

**GalaxyPro™ 34 mm  
AF-3700 Series**

**Installation & Operation Manual**

*ED-17286*

*Rev 2*

*11 December 2007*

**DAKTRONICS**

Fill in the chart with specific information about this display so these details will be readily available when calling for service or replacement parts.

Information needed for technicians and/or Customer Service	Fill in the blank
Location address of the display:	
Model number of the display:	<b>AF-3700 34 mm</b>
Version of software being used: <i>(Right-click on Venus 1500 name in toolbar, choose "About Venus 1500")</i>	<b>Venus 1500 v. _____</b>
Method of communication being used: <i>(See Section 4 for guidance)</i>	
Controller version used in the display:	<b>M3 controller</b>



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# Section 1: Overview of the Displays

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Daktronics GalaxyPro™ AF-3700 series displays are built to display a wide variety of messages with great color depth. This manual provides simple installation, maintenance, and troubleshooting information to ensure the optimal performance of the display. Diagnostic information and parts replacement are also included. Definitions of terms and connectors used in the manual can be found in **Appendix B**.

The diagrams in **Figure 2** and **Figure 3** give an overview of the displays. The first figure shows the front and back views of a typical display. The second figure shows a simplified diagram of basic display set-up.

## 1.1 Display Details

The GalaxyPro® model numbers are described as follows:

<b>AF-3700-RRxCCC-34-RGB-X</b>		
<b>AF-3700</b>	=	Outdoor GalaxyPro display
<b>RR</b>	=	Number of pixel rows high
<b>CCC</b>	=	Number of pixel columns long
<b>34</b>	=	34 mm pixel to pixel spacing
<b>RGB</b>	=	LED Color: R (Red), G (Green), B (blue) (68 billion colors - pixel calibrated)
<b>X</b>	=	SF – Single Face or 2V – Primary/Mirror

The displays are offered as single-face or double-face units. If the display is a double-face setup, the first display is referred to as the primary and the second display is called the mirror. If the second display will be mounted at a distance of more than six feet from the primary display, then two primary displays will need to be utilized.

A module is the building block of the GalaxyPro display. Each module measures 8 pixels high by 8 pixels wide (**Figure 1**). By placing modules side-by-side and on top of one another, a variety of display sizes can be designed and built. Individual modules can be easily removed from the display if required.

A typical display system is run with a Windows® based personal computer (PC) running Venus® 1500 software and one or more displays. Venus 1500 is a software package that runs under Windows 98, ME™, NT® 4.0, 2000, XP, or Vista Home/Professional operating systems on an IBM®-compatible computer. Refer to the Venus 1500 operations manual (**ED-13530**) for installation and operation of the Venus 1500 software.



**Figure 1:** Single Module

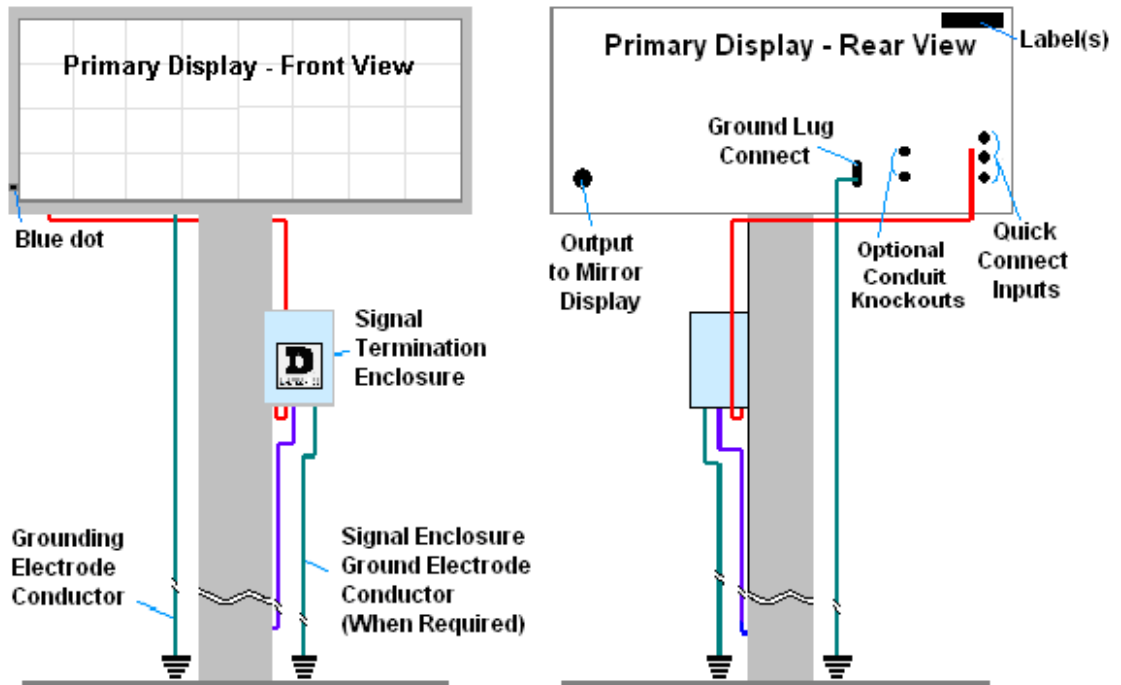


Figure 2: Display Components

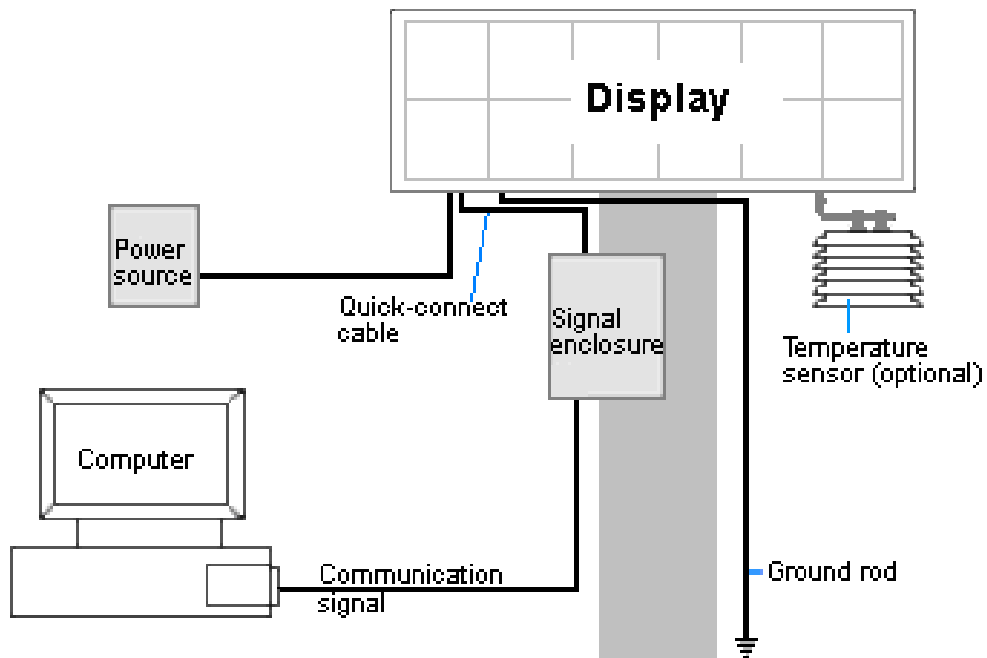


Figure 3: Basic Display Set-up



## Section 2: Mechanical Installation

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Read the Mechanical, Power, and Signal Installation sections before installing the display(s).



Daktronics engineering staff must approve **any** changes that may affect the weather-tightness of 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.

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

### Reference Drawing:

Shop Drawing for specific display size..... Listed in **Appendix A**

## 2.1 Support Structure Requirements

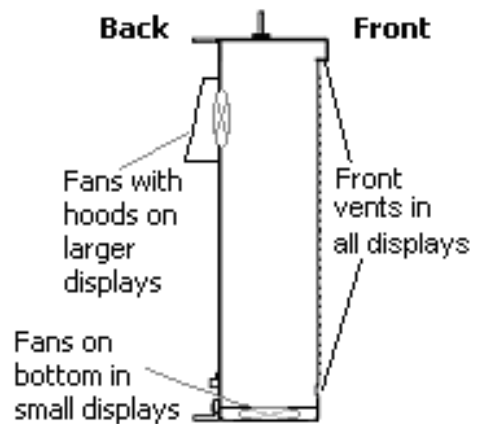


The installer is responsible for ensuring that the mounting structure and hardware are capable of supporting the display, and that the structure follows all local codes.

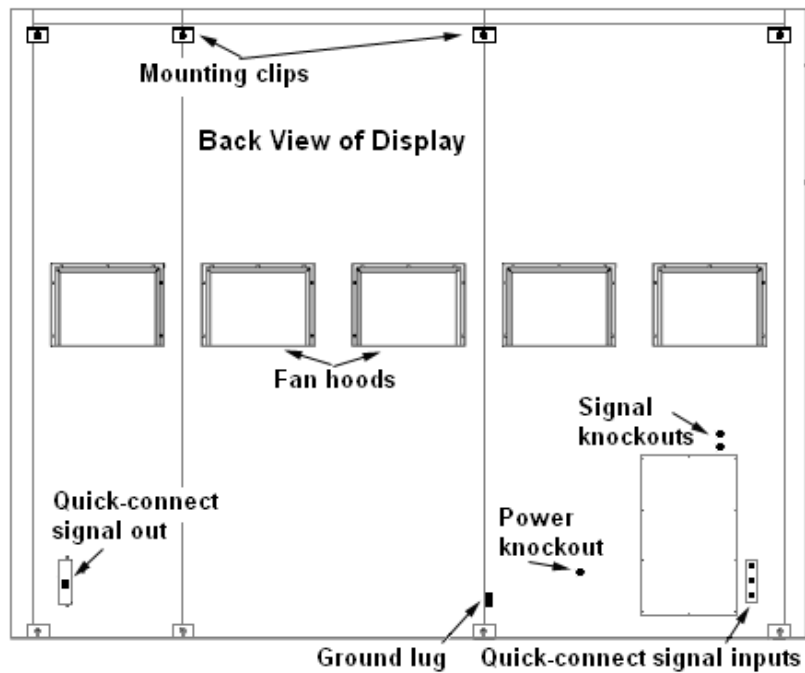
Support structure design depends on the mounting methods, display size, and weight. Because every installation site is unique, no single procedure is approved by Daktronics for mounting GalaxyPro™ displays. The information contained in this section is general information only and may or may not be appropriate for this particular installation. Refer to **Figure 2** and **Figure 3** for basic display set-ups.

Mounting plans need to take into account the ventilation system for the specific display size. In general, the front of all displays needs to be unobstructed to allow for air flow and internal access. Displays 40 pixels high and larger also need unobstructed area in the back to allow for fans expelling air through the hoods (**Figure 4**).

Also keep in mind the location of the mounting clips and the clearance needed for the power/signal terminations on the back of the display (**Figure 5**). Display height and wind loading are also critical factors to be considered. This information can be found in the **Shop Drawing** which was supplied with the order. These are also listed in **Appendix A**.



**Figure 4:** Ventilation of Displays



**Figure 5:** Back View of Typical Display/Section

### Pre-installation Checklist

Verify the following before proceeding with installation:

- The display is in good condition after shipping and uncrating.
- A straight and square mounting frame is provided for the display. Height variation in any four-foot horizontal section may not exceed 1/4-inch.
- Adequate support is provided for the display so that the structure will not yield at any unsupported points after mounting.
- Clearance of 4" of unobstructed space above the top of the display is allowed to remove the eyebolt. **Note:** No clearance is required once the eyebolt is removed.
- Clearance around the display is maintained to allow unobstructed air flow through the vents and fans and to allow access to internal components.

## 2.2 Lifting a Display or Display Section

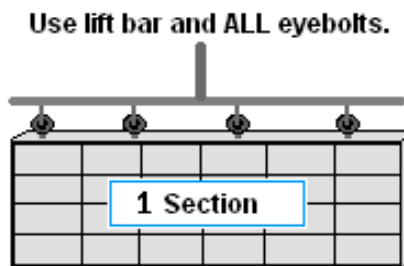


In order to maintain the structural integrity of the display cabinet, the 90° angle between the cabinet and the lifting method must be maintained.

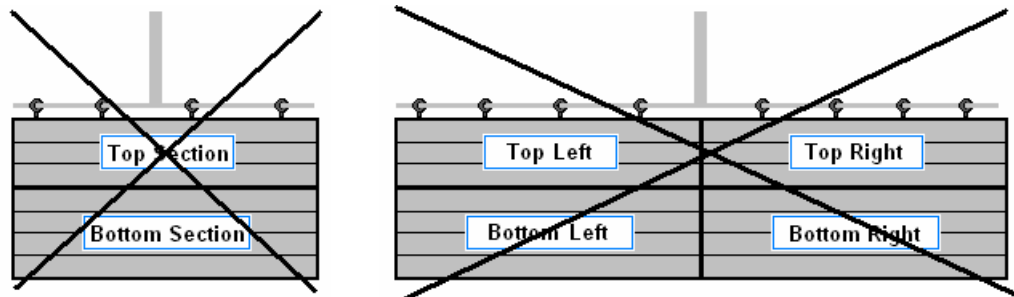
**If damage occurs due to improper lifting procedures, the warranty will be void.**

### General Lifting Notes:

- Lift the display into position on the support structure using a lifting bar and all eyebolts. (Figure 6).
- **Do not** attempt to permanently support the display by the eyebolts.
- **Do not** lift more than one section at a time with the eyebolts.
- Mount bottom section(s) first.



*Figure 6: Correct Lifting Procedure*



*Figure 7: Incorrect Lifting*

Left and right sections may be mounted together **ONLY** if a lifting bar and all eyebolts are used. Left/right signal and ground connections may be easier to make on the ground. Top/bottom or more than two sections should not be mounted together since the eyebolts and connecting hardware are not strong enough for this procedure.

After installation is complete, carefully inspect the display for any holes that may allow water to seep into the display and seal any openings with silicone.

**If the eyebolts on the top of the display have been removed, plug the holes with bolts and the rubber-sealing washer that was removed with the eyebolt unless an overhead structure protects the area.**

Refer to **Section 3** for power routing and to the appropriate communication manual for signal connections to the display.

## 2.3 Sectional Mounting

### Bottom or Bottom-Left Section

Before mounting, connecting the sections, or installation:

1. Remove the first, second and every even module from the top row of the bottom section.
2. Also, remove the first and second module from the bottom left corner of the bottom section - the controller and power termination panel are located there.
3. If an additional section will be added for length, remove the modules in the adjoining columns. An opening is located behind each module in the columns for ribbon cable connection between sections.

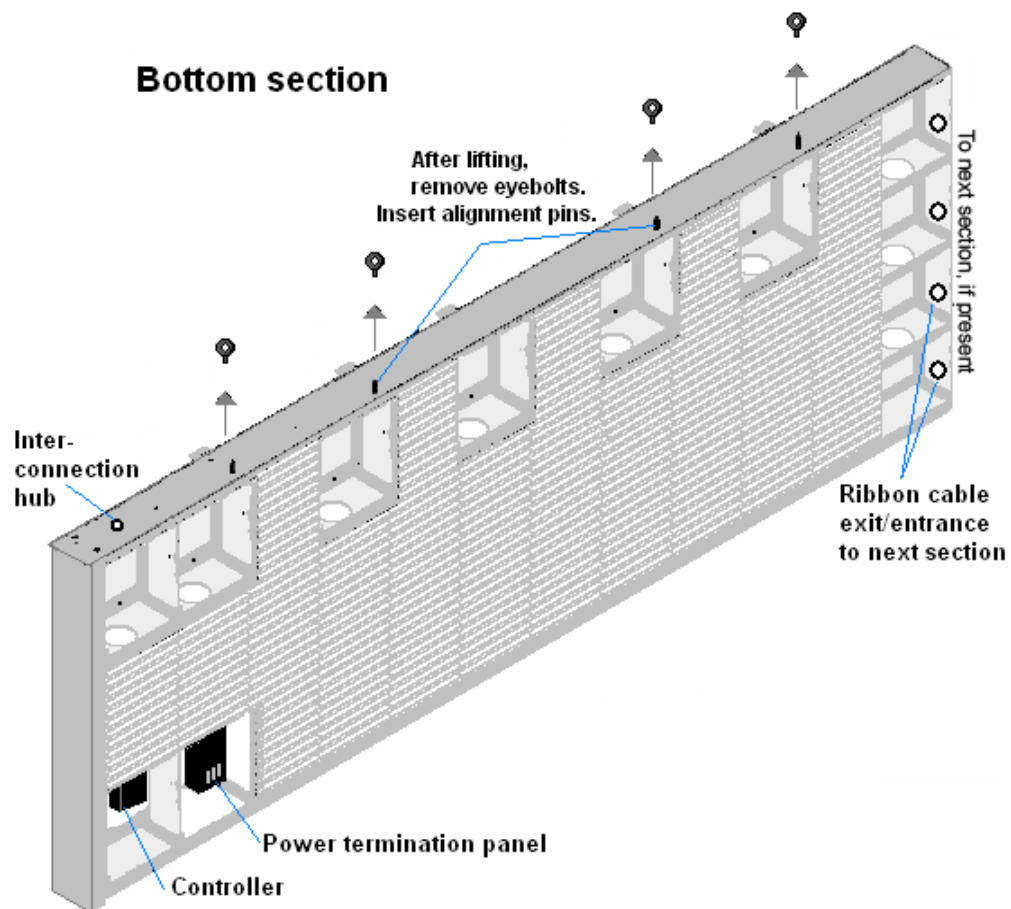
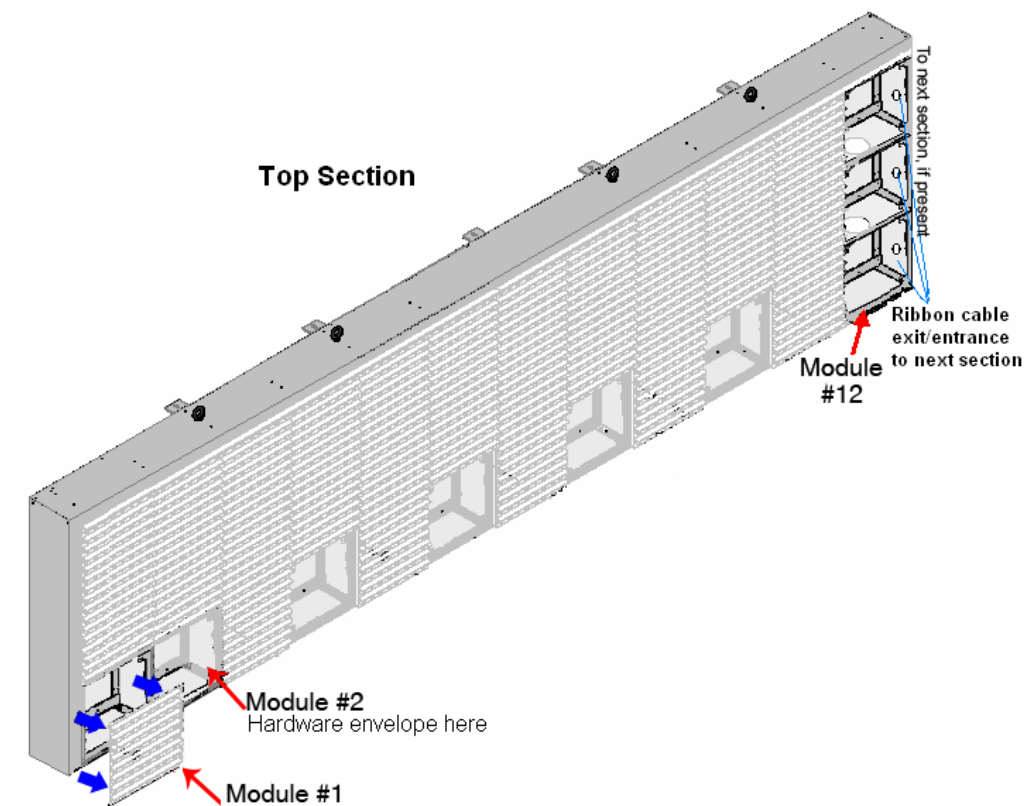


Figure 8: Bottom Section Preparation

## Top or Top-Left Section

Before mounting, connecting the sections, or installation:

1. Remove the first, second, and every even module from the bottom row of a top section. This will aid in aligning and connecting top and bottom sections, along with making grounding and signal connections.
2. Behind the second module in the bottom row is a padded envelope that contains the hardware needed to attach the sections together. Remove this now so the hardware can be used in the following steps.
3. If an additional section will be added for length, remove the modules in the adjoining columns. An opening is located behind each module in the columns for ribbon cable connection between sections.



