CP2210

Setup Guide

020-100524-04

CHRISTIE®

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NOTICES

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REGULATORY

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

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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Every effort has been made to ensure accuracy, however in some cases changes in the products or availability could occur which may not be reflected in this document. Christie reserves the right to make changes to specifications at any time without notice. Performance specifications are typical, but may vary depending on conditions beyond Christie's control such as maintenance of the product in proper working conditions. Performance specifications are based on information available at the time of printing. Christie makes no warranty of any kind with regard to this material, including, but not limited to, implied warranties of fitness for a particular purpose. Christie will not be liable for errors contained herein or for incidental or consequential damages in connection with the performance or use of this material.
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. **Cinema projector lamps (See Christie's separate lamp program policy).**
c. **Damage caused by use of a cinema 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.

1: Introduction

2: Installation and Setup

3: Connect Devices to the cinema projector

4: Adjust the Image

5: Operation

6: Maintenance

7: Troubleshooting

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 cinema projector.

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

1.1 Cinema projector Labels and Marking

Observe and follow any warnings and instructions marked on the cinema projector.

⚠ DANGER Danger symbols indicate a hazardous situation which, if not avoided, will result in death or serious injury. This signal word is to be limited to the most extreme situations.

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

⚠ CAUTION Caution symbols indicate a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE! Addresses practices not related to personal injury.

NOTICE! Observe and follow any warnings and instructions marked on the cinema projector.


The exclamation point within the equilateral triangle indicates related operating/maintenance instructions in the documentation accompanying the cinema projector.


The lightning flash and arrowhead symbol within the equilateral triangle indicates non-insulated “dangerous voltage” within the cinema projector's enclosure that may be of sufficient magnitude to constitute a risk of electric shock.

1.2 General Precautions

⚠ WARNING Never look directly into the cinema projector lens or at the lamp. The extremely high brightness can cause permanent eye damage. For protection from ultraviolet radiation, keep all cinema 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.

This cinema projector must be operated in an environment that meets the operating range specification, as listed in ***Section 6 - Specifications from the CP2210 User Manual (020-100410-xx)***.

1.3 AC/Power Precautions

⚠ WARNING

1) Use only the AC power cord supplied. DO NOT attempt operation if the AC supply is not within the specified voltage and power range. For details, see *Section 6 - Specifications from the CP2210 User Manual (020-100410-xx).*

2) As a safety feature the cinema projector is equipped with a three-wire plug with a third (grounding) pin. If you are unable to insert the plug into the outlet, contact an electrician to have the outlet replaced. DO NOT defeat the safety purpose of the grounding-type plug.

3) DO NOT attempt operation if the AC supply is not within the rated voltage range, as specified on the license label.

4) Disconnect cinema projector from AC before opening any enclosure.

⚠ CAUTION

1) DO NOT allow anything to rest on the power cord. Locate the cinema projector where the cord cannot be abused by persons walking on it or objects rolling over it. Never operate the cinema 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 power cord is provided with each cinema 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.

1.4 Lamp Precautions

⚠ DANGER EXPLOSION HAZARD! Wear authorized protective safety gear whenever the lamp door is open! Never attempt to remove the lamp directly after use. The lamp is under significant pressure when hot and cold, and may explode, causing personal injury and/or property damage.

Any lamp used in the CP2210 is under high pressure and must be handled with great care at all times. Lamps may explode if dropped or mishandled.

Wear Protective Clothing

Never open the lamp door unless you are wearing authorized protective clothing such as that included in a Christie Protective Clothing Safety Kit (P/N: 598900-095). 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. **NOTE:** *Christie's protective clothing recommendations are subject to change. Any local or federal specifications take precedence over Christie recommendations.*

Cool the Lamp Completely

⚠ DANGER Lamp may explode causing bodily harm or death. 1) Always wear protective clothing whenever lamp door is open or while handling lamp. 2) Ensure those within the vicinity of the cinema projector are also suited with protective clothing. 3) Never attempt to access the lamp while the lamp is ON. Wait at least 10 minutes after the lamp turns OFF before powering down, disconnecting from AC 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 and/or property damage. After turning the lamp OFF, it is crucial that you ***wait at least 15 minutes*** before disconnecting AC and opening the lamp door. This provides enough time for the cooling fans to properly cool the lamp. Ensure the lamp is completely cooled before handling and ***always*** wear protective clothing!
For all other precautions critical for safe removal and replacement of the lamp, see *6.8 Replace the Lamp, on page 6-4*.

1.5 Contact Your Dealer

If you encounter a problem with your Christie cinema projector, contact your dealer. Typically, servicing is performed

on site. To assist with the servicing of your cinema 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:	
cinema projector Serial Number*:	
Purchase Date:	
Installation Date:	

** The serial number can be found on the license label located on the front panel.*

Table 1.2 Ethernet Settings

Default Gateway:	
cinema projector IP Address:	
Subnet Mask:	

2 Installation and Setup

This section provides information and procedures for positioning and installing the cinema projector.

You need these tools to install the CP2210 cinema projector:

- 19 mm wrench
- Protective safety clothing (if you are replacing the lamp)
- Lamp

This section explains how to install, connect and optimize the cinema projector for delivery of superior image quality. **NOTE***: Illustrations are graphical representations only and are provided to enhance the understanding of the written material.*

2.1 Power Requirements

⚠ WARNING No protective device is provided in the neutral conductor.

- A single-phase 20A UL listed connection of AC power supply is required to accommodate the detachable cinema projector plug.
- The power supply, along with protection from short-circuits must be must be part of the building installation.

2.2 What's In the Box?

These items are included with your CP2210 cinema projector:

- cinema projector with Touch Panel Controller
- User Manual
- Warranty Card
- Web Registration Form
- Power Cord

NOTE: *Lamp and lens supplied separately.*

2.3 Cinema Projector Components

The CP2210 cinema projector includes these components:

2.3.1 Air Filter Cover and Air Filter

Located directly behind the air filter cover is a field replaceable air filter. The air filter is responsible for filtering the intake air before it begins circulating in the front compartment to cool the main electronics.

2.3.2 Douser

For most instances, use the douser control buttons on the TPC to blank the display for instant picture muting. Closing the douser rotates a shutter blade in front of the illumination system and reduces lamp power to conserve lamp life.

2.3.3 Adjustable Feet

For many cinema installations, the cinema projector is inclined slightly forward to match screen tilt and to minimize the amount of vertical offset required. Turn the adjustable feet to increase or decrease the cinema projector height as needed for proper leveling and/or slight tilt. See *Section 2.5 Adjust Tilt and Level the Cinema Projector* for details on how to adjust the feet and how to properly secure the cinema projector.

2.3.4 Lamp Door and Lamps

Located on the back of the cinema projector is the lamp access door designed with a mid-security lock. The lamp door must remain closed and locked for all normal operation. Lamp replacement should only be performed by qualified technicians.

The cinema projector is designed to operate with 2.0kW, 1.8kW and 1.4kW lamps.

2.3.5 LED Status Indicators

Located in the rear corners of the cinema projector are two sets of LEDs, which illuminate to provide continuous feedback of the cinema projector status.

2.3.6 Optional - Motorized Auxiliary Lens Mount (MALM)

The MALM assembly is an optional hardware component, which when needed can be used to switch from flat to “scope” formats. This assembly can be secured to the cinema projector base and supports either a 1.25x anamorphic lens or a 1.26x wide converter lens (WCL). The drive and control electronics package for this motorized accessory lens mount communicates with and is controlled by the cinema projector over a 9-pin subminiature D cable that connects to the Auxiliary Input Panel.

2.3.7 Projection Lens

A variety of lenses can be used with the CP2210.

2.3.8 Security Locks

Critical internal components and/or connections are protected by various security locks on cinema projector covers/access panels. This safeguard enables only authorized personnel to access certain restricted areas of the cinema projector. The cinema projector panels cannot be removed with standard tools unless the key locks are open.

- **Panels with high-security lock:** Light Engine and Cardcage
- **Panels with low-security lock:** Rear Access Door
- **No locks:** Air Filter Access Panel

2.3.9 Input Panel

- PIB Faceplate Connections

Located on the operator side of the cinema projector (left side) is a communication panel that provides connection of external devices such as servers and a controller.

- **Ethernet:** Use the 10Base-T/100Base-TX Ethernet port for network connection to the cinema projector.

