User Manual

Boxer 4K

Boxer 4K20 (Bb.4) and Boxer 4K30 (Bb.1)

CHRISTIE®

NOTICES

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GENERAL

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

WARRANTY

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

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

b. Projector lamps (See Christie's separate lamp program policy).

c. Problems or damage caused by use of a projector lamp beyond the recommended lamp life, or use of a lamp other than a Christie lamp supplied by Christie or an authorized distributor of Christie lamps.

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

e. Problems or damage caused by the use of any lamp, replacement part or component purchased or obtained from an unauthorized distributor of Christie lamps, replacement parts or components including, without limitation, any distributor offering Christie lamps, replacement parts or components through the internet (confirmation of authorized distributors may be obtained from Christie).

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

g. Problems or damage caused by improper installation/alignment, or by equipment modification, if by other than Christie service personnel or a Christie authorized repair service provider.

h. Problems or damage caused by use of a product on a motion platform or other movable device where such product has not been designed, modified or approved by Christie for such use.

i. Problems or damage caused by use of a projector in the presence of an oil-based fog machine or laser-based lighting that is unrelated to the projector.

j. For LCD projectors, the warranty period specified in the warranty applies only where the LCD projector is in "normal use" which means the LCD projector is not used more than 8 hours a day, 5 days a week.

k. Except where the product is designed for outdoor use, problems or damage caused by use of the product outdoors unless such product is protected from precipitation or other adverse weather or environmental conditions and the ambient temperature is within the recommended ambient temperature set forth in the specifications for such product.

l. Defects caused by normal wear and tear or otherwise due to normal aging of a product.

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

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

PREVENTATIVE MAINTENANCE

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

REGULATORY

The product has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the product is operated in a commercial environment. The product generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of the product in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at the user's own expense.

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

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

ENVIRONMENTAL

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

Content

Introduction

This manual is intended for Christie qualified installers and trained operators of Christie Boxer 4K projection systems.

For complete Boxer 4K 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 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 manual.
- Do not look directly into the lens or at the lamp. The extremely high brightness can cause permanent eye damage.
- EXTREME BRIGHTNESS! When accessing a restricted access location for product service or maintenance, avoid exposure to the product beam path by turning the product power off and disconnecting the product from AC power, or by shuttering the lamp to avoid emissions from the front aperture.
- 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.
- 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.
- FIRE AND SHOCK HAZARD! Use only the attachments, accessories, tools, and replacement parts specified by Christie.

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

- TRIP OR FIRE HAZARD! Position all cables where they cannot contact hot surfaces, be pulled, be tripped over, or damaged by persons walking on or objects rolling over the cables.
- 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 (greater than or equal to 3.0 m from the floor to the beam) that prevents exposure of spectators' eyes within the hazard distance.

- EXTREME BRIGHTNESS! Do not place reflective objects in the product light path.

The following diagram and table show the zones for optical and thermal radiation hazard distances:
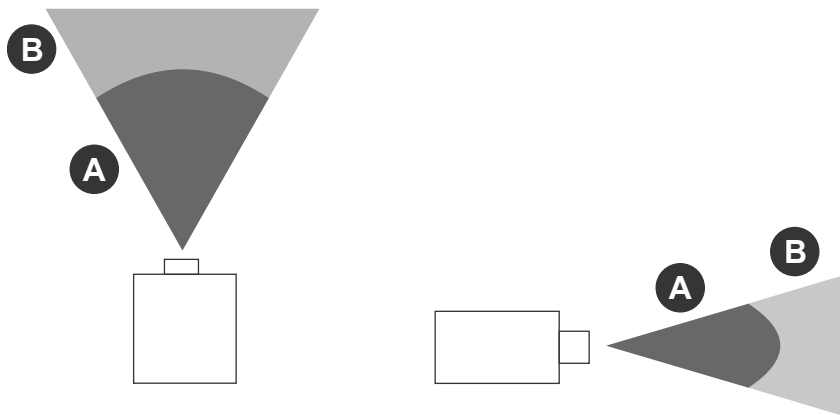
- Zone A—The light intensity may cause eye damage after a momentary or brief exposure (before a person can avert his or her eye away from the light source). The light may cause skin burns to occur.

- Zone B—The light intensity does not pose a hazard due to the eye's aversion response to bright light. However, staring directly into the light may still be a hazard.

