

**DATETIME® DF-1012 TIME &
TEMPERATURE DISPLAY**

INSTALLATION AND
OPERATION MANUAL

P1279

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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.

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DAKTRONICS

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1 Introduction

This manual provides installation and service information for Daktronics DataTime® DF-1012 Time & Temperature displays.

Please read and understand all steps in this manual before beginning the installation process. Complete the steps in this manual in order. Contact Daktronics Technical Support with any questions before or during the installation process.

Safety Precautions

- Read and understand these instructions before installing the display.
- Do not drop the controller or allow it to get wet.
- Properly ground the display with a ground rod at the sign location.
- Disconnect power when the display is not in use.
- Disconnect display power before servicing power supplies to avoid electrical shock.
- Do not modify the display structure or attach any panels or coverings without the express written consent of Daktronics.

Figure 1 shows a label found inside the display where the model number and power requirements are located. When calling Daktronics Customer Service, have this information available to ensure a request is serviced quickly.



Figure 1: Display Identification Label

Product Overview

DataTime® displays show temperatures in Fahrenheit or Celsius (three digits, degree symbol, and F or C character) and 12- or 24-hour time. These displays feature:

- Front accessibility
- LEDs to illuminate numeric digits
- Maximum power usage is 180 W using a 120 V power input
- Cabinets constructed of heavy-gauge aluminum
- Black digit faceplates set directly into the surface of the display
- DM-100 handheld controller operation; refer to **Section 6: DM-100 Controller (p.20)** for operating instructions

Display model numbers are defined as follows:

DF-1012-HH-C		
DF-1012	=	Outdoor Digit Display Product Series
HH	=	Digit height in inches (10, 13, 18, 24)
C	=	LED Color- R (Red) or A (Amber)

Mounting weights and dimensions for each model are listed in **Mechanical Installation Overview (p.2)**.

2 Mechanical Installation

Daktronics engineering staff must approve any changes that may affect the display's weather tightness. Before any modifications are made, submit detailed drawings of the changes to Daktronics for evaluation and approval or the warranty will be void.

Daktronics is not responsible for the installation or the structural integrity of support structures done by others. The customer must ensure that a qualified structural engineer approves the structure and any additional hardware.

Mechanical Installation Overview

Mechanical installation typically consists of mounting the display and any accompanying panels to the support structure.

Weights and dimensions for each model are shown below.

120 V AC				
Model	Dimensions (H x W x D) Feet - Inches (Meters)	Uncrated Weight Pounds (kg)	Digit Size	Watts
DF-1012-10-R or A	1'-3" x 3' x 6" (0.39 x 0.89 x 0.16)	25 (10)	10	90
DF-1012-13-R or A	1'-6" x 4' x 6" (0.46 x 1.22 x 0.16)	27 (12)	13	100
DF-1012-18-R or A	2' x 5' x 6" (0.61 x 1.53 x 0.16)	43 (20)	18	130
DF-1012-24-R or A	2'-6" x 6'-6" x 6" (0.77 x 1.99 x 0.16)	58 (26)	24	180

230 V AC				
Model	Dimensions (H x W x D) Feet - Inches (Meters)	Uncrated Weight Pounds (kg)	Digit Size	Max. Watts
DF-1012-10-R or A	1'-3" x 3' x 6" (0.39 x 0.89 x 0.16)	25 (10)	10	90
DF-1012-13-R or A	1'-6" x 4' x 6" (0.46 x 1.22 x 0.16)	27 (12)	13	100
DF-1012-18-R or A	2' x 5' x 6" (0.61 x 1.53 x 0.16)	43 (20)	18	130
DF-1012-24-R or A	2'-6" x 6'-6" x 6" (0.77 x 1.99 x 0.16)	58 (26)	24	180

Support Structure Design

DataTime® displays are designed for wall or pole mounting, but every installation is different. Actual site demands dictate the appropriate mounting method. DataTime® DF-1012 models are designed to be inserted into an existing sign cabinet or for rear attachment using the threaded inserts in the rear of the display.

Lifting the Display

Hand lift displays into the support structure.

Note: Daktronics assumes no liability for display damage or injury resulting from incorrect setup or incorrect lifting methods.

Temperature and Light Sensor

Reference Drawings:

Installation, Temp Sensor, G3 **DWG-184840**
Time and Temp Power/Signal Hookup..... **DWG-938369**

All DataTime® series displays use a light sensor to regulate dimming functions and a temperature sensor to collect and display temperature information. Temperature and light-monitoring electronics are located in the sensor housing shown in **Figure 2**.

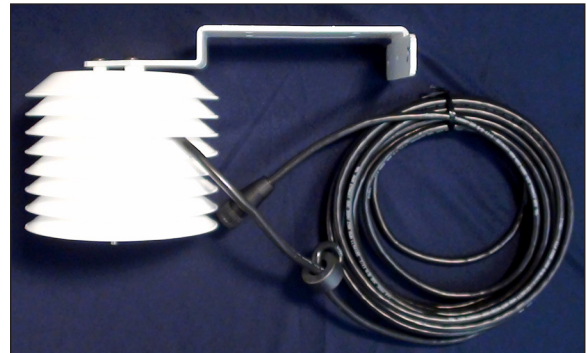


Figure 2: Temperature Sensor Housing and Cable

The Daktronics Controller Area Network (CAN) Temperature/Light Sensor is pre-installed in a protective housing. The assembly includes the sensor, mounting bracket, and cabling with a quick-connect plug. Instructions that follow

describe the placement and connection of the device. Review the wiring diagram and connection illustration in **DWG-184840** before beginning.

Dimming decreases overall display intensity, both for better display viewing and to prolong LED life. Set the brightness level highest during the day and lower at night.

Locating the Temperature Sensor

Refer to **Figure 3**, **Figure 4**, and **Figure 5** for recommendations.

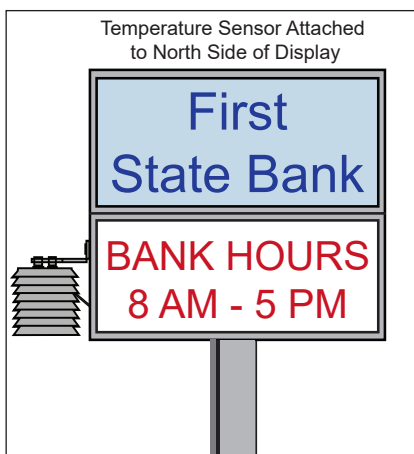


Figure 3: Temperature Sensor Mounted on Display

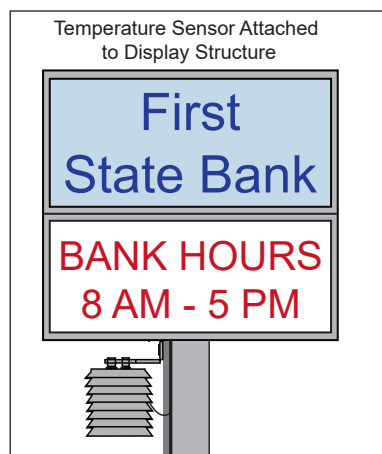


Figure 4: Temperature Sensor Mounted on Structure

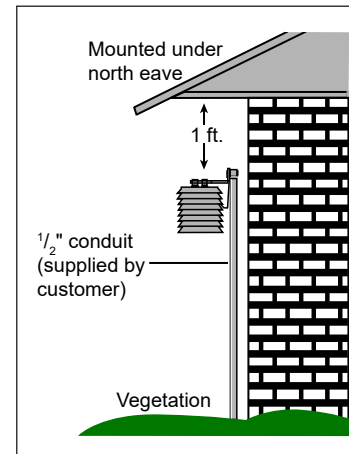


Figure 5: Temperature Sensor Mounted Under North Eave

Recommendations and Requirements

- Locate the sensor under a north eave or on a northern exposure, away from direct sunlight and above grass. Additional shade usually provided by a northern exposure results in more accurate temperature readings.
- If locating the sensor on a northern exposure is not possible, mount the sensor on the display or somewhere on the display structure. (This works best with light-colored displays.) Locate the sensor above, below, or on the northern edge of the display to keep the sensor shaded as much as possible. Sensor readings are more accurate if there is grass below the sign, rather than concrete or asphalt.
- Locate the sensor away from chimneys, air conditioners, vents, tar roofs, concrete, and parking lots, all of which can cause abnormal temperature fluctuations and incorrect sensor readings. For accurate readings under these conditions, keep a separation of at least 20-30' (6.1-9.1 m) horizontally and 8' (2.4 m) vertically between the sensor and the influential element.
- Do not mount the sensor in locations that restrict air movement.
- When a display has two faces, do not mount the sensor between them.