- **GPIO:** Connect external I/O devices, such as the Christie ACT, for remote control of a limited number of cinema projector functions. See *Section 3 Connect Devices to the cinema projector* for GPIO pinouts.
- **SCCI:** A Simple Contact Closure Interface (SCCI) port that provides the following functions upon a simple dry contact closure: Lamp ON/OFF and Douser Open/Closed.
- **RS232 ICP:** For direct DLP communication. Trained users required.
- **RS232 PIB:** Utilizes Christie-proprietary protocol and is intended for Christie accessories or third-party automation equipment.
- **3D:** Connect a variety of 3D products to this connector, such as MasterImage or Real D for polarizing and de-ghosting 3D content during projection.
- **Marriage:** Marriage must be established to allow the cinema projector to play encrypted content. This means the security boundaries SPB1 and SPB2 are physically and electrically connected and that marriage is monitored 24/7. Marriage is initiated from a Wizard application on the TPC. A user with the appropriate credentials is prompted to press the **Marriage** button to establish marriage. If the button is pressed any other time it is ignored. Marriage cannot be established remotely.
- **Emergency Start:** This button is recessed into the faceplate to prevent accidental activation. It should only be used when the TPC has failed or is disconnected. When pressed, the cinema projector is powered on, the lamp is powered up and the douser is opened. When you press and hold this button, the douser is closed and the lamp is powered OFF, but power is still ON.
- **Reset:** This button is slightly recessed into the faceplate to prevent accidental activation. The main purpose is to reset the electronics of the cinema projector. After re-booting, the cinema projector will return to the previous power mode (STANDBY or FULL power), however the lamp will not strike automatically and requires manual striking.
- **DVI-A / DVI-B:** These are single-link ports for single-link cables/connectors only. The connectors can be used together as a twin-link DVI port.
- **HD-SDI A/HD-SDI-B:** Connect a variety of high-definition cinema sources to these SMPTE 292M bit-serial standard interface BNCs. The connectors can be used together to deliver Dual Link HD-SDI following the SMPTE 372M standard.
- PIB Faceplate Status Indicators
- **STBY:** Standby power (Single Color Green) indicates the presence of +24V from the standby power supply.
  - **OFF:** Indicates no standby power (breaker OFF or Standby power failure).
  - **Green:** Indicates standby power.
- **PWR:** Main power (Single Color Green) indicates the presence of +24V from the Low Voltage Power Supply (LVPS).
  - **OFF:** No LVPS power (STANDBY mode or breaker OFF).
  - **Green:** Indicates full power.
- **RUN:** Blinking heartbeat (bi-color green/yellow).
  - **OFF or Solid Green:** Indicates cinema projector not functioning properly.
  - **Blinking Green:** OK (software/communication/OS/ICP/Enigma/IMB if present are operating normally).
  - **Solid Yellow:** Communication error. NiOS functioning OK, but can no longer communicate with TPC.
- **PIB:** cinema projector Intelligence Board Status (Bi-color Red/Green)
  - **OFF:** Not detected.
  - **Red:** Detected communication problems etc.
  - **Blinking Red:** PIB card seating error.
  - **Green:** Detected and working properly.
- **ICP:** Integrated Cinema Processor Status (Bi-color Red/Green)

  - **OFF:** Not detected.
  - **Red:** Detected communication problems etc.
  - **Green:** Detected and working properly.
- **LD:** Link Decrypter (Enigma) Status (Bi-color Red/Green)
  - **OFF:** Not detected.
  - **Red:** Detected communication problems etc.
  - **Green:** Detected and working properly.
- **IMB:** Image Media Block Status (Bi-color Red/Green)
  - **OFF:** Not detected.
  - **Red:** Detected communication problems etc.
  - **Green:** Detected and working properly.
- ICP Faceplate Connections

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

- **REGEN:** (Regulators Enabled) This LED indicates the presence of the internal regulator enable signal. When illuminated BLUE the internal regulators are enabled. When OFF, not enabled.
- **SOFTST:** (Software State) This LED 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) This LED 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) This LED 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) This LED 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, active source present.
- **USB 1 / USB 2:** For future use.

2.3.10 Touch Panel Controller (TPC)

The TPC is a portable, touch-sensitive screen used to control the cinema projector. It is mounted to the rear of the cinema projector and can be adjusted at any angle using the flexible double ball joint mount for convenient viewing and flexible operation in various installation configurations. The TPC provides users with a means for monitoring operation and status of the cinema projector. Users can turn the lamp ON/OFF, select a specific source/input and obtain basic status information. Depending on the installation, the TPC can remain mounted to the cinema projector or wall mounted anywhere else at the site. An optional extension cable is also available, which can be purchased separately to provide TPC access up to 100 feet away. **NOTE:** *If your system has a TPC-660E check to ensure the main switch on the back is connected properly. If your system has a TCP-650H it automatically turns ON when connected.*

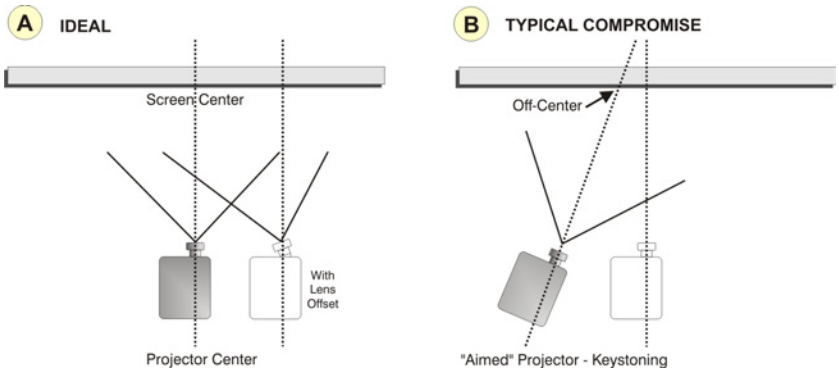
2.4 Position the Cinema Projector

⚠ WARNING

- **All installation procedures must be performed by a qualified technician in a restricted access location.**
- **Never operate the cinema projector without all of its covers in place.**
- **cinema 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 while handling the lamp. Lamp installation/replacement requires a qualified technician.**
- **Two people are required to safely lift and install the cinema projector.**
- **When transporting the cinema projector from a cold environment it is essential the cinema projector**
  acclimatizes to the operating environment before powering up for a minimum of three hours after unpacking. Failure to ensure the cinema projector has properly acclimatized could
  damage cinema projector electronics. This applies to the lamp as well. The lamp will be damaged if it is powered ON when below room temperature. Lamps should be stored between 25-65°C (77-149°F).

⚠ CAUTION Auto LampLOC™ must be run any time the cinema projector is physically moved or when it has been leveled.

1. An optional rack stand (P/N: 108-282101-xx) is available for use with the cinema projector. For installation instructions, see the ***Rack Stand Installation Instruction Sheet (P/N: 020-100060-xx)***.
   NOTES: 1) *When using the rack stand, the foot lock brackets are a mandatory safety measure to prevent the cinema projector from tipping.* **2)** *The rack stand's feet are used for leveling only and not for tilting the cinema projector. To prevent tipping ensure the required accessories supplied by Christie are used.*
2. Position the cinema projector at an appropriate throw distance (cinema projector-to-screen distance) and vertical position. Ideally, center the cinema projector with the theatre screen. If competing for space with an already present film cinema projector, aim the cinema projector slightly off-center, as shown in **.** This will slightly increase side keystoning, but will minimize the horizontal lens offset required. **NOTE***: Unlike film cinema projectors, it is best to keep the cinema 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.*
3. Once you have completed the remaining installation steps and the cinema projector is up-and-running, adjust precise image geometry and placement, as described in *4.3 Basic Image Alignment, on page 4-2*.



2.5 Adjust Tilt and Level the Cinema Projector

⚠ CAUTION Auto LampLOC™ must be run any time you move or level the cinema projector.

⚠ CAUTION Disconnect the cinema projector from AC when adjusting the tilt angle or leveling the cinema projector.

The CP2210 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 cinema 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 cinema projector feet to match this angle.

NOTE: *The front-to-back tilt of the cinema 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 cinema projector, extend or retract the adjustable feet on the bottom of the cinema projector by rotating them. Once the required adjustment is made, tighten the lock nut.

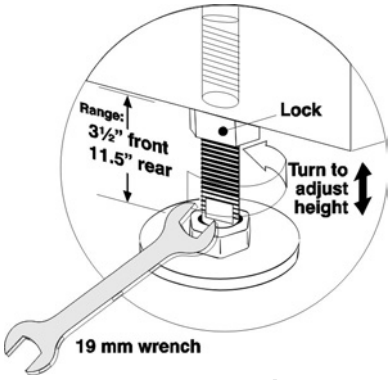


Figure 2-1 Adjusting

2.6 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 cinema projector.