**Figure 9:** Top Section Preparation

## Combining Sections

1. Install the alignment pins in the top edge of the bottom section by screwing them into the holes where the eyebolts were located.
2. Attach the bottom section to the support structure by welding or using 1/2" grade-5 bolts and hardware. Secure **all** clip angles. Refer to **Figure 10**.
3. Set the top section on top of the bottom section with the aid of the alignment pins.
4. Attach the **top to bottom** sections by unscrewing the alignment pins and replacing them with the following (Refer to **Figure 11**):
  - 1/2"-13 X 1 1/2" bolts (HC-1152)
  - 1/2" split washers (HC-1101)
  - 1/2" flat washers (HC-1095).

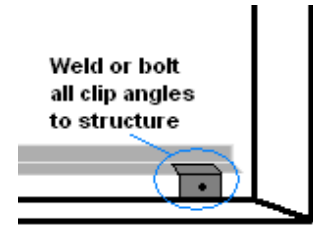


Figure 10: Clip Angle Detail

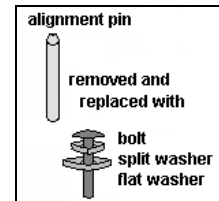


Figure 11: Alignment Pin

Fill in all holes in the adjoining sections.

5. If additional sections will be added for length, remove the covers from interconnection openings. Attach the **left to right** sections with the following:
  - 1/2"-13 X 1 1/2" bolts (HC-1152)
  - 1/2" split washers (HC-1101)
  - 1/2" flat washers (HC-1095).

Fill in all holes in the adjoining sections.

6. Attach the top section(s) to the structure. Weld or use 1/2" grade-5 bolts and hardware to secure **all** clip angles to the support structure.

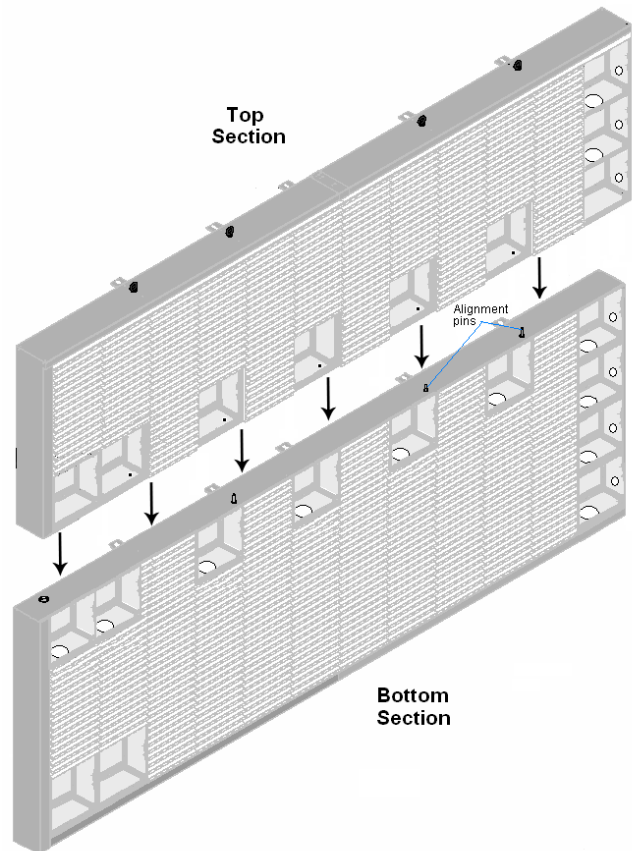


Figure 12: Attaching Top and Bottom Sections

## 2.4 Optional Temperature Sensor Mounting

If an optional temperature sensor will be used with this display, refer to **Appendix C** for mounting and signal connections.

# Section 3: Power Installation

---

Read the Mechanical, Power, and Signal Installation sections before installing the display(s).



- Only a qualified individual should terminate power and signal cable at this Daktronics display.
- All proposed changes must be approved by Daktronics engineering staff or the warranty will be rendered null and void.

### Reference Drawings:

Schematic, AF-3700-34-RGB, general .....	<b>Drawing B-277048</b>
Power Specs, AF-3700-(8-32) x*-34-RGB-120/240 & 120/208V .....	<b>Drawing B-278578</b>
Power Specs, AF-3700-(40-64) x*-34-RGB-120/240 & 120/208V .....	<b>Drawing B-283112</b>
Power Specs, AF-3700-(72-80) x*-34-RGB-120/240 & 120/208V .....	<b>Drawing B-283113</b>
Power Specs, AF-3700-(88-96) x*-34-RGB-120/240 & 120/208V .....	<b>Drawing B-283114</b>
Power Specs, AF-3700-(104-112) x*-34-RGB-120/240 & 120/208V .....	<b>Drawing B-283115</b>
Power Specs, AF-3700-(120-128) x*-34-RGB-120/240 & 120/208V .....	<b>Drawing B-278707</b>
Power Specs, AF-3700-(8-32) x*-34-RGB- <b>240 &amp; 240/415V</b> .....	<b>Drawing B-298537</b>

## 3.1 Conduit

Daktronics **does not** include the conduit. Separate conduit must be used to route:

- power.
- signal IN wires to the signal termination enclosure, when applicable.
- signal OUT wires (if not using the provided interconnect cable).

Displays are provided with unthreaded power knockouts on the back for use with 3/4" conduit. The 8-pixel high displays have a J-box on the back for power termination.

## 3.2 Overview of Power/ Signal Connection

Following is a brief summary of the power and signal connections to the display.

1. Power to the display will be terminated internally in most cases. **Section 3.5** shows the internal wiring diagrams.
2. Possible methods for signal termination are shown in the manual for the specific communication type.
3. Power is routed to the display through a fused disconnect switch capable of opening all ungrounded power conductors. Install this disconnect within the line-of-sight of any personnel performing maintenance on the display. (If the disconnect is located out of sight of the display, it must be capable of being locked in the open position.)

**Note:** Displays are equipped with overcurrent protection devices that carry a **UL489** or **UL1077 (IEC 60947, VDE 660)** rating. These devices are only intended to protect the components within the display. Suitable devices must be used for the equipment and feeders supplying power to the display.

4. Power conductors from the disconnect to the display should be routed through conduit in agreement with local code.
5. Display power will terminate internally at the power termination panel.
6. Connect the grounding electrode conductor at the grounding lug on the back of the display.
7. Signal cable is routed to the signal termination enclosure. When required, the signal enclosure may also be grounded.
8. Signal into the enclosures must be routed through conduit. The knockouts in the enclosures require the use of ½" conduit.
9. The signal quick-connect cable from the enclosure to the display can be routed through conduit or through the display pole if power is not also routed in the display pole.

**Note:** Daktronics strongly recommends that the quick-connect cable be secured to protect it from weather or vandalism.

### 3.3 Power Requirements



Do not connect the displays to any voltage other than that listed on the Daktronics product label.

**Important Note:** Conductors of circuits delivering power to a Daktronics display shall be sized in accordance with NEC and local electrical codes so that the power distribution system is capable of delivering full load power to the display while maintaining a voltage within 5% of the utility nominal voltage.

Each display size may be constructed to use either single-phase or three-phase power, with the exception of the 8 high displays which use only single-phase power. Proper power installation is imperative for proper display operation. Power specifications for various size displays can be found in the **Power Specifications** located in **Appendix A**. The following sub-sections provide details of power installation.

#### Main Disconnect

The National Electrical Code requires the use of a lockable power disconnect near the display. Provide a lockable disconnect switch (knife switch) at the display location so that all power lines can be completely disconnected. Use a disconnect so that all hot lines and the neutral can be disconnected. The main disconnect should be mounted at or near the point of power connection. A main disconnect is to be provided for each supply circuit to the display.

The disconnecting means must be located in a direct line of sight from the display or outline lighting that it controls. This requirement enables a worker to keep the disconnecting means within view while working on the display.

**Exception:** Disconnect components that are capable of being locked in the open position may be located elsewhere.



## 3.4 Grounding



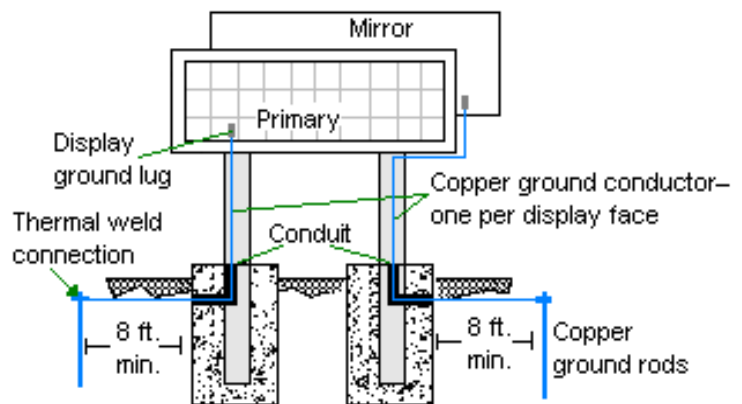
This sign is to be installed in accordance with the requirements of Article 600 of the National Electrical Code and/or other applicable local codes. This includes proper grounding and bonding of the sign.

Displays **must** be grounded according to the provisions outlined in Article 250 of the National Electrical Code®.

### Installation with Ground and Neutral Conductors Provided

These displays use installation with ground and neutral conductors provided. The power cable **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 disconnect if the disconnect is not located within sight of the display.

Proper grounding is necessary for reliable equipment operation. It also protects the equipment from damaging electrical disturbances and lightning. Daktronics requires a resistance to ground of 10 ohms or less. **The display must be properly grounded or the warranty will be void.**



**Figure 13:** Correct Grounding

### Important points about grounding:

- Follow local and national codes: The material of an earth-ground electrode differs from region to region and from conditions present at the site. Consult the National Electrical Code and any local electrical codes that may apply.
- Support structure **cannot** be used as an earth-ground electrode: The support is generally embedded in concrete, and if embedded in earth, the steel is either primed or it corrodes, making it a poor ground.
- One grounding electrode for each display face: The grounding electrode is typically configured as one grounding rod for each display face. Grounding is connected between sections by bonding jumpers. Other grounding electrodes as described in Article 250 of the National Electric Code may be used.
- Resistance to ground 10 ohms or less: This is required by Daktronics for proper display performance. If the resistance to ground is higher than 10 ohms, it will be necessary to install additional grounding electrodes to reduce the resistance. The grounding electrode should be installed within 25 feet of the base of the display. The grounding electrode must be connected to the ground lug on the back of the display (**Figure 13**).

### 3.5 Power Connection

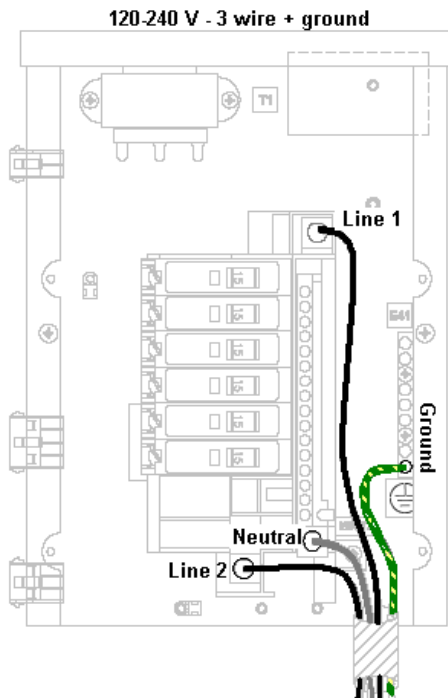
Power is terminated internally to the power termination board in all displays except the 8-pixel high displays. Included in this section are the instructions for both 120 VAC and 240 VAC power sources, including:

- terminating single-phase power
- terminating three-phase power
- terminating power to the J-box (single-phase, 8-pixel high displays only).

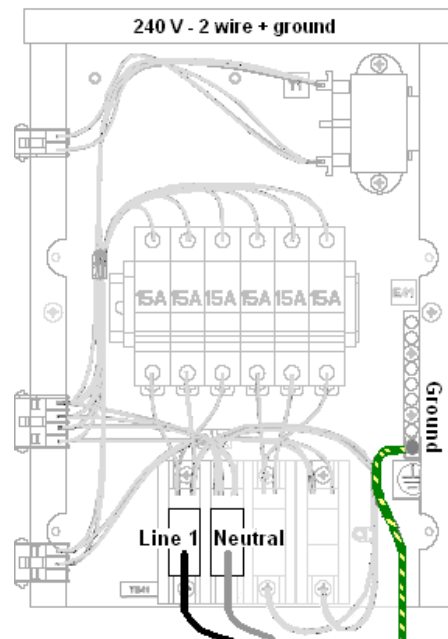
**Schematic Drawing B-277048** may also be referenced, if necessary.

#### Terminating single-phase power to the internal power termination panel:

1. Open the display as explained in **Section 6.1** and locate the power termination panel.
2. Route the cable through conduit to the back of the display. Use one of the knockouts for access, being careful not to damage internal components.
3. For 120/240 (3 wire + ground), connect the neutral wire to the neutral lug and the live wires to Line 1 and Line 2. Refer to **Figure 14**.  
For 240 VAC, (2 wires + ground), connect the neutral wire to the neutral lug and the live wire to Line 1 lug. Refer to **Figure 15**.
4. The ground wire connects to the grounding bus bar.



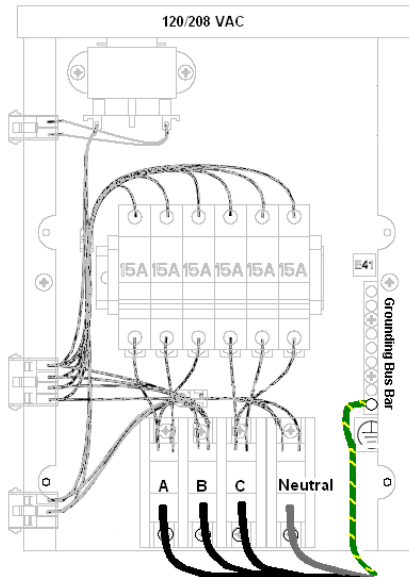
**Figure 14:** 120 V Single-phase Power Termination



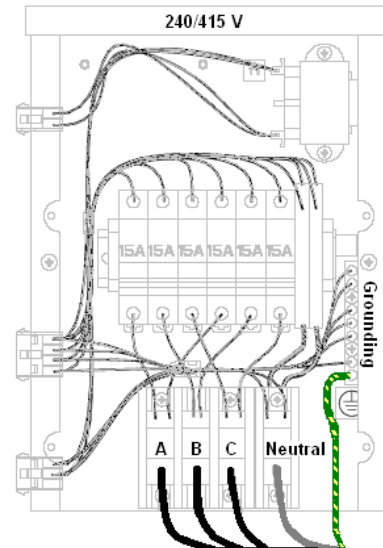
**Figure 15:** 240 V Single-phase Power Termination

### Terminating 3-phase power to the internal power termination panel:

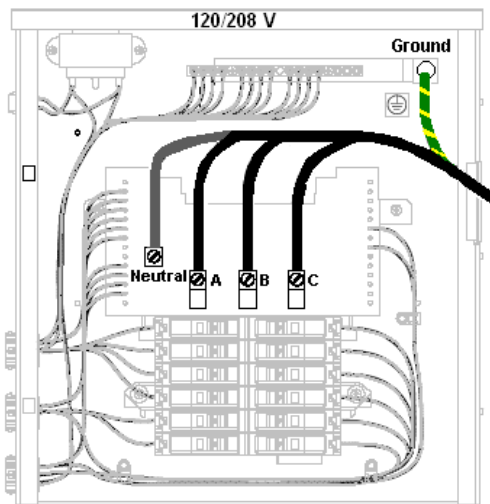
1. Open the display as explained in **Section 6.1** and locate the power termination panel.
2. Route the cable through conduit to the back of the display. Use one of the knockouts for access, being careful not to damage internal components.
3. Connect the neutral wire to the neutral lug and the live wires to the lugs labeled A, B, and C. Refer to **Figure 16** and **Figure 17** for 6-breaker panels for 120/208 and 240/415 voltages. **Figure 18** and **Figure 19** show the 12-breaker power termination panels.
4. The ground wire connects to the grounding bus bar.



