Mirage 304K (Bm.1)

CHRISTIE®

NOTICES

COPYRIGHT AND TRADEMARKS

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. Our centers of excellence for manufacturing in Kitchener, Ontario, Canada and in Shenzhen, China are ISO 9001:2015 Quality Management System-certified.

For the most current technical documentation and office contact information, visit *http://www.christiedigital.com*.

Warranty

Products are warranted under Christie's standard limited warranty, the details of which are available at *https://www.christiedigital.com/help-center/ warranties/* or by contacting your Christie dealer or Christie.

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 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, separate collection systems are for used electrical and electronic products.

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

Please help us to conserve the environment we live in!

Notation

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

⚠ (red)	Danger messages indicate a hazardous situation which, if not avoided, results in death or serious injury.
⚠ (orange)	Warning messages indicate a hazardous situation which, if not avoided, could result in death or serious injury.
⚠ (yellow)	Caution messages indicate a hazardous situation which, if not avoided, could result in minor or moderate injury.
❗ (blue)	Notice messages indicate a hazardous situation which, if not avoided, may result in equipment or property damage.
📝	Information messages provide additional information, emphasize or provide a useful tip.

Content

Introduction

This manual is intended for Christie qualified installers and trained operators of Christie Mirage 304K projection systems.

For complete Mirage 304K product documentation and technical support, go to *www.christiedigital.com*.

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 off the product power and disconnecting the product from AC power, or by shuttering the light source to avoid emissions from the front aperture.
- ELECTRICAL and BURN HAZARD! Use caution when accessing internal components.
- 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.
- SHOCK HAZARD! Power supply uses double pole/neutral fusing. Disconnect all power sources before opening the product.
- FIRE HAZARD! Do not exceed 30 A for the breaker to power Input 1 on the projector.
- Install the product near an easily accessible AC receptacle.
- RADIATION HAZARD! Use of controls or adjustments, or performing procedures other than those specified may result in hazardous radiation exposure.

⚠️ **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.
- The American Conference of Governmental Industrial Hygienists (ACGIH) recommends occupational UV exposure for an 8-hour day to be less than 0.1 microwatts per square centimeters of effective UV radiation. A workplace evaluation is advised to assure employees are not exposed to cumulative radiation levels exceeding the government guidelines for your area. Be aware that some medications are known to increase sensitivity to UV radiation.

Light intensity hazard distance

This projector has been classified as Risk Group 3 as per the IEC62471 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.
- 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 show the zones for ocular and skin hazard distances.
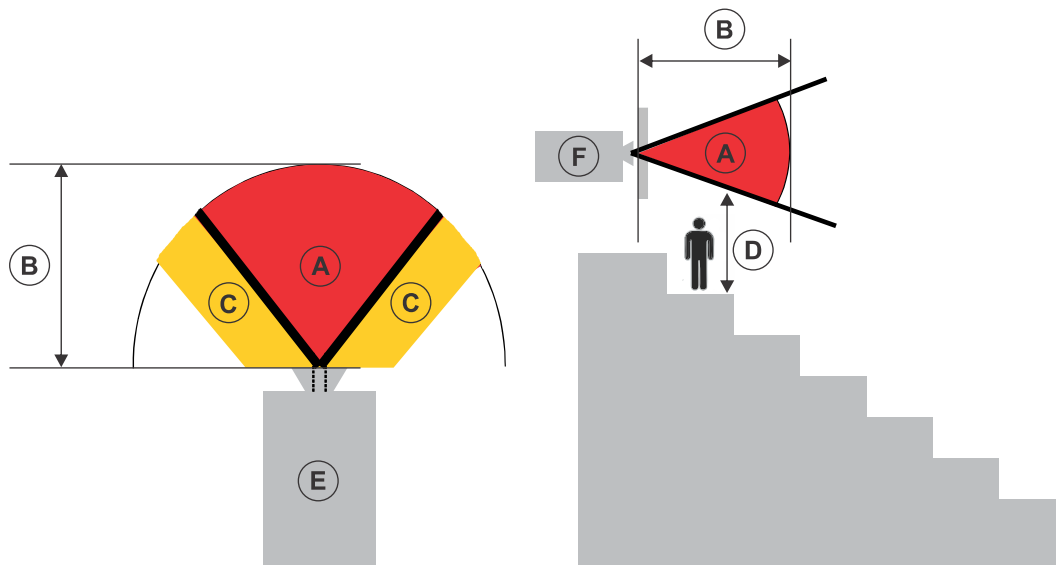
- A—Hazard zone. The region of space where the projection light from the projector is above emission limits for Risk Group 2. The light intensity may cause eye damage after a momentary or brief exposure (before a person can avert their eyes away from the light source). The light may cause skin burns 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 (8.2 feet).
- D—Vertical distance to hazard zone. The hazard zone must be no lower than 3.0 meters (9.8 feet) above the floor.

  If the vertical distance to hazard zone requirement (Zone D) is satisfied, the horizontal clearance distance (Zone C) is not needed.
- E—Represents the top view of the projector.
- F—Represents the side view of the projector.

Projection lens	Part number	Hazard distance (m)
0.38:1	144-136101-XX	0.6
0.72:1 HB fixed lens	144-110103-XX	0.6
0.9:1 fixed lens	144-111014-XX	0.7
1.13-1.31:1 HB zoom lens (Discontinued)	144-103105-XX	1.1
1.31-1.63:1 HB zoom lens	144-104106-XX	1.3
1.63-2.17:1 HB zoom lens (Discontinued)	144-105107-XX	1.7
1.99-2.71:1 HB zoom lens	144-106108-XX	2.2
2.71-3.89:1 HB zoom lens	144-107109-XX	3.1
3.89-5.43:1 HB zoom lens	144-108100-XX	4.2
4.96-7.69:1 HB zoom lens	144-109101-XX	6.0

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 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.

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

Electric shock hazard. To avoid personal injury, disconnect all power sources before performing maintenance or service.

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

Explosive material hazard. To avoid personal injury, disconnect all power sources before performing maintenance or service, and wear Christie-approved protective clothing.

Bright light hazard. To avoid personal injury, never look directly at the light source.

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

Hot surface hazard. To avoid personal injury, allow the product to cool for the recommended cool down time before touching or handling for maintenance or service.

Burn hazard. To avoid personal injury, allow the product to cool for the recommended cool down time before handling for maintenance or service.

Pinch hazard. To avoid personal injury, keep hands clear and loose clothing tied back.

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

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

General hazard.

Not for household use.

Mandatory action

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

SHOCK HAZARD! Disconnect all power sources before performing maintenance or service procedures.

Consult the service manual.

Electrical labels

	Indicates the presence of a protective earth ground.
	Indicates the presence of an earth ground.

Additional hazard labels

	Risk Group 3 warning: Indicates a potential optical radiation hazard emitted from this product. Thermal radiation emitted from this product may cause burns.

Projector overview

Learn about the Mirage 304K projector.

The Mirage 304K is a professional quality projector using Digital Light Processing (DLP^{TM}) technology from Texas Instruments. Integrating smoothly into traditional projection environments, the Mirage 304K interfaces with local networks throughout the world, for multimedia presentations from a variety of formats, to offer stunning wide screen, high resolution 4K images at 60 frames per second.

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:	

Ethernet settings	
Subnet mask:	

Key features

Understand the important features of the projector.

- Built in warp and blend of projected images
- Near field communication
- Multi-lamp module with no lamp alignment required
- Improved lens mount with bayonet style insertion
- Single phase 200-240 V
- Side access to optical adjustments
- 4K resolution for flexibility and future proofing
- Omnidirectional operation
- TruLife electronics
- LCD display to provide information at-a-glance

How the projector works

The Mirage 304K accepts a variety of input signals for projection on front or rear projection screens, typical in commercial or other large screen applications.

High-brightness light is generated by mercury vapor lamps, then modulated by three Digital Micromirror Device (DMD) panels responding to incoming data streams of digitized red, green and blue color information. As these digital streams flow from the source, light from the responding on pixels of each panel is reflected, converged and then projected to the screen through one or more projection lenses, where all pixel reflections are superimposed in sharp full-color images.

List of components

Verify all components were received with the projector.

- Power cord for full brightness, six lamp operation
- Power cord for limited power, single lamp operation
- IR remote keypad

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.

Mirage 304K

1. Access the documentation from the Christie website:
   - Go to *http://bit.ly/2Fx47O4* or
     https://www.christiedigital.com/en-us/business/products/projectors/3-chip-dlp/3d-projectors
   - 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 the projector is available in the following documents.

- *Mirage 304K Installation and Setup Guide (P/N: 020-102013-XX)*
- *Boxer Product Safety Guide (P/N: 020-101780-XX)*
- *Boxer 4K Service Guide (P/N: 020-101699-XX)*
- *Mirage 304K Serial Commands Guide (P/N: 020-101776-XX)*
- *Mirage 304K Status System Guide (P/N: 020-101783-XX)*

Site requirements

To safely install and operate the projector, the installation location must have restricted access for authorized personnel only and meet these minimum requirements.

Physical operating environment

Provides specifications for the operating environment.

