



Installation and Setup Guide

020-001713-01

# **Velvet LED Display System**

**Core Series**

**CHRISTIE®**

## NOTICES

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- f) Problems or damage caused by misuse, improper power source, accident, fire, flood, lightning, earthquake or other natural disaster.
- g) Problems or damage caused by improper installation/alignment, or by equipment modification, if by other than Christie service personnel or a Christie authorized repair service provider.
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- j) For LCD projectors, the warranty period specified in the warranty applies only where the LCD projector is in "normal use" which means the LCD projector is not used more than 8 hours a day, 5 days a week.
- k) Except where the product is designed for outdoor use, problems or damage caused by use of the product outdoors unless such product is protected from precipitation or other adverse weather or environmental conditions and the ambient temperature is within the recommended ambient temperature set forth in the specifications for such product.
- l) Image retention on LCD flat panels.
- m) Defects caused by normal wear and tear or otherwise due to normal aging of a product.

The warranty does not apply to any product where the serial number has been removed or obliterated. The warranty also does not apply to any product sold by a reseller to an end user outside of the country where the reseller is located unless (i) Christie has an office in the country where the end user is located or (ii) the required international warranty fee has been paid.

The warranty does not obligate Christie to provide any on site warranty service at the product site location.

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Preventative maintenance is an important part of the continued and proper operation of your product. Failure to perform maintenance as required, and in accordance with the maintenance schedule specified by Christie, will void the warranty.


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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.

CAN ICES-3 (A) / NMB-3 (A)

이 기기는 업무용(A급)으로 전자파적합등록을 한 기기이오니 판매자 또는 사용자는 이점을 주의하시기 바라며, 가정 외의 지역에서 사용하는 것을 목적으로 합니다.

### ENVIRONMENTAL

The product is designed and manufactured with high-quality materials and components that can be recycled and reused. This symbol  means that electrical and electronic equipment, at their end-of-life, should be disposed of separately from regular waste. Please dispose of the product appropriately and according to local regulations. In the European Union, there are separate collection systems for used electrical and electronic products. Please help us to conserve the environment we live in

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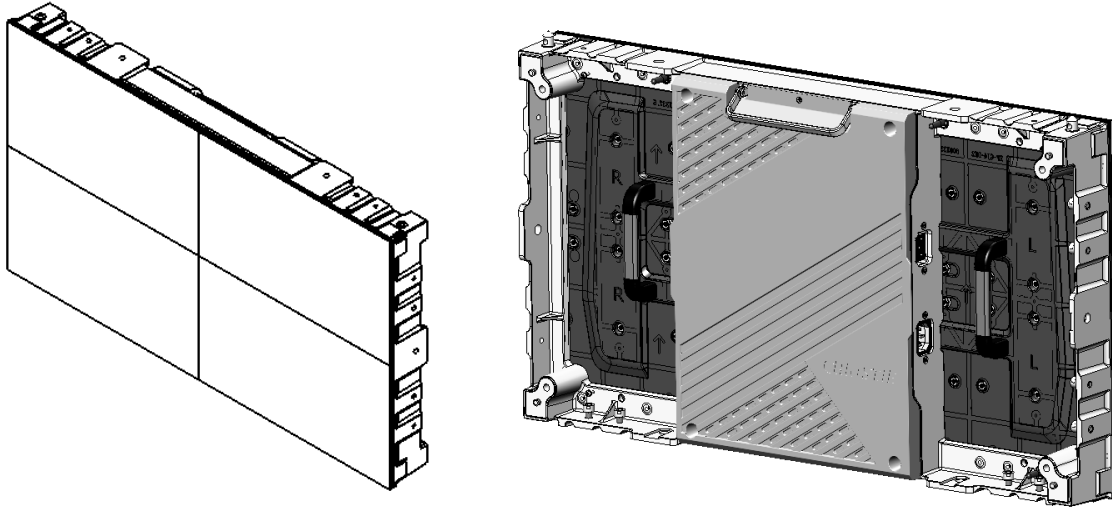
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# Product overview

Reach new heights with Christie® Velvet® Core Series. Featuring UHD resolution, extremely high fill-factor and advanced monitoring capabilities, the Core Series is a completely certified LED display wall solution providing 24/7 operation for critical viewing environments. With front-access serviceability, remote and redundant power supply and a slim ADA-compliant design, the Core Series delivers the highest performance possible for LED displays.



## Important safeguards

To prevent personal injury and to protect the device from damage, read and follow these safety precautions.

### General safety precautions

To prevent personal injury and to protect the device from damage, read and follow these safety precautions.



**Warning!** If not avoided, the following could result in death or serious injury.

- Observe all electrostatic precautions. Use a grounded wrist strap and insulated tools when handling, servicing, or cleaning electronic assemblies.
- A certified electrician must be present during installation to ensure the installation meets the local electrical code.
- Motors and fans may start without warning.



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

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

## Power Precautions

Ensure all power precautions are understood before installing the product.



**Warning!** If not avoided, the following could result in death or serious injury.

- After the replacement of the power supply, hi-pot and ground/earth bond tests must be performed. Only Christie qualified technicians who are familiar with the necessary precautions can perform these tests.
- A certified electrician must be present during installation to ensure the installation meets the local electrical code.
- Always connect the ground or earth first to reduce shock hazard.
- Do not return the current through the ground or earth.
- SHOCK HAZARD! The line cord has a maximum power carrying capability. For the maximum number of tiles that may be connected per daisy chain when connecting to the power supply, refer to the product specifications.
- SHOCK HAZARD! A permanent single-phase connection must be installed between the LED tile system and the AC power supply.
- FIRE AND SHOCK HAZARD! Do not operate the system unless certified power connections, providing the recommended voltage, are used.
- HIGH TOUCH CURRENT HAZARD! To ensure reliable grounding, the power connection must be made by using an industrial plug (pluggable type B), or be provided by a permanent connection.
- A 13-20 A double pole mains circuit breaker, certified for the applicable local regulations, is required. It must be part of the building installation and easily accessible.
- Do not use a wall breaker greater than 20 A. This could result in severe damage to the tile system in the event of a failure.



**Caution!** If not avoided, the following could result in minor or moderate injury.

- SHOCK HAZARD! The line cord has a maximum power carrying capability. For the maximum number of tiles that may be connected per daisy chain when connecting to the power supply, refer to the product specifications.
- SHOCK HAZARD! Only use the AC power cord provided with the product or recommended by Christie.
- TRIP OR FIRE HAZARD! Position all cables where they cannot contact hot surfaces, be pulled, be tripped over, or damaged by persons walking on or objects rolling over the cables.
- FIRE HAZARD! Do not use a power cord, harness, or cable that appears damaged.
- FIRE OR SHOCK HAZARD! Do not overload power outlets and extension cords.
- Only Christie qualified technicians are permitted to open product enclosures.

# Terminology

Learn about the components of the LED display system.

Term	Definition
Tile	A cabinet that contains several LED modules.
Array	A group of connected tiles that form a larger display.
Controller	Controls the LED display system array and video input source. Sometimes referred to as the control unit.
Pixel	A group of one red, one green, and one blue dot.
Subpixel	A pixel is comprised of three subpixels, one for each color: red, green, and blue. Each subpixel in LED display technology is an LED chip.
Pixel pitch	Specifies the distance from the center of one pixel to the center of the next pixel.
SMD package size	A technical supplier specification related to the pixel size, and denotes the size of the surface-mounted diode (SMD) itself.
Fill factor	Indicates the ratio between the area covered by pixels and the area not covered by pixels.

## Product documentation

For installation, setup, and user information, see the product documentation available on the Christie Digital Systems USA Inc. 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/2y75104> or, <https://www.christiedigital.com/en-us/digital-signage/products/led-tiles/core-series>.
  - Scan the QR code using a QR code reader.



