

**Reproduction Reference**  
**ED-13750 – P1279**  
**DataMaster Gasoline Price Displays**

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1. This page is for reproduction reference only and will not be included in the manual.
2. This manual is to be copied on FRONT AND BACK PAGES –8 ½ x 11 paper.
3. Note: The first and second pages, Cover Page and Copyright Page, use the front of the page (blank on back). Section heading pages always start on a new page; they never start on the back of another page.
4. Drawings for this manual are listed in the following table. Group and insert the drawings in alphanumeric order in **Appendix A: Reference Drawings**. Reduce all size B drawings to A-size, and print all A drawings back-to-back and all B drawings back-to-back.

A-38532	A-166142	A-181220	A-181673	A-185204
A-164988	A-166216	A-181222	A-183775	A-185205
A-164998	A-167237	A-181224	A-184475	A-185206
A-165028	A-168376	A-181233	A-184918	A-189768
A-165742	A-175342	A-181234	A-185176	
A-165743	A-177935	A-181235	A-185177	
A-166139	A-179599	A-181672	A-185203	

5. Insert the following documents in these **Appendices** as follows:

**Appendix B:**

DataMaster Frequently Asked Questions .....	<b>ED-13481</b>
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**Appendix C:**

Gasoline Price Displays	
Direct-Wire Installation	
Quick Install Reference .....	<b>ED-13965</b>
▪ Riser Diagram, Indoor Wire Control.....	<b>Drawing A-175342</b>
▪ Light Sensor Installation, G3.....	<b>Drawing A-183775</b>

**Appendix D:**

DataMaster Gasoline Price Displays	
Quick Start Reference.....	<b>ED-13960</b>

*(Continued on next page)*

*(Continued from preceding page)*

6. All sections and all Appendices are to be tabbed with the following labels:

Section 1:	<b>Introduction</b>
Section 2:	<b>Display Specifications</b>
Section 3:	<b>Installation</b>
Section 4:	<b>Display Service Information</b>
Section 5:	<b>DataMaster 100 Controller</b>
Section 6:	<b>Display Operation</b>
Section 7:	<b>POS Interface Installation and Operation</b>
App A:	<b>Reference Drawings</b>
App B:	<b>DataMaster FAQ</b> <b>ED13481</b>
App C:	<b>Gas Price Quick Install</b> <b>ED13965</b>
App D:	<b>Gas Price Quick Start</b> <b>ED13960</b>

7. Use a blue window cover and a blue back.
8. Punch all pages, window cover and back cover along the left edge and bind with a binder.
9. Please direct questions and suggestions to Engineering Support.



**DataMaster™ Outdoor LED  
Gasoline Price Displays**

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**Installation and Operation Manual**

*ED-13750*

*Rev 3 – 26 Jan 2005*

**Informing  
& Entertaining  
*the* World**



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

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

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

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

*DataMaster Serial No.* \_\_\_\_\_

## **DAKTRONICS, INC.**

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# Table of Contents

---

<b>Section 1:</b>	<b>Introduction.....</b>	<b>1-1</b>
1.1	How To Use This Manual .....	1-1
1.2	Daktronics Nomenclature .....	1-2
1.3	Manual Overview .....	1-3
1.4	Product Overview .....	1-4
1.5	Model Names.....	1-5
1.6	Product Safety Approval .....	1-5
<b>Section 2:</b>	<b>Gasoline Price Display Specifications .....</b>	<b>2-1</b>
2.1	Mechanical Specifications Drawings .....	2-1
2.2	Electrical Specification Drawings .....	2-1
2.3	Specifications .....	2-3
<b>Section 3:</b>	<b>Mechanical and Electrical Installation .....</b>	<b>3-1</b>
3.1	Mechanical Installation.....	3-1
	Lifting the Display.....	3-1
3.2	Electrical installation .....	3-2
	Power.....	3-3
3.3	Power and Signal Connection .....	3-5
	Host/Client and Master/Slave Definitions and Address Settings .....	3-6
3.4	Photo Sensor Installation.....	3-7
<b>Section 4:</b>	<b>Display Maintenance and Troubleshooting.....</b>	<b>4-1</b>
4.1	Cabinet Specifications .....	4-1
4.2	Component Location and Access .....	4-1
	Replacing a Digit.....	4-2
	Replacing a Digit Segment.....	4-3
	Replacing a Driver.....	4-3
4.3	Schematics .....	4-4
4.4	LED Drivers .....	4-4
4.5	Segmentation and Digit Designation .....	4-5
4.6	Troubleshooting.....	4-6
	Power On Self-Test: .....	4-7
4.7	Lightning Protection.....	4-8
4.8	Replacement Parts .....	4-8
4.9	Daktronics Exchange and Repair and Return Programs.....	4-11
<b>Section 5:</b>	<b>DataMaster 100 Controller.....</b>	<b>5-1</b>
5.1	DataMaster 100 Overview.....	5-1
	Replacement Parts List.....	5-1
5.2	Control System Overview .....	5-2
	Wire Control.....	5-3

5.3	Controller Signal Connection .....	5-4
<b>Section 6:</b>	<b>Gas Price Display Operation.....</b>	<b>6-1</b>
6.1	DataMaster™ Insert and Code.....	6-1
6.2	Gas Price Display Operation .....	6-1
	Gas Price Display Startup.....	6-2
	Gas Price Controller Operation .....	6-2
	Modifying Price Line Settings.....	6-3
	Dimming.....	6-3
	Display Sequence .....	6-5
	Menu Items.....	6-6
	Edit Price Line 1-5.....	6-6
<b>Section 7:</b>	<b>POS Interface Installation and Operation.....</b>	<b>7-1</b>
7.1	Hardware installation:.....	7-1
7.2	Configuring the DM-100 for Gilbarco G-Site Interface.....	7-2
	Changing Prices:.....	7-3
<b>Appendix A:</b>	<b>Reference Drawings .....</b>	<b>A-1</b>
<b>Appendix B:</b>	<b>DataMaster Frequently Asked Questions (FAQ) .....</b>	<b>B-1</b>
<b>Appendix C:</b>	<b>DataMaster Gasoline Price Quick Installation Reference.....</b>	<b>C-1</b>
<b>Appendix D:</b>	<b>DataMaster Gasoline Price Quick Start Reference.....</b>	<b>D-1</b>



# List of Figures

---

<b>Figure 1:</b> Daktronics Drawing Label .....	1-1
<b>Figure 2:</b> Display Identification Label .....	1-2
<b>Figure 3:</b> Gasoline Price Display .....	1-4
<b>Figure 4:</b> Lifting the Display .....	3-2
<b>Figure 5:</b> DataMaster Driver Enclosure with 4-Column Driver .....	3-5
<b>Figure 6:</b> Internal Light Sensor .....	3-7
<b>Figure 7:</b> DataTime Time and Temp Display with Door Panels Open .....	4-1
<b>Figure 8:</b> Digit Assembly .....	4-2
<b>Figure 9:</b> Segmented Digit Panel .....	4-3
<b>Figure 10:</b> Digit Designation .....	4-5
<b>Figure 11:</b> DataMaster 100 .....	5-1
<b>Figure 12:</b> DataMaster 100 Controller with Signal Cable .....	5-3
<b>Figure 13:</b> Wire Control from Base of Sign .....	5-4
<b>Figure 14:</b> Wire Control from Building Location .....	5-5
<b>Figure 15:</b> DataMaster 100 Insert LL-2551 .....	6-1



# Section 1: Introduction

---

This manual explains the installation and operation of *Daktronics DataMaster™ Outdoor LED Gasoline Price Displays* and provides details for display maintenance. If you have questions regarding the safety, installation, operation, or service of these systems, 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:

1. Read and understand these instructions before installing your display.
2. Do not drop the controller or allow it to get wet.
3. Properly ground the display with a ground rod at the sign location.
4. **Disconnect power when the display is not in use.**
5. **Disconnect power when servicing the display.**
6. Do not modify the display structure or attach any panels or coverings without the express written consent of Daktronics, Inc.

**Figure 1**, below, illustrates the Daktronics drawing numbering system. Daktronics identifies individual drawings with a number (1279-RO4A-181218 in the example), which is located in the bottom right corner of each drawing. This manual refers to drawings by the last set of numbers in their ID as well as the letter preceding them. The example would be **Drawing A-181218**.

DAKTRONICS, INC. BROOKINGS, SD 57006		
PROJ: DATATIME LED DISPLAYS		
TITLE: MECHANICAL SPECS, DF-1010-24, G3		
DES. BY: AVB		DRAWN BY: A GIBSON
DATE: 09 JAN 03		
REVISION	APPR. BY:	1279-RO4A-181218
	SCALE: 1 = 16	

*Figure 1: Daktronics Drawing Label*

Reference drawings in this manual are grouped and inserted in alphanumeric order in the **Appendix**.

Listed below are a number of drawing types commonly used by Daktronics, along with the information each is likely to provide.

- **System Riser Diagrams:** overall system layout from control room to display, power, and phase requirements.
- **Shop Drawings:** fan locations, transformer locations, mounting information, power and signal entrance points, and access method (front or rear).

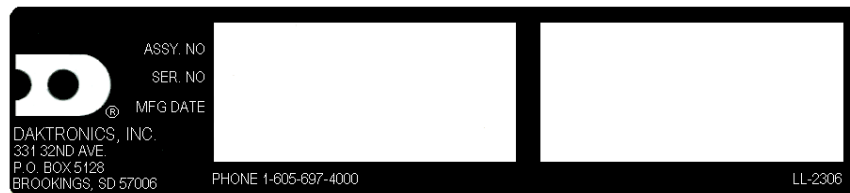
- **Schematics:** power wiring, signal wiring, panelboard or power termination panel assignments, signal termination panel assignments, and transformer assignments.
- **Final Assembly:** component locations, part numbers, display dimensions, and assembly/disassembly instructions.

All references to drawing numbers, appendices, figures, or other manuals are presented in **bold** typeface, as in this example: “Refer to **Drawing A-181220** for the location of the driver enclosure ”. Additionally, any drawings referenced within a particular subsection are listed at the beginning of that subsection in the following manner:

**Reference Drawing:**  
 Mechanical Specs, DF-1020-13, G3..... **Drawing A-181220**

Daktronics identifies manuals by their engineering document (ED) number, which is located on the cover page of the manual. For example, this manual would be referred to as **ED-13750**.

The serial and model numbers of a Daktronics display can be found on the ID label on the display. The label will be similar to the one shown in **Figure 2**. When calling Daktronics Customer Service, please have this information available to ensure that your request is serviced as quickly as possible. For future reference, note your display model number, serial number, and installation date on the front page of this manual.



**Figure 2:** *Display Identification Label*

Daktronics displays are built for long life and require little maintenance. However, from time to time, certain display components will have to be replaced. The Replacement Parts List in **Section 4** provides the names and part numbers of components that may require replacement during the life of this display.

Following the Replacement Parts List is an explanation of Daktronics exchange and replacement programs. Refer to these instructions if you must replace or repair any display component.

## 1.2 Daktronics Nomenclature

To fully understand some Daktronics drawings, such as schematics, it is necessary to know how various components are labeled in those drawings. You will find this information useful when trying to communicate maintenance or troubleshooting efforts.

The label “A” on a drawing item typically denotes an assembly. An assembly can be a single circuit board or a collection of components that function together, usually mounted on a single plate or in a single enclosure.

In addition, the following labeling formats might be found on various Daktronics drawings:

- “TB \_\_” denotes a termination block for power or signal cable.
- “E \_\_” denotes a grounding point.
- “J \_\_” denotes a power or signal jack.
- “P \_\_” denotes a power or signal plug for the opposite jack.

Finally, Daktronics part numbers are commonly found on drawings. Those part numbers can be used when requesting replacement parts from Daktronics Customer Service. Take note of the following part number formats. (Not all possible formats are listed here.)

- “OP- \_\_\_\_\_- \_\_\_\_\_” denotes an individual circuit board, such as a driver board.
- “OA- \_\_\_\_\_ - \_\_\_\_\_” denotes an assembly, such as a circuit board and the plate or bracket to which it is mounted. A collection of circuit boards working as a single unit may also carry an assembly label.
- “W- \_\_\_\_\_” denotes a wire or cable. Cables may also carry the assembly numbering format in certain circumstances. This is especially true for ribbon cables.
- “T- \_\_\_\_\_” denotes a transformer.
- “PR- \_\_\_\_\_ - \_” denotes a specially ordered part.
- “M- \_\_\_\_\_” denotes a metal part, and “OM-\_\_\_\_\_” typically denotes a fabricated metal assembly.

## 1.3 Manual Overview

This manual details outdoor LED numeric displays. It is divided into the following sections:

- Section 1:** Contains an overview of the DataMaster Series, product safety information, and labeling and numbering descriptions.
- Section 2:** Lists Gas Price display drawings with mechanical and electrical information and contains a table detailing the mechanical specifications, circuit specifications and power requirements for each model.
- Section 3:** Contains information needed to perform the mechanical and electrical installation for each model.
- Section 4:** Contains service and troubleshooting information.
- Section 5:** Contains an overview of the DataMaster controller, with a description of the types of control systems and instructions for DM-100 setup.

- Section 6:** Provides operating instructions for Gas Price displays.  
**Section 7:** POS Interface Installation and Operation  
**Appendix:** Contains all drawings referenced in this manual, quick-start guides, and a list of frequently asked questions.

## 1.4 Product Overview

DataMaster Gasoline Price displays are part of a family of Daktronics products designed for easy installation, readability, and reliability. Microprocessor control assures consistent operation and accuracy. The Gas Price display is illustrated in **Figure 3** below.



**Figure 3:** Gasoline Price Display

The DataMaster Series includes:

- **Gasoline Price Displays:** gas price signs with three standard digits, decimal, and  $\frac{9}{10}$  fraction.
- **Rate Displays:** two- or four-digit signs, typically used to display hotel/motel room rates or commodity prices.
- **Time & Temperature Displays:** Automatic time & temp signs capable of displaying temperatures in Fahrenheit or Celsius (three digits, degree symbol, and *F* or *C* character) and 12- or 24-hour time.

The Gasoline Price displays are available in two styles, a full-cabinet model designed for standalone use (DF-1020), and a front-insertion, or “drop-in”, model designed for installation in an existing or custom sign (DF-1021).

DataMaster displays use light emitting diodes to illuminate their numeric digits. (Light emitting diodes, or LEDs, are tiny, solid-state components that use a semiconductor to transform electrical current into light; they are high-intensity, low-energy lighting units.)

The displays feature highly visible PanaView<sup>®</sup> digits 13", 18", 24", 36" and 48" tall. (The front-insertion Gas Price model is available with 13", 18" and 24" digits.) All DataMaster displays are configured with red or amber LEDs.

Because of their LED technology, the displays consume little power, some barely more than a household lamp. Power usage for individual displays in this series is a maximum 300 W. All models have a 120 V power requirement.

DataMaster cabinets, specially developed for outdoor use, are constructed of heavy-gauge aluminum. Digit faceplates are black, and they are set directly into the surface of the display. Mounting weights and dimensions for each model are listed in **Section 2** of this manual.

The DataMaster outdoor LED displays have been designed for use with a DataMaster™ 100 hand-held controller. The device uses a keyboard overlay (called an insert) for display control, and the DataMaster displays themselves operate without modification on All Sport® 5000 signal protocol. **Section 6** of this manual provides complete operating instructions.

## 1.5 Model Names

Daktronics displays, video screens, and scoreboards are differentiated by their model numbers. The displays described in this manual all carry the two-letter prefix, *DF*-, which indicates that they are DataMaster models. The letter *D* indicates that they are numeric displays; the letter *F* indicates LED technology.

In the outdoor LED display series, typically the first set of numbers following the prefix identifies the series or product line, while the second set of numbers refers to digit height. A final letter denotes digit color. With *Model DF-1020-13-A*, for example, *1020* identifies the Gas Price full-cabinet line, and *13* signifies that the display's primary digits are a nominal 13" tall. In the example, the letter *A* signifies that the digits are amber, while *R* would indicate red LED digits.

Another designation often used with the Model DF-1021 Gas Price display is an *M* or an *S*; those letters indicate that the display is either a master or a slave unit.

## 1.6 Product Safety Approval

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





# Section 2: Gasoline Price Display Specifications

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## 2.1 Mechanical Specifications Drawings

Use the following table to determine the mechanical specifications for your display. The drawings are listed below by model number; they have been inserted in the **Appendix** in alphanumeric order by drawing number.

Model	Drawing Title	Drawing Number
<b>Full-Cabinet Displays (DF-1020 Series)</b>		
DF-1020-13	Mechanical Specs, DF-1020-13, G3	Drawing A-181220
DF-1020-18	Mechanical Specs, DF-1020-18, G3	Drawing A-181224
DF-1020-24	Mechanical Specs, DF-1020-24, G3	Drawing A-181234
DF-1020-36	Mechanical Specs, DF-1020-36, G3	Drawing A-165742
DF-1020-48	Mechanical Specifications, DF-1020-48, G3	Drawing A-181672
<b>Front-Insertion/Drop-In Displays (DF-1021 Series)</b>		
DF-1021-13	Mechanical Specs, DF-1021-13, G3	Drawing A-185176
DF-1021-18	Mechanical Specs, DF-1021-18, G3	Drawing A-185203
DF-1021-24	Mechanical Specs, DF-1021-24, G3	Drawing A-185205

## 2.2 Electrical Specification Drawings

Use the following table to determine the electrical specifications for your display. The drawings are listed below by model number; they have been inserted in the **Appendix** in alphanumeric order by drawing number.

<b>Model</b>	<b>Drawing Title</b>	<b>Drawing Number</b>
<b>Full-Cabinet Displays (DF-1020 Series)</b>		
DF-1020-13	Electrical Specs, DF-1020-13, G3	Drawing A-181222
DF-1020-18	Electrical Specs, DF-1020-18, G3	Drawing A-181233
DF-1020-24	Electrical Specs, DF-1020-24, G3	Drawing A-181235
DF-1020-36	Electrical Specs, DF-1020-36, G3	Drawing A-165743
DF-1020-48	Electrical Specs, DF-1020-48, G3	Drawing A-181673
<b>Front-Insertion/Drop-In Displays (DF-1021 Series)</b>		
DF-1021-13	Electrical Specs, DF-1021-13, G3	Drawing A-185177
DF-1021-18	Electrical Specs, DF-1021-18, G3	Drawing A-185204
DF-1021-24	Electrical Specs, DF-1021-24, G3	Drawing A-185206

## 2.3 Specifications

The table below shows all of the mechanical specifications, circuit specifications, and maximum power requirements for each model in this series. Models are listed in alphanumeric order by digit size.

### *DataMaster Gasoline Price Displays*

Model	Dimensions	Weight Uncrated  Crated	Digit Size/Color	Maximum Wattage	Circuit
DF-1020-13-A DF-1020-13-R	H1'-6", W4'-0", D6" (457 mm, 1219 mm, 152 mm)	36 lb (16 kg)  58 lb (26 kg)	13" (330 mm)  Amber, red	150 W	120 V AC  1.3 A
DF-1020-18-A DF-1020-18-R	H2'-0", W5'-0", D6" (610 mm, 1524 mm, 152 mm)	60 lb (27 kg)  96 lb (44 kg)	18" (457 mm)  Amber, red	150 W	120 V AC  1.3 A
DF-1020-24-A DF-1020-24-R	H2'-6", W6'-6", D6" (762 mm, 1981 mm, 152 mm)	90 lb (41 kg)  144 lb (65 kg)	24" (610 mm)  Amber, red	150 W	120 V AC  1.3 A
DF-1020-36-A DF-1020-36-R	H3'-6", W8'-6", D8" (1067 mm, 2591 mm, 203 mm)	160 lb (73 kg)  256 lb (116 kg)	36" (914 mm)  Amber, red	300 W	120 V AC  2.5 A
DF-1020-48-A DF-1020-48-R	H4'-6", W11'-0", D8" (1372 mm, 3353 mm, 203 mm)	280 lb (127 kg)  448 lb (203 kg)	48" (1219 mm)  Amber, red	300 W	120 V AC  2.5 A

<b>Model</b>	<b>Dimensions</b>	<b>Weight Uncrated  Crated</b>	<b>Digit Size/Color</b>	<b>Maximum Wattage</b>	<b>Circuit</b>
DF-1021-13-A DF-1021-13-R	H1'-6", W4'-0", D6" (457 mm, 1219 mm, 152 mm)	36 lb (16 kg)  58 lb (26 kg)	13" (330 mm)  Amber, red	150 W	120 V AC  1.3 A
DF-1021-18-A DF-1021-18-R	H2'-0", W5'-0", D6" (610 mm, 1524 mm, 152 mm)	60 lb (27 kg)  96 lb (44 kg)	18" (457 mm)  Amber, red	150 W	120 V AC  1.3 A
DF-1021-24-A DF-1021-24-R	H2'-6", W6'-0", D6" (762 mm, 1829 mm, 152 mm)	90 lb (41 kg)  144 lb (65 kg)	24" (610 mm)  Amber, red	150 W	120 V AC  1.3 A

## Section 3: 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.

### 3.1 Mechanical Installation

**Reference Drawings:**

Mounting Method, Flag Style, One Pole .....**Drawing A-166139**

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

While DataMaster 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 fully finished exteriors, for example, but other models are designed to be inserted into an existing sign cabinet and require a custom installation.

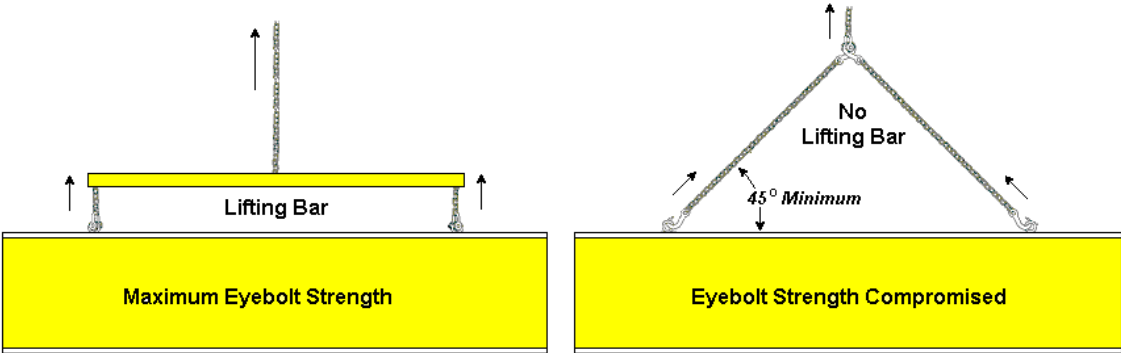
The engineering drawings referenced above detail a number of mounting methods, from a single display on a single column support to multiple displays stacked above one another in a two-pole installation. The drawings include welding and hardware notes that will be applicable for most installations.

**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

Model DF-1020 displays are shipped equipped with  $\frac{3}{8}$ " eyebolts that are used for lifting and positioning the modules. Eyebolts are located along the top outer edges of the cabinet. Model DF-1021 drop-in displays are not so equipped.

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 4**, below, illustrates two lifting methods.



**Figure 4:** *Lifting the Display*

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.

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

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

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. On models with 13", 18" or 24" digits, thread  $\frac{3}{8}$ "-13 bolts into the holes. On models with 36" or 48" digits, install  $\frac{1}{2}$ "-13 bolts in the holes.

### 3.2 Electrical installation

**Reference Drawing:**

Quick Install, DF-1020 Gas Price Displays ..... **Drawing A-189768**

**Drawing A-189768** provides detailed instructions for power and signal connections for Gas Price displays, including hookup of the light sensor and connections between host and client displays. Refer to this drawing before undertaking any part of the electrical installation.

**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 Drawings:**

- Schematic; Multipurpose 4 Col. LED Drvr.....**Drawing A-165028**
- Schematic; Gen III Outdoor LED,  
8 Column Drvr .....**Drawing A-177935**
- 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 removable or 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.

The 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.**

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Refer to the DataMaster display schematics 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; Multipurpose 4 Col. LED Drvr.....**Drawing A-165028**
- Schematic; 16 Col Multipurpose LED Drvr.....**Drawing A-179599**
- Enclosed Driver, 4 Column Reference.....**Drawing A-184918**
- Schematic; Gen III Outdoor LED,  
8 Column Drvr .....**Drawing A-177935**

**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 schematics, **Drawings A-165028, A-177935, and A-179599**, or the driver reference, **Drawing A-184918**, for information on where to connect the grounding wire. Connection at the driver enclosure terminal block is illustrated at the bottom of **Drawing 184918**.

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 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. Under 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.



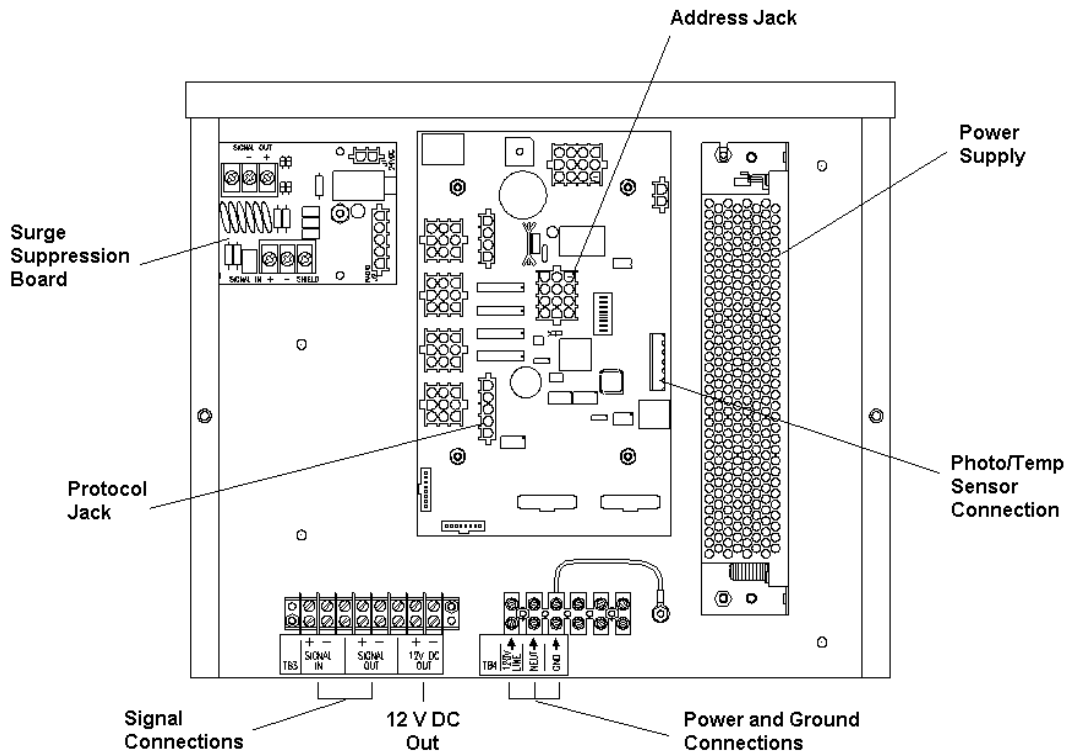
### 3.3 Power and Signal Connection

#### Reference Drawings

Schematic; Multipurpose 4 Col. LED Drvr .....	<b>Drawing A-165028</b>
Enclosed Driver, 4 Column Reference .....	<b>Drawing A-184918</b>
4 Column MASC LED Driver Specifications .....	<b>Drawing A-166216</b>
Quick Install, DF-1020 Gas Price Displays.....	<b>Drawing A-189768</b>
Schematic; Gen III Outdoor LED, 8 Column Drvr .....	<b>Drawing A-177935</b>
Schematic; 16 Col Multipurpose LED Drvr .....	<b>Drawing A-179599</b>
8 Column MASC LED Driver Specifications .....	<b>Drawing A-167237</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 knockouts for  $\frac{1}{2}$ " and  $\frac{3}{4}$ " 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-189768** for a complete review of power and signal connections for Gasoline Price displays. **Drawings A-184918, A-167237 and A-184475** illustrate and provide connection specifications for drivers used in DataMaster Gas Price displays. The schematics listed above detail both the wiring in the enclosure and external connections to the display. Power and signal connections, illustrated in **Figure 5** below, are similar for all three drivers.



**Figure 5:** DataMaster Driver Enclosure with 4-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, as shown in **Drawing A-184918**.

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-165028, A-177935** and **A-179599**, for wiring details.