Projection lens	Part number	Zone A (m)	Zone B (m)
0.72:1 HB fixed lens	144-110103-XX	0 to 0.6	0.6+
0.9:1 fixed lens	144-111014-XX	0 to 0.7	0.7+
1.13-1.31:1 HB zoom lens	144-103105-XX	0 to 1.1	1.1+
1.31-1.63:1 HB zoom lens	144-104106-XX	0 to 1.3	1.3+
1.63-2.17:1 HB zoom lens	144-105107-XX	0 to 1.7	1.7+
1.99-2.71:1 HB zoom lens	144-106108-XX	0 to 2.2	2.2+
2.71-3.89:1 HB zoom lens	144-107109-XX	0 to 3.1	3.1+
3.89-5.43:1 HB zoom lens	144-108100-XX	0 to 4.2	4.2+
4.96-7.69:1 HB zoom lens	144-109101-XX	0 to 6.0	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

General hazard.

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.

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

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

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.

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

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

Not for household use.

Mandatory action

Disconnect all power sources before performing maintenance or service procedures.

Consult the service manual.

Electrical labels

(protective earth ground symbol)	Indicates the presence of a protective earth ground.
(earth ground symbol)	Indicates the presence of an earth ground.

Additional hazard labels

(Risk Group 3 warning label)	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 Boxer 4K projector.

The Boxer 4K is a professional quality, easy-to-use projector using Digital Light Processing (DLP^{TM}) technology from Texas Instruments. Integrating smoothly into traditional projection environments, the Boxer 4K 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
- New LCD display to provide information at-a-glance

How the projector works

The Boxer 4K 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

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 1500 ft
- Humidity (non-condensing) 10 to 80%
- Operating altitude: 10,000 ft maximum at 5 to 25 degrees Celsius 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.
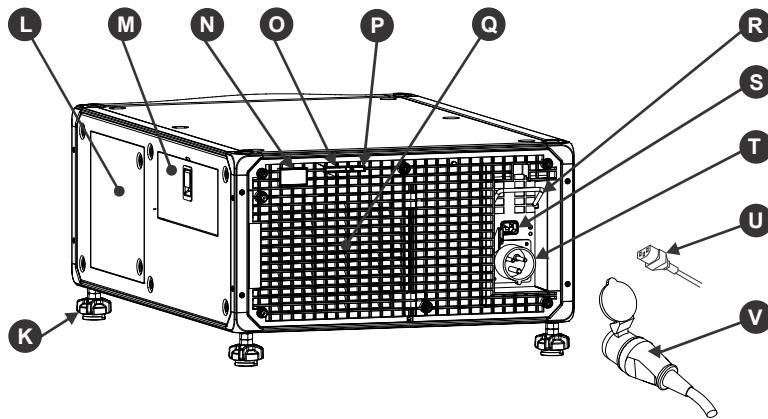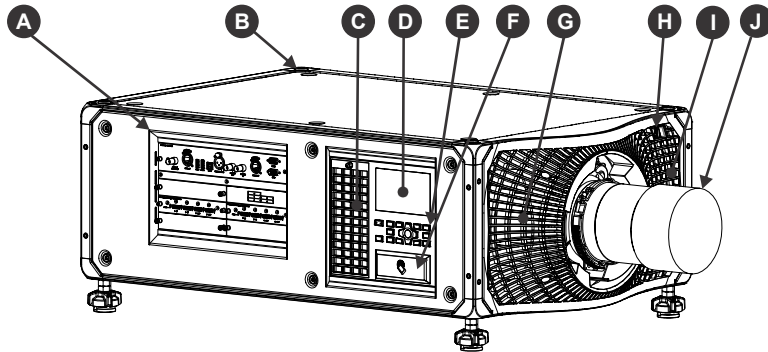
ID	Component	Description
A	Communication and input panel	Connects media sources to either the ports on the option cards or the IMXB.
B	Mounting and rigging holes	M12 x 1.75 holes for projector feet installation and offer mounting and rigging points.
C	User interface air filter door	Provides to the user interface air filter.
D	Display panel	Displays the projector menus and status.
E	Keypad interface	Controls the projector.
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.

ID	Component	Description
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 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 remote keypad