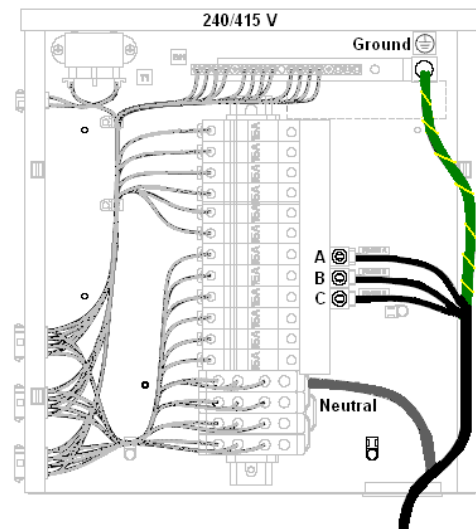
**Figure 17:** 120/208 VAC Power Termination – 6-breaker



**Figure 16:** 240/415 VAC Power Termination – 6-breaker



**Figure 18:** 120/208 V Power Termination – 12 breaker



**Figure 19:** 240/415 V Power Termination – 12 breaker

**For 8-pixel high displays only:  
Terminating hot, neutral, and ground wires at the J-box**

1. Route the power cable through 3/4" conduit to the rear of the display and into the power termination J-box.
2. The power termination enclosure will contain two or three wires plus a ground coming from the interior of the display. These wires are pre-terminated to the power termination panel inside the display.
3. Inside the external power termination J-box, connect the power wires to the wires coming from the display interior using wire nuts. Refer to **Figure 20** and **Figure 21** for a diagram.

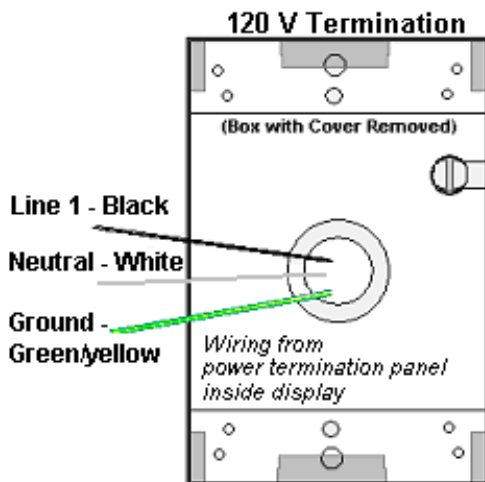
**Note** the following colors are used for the pre-terminated wires:

**120 VAC**

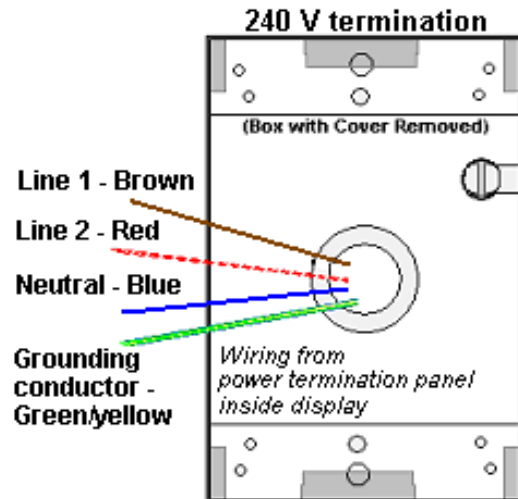
- Line 1 - Black
- Neutral - White
- Grounding - Green-Yellow

**240 VAC**

- Line 1 - Brown
- Line 2 - Red
- Neutral - Blue
- Grounding - Green-Yellow



**Figure 20:** 120 VAC Power Termination



**Figure 21:** 120/240 VAC Power Termination

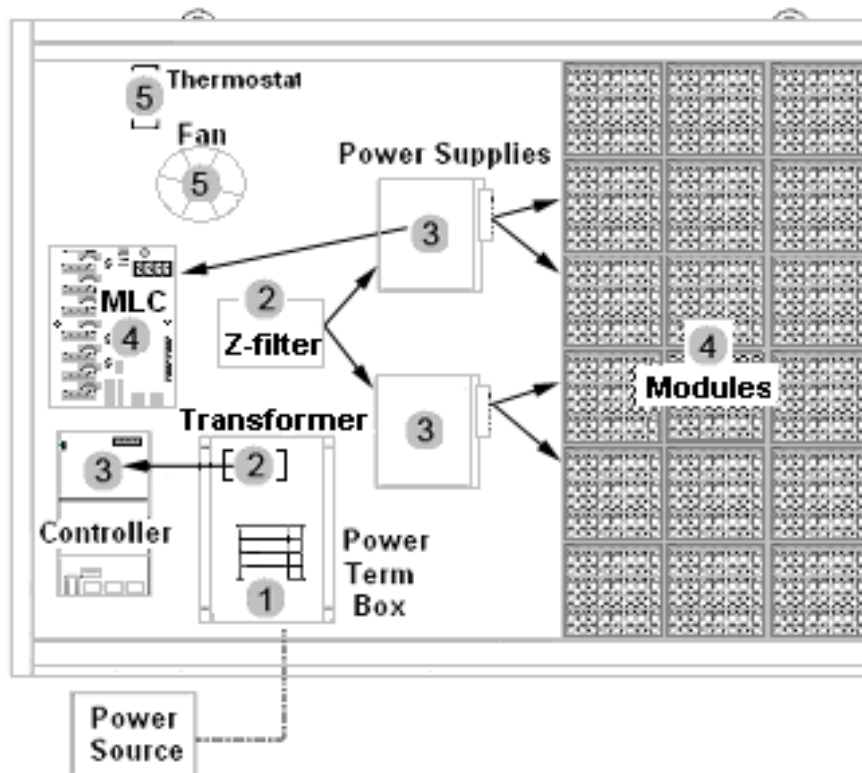
### 3.6 Power Routing in the Display

Following is a basic overview of power routing. Check exact power routing on **Drawing B-277048** found in **Appendix A**.

A general power routing, as shown in **Figure 22**, can be summarized as follows.

1. Power terminates internally to the power termination panel.
2. Power travels through the transformer which adjusts power to the appropriate voltage for the controller.
3. Power is routed through filters to the power supplies which provide power to the MLC and modules.
4. Power is also sent from the last breaker on the power termination panel through a filter to the thermostat and fans.

**Note:** Power supplies are preset to the proper voltage: 9 VDC.



**Figure 22:** Power Flow Summary



## Section 4: Signal Installation Overview

Daktronics GalaxyPro™ displays are equipped to receive various Ethernet communication signals. The following sections include a brief description of each available type. Also included is a list of troubleshooting tips to check that the display is connected and configured correctly.

For specific details on installing the communication signal, consult the quick guide and manual included in the box with the communication equipment. Each type of communication is listed below with its manual number.

Communication Type	Communication Manual ED#
Wireless Ethernet Bridge	ED-16483
Ethernet	ED-14745
Fiber Ethernet	ED-14746

**Note:** These are the standard communication types, but each site is unique and may include additional equipment. If problems arise, contact the display's seller, service company, or Daktronics Customer Service.

### Reference Drawings:

Routing, Fiber, MM, LC, AF-3700-(8-64x48-304)-34.....	<b>Drawing B-287914</b>
Routing, Fiber, MM, LC, AF-3700-(8-64x320-384)-34.....	<b>Drawing B-287915</b>
Routing, Fiber, MM, LC, AF-3700-(72-128x48-304)-34.....	<b>Drawing B-287916</b>
Routing, Fiber, MM, LC, AF-3700-(72-128x320-384)-34.....	<b>Drawing B-287917</b>

### 4.1 Primary/Mirror Signal Connection

If this display is a two-sided primary/mirror display, a quick-connect fiber cable will be provided to connect the signal between the two display faces. Connect J34-Signal Out on the Primary display to J32-Signal In on the Mirror display. Secure the excess cable to the supports to prevent damage from weather or vandalism. Refer to **Figure 24** and **Figure 23** for an illustration of the cable and the quick-connect input.



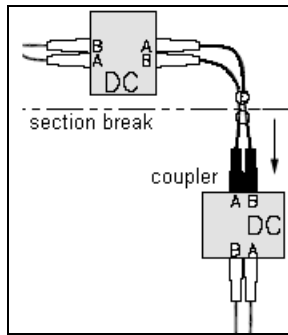
**Figure 24:** Quick-Connect Signal Cable



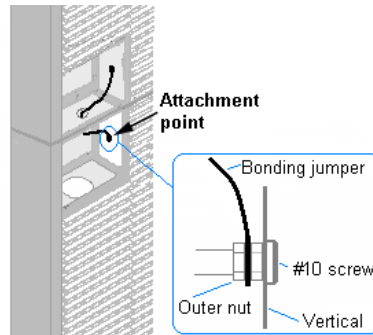
**Figure 23:** Fiber Interconnect Cable and Input

## 4.2 Signal and Bonding Interconnections

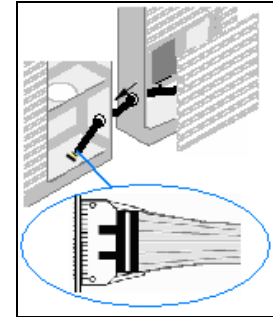
Three types of cables run between sections to connect signal and ground. Signal runs between display sections by connecting fiber cables to installed couplers (**Figure 25**). Bonding jumpers are used to connect all display sections together, requiring that only one section be connected to the ground rod (**Figure 27**). Ribbon cables are used to connect signal between modules (**Figure 26**). Refer to the following instructions on connecting these between sections. Refer to **Fiber Routing Drawings** located in **Appendix A** for additional detail.



**Figure 25:** Fiber Interconnections



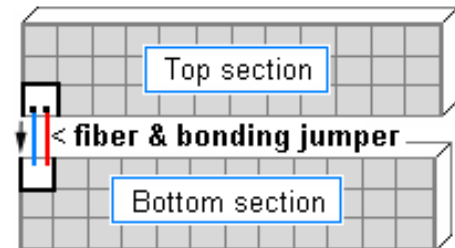
**Figure 27:** Bonding Jumper Detail



**Figure 26:** Ribbon Cable

### Between Top and Bottom Sections

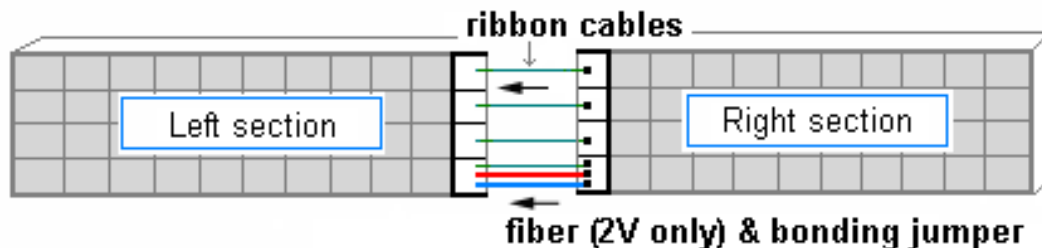
- Locate the fiber cable in the bottom left corner of the top section. Insert it through the hub into the bottom section and connect to the fiber coupler located in the top left module opening.
- Locate the bonding jumper in the bottom left corner of top section. Insert it through the hub into the bottom section and connect to the bonding jumper stud in the top left end of bottom section.



**Figure 28:** Top/Bottom Interconnections

### Between Left and Right Sections

- Locate the bonding jumper in the lower left end of the right section. Route through into the left section and connect to the bonding jumper stud.
- Connect ribbon cables along the seam between displays from the right section to the left section.
- When a Mirror display is being used (2V configuration), locate the fiber cable in the bottom left end of the right section. Route through the holes between display sections and connect to the coupler in the right end of the left section.

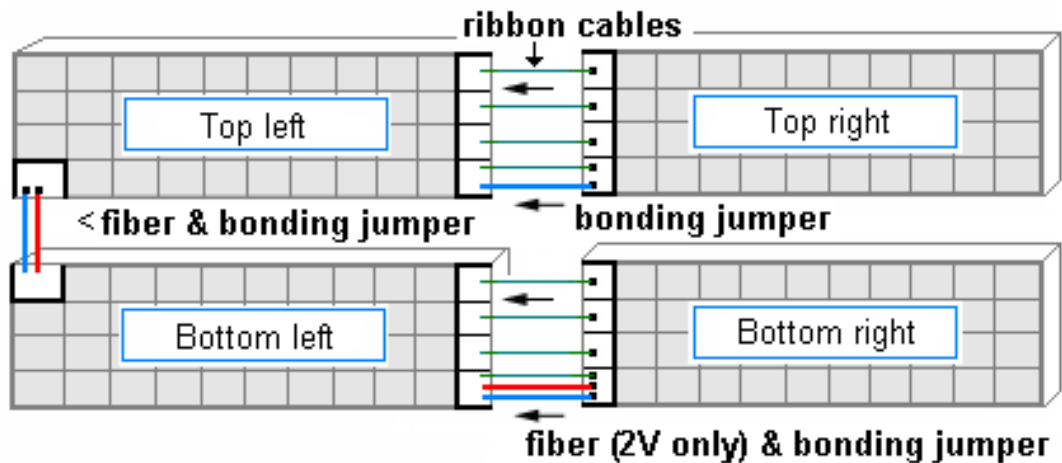


**Figure 29:** Right/Left Interconnections



#### Four (4) Section Interconnections

- Locate the fiber cable in the bottom left corner of the top left section. Insert it through the hub into the bottom section and connect to the fiber coupler located in the top left module opening.
- Locate the bonding jumper in the bottom left end of the top left section. Route through holes between display sections into the top left end of the bottom left section and connect to the bonding jumper stud.
- Locate the bonding jumper in the bottom left end of the top right section. Route through holes between display sections into the right end of the top left section and connect to the bonding jumper stud.
- Locate the bonding jumper in the lower left end of the bottom right section. Route through the holes between display sections and connect to the bonding jumper stud.
- Connect ribbon cables along the seam between displays from the right sections to the left sections.
- When a Mirror display is being used (2V configuration), locate the fiber cable in the bottom left end of the bottom right section and route through the holes between display sections and connect to the fiber coupler in the right end of the bottom left section.



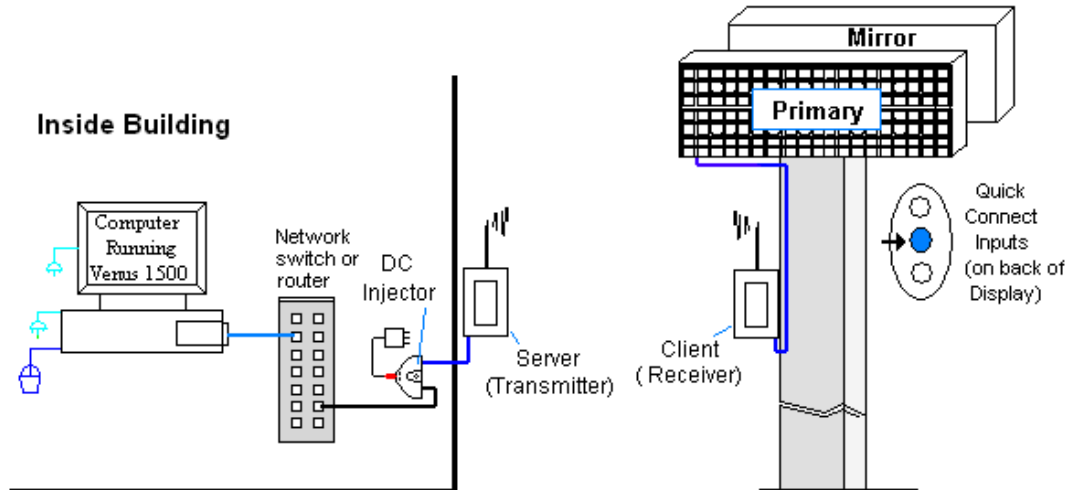
**Figure 30:** Interconnections between Four Sections

## 4.3 Wireless Ethernet Bridge Communication

If the communication system is a Wireless Ethernet Bridge, look for:

- a network card in the computer connecting to a network switch or router.
- a server radio mounted on the building and a client radio at the display.

**Note:** This system is referred to as a “bridge” because the radios are configured as a matched pair. Therefore, if one radio needs to be replaced, both will have to be replaced.



**Figure 31:** Wireless Ethernet Bridge Layout

### Connections

- Computer to network – RJ45 cable from computer port to network server in building.
- Network switch to DC injector
- Wall power adapter from 120 VAC outlet to DC injector.
- Network cable from DC injector to server radio.
- Clear line of sight between server radio and client radio.
- Client radio to display – quick-connect cable to the middle jack on display back.

Troubleshooting	
Component	Check:
Cable Connections	<ul style="list-style-type: none"> <li>• A cable connects the computer to the network switch or router.</li> <li>• A cable runs from the network switch to the DC injector.</li> <li>• A cable runs from DC injector to server radio.</li> <li>• The quick-connect cable is connected from the client radio to the middle jack on back of display.</li> </ul>
Diagnostic LEDs	<ul style="list-style-type: none"> <li>• The green LEDs will be on when DC injector has power.</li> <li>• The server and client radios have internal LEDs. Refer to the Wireless Ethernet manual for their specifications.</li> </ul>
Display Power	<ul style="list-style-type: none"> <li>• The display is either running a message or showing a single pixel flashing in the bottom right corner of the display when power is on.</li> </ul>
Software	<ul style="list-style-type: none"> <li>• The software and the display are set to the same network address.</li> <li>• Refer to the software manual for other possible conditions.</li> </ul>

## 4.4 Wire Ethernet Communication

If the communication system is Wire Ethernet, look for:

- a network card in the computer connecting to a network switch.
- a network jack that looks similar to an oversized phone jack.