Route signal cabling to the terminal block on the lower left edge of the enclosure (see **Figure 5**). 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 and Master/Slave Definitions and Address Settings**

### **Reference Drawings:**

Host/Client and Master/Slave Definitions .....	<b>Drawing A-168376</b>
4 Column MASC LED Driver Specifications .....	<b>Drawing A-166216</b>
8 Column MASC LED Driver Specifications .....	<b>Drawing A-167237</b>
16 Col. MASC Driver Specifications .....	<b>Drawing A-184475</b>

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 light/temp sensor. The Signal Out terminals are used to connect to “client drivers”.

Select the host driver by inserting the Protocol 4 plug into the 5-pin protocol jack (J20.) For protocol jack location, refer to the driver specifications drawings listed above.

The 12 V DC terminals connected to the host driver (see “Signal Connections” in **Figure 5**) 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.

Some multiple-module signs use “slave displays”. These displays do not contain a driver and may use either the client or host digit outputs. Refer to **Drawing A-168376** for an illustration of the client/host driver and master/slave display setups.

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-module 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.

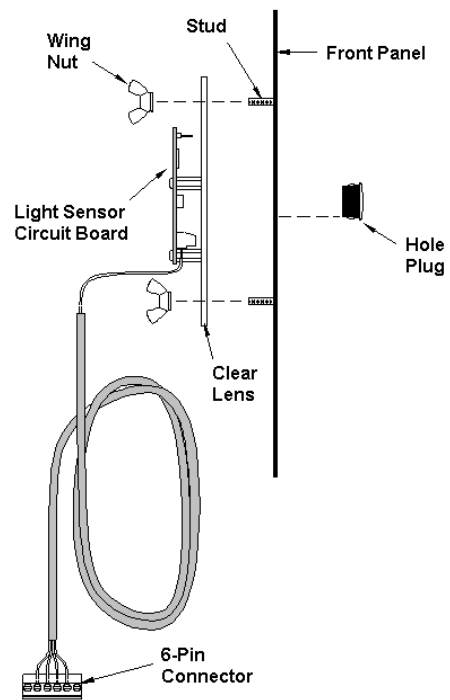
### 3.4 Light Sensor Installation

**Reference Drawing:**

Light Sensor Installation, G3.....**Drawing A-183775**

Displays in the DataMaster series use a light sensor 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.) Use **Drawing A-183775** and the following instructions to install the light sensor in your DataMaster Gasoline Price display. If the sign or sign system has more than one display, install the light sensor in the host display only.

1. Remove the screws on the front of the display and open the hinged access door.
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.
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 replace the screws.



**Figure 6: Internal Light Sensor**



## Section 4: Display Maintenance and Troubleshooting

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### **IMPORTANT NOTES:**

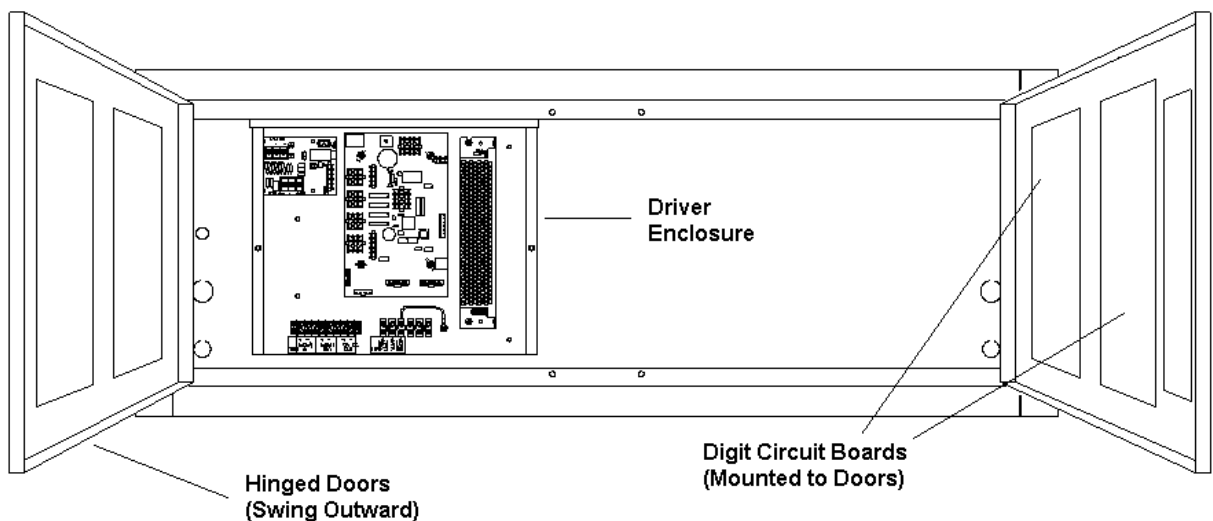
1. Disconnect power before doing any repair or maintenance work on the display!
2. Allow only qualified service personnel access to internal display electronics.
3. Disconnect power when not using the display.

### 4.1 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 chart in **Section 2**. Hinged panels for servicing digits and indicators and for component access are detailed in each model's mechanical specifications drawing.

### 4.2 Component Location and Access

For the front-access modules in this series, all internal electronic components and digits can be reached by opening one of the hinged access doors on the front of the display. Each door swings outward when the two screws on the display face panel are removed, as shown in **Figure 7**. For front and opened views of the displays, refer to your model's electrical and mechanical specifications drawings, listed in **Sections 2.1** and **2.2**.



*Figure 7: DataTime Time and Temp Display with Door Panels Open*

Component placement varies slightly with each DataMaster model; consult the model-specific mechanical drawing to determine the layout for your display.

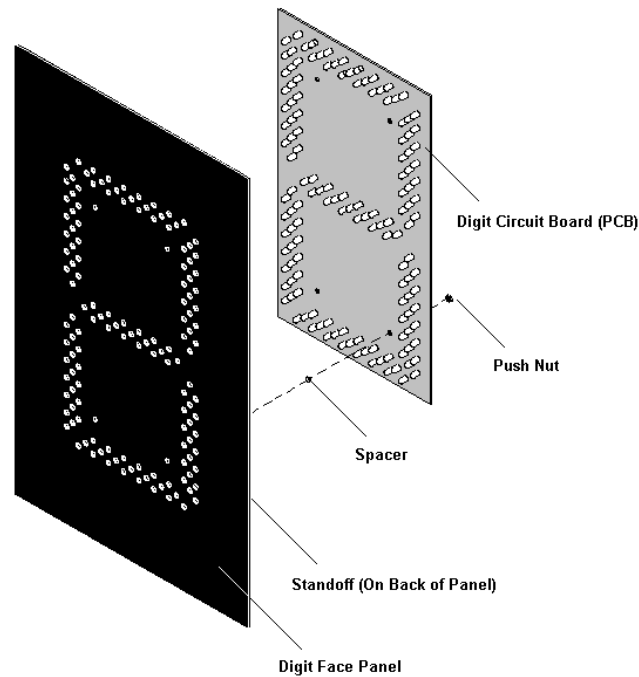
**Note: Disconnect power before servicing the display!** Disconnect power, too, when the display is not in use. Prolonged power-on may shorten the life of some electronic components.

## 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.
2. Disconnect the power/signal 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.)



**Figure 8:** Digit Assembly

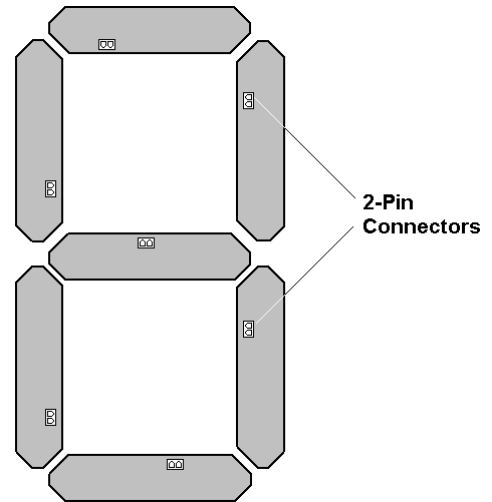
4. Position a new digit over the screws and tighten the nuts.
5. Reconnect the power/signal connector. **Note: This is a keyed connector, it will attach in one way only. Do not attempt to force the connection!**
6. Close and secure the digit panel and test the display.

## Replacing a Digit Segment

When a digit malfunctions, in most cases it is necessary to replace the entire digit circuit board. Some larger digits (24", 36", 48"), however, may be 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 power/signal 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.
4. Position a new segment over the screws 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.



**Figure 9: Segmented Digit Panel**  
(Rear View)

Replace a malfunctioning colon, decimal, or indicator assembly in the same manner.

## Replacing a Driver

Drivers are typically mounted inside the display and immediately behind a digit, but location and mounting varies by model. Refer to the component locations drawings in **Section 2** for the location of your driver. All displays in this manual are front-accessible.

Each driver is enclosed with a power supply and signal terminal block. 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 4.2**.
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.

### 4.3 Schematics

**Reference Drawings:**

- Schematic; Multipurpose 4 Col. LED Drvr..... **Drawing A-165028**
- Schematic; Gen III Outdoor LED, 8 Column Drvr ..... **Drawing A-177935**
- Schematic; 16 Col Multipurpose LED Drvr..... **Drawing A-179599**

**Drawings A-165028, A-177935, and A-179599** are the schematic diagrams for the 4-, 8- and 16-column drivers used in the DataMaster Gas Price displays. The schematics include power and signal inputs and all wiring for the models described in this manual.

### 4.4 LED Drivers

**Reference Drawings:**

- 4 Column MASC LED Driver Specifications ..... **Drawing A-166216**
- 8 Column MASC Driver Specifications ..... **Drawing A-167237**
- 16 Col. MASC Driver Specification ..... **Drawing A-184475**

In the display, the LED drivers perform the task of switching digits on and off. Refer to **Drawings A-166216** or **A-184475** for a complete listing of driver connector functions and wiring pin numbers.

DataMaster Gas Price displays may use 4-, 8-, or 16-column drivers, depending on the model and size of digits. Each 16-column 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. (Major functions are the same on 4- and 8-column drivers.)

<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



16-Column LED Driver	
Connector No.	Function
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.

## 4.5 Segmentation and Digit Designation

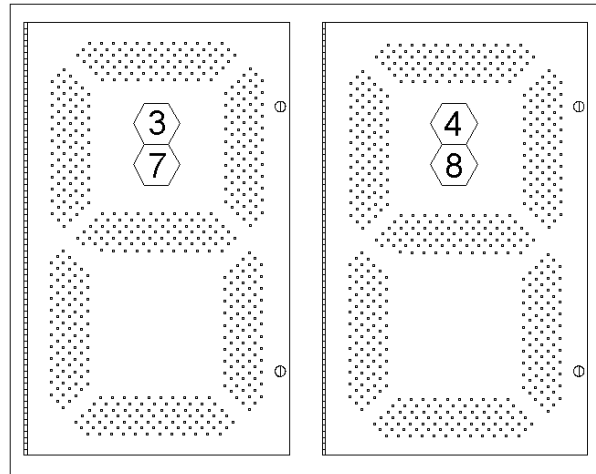
### Reference Drawing:

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 component locations drawings in **Section 2** specify the driver connectors controlling the 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. (Larger digits, like the 36" digits shown in **Figure 10**, are each wired to two connectors.)



**Figure 10: Digit Designation**

## 4.6 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. (Refer to the appropriate manual for a list of potential problems with add-on or separately mounted message centers.

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.

**Note: The LCD screen on the DataMaster 100 controller will not show the failure codes described in the table below. Failure codes will only be displayed on the DataMaster 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	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. <i>(DataTime Time &amp; Temp displays only)</i>
E3	Temp Error: There is no response from the temp sensor or light 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>ED13364</b> .  <b>Note: The temp sensor takes approximately 10 seconds to initialize on power-up. The sign will display this error until initialization is complete.</b>
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 <DISPLAY SEQUENCE> 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.

## 4.7 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.

## 4.8 Replacement Parts

Refer to the following table for Daktronics replacement parts.

<b>Description</b>	<b>Daktronics Part No.</b>
Light sensor, G3	0A-1279-0203
Protocol plug (Protocol 4)	0A-1279-0089
Transformer, wall pack (for DataMaster 100)	T-1118
DataMaster 100 hand-held controller	0A-1196-0088
Junction box, outdoor, 9-pin D-male	0A-1196-0093
Junction box, indoor, 9-pin D, male	0A-1196-0099
Power supply, 24 V DC, 150 W	A-1720
Signal surge suppression board	0P-1110-0011
Driver, 4-column MASC, LED	0P-1192-0068
Driver, 8-column MASC, LED	0P-1192-0082
Driver, 16-column, MASC, LED	0P-1192-0086
DataMaster 100 outdoor wired installation kit	0A-1279-0087
DataMaster 100 indoor wired installation kit	0A-1279-0103

<b>Description</b>	<b>Daktronics Part No.</b>
Cable, 6-conductor, 22 AWG (for radio installation)	W-1210
Cable, serial, DB9 male to DB9 female	W-1267
Digit, 13" red, pc board	0P-1192-0200
Digit, 13" amber, pc board	0P-1192-0214
Digit, 13" <sup>9</sup> / <sub>10</sub> , red, pc board	0P-1192-0234
Digit, 13" <sup>9</sup> / <sub>10</sub> , amber, pc board	0P-1192-0234
Digit, 18" 7-segment, red, pc board	0P-1192-0235
Digit, 18" 7-segment, amber, pc board	0P-1192-0216
Digit, 13" 7-segment, red, w/ faceplate	0A-1192-2223
Digit, 13" 7-segment, amber, w/ faceplate	0A-1192-2224
Digit, 18" 7-segment, red, w/ faceplate	0A-1192-2227
Digit, 18" 7-segment, amber, w/ faceplate	0A-1192-2228
Digit, 24" <sup>9</sup> / <sub>10</sub> red, pc board	0P-1192-0232
Digit, 24" <sup>9</sup> / <sub>10</sub> amber, pc board	0P-1192-0233
Digit, 24" 7-segment, red, w/ faceplate	0A-1192-2231
Digit, 24" 7-segment, amber, w/ faceplate	0A-1192-2232
Digit segment, 24" red, vert	0P-1192-0204
Digit segment, 24" red horiz	0P-1192-0205
Digit segment, 24" amber, vert	0P-1192-0218
Digit segment, 24" amber horiz	0P-1192-0219
Digit, 24" <sup>9</sup> / <sub>10</sub> red, w/faceplate	0P-1192-2359
Digit, 24" <sup>9</sup> / <sub>10</sub> amber, w/faceplate	0P-1192-2360
Digit, 36" 7-segment, red, hinged	0A-1279-0195
Digit, 36" 7-segment, amber, hinged	0A-1279-0196
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

Description	Daktronics Part No.
Digit, 48" 7-segment, red, hinged	0A-1279-0181
Digit, 48" 7-segment, amber, hinged	0A-1279-0182
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
Decimal, 13" red, pc board (used in DF-1020-13)	0P-1192-0238
Decimal, 13" amber, pc board (used in DF-1020-13)	0P-1192-0239
Indicator, 2" red, pc board (used in 18" and 24" displays)	0P-1192-0228
Indicator, 2" amber, pc board (used in 18" and 24" displays)	0P-1192-0229
Indicator, 4" red, pc board (used in 36" and 48" displays)	0P-1192-0244
Indicator, 4" amber, pc board (used in 36" and 48" displays)	0P-1192-0245
Indicator, 4" red w/ face plate (used in 36" and 48" displays)	0A-1192-2434
Indicator, 4" amber w/ face plate (used in 36" and 48" displays)	0A-1192-2435

## 4.9 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 5: DataMaster 100 Controller

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 three main options for display control.
- + **Controller Signal Connection** further details the actual setup of the DM-100 when used in an indoor location and in a base-of-sign application.

### 5.1 DataMaster 100 Overview

#### Reference Drawing:

System Riser Diagram, Control Combinations .....**Drawing A-164988**

The DataMaster 100 Series controller, shown in **Figure 11**, is a hand-held controller designed to operate Daktronics LED DataMaster 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, and time and temperature data. Refer to **Drawing A-164988** for information on possible control options and connection procedures.

For details on configuring the DataMaster to operate a display, refer to **Section 6: Gas Price 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.



**Figure 11: DataMaster 100**

Description	Daktronics Part No.
Wall pack transformer	T-1118
DataMaster 100 controller	0A-1196-0088
Control Insert	0G-164998
Cable, DB-9 male to DB-9 female, 10'	W-1267

Refer to **Section 4.9** for details concerning the Daktronics exchange and repair programs.

## 5.2 Control System Overview

All of the displays in the LED DataMaster Series have three main control options: direct wire, 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.

**This manual covers direct-wire installations only! For systems using modem or radio communication, also refer to the following manuals:**

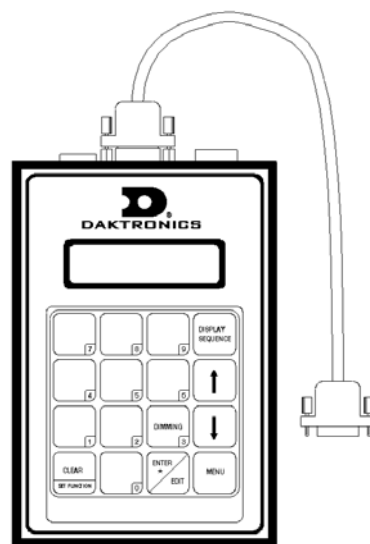
**ED13953: DataMaster Modem Installation Manual**  
**ED13894: DataMaster Radio Installation Manual**

## Wire Control

### Reference Drawings:

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

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 DataMaster 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. 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 2000 feet from the actual sign.

The operator changes the display by entering current prices, rates, and operating instructions on the keypad of the DataMaster controller. For complete details on sign operation, refer to **Section 6**.

## 5.3 Controller Signal Connection

This section provides information on the setting up the signal connection between the DM-100 and DataMaster Gasoline Price displays.

### Reference Drawing:

System Riser Diagram; Control Combinations ..... **Drawing A-164988**

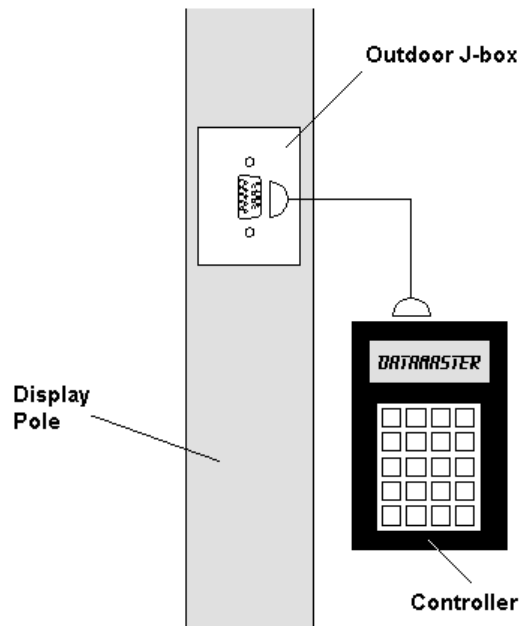
The DataMaster displays may be controlled from a location inside a building, or from the base of the display, depending on customer preference. **Drawing A-164988** and the subsections that follow provide greater detail on both installations using signal wire.

### **Wire Control from the Base of the Sign**

This control option, illustrated in **Figure 13**, permits operation of the sign from the base of the display. The controller is connected to an outdoor junction box mounted on the display pole, which routes the signal to the sign through one 2-pair cable, 22 AWG. Cable is in conduit where required.

This control option does not require the controller to be connected to a power outlet. In this configuration, the DataMaster 100 uses the sign as a power source.

To operate the DataMaster display using this setup, connect the 9-pin to 9-pin cable from the DataMaster controller to the 9-pin j-box mounted on the display pole.

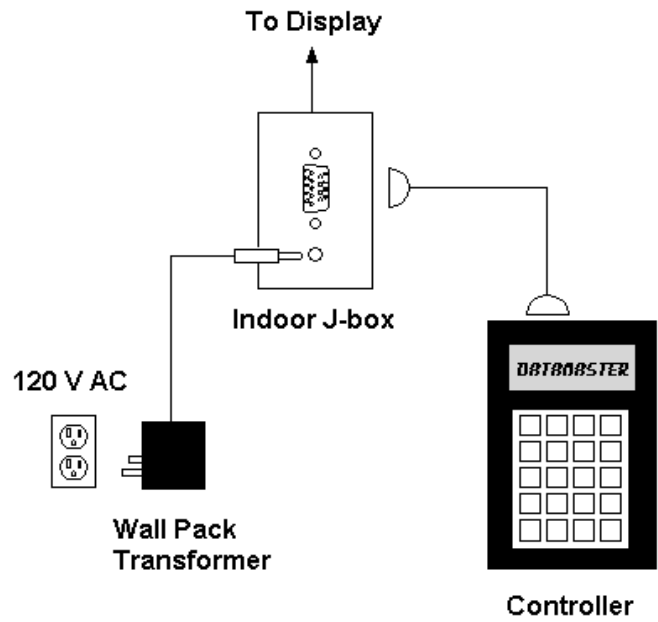


**Figure 13: Wire Control from Base of Sign**

### **Wire Control from a Building Location**

This control option, illustrated in **Figure 14**, permits operation of the sign from an indoor control location. The hand-held controller is connected to an indoor junction box (j-box), which routes the signal to the sign through one 2-pair cable, 22 AWG. Cable is in conduit where required.

To operate the DataMaster display using this setup, connect the 9-pin to 9-pin cable from the DataMaster controller to the 9-pin j-box, and plug the controller's wall pack transformer into a 120 V AC outlet.



*Figure 14: Wire Control from Building Location*





## Section 6: Gas Price Display Operation

This section covers the basic operation of the DataMaster Gasoline Price display using the DataMaster 100 controller.

### 6.1 DataMaster™ Insert and Code

**Reference Drawing:**

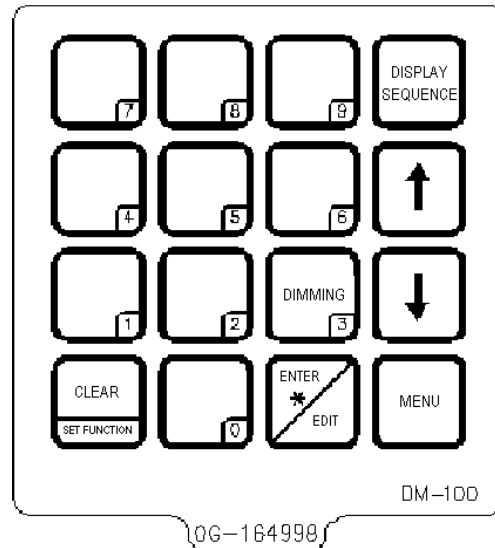
Insert, LL-2551 Price/T&T Display ..... **Drawing A-164998**

The DataMaster 100 uses a keypad insert to program gas price information into Daktronics LED DataMaster Gas Price displays.

**Figure 15** illustrates the DM-100 insert used to control the displays. For more details on the insert, refer to the DataMaster 100 insert drawing, **Drawing A-164998**, located in the **Appendix**.

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

To start the controller and use the insert, refer to the display operation information located in this section. Read the section carefully to fully understand the operation instructions.



**Figure 15:** DataMaster 100 Insert LL-2551




### 6.2 Gas Price Display Operation

The DataMaster 100 controller can be configured to program gas price variances displayed on the LED DataMaster Gas Price sign. The instructions provided in this section discuss the functions the operator uses to control the Gas Price display.

In the unlikely event that the Gas Price display malfunctions, refer to **Appendix B** for some troubleshooting actions that can be taken.

## Gas Price Display Startup



To operate the DataMaster Gas Price displays, the DataMaster 100 must first be programmed to the gas price 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.</p>
	<p>This message appears next on the screen.</p> <p>If "GAS PRICE" was shown on the bottom line of the LCD during startup, do nothing. The controller will automatically default to previous Gas Price settings.</p> <p>If a function other than "GAS PRICE" 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 gas price option is shown. Press the &lt;ENTER&gt; key to accept.</p>

The DataMaster 100 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. To operate the DataMaster 100, press any of the keys listed in the following gas price sections.

## Gas Price Controller Operation

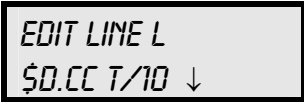
The Gas Price Controller LCD display will default to showing the current display settings on power up. The following text will be shown on the LCD.

LCD Screen	Action
 	<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 Price Line Settings

The gas price can be modified either by pressing the <EDIT> key during operation (see **Gas Price Controller Operation**) or using the <MENU> key (see **Menu Items**). Refer to the following key to identify the item to be edited.

- L = Current line number to be edited
- D.CC = Current dollars and cents value to edit
- T = Current tenths of cent value to edit


LCD Screen	Action
	<p>Press any of the number keys to edit the price value for this line. Press the down arrow key &lt;↓&gt; to modify the value of the 1/10-cent data for this line (see note below).</p> <p>Press &lt;ENTER&gt; to accept the new value or press &lt;CLEAR&gt; to abort the changes.</p> <p><b>Note:</b> The flashing asterisk on the LCD shows the current data being edited.</p> <p>Many displays do not have a changeable 1/10-cent digit. Changing the tenths-cent value from 9 on these digits will make the digit appear incorrect.</p>

### Dimming

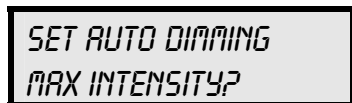
The dimming level of the Gas Price display can be adjusted in two ways. A temperature/light sensor, mounted near the display, can detect the level of ambient light at the display location and dim the sign's LEDs accordingly. This function is known as automatic dimming. When the manual dimming function 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 dimming functions, or to enter the **Blank Sign** function, press <DIMMING>. The current setting is shown on the bottom line of the LCD.


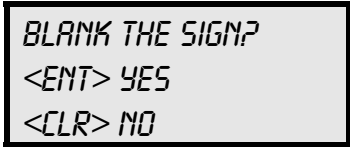
LCD Screen	Action
	<p>Press the down arrow key &lt;↓&gt; to toggle through dim settings:</p> <p><b>Automatic</b> – The display automatically dims based on the light detected at the display*</p> <p><b>Manual</b> – The display dimming level is set manually. Once set, this value remains regardless of the level of light detected at the display.</p> <p><b>Blank Sign</b> – The display can be blanked out without powering down. Refer to the <b>Blank Sign</b> section for details.</p>

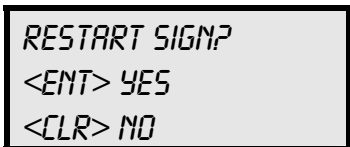
If AUTOMATIC dimming is selected, the following LCD prompt will be shown:

LCD Screen	Action
	<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
 <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 (Note: 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>

LCD Screen	Action
 	<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>

LCD Screen	Action
	<p>To resume normal operation from a blanked sign, press the &lt;DIMMING&gt; key again. The DM-100 will display a Restart Sign message. Press &lt;ENT&gt; to restart or press &lt;CLR&gt; to return to the menu without restarting the sign.</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. This button will also allow for a preview of the new sequence on the LCD.

## Menu Items

Pressing the <MENU> key accesses the following settings:

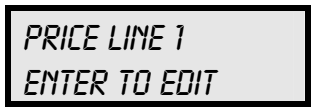
1. Price Line 1
2. Price Line 2
3. Price Line 3
4. Price Line 4
5. Price Line 5
6. LED Test
7. Modem Settings
8. Display Status
9. Set Time

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

For more information about the Modem Settings submenu, refer to **ED13953: DataMaster Modem Installation Manual**. For additional information about the Display Status or the Set Time submenus, refer to **ED13894: DataMaster Radio Installation Manual**.

### Edit Price Line 1-5

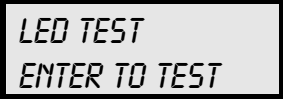
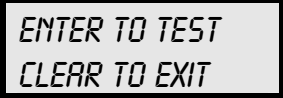
After pressing the <MENU> key, the following LCD prompt is displayed:

LCD Screen	Action
	<p>Pressing the &lt;MENU&gt; key displays this message.</p> <p><b>Press &lt;ENTER&gt; to edit the current item shown on the LCD.</b></p> <p><b>Press the up or down arrow keys to move to the previous or next item in the list.</b></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>

Use Menu items 1-5 to edit the price on each line of the display. (Lines are typically numbered top to bottom with 1 being the top of the display.) See **Modifying Price Line Settings**.

### **LED Test**

Select menu item 6, LED Test, to test the LED digits on the display.

