

**SMALL MATRIX
GALAXY® GS6 SERIES**
INSTALLATION AND
OPERATION MANUAL

P1817

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Rev 13
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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.

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DAKTRONICS

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1 Introduction

This manual provides the necessary information to install and service a Galaxy® Small Matrix GS6 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.33)** 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

Galaxy® Small Matrix GS6 model numbers are defined as follows:

GS6-RxC-M-RGB-F		
GS6	=	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 Galaxy® Small Matrix GS6 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 void the display warranty.

Pre-Installation Checklist

- The display was not damaged during shipping.
- The mounting structure will provide a straight and square mounting frame for the display.
- The support structure must be able to carry the weight of the display and meets local and national codes.
- Ensure proper power is available at sign structure, refer to the **Shop Drawing** for display power requirements.
- The display cabinet has no holes (accidental or intentional) that will allow water to enter the display.
- 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 the **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 (32 kph).

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.

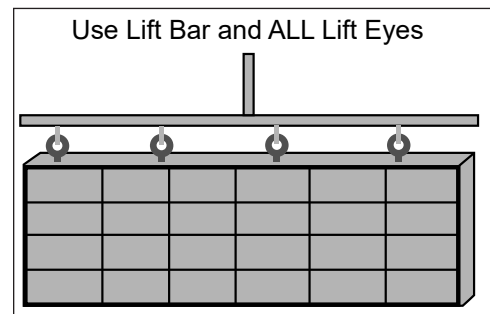


Figure 1: Proper Display Lifting

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

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 corner 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 Galaxy® Small Matrix GS6 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 2** for guidelines.

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

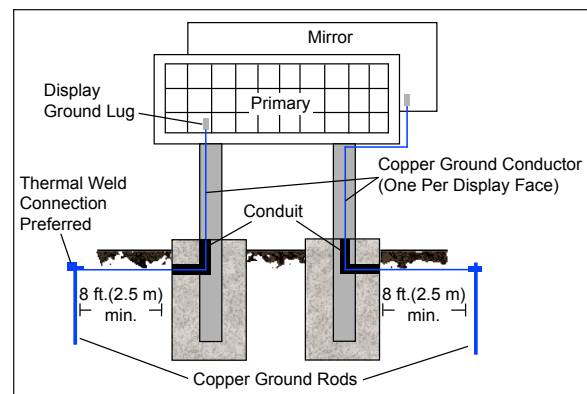


Figure 2: Proper Display Grounding

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.

Important Points About 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 3** for 120 VAC and **Figure 4** for 120/240 VAC.

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

120 VAC	120/240 VAC
Line 1 – Black	Line 1 – Black
	Line 2 – Red
Neutral – White	Neutral – White
Ground – Green/Yellow	Ground – Green/Yellow

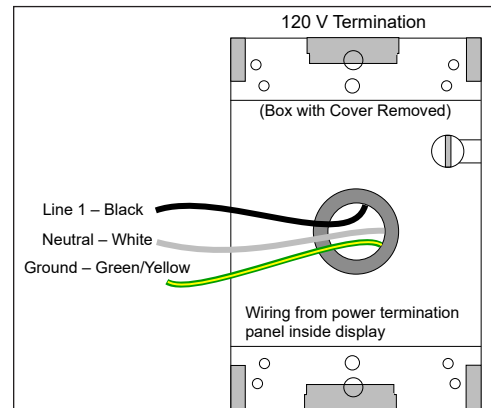


Figure 3: 120 V J-box Termination

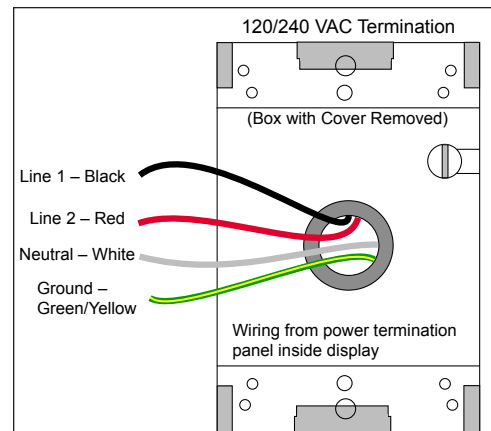


Figure 4: 120/240 V J-box Termination

Displays With Internal Power Termination

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

1. Open the display as explained in **Internal Display Access (p.20)** 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 5** for an example.

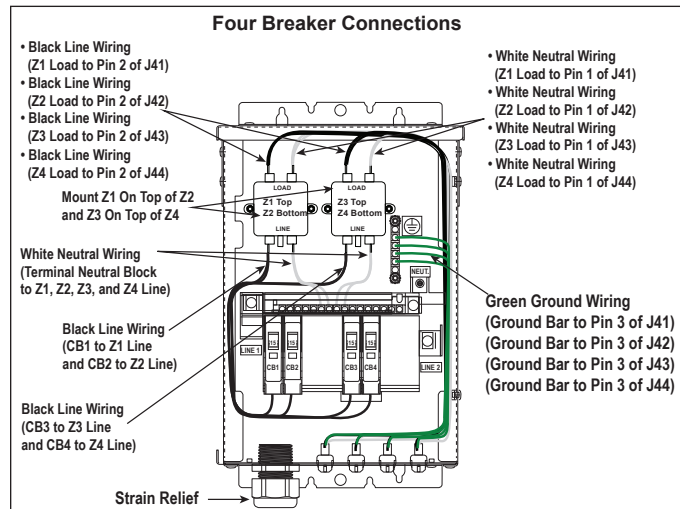


Figure 5: Single-phase Four Breaker Domestic Panel

5 Signal Cable Installation

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 document number.

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.

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

Primary/Mirror Display Interconnections

If this display is a two-sided primary/mirror display, two quick-connect cables are provided to connect the signal between the two faces. Refer to **Figure 6** for an example.

1. Connect a cable from the Signal Out jack on primary face to Signal In jack on mirror face.
2. Connect a second cable from the Signal Out jack on the mirror face to the Signal In jack on the primary face.
3. Secure the excess cable to the support structure to prevent damage from weather or vandalism.

