

CP2210



User Manual

020-100410-08

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020-100410-08

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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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.

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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 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 Labels and Marking

These warning labels can appear on the cinema projector:

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

⚠ WARNING Indicates a hazardous situation that 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.*



The exclamation point within the 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 clothing 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 [Appendix A: Specifications](#).

1.3 Power Warnings

⚠ WARNING

- 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, refer to Section 6 Specifications.
- 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.
- DO NOT attempt operation if the AC supply is not within the rated voltage range, as specified on the license label.
- Disconnect cinema projector from AC before opening any enclosure.

⚠ CAUTION

- DO NOT allow anything to rest on the power cord. Locate the cinema projector where the cord cannot be damaged by persons walking on it or objects rolling over it. Never operate the cinema projector if the power cable appears damaged.
- DO NOT overload power outlets and extension cords as this can result in fire or shock hazards.
- 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.

1.3.1 Power Cords and Attachments

⚠ WARNING The North American rated line cord is provided with each cinema projector. Ensure that you are using a line cord, socket and power plug that meets the appropriate local rating standards. 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.

To avoid the risk of fire, shock, or personal injury, use only the attachments and accessories recommended by Christie.

1.4 Lamp Precautions

Lamps used in the cinema 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 the Christie Protective Clothing Safety Kit #598900-095.

⚠ DANGER Lamp may explode causing bodily harm or death. 1) Always wear protective clothing whenever the lamp door is open or while handling the lamp. 2) Ensure those within the vicinity of the cinema 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 turning the cinema projector off, disconnecting it from a power source, and opening the lamp door.

1.5 Contact Your Dealer

If you encounter a problem with your Christie cinema projector, contact your dealer. 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 explains how to install, connect, and optimize the cinema projector display.

2.1 Cinema Projector Components

The cinema projector includes these components:

Air Filter Cover and Air Filter

Filters the intake air before it circulates in the front compartment to cool the main electronics.

Douser

Closing the douser rotates a shutter blade in front of the illumination system and reduces lamp power to conserve lamp life.

Adjustable Feet

Adjusts the tilting angle of the cinema 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 cinema projector is designed to operate with 2.0kW, 1.8kW and 1.4kW lamps. See [Appendix A: Specifications](#) for a complete list of available lamp types.

LED Status Indicators

Provide information about the status of the cinema projector. See [5.4 Cinema Projector LED Status Indicators](#) for information about cinema projector status.

Motorized Auxiliary Lens Mount

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 this cinema projector. See the [Appendix A: Specifications](#) for a list of available lenses.

Security Locks

Prevent unauthorized access to cinema projector components

PIB Faceplate Connections

- **10Base-T/100Base-TX Ethernet:** Connects the cinema projector to a network.
- **GPIO:** Connects the cinema projector to external input and output devices, such as the Christie ACT. See [3.4 Connecting Devices to the GPIO Port](#) for GPIO pinouts.
- **SCCI:** A Simple Contact Closure Interface (SCCI) port that uses a simple dry contact closure to turn the lamp on or off or open or close the douser. See [3.3 Connecting Devices to the SCCI Port](#) for SCCI pinouts.
- **RS232 ICP:** For direct DLP communication. Trained users required.
- **RS232 PIB:** Connects the cinema projector to 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:** Allows the cinema projector to display encrypted content.
- **Emergency Start:** Starts the cinema 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 cinema projector electronics. If the cinema projector is in standby mode, it returns to standby mode after the reset. If the cinema projector is in any other state, the cinema projector is on and the lamp is off following the reset.
- **DVI-A / DVI-B:** 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 cinema projector to high-definition cinema sources. 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.
- **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) 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, active source present.

Touch Panel Controller (TPC)

The TPC is a touch-sensitive screen that you use to control and monitor the status of the cinema projector. It is mounted on the rear of the cinema projector and you can use the flexible connection to adjust the viewing angle.

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

2.2 Position the Cinema Projector

⚠ WARNING 2 people are required to safely lift and install the cinema projector.

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

1. If you are installing the cinema projector in the optional rack stand (P/N 108-282101-xx) follow the instructions provided with the rack stand to install it.

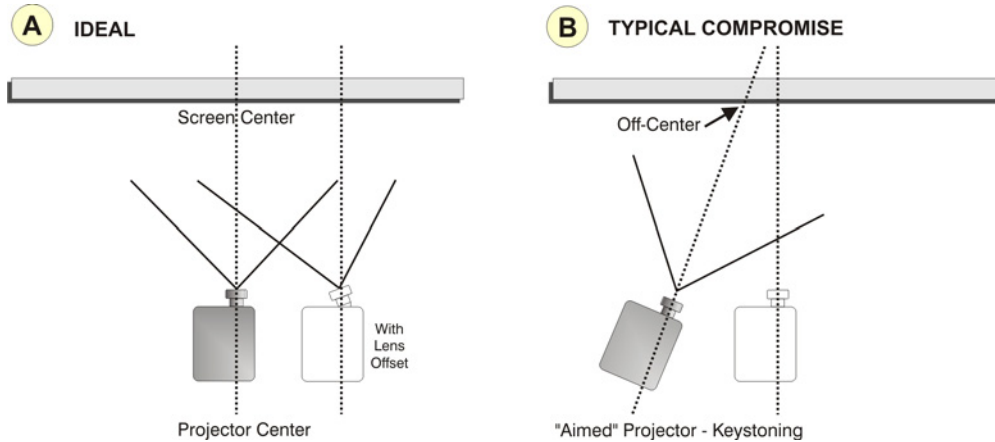
NOTES: **1)** For better access, wire the LPS before installing it into the rack stand. **2)** Use the hold down clamp (P/N 116-100101-01) when securing the cinema projector to the rack stand.

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 space is limited, you can aim the cinema projector slightly off-center. This increases side keystoneing, but reduces the horizontal lens offset required.

NOTE: Keep the cinema projector lens 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 key-stone distortion.

- 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](#).



2.3 Adjust Tilt and Level the Cinema Projector

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

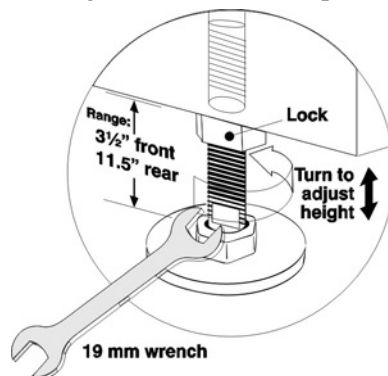
⚠ CAUTION Disconnect from AC for these alignments. Images are not yet needed.

The lens should be centered and parallel with the screen to ensure optimum lens performance with minimal offset. If this position is not possible, 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.

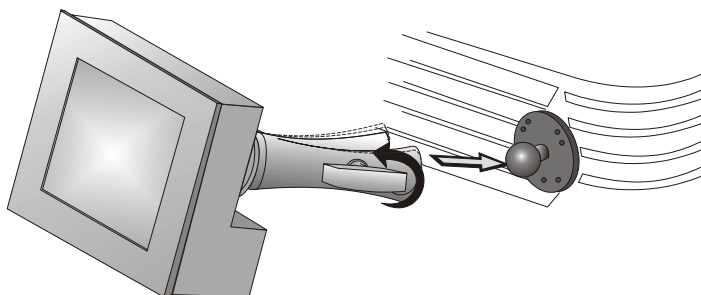
NOTICE: The front-to-back tilt of the cinema projector must not exceed 15°. This limit ensures safe lamp operation and the proper positioning of the liquid cooling reservoir.

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.

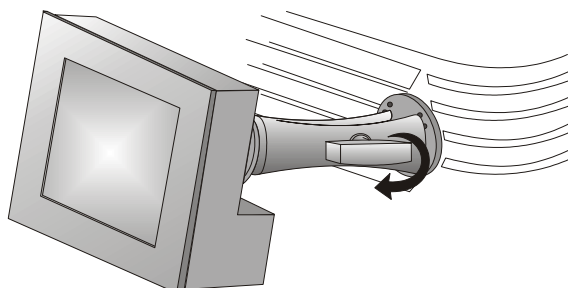


2.4 Install the Touch Panel Controller

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



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



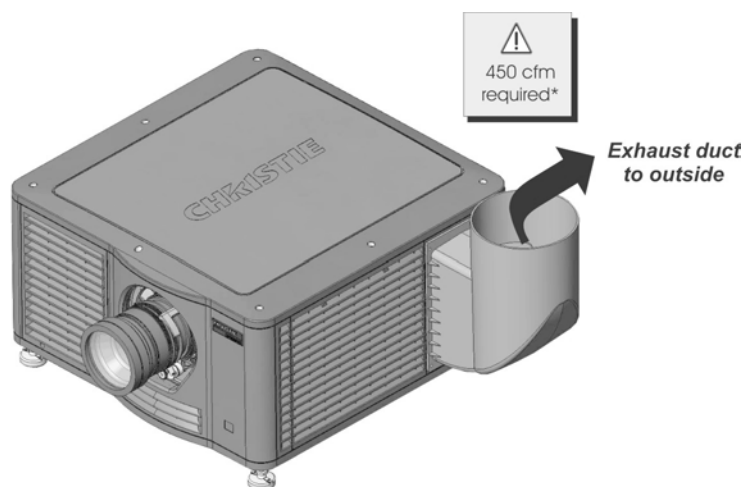
3. Connect the cable from the TPC to the connector on the rear panel of the cinema projector.
4. Adjust the angle of the TPC.

2.5 Connect Optional Exhaust Ducting

If the room the cinema projector is installed in is not equipped to ventilate up to 11,000 BTU (per hour) you must install the optional duct (P/N: 119-103105-xx).

Connect the pre-existing external venting ductwork to the optional duct on the side 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, when measured at the cinema projector exhaust opening.



2.5.1 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:

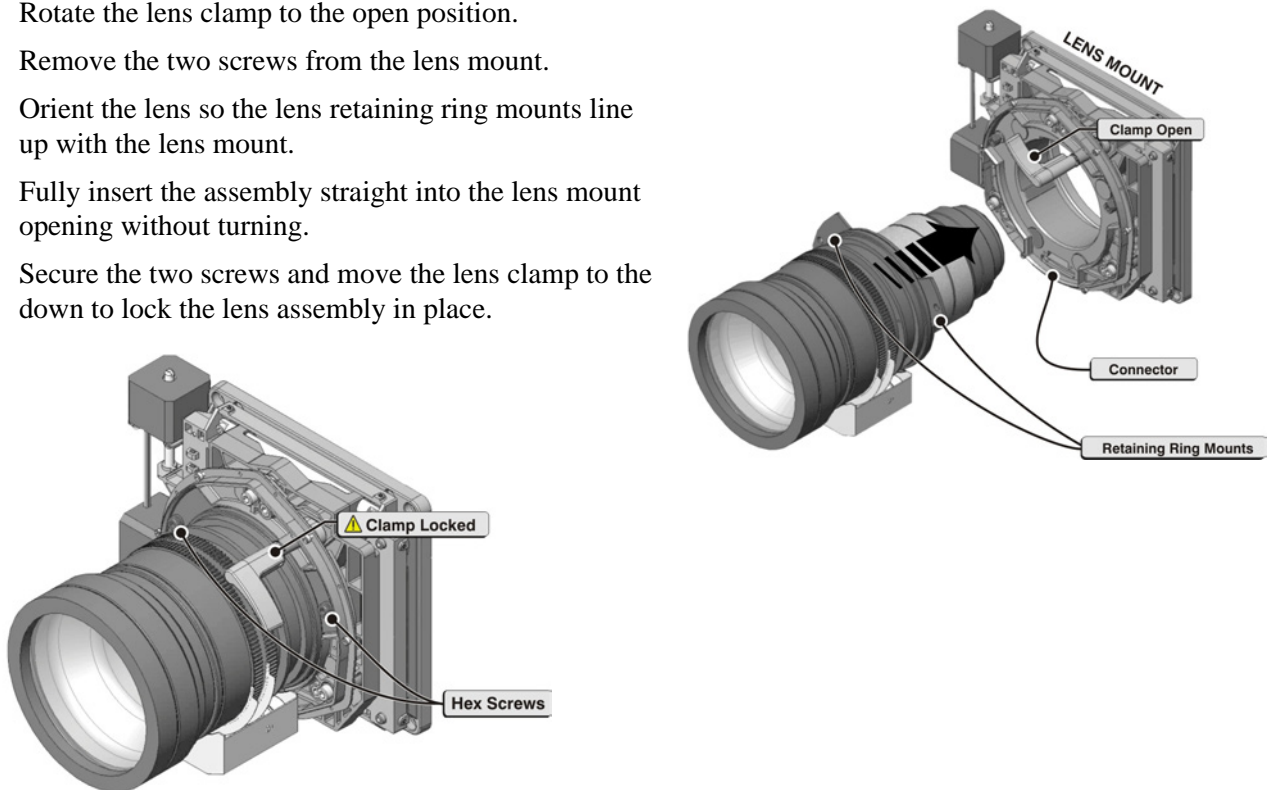
Measured linear ft/min x 0.35 = CFM

Add an extractor or a booster if there is insufficient airflow. Do not mount the extractor on the cinema projector as this may introduce some vibration into the image.

2.6 Install the Primary Lens

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. Rotate the lens clamp to the open position.
2. Remove the two screws from the lens mount.
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.
5. Secure the two screws and move the lens clamp to the down to lock the lens assembly in place.



2.7 Install the Optional Anamorphic Lens

1. 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.
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.

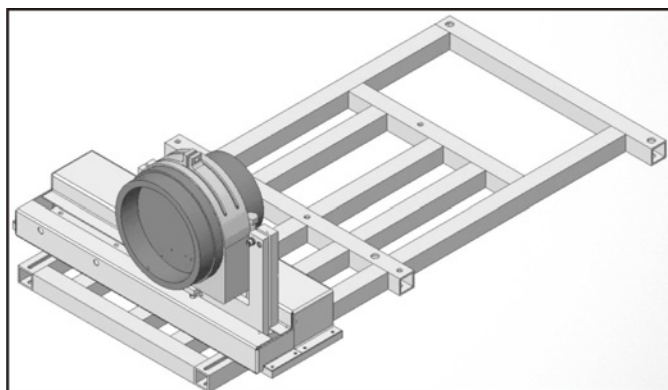
5. Adjust the location of the anamorphic lens so the image passes through the center as much as possible without vignetting, reducing side or corner brightness, especially in wide angle projection.
6. Remove the anamorphic lens and turn the Focus knob to re-focus the primary lens. The goal is for good 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.

2.8 Install the Optional Wide Converter Lens

1. Optimize the primary cinema 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.

2.9 Install Optional Motorized Auxiliary Lens Mount

The M-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 User I/O panel. For details, refer to the *Motorized Auxiliary Lens Mount (M-ALM) Installation Instruction Sheet* (P/N: 020-100188-xx).



2.10 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 the lamp door is open or when handling the lamp.

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.

Section 2: Installation and Setup

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. Turn the 2 thumbscrews on the internal lamp door counterclockwise.
7. Install the lamp. See [7.8 Replace the Lamp](#) for lamp installation instructions.

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

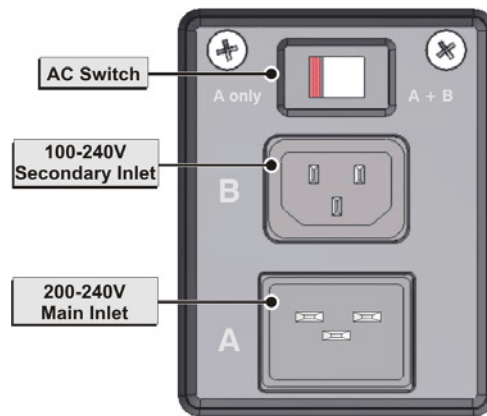
2.11 Connect Power

In countries such as Norway, a dedicated, protected earth wire must be installed on the cinema projector before it can be connected to an IT power distribution system. You must use a 20A branch circuit breaker for Input A. See [Connect the Cinema Projector to an IT Power Distribution System](#).

Do not operate the cinema projector if the AC power supply and power cord are not within the specified voltage and power range. Only use the power cord supplied with the cinema projector.

Connect one end of the cinema projector power cord to the AC receptacle on the lower-left rear corner of the cinema projector and then connect the other end of the power cord to an AC receptacle.

If you are using an Uninterrupted Power Supply (UPS) to power the main electronics, move the AC switch to A + B and connect the power cord provided with the UPS to the B outlet.



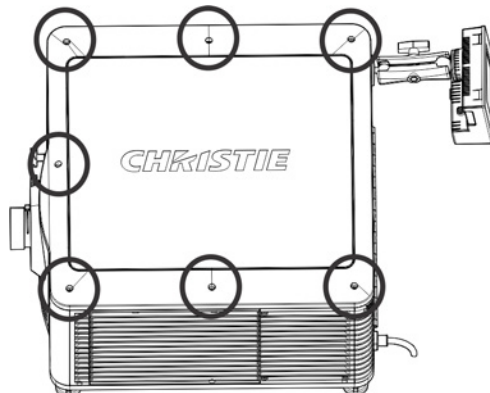
2.11.1 Connect the Cinema Projector to an IT Power Distribution System

In countries such as Norway, a dedicated, protected earth wire must be installed on the cinema projector before it can be connected to an IT power distribution system. You must use a 20A branch circuit breaker for Input A.

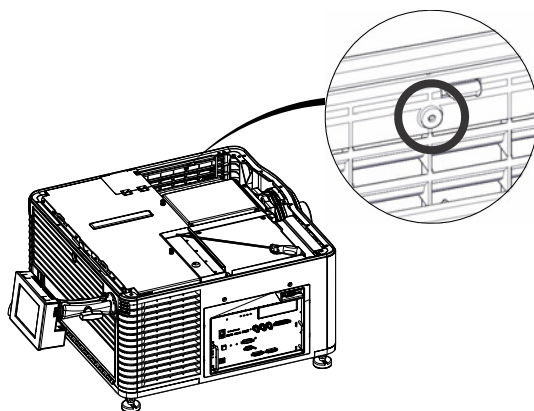
⚠ WARNING The dedicated earth wire can only be installed by a Christie accredited service technician or an electrician. The protected earth wire must be green/yellow 12 AWG minimum. See [Projector Specifications](#) for power requirements.

1. If the cinema projector is operating, turn it off and disconnect it from AC power.

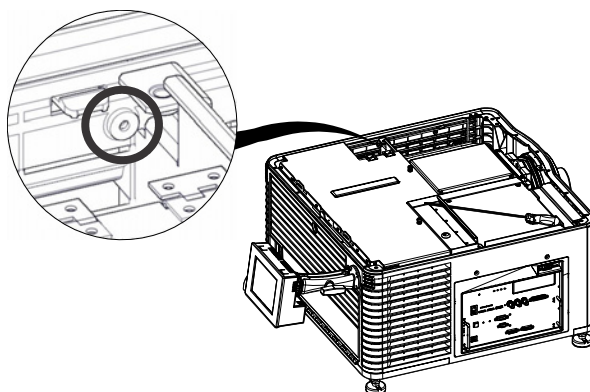
2. Remove the top lid of the cinema projector:
 - a. Loosen the 7 screws that secure the top lid to the cinema projector.



