

**DataMaster<sup>®</sup> Outdoor LED  
Lottery Displays**

Model DF-1060

**Installation and Operation Manual**

ED-14305

Rev 2 – 20 March 2006

**DAKTRONICS**

*Please fill in the information below for your display; use it for reference when calling Daktronics for assistance.*

*Display Serial No.* \_\_\_\_\_

*Display Model No.* \_\_\_\_\_

*Date Installed* \_\_\_\_\_

## **DAKTRONICS, INC.**

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# Section 1: Introduction

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This manual explains the installation of *Daktronics® DataMaster® LED Lottery Displays* and provides details for display maintenance and operation. If you have questions regarding the safety, installation, operation, or service of this system, contact Daktronics. Customer Service Help Desk telephone numbers are listed on the cover page of this manual.

## 1.1 How To Use This Manual

### *Important Safeguards:*

- Read and understand these instructions before installing the display.
- Do not drop the control console or allow it to get wet.
- Properly ground the display with a grounding electrode at the sign location.
- ***Disconnect power when the display is not in use.***
- ***Disconnect power when servicing the display.***
- Do not modify the display structure or attach any panels or coverings to the scoreboard without the express written consent of Daktronics, Inc.

Listed below are a number of drawing types commonly used by Daktronics, along with the information that each is likely to provide. This manual might not contain all these drawings.

- **System Riser Diagrams:** overall system layout from control room to the display, power and phase requirements.
- **Shop Drawings:** fan locations, mounting information, power and signal entrance points and access method (front or rear).
- **Schematics:** power and signal wiring for various components.
- **Component Placement Diagrams:** locations of critical internal display components such as dual line controllers, line filters and power supplies.
- **Layout, Load Center and Signal Drawings:** load center power assignments and dual line controller signal assignments. These drawings illustrate the origin of each module's power and signal.

**Figure 1** illustrates a Daktronics drawing label. The drawing number is located in the lower-right corner of a drawing. This manual refers to drawings by the last set of digits and the letter preceding them. In the example below, the drawing would be referred to as **Drawing A-69945**.

DAKTRONICS, INC. BROOKINGS, SD 57006	
PRQJ: BASKETBALL	
TITLE: SEGMENTATION, 7 SEG BAR DIGIT	
DES. BY: BPETERSON    DRAWN BY: TNELSON    DATE: 8 JUL 02	
APPR. BY: AVB	7087-P08A-69945
SCALE: 1 = 4	

*Figure 1: Daktronics Drawing Label*

All references to drawing numbers, appendices, figures, or other manuals are presented in **bold** typeface, as in this example: “Refer to the **Component Placement Diagram, Drawing A-69945**, in **Appendix A** for the power supply location.”

In addition, any drawings referenced within a particular section are listed at the beginning of that section. Drawings may be referenced by title or by title and drawing number as in the following example:

**Reference Drawing:**

Component Placement Diagram, A-69945 ..... **Appendix A**

Daktronics identifies manuals by the engineering document (ED) number located on the cover page of each manual. For example, this manual would be referred to as **ED-14305**.

Daktronics displays are built for long life and require little maintenance. However, from time to time, certain display components will need to be replaced. The Replacement Parts List in **Section 3.8** provides the names and part numbers of components that may need to be ordered during the life of this display. Most display components have a white label that lists the part number. The component part number is in the following format: 0P-XXXX-XXXX (circuit board) or 0A-XXXX-XXXX (multi-component assembly).

Following the Replacement Parts List is the Exchange/Replacement Procedure in **Section 3.9**. Refer to these instructions if any display component needs repair or replacement.

Please list the model number, display serial number and the date this display became operational in the spaces provided on the second page of this manual. When calling Daktronics customer service, have this information available to ensure that your request is serviced as quickly as possible.

## 1.2 Manual Overview

This manual details large-size outdoor digit sets. It is divided into the following sections:

**Section I**      **Introduction** covers the basic information needed to make the most of the rest of this manual. Take time to read the entire introduction, because it defines terms and explains concepts used throughout the manual. This section contains an overview of the product, display specifications, product safety information, and labeling and numbering descriptions.

**Section II**     **Mechanical and Electrical Installation** provides general guidance on display mounting and terminating power and signal cable at the display.

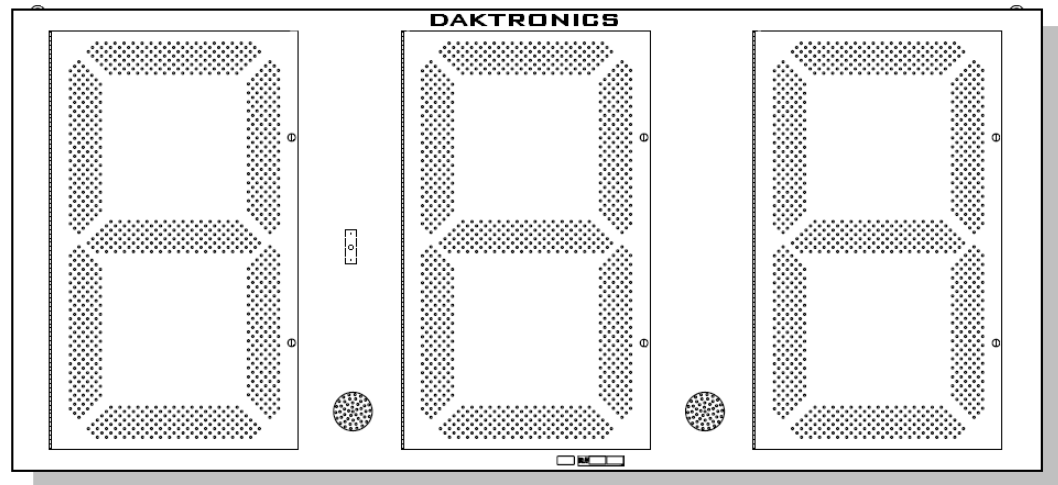


- Section III Maintenance and Troubleshooting** addresses such things as removing basic display components, troubleshooting the display, performing general maintenance, and exchanging display components.
- Section IV Control System Overview** describes the DataMaster™ 100 and system setup options.
- Section V Lottery Display Operation** provides complete instructions for programming and operating the Lottery display.
- Appendix A Reference Drawings** contains all engineering drawings called out in this manual.
- Appendix B Supplementary Manuals** contains additional information that may be helpful in the operation and maintenance of the display.

Daktronics recommends that you read all general sections before beginning installation or operation.

## 1.3 Product Overview

The DataMaster Lottery models detailed in this manual are part of a family of outdoor displays designed to offer simple installation, easy readability, and reliability. Solid-state components and microprocessor control assure consistent operation and accuracy. The three-digit Lottery sign is illustrated in **Figure 2** below.



**Figure 2:** DF-1060-60

Intended for use in highway and city signs and billboards, the Lottery displays include several models: DF-1060-60, DF-1060-48, DF-1060-36 and DF-1060-24. All have the same layout: three LED digits separated by LED decimals. They are distinguished from one another by their overall size and by the height of their digits.

The displays use red or amber LEDs – light emitting diodes – to illuminate the digits. (LEDs are tiny, solid-state components that use a semiconductor chip to transform electrical current into light. They are high-intensity, low-energy lighting units.) Because of their LED technology, the Lottery displays consume little power – barely more than a household lamp. Maximum power usage for all three models in this series is 300 W.

Cabinets for the displays are constructed of heavy-gauge aluminum. Cabinets are typically black to maximize LED contrast, but other cabinet colors are available. Digit faceplates are black, and they are set directly into the cabinet surface.

Refer to **Section 1.6** for a complete listing of weights, dimensions, and power specifications.

The Lottery displays have been designed for use with the Daktronics DataMaster™ 100 hand-held controller. The device uses a keypad overlay (called an insert) for display control, and the Data Master displays themselves operate without modification on All Sport® 5000 signal protocol. Other controllers may be used with Daktronics software and the appropriate interface. Refer to **Section 5** for complete operating information.

## 1.4 Model Identification

Daktronics displays are differentiated by their model numbers: For example, with Model **DF-1060**, the two-letter prefix **DF-** identifies it as a Data Master Lottery display. The next four numbers, **1060**, identify the specific model.

**DF-** series displays are further identified with a suffix of **-36**, **-48**, or **-60**, *indicating* nominal digit size in inches: **DF-1060-48** describes a Data Master Lottery display with 48" digits.

Finally, the **DF-** model names may include the letters “**R**” or “**A**”, indicating red or amber LED digits: **DF-1060-36-R**.

## 1.5 Product Safety Approval

Daktronics outdoor LED displays are ETL-listed and tested to CSA standards. Contact Daktronics with any questions regarding the testing procedures.

## 1.6 Display Specifications

**Reference Drawings:**

Mechanical Specs, DF-1060-36 .....	<b>Drawing A-195399</b>
Mechanical Specs, DF-1060-48 .....	<b>Drawing A-195339</b>
Mechanical Specs, DF-1060-60 .....	<b>Drawing A-195343</b>
Mechanical Specs, DF-1060-24 .....	<b>Drawing A-240357</b>

Specifications for each of the three lottery display models are shown the drawings listed above, in the electrical specification drawings, and in the following table.

### DataMaster DF-1060 Lottery Displays

Model	Dimensions Height, Width, Depth	Weight Uncrated  Crated	Digit Size  Digit Color	Maximum Wattage	Power	Amps per Line (Single Phase)
DF-1060-60	H6'-0", W12'-0", D8" (1829 mm, 3658 mm, 203 mm)	350 lb (160 kg)  560 lb (254 kg)	60" (1524 mm)  Red or amber	300 W	120 V AC	2.5 A
DF-1060-48	H4'-6", W10'-0", D8" (1372 mm, 3048 mm, 203 mm)	200 lb (91 kg)  320 lb (145 kg)	48" (1219 mm)  Red or amber	300 W	120 V AC	2.5 A
DF-1060-36	H3'-6", W7'-6", D8" (1067 mm, 2286 mm, 203 mm)	140 lb (64 kg)  224 lb (102 kg)	36" (914 mm)  Red or amber	300 W	120 V AC	2.5 A
DF-1060-24	H5'-0", W2'-6", D6 1/8" (1524mm, 720mm, 155mm)	60 lb (27 kg)  100 lb (45 kg)	24" (610 mm)  Red or Amber	150 W	120 V AC	1.3 A

**Note:** Each display requires a dedicated 15 A, 120 V AC line.



# Section 2: Mechanical and Electrical Installation

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Mechanical installation typically consists of installing concrete footings and steel beams and mounting the display and any accompanying panels to the beams.

Electrical installation consists of the following processes:

- Providing power and ground to a disconnect near the display.
- Routing power and ground from the main disconnect to the display driver/power enclosure.
- Connecting the display ground to a grounding electrode at the sign location.
- Routing the control signal cable from the control location to the sign location.

## 2.1 Mechanical Installation

### Reference Drawings:

- Mounting Method, Flag Style, One Pole ..... **Drawing A-166139**
- Mounting Method, Single Line on One Pole ..... **Drawing A-166142**

While Data Master outdoor digit displays are designed for wall or pole mounting, every installation will be different. Actual site demands will dictate the appropriate mounting method. Most DataMaster models have finished exteriors, for example, but other models are designed to be inserted into an existing sign cabinet and require a custom installation. Lottery displays have a fully finished cabinet, but they are designed to be used as part of larger sign or billboard.

The engineering drawings referenced above describe several mounting methods, from a single display on a single column support to multiple displays stacked above one another in a two-pole installation. The drawings include welding and hardware notes that will be applicable for most installations.

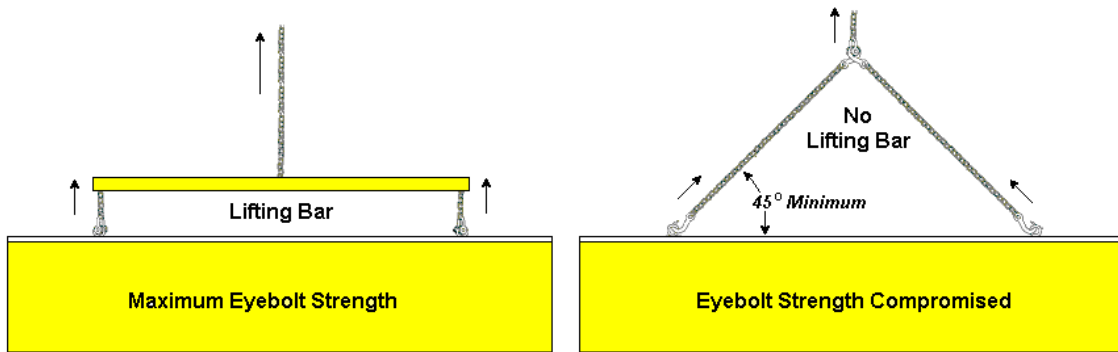
**Note:** The drawings suggest mounting methods and are not to be considered as specifications for construction. The actual mounting hardware and structural design must be specified by a qualified engineer.

### Lifting the Display

DataMaster Lottery displays are shipped equipped with  $\frac{1}{2}$ " eyebolts that are used for lifting and positioning the modules. Eyebolts are located along the top outer edges of the cabinet.

Daktronics strongly recommends using a spreader bar, or lifting bar, to lift the display. Using a spreader bar ensures that the force on the eyebolts is straight up, minimizing lifting stress.

**Figure 3**, below, illustrates two lifting methods. The illustration shows both the preferred method (left example) and an alternative method (right example) for lifting a display. Be sure to use every lifting point provided.



**Figure 3:** *Lifting the Display*

Eyebolts are intended for lifting during installation only. Do not attempt to permanently support the display by the eyebolts.

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

In installations in which an ad panel or some other display section may be added to the base display, the lower section is installed first and secured to the support beams, and then the upper section is placed atop or above the lower sign section and attached to the beams. There may be cables extending from the top of the lower section. Guide these cables into the hole in the bottom of the upper section for later connection.

Installers may remove the lift eyebolts once the display is in place. Inspect the top and sides of the display for any holes or openings that may allow moisture to enter the display, and plug and seal those openings with silicone or another waterproofing sealant.

## 2.2 Electrical installation

Electrical installation consists of the following processes:

- Providing power and ground to a disconnect near the display.
- Routing power and ground from the main disconnect to the display driver/power enclosure.
- Connecting the display ground to a grounding electrode at the sign location.
- Routing the control signal cable from the control location to the sign location.

**Note:** Only qualified individuals should perform power routing and termination to the display. It is the responsibility of the electrical contractor to ensure that all electrical work meets or exceeds local and national codes.

## Power

### Reference Drawing:

Schematic; 16 Col Multipurpose LED Drvr ..... **Drawing A-179599**

Daktronics DataMaster displays have been designed for easy access to components, and the power and control signal hookup has been simplified. Front panels are hinged to allow access to the digits, cabling, and other electronic components.

Correct power installation is imperative for proper display operation. The subsections that follow give details of display power installation. Only qualified individuals should attempt to complete the electrical installation; untrained personnel should not attempt to install these displays or any of the electrical components. Improper installation could result in serious damage to the equipment and could be hazardous to personnel.

DataMaster outdoor displays require a dedicated, 120 V circuit for incoming power. The display itself has no breakers or fuses.

**WARNING:** It is critical that the display circuit be fused at 15 A, and that all conductors used must be designed to pass a 15 A current in normal operation. Failure to meet wiring and overcurrent protection device requirements is a violation of the National Electrical Code® and will void the display warranty.

Refer to the DataMaster display schematic listed above and to the chart in **Section 2** to determine circuit specifications and maximum power requirements for the models described in this manual.

## Grounding

### Reference Drawings:

Schematic; 16 Col Multipurpose LED Drvr ..... **Drawing A-179599**

Reference, Driver Enclosures ..... **Drawing A-182708**

*Displays MUST be grounded according to the provisions outlined in Article 250 of the National Electrical Code and according to the specifications in this manual.*

*Daktronics recommends a resistance-to-ground of 10 ohms or less.*

*The contractor performing the electrical installation can verify ground resistance. Technicians from Daktronics Sales and Service offices can also provide this service.*

The display system *must* be connected to an earth electrode installed at the display. Proper grounding is necessary for reliable equipment operation. It also protects the equipment from damaging electrical disturbances and lightning. ***The display must be properly grounded, or the warranty will be void.*** Refer to the schematic, **Drawing A-179599**, for information on connecting the grounding wire. The driver enclosure terminal block, the location of the grounding connector, is illustrated in **Drawing A-182708**.

The material for an earth-ground electrode differs from region to region and may vary according to conditions present at the site. Consult the National Electrical Code and any local electrical codes that may apply. The support structure of the display cannot be used as an earth-ground electrode. The support is generally embedded in concrete, and if it is in earth, the structural steel is usually primed or it corrodes, making it a poor ground in either case.

### **Power Installation**

There are two considerations for 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 paragraphs:

**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. This would violate electrical codes and void the warranty. Use a disconnect so that all hot lines and neutral can be disconnected. The National Electrical Code requires the use of a lockable power disconnect within sight of or at the display.

**Installation with Only a Neutral Conductor Provided.** Installations where no grounding conductor is provided must comply with Article 250-32 of the National Electrical Code. If the installation in question meets all of the requirements of Article 250-32, the following guidelines must be observed:

- 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.

## **2.3 Power and Signal Connection**

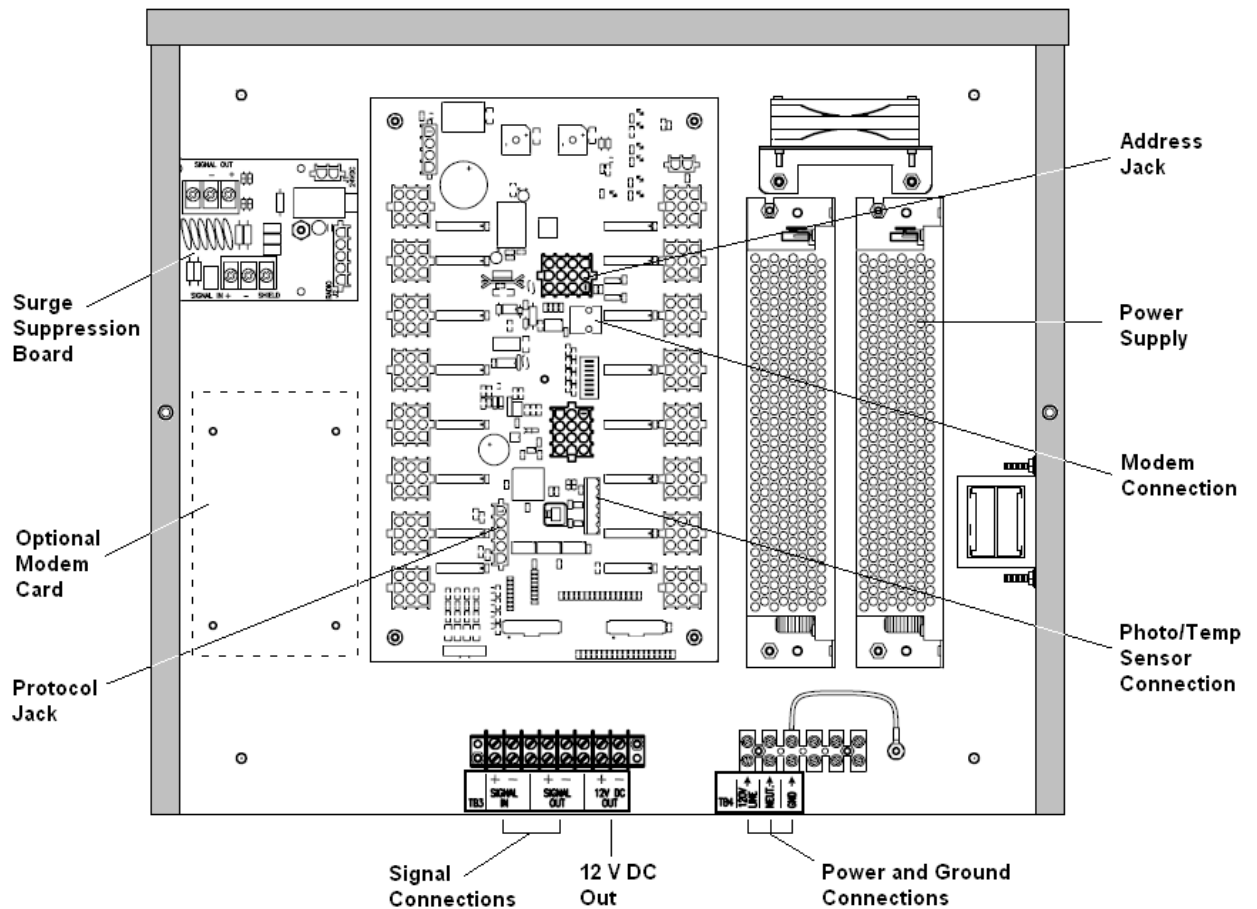
### **Reference Drawings**

Quick Install, DF-1060 Lottery Displays .....	<b>Drawing A-198033</b>
Schematic; 16 Col Multipurpose LED Drvr.....	<b>Drawing A-179599</b>
16 Col. MASC Driver Specification.....	<b>Drawing A-184475</b>

Route power and signal cables into the display from the side or rear. There are  $\frac{7}{8}$ " knockouts for  $\frac{1}{2}$ " conduit fittings on the sides of all DataMaster cabinets and on the back panels. All power and signal wiring terminates at the driver enclosure.

Refer to **Drawing A-198033** for a complete review of power and signal connections for DataMaster Rate displays. **Drawing A-184475** illustrates and provides connection specifications for the 16-column driver used in all DataMaster Lottery displays. The schematic for the driver details both the wiring in the enclosure and external connections to the display. Power and signal connections are illustrated in **Figure 4**.





**Figure 4:** DataMaster Driver Enclosure with 16-Column Driver

To gain access to the driver enclosure, open the access door and remove the cover from the enclosure. Refer to the electrical specifications drawings for the access location for your sign.

