P-1150-0281
PanaView Arrow, 3" White LED	0P-1150-0282
PanaView Colon, White LED	0P-1150-0283
PanaView Digit, 13" White LED, 2-seg	0P-1150-0284
PanaView Digit, 10" White LED, 2-seg	0P-1150-0286
LED driver, 4-column (TI-2200 only)	0P-1192-0067
PanaView Digit, 7" Red LED, 7-seg	0P-1230-0048
PanaView Digit, 7" Amber LED, 7-seg	0P-1230-0049
PanaView Digit, 7" Red LED, 2-seg	0P-1230-0058
PanaView Digit, 7" Amber LED, 2-seg	0P-1230-0059
PanaView Digit, 10" Red LED, 7-seg	0P-1230-0050
PanaView Digit, 10" Amber LED, 7-seg	0P-1230-0051
PanaView Digit, 10" Red LED, 2-seg	0P-1230-0060
PanaView Digit, 10" Amber LED, 2-seg	0P-1230-0061
PanaView Digit, 13" Red LED, 7-seg	0P-1230-0052
PanaView Digit, 13" Amber LED, 7-seg	0P-1230-0053

Description	Part Number
PanaView Digit, 13" Red LED, 2-seg	0P-1230-0062
PanaView Digit, 13" Amber LED, 2-seg	0P-1230-0063
PanaView Digit, 18" Red LED, 7-seg	0P-1230-0056
PanaView Digit, 18" Amber LED, 7-seg	0P-1230-0057
PanaView Digit, 18" Red LED, 2-seg	0P-1230-0066
PanaView Digit, 18" Amber LED, 2-seg	0P-1230-0067
PanaView Colon, Red LED	0P-1230-0070
PanaView Colon, Amber LED	0P-1230-0071
UniView Digit, 7" Red LED, 7-seg	0P-1230-0023
UniView Digit, 7" Amber LED, 7-seg	0P-1230-0024
UniView Digit, 7" Red LED, 2-seg	0P-1230-0031
UniView Digit, 7" Amber LED, 2-seg	0P-1230-0032
UniView Digit, 10" Red LED, 7-seg	0P-1230-0025
UniView Digit, 10" Amber LED, 7-seg	0P-1230-0026
UniView Digit, 10" Red LED, 2-seg	0P-1230-0033
UniView Digit, 10" Amber LED, 2-seg	0P-1230-0034
UniView Digit, 13" Red LED, 7-seg	0P-1230-0027
UniView Digit, 13" Amber LED, 7-seg	0P-1230-0028
UniView Digit, 13" Red LED, 2-seg	0P-1230-0035
UniView Digit, 13" Amber LED, 2-seg	0P-1230-0036
UniView Digit, 18" Red LED, 7-seg	0P-1230-0040
UniView Digit, 18" Amber LED, 7-seg	0P-1230-0041
UniView Digit, 18" Red LED, 2-seg	0P-1230-0044
UniView Digit, 18" Amber LED, 2-seg	0P-1230-0045
UniView 1 Position Indicator, Red LED	0P-1230-0037
UniView 3 Position Indicator, Red & Amber LED	0P-1230-0038
UniView 1 Position Indicator, Amber LED	0P-1230-0039
UniView Colon, Red LED	0P-1230-0068
UniView Colon, Amber LED	0P-1230-0069
Digit; 13" Red LED, 7-seg w/ tenths, NBA	0P-1230-0143
Decimal, 2" Red LED, NBA	0P-1230-0144
PanaView Digit, 18" White LED, 7-seg	0P-1230-0145
PanaView Digit, 18" White LED, 2-seg	0P-1230-0160
Power supply, 12V, 85-264VAC, 150W	A-2855
Transformer, 115/230 V @ 2 A	T-1063
Transformer, 115/230 V @ 6.25 A	T-1066
Cable, 20' phone plug	W-1236
Cable, 50' phone plug	W-1237
Cable, 30' phone plug	W-1238
Cable, 10' phone plug	W-1340

Refer to **Section 4: Daktronics Exchange and Repair & Return Programs (p. 21)** for information on exchanging or returning parts.