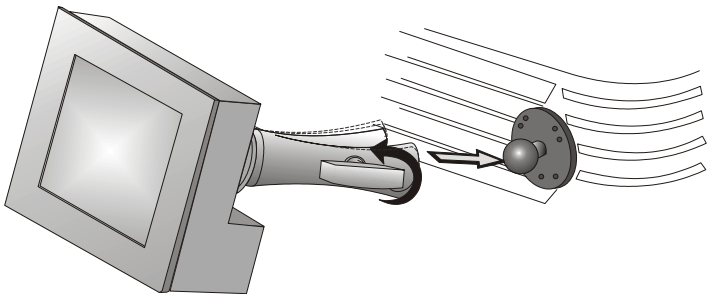


Figure 2-2 Loosen Mounting Arm

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

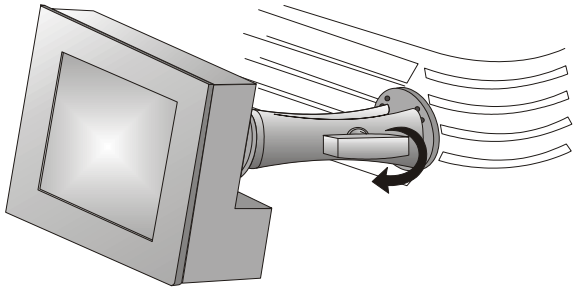


Figure 2-3 Tighten Mounting Arm

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

2.7 Connect Optional Exhaust Ducting

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

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

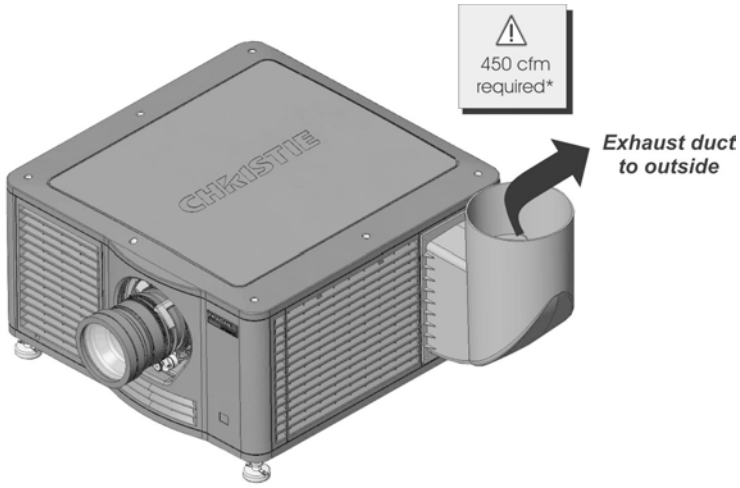


Figure 2-4 Connect Ducting

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

2.7.1 Determine the cinema 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 cinema projector. Take the measurement at the very end of the duct without the cinema projector connected. Use this formula to determine the CFM value for the cinema projector:

Measured linear ft/min x 0.34 = CFM

2.8 Install the Primary Lens

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

1. Turn the lens clamp to the OPEN position.

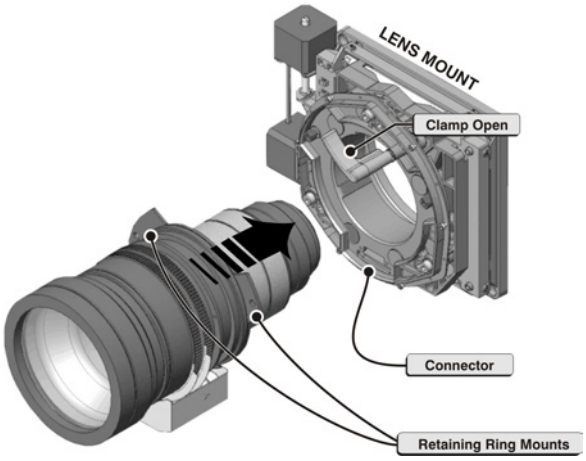


Figure 2-5 Insert Lens

2. Remove the two hex screws from the lens mount **2.9**.
3. Orient the lens so the lens retaining ring mounts line up with the lens mount.
4. Fully insert the assembly straight into the lens mount opening without turning. Magnets inside the lens mount help guide the lens into the correct position. A clicking sound indicates the lens has made contact with the magnets. These magnetic guides ensure the lens is properly seated inside the mount, that the aperture is orientated correctly and that the connector for motorized zoom and focus is properly connected.
5. Secure the two hex screws and position the lens clamp DOWN to lock the lens assembly in place.

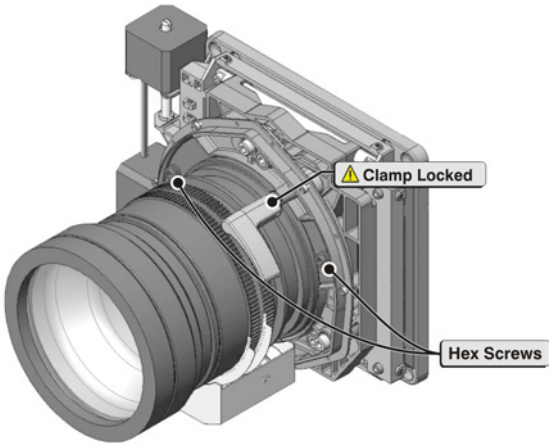


Figure 2-6 Lock Lens in Place

2.9 Install the Optional Anamorphic Lens

1. Install the M-MALM according to the instructions provided with the kit. Ensure the primary lens is optimized first for best optical alignment, offset and boresight.
2. Loosen the holding clamp on the auxiliary lens mount and adjust rotation of the whole anamorphic lens so the image remains perfectly square with anamorphic in and out.
3. Adjust location of anamorphic lens so the image does not shift left or right with the anamorphic lens IN and OUT.
4. Adjust location of anamorphic lens so the image passes through the center as much as possible without vignetting or reducing side or corner brightness, especially in wide angle projection.
5. With the anamorphic lens not in place, re-focus the primary lens. The goal is good focus at center and on all sides. Now add the anamorphic lens and check focus again.
6. If center-to-edge horizontal focus in the image needs improvement, focus the anamorphic lens - rotate its focus barrel as needed.

2.10 Install the Optional Wide Converter Lens

1. Install the Auxiliary Lens Mount and WCL according to the instructions provided with the kit. Ensure the primary lens is optimized first for best optical alignment, offset and boresight.
2. **Image shift:** Adjust the vertical and horizontal position of the WCL to align it with the already adjusted prime lens.
3. **Pitch Adjustment:** Adjust pitch, either up or down to equalize the top and bottom clearance to the prime lens barrel.
4. **Yaw Adjustment:** Adjust yaw so the clearance between both lens barrels is equal from side-to-side.

2.11 Install the Optional Motorized Auxiliary Lens Mount (MALM)

The M-MALM assembly is an optional hardware component, that you can use used to switch from flat to scope formats. The MALM is secured to the cinema projector base and supports either a 1.25x anamorphic lens or a 1.26x wide converter lens (WCL). A 9-pin subminiature D cable connected to the input panel is used to communicate with and control the MALM. For more information, see the ***Motorized Auxiliary Lens Mount (M-MALM) Installation Instruction Sheet (P/N: 020-100188-xx).***

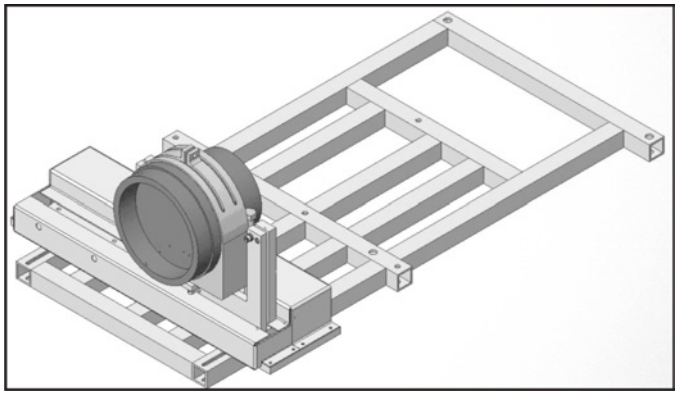


Figure 2-7 MALM

2.12 Install the Lamp

⚠ DANGER

- **Only personnel trained specifically by Christie on lamp replacement and lamp safety may handle the lamp. High-pressure lamp may explode if improperly handled.**

- **Always wear Christie approved protective safety clothing (P/N: 59-8900-095) whenever the internal lamp door is open or while handling the lamp.**
- **Never attempt to access the lamp while the lamp is ON. Wait at least 15 minutes after the lamp turns OFF before powering down, disconnecting from AC and opening the internal lamp door.**

⚠ CAUTION 1) Auto LampLOC™ must be run any time the lamp is removed (inspected or changed). 2) DO NOT place heavy objects on the open rear access door.

1. If the cinema projector is operating, turn it off and allow it to cool a minimum of 10 minutes.
2. Turn the breaker switch for the cinema projector off.
3. Disconnect the cinema projector from AC power.
4. Put on your protective clothing and face shield.
5. Use the security key to open the lamp door on the rear of the cinema projector.
6. Turn the two thumbscrews on the internal lamp door counterclockwise.
7. Install the lamp. See *6.8 Replace the Lamp, on page 6-4*.