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

## Related documentation

Additional information on the Core LED Display System is available in the following documents.

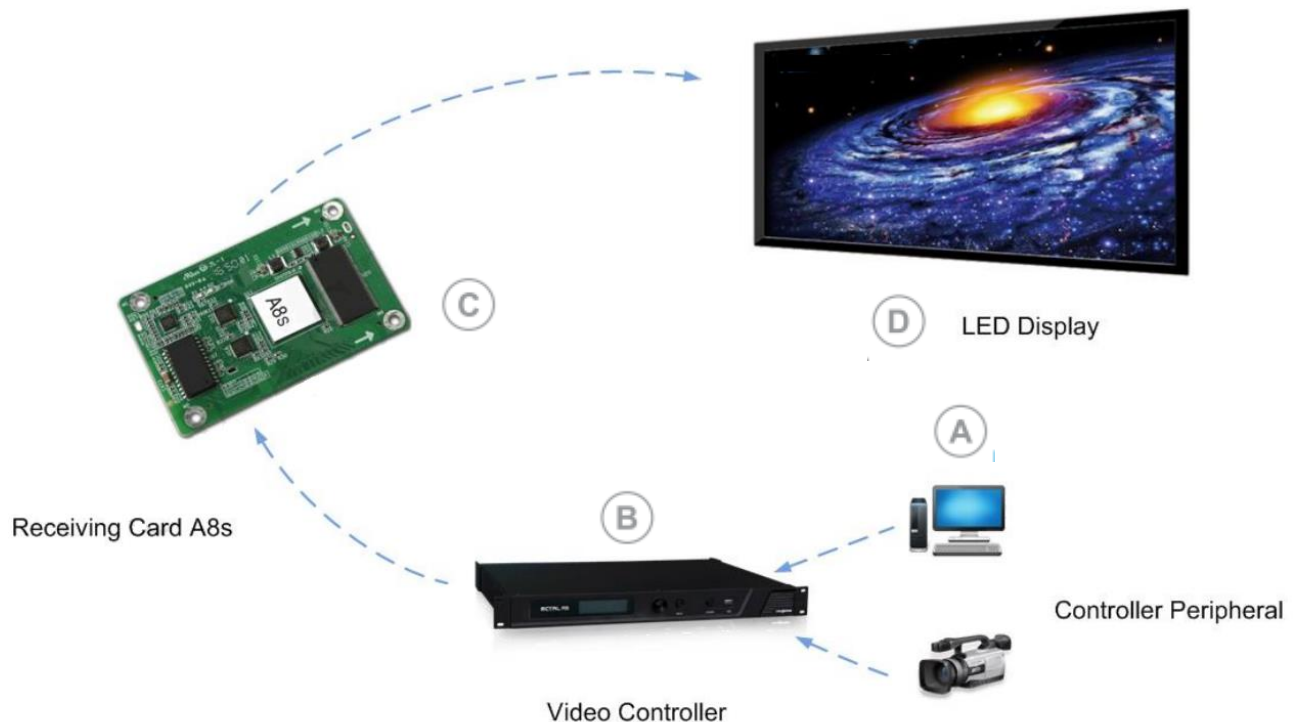
- *Core (Internal Power) Safety Guide (P/N: 020-001712-01)*
- *Core (Internal Power) Specifications Guide (P/N: 020-001737-01)*
- *E500 LED Display Controller Serial Commands Technical Reference (P/N: 020-102458-XX)*
- *E600 User Guide (P/N: 020-102717-XX)*

## Required tools

Make sure the following tools are available during the installation.

- Rubber hammer
- Utility knife
- Allen key
- Spirit level
- Tape measure
- Anti-static glove
- M3 socket wrench
- Torque driver
- Torque wrench
- Philips screwdriver, with magnetic tip
- Slotted screwdriver, with magnetic tip
- LED module removal tool (P/N: 003-006844-01)
- Mounting block template (P/N: 003-006842-01)
- Screws appropriate for the mounting surface. These screws are not provided.

## Typical LED solution





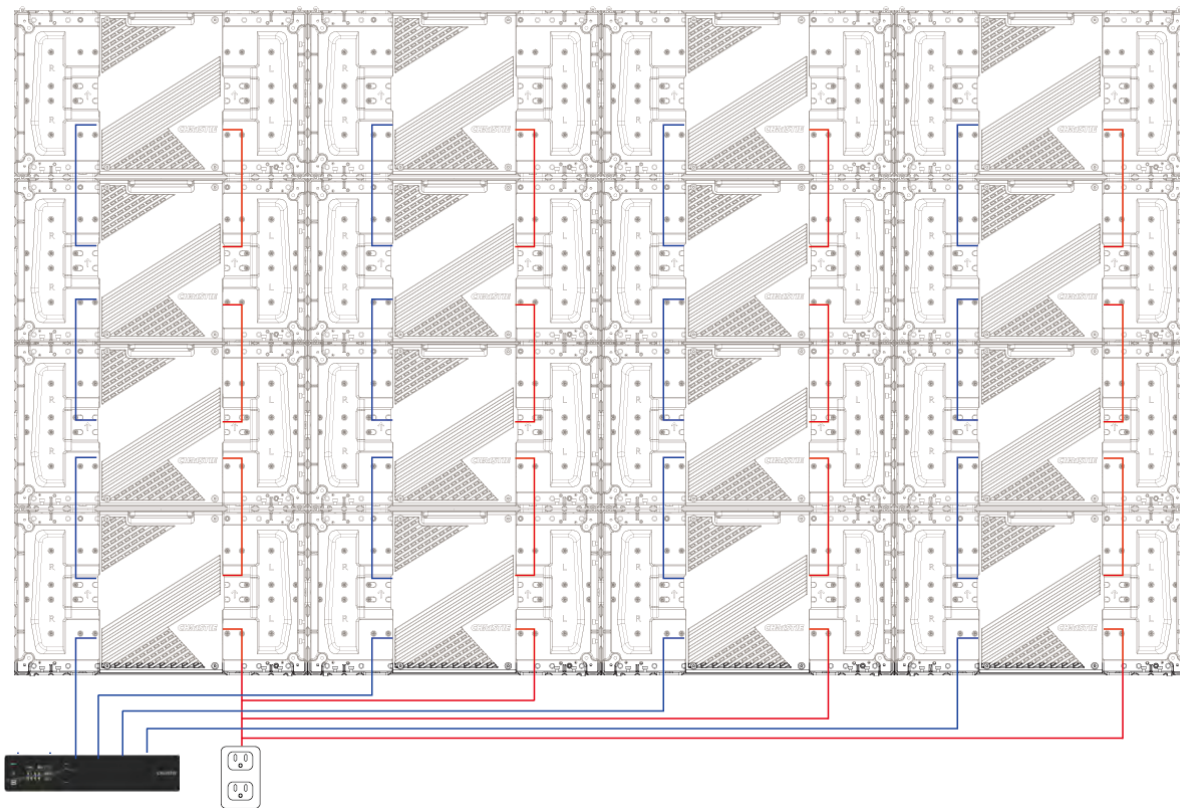
<b>A</b>	Media sources
<b>B</b>	E600 LED display controller
<b>C</b>	Receiving card
<b>D</b>	LED display

## Cable and controller layout and design

Before an array is constructed, you must plan the design layout of the tiles to make sure that the controller placement and the cabling layout support the overall tile design objectives.

The LED display system offers considerable flexibility in terms of the number of media sources that can be displayed and the overall resolution. Color and brightness matching, as well as other functions, may be performed across an entire array.

The video source connections between the cabinets are represented by the blue line. The power connections between the cabinets are represented by the red line.



## E600 Controller limitations

Each controller can support a maximum number of tiles, which varies depending on the pixel pitch of the tiles in the array. The configuration to achieve an HD display differs by the pixel pitch of the tile, as outlined in the table below.

