The top half of the page features a complex, abstract background of overlapping, semi-transparent blue triangles and polygons in various shades of blue, creating a dynamic, crystalline effect. This pattern transitions into a clean white background at the bottom.

User Guide
020-102958-03

4K40-RGB

D4K40-RGB, Roadie 4K40-RGB

CHRISTIE®

NOTICES

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GENERAL

Every effort has been made to ensure accuracy, however in some cases changes in the products or availability could occur which may not be reflected in this document. Christie reserves the right to make changes to specifications at any time without notice. Performance specifications are typical, but may vary depending on conditions beyond Christie's control such as maintenance of the product in proper working conditions. Performance specifications are based on information available at the time of printing. Christie makes no warranty of any kind with regard to this material, including, but not limited to, implied warranties of fitness for a particular purpose. Christie will not be liable for errors contained herein or for incidental or consequential damages in connection with the performance or use of this material. Manufacturing facilities in Canada and China are ISO 9001 certified. Manufacturing facilities in Canada are also ISO 14001 certified.

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!

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Introduction

This manual is intended for professionally trained operators of Christie high-brightness projection systems.

Only Christie qualified technicians who are knowledgeable about the hazards associated with high-voltage, ultraviolet exposure, and the high temperatures generated by the projector are authorized to assemble, install, and service the projector.

For complete 4K40-RGB product documentation and technical support, go to www.christiedigital.com.

Models

This guide applies to the following models.

- D4K40-RGB
- Roadie 4K40-RGB

Safety and warning guidelines

Read all safety and warning guidelines before installing or operating the projector.

This projector is intended for use in a non-cinema environment.

This projector must be operated in an environment that meets the operating range specification. Use only the attachments and/or accessories recommended by Christie. Use of others may result in the risk of fire, shock, or personal injury.



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

- This product must be operated in an environment that meets the operating range as specified in this document.
- Do not look directly into the lens when the light source is on. The extremely high brightness can cause permanent eye damage.
- EXTREME BRIGHTNESS! When accessing a restricted access location for product service or maintenance, avoid exposure to the product beam path by turning the product power off and disconnecting the product from AC power, or by shuttering the light source to avoid emissions from the front aperture.
- FIRE HAZARD! Keep hands, clothes, and all combustible material away from the concentrated light beam of the projector.
- Keep fingers and other body parts away from the moving parts in the product. Tie back long hair, and remove jewelry and loose clothing before manually adjusting the product.
- FIRE AND SHOCK HAZARD! Use only the attachments, accessories, tools, and replacement parts specified by Christie.
- Do not operate the product without a lens installed.
- Always use a lens plug when installing or moving the product. This prevents contaminants from entering the product.
- FIRE AND SHOCK HAZARD! Use only the attachments, accessories, tools, and replacement parts specified by Christie.



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

- 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.

AC power precautions

Read all safety and warning guidelines before connecting to AC power.



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

- SHOCK HAZARD! Only use the AC power cord provided with the product or recommended by Christie.
- FIRE AND SHOCK HAZARD! Do not attempt operation unless the power cord, power socket, and power plug meet the appropriate local rating standards.
- SHOCK HAZARD! Do not attempt operation if the AC supply is not within the specified voltage and current, as specified on the license label.
- SHOCK HAZARD! The AC power cord must be inserted into an outlet with grounding.
- SHOCK HAZARD! Disconnect the product from AC before installing, moving, servicing, cleaning, removing components, or opening any enclosure.
- Install the product near an easily accessible AC receptacle.



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

- 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.
- SHOCK HAZARD! Power supply uses double pole/neutral fusing.

Laser safety precautions

Read all safety and warning guidelines before operating the projector laser.



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

- PERMANENT/TEMPORARY BLINDNESS HAZARD! No direct exposure to the beam must be permitted. Class 1 Laser Product - Risk Group 3 according to IEC 60825-1:2014 and IEC 62471-5:2015.
- LASER RADIATION HAZARD! This projector has a built-in Class 4 laser module. Never attempt to disassemble or modify the laser module.
- Possible hazardous optical radiation emitted from this product. (Risk group 3)
- Only Christie qualified technicians who are knowledgeable about the hazards associated with laser use, high-voltage, and high temperatures generated by the product are authorized to assemble, install, and service the Christie Laser Projection System.
- Do not look directly into the lens when the light source is on. The extremely high brightness can cause permanent eye damage.
- Do not operate the product without all of its covers in place.

Light intensity hazard distance

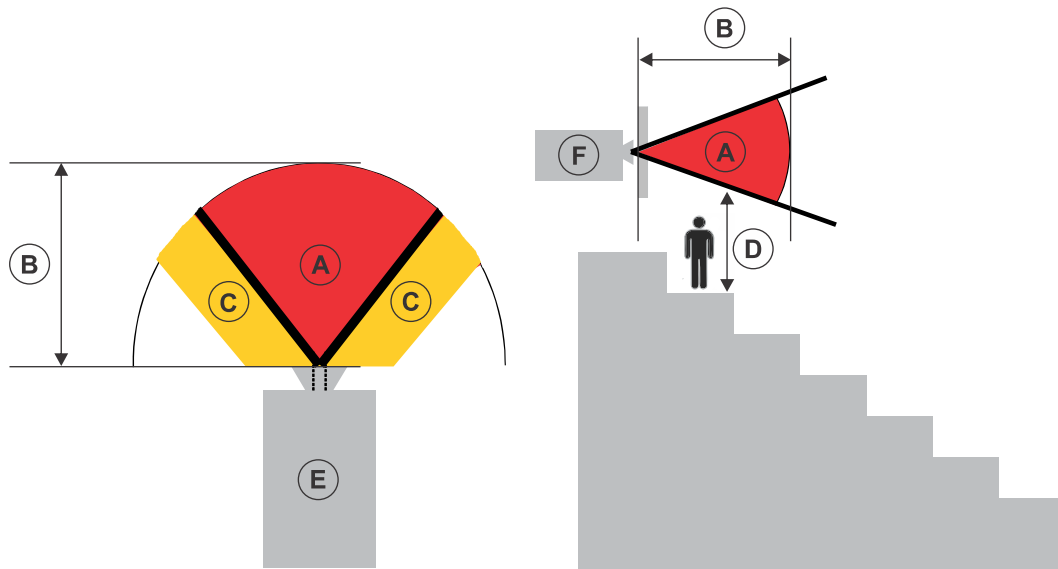
This projector has been classified as Risk Group 3 as per the IEC 62471-5:2015 standard due to possible hazardous optical and thermal radiation being emitted.



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

- PERMANENT/TEMPORARY BLINDNESS HAZARD! No direct exposure to the beam must be permitted. Class 1 Laser Product - Risk Group 3 according to IEC 60825-1:2014 and IEC 62471-5:2015.
- PERMANENT/TEMPORARY BLINDNESS HAZARD! Operators must control access to the beam within the hazard distance or install the product at the height that prevents exposure of spectators' eyes within the hazard distance. The hazard zone must be no lower than 3.0 meters above the floor and the horizontal clearance to the hazard zone must be a minimum 2.5 meters.
- EXTREME BRIGHTNESS! Do not place reflective objects in the product light path.

The following diagram and table show the zones for ocular and skin hazard distances:



- A—Hazard zone. The region of space where the projection light from the laser-illuminated projector is above emission limits for Risk Group 2. The light intensity may cause eye damage after a momentary or brief exposure (before a person can avert his or her eyes away from the light source). The light may cause skin burns to occur.
- B—Hazard distance. Operators must control access to the beam within the hazard distance or install the product preventing potential exposure of the spectators' eyes from being in the hazard distance.
- C—No access zone. Horizontal clearance of the no access zone must be a minimum of 2.5 meters.
- D—Vertical distance to hazard zone. The hazard zone must be no lower than 3.0 meters above the floor.
- E—Represents the top view of the projector.
- F—Represents the side view of the projector.

For US and international hazard distances based upon IEC 62471-5:2015, *Photobiological Safety of Lamps and Lamp Systems – Part 5: Image Projectors*.

Projection lens	Part number	Hazard distance (m)
0.72:1 HB fixed	144-110103-XX	1.0
0.9:1 HB fixed	144-111014-XX	1.0
1.13-1.31:1 HB zoom	144-103105-XX	1.0
1.13-1.66:1 HB zoom	144-129103-XX	2.0
1.31-1.63:1 HB zoom	144-104106-XX	2.0
1.45-2.17:1 HB zoom	144-130105-XX	2.5
1.63-2.17:1 HB zoom	144-105107-XX	2.5
1.95-3.26:1 HB zoom	144-131106-XX	4.0

Projection lens	Part number	Hazard distance (m)
1.99-2.71:1 HB zoom	144-106108-XX	3.0
2.71-3.89:1 HB zoom	144-107109-XX	4.5
3.89-5.43:1 HB zoom	144-108100-XX	6.5
0.72:1 UHC fixed	163-116109-XX	1.0
0.9:1 UHC fixed	163-117100-XX	1.0
1.13-1.66:1 UHC zoom	163-118101-XX	2.0
1.45-2.17:1 UHC zoom	163-119102-XX	2.5
1.95-3.26:1 UHC zoom	163-120103-XX	3.5
2.71-3.89:1 UHC zoom	163-121105-XX	4.6
3.89-5.43:1 UHC zoom	163-122106-XX	6.6

For Installations in the United States

The following must be in place for laser-illuminated projector installations in the United States:

- Any human access to the hazard zone, if applicable, must be restricted by barriers to enforce the no access zone.
- Permanent show installations containing Risk Group 3 laser-illuminated projectors must meet the following conditions:
 - Installed by Christie or by Christie-authorized and trained installers.
Refer to the Laser Illuminated Projector - Class 1 Risk Group 3 Installation training (Course code: CF-LIPI-01) on the <http://www.christieuniversity.com> site.
 - Performed according to instructions provided by Christie.
 - Ensure the projection system is securely mounted or immobilized to prevent unintended movement or misalignment of the projections.
- A copy of the FDA variance approval letter must be with the operator or other responsible individual.
FDA variances can be found in the online training course—Laser Illuminated Projection - Class 1 Risk Group 3 Installation.
- Temporary show installations containing Risk Group 3 laser-illuminated projectors may be installed by Christie or sold or leased only to valid laser light show variance holders (laser light show manufacturers) for image projection applications. Such manufacturers may currently hold a valid variance for production of Class IIIb and IV laser light shows and/or for incorporation of the Risk Group 3 laser-illuminated projectors into their shows. This requirement applies also to dealers and distributors of these laser-illuminated projectors.
- For temporary installations, the FDA variance holder must maintain complete records of all show itineraries with dates, locations, operator name, and contact information clearly and completely identified.
- The Christie Laser Projection System Installation Checklist must be fully completed after the installation and sent to lasercompliance@christiedigital.com. A copy can remain on-site. This checklist can be found as a separate document in the accessory box with the manual.