Connecting the Temperature Sensor

After properly locating the sensor, follow these steps to connect it to the display:

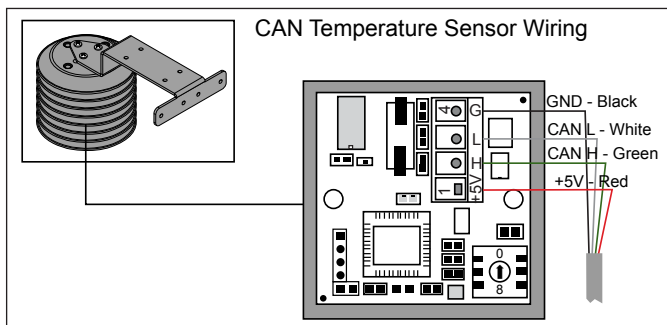
1. The temperature sensor is equipped with outdoor-rated cable that has a 4-pin quick-connect plug on the end. Route the cable from the sensor to the rear of the display.
2. Connect the sensor cable to the mating 4-pin quick-connect jack located on the rear of the display. Refer to the **Shop Drawing** for the exact location of the jack. After plugging in the sensor cable, be sure to tighten the connector collar.
3. Secure additional cable to prevent the quick-connect plug from being pulled out of the display and to protect it from weather or vandalism.

Note: The temperature sensor is equipped with 25' (7.6 m) of cable. The cable can be shortened and then re-terminated. Alternately, the cable may be extended to a distance of 750' (230 m) using a four-conductor shielded cable. When not using the provided weather-resistant cable, route the cable in conduit from the sensor to the display.

Connection to the Sensor

If it is necessary to reconnect shorter or longer wires to the temperature sensor terminal block, refer to **Figure 6** and the table for the correct pinout.

Note: Make sure the power is off before making any connections.



Wiring to Temperature Sensor		
Wire Color	Terminal Block Pin Number	Function
Red	Pin 1	+5 V
Green	Pin 2	CAN H
White	Pin 3	CAN L
Black	Pin 4	GND

Figure 6: Temperature Sensor Connection

Connection from Sensor to the Display Driver

If the distance from the temperature sensor to the display is greater than the provided 25' (7.6 m) cable, connect a 4-conductor shielded cable from the sensor to TB1 on the display driver board.

1. Ensure display power is **OFF** when attaching the internal sensor cable to the host driver.
2. Connect the temperature sensor to the terminal block (TB1) on the host driver. Refer to **Figure 7** and the table for the correct pinout.

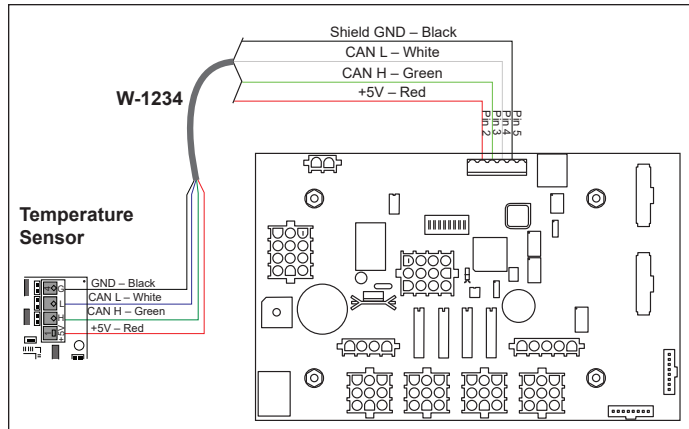


Figure 7: Temperature Sensor to Display Driver Connections

Connections from Temperature Sensor to Host Driver			
Temperature Sensor (TB1)	Wire Color	Function	Host Driver (TB1)
Pin 1	Red	+5 V	Pin 2
Pin 2	Green	CAN H	Pin 3
Pin 3	White	CAN L	Pin 4
Pin 4	Black	GND	Pin 5

3 Electrical Installation

Warnings and Disclaimers

- Ensure that all electrical work meets or exceeds all local or national electrical codes.
- Provide the required power to the display as listed on the product labels, specifications, or site-specific riser drawings. The conductor size may vary based on the length of the power run.
- Consider implementing a separate circuit for the display using an isolation transformer or dedicated transformer.
- Daktronics assumes no liability for any issues caused by line voltage fluctuations or other improper power conditions.

Important Notes:

- Only qualified individuals should perform power and signal routing to the display and termination at the display.
- Daktronics engineering staff must approve all proposed changes, or the warranty will be void.
- Improper installation could result in serious damage to the equipment and could be hazardous to personnel.

Preparing for Power/Signal Connection

Reference Drawing:

Time and Temp Power/Signal Hookup..... **DWG-938369**

Electrical installation includes the following steps:

- Provide power and ground to a disconnect near the display.
- Route power and ground from main disconnect to display driver/power enclosure.
- Connect display ground to ground electrode at display location.
- Route control signal cable from control location to display location.

DWG-938369 provides instructions for power and signal connections, including connection of the temperature sensor and connections between host and client displays. Refer to this drawing before completing the electrical installation.

Power Connections

DataTime® displays have removable or hinged front panels that allow access to the digits, cabling, and other electronic components.

A dedicated, 120 V circuit (or 230 V for international use) is required for incoming power. The display has no breakers or fuses.

WARNING: Fuse the display circuit at 15 A. Design all conductors to pass a 15 A current in normal operation. Failure to meet wiring and over current protection device requirements violate the National Electrical Code and voids the display's warranty.

Grounding

All components of a display system – including but not limited to displays, control equipment, and connected peripheral equipment – must be electrically grounded. Only qualified individuals may perform electrical work, including verification of ground resistance. Daktronics is not responsible for improper grounding or damage incurred as a result of improper grounding.

Grounding methods must meet the provisions of all applicable local and national codes. Inspect and verify all grounding methods meet the provisions of all applicable local and national codes.

Proper grounding is necessary for reliable equipment operation and general electrical safety. Failure to properly ground the display system may void the warranty, disrupt operation, damage equipment, and cause bodily harm or death.

There are two types of power installation: installation with ground and neutral conductors provided, and installation with only a neutral conductor provided. These two power installations differ slightly, as described in the following subsections:

Installation with Ground and Neutral Conductors Provided

For this type of installation, the power circuit must contain an isolated earth-ground conductor. In this circumstance, do not connect neutral to ground at the disconnect or at the display as this would violate electrical codes and void the warranty.

Use a disconnect so that all ungrounded lines can be disconnected. The local and national electrical codes may require using a lockable power disconnect at or within sight of the display.

Installation with Only a Neutral Conductor Provided

Installations where no grounding conductor is provided must comply with local and national electrical codes. If the installation meets all requirements, observe the following guidelines:

- Connect the grounding electrode cable at the local disconnect, never at the display driver/power enclosure.
- Use a disconnect that opens all of the ungrounded phase conductors.

Lightning Protection

The use of a disconnect near the display location to completely cut all current-carrying lines significantly protects the circuits against lightning damage. Local and national electrical codes may also require it. In order for this system to provide protection, the power must be disconnected when the display is not in use.