Connect the power and signal cables at the appropriate locations on the driver enclosure panel, shown in **Figure 4** and in **Drawing A-198033**.

The power feeder circuit connects directly to a terminal block in the driver enclosure. The block is located in the bottom center of both types of driver enclosure. Refer to the driver illustrations and the schematics, **Drawings A-184475** and **A-179599**, for wiring details.

Route signal cabling to the terminal block on the lower left edge of the enclosure (see **Figure 4**). The connections are labeled to permit easy installation. (In the 16-column enclosure, the signal block is at bottom center.) For signal cable, Daktronics recommends 2-pair shielded cable, 22 AWG (Daktronics part number W-1234).

## Host/Client Definitions and Address Settings

### Reference Drawings:

Host/Client Definitions.....	<b>Drawing A-185236</b>
16 Col. MASC Driver Specifications .....	<b>Drawing A-184475</b>

In sign systems with multiple displays, one driver at each sign installation is designated as the “host driver.” This driver receives its signal directly from the controller on the Signal In terminals, and it is the only driver that is connected to the photo/temp sensor. The Signal Out terminals are used to connect to “client drivers.” Refer to **Drawing A-185236** for an illustration of the client/host driver display setups.

Select the host driver by inserting the Protocol 4 plug into the 5-pin protocol jack (J20.) Refer to **Drawing A-184475**.

The 12 V DC terminals connected to the host driver (see “Signal Connections” in **Figure 4**) run to the controller junction box. This output is used to power the DataMaster 100 controller.

All other drivers in the display system are client drivers. These 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 address of each driver is set using the address jack (J19), and the address setting is based on that driver's position in the sign or display system. If a single-line sign is used, the address will typically be address “1.” This is the default address plug that is shipped with each display. In a multiple-sign display, the address plug determines which line of information is shown on the drivers' digits. The address plug for each line is included in the address plug kit, if applicable.

## 2.4 Modem Installation

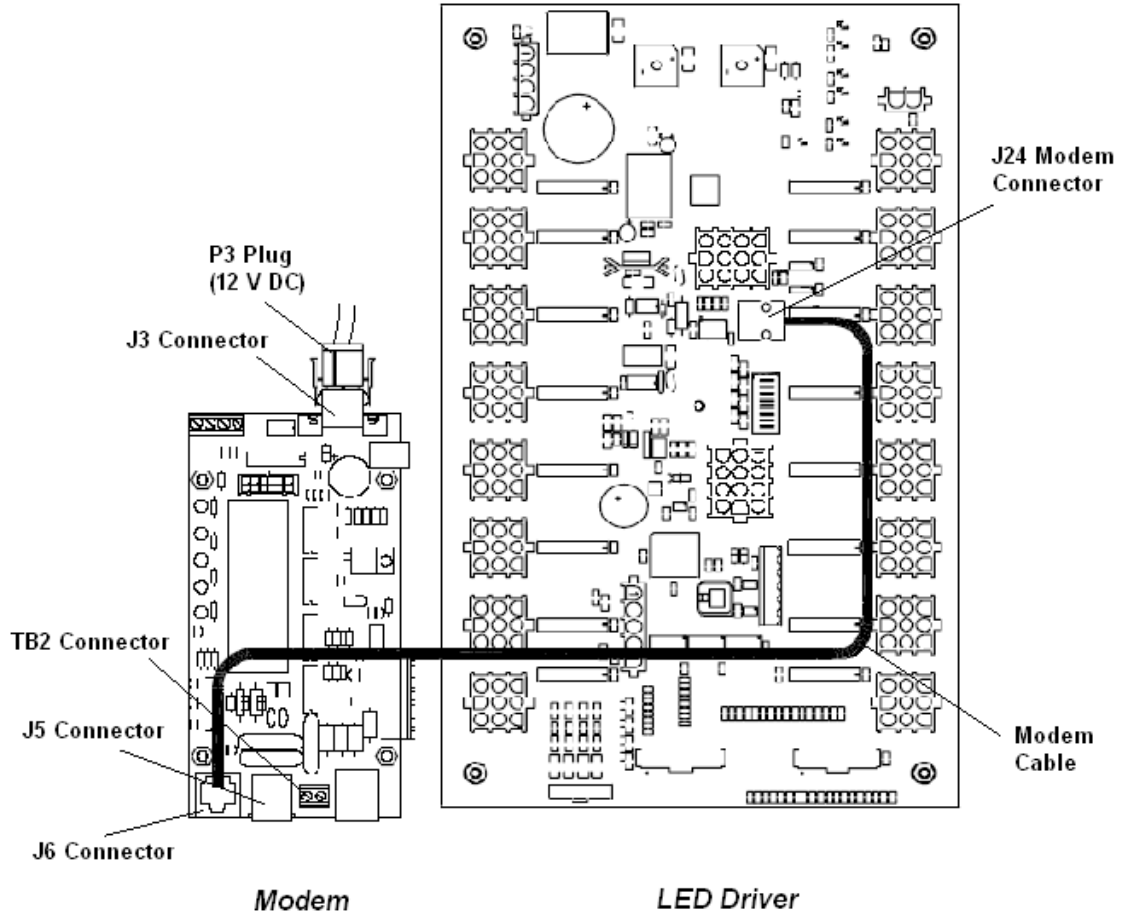
### Reference Drawing:

Modem Installation, MASC Driver Enclosure.....	<b>Drawing A-194873</b>
------------------------------------------------	-------------------------

In most instances, DataMaster Lottery displays will be controlled by modem. Typically, modems and cabling will be factory-installed and ready to operate. In the event that a modem must be field installed, refer to the *16-Col Driver* detail on **Drawing A-194873**, and follow these steps:

1. Make sure the power to the display is off.
2. The modem mounts on four standoffs to the left of the driver. Position the card on the standoffs and secure it with the hardware provided. Plug in the RJ-45 end of the modem cable to the J6 connector as shown in **Figure 5**. Plug the RJ-11 end of the cable into the J24 jack on the driver.
3. Plug in the 12-volt power source, P3, to the J3 connector on the modem card.

4. Connect the incoming phone line to the modem on J5, or wire the line to TB2, Tip and Ring inputs.
5. Turn the display power on, and test the installation.



*Figure 5: Modem-to-Driver Connection*

## 2.5 Radio Installation

The Data Master radio permits control of any DataMaster display without the use of a direct-wired connection between the DataMaster 100 and the display. Because the radio is optional with DataMaster displays, the receivers and transmitters must be field-installed. Please refer to the **DataMaster Radio Installation Manual, ED-13894**, for complete details on installation and setup for a bidirectional radio system.

## 2.6 Photosensor Installation

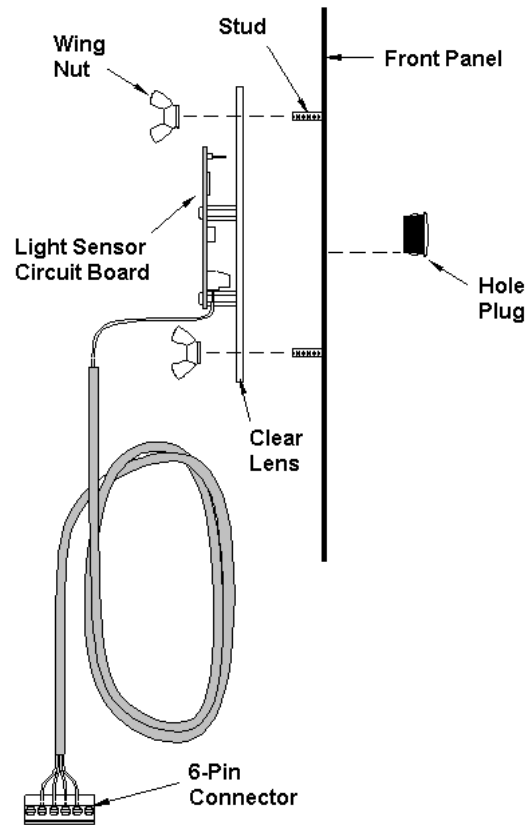
### Reference Drawings:

Light Sensor Installation, G3 .....	<b>Drawing A-183775</b>
Electrical Specs, DF-1060-60.....	<b>Drawing A-194930</b>
Electrical Specs, DF-1060-48.....	<b>Drawing A-195339</b>
Electrical Specs, DF-1060-36.....	<b>Drawing A-195398</b>

Displays in the DataMaster series use a photosensor to regulate sign dimming functions. (Dimming involves decreasing overall display intensity, both for better display viewing and to prolong LED life. The brightness level should be highest during the day to compete with daylight, and lower at night.)

The light sensor is typically installed at the factory. However, if field installation is necessary, use **Drawing A-183775** and the following instructions to mount the photo sensor in your DataMaster Rate display. If the sign or sign system has more than one display, *install the light sensor in the host display only.*

1. Unfasten the latch screws on the middle digit and open the hinged access door. The light sensor will be mounted to the panel between the first and second digits. The exact location will be shown on each of the electrical specifications drawings listed above.
2. Locate and remove the  $\frac{5}{8}$ " plastic plug from front panel of the display, as shown in **Figure 6**. The location of the plug varies by model. Refer to the mechanical specifications drawings for model-specific information.
3. There are two 6-32 studs above and below the plughole. Position the internal light sensor assembly on the studs, with the clear lens toward the front of the cabinet and the cable at the bottom. Secure the sensor with the plastic wing nuts provided with the assembly kit.



**Figure 6:** Light Sensor Installation

4. Route the signal cable to the driver and insert the 6-position plug into the mating jack on the driver, TB1.
5. Close the hinged access doors and tighten the latch screws.



# Section 3: Display Maintenance and Troubleshooting

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## IMPORTANT NOTES:

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

### 3.1 Cabinet Specifications

Cabinets for the Daktronics outdoor LED digit displays are constructed of heavy-gauge aluminum. Exact dimensions and weights for each model are listed in the specifications table in **Section 2**. Hinged panels for servicing digits and indicators and for component access are detailed in each model's mechanical specifications drawing.

### 3.2 Component Location and Access

#### Reference Drawings:

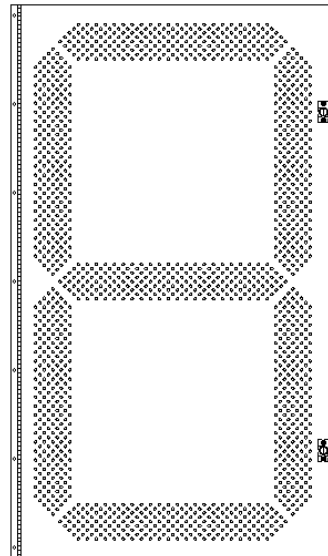
Electrical Specs, DF-1060-60 .....	Drawing A-194930
Electrical Specs, DF-1060-48 .....	Drawing A-195339
Electrical Specs, DF-1060-36 .....	Drawing A-195398

For the front-access displays in this series, all internal electronic components and digits can be reached by opening the hinged access doors on the front of the display. Each door swings outward when the latch screws on the display face panel are unfastened. The latches, shown in **Figure 7**, require a quarter-turn.

In each of the DF-1060 models, the driver enclosure is located immediately behind the center digit. For front and opened views of the displays, refer to your model's electrical specifications drawings, listed above.

**Note:** Disconnect power before servicing the display!

Disconnect power, too, when the display is not in use. Prolonged power-on may shorten the life of some electronic components.



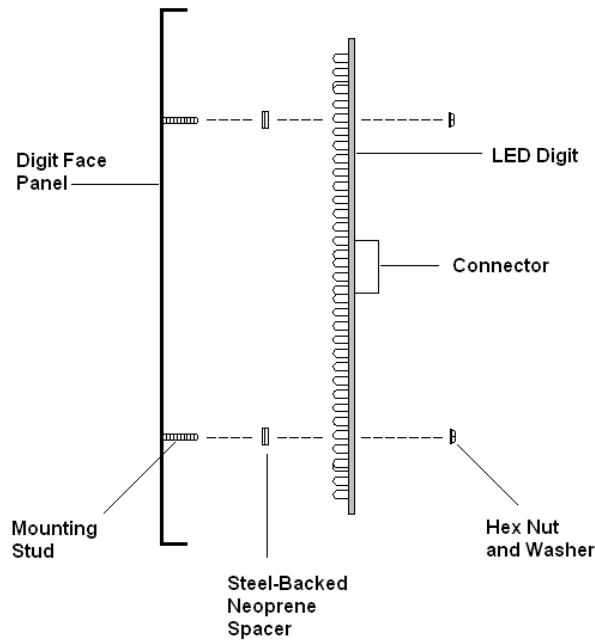
**Figure 7:** Hinged Digit Panel

## Replacing a Digit

The digit circuit board, the platform for the LEDs, is mounted to the back of the digit panel. Do not attempt to remove individual LEDs. In the case of a malfunctioning board, replace the entire digit panel. Refer to **Figure 8** below.

To remove a display digit, follow these steps:

1. Open the digit panel as described in the preceding section.



**Figure 8:** Digit Installation

2. Disconnect the connector from the back of the digit. Release the connector by squeezing together the locking tabs as you pull the connector free.
3. The digits are secured to the inside of the panel with fixed machine screws, spacers, and push nuts. Remove the nuts and lift the digit off the standoff screws. (The push nuts can be removed in several ways, but Daktronics recommends using a  $\frac{9}{32}$ " nut driver.)
4. Position a new digit over the screws and replace and tighten the nuts.
5. Reconnect the power/signal connector.

**Note:** This is a keyed connector **It** will attach in one way only. Do not attempt to force the connection!

6. Close and secure the digit panel and test the display.

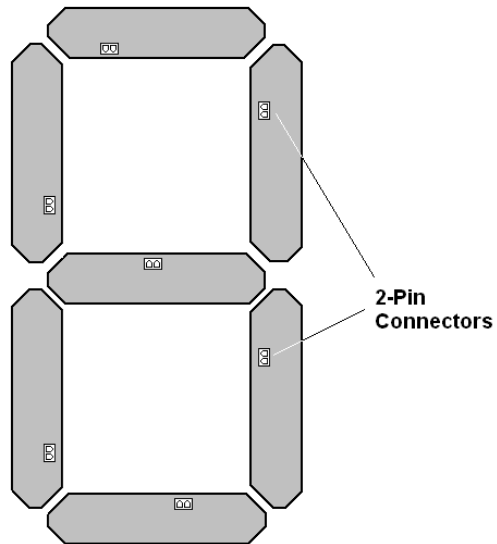


## Replacing a Digit Segment

When a digit malfunctions, in most cases it is necessary to replace the entire digit circuit board. Some larger digits (36", 48", 60"), however, are constructed in segments, as shown in **Figure 9**, and it may be possible to make repairs by removing only the defective segment. As with smaller digits, the digit segment circuit boards are mounted to the back of the digit panel. *Do not attempt to remove individual LEDs.*

To remove a digit segment, follow these steps:

1. Open the digit panel as described above.
2. Disconnect the 2-pin or 4-pin connector from the back of the individual segment. Release the connector by squeezing together the locking tabs as you pull the connector free.
3. The individual segments are secured to the inside of the panel with fixed machine screws, spacers, and push nuts. Remove the nuts and lift the segment off the standoff screws.



**Figure 9:** Digit Segments and Connectors

4. Position a new segment over the screws and replace and tighten the nuts.
5. Reconnect the power/signal connector.

**Note:** This is a keyed connector **It** will attach in one way only. Do not attempt to force the connection!

6. Close and secure the digit panel and test the display.

Replace a malfunctioning decimal in the same manner.

## Replacing a Driver

Drivers are mounted inside the display and immediately behind a digit, and with the Lottery displays, the driver enclosure is located immediately behind the center digit.

Each driver is enclosed with a power supply and power and signal terminal blocks. Before a failed driver can be reached, the enclosure must be accessed. Follow these steps:

1. Open the digit panel or display face panel as described in **Section 3.2**.
2. Remove the cover from the driver enclosure.
3. Disconnect all connectors from the driver. Release each connector by squeezing together the locking tabs as you pull the connector free.

**Note:** When reconnecting, remember that these are keyed connectors and will attach in one way only. Do not attempt to force the connections.

4. Remove the screws, nuts, or wing nuts securing the driver to the inside of the enclosure.
5. Carefully lift the driver from the display and place it on a clean, flat surface.
6. Follow steps 1 through 5 in reverse order to attach a new driver.

## 3.3 Schematic

### Reference Drawing:

Schematic; 16 Col Multipurpose LED Drvr..... **Drawing A-179599**

**Drawing A-179599** is the schematic diagram for the 16-column driver used in the Data Master Lottery displays. The schematic includes power and signal inputs and all wiring for the models described in this manual.

## 3.4 LED Drivers

### Reference Drawing:

16 Col. MASC Driver Specification..... **Drawing A-184475**

In the display, the LED driver performs the task of switching digits on and off. Refer to **Drawing A-184475** for a complete listing of driver connector functions and wiring pin numbers.

All Data Master Lottery displays use 16-column drivers, and each driver has 20 or more connectors providing power and signal inputs to the circuit, and outputs to the digits and indicators. The following table describes connector functions for a 16-column driver.

<b>16-Column LED Driver</b>	
<b>Connector No.</b>	<b>Function</b>
J1 – 16	Outputs to digits
J17	Power and signal input
J18	Relay
J19	Address
J20	Protocol
J21-22	ISP
J23	12 V DC out
J24	Modem
J28	Switch inputs
TB1	CAN (photo/temp sensor)

Output connectors 1 through 16 each have nine pins. Pin 7 provides power (hot) to the digit or indicators wired to that connector. The other eight pins provide switching connections.

The display line controlled by the driver is set with jumper wires in the 12-pin address plug inserted in jack J19. All DataMaster displays ship with a “Line 1” plug installed.

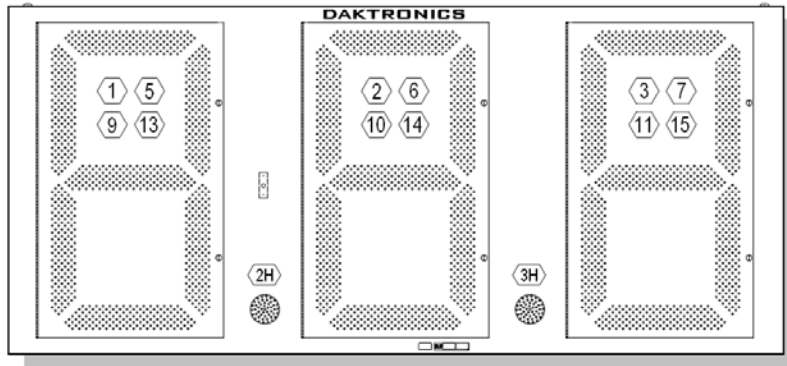
### 3.5 Segmentation and Digit Designation

**Reference Drawing:**

Segmentation, 7 Segment Bar Digit ..... **Drawing A-38532**

In each digit, certain LEDs always go on and off together. These groupings of LEDs are referred to as “segments.” **Drawing A-38532** illustrates digit segmentation. It also details which connector pin is wired to each digit segment and the wiring color code used throughout the display.

The electrical specifications drawings listed in **Section 3.2** specify the driver connectors controlling the individual digits. Numbers displayed in hexagons in the upper half of each digit, as shown in **Figure 10**, indicate which connector or connectors are wired to that digit. The larger digits, 48" and 60", are each wired to four connectors; while 36" digits have only two connectors.



**Figure 10:** Digit Designation

### 3.6 Troubleshooting

This section lists potential problems with the display, 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.

Symptom/Condition	Possible Cause
<i>Garbled display</i>	<ul style="list-style-type: none"> <li>▪ Internal driver logic malfunction</li> <li>▪ Control console malfunction</li> </ul>
<i>Digit will not light</i>	<ul style="list-style-type: none"> <li>▪ Black wire to digit broken</li> <li>▪ Poor contact at driver connection</li> <li>▪ Driver malfunction</li> </ul>
<i>Segment will not light</i>	<ul style="list-style-type: none"> <li>▪ Broken LED or connection</li> <li>▪ Driver shift register failure</li> <li>▪ Broken wire between driver and digit</li> <li>▪ Poor contact at driver connector</li> </ul>
<i>Segment stays lit</i>	<ul style="list-style-type: none"> <li>▪ Driver shift register failure</li> <li>▪ Short circuit on digit</li> </ul>
<i>Data appears in the wrong place on the display, wrong data on a particular line of the display</i>	<ul style="list-style-type: none"> <li>▪ Incorrect address settings on drivers (Refer to “Power On Self-Test” in the following section, and consult tables to set correct addresses.)</li> </ul>

Some DataMaster displays have their own built-in troubleshooting mechanism. Failures that may occur in the display driver are described using codes. In the event a sign malfunctions, a failure code registers by displaying an “Ex” value on the first two digits of the display. “E” simply indicates an error, and the letter “x” represents the actual code number. Refer to the following table for a description of each failure code and for possible solutions. Not all error codes are applicable to all displays.

**Note:** The LCD screen on the DataMaster 100 controller will not show the failure codes described in the following table. Failure codes will be displayed only on the Data Master sign.