- b. Lift the lid up from the rear of the cinema projector and set it aside.
3. Remove the service door:
 - a. Reach into the cinema projector and remove the first service panel screw.

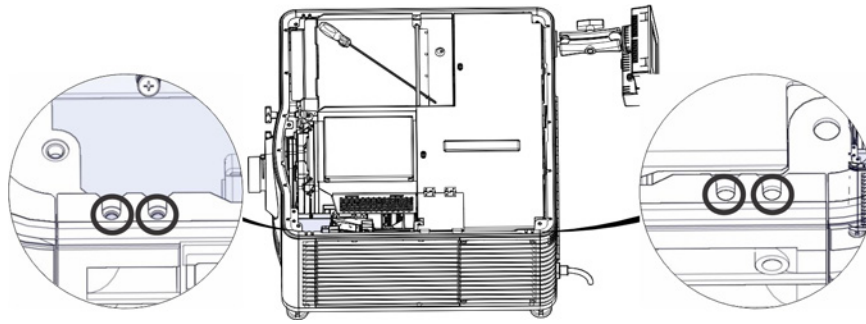


- b. Open the integrator rod access door and remove the second service panel screw.

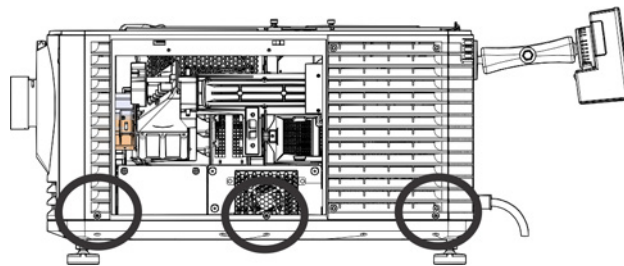


- c. Push the clips on the top of the service panel down and out to remove the service panel.

4. Remove the 4 screws securing the side skin to the top of the cinema projector structure.



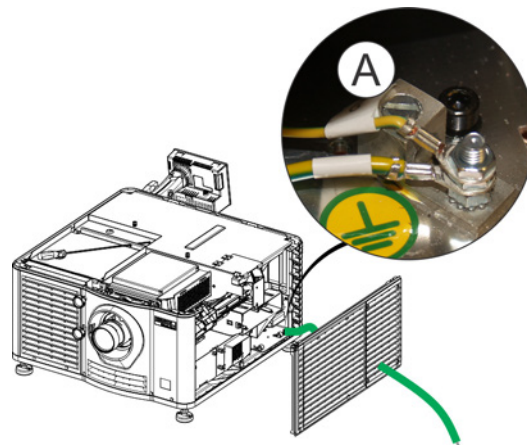
5. Remove the 3 screws securing the side skin to the bottom of the cinema projector structure. Lift the skin upward and out to remove it.



6. Pull one end of the protected earth wire through the rear side skin louvers.



7. Connect the protected earth wire to the cinema projector:
 - a. Loosen the threaded bolt on the ground lug (A).



- b. Remove 15 mm of the insulated covering from the end of the protected earth wire.

- c. Insert the bare end of the protected earth wire into the hole on the ground lug so it is beneath the threaded bolt.
 - d. Tighten the threaded bolt to 50 in-lb.
- 8. Replace the side skin. Make sure the protected earth wire is not caught between the skin and cinema projector structure.
- 9. Replace the service door.
- 10. Replace the top lid.

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 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)

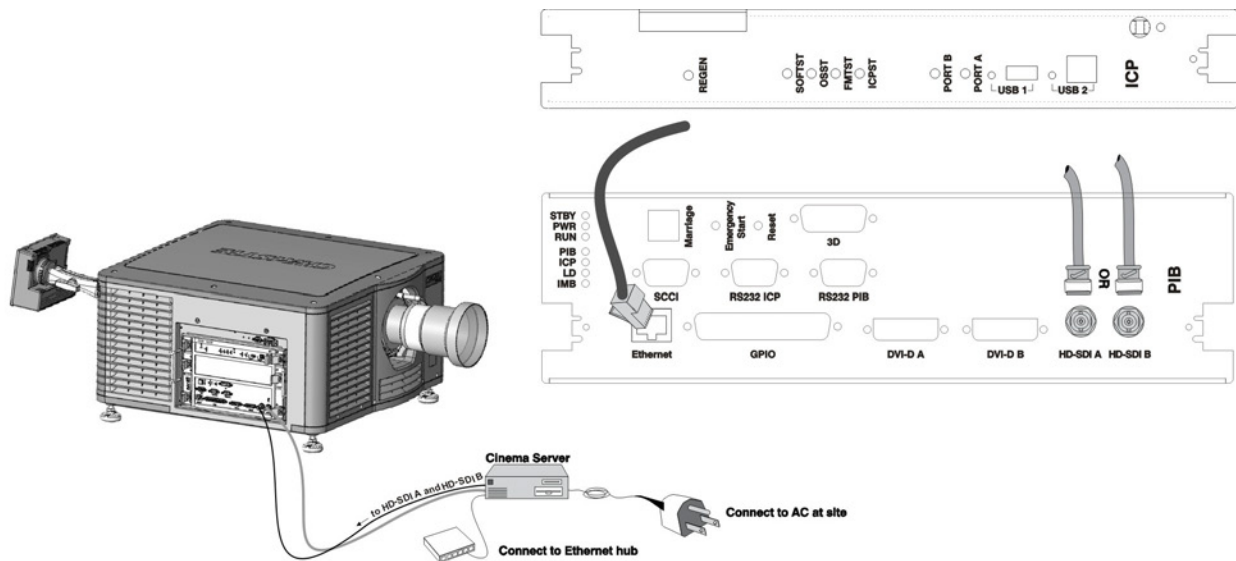


Figure 3-1 Connecting Cinema Sources

3.2 Connect a Communications Device

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

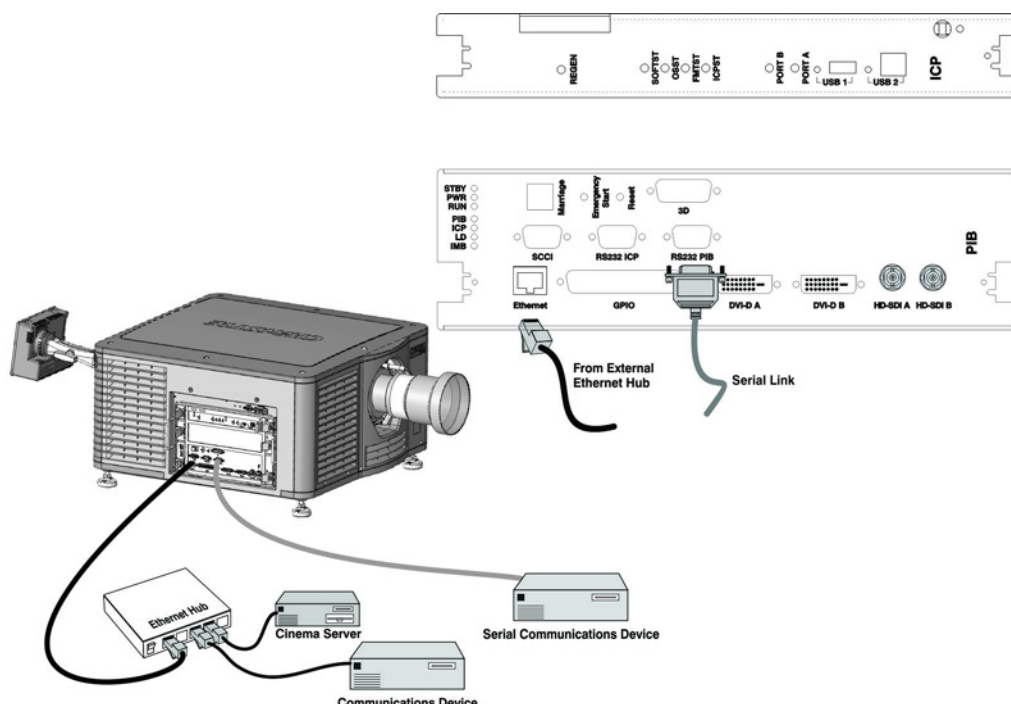


Figure 3-2 Connecting Communications

3.3 Connecting Devices to the SCCI Port

The Simple Contact Closure Port (SCCI) port is a DB-9 (male) connector 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	<p>Open Collector Low when one of the following interlocks is tripped or conditions present:</p> <ul style="list-style-type: none"> • Lamp Door • Lamp Blower • Extractor • Tamper • Marriage • Ballast Communication <p>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.</p>
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 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 cinema projector. To configure the pins on the connector, tap **Menu > Administrator Setup > GPIO Setup**.

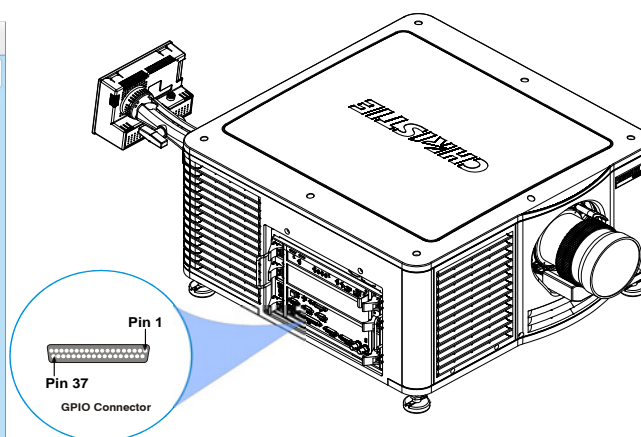
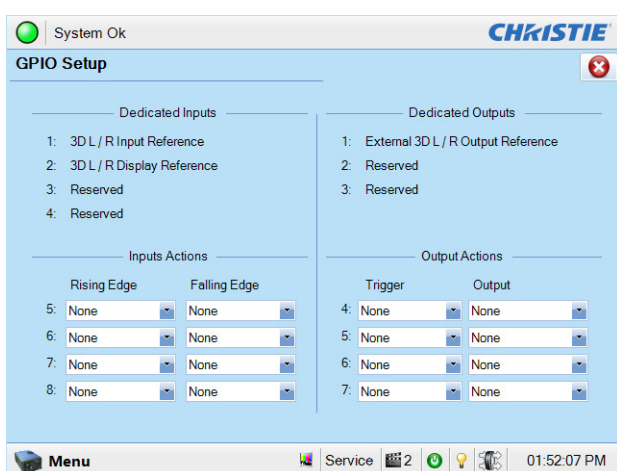


Figure 3-3 Admin: GPIO Setup Window and GPIO Port Location on cinema projector

Section 3: Connecting Devices to the Projector

As shown in the tables, each available pairing of pins (\pm) 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.

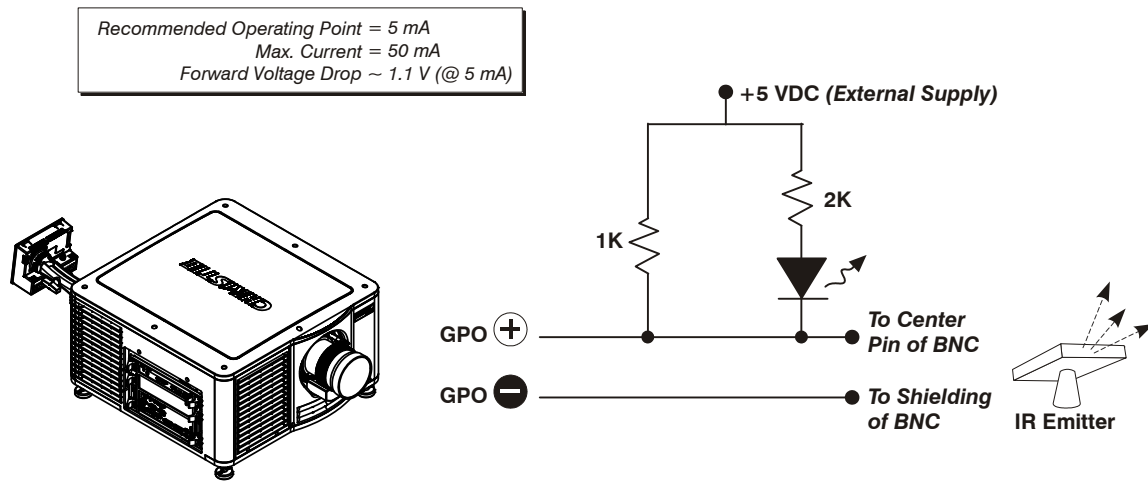


Figure 3-4 GPIO Circuit Diagram

3.5 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 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_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 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 Adjusting 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 the **Foot Lamberts Calibration** wizard.

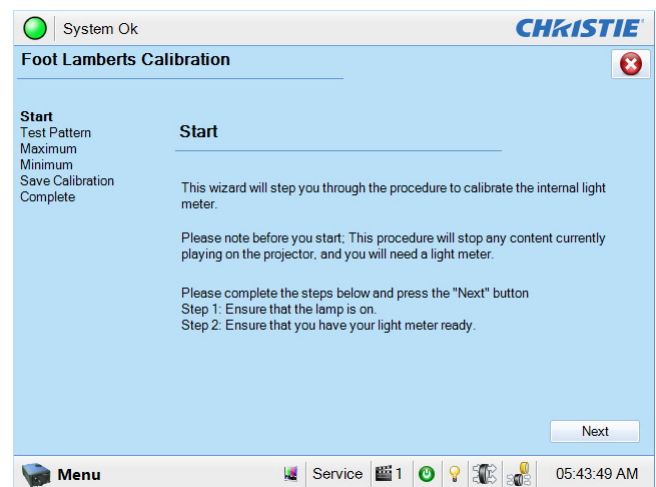


Figure 4-1 Footlamberts Calibration Wizard

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 [2.2 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. See [5.6 Work with Lenses](#).
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.

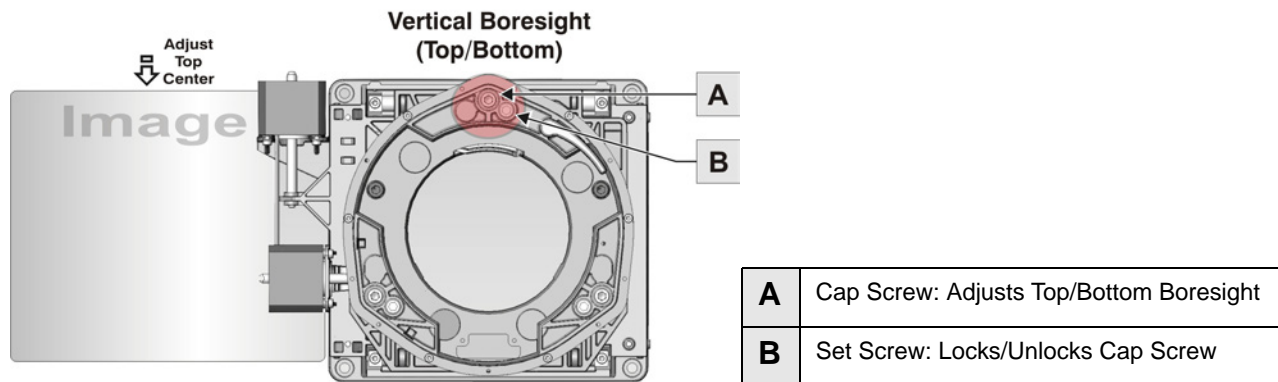


Figure 4-2 Top/Bottom Image Adjustment

1. Tap the **Test Patterns** button on the **Main Panel**.
2. Tap **All Test Patterns**.
3. Tap **DC2K Framing**.
4. Loosen the set screw. (Figure 4-2/B).
5. Turn the vertical adjust cap screw 1/8 of a turn counter-clockwise. (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

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

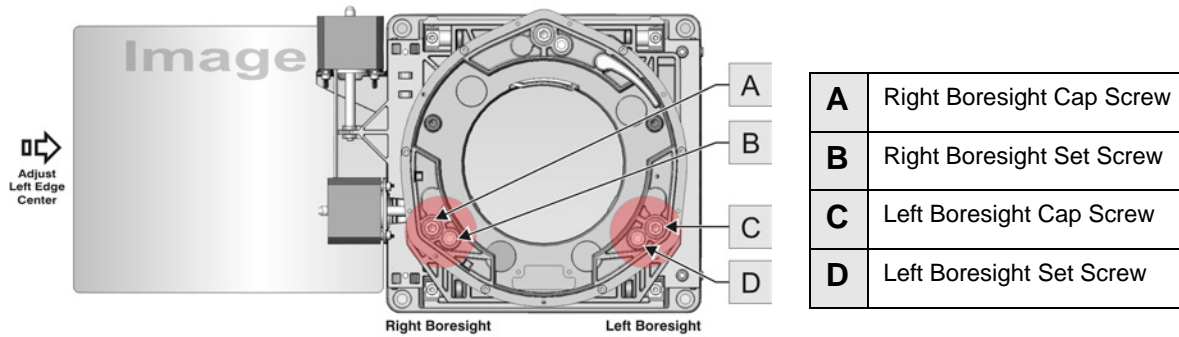


Figure 4-3 Left/Right Image Adjustment

- Tap the **Test Patterns** button on the **Main Panel**.
- Tap **All Test Patterns**.
- Tap **DC2K Framing**.
- Loosen the right boresight set screw. (**Figure 4-3/B**).
- Turn the right adjust cap screw 1/16 of a turn clockwise (**Figure 4-3/A**).
- Adjust the left adjust cap screw equally in the opposite direction (**Figure 4-3/C**).
- 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.
- 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.

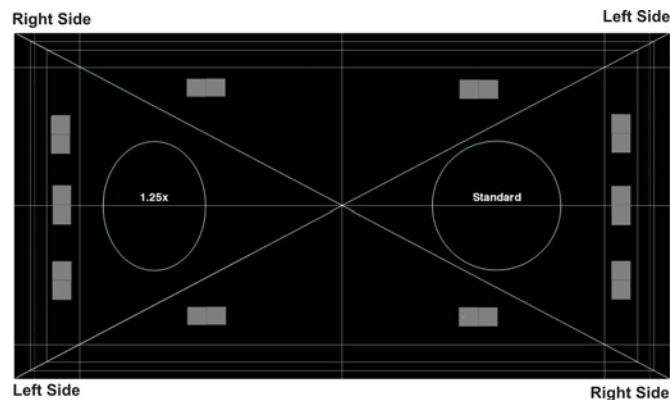


Figure 4-4 Example of Framing Test Pattern

- Repeat Steps 5 to 7 for the left-side.
- Each corner of the screen should be equally in focus when horizontal boresight is completed correctly. If necessary, repeat vertical boresight. See *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., on page 4-2.*

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 (**Figure 4-5/B**).
2. Turn the pivot screw 90-180° (**Figure 4-5/C**).
3. Adjust both cap screws (**Figure 4-5/A**).
4. Tighten the two set screws and pivot screw when you have aligned the fold mirror correctly.