The DM-100 controller should also be disconnected from power and from the signal junction box when the system is not in use. The same surges that may damage the display components can also damage the controller's circuitry.

Signal Connection

Reference Drawings

4 Column MASC LED Driver Specifications	DWG-166216
Enclosed Driver, 4 Column Reference	DWG-938300
Time and Temp Power/Signal Hookup.....	DWG-938369

Route power and signal cables into the display through the 7/8" knockouts with 1/2" conduit fittings on the sides or back panels of all DataTime® display cabinets. All power and signal wiring terminates at the driver enclosure.

Turn the latches on the hinged doors to open the display cabinet. To access the driver enclosure, open the door and remove the cover. Refer to the **Shop Drawings** for the display access location.

DWG-938300 provides a complete review of power and signal connections for direct connection to the displays. **DWG-166216** provides connection specifications for the four-column drivers used in all DataTime® displays. Power and signal connections, illustrated in **Figure 8**, are similar for both drivers.

Host/Client Definitions

Reference Drawings:

4 Column MASC LED Driver Specifications	DWG-166216
Host/Client Definitions	DWG-185236

Designate one driver at each installation as the host driver, which receives its signal directly from the DM-100 controller on its Signal IN terminals. It is the only driver connected to the photo/temperature sensor. The Signal OUT terminals on the host driver connect to the client driver. The client can re-drive this signal to other drivers.

Insert the Protocol-4 plug into the 5-pin protocol jack (J20) to designate the host driver. Refer to **Figure 8** or **DWG-166216** for the location of the protocol jack.

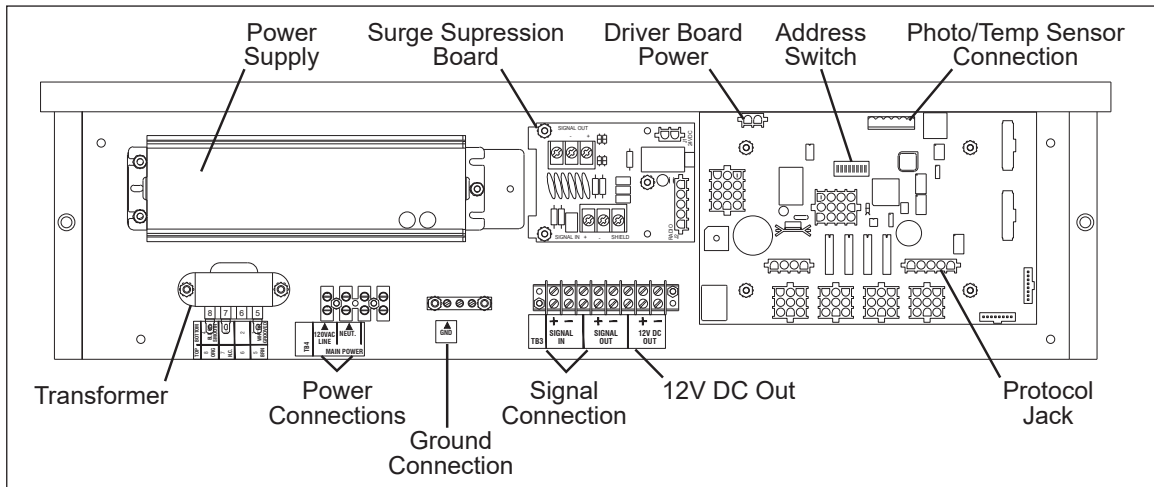


Figure 8: DataTime Driver Enclosure with 4-Column Driver

Direct – Outdoor Connection

Reference Drawings:

Riser Diagram, Outdoor Wire Control, Data Time/Mas.....	DWG-164988
Enclosed Driver, 4 Column Reference	DWG-938300
Time and Temp Power/Signal Hookup.....	DWG-938369

A direct-controlled display uses a current loop connection from the J-box at the base of the display to the driver enclosure in the display. All power and signal wiring terminates at the driver enclosure. The DM-100 controller receives power from the display. **DWG-164988** shows the display layout.

Note: Route the cable from the J-box to the display through conduit or the display pole to protect it from weather and vandalism.

1. Mount the J-box at the display.
2. Insert the Protocol-4 plug into the five-pin protocol jack (J20) to select the host driver.
3. Route a 6-conductor, 18 AWG shielded signal cable through conduit from the J-box to the driver enclosure in the host display (50' [15.2 m] of signal wire is provided).
4. Connect the signal wire from the J-box to the driver enclosure. Refer to **Figure 9** and the table. **DWG-938300** and **DWG-938369** provide more information.

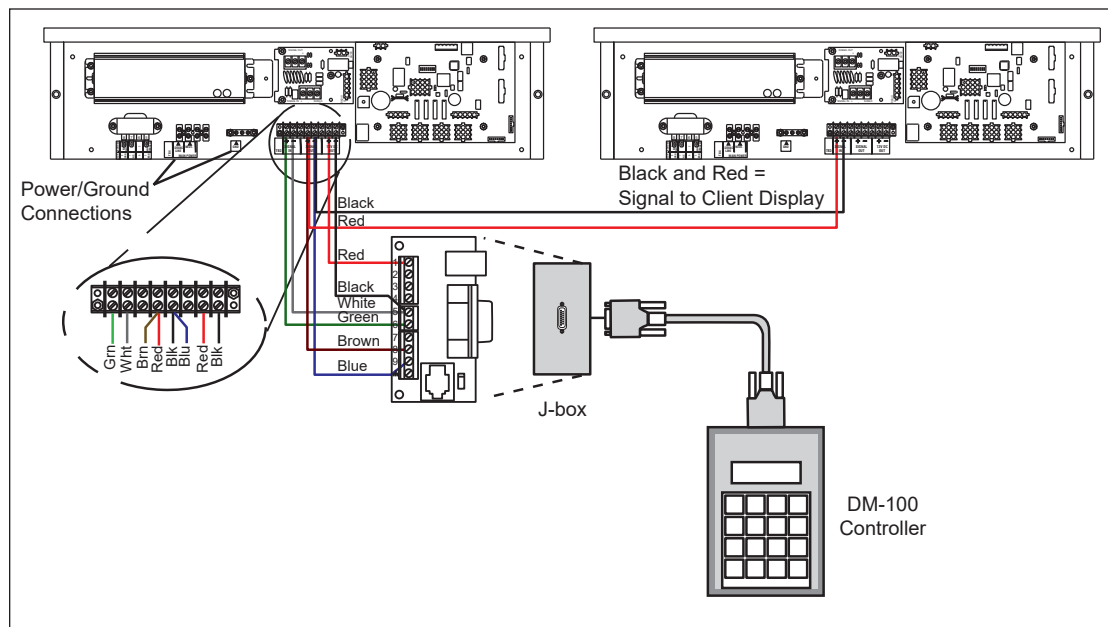


Figure 9: Direct Connection from Outdoor Location

Wiring from J-Box to Host Driver Enclosure		
J-Box Pin Number	Cable Color	Enclosure Terminal Block
Pin 1	Red	12 V DC Out (+)
Pin 5	Black	12 V DC Out (-)
Pin 5	White	Signal IN (-)
Pin 6	Green	Signal IN (+)
Pin 8	Brown	Signal OUT (+)
Pin 9	Blue	Signal OUT (-)

5. Mount the temperature sensor following instructions in **Temperature and Light Sensor (p.3)**, and connect the quick-connect cable to the 4-pin quick connect on the rear of the display.
6. The DM-100 controller plugs into the J-box using a DB9M to DB9F serial cable.

Direct – Indoor Connection

Reference Drawings:

Riser Diagram- Indoor Wire Control- Data Time/Mas.	DWG-175342
Enclosed Driver, 4 Column Reference	DWG-938300
Time and Temp Power/Signal Hookup.....	DWG-938369

A direct-controlled display can be used from a J-box at in indoor location. Connect only two, 22 AWG, signal wires to the J-box and use a wall pack transformer for power to the DM-100 controller. The distance from the indoor J-box to the host driver can be up to 2000' (610 m). Refer to **Figure 11** and **DWG-175342** for system layout and signal connections.