Table 2.1 Lamp Types Available for CP2210

Lamp	Type
1.4kW	CXL-14M
1.8kW	CDXL-18SD
2.0kW	CDXL-20SD

2.13 Connect the Cinema Projector to AC Power

⚠ WARNING

- **DO NOT attempt operation if the AC supply and cord are not within the specified voltage and power range. See *Section 6 - Specifications from the CP2210 User Manual (020-100410-xx).***
- **Always turn the cinema projector off before unplugging the AC power cord. The appropriate ratings for the cinema projector are listed on the license label on the back of the cinema projector. Wait 15 minutes for the main exhaust fan to turn OFF and for the lamp to cool sufficiently before unplugging the cinema projector.**
- **Ground (earth) connection is necessary for safety. Never compromise safety by returning the current through the ground. Connect ground FIRST to reduce shock hazard from high leakage.**

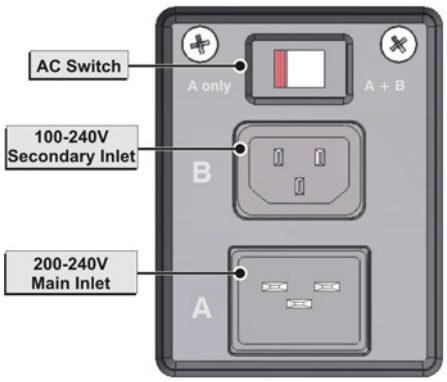


Figure 2-8 AC Receptacle

NOTICE! Use the power cord provided with the cinema projector. DO NOT compromise safety by using other connectors. For all other regions, ensure a power cord, power plug, and socket that meet the appropriate rating standards are used.

1. Connect one end of the cinema projector power cord to the AC receptacle on the rear of the cinema projector and the other end to an AC outlet.
2. Turn the AC switch to the left (**Figure 2-9**).

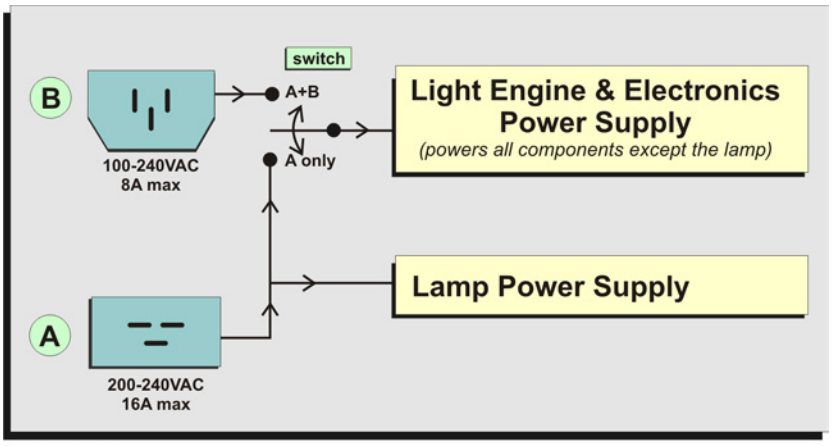


Figure 2-9 Connecting to Power

2.14 Connect Sources and Turn the Cinema Projector On

After you install the lamp, you can connect external cinema servers and sources. Before you ignite the lamp for the first time, use this procedure to ensure successful communication with input devices.

1. Assign the cinema projector a unique IP address and enter a baud rate:
   - Tap **Menu** > **Administrator Setup** > **Communications Configuration**.
   - Enter the IP address for the cinema 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. On the Touch Panel Controller (TPC), tap and hold the green power  icon
4. Complete a LampLOC™ alignment on the new lamp:
   - Tap **Menu** > **Advanced Setup** > **LampLOC™ Setup**.
   - Tap **Do Auto**.
5. On the TPC, tap and hold the light bulb  icon to ignite the lamp.
6. Complete an optical alignment to optimize images displayed on screen. See *Section 4.3 Basic Image Alignment.*
7. Adjust optical components if required.

3 Connect Devices to the cinema projector

This section provides information and procedures for connecting input devices to the cinema projector. You connect input devices to the input panel located on side of the cinema projector

3.1 Connect a Cinema Server

Cinema servers reside outside the cinema projector and are connected to one of the ports on the cinema Projector Intelligence Board (PIB) located on the left (operator's) side of the cinema projector. (**Figure 3-1**)

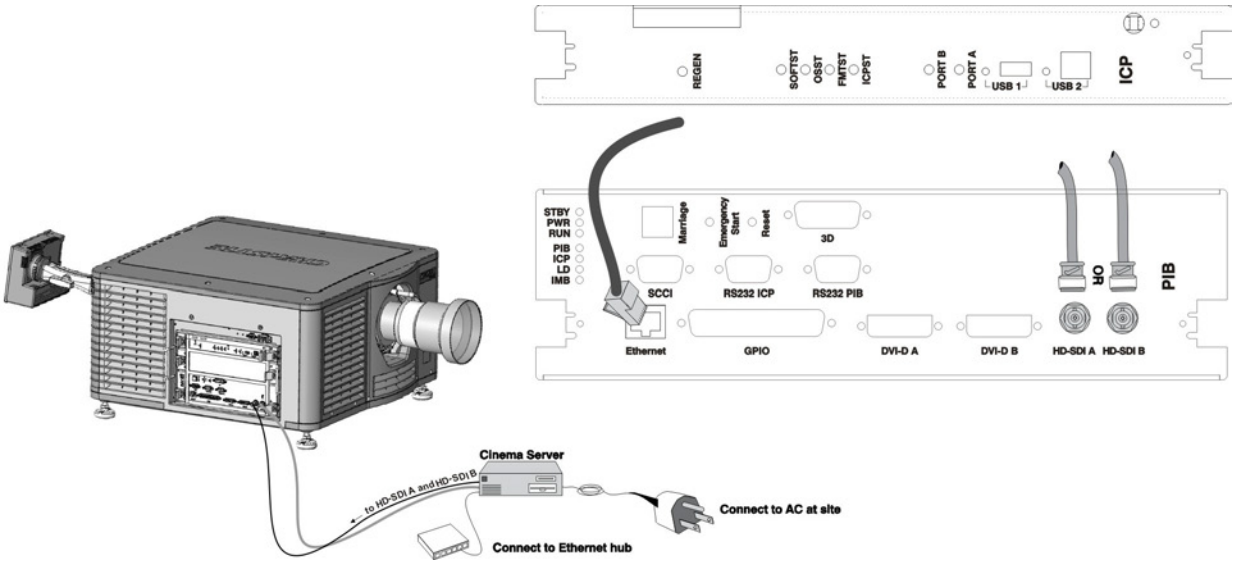


Figure 3-1 Connecting Cinema Sources

3.2 Connect a Communications Device

⚠ CAUTION The RS232 PIB port located on the PIB faceplate utilizes Christie-proprietary protocol and is intended for Christie accessories or automation controllers only.

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

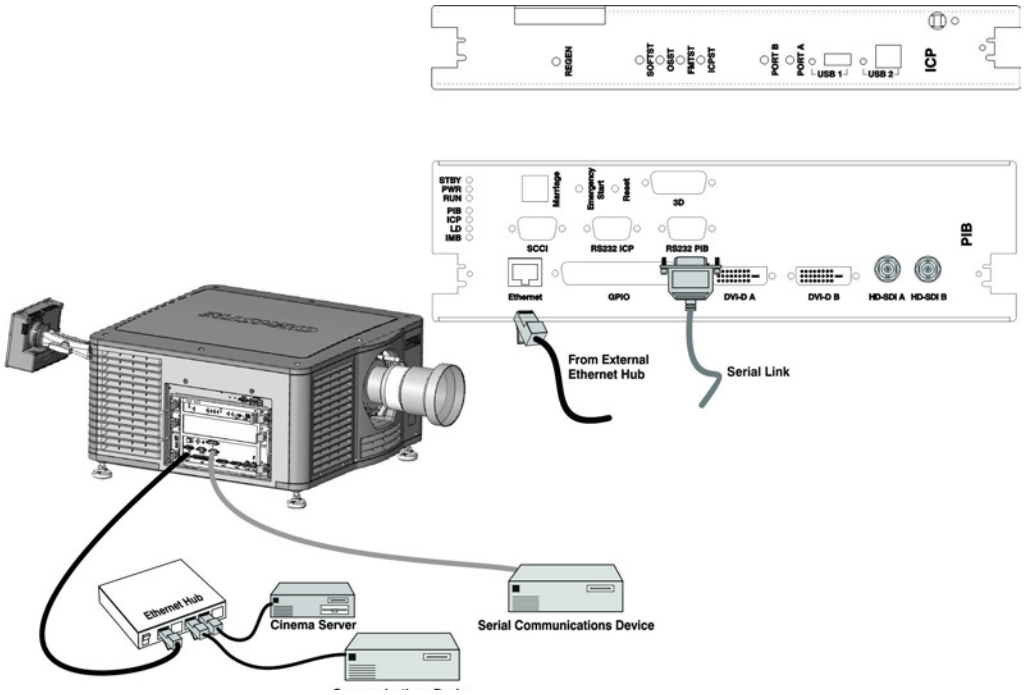


Figure 3-2 Connecting Communications

3.3 Connect 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 cinema 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	cinema projector at **Power On** mode, lamp is ON
3	+5V Standby	Out	Current limited 5VDC supply
4	Lamp OFF	In	cinema 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