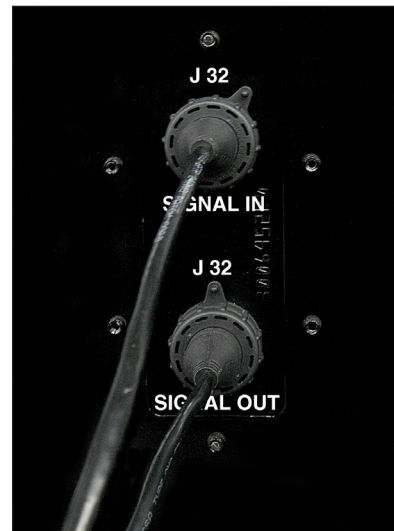


Figure 6: Primary/Mirror Quick-connect Cable

6 System Start-Up Procedure

Displays show a boot sequence about two minutes after power is turned on. This information is very useful when configuring the display in Venus[®] software. Prior to turning the display on, make sure display communications and any network connections have been made.

Boot Sequence

Description
Firmware Name and Version
Display Size (Pixels High by Pixels Wide)
DHCP Name Assigned
IP Address and State
MAC Address
Configuration Port
Status Port
Management Port (Used 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.
- Confirm ability to log in to **venus.daktronics.com**
- Inspect peripheral equipment (temperature sensor, light sensor, etc.) for proper installation.

7 Network and Communication Installation

This section explains how to set up communications with a Galaxy® Small Matrix GS6 display through a network or an individual computer. Refer to the available standard communication options in the provided quick guides and reference manuals for more information.

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

See **Legacy Remote Display Configuration (p.35)** for legacy display configuration.

Network and Communication Installation Recommendations

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

Galaxy® Small Matrix GS6 displays use DHCP by default, which allows automatic display configuration by the customer's network, and eliminates 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.

Requirements For Communication Through A Network

The display must be allowed to establish an outgoing internet connection on Port 80 (http) and Port 443 (https).

Connect A Display to A DHCP Network

Display Currently Configured For DHCP (Default)

The following steps explain how to configure a display and connect to a network that supports DHCP. Using the display's DHCP name is desired for communication.

Network Requirements

- DHCP Server
- Existing Network
- Available network port, configured properly

Installation/Start-up Steps

1. Ensure the display has an established link with the network.
2. Turn on the display.

Display Configured For Static IP Address

The following steps explain how to reconfigure a display for DHCP network when it has previously been configured for a static IP address.

Network Requirements

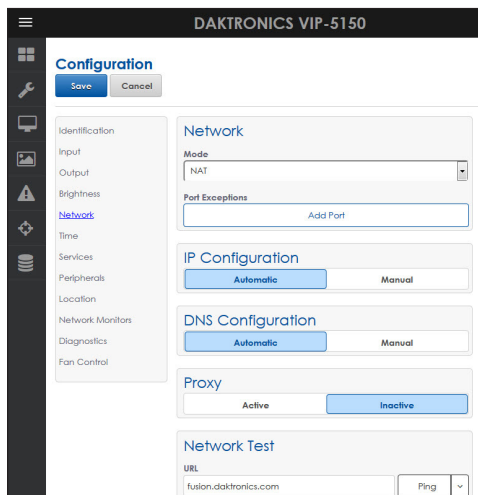
- Existing Network
- Available network port, configured properly
- PC
- Internet web browser

Configuration Steps Using IP Address

1. Connect a computer to the display.
2. Turn on the display.
3. Observe boot sequence—reconfigure computer to the same IP address range as the display and same subnet.
4. Manually enter display IP address in web browser followed by :85 (for example, <http://169.254.13.87:85>) to identify the correct connection port.
5. Enter **Dak** as the username and **DakPassword!** as the password in the Windows Security window.



6. Click **OK** to connect to the display (refer to the help file for additional information about the configuration utility).
7. Click the **Network** tile.
8. Click **Automatic** under both the **IP** and **DNS Configuration** headings.



9. Click **Save**.
10. Log out of the configuration utility.
11. Turn off the display.
12. Disconnect the computer from the display and connect display to the network.
13. Ensure the display has an established link with the network.
14. Turn on the display.

Configuration Using DisplayFind To Discover The Display

Download DisplayFind

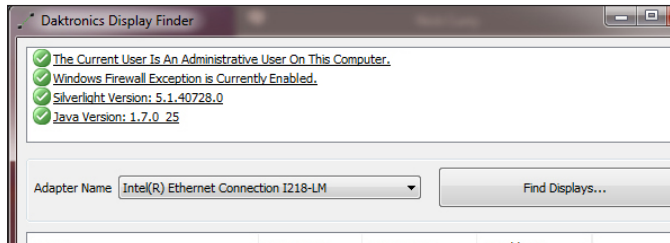
1. Open Internet Explorer or Firefox web browser.
2. Navigate to **dakfiles.daktronics.com**
3. Click **Venus 1500 > Utils > DisplayFind > DisplayFind.exe**.
4. When prompted, select **Run** to complete the installation of the DisplayFind utility or **Save** to the computer for later use.

Launch DisplayFind

Double-click the **DisplayFind** icon on your desktop.



Each item listed at the top of the DisplayFind utility should have a green check mark. Refer to the explanations below for what each item means. If an item has a red X next to it, click it for additional information or to access the download.



The Current User Is An Administrative User On This Computer

- The user must have administrative rights to install Silverlight™.
- Once Silverlight™ is installed, administrative rights are not necessary.

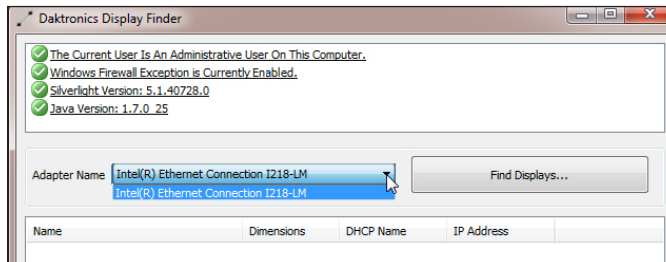
Windows Firewall Exception Is Currently Enabled

- Windows firewall should be temporarily disabled to allow discovery responses to be received from any displays.
- Other third party Antivirus/firewall applications (McAfee, Symantec, ZoneAlarm, etc.) should also be temporarily disabled.