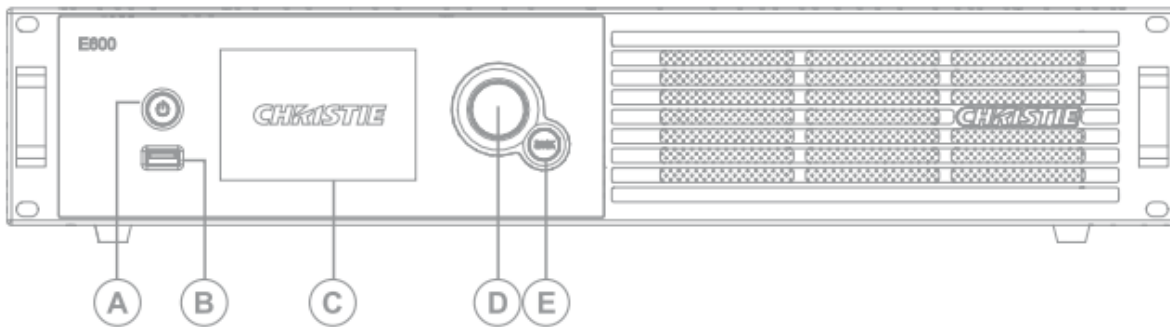
Tile	Pixel pitch	1080p array size	4K array size	8K array size	Maximum number of tiles per controller
LED012	1.25 mm	4x4	8x8	16x16	64
LED015	1.5625mm	5x5	10x10	20x20	100
LED018	1.875mm	6x6	12x12	24x24	144
LED025	2.5mm	8x8	16x16	32x32	256

## E600 controller interface and ports

Learn about the interface and physical ports on the E600 controller.

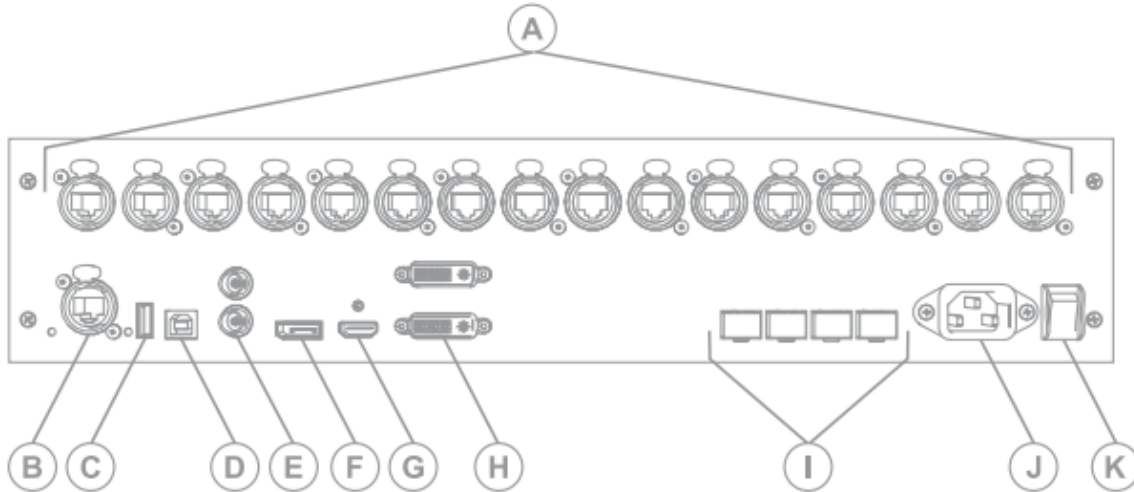
The E600 controller behaves as two independent controllers, displaying 3840 x 2160 pixels at 30 Hz with each virtual controller. The images of both DVI1 and DVI2 input sources can be displayed on the tiles simultaneously, but the inputs must be configured independently. DVI1 corresponds to Ethernet ports 1-8, and DVI2 corresponds to Ethernet ports 9-16.

### Front



<b>A</b>	Power button
<b>B</b>	USB interface for communication with a UDISK
<b>C</b>	LCD screen
<b>D</b>	Menu dial for interacting with the menu
<b>E</b>	Menu dial for interacting with the menu
<b>F</b>	Back button for exiting from the current operation or option in the menu

**Rear**



Inputs/Outputs		Description	
A	Outputs	BNC (Qty. 16)	16-channel Gigabit Ethernet interface, with each channel supporting up to 1G bandwidth Total loading capacity: 8.8 million pixels Low latency is not supported
B	Control	Ethernet	USB, RJ45 (with SNMP support), and USB cascading
C		USB Out	
D		USB In	
E	Genlock	BNC (Qty. 2)	Support Genlock IN & LOOP
F	Inputs	DisplayPort	Standard DisplayPort 1.2 input The maximum user-definable resolution is 7680 x 1080 @ 60Hz or 1080 x 6000 @ 60Hz.
G		HDMI	Standard HDMI 2.0 input Supports 8 bit, 10 bit, and 12 bit; refer to the table below.
H		DVI (Qty.2)	Dual-link DVI, user-definable resolution <ul style="list-style-type: none"> <li>• Horizontal resolution maximum: 3840 pixels</li> <li>• Vertical resolution maximum 3840 pixels</li> </ul>
I	OPT Output		Fiber optic ports for connecting to the FE600 fiber optic extender
J	Power		Power supply port: AC 100-240V~ 50/60hz
K			Power switch

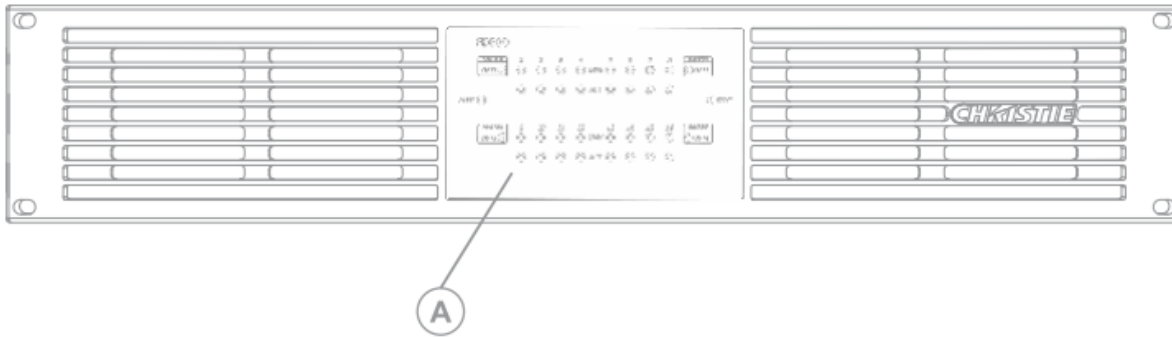
**HDMI 8 bit, 10 bit, and 12 bit support**

<b>Color depth</b>	<b>Input source</b>	<b>3840 x 1080 @ 60Hz (HDCP)</b>	<b>1920 x 1080 @ 60Hz (HDCP)</b>
<b>8 bit</b>			
RGB444	Yes	Yes	Yes
YCbCr444	Yes	Yes	Yes
YCbCr422	Yes	Yes	Yes
YCbCr420	Yes	Yes	Yes
<b>10 bit</b>			
RGB444	Yes	Yes	Yes
YCbCr444	Yes	Yes	Yes
YCbCr422	Yes	Yes	Yes
YCbCr420	Yes	Yes	Yes
<b>12 bit</b>			
RGB444	Yes	Yes	Yes
YCbCr444	Yes	Yes	Yes
YCbCr422	Yes	Yes	Yes
YCbCr420	Yes	Yes	Yes

