

CP4220

Setup Guide

020-100692-02

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NOTICES

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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.


This Class A digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

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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!

Canadian manufacturing facility is ISO 9001 and 14001 certified.

GENERAL WARRANTY STATEMENTS

For complete information about Christie's limited warranty, please contact your Christie dealer. In addition to the other limitations that may be specified in Christie's limited warranty, the warranty does not cover:

- a. Damage occurring during shipment, in either direction.
- b. Projector lamps (See Christie's separate lamp program policy).
- c. Damage caused by use of a projector lamp beyond the recommended lamp life, or use of a lamp supplied by a supplier other than Christie.
- d. Problems caused by combination of the product with non-Christie equipment, such as distribution systems, cameras, video tape recorders, etc., or use of the product with any non-Christie interface device.
- e. Damage caused by misuse, improper power source, accident, fire, flood, lightning, earthquake or other natural disaster.
- f. Damage caused by improper installation/alignment, or by product modification, if by other than a Christie authorized repair service provider.
- g. For LCD projectors, the warranty period specified applies only where the LCD projector is in "normal use." "Normal use" means the LCD projector is not used more than 8 hours a day, 5 days a week. For any LCD projector where "normal use" is exceeded, warranty coverage under this warranty terminates after 6000 hours of operation.
- h. Failure due to normal wear and tear.

PREVENTATIVE MAINTENANCE

Preventative maintenance is an important part of the continued and proper operation of your product. Please see the Maintenance section for specific maintenance items as they relate to your product. Failure to perform maintenance as required, and in accordance with the maintenance schedule specified by Christie, will void the warranty.

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1 Introduction

This manual is intended for professionally trained operators of Christie high-brightness projection systems. These operators are qualified to replace the lamp and air filter, but should not attempt to install or service the projector.

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

1.1 Labels and Markings

These warning labels can appear on the projector:

⚠ DANGER Indicates a hazardous situation which that could result in death or serious injury.

⚠ WARNING Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION Indicates a hazardous situation that could result in minor or moderate injury.

NOTICE! *Addresses practices not related to personal injury.*

⚠ WARNING Never look directly into the projector lens or at the lamp. The extremely high brightness can cause permanent eye damage. For protection from ultraviolet radiation, keep all projector housings intact during operation. Protective safety gear and safety goggles are recommended when servicing.

⚠ WARNING FIRE HAZARD! Keep hands, clothes, and all combustible material away from the concentrated light beam of the lamp.

⚠ CAUTION Position all cables where they cannot contact hot surfaces or be pulled or tripped over.

⚠ CAUTION 1) 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. An evaluation of your workplace is advised to assure employees are not exposed to cumulative radiation levels exceeding the government guidelines for your area. 2) Be aware that some medications are known to increase sensitivity to UV radiation.



1.2 AC / Power Precautions

To correctly install this projector, a certified electrician must install a permanent a single-phase connection from the projector to the AC supply. You must operate the projector at the recommended voltage.

⚠ WARNING

Disconnect projector from AC before opening any enclosure.

⚠ CAUTION

- 1) DO NOT allow anything to rest on the power cord. Locate the projector where the cord cannot be damaged by people walking on it or by objects rolling over it. Never operate the projector if the power cable appears damaged in any way.**
- 2) DO NOT overload power outlets and extension cords as this can result in fire or shock hazards.**
- 3) Note that only qualified service technicians are permitted to open any enclosure on the product and only if the AC has been fully disconnected from the product.**

Power Cords and Attachments

⚠ WARNING 1) The North American rated line cord is provided with each projector. Ensure that you are using a power cord, socket and power plug that meets the appropriate local rating standards. 2) Use only an AC power cord recommended by Christie. Do not attempt operation if the AC supply and cord are not within the specified voltage and power range.

Use only the attachments and/or accessories recommended by Christie. Use of others may result in the risk of fire, shock or personal injury.

1.3 Lamp Precautions

Lamps used in the projector are under high pressure and you must handle them with caution. Lamps can explode and cause serious personal injury if they are dropped or mishandled.

⚠ DANGER EXPLOSION HAZARD! Wear authorized protective safety clothing whenever the lamp door is open.

Recommended protective clothing includes, but may not be limited to a polycarbonate face shield, protective gloves, and a quilted ballistic nylon jacket or a welder's jacket. This equipment is included in included in the Christie Protective Clothing Safety Kit #598900-095.

NOTE: *Christie's protective clothing recommendations are subject to change. Any local or federal specifications take precedence over Christie recommendations.*

⚠ DANGER Lamp may explode causing bodily harm or death. 1) Always wear protective clothing whenever the lamp door is open or while handling lamp. 2) Ensure those within the vicinity of the projector are also equipped with protective clothing. 3) Never attempt to access the lamp while the

lamp is on. Wait a minimum of 10 minutes after the lamp turns OFF before turning the projector off, disconnecting it from a power source, and opening the lamp door.

The arc lamp operates at a high pressure that increases with temperature. Failure to allow the lamp to sufficiently cool prior to handling increases the potential for an explosion causing personal injury or property damage.

1.4 Contacting Your Dealer

If you encounter a problem with your Christie projector, contact your dealer. To assist with the servicing of your projector, enter the information in the tables and keep this information with your records.

Table 1.1 Purchase Record

Dealer:
Dealer or Christie Sales/Service Contact Phone Number:
Projector Serial Number*:
Purchase Date:
Installation Date:

** The serial number is on the license label located on the front panel of the projector.*

Table 1.2 Ethernet Settings

Default Gateway	
Projector IP Address	
Subnet Mask	

2 Installation and Setup

This section explains how to install, connect, and optimize the projector display.

2.1 Site Requirements

To safely install and operate the CP4220 projector, the installation location must meet these minimum requirements:

- **Physical Operating Environment**
 - Maximum Ambient Temperature (operating) 35°C
 - Minimum Ambient Temperature (operating) 10°C
- **External Exhaust Ducting**
 - The installation site must provide a minimum of 450 CFM (ft³/min) external exhaust airflow to ensure adequate cooling of the Xenon arc lamp at less than or equal to 25°C ambient and less than 3,000 feet elevation. Above 25°C or 3,000 feet, 600 CFM is required. For detailed instructions for measuring CFM, *see 2.8 Connect External Exhaust Ducting, on page 2-7.*
- **Permanent Power Connection**
 - Single-phase projector unit: Maximum 15A circuit breaker protection provided as part of the building installation
 - Three-phase Lamp Power Supply (LPS): Minimum 50A breaker protection must be provided and must disconnect all phases simultaneously for the stationary permanently connected equipment.
 - Protection from overcurrents, short circuits, and earth faults must be part of the building installation.
 - 4-wire to Terminal Block in Lamp Power Supply (certified electrician required).
 - Protection from overcurrents, short circuits, and earth faults must be part of the building installation. The disconnect device (double pole switch or circuit breaker with minimum 3mm contact gap) must be readily accessible within the projection room.

2.2 Tools Required for Installation

You need these tools to install the CP4220 projector:

- 12" screwdrivers: Phillips #2 (magnetic) and flat
- 19mm and 7/8" wrenches
- Assorted Allen keys (metric)
- Heat extractor
- Christie approved protective safety clothing if you are working with the lamp
- Lamp
- Lens cleaning tissue and solution

2.3 Projector Components

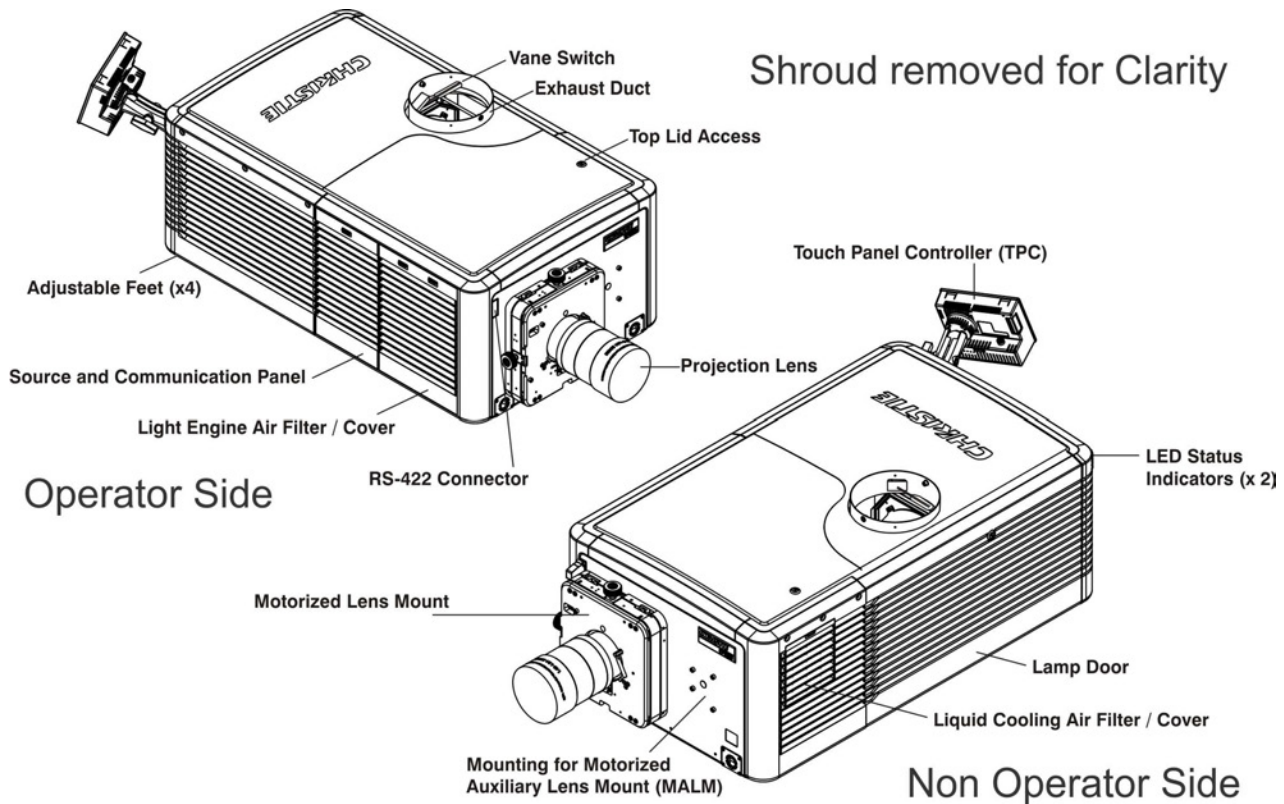


Figure 2-1 Projector Overview

Air Filter Cover and Air Filter

The air filter filters the intake air before it circulates in the front compartment to cool the main electronics. See [6.11 Replace the Light Engine Air Filter](#).

Manual Douser Override

Closes the douser. Closing the douser rotates a shutter blade in front of the lamp and reduces lamp power to 2kW to conserve lamp life. The override switch is meant for emergency use only.

Exhaust Duct and Vane Switch

Extracts heated air from the lamp compartment. The vane switch inside the rigid port monitors the amount of airflow. See [Section 2.1 Site Requirements](#) for airflow requirements of the external heat extraction system.

Adjustable Feet

Adjusts the tilting angle of the projector.

Lamp Door and Lamps

Provides access to the lamp. The lamp door must remain closed and locked for normal operation. Lamp replacement should only be performed by qualified technicians.

The projector 7kW ballast is designed to operate with 2.0kW, 3.0kW, 4.5kW or 6.0kW lamps. See [6.9 Replace the Lamp](#) for a complete list of available lamp types.

LED Status Indicators

Provides information about the status of the projector. See Section 5 Operation for information about projector status

Motorized Auxiliary Lens Mount (MALM)

An optional auxiliary lens mount can be installed adjacent to the primary lens mount to provide motorized positioning of a 1.25x Anamorphic lens or a 1.26 Wide Converter lens in front of the primary lens. The Wide Converter lens “zooms” the image from flat to scope image formats. The Anamorphic lens horizontally spreads the image back into its wider 2.39:1 “scope” image and is most typically used in side-masking theatres or on larger screen sizes.

Projection Lens

A variety of lenses can be used with the CP4220 projector. See [6.13 Replace the Lens](#) for a list of available lenses.

RS-422 Connector

Connects the motorized lens mount to the projector.

Security Locks

Prevents unauthorized access to projector components.

Shroud

Covers the motorized lens mount assembly. The shroud is to be removed for installing a lens, MALM or when using some 3D equipment.

Input Panel

Connects the projector to external devices.

PIB (Projector Intelligence Board) Faceplate Connections:

10Base-T/100Base-TX Ethernet: Connects the projector to a network.

GPIO: Connects the projector to external Input and output devices, such as the Christie ACT. See [Section 3: Connect Devices to the Projector](#) for GPIO pinouts.

DVI-A / DVI-B: Connects the projector to non-cinema video and graphics sources. These are single-link ports for single-link cables and connectors. The connectors can be used together as a twin-link DVI port.

HD-SDI A/HD-SDI-B: Connects the projector to high-definition cinema sources. The connectors can be used together to deliver Dual Link HD-SDI following the SMPTE 372M standard.

SCCI: A Simple Contact Closure Interface (SCCI) port that uses a simple dry contact closure to turn the lamp on or off or to open or close the douser. See [Section 3: Connect Devices to the Projector](#) for SCCI pinouts.

RS232 ICP: Connects a projector to a computer for direct DLP communication.

RS232 PIB: Connects the projector to Christie accessories or third-party automation equipment.

Marriage: Allows the projector to display encrypted content.

Emergency Start: Starts the projector, turns the lamp on, and opens the douser when the Touch Panel Controller is unavailable or disconnected. Press and hold this button, to close the douser and turn the lamp off; the power remains on.

Reset: Resets the projectors electronics. After the projector restarts, the projector returns to the standby mode.

3D: Connects the projector to 3D products, such as MasterImage or Real D for polarizing and de-ghosting 3D content during projection.

ICP Faceplate Connections

The ICP board provides the image processing electronics for the projector. The ICP faceplate includes a number of LEDs that are only functional when the projector is in full power mode.

- **REGEN:** (Regulators Enabled) Indicates the presence of the internal regulator enable signal. When illuminated BLUE the internal regulators are enabled. When OFF, not enabled.
- **SOFTST:** (Software State) Indicates the state of the software application. When OFF, in a Fail state (0). When RED, in a Fail state (1). When YELLOW, in a Fail state (2). When GREEN, status OK.
- **OSST:** (Operating System State) Indicates the state of the operating system. When OFF, in a Fail state (0). When RED, in a Fail state (1), When YELLOW, in a Fail state (2). When GREEN, status OK.
- **FMTST:** (FMT FPGA State) Indicates the configured state of the FMT FPGA. When RED, unable to configure FPGA with Main or Boot application. When YELLOW, in Boot application. When Green, in Main application.
- **ICPST:** (ICP FPGA State) Indicates the configured state of the ICP FPGA. When RED, unable to configure FPGA with Main or Boot application. When YELLOW, in Boot application. When Green, in Main application.
- **Port A / Port B:** Indicates the status of the ICP input port A or B. When OFF, no source is present. When GREEN, an active source is present.
- **IMB:** Allows the installation of an Image Media Block (IMB).

Touch Panel Controller (TPC)

The TPC is a touch-sensitive screen that you use to control the projector. It is mounted on the rear of the projector and you can use the flexible connection to adjust the viewing angle. In general, the TPC provides users with a means for monitoring operation and status of the projector. You typically use the TPC to turn the lamp on or off, select an input device, and view status information.

You can install the TPC on a wall near the projector, or you can use the optional extension cable to control the projector from a maximum distance of 100 feet.

2.4 Installation Safety and Warning Guidelines

⚠ WARNING QUALIFIED TECHNICIAN REQUIRED for all installations. This product must be installed in a restricted access location.

⚠ WARNING Never operate the projector without the covers in place.

⚠ WARNING The projector uses a high-pressure lamp that may explode if improperly handled. Always wear manufacturer approved protective safety clothing (gloves, jacket, face shield) whenever the lamp door is open or when handling the lamp. Only qualified technicians should install projector lamps.

⚠ WARNING To prevent the projector from tipping unexpectedly, you must install the safety strap on the rear of the projector.

⚠ WARNING Four or more people are required to safely lift and carry one projection head a short distance. Remove the lamp before transporting the projector.

