System Matrix - XPS
Software Manual

Software Version 20.07.2000

Prismview
A Samsung Electronics Company

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1.0 Introduction

Using This Manual

Please be aware that some options depend on the display's chip type, driver type, and software settings.

PV System Matrix Overview

PV System Matrix is a control software used to control multiple LED displays, or multiple display sections within a single application window. Each sign or section is managed through a serial server connected over a TCP-IP network, from the program to each display. PV System Matrix only works with Network communication TCP-IP. Multiple displays of various size and pixel pitch can be controlled from within a single instance of PV System Matrix.

PV System Matrix was created to provide control of each display or section, give a status overview of display components, and report LED diagnostics. Each controller can be managed independently or as a group.

Installing on Your Computer

When PV System Matrix is installed, a shortcut to the program is placed in the Start Menu. To access PV System Matrix go to:

1. Start Menu
2. All Programs
3. Prismview
4. PV System Matrix.

2.0 Common Tasks

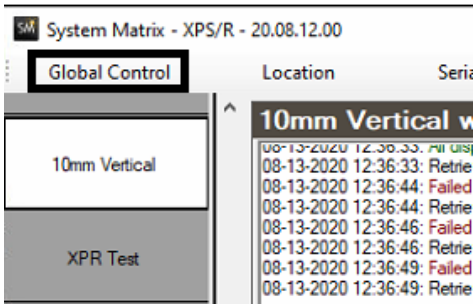
This chapter outlines the instructions for several of the most common tasks.

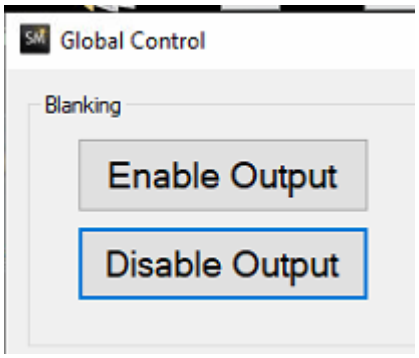
How to Blank All Displays

Blanking is used when it is necessary for the faces of the displays to be blank without deactivating power to all of the display components. This allows the user to stop outputting a signal to the display while the

Instructions

1. In the top tool bar, Click on the 'Global Control' button.
2. After the Global Control window opens, click the 'Disable Output' button to stop all content from playing on your display.
3. To allow the displays to begin showing content again, click the 'Enable Output' button.

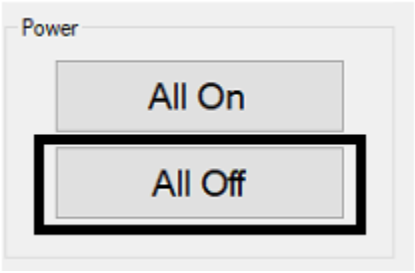




How to Power On or Off All of your Displays

Prismview displays are designed and built to run continually, but in some circumstances you may desire to power down the displays, for example, when an event is not presently being held at the venue. This section outlines the proper procedure for powering down all connected displays.

1. In the top tool bar click, 'Global Control'.
2. After the Global Control window opens, click the 'All Off' button to power down all connected displays.
3. To power up the displays again, simply click the 'All On' button.

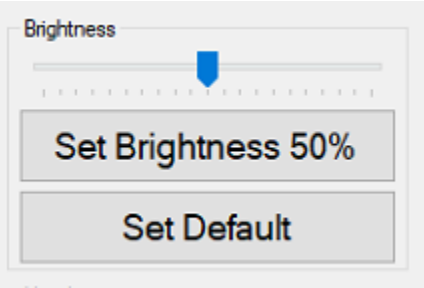


There will be a 2-3 minute reboot time before the output signal will be shown on the display.

How to Temporarily Adjust the Brightness of All of your Displays

Manual changing the brightness as shown below overrides all default brightness values. It causes a sudden, temporary brightness change. Restarting PV System Matrix returns the displays to default brightness settings .

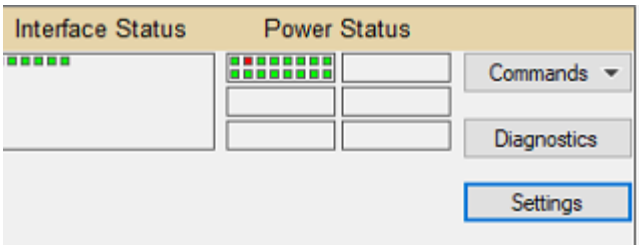
1. In the top tool bar click 'Global Control'.
2. Use the brightness slider bar to control the brightness.
    - The left-side of the bar is 0% brightness and the right-side of the bar is 100% brightness.
    - The 'Set Brightness XX%' slider applies this brightness value to all displays.
3. The 'Set Default' button returns brightness values to the default setting.

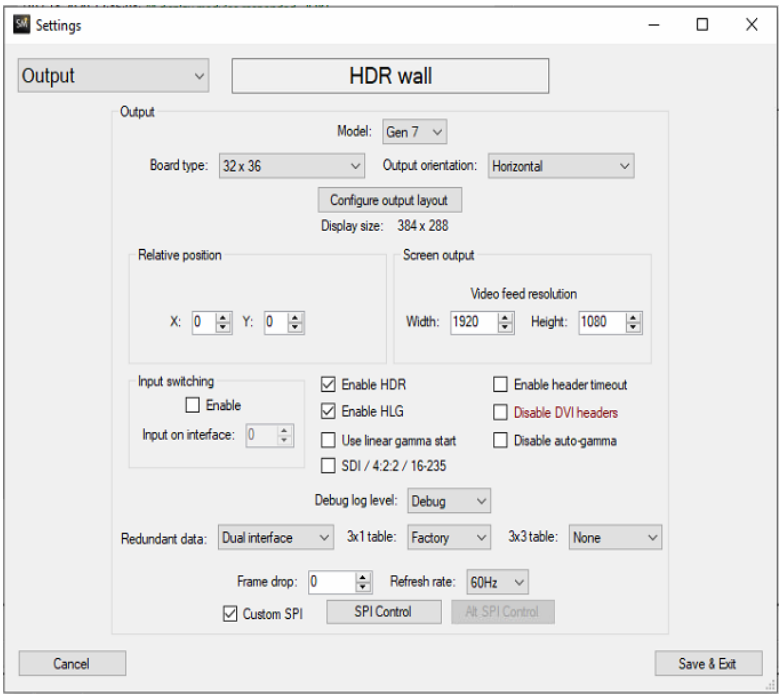


How to Adjust the Default Brightness Settings

Setting the 'General Output Brightness' value, the LED display will always stay at the same set brightness value. You have to manually set the default brightness settings for each display or section.

1. Click the 'Settings' button on the matrix entry that you want to change.
2. Select Dimming from the 'settings' drop-down menu in the upper-left corner of the window.
3. Enter the desired default brightness value, as a percentage, in the 'Output' field, near the top center of the window.





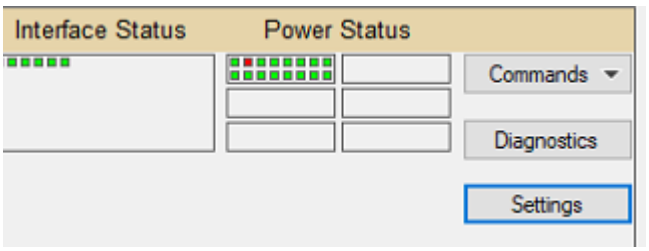
0% brightness is the max darkness and 100% brightness is the max brightness.

When the software is rebooted, the display defaults to this brightness value.

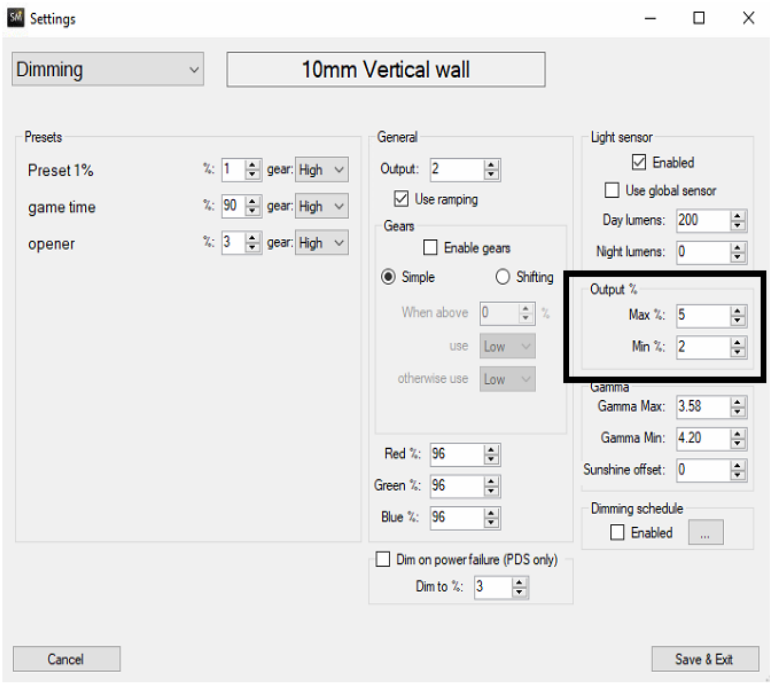
How to Adjust Maximum and Minimum Brightness

This section outlines the procedure for setting the maximum and minimum brightness limits for the display.

1. Click the 'Settings' button on the desired matrix entry.
2. Select 'Dimming' from the 'settings' drop-down menu in the upper-left corner of the window.
3. Enter the desired minimum and maximum output % values. These Values are based on a 1-100 scale.



These brightness limits apply to Ramping and Light Sensor brightness changes, but are overridden by Manual and Dimming Schedule brightness changes.



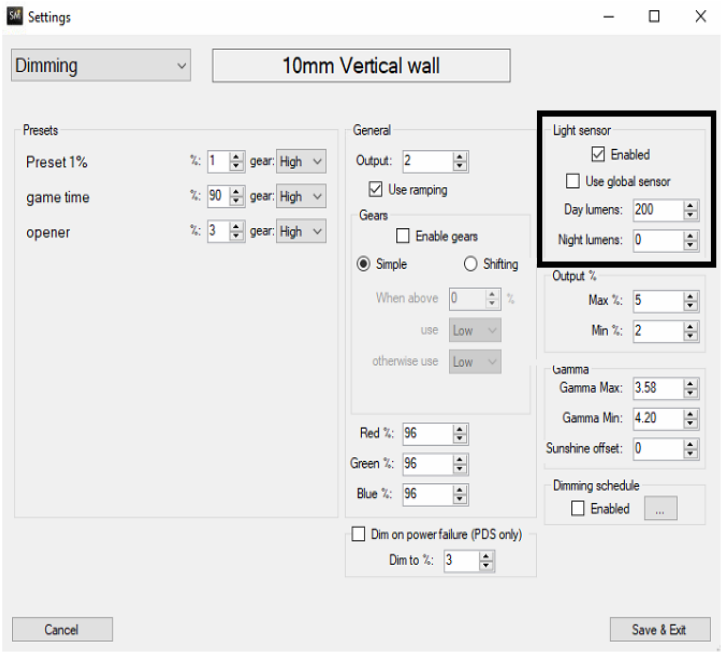
How to Adjust Automatic Brightness Thresholds

This section outlines the proper steps for creating upper and lower limits for automatic brightness adjustment. The installed light sensor will automatically adjust the brightness of the display to correspond with the dynamic light conditions around the display. The thresholds will establish minimum and maximum brightness for the automatic adjustment.

1. Click the 'Settings' button on the desired matrix entry.
2. Select 'Dimming' from the drop-down menu in the upper-left corner of the 'Settings' window.