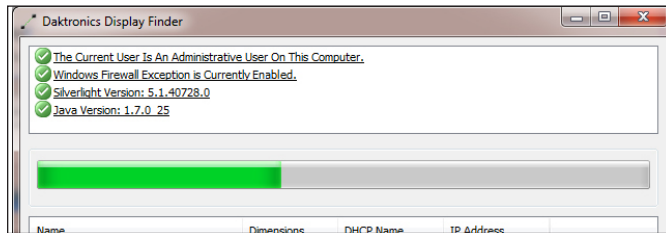
Silverlight™ Version – A green checkmark tells you Silverlight™ 3.0 or newer is installed.

Connect To A Display

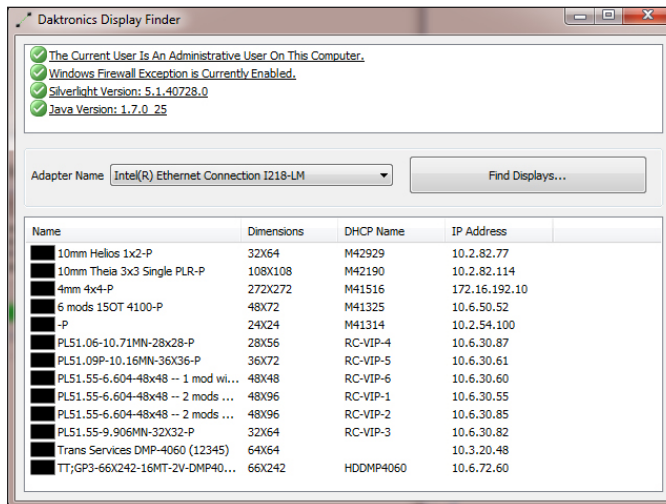
1. Select the **Network Adapter** used to communicate with your display.



2. Click the **Find Displays** button to detect any displays using the selected network adapter.



3. Detected displays are listed in the bottom window of the utility.



4. Click the **desired display** (VIP5-xx-xxx) to launch the configuration utility within your web browser.

Note: Refer to the configuration utility help file for additional information.

After running DisplayFind to determine the display's static IP address, reconfiguration of the computer to the same IP address range and subnet may be required.

5. Follow the steps in **Configuration Steps Using IP Address (p.11)**.

Connect A Display To A Static IP Network

Display Currently Configured for DHCP (Default)

The following steps explain how to set a static IP address on the display.

Network Requirements

- Existing Network
- Available network port, configured properly
- PC
- Internet Explorer or Firefox web browser

Configuration Steps Using IP Address

1. Connect a computer to the display.
2. Configure the computer for DHCP.
3. Turn on the display.

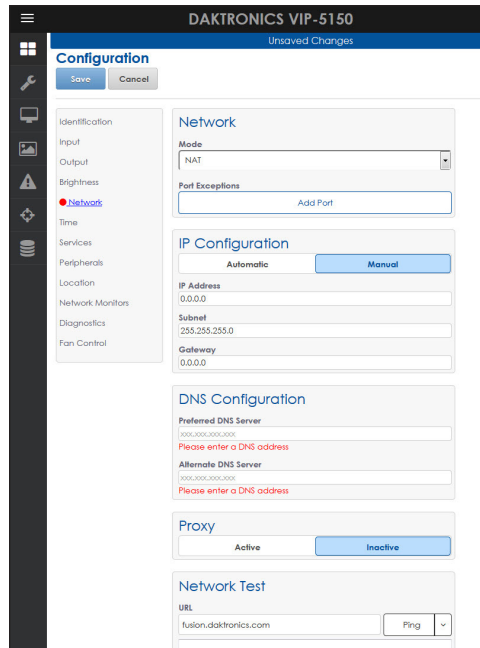
Note: Both the display and the computer should time out searching for a DHCP server and fall back to auto IP addresses of 169.25x.x.x.

4. Observe boot sequence—reconfigure computer to same in the IP address range as the display and same subnet.
5. Manually enter display IP address in web browser followed by :85 (for example, http://169.254.13.87:85) to identify the correct connection port. Refer to the **Configuration Using DisplayFind To Discover The Display (p.12)** section.
6. Enter **User Name Dak** and **Password DakPassword!** in the **Windows Security** window.



7. Click **OK** to connect to the display (refer to the help file for additional information about the configuration utility).
8. Click the **Network** file.
9. Click **Manual** under the **IP Configuration** heading.

10. Enter the **IP address, subnet mask, default gateway**, and **DNS servers** that you would like set on the display.



11. Click **Save**.
12. Log out of the configuration utility.
13. Turn off the display.
14. Disconnect the computer from the display and connect the display to the network.
15. Ensure the display has an established link with the network.
16. Turn on the display.

Display Configured For Static IP Address

The following steps explain how to update the static IP address that is currently set on the display.

Network Requirements

- Existing Network
- Available network port, configured properly
- PC
- Internet Explorer or Firefox web browser

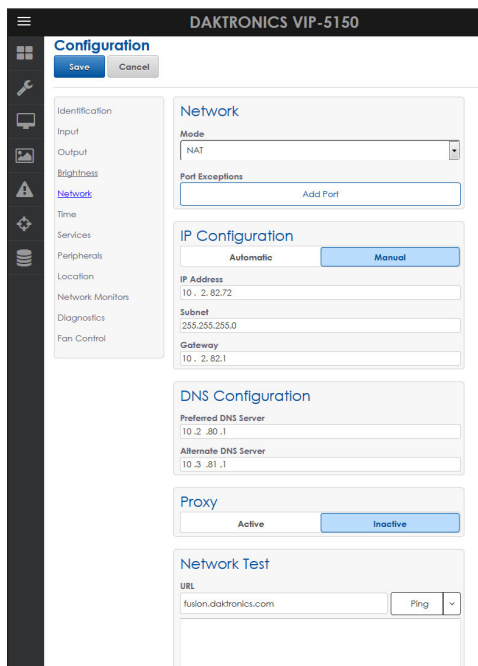
Configuration Steps Using IP Address

1. Connect a computer to the display.
2. Turn on the display.
3. Observe boot sequence—reconfigure computer to same in the IP address range as the display and same subnet.
4. Manually enter IP address in web browser (for example `http://display IP address:85`) or refer to the **Configuration Using DisplayFind To Discover The Display (p.12)**.

