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InfoNet™ Indoor
Multi-Line Displays
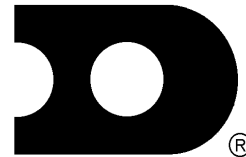**Series G-100 & G-200**

Installation & Maintenance Manual

ED 9848

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Section 1 : Introduction

1.1 How To Use This Manual

This manual is designed to explain the installation of Daktronics InfoNet™, indoor multi-line LED displays controlled by a Venus® 1500 controller. For questions regarding the safety, installation, operation or service of this system, please refer to the telephone numbers listed on the cover page of this manual.

The box below is an illustration of Daktronics drawing numbering system. The drawing number "7087-P08A-69945" is how Daktronics identifies individual drawings. This number is located in the bottom right corner of the drawing. The manual will refer to drawings by the last five digits and the letter preceding them. In the example, the drawing would be referred to as **Drawing A-69945**. All drawings referred to as such will be inserted at the *end of each section*.

```
DAKTRONICS, INC.    BROOKINGS, SD 57006
PROJ:
TITLE:
DES. BY:                    DRAWN BY: DOK          DATE: 04-20-95
        APPR. BY:
        SCALE:    1=80          7087-P08A-69945
```

1.2 Safety Precautions

1. Read and understand these instructions before installing.
2. Be sure that the display is properly grounded.
3. Disconnect power before working on the display.
4. Do not modify the displays or attach any panels or coverings to the display without the express written consent of Daktronics, Inc.
5. Most products are equipped with a 3-wire grounding-type plug, a plug having a third (grounding) pin. This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact a qualified electrician to replace your obsolete outlet. Do not defeat the purpose of the grounding-type plug.

1.3 Network Concepts

The concept of using LED displays as a cost effective, high impact method of communication is rapidly growing throughout many industries and businesses. The reasons for this growth are many, but the need for additional features and complexity of multiple sign installations has emerged, and the Daktronics display systems have been designed to meet those needs. The common thread to most clients' requests is a means of programming and controlling a group of signs from a central control point. Daktronics responded by developing a powerful system of interconnecting and controlling signs. Great care has been taken to design products that will satisfy a wide variety of installations. Some of the design goals of these systems include the following:

- Easy transfer of messages
- The ability to tell a sign in the network which message it should run

- The ability to determine the status of any sign on the network
- The ability to control multiple sign technologies on the same network

All of the programming features would seem insignificant if the installation of the systems could not be accomplished with basic tools and without technical difficulty. Daktronics decided to use the very popular and readily available RJ-11 connector. This connector is also used on modern home and office telephone equipment.

All that is required for signal installation is a standard six (6) conductor modular telephone wire. Tools required for mounting the display depend on the location and size of the display. For some installations, it may be possible to buy pre-terminated telephone cables for use with the displays.

There are four (4) network systems available: RS/232, RS/422, modem and TCP/IP.

1.3.1 RS/232 Network

Reference Drawing: System Riser Diagram; RS/232 .... **Drawing A-91388**

RS/232 (EIA/TIA-232-E) is a standard communication interface that employs a single-ended serial transmission scheme that uses a maximum cable length of 10 meters (30 feet). This interface was designed for computer communication at short distances. All computers have an RS/232 communications port.

1.3.2 RS/422 Network

Reference Drawing: System Riser Diagram; RS/422 .... **Drawing A-91387**

RS/422 (EIA/TIA-422-B) is a standard communication interface that utilizes a differential balanced transmission scheme which uses a typical maximum cable length of 1.2 km (approximately 4000 feet). The main advantage to RS/422 over RS/232 is the longer cable length that is possible. A signal converter is needed to convert the computer's RS/232 to RS/422.

1.3.3 Modem Network

Reference Drawing: System Riser Diagram; Modem .... **Drawing A-91386**

The modem is a standard communication interface that utilizes standard phone transmission lines. The phone company assigns each phone line a number that the modem uses to communicate between the controller and the display.

1.3.4 TCP/IP Network

Reference Drawing: V1500 System Riser Diagram .... **Drawing A-93904**

The TCP/IP protocol is an interface allowing the Ethernet network card (installed in the operator's computer) to communicate with the serial server via a Local Area Network (LAN). Information for the individual displays is distributed from the serial server's RS/232 output.

1.4   Display Overview

The Daktronics Indoor LED displays have been designed and manufactured for performance, reliability, easy maintenance and long life. The displays consist of an array of LED pixels. The configuration of the LED pixels is dependent on the family of LED displays. The standard character is seven pixels high by five pixels wide.

A typical system consists of a Windows® based personal computer (PC) running Venus® 1500 software and one or more displays. The PC controls one or more multi-line displays. The displays are offered as single-face displays, which are single-sided stand-alone units. They can become double-faced by mounting them back-to-back with a second unit.

The Venus 1500 is a software package which runs under Windows 3.1x or Windows 95® operating systems on an IBM®-compatible computer. Refer to the Venus 1500 controller manual, **ED-12717**, for installation and maintenance of the Venus 1500 editing station.