Day LUX

Day LUX is the daytime threshold for the light sensor to reach. Once the light sensor LUX value reaches this threshold, the LED display output brightness will be at the set maximum output %. This setting is typically set to 11,000 Illuminance when the light sensor is mounted in direct sunlight. If its mounted in the shade, it is typically set between 4000 and 7000 Illuminance.



Night LUX

Night LUX is the night time threshold for the light sensor to reach. Once the light sensor LUX value reaches this threshold, the LED display output brightness will be at the set minimum output %. This is typically set to 0, if the light sensor is mounted in complete night time darkness. If its mounted in a location that picks up night time ambient light, it is typically set between 10 and 200.

Note: Lumen settings require the use of a light sensor for functionality.

Gamma

Gamma, or Gamma correction, is an adjustment used to visually adjust the sensitivity to relative differences between darker tones than between lighter tones of the video picture or image.

Gamma Min

This is the set Gamma level for nightime brightness. This value is reached when the LED display is at the minimum, nighttime brightness.

Gamma Max

This is the set Gamma level for daytime brightness. This is the Gamma used when the LED display is at max brightness level.

By default, these are set to:

These are the recommended settings for outdoor operation, in sunlight conditions:

Gamma Max: 2.2

Gamma Min: 4.2

For indoor operation, out of direct sunlight, it is recommended:

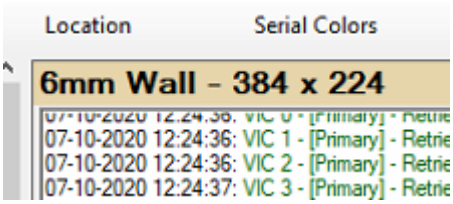
Gamma Max: 2.6

Gamma Min: 3.2

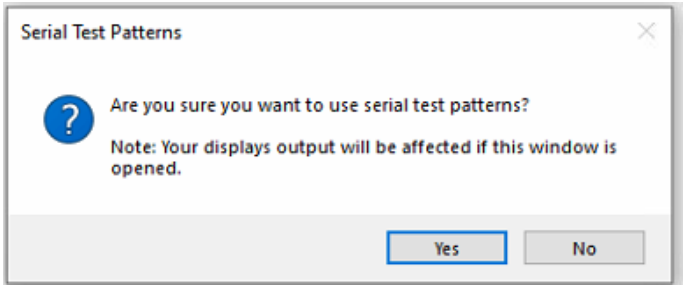
How to Use the Serial Color Test Patterns

Serial color test patterns send a specified color or test pattern to the display through the serial connection and are for troubleshooting purposes. Test colors and patterns confirm color uniformity, that all interfaces are outputting to modules, and all modules and that all pixels are operating appropriately. Serial color test patterns bypass all video signals, and will disrupt scheduled content until test patterns have stopped.

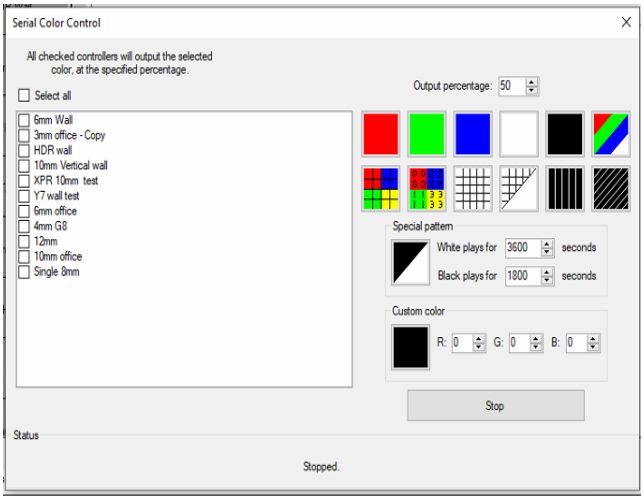
1. Select 'Serial Colors' from the Tool bar in the main PV System Matrix window.



A warning box will appear asking you if you want to use serial test patterns.



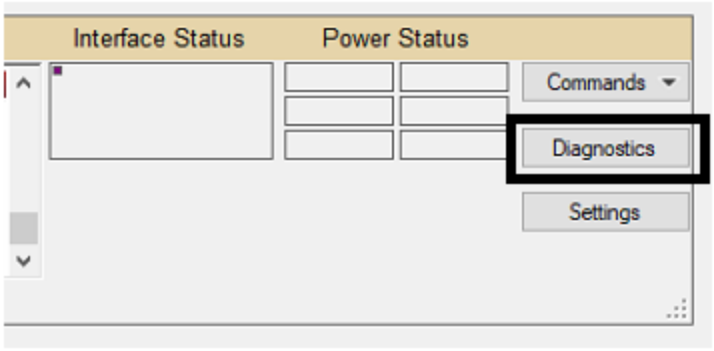
2. On the left side select the displays on which you want to display serial color test patterns.
3. Select the 'Output percentage:' which will set the brightness of the displays while you are displaying the test patterns.
4. Press the stop button to stop showing the the serial color test patterns on your display.



Diagnostics Overview

This section outlines the procedure to monitor the operational readings of the components inside the display. It will display the status of individual pixels, modules, interface cards, power supplies, etc. All LED modules also report operational thermal data.

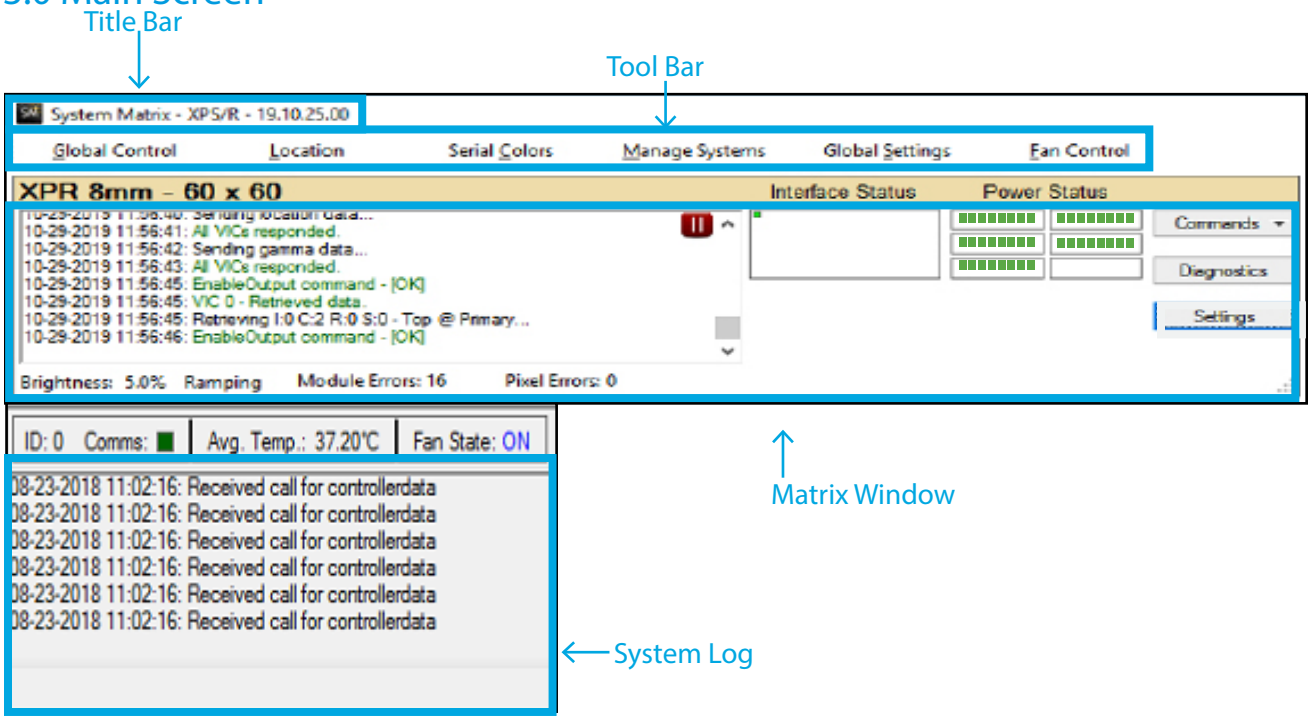
1. Select 'Diagnostic' from the Tool bar in the main PV System Matrix window.



Clicking on 'Show problems', shows more detailed information from diagnostics details and can show where problems are located.

Advanced Settings

3.0 Main Screen



The Main Window has four areas:

Title Bar

The Title Bar is located in the top border of the Main Window. The Title Bar contains the Software title and Version Number.

Tool Bar

Each of these buttons will open windows where operational settings can be adjusted. The settings in each of these menus will be explored more fully on the following pages.

The Tool bar has six menu buttons:

- Global Control
- Location
- Serial Colors
- Manage Systems
- Global Settings
- Fan Control

Matrix Window

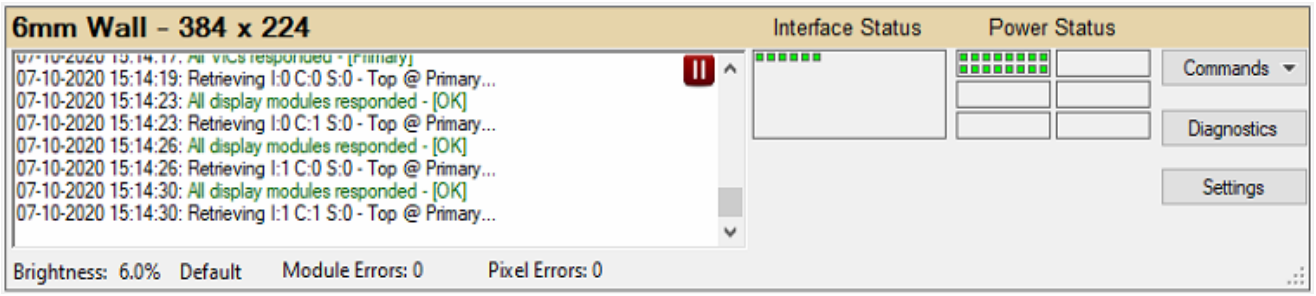
The 'Matrix Window' at the bottom of the screen shows specific information about what is happening with an individual display or display section. It will continuously receive LED diagnostic data received from the interfaces. The features of this window are discussed in detail later in the manual see "Matrix Window" on page 41.

System Log

Reports general errors in the program as well as in the logging internal web server activity, if applicable. When installed and configured, the web server is used to communicate with the Matrix Master Control program.

There is a small red pause button in the upper-right corner of both the Matrix Window Log and the System Log. When pressed, this will pause the automatic progression of the log. The log will continue to record, but will not auto-scroll, so individual entries can be further evaluated.

4.0 Matrix Window



The Matrix Window shows information for controllers connected to PV System Matrix.

Controller Title Bar

The 'Controller Title Bar' shows the user defined name and the pixel size of the controller. The name is defined when the controller is created, and the size is established in controller output settings. See "Output Settings" on page 24 for more information.

Controller Diagnostics

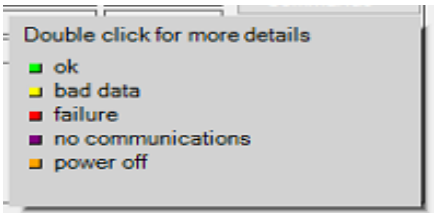
This log window shows real-time diagnostic information specific to this controller.

Interface Status

Uses the same status colors as the 'Power Status' below. These dots show up in the box. If you hover over the box it shows the key to the status colors. You can double click the 'Interface Status' box to see more detailed information about it.

