User Guide
020-102234-06

Christie Link

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NOTICES

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GENERAL

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WARRANTY

Products are warranted under Christie's standard limited warranty, the complete details of which are available by contacting your Christie dealer or Christie. In addition to the other limitations that may be specified in Christie's standard limited warranty and, to the extent relevant or applicable to your product, the warranty does not cover:

a. Problems or damage occurring during shipment, in either direction.

b. Problems or damage caused by combination of a product with non-Christie equipment, such as distribution systems, cameras, DVD players, etc., or use of a product with any non-Christie interface device.

c. Problems or damage caused by misuse, improper power source, accident, fire, flood, lightning, earthquake, or other natural disaster.

d. 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.

e. Use of third party product enclosures for environmental protection during outside use must be approved by Christie.

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. 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.

h. 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.

PREVENTATIVE MAINTENANCE

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.

REGULATORY

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

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!

Content

Introduction

This manual is intended for installers and operators of the Christie Link fiber optic system.

For complete Christie Link product documentation and technical support, go to *www.christiedigital.com*.

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/2tlHckq* or
     https://www.christiedigital.com/en-us/products/accessories/christie-link-transmitter

   - Scan the QR code using a QR code reader app on a smartphone or tablet.

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

Related documentation

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

- *Christie Link Product Safety Guide (P/N: 020-102249-XX)*
- *Christie Link Status System Guide (P/N: 020-02255-XX)*
- *Christie Link Serial Commands Guide (P/N: 020-102321-XX)*

Important safeguards

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

Installation safety and warning guidelines

Read all safety and warning guidelines before installing Christie Link.

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

- SHOCK AND FIRE HAZARD! Keep coaxial cables within the building installation, never routing them to external sites.
- LASER RADIATION HAZARD! Do not exceed a Class 1/1M laser radiation rating for optical module.

AC power precautions

Learn the safety precautions related to AC power.

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

- SHOCK HAZARD! Disconnect the product from AC before installing, moving, servicing, cleaning, removing components, or opening any enclosure.
- SHOCK HAZARD! Do not attempt operation if the AC supply is not within the specified voltage and current, as specified on the license label.
- FIRE HAZARD! Do not use a power cord, harness, or cable that appears damaged.
- FIRE AND SHOCK HAZARD! Do not attempt operation unless the power cord, power socket, and power plug meet the appropriate local rating standards.

Product labels

Learn about the labels that may be used on the product. Labels on your product may be yellow or black and white.

General hazards

Hazard warnings also apply to accessories once they are installed in a Christie product that is connected to power.

Fire and Shock Hazard
To prevent fire or shock hazards, do not expose this product to rain or moisture.   Do not alter the power plug, overload the power outlet, or use it with extension cords.   Do not remove the product enclosure.   Only Christie qualified technicians are authorized to service the product.

Electrical Hazard
Risk of electric shock.   Do not remove the product enclosure.   Only Christie qualified technicians are authorized to service the product.

General hazard.

Electrocution hazard. To avoid personal injury, always disconnect all power sources before performing maintenance or service procedures.

Mandatory action

Disconnect all power sources before performing maintenance or service procedures.

Consult the service manual.

Product overview

The Christie Link provides a fully integrated fiber solution for long range video transport.

The Christie Link is intended to be used in conjunction with fiber optic cabling/module options and two option cards, the CFIC or HBMIC to convert electrical signals to optical for transport across long distances.

Key features

Understand the important features of the Christie Link.

- Supports HDMI and DisplayPort video input
- Allows HD to full 4K120Hz workflow
- Supports 3D video
- Includes a status LED
- Built-in keypad control interface
- Web user interface
- Ethernet
- Compatible with QSFP+ (40 Gbps) modules

List of components

Verify all components were received with the projector.

- Christie Link module
- Power cord
- User manual

For all accessories, refer to the specifications section.

Installation and setup

Learn how to install, connect, and optimize the settings.

Operating environment

Provides specifications for operating environment.

- 2 inch clearance from front intake
- 3 inch clearance from rear exhaust
- Ambient temperature (operating) 5 to 35° C (41 to 95° F) up to 1500 ft
- Humidity (non-condensing) 10 to 80%
- Operating altitude: 10,000 ft maximum at 5 to 25° C ambient

System overview

Christie Link transports DisplayPort or HDMI video signals over long distances through fiber optic cabling using the Christie video over fiber data standard.

Christie Link setup

Understand the setup configuration.

