

**COLORSMART®**  
**INDOOR LED SCOREBOARDS**  
SERVICE MANUAL

P1763

DD2507404  
Rev 07  
25 August 2021

Models		
BB-3101	BB-3114	BB-3146
BB-3102	BB-3115	BB-3147
BB-3103	BB-3121	SD-3101
BB-3104	BB-3123	SD-3102
BB-3105	BB-3124	SD-3103
BB-3106	BB-3125	SD-3106
BB-3107	BB-3126	TI-3103
BB-3108	BB-3142	

## 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

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# 1 Introduction

This manual explains the troubleshooting and service of Daktronics ColorSmart® 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.16)**. This manual is not specific to a particular installation.

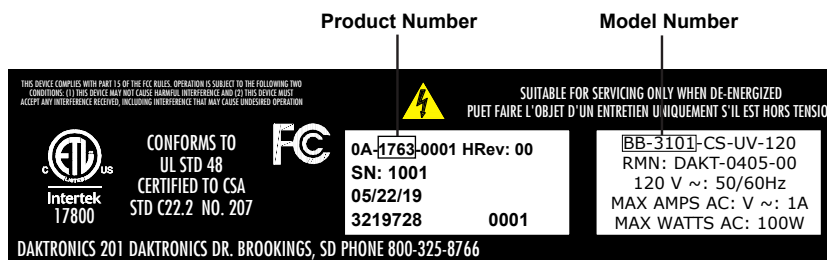
## Important Safeguards

- **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.

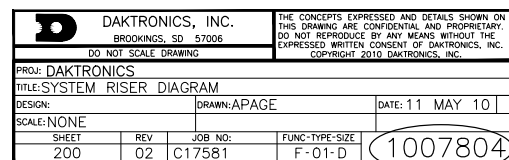


**Figure 1:** Specifications Label

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.



**Drawing Number**

**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.

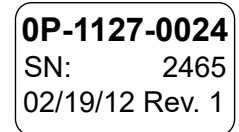
Listed below are drawing types commonly used by Daktronics, along with the information typically provided. All drawings referenced in this manual are found in the appendices.

- **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.10)**, use the label to order a replacement. Refer to **Section 4: Daktronics Exchange and Repair & Return Programs (p.16)** 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-XXXXXXX
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 120 VAC power.
	No power to the control console	Ensure the console is plugged into a 120 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 120 VAC power.
		Check that the red DS2 LED on the driver lights up when sending commands from the controller; see <b>LED Drivers (p.6)</b> .
	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 <b>POWER</b> and amber <b>RADIO IN RANGE</b> 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 120 VAC power.
		Check that the red DS2 LED on the driver lights up when sending commands from the controller. See <b>LED Drivers (p.6)</b> .
		Exchange the driver with a working one of the same part #. Replace if necessary. See <b>LED Drivers (p.6)</b> .
	No power to driver	Check that the green DS1 LED on the driver remains lit up when the display is powered on. See <b>LED Drivers (p.6)</b> .

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 <b>All Sport 5500 Control Console Operation Manual (ED-16809)</b> .
	Incorrect driver address	Ensure all drivers are set to the correct address. See <b>Setting the Driver Address (p.7)</b> .
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 DS2 LED on the driver lights up when sending commands from the controller. See <b>LED Drivers (p.6)</b> .
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 <b>Replacing Digits (p.5)</b> .
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 <b>Replacing Digits (p.5)</b> or <b>LED Drivers (p.6)</b> .
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 <b>Radio Connections (p.8)</b> .
	Radio Interference	There may be other radio transmissions in the area that overpower the console. If it is not possible to disable the interfering device, it may be necessary to run a wired signal connection instead.
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.

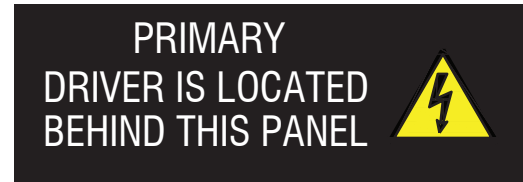


Figure 4: Power Warning Label

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. To replace a digit circuit board (**Figure 5**):