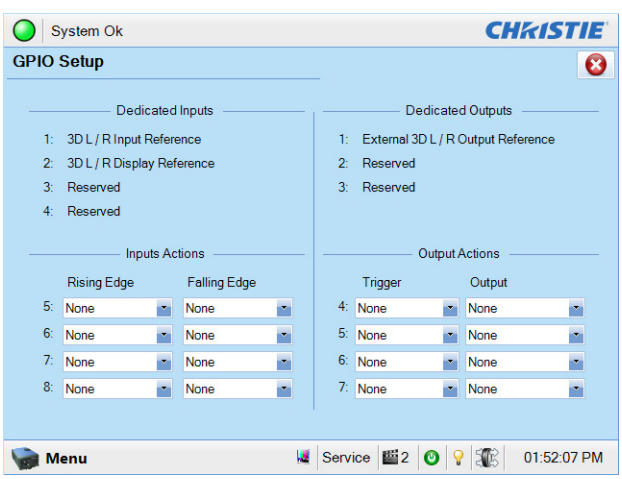
8	Health Output	Out	Open Collector Low when one of the following interlocks is tripped or conditions present: • Lamp Door • Lamp Blower • Extractor • Tamper • Marriage • Ballast Communication The show will not be able to play. Open Collector High when all interlocks relevant to CineLink and Lamp are 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 cinema projector Health Output. The output is an open-collector circuit which only draws power when the cinema projector is deemed to be "un-healthy". The primary use of the cinema projector Health Output is to ensure that patrons are not left in a dark theatre due to cinema 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 cinema projector is always considered to be "healthy" in Standby Mode since there is no fear of cinema projector fault causing an impact to patrons, and there should be no patrons in the theatre at that time.

3.4 Connect 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 cinema projector. To configure the pins on the connector, tap **Menu** > **Administrator Setup** > **GPIO Setup**.



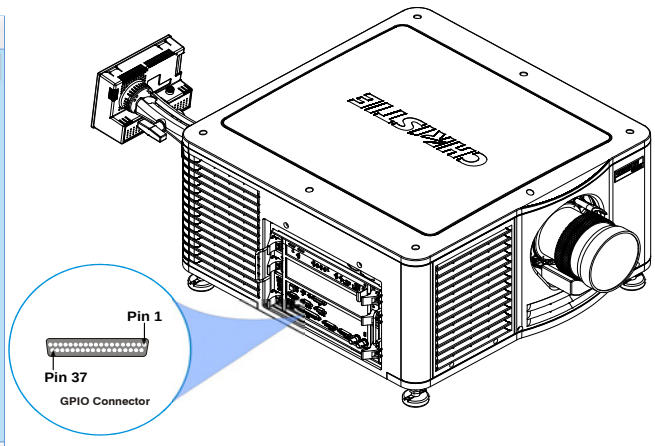


Figure 3-3 Admin: GPIO Setup Window and GPIO Port Location on cinema projector

As shown in the tables, 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 cinema projector to respond to an incoming signal, or as an output if you want an external device to respond to the cinema 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	cinema projector Good

This diagram illustrates how to wire your own GPIO cable to a server or 3D device such as an infrared emitter.

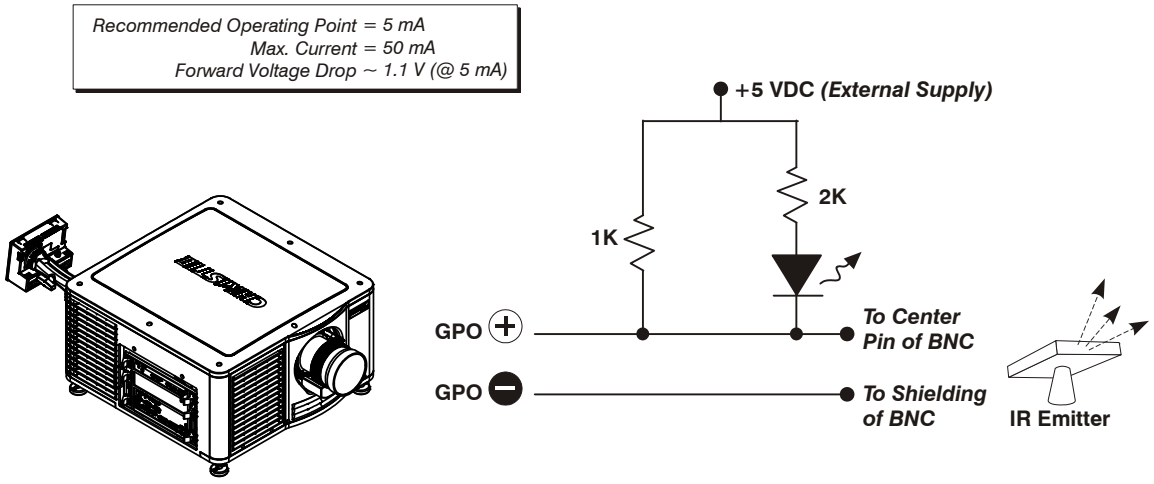


Figure 3-4 GPIO Circuit Diagram

3.5 Connect 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 cinema projector from 3D device. 1200 Baud, 8 bits, no parity. Currently unsupported.
5	RS232_TX	Out	Data to cinema projector from 3D device. 1200 Baud, 8 bits, no parity. Currently unsupported.
6	CONN_3D_MODE+	Out	SYNC from cinema projector. To cinema projector GPO collector. Compatible with current cinema 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 cinema projector. To cinema projector GPO collector. Compatible with current cinema projector GPIO requirements and restrictions. (24VDC max, 50mA max)
8	3D_INPUT_REFRERENCE+	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_REFRERENCE-	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 cinema projector. From cinema projector GPO emitter. Compatible with current cinema projector GPIO requirements and restrictions. (24VDC max, 50mA max)
14	CONN_SYNC-	Out	SYNC from cinema projector. From cinema projector GPO emitter. Compatible with current cinema 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 cinema 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 in the cinema projector. 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 lamp is on and the douser is open.
- A white test pattern is selected.

1. On the TPC, tap **Menu** > **Advanced Setup** > **LampLOC™ Setup**.
2. Tap **Do Auto**.

4.2 Calibrate Screen Brightness (fL)

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

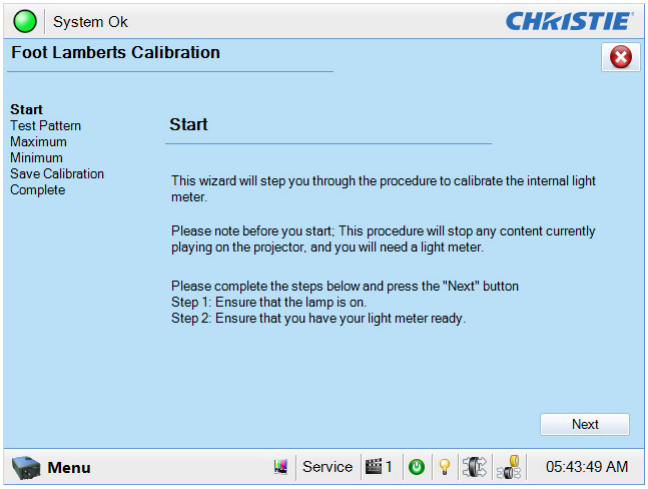


Figure 4-1 Footlamberts Calibration Wizard

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 CP2210 is properly positioned relative to the screen. See *2.4 Position the Cinema 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 cinema projector leveling so the top edge of the image is parallel to the top edge of the screen.

4.4 Adjust Offset

IMPORTANT! Ensure the correct lens is selected in the Advanced Setup: Lens Setup window before calibration to ensure you will remain within the applicable boundary of the installed lens when adjusting.

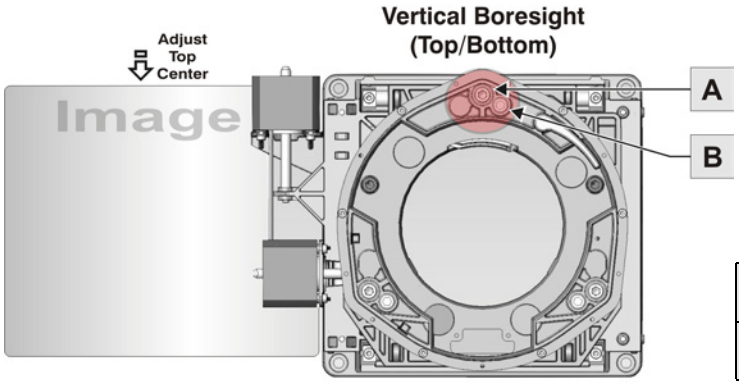
Project an image with the **primary lens**. Always adjust offset before boresight. Using the framing test pattern, adjust horizontal and vertical **Offset** as necessary to display a square image on the screen with minimal cinema projector aiming error. **NOTES: 1)** *For best optical performance, make sure to minimize keystone error by using offset more than aiming to center the image in off axis installations.* **2)** *Avoid extreme tilts or offsets. Corner vignettes on a white test pattern indicates extreme offset that should be avoided using mechanical alignment.*

4.5 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 cinema projector tilt, but also to precisely maintain the original factory settings of the lens mount axial position.