1. Connect the DisplayPort or HDMI video source directly to the Christie Link module using standard cabling.
2. Configure the Christie Link module and Christie projector with the appropriate QSFP+ modules.
3. Connect the Christie Link module to a Christie projector using a qualified fiber optic cable.

Boxer connection diagram

The following solutions are for Boxer installations.

Install Christie Link to Boxer at 2K/4K 60 Hz and 2K/4K 120 Hz
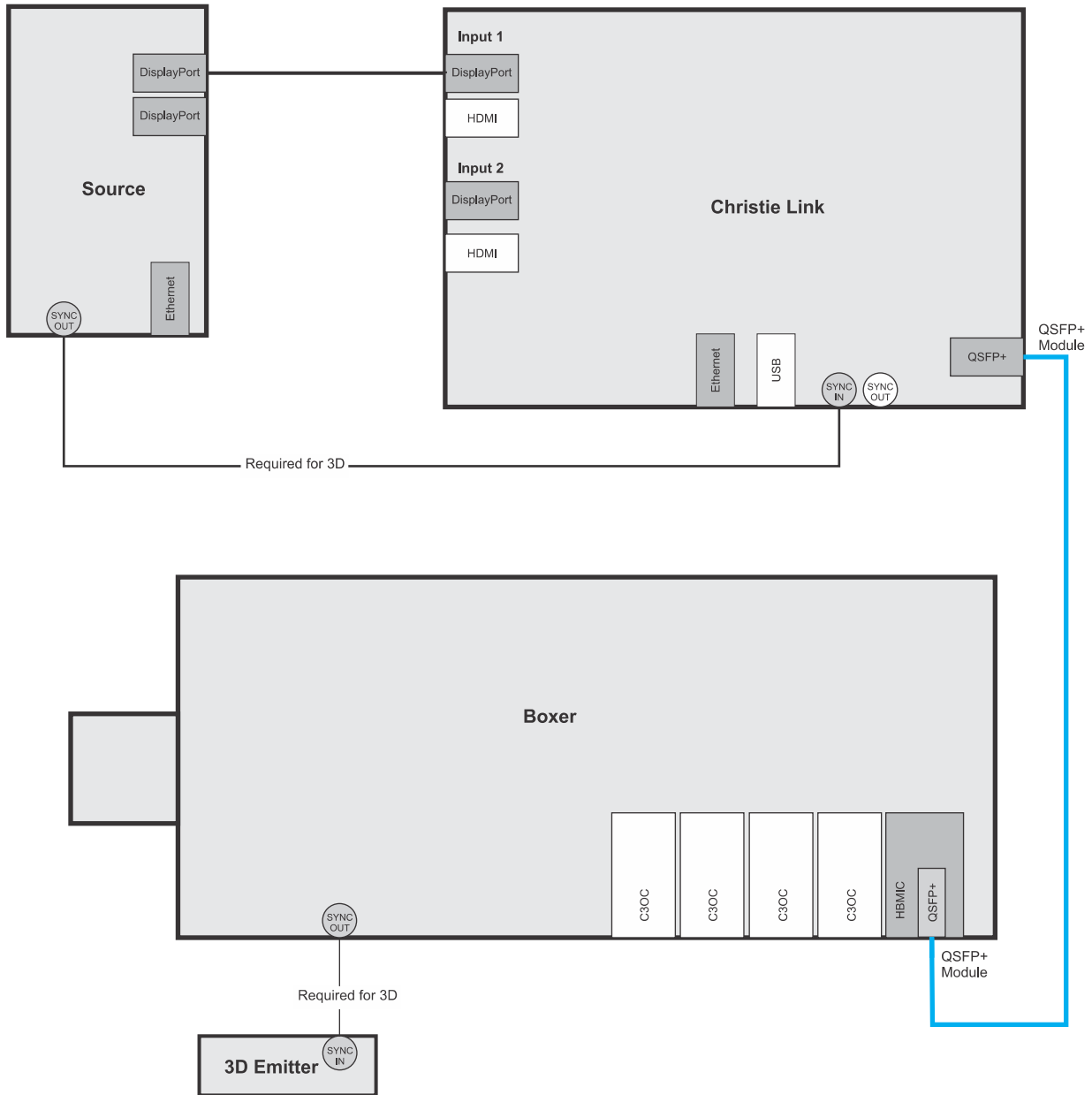
Christie Link components