Power Status

Hover over the window to view, or double click it. Controller specific power supply diagnostics are displayed with a key to interpreting the diagnostic information. Power supplies must have an assigned IP address before power diagnostics are available. See "Communications" on page 21. Each connected power supply has a color-coded status designation. The Power Key on the right-side of the Matrix Window lists the meaning of each status color.



OK

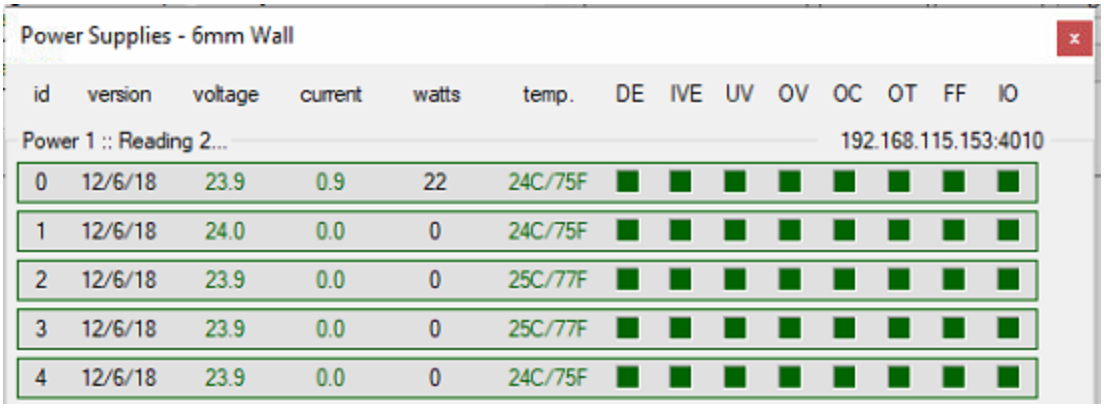
Power supply and communications are operating normally.

Bad Data

The display and communications are working properly, but diagnostic data is invalid or incomplete.

Failure
The display has a section out, and there is no communication with the power supply.

No Communications
The display is operating normally, but the serial server has lost communication with the power supply.



Power Off
Communications operating normally, but that section of the display has shut down.

If you double click on the power supply window, a new window will open on top of the Matrix Main window. The window shows this table and gives a more detailed view of each power supplies detail.

ID
This is a label used to identify a power supply in a serial communication chain.

Version
This is the version of firmware installed on the power supply.

- This is the voltage of the power supply.

Current
This is the current of the power supply.

Watts
This the watts output of the power supply.

Temp
This is the operating temperature of the power supply.

DE (Derate)
The supply is running lower voltage than optimal; the supply is running on reduced output current.

IVE (Input Voltage Error)
A voltage error occurred since the last power up.

UV (Under Voltage)
Incoming voltage is below 100v.

OV (Over Voltage)
Incoming voltage is above 250v

OC
(Over Current) too much load on the DC supply.

OT (Over Temperature)
The supply is overheating.

FF (Fan Failure)
Something has cause the fan to stop, shutting down the supply's output.

IO (Standby enabled)
The supply has been switched to standby mode by the 'power off' command from Pv System Matrix software.

Module and Pixel Errors

This line shows a quick reference for basic operational data. It lists the current brightness, the number of Pixel and Module Errors, and the current Dimming Mode — Default, Ramping, Manual, and Dimming Schedule.

Matrix Brightness

This indicator shows the current display output percentage.

Commands

Send operational and diagnostic commands to individual controllers. The following options are available: Commands, Send header now, Use default dimming, Get interface firmware version. See below for more information.

Send Header
Forces a new header to be sent to the display

Use Default Dimming
Forces the display to return to the defined default dimming settings set for the individual controller.

Enable/Disable output
Allows or prevents content from playing on the display. Note: internal display components will still have power, and can be stopped and started quickly.

Turn on/off power supplies
Powers the display components up or down. Note: if the power has been turned off, there is a 2-3 minute power up cycle that will need to take place before the display can begin outputting content.

Cycle Power Supplies
This is a cycle command that is sent to the power supplies. This command power cycles the connected power supply off for 5 seconds. After this power cycle command is sent it could take up to 2 minutes for the display to return to outputting.

Update Module-Bootloader
Update module bootloader is an advanced command used to update the LED module firmware. This feature is only used on XPR modules only. This command should not be used without proper instructions and should be done by a technician only.

Reset Interfaces
This resets all the interfaces in the controller. A reset will temporarily blank the display, while the interfaces wait for a new header to be sent.

Flush Modules
Sends a reset command to the LED module's processor. When clicked, the LED display will flash off for less than one second, and then resume normal playback. Flush Modules is used to clear an error on an LED module. This is an advanced feature, and should only be used under the direction of authorized Prismview personnel.

Enable/Disable Auto-Gamma
Enables, or disables, the LED module Auto-
Gamma feature. In nearly every situation, Auto-Gamma should be enabled.

Module Data Forwards/Backwards
Data forward command which forces the LED cards to data forward through a serial command.

Input 1/2
This is a custom feature, and applicable only for dual video input configurations. Most displays are unable to use this command. On enabled displays, the command switches between Input 1, the primary video signal, and Input 2, the backup signal.

Save header to interface
Saves the current header, including the brightness setting, to the interface memory. Saving a header allows the display to always output without a new header from the control computer.

Serial Peek & Tweak
This is a disable feature. This feature is in development.

Start/Stop Diagnostics
Stop command stops LED module diagnostic from actively scanning. Starts and resumes LED diagnostics scan.

Detailed Interface Feedback
This is an advanced feature which retrieves back detailed information from the selected interface. Used by engineering.

Diagnostics

Opens the Diagnostic window. The diagnostic window has seven zones:

Zone 1

Contains the following tools: Refresh button, Auto refresh, Show problems, Diagnostics drop-menu.

Refresh Button

Requests updated information from the controller.

Auto Refresh

With this checkbox marked, PV System Matrix will update diagnostics information after each cycle, approximately every 5 seconds. This is checked by default.

Show Problems

With this checkbox marked, the window will display all module firmware versions found, all module types found, and all interface versions found.

Drop-down Menu

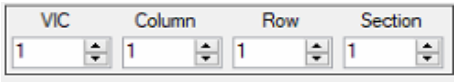
From this drop-down menu, you can select from three types of diagnostics data: Diagnostics, Heat Map (fixed), and Heat Map (dynamic). An explanation of diagnostics is contained in the following zones, and the heat maps are explained later in this manual. See "Heat Mapping" on page 24.

Zone 2

Contains four status indicators: Module firmware version, Module firmware type, Interface firmware version, and FPGA version. Each indicator has three possible conditions; a green 'OK' indication, a red 'ERROR' indication, or an orange 'UNKNOWN' indication.

Zone 3

Zone 3 is an advanced feature used for debugging and troubleshooting. This zone shows detailed module information retrieved from the module. This shows one modules information at a time.



Checksums

Checksums are used to verify that the data packet retrieved is correct. If the two values are correct, all the other model data is correct.

General

General is the general module information. This field shows the selected LED modules information. The general information gives the modules serial number, firmware version, processor frequency, hardware generation, gamma checksum, if the module is in redundant data mode, or if the card firmware has temperature color correction enabled.

Brightness Details

Brightness deails hos the selected LED module set brightness values being reported back from the module. The top number is the overall brightness. The middle row shows the RGB set brightness levels. The bottom row values are the calibrated Global Brightness values.

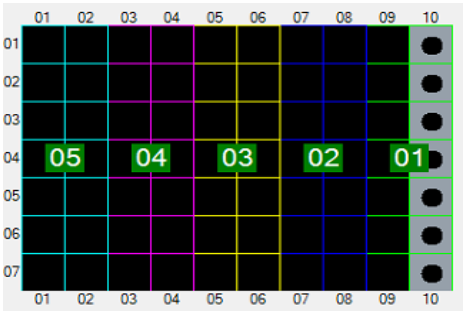
Voltages/Temperature

Coltage and temperature shows the information for the selected module. Voltage information is shown for modules components. Logic is the voltage at the module processor. Red is the coltage on the red LEDs. Green/Blue is the voltage on the green/blue LEDs. Below the voltage information is the module temperature.

Zone 4

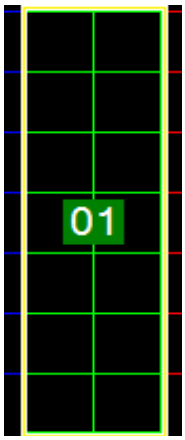
This zone shows a visual representation of the LED diagnostics. This zone can show the LED module status visually, or a visual view of all the modules temperatures.

The grid in Zone 4 shows a graphic representation of the LED module status.

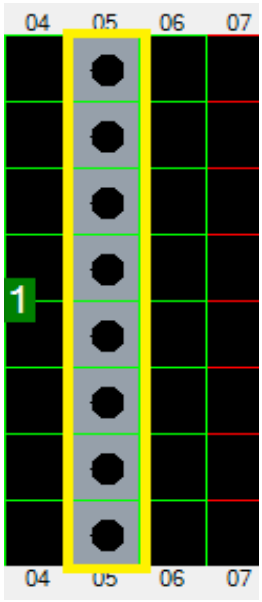


Each individual Square represents an LED module.

Each colored section represents and interface segment or ID, Each interface shows the modules on that interface. This example shows 14 modules on interface 1. Note: The Interface grid colors correspond to the interface color when serial colors are run.



This gray scan bar moves around the image as the software scans interface by interface, column by column. As the software retrieves the data from the LED Modules the old information previously scanned is discarded and replaced with the new module data retrieved.



Module Color Status

Good Response — Module is operating normally

No Response — No communication between the module and interface. This could indicate a non-responsive module.

In Redundant Mode — The primary data flow has been interrupted and the LED module is using the backup redundant data path. The yellow indicates the module data was found on the redundant data path. The red dot indicates the LED module is receiving the data input, on the output data port. (This will only be seen on Module firmware 60, 72, 83 and newer)

Backwards Data cable - This is and indicator that the data cable on the back of the LED Module, Input and output, are connected backwards. (This will only be seen on Module firmware 60, 72, 83 and newer)

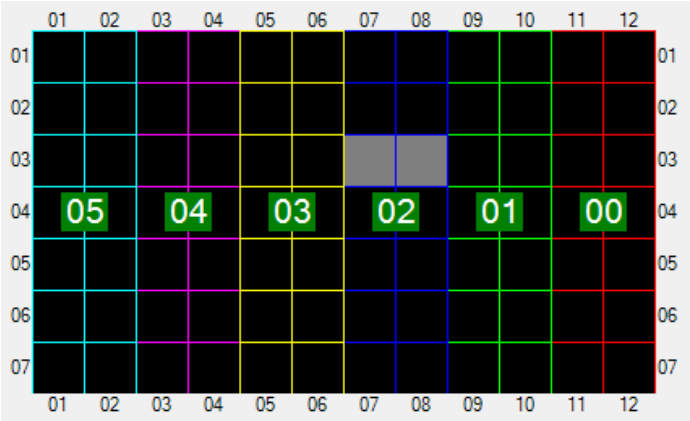
In redundant, possible Backwards Data cable – This is also an indicator that a module is in redundant. Module firmware versions older than 60, 72, 83 will always show Yellow when in redundant. If running module firmware versions 60, 72, 83 or newer than the data cable is connected backwards, and the module is being found on the redundant path.

In Dot Mode — The module is currently communicating with dot correction data instead of diagnostic data.