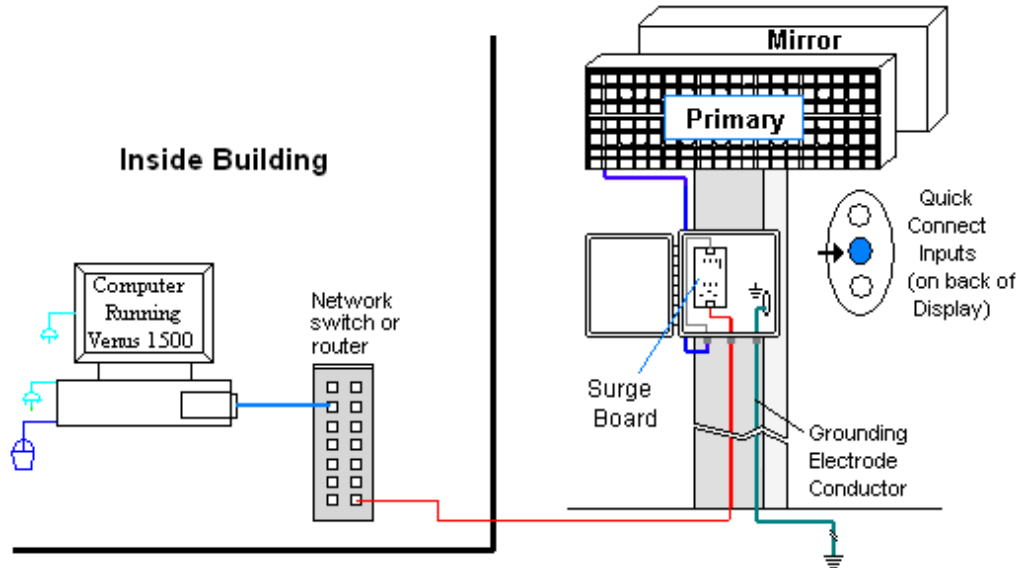


Figure 32: Ethernet Communication Layout

### Connections

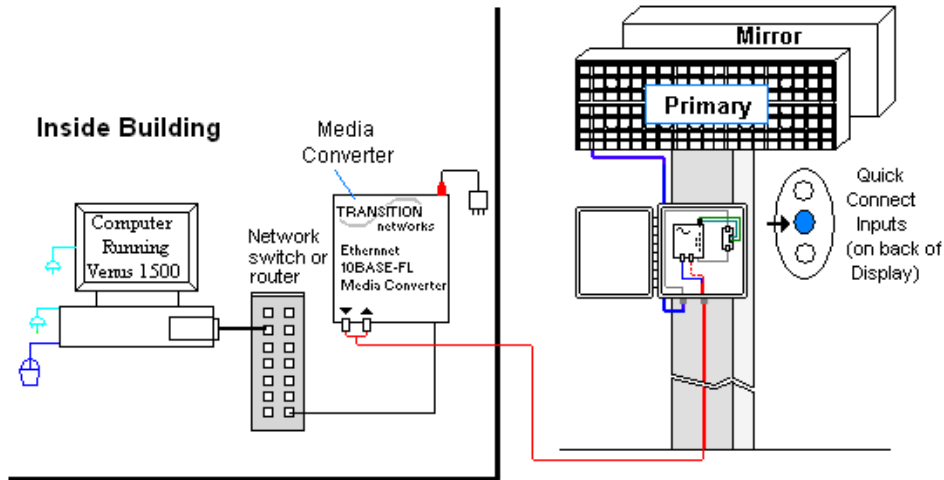
- Computer to network – RJ45 cable from computer port to network server in building.
- Network switch to surge board – another RJ45 cable from switch to surge board in enclosure at display.
- Enclosure at the display to display – quick-connect cable from the enclosure to middle jack on back of display.

Troubleshooting	
Component	Check:
Cable Connections	<ul style="list-style-type: none"> <li>• An RJ45 cable connects the computer to the network switch or router.</li> <li>• An RJ45 cable from the server is connected to the input port on the Ethernet surge board at the display.</li> <li>• The quick-connect cable runs from the enclosure to the middle jack on display back.</li> </ul>
Display Power	<ul style="list-style-type: none"> <li>• The display is either running a message or showing a single pixel flashing in the bottom right corner of the display when power is on.</li> </ul>
Software	<ul style="list-style-type: none"> <li>• The software is configured for TCP/IP communication.</li> <li>• The software and the display are set to the same network address.</li> <li>• Refer to the software manual for other possible conditions.</li> </ul>

## 4.5 Fiber Ethernet Communication

If the communication system is Fiber Ethernet, look for:

- an indoor media converter connected to the network and to fiber cable.
- a second media converter outdoors located in an enclosure at the display.



**Figure 33:** Fiber Ethernet Communication Layout

### Connections

- Computer to network – RJ45 cable from computer port into network switch.
- Network to first media converter – RJ45 cable from network switch/router into media converter.
- Media converter’s 9-volt power adapter plugged into 120 VAC outlet.
- Indoor media converter to outdoor media converter – two fiber-optic cables run from indoor media converter to second converter in the enclosure at display.
- Enclosure to display – quick-connect cable to the middle jack on display back.

**DO NOT SHARPLY BEND** fiber-optic cable at any point along the fiber cable.

Troubleshooting	
Component	Check:
Cable Connections	<ul style="list-style-type: none"> <li>• The cable is connected from the computer to the network switch/router.</li> <li>• The network cable connects from network switch to media converter in building.</li> <li>• The indoor media converter power adapter is plugged in.</li> <li>• The fiber cables connect from the first media converter to the second one at display. The “out” arrow on one will connect to an “in” arrow on the other.</li> <li>• The cable is connected from the enclosure to middle jack on display back.</li> </ul>
Diagnostic LEDs	<ul style="list-style-type: none"> <li>• Each media converter has a green power LED on, indicating power.</li> <li>• When the media converter transmits data, the “link” is ON and RX LEDs flash.</li> </ul>
Display Power	<ul style="list-style-type: none"> <li>• The display is either running a message or showing a single pixel flashing in the bottom right corner of the display when power is on.</li> </ul>
Software	<ul style="list-style-type: none"> <li>• The software is configured for TCP/IP communication.</li> <li>• The software and the display are set for the same network address.</li> <li>• Refer to the software manual for other possible conditions.</li> </ul>

## Section 5: Start-up Procedure

---

Before starting up the display, go over this checklist to ensure that all parts are ready to operate correctly. **Figure 34** shows the basic display components referred to in each step.

### 5.1 Start-up Checklist

✓ **Is power connected to the display?**

The power conduit will leave the display from the rear and connect to a power source either outside or inside a building. Refer to **Figure 34** for approximate location of the power cable or conduit.

✓ **If the display has multiple faces or sections, are they connected?**

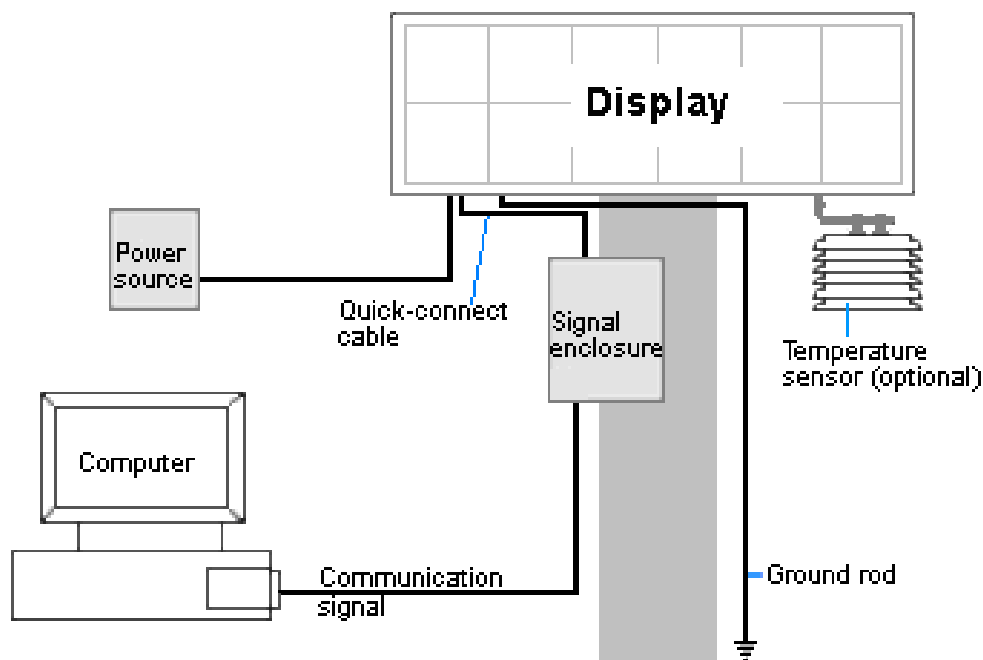
Check that power, signal, and ground connections run between the display cabinets.

✓ **Is the control computer connected to the display?**

Some type of communication line will run between the control computer and the display, depending on the communication method. Refer to **Section 4** for assistance with identifying the communication type and its connections.

✓ **Is the computer software set up to work with the display?**

The software manual provides the information necessary to allow the computer to communicate with this display. Follow the step-by-step directions in the **Configuration** section for correct set-up.



*Figure 34: Basic Display Set-up*

## 5.2 Start-up Sequence

Each time the display is turned on, an initialization sequence will run. The information in the second column will then be shown on the display.

**Note:** The Xs refer to numbers that may vary for each display, such as the hardware address.

<b>Topic</b>	<b>Information shown</b>
1. Product Name	• Galaxy Pro
2. Display Size	• Row x Column
3. Shading	• 16.7M RGB
4. Bootloader Version	• OS X.XX
5. Firmware Number	• <b>ED-16619</b>
6. Firmware Revision	• Rev X.X.X
7. Hardware Address	• HW:XX
8. Software Address	• SW:XX
9. IP Address: (Default)	• IP: 172.16.192.25
10. Subnet Msk: (Default)	• MSK: 255.255.0.0
11. Mac Address	• MAC:00:09:EC:02:04:06
12. COM1 Configuration	• C1: V15 (modem: C1:V15 if a modem is present)
13. COM 2 Configuration	• C2: DEBUG
14. Socket 3001:	• TCP 3001: V15
15. Line Frequency	• CLK: AUTO (60)
16. Display Description	• M3 Display

After this sequence is complete, the display will blank. A single pixel will flash in the lower right corner of the display to show that the display has power, but no messages are currently running.

## Section 6: Maintenance

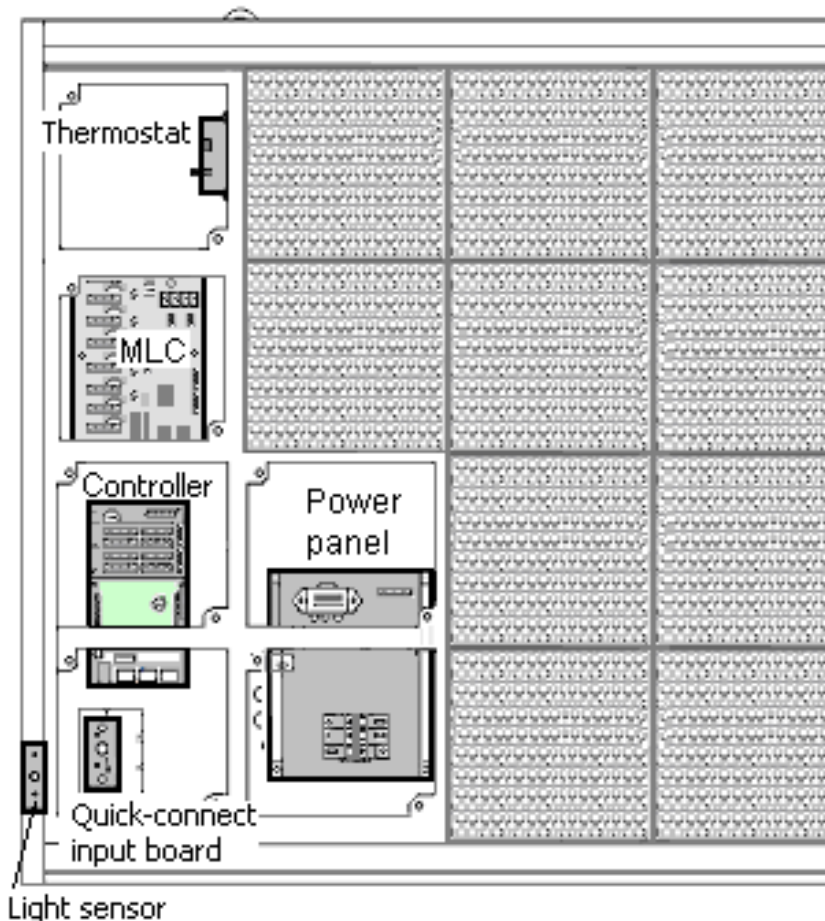
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### Important Notes



- Power must be turned OFF before any repair or maintenance work is done on the display.
- Qualified service personnel are recommended for servicing internal electronic components.
- The Daktronics engineering staff must approve ANY changes made to the display. Before altering the display, detailed drawings for proposed modifications must be submitted to Daktronics engineering staff for evaluation and approval, or the warranty will be rendered null and void.

Daktronics GalaxyPro 34 mm displays are front accessible, meaning that access to the internal components is gained by removing the front modules of the display. The display may need to be opened to perform maintenance or for troubleshooting. The following diagram (**Figure 35**) shows the location of internal components. On larger displays, the internal components will remain in the lower left area of the display and the thermostat will be located behind the upper left module. Refer to the **Layout Drawings** located in **Appendix A** for the location of components in specific display sizes.

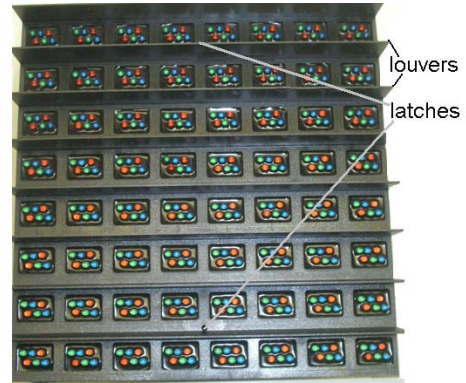


**Figure 35:** Location of Internal Components

## 6.1 Access to Display Interior

Daktronics GalaxyPro displays provide access to internal components by removing the front modules. The display may need to be opened to perform maintenance or for troubleshooting. To access the interior of the display, perform the following steps:

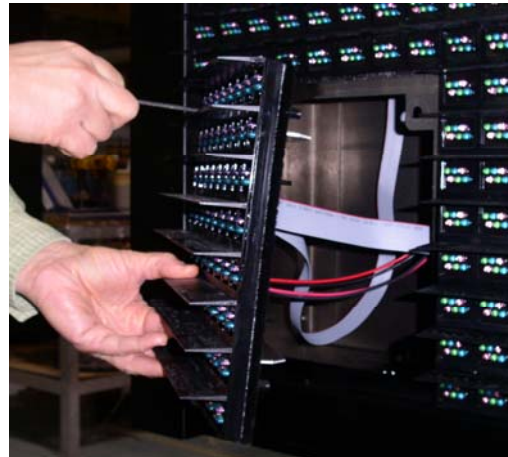
1. **Disconnect power to the display.**
2. Locate the latch access fasteners on the module (**Figure 36**). One is centered below the top row of pixels and one is centered above the bottom row.
3. With a 1/8" hex wrench, turn the latch access fasteners a quarter turn counter-clockwise. Gently pull the module far enough forward to reach the power and ribbon cables (**Figure 37**).
4. Disconnect the two ribbon cables from the module by spreading the tabs on the sides and then lifting the cable head from the jack. Note how they are connected to the back.
5. Unplug the power cable by squeezing the tabs on the sides of the plug head and pulling out.
6. When ready to reinstall the module, reconnect the cables to the module, making sure that the tabs are tightly pushed against the cable head. Carefully push the ribbon wires back into the cabinet so they are clear of the module edges.
7. Place the module into its proper location, checking that the weather stripping is in place. Latch the module both top and bottom by turning the hex wrench clockwise a quarter turn.



**Figure 36:** Module Access Locations

### Note:

- The weather-stripping on the back edge of the module must be intact and in good condition if it is to prevent water from seeping into the display.
- The module latches must be fully engaged to create a watertight seal around the edge of the module. The module should be firmly seated against the display when the latches are fully engaged.



**Figure 37:** Removing a Module



## 6.2 Ventilation System/ Fans

### Frequency of Inspection

In displays smaller than 40 pixels high, ventilation fans are located along the bottom of the display. The fans pull air into the cabinet from the lower vent, exhausting air out the top vent (**Figure 38**). Displays 40 pixels high and larger have fans mounted on the back of the display, pulling air in from the front vents and out through hoods (**Figure 39**).

Fans should be checked every time the display is opened or at a minimum of once per year. Check more often if the display is located in a dusty or harsh environment, such as along a gravel road.

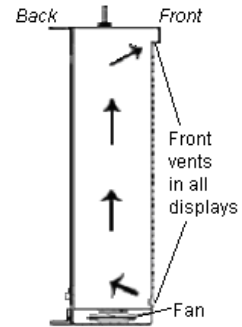
### Fan Blades

Check the fan blades for dirt and debris, cleaning them and the inside of the display if necessary. Fan blades must be kept clean to maintain fan efficiency and to ensure proper cooling. Spin the fan blades with a pen or pencil to ensure that the bearings are free and that the fan is still in balance.

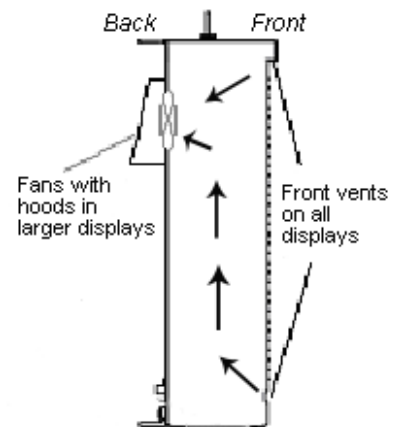
### Air Flow

To check the operation of the fans, open the display to expose the thermostat in the top left corner of the cabinet behind the first module (**Figure 40**). Push the bypass switch on the thermostat enclosure to temporarily turn on the fans. If a fan does not rotate or does not operate smoothly, replace it.

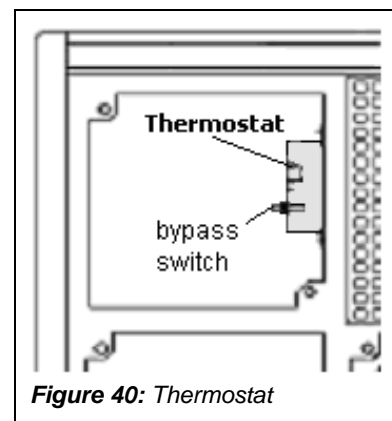
Make sure that the intake vents on the bottom front and the exhaust vents on the top front of the display are not blocked and are free of dust or other debris. Hold a piece of lightweight paper in front of the top edge of the display to detect air movement through the vents.