InfoNet multi-line displays are character-based indoor LED displays which are available in monochrome red or tri-color (red, green and amber) characters. Daktronics offers multi-line displays with a 2.1" character in four (4) different lengths. The InfoNet model numbers are described as follows: **G-X00-L-7xCCC-2.1**

G	=	InfoNet Line Display
X00	=	100 = Indoor Monochrome Red
L	=	Number of Lines
7	=	7 rows high
CCC	=	The number of columns long (120, 160, 200 and 240 are available)
2.1	=	2.1 Character Height

1.5   Part Definitions

Com Port: A *Com Port* is a connector on the back of the controller PC. The Com Port is used to control the sign *network* through either a 9 or 25 pin serial connector.

Display Configuration: *Display configuration* refers to a display's model number, address, etc. This information will be automatically displayed when the display is powered up. Display configuration is as follows:

1. Output Test (DDD's)
2. Display Model Number (i.e. G-100-3-7x120-2.1)
3. Firmware Version
4. COM1 Configuration (typically V1500)
5. COM2 Configuration (either DataView™ or RTD)
6. Line Interrupt Rate
7. Display Address--displayed in binary code (i.e. 001)
8. Sign Name
9. Modem present (only if modem is installed)

Flipped Cable: The *flipped cable* is a six (6) conductor phone cable. Pin 1 of connector A connects to pin 6 of connector B.

LAN: Local Area Network

Loop Back Test: The *loop back test* is a troubleshooting test which connects the output to the input. Contact Daktronics customer service for this test.

Module: A module is one unit of the display.

Network: A *network* consists of multiple signs connected to each other. Up to 240 Venus 1500 controlled displays can exist on one network.

RS/232: *RS/232* is a standard PC communication type with a maximum cable length of 25 feet (7.62 meters).

RS/422: *RS/422* is a standard differential communication type with a maximum cable length of 4000 feet (1.2 kilometers).

RX LED: A *RX LED* is a LED on the signal converter which indicates if the display is sending data back to the *signal converter*.

Serial Server: A *serial server* is a device used to obtain information off of a *LAN*.

Sign Address: The *sign address* is an identification number assigned to each sign of a *network*. The control software uses the address to locate and communicate with each display. Displays which are on the same network cannot have the same address.

**Signal
Cable Tester:** The *signal cable tester* is used to test the cable connections and data communication

**Signal
Converter:** The *signal converter* is a Daktronics supplied unit which converts the data from *RS/232* to *RS/422*. The signal converter is used in RS/422 systems.

TCP/IP: The *TCP/IP* (Transmission Control Protocol/Internet Protocol) is a communications protocol used for *LAN*'s.

TX LED: A *TX LED* is a LED on the serial converter which indicates the control PC is sending data to the display.

Venus 1500: The *Venus 1500* is a Daktronics designed, Windows based software used to run the displays.

Section 2 : Mechanical Installation

 Note: Daktronics engineering staff must approve *any* changes made to the display. If any modifications are made, detailed drawings of the changes *must* be submitted to Daktronics for evaluation and approval, or the warranty may be void.

2.1   Support Structure Design

Support structure design depends on mounting methods, display size and weight. The structure design is critical and should be done only by a qualified individual. It is the customer's responsibility to ensure that the structure and the connectors are adequate. *Daktronics is not responsible for the installations or the structural integrity of support structures done by others*.

2.2   Display Ventilation Requirements

Fresh air inlets and exhaust vents should not be obstructed in any way. Using the Daktronics suggested mounting methods will ensure proper ventilation. If you are using a different mounting method, consult a Daktronics sales representative for clearance requirements regarding your particular display. If ventilation requirements are not met, the display warranty will be void.

2.3   Display Mounting

It is the customer's responsibility to ensure that the installation will meet local standards. The mounting hardware must be capable of supporting all components to be mounted. *Daktronics is not responsible for the installations or the structural integrity of support structures done by others.*

Daktronics recommends either a wall mount, a recessed mount or a hanging mount method. Remember to have *all* mounted displays inspected by a qualified structural engineer.

2.3.1   Hanging Mount

Reference Drawing: Shop Drawing, G-***-2-7x***-2.1 ......**Drawing A-95540**

The multi-line InfoNet has two pre-drilled holes in the top of the display for use in the hanging mounting method. To hang a display:

1. Remove the two retaining screws from the top of the display using a Philips screw driver.
2. Slide the provided sealing washer over the threads of each eye bolt.
3. Insert the eye bolts into the pre-drilled holes on the display (refer to **Figure 1**).
4. Hand tighten the eye bolts.

Note: *Hanging the display without using the supplied eye bolts will negate the warranty. Attaching or hanging anything from the display will render the warranty null and void.*

Figure 1: Eye Bolt Insertion

2.3.2 Wall Mount

Reference Drawings: Shop Dwg, G-***-2-7x***-2.1 .... **Drawing A-94764**
Shop Dwg, G-***-3-7x***-2.1 .... **Drawing A-94765**
Shop Dwg, G-***-4-7x***-2.1 .... **Drawing A-94766**
Shop Dwg, G-***-5-7x***-2.1 .... **Drawing A-94767**
Shop Dwg, G-***-6-7x***-2.1 .... **Drawing A-94768**
Mtg Methods, G-***-*-7x***-2.1 .... **Drawing A-95540**

