

**SMALL MATRIX GALAXY®
GT6X SERIES**

**INSTALLATION AND
OPERATION MANUAL**

P2056

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FCC Statement

Supplier Declaration of Conformity (SDoC)

This product complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense.

Warning: The user is cautioned that changes and modifications made to the equipment without the approval of manufacturer could void the user's authority to operate this equipment.

Industry Canada Regulatory Information

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

Inquiries

Contact Daktronics with any questions regarding our product compliance.

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DAKTRONICS

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1 Introduction

This manual provides the necessary information to install and service a GT6x Small Matrix series display.

Please read and understand all steps in this manual before beginning the installation process.

Complete the steps in this manual in order. Contact Daktronics Technical Support with any questions before or during the installation process.

Limitation of Liability

The factory warranty will be void if:

- The display is not installed according to the steps in this manual.
- Proper electrical service is not provided or the display is not grounded properly.
- Unauthorized modifications are made to the display, display cabinet, or the control system.

Refer to **Daktronics Warranty and Limitation of Liability (p.27)** at the end of this manual for the full Daktronics Warranty and Limitation of Liability.

Contact Information

For assistance before, during, or after display installation, please contact Daktronics Technical Support: 1-800-DAK-TRON (325-8766).

Model Number Guide

GT6x Small Matrix model numbers are defined as follows:

GT6x-RxC-M-RGB-F		
GT6x	=	Outdoor Standard Galaxy® display
R	=	Number of pixel rows high
C	=	Number of pixel columns wide
M	=	Pixel pitch in millimeters
RGB	=	LED Color: RGB (Red, Green, Blue)
F	=	Face setup: SF – Single Face or 2V – Primary/Mirror

Displays are either single face (SF) or two view (2V). 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' (2.4 m) from the primary display, two primary displays are used.

2 Installation Preparation

This section explains what to consider before installing a Daktronics GT6x Small Matrix display.

Follow all guidelines and safety precautions in this manual when installing the display. Do not modify the display or control system in any manner without the written permission of Daktronics engineering staff.

Any unauthorized modifications nullify the display warranty.

Pre-Installation Checklist

- Ensure the display was not damaged during shipping.
- Ensure the mounting structure will provide a straight and square mounting frame for the display.
- Ensure the support structure can carry the weight of the display and meets local and national codes.
- Ensure proper power is available at sign structure—refer to **Shop Drawing** for display power requirements.
- Ensure the display cabinet has no holes (accidental or intentional) that will allow water to enter the display.
- Ensure all display modules are fully latched into the display cabinet.

Structure Requirements

Support structure design depends on mounting method, installation height, display size, and weight. Because every installation site is unique, Daktronics approves no single procedure for mounting displays.

Things to consider prior to installation:

- Display structure and mounting must not obstruct airflow—refer to **Shop Drawing** for ventilation space requirements.
- The light sensor must not be obstructed for the display to function properly.

For additional questions about display mounting requirements and specifications, refer to the display **Shop Drawing** or contact Daktronics Technical Support at 1-800-DAK-TRON (325-8766).

3 Display Installation

This section explains the steps necessary for proper lifting and installation of the display to the sign structure.

Follow all guidelines and safety precautions in this manual when installing the display.

Do not modify the display or control system in any manner without the written permission of Daktronics engineering staff. Any unauthorized modifications will nullify the warranty.

Display Installation Preparation

- Inspect the display for damage prior to installation.
- Use all clip angle locations for mounting.
- Provide an adequate support structure that is straight and level.
- Provide adequate ventilation that meets or exceeds display specifications listed on the **Shop Drawing**
- Use all lift eyes when lifting the display.
- Do not open the DMP enclosure.
- Do not drill holes into the display unless noted.
- Do not block display ventilation system.
- Do not use the lift eyes for display mounting.

Display Installation

1. Carefully remove shipping crate.
2. Attach a crane or lift truck to the lift eyes on the display's top.

Note: Use a spreader beam to ensure proper vertical lift that will not damage the cabinet. Refer to **Figure 1**.

3. Lift the display off the truck to the display structure.

Note: Do not lift displays in wind speeds greater than 20 mph.

4. Mount the display to the structure by welding or bolting all clip angle locations to horizontal stringers.

Note: Use all clip angles when mounting the display. Refer to **Figure 2**.

5. Remove crane support and tag lines from the display once mounting is complete.

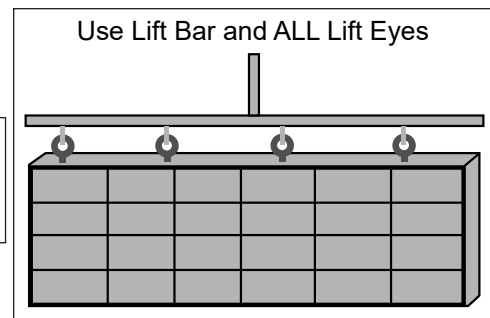


Figure 1: Proper Display Lifting



Figure 2: Clip Angle on Stringer

4 Electrical Installation

This section explains the steps necessary to make final electrical connections to the display from the primary power source. For display-specific power requirements, refer to the **Shop Drawing** or label on the rear of the display. Follow all installation guidelines.

Warnings and Disclaimers

- Ensure that all electrical work meets or exceeds all local or national electrical codes.
- Provide the required power to the display as listed on the product labels, specifications, or site-specific riser drawings. The conductor size may vary based on the length of the power run.
- Consider implementing a separate circuit for the display using an isolation transformer or dedicated transformer.
- Daktronics assumes no liability for any issues caused by line voltage fluctuations or other improper power conditions.

Important Notes

- Qualified personnel must perform electrical installations to prevent injury to personnel and damage to the equipment.
- Daktronics engineering staff must approve any changes made to the display. Before altering the display, submit detailed drawings for the proposed modifications to the Daktronics engineering staff for evaluation and approval, or the warranty will be void.
- Improper installation could result in serious damage to the equipment and could be hazardous to personnel.
- Size conductors of circuits that deliver power to the display according to national and local electrical codes so the power distribution system delivers full-load power to the display while maintaining a voltage within 5% of the utility nominal voltage.

Power Requirements

- Install the display according to all applicable local and national electrical codes. This includes proper grounding and bonding of the display.
- Do not connect the display to any voltage other than that listed on the Daktronics product label.
- Displays use single-phase power. Proper power installation is imperative for display operation.

Main Disconnect

Daktronics requires using a power disconnect switch with the display. A disconnect allows all ungrounded conductors to be disconnected near the point of power connection.

Locate the disconnecting means either in a direct line of sight from the display or so it can be locked in the open position. This ensures that power is not reconnected while service personnel work on the display.

Conduit

Daktronics does not provide 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)

For power, displays have either a J-box or a $\frac{3}{4}$ " conduit access hole located in the lower right on the rear of the display. For signal, displays have signal input quick connects or etched drilling guides for conduit.

Overview of Power/Signal Connection

Power to the display is terminated externally in most cases. **Power Connection (p.6)** shows external wiring examples.

Possible methods for signal termination are shown in the various communication manuals.

1. Power is routed to the display through a fused disconnect switch capable of opening all ungrounded power conductors. Install the disconnect within the line of sight of any personnel performing maintenance on the display, unless it can be locked in the open position.
2. Route power conductors from the disconnect to the display through conduit following local code specifications.
3. Terminate display power either to the J-box or internally at the power termination panel.
4. Connect the grounding conductor to the grounding lug on the rear of the display.
5. Route signal cable to the signal termination enclosure. Ground the enclosure to an isolated earth-ground connector (when required).
6. Route signal into the enclosure through conduit. The knockouts on the enclosure require the use of $\frac{3}{4}$ " conduit.
7. Route signal quick-connect cables from the enclosure to the display either through conduit or through the display pole if power is not also routed in the display pole.

Note: Quick-connect cables MUST be secured to protect them from weather or vandalism.

Earth Ground Installation

To connect the Daktronics GT6x Small Matrix display to an earth-ground electrode, follow these steps:

1. Install an earth-ground electrode (ground rod, ground plate, etc.) near the base of the display. Refer to **Figure 3** for guidelines.

Note: Each display face requires an earth-ground electrode.

