

# Mirage WQ-L

Setup Guide

020-101390-01



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## NOTICES

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Canadian manufacturing facility is ISO 9001 and 14001 certified.

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- b. Problems or damage caused by combination of a Product with non-Christie equipment, such as distribution systems, cameras, video tape recorders, etc., or use of a Product with any non-Christie interface device.
- c. Problems or damage caused by the use of any replacement part or component purchased or obtained from an unauthorized distributor of Christie, replacement parts or components including, without limitation, any distributor offering Christie replacement parts or components through the internet (confirmation of authorized distributors may be obtained from Christie).
- d. Problems or damage caused by misuse, improper power source, accident, fire, flood, lightning, earthquake or other natural disaster.
- e. 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.
- f. Problems or damage caused by use of a product on a motion platform or other movable device where such product has not been designed, modified or approved by Christie for such use.
- g. Problems or damage caused by use of a projector in the presence of an oil-based fog machine.
- h. Failure due to normal wear and tear.

### PREVENTATIVE MAINTENANCE

Preventative maintenance is an important part of the continued and proper operation of your product. Please see the Maintenance section for specific maintenance items as they relate to 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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# Safety Warnings and Cautions



Always power down and disconnect/disengage power before servicing or cleaning. Failure to comply could result in death or serious injury.



Risk Group 2: Possible hazardous optical radiation emitted from this product. Do not stare at operating lamp. May be harmful to the eyes. Failure to comply could result in minor or moderate injury.



Laser radiation is emitted from the laser diode in the remote. Do not look directly into the laser beam. Failure to comply could result in minor or moderate injury.

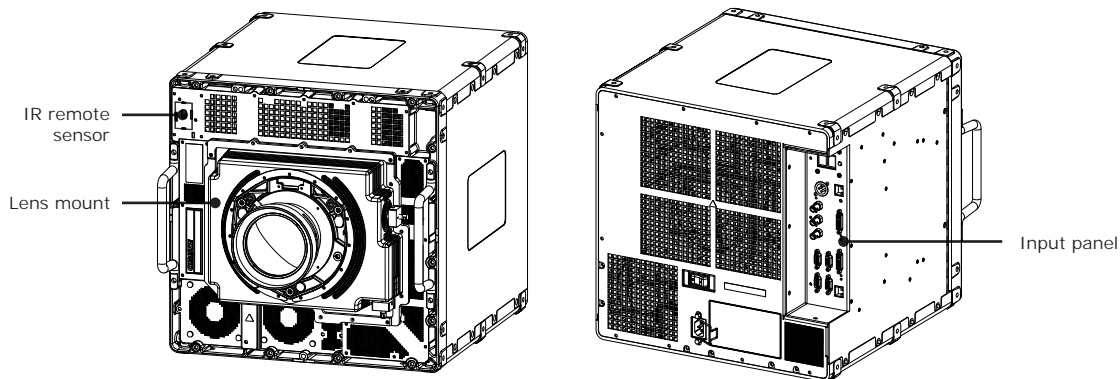


Failure to comply with the following may result in equipment damage:

- All installation procedures must be performed by accredited service technicians.
- The projector must be operated in an environment that meets operating specifications. For details, see the [Mirage WQ-L User Manual \(P/N: 020-101372-xx\)](#).

# Projector Overview

Mirage WQ-L projectors are professional quality WQXGA data projectors featuring the latest in DLP® display technology to achieve high brightness, high resolution video projection images. The modular design of the Mirage WQ-L projectors makes them an ideal choice for the demanding needs of visualization applications.



## Key Features

- Native WQXGA, 2560 x 1600 resolution single-chip DLP® light engine
- Solid-state (LED) illuminator
- ArrayLOC™ feature to maintain uniform color and brightness across multiple projectors
- Display of stereoscopic 3D video
- Two dual-link DVI inputs (digital only)
- Adjustable visible illumination levels
- Warp and blend of projected images
- Operates in any orientation
- Ruggedized for operation on motion platforms
- Compatible with Matrix StIM projection lens suite
- Air-cooled



# List of Components



A User Kit is supplied with each projection system. Additional User Kits can be purchased separately (P/N: 130-103105-xx).

Make sure these components were received with the projector:

- Warranty Card
- Web Registration Form
- Line Cord (appropriate for region)

# Purchase Record and Service Contacts

To assist with the servicing of your projector, fill out the following information and keep with your records.

Purchase Record	
Dealer	
Dealer or Christie Sales/Service Contact Phone Number	
Serial Number	
Purchase Date	
Installation Date	

\* The serial number can be found on the license label.

Ethernet Settings	
Default Gateway	
DNS Server	
IP Address	
Subnet Mask	

# Unpack the Projector

**CAUTION**

The projector should be lifted by 2 people. Use the designated handles to help lift and support the projector. Use a stable cart to transport the projector. Failure to comply could result in minor or moderate injury.

**NOTICE**

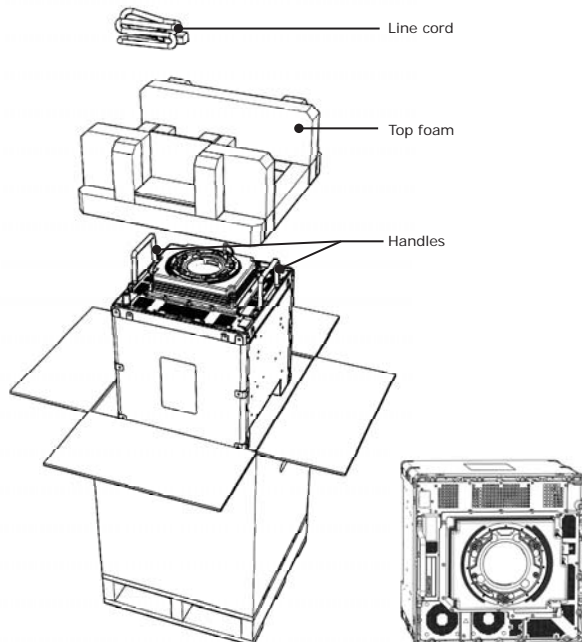
Do not place the projector onto a surface with the line cord retainer side down. Failure to comply may result in damage to the line cord retainer.