1. Mount the J-box at an indoor location.
2. Insert the Protocol-4 plug into the five-pin protocol jack (J20) to select the host driver.
3. Route a 4-conductor, 18 AWG, shielded signal cable through conduit from the J-box to the driver enclosure in the host display.
4. Connect the signal wire, through conduit, from the J-box to the driver enclosure as shown in **Figure 10** and listed in the table. Refer to **DWG-938300** and **DWG-938369** for additional information.

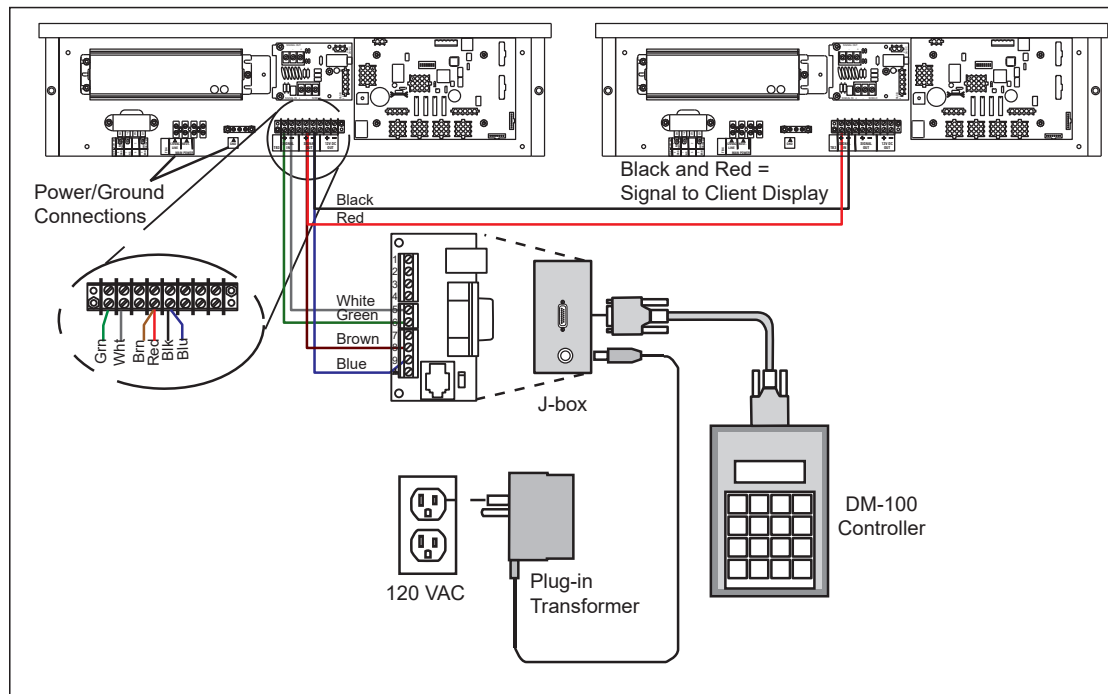


Figure 10: Direct Connection from Indoor Location

Wiring from Indoor J-Box to Host Driver Enclosure		
J-Box Pin Number	Cable Color	Enclosure Terminal Block
Pin 5	White	Signal IN (-)
Pin 6	Green	Signal IN (+)
Pin 8	Brown	Signal OUT (+)
Pin 9	Blue	Signal OUT (-)

5. Mount the temperature sensor according to **Temperature and Light Sensor (p.3)**, and connect the quick-connect cable to the 4-pin quick connect on the back of the display.
6. The DM-100 controller plugs into the J-box using a DB9M to DB9F serial cable.
7. Plug the wall pack transformer into a wall socket and the other end into the DM-100 controller.

Client Definitions and Address Settings

Reference Drawings:

4 Column MASC LED Driver Specifications	DWG-166216
Host/Client Definitions	DWG-185236

Designate one driver at each display installation as the host driver. All other displays are clients. Use the Signal OUT terminals on the host driver to connect to client drivers.

Figure 11 and **DWG-185236** illustrate the client/host display connection.

Client drivers receive signal from the host driver on the Signal IN terminals and can re-drive this signal to other client drivers on the Signal OUT terminals.

The maximum wire distance between the host driver and client driver is 2000' (610 m).

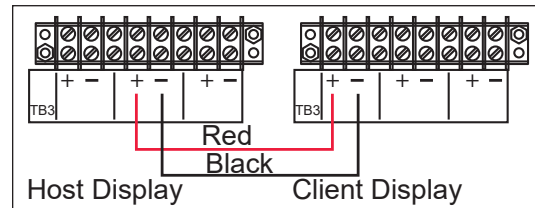


Figure 11: Host, Signal Out to Client, Signal In

Address Settings

Set the address of each driver using DIP switches (S1). The address is based on a driver's position in the display system.

If a single-line display is used, the address is typically Address 01; switch 1 is turned ON and the remaining 7 switches are OFF. This is the default address set when each display is shipped.

In multiple-product displays, the address determines which line of information is shown on the driver's digits. The switch is set using a binary address. Use the table and the examples in **Figure 12** for setting the address.

Note: Some older drivers use an address plug (Daktronics part # 0A-1150-0122) to set the address of each driver in J19. Set the address for each driver using a switch or a plug.

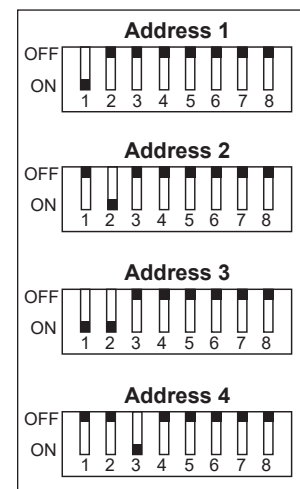


Figure 12: Common Address Settings

Binary Address Settings								
Address	Switch Number							
	1	2	3	4	5	6	7	8
1	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF
2	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF
3	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF
4	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF
5	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF
6	OFF	ON	ON	OFF	OFF	OFF	OFF	OFF
7	ON	ON	ON	OFF	OFF	OFF	OFF	OFF
8	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF
9	ON	OFF	OFF	ON	OFF	OFF	OFF	OFF
10	OFF	ON	OFF	ON	OFF	OFF	OFF	OFF
11	ON	ON	OFF	ON	OFF	OFF	OFF	OFF
12	OFF	OFF	ON	ON	OFF	OFF	OFF	OFF
13	ON	OFF	ON	ON	OFF	OFF	OFF	OFF
14	OFF	ON	ON	ON	OFF	OFF	OFF	OFF
15	ON	ON	ON	ON	OFF	OFF	OFF	OFF

4 Maintenance and Troubleshooting

Important Notes:

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

Component Location and Access

Each display contains an enclosure that includes the following devices:

- Display Driver
- Signal Surge Board
- 24V DC Power Supply
- Signal/Power Input Termination Jacks
- 10V AC Transformer

On 10" and 13" displays, all the components are behind one door. For 18" and 24" displays, the hinged doors swing outward when the two latches on the front display face panel are turned, as shown in **Figure 13**. Since component placement varies slightly with each DataTime® model; consult the specific model's **Shop Drawings**.