Identify the main components of Christie Link.
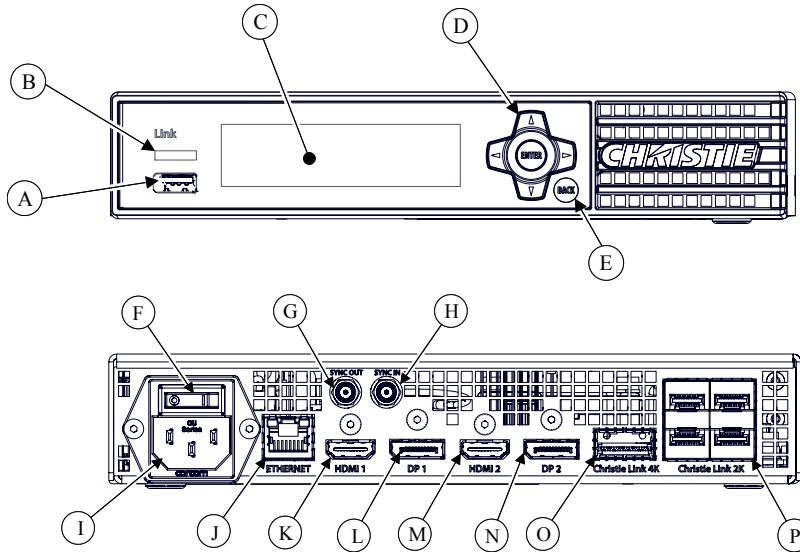
ID	Component	Description
A	USB port	Accepts USB sticks for upgrade and interrogation.
B	LED status indicator	Indicates device status.
C	Display panel	Provides more detailed status and menu options/settings.
D	Keypad	Use the keypad to navigate through the menu options.
E	Back button	Exits the current menu option.
F	AC power switch	Powers on and off the unit.
G	Sync out (SMA connector)	Transmits the 3D sync to another Christie Link.
H	Sync in (SMA connector)	Accepts a 3D sync from the video source.
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
L	DP1	Display Port connection 1.
M	HDMI 2	High-Definition Multimedia Interface cable connection 2
N	DP2	Display Port connection 2.
O	Christie Link 4K	Use this port to connect to the HBMIC option card for up to 4K resolution at 120 Hz.
P	Christie Link 2K	Reserved for future use.

Christie Link dashboard

Identify the main components of the dashboard on the display panel. The Christie Link module dashboard is similar to the web dashboard. Users can configure and adjust settings from either dashboard.
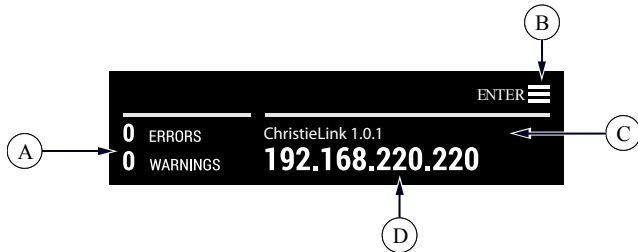
ID	Description
A	Notify users of errors and warnings.
B	Indicates that you need to press enter to access the menu.
C	Displays the product name and software version.
D	Displays the IP address.

Christie Link menu

Identify the main components of the menu on the display panel.
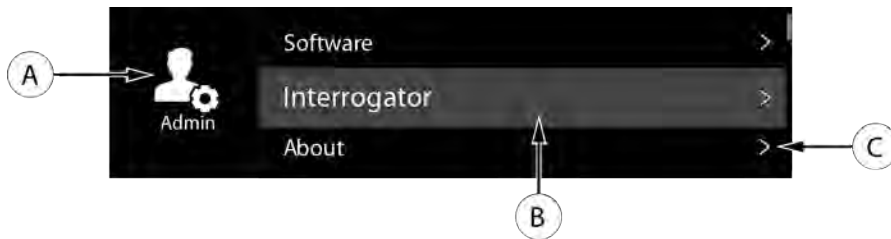
ID	Description
A	Indicates the sub-menu.
B	Highlights the menu item in the list of options.
C	Indicates another level of sub-menu options.

