A decorative background consisting of overlapping, semi-transparent blue triangles and polygons of various shades, creating a complex, crystalline geometric pattern. The pattern is denser at the top and fades towards the bottom, where it meets a white background.

User Guide
020-102835-07

MicroTiles LED

CHRISTIE®

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The product 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 product is operated in a commercial environment. The product 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 the product in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at the user's own expense. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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If printing this document, consider printing only the pages you need and select the double-sided option.

Please help us to conserve the environment we live in!

Notation

Learn the hazard and information symbols used in the product documentation.



Danger messages indicate a hazardous situation which, if not avoided, results in death or serious injury.



Warning messages indicate a hazardous situation which, if not avoided, could result in death or serious injury.



Caution messages indicate a hazardous situation which, if not avoided, could result in minor or moderate injury.



Notice messages indicate a hazardous situation which, if not avoided, may result in equipment or property damage.



Information messages provide additional information, emphasize or provide a useful tip.

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Product overview

Christie MicroTiles LED tiles are modular, high-quality image display units that can be configured to create small display configurations as well as larger more complex display canvases of virtually any size and shape.

Each tile captures a portion of the image and applies scaling, as required, which results in a single picture. The LED wall controller acts as the main system controller and coordinates with all connected tiles to form a canvas.

Christie MicroTiles LED tiles are designed to occupy a smaller more manageable install footprint with minimal mechanical and electronics components. The simplicity of the design ensures higher reliability and improved thermal management.

Product documentation

For installation, setup, and user information, see the product documentation available on the Christie website. Read all instructions before using or servicing this product.

1. Access the documentation from the Christie website:
 - Go to this URL: <http://bit.ly/2DE9cnu> or <https://www.christiedigital.com/en-us/digital-signage/products/led-tiles/microtiles-led>.
 - Scan the QR code using a QR code reader app on a smartphone or tablet.



2. On the product page, select the model and switch to the **Downloads** tab.

Related documentation

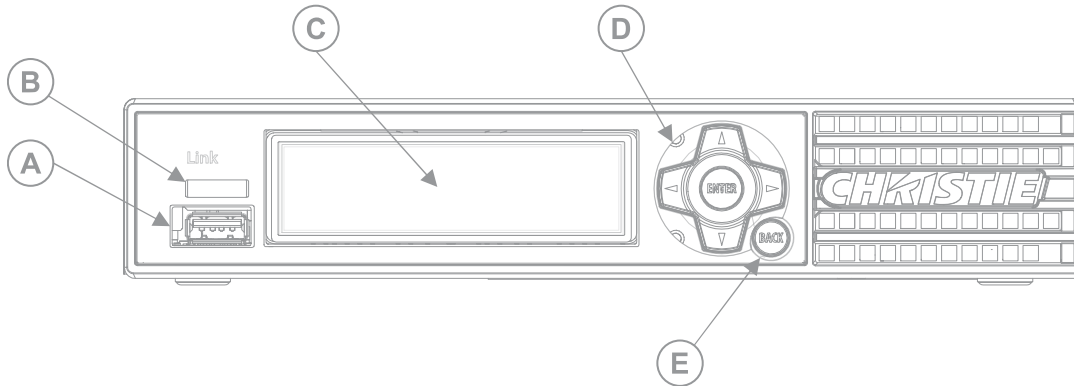
Additional information on this product is available in the following documents.

- *MicroTiles LED Product Safety Guide (P/N: 020-102824-XX)*
- *MicroTiles LED Installation and Setup Guide (P/N: 020-102825-XX)*
- *MicroTiles LED Specifications Guide (P/N: 020-102836-XX)*
- *MicroTiles LED Serial Commands Guide (P/N: 020-103050-XX)*
- *MicroTiles LED Status System Guide (P/N: 020-103556-XX)*
- *Replacing LED modules in a MicroTiles LED array (P/N: 020-103059-XX)*
- *Removing the MicroTiles LED chassis (P/N: 020-102670-XX)*

Wall controller interface and ports

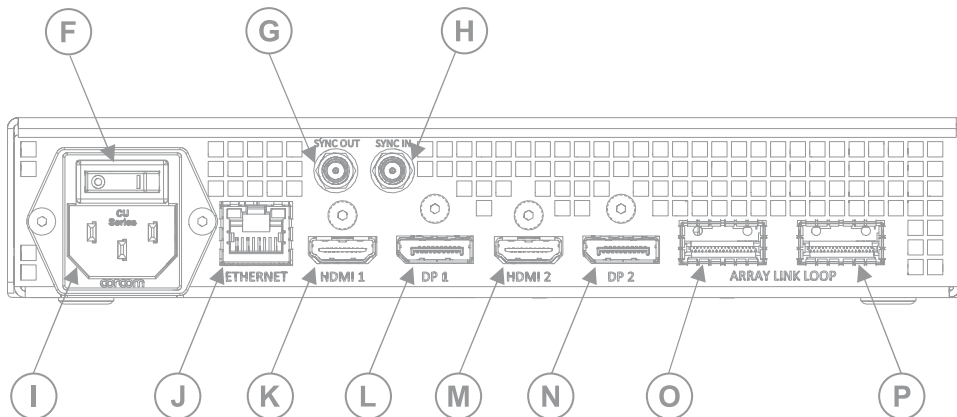
Learn about the interface and physical ports on the wall controllers.

Front ports



ID	Component	Description
A	USB port	Accepts USB storage devices for upgrade, interrogation, and USB to serial adapter.
B	LED status indicator	Indicates device status.
C	Display panel	Provides more detailed status and menu options/settings.
D	Keypad	Use the keypad to navigate through the menu options.
E	Back button	Exits the current menu option.

Christie Link E1000 rear ports

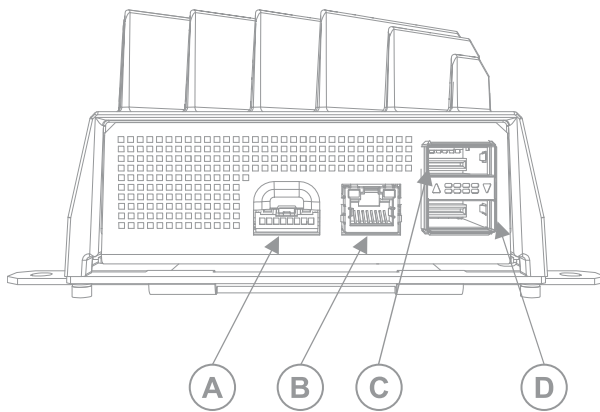


ID	Component	Description
F	AC power switch	Powers on and off the unit.
G	Sync out (SMA connector)	Reserved for future use.
H	Sync in (SMA connector)	Reserved for future use.