3 TNMC and Electronic Caption Troubleshooting

Disconnect power before doing any repair or maintenance work on the display. Permit only qualified service personnel to access internal display electronics. Disconnect power when not using the display.

Display Overview

Team Name Message Centers (TNMCs) are programmable LED displays that can show custom Home and Guest names or messages of about 15 characters in place of static vinyl captions. TNMCs are typically factory-installed, but they can also be added later, after the scoreboard has been mounted. Characters are shown on one line using single- or double-stroke fonts 6" (152 mm) or 8" (203 mm) high.

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.

TNMCs and electronic captions (**Figure 16**) are both available with red, amber, or white LEDs. Refer to the table below for additional message center specifications.

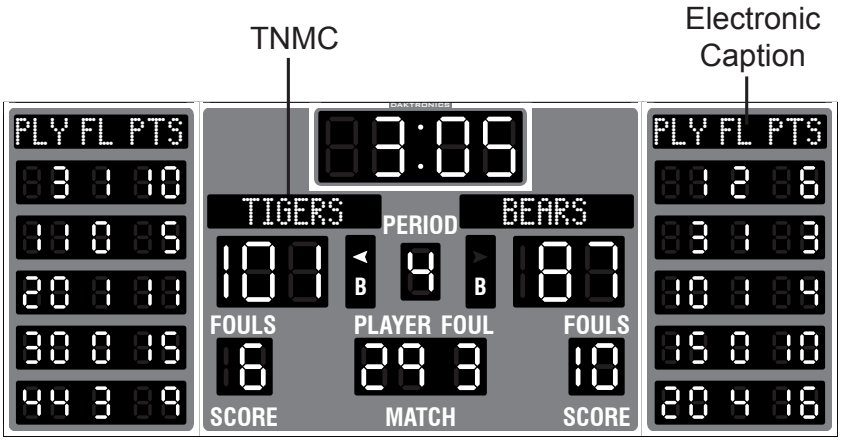


Figure 16: *Basketball Scoreboard with TNMCs and Electronic Captions*

Matrix Size	Weight*	# of 8x16 Modules	Active Display Area	Pixel Spacing
8x48	15 lb (7 kg)	3	6" x 36" (152 mm x 914 mm)	0.75" (19 mm)
8x16	15 lb (7 kg)	1	6" x 12" (152 mm x 305 mm)	
8x48**	20 lb (9 kg)	3	8" x 48" (203 mm x 1219 mm)	1" (25 mm)
8x32***	15 lb (7 kg)	2	8" x 32" (203 mm x 813 mm)	

* Weight shown is for a pair of displays.
** Only used on BB-2116 and H-2101.
*** Only used on tennis scoreboards.

Initialization Information at Startup

Each time the display is powered up and there is no All Sport signal present, the display runs through an initialization process during which it tests all LEDs and addresses. The message center first displays 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.

Troubleshooting

The table below lists potential problems with the display and indicates 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.

Problem	Solution/Items to Check
One or more LEDs on a single module fails to light or turn off.	Check/replace the ribbon cables on the module.
	Replace the module. See **Replacing a Component (p. 18)**.
A section of the display is not working; section extends all the way to the right side of the display.	Replace the first module/driver on the left side of the first module that is not working. See **Replacing a Component (p. 18)** and **Display Drivers (p. 19)**.
	Replace the second module that is not working. See **Replacing a Component (p. 18)**.
	Replace the power supply assembly on the first module that is not working. See **Replacing a Component (p. 18)**.
	Check/replace the ribbon cables running to the first module that is not working.
One row of modules does not work or is garbled.	Replace the first module. See **Replacing a Component (p. 18)**.
	Replace the display driver. See **Display Drivers (p. 19)**.
A group of modules which shares the same power supply assembly fails to work.	Replace the power supply assembly. See **Replacing a Component (p. 18)**.
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.
	Replace the display driver. See **Display Drivers (p. 19)**.