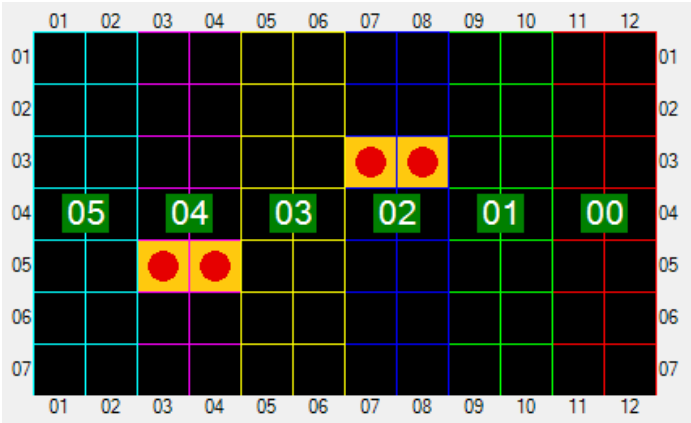
Possibly Uncalibrated — The calibration data for the module is set to default values. The module has not have been adjusted for brightness and color correction and will not have the correct white value.

Examples of Diagnostics Issues

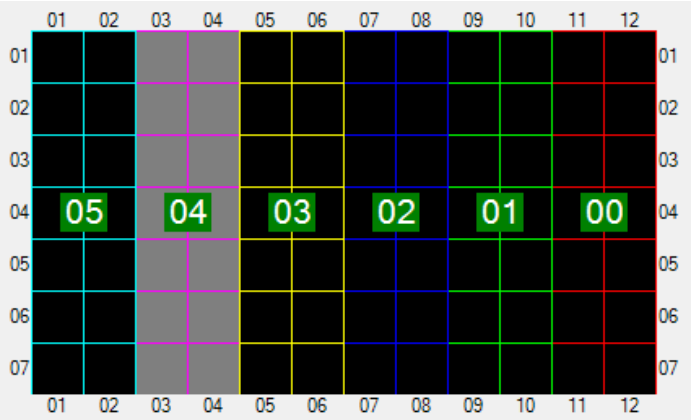
This shows interface 02 has a line of modules not responding to diagnostics.



This shows Interface 02 has a line of modules running in redundant mode.



This shows interface 04 has no modules responding.



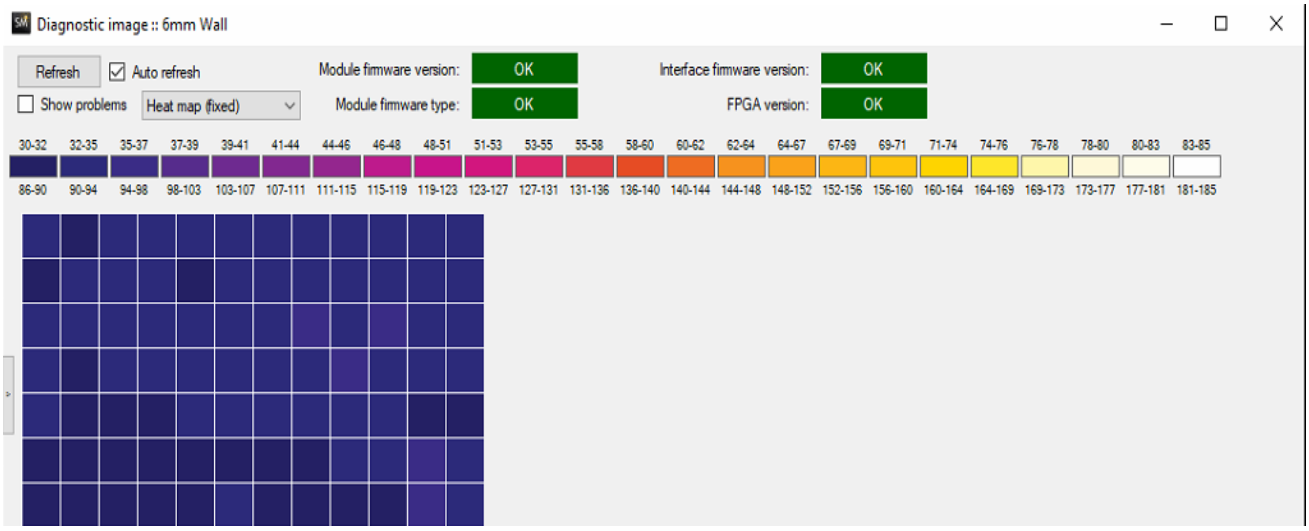
Heat Mapping

From the 'Matrix Window' tab after you have clicked on 'Diagnostics' you can click on the drop-down menu where it say 'Diagnostics' to navigate to 'Heat Mapping'.

The heat map feature of PV System Matrix converts thermal data reported from each module into a graphic that allows visual analysis of heat flow through a display. Heat maps can be generated in two methods: fixed or dynamic.

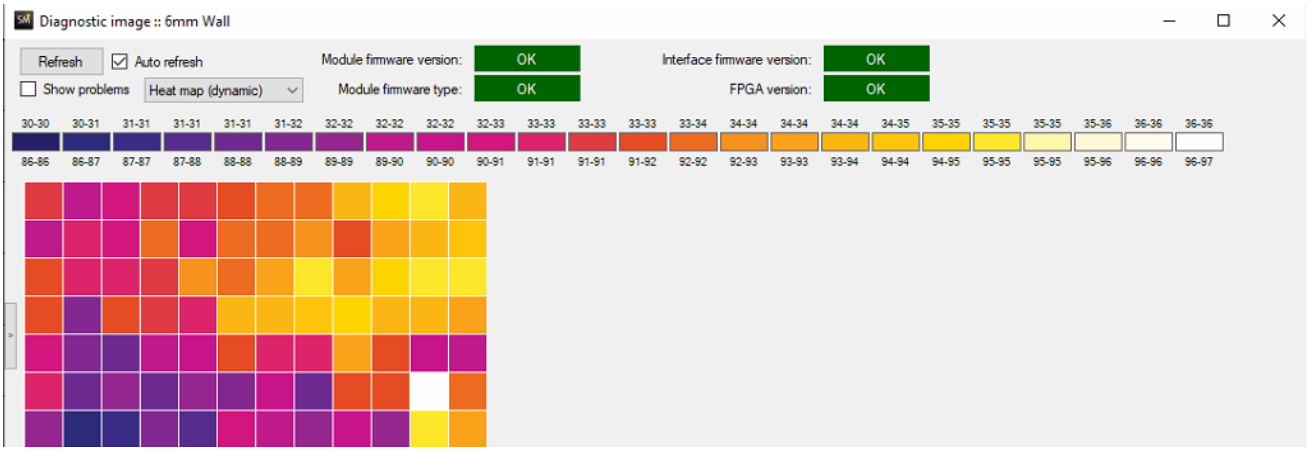
Fixed

This option creates a map based on a fixed temperature scale. It has a low temperature of 86° F (30° C) and a high temperature of 185° F (85° C). The colors coordinate to fixed temperature ranges along the scale.



Dynamic

The dynamic heat map creates a similar graphic, but the scale is adjusted to the lowest and highest temperatures reported from the modules.

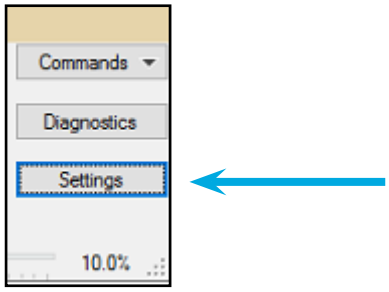


A fixed heat map will allow you to verify the overall temperature state of your display. While a dynamic heat map will show hot spots and allow you to diagnose potential ventilation issues.

Settings

This button opens a window of controller specific settings.

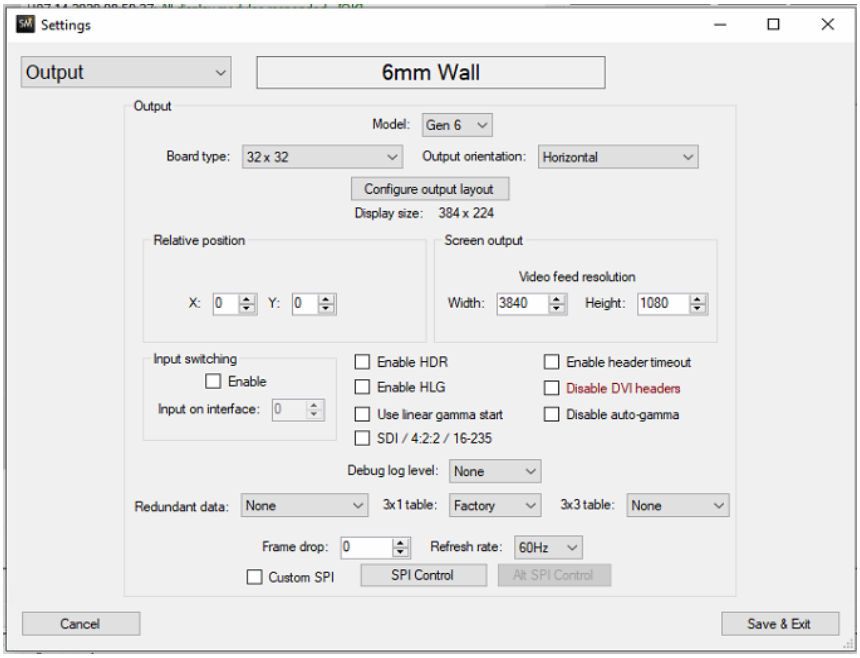
The Settings button opens a window to control the layout and configuration of this controller. There are three subcategories that can be selected from the drop-down menu in the upper-left corner of the window: Output, Dimming, and Communications. The settings available will change depending on the subcategory selected.



All settings included in Controller Settings are configured by Prismview Technicians during display installation, and should only be changed under the direction of Prismview personnel. Improper changes to these settings may disrupt display operation. Please contact Prismview Support at 1.800.741.6721 or esupport@prismview.com for assistance.

Output Settings

The Output Settings are used to configure the layout of this controller.



Width and Height

These boxes will auto-populate based on the selection of the LED Board Type and the configuration of the Output Layout. See "Output Settings" on page 24.

Board Type
The Board Type is the pixel configuration of the modules in your display. Select the correct module type used with the connected display.

Output Orientation
Output Orientation is the direction of data flow throughout the display. There are two Output Orientation options: Horizontal and Vertical. Each display is configured with one Output Orientation. Selecting the incorrect option will disrupt content playback.

Configure Output Layout
This tool is used to define the layout of the modules and interfaces being used for this controller. Please refer to "Output Layout Configurator" on page 27 for more information.

Relative Position
Relative position applies when controlling a single display in multiple sections with PV System Matrix. The X and Y values indicate the beginning pixel of the display section. On displays that are not separated into multiple sections, these values are X 0 Y 0.

Screen Output — Video Feed Resolution
These values designate the native pixel width and height of the incoming video signal (e.g. 1920x1080 or 1280x720).

Input Switching
Input Switching is used to change the source of the incoming content signal. Note: Input Switching requires extra control system hardware to provide the alternate content signal.

Enabled
With this checkbox marked, Input Switching is available.

Input on Interface
This value designates the interface address where both inputs are located.

Enable HDR
This is only enabled if you have HDR firmware on interface.

Enable HLG
This is switched on when you have HDR HLG.

Use Linear Gamma Start
Used for HDR when wanting a linear gamma curve

SDI / 4:2:2 / 16-135
Used for Limited video signal, or 422 RGB

Enable header Time out
With this option enabled, the display's video interface will force blank after a period of time when the interface has not sent, or received, a new header. If this feature is not checked, the display will retain the information sent with the previous header until receiving a new header.

Disable DVI Header
This is an advanced setting, used for calibration purposes. This setting should be unchecked by default, and only changed by Prismview Technicians.

Disable Auto Gamma

If this checkbox is marked, the LED display will not automatically adjust gamma and color to accommodate the LED display's output brightness.