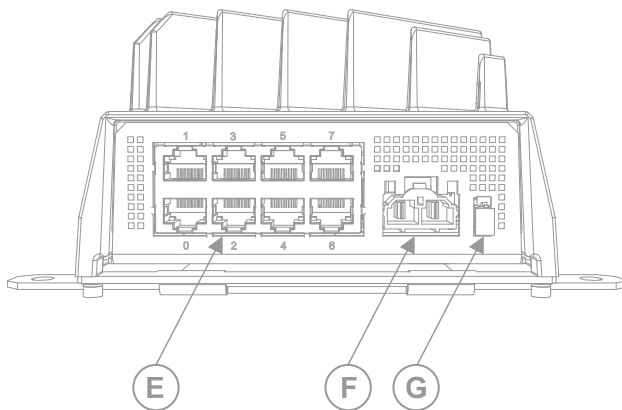
ID	Component	Description
I	AC power receptacle	Plug in an appropriately rated line cord.
J	Ethernet	Accepts an Ethernet cable connection.
K	HDMI 1	High-Definition Multimedia Interface cable connection 1 (In only)
L	DP1	DisplayPort connection 1 (In only)
M	HDMI 2	High-Definition Multimedia Interface cable connection 2 (In only)
N	DP2	DisplayPort connection 2 (In only)
O	QSFP+0	Use this port to connect to Octrollers.
P	QSFP+1	Use this port to connect to Octrollers.

Octroller ports

Learn about the interface and physical ports on the Octroller.

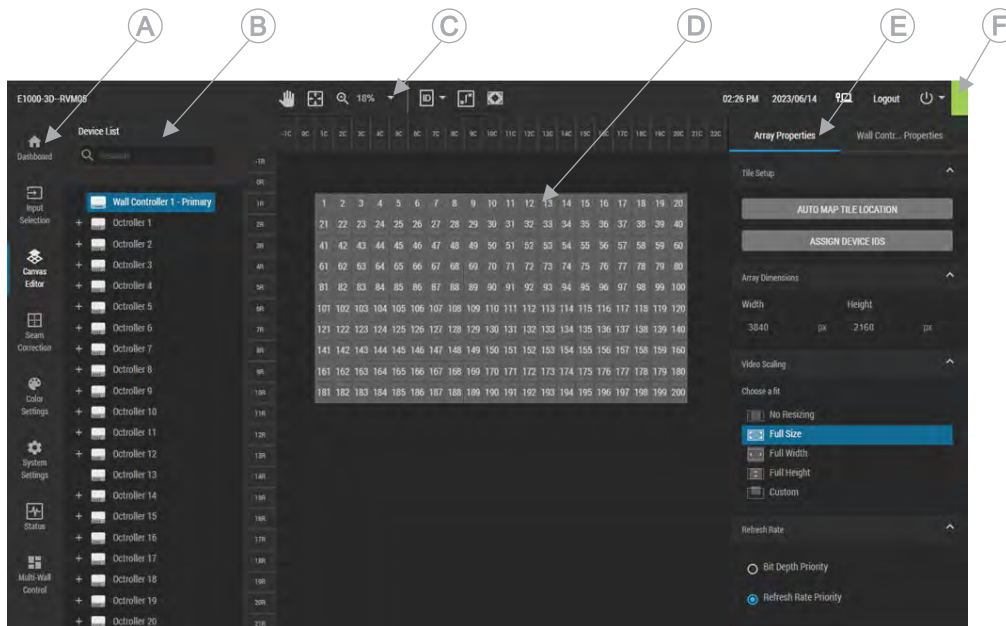


A	Ambient light sensor and 3D sync signal for an external IR box.
B	Service—To access serial commands and other service functionality, connect an Ethernet cable between the Octroller and a computer.
C	QSFP+0—Connection that sends data from the wall controller to all Octrollers in the chain.
D	QSFP+1—Connection that sends data from the wall controller to all Octrollers in the chain.
E	Tile Link—Sends power and data from the Octroller to the LED tiles. One connection per tile.
F	DC power connection to the Remote Power Rack Shelf.
G	PWR OK—Connects to the local AC power supply when used in a redundant configuration.



Understanding the MicroTiles LED interface

Learn the different areas of the web user interface.



<p>A</p>	<p>Task bar—Provides access to the configuration of the MicroTiles LED array.</p> <ul style="list-style-type: none"> • Dashboard—Displays a summary view of the array. • Input Selection—Identifies and tests the inputs providing content to the array. • Canvas Editor—Specifies the array dimensions and scaling. • Seam Correction—Adjusts the LED modules seams so the brightness is uniform across the array and reduces the visibility of the seams. • Color Settings—Sets the color space, saturation, brightness, and color temperature. • System Settings—Upgrades the firmware and exports system logs.
-----------------	---

	<ul style="list-style-type: none"> • Status—Identifies the areas of the array triggering errors or warnings. • Multi-Wall Control—Sends messages to selected MicroTiles LED walls in its list at once for a subset of functions.
B	Device list —Lists all LED wall controllers, Octrollers, and LED tiles in the array.
C	Tool bar —Displays the name, date, and time of the LED wall controller, as well as the buttons for test patterns and Tile ID.
D	Array view —Displays the configured layout of the array. Users can select an individual tile or multiple tiles simultaneously to adjust seam brightness and apply module color correction.
E	Properties pane —Displays the properties of the array, device, and edge, depending on the area of the web user interface being accessed.
F	System status indicator —Displays the overall health of the array. <ul style="list-style-type: none"> • Green—No errors or warnings detected. • Orange—Warnings have been detected, which may impact the performance of the array. • Red—An error has been detected that may stop content from appearing on the array.

Technical support

Technical support for Christie Enterprise products is available at:

- North and South America: +1-800-221-8025 or Support.Americas@christiedigital.com
- Europe, Middle East, and Africa: +44 (0) 1189 778111 or Support.EMEA@christiedigital.com
- Asia Pacific (support.apac@christiedigital.com):
 - Australia: +61 (0)7 3624 4888 or tech-Australia@christiedigital.com
 - China: +86 10 6561 0240 or tech-supportChina@christiedigital.com
 - India: +91 (80) 6708 9999 or tech-India@christiedigital.com
 - Japan: 81-3-3599-7481
 - Singapore: +65 6877-8737 or tech-Singapore@christiedigital.com
 - South Korea: +82 2 702 1601 or tech-Korea@christiedigital.com
- Christie Professional Services: +1-800-550-3061 or NOC@christiedigital.com

Operating recommendations

Follow these installation guidelines to limit the risk of damaging the MicroTiles LED in different operating environment conditions.

If the environment is under construction or susceptible to uncontrolled changes in temperature or humidity, module installation may best be delayed until construction has been completed. If used in a portable, rental, or demo application, Christie suggests transporting the modules in foam trays sealed in moisture-proof antistatic bags. Place a fresh desiccant pack inside each bag. Follow the dehumidification recommendations below during each setup.

- Do not use chemicals or water to clean the surface of the display. Christie recommends only using dry filtered compressed air to remove loose particles between the LEDs. Additional

instructions on how to clean the MicroTiles LED modules can be found in the *Maintaining the array* (on page 28) section.

- Avoid direct sunlight/UV light on the screen.
- Do not blow cold air directly on the display as this could cause condensation to form on the surface of the modules and/or thermal stress which could damage the display equipment and void the warranty.
- Avoid storing, exposing, or operating MicroTiles LED modules in an environment with excessive humidity as this may cause premature wear and void the warranty.
- If MicroTiles LED modules have been exposed to an environment with high humidity such as greater than 60% RH, the dehumidification process provided in *Performing the dehumidification process* (on page 12) can be used to reduce moisture within the LEDs. This process can help protect the MicroTiles LED module while extending their lifespan.
- The dehumidification process works by displaying content at a reduced brightness for a period of time, then transitioning to a higher brightness. This process slowly heats up the MicroTiles LED module circuitry and removes moisture within the LEDs.
- The dehumidification process takes up to four hours to complete.