- Ambient temperature (operating) 5 to 40°C (41 to 104°F) up to 457.2 m (1500 feet)
- Humidity (non-condensing) 10 to 80%
- Operating altitude: 3,000 m (10,000 feet) maximum at 5 to 25°C (41 to 77°F) ambient

Power connection

The projector uses an innovative dual AC inlet power system that offers two power modes.

To operate at full brightness (six lamps), power the projector using AC Input 1 if the appropriate high power source is available. To operate in limited power mode (single lamp), power the projector using standard lower power sources using AC Input 2. A different power cord is provided for each power source. A 30A rated wall breaker is required at the installation when using Input 1. A 15A rated wall breaker is required at the installation when using Input 2.

Projector components

Identify the main components of the projector.
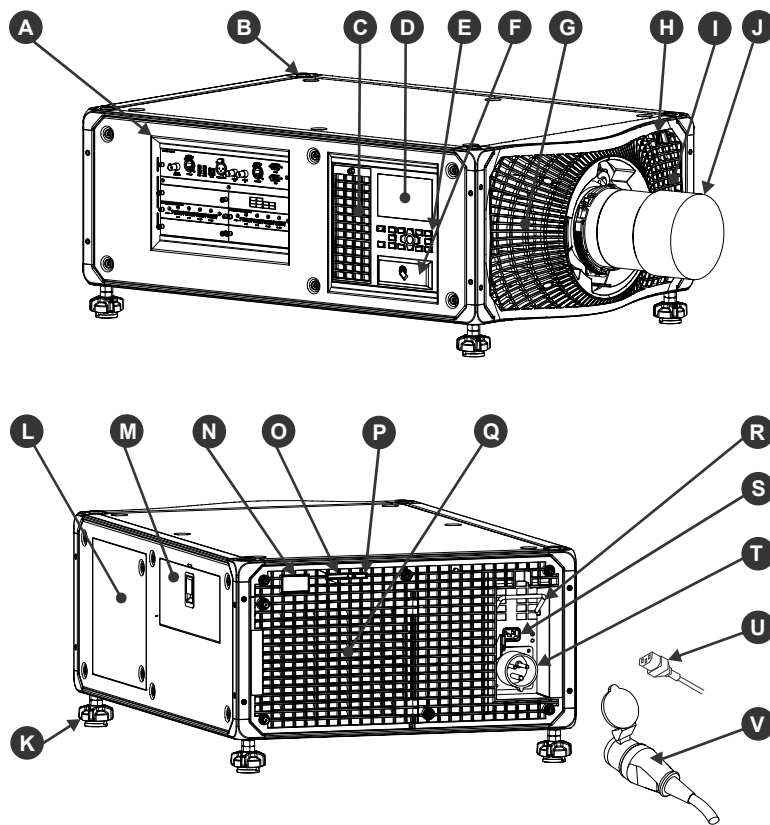
ID	Component	Description
A	Communication and input panel	Connects media sources to either the ports on the option cards or the IMXB.
B	Mounting and rigging holes	M12 x 1.75 holes for projector feet installation and offer mounting and rigging points.
C	User interface air filter door	Provides to the user interface air filter.
D	Display panel	Displays the projector menus and status.
E	Keypad interface	Controls the projector.

ID	Component	Description
F	Christie TAP Enables	Android devices to communicate with the projector using near field communication.
G	Electronics-side filter door	Provides access to the electronics-side air filter.
H	Front IR	Receives transmissions from the IR remote.
I	Lamp-side filter door	Provides access to the lamp-side air filter.
J	Projection lens	A variety of lenses can be used with the projector. Available lenses are listed in accessories.
K	Adjustable feet	Raise or lower these feet when positioning the projector to make sure it is level on all sides so the displayed image appears rectangular without any keystone.
L	Service compartment	Access to fold mirror, optical zoom/focus, and digital micromirror device (DMD) convergence adjustments.
M	Tool box	Provides tools for Christie qualified technicians.
N	Rear IR	Receives transmissions from the IR remote.
O	LED status indicator	Indicates lamp and power status.
P	Shutter LED status indicator	Indicates shutter status.
Q	Lamp door	Access to lamp compartment.
R	AC lock	Locks Input 1 power cord.
S	AC Input 2: limited power	Use this IEC 320-C14 inlet to connect to an appropriately rated power cord (component R) provided for your region. For use in limited power mode.
T	AC Input 1: full power	Use this IEC 309 inlet to connect to an appropriately rated power cord (component S) provided for your region. For use in full power mode.
U	Power cord: limited power	Connects the provided power cord appropriately rated for your region to AC Input 2 for limited power mode.
V	Power cord: full power	Connects the provided power cord appropriately rated for your region to AC Input 1 for full power mode.

IR/wired remote keypad

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

To use the IR remote, direct the keypad toward the projector's front or rear IR sensor and select a function key. One of the two IR sensors on the projector detect the signal and relay the commands for internal processing. The remote also offers a connector for wired connections to the projector.
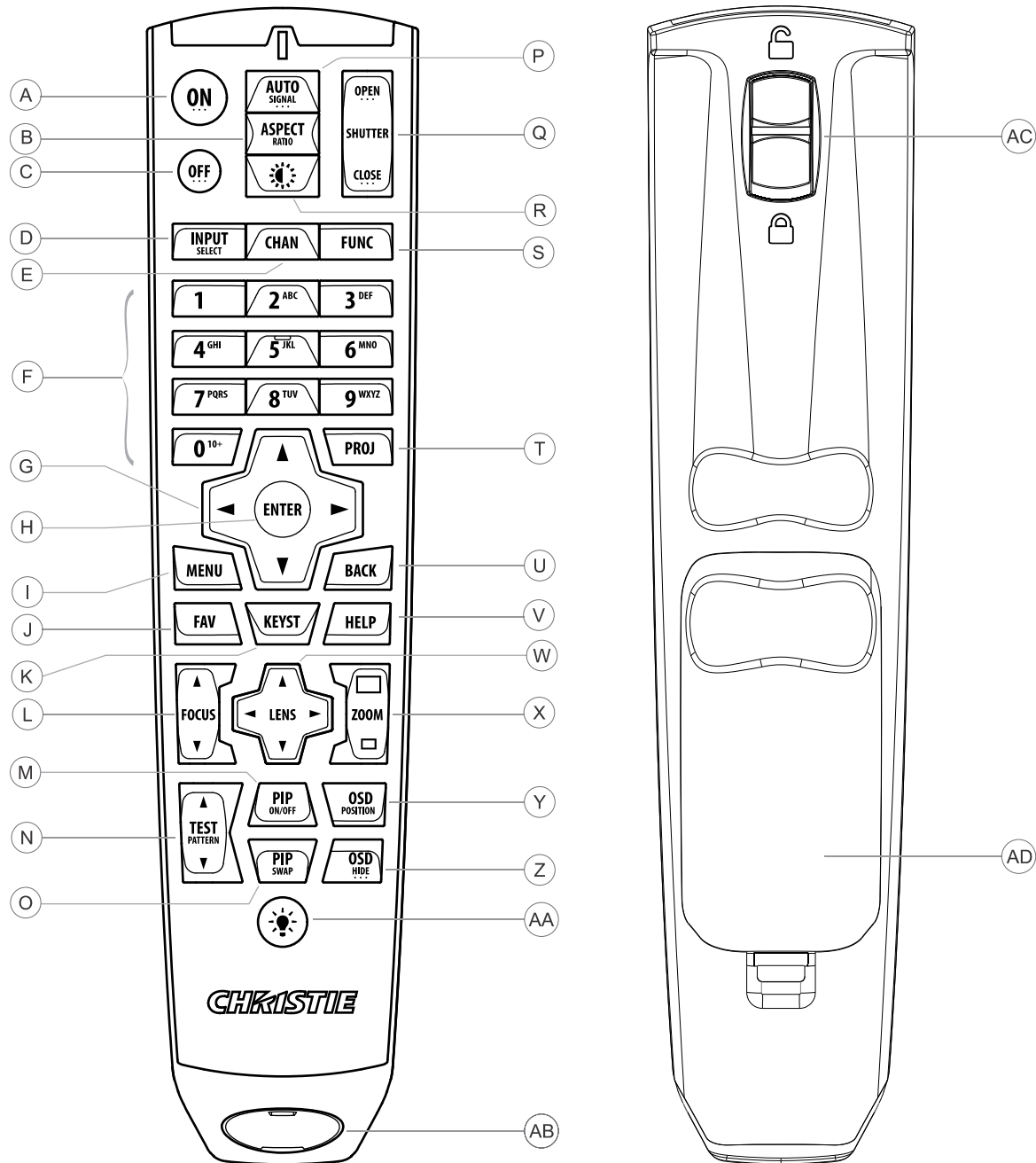
Button	Description
A	Powers on the projector light source.
B	Opens the aspect ratio dialog.
C	Turns off the light source and puts the projector in standby.
D	Selects an active or inactive input on any slot.
E	Not supported.

Button	Description
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.