Failure Code	Description	Possible Solution
E1	Protocol Setting Error: There is an unsupported driver protocol setting.	Check the value set in the protocol plug of the driver (J20).
E2 <i>(Not applicable to Lottery displays)</i>	Time Error: There is no valid time stored in the driver; it may be a failure of the real-time clock on board or other timekeeping device.	Set the time in the display using the Set Time menu option on the DataMaster 100 controller.
E3 <i>(Not applicable to Lottery displays)</i>	Temp Error: There is no response from the temp sensor, or general temp sensor failure.	Check the temp sensor location and verify all connections. Refer to the instruction sheet for the CAN Temperature/Light Sensor mounting, <b>ED-13364</b> .  <b>Note:</b> The temp sensor takes approximately 10 seconds to initialize on power-up. The sign will display this error until initialization is complete.
E4	No Message Error: This code is shown when there are no messages downloaded to the display	Download a new message to the display using the < <b>DISPLAY SEQUENCE</b> > key on the DataMaster 100 controller.
E5	No Line Number Selected Error: The driver for this line has a Protocol 4 plug installed in J20, but there is no address plug installed in J19.	Set the line number by installing the correct plug in J19. 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:

A useful troubleshooting tool is the power on self-test the host driver performs every time it powers up:

- If the signal wiring between each controller is correct, the first two digits of each driver will display "Ad" momentarily, and the first digit will then flash three numbers indicating the decimal address that is set with the address plug in J19. (If a client driver displays "A <number>," followed by "P <number>," it is not receiving "signal in," and is performing its own self-test.)

- Next, the first two digits of each line will display “Lx”, where “x” is the line number that the driver is set to control (set with address plug).
- Finally, each line will display “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 plug is installed, or the driver or digit harness is connected incorrectly.

If there is no address plug in the host driver, the host driver will display “E5,” and all client drivers will continually cycle through the power on self-test.

### 3.7 Lightning Protection

The use of a disconnect near the display to completely cut all current-carrying lines significantly protects the circuits against lightning damage. The National Electrical Code also requires it. In order for this device to provide protection, the power *must* be disconnected when the display is not in use. The control console should also be disconnected from power and from the signal j-box when the system is not being used. The same surges that may damage the display's driver can also damage the console's circuit.

### 3.8 Replacement Parts

Refer to the following table for Daktronics replacement parts.

Description	Daktronics Part No.
Driver; enclosed, 16-col MASC	0A-1279-0176
<ul style="list-style-type: none"> <li>■ Driver (only); 16-col, MASC, LED, coated</li> </ul>	0P-1192-0086
<ul style="list-style-type: none"> <li>■ Power supply; 24 V, 150 W, 86-132 V input</li> </ul>	A-1720
<ul style="list-style-type: none"> <li>■ Fan; 32 cfm, 24 V DC, 3.15 in sq</li> </ul>	B-1030
<ul style="list-style-type: none"> <li>■ Surge board with radio conn, outdoor</li> </ul>	0P-1110-0011
Light sensor, G3	0A-1279-0203
<ul style="list-style-type: none"> <li>■ Sensor (only); CAN temp and light detector, coated w/ bus term</li> </ul>	0P-1247-0002
Digit half-segment, 60" red, horizontal, G3	0P-1192-0280
Digit half-segment, 60" red, vertical, G3	0P-1192-0281
Digit half-segment, 60" red, horizontal, G3	0P-1192-0282
Digit half-segment, 60" red, vertical, G3	0P-1192-0283

*(Continued on next page)*

(Continued from preceding page)

Description	Daktronics Part No.
Digit segment, 48" red vert	0P-1192-0212
Digit segment, 48" red horiz	0P-1192-0213
Digit segment, 48" amber vert	0P-1192-0226
Digit segment, 48" amber horiz	0P-1192-0227
Digit segment, 36" red vert	0P-1192-0208
Digit segment, 36" red horiz	0P-1192-0209
Digit segment, 36" amber vert	0P-1192-0222
Digit segment, 36" amber horiz	0P-1192-0223
Digit segment, 24" red vert	0P-1192-0204
Digit segment, 24" red horiz	0P-1192-0204
Digit segment, 24" amber vert	0P-1192-0218
Digit segment, 24" amber horiz	0P-1192-0219
Indicator, 4" circular red, pc board, G3	0P-1192-0244
Indicator, 4" circular amber, pc board, G3	0P-1192-0245
Address plug; AS shot clock, Address No. 1	0A-1150-0122
Plug; protocol 4	0A-1279-0089
Signal converter w/modem; 232-422, coated	0P-1279-0003
DataMaster 100 installation kit; indoor wired	0A-1279-0103

### 3.9 Daktronics Exchange and Repair and Return Programs

To serve customers' repair and maintenance needs, Daktronics offers both an Exchange Program and a Repair and Return Program. Daktronics' unique Exchange Program is a quick, economical service for replacing key components in need of repair. If a component fails, Daktronics sends the customer a replacement, and the customer, in turn, sends the failed component to Daktronics. This not only saves money but also decreases display downtime.

Daktronics provides these plans to ensure users get the most from their Daktronics products, and it offers the service to qualified customers who follow the program guidelines explained below. Please call the Help Desk – 877-605-1115 – if you have questions regarding the Exchange Program or any other Daktronics service.



When you call the Daktronics Help Desk, a trained service technician will work with you to solve the equipment problem. You will work together to diagnose the problem and determine which exchange replacement part to ship. If, after you make the exchange, the equipment still causes problems, please contact our Help Desk immediately.

If the replacement part fixes the problem, package the defective part in the same box and wrapping in which the replacement part arrived, fill out and attach the enclosed UPS shipping document, and *RETURN THE PART TO DAKTRONICS*. In most circumstances, you will be invoiced for the replacement part at the time it is shipped. This bill is due when you receive it.

Daktronics expects immediate return of an exchange part if it does not solve the problem. The company also reserves the right to refuse equipment that has been damaged due to acts of nature or causes other than normal wear and tear.

If the defective equipment is not shipped to Daktronics within 30 working days from the invoice date, it is assumed you are purchasing the replacement part, and you will be invoiced for it. This second invoice represents the difference between the exchange price and the full purchase price of the equipment. The balance is due when you receive the second invoice. If you return the exchange equipment after 30 working days from the invoice date, you will be credited for the amount on the second invoice, minus a restocking fee.

**To avoid a restocking charge, please return the defective equipment within 30 days from the invoice date.**

Daktronics also offers a Repair and Return program for items not subject to exchange.

**Return Materials Authorization:** To return parts for service, contact your local representative prior to shipment to acquire a Return Material Authorization (RMA) number. If you have no local representative, call the Daktronics Help Desk for the RMA. This expedites repair of your component when it arrives at Daktronics.

**Packaging for Return:** Package and pad the item well so that it will not be damaged in shipment. Electronic components such as printed circuit boards should be installed in an enclosure or placed in an antistatic bag before boxing. Please enclose your name, address, phone number and a clear description of symptoms.

***This is how to reach us:***

***Mail:*** Customer Service  
Daktronics, Inc.  
PO Box 5128  
331 32nd Ave  
Brookings SD 57006

***Phone:*** Daktronics Help Desk: 877-605-1113 (toll free)  
or 605-697-4034

***Fax:*** 605-697-4444

***E-mail:*** [helpdesk@daktronics.com](mailto:helpdesk@daktronics.com)

## Section 4: Control System Overview

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This section describes the DataMaster 100 and includes the following subsections:

- **DM-100 Controller Overview** identifies the control equipment, lists replacement parts, and describes how the DM-100 operates the displays.
- **Control System Overview** reviews the main options for display control.

### 4.1 DataMaster 100 Overview

**Reference Drawing:**

Riser Diagram, Outdoor Wire Control.....**Drawing A-164988**

The DataMaster 100 Series controller, shown in **Figure 11**, is a hand-held controller designed to operate Daktronics LED Data Master displays. This lightweight controller, 6<sup>1</sup>/<sub>4</sub>" high by 4<sup>1</sup>/<sub>4</sub>" wide, is encased in ABS plastic, making it a durable and convenient control option. The console's liquid crystal display (LCD) guides the user through the operation of the system.

The DataMaster 100, identified by the series number DM-100, can be configured to display gasoline price, motel rates, lottery jackpots, parking garage information, and time and temperature data. Refer to **Drawing A-164988** for information on possible control options and connection procedures.



**Figure 11:** DataMaster 100

For details on configuring the DataMaster to operate a display, refer to **Section 5: Lottery Display Operation**.

**Note:** When your carrier delivers your Daktronics order, open the packages and inspect for shipping damage such as rattles and dents. See that all equipment is included as shown on the packing slip. Immediately report any deficiencies to Daktronics. Save all packing materials for shipping if warranty repair or exchange is needed.

## Replacement Parts List

The following is a list of possible replacement parts for the DataMaster 100 controller. When re-ordering a part, be sure to use its corresponding part number.

Description	Daktronics Part No.
Wall pack transformer	T-1118
DataMaster 100 controller	0A-1196-0088
Control Insert	LL-2551
Cable, DB-9 male to DB-9 female, 10'	W-1267

Refer to **Section 3.9** for details concerning the Daktronics exchange and repair programs.

## 4.2 Control System Overview

### Reference Drawings:

- Riser Diagram, Outdoor Wire Control ..... **Drawing A-164988**
- Riser Diagram, Indoor Wire Control ..... **Drawing A-175342**

The DataMaster Lottery displays may be operated with standard DataMaster software using a DM-100 controller. In many cases, however, the displays will be operated with custom or third-party software

All of the displays in the LED DataMaster Series have several control options including direct wire, modem, radio, and data download from a junction box at the sign. Refer to the appropriate system riser diagram, listed above, for detailed instructions on control system setup.

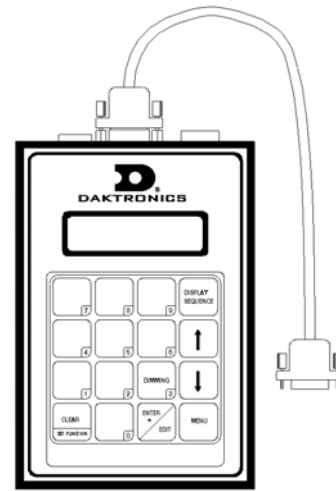
### Wire Control

#### Reference Drawings:

- Riser Diagram, Outdoor Wire Control ..... **Drawing A-164988**
- Riser Diagram, Indoor Wire Control ..... **Drawing A-175342**

In almost all cases, the DataMaster Lottery displays will be controlled from a location inside a building, either by direct wire or by modem, but they may also be controlled from the base of the display. **Drawings A-164988** and **A-175342** and the subsections that follow provide greater details on installations using signal wire.

For display systems using a base-of-sign connection, the DataMaster 100 controller, shown with a connecting cable in **Figure 12**, plugs directly into an outdoor junction box, where the operator keys in instructions for the sign. Typically, the j-box is mounted to the display pedestal or column support, and the controller connects with the box via TIA/EIA-232 signal cable (formerly RS-232). The controller draws its power from the display itself. Refer to **Drawings A-175342** and **A-164988** for complete details on both indoor and outdoor direct-wire installations.



**Figure 12:** DataMaster 100 Controller with Signal Cable

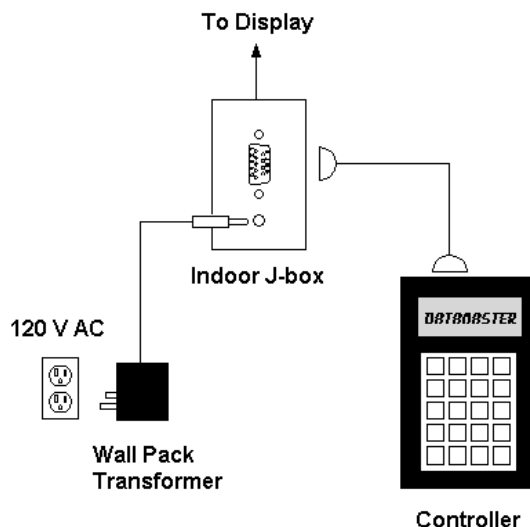
Signal from the junction box enters the sign and travels to the first display driver over 2-pair, shielded signal cable. The 22 AWG cable must be enclosed in conduit. Re-driven signal travels from the driver of the first display to the driver of the next over another line, also 22 AWG shielded cable in conduit. The process repeats for as many displays as there are in the system.

Once instructions have been input into the display, the driver's memory retains the data, and the controller can be unplugged. The sign will continue to operate on the stored information.

Signal cabling is similar for systems where the Data Master displays will be operated remotely from a building location, except that the controller requires a wall pack transformer. The transformer plugs into both the hand-held controller and into a 120 V AC outlet, as shown in

**Figure 13.** The DataMaster controller also connects to a junction box to send signal to the display, but the j-box will be located within the store or office. The control location can be up to 2,000 feet from the actual sign.

The operator changes the display by entering current lottery numbers and operating instructions on the keypad of the DataMaster controller. For complete details on sign operation, refer to **Section 5**.



**Figure 13:** Wire Control from Building Location

## **Modem and Radio Control**

A third "wired" method of relay information to the display is by using a dial-out modem system and a telephone line. A modem junction box is required for this operating system. Most DataMaster Lottery displays will be controlled by modem. For basic information on installing a modem, refer to **Section 2.4**. The **DataMaster Modem Installation Manual, ED-13953**, provides complete information on modem systems, including cable routing and j-box installation.

Optional DataMaster bidirectional radio permits control of any DataMaster display without the use of a direct-wired connection between the DataMaster 100 and the display. Because radio is optional with DataMaster displays, the receivers and transmitters must be field-installed.

For additional information for either of these options, please contact your Daktronics account representative or service provider.

## Section 5: Lottery Display Operation

This section covers the basic operation of the DataMaster Lottery display using the DataMaster 100 controller and DataMaster software. Some Lottery display installations may use custom or third party software or may use Daktronics DataMaster software with another controller; in either case, error-free operation will require protocol adjustments and an appropriate interface.

### 5.1 DataMaster Insert and Code

**Reference Drawing:**

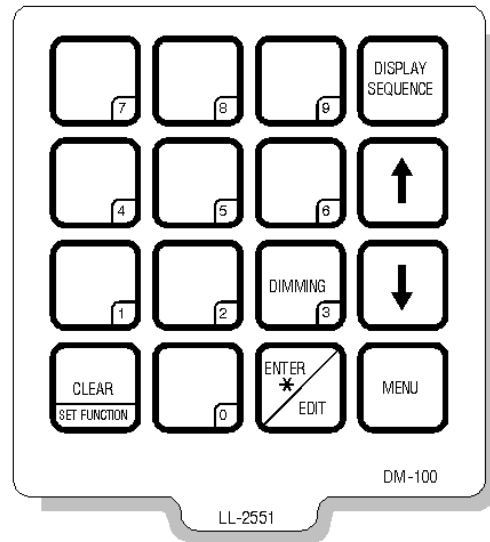
Insert, DM-100 Price/T&T Display ..... **Drawing A-167856**

The DataMaster 100 uses a keypad insert to program rate information into Daktronics LED DataMaster displays.

**Figure 14** at right illustrates the DM-100 insert used to control the rate displays. For more details on the insert, refer to the DataMaster 100 insert drawing, **A-164999**, located in **Appendix A**.

If an insert is lost or damaged, a copy of the insert drawing can be used until a replacement can be ordered.

To start the controller and use the insert, refer to the following display operation information. Read each subsection carefully to fully understand the operating procedures.



**Figure 14:** DataMaster 100 Insert LL-2551




### 5.2 Lottery Display Operation

The DataMaster 100 controller can be configured to program number variances displayed on the LED DataTime Lottery sign. The instructions provided in this section discuss the functions the operator uses to control the display.

In the unlikely event that the Lottery display malfunctions, refer to **ED-13481: Frequently Asked Questions** in **Appendix B**, and to the troubleshooting tables in **Section 3.6**. Both of those subsections detail measures that can be taken to correct various problems.

## Lottery Display Startup

To operate the DataMaster Lottery displays, the DataMaster 100 must first be programmed to the Lottery display function. Use the <SET FUNCTION> key on startup. Use the following table as a guide to startup procedures.

LCD Screen	Action
	<p>Plug the wall pack transformer into a 120 V AC power outlet, and connect it to the DataMaster 100.</p> <p>This display appears briefly, showing the current function of operation.</p>
	<p>This message appears next on the screen.</p> <p>If "LOTTERY" was shown on the bottom line of the LCD during startup, do nothing. The controller will automatically default to the previous display settings.</p> <p>If a function other than "LOTTERY" was shown on the bottom line of the LCD during startup, press the &lt;SET FUNCTION&gt; key while the second LCD prompt is displayed.</p>
	<p>Press the arrow up or down keys &lt;↑↓&gt; until the Lottery option is shown. Press the &lt;ENTER&gt; key to accept.</p>

The handheld controller should now be ready for use. The controller will "remember" the last function setting, so this step should only need to be done with a new controller, or one that is configured for different displays. Press any of the keys listed below to operate the controller.

## Lottery Display Controller Operation

The DataMaster 100, configured to the Lottery display option, defaults to showing the current display settings on power-up. The following text will be shown on the LCD.



LCD Screen	Action
<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p style="text-align: center;">LOTTERY AMOUNT</p> <p style="text-align: center;">1↓ \$ 000</p> </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p style="text-align: center;">&lt;EDIT&gt; TO MODIFY</p> <p style="text-align: center;">1↓ \$ 000</p> </div> <p><b>Note:</b> Options include            \$000 (default)            \$00.0            \$0.00</p>	<p>The display will toggle between these two screens.</p> <p>Press the up or down arrow keys &lt;↑↓&gt; to scroll through the current setting for any of the lines on the display.</p> <p>Press the &lt;ENTER/EDIT&gt; key to modify any of the line settings.</p>

### Modifying Amount Settings

The lottery can be modified either by pressing the <EDIT> key during operation (Refer to **Lottery Display Controller Operation**) or using the <MENU> key (refer to the <MENU>**Key Operation**.)

Use the following key to identify the item to be edited.

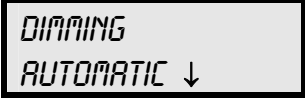
- L = Current lottery number to be edited
- \$000 = Current value to edit

LCD Screen	Action
<div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center;">EDIT LOTTERY L</p> <p style="text-align: center;">\$000</p> </div>	<p>Press any of the number keys to edit the amount for this lottery.</p> <p>Note: The flashing asterisk on the LCD shows the current data being edited.</p>


## Dimming

The dimming level of the Lottery display can be adjusted in two ways. A temperature/light sensor, mounted near the display, can detect the level of ambient light at the display location and dim the sign's LEDs accordingly. This function is known as automatic dimming. When the manual dimming function is selected, the LEDs remain at the same level of brightness regardless of the level of light detected at the display.

To select either of these functions, press <DIMMING>. The current setting is shown on the bottom line of the LCD.

LCD Screen	Action
 <p>The LCD screen displays the word "DIMMING" on the top line and "AUTOMATIC" with a downward-pointing arrow on the bottom line.</p>	<p>Press the down arrow key &lt;↓&gt; to toggle through dim settings:</p> <p><b>Automatic</b> – The display automatically dims based on the light detected at the display</p> <p><b>Manual</b> – The display dimming level is set manually. Once set, this value remains regardless of the level of light detected at the display.</p>

If AUTOMATIC dimming is selected, the following LCD prompt will be shown:

LCD Screen	Action
 <p>The LCD screen displays "SET AUTO DIMMING" on the top line and "MAX INTENSITY?" on the bottom line.</p>	<p>Press the &lt;ENTER/EDIT&gt; key to edit the auto dimming max intensity. This is the maximum intensity that the display will use in full-bright modes (during daylight hours.)</p> <p>Press &lt;CLEAR&gt; to keep the current auto dimming maximum setting</p>

The following LCD prompt is shown for either **Manual** or **Automatic dimming** selections:

LCD Screen	Action
<div data-bbox="464 390 768 487" style="border: 1px solid black; padding: 5px; text-align: center;"> <p><i>INTENSITY XX↑</i> <i>ENTER TO SET</i></p> </div> <p>XX – Current intensity (1-16) Max Intensity - 16</p>	<p>Press the up or down arrow key &lt;↑↓&gt; to modify the current intensity of the display (<b>Note:</b> The DataMaster must be connected to the display)</p> <p>Press &lt;ENTER&gt; to accept this intensity. If the manual dimming mode is selected, this will be the new intensity for the display. If the automatic dimming mode is selected, the display will illuminate in full-bright mode, which is the maximum intensity level.</p>

A third option controlled by the <DIMMING> key is the **Blank Sign** command, which clears the display completely.

LCD Screen	Action
<div data-bbox="464 1031 768 1127" style="border: 1px solid black; padding: 5px; text-align: center;"> <p><i>DIMMING</i> <i>BLANK SIGN ↓</i></p> </div> <div data-bbox="464 1165 768 1308" style="border: 1px solid black; padding: 5px; text-align: center;"> <p><i>BLANK THE SIGN?</i> <i>&lt;ENT&gt; YES</i> <i>&lt;CLR&gt; NO</i></p> </div> <div data-bbox="464 1367 768 1463" style="border: 1px solid black; padding: 5px; text-align: center;"> <p><i>RESTART SIGN?</i> <i>&lt;ENT&gt; YES</i></p> </div>	<p>Press &lt;ENTER&gt; to accept this option.</p> <p>The next LCD dialog will ask whether you want to blank the screen or escape. The LCD toggles between Yes and No. Pressing &lt;CLR&gt; resumes normal operation; pressing &lt;ENT&gt; actually blanks the sign.</p> <p>To resume normal operation from a blanked sign, press the &lt;DIMMING&gt; key again. The DM-100 will display a <b>Restart Sign</b> message. There is only one option: Yes. Press &lt;ENT&gt; to restart.</p>

### Display Sequence

Once connected to the base of the display or to the indoor j-box, press <DISPLAY SEQUENCE> to display the new sequence on the display.

## Menu Items

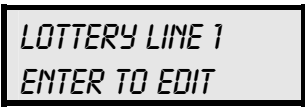
Pressing the <MENU> key accesses the following settings:

1. Lottery 1
2. Lottery 2
3. Lottery 3
4. Lottery 4
5. Lottery 5
6. LED Test
7. Display Option 1
8. Display Option 2
9. Display Option 3
10. Display Option 4
11. Display Option 5
12. Modem Settings
13. Display Status
14. Set Time

Use Menu items 1-5 to edit the price on each lottery on the display. Lines are typically numbered top to bottom with 1 being the top of the display. For further details, refer to **Modifying Amount Settings** discussed previously in this section.