⚠ CAUTION Keep the projector level when you lift or transport it. Avoid tilting the projector to the right. This can introduce an air bubble into the coolant hoses that can result in an air lock and the overheating of the projector.

⚠ CAUTION Perform a automatic LampLOC™ adjustment when you move, level, or install a new lamp in the projector.

2.5 Position the Projector

1. Position the projector at an appropriate throw distance (projector-to-screen distance) and vertical position. Ideally, center the projector with the theatre screen. If space is limited, aim the projector slightly off-center as shown in **Figure 2-2**. This increases side keystoneing, but reduces the horizontal lens offset required.

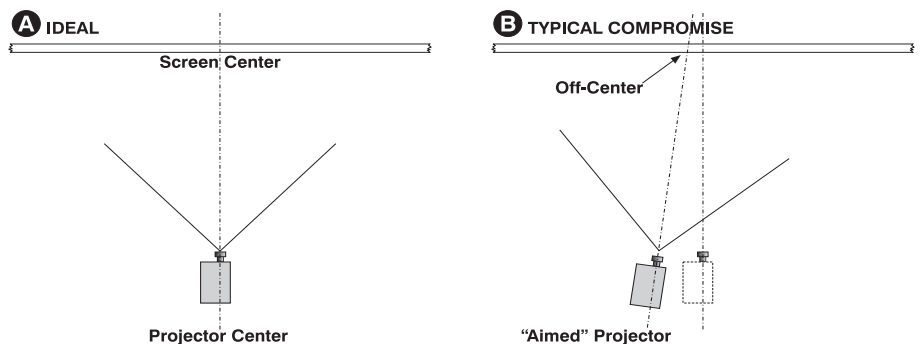


Figure 2-2 Position the Projector

2. Attach the supplied safety strap to the back of the projector and fasten it to its mounting surface. Use of the strap is mandatory to prevent the projector from tipping when a lens or auxiliary lens mount is installed.

NOTE: Unlike film projectors, it is best to keep the projector lens surface as parallel to the screen as possible, even if significantly above the screen center. When a particularly short throw distance combines with a very wide screen, you may have to forfeit some aim and stay more parallel to the screen. In such cases, some lens offset can reduce the keystone distortion.

2.6 Adjust Tilt and Level the Projector

⚠ WARNING The projector's rear safety strap must be in place before you adjust the projector's feet.

⚠ WARNING DO NOT over-extend the feet. Make sure several threads are engaged into the projector baseplate.

The CP4220 lens should be centered and parallel with the screen. This orientation ensures optimum lens performance with minimal offset. If this position is not possible (such as when the projector is significantly higher than the center of the screen), it is better to rely on offset rather than extra tilt.

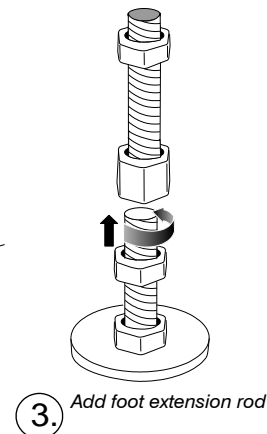
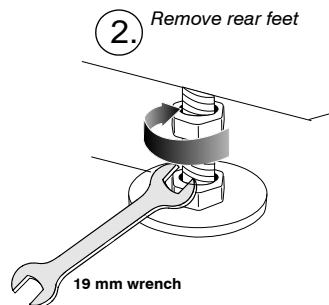
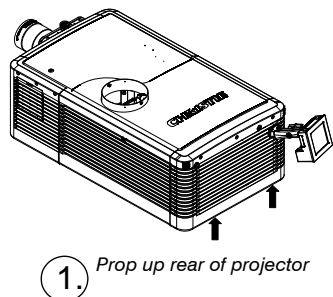
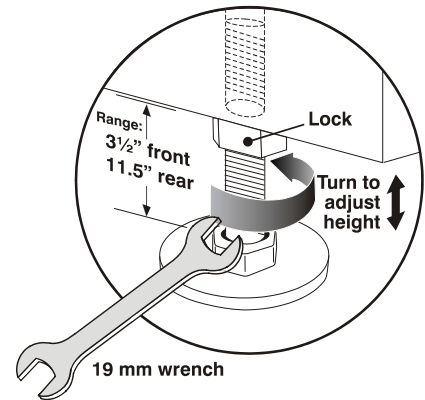
Use a protractor to measure the degree of screen tilt and then extend or retract the projector feet to match this angle.

NOTE: *The front-to-back tilt of the projector must not exceed 15°. This limit ensures safe lamp operation and the proper positioning of the liquid cooling reservoir*

To adjust the vertical or horizontal position of the projector, extend or retract the adjustable feet on the bottom of the projector by rotating them. Once the required adjustment is made, tighten the lock nut.

If you need to adjust the vertical or horizontal position of the projector beyond what the standard feet allow, you can install two 6 inch extension rods to increase the amount of adjustment. To install the extension rods safely:

1. Prop the rear of the projector up to access and remove the two rear feet. This can be done by one person holding the back end of the projector up slightly so another person can unthread the feet OR by propping up the back of the projector with a sturdy object.
2. Add the extension rods to the standard feet.
3. Thread the newly extended feet back into the projector's baseplate. Adjust the feet until the desired tilt is achieved.
4. Lock the feet in place by turning each lock nut until it fits tight against the projector.



2.7 Install the Touch Panel Controller (TPC)

1. Loosen the mounting arm so that the end fits over the ball joint located on the rear panel of the projector.

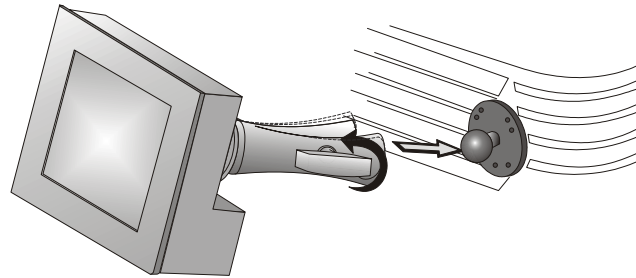


Figure 2-4

2. Tighten the mounting arm until it fits tightly on the joint.

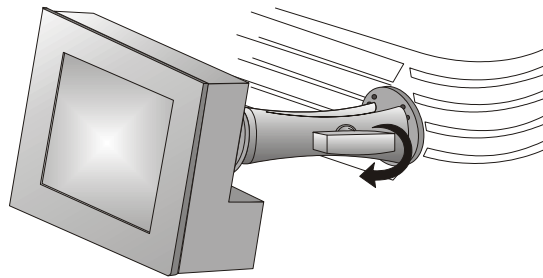


Figure 2-5

3. Connect the cable from the TPC to the connector on the rear panel of the projector.
4. Adjust the angle of the TPC.

2.8 Connect External Exhaust Ducting

Connect the existing outside-venting ductwork to the 8 inch diameter exhaust port on the top of the projector. Confirm that there are no obstructions or bends in the ducting, all air intakes are free of obstructions, and the vane switch at the exit duct moves freely.

The pre-installed outside-venting duct should be rigid at the projector and must also include a heat extractor and blower that maintains a minimum of 450 CFM* when the projector is operating at less than or equal to 25°C ambient and less than 3,000 feet, when measured at the projector exhaust opening.

⚠ WARNING

- ***600 CFM is required in projection rooms with an ambient temperature above 25°C or located at an elevation greater than 3000 feet above sea level.**

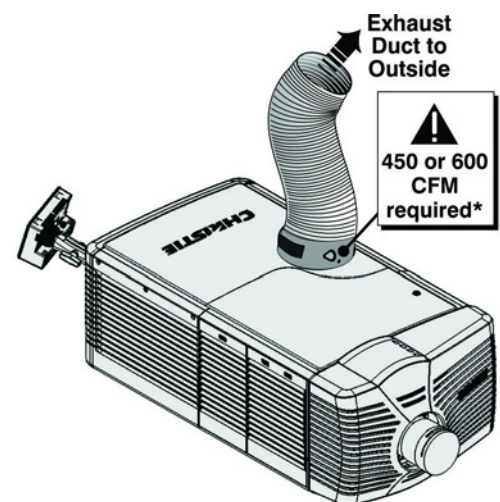


Figure 2-6 Connect Exhaust Ducting

- At minimum, a 10" long, strong metal duct must be installed at the projector to prevent glass shards from exiting the duct in the event of a lamp explosion.

2.8.1 Determine the Projector Exhaust CFM Value

Use an airflow meter to measure the ft/min or ft/sec at the rigid end of the open exhaust duct that connects to the projector. Take the measurement at the very end of the duct without the projector connected. Use this formula to determine the CFM value for the projector:

$$\text{Measured linear ft/min} \times 0.35 = \text{CFM}$$

Table 2.1 Airflow Requirement

Lamp Type	Min. Airflow (CFM) Required
2.0 kW	450 CFM*
3.0 kW	450 CFM*
4.5 kW	600 CFM
6.0 kW	600 CFM

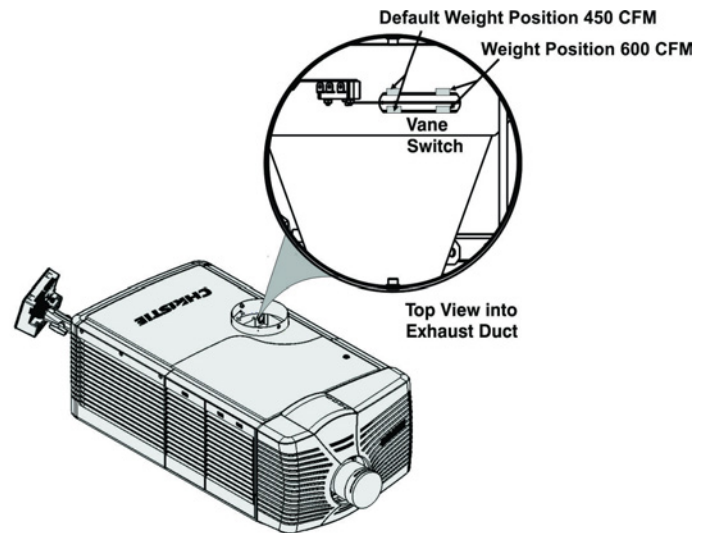


Figure 2-7 Exhaust Duct Vane Switch

Add an extractor or a booster if there is insufficient airflow. Do not mount the extractor on the projector as this may introduce some vibration into the image. **NOTE:** To prevent the projector from overheating or becoming unsafe, an alarm sounds if the duct is obstructed or a fan fails. It is recommended that you regularly verify that the exhaust is functioning correctly.

CAUTION Never disable the vane switch. Attempting to operate the projector with inadequate airflow can result in dangerous overheating of the projector.

2.9 Remove the Shroud

To access the MLM and lens, you need to remove one shroud. Remove the second shroud when you use a Motorized Auxiliary Lens Mount or a Real D Z.

1. Using finger pressure, push down on the locations specified by the red arrows in the diagram.
2. Carefully slide the shroud sideways and forward away from the MLM and lens.
3. Place the shroud cover on a clean surface to prevent scratches.

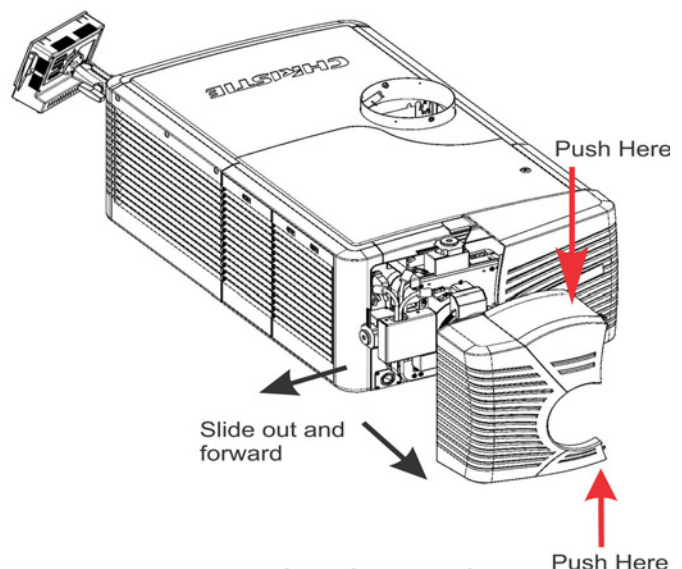


Figure 2-8 Shroud Removal

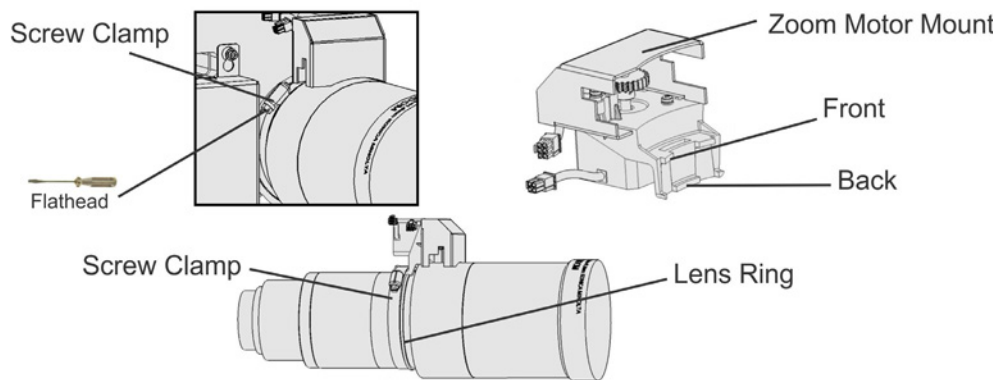
2.10 Install the Primary Lens

The lens seals the projection head, preventing contaminants from entering the main electronics area. Do not operate the projector without a lens installed. Install a lens plug when you install or transport the projector.

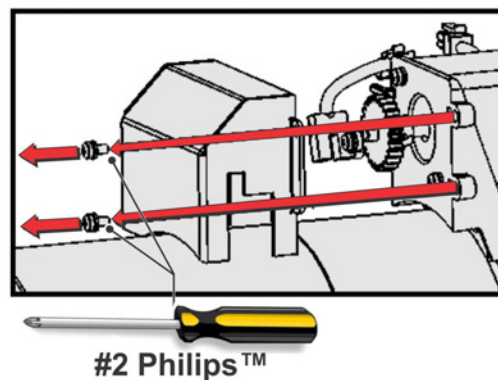
⚠ WARNING To prevent a collision between the projection lens and the Motorized Auxiliary Lens Mount (MALM), move it to the OUT position before you calibrate the lens or perform reset functions. Keep your fingers and other body parts away from the moving parts in the projector. Motors and fans may start without warning. Tie back long hair, remove jewelry and loose clothing before manually adjusting the projector.

NOTE: **1)** Make sure the zoom ring is against the front of motor mount for lenses: 1.6-2.4:1, 1.8-3.0:1, 2.15-3.6:1. **2)** Make sure the zoom ring is against the back of motor mount for lenses: 1.45-2.05:1, 1.25-1.83:1. **3)** All other lenses: Leave a gap between the rotating zoom section of lens and motor mount.

1. Unpack the zoom motor kit.
2. Use a flathead screwdriver to install the zoom motor mount onto the lens with a screw clamp.

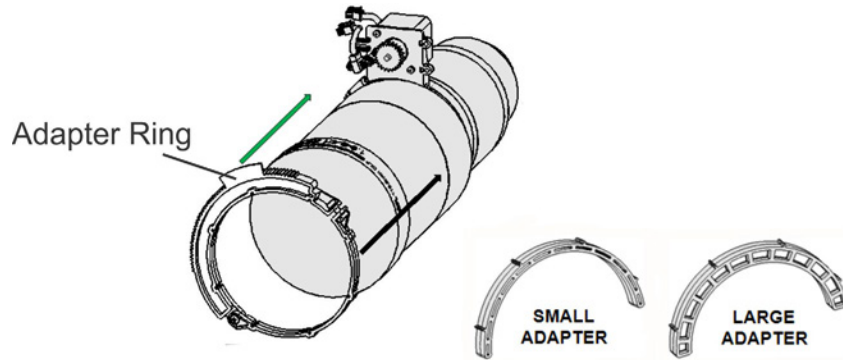


3. Remove the cover from the zoom motor mount with a Phillips screwdriver. Keep the hardware and cover.



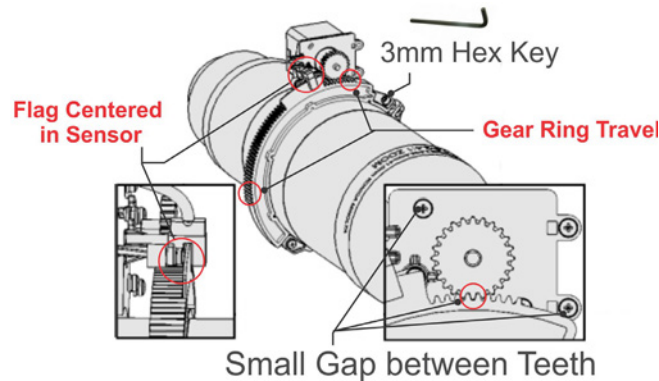
4. Install zoom gear ring and adapter onto the lens.