The multi-line has holes on the back of the display for the attachment of the wall mounting clips. Using the #8-32 screws provided with the display, attach the mounting clips to the rear of the display as shown (refer to **Figures 2** and **3**). *Use all the supplied clips.*
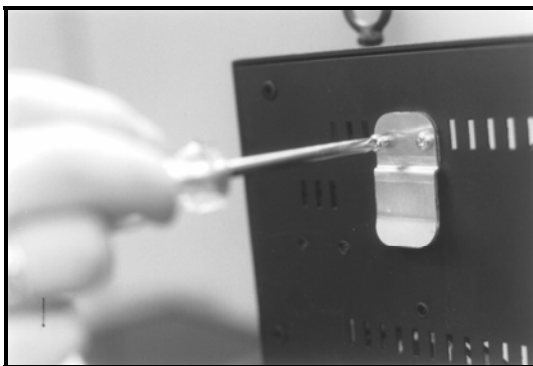
Figure 2: Wall Mounting Clip Attachment
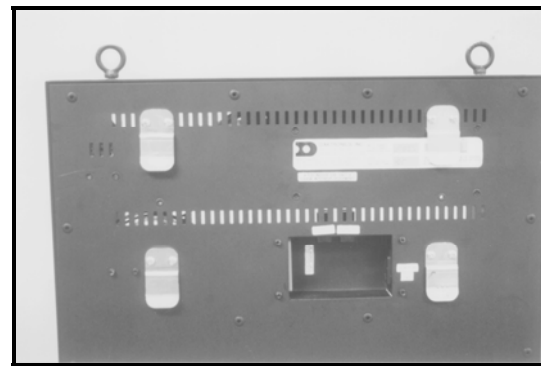
Figure 3: Mounting Clip Placement; Rear View

1. Mount the wall bracket to the wall where the display is to be located. Refer to the referenced shop drawings for your model of display to determine the location of the bracket with respect to the display. *Be sure the bracket is mounted to sufficiently support the weight of the display. Have all mountings inspected by a qualified structural engineer.*
2. Set the display on the wall mounted bracket. The bracket fits onto the wall mounting clips as shown in the reference drawings.

2.3.3 Recessed Mount

Reference Drawings: Recessed Mounting .... **Drawing A-95847**

Refer to **Section 3** for information on connecting power and signal to the sign.

1. Determine the location for the display.
2. From **Drawing A-95847**, determine the size of the opening required for your sign, i.e. a G-100-3-7x160-2.1 model display would require an opening 53 ½ inches wide by 18.05 inches tall.
3. Cut the opening for the display. For adequate ventilation of the sign, the opening must be at least 3 ¼ inches deep.
4. Remove the face panel from the sign as described in **Section 4.1**. The pre-drilled holes in the mounting channel (on the rear side of the display) will now be visible.
5. Position the display in the opening.
6. Attach the display to the wall using the pre-drilled holes (refer to **Drawing A-95847**). Additional holes may be drilled to ensure adequate support.
7. Attach the face panel and power up the display.

Section 3 : Electrical Installation

3.1   Signal

3.1.1   Cables

The six conductor connector used in the network is an industry standard, RJ-11. This connector can be found on many telephones.

The cable used in the network is a standard flat six conductor telephone cable (**standard flipped cable**). Refer to **Figure 4**. This cable has one end that is the mirror image of the other end (i.e. the cable is flipped). Refer to **Figure 5** for a standard flipped cable.
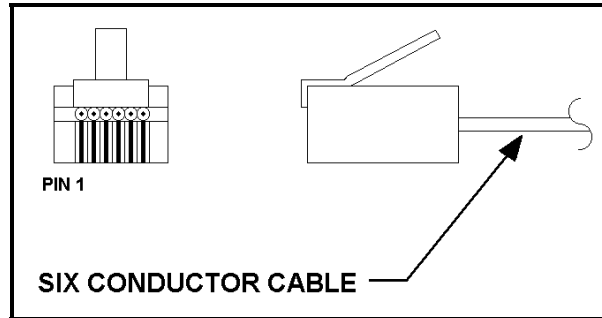
Figure 4: Six Conductor RJ-11 Connector and Cable

Notice in **Figure 5** that the color code on one connector must be made the opposite on the other connector. When installing a network, it is not easy to remember in which direction the previous end was oriented. One simple way to avoid confusion is to standardize the color code as one color for the connector going into the output of a sign and the opposite color for a connector going into the input of a sign. This will help ensure correct cabling since cables are always installed from the output jack of one sign to the input jack of the next sign.
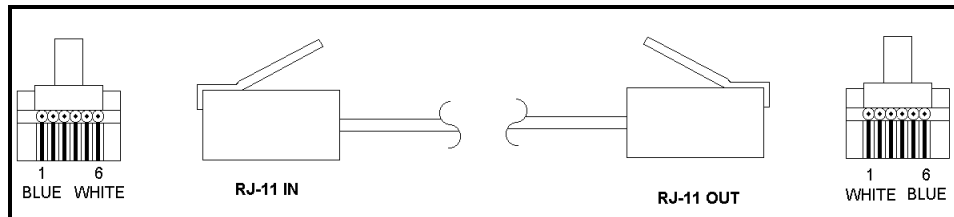
Figure 5: Flipped Cable with RJ-11 Connectors

3.1.2 Installing an RJ-11 Connector

Installing an RJ-11 connector on the end of the six conductor cable is a simple task when the correct tools are used. The RJ-11 crimping tool (Daktronics part number TH-1033) performs two separate steps.
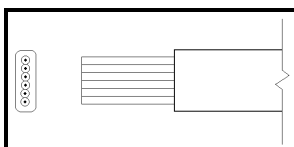
Figure 6: Wire with Outer Jacket Stripped

First, use the crimping tool to strip the outer insulation from the inner wires. This does not result in bare wires since only the gray outer jacket is removed. After correct stripping, the wire will appear as shown in **Figure 6**.