Daily use recommendations

Follow these guidelines for optimal daily use to make sure optimal performance of the MicroTiles LED.

- MicroTiles LED modules should be powered on and operated daily for a minimum of four hours each day.
- When turning on the MicroTiles LED modules, Christie recommends setting brightness levels to a maximum of 80% for the first five minutes.
- When daily use is not required, and humidity is less than 60% RH, Christie recommends powering on the modules at least twice a week and operating them for a minimum of four hours each time.
- When daily use is not required and humidity is between 60% RH to 80% RH, Christie recommends powering on the modules at least once a day and operating them for a minimum of four hours each day.
- When daily use is not required and humidity is greater than 80% RH, Christie recommends operating the modules for a minimum of eight hours every day, reducing brightness to 50% for the first two hours of operation.

When to perform the dehumidification process

Christie recommends performing the dehumidification process when the MicroTiles LED modules meet the following conditions.

- Installed for the first time.
- Exposed to a humid environment where humidity levels are greater than 60% RH, such as coastal areas receiving significant precipitation.
- Restarted after a period of not being used for two or more days in higher humidity environments or ten or more days in lower humidity environments.

Performing the dehumidification process

The following procedure helps to remove condensation from the MicroTiles LED.



The dehumidification will be an automatic feature on a future system software upgrade release using the LED Wall Controller software.

1. Log into the LED Wall Controller user interface.
2. Turn on the MicroTiles LED modules.
3. Set the brightness to 50%.
4. Play video content for four hours.
5. Adjust the brightness to the required level after four hours.

Storing MicroTiles LED modules and spare inventory

Follow these recommendations for storing the MicroTiles LED modules and spare inventory.

- Store MicroTiles LED modules indoors in a dry environment. Storage temperature range: -10 to 50°C (50 to 122°F).
- Pack MicroTiles LED modules in foam trays and placed in sealed, moisture-proof, anti-static bags. Place a fresh desiccant pack inside each bag.
- Do not unpack or remove MicroTiles LED modules from their factory sealed bags until needed. If modules are stored prior to installation, they should remain in their packaging.

Configuring the array

Configure the MicroTiles LED array through the web user interface.

Operating the LCD front panel

Some basic settings can be changed from the LCD front panel (IP address, SNMP settings) all other controls are available in the web user interface.

The LCD front panel displays the following:

- Software version of the wall controller
- Wall controller's IP address
- General status of the array (if any alarms are present)

Changing the IP address of the wall controller

The network setting of the wall controller can be changed to a static IP or dynamic IP address (DHCP) from LCD front panel:

1. To activate the LCD menu, select **ENTER**.
2. Navigate to **Communication > Network Settings > IP settings**.
3. Change the IP address to **DHCP** or a static IP address.

Setting up SNMP

To enable the trap alarms for SNMP monitoring, the alarms and the trap IP must be changed from the LCD front panel (or using serial commands).

1. Navigate to **System Settings > SNMP > IP address** and enter the IP address of the SNMP monitoring device.
2. Navigate to the **Trap Configuration** submenu and enable the group of traps to be monitored: alarms, video signal alarms, or power state alarms.
3. Optionally, change the Read password.
The default value is *public*. Christie recommends changing the password.

When necessary, additional functions can be performed from the LCD front panel such as the system upgrade, running interrogator, and switching inputs but full functionality for these features is available in the web user interface.

Accessing the MicroTiles LED web user interface

Learn how to access the web user interface.

The MicroTiles LED web user interface is supported on the following browsers:

- Google Chrome™
- Microsoft® Edge®
- Safari®

Access the web user interface to configure the array and monitor the status of the components.

1. In a web browser, enter the IP address of the LED wall controller.
The IP address is displayed on the LED wall controller display.
In configurations with two LED wall controllers, entering the IP address for either wall controller accesses the same web user interface settings.
2. Log into the session with the username and the password.
The username and password are case-sensitive.
3. Select **Login**.

Changing the user account password

Periodically change the user account password to limit access to the web interface to authorized users.

Christie recommends changing the default user account password.

1. From the home page of the web user interface, select **System Settings**
2. In the Controller area, beside Remote Password select **Edit**.
3. Select the **Current Password** and enter your current password.
4. Select **New Password** and enter your new password.
Create your password using 4 to 32 characters. The password can be any combination of letters, numbers, and symbols (ASCII-standard characters only). Accents and accented characters are not supported.
5. In the Confirm Password field, re-enter your new password.
6. Select **Apply**.

Accessing the generated user account password

In some situations, the user account password is not available and the generated user password can be used to access the web user interface.

Note the following about the generated user account password:

- Every time the user account password is updated, the generated password is changed.
 - If the system defaults are reset using the **Reset Factory Defaults** feature, the user account password is reset.
1. From the LCD display on the wall controller, select **Admin**.
 2. Select the down arrow until the Generated Password is displayed.
Use the generated password to access the web user interface.

Displaying content on the array

Learn the different methods of configuring the input for a MicroTiles LED array.

Selecting the input

Configure the input for an array with one or more LED wall controllers.

1. Log into the MicroTiles LED web user interface.
2. Select **Input Selection**.
3. In the Device List, select the LED wall controller.
4. In the properties area, specify this is the **Primary Controller**.
5. Configure the input.
 - **E1000 wall controller**
 - a. Select the input.
 - **Disable**—Disables displaying content on the array.
 - **DP 1** or **DP 2**—Provides content to the LED wall controller through the DisplayPort input.
 - **HDMI 1** or **HDMI 2**—Provides content to the LED wall controller through the HDMI input.
 - **DP Stitched** or **HDMI Stitched**—Splits content to the LED wall controller across the two DP or HDMI inputs, where each input is providing half of the video. The two inputs are stitched together, displaying the content as a single video. Input 1 populates the left half of the array, and Input 2 populates the right. Both signals must have identical timing.
 - b. If the second HDMI or DP port is going to provide redundancy for the content going through HDMI 1 or DP 1, select **Set [input name] as redundant**.
 - **E1000-3D wall controller**
 - a. Select the input.
 - **Disable**—Disables displaying content on the array.
 - **DP 1** or **DP 2**—Provides content to the LED wall controller through the DisplayPort input.
 - **HDMI 1** or **HDMI 2**—Provides content to the LED wall controller through the HDMI input.
 - **DP Stitched** or **HDMI Stitched**—Splits content to the LED wall controller across the two DP or HDMI inputs, where each input is providing half of the video. The two inputs are stitched together, displaying the content as a single video. Input 1 populates the left half of the array, and Input 2 populates the right. Both signals must have identical timing.
 - **DP Dual Input 3D** or **HDMI Dual Input 3D**—Displays 3D content on the LED array.
 - b. If the second HDMI or DP port is going to provide redundancy for the content going through HDMI 1 or DP 1, select **Set [input name] as redundant**.