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

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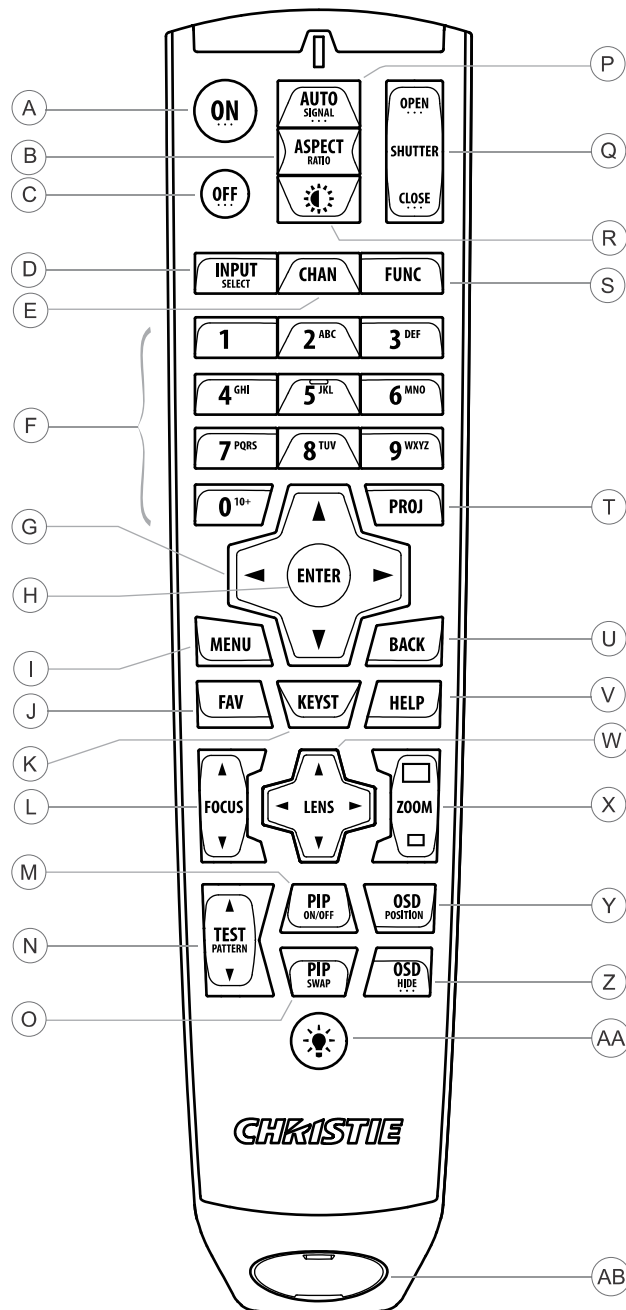
Button	Description
A	Powers the projector lamps on.
B	Opens the aspect ratio dialog.
C	Turns the lamps off and puts the projector in standby.
D	Selects an active or inactive input on any slot.
E	Not supported.

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 OSD position menu.
Z	Shows or hides the OSD menus.
AA	Turns the remote backlight on.
AB	Male XLR connector for wired option.

Display panel components

Identify the main components of the display panel (also known as the home page).
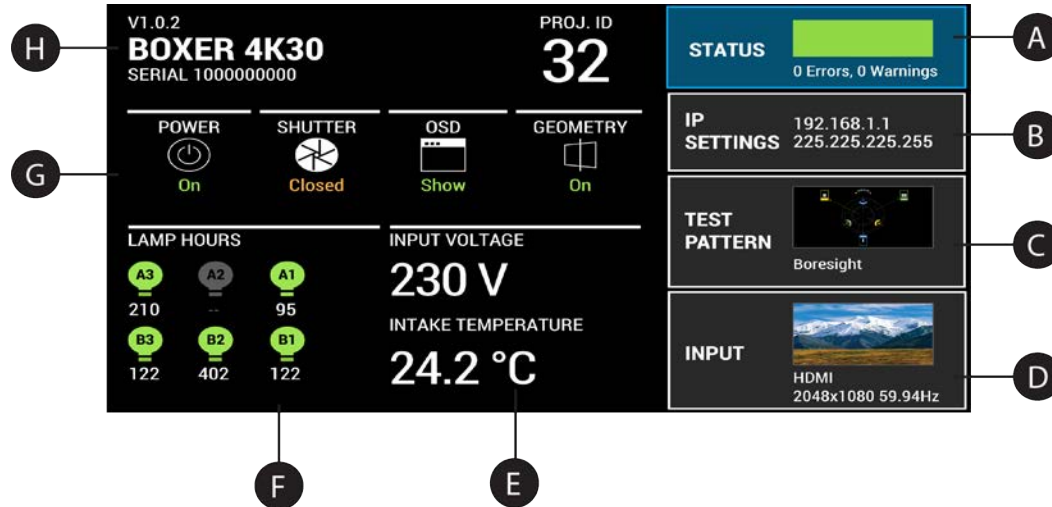
ID	Component	Description
A	Status	Contains information about the health of the projector including the number of warnings and errors.
		Provides access to the status system.
B	IP Settings	Displays the IP address and subnet values.
		Provides access to changing the IP settings.
C	Test Pattern	Displays 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 the projector on

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 power range, as specified on the license label.

1. Plug the projector in to AC power.

   The projector automatically powers on when plugged in. The display panel functionality becomes available.

2. To turn the lamps on, press and hold the **Power** button until you hear a beep.

Projector LED status indicators

Identify the LED state colors and meaning.