Display panel components

Identify the main components of the display panel (also known as the home page).
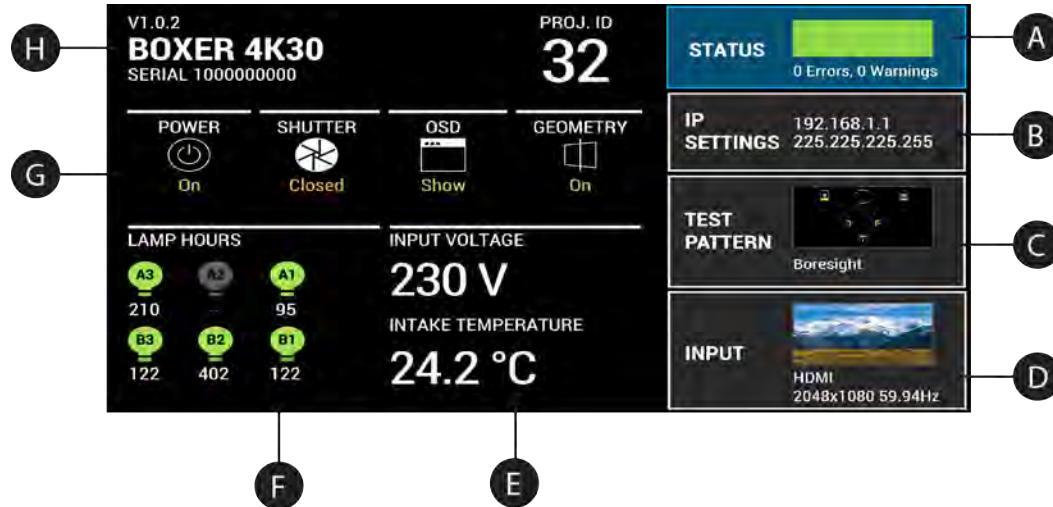
ID	Component	Description
A	Status	Contains information about the health of the projector including the number of warnings and errors. Provides access to the status system.
B	IP Settings	Displays the IP address and subnet values. Provides access to changing the IP settings.
C	Test Pattern	Displays the currently selected test pattern. If no test pattern is selected, Off is displayed. Provides access to the list of test patterns.
D	Input	Displays the signal for the currently selected input. Provides access to the list of input signals.
E	Power and Temperature	Indicates the incoming voltage, measured in Volts, and intake temperature, measured in Celsius.
F	Lamp Hours	Displays the state of the lamps and the number of hours used.
G	Projector and Component Controls	Indicates the states of the projector and its components.
H	Projector Information	Provides information about the projector such as the projector name, serial number, software version, and projector ID.

Turning on the projector

When the projector AC power supply is plugged in, the power is on.

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

- SHOCK HAZARD! Do not attempt operation if the AC supply is not within the specified voltage and current, as specified on the license label.

1. Plug the projector into AC power.

   When plugged in, the projector automatically powers on to standby mode within 60 seconds. The display panel functionality becomes available.

2. To turn on the light source using the projector keypad, select and hold the **Power** ⏻ button until a beep sounds.

   To turn on the light source using the remote, select and hold the **ON** button until you a beep sounds.

Projector LED status indicators

Identify the LED state colors and meaning.

LED	State		Description
Blue	Solid	Standby	Light source is off. Video electronics are off. Projector status is OK.
	Flashing	Cool down	Projector is moving to one of the two standby states: • Light source is off and video electronics are booting up. • Light source is off. Video electronics and light source is cooling down.
Green	Solid	Light source on	Light source is on. Projector status is OK.
	Flashing	Startup	Projector is moving to light source on state. Light source is warming up. Video electronics are initializing.
Yellow	Solid	Warning in standby	Projector is in standby state. A problem exists with the projector that does not prevent it from operating.
	Flashing yellow/green	Warning during startup	Projector is in a startup state. A problem exists with the projector that does not prevent it from operating.
	Flashing	Warning with light source on	Light source is on. A problem exists with the projector that will not cause it to shut down.
	Flashing yellow/blue	Warning during cool down	Projector is in a cool down state. Light source is off. Video electronics and light source are cooling down. A problem exists with the projector that does not prevent it from operating.
Red	Solid	Error in standby	Projector is in standby. An error exists that prevents the projector from starting up.

LED	State		Description
	Flashing	Error	An error with the projector exists during startup, cool down, or when the light source is off. Projector will proceed to shut down.
Off		AC off	The AC power is off.

Projector LED shutter indicators

Identify the shutter LED state colors and meaning.

LED	State	Description
Solid magenta	Shutter closed	The shutter is closed. In standby, the shutter is always automatically closed and the magenta light is muted.
Off	Shutter open	The shutter is open.

Turning off the projector

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

1. To turn off the light source using the projector keypad, select and hold the **Power** ⏻ button until a beep sounds.

   To turn off the light source using the remote, select and hold the **OFF** button until a beep sounds.

   When powering off the projector, allow the projector to complete its cool down cycle. Do not immediately unplug the projector if this can be avoided.

2. To turn off power to the projector, disconnect from AC power.

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, select **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**.

You can also select **MENU** > **Configuration** > **Lens Settings** > **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 **Reset**.

3.　To confirm the reset, select **Reset Lens Position**.

Aligning the image with lens zoom and focus

Make sure 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 **Lens 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 on the display panel, 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**.

Calibrating the zoom motor

Calibrate the zoom motor to make sure all zoom controls for the lens are enabled.

1.　Select **MENU** > **Configuration** > **Lens Settings** > **Zoom Lens Calibration**.

Issuing the `(LCB+ZOOM 1)` serial command also manually calibrates the lens.

2. To start the calibration, select **Calibrate Zoom Lens**.

3. At the confirmation prompt, select **Calibrate Zoom Lens**.
   The Zoom menu item is greyed out until the calibration is complete, which can take up to a minute.

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. Christie recommends selecting this option when using a fixed lens as all zoom operations are disabled.

   - **Hide Detection Warnings**—Hides lens detection warnings. Christie recommends selecting this option when using a third-party lens.

3. Select **Enter**.

Lens control limitations

The projector has keep-out areas for the lens position, illustrated below. When adjusting the lens offset, these regions are unavailable to prevent interference and potentially damage of internal components.
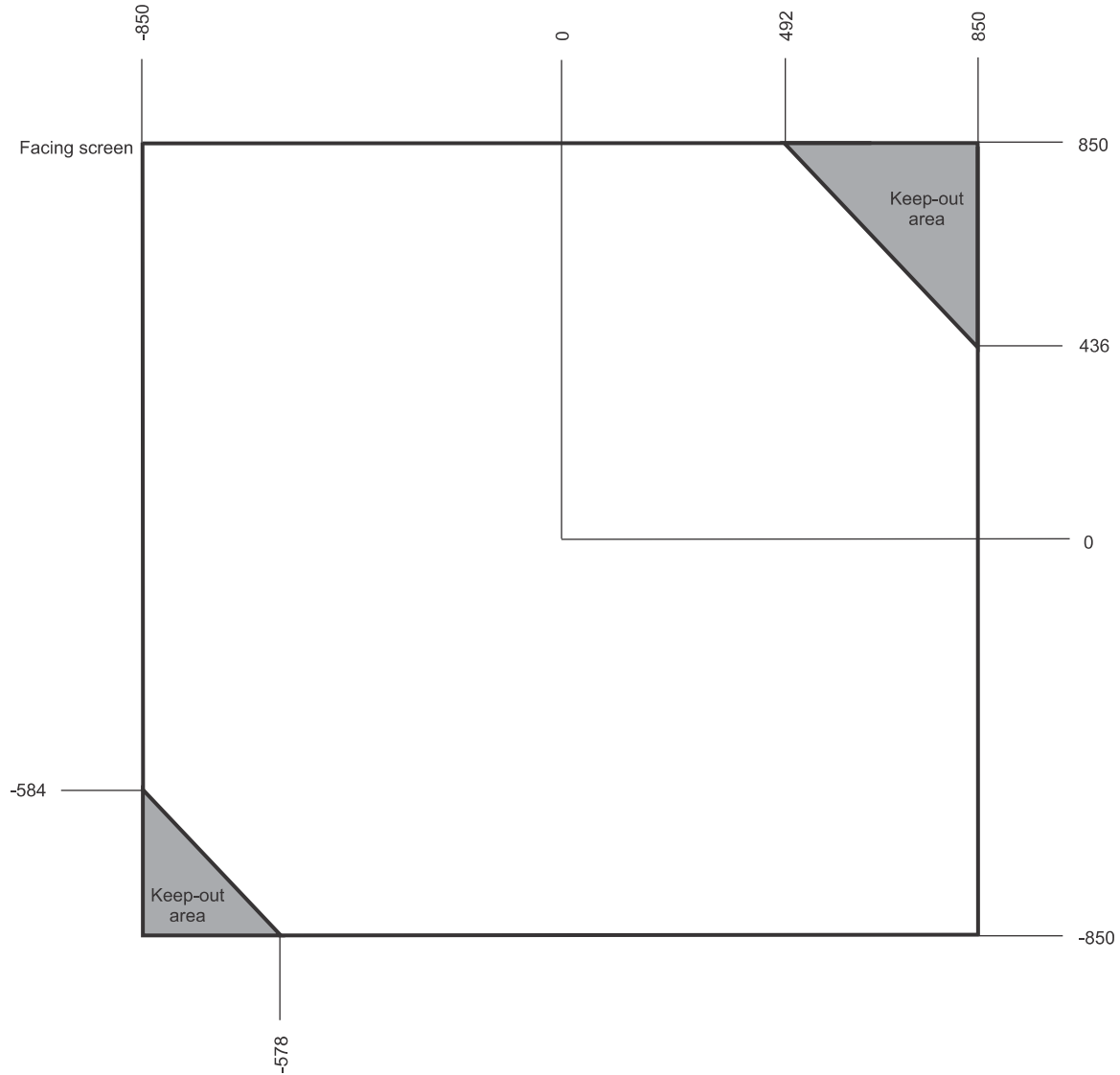
Ultra short throw lens control limitations