The array diagram is updated to reflect the input selection.

6. For an additional LED wall controller, select it from the device tree.
7. Set the wall controller as **Secondary Controller**.
By default, the second wall controller provides redundancy for the primary wall controller.
8. To configure the secondary wall controller, repeat step 5.

Redundancy configurations

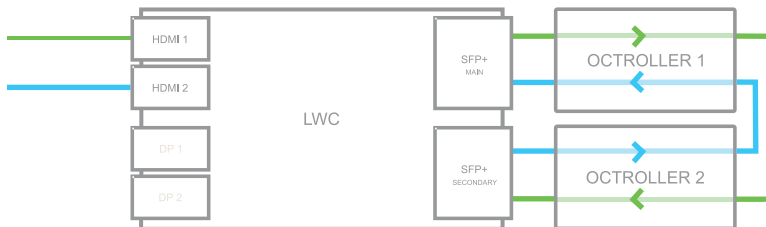
Understand the different array configurations that provide redundancy.

Redundancy models with a single wall controller

- One input into the array, providing no input redundancy. Redundancy exists between octrollers.

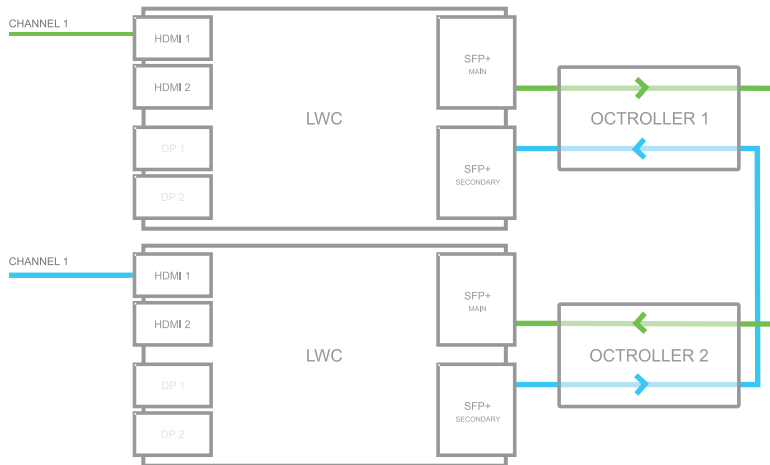


- Two inputs into the array from two different sources with the same content. The sources on the two inputs are in sync and available to provide content if the connection between Octrollers becomes unavailable.

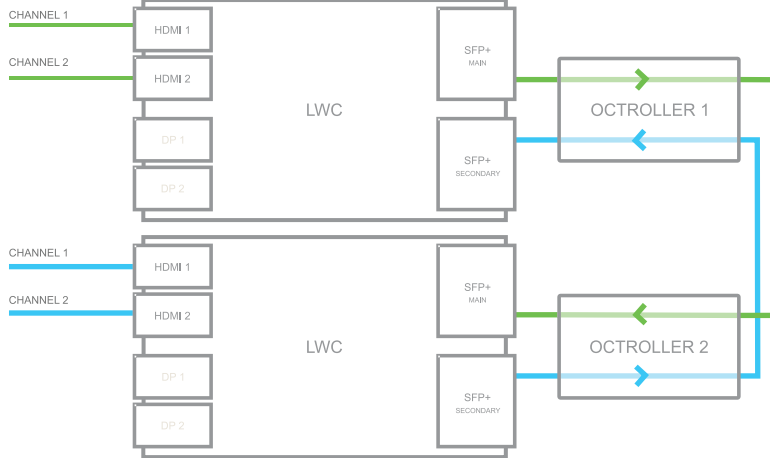


Redundancy models with a two wall controllers

- One input into each wall controller, each from a different source with the same content. The sources on the two wall controllers are in sync and available to provide content if the connection between Octrollers becomes unavailable.



- Each wall controller has two inputs from the same source but the sources are different, providing redundancy for stitched content.



Resetting all tiles to use the primary wall controller

When a break in the array communication flow occurs, the failover settings are used and content from two wall controllers may be being displayed on the array. Reset the tiles to use the primary wall controller.

1. Select **Input Selection**.
2. In the right pane, switch to the **Array Properties** tab.
3. To change all tiles to use the primary wall controller, in the Reset Controller Output area, select **Set**.

Related information

Testing the wall controller inputs (on page 18)

Testing the wall controller inputs

Verify the communication on each input of the wall controller is sending content to the array.

1. Select **Input Selection**.
2. In the right pane, switch to the **Array Properties** tab.
3. In the Test Controller Inputs area, select an input to test.
All tiles in the array show content from the selected input.
4. To return to the default input, select **None**.

Related information

Resetting all tiles to use the primary wall controller (on page 17)


Generating an EDID

Configure MicroTiles LED to accept the video source in the preferred signal formats.

1. Log into the MicroTiles LED web user interface.
2. Select **Input Selection**.
3. In the Device List, select the LED wall controller.
4. To create a custom EDID configuration, select **Generate** in the **EDID Configuration** section of the **Properties** pane and enter the size and frame rate of the source.
The EDID is generated for the currently selected input type. In configurations with two LED wall controllers, the EDID is synchronized between devices.
5. Select **Apply**.
6. To use a standard EDID configuration, in the Properties pane, select **Auto**.

Displaying a test pattern

Display a test pattern to help configure MicroTiles LED.

1. Log into the web user interface.
2. Select **Test Pattern Generator**. 
3. From the Test Pattern window, select a test pattern.
4. To close the Test Pattern window, select **Test Pattern Generator** again.
5. To turn off the test pattern, select **Off**.


Mapping the canvas

Make sure each tile knows its physical location within the array.

Automatically mapping tiles in the array

MicroTiles LED tiles are equipped with neighbor detection, which automatically determines the location of each tile within the canvas and the overall configuration of the canvas.

Christie recommends automatically mapping the tiles in the array after the chassis are installed, and after the LED tiles are installed on the chassis.

1. Select **Canvas Editor**.
2. Under the Array Properties tab, select **Auto Map Tile Location**.
All devices in the array are renumbered. The Octrollers are renumbered based on their connection order from the primary wall controller. Tiles are renumbered, row by row, with tile 1 located at the top left corner.
3. To view the tile edges that have been located, select **Identify Tiles**  and display the **Neighbor Detection** test pattern.
Any edges where a neighbor has not been detected appear as red lines. Edges where neighbors have been detected are black. To update the results displayed, re-apply the test pattern.

Assigning unique IDs to each tile


For better identification, assign each tile in the array a unique ID number.

Assign unique IDs to the tiles after the initial install, when all tiles have a 0 id, and after the tiles are automatically or manually mapped.

1. Select **Canvas Editor**.
2. In the Tile Setup area, select **Assign Device IDs**.
All tiles in the array are renumbered, row by row, with tile 1 located at the top left corner.

Identifying a tile

To locate a tile in the array, display the tile IDs on all tiles.