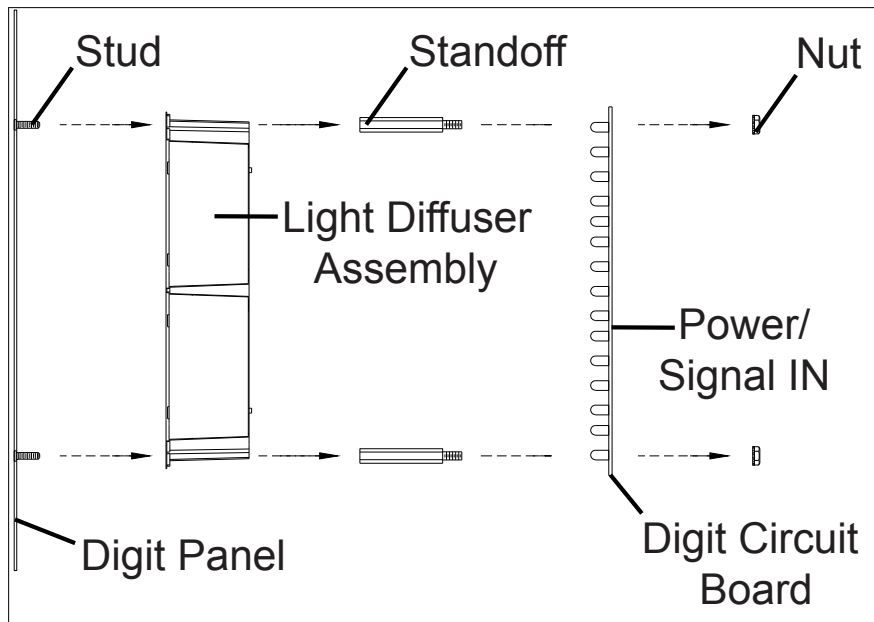


Figure 5: UniView Digit Assembly

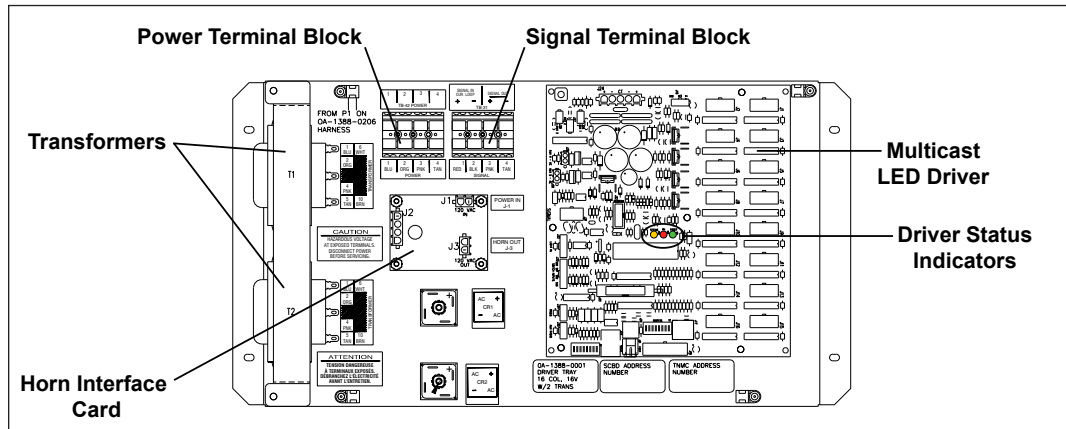
1. Open the digit panel as described in **Component Locations and Access (p.5)**.
2. Disconnect the 9-pin plug from the back of the digit by squeezing the locking tabs together and pulling the connector free.
3. Use a 9/32" nut driver to remove the nuts securing the digits to the aluminum standoffs, 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 four screws, and then power up and test the display to verify the issue has been resolved.

# LED Drivers

## Reference Drawings:

- 4 Column LED Driver II; Specifications ..... **DWG-123783**
- Specifications; Driver, MCAST, 16 Col..... **DWG-284554**

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 6** to view the location and components of a driver tray.



**Figure 6:** Driver Tray Components

All ColorSmart scoreboards and ColorSmart-compatible statistics displays use 16-column Multicast 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.

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.

LED	Color	Function	Operation	Summary
DS1 DS2	Green	Power	Steady on	DS1 (16-column) / DS2 (4-column) will be on and steady to indicate the driver has power.
DS2 DS1	Red	Signal RX	Steady on or blinking	DS2 (16-column) / DS1 (4-column) will be on or blinking when the driver is receiving a signal and off when there is no signal.
DS3	Amber	Status	Blinking	DS3 (16-column) will be blinking at one second intervals to indicate the driver is running ( <b>not available on 4-column LED drivers</b> ).