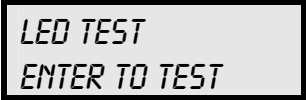
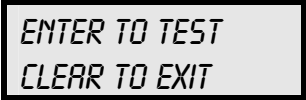
For more information about the Modem Settings submenu, refer to **ED-13953: DataMaster Modem Installation Manual**. For additional information about the Display Status or the Set Time submenus, refer to **ED-13894: DataMaster Radio Installation Manual, ED13894**; that manual provides for complete details on installation and setup for a bidirectional radio system.

After pressing the <MENU> key, the following LCD prompt is displayed:

LCD Screen	Action
	<p>Pressing the &lt;MENU&gt; key displays this message.</p> <p>Press &lt;ENTER&gt; to edit the current item shown on the LCD.</p> <p>Press the up or down arrow keys &lt;↑↓&gt; to move to the previous or next item in the list.</p> <p>Press the &lt;MENU&gt; key a second time or press the &lt;CLEAR&gt; key (press twice if editing) to exit the menu.</p>

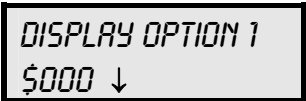
### LED Test

Select Menu Item 6, LED Test, to test the LED digits on the display.

LCD Screen	Action
	Press the <ENTER> key to cycle the display digits between all LEDs on and all LEDs off.
LCD Screen	Action
	Press <ENTER> to send the test command to the sign.  Press <CLEAR> to exit the test mode

### Display Option

Use the Display Option menu to select the display configuration for each lottery.

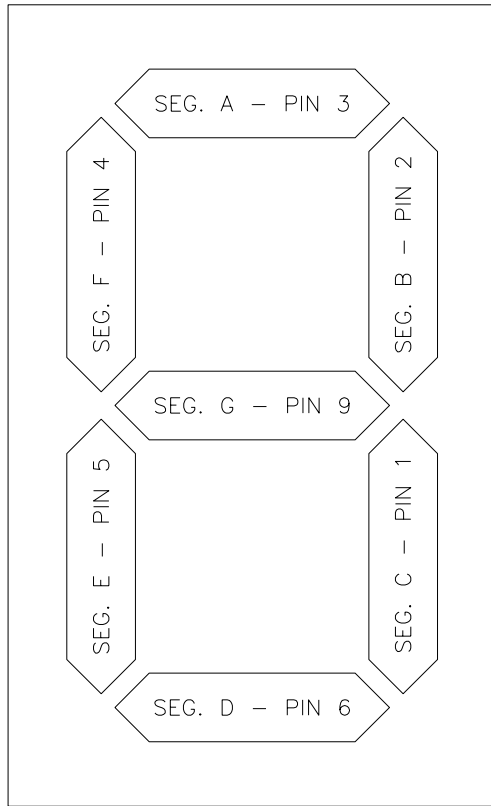
LCD Screen	Action
	<p>The current configuration for a lottery is shown on the bottom line of the LCD. Press the down arrow key &lt;↓&gt; to select any of the possible configuration values.</p> <p>Possible values are: \$000 (default) \$00.0 \$0.00</p> <p>Select the configuration that matches the layout for that lottery on your display.</p> <p><b>Note:</b> If the wrong configuration is selected, the digits shown on the LCD may not be displayed correctly on the display.</p> <p>Press &lt;ENTER&gt; to accept and move on to the next screen.</p>

LCD Screen	Action
<div data-bbox="418 317 721 420" style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p style="text-align: center;"><i>DISPLAY \$000*</i> <i>ENTER TO UPDATE</i></p> </div> <p data-bbox="396 457 695 487">*Option chosen will display</p>	<p data-bbox="773 323 1243 386">The LCD screen will display this message to verify that the new setting is correct.</p> <p data-bbox="773 428 1208 491">Press &lt;ENTER&gt; if you want to update the display option.</p> <p data-bbox="773 533 1250 630"><b>Note:</b> Modifying this setting will clear the current amount setting for that corresponding lottery only.</p> <p data-bbox="773 672 1273 735">Connect to the display and press the &lt;DISPLAY SEQUENCE&gt; key to update.</p>

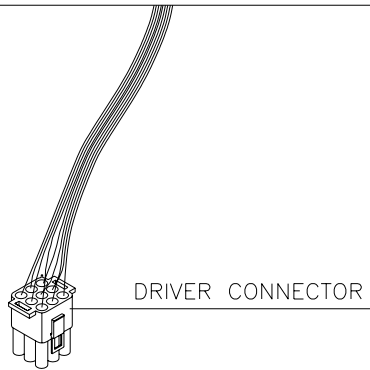
## Appendix A: Reference Drawings

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Segmentation, 7 Segment Bar Digit .....	Drawing A-038532
Riser Diagram; Outdoor Wire Control .....	Drawing A-164988
Mounting Method, Flag Style, One Pole.....	Drawing A-166139
Mounting Method, Single Line on One Pole.....	Drawing A-166142
Insert, DM-100 PRICE/T&T Display .....	Drawing A-167856
Riser Diagram, Indoor Wire Control .....	Drawing A-175342
Schematic; 16 Col Multipurpose LED Drvr.....	Drawing A-179599
Light Sensor Installation, G3 .....	Drawing A-183775
16 Col. MASC Driver Specification.....	Drawing A-184475
Host/Client Definitions .....	Drawing A-185236
Modem Installation, MASC Driver Enclosure .....	Drawing A-194873
Electrical Specs, DF-1060-60.....	Drawing A-194930
Electrical Specs, DF-1060-48.....	Drawing A-195339
Mechanical Specs, DF-1060-60 .....	Drawing A-195343
Mechanical Specs, DF-1060-48 .....	Drawing A-195367
Electrical Specs, DF-1060-36.....	Drawing A-195398
Mechanical Specs, DF-1060-36 .....	Drawing A-195399
Quick Install, DF-1060 Lottery Displays .....	Drawing A-198033
Shop Drawing, DF-1060-24.....	Drawing A-240357



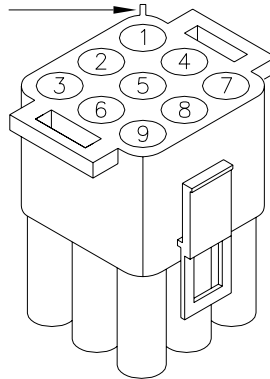
7 SEGMENT BAR DIGIT  
FRONT VIEW



COLOR CODE		
PIN NO.	WIRE COLOR	DRIVER SEGMENT
1	ORN	C
2	RED	B
3	BRN	A
4	BLU	F
5	PNK	E
6	TAN	D
7	BLK	COM.
8	GRY	H
9	VIO	G

CONNECTOR PIN NUMBERING

NOTE SPLINE NEAR NO. 1



NOTE: "H" SEGMENT, GRAY WIRE IS NOT USED ON 7 SEGMENT BAR DIGIT.

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DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: BASKETBALL

TITLE: SEGMENTATION, 7 SEGMENT BAR DIGIT

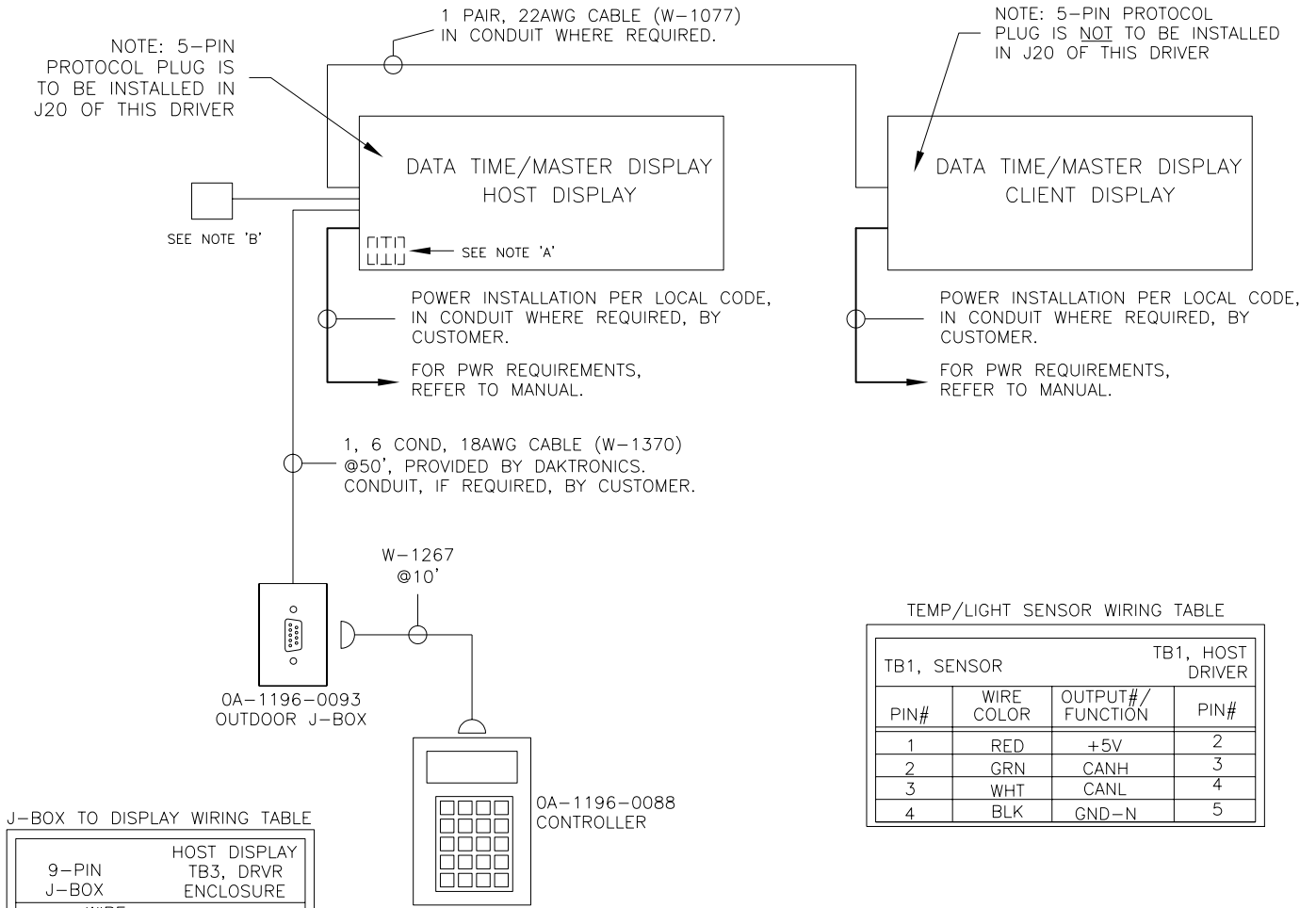
DES. BY: DRAWN BY: HEIDERSCHIEDT DATE: 5 JUN 89

REVISION 02 APPR. BY: AVB SCALE: 1=4 1009-R04A-38532

REV.	DATE	DESCRIPTION	BY	APPR.
2	30 APR 97	ADDED SEGMENT DESIGNATIONS TO DIGIT FIGURE.	AVB	AVB
1	2 JAN 92	CHANGED FROM B-SIZE TO A-SIZE DWG.	C FICK	



# WIRE CONTROL AT BASE OF SIGN



J-BOX TO DISPLAY WIRING TABLE

9-PIN J-BOX		HOST DISPLAY TB3, DRVR ENCLOSURE	
PIN#	WIRE COLOR	FUNCTION	PIN#
1	RED	12VDC-P	7
5	BLK	GND-N	8
6	GRN	SIG. IN+	1
5	WHT	SIG. IN-	2
8	BRN	SIG. OUT+	4
9	BLU	SIG. OUT-	5

TEMP/LIGHT SENSOR WIRING TABLE

TB1, SENSOR			TB1, HOST DRIVER	
PIN#	WIRE COLOR	OUTPUT# / FUNCTION	PIN#	
1	RED	+5V	2	
2	GRN	CANH	3	
3	WHT	CANL	4	
4	BLK	GND-N	5	

DISPLAY TO DISPLAY WIRING TABLE

HOST DISPLAY TB3, DRIVER ENCLOSURE		CLIENT DISPLAY TB3, DRIVER ENCLOSURE	
PIN#	WIRE COLOR	FUNCTION	PIN#
4	GRN	SIGNAL-P	1
5	WHT	SIGNAL-N	2

NOTE 'A':  
0A-1279-0100, INTERNAL PHOTO CELL KIT INCLUDED ON DATA TIME MODELS. REFER TO MANUAL FOR DETAILS.

NOTE 'B':  
0A-1151-0005 EXTERNAL TEMP/LIGHT SENSOR /W 8' OF 2 PAIR, 22 AWG CABLE (W-1234), INCLUDED ON DATA MASTER MODELS. INSTALLED ONSITE BY OTHERS.

INSTALL "PROTOCOL 4" PLUG IN THE DRIVER IN THE HOST DISPLAY ONLY.

REFER TO DRAWING 1279-R03A-165028 FOR DRIVER ENCLOSURE SCHEMATIC

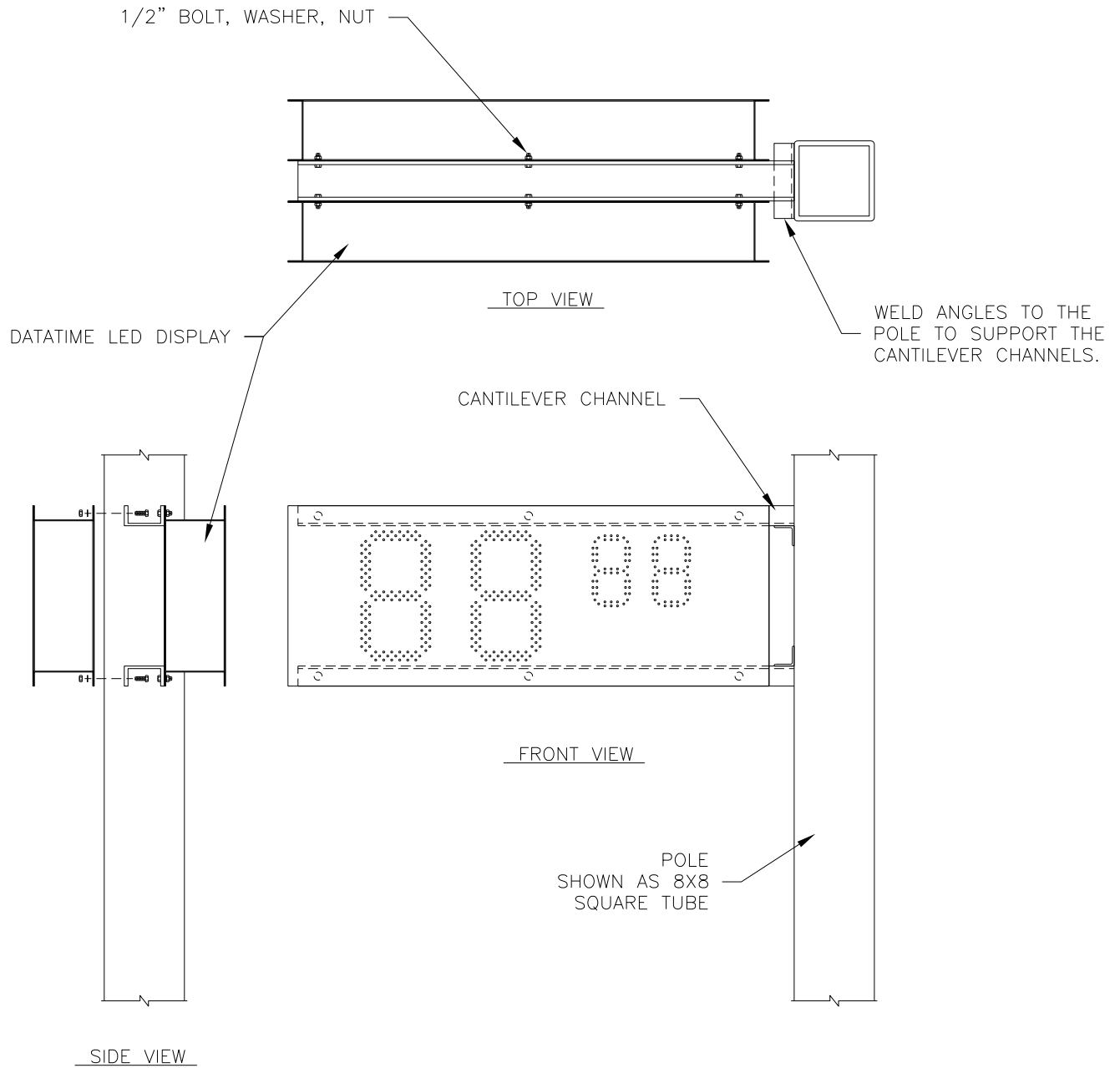
REV.	DATE	DESCRIPTION	BY	APPR.
07	06 APR 05	REVISED WIRING TABLE, CHANGED SOME CABLES.	ATP	
06	07 OCT 04	UPDATED PER NEW ASSEMBLES	RT	
05	19 SEP 02	CHANGED TO OUTDOOR CONTROL ONLY. ADDED HOST AND CLIENT DISPLAY FIGURES.	AVB	
04	10 SEP 02	REVISED CONFIGURATION OF CONTROL LOCATION FOR THE BUILDING LOCATION WITH NEW J-BOX, 0A-1196-0093.	NMB	
03	14 JUL 02	ADDED NEW NOTES FOR LIGHT AND TEMP SENSORS.	MWM	
02	25 JUN 02	CHANGED WALL PACK TRANSFORMER FROM 0F-1056-0004 TO T-1118	MWM	
01	30 MAY 02	REVISED ALL WIRING CHARTS AND ADDED PROPRIETARY NOTES.	MWM	

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**DAKTRONICS, INC. BROOKINGS, SD 57006**

PROJ: DATATIME LED DISPLAYS  
 TITLE: RISER DIAGRAM, OUTDOOR WIRE CONTROL, DATA TIME/MAS.  
 DES. BY: MMILLER DRAWN BY: MMILLER DATE: 15 APR 02

REVISION	APPR. BY:	1279-R01A-164988
07	SCALE: NONE	



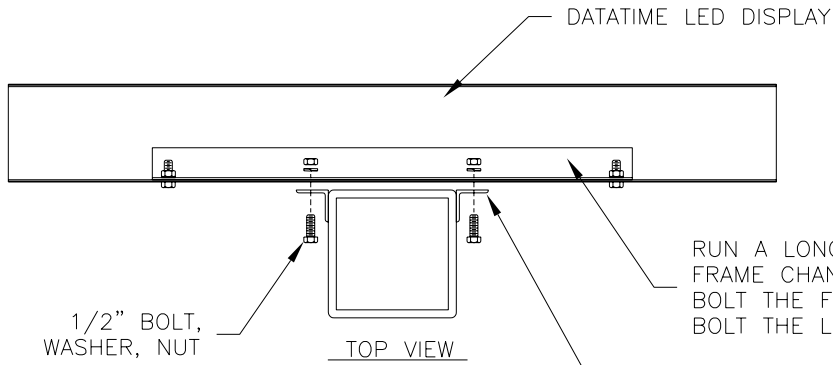
CANTILEVER OR FLAG MOUNTING METHOD

THIS METHOD MAY ALSO BE USED FOR MULTI-LINE DISPLAYS. LEAVE ADEQUATE SPACE BETWEEN DISPLAY LINES TO ALLOW ACCESS TO THE HARDWARE INSIDE THE CHANNELS.

THIS DRAWING SUGGESTS A MOUNTING METHOD AND IS NOT A SPECIFICATION FOR CONSTRUCTION. THE ACTUAL STRUCTURE AND MOUNTING HARDWARE MUST BE SPECIFIED BY A QUALIFIED ENGINEER.