LED	State		Description
Blue	Solid	Standby	Lamps are off. Video electronics are off. Projector status is OK.
	Flashing	Cool down	Projector is moving to one of the two standby states: • Lamps are off and video electronics are booting up. • Lamps are off. Video electronics and lamps are cooling down.
Green	Solid	Lamps on	Lamps are on. Projector status is OK.
	Flashing	Startup	Projector is moving to lamp on state. Lamps are striking and 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 lamps on	Lamps are 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. Lamps are off. Video electronics and lamps 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 lamps are 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 the projector off

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

1. To turn the lamps off, press and hold the **Power** button until you hear a beep.

   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, press **Enter**.

Setting the image resize preset

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

1. Select **MENU** > **Image Settings** > **Size & Position** > **Resize Presets**.

2. Select the appropriate resize preset:

   - **Auto**—Maximize for current source.
   - **No Resizing**—Display in native resolution.
   - **Full Size**—Fill the screen, regardless of source.
   - **Full Width**—Fill display width and keep aspect ratio.
   - **Full Height**—Fill display height and keep aspect ratio.

3. Select **Enter**.

Adjusting lens settings

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

Adjusting offset

Always adjust offset before adjusting boresight.

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

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

Resetting the lens to home position

Set the lens offset back to the home position.

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

Aligning the image with lens zoom and focus

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

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

Locking the lens motor

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

1. Select **MENU** > **Configuration** > **Lens Settings** > **Lock all Lens Motors**.

2. To enable locking of all lens motors, select **Enter**.

Determining what lens warnings are displayed

Controls the level of lens warnings displayed.

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

2. Select the appropriate lens warning level:

   - **Show All Warnings**—Shows all lens warnings.

   - **Hide Zoom Motor Warnings**—Hides zoom motor warnings. Christie recommends selecting this option when using a fixed lens.

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

3. Select **Enter**.

Adjusting primary colors

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

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

To achieve consistency use a color meter to measure the native primary colors—red, green, blue, and white—as they appear on the screen. On the basis of these new values, which are stored in memory, each projector automatically calculates any necessary corrections to reproduce the original factory colors under the current environmental conditions. This essentially calibrates a projector to its surroundings, compensating for factors such as screen type, lamp 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** > **Admin** > **Service**.

2. Enter the service password.

3. Select **Color Primary Settings**.

4. To edit the primary colors, select **Edit Primary Colors**.

5. Adjust the slider or enter the measured color values of the primary color component you selected.

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

7. Repeat steps 5 and 6 for each primary color component.

8. To view a specific color while adjusting, select **Show Color Pattern**.

9. Select the appropriate color and select **Enter**.

10. To reset the primary colors to their defaults, select **Reset Color Primaries**.

11. At the confirmation prompt, select **OK**.

DMD color correction

Adjust the DMD color values as required.

Adjusting color by precise chromaticity values

Change the values of the primary color components.

1. Select **MENU** > **Configuration** > **Color Correction by x,y**.

2. Adjust the slider or enter the measured color values of the primary color component you selected.

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

4. Repeat steps 2 and 3 for each primary color component.

5. To view a specific color while adjusting, select **Show Color Pattern**.

6. Select the appropriate color and select **Enter**.

Adjusting color by saturation

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

1. Select **MENU** > **Configuration** > **Color Saturation**.

2. Adjust the value of the primary color you selected by using more or less of it in relation to the other primary colors.

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

4. Repeat steps 2 and 3 for each primary color.

5. To view a specific color while adjusting, select **Show Color Pattern**.

6. Select the appropriate color and select **Enter**.

Signal color correction

Adjust the video signal color as required.

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

Adjusting the color space

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

1. Select **MENU** > **Image Settings** > **Color & Gamma** > **Color Space**.

2. Select the adjustment most suited to the input signal:

- Auto Detect

- YCbCr HDTV (Explanded Ranage)

- YCbCr JPEG (Full Range)

- YCbCr UHDTV (ITU-R BT.2020) (Full Range)

- RGB (Full Range)

- RGB (Limited Range)

3. Select **Enter**.

Adjusting color by temperature

Adjust the color temperature as expressed in degrees Kelvin.

1. Select **MENU** > **Image Settings** > **Color & Gamma**.

2. Select **Color Temperature**.

3. Adjust the slider to change the light to warmer or cooler and select **Enter**.

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) coloimetry with DCI white point.

- **DCI P3 (D65)**—Set the DCI P3 colorimetry with D65 white point.

- **Custom**—Select a user defined set of color adjustments.

3. Select **Enter**.

Correcting for ambient light

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

1. Select **MENU** > **Image Settings** > **Color & Gamma** > **Ambient Light Correction**.

2. Select **Enter**.

3. Use the right and left arrows to adjust how the image displays in conditions with ambient light.

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

Setting the frame delay

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

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

1. Select **MENU** > **Image Settings** > **Advanced Image Settings** > **Frame Delay**.

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

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

4. To set the achievable frame delay, select **Actual Delay**.

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

Enabling film mode detect

Enables or disables the detection of film motion.