- Refer to **DWG-284554** in **Appendix C** for detailed driver pin out/switch specifications of 16-column drivers.
- Refer to **DWG-123783** in **Appendix C** for detailed driver pin out/switch specifications of 4-column drivers.

## Replacing a Driver

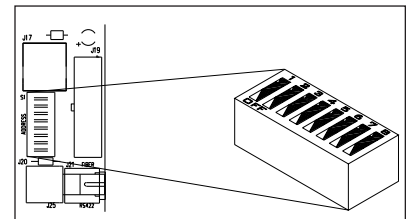
1. Open the digit panel nearest the driver as described in **Component Locations and Access (p.5)**.
2. Disconnect all plugs from the driver by squeezing the locking tabs together and pulling the connectors free. It may be helpful to label the cables or take a picture to know which plug goes to which 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.7)**.
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.....	<b>DWG-115078</b>
Address Table; Driver, MCAST, Address Jack .....	<b>DWG-284771</b>
Address Table; Driver, MCAST, Add DIP Switch.....	<b>DWG-284772</b>

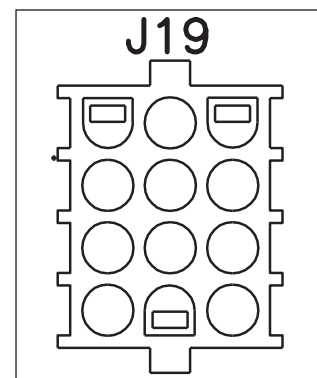
Since the same LED drivers can be used for many display models, each driver must be set to receive the correct signal input, or address, for the model in which it is being used. Addresses are set through the **S1** DIP switch on the driver (**Figure 7**) using a pen or small, pointed object.



**Figure 7:** Driver Address DIP Switch

When setting the driver address, first refer to the tables on the following page to determine the correct address setting of the driver(s) in a particular scoreboard model. Then see **DWG-284772** in **Appendix C** for addressing information for driver addresses 1 – 128.

ColorSmart and 4-column LED drivers also have the option of setting the address using jumper wires in a 12- or 16 pin plug which mates with jack **J19** on the driver (**Figure 8**). It may be possible to reuse the same address plug from the driver that was replaced. If not, first refer to the tables on the following page to determine the correct address setting of the driver(s) in a particular scoreboard model. Then see **DWG-284771** in **Appendix C** for a listing of the wire/pin connections for driver addresses 1 – 128 for ColorSmart drivers, or refer to **DWG-115078** for 4-column LED drivers.



**Figure 8:** J19 Address Jack

Model		Driver # & Address	
BB-3101	BB-3108	A1	17
BB-3102	BB-3121		
BB-3103	BB-3125		
BB-3104	BB-3126		
BB-3105	BB-3142		
BB-3106	BB-3146*		
BB-3107	BB-3147*		
BB-3123	BB-3124	A1	17
		A2	14

Model	Driver # & Address	
SD-3101 SD-3102	Left (Home):	
	A1	23
	A2	24
	Right (Guest):	
	A1	25
	A2	26
BB-3114	A1	2
BB-3115	A1	1
TI-3103	A1	1

Model	Driver # & Address	
SD-3103	Left (Home):	
	A1	23
	A2	27
	A3	24
	Right (Guest):	
	A1	25
	A2	28
	A3	26
SD-3106	A1	15

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

## Multiple Drivers

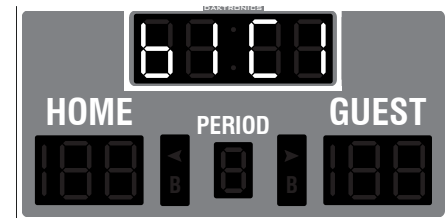
Displays that require multiple drivers operate using a primary/secondary driver configuration. The two drivers have been designed to simply plug into one another, and this is done at the factory, so no additional on-site connection is necessary.

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).

## 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:

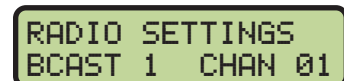
- When using the **All Sport 5500** console, the display will show "bX CY" where X is the Broadcast group number and Y is the Channel number. The default is b1C1.
  - If there is a clock, the settings appear in the first four clock digits (**Figure 9**).
  - If there is no clock, the settings should appear in the Home and Guest score digits, but this may vary by scoreboard model.