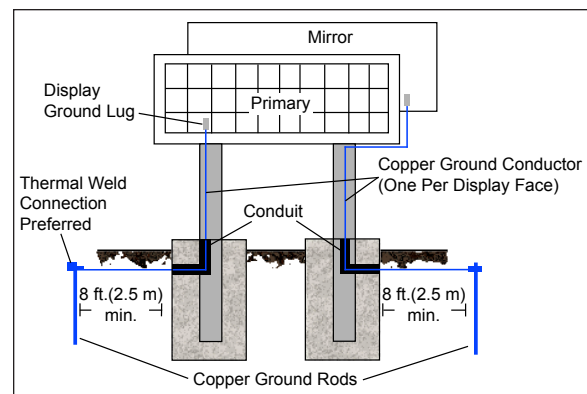


Figure 3: Proper Display Grounding

2. Connect a copper wire from the grounding electrode to the ground lug on the rear of the display.
3. Bury any copper cable or grounding electrodes so they are below grade.

Grounding

All components of a display system—including but not limited to displays, control equipment, and connected peripheral equipment—must be electrically grounded. Only qualified individuals may perform electrical work, including verification of ground resistance. Daktronics is not responsible for improper grounding or damage incurred as a result of improper grounding.

Grounding methods must meet the provisions of all applicable local and national codes. Inspect and verify all grounding methods meet the provisions of all applicable local and national codes.

Proper grounding is necessary for reliable equipment operation and general electrical safety. Failure to properly ground the display system may void the warranty, disrupt operation, damage equipment, and cause bodily harm or death.

Power Connection

Power is most often terminated to the J-box on displays. However, larger displays require power to be terminated internally in the Power Termination Panel.

Displays With an External Power Termination J-box

To terminate hot, neutral, and ground wires at the J-box, follow these steps:

1. Route the power cable through conduit to the rear of the display and into the power termination J-box [the J-box contains $\frac{3}{4}$ " threaded conduit fitting(s)].

Note: The J-box contains two or three wires plus a ground coming from the power termination panel inside the display.

2. Inside the J-box, connect the power wires to the wires coming from the display interior using wire nuts. Refer to **Figure 4** for 120 VAC and **Figure 5** for 120/240 VAC.

The following colors are used for the pre-terminated wires:

120 VAC	120/240 VAC
Line 1 – Brown	Line 1 – Brown
	Line 2 – Brown
Neutral – Blue	Neutral – Blue
Ground – Green/Yellow	Ground – Green/Yellow

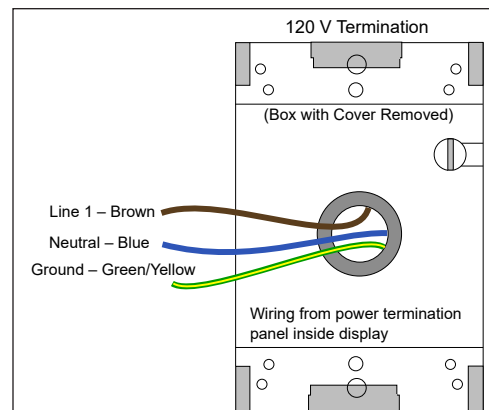


Figure 4: 120 V J-box Termination

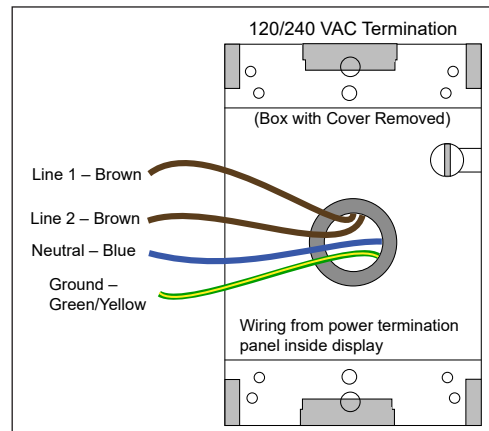


Figure 5: 120/240 V J-box Termination

Displays With Internal Power Termination

To terminate single-phase power to the internal power termination panel, follow these steps:

1. Open the display as explained in **Internal Display Access (p.15)** and locate the power termination panel.
2. Route the cable through conduit to the rear of the display. Use the $\frac{3}{4}$ " knockout for access, being careful not to damage internal components.
3. Connect the neutral wire to the neutral lug and the live wires to the Line 1 and Line 2 lugs.
4. The ground wire connects to the grounding bus bar. Refer to **Figure 6** for an example.

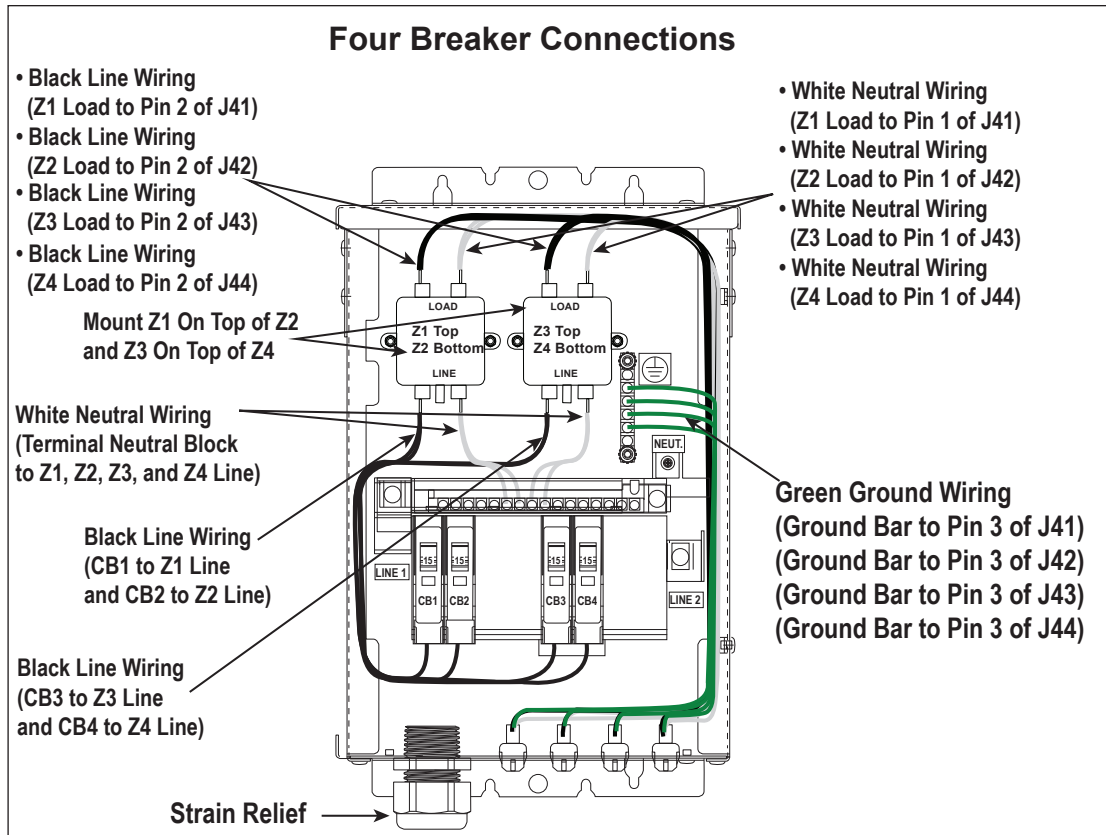


Figure 6: Single-phase Four Breaker Domestic Panel

5 Signal Cable Installation

Primary/Mirror Display Interconnections

For data to get from the Primary display to the Mirror display, the interconnect cable must be connected. This cable typically comes attached to the rear of the display.

1. Locate the cable, unpackage it, and remove protective caps from cables.
2. If this display is a two-sided primary/mirror display, quick-connect cables are provided to connect the signal between the two faces. Refer to Option 1 or Option 2 below for your specific application.

Option 1: Connect a cable from the Signal Out jack on primary face to Signal In jack on mirror face. Connect a second cable from the Signal Out jack on the mirror face to the Signal In jack on the primary face.

Option 2: Install the fiber quick-connect cable between Primary and Mirror display faces when applicable.

3. Coil up any excess cable and secure it to prevent vandalism and weather-related damage.

Note: Anchor points are found on each fan hood to secure excess cable.