NOTE: 1) Use a small adapter for lens 1.8-3.0. **2)** Use a large adapter for lens 1.45-2.05, 2.15-3.6, 1.25-1.83:1 **3)** All other lenses do not need an adapter.

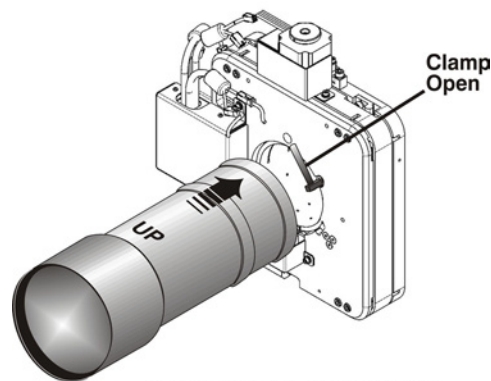


5. Verify that there is full travel of the gear ring, and the alignment of the sensor is correct.

NOTE: There must be a small gap between the gears to prevent binding. To ensure there is a gap, loosen the screws and readjust the gap. Tighten the screws when you have completed the adjustment.



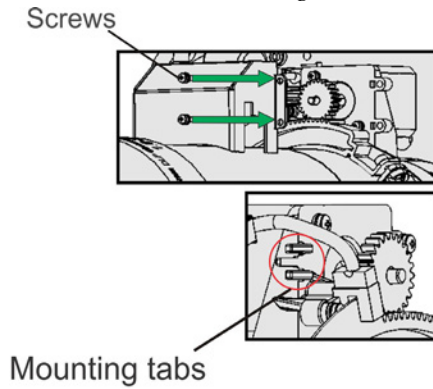
6. Turn the lens clamp to the OPEN position on the MLM and fully insert the assembly straight into the lens mount opening without turning. When the lens is fully inserted it is seated properly within the lens mount and the aperture is installed correctly.



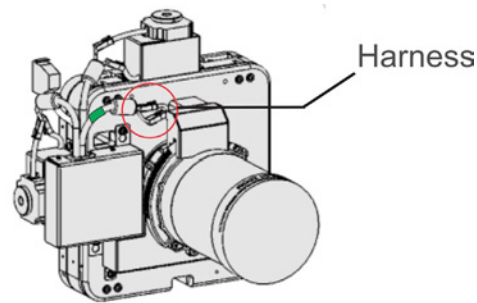
Note: Zoom motor/adapter removed for clarity

7. Install the cover with the screws.

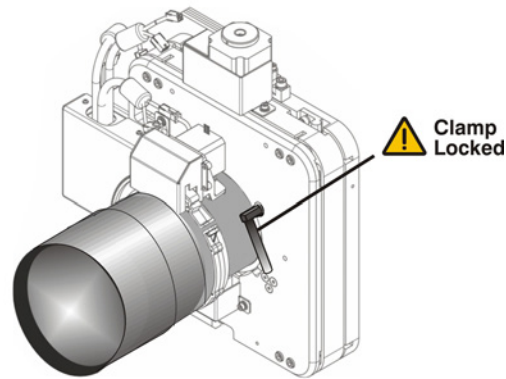
NOTE: Make sure the cover is between the mounting tabs.



8. Connect the harness wires.



9. Position the lens clamp DOWN to lock the lens assembly in place.



10. Calibrate the lens. See [4.3 Basic Image Alignment](#) for details.
11. Install the shroud.

2.11 Install the Optional Anamorphic Lens

1. Make sure to optimize your primary lens first for best optical alignment, offset and boresight.
2. Install the auxiliary lens mount using the instructions included with the kit.
3. Loosen the holding clamp on the auxiliary lens mount. Adjust the rotation of the anamorphic lens so the image remains perfectly square with anamorphic in and out.

Installation and Setup

4. Adjust the location of the anamorphic lens so that the image does not shift left or right with the anamorphic lens in and out.
5. Adjust the location of the anamorphic lens so the image passes through the center as much as possible without vignetting, reducing side or corner brightness, especially in wide angle projection.
6. Remove the anamorphic lens and turn the Focus knob to re-focus the primary lens. The goal is for good focus at the center and on all sides.
7. Re-install the anamorphic lens and check the focus.
8. If center-to-edge horizontal focus in the image needs improvement, rotate the focus barrel.

2.12 Install the Optional Wide Converter Lens

1. Optimize the primary projector lens for optical alignment, offset, and boresight.
2. Install the Auxiliary Lens Mount and Wide Converter Lens (WCL) using the instructions included with the kit.
3. Adjust the vertical and horizontal position of the WCL to align it with the primary lens.
4. Adjust the pitch, up or down to equalize the top and bottom clearance to the primary lens barrel.
5. Adjust yaw to make the clearance between both lens barrels equal from side-to-side.

2.13 Install the Lamp

⚠ DANGER This procedure should only be performed by a Christie accredited technician. High-pressure lamp may explode if improperly handled. Always wear approved protective safety clothing whenever lamp door is open or when handling the lamp.

1. If the projector is operating, turn it off and allow it to cool a minimum of 10 minutes.
2. Turn the breaker switch for the projector off.
3. Disconnect the projector from AC power.
4. Put on your protective clothing and face shield.
5. Use the security key to open the lamp door and access the lamp cooling compartment. Do not place heavy objects on the open lamp door.
6. Install the anode yoke assembly. Use this table to determine the correct position of the anode yoke assembly.

Table 2.2 Lamp Types Available for CP4220 and Anode Yoke Position

LAMP	TYPE	ANODE YOKE POSITION
2.0 kW	CDXL-20	Move the lamp cradle as far forward as possible (position closest to igniter)
3.0 kW	CDXL-30	Move the lamp cradle to the rear position, which is approximately 1" closer to the reflector.)
	CDXL-30SD (short arc)	
	CXL-30	

7. Install the lamp. See [6.9 Replace the Lamp](#) for lamp replacement instructions. Observe all warnings, and wear protective safety gear.

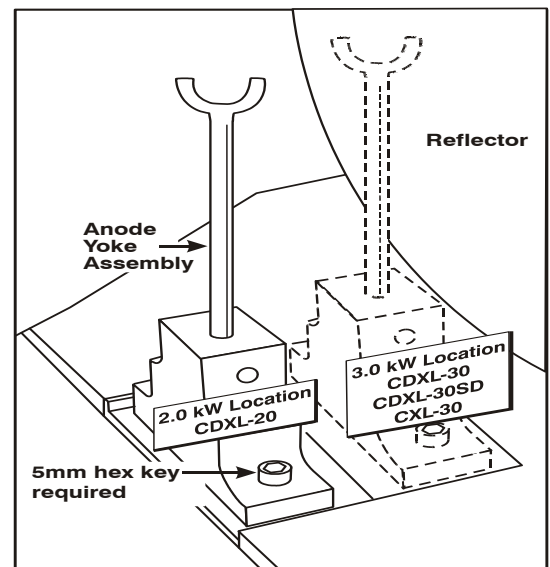


Figure 2-9 Yoke assembly installation

2.14 Connect the Projector to AC Power with a Permanent Connection

⚠ WARNING 1) Certified electrician required. 2) Ground (earth) connection is necessary for safety. Never compromise safety by returning the current through the ground. 3) Connect ground **FIRST** to reduce shock hazard from high leakage.

⚠ CAUTION Use an appropriate strain relief connector on the AC supply cable to prevent the cable from rubbing against the projector knockout plate and becoming damaged.

When connecting the projector to AC power, follow all electrical codes for your location. In addition, follow these recommendations:

- A 30-32A double pole, UL listed wall circuit breaker is required. It must be part of the building installation and easily accessible.
 - Use 10AWG or 8AWG wiring. The distance between the wall circuit breaker and the projector must not exceed 20 meters using 10AWG cables or 30 meters using 8AWG cables.
 - For North American installations, use at least 10AWG copper wires for the connection of the main AC supply to the projector's ground lug.
 - Copper or aluminum are acceptable as conductor wiring material to the terminal block.
1. On the bottom of the projector in the front right corner, loosen the two screws and slide the plate forward to expose the terminal block.

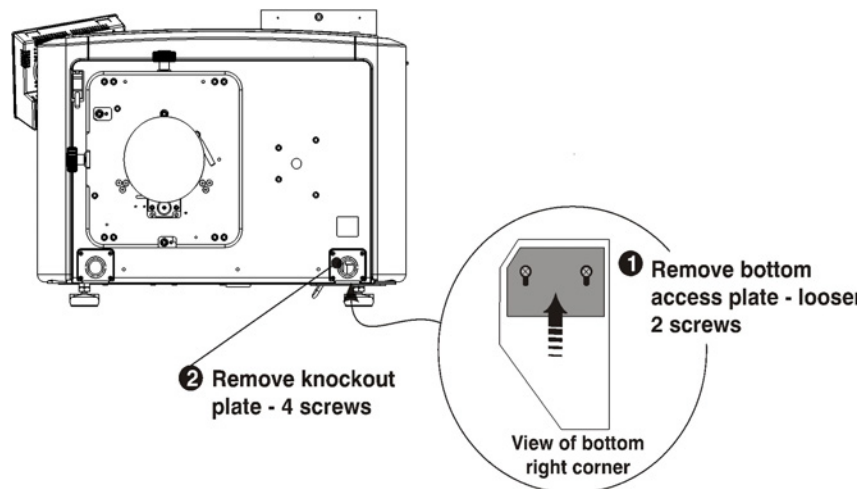


Figure 2-10

2. Remove the knockout plate located in the bottom right corner of the front bezel. The AC supply is routed to the terminal block through an appropriate strain relief mounted on this knockout plate.
3. Connect the AC power source to the terminal block, beginning with the ground lead first. Use an appropriately sized strain relief connector with the knockout plate provided to ensure adequate environmental sealing and to prevent the cables from wear and accidentally being torn out. **NOTES: 1) The terminal block accommodates up to an 8 AWG wire. 2) If desired, a 90° strain relief connector can be used to route the power cable in a downward direction.**

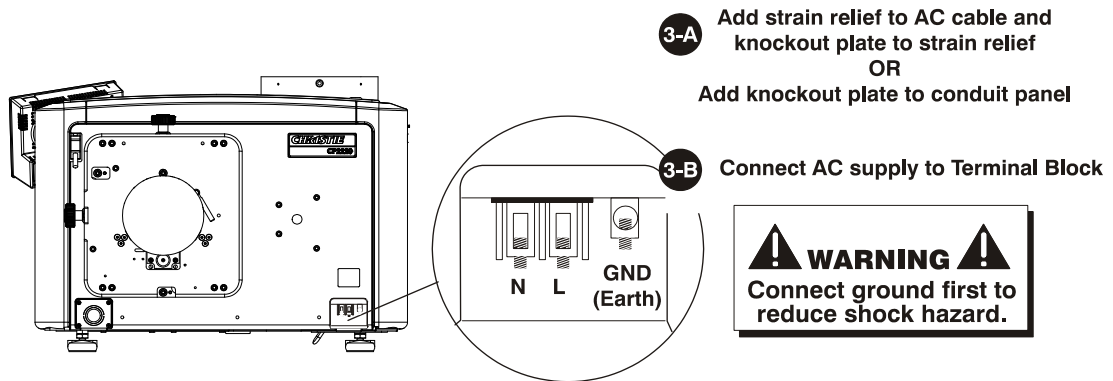


Figure 2-11

4. Replace the knockout plate and the bottom access panel over the terminal block.

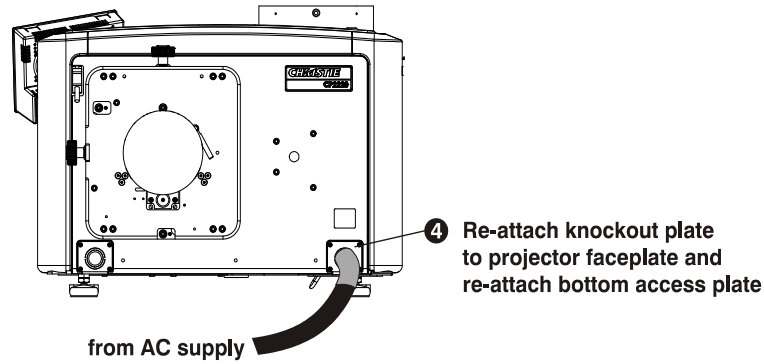
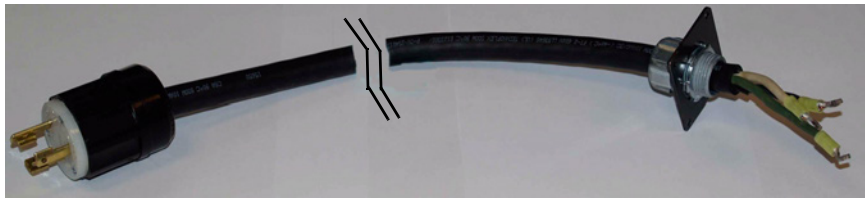


Figure 2-12

2.15 Connect the Projector to AC Power with a Pluggable Type B Connection

When connecting the projector to AC power, follow all electrical codes for your location. In addition, follow these recommendations:

- There must be easy access to the current protection device or breaker in the building.
- Use 10AWG or 8AWG wiring: the distance between the wall circuit breaker and the projector must not exceed 20 meters using 10AWG cables or 30 meters using 8AWG cables.
- The socket-outlet is installed near the equipment and is easily accessible.
- The plug can be used as the device disconnect and is near the unit and easily accessible.



**Figure 2-13 Nema-L630A 250V Male Power Plug (116-102104-01)
Actual Length 1.5 Meters**

1. On the bottom of the projector in the front right corner, loosen the two screws and slide the plate forward to expose the terminal block.
2. Remove the knockout plate (four screws) located in the bottom right corner of the front bezel.
3. Connect the AC power source to the terminal block, beginning with the ground lead first. Tighten screws securely.
4. Secure the knockout plate (four screws) and the bottom access panel (two screws) over the terminal block.

2.16 Configure the Optional Uninterrupted Power Supply

A UPS allows the projector head electronics to remain operable during a power failure.

Unplug the LVPS input connection from Main Power and connect it to the UPS input plug. Re-use the dummy plug from the UPS connection with the unused Main Power plug.

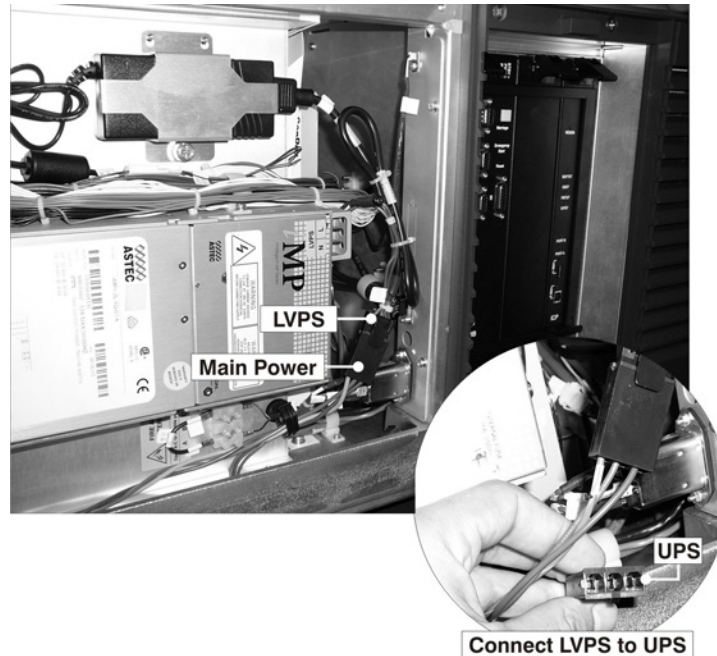


Figure 2-14

2.17 Connect Sources and Turn the Projector On

1. Assign the projector a unique IP address and enter a baud rate:
 - Tap **Menu** > **Administrator Setup** > **Communications Configuration**.
 - Enter the IP address for the projector in the **IP Address** field.
 - Select a baud rate for the input device in the **Serial Speed (Baud)** list.
2. Enter lamp information:
 - Tap **Menu** > **Advanced Setup** > **Lamp History**.
 - Tap **Add Lamp**.
 - Complete the fields in the **Add Lamp** dialog.
 - Tap **Save**.
3. Tap and hold the green power button to turn the projector on.
4. Complete a LampLOC™ alignment on the new lamp:
 - Tap **Menu** > **Advanced Setup** > **LampLOC™ Setup**.
 - Tap **Do Auto**.