Christie recommends that the packaging material for at least 1 projector is saved in case one needs to be shipped for service.

The projector is shipped assembled with the projection lens shipped separately. Install the lens once the projector is fully assembled and in its final position. See [Install the Lens on page 6](#).

1. Remove the line cord from the packaging.
2. Remove the top foam from the box.
3. Open the bag and lift the projector up using the 2 handles. It is recommended that 2 people remove the projector, each holding onto a handle.
4. Rotate the projector 90° and place on a flat surface.



Place on a flat surface in the orientation shown.  
Do not place the projector onto a surface with the line cord retainer side down.

# Mount the Projector

**CAUTION**

Do not stack units. Failure to comply could result in minor or moderate injury.

**NOTICE**

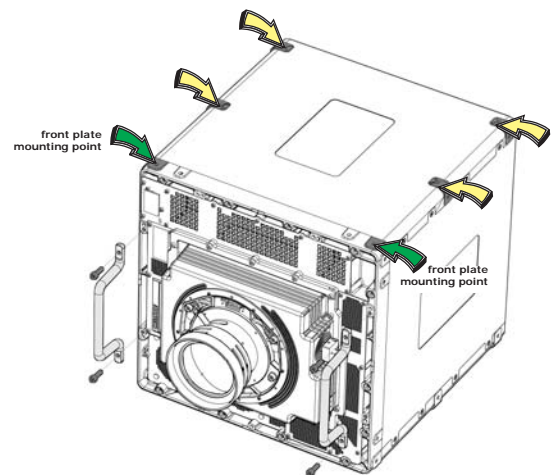
Failure to comply with the following may result in equipment damage:

- Air flows in through the front of the projector and out the rear of the projector. Insufficient airflow can cause the projector to overheat during operation and/or place stress on the source connections. When mounting the projector allow for up to 1100 CFM of airflow through the projector. Ambient temperature must stay below 40° C (95° F).
- Inlet air temperature must be below 40° C (95° F).
- Keep the projector away from all devices radiating electromagnetic energy. For example, motors and transformers, speakers, power amplifiers, and elevators.



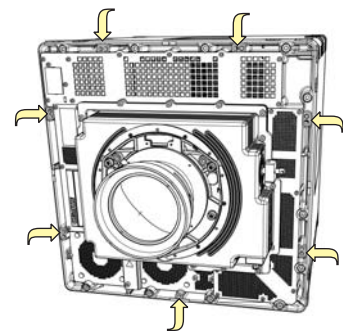
The mounting support system and the mounting surface must be evaluated and accepted by local authorities and must adhere to local standards and safety regulations.

Mounting points are available on all 4 sides of the projector, including the front face. Each side has 6 mounting points, 2 of which are on the front plate. The front plate has an additional 7 front facing mounting points. Christie recommends that a minimum of 4 mounting points are used in any installation, with at least 1 of the mounting points being on the front plate. A 10mm thread engagement and a minimum torque of 30 in.-lbs (3.5 Nm)/maximum torque of 35 in.-lbs (4 Nm) is recommended. For some installations it may be necessary to remove the front handles once the projector is in its final location. To remove the handles use a 5 mm hex driver to loosen the 2 socket head cap screws.



## Mount a Ruggedized Kit (optional)

If you are mounting a ruggedized kit use the 7 designated mounting points on the front of the projector. The handles will need to be removed to access 4 of these points. Christie does not provide the ruggedized kit or the hardware to secure a ruggedized kit. Christie recommends using M6 hardware with a 10 mm thread engagement, and a maximum torque of 4 Nm.



# Install the Lens



Risk Group 2: Possible hazardous optical radiation emitted from this product. Do not stare at operating lamp. May be harmful to the eyes. Failure to comply could result in minor or moderate injury.

## NOTICE

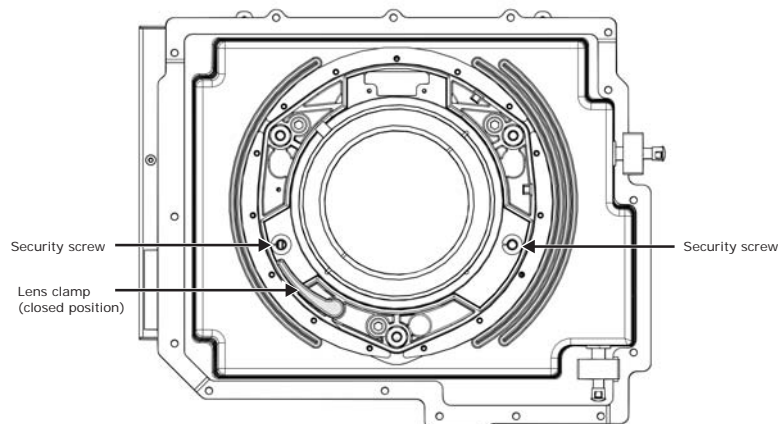
Failure to comply with the following may result in equipment damage:

- Do not insert the lens at an angle.
- Always replace the lens plug when transporting to protect the optical components.
- Always place the lens cap onto the lens when transporting to avoid scratching the lens.
- Never operate the projector without a lens.
- A small amount of dust or dirt on the lens has minimal effect on image quality. To avoid the risk of scratching the lens, clean only if absolutely necessary. For cleaning instructions, see the [Mirage WQ-L User Manual \(P/N: 020-101372-xx\)](#).