Power and Signal Summary

Reference Drawings:

Assembly and Pwr/Sig Routing; 3/4" TNMC **DWG-1130367**
Assembly and Pwr/Sig Routing; 1" TNMC **DWG-1130368**
Assembly and Pwr/Sig Routing; Elec Captions **DWG-1130784**
Assembly and Pwr/Sig Routing; 3/4" TNMC, 19VDC **DWG-1153430**
Schematic; 3/4" (6") TNMC or Electronic Caption **DWG-3342435**
Schematic; 1" (8") TNMC or Electronic Captions **DWG-3342995**

Refer to **DWG-1130367** and **DWG-3342435** in **Appendix C** for detailed assembly and schematic diagrams about display power and signal routing of displays with 3/4" pixel spacing.

Refer to **DWG-1153430** and **DWG-3342435** in **Appendix C** for detailed assembly and schematic diagrams about display power and signal routing of displays with 3/4" pixel spacing in 19 VDC scoreboards.

Refer to **DWG-1130368** and **DWG-3342995** in **Appendix C** for detailed assembly and schematic diagrams about display power and signal routing of displays with 1" pixel spacing.

Refer to **DWG-1130784** in **Appendix C** for detailed assembly diagrams about display power and signal routing of basketball scoreboards with electronic captions.

Display signal routing can be summarized as follows:

1. Data from the All Sport console (or DakTennis software) travels via signal cable (or radio) into the scoreboard.
2. The signal then travels through the driver, typically re-driven from the driver **TB-31** to the current loop interface (CLI) cards located on the right-hand module of each display and then to the first LED module via ribbon cable.
3. The signal relays from module to module via ribbon cable in daisy-chain style until it reaches the last module in the message display.

Display power routing can be summarized as follows:

1. Incoming power from the power cord terminates at the main scoreboard LED driver tray.
2. Using interconnect harnesses, the power for TNMCs is passed from the driver tray to the Home display power supply, and then to the Guest display power supply. In statistic display electronic captions, each power supply receives power from a separate driver.
3. Power from the power supplies is relayed to all display modules.
4. The modules draw their power directly from the power supply assemblies; the display driver receives power out from the first module via ribbon cable.

Replacing a Component

1. Remove the screws on either side of the display face panel that secure it to the scoreboard. Carefully remove the face panel from the cabinet, as there will be several cables connected to it.
2. Disconnect all power/signal cables from the component by squeezing together the locking tabs and pulling the connectors free. It may be helpful to label the cables or take a picture to know which cable goes to which connector when reattaching.
3. Remove the hardware securing the component to the display face panel.

> **Note:** In order to replace the right-most module circuit board (when viewing the display from the front), the power supply bracket and driver circuit board must be removed from it first.

4. Position a new component on the display face panel and tighten the hardware.
5. Reconnect all power/signal connectors.
6. Power up and test the scoreboard/display to verify the issue has been resolved.

Refer to **Figure 17** for display assembly, showing the power supply, driver, and modules.

> **Note:** When replacing power supplies built after April 2016 (for 3/4" TNMCs) or August 2016 (for 1" TNMCs), the replacement power supply will come attached to a mounting plate that mounts to the existing power supply bracket.