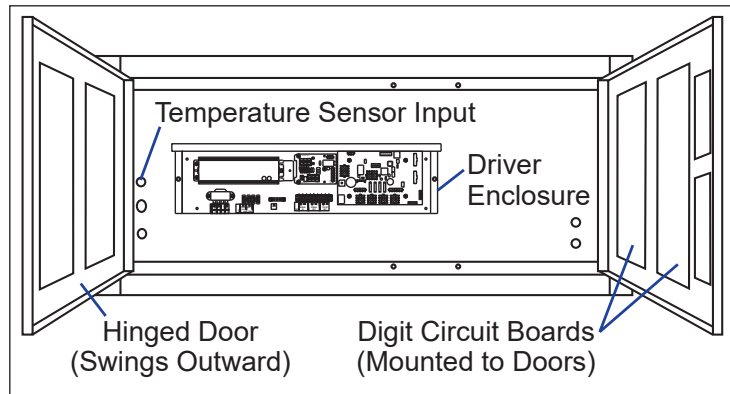


Figure 13: Time and Temp Display with Door Panels Open

Troubleshooting

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

Symptom/Condition	Possible Cause
Entire display fails to work	<ul style="list-style-type: none"> • Check for proper line voltage at power termination panel. • Check connections from power supply to driver. • Check power LED on driver.
Cannot communicate with display	<ul style="list-style-type: none"> • Check connections at J-box and display. • Make sure DM-100 controller is receiving power. • Check serial wires from J-box to host driver.
No display on client sign	<ul style="list-style-type: none"> • Check for power on client. • Check signal wires from host to client. • Make sure protocol plug is not connected. (Protocol plug is for host driver only.) • Check addressing of client display.

Symptom/Condition	Possible Cause
Client drivers continually cycle through the power-on self-test	<ul style="list-style-type: none"> Make sure address is set on the host driver.
Garbled display	<ul style="list-style-type: none"> Power down and power display back up. Check connections from driver to digits. Re-send message from DM-100.
Digit will not light	<ul style="list-style-type: none"> Test using different digit board in display. Test using a different output from the driver. Black wire to digit broken. Poor contact at driver connection. Driver malfunction.
Segment will not light	<ul style="list-style-type: none"> Test using output to different segment. Check for broken LED or connection. Check wires between driver and digit. Poor contact at driver connector. Driver shift register failure.
Segment stays lit	<ul style="list-style-type: none"> Test using output to different segment. Check for shorts on wires. Driver shift register failure.
Data appears in the wrong place on the display; wrong data on a particular line of the display	<ul style="list-style-type: none"> Incorrect address settings on drivers. Refer to Power-On Self-Test (POST) (p.15) in the following section. Incorrect connection from driver to digits.

Error Codes

Some DataTime® displays have their own built-in troubleshooting mechanism. Failures that occur in the display driver use codes. If a display malfunctions, a failure code registers by showing an E# value on the first two digits of the display. Refer to the following table for a description of each failure code and for possible solutions.

Note: The LCD screen on the DM-100 controller will not show the following failure codes. Failure codes are only shown on the DataTime® display.

Failure Code	Description	Possible Solution
E1	Protocol Setting Error: There is an unsupported driver protocol setting.	<ul style="list-style-type: none"> Check the value set in the protocol plug of the driver (J20).
E2	Time Error: No valid time stored in the driver; it may be a failure of the real-time clock on board or other timekeeping device.	<ul style="list-style-type: none"> Use the Set Time menu option of the DM-100 controller to set the time on the display.

E3	Temperature Error: No response coming from the temperature sensor, or general temperature sensor failure.	<ul style="list-style-type: none"> Check the temperature sensor location and verify all connections. Refer to Section 2. <p>Note: The temperature sensor takes about 10 seconds to initialize on power up. The display shows this error until initialization is complete</p> <ul style="list-style-type: none"> If a temperature sensor is not used, set the hold time to zero.
E4	No Message Error: This code is shown when no messages are downloaded to the display.	<ul style="list-style-type: none"> Download a new message to the display using the DISPLAY SEQUENCE key on the DM-100 controller.
E5	No Line Number Selected Error: The driver for this line has a Protocol-4 plug installed in J20, but the address is not set on the address switch.	<ul style="list-style-type: none"> Set the line number by setting the address using the address switch. The Protocol-4 plug designates this driver as the host. If this is not the host, remove the Protocol-4 plug from J20.

Power-On Self-Test (POST)

The power-on self-test is a useful troubleshooting tool that the host driver performs each time it powers up:

- If the signal wiring between each controller is correct, the first two digits of each driver display "Ad" momentarily, and the first digit flashes three numbers indicating the decimal address set with the address switch.

Note: If a client driver displays A#, followed by P#, it is not receiving signal in and is performing its own self-test.

Driver Firmware Version	(r:##)
Address	(Ad:##)
Line number	(L:#)
Columns	(1234)

- The first two digits of each line display "L#", the line number that the driver is set to control using the address switch (or set with address plug on older drivers).
- Each line displays 1234... according to the column number of each of its digits. Every line should show 1 on the left-most digit, and all digits should be numbered consecutively from left to right. If this is not the case, either the wrong address is set, or the driver or digit harness is connected incorrectly.

If no address is set on the host driver, it will display E5, and all client drivers will continually cycle through the power-on self-test.

5 Parts Replacement

Following is information needed to obtain new parts from Daktronics and how to install them in the display.

Important Notes:

- Disconnect power before any repair or maintenance is done on the display.
- Only qualified service personnel should access to internal display electronics.
- Disconnect power when the display is not in use.
- The electrician installing the displays must provide some parts required for installation such as screws, wire nuts, electrical tape, etc. Daktronics does not provide these items.

Replacement Parts

Most display components have a white label that lists the part number in bold as shown in **Figure 14**. Part numbers may also appear on illustrations and reference drawings as well as in the Bill of Materials (BOM) for the project. If a replacement part cannot be identified, contact Daktronics Customer Service.

Refer to **Section 7: Daktronics Exchange and Repair & Return Programs (p.27)** if replacing or repairing any display component.

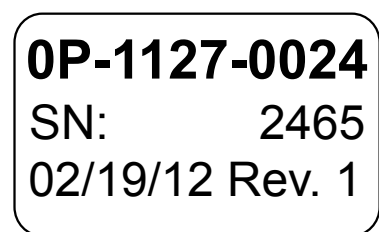


Figure 14: Example Part Label

Segmentation and Digit Designation

In each digit, certain LEDs always go on and off together. These groupings of LEDs are referred to as segments. **Shop Drawings** specify the driver connectors controlling the digits. Numbers shown in the upper half of each digit indicate which connector is wired to that digit.

Replacing Digits

Do not attempt to remove individual LEDs; in the case of a malfunctioning LED or digit segment, replace the entire digit.

To replace a digit:

1. Open the door panel as described in **Component Location and Access (p.13)**.
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 digit to the inside of the panel, and then lift the digit segment off the standoff studs.
4. Position a new digit over the studs, and then tighten the nuts.
5. Reconnect the 9-pin plug. This is a keyed connector that attaches in one way only. Do not force connection.
6. Close and secure the digit panel, and then power up and test the display to verify the issue has been resolved.

Replacing Digit Segments

Digits that are 24" or larger are composed of seven circuit board segments. The digit segment circuit boards are mounted to the back of the digit panel. Refer to **Figure 15**. Do not attempt to remove individual LEDs; it may be possible to make repairs by removing just the defective segment. To replace a digit segment:

1. Open the door panel as described in **Component Location and Access (p.13)**.
2. Disconnect the 2-pin power plug from the back of the digit segment by squeezing the locking tabs together and pulling the connector free.
3. Use a 9/32" nut driver to remove the nuts securing the digit segment to the inside of the panel, and then lift the digit segment off the standoff studs.
4. Position the new segment over the studs, and then tighten the nuts.
5. Reconnect the 2-pin plug. This is a keyed connector that attaches in one way only. Do not force connection.
6. Close and secure the digit panel, and then power up and test the display to verify the issue has been resolved.