- Certain US states have additional laser regulatory requirements. Go to www.christiedigital.com for additional regulatory requirements.

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	
 	<p>To prevent fire or shock hazards, do not expose this product to rain or moisture.</p> <p>Do not alter the power plug, overload the power outlet, or use it with extension cords.</p> <p>Do not remove the product enclosure.</p> <p>Only Christie qualified technicians are authorized to service the product.</p>
Electrical Hazard	
	<p>Risk of electric shock.</p> <p>Do not remove the product enclosure.</p> <p>Only Christie qualified technicians are authorized to service the product.</p>
	<p>General hazard.</p>
	<p>Electric shock hazard. To avoid personal injury, disconnect all power sources before performing maintenance or service.</p>
	<p>Electrocution hazard. To avoid personal injury, always disconnect all power sources before performing maintenance or service procedures.</p>
	<p>Hot surface hazard. To avoid personal injury, allow the product to cool for the recommended cool down time before performing maintenance or service.</p>
	<p>Burn hazard. To avoid personal injury, allow the product to cool for the recommended cool down time before performing maintenance or service.</p>
	<p>Optical radiation hazard. To avoid personal injury, never look directly at the light source.</p>
	<p>Moving parts hazard. To avoid personal injury, keep hands clear and loose clothing tied back.</p>



Fan hazard. To avoid personal injury, keep hands clear and loose clothing tied back. Always disconnect all power sources before performing maintenance or service procedures.



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



Not for household use.

Mandatory action



Disconnect all power sources before performing maintenance or service procedures.



Consult the service manual.

Electrical labels

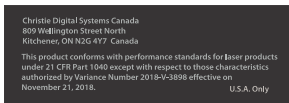


Indicates the presence of a protective earth ground.

Laser labels



CLASS 1 LASER PRODUCT IEC 60825-1



FDA laser variance (US projectors only)



Indicates a light hazard. Do not look directly into the lens. The extreme high brightness can cause permanent eye damage. Class 1 Laser Product - Risk Group 3 according to IEC 60825-1: 2014 and IEC 62471-5:2015



Indicates Class 4 laser radiation when open. Avoid eye or skin exposure to direct or scattered radiation.

Product documentation

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

D4K40-RGB and Roadie 4K40-RGB

1. Access the documentation from the Christie website:
 - Go to this URL: <http://bit.ly/2NIBz7a> or <https://www.christiedigital.com/en-us/business/products/projectors/3-chip-dlp>.
 - Scan the QR code using a QR code reader app on a smartphone or tablet.



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

Related documentation

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

- *4K40-RGB Product Safety Guide (P/N: 020-102957-XX)*
- *4K40-RGB Installation and Setup Guide (P/N: 020-102961-XX)*
- *4K40-RGB Specifications Guide (P/N: 020-102959-XX)*

- 4K40-RGB Status System Guide (P/N: 020-102975-XX)
- 4K40-RGB Serial Commands Guide (P/N: 020-102972-XX)
- 4K40-RGB Service Guide (P/N: 020-102960-XX)

Technical support

Technical support for Christie products is available at:

- North and South America: +1-800-221-8025 or Support.Americas@christiedigital.com
- Europe, Middle East, and Africa: +44 (0) 1189 778111 or Support.EMEA@christiedigital.com
- Asia Pacific: +65 6877-8737 or Support.APAC@christiedigital.com

Projector overview

Learn about the 4K40-RGB projector.

4K40-RGB is a professional quality, easy-to-use 3DLP® RGB laser projector. The high-brightness 4K40-RGB is designed to meet the special demands found in large venues, live events, and high-usage environments. With reliable Christie RealLaser™ illumination integrated in a rugged chassis and ultra-fast processing of Christie TruLife™ electronics, the 4K40-RGB is the go-to solution for demanding, large venue events and applications.

Contact your dealer

Record the information about your projector and keep this information with your records to assist with the servicing of your projector. If you encounter a problem with your Christie projector, contact your dealer.

Purchase record	
Dealer:	
Dealer or Christie Sales/Service contact phone number:	
Projector serial number:	
The serial number can be found on the license label located on the display panel	
Purchase date:	
Installation date:	

Ethernet settings	
Default gateway	
Projector IP address	
Subnet mask	

Key features

Understand the important features of the projector.

- Long lasting, reliable Christie RealLaser™ RGB laser illumination
- Compact form with direct-coupled laser source integrated into the projector chassis
- LiteLOC™ color lock feature for constant image brightness and color
- Omnidirectional operation for unrestricted design and installation flexibility
- Christie TruLife™ electronics for ultra-high resolution, high frame rate video up to 120 frames per second
- Christie Terra input card integrates into SDVoE networks
- Compatible with most Christie Boxer lenses
- Full-color LCD display to provide information at-a-glance
- Integrated keypad control interface

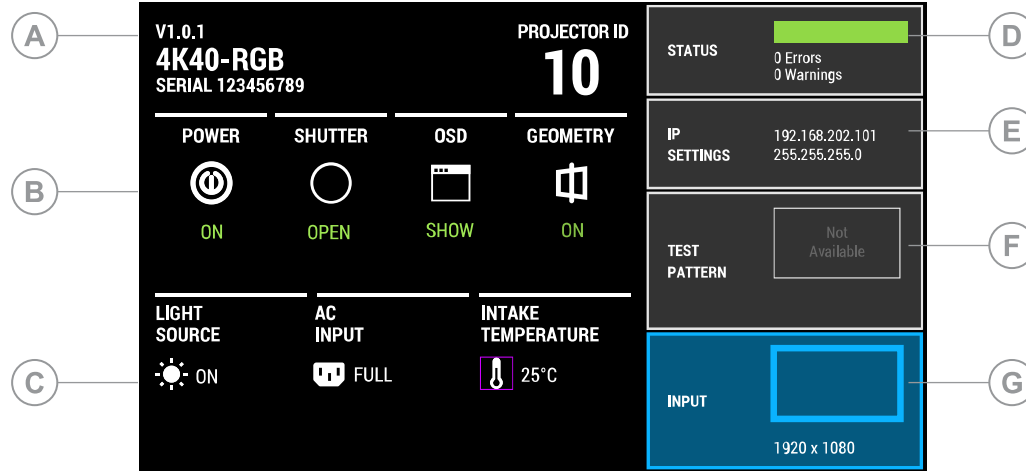
List of components

Verify all components were received with the projector.

- Power cord
- IR remote keypad
- Network cable
- Tools
- Fiber optic support
- Laser illumination source interlock jumper for J33 harness (P/N: 001-114198-XX)
- Fiber connector safety cover

Display panel components

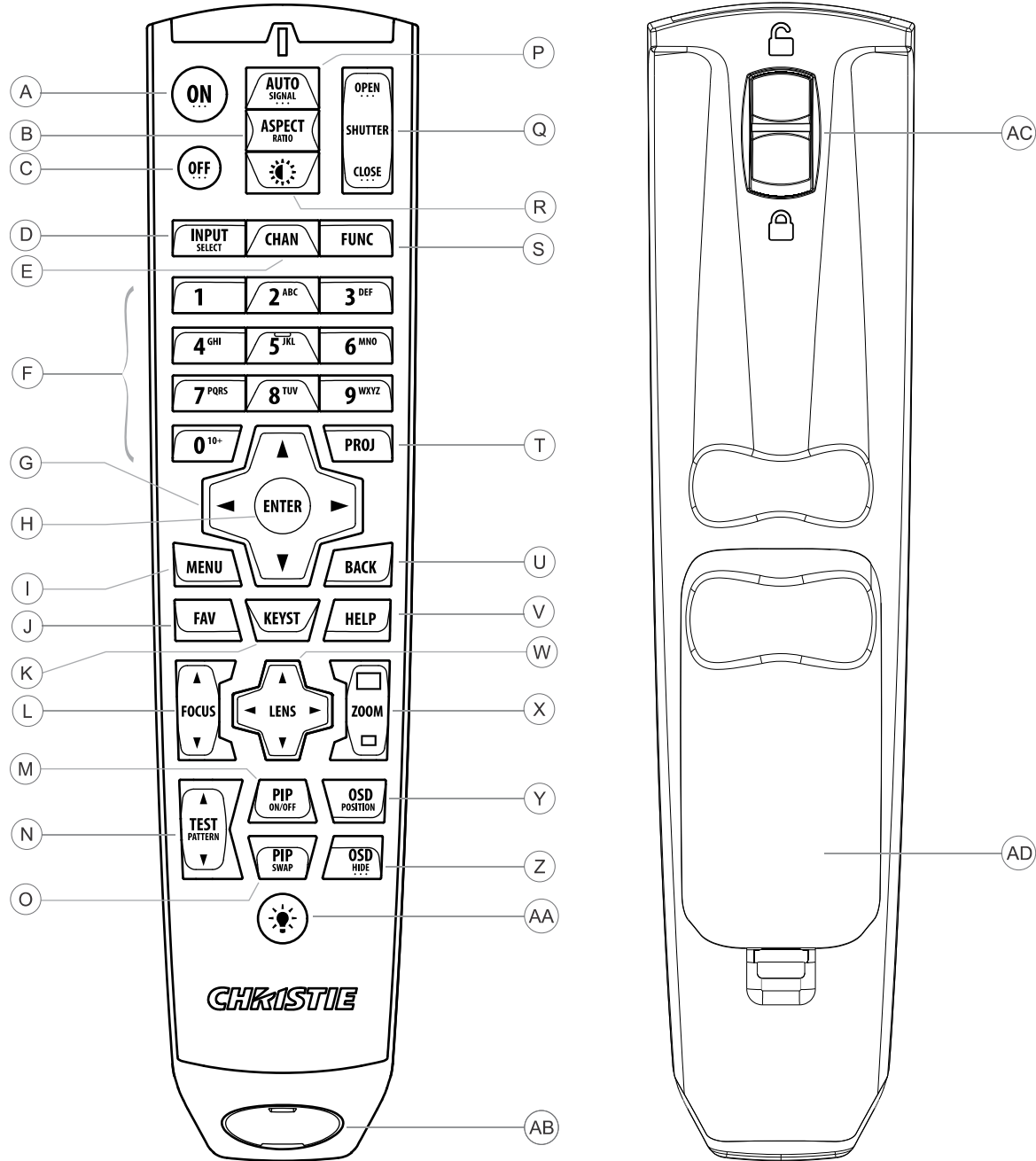
Identify the main components of the display panel (also known as the home page).