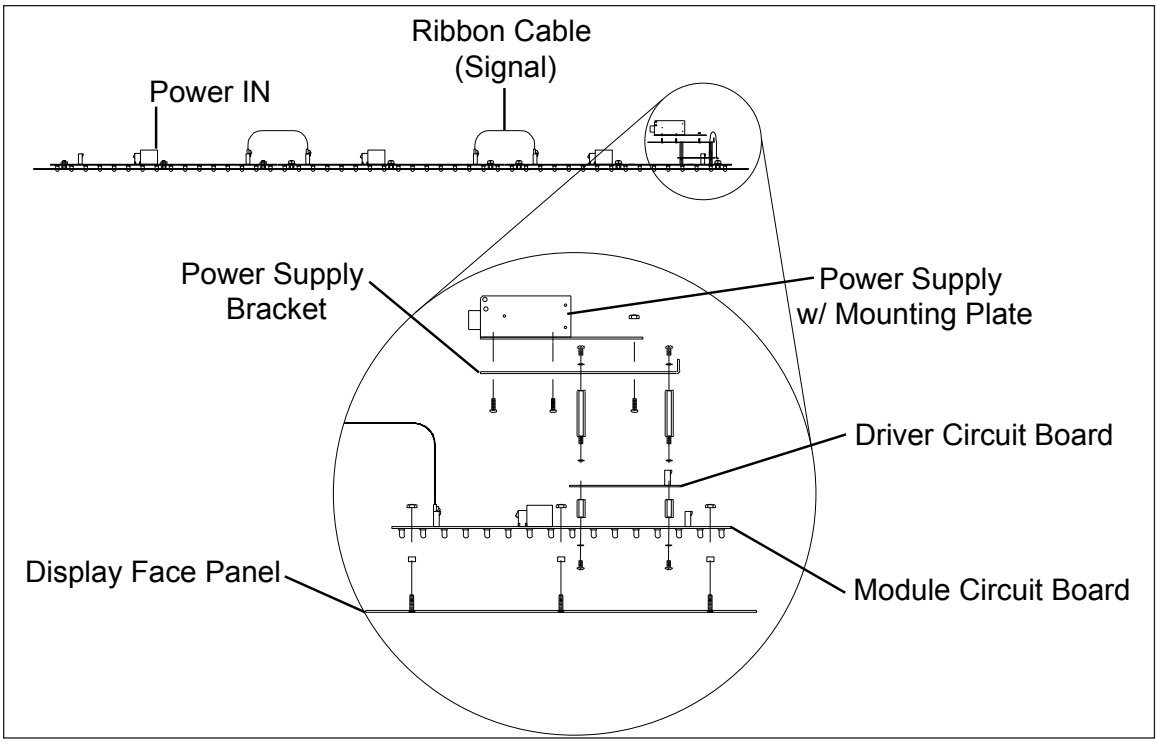


Figure 17: *Display Assembly, Top View*

Display Drivers

Reference Drawings:

A/S 5000 Capable TNMC Shift Card; Specifications **DWG-123794**
Power and Address Details; Indoor Tennis Scoreboards..... **DWG-3019367**

Display drivers, also known as controllers or shift cards, use a 12-pin plug that mates with jack **J4** to set the address. For TNMCs, the address plug is set to 1 (221). A typical Player-Foul-Points electronic caption for statistics displays uses address 3 (223) while a scoreboard with electronic captions uses address 8 (228). Pin 11 on the address plug selects whether to show Home data (connected) or Guest data (not connected). Refer to **DWG-123794** in **Appendix C** for addressing information.

> **Note:** Refer to **DWG-3019367** for TNMC addressing information of tennis systems with up to 12 courts.

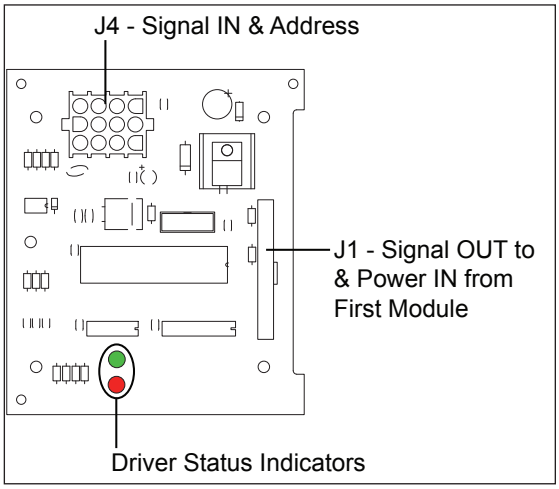


Figure 18: *Display Driver*

Figure 18 illustrates some of the primary jacks and indicators of a display driver.

Diagnostic LEDs

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

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

LED Name	Color	Illumination Summary
DS1 PWR	Green	Steady on or blinking when the driver has power
DS2 RX	Red	Steady on or blinking when the driver is receiving and off when there is no current loop (CL) signal

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.
- **Corrosion:** Check the paint, and look for possible corrosion.

Make repairs or take corrective action immediately if any of the preceding conditions are present.

