

GalaxyPro[®] Revolution Series Sectional Display

Installation & Operation Manual

DD1359049

Rev 5 – 8 July 2011

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:	
Version of software being used:	
Method of communication being used: <i>(See Section 4: for guidance)</i>	



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Section 1: Display Overview

This manual provides simple installation, maintenance, and troubleshooting information to help ensure the optimal performance of the Daktronics GalaxyPro® Revolution series display. Diagnostic and parts replacement information is also included and a Glossary can be found in the rear of this manual.

1.1 Display Details

GalaxyPro® Revolution model numbers are defined as follows:

GPR-RxC-M-L-F		
GPR	=	Outdoor GalaxyPro® Revolution display
R	=	Number of pixel rows high
C	=	Number of pixel columns long
M	=	Pixel pitch: 12EV – “12 Evolution” pixels, all others in millimeters
L	=	LED Color: R (Red), G (Green), B (Blue)
F	=	Face setup: SF – Single Face or 2V – Primary/Mirror

The displays are offered as single-face (SF) or two view (2V) units. In 2V units, the first display is referred to as the primary and the second is called the mirror. If the second display is mounted more than 8 feet (2.4m) from the first, two primary units are used.

A module is the building block of the GalaxyPro® Revolution display. **Figure 1** shows a 20mm module measuring 16 pixels high by 16 pixels wide (module sizes will vary). Individual modules can be easily removed from the display if needed.

A typical display system consists of a Windows®-based computer running Venus® 1500 software and one or more displays. Venus® 1500 is a software package that runs under Windows® XP or Vista Home/Professional operating systems on an IBM®-compatible computer. Refer to the Venus® 1500 Help file for operation of the Venus® 1500 software.

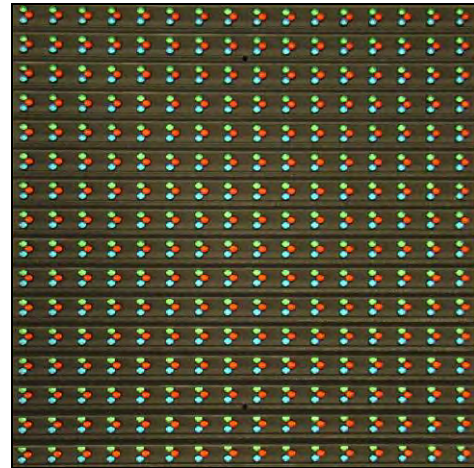


Figure 1: Single Module

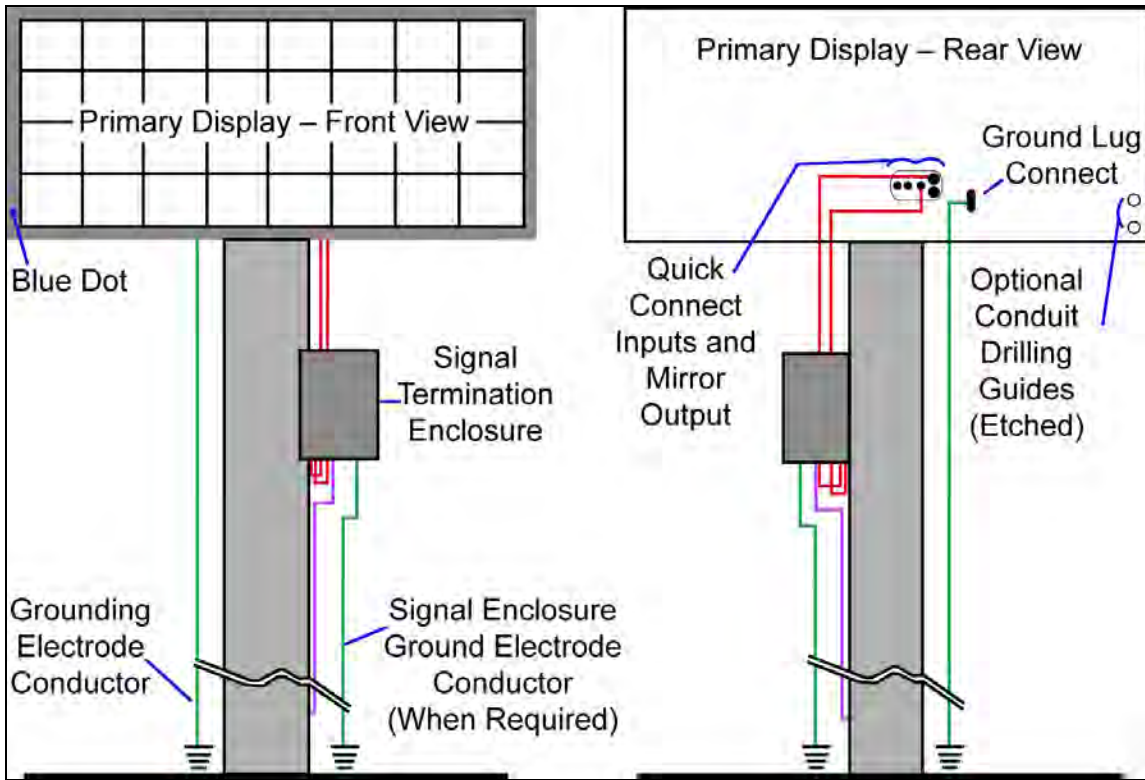


Figure 2: Display Components

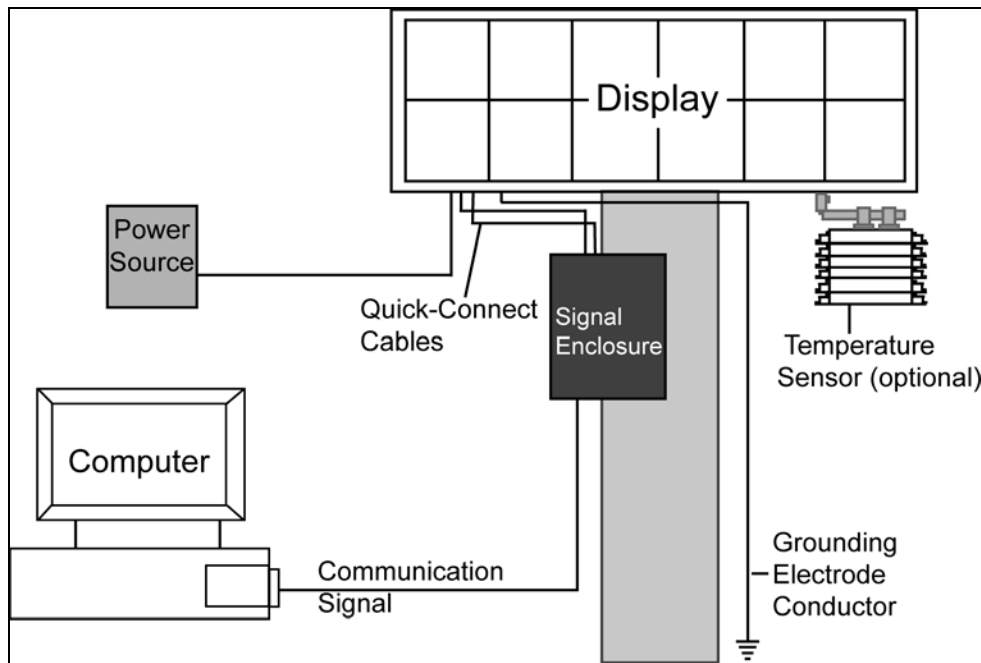


Figure 3: Basic Display Setup

1.2 Sectional Displays

Sectional displays are made up of several single sections. Each section consists of a cabinet and various internal components. The orientation of the section will determine what components are installed.

Section Numbering

Figure 4 illustrates a front view of a sectional display. The first number indicates a section's row starting from the top. The last number indicates a section's column starting from the left.

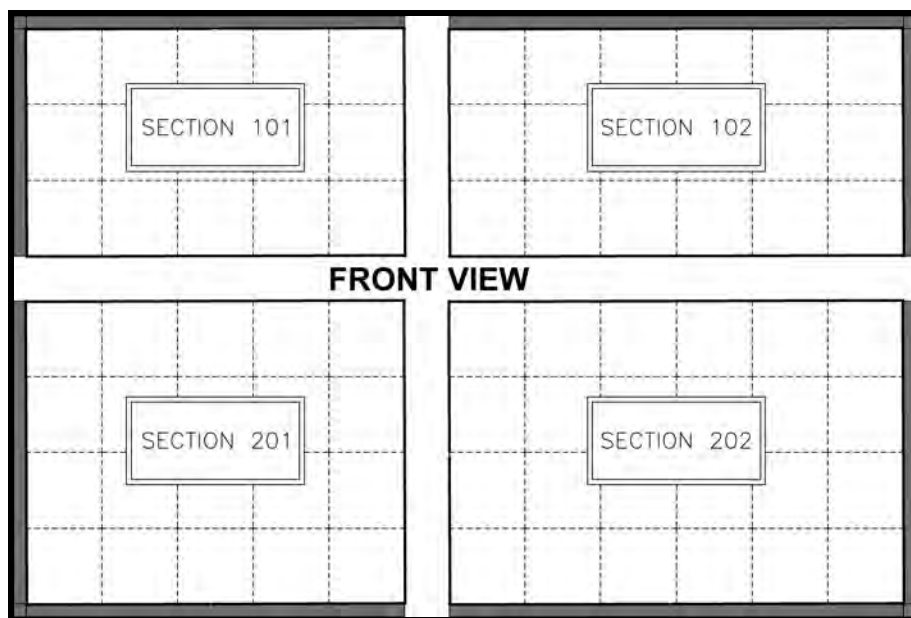


Figure 4: Sections

Section 2: Mechanical Installation

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 will be null and 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.

2.1 Pre-installation Checklist

Verify the following before 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 4ft. (1.2m) horizontal section must not exceed $\frac{1}{4}$ " (6.3mm).
- Adequate support is provided for the display so that the structure will not yield at any unsupported points after mounting.
- Leave 4" (102mm) of unobstructed space above the display so the eyebolt can be removed. No clearance is required once the eyebolt is removed.
- Maintain clearance around the display to allow unobstructed air flow through the vents and fans and to allow access to internal components.
- Assure the display cabinet has no holes (accidental or intentional) that could allow water to enter the display.
- Check that all display modules are fully latched into the display cabinet.
- All horizontal stringers are plumb. Run a plumb bob from the top horizontal stringer down to the bottom of the display. Refer to **Figure 5** for an example.

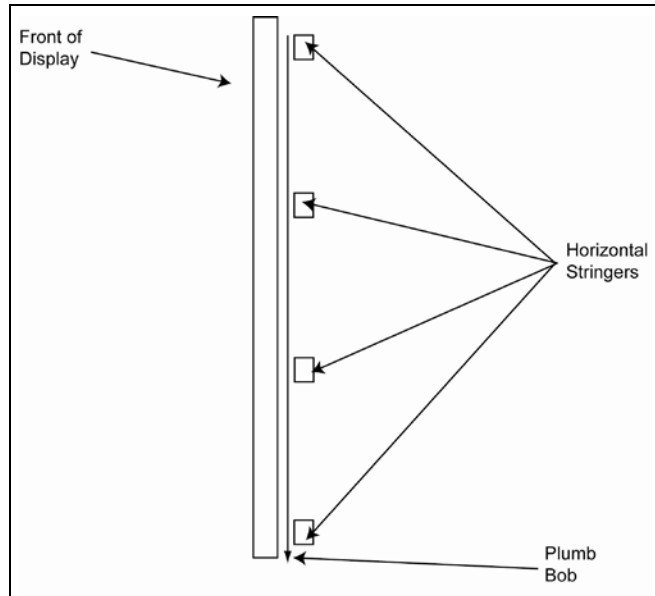


Figure 5: Horizontal Stringers

2.2 Support Structure Requirements

The installer must ensure the support structure and hardware can support the display, and that the structure follows all local and national structural codes. Support structure design depends on the mounting method, display size, and weight.

Because every installation site is unique, no single procedure is approved by Daktronics for mounting GalaxyPro displays. This section contains general information that may or may not be appropriate for this particular installation. Refer to **Figure 2** and **Figure 3** for basic display setups.

Also remember the location of mounting clips and the clearance needed for the power/signal terminations and ventilation systems on the back of the display, as shown in **Figure 6**.

Display height and wind loading are also critical factors to consider. This information can be found on the **Shop Drawing** which was supplied with the order.

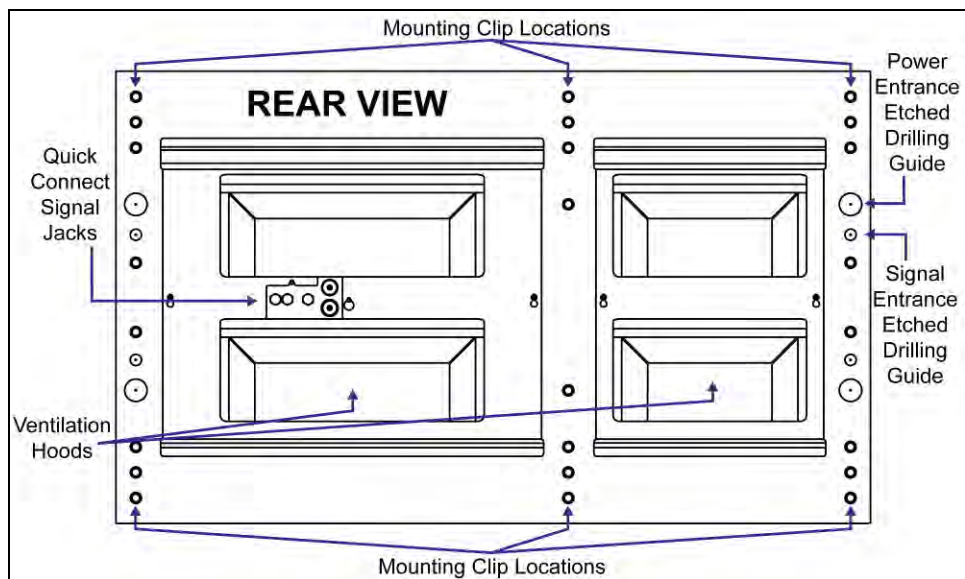


Figure 6: Section Rear View

2.3 Lifting a Display Section

Maintain a 90-degree angle between the cabinet and lifting method to retain the cabinet's structural integrity.

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 as shown in **Figure 7**.

Do not attempt to permanently support the display by the eyebolts.

Do not lift more than one section at a time.

Mount the bottom section(s) first.

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

If the eyebolts on the top of the display were removed, plug the holes with bolts and the rubber-sealing washer that was removed with the eyebolt.

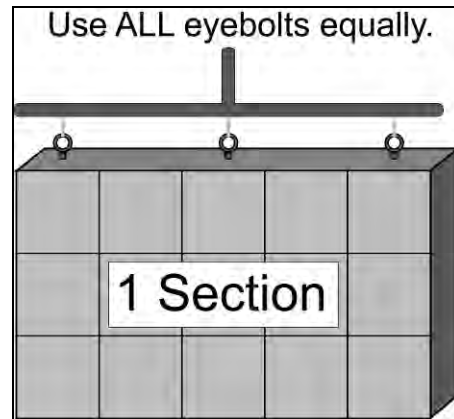


Figure 7: Lifting the Display

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

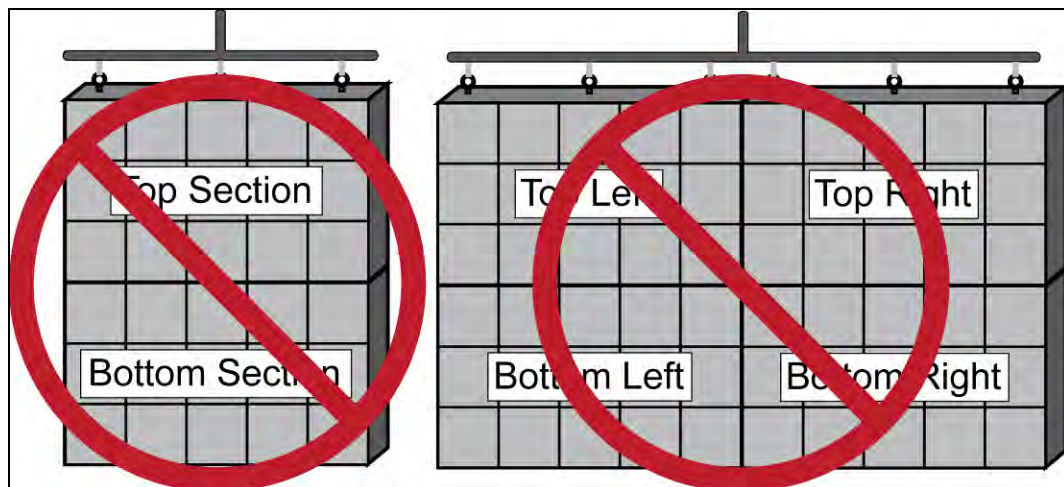


Figure 8: Incorrect Lifting

2.4 Sectional Mounting

Bottom/Bottom-Left Section

Before mounting, connecting the sections, or installation:

1. Remove modules from the first (left) column.
2. Remove the modules located in front of the power termination panel (refer to layout drawings in **Appendix A**).
3. If an additional section will be added for width, remove modules from the last (right) column.

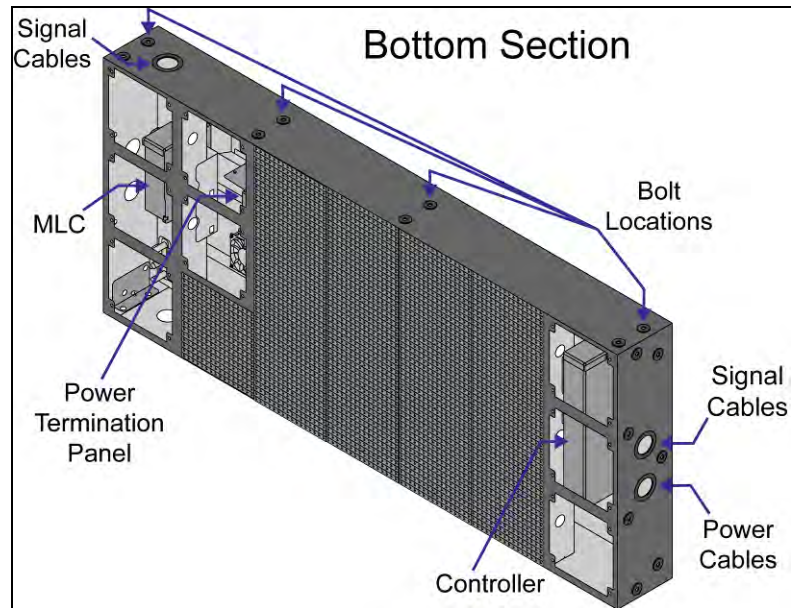


Figure 9: Bottom Section Preparation

Top/Top-Left Section

Before mounting, connecting the sections, or installation:

1. Remove modules from the first (left) column.
2. Remove every odd module from the bottom row.
3. If an additional section will be added for width, remove modules from the last (right) column.