Debug Log Level

This is an advanced feature, and in most situations should be set to None. When Debug information is necessary, and enabled, PV System Matrix generates log files, and stores them in the program's Settings directory. These log files contain information for advanced debugging and troubleshooting.

Redundant Data

Redundant data refers to the modules being able to pull video feed from an adjacent row in the event the input signal is lost. There are four redundant data options:

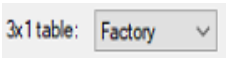
None
Redundant Data has been disabled.

Single Interface
The most commonly used form of redundant data. It is established by creating a loop between two rows of adjacent LED modules. This allows a backup data signal to travel between the end of the rows in the opposite direction of the primary signal. Note: single interface redundant data requires an even number of rows.

Dual Interface
Only used in very rare circumstances, redundant data is established by placing an interface card at both ends of the row of LED modules, with an incoming video signal to each interface. The data signal is transmitted through each interface card

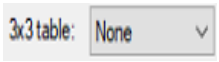
Auto
Only used in very rare circumstances, redundant data is enabled, and will automatically switch to the back up content signal during a disruption.

3x1 Table



This feature is used for sign calibration, and should be set in the 'Factory' setting from the manufacturer. It should remain in the 'Factory' setting.

3x3 Table



This feature is also used for sign calibration. If the display has not been 3x3 calibrated the settings should be None. If it has been 3x3 calibrated it should be set to Max_Gamut. This setting is set at the manufacturer, and should only be changed under direction from the manufacturer.

Frame Drop

This feature is used to make timing adjustments, it is recommended to leave the number unchanged. The value will adjust automatically for certain lengths of modules in a line and with redundant data.

Refresh Rate

Refresh Rate refers to the refresh rate of the incoming feed. The setting should be adjusted to match the refresh rate of the video source.

Custom SPI
Is used to define a custom timing pattern for the display. It is recommended to leave custom unchecked, the software will automatically adjust these settings for best performance.

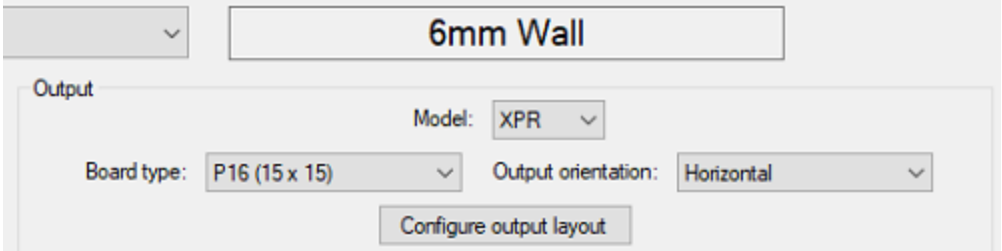
SPI Control
Opens the SPI Control window, and allows for custom data adjustments and tweaks to LED modules and video interfaces. This is an advanced setting for Prismview Engineers and Technicians

Cancel
Closes the Settings window without saving any changes, including any changes made to Dimming or Communications.

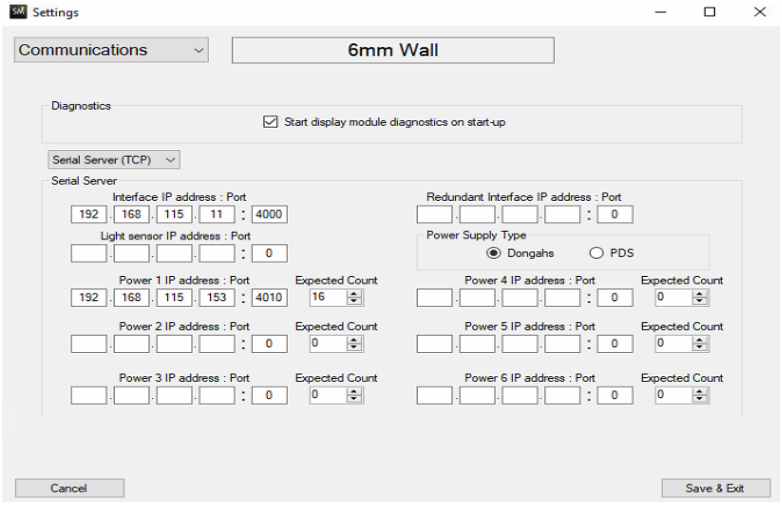
Save & Exit
Saves all changes and closes the Settings window.

Output Layout Builder

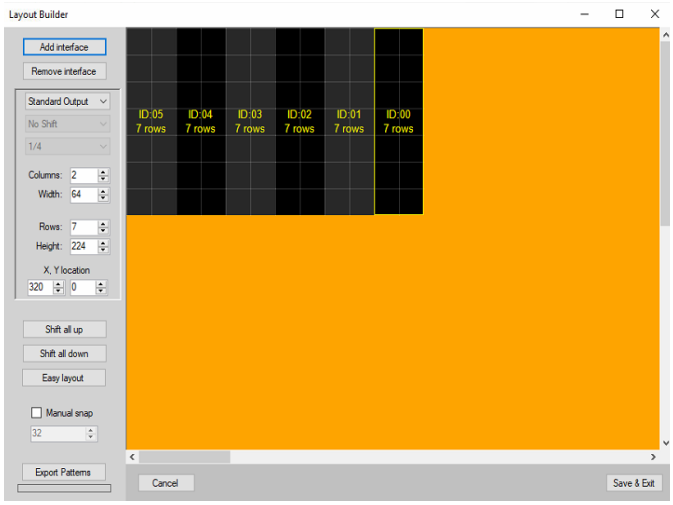
Locate the 'Output Layout Builder' button inside of the 'settings' dialog box.



Using the Sign Layout Configurator, the user can input the number of modules per interface and their configuration. The ID number corresponds with the interface address. The number of lines and columns is determined by the number of modules in the rows and columns of the interface. The height and width will automatically populate with the correct information and does not normally need to be adjusted.



All Prismview displays are configured before shipping. Modifications made to the Layout Configuration should only be made under the direction of Prismview Support personnel. Layout Builder is used to build the layout of the LED display. This layout sets up the software so that the software knows how many interfaces, the LED module connected to every interface, and the interfaces corresponding position in the LED display.



Add Interface
This feature inserts a new interface on the sign layout screen. In the example shown, interface ID:00 and interface ID:01 have already been added. Note: The width and height of interfaces can be changed using the "Columns," "Width," "Lines," and "Height" values in the upper-right of the window.

X:0 and Y:0
These values designate the scrape location. The scrape location refers to the position of the screen to be captured and sent to the display. By default, this starts at coordinate 0x0, the top, left corner of the source feed. Each interface will be positioned somewhere within these bounds and captures the image at the specified coordinates of the video source. This value can be adjusted by:

1. Dragging the interfaces position on the layout. Te interface will snap to the set snap number.
2. Typing in the desired number.
3. Using the up/down arrow next to the value it can be adjusted one pixel at a time.

Remove Interface
Removes the highlighted interface from the layout screen.

Standard Output
Standard output is used for output from the interface. This is used when the interfaces are setup to do 16 outputs high.

8x8 Split
8x8 split is used when dividing the interface into two parts. This means the interface will only do 8 lines high and doubles the width using the other 8 ports and splitting them to be used in width.

Shift
Shift is only used when using the 8x8 split mode. This mode allows the interface to shift pixels up or down in the middle of the split. When shift is enabled, the step of the number of pixels can be adjusted by 1/4, 1/2, or 3/4.

Columns and Widths
Columns and widths adjust the size selected interfaces configuration. With an interface selected on the layout window, these values change the selected interface set number of modules of module width and height. As you change these values, you will see the interfaces size in the layout change.

Shift All Up/Down
Moves the location of all interfaces up or down. These buttons are used in conjunction with "Manual Snap". When the box is checked and 16 is typed in at the top, "Shift all down" will move all interfaces down by 16 pixels.

Manual Snap
When checked, interface movement on the canvas is limited to the value entered in the box below the checkbox. When not checked, the interfaces snap to the current LED module pixel count, ensuring correct alignment of interfaces.

Number Value box
Designates the number of pixels the interface will snap to when moving on the canvas.

Easy Layout
The Easy Layout button opens a dialog box to quickly establish the display layout. This is covered in more detail on the following pages.

Close
Closes the window without saving any changes.

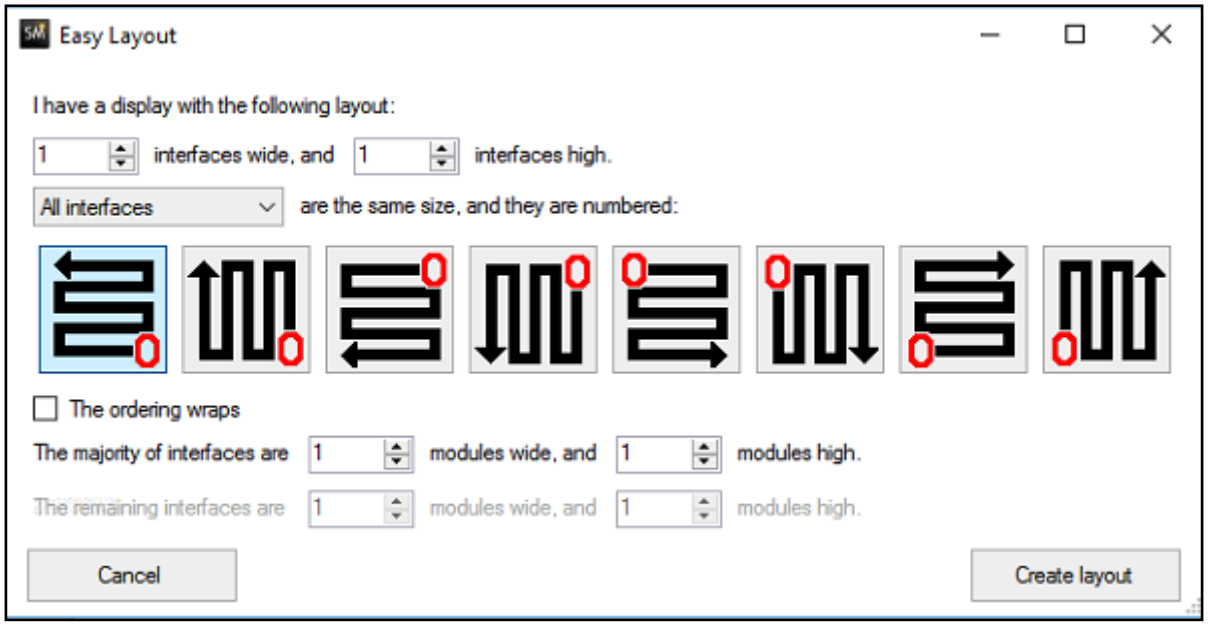
Save & Close
Saves any changes made to the layout and closes the window.

Easy Layout

The Easy Layout feature can be used to configure the interface and module layout of a new display. All displays are configured by Prismview technicians during installation, and these steps should only be followed when a new display has been connected, and under the direction of Prismview personnel. Incorrect configurations may cause problems with display operation and diagnostics.

1. Select the 'Easy Layout' button which is located in the middle which is in the top of the Sign Layout Configurator window.