Replacement Parts

The following table contains display components that may require replacement. Many of the components within the display also have attached part number labels.

Description	Part Number
Indoor TNMC Card	0P-1150-0206
Module; 8x16, Amber (1")	0P-1186-0104
Module; 8x16, Red (1")	0P-1186-0111
Module; 8x16, Amber (0.75")	0P-1186-0112
Module; 8x16, Red (0.75")	0P-1186-0204
Module; 8x16, White (0.75")	0P-1186-0207
Module; 8x16, White (1")	0P-1186-0208
Power Supply with Plate (replacement for 3/4" mods after April 2016)	0A-1192-5515
Power Supply with Plate (replacement for 1" mods after April 2016)	0A-1192-5516
Power Supply; 5V @ 8A 85-264 VAC (for 0.75" mods)	A-3220300
Power Supply; 12V @ 8.4A 85-264 VAC (for 1" mods)	A-3259407
Cable; 18 pos, Ribbon, 6"	W-1320

Refer to **Section 4: Daktronics Exchange and Repair & Return Programs (p. 21)** for information on exchanging or returning parts.

4 Daktronics Exchange and Repair & Return Programs

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 Manufactured/Installed: _____

Daktronics Customer ID Number: _____

To participate in the Exchange Program, follow these steps:

1. **Call Daktronics Customer Service.**

   United States & Canada: 1-800-DAK-TRON (325-8766)

   Outside the U.S. & Canada: +1-605-275-1040

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

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

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 Daktronics Customer Service.**

   United States & Canada: 1-800-DAK-TRON (325-8766)

   Outside the U.S. & Canada: +1-605-275-1040

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

5. **Ship to:**

   Daktronics Customer Service

   [Case #]

   201 Daktronics Drive, Dock E

   Brookings, SD 57006

Daktronics Warranty & Limitation of Liability

The Daktronics Warranty & Limitation of Liability is located at the end of this manual. The Warranty is independent of Extended Service agreements and is the authority in matters of service, repair, and display operation.

A Specifications

Click the links below to view the product specification sheets for the scoreboards in this manual. Product-specific mechanical and electrical drawings are included with each spec sheet.

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

Model	Spec Sheet	Model	Spec Sheet	Model	Spec Sheet	Model	Spec Sheet
BB-2101	DD2481847	BB-2126	DD2481913	H-2106	DD2541499	TN-2503	DD2650454
BB-2102	DD2481850	BB-2130	DD2481915	H-2107	DD2541501	TN-2504	DD2650457
BB-2103	DD2481852	BB-2131	DD2481917	H-2108	DD2541505	TN-2505	DD2650463
BB-2104	DD2481853	BB-2132	DD2481921	H-2109	DD2541516	TN-2560	DD2650465
BB-2105	DD2481855	BB-2142	DD2481922	H-2111	DD2541518	TN-2561	DD2650467
BB-2106	DD2481859	BB-2143	DD2481927	H-2112	DD2541519	TN-2562	DD2650469
BB-2107	DD2481865	BB-2144	DD2481929	H-2114	DD2541521	TN-2563	DD2650470
BB-2108	DD2481866	BB-2146	DD2481933	H-2115	DD2541522	VB-2101	DD2568754
BB-2109	DD2481869	BB-2147	DD2481936	SD-2101	DD2481954		
BB-2111	DD2481872	BB-2152	DD2061941	SD-2102	DD2481956		
BB-2114	DD2481873	BB-2153	DD2213495	SD-2103	DD2481959		
BB-2115	DD2481875	BB-2154	DD2475304	SD-2104	DD2481962		
BB-2116	DD2481881	BB-2155	DD2457495	SD-2106	DD2481964		
BB-2117	DD2481884	BB-2156	DD2475313	SQ-2001	DD2962304		
BB-2119	DD2481889	CU-2001	DD1862875	TI-2030	DD1747844		
BB-2121	DD2481893	H-2101	DD2541481	TI-2101	DD2594852		
BB-2122	DD2481896	H-2102	DD2541488	TI-2102	DD2594853		
BB-2123	DD2481901	H-2103	DD2541491	TI-2103	DD2889079		
BB-2124	DD2481909	H-2104	DD2541494	TI-2200	DD2594855		
BB-2125	DD2481911	H-2105	DD2541497	TN-2501	DD2650450		