For some installations security screws are required on the lens.

1. Remove the lens plug from the lens opening.
2. Remove the rear lens cap from the lens.
3. Rotate the lens clamp to the open position.
4. Remove and retain the (2) security screws from the lens mount.
5. Align the lens interface plate with the lens mount. Fully insert the assembly straight into the lens mount opening without turning.
6. Rotate the lens clamp to the closed position before fastening the security screws.



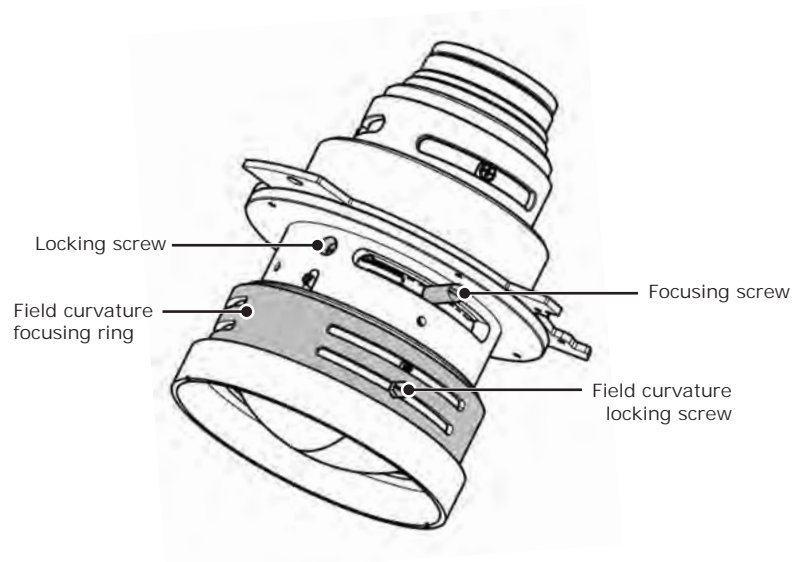
## Adjust Lens Focus



Failure to properly adjust lens focus results in an image that is not uniformly focused and contains geometric distortion.

This section describes best practices for lens focus adjustment of the 0.68:1 WQXGA lens (P/N: 125-103105-xx), the 0.80:1 WQXGA lens (PN: 125-105107-xx), and the 1.28 - 1.71:1 WQXGA lens (P/N: 125-101103-xx).

1. Loosen the locking screw and the focusing screw.
2. Adjust the focusing screw for best focus in the image center.
3. **0.68:1 Lens Only:** Loosen the field curvature locking screw and adjust the field curvature focusing ring to sharpen the image corners.
4. Adjust the focus screw for best overall screen focus.
5. Although it is not necessary, you may want to retighten the main locking screw. Use a maximum of 4 in.-lbs (0.45 Nm) to tighten.



# Calculate Throw Distance and Position

Throw distance is the distance measured from your projector to the screen. This calculation determines if there is enough room to install your projector with a desired screen size and if the image size will be the accurate size for your screen. To estimate the throw distance take the horizontal width of the screen and multiply it by the lens throw ratio. The result determines approximately the distance the projector should be positioned from the screen to project a focused image large enough to fill the screen. For example, using a 1.28 - 1.71 zoom lens set at its widest (1.2:1) throw ratio, throw distance would roughly be 1.2 x screen width.



Use the lens and screen size to calculate the precise throw distance. Due to lens manufacturing tolerances for lens focal length, actual throw distance can vary ±2% between lenses with the same nominal throw ratio.

Lens Throw Distance	Offset Percentage (Offset Pixels)				Specified Throw Distance Range			
	Horizontal		Vertical		Inches		Meters	
	left <sup>1</sup>	right <sup>1</sup>	up	down	Min.	Max.	Min.	Max.
0.68:1	±10%		±25%		28	83	0.7	2.1
1.28 – 1.71:1	60%	100%	150%	100%	59	213	1.5	5.4
0.80:1	60%	100%	100%	100%	28	102	0.7	2.6

<sup>1</sup> The left and right horizontal offset examples are based on the projector being in the normal landscape orientation and looking towards the front of the projector from the back (input panel side).



- Offsets are subject to ±7% centering tolerance.
- Image size outside the specified width range may result in reduced image quality.
- Throw distance is measured from the marked exit pupil position on the lens to the screen. Throw ratio is defined as:

$$\text{Throw ratio} = \frac{\text{throw distance} \pm 2\%}{\text{screen width}}$$

- 100% offset is defined as having all pixels shifted beyond the projector optical axis.
- Offsets are measured from the optical lens centre, which may not coincide with the mechanical centre. % offset is defined as:

$$\% \text{ Offset} = \frac{\# \text{ of pixels of offset}}{\text{half vertical panel resolution}} \times 100$$