The projector has keep-out areas for the ultra short throw lens position, illustrated below. When adjusting the lens offset, these regions are unavailable to prevent interference and potentially damage of internal components.
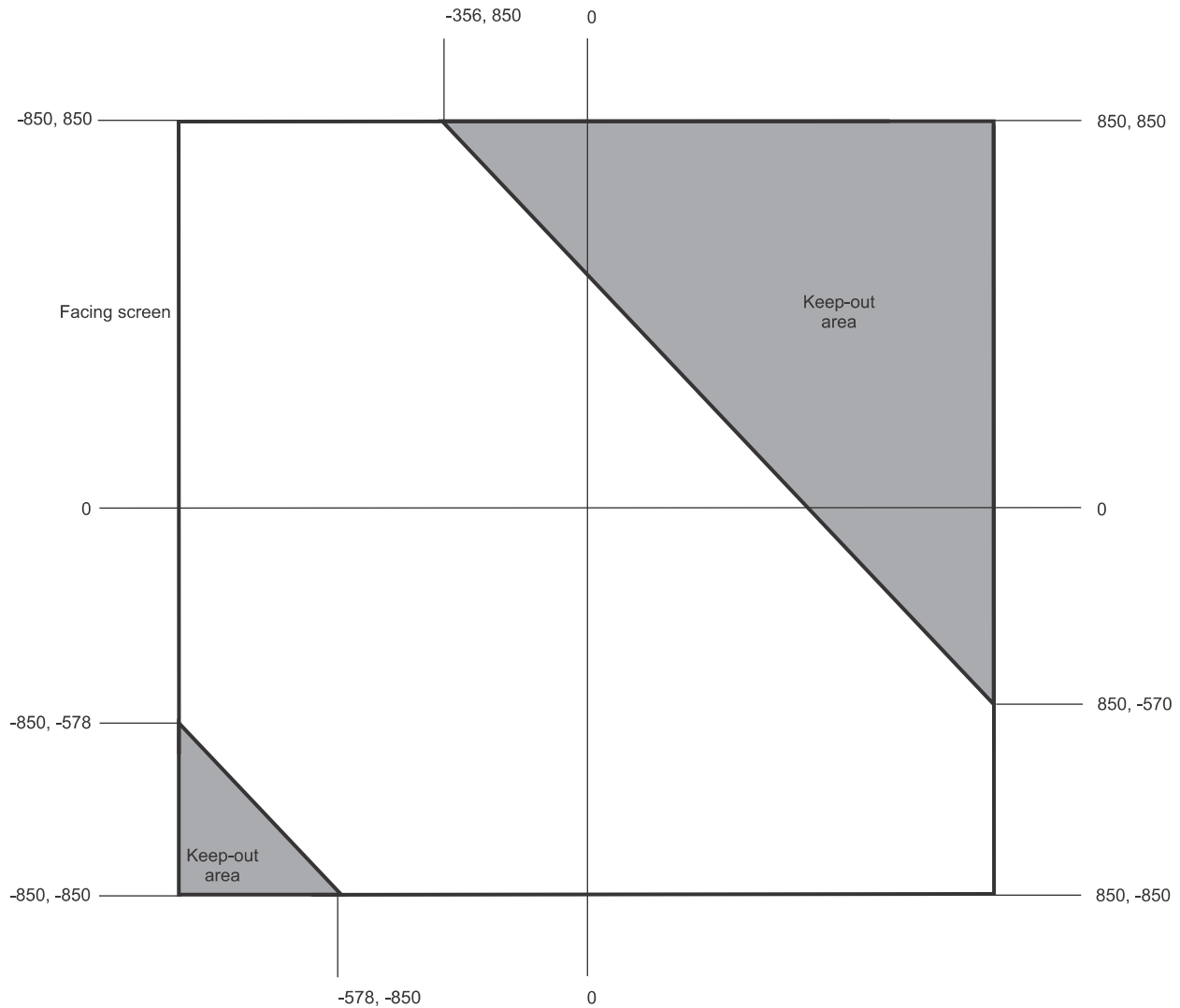
Enabling the ultra short throw lens keep-out area

Not switching to the ultra short throw lens keep-out area risks damaging the projector when an ultra short throw lens is installed.

1. Select **MENU** > **Configuration** > **Lens Settings**.

2. Select **Enable UST Lens 0.38:1**.

3. To enable the ultra short throw lens keep-out area, select **Enter**.

   The reduced keep-out area is implemented and the lens offset is set to zero.

4. To use a non-ultra short throw lens, clear the checkbox to disable this option.

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 make sure 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 settings, select **Edit**.
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 4 and 5 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 **Reset**.

DMD color correction

Adjust the digital micromirror device (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. To edit the custom color correction settings, select **Edit**.
3. Adjust the slider or enter the measured color values of the primary color component you selected.
4. To confirm your selection, select **Enter**.
5. Repeat steps 3 and 4 for each primary color component.
6. To view a specific color while adjusting, select **Show Color Pattern**.
7. 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. To edit the custom color correction settings, select **Edit**.
3. Adjust the value of the primary color you selected by using more or less of it in relation to the other primary colors.
4. To confirm your selection, select **Enter**.
5. Repeat steps 3 and 4 for each primary color.
6. To view a specific color while adjusting, select **Show Color Pattern**.
7. 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)
    * $Y'C'_B C'_R$ HDTV (Expanded Range)
    * $Y'C'_B C'_R$ JPEG (Full Range)
    * $Y'C'_B C'_R$ UHDTV (ITU-R BT.2020) (Full Range)
3. Select **Enter**.

Adjusting color by temperature

Adjust the color temperature as expressed in degrees Kelvin.

1. **MENU** > **Image Settings** > **Color & Gamma** > **Color Correction Mode**.
2. From the list, select **Color Temperature**.
3. Select the **Color Temperature** option.
4. Adjust the slider to change the light to warmer or cooler and select **Enter**.

Adjusting color values based on gamma function

The gamma function options adjust the color values of the inputted signal to give you a more detailed picture.

1. Select **MENU** > **Image Settings** > **Color & Gamma** > **Gamma Function**.
2. Select the appropriate option:
   - Auto Detect
   - sRGB
   - ITU-R BT-1886
   - Power Law Function
   - Classic
3. 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 occurring 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**.

   You can also set the frame delay from the 3D Settings menu.

2. To set the total video frame delay, select **Set Delay**.

3. Adjust the value and to confirm your selection, select **Enter**.

The Actual Delay field reports what the system has delivered for the frame delay. The value is reported in frames and milliseconds.

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 or to create edge blends and upload them to Mirage 304K.

1. Create an edge blend file using the or application.
   To connect Mirage 304K 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 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 Mirage 304K.

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**.

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 or application.

   To connect Mirage 304K 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 keystoned 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 keystoned 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 keystoned 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 keystoned 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 keystoned 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.
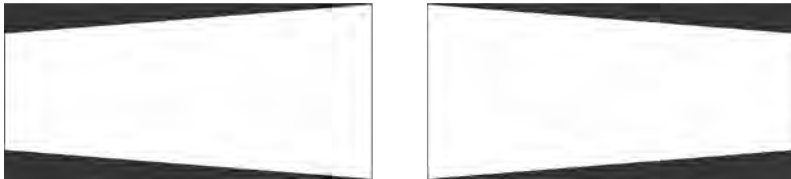
1. Select **MENU** > **Configuration** > **Geometry Correction** > **Geometry Correction Mode**.
2. Select **Horizontal Keystone Correction**.
3. From the correction dialog, adjust the horizontal keystone by using the arrow keys.
4. Select **Apply Changes**.

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**.

Cropping pixels from the display edges

Use the Blanking feature to crop certain pixels from any edge of the display.

1. Select **MENU** > **Configuration** > **Blanking**.

2. To crop the pixels on one display edge, use the arrow keys to adjust the values between 0 and 25%.

3. To accept the selection, select **Enter**.

4. Repeat steps 2 and 3 to crop pixels for the remaining sides, if required.

5. To remove all cropping from the display edges, select **Reset Blanking**.

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

    The blanking values are returned to 0.

Configuring system settings

Learn how to configure the system settings.

Setting the date

Configure the date on Mirage 304K.

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 Mirage 304K.

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).

Synchronizing the date and time

Set the projector date and time to match what is set on the computer.

> 📝 This feature is only available on the web interface.

1. Select **MENU** > **System Settings** > **Date & Time**.
   You can also access the date and time configurations by clicking on the time displayed on the header of the web interface.
2. To synchronize the date and time, select **Sync to System**.

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**.

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. Select **Current Password** and enter your current password.