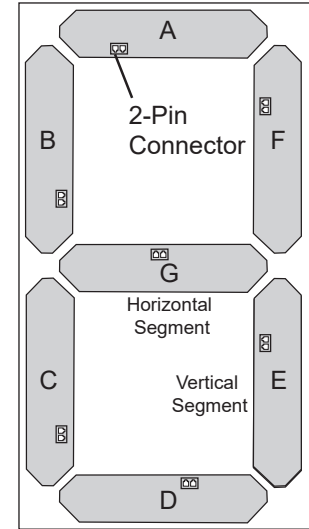


Figure 15: Digit Segments

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

LED Drivers

Reference Drawing:

4 Column MASC LED Driver Specifications **DWG-166216**

LED drivers perform the task of switching digits on and off within the display. Refer to **Figure 16** to view the location of driver jacks and indicators. For detailed descriptions and pin-outs of the driver jacks, refer to **DWG-166216**.

The following table lists the functions of the jacks, including those that are not used.

LED Driver Jack Functions	
Jack Number	Function
J1-J4 (4-column)	Digit Output
J17	Signal/Power Input
J20	Protocol-4 Location
J23	12V DC Power Out
J19	Address Plug (older drivers only)
J18, J21, J22, J24, J25, J26, J27, J28	Jacks Not Used

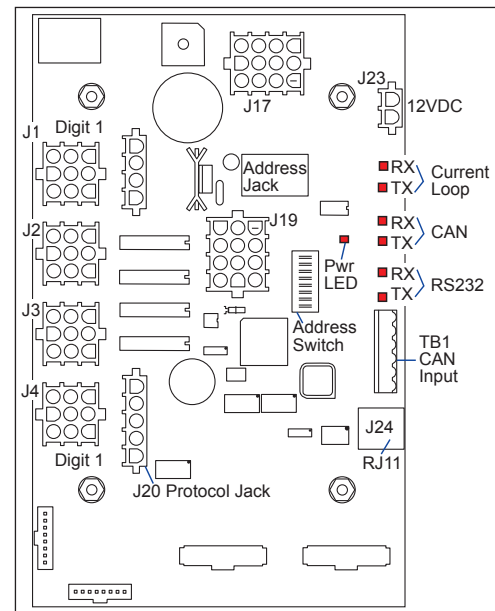


Figure 16: Four-Column Digit Driver

Each display line is set with an eight-position DIP switch before shipping.

Note: Some older drivers use a 12-position address plug inserted in J19. All DataTime® displays ship with a Line 1 address already set.

Replacing a Driver

Drivers are mounted inside the display enclosure and typically behind a digit, but location and mounting varies by model. Refer to the **Shop Drawings** for driver location. All DataTime® displays are front-accessible.

1. Open the door panel as described in **Component Location and Access (p.13)**.
2. Remove the cover from the driver enclosure.
3. 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.
4. Remove the nuts securing the driver to the inside of the enclosure.
5. Carefully lift the driver from the display cabinet and place it on a clean, flat surface.
6. Position a new driver over the screws and tighten the nuts.
7. Reconnect all plugs to their mating jacks on the new driver. These are keyed connectors that attach in one way only. Do not force connections.
8. Ensure the new driver is set to the correct address. This will be the same address of the old driver being replaced. Refer to **Client Definitions and Address Settings (p.11)**.
9. Put the metal cover back on the enclosure, securely close the access panel, and then power up and test the display to verify the issue has been resolved.

Replacing Signal Surge Boards

Reference Drawings:

Enclosed Driver, 4 Column Reference **DWG-938300**

The signal surge suppression board, shown in **Figure 17**, is an inline device used to filter the current loop data line. It suppresses surges down to a low voltage to protect the display's controller. Refer to **DWG-938300** for the location of the surge board inside the driver enclosure. The surge board is pre-wired before the display is shipped.

The surge board is mounted inside the upper-left corner of the driver enclosure inside the display and typically behind a digit, but location and mounting varies by model. Refer to the **Shop Drawings** for the location of the surge board.

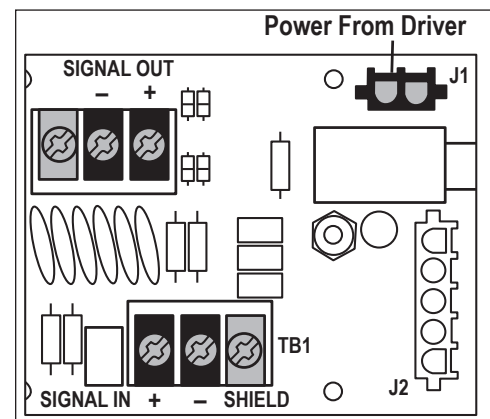


Figure 17: Signal Surge Suppression Board

1. Open the door panel as described in **Component Location and Access (p.13)**.
2. Remove the cover from the driver enclosure.
3. Disconnect the 2-pin power plug from the surge board by squeezing the locking tabs together and pulling the connector free.
4. Disconnect all wires at the SIGNAL IN and SIGNAL OUT (if used) terminal blocks.

5. Remove the nuts securing the surge board to the inside of the enclosure.
6. Carefully lift the surge board from the display cabinet and place it on a clean, flat surface.
7. Position the new segment over the studs, and then tighten the nuts.
8. Reconnect the 2-pin plug. This is a keyed connector that attaches in one way only. Do not force connection.
9. Reconnect all wires at the SIGNAL IN and SIGNAL OUT (if used) terminal blocks.
10. Put the metal cover back on the enclosure, securely close the access panel, and then power up and test the display to verify the issue has been resolved.

6 DM-100 Controller

DM-100 Overview

Reference Drawing:

- Riser Diagram, Outdoor Wire Control, Data Time/Mas. DWG-164988
- Riser Diagram- Indoor Wire Control- Data Time/Mas. DWG-00175342

The handheld DM-100 controller, shown in **Figure 18**, is designed to operate Daktronics DataTime® and DataMaster® displays. The console's liquid crystal display (LCD) guides the user through the operation of the system.

Time and temperature displays use a junction box at the base of the display or an indoor wire system. Refer to **Section 3: Electrical Installation (p.6)** for information and connection types.

Note: The DM-100 controller must be connected to the display to modify the time, temperature, hold time, etc.



Figure 18: DM-100 Controller

DM-100 Insert

Reference Drawing:

- Insert, LL-2551 Price/T&T Display DWG-164999

The DM-100 controller uses a keypad insert to program time and temperature information for the displays. Refer to **DWG-164999**. If an insert is lost or damaged, use a copy of the insert drawing until a replacement is ordered.

Note: Depending on the version of the DM-100 controller and the revision on the display, some of the following items may not be used, or will not be shown on the DM-100 controller.

Time and Temperature Display Operation

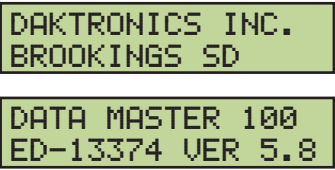
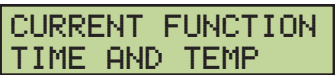

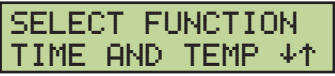
Connect to the display through either the indoor or outdoor J-box to set the time and date and send changes to the display.

Since the display automatically keeps track of time, the controller should only occasionally need to be connected. Time on the display should remain accurate even through a loss of power for several days. Use this function when a display is initially installed or to correct time due to long power outages.

In the unlikely event that the display malfunctions, refer to **Troubleshooting (p.13)** for corrective actions.

To operate time and temperature displays, the handheld controller must first be programmed to the TIME AND TEMP function. Use the **SET FUNCTION** key on startup.

Note: Current time and temperature values are not displayed on the DM-100 because these values are stored in the display itself.

LED Screen	Action/Information Shown
	<p>For indoor installation only: Plug the wall pack transformer into a 120 VAC power outlet, and connect it to the DM-100. This information appears briefly during startup.</p>
	<p>If TIME AND TEMP is shown on the bottom line of the LCD during startup, do nothing. The controller automatically defaults to previous time and temp settings.</p>
	<p>If a function other than TIME AND TEMP is shown on the bottom line of the LCD during startup, press the SET FUNCTION key while the second LCD prompt is displayed.</p>
	<p>Press the Up and Down Arrow keys until the TIME AND TEMP option is shown, and then press ENTER to accept.</p>

Menu Items

Press the **MENU** key to access the settings listed below.