## Determine Vertical and Horizontal Position

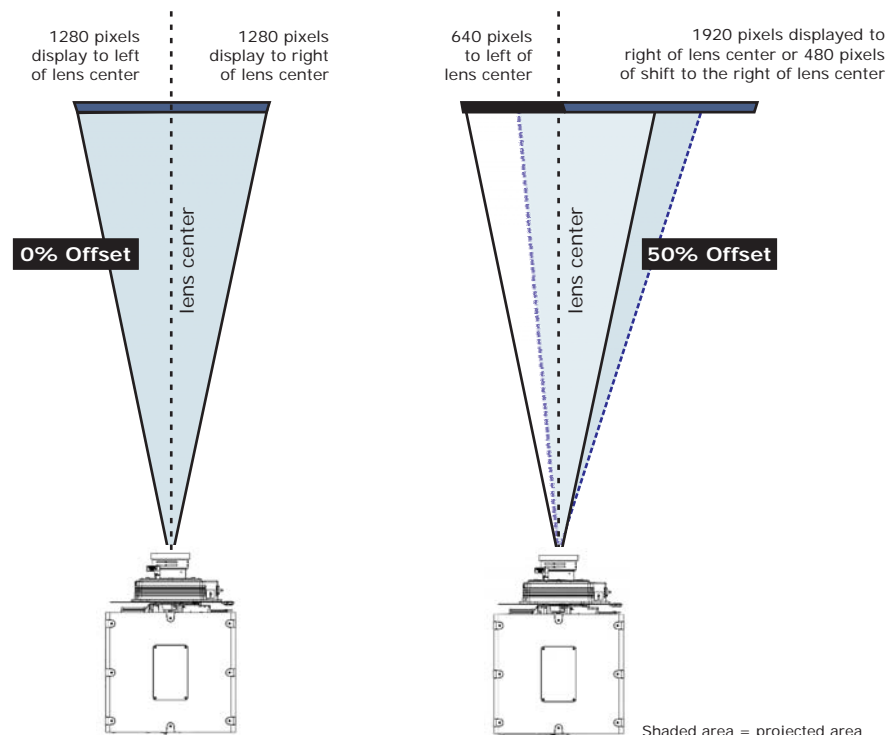
The projection lens and the screen type determine the vertical and horizontal position of your projector in relation to the screen. Ideally, you should position the projector perpendicular to the screen to make the image appear rectangular instead of keystone (trapezoidal). You can offset vertical position of the image (move it above or below the optical axis) by adjusting the lens mount. The type of projection lens you install determines the amount of available vertical offset. Vertical offset can be expressed as the percent of half the image height or the number of pixels of shift from lens center.



- Offsets are subject to ±7% centering tolerance.
- % offset is defined as:

$$\% \text{ Offset} = \frac{\# \text{ of pixels of offset}}{\text{half vertical panel resolution}} \times 100$$

The horizontal position of the image can also be offset (moved to the left or right of the optical center) by adjusting the lens mount. The amount of horizontal offset available depends on the lens installed and if the image has already been vertically offset. Horizontal offset can be expressed as the percent of half the image width or the number of pixels of shift to one side of lens center.

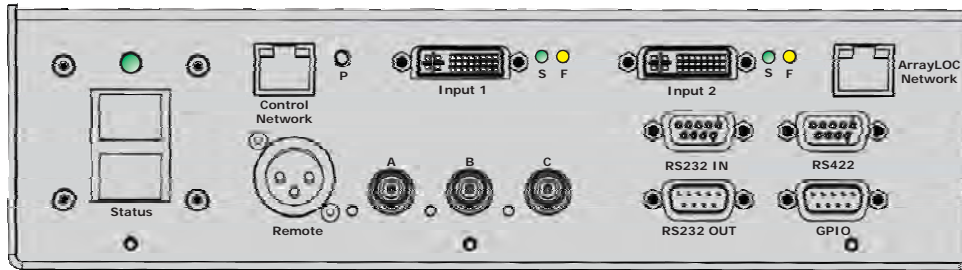


**In this example, no offset is applied.**  
Therefore, half of the image appears to the left of lens center and half appears to the right.

**In this example, 50% offset is applied.**  
Therefore, 3/4 or 75% of the image appears to one side of the lens center.

# Connect a Source

All source connections are made to the input panel, located at the back of the projector. Each input is labeled for easy identification. Using the correct cable(s), connect your source. See [Network Setup for External Communications](#) on page 16.



## Serial Port Connections



Use the RS-422 port only if the device being used has this capability. Always consult with equipment literature before connecting.

RS-232 and RS-422 serial ports are both available on the projector. You can connect a device with a serial interface, such as a computer to either of these connectors (not both) and control the projector remotely by entering specific serial communication commands. For details, see *Mirage WQ-L User Manual (P/N: 020-101372-xx)*.

Two 9-pin D-sub connectors, labeled RS-232 IN and RS-232 OUT on the input panel, are dedicated to serial communication. Using the appropriate serial communication cables, connect the controlling source, such as a personal computer to the RS-232 IN connector. Set the projector baud rate to match that of the computer.

To control the projector with a computer or other controlling device with RS-422 capability, connect a RS-422 serial communication cable between the controlling device and the RS-422 port on the projector. RS-422 is better suited than RS-232, for serial communication over distances greater than 50 feet (15 m).

## Control Network

See the *Mirage WQ-L User Manual (P/N: 020-101372-xx)* for further information about setting up and using a projector connected via Ethernet.



## Inputs 1 and 2



Native WQ is required in order to receive a valid DVI-D signal.

Use Inputs 1 and 2 to connect the main and secondary input sources. See [Select Inputs](#) on page 15. The LEDs assigned to each input indicate the following:

	S indicator (signal)	F indicator (function)
	<p><b>Green:</b> Indicates valid DVI-D source signal.</p> <p><b>Red:</b> Indicates an invalid source signal. Check the connection and make sure the source is correct.</p> <p><b>Off:</b> Indicates no signal detected on DVI port.</p>	<p><b>Green:</b> Indicates the input is selected.</p> <p><b>Yellow:</b> Indicates which of the 2 inputs is being used as the secondary input.</p> <p><b>Off:</b> Indicates no input is selected.</p>

## GPIO

The GPIO connector provides a method of interfacing a wide range of external I/O devices. See the *Mirage WQ-L User Manual (P/N: 020-101372-xx)* for complete details on pin configuration and how to program the GPIO.

## ArrayLOC Network

The ArrayLOC Network connector provides a method of interfacing multiple projectors in an array to manage preliminary color setup. For details, see [ArrayLOC Network Configuration](#) on page 20.

# Connect to Power



Always power down and disconnect/disengage power before servicing or cleaning. Failure to comply could result in death or serious injury.