1. In the toolbar, select **Identify Tiles** .
2. Select the information to display.
 - **Tile ID**—Displays the tile number.
 - **Module ID**—Displays the tile number on each of the three modules in the tile.
 - **Info Page**—Displays the following information on each tile in the array:
 - X,Y coordinates of the tile
 - Octroller ID number
 - Internal IP address of the Octroller and the port number on the Octroller the tile is connected to.

- Tile number
 - **HeatMap**—Displays the temperature of each module in the tile.
 - **Neighbor Detection**—Displays Octroller IP address and port number for any neighboring tiles detected in the array, starting from the top left tile. Edges where neighboring tiles are not detected appear as colored lines.
3. To turn off the information, from the Identify Tiles list, select **Off**.

Manually mapping the tiles in the array

Learn how to manually identify the parameters of the canvas.

1. Navigate to the Canvas Editor.
2. *Identify the size of the canvas* (on page 21).
3. Drag and drop the tile to the correct position in the array.
Alternatively, *set the starting coordinates for each tile in the array* (on page 20).
4. Configure the scaling factor for the content.

Manually setting the coordinates of a tile

In configurations where a canvas includes a group of tiles not physically connected, add the tiles to the grid by specifying the X and Y coordinates.

Use the rows (y-coordinates) and columns (x-coordinates) of the grid to manually map tiles. The top left corner of the canvas is 0,0.

The image on the canvas is automatically configured and mapped after the tile is dropped into the main grid.

Tile dimensions are:

Pixel pitch	Tile size (W x H)
0.75 mm	320 x 360 pixels
1.00 mm	240 x 270 pixels
1.25 mm	192 x 216 pixels
1.50 mm	160 x 180 pixels

1. Select **Canvas Editor**.
2. Display the ID of all tiles in the canvas.
3. In the Device List or in the Array View, select the tile.
4. In the Properties area, do one of the following:
 - Enter the X,Y pixel coordinates of the top left corner of the tile.
X is the distance in pixels from the left edge of the canvas (columns) and Y is the distance in pixels from the top edge of the canvas (rows). The top left corner of the canvas is 0,0.
For example, for the top tile in the third column of a 1.25 mm pitch canvas, the coordinates would be X position = 384, Y position = 0.
 - Enter the column and row position of the tile.
When typing the row or column number, do not include the letter after the number. For example, enter 5 and not 5R.

The location of the tile is updated immediately.

Related information

Identifying a tile (on page 19)

Manually setting the canvas size

Set the dimensions of the canvas.

1. Select **Canvas Editor**.
2. In the Array Dimensions area, set the width and height of the canvas window in pixels.

Scaling the content

Adjust how the content fits within the canvas.

1. Select **Canvas Editor**.
2. In the Array Properties area, expand **Video Scaling** and select how the content should scale in the content window.
 - **No Resizing**—Centers the content in the output window and maintains the native resolution.
 - **Full Size**—Scales the content to both the horizontal and vertical dimensions of the output window but does not maintain the aspect ratio.
 - **Full Width**—Scales the content to the horizontal dimensions of the output window while maintaining the aspect ratio. The content is either cropped or displayed in letterbox format.
 - **Full Height**—Scales the content to the vertical dimensions of the output window, while maintaining the aspect ratio. The content is either cropped or displayed in letterbox format.
 - **Custom**—Allows a custom starting position and dimension to be set for the content.

Creating a custom content window

Define the starting point and size of an area where content will be displayed.

Any changes to the settings are applied immediately.

1. Select **Canvas Editor**.
2. Switch to the Array Properties tab and expand the **Video Scaling** area.
3. Select **Custom**.
4. To set the starting point for the content, set the X and Y coordinates of the content origin point.
5. Set the width and height of the content window.

Setting up MicroTiles LED for 3D

MicroTiles LED is capable of displaying stereoscopic 3D video sources, relying on additional hardware (stereo emitters and glasses) to complete the display system.



3D is only available on 0.75 mm, 1.0 mm, and 1.25 mm tiles.

Images generated from a stereo 3D video source consist of a series of images (frames) that alternate quickly between two slightly different viewpoints, corresponding to our left and right eyes. When these frames are displayed fast enough and viewed with special glasses synchronized to the left/right (L/R) changes, the resulting image appears with the same depth and perspective sense in the real world.

MicroTiles LED uses a frame sequential single input that supports signals up to 1080P. Signals with higher resolution than 1080P, uses a dual-input configuration for displaying 3D content, where two video streams are provided by the video server, with the left eye supplied by one stream and the right eye supplied by the other. The video streams are frame locked and supplied concurrently.

3D requirements

Stereo 3D applications require a stereo 3D-capable source, special hardware and software setups, and the array's 3D Settings menu option to control the processing, synchronization, and displaying of the stereoscopic 3D source material.

Hardware requirements

Understand the hardware requirements for stereo 3D applications.

- E1000-3D wall controller (P/N: 161-012104-XX)
- 3D sync cable
- AE125H IR External 3D Emitter for controlling active shutter glasses
- XPAND Vision X101 3D glasses
- A source, usually a computer with a 3D graphics card(s)

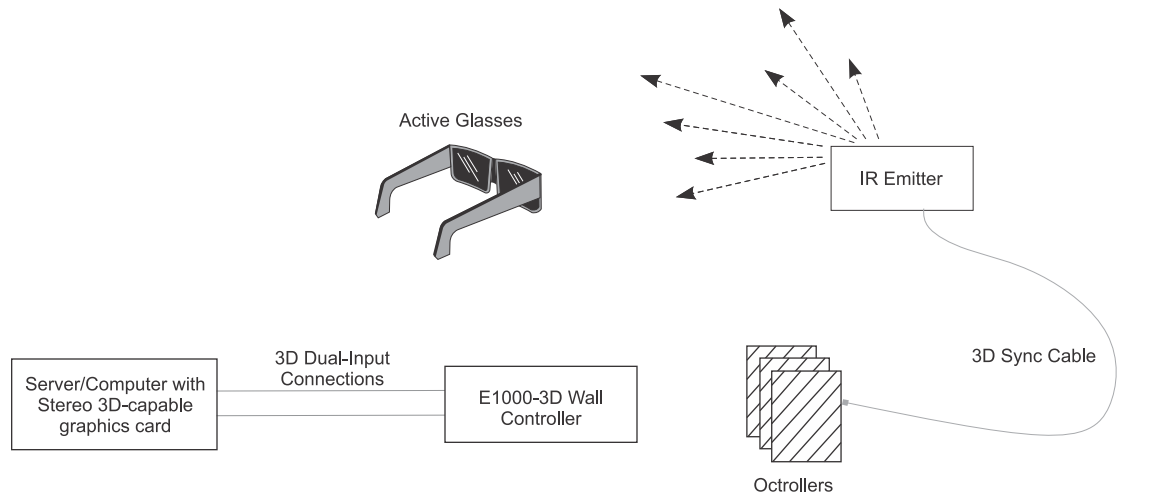
Software and content requirements

Understand the software and content requirements for stereo 3D applications.

- Any 3D computer software that supports 3D stereo on a supported computer(s) with associated graphic cards (suggested cards include ATI or NVIDIA)
- A video stream from a video source prepared to be sequential content (for direct-input 3D) or two video streams from a video source that has been prepared to be supplied left eye and right eye concurrently and frame locked (dual-input 3D)

Active stereo 3D configuration

Use the following diagram to understand a typical hardware configuration for active stereo 3D systems.