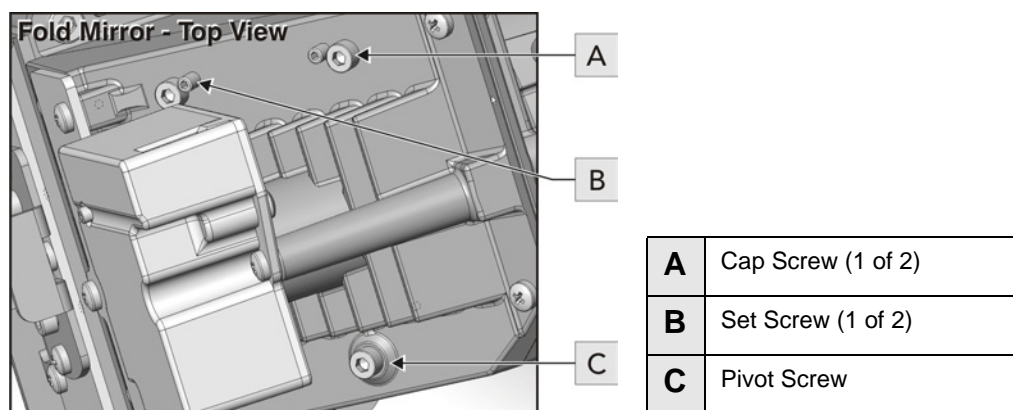


Figure 4-5 Fold Mirror Adjustment

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.

4.11 Work with 3D

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

4.11.1 Display Requirements

To display 3D images with the CP2210 cinema projector, you require these items:

- Two HD-SDI cinema signals (left and right) connected to the cinema projector's SMPTE ports **HD-SDI A** and **HD-SDI B**.
- 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 cinema 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.

4.11.2 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.

Table 4.1 3D Hardware Systems

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

4.11.3 Install a 3D Server with an YCxCz Interface

1. Install and connect your 3D hardware to the cinema 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.

4.11.4 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**.

4.11.5 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**.

4.11.6 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.

Section 4: Adjusting the Image

- 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 4.11.5 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.

4.11.7 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 4.11.5 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.

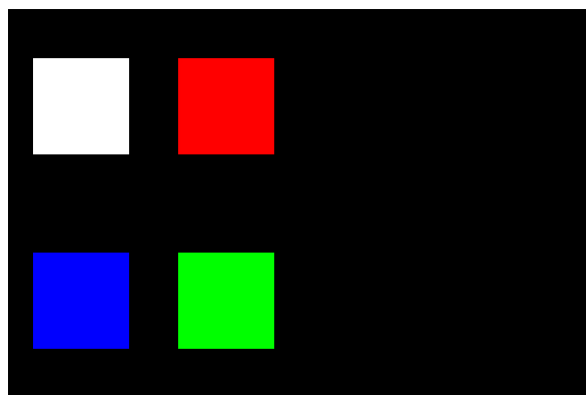
4.11.8 Display 3D Diagnostic Test Patterns

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 4-6 .
RGB-12bit-3D Four Quadrant	Alternates between 2 images shown in Figure 4-7 .
RGB-12bit-3D Full White	Alternates between 2 100% white images.
RGB-12bit-3D Half Descending	Alternates between 4 images shown in Figure 4-8 .
RGB-12bit-3D Horizontal Ramp	Alternates between 2 horizontal ramp images.
RGB-12bit-3D L-Pattern	Alternates between 2 images shown in Figure 4-9 .

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

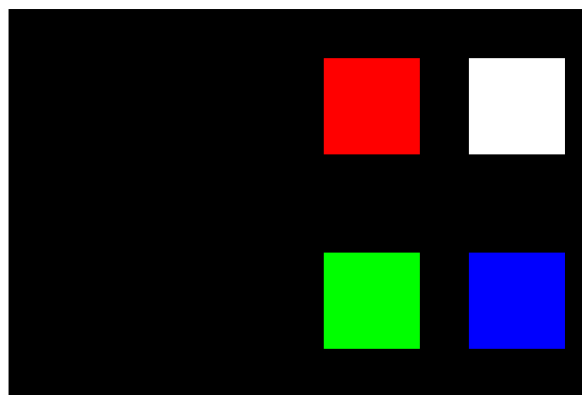
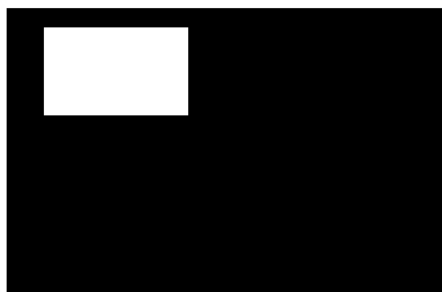
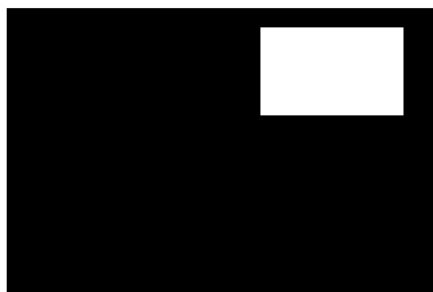


Figure 4-6 RGB-12 bit -3D Dynamic Range Test Pattern

**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 4-7 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**

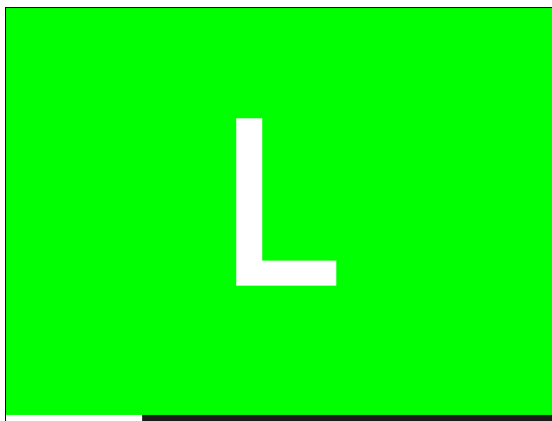


**FRAME 4 - 12.5% white field with
last line 75% white and 25% black**



Figure 4-8 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 4-9 RGB-12bit-3D L-Test Pattern

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4.11.9 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 cinema projector Touch Pad Controller (TPC).
 - b. Select a 3D channel in the **Channel Name** list.
 - c. Select **Inverted** in the **3D Sync Polarity** list.

4.11.10 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 cinema 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.

4.12 Present Movies

This section provides information and procedures for using the cinema projector to present movies. It is recommended that you read through this section in its entirety before displaying movies for the first time. Before you display movies for the first time, verify that the cinema projector is properly installed, aligned, and configured. See [2 Installation and Setup](#).

4.12.1 Connect Sources

Connect a digital media storage device or cinema server to one of the 292A or 292B input ports. For a list of standard single-link SMPTE 292M Formats, see [Appendix A: Specifications](#).

4.12.2 Use an Anamorphic Lens

The standard zoom lens on the cinema projector can display flat images because the native resolution and format of the cinema projector closely match the flat aspect ratio. The installation of an optional anamorphic lens requires that the source material is resized to fill the digital micromirror device (DMD) and the pixels are horizontally stretched so that the full 2.39 image width appears on-screen.

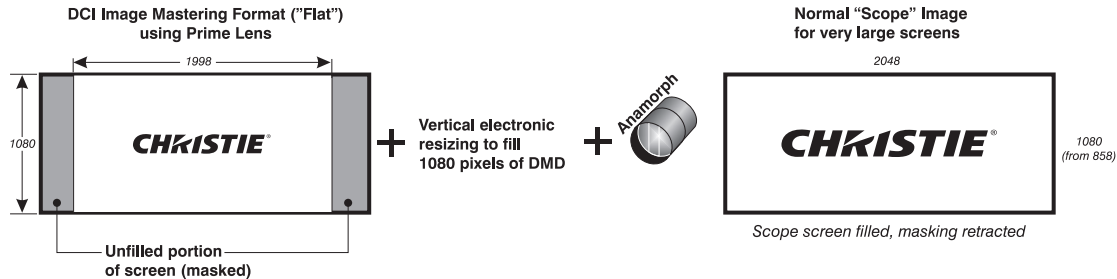


Figure 4-10 Using Anamorphic Lens to Achieve "Scope" for Large Screens

4.12.3 Use a Wide Converter Lens

The optional Wide Converter Lens (WCL) magnifies a flat image with a format of 1.85:1 to a scope image with a 2.39:1 format, while maintaining the full resolution of the source material.

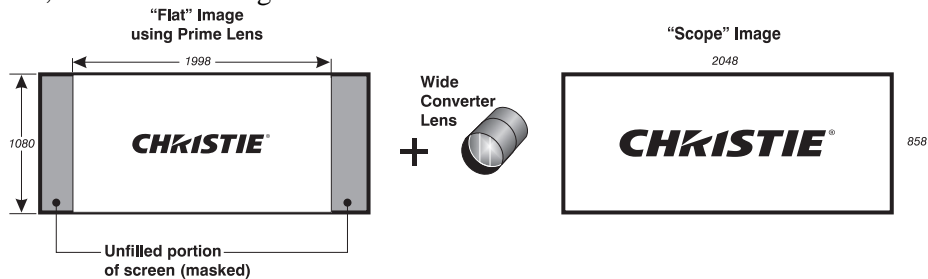


Figure 4-11 Using Wide Converter Lens to Achieve "Scope" with No Resizing

4.12.4 Masking

You use masking to conceal the unused edges of a screen. These are the two types of masking:

- **Top Masking** – Movable flat black panels or curtains are installed along the top edge of the screen. You raise the curtain for flat images, and you lower the curtain for scope images.
- **Side Masking** – Movable flat black panels or curtains are installed on each side of the screen. You close the curtain for flat images, and open the curtain for scope images.

Typically, you install top and side masking to allow a greater range of adjustment.

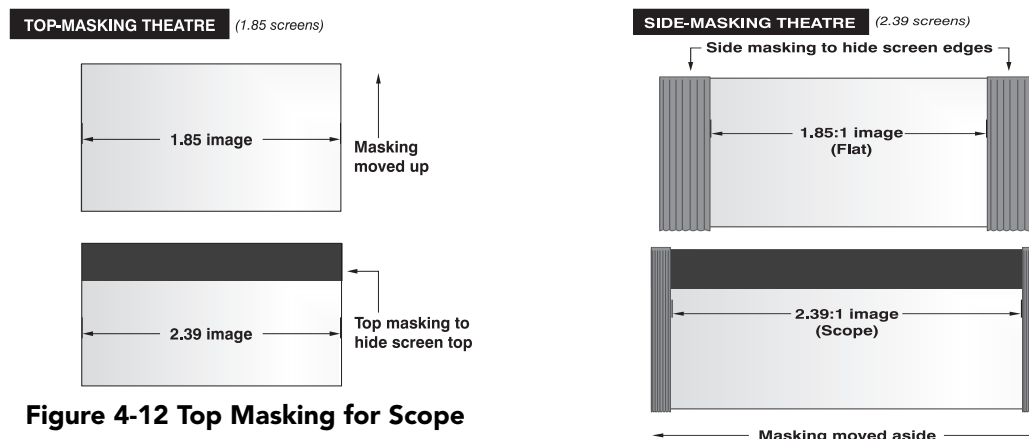


Figure 4-12 Top Masking for Scope

4.12.5 Display Non-Cinema Content

To display content from standard or high definition non-cinema sources, connect the source to the DVI-D A and DVI-D B ports on the input panel. The DVI port auto-detects progressive scan and digital RGB sources and displays them in their original format. Using two DVI ports as a higher-bandwidth dual-link or twin-link pair is not supported. For a list of compatible non-cinema DVI sources, see [Appendix A: Specifications](#).

4.12.6 Select a Source



The cinema projector uses pre-configured channels to determine how to display images from different sources. Each channel file contains the optimum processing and display settings for the source. You select channels on the Main Touch Pad Controller (TPC) screen. If the channel you need is not listed on the Main panel, click **All**.

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 Cinema Projector Power States

The following table identifies what occurs when the TPC's **Power** and **Lamp** buttons are tapped during any of the cinema projector's 4 main power states. See **Table 5.1**.

Table 5.1 cinema projector Status when any TPC Lamp or Power Buttons Selected

		cinema projector's Current State:			
		Standby Power Mode (Solid Yellow)	Power ON/ Lamp OFF (Green Blip)	Power ON / Lamp ON (Solid Green)	Cooling Down Mode (Yellow Blip/ Green Blip)
TPC Buttons Tapped:	Power ON	To full power ON (boot delay)	No action	No action	Cancels cool down, goes into full power
	Power OFF	No action	Power OFF immediately	Lamp OFF (immediately), enters cool down mode	No action
	Lamp ON	To power ON and lamp ON (boot delay)	To lamp ON (immediately)	No action	Cancels cool down, goes to Lamp ON (immediately)
	Lamp OFF	No action	No action	Lamp OFF (immediately)	No action

5.4 Cinema Projector LED Status Indicators

Red, yellow, and green LEDs on the top and rear corners of the cinema projector indicate the status of the cinema projector. The LEDs can be solidly lit, or they can flash frequently or intermittently. This table lists the LED state and the associated meaning:

Table 5.2 Cinema Projector Status LED Legend

LED	State	Description
Solid Green	Lamp ON	Power is ON, Lamp is ON.
Green Blip	Power ON	Power is ON, Lamp is OFF. The lamp can be struck when in this mode.
Solid Yellow	Standby mode	Power is OFF, Lamp is OFF. Power saving mode.
Yellow Blip/ Green Blip	Cool down mode	Transitioning to Standby mode. Power is ON, Lamp is OFF. The lamp can be struck when in this mode.
Flashing Red	New critical alarm or warning	New critical alarm or warning has NOT been acknowledged by operator.
Solid Red	Existing critical alarm or warning	Critical alarm or warning exists, but has been acknowledged by operator.

5.5 Work with the Lamp

This section provides information and procedures for optimizing lamp performance. Optimizing lamp performance can ensure you receive the brightest, most uniform image possible for the life of the lamp.

5.5.1 Adjust Lamp Power

1. Tap **Menu** > **Advanced Setup** > **Lamp Power/LiteLOC Setup**.
2. Increase or decrease the **Power %** value.
3. Tap **Set Target**.
4. Select **Enable LiteLOC™**.

5.5.2 Change the Lamp Power Percentage

Entering a new Lamp Power percentage temporarily disables LiteLOC settings.

1. Tap **Menu** > **Advanced Setup** > **Lamp Power/LiteLOC Setup**.
2. Increase or decrease the **Power %** value.

5.5.3 Use LampLOC™ to Adjust the Lamp Position

To ensure optimal lamp performance and peak brightness at the screen for the life of the lamp, use LampLOC™ to adjust the lamp position when you install a new lamp in the cinema projector. After making the adjustment, the lamp is well-centered and distanced correctly from the remainder of the illumination system. Before adjusting LampLOC™, ensure the following criteria are met:

- The lamp must be ON and the douser (shutter) OPEN during adjustment. *A 10-minute warm-up is recommended. Ensure to follow all the criteria specified in [5.1 Turn the Cinema Projector On, on page 5-1](#).*
- Perform a white test pattern. This is recommended to allow you to view LampLOC™ progress on-screen.

To automatically adjust LampLOC™:

1. Tap **Menu** > **Advanced Setup** > **LampLOC™ Setup**.
2. Tap **Do Auto**.

5.5.4 Manually Adjust the Lamp Position

1. On the **Main** screen of the TPC, tap the test patterns button.
2. Tap **RGB-12bit-Full Screen White**.
3. Mount a light meter on a tripod and center it with the lens. The distance from the lens does not matter. You may need an attenuator or an internal foil aperture.
4. Tap **Menu** > **Advanced Setup** > **LampLOC™ Setup**.
5. Tap the directional arrows to adjust the value displayed in the **Z** field. The brightness reading in front of the lens should be maximized.
6. Tap the directional arrows to adjust the values displayed in the **X** and **Y** fields. The brightness reading in front of the lens should be maximized.
7. Repeat Steps 5-6, but take your readings at the screen instead of at the lens.

8. Run LiteLOC™ or LampLOC™ if required.

5.5.5 View Lamp Information

To view information on the lamps previously installed in the cinema projector, or to add a new lamp:

Tap **Menu** > **Advanced Setup** > **Lamp History**.

5.5.6 Receive an Alarm when a Lamp Reaches Its Expiry Date

To receive an alarm when the lamp reaches its operational limit:

1. Tap **Menu** > **Administrator Setup** > **Preferences**.
2. Tap **Lamp Expiry** in the **Alarm Triggers** area.

5.5.7 Receive an Alarm when a Lamp Needs to be Rotated

To receive an alarm when the lamp reaches its operational limit:

1. Tap **Menu** > **Administrator Setup** > **Preferences**.
2. Tap **Lamp Rotation** in the **Alarm Triggers** area.

5.5.8 Lamp Expiry Hours

This table lists the maximum hours cinema projector lamps can operate before replacement:

Table 5.3 Lamp Expiry Hours

Lamp Type	Replace BEFORE
CXL-14 (1.4 kW)	3000 hours
CDXL-18SD (1.8 kW)	1500 hours
CDXL-20SD (2.0 kW)	1500 hours

5.5.9 Minimum and Maximum Lamp Power Ratings

This table lists the minimum and maximum power settings for cinema projector lamps:

Table 5.4 Minimum and Maximum Lamp Power by Lamp Type

Lamp Type	Lamp Size	Min Lamp Power	Max Lamp Power
CXL-14M	1.4 kW	1000W (70%)	1575W (110%)
CXL-16M	1.6 kW	1000W (62%)	1760W (110%)
CDXL-18SD	1.8 kW	1000W (56%)	1980W (110%)
CDXL-20SD	2 kW	1000W (50%)	2100W (105%)

5.6 Work with Lenses

The lens mount secures the primary zoom lens to the cinema projector and provides setup adjustments for correct boresight, and manually controlled focus, zoom and offsets. See [Section 4.3 Basic Image Alignment](#) for all lens installation and boresight instruction.