**Figure 9:** Radio Settings in Clock Digits

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

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

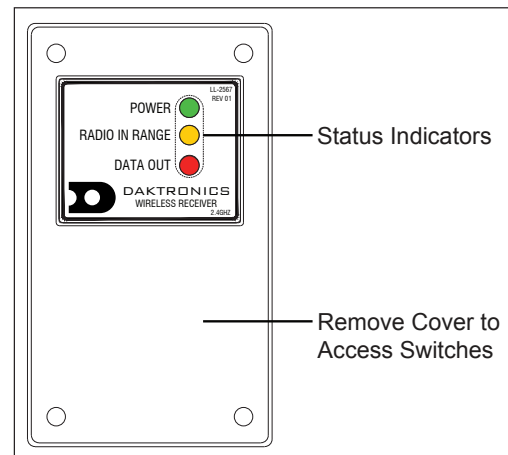


## Radio Interference

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

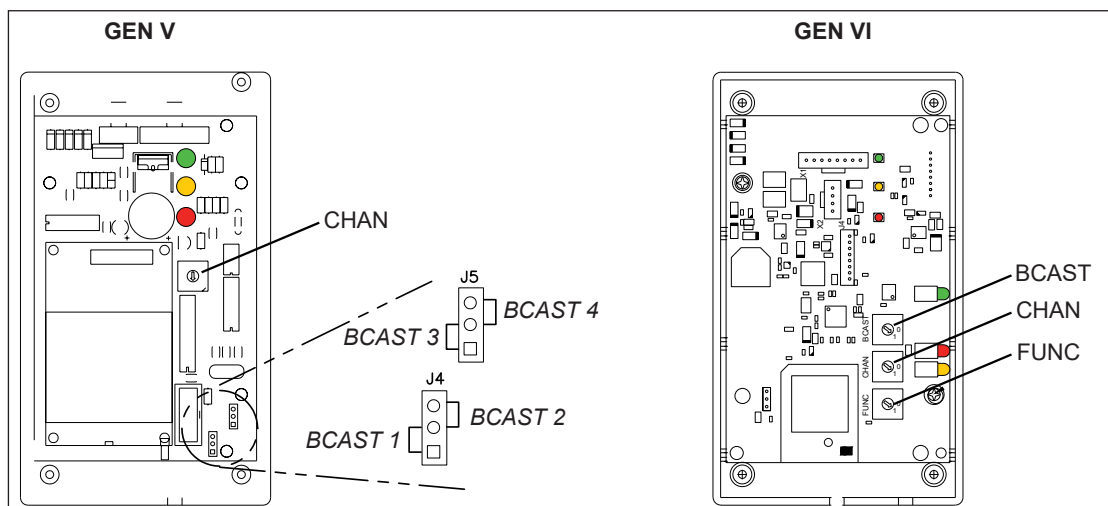
1. To locate the radio receiver, simply look for the black antenna sticking out the front of the display. Component Location drawings also show the exact position where the radio receiver will be mounted.
2. Open the access panel to which the receiver is attached as described in **Component Locations and Access (p.5)**.
3. The radio receiver has a plastic cover with a window to view status indicators (**Figure 10**).

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



**Figure 10:** 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 11**.
  - 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 11:** Radio Receiver Switches

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

# Segmentation and Digit Designation

## Reference Drawings:

- Segmentation, 7 Segment Bar Digit ..... **DWG-38532**
- Segmentation, Color or Mono 7 Segment Digit..... **DWG-308053**

In each digit, certain LEDs always go on and off together. These groupings of LEDs are referred to as segments. **DWG-38532** and **DWG-308053** in **Appendix C** detail which connector pin is wired to each digit segment and the wiring color code used throughout the display.