# FE600 controller extender interface and ports

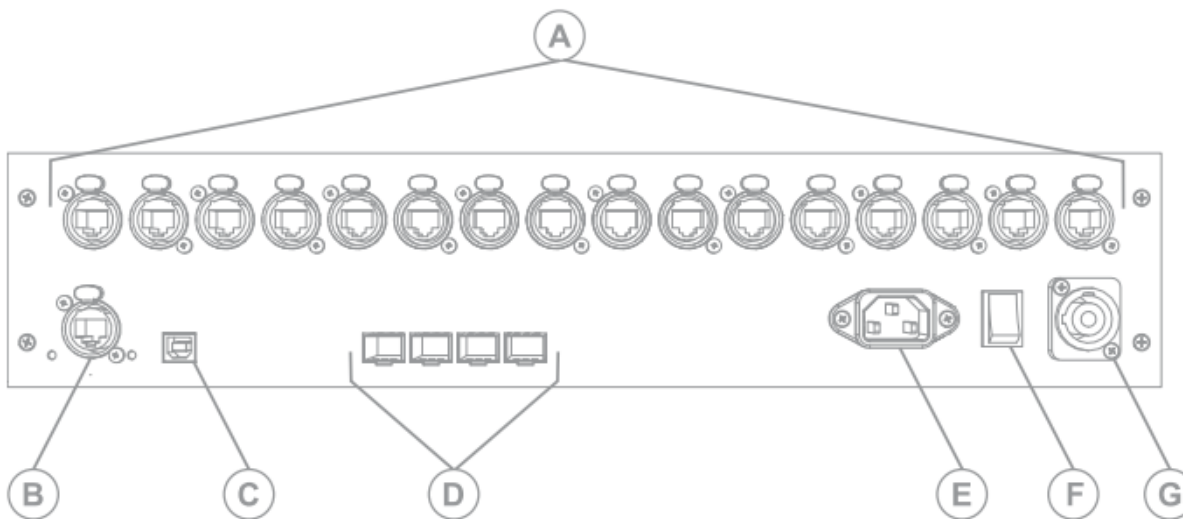
Learn about the interface and physical ports on the E600 controller.

## Front



<b>A</b>	Status display
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## Rear

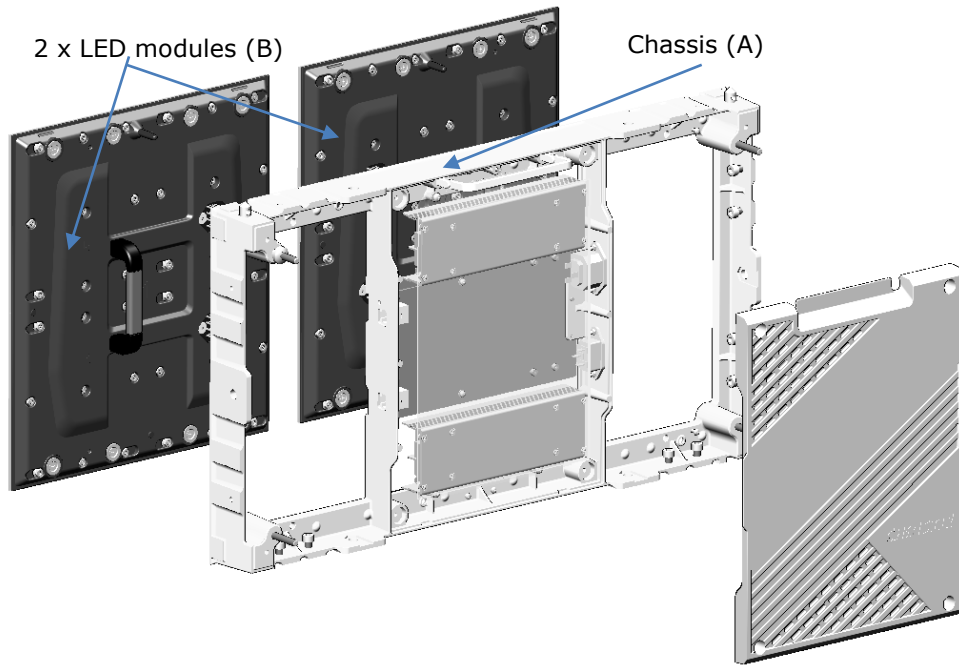


Inputs/Outputs		Description	
A	Outputs	BNC (Qty. 16)	16-channel Gigabit Ethernet interface, with each channel supporting up to 1G bandwidth Total loading capacity: 8.8 million pixels Low latency is not supported
B	Control	Ethernet	USB, RJ45 (with SNMP support), and USB cascading
C		USB In	
D	OPT Output (Qty. 4)		Fiber optic ports for connecting to the E600 controller

		<ul style="list-style-type: none"> <li>• OPT1 is used for transferring the data of port 1-8</li> <li>• OPT2 is used for transferring the data of port 9-16</li> <li>• OPT3 is the backup channel of OPT1</li> <li>• OPT4 is the backup channel of OPT2</li> </ul> <p>Either Gigabit Ethernet port or optical fiber port can be used at the same time, but cannot be used to connect devices simultaneously.</p>
E	Power	Power supply port: AC 100-240V~ 50/60hz
F		Power switch
G		Power supply port: AC 100-240V~ 50/60hz

# Installation and setup

The configuration of an array depends on the installation. Use the following instructions as a guideline only. Before you install an LED array, you must fully understand all site requirements and characteristics.



## Installing an LED array from the front

Perform the following steps when you install an LED array while facing the LED modules.

1. Install the mounting pads (on page 16).
2. Mount the tiles (A) (on page 20).
3. Connect the data cables (on page 21).
4. Connect the power cables between tiles (on page 22).
5. Install the LED modules (B) (on page 23).
6. Power on the array (on page 26).
7. Install the E600 controller software (on page 26).
8. Configure the E600 controller (on page 26).

The controller can be configured at any time. Before connecting the controller to the wall, Christie recommends updating the firmware and configuring the controller.

## Installing the mounting pads

If the tiles are being installed onto a flat wall surface, determine where the mounting pads should be installed, and attach them to the support structure.

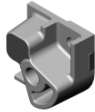


Warning! If not avoided, the following could result in death or serious injury.

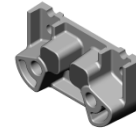
- External support for a display wall must be designed and implemented by a Christie qualified installer and must comply with local area regulations and safety standards.
- All display walls must have permanent external supports. The amount of external support required depends on the size of the display wall.
- A minimum of two people or appropriately rated lift equipment is required to safely lift, install, or move the product.

The mounting pads are available in four different configurations:

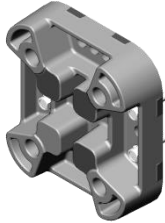
Corner pads with one hole



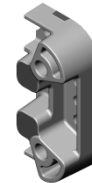
Exterior top or bottom edge pads with two holes