## WARNING

Do not operate if the AC supply and cord are not within the specified voltage and power range. The North American rated line cord is supplied with this projector. For all other regions, use only a regionally approved line cord, power plug and socket. Do not use a damaged line cord. Failure to comply could result in death or serious injury.

## NOTICE

In Norway, for IT power distribution systems, a dedicated protected earth wire must be installed on the projector before it can be connected to power. The dedicated earth wire must be installed by a Christie accredited service technician. To connect the projector to an IT power distribution system connect the building ground to the internal ground lug behind the AC input inside the projector. It is recommended that you run the connection through the louvers on the projector. Failure to comply may result in equipment damage.



The appropriate regional line cords are shipped separately.

1. Connect an approved line cord to the projector AC receptacle. Make sure the security clip is latched onto the cord.
2. Connect the three-pronged end of the line cord to a grounded AC outlet. The outlet must be near the equipment and easily accessible.
3. Flip the power switch on the back of the projector. The projector takes approximately two minutes to initialize. The status light on the input panel turns yellow.
4. Power on the device.
  - Press **Power**, and then the up arrow from the IR remote.
  - From the WebUI select **Power > On** from the Main tab.
5. Press an input key on the IR remote to select and display the image for the connected source.

# Disconnect Power

**NOTICE**

Do not flip the main Power switch to the Off position, or disconnect the projector until the cooling fans have stopped. Failure to comply may result in equipment damage.

1. Power off the device.
  - Press **Power**, and then the down arrow from the IR remote.
  - From the WebUI select **Power** > **Off** from the Main tab.
2. After the internal cooling fans stop, flip the main power switch to the Off position.
3. Disconnect the line cord from the wall outlet.

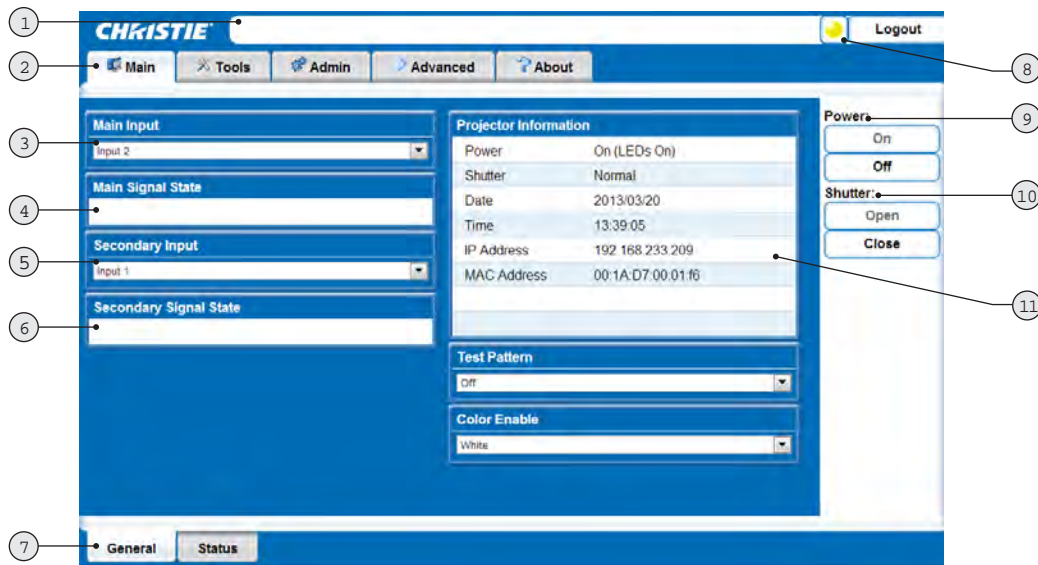
# Login to WebUI

1. Open your web browser and enter the IP address (in the address bar) assigned to your projector.



The factory default IP address is 192.168.1.89. To change the default use the NET serial command through RS-232. See the *Mirage WQ-L User Manual (P/N: 020-101372-xx)*.

2. Select the appropriate language from the **Language** drop-down list, located in the upper left-hand corner.
3. Enter your user name and password. Both entries are case-sensitive.
4. Click the **Login** button. The **Main** window appears.



Description	
1	Status bar
2	Primary tabs
3	Main Input drop-down list
4	Main Signal State (read-only)
5	Secondary Input drop-down lists
6	Secondary Signal State (read-only)
7	Secondary tabs (specific to a primary tab) located along the bottom of the Main page.
8	Status indicator display
9	Power On/Off
10	Shutter Open/Close (powers LEDs On and Off to simulate shutter operation).
11	Projector information (read-only)

# Select Inputs



You can use the IR remote to setup your inputs; however, Christie recommends that inputs are setup through the WebUI.

An input is an input source physically connected to the projector. Input describes the source signal to which it is connected. See [Connect a Source](#) on page 10 for a full explanation of how to connect sources to the projector.

1. From the Main menu, select **Input & Switching**.
2. From the **Main Input** drop-down menu specify the source of the image. Select from **Input 1** and **Input 2**.
3. If the projector(s) will be operating with InfraScene, the source of the image for the secondary input must be specified through the **Secondary Input** drop-down menu.



- To quickly and easily swap your inputs select Swap Main and Secondary Inputs.
- To adjust the gamma settings for the secondary input select Secondary Image Settings.

Frame Locking is enabled by default. This feature is used to select how the projector controls the output frame timing based on the input signal. When set to Frame Lock, output image frames are locked to the input if possible. When locked, the output is always locked to the main input. When working with 2 inputs you can select input 2 as the lock source for the output by selecting Frame Lock Secondary.

# Network Setup for External Communications



To complete the projector network setup you will also need to connect the projectors together for ArrayLOC communication and functions. See [ArrayLOC Network Configuration](#) on page 20.