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





## Section 7: POS Interface Installation and Operation

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A Point of Sale (POS) interface option is available with DataMaster LED Gasoline Price Displays. Displays with this option automatically update when product prices are changed in the POS. Displays with the POS interface option will be supplied with a POS Interface Kit (0A-1279-0400 for Gilbarco G-Site).

### BEFORE YOU START:

1. Ensure that the POS system has a price sign output port, and refer to the POS manuals to enable and/or configure the port.
2. Locate the parts in the list below.

### 7.1 Hardware installation:

1. Locate the following parts:
  - a) POS Interface Kit containing:
    - i) DataMaster 100 w/POS option (0A-1196-0133)
    - ii) Wall mounting bracket for DM-100 (0M-200082)
    - iii) POS Interface Cable for Gilbarco G-Site POS: RJ45 to DB9 cable (0A-1279-0402)
    - iv) POS riser diagram (drawing number 200195)
  - b) 10' cable, DB9 to DB9 (W-1267)
  - c) Indoor junction box (0A-1196-0099) for direct wired installations  
**OR...**
  - d) Radio Interface junction box (0A-1279-0161) for wireless installations.
  - e) Wallpack transformer (T-1118).
2. The wall mount bracket (0M-200082) provides convenient storage for the DM-100 controller. If using the wall mount bracket for the DM-100, ensure that there is sufficient clearance above the bracket to allow the DM-100 to be removed from the bracket with both cables attached. Also ensure that the POS interface cable will reach from the DM-100 location to the price sign output of the POS. Fasten the wall mount bracket if desired. The DM-100 can be permanently attached to the wall mounting bracket by removing the two screws in the bottom edge of the DM-100, sliding the DM-100 into the wall mount bracket, and reinstalling the screws through the slots in the bottom bracket flange.
3. Mount the junction box (c. or d. above). Ensure that the DB9 to DB9 cable (W-1267) will reach from the DM-100 to the junction box.
4. Complete junction box to sign, or junction box to radio wiring as shown on the riser diagram (drawing 200195).
5. Attach the POS interface cable to the POS price sign port. Coil any excess cable and cable tie it out of the way.
6. Attach the DB9 to DB9 cable (W-1267) to the junction box as shown on the riser diagram. Coil any excess cable and cable tie it out of the way.


7. Plug the transformer (T-1118) into an outlet, and connect the output to the power jack on the J-box.
8. Ensure that the DM-100 is up and running. Send a price change to the sign to verify communications between the sign and the DM-100.

## 7.2 Configuring the DM-100 for Gilbarco G-Site Interface

### BEFORE YOU START:

The DM-100 function must be set to “GAS PRICE”. The current function of the DM-100 is displayed during power up. To change to function, cycle power to the DM-100, and press the <SET FUNCTION> key when prompted.

1. Press the <Menu> key and use the <↑> and <↓> keys to scroll to the “POS SETTINGS” menu item.



A rectangular box with a black border containing the text "POS SETTINGS" on the top line and "ENT TO MODIFY ↓↑" on the bottom line.

Press <ENTER>.

2. Select the POS type by using the <↑> and <↓> keys to scroll to “GILBARCO GSITE”.



A rectangular box with a black border containing the text "POS INTERFACE" on the top line and "GILBARCO GSITE ↓↑" on the bottom line.

Press <ENTER>.

3. Each price in the Gilbarco G-Site is uniquely identified by ‘price category’. Each price category corresponds to the price assigned to a particular grade/service level/price level. Use the menu shown below to configure which price category you would like displayed on each line of the display.



A rectangular box with a black border containing the text "PRICE CATEGORY" on the top line and "LINE 1 : 1 ↓↑" on the bottom line.

Use the <↑> and <↓> keys to select a price category to be displayed on line 1 of the sign. Press <ENTER> to accept the setting. Pressing <ENTER> when the price category displayed is <NONE> will cause the price sign to ignore POS data for this line. (This may be useful for configuring some lines of a price sign to receive manual price changes only).

Select a price category to be displayed on each line of the sign, and press <MENU>, or <ESC/CLEAR> when finished. The POS interface configuration is complete.

### **Changing Prices:**

Each display line for which a price category is configured will automatically update when the price is changed in the POS system. Attempting to manually edit prices that are configured for POS control will cause the following screen to appear:



```
THIS LINE POS
CTRLD. OVERRIDE?
```

Press <ENTER> to manually edit the price, or <ESC/CLEAR> to cancel.



# Appendix A: Reference Drawings

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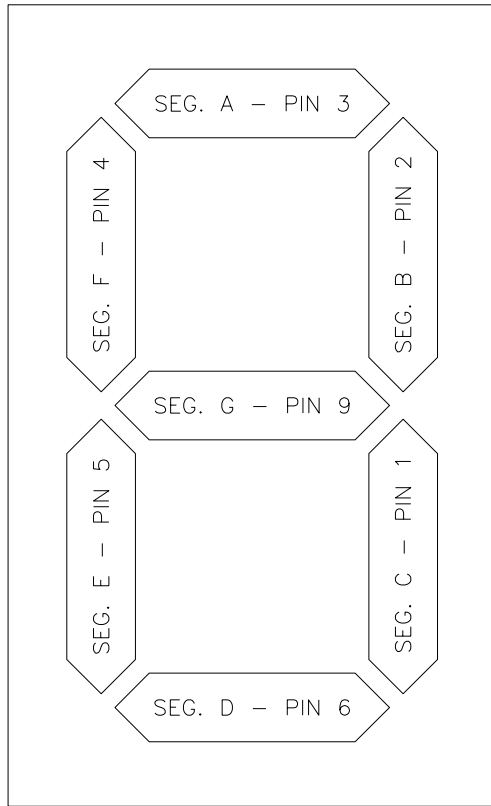
The Daktronics drawing number is located in the bottom right corner of the drawing. Refer to **Section 1.1** for instructions on reading the drawing number.

Drawings in this manual are referenced by their last set of digits and the letter preceding them. Drawings in this appendix are first listed in alphanumeric order; a second grouping lists drawings by function.

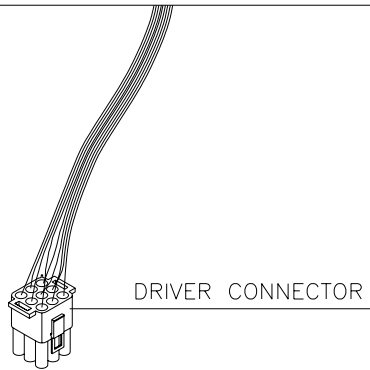
## A Drawings (All Drawings)

Segmentation, 7 Segment Bar Digit.....	<b>Drawing A-38532</b>
Riser Diagram; Outdoor Wire Control .....	<b>Drawing A-164988</b>
Insert, 0G-164988 Price/ T&T Display .....	<b>Drawing A-164998</b>
Schematic; Multipurpose LED Drvr.....	<b>Drawing A-165028</b>
Mechanical Specs, D-F-1020-36, G3.....	<b>Drawing A-165742</b>
Electrical Specs, D-F-1020-36, G3 .....	<b>Drawing A-165743</b>
Mounting Method, Flag Style, One Pole .....	<b>Drawing A-166139</b>
Mounting Method, Single Line on One Pole.....	<b>Drawing A-166142</b>
4 Column MASC LED Driver Specifications.....	<b>Drawing A-166216</b>
8 Column MASC LED Driver Specifications.....	<b>Drawing A-167237</b>
Host/Client and Master/Slave Definitions .....	<b>Drawing A-168376</b>
Riser Diagram, Indoor Wire Control.....	<b>Drawing A-175342</b>
Schematic; Gen III Outdoor LED, 8 Column Driver.....	<b>Drawing A-177935</b>
Schematic; 16 Col Multipurpose LED Drvr.....	<b>Drawing A-179599</b>
Mechanical Specs, DF-1020-13, G3.....	<b>Drawing A-181220</b>
Electrical Specs, DF-1020-13, G3 .....	<b>Drawing A-181222</b>
Mechanical Specs, DF-1020-18, G3.....	<b>Drawing A-181224</b>
Electrical Specs, DF-1020-18, G3 .....	<b>Drawing A-181233</b>
Mechanical Specs, DF-1020-24, G3.....	<b>Drawing A-181234</b>
Electrical Specs, DF-1020-24, G3 .....	<b>Drawing A-181235</b>
Mechanical Specifications, DF-1020-48, G3.....	<b>Drawing A-181672</b>
Electrical Specs, DF-1020-48, G3 .....	<b>Drawing A-181673</b>
Light Sensor Installation .....	<b>Drawing A-183775</b>
16 Col. MASC Driver Specification .....	<b>Drawing A-184475</b>
Enclosed Driver, 4 Column Reference.....	<b>Drawing A-184918</b>
Mechanical Specs, DF-1021-13, G3.....	<b>Drawing A-185176</b>
Electrical Specs, DF-1021-13, G3 .....	<b>Drawing A-185177</b>
Mechanical Specs, DF-1021-18, G3.....	<b>Drawing A-185203</b>
Electrical Specs, DF-1021-18, G3 .....	<b>Drawing A-185204</b>
Mechanical Specs, DF-1021-24, G3.....	<b>Drawing A-185205</b>
Electrical Specs, DF-1021-24, G3 .....	<b>Drawing A-185206</b>
Quick Install, DF-1020 Gas Price Displays .....	<b>Drawing A-189768</b>



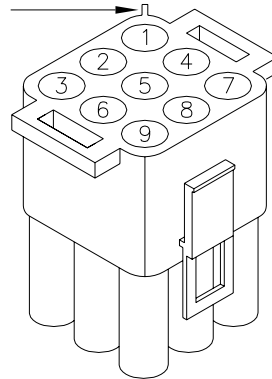


7 SEGMENT BAR DIGIT  
FRONT VIEW



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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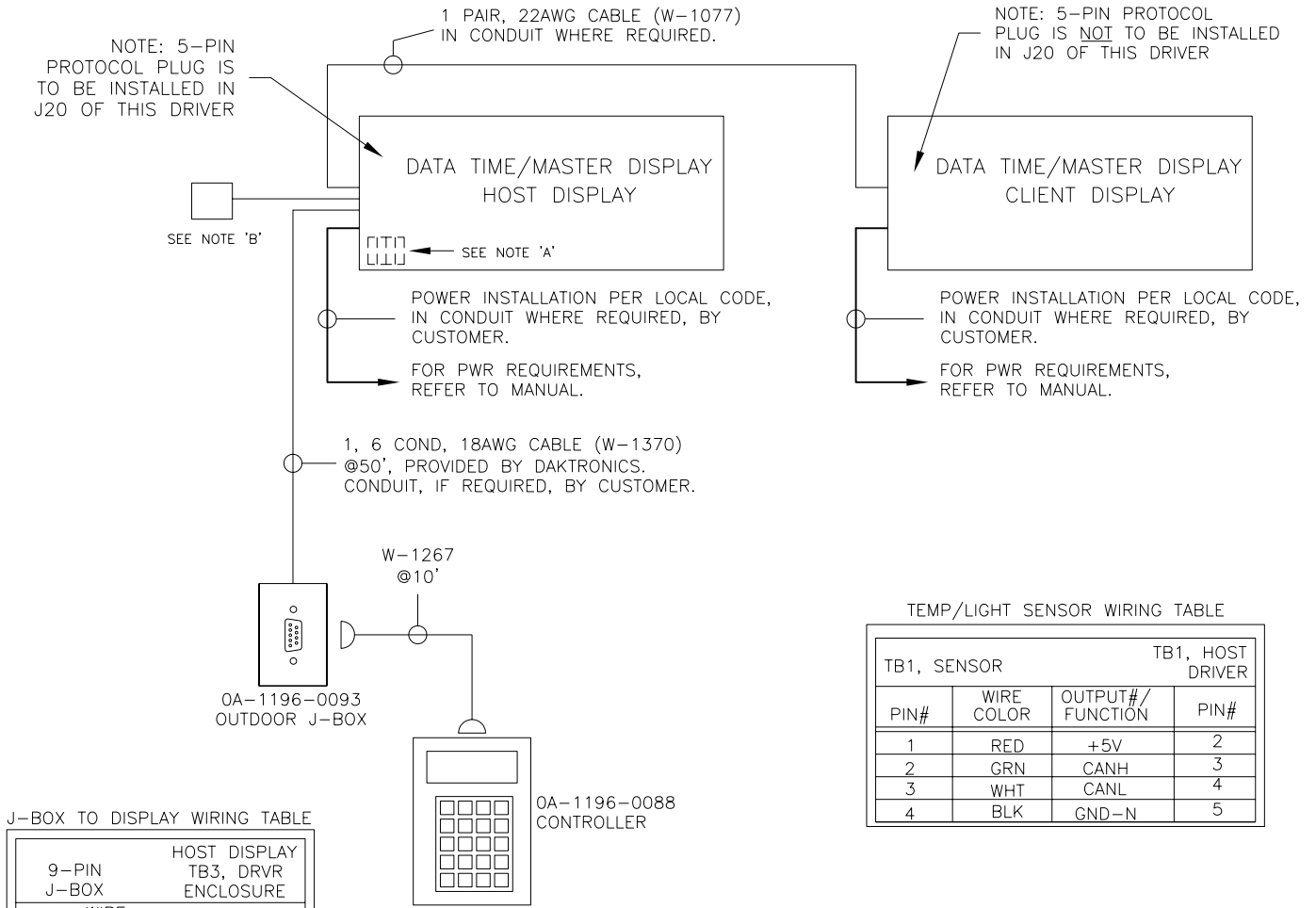
DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: BASKETBALL  
TITLE: SEGMENTATION, 7 SEGMENT BAR DIGIT  
DES. BY: 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-1196-0099.	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	

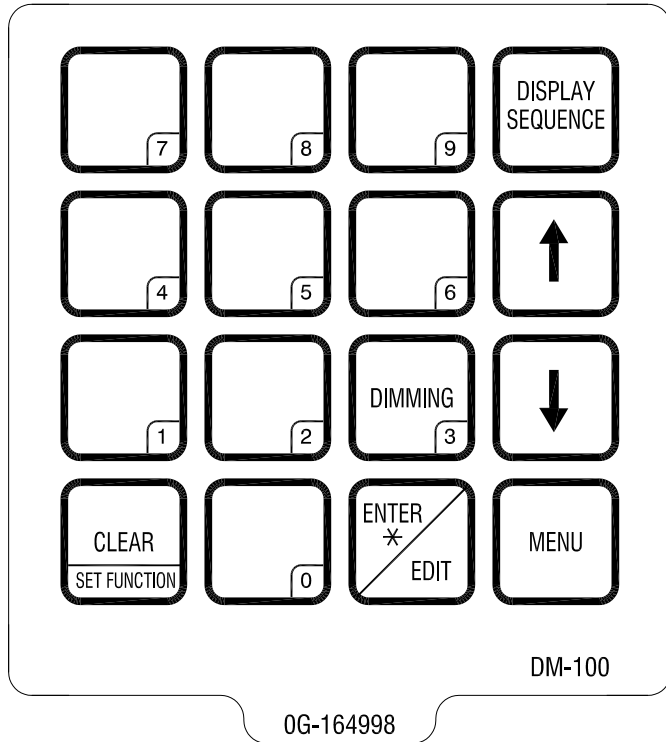
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**DAKTRONICS, INC. BROOKINGS, SD 57006**

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	





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DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ:

TITLE: INSERT, OG-164998 PRICE/T&T DISPLAY

DES. BY: EBRAVEK

DRAWN BY: EBRAVEK

DATE: 5 APR 02

REVISION

APPR. BY:

SCALE:

1=1

1196-E07A-164998

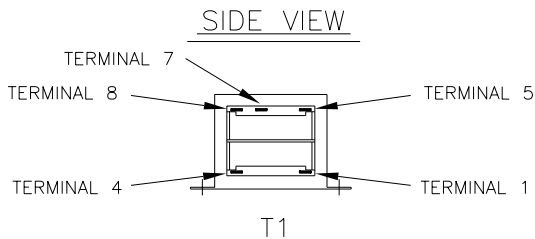
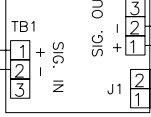
REV.	DATE	DESCRIPTION	BY	APPR.
00				

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

OP-1110-0011

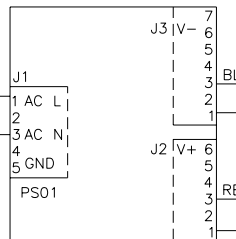
TB3

- 1 TAN
- 2 RED
- 3
- 4 GRY
- 5 BRN
- 6 RED
- 7 BLK
- 8

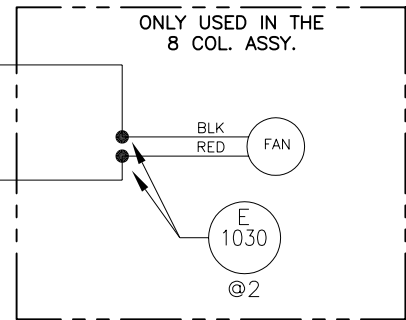


TB4

- 1
- 2
- 3



A-1720  
POWER SUPPLY



4 COL. DRIVER  
OP-1192-0067  
NON-COATED DRIVER  
OP-1192-0068  
COATED DRIVER

8 COL. DRIVER  
OP-1192-0081  
NON-COATED DRIVER  
OP-1192-0082  
COATED DRIVER

NOTES:

ALL CONDUCTORS ARE 18AWG.

REV.	DATE	DESCRIPTION	BY	APPR.
08	17 DEC 03	CHANGED WIRE COLORS OF T1 CONNECTIONS. ADDED SIDE VIEW OF T1.	JBS	
07	29 APR 03	ADDED T1, FOR TIMING.	TAS	MWM
06	24 FEB 03	CHANGED J3 ON POWER SUPPLY TO 7 PINS PER ECO-27985.	AVB	
05	14 JAN 03	CHANGED THE BLU TEXT TO RED ON TB3 CONNECTOR	CME	
04	24 OCT 02	CHANGED 12V DC WIRING CONNECTIONS FROM MASC DRIVER TO SIGNAL SURGE PROTECTOR, LANDLINE MODEM AND TERMINAL BLOCK	JBS	
03	29MAY02	MOVED WIRES GOING INTO PIN 6 & 9 OF P17 TO PIN 10 & 12 OF P17	NMB	
02	06 MAY 02	CHANGED WIRE COLORS FOR TB3 CONNECTIONS	MWM	
01	24APR02	ADDED TB3-7 & 8 CONNECTIONS TO 4 COL. LED DRIVER. ADDED P22 AND J22 ALSO.	THS	

0A-1279-0086  
MULTI PURPOSE HARNESS ASSY.

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DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: DATA TIME LED DISPLAYS

TITLE: SCHEMATIC; MULTIPURPOSE LED DRVR

DES. BY: MMILLER

DRAWN BY: MMILLER

DATE: 08 APR 02

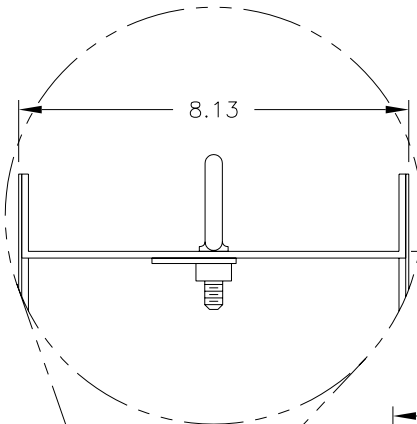
REVISION

APPR. BY:

08

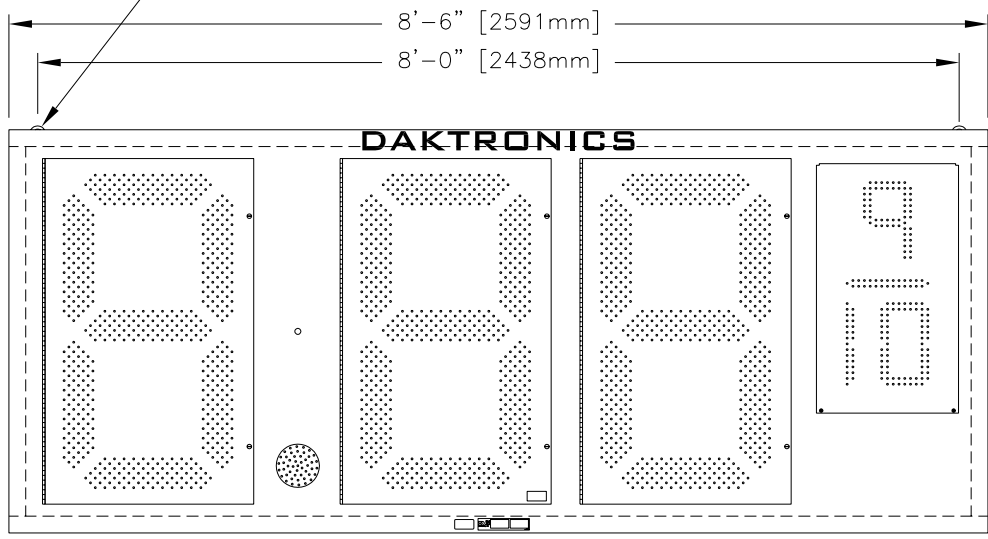
SCALE: 1=1

1279-R03A-165028



FRAME CHANNEL DETAIL  
SCALE 1=4  
DIMENSIONS TYPICAL  
TOP, BOTTOM, AND SIDES

1/2" EYEBOLTS IN THE TOP FOR LIFTING DURING INSTALLATION ONLY AND MAY NOT BE USED FOR SUSPENDED INSTALLATION.



**DAKTRONICS**

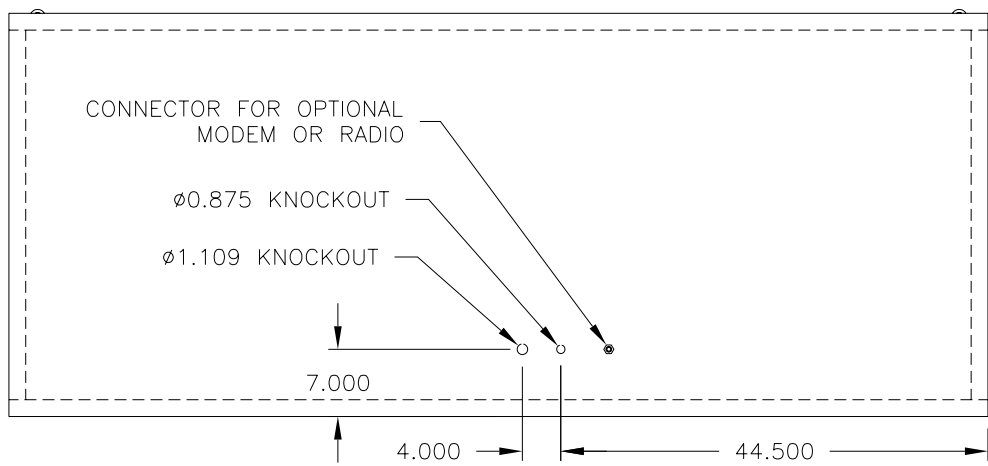
SIDE VIEW

FRONT VIEW

FRAME IS MADE OF EXTRUDED ALUMINUM CHANNEL, 8.000" X 1.750", 0.141" THICK.

FRONT IS 0.063" ALUMINUM SHEET, REAR IS 0.050" ALUMINUM SHEET.

KNOCKOUTS IN THE REAR ARE FOR USE WITH 1/2" AND 3/4" CONDUIT FITTINGS.



REAR VIEW

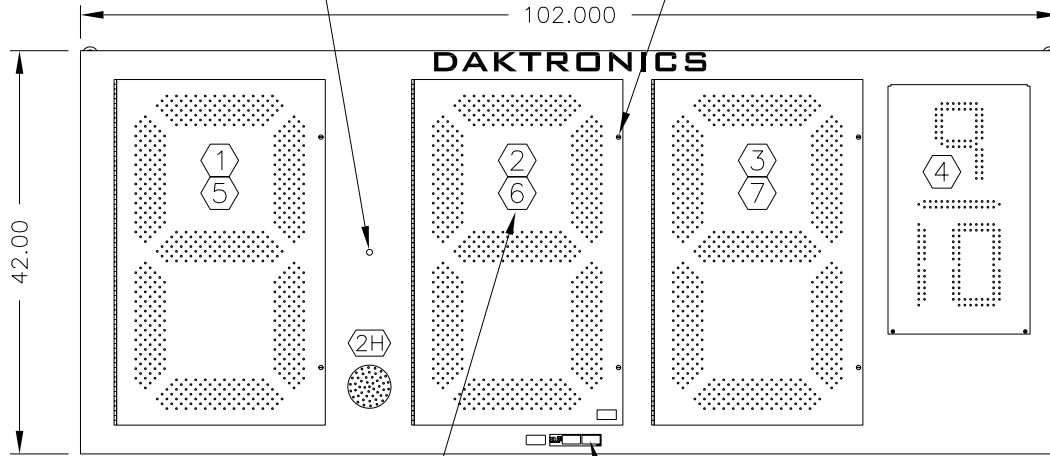
APPROXIMATE WEIGHT: 160 LB [73 KG]

REV.	DATE	DESCRIPTION	BY	APPR.
03	15 JUN 05	UPDATED DIGIT PANELS PER DESIGN CHANGES.	MGL	
02	01 APR 04	ADJUSTED BACK SHEET THICKNESS PER DESIGN CHANGES.	MGL	
01	27 MAY 03	UPDATED 9/10 DIGIT PANEL.	JJS	

<b>DAKTRONICS, INC. BROOKINGS, SD 57006</b>	
PROJ: DATA TIME LED DISPLAYS	
TITLE: MECHANICAL SPECS, DF-1020-36, G3	
DES. BY: AVB	DRAWN BY: A VANBEMMEL DATE: 05 FEB 03
REVISION 03	APPR. BY: _____ SCALE: 1=20
<b>1279-R04A-165742</b>	

REMOVE PLASTIC PLUG AND  
INSTALL LIGHT SENSOR HERE.

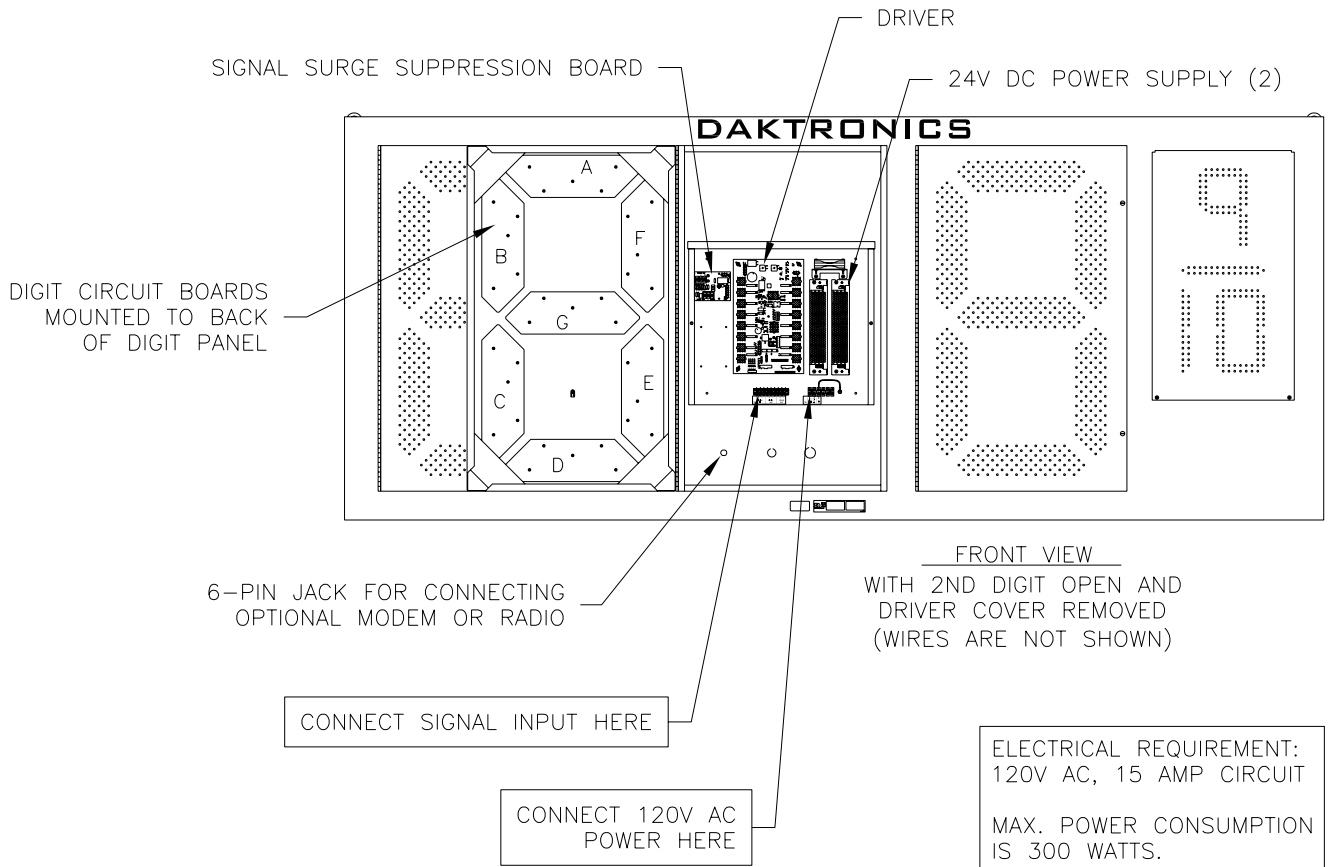
TURN LATCHES TO OPEN THE DOORS AND  
GAIN ACCESS TO INTERNAL COMPONENTS.