5. Enter **User Name Dak** and **Password DakPassword!** in the **Windows Security** window.



6. Click **OK** to connect to the display (refer to the help file for additional information about the configuration utility).
7. Click the **Network** file.



8. Change the **IP address settings** to new values.
9. Click the **Save** button.
10. Click **Upload Configuration**.
11. Turn off display.
12. Disconnect the computer from the display and connect display to the network.
13. Ensure the display has an established link with the network.
14. Turn on the display.

8 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 7**.
3. Change the **password** in the **Update Password** window. 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**.

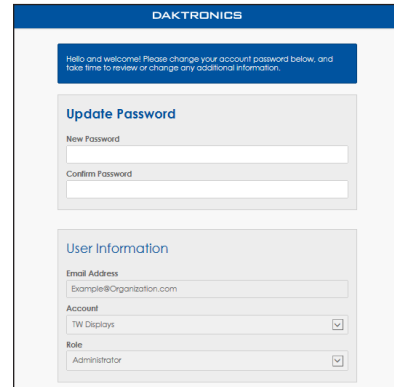
The screenshot shows a web interface for Daktronics. At the top, there is a blue header with the text "Hello and welcome! Please change your account password below, and take time to review or change any additional information." Below this is a section titled "Update Password" with two text input fields: "New Password" and "Confirm Password". Below that is a section titled "User Information" with three text input fields: "Email Address" (containing "Example@Organization.com"), "Account" (containing "TW Displays" with a dropdown arrow), and "Role" (containing "Administrator" with a dropdown arrow). A blue "Login" button is located at the bottom right of the form.

Figure 7: 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 8**.
3. Change the **system password** in the **Update Password** window. 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**.

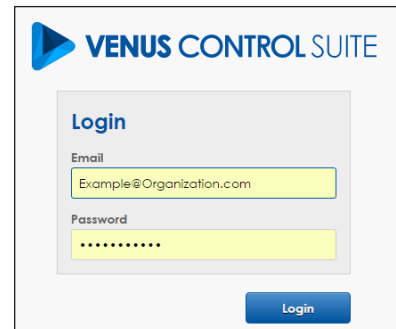

The screenshot shows a web interface for Venus Control Suite. At the top, there is a blue header with the text "VENUS CONTROL SUITE". Below this is a section titled "Login" with two text input fields: "Email" (containing "Example@Organization.com") and "Password" (containing "*****"). A blue "Login" button is located at the bottom right of the form.

Figure 8: 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 9** 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

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 the **Width** and **Height** text boxes.
8. Click **Save**.
9. Repeat **Steps 3-8** for each display.

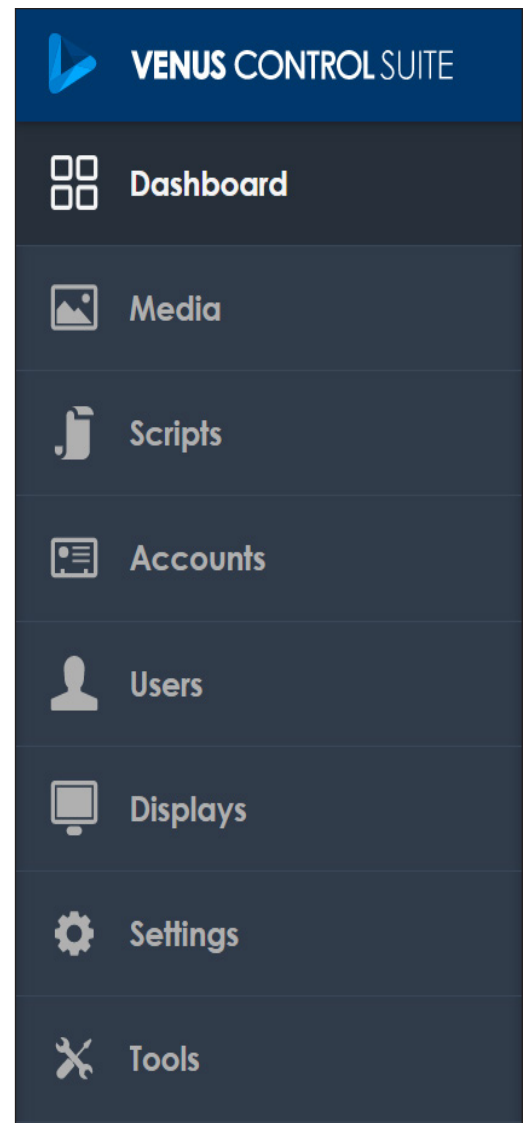


Figure 9: Venus® Main Menu

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 10**. Select **About** under the user name to open the contact information window. Refer to **Figure 11**.

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

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

Online

www.daktronics.com/support

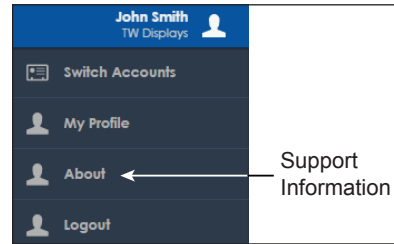


Figure 10: Account Information

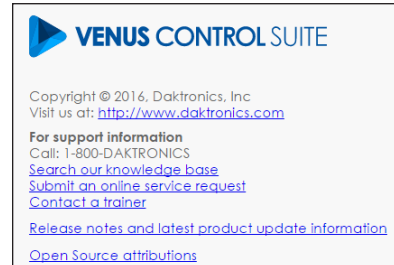


Figure 11: Contact Information

9 Display Maintenance

This section explains the steps necessary to maintain the Galaxy® Small Matrix GS6 display. Galaxy® Small Matrix GS6 displays are front accessible only. Remove modules on the front of the display to gain access to internal components. **Figure 12** and **Figure 17** show internal component locations.

- Turn off power from display before doing any repair or maintenance work.
- General component locations, shown in **Figure 12**, may vary depending on display size.