ID	Component	Description
A	Projector Information	Provides information about the projector such as the projector name, serial number, software version, and projector ID.
B	Projector and Component Controls	Indicates the states of the projector and its components.
C	Power and Temperature	Indicates the light source mode, power mode, and intake temperature.
D	Status	Contains information about the health of the projector including the number of warnings and errors. Provides access to the status system.
E	IP Settings	Displays the IP address and subnet values. Provides access to changing the IP settings.
F	Test Pattern	Displays the currently selected test pattern. If no test pattern is selected, Off is displayed. Provides access to the list of test patterns.
G	Input	Displays the signal for the currently selected input. Provides access to the list of input signals.

IR remote keypad

The IR remote keypad controls the projector by way of wireless communications from a battery-powered infrared (IR) transmitter.



Button	Description
A	Powers on the projector light source.
B	Opens the aspect ratio dialog.

Button	Description
C	Turns off the light source and puts the projector in standby.
D	Selects an active or inactive input on any slot.
E	Not supported.
F	Enter a number, such as menu, item index or value.
G	Use the arrows to navigate within a menu or to adjust settings.
H	Selects a highlighted menu item and changes or accepts a value.
I	Toggles the menus on/off.
J	Not supported.
K	Opens the keystone dialog.
L	Adjusts the lens focus.
M	Not supported.
N	Displays a test pattern.
O	Not supported.
P	Optimizes the image automatically.
Q	Opens or closes the shutter.
R	Not supported.
S	Initiates a custom action when a number is selected.
T	Selects a projector in multi-projector installations.
U	Returns to the previous menu level or exits menus if at the top level.
V	Displays context-sensitive help.
W	Arrows adjust the lens offset.
X	Adjust the lens zoom.
Y	Opens the on-screen display position menu.
Z	Shows or hides the on-screen display menus.
AA	Turns the remote backlight on.
AB	Male 3-pin XLR connector for wired option.
AC	Lock/unlock the keypad.
AD	Battery door.

Adjusting the image

Adjust the projector image. Christie recommends warming the lens before completing these procedures as focus may change as the lens warms.

Selecting screen image orientation

Specify the orientation to use for the image. The projector supports front projection, rear projection, front projection inverted, or rear projection inverted.

1. Select **MENU > Image Settings > Image Orientation**.
2. Select the required orientation from the list.
3. To confirm your selection, press **Enter**.

Setting the image resize preset

Set the image resize preset to determine if an image will display in its native resolution or will resize by maximizing the height, width, both height and width, or to the maximum size while keeping the original aspect ratio.

1. Select **MENU > Image Settings > Size & Position > Resize Presets**.
2. Select the appropriate resize preset:
 - **Auto**—Maximize for current source.
 - **No Resizing**—Display in native resolution.
 - **Full Size**—Fill the screen, regardless of source.
 - **Full Width**—Fill display width and keep aspect ratio.
 - **Full Height**—Fill display height and keep aspect ratio.
3. Select **Enter**.

Adjusting lens settings

Adjust various lens settings including the offset, zoom, focus, and locking the lens motor.

Adjusting offset

Adjust the offset to align the image on the screen. Always adjust offset before adjusting boresight.



For the best optical performance and minimal keystone, use offsets instead of aiming at the center of the image, in off-axis installations. Avoid extreme tilts or offsets. Corner vignettes on a white test pattern indicate extreme offset that should be avoided using mechanical alignment.

1. Project an image with the primary lens.

2. Select a framing test pattern.
3. Select **LENS OFFSET**.
4. Use the arrows to adjust the offset to display a square image on the screen, with minimal projector aiming error.
5. To exit to the home page, select **Back**.

Resetting the lens to home position

Set the lens offset back to the home position.

1. Select **LENS OFFSET**.
You can also select **MENU > Configuration > Lens Settings > Lens Offset**.
2. To reset the lens to the default home position, select **Enter**.
3. To confirm the reset, select **OK**.

Aligning the image with lens zoom and focus

Ensure that the image reflected from the digital micromirror device (DMD) is parallel and centered with the lens and screen.

1. Display an image or test pattern that can be used to analyze image focus and geometry.
2. Select **ZOOM**.
You can also select the zoom function from **MENU > Configuration > Lens Settings > Zoom**.
3. Use the up and down arrows to zoom in or out of the image.
4. To exit, select **Back**.
5. Select **FOCUS**.
You can also select the focus function from **MENU > Configuration > Lens Settings > Focus**.
6. Use the up and down arrows to adjust the focus of the image.
7. To exit, select **Back**.
8. To refine your adjusts, repeat steps 2 to 7.

Locking the lens motor

Prevents all lens motors from moving. It disables the zoom, focus, and offset settings, locking out any changes and overriding all other lens features. This feature prevents accidental lens position changes in multi-projector installations.

1. Select **MENU > Configuration > Lens Settings > Lock all Lens Motors**.
2. To enable locking of all lens motors, select **Enter**.

Determining what lens warnings are displayed

Controls the level of lens warnings displayed.

1. Select **MENU > Configuration > Lens Settings > Lens Warnings**.
2. Select the appropriate lens warning level:

- **Show All Warnings**—Shows all lens warnings.
 - **Hide Zoom Motor Warnings**—Hides zoom motor warnings.
 - **Hide Detection Warnings**—Hides lens detection warnings. Christie recommends selecting this option when using a third-party lens.
3. Select **Enter**.

Adjusting primary colors

Calibrate the accuracy of primary colors, which can change because of lighting and environmental factors.

All primary colors in the projector are precisely set to pre-established values to ensure overall color performance is optimized and is as accurate as possible. Lighting and other environmental factors may slightly change how these colors appear on your screen. While the change is negligible in most cases, you may prefer to recover the originally intended color performance before trying to match colors from several projectors.

To achieve consistency use a color meter to measure the native primary colors—red, green, blue, and white—as they appear on the screen. On the basis of these new values, which are stored in memory, each projector automatically calculates any necessary corrections to reproduce the original factory colors under the current environmental conditions. This essentially calibrates a projector to its surroundings, compensating for factors such as screen type, light source and/or ambient lighting, and improves color accuracy and consistency in a group of projectors. It ensures a good starting point for further customizing and matching; however, is not critical for all installations.

1. From the display panel, select **MENU > Configuration**.
2. Select **Color Primary Settings**.
3. To edit the primary colors, select **Edit Primary Colors**.
4. Adjust the slider or enter the measured color values of the primary color component you selected.
5. To confirm your selection, select **Enter**.
6. Repeat steps 5 and 6 for each primary color component.
7. To view a specific color while adjusting, select **Show Color Pattern**.
8. Select the appropriate color and select **Enter**.
9. To reset the primary colors to their defaults, select **Reset Color Primaries**.
10. At the confirmation prompt, select **OK**.

DMD color correction

Adjust the DMD color values as required.

Adjusting color by precise chromaticity values

Change the values of the primary color components.

1. Select **MENU > Configuration > Color Correction by x,y**.
2. Adjust the slider or enter the measured color values of the primary color component you selected.

3. To confirm your selection, select **Enter**.
4. Repeat steps 2 and 3 for each primary color component.
5. To view a specific color while adjusting, select **Show Color Pattern**.
6. Select the appropriate color and select **Enter**.

Adjusting color by saturation

Change the strength of the primary color in relation to the other primary colors.

1. Select **MENU > Configuration > Color Saturation**.
2. Adjust the value of the primary color you selected by using more or less of it in relation to the other primary colors.
3. To confirm your selection, select **Enter**.
4. Repeat steps 2 and 3 for each primary color.
5. To view a specific color while adjusting, select **Show Color Pattern**.
6. Select the appropriate color and select **Enter**.

Signal color correction

Adjust the video signal color as required.



For best results, Christie recommends setting all color and gamma settings to **Auto Detect**.

Adjusting the color space

Determine how the color components are decoded for accurate color in the display.

1. Select **MENU > Image Settings > Color & Gamma > Color Space**.
2. Select the adjustment most suited to the input signal:
 - Auto Detect
 - RGB (Full Range)
 - RGB (Limited Range)
 - YCbCr HDTV (Expanded Range)
 - YCbCr JPEG (Full Range)
 - YCbCr UHD TV (ITU-R BT.2020) (Full Range)
3. Select **Enter**.