Christie Link web dashboard

Identify the main components of the web dashboard.
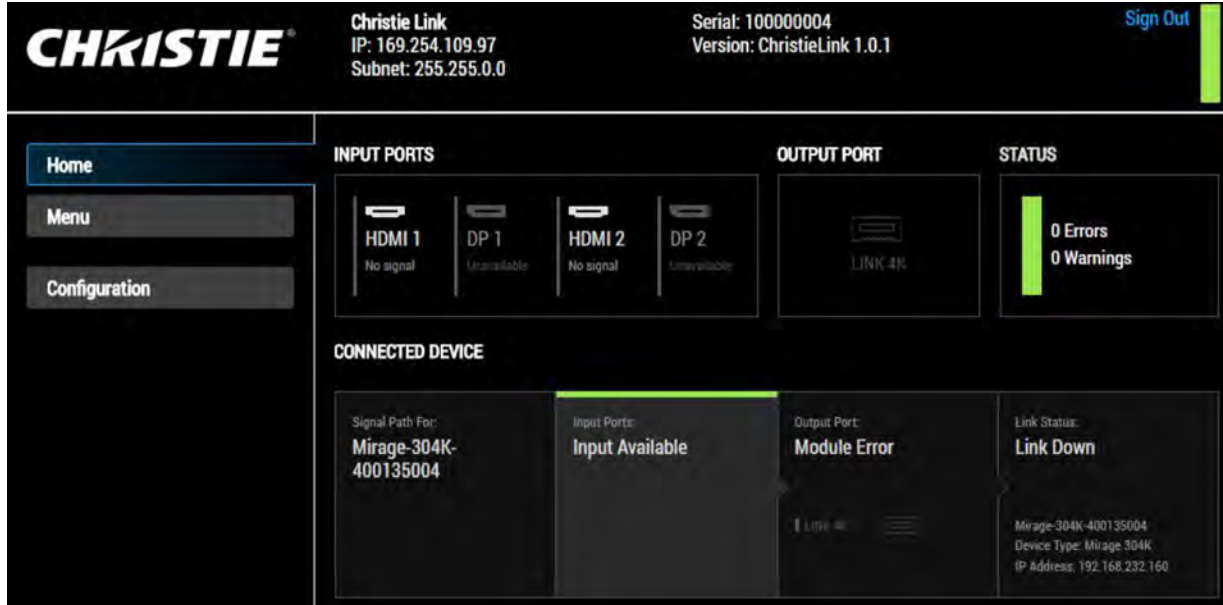
Home is the system dashboard showing all the inputs and outputs connected to Christie Link.

Connected Devices shows the current signal paths and can be used to diagnose signal path errors, such as the module is broken or input is not available.