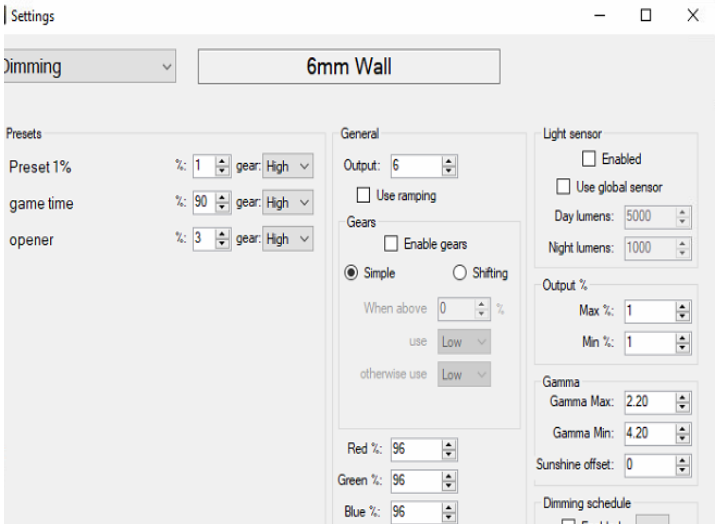
   The 'Easy Layout' window will appear on top of the Sign Layout Configurator window.



2. Enter the number of interfaces across the width and throughout the height of your display.
3. From the drop-down menu, select if all of the interfaces that have the same module height and width, or if the left or right-side are a different size. And if the interfaces are numbered vertically or horizontally.
4. Enter the module width and height for the majority of interfaces.
5. If necessary, enter the module width and height for the remaining interfaces.
6. Click 'Create layout.'
7. The new layout is now visible in the Sign Layout Configurator.

Dimming

The Dimming settings are used to control the output brightness of the controller. These settings can be manually adjusted or automatically controlled with the 'Location' setting in the Main Window, or with a light sensor.



Output

The default brightness value – adjustable from 0-100% — determines the static brightness of the LED display on startup, or when restoring system defaults.

Use ramping

Enables dynamic brightness adjustments on your display. When checked, PV System Matrix overrides the default brightness, established by the Output value, and the display automatically adjusts brightness based on the following criteria:

- Minimum and Maximum Output % values, (See Output % below for more information),
- The current time and date settings on the display control PC.
- PV System Matrix's Sunrise/Sunset Table for the display location.

Red
Adjustment for the Red value of the controller.

Green
Adjustment for the Green value of the controller.

Blue
Adjustment for the Blue value of the controller.

Light Sensor

Enabled
This check box allows the light sensor to control the brightness settings.

Use Global Sensor
When checked the selected matrix uses the configured global light sensor for automatic brightness control. Using the global sensor allows multiple matrices to share the same sensor and all change brightness in unison with one light sensor.

Day Lumens
Sets the illuminance threshold for the daytime brightness or max output %. When the light sensor is greater than this set value, the display will output at max brightness. This setting is typically set to 11,000 Illuminance, when the light sensor is mounted in direct sunlight. If its mounted in the shade, it is typically set between 4000 and 7000 Illuminance.

Night Lumens
Sets the illuminance threshold for the nighttime brightness or minimum output %. When the light sensor is less than this set value, the display will output at minimum brightness. When LUX values reach this threshold, the LED display output brightness will be at the set minimum output %. 'Night Lumens' is typically set to 0 if the light sensor is mounted in complete night time darkness. If its mounted in a location that picks up night time ambient light, it is typically set between 10 and 200 Illuminance.

Output %

Max %
Sets a maximum percentage limit for display brightness.

Minimum%
Sets a minimum limit for display brightness.

Gamma

Gamma
Allows the gamma value to be adjusted. Recommended gamma values will vary depending on display location and ambient lighting conditions. Please refer to the recommendations listed below.

Gamma Max
Gamma Max is the Gamma value used while the display is running and the set maximum brightness value.

Gamma Min
Gamma Min is the Gamma value used while the display is running at the set minimum brightness value.

Outdoor with Direct Sunlight Conditions
Range
Gamma Max: 2.0 to 2.6
Gamma Min: 2.8 to 4.2
Recommended Value
Gamma Max: 2.2
Gamma Min: 3.0

Indoor Environments with Indoor Lighting or Low Light Conditions Using No Dimming or Ramping Method.
Range
Gamma Max/Min: 2.5 to 2.8
Recommended Value
Gamma Max/Min: 2.6

Dark Conditions Using No Dimming or Ramping Method.
Range
Gamma Max/Min: 2.6 to 4.2
Recommended Values
Gamma Max/Min: 2.8

Sunshine Offset
This setting is used for outdoor operation in sunlight. It is used to increase the output brightness to compensate for sunlight. A value from 0-10 can be entered, 0 for no sunlight compensation and 10 maximum compensation.

Dimming Schedule

Enabled
When checked, PV System Matrix will follow the established dimming schedule.
. . . — Click the ellipsis button to edit the dimming schedule. The dimming schedule is created in a text file using basic HTML code.

Cancel
Closes the Settings window without saving any changes, including any changes made to the Output and Communications settings.

Save & Exit
Saves any changes and closes the settings window.

Communications

The Communications settings allow you to define the IP addresses for devices connected to the serial server.

The first IP address is for the first of the controller's interface cards.

The second IP address is for the light sensor. This address should only be assigned for an individual light sensor that will only be used to adjust brightness of this controller. The address of a Global Light Sensor can be assigned in the Global Light Sensor settings. Refer to "Light Sensor" on page 21.

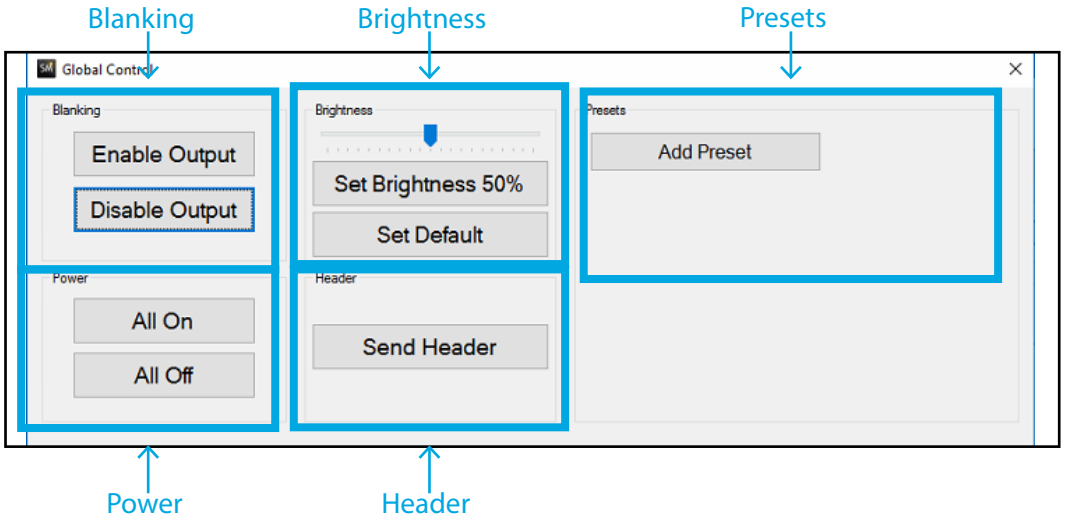
The remaining IP address can be assigned to power supplies. These must be assigned for proper diagnostics operation. Up to ten power supplies can be connected together and assigned to a single IP address and Port. In addition to the power supply IP address and Port assignments, an Expected Count is required. Maximum Expected Count is 16.

The 'Cancel' button will close the Settings widow without saving any changes, including any changes made to the Output and Dimming settings.

The 'Save & Exit' button will save any changes and close Settings window.

5.0 Global Control

The settings in the Global Control menu universally affect all displays connected to PV System Matrix. These settings are divided into five sections: Blanking, Power, Brightness, Header, and Presets.



Blanking

Allows you to toggle between Enable Output or Disable Output. After clicking "Disable Output," the blank display will still have power to all the components, but images and videos will stop appearing on the display. Clicking "Enable Output" will allow content to once again appear on the display.

Power

These buttons toggle ALL controller primary power supplies on and off. After the "All Off" button has been clicked, the display will require 2-3 minutes to restore power to the display components, and be ready to resume content playback.

Brightness

Move the slider to the desired, temporary brightness. The "Set Brightness XX%" button forces the brightness setting of all controllers to the slider bar value. "Set Default" returns all controllers to their individual, user defined, default brightness setting.

Header

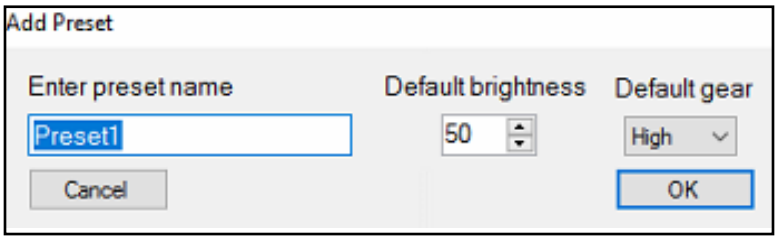
Is a special command sent to the display. It contains operational information that communicates brightness levels and what part of the image or animation should display on each module. The 'Send Header' button forces a new header to be sent to all displays. Headers are sent automatically every 60 seconds, but any changes can be implemented immediately by forcing PV System Matrix to send a new header.

Presets

Allow you to quickly switch between commonly used brightness and gear values. Presets override brightness adjustments from connected light sensors or ramping settings.

How to Add a New Preset

1. Click the 'Add Preset' button.
2. In the resulting window, shown above, enter the preset name, default brightness value, and select a default gear from the drop-down menu.
3. Click the 'OK' button, and the new preset is now an option in the Global Control window.

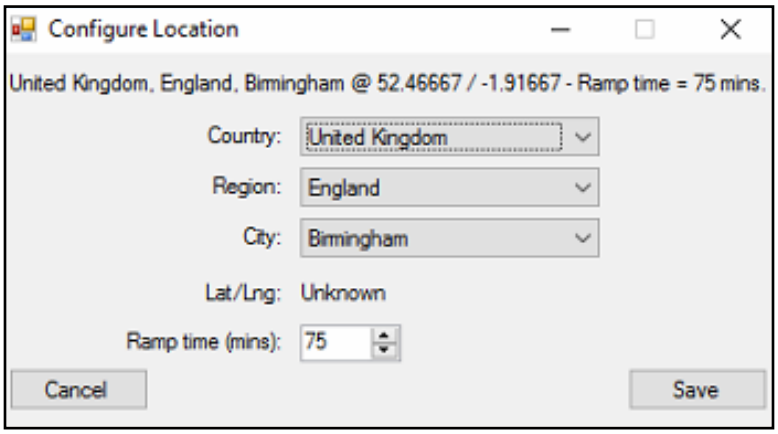


6.0 Location

The Location button on the tool bar will open the Configure Location window. These settings are typically used for outdoor locations where the brightness of the display will be automatically adjusted with sunrise and sunset.

Current

The current location is listed at the top of the window in the format: country, region, city @ latitude / longitude.



Country, Region, and City

These drop-down menus are used to change the location.

Latitude/Longitude

As the display location is set, the latitude and longitude will automatically populate.

Ramp time (minutes)

The Ramp time value will set the ramping time of the display. Ramping is a gradual adjustment in display brightness to correspond with sunrise and sunset.