⚠ CAUTION Only adjust vertical boresight 1/8 of a turn or less at one time to maintain optimal lens performance (i.e. factory setup of absolute lens distance to the prism). It is critical that each turn of the cap screws is tracked to ensure adjustments are accurate.

It is recommended that top/bottom boresight be completed before horizontal boresight. **NOTE:** *Typically, horizontal boresight does not require adjustment. It should only be adjusted if a large horizontal angular offset to the screen is required.*



A	Cap Screw: Adjusts Top/Bottom Boresight
B	Set Screw: Locks/Unlocks Cap Screw

Figure 4-2 Top/Bottom Image Adjustment

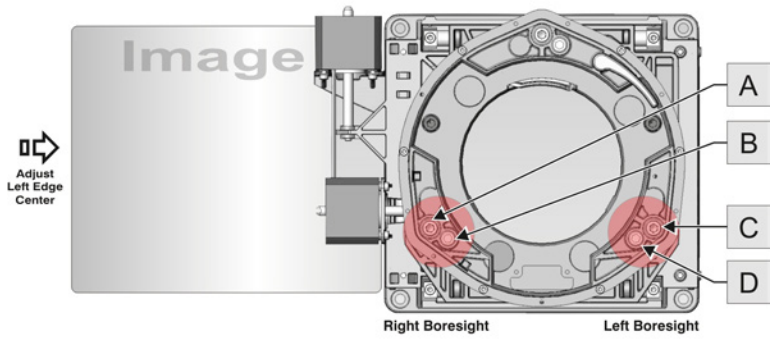
1. Tap the **Test Patterns** button on the **Main Panel**.
2. Tap **All Test Patterns**.
3. Tap **DC2K Framing**.
4. Loosen the set screw with a 5mm hex key. (**Figure 4-2/B**).
5. Turn the vertical adjust cap screw 1/8 of a turn counter-clockwise with the 5mm hex key. (**Figure 4-2/A**).
6. Adjust both left and right horizontal adjusters by half the number of turns, in the **opposite direction** of the vertical adjust (**Figure 4-3**). For example, if the vertical adjust cap screws was turned 1/8 of a turn, the left and right horizontal cap screws should be turned 1/16 of a turn in the **opposite direction**.
7. Check the screen. If the projected image is worse than before the adjustment was made turn the vertical adjust cap screw 1/8 of turn clockwise. Ensure the left and right horizontal adjusters are adjusted equally in the opposite direction to correct axial focus. **NOTE:** *The 1/8 of a turn is a suggestion only and can be less if needed; however, it should never be exceeded. Always compensate both left and right horizontal adjustments according to the vertical adjustment.*
8. Always observe the screen after each adjustment. If necessary, continue to make adjustments until both top and bottom are equally sharp. **Remember to adjust left and right horizontal adjusters in the opposite direction each time.** This ensures the lens is in the same relative position.
9. When the top and bottom of the image are equally in focus lock the set screw to hold that position. Recheck the image.
10. If fine tuning is required, focus the image at the left and right sides. See *4.6 Adjust Horizontal Boresight, on page 4-3*.

4.6 Adjust Horizontal Boresight

⚠ CAUTION Only adjust vertical boresight 1/8 of a turn or less at one time to maintain optimal lens performance (i.e. factory setup of absolute lens distance to the prism). It is critical that you count each turn of the cap screws to ensure accurate adjustment.

Horizontal boresight should only be adjusted if a large horizontal tilt to the screen is required

1. When top/bottom boresight is complete, adjust the image at the left and right sides of the screen.



A	Right Boresight Cap Screw
B	Right Boresight Set Screw
C	Left Boresight Cap Screw
D	Left Boresight Set Screw

Figure 4-3 Left/Right Image Adjustment

2. Tap the **Test Patterns** button on the **Main Panel**.
3. Tap **All Test Patterns**.
4. Tap **DC2K Framing**.
5. Loosen the right boresight set screw with a 5mm hex key. (**Figure 4-3/B**).
6. Turn the right adjust cap screw 1/16 of a turn clockwise with a 5mm hex key (**Figure 4-3/A**).
7. Adjust the left adjust cap screw **equally** in the opposite direction (**Figure 4-3/C**).
8. Check the screen. If the projected image is worse than before the adjustment was made turn the right adjust cap screw 1/16 of turn counter-clockwise. **Ensure the left adjuster is adjusted equally in the opposite direction.**
9. Check the screen each time an adjustment is made. The right-side adjustments affect the top right and bottom left points on the screen (**Figure 4-4)**. Once both cross hairs are in focus lock the set screw for right boresight.

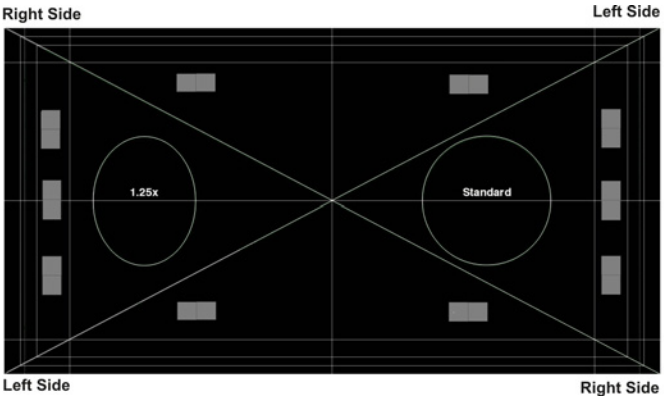


Figure 4-4 Example of Framing Test Pattern

10. Repeat Steps 5 to 7 for the left-side.
11. Each corner of the screen should be equally in focus when horizontal boresight is completed correctly. If necessary, repeat vertical boresight. Only adjust vertical boresight 1/8 of a turn or less at one time to maintain optimal lens performance (i.e. factory setup of absolute lens distance to the prism). It is critical that each turn of the cap screws is tracked to ensure adjustments are accurate.

4.7 Adjust DMD Convergence

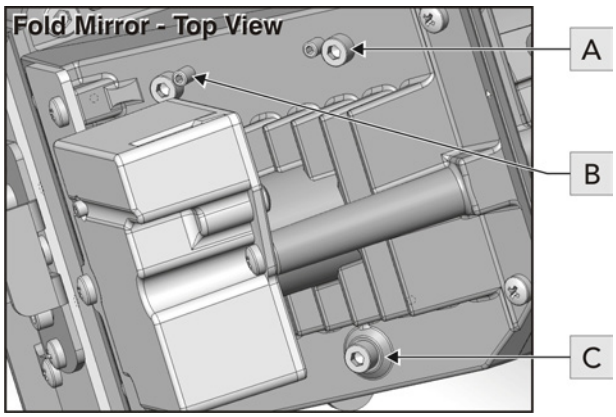
⚠ DANGER UV EXPOSURE! Protective UV glasses must be worn when performing convergence adjustments.

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.

4.8 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:

1. Unlock the two set screws with a 1.5mm hex key (**Figure 4-5/B**).
2. Turn the pivot screw 90-180° using a 2.5mm hex key (**Figure 4-5/C**).
3. Adjust both cap screws with a 2.5mm hex key (**Figure 4-5/A**).
4. Tighten the two set screws and pivot screw when you have aligned the fold mirror correctly.



A	Cap Screw (1 of 2)
B	Set Screw (1 of 2)
C	Pivot Screw

Figure 4-5 Fold Mirror Adjustment

4.9 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.

4.10 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 cinema projector. After you create the Flat and Scope screen files you can use them in multiple channels. To learn more about accessing channels, see Channel Setup: Config 1 Window. To learn more about creating screen files, see Advanced Setup: Screen File Setup Window.

5 Operation

This section describes how to operate the CP2210 cinema projector.

5.1 Turn the Cinema Projector On

⚠ WARNING DO NOT attempt to turn the cinema projector on if the AC supply is not within the specified voltage range.

1. Ensure the circuit breaker for the cinema projector is 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 Cinema 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 cinema projector enters a cool down mode and the fans and electronics stay on for 10 minutes. After this cool down period, the cinema projector enters standby mode.
3. If you are servicing the cinema 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 cinema projector. You can use the TPC to turn the cinema projector and lamp on or off, select channels, and view status information. The TPC is mounted on the rear of the cinema 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 cinema projector and an optional cable allows you to control the cinema 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 cinema projector, turns the lamp on, and opens the douser.

6 Maintenance

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

6.1 Inspect Ventilation

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

6.2 Fill the Coolant Reservoir

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

⚠ WARNING Only use coolant recommended by Christie in your cinema projector. Using unapproved coolant can result in cinema projector damage and voids the cinema 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 cinema 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 cinema 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 nearby 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 Optional Exhaust Duct (P/N: 119-103105-xx)

Check the exhaust duct periodically to ensure it is clean and unobstructed.