The crimping tool is then used to crimp the RJ-11 connector onto the cable. The RJ-11 connector is locked into a special socket in the tool. The stripped wire is inserted into the RJ-11 connector. Finally, the tool is squeezed like a pliers to crimp the connector onto the wire. This completes the installation of an RJ-11 connector onto the wire.

3.2   Power

3.2.1   Power Requirements

Reference Drawings: Shop Dwg, G-***-2-7x***-2.1 .... **Drawing A-94764**
Shop Dwg, G-***-3-7x***-2.1 .... **Drawing A-94765**
Shop Dwg, G-***-4-7x***-2.1 .... **Drawing A-94766**
Shop Dwg, G-***-5-7x***-2.1 .... **Drawing A-94767**
Shop Dwg, G-***-6-7x***-2.1 .... **Drawing A-94768**

Refer to the referenced drawings (found at the end of **Section 2**) for voltage and current requirements. The displays are powered by a 120VAC single phase outlet.

Do not connect the display to any voltage other than that listed on the Daktronics product label attached to the back of the display.

3.2.2   Grounding

Proper grounding is necessary for reliable equipment operation and provides some protection to the equipment from damaging electrical disturbances. The displays are supplied with a power cord which contains an earth ground conductor. Make sure to plug this cord into a grounded outlet. If the proper grounding methods are not followed, the warranty will be void.

Note: Displays must be earth grounded according to local electrical code.

3.2.3   Power Connection – Pluggable Cord Connected Displays

The multi-line displays are supplied with a six (6) foot power cord.

The socket-outlet should be installed near the equipment and be easily accessible.   Plug the power cord into the socket as shown in **Figure 7**.
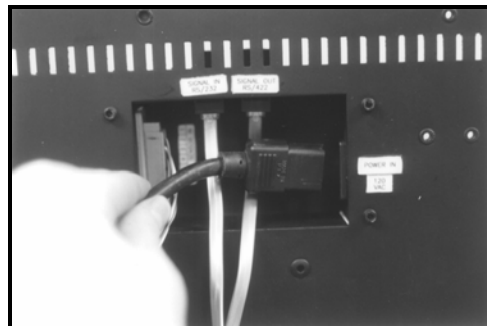

Figure 7: Power Cord Connection

3.3   Computer to Sign

3.3.1   RS/232 System

Reference Drawing: System Riser Diagram; RS/232 ....**Drawing A-91388**
Shop Dwg, G-***-2-7x***-2.1 ....**Drawing A-94764**
Shop Dwg, G-***-3-7x***-2.1 ....**Drawing A-94765**
Shop Dwg, G-***-4-7x***-2.1 ....**Drawing A-94766**
Shop Dwg, G-***-5-7x***-2.1 ....**Drawing A-94767**
Shop Dwg, G-***-6-7x***-2.1 ....**Drawing A-94768**

A RS/232 system connects the first sign directly to the computer with an adapter cable. The adapter cable comes with both a 9 pin and a 25 pin connector.
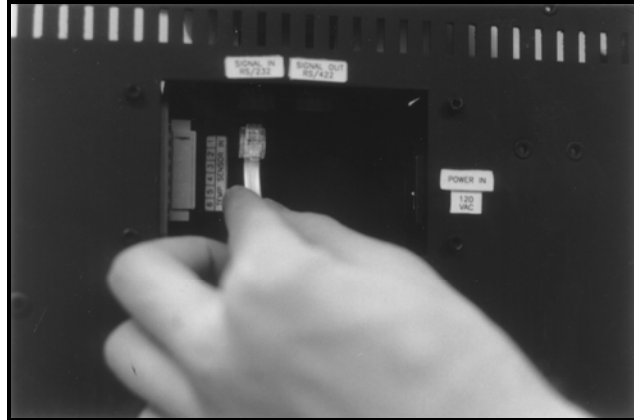
Figure 8: Input Signal Cable Connection

1. Plug the 9 pin or 25 pin connector (depending on your PC) to the PC's RS/232 serial COM port.

2. Plug one end of the phone cable into the adapter and the opposite end into the "RS/232 IN" jack on the rear of the display (refer to **Figure 8**).

The "RS/232 IN" jack's pin out is as follows:

Pin	Function
1	RTS_OUT-P
2	RESET_OUT-P
3	TX_OUT-N
4	GND-N
5	RX_IN-N
6	DCD_IN-P

3.3.2   RS/422 System

Reference Drawing: System Riser Diagram; RS/422 ....**Drawing A-91387**
Shop Dwg, G-***-2-7x***-2.1 ....**Drawing A-94764**
Shop Dwg, G-***-3-7x***-2.1 ....**Drawing A-94765**
Shop Dwg, G-***-4-7x***-2.1 ....**Drawing A-94766**
Shop Dwg, G-***-5-7x***-2.1 ....**Drawing A-94767**
Shop Dwg, G-***-6-7x***-2.1 ....**Drawing A-94768**

A RS/422 system requires a signal converter to connect the first sign to the computer.

1. Plug the serial cable's 25 pin connector into the signal converter as shown in **Figure 8**.
2. Plug either the 9 pin or the 25 pin connector (depending on your PC) into the RS/232 COM port to be used.