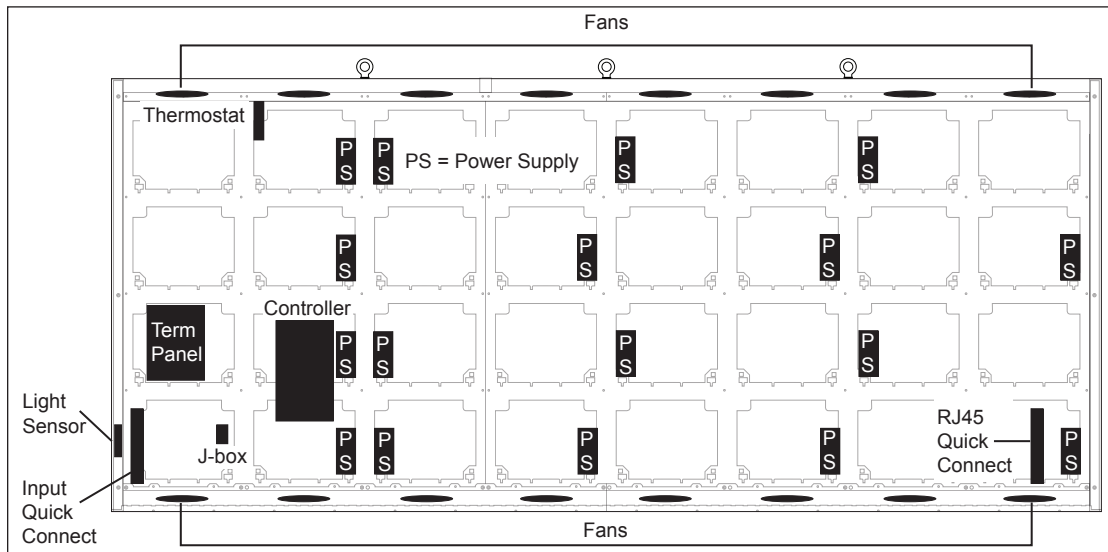


Figure 12: Component Locations In 4x8 Display

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 12**.
3. Locate the latch fastener near the top-center of the module, refer to **Figure 13**. Turn the wrench a quarter turn counter-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, as shown in **Figure 14**.

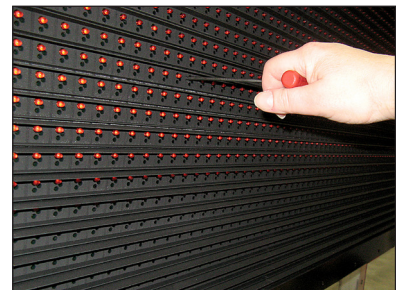


Figure 13: Remove Modules

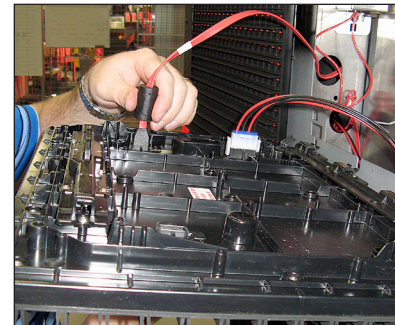


Figure 14: Disconnect Cables

6. Push the cables into the display so they do not get pinched.
7. Reconnect SATA and power cables to the module, as shown in **Figure 15**.

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

8. 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, as shown in **Figure 16**. Tip the top of the module back into place and latch it by turning the hex head wrench a quarter-turn clockwise.

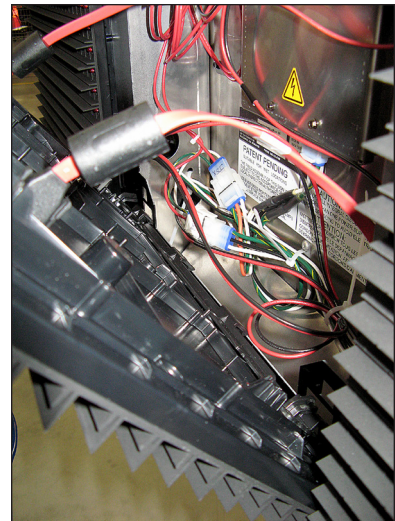


Figure 15: Reinstall Modules

Ventilation System

Galaxy® Small Matrix GS6 displays are equipped with a ventilation system that helps keep internal components at operable temperatures. Galaxy® Small Matrix GS6 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

1. Turn off power to the display.
2. Mix a mild, non-abrasive, non-petroleum-based detergent and cold water. Use 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 terry cloth to dry and remove any excess water. Take care not to damage LEDs by catching the cloth on them.

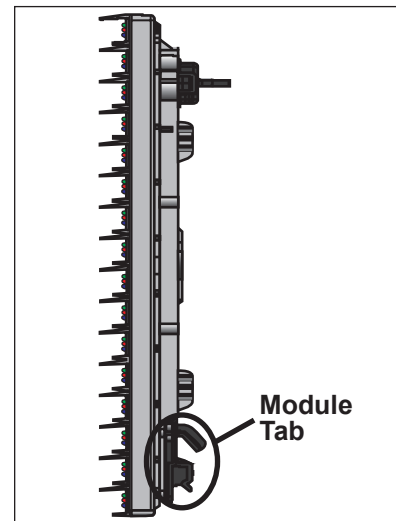


Figure 16: Tab on Back of Module

Dry Cleaning Process

1. Turn off power to the display.
2. 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.

10 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 17 shows an example of how power is routed through the display.