Interior pads with four holes

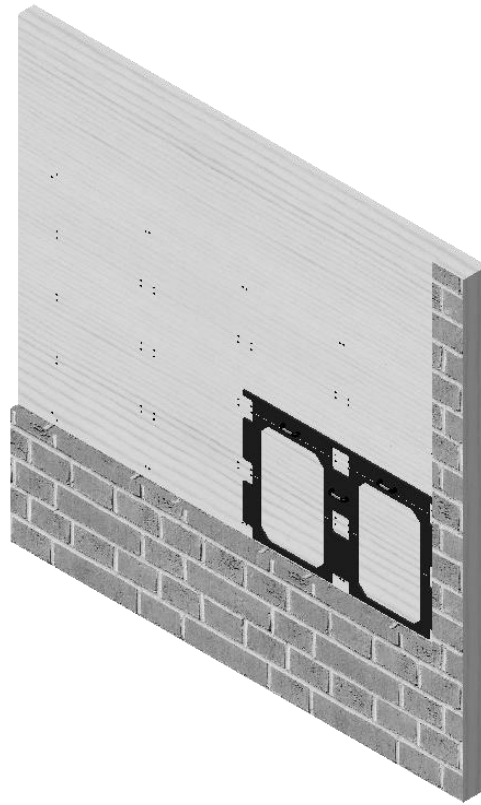


Exterior side pads with two holes

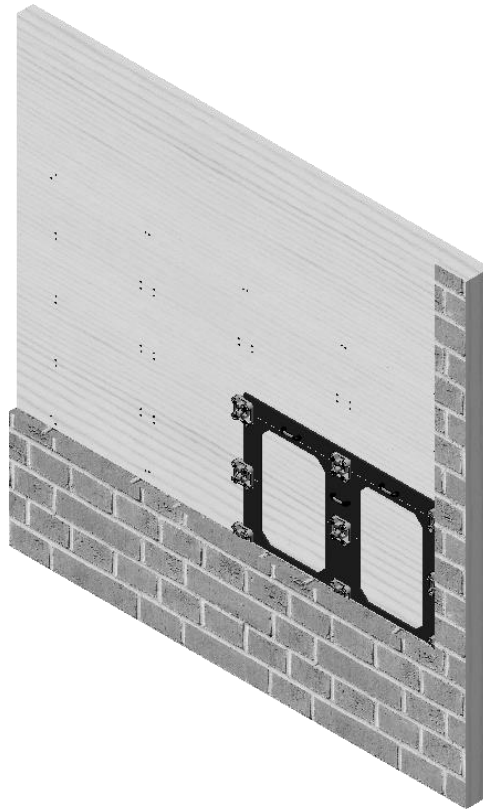


1. If the tiles are being mounted on an external support structure, ensure the external support structure is anchored to the wall and/or to the floor.  
The design and anchoring of the LED display structure is not the responsibility of Christie Digital Systems USA Inc. Contact a Christie representative for structure design options.
2. Determine where the mounting pads should be installed.
  - Find the center of the bottom of the display area.
  - Position the mounting template with the bottom left template hole centered on the point identified in step 2a.

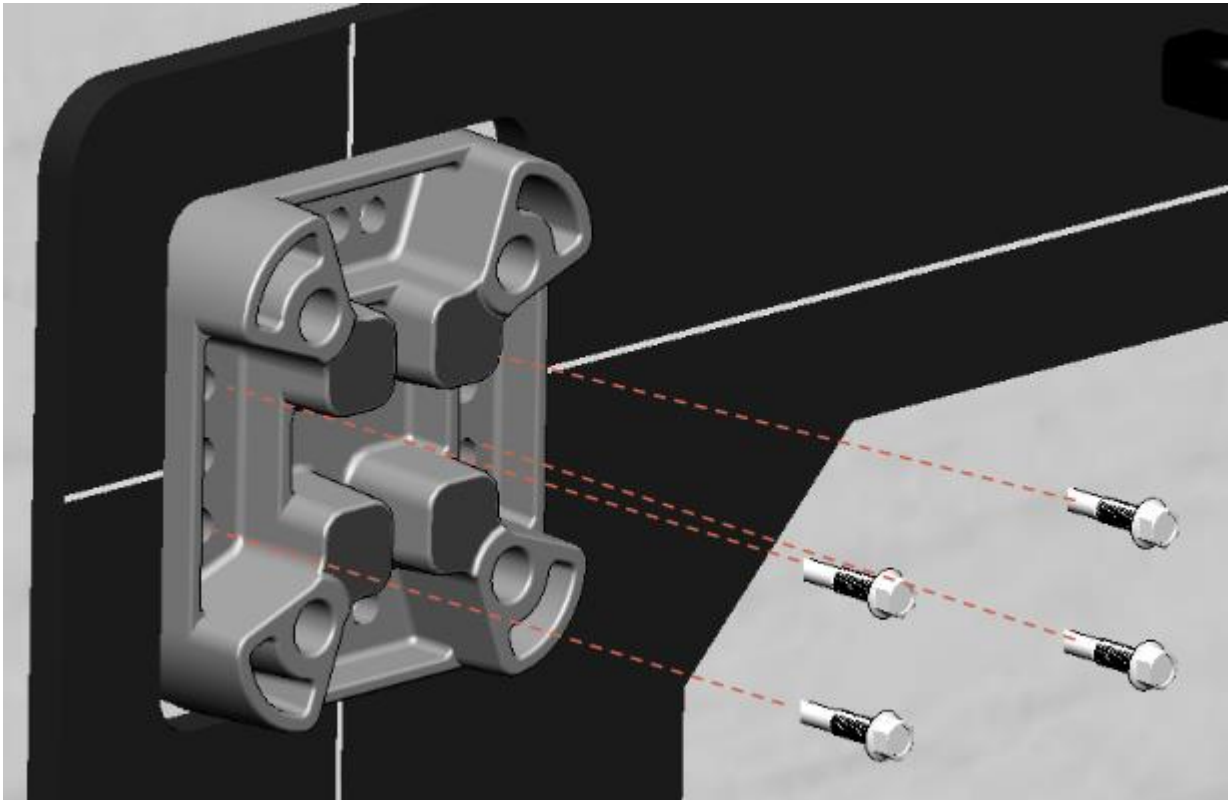




- Level and hold the mounting template on the support structure.
3. Install the mounting pads.
- Place the mounting pads inside the template holes, and secure them to the support structure.
    - For installation onto a steel structure, tighten the M6 screws to a torque of 11.5 Nm (15.05 lbs.in).
    - For installation onto a wooden surface:M6 wood screws—Tighten to a torque of 11.5 Nm (15.05 lbs.in)

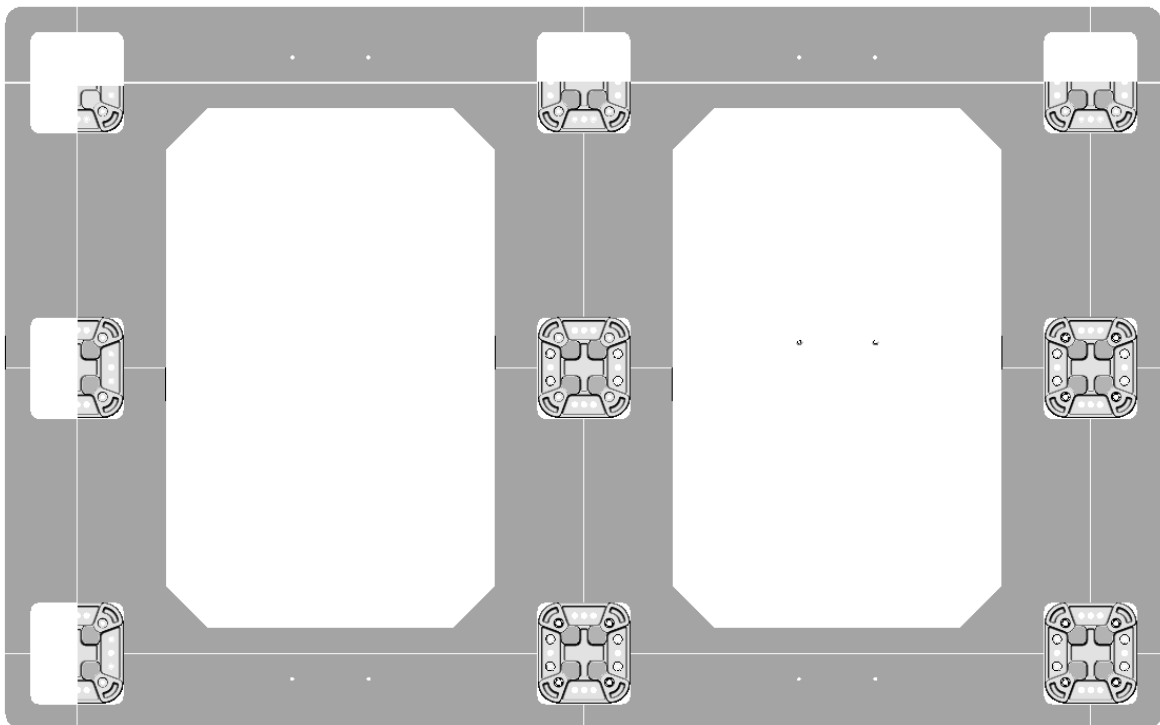


- Install any exterior edge or corner mounting pads in the proper location inside the template holes, pushing the pads as close to the edge of the template holes as possible. For example, install the mounting pads for the bottom left corner tile in the bottom right corner of the template hole.