3 Connect Devices to the Projector

This section provides information and procedures for connecting input devices to the projector. You connect input devices to the Projector Intelligence Board (PIB) located on side of the projector.

These communication ports are accessible by removing the side source and communication access panel. When connecting devices, route all cables along the channels located on the bottom of the projector and up through the opening in the frame to the communication connection port.

Replace the access panel to ensure server and source connections remain secure.

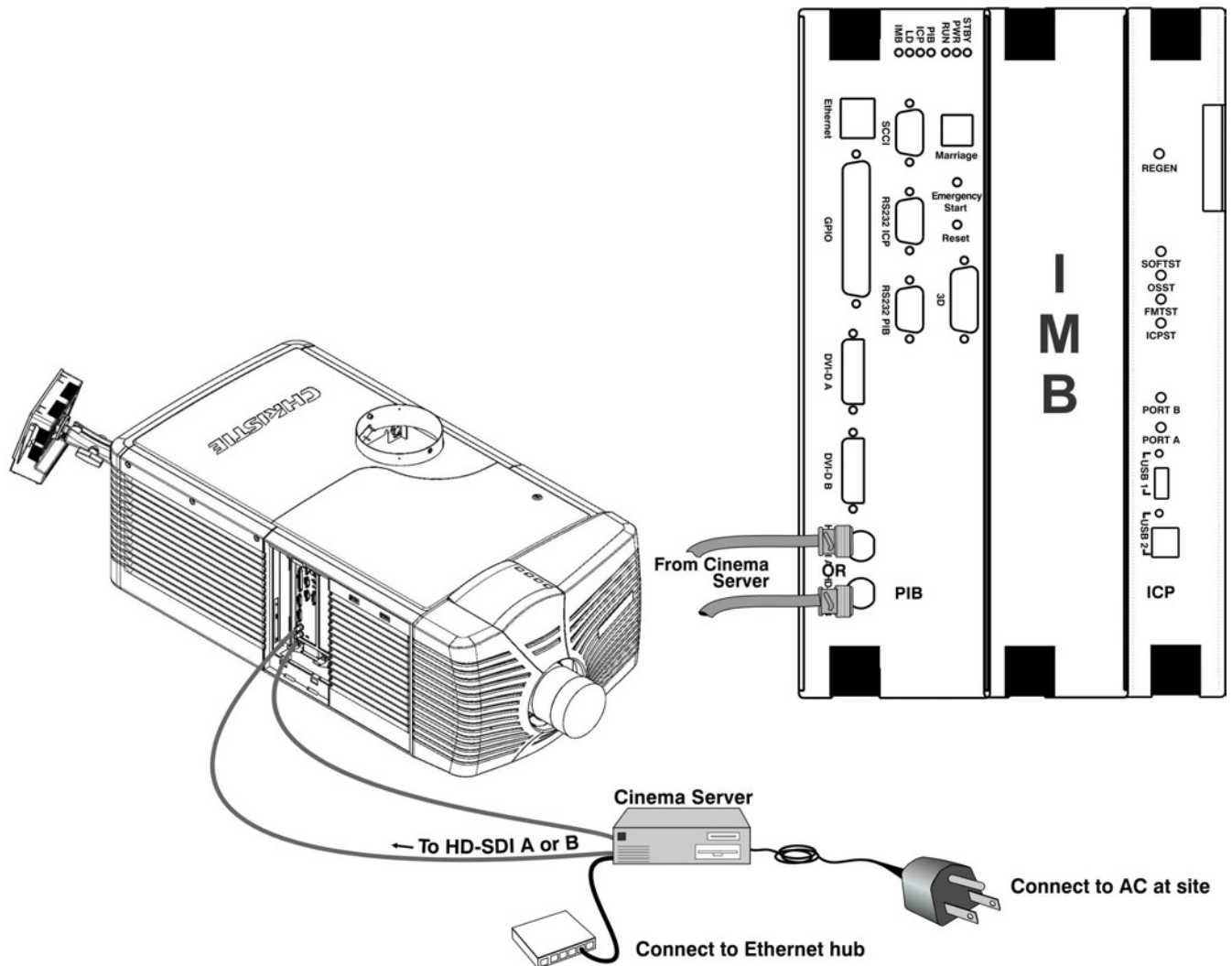


Figure 3-1 Connecting Cinema Sources

3.1 Connect a Communications Device

To communicate with the projector, connect the equipment to the Ethernet hub or switch.

For applications or equipment utilizing serial communications, use the Christie-proprietary serial protocol to connect to the RS232 PIB port on the PIB. When using Christie serial protocol over Ethernet, connect to port 5000. **NOTICE:** *The RS232 PIB port located on the PIB faceplate utilizes Christie-proprietary protocol and is intended for Christie accessories or automation controllers only.*

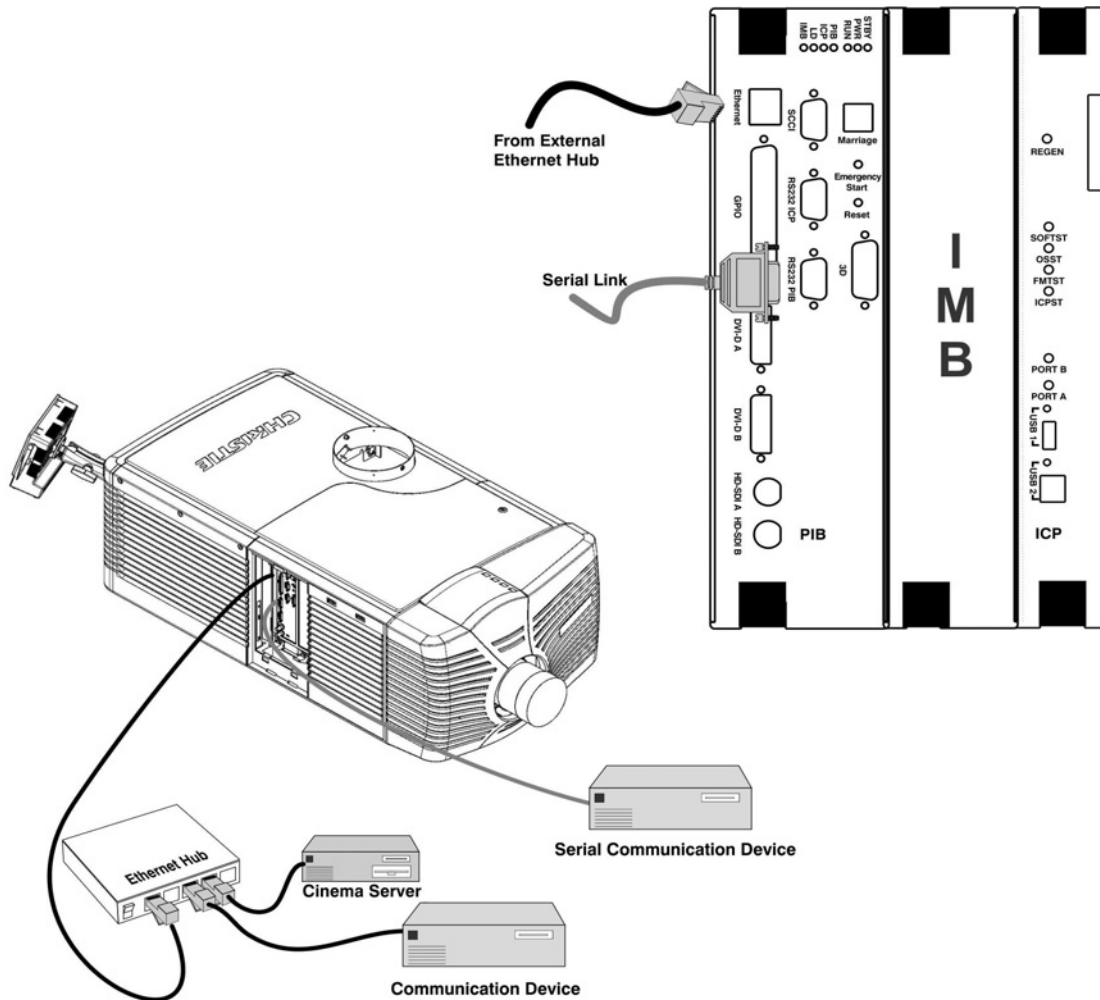


Figure 3-2 Connecting Communications

3.2 Connecting Devices to the SCCI Port

The Simple Contact Closure Port (SCCI) port is a DB-9 (male) connector is located on the PIB input panel and is used to control a limited set of projector functionality through contact closures. This table lists the control functions available through the SCCI:

Table 3.1 SCCI Connector Pinouts

PIN	SIGNAL NAME	DIRECTION	DESCRIPTION
1	+5V Standby	Out	Current limited 5VDC supply
2	Lamp ON	In	Projector at Power On mode, lamp is ON
3	+5V Standby	Out	Current limited 5VDC supply
4	Lamp OFF	In	Projector at full power, lamp is OFF
5	+5V Standby	Out	Current limited 5VDC supply
6	Douser Closed	In	Close douser
7	Douser Open	In	Douser open
8	Health Output	Out	Open Collector Low when one of the following interlocks is tripped or conditions present: <ul style="list-style-type: none"> • Lamp Door • Lamp Blower • Extractor • Tamper • Marriage • Ballast Communication The show will not be able to play. Open Collector High when all interlocks relevant to CineLink and Lamp are not tripped. The show is able to play.
9	Ground	Out	Ground

NOTE: All SCCI inputs require a pulse input of 50ms to several seconds to operate reliably. Inputs are 5V resistor current limited LED's inside of optocouplers.

A “Health Output” on this connector is also provided for locations that require a projector Health Output. The output is an open-collector circuit which only draws power when the projector is deemed to be “un-healthy”. The primary use of the Projector Health Output is to ensure that patrons are not left in a dark theatre due to projector fault. Therefore, any fault that results in the movie playback stopping should cause this circuit to draw power and indicate an un-healthy state. The projector is always considered to be “healthy” in Standby Mode since there is no fear of projector fault causing an impact to patrons, and there should be no patrons in the theatre at that time.

3.3 Connecting Devices to the GPIO Port

The GPIO port is a 37-pin D-sub connector (female) located on the PIB input panel and provides 8 input and 7 output signals for connecting external devices to the projector. To configure the pins on the connector, tap **Menu > Administrator Setup > GPIO Setup**.

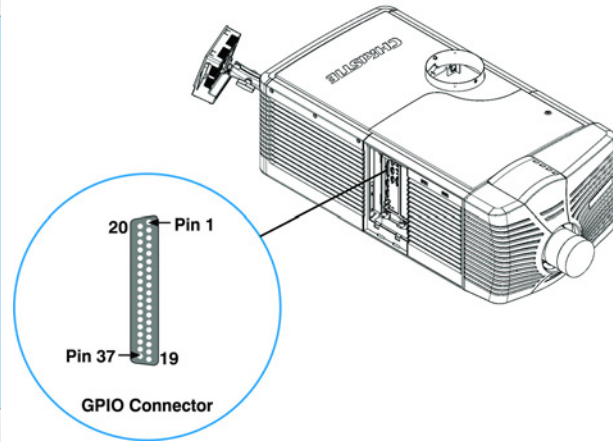
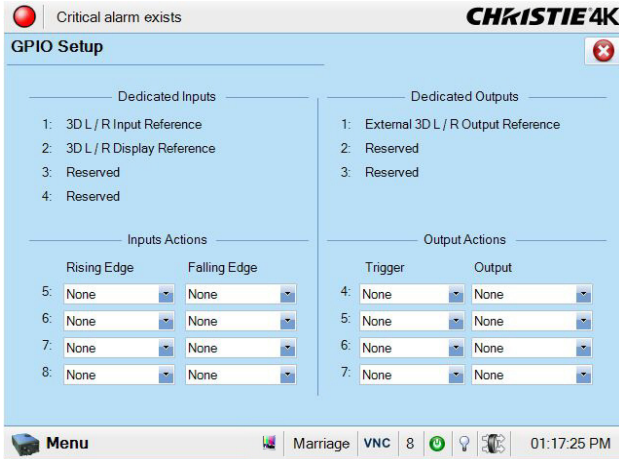


Figure 3-3 Admin: GPIO Setup Window and GPIO Port Location on Projector

As shown below, each available pairing of pins (+/-) is defined as either an *input* or *output*. Four inputs and three outputs have already been predefined. Configure a pin as an input if you want the projector to respond to an incoming signal, or as an output if you want an external device to respond to the projector.

Inputs	Positive	Negative	Description
GPIN #1	Pin 1	Pin 20	3-D L/R Input Reference
GPIN #2	Pin 2	Pin 21	3-D L/R Display Reference
GPIN #3	Pin 3	Pin 22	Reserved
GPIN #4	Pin 4	Pin 23	Reserved
GPIN #5	Pin 5	Pin 24	Input
GPIN #6	Pin 6	Pin 25	Input
GPIN #7	Pin 7	Pin 26	Input
GPIN #8	Pin 8	Pin 27	Input

Outputs	Positive	Negative	Description
GPOUT #1	Pin 9	Pin 28	External 3-D L/R Output Reference
GPOUT #2	Pin 10	Pin 29	Reserved
GPOUT #3	Pin 11	Pin 30	Reserved
GPOUT #4	Pin 12	Pin 31	Output
GPOUT #5	Pin 13	Pin 32	Output
GPOUT #6	Pin 14	Pin 33	Output
GPOUT #7	Pin 15	Pin 34	Output
PROJ_GOOD	Pin 16	Pin 35	Projector Good

If you are wiring your own GPIO cable for use with a server or 3D device such as an IR emitter or a polarizer, follow the circuit diagram.

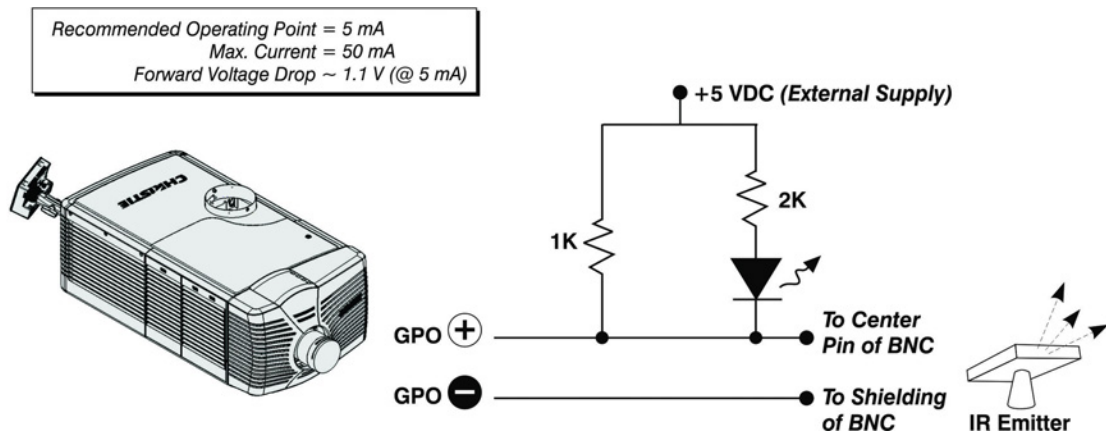


Figure 3-4 GPIO Circuit Diagram

3.4 Connecting Devices to the 3D Connector

The 3D connector is a 15-pin D-sub connector (female) located on the PIB input panel. This table lists the control functions available through the 3D connector.