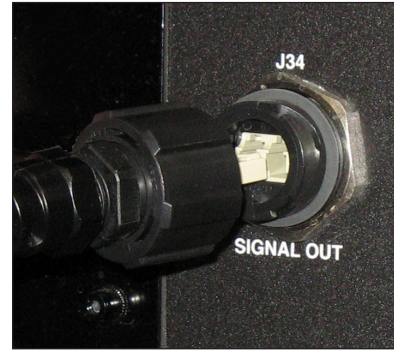


Figure 7: Signal Out Jack

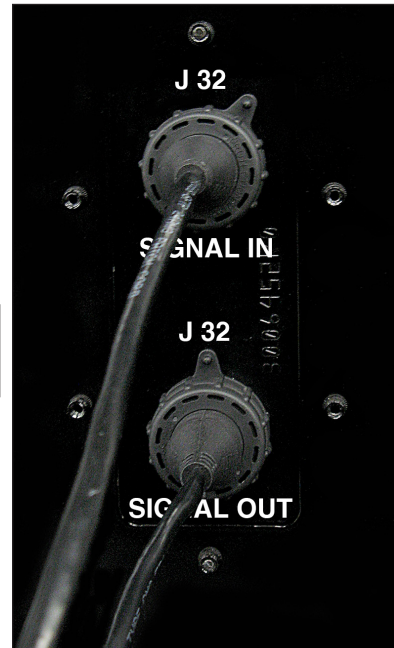


Figure 8: Signal In and Out Jacks

6 Network and Communication Installation

This section explains how to setup communications with a GT6x Small Matrix series display through a network or an individual computer. Obtain information about the available standard communication options in the provided quick guides and reference manuals.

System Startup

The display shows a boot sequence shortly after the power is turned on. The information in this sequence is very useful when using Venus® Control Software to configure the display. Ensure all display communications and network connections are made before turning the display on.

Boot Sequence

The information in the boot sequence includes the following:

Description
Firmware name and version
Display size (pixels high by pixels wide)
Dynamic Host Configuration Protocol (DHCP)-assigned name
IP address and state
Media access control (MAC) address
Configuration port
Status port
Management port to access configuration
Description

Start-Up Checklist

- Confirm power is correctly connected to the display.
- Confirm there is sufficient power according to display requirements.
- Confirm a main disconnect is installed.
- Confirm the display is grounded per local and national codes.
- Confirm that all communication equipment is installed according to provided documentation.
- Confirm that any necessary network connections have been made.
- Inspect peripheral equipment (temperature sensor, light sensor, etc.) for proper installation.

Communication Installation

This section explains the network settings of displays and gives guidance for integrating a display with a customer's network. It also provides basic information about available standard communication options.

Daktronics is not responsible for setting up a customer's network system neither a Local Area Network (LAN) nor a Wide Area Network (WAN).

Keep the following points in mind when installing network and communication:

- Complete all network and communication installation prior to turning on the display.
- Have a laptop with internet access on-site.
- Work with a customer's IT professional for network integration (preferred).

Network Connection

GT6x Small Matrix displays use Dynamic Host Configuration Protocol (DHCP) by default, allowing the customer's network to configure the display and eliminating manual configuration of the player.

When the display is connected to a network that supports DHCP, a default DHCP name similar to "DMP8.xx.xxxx" or "DMP5.xx.xxxx", where "xxxx" represents a unique identifier for the display, is shown in the display boot sequence.

Ports 4500-4525 must be open for communication on the switcher or router.

Computer Connection

When connecting the display directly to a computer, and Dynamic Host Configuration Protocol (DHCP) is not available, the display's AutoIP feature assigns an IP address. AutoIP addresses fall into the range of 169.254.0.0 to 169.254.255.255. The IP address displays during the boot sequence when the display first turns on.

Static IP Address Setting

Setting a static IP address on a display requires the following:

- Laptop with Java®, Silverlight®, DisplayFind, and Internet Explorer® applications installed
- Display IP address (provided by customer)
- Ethernet patch cable to connect the computer to the display

Work with Daktronics Technical Support when programming a static IP address on the player.

Standard Communication Options

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

Communication Type	Communication Manual	Communication Quick Guide
Wireless Ethernet Bridge	DD1685027	DD1417586
Wire Ethernet	DD1417609	DD1417573
Fiber Ethernet	DD1417611	DD1417581
Cellular Modem	N/A	DD3486291

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

7 Venus Software Configuration

Other control software is available on a contract basis. Refer to that product's help file for system requirements, installation, and configuration information.

First-Time Venus Login

Logging In – Daktronics Web-Hosted Server

1. Navigate to **https://venus.daktronics.com**.
2. Enter the **user name** and **password** provided by Daktronics into the **Email** and **Password** text boxes and click **Login**. Refer to **Figure 10**.
3. Change the **password** in the **Update Password** window. Refer to **Figure 9**. This step is required only for the first-time login to VCS.
4. Update the account information fields in the **User Information** and **Additional Information** sections and click **Save**.

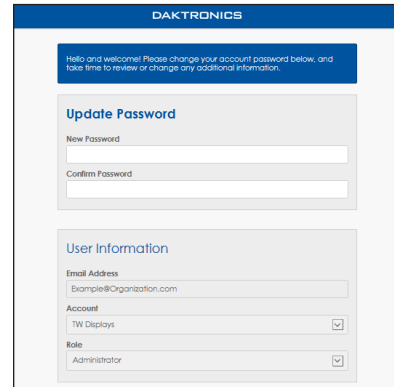
The screenshot shows a web interface for Daktronics. At the top, there is a blue header with the word 'DAKTRONICS'. Below the header, a blue box contains a message: 'Hello and welcome! Please change your account password below, and take time to review or change any additional information.' The main content area is divided into two sections. The first section is titled 'Update Password' and contains two text input fields: 'New Password' and 'Confirm Password'. The second section is titled 'User Information' and contains three fields: 'Email Address' with the value 'Example@Organization.com', 'Account' with the value 'TW Displays' and a checked checkbox, and 'Role' with the value 'Administrator' and a checked checkbox.

Figure 9: Update Information Prompt

Logging In – Customer Local-Hosted Server

1. Navigate to **https://ComputerName:44300** (entering the actual computer name for ComputerName).
2. Enter the **user name** and **password** provided by Daktronics into the **Email** and **Password** text boxes and click **Login**. Refer to **Figure 10**.
3. Change the **system password** in the **Update Password** window. Refer to **Figure 9**. This step is required only for the first-time login to VCS.
4. Update the account information fields in the **User Information** and **Additional Information** sections and click **Save**.

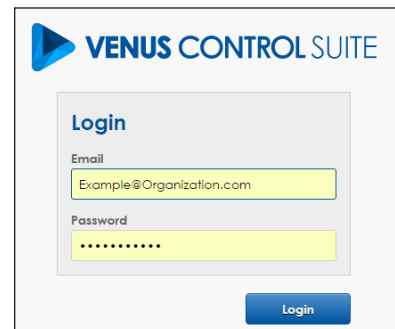

The screenshot shows the login page for the Venus Control Suite. At the top, there is a blue header with the Venus logo and the text 'VENUS CONTROL SUITE'. Below the header, the main content area is titled 'Login'. It contains two text input fields: 'Email' with the value 'Example@Organization.com' and 'Password' with a masked password '.....'. A blue 'Login' button is located at the bottom right of the form.

Figure 10: Venus System Login

Venus Menu Overview

After initial login, the **Dashboard** window opens showing status tiles for each display in the system. Click **Show Menu**  at the upper-left corner of the screen to open the main menu. Refer to **Figure 11** and the table below.

Menu Item	Description
Dashboard	Shows status tiles for each display and any active, online, associated devices such as VIP-5X60s, DMP-8000s, and DMP-5000s
Media	Opens the Media Library where content media files are uploaded, created through the Content Studio application, tagged, stored, and assigned to an account
Scripts	Opens the Script Library where display commands are created and stored
Accounts	Creates new accounts for advertisers
Users	Lists current user profiles and allows users to update passwords or add new users
Displays	Lists all available displays and provides basic management tools including Devices for linking DMP-8000s, DMP-5000s, and VIP-5X60s to a specific display

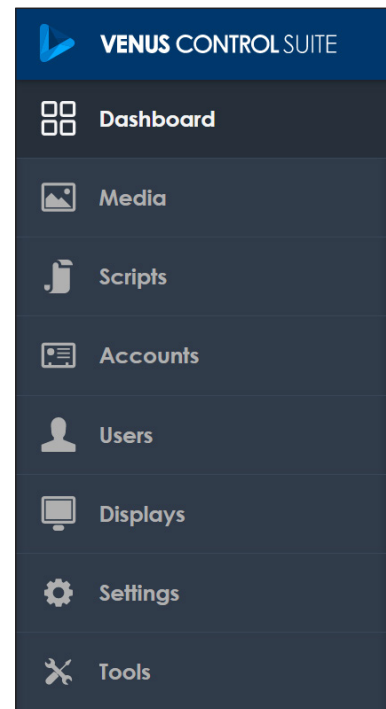


Figure 11: Venus® Main Menu

Venus System Setup

To add displays to Venus, follow these steps:

1. Click **Menu** on the top-left side of the initial dashboard screen.
2. Click **Displays** at the bottom of the **Menu**. The **No displays were found message** opens.
3. Click **Add New** at the top-left side of the window. The **Add Display** window opens.
4. Enter the display name into the **Title** text box.
5. Select the correct time zone for the display from the **Display Time Zone** drop-down menu.
6. Enter a description of the display in the **Description** text box.
7. Enter the size of the display (in pixels) in the **Width** and **Height** text boxes.
8. Click **Save**.
9. Repeat **Steps 3–8** for each display.