The corners should line up with the center of the mounting pads.

The sides of the tiles should line up with the center of the mounting pads.



4. Remove the template from the mounting pads.
5. To install the remaining mounting pads for the array, place the template over already installed mounting pads so three of the template holes have mounting pads, and the remaining holes are empty. Repeat steps 2 to 4 for all other rows in the array.

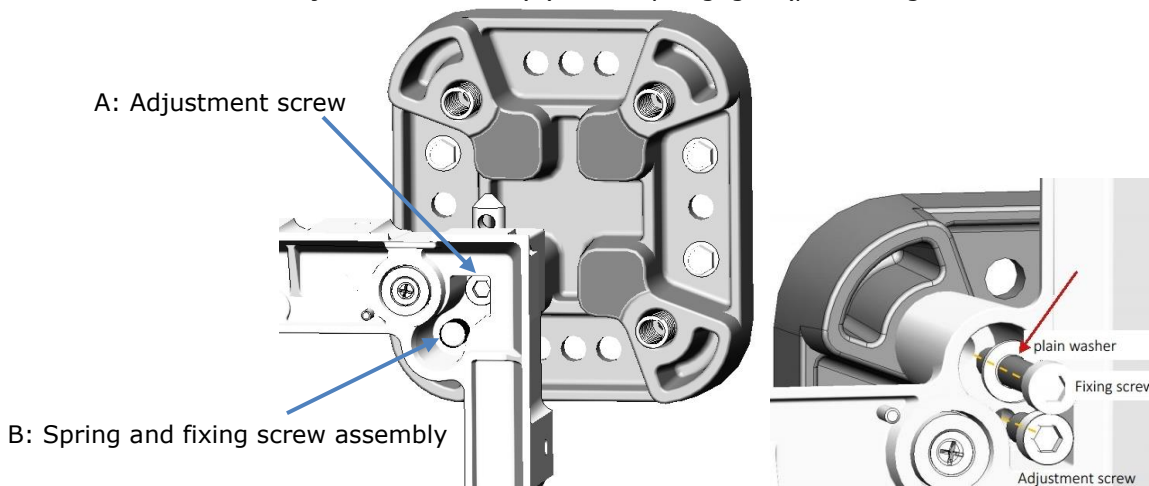
## Mounting the tiles

Install the tiles in the array row by row. Do not attempt to construct the array column by column.



Warning! If not avoided, the following could result in death or serious injury.

- External support for a display wall must be designed and implemented by a Christie qualified installer and must comply with local area regulations and safety standards.
  - All display walls must have permanent external supports. The amount of external support required depends on the size of the display wall.
  - A minimum of two people or appropriately rated lift equipment is required to safely lift, install, or move the product.
1. If present, remove the metal plates that cover all the external pass-through holes in the tile chassis, including the plate surrounding the power and data ports.
  2. Ensure the adjustment screws (A) are fully engaged (protruding 3mm from the tile chassis).



3. Insert the springs (B) and plain washer into the mounting pads.
4. Attach the first tile in the center of the bottom row to the mounting pads in the four mounting points. Ensure the M6 screws (B) have at least three full thread engaged into the tile.
5. To install the second tile in the row, repeat steps 1 to 3.
6. Adjust the spacing between the tiles, and ensure there are minimal gaps between the LED modules of each tile.

To determine if adjustments are needed between the chassis, or to see how close the LED modules are, it may be necessary to install and remove the LED modules multiple times.

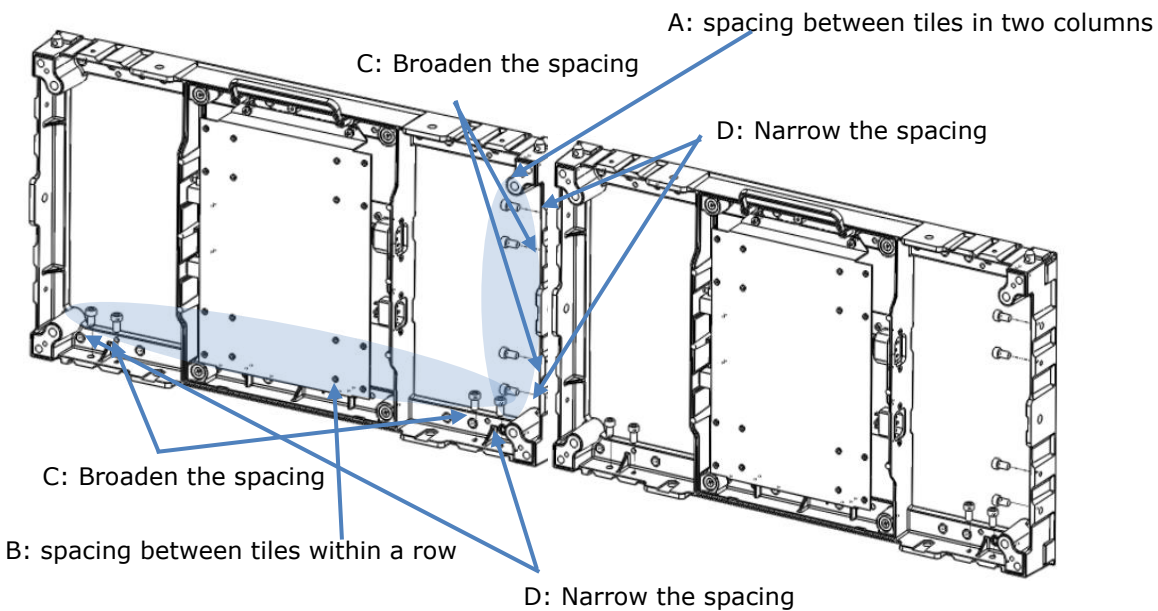
If the surface edges of the LED modules are not smooth, adjust the tightness of the fixing screw attaching the chassis to the mounting pads. Loosen the adjustment screw before tighten the fixing screw that compresses the spring and then presses the tile chassis against the wall more closely.

7. Repeat steps 1 to 5 for all the remaining tiles in the bottom row.
8. After the bottom row is installed and the gaps are adjusted, repeat steps 1 to 6 for the remaining rows.

## Adjusting the spacing between tiles

If there are gaps between the LED modules of different tiles, or the LED modules cannot be installed, adjust the spacing between the tile chassis.

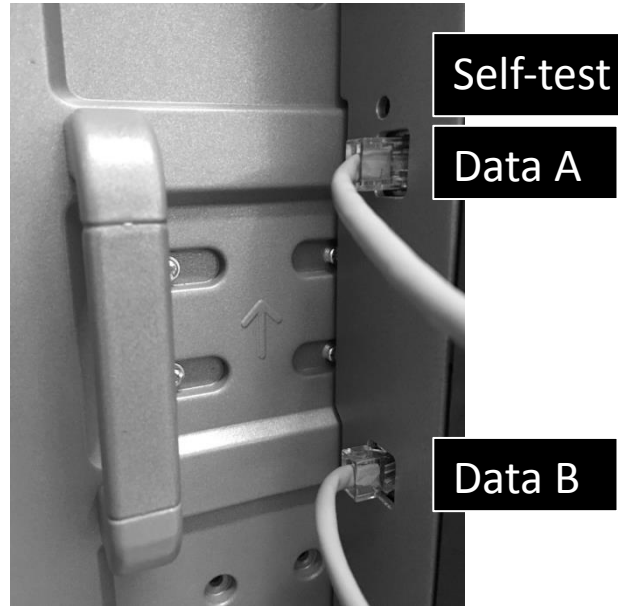
1. Ensure there are minimal gaps between the LED modules of each tile.
  - To adjust the spacing between tiles in two columns, change the tightness of the screws (A).
  - To adjust the spacing between tiles within a row, change the tightness of the screws (B).