In response to the 3D Sync Out signal from the array, the IR emitter emits an infrared signal to a receiver in the active 3D shutter glasses. This synchronizes the active glasses to alternatively open and close for the active stereo 3D applications.

Cabling the array

Connect the cables between all components of the array.

1. Connect cables from the source to the LED wall controller.
 - For configurations with a single input, and no redundancy, connect the source cable to **DP1** or **HDMI1**.
 - For configurations with two inputs creating a single image, connect source cables to both **DP 1** and **DP 2**, or **HDMI 1** and **HDMI 2**.
The two input cables may be providing redundancy or for stitched content.
 - For configurations displaying 3D content, connect the cable for the left eye source to DP/HDMI 1 and connect the cable for the right eye source to DP/HDMI 2.
2. Using an appropriate length of QSFP cable, connect the cables from the LED wall controller to the first Octroller.
Various lengths of this cable assembly are available from Christie.
3. Connect a QSFP+DAC cable between each Octroller in the array.
4. To create redundancy in the video signal, using an appropriate length of QSFP cable, connect the cable from the last Octroller to the LED wall controller.
5. Hang one end of an Ethernet cable in the location on the mounting sheet where an LED tile will be installed and connect the other end of the cable into an Octroller port.
To avoid an increase in temperature, where possible connect QSFP+ connectors into the lower row of ports.
A maximum of eight LED tiles can be connected to a single Octroller.

Various lengths of CAT 6 unshielded, UTP, 24 AWG pre-terminated cables are available from Christie. Alternatively, a custom length of Ethernet cable can be created using the Christie Cat 6 cable spool (P/N: 161-120104-XX), RJ45 Connect kit (P/N: 161-122106-XX) and Ethernet crimping tool (P/N: 11-121105-XX).

6. For each tile in the array repeat step 5.

Enabling 3D

Install and configure the array to display 3D content.

1. To enable 3D for dual-input 3D content:
 - a) Install the array components as specified, using the E1000-3D wall controller.
 - b) Cable the array, connecting the cable for the left eye source to HDMI or DP 1, and the right eye source cable to input 2.
 - c) Install the IR emitter.
 - d) Connect the 3D sync cable between the IR emitter and the service port on any Octroller.
 - e) In the web user interface, select **Input Selection**.
 - f) Select **DP Dual Input 3D** or **HDMI Dual Input 3D** as appropriate.
2. To enable 3D for a single, frame-sequential 3D video input:
 - a) Install the array components as specified, using the E1000-3D wall controller.
 - b) *Configure the array for a single input* (on page 15).
 - c) Install the IR emitter.
 - d) Connect the 3D sync cable between the IR emitter and the service port on any Octroller.
 - e) In the web user interface, select **Input Selection**.
 - f) Change the 3D sync delay to **7700**.
 - g) In the 3D Settings area select **Enable 3D stereo in a single port**.

Inverting the left and right eye

Learn how to invert the 3D sequence in the case of a left and right eye mismatch.

1. Select **Input Selection**.
2. In the Device list, select the wall controller.
3. In the 3D Settings area, select **Invert Left/Right Eye**.

Adjusting the dark interval

Control the time between frames when no image is being projected to the screen.

1. Select **Input Selection**.
2. In the Device list, select the wall controller.
3. In the 3D Settings area, to specify the number of milliseconds between frames when no image is being projected, use the **Dark Interval** slider or enter a value in the field.

Adjusting the image

Calibrate the display to achieve optimum picture quality.

Before adjusting the image, perform the following tasks:

1. Power on the display and display a full-field white test pattern at the targeted operating brightness.
Displaying the test pattern for a minimum of 25 minutes brings the array up to temperature stability.
2. Position the person adjusting the image at a viewing angle centered on the display and represents a typical user position at the nominal viewing distance from the display.
For 1.25 mm pixel pitch tiles, this distance is approximately 3.75 m.

Adjusting the brightness levels of the seams between tiles

To blend tiles together, change the brightness of the seam between the tiles or LED modules. The brightness of each LED module seam can be adjusted.

1. From the ID list, display the **Module ID** test pattern.
2. Select **Seam Correction**.
3. Select the seams to adjust.
 - To select a single seam, select the grey bar.
 - To select the seams in an area of the array, or to select the entire array, click and drag the mouse on a diagonal around the seams.
 - To select multiple seams, press and hold **CTRL** and select each seam to be adjusted.
 - To select the entire array, click and drag the mouse on a diagonal around all tiles in the array.

When multiple seams are selected, changing the brightness adjusts them to the same value.

4. To change the seam brightness, move the **Seam Brightness** slider or change the value in the brightness percentage field.

Resetting all seams to the default values

To return the seam values back to the original values, return the seams to the default settings.

1. Select **Seam Correction**.
2. Select **Reset**.

Adjusting the color luminosity of the array

Learn how to change the brightness and gamma of the array.

1. Select **Color Settings**.
2. Expand the **Color Correction** area in the right pane.
3. To adjust the **Brightness** or **Gamma**, move the slider or enter a specific value in the field. The values are applied immediately.

Defining the color space

Identify how the color components are decoded for accurate color in the array.

When the Color Correction mode is set to Native, the Color Gamut and Color Temperature controls are disabled. To enable them, set the Color Correction mode to any value but Native.

1. Select **Color Settings**.
2. Expand the Color Gamut area and select a color space.
 - **Max Gamut**—Sets the array to use the maximum gamut the array can achieve, based on the lowest achievable gamut of an LED module in the array. The triangle representing the maximum gamut is always displayed on the color chart.
 - **NTSC-1987, NTSC-1953, REC-709, DCI-P3**—Sets the array to use the specified gamut to the percentage of the color space the LEDs in the array can achieve.
 - **Custom**—Specifies a custom color space for how the color components are decoded for accurate color in the array.

Setting a custom color space

Specify a custom color space for how the color components are decoded for accurate color in the array.

1. Select **Color Settings**.
2. Expand the **Color Gamut** area.
3. Select **Custom**.
4. Modify the color point values for the X and Y coordinates.
5. Select **Apply Values**.

Changing the color temperature

Specify the color temperature of the array, in degrees Kelvin.

1. Select **Color Settings**.
2. Expand the **Color Gamut** area.
3. To adjust the color temperature, move the slider or enter a specific value in the field. The change is applied immediately.

Adjusting color by saturation

Defines the hue of each primary color component (red, green, and blue).

Adjustments to the color saturation may require that seam brightness be re-adjusted.

1. Select **Color Settings**.
2. Expand the **Color Saturation** area.
3. To change the color saturation for the entire array, adjust the sliders or enter a value as necessary.
4. To change the color saturation for an LED module in a tile select the LED module and adjust the sliders or enter a value as necessary.
5. To reset the changes to the individual LED module saturation, in the Reset Settings area select **Reset**.

This does not reset the changes to the saturation of the entire array.

Adjusting the brightness of LED modules

If individual LED modules appear to be dimmer or brighter than the majority of the modules in the array, adjust the brightness of just those LED modules.