**Figure 38:** Air Flow in Smaller Displays



**Figure 39:** Air Flow in Larger Displays



**Figure 40:** Thermostat

## 6.3 Annual Inspection

A yearly inspection should be completed to maintain safe and dependable display operation. The display will need to be opened to visually inspect the cabinet interior and the components. Refer to **Section 6.1** for directions to access the interior. The inspection should address the following issues:

Inspection item	Possible corrective measures
Loose bolts, screws, rivets	<ul style="list-style-type: none"><li>• Tighten or replace, as required.</li></ul>
Dust around fans, on cabinet bottom	<ul style="list-style-type: none"><li>• Vacuum or carefully wipe away.</li></ul>
Water intrusion or stains	<ul style="list-style-type: none"><li>• Replace weather-stripping.</li><li>• Tighten module latches.</li><li>• Place silicon sealant around all locations where water might enter.</li><li>• Replace damaged electronic components.</li></ul>
Paint corrosion by footings, tie points, ground rods	<ul style="list-style-type: none"><li>• Check the metal footings for structural integrity.</li><li>• Replace and/or repaint as necessary.</li><li>• Check ground wire connections at ground rod and ground lug.</li></ul>

## Section 7: Diagnostics and Troubleshooting

This section defines the diagnostic LEDs located on the controller, MLC, and temperature sensor. Troubleshooting tips are also provided for solving display problems.

### Safety Precautions



**Disconnect power when servicing the display.**

**Do not** modify the display structure or attach any panels or coverings to the display without written consent of Daktronics.

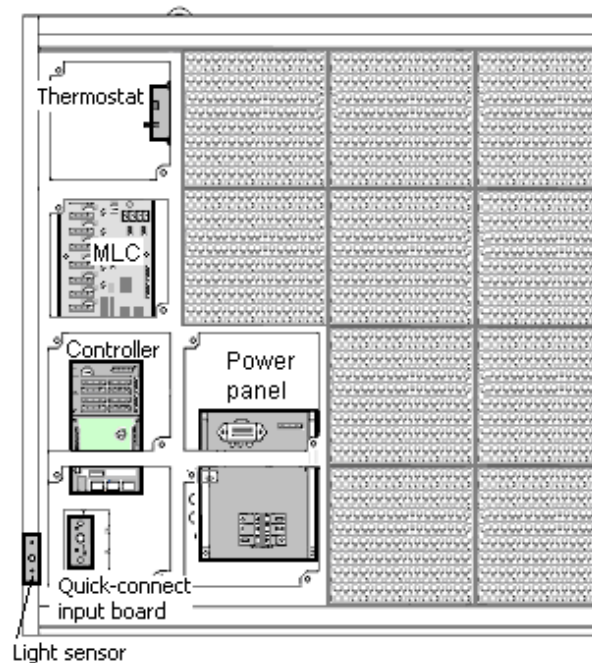
### 7.1 Controller Diagnostics

The controller is one of the internal components labeled in **Figure 41**. This component is the “brains” of the display, receiving communication from the computer and then sending the appropriate information to the MLC which outputs to the modules. The LEDs on the controller are able to show whether the power and communication signal are working properly.

Since the controller is inside the display, a module or two will need to be removed to view the diagnostic LEDs. To access the interior of the display, refer to **Section 6.1** for instructions and illustrations.

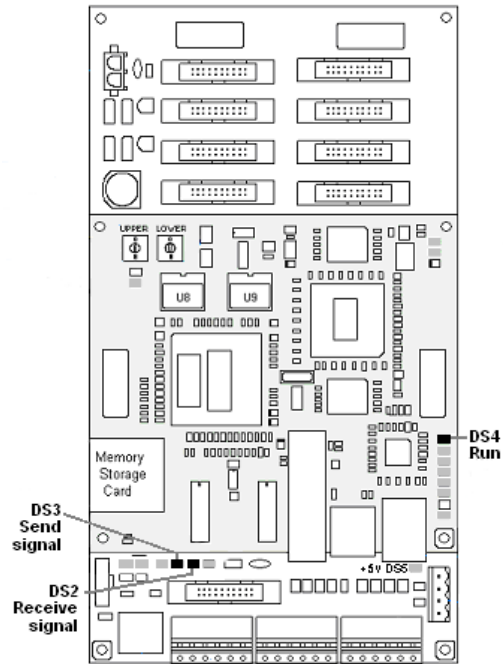
**Remember to disconnect power to the display before accessing the interior.**

However, once the modules are removed and wires are found to be safe, power can be turned back on to view the diagnostic LEDs.



**Figure 41:** Interior Component Locations

**Figure 42** illustrates a GalaxyPro controller. Red diagnostic LEDs are located at various places on the controller. The following table details some essential LEDs to monitor and the information that each LED provides. The LED name and number are noted in **Figure 42**.

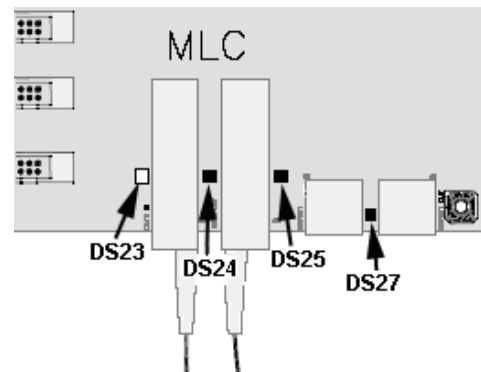


**Figure 42:** Controller Component Layout

Label	LED	Operation
Run	DS4	Steady FLASH about once per second indicates controller is working properly.
Send signal	DS3	OFF is the normal state. FLASH when transmitting communication to the computer.
Receive signal	DS2	OFF is the normal state. FLASH when receiving communication from the computer.

## 7.2 MLC Diagnostics

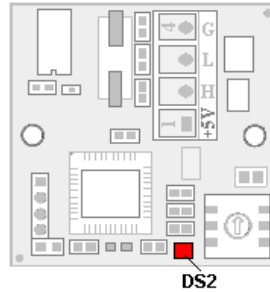
Each MLC unit contains four red diagnostic LEDs. When fiber is properly connected, the LED labeled DS23 (left side) will be off and the other LEDs will be on.



**Figure 43:** MLC Diagnostic LEDs

## 7.3 Temperature Sensor Diagnostic

If the display includes a temperature function, the temperature sensor board will also provide diagnostic information. The temperature sensor board is located inside the temperature sensor housing which hangs near the display (**Figure 44**). The sensor board diagram below shows the red diagnostic LED (DS2) near the bottom edge of the component.



**Figure 44:** Temperature sensor board

Temperature Sensor		
DS2	Run	FLASH at variable rates when sending temperature information; evidence that the unit has power.

Refer to **Appendix C** for temperature sensor mounting and connections.

## 7.4 Troubleshooting Display Problems

This section contains some symptoms that may be encountered in the displays. This list does not include every possible symptom or solution but does represent common situations and simple steps to resolve them. The solutions are given in priority order so try the first solution first.

Troubleshooting may require removal and replacement of modules. Refer to **Section 6.1** for instructions on this procedure. When replacing modules, make sure that the power and signal cables are reconnected correctly and the latches are tightly closed.

### Module and LED problems

#### One or more LEDs are not lighting

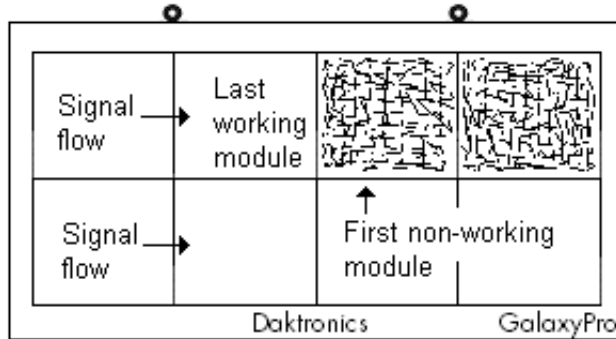
- Check/replace the ribbon cables on the module.
- If that does not help, the module may need to be replaced.

#### One or more LEDs on a single module will not turn off

- Check/replace the ribbon cables on the module.
- If that does not help, the module may need to be replaced.

### A section of the display is not working

- Check/replace ribbon cables from the last working module in the row to the first non-working module next to it.
- Move or replace the first non-working module, the one on the far left of the non-working section.
- Move or replace the first module to the left of the non-working modules.
- Check the back of the modules to see that the power LEDs are on.
- Make sure the power cable to the module is connected.



**Figure 45:** Modules Not Working

### One row of modules is not working or shows a distorted message

- Check/replace the ribbon cables to and from the first non-working module.
- Check for bent pins on the jack going to a non-working module.
- Move or replace the modules that show distorted text.
- Move or replace the first module to the left of the one that isn't working.
- Check the fuse from the output and replace if necessary.

### A column of the display does not work

- Check that the ribbon and power cable are plugged into the first module in the row.
- While power is on, look at the back of the first malfunctioning module to see if the diagnostic LED is off, implying a power supply problem.

### Entire display fails to work

- Check the breakers in the building connected to main power source.
- Check the breakers in the power termination panel (bottom row, second module from the left).
- Check the fiber cables between the controller and the MLC.
- Check the diagnostic LEDs on the controller for Power and Run (**Section 7.1**).
- Check/replace the ribbon cable from the MLC to the modules.
- Verify proper use of the software by checking the software manual.

## Brightness problems

### Display is stuck on bright or dim

- Check Manual/Auto dimming in Venus 1500 software. The *Brightness* is typically set to *Automatic*. If not, perform the following step:  
In *Display Manager/Diagnostics*, select **Automatic** and click **Set Brightness**.
- Check the light sensor cable and wiring for secure connections.
- Check the light sensor lens for obstructions (lower left edge, front of primary cabinet).
- Replace the light sensor assembly.

### Display is too bright at night

Set the *Dimming Schedule*. Refer to the Venus 1500 manual (ED-13530).

## Message problems

### Blank display seen after boot-up

A blank display is normal after the boot-up procedure. When finished, the display will be blank except for a flashing LED in the lower right corner. The display is then waiting for a message to be sent.

### LED flashes in the lower right corner

The flashing pixel indicates that the display is receiving power and waiting for a message to be sent. Once a message is sent and run on the display, the flashing LED should be replaced with the message.

### Message only shows up on one side of the display

Determine if the displays are set up as two primary displays or one primary and one mirror display. To do this, turn off power, then turn it back on and observe the two display faces.

If the set-up involves two primary displays, one should show "HW001" and the other "HW002".

- Verify that two different addresses are set up for these two primary displays in the Venus 1500 Administrator.
- Verify that two different addresses are set on the controller(s).
- Send a different message to each display separately by clicking on that display name in the list. **Note:** With two controllers, messages may not always run simultaneously.

If the set-up consists of a primary/mirror display, check the cable between them.

- Verify that the quick-connect cable is firmly plugged into both cabinets.
- Check that the cable and plugs are in good condition.

## Temperature problems

*(For displays with a temperature sensor installed.)*

### Showing the current temperature on the display

1. Open the Venus 1500 Message Studio.
2. Choose **File**→ **New** if the temperature will be part of a new message or **File**→ **Open** if this will be added to a current message.
3. Open the message field and click **Data Fields** at the top.
4. Choose **Temperature**. Select the desired format. The field is now in the message.
5. Send and run the message and the temperature will now be shown.

**Note:** The temperature sensor must be correctly installed before a current temperature can be shown.

### Temperature shown is too high or too low

The temperature on the display can be adjusted either up or down to become more accurate.

1. Open the *Venus 1500 Display Manager* and click **Diagnostic Control**.
2. Click on the name of this display under the *Display List*.
3. To the right of the *Set Temperature Offset* button, use the slider bar to adjust the temperature being shown. The change made will be shown next to the bar. The range is  $\pm 9^{\circ}$  ( $1^{\circ}\text{C}=1.8^{\circ}\text{F}$ ).

- Once the adjustment is made, click **Set Temperature Offset** to send this change to the display.

**Note:** Repeat these steps for each primary display that shows the temperature.

**Temperature always reads -196F/-127C degrees**

- Check the temperature sensor cable connections.
- Look for bent pins on connectors.
- Check that the temperature sensor is set to address 1.
- Make sure the sensor has power by checking that the LED is blinking.
- Replace the temperature sensor.

**Testing displays**

**Start and stop the test pattern**

- Open the *Venus 1500 Display Manager* and click **Diagnostic Control**.
- Click on the name of the chosen display under the *Display List*, then choose **Cycle All** for the complete sequence or use the arrow to choose the specific test to be shown. Click **Start Test**.
- Once testing is finished, click on the name of the display, then click **Stop Test**.

**Note:** This procedure must be done for each primary display being tested.

**Before calling for help**

**Steps to take before calling Daktronics Customer Service**

- Turn off the power breaker switch. Wait a few minutes and turn it back on. Have someone watch the display(s) to make sure that the initialization sequence runs.
- Once the sequence is complete, try to communicate with the display.
- Check the Communication and Troubleshooting sections of this manual.
- Call the service technician or Daktronics Customer Service at 866-343-3122.

**Note:** It is helpful to be sitting at the control computer while talking with the service technician.

This chart is also provided inside the front cover of this manual for easy reference.

Information needed	Fill in the blank
Location address of the display:	
Model number of the display:	<b>AF-3700</b>
Version of software being used: <i>(Right-click on Venus 1500 name in toolbar, choose "About Venus 1500")</i>	<b>Venus 1500 v. _____</b>
Method of communication being used: <i>(See Section 4 for guidance)</i>	
Controller version used in the display:	<b>M3 controller</b>



# Section 8: Parts Replacement

This section covers the replacement of parts in a GalaxyPro display. The first section provides a list of parts and their Daktronics part numbers. The second section gives instructions for replacing the most basic parts. For information on obtaining replacement parts from Daktronics, refer to **Section 9**.



**Disconnect power when servicing the display.**

### Reference Drawings:

Layout Drawings for most sizes ..... **Appendix A**

## 8.1 About Replacement Parts

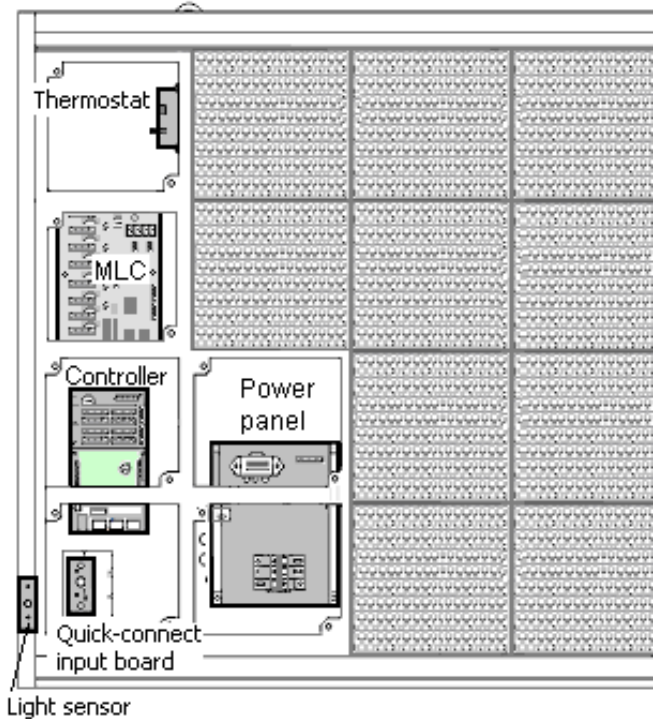
Daktronics AF-3700 GalaxyPro displays are designed and manufactured for performance, reliability, easy maintenance, and long life. However, on occasion, parts may need to be replaced. **Section 9** provides information on obtaining replacement parts from Daktronics. **Appendix B** provides information about the connectors referenced in the replacement instructions.

This section provides replacement instructions for the following parts:

- modules
- controller
- MLC
- power supplies
- light sensor
- temperature sensor

These components are generally located as shown in **Figure 46**. The location of power supplies varies depending on the matrix size of the display. Refer to the appropriate **Layout Drawing** for the exact location.

The following table contains some of the items that may need to be replaced in a display over a period of time. If a circuit board or assembly is not listed in the Replacement Parts List, use the label to order a replacement.

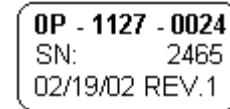


**Figure 46:** Interior Location of Components

Most circuit boards and components

within this display carry a label that lists the part number of the unit. A typical label is shown in **Figure 47** with the part number in bold.

Cables will not carry a part number label. To assist with correct identification of cables and connectors, refer to the descriptions in **Appendix B**.



**Figure 47:** Typical Label

Part Description	Part Number
Module, 2R2G2B, 8 x 8	0A-1208-4650
Controller, GalaxyPro	0A-1382-0002
MLC, 4050, 8 output, coated	0P-1273-0039
Power Supply Assembly, (A-1839C) w/o harness (1000W)	0A-1327-0018
Power Supply Assembly, (A-1997) w/o harness (600W)	0A-1327-0021
Transformer, Pri 115V, Sec 10VCT@3A	T-1119
Transformer, Pri 240V, Sec 10VCT@2.5A	T-1121
Filter, RFI Line 20 AMP 120 VAC	Z-1007
Automotive Fuse, 32 volt 15 amp	F-1058
Digital Temperature Sensor (PCB)	0P-1247-0008
Thermostat	0A-1327-3101
Light Sensor circuit board	0P-1151-0002
Fan; 134 CFM, 120V @60Hz, 22 watt (8-24 high, 32 high first bay)	B-1053
Fan; 245 CFM, 120V @60Hz, 46-50 watt (32+ high)	B-1019
Fan; 110 CFM, 240V @60Hz, 29-24 watt	B-1011
Fan; 245 CFM, 230V @60Hz, 46-50 watt	B-1020
Quick-connect Primary Input	0A-1327-1000
Quick-connect Primary Output	0A-1327-1018
Quick-connect Mirror Input	0A-1327-1019
<b>Ribbon Cables; 20 Position</b>	
Cable Assy; 20 pos Ribbon, 18", Dual Row	W-1387
Ribbon Assy; 20 Pos, 24"	0A-1000-0016
Ribbon Assy; 20 Pos, 30"	0A-1000-0017
Ribbon Assy; 20 Pos, 42"	0A-1000-0019
Ribbon Assy; 20 Pos, 60"	0A-1000-0021
Ribbon Assy; 20 Pos, 72"	0A-1000-0022
Ribbon Assy; 20 Pos, 84"	0A-1000-0023
Interconnect Cable; Fiber, QC, 10 ft.	W-1658
Memory Storage Card, 2 GB	A-2193
Electrical Contact Cleaner Lubricant / Cal-Lube	CH-1019
Hex Wrench, T-Handle 1/8" RT for modules	TH-1062
Manual; Venus 1500 Operator's, Version 3.0	ED-13530

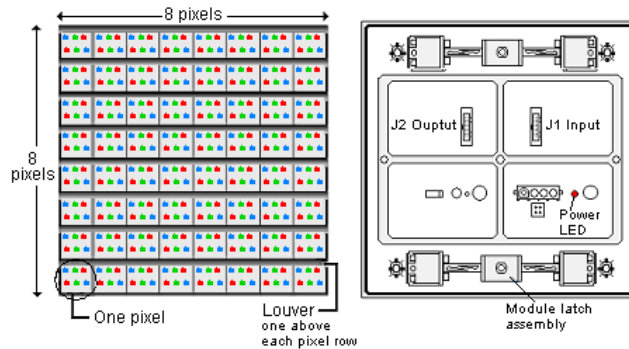
## 8.2 Instructions for Replacing Parts

### Module Replacement



If LEDs have failed, **do not attempt to replace individual LEDs.** Return a failed module to Daktronics for replacement and/or repair.