For shot clocks built prior to February 2016, refer to these component location drawings:

Model	Drawing
BB-2109	1066474
BB-2111	1066476
BB-2114	1066481
BB-2115	1066704
BB-2130	1066714
BB-2131	1066721
BB-2132	1066726
BB-2152	1059565

For shot clocks built between February 2016 and May 2022, refer to these drawings:

Model	Mechanical Specification	Component Location
BB-2114	3267937	3272581
BB-2115	3267938	3272582

19 VDC Model Specifications

Note that the following 19 VDC scoreboards have different power requirements than those shown on the product specification sheets. Any models not shown below are not available with 19 VDC power.

Model		Power
BB-2101 BB-2103 BB-2105 BB-2107 BB-2114 BB-2115 BB-2116 BB-2117 BB-2119	BB-2121 BB-2122 BB-2125 BB-2130 BB-2142 BB-2143 BB-2144 BB-2152	200 Watts, 10 Amps
H-2101 H-2102 H-2111	H-2114 H-2115	

Model	Power
H-2103	H-2102 or H-2115 required for power
SD-2106	200 Watts, 10 Amps
CU-2001	
TI-2030 TI-2101 TI-2102	
VB-2101	

B Schematics

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

Basketball & Stat Displays

Model		Schematic Drawing		
		120 VAC	240 VAC	19 VDC
BB-2101 BB-2102 BB-2103 BB-2104 BB-2105 BB-2106 BB-2107 BB-2108 BB-2121	BB-2122 BB-2125 BB-2126 BB-2142 BB-2143 BB-2144 BB-2146 BB-2147	3346561 3013427*	3346565 3022578*	3386182 3057374*
BB-2153 BB-2154	BB-2155 BB-2156	3346564 1130381*	3346568 1130382*	N/A
BB-2116 BB-2117	BB-2119	3346563 3024355*	3346567 3024737*	N/A
BB-2123	BB-2124	3346569 3024247*	3346571 3024671*	N/A
SD-2101 SD-2102	SD-2103 SD-2104	3346570 3022678*	3346572 3024710*	N/A
SD-2106		3346561 3013427*	3346565 3022578*	3386182 3057374*

*Prior to April 2016

Hockey

Model		Schematic Drawing		
		120 VAC	240 VAC	19 VDC
H-2101 H-2111	H-2112	3346561 3013427*	3346565 3022578*	3386182 3057374*
H-2104 H-2105 H-2106	H-2107 H-2108 H-2109	3346569 3024247*	3346571 3024671*	N/A
H-2102 H-2114	H-2115	3346562 3024301*	3346566 3024645*	N/A
H-2103		N/A		

*Prior to April 2016

Shot Clocks

Model		Schematic Drawing		
		120 VAC	240 VAC	19 VDC
BB-2109	BB-2131	4551491 1046900*	4592568 1046897*	N/A
BB-2111	BB-2132	4542645 1046901*	4592567 1046898*	N/A
BB-2114		5022110 4551636** 1045157*	5022964 4592139** 1045160*	4996517
BB-2130	BB-2152	4542718 1045024*	4552604 1045148*	N/A
BB-2115		5022807 4542718** 1045024*	5022999 4552604** 1045148*	1153816

*Prior to February 2020
**February 2020 to May 2022

Timing Displays

Model		Schematic Drawing		
		120 VAC	240 VAC	19 VDC
TI-2101 TI-2102	TI-2030	3346561 3013427*	3346565 3022578*	3386182 3057374*
TI-2103		1184553	N/A	
TI-2200		195063	N/A	

*Prior to April 2016

Tennis

Model		Schematic Drawing		
		120 VAC	240 VAC	19 VDC
TN-2501		1196490		3044485
TN-2503 TN-2504	TN-2505	3346561 3013427*	3346565 3022578*	3386182 3057374*
TN-2560	TN-2561	Team Score: 1097081		N/A
TN-2562	TN-2563	Team Score: 1110522		N/A