THE CONCEPTS EXPRESSED AND DETAILS SHOWN ON THIS DRAWING ARE CONFIDENTIAL AND PROPRIETARY. DO NOT REPRODUCE BY ANY MEANS, INCLUDING ELECTRONICALLY WITHOUT THE EXPRESSED WRITTEN CONSENT OF DAKTRONICS, INC. COPYRIGHT 2009 DAKTRONICS, INC.			
DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: DATATIME® LED DISPLAYS			
TITLE: MOUNTING METHOD- FLAG STYLE- ONE POLE			
DES. BY: AVB		DRAWN BY: A VANBEMMEL DATE: 26 APR 02	
REVISION	APPR. BY:	1279-R10A-166139	
00	SCALE: 1=16		

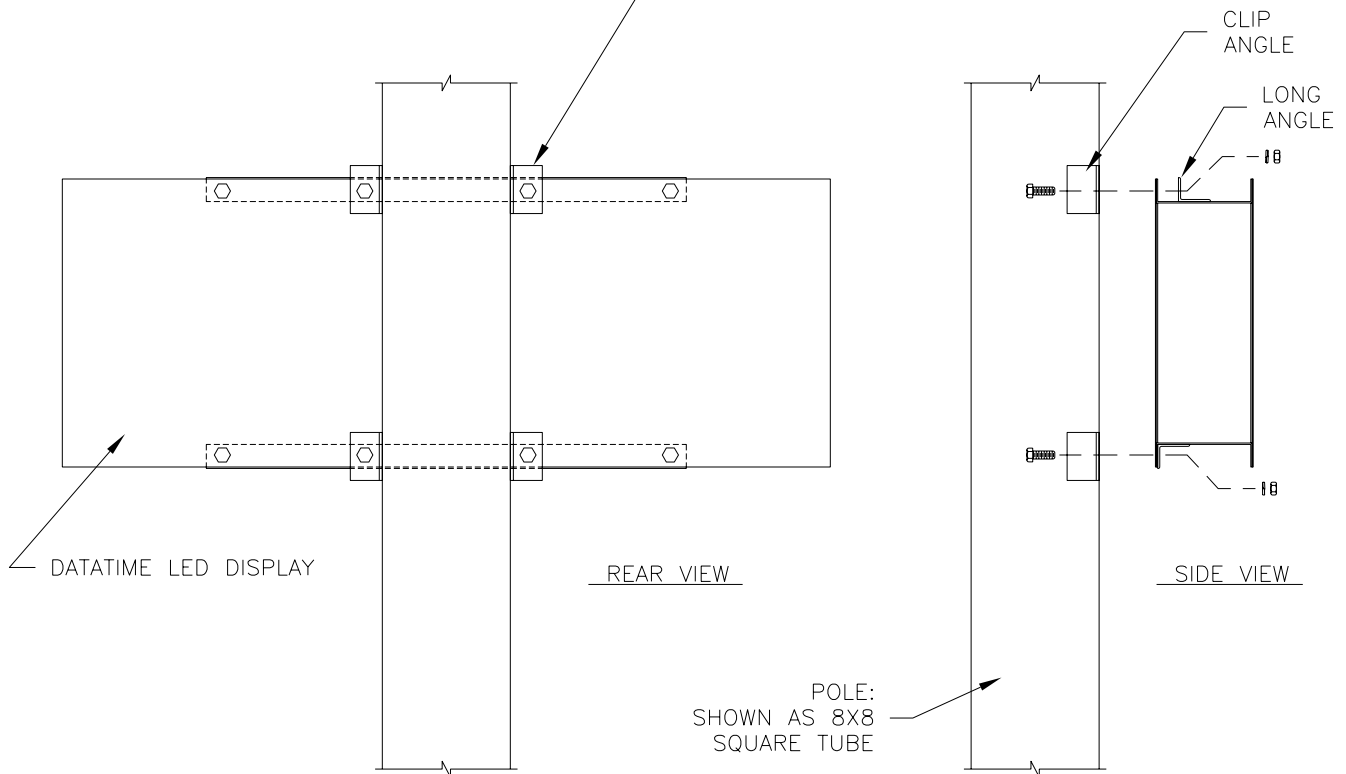
REV.	DATE	DESCRIPTION	BY	APPR.



RUN A LONG ANGLE INSIDE THE DISPLAY FRAME CHANNEL TO REINFORCE THE FRAME. BOLT THE FRAME TO THE LONG ANGLES AND BOLT THE LONG ANGLES TO THE CLIP ANGLES.

DRILL THROUGH THE ANGLES AND THE DISPLAY'S FRAME CHANNEL AND MOUNT WITH 1/2" HARDWARE.

WELD CLIP ANGLES TO THE POLE TO PROVIDE A SURFACE TO ATTACH THE DISPLAY.

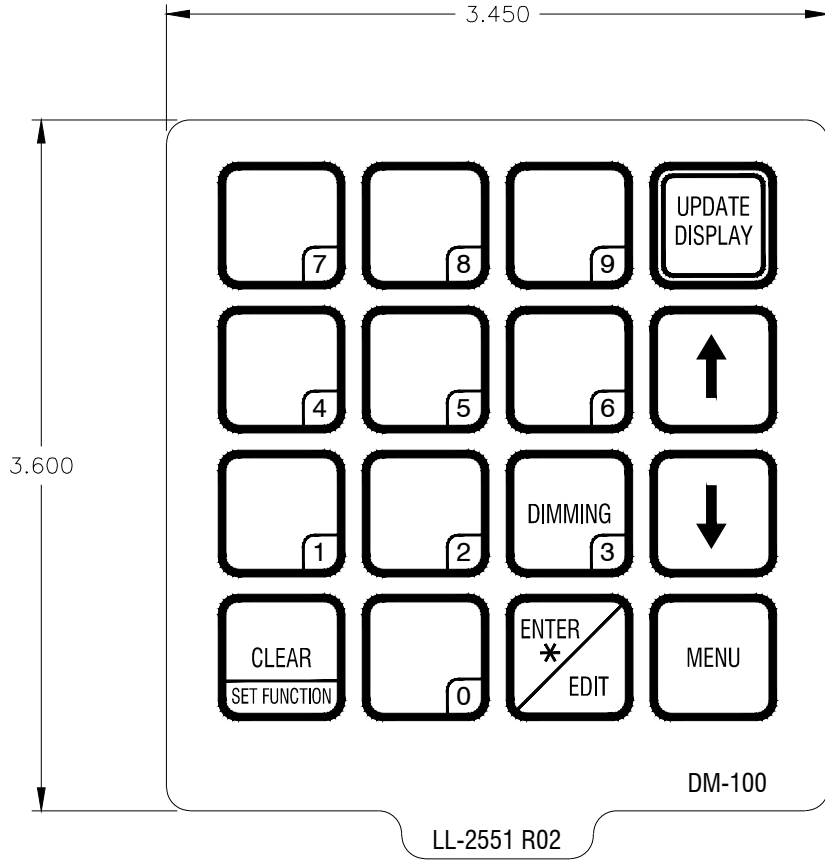



SINGLE FACED DISPLAY IS SHOWN. DOUBLE FACED (2V) DISPLAYS MAY BE MOUNTED THE SAME WAY BY WELDING CLIP ANGLES ONTO THE BOTH SIDES OF THE POLE.

THIS DRAWING SUGGESTS A MOUNTING METHOD AND IS NOT A SPECIFICATION FOR CONSTRUCTION. THE ACTUAL STRUCTURE AND MOUNTING HARDWARE MUST BE SPECIFIED BY A QUALIFIED ENGINEER.

DAKTRONICS, INC. BROOKINGS, SD 57006	
PROJ: DATETIME LED DISPLAYS	
TITLE: MOUNTING METHOD, SINGLE LINE ON ONE POLE	
DES. BY: AVB	DRAWN BY: A VANBEMMEL DATE: 26 APR 02
REVISION	APPR. BY: _____
	SCALE: 1=12
1279-R10A-166142	

REV.	DATE	DESCRIPTION	BY	APPR.



 <b>DAKTRONICS, INC.</b> BROOKINGS, SD 57006		THE CONCEPTS EXPRESSED AND DETAILS SHOWN ON THIS DRAWING ARE CONFIDENTIAL AND PROPRIETARY. DO NOT REPRODUCE BY ANY MEANS WITHOUT THE EXPRESSED WRITTEN CONSENT OF DAKTRONICS, INC. COPYRIGHT 2010 DAKTRONICS, INC.	
DO NOT SCALE DRAWING			
PROJ:			
TITLE: INSERT; LL-2551 DM-100 PRICE/T&T DISPLAY			
DESIGN: EBRAVEK		DRAWN: EBRAVEK	DATE: 28 MAY 02
SCALE: 1 = 1			
SHEET	REV	JOB NO:	FUNC-TYPE-SIZE
	00	P1196	E-07-A
			167856

# WIRE CONTROL FROM BUILDING LOCATION

NOTE: 5-PIN PROTOCOL PLUG IS TO BE INSTALLED IN J20 OF THIS DRIVER

1 PAIR, 22AWG CABLE (W-1077)  
IN CONDUIT WHERE REQUIRED.

NOTE: 5-PIN PROTOCOL PLUG IS NOT TO BE INSTALLED IN J20 OF THIS DRIVER

SEE NOTE 'B'

DATA TIME/MASTER DISPLAY  
HOST DISPLAY

SEE NOTE 'A'

POWER INSTALLATION PER LOCAL CODE,  
IN CONDUIT WHERE REQUIRED,  
BY CUSTOMER.

FOR POWER REQUIREMENTS,  
REFER TO MANUAL.

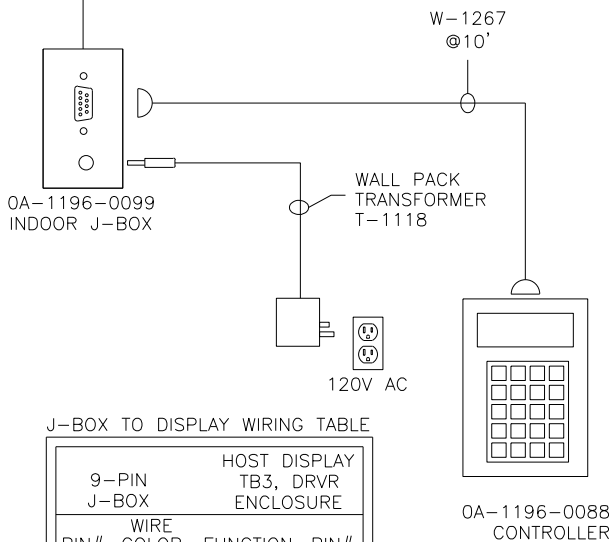
4-COND SIGNAL CABLE (W-1234)  
RECOMMENDED WIRE SIZE: 18 TO 22 AWG.  
PROVIDED BY INSTALLER, IN CONDUIT WHERE REQUIRED.

DATA TIME/MASTER DISPLAY  
CLIENT DISPLAY

POWER INSTALLATION PER LOCAL CODE,  
IN CONDUIT WHERE REQUIRED, BY  
CUSTOMER.

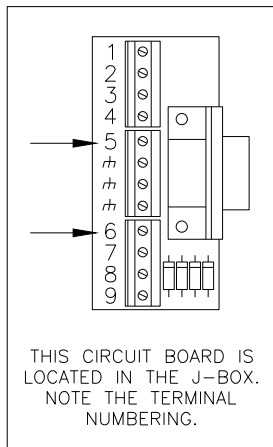
FOR PWR REQUIREMENTS,  
REFER TO MANUAL.

## CONTROL LOCATION



TEMP/LIGHT SENSOR WIRING TABLE

TB1, SENSOR			TB1, HOST DRIVER	
PIN#	WIRE COLOR	OUTPUT# / FUNCTION	PIN#	
1	RED	+5V	2	
2	GRN	CANH	3	
3	WHT	CANL	4	
4	BLK	GND-N	5	



J-BOX TO DISPLAY WIRING TABLE

9-PIN J-BOX		HOST DISPLAY TB3, DRV ENCLOSURE		
PIN#	WIRE COLOR	FUNCTION	PIN#	
6	GRN	SIG. IN+	1	
5	WHT	SIG. IN-	2	
8	BRN	SIG. OUT+	4	
9	BLU	SIG. OUT-	5	

DISPLAY TO DISPLAY WIRING TABLE

HOST DISPLAY TB3, DRV ENCLOSURE		CLIENT DISPLAY TB3, DRV ENCLOSURE		
PIN#	WIRE COLOR	FUNCTION	PIN#	
4	GRN	SIGNAL-P	1	
5	WHT	SIGNAL-N	2	

NOTE 'A':  
0A-1279-0203, INTERNAL LIGHT SENSOR KIT INCLUDED ON DATA TIME MODELS. REFER TO MANUAL FOR DETAILS.

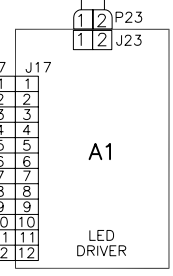
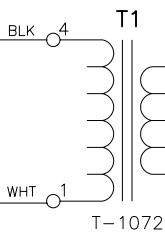
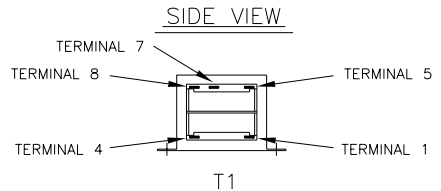
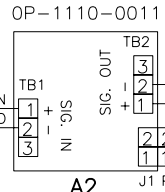
INSTALL "PROTOCOL 4" PLUG IN THE DRIVER IN THE HOST DISPLAY ONLY.

NOTE 'B':  
0A-1151-0005 EXTERNAL TEMP/LIGHT SENSOR /W 8' OF 2 PAIR CABLE INCLUDED WITH DATA MASTER MODELS, INSTALLED ON SITE BY OTHERS.

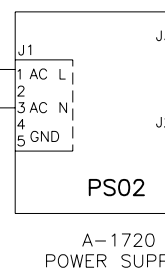
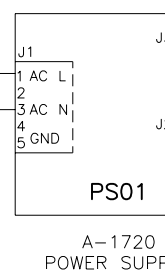
REFER TO DRAWING 1279-R03A-897103 FOR DRIVER ENCLOSURE SCHEMATIC

REV 05	DATE: 22 DEC 11	REMOVED NOTE ABOUT 100' OF CABLE INCLUDED.	BY: AVB	<p>DAKTRONICS, INC. BROOKINGS, SD 57006 DO NOT SCALE DRAWING</p>	<p>THE CONCEPTS EXPRESSED AND DETAILS SHOWN ON THIS DRAWING ARE CONFIDENTIAL AND PROPRIETARY. DO NOT REPRODUCE BY ANY MEANS WITHOUT THE EXPRESSED WRITTEN CONSENT OF DAKTRONICS, INC. COPYRIGHT 2011 DAKTRONICS, INC.</p>
REV 04	DATE: 06 APR 05	REVISED WIRING TABLE, CHANGED SOME CABLES.	BY: ATP		
REV 03	DATE: 07 OCT 04	UPDATED PER NEW ASSEMBLES	BY: RT	<p>PROJ: DATATIME LED DISPLAYS</p>	
REV 02	DATE: 20-SEP-04	CHANGED PART NUMBER FOR LIGHT SENSOR	BY: JHF	<p>TITLE: RISER DIAGRAM- INDOOR WIRE CONTROL- DATA TIME/MAS.</p>	
REV 01	DATE: 13 MAR 03	ADDED J-BOX CIRCUIT BOARD PICTURE. CHANGED PART NUMBERS FOR LIGHT SENSOR AND TEMP SENSOR ASSEMBLIES.	BY: AVB	<p>DESIGN: SCALE: NONE</p>	<p>DRAWN: M MILLER DATE: 18 SEP 02</p>
				<p>SHEET 05</p>	<p>REV 05</p>
				<p>JOB NO: P1279</p>	<p>FUNC-TYPE-SIZE R-01-A</p>
				<p>175342</p>	

LANDLINE MODEM  
OP-1279-0003  
COATED MODEM  
(INSTALL OPTION)



16 COL. DRIVER  
OP-1192-0085  
NON-COATED DRIVER  
OP-1192-0086  
COATED DRIVER



NOTES:  
ALL CONDUCTORS ARE 18AWG.

0A-1279-0177  
MULTI PURPOSE HARNESS ASSY.

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DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: DATA TIME LED DISPLAYS

TITLE: SCHEMATIC; 16 COL MULTIPURPOSE LED DRVR

DES. BY: MMILLER DRAWN BY: NBOWERS DATE: 05DEC02

REVISION 03 APPR. BY: SCALE: 1=1

1279-R03A-179599

REV.	DATE	DESCRIPTION	BY	APPR.
03	17 DEC 03	CHANGED WIRE COLORS OF T1 CONNECTIONS. ADDED SIDE VIEW OF T1.	JBS	
02	30 APR 03	ADDED T1, FOR TIMING.	TAS	MWM
01	14 JAN 03	CHANGED THE BLU TEXT TO RED ON TB3 CONNECTOR	CME	

**FOR DM-100 OR VENUS 1500 CONTROLLED SYSTEMS:**

IF THE SIGN HAS MORE THAN ONE DISPLAY, INSTALL THE LIGHT SENSOR IN THE HOST DISPLAY ONLY.

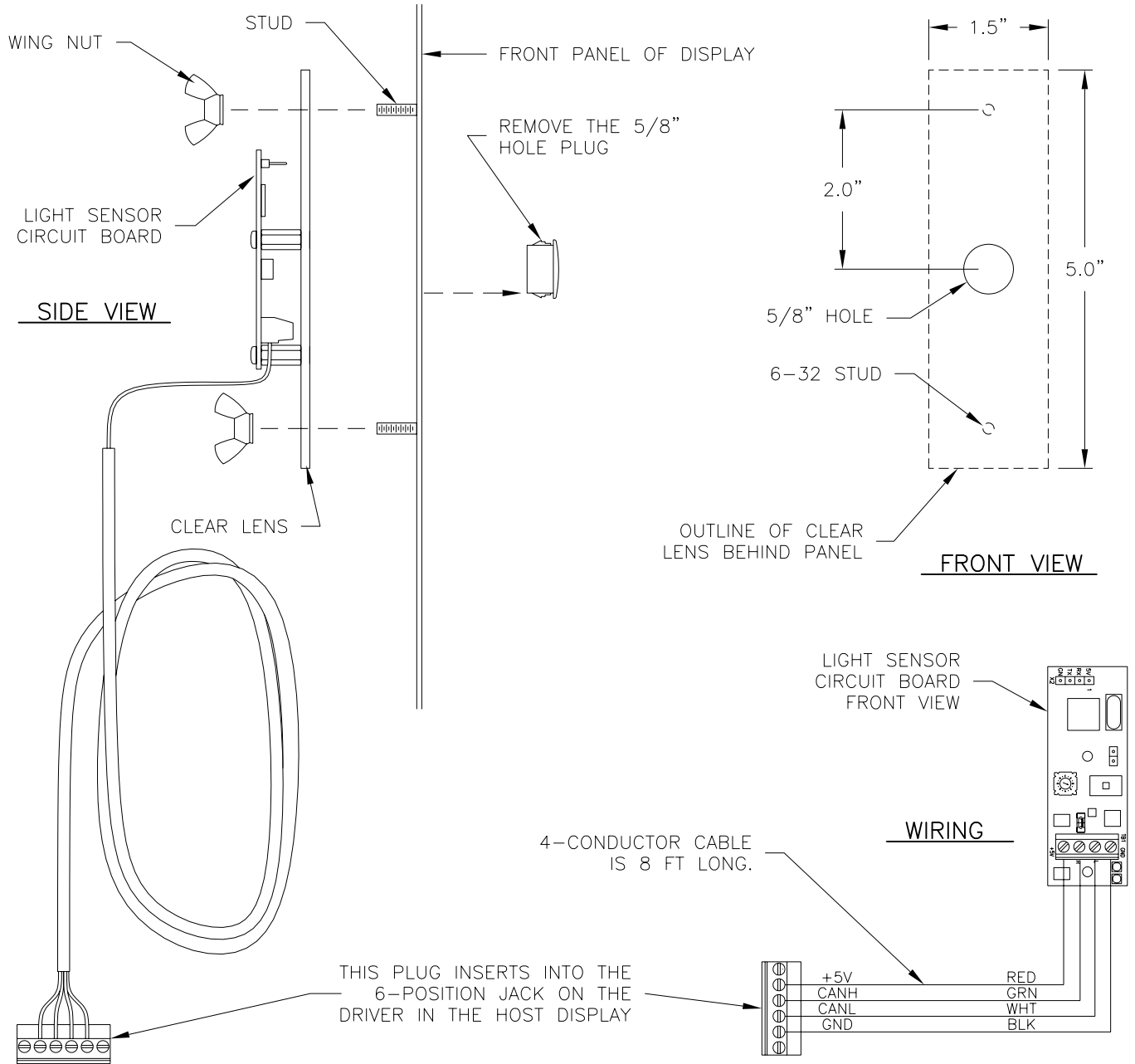
**FOR DAKMAP (MULTIDROP) CONTROLLED SYSTEMS:**

REFER TO DRAWING A-210516 FOR WIRING OPTIONS.

LOCATE THE 5/8" [16 MM] HOLE IN THE FRONT OF THE DISPLAY. THE LOCATION VARIES WITH THE SIZE AND MODEL OF THE DISPLAY. THE HOLE IS CAPPED WITH A BLACK PLASTIC PLUG. REMOVE THE PLUG. IF THE HOLES DO NOT EXIST IN THE DISPLAY, DRILL HOLES AS SHOWN AT RIGHT AND USE 6-32 MACHINE SCREWS TO MOUNT THE SENSOR ASSEMBLY.

THERE ARE TWO 6-32 STUDS ABOVE AND BELOW THE HOLE. POSITION THE LIGHT SENSOR ASSEMBLY OVER THE STUDS WITH THE CABLE AT THE BOTTOM. SECURE THE LIGHT SENSOR TO THE STUDS WITH THE TWO PLASTIC WING NUTS PROVIDED WITH THE LIGHT SENSOR KIT.

CONNECT THE 6-PIN PLUG ON THE END OF THE CABLE TO THE MATING JACK ON THE DRIVER.