THE NUMBERS IN THE DIGITS INDICATE  
WHICH DRIVER CONNECTORS ARE WIRED  
TO THAT DIGIT. 36" DIGITS ARE WIRED  
TO TWO CONNECTORS EACH.

LOOK HERE FOR MODEL NUMBER  
AND POWER REQUIREMENTS.

FRONT VIEW



DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: DATA TIME LED DISPLAYS

TITLE: ELECTRICAL SPECS, DF-1020-36, G3

DES. BY: AVB

DRAWN BY: A VANBEMMEL

DATE: 05 FEB 03

REVISION

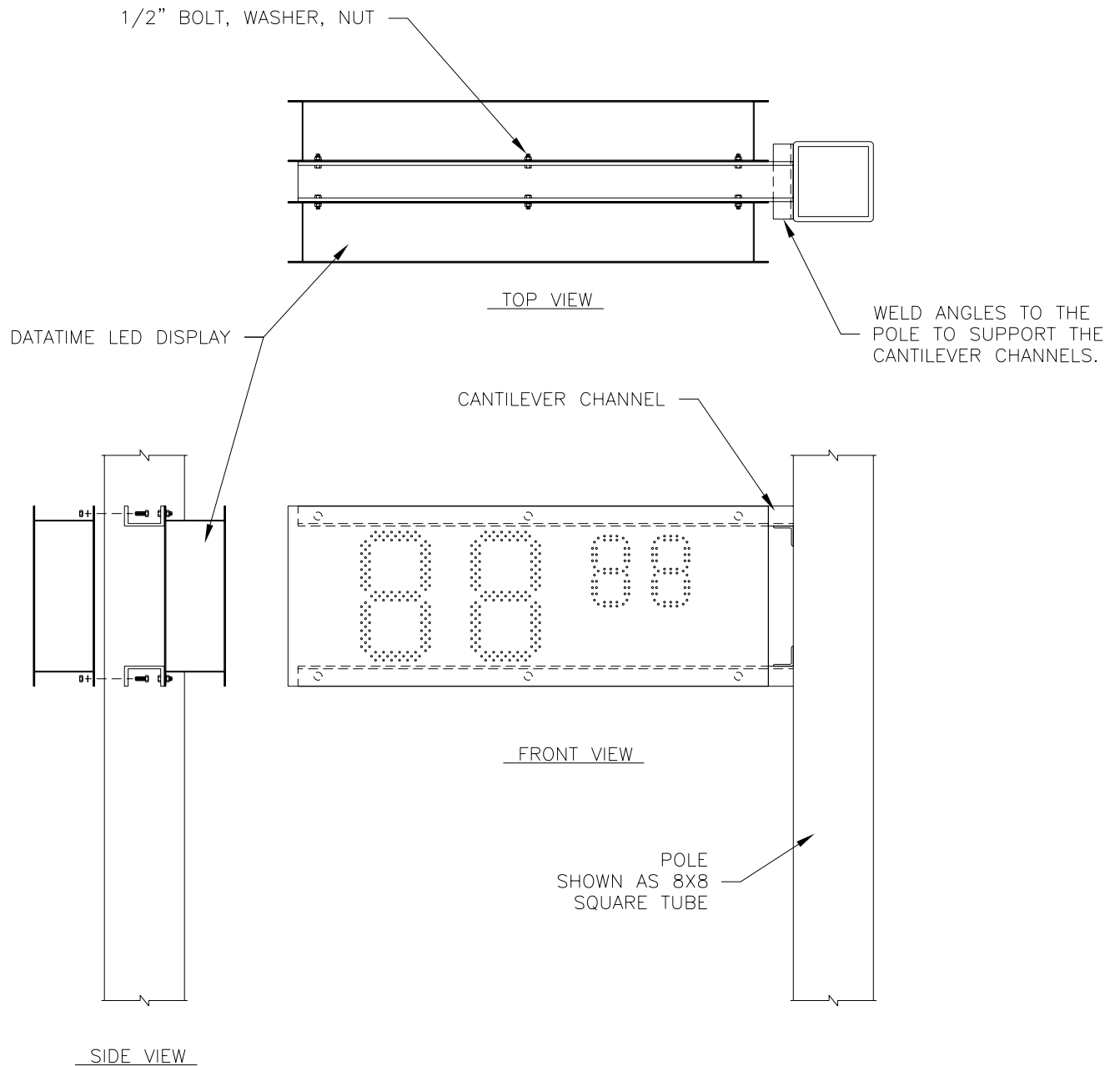
APPR. BY:

02

SCALE: 1=20

1279-R04A-165743

REV.	DATE	DESCRIPTION	BY	APPR.
02	15 JUN 05	UPDATED DIGIT PANELS PER DESIGN CHANGES.	MGL	
01	27 MAY 03	UPDATED 9/10 DIGIT PANEL.	JJS	



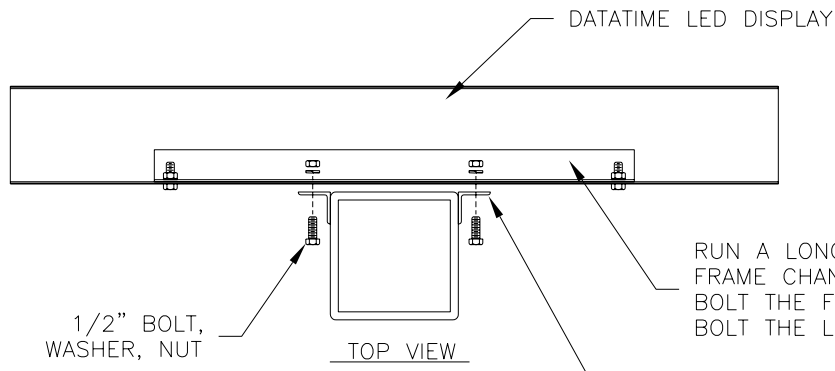
CANTILEVER OR FLAG MOUNTING METHOD

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.

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: _____
	SCALE: 1=16
1279-R10A-166139	

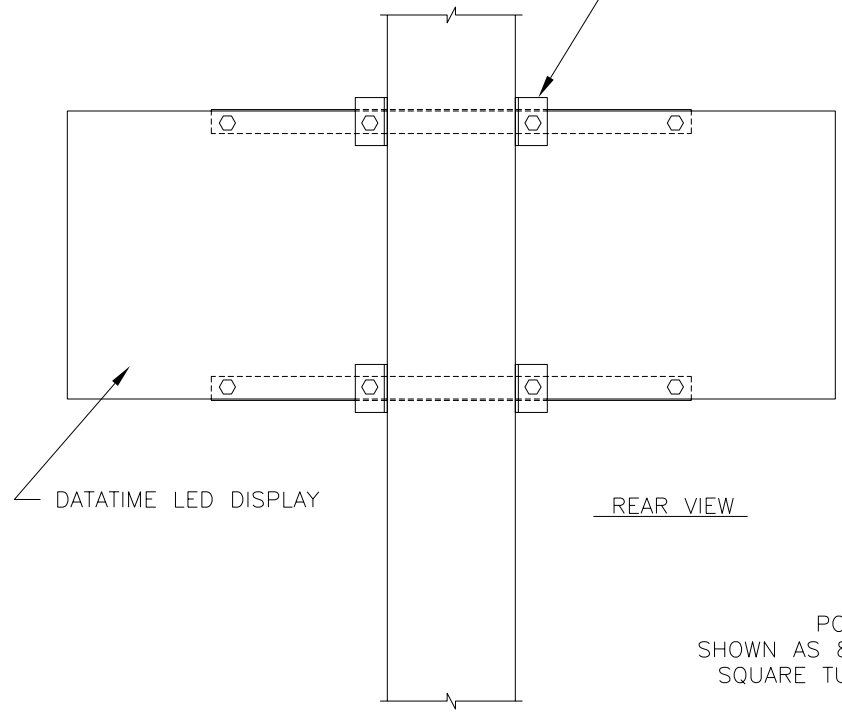
REV.	DATE	DESCRIPTION	BY	APPR.



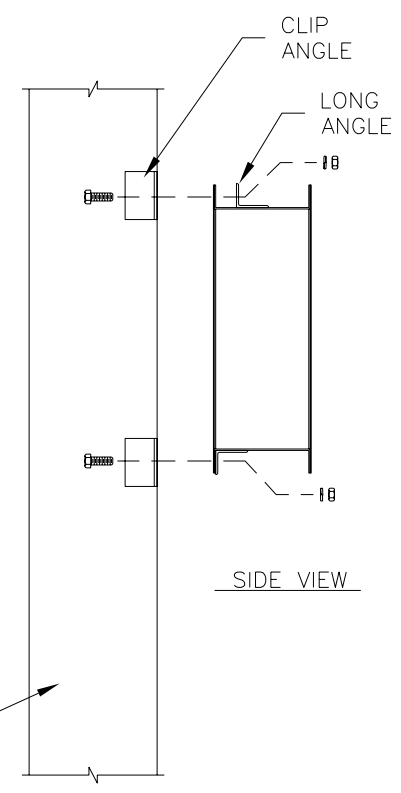
RUN A LONG ANGLE INSIDE THE DISPLAY FRAME CHANNEL TO REINFORCE THE FRAME. BOLT THE FRAME TO THE LONG ANGLES AND BOLT THE LONG ANGLES TO THE CLIP ANGLES.

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.



POLE: SHOWN AS 8X8 SQUARE TUBE



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.

OP-1192-0067 UNCOATED OR OP-1192-0068 COATED  
4 COLUMN MASC LED DRIVER

J-27 RS232 COM	
PIN	FUNCTION
1	RX-P
2	TX-P
3	GND-N
4	+12V -P
5	DCD-P
6	RESET-P

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

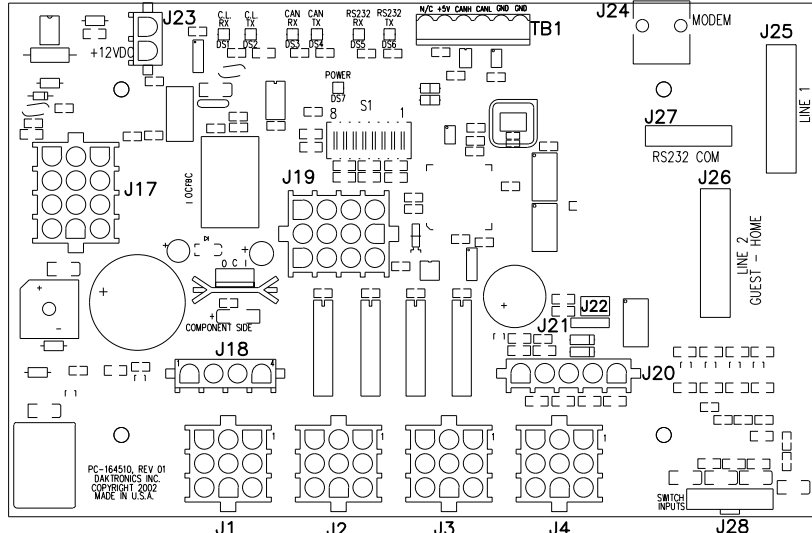
TB1 CAN	
PIN	FUNCTION
1	N/C
2	+5V-P
3	CANH-P
4	CANL-P
5	GND-N
6	GND-N

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

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	AUXOUT2-N
3	120SW1-N
4	120SW1-P



J25			
FUNCTION	PIN	PIN	FUNCTION
L1_ID0-P	1	20	RED1-P
L1_ID1-P	2	19	GRN1-P
GND-N	3	18	L1_LATCH-P
GND-N	4	17	L1_DIM-P
GND-N	5	16	RED2-P
GRN2-P	6	15	RED3-P
GND-N	7	14	L1_CLK-P
GND-N	8	13	GRN3-P
L1_ID2-P	9	12	RED4-P
L1_ID3-P	10	11	GRN4-P

J26			
FUNCTION	PIN	PIN	FUNCTION
L2_ID0-P	1	20	RED1-P
L2_ID1-P	2	19	GRN1-P
GND-N	3	18	L2_LATCH-P
GND-N	4	17	L2_DIM-P
GND-N	5	16	RED2-P
GRN2-P	6	15	RED3-P
GND-N	7	14	L2_CLK-P
GND-N	8	13	GRN3-P
L2_ID2-P	9	12	RED4-P
L2_ID3-P	10	11	GRN4-P

J1-4 DIGIT	
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

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

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

NOTE:

- RED LED CL RX WILL BE ON OR BLINKING WHEN THE DRIVER IS RECEIVING SIGNAL AND OFF WHEN THERE IS NO SIGNAL WITH CL
- GREEN LED CL TX WILL BE ON OR BLINKING WHEN THE DRIVER IS RECEIVING SIGNAL AND OFF WHEN THERE IS NO SIGNAL WITH CL
- RED LED CAN RX WILL BE BLINKING WHEN THE DRIVER IS RECEIVING SIGNAL AND ON WHEN THERE IS NO SIGNAL WITH CAN
- GREEN LED CAN TX WILL BE BLINKING WHEN THE DRIVER IS RECEIVING SIGNAL AND ON WHEN THERE IS NO SIGNAL WITH CAN
- IF THERE IS NOT A CAN DEVICE CONNECTED TO TB1, CAN RX AND TX LEDS WILL BE ON AND STEADY.
- RED LED RS232 RX WILL BE ON OR BLINKING WHEN THE DRIVER IS RECEIVING SIGNAL AND OFF WHEN THERE IS NO SIGNAL WITH RS232
- GREEN LED RS232 TX6 WILL BE ON OR BLINKING WHEN THE DRIVER IS RECEIVING SIGNAL AND OFF WHEN THERE IS NO SIGNAL WITH RS232
- GREEN LED POWER INDICATES THE DRIVER HAS POWER

REV	DATE:	CORRECTED S1 PINOUT	BY:
04	01 FEB 13		RBN
3	27 NOV 04	UPDATE DRIVER J-27 FOR CORRECT PIN OUT	BY:
2	16 MAY 03	UPDATE DRIVER FOR LATEST REVISION OF MASC DRIVER.	BY:
1	06 JUN 02	ADDED LED LABELS ADDED NEW NOTES	BY:

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	PROJ: <b>OUTDOOR LED SCOREBOARDS</b> TITLE: <b>4 COLUMN MASC LED DRIVER SPECIFICATIONS</b>	
DESIGN:	DRAWN: <b>JSPAHR</b>	DATE: <b>29 APR 02</b>
SCALE: <b>1=2</b>		
SHEET	REV	JOB NO:
	<b>04</b>	<b>P1192</b>
FUNC -TYPE-SIZE		
<b>R - 07 - A</b>		
		<b>166216</b>

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

OP-1192-0081 UNCOATED  
OR OP-1192-0082 COATED  
8 COLUMN MASC LED DRIVER

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

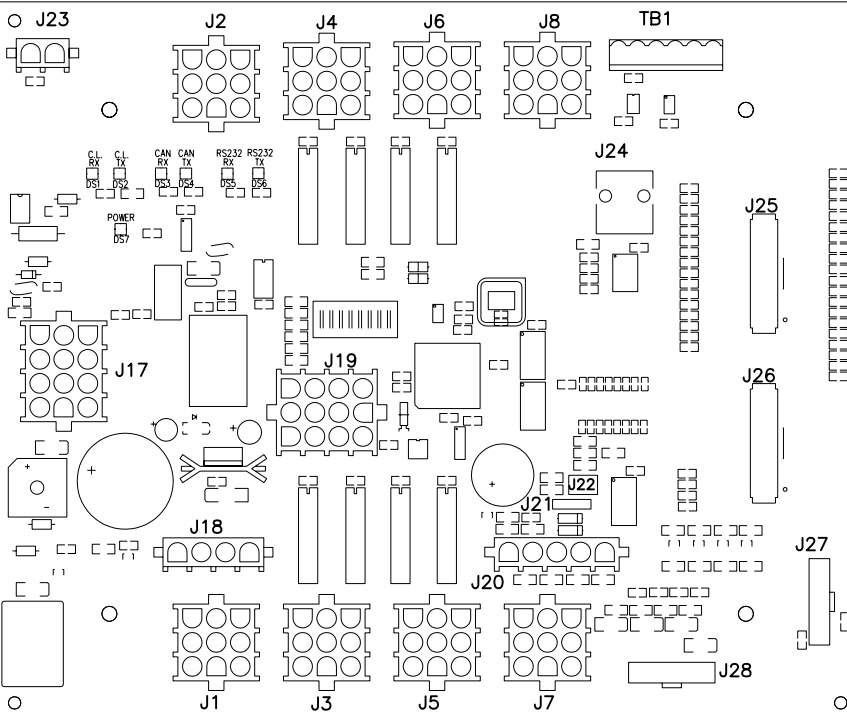
J25			
FUNCTION	PIN	PIN	FUNCTION
ID3-P	21	20	GND-N
FREE0-P	22	19	GND-N
ID2-P	23	18	GND-N
ROWSEL2-P	24	17	GND-N
GRN.DIM-P	25	16	GND-N
CLK-P	26	15	GND-N
GRN4-P	27	14	GND-N
RED4-P	28	13	GND-N
GRN3-P	29	12	GND-N
RED3-P	30	11	GND-N
GRN2-P	31	10	GND-N
RED2-P	32	9	GND-N
GRN1-P	33	8	GND-N
RED1-P	34	7	GND-N
RED.DIM-P	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

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

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

J1-8 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

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

PROJ:

TITLE: 8 COLUMN MASC LED DRIVER SPECIFICATIONS

DES. BY:

DRAWN BY: JSPAHR

DATE: 16 MAY 02

REVISION

APPR. BY:

02

SCALE: 1=2

1192-R07A-167237

REV.	DATE	DESCRIPTION	BY	APPR.
02	22 NOV 04	CHANGED NOTES RELATING TO LED FUNCTIONS.	AVB	
01	06 JUN 02	ADDED NEW NOTES ADDED LABELS TO LEDS	JJS	

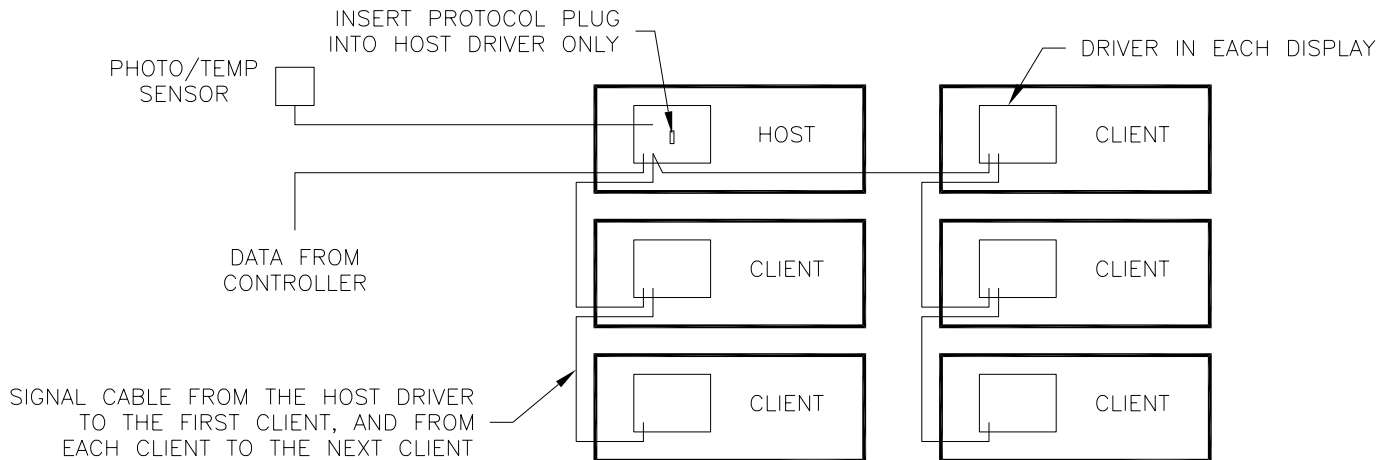


## HOST/CLIENT DESIGNATIONS:

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 PROTOCOL PLUG IS A 5-PIN PLUG SUPPLIED WITH THE PHOTO/TEMP SENSOR KIT.

THE OTHER DRIVERS ARE DESIGNATED AS CLIENT DRIVERS. THE FIRST CLIENT DRIVER RECEIVES ITS SIGNAL (DATA) FROM THE HOST AND THEN TRANSMITS SIGNAL TO THE NEXT CLIENT, AND THAT ONE TO THE NEXT UNTIL ALL CLIENTS IN THE SYSTEM HAVE BEEN CONNECTED.

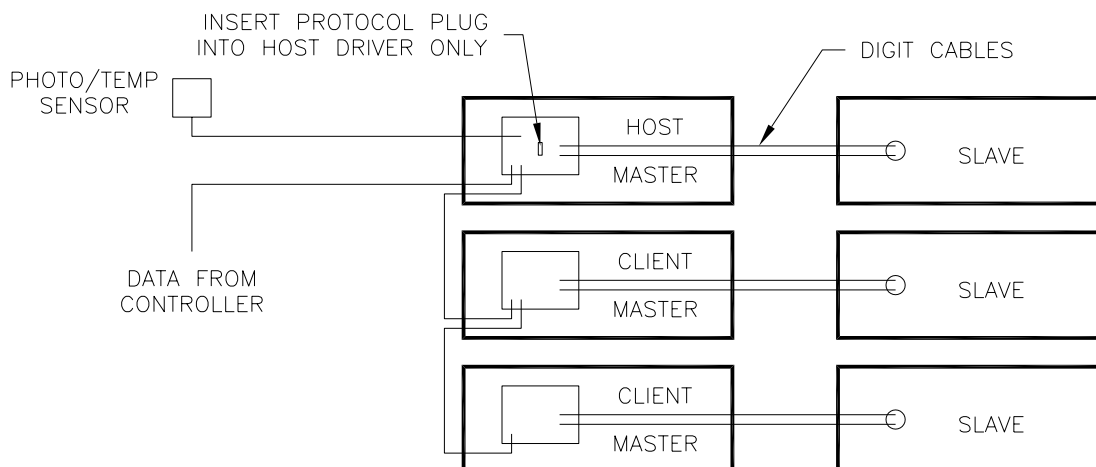
THIS HOST/CLIENT RELATIONSHIP MAY BE USED IN MULTI-LINE DISPLAYS, AS PICTURED, OR ON SINGLE-LINE 2V (DOUBLE SIDED) DISPLAYS, WHERE EACH DISPLAY FACE CONTAINS A DRIVER.



## MASTER/SLAVE DESIGNATIONS:

SOME 2V INSTALLATIONS USE A DISPLAY WITH A DRIVER ON ONE SIDE OF THE SIGN, AND A DISPLAY WITHOUT A DRIVER ON THE OTHER SIDE OF THE SIGN. THE DISPLAY WITH A DRIVER IS DESIGNATED AS A MASTER, WHILE THE DISPLAY WITHOUT A DRIVER IS THE SLAVE. THE SLAVE DISPLAY HAS LONG CABLES EXTENDING FROM THE BACK, WHICH ARE TO BE ROUTED THROUGH A HOLE IN THE BACK OF THE MASTER DISPLAY. THE PLUGS ON THESE CABLES ARE TO BE CONNECTED TO THE MASTER'S DRIVER DURING INSTALLATION.

IF THE INSTALLATION IS MULTI-LINE, AS PICTURED, THE DRIVERS ON THE MASTER SIDE OF THE SIGN FOLLOW THE HOST/CLIENT RELATIONSHIP DESCRIBED ABOVE.