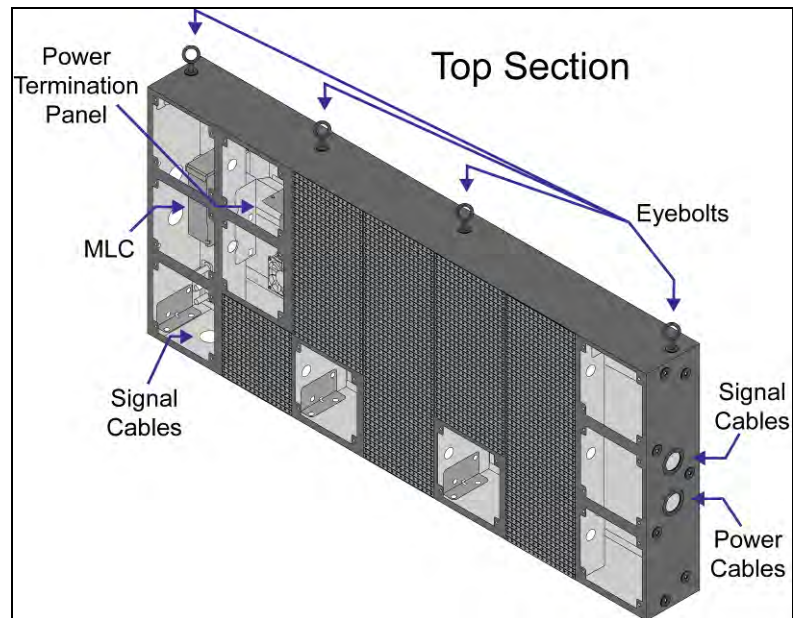


Figure 10: Top Section Preparation

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. Refer to **Figure 12** for an example.
2. Attach the bottom section to the support structure by welding or using $1/2"$ grade-5 (or stronger) bolts and hardware. Secure all clip angles.
3. Set the top section on top of the bottom section with the aid of the alignment pins. Refer to **Figure 12** for an example.
4. Remove the alignment pins and attach the sections together with $1/2"$ grade-5 (or stronger) bolts and flat and lock washers. Refer to **Figure 11** for an example.
5. If additional sections will be added for width, attach the sections left to right with $1/2"$ grade-5 (or stronger) bolts and flat and lock washers. Refer to **Figure 11** for an example.

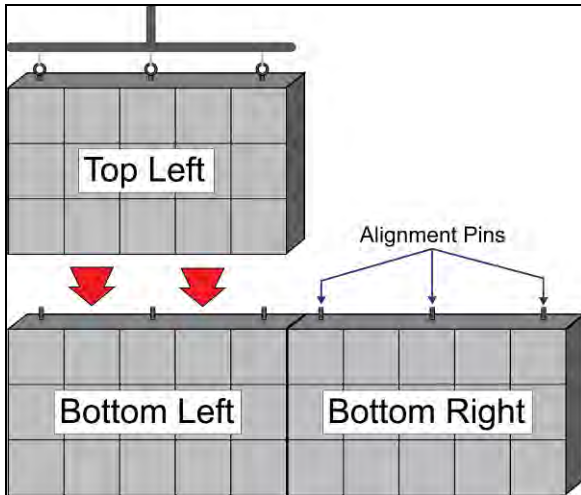


Figure 12: Combining Sections

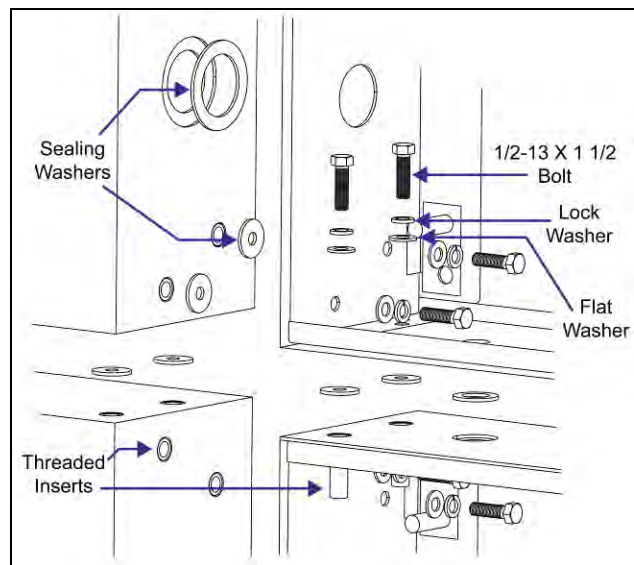


Figure 11: Section Connections

2.5 Optional Temperature Sensor Mounting

If an optional temperature sensor is used with this display, refer to **Appendix B** 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 null and void.

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 have etched power entrance drilling guides on the back for use with $3/4$ " conduit. Refer to the **Shop Drawing** to determine which type of display is being installed.

3.2 Power/ Signal Connection Overview

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

1. Possible methods for signal termination are shown in the manual for the specific communication type.
2. Power is routed to the display through a fused disconnect switch that can open all ungrounded power conductors. Install this disconnect within the line of sight of 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.)
3. Route power conductors from the disconnect to the display through conduit according to local and national electrical codes.
4. Display power terminates internally at the power termination panel.
5. Connect the grounding electrode conductor at the grounding lug on the back of the display.
6. Route signal cable to the signal termination enclosure. When required, the signal enclosure must be grounded.
7. Route signal into the enclosures through $3/4$ " conduit.

8. Route the signal quick-connect cables from the enclosure to the display through conduit or through the display pole if power is not also routed in the display pole. Daktronics strongly recommends the quick-connect cables be secured to protect it from weather or vandalism.

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

3.3 Power Requirements

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

Conductors of circuits delivering power to a Daktronics display must be sized according to national and local electrical codes so that the power distribution system can deliver full-load power to the display while maintaining a voltage within 5 percent of the utility nominal voltage.

Displays use single-phase power. Proper power installation is imperative for display operation. Power specifications for various size displays can be found in the **Shop Drawing** that was supplied with the order.

Main Disconnect

Daktronics requires using a power disconnect switch with the display. Use a disconnect switch so that all ungrounded conductors can be disconnected near the point of power connection.

The disconnecting means must be either located in a direct line of sight from the display or capable of being locked in the open position. This ensures that power will not be reconnected while service personnel work on the display.

3.4 Grounding

Displays must be grounded according to the provisions outlined in all applicable local and national electrical codes.

These displays are installed with ground and neutral conductors provided. The power cable must contain an isolated earth-ground conductor.

Do not connect neutral to ground at the disconnect or at the display. This will violate electrical codes and render the warranty null and void.

The display system must be connected to earth ground as shown in **Figure 13**. Proper grounding 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 null and void.

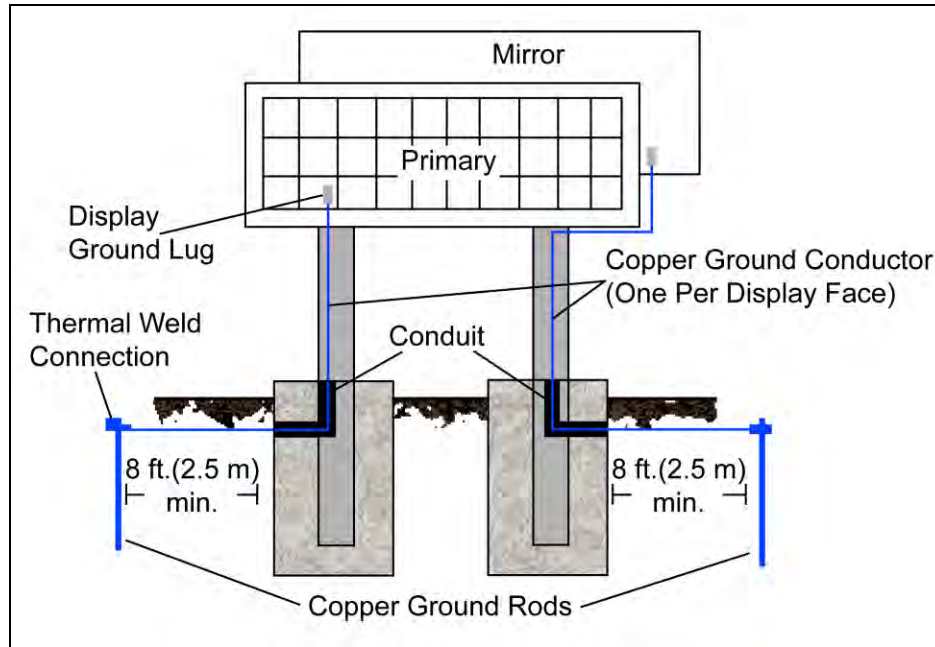


Figure 13: Correct Grounding

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 any electrical codes that 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:** Grounding is connected between sections. Other grounding electrodes as described in national and local electrical codes 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 is necessary to install additional grounding electrodes to reduce resistance. The grounding electrode must be installed within 25 feet (7.6 m) of the display's base and must be connected to the ground lug on the back of the display, as shown in **Figure 13**.

3.5 Power Connection

Power is terminated internally to the power termination panel inside each left display section.

1. Open the display as explained in **Section 6:** and locate the power termination panel.
2. Route the cable through conduit to the back of the display. Use one of the etched drilling guides for access, being careful not to damage internal components.
3. Clean any metal shavings from the cabinet and seal the holes to prevent water from entering the cabinet.
4. Connect the neutral wire to the neutral lug and the live wires to Line 1 and Line 2. Refer to **Figure 14.**
5. The ground wire connects to the grounding lug.

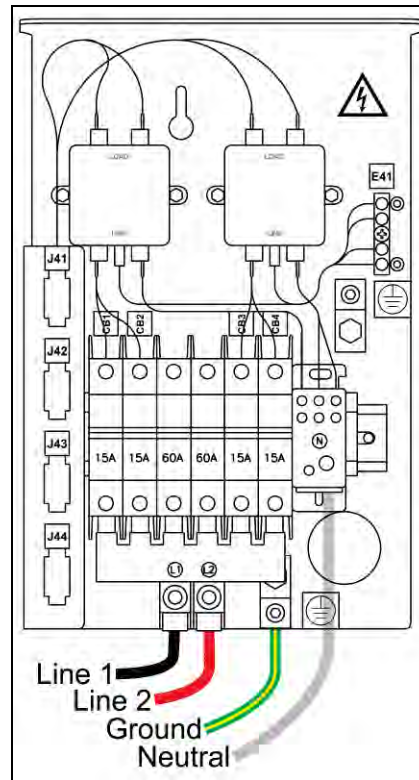


Figure 14: 120/240 V Single-Phase Power Termination

3.6 Power Routing in the Display

1. Power terminates internally to the power termination panel.
2. Power is routed through filters to the power supplies.
3. The power supplies provide power to the controller, MLC, modules, and fans.
4. If additional sections are added for width, power is routed from the power termination panel to subsequent sections. Power supplies are preset to the proper voltage: 12 VDC.

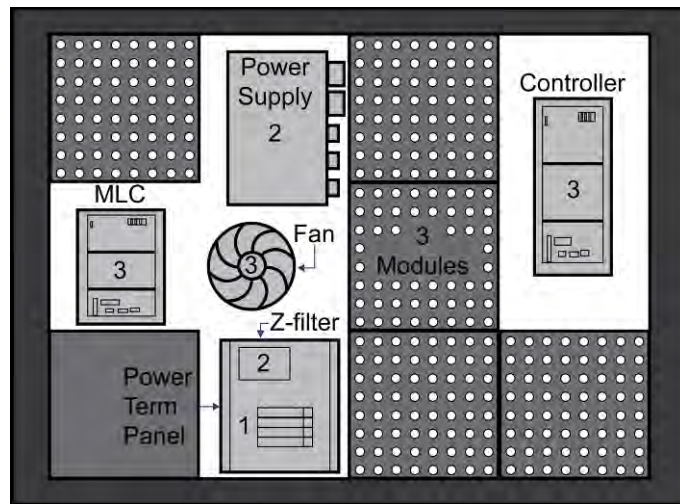


Figure 15: Power Flow Summary

3.7 Power Connections Between Sections

If additional sections are added for width, power must be routed from the first (left) section to any subsequent sections. Refer to **Figure 17** for examples.

1. Attach the PVC coupler provided with the subsequent section(s) to the lower opening between sections. Refer to **Figure 16** for an example.
2. Power interconnect wires are pre-terminated at the main section's power termination panel.
3. Route the power interconnect wires from the main (left) section through the lower PVC coupler into the subsequent section(s).
4. Connect the power interconnect wire to the power termination panel as described in **Section 3.5**.

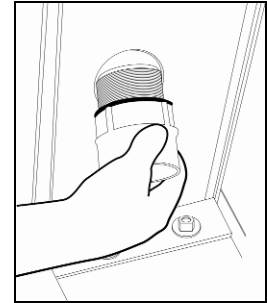


Figure 16: PVC Coupler

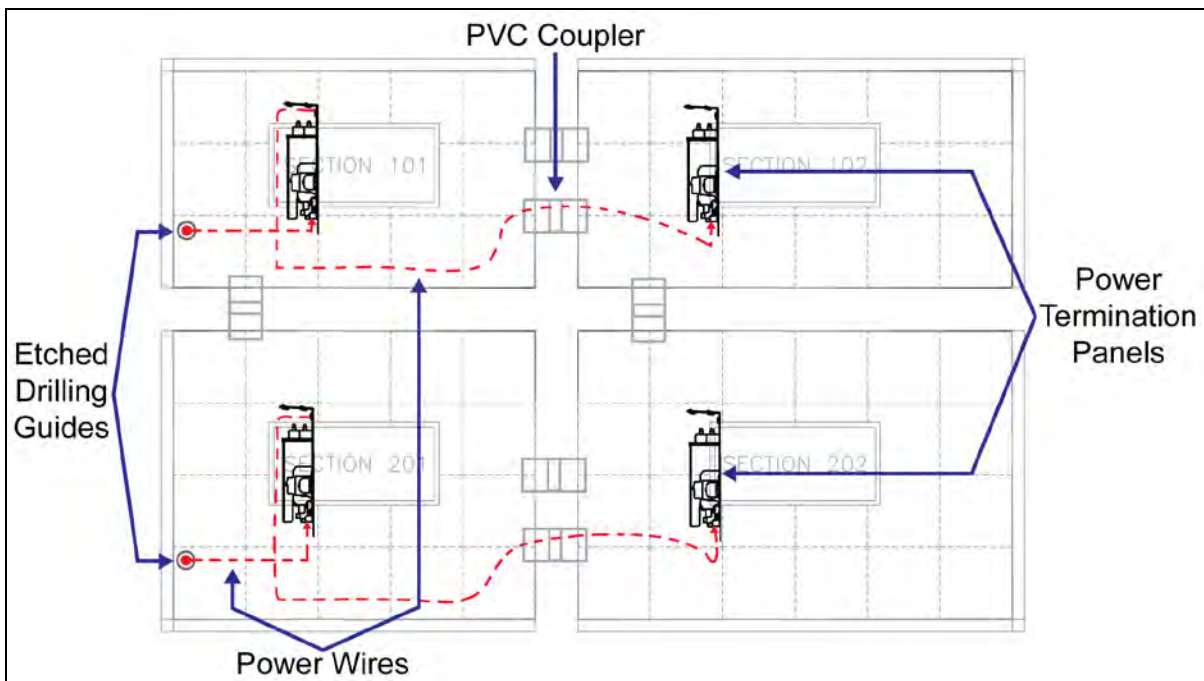


Figure 17: Section Power Connections

Section 4: Signal Installation Overview

Daktronics GalaxyPro® Revolution displays are equipped to receive various forms of Ethernet communication. GalaxyPro® Revolution displays require the use of ports 4500-4525 for communication and port forwarding applications. For communication signal installation details, consult the quick guide and manual included with the communication equipment. Each communication type and its manual number are listed below.

Communication Type	Communication Manual	Communication Quick Guide
Ethernet	DD1417609	DD1417573
Fiber Ethernet	DD1417611	DD1417581
Wireless Ethernet Bridge	DD1685027	DD1417586

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.

4.1 Primary/Mirror Signal Connection

If this display is a two-sided primary/mirror display, a quick-connect fiber-optic cable is provided to connect signal between the two 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. **Figure 18** and **Figure 19** show the cable and the quick-connect jacks.



Figure 18: Quick Connect Signal Cable



Figure 19: Fiber Interconnect Jack

4.2 Signal Connections Between Sections

Fiber-optic cable must be connected between each first (left) section's Multi-Line Controller (MLC). If additional sections are added for width ribbon cables must be connected between modules as well as an RJ11 cable between sections. Refer to **Figure 20** for an example.

To connect MLCs:

1. A fiber-optic cable will be connected to the upper MLC(s).
2. Route the fiber-optic cable from the upper MLC through the PVC coupler to the lower MLC.
3. Connect the fiber-optic cable to the J24 jack on the lower MLC.

To connect additional sections added for width:

1. Ribbon cables will be attached to modules in subsequent sections. There will also be an RJ11 cable located in the upper left corner of the subsequent sections.
2. Route the ribbon cables from the subsequent modules through the upper PVC coupler to the adjacent modules in the previous section. Also route the RJ11 cable to the upper right corner of the previous section.
Note: Signal cables and power wires must not be routed through the same PVC coupler.
3. Connect the ribbon cables to the open jacks on the first sections' modules.
4. Connect the RJ11 cable to the RJ11 coupler.

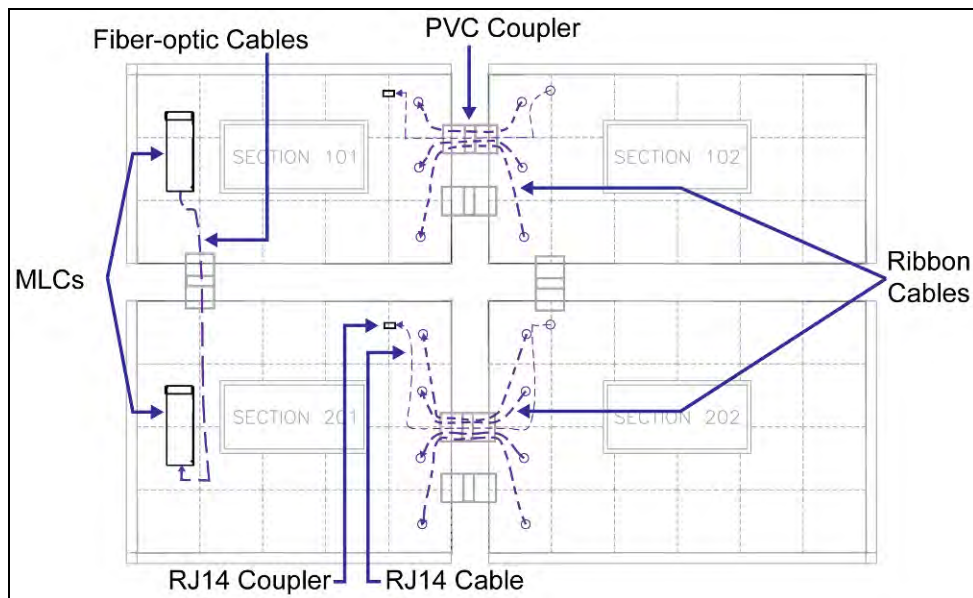


Figure 20: Section Signal Connections

Section 5: Start-up Procedure

Before starting the display, review the following list. **Figure 3** shows the basic display components referred to in each step.

5.1 Start-up Checklist

- Confirm that power is correctly connected to the display.
- Allow for sufficient power as listed in the display **Shop Drawing** and **Power Specs**.
- Assure a main disconnect switch is used to control power.
- Inspect all circuit breakers (internal and external) for sufficient marking and size.
- Confirm that adequate grounding is installed. Each display face must have a separate earth-ground conductor with a resistance of 10 Ohms or less.
- Assure the external communication equipment (signal enclosure, client radio, etc.) is properly installed.
- Inspect signal connections at the control computer.
- Inspect signal connections at the display.
Inspect signal connections between displays when necessary.
- Confirm that the control computer is correctly configured.
Follow the step-by-step directions in the Venus[®] 1500 Help File's Configuration section for correct setup.
- Inspect peripheral equipment (temperature sensor, etc.) for proper installation.

5.2 Start-up Sequence

Each time the display is turned on, an initialization sequence runs.

Attribute and Description	Example
Current Firmware Version Running on Display	M4-GalaxyProRev 4.X.X
Current Root File System Version Running on Display	Rfs X.X.X
Display Size	Row x Column
Display Color Type	RGB
Bit Depth of Display	32
Currently Configured Time Zone	America/North Dakota/Center
Current IP Address of Display	Varies
Name of Web Service and Port It Currently Runs On	Srv: DisplayConfig Port: 4500
Name of Web Service and Port It Currently Runs On	Srv: DisplayStatus Port: 4501
Name of Web Service and Port It Currently Runs On	Srv: PlayControl Port: 4502
Name of Web Service and Port It Currently Runs On	Srv: SecurityManagement Port: 4503
Name of Web Service and Port It Currently Runs On	Srv: FileTransfer Port: 4504
Name of Connected Sensor and Its Offset (Address)	Sensor: TEMP Offset: Addr: 1
Name of Connected Sensor and Its Offset (Address)	Sensor: LIGHT_LUX Offset: Addr: 2
User-Defined Display Description	East Employee Entrance

The order of services and sensors is subject to change. After the initialization 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 presentations are currently running.