Status light corresponds to the status light in the top right on the Christie Link module.
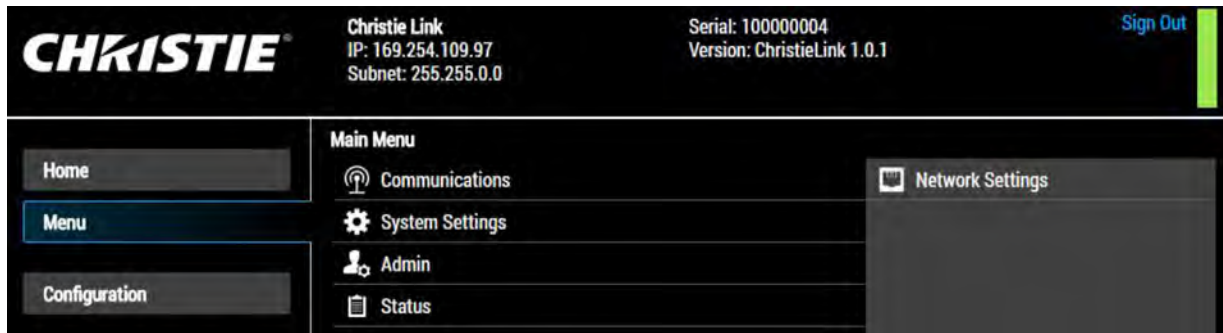
Menu dashboard allows users access to **Network Settings**, **System Settings**, **Admin**, and **Status settings**.
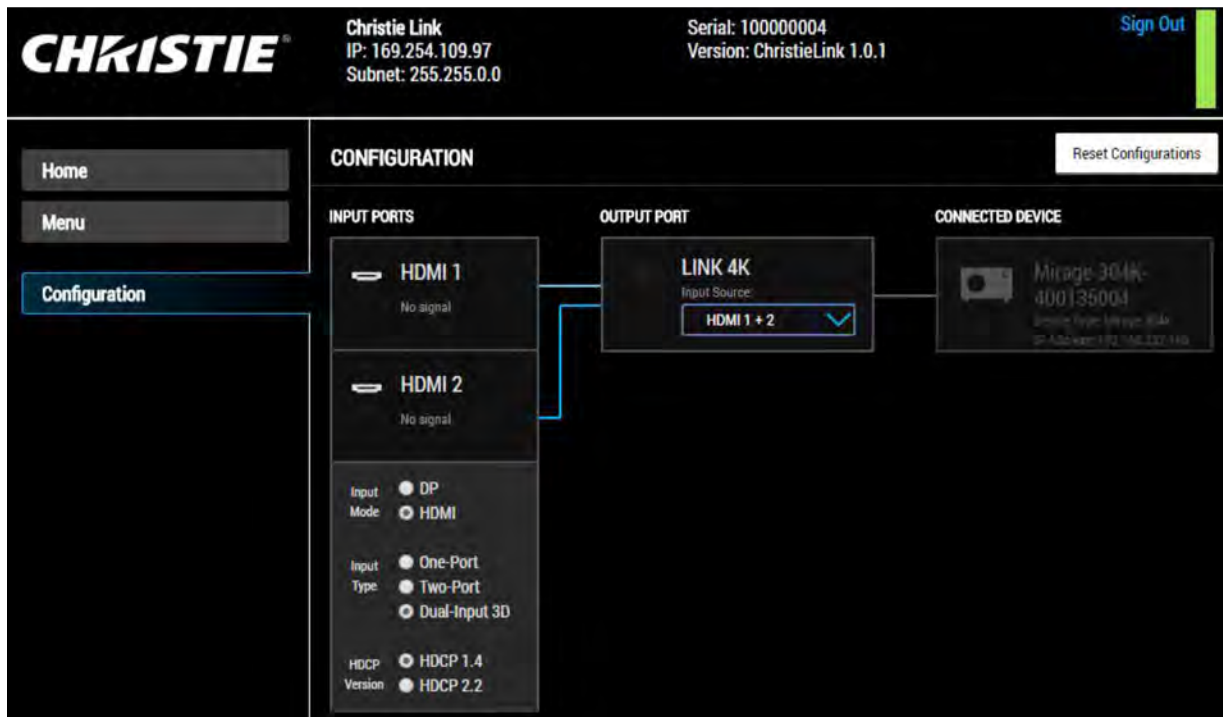
Configuration settings allow users to see the visual input to output mapping and dynamically change the input mode, input type and where video is routed to. If a device is connected, it will appear inactive until a connection is restored. To clear the cached devices, click **Reset Configurations**

Christie Link LED status indicators

Identify the LED state colors and meaning.

If there is both a warning and error, the LED status will indicate the red error status.

LED	State		Description
Blue	Flashing		System is starting up.
Green	Solid		Power is on. System status is OK.
Yellow	Flashing		Warning a problem exists with the system but it is still functioning.
Red	Flashing		A critical error exists that prevents the system from functioning.
Off			The AC power is off.

Christie Link input types

Learn about the different input type options.

One-Port

Users can select the input type (DisplayPort or HDMI) for each individual output port. Options include selecting input one, input two, or multi-stream. In multi-stream mode, both inputs are sent to the connected projector and the user can select which input stream to run. The videos are not combined.

Two-Port

In Two-Port mode, input one and input two are combined into a single video. Input one is responsible for the left section of the screen, and input two is responsible for the right section of the screen.

When two-port mode is selected, no options are available for the output modules. It only displays HDMI 1 & 2 or DisplayPort 1 & 2.

Dual Input 3D

Users are not required to select the inputs to each individual output port. The two input signals are always combined. Input one is responsible for the left eye and input two is responsible for the right eye.

When dual input 3D is selected, no options are available for the output modules. It only displays HDMI 1 & 2 or DisplayPort 1 & 2.

Connecting Christie Link to the projector

Configure the connection between Christie Link and the projector.

1. From the projector display panel, select **Configuration** > **Input Settings**.
2. Navigate to Input Mode and select **HDMI** or **DP**.
   DP (DisplayPort) is the default.
3. To save the selection, select **Enter**.
4. Navigate to Input Type and select **One-Port**, **Two-Port**, or **Dual-Input 3D**.
5. To save the selection, select **Enter**.
6. Navigate to the Output Devices and select the source.
   The input type (One-Port, Two-Port, or Dual-Input 3D) determines the available options.
7. To save the selection, select **Enter**.
   If the projector is connected and detected, only the required source selections are available.