1. Examine the array and identify LED modules that appear dimmer or brighter than the surrounding modules.
2. Select **Color Settings**.
3. Starting from the middle column of the display, in the web user interface select the tile with the module to be adjusted and select the LED module on that tile to be adjusted.
4. Display a **Flat Green** test pattern.
5. Adjust the **Green of Green** slider until the required brightness is achieved.
6. For all LED modules identified in step 1, repeat step 5.
7. Change to a **Flat Blue** test pattern.
8. For the **Blue of Blue** setting, repeat step 5 and 6.
9. Change to a **Flat Red** test pattern.
10. For the **Red of Red** setting, repeat step 5 and 6.
11. Display a **Flat White** test pattern.
12. Confirm the brightness uniformity and balance is matched across all LED modules.
13. If the brightness is still not uniform or balanced, repeat steps 4 to 11 until the brightness is correct.

Maintaining the array

Understand the procedures for performing maintenance on the MicroTiles LED array.

Checking the current software version

Verify the version of the software running on the MicroTiles LED array.

1. Select **System Settings**.
2. In the Software area, review the current version and the date of the last update.

Updating the MicroTiles LED software

To install available software updates use the MicroTiles LED web user interface.



Notice. If not avoided, the following could result in property damage.

- Do not disconnect the power source for any components during the update.



For normal operation, all devices in the array must have the same version of firmware.

1. Download the latest software from www.christiedigital.com and save it to the computer to be connected to the array for the update.
2. Log into the MicroTiles LED web user interface.
3. Select **System Settings**.
4. In the Software section, select **Upgrade**.
5. Navigate to the file saved in step 1 and select **OK**.

The update starts immediately and progresses in this order:

- a. The LED wall controllers are updated.
- b. After the wall controllers are updated, all Octrollers are updated.
- c. After all the Octrollers finish the update process, the tiles connected to the Octrollers are updated.

When the update is finished, the status is displayed.

6. For the update to be applied, restart the array by selecting **Reboot**.
Christie recommends clearing the browser cache after performing a firmware upgrade and before running the new software on the array.

Related information

Restarting the array (on page 29)

Synchronizing the date and time

Synchronize the date and time on the wall controller with the date and time of the computer accessing the web user interface.

1. Select **System Settings**.
2. In the Controller area, select **Sync to System**.
The date and time on the wall controller is updated immediately.

Backing up the MicroTiles LED profile

Create a backup of the settings for each hardware component in the array.

1. Log into the web user interface.
2. Select **System Settings**.
3. Select **Backup**.
4. To save the file, select **OK**.
The backup file is downloaded to the folder specified in your browser.

Restoring a backed up profile

After components have been replaced, to avoid having to re-configure the array restore the backed up settings.

1. Log into the web user interface.
2. Select **System Settings**.
3. Select **Restore**.
4. Navigate to the backup file, and select **Open**.
5. Select the settings to restore.
6. If any issues are identified, such as missing components or replaces components, specify the action to take.
7. Select **Restore**.
8. Select **Close**.

Restarting the array

When powering off in preparation for inspection or maintenance, always disconnect from power.

1. In the web user interface, select **Power**.
2. To restart the array, select **Reboot**.
3. To put the array into Standby mode, select **Power Off Wall** and turn off the wall controller and the remote power rectifiers.
4. To power on the array, turn on the rectifiers and wall controllers.
5. To bring the array out of Standby mode, in the web user interface select **Power > Power On Wall**.

Cleaning the LED panels

Learn how to clean the MicroTiles LED panel.



Notice. If not avoided, the following could result in property damage.

- Always wear clean, lint-free gloves when handling the product.

To avoid the risk of damaging the LEDs, clean the panel only if absolutely necessary.

1. To clean the LED panels use a dry, clean, soft cloth with a low lint count or a paint brush to remove any particles.

Do not use the following products when cleaning the panels:

- Compressed air cans
 - Liquids
 - Abrasive cloths
2. To remove loose particles between the LEDs, use filtered compressed air. Make sure the air compressor does not spray oil or condensation.

Restoring factory default settings

Restoring factory settings removes all custom device settings.

1. To restore the factory defaults through the LCD display on the wall controller:
 - a) Select **Admin**.
 - b) Select **Reset Factory Defaults**.
All customized settings are set to the default factory settings.
 - c) At the confirmation prompt, select **Reset**.
2. To restore the factory defaults through the web user interface:
 - a) Log into the web user interface.
 - b) Select **System Settings**.
 - c) In the Backup and Restore area, select **Reset**.
 - d) In the confirmation dialog, select **Reset**.

Controlling multiple MicroTiles LED walls

To communicate to multiple MicroTiles LED walls from one web user interface, use the Multi-Wall Control feature.

The Multi-Wall Control sends messages to each selected wall in its list for the following subset of functions:

- **Brightness**—Changes the brightness level on selected walls.
- **Color Space**—Changes the color space on selected walls.
- **Test Patterns**—Initiates the same test pattern on selected walls.
- **Tile Patterns**—Initiates a tile pattern on selected walls.
- **Upgrade**—Upgrades selected walls.
- **Interrogator**—Generates an interrogator report on selected walls.
- **Reboot**—Reboots selected walls.
- **Standby**—Powers selected walls to Standby mode.
- **On**—Powers on selected walls.

Each wall must have the following requirements for successful communication with the Multi-Wall Control:

- Powered on
- Run on version 1.4.0 or higher
- Connected to the primary controller

The multi-wall control list is only set to one MicroTiles LED wall's web user interface. The list does not replicate to each connected wall's web user interface.

Adding a wall

Use the web user interface of an existing wall to act as the controller for multiple walls.

1. *Access the web user interface of one MicroTiles LED wall (on page 14).*
2. In the left-side menu, select **Multi-Wall Control**.
3. Select **Add**.
4. In the Add Wall dialog, enter the IP address of the wall and a name.
5. Select **Add**.

The wall name is visible on the page with the following information:

- Build
- Brightness level

- Color space in use
- Input
- Signal
- IP address
- System status indicator

If a test pattern or tile pattern is in use, the input and signal icons disappear and TP On is displayed.

6. Repeat steps 3 to 5 for each wall.

Removing a wall

If a wall is no longer required, remove it from the multi-wall list.

1. Access the web user interface containing the multi-wall control list (on page 14).
2. In the left-side menu, select **Multi-Wall Control**.
3. On the Walls page, navigate to the wall entry.
4. To the right of the entry, select **More Options**.
5. Select **Remove**.
6. Repeat steps 3 to 5 for each wall.

Adjusting the brightness levels of multiple walls

Use the Multi-Wall Control feature to adjust the brightness levels across multiple walls to the same value.

1. Access the web user interface containing the Multi-Wall Control list (on page 14).
2. In the left-side menu, select **Multi-Wall Control**.
3. On the Walls page, select **Walls** to select all available walls or select each wall individually.
4. Select **Settings**.
5. Select **Brightness**.
If there are different brightness levels, a mixed brightness message appears. If you do not want to continue, select **Cancel**.
6. In the Brightness dialog, use the slider or enter a value.
7. Select **Done**.
A message appears indicating a successful application or a failure.