Each module can be removed separately without moving other components of the display.

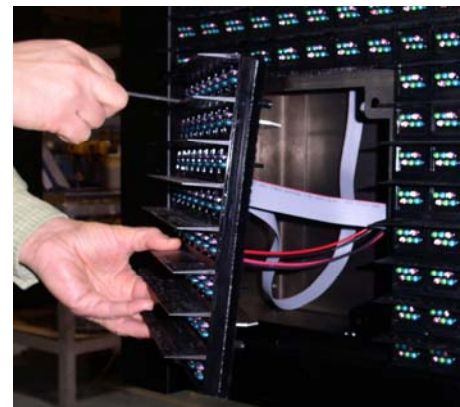


**Figure 48:** Module, Front/Back

1. Turn off power to the display.
2. Follow the instructions in **Section 6.1** to release the module from the display cabinet (**Figure 49**).
3. Disconnect the two ribbon cables from the module, noting how they are connected to the back. Release ribbon cables by spreading the tabs on the sides and then lifting the cable head from the jack (**Figure 48**).
4. Unplug the power cable by squeezing the tabs on the sides of the plug head and pulling out.
5. Connect all three cables to the new module, making sure that the ribbon cable tabs are tightly pushed against the cable head. Carefully push the ribbon wires back into the cabinet so they are clear of the module edges.
6. Place the module into its proper location, checking that the weather stripping is in place. Latch the module tightly both top and bottom by turning the hex wrench a quarter turn clockwise.

#### Notes:

- The weather-stripping on the back edge of the module must be in good condition and returned to its proper position if it is to prevent water from seeping into the display.
- The module latches must be fully engaged to create a watertight seal around the edge of the module. The module should be firmly seated against the display when the latches are fully engaged.



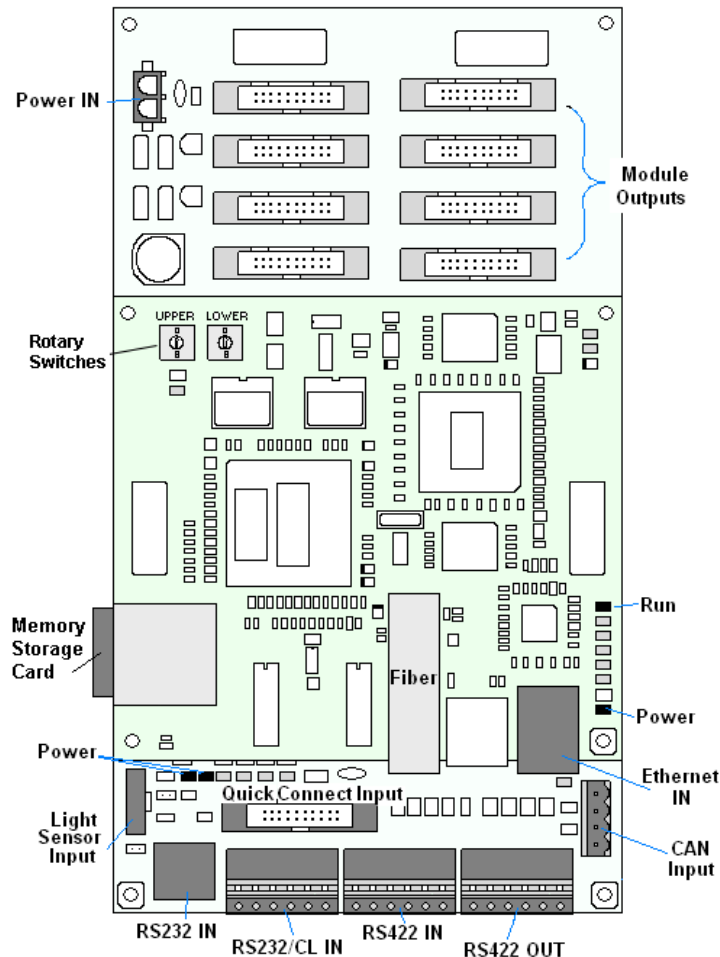
**Figure 49:** Removing a Module

## Controller Replacement

Complete the following steps to replace a controller in the display:

**Tools required:** 1/8" hex wrench and 5/16" nut driver

1. Turn off power to the display.
2. Remove the module directly in front of the controller in the lower left area of the display. Refer to **Figure 46** for the exact location.
3. Disconnect the power plug from J5.
4. Remove all power and signal connections from the board. Label the cables as they are removed to insure proper replacement.
5. Remove the six nuts holding the board in place using a 5/16" nut driver.
6. Take note of the rotary address on the controller and ensure the address on the replacement board is the same (**Figure 51**).
7. Remove the memory storage card on the old controller and insert it into the new controller. Note its location on **Figure 50**.
8. To install the new controller, replace the six nuts holding it to the display back. Reconnect power and signal cables. Turn on power, observing the boot-up sequence, and then note that the LED in the lower right corner shows power.



**Figure 50:** GalaxyPro Controller

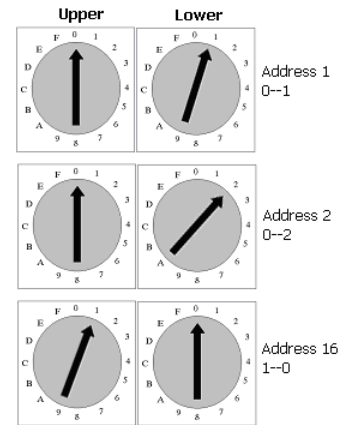
### Controller Address Setting

The rotary switches set the hardware address which the software uses to identify that particular display. Each controller in a network needs a unique address.

To set the rotary address switches, rotate them counter-clockwise until the arrow points to the desired number. The display's power must be turned off and then turned back on to activate the test mode or to change an address.

#### Note:

- Setting both rotary switches to address 0 will activate Test Mode. Turn the display's power off and back on to activate testing.
- After testing, reset the rotary switches to an address other than 0/0. The software will not recognize an address of 0.



**Figure 51:** Rotary Address Switches

### Memory Storage Card



Do not remove the memory storage card with power connected to the controller – critical damage will result.

The controller in the GalaxyPro display contains a 2GB memory storage card. This card stores the configurations, messages, schedules and fonts created by the control software. The memory storage card can be moved if a controller needs to be replaced or if the information stored on it needs to be used on another display. The information on the card will automatically be recognized and available for use by the display, thus eliminating the need to reconfigure a display.

To remove the memory storage card, disconnect power and then gently push in on the edge of the card. The card will spring out of its location on the controller.

To install a memory storage card, slide it into the slot on the side of the controller. Push it gently in until a click is felt. The card should now be held firmly in the slot.

**Warning!** The memory storage card is specifically designed to work with the GalaxyPro controller. **Do not** attempt to reprogram or move files by inserting this card in a computer or other device. The card will then no longer function correctly in the controller.

## MLC Replacement

The Multi-Line Controller (MLC) receives signal via fiber cable from the controller or another MLC and distributes it to the modules (**Figure 52**). One MLC will be present in displays up to 64 pixels high and two MLCs are installed in larger displays. Ribbon cables run from the module connectors on the MLC to the first modules in each row via ribbon cables. The power supply nearest the MLC will provide its power.

### Tools required: Nutdriver

1. Turn off power to the display.
2. Remove the module directly in front of the MLC. Typically, this is in the left end of the display section, approximately the third module from the bottom of the cabinet. Refer to the appropriate **Layout Drawing** for exact location.
3. Disconnect the fiber cables.
4. Remove all ribbon cables, labeling the module number as they are removed to insure proper replacement.
5. Remove the six nuts holding the board in place using a 5/16" nut driver.
6. To install the new MLC, move the unit into place and replace the six nuts holding it to the display back. Reconnect fiber and ribbon cables. Turn on power, observing the boot-up sequence. Note that the LEDs to the right of the fiber cables are on; DS23 to the left of the fiber cable should be off. Refer to **Figure 43**.

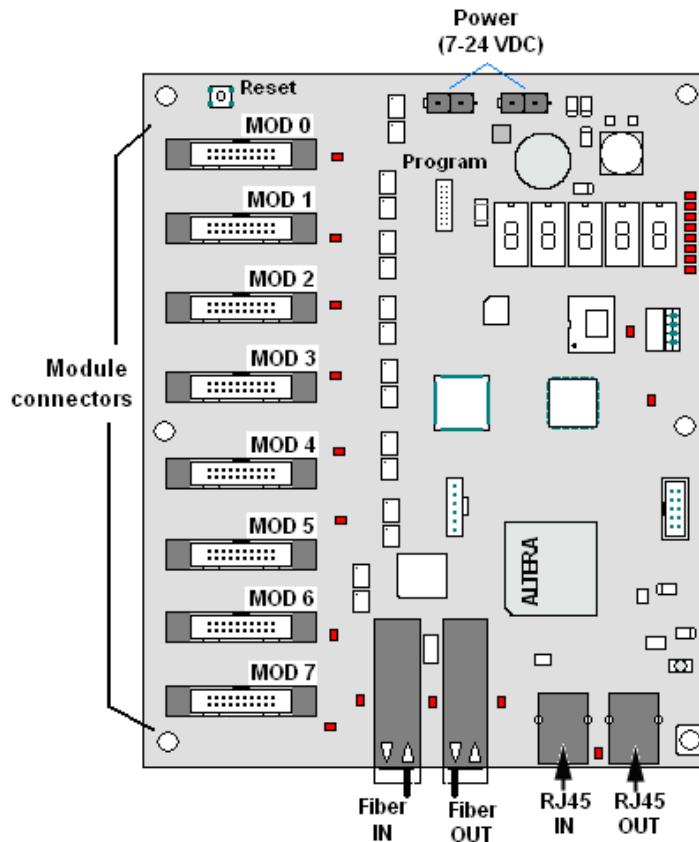


Figure 52: MLC

## Power Supply Replacement

Power supplies in GalaxyPro displays come in two basic types. Displays that are 8 pixels high use 600-watt power supplies that will each run up to nine modules. All other displays use 1,000-watt power supplies that will run up to 18 modules each.

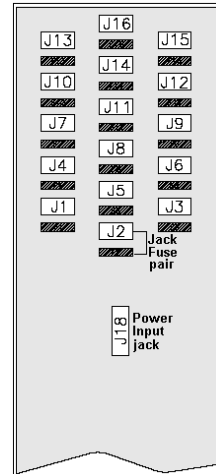
Power supplies in GalaxyPro displays are able to handle a range of power from 120 to 240 volt. The power supply contains a power distribution board on one edge that receives AC power and then supplies DC power to the modules. Each module is connected to a jack on the power distribution board by a Mate-n-Lok cable. Refer to **Figure 54**.

The fuses on the power distribution board are 32 volt 15 amp automotive fuses. Each jack has a corresponding fuse just below it. Be sure to replace fuses with the correct type. **Figure 53** shows the label attached to the side of each power supply noting the jack numbers. When replacing a power supply, note which one or two modules are connected to each jack.

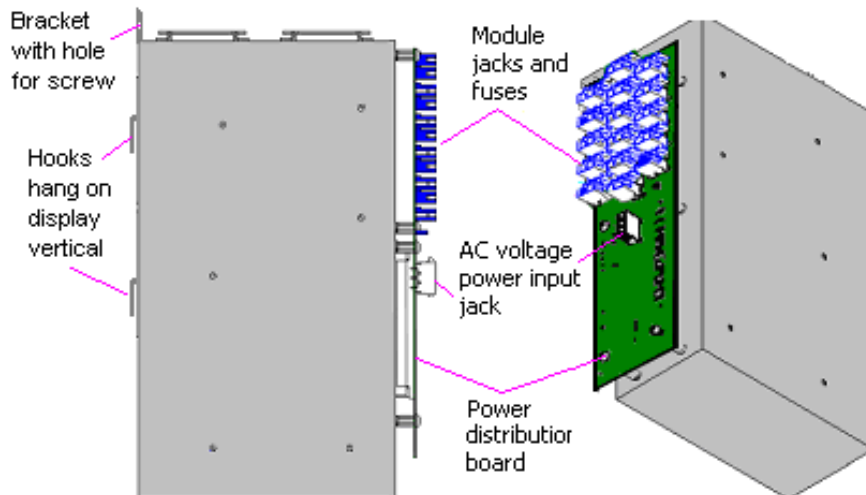
Complete the following steps to replace a power supply:

### Tool required: Phillips screwdriver

1. Turn off power to the display.
2. Remove the module directly in front of the appropriate power supply.
3. Disconnect the Mate-n-Lok® connectors from the power source as well as those going to the modules, noting the jack numbers going to each module (**Figure 53**).
4. Loosen the screw holding the power supply bracket to the cabinet upright and lift it off the hooks.
5. Carefully pull the power supply out of the cabinet.
6. Move the new power supply into place and tighten the screw on the support bracket.
7. Reconnect all the Mate-n-Lok® plugs so that each module will receive power. Refer to the appropriate **Layout Drawing** for module connections, if needed.



**Figure 53:** Jacks and Fuses Label on Power Supply



**Figure 54:** Power Supply with Low Voltage Distribution Board

## Light Sensor Replacement

The light sensor assembly is mounted inside the bottom left edge of the cabinet. Refer to **Figure 41** for location. The entire assembly fits over two screws.

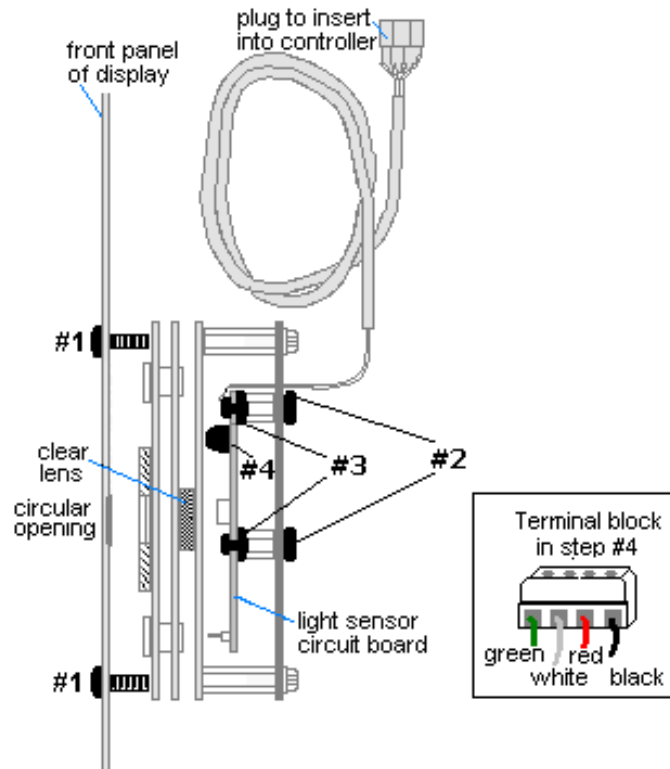
If the light sensor should fail, only the circuit board needs to be replaced. Remove the bottom left module on the display to access the light sensor. To replace a light sensor circuit board (**Figure 55**), follow these steps.

**Note:** The hardware mentioned in each step is given a corresponding number in the drawing. For instance, the nuts mentioned in step 2 are labeled #2 in the figure.

**Tool required:** #4 hex driver, Phillips screwdriver

1. Remove the screws that hold the light sensor to the cabinet.
2. Remove the #4-40 nuts securing the circuit board to the plate.
3. Remove the standoffs and attachment screws from the board.
4. Disconnect the four electrical wires on the sensor by unscrewing each screw that holds a wire in place. Note the order that the wires are connected so that they can be reconnected in the same locations on the replacement.
5. The light sensor plug on the controller does not need to be detached.
6. Reattach the new circuit board, following these steps in reverse.

**Note:** Align the new circuit board so that the lens lines up with the 1/2" circular opening in the bottom left edge of the display when the assembly is in place.



**Figure 55:** Light Sensor Assembly

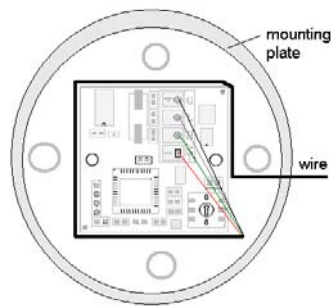


## Temperature Sensor Replacement

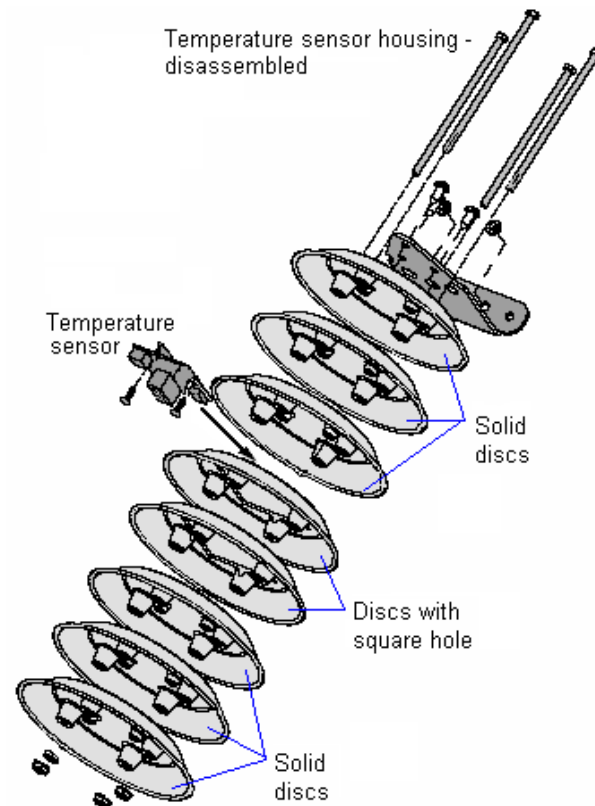
The temperature component is a small sensor board located inside the plastic housing. This will be mounted outside, typically either near the display or near the building. If a problem appears, the internal sensor can be replaced by accessing it in the following method. Refer to.