- To broaden the spacing, protrude the screw (C) by screwing it clockwise.
  - To narrow the spacing, protrude the screw (D) by screwing it clockwise.
2. If the surface edges of the LED modules are not smooth, adjust the depth of the panel by changing the tightness of the screws attaching the tile to the mounting pads.
  3. To test the spacing between tiles, replace the LED modules.

## Connecting the data source cables

1. Connect the data cables between the tiles in the array.



2. Connect an Ethernet cable from the first tile in the array to the controller.

## Connecting the power cables

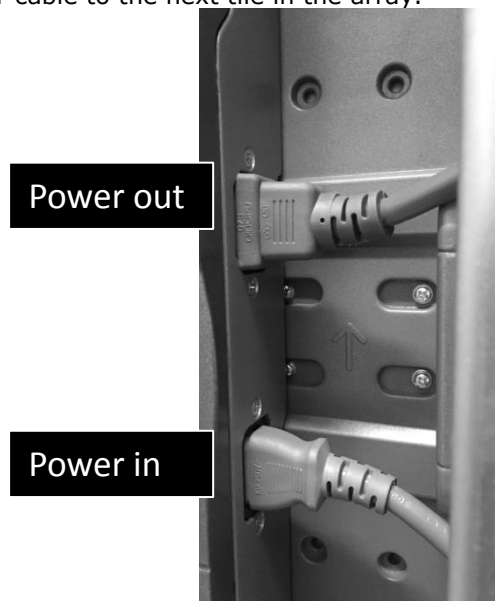
Connect the power cables between the tiles in the array, column by column.



Caution! If not avoided, the following could result in minor or moderate injury.

- SHOCK HAZARD! The line cord has a maximum power carrying capability. For the maximum number of tiles that may be connected per daisy chain when connecting to the power supply, refer to the product specifications.

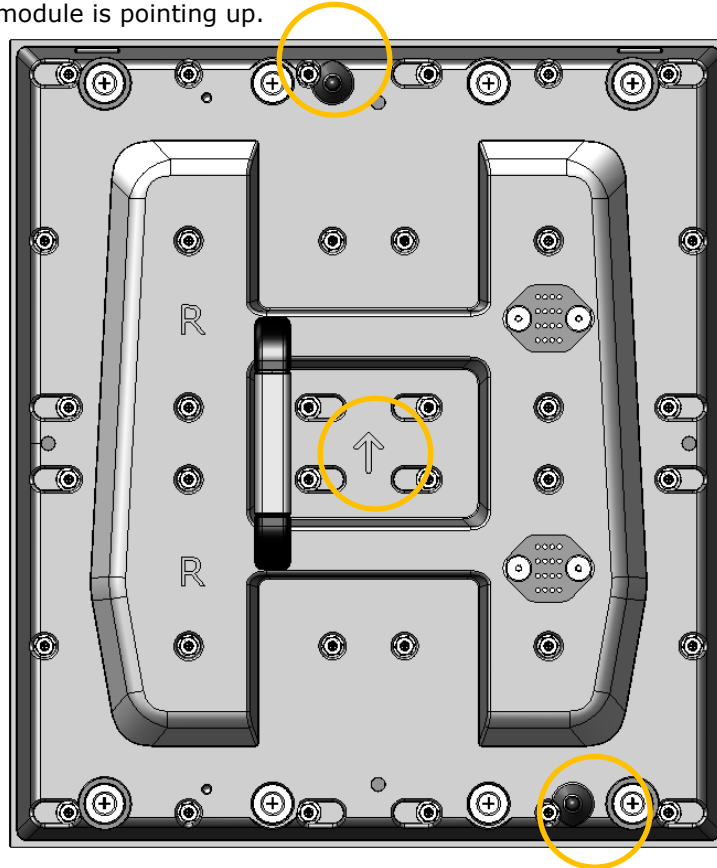
1. Connect the power cable to the next tile in the array.



2. Connect the cabinet power cable to the wall outlet.

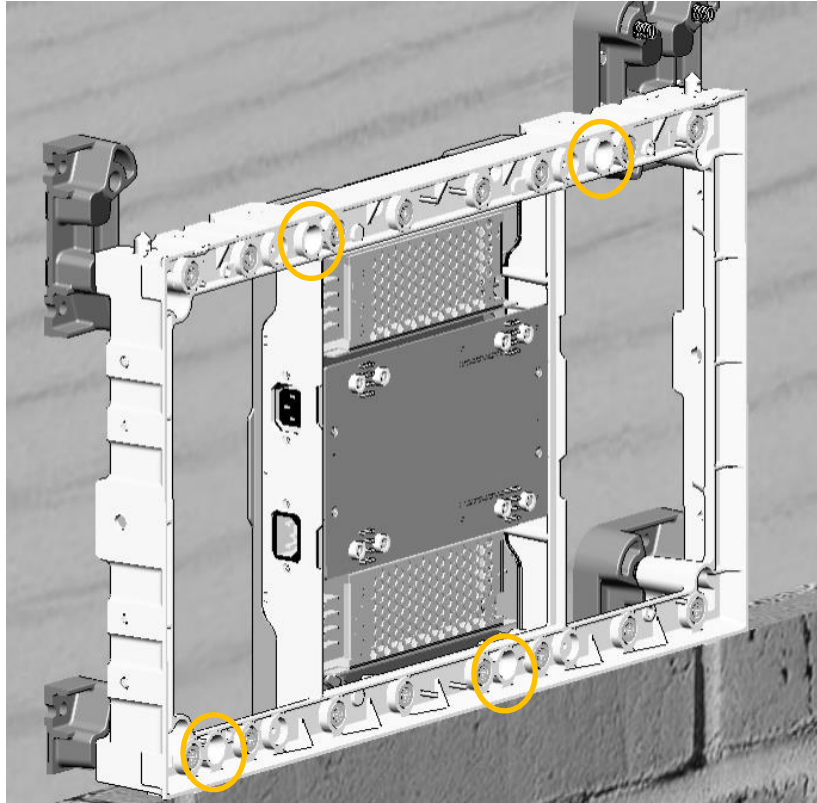
## Installing the LED modules

1. For the LED modules are distinctive for installing in the left/right of a tile.
2. Line up the LED module with the alignment pins in the alignment recesses, ensuring the arrow on the back of the LED module is pointing up.



3. Set the LED module into place on the alignment recesses.  
If the LED module does not fit back into place, or there is a gap between the LED modules of two tiles, adjust the spacing between the tiles.





## Powering on the array

Turn on each component in the array in the order below.

1. Start the computer that is the video source.
2. Plug the tiles into the wall.
3. Turn on the controller.
  - On the rear of the controller, turn the power switch to On.
  - On the front of the controller, press the Power button.

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Turn on each component in the array in the order below.

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## Connecting to video sources

An LED array requires a controller to display content on the tiles.

1. Connect the data cable from the first tile in the array to the controller.
2. Connect the HDMI or DVI output from the video source (computer or media player) to the appropriate input port on the controller.

The E600 controller behaves as two independent controllers, displaying 3840 x 2160 pixels at 30 Hz with each virtual controller. The images of both DVI1 and DVI2 input sources can be displayed on the tiles simultaneously, but the inputs must be configured independently.

DVI1 corresponds to Ethernet ports 1-8, and DVI2 corresponds to Ethernet ports 9-16.