Contact Information and Where to Get Help

Daktronics contact information and VCS account information is available by clicking the **user name** at the upper-right corner. Refer to **Figure 12**. Select **About** under the user name to open the contact information window. Refer to **Figure 13**.

If further assistance is required, Daktronics Customer Service is available 7 a.m. to 7 p.m. CST, Monday to Friday via telephone or online connection.

Telephone

- U.S. & Canada: 1-800-DAK-TRON (325-8766)
- Outside the U.S. & Canada: +1-605-275-1040

Online

www.daktronics.com/support

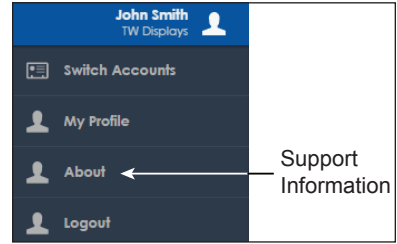


Figure 12: Account Information

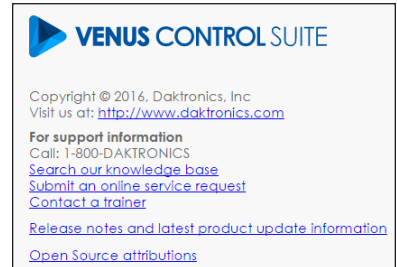


Figure 13: Contact Information

8 Display Maintenance

This section explains the steps necessary to maintain GT6x Small Matrix displays, which are front accessible only. Remove modules on the front of the display to gain access to internal components. **Figure 14** and **Figure 18** show internal component locations.

- Turn off power to the display before doing any repair or maintenance work.
- Only displays four modules high and higher have fans in both the top and bottom.

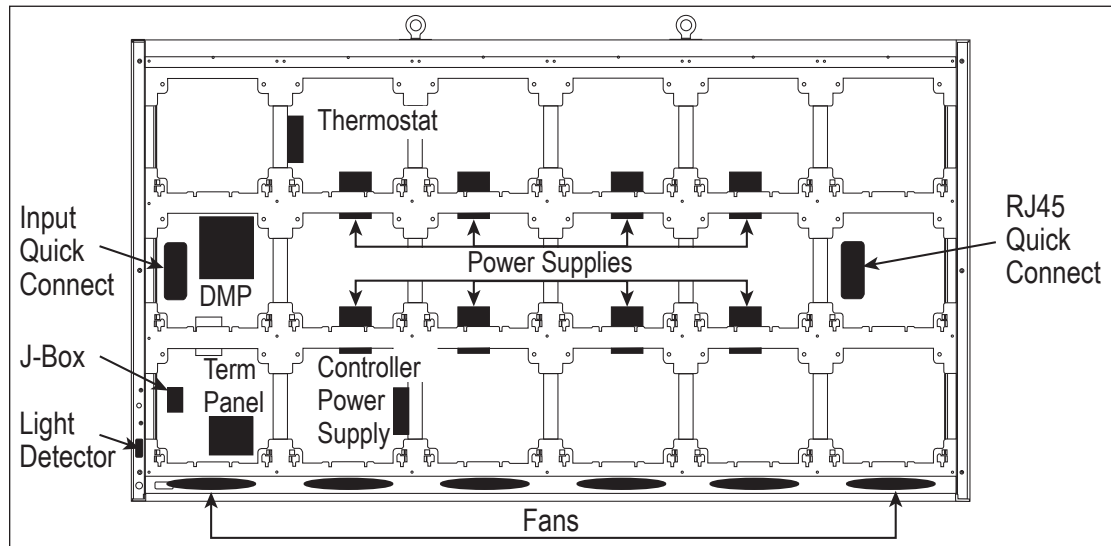


Figure 14: Component Locations

Internal Display Access

1. Disconnect power to the display.
2. Remove the bottom two modules from the second column on the left side of the display with a $\frac{1}{8}$ " hex head wrench. A component layout is shown in **Figure 14**.
3. Locate the latch fastener on the module near the top-right side. Refer to **Figure 15**. Turn the wrench a quarter-turn clockwise.
4. Gently tip the top of the module outward slightly. Then lift the module upward to disengage the tabs at the bottom of the module from the slots on the display's face sheet.
5. Disconnect the SATA cables and unplug the power cable by squeezing the tabs on the sides of the plug head and pulling it out. Refer to **Figure 16**.
6. Reconnect the SATA and power cables to the module.
7. Push the cables into the display so they do not get pinched.

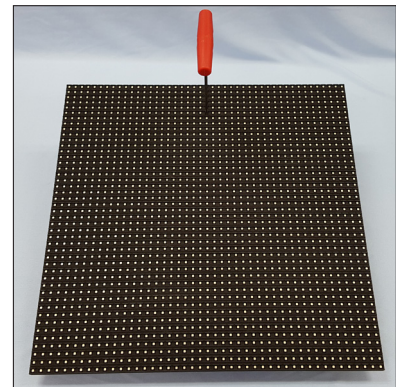


Figure 15: Module Front

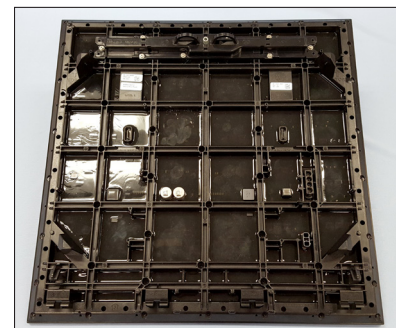


Figure 16: Module Rear

- Place modules back into their proper locations by inserting the tabs at the bottom of the modules in the corresponding slots on the display face sheet. Refer to **Figure 17**. Tip the top of the module back into place and latch it by turning the hex head wrench a quarter-turn counter-clockwise.

Note: A fully seated module should be flush with the modules around it.

Ventilation System

GT6x Small Matrix displays are equipped with a ventilation system that helps keep internal components at operable temperatures. GT6x Small Matrix displays are front ventilated, so the display support structure must allow adequate space or air movement for proper ventilation. Refer to the display **Shop Drawing** for ventilation requirements.

Fans help bring fresh air into the display while exhausting hot air through the upper vents. Fans are controlled via a thermostat in the display cabinet. The thermostat is equipped with a bypass button for testing fan operation. Replace fans that are not working properly.

Display Face Cleaning

Wet Cleaning Process

- Turn off power to the display.
- Mix a mild, non-abrasive, non-petroleum-based detergent and cold water. Use one ounce of detergent to one gallon of cold water.
- Saturate a light/medium duty cleaning brush with the soapy water.
- 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.
- 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.
- Use a dry, soft terry cloth towel to dry and remove excess water. Take care not to damage LEDs or the plastic louvers by catching the cloth on them.

Dry Cleaning Process

- Turn off power to the display.
- Rub a dry, soft terry cloth towel horizontally across each row of LEDs. Make four passes per row of LEDs before moving to the next row of LEDs. 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.

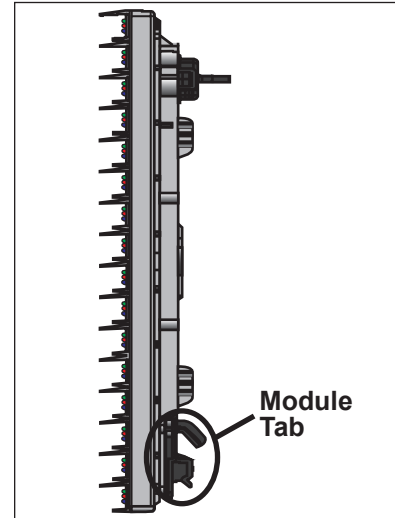


Figure 17: Tab on Back of Module

9 Display Troubleshooting

This section provides basic display information such as power and signal routing as well as basic troubleshooting tips for common problems. For issues not addressed in this manual, please contact Daktronics Technical Support.