On power up, the DM-100 display defaults to show the current display settings. The sequence preview shows the selected sequence order and display formats. The following menu items are shown on the LCD. Press the **Up** and **Down Arrow** keys to select.

1. Daylight Savings	8. Relative Humidity (%RH) Format/Hold Time
2. Set Time (12 hr/24 hr)	9. Sequence Order
3. °F Temp Offset	10. LED Test
4. °C Temp Offset	11. Modem Settings
5. Time Format/Hold Time	12. Display Status
6. °F Format/Hold Time	13. Diagnostics
7. °C Format/Hold Time	14. About

Daylight Savings Setting

Use the **Daylight Savings** menu to automatically correct for daylight saving time.

LED Screen	Action/Information Shown
<pre>DAYLIGHT SAVINGS ENTER TO MODIFY</pre>	<p>Press ENTER to modify the daylight saving time setting.</p> <ul style="list-style-type: none"> To enable daylight saving time correction, ensure AUTOMATIC is selected, and then press ENTER again. To disable daylight saving time correction, press the Down Arrow key to select DISABLE, and then press ENTER again. <p>If enabled, display time automatically corrects for daylight-saving time. The default setting is daylight-saving time enabled.</p> <p>Note: For changes to take effect, the time must be updated on the display. Use the SET TIME menu function.</p>
<pre>DAYLIGHT SAVINGS AUTOMATIC*↓</pre>	
<pre>DAYLIGHT SAVINGS DISABLE* ↓</pre>	
<pre>PLEASE SET TIME & UPDATE DISPLAY</pre>	

Set Time/Date

Use the **Set Time** menu to set the time on the display.

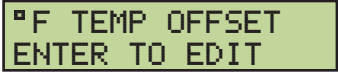
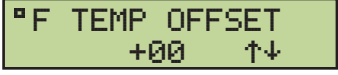
LED Screen	Action/Information Shown
	<p>The LCD goes to SET TIME directly from the DAYLIGHT SAVINGS setting; it can also be selected through the menu.</p>
<pre>SET TIME 12HR ENTER TO EDIT</pre>	<p>Press ENTER to modify the time shown on the screen.</p> <p>Note: The flashing asterisk (*) shows current data being edited.</p>
<pre>SET TIME 12HR HH:MM* AM ↓</pre> <p>HH:MM = hours, minutes</p>	<p>Use the number keypad to change the time as needed and use the Up and Down Arrow keys to switch between AM and PM. The AM/PM setting is not shown when 24-hour time is selected.</p> <p>Press ENTER to save changes when finished editing, or press CLEAR to cancel changes.</p>

After setting the time, set the date. If the date is already correct, press **ENTER** through the date to send it to the display. If the date is not correct, follow the steps below.

LED Screen	Action/Information Shown
<pre>SET TODAYS DATE MM*/DD /YY</pre> <p>MM – Current month value DD – Current day value YY – Current year value</p>	<p>Use the number keypad to enter the month, day, and year (last two digits), pressing ENTER after each value.</p> <p>Note: The flashing asterisk (*) shows current value being edited.</p> <p>The LCD will alternate between the entered date and time. If the values are correct, press ENTER to save changes. If the values are incorrect, press CLEAR to cancel changes and start over.</p>
<pre>MM/DD/YY ENTER TO SEND</pre>	
<pre>TIME- HH:MM AM ENTER TO SEND</pre> <p>HH:MM = hours, minutes</p>	

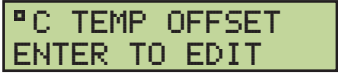
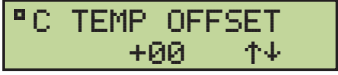
Fahrenheit Temperature Offset

Use the °F **Temperature Offset** menu to set the degrees Fahrenheit offset temperature. This value is what the display will automatically increment or decrement the Fahrenheit temperature read from the temperature sensor.

LED Screen	Action/Information Shown
	Press ENTER to modify the Fahrenheit temperature offset.
	<p>+00 shows the current degrees Fahrenheit temperature offset. Press the Up and Down Arrow keys to modify the offset.</p> <p>Note: Only values between -16 and +16 are allowed.</p> <p>Press ENTER to save changes when finished editing, or press CLEAR to cancel changes.</p>

Celsius Temperature Offset

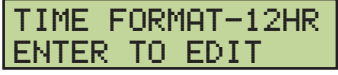
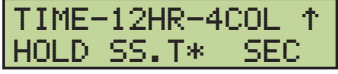
Use the °C **Temperature Offset** menu to set the degrees Celsius offset temperature. This value is what the display will automatically increment or decrement the Celsius temperature read from the temperature sensor.

LED Screen	Action/Information Shown
	Press ENTER to modify the Celsius temperature offset.
	<p>+00 shows the current degrees Celsius temperature offset. Press the Up and Down Arrow keys to modify the offset.</p> <p>Note: Only values between -9 and +9 are allowed.</p> <p>Press ENTER to save changes when finished editing, or press CLEAR to cancel changes.</p>

Time Format/Hold Settings

Use the **Time Format** menu to set the time format and hold time settings. The hold time determines how long the item is shown on the display. The default value is 5.0 seconds.

Note: Rather than going through the menu, simply press **ENTER/EDIT** when the time is shown on the LCD during operation.

LED Screen	Action/Information Shown
	Press ENTER to modify the time format.
 <p>SS.T = seconds, 1/10 second</p>	<p>Use the Up Arrow key to select between 12 hour and 24 hour time formats. Most displays will use the 4COL setting.</p> <p>Use the number keypad to enter a hold time in seconds and tenths of a second.</p> <p>Note: Setting the hold time to 00.0 seconds disables this function.</p> <p>Press ENTER to save changes when finished editing, or press CLEAR to cancel changes.</p>

Temperature Format/Hold Settings

Use the **Temp Format** menus to set the temperature format and hold time settings. The hold time determines how long the item is shown on the display. The default value is 5.0 seconds.

Note: Rather than going through the menu, simply press **ENTER/EDIT** when the temperature is shown on the LCD during operation.

LED Screen	Action/Information Shown
<pre>°F - FORMAT ENTER TO EDIT</pre>	Press ENTER to modify the appropriate temperature format.
<pre>°C - FORMAT ENTER TO EDIT</pre>	Use the Up Arrow key to select between temperature formats.
<pre>°F-FORMAT xx° ↑ HOLD SS.T* SEC</pre>	For Fahrenheit temperature, select xx°, xxF, or xx (blank). For Celsius temperature, select xxc, xx°, xxC, or xx (blank). (xx° is the default for °F, and xxc is the default for °C.)
<pre>°C-FORMAT xxc ↑ HOLD SS.T* SEC</pre>	Use the number keypad to enter a hold time in seconds and tenths of a second.
SS.T = seconds, 1/10 second	Note: Setting the hold time to 00.0 seconds for any of the above hold times disables that function. This is useful at times when only one temperature format is used.
	Press ENTER to save changes when finished editing, or press CLEAR to cancel changes.

Note: An option to set relative humidity (%RH) format is also available on the DM-100 controller, but this cannot be read using the standard temp/light sensor.

Sequence Order

Use the **Sequence Order** menu to set the order that information is shown on the display.

LED Screen	Action/Information Shown
<pre>SEQUENCE ORDER * TIME, °F, °C, ↓</pre>	<p>The current order is displayed on the bottom line of the LCD. Press the Down Arrow key to select the alternate sequence. Possible sequence options are:</p> <ul style="list-style-type: none"> • Time, °F, °C (default) • Time, °C, °F • Time, °F, Time, °C • Time, °F • Time, °C • Time • °F • °C • °F, °C • Time, °F, °C, %RH • Time, °C, °F, %RH
	Press ENTER to save changes when finished editing, or press CLEAR to cancel changes.
	Note: The new sequence is saved when the handheld controller is powered down.