3. Power on the array.  
After the controller is connected and powered up, the video content is available as long as the video source is connected

# Configuring the E600 controller

After installing the tiles and connecting all cables, complete the E600 controller initial configuration. For additional configuration settings, refer to E600 User Guide (P/N: 020-102717-XX).

## Installing/Accessing the E600 controller software

The E600 controller software controls the configuration of the array.

1. On the Christie website, navigate to the E600 product page.
2. Switch to the **Downloads** tab and click **Software Downloads**.
3. Download and unzip the Christie LED Control Unit E600 Software zip file.
4. Double-click the `Christie Controller Software Setup <version>.exe` file, and follow the on-screen instructions and install the E600 controller software.

## Logging into the controller software

To access the configuration features of the controller software, log in to the system.

1. Ensure the computer running the controller software is on the same network at the controller.
2. Connect a USB cable between the controller and the computer running the controller software.
3. Launch the controller software and log in as the administrator.
  - Click **User > Advanced User Login**.
  - Login with the password **admin**.

## Adjusting the initial picture coordinates

Adjust the initial coordinates of the pictures on the screen.

1. On the front of the controller, press the menu dial.  
When using the menu dial, rotate the dial to move through the items in the menu. To select a menu item or to set a value, push in the menu dial.  
To return to the previous menu, press the button to the bottom right of the menu dial.
2. Select **Advanced Settings > Image Offset**.
3. Select **Start X** and push the menu dial.
4. Rotate the dial and set the horizontal offset.
5. Select **Start Y** and push the menu dial.
6. Rotate the dial and set the vertical offset.

## Testing the communication between the controller and tiles

Verify that the array is connected to and recognized by the E600 controller.

1. Connect the USB cable between the controller and the computer running the E600 controller software.
2. Launch the E600 controller software and log in as the administrator.
  - Click **User> Advanced User Login**.
  - Login with the password **admin**.
3. To confirm the display is connected to and recognized by the controller, in the Local System Info area, ensure **Control System** has a value of **1**.  
If the controller is not recognizing the tiles, select **System> Reconnect**.
4. Select **Screen Control**.
5. To confirm the controller is communicating with all tiles, select a color from the Self Test list and click **Send**.  
If the controller is communicating with all the tiles, each display changes to the selected color.
6. Reset the Self Test to **Normal** and click **Send**.
7. Click **Close**.

## Reviewing the tile configuration

Review the tile configuration reported in the E600 controller software.

1. Connect a USB cable between the controller and the computer running the controller software.
2. Launch the controller software and log in as the administrator.
  - Click **User> Advanced User Login**.
  - Login with the password **admin**.
3. Click **Screen Configuration**.
4. Select **Configure Screen** and click **Next**.
5. Switch to the **Screen Connection** tab.
6. Click **Read from HW**.
7. Review the configuration of the tiles in the array, and modify as needed.  
The cable layout for the tiles in the array is identified with an **S** where the first cable starts, and the green line shows the path of the daisy chain of cables. **E** identifies the end of the daisy chain.

## Setting the input resolution

Set the resolution for the home page display of interface, which must be consistent with the output resolution of the video source.

1. Connect a USB cable between the controller and the computer running the controller software.

2. Launch the controller software and log in as the administrator.
  - Click **User> Advanced User Login**.
  - Login with the password **admin**.
3. Click **Screen Configuration**.
4. Select **Configure Screen** and click **Next**.
5. Switch to the **Sending Card** tab.
6. In the Set the Sending Card Display Mode section, select the resolution of the video source from the Resolution list.

Tile	Native resolution
LED012	480x270
LED015	384x216
LED018	320x180
LED025	240x135

7. Click **Set**.
8. Click **Save**.

## Locking and unlocking the controller

Disable the ability to navigate the menu and modify the settings from the front of the controller.

1. To disable access to the controller menu, press and hold the menu dial and back button until the controller screen flashes.
2. To re-enable access to the controller menu, press and hold the menu dial and back button for approximately 15 seconds.
3. Test if the controller is unlocked by using the menu dial to navigate the menu.  
If the controller is still locked, press and hold the menu dial and back button for a longer period of time.

## Upgrading the firmware on the E600 controller

When a new version of the software is released, the E600 controller must be upgraded.

1. Download the firmware file to a computer that will be connected to the controller for the upgrade, or to a USB key.
2. Unzip the downloaded firmware file.
3. Connect an HDMI or Ethernet cable between the computer running the controller software and the controller.
4. Launch the E600 controller software and log in as the administrator.
  - Click **User> Advanced User Login**.

- Login with the password **admin**.
5. In the blank area beside the Monitoring icon, right-click and type **666888**.
  6. In the Program Path area, browse to the location of the unzipped download, and select the firmware upgrade folder.
  7. Click **Update**.
  8. In the confirmation message, click **Yes**.  
As the firmware upgrade is installed, the controller screen and controller software both display a progress indicator. After the upgrade is complete, the controller reboots.  
To verify the upgrade was successful, in the top left corner of the controller display verify the version number displayed is 1.0.5.9.

# Maintaining the LED panels

Learn the information and procedures for performing maintenance on the Core (Internal Power) LED Display System.

## Cleaning the LED panels

Learn how to clean the Velvet CorePlus (Internal Power) LED Display System 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.
2. To remove loose particles between the LEDs, use filtered compressed air. Ensure the air compressor does not spray oil or condensation.

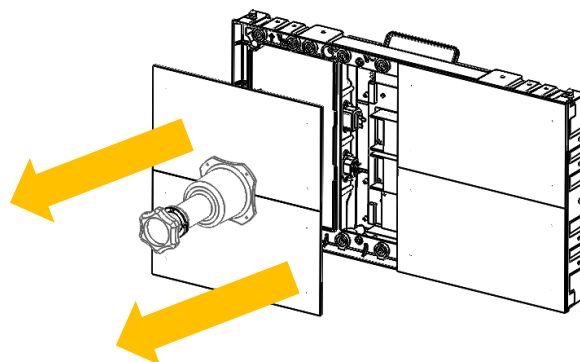
Do not use the following products when cleaning the panels:

- Compressed air cans
- Liquids
- Abrasive cloths

## LED Module Replacement

Remove the LED modules using the removal tool.

1. Place the removal tool against the LED module with the magnet retracted.
2. Spin the lever to release the magnet slowly.
3. Pull the LED modules vertically off the tile.



# Regulatory

This product conforms to the latest regulations and standards related to product safety, environmental requirements, and electromagnetic compatibility (EMC).

## Safety

- cTUVus per UL 60950-1 - Information Technology Equipment – Safety – Part 1: General Requirements
- IEC 60950-1 IEC/EN 60950-1 - Information Technology Equipment – Safety – Part 1: General Requirements
- EN 60950-1
- IEC 62471-1 - Photobiological safety of lamps and lamp systems

## Electro-magnetic compatibility

### Emissions

- FCC CFR47, Part 15, Subpart B, Class A - Unintentional Radiators
- CAN ICES-003 (A)/NMB-003 (A) - Information Technology Equipment (In Apparatus) - Limits and Methods of Measurement
- CISPR 32/EN 55032, Class A
- IEC 61000-3-2/EN61000-3-2: Limits for Harmonic Current Emissions

### Immunity

- IEC 61000-3-3/EN61000-3-3
- IEC/EN61000
- IEC 61000-4-2/EN61000-4-2
- IEC 61000-4-3/EN61000-4-3
- IEC 61000-4-4/EN61000-4-4
- IEC 61000-4-5/EN61000-4-5
- IEC 61000-4-6/EN61000-4-6
- IEC 61000-4-8/EN61000-4-8
- IEC 61000-4-11/EN61000-4-11

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For the most current technical documentation, visit [www.christiedigital.com](http://www.christiedigital.com).