*Prior to April 2016

Volleyball

Model	Schematic Drawing		
	120 VAC	240 VAC	19 VDC
VB-2101	3346561 3013427*	3346565 3022578*	3386182 3057374*

*Prior to April 2016

Squash

Model	Schematic Drawing		
	120 VAC	240 VAC	19 VDC
SQ-2001	1196490		3044485

Curling

Model	Schematic Drawing		
	120 VAC	240 VAC	19 VDC
CU-2001	3346569 3024247*	3346571 3024671*	N/A

*Prior to April 2016

Team Name Message Centers & Electronic Captions

Pixel Spacing	Schematic Drawing
3/4"	3342435 1132254*
1"	3342995 1133209*

*Prior to April 2016

C Drawings

Refer to **Resources (p. 1)** for information regarding how to read the drawing number. Any contract-specific drawings take precedence over the general drawings.

Reference Drawings:

Segmentation, 7 Segment Bar Digit 38532
Address Table, 1 Through 128 115078
4 Column LED Driver II; Specifications 123783
4 Column MASC LED Driver Specifications 166216
A/S 5000 Capable TNMC Shift Card; Specifications 123794
16 Column LED Driver II Specifications 126174
Assembly and PWR/SIG Routing; 3/4" TNMC 1130367
Assembly and PWR/SIG Routing; 1" TNMC 1130368
Assembly and PWR/SIG Routing; Elec Captions 1130784
Assembly and PWR/SIG Routing; 3/4" TNMC, 19VDC 1153430
Address Table; Rotary Switches H and L 1198765
Power and Address Details; Indoor Tennis Scoreboards 3019367
Specifications; Gyrus LED Driver, 16 Col 3071833
Schematic; 3/4" (6") TNMC or Electronic Caption 3342435
Schematic; 1" (8") TNMC or Electronic Captions 3342995

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D Daktronics Warranty & Limitation of Liability

This section includes the Daktronics Warranty & Limitation of Liability statement (SL-02374).

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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 and End User agree 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 (the "End User", which may also be the Purchaser) 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 End User 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 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 End User DDP Daktronics designated facility per Incoterms® 2020. If returned Equipment is repaired or replaced under the terms of this Warranty, Daktronics will prepay ground transportation charges back to End User and shall ship such items DDP End User's designated facility per Incoterms® 2020; otherwise, End User shall pay transportation charges to return the Equipment back to the End User and such Equipment shall be shipped Ex Works Daktronics designated facility per Incoterms® 2020. All returns must be pre-approved by Daktronics before shipment. Daktronics shall not be obligated to pay freight for any unapproved return. End User 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. Unless otherwise expressly provided, this Warranty does not impose any duty or liability upon Daktronics for partial LED pixel degradation. Notwithstanding the foregoing, in no event does this Warranty include LED pixel degradation caused by UV light. This Warranty does not 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, OR ACCURACY OR QUALITY OF DATA. OTHER ORAL OR WRITTEN INFORMATION OR ADVICE GIVEN BY DAKTRONICS, ITS AGENTS OR EMPLOYEES, SHALL NOT 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

This Warranty does not impose any duty or liability upon Daktronics for any:

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

B. damage caused by: (i)the improper handling, installation, adjustment, use, repair, or service of the Equipment, or (ii) any physical damage which includes, but is not limited to, missing, broken, or cracked components resulting from non-electrical causes;

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altered, scratched, or fractured electronic traces; missing or gauged solder pads; cuts or clipped wires; crushed, cracked, punctured, or bent circuit boards; or tampering with any electronic connections, provided that such damage is not caused by 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) improper power including, without limitation, 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;

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. 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 End User and are not part of the contract of sale;

G. 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. replenishment of spare parts. In the event the Equipment was purchased with a spare parts package, the parties acknowledge and agree that the spare parts package is designed to exhaust over the life of the Equipment, and as such, the replenishment of the spare parts package is not included in the scope of this Warranty;