Power and Signal Routing

Understanding power and signal flow through the display can help a technician troubleshoot an issue.

Power Routing

Figure 18 shows an example of how power is routed through the display.

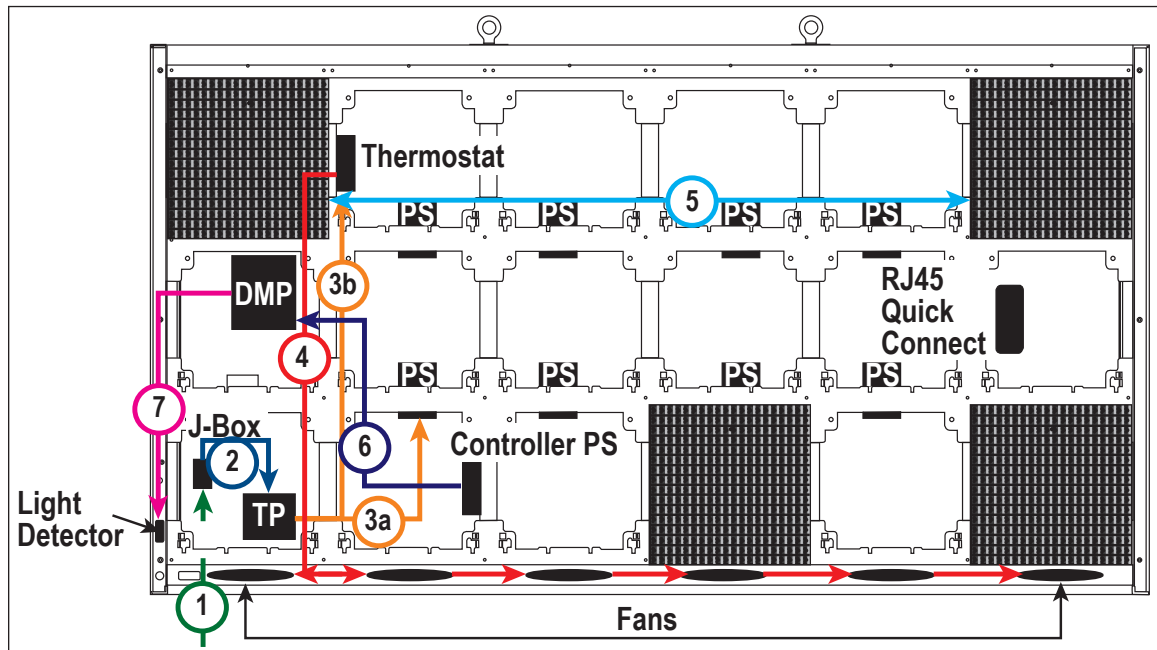


Figure 18: Power Routing

1. AC Power enters the display through the J-box on the rear of the display (1).
2. Power then travels to the Power Termination Panel (2).
3. Power is distributed to the Power Supplies (3a) and Thermostat (3b).
4. Power leaves the thermostat and travels to the fans (4).
5. Modules get power from the Power Supplies (5).
6. DC Power is supplied to the Controller (6) from the Controller Power Supply.
7. The Controller supplies power to the Light Sensor (7).

Signal Routing

Figure 19 shows how signal is routed through the display.

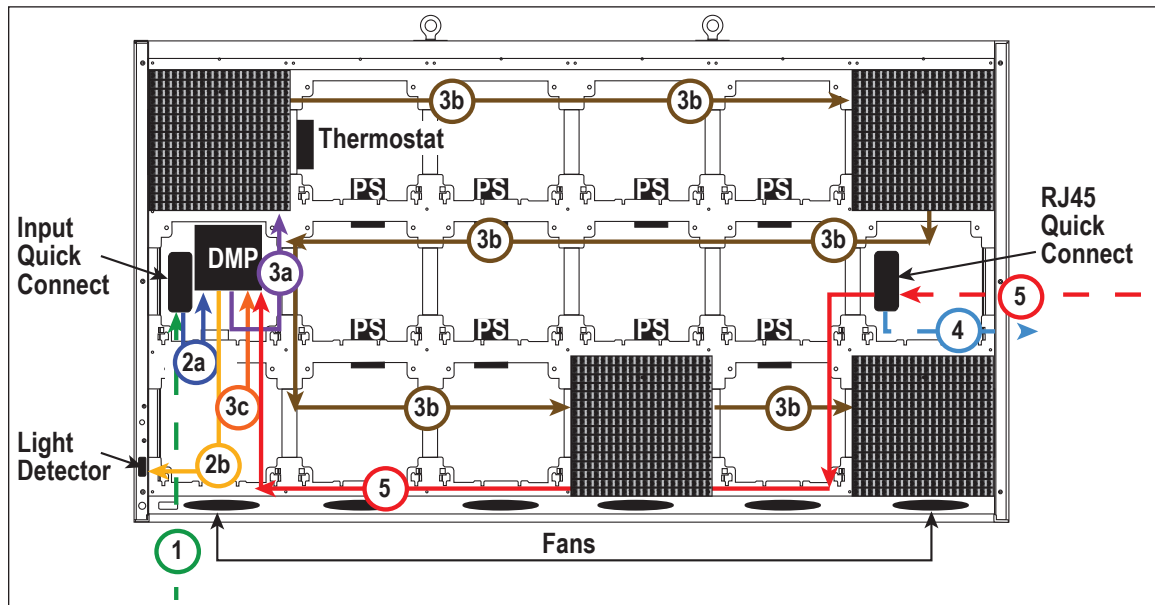


Figure 19: Signal Routing

1. Signal enters the display from the external signal enclosure through the signal input quick-connect jacks (1).
2. Signal travels from the J32 signal input jack through an Ethernet Cat5e cable to the J32 Ethernet jack on the controller (2a).
 - The J33 auxiliary input jack and jack J31, for optional external temperature sensor, connect to breakout harness to jack J36 on the controller.
 - The light sensor is connected to the breakout harness to the J36 jack on the Controller (2b).
3. In single-face displays, signal travels from the Controller SATA A jack to SATA A on the first Module (3a) and travels from module to module via SATA cables (3b). Refer to **Figure 20**. Signal returns to the Controller SATA B jack (3c).
4. In 2V displays, signal from the primary display face RJ45 Quick Connect travels from the Primary Out jack to the mirror face (4) to the Mirror In jack.
5. Signal returns from the mirror display via the Mirror Out jack to the Primary In jack on the primary display and finally returns to the Controller SATA B jack (5). Refer to **Figure 19**.

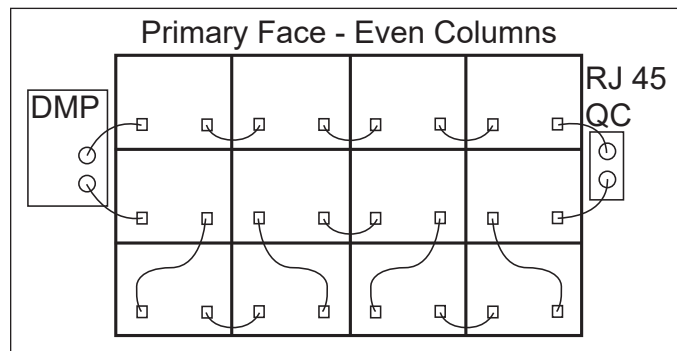


Figure 20: Module-to-Module Signal Routing

Note: One-high displays must be located less than 20' apart to accommodate signal redundancy between primary and mirror displays.

Controller Diagnostics

DMP-5050 is the controller in a GT6x Small Matrix display. The controller is located in the lower-left portion of the display in an environmental enclosure. The controller receives incoming signal from the control computer and routes that signal to the display. The controller has three LEDs on it that can be useful when troubleshooting a communication issue. **Figure 21** shows those LEDs.

PLR Diagnostics

The ProLink Router (PLR), receives signal from the display player, which transfers it on to the modules through SATA cables. GT6x Small Matrix displays are equipped with a redundant signal path, meaning two SATA cables are connected to each module. If one of the two SATA cables fail, the module continues to receive data from the other SATA cable and the display continues functioning normally.