3. Select **New Password** and enter your new password.

Create your password using 4 to 32 characters. The password can be any combination of letters, numbers, and symbols (ASCII-standard characters only). Accents and accented characters are not supported.

4. Select **Confirm** and re-enter your new password.

5. Select **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 either the **Reset Projector Defaults** or **Reset Factory Defaults** features, 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** > **Service**.

2. Enter the service password.

3. Select **Generated password**.
   The generated password is displayed in this field.

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

3. Select **Ignore Low AC Input Voltage Error**.

4. To ignore the Low AC Input Voltage error when turning on the projector, 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 and required fans remain on.

This feature is not available while the projector is cooling down.

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**.

Implementing Stealth mode

When Stealth mode is enabled, the status and shutter LEDs are turned off and the heartbeat feature on the display panel Enter key is disabled.

1. Select **MENU** > **System Settings** > **Power Settings** > **Stealth Mode**.
2. To disable the LEDs and heartbeat feature, select **Enter**.
3. To enable the LEDs and heartbeat feature, select **Stealth Mode** again.

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**.

Disabling secondary DVI receivers

In some cases when using single-link DVI signals, the unused secondary receivers disrupt the signal detection logic. Disable the secondary receivers if occasional screen flashes are seen while the projector attempts to re-synchronize to the incoming video.

1. Select **MENU** > **Configuration** > **Input Settings** > **Disable Secondary DVI Receiver on DDIC**.

   Issuing the `(DDD 1)` serial command also disables the secondary receivers.
2. To disable the secondary receivers, select **Enter**.

Informing the source of signal preferences

Configure Mirage 304K to automatically inform the video source of the preferred signal formats.

1. From the display panel, select **MENU** > **Configuration** > **Input Settings** > **Advanced EDID Extensions**.

2. To enable the advanced EDID extensions, select **Enter**.

    Christie recommends enabling the advanced EDID extensions.

3. On the projector, select **MENU** > **Configuration** > **Input Settings** > **EDID Window Mode**.

4. Verify **Auto Detect** is selected.

5. If you need a specific frame rate, from the display panel, select **MENU** > **Configuration** > **Input Settings** > **EDID Timing**.

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

    60 Hz is the default EDID timing.

Adjusting lamp power

Change the power of the lamp.

1. Select **MENU** > **Configuration** > **Lamp** > **Lamp Power**.

2. Select **Enter**.

3. To adjust the lamp power, use the slider.

4. To confirm your selection, select **Enter**.

BrightSelect™

This feature allows users to select specific lamps to power on and off during projector operation.

Use the BrightSelect options to manage which lamp is on and off to control brightness levels. Operating fewer than six lamps may extend the life of a set of six lamps by rotating the use of lamps. To maintain original brightness if a lamp fails when operating fewer than six lamps, BrightSelect automatically strikes one of the inactive lamps.

- **Limited power mode**—Only one lamp can be selected.
- **Full power mode**—Between one to six lamps can be selected.

Selecting lamps using BrightSelect™

Use BrightSelect to determine which lamps are on and off during projector operation.

1. Select **Menu** > **Configuration** > **Lamp** > **BrightSelect**.

2. Select the lamps to activate.

    In limited power mode only one lamp can be activated.

3. To set the system to automatically turn on a deselected lamp if one of the selected ones fails to maintain the required level of brightness, select **Enable automatic lamp redundancy**.

4. Select **Apply**.

Enabling Camera Friendly Color mode

Some digital camera equipment presents the images generated by Christie laser products with a noticeable red shift. These images do not represent how human vision perceives the projected image

and are an effect of the camera charge couple device (CCD) but do not reflect the images generated by Christie laser products.

To mitigate this, enable the Camera Friendly Color mode so the target white-point is set to a cooler color temperature. This significantly reduces the observed effect and Christie recommends using this mode for sites wanting to take photographs of the projected images. The target Camera Friendly White x and White y settings default to an appropriate value but can be modified in **MENU** > **Admin** > **Service** > **Light & Output Settings**.

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

2. Enter the service password.

3. Select **Light & Output Settings**.

4. To enable the Camera Friendly Color mode, select **Camera Friendly Color Mode** > **On**.

   If you only want to enable or disable Camera Friendly Color mode without changing the White x and y values, navigate to **Configuration** > **Light & Output Settings**.

5. To set the white color targets, enter the required **Camera Friendly White x** and **Camera Friendly White y** values.

   The default value is determined to improve the red-hue issue.

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.
   The password is only required for the display panel and not the web user interface.
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 Mirage 304K through Art-Net

Mirage 304K 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 Mirage 304K 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. Mirage 304K specifies 24 channels.

> 📝 Mirage 304K 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	• 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	• 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	• 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	• Locked by the Lens Shift Enable channel.

Channel	Name	Description	Suggested starting position	Notes
12	Lens Vertical Position (Fine)	255 = Full upper position (100%)		• 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 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]
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]

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

Working with macros

Automate tasks in Mirage 304K 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 Scheduled Event macro

Create a Scheduled Event macro to automate a repetitive task.

Up to 24 macros can be created.

📝 This feature is only available on the web interface.

1. From the home page of the web interface, select **Macros and GPIO**.
2. Select **Add Macro**.

   If the limit of 24 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. From the Type list, select **Scheduled Event**.
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, select **Recurring**.

   When enabled, the button appears green. When disabled, the button appears grey.

   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 *Mirage 304K Serial Commands Guide (P/N: 020-101776-XX)*.
9. To test the functionality, select **Test**.
   An `Action succeeded` message is displayed upon a successful test.
10. To save the macro, select **Save**.

If the time specified in a macro has expired, a warning icon depicting an expired macro is displayed in the title bar.

Adding a GPIO Event macro

Create a macro which can be triggered through a GPIO input pin to automate projector actions by external signals.

Up to 14 GPIO Event macros can be created.

> This feature is only available on the web interface.

1. From the home page of the web interface, select **Macros and GPIO**.
2. Select the **Add Macro**.

   If the limit of 24 total 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. From the Type list, select **GPIO Event**.
5. From the display of pins, select the input pin.

   Only pins configured as input pins can have triggers. Output pins are disabled.
6. Select the type of transition: **High to Low** or **Low to High**.

   An input pin can only have a maximum of two events, one for each transition type.
7. In the Serial Command field, enter the serial command(s) you want to run.

   For available serial commands and their syntax, refer to the *Mirage 304K Serial Commands Guide (P/N: 020-101776-XX)*.
8. To test the functionality, select **Test**.
   An `Action succeeded` message is displayed upon a successful test.
9. To save the macro, select **Save**.

If the input pin used in a GPIO Event macro has changed from input to output, a warning icon depicting an invalid macro is displayed in the title bar.

Copying a macro

Duplicate a Scheduled Event macro to create another macro of similar functionality.

Up to 24 macros can be created. GPIO Event macros cannot be duplicated.

> This feature is only available on the web interface.

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

   ![icon]

   If the limit of 24 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, select **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 **Macros and GPIO**.
2. From the list of macros, select **Edit** next to the macro you want to edit.

3. Modify the appropriate fields.
4. To save the macro, select **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 **Macros and GPIO**.
2. From the list of macros, select one or more macros to delete.
   To delete all the macros in the list, select **Select All**.
   The number of macros you want to delete is displayed next to the trash can.
3. Select **Delete**.

4. At the confirmation prompt, select **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 **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.
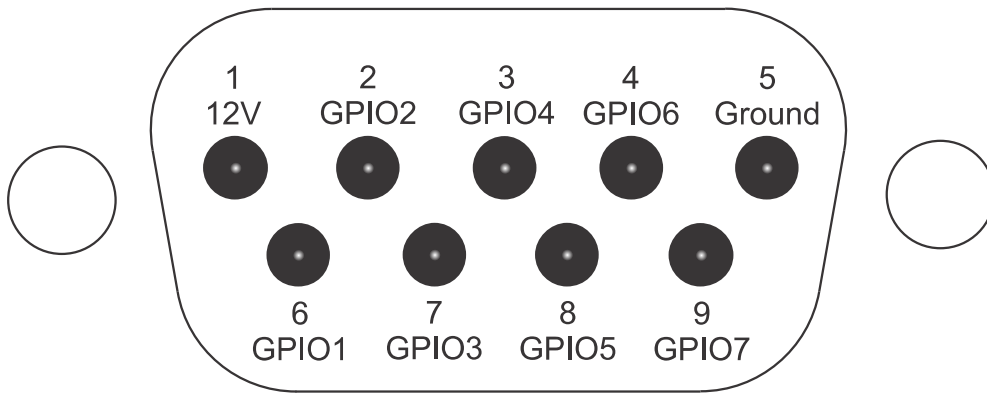
D-SUB pin number	Signal	Output high (Voh)	Notes
Pin 1	+12V	—	1A max
Pin 2	GPIO 2	5V	75mA max (e)fused to prevent damage
Pin 3	GPIO 4		
Pin 4	GPIO 6		
Pin 5	Ground	—	—
Pin 6	GPIO 1	5V	75mA max (e)fused to prevent damage
Pin 7	GPIO 3		
Pin 8	GPIO 5		
Pin 9	GPIO 7		

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. Next to New Profile, select **Create**.
5. In the dialog, enter a new profile name.
6. Select **Save**.