3. Plug the signal converter's power cord into a 120 VAC grounded outlet.
4. Plug a flipped phone cable into the "RS/422 OUT" of the signal converter and the opposite end into the "RS/422 IN" of the first display.

The "RS422 IN" jack's pin out is as follows:

Pin	Function
1	N.C.
2	D1OUT-P
3	D1OUT-N
4	D1IN-P
5	D1IN-N
6	N.C.

3.3.3 Modem System

Reference Drawing: System Riser Diagram; Modem .... **Drawing A-91386**

A modem system uses a standard phone line to connect the computer to the sign. At the display, simply plug in a phone cable from the J-box into the jack labeled "PHONE IN" (the plug location is at the same point as shown in **Figure 10**).

At the PC, hook up the PC modem per the manufacturer's instructions, then follow the Venus 1500 manual (**ED-12717**) to determine the PC modem's configuration.

3.3.4 TCP/IP or LAN System

Reference Drawing: V1500 System Riser Diagram............ **Drawing A-93904**

A LAN system requires a computer running on a LAN.

1. Connect the serial server to the LAN. The server has an RS/232 output just as a PC would.
2. Follow the steps for setup of a RS/232 system.

3.4   Sign to Sign Connections

Reference Drawings: RS/422 System Riser................................. **Drawing A-91387**
RS/232 System Riser................................. **Drawing A-91388**

The sign-to-sign connections are the same for the RS/232 system, RS/422 system, modem system and TCP/IP system. Refer to the riser diagrams at the end of **Section 2**.

When wiring a sign to sign network, the cable and connectors discussed earlier in this section are used. Pay special attention to the information regarding flipped cables to help ensure a successful installation. The best method of wiring the signs together is to start at the first sign, as it is designated to begin the network.
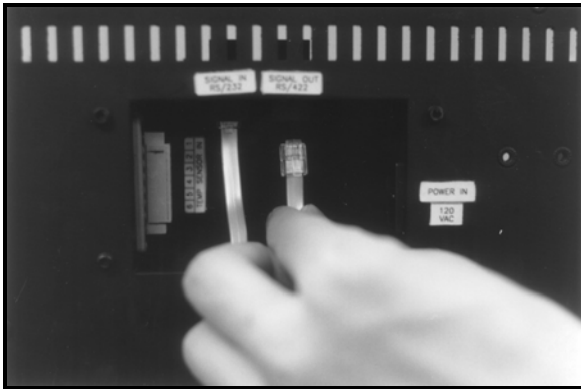
Figure 9: Output Signal Cable Connection

1. Plug the cable into the "SIGNAL OUT" output jack of the first sign (refer to **Figure 9**) and the other end of the cable into the input jack of the next sign.

2. Continue this procedure throughout the network. When the wiring is complete, the last sign will have nothing in the output jack.

Section 4 : Maintenance and Troubleshooting

IMPORTANT NOTES:
1. **Disconnect power before any repair or maintenance work is done on the display!**
2. **Any access to internal display electronics must be made by qualified service personnel.**

The multi-line InfoNet displays are FRONT ACCESS. The components within the displays are not field repairable. In most cases, it is easiest to completely replace the failed part or return it to Daktronics for repair.

Reference Drawings: Schematic; G-***-2-7120/7200/72400-2.1 ....**Drawing B-94385**
Schematic; G-***-2-7160-2.1 ....**Drawing B-94386**
Schematic; G-***-3-7160-2.1 ....**Drawing B-94239**
Schematic; G-***-3-7120/7200/7240-2.1 ....**Drawing B-94240**
Schematic; G-***-4-7160-2.1 ....**Drawing B-94387**
Schematic; G-***-4-7120/7200/7240-2.1 ....**Drawing B-94388**
Schematic; G-***-5-7160-2.1 ....**Drawing B-94390**
Schematic; G-***-5-7120/7200/7240-2.1 ....**Drawing B-94392**
Schematic; G-***-6-7120/7200/7240-2/1 ....**Drawing B-93896**
Schematic; G-***-6-7160-2.1 ....**Drawing B-93956**

4.1   Opening the Display

Remove the socket head screws from the face panel using a 9/64" Allen wrench (refer to **Figure 10**).
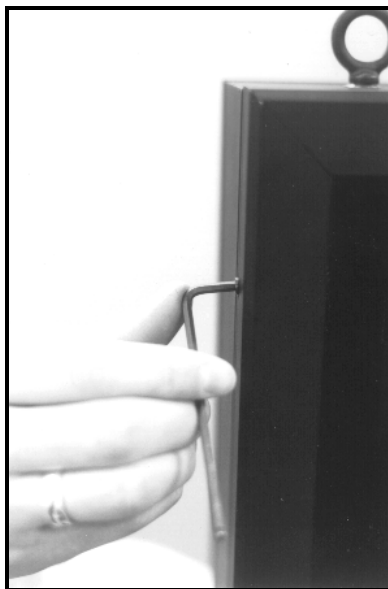

Figure 10: Removing the Screws from the Face Panel

Gently pull the face panel from the body of the sign. The display opens as shown in **Figure 11**. The LED module panels can now be seen.

Figure 11: Display, Face Panel partially removed.