Adjusting color by temperature

Adjust the color temperature as expressed in degrees Kelvin.

1. Select **MENU > Image Settings > Color & Gamma**.
2. Select **Color Temperature**.
3. Adjust the slider to change the light to warmer or cooler and select **Enter**.

Selecting the color correction mode

Select the color correction mode most suited to the input signal.

1. Select **MENU > Image Settings > Color & Gamma > Color Correction Mode**.
2. Select the adjustment most suited to the input signal:
 - **Auto Detect**—Automatically detect the appropriate color correction mode, where possible.
 - **Max Drives**—All color adjustments are turned off, allowing the projector to run at maximum brightness.
 - **Color Temperature**—Specify a color temperature between 3200 and 9300, expressed in degrees Kelvin.
 - **HD Video**—Set the output color to a specific standard value. Adjusts the colors red, green, blue, and white.
 - **DCI P3**—Set the DCI P3 (cinema) colorimetry with DCI white point.
 - **DCI P3 (D65)**—Set the DCI P3 colorimetry with D65 white point.
 - **Custom**—Select a user defined set of color adjustments.
3. Select **Enter**.

Correcting for ambient light

Ambient light is the natural light that occurs in the environment where the projector is located.

1. Select **MENU > Image Settings > Color & Gamma > Ambient Light Correction**.
2. Select **Enter**.
3. Use the right and left arrows to adjust how the image displays in conditions with ambient light.
4. To confirm your selection, select **Enter**.

Setting the frame delay

Delay the output signal timing relative to the input signal timing by a fraction of a frame, and up to several frames.

The minimum latency can vary based on the amount of scaling applied to the image. When using keystone or warping, an additional latency is required, depending on the amount of warp.

1. Select **MENU > Image Settings > Advanced Image Settings > Frame Delay**.
2. To set the frame delay, select **Set Delay**.
3. Adjust the value and to confirm your selection, select **Enter**.
4. To set the achievable frame delay, select **Actual Delay**.
5. Adjust the value and to confirm your selection, select **Enter**.

Enabling film mode detect

Enables or disables the detection of film motion.

1. Select **MENU > Image Settings > Advanced Image Settings > Film Mode Detect**.

2. To enable the detection of film motion, select **Auto Detect**.
3. To disable the detection of film motion, select **Disabled**.
4. Select **Enter**.

Adjusting the image sharpness

Change the sharpness of the image.

Lower settings can improve a noisy signal. Setting the sharpness above the halfway point can introduce noise in the image.

1. Select **MENU > Image Settings > Advanced Image Settings > Sharpness**.
2. Select **Enter**.
3. Use the right and left arrows to adjust the sharpness of the image.
4. To confirm your selection, select **Enter**.

Creating a seamless image with edge blending

Combine several projected images into one single, seamless image with edge blending.

Adding edge blends to the projector

Use Christie or to create edge blends and upload them to 4K40-RGB.

1. Create an edge blend file using the Christie or application.
To connect 4K40-RGB with Christie or , use port 3003.
Christie Twist Premium, Twist Pro, and offer advanced warping options. Refer to the Christie website (www.christiedigital.com) for product information and documentation.
2. Upload the edge blend file to the projector.
3. On one projector, select **MENU > Configuration > Edge Blending**.
4. Select the appropriate edge blend setting and select **Enter**.
5. Repeat steps 2 to 4 for the remaining projectors.
6. To turn off edge blending, from **MENU > Configuration > Edge Blending**, select **Off**.

Enabling basic edge blending

Create basic edge blends directly on 4K40-RGB.

1. Start with two projectors and display the full white field test pattern from both.
2. On one projector, select **MENU > Configuration > Edge Blending**.
3. To enable basic edge blending, select **Basic**.
4. To edit blending adjustments, select **Edge Blend Widths**.
5. From the Basic Blending dialog, select a side to blend.
6. To make the blending adjustments, use the arrow keys to change either the vertical and horizontal values as appropriate.

7. To accept the selection, select **Enter**.
8. Repeat steps 4 to 6 to blend the remaining sides.
9. When all adjustments are made, use the arrow keys to highlight **Apply** and select **Enter**.
10. Repeat steps 2 to 9 for the remaining projectors.
11. To turn off basic edge blending, from **MENU > Configuration > Edge Blending**, select **Off**.

Resetting edge blending

Reset the edge blending to revert any edge blends.

1. Select **MENU > Configuration > Edge Blending**.
2. Select **Reset Edge Blends**.
3. At the confirmation prompt, select **Reset**.

Blending black levels for multiple projectors

Use black level blending to modify the brightness of non-blended regions to match the elevated brightness levels of the blended regions.

You can adjust the black level intensity of multiple adjacent projected images to create one large seamless display.

Enabling black level blending

Enable black level blending to eliminate the differences between black levels when edge blending multiple projectors.

1. Select **MENU > Configuration > Black Level Blending > Black Level Blending Mode**.
2. Select **Basic**.
To disable black level blending, select **MENU > Configuration > Black Level Blending > Black Level Blending Mode > Off**.

Adjusting the black level blends

Control how the edges of adjacent images are overlapped to create a seamless image.

1. Start with a minimum of two projectors and display the full black field test pattern from each projector.
2. On one projector, select **MENU > Configuration > Black Level Blending > Black Level Blend Widths**.
3. Set the black level blend widths of the top, bottom, left, or right edges (depending on which edge of the projector you are working with to black level blend).
 - To use the widths set by the edge blend, select **Use Edge Blend Width Values**. This option is selected by default.
 - To manually set the widths, use the arrow keys to enter the pixel values.

On the on-screen display or web UI, you can enter the number directly in the field using the remote or keyboard.

4. Select **Apply**.
5. Select **MENU > Configuration > Black Level Blending > Black Level Blend Offset**.
6. To adjust the brightness and black hues of the blended region, use the arrow keys to enter the pixel values.
On the on-screen display or web UI, you can enter the number directly in the field using the remote or keyboard.
7. If using the web UI, you can adjust the brightness and black hues in more detail by modifying the values in the Fine Adjustment and Course Adjustment fields.
8. Select **Apply**.
9. Repeat steps 2 to 8 for the remaining projectors.

Resetting black level blending

Reset the black level blending to revert any black level blends.

Pressing **Func+Help** on the IR remote keypad disables all geometry corrections (warping, keystone, and black level blending) without changing the settings associated with them.

1. Select **MENU > Configuration > Black Level Blending**.
2. Select **Reset Black Level Blends**.
3. At the confirmation prompt, select **Reset**.
After the reset, the black level blend offsets are set to 0, **Use Edge Blend Width Values** checkbox is selected, and the edge blend values are used; however, the black level blend widths are not set to zero.

Geometry correction

Modify the geometry for all sources.

Enabling warping

Use warping to project images on any surface shape.

1. Create a warp file using the 4K40-RGB or application.
To connect 4K40-RGB with or , use port 3003.
Christie Twist Premium, Twist Pro, and offer advanced warping options. Refer to the Christie website (www.christiedigital.com) for product information and documentation.
2. Upload the warp file to the projector.
3. Select **MENU > Configuration > Geometry Correction > Geometry Correction Mode**.
4. Select the appropriate warp setting and select **Enter**.
5. To turn off warping, from **MENU > Configuration > Geometry Correction > Geometry Correction Mode**, select **Off**.

Pressing **Func+Help** on the IR remote keypad disables all geometry corrections (warping, keystone, and black level blending) without changing the settings associated with them.

Correcting the shape of a keystoneed image

Keystone effect occurs when you project an image onto the screen at an angle and the projector is not centered on the screen. The image appears distorted and resembles a trapezoid.

To correct the shape of a keystoneed image, use the keystone options available in the geometry correction menu. Perform coarse keystone adjustments by using the horizontal or vertical settings. It may not be possible to match the screen dimensions with the horizontal and vertical keystone controls but you can refine these settings by adjusting the 2D keystone settings.

Enabling keystone adjustments

Enable keystone corrections to correct the shape of a keystoneed image.

1. Select **MENU > Configuration > Geometry Correction > Geometry Correction Mode.**

2. Select **Keystone.**

Any keystone adjustments previously set are enabled.

To disable keystone adjustments, select **MENU > Configuration > Geometry Correction > Geometry Correction Mode > Off.**

Adjusting the image with 2D keystone

2D keystone distorts the projected image both vertically and horizontally simultaneously and resembles a trapezoid.

Adjusting horizontal or vertical keystone correction after 2D keystone erases the 2D keystone settings; however, performing 2D keystone after horizontal or vertical correction retains the previous keystone setting.

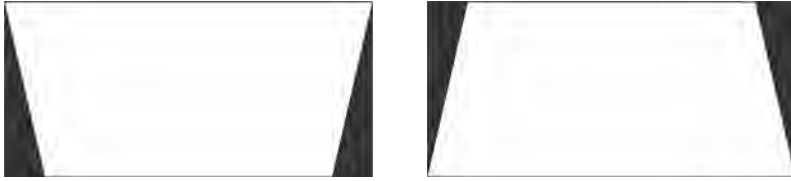


1. Select **MENU > Configuration > Geometry Correction > Geometry correction Mode.**
2. Select **2D Keystone Correction.**
3. From the correction dialog, select the corner to adjust.
4. To make the keystone adjustments, use the arrow keys to change both the vertical and horizontal values.
5. Select **Apply Changes.**

Adjusting vertical keystone

Use vertical keystone to correct a keystoneed image shape in which the top and bottom borders of the image are unequal in length, and both sides of the image are inclined toward the top or bottom edge.

If vertical keystone adjustments have been made, starting horizontal keystone adjustments erases the vertical settings.