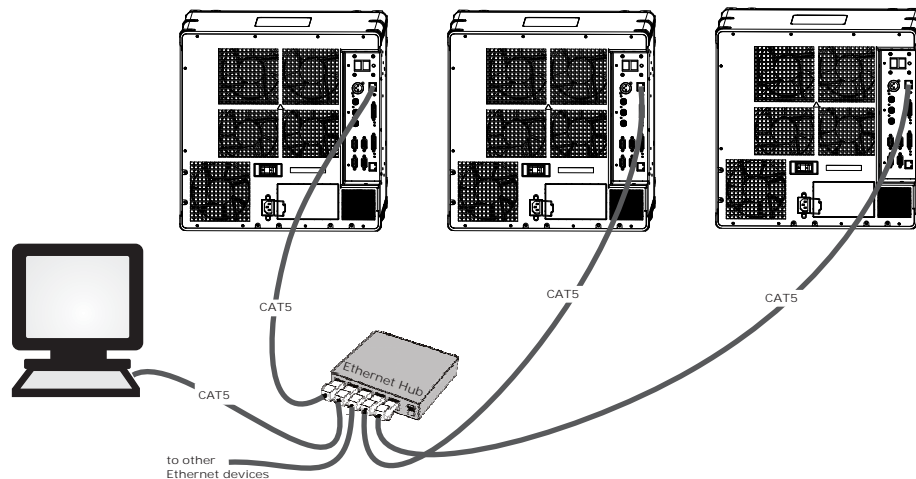
## Ethernet (recommended)

In the Ethernet network the controller communicates with each projector separately.



Recommended for network administrators only.

1. Connect a standard CAT5 Ethernet cable between the controller (or Ethernet hub) and the Control Network port on the projectors input panel.



2. From the WebUI, set the IP address in **Configuration > Communications > Ethernet Settings**.
3. From the WebUI, set network routing to **Separate** in **Configuration > Communications**.

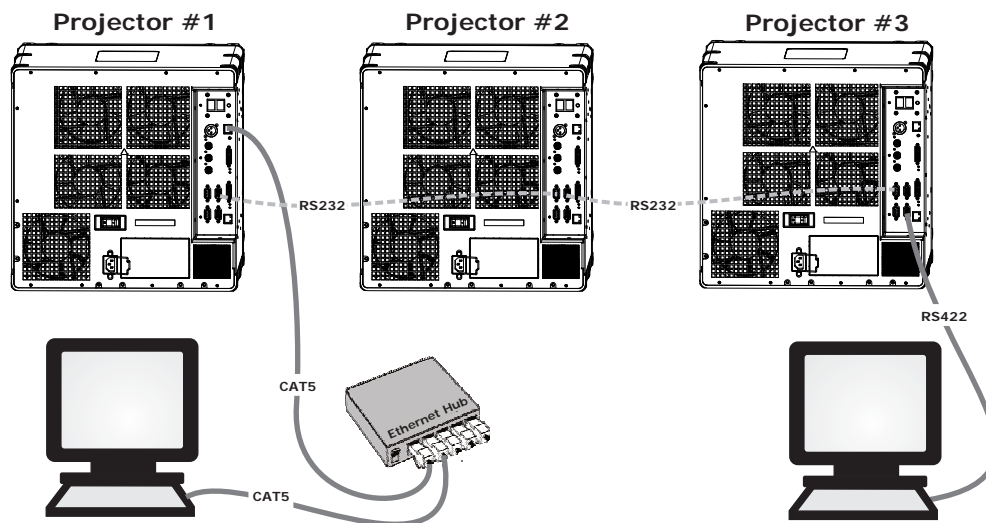
## Mixed Network

**NOTICE**

Using the wrong type of serial cable can damage the projector. RS-232 communication cables must be of good quality and no more than 25 ft (7.62 m) in length. Failure to comply may result in equipment damage.

In a mixed network the controller can communicate with the first projector and the command can be relayed to each serially connected projector. This configuration is useful if you are using a non-RS-232 controller with the RS-232 linking available between these projectors. The image below shows both an RS-422 compatible controller and an Ethernet-connected PC working with a network of projectors linked using their RS-232 in/out ports.

1. Connect the controller to a projector with a standard CAT5 Ethernet cable between the controller (or Ethernet hub) and the **Control Network** port on the projectors input panel.
2. Connect an RS-422 serial cable between the PC and the RS-422 port on the projectors input panel.
3. Connect a serial cable between the RS-232 OUT connector of the first projector and the RS-232 IN connector of the next projector.
4. Connect the remaining projectors.
5. If the controller is connected via an Ethernet cable, set the IP address from the WebUI in **Configuration > Communications > Ethernet Settings**.
6. Set the serial options in **Configuration > Communications**.
7. From the WebUI, select **Configuration > Communications > Network Routing**.
  - To relay commands to all projectors set **Network Routing to All Joined**.
  - To isolate RS-422 communications, select **RS-232 and Ethernet Joined**. Only projector #3 will respond to the RS-422 controller.
  - To isolate Ethernet communications, select **RS-232 and RS-422 Joined**. Only projector #1 will respond using Ethernet.