5.3 Post Installation Checklist

Verify the following after starting the display:

- Assure all ventilation fans are fully operational.
- Inspect all intake and exhaust vents for obstruction.
- Confirm proper communications from the control computer to the display(s).
- Assure proper communications between display faces when applicable.

Section 6: Maintenance

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.

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 null and void.

Daktronics GalaxyPro Revolution displays are both front and rear accessible, meaning internal components are accessed by removing either the modules or rear access panels. The display must be opened to perform maintenance or troubleshooting. **Figure 21** shows internal component locations. Some components are restricted to specific sections. For example, Multi-Line Controllers (MLCs) are only located in the left sections while the controller is only located in the lower left section. Refer to the appropriate **Layout Drawings** for the location of components in specific display sizes.

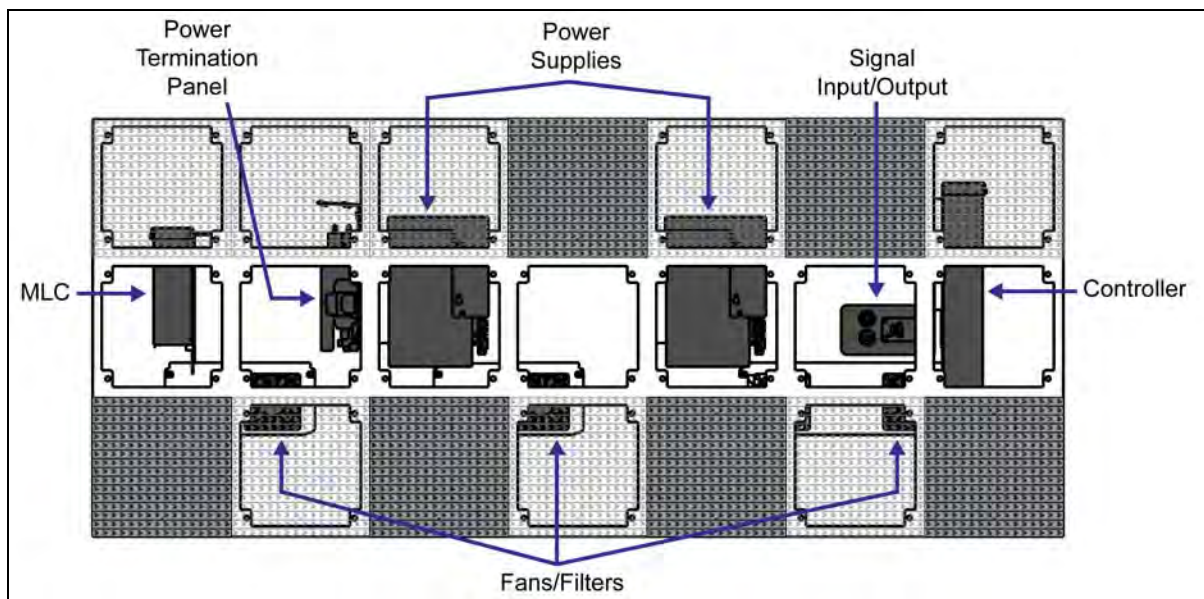


Figure 21: Interior Location of Components

6.1 Proper Ladder Use

A ladder can be used to access displays, although it is not preferable. If a ladder must be used, do not place the ladder directly against the display face. The pressure from the two ladder ends, even when covered with pads, is too concentrated and can damage the LEDs and louvers.

Instead, use a padded or carpeted board across the top of the ladder to distribute the weight of the ladder evenly when placed against the display face. The padded board should be wide enough to spread the weight of the ladder across a minimum of two modules.



Figure 22: Padded Board on Ladder

6.2 Access to Display Interior

Front Access

1. Disconnect power to the display.
2. Locate the latch access fasteners shown in **Figure 23** on the module.
3. With a $1/8$ " hex wrench, turn the latch access fasteners counter-clockwise a quarter turn, as shown in **Figure 24**. Gently pull the module far enough forward to reach the power and ribbon cables.

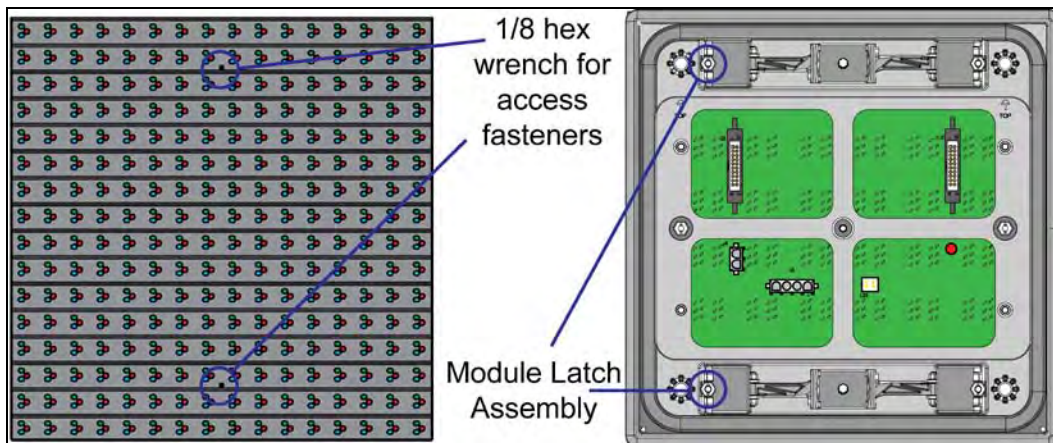


Figure 23: Module Access Locations

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. A generic display module is shown in **Figure 23**.
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 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 24: Removing a Module

Weather stripping on the module's back edge must be intact and in good condition to prevent water from seeping into the display.

Module latches must be fully engaged to create a watertight seal around the module's edge. The module must be firmly seated against the display when the latches are fully engaged.

Rear Access

1. Disconnect power to the display.
2. Locate the two hex head machine screws on either side of the rear access panel.
3. Use a Philips head screwdriver to loosen the screws.
4. Pull the panel up then out.
5. Disconnect the locking electrical connector attached to the fan.

6.3 Ventilation System/Fans/Filters

GalaxyPro Revolution sectional displays are equipped with rear ventilation systems to help keep the internal components at operable temperatures. Intake fans bring air into the display through filtered lower vents while upper vents exhaust warm air. **Figure 25** provides an example of the display's airflow.

Frequency of Inspection

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

The frequency of inspection will vary greatly from display to display as no two display setups are exactly the same. Therefore, Daktronics advises users and service technicians to use their own discretion when establishing an inspection schedule.

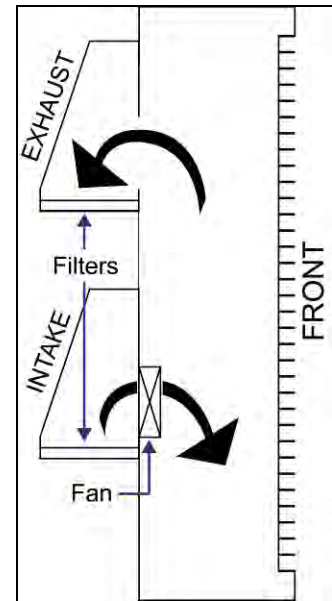


Figure 25: Ventilation Airflow

Fan Blades

Check the fan blades for dirt and debris, cleaning them and the inside of the display if necessary 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 in balance.

Filters

Filters are located at the bottom of the lower vent. Each time the fans are inspected, the filter medium should be checked and cleaned if dirty or replaced if worn or torn.

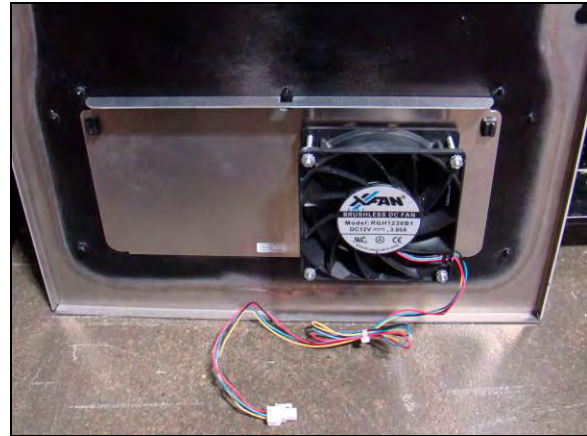


Figure 26: Ventilation Fan Assembly

To access the filter medium, remove the fan assembly by turning the two upper latches and pulling out from the top as show in **Figure 27**.

The filters may be cleaned with water or compressed air blown through the filter in the opposite direction from which air normally flows. Allow filters to dry before returning them to their trays. Again, Daktronics encourages users and service technicians to use their own discretion when deciding whether to clean or replace the filters.

Air is drawn upward through the filter. Be sure to check the bottom of the filter as this will be the side that requires cleaning.

Vents

Make sure that the lower intake vents and upper exhaust vents of the display are not blocked and are free of dust or other debris. Hold a piece of lightweight paper under the vents to detect air movement through the vents.



Figure 27: Removing Fan Assembly



Figure 28: Removing Filter Medium

6.4 Display Face Cleaning

Wet Outdoor Cleaning Process

1. Turn off the power to the display.
2. Mix a mild, non-abrasive, non-petroleum based detergent and cold water, one ounce of detergent to one gallon of cold water.
3. Saturate a light/medium duty cleaning brush with the soapy water.
4. Use horizontal brush strokes to loosen and remove dirt and grime, washing the display from top to bottom.
Use light pressure so as not to damage the LEDs. Clean only an area that is safely within reach from a lift or stage, and then move on to the next section of modules.

5. Rinse the display face with generous amounts of cold water under low pressure. A spot-free rinse agent can be used to reduce water spots.
6. Use soft, dry terrycloth to dry and remove any excess water. Take care not to damage LEDs by catching the cloth on them.
7. Allow the display to completely air-dry for 12 hours before applying power to the display.

Dry Outdoor Cleaning Method

1. Turn off power to the LED matrix display.
2. Rub a dry, soft terrycloth towel horizontally across each row of LEDs.
3. Work from top to bottom safely within reach from a lift or a stage. Take care not to damage LEDs or the plastic louvers by catching the cloth on them.

6.5 Annual Inspection

Complete a yearly inspection to maintain safe and dependable display operation. Open the display to visually inspect the cabinet interior and the components. Refer to **Section 6**: 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">• Tighten or replace, as required.
Dust around fans, on cabinet bottom	<ul style="list-style-type: none">• Vacuum or carefully wipe away.
Water intrusion or stains	<ul style="list-style-type: none">• Replace weather stripping.• Tighten module latches.• Place silicon sealant around all locations where water might enter.• Replace damaged electronic components.
Paint corrosion by footings, tie points, ground rods	<ul style="list-style-type: none">• Check the metal footings for structural integrity.• Replace and/or repaint as necessary.• Check ground wire connections at ground rod and ground lug.
Filters	<ul style="list-style-type: none">• At any inspection, check filters.• Clean or replace filters as necessary.

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.

7.1 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.

7.2 Controller Diagnostics

The controller, shown in **Figure 29**, receives communication from the computer and sends it to the MLCs which output it to the modules. The LEDs on the controller show whether the power and communication signal are working properly.

One or two modules must be removed to see the controller. Refer to **Section 6**: for instructions on how to access display interior.

Remember to disconnect power to the display before accessing the interior. However, after removing the modules and wires are found to be safe, power can be turned on to view the diagnostic LEDs.

A steady flash of about once per second on the DS2 "Run" LED indicates that the controller is working properly. An increased flash rate indicates that the controller is booting.

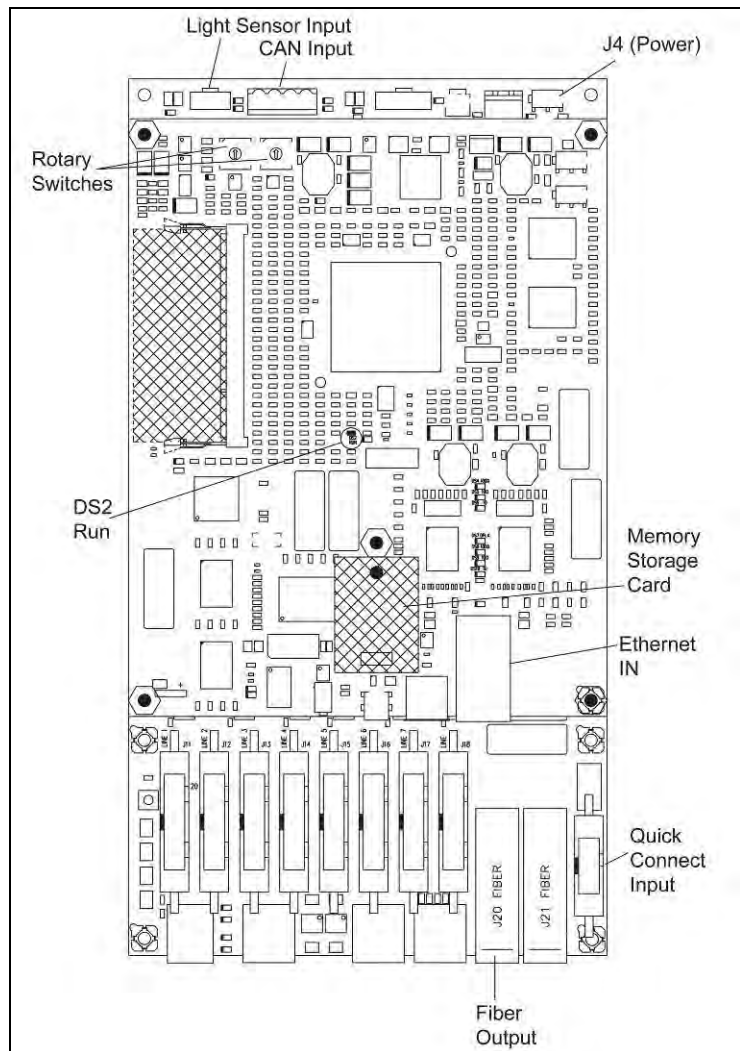


Figure 29: Controller Component Locations

7.3 MLC Diagnostics

Each multi-line controller (MLC) contains four red diagnostic LEDs, as shown in **Figure 30**. When fiber is properly connected, the LED labeled DS23 (left side) will be off and the other LEDs will be on

7.4 Temperature Sensor Diagnostics

If the display includes a temperature sensor, the temperature sensor board will provide diagnostic information. The temperature sensor board, shown in **Figure 31**, is located inside the temperature sensor housing which hangs near the display. A flashing DS2 LED indicates that unit is sending temperature information. It also indicates that the unit has power.

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

7.5 Troubleshooting Display Problems

Some common symptoms that may be encountered in a display and simple steps to resolve them follow. Solutions are organized by priority, so try them in order.

Troubleshooting may require removing or replacing modules. Refer to **Section 6**: for instructions on this procedure. Make sure power and signal cables are reconnected correctly and latches are tightly closed when replacing modules.

Consult the Venus[®] 1500 software **Help** file when content problems (including brightness, message, temperature, and testing) occur. Click the **Application** button in the top left corner of the Venus[®] 1500 **Home** page and click **Help**.

Module and LED problems

One or more LEDs will not light

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

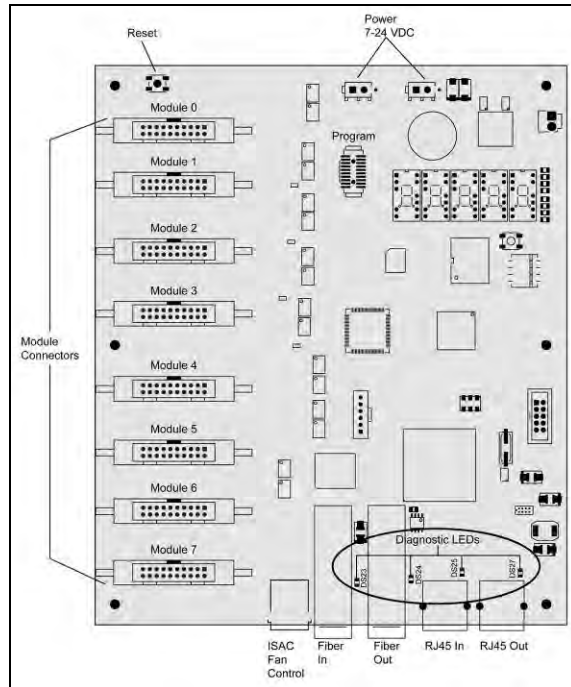


Figure 30: MLC Diagnostic LEDs

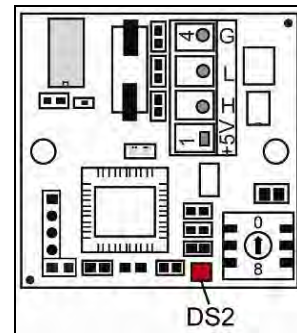


Figure 31: Temperature Sensor Board

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

- Check/replace 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, shown in Figure 32

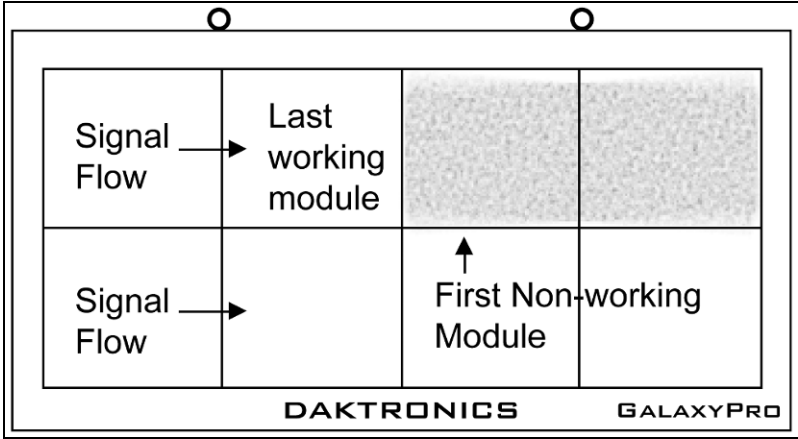
- Check/replace ribbon cables from the last working module in the row to the first non-working module next to it.
 - Move or replace the first non-working module, the one on the far left of the non-working section.
- 

Figure 32: Modules Not Working

- 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.

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 is not 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 cables 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.

Before calling Daktronics Customer Service

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

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:	
Version of software being used:	
Method of communication being used: (See Section 4 for guidance)	
Controller version used in the display:	

Section 8: Parts Replacement

Disconnect power when servicing the display.

8.1 About Replacement Parts

The following table contains some of the items that may need to be replaced over a period of time. **Figure 21** shows the general location of these components. The location of power supplies varies depending on the display's matrix size. Refer to the appropriate **Layout Drawing** for the exact location. If a circuit board or assembly is not listed in the Replacement Parts List, use the label to order a replacement. Most circuit boards and components carry a label that lists its part number. A typical label is shown in **Figure 33** with the part number in bold.