Importing a projector profile

Import projector profiles set on different projectors using a USB flash drive (projector) or file (web interface).

1. If using the display panel, 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. Next to Import From File, select **Import**.
5. Select a projector profile file.

   - On the projector, from the File Selection dialog, select a projector profile file.
   - From the web interface, in the Open dialog, navigate to the file and select **Open**.

   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, *<productname>_2022-06-15*. 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 (projector) or file (web interface).

1. If using the display panel to export a projector profile, 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**.
    A default name is assigned.

5. Select **Download File**.
    The profile file is exported to the USB flash drive or to the default location on the computer.

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**.

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

Backing up, restoring, and upgrading projector files

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

Upgrading the Mirage 304K software

When a new version of the software is released, Mirage 304K must be upgraded.

1. Turn off the lamps before proceeding with the upgrade.

2. If using the display panel to upgrade the software, insert a USB key that contains the software upgrade file.

   If two USB flash drives are inserted, the first flash drive inserted is the one recognized for the upgrade. 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. Select **MENU** > **Admin** > **Software** > **Upgrade**.

4. Select an upgrade file.

   - On the projector, select the upgrade file from the root of the USB and select **Enter**.

   - From the web interface, in the Open dialog, navigate to the file and select **Open**.

5. To automatically restart Mirage 304K, select **Restart Now**.

   If you decide to restart Mirage 304K at a later date (**Restart Later**), you cannot perform another upgrade until the Mirage 304K is restarted.

Adding a software license to a projector

Add the software license to the projector using the Christie Twist 2.8 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 **Menu** > **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, select **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. Select **Apply**.

9. Reboot the projector.

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

Exporting backup settings to an external device

Save the Mirage 304K 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 Mirage 304K.

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. From the projector:

   a) To edit the backup file name, select the up arrow and select **Enter**.

   b) To save the name, navigate down and select **SAVE**.
      The backup file is exported.

5. From the web interface:

   a) To edit the backup file name, enter the new name and select **Backup**.
      The backup file is created.

   b) To download the backup file, select **Download**.
      The backup file is downloaded to the default location on the computer.

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. Select the file.

- On the projector, from the File Selection dialog, select a file to restore.
- From the web interface, in the Open dialog, navigate to the file and select **Open**.

The backup settings file is imported to the projector.

Restoring projector default settings

Restore the Mirage 304K 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. Next to Reset Projector Defaults, select **Reset**.

All customized settings are set to the default Mirage 304K settings.

Diagnostic tools

Follow these procedures to help with diagnosing issues with Mirage 304K.

Viewing Mirage 304K information

View the licenses for the software added to Mirage 304K and the licenses of the software used to operate Mirage 304K. The information is read-only.

1. To view the additional software added to Mirage 304K, next to **MENU** > **Admin** and next to Licenses, select **View**.

2. To view the software licenses used to run Mirage 304K, select **MENU** > **Admin** and next to About, select **View**.

Viewing lamp information

Monitor the states of the lamps and the number of hours used.

1. Select **MENU** > **Status** > **Lamp Info**.

2. Use the right arrow to select the lamp list.

3. For a detailed view of a specific lamp, select **Enter**.

Adding lamp end-of-life indicator

Specify the number of hours remaining before issuing an end-of-life indicator for the lamp.

1. Select **MENU** > **Configuration** > **Lamp** > **Lamp Life Warning at (Hours)**.

2. Select **Enter**.

3. Use the right and left arrows to specify the number of hours remaining before issuing a lamp end-of-life warning.

4. To save the adjustment, select **Enter**.

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 and light engine test patterns to assist with configuration of the projector and to diagnose any issues that may occur.

Selecting a test pattern

Many 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** > **Admin** > **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 greyscale 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, select **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** > **Diagnostics** > **Test Pattern** > **Engine Test Patterns**.

2. Scroll through the list of test patterns.

3. Select the required test pattern.

4. To confirm your selection, select **Enter**.

5. To disable the engine test patterns, select **MENU** > **Admin** > **Diagnostics** > **Test Pattern** > **Engine Test Patterns** > **Off**.

Viewing Mirage 304K 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 Mirage 304K.

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.

Monitoring projector and lamps with Christie TAP

The near field communication (NFC) mobile app, called Christie TAP, enables Android devices to communicate with the projector, regardless if the projector is powered on or not.

1. From the Google Play Store, download the Christie TAP mobile app to your compatible Android device.

2. Hold the NFC tag of your Android device to the NFC panel next to the display panel on the projector until you connect.

   The projector does not need to be powered on to retrieve projector and lamp information.

   Successful connection includes a visual cue on the screen, haptic feedback on the device, and an auditory cue as well.

3. Review the projector IP address and lamp hour information provided.

Running the Mirage 304K interrogator

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

1. If saving the interrogator file to a USB flash drive on the projector, insert a USB flash drive in the USB port on Mirage 304K.

   If two USB flash drives are inserted, the first flash drive inserted is the one recognized. The USB flash drive must be formatted using the FAT 32 file system.

2. Select **MENU** > **Admin** > **Interrogator**.

3. Select **Run**.

   - If on the projector, the interrogator file is stored at the root directory on the USB flash drive.

   - If running Mirage 304K interrogator from the web interface, a message appears indicating the integrator file was successfully created.

4. From the web interface to download the interrogator file to the computer, select **Download File**.

   The interrogator file is downloaded to the default location on the computer.

5. If on the projector, 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 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. Enter the read community string.
    On the display panel use the up and down arrows to enter the read community string.
3. To confirm the name of the string, select **Enter**.

Configuring traps

A trap is a condition that SNMP monitors on Mirage 304K.

1. Select **MENU** > **Communications** > **SNMP** > **Trap Configuration**.
2. Select the trap you want to enable and select **Enter**.
    The available traps are:
    -   Lamp Life
    -   Lamp Fault
    -   Fan Stall
    -   Thermal Sensors
    -   Power
    -   Video Signal
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. From the projector:
    a) Select **Address 1**.
    b) Use the up and down arrows to enter an IP address.
    c) To confirm the address, select **Enter**.
    d) To add a second and third IP address, repeat steps a to c for **Address 2** and **Address 3**.
3. From the web interface:
    a) For Address 1, select **Edit**.
    b) Enter the IP address.
    c) Select **Apply**.
    d) To add a second and third IP address, repeat steps a to c for **Address 2** and **Address 3**.

Downloading the SNMP MIB files

The SNMP management information base (MIB) files describe the data format used by SNMP.

1. Select **MENU** > **Communications** > **SNMP**.

2. To download the SNMP MIB files, select **Download File**.

    The files are downloaded to the default location on the computer.

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.

3. Select **Reset Factory Defaults**.

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

Mirage 304K Specifications

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

Display

Learn about the display specifications.

Panel resolution and refresh rate	
Pixel format (H x V square pixels)	4096x2160
Processing path	23.97-60 Hz

Achievable contrast ratio
450:1 ANSI, up to 1800:1 Full Frame ON/OFF

Color and greyscale resolution	
Displayable colors	35.2 trillion
Greyscale resolution	45 bits total linear, 15 bits per RGB component

White point	
Nominal white (full white, after calibration)	x = 0.300 +/- 0.050
	y = 0.300 +/- 0.050

Gamma	
Nominal	2.2 ± 5%

Control signal compatibility

Ethernet port	
Interface	10Base-T/100Base-TX
Connector	Female RJ-45

3D sync	
Connector	BNC Male
Interface	TTL inputs and outputs

RS232 in	
Connector	9-pin subminiature D, female
Bit rate	115,200 bps
Data format	1 start bit, 8 data bits, 1 stop bit, no parity

GPIO	
Connector	DE-9 Male
Interface	CDS GPIO/3D Trigger Support - 7bit configurable

Wired remote	
Connector	3-pin XLR female
Interface	Custom

Shipped input cards

The following table details which input cards are shipped with the models.

Model	Part number	Shipped option cards
Boxer 4K30	144-001012-01 144-001012-02	2 x TDPIC 2 x 3GIC
	144-001012-03	1 x HBMIC 4 blank faceplates
Boxer 4K20	144-011103-01	1 x HBMIC
Boxer 2K30	144-009100-01	1 x HBMIC
Boxer 2K25	144-008109-01	1 x HBMIC
Boxer 2K20	144-007108-01	1 x HBMIC
Boxer 30	144-006107-01 144-006107-02	1 x TDPIC 1 x 3GIC
	144-006107-03	1 x HBMIC 4 blank faceplates
Mirage 304K	144-001023-01 144-001023-02	4 x TDPIC

Optional input cards

Learn about the input cards that may be used with the projector.

Input card	Part number	Additional information
Dual 3G SD/HD-SDI	108-313101-02+	—
Dual Link DVI (DDIC)	108-312101-02+	Analog signals are not supported for this input card; therefore VGA port and VGA to DVI converters are not supported.
Twin HDMI (THIC)	108-311101-XX	—
Twin DisplayPort (TDPIC)	108-451101-XX	—
Terra SDVoE (TSIC)	144-132107-XX	—
Quad DisplayPort (QDPIC)	144-114107-XX	—
High Bandwidth Multi-Input Card (HBMIC)	144-116109-XX	—

Temperature sensor thresholds

The projector shutdowns within one minute of an error threshold being reached.