PLR Self-Test

When put into self-test mode, the PLR tests for correct operation and displays pass/fail status on the 7-segment display.

To put the PLR into self-test mode, loop a SATA cable between ports A and B. Then take a fiber cable and connect the fiber ports together. Refer to **Figure 22**. Once the cables are connected, cycle power to the PLR and it will boot-up in self-test mode. Following is a table of a few possible messages. Contact Daktronics Technical Support for additional information or questions.

Code			Description
8	8	8	Testing 7 segments (held for 2 seconds)
t	s	t	Initial test in progress (60-second duration)
P	A	S	All tests passed
E	r	r	Test failures reported
F	0	1	Fiber Port A Error
F	0	2	Fiber Port B Error
F	0	3	RJ45 IN (Port A) Error
F	0	4	RJ45 OUT (Port B) Error
F	0	5	ProLink5 (SATA) Port A Error
F	0	6	ProLink5 (SATA) Port B Error
C	N	P	CAN Light Sensor (J8) Port Pass
C	N	F	CAN Light Sensor (J8) Port Fail

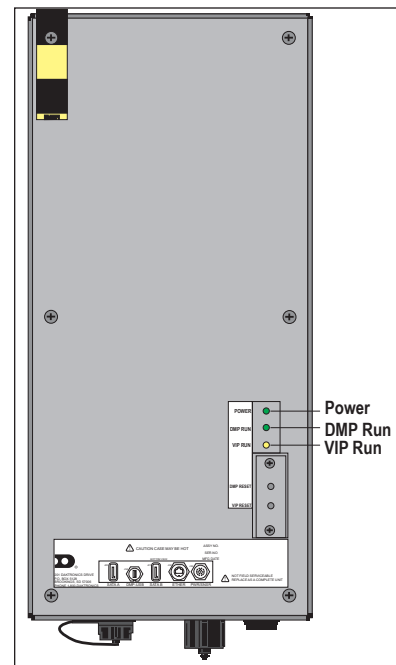


Figure 21: Player Diagnostic LEDs

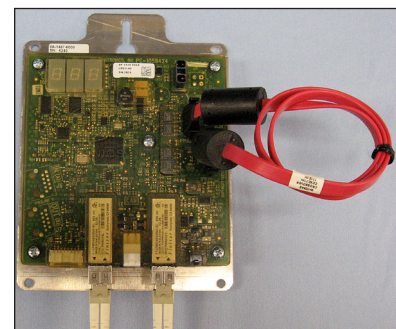


Figure 22: PLR Self-Test Setup

If any Err message is displayed, send the PLR back to Daktronics for repair or replacement.

Module Diagnostics

Modules are equipped with a status indicator LED that can help troubleshoot possible issues. Under normal operation, the status indicator LED should flash once every four seconds.

Module Self-Test

If a module is blank but has power supplied to it, perform a module self-test to diagnose a module or signal cable failure. To perform a self-test, follow these steps:

1. Attach a signal cable to Port A and Port B on the module. Refer to **Figure 23**.
2. Disconnect the power to the module for 10 seconds.
3. Reconnect the power to start the self-test.
4. Verify the module is running a self-test.

Remove the signal cable and cycle power to the module to stop the self-test.

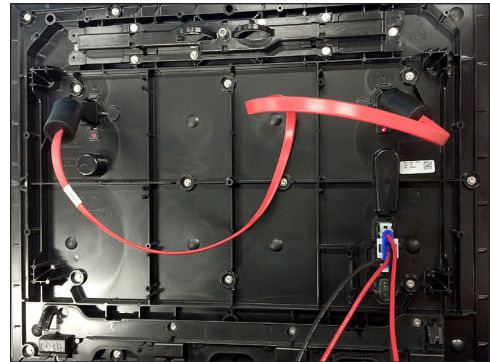


Figure 23: Module Self Test

10 Replacing Parts

Most display components have a white label that lists the part number in bold as shown in **Figure 24**. Part numbers may also appear on illustrations and reference drawings as well as in the Bill of Materials (BOM) for the project. If a replacement part cannot be identified, contact Daktronics Customer Service.

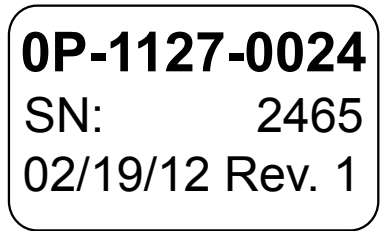


Figure 24: Typical Parts Label

Refer to **Section 11: Daktronics Exchange and Repair & Return Programs (p.23)** if replacing or repairing any display component.

Module Replacement

Note: Do not allow modules to hang by the cables.

1. Turn off power to the display.
2. Remove module using a $\frac{1}{8}$ " hex head wrench.
3. Gently tip the top of the module outward slightly, and then lift the module upward to disengage the tabs at the bottom of the module from the slots on the display's face sheet.
4. Disconnect the power cable.
5. Carefully disconnect the two signal cables from the module.
6. Connect the two signal cables to the new module.
7. Connect the power cable.
8. Insert the tabs at the bottom of the module in the corresponding slots on the display face sheet. Refer to **Figure 17**. Tip the top of the module back into place and latch it by turning the hex head wrench a quarter-turn counter-clockwise. Make sure not to pinch any cables.
9. Latch the new module into place making sure it is fully seated.

Display Power Supply Replacement

1. Disconnect the power supply from any wiring harnesses connected to it.
2. Use a Torx T25 screwdriver to remove the two screws that hold the power supply to the mounting bracket to the display backsheet. Refer to **Figure 25**.
3. Carefully pull the power supply outward.
4. After securing the new power supply, reconnect the wiring harnesses disconnected in **Step 1**.

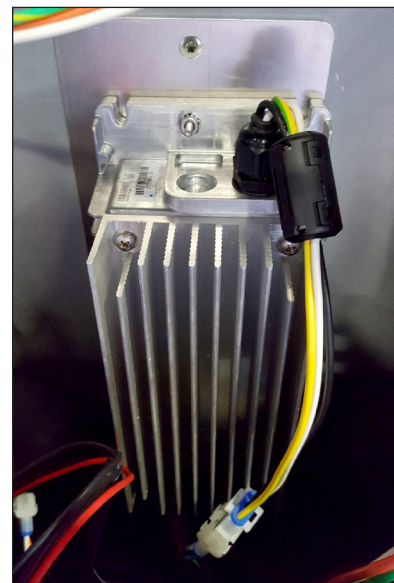


Figure 25: Power Supply Mounting

Controller Power Supply Replacement

1. Remove the modules in front of the controller.
2. Disconnect the power supply from any wiring harnesses connected to it.
3. Push down on the top leg of the wire form bracket and rotate the power supply clockwise. Refer to **Figure 26**.
4. Carefully pull the power supply outward.
5. After securing the new power supply, reconnect the wiring harnesses disconnected in **Step 1**.



Figure 26: Controller Power Supply Mounting

Controller Replacement

The controller is located in the lower-left area of the display. From the bottom-left corner of the Primary face, go up to the second row of modules and over to the second column of modules to locate the controller. The controller is in an enclosure which is not to be opened. Replace the entire enclosure.

1. Remove the modules in front of the controller.

Note: Do not allow the modules to hang by their cables.

2. Disconnect the cables from the controller.
3. Loosen the screw securing the controller enclosure and bracket.
4. Carefully lift the enclosure up and out of the display.
5. Insert the new enclosure and tighten the screw.
6. Reattach the cables to the controller using the labels and reference drawings as a guide.

PLR Replacement

PLRs can be found in both Primary and Mirror display faces as well as all sections of a sectional display.

1. Remove the module in front of the PLR.

Note: Do not allow the modules to hang by their cables.

2. Disconnect the two SATA cables, fiber cables, and power cable to the PLR.
3. Loosen the screw at the top of the PLR mounting plate.
4. Lift the mounting plate up and out of the display.
5. Insert the new PLR with mounting plate and tighten the screw.
6. Insert the two SATA cables, fiber cables, and power cable in the appropriate locations.

11 Daktronics Exchange and Repair & Return Programs

Exchange Program

The Daktronics Exchange Program is a service for quickly 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 decreases equipment downtime. Customers who follow the program guidelines explained below will receive this service.

Before contacting Daktronics, identify these important numbers:

Display Serial Number: _____

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.
United States & Canada: 1-800-DAK-TRON (325-8766)
Outside the U.S. & Canada: +1-605-275-1040
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 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 three 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 two weeks of the second invoice date, Daktronics will credit the customer for the second invoice.