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DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: DATATIME LED DISPLAYS

TITLE: HOST/CLIENT AND MASTER/SLAVE DEFINITIONS

DES. BY: AVB

DRAWN BY: A VANBEMMEL

DATE: 06 JUN 02

REVISION

APPR. BY:

SCALE: NONE

1279-R04A-168376

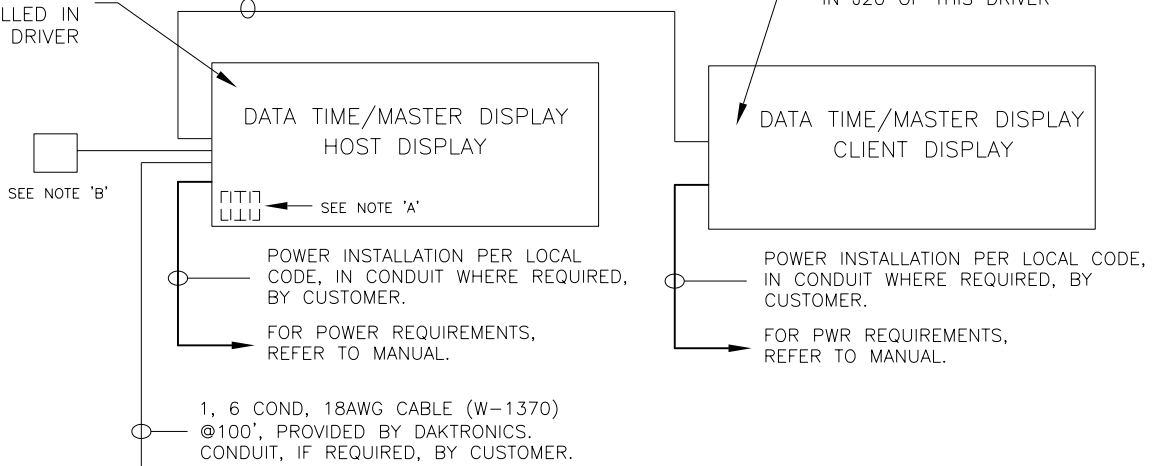
REV.	DATE	DESCRIPTION	BY	APPR.
02	23 SEP 02	ADDED PROTOCOL PLUG NOTE.	AVB	
01	09 JUL 02	REMOVED PHOTO/TEMP SENSOR PART NO.	AVB	

# WIRE CONTROL FROM BUILDING LOCATION

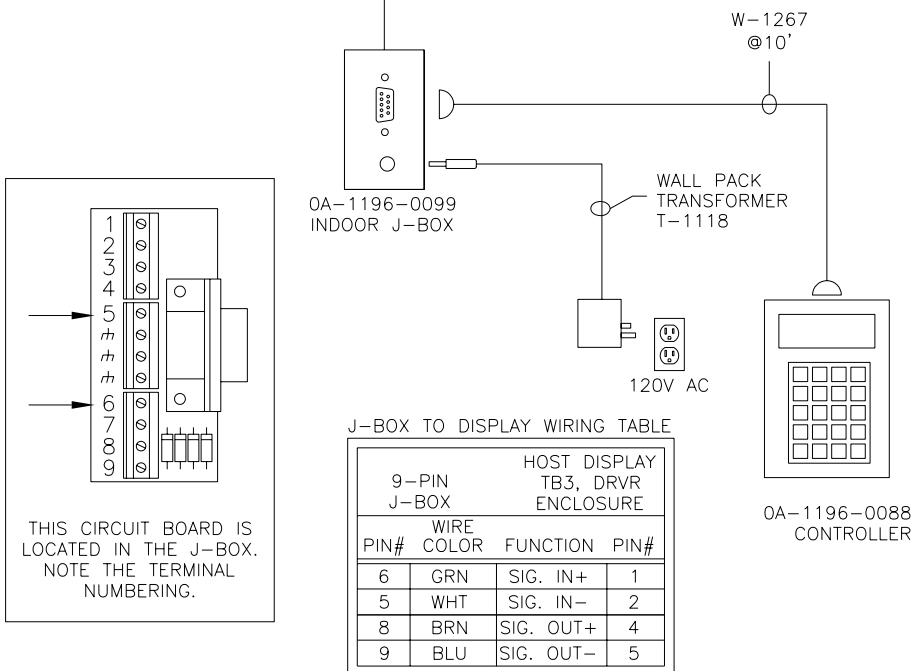
NOTE: 5-PIN PROTOCOL PLUG IS TO BE INSTALLED IN J20 OF THIS DRIVER

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



## 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, DRVR 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, 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-1279-0203, 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-165028 FOR DRIVER ENCLOSURE SCHEMATIC

REV.	DATE	DESCRIPTION	BY	APPR.
04	06 APR 05	REVISED WIRING TABLE, CHANGED SOME CABLES.	ATP	
03	07 OCT 04	UPDATED PER NEW ASSEMBLES	RT	
02	20-SEP-04	CHANGED PART NUMBER FOR LIGHT SENSOR	JHF	
01	13 MAR 03	ADDED J-BOX CIRCUIT BOARD PICTURE. CHANGED PART NUMBERS FOR LIGHT SENSOR AND TEMP SENSOR ASSEMBLIES.	AVB	

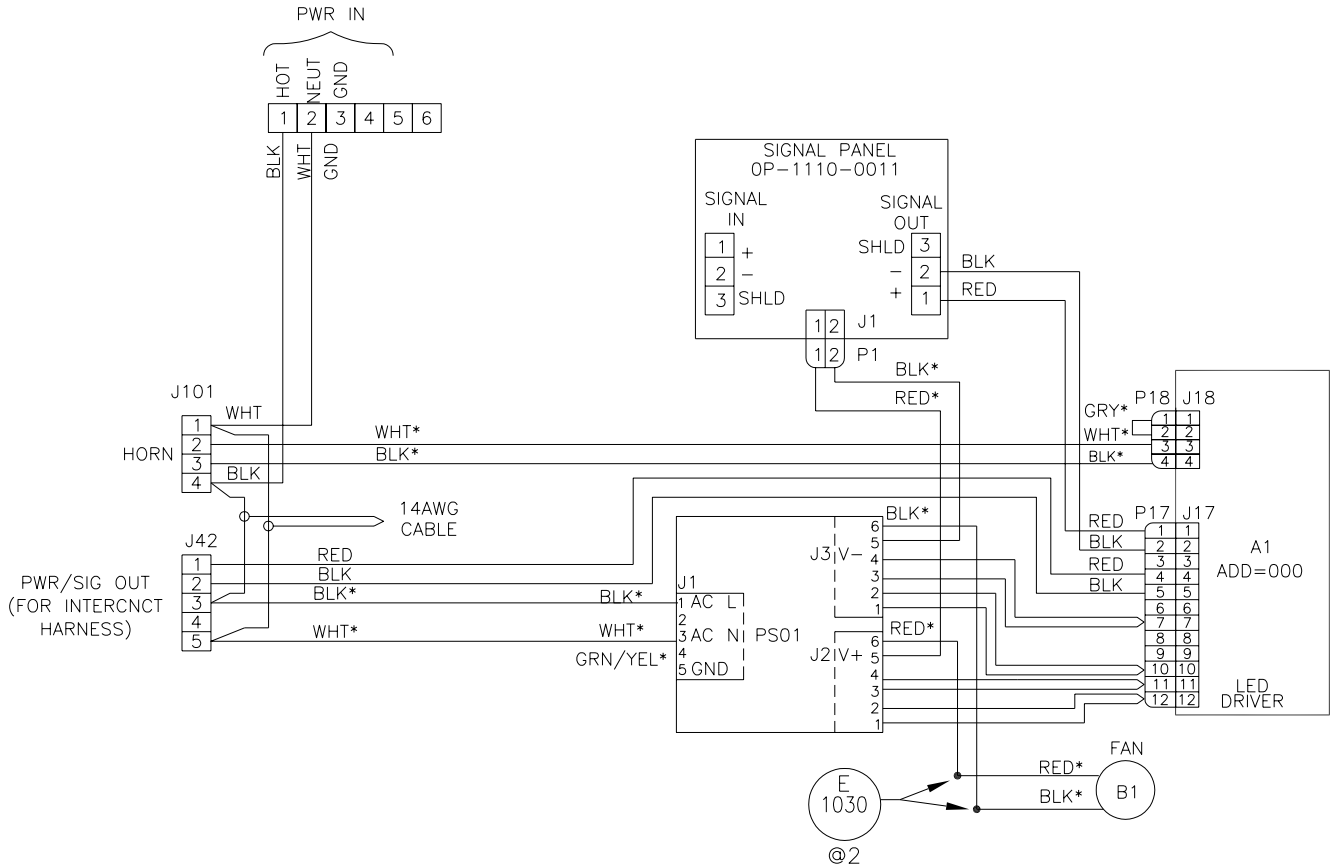
THE CONCEPTS EXPRESSED AND DETAILS SHOWN ON THIS DRAWING ARE CONFIDENTIAL AND PROPRIETARY. DO NOT REPRODUCE BY ANY MEANS, INCLUDING ELECTRONICALLY WITHOUT THE EXPRESSED WRITTEN CONSENT OF DAKTRONICS, INC. COPYRIGHT 2002 DAKTRONICS, INC.

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

PROJ: DATETIME LED DISPLAYS  
TITLE: RISER DIAGRAM, INDOOR WIRE CONTROL, DATA TIME/MAS.  
DES. BY: DRAWN BY: M MILLER DATE: 18 SEP 02

REVISION	APPR. BY:	1279-R01A-175342
04	SCALE: NONE	

MASTER CONFIGURATION  
0A-1192-2254



ALL POWER CONDUCTORS ARE 14AWG EXCEPT \* INDICATES 18AWG CONDUCTORS.

ALL SIGNAL CONDUCTORS ARE 22AWG CONDUCTORS.

REFERENCE DWG 1192-R06C-178208 FOR DETAILED CABLE ASSEMBLY DIAGRAM.

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 2002 DAKTRONICS, INC.

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: OUTDOOR LED SCOREBOARDS

TITLE: SCHEMATIC; GEN III OUTDOOR LED, 8 COLUMN DRVR

DES. BY: MMILLER

DRAWN BY: MMILLER

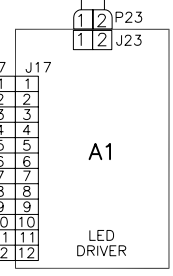
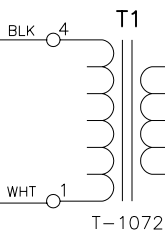
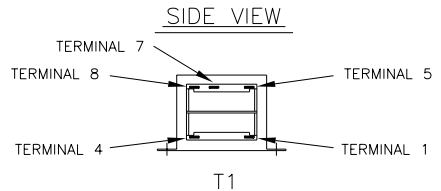
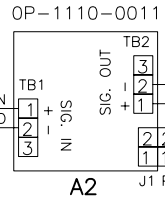
DATE: 05 NOV 02

01	10 DEC 02	ADDED BLOCKS 5 AND 6 TO PWR IN	AJL	MWM
REV.	DATE	DESCRIPTION	BY	APPR.

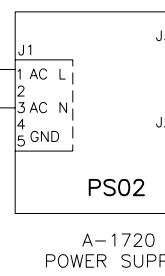
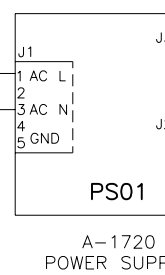
REVISION	APPR. BY:
	SCALE: 1=1

1192-R03A-177935

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



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



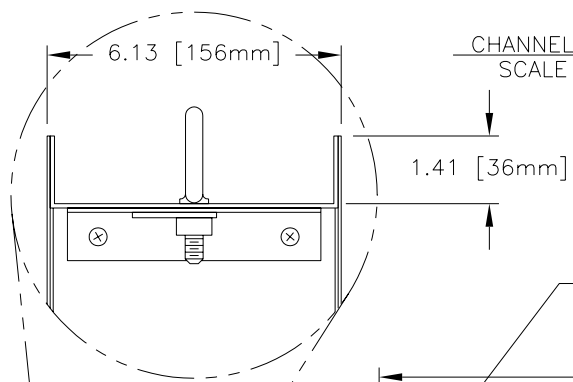
NOTES:  
ALL CONDUCTORS ARE 18AWG.

0A-1279-0177  
MULTI PURPOSE HARNESS ASSY.

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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	

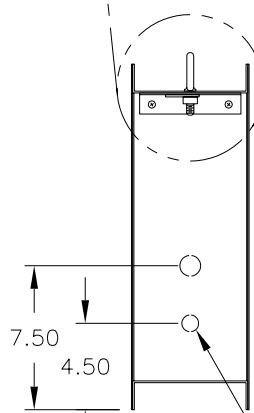
DAKTRONICS, INC. BROOKINGS, SD 57006		
PROJ: DATA TIME LED DISPLAYS		
TITLE: SCHEMATIC; 16 COL MULTIPURPOSE LED DRVR		
DES. BY: MMILLER	DRAWN BY: NBOWERS	DATE: 05DEC02
REVISION 03	APPR. BY: SCALE: 1=1	1279-R03A-179599



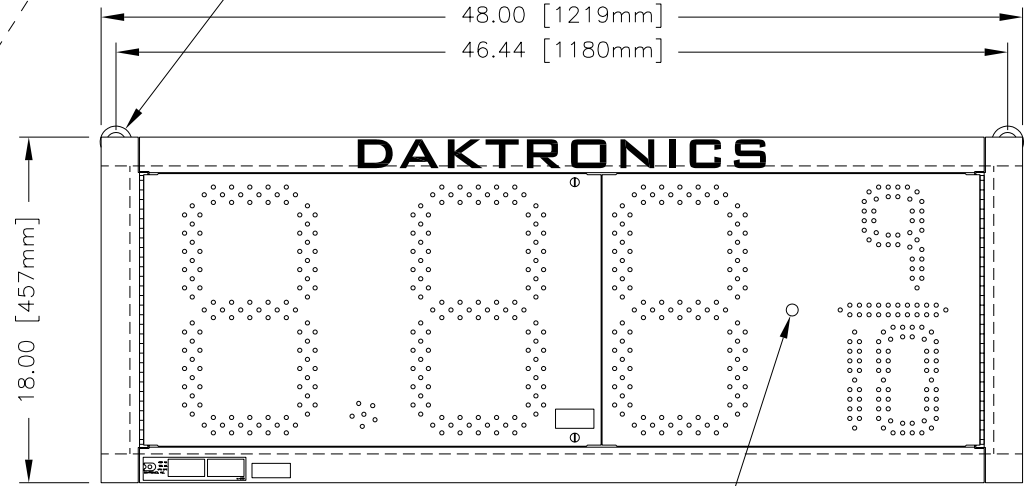
DIMENSIONS TYPICAL TOP, BOTTOM, AND SIDES

TOP AND BOTTOM CHANNELS ARE FORMED 0.090" ALUMINUM SHEET.  
FRONT, BACK, AND SIDE MEMBERS ARE 0.063" ALUMINUM SHEET.

LIFT EYES FOR USE DURING INSTALLATION ONLY AND ARE NOT FOR PERMANENT SUSPENSION



SIDE VIEW

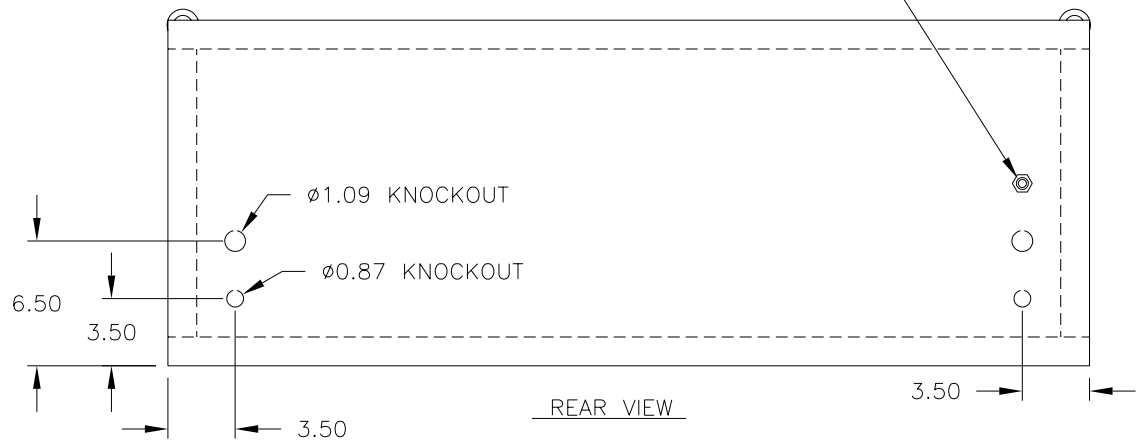


FRONT VIEW

HOLE FOR LIGHT SENSOR

KNOCKOUTS IN SIDES AND REAR FOR USE WITH 1/2" AND 3/4" CONDUIT

CONNECTOR FOR OPTIONAL MODEM OR RADIO



REAR VIEW

ESTIMATED WEIGHT: 36 LB [16 KG]

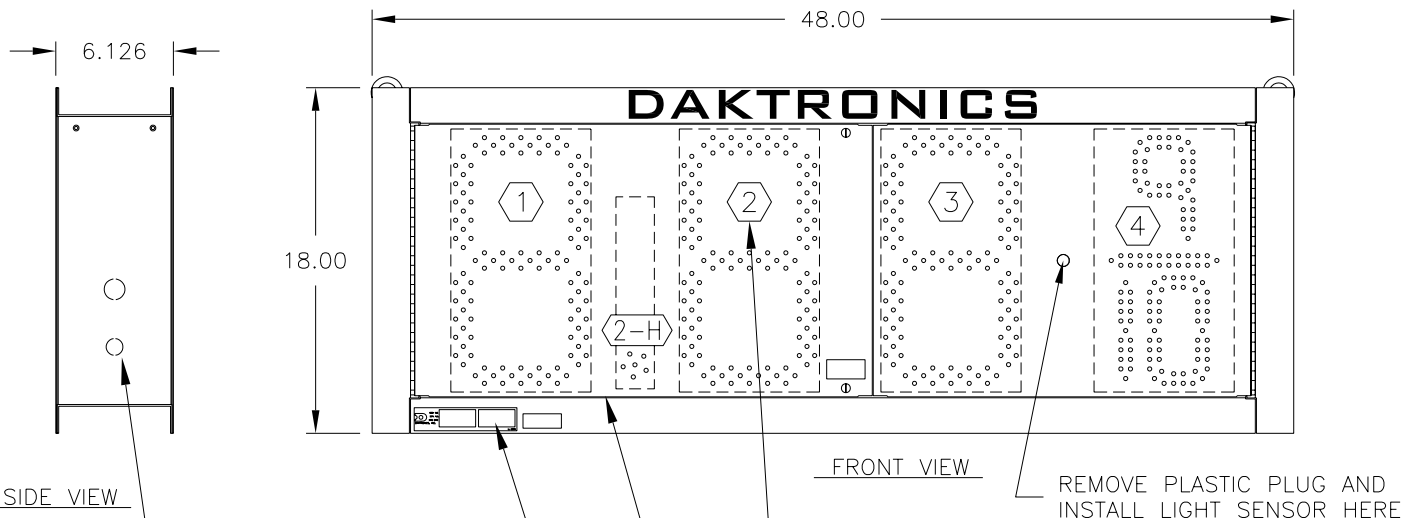
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DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: DATA TIME LED DISPLAYS  
TITLE: MECHANICAL SPECS, DF-1020-13, G3  
DES. BY: AVB DRAWN BY: AGIBSON DATE: 09 JAN 03

REVISION 02 APPR. BY: SCALE: 1=10 1279-R04A-181220

REV.	DATE	DESCRIPTION	BY	APPR.
02	31 MAY 05	UPDATED DIGIT PANELS PER DESIGN CHANGES.	MGL	
01	31 MAR 04	ADJUSTED BACK SHEET AND SIDE CHANNELS PER DESIGN CHANGES.	MGL	



SIDE VIEW

FRONT VIEW

KNOCKOUTS IN SIDES AND BACK FOR USE WITH 1/2" AND 3/4" CONDUIT

REMOVE PLASTIC PLUG AND INSTALL LIGHT SENSOR HERE

NUMBER IN DIGIT INDICATES WHICH DRIVER CONNECTOR IS WIRED TO THAT DIGIT

REMOVE THESE SCREWS TO OPEN DOORS AND GAIN ACCESS TO INTERNAL COMPONENTS.

LOOK HERE FOR MODEL NUMBER AND POWER REQUIREMENT

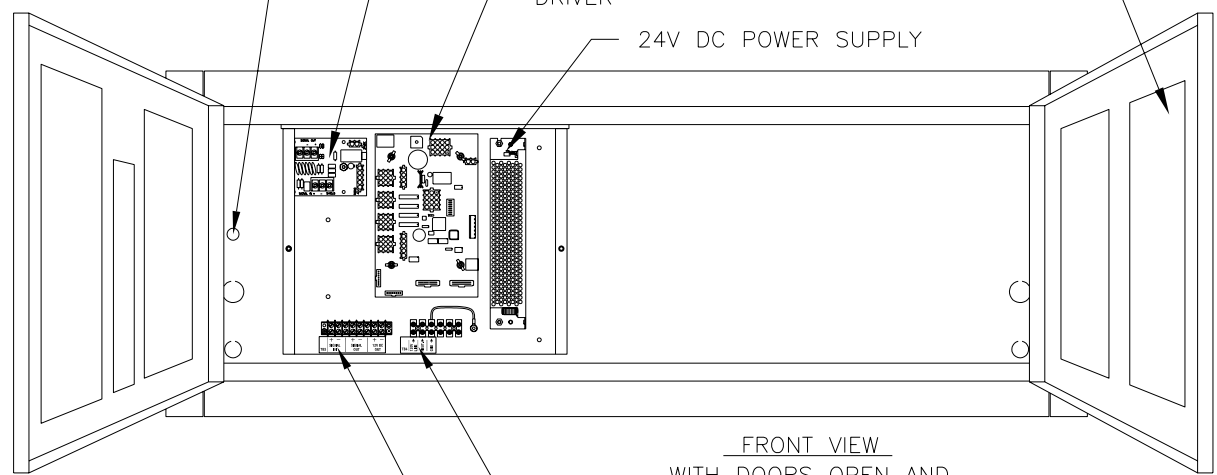
6-PIN JACK FOR CONNECTING OPTIONAL MODEM OR RADIO

SIGNAL SURGE SUPPRESSION BOARD

DIGIT CIRCUIT BOARDS MOUNTED TO DOORS

DRIVER

24V DC POWER SUPPLY



FRONT VIEW

WITH DOORS OPEN AND DRIVER COVER REMOVED (WIRES NOT SHOWN)

ELECTRICAL REQUIREMENT:  
120V AC, 15 AMP CIRCUIT  
  
MAX. POWER CONSUMPTION IS 150 WATTS.

CONNECT 120V AC POWER HERE

CONNECT SIGNAL INPUT HERE

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 2002 DAKTRONICS, INC.

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: DATA TIME LED DISPLAYS

TITLE: ELECTRICAL SPECS, DF-1020-13, G3

DES. BY: AVB

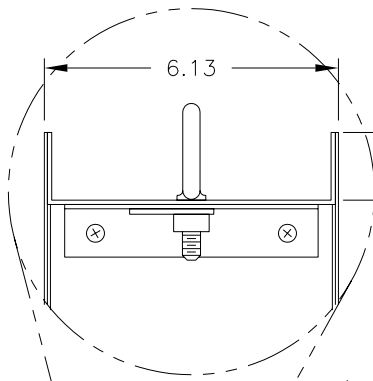
DRAWN BY: AGIBSON

DATE: 09 JAN 03

REV.	DATE	DESCRIPTION	BY	APPR.
01	31 MAY 05	UPDATED DIGIT PANELS PER DESIGN CHANGES.	MGL	

REVISION	APPR. BY:
01	SCALE: 1=10

1279-R04A-181222

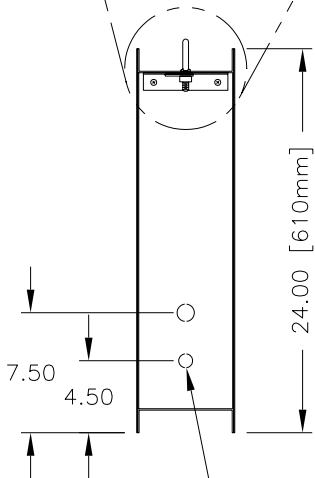


CHANNEL DETAIL  
SCALE 1=4

DIMENSIONS TYPICAL TOP,  
BOTTOM, AND SIDES

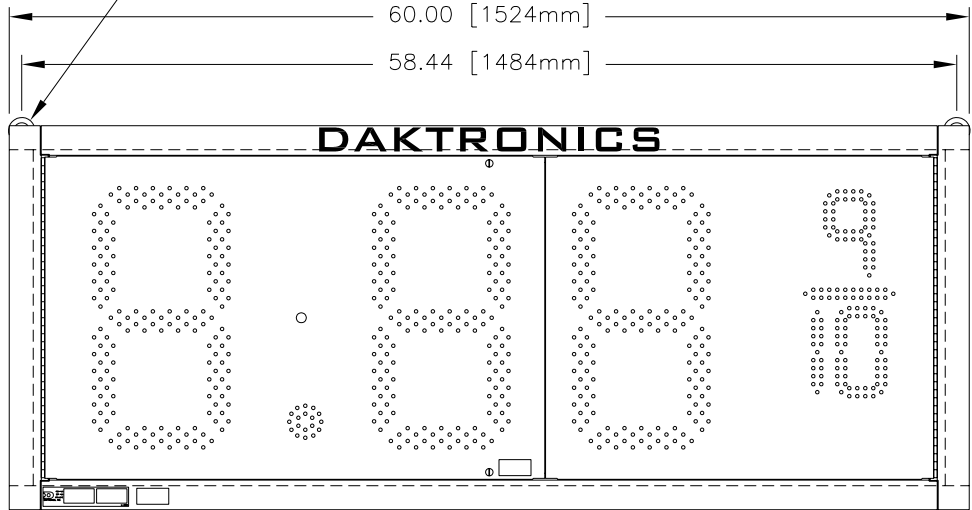
TOP AND BOTTOM CHANNELS ARE FORMED 0.090" ALUMINUM SHEET.  
FRONT, BACK, AND SIDE MEMBERS ARE 0.063" ALUMINUM SHEET.

LIFT EYES FOR USE DURING INSTALLATION ONLY  
AND ARE NOT FOR PERMANENT SUSPENSION.



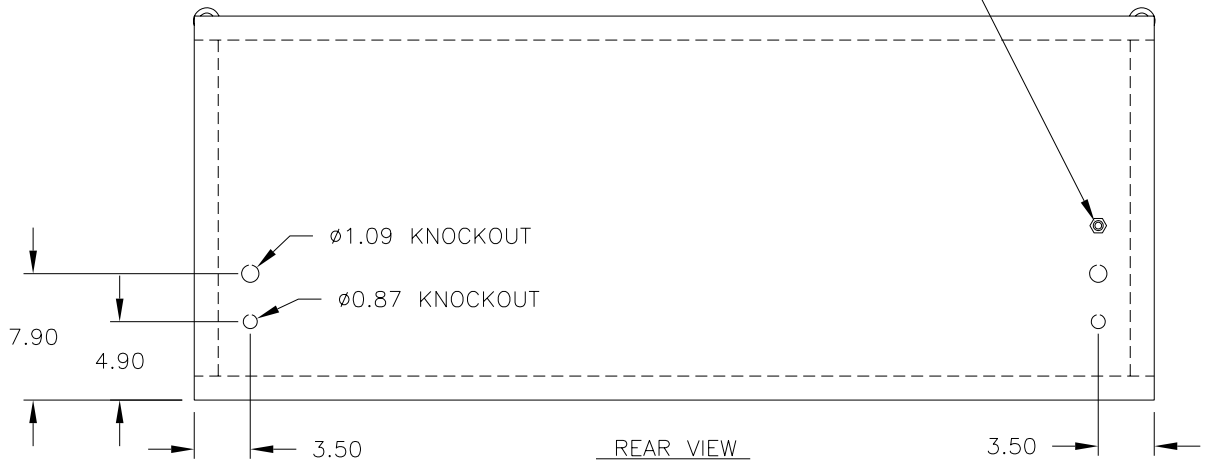
SIDE VIEW

KNOCKOUTS IN SIDES AND  
REAR FOR USE WITH 1/2"  
AND 3/4" CONDUIT FITTINGS



FRONT VIEW

CONNECTOR FOR OPTIONAL MODEM OR RADIO



REAR VIEW

ESTIMATED WEIGHT: 60 LB. [27 KG]

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DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: DATA TIME LED DISPLAYS

TITLE: MECHANICAL SPECS, DF-1020-18, G3

DES. BY: AVB

DRAWN BY: AGIBSON

DATE: 09 JAN 03

REVISION

APPR. BY:

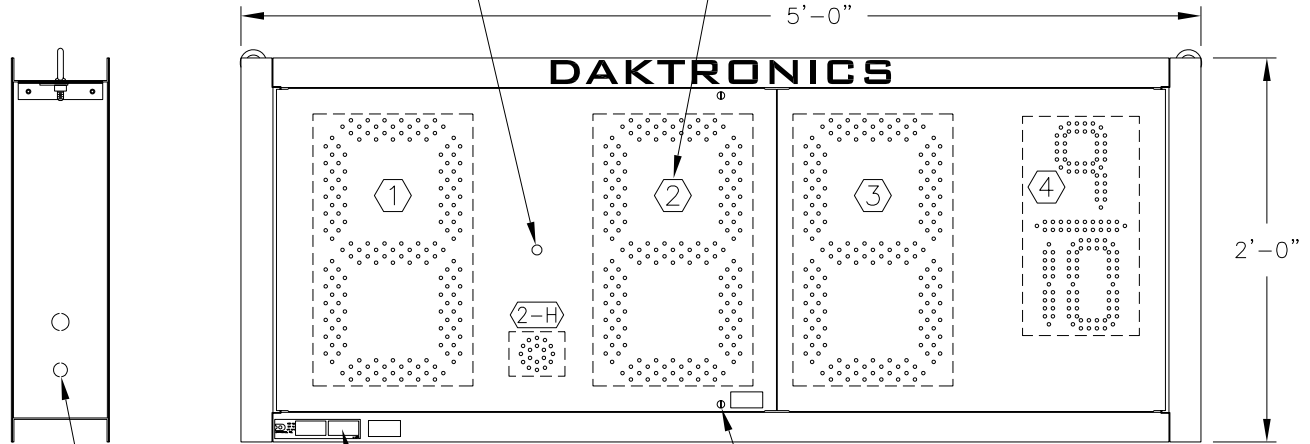
SCALE: 1=12

1279-R04A-181224

REV.	DATE	DESCRIPTION	BY	APPR.
02	08 JUN 05	UPDATED DIGIT PANELS PER DESIGN CHANGES.	MGL	
01	01 APR 04	ADJUSTED BACK SHEET AND SIDE CHANNELS PER DESIGN CHANGES.	MGL	

REMOVE THE PLASTIC PLUG AND  
INSTALL THE LIGHT SENSOR HERE.

THE NUMBER IN THE DIGIT INDICATES WHICH  
DRIVER CONNECTOR IS WIRED TO THAT DIGIT.



SIDE VIEW

LOOK HERE FOR MODEL  
NUMBER AND POWER  
REQUIREMENTS.

TURN THE LATCHES TO OPEN DOORS AND  
GAIN ACCESS TO INTERNAL COMPONENTS.