Location	Warning (°C)	Error (°C)	Remarks
Air intake	47	—	
Main control board	82	95	
Main control board FPGA	82	—	
Backpane	82	95	
Image processor scaler	82	95	
Image processor warp-red	82	95	
Image processor warp-green	82	95	
Image processor warp-blue	82	95	
Formatter-Red	82	95	
Red digital micromirror device (DMD)	60	65	
Formatter-Green	82	95	
Formatter-Blue	82	95	
Option card 0	82	95	
Option card 1	82	95	
Option card 2	82	95	

Location	Warning (°C)	Error (°C)	Remarks
Option card 3	82	95	
Option card 4	82	95	
Housekeeping board	82	95	
Lamp driver A1	95	—	
Lamp driver A2	95	—	
Lamp driver A3	95	—	Driver not present in Boxer 2K20.
Lamp driver B1	95	—	
Lamp driver B2	95	—	
Lamp driver B3	95	—	Driver not present in Boxer 2K20 and Boxer 2K25.
Power supply heatsink 2	85	—	
Power supply heatsink 3	70	—	
Power supply heatsink 5	85	—	

Warning thresholds for fans

Learn the warning thresholds (in RPMs) for each fan.

The warning thresholds are for minimal fan RPMs.

Location	Warning
Bulb blower B3	100
Bulb blower B2	100
Bulb blower B1	100
Bulb blower A3	100
Bulb blower A2	100
Bulb blower A1	100
Lamp fan B3	100
Lamp fan A3	100
Lamp fan B2	100
Lamp fan A2	100
Lamp fan B1	100
Lamp fan A1	100
Radiator fan A	800
Radiator fan B	800

Location	Warning
Radiator fan C	800
Radiator fan D	800
High-speed image processing board (HIP) blower A	800
High-speed image processing board (HIP) blower B	800
Intake A	800
Intake B	800
Lamp driver intake	800
Lamp driver exhaust	800
Formatter-green	800
Formatter-red	800
Formatter-blue	800
LAD blower A	800
LAD blower B	800
Card cage exhaust 1	1600
Card cage exhaust 2	1600
Card cage intake 1	1600
Card cage intake 2	1600

Warning threshold for liquid cooling module

Learn the warning thresholds (in RPMs) for the liquid cooling components.

Location	Warning
Liquid cooling pump	180 RPM

Power requirements

Learn the power requirements for Mirage 304K projector.

Parameter	Requirement
Rated voltage	
Input 1	200 - 240 VAC
Input 2	100 - 130 VAC; 200- 240 VAC
Rated current	
Input 1	19A maximum
Input 2	13.8 - 10.6 A; 9.3 - 7.7 A

Parameter	Requirement
Line frequency	50/60 Hz
AC input coupler	
Input 1	IEC 309, 32 A/250 VAC
Input 2	IEC 320 - C14, 15 A/125 VAC, 10 A/250 VAC
Inrush current	40 A maximum
Maximum power consumption	
Input 1	3800 W
Input 2	1380 W

Physical specifications

Learn the dimensions and weight of the projector.

Description	Dimensions
Projector size	
Overall size, case only (L x W x H) (excluding lens, stack, and feet)	939.8 x 596.9 x 304.8 (mm) 37 x 23.5 x 12 (inches)
Overall size (L x W x H) (includes skid)	1207 x 838 x 654 (mm) 47.5 x 33 x 25.75 (inches)
Projector weight	
Without lens	73 kg (160 lbs)
Shipping without lens (includes packaging)	95 kg (210 lbs)
Operating position	Omni-directional

Accessories

Learn about the accessories available for the projector.

Projection lenses (sold separately)

Description	Part number
0.38:1 HB fixed	144-136101-XX
0.72:1 HB fixed	144-110103-XX
0.9:1 fixed	144-111014-XX
1.13-1.31:1 HB zoom (Discontinued)	144-103105-XX
1.31-1.63:1 HB zoom	144-104106-XX

Description	Part number
1.13-1.66:1 HB zoom	144-129103-XX
1.45-2.17:1 HB zoom	144-130105-XX
1.63-2.17:1 HB zoom (Discontinued)	144-105107-XX
1.95-3.26:1 HB zoom	144-131106-XX
1.99-2.71:1 HB zoom	144-106108-XX
2.71-3.89:1 HB zoom	144-107109-XX
3.89-5.43:1 HB zoom	144-108100-XX
4.98-7.69:1 HB zoom	144-109101-XX

Miscellaneous

Other accessories (sold separately)	
Description	**Part number**
IR remote	003-120918-XX
Mystique	900-100285-XX 900-100286-XX 900-100274-XX 900-100275-XX
Christie Guardian	156-134109-XX 156-135100-XX
Rigging frames	144-112015-XX
Rigging handles	144-134109-XX

> ⓘ **Notice.** If not avoided, the following could result in property damage.
>
> • Use appropriate packaging when shipping the product installed in the frame.

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

- IEC 62471-1 – Photobiological Safety of Lamps and Lamp Systems

Near field communication reader

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

- Changes or modifications not expressly approved by Christie Digital Systems USA Inc. could void the user's authority to operate the equipment.
- Contains: FCC ID: XU6-NFCR, IC : 8691A-NFCR

ANATEL
Agência Nacional de Telecomunicações
033387-15-2919

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
- IEC 61000-3-2/EN61000-3-2: Limits for Harmonic Current Emissions

Immunity

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

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).

Environment

Learn about the environment requirements for projector while operating and not operating.

Operating environment	
Temperature	5 to 40°C (41 to 104°F)
Humidity (non-condensing)	10 to 80%
Altitude	3000 meters (10,000 feet) maximum at 10 to 25°C (50 to 77°F) ambient

Non-operating environment	
Temperature	-40 to 70°C (-40 to 158°F)

Signal connectivity specifications

Identify the signal connectivity specifications for Mirage 304K.

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

For a list of supported Christie Link video formats, see the *Christie Link User Manual (P/N: 020-102234-XX)*.

HBMIC video formats

Identify the video formats for the HBMIC card.

DisplayPort 1.2

This interface supports HDCP 1.x.

	Format	Hres	Vres	Frame rate (Hz)	Sampling	Bit-depth
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

HDMI 2.0

This 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

	Format	Hres	Vres	Frame rate (Hz)	Sampling	Bit-depth	Notes
	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	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

SDI (HD, 3G, 6G, and 12G-SDI)

A valid SMPTE-352 payload is required for this interface.

	Format	Hres	Vres	Frame rate (Hz)	Sampling	Bit-depth	Notes
HD	1280x720	1280	720	24, 25, 30, 50, 60	4:2:2	10bpc	—
	1920x1080i	1920	1080	50, 60	4:2:2	10bpc	—
	1920x1080	1920	1080	24, 25, 30	4:2:2	10bpc	—
	2048x1080	2048	1080	24, 25, 30	4:2:2	10bpc	—
3G	1280x720	1280	720	24, 25, 30, 50, 60	RGB/4:4:4	10/12bpc	Level-A only
	1920x1080i	1920	1080	50, 60	RGB/4:4:4	10/12bpc	Level-A only
	1920x1080	1920	1080	24, 25, 30	RGB/4:4:4	10/12bpc	Level-A only
	1920x1080	1920	1080	50, 60	4:2:2	10bpc	Level-A only
	2048x1080	2048	1080	24, 25, 30	RGB/4:4:4	10/12bpc	Level-A only
	2048x1080	2048	1080	50, 60	4:2:2	10bpc	Level-A only
6G	1920x1080	1920	1080	50, 60	RGB/4:4:4	10/12bpc	—
	2048x1080	2048	1080	50, 60	RGB/4:4:4	10/12bpc	—
	3840x2160	3840	2160	24, 25, 30	4:2:2	10bpc	—
	4096x2160	4096	2160	24, 25, 30	4:2:2	10bpc	—
12G	3840x2160	3840	2160	24, 25, 30	RGB/4:4:4	10/12bpc	—
	3840x2160	3840	2160	50, 60	4:2:2	10bpc	—
	4096x2160	4096	2160	24, 25, 30	RGB/4:4:4	10/12bpc	—
	4096x2160	4096	2160	50, 60	4:2:2	10bpc	—

QDPIC video formats

Identify the video formats for the QDPIC card.

The DisplayPort 1.2 interface supports HDCP 1.x.

	Format	Cables	Hres	Vres	Frame rate (Hz)	Sampling	Bit-depth
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
	4096x2160	2x	2048	2160	120	RGB/4:4:4	8/10bpc

TDPIC video formats

Identify the video formats for the TDPIC card.