PIN	SIGNAL NAME	DIRECTION	DESCRIPTION
1	+12V	Out	Power to 3D device. Maximum 1A (total between both +12V pins).
2	GND	/	Ground
3	GND	/	Ground
4	RS232_RX	In	Data to projector from 3D device. 1200 Baud, 8 bits, no parity. Currently unsupported.
5	RS232_TX	Out	Data to projector from 3D device. 1200 Baud, 8 bits, no parity. Currently unsupported.
6	CONN_3D_MODE+	Out	SYNC from projector. To projector GPO collector. Compatible with current projector GPIO requirements and restrictions. (24VDC max, 50mA max) 3D ON = Hi logic level = O/P transistor ON 3D OFF = Low logic level = O/P transistor OFF
7	CONN_SYNC+	Out	SYNC from projector. To projector GPO collector. Compatible with current projector GPIO requirements and restrictions. (24VDC max, 50mA max)
8	3D_INPUT_REFERENCE+	In	3D L/R Input Reference (P) (Voltage Limit: 1.4VDC to 12VDC)
9	+12V	Out	Power to 3D system. Maximum 1A (Total between both +12V pins)
10	3D_INPUT_REFERENCE-	In	3D L/R Input Reference (N) (Voltage limit: 1.4VDC to 12VDC)
11	3D_DISPLAY_REFERENCE+	In	3D L/R Input Reference (P) (Voltage limit: 1.4VDC to 12VDC)
12	3D_DISPLAY_REFERENCE-	In	3D L/R Input Reference (P) (Voltage limit: 1.4VDC to 12VDC)
13	CONN_3D_MODE-	Out	3D mode state from projector. From projector GPO emitter. Compatible with current projector GPIO requirements and restrictions. (24VDC max, 50mA max)
14	CONN_SYNC-	Out	SYNC from projector. From projector GPO emitter. Compatible with current projector GPIO requirements and restrictions. (24DC max, 50mA max)
15	Not connected		

4 Adjust the Image

This section provides information and procedures for adjusting the projector image.

4.1 Maximize Light Output

To ensure optimal operation and peak screen brightness, use LampLOC™ to adjust the lamp position whenever you install a new lamp. When you complete the LampLOC adjustment, the lamp is centered and is the correct distance from the illumination system. Before running LampLOC, verify that:

- The anode yoke is in the correct position for the lamp type.
 - The lamp extension nut is installed when using a CDXL-30SD lamp. Remove the nut if you are not using a CDXL-30SD lamp.
 - The lamp is on and the douser is open.
1. On the Touch Pad Controller, tap the **Test Patterns** icon.
 2. Tap the **Full Screen White** test pattern.
 3. Tap **Menu > Advanced Setup > LampLOC™ Setup**.
 4. Tap **Do Auto**.

4.2 Calibrate Screen Brightness (fL)

1. On the Touch Pad Controller, tap **Menu > Administrator Setup > Foot Lamberts Calibration**.
2. Complete the **Foot Lamberts Calibration** wizard.

4.3 Basic Image Alignment

This procedure ensures that the image reflected from the digital micromirror device (DMD) is parallel and centered with the lens and screen. This procedure must be completed before you complete a boresight adjustment.

1. Verify the projector is properly positioned relative to the screen. See [Section 2.5: Position the Projector](#).
2. Display a test pattern that you can use to analyze image focus and geometry. The framing test pattern works well for this.
3. Perform a preliminary focus and (if available) a zoom adjustment with the primary lens. Focus the center of the image first.
4. Hold a piece of paper at the lens surface and adjust the offsets until the image is centered within the lens perimeter.
5. With the framing test pattern on screen, re-check projector leveling so the top edge of the image is parallel to the top edge of the screen.

4.4 Adjust Offset

Project an image with the primary lens. Always adjust offset before boresight.

Select a framing test pattern and then adjust the horizontal and vertical offset to display a square image on the screen with minimal projector aiming error.

NOTES: 1) *For the best optical performance and minimize keystone error, use offset and not aiming to center the image in off axis installations. 2)* *Avoid extreme tilts or offsets. Corner vignettes on a white test pattern indicate extreme offset that should be avoided using mechanical alignment.*

4.5 Adjust Offset with an ILS

Project an image with the primary lens. Always adjust offset before boresight. Ensure the correct lens is selected in the Advanced Setup: Lens Adjust window before calibration to ensure you remain within the applicable boundary of the installed lens.

1. Tap **Menu > Advanced Setup > Lens Setup**.
2. Tap **Enable Automatic ILS**. Enabling Automatic ILS overwrites the pre-defined settings for the channel.
3. Tap the Test Patterns icon and select a framing test pattern.
4. Tap **Menu > Advanced Setup > ILS File Setup**.
5. Tap the directional arrows in the **Offset** area. For best optical performance, make sure to minimize keystone error by using offset more than aiming to center the image in off axis installations. Avoid extreme tilts or offsets. Corner vignettes on a white test pattern indicates extreme offset that should be avoided using mechanical alignment.

4.6 Adjust Left and Right Boresight

When performing these adjustments the goal is to balance the tilt of the lens mount to compensate for screen to projector tilt, but also to precisely maintain the original factory settings of the lens mount axial position.

1. Loosen the horizontal locking screw.

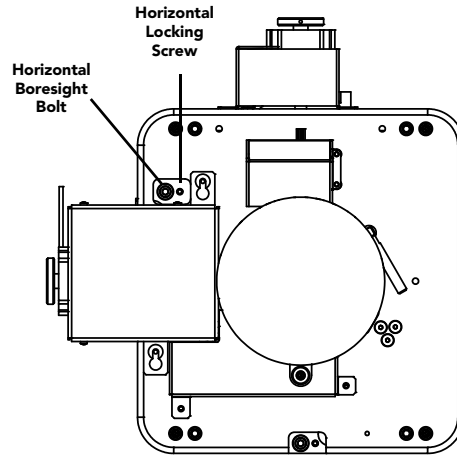


Figure 4-1 Horizontal Boresight

2. Extend the lens focus completely.
3. Adjust the **Focus** using the focus knob to retract the lens. Watch the image at the left edge of the screen until it comes into focus. If the entire screen is in focus, proceed to step 7.

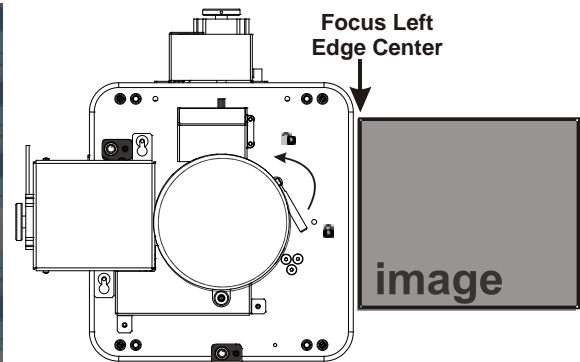
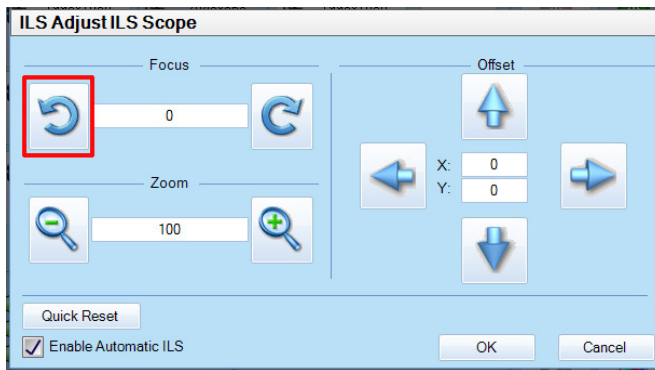


Figure 4-2 Adjust Focus

4. Continue retracting the lens.
 - a. If the right side of the image comes into focus before the lens is completely retracted, adjust the horizontal boresight bolt to balance the left and right edges.
 - b. If the right side of the image fails to come into focus, adjust the horizontal boresight bolt.
5. When both sides appear equally blurry, adjust the horizontal or vertical offset to re-center the image.
6. Repeat steps 1 - 5 until both sides of the image are focused.
7. Tighten the horizontal hold screw to maintain your adjustments.
8. Check the boresight again.

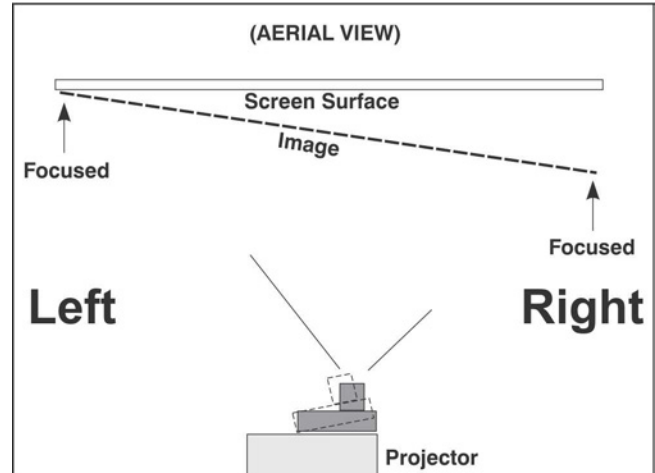


Figure 4-3 Aerial View Illustrating Misaligned Boresight

4.7 Adjust Top and Bottom Boresight

1. Focus the image at the top edge of the screen.
2. Loosen the vertical hold screw.
3. Extend the lens focus completely.
4. Adjust the **Focus** knob to retract the lens. Watch the image at the top edge of the screen until it comes into focus. If the entire screen is in focus, proceed to step 8.
5. Continue retracting the lens.
 - a. If the bottom edge of the image comes into focus before the lens is completely retracted, adjust the vertical boresight bolt to direct or aim the lens mount UP towards the top of the screen to balance out the top/bottom edges.
 - b. If the top edge of the image is not in focus, adjust the vertical boresight bolt to direct or aim the lens mount toward the bottom of the screen.
6. When both sides appear equally blurry, adjust the horizontal and/or vertical offset to re-center the image on the screen.
7. Repeat Steps 2 - 5 until the top and bottom of the screen are both well-focused.
8. Re-focus the center of the image. The goal is for good focus at the center and on all sides.

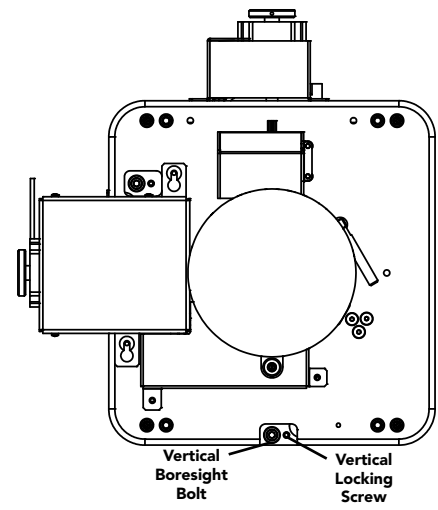


Figure 4-4 Vertical Boresight

9. Tighten the vertical hold screw to maintain your adjustments.

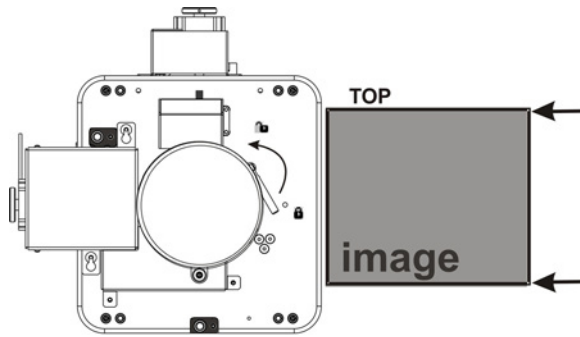


Figure 4-5 Adjust Vertical Boresight

10. Check the boresight again.

4.8 Adjust Top and Bottom Boresight with an ILS

1. Loosen the **Vertical Locking Screw**.
2. Extend the lens focus completely.
3. Adjust the Focus to retract the lens using the counter-clockwise button on the ILS Adjust window. Watch the image at the top edge of the screen until it comes into focus. If the image appears well focused on the top edge but not on the bottom, we need to determine if the bottom edge focuses in front of or behind the screen. If the entire screen comes into focus, skip to step 8.
4. Continue retracting the lens.
 - a. If the bottom edge of the image comes into focus before the lens is completely retracted, then the image focuses in front of the screen. To correct this problem, adjust the **Vertical Bore-sight Bolt** to direct or aim the lens mount UP towards the top of the screen to balance out the top/bottom edges.
 - b. If the top edge of the image fails to come into focus then the image focuses behind the screen. To correct this problem, adjust the **Vertical Boresight Bolt** to direct or aim the lens mount DOWN towards the bottom of the screen.
5. When both sides appear equally blurry, tap **Menu > Advanced Setup > ILS File Setup** and tap the directional arrows in the **Offset** area to center the image on the screen.
6. Repeat Steps 2 - 5 until the top and bottom of the screen are both well-focused.
7. Although all sides of the image should now be in focus, the center of the image may be slightly blurry at this point. Re-focus the center of the image. The goal is for good focus at the center and on all sides.
8. Adjust the **Vertical Locking Screw** to lock the lens mount in place and check boresight again.

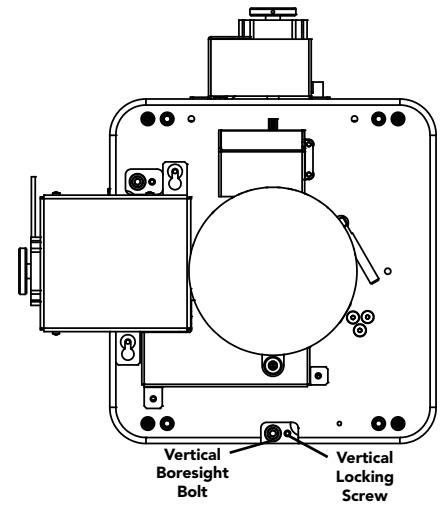


Figure 4-6 Vertical Boresight

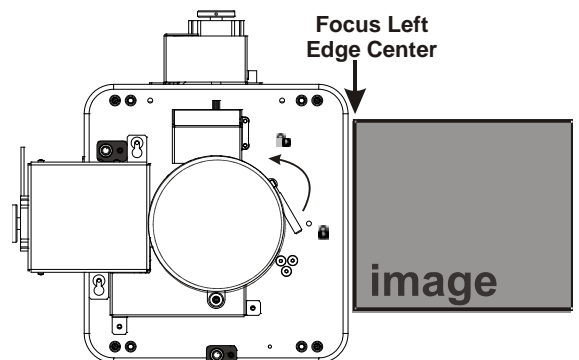


Figure 4-7 Adjust Vertical Boresight

4.9 Adjust DMD Convergence

⚠ DANGER UV EXPOSURE! Protective UV glasses must be worn when performing convergence adjustments.

A convergence problem occurs when one or more projected colors (red, green, blue) appears misaligned when examined with a convergence test pattern. Normally, the three colors should overlap precisely to form pure white lines throughout the image and one or more poorly converged individual colors may appear adjacent to some or all of the lines. Contact your Christie accredited service technician to correct DMD convergence issues.

4.10 Fold Mirror Adjustment

If a corner or edge of an image is missing, the fold mirror might be misaligned with the optical system. To correct this issue:

- Adjust the screw closest to the operator's side (right side, when facing screen) to raise or lower the image.
- Adjust the screw on the left side to move the image left or right.