If after two 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.

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 Daktronics Customer Service.

United States & Canada: 1-800-DAK-TRON (325-8766)

Outside the U.S. & Canada: +1-605-275-1040

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. Daktronics does not recommend using packing peanuts when shipping.

4. Enclose:

- Name
- Address
- Phone number
- RMA number
- A clear description of symptoms

Shipping Address

Daktronics Customer Service

600 E 54th St N

Case # _____

Sioux Falls, SD 57104


Attn: RMA# _____

Daktronics Warranty and Limitation of Liability

The Daktronics Warranty & Limitation of Liability is located at the end of this manual. The Warranty is independent of Extended Service agreements and is the authority in matters of service, repair, and display operation.

A Reference Drawings

Figure 27 illustrates a Daktronics drawing label. This manual refers to drawings by listing the last set of digits. In the example, the drawing would be referred to as **DWG-1007804**. All references to drawing numbers, appendices, figures, or other manuals are presented in bold typeface.

 DAKTRONICS, INC. BROOKINGS, SD 57006 DO NOT SCALE DRAWING		THE CONCEPTS EXPRESSED AND DETAILS SHOWN ON THIS DRAWING ARE CONFIDENTIAL AND PROPRIETARY. DO NOT REPRODUCE BY ANY MEANS WITHOUT THE EXPRESSED WRITTEN CONSENT OF DAKTRONICS, INC. COPYRIGHT 2010 DAKTRONICS, INC.
PROJ: DAKTRONICS TITLE: SYSTEM RISER DIAGRAM		
DESIGN:		DRAWN: APAGE
SCALE: NONE		
SHEET 200	REV 02	JOB NO: C17581
		FUNC-TYPE-SIZE F-01-D
		1007804

Drawing Number

Figure 27: Drawing Label

- When viewing a digital version of this manual, simply click a link below to open it.
- When referencing the printed version of this manual, open an Internet browser and go to **www.daktronics.com/web-documents/drawings/#####.pdf** (where "#####" is a 7-digit number shown below).

Project-specific documents take precedence over those listed in this section. To obtain copies of drawings specific to your display, contact Daktronics Customer Service:

- United States & Canada: 1-800-DAK-TRON (325-8766)
- Outside the U.S. & Canada: +1-605-275-1040

Shop Drawings:

To view a spreadsheet of GT6x shop drawings, open an internet browser and go to www.daktronics.com/web-documents/drawings/DD4541548.pdf

Block Diagrams:

Block Diagram; GT6, DMP.....	DWG-3835662
Block Diagram; GT6x, DMP, 1PLR.....	DWG-4282232
Block Diagram; GT6x, DMP, 2PLR,2-3 Mods Tall.....	DWG-4282233
Block Diagram; GT6x, DMP, 2PLR,4-6 Mods Tall.....	DWG-4282234
Block Diagram; GT6x, DMP, 3PLR, 3-5 Mods Tall.....	DWG-4282235
Block Diagram; GT6x, DMP, 3PLR, 6 Mods Tall.....	DWG-4285175
Block Diagram; GT6x, DMP, 4PLR.....	DWG-4285176
Block Diagram; GT6x, DMP, One Mod Tall.....	DWG-4285649

SATA Routing Drawings:

Block Diagram; GT6x SATA Routing, DMP-5050.....	DWG-4282226
Block Diagram; GT6x SATA Routing, DMP, 1PLR.....	DWG-4282227
Block Diagram; GT6x SATA Routing, DMP, 2PLR.....	DWG-4282228
Block Diagram; GT6x SATA Routing, DMP, 3PLR.....	DWG-4282229
Block Diagram; GT6x SATA Routing, DMP, 4PLR.....	DWG-4282230
Block Diagram; GT6x SATA Routing, DMP, 5 & 6 PLR.....	DWG-4282231

Other Drawings:

Install Assembly, GT6 Back to Back Kit.....	DWG-3125256
Shop Drawing, GT6 Back to Back Kit.....	DWG-3128528

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B Daktronics Warranty and Limitation of Liability

This section includes the Daktronics Warranty & Limitation of Liability statement (SL-02374).

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DAKTRONICS WARRANTY & LIMITATION OF LIABILITY

This Warranty and Limitation of Liability (the "Warranty") sets forth the warranty provided by Daktronics with respect to the Equipment. By accepting delivery of the Equipment, Purchaser and End User agree to be bound by and accept these terms and conditions. Unless otherwise defined herein, all terms within the Warranty shall have the same meaning and definition as provided elsewhere in the Agreement.

DAKTRONICS WILL ONLY BE OBLIGATED TO HONOR THE WARRANTY SET FORTH IN THESE TERMS AND CONDITIONS UPON RECEIPT OF FULL PAYMENT FOR THE EQUIPMENT

1. Warranty Coverage.

- A. Daktronics warrants to the original end user (the "End User", which may also be the Purchaser) that the Equipment will be free from Defects (as defined below) in materials and workmanship for a period of one (1) year (the "Warranty Period"). The Warranty Period shall commence on the earlier of: (i) four weeks from the date that the Equipment leaves Daktronics' facility; or (ii) Substantial Completion as defined herein. The Warranty Period shall expire on the first anniversary of the commencement date.

"Substantial Completion" means the operational availability of the Equipment to the End User in accordance with the Equipment's specifications, without regard to punch-list items, or other non-substantial items which do not affect the operation of the Equipment
- B. Daktronics' obligation under this Warranty is limited to, at Daktronics' option, replacing or repairing, any Equipment or part thereof that is found by Daktronics not to conform to the Equipment's specifications. Unless otherwise directed by Daktronics, any defective part or component shall be returned to Daktronics for repair or replacement. This Warranty does not include on-site labor charges to remove or install these components. Daktronics may, at its option, provide on-site warranty service. Daktronics shall have a reasonable period of time to make such replacements or repairs and all labor associated therewith shall be performed during regular working hours. Regular working hours are Monday through Friday between 8:00 a.m. and 5:00 p.m. at the location where labor is performed, excluding any holidays observed by Daktronics.
- C. Daktronics shall pay ground transportation charges for the return of any defective component of the Equipment. All such items shall be shipped by End User DDP Daktronics designated facility per Incoterms® 2020. If returned Equipment is repaired or replaced under the terms of this Warranty, Daktronics will prepay ground transportation charges back to End User and shall ship such items DDP End User's designated facility per Incoterms® 2020; otherwise, End User shall pay transportation charges to return the Equipment back to the End User and such Equipment shall be shipped Ex Works Daktronics designated facility per Incoterms® 2020. All returns must be pre-approved by Daktronics before shipment. Daktronics shall not be obligated to pay freight for any unapproved return. End User shall pay any upgraded or expedited transportation charges
- D. Any replacement parts or Equipment will be new or serviceably used, comparable in function and performance to the original part or Equipment and warranted for the remainder of the Warranty Period. Purchasing additional parts or Equipment from the Seller does not extend the Warranty Period.
- E. Defects shall be defined as follows. With regard to the Equipment (excepting LEDs), a "Defect" shall refer to a material variance from the design specifications that prohibit the Equipment from operating for its intended use. With respect to LEDs, "Defects" are defined as LED pixels that cease to emit light. Unless otherwise expressly provided, this Warranty does not impose any duty or liability upon Daktronics for partial LED pixel degradation. Notwithstanding the foregoing, in no event does this Warranty include LED pixel degradation caused by UV light. This Warranty does not provide for the replacement or installation of communication methods including but not limited to, wire, fiber optic cable, conduit, trenching, or for the purpose of overcoming local site interference radio equipment substitutions.

EXCEPT AS OTHERWISE EXPRESSLY SET FORTH IN THIS WARRANTY, TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, DAKTRONICS DISCLAIMS ANY AND ALL OTHER PROMISES, REPRESENTATIONS AND WARRANTIES APPLICABLE TO THE EQUIPMENT AND REPLACES ALL OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTIES OR CONDITIONS OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR ACCURACY OR QUALITY OF DATA. OTHER ORAL OR WRITTEN INFORMATION OR ADVICE GIVEN BY DAKTRONICS, ITS AGENTS OR EMPLOYEES, SHALL NOT CREATE A WARRANTY OR IN ANY WAY INCREASE THE SCOPE OF THIS LIMITED WARRANTY.

THIS LIMITED WARRANTY IS NOT TRANSFERABLE.