4.2   Accessing the Interior of the Display

1. Using a #2 Philips screwdriver, turn the screws securing the LED module panel top and bottom to the cabinet of the display one-quarter turn counter-clock-wise. The screws are designed to remain in the LED module flanges, but release from the cabinet.
2. Gently tilt the LED module panel downward from the body of the display. It will come forward as a complete unit. **Note:** Use caution when removing the LED module panel. The ribbon cable connecting the LED's to the inside of the display will still be connected.
3. To completely remove the LED module panel from the cabinet of the display, spread the clasps of the 40 pin connector on the rear side of the panel. Gently pull the cable to disconnect it (refer to **Figure 12**).
4. Disconnect the four-pin power connector. The power cable is released by squeezing the tabs on each side of the connector (refer to **Figure 13**).

Figure 12: LED Module Ribbon Cable Removal

Figure 13: Disconnection of LED Module Panel Power Cable

4.3   Display Interior

Once the LED module panel is removed, the display interior will be visible. Various internal components, including the display controller, the modem (when applicable), the light detector, the transformer, LED modules, the power supplies and the buzzer are now accessible for repair or replacement.

4.3.1   LED Module Replacement

If any LED modules fail, the recommended procedure is to replace the failed module or send it to Daktronics or a certified dealer for repair. Refer to **Section 4.7** for information on packaging components for shipment.
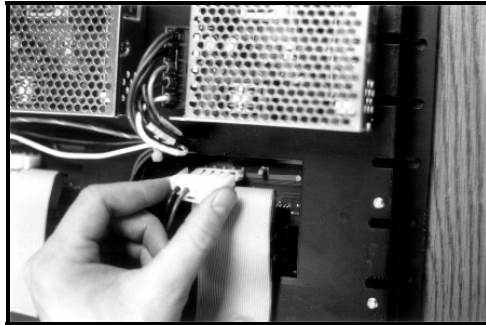

Figure 14: Disconnection of Power Supply from a LED Module

To remove an individual LED module:
1. Disconnect the signal connection from the failed module.
2. Gently pull the 10-pin ribbon cable from the failed module.
3. Disconnect the power supply (refer to **Figure 14**).
4. Press the tabs on each side of the four-pin connector to release it.

Each module is held in place by #6 screws. Using a Philips screwdriver, remove the module screws from the front.

Gently pull the filed module from the panel. Reverse the previous steps to attach a new module.

4.3.2   Power Supply Replacement

Power to the LED modules is provided by small 5V power supplies. Each power supply can support up to four (4) modules. They are located on the rear side of the LED module panel.

To remove a power supply that has failed, first remove the LED module on the opposite side of the failed power supply as described in **Section 4.3.1**.

Each power supply is secured to the module panel with two (2) 3x10 metric screws as shown in **Figure 15**. Use a #1 Philips head screwdriver to remove the screws.
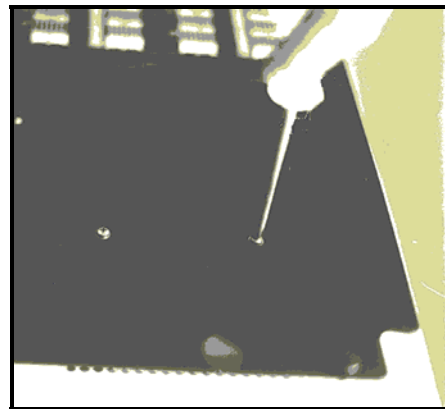

Figure 15: Loosening of Power Supply Screws

Disconnect the power cables as shown in **Figure 16**. The power supply is now fully released and ready for replacement. Follow the previous steps in reverse order to reattach the new power supply. Be sure to connect the power wires to the correct locations. Refer to your display's schematic for the proper wiring configuration.
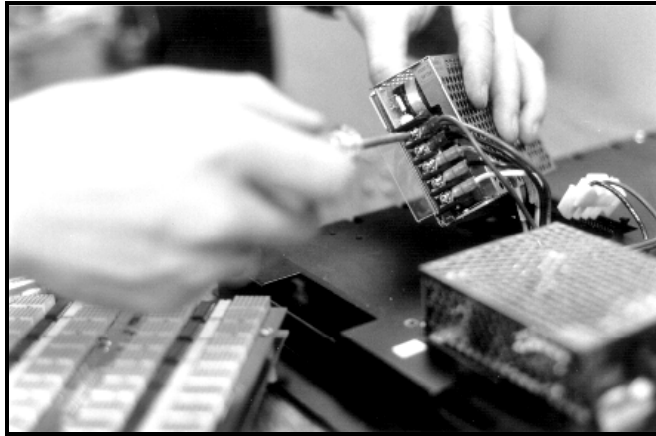
Figure 16: Power Supply Cable Connections

4.3.3 Display Controller

The display controller is mounted to the rear of the display cabinet in the lower left corner (2 line displays have the controller located in the upper left side). The controller receives information from the computer, interprets it and activates the appropriate LED's on the display.
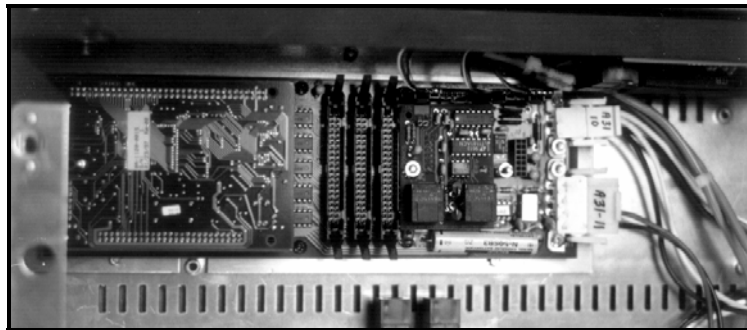

Figure 17: Display Controller; Front View

The
display controller also has a set of eight (8) switches (located on the left side of the controller) by which an address can be set using standard binary code (refer to **Section 4.4**). Refer to **Section 1.5** for information on sign addressing.