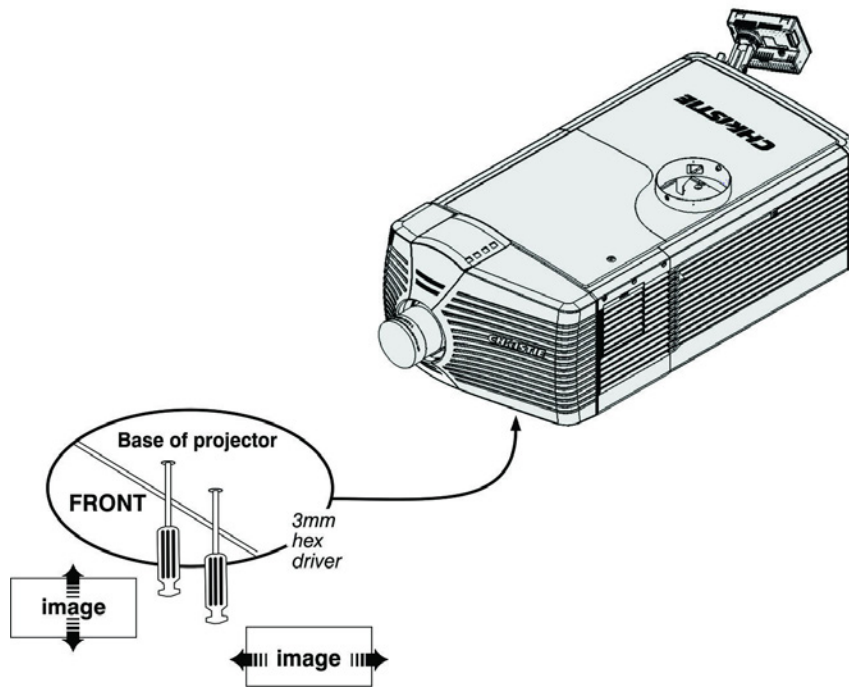


Figure 4-8 Fold Mirror Adjustment

4.11 Calibrating the System

Use the TPC to calibrate image color performance and define electronic screen masking. This is required in your particular installation for the creation of Source, Screen, MCGD and TCGD files necessary for proper display of incoming material. You can also define the system/network configuration for communication links to the projector and transmit information to and from the CP4220 via an Ethernet or RS-232 connection.

4.12 Color Calibration

To ensure an accurate color display:

1. Measure the colors displayed on the screen from the center of the audience viewing location to determine the Measured Color Gamut Data (MCGD) value.
2. On the Touch Pad Controller tap **Menu > Advanced Setup > MCGD File Setup** and enter the color values in the x and y fields for the different colors.
3. Tap **Save**. The software automatically determines the Target Color Gamut Data (TCGD) value. The TCGD value determines what corrections are needed to display the correct colors.

4.13 Electronic Screen Masking

You can use the masking tool to correct image edge blanking. The masking tool produces results that are similar to filing the aperture plate in a film projector. After you create the Flat and Scope screen files you can use them in multiple channels.

4.14 Working with 3D

This section provides information and procedures for setting up and managing 3D presentations.

4.14.1 Display Requirements

To display 3D images with the CP2220 projector, you require these items:

- A 3D hardware system:
 - Pi-Cell polarizer for display on a screen that has a silver polarization-preserving surface for use with passive glasses (RealD).
 - Rotating polarizing wheel (external) with passive circular polarizing glasses (MasterImage). Requires a silver screen.
 - IR emitter for controlling the left eye/right eye gating (switching) of active glasses (Xpand).
 - Dual projector 3D - passive glasses (circular or linear). Requires a silver screen.
- A 3D connection cable:
 - 3D sync output cable (GPIO).
 - 3D connector.
- Power supply for your sync output device.

4.14.2 Hardware Setup

Use an infrared emitter to control gating in active glasses, a polarizing Z-screen (Pi-cell) with passive glasses or filter wheel with passive glasses.

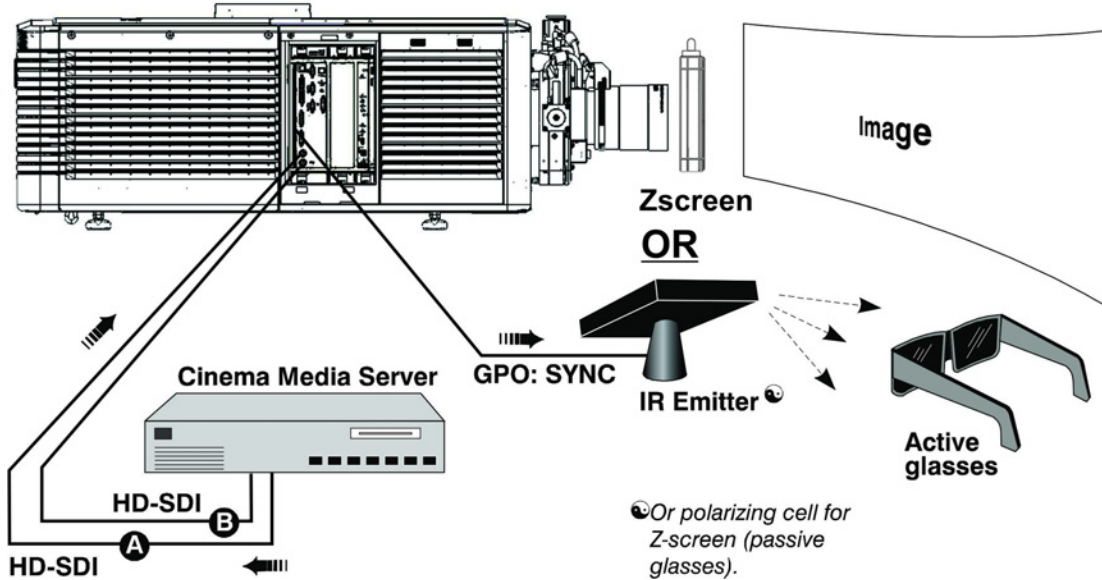


Figure 4-9 3D Hardware Setup

Table 4.1 3D Hardware Systems

	RealD Z-screen	RealD XL Box	Dolby Filter Wheel	Xpand	Master Image	Dual Projector
Installed/Mounted Components	Z-screen mounted in front of the projection lens	XL box mounted in front of the projection lens	Installed filter wheel inside the projector	None	Installed wheel in front of the projector	Polarizing plates in front of lenses
Silver Screen	Yes	Yes	No	No	Yes	Yes
3D Glasses	Polarizing circular glasses	Polarizing circular glasses	Color filter glasses	Active glasses	Circular polarized glasses	Polarizing circular or linear glasses

4.14.3 Install a 3D Server with an YCxCz Interface

1. Install and connect your 3D hardware to the projector.
2. Edit and apply the default 3D lamp file:
 - a. Tap **Menu > Advanced Setup > Lamp Power/LiteLOC Setup**.
 - b. Set the brightness percentage for the lamp in the **Power %** field.
 - c. Tap **Save**.
 - d. Repeat steps b and c for all remaining 3D channels.
3. Measure the color gamut and create a measured color file.

4. Edit the channel values for your theatre. The predefined 3D Channels are named: **3D Flat 1998x1080** and **3D Scope 2048x858**.
5. Run test patterns to verify the performance of the new 3D channel formats.
6. Run 3D content to verify correct left and right eye data.

4.14.4 Edit the Default 3D Lamp File

For 3D images to display correctly, you must edit the default 3D lamp file to match the specifications of your 3D hardware.

1. Tap **Menu** > **Advanced Setup** > **Lamp Power / LiteLOC™ Setup**.
2. Select **Default** in the **Current Lamp File** list.
3. Set the brightness percentage for the lamp in the **Power %** field.
4. Tap **Save**.

4.14.5 Define a Measured Color Gamut Data File

For 3D images to display correctly, you must define an MCGD file to match the specifications of your 3D hardware.

1. Tap **Menu** > **Advanced Setup** > **MCGD File Setup**.
2. Hold a pair of 3D glasses in front of the light meter to determine the new x and y color coordinates for Red, Green, Blue, and White. Use the same light path that you use to display a show.
3. Enter the x and y values in the **Red**, **Green**, **Blue** and **White** fields.
4. Tap **Save As**.
5. Enter **3D Onsite** in the **File Name** field.
6. Tap **Save**.

4.14.6 Edit the 3D Flat 1998 x 1080 Channel

1. Tap **Menu** > **Channel Setup**.
2. Select **3D Flat 1998x1080** in the **Channel Name** list.
3. Tap **Config 1** in the left pane and edit these settings:
 - a. Select **292-Dual** in the **Input** list.
 - b. Select **YCrCb 4:2:2 10 bits x2** in the **Data Format** list.
 - c. Select **1998x1080 1.85 Flat** in the **Source File** list.
 - d. Select **Flat** in the **Screen File** list.
4. Tap **Config 2** in the left pane and edit these settings:
 - a. Select **3D Onsite** in the **Measured Color** list. If this option is not available, see Section 4.14.5: Define a Measured Color Gamut Data File.
 - b. Select **DC28_DCIXYZE_314_351** in the **Target Color** list.
 - c. Select **YCxCz Inverse ICT** in the **Color Space** list.
 - d. Select **Gamma 2.6** in the **Gamma** list.
 - e. Select **Linear_9x9x9** in the **LUT-CLUT** list.

5. Tap **3D Control** in the left pane and edit these settings:
 - a. Select **Line Interleave** in the **3D Sync Input Mode** list.
 - b. Select **6:2** in the **Frame Rate N:M** list.
 - c. Select **Left (L1R1 L2R2)** in the **L/R Display Sequence** list.
 - d. Select **True** in the **3D Sync Polarity** list.
 - e. Enter **430** in the **Dark Time** field or enter a value appropriate for your 3D hardware.
 - f. Enter **-120** in the **Output Delay** field or enter a value appropriate for your 3D hardware.
 - g. Enter **0** in the **Phase Delay** field or enter a value appropriate for your 3D hardware.

4.14.7 Edit the 3D Scope 2048 x 858 Channel

1. Tap **Menu > Channel Setup**.
2. Select **3D Scope 2048x858** in the **Channel Name** list.
3. Tap **Config 1** in the left pane and edit these settings:
 - a. Select **292-Dual** in the **Input** list.
 - b. Select **YCrCb 4:2:2 10 bits x2** in the **Data Format** list.
 - c. Select **2048x858 2.39 Scope** in the **Source File** list.
 - d. Select **Scope** in the **Screen File** list.
4. Tap **Config 2** in the left pane and edit these settings:
 - a. Select **3D Onsite** in the **Measured Color** list. If this option is not available, see Section 4.14.5: Define a Measured Color Gamut Data File.
 - b. Select **DC28_DCIXYZE_314_351** in the **Target Color** list.
 - c. Select **YCxCz Inverse ICT** in the **Color Space** list.
 - d. Select **Gamma 2.6** in the **Gamma** list.
 - e. Select **Linear_9x9x9** in the **LUT-CLUT** list.
5. Tap **3D Control** in the left pane and edit these settings:
 - a. Select **Line Interleave** in the **3D Sync Input Mode** list.
 - b. Select **6:2** in the **Frame Rate N:M** list.
 - c. Select **Left (L1R1 L2R2)** in the **L/R Display Sequence** list.
 - d. Select **True** in the **3D Sync Polarity** list.
 - e. Enter **430** in the **Dark Time** field or enter a value appropriate for your 3D hardware.
 - f. Enter **-120** in the **Output Delay** field or enter a value appropriate for your 3D hardware.
 - g. Enter **0** in the **Phase Delay** field or enter a value appropriate for your 3D hardware.

4.14.8 Display 3D Diagnostic Test Patterns

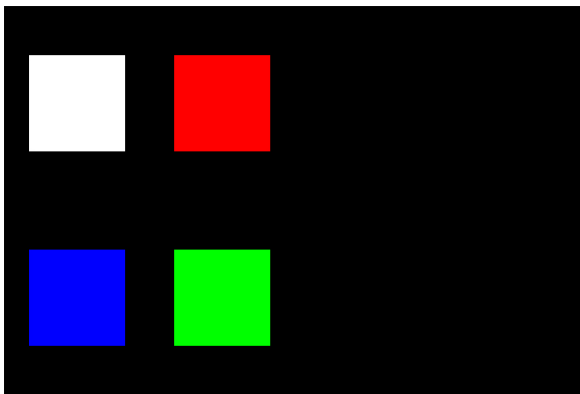
You can use 3D test patterns to verify your 3D hardware is functioning correctly.

1. Tap **Menu > Channel Setup**.
2. Select a 3D channel in the **Channel Name** list.

3. Tap **3D Test Patterns**.
4. Tap a test pattern.
5. Put on a pair of 3D glasses.
6. Look at the on-screen image, and then close your left eye and look at the image through your right eye. Switch when the image alternates.

3D Test Pattern	Action
RGB-12bit -3D Dynamic Range	Alternates between 2 images shown in Figure 4-10 .
RGB-12bit-3D Four Quadrant	Alternates between 2 images shown in Figure 4-11 .
RGB-12bit-3D Full White	Alternates between 2 100% white images.
RGB-12bit-3D Half Descending	Alternates between 4 images shown in Figure 4-12 .
RGB-12bit-3D Horizontal Ramp	Alternates between 2 horizontal ramp images.
RGB-12bit-3D L-Pattern	Alternates between 2 images shown in Figure 4-13 .

100% black field with 100% white (TL), red (TR), green (BR), blue (BL) boxes



100% black field with 100% red (TL), white (TR), blue (BR), green (BL) boxes

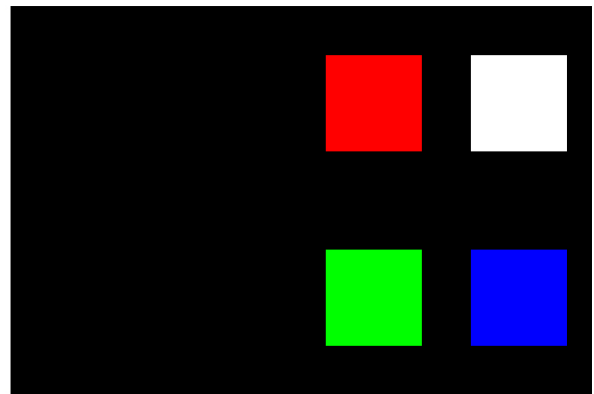


Figure 4-10 RGB-12 bit -3D Dynamic Range Test Pattern

**FRAME 1 - 100% white field box in
100% black field**



**FRAME 2 - 100% white field box in
100% black field**



**FRAME 3 - 100% white field box in
100% black field**

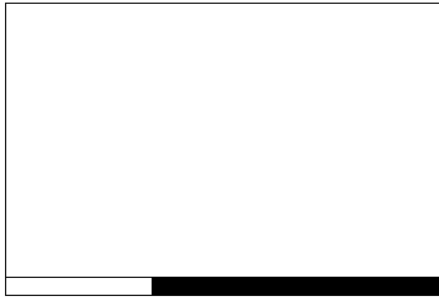


**FRAME 4 - 100% white field box in
100% black field**



Figure 4-11 RGB-12bit-3D Four Quadrant Test Pattern

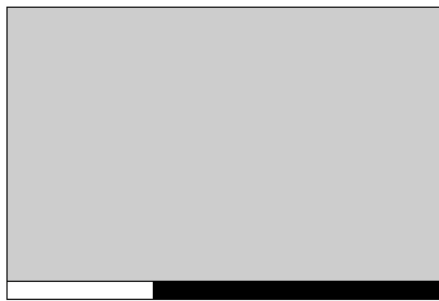
FRAME 1 - 100% white field with last lines 25% white and 75% black



FRAME 2 - 50% white field with last line 75% white and 25% black



FRAME 3 - 25% white field with last line 25% white and 75% black

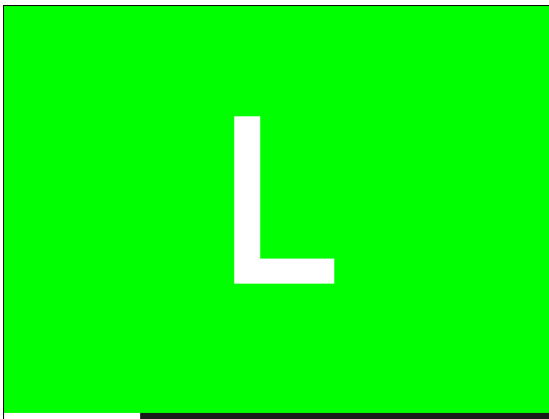


FRAME 4 - 12.5% white field with last line 75% white and 25% black



Figure 4-12 RGB-12bit-3D Half Descending Test Pattern

Green field with white “L” and last lines 25% white, 75% black



Magenta field with last lines 75% white, 25% black



Figure 4-13 RGB-12bit-3D L-Test Pattern

4.14.9 Verify 3D Cinema Content

1. Put on a pair of 3D glasses.
2. Play the 3D content.
3. Verify the left and right eye display correctly.
4. Put the 3D glasses on upside down.
5. If the image is reversed:
 - a. Tap **Menu** > **Channel Setup** on the projector Touch Pad Controller (TPC).
 - b. Select a 3D channel in the **Channel Name** list.
 - c. Select **Inverted** in the **3D Sync Polarity** list.