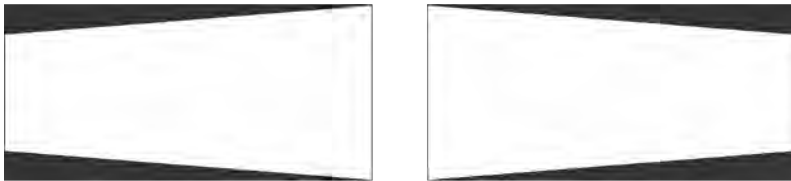


1. Select **MENU > Configuration > Geometry Correction > Geometry Correction Mode.**
2. Select **Vertical Keystone Correction.**
3. From the correction dialog, adjust the vertical keystone by using the arrow keys.
4. Select **Apply Changes.**

Adjusting horizontal keystone

Use horizontal keystone to correct a keystone image shape in which the left and right borders of the image are unequal in length, and the top and bottom are slanted to one of the sides.

If horizontal keystone adjustments have been made, starting vertical keystone adjustments erases the horizontal settings.



1. Select **MENU > Configuration > Geometry Correction > Geometry Correction Mode.**
2. Select **Horizontal Keystone Correction.**
3. From the correction dialog, adjust the horizontal keystone by using the arrow keys.
4. Select **Apply Changes.**

Resetting keystone correction

Reset keystone to revert the distorted image shape back to default values.

Pressing **Func+Help** on the IR remote keypad disables all geometry corrections (warping, keystone, and black level blending) without changing the settings associated with them.

1. Select **MENU > Configuration > Geometry Correction.**
2. Select **Reset Keystone Correction.**
3. At the confirmation prompt, select **Reset.**

Configuring system settings

Learn how to configure the system settings.

Setting the date

Configure the date on 4K40-RGB.

1. Select **Menu > System Settings**.
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 4K40-RGB.

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

Changing the splash screen

Select the color displayed on the screen.

1. Select **MENU > System Settings > Splash Screen Settings > Background Color**.
2. Select a splash screen background color:
 - Black
 - Red
 - Green
 - Blue
3. Select **Enter**.

Determining the on-screen display position

Choose one of the pre-defined locations for the display of the on-screen menus.

1. Select **MENU > System Settings > Menu Preferences > OSD Position**.

2. Select the location on the screen where you want the on-screen display menus to appear.
3. Select **Enter**.

Changing the language

Choose the language you want displayed on projector display panel and on-screen display.

1. Select **MENU > Languages**.
You can also select the language from **MENU > System Settings > Menu Preferences > Languages**.
2. Select **Enter**.
3. Select the appropriate language and select **Enter**.
The change takes effect immediately.

Changing the temperature units

Set if the temperature is measured in Celsius or Fahrenheit.

1. Select **MENU > System Settings > Menu Preferences > Temperature Units**.
2. Select the temperature unit: **Celsius** or **Fahrenheit**.
3. Select **Enter**.

Resuming projector operation after an AC power interruption

If an AC power interruption occurs while Auto Power Up is enabled, the projector will resume operation in the same state it was prior to the loss of power.

1. Select **MENU > System Settings > Power Settings**.
2. Select **Auto Power Up**.
3. To enable automatically powering up the projector after an AC interruption, select **Enter**.

Keeping electronics on in standby mode

When the projector is placed in standby mode, the light source will be turned off but the electronics will remain on.

1. Select **MENU > System Settings > Power Settings**.
2. Select **Keep Electronics On In Standby**.
3. To enable electronics remaining on in standby mode, select **Enter**.

Enabling direct pass-through of HDMI, 3G, and DisplayPort input signals

Allow the signals from HDMI, 3G, and DisplayPort inputs to pass through another projector.

1. Select **MENU > Configuration > Input Settings > Enable Video Loop Out.**
2. To enable passing HDMI, 3G, and DisplayPort input signals through to another projector, select **Enter.**

Informing the source of signal preferences

Configure 4K40-RGB 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 Settings > EDID Timing.**
2. Select the required EDID timing and select **Enter.**
60 Hz is the default EDID timing.

Managing the light source

Learn how to configure laser drive levels and use the projector's LiteLOC™ feature.

The laser file allows you to control the power settings of the red, green, and blue (RGB) lasers. The LiteLOC™ feature ensures that color and brightness are held at the level you set.

You can create multiple profiles to manage varying screen sizes, brightness requirements, room temperatures in the projection booth, and types of content (such as 2D, 3D, and alternative content).

Configuring the laser power settings using LiteLOC™ version 1.0

Projector profiles contain the power settings for the RGB laser light source. Use LiteLOC version 1.0 to maintain color and brightness at a consistent level.

The maximum power limit for red changes according to the value set for the maximum expected room temperature. For red, green, and blue power levels, system stability may be affected if levels are set below the minimum power limit shown.

To ensure color and brightness are held at the required levels for your installation, Christie recommends that you enable LiteLOC version 1.0 for each laser configuration you create.

1. From the display panel, select **MENU > Configuration > Light & Output Settings > LiteLOC.**
2. To disable LiteLOC, select **LiteLOC disabled.**
3. To display the white test pattern, **MENU > Test Pattern**
4. Scroll through the list of test patterns and select **White.**
5. To confirm your selection, select **Enter.**
6. To indicate the maximum expected room temperature, select **MENU > Configuration > Light & Output Settings > Max Ambient Temperature.**

7. Use the slider to increase and decrease the maximum ambient temperature and select **Enter**.
The system uses the maximum expected room temperature to calculate the light output. The default maximum expected room temperature setting is 25° C. A lower room temperature generally results in increased brightness and better efficiency. A higher room temperature reduces the maximum power setting available for the lasers. The maximum expected room temperature setting must reflect actual operating conditions.
8. Select **MENU > Image Settings > Color & Gamma > Color Correction Mode**.
9. Select **Max Drives** and to confirm your selection, select **Enter**.
10. Select **MENU > Configuration > Light & Output Settings**.
11. To set the approximate red power level, select **Red Laser Setpoint** and use the slider to increase and decrease the value required for your projection environment.
System stability may be affected if you set a power level below the minimum power level recommended.
When setting the red power level, Christie recommends setting a level below the maximum limit shown. A value below the maximum limit ensures an optimal brightness that can be maintained over time.
12. To set the green (**Green Laser Setpoint**) and blue (**Blue Laser Setpoint**) power levels, repeat step 11.
13. Allow the projector to stabilize.
14. If color or brightness is not at the target level, refine the red, green, and blue power settings to achieve the target by repeating steps 11 and 12.
15. Allow the projector to re-stabilize.
The projector is considered stable when no further adjustments are required and you obtain the same screen state results after two sets of measurements, five minutes apart.
16. To lock the current color and brightness once the correct color and brightness are achieved and the projector has stabilized, select **MENU > Configuration > Light & Output Settings > LiteLOC**.
17. Select **LiteLOC 1.0**.
18. To save the new laser settings, save to a projector profile.

Related information

Creating a new projector profile (on page 46)

Selecting a test pattern (on page 50)

Selecting the color correction mode (on page 24)

Configuring the laser power settings using LiteLOC™ version 2.0

Projector profiles contain the power settings for the RGB laser light source. LiteLOC version 2.0 can be set to the maximum brightness limit and will maintain color while reducing brightness, if required.

1. To indicate the maximum expected room temperature, select **MENU > Configuration > Light & Output Settings > Max Ambient Temperature**.
2. Use the slider to increase and decrease the maximum ambient temperature and select **Enter**.
The system uses the maximum expected room temperature to calculate the light output. The default maximum expected room temperature setting is 25° C. A lower room temperature

generally results in increased brightness and better efficiency. A higher room temperature reduces the maximum power setting available for the lasers. The maximum expected room temperature setting must reflect actual operating conditions.

3. To enable LiteLOC version 2.0, select **MENU > Configuration > Light & Output Settings > LiteLOC**.
4. Select **LiteLOC 2.0**.
5. To set the color of white you want to achieve from the laser, record the **White X** and **White Y** values.
6. To control the brightness, select **Maser Laser Power** and use the slider to increase or decrease the value.
100% is the maximum brightness of the projector at the ambient temperature setting of 22° C.
7. To save the new laser settings, save to a projector profile.

Setting up 1D color uniformity

Learn how to set up 1D color uniformity on the projector after taking measurement of each of the color primaries at points (15, 2, 5, 8, and 16).

1. Ensure the projector is running in representative ambient light.
2. Setup a spectroradiometer, such as the CR-250, on a tripod.
If not using the CR-250 or better, Christie recommends placing the meter perpendicular to the screen to achieve accurate measurements.
Do not use the PR-655 spectroradiometer to perform color uniformity on a multi-projector installation.
3. Power on the projector.
4. Allow the light source to stabilize.
5. Select **MENU > Configuration > Horizontal 1D Color Uniformity**.
6. To disable color uniformity, select **Color Uniformity Mode**.
7. Select **Enter**.
8. Select **MENU > Image Settings > Color & Gamma > Color Correction Mode**.
9. Select **Max Drives** and to confirm your selection, select **Enter**.
10. Select **Show Color Pattern > Auto** and to confirm your selection, select **Enter**.
11. From the side panel home page, use the arrows to select **Test Pattern**.
12. Select the **17 Point test pattern** and to confirm your selection, select **Enter**.