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

2. To enable the detection of film motion, select **Auto Detect**.

3. To disable the detection of film motion, select **Disabled**.

4. Select **Enter**.

Adjusting the image sharpness

Change the sharpness of the image.

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

1. Select **MENU** > **Image Settings** > **Advanced Image Settings** > **Sharpness**.

2. Select **Enter**.

3. Use the right and left arrows to adjust the sharpness of the image.

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

Enabling edge blending

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

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 edge blending, select **Basic**.
4. Select **Basic Edge Blending** and select **Enter**.
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 Changes** and select **Enter**.
10. Repeat steps 2 to 9 for the remaining projectors.
11. To turn off edge blending, from **MENU** > **Configuration** > **Edge Blending**, select **Off**.

Blending black levels for multiple projectors

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

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

Enabling black level blending

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

1. Select **MENU** > **Configuration** > **Black Level Blending** > **Black Level Blending Mode**.
2. Select **Basic**.

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

Adjusting the black level blends

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

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

This option is selected by default.

- To manually set the widths, use the arrow keys to enter the pixel values.

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

4. Select **Apply**.

5. Select **MENU** > **Configuration** > **Black Level Blending** > **Black Level Blend Offset**.

6. To adjust the brightness and black hues of the blended region, use the arrow keys to enter the pixel values.

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

7. If using the web UI, you can adjust the brightness and black hues in more detail by modifying the values in the Fine Adjustment and Course Adjustment fields.

8. Select **Apply**.

9. Repeat steps 2 to 8 for the remaining projectors.

Resetting black level blending

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

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

1. Select **MENU** > **Configuration** > **Black Level Blending**.

2. Select **Reset Black Level Blends**.

3. At the confirmation prompt, select **Reset**.
   After the reset, the black level blend offsets are set to 0, **Use Edge Blend Width Values** checkbox is selected, and the edge blend values are used; however, the black level blend widths are not set to zero.

Geometry correction

Modify the geometry for all sources.

Enabling warping

Use warping to project images on any surface shape.

1. Create a warp file using the Twist application.

   To connect Boxer 4K with Twist, use port 3003. For details, see the *Twist User Manual (P/N: 020-101380-XX)*.

2. Upload the warp file to the projector.

   For details, see the *Twist User Manual (P/N: 020-101380-XX)*.

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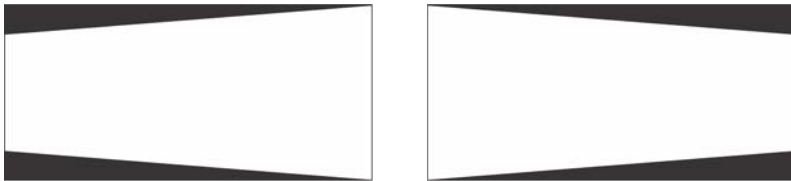
1. Select **MENU** > **Configuration** > **Geometry Correction** > **Geometry Correction Mode**.
2. Select **Horizontal Keystone Correction**.
3. From the correction dialog, adjust the horizontal keystone by using the arrow keys.
4. Select **Apply Changes**.

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**.

Configuring system settings

Learn how to configure the system settings.

Setting the date on the projector

Configure the date on Boxer 4K.

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 on the projector

Configure the time on Boxer 4K.

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**.

2. Select **Enter**.

3. Select the appropriate language and select **Enter**.
   The change takes effect immediately.

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**.

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

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

1. Select **MENU** > **Configuration** > **Input Settings** > **Enable Video Loop Out**.

2. To enable passing HDMI, 3G, and DisplayPort input signals through to another projector, select **Enter**.

Informing the source of signal preferences

Configure Boxer 4K 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 that **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. Press **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**.

Configuring communications

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

Enabling projector communication

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

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

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

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

Setting the remote access level

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

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

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

Communicating with Boxer 4K through Art-Net

Boxer 4K 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 Boxer 4K 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. Boxer 4K specifies 24 channels.

Boxer 4K 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 lamps 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.

Channel	Name	Description	Suggested starting position	Notes
10	Lens Horizontal Position (Fine)			• A 250 ms delay exists before sending this channel to the projector.
11	Lens Vertical Position (Coarse)	0 = Full lower position (0%)	128	• Locked by the Lens Shift Enable channel.
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 For a list of input indices, see *Index list for the input channel* (on page 37). Channel 1 slider lock can be used if a keypad is not available for the input selection.
14 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]

Input index	Description	Input index	Description
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]
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]

Input index	Description	Input index	Description
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 Boxer 4K with macros so the same tasks can be done on a regular basis.