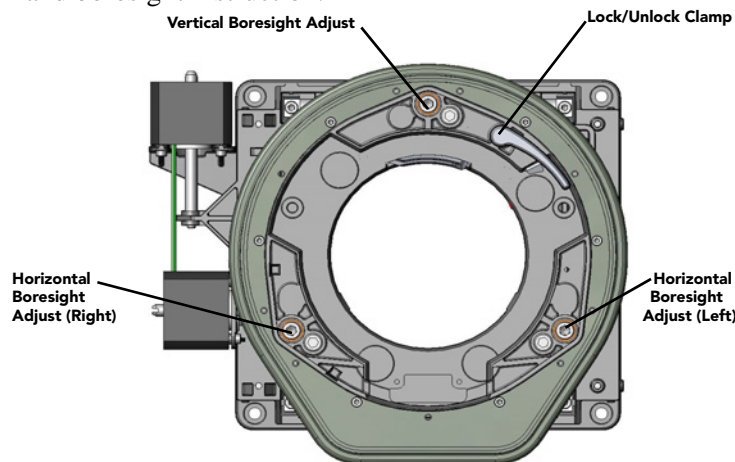


Figure 5-1 Lens Mount

An anamorphic lens (1.25x) can be installed into the optional motorized auxiliary lens mount, then adjusted into place in front of the primary lens to widen a “squeezed” image into a properly proportioned “scope” anamorphic cinema display. It is typically used in theatres having side masks that are retracted for “scope” images, or in theatres having fixed side masking but a very short throw ratio.

5.6.1 Access the ILS

On the **Main** screen of the TPC, tap **Advanced Setup > ILS File Setup**.

5.6.2 Enable ILS on a Channel

1. On the **Main** screen of the TPC, tap a channel.
2. Tap the **Test Patterns** button and then tap a test pattern.
3. On the **Main** screen of the TPC, tap **Lens Adjust**.
4. Tap **Enable Automatic ILS** to automatically apply the active channel settings.

5.6.3 Alter the Active ILS Settings

1. On the **Main** screen of the TPC, tap **Lens Adjust**.
2. Tap **Enable Automatic ILS**.
3. Tap the directional arrows to adjust the values displayed in the **X**, **Y**, and **Zoom** fields. These values overwrite the ILS settings.

5.6.4 Maintain Lens Position Regardless of Selected Channel

1. On the **Main** screen of the TPC, tap **Lens Adjust**.
2. Clear the **Enable Automatic ILS** check box.

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3. Tap **OK**.
4. Adjust the focus, Horizontal (X) and Vertical (Y) offset, and zoom by tapping the applicable button.
NOTE: *This does not over-write the system settings for the ILS. If **Enabled Automatic ILS** is selected again, the ILS will position the lens to the saved channel settings.*
5. If the **Quick Reset** or **Lens Calibration** buttons are tapped in the **Advanced Setup: Lens Setup** window, the lens returns to this remembered location. Also, this setting is remembered across system resets and reboots.

5.6.5 Reset the ILS

The ILS must be reset when:

- the lens has been moved
- manual adjustments have been made to horizontal or vertical offset, zoom or focus
- a power outage occurred during a channel change
- ILS settings are drifting within a short period of time

1. On the **Main** screen of the TPC, tap **Lens Adjust**.
2. Tap **Quick Reset**. If **Enable Automatic ILS** is not selected, the lens returns to the stored settings.

5.6.6 Calibrate the ILS

You must calibrate the ILS must when you install a new lens.

1. On the **Main** screen of the TPC, tap **Lens Adjust**.
2. Tap **Full Calibration**. If **Enable Automatic ILS** is not selected, the lens returns to the stored settings.

6 Cinema Projector Menus

This section provides information and procedures for using cinema projector menus. You can use cinema projector menus to adjust cinema projector settings and view status information.

6.1 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.

6.2 Main Screen

Use the Main screen of the Touch Panel Controller (TPC) to access power, lamp, douser, auxiliary lens, lens adjust, and test pattern settings. You can also select channels.

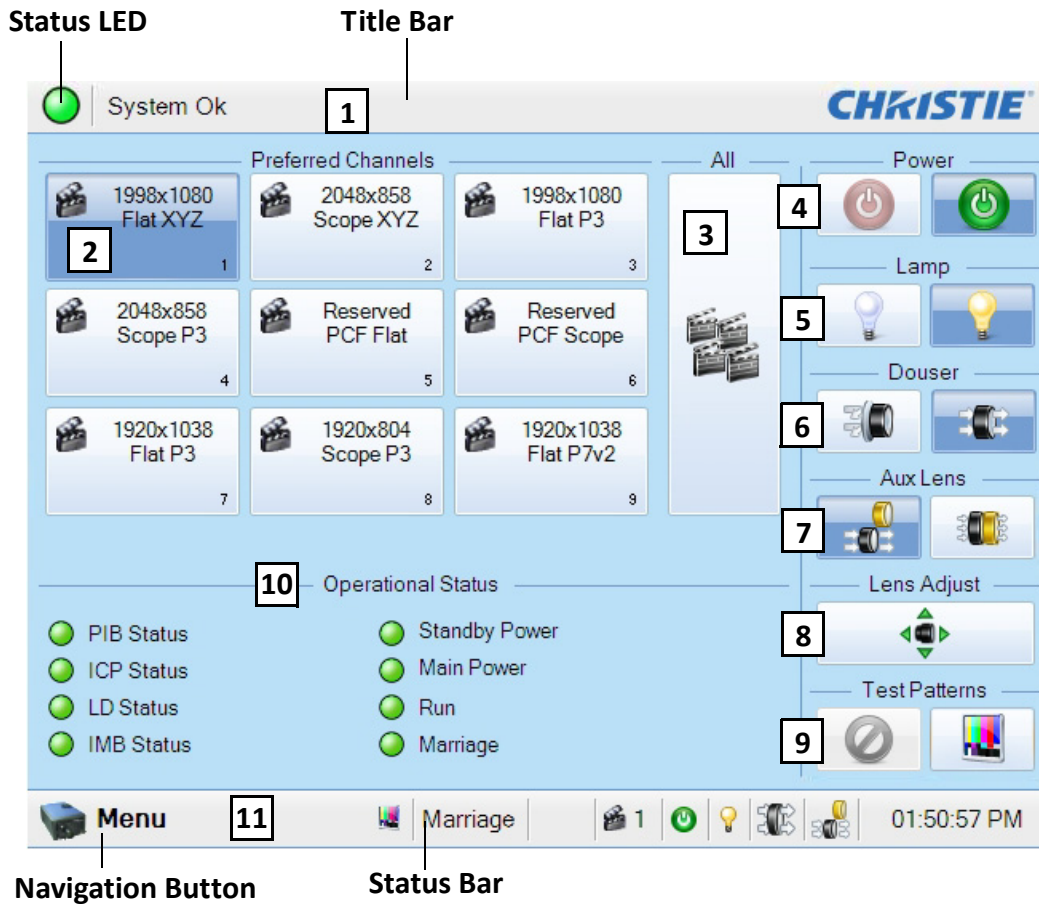


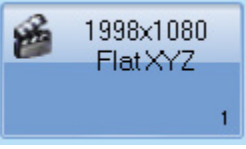











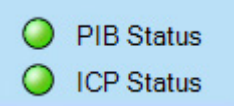





Figure 6-1 Main Panel


Table 6.1 Main Panel

Control	Description
1: Title Bar * Status LED  Status Error Message  Critical alarm exists	Displays a green, yellow, or red LED. A green LED indicates that the cinema projector is operating properly. If a monitored system falls below a normal reading, the LED is yellow or red. A yellow LED indicates a warning, and a red LED indicates a critical error that you must correct. Tap the status LED to open the Status window and resolve issues. For information about the Status window, see 6.5 Status Window .
2: Channels Buttons 	Displays custom cinema projector settings.
3: All Channels Button	Displays 64 saved channels.

Control	Description
<p>4: Power</p> <p>Power OFF Power ON</p>  	<p>Turns the cinema projector on or off. Press off to place the cinema projector in stand-by mode. To prevent accidental activation, you must press and hold the on or off buttons. A message displays in the title bar when the cinema projector turns on or off.</p>
<p>5: Lamp</p> <p>Lamp OFF Lamp ON</p>  	<p>Turns the lamp on or off. To prevent accidental activation, you must press and hold the on or off buttons. A boot delay occurs if you select lamp on before pressing power on.</p>
<p>6: Douser</p> <p>Douser Closed Douser Opened</p>  	<p>Opens or closes the douser.</p>
<p>7: Aux Lens</p> <p>Aux Lens OUT Aux Lens IN</p>  	<p>Engages or disengages the auxiliary lens. If the auxiliary lens mount is not installed, the Aux Lens buttons are disabled. Engaging the auxiliary lens temporarily overrides the position settings defined in the Config 1 channel.</p>
<p>8: Lens Adjust</p> 	<p>Controls the Intelligent Lens System (ILS) lens motors. Press to open the ILS Adjust window. If the Intelligent Lens System is not installed, the Lens Adjust button is not available.</p>
<p>9: Test Patterns</p> <p>Disable Select Test Pattern</p>  	<p>Selects or disables test patterns. Press Select Test Pattern to open the Preferred Test Patterns window.</p>
<p>10: Operational Status</p> 	<p>Displays the status of cinema projector functions including the cinema projector Intelligence Board (PIB), TI Electronics the Integrated Cinema Processor Board (ICP), Link Decrypter (LD), Internal Media Block (IMB), Standby Power, Main Power, Run, and Marriage. A green LED indicates the system is functioning correctly. A red LED indicates a critical error that you must correct. Click the status LED to open the Status window and resolve issues.</p>

Control	Description
<p>11: Status Bar *</p> <p>Menu Button</p>  <p>Status</p>  <p>Select Test Pattern</p> 	<p>The Menu button is the starting point to the user windows. Tapping this button opens a 2 layer menu system populated with available windows based on your permission level. The bottom right corner of every window shows the logged in user, the active channel, as well as the status of the Power, Lamp, Douser and Aux Lens. These icons change as these elements update from changes on the cinema projector. The current time also displays.</p> <p>Tap the Select Test Pattern icon to open the Preferred Test Patterns window and select a test pattern.</p>

6.3 Open the On Screen Keyboard

Tap the **Launch Dialog** button  to open the On Screen Keyboard. The Onscreen Keypad is only available when you need to enter numerical values.

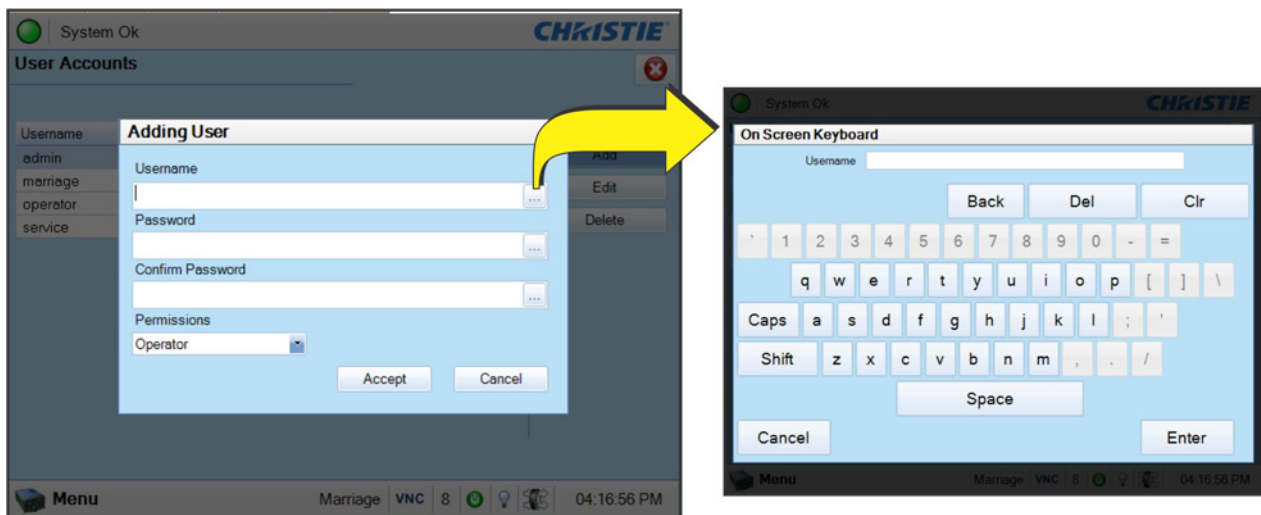


Figure 6-2 On Screen Keypad

6.4 User Access and Rights

This table lists the Touch Panel Controller (TPC) permissions:

Table 6.2 User Levels

Permission	Description
Status	Can view basic cinema projector status, diagnostic information, and software version information. This is the default permission for serial communications.
Operator	Can activate channels and test patterns and view detailed diagnostic logs and server errors. This is the default TPC permission.
Advanced	Can define display settings such as source resolution, aspect ratio, image cropping, and color gamut information, optimize light output, record lamp changes, and define setup files for input devices.
Administrator	Can activate channel and test patterns, perform Foot Lambert calibrations, define Ethernet settings, restore backup files, and upgrade system software. Can add users and set user access rights for users with Administrator permissions and below.
Service	Can access all TPC windows, but cannot perform Marriage.
Marriage	Can access all TPC windows and perform Marriage.

Accessible Windows Per User Level

Menu	Status	Operator	Advanced	Administrator	Service	Marriage
Main	X	X	X	X	X	X
Status	X	X	X	X	X	X
Diagnostics - Interrogator - SMPTE Errors - System Logs - Server Test - DLP Management		X (except DLP Management)	X (except DLP Management)	X	X	X
Network Devices	X	X	X	X	X	X
Channel Setup - Config 1 - Config 2 - 3D Control			X	X	X	X
Advanced Setup - Lamp Power / LiteLOC™ Setup - Lamp Change Wizard - Lamp History - LampLOC™ Setup - ILS File Setup - Lens Setup - Source File Setup - Screen File Setup - MCGD File Setup - TCGD File Setup			X	X	X	X

Menu	Status	Operator	Advanced	Administrator	Service	Marriage
Administrator Setup - Preferred Channel Setup - Preferred Test Pattern Setup - Preferences - Content Devices Configuration - Time Setup - Communications Configuration - Network Devices Setup - GPIO Setup - Foot Lamberts Calibration - User Accounts - Upgrade				X	X	X
Service Setup - File Management - LD/IMB Marriage - System Access				X (except Marriage)	X (except Marriage)	X
About	X	X	X	X	X	X
Help	X	X	X	X	X	X

6.5 Status Window

You use the Status window to view cinema projector status information. To view the Status window, tap **Menu** > **Status**.

The right pane displays a list of cinema projector items and their status. The left pane provides detailed information about individual cinema projector items.

A green LED indicates the item is functioning correctly. A yellow LED is a warning that a cinema projector item requires attention. A red LED indicates a cinema projector item requires immediate attention.

If the **Item** or **Value** descriptions are too long for the cell, click the description to view the full description at the bottom of the window. To adjust the width of a column in the left pane, click and drag the column border. When you close the Status window, the column widths return to their default size.

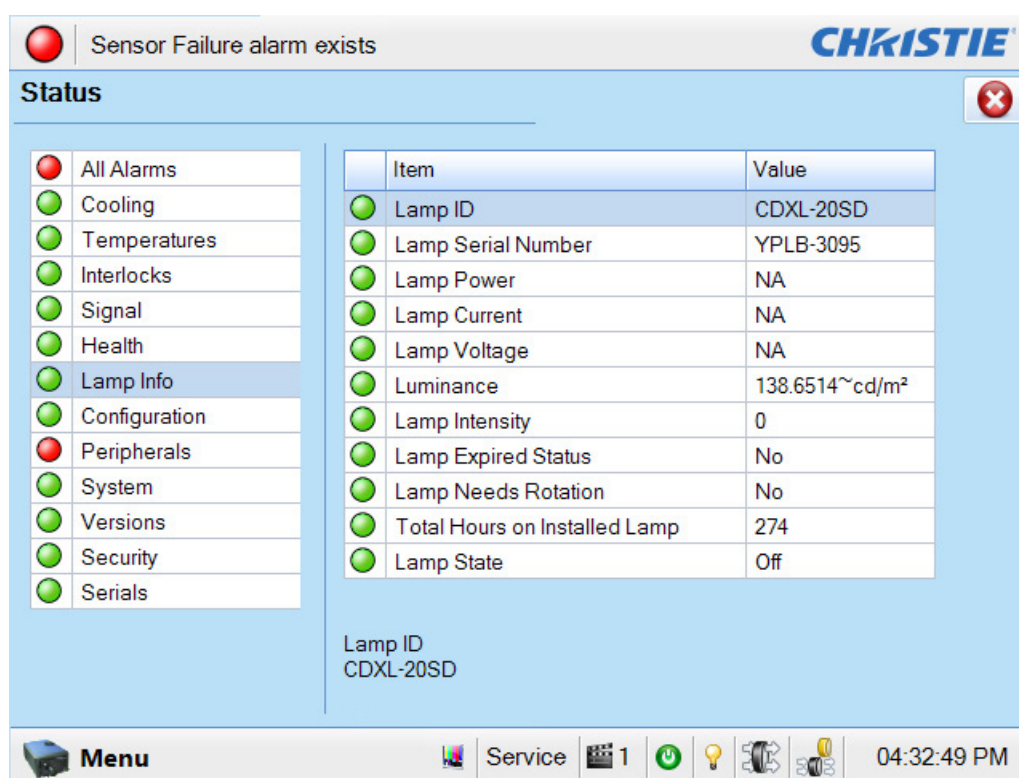


Figure 6-3 Status Window

Table 6.3 Summary of Status: System Components

All	
Displays all the status items that are in alarm state.	
Cooling	
Cooling Pump	
Intake Fanpack (bottom right)	
Intake Fanpack (bottom left)	
Intake Fanpack (top right)	
Intake Fanpack (top left)	
Light Engine Fan	
Radiator	
DC Blower Anode	
DC Blower Cathode	
Ballast Fan	
Temperatures (degrees Celsius)	
Card Cage Exhaust	
Lamp Exhaust	65 °C = warning, ≥ 75 °C = critical
Filtered Air Intake	
Integrator	90 °C = warning, ≥ 100 °C = critical
Prism	60 °C = warning, ≥ 70 °C = critical
Blue DMD	63 °C = warning, ≥ 68 °C = critical
Green DMD	63 °C = warning, ≥ 68 °C = critical
Red DMD	63 °C = warning, ≥ 68 °C = critical
ILS Board	
LampLOC™ Board	
EVB Board	
Ballast	
FMT FPGA	
ICP FPGA	
ICP Board	
PIB	
Backplane	
Interlocks	
Fire Alarm	OK/Failed
Lamp Thermal	OK/Failed
Signal	
Input Frequency	
Input Port	
Data Format	
LD Link0 State	
LD Link1 State	
LD Link2 State	
LD Link3 State	
Health	
292-A Total SMPTE Error Count	
292-A Recent SMPTE Error Count	
292-B Total SMPTE Error Count	
292-B Recent SMPTE Error Count	
CPLD Self Test	
PI Board Seated Properly	
RAM Self Test	
Flash Self Test	
LVDS Self Test	
LampLOC™ Main Code - CRC	
LampLOC™ State	
LampLOC™ X Sensor	
LampLOC™ Y Sensor	
LampLOC™ Z Sensor	
EVB Main Code - CRC	
EVB State	
LVPS AC OK	
LVPS DC OK	