13. Record the x, y, and RGB luminance values for the center point.

- a) Point the spectroradiometer at point 5 (middle square).
 - b) Click the X value.
 - c) Record the x value from the spectroradiometer.
 - d) Click the Y value.
 - e) Record the y value from the spectroradiometer.
 - f) Click on the Red luminance setting.
The display changes to the appropriate color.
 - g) Record the luminance value from the spectroradiometer.
 - h) Click on the Green luminance setting.
The display changes to the appropriate color.
 - i) Record the luminance value from the spectroradiometer.
 - j) Click on the Blue luminance setting.
The display changes to the appropriate color.
 - k) Record the luminance value from the spectroradiometer.
14. Record the luminance values for the remaining four points (2—inside left, middle square; 15—far left, middle square; 8—inside right, middle square; and 16—far right, middle square)
- a) Point the spectroradiometer at a point.
 - b) Click on the Red luminance setting.
The display changes to the appropriate color.
 - c) Record the luminance value from the spectroradiometer.
 - d) Click on the Green luminance setting.
The display changes to the appropriate color.
 - e) Record the luminance value from the spectroradiometer.
 - f) Click on the Blue luminance setting.
The display changes to the appropriate color.
 - g) Record the luminance value from the spectroradiometer.
 - h) For the remaining three points, repeat steps a to g.
15. Select **MENU > Configuration > Horizontal 1D Color Uniformity**.
16. To enable color uniformity, select **Color Uniformity Mode**.
17. Select **Enter**.
18. To verify 1D color uniformity is working, enable a flat white test pattern.

Related information

Selecting an engine test pattern (on page 52)

Turning on the projector with low voltage

Enable the projector to turn on even if the AC mains voltage is below specification.

1. From the display panel, select **MENU > Admin > Service**.
2. Enter the service password.

3. Select **Ignore Low AC Input Voltage Error**.
4. To ignore the Low AC Input Voltage error when turning on the projector, select **Enter**.

Configuring communications

Defines and controls how single or multiple projectors are linked with each other and with a controlling device.

Enabling projector communication

Enable the receivers and the wired keypad to communicate with the projector from the remote.

The front and rear IR sensors receive transmissions from the IR remote. Keep the transmission path to these sensors unobstructed for uninterrupted communications with the projector.

Alternatively, you can connect a wired version of the remote to the connector on the IMXB labeled Wired Keypad.

1. Select **MENU > Communications > Projector Communications**.
2. To assign the projector an ID, select **Projector ID**.
3. Use the up and down keys to enter the projector ID.
4. Select **Enter**.
5. To enable the front IR sensor, select **Front IR Enabled** and select **Enter**.
6. To enable the rear IR sensor, select **Rear IR Enabled** and select **Enter**.
7. To enable a wired version of the remote, select **Wired Keypad Enabled** and select **Enter**.
By default this feature is enabled.
8. To enable HD control for video signals, Ethernet, or IR, select **HDBaseT IR Extender Enabled** and select **Enter**.

Setting the remote access level

Determine if and how the projector can be accessed remotely for the RS232 port or the Ethernet.

1. From the display panel, select **MENU > Admin > Service**.
2. Enter the service password.
3. To determine the remote access for the Ethernet port, select **Remote Access Level (Ethernet)**.
4. Select the appropriate remote access level:
 - No Access
 - Login Required
 - Free Access
5. Select **Enter**.

6. To determine the remote access for the RS232 IN port, select **Remote Access Level (RS232 IN)**.
7. Select the appropriate remote access level:
 - No Access
 - Login Required
 - Free Access
8. Select **Enter**.

Communicating with 4K40-RGB through Art-Net

4K40-RGB supports communications through the Art-NET using the Ethernet connector.

1. Select **MENU > Communications > Art-Net Settings**.
2. Verify the **Enable Art-Net** option is disabled.
Disabling Art-Net before configuring it ensures 4K40-RGB does not accidentally respond to DMX messages destined for other devices on the network.
3. To specify which subnet the projector belongs to, in the Art-Net Subnet field adjust the value between 0 and 15.
The subnet provides expandability beyond the universe level.
4. To confirm your selection, select **Enter**.
5. To specify which universe the projector belongs to, so it can filter out all other data packets, in the Art-Net Universe field, adjust the value between 0 and 15.
For Art-Net, data is broadcast over an Ethernet network, so every device receives every packet of data, whether the device belongs to that universe or not.
6. To confirm your selection, select **Enter**.
7. To determine the starting channel for this projector, in the Base Channel field, adjust the value between 1 and 488.
If multiple projectors are used on the same universe and are to be controlled independently, this value must be changed. For example, if both projectors are using the Shutter (20 channels), projector 1 should start at base channel 1 and projector 2 should start at base channel 21.
8. To confirm your selection, select **Enter**.
9. Select **Enable Art-Net**.
10. To enable the Art-Net functionality, select **Enter**.

Art-Net channel listing

There are 512 channels per universe. 4K40-RGB specifies 24 channels.



4K40-RGB has multiple methods of being controlled in addition to Art-Net. If a setting is changed through another interface, the DMX controller can re-assert control by changing the value on the appropriate DMX channel.

Channel	Name	Description	Suggested starting position	Notes
1	Slider Lock	0 to 171 = Locked 172 to 255 = Unlocked	0	—
2	Power	0 to 85 = Powers off the projector (goes into Standby mode) 86 to 171 = Cancel timer 172 to 255 = Powers on the projector (switches light source on, warm up mode)	128	Must be valid for five seconds before it is applied.
3	Shutter	0 to 85 = Closes the shutter (black screen) 172 to 255 = Opens the shutter (live video)	255	Christie recommends setting this channel to 255 prior to powering up the projector so it is consistent with the shutter state after the projector is fully on.
4	Lens Shift Enable	0 to 171 = Disables lens shift 172 to 255 = Enables lens shift	—	Locks all lens motors.
5	Zoom (Coarse)	0 = Smallest image possible (0%) 255 = Largest image possible (100%)	128	<ul style="list-style-type: none"> • Locked by the Lens Shift Enable channel. • Scaled as a percentage of the total control range. • A 250 ms delay exists before sending this channel to the projector.
6	Zoom (Fine)			
7	Focus (Coarse)	0 = 0% 255 = 100%	128	<ul style="list-style-type: none"> • Locked by the Lens Shift Enable channel. • Scaled as a percentage of the total control range. • A 250 ms delay exists before sending this channel to the projector.
8	Focus (Fine)			
9	Lens Horizontal Position (Coarse)	0 = Full left position (0%) 255 = Full right position (100%)	128	<ul style="list-style-type: none"> • Locked by the Lens Shift Enable channel. • A 250 ms delay exists before sending this channel to the projector.
10	Lens Horizontal Position (Fine)			
11	Lens Vertical Position (Coarse)	0 = Full lower position (0%)	128	<ul style="list-style-type: none"> • Locked by the Lens Shift Enable channel.

Channel	Name	Description	Suggested starting position	Notes
12	Lens Vertical Position (Fine)	255 = Full upper position (100%)		<ul style="list-style-type: none"> A 250 ms delay exists before sending this channel to the projector.
13	Input	1 to 80 = Input index 86 = Load 91 to 170 = Additional input indices 171 = Execute	0	To change inputs, send the following sequence: Load > Input index > Execute For a list of input indices, see <i>Index list for the input channel</i> (on page 40). Channel 1 slider lock can be used if a keypad is not available for the input selection.
14	Fade Time	0 = 0 seconds 250 = 2.5 seconds	—	Determines the length of time it takes for the shutter to open and close with a fading effect.
15 to 24	Reserved	Reserved for future use.	—	—

Index list for the input channel

the following table provides the index information for the input channel.



Not all options listed in the table are available on all products. Available options depend on the projector model and the cards installed on the projector. The QSFP+ options require the **Enable Christie Link** option to be set.

Input index	Description	Input index	Description
1	One-port [0-1]	44	Four-Port [1-2][2-2][3-2][4-2]
2	One-port [0-2]	45	One-Port, Dual-Input 3D L:[0-1],R:[0-2]
3	One-port [0-3]	46	One-Port, Dual-Input 3D L:[0-3],R:[0-4]
4	One-port [0-4]	47	One-Port, Dual-Input 3D L:[1-1],R:[1-2]
5	One-Port [1-1]	48	One-Port, Dual-Input 3D L:[1-3],R:[1-4]
6	One-Port [1-2]	49	One-Port, Dual-Input 3D L:[2-1],R:[2-2]
7	One-Port [1-3]	50	One-Port, Dual-Input 3D L:[2-3],R:[2-4]
8	One-Port [1-4]	51	One-Port, Dual-Input 3D L:[3-1],R:[3-2]
9	One-Port [2-1]	52	One-Port, Dual-Input 3D L:[3-3],R:[3-4]
10	One-Port [2-2]	53	One-Port, Dual-Input 3D L:[4-1],R:[4-2]
11	One-Port [2-3]	54	One-Port, Dual-Input 3D L:[4-3],R:[4-4]
12	One-Port [2-4]	55	One-Port, Dual-Input 3D L:[1-1],R:[2-1]