2. Exclusion from Warranty Coverage

This Warranty does not impose any duty or liability upon Daktronics for any:

- A. damage occurring at any time, during shipment of Equipment unless otherwise provided for in the Agreement. When returning Equipment to Daktronics for repair or replacement, End User assumes all risk of loss or damage, agrees to use any shipping containers that might be provided by Daktronics, and to ship the Equipment in the manner prescribed by Daktronics;
- B. damage caused by: (i) the improper handling, installation, adjustment, use, repair, or service of the Equipment, or (ii) any physical damage which includes, but is not limited to, missing, broken, or cracked components resulting from non-electrical causes;



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altered, scratched, or fractured electronic traces; missing or gauged solder pads; cuts or clipped wires; crushed, cracked, punctured, or bent circuit boards; or tampering with any electronic connections, provided that such damage is not caused by personnel of Daktronics or its authorized repair agents;

- C. damage caused by the failure to provide a continuously suitable environment, including, but not limited to: (i) neglect or misuse; (ii) improper power including, without limitation, a failure or sudden surge of electrical power; (iii) improper air conditioning, humidity control, or other environmental conditions outside of the Equipment's technical specifications such as extreme temperatures, corrosives and metallic pollutants; or (iv) any other cause other than ordinary use;
- D. damage caused by fire, flood, earthquake, water, wind, lightning or other natural disaster, strike, inability to obtain materials or utilities, war, terrorism, civil disturbance, or any other cause beyond Daktronics' reasonable control;
- E. failure to adjust, repair or replace any item of Equipment if it would be impractical for Daktronics personnel to do so because of connection of the Equipment by mechanical or electrical means to another device not supplied by Daktronics, or the existence of general environmental conditions at the site that pose a danger to Daktronics personnel;
- F. statements made about the product by any salesperson, dealer, distributor or agent, unless such statements are in a written document signed by an officer of Daktronics. Such statements as are not included in a signed writing do not constitute warranties, shall not be relied upon by End User and are not part of the contract of sale;
- G. damage arising from the use of Daktronics products in any application other than the commercial and industrial applications for which they are intended, unless, upon request, such use is specifically approved in writing by Daktronics;
- H. replenishment of spare parts. In the event the Equipment was purchased with a spare parts package, the parties acknowledge and agree that the spare parts package is designed to exhaust over the life of the Equipment, and as such, the replenishment of the spare parts package is not included in the scope of this Warranty;
- I. security or functionality of the End User's network or systems, or anti-virus software updates;
- J. performance of preventive maintenance;
- K. third-party systems and other ancillary equipment, including without limitation front-end video control systems, audio systems, video processors and players, HVAC equipment, batteries and LCD screens;
- L. incorporation of accessories, attachments, software or other devices not furnished by Daktronics; or
- M. paint or refinishing the Equipment or furnishing material for this purpose.

3. Limitation of Liability

- A. Daktronics shall be under no obligation to furnish continued service under this Warranty if alterations are made to the Equipment without the prior written approval of Daktronics.
- B. It is specifically agreed that the price of the Equipment is based upon the following limitation of liability. In no event shall Daktronics (including its subsidiaries, affiliates, officers, directors, employees, or agents) be liable for any claims asserting or based on (a) loss of use of the facility or equipment; lost business, revenues, or profits; loss of goodwill; failure or increased cost of operations; loss, damage or corruption of data; loss resulting from system or service failure, malfunction, incompatibility, or breaches in system security; or (b) any special, consequential, incidental or exemplary damages arising out of or in any way connected with the Equipment or otherwise, including but not limited to damages for lost profits, cost of substitute or replacement equipment, down time, injury to property or any damages or sums paid to third parties, even if Daktronics has been advised of the possibility of such damages. The foregoing limitation of liability shall apply whether any claim is based upon principles of contract, tort or statutory duty, principles of indemnity or contribution, or otherwise
- C. In no event shall Daktronics be liable for loss, damage, or injury of any kind or nature arising out of or in connection with this Warranty in excess of the Purchase Price of the Equipment. The End User's remedy in any dispute under this Warranty shall be ultimately limited to the Purchase Price of the Equipment to the extent the Purchase Price has been paid.

4. Assignment of Rights

- A. The Warranty contained herein extends only to the End User (which may be the Purchaser) of the Equipment and no attempt to extend the Warranty to any subsequent user-transferee of the Equipment shall be valid or enforceable without the express written consent of Daktronics.

5. Governing Law; Election of Remedies

- A. The rights and obligations of the parties under this Warranty shall not be governed by the provisions of the United Nations Convention on Contracts for the International Sales of Goods of 1980. The parties consent to the application of the laws of the State of South Dakota to govern, interpret, and enforce each of the parties' rights, duties, and obligations arising from, or relating in any manner to, the subject matter of this Warranty, without regard to conflict of law principles.
- B. Any dispute, controversy or claim arising from or related to this Warranty, the parties shall first attempt to settle through negotiations. In the event that no resolution is reached, then such dispute, controversy, or claim shall be resolved by final and binding arbitration under the Rules of Arbitration of the International Chamber of Commerce. The language of the arbitration

DAKTRONICS WARRANTY & LIMITATION OF LIABILITY

shall be English. The place of the arbitration shall be Sioux Falls, SD. A single arbitrator selected by the parties shall preside over the proceeding. If a single arbitrator cannot be agreed upon by the parties, each party shall select an arbitrator, and those arbitrators shall confer and agree on the appointed arbitrator to adjudicate the arbitration. The arbitrator shall have the power to grant any provisional or final remedy or relief that it deems appropriate, including conservatory measures and an award of attorneys' fees. The arbitrator shall make its decisions in accordance with applicable law. By agreeing to arbitration, the Parties do not intend to deprive any court of its jurisdiction to issue a pre-arbitral injunction, pre-arbitral attachment, or other order in aid of arbitration proceedings and the enforcement of any award. Without prejudice to such provisional remedies as may be available under the jurisdiction of a court, the arbitrator shall have full authority to grant provisional remedies and to direct the Parties to request that any court modify or vacate any temporary or preliminary relief issued by such court, and to award damages for the failure of any Party to respect the arbitrator's orders to that effect.

6. Availability of Extended Service Agreement

- A. For End User's protection, in addition to that afforded by the warranties set forth herein, End User may purchase extended warranty services to cover the Equipment. The Extended Service Agreement, available from Daktronics, provides for electronic parts repair and/or on-site labor for an extended period from the date of expiration of this warranty. Alternatively, an Extended Service Agreement may be purchased in conjunction with this Warranty for extended additional services. For further information, contact Daktronics Customer Service at 1-800-DAKTRONics (1-800-325-8766).

Additional Terms applicable to sales outside of the United States

The following additional terms apply **only** where the installation site of the Equipment is located outside of the United States of America.

1. In the event that the installation site of the Equipment is in a country other than the U.S.A., then, notwithstanding Section 5 of the Warranty, where the selling entity is the entity listed in Column 1, then the governing law of this Warranty is the law of the jurisdiction listed in the corresponding row in Column 2 without regard to its conflict of law principles. Furthermore, if the selling entity is an entity listed in Column 1, then the place of arbitration is listed in the corresponding row in Column 3.

Column 1 (Selling Entity)	Column 2 (Governing Law)	Column 3 (Location of Arbitration)
Daktronics, Inc.	The state of Illinois	Chicago, IL, U.S.A.
Daktronics Canada, Inc.	The Province of Ontario, Canada	Toronto, Ontario, Canada
Daktronics UK Ltd.	England and Wales	Bristol, UK
Daktronics GmbH	The Federal Republic of Germany	Wiesbaden, Germany
Daktronics Hong Kong Limited	Hong Kong, Special Administrative Region of the P.R.C.	Hong Kong SAR
Daktronics Shanghai Co., Ltd.	The Peoples Republic of China	Shanghai, P.R.C.
Daktronics France, SARL	France	Paris, France
Daktronics Japan, Inc.	Japan	Tokyo, Japan
Daktronics International Limited	Macau, Special Administrative Region of the P.R.C.	Macau SAR
Daktronics Australia Pad Ltd	Australia	Sydney, Australia
Daktronics Singapore Pte. Ltd	Singapore	Singapore
Daktronics Brazil LTDA	Brazil	São Paulo, Brazil
Daktronics Spain S.L.U.	Spain	Madrid, Spain
Daktronics Belgium N. V	Belgium	Kruikeke, Belgium
Daktronics Ireland Co. Ltd.	Ireland	Dublin, Ireland

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