**Tool required: #8 hex driver, Phillips screwdriver**

1. Open the temperature sensor housing by removing the four #8-32 nuts from the bottom, and removing the five bottom discs. Three of the discs are solid, while the center two have a square hole in them to fit around the sensor.
2. Label the wires connected to the temperature sensor board and then disconnect the cable from the temperature sensor terminal block in the sensor housing.
3. Remove the two screws holding the board to the plastic disc. Install the new board, and replace the two screws.
4. Reconnect the cable to the temperature sensor board, making sure all the wires make a good electrical connection.
5. Route cable around the sensor board (**Figure 56**) and then reassemble the sensor enclosure.



**Figure 56:** Wire around Sensor Board



**Figure 57:** Temperature Sensor



## Section 9: Daktronics Exchange and Repair & Return Programs

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To serve customers' repair and maintenance needs, Daktronics offers both an Exchange Program and a Repair & Return Program.

### Before Contacting Daktronics

Print any important part numbers here:

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Fill in these numbers before calling Customer Service:

Display Serial Number: \_\_\_\_\_

Display Model Number: AF-3700 34 mm

Contract Number: \_\_\_\_\_

Date Installed: \_\_\_\_\_

Location of Display: \_\_\_\_\_

Daktronics Customer ID Number: \_\_\_\_\_

### 9.1 Exchange Program

Daktronics' unique Exchange Program is a quick service for replacing key parts in need of repair. If a part requires repair or replacement, Daktronics sends the customer a replacement, and the customer sends the problem part to Daktronics. This decreases display downtime.

To participate in the Exchange Program, follow these steps.

1. **Call Daktronics Customer Service: 866-343-3122.**
2. **When the new exchange part is received, mail the old part to Daktronics.**

If the replacement part fixes the problem, send in the problem part which is being replaced.

  - a. Package the old part in the same shipping materials in which the replacement part arrived.
  - b. Fill out and attach the enclosed UPS shipping document.
  - c. Ship the part to Daktronics.
3. **A charge will be made for the replacement part immediately, unless a qualifying service agreement is in place.**

In most circumstances, the replacement part will be invoiced at the time it is shipped.
4. **If the replacement part does not solve the problem, return the part within 30 working days or the full purchase price will be charged.**

If the equipment is still defective after the exchange is made, please contact Customer Service immediately. Daktronics expects *immediate return* of an exchange part if it does not solve the problem. The company also reserves the right to refuse parts that have been damaged due to acts of nature or causes other than normal wear and tear.

## 9.2 Repair & Return Program

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

1. **Call or fax Daktronics Customer Service:**  
Phone: 866-343-3122                      Fax: 605-697-4444
2. **Receive a Return Materials Authorization (RMA) number before shipping.**  
This expedites repair of the part.
3. **Package and pad the item carefully to prevent damage during shipment.**  
Electronic components, such as printed circuit boards, should be placed in an antistatic bag before boxing.
4. **Enclose:**
  - your name
  - address
  - phone number
  - the RMA number
  - a clear description of symptoms

## 9.3 Shipping Address

Daktronics Customer Service  
PO Box 5128  
331 32nd Ave  
Brookings SD 57006

# Appendix A: Reference Drawings

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Following are the drawings for 34 mm GalaxyPro displays that are included in this section. Note that each drawing includes various height choices and a range of lengths. Be sure to refer to the drawing which correlates with the matrix size of the specific display since component locations, power specifications, and signal routing will vary according to display size.

**Note:** Pixel height and length ranges are noted in parentheses.

## **Power Specifications, listed by pixel height**

Power Specs, AF-3700-(8-32) x*-34-RGB-120/240 & 120/208V .....	<b>Drawing B-278578</b>
Power Specs, AF-3700-(40-64) x*-34-RGB-120/240 & 120/208V .....	<b>Drawing B-283112</b>
Power Specs, AF-3700-(72-80) x*-34-RGB-120/240 & 120/208V .....	<b>Drawing B-283113</b>
Power Specs, AF-3700-(88-96) x*-34-RGB-120/240 & 120/208V .....	<b>Drawing B-283114</b>
Power Specs, AF-3700-(104-112) x*-34-RGB-120/240 & 120/208V .....	<b>Drawing B-283115</b>
Power Specs, AF-3700-(120-128) x*-34-RGB-120/240 & 120/208V .....	<b>Drawing B-278707</b>
Power Specs, AF-3700-(8-32) x*-34-RGB- <b>240 &amp; 240/415V</b> .....	<b>Drawing B-298537</b>
Schematic, AF-3700-34-RGB, general.....	<b>Drawing B-277048</b>
Schematic, M3, Primary signal, internal, w/QC & MLC .....	<b>Drawing B-283392</b>

## **Fiber Routing**

Routing, Fiber, MM, LC, AF-3700-(8-64x48-304)-34 .....	<b>Drawing B-287914</b>
Routing, Fiber, MM, LC, AF-3700-(8-64x320-384)-34 .....	<b>Drawing C-287915</b>
Routing, Fiber, MM, LC, AF-3700-(72-128x48-304)-34 .....	<b>Drawing C-287916</b>
Routing, Fiber, MM, LC, AF-3700-(72-128x320-384)-34 .....	<b>Drawing C-287917</b>

## **Layout Drawings**

Layout, EE/ME, AF-3700-(8-72)x(48-176)-34-RGB .....	<b>Drawing C-275109</b>
Layout, EE/ME, AF-3700-(8-72)x(192-272)-34-RGB .....	<b>Drawing C-275110</b>
Layout, EE/ME, AF-3700-(8-72)x(288-336)-34-RGB .....	<b>Drawing C-275111</b>
Layout, EE/ME, AF-3700-(8-72)x(352-384)-34-RGB .....	<b>Drawing C-275112</b>

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## **List of Shop Drawings**

The following drawings are listed for reference purposes only and are not included here. A Shop Drawing was provided when the display order was placed. However, if one is needed, look up the drawing number here and request it from Daktronics Customer Service. Note that the numbers in parentheses describe the range of lengths included in the drawing.

## **Shop Drawings listed by pixel height**

Shop Dwg, AF-3700-24 x (48-304)-34 .....	<b>Drawing B-293705</b>
Shop Dwg, AF-3700-24 x (320-384)-34 .....	<b>Drawing B-293714</b>
Shop Dwg, AF-3700-32 x (48-304)-34 .....	<b>Drawing B-293706</b>
Shop Dwg, AF-3700-32 x (320-384)-34 .....	<b>Drawing B-293715</b>
Shop Dwg, AF-3700-40 x (48-304)-34 .....	<b>Drawing B-293707</b>
Shop Dwg, AF-3700-40 x (320-384)-34 .....	<b>Drawing B-293716</b>
Shop Dwg, AF-3700-48 x (48-304)-34 .....	<b>Drawing B-286924</b>
Shop Dwg, AF-3700-48 x (320-384)-34 .....	<b>Drawing B-293717</b>

Shop Dwg, AF-3700-56 x (48-304)-34.....	<b>Drawing B-286887</b>
Shop Dwg, AF-3700-56 x (320-384)-34.....	<b>Drawing B-293718</b>
Shop Dwg, AF-3700-64 x (48-304)-34.....	<b>Drawing B-286753</b>
Shop Dwg, AF-3700-64 x (320-384)-34.....	<b>Drawing B-293719</b>
Shop Dwg, AF-3700-72 x (48-304)-34.....	<b>Drawing B-293708</b>
Shop Dwg, AF-3700-72 x (320-384)-34.....	<b>Drawing B-293720</b>
Shop Dwg, AF-3700-80 x (48-304)-34.....	<b>Drawing B-293709</b>
Shop Dwg, AF-3700-80 x (320-384)-34.....	<b>Drawing B-293721</b>
Shop Dwg, AF-3700-88 x (48-304)-34.....	<b>Drawing B-293710</b>
Shop Dwg, AF-3700-88 x (320-384)-34.....	<b>Drawing B-293722</b>
Shop Dwg, AF-3700-96 x (48-304)-34.....	<b>Drawing B-293711</b>
Shop Dwg, AF-3700-96 x (320-384)-34.....	<b>Drawing B-293723</b>
Shop Dwg, AF-3700-104 x (48-304)-34.....	<b>Drawing B-293749</b>
Shop Dwg, AF-3700-104 x (320-384)-34.....	<b>Drawing B-293755</b>
Shop Dwg, AF-3700-112 x (48-304)-34.....	<b>Drawing B-293712</b>
Shop Dwg, AF-3700-112 x (320-384)-34.....	<b>Drawing B-293724</b>
Shop Dwg, AF-3700-120 x (48-304)-34.....	<b>Drawing B-293751</b>
Shop Dwg, AF-3700-120 x (320-384)-34.....	<b>Drawing B-293753</b>
Shop Dwg, AF-3700-128 x (48-304)-34.....	<b>Drawing B-286403</b>
Shop Dwg, AF-3700-128 x (320-384)-34.....	<b>Drawing B-293725</b>

# Appendix B: Glossary

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## Definitions of Terms

**Controller:** The “brains” of the display. The controller receives signal communication from the computer and sends the appropriate information to the MLC. Messages and schedules may also be stored on the controller for use when desired.

**Display Address:** An identification number assigned to each display of a network. The control software uses the address to locate and communicate with each display. Displays that are on the same network must have different addresses.

**Driver/LED Board:** The LEDs are mounted directly onto the module. This board is also responsible for the on/off and intensity levels of the LEDs.

**GalaxyPro®:** Daktronics trademarked name for LED RGB matrix displays.

**LED (light emitting diode):** A low energy, high intensity lighting unit.

**Louwer:** Black plastic ledge positioned horizontally above each pixel row. The louvers block sunlight, thus increasing the level of contrast on the display face.

**Mirror:** The second display in a two-sided configuration. The mirror display **does not** have a controller so it displays an exact copy of the information on the primary display. All signal information to the mirror is received through an inter-connect cable from the primary display.

**Module:** 34 mm GalaxyPro® modules are 8 pixels high by 8 pixels wide. Each is individually removable from the front of the display.

**Multi-line Controller (MLC):** a component that distributes signal from the controller or another MLC to a number of modules.

**Network:** Consists of multiple displays connected to each other. As many as 240 primary displays can exist on one network.

**Pixel:** A cluster of red, green, and blue LEDs.

**Primary:** A single-faced unit or the first display in a Primary-Mirror (2V) configuration. The communication signal, light sensor and temperature sensor will be connected to this display. The information from these components will be relayed from the primary display to the mirror display so that it shows exactly the same information. An inter-connect cable will transfer this information from the primary to the mirror display in this configuration.

**Venus 1500:** Name given to the software on the control computer that is used to create messages and send them to the displays. The Venus 1500 manual is included on the installation disk.

## Common Power and Signal Connectors



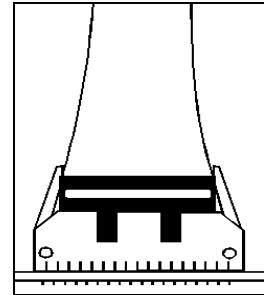
When pulling a connector plug from a jack, **do not pull on the wire or cable**; pull on the plug head itself. Pulling on the wires may damage the connector.

The power and communication signal connections in the displays use many different types of connectors. The following information presents some common connectors encountered during display installation and maintenance:

### Ribbon Cable Connectors:

A typical ribbon cable connector is shown in **Figure 58**. To disconnect the ribbon cable, push out the plastic clips on the sides to unlock the cable and then remove the jack.

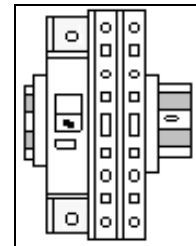
Before replacing a ribbon cable connector, spray it with DeoxIT™ contact cleaner to remove any foreign matter that may cause signal problems. In addition, apply a generous amount of CaiLube™ protector paste to the plug before inserting it into the jack. This paste will protect both the plug and the jack from corrosion.



**Figure 58:** Ribbon Cable Connector

### Termination Blocks:

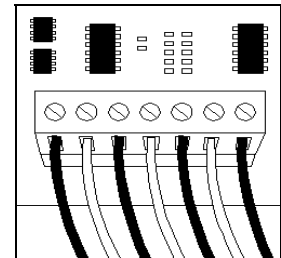
Termination blocks are commonly used to connect internal power to an external power source. Power wires need to have one-half inch of insulation stripped from the end of the wire prior to termination. Insert wires into terminations and make sure the clamp holds the wire firmly. A typical termination block is shown in **Figure 59**.



**Figure 59:** One Breaker Termination Block

### Phoenix™-Style Connectors:

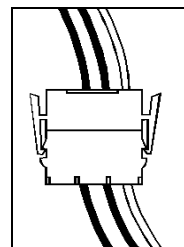
Phoenix-style connectors, which are usually green, are often used for communication signal termination on circuit boards. Refer to **Figure 60**. Strip one-quarter inch of insulation from the wire prior to insertion. To remove a wire, turn the corresponding screw counter-clockwise to loosen the connector's grip on the wire. To insert a wire, push the bare wire into the connector and turn the above screw clockwise to lock the wire into place.



**Figure 60:** Phoenix Connector

### Mate-n-Lok® Connectors:

The Mate-n-Lok connectors found in the displays are white and come in a variety of sizes. **Figure 61** illustrates a four-pin Mate-n-Lok connector. To remove the plug from the jack, squeeze the plastic locking clasps on the side of the plug and pull it from the jack.



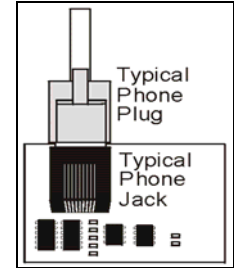
**Figure 61:** Mate-n-Lok Connector



**Phone/Network Jacks (RJ11/RJ45 Connectors):**

RJ connectors, as seen in **Figure 62**, are similar to the telephone connectors or network jacks found in homes and businesses. These jacks are used on the ends of RJ11 or RJ45 cable. In order to remove this plug from the jack, depress the small clip on the underside of the plug.

Before replacing an RJ connector, spray it with DeoxIT™ contact cleaner to remove any foreign matter that may cause signal problems. In addition, apply a generous amount of CaiLube™ protector paste to the plug before inserting it into the jack. This paste will protect both the plug and the jack from corrosion.

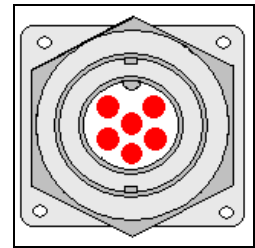


**Figure 62:** RJ11/RJ45 Connector

**Quick-connect Jack:**

The display uses quick-connect jacks for the connection of the signal, the temperature sensor and the connection to a mirror display. Three input and one output quick-connect jacks are located on the back of the primary display. When not in use, the attached dust cover should be kept closed.

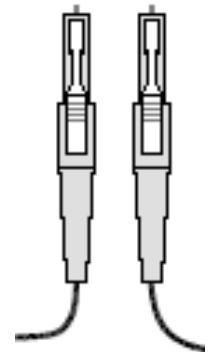
To attach the cable to a jack, match the configuration of wires in the plug to the pattern in the jack. Push the plug in, then turn the outer collar to lock it into place. **Figure 63** illustrates the six-pin quick-connect jack.



**Figure 63:** RS232/Six-pin Quick-connect Jack

**Fiber Optic Cable:**

A fiber optic network transmits light (signal) through a glass fiber. Because fiber optic cable is glass, the cable must never be bent. Two fiber cables are shown in **Figure 64**.



**Figure 64:** Fiber-Optic Cable



## **Appendix C: Temperature Sensor Installation**

---

**Reference Drawings:**

Temp Sensor Cable Routing Schematic .....	Drawing A-197884
Exploded Temp Housing Assembly .....	Drawing A-198371

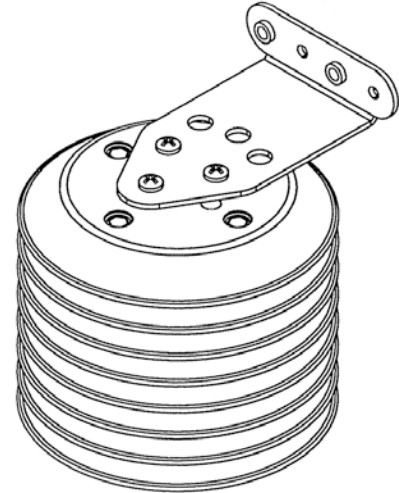
## 1.1 Temperature Sensor Overview

The temperature sensor enclosure, shown in **Figure 1**, is composed of eight plastic disks, a metal mounting bracket, and a 25-foot weather-resistant cable.

In most cases, the enclosure is mounted using two screws. The cable is plugged into the back of the display.

It may be necessary to disassemble the enclosure or rewire the temperature sensor board. Instructions are provided for those situations.

Refer to the following chart for part numbers if replacement or additional parts are needed.