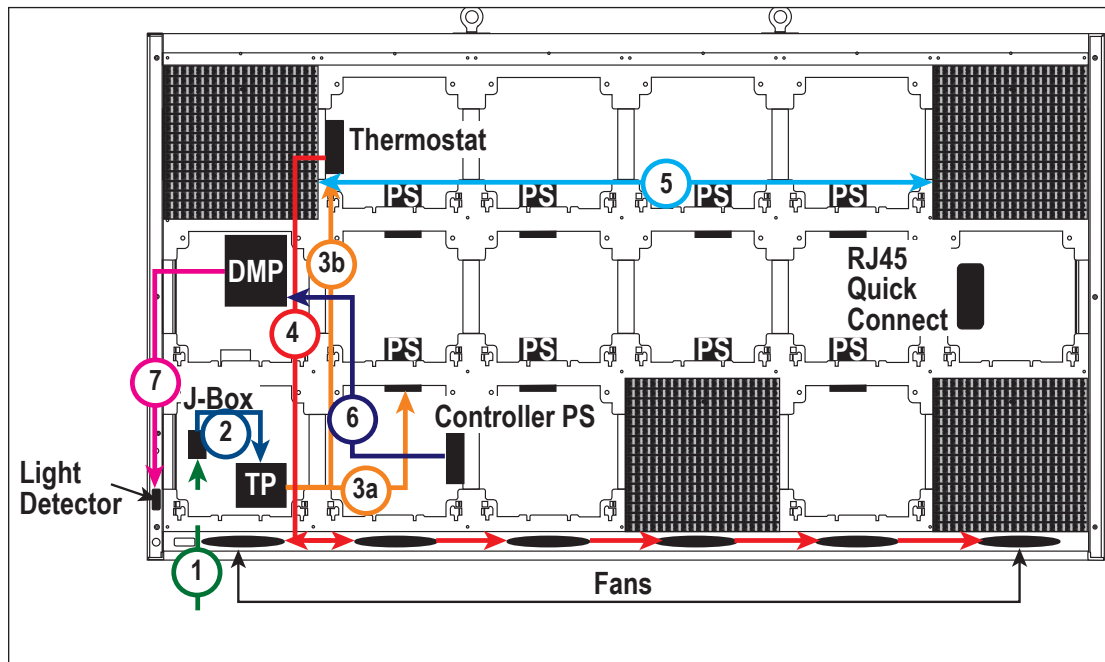


Figure 17: Power Routing

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 18 shows how signal is routed through the display.

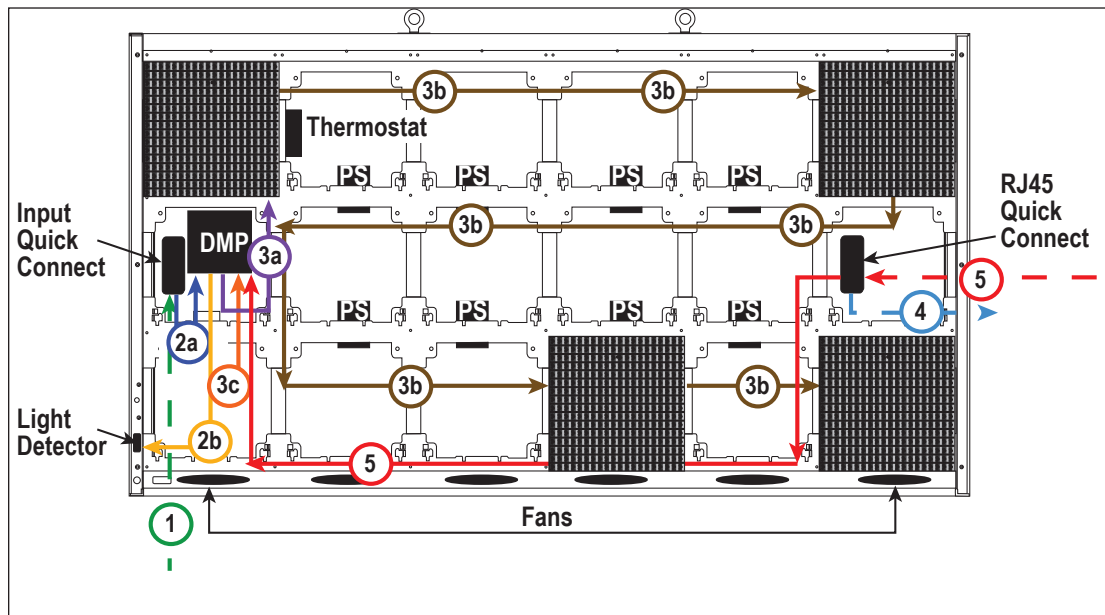


Figure 18: Signal Routing

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), finally returning 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 **Primary/Mirror Display Interconnections (p.8)**.

Note: One-high displays must be located less than 20' (6.1 m) apart to accommodate signal redundancy between primary and mirror displays.

Controller Diagnostics

DMP-8050 is the controller in a Galaxy® Small Matrix GS6 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 19** shows those LEDs.

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, as shown in **Figure 20**.
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.

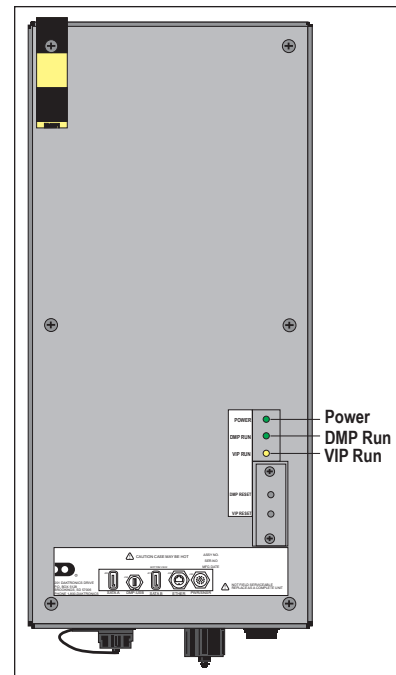


Figure 19: Player Diagnostic LEDs

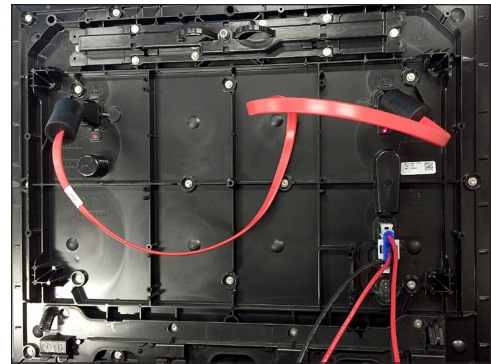


Figure 20: Module Self Test

11 Replacing Parts

Most display components have a white label that lists the part number in bold as shown in **Figure 21**. 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.

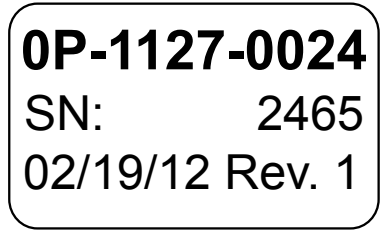


Figure 21: Typical Parts Label

Refer to **Daktronics Exchange and Repair & Return Programs (p.28)** 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 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, as shown in **Figure 15**. Tip the top of the module back into place and latch it by turning the hex head wrench a quarter-turn clockwise. Make sure not to pinch any cables.
9. Latch the new module into place making sure it is fully seated.