Lamp Info	
Lamp ID	CDXL-20SD
Lamp Serial Number	
Lamp Power	Lamp power in watts
Lamp Current	Lamp current in amps
Lamp Voltage	Lamp voltage in volts
Luminance	Luminance in Foot Lamberts or Candela
Lamp Intensity	Current light intensity reading
Lamp Expired Status	Yes/No
Lamp Needs Rotation	Yes/No
Total Hours on Installed Lamp	Total number of hours on current lamp
Lamp State	On/Off
Configuration	
cinema projector Model	Displays cinema projector model
cinema projector Serial Number	Displays cinema projector serial number
Date of Manufacture	Displays manufacture date
cinema projector Subtype	
cinema projector Subtype ID	
Light Engine Native Resolution	2048 x 1080
Ballast ID	
IP Address	Displays IP address
Subnet Mask	Displays subnet mask address
Gateway	Displays gateway address
Peripherals	
Auxiliary Lens Install Status	Yes/No
Auxiliary Lens Type	Type of auxiliary lens installed
ILS Install Status	Yes/No
ILS Main Code - CRC	
ILS Temperature	Displays ILS temperature in Celsius/Fahrenheit when ILS is installed
ILS Board ID	
ILS Boot Version	
ILS Software Version	
ILS Hardware Version	
ILS X Sensor Status	
ILS Y Sensor Status	
ILS Focus Sensor Status	
ILS Zoom Sensor Status	
ILS State	
System	
Hours on cinema projector	
ICP State	
LD State	
Lamp Hours on cinema projector	
Ballast State	
Available Disk Space (MB)	
Disk Space Used (MB)	
Available Memory (KB)	
ICP 3.3v Rail	
ICP 2.5v Rail	
ICP 1.8v Rail	
ICP 1.2v Rail	
Power Good VID	
Power Good 1v2 2x5	
Power Good 1v8 3x3	
Power Good 24V EXT	
Power Good 24V STBY	
ICP Free Disk Space (KB)	
ICP Total Disk Space (KB)	
Versions	
Package Version	
TPC Software	
TPC OS	
EVB Main	
EVB Boot	
EVB Hardware	
IMCB Lamp Boot	
IMCB Lamp Main	
IMCB Lamp Hardware	

Section 6: Projector Menus

IMCB ILS Boot	
IMCB ILS Main	
IMCB ILS Hardware	
PIB LVDS FPGA	
PIB FPGA Factory	
PIB Main Production	
PIB Main Factory	
PIB Bootloader	
PIB CPLD	
PIB FPGA Active	
Router Bootloader	
Router Kernel	
Router Sysfs	
LD Security List	
LD Software	
LD Login List	
ICP Software	
ICP OS	
ICP Kernel	
ICP RAM Disk	
ICP Software Boot	
ICP Firmware Boot	
ICP Software Main	
ICP Firmware Main	
ICP Firmware FPGA Config	
ICP Secure Processor	
Formatter Software Boot	
Formatter Firmware Boot	
Formatter Software Main	
Formatter Firmware Main	
Formatter Satellite	
Formatter FPGA Config	
Formatter Sequence Data	
Formatter DMD Data	
PIB Mod ID.Rev.Level	Value displayed as PIB model ID. Revision Number. Level
Backplane Mod ID.Rev.Level	Value displayed as Backplane model ID. Revision Number. Level
Faceplate Mod ID.Rev.Level	Value displayed as Faceplate model ID. Revision Number. Level
SFB-Red Level Mod ID Board	
SFB-Blue Level Mod ID Board	
SFB-Green Level Mod ID Board	
Security	
Security Enclosure Armed	
Security Enclosure Tamper	
Security Enclosure Battery Event	
Bottom Enclosure Open	
Top Enclosure Open	
Log Error	
Log Warning	
Logical Marriage Tamper	
Physical Marriage Tamper	
LD Low Battery	
Marriage Active	
cinema projector Security Lid Tamper	
The Certificates on the LD have been Zeroized	
ICP-LD Communication Error	
Serials	
LD	
TI ICP	
cinema projector	
Backplane	
PIB	
EVB	
LampLOC™ Board	
ILS Board	
Primary Lens	
Auxiliary Lens	
Lamp	
Ballast	

6.6 Alarm Window

When an alarm occurs, an Alarms window with a red border appears with a description of the alarm condition, state, and time and date of the alarm. The window only displays alarms you have not previously acknowledged. To acknowledge an alarm and remove it from the Alarms window, click **Acknowledge**. To view all alarms, tap **Menu > Status > All Alarms** in the left pane.

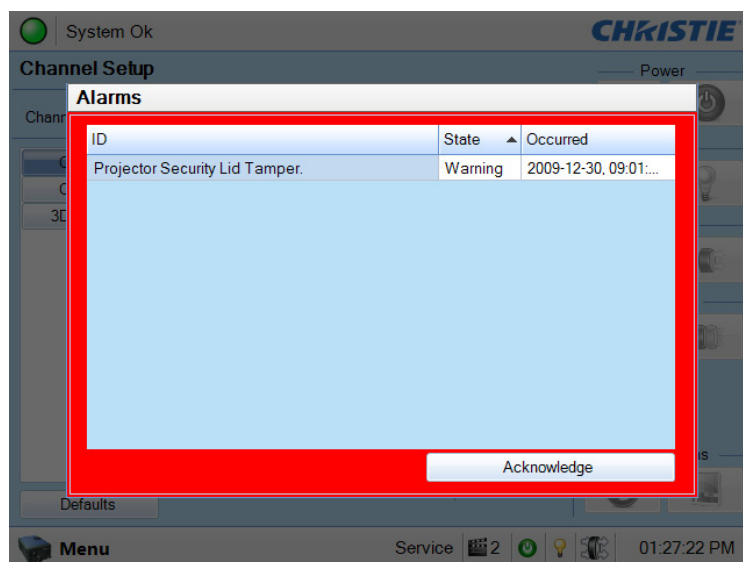


Figure 6-4 Alarm Window

6.7 Interrogator Window

To open the Interrogator window you need Operator, Administrator, or Service permissions. Tap **Menu** > **Diagnostics** > **Interrogator**.

When you run the interrogator, you cannot modify cinema projector settings. Image disruption can occur if you run the interrogator during a show. If a failure occurs, run the interrogator to capture valuable diagnostic information before you correct the issue or restart the cinema projector.

Use the Interrogator window to retrieve log files and current configuration information in a single file. Select **Basic Mode** to return log files, or select **Enhanced Mode** to return log files and registered batch files. Select **Download to USB** to copy the log and batch files to a USB drive.

NOTE: Log files are compressed into a .7z or 7-zip file format. A tool for opening these archives can be downloaded from <http://www.7-zip.org>.

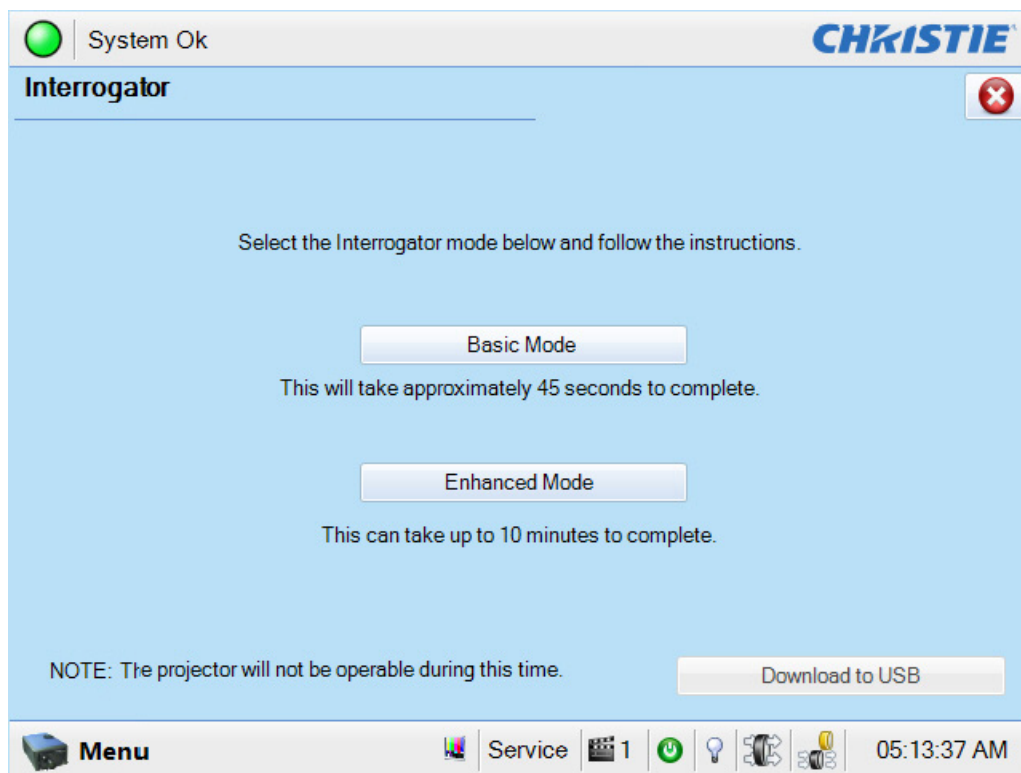


Figure 6-5 Diagnostics: Interrogator Window

6.8 SMPTE Errors Window

To open the SMPTE Errors window you need Operator, Administrator, or Service permissions. Tap **Menu > Diagnostics > SMPTE Errors**.

The SMPTE Errors window displays a numerical representation of the signal integrity of the HD-SDI signals sent to the cinema projector on the BNC signal cables. Click Clear Errors to clear all errors.

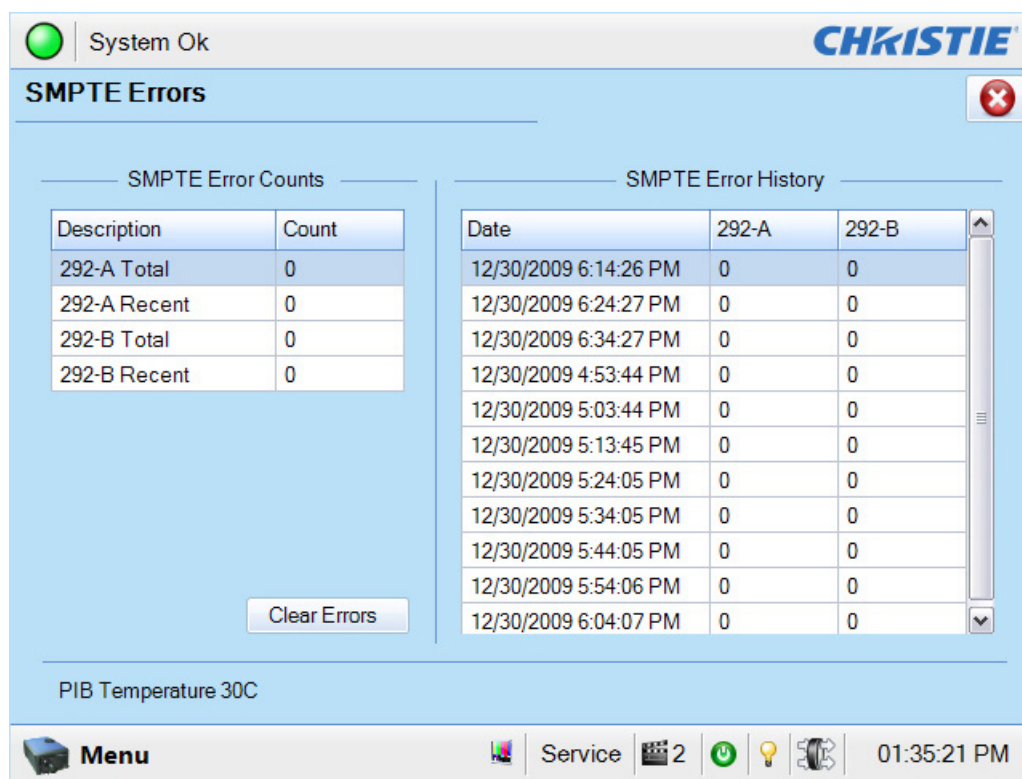


Figure 6-6 Diagnostics: SMPTE Errors Window

Table 6.4 SMPTE Errors Window

Region	Control	Description
SMPTE Error Counts	292-A Total/Recent	The total/recent count of 292-A errors.
	292-B Total/Recent	The total/recent count of 292-B errors.
	Clear Errors	Resets SMPTE Error Counts to 0. This is used for testing to see if the error returns.
SMPTE Error History		A history of SMPTE errors.

6.9 System Logs Window

To open the System Logs window you need Operator, Administrator, or Service permissions. Tap **Menu > Diagnostics > System Logs**.

Use the System Logs window to retrieve or download log files.

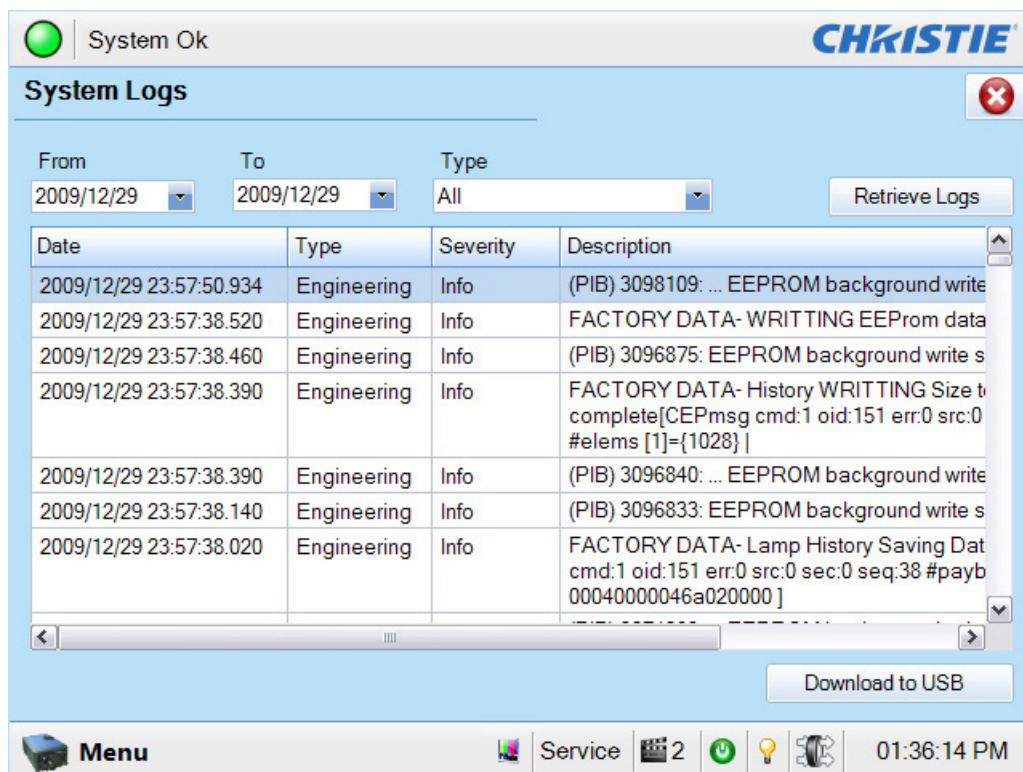


Figure 6-7 System Logs Window

Table 6.5 Diagnostics: System Logs Window

Field	Description
From	The start date for the log file reporting period.
To	The end date for the log file reporting period.
Type	The type of log file to retrieve. These are the available options: All System Event Maintenance Operational Security Engineering

6.10 Server Test Window

To open the Server Test window you need Operator, Administrator, or Service permissions. Tap **Menu > Diagnostics > Server Test**.

Use the Server Test window to search for content or transmission errors in the subtitle and metadata .xml files on a cinema server. To verify the subtitle and metadata files for a movie, play the movie and then open the Server Test window. The **Meta File URI** and **Subtitling URI** fields are populated with the .xml file names if they exist.

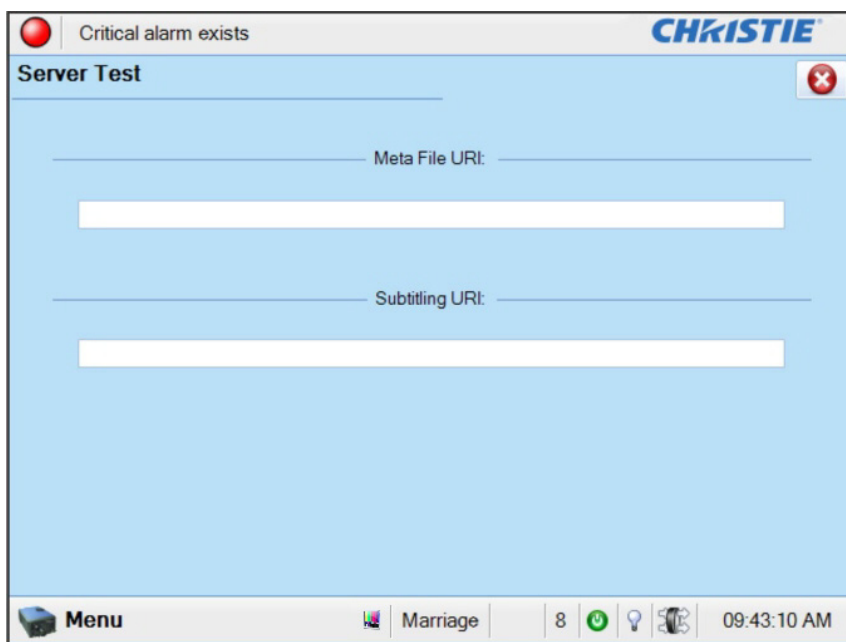


Figure 6-8 Diagnostics: Server Test

6.11 DLP Management Window

Use the DLP Management window to manage the TI Integrated Cinema Processor (ICP) electronics. Tap **Menu > Diagnostics > DLP Management**.