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DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: DATATIME LED DISPLAYS

TITLE: LIGHT SENSOR INSTALLATION, G3

DES. BY: AVB

DRAWN BY: A VANBEMMEL

DATE: 21 FEB 03

REVISION

APPR. BY:

02

SCALE:

1=2

1279-R10A-183775

REV.	DATE	DESCRIPTION	BY	APPR.
02	10 MAY 04	UPDATED TEXT.	RT	
01	03 JUN 03	ADDED HOLE PATTERN DIMENSIONS.	AVB	

OP-1192-0085 UNCOATED  
OR OP-1192-0086 COATED  
16 COLUMN MASC LED DRIVER

J19 - ADDRESS	
PIN	FUNCTION
1	GND-N
2	ADD0-N
3	ADD1-N
4	GND-N
5	ADD2-N
6	ADD3-N
7	GND-N
8	ADD4-N
9	ADD5-N
10	GND-N
11	ADD6-N
12	ADD7-N

J23 +12VDC	
PIN	FUNCTION
1	+12VDC-P
2	GND-N

J17 - MAIN	
PIN	FUNCTION
1	CLIN-P
2	CLIN-N
3	232IN-P
4	CLOUT-P
5	CLOUT-N
6	16VAC-P
7	GND-N
8	N/C
9	16VAC-N
10	GND-N
11	N/C
12	+VBB-P

J18 - RELAY	
PIN	FUNCTION
1	HORNOUT-N
2	AUXOUT-N
3	120SW1-N
4	120SW1-P

J1-16 DIGITS	
PIN	FUNCTION
1	SEGC-N
2	SEGB-N
3	SEGA-N
4	SEGF-N
5	SEGE-N
6	SEGD-N
7	+VBB-P
8	SEGH-N
9	SEGG-N

J20 PROTOCOL	
PIN	FUNCTION
1	GND
2	PRO-N
3	PR1-N
4	PR2-N
5	PR3-N

J21 - ISP	
PIN	FUNCTION
1	VFP-P
2	BKD-P
3	GND-N
4	RESET-P

J22 - ISP	
PIN	FUNCTION
1	BKD-P
2	GND-N
3	N/C
4	RESET-P
5	VFP-P
6	+5V-P

J28 - SWITCH	
PIN	FUNCTION
1	SWITCH1-P
2	SWITCH1-N
3	SWITCH2-P
4	SWITCH2-N
5	SWITCH3-P
6	SWITCH3-N
7	SWITCH4-P
8	SWITCH4-N

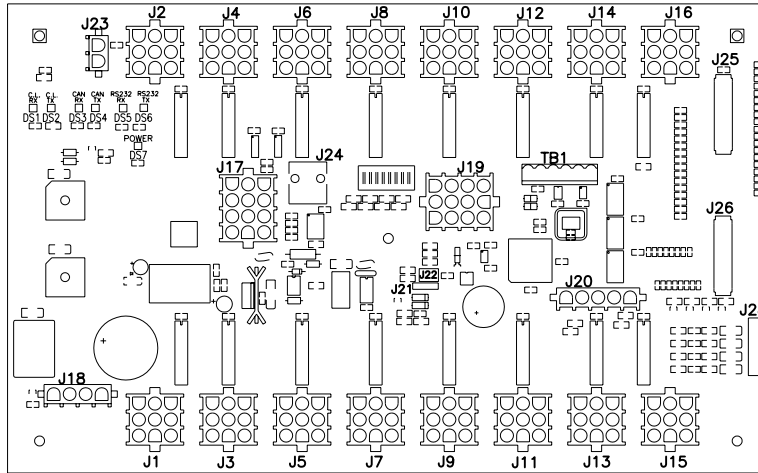
J27 - TPIC	
PIN	FUNCTION
8	GND-N
7	GND-N
6	DIG.DATA-P
5	DIG.STROBE-P
4	DIG.CLK-P
3	DIG.OE-N
2	+VBB-P
1	+5V-P

TB1 - CAN	
PIN	FUNCTION
1	N/C
2	+5V-P
3	CANH-P
4	CANL-P
5	GND-N
6	GND-N

J24	
PIN	FUNCTION
1	MODEM_RTS-P
2	MODEM_RESET-P
3	MODEM_TX-P
4	GND-N
5	MODEM_RX-P
6	MODEM_DCD-P

J25			
FUNCTION	PIN	PIN	FUNCTION
ID3-P	21	20	GND-N
FREE0-P	22	19	GND-N
ID2-P	23	18	GND-N
ROWSEL2-P	24	17	GND-N
GRN.DIM-P	25	16	GND-N
CLK-P	26	15	GND-N
GRN4-P	27	14	GND-N
RED4-P	28	13	GND-N
GRN3-P	29	12	GND-N
RED3-P	30	11	GND-N
GRN2-P	31	10	GND-N
RED2-P	32	9	GND-N
GRN1-P	33	8	GND-N
RED1-P	34	7	GND-N
RED.DIM-P	35	6	GND-N
LAT-P	36	5	GND-N
ROWSEL1-P	37	4	GND-N
ROWSEL0-P	38	3	GND-N
ID1-P	39	2	GND-N
ID0-P	40	1	GND-N

J26			
FUNCTION	PIN	PIN	FUNCTION
N/C	21	20	GND-N
FREE0-P	22	19	GND-N
N/C	23	18	GND-N
ROWSEL2-P	24	17	GND-N
GRN.DIM-P	25	16	GND-N
CLK-P	26	15	GND-N
N/C	27	14	GND-N
N/C	28	13	GND-N
N/C	29	12	GND-N
N/C	30	11	GND-N
GRN2-P	31	10	GND-N
RED2-P	32	9	GND-N
GRN1-P	33	8	GND-N
RED1-P	34	7	GND-N
RED.DIM-P	35	6	GND-N
LAT-P	36	5	GND-N
ROWSEL1-P	37	4	GND-N
ROWSEL0-P	38	3	GND-N
N/C	39	2	GND-N
N/C	40	1	GND-N



NOTES:

- WITH NO ADDRESS PINS SELECTED THE DRIVER WILL DEFAULT TO STANDARD PROTOCOL.
- RED LED DS1 WILL BE ON WHEN THE DRIVER IS RECEIVING CURRENT LOOP SIGNAL AND OFF WHEN THERE IS NO SIGNAL.
- GREEN LED DS2 WILL BE ON WHEN THE DRIVER TRANSMITS CURRENT LOOP SIGNAL.
- RED LED DS3 WILL BLINK WHEN THE DRIVER RECEIVES CAN SIGNAL.
- GREEN LED DS4 WILL BLINK WHEN THE DRIVER TRANSMITS CAN SIGNAL.
- IF BOTH DS3 AND DS4 ARE ON CONTINUOUSLY, THE CAN BUS IS IN AN ERROR STATE (NO CONNECTION TO CAN NETWORK).
- RED LED DS5 WILL BE ON WHEN THE DRIVER RECEIVES RS-232 SIGNAL.
- GREEN LED DS6 WILL BE ON WHEN THE DRIVER TRANSMITS RS-232 SIGNAL.
- GREEN LED DS7 INDICATES THAT THE DRIVER HAS POWER.

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DAKTRONICS, INC. BROOKINGS, SD 57006

REV.	DATE	DESCRIPTION	BY	APPR.
02	22 NOV 04	CHANGED NOTES RELATING TO LED FUNCTIONS.	AVB	
01	9 SEP 04	EDITED TEXT TO INCLUDE ADDRESS DIP-SWITCH	JMC	

PROJ:	16 COL. MASC DRIVER SPECIFICATION		
DES. BY:	CBRECZI	DRAWN BY:	CBRECZI
		DATE:	05 MAR 03
REVISION	APPR. BY:	1192-R07A-184475	
02	SCALE: 1=3		



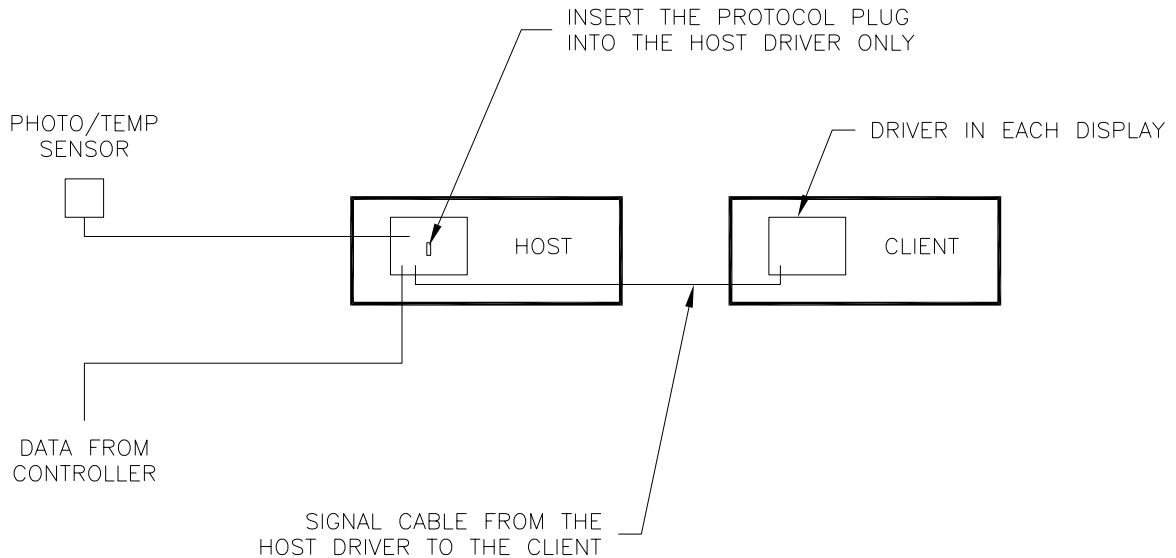
HOST/CLIENT DESIGNATIONS:

BEFORE INSTALLING, THE TWO DISPLAYS PROVIDED FOR A 2-V (DOUBLE-FACED) SIGN ARE IDENTICAL. EACH DISPLAY HAS A DRIVER TO CONTROL ITS DIGITS. EACH DISPLAY HAS A 5-PIN PROTOCOL PLUG IN A PACKAGE INSIDE THE DISPLAY, BUT NOT INSTALLED.

ONE DRIVER IN EACH SIGN INSTALLATION IS DESIGNATED AS THE HOST DRIVER. THIS DRIVER RECEIVES ITS SIGNAL (DATA) DIRECTLY FROM THE CONTROLLER AND IS ALSO CONNECTED TO THE PHOTO/TEMP SENSOR. THE DESIGNATION AS HOST IS DETERMINED BY WHICH DRIVER HAS THE PROTOCOL PLUG INSERTED.

THE OTHER DRIVER IS DESIGNATED AS A CLIENT DRIVER. THE CLIENT DRIVER RECEIVES ITS SIGNAL (DATA) FROM THE HOST. CONNECT SIGNAL WIRES FROM THE CONTROLLER TO THE HOST DRIVER'S "SIGNAL IN" TERMINALS. CONNECT WIRES FROM THE "SIGNAL OUT" TERMINAL IN THE HOST DISPLAY TO THE "SIGNAL IN" TERMINALS ON THE CLIENT DISPLAY.

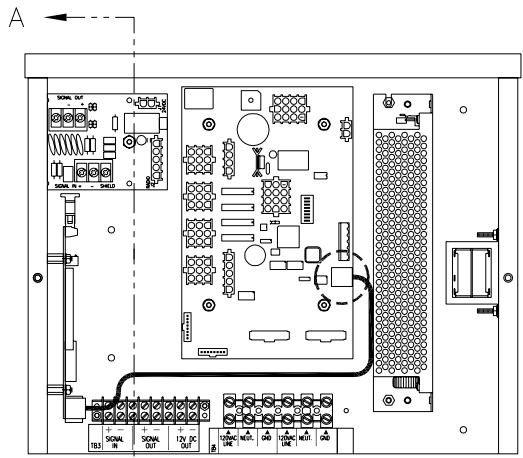
IF A SIGN INSTALLATION HAS ONLY ONE DATETIME LED DISPLAY, IT IS TO BE DESIGNATED AS A HOST, EVEN THOUGH THERE IS NO CLIENT DISPLAY.



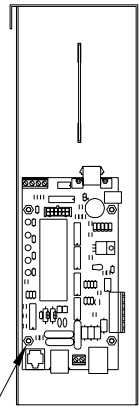
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DAKTRONICS, INC. BROOKINGS, SD 57006	
PROJ: DATETIME LED DISPLAYS	
TITLE: HOST/CLIENT DEFINITIONS	
DES. BY: AVB	DRAWN BY: A VANBEMMEL DATE: 18 MAR 03
REVISION	APPR. BY: _____ SCALE: NONE
1279-R04A-185236	

REV.	DATE	DESCRIPTION	BY	APPR.

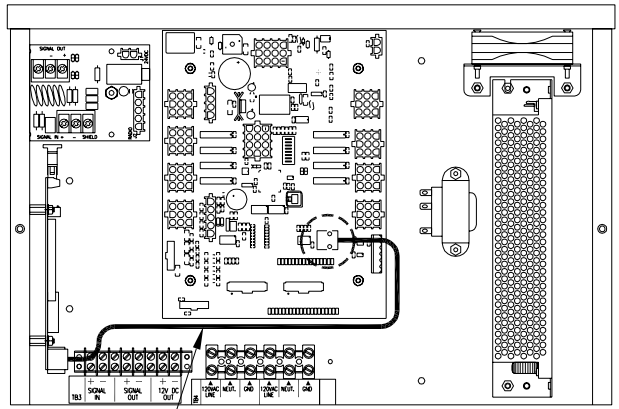
REV.	DATE	DESCRIPTION	BY	APPR.
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FRONT VIEW  
4-COL. DRIVER



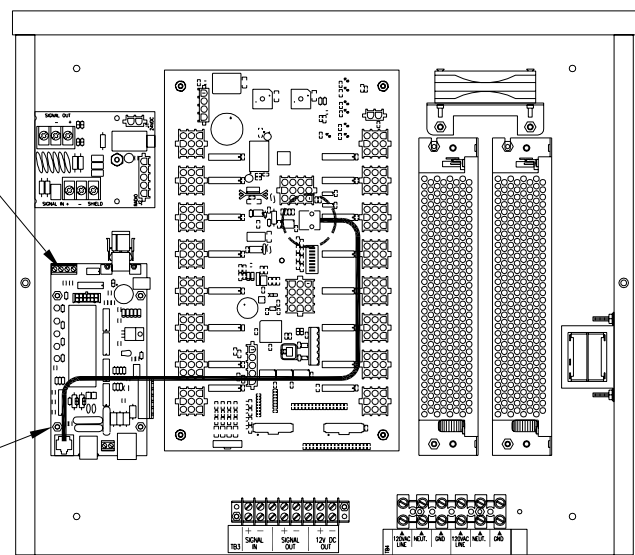
SECTION A-A  
TYP. FOR BOTH  
4-COL & 8-COL



FRONT VIEW  
8-COL. DRIVER

OA  
1137  
0300

HE 1141   HS 1453   HE 1168



FRONT VIEW  
16-COL. DRIVER

OP  
1279  
0003

HS 1453   HE 1168

THE THREE SIZES OF MASC DRIVER ENCLOSURE ARE SHOWN.

SEE DRAWING A-177039 FOR WIRING HOOKUP DETAILS.

MODEM, MOUNTING HARDWARE, AND CABLE ARE INCLUDED IN SIGN MODEM KIT, OA-1279-0257.

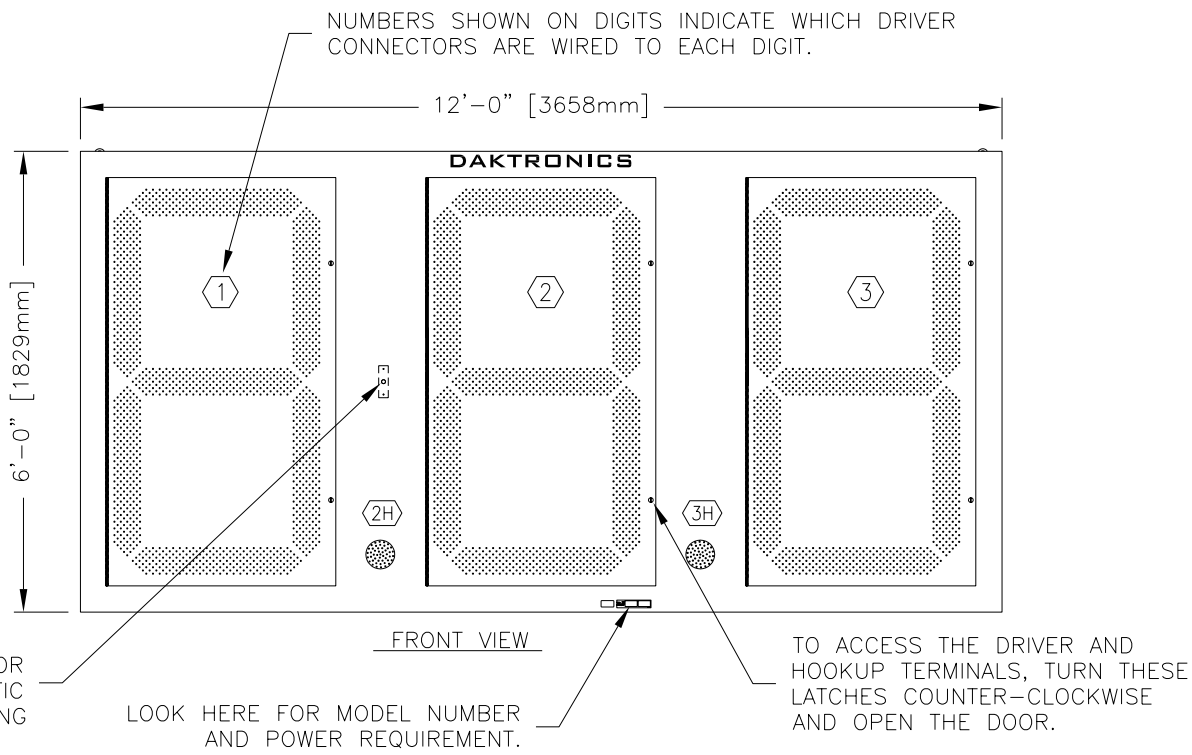
THE CONCEPTS EXPRESSED AND DETAILS SHOWN ON THIS DRAWING ARE CONFIDENTIAL AND PROPRIETARY. DO NOT REPRODUCE BY ANY MEANS, INCLUDING ELECTRONICALLY WITHOUT THE EXPRESSED WRITTEN CONSENT OF DAKTRONICS, INC. COPYRIGHT 2003 DAKTRONICS, INC.

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ.:  
TITLE: MODEM INSTALLATION, MASC DRIVER ENCLOSURE

DES. BY: AVB   DRAWN BY: A VANBEMMEL   DATE: 14 AUG 03

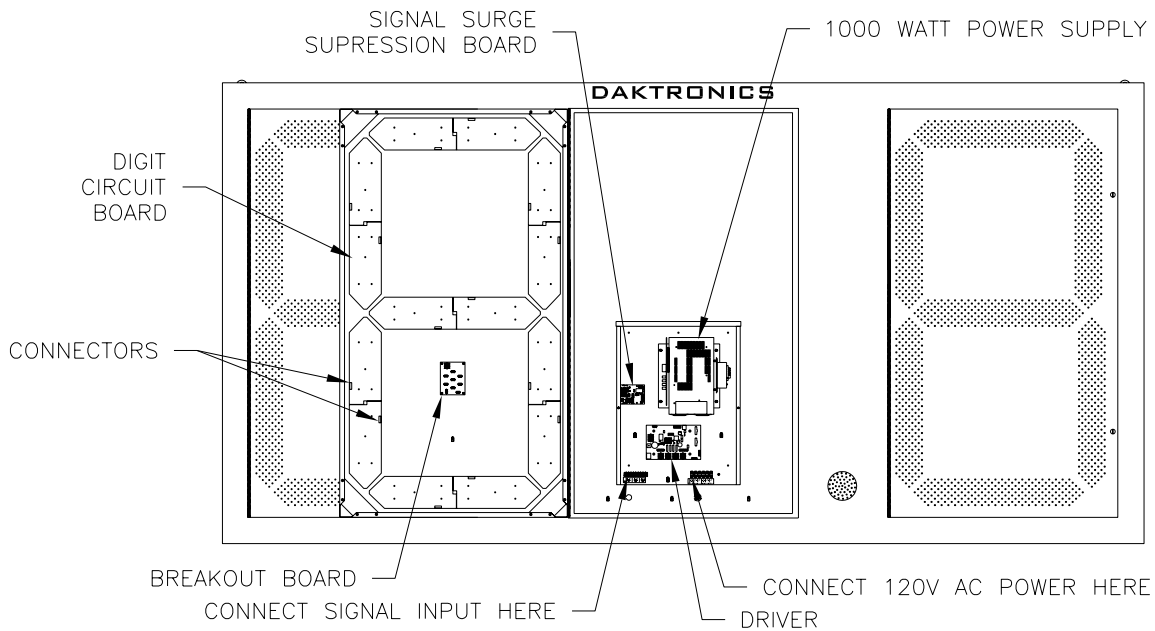
REVISION   APPR. BY:   SCALE: 1=6   1279-E10A-194873



LIGHT SENSOR FOR AUTOMATIC NIGHT DIMMING

LOOK HERE FOR MODEL NUMBER AND POWER REQUIREMENT.

TO ACCESS THE DRIVER AND HOOKUP TERMINALS, TURN THESE LATCHES COUNTER-CLOCKWISE AND OPEN THE DOOR.



BREAKOUT BOARD  
CONNECT SIGNAL INPUT HERE

CONNECT 120V AC POWER HERE  
DRIVER

FRONT VIEW  
2ND DIGIT DOOR OPEN  
WIRES ARE NOT SHOWN

ELECTRICAL REQUIREMENT:  
120V AC, 15 AMP CIRCUIT  
MAX POWER CONSUMPTION IS 1000 WATTS.