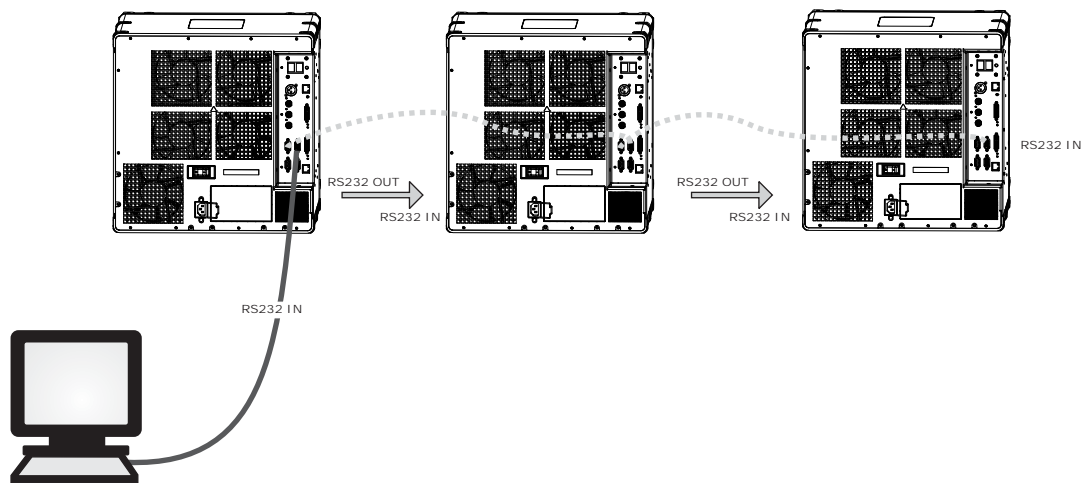
## RS-232 Network

**NOTICE**

Using the wrong type of serial cable can damage the projector. RS-232 communication cables must be of good quality and no more than 25 ft (7.62 m) in length. Failure to comply may result in equipment damage.

In an RS-232 network the controller can communicate with the first projector and the command can be relayed to each serially connected projector.

1. Connect the controller to 1 projector by connecting a serial cable between the PC and the RS-232 IN port on the input panel.
2. Connect a serial cable between the RS-232 OUT connector of the first projector and the RS-232 IN connector of the next projector.
3. Connect the remaining projectors.
4. Set the RS-232 serial options in **Configuration > Communications > Serial (RS-232 IN) Options**.
5. Set network routing in **Configuration > Communications > Network Routing** to **RS-232 and RS-422 Joined**.





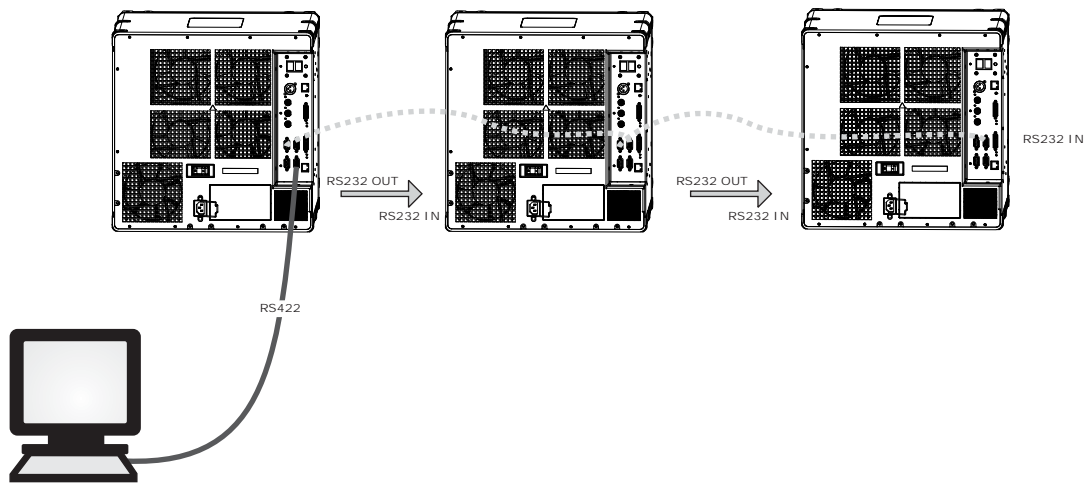
## Mixed Serial Network (RS-232 and RS-422)

**NOTICE**

Do not connect incompatible equipment, including the wrong type of serial cable to the RS-422 port. Failure to comply could cause equipment damage.

RS-422 serial communication is better over long distances than RS-232 communication. Use the RS-422 port only if your device has RS-422 capability. Always read the equipment literature before connecting. In the RS-422 network the controller can communicate with the first projector and the command can be relayed to each serially connected projector.

1. Connect the controller to 1 projector by connecting an RS-422 serial cable between the PC and the RS-422 port on the input panel.
2. Connect an RS-232 serial cable between the RS-232 OUT connector of the first projector and the RS-232 IN connector of the next projector. Connect the remaining projectors using RS-232 cables.
3. Set the serial options in **Configuration > Communications**.
4. Set network routing in **Configuration > Communications > Network Routing to RS-232 and RS-422 Joined**.



# ArrayLOC Network Configuration

Preliminary color setup is managed by ArrayLOC. ArrayLOC is enabled by default and configured to display a reasonably saturated gamut at the maximum brightness that all the projectors in the array can support.



A projector that is not connected via ArrayLOC functions as a single unit array.

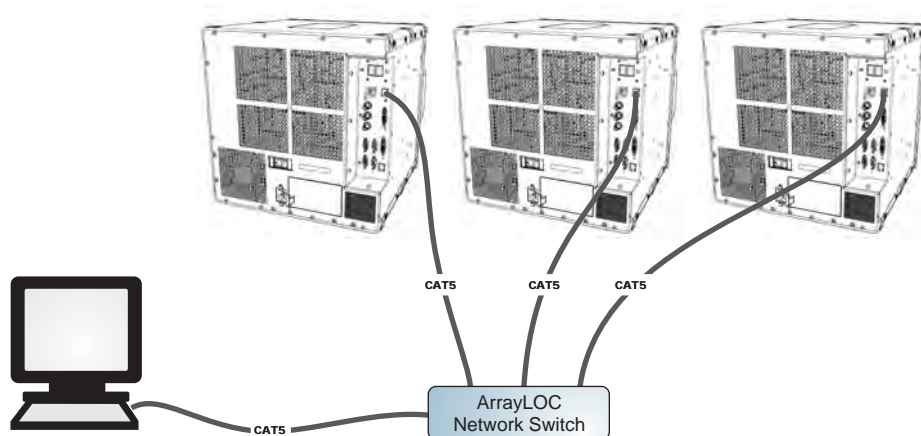
## ArrayLOC over Control Network

Use the Control Network for ArrayLOC when you want to communicate with the projectors in the array over the same network.