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

Adding a macro

Create a macro to automate a repetitive task.

Up to 10 macros can be created.

This feature is only available on the web interface.

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

   If the limit of 10 macros is reached, the **Add Macro** button is disabled and displays a Limit Reached message.
3. In the Name field, enter a meaningful name for the macro.
4. Verify that **Scheduled Event** is listed in the Type list.
5. In the Start Date field, select a date from the calendar.
6. In the Start Time field, use the up and down keys to adjust the hour (HH), minutes (MM), and seconds (SS).

   You can also manually enter the hour, minutes, and seconds.
7. To make this a reoccurring event, click **Recurring**.

   When enabled, the button appears green. When disabled, the button appears gray.
   a) To determine the recurrence pattern, under Every, select the day or days of the week you want run the macro.
   b) Determine the life of the macro.
      - To have the macro run indefinitely, select **No end date**.
      - To run the macro for a defined period of time, in the Recur for field, use the up and down keys to adjust the number of weeks.

        You can also manually enter the number of weeks. The limit is 99 weeks.
8. In the Serial Command field, enter the serial command(s) you want to run.

   For available serial commands and their syntax, refer to the Boxer 4K Serial API Commands guide (P/N: 020-101697-XX).

9. To test the functionality, click **Test**.
   An `Action succeeded` message is displayed upon a successful test.

10. To save the macro, click **Save**.

Copying a macro

Duplicate a macro to create another macro of similar functionality.

Up to 10 macros can be created.

This feature is only available on the web interface.

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

   If the limit of 10 macros is reached, the **Duplicate** button is disabled and the **Add Macros** button displays a Limit Reached message.
3. In the Name field, enter a meaningful name for the macro.
4. Modify the appropriate fields.
5. To save the macro, click **Save**.

Editing a macro

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

This feature is only available on the web interface.

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

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

Deleting a macro

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

This feature is only available on the web interface.

1. From the home page of the web interface, select **MENU** > **Macros and GPIO**.
2. From the list of macros, select one or more macros to delete.

   To delete all the macros in the list, click **Select All**. the number of macros you want to delete is displayed next to the trash can.

3. Click **Delete**.

🗑(1)

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

Configuring the GPIO

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

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

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

📝 This feature is only available on the web interface.

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

   A blue pin indicates input and a green pin indicates output.

4. Select **Apply**.

GPIO connector

The GPIO connector located on the input panel provides a flexible method of interfacing with the projector. Seven GPIO pins are available on the nine pin D-Sub GPIO connector. Two other pins are reserved for ground and power.
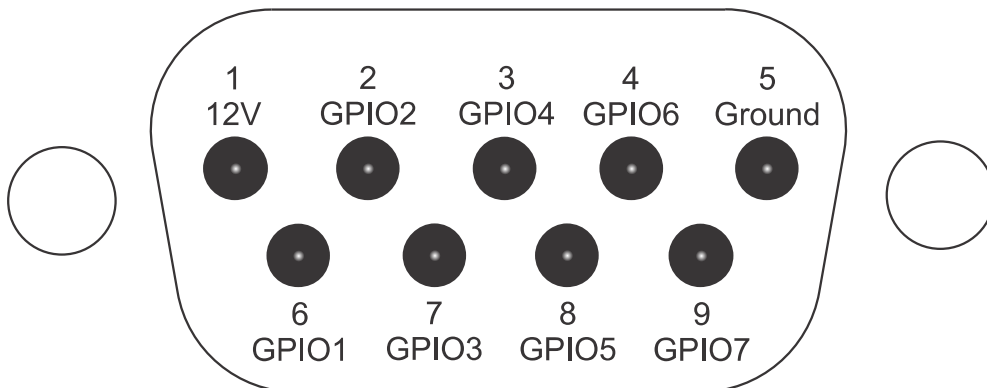
D-SUB pin number	Signal	Output high (Voh)	Notes
Pin 1	+12V	—	1A max

D-SUB pin number	Signal	Output high (Voh)	Notes
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. Select **New Profile**.
5. Select **Save**.

Importing a projector profile

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

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

Restoring settings from a profile

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

1. Select **MENU** > **Admin** > **Projector Profiles**.
2. Select an existing profile.
3. Select **Restore Profile**.

4. From the Restore dialog, select the settings you want to restore.

5. Select **Restore**.

Renaming a projector profile

A newly created projector profile is given the name of the projector with the date the profile was saved, for example, Boxer 4K30_2016-06-15. 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.