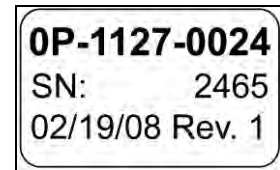


Figure 33: Typical Label

Part Description	Part Number
Air Filter, Single-wide	EN-2392
Air Filter, Double-wide	EN-2308
Air Filter, Triple-wide	EN-2309
Cable, Fiber-optic; 3 ft. (1 m)	W-1659
Cable, Fiber-optic, 10 ft. (3.1 m)	W-1864
Cable, Fiber-optic; 33 ft. (11 m)	W-1685
Cable, RJ11, 3 ft. (1 m)	0A-1222-2102
Cable, RJ11, 6 ft. (2 m)	0A-1222-2103
Cable, RJ11, 10 ft. (3.05 m)	0A-1222-2109
Cable; RJ45, 2 ft. (61 cm)	W-1537
Controller Enclosure Fan	B-1068
Controller, GalaxyPro [®] Revolution	0A-1415-0001
Electrical Contact Cleaner/Lubricant	CH-1019
Fan Control Cable, 5 ft. (1.5 m)(Single)	W-1666
Fan Control Harness, 5 ft. (1.5 m)(Dual)	0A-1327-2510
Fan, Ventilation	B-1064
Light Sensor	0A-1327-3011
Module, 12EV	0A-1431-7000
Module, 16 mm	0A-1465-7001
Module, 20 mm	0A-1429-7000
Module, 23 mm	0A-1430-7003
Multi-Line Controller 4051	0P-1273-0060
Multi-Line Controller 4054	0P-1423-5240
Power Supply A-2021	0A-1327-0030
Power Interconnect Wires, 14 ft. (4.3 m)	W-1947

Quick-connect, Input/Output	0A-1327-1036
Quick-connect, Mirror Input	0A-1327-1037
RFI Filter	Z-1007
Ribbon Cable, 10 POS, 24" (61cm)	0A-1000-0074
Ribbon Cable, 20 POS, 18" (46 cm)	W-1387
Ribbon Cable, 20 POS, 30" (76 cm)	0A-1000-0017
Ribbon Cable, 20 POS, 36" (91 cm)	W-1677
Ribbon Cable, 20 POS, 42" (1.1 m)	0A-1000-0019
Ribbon Cable, 20 POS, 48" (1.2 m)	0A-1000-0020
Ribbon Cable, 20 POS, 72" (1.8 m)	W-1678

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.

1. Turn off power to the display.
2. Release the module from the display cabinet by turning the latch fasteners counter-clockwise a quarter turn. (Follow the instructions in **Section 6**.)
3. Disconnect the two ribbon cables from the module, noting how they are connected to the back, by spreading the tabs on the sides and then lifting the cable head from the jack.
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 the ribbon cable tabs are tightly pushed against the cable head. Carefully push the cables 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.

Weather stripping on the back edge of the module must be in good condition and returned to its proper position to prevent water from seeping into the display.

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.

Controller Replacement

Tools required: 1/8" hex wrench, 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 of the display. See **Figure 24** for the location.
3. Remove the controller enclosure cover.
4. Disconnect the power plug from the J4 power jack.
5. Remove all power and signal connections from the board. Label the cables as they are removed to ensure proper replacement.
6. Remove the six nuts holding the board in place using a 5/16" nut driver.

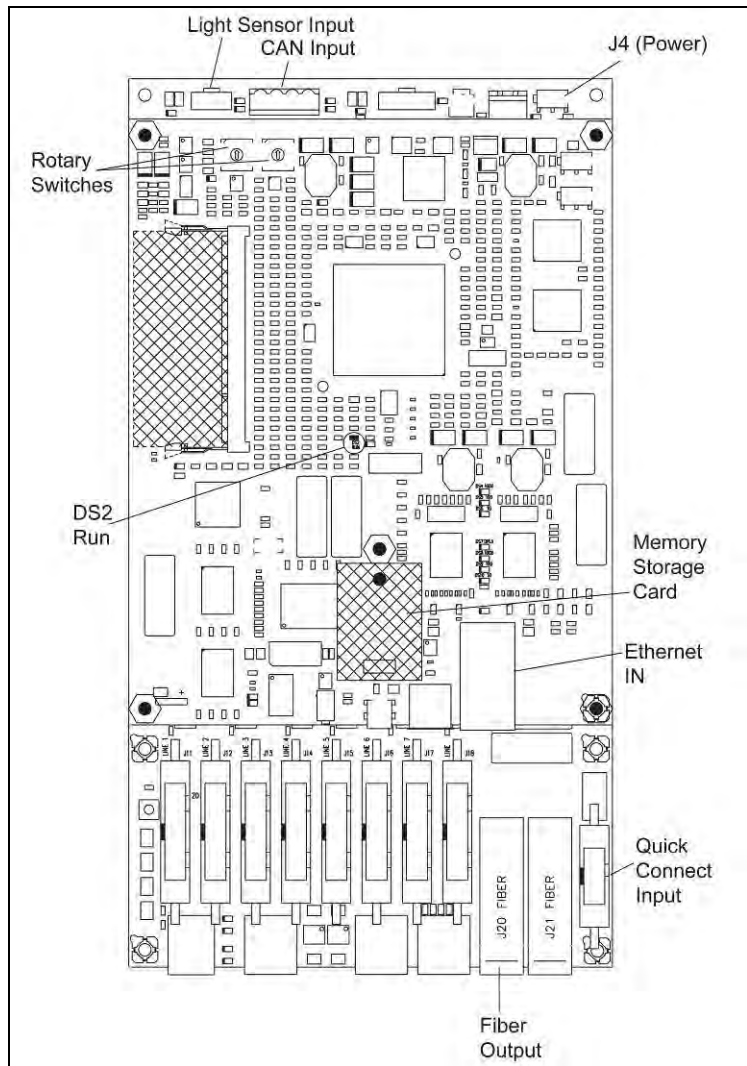


Figure 34: GalaxyPro Controller Component Locations

7. Install the new controller by replacing the six nuts holding it to the display back. Reconnect power and signal cables. Turn on power, observing the boot-up sequence, and if no presentations are running, note that the LED in the lower right corner shows power.
8. After powering the controller up for the first time, it must be reconfigured and all the content will need to be loaded. The IP or DHCP address of the controller may need to be changed.

Multi-Line Controller Replacement

Tools required: $\frac{5}{16}$ " Nut driver

1. Turn off power to the display.
2. Remove the module directly in front of the MLC on the left side of the display. Refer to the appropriate **Layout Drawing** for exact location.
3. Disconnect the fiber-optic cables.
4. Remove all ribbon cables, labeling the module number as they are removed to insure proper replacement.

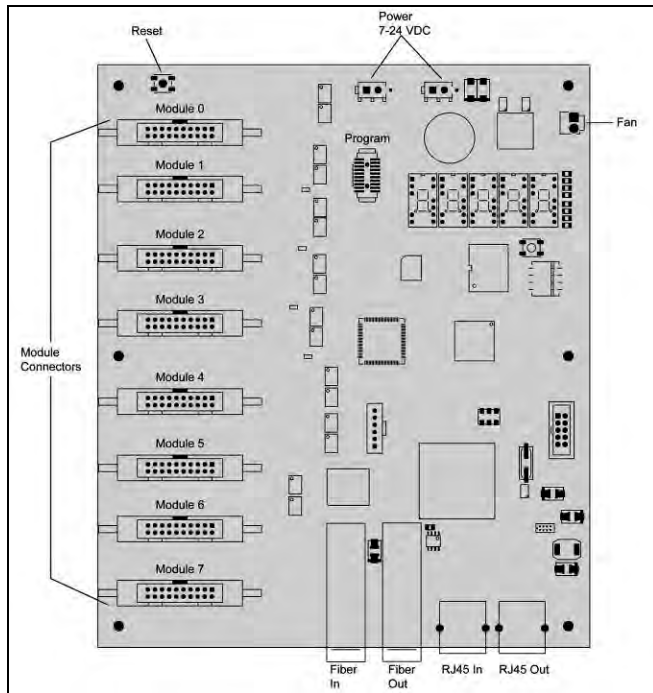


Figure 35: Multi-Line Controller

5. Remove the six nuts holding the board in place using a $\frac{5}{16}$ " nut driver.
6. To install the new MLC, move the unit into place and replace the six nuts that hold it to the display back. Reconnect the fiber-optic and ribbon cables. Turn on the power, observing the boot-up sequence. Note that the LEDs to the right of the fiber-optic cables are on; DS23 to the left of the fiber cable should be off. Refer to **Figure 35**.

Power Supply Replacement

Power supplies, shown in **Figure 36**, in GalaxyPro® Revolution displays handle a range of power from 120 to 240 volts. The power supply contains a power distribution board on one edge that receives AC power and then supplies DC power to modules and other internal components. Each module is connected to a jack on the power distribution board by an individual power cable. When replacing a power supply, note which one or two modules are connected to each jack.

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 connectors from the power source as well as those going to the modules, noting the jack numbers going to each module. Also, unplug the ISAC fan control.
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 plugs so that each module receives power and plug the ISAC fan control back in. Refer to the appropriate **Layout Drawing** for module connections, if needed.

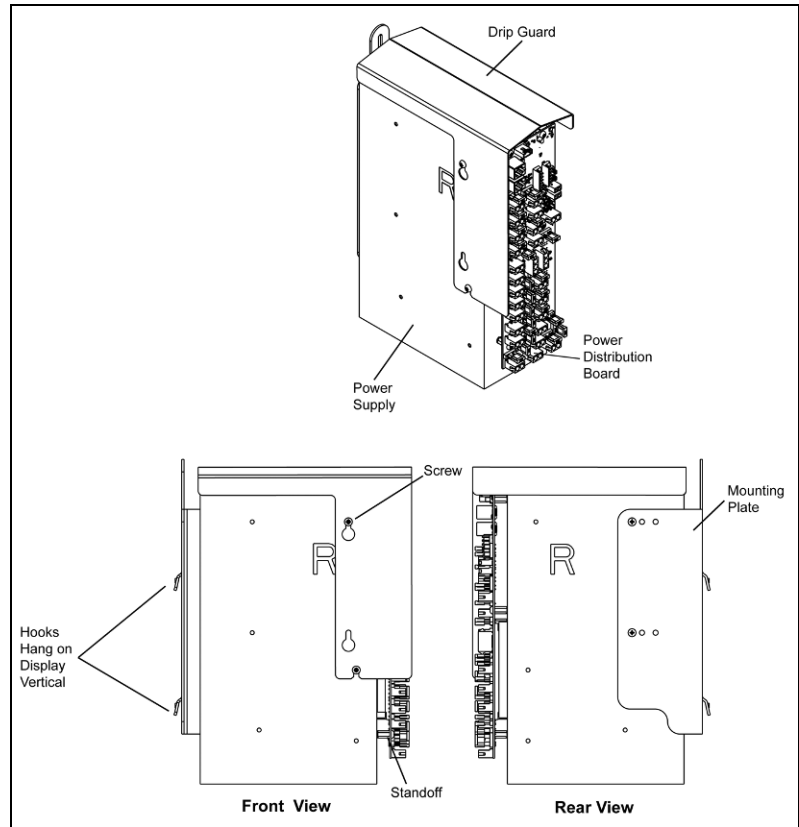


Figure 36: Power Supply

Light Sensor Replacement

The light sensor assembly is mounted inside an enclosure on the lower left edge of the cabinet. Refer to **Figure 21** for location. The entire assembly fits over two screws inside the enclosure.

If the light sensor fails, only the circuit board must be replaced.

Tools required: $\frac{3}{16}$ " nut driver, Phillips screwdriver

1. Remove the module adjacent to the light sensor enclosure.
2. Remove the four screws (two on the front, two inside the cabinet) that hold the enclosure to the cabinet.
3. Remove the nut from the light sensor cable strain relief inside the cabinet.
4. Disconnect the light sensor cable from the J5 CAN jack on the upper edge of the controller.
5. Remove the entire assembly from the cabinet pulling the light sensor cable through the opening on the side of the cabinet.
6. Complete these steps in reverse to attach the new light sensor assembly. Be sure that the gasket material is seated sufficiently to prevent water from entering the display.

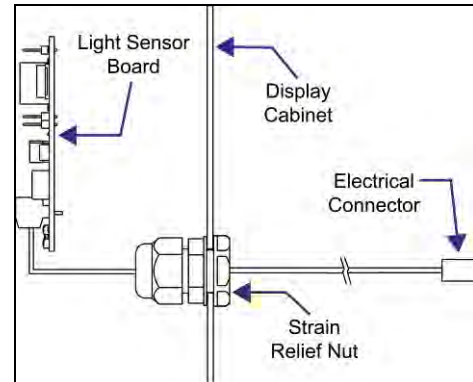


Figure 37: Light Sensor Assembly

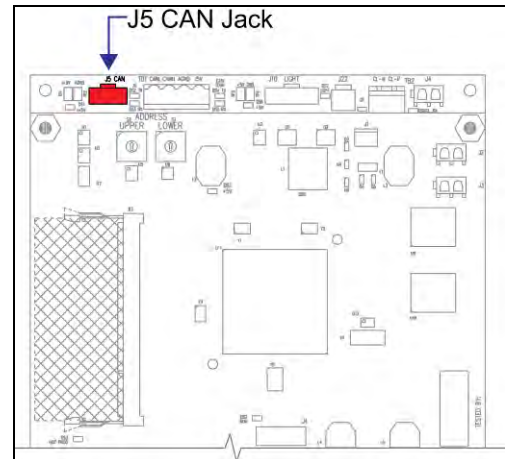


Figure 38: M4 Controller Light Sensor Jack

8.3 Temperature Sensor Replacement

The temperature sensor, shown in **Figure 39** and **Figure 40** is a small sensor board located inside the plastic housing. This is mounted outside, typically either near the display or near the building.

Tool required: 1/4" nut 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 discs 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, as shown in **Figure 39**, and then reassemble the sensor housing.

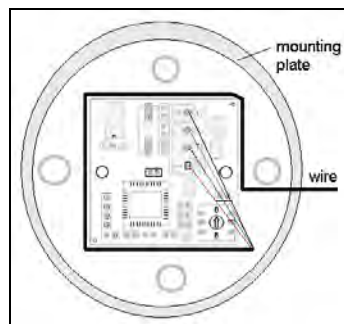


Figure 39: Wire and Sensor Board

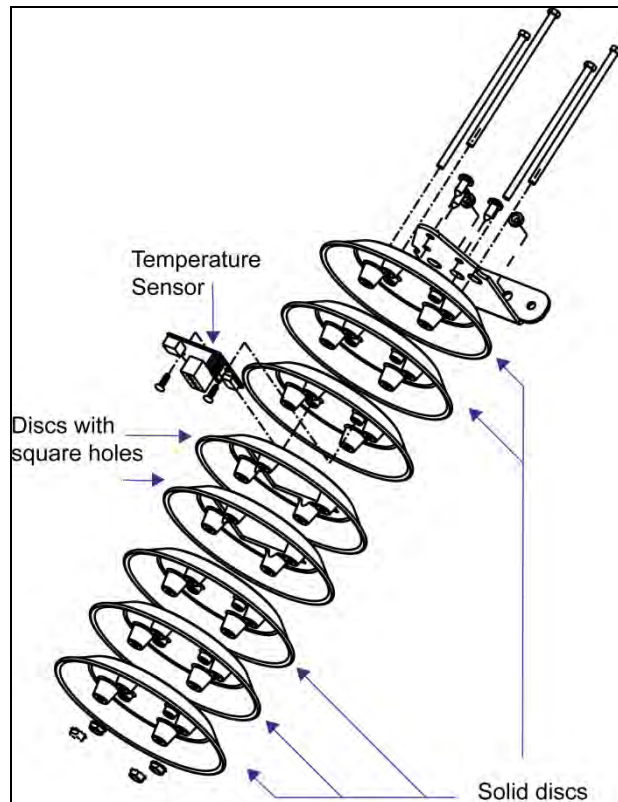


Figure 40: Temperature Sensor

Section 9: Daktronics Exchange and Repair & Return Programs

9.1 Exchange Program

The Daktronics Exchange Program is a quick, economical service for replacing key components in need of repair. If a component fails, Daktronics sends a replacement part to the customer who, in turn, returns the failed component to Daktronics. This not only saves money but also decreases equipment downtime. Customers who follow the program guidelines explained below will receive this service.

Before Contacting Daktronics

Fill in these numbers before calling Customer Service:

Display Model Number: _____

Date Installed: _____

Location of Display: _____

Daktronics Customer ID Number: _____

To participate in the Exchange Program, follow these steps:

1. **Call Daktronics Customer Service:** 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.

If the failed part or replacement part is not returned to Daktronics within 3 weeks of the ship date, Daktronics will assume that the customer is purchasing the replacement part and will send an invoice for the value of the new sale part. If the part or parts are returned within 2 weeks of the second invoice date, Daktronics will credit the customer for the second invoice.

If after 2 weeks Daktronics has still not received the parts back, the customer must pay the second invoice and will not be credited for the return of the failed part. Daktronics reserves the right to refuse parts that have been damaged due to acts of nature or causes other than normal wear and tear.

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

Shipping Address

Daktronics Customer Service
PO Box 5128
201 Daktronics Dr.
Brookings SD 57006

9.3 Daktronics Warranty and Limitation of Liability

The Daktronics Warranty and Limitation of Liability is located in **Appendix D**. The Warranty is independent of Extended Service agreements and is the authority in matters of service, repair, and display operation.

Glossary

Controller: The “brains” of the display. The controller receives signal communication from the computer and sends the appropriate information to the multi-line controller (MLC). Presentations 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.

GalaxyPro® Revolution: One of Daktronics’ trademarked names for commercial LED matrix displays.

Light Emitting Diode (LED): A low energy, high intensity lighting element. LEDs are the smallest portion of the presentations that appear on the display.

Louwer: A black plastic ledge positioned above either individual LEDs or each row of LEDs. Louvers block sunlight and increase the level of contrast on the display face.

Mirror: The second display in a Two View (2V) 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: The primary component of a display consisting of LEDs attached to a circuit board encased in a hard plastic body. Individual module sizes vary depending on the pixel pitch of the display and 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.

Picture Element (Pixel): A single LED or cluster of LEDs which work together to create images. The number and color of the LEDs will depend on the pixel pitch. For example, smaller pixels contain fewer LEDs while larger ones contain more LEDs.

Pixel Pitch: The amount of space between the center of two pixels (16 mm, 20 mm, etc.). The pixel pitch is equidistant both vertically and horizontally.

Primary: Either an individual single-sided display or the first display in a two-sided (2V) configuration. The communication signal, light sensor, and temperature sensor will be connected to this display. Information is relayed from the primary display through an inter-connect cable to the mirror display so that it shows exactly the same information.

Section: A portion of a display consisting of a metal cabinet and various internal components (controller, MLC, etc.). A sectional display contains two or more sections joined together.

Venus® 1500: The software on the control computer used to create messages and send them to the displays.