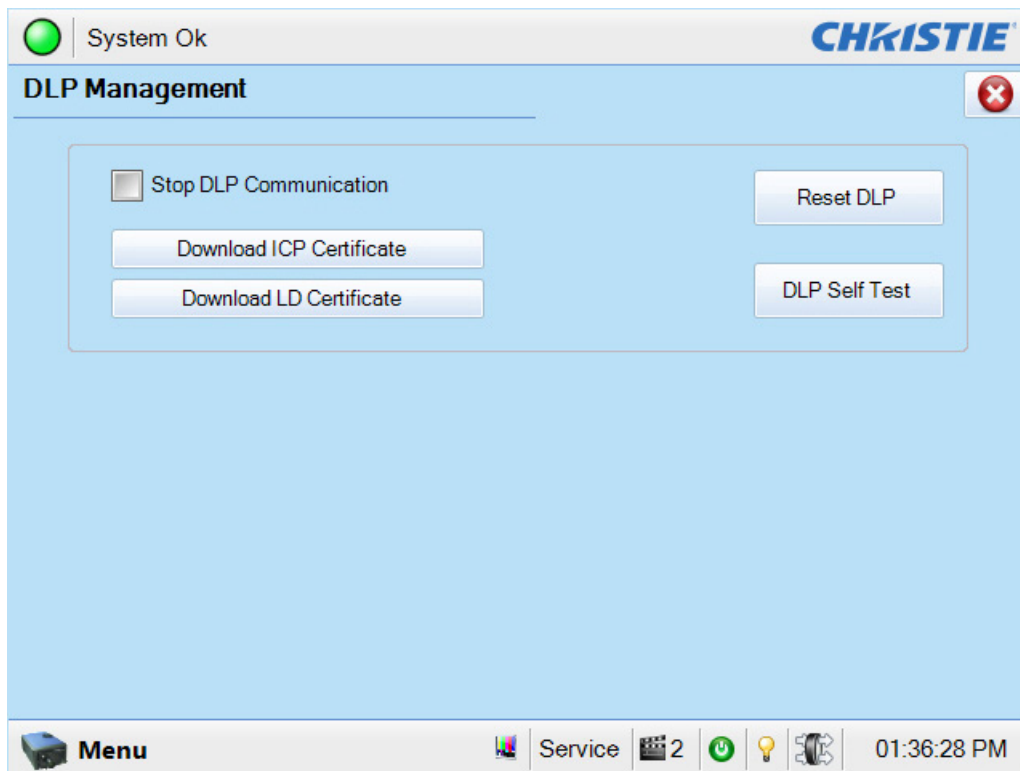


Figure 6-9 Diagnostics: DLP Management Window

Table 6.6 DLP Management Window

Control	Description
Stop DLP Communication	Turns off communication to the DLP hardware (Integrated Cinema Processor and Link Decrypter).
Download ICP Certificate	Copies the ICP certificate to a file on the USB drive. If a USB drive is not available, the file is saved to the FTP root directory.
Download LD Certificate	Copies the LD certificate to a file on the USB drive. If a USB drive is not available, the file is saved to the FTP root directory.
Reset DLP	Resets the ICP board. Do not select this option when a movie is playing.
DLP Self Test	Runs ICP and LD self tests of the DLP hardware and returns the results on-screen.

6.12 Network Devices

The **Network Devices** menu only displays when you add a network device in the **Administrator Setup: Network Devices Setup** window. See [6.15.8 Network Devices Setup Window, on page 6-42](#).

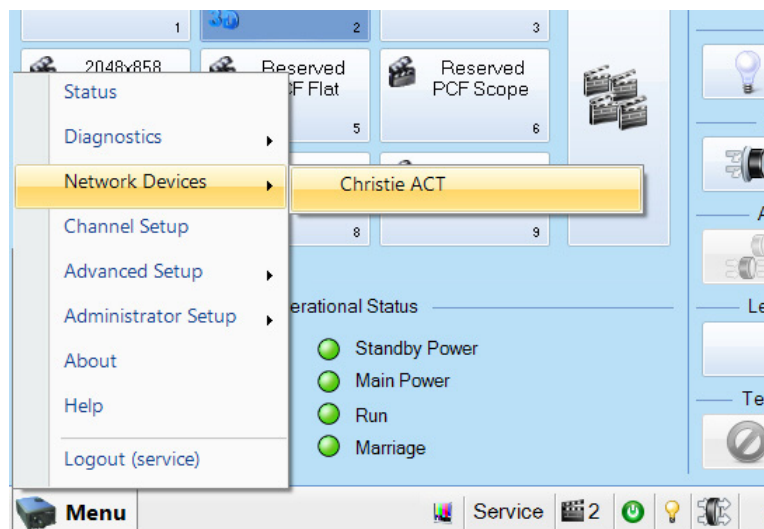


Figure 6-10 Accessing Christie ACT via the Network Devices Window


To interact with the device tap  in the top right corner of the window. To alter the zoom of the device tap **Zoom: 100%**, in the top right corner of the window.



Figure 6-11 Christie ACT Displayed Through the TPC

6.13 Channel Setup Windows

To open the Channel Setup windows you need Advanced, Administrator, or Service permissions. Tap **Menu > Channel Setup**.

Use the Channel Setup window to create and store customized cinema projector settings for different inputs. You can create a maximum of 64 channels.

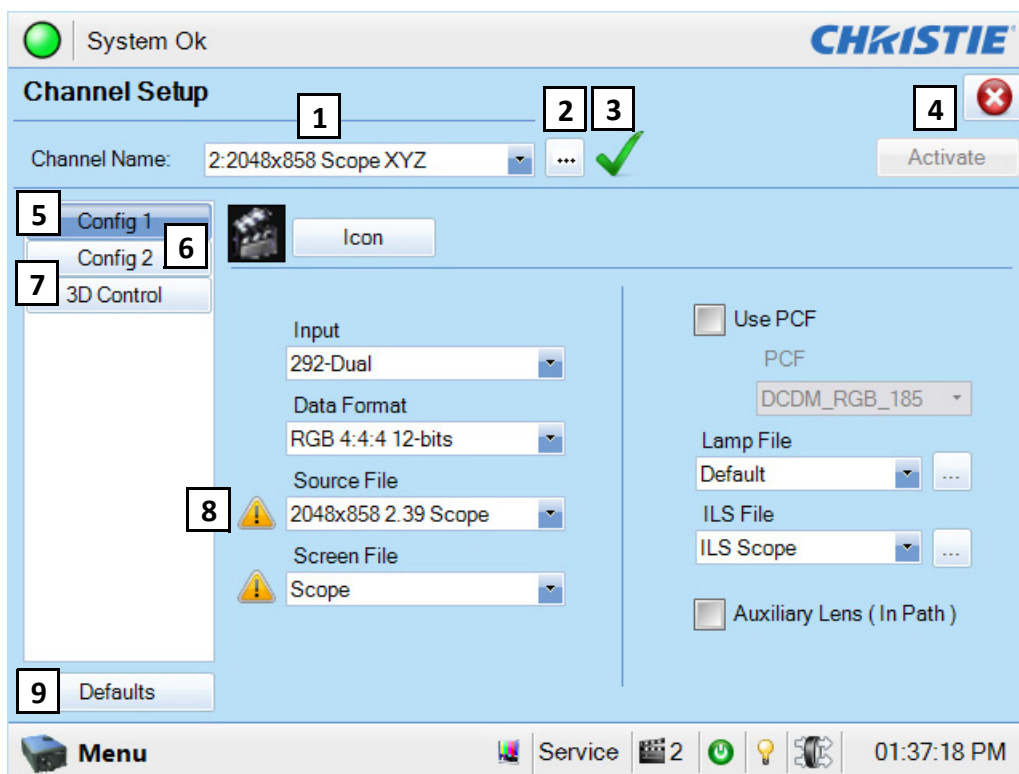


Figure 6-12 Channel Setup Window

Table 6.7 Channel Setup Window

Control	Description
1: Channel Name	The name of the channel.
2: Edit Name	Edits the name of the currently selected channel.
3: Active Channel	Indicates if the selected channel is the active channel.
4: Activate	Activates the selected channel.
5: Config 1	General configuration options.
6: Config 2	Color configuration options.
7: 3D Control	Features to support 3D displays.
8: Warning	The currently displayed file does not exist on the system and needs to be defined in the Advanced Setup window.
9: Defaults	Applies the factory default settings of the current channel or all channels.

6.13.1 Config 1 Window

Use the Channel Setup: Config 1 window to change the channel configuration settings.

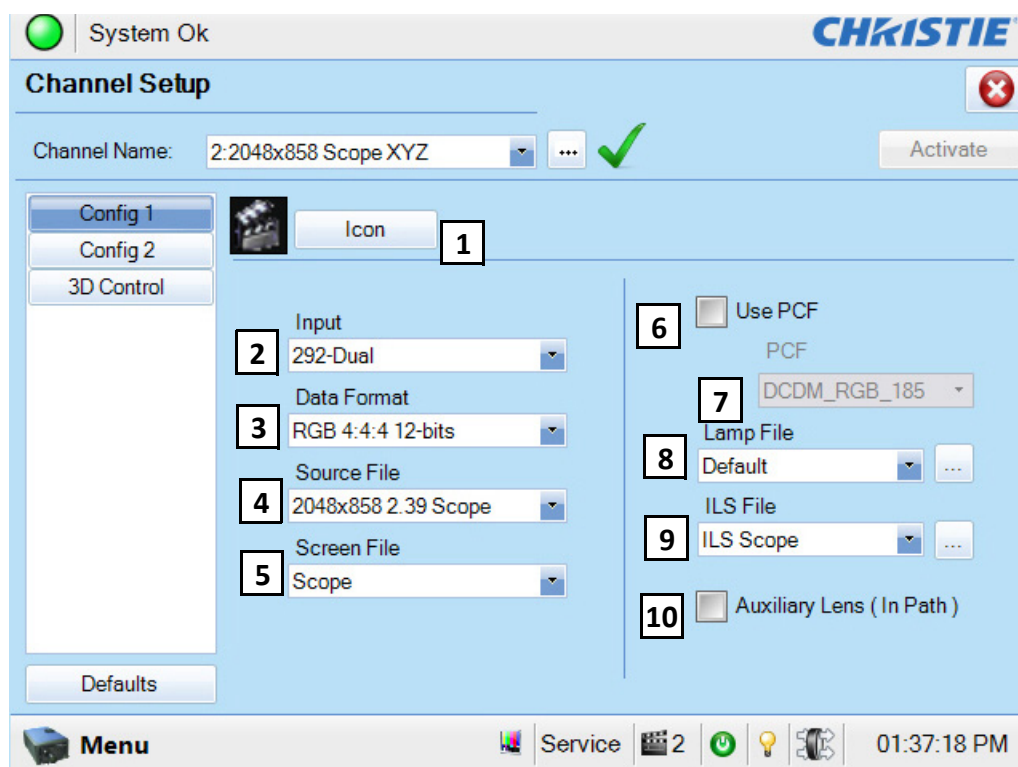


Figure 6-13 Channel Setup: Config 1 Window

Table 6.8 Config 1 Window

Control	Description
1: Icon	The icon associated with the channel.
2: Input	The location or connection for the current input.
3: Data Format	The source type (8-10-12 bit) and whether or not it is packed.
4: Source File	The resolution and aspect ratio of the incoming source. To view a list of available sources, see 6.14.6 Source File Setup Window, on page 6-31 .
5: Screen File	The display area, masking, cropping and lens for the current input.
6: Use PCF	Selects a pre-defined cinema projector Configuration File (PCF) for the input and prevents Channel adjustments.
7: PCF	The PCF file.
8: Lamp File	The lamp configuration associated with the channel. Click Launch Dialog to edit the lamp file settings. Any changes made to the Lamp File settings are applied to all channels that use this lamp file.
9: ILS File	The ILS configuration associated with the channel. Click Launch Dialog to edit the ILS file settings. Any changes made to the ILS File settings are applied to all channels that use this ILS file.
10: Auxiliary Lens	Indicates if the channel uses an anamorphic lens.

6.13.2 Config 2 Window

Use the Channel Setup: Config 2 window to change the color settings of a channel.

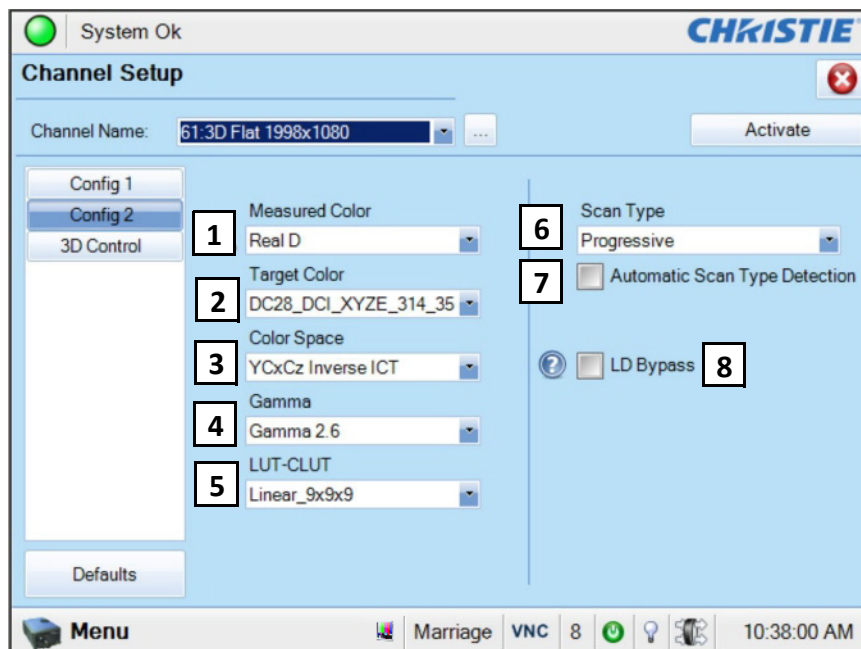


Figure 6-14 Channel Setup: Config 2 Window

Table 6.9 Config 2 Window

Control	Description
1: Measured Color	The Measured Color Gamut Data (MCGD) file to use as a reference for calculating target color processing.
2: Target Color*	The Target Color Gamut Data (TCGD) value.
3: Color Space*	The method of color decoding for the current source. The default is YCbCr for all DVI sources. The default for all cinema sources is Unity RGB.
4: Gamma*	The gamma correction required for the proper tonal range of the source material.
5: LUT_CLUT*	Applies a 3D color cube for increased color accuracy.
6: Scan Type	The video scan type. The default is Progressive .
7: Automatic Scan Type Detection	Automatically performs scan type detection. This feature is supported for PIB inputs only.
8: LD Bypass	Bypasses the link decrypter. Select this option only if Marriage is broken and the content being displayed is not CineLink 2 encrypted.

* **NOTE:** Components marked with an asterisk (*) are part of pre-defined PCFs (cinema projector Configuration Files) that controls image processing for a given source. When you select **Use PCF**, these options are not available.

6.13.3 3D Control Window

Use the 3D Control window to adjust and synchronize incoming 3D signals with external 3D equipment such as screens, emitters, and glasses. For more information, see [4.11 Work with 3D](#).

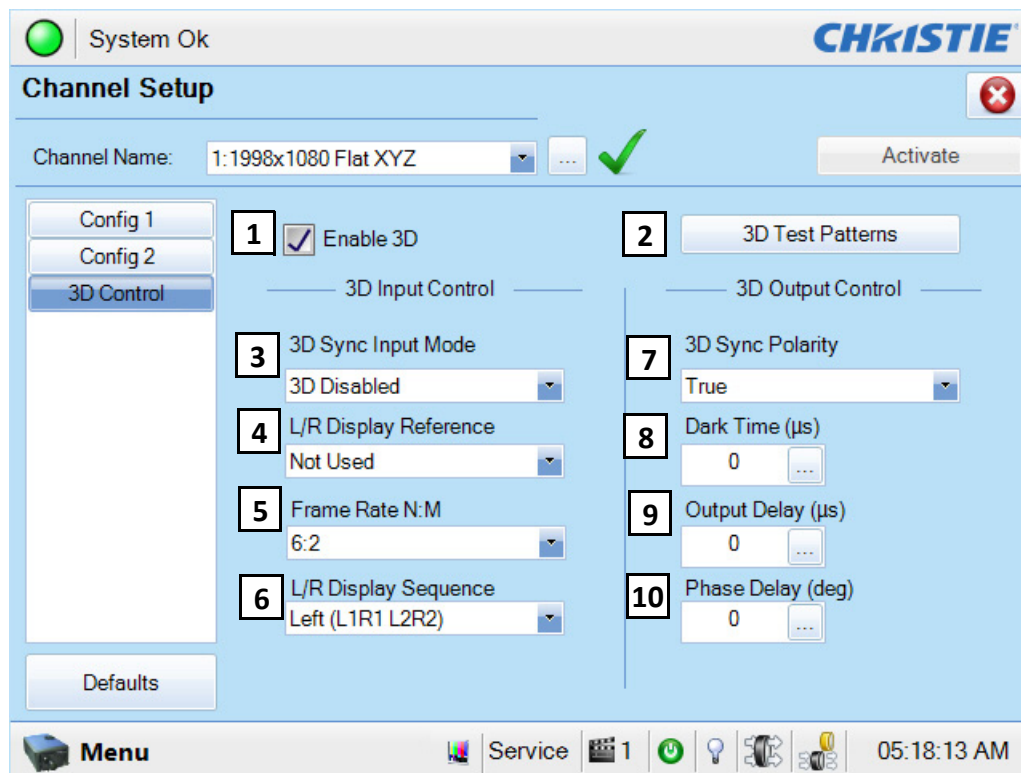


Figure 6-15 Channel Setup: 3D Control Window

Table 6.10 3D Control Window

Control	Description
1: Enable 3D	Enables 3D.
2: 3D Test Patterns	Displays 3D test patterns.

Control	Description
3: 3D Sync Input Mode	<p>Specifies whether a specific frame of input data has left eye or right eye data.</p> <p>Use GPI (polarity = true) or (polarity = inverted): Select if you are using a single 3D signal requiring a separate 3D stereo sync input at the GPIO.</p> <p>Use Selected Input Port (polarity = true) or (polarity = inverted): Select if your 3D source provides separate left and right data via 2 cables at the HD-SDI A and HD-SDI B SMPTE ports. This assumes the 3D stereo sync signal is included with the image data inputs rather than supplied separately at the GPIO port.</p> <p>Use White Line Code (true and inverted): Select only if using a single 3D input signal in which an embedded white line at the bottom of each frame identifies left vs. right, and an additional separate 3D stereo sync input at the GPIO port is not present. The bottom row of the left-eye sub-field should be pure white for the left-most 25% of the pixel row and pure black for the remainder of the row. The bottom row of the right-eye sub-field should be pure white for the left-most 75% of the pixel row and pure black for the remainder of the row.</p> <p>Use Line Interleave: For use with 3D source data only. When specified, the TI system will de-interleave each line into the left image or right image in memory as specified. Line interleave can be used with PsF 3D data (left and right data for one field, then left and right data for second field).</p>
4: L/R Display Reference	Specifies which frame of eye data to display during a specific display frame. This signal is referenced to the display frame rate which is specified by the Frame Rate N:M.
5: Frame Rate N:M	Sets how many frames to display per number of frames that form one complete image. Increase the display frame rate to reduce flicker from your source(s).
6: L/R Display Sequence	Defines the frame order (L-R or R-L) required for 3D perspective. This option only has meaning when the Frame Rate factor M is equal to 2. For this case, 2 input frames of data are required to constitute a complete frame of image data. This parameter tells the system which frames go together to make a complete image. NOTE: When using <i>Line Interleave</i> as the <i>3D Sync Input Mode</i> , ensure that <i>Left (L1R1 L2R2)</i> is selected.
7: 3D Sync Polarity	<p>Keeps 3D stereo sync output the same as input (true) or reversed (inverted).</p> <p>True: 3D L/R sync output from GPO will match L/R sync input.</p> <p>Inverted: 3D L/R sync output from GPO will be the opposite of sync input (left = right, right = left).</p>
8: Dark Time	Creates a blank time interval between left and right frames to allow for LCD shutter glasses, Z screen, or rotating 3D wheel to synchronize the output. See <i>Dark Time and Output Delay Notes</i> below. Values between 0 and 65535 are accepted. Tap the Launch Dialog button to enter the dark time value.
9: Output Delay	The non-image time in Microseconds (μ). Offset 3D stereo sync output in relation to dark time interval. Acceptable values are between -32768 and 32767 are accepted where a positive offset = delay and negative offset = start early. Tap Launch Dialog to enter the output delay value.
10: Phase Delay	The degree of reference between the left and right sync output. Values between -180 and 180 are accepted. Tap Launch Dialog to enter the phase delay value.