Power Supply Replacement

1. Disconnect the power supply from any wiring harnesses connected to it.
2. Push down on the top leg of the wire form bracket and rotate the power supply clockwise. Refer to **Figure 22**.
3. Carefully pull the power supply outward.
4. After securing the new power supply, reconnect the wiring harnesses disconnected in **Step 1**.



Figure 22: Power Supply Mounting

Controller Replacement

The controller is located in the lower-left area of the display, as shown in **Figure 12**. From the bottom-left corner of the Primary face, go up to the second row of modules and over to the right two 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 at the bottom of the enclosure.
3. Loosen the screw securing the controller enclosure and bracket to the rear of the display.
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 bottom of the enclosure using the label as a guide.
7. Reconnect controller fan power cable to jack J5.

12 Daktronics Exchange and Repair & Return Programs

Daktronics Exchange and Repair & Return Programs

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

Exchange Program

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

Before Contacting Daktronics

Identify these important part numbers:

Display Serial Number:

Display Model Number:

Contract Number:

Date Installed:

Location of Display (Mile Marker Number):

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 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.

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.
4. Enclose:
 - Your name
 - Address
 - Phone number
 - The RMA number
 - A clear description of symptoms

Shipping Address

Daktronics Customer Service
600 E 54th St N
Case # _____
Sioux Falls, SD 57104

Daktronics Warranty and Limitation of Liability

The Daktronics Warranty and Limitation of Liability is located in **Daktronics Warranty and Limitation of Liability (p.29)**. The Warranty is independent of Extended Service agreements and is the authority in matters of service, repair, and display operation.

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A Reference Drawings

Shop drawings show display dimensions, signal and power connection locations, as well as information on service access and power requirements. To obtain copies of shop drawings or other reference 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

Block Diagram:

Block Diagram, GX6-13-02, with DMP **DWG-3002844**

Shop Drawings:

Click [DD3278814](#) or open an internet browser and go to <https://www.daktronics.com/web-documents/Drawings/DD3278814.pdf> for a spread sheet of GS6 shop drawings.

Other Drawings:

Install Assembly, GS6 Back to Back Kit **DWG-3125256**
Shop Drawing, GS6 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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C Legacy Remote Display Configuration

Connect A Display to A DHCP Network

Display Currently Configured for DHCP (Default)

The following steps explain how to configure a display and connect to a network that supports DHCP. Using the display's DHCP name is desired for communication.

Network Requirements

- DHCP Server
- Existing Network
- Available network port, configured properly

Installation/Start-up Steps

1. Ensure computer has an established link with the network.
2. Turn on the display.

Display Configured For Static IP Address

The following steps explain how to reconfigure a display for DHCP network when it has previously been configured for a static IP address.

Network Requirements

- Existing Network
- Available network port, configured properly
- PC
- Internet Explorer or Firefox web browser

Configuration Steps Using IP Address

Installation/Start-up Steps

1. Ensure the display has an established link with the network.
2. Turn on the display.

Display Configured For Static IP Address

The following steps explain how to reconfigure a display for DHCP network when it has previously been configured for a static IP address.

Network Requirements

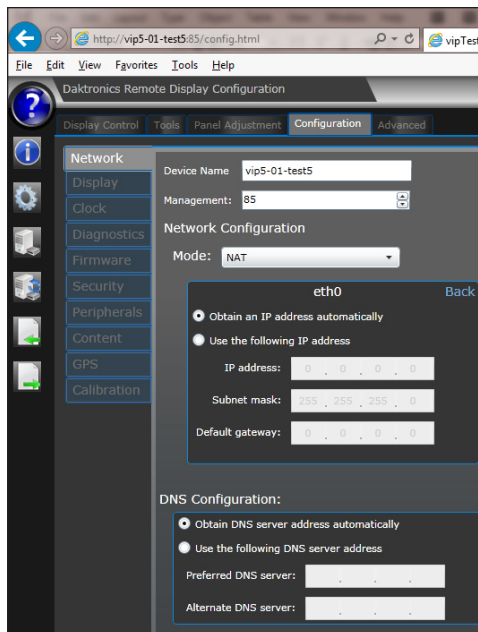
- Existing Network
- Available network port, configured properly
- PC
- Internet Explorer or Firefox web browser

Configuration Steps Using IP Address

1. Connect a computer to the display.
2. Turn on the display.
3. Observe boot sequence—reconfigure computer to same in the IP address range as the display and same subnet.
4. Manually enter IP address in web browser, `http://display IP address:85`.
5. Enter **User Name Dak** and **Password DakPassword!** in the Windows Security window.



6. Click **Logon** to connect to the display (refer to the help file for additional information about the configuration utility).
7. Click the **Configuration** tab .
8. Click **eth0**.
9. Select **Obtain an IP address automatically**.



10. Click **Upload Configuration**.
11. Log out of the configuration utility.
12. Turn off display.
13. Disconnect the computer from the display and connect display to the network.

14. Ensure the display has an established link with the network.

15. Turn on the display.

Configuration Using DisplayFind To Discover The Display

Download DisplayFind

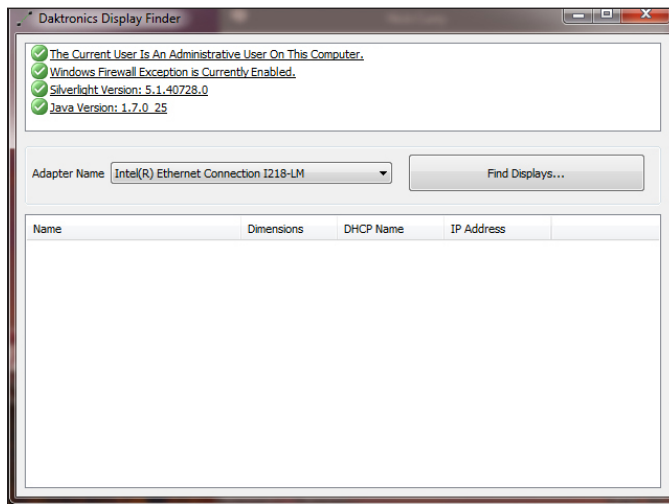
1. Open Internet Explorer or Firefox web browser.
2. Navigate to **dakfiles.daktronics.com**
3. Click **Venus 1500 > Utils > DisplayFind > DisplayFind.exe**.
4. When prompted, select **Run** to complete the installation of the DisplayFind utility or **Save** to the computer for later use.