1. Connect the controller by connecting a CAT 5 Ethernet cable between the PC and the ArrayLOC network switch.
2. Connect a standard CAT5 Ethernet cable between the ArrayLOC network switch and the Control Network port of each projector.
3. From the Main menu, select **ArrayLOC > ArrayLOC Configuration**.
4. From the ArrayLOC Network drop-down list select **Control Network**.



The length of the connections depends on ArrayLOC network switch placement within the array. It may be possible to reuse the Ethernet cable supplied with the projector for one of these connections, but at least one connection requires that you supply an additional Ethernet cable per projector.



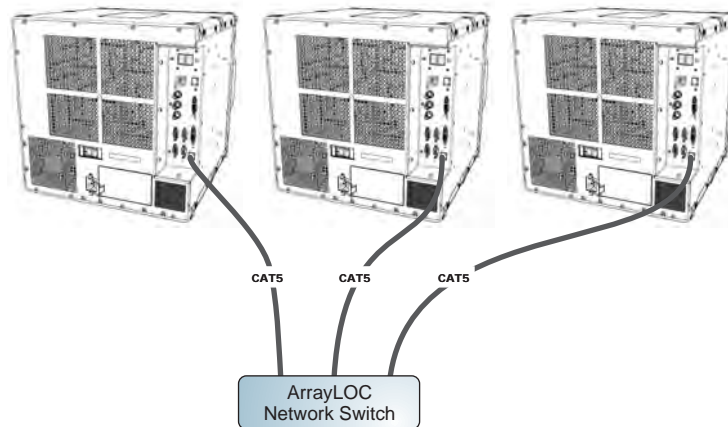
## ArrayLOC over ArrayLOC Network (preferred)

The ArrayLOC Network should be used if you want to isolate the ArrayLoc network traffic from the Control Network.

1. Connect a standard CAT5 Ethernet cable between the ArrayLOC network switch and the ArrayLOC Network port on the projectors input panel.
2. From the Main menu, select **ArrayLOC > ArrayLOC Configuration**.
3. From the ArrayLOC Network drop-down list select **ArrayLOC Network**.



The length of the connections depends on ArrayLOC network switch placement within the array. It may be possible to reuse the Ethernet cable supplied with the projector for one of these connections, but at least one connection requires that you supply an additional Ethernet cable per projector.



## Adjust Image Geometry and Optical Alignment



This initial optical alignment is the foundation for optimizing images on the screen, and must be completed before final boresight adjustments. Only perform image alignment once the projector is fully assembled and powered up in its final location.

### Basic Optical Alignment

1. Press **Test** on the IR remote to display a test pattern. It is recommended to use the **Edge Blend** or **Grid** test pattern.
2. Perform a quick preliminary focus and (if available) zoom adjustment with the primary lens. Do not worry about consistency across the image at this point, just center focus. It is good practice to have the zoom adjustment collar and the focus adjustment collar in the center of its range.
3. Hold a piece of paper at the lens surface, adjust offsets as necessary until the image is centered within the lens perimeter. A full white field works best for this.
4. If necessary, center the image on the screen. If the projector is mounted off-center to the screen axis, then offset the lens as much as required. Aim the projector over slightly towards the center of the screen, but use caution, as too much tilt will cause excessive keystone distortion. Lens offset will not.
5. With the test pattern on screen, double-check projector leveling so the top edge of the image is parallel to the top edge of the screen. Make sure the projector is positioned in the throw distance range for the lens in use.

### Folded Optics

In rear screen applications where space behind the projector is limited, a mirror may be used to fold the optical path. The position of the projector and mirror must be accurately set — if considering this type of installation contact Christie Customer Support for assistance.

# Adjust Software to Optimize Image



Unless otherwise indicated, instructions apply to all projector models in stand-alone or multi-projector configurations.

1. Display an external signal.
2. Select **Screen Image Orientation** in **Configuration > Output Options** and change the orientation of the displayed image to suit the installation.
3. Assign projector ID number(s). See the *Mirage WQ-L User Manual (P/N: 020-101372-xx)*.
4. Make sure that ArrayLOC is enabled. From the Main menu select **ArrayLOC** and select **Enabled** from the **Bright/ColorLOC Mode** drop-down list. ArrayLOC automatically adjusts projector colors and brightness.
5. Adjust ArrayLOC color target.
6. Fine-tune ArrayLOC to compensate for system optics.

#### Corporate offices

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USA – Cypress  
ph: 714-236-8610

Canada – Kitchener  
ph: 519-744-8005

#### Consultant offices

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Italy  
ph: +39 (0) 2 9902 1161

#### Worldwide offices

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Australia  
ph: +61 (0) 7 3624 4888

Brazil  
ph: +55 (11) 2548 4753

China (Beijing)  
ph: +86 10 6561 0240

China (Shanghai)  
ph: +86 21 6278 7708

Eastern Europe and  
Russian Federation  
ph: +36 (0) 1 47 48 100

France  
ph: +33 (0) 1 41 21 44 04

Germany  
ph: +49 2161 664540

India  
ph: +91 (080) 6708 9999

Japan (Tokyo)  
ph: 81 3 3599 7481

Korea (Seoul)  
ph: +82 2 702 1601

Republic of South Africa  
ph: +27 (0)11 510 0094

Singapore  
ph: +65 6877-8737

Spain  
ph: + 34 91 633 9990

United Arab Emirates  
ph: +971 4 3206688

United Kingdom  
ph: +44 (0) 118 977 8000