Configuring system settings

Learn how to configure the system settings.

Configuring Christie Link network settings

You can set the IP address and device name of the Christie Link device.

> You cannot change the IP settings using the web interface.

1. Select **Menu** > **Communications** > **Network Settings**.
2. Select **IP Settings**.
3. Select **Edit**.
4. Select **DHCP** or **Static**
5. Use the up and down keys to enter the IP address of Christie Link.
6. Select **Enter**.
7. Select **Device Name**.
8. Use the up and down keys to enter the name of Christie Link.
9. Select **Enter**.

Setting the date

Configure the date on Christie Link.

1. Select **Menu** > **System Settings** > **Date & Time**.
2. Select **Date**.
3. Use the up and down keys to adjust the year (YYYY), month (MM), and day (DD).

Setting the time

Configure the time on Christie Link.

1. Select **Menu** > **System Settings** > **Date & Time**.
2. Select **Time**.
3. Use the up and down keys to adjust the hour (HH), minutes (MM), and seconds (SS).

Informing the source of signal preferences

Configure Christie Link to automatically inform the video source of the preferred signal formats.

1. If you need a specific frame rate, from the display panel, select **MENU** > **Configuration** > **INPUT PORTS** > **EDID Timing**.

2. Select the required EDID timing and select **Enter**.

   60 Hz is the default EDID timing.

Changing the user account password

The user account password limits access to the functionality on the web interface to authorized users.

Christie recommends changing the default user account password.

📝 This feature is only available on the web interface.

1. From the home page of the web interface, select **MENU** > **Admin** > **Remote Password**.

2. Click the **Current Password** and type your current password.

3. Click **New Password** and type 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.

4. Click **Confirm** and retype your new password.

5. Click **Apply**.

Accessing the generated user account password

If the user account password is not available, the generated password can be used to access the functionality on the web interface.

Note the following about the generated user account password:

- The generated password can be used to change the user account password.
- Every time the user account password is updated, the generated password is changed.
- If the projector defaults are reset using the **Reset Factory Defaults** feature, the user account password is reset.

📝 This feature is accessed from the display panel on the projector and the on-screen display.

1. From the display panel, select **MENU** > **Admin**.

2. Select **Generated password**.

   The generated password is displayed in this field.

Diagnostic tools and upgrading Christie Link

Follow these procedures to help with upgrading and diagnosing issues with Christie Link.

Viewing Christie Link status

Alarms contain information about the values of the items operating in normal range, warnings, and errors that can be reported by the status system of Christie Link.

1. From the display panel, select **Status**.

   You can also view the statuses from **MENU** > **STATUS**.

2. Scroll to the status category you want to view and select it.

Upgrading the Christie Link software

When a new version of the software is released, Christie Link must be upgraded.

1. Insert a USB key that contains the software upgrade file.

   The USB flash drive must be formatted using the FAT 32 file system.

   The upgrade file must be located at the root of the USB key.

2. From the display panel, select **MENU** > **Admin**.

3. Select **Software** > **Upgrade**.

4. Select an upgrade file and select **Enter**.

5. To automatically restart Christie Link, select **Restart Now**.

   If you decide restart Christie Link at a later date (**Restart Later**), you cannot perform another upgrade until the Christie Link is restarted.

Running the Christie Link interrogator

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

1. Insert a USB flash drive in the USB port on Christie Link.

   The USB flash drive must be formatted using the FAT 32 file system.

2. From the display panel, select **MENU** > **Admin** > **Interrogator**.

3. Select **Run**.

   The interrogator file is stored at the root directory on the USB flash drive.

4. At the completion prompt, select **OK**.

Restoring factory default settings

Restoring factory settings removes all custom device settings.

Only Christie qualified technicians can reset factory defaults.

1. From the display panel, select **MENU** > **Admin** > **Service**.

2. Enter the service password.
   The password is only required for the display panel and not the web user interface.

3. Select **Reset Factory Defaults**.
   All customized settings are set to the default factory settings.

4. At the confirmation prompt, select **Reset**.

Christie Link Specifications

Learn about the product specifications. Due to continuing research, specifications are subject to change without notice.

Physical specifications

Learn the dimensions and weight of the Christie Link.

Description	Dimensions
Size (L x W x H)	285.5 mm x 220.2 mm x 42.8 mm
Weight	1.5 kg
Operating position	Landscape

Power requirements

Learn the power requirements for Christie Link.