4.14.10 3D Troubleshooting

Reversed 3D Effect (Pseudo 3D)

1. Put your 3D glasses on upside down.
2. If the image is reversed:
 - a. Tap **Menu** > **Channel Setup** on the projector Touch Pad Controller (TPC).
 - b. Select a 3D channel in the **Channel Name** list.
 - c. Select **Inverted** or **True** in the **3D Sync Polarity** list.

Image Breakup

1. Tap **Menu** > **Channel Setup**.
2. Select a 3D channel in the **Channel Name** list.
3. Tap **3D Control** in the left pane.
4. Lower the **Dark Time** field value.

Image is Too Dark

The lamp power for 3D content is typically twice as high as for 2D content except when you are using a RealD XL device.

1. Tap **Menu** > **Advanced Setup** > **Lamp Power/LiteLOC™ Setup**.
2. Increase the value in the **Power %** field.

No 3D Effect

1. Tap **Menu** > **Channel Setup**.
2. Select a 3D channel in the **Channel Name** list.
3. Tap **3D Control** in the left pane.
4. Verify **Enable 3D** is selected.

Ghosting / Cross-talk

1. Tap **Menu** > **Channel Setup**.
2. Select a 3D channel in the **Channel Name** list.
3. Tap **3D Control** in the left pane.
4. Raise or lower the **Dark Time** field value.
5. Raise or lower the **Output Delay** field value.

Motion Artifacts

1. Tap **Menu** > **Channel Setup**.
2. Select a 3D channel in the **Channel Name** list.
3. Tap **3D Control** in the left pane.
4. Select **Left (L1R1 L2R2)** in the **L/R Display Sequence** list.

Disturbing Flashing in One Eye



1. Tap **Menu** > **Channel Setup**.
2. Select a 3D channel in the **Channel Name** list.
3. Tap **3D Control** in the left pane.
4. Select **Left (L1R1 L2R2)** in the **L/R Display Sequence** list.

5 Operation



This section provides information and procedures for operating the projector.

5.1 Turn the Projector On

WARNING! Do not attempt to turn the projector on if the AC supply is not within the specified voltage range.

1. Turn the circuit breaker for the projector on.
2. On the Touch Panel Controller (TPC), tap and hold the green power  icon.
3. On the TPC, tap and hold the light bulb  icon to ignite the lamp.

5.2 Turn the Projector Off

1. On the Touch Panel Controller (TPC), tap and hold the light bulb  icon to turn the lamp off.
2. On the TPC, tap and hold the red power  icon. The projector enters a cool down mode and the fans and electronics stay on for 10 minutes. After this cool down period, the projector enters standby mode.
3. If you are servicing the projector, or removing the protective cover, disconnect AC and turn the breaker OFF.

5.3 The Touch Panel Controller (TPC)

The TPC is a touch-sensitive screen that you use to control the projector. You can use the TPC to turn the projector and lamp on or off, select channels, and view status information. The TPC is mounted on the rear of the projector. You can tilt and turn the TPC to improve the viewing angle. There are two USB ports under a cover on the rear of the TPC that you can use to download log files and install software upgrades. You can disconnect the TPC from the projector and an optional cable allows you to control the projector from a maximum distance of 100 feet.

If the TPC fails or is disconnected, press the emergency start button that is recessed on the faceplate. This starts the projector, turns the lamp on, and opens the douser.

6 Maintenance

This section provides information and procedures for performing projector maintenance. You should read through this section in its entirety before performing maintenance activities. When you perform projector maintenance, obey all warnings and precautions.

6.1 Inspect Ventilation

Vents and louvers in the projector covers provide ventilation, both for intake and exhaust. Never block or cover these openings. Do not install the projector near a radiator, heat register, or within an enclosure. To ensure adequate airflow around the projector, keep a minimum clearance of 50cm (19.69”) on the left, right, and rear sides of the projector.

6.2 Fill the Coolant Reservoir

⚠ DANGER HAZARDOUS SUBSTANCE! The coolant used in the projector contains ethylene glycol. Use caution when handling. **DO NOT** ingest.

⚠ WARNING Only use coolant recommended by Christie in your projector. Using unapproved coolant can result in projector damage and voids the projector warranty.

The liquid cooler system sends and receives coolant from the digital micromirror device (DMD) heat sinks. Check the coolant level every 6 months, by removing the top projector lid. The coolant level should always be above the minimum level indicator. If the liquid cooling system fails, an over-temperature alarm window appears in the Touch Pad Controller (TPC). The lamp turns off if the projector enters an over-temperature state for longer than one minute.

Top up the coolant with the Christie approved coolant JEFFCOOL E105. Use the refill bottle (with the nozzle) provided in the Liquid Coolant Fill Service Kit (P/N: 003-001837-xx). When refilling, use caution not to spill or let any of the coolant drip on or near the electronics. After filling the reservoir, check the coolant hoses for kinks which may restrict fluid flow.

If coolant drips on electronics or other components, blot the affected area using a dust-free optical grade tissue. It is recommended you blot a few times, discard the tissue and use a new tissue to blot the area again. Keep repeating this cycle until the coolant is removed. Then lightly moisten a new tissue with de-ionized water and blot the area again. Use a dry tissue to dry the area.

6.3 Inspect the Lamp

⚠ DANGER Always disconnect the projector from AC power and wear authorized protective safety gear.

- Check the contact surfaces of the anode (positive) and the cathode (negative) connections for cleanliness.
- Clean electrical contact surfaces regularly to prevent contact resistance from scorching connectors. Use an approved contact cleaner.
- Verify that all electrical and lamp connections are secure.

6.4 Inspect and Clean Optics

Unnecessary cleaning of optics can increase the risk of degrading delicate coatings and surfaces. If you are not a qualified service technician, you can only inspect and clean the lens and lamp reflector. Do not perform maintenance on other optical components. Check these components periodically in a clean, dust-free environment using a high-intensity light source or flashlight. Clean them only when dust, dirt, oil, fingerprints or other marks are obvious. Never touch an optical surface with your bare hands. Always wear latex lab gloves.

These are the recommend tools for removing dust or grease:

- Soft camel-hair brush
- Dust-free blower - filtered dry nitrogen blown through an anti-static nozzle.
- Dust-free lens tissue, such as Melles Griot Kodak tissues (18LAB020), Opto-Wipes (18LAB022), Kim Wipes or equivalent.
- For the lens only - lens cleaning solution such as Melles Griot Optics Cleaning Fluid 18LAB011 or equivalent
- For the reflector only - Methanol.
- Cotton swabs with wooden stems.
- Lens cleaning cloth or microfiber such as Melles Griot 18LAB024 or equivalent.

6.4.1 Clean the Lens

A small amount of dust or dirt on the lens has minimal effect on image quality-to avoid the risk of scratching the lens, clean the lens only if absolutely required.

Remove Dust

1. Brush most of the dust off with a camelhair brush or use a dust-free blower.
2. Fold a microfiber cloth and wipe the remaining dust particles off the lens with the smooth portion of the cloth that has no folds or creases. Do not apply pressure with your fingers. Instead, use the tension in the folded cloth to remove the dust.
3. If significant dust remains on the lens surface, dampen a clean microfiber cloth with lens cleaning solution and wipe gently until clean.

Remove Fingerprints, Smudges, or Oil

1. Brush most of the dust off with a camelhair brush or use a dust-free blower.
2. Fold a microfiber cloth and wipe the remaining dust particles off the lens with the smooth portion of the cloth that has no folds or creases. Do not apply pressure with your fingers. Instead, use the tension in the folded cloth to remove the dust.

6.5 Inspect and Clean the Lamp Blower

NOTICE! DO NOT bend the impeller blades or loosen the balancing weights.

A clogged lamp blower impeller or motor can reduce air flow leading to overheating and failure of the lamp.

1. Vacuum loose dirt from the lamp blower impeller.
2. If necessary, use a brush with hot water.

3. Fold a clean microfiber cloth and dampen with methanol and wipe evenly with the smooth portion of the cloth that has no folds or creases. **Do not apply pressure with your fingers.** Use the solution in the cloth to collect the dirt.

6.6 Clean the Igniter

Clean the high voltage terminal and insulator to remove accumulated dust or dirt.

6.7 Inspect and Clean the Airflow Interlocks

The CP4220 uses two airflow interlocks; a lamp blower vane switch and an extractor vane switch.

The lamp blower vane switch is located within the lamp cooling compartment. The extractor vane switch is located just inside the top duct on the projector lid. Check and clean the switches to remove accumulated dust or dirt that could impede movement if necessary. Within the exhaust duct connected at the top of the projector, adequate airflow must be maintained and routed outside of the building. Inspect regularly and confirm that 1) there are no obstructions or “kinks” within the ducting, 2) all air intake areas are unobstructed, and 3) exhaust airflow is at least 450 CFM* (measured at the rigid end of the duct when not connected to the projector). Refer to [6.1 Inspect Ventilation, on page 6-1](#).


*** 600 CFM is required in projection rooms with ambient temperature above 25°C or elevation (above sea level) greater than 3000 feet.**

6.8 Inspect the Laminar Airflow Device (LAD)

The LAD filter is attached to the light engine assembly handle in the light engine compartment. Inspect the LAD filter every six months. If the LAD filter is dark grey, contact Christie or your dealer for replacement.

6.9 Replace the Lamp

⚠ DANGER 1) Lamp replacement must be performed by a qualified service technician only. 2) **EXPLOSION HAZARD.** Wear authorized protective clothing whenever the lamp door is open and when handling the lamp. Never twist or bend the quartz lamp body. Use the correct wattage lamp supplied by Christie. 3) Ensure those within the vicinity of the projector are also wearing protective safety clothing. 4) Never attempt to remove the lamp when it is hot. The lamp is under a great deal of pressure when hot and may explode, causing personal injury or death and/or property damage. Allow the lamp to cool completely before replacing it.

1. Click  on the TPC **Main** panel to turn the lamp and main AC OFF. Allow the internal cooling fans to run for at least 10 minutes to cool the lamp.
2. When the cooling fans stop, unplug the projector.
3. Wearing authorized protective safety gear, unlock and open the lamp door. If desired, release the latch mechanism to remove the door entirely.
4. Remove the front lamp duct to reveal the cathode end (-) of the lamp.
5. Loosen set screws from the negative cathode and the positive anode lamp connectors. Make sure to apply minimal torque and DO NOT STRESS the quartz tube. (Figure 6-1).

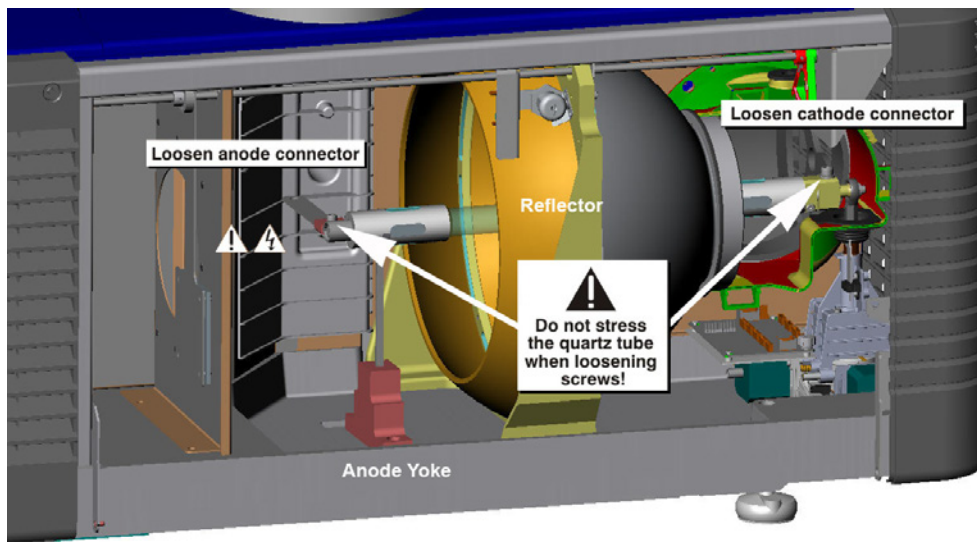


Figure 6-1 Removing the Lamp

6. Carefully slide the positive anode connector off the front of the lamp.
7. Holding the cathode end of the lamp, unscrew the lamp from the cathode connector. Carefully remove the lamp from the projector and immediately place it inside the protective cover or original packaging.
Caution! Handle the lamp by the cathode/anode end shafts only, never the glass.
8. Place the lamp on the floor where it cannot fall or be bumped. **Warning!** Handle box with extreme caution - the lamp is hazardous even when packaged. Dispose of lamp box according to safety regulations for your area.
9. With the lamp removed, visually inspect the reflector for dust. Clean the reflector if necessary as described [Section 6.4 Inspect and Clean Optics](#).
10. Remove the tape, knurled nut, and locking star washer securing the lamp within its cover.
11. If you are installing a different type of lamp from the original, ensure the correct position of the anode yoke.
12. Insert the threaded cathode (-) end of the lamp into the negative lamp connector nut located in the rear of the lamp compartment. (**Figure 6-2**) Using both hands, hand-tighten this end into the threaded nut.
Caution! 1) Handle the lamp by the cathode/anode end shafts only, never the glass. **DO NOT** over-tighten. **DO NOT** stress the glass in any way. **2)** Check leads. Make sure the anode (+) lead between the lamp and igniter is well away from any projector metal such as the reflector or firewall.
13. Rest the anode (+) end of the lamp on the anode yoke and slip the positive lamp connector over the bulb end. (**Figure 6-2**) Using the 5mm Allen key, squeeze together with the anode clamp making sure not to place any torque on the lamp quartz tube. **Important!** Ensure that the “flat” part of the anode end of the lamp is facing up. **Warning!** Explosion hazard - Do not apply torque to the anode end of the lamp.
14. Tighten the negative and positive lamp connector screws. **Important!** Proper electrical contact prevents resistance in the lamp connectors. **Caution! 1)** Handle the lamp by the cathode/anode end shafts only, never the glass. **DO NOT** over-tighten. **DO NOT** stress the glass in any way. **2)** Check leads. Make sure the

anode (+) lead between the lamp and igniter is well away from any projector metal such as the reflector or firewall.

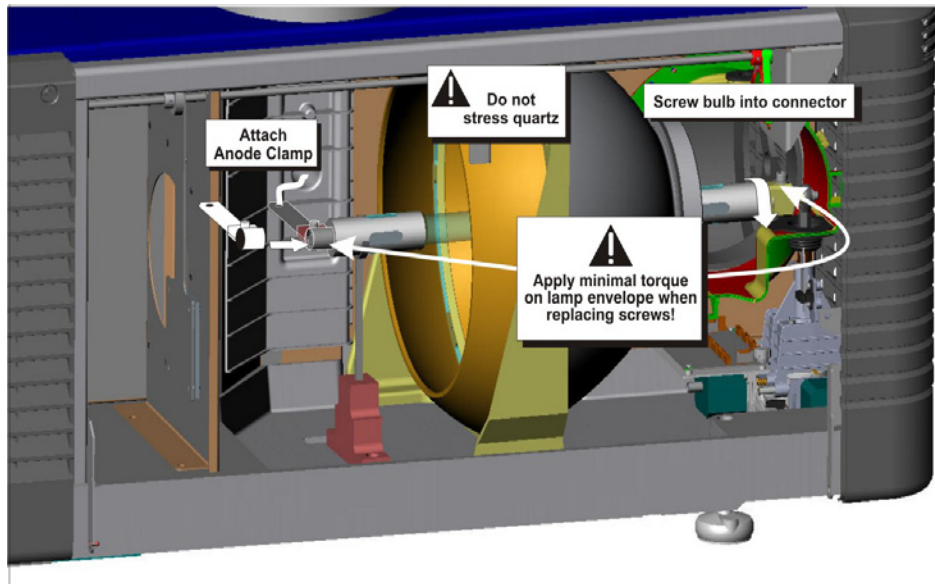
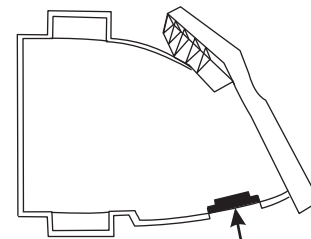


Figure 6-2 Installing the Lamp

15. Re-install the Front Lamp Duct

NOTE: It is critical that you lift the small light shield on the rear lamp duct cover so that it does not get jammed between the two pieces when they come together. (**Figure 6-3**) To ensure a good fit between the two pieces, squeeze the top and bottom cover snaps to ensure they are locked in place. The light shield should move freely to the touch.