Input index	Description	Input index	Description
13	One-Port [3-1]	56	One-Port, Dual-Input 3D L:[1-2],R:[2-2]
14	One-Port [3-2]	57	One-Port, Dual-Input 3D L:[1-3],R:[2-3]
15	One-Port [3-3]	58	One-Port, Dual-Input 3D L:[1-4],R:[2-4]
16	One-Port [3-4]	59	One-Port, Dual-Input 3D L:[3-1],R:[4-1]
17	One-Port [4-1]	60	Two-Port, Dual-Input 3D L:[0-1][0-2],R:[0-3][0-4]
18	One-Port [4-2]	61	Two-Port, Dual-Input 3D L:[1-1][1-2],R:[1-3][1-4]
19	One-Port [4-3]	62	Two-Port, Dual-Input 3D L:[2-1][2-2],R:[2-3][2-4]
20	One-Port [4-4]	63	Two-Port, Dual-Input 3D L:[3-1][3-2],R:[3-3][3-4]
21	One-Port [HDBaseT]	64	Two-Port, Dual-Input 3D L:[4-1][4-2],R:[4-3][4-4]
22	Two-Port [0-1][0-2]	65	Two-Port, Dual-Input 3D L:[1-1][1-2],R:[2-1][2-2]
23	Two-Port [0-3][0-4]	66	Two-Port, Dual-Input 3D L:[3-1][3-2],R:[4-1][4-2]
24	Two-Port [1-1][1-2]	67	Two-Port, Dual-Input 3D L:[1-1][2-1],R:[3-1][4-1]
25	Two-Port [1-3][1-4]	68	Four-Port, Dual-Input 3D L:[1-1][1-2][2-1][2-2],R:[3-1][3-2][4-1][4-2]
26	Two-Port [2-1][2-2]	69	Four-Port, Dual-Input 3D L:[1-1][1-2][1-3][1-4],R:[2-1][2-2][2-3][2-4]
27	Two-Port [2-3][2-4]	70	Four-Port (columns) [0-1][0-2][0-3][0-4]
28	Two-Port [3-1][3-2]	71	Four-Port (columns) [1-1][1-2][1-3][1-4]
29	Two-Port [3-3][3-4]	72	Four-Port (columns) [2-1][2-2][2-3][2-4]
30	Two-Port [4-1][4-2]	73	Four-Port (columns) [3-1][3-2][3-3][3-4]
31	Two-Port [4-3][4-4]	74	Four-Port (columns) [4-1][4-2][4-3][4-4]
32	Two-Port [1-1][2-1]	75	Four-Port (columns) [1-1][1-2][2-1][2-2]
33	Two-Port [3-1][4-1]	76	Four-Port (columns) [3-1][3-2][4-1][4-2]
34	Two-Port [1-2][2-2]	77	Four-Port (columns) [1-1][2-1][3-1][4-1]
35	Two-Port [3-2][4-2]	78	Four-Port (columns) [1-2][2-2][3-2][4-2]
36	Four-Port [0-1][0-2][0-3][0-4]	79	Four-Port (columns), Dual-Input 3D L:[1-1][1-2][2-1][2-2],R:[3-1][3-2][4-1][4-2]
37	Four-Port [1-1][1-2][1-3][1-4]	80	Four-Port (columns), Dual-Input 3D L:[1-1][1-2][1-3][1-4],R:[2-1][2-2][2-3][2-4]
38	Four-Port [2-1][2-2][2-3][2-4]	91	QSFP+ [0-1]
39	Four-Port [3-1][3-2][3-3][3-4]	92	QSFP+ [0-2]
40	Four-Port [4-1][4-2][4-3][4-4]	93	QSFP+ [1-1]
41	Four-Port [1-1][1-2][2-1][2-2]	94	QSFP+ [1-2]
42	Four-Port [3-1][3-2][4-1][4-2]	95	QSFP+ [2-1]

Input index	Description	Input index	Description
43	Four-Port [1-1][2-1][3-1][4-1]	96	QSFP+ [2-2]

Working with macros

Automate tasks in 4K40-RGB with macros so the same tasks can be done on a regular basis.



If the date and/or time is changed on the projector, a macro may be unexpectedly executed.

Adding a macro

Create a macro to automate a repetitive task.

Up to 10 macros can be created.



This feature is only available on the web interface.

1. From the home page of the web interface, select **MENU > Macros and GPIO**.
2. Click the **Add Macro**.
If the limit of 10 macros is reached, the **Add Macro** button is disabled and displays a Limit Reached message.
3. In the Name field, enter a meaningful name for the macro.
4. Verify that **Scheduled Event** is listed in the Type list.
5. In the Start Date field, select a date from the calendar.
6. In the Start Time field, use the up and down keys to adjust the hour (HH), minutes (MM), and seconds (SS).
You can also manually enter the hour, minutes, and seconds.
7. To make this a reoccurring event, click **Recurring**.
When enabled, the button appears green. When disabled, the button appears gray.
 - a) To determine the recurrence pattern, under Every, select the day or days of the week you want run the macro.
 - b) Determine the life of the macro.
 - To have the macro run indefinitely, select **No end date**.
 - To run the macro for a defined period of time, in the Recur for field, use the up and down keys to adjust the number of weeks.
You can also manually enter the number of weeks. The limit is 99 weeks.
8. In the Serial Command field, enter the serial command(s) you want to run.
For available serial commands and their syntax, refer to the *4K40-RGB Serial Commands Guide (P/N: 020-102972-XX)*.
9. To test the functionality, click **Test**.
An `Action succeeded` message is displayed upon a successful test.
10. To save the macro, click **Save**.

Copying a macro

Duplicate a macro to create another macro of similar functionality.

Up to 10 macros can be created.



This feature is only available on the web interface.

1. From the home page of the web interface, select **MENU > Macros and GPIO**.
2. From the list of macros, click **Duplicate** next to the macro you want to copy.



If the limit of 10 macros is reached, the **Duplicate** button is disabled and the **Add Macros** button displays a Limit Reached message.

3. In the Name field, enter a meaningful name for the macro.
4. Modify the appropriate fields.
5. To save the macro, click **Save**.

Editing a macro

Edit the macro if the functionality of the macro has changed.



This feature is only available on the web interface.

1. From the home page of the web interface, select **MENU > Macros and GPIO**.
2. From the list of macros, click **Edit** next to the macro you want to edit.



3. Modify the appropriate fields.
4. To save the macro, click **Save**.

Deleting a macro

Delete one or more macros if they are no longer relevant.



This feature is only available on the web interface.

1. From the home page of the web interface, select **MENU > Macros and GPIO**.
2. From the list of macros, select one or more macros to delete.
To delete all the macros in the list, click **Select All**. the number of macros you want to delete is displayed next to the trash can.

3. Click **Delete**.



4. At the confirmation prompt, click **Delete**.

Configuring the GPIO

The Generic Purpose Input Output (GPIO) provides a flexible method of interfacing with external devices to the projector.

The GPIO is configured to automate real time events. Each of the seven pins is defined as either an input or output depending on the required outcome. The remaining two pins are reserved for ground and power.

Configure the pin as an input if you want the projector to respond to something the device does and as an output if you want the external device to respond to an action taken by the projector. For example, configure the pin as an output if you want the lighting in a room to automatically dim when the projector is turned on.

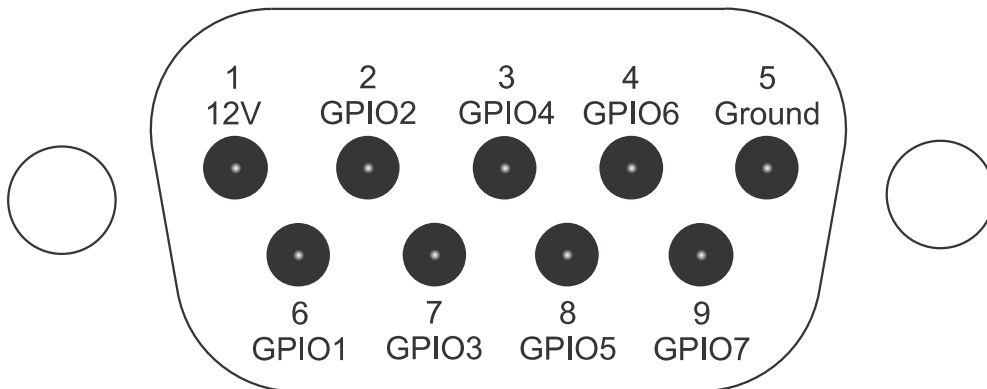


This feature is only available on the web interface.

1. From the home page of the web interface, select **MENU > Macros and GPIO**.
2. Select **GPIO Configuration**.
3. In the GPIO Configuration dialog under Update the New Configuration, toggle the pins you want active for the input and output.
A blue pin indicates input and a green pin indicates output.
4. Select **Apply**.

GPIO connector

The GPIO connector located on the input panel provides a flexible method of interfacing with the projector. Seven GPIO pins are available on the nine pin D-Sub GPIO connector. Two other pins are reserved for ground and power.



D-SUB pin number	Signal	Output high (Voh)	Notes
Pin 1	+12V	—	1A max
Pin 2	GPIO 2	5V	75mA max (e)fused to prevent damage
Pin 3	GPIO 4		
Pin 4	GPIO 6		
Pin 5	Ground	—	—

D-SUB pin number	Signal	Output high (Voh)	Notes
Pin 6	GPIO 1	5V	75mA max (e)fused to prevent damage
Pin 7	GPIO 3		
Pin 8	GPIO 5		
Pin 9	GPIO 7		



All GPIO pins are weakly pulled up to 3.3V.

Setting up projector profiles

Use the projector profiles to store configured settings so you can switch between the profiles as required.

Creating a new projector profile

Save the projector configuration to a profile so you can revert to those saved settings any time. You can save up to 10 projector profiles.

1. Configure the projector settings you want to save to the profile.
2. Select **MENU > Admin > Projector Profiles**.
3. Select an empty profile.
4. Select **New Profile**.
5. Select **Save**.

Importing a projector profile

Import projector profiles set on different projectors using a USB flash drive.

1. Insert the USB flash drive containing the projector profile file into the USB port on the projector.
2. Select **MENU > Admin > Projector Profiles**.
3. Select an empty profile.
4. Select **Import From File**.
5. From the File Selection dialog, select a projector profile file.
The projector profile file is imported to the projector.

Restoring settings from a profile

Return the projector to the configuration specified in a specific projector profile.

1. Select **MENU > Admin > Projector Profiles**.
2. Select an existing profile.
3. Select **Restore Profile**.
4. From the Restore dialog, select the settings you want to restore.
5. Select **Restore**.

Renaming a projector profile

A newly created projector profile is given the name of the projector with the date the profile was saved, for example, . You can change the name of the saved profile to a more meaningful name.

1. Select **MENU > Admin > Projector Profiles**.
2. Select an existing profile.
3. Select **Rename Profile**.
4. Use the up and down keys to enter the new name of the profile.
5. Select **Save**.