Appendix A: Reference Drawings

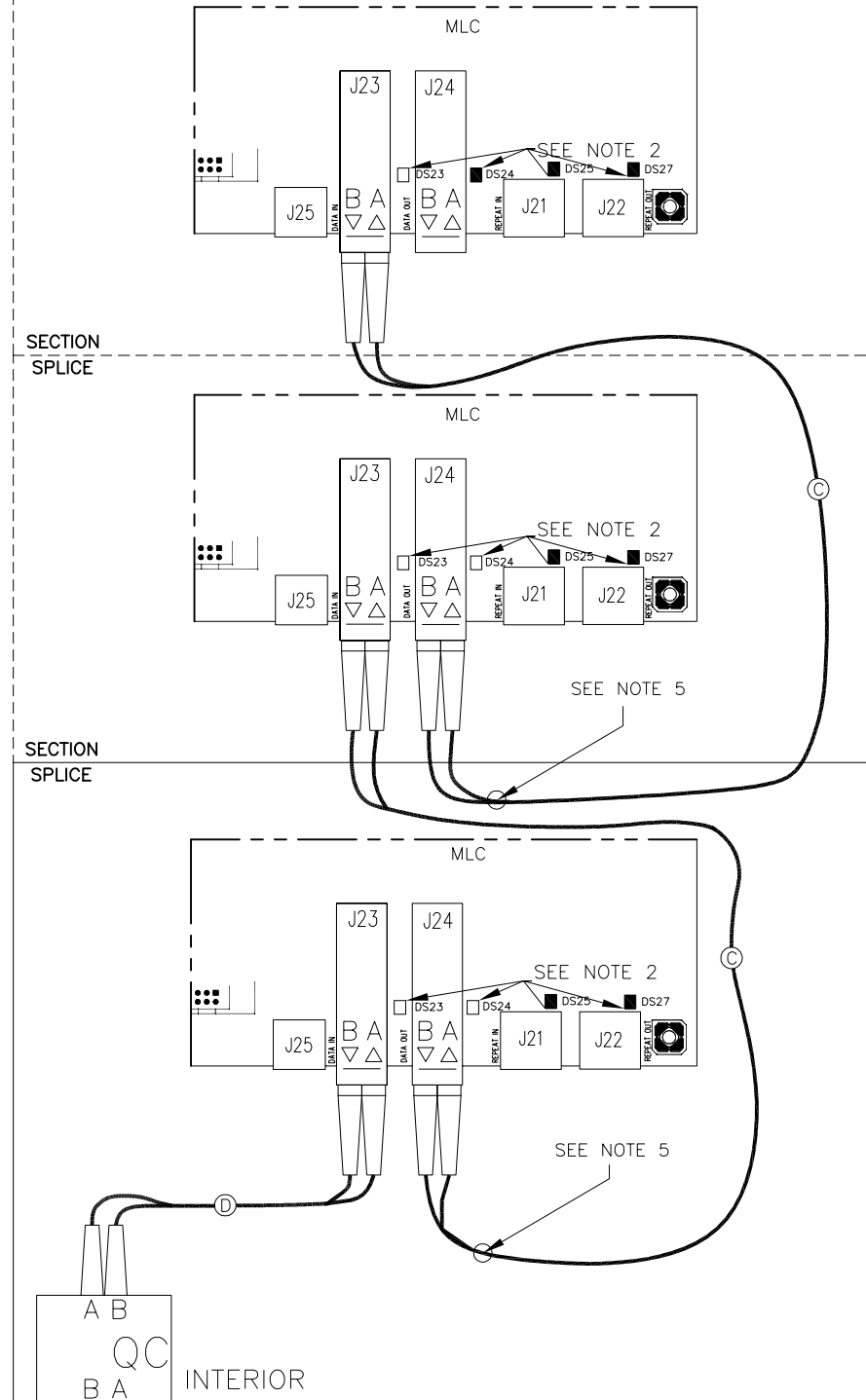
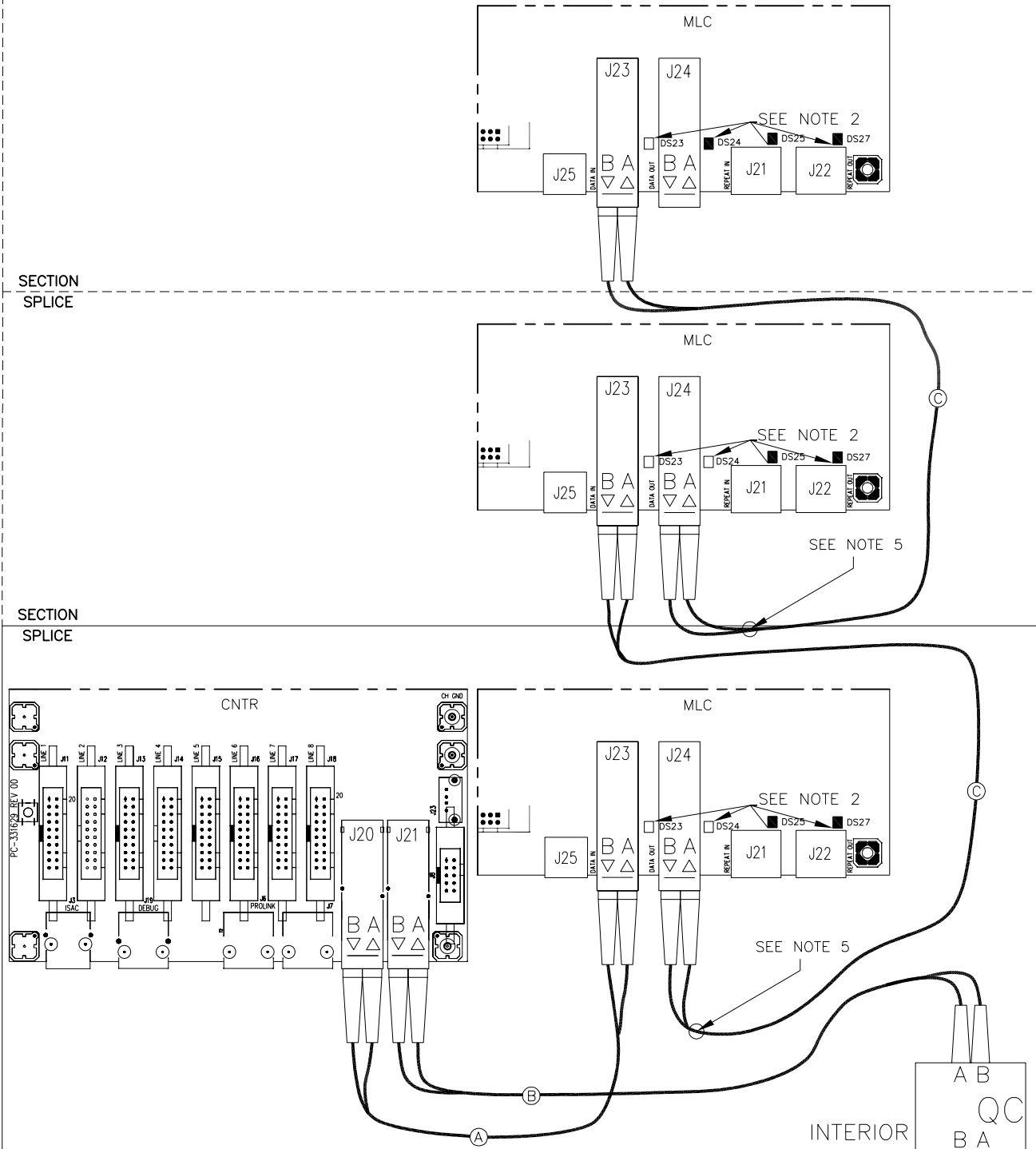
Fiber-optic Routing, Schematics, and Layout Drawings are included in this section. Refer to the drawing that correlates with the display's matrix size since component locations, power specifications, and signal routing vary according to display size. To obtain copies, contact Daktronics' Customer Service:

Phone: 866-343-3122 Fax: 605-697-4700

Fiber-optic Routing	Drawing B-359578
Schematic, GPR-12EV Sectional, General	Drawing B-366423
Schematic, GPR-20MM Sectional, General	Drawing B-575015
Schematic, M4, Primary signal, Internal	Drawing B-380351
Component Layout; GPR-12EV Sectional	Drawing B-358216
Component Layout; GPR-16MM Sectional	Drawing B-735351
Component Layout; GPR-20MM Sectional	Drawing B-495108

PRIMARY FACE

MIRROR FACE



DETAIL: A



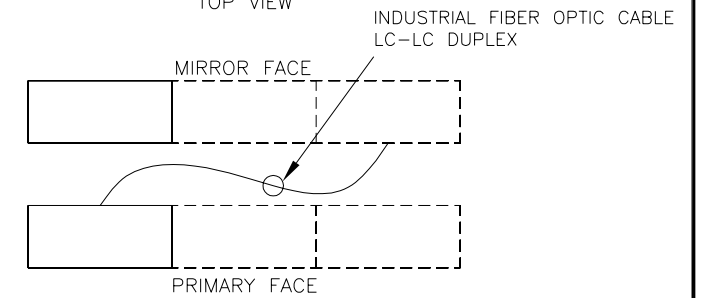
END VIEW OF FIBER JACK

LEGEND:
 CNTR = CONTROLLER
 MLC = MULTI-LINE CONTROLLER
 QC = FIBER QUICK CONNECT

FIBER CABLE CHART

ID #	END 1	END 2	DISPLAY LENGTH	P.N.
(A)	CNTR J20	MLC J23	ALL	W-1685 (10M)
(B)	CNTR J21	QC	ALL	W-1659 (1M)
(C)	MLC J23	MLC J24	ALL	W-1685 (10M)
(D)	MLC J23/MIR	QC	ALL	W-1685 (10M)

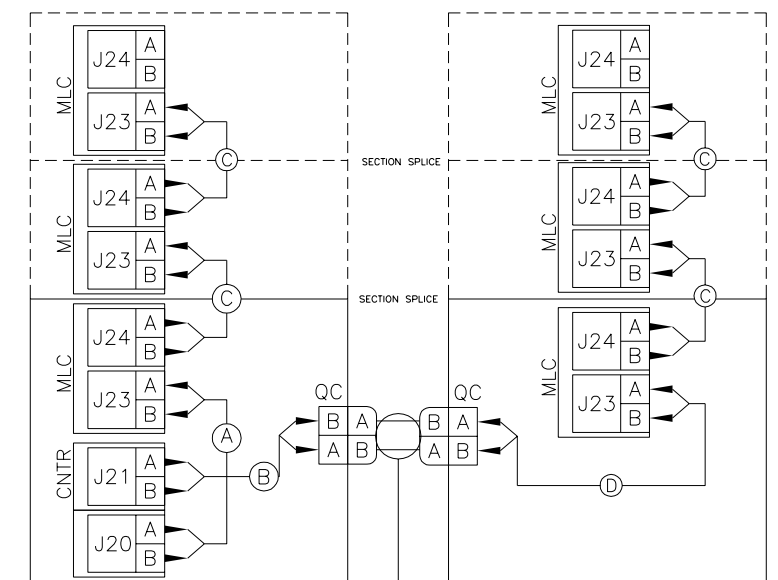
TOP VIEW



PRIMARY (FRONT VIEW)

(FRONT VIEW)

MIRROR (FRONT VIEW)



NOTES:

- 1) FIBER CABLE WILL BE INSTALLED AFTER ALL OTHER HARNESSSES ARE INSTALLED AND CABLE TIED DOWN. FIBER CABLE WILL BE ATTACHED TO THE WIRE SUPPORT USING VELCRO. EXCESS FIBER CABLE IS TO BE NEATLY COILED UP IN A 6" LOOP.
- 2) MLC COMMUNICATION LEDS WILL TURN "OFF" WHEN TRANSCEIVER IS RECEIVING A VALID SIGNAL.
- 3) THE PRIMARY FACE (SINGLE FACE OR 2V) IS WIRED THE SAME.
- 4) DISPLAY SIZES VARY IN HEIGHT AND LENGTH. DRAWING SHOWS 3 SECTIONS TALL AND ONLY THE LEFT MOST SECTIONS OF THE PRIMARY AND THE MIRROR FACES.
- 5) COIL THIS END, VELCRO, AND LEAVE IN BOTTOM LEFT MOD OPENING OF ABOVE SECTION.

INDUSTRIAL FIBER OPTIC CABLE
 LC-LC DUPLEX

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DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: GALAXYPRO EV REVOLUTION SERIES

TITLE: ROUTING, FIBER, SECTIONAL

DES. BY: DRAWN BY: TANDERS

DATE: 24 MAR 08

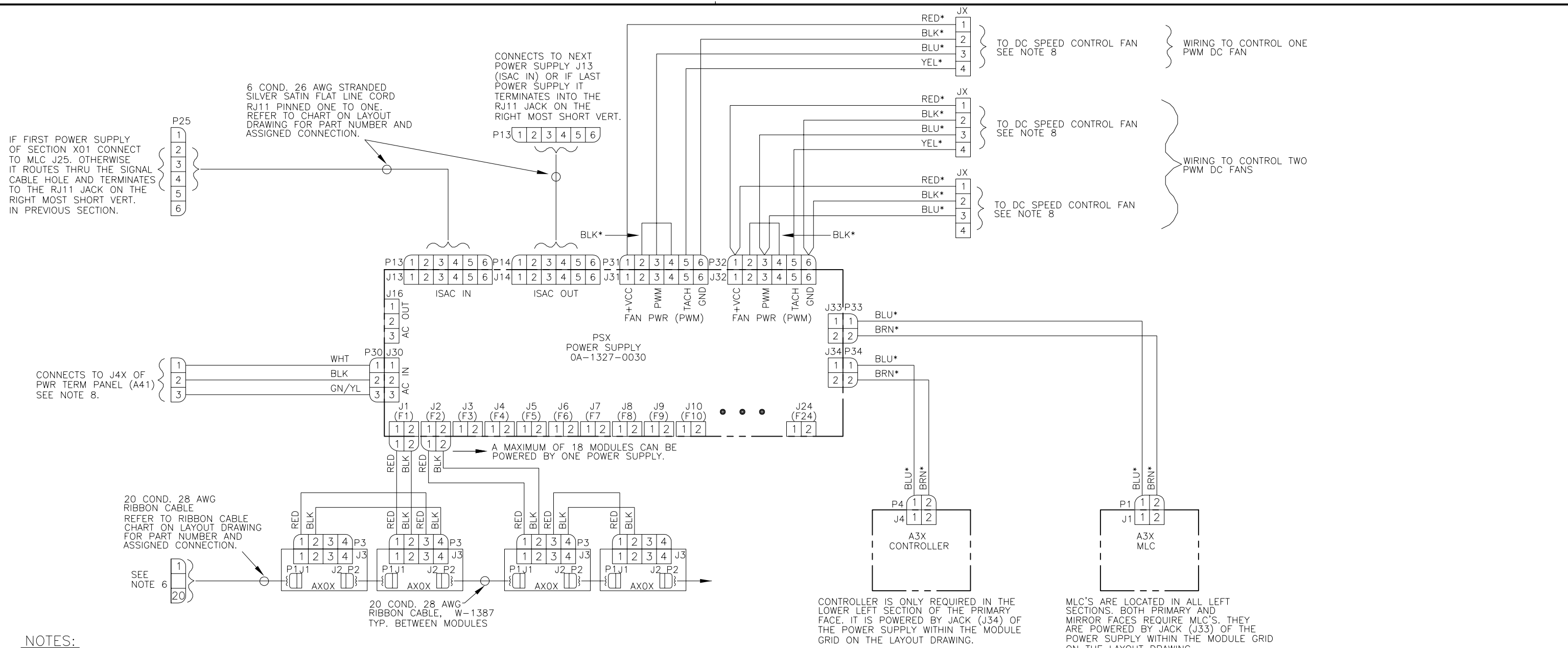
REVISION

APPR. BY:

SCALE:

1466-R01B-359578

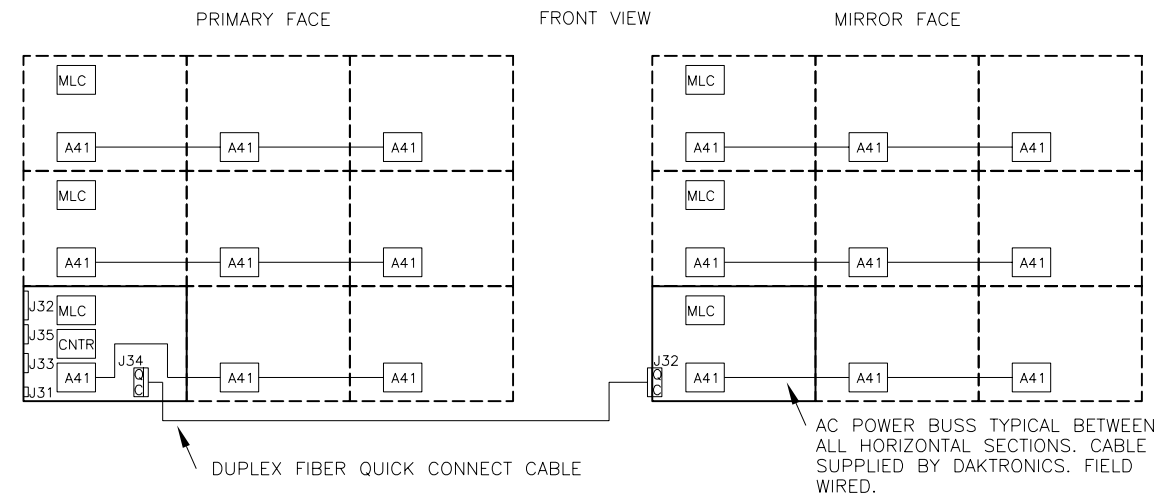
REV.	DATE	DESCRIPTION	BY	APPR.
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NOTES:

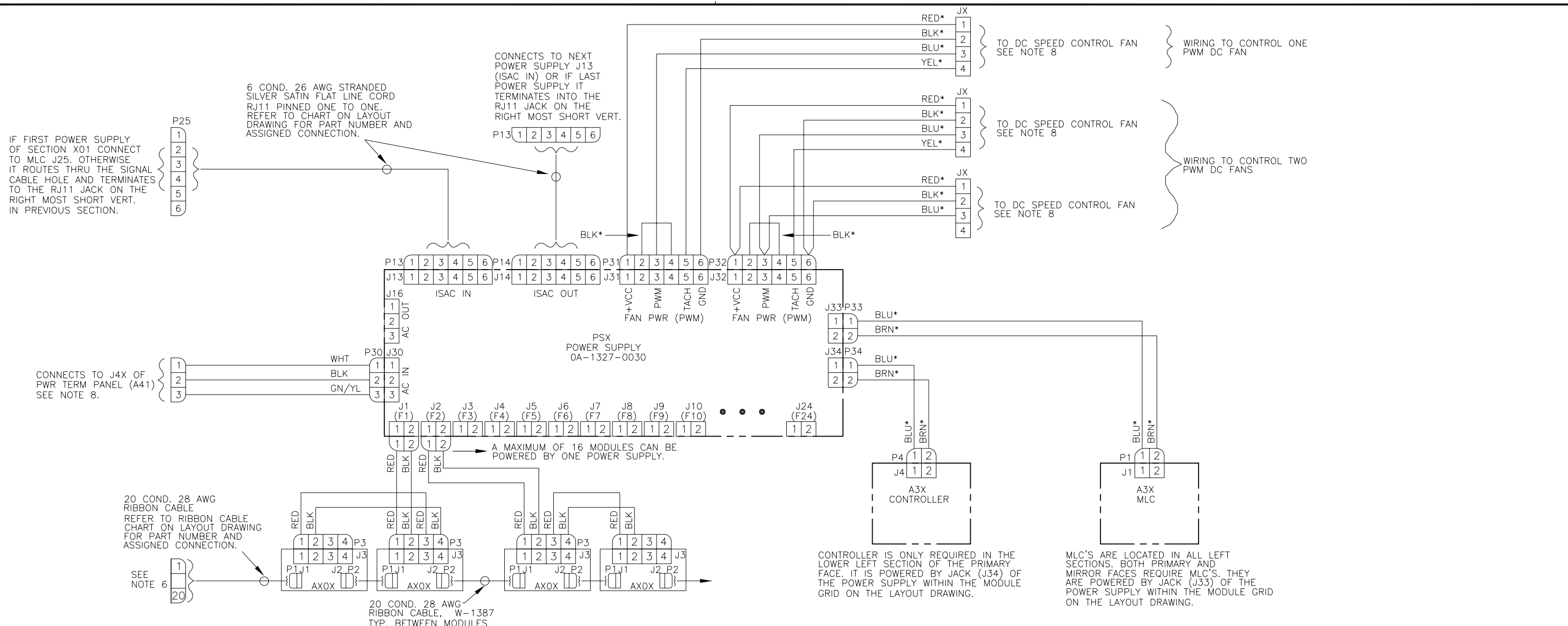
1. ALL WIRE IS 14 AWG EXCEPT * IS 18 AWG UNLESS OTHERWISE NOTED.
2. EACH LED MODULE IS A 24x24 MATRIX.
3. THE FRAME IS TO BE CONNECTED TO EARTH GROUND AT INSTALLATION TIME.
4. LED MODULE VOLTAGE IS 12.0 VDC.
5. F1-F24 ARE FUSES, ATC-15, 32V, 15 AMP AUTOMOTIVE. DAK P.N. (F-1048)
6. REFER TO DWG. B-380351 FOR CONTROLLER SIGNAL WIRING OF PRIMARY FACE AND MLC PIN OUTS.
7. REFER TO DWG. A-518707 FOR POWER SPECS.
8. AC HARNESS TO POWER SUPPLY SHOWN IS TYPICAL FOR ALL POWER SUPPLIES. REFER TO LAYOUT DRAWING FOR QTY. AND PART NUMBER. POWER SUPPLIES CONNECT TO POWER TERM PANEL IN NUMERICAL ORDER, I.E. J41 TO PS1, J42 TO PS2, ETC.
9. FANS ARE DC AND ARE POWERED BY THE POWER SUPPLY WITHIN THE MODULE GRID ON THE LAYOUT DRAWING. EACH POWER SUPPLY DISTRIBUTION BOARD HAS 2 FAN SPEED CONTROL OUTPUTS (J31 & J32). EACH OUTPUT CAN CONTROL UP TO 2 FANS. REFER TO LAYOUT DRAWING FOR QTY. AND PART NUMBER.