6.4 Inspect the Lamp

⚠ DANGER Always disconnect from AC 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.

6.5 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.

6.5.1 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. Wrap a lens tissue around a swab and soak it in lens cleaning solution. The tissue should be damp but not dripping.
3. Gently wipe the surface using a figure eight motion. Repeat until the blemish is removed.

6.5.2 Clean the Lamp Reflector

Inspect the mirror surface (reflector) for cleanliness when you remove the lamp for replacement. Wear protective clothing while inspecting or cleaning. Color variations on the reflector are normal.

Remove Dust

1. Brush most of the dust off with a camelhair brush or use a dust-free blower.
2. If some dust remains, leave it. Some dust is inevitable. Avoid unnecessary cleaning.

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.

6.6 Clean the Radiator Filter

Inspect the filter routinely and follow this procedure to clean it when it appears dirty.

1. Remove the top lid:
   a. Loosen the 7 captive screws securing the top lid to the cinema projector housing.
   b. Unlock the rear access door using the low security key.
   c. Lift the lid up from the rear of the cinema projector and pull it away from the 2 tabs on the front skin.
2. Remove side skin service door:
   a. Remove the 2 screws from the inside of the door.
   b. To remove the door disengage the skin from the 2 snap tabs.

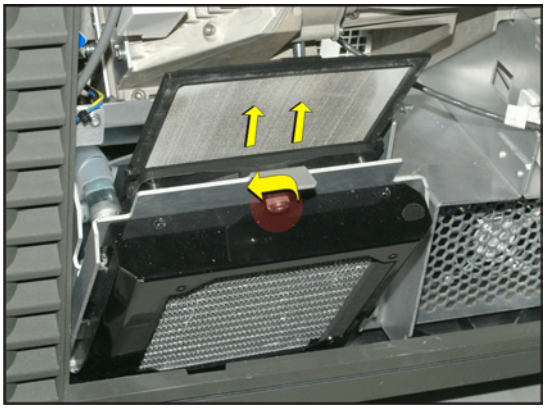


Figure 6-1 Remove Radiator Filter

3. Remove the radiator filter:
   a. Loosen the thumbscrew securing the radiator filter door.
   b. Pull the filter up and out.
   c. Wash the radiator filter with water and a mild detergent or clean it with compressed air.
   d. Ensure the air filter is completely dry and insert it with the air flow indicator facing toward the cinema projector.
4. Reinstall the service door and the top lid.

6.7 Inspect and Clean 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 possible overheating and lamp failure of the lamp.

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

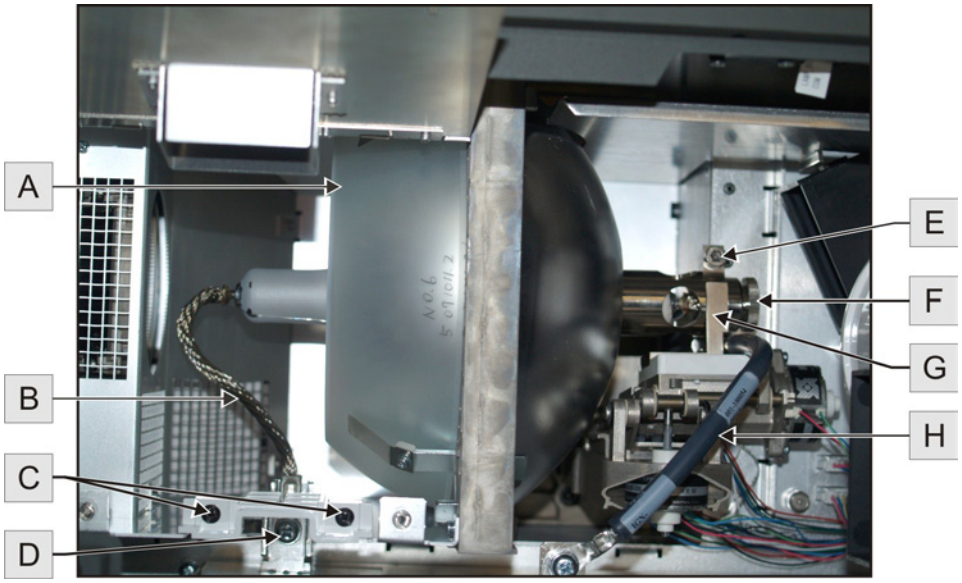
6.8 Replace the Lamp

⚠ DANGER 1)Lamp replacement must be performed by a qualified service technician. 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 cinema 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 before replacing it.

⚠ WARNING Improper installation of the lamp can damage the cinema projector.

1. Tap and hold the red power button  on the TPC **Main** panel to turn the lamp and cinema projector off.
2. Allow the lamp to cool for a minimum of 10 minutes.
3. Unplug the cinema 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 old lamp and inspect the reflector:
   a. Remove the 2 captive screws securing the isolator (**Figure 6-2/C**).
   a. Remove the screw securing the anode wire with a 5mm hex key. (**Figure 6-2/D**).
   b. Loosen the cathode screw (**Figure 6-2/E**) on the rear access nut (**Figure 6-2/F**).
   c. Hold the lamp from the anode end and carefully unscrew and remove the cathode nut (**Figure 6-2/F**).
   d. Hold the lamp from the anode end and carefully slide out ensuring not to make contact with the reflector.
   e. With your free hand guide the cathode end out of the reflector, on an angle.
   f. Before placing the old lamp into the protective case ensure the cathode nut is reinstalled. Place the lamp, within the case, 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 local area safety regulations.**

g. With the lamp removed, visually inspect the reflector for dust. If necessary, clean the reflector.



A	Reflector
B	Anode Wire
C	Isolator Screws
D	Anode Nut
E	Cathode Screw
F	Cathode Nut
G	Cathode Clamp
H	Cathode Wire

Figure 6-2 Lamp Assembly

7. Remove the new lamp from the protective case. **NOTE:** *Before removing the lamp from the case loosen the cathode screw and remove the cathode nut from the lamp*.
8. Install the new lamp:

⚠ CAUTION 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. Check leads. Ensure the anode (+) lead between the lamp and igniter is well away from any cinema projector metal, such as the reflector or firewall.

a. Remove the cathode clamp from the lamp before removing it from the case.
b. Hold the anode end of the lamp in your left hand and angle it up through the hole in the back of the reflector assembly. Insert your right index and middle finger through the back front of the reflector and guide the lamp onto the cathode clamp. **Be careful** not to hit the lamp against the reflector.
c. Thread on and hand-tighten the cathode nut. Ensure the smooth portion of the nut is against the cathode clamp.
d. Tighten the cathode screw (**Figure 6-2/E**) onto the cathode end of the lamp with a hex key.
e. Align the ring terminal on the anode wire (**Figure 6-2/B**) with the mounting position (**Figure 6-2/D**), ensuring the crimped side of the wire is facing out. Tighten the anode screw. **NOTE:** *Route anode lead away from nearby metal surfaces.*

9. Close the internal lamp door and manually turn the 2 thumbscrews to lock it in place.
10. Close the rear access door. **NOTE:** *Ensure the hex key is placed back into its holder before closing the rear access door.*

11. **Software Adjustments**. In the **Advanced Setup: Lamp History** window, tap 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. Tap **Save** to save the data entered (**Figure 6-3**).

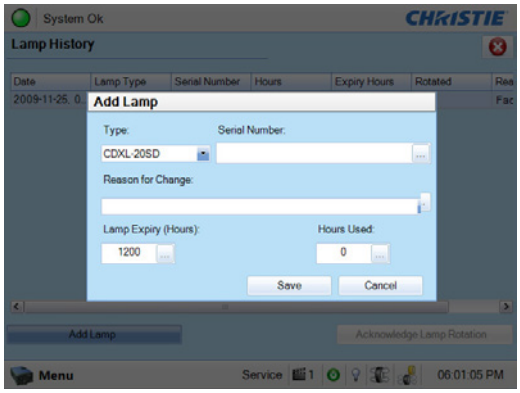


Figure 6-3 Add Lamp Window

12. **Power the Lamp ON**. Tap  from the TPC Main panel to turn the lamp ON.

13. **Adjust LampLOC™**. Immediately adjust lamp position (LampLOC™) via **Advanced Setup: LampLOC™ Setup** window. By adjusting lamp position, you can achieve optimized light output by centering the lamp with the reflector and obtaining correct distancing from the center of the illumination system.

6.9 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 cinema 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 cinema projector off.
2. Allow the lamp to cool for a minimum of 10 minutes.
3. Unplug the cinema 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 cinema projector on.
11. Tap **Menu** > **Advanced Setup** > **Lamp History**.
12. Tap **Acknowledge Lamp Rotation**.

6.10 Replace the Air Filter

⚠ CAUTION Use only high efficiency Christie approved filters. Never operate the cinema 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 cinema projector in a dusty or dirty environment. The filter is located on the right side of the cinema projector behind the air filter cover.