The drawings attached to the product specification sheets listed in **Appendix A** 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
Digit, 13" UniView, red LED, 7-seg	0P-1230-0027
LED driver, MCAST, 16-column	0P-1388-0100
LED driver, MCAST, 4-column	0P-1388-0101
Digit, 7" ColorSmart, red LED, 7-seg	0P-1388-1018
Digit, 7" ColorSmart, amber LED, 7-seg	0P-1388-0020
Digit, 7" ColorSmart, multicolor LED, 7-seg	0P-1388-1017
Digit, 7" ColorSmart, red LED, 2-seg	0P-1388-1030
Digit, 7" ColorSmart, amber LED, 2-seg	0P-1388-0032
Digit, 7" ColorSmart, multicolor LED, 2-seg	0P-1388-1029
Digit, 10" ColorSmart, red LED, 7-seg	0P-1388-1303
Digit, 10" ColorSmart, amber LED, 7-seg	0P-1388-0304
Digit, 10" ColorSmart, multicolor LED, 7-seg	0P-1388-1302
Digit, 10" ColorSmart, red LED, 2-seg	0P-1388-1307
Digit, 10" ColorSmart, amber LED, 2-seg	0P-1388-0308
Digit, 10" ColorSmart, multicolor LED, 2-seg	0P-1388-1306
Digit, 13" ColorSmart, red LED, 7-seg	0P-1388-1311
Digit, 13" ColorSmart, amber LED, 7-seg	0P-1388-0312
Digit, 13" ColorSmart, multicolor LED, 7-seg	0P-1388-1310
Digit, 13" ColorSmart, red LED, 2-seg	0P-1388-1315
Digit, 13" ColorSmart, amber LED, 2-seg	0P-1388-0316

Description	Part Number
Digit, 13" ColorSmart, multicolor LED, 2-seg	0P-1388-1314
Colon, 1 pos red LED	0P-1388-0319
Colon, 1 pos amber LED	0P-1388-0320
Colon, 1 pos multicolor LED	0P-1388-1318
Indicator, 1 pos red LED	0P-1388-0025
Indicator, 1 pos amber LED	0P-1388-0026
Indicator, 3 pos amber/red	0P-1388-0027
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.16)** for information on exchanging or returning parts.

### 3 TNMC and Electronic Caption Troubleshooting

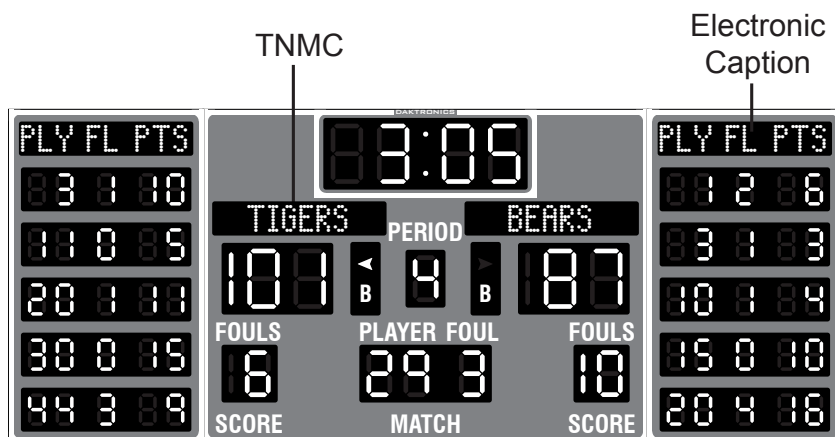
Disconnect power before doing any repair or maintenance work on the display.  
 Permit only qualified service personnel to access internal display electronics.  
 Disconnect power when not using the display.

#### 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) 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.

Primary TNMC matrix size is 8x48 with 0.75" (19 mm) pixel spacing. **Figure 12** shows examples of both TNMCs and electronic captions.



**Figure 12:** 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)

\* Weight shown is for a pair of displays.

#### 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 <b>Replacing a Component (p.14)</b> .
A section of the display is not working; section extends all the way to the right side of the display	Replace the first module on the right side of the first module that is not working. See <b>Replacing a Component (p.14)</b> .
	Replace the second module that is not working. See <b>Replacing a Component (p.14)</b> .
	Replace the power supply assembly on the first module that is not working. See <b>Replacing a Component (p.14)</b> .
	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 <b>Replacing a Component (p.14)</b> .
A group of modules which shares the same power supply assembly fails to work.	Replace the power supply assembly. See <b>Replacing a Component (p.14)</b> .
Entire display fails to work.	Check for proper line voltage into the power termination panel.
	Check/replace the ribbon cable from the driver to the modules.
	Check the voltage settings on the power supplies.
	Check/replace the signal cable to the driver.

## Power and Signal Summary

### Reference Drawings:

Address Table; Driver- MCAST- TNMC DIP Switch.....	<b>DWG-284773</b>
Schematic; 3/4" (6") M-CAST TNMC Set Or Electronic Caption .....	<b>DWG-1133307</b>
Assembly and Pwr/Sig Routing; 3/4" TNMC, MCAST .....	<b>DWG-1133639</b>

Refer to **DWG-1133307** and **DWG-1133639** in **Appendix C** for detailed assembly and schematic diagrams about display power and signal routing of displays with 3/4" pixel spacing.