FRAME RATE N:M NOTES

These N:M ratios define how many frames to display per number of frames that form one complete image. For all 3D use, the denominator is 2, indicating that 2 frames (left and right) are combined into every complete display frame. For non-3D, it is 1 frame. Set it to the highest rate possible without image cropping.

EXAMPLE

4:2 = 4 frames displayed
2 frames per image

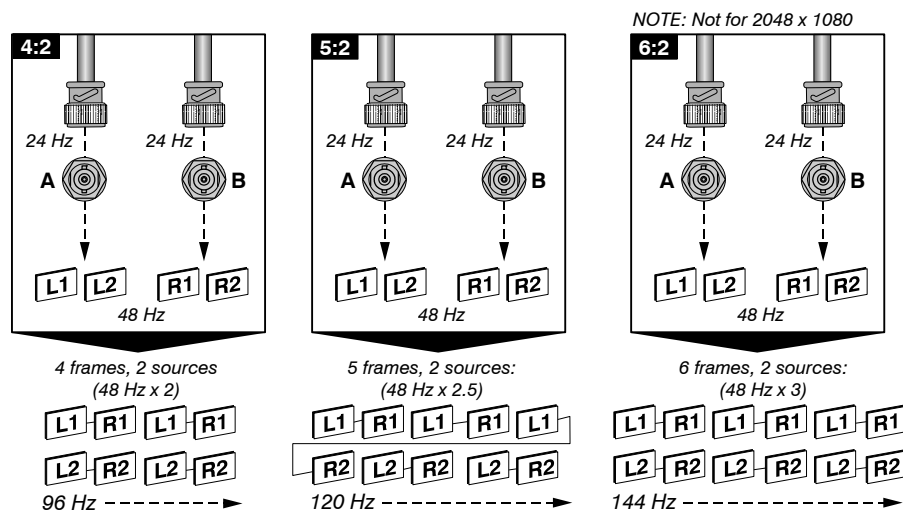


Figure 6-16 Examples of Frame Rate N:M

DARK TIME and OUTPUT DELAY NOTES

The dark time between incoming left and right frames provides a brief interval of non-image time (in microseconds) for your switching device (such as shutters in glasses) to complete its switch. When this interval is set properly, neither eye sees image data intended for the other eye and this helps to prevent color artifacts and ghosting. The output delay setting shifts the 3D sync in relation to the Dark Time interval, starting each frame slightly earlier (-) or later (+). Too much offset can cause “bleed-through” where each eye sees some data that is intended for the other, or causes color cropping since some DMD sequences may be clipped.

6.14 Advanced Setup Windows

To open the Advanced Setup window you need Advanced, Administrator, or Service permissions.

Use the Advanced Setup windows to define the operating parameters for the cinema projector including lamp settings and the lens position.

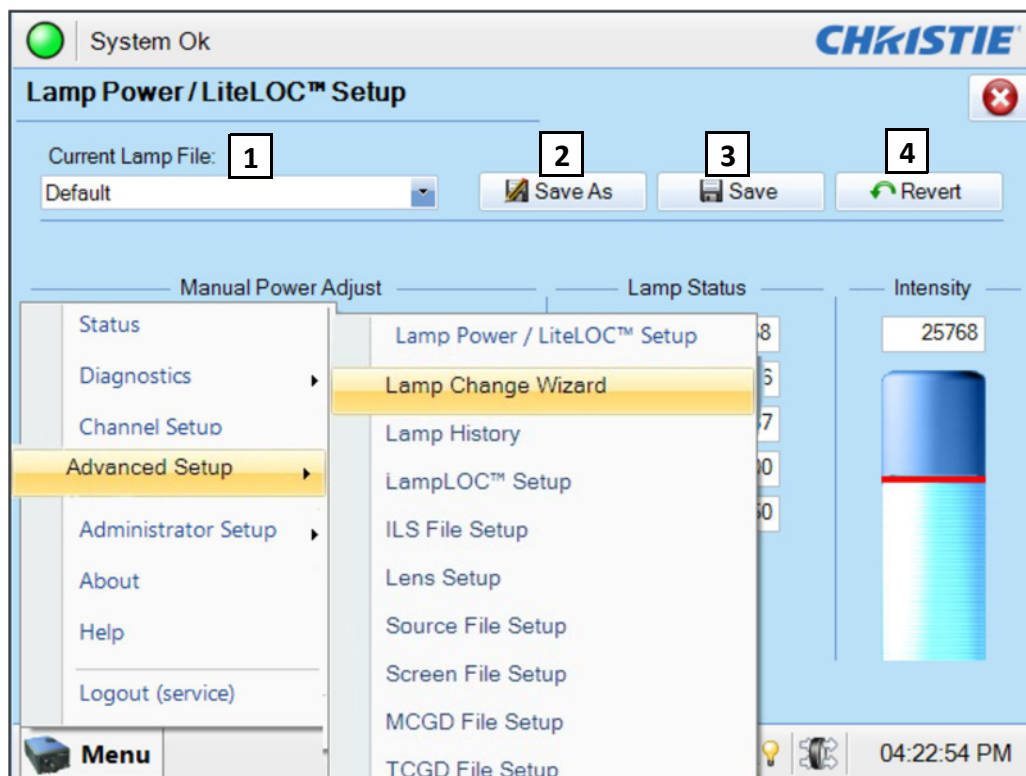


Figure 6-17 Functionality in Advanced Setup Windows

Table 6.11 Functionality in Advanced Setup Windows

Control	Description
1: Current File	The file to which you want to apply modifications. This option is only available in the Lamp Power / LiteLOC™ Setup , ILS Setup , Source File Setup , Screen File Setup , MCGD File Setup and TCGD File Setup windows. Changes are applied to all channels that use this file.
2: Save As	Saves the configuration file with a new name.
3: Save	Saves the configuration file.
4: Revert	Cancels unsaved screen settings and reapplies the saved settings.

6.14.1 Lamp Power / LiteLOC™ Setup Window

LiteLOC™ is a power control algorithm that increases the power level to maintain lamp brightness as the lamp ages. Tap **Menu > Advanced Setup > Lamp Power/LiteLOC™ Setup**.

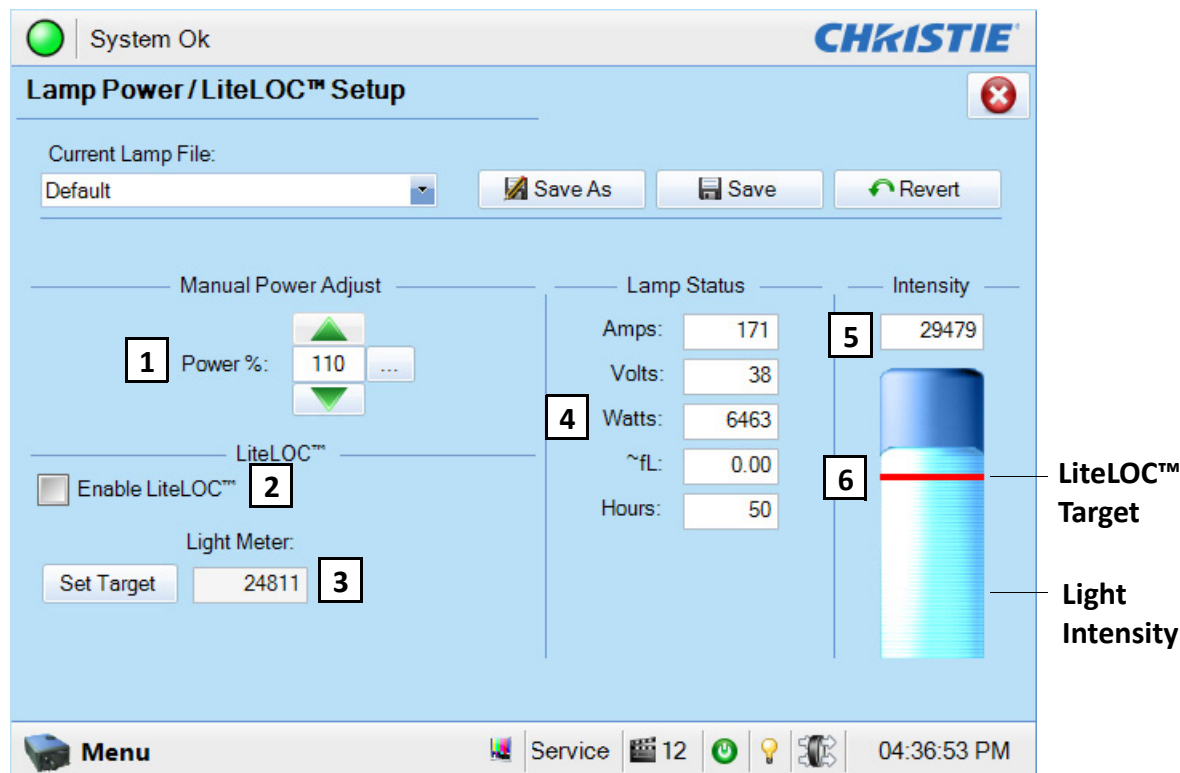


Figure 6-18 Lamp Power / LiteLOC™ Setup Window

Table 6.12 Lamp Power / LiteLOC™ Setup

Control	Description
1: Power %	The percentage of power to supply to the lamp. See 6.14.2 for the valid Lamp Power ranges for specific lamp types.
2: Enable LiteLOC™	Applies LiteLOC™ to the current channel.
3: Light Meter - Set Target	Automatically enables LiteLOC™ and maintains the current brightness level as long as possible. The Light Meter value is an arbitrary unit of measure, not lumens or fL.
4: Amps, Volts, Watts, ~fL or ~cd/m ² , Hours	Lamp current in amperes, lamp voltage in volts, lamp power in watts, approximate Foot Lamberts reading on the light sensor (assuming a calibration was performed), and hours on current lamp.
5: Text Region	The current light sensor reading in arbitrary units-of -measure and does not represent actual lumens or fL.
6: Light Bar	The current light intensity and LiteLOC™ target .

6.14.2 Lamp History Window

The **Lamp History** window displays a list of the previous and current lamps installed in the cinema projector. Tap **Menu > Advanced Setup > Lamp History**.

You cannot remove a lamp from the list after you add it.

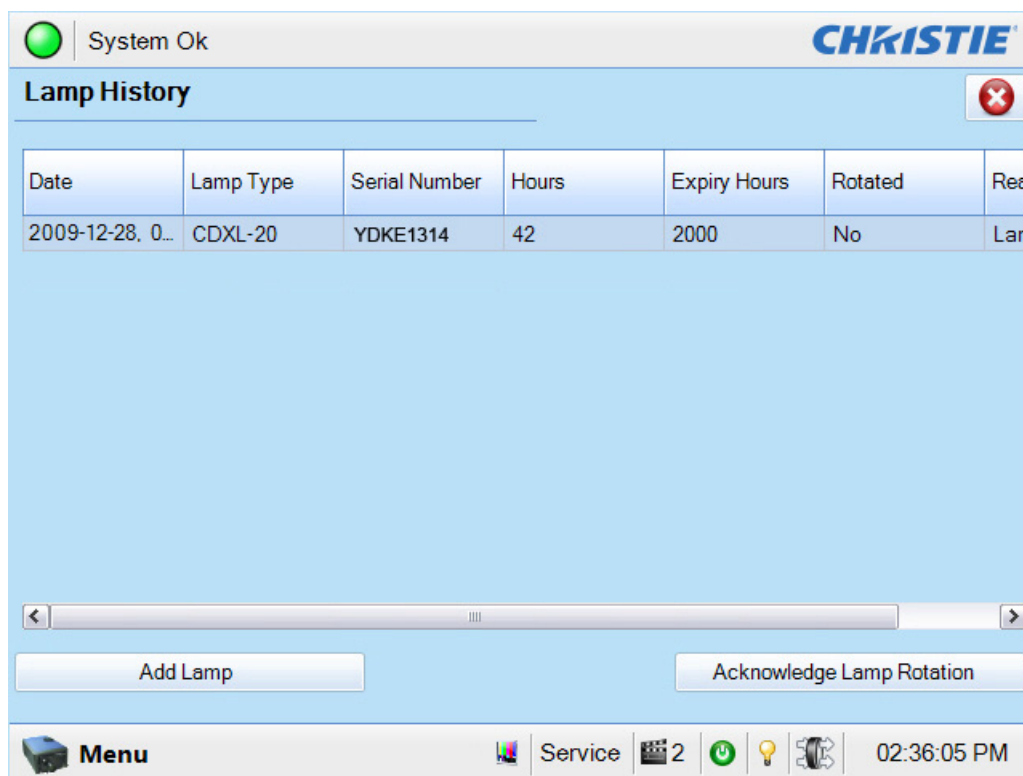


Figure 6-19 Advanced Setup: Lamp History Window

Table 6.13 Lamp History Window

Control	Description
Date	The date the lamp was installed.
Lamp Type	The lamp type.
Serial Number	The lamp serial number.
Hours	The number of hours the lamp has operated.
Expiry Hours	The number of hours the lamp operates before it is replaced.
Rotated	Specifies if the lamp has been rotated.
Reason	The reason for changing the lamp.
Add Lamp	Tap Add Lamp to open the Add Lamp window. See Add Lamp Window, on page 6-27 .
Acknowledge Lamp Rotation	Acknowledge the lamp has been rotated.

Add Lamp Window

The screenshot shows the 'Add Lamp' window in the Christie Solaria projector's menu system. The window is titled 'Add Lamp' and is overlaid on the 'Lamp History' screen. The 'Add Lamp' window contains the following fields and controls:

- Type:** A dropdown menu currently set to 'CDXL-20SD'.
- Serial Number:** An empty text input field.
- Reason for Change:** An empty text input field.
- Lamp Expiry (Hours):** A numeric input field set to '1200'.
- Hours Used:** A numeric input field set to '0'.
- Buttons:** 'Save' and 'Cancel' buttons at the bottom right of the window.

The background 'Lamp History' screen shows a table with the following columns: Date, Lamp Type, Serial Number, Hours, Expiry Hours, Rotated, and Rea. The bottom of the screen features a 'Menu' button, 'Service' status, and a clock showing 06:01:05 PM.

Figure 6-20 Add Lamp Window

Table 6.14 Add Lamp Window

Control	Description
Type	The lamp type.
Serial Number	The serial number of the new lamp. A serial number can be up to 32 alpha-numeric characters.
Reason for Change	The reason you are installing the lamp.
Lamp Expiry	The number of hours the lamp operates before it is replaced. For information about lamp expiry hours for available lamps, see 5.5.8 Lamp Expiry Hours.
Hours Used	The number of hours the lamp has operated.

6.14.3 LampLOC™ Setup Window

Use the LampLOC Setup window to reposition the cinema projector bulb for optimized light output. Tap **Menu > Advanced Setup > LampLOC™ Setup**

Click **Do Auto** to run LampLOC automatically. You must turn the lamp on before you run LampLOC. If you turn the lamp off during LampLOC, the bulb returns to its former position. The douser is open and it is not functional during a LampLOC adjustment. To keep the bulb optimized as it ages, run LampLOC once a month.

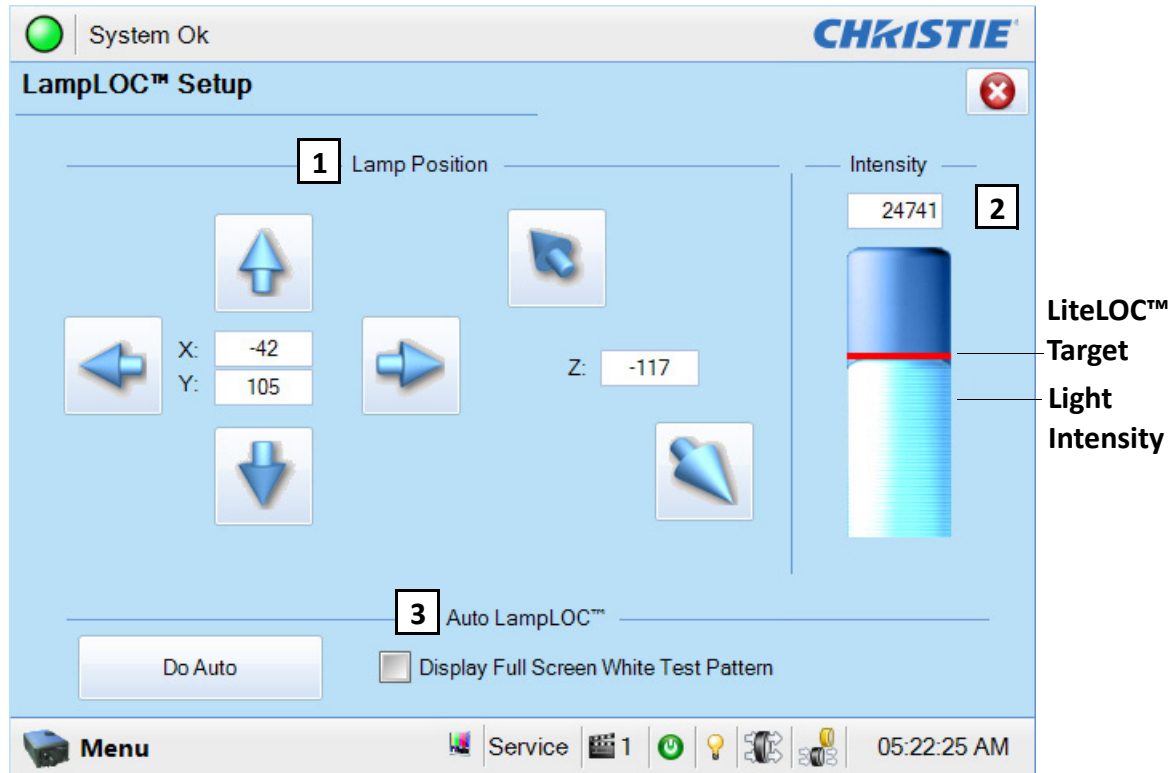


Figure 6-21 LampLOC™ Setup Window

Table 6.15 Advanced Setup: LampLOC™ Setup Window

Control	Description
Left/Right Up/Down In/Out Arrow Buttons	Moves the lamp up, down, in, out, left, and right. The current position of the lamp displays in Cartesian coordinates. Tap once to increase or decrease the lamp position by a single increment. Press and hold a button to increase or decrease the lamp position by multiple increments. You cannot move the lamp beyond the pre-defined limits for the cinema projector. For CP2210, X/Y = +/-250; Z = +/-175.
Value	Shows the current light sensor reading in arbitrary units-of -measure and does not represent actual lumens or fL.
Light Bar	Indicates the current light intensity (vertical bar) and LiteLOC™ target (red horizontal line).
Do Auto	Starts the auto LampLOC™ calibration procedure, which adjusts the lamp position until the highest light reading is obtained from the light sensor.
Display Full Screen White Test Pattern	Temporarily displays a full screen white test pattern for the duration of the LampLOC™ adjustment. The previous display reappears when you close the LampLOC™ Setup page or clear the check box.