To replace a failed controller:
1. Disconnect all attached cables.   Take note of their orientation.
2. Remove all #6 connecting screws. *If the address switches are used, take note of the switch configuration and set the same address on the new controller.*
3. Attach the new controller using #6-32 screws.

4.3.4 Modem

If a modem was ordered with the display, it will be mounted inside the display cabinet, near the controller. The modem is used in lieu of a direct communication line with the computer.

The modem is held in place with the use of plastic rails known as a "snap track." To replace a failed modem, disconnect all attached cables and carefully "snap" it out of the rails. Insert the new modem by first laying one end into the rails of the "snap track," then pivot it up and snap into place.

4.3.5 Light Detector

A light detector is located in the bottom of the left flange. The light detector is used to measure light levels outside the display and, when enabled through the Venus 1500 software, adjusts the brightness level of the LED's appropriately.

The light detector is mounted on a support flange. To replace the light detector, first remove the #6 screws attaching the support flange to the inside of the display. Disconnect the light detector's wire to the display controller. The light detector is attached to the support flange with #4 screws, standoffs and nuts. Remove the failed light detector from the support flange. Reverse these steps to attach the new light detector.

4.3.6 Fuse

The MDL-7 fuse is located in the left end of the cabinet, near the display controller (refer to **Figure 18**).

To replace the fuse, push and turn the fuse cap, insert the new fuse into the cap and reattach.

Figure 18: Fuse

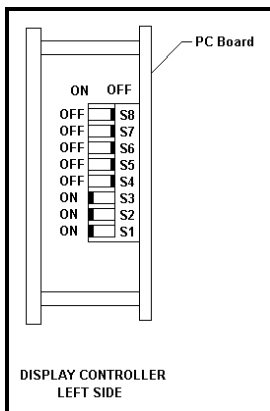### 4.4 Controller Address and Test Mode

Figure 19: DIP Switches

The controller has a set of "DIP" switches on the side of the controller as shown in **Figure 19**. These DIP switches set the hardware address. When replacing a controller board, be sure to set the DIP switches in the same address configuration as the defective controller.

Note: A test mode can be activated by setting the DIP switches to address 0 (flip all the switches toward the numbers on the circuit board). The display's power must be downed, then reconnected to run the test mode.

Address	Switch 1	Switch 2	Switch 3	Switch 4	Switch 5	Switch 6	Switch 7	Switch 8
1	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF
2	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF
3	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF
4	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF
5	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF
6	OFF	ON	ON	OFF	OFF	OFF	OFF	OFF
7	ON	ON	ON	OFF	OFF	OFF	OFF	OFF
8	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF
9	ON	OFF	OFF	ON	OFF	OFF	OFF	OFF
10	OFF	ON	OFF	ON	OFF	OFF	OFF	OFF

| 11 | ON | ON | OFF | ON | OFF | OFF | OFF | OFF |
| 12 | ON | ON | ON | ON | ON | ON | ON | ON |

4.5   Troubleshooting

This section contains some symptoms that may be encountered with the LED displays. Possible remedies are provided. This list does not include every possible problem, but does represent some of the more common situations that may occur.

Symptoms/Conditions	Possible Causes/Remedy
Cannot communicate with the display	• Check flipped phone cable connections. • Check display configuration. • Check Venus 1500 configuration • Check signal converter power and TX LED's. • Contact Daktronics customer service.
Display will not run.	• Check power cord. • Check the fuse. • Power down then power up the display (reset) • Contact Daktronics customer service
Entire display is garbled or a section of the display is bad.	• Power down, then power up display (reset) • Contact Daktronics customer service.
Section of the network of displays is not working.	• Bad input on first bad display. • Bad output on last good display. • Switch the suspected bad display with a known good display. • Contact Daktronics customer service.

Note: The display configuration will be shown on power up and will contain the following information:

1. Output Test (DDD's)
2. Display Model Number (i.e. G-100-3-7x120-2.1)
3. Firmware Version
4. COM1 Configuration (typically V1500)
5. COM2 Configuration (either DataView or RTD)
6. Line Interrupt Rate
7. Display Address--displayed in binary code (i.e. 001)
8. Sign Name
9. Modem Present (only if a modem is connected)

4.6   Replacement Parts

Part Description	Daktronics Part No.
Display Controller (RS232)	0A-1156-0013
Display Controller (RS422)	0A-1156-0014
Display Internal Modem	0P-1146-0003
Module; Mono. Red	0P-1156-0002
Module; Tri-Color	0P-1156-0001
Light Detector	0P-1151-0002