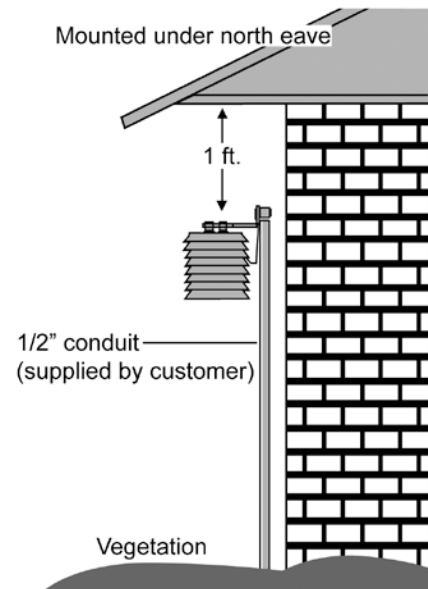
**Figure 1: Temperature Sensor**

Parts List	
Part Description	Daktronics Part Number
Temperature Sensor Housing	0A-1151-0005
4-pin Male Cable, 25 feet	W-1819
22 AWG 2-pair Shielded Cable	W-1234

## 1.2 Mounting Locations

For greater temperature accuracy, follow these mounting recommendations:

- **Mount sensor vertically.**
- An ideal location is under a north eave or on a northern exposure away from direct sunlight, as shown in **Figure 2**. In these cases, the quick-connect cable is not used. Four-conductor, 22-AWG, shielded cable must be pulled from the display to the temperature sensor location. Route the cable through conduit when exposed to outdoor conditions. The maximum length of the cable should be no more than 500 feet.
- Mount the sensor above grass or vegetation rather than concrete or other pavement.
- Mount at least 20 feet away from chimneys, vents, air conditioners, or other items that would influence correct temperature readings.
- Do not mount the sensor between displays or locations that restrict air movement.
- Mount the sensor so the cable is protected from weather and vandalism.



**Figure 2: Located on the North Eave**

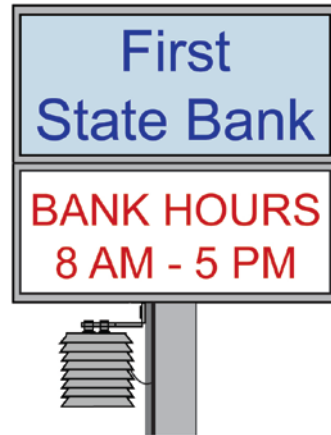
The most common location for the temperature sensor is on the display structure, as shown in **Figure 3**. To keep the sensor shaded, locate it below or on a northern edge of the display.

**Note:** Always mount the sensor in a location so it can easily be connected to the primary display.

## 1.3 Using the provided 25-foot quick-connect cable (most common)

1. The temperature sensor is connected to the display through a quick-connect input plug on the back of the first face. The temperature sensor is provided with 25 feet of weather resistant cable. The cable does not need to be in conduit. The sensor connects to the display at J31. **Figure 4** and **Figure 5** show the location of the quick-connect plug.
2. The quick-connect signal cable between displays connects both communication and temperature signal. No additional wiring is required from display to display for the temperature sensor.
3. Coil any excess cable and secure it to discourage vandalism, as shown in **Figure 4**.

Temperature Sensor Attached to Display Structure



**Figure 3:** Located on Structure



**Figure 4:** AF-3700 Quick-Connect Cable



**Figure 5:** AF-3500 Quick-Connect Panel

## 1.4 Using more than 25-feet of cable and no quick-connect plug (rare use)

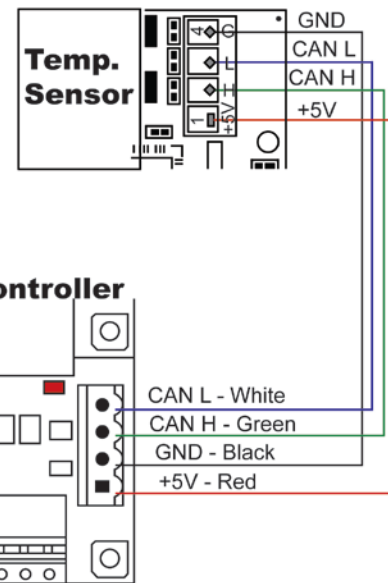
1. Run 1/2" conduit from the temperature sensor location to a knockout on the back of the primary display. The cable must be routed through 1/2" metal conduit that is earth-grounded to protect the sensor and controller from lightning damage.

2. Use a 2-pair, 22 AWG, individually shielded cable to connect the sensor to the 4-position terminal block in the display labeled TB4. Connect to the controller as shown in **Figure 6**.

3. Open the temperature sensor housing by removing the four nuts from the bottom and removing the five bottom disks. Refer to **Drawing A-198371** for details on sensor housing disassembly.

4. Disconnect the quick-connect CAN temperature sensor cable from the temperature sensor terminal block in the CAN temperature sensor housing.

5. Connect the cable coming from the controller's terminal block to the temperature sensor board in the temperature sensor housing. Refer to **Figure 6** and the following table for wiring locations and connections at the sensor and to the controller.



**Figure 6:** CAN Temperature Sensor Connection Controller

Primary – Controller Board (A31-TB4)	Field Cabling	CAN Temp Sensor (TB1)
Pin 1 (+5V CAN)	Red	Pin 1 (+5V CAN)
Pin 2 (GND CAN)	Shield Black	Pin 4 (GND CAN)
Pin 3 (CAN H)	Green	Pin 2 (CAN H)
Pin 4 (CAN L)	White	Pin 3 (CAN L)

6. Route cable around the sensor board as shown in **Drawing A-197884**.

7. Connect the cable and reassemble the sensor.

**Note:** The cable length from the sensor to the last display should not exceed 500 feet.

## 1.5 Temperature Interconnection (for primary-primary setups)

When the display uses the quick-connect interconnect cable, this connection is already complete.

When the interconnect cable is not used, a 4-conductor shielded cable is needed to terminate the temperature sensor from display one to display two.

One end terminates at the 4-position terminal block (TB4) on the primary display. The other end terminates at the 4-position terminal block (TB4) in the second display. Refer to **Figure 7** and the following table for correct interconnect locations.

**Note: Do not connect the wire to pin one on either display.**

Interconnect Locations – M3 Controller		
Primary (A31-TB4)	Field Cabling	Secondary (A31-TB4)
Pin 2 (GND CAN)	Black	Pin 2 (GND CAN)
Pin 3 (CAN H)	Green	Pin 3 (CAN H)
Pin 4 (CAN L)	White	Pin 4 (CAN L)

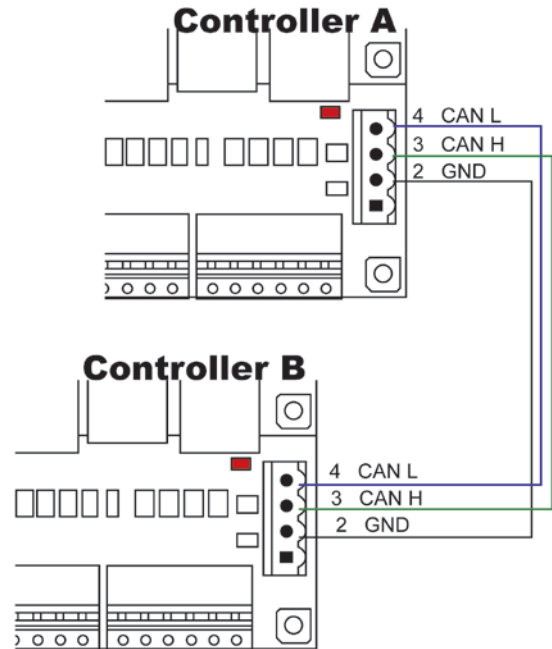


Figure 7: CAN Controller Interconnect

## 1.6 Sensor Replacement

If the temperature sensor board or wiring malfunctions, access it by:

1. Open the temperature sensor housing by removing the four nuts from the bottom and then removing the five bottom disks. Refer to **Figure 8** for details on sensor housing disassembly.
2. Label the wires connected to the temperature sensor board and then disconnect the cable from the sensor terminal block in the temperature sensor housing.

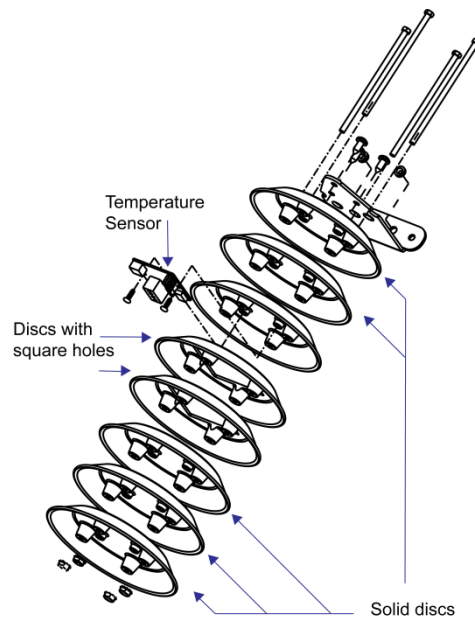
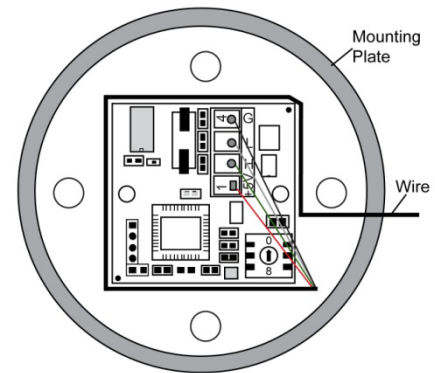


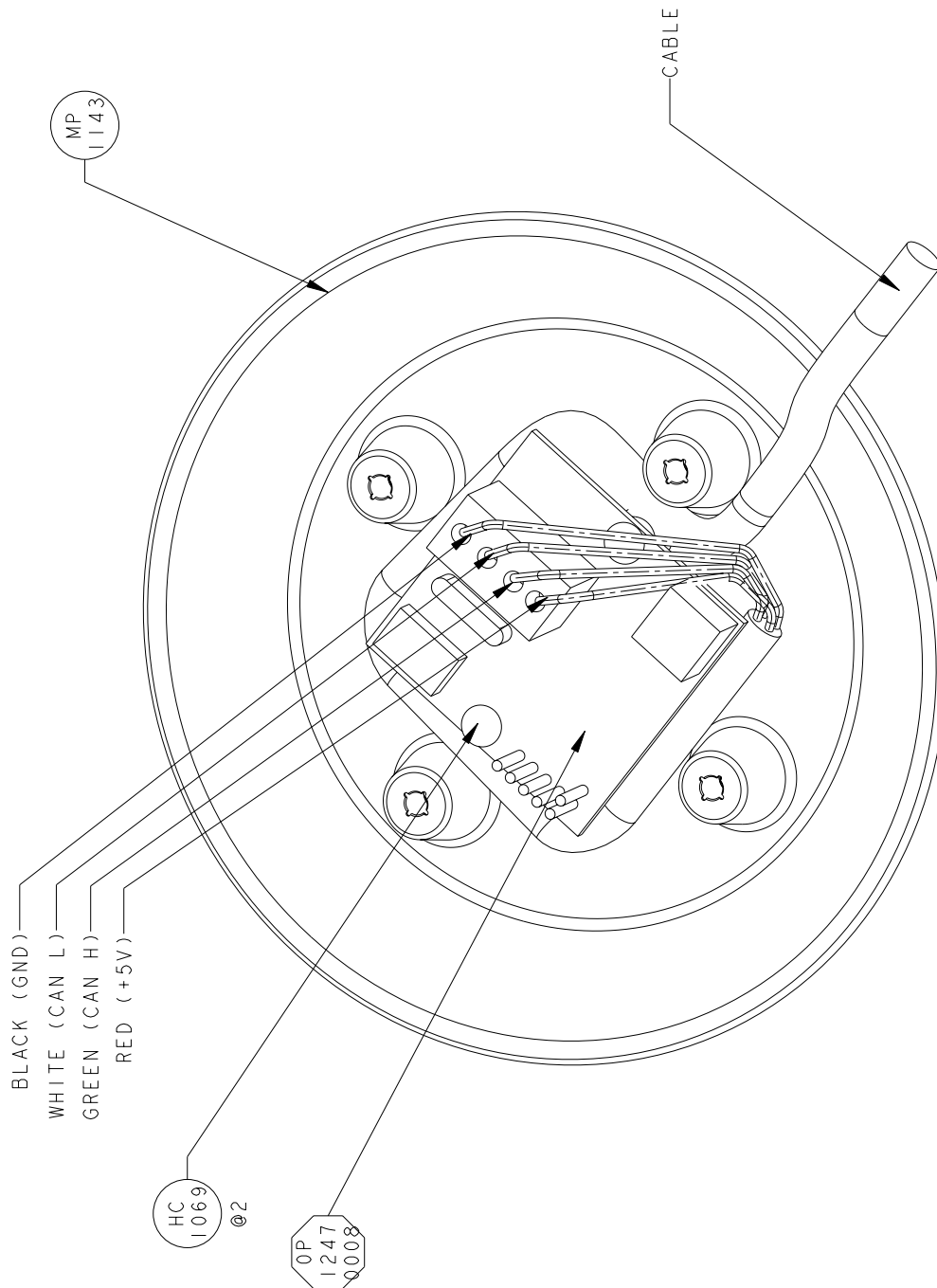
Figure 8: Temperature Sensor Diagram

3. Remove the two screws holding the board to the plastic disk. Install the new board and replace the two screws.
4. Reconnect the cable to the temperature sensor board, making sure all the wires make a good electrical connection.
5. Route wires around the sensor board as shown in **Figure 9** and reassemble the sensor enclosure.



**Figure 9:** Temperature Sensor Wiring





**ASSEMBLY INSTRUCTIONS:**  
 ATTACH PC BOARD TO MP-1143 W/ HC-1069.  
 STRIP JACKET OF W-1819 2". STRIP INSULATION  
 OF INDIVIDUAL WIRES APPROXIMATELY 1/4".  
 INSERT WIRES INTO TERMINALS AS SHOWN & TIGHTEN.  
 ROUTE CABLE AS SHOWN.

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

PROJ: LIGHT & TEMP SENSORS

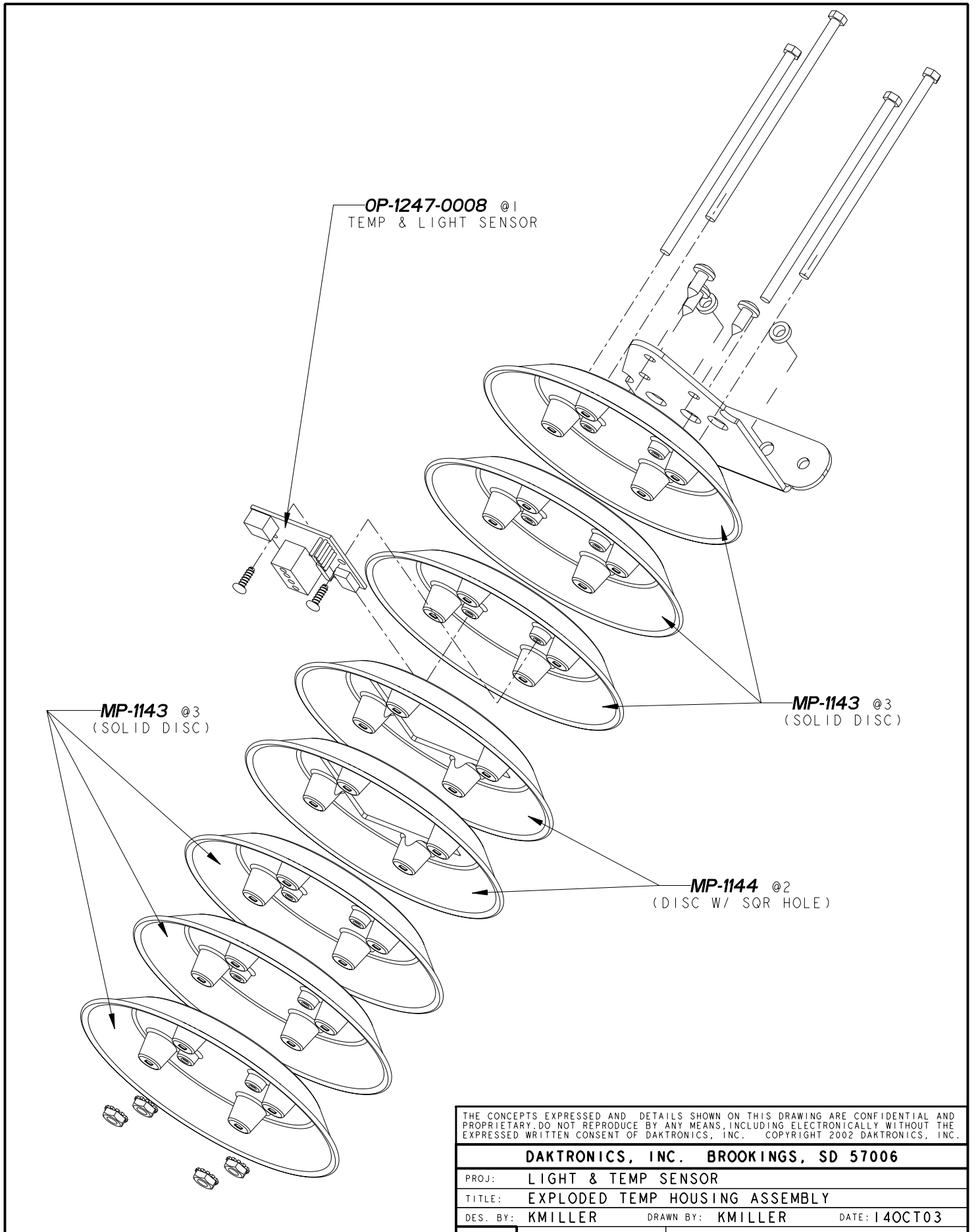
TITLE: TEMP SENSOR CABLE ROUTING SCHEMATIC

DES. BY: K MILLER DRAWN BY: K MILLER DATE: 03OCT03

REVISION SHEET 1 OF DWG 197884 SCALE: 1 = 1

1151 - E10A - 197884

REV.	DATE	DESCRIPTION	BY	APPR.



**OP-1247-0008** @1  
TEMP & LIGHT SENSOR

**MP-1143** @3  
(SOLID DISC)

**MP-1143** @3  
(SOLID DISC)

**MP-1144** @2  
(DISC W/ SQR HOLE)

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

PROJ:	LIGHT & TEMP SENSOR		
TITLE:	EXPLODED TEMP HOUSING ASSEMBLY		
DES. BY:	KMILLER	DRAWN BY:	KMILLER
		DATE:	14OCT03

REVISION	SHEET 1 OF DWG 198371	1151-E10A-198371
	SCALE: 1=3	

REV.	DATE	DESCRIPTION	BY	APPR.