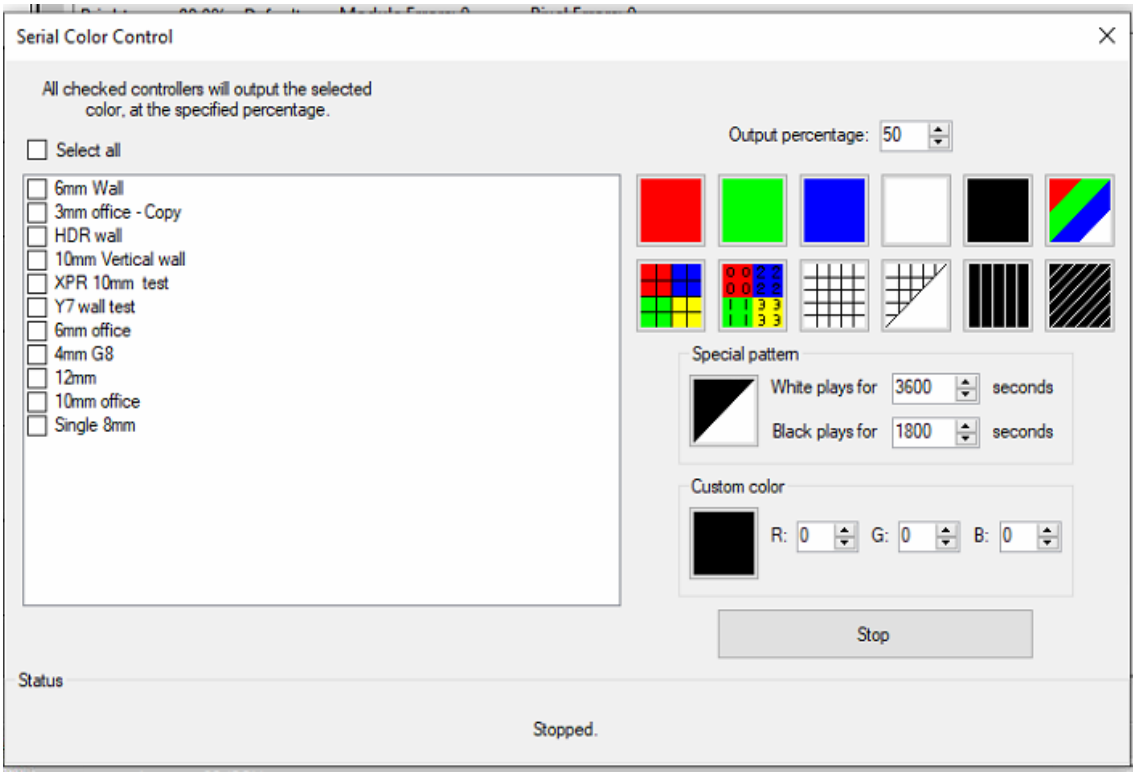
Save

Saves any changes made to the location settings, and closes the window.

Cancel

Closes the Location window without saving any changes.

7.0 Serial Colors



Active Controller Window

Changes made will only effect the controllers with a check mark. All controllers are selected by default. To prevent unplanned interruption, deselect any controllers that should not be altered for testing.

PV System Matrix may appear unresponsive while a serial color command is starting, stopping, or changing from one test pattern to another.

Output Percentage

This controls the output brightness while using the serial commands.

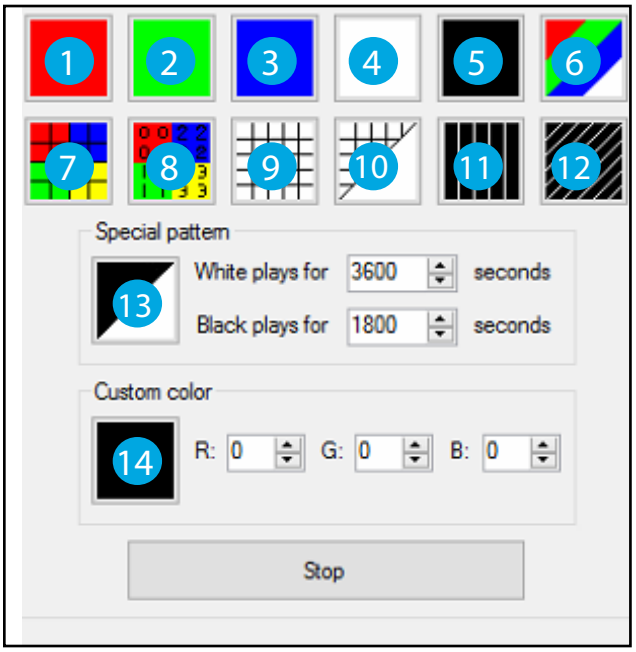
Serial Control Options

These buttons force the controller to show a specific color or pattern for diagnostic purposes. These options are covered in depth on the next page.

Stop Button

Stops the serial command for test patterns from being sent to the selected controllers.

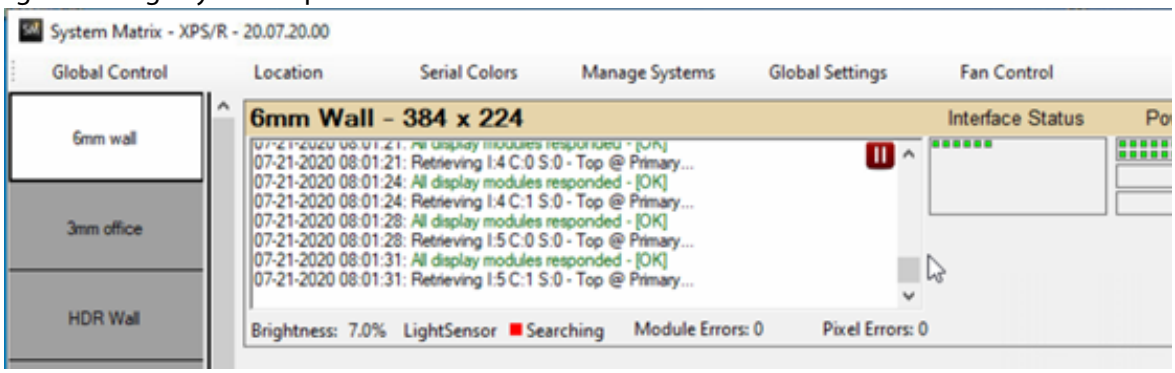
Serial Control Options



1. Displays red across all modules.
2. Displays green across all modules.
3. Displays blue across all modules.
4. Displays white across all modules.
5. Blanks the display.
6. Cycles the display through red, green, blue, and white. The colors will change every 18 seconds.
7. Divides the display into a grid by module, and colors groups by Interface ID.
8. Outputs a count through each interface ID. The layout configuration is separated into sections by module, and colors by interface ID. The counting sequence can be helpful is determining if multiple interfaces are sharing the same ID.
9. Output a white grid around each module.
10. Alternates output between a white grid and a solid white output.
11. Cycles vertical lines "marching" across each section of the display.
12. Cycles diagonal lines "marching" across each section of the display.
13. Alternates between all modules blank and displaying white across all modules. The time of each can be customized.
14. Displays a custom color across all modules using red, green, and blue values.

8.0 Manage Systems

Manage Systems is used to Name and Create Displays and then add Controllers to Displays. This is used for the initial setup of Matrix and the LED Display. This is an advanced setting and should only be used with proper knowledge and training. Entering these settings and pushing the wrong buttons can break your LED displays configuration.
Clicking on Manage Systems opens a new Window.

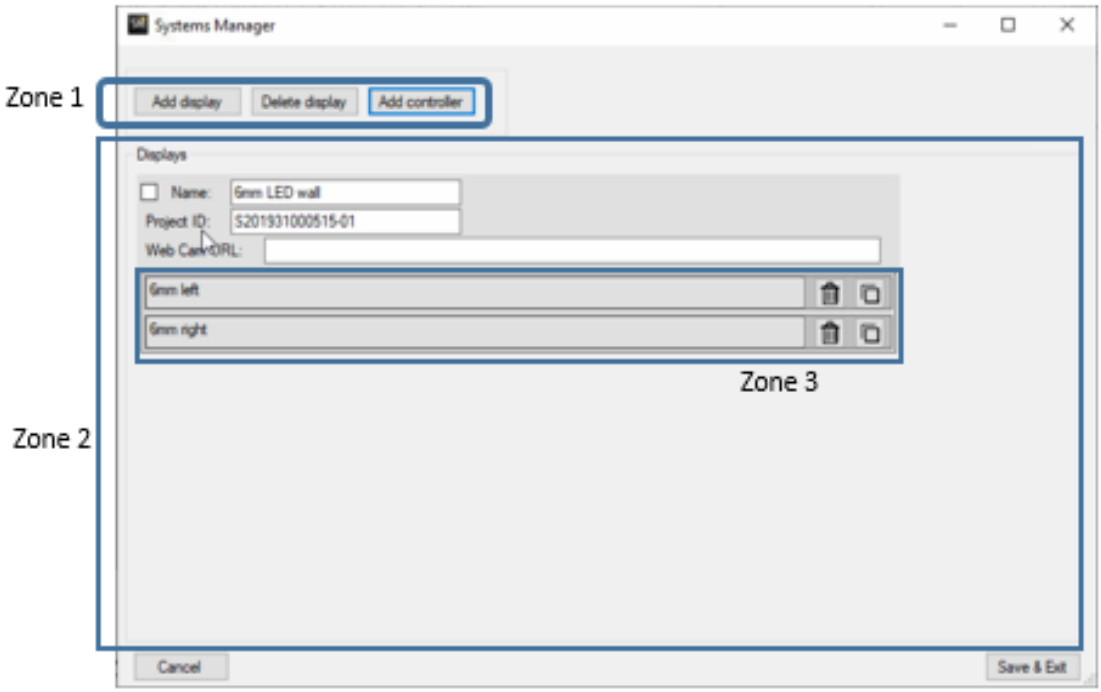


This is the Systems Manager Window. In Systems Manager, you can Add or Rename Displays and move or Copy Controllers.

Zone 1. These are buttons for Adding and Removing Displays and Controllers.

Zone 2. These are the Displays Added.

Zone 3. These show the associated Controllers that belong to the Display.

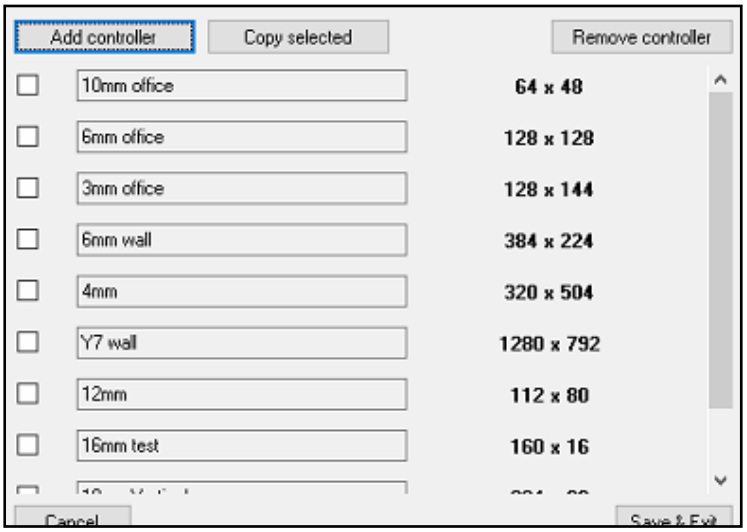


Add Controller Procedure

These steps should only be performed under the direction of Prismview personnel. Incorrect settings may disrupt operation of displays controlled by PV System Matrix.

1. Click 'Add controller'
    - A new controller line will be added to the systems list. The new controller will be Not Configured.
2. Enter a name for the new controller.
    - To avoid confusion, it is good practice to select a name that references the display.
3. When all of the desired controllers have been added, click 'Save & Exit'

It is normal for newly added controllers to be listed as 'Not Configured'. Configuration for controllers is completed in the settings section.