FIGURE 1:



THE CONCEPTS EXPRESSED AND DETAILS SHOWN ON THIS DRAWING ARE CONFIDENTIAL AND PROPRIETARY. DO NOT REPRODUCE BY ANY MEANS, INCLUDING ELECTRONICALLY WITHOUT THE EXPRESSED WRITTEN CONSENT OF DAKTRONICS, INC. COPYRIGHT 2008 DAKTRONICS, INC.			
DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: GALAXYPRO 12EV REVOLUTION SERIES			
TITLE: SCHEMATIC, SECTIONAL, GPR-12EV-RGB, GENERAL			
DES. BY: LKERR		DRAWN BY: LKERR	
DATE: 04 MAR 08		REVISION	
00	APPR. BY:	SCALE: 1=1	1466-R03B-366423

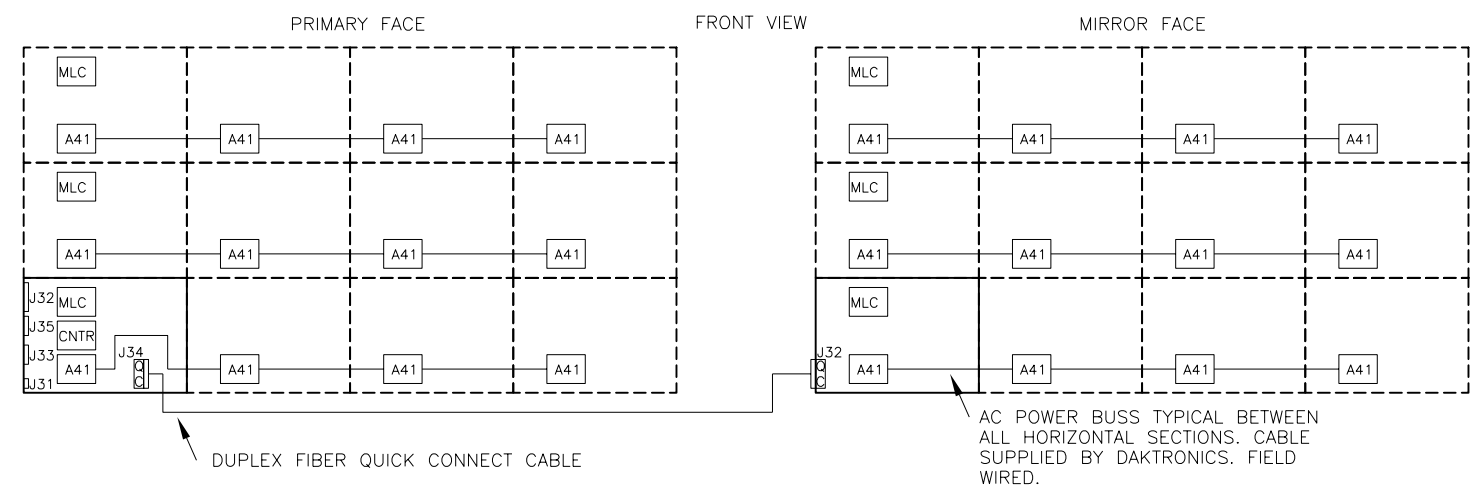
REV.	DATE	DESCRIPTION	BY	APPR.



NOTES:

1. ALL WIRE IS 14 AWG EXCEPT * IS 18 AWG UNLESS OTHERWISE NOTED.
2. EACH LED MODULE IS A 16X16 MATRIX.
3. THE FRAME IS TO BE CONNECTED TO EARTH GROUND AT INSTALLATION TIME.
4. LED MODULE VOLTAGE IS 12.0 VDC.
5. F1-F24 ARE FUSES, ATC-15, 32V, 15 AMP AUTOMOTIVE. DAK P.N. (F-1048)
6. REFER TO DWG. B-380351 FOR CONTROLLER SIGNAL WIRING OF PRIMARY FACE AND MLC PIN OUTS.
7. REFER TO DWG. A-575030 FOR POWER SPECS.
8. AC HARNESS TO POWER SUPPLY SHOWN IS TYPICAL FOR ALL POWER SUPPLIES. REFER TO LAYOUT DRAWING FOR QTY. AND PART NUMBER. POWER SUPPLIES CONNECT TO POWER TERM PANEL IN NUMERICAL ORDER, I.E. J41 TO PS1, J42 TO PS2, ETC.
9. FANS ARE DC AND ARE POWERED BY THE POWER SUPPLY WITHIN THE MODULE GRID ON THE LAYOUT DRAWING. EACH POWER SUPPLY DISTRIBUTION BOARD HAS 2 FAN SPEED CONTROL OUTPUTS (J31 & J32). EACH OUTPUT CAN CONTROL UP TO 2 FANS. REFER TO LAYOUT DRAWING FOR QTY. AND PART NUMBER.

FIGURE 1:



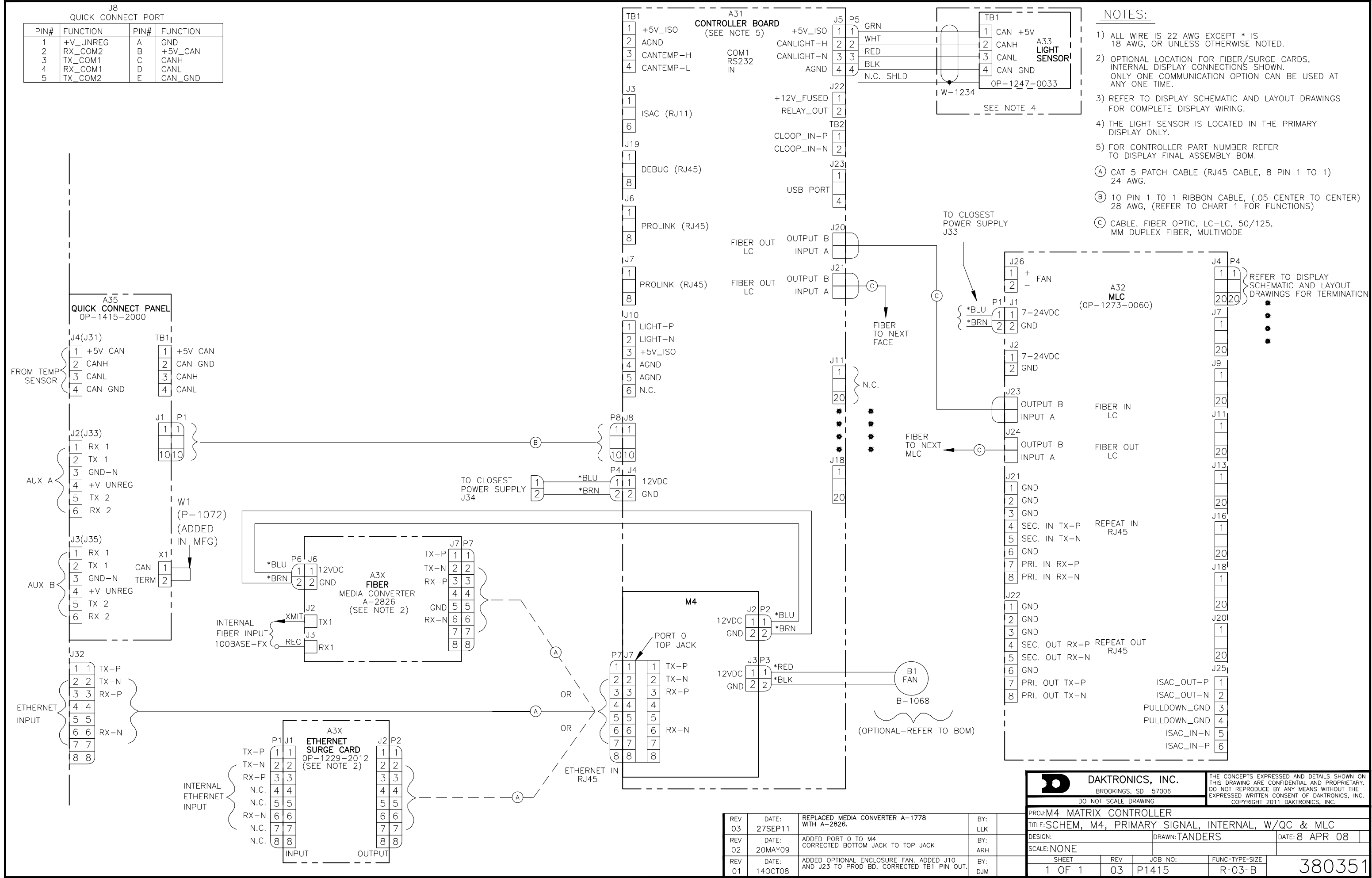
THE CONCEPTS EXPRESSED AND DETAILS SHOWN ON THIS DRAWING ARE CONFIDENTIAL AND PROPRIETARY. DO NOT REPRODUCE BY ANY MEANS, INCLUDING ELECTRONICALLY WITHOUT THE EXPRESSED WRITTEN CONSENT OF DAKTRONICS, INC. COPYRIGHT 2008 DAKTRONICS, INC.			
DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: GALAXYPRO 20 REVOLUTION SERIES			
TITLE: SCHEMATIC, SECTIONAL, GPR-20-RGB, GENERAL			
DES. BY: LKERR		DRAWN BY: JGOLDAD	DATE: 15 JUL 08
REVISION	APPR. BY:	1479-R03B-575015	
00	SCALE: 1=1		

REV.	DATE	DESCRIPTION	BY	APPR.

J8
QUICK CONNECT PORT

PIN#	FUNCTION	PIN#	FUNCTION
1	+V_UNREG	A	GND
2	RX_COM2	B	+5V_CAN
3	TX_COM1	C	CANH
4	RX_COM1	D	CANL
5	TX_COM2	E	CAN_GND

- NOTES:**
- 1) ALL WIRE IS 22 AWG EXCEPT * IS 18 AWG, OR UNLESS OTHERWISE NOTED.
 - 2) OPTIONAL LOCATION FOR FIBER/SURGE CARDS, INTERNAL DISPLAY CONNECTIONS SHOWN. ONLY ONE COMMUNICATION OPTION CAN BE USED AT ANY ONE TIME.
 - 3) REFER TO DISPLAY SCHEMATIC AND LAYOUT DRAWINGS FOR COMPLETE DISPLAY WIRING.
 - 4) THE LIGHT SENSOR IS LOCATED IN THE PRIMARY DISPLAY ONLY.
 - 5) FOR CONTROLLER PART NUMBER REFER TO DISPLAY FINAL ASSEMBLY BOM.
- (A) CAT 5 PATCH CABLE (RJ45 CABLE, 8 PIN 1 TO 1) 24 AWG.
 (B) 10 PIN 1 TO 1 RIBBON CABLE, (.05 CENTER TO CENTER) 28 AWG, (REFER TO CHART 1 FOR FUNCTIONS)
 (C) CABLE, FIBER OPTIC, LC-LC, 50/125, MM DUPLEX FIBER, MULTIMODE



DAKTRONICS, INC.
 BROOKINGS, SD 57006
 DO NOT SCALE DRAWING

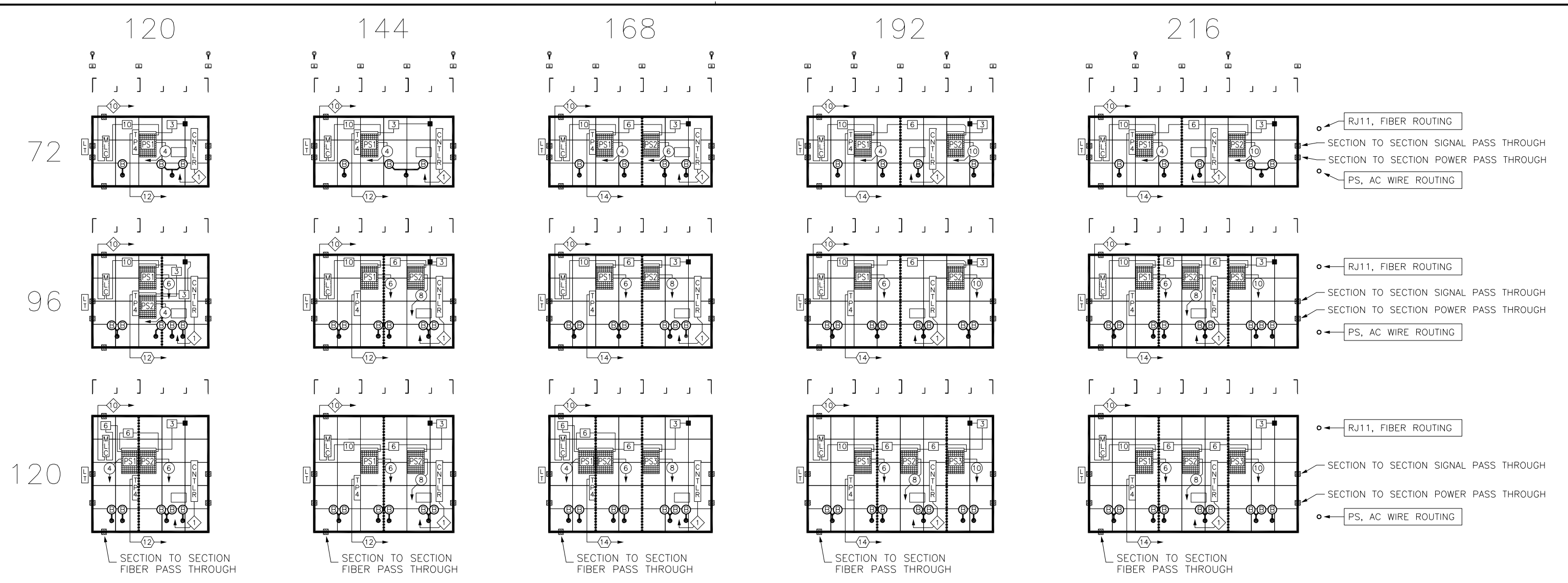
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PROJ: M4 MATRIX CONTROLLER
 TITLE: SCHEM, M4, PRIMARY SIGNAL, INTERNAL, W/QC & MLC

DESIGN: _____ DRAWN: TANDERS DATE: 8 APR 08
 SCALE: NONE

REV	DATE	DESCRIPTION	BY
03	27SEP11	REPLACED MEDIA CONVERTER A-1778 WITH A-2826.	LLK
02	20MAY09	ADDED PORT 0 TO M4 CORRECTED BOTTOM JACK TO TOP JACK	ARH
01	14OCT08	ADDED OPTIONAL ENCLOSURE FAN. ADDED J10 AND J23 TO PROD BD. CORRECTED TB1 PIN OUT.	DJM

SHEET 1 OF 1 REV 03 JOB NO: P1415 FUNC-TYPE-SIZE R-03-B 380351



POWER SUPPLY HARNESES

④... 0A-1327-2062, 4 FT	⑧... 0A-1327-2011, 8 FT
⑥... 0A-1327-2010, 6 FT	⑩... 0A-1327-2012, 10 FT

ISAC BUSS RJ CABLES

③ 0A-1222-2102..... CABLE, RJ11 TO RJ11, STRT, 3 FT
⑥ 0A-1222-2103..... CABLE, RJ11 TO RJ11, STRT, 6 FT
⑩ 0A-1222-2109..... CABLE, RJ11 TO RJ11, STRT, 10 FT

FIBER CABLES (METERS)

① W-1659... CNTRLR J21 OR QC
⑩ W-1685... MLC J23 TO CNTRLR J20 OR QC OR SECTION BREAK

NOTE: THE DIFFERENCES BETWEEN A MIRROR AND A PRIMARY DISPLAY ARE IN THE QUICK CONNECTS, THE LIGHT SENSOR, AND THE CONTROLLER. A PRIMARY HAS A CONTROLLER WHILE THE MIRROR DOES NOT. SEE LEGENDS FOR ASSEMBLY NUMBERS.

PRIMARY ASSEMBLIES

CONTROLLER		0A-1327-1032
QUICK CONNECT		0A-1327-1036
LIGHT DETECTOR		0A-1327-3011

MIRROR ASSEMBLIES

QUICK CONNECT		0A-1327-1037
---------------	--	--------------

AC BUSS	DOMESTIC	INTERNATIONAL
⑫	W-1946, 12 FT	0A-1327-2220, 12 FT
⑭	W-1947, 14 FT	0A-1327-2221, 14 FT
⑮	W-2111, 16 FT	0A-1327-2222, 16 FT

POWER TERM PANEL

	120/240VAC, 1 PH	240VAC, 1 PH
	0A-1466-0502 (4CKT)	0A-1466-0517 (4CKT)

SINGLE FAN HARNESS W-1666

DUAL FAN HARNESS 0A-1327-2510

FROM LEFT TO RIGHT, PLUG THE FIRST FAN ASSEMBLY INTO POWER SUPPLY ASSEMBLY J31, AND THE SECOND INTO J32.

RJ COUPLER J-1151

FAN B-1064

MLC 0A-1327-1031

POWER SUPPLY 0A-1327-0030

MODULE 11.808" X 11.808"
24 PIXEL X 24 PIXEL
12MM C-C / 0.492" C-C

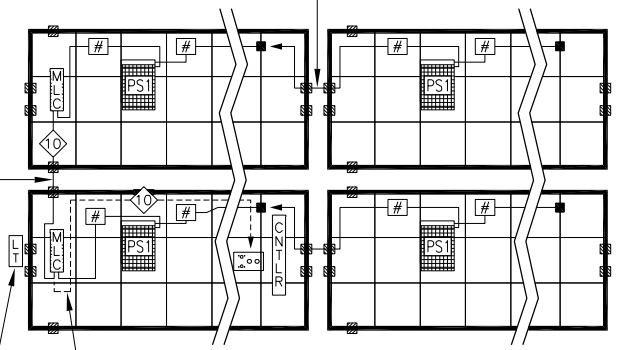
AREA WITHIN DARK GRID LINES REPRESENTS A GROUPING OF MODULES THAT ARE POWERED BY A SINGLE POWER SUPPLY.

WIRE SUPPORT ICON IDENTIFIES THE WIRE SUPPORT LOCATION

IN SECTIONS TO THE RIGHT OF THE LEFT MOST SECTION, AN RJ-11 CABLE WILL BE ROUTED FROM THE POWER SUPPLY THROUGH THE LEFT SIDE OF THE CABINET AND PLUG INTO THE COUPLER LOCATED IN THE UPPER RIGHT CORNER OF THE SECTION TO THE LEFT.

BEGINNING WITH THE TOP LEFT SECTION, ROUTE THE FIBER CABLE FROM THE MLC THROUGH THE BOTTOM OF THE CABINET TO THE MLC IN THE SECTION BELOW. THE MLC IN THE BOTTOM LEFT SECTION WILL NEED NO FIELD CONNECTION.

A FULL ASSEMBLY OF SECTIONS WILL HOUSE ONE LIGHT DETECTOR LOCATED IN THE BORDER OF THE LOWER LEFT SECTION. THE WIRE WILL ENTER THE CABINET THROUGH THE BORDER AND BE ROUTED TO THE CONTROLLER IN THE LOWER LEFT SECTION.



IN A MIRROR DISPLAY WITH NO CONTROLLER, THE FIBER CABLE WILL BE ROUTED TO THE QUICK CONNECT.