Power Supplies	A-1499
Buzzer	DS-1357
120V Transformer	T-1072
Fuse, MDL-7	F-1031
Power Cord	W-1181
Module Ribbon Cable	W-1362
Controller Ribbon Cable Set	
2 Line Display	0A-1156-0069
3 Line Display	0A-1156-0070
4 Line Display	0A-1156-0071
5 Line Display	0A-1156-0072
6 Line Display	0A-1156-0073
"Door Split" Ribbon Cable Set	
2 Line Display	0A-1156-0074
3 Line Display	0A-1156-0075
4 Line Display	0A-1156-0076
5 Line Display	0A-1156-0077
6 Line Display	0A-1156-0078
Signal Converter	0A-1127-0237
Signal Converter Serial Cable	W-1363
Serial Server	A-1557
LAN Patch Cable	W-1383
PC DB9-RJ11	0A-1115-0042
PC DB25-RJ11	0A-1115-0044
25' RJ-11 Cable	W-1265
100' RJ-11 Cable	0A-1146-0002
500' RJ-11 Cable	0A-1146-0003
1000' RJ-11 Cable	0A-1146-0004
Six Conductor Signal Wire	W-1368
RJ-11 Connector	P-1071
Crimp Tool	TH-1033
Cable Tester	0A-1146-0005
Venus 1500 Manual	ED-12717
Temperature Sensor	0P-1151-0003
Temperature Sensor Cable	W-1234

4.7   Unit Exchange/Replacement Procedure

Daktronics unique exchange program offers our clients the quickest, most economical way of receiving product repairs. If a component fails, Daktronics will send the customer a replacement. The customer, in turn, sends the failed component to Daktronics. This not only saves money but decreases the time the display is inoperable. Daktronics offers repair and return on a timely basis; in urgent situations, every attempt is made to ship by the fastest transit method available.

1. **Packaging for Return:** Package and pad the item well to prevent damage during shipment. Electronic components, such as printed circuit boards, should either be installed in an enclosure or placed in an anti-static bag before boxing.

Please enclose your name and address along with a list of all the symptoms. Please be as specific as possible.

2. **Driver Packaging Instructions:** Drivers should be placed in a static-free enclosure for return shipping. An anti-static convoluted foam packing is available from Daktronics (part number PK-1135). The shipping box (Daktronics part number PK-1006) should be used along with the foam.

3. **Where to Send:** Contact your local representative prior to shipment to acquire a Return Material Authorization Number (RMA#). This will speed up the repair of your unit.

   When returning defective items under the exchange program, please use the UPS Blue Return Tags found in the package containing the exchange unit sent from Daktronics. This will speed up the transaction and help avoid confusion when the part is returned to Daktronics. **The defective item must be returned within 15 days of receiving a replacement part.** Using the UPS Blue Return Tag immediately will eliminate the possibility of late charges being assessed against your account.

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

   Phone: Toll Free: 1-800-843-9879
   or 1-605-697-4400

   Customer Service Fax: 1-605-697-4444

   E-Mail: helpdesk@daktronics.com

4.8   Daktronics Warranty and Limitation of Liability

Daktronics Warranty and Limitation of Liability information is located in Appendix B. The Warranty is independent of Extended Service agreement and is the authority in matters of service, repair, and display operation.
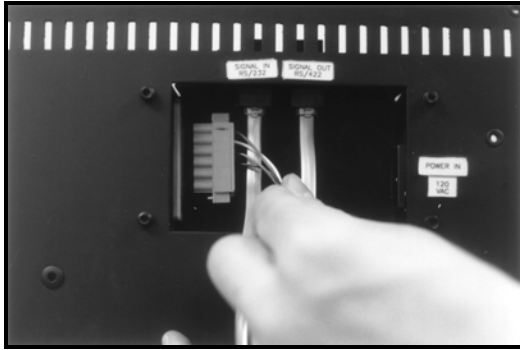
Appendix A: Optional Temperature Sensor

Figure 20: Temperature Sensor Cable Connection

The multi-line InfoNet displays may be ordered with an optional temperature sensor (0A-1151-0002). Follow the supplied mounting instructions to attach the temperature sensor and housing.

The temperature sensor cable connects to the back of the display using the removable green jack (refer to **Figure 20**).

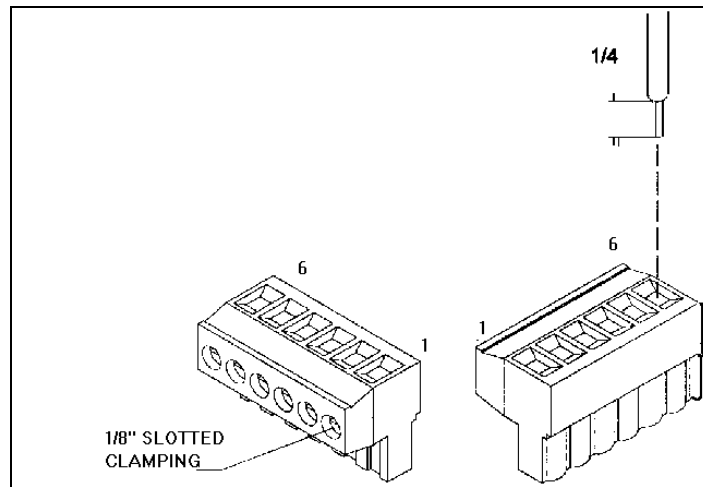The pin orientation of the jack is shown in **Figure 21**.

Figure 21: Pin Orientation

Connect the temperature sensor cable to the jack as follows:

Display	Cable Wires	Temperature Sensor
Pin 1	Green	P
Pin 2	White	N
Pin 3	Red	+V
Pin 4	Black	GND
Pin 5	Bare	N/A

Appendix B: Daktronics Warranty and Limitation of Liability (SL-02374)