Lift rear light shield when installing front lamp duct

Figure 6-3 Light Shield on Front Lamp Duct

16. Close Lamp Door.
17. Turn Wall Circuit ON.

18. In the **Advanced Setup: Lamp History** window, click the **Add Lamp** button and record lamp type, serial number, reason for change and number of the hours logged on to the lamp. If the lamp has not been previously used, enter 0. Click **Save** to save the data entered. (**Figure 6-4**)

19. Click  from the TPC **Main** panel to turn the lamp on.
20. **Open the LampLOC** window. Run LampLOC to optimize light output.

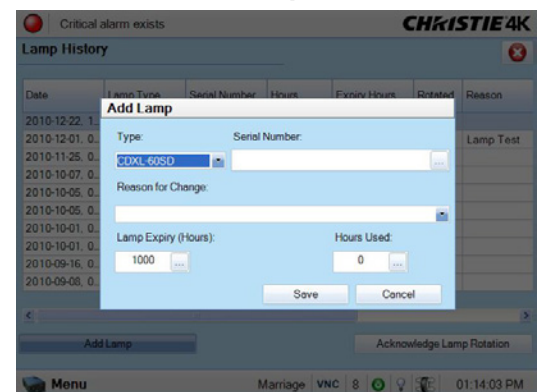



Figure 6-4 Add Lamp Window

6.10 Rotate the Lamp

⚠ DANGER 1) Lamp rotation must be performed by a qualified service technician only. 2) **EXPLOSION HAZARD!** Wear authorized protective clothing whenever the lamp door is open and when handling the lamp. Never twist or bend the quartz lamp body. Use the correct wattage lamp supplied by Christie. 3) Ensure those within the vicinity of the projector are also wearing protective safety clothing. 4) Never attempt to remove the lamp when it is hot. The lamp is under pressure when hot and may explode, causing personal injury, death, or property damage. Allow the lamp to cool completely.

When the operational life of the lamp reaches halfway, it is recommended that you rotate it 180° to ensure an even burn of the lamp, improve lamp performance, and extend the life of the lamp. An alarm window appears on the TPC after you complete the lamp rotation.

1. Tap and hold the red power button  on the TPC **Main** panel to turn the lamp and projector off.
2. Allow the lamp to cool for a minimum of 10 minutes.
3. Unplug the projector.
4. Put on your protective clothing and face shield.
5. Unlock and open the lamp door. Release the tethered latch mechanism to remove the door entirely.
6. Remove the cathode cable and rotate the lamp 180°.
7. Replace the cathode cable.
8. Replace and lock the lamp door.
9. Remove your protective clothing and face shield.
10. Tap and hold the green power button to turn the projector on.
11. Tap **Menu > Advanced Setup > Lamp History**.
12. Tap **Acknowledge Lamp Rotation**.

6.11 Replace the Light Engine Air Filter

⚠ CAUTION Use only high efficiency Christie approved filters. Never operate the projector without the filter installed. Always discard used air filters.

You should check the condition of the light engine air filter monthly. Replace the light engine air filter when you replace the lamp module or sooner if you are operating the projector in a dusty or dirty environment. The filter is located on the right side of the projector behind the air filter cover.


1. Release two tabs on the air filter cover and remove.
2. Slide the air filter out and discard. Insert the new air filter with the airflow indicator facing toward the projector. **NOTE:** *Never reuse an old air filter. The air filters in this product cannot be cleaned thoroughly enough for reuse and can lead to the contamination of optical components.*
3. Install the air filter cover by inserting the two bottom tabs into place and then snapping the door closed.

6.12 Replace the Liquid Cooling Air Filter

The radiator air filter is located on left/front side of the projector behind a small air filter cover.

1. Release a single tab on the air filter cover and remove.
2. Slide the air filter out and discard. Insert the new air filter with the air flow indicator facing toward the projector. **NOTE:** *Never reuse an old air filter. The air filters in this product cannot be cleaned thoroughly enough for reuse and can lead to the contamination of optical components.*
3. Install the air filter cover by inserting the bottom tabs into place and then snapping the door closed.

6.13 Replace the Lens

1. Tap and hold the red power button  on the TPC **Main** panel to turn the lamp and projector off.
2. Allow the lamp to cool for a minimum of 10 minutes.
3. Unplug the projector.
4. Remove the shroud.
5. Turn the lens clamp to the OPEN/UP position.
6. Release the lens locking lever (UP position).
7. Pull out the lens and replace it with a different high-brightness lens. **NOTE:** *Always install the lens with “UP” label in the top position. This will assist in achieving consistent boresight alignment each time the lens is replaced.*
8. Secure the lens with the lens locking lever (DOWN position).
9. Calibrate the lens.
10. Install the shroud.

7 Troubleshooting

This section provides information and procedures for resolving common projector issues. If you cannot resolve a projector issue, contact a Christie accredited service technician.

7.1 Projector Does Not Turn On

- Check the wall circuit breaker to see if it is ON. If there is a problem with the wall circuit breaker, have a certified electrician investigate any electrical problem.
- Check the status of the LEDs on the rear corners of the projector. (Figure 7-1). If there is no activity, see #3.
- Verify power by looking through the rear, right side grill. One LED should be present in the upper right. This indicates the LVPS has power. Another LED should be seen in the lower left indicating Main input. (Figure 7-2)
- On the TPC, verify in the **Operational Status** region of the **Main** panel that there is no failure with PIB communication (PIB Status).

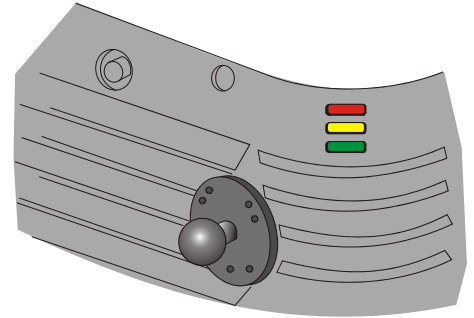


Figure 7-1 Projector Status LEDs

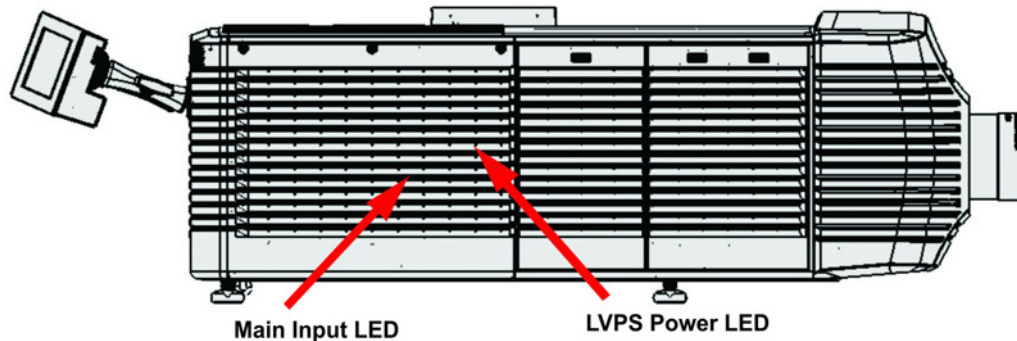


Figure 7-2 View Power Status LEDs

7.2 Lamp Does Not Ignite

- Tap **Menu** > **Advanced Setup** > **Lamp History** and verify the number of hours the lamp has operated. Replace a lamp nearing the end of its operational life
- Tap **Menu** > **Status** and then **Interlocks** in the left pane. Check and correct all interlock failures.
- Tap **Menu** > **Status** and then **All Alarms** in the left pane. If a ballast communication error has occurred, restart the projector and turn the lamp on.
- Tap **Menu** > **Status** and then **Temperatures** in the left pane. Verify if the DMD temperatures are too high. If the temperatures are too high, cool the projector. Ensure the projector is properly ventilated, the air filters are not blocked, and the liquid cooling reservoir has coolant.
- Listen for a clicking noise that indicates the ballast is attempting to strike the lamp. If you do not hear a clicking noise, there might be a problem a problem with the ballast. Contact a Christie accredited service technician to resolve the issue.

- If you hear a brief clicking noise, but the lamp does not ignite, replace the lamp.
- Check the transformer Voltage switch on the transformer.

7.3 Lamp Suddenly Turns Off

- Tap **Menu > Advanced Setup > Lamp Power/LiteLOC Setup**. Increase the lamp power.
- Tap **Menu > Status** and then **Interlocks** in the left pane. Review and correct all interlock failures.
- If EVB errors occur, check the door interlock.
- Tap **Menu > Status** and then **Temperatures** in the left pane. Verify if the DMD temperatures are too high. If the temperatures are too high, cool the projector. Ensure the projector is properly ventilated, the air filters are not blocked, and the liquid cooling reservoir has coolant.
- Replace the lamp.

7.4 Flicker, Shadows, Or Dimness

- Ensure the douser is open.
- Run a LampLOC™ adjustment.
- Verify that a LampLOC™ adjustment is not in progress.
- Tap **Menu > Advanced Setup > LampPower/LiteLOC™ Setup**. Monitor the Power % field to determine if the power is consistent or varying. Increase the lamp power. Lamps which are near end of service may not operate reliably at a lower power setting.
- Fold mirror misalignment. Contact your Christie accredited service technician to resolve the issue.
- Integrator rod misalignment. Contact your Christie accredited service technician to resolve the issue.

7.5 LampLOC™ Not Working

- If the **Do Auto** option is not working, tap **Menu > Advanced Setup > LampLOC™ Setup** and adjust the lamp position manually. Observe screen brightness by adjusting the XYZ values or use a light meter to check for changes in brightness.
- Check that the anode yoke (lamp yoke) is in the correct position. (Figure 7-3)
- Check that the flat part of the anode end of the lamp (if applicable) faces up in the anode yoke. For CDXL-20 and CDXL-30 lamps, the flat part of the anode end of the lamp should be positioned at the 2 or 10 o'clock position.

7.6 LiteLOC™ Not Working

- Tap **Menu > Advanced Setup > LampPower/LiteLOC™ Setup**. Tap **Enable LiteLOC™**.
- If the lamp power is at the maximum setting to maintain a LiteLOC™ setting, LiteLOC™ is automatically disabled. Reduce the LiteLOC™ setting, or install a new lamp.

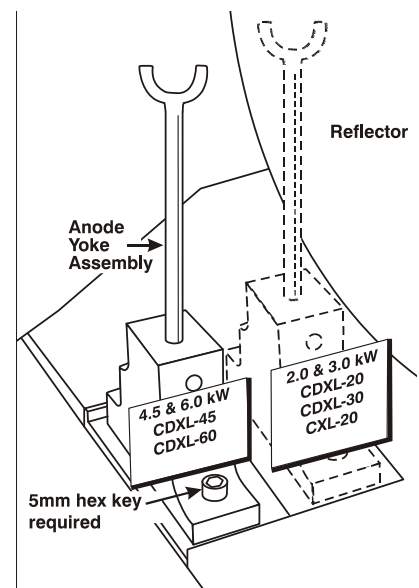


Figure 7-3 Lamp Yoke Position

7.7 Touch Panel Controller (TPC)

- If the TPC does not appear, restart the projector.
- If the TPC display is blank, ensure the TPC is on by opening the flap at the back of the TPC and verify the grey button in the bottom left corner is ON.
- If the button taps on are misinterpreted, the TPC screen may need recalibrating. Tap **Menu > Administrator Setup > Preferences**. Tap **Calibrate Screen** and follow the instructions on the screen.

7.8 Trouble Establishing Communication with Projector

Verify all input devices have the same subnet mask and unique IP addresses.

7.9 Blank Screen, No Display of Cinema Image

- Ensure the lens cap is not on either end of the lens.
- Ensure the lamp is ON.
- Confirm all power connections are OK.
- Ensure the douser is OPEN by verifying the state of the douser on Main panel as well as the state of the douser switch at the back of the projector in the top, left corner.
- Ensure any test pattern other than the full black test pattern displays properly.
- Verify the correct display file is selected?
- For cinema connections, verify the correct port is used.

7.10 Severe Motion Artifacts

Verify if there is a synchronization problem with reversed 3-2 pull-down in the 60Hz-to-24Hz film-to digital conversion and correct it at the source.

7.11 Image Appears Vertically Stretched or 'Squeezed' into Center of Screen

To regain full image width and proper proportions you may need to install an anamorphic lens. Open the Source File Setup window and verify the resolution and aspect ratio settings. Open the Screen File Setup window and verify the lens factor settings.

7.12 No Image, Just Pink Snow

This problem occurs when the correct cryptographic key is not available to decode encrypted cinema content.

- If the projector security lid is unlocked or open, a warning appears on the Touch Panel Controller (TPC). Pause or stop the show on the server and then close and lock the lid. Press Play on the server and wait for the projector to receive the decryption keys from the server. If the projector does not recover after 30 seconds, pause or stop the show and try pressing Play again. If this solution does not work, reset the server. Check the Status window on the TPC for a tamper warning. If the lamp door is closed, the tamper switch may be faulty.
- Ensure the IP octets for the projector and the server match. Change if necessary.
- Tap **Menu > Channel Setup**. Tap **Config 2** in the left pane and select **LD Bypass**.

7.13 Inaccurate Display Colors

Adjust the color, tint, color space, and color temperature settings of your input source. Tap **Menu > Channel Setup**. Tap **Config 1** in the left pane and verify the correct value is selected in the **PCF** list. Tap **Config 2** in the left pane and verify the correct value is selected in the **Color Space** field.

7.14 Display is Not Rectangular

- Verify the projector is level and the lens surface and screen are parallel to one another.
- Adjust the vertical offset of the lens mount with the vertical offset knob or ILS.
- Check that the anamorphic lens is straight. Rotate to orient the aperture correctly.
- Tap **Menu > Advanced Setup > Screen File Setup** and verify the settings for the screen file are correct.

7.15 Display is Noisy

- Adjust the input source pixel tracking, phase, and filter.
- Verify the video input is terminated (75 ohms). If the device is the last device in a linked series, verify the video input is terminated at the last input source.
- Verify the cables connecting the input device to the projector meet the minimum requirements.
- Add signal amplification or conditioning if the distance between the input device and the projector exceeds 25 feet.


7.16 Display has Suddenly Frozen

Turn off the projector and unplug the power cord from the power source. Plug the projector power cord into a power source and turn the projector on.

7.17 Data is Cropped from Edges

Reduce the image size to fill the display area, and then stretch the image vertically to fill the screen. Add an anamorphic lens to regain image width.

7.18 The Projector is ON, but There is No Image

- Ensure AC power is connected.
- Make sure the lens cover is removed from the lens.
- Make sure the douser is open.
- Tap  on the main TPC screen. If the lamp does not strike, see [7.2 Lamp Does Not Ignite, on page 7-1](#).
- Tap **Menu > Channel Setup**. Verify the correct channel is selected and the settings are correct.
- Ensure an active source is connected properly. Check the cable connections and make sure the alternative source is selected.
- Verify you can select test patterns. If you can, check your source connections again.
- Ensure your Cinema server is running Series 2 compatible software.

7.19 The Display is Jittery or Unstable

- Verify that the input device is connected properly. If the input device is not connected properly, the projector repeatedly attempts to display an image.
- The horizontal or vertical scan frequency of the input signal may be out of range for the projector.
- The sync signal may be inadequate. Correct the source problem.

7.20 The Display is Faint

- Verify the input source is terminated only once.
- If the input is not a video source, use a different sync tip clamp location.

7.21 Portions of the Display are Cut OFF or Warped to the Opposite Edge

If you have resized the image, adjust the resizing settings until the entire image is visible and centered.

7.22 Display Appears Compressed (Vertically Stretched)

- Adjust the frequency of the pixel sampling clock for the input source.
- Verify the size and position settings are correct for the input source.
- Use an anamorphic lens for HDTV and anamorphic DVD input sources that have been re-sized and vertically stretched.

7.23 Inconsistent Picture Quality

- Verify the quality of the signal from the input source.
- Verify the H and V frequencies of the input source are correct.

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