Parameter	Requirement
Voltage	100-240 VAC
Current	1.0 A
Line frequency	50/60 Hz
Christie Link module	Connector type: IEC60320-1 C14
Power cord	Connector type: IEC60320-1 C13

Accessories

Learn about the accessories available for the Christie Link.

Description	Part number
QSFP+ Fiber Optic Module	144-120104-XX
High Bandwidth Mulit-Input Card (HBMIC)	144-116109-XX
Rack Mounting Shelf	144-128102-XX

Fiber specifications

The Christie Link accepts the following fiber cable options.

Parameter	Requirement	Description
Connector 1 - Type	LC	Blue color
Connector 1 - Polish	UPC	
Connector 2 - Type	LC	Blue color
Connector 2 - Polish	UPC	
Fiber Mode	9/125 μm	Single-mode yellow cable
Fiber Type	Duplex	
Wavelength	1310 nm	
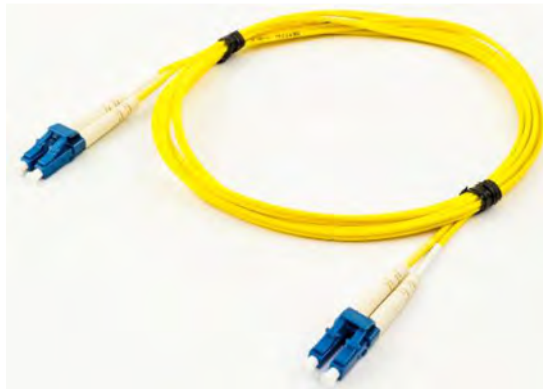
Regulatory

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

Safety

- ANSI/UL 60950-1 – Information Technology Equipment – Safety – Part 1: General Requirements
- CAN/CSA C22.2 No. 60950-1
- EN 60950-1
- IEC 60950-1 IEC/EN 60950-1 – Information Technology Equipment – Safety – Part 1: General Requirements

Electro-magnetic compatibility

Emissions

- CAN ICES-003 (A)/NMB-003 (A) – Information Technology Equipment (Including Digital Apparatus) – Limits and Methods of Measurement
- CISPR 22/EN 55022, Class A
- FCC CFR47, Part 15, Subpart B, Class A – Unintentional Radiators

Immunity

- CISPR 24/EN55024 EMC Requirements – Information Technology Equipment – Immunity Characteristics – Limits and Methods of Measurements

Environmental

- China Ministry of Information Industry (along with 7 other Government Agencies) Order No.32 (01/2016) on the control of pollution caused by electronic information products, hazardous substances concentration limits (GB/T 26572 - 2011), and the applicable product marking requirement (SJ/T 11364 - 2014).
- EU Directive (2011/65/EU) on the restriction of the uses of certain hazardous substances (RoHS) in electrical and electronic equipment and the applicable official amendment(s).
- EU Directive (2012/19/EU) on waste and electrical and electronic equipment (WEEE) and the applicable official amendment(s).
- Regulation (EC) No. 1907/2006 on the registration, evaluation, authorization and restriction of chemicals (REACH) and the applicable official amendment(s).

Signal connectivity specifications

Identify the signal connectivity specifications for Christie Link.

The list of formats listed below are not exhaustive and other formats may be supported. For more information, contact Christie Technical Support.

HDMI 2.0 video formats

The HDMI 2.0 interface supports HDCP 1.x and 2.2.

	Format	Hres	Vres	Frame rate (Hz)	Sampling	Bit-depth	Notes
HD	1280x720	1280	720	24, 25, 30, 50, 60, 120	RGB/4:4:4/4:2:2	8/10/12bpc	—
	1920x1080i	1920	1080	50, 60	RGB/4:4:4/4:2:2	8/10/12bpc	—
	1920x1080	1920	1080	24, 25, 30, 50, 60, 120	RGB/4:4:4/4:2:2	8/10/12bpc	—
	2048x1080	2048	1080	24, 25, 30, 50, 60, 120	RGB/4:4:4/4:2:2	8/10/12bpc	—
4K	3840x2160	3840	2160	24, 25, 30	RGB/4:4:4/4:2:2	8/10/12bpc	4:2:2 12-bit only
	3840x2160	3840	2160	50, 60	RGB/4:4:4	8bpc	—
	3840x2160	3840	2160	50, 60	4:2:2/4:2:0	8/10/12bpc	4:2:2 12-bit only
	4096x2160	4096	2160	24, 25, 30	RGB/4:4:4/4:2:2	8/10/12bpc	4:2:2 12-bit only
	4096x2160	4096	2160	50, 60	RGB/4:4:4	8bpc	—
	4096x2160	4096	2160	50, 60	4:2:2/4:2:0	8/10/12bpc	4:2:2 12-bit only
3D	1280x720	1280	720	50, 60	RGB/4:4:4/4:2:2	8/10/12bpc	Frame-packing, top-and-bottom
	1920x1080	1920	1080	24, 25	RGB/4:4:4/4:2:2	8/10/12bpc	Frame-packing