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DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: DATATIME LED DISPLAYS

TITLE: ELECTRICAL SPECS, DF-1060-60

DES. BY: AVB

DRAWN BY: AVB

DATE: 14 AUG 03

REVISION

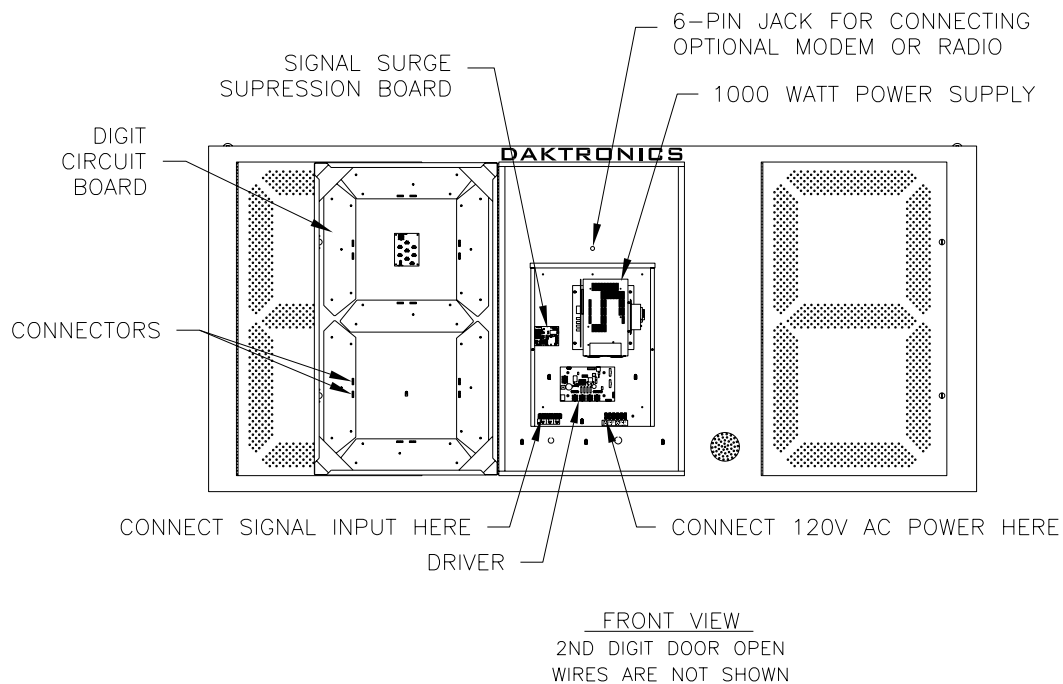
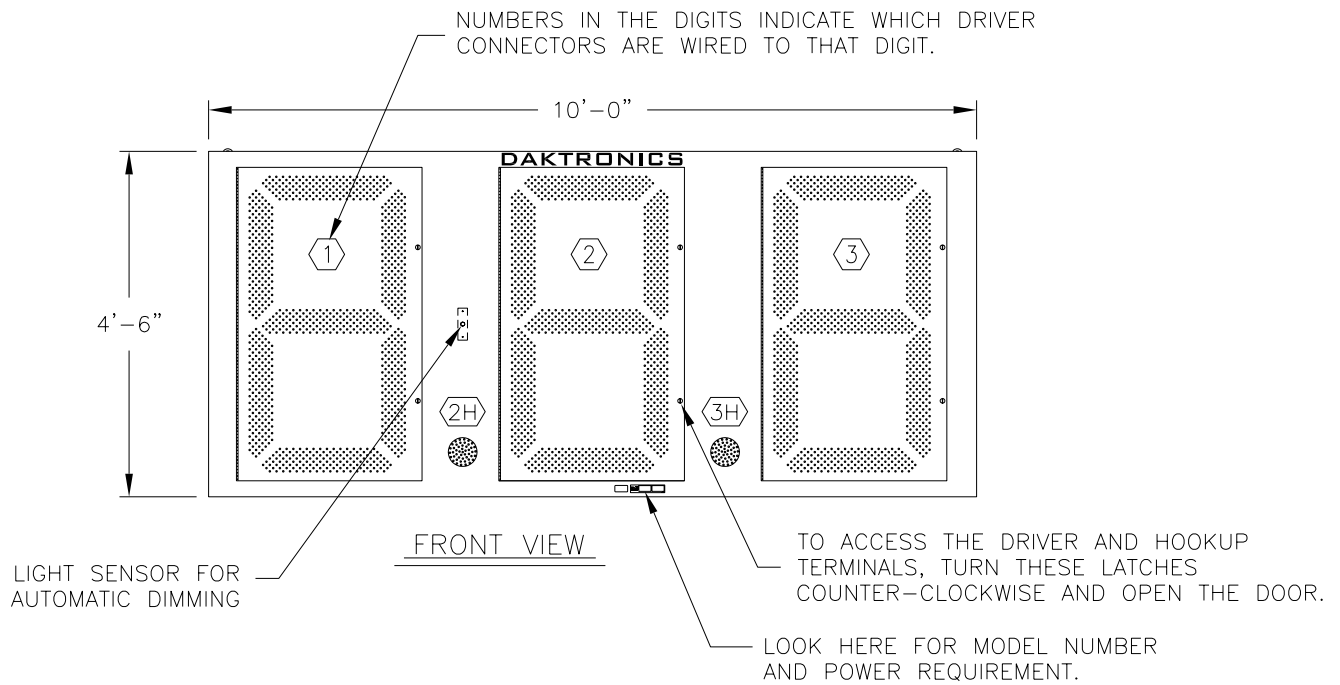
APPR. BY:

02

SCALE: 1=30

1279-R04A-194930

REV.	DATE	DESCRIPTION	BY	APPR.
02	10 MAY 06	UPDATED DRIVER ENCLOSURE TO THE NARROWER 1000 WATT VERSION.	MGL	
01	06 MAY 05	UPDATED DRIVER ENCLOSURE AND REAR VIEW OF DIGIT PANEL.	MGL	



ELECTRICAL REQUIREMENT  
 120V AC, 15 AMP CIRCUIT  
 MAX POWER CONSUMPTION IS 1000 WATTS.

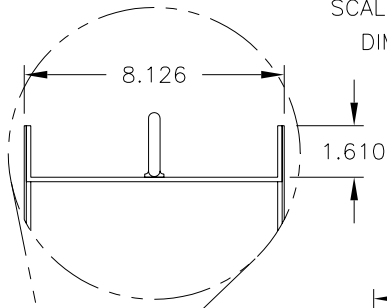
THE CONCEPTS EXPRESSED AND DETAILS SHOWN ON THIS DRAWING ARE CONFIDENTIAL AND PROPRIETARY. DO NOT REPRODUCE BY ANY MEANS, INCLUDING ELECTRONICALLY WITHOUT THE EXPRESSED WRITTEN CONSENT OF DAKTRONICS, INC. COPYRIGHT 2003 DAKTRONICS, INC.			
DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: DATATIME LED DISPLAYS			
TITLE: ELECTRICAL SPECS, DF-1060-48			
DES. BY: A VANBEMMEL		DRAWN BY: M LEOPOLD	
		DATE: 20 AUG 03	
REVISION	APPR. BY:	1279-R04A-195339	
02	SCALE: 1=30		

02	10 MAY 06	UPDATED DRIVER ENCLOSURE TO THE NARROWER 1000 WATT VERSION.	MGL	
01	26 OCT 05	UPDATED THE DISPLAY PER DESIGN CHANGES.	MGL	
REV.	DATE	DESCRIPTION	BY	APPR.

FRAME CHANNEL DETAIL

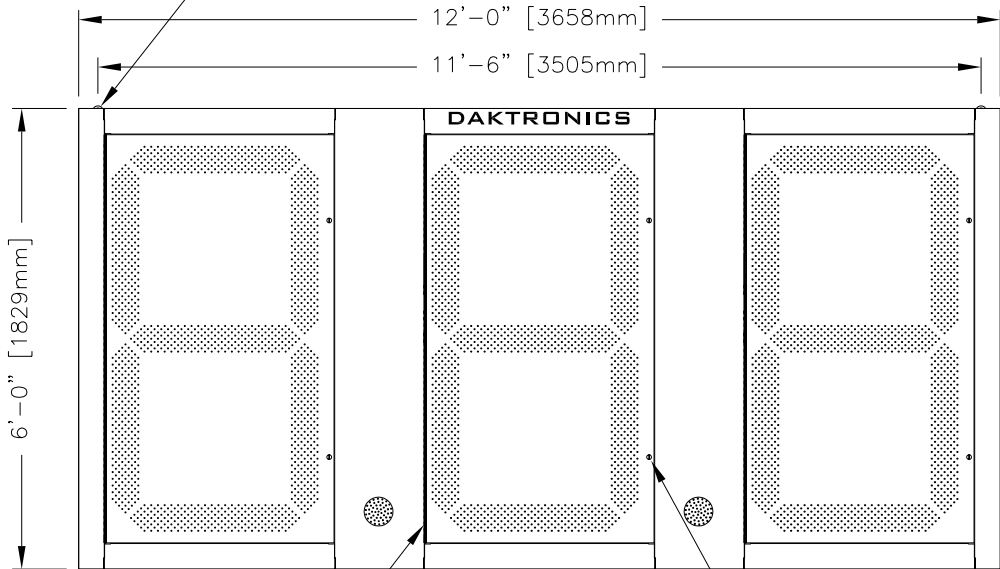
SCALE 1=6

DIMENSIONS TYPICAL TOP, BOTTOM, AND SIDES



FRAME IS MADE OF EXTRUDED ALUMINUM CHANNEL,  
8.000" X 1.750", 0.141" THICK.  
FRONT IS 0.063" ALUM. SHEET, REAR IS 0.050" ALUM. SHEET.

EYEBOLTS IN THE TOP ARE FOR LIFTING DURING INSTALLATION ONLY.  
THEY ARE NOT TO BE USED FOR SUSPENDED INSTALLATION.

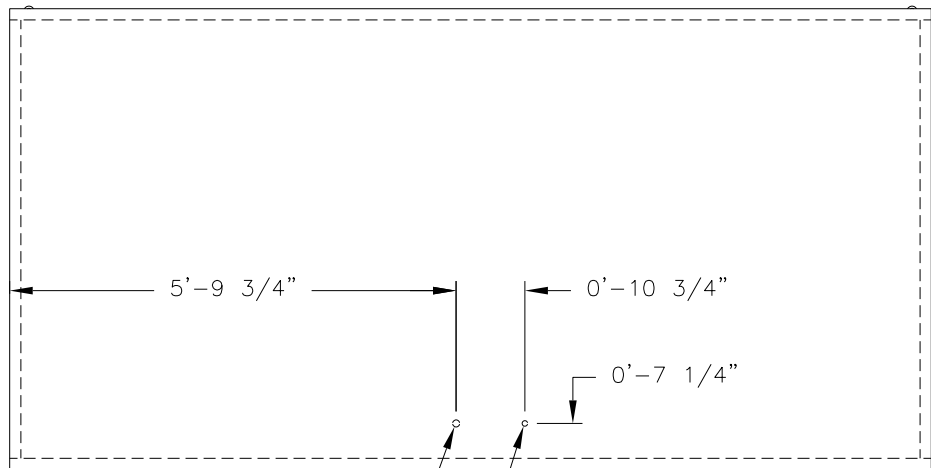


SIDE VIEW

HINGE

FRONT VIEW

DOOR LATCH  
@2 PER DIGIT



1.090" KNOCKOUT FOR  
USE WITH 1/2" CONDUIT

0.875" KNOCKOUT FOR  
USE WITH 1/2" CONDUIT

REAR VIEW

APPROXIMATE WEIGHT: 350 LBS [160 KG]

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DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: DATETIME LED DISPLAYS

TITLE: MECHANICAL SPECS, DF-1060-60

DES. BY: AVB

DRAWN BY: AVB

DATE: 20 AUG 03

REVISION

APPR. BY:

00

SCALE: 1=30

1279-R04A-195343

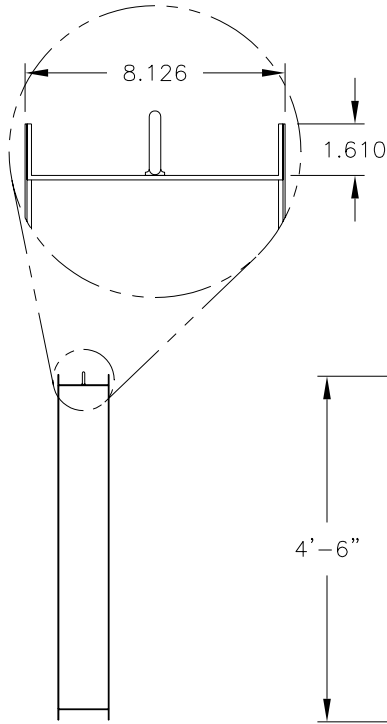
REV.	DATE	DESCRIPTION	BY	APPR.

FRAME CHANNEL DETAIL

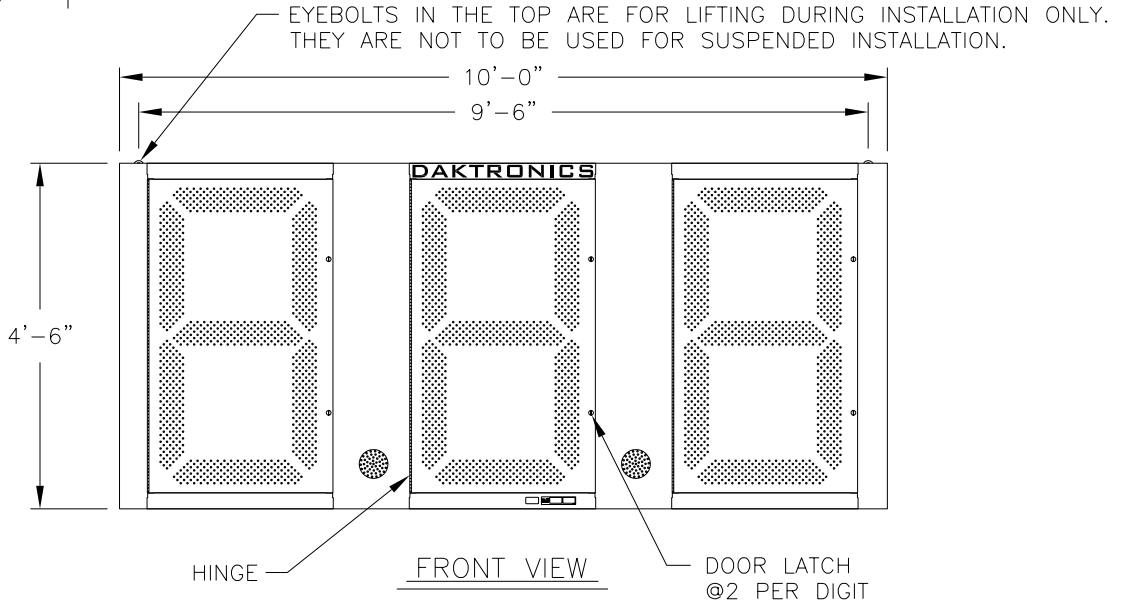
SCALE 1=6

DIMENSIONS TYPICAL TOP, BOTTOM, AND SIDES

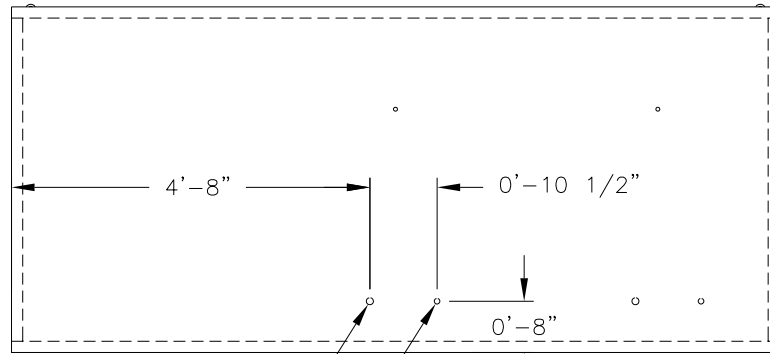
FRAME IS MADE OF EXTRUDED ALUMINUM CHANNEL,  
8.000" X 1.750", 0.141" THICK.  
FRONT IS 0.063" ALUM. SHEET, REAR IS 0.050" ALUM. SHEET.



SIDE VIEW



FRONT VIEW



REAR VIEW

Ø1.125 KNOCKOUT FOR 3/4" CONDUIT

Ø0.875 KNOCKOUT FOR 1/2" CONDUIT

APPROXIMATE WEIGHT: 200 LBS

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DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: DATATIME LED DISPLAYS

TITLE: MECHANICAL SPECS, DF-1060-48

DES. BY: A VANBEMMEL

DRAWN BY: M LEOPOLD

DATE: 20 AUG 03

REVISION

APPR. BY:

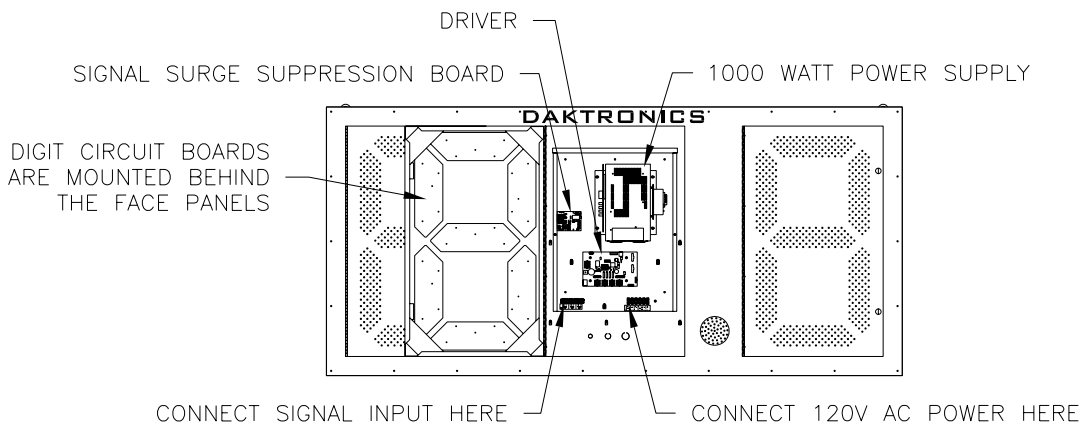
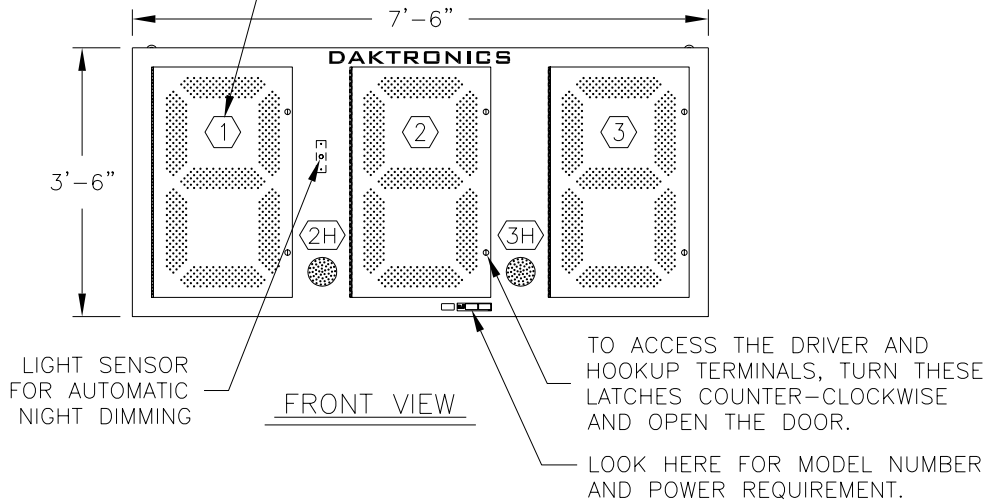
02

SCALE: 1=30

1279-R04A-195367

REV.	DATE	DESCRIPTION	BY	APPR.
02	10 MAY 06	UPDATED LOCATION OF KNOCKOUTS.	MGL	
01	26 OCT 05	UPDATED THE DISPLAY PER DESIGN CHANGES.	MGL	

NUMBERS SHOWN ON DIGITS INDICATE WHICH DRIVER CONNECTORS ARE WIRED TO EACH DIGIT.



FRONT VIEW  
2ND DIGIT DOOR OPEN  
WIRES ARE NOT SHOWN

ELECTRICAL REQUIREMENT  
120V AC, 15 AMP CIRCUIT  
MAX POWER CONSUMPTION IS 1000 WATTS.

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DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: DATATIME LED DISPLAYS

TITLE: ELECTRICAL SPECS, DF-1060-36

DES. BY: A VANBEMMEL

DRAWN BY: M LEOPOLD

DATE: 21 AUG 03

REVISION

APPR. BY:

02

SCALE: 1=30

1279-R04A-195398

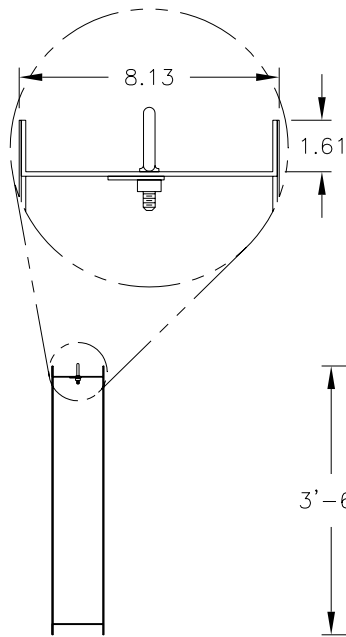
REV.	DATE	DESCRIPTION	BY	APPR.
01	27 OCT 06	UPDATED SPECS PER DESIGN CHANGES.	MGL	
01	03 NOV 03	CORRECTED TEXT ABOVE TOP FIGURE TO REFER TO 36" INCH DIGIT.	MGL	

FRAME CHANNEL DETAIL

SCALE 1=6

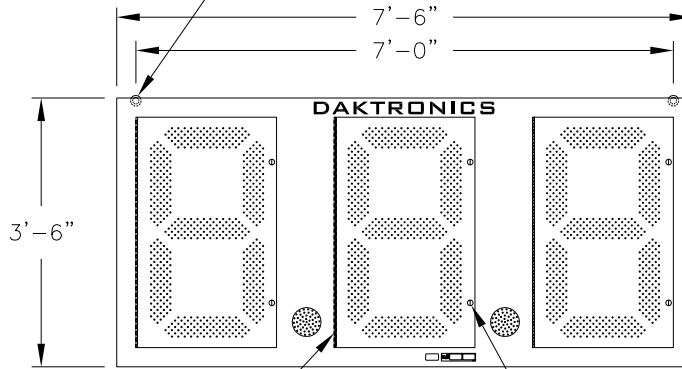
DIMENSIONS TYPICAL TOP, BOTTOM, AND SIDES

FRAME IS MADE OF EXTRUDED ALUMINUM CHANNEL,  
8.000" X 1.750", 0.141" THICK.  
FRONT AND REAR ARE 0.063" ALUM. SHEET.