I. security or functionality of the End User's network or systems, or anti-virus software updates;

J. performance of preventive maintenance;

K. 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;

L. incorporation of accessories, attachments, software or other devices not furnished by Daktronics; or

M. paint or refinishing the Equipment or furnishing material for this purpose.

3. **Limitation of Liability**

A. 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.

B. 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 claims asserting or based on (a) loss of use of the facility or equipment; lost business, revenues, or profits; loss of goodwill; failure or increased cost of operations; loss, damage or corruption of data; loss resulting from system or service failure, malfunction, incompatibility, or breaches in system security; or (b) 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, injury to property or any damages or sums paid 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

C. In no event shall Daktronics be liable 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. The End User'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

A. The Warranty contained herein extends only to the 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; Election of Remedies

A. 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. The parties consent to the application of the laws of the State of South Dakota to govern, interpret, and enforce each of the parties' 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.

B. Any dispute, controversy or claim arising from or related to this Warranty, the parties shall first attempt to settle through negotiations. In the event that no resolution is reached, then such dispute, controversy, or claim shall be resolved by final and binding arbitration under the Rules of Arbitration of the International Chamber of Commerce. The language of the arbitration

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shall be English. The place of the arbitration shall be Sioux Falls, SD. A single arbitrator selected by the parties shall preside over the proceeding. If a single arbitrator cannot be agreed upon by the parties, each party shall select an arbitrator, and those arbitrators shall confer and agree on the appointed arbitrator to adjudicate the arbitration. The arbitrator shall have the power to grant any provisional or final remedy or relief that it deems appropriate, including conservatory measures and an award of attorneys' fees. The arbitrator shall make its decisions in accordance with applicable law. By agreeing to arbitration, the Parties do not intend to deprive any court of its jurisdiction to issue a pre-arbitral injunction, pre-arbitral attachment, or other order in aid of arbitration proceedings and the enforcement of any award. Without prejudice to such provisional remedies as may be available under the jurisdiction of a court, the arbitrator shall have full authority to grant provisional remedies and to direct the Parties to request that any court modify or vacate any temporary or preliminary relief issued by such court, and to award damages for the failure of any Party to respect the arbitrator's orders to that effect.

6. Availability of Extended Service Agreement

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

Additional Terms applicable to sales outside of the United States

The following additional terms apply **only** where the installation site of the Equipment is located outside of the United States of America.

1. In the event that the installation site of the Equipment is in a country other than the U.S.A., then, notwithstanding Section 5 of the Warranty, where the selling entity is the entity listed in Column 1, then the governing law of this Warranty is the law of the jurisdiction listed in the corresponding row in Column 2 without regard to its conflict of law principles. Furthermore, if the selling entity is an entity listed in Column 1, then the place of arbitration is listed in the corresponding row in Column 3.

Column 1 (Selling Entity)	Column 2 (Governing Law)	Column 3 (Location of Arbitration)
Daktronics, Inc.	The state of Illinois	Chicago, IL, U.S.A.
Daktronics Canada, Inc.	The Province of Ontario, Canada	Toronto, Ontario, Canada
Daktronics UK Ltd.	England and Wales	Bristol, UK
Daktronics GmbH	The Federal Republic of Germany	Wiesbaden, Germany
Daktronics Hong Kong Limited	Hong Kong, Special Administrative Region of the P.R.C.	Hong Kong SAR
Daktronics Shanghai Co., Ltd.	The Peoples Republic of China	Shanghai, P.R.C.
Daktronics France, SARL	France	Paris, France
Daktronics Japan, Inc.	Japan	Tokyo, Japan
Daktronics International Limited	Macau, Special Administrative Region of the P.R.C.	Macau SAR
Daktronics Australia Pad Ltd	Australia	Sydney, Australia
Daktronics Singapore Pte. Ltd	Singapore	Singapore
Daktronics Brazil LTDA	Brazil	São Paulo, Brazil
Daktronics Spain S.L.U.	Spain	Madrid, Spain
Daktronics Belgium N. V	Belgium	Kruibeke, Belgium
Daktronics Ireland Co. Ltd.	Ireland	Dublin, Ireland

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