7/8" KNOCKOUTS  
IN SIDES AND BACK  
FOR 1/2" CONDUIT

FRONT VIEW

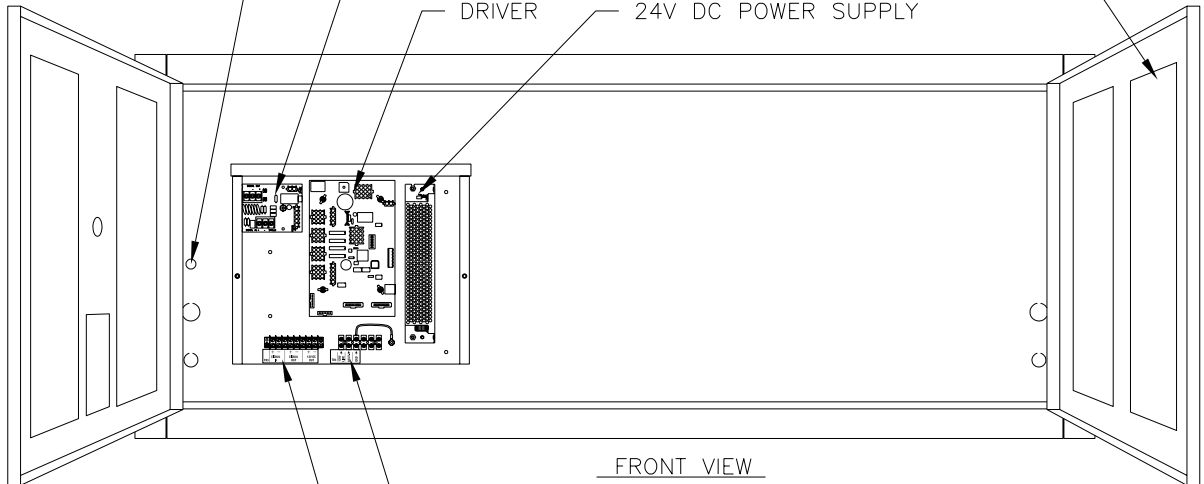
6-PIN JACK FOR CONNECTING  
OPTIONAL MODEM OR RADIO

SIGNAL SURGE  
SUPPRESSION BOARD

DIGIT CIRCUIT BOARDS  
MOUNTED TO DOORS

DRIVER

24V DC POWER SUPPLY



FRONT VIEW  
WITH DOORS OPEN AND  
DRIVER COVER REMOVED  
(WIRES NOT SHOWN)

ELECTRICAL REQUIREMENT:  
120V AC, 15 AMP CIRCUIT

MAX. POWER CONSUMPTION  
IS 150 WATTS.

CONNECT 120V AC POWER HERE

CONNECT SIGNAL INPUT HERE

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DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: DATA TIME LED DISPLAYS

TITLE: ELECTRICAL SPECS, DF-1020-18, G3

DES. BY: AVB

DRAWN BY: AGIBSON

DATE: 09 JAN 03

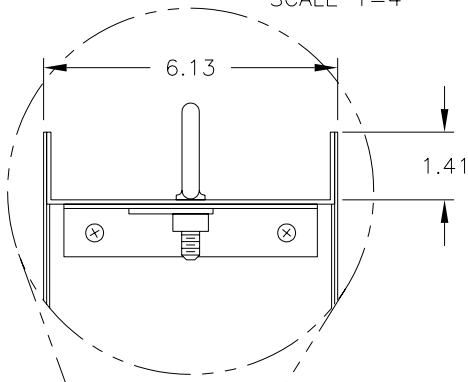
REV.	DATE	DESCRIPTION	BY	APPR.
01	09 JUN 05	UPDATED DIGIT PANELS PER DESIGN CHANGES.	MGL	

REVISION	APPR. BY:	1279-R04A-181233
01	SCALE: 1=12	



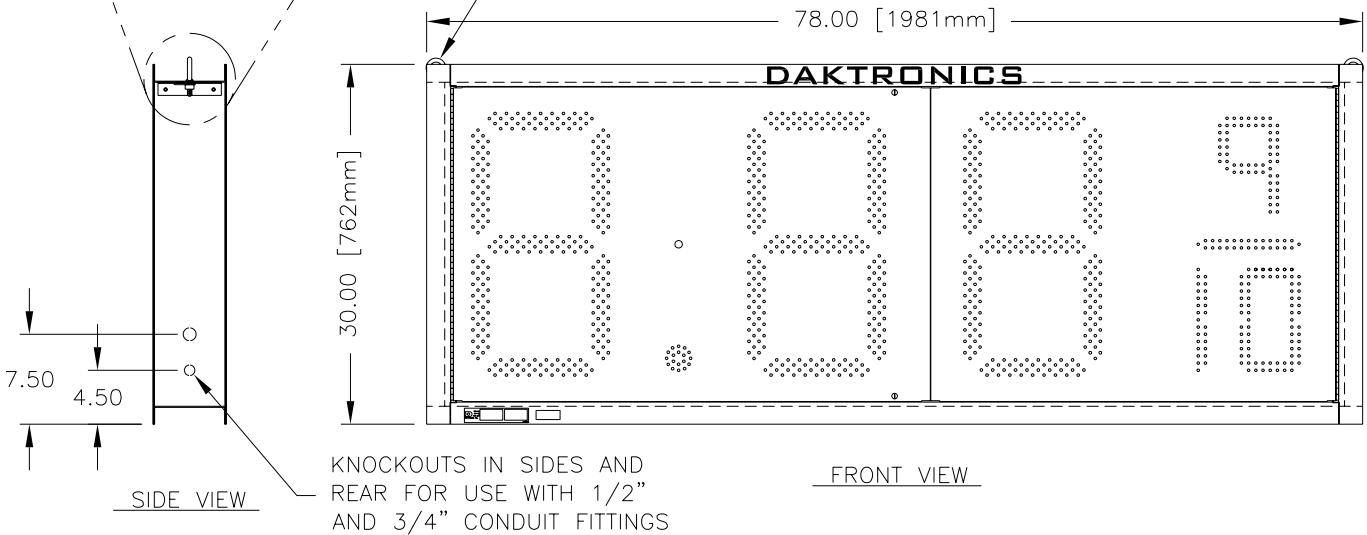
FRAME CHANNEL DETAIL  
SCALE 1=4

DIMENSIONS TYPICAL TOP,  
BOTTOM, AND SIDES

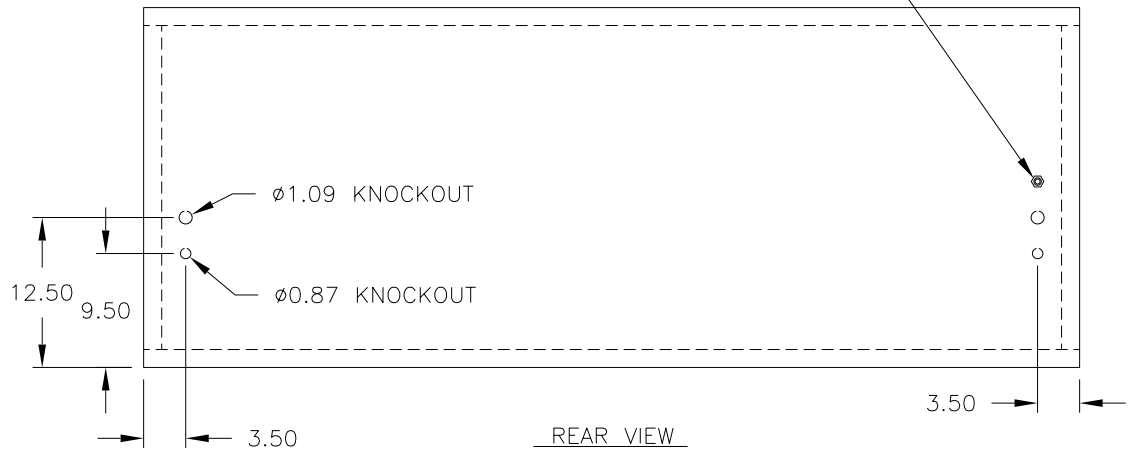


TOP AND BOTTOM CHANNELS ARE FORMED 0.090" ALUMINUM SHEET.  
FRONT, BACK, AND SIDE MEMBERS ARE 0.063" ALUMINUM SHEET.

EYEBOLTS IN THE TOP FOR LIFTING DURING INSTALLATION  
ONLY AND ARE NOT FOR PERMANENT SUSPENSION.



CONNECTOR FOR OPTIONAL MODEM OR RADIO



APPROXIMATE WEIGHT: 90 LB [41 KG]

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DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: DATA TIME LED DISPLAYS

TITLE: MECHANICAL SPECS, DF-1020-24, G3

DES. BY: AVB

DRAWN BY: AGIBSON

DATE: 09 JAN 03

REVISION

APPR. BY:

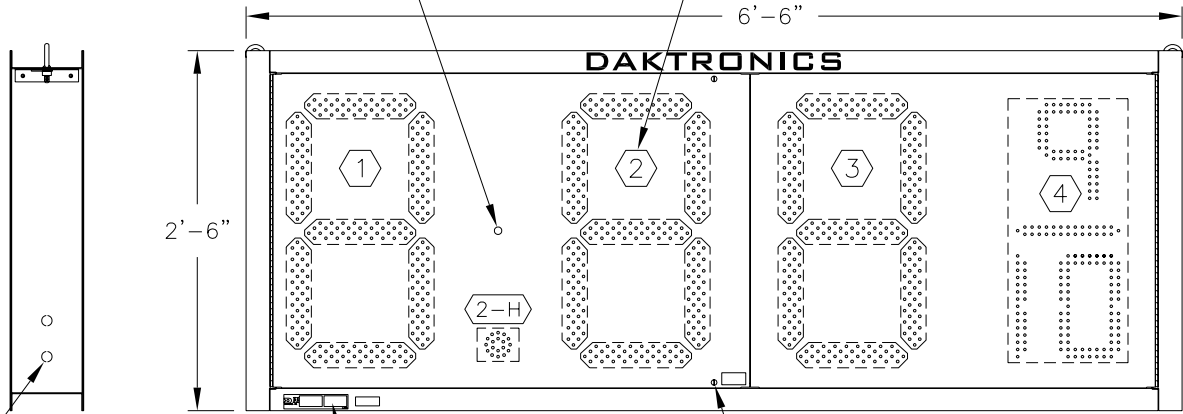
SCALE: 1=16

1279-R04A-181234

REV.	DATE	DESCRIPTION	BY	APPR.
02	13 JUN 05	UPDATED DIGIT PANELS PER DESIGN CHANGES.	MGL	
01	31 MAR 04	ADJUSTED BACK SHEET AND SIDE CHANNELS PER DESIGN CHANGES.	MGL	

REMOVE THE PLASTIC PLUG AND  
INSTALL LIGHT SENSOR HERE.

NUMBERS IN THE DIGITS INDICATE WHICH  
DRIVER CONNECTOR IS WIRED TO THAT DIGIT.



SIDE VIEW

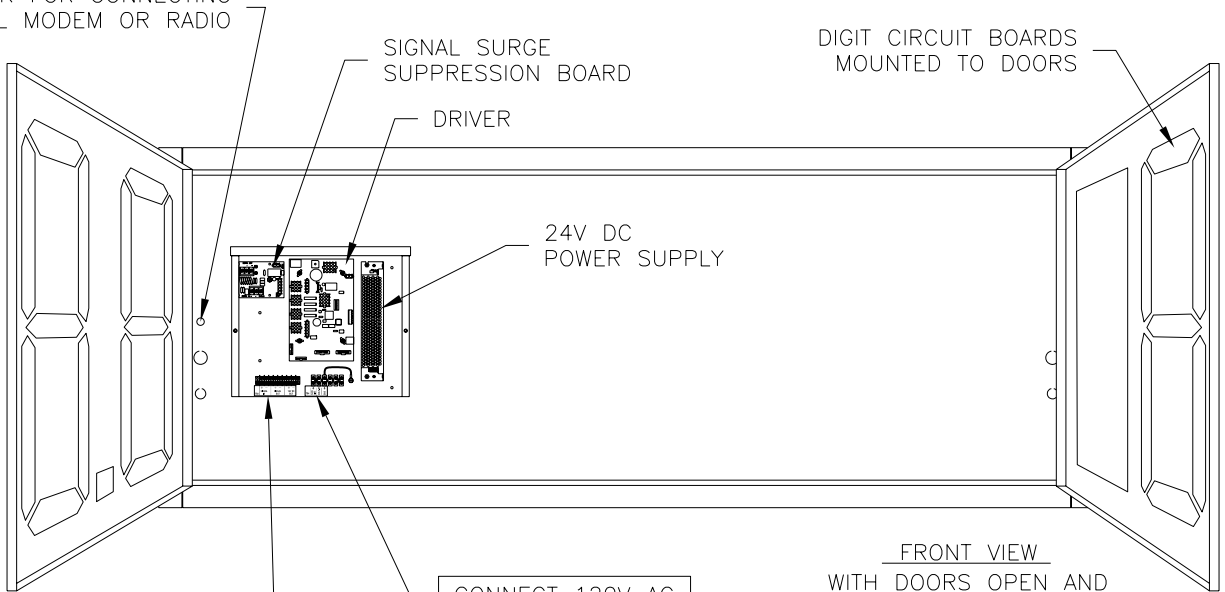
FRONT VIEW

KNOCKOUTS IN SIDES AND  
BACK FOR USE WITH 1/2"  
AND 3/4" CONDUIT

LOOK HERE FOR  
MODEL NUMBER  
AND POWER  
REQUIREMENTS.

TURN LATCHES TO OPEN THE  
DOORS AND GAIN ACCESS TO  
INTERNAL COMPONENTS.

6-PIN JACK FOR CONNECTING  
OPTIONAL MODEM OR RADIO



SIGNAL SURGE  
SUPPRESSION BOARD

DRIVER

24V DC  
POWER SUPPLY

DIGIT CIRCUIT BOARDS  
MOUNTED TO DOORS

FRONT VIEW

WITH DOORS OPEN AND  
DRIVER COVER REMOVED  
(WIRES NOT SHOWN)

CONNECT SIGNAL INPUT HERE

CONNECT 120V AC  
POWER HERE

ELECTRICAL REQUIREMENT:  
120V AC, 15 AMP CIRCUIT

MAX. POWER CONSUMPTION  
IS 150 WATTS.

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DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: DATA TIME LED DISPLAYS

TITLE: ELECTRICAL SPECS, DF-1020-24, G3

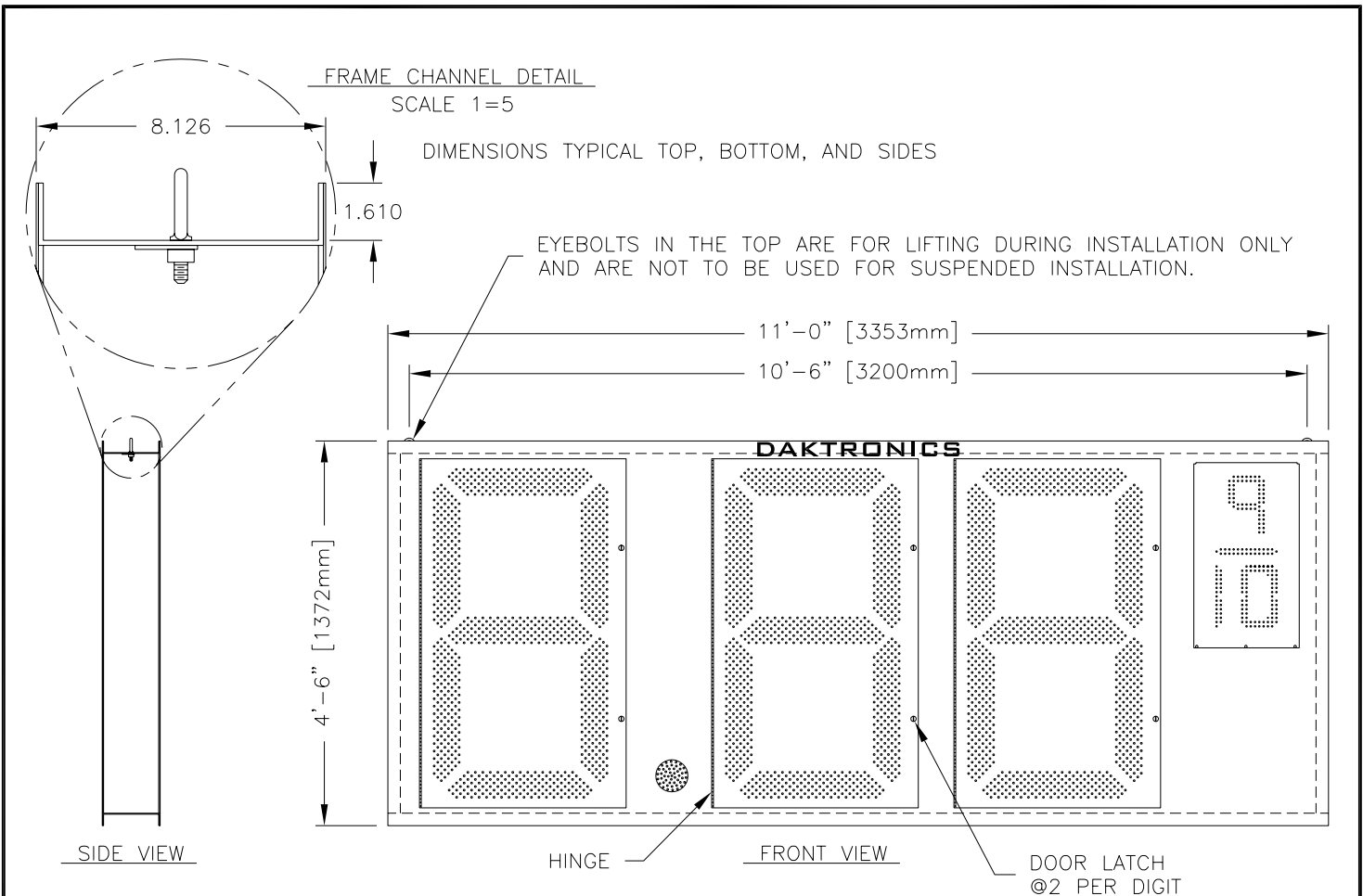
DES. BY: AVB

DRAWN BY: AGIBSON

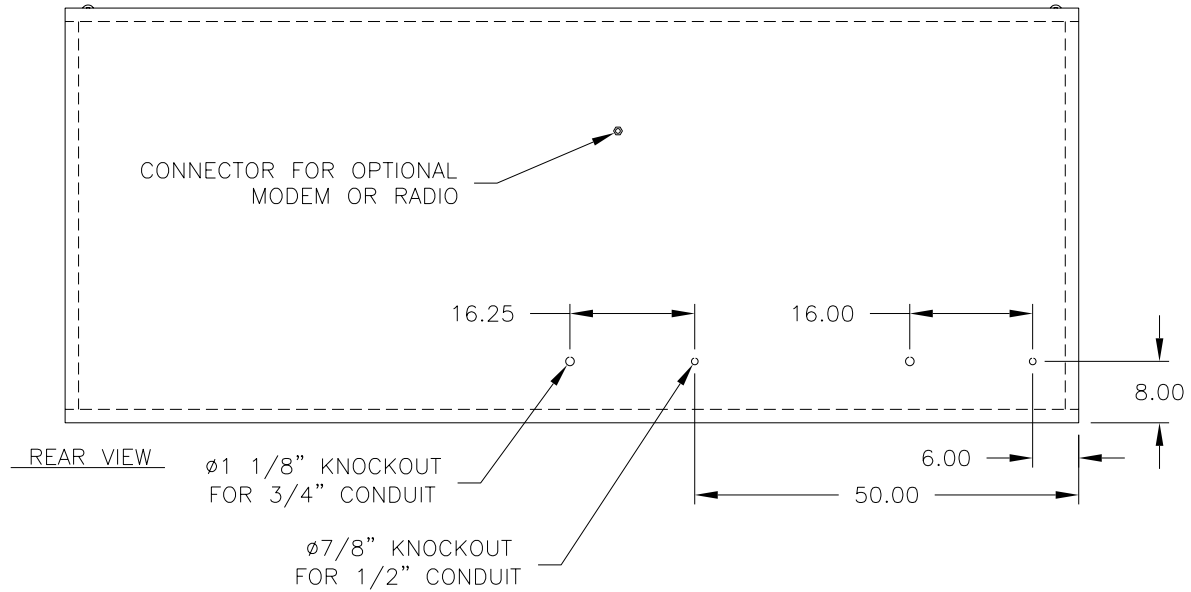
DATE: 09 JAN 03

REV.	DATE	DESCRIPTION	BY	APPR.
01	13 JUN 05	UPDATED DIGIT PANELS PER DESIGN CHANGES.	MGL	

REVISION	APPR. BY:	1279-R04A-181235
01	SCALE: 1=16	



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



APPROXIMATE WEIGHT: 280 LB [127 KG]

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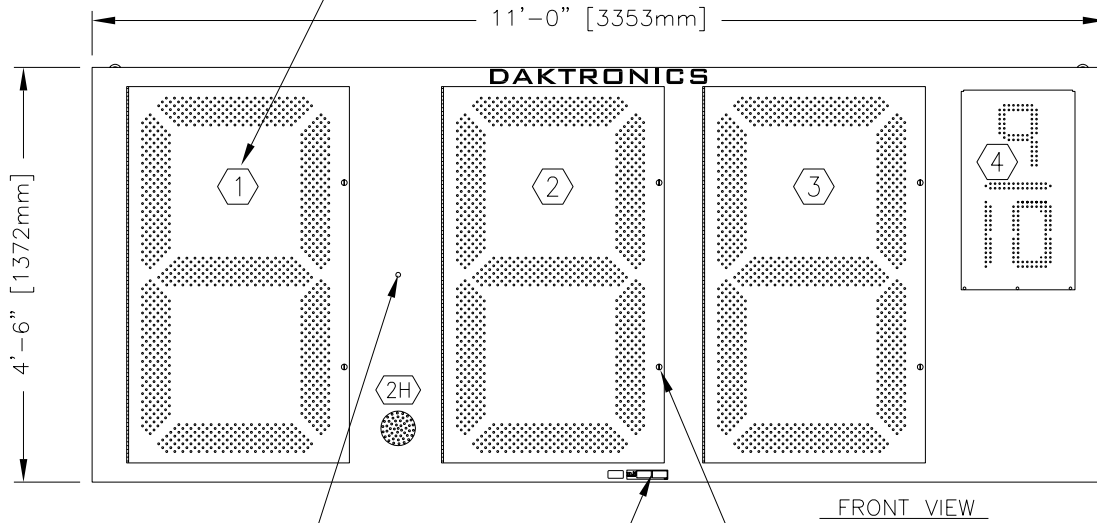
DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: DATA 3TIME LED DISPLAYS  
 TITLE: MECHANICAL SPECS, DF-1020-48, G3  
 DES. BY: AVB DRAWN BY: A VANBEMMEL DATE: 21 JAN 03

REV.	DATE	DESCRIPTION	BY	APPR.
01	08 MAR 05	UPDATED HOLE PATTERN IN BACKSHEET.	MGL	
01	31 MAR 04	ADJUSTED BACK SHEET THICKNESS PER DESIGN CHANGES.	MGL	

REVISION	APPR. BY:	1279-R08A-181672
02	SCALE: 1=25	

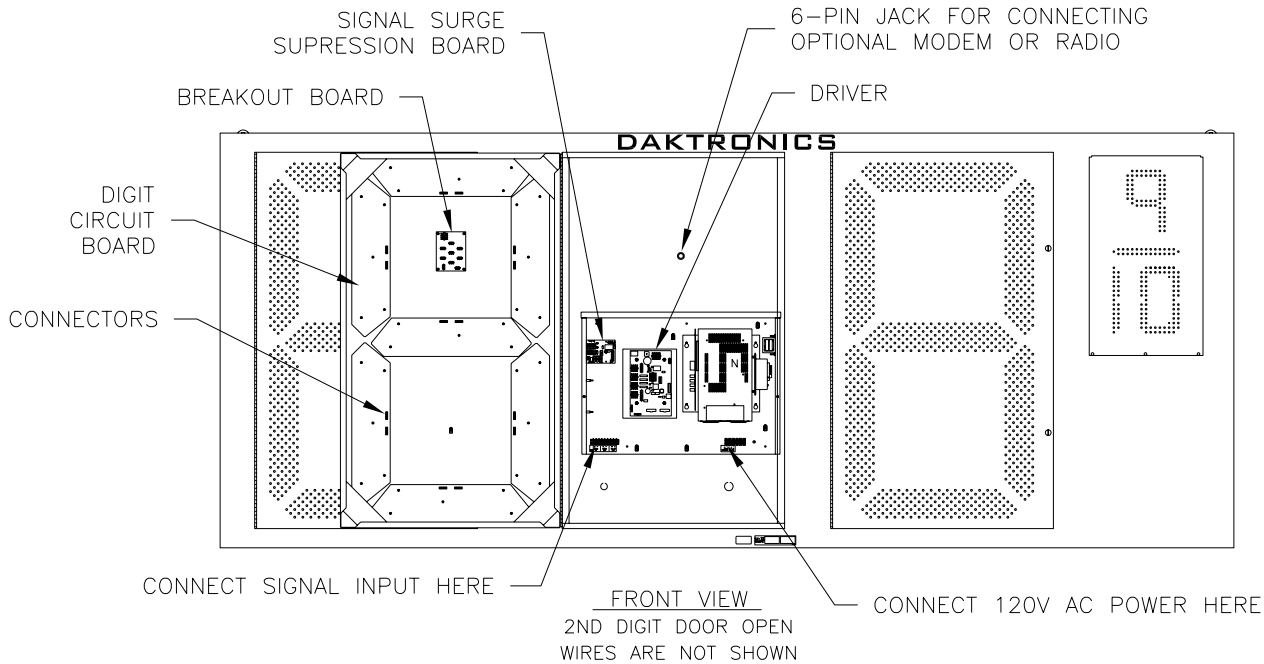
NUMBERS SHOWN ON DIGITS INDICATE WHICH DRIVER CONNECTORS ARE WIRED TO EACH DIGIT. EACH 48" DIGIT IS WIRED TO FOUR DRIVER CONNECTORS.



REMOVE THE PLASTIC PLUG AND INSTALL THE LIGHT SENSOR HERE

LOOK HERE FOR MODEL NUMBER AND POWER REQUIREMENT.

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



ELECTRICAL REQUIREMENT:  
120V AC, 15 AMP CIRCUIT  
MAX POWER CONSUMPTION IS 300 WATTS.

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DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: DATA TIME LED DISPLAYS			
TITLE: ELECTRICAL SPECS, DF-1020-48, G3			
DES. BY: AVB		DRAWN BY: AVB	
		DATE: 21 JAN 03	
REVISION	APPR. BY:	1279-R04A-181673	
01	SCALE: 1=25		

01	08 MAR 05	UPDATED DRIVER ENCLOSURE AND DIGIT DESIGNATIONS.	MGL	
REV.	DATE	DESCRIPTION	BY	APPR.