Exporting a projector profile to an external device

Save the projector settings to a USB flash drive.

1. Insert a USB flash drive (properly formatted as FAT) into the USB port on the projector.
2. Select **MENU > Admin > Projector Profiles**.
3. Selecting an existing profile.
4. Select **Export to File**.
A default name is assigned.

Deleting a projector profile

If the settings in the projector profile are no longer relevant, delete the profile.

1. Select **MENU > Admin > Projector Profiles**.
2. Select the profile you want to delete.
3. Select **Delete Profile**.
4. At the confirmation prompt, select **Delete**.

Backing up, restoring, and upgrading files

Learn how to back up, restore, and upgrade files.

Upgrading the 4K40-RGB software

When a new version of the software is released, 4K40-RGB must be upgraded.

1. Turn off the lasers before proceeding with the upgrade.
2. 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.
3. From the display panel, select **MENU > Admin**.
4. Select **Software > Upgrade**.
5. Select an upgrade file and select **Enter**.
6. To automatically restart 4K40-RGB, select **Restart Now**.
If you decide restart 4K40-RGB at a later date (**Restart Later**), you cannot perform another upgrade until the 4K40-RGB is restarted.

Adding a software license to a projector

Add the software license to the projector using the Christie Twist 2.5 or higher.

1. Record the serial number of the projector(s) and send it to Christie Technical Support.
The serial number is available on the projector label, from the **Status > Configuration** menu, or you can send the (SST+CONF?1) serial API command.
Christie Technical Support will send a zipped license file to you. If you sent more than one serial number, you will receive multiple license files as the .key file is based on the serial number of the projector.
2. Unzip the license file to a known location on your computer.
3. Make sure the projector you want to upgrade is running and is on the same subnet as your computer.
4. From the Start menu, select **Christie > Twist 2.x > Projector License Utility**.
5. In the Christie Projector License Utility dialog, click **Browse**.
6. Navigate to the location of the unzipped license file (.key) and select it.
7. From the Projectors list, select the projector you want to apply the upgrade to.
8. Click **Apply**.

9. Reboot the projector.
10. Repeat steps 3 to 9 for each additional projector.

Exporting backup settings to an external device

Save the 4K40-RGB settings to a USB flash drive (projector) or file (web interface).

1. If using the display panel to export settings, insert a USB flash drive (properly formatted as FAT) into the USB port on 4K40-RGB.
2. Select **MENU > Admin > Backup & Restore**.
3. Select the backup option.
 - On the projector, select **Backup to USB**.
 - On the web interface, select **Backup to File**.

A default name is assigned.

4. To edit the backup file name, select the up arrow and select **Enter**.
5. To save the name, navigate down and select **SAVE**.
The backup file is exported.

Importing a file from an external device to restore settings

Restore backed up files, stored on a USB flash drive (projector) or file (web interface), onto the projector.

1. If using the display panel to import the file, insert the USB flash drive containing the backup file into the USB port on the projector.
2. Select **MENU > Admin > Backup & Restore**.
3. Select the restore option.
 - On the projector, select **Restore from USB**.
 - On the web interface, select **Restore from File**.
4. From the File Selection dialog, select a file to restore.
The backup settings file is imported to the projector.

Restoring projector default settings

Restore the 4K40-RGB settings back to the default values. Network configurations and calibration values are not reset.

1. From the display panel, select **MENU > Admin > Backup & Restore**.
2. Select .
All customized settings are set to the default 4K40-RGB settings.

Diagnostic tools

Follow these procedures to help with diagnosing issues with 4K40-RGB.

Viewing 4K40-RGB information

View the licenses for the software added to 4K40-RGB and the licenses of the software used to operate 4K40-RGB. The information is read-only.

1. To view the additional software added to 4K40-RGB, select **MENU > Admin > Licenses**.
2. To view the software licenses used to run 4K40-RGB, select **MENU > Admin > About**.

Freezing an image

Use the Freeze Image diagnostic tool to examine in detail a still version of an incoming image.

For example, in moving images sometimes it is difficult to observe artifacts such as external de-interlacing/resizing and signal noise.

1. Select **MENU > Admin > Diagnostics**.
2. To enable freezing of an image, select **Freeze Image** and select **Enter**.
3. To return to normal operation, select **Enter** again to clear the checkbox.

Test patterns

Use the projector to assist with configuration of the projector and to diagnose any issues that may occur.

Selecting a test pattern

21 test patterns are available to assist with the configuration of the projector and to diagnose any issues that may occur.

1. From the side panel home page, use the arrows to select **Test Pattern**.
You can also select the test patterns from **MENU > Test Pattern** or **MENU > Diagnostics > Test Pattern**.
2. Scroll through the list of test patterns.
3. Select the required test pattern.
4. To confirm your selection, select **Enter**.

Modifying grey level test pattern characteristics

Set the level of grey displayed in the full grey test patterns.

1. Select **MENU > Admin > Diagnostics**.
2. Select **Test Pattern**.
3. Select one of the grey test patterns: GREY SCALE 16 or FLAT GREY.
4. Select **Enter**.
5. To change the grey scale of the test pattern, select **Test Pattern Grey Level** and adjust the slider to the value you want.
6. To confirm your selection, select **Enter**.

Modifying ramp test pattern characteristics

Modify the characteristics for the associated ramp video signal test patterns.

1. Select **MENU > Admin > Diagnostics**.
2. Select **Test Pattern**.
3. Select one of the ramp test patterns: RGBW RAMP, HORIZONTAL RAMP, VERTICAL RAMP, or DIAGONAL RAMP.
4. Select **Enter**.
5. To enable movement of the test pattern, select **Test Pattern Ramp Motion** and select **Enter**.
6. To change the slope of the ramp test pattern, select **Test Pattern Ramp Slope** and adjust the slider to the value you want.
7. To confirm your selection, select **Enter**.
8. To change the level of the ramp test pattern, select **Test Pattern Ramp Level** and adjust the slider to the value you want.
9. To confirm your selection, select **Enter**.

Modifying grid test pattern characteristics

Modify the characteristics for the associated grid test patterns.

1. Select **MENU > Admin > Diagnostics**.
2. Select **Test Pattern**.
3. Select one of the grid test patterns: SQUARE GRID or DIAGONAL GRID.
4. Select **Enter**.
5. To change the pitch of the grid test pattern, select **Test Pattern Grid Pitch** and adjust the slider to the value you want.
6. To confirm your selection, select **Enter**.
7. To change the color of the grid, select **Test Pattern Grid Color** and select **Enter**.
8. To enable movement of the test pattern, select **Test Pattern Grid Motion** and select **Enter**.

Enabling a specific test pattern color

You can enable a specific test pattern color to eliminate one or more colors to help with certain diagnostics and setups, such as overlaying one image on top of another from stacked projectors.

1. From the side panel home page, use the arrows to select **Test Pattern**.
You can also select the test patterns from **MENU > Test Pattern**.
2. Select the **Flat White** test pattern.
3. To confirm your selection, select **Enter**.
4. On the IR remote keypad, press **Func+6+<0 to 7>**.
Where <0 to 7> represents a specific color.

Selecting an engine test pattern

Several engine test patterns are available to assist with the calibration and internal optical alignments of the projector and to diagnose any issues that may occur.

1. Select **MENU > Admin > Service**.
2. Enter the service password.
3. Select **Engine Test Patterns**.
4. Scroll through the list of test patterns.
5. Select the required test pattern.
6. To confirm your selection, select **Enter**.
7. To disable the engine test patterns, select **MENU > Admin > Service > Engine Test Patterns > Off**.

Viewing 4K40-RGB 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 4K40-RGB.

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.

Running the 4K40-RGB 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 4K40-RGB.
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**.

Identifying where alarm and trap messages are sent

Configure the email address and SNMP trap destination where alarms are recorded.

Creating a distribution mailing list for SNMP alerts means that changes to the people receiving the emails does not require a change to the MIB browser configuration.

Setting the SNMP read community string

The SNMP read community string is similar to a userid or password that allows access to the device.

1. Select **MENU > Communications > SNMP > SNMP Read Community**.
2. Use the up and down arrows to enter the read community string.
3. To confirm your selection, select **Enter**.

Configuring traps

A trap is a condition that SNMP monitors on 4K40-RGB.

1. Select **MENU > Communications > SNMP > Trap Configuration**.
2. Select the trap you want to enable and select **Enter**.

The available traps are:

- Fan Stall
- Thermal Sensors
- Power

3. To enable additional traps, repeat step 2.

Defining a trap IP address

When a trap condition is met, a notification is sent using an SNMP notification to one or more specified IP addresses.

1. Select **MENU > Communications > SNMP**.
2. Select **Address 1**.
3. Use the up and down arrows to enter an IP address.
4. To confirm the address, select **Enter**.
5. To add a second and third IP address, repeat steps 2 to 4 for **Address 2** and **Address 3**.

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**.
2. Select **Reset Factory Defaults**.

All customized settings are set to the default factory settings.

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

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. 60950-1-07 – Information Technology Equipment – Safety – Part 1: General Requirements
- IEC/EN 60825-1 – Safety of Laser Products – Part 1: Equipment Classification and Requirements
- IEC/EN 62471-5 – Photobiological safety of lamps and lamp systems – Part 5: Image projectors
- UL 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 32:2012/EN 55032:2012, Class A – Electromagnetic Compatibility of Multimedia Equipment – Emission Requirements
- FCC CFR47, Part 15, Subpart B, Class A – Unintentional Radiators
- IEC 61000-3-11/EN61000-3-11: Limitations of Voltage Changes, Voltage Fluctuations, and Flicker for equipment with rated current ≤ 75 A
- IEC 61000-3-12/EN61000-3-12: Limits for harmonic current emissions for equipment for systems with input current > 16 A and ≤ 75 A per phase

Immunity

- CISPR 24:2010/EN55024:2010 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).

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