Display signal routing can be summarized as follows:

1. Data from the All Sport console travels via signal cable (or radio) into the scoreboard.
2. The signal then travels through the driver and out to the first LED module of the Home display via ribbon cable harness.
3. The signal relays from module to module via ribbon cable in daisy-chain style until it reaches the last module in the Guest display. In electronic captions, the Home and Guest displays receive signal from separate drivers.

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 **S2** DIP switch package on the main scoreboard driver sets the display driver address. Refer to **DWG-284773** in **Appendix C** for the location and functions of the **S2** DIP switch.

- For TNMCs, switches 1-4 of **S2** are set to OFF, which equals address 221. With Switch 5 off, Home information is displayed. With Switch 5 on, Guest information is displayed.
- For electronic captions, a typical Player-Foul-Points display uses address 223, with Switch 2 and Switch 5 both on.

## Component Locations and Access

To access the internal components of the display, simply remove the screws on either side of the face panel that secure it to the scoreboard. Carefully remove the face panel from the scoreboard, as there will be several cables connected to it.

## Replacing a Component

Display modules consist of LEDs embedded in a circuit board. One or more circuit boards are mounted to the back of a display face panel. Do not attempt to remove individual LEDs. In the case of malfunctioning LEDs, replace the entire module circuit board.

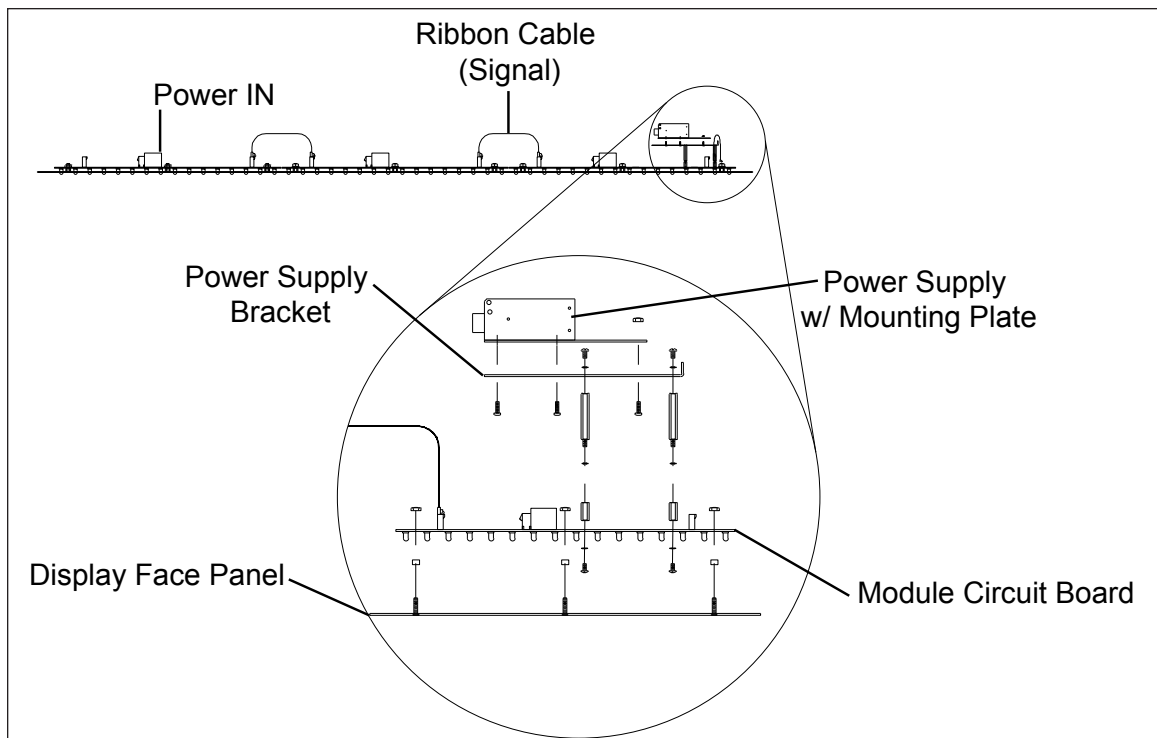
1. Access the internal components as described in **Component Locations and Access (p.14)**.
2. Disconnect all power/signal cables from the component by squeezing together the locking tabs and pulling the connectors free. It may be helpful to label the cables or take a picture to know which cable goes 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 must be removed 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 13** for display assembly, showing the power supply, driver, and modules.