Changing the color space of multiple walls

Apply a specific color space across multiple walls.

1. Access the web user interface containing the Multi-Wall Control list (on page 14).
2. In the left-side menu, select **Multi-Wall Control**.
3. On the Walls page, select **Walls** to select all available walls or select each wall individually.

4. Select **Settings**.
5. Expand **Color Space** and select a color space.
 - **Max Gamut**—Sets the array to use the maximum gamut the array can achieve, based on the lowest achievable gamut of an LED module in the array. The triangle representing the maximum gamut is always displayed on the color chart.
 - **NTSC-1987, NTSC-1953, REC-709, DCI-P3**—Sets the array to use the specified gamut to the percentage of the color space the LEDs in the array can achieve.
 - **Custom**—Specifies a custom color space for how the color components are decoded for accurate color in the array.

Showing a test pattern on multiple walls

Apply a test pattern on multiple walls.

When a test pattern is applied, an icon appears in the Walls list and overrides the input and signal status.

1. *Access the web user interface containing the Multi-Wall Control list (on page 14).*
2. In the left-side menu, select **Multi-Wall Control**.
3. On the Walls page, select **Walls** to select all available walls or select each wall individually.
4. Select **Settings**.
5. Expand **Test pattern** and select a test pattern.

Showing a tile pattern on multiple walls

Apply a tile pattern on multiple walls.

When a tile pattern is applied, an icon appears in the Walls list and overrides the input and signal status.

1. *Access the web user interface containing the Multi-Wall Control list (on page 14).*
2. In the left-side menu, select **Multi-Wall Control**.
3. On the Walls page, select **Walls** to select all available walls or select each wall individually.
4. Select **Settings**.
5. Expand **Tile pattern** and select a tile pattern.

Updating the MicroTiles LED software on multiple walls

To update multiple walls to the same software version, complete the following steps.



Notice. If not avoided, the following could result in property damage.

- Do not disconnect the power source for any components during the update.



For normal operation, all devices in the array must have the same version of firmware.

1. Download the latest software from www.christiedigital.com and save it to the computer to be connected to the array for the update.
2. Access the web user interface containing the Multi-Wall Control wall list (on page 14).
3. In the left-side menu, select **Multi-Wall Control**.
4. On the Walls page, select **Walls** to select all available walls or select each wall individually.
5. Select **More Options**.
6. Select **Upgrade**.
7. Navigate to the file saved in step 1 and select **OK**.
Each wall entry displays a progress bar for the upgrade status on the Walls page. A message appears to indicate a successful upgrade.
8. Once the upgrade is complete, make sure all upgraded walls are selected, or complete the following steps for each wall individually.
9. Select **Power**.
10. Select **Reboot**.
11. In the Reboot dialog, select **OK**.
12. Log into the MicroTiles LED web user interface containing the Multi-Wall Control wall list.
Christie recommends clearing the browser cache after performing a firmware upgrade and before running the new software on the array.

Generating an interrogator log for multiple walls

The interrogator captures diagnostic information Christie personnel uses to help diagnose and correct any issues.

1. Access the web user interface containing the Multi-Wall Control list (on page 14).
2. In the left-side menu, select **Multi-Wall Control**.
3. On the Walls page, select **Walls** to select all available walls or select each wall individually.
4. Select **More Options**.
5. Select **Interrogator**.
Each wall entry displays a progress bar for the interrogator status.
6. Once complete, navigate to a wall entry and select **Download**.
7. In the browser dialog, select a location to save the file.
8. Select **Save**.
The interrogator data is downloaded to the computer as a .zip file.
9. Repeat steps 6 to 8 for each wall.

Powering walls to Standby mode

To set multiple walls to Standby mode, follow these steps.

When a wall is in Standby mode, applications in the wall web user interface are greyed out except for Dashboard.



When the web user interface containing the multi-wall control list is in Standby mode, the functionality of the Multi-Wall Control is greyed out.

1. Access the web user interface containing the Multi-Wall Control list (on page 14).
2. In the left-side menu, select **Multi-Wall Control**.
3. On the Walls page, select **Walls** to select all available walls or select each wall individually.
4. Select **Power**.
5. Select **Power > Standby Mode**.
6. To resume functionality of the Multi-Wall Control application, select **Dashboard**.
7. Select **Power**.
8. Select **Power on Wall**.

Opening a web user interface window from the Walls list

Learn how to open multiple web user interface windows from a single web user interface.

After the initial setup of creating the Walls list using the Multi-Wall Control feature, use the main web user interface to open other web user interfaces on the list instead of remembering each IP address.



This feature is only functional when the web user interface containing the Multi-Wall Control list can communicate with the web user interface you want to open.

1. Access the web user interface containing the Multi-Wall Control list (on page 14).
2. In the left-side menu, select **Multi-Wall Control**.
3. On the Walls page, navigate to the wall entry.
4. Select **More Options**.
5. Select **Open in New Window**.
6. Repeat steps 3 to 5 for each wall.

Troubleshooting the array

Learn the information and procedures for troubleshooting issues with the MicroTiles LED array.

Viewing the status of the entire array

To assist with diagnostics, use the status interface to view status information about the Christie MicroTiles LED.

1. Select **Status** or select the colored bar in the top right corner.
After selecting **Status**, to see the status overlay maps in the web user interface, select the **Array Properties** tab.
2. In the Device List, select a wall controller.
3. In the wall controller properties area, review the status information.
Areas of the array requiring attention are colored orange or red. Orange indicates a warning, which may impact the performance of the array. Red indicates an error, which stops content from appearing on the array.
4. To identify the cause of the colored status, expand the section.
5. To remedy the warning or error, modify the array configuration as needed.

Generating an interrogator file

The interrogator captures diagnostic information Christie personnel uses to help diagnose and correct any issues.

1. Select **System Settings**.
2. In the Interrogator section, select **Run**.
3. Select **Save File** and select **OK**.
The interrogator data is downloaded to the computer as a .zip file.

Exporting system status data

To assist with analysis and troubleshooting, extract data on the temperature, power, and status of all components in the array.

1. Select **System Settings**.
2. In the System Snapshot area, select **Export**.
3. Select **Save File** and select **OK**.

The snapshot data is downloaded to the computer as a .csv file.

Downloading the upgrade log files


Upgrade logs files can aid with the identification and correction of array issues.

1. Select **System Settings**.
2. In the Software area, select **Download Logs**.
3. Select **Save File** and select **OK**.

The log files are downloaded to the computer as a .csv file.

Viewing the temperature of the LED modules

To identify which tiles are reaching the temperature heat threshold, display the HeatMap test pattern.

1. Log into the web user interface.
2. In the toolbar, select **Identify Tiles** .
3. Select **HeatMap**.
4. To turn off the test pattern, select **Off**.

The tiles in the array are updated to display their current temperatures in Celcius.

You can also visualize the temperatures of the LED modules in the web user interface without disrupting the content displayed on the tiles.

1. Log into the web user interface.
2. Select the **Status** page.
3. On the Properties panel, select **Array Properties**.
4. Select **Temperature**.

The tiles in the array are updated to display the LED modules temperatures (by default in Celsius).