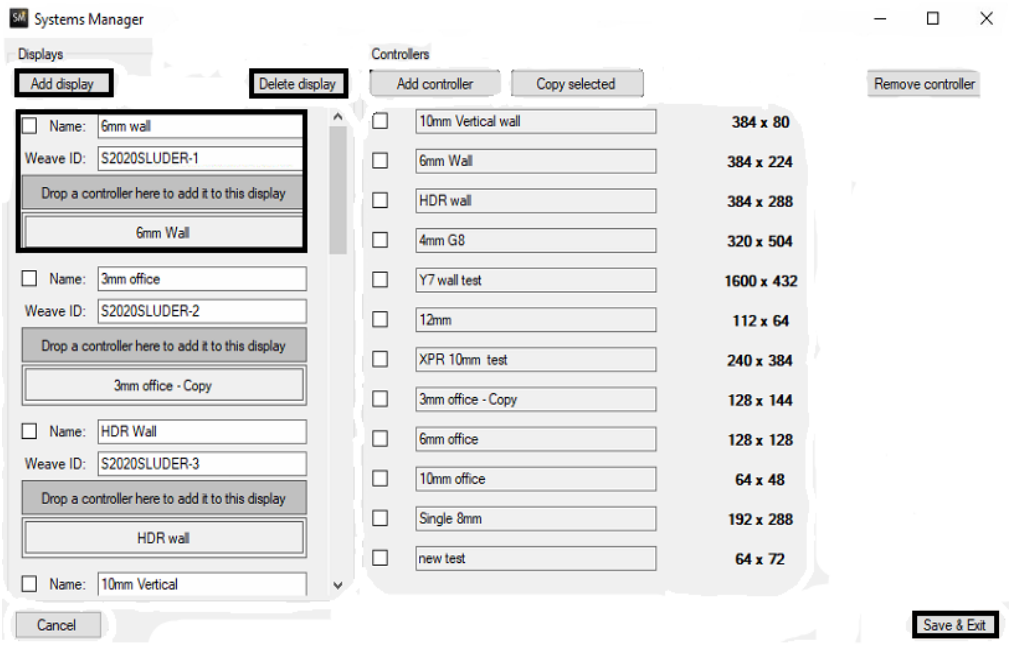


Once a controller has been added, and the name has been saved the name cannot be changed, without removing the controller and adding, or copying, a new instance of that controller.

Add Display Procedure

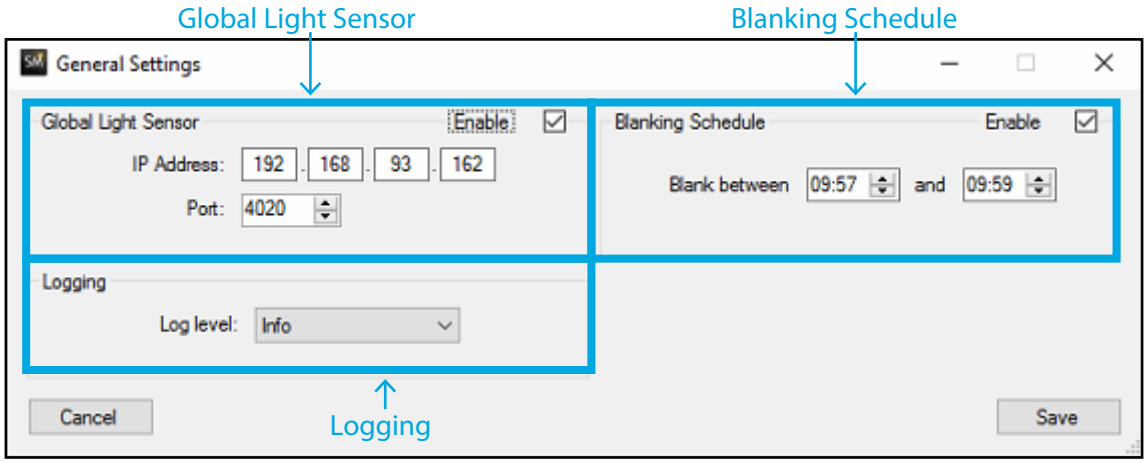
These steps should only be performed under the direction of Prismview personnel. Incorrect settings may disrupt operation of displays controlled by PV System Matrix.

1. Click 'Add display'
    - A new display box will appear which will need a Name, Weave ID, and a Controller to be added.
2. Enter a name for the new display and adding a Controller to a Display.
    - To avoid confusion, it is good practice to select a name that references the display.
    - You can drag and drop a Controller to add a created Display.
3. When all of the necessary display fields have been added, click 'Save & Exit'



9.0 Global Settings

In the 'Global Settings' or general settings window you can configure your global light sensor, set the 'Logging' settings, and set a 'Blanking Schedule' for your display.

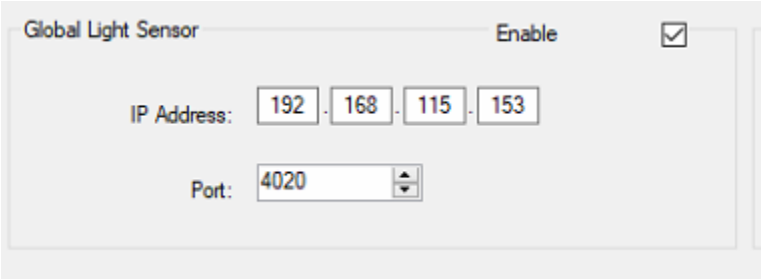


Global Light Sensor

Here you can configure your 'Global Light Sensor' by entering the 'IP Address:' and the 'port' #.

The Global Light Sensor Settings are used to establish communication between a light sensor and the matrices in PV System Matrix. A Global Light Sensor adjusts the brightness of all connected displays in response to ambient light. Settings for individual display sections can be adjusted in the Dimming settings window for each individual controller.

A Global Light Sensor is used to adjust the brightness of all connected displays in response to ambient light. Settings for individual light sensors can be adjusted in the Dimming settings window for an individual controller. See "Light Sensor" on page 21 for more information.



Enabled

Check the box will enable, or disable, the light sensor to automatically adjust the brightness of the controllers.

IP Address

Is the network address of the serial server hosting the light sensor. When properly configured, the IP address will allow PV System Matrix to receive data about ambient light from the light sensor.

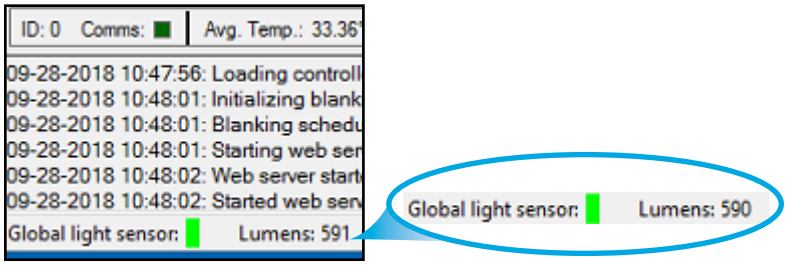
Save

Saves any changes made to the Light Sensor Settings, and closes the window.

Cancel

Closes the Light Sensor Settings window without saving any changes.

Once the light sensor is enabled the global light sensor status will show up on the bottom of the program.



Blanking Schedule

Blanks the display between the adjustable set times.

When enabled, the display will blank between the first set time and the second set time. This feature may be useful if you want to schedule the display to be blank during set during nigh time hours.

Logging

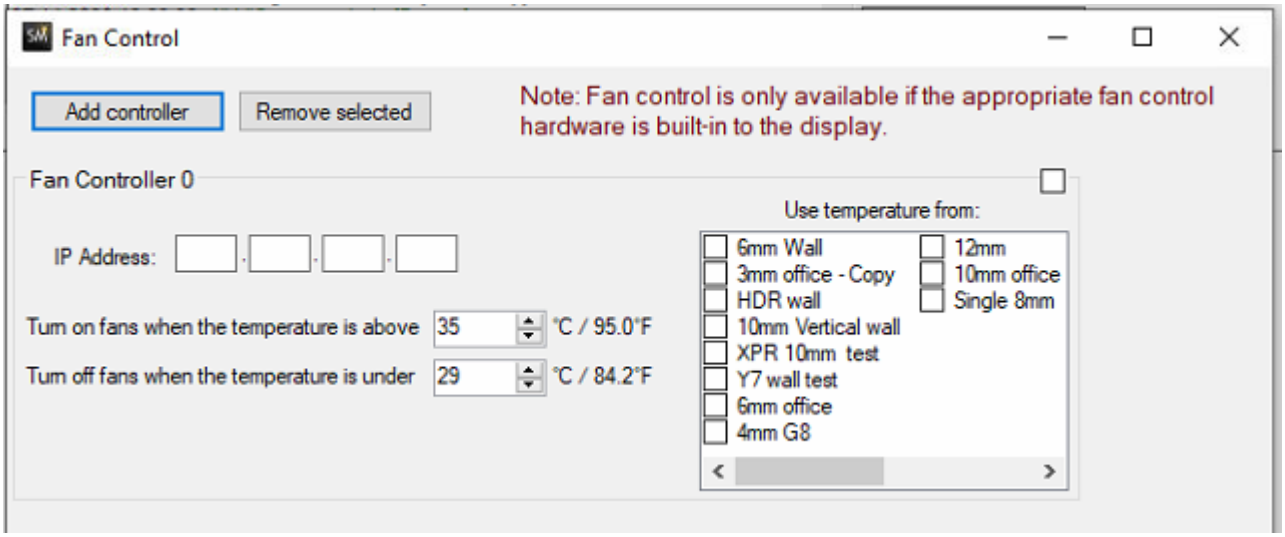
You can set the 'Log Level', The recommended logging setting is 'Info'.

10.0 Fan Control

How to Configure your Fan Control Hardware

Fan control will only function if the display is equip with the correct hardware for controlling the displays fans. For more information regarding fan control please contact Prismview Technical Support.

The fan controller hardware has a factory set static IP address of 192.168.0.10. If there are multiple fan controllers, the controllers IP address will go up from 192.168.0.10. So a second controller would be 193.168.1.10.



Adding a Fan Controller

1. To add a fan controller to the software, Click the 'add controller' button.
2. Then enter the IP address of the controller .
    - We recommend using the preset temperatures when the controller is added.

Removing a Fan Controller

1. To remove a controller from the software check the box in the upper-right corner of the controller.
2. Than click 'Remove selected' in the top left of the window.

Setting the Temperature

The temperature of the LED display is sensed though the displays LED module's temperatures. Each LED module has a temperature sensor on-board. As the software reads back each module diagnostics, it retrieves each modules data. The software then computes an average display temperature.

You can adjust the fan 'ON' and 'OFF' temperatures. This will change the temperature that the fans turn 'ON' and 'OFF' at, based on the average temperature.

The software will not allow the 'ON' temperature to be set higher than 41 Celsius. There can never be a difference of less than 6' between the 'ON' and 'OFF' temperatures. So the 'OFF' temperature can never be set within 6 Celsius of the 'ON' temperature. This prevents the fans from constantly turning on and off. Once the fans turn 'ON', they will run until the LED Module temperatures drop-down to the 'OFF' temperature.

In the 'Use temperature from:' box, you select which Display or segment of the Display to use the temperature from. It is recommended that if the display is a single LED display with multiple control segments, that all display segments are selected. If you have several different displays and fan controllers, then you select the displays that are associated to the fan controller. Fan control will use the highest average temperature of the selected Displays.

The current average temperature will be shown in the fan control status window at the bottom left corner of the program.

Monitoring Fan Control

When you add a controller it shows up at the bottom bar. It shows a color red if it is not connected and shows up green if it is running.

If there is no communication with the fan the fan will automatically turn on just in case as a safety precaution. The bar above shows the average temperature of all of the screens connected to that fan controller. If you have multiple fan controllers they will show up to the right on the same bar.

When the average temperature goes above the set 'ON' temperature the fans will turn on. When the temperature drops below the set 'OFF' temperature the fans will turn off. The current status of the fans is shown on the right. It will read 'ON' when fans are in the 'ON' state and 'OFF' when they are in the 'OFF' state.