Launch DisplayFind

Double-click the **DisplayFind** icon on your desktop.



Each item listed at the top of the DisplayFind utility should have a green check mark. See the explanations below for what each item means. If an item has a red X next to it, click it for additional information or to access the download.



The Current User Is Not An Administrative User On This Computer

- Must have administrative rights to install Silverlight™
- Once Silverlight™ is installed, administrative rights are not necessary

Windows Firewall Exception Is Currently Enabled

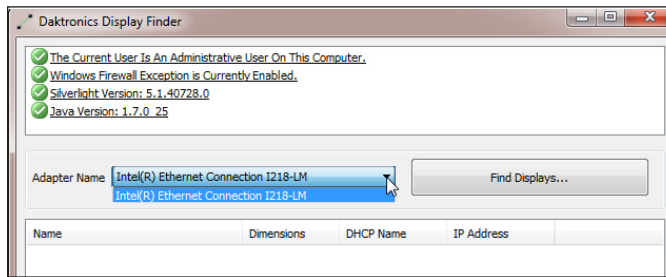
- Windows firewall should be temporarily disabled to allow discovery responses to be received from any displays
- Other third party Antivirus/firewall applications (McAfee, Symantec, ZoneAlarm, etc) should also be temporarily disabled

Silverlight™ Version – a green checkmark tells you Silverlight™ is installed

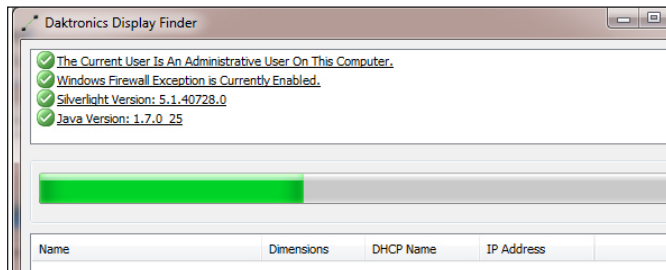
- Silverlight™ 3.0 or newer installed

Connect To A Display

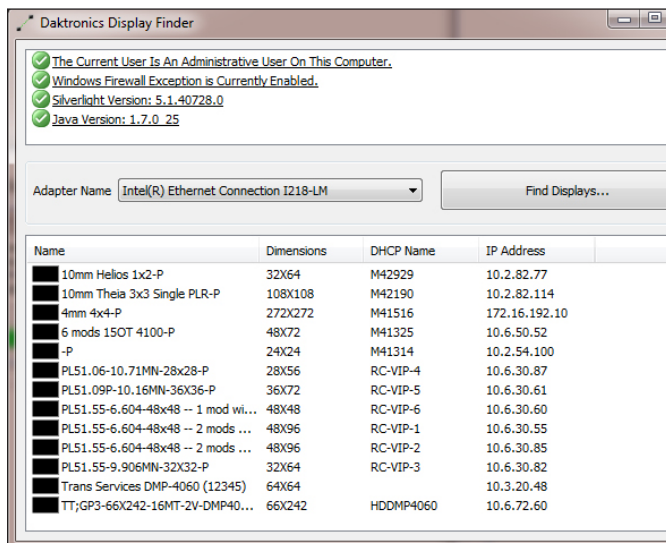
1. Select the **Network Adapter** used to communicate with your display.



2. Click the **Find Displays** button to detect any displays using the selected network adapter.



3. Detected displays are listed in the bottom window of the utility.



4. Click the **desired display** (VIP5-xx-xxx) to launch the configuration utility within your web browser.

Note: Refer to the configuration utility help file for additional information.

- After running DisplayFind to determine the display's static IP address, reconfiguration of the computer to the same IP address range and subnet may be required.

5. Follow the steps in the **Configuration Steps Using IP Address (p.36)** section.

Connect A Display To A Static IP Network

Display Currently Configured for DHCP (Default)

The following steps explain how to set a static IP address on the display.

Network Requirements

- Existing Network
- Available network port, configured properly
- PC
- Internet Explorer or Firefox web browser

Configuration Steps Using IP Address

1. Connect a computer to the display.
2. Configure the computer for DHCP
3. Turn on the display.

Note: Both the display and the computer should timeout searching for a DHCP server and fall back to auto IP addresses of 169.25x.x.x.

4. Observe boot sequence—reconfigure computer to same in the IP address range as the display and same subnet.
5. Manually enter IP address in web browser, <http://display IP address:85> or see the **Configuration Using DisplayFind To Discover The Display (p.37)** section.
6. Enter **User Name Dak** and **Password DakPassword!** in the **Windows Security** window.



7. Click **Logon** to connect to the display (refer to the help file for additional information about the configuration utility).

8. Click the **Configuration** tab.



9. Click **eth0**.
10. Select **Use the following IP Address**.
11. Enter the **IP address, subnet mask, default gateway**, and **DNS servers** that you would like set on the display.
12. Click **Upload Configuration**.
13. Log out of the configuration utility.
14. Turn off display.
15. Disconnect the computer from the display and connect display to the network.
16. Ensure the display has an established link with the network.
17. Turn on the display.

Display Configured For Static IP Address

The following steps explain how to update the static IP address that is currently set on the display.

Network Requirements

- Existing Network
- Available network port, configured properly
- PC
- Internet Explorer or Firefox web browser

Configuration Steps Using IP Address

1. Connect a computer to the display.
2. Turn on the display.

3. Observe boot sequence—reconfigure computer to same in the IP address range as the display and same subnet.
4. Manually enter IP address in web browser, <http://display IP address:85> or see the **Configuration Using DisplayFind To Discover The Display (p.37)** section.
5. Enter **User Name Dak** and **Password DakPassword!** in the **Windows Security** window.



6. Click the **Configuration** tab.
7. Click **eth0**.



8. Change the **IP address settings** to new values.
9. Click **Upload Configuration**.
10. Log out of the configuration utility.
11. Turn off display.
12. Disconnect the computer from the display and connect display to the network.
13. Ensure the display has an established link with the network.
14. Turn on the display.