DisplayPort video formats

The DisplayPort 1.2 interface supports HDCP 1.x.

	Format	Cables	Hres	Vres	Frame rate (Hz)	Sampling	Bit-depth	Notes
HD	1280x720	—	1280	720	24, 25, 30, 50, 60, 120	RGB/4:4:4	8/10/12bpc	—
	1920x1080	—	1920	1080	24, 25, 30, 50, 60, 120	RGB/4:4:4	8/10/12bpc	—
	2048x1080	—	2048	1080	24, 25, 30, 50, 60, 120	RGB/4:4:4	8/10/12bpc	—
4K	3840x2160	—	3840	2160	24, 25, 30, 50, 60	RGB/4:4:4	8/10bpc	—
	4096x2160	—	4096	2160	24, 25, 30, 50, 60	RGB/4:4:4	8/10bpc	—
	3840x2160	2x	1920	2160	120	RGB/4:4:4	8/10bpc	Two-port mode
	4096x2160	2x	2048	2160	120	RGB/4:4:4	8/10bpc	Two-port mode

Dual-input 3D

Identify the video formats for the Dual-input 3D.

One set of cables is required for left-eye and another set is required for right-eye. The output rate depends on the input rate (per eye) as follows:

- 24 Hz signals are triple-flashed resulting in an output rate of 144 Hz.
- 25 Hz signals are triple-flashed resulting in an output rate of 150 Hz.
- 30 Hz signals are double-flashed resulting in an output rate of 120 Hz.
- 60 Hz signals are single-flashed resulting in an output rate of native 120 Hz.

HDMI 2.0

This interface supports HDCP 1.x.

	Format	Cables	Hres	Vres	Frame rate (Hz)	Sampling	Bit-depth	Notes
HD	1280x720	2x	1280	720	24, 25, 30, 50, 60	RGB/4:4:4/4:2:2	8/10/12bpc	—
	1920x1080	2x	1920	1080	24, 25, 30, 50, 60	RGB/4:4:4/4:2:2	8/10/12bpc	—
	2048x1080	2x	2048	1080	24, 25, 30, 50, 60	RGB/4:4:4/4:2:2	8/10/12bpc	—

	Format	Cables	Hres	Vres	Frame rate (Hz)	Sampling	Bit-depth	Notes
4K	3840x2160	2x	3840	2160	24, 25, 30	RGB/4:4:4/4:2:2	8/10/12bpc	4:2:2 12-bit only
	3840x2160	2x	3840	2160	50, 60	RGB/4:4:4	8bpc	—
	3840x2160	2x	3840	2160	50, 60	4:2:2/4:2:0	8/10/12bpc	4:2:2 12-bit only
	4096x2160	2x	4096	2160	24, 25, 30	RGB/4:4:4/4:2:2	8/10/12bpc	4:2:2 12-bit only
	4096x2160	2x	4096	2160	50, 60	RGB/4:4:4	8bpc	—
	4096x2160	2x	4096	2160	50, 60	4:2:2/4:2:0	8/10/12bpc	4:2:2 12-bit only

DisplayPort 1.2

The DisplayPort 1.2 interface supports HDCP 1.x.

	Format	Cables	Hres	Vres	Frame rate (Hz)	Sampling	Bit-depth
HD	1280x720	2x	1280	720	24, 25, 30, 50, 60	RGB/4:4:4	8/10/12bpc
	1920x1080	2x	1920	1080	24, 25, 30, 50, 60	RGB/4:4:4	8/10/12bpc
	2048x1080	2x	2048	1080	24, 25, 30, 50, 60	RGB/4:4:4	8/10/12bpc
4K	3840x2160	2x	3840	2160	24, 25, 30, 50, 60	RGB/4:4:4	8/10bpc
	4096x2160	2x	4096	2160	24, 25, 30, 50, 60	RGB/4:4:4	8/10bpc

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