1. Insert a USB flash drive (properly formatted as FAT) into the USB port on the projector.

2. Select **MENU** > **Admin** > **Projector Profiles**.

3. Selecting an existing profile.

4. Select **Export to File**.
   A default name is assigned.

5. Select **Download File**.
   The profile file is exported to the USB flash drive.

Deleting a projector profile

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

1. Select **MENU** > **Admin** > **Projector Profiles**.

2. Select the profile you want to delete.

3. Select **Delete Profile**.

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

Backup, restore, and upgrade projector files

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

Upgrading the Boxer 4K software

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

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

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

4. Select **Software** > **Upgrade**.

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

6. To automatically restart Boxer 4K, select **Restart Now**.

   If you decide restart Boxer 4K at a later date (**Restart Later**), you cannot perform another upgrade until the Boxer 4K is restarted.

Exporting backup settings to an external device

Save the projector settings to a USB flash drive.

1. Insert a USB flash drive (properly formatted as FAT) into the USB port on the projector.

2. Select **MENU** > **Admin** > **Backup & Restore**.

3. Select **Backup to USB**.
   A default name is assigned.

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

5. To save the name, navigate down and select **SAVE**.
   The backup file is exported to the USB flash drive.

Importing a file from an external device to restore settings

Restore backed up files, stored on a USB flash drive, onto the projector.

1. Insert the USB flash drive containing the backup file into the USB port on the projector.

2. Select **MENU** > **Admin** > **Backup & Restore**.

3. Select **Restore from USB**.

4. From the File Selection dialog, select a file to restore.
   The backup settings file is imported to the projector.

Restoring projector default settings

Restore the Boxer 4K settings back to the default values. Network configurations and calibration values are not reset.

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

2. Select **Reset Projector Defaults**.
   All customized settings are set to the default Boxer 4K settings.

Diagnostic tools

Follow these procedures to help with diagnosing issues with Boxer 4K.

Viewing projector information

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

1. To view the additional software added to the projector, select **MENU** > **Licenses**.
2. To view the software licenses used to run the projector, select **MENU** > **About**.

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

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

1. From the side panel home page, use the arrows to select **Test Pattern**.

   You can also select the test patterns from **MENU** > **Test Pattern**.
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 dispalyed in the full grey test patterns.

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

Modifying ramp test pattern characteristics

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

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

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

Modifying grid test pattern characteristics

Modify the characteristics for the associated gridl test patterns.

1. Select **MENU** > **Admin** > **Diagnostics**.

2. Select **Test Pattern**.

3. Select one of the grid test patterns: SQUARE GRID or DIAGONAL GRID.

4. Select **Enter**.

5. To change the pitch of the grid test pattern, select **Test Pattern Grid Pitch** and adjust the slider to the value you want.

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

7. To change the color of the grid, select **Test Pattern Grid Color** and select **Enter**.

8. To enable movement of the test pattern, select **Test Pattern Grid Motion** and select **Enter**.

Enabling a specific test pattern color

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

1. From the side panel home page, use the arrows to select **Test Pattern**.

   You can also select the test patterns from **MENU** > **Test Pattern**.

2. Select the **Flat White** test pattern.

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

4. On the IR remote keypad, press **Func**+**6**+**<0 to 7>**.

   Where *<0 to 7>* represents a specific color.

Viewing Boxer 4K 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 Boxer 4K.

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 Boxer 4K interrogator

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

1. Insert a USB flash drive in the USB port on Boxer 4K.

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

3. Select **Run**.

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

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

Identifying where alarm and trap messages are sent

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

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

Setting the SNMP read community string

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

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

2. Use the up and down arrows to enter the read community string.

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

Configuring traps

A trap is a condition that SNMP monitors on Boxer 4K.

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

3. To enable additional traps, repeat step 2.

Defining a trap IP address

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

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

2. Select **Address 1**.

3. Use the up and down arrows to enter an IP address.

4. To confirm the address, select **Enter**.

5. To add a second and third IP address, repeat steps 2 to 4 for **Address 2** and **Address 3**.

Restoring factory default settings

Restoring factory settings removes all custom device settings.

Only Christie qualified technicians can reset factory defaults.

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

2. Enter the service password.

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

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

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)	4096 x 2160
Processing path	23.97 - 60 Hz

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

Color and grayscale resolution	
Displayable colors	35.2 trillion
Grayscale resolution	45 bits total linear, 25 bits per RGB component

White point	
Nominal white (full white, after calibration)	y = 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	
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	—	
IMXB	82	95	
IMXB FPGA	82	—	
Backpane	82	95	
HIP scaler	82	95	
HIP warp red	82	95	
HIP warp green	82	95	
HIP warp blue	82	95	
Red FPGA	82	95	
Red DMD	60	65	
Green FPGA	82	95	
Blue FPGA	82	95	
Option card 0	82	95	
Option card 1	82	95	
Option card 2	82	95	
Option card 3	82	95	
Option card 4	82	95	

Location	Warning (°C)	Error (°C)	Remarks
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. All fan warnings are set to ~75% of their normal operating speeds.