1. Loosen the 2 captive screws on the bottom of the filter cover. (**Figure 6-4**)
2. Pull the cover out and down.
3. Slide the air filter out and discard. Insert the new air filter with the airflow indicator facing toward the cinema 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.*
4. Install the air filter cover by inserting the 2 bottom tabs and then snapping the door closed.
5. Tighten the 2 captive screws.

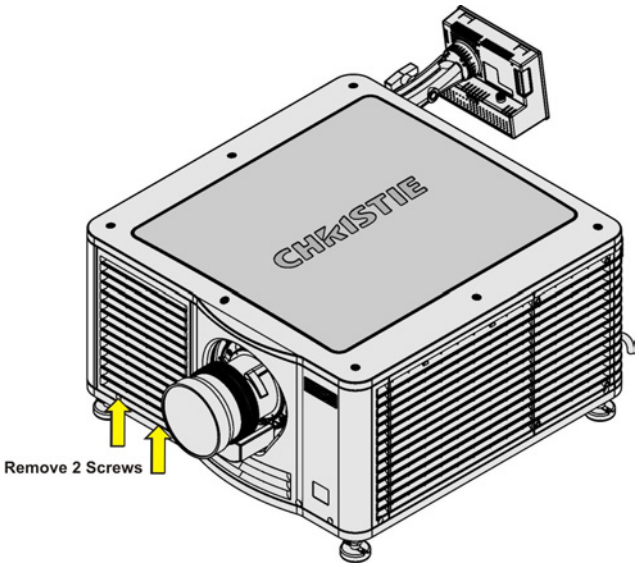


Figure 6-4 Remove Light Engine Air Filter

6.11 Replace the Lens

1. Tap and hold the red power button on the TPC **Main** panel to turn the lamp and cinema projector off.
2. Allow the lamp to cool for a minimum of 10 minutes.
3. Unplug the cinema projector.

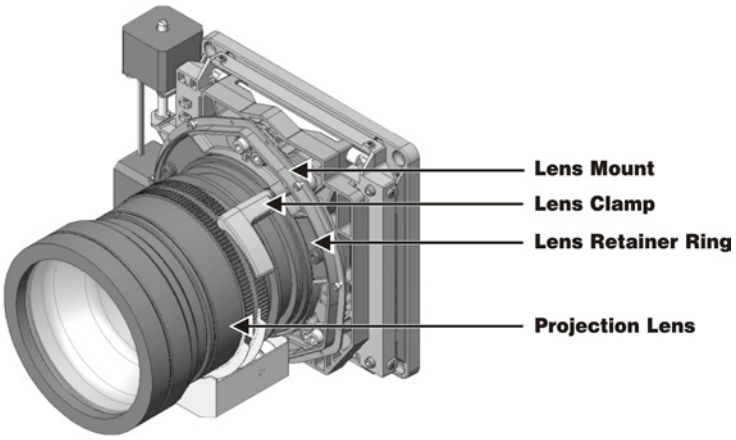


Figure 6-5 Lens Assembly

4. Install the lens cap and release the lens clamp by pushing it up (**Figure 6-6**).

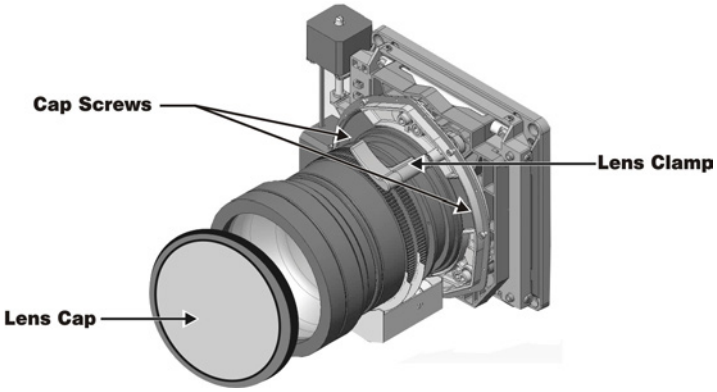


Figure 6-6 Release Lens Clamp

5. If necessary, remove the 2 cap screws securing the lens to the lens mount using a 5mm hex key (**Figure 6-6**). The cap screws are only needed when the cinema projector is ceiling mounted.
6. Pull the lens out of the lens mount. The lens, motorized zoom and focus connectors disconnect when the lens is pulled straight out of the mount.
7. Remove the small rear cap. Keep the front cap on.
8. Align the mounts on the lens connector with the lens mount. Insert the lens until it connects with the magnets on the mount. Once the lens makes contact with the magnetic plates it will be seated correctly and the connector for motorized zoom and focus will be properly connected (**Figure 6-7**).
9. Secure the lens clamp by pushing it down to the closed position.

10. For added stability, secure the cap screws provided on the lens mount. If you have installed a large zoom lens, one or more of the screws may be inaccessible - simply tighten those that are accessible.
NOTE: *Recommended for heaviest lenses, such as 0.8:1 and 1.3-1.75:1.*

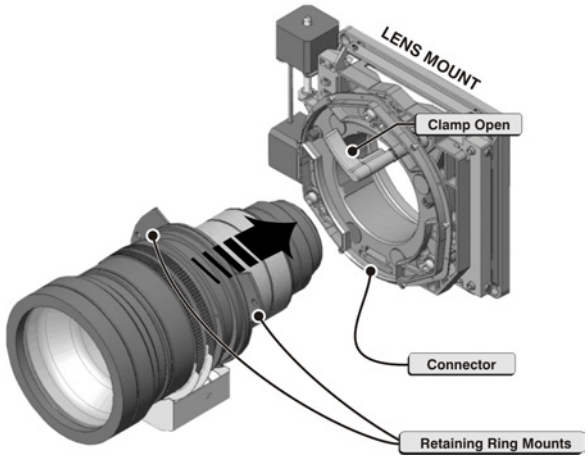


Figure 6-7 Install Lens

7 Troubleshooting

If the cinema projector does not appear to be operating properly, note the symptoms and use this section as a guide. If the problem can not be resolved, contact your dealer for assistance. **NOTE:** *A qualified service technician is required when opening an enclosure to diagnose any "probable cause".*

7.1 Cinema Projector Does Not Turn On

- Verify the wall circuit breaker is on. If there is a problem with the wall circuit breaker turning off, contact a certified electrician.
- Check the status of the LEDs on the rear corners of the cinema projector.
- Verify the LVPS has power by looking through the non-operator's side front access panel. One LED should be present in the lower middle region. (**Figure 7-1**)

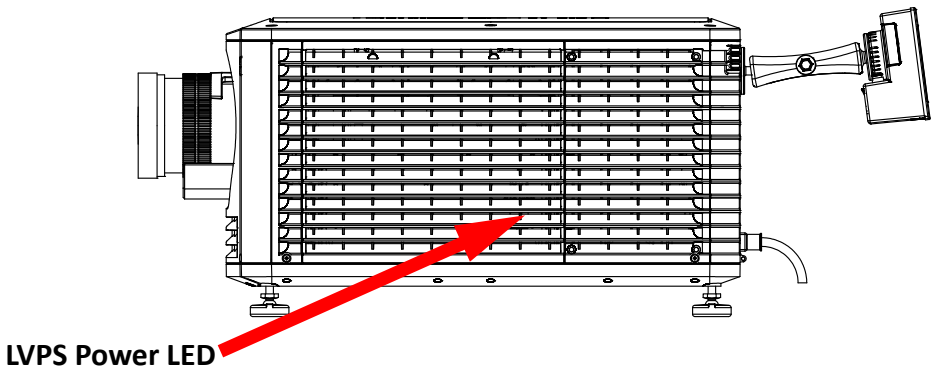


Figure 7-1 View Power Status LEDs

- On the TPC, verify in the **Operational Status** region of the **Main** panel does not indicate a PIB failure.

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 cinema 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 cinema projector. Ensure the cinema 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.

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 cinema projector. Ensure the cinema 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.

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.

7.7 TPC

- If the TPC fails to initialize, restart the cinema 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 locations of button presses on the screen are misinterpreted, the TPC screen may need recalibrating. Tap **Menu** > **Administrator Setup > Preferences**. Tap **Calibrate Screen** and follow the onscreen instructions.

7.8 Cannot Establish Communication with cinema 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 still OK.
- Ensure the douser is **OPEN** by verifying the state of the douser on **Main** panel.
- 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 selected.

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 cinema 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 cinema projector to receive the decryption keys from the server. If the cinema 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 cinema 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 cinema 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 cinema projector meet the minimum requirements.
- Add signal amplification or conditioning if the distance between the input device and the cinema projector exceeds 25 feet.

7.16 Display has Suddenly Frozen

Turn off the cinema projector and unplug the power cord from the power source. Plug the cinema projector power cord into a power source and turn the cinema 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 cinema projector is On, but There is No Display

- 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, refer to *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 Unstable

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