REV.	DATE	DESCRIPTION	BY	APPR.
03	3 DEC 09	ADDED PART NUMBER FOR 16 FT AC BUSS	ARH	
02	21 OCT 08	ADDED PART NUMBER FOR INTERNATIONAL POWER.	MGL	
01	17 JUN 08	CHANGED THE QUICK CONNECT BRACKETS TO BE GENERIC ON THE LAYOUTS.	MGL	

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DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: GALAXYPRO 12EV REVOLUTION SERIES

TITLE: COMPONENT LAYOUT, GPR-12EV-SECTIONAL

DES. BY: M LEOPOLD DRAWN BY: M LEOPOLD DATE: 28 APR 08

REVISION	APPR. BY:	1466-E10B-358216
03	SCALE: 1=50	

96

112

128

144

160

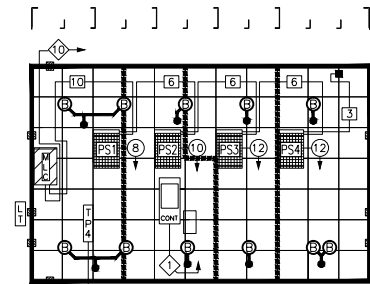
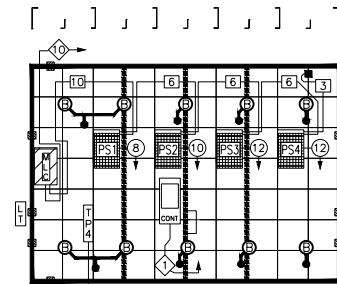
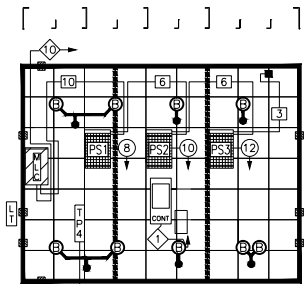
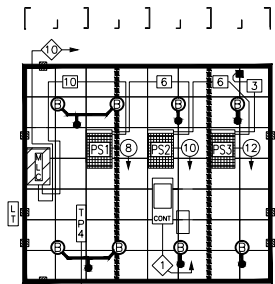
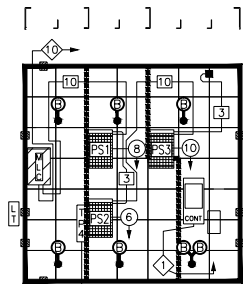
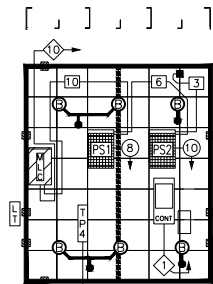
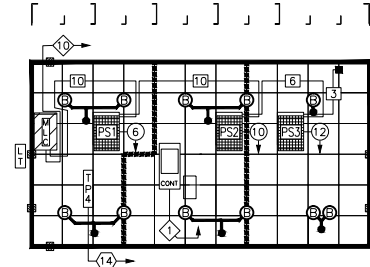
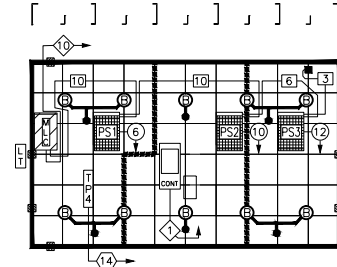
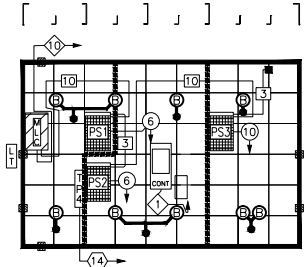
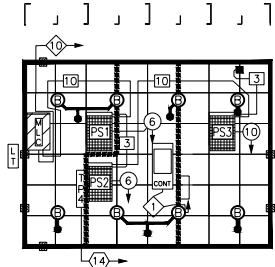
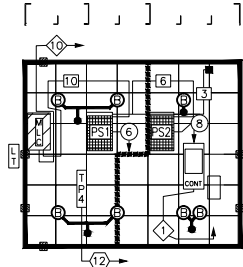
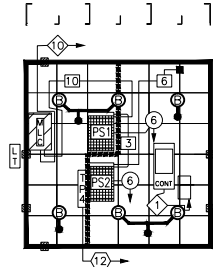
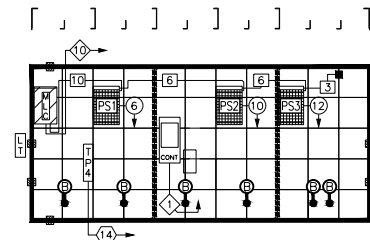
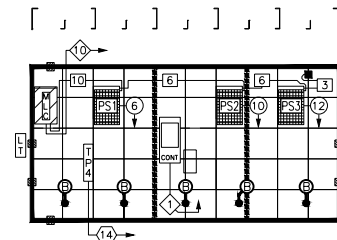
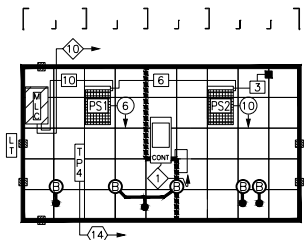
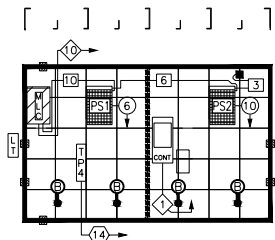
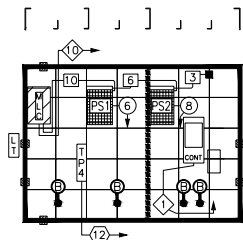
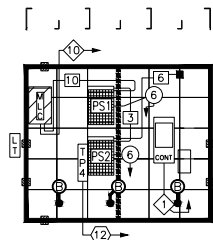
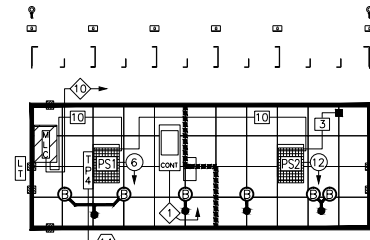
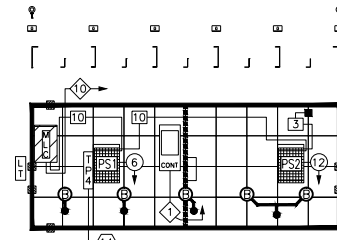
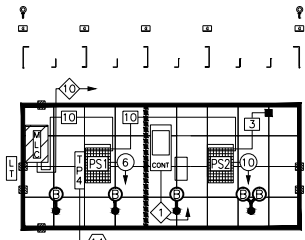
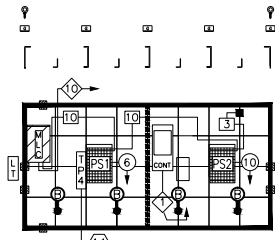
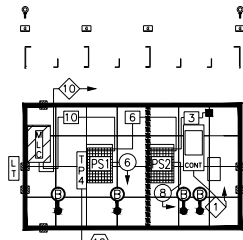
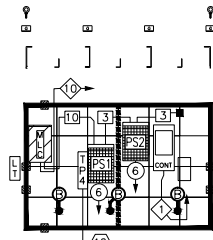
176

64

80

96

112



○ RJ11, FIBER ROUTING
 ○ SECTION TO SECTION SIGNAL PASS THROUGH
 ○ SECTION TO SECTION POWER PASS THROUGH
 ○ PS, AC WIRE ROUTING

○ RJ11, FIBER ROUTING
 ○ SECTION TO SECTION SIGNAL PASS THROUGH
 ○ SECTION TO SECTION POWER PASS THROUGH
 ○ PS, AC WIRE ROUTING

○ RJ11, FIBER ROUTING
 ○ SECTION TO SECTION SIGNAL PASS THROUGH
 ○ SECTION TO SECTION POWER PASS THROUGH
 ○ PS, AC WIRE ROUTING

○ RJ11, FIBER ROUTING
 ○ SECTION TO SECTION SIGNAL PASS THROUGH LINES 1-4
 ○ SECTION TO SECTION SIGNAL PASS THROUGH LINES 5-7
 ○ SECTION TO SECTION POWER PASS THROUGH
 ○ PS, AC WIRE ROUTING

SECTION TO SECTION FIBER PASS THROUGH

SECTION TO SECTION FIBER PASS THROUGH

SECTION TO SECTION FIBER PASS THROUGH

SECTION TO SECTION FIBER PASS THROUGH

SECTION TO SECTION FIBER PASS THROUGH

SECTION TO SECTION FIBER PASS THROUGH

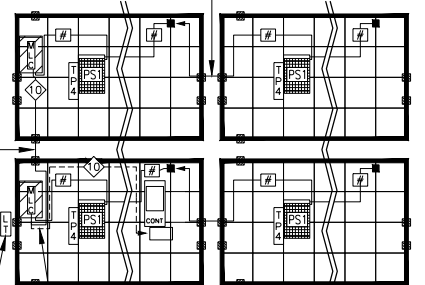
POWER SUPPLY HARNESSSES	
④ .0A-1327-2062, 4 FT	⑩ .0A-1327-2012, 10 FT
⑤ .0A-1327-2010, 6 FT	⑪ .0A-1327-2013, 12 FT
⑥ .0A-1327-2011, 8 FT	
ISAC BUSS RJ CABLES	
⑬ OA-1222-2102....CABLE, RJ11 TO RJ11, STRT, 3 FT	
⑭ OA-1222-2103....CABLE, RJ11 TO RJ11, STRT, 6 FT	
⑮ OA-1222-2109....CABLE, RJ11 TO RJ11, STRT, 10 FT	
FIBER CABLES (METERS)	
① W-1659...CNTRLR J21 OR QC	
② W-1685...MLC J23 TO CNTRLR J20 OR QC OR SECTION BREAK	
NOTE: THE DIFFERENCES BETWEEN A MIRROR AND A PRIMARY DISPLAY ARE IN THE QUICK CONNECTS, THE LIGHT SENSOR, AND THE CONTROLLER. A PRIMARY HAS A CONTROLLER WHILE THE MIRROR DOES NOT. SEE LEGENDS FOR ASSEMBLY NUMBERS.	
PRIMARY ASSEMBLIES	
CONTROLLER	OA-1327-1049 OA-1415-0001
QUICK CONNECT	OA-1327-1045
LIGHT DETECTOR	OA-1327-3015
MIRROR ASSEMBLIES	
QUICK CONNECT	OA-1327-1046

AC BUSS	DOMESTIC	INTERNATIONAL
⑫	W-1946, 12 FT	OA-1327-2220, 12 FT
⑬	W-1947, 14 FT	OA-1327-2221, 14 FT
POWER TERM PANEL	120/240VAC, 1 PH. OA-1466-0502 (4CKT)	240VAC, 1 PH. OA-1466-0517 (4CKT)
SINGLE FAN HARNESS	W-1666	FROM LEFT TO RIGHT, PLUG THE FIRST FAN ASSEMBLY INTO POWER SUPPLY ASSEMBLY J31, AND THE SECOND INTO J32.
DUAL FAN HARNESS	OA-1327-2510	
RJ COUPLER	J-1151	
FAN	B-1064	
MLC	OA-1327-1050 OA-1423-5240	
POWER SUPPLY	OA-1327-0035	
MODULE	10.400" X 10.400" 16 PIXEL X 16 PIXEL 16MM C-C / 0.650" C-C	
	AREA WITHIN DARK GRID LINES REPRESENTS A GROUPING OF MODULES THAT ARE POWERED BY A SINGLE POWER SUPPLY.	
WIRE SUPPORT	○ ICON IDENTIFIES THE WIRE SUPPORT LOCATION	

IN SECTIONS TO THE RIGHT OF THE LEFT MOST SECTION, AN RJ-11 CABLE WILL BE ROUTED FROM THE POWER SUPPLY THROUGH THE LEFT SIDE OF THE CABINET AND PLUG INTO THE COUPLER LOCATED IN THE UPPER RIGHT CORNER OF THE SECTION TO THE LEFT.

BEGINNING WITH THE TOP LEFT SECTION, ROUTE THE FIBER CABLE FROM THE MLC THROUGH THE BOTTOM OF THE CABINET TO THE MLC IN THE SECTION BELOW. THE MLC IN THE BOTTOM LEFT SECTION WILL NEED NO FIELD CONNECTION.

A FULL ASSEMBLY OF SECTIONS WILL HOUSE ONE LIGHT DETECTOR LOCATED IN THE BORDER OF THE LOWER LEFT SECTION. THE WIRE WILL ENTER THE CABINET THROUGH THE BORDER AND BE ROUTED TO THE CONTROLLER IN THE LOWER LEFT SECTION.



IN A MIRROR DISPLAY WITH NO CONTROLLER, THE FIBER CABLE WILL BE ROUTED TO THE QUICK CONNECT.

REV 03	DATE: 11 NOV 10	UPDATED LIGHT DETECTOR CALLOUT NUMBER	BY: LCS
REV 02	DATE: 12 MAY 10	UPDATED CALLOUT NUMBER FOR MLC	BY: BDA
REV 01	DATE: 23 APR 09	UPDATED SIZE AND LOCATION OF MLC AND CONTROLLER.	BY: RLB

DAKTRONICS, INC.
 BROOKINGS, SD 57006
 DO NOT SCALE DRAWING

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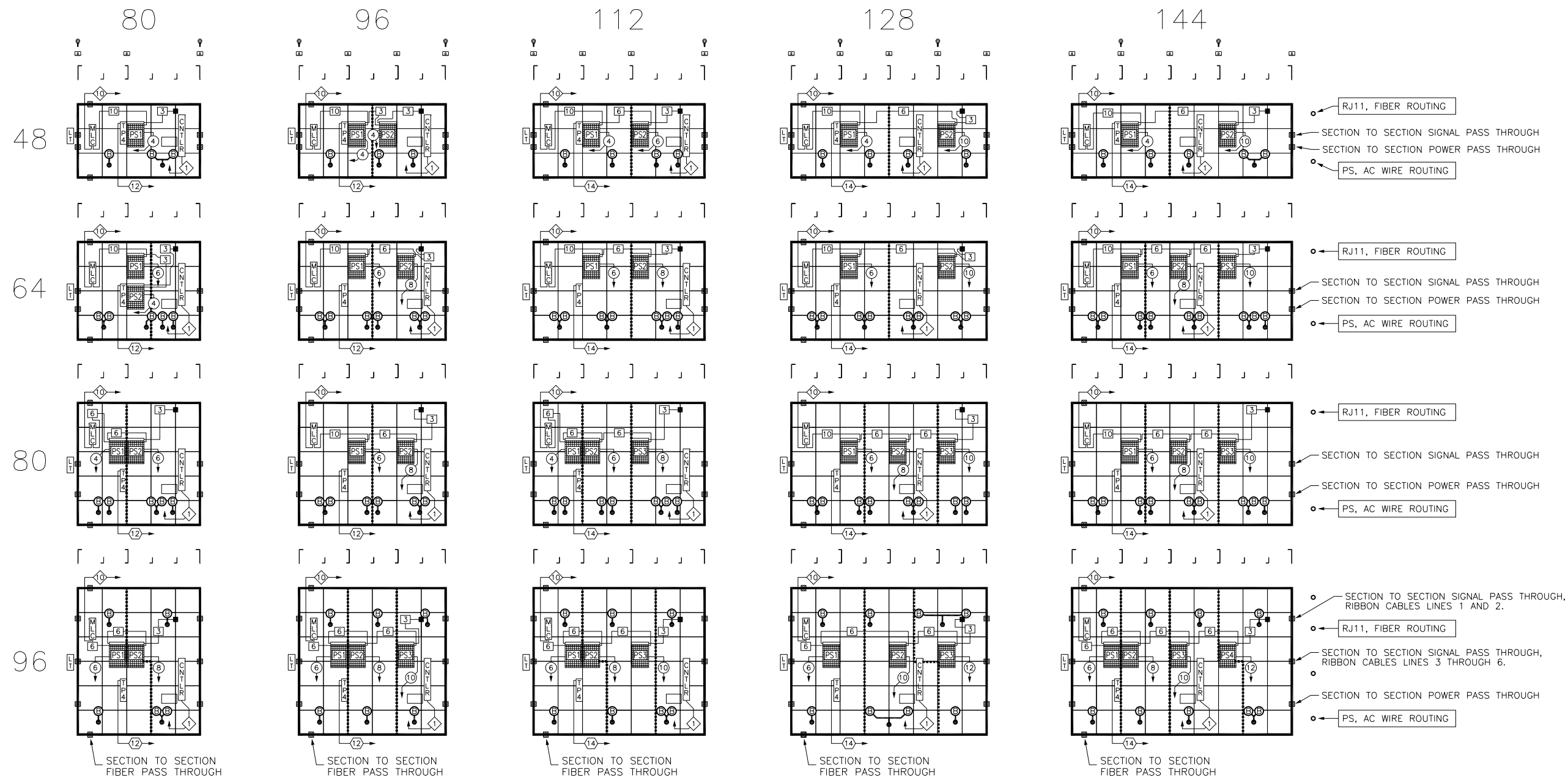
PROJ: GALAXYPRO 16MM DISPLAYS
 TITLE: COMPONENT LAYOUT, GPR-16-SECTIONAL

DESIGN: _____ DRAWN: M LEOPOLD DATE: 28 OCT 08

SCALE: 1=65

SHEET 1 OF 1	REV 03	JOB NO: P1500	FUNC-TYPE-SIZE E-10-B
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735351



POWER SUPPLY HARNESSSES

④ OA-1327-2062, 4 FT	⑩ OA-1327-2012, 10 FT
⑥ OA-1327-2010, 6 FT	⑫ OA-1327-2013, 12 FT
⑧ OA-1327-2011, 8 FT	

ISAC BUSS RJ CABLES

③ OA-1222-2102.... CABLE, RJ11 TO RJ11, STRT, 3 FT
⑥ OA-1222-2103.... CABLE, RJ11 TO RJ11, STRT, 6 FT
⑩ OA-1222-2109.... CABLE, RJ11 TO RJ11, STRT, 10 FT

FIBER CABLES (METERS)

① W-1659... CNTRLR J21 OR QC
⑩ W-1685... MLC J23 TO CNTRLR J20 OR QC OR SECTION BREAK

NOTE: THE DIFFERENCES BETWEEN A MIRROR AND A PRIMARY DISPLAY ARE IN THE QUICK CONNECTS, THE LIGHT SENSOR, AND THE CONTROLLER. A PRIMARY HAS A CONTROLLER WHILE THE MIRROR DOES NOT. SEE LEGENDS FOR ASSEMBLY NUMBERS.

PRIMARY ASSEMBLIES

CONTROLLER	①	OA-1327-1032
QUICK CONNECT	②	OA-1327-1036
LIGHT DETECTOR	③	OA-1327-3011

MIRROR ASSEMBLIES

QUICK CONNECT	④	OA-1327-1037
---------------	---	--------------

	AC BUSS	DOMESTIC	INTERNATIONAL
	⑫	W-1946, 12 FT	OA-1327-2220, 12 FT
	⑭	W-1947, 14 FT	OA-1327-2221, 14 FT

POWER TERM PANEL	120/240VAC, 1 PH	240VAC, 1 PH
④	OA-1466-0502 (4CKT)	OA-1466-0517 (4CKT)

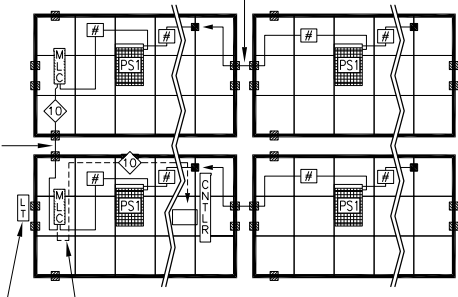
SINGLE FAN HARNESS	⑤	W-1666	FROM LEFT TO RIGHT, PLUG THE FIRST FAN ASSEMBLY INTO POWER SUPPLY ASSEMBLY J31, AND THE SECOND INTO J32.
DUAL FAN HARNESS	⑥	OA-1327-2510	

RJ COUPLER	⑦	J-1151
FAN	⑧	B-1064
MLC	⑨	OA-1327-1031
POWER SUPPLY	⑩	OA-1327-0030
MODULE	⑪	12.480" X 12.480" 16 PIXEL X 16 PIXEL 20MM C-C / 0.780" C-C
AREA WITHIN DARK GRID LINES REPRESENTS A GROUPING OF MODULES THAT ARE POWERED BY A SINGLE POWER SUPPLY.		
WIRE SUPPORT	⑬	ICON IDENTIFIES THE WIRE SUPPORT LOCATION

IN SECTIONS TO THE RIGHT OF THE LEFT MOST SECTION, AN RJ-11 CABLE WILL BE ROUTED FROM THE POWER SUPPLY THROUGH THE LEFT SIDE OF THE CABINET AND PLUG INTO THE COUPLER LOCATED IN THE UPPER RIGHT CORNER OF THE SECTION TO THE LEFT.