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
Radiator fan C	800
Radiator fan D	800
HIP blower A	800

Location	Warning
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	1600
Card cage exhaust	1600
Card cage intake	1600
Card cage intake	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 Boxer 4K.

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
Line frequency	50/60 Hz
AC input coupler	
Input 1	IEC 309, 32 A/250 VAC

Parameter	Requirement
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.

Lenses (sold separately) Description	Part number
Lens 1.13-1.31:1 HB Zoom	144-103105-XX
Lens 1.31-1.63:1 HB Zoom	144-104106-XX
Lens 1.63-2.17:1 HB Zoom	144-105107-XX
Lens 1.99-2.71:1 HB Zoom	144-106108-XX
Lens 2.71-3.89:1 HB Zoom	144-107109-XX
Lens 3.89-5.43:1 HB Zoom	144-108100-XX
Lens 4.98-7.69:1 HB Zoom	144-109101-XX
Lens 0.72:1 HB Fixed	144-110103-XX
Lens 0.9:1 Fixed	144-111014-XX

Other accessories (sold separately) Description	Part number
IR remote	003-120918-XX
Mystique Install	900-100285-XX
	900-100286-XX
	900-100274-XX
	900-100275-XX
Rigging frames	144-112015-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 following regulations related to product safety, environmental requirements and electromagnetic compatibility (EMC).

Safety

- CAN/CSA C22.2 No. 60950-1
- ANSI/UL 60950-1
- IEC 60950-1
- EN 60950-1
- IEC 62471-1

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

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033387-15-2919

Electro-magnetic compatibility

Emissions

- FCC CFR47, Part 15, Subpart B, Class A

- CAN ICES-3 (A) / NMB-3 (A)
- CISPR 22/EN 55022, Class A
- IEC 61000-3-2/EN61000-3-2

Immunity

- CISPR 24/EN55024
- 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

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 Regulation (EC) No. 1907/2006 on the registration, evaluation, authorization and restriction of chemicals (REACH) 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).

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).

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

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

Signal connectivity specifications

Identify the signal connectivity specifications for Boxer 4K.

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	RGB/4:4:4	8/10/12bpc
	1920x1080	1920	1080	24, 25, 30, 50, 60	RGB/4:4:4	8/10/12bpc
	2048x1080	2048	1080	24, 25, 30, 50, 60	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	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	RGB/4:4:4/4:2:2	8/10/12bpc	—

	Format	Hres	Vres	Frame rate (Hz)	Sampling	Bit-depth	Notes
	2048x1080	2048	1080	24, 25, 30, 50, 60	RGB/4:4:4/4:2:2	8/10/12bpc	—
4K	3840x2160	3840	2160	24, 25, 30	RGB/4:4:4/4:2:2	8/10/12bpc	4:2:2 12-bit only
	3840x2160	3840	2160	50, 60	RGB/4:4:4	8bpc	—
	3840x2160	3840	2160	50, 60	4:2:2/4:2:0	8/10/12bpc	4:2:2 12-bit only
	4096x2160	4096	2160	24, 25, 30	RGB/4:4:4/4:2:2	8/10/12bpc	4:2:2 12-bit only
	4096x2160	4096	2160	50, 60	RGB/4:4:4	8bpc	—
	4096x2160	4096	2160	50, 60	4:2:2/4:2:0	8/10/12bpc	4:2:2 12-bit only

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

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	RGB/4:4:4	8/10bpc	—
	1920x1080	—	1920	1080	24, 25, 30, 50, 60	RGB/4:4:4	8/10bpc	—
	2048x1080	—	2048	1080	24, 25, 30, 50, 60	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	—
	4096x2160	4x	2048	1080	50, 60	RGB/4:4:4	8/10bpc	—

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	—
	1920x1080	—	1920	1080	24, 25, 30, 50, 60	RGB/4:4:4	8bpc	—
	2048x1080	—	2048	1080	24, 25, 30, 50, 60	RGB/4:4:4	8bpc	—
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	RGB/4:4:4	8bpc	—
	4096x2160	4x	2048	1080	50, 60	RGB/4:4:4	8bpc	—

THIC video formats

Identify the video formats for the THIC card. The HDMI 1.3 interface supports HDCP 1.x.

	Format	Cables	Hres	Vres	Frame rate (Hz)	Sampling	Bit-depth
HD	1280x720	—	1280	720	24, 25, 30, 50, 60	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	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

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
HD	1280x720	1280	720	24, 25, 30, 50, 60	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	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	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

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	—
	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

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