The DisplayPort 1.1a 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	8/10bpc	—
	1920x1080	—	1920	1080	24, 25, 30, 50, 60, 120	RGB/4:4:4	8/10bpc	—
	2048x1080	—	2048	1080	24, 25, 30, 50, 60, 120	RGB/4:4:4	8/10bpc	—
4K	3840x2160	—	3840	2160	24, 25, 30	RGB/4:4:4	8/10bpc	—
	4096x2160	—	4096	2160	24, 25, 30	RGB/4:4:4	8/10bpc	—
	3840x2160	2x	1920	2160	50, 60	RGB/4:4:4	8/10bpc	Cannot use both TDPIC inputs at once; requires two separate TDPICs
	4096x2160	2x	2048	2160	50, 60	RGB/4:4:4	8/10bpc	Cannot use both TDPIC inputs at once; requires two separate TDPICs
	3840x2160	4x	1920	1080	50, 60	RGB/4:4:4	8/10bpc	—

Format	Cables	Hres	Vres	Frame rate (Hz)	Sampling	Bit-depth	Notes
4096x2160	4x	2048	1080	50, 60	RGB/4:4:4	8/10bpc	—
3840x2160	4x	1920	1080	120	RGB/4:4:4	8/10bpc	Cannot use both TDPIC inputs at once; requires four separate TDPICs
4096x2160	4x	2048	1080	120	RGB/4:4:4	8/10bpc	Cannot use both TDPIC inputs at once; requires four separate TDPICs

DDIC video formats

Identify the video formats for the DDIC card. The DVI-D interface supports HDCP 1.x.

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

THIC video formats

Identify the video formats for the THIC card. The HDMI 1.3 interface supports HDMI 1.4a 3D formats and 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/4:4:4/4:2:2	8/10/12bpc	—
	1920x1080i	—	1920	1080	50, 60	RGB/4:4:4/4:2:2	8/10/12bpc	—

	Format	Cables	Hres	Vres	Frame rate (Hz)	Sampling	Bit-depth	Notes
	1920x1080	—	1920	1080	24, 25, 30, 50, 60	RGB/4:4:4/4:2:2	8/10/12bpc	—
	2048x1080	—	2048	1080	24, 25, 30, 50, 60	RGB/4:4:4/4:2:2	8/10/12bpc	—
4K	3840x2160	4x	1920	1080	24, 25, 30, 50, 60	RGB/4:4:4/4:2:2	8/10/12bpc	—
	4096x2160	4x	2048	1080	24, 25, 30, 50, 60	RGB/4:4:4/4:2:2	8/10/12bpc	—
3D	1280x720	—	1280	720	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

HDBase-T video formats

Identify the video formats for the HDBase-T card. The HDMI 1.4 interface supports HDCP 1.x.

	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	8bpc	—
	4096x2160	4096	2160	24, 25, 30	RGB/4:4:4/4:2:2	8bpc	—
3D	1280x720	1280	720	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

3GIC video formats

Identify the video formats for the 3GIC card for HD and 3G-SDI.

	Format	Cables	Hres	Vres	Frame rate (Hz)	Sampling	Bit-depth	Notes
HD	1280x720	—	1280	720	24, 25, 30, 50, 60	4:2:2	10bpc	—
	1920x1080i	—	1920	1080	50, 60	4:2:2	10bpc	—
	1920x1080	—	1920	1080	24, 25, 30	4:2:2	10bpc	—

	Format	Cables	Hres	Vres	Frame rate (Hz)	Sampling	Bit-depth	Notes
	2048x1080	—	2048	1080	24, 25, 30	4:2:2	10bpc	—
3G	1280x720	—	1280	720	24, 25, 30, 50, 60	RGB/4:4:4	10/12bpc	Level-A recommended
	1920x1080i	—	1920	1080	50, 60	RGB/4:4:4	10/12bpc	Level-A recommended
	1920x1080	—	1920	1080	24, 25, 30	RGB/4:4:4	10/12bpc	Level-A recommended
	1920x1080	—	1920	1080	50, 60	4:2:2	10bpc	Level-A recommended
	2048x1080	—	2048	1080	24, 25, 30	RGB/4:4:4	10/12bpc	Level-A recommended
	2048x1080	—	2048	1080	50, 60	4:2:2	10bpc	Level-A recommended
3G-4K	3840x2160	4x	1920	1080	24, 25, 30	RGB/4:4:4	10/12bpc	Level-A recommended
	3840x2160	4x	2048	1080	50, 60	4:2:2	10bpc	Level-A recommended
	4096x2160	4x	1920	1080	24, 25, 30	RGB/4:4:4	10/12bpc	Level-A recommended
	4096x2160	4x	2048	1080	50, 60	4:2:2	10bpc	Level-A recommended

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.

HBMIC

A valid SMPTE-352 payload is required for the SDI interface (HD, 3G, 6G, and 12G-SDI).

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

	Format	Cables	Hres	Vres	Frame rate (Hz)	Sampling	Bit-depth
3G	1280x720	2x	1280	720	24, 25, 30, 60	RGB/4:4:4	10/12bpc
	1920x1080	2x	1920	1080	24, 25, 30	RGB/4:4:4	10/12bpc
	1920x1080	2x	1920	1080	60	4:2:2	10bpc
	2048x1080	2x	2048	1080	24, 25, 30	RGB/4:4:4	10/12bpc
	2048x1080	2x	2048	1080	60	4:2:2	10bpc
6G	1920x1080	2x	1920	1080	60	RGB/4:4:4	10/12bpc
	2048x1080	2x	2048	1080	60	RGB/4:4:4	10/12bpc
	3840x2160	2x	3840	2160	24, 25, 30	4:2:2	10bpc
	4096x2160	2x	4096	2160	24, 25, 30	4:2:2	10bpc
12G	3840x2160	2x	3840	2160	24, 25, 30	RGB/4:4:4	10/12bpc
	3840x2160	2x	3840	2160	60	4:2:2	10bpc
	4096x2160	2x	4096	2160	24, 25, 30	RGB/4:4:4	10/12bpc
	4096x2160	2x	4096	2160	60	4:2:2	10bpc

QDPIC

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, 60	RGB/4:4:4	8/10/12bpc
	1920x1080	2x	1920	1080	24, 25, 30, 60	RGB/4:4:4	8/10/12bpc
	2048x1080	2x	2048	1080	24, 25, 30, 60	RGB/4:4:4	8/10/12bpc
4K	3840x2160	2x	3840	2160	24, 25, 30, 60	RGB/4:4:4	8/10bpc
	4096x2160	2x	4096	2160	24, 25, 30, 60	RGB/4:4:4	8/10bpc

TDPIC

The DisplayPort 1.1a interface supports HDCP 1.x.

	Format	Cables	Hres	Vres	Frame rate (Hz)	Sampling	Bit-depth	Notes
HD	1280x720	2x	1280	720	24, 25, 30, 60	RGB/4:4:4	8/10bpc	—
	1920x1080	2x	1920	1080	24, 25, 30, 60	RGB/4:4:4	8/10bpc	—
	2048x1080	2x	2048	1080	24, 25, 30, 60	RGB/4:4:4	8/10bpc	—
4K	3840x2160	2x	3840	2160	24, 25, 30	RGB/4:4:4	8/10bpc	Cannot use both TDPIC inputs at once; requires two separate TDPICs

Format	Cables	Hres	Vres	Frame rate (Hz)	Sampling	Bit-depth	Notes
4096x2160	2x	4096	2160	24, 25, 30	RGB/4:4:4	8/10bpc	Cannot use both TDPIC inputs at once; requires two separate TDPICs
3840x2160	4x	1920	2160	60	RGB/4:4:4	8/10bpc	Cannot use both TDPIC inputs at once; requires four separate TDPICs
4096x2160	4x	2048	2160	60	RGB/4:4:4	8/10bpc	Cannot use both TDPIC inputs at once; requires four separate TDPICs
3840x2160	8x	1920	1080	60	RGB/4:4:4	8/10bpc	—
4096x2160	8x	2048	1080	60	RGB/4:4:4	8/10bpc	—

DDIC

The DVI-D interface supports HDCP 1.x.

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

THIC

The HDMI 1.4 interface supports HDCP 1.x.

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

3GIC (HD and 3G-SDI)

	Format	Cables	Hres	Vres	Frame rate (Hz)	Sampling	Bit-depth	Notes
HD	1280x720	2x	1280	720	24, 25, 30, 60	4:2:2	10bpc	—
	1920x1080	2x	1920	1080	24, 25, 30	4:2:2	10bpc	—
	2048x1080	2x	2048	1080	24, 25, 30	4:2:2	10bpc	—
3G	1280x720	2x	1280	720	24, 25, 30, 60	RGB/4:4:4	10/12bpc	Level-A recommended
	1920x1080	2x	1920	1080	24, 25, 30	RGB/4:4:4	10/12bpc	Level-A recommended
	1920x1080	2x	1920	1080	60	4:2:2	10bpc	Level-A recommended
	2048x1080	2x	2048	1080	24, 25, 30	RGB/4:4:4	10/12bpc	Level-A recommended
	2048x1080	2x	2048	1080	60	4:2:2	10bpc	Level-A recommended
3G-4K	3840x2160	8x	1920	1080	24, 25, 30	RGB/4:4:4	10/12bpc	Level-A recommended
	3840x2160	8x	2048	1080	60	4:2:2	10bpc	Level-A recommended
	4096x2160	8x	1920	1080	24, 25, 30	RGB/4:4:4	10/12bpc	Level-A recommended
	4096x2160	8x	2048	1080	60	4:2:2	10bpc	Level-A recommended