Use the hold time to disable one or more of the selected display items. For example, to disable temperature in °C from a sequence, select the **°C - Format/Hold** menu and enter a "00.0" hold time.

LED Test

Use the **LED Test** menu item to test the LED digits on the display.

LED Screen	Action/Information Shown
<pre>LED TEST? ENTER TO TEST</pre>	<p>The LED test will cycle the display digits between all LEDs on and all LEDs off.</p>
<pre>ENTER TO TEST CLEAR TO EXIT</pre>	<p>Press the ENTER to send the test command to the sign.</p> <p>Press CLEAR to exit the test mode.</p>

Modem Settings

This method of communication is not used with standard Time & Temp Displays.

Display Status

The DM-100 controller queries the display and responds if it finds the bi-directional link.

Diagnostics

Press **ENTER** to perform RS232 and Current Loop loopback tests to help diagnose communications issues.

About

Press **ENTER** to view DM-100 firmware information. Press **ENTER** again to exit. This information appears very briefly during controller startup.

Dimming

- Press **DIMMING** on the keypad. The current setting is shown on the bottom line of the LCD. The dimming level of the display is adjusted in one of two ways:
 - Automatic Dimming uses a temperature/light sensor mounted near the display to detect the level of ambient light at the display location and dim the LED brightness accordingly.
 - Manual Dimming retains the same LED brightness level regardless of the level of light detected at the display.
- Refer to the following tables to set the dimming level:

LCD Screen	Action/Information Shown
<pre>DIMMING AUTOMATIC ↓</pre>	<p>Press the Down Arrow key to toggle through dimming settings:</p> <ul style="list-style-type: none"> Automatic – The display automatically dims based on the light detected at the display. Manual – The display dimming level is set manually. Once set, this value remains the same regardless of the light level detected at the display. Blank Sign – Briefly clears all content from display.
<pre>DIMMING MANUAL ↓</pre>	
<pre>DIMMING BLANK SIGN ↓</pre>	

When **AUTOMATIC** dimming is selected, the following prompt appears:

LCD Screen	Action/Information Shown
<pre>SET AUTO DIMMING MAX INTENSITY?</pre>	<p>Press the ENTER/EDIT key to edit the maximum intensity that the display uses in full-bright modes (during daylight hours).</p> <p>Press CLEAR to keep the current auto dimming maximum setting.</p>

The following prompt is shown for both **MANUAL** and **AUTOMATIC** dimming selections:

LCD Screen	Action/Information Shown
<pre>INTENSITY XX↑↓* ENTER TO SET</pre> <p>XX – Current intensity (01-16) Max Intensity – 16</p>	<p>Press the Up and Down Arrow keys to modify the display's current intensity.</p> <p>Note: The DM-100 must be communicating with the display.</p> <p>Press ENTER to accept this intensity.</p> <p>When manual dimming mode is selected, this is the display's new intensity.</p> <p>When automatic dimming mode is selected, the display illuminates in full-bright mode, which is the maximum intensity level.</p>

When **BLANK SIGN** is selected, the following prompt appears:

LCD Screen	Action/Information Shown
<pre>BLANK THE SIGN? <ENT> YES</pre>	<p>Press ENTER to blank the sign.</p>
<pre>BLANK THE SIGN? <CLR> NO</pre>	<p>Press CLEAR to leave the sign on.</p>
<pre>RESTART SIGN? <ENT> YES</pre>	<p>When in Blank Mode, the digits on all of the displays will turn off and only the decimal will be lit.</p>
<pre>RESTART SIGN? <CLR> NO</pre>	<p>To turn the sign back on, first press the DIMMING key, and then press ENTER.</p> <p>To leave the sign blank, press CLEAR.</p>

7 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: _____

Date Installed: _____

Location of Display: _____

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. A charge will be made for the replacement part immediately, unless a qualifying service agreement is in place. In most circumstances, the replacement part will be invoiced at the time it is shipped.

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

If after two weeks Daktronics has still not received the parts back, the customer must pay the second invoice and will not be credited for the return of the failed part. Daktronics reserves the right to refuse parts that have been damaged due to acts of nature or causes other than normal wear and tear.

Repair & Return Program

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

1. Call Daktronics Customer Service.

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

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

2. Receive a Return Materials Authorization (RMA) number before shipping.

This expedites repair of the part.

3. Package and pad the item carefully to prevent damage during shipment.

Electronic components, such as printed circuit boards, should be placed in an antistatic bag before boxing. Daktronics does not recommend using packing peanuts when shipping.

4. Enclose:

- Name
- Address
- Phone number
- RMA number
- A clear description of symptoms

Shipping Address

Daktronics Customer Service

600 E 54th St N

Case # _____

Sioux Falls, SD 57104

Attn: RMA# _____

Daktronics Warranty and 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.

Glossary

Client: Receives signal from the host driver on the Signal IN terminals. These drivers can re-drive signal to other client drivers.

DM-100 Controller: The handheld keypad device used to set the time, date, hold times, dimming etc. on the DataTime® display.

Display Address: An identification number assigned to each driver in a network. The address is set using an 8-position binary switch. For single-line signs such as a Time & Temp display, the address will typically be "1." The address will be displayed each time the display powers up.

Digit Circuit Board: The board mounted to the back of a digit panel and containing the LEDs. It can be made up of an entire digit or as individual segments of a digit.

Host: Contains the driver which relays signal directly from the DM-100 controller on its Signal IN terminals. It is the only driver connected to the temperature/photo sensor. The Signal OUT terminals are used to connect to a client driver. The host driver is selected by inserting the Protocol 4 plug into the protocol jack.

Light emitting diode (LED): High-intensity, low-energy lighting units.

Power Supply: Converts AC line voltage from the load center to low DC voltage for one or more digit circuit boards.

Protocol plug: A plug inserted in the 5-pin protocol jack to select the host driver for a set of host-client displays.

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A Reference Documents

This appendix contains drawings and documents that are generic to Daktronics time and temperature displays. Project-specific documents take precedence over those listed in this section.

- When viewing a digital version of this manual, simply click a link below to open it.
- When referencing the printed version of this manual, open an Internet browser and go to **www.daktronics.com/web-documents/Drawings/#####.pdf**, where “#####” is an 8-digit number shown below).

General Drawings

Riser Diagram, Outdoor Wire Control, Data Time/Mas.	DWG-00164988
Insert, LL-2551 Price/ T&T Display	DWG-00164999
4 Column MASC LED Driver Specifications	DWG-00166216
Riser Diagram- Indoor Wire Control- Data Time/Mas.	DWG-00175342
Installation Quick Reference, DF-1010 Time & Temp	DWG-00176249
Installation, Temp Sensor, G3	DWG-00184840
Host/Client Definitions	DWG-00185236
Enclosed Driver, 4 Column Reference	DWG-00938300
Time and Temp Power/Signal Hookup.....	DWG-00938369
Schematic; MASC Drvr, Wide Enclosure	DWG-05116507

Shop Drawings

Shop Drawing, DF-1012-10-DI/SF, 120V	DWG-01130597
Shop Drawing, DF-1012-13-DI/SF, 120V	DWG-01130598
Shop Drawing, DF-1012-18-DI/SF, 120V	DWG-01130600
Shop Drawing, DF-1012-24-DI/SF, 120V	DWG-01130601
Shop Drawing, DF-1012-10-DI/SF, 230V	DWG-01130602
Shop Drawing, DF-1012-13-DI/SF, 230V	DWG-01130603
Shop Drawing, DF-1012-18-DI/SF, 230V	DWG-01130604
Shop Drawing, DF-1012-24-DI/SF, 230V	DWG-01130605

Reference Documents:

Temperature Sensor Mounting.....	ED-18601
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Note: When referencing the printed version of this manual, open an Internet browser and go to **www.daktronics.com/web-documents/Manuals/ED-18601.pdf**

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B Daktronics Warranty and 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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