**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.

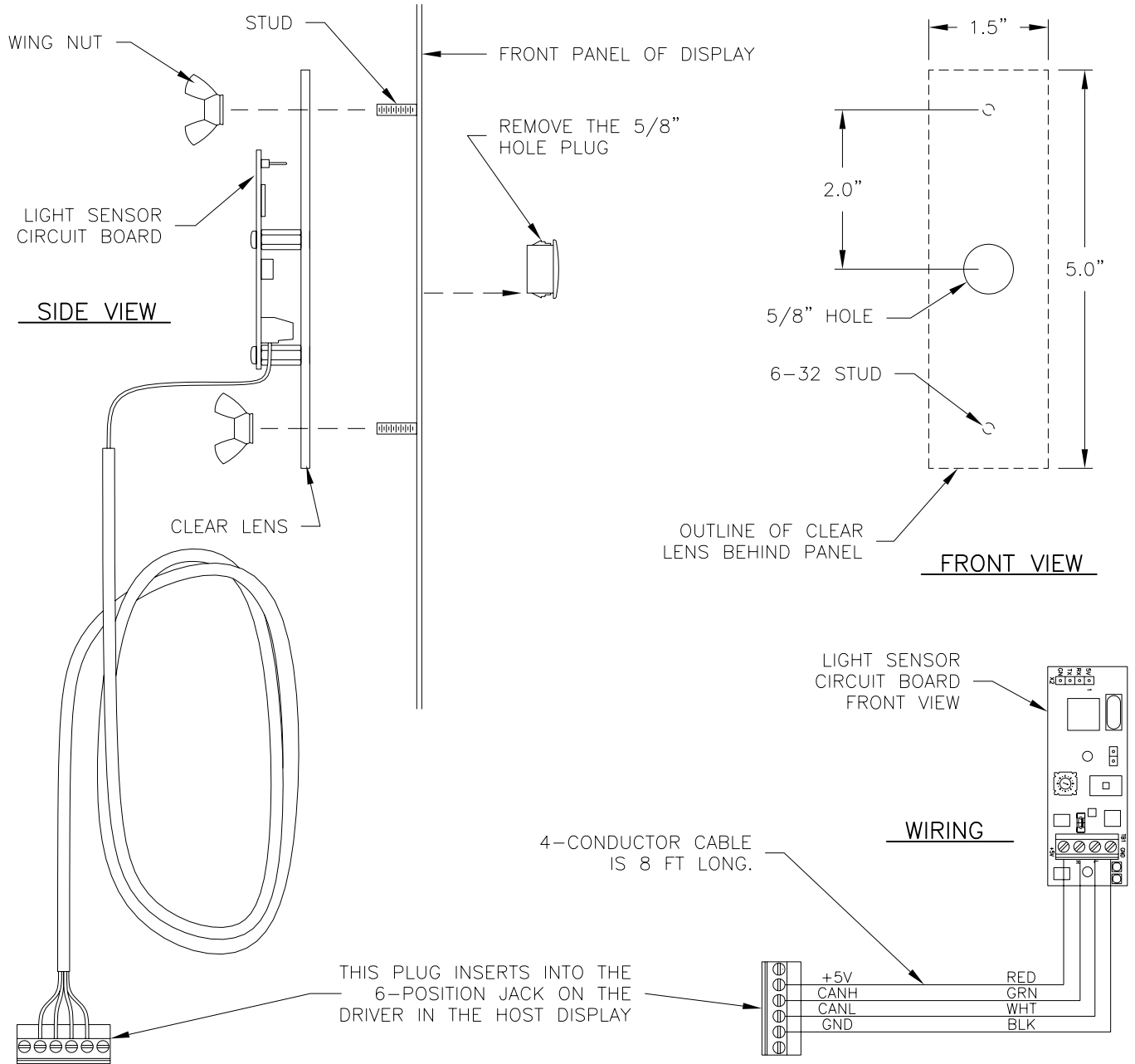
**FOR DAKMAP (MULTIDROP) CONTROLLED SYSTEMS:**

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

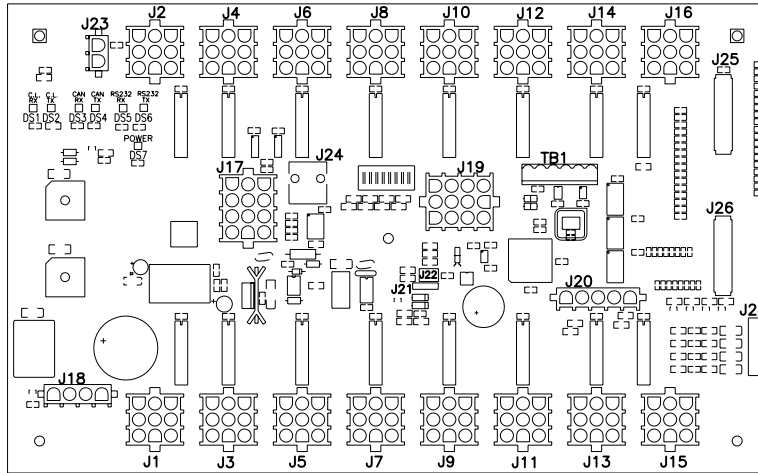
J27 - TPIC	
PIN	FUNCTION
8	GND-N
7	GND-N
6	DIG.DATA-P
5	DIG.STROBE-P
4	DIG.CLK-P
3	DIG.OE-N
2	+VBB-P
1	+5V-P

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.

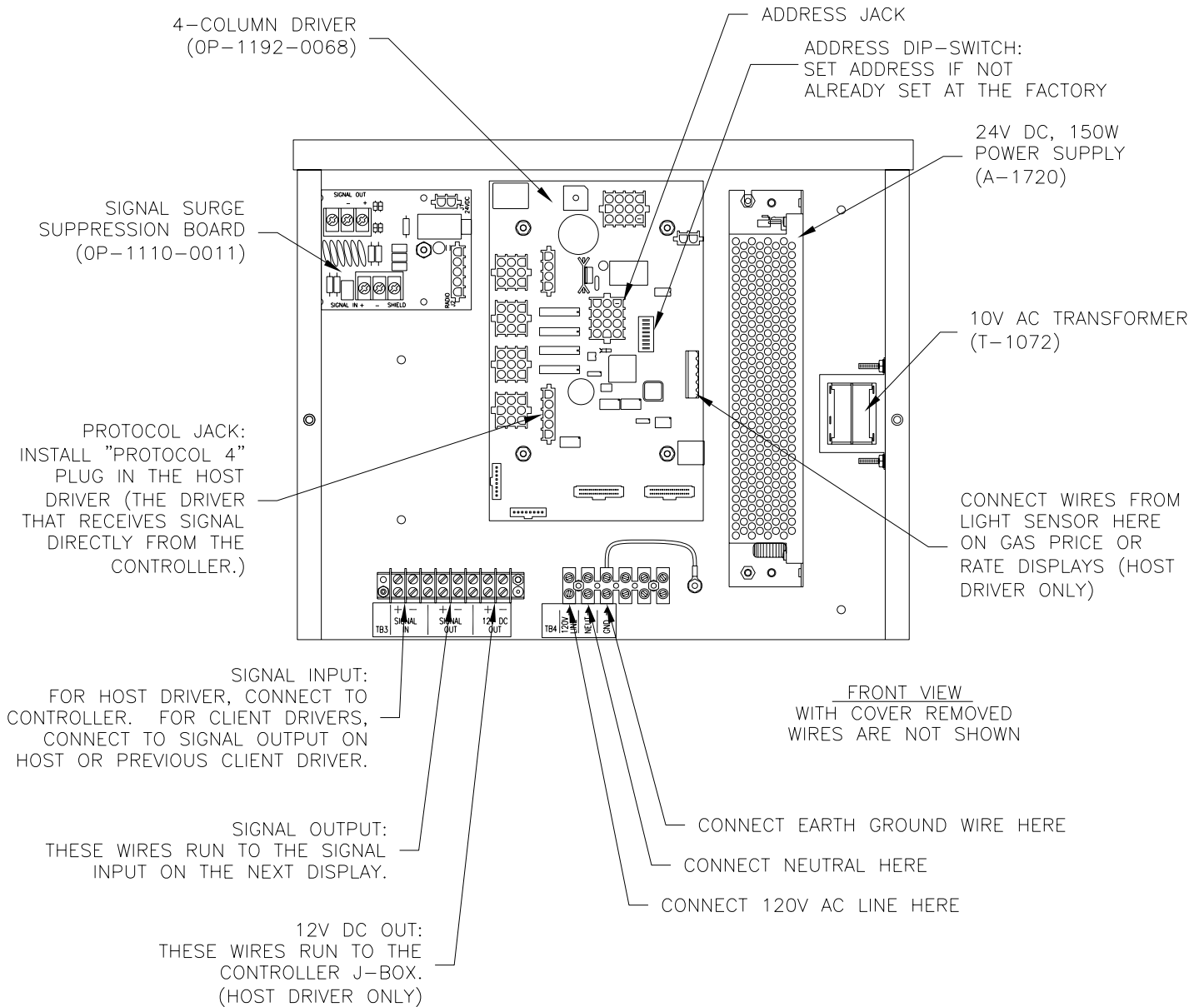
THE CONCEPTS EXPRESSED AND DETAILS SHOWN ON THIS DRAWING ARE CONFIDENTIAL AND PROPRIETARY. DO NOT REPRODUCE BY ANY MEANS, INCLUDING ELECTRONICALLY WITHOUT THE EXPRESSED WRITTEN CONSENT OF DAKTRONICS, INC. COPYRIGHT 2003 DAKTRONICS, INC.

DAKTRONICS, INC. BROOKINGS, SD 57006

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	

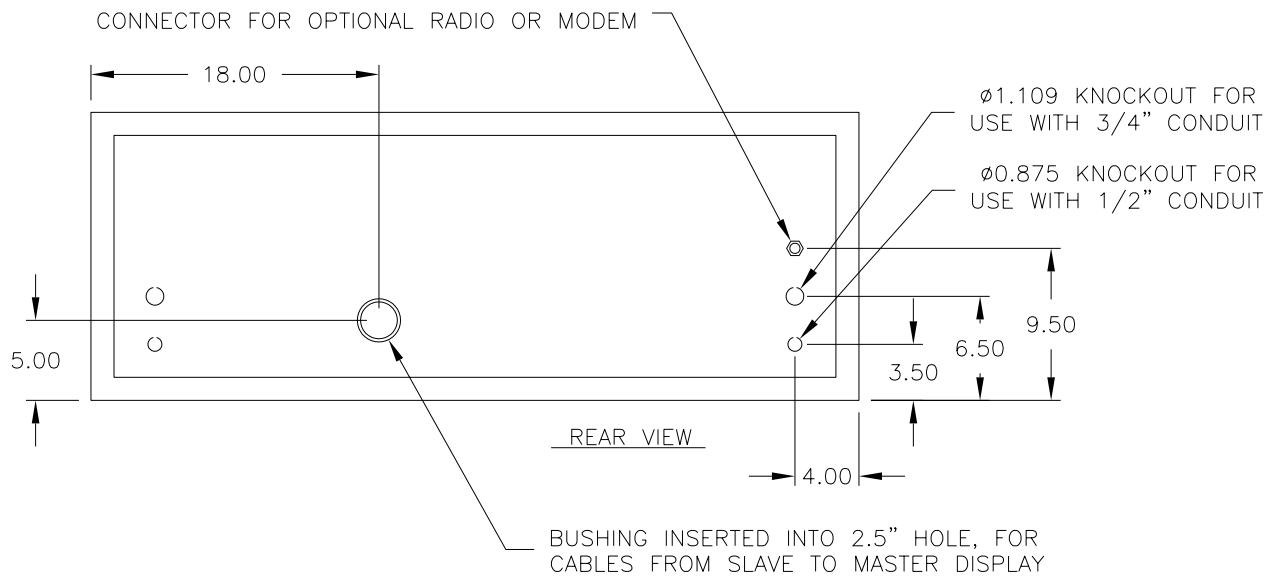
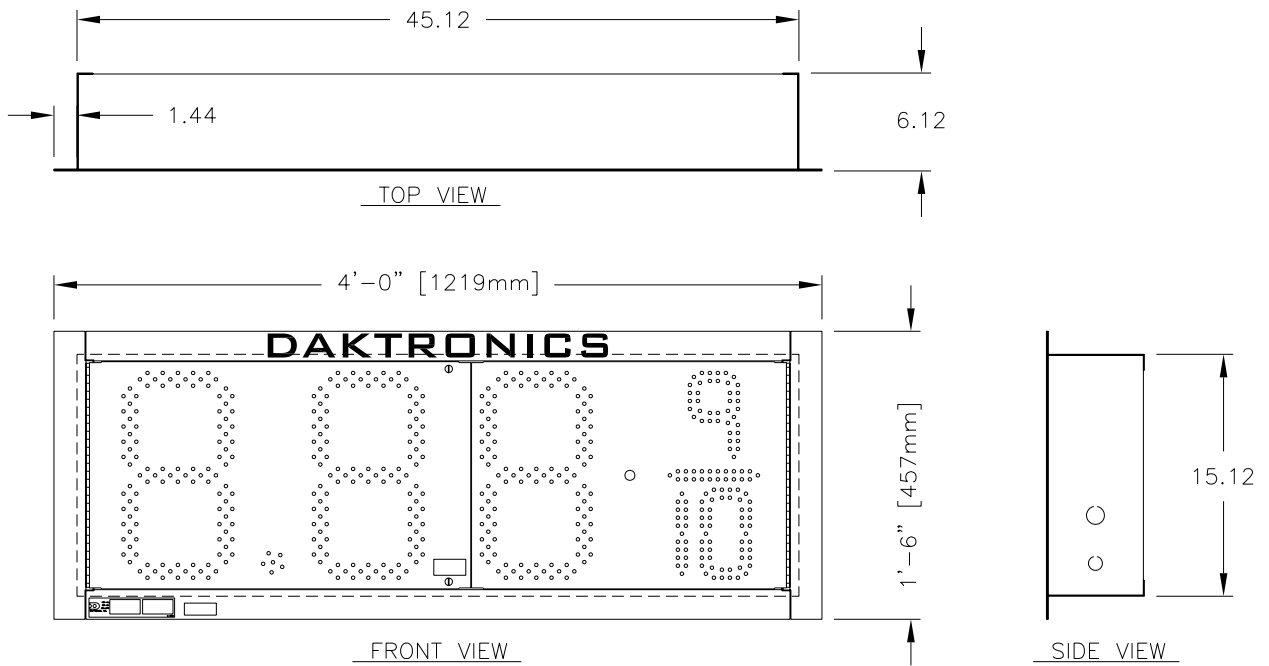
PROJ:	16 COL. MASC DRIVER SPECIFICATION		
DES. BY:	CBRECZI	DRAWN BY:	CBRECZI
		DATE:	05 MAR 03
REVISION	APPR. BY:	1192-R07A-184475	
02	SCALE: 1=3		

THIS IS THE ENCLOSED 4-COLUMN DRIVER USED IN MOST DATETIME LED DISPLAYS WITH 13", 18" AND 24" DIGITS.



DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: DATETIME LED DISPLAYS			
TITLE: ENCLOSED DRIVER, 4 COLUMN REFERENCE			
DES. BY: AVB		DRAWN BY: A VANBEMMEL	
		DATE: 13 mar 03	
REVISION	APPR. BY:	1279-R04A-184918	
02	SCALE: 1=4		

REV.	DATE	DESCRIPTION	BY	APPR.
02	9 SEP 04	EDITED ADDRESSING TEXT TO INCORPORATE ADDRESS DIP-SWITCH	JMC	
01	07 MAY 03	ADDED 10V TRANSFORMER	AVB	



BOTH MASTER (DF-1021-13-M) AND SLAVE (DF-1021-13-S) DISPLAYS HAVE THE SAME EXTERNAL DIMENSIONS AND FEATURES.

THIS DISPLAY IS INTENDED TO BE INSERTED INTO A RECTANGULAR OPENING IN A LARGER SIGN.

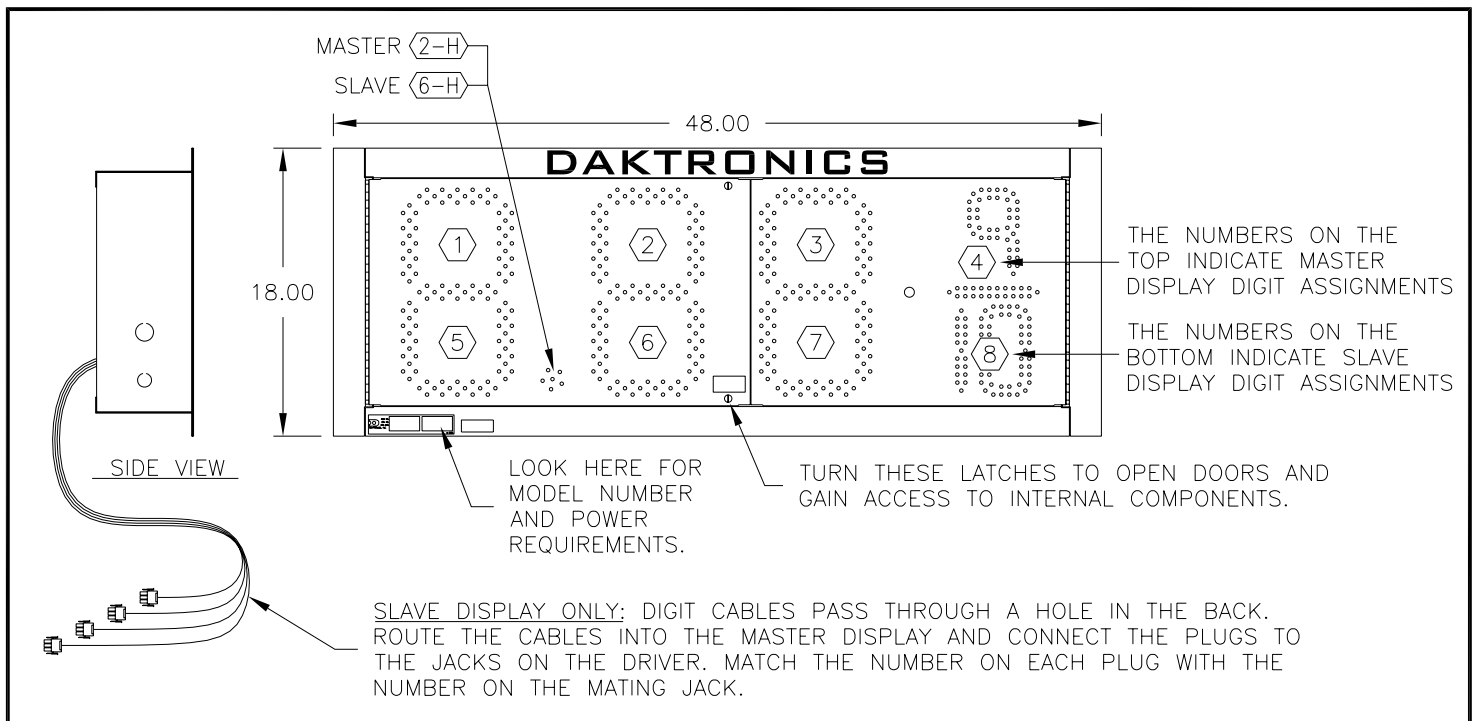
RECOMMENDED OPENING SIZE IS 45.50" X 15.50" [1156 MM X 394 MM]

THE DISPLAY IS CONSTRUCTED OF 0.063" ALUMINUM. FRONT FLANGE IS 1/8" THICK.  
 ESTIMATED WEIGHT: 36 LB [16 KG]

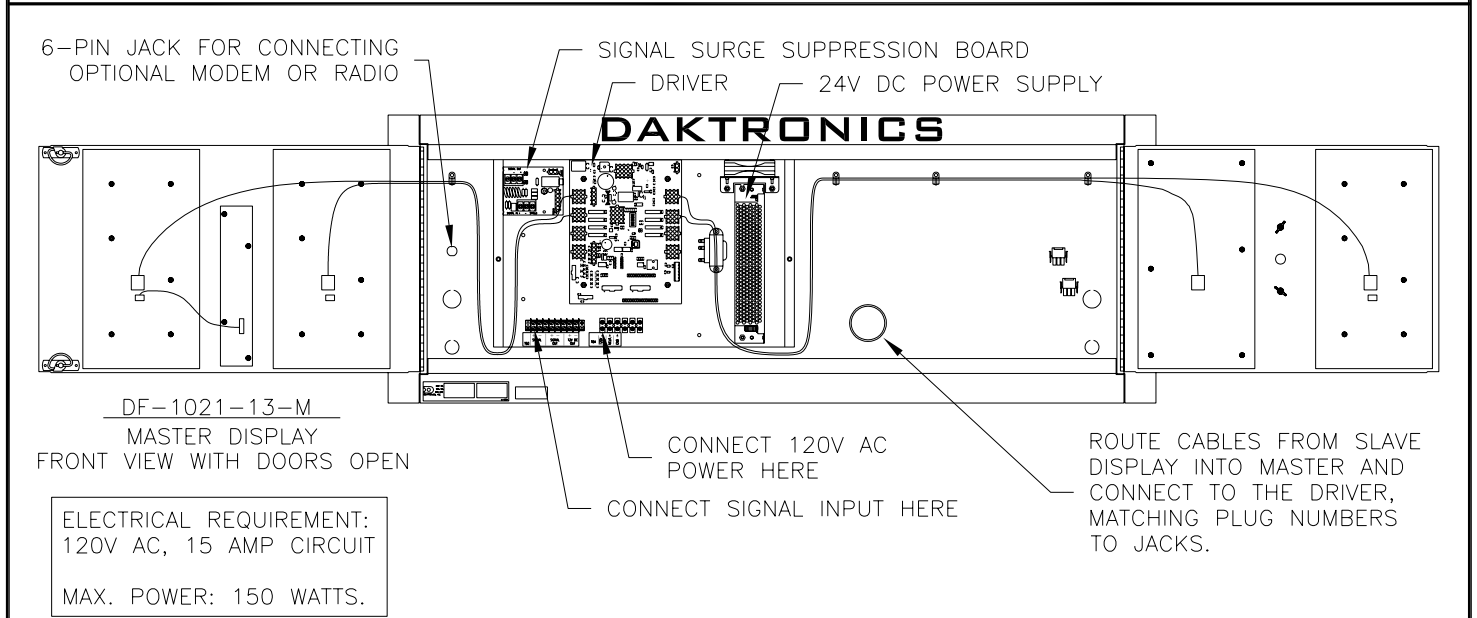
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DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: DATA TIME LED DISPLAYS			
TITLE: MECHANICAL SPECS, DF-1021-13, G3			
DES. BY: AVB		DRAWN BY: A VANBEMMEL DATE: 17 MAR 03	
REVISION	APPR. BY:	1279-R04A-185176	
01	SCALE: 1=12		

01	31 MAY 05	UPDATED DIGIT PANELS PER DESIGN CHANGES.	MGL	
REV.	DATE	DESCRIPTION	BY	APPR.

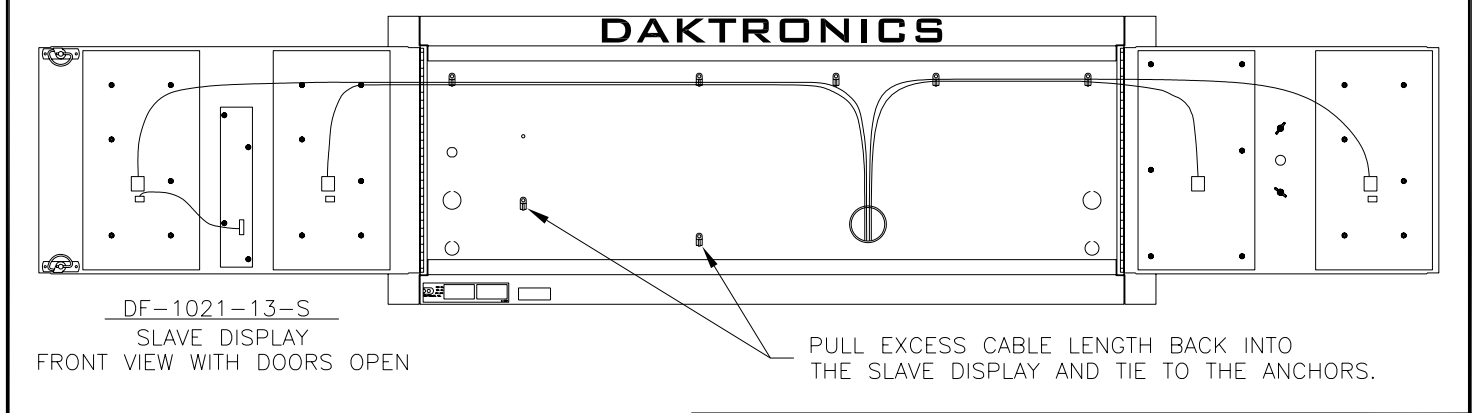




SLAVE DISPLAY ONLY: DIGIT CABLES PASS THROUGH A HOLE IN THE BACK. ROUTE THE CABLES INTO THE MASTER DISPLAY AND CONNECT THE PLUGS TO THE JACKS ON THE DRIVER. MATCH THE NUMBER ON EACH PLUG WITH THE NUMBER ON THE MATING JACK.

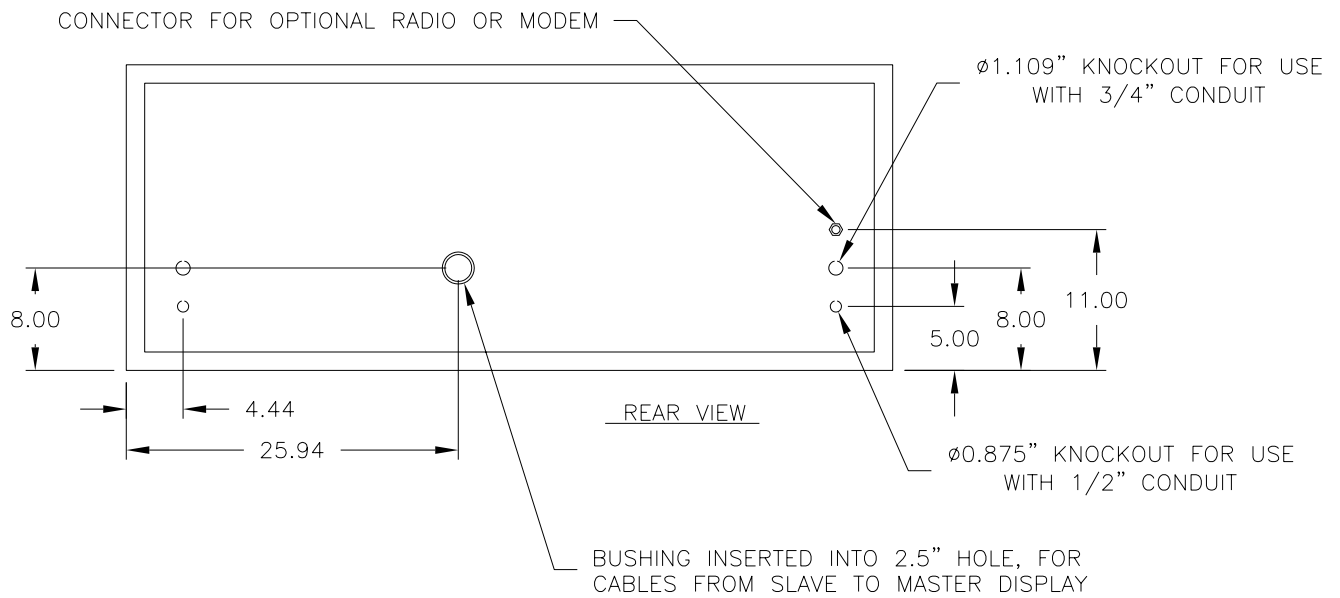
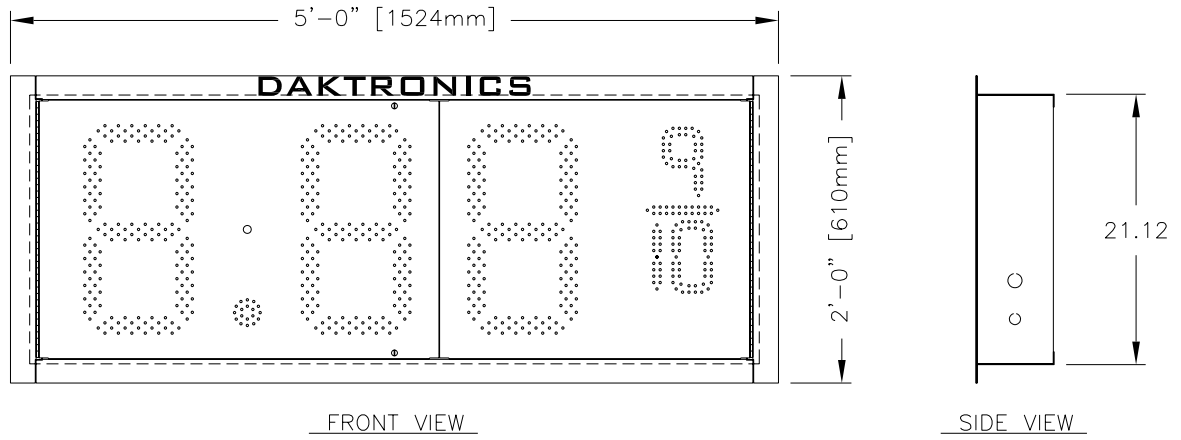
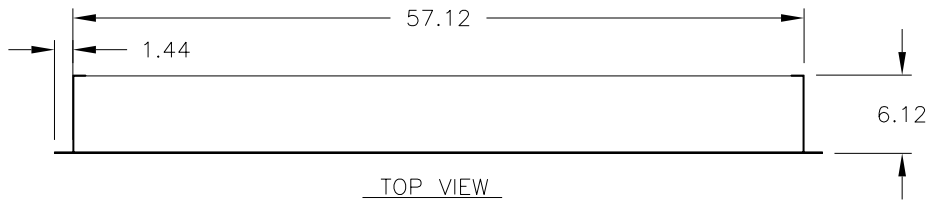


ELECTRICAL REQUIREMENT:  
120V AC, 15 AMP CIRCUIT  
MAX. POWER: 150 WATTS.