BEGINNING WITH THE TOP LEFT SECTION, ROUTE THE FIBER CABLE FROM THE MLC THROUGH THE BOTTOM OF THE CABINET TO THE MLC IN THE SECTION BELOW. THE MLC IN THE BOTTOM LEFT SECTION WILL NEED NO FIELD CONNECTION.

A FULL ASSEMBLY OF SECTIONS WILL HOUSE ONE LIGHT DETECTOR LOCATED IN THE BORDER OF THE LOWER LEFT SECTION. THE WIRE WILL ENTER THE CABINET THROUGH THE BORDER AND BE ROUTED TO THE CONTROLLER IN THE LOWER LEFT SECTION.



IN A MIRROR DISPLAY WITH NO CONTROLLER, THE FIBER CABLE WILL BE ROUTED TO THE QUICK CONNECT.

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DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: GALAXYPRO 20MM REVOLUTION SERIES
TITLE: COMPONENT LAYOUT, GPR-20-SECTIONAL

DES. BY:	DRAWN BY: M LEOPOLD	DATE: 13 JUN 08
REVISION	APPR. BY:	SCALE: 1=60
01		1479-E10B-495108

REV.	DATE	DESCRIPTION	BY	APPR.
01	26 JAN 09	CHANGED DRAWING SCALE AND ADDED 96 HIGH SECTIONS, REDUCED POWER SUPPLIES IN 64X128 DISPLAY FROM 3 TO 2.	MGL	

Appendix B: International Installation

The power source is the biggest difference between domestic and international applications. International displays run on 240 VAC.

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

Daktronics' displays used in international applications are equipped with different power termination panels than domestic displays. However, the termination method is similar to domestic termination discussed in **Section 3**:

1. Open the display as explained in **Section 6**: and locate the power termination panel.
2. Route the cable through conduit to the back of the display. Remove the rubber plug from the $\frac{3}{4}$ " knockouts for access, being careful not to damage internal components.
3. Remove the cover of the power termination panel.
4. Connect the neutral wire to the neutral lug and the live wire to the Line 1 lug, as shown in **Figure 41**.
5. The ground wire connects to the grounding bus bar.

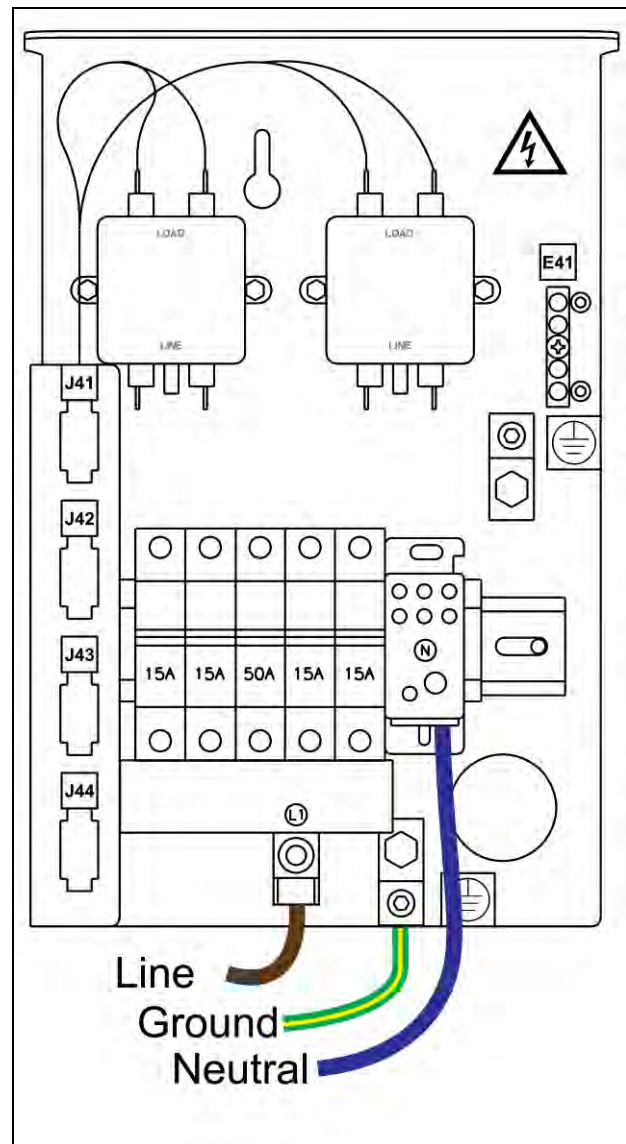


Figure 41: 240 V Single-Phase Power Termination

Appendix C: Maintenance Log

Inspection Item:	Date performed:								
General: Exterior Visual Inspection									
General: Interior Visual Inspection									
Modules: Weather Stripping									
Modules: Electrical Connections									
Modules: Latch Operation									
Ventilation System: Fans									
Ventilation System: Filters									
Hardware/Fasteners: Loose bolts, nuts, screws, rivets, etc.									
Cabinet (Int. & Ext.): Paint cracking and peeling									
Cabinet (Int. & Ext.): Metal Corrosion									

Appendix D: Daktronics Warranty and Limitation of Liability

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.

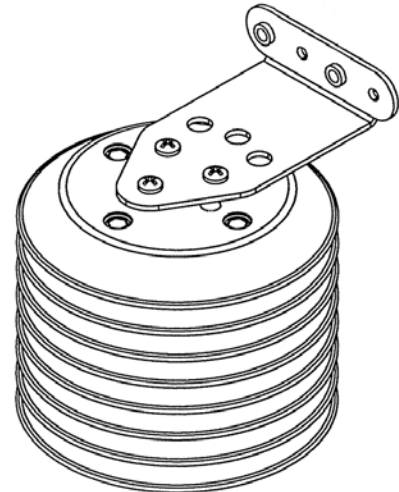


Figure 1: Temperature Sensor

Parts List	
Part Description	Daktronics Part Number
Temperature Sensor Housing Assembly	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 restricts air movement.
- Mount the sensor so the cable is protected from weather and vandalism.

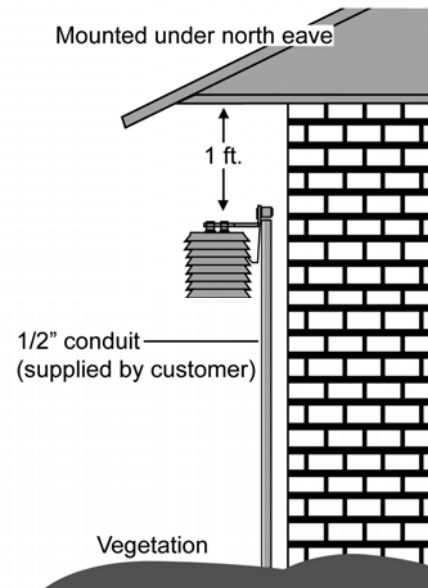


Figure 2: Located on the North Eave

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** shows the location of the quick-connect plug.
2. Coil any excess cable and secure it to discourage vandalism.

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 TB1. Connect to the controller as shown in **Figure 5**.
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.

Temperature Sensor Attached to Display Structure



Figure 3: Located on Structure



Figure 4: GalaxyPro Revolution Quick-Connect Panel

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

Primary – Controller Board (A31-TB1)	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)

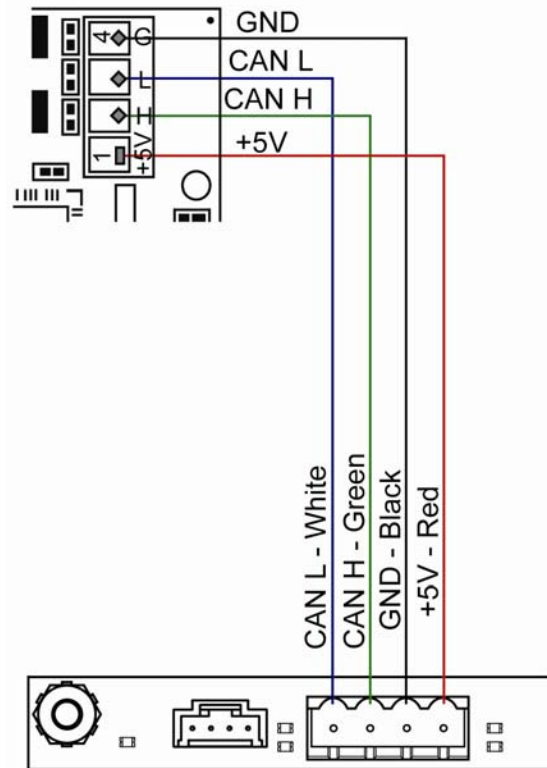


Figure 5: CAN Temperature Sensor Connection - M4 Controller

1.5 Temperature Interconnection (rare use)

In a primary to primary configuration, a 4-conductor shielded cable is needed to terminate the temperature sensor from one display to the other.

One end terminates at the 4-position terminal block (TB1) on the primary display. The other end terminates at the 4-position terminal block (TB1) in the second display. Refer to **Figure 6** and the following table for correct interconnect locations.

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

In a primary to primary configuration, a 4-conductor shielded cable is needed to

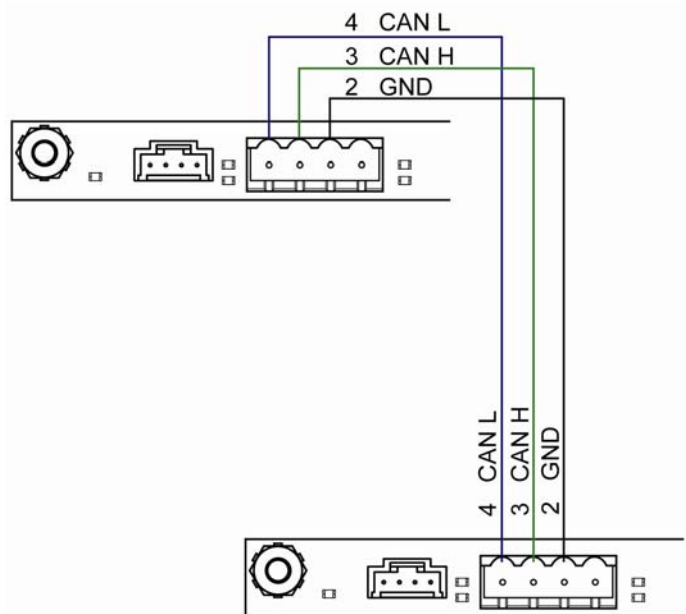


Figure 6: CAN Controller Interconnect – M4 Controller

terminate the temperature sensor from one display to the other.

One end terminates at the 4-position terminal block (TB1) on the primary display. The other end terminates at the 4-position terminal block (TB1) in the second display. Refer to **Figure 6** and the following table for correct interconnect locations.

Interconnect Locations – M4 Controller		
Primary (A31-TB1)	Field Cabling	Secondary (A31-TB1)
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)

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

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 7** 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.
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 8** and reassemble the sensor enclosure.

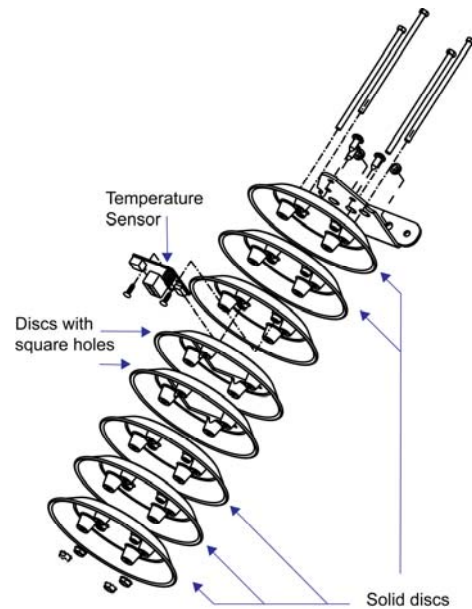


Figure 7: Temperature Sensor Diagram

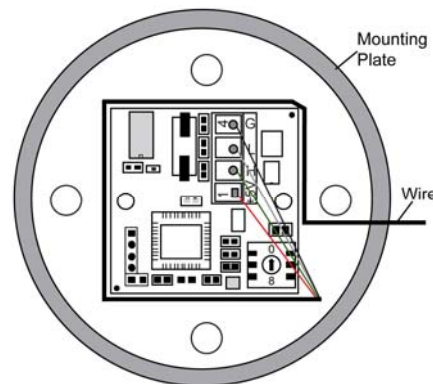
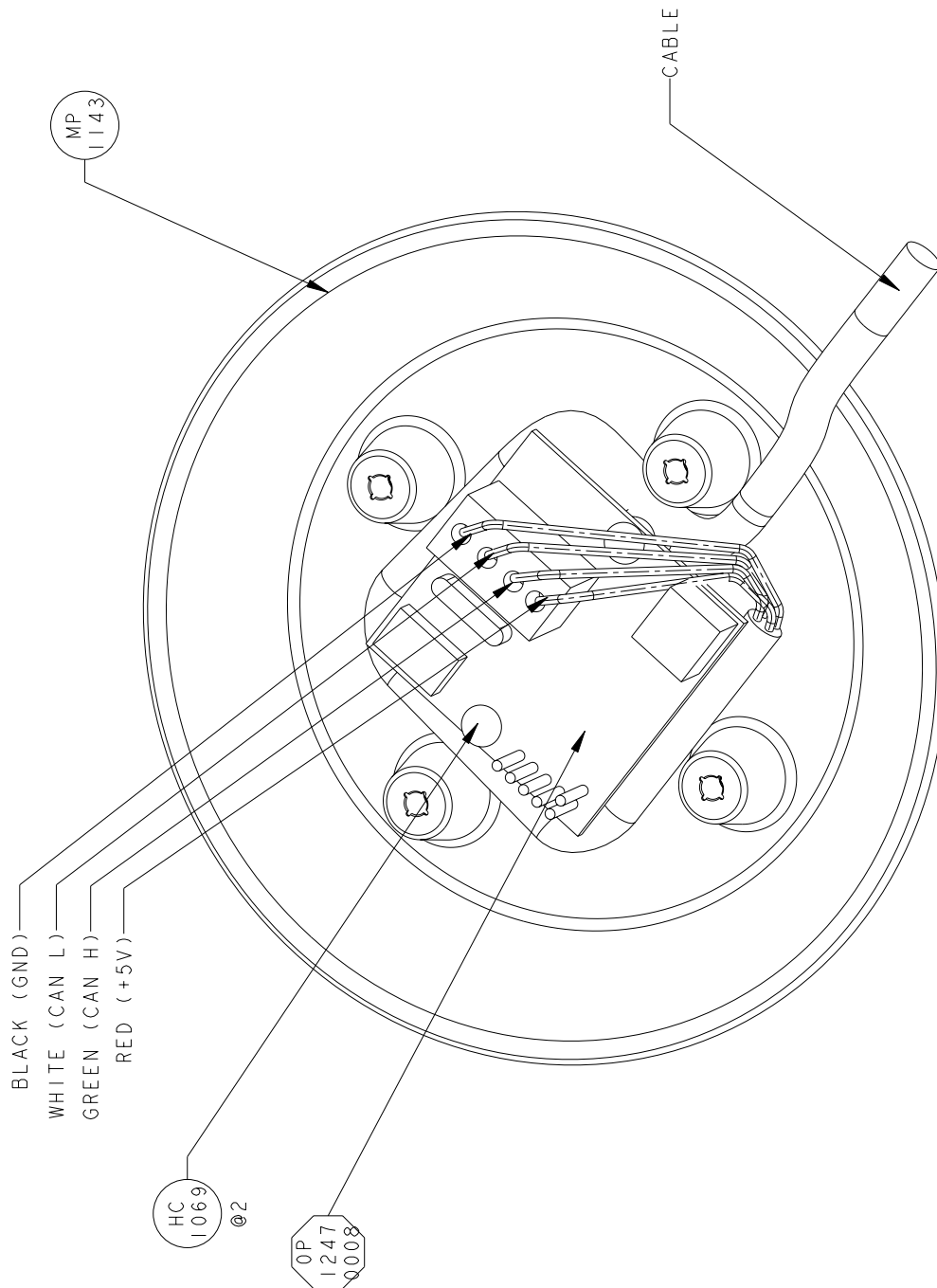


Figure 8: Temperature Sensor Wiring



ASSEMBLY INSTRUCTIONS:
 ATTACH PCB 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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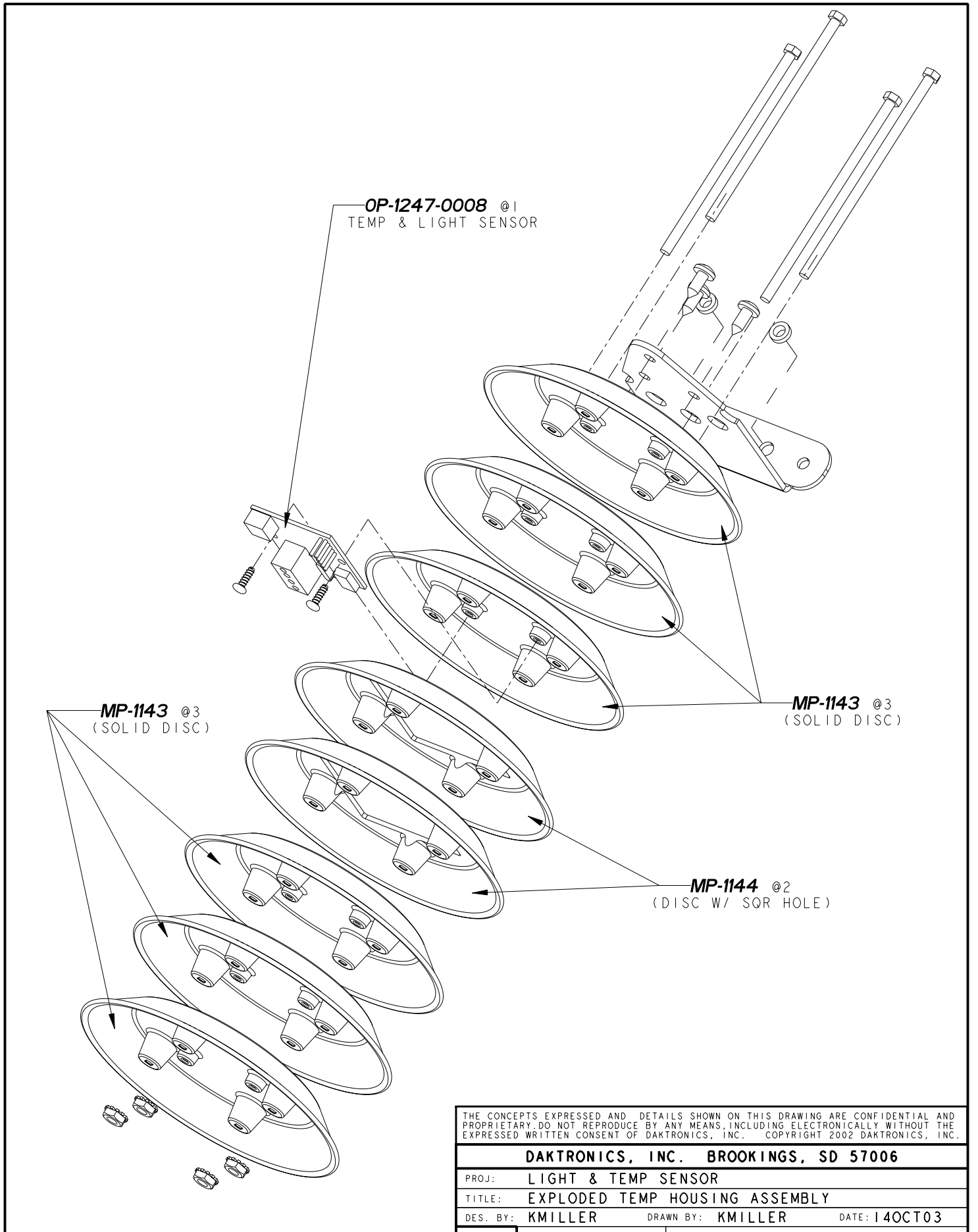
PROJ: LIGHT & TEMP SENSORS

TITLE: TEMP SENSOR CABLE ROUTING SCHEMATIC

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

REVISION SHEET 1 OF DWG 197884 1151 - E10A - 197884
 SCALE: 1 = 1

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.