**Note:** When replacing power supplies built after April 2016, the replacement power supply will come attached to a mounting plate that mounts to the existing power supply bracket.



**Figure 13:** Display Assembly, Top View

## 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
Module; 8x16, Amber (0.75")	0P-1186-0112
Power Supply with Plate (replacement for 3/4" mods after April 2016)	0A-1192-5515
Cable; 18 pos, Ribbon, 6"	W-1320

Refer to **Section 4: Daktronics Exchange and Repair & Return Programs (p.16)** 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.

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## 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
BB-3101	<a href="#">DD2506515</a>	BB-3114*	<a href="#">DD2506553</a>	BB-3146	<a href="#">DD2506590</a>
BB-3102	<a href="#">DD2506524</a>	BB-3115	<a href="#">DD2506570</a>	BB-3147	<a href="#">DD2506594</a>
BB-3103	<a href="#">DD2506529</a>	BB-3121	<a href="#">DD2506571</a>	SD-3101	<a href="#">DD2506601</a>
BB-3104	<a href="#">DD2506532</a>	BB-3123	<a href="#">DD2506573</a>	SD-3102	<a href="#">DD2506604</a>
BB-3105	<a href="#">DD2506535</a>	BB-3124	<a href="#">DD2506578</a>	SD-3103	<a href="#">DD2506606</a>
BB-3106	<a href="#">DD2506540</a>	BB-3125	<a href="#">DD2506580</a>	SD-3106	<a href="#">DD3451128</a>
BB-3107	<a href="#">DD2506542</a>	BB-3126	<a href="#">DD2506583</a>	TI-3103	<a href="#">DD3264172</a>
BB-3108	<a href="#">DD2506550</a>	BB-3142	<a href="#">DD2506587</a>		

\*For models built prior to October 2018, refer to [DWG-1066728](#).

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## 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
BB-3101	BB-3108	<a href="#">3355804</a> <a href="#">1134877*</a>
BB-3102	BB-3121	
BB-3103	BB-3125	
BB-3104	BB-3126	
BB-3105	BB-3142	
BB-3106	BB-3146	
BB-3107	BB-3147	
BB-3123	BB-3124	
SD-3101	SD-3102	<a href="#">3356240</a> <a href="#">1135077*</a>
SD-3103		<a href="#">3356242</a> <a href="#">1135082*</a>
SD-3106		<a href="#">3355804</a> <a href="#">1134877*</a>

\*Prior to April 2016

### Shot Clocks

Model	Schematic Drawing
BB-3114	<a href="#">1045157</a>
BB-3115	<a href="#">1122009</a>

### Timing Displays

Model	Schematic Drawing
TI-3103	<a href="#">1184553</a>

### Team Name Message Centers & Electronic Captions

Pixel Spacing	Schematic Drawing
3/4"	<a href="#">3342550</a> <a href="#">1133307*</a>

\*Prior to April 2016

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## 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 .....	<a href="#"><u>38532</u></a>
Address Table, 1 Through 128.....	<a href="#"><u>115078</u></a>
4 Column LED Driver II; Specifications .....	<a href="#"><u>123783</u></a>
Specifications; Driver, MCAST, 16 Col.....	<a href="#"><u>284554</u></a>
Address Table; Driver, MCAST, Address Jack .....	<a href="#"><u>284771</u></a>
Address Table; Driver, MCAST, Add DIP Switch.....	<a href="#"><u>284772</u></a>
Address Table; Driver- MCAST- TNMC DIP Switch.....	<a href="#"><u>284773</u></a>
Segmentation, Color or Mono 7 Segment Digit.....	<a href="#"><u>308053</u></a>
Assembly and PWR/SIG Routing; 3/4" TNMC, MCAST .....	<a href="#"><u>1133639</u></a>

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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;

# DAKTRONICS WARRANTY & LIMITATION OF LIABILITY

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



# DAKTRONICS WARRANTY & LIMITATION OF LIABILITY

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	Kruikeke, Belgium
Daktronics Ireland Co. Ltd.	Ireland	Dublin, Ireland

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