SIDE VIEW

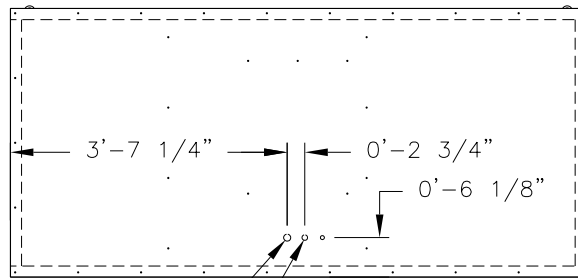
EYEBOLTS IN THE TOP ARE FOR LIFTING DURING  
INSTALLATION ONLY. THEY ARE NOT TO BE USED  
FOR SUSPENDED INSTALLATION.



HINGE

FRONT VIEW

DOOR LATCH  
@2 PER DIGIT



Ø1.109 KNOCKOUT  
FOR 3/4" CONDUIT

Ø0.875 KNOCKOUT  
FOR 1/2" CONDUIT

REAR VIEW

APPROXIMATE WEIGHT: 140 LBS

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DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: DATATIME LED DISPLAYS

TITLE: MECHANICAL SPECS, DF-1060-36

DES. BY: A VANBEMMEL DRAWN BY: M LEOPOLD DATE: 21 AUG 03

REV.	DATE	DESCRIPTION	BY	APPR.
01	27 OCT 06	UPDATED SPECS PER DESIGN CHANGES.	MGL	

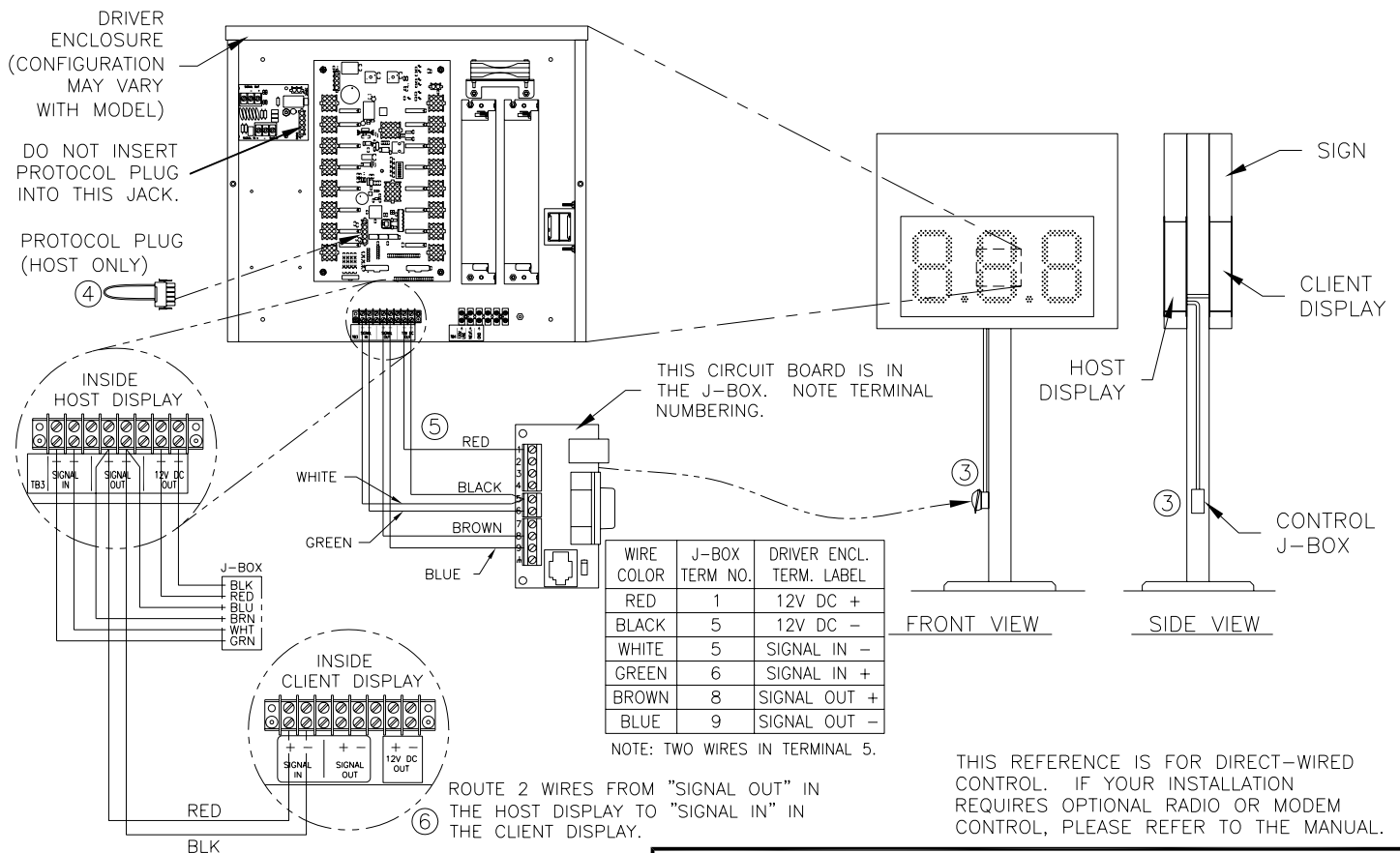
REVISION	APPR. BY:
01	SCALE: 1=30

1279-R04A-195399



BASIC INSTALLATION PROCEDURE (SOME STEPS ARE INDICATED BY CIRCLED NUMBERS ON THE DRAWING)

1. MOUNT THE DISPLAY TO THE STRUCTURE OR GREATER SIGN.
2. PROVIDE 120V AC POWER TO THE SIGN. EACH DISPLAY SECTION WILL REQUIRE POWER. CONNECT 120V AC POWER WIRES TO THE POWER TERMINALS IN THE DRIVER ENCLOSURE OF EACH DISPLAY.
3. MOUNT THE CONTROL J-BOX NEAR THE BOTTOM OF A SUPPORT POLE, OR INSTALL THE INDOOR J-BOX INSIDE THE BUILDING.
4. IF MORE THAN ONE DISPLAY IS INSTALLED IN THE SIGN, SELECT WHICH DISPLAY IS TO BE THE HOST BY INSERTING THE 5-PIN "PROTOCOL 4" PLUG INTO THE MATING JACK (J20) ON THE DRIVER. IF THERE IS ONLY ONE DISPLAY, IT IS TO BE SET UP TO BE A HOST. ANY OTHER DISPLAYS ON THE SIGN ARE CLIENTS. DO NOT INSTALL A PROTOCOL PLUG IN THE DRIVER IN A CLIENT DISPLAY.
5. ROUTE SIGNAL CABLE (6 COND, 18 AWG) IN CONDUIT FROM THE CONTROL J-BOX TO THE SIGN AND CONNECT TO THE TERMINALS IN THE HOST DISPLAY. CONNECT TO "SIGNAL IN", "SIGNAL OUT", AND "12V DC OUT" TERMINALS. NOTE: THE "12V DC OUT" TERMINALS ARE NOT USED WITH THE INDOOR J-BOX.
6. ROUTE SIGNAL WIRES (1 PAIR, 22 AWG) FROM THE HOST DISPLAY TO THE CLIENT DISPLAY(S). CONNECT FROM "SIGNAL OUT" ON THE HOST TO "SIGNAL IN" ON THE FIRST CLIENT. FOR ADDITIONAL CLIENT DISPLAYS, CONNECT "SIGNAL OUT" ON THE FIRST CLIENT TO "SIGNAL IN" ON THE NEXT CLIENT, AND SO ON UNTIL ALL CLIENTS ARE CONNECTED.
7. TURN ON THE POWER TO THE SIGN. THE DISPLAY WILL GO THROUGH A SELF-TEST CYCLE AND THEN THE MESSAGE "E4" SHOULD SHOW ON THE DIGITS OF THE HOST DISPLAY. THIS MEANS THAT NO DATA HAS BEEN LOADED INTO THE DISPLAY FROM THE CONTROLLER.
8. CONNECT THE DATAMASTER 100 CONTROLLER TO THE J-BOX AND AT THE "SELECT FUNCTION" PROMPT, SELECT "LOTTERY". OPERATE THE CONTROLLER ACCORDING TO THE INSTRUCTIONS IN THE MANUAL, TO SET THE DATA AND SEQUENCE. DISCONNECT THE CONTROLLER AND CLOSE THE J-BOX WHEN PROGRAMMING IS COMPLETE.



REV.	DATE	DESCRIPTION	BY	APPR.
04	30 MAR 07	SWAPPED SIGNAL IN + AND - ON TABLE.	AVB	
03	08 JAN 07	UPDATED J-BOX PCB, ADDED WIRING TABLE.	AVB	
02	06 APR 05	CHANGED STEP 5, ADDED WIRES TO VIEW.	ATP	
01	21 NOV 02	ADDED TERMINAL NUMBERING ON J-BOX CARD	AVB	

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**DAKTRONICS, INC. BROOKINGS, SD 57006**

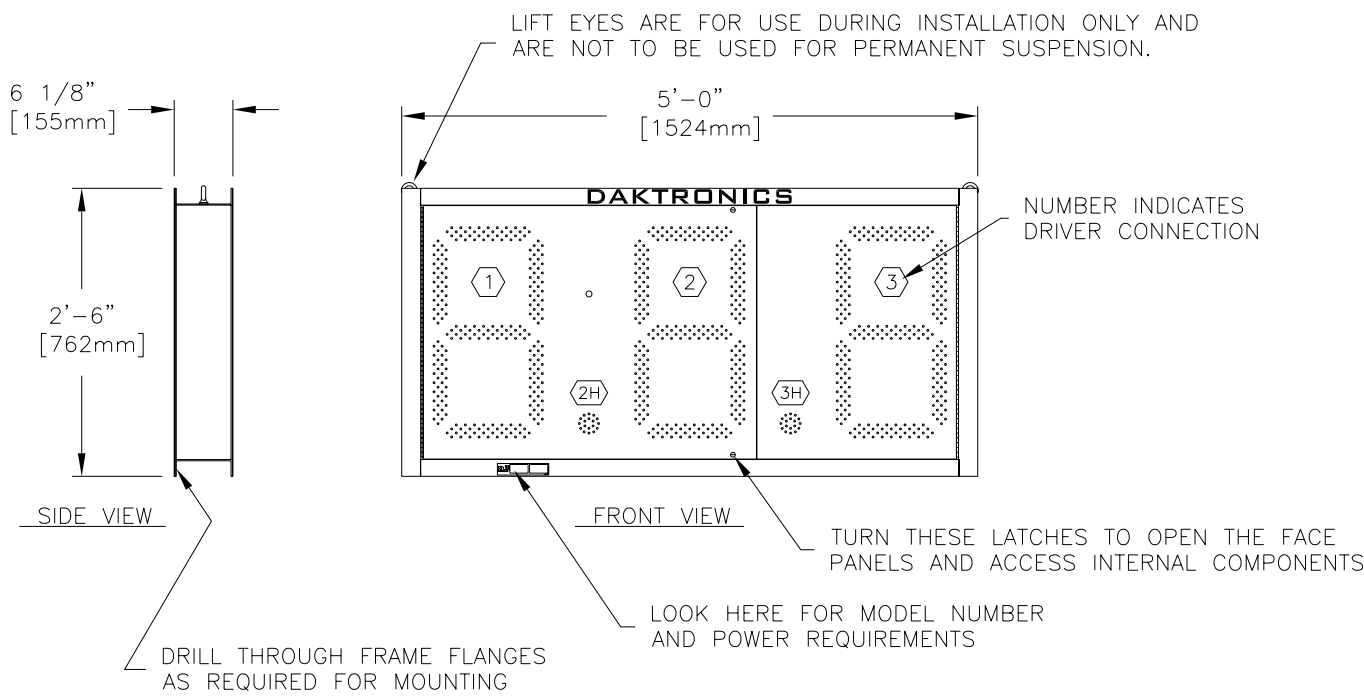
PROJ: DATETIME LED DISPLAYS

TITLE: QUICK INSTALL, DF-1060 LOTTERY DISPLAYS

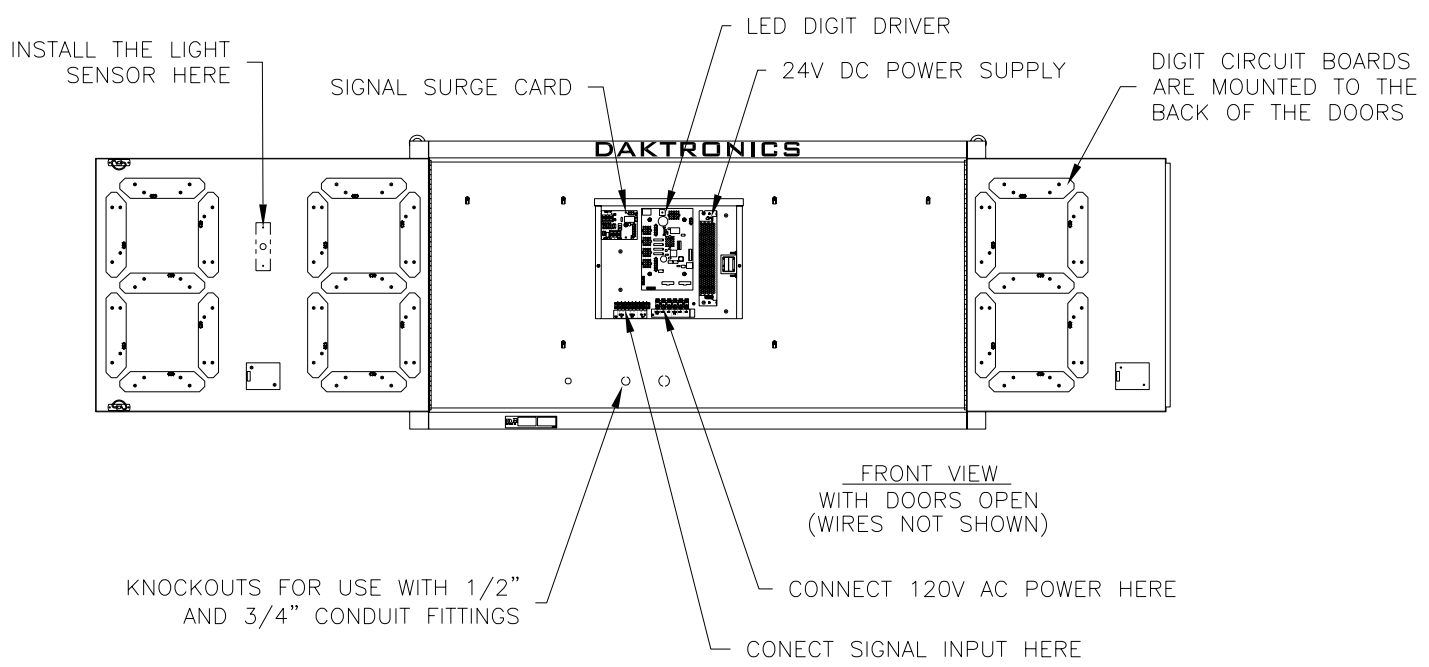
DES. BY: AVB      DRAWN BY: A VANBEMMEL      DATE: 07 OCT 03

REVISION: 04      APPR. BY:      SCALE: NONE

**1279-R04A-198033**



DISPLAY CABINET CONSTRUCTION IS ALL ALUMINUM.  
WEIGHT IS APPROXIMATELY 60 LBS [27 KG]



MAX POWER IS ABOUT 150 WATTS  
PROVIDE A 120V AC, 15 AMP CIRCUIT

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DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: DATATIME / DATAMASTER LED DISPLAYS			
TITLE: SHOP DRAWING, DF-1060-24			
DES. BY: A VANBEMMEL		DRAWN BY: A VANBEMMEL	
		DATE: 29 APR 05	
REVISION	APPR. BY:	1279-R04A-240357	
00	SCALE: 1=20		

REV.	DATE	DESCRIPTION	BY	APPR.

# Appendix B: Supplementary EDs

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DataTime FAQ.....ED-13481

# DataTime<sup>®</sup>/DataMaster<sup>™</sup> FAQ

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The following frequently asked questions (FAQ) list was designed to provide DataTime or DataMaster display owners with answers to common questions as well as additional troubleshooting information. Reviewing this FAQ list before calling the Daktronics Customer Service Help Desk will result in a better, more complete information exchange.

Note: This FAQ refers to specific sections in following installation and operation manuals.

**DataTime Outdoor LED Display Series:**

- **ED13752: Time & Temperature Displays**

**DataMaster Outdoor LED Display Series:**

- **ED14475: Event Counter Displays**
- **ED14305: Lottery Displays**
- **ED14139: Parking Garage Displays**
- **ED13750: Gas Price Displays**
- **ED13751: Rate Displays**

**Q. How do I know which driver is the “host” (that is, which driver connects to the DataMaster<sup>™</sup> 100 controller)?**

**A.** All driver boards are identical until you install the Protocol 4 plug. The driver containing the Protocol 4 plug becomes the host. (Refer to the section titled **Power and Signal Connection** of the manual.)

**Q. Which driver do I connect the temperature and light sensor to?**

**A.** Connect the sensor to the host driver only (the driver that is connected to the DataMaster 100 controller).

**Q. I have a price display with multiple lines. Which line do I put the host driver on?**

**A.** You can designate any driver as the host driver by installing the protocol plug in jack J20. Be sure to set the line number of each driver by installing the correct address plug. Use the Signal Out terminals of this display to go to the driver on the next line. Connect signal to all other displays using the Signal Out terminals of the previous line. (Refer to the section titled **Power and Signal Connection** of the manual.)

**Q. I powered up the display for the first time, and nothing happened; no digits lit up or anything. What’s wrong?**

**A.** First, open the display containing the host driver (the driver connected to the DataMaster 100 controller). Is the green LED labeled POWER illuminated? If not, the driver is either not getting 24 V DC, or there is a problem with the power supply circuit on the driver board. If there is 24 V DC on J17, and J17 is secure, the driver is defective. If the POWER LED is illuminated, check the protocol and address settings.

Check to make sure that the protocol plug is loaded in J20 of the host driver. The protocol plug should be installed only on the host driver (the driver connected to the DataMaster 100 controller.)

If the host driver has power and the proper protocol and address settings, it will always display something on power-up (it may be just an error code). If this does not resolve the problem, the driver is probably defective. You can try swapping the host driver with one from a different display. Make sure that the host driver always has a protocol plug installed on J20.

**Q. My sign is displaying “Ex” (x is a number). What’s wrong?**

**A.** The driver displays error codes for common problems; refer to the **Troubleshooting** section of the manual to resolve the problem.

**Q. My sign is displaying garbage. What’s wrong?**

**A.** Most likely the protocol and/or address plug settings are incorrect. The protocol plug should be installed in jack J20 only on the host driver (the driver connected to the DataMaster 100 controller). (Refer to the **Power and Signal Connection** section of the manual.)

**Q. I don’t want to show \_\_ (°C/°F/time) on my Time & Temp display. How do I remove this?**

**A.** Use the DataMaster 100 controller to set the hold time for this item to 0.0.

**Q. When I try to set the hold times on my Time & Temp display to less than 1.1 seconds, it doesn’t work. Why?**

**A.** DataTime displays with driver software versions earlier than 2.0 did not support hold times of less than 1.1 seconds. Versions 2.0 and newer do not have this issue.

**Q: I just connected my DataTime display, and instead of showing temp, it shows an error message. What's wrong?**

**A:** Refer to **Drawing A-166883** for temp sensor jumper settings and LED indicator information. Refer to **Drawing A-166216** for the 4-column MASC LED driver (or appropriate 8- or 16-column driver specifications) for troubleshooting information. The CAN RX and CAN TX LEDs should blink once every few seconds. If both LEDs are on constantly, suspect the wiring between the MASC LED driver and the temp/light sensor.

**Q: I have a multiple line display and all lines of the display show the information set on the first line. How do I get the correct information on each line of the display?**

**A:** The line number for the display is set using address plug J19. All displays ship with an address plug that defaults to Line 1. The install kit includes a set of 12-pin Mate-N-Lok™ plugs that are labeled with the line number of the display driver to which they should be installed. If a driver is located inside a display on a line other than Line 1, remove the Address plug and install the corresponding plug to the line of price data you would like to show.

- Q: My Time and Temp display doesn't keep accurate time. Every month I have to reset the time. What's up with that?**
- A:** Signs shipped before 4/29/03 may exhibit this problem. It can be corrected by installing a 60Hz reference retrofit kit (0A-1279-0283), and updating the driver software to version 3.0 or newer.

The following table lists problems that have been found with older versions of the display driver software. If you see this problem, look at the version label on the MASC driver. If the version is earlier than the one listed in the fix column, this driver needs to be sent back for reprogramming. Contact Daktronics Customer Service:

**Mail:** Customer Service  
 Daktronics, Inc.  
 PO Box 5128  
 331 32<sup>nd</sup> Ave  
 Brookings SD 57006

**Phone:** 877-605-1113 (toll free) or 605-697-4034

**Fax:** 605-697-4444

**E-mail:** helpdesk@daktronics.com

<b>Problems with Old Driver Software Versions</b>		
<b><i>Display Issues</i></b>	<b><i>Fixed with Software Version</i></b>	<b><i>Fix Date</i></b>
Decimal point does not work on price display.	1.1	5/22/02
Tens digit is blank when the temperature display should be over 100°.	1.2	5/30/02
Automatic daylight savings time correction does not work.	1.3	8/06/02
Hold times of less than 1.1 seconds do not work.	2.0	10/22/03
Old sequence may show for 16 minutes under certain circumstances.	2.0	10/22/03
Hours value toggles between 2 and 1 on last Sunday in October. (Just after Daylight Savings.)	2.0	10/22/03
Multiple stroke digits do not show error codes correctly.	3.0	4/29/03
No support for Event Counter displays.	3.7	12/31/03