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DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: DATATIME LED DISPLAYS			
TITLE: ELECTRICAL SPECS, DF-1021-13, G3			
DES. BY: AVB		DRAWN BY: A VANBEMMEL	
		DATE: 17 MAR 03	
REVISION	APPR. BY:	1279-R04A-185177	
01	SCALE: 1=12		

01	31 MAY 05	UPDATED DIGIT PANELS PER DESIGN CHANGES.	MGL	
REV.	DATE	DESCRIPTION	BY	APPR.



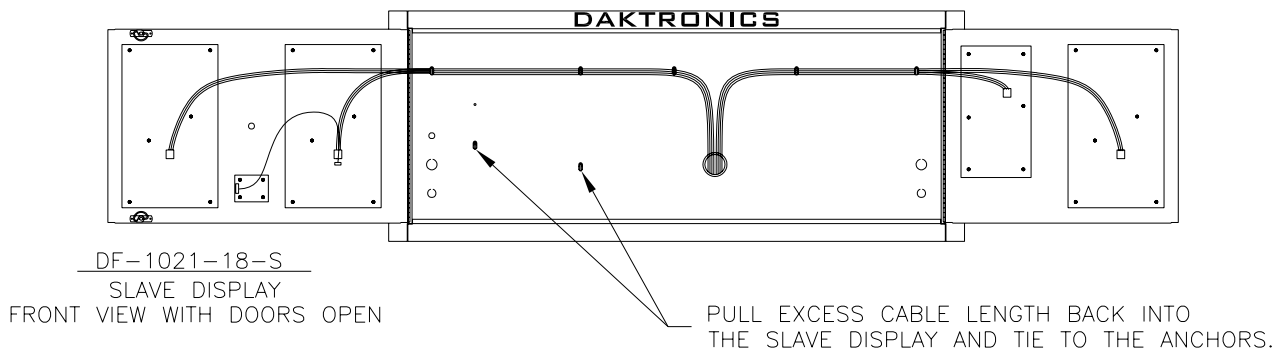
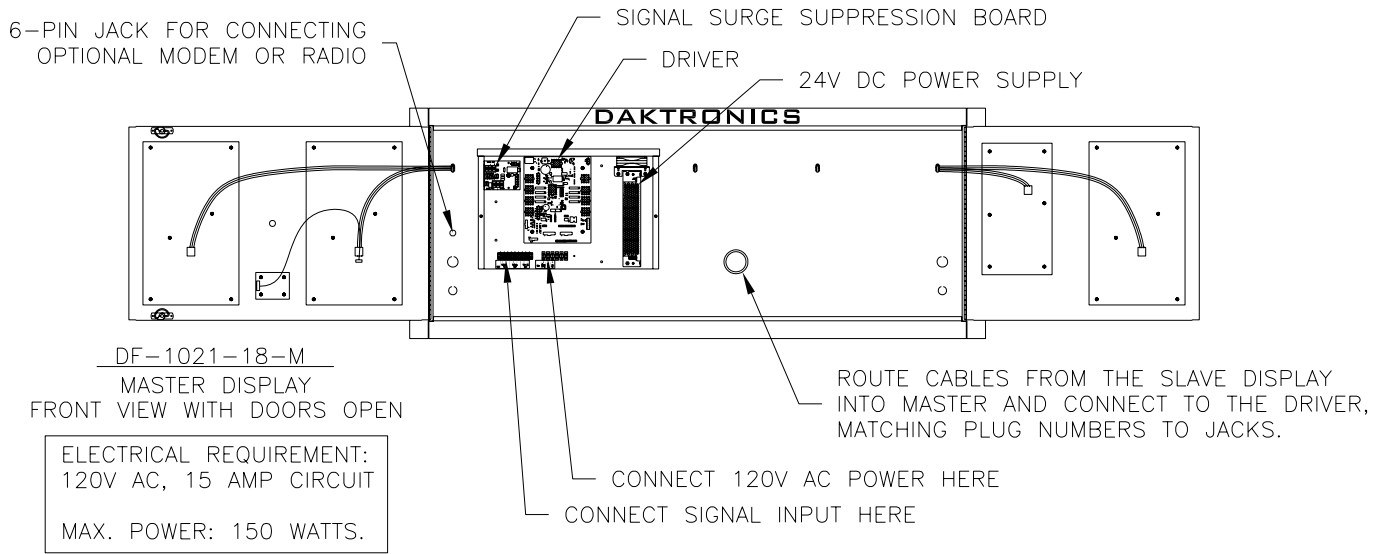
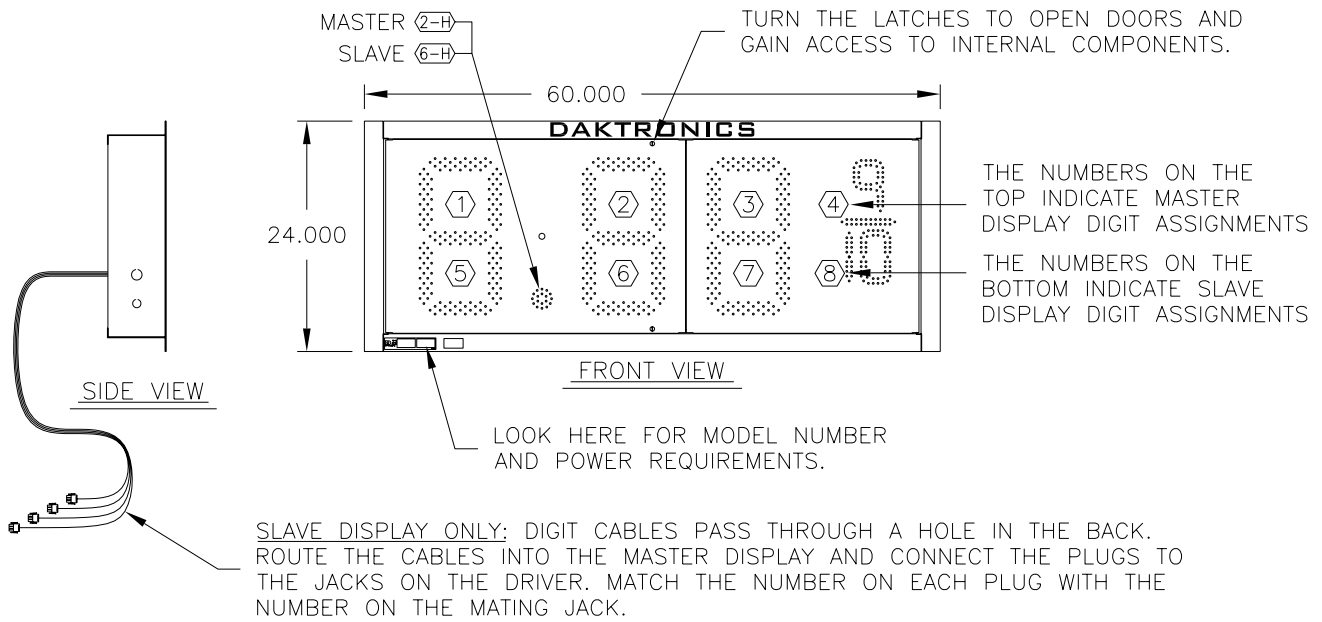
BOTH MASTER (DF-1021-18-M) AND SLAVE (DF-1021-18-S) DISPLAYS HAVE THE SAME EXTERNAL DIMENSIONS AND FEATURES.

THIS DISPLAY IS INTENDED TO BE INSERTED INTO A RECTANGULAR OPENING IN A LARGER SIGN. RECOMMENDED OPENING SIZE IS 57.50" X 21.50" [1461 MM X 546 MM]

THE DISPLAY IS CONSTRUCTED OF 0.063" ALUMINUM. FRONT FLANGE IS 1/8" THICK. ESTIMATED WEIGHT: 60 LB [27 KG]

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DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: DATETIME LED DISPLAYS			
TITLE: MECHANICAL SPECS, DF-1021-18, G3			
DES. BY: AVB		DRAWN BY: A VANBEMMEL DATE: 17 MAR 03	
REVISION	APPR. BY:	1279-R04A-185203	
01	SCALE: 1=15		

01	08 JUN 05	UPDATED DIGIT PANELS PER DESIGN CHANGES.	MGL	
REV.	DATE	DESCRIPTION	BY	APPR.



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DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: DATATIME LED DISPLAYS

TITLE: ELECTRICAL SPECS, DF-1021-18, G3

DES. BY: AVB

DRAWN BY: A VANBEMMEL

DATE: 17 MAR 03

REVISION

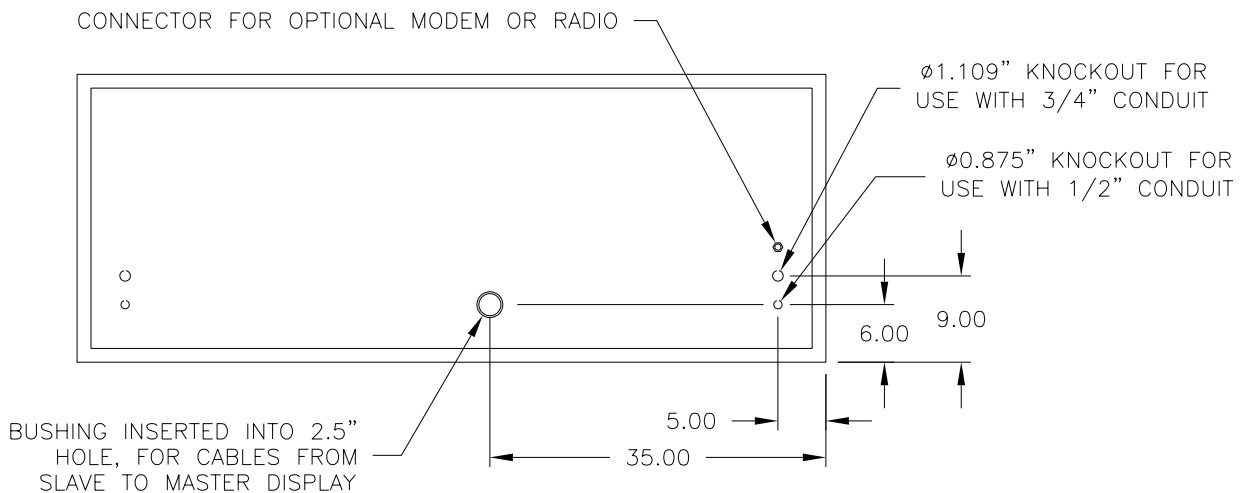
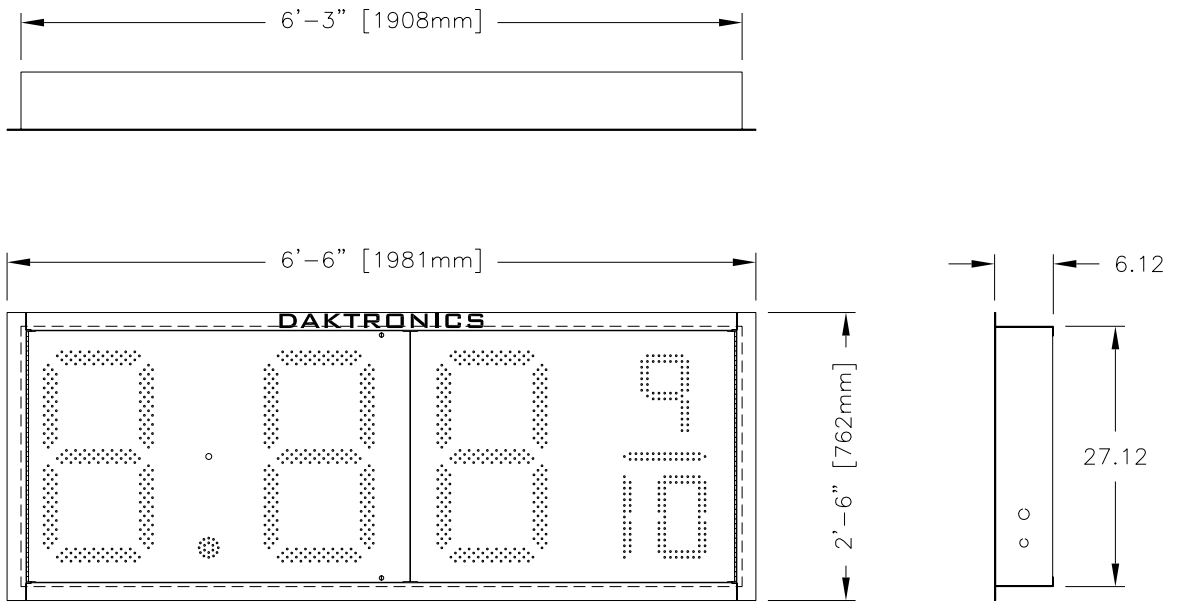
APPR. BY:

01

SCALE: 1=20

1279-R04A-185204

REV.	DATE	DESCRIPTION	BY	APPR.
01	08 JUN 05	UPDATED DIGIT PANELS PER DESIGN CHANGES.	MGL	



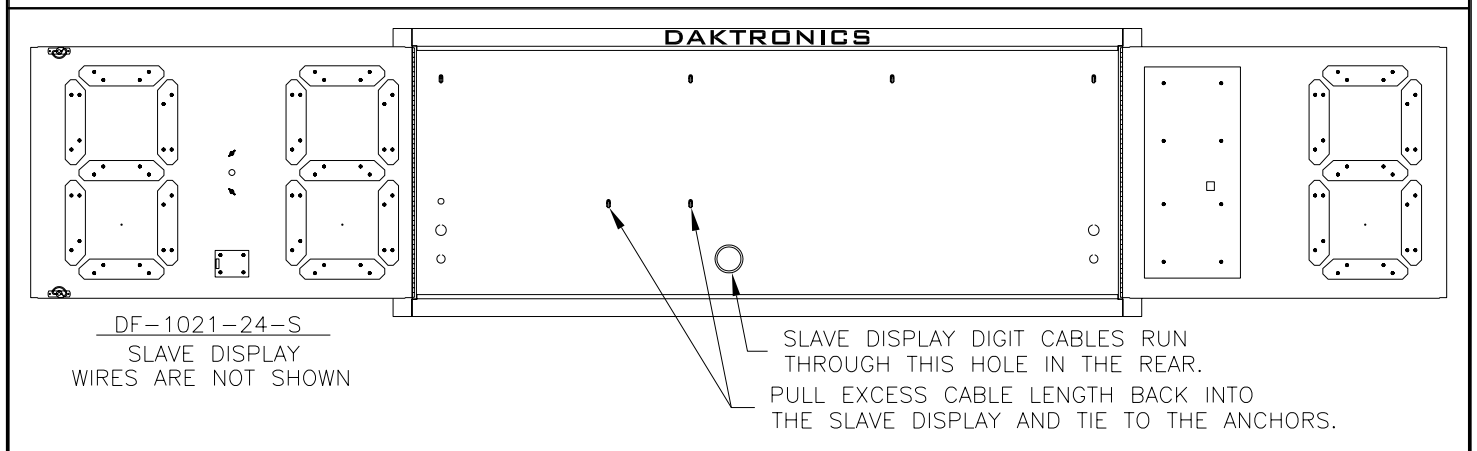
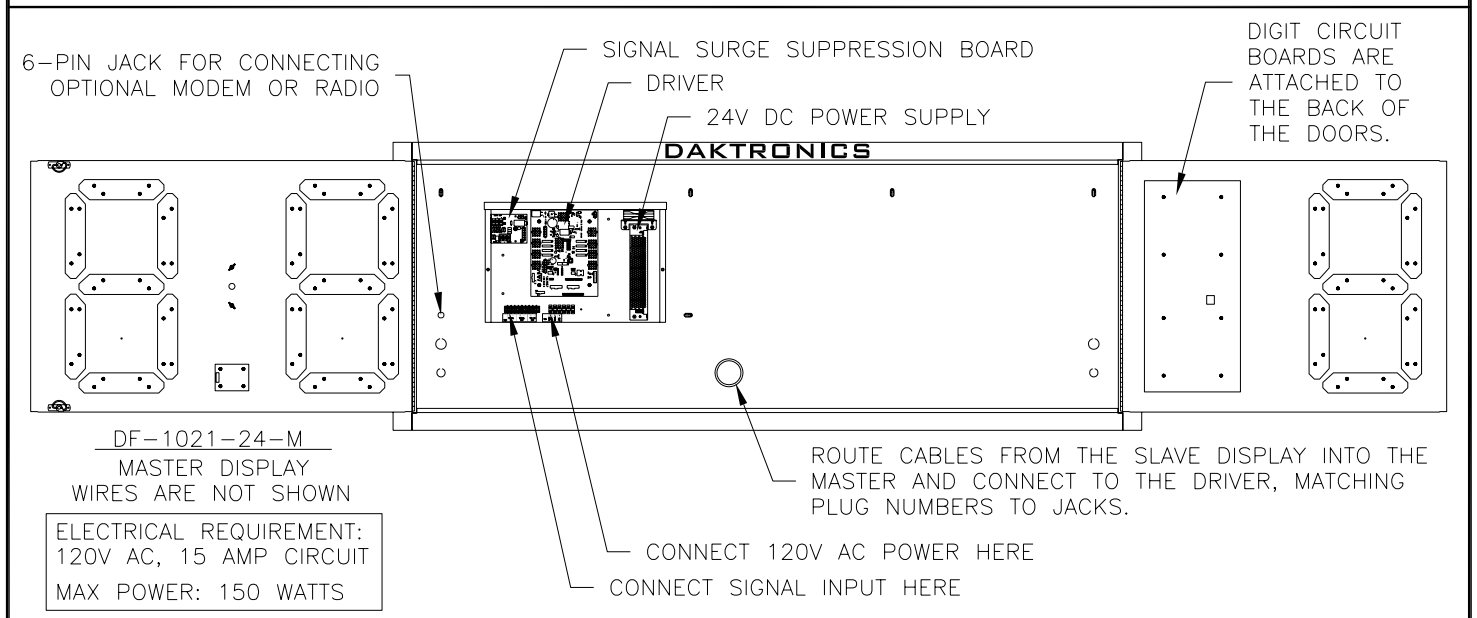
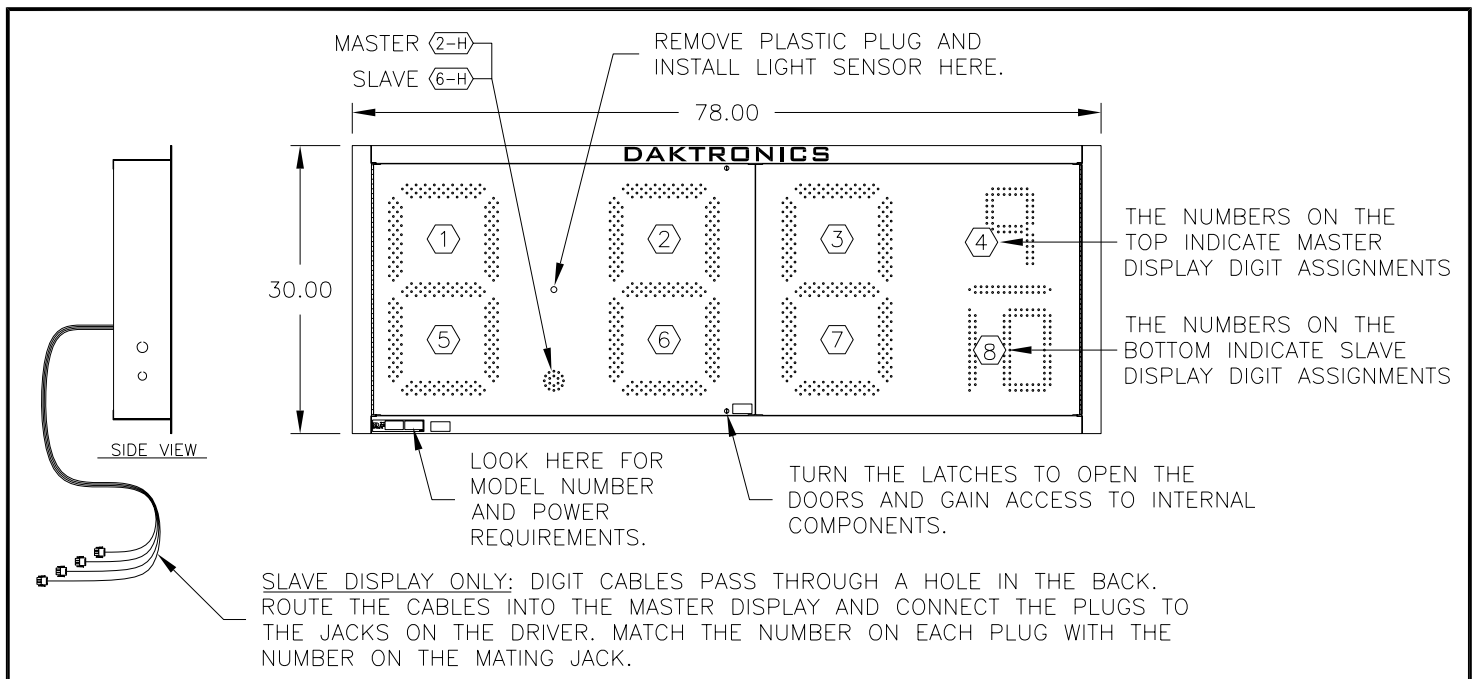
BOTH MASTER (DF-1021-24-M) AND SLAVE (DF-1021-24-S) DISPLAYS HAVE THE SAME EXTERNAL DIMENSIONS AND FEATURES.

THIS DISPLAY IS INTENDED TO BE INSERTED INTO A RECTANGULAR OPENING IN A LARGER SIGN. RECOMMENDED OPENING SIZE IS 75.50" X 27.50" [1918 MM X 673 MM]

THE DISPLAY IS CONSTRUCTED OF 0.063" ALUMINUM. FRONT FLANGE IS 1/8" THICK. ESTIMATED WEIGHT: 90 LB [41 KG]

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DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: DATATIME LED DISPLAYS			
TITLE: MECHANICAL SPECS, DF-1021-24, G3			
DES. BY: AVB		DRAWN BY: A VANBEMMEL DATE: 18 MAR 03	
REVISION	APPR. BY:	1279-R04A-185205	
01	SCALE: 1=20		

01	14 JUN 05	UPDATED DIGIT PANELS PER DESIGN CHANGES.	MGL	
REV.	DATE	DESCRIPTION	BY	APPR.



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DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: DATATIME LED DISPLAYS

TITLE: ELECTRICAL SPECS, DF-1021-24, G3

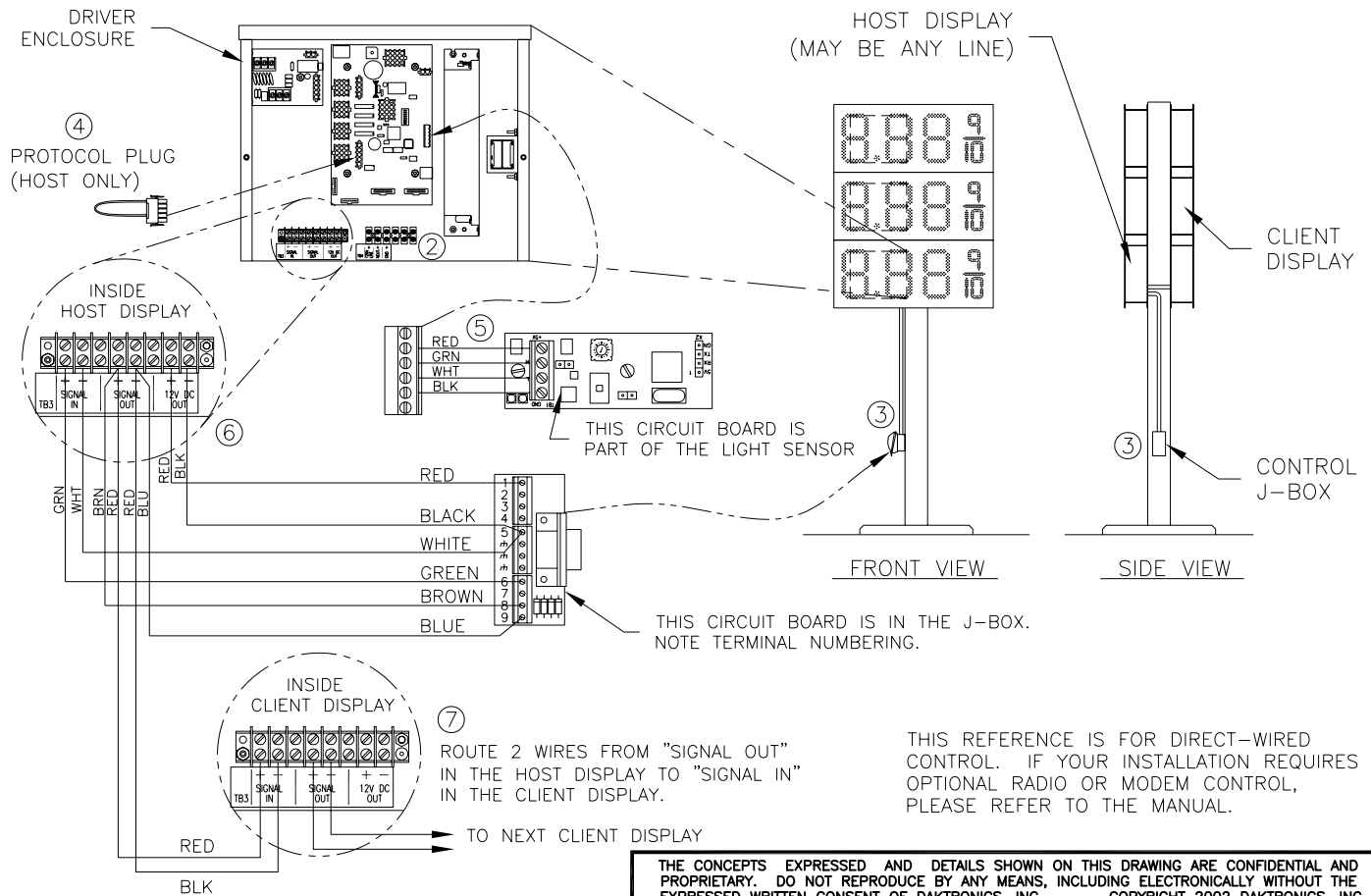
DES. BY: AVB DRAWN BY: A VANBEMMEL DATE: 18 MAR 03

REVISION	APPR. BY:	1279-R04A-185206
01	SCALE: 1=20	

01	14 JUN 05	UPDATED DIGIT PANELS PER DESIGN CHANGES.	MGL	
REV.	DATE	DESCRIPTION	BY	APPR.

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. OUTDOOR J-BOX IS SHOWN.
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. MOUNT THE LIGHT SENSOR INSIDE THE HOST DISPLAY'S FACE PANEL, AND CONNECT THE SENSOR'S CABLE TO THE 6-PIN JACK IN THE DRIVER ENCLOSURE.
6. 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.
7. 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.
8. 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.
9. CONNECT THE DATAMASTER 100 CONTROLLER TO THE J-BOX AND SELECT THE "PRICE DISPLAY" OPTION. OPERATE THE CONTROLLER ACCORDING TO THE DM-100 CONTROLLER REFERENCE, ED-13960, TO SET THE GAS PRICE DATA. DISCONNECT THE CONTROLLER AND CLOSE THE J-BOX WHEN PROGRAMMING IS COMPLETE.



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DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: DATAMASTER LED DISPLAYS			
TITLE: QUICK INSTALL, DF-1020 GAS PRICE DISPLAYS			
DES. BY: AVB		DRAWN BY: A VANBEMMEL	
		DATE: 06 JUN 03	
REVISION	APPR. BY:	1279-R04A-189768	
01	SCALE: NONE		

01	06 APR 05	CHANGED STEP 6, ADDED WIRES TO VIEW.	ATP	
REV.	DATE	DESCRIPTION	BY	APPR.

# Appendix B: DataMaster Frequently Asked Questions (FAQ)

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DataMaster FAQ.....ED-13481





# Appendix C: DataMaster Gasoline Price Quick Installation Reference

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Gasoline Price Displays

Direct-Wire Installation Quick Install Reference .....ED-13965



# **Appendix D: DataMaster Gasoline Price Quick Start Reference**

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DataMaster Gasoline Price Displays Quick Start Reference ..... **ED-13960**