Control	Description
Auto LampLOC™ Progress Bar	Shows the current LampLOC™ procedure completion status.
Cancel Auto	Cancels the LampLOC calibration.

6.14.4 ILS File Setup Window

⚠ WARNING To prevent the projection lens and the Motorized Auxiliary Lens Mount (MALM) colliding, move the MALM to the out position before calibrating the lens or resetting the MALM. When performing a lens calibration keep your fingers away from moving parts.

Use the ILS File Setup window to modify the Intelligent Lens System (ILS) settings in an ILS file. Tap **Menu** > **Advanced Setup** > **ILS File Setup**

The ILS File Setup window is not available if you have not selected the ILS Installed option in the Lens Setup window. Changes made to settings are applied to all channels that use the ILS file. Tap once to increase or decrease the focus, offset, or zoom by a single increment. Press and hold a button to increase or decrease the focus, offset, or zoom by multiple increments. If you adjust the focus, offset, or zoom of the lens mount manually, the new settings are not saved in the ILS file.

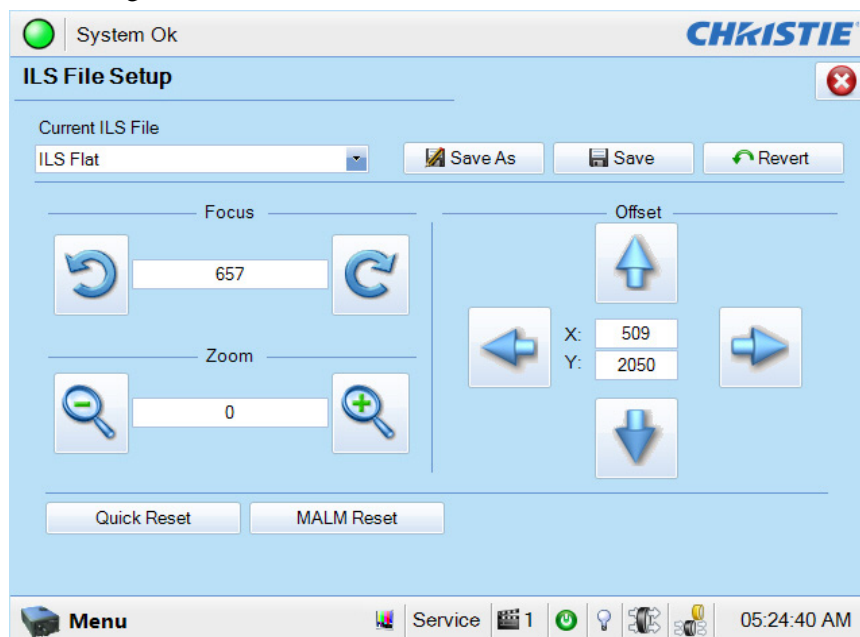


Figure 6-22 ILS File Setup Window

Table 6.16 ILS File Setup A

Control	Description
Focus	Adjusts the focus.
Zoom	Adjusts the zoom.
Offset	Adjusts the offset.
Quick Reset	Resets the lens to the mechanical center before moving back to the original position.
MALM Reset	Resets the position of the MALM to the mechanical reference point.

6.14.5 Lens Setup Window

Use the Lens Setup window to setup the primary and auxiliary lenses and configure the Intelligent Lens System (ILS) if it is installed. Tap **Menu > Advanced Setup > Lamp Power/LiteLOC™ Setup**.

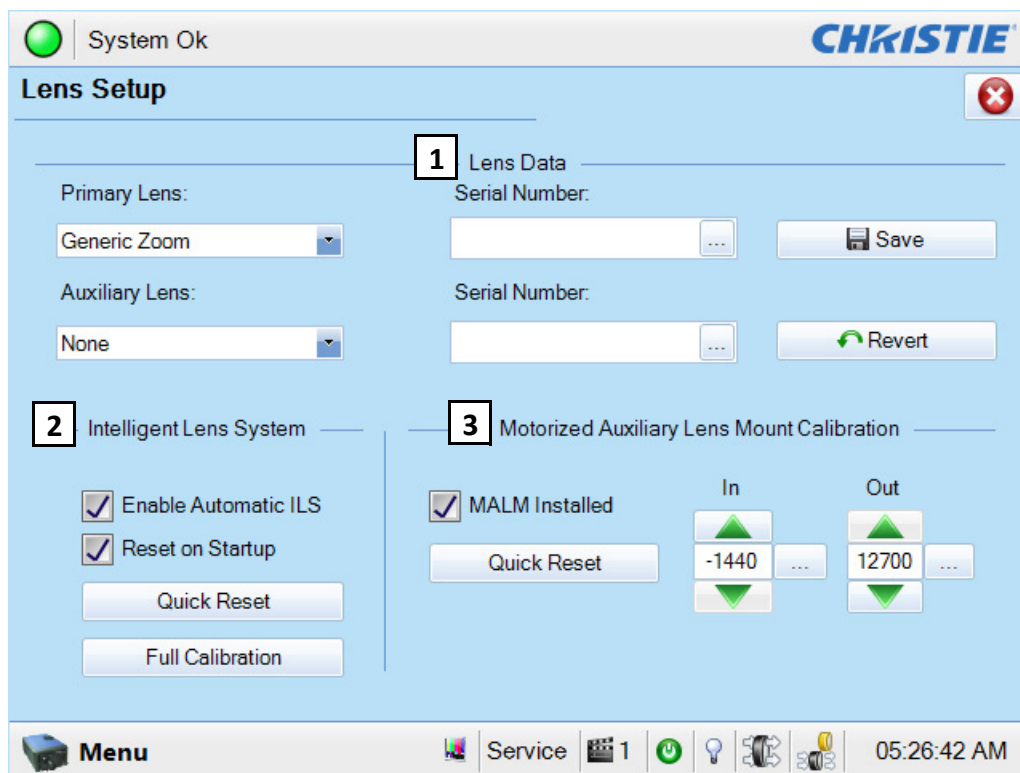


Figure 6-23 Lens Setup Window

Table 6.17 Lens Setup Window

Control	Description
Primary Lens	The type of primary lens installed on the cinema projector.
Serial Number	The serial number for the primary lens.
Auxiliary Lens	The type of auxiliary lens installed on the cinema projector.
Serial Number	The serial number for the auxiliary lens.
Save	Saves the lens type or serial number(s).
Revert	Reverts to the last saved values for the lens type or serial number(s).
Enable Automatic ILS	Automatically moves the lens to the position specified by the channel and overwrites focus, zoom, and offset settings in the ILS file.
Reset on Startup	Uses ILS settings to calibrate the lens when you start the cinema projector.
Quick Reset	Resets the ILS and returns the lens to the manual position..
Full Calibration	Perform a full ILS calibration and returns the lens to the manual position.
MALM Installed	Indicates a MALM is installed on the cinema projector.
MALM Reset	Resets the position of the MALM to the mechanical reference point.

Control	Description
In	Moves the MALM to the right or left. If the MALM is in the OUT position (right), the MALM moves to the IN position (left) before the incremental adjustments begin.
Out	Moves the MALM to the right or left. If the MALM is in the IN position, the MALM moves to the OUT position (right) before the incremental adjustments begin.

6.14.6 Source File Setup Window

Use the Source File Setup window to create source files that store resolution, offset, and aspect ratio settings for input devices. Tap **Menu** > **Advanced Setup** > **Source File Setup**.

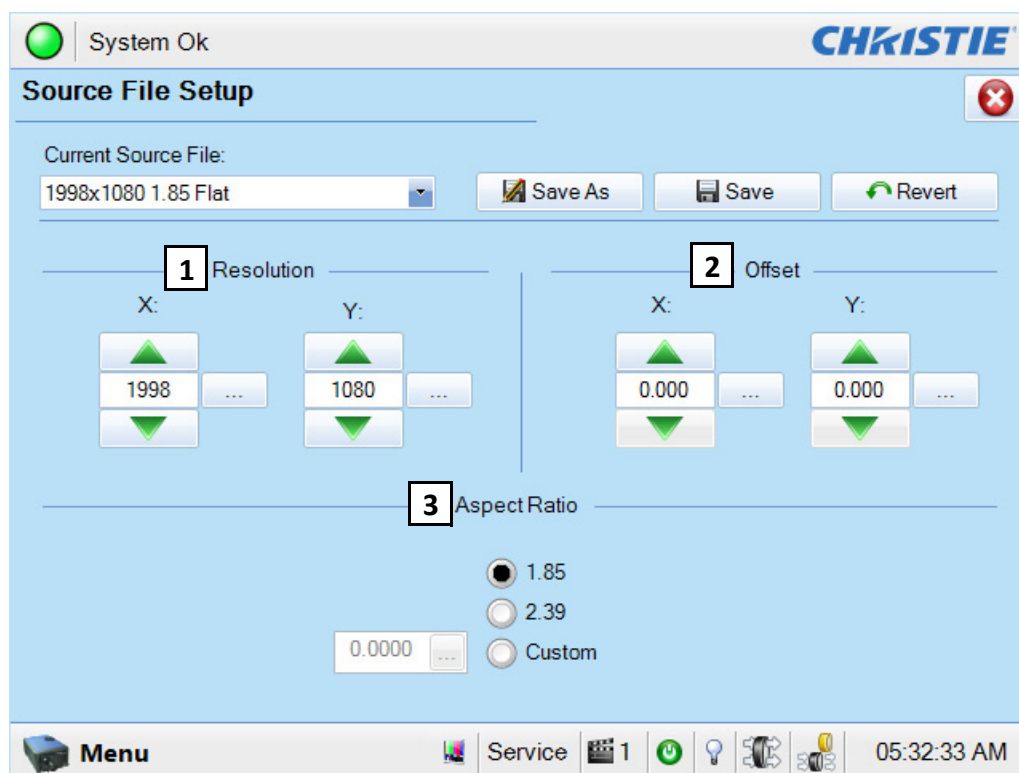


Figure 6-24 Source File Setup Window

Table 6.18 Source File Setup Window

Control	Description
1: Resolution	The X and Y resolution of the incoming signal. For example, 2048 (X) and 858 (Y) or 1920 (X) and 1080 (Y). The resolution must match the incoming signal format. Tap once to increase or decrease the resolution by a single increment. Tap and hold a button to increase or decrease the resolution by multiple increments.
2: Offset	The amount of incoming data to discard. Set the values to zero to process all incoming data. Tap once to increase or decrease the offset by a single increment. Press and hold a button to increase or decrease the offset by multiple increments. The allowable X range is -4096 to 4096 pixels and Y range of -2160 to 2160 pixels.
3: Aspect Ratio	The aspect ratio for the incoming signal. The allowable range is 0 to 7.99..

6.14.7 Screen File Setup Window

Use the Screen File Setup window to define the display panel size and how you want the image cropped. You can save your settings, and apply them to other input devices. Tap **Menu > Advanced Setup > Screen File Setup**.

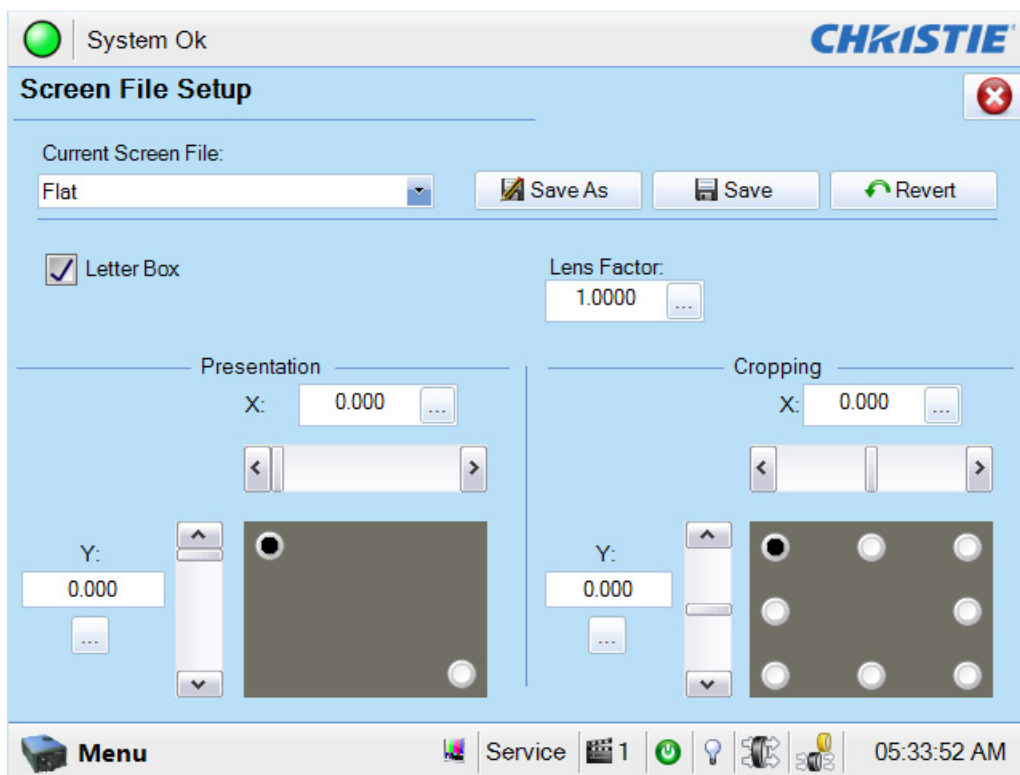


Figure 6-25 Screen File Setup Window

Table 6.19 Screen File Setup Window

Control	Description
Letter Box	All image data is displayed and the aspect ratio is maintained.
Lens Factor	The amount you want to stretch an image horizontally. Allowable values can range from 0.00 to 7.99. Enter 1 if you are not using an anamorphic lens.
Presentation	The size and location of the image. By default, the cinema projector uses a 4096 x 2160 panel.
Cropping	Hides unwanted image data.

6.14.8 MCGD File Setup Window

Use the MCGD File Setup window to correct uncorrected, on-screen colors. Tap **Menu** > **Advanced Setup** > **MCGD File Setup**.

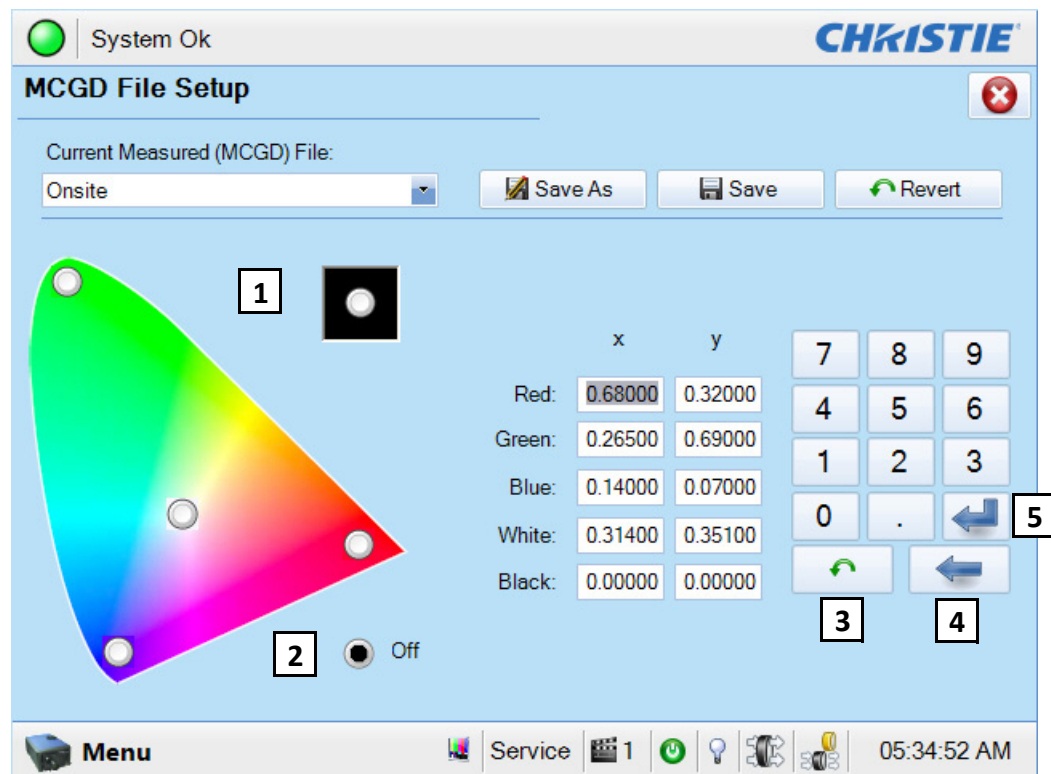


Figure 6-26 MCGD File Setup Window

Table 6.20 MCGD File Setup Window

Control	Description
1: Gamut Visual Control	Enables the color test pattern on the screen.
2: Off Button	Turns off the displayed color and returns the cinema projector to content play.
3: Revert	Reverts to the previously saved value.
4: Back	Deletes the entry before the cursor one character at a time.
5: Enter Button	Advances the cursor to the next text region.

Record MCGD Color Settings

1. On the Touch Pad Controller, open the **MCGD File Setup** window.
2. In the **Current Measured (MCGD) File** list, select **Onsite**.
3. Tap a color option button to display the full-field YCbCr test pattern.
4. Measure the coordinates at the screen with a color meter.
5. Enter the values in the **X** and **Y** fields of the **MCGD File Setup** window.
6. Repeat Steps 3 - 5 for each color.
7. Select **Off** and then tap **Save**.

6.14.9 TCGD File Setup Window

Use the TCGD File Setup window to modify or create custom Target Color Gamut Data (TCGD) files. Tap **Menu > Advanced Setup > TCGD File Setup**.

A TCGD file appears in the **Channel Setup: Config 2** window as **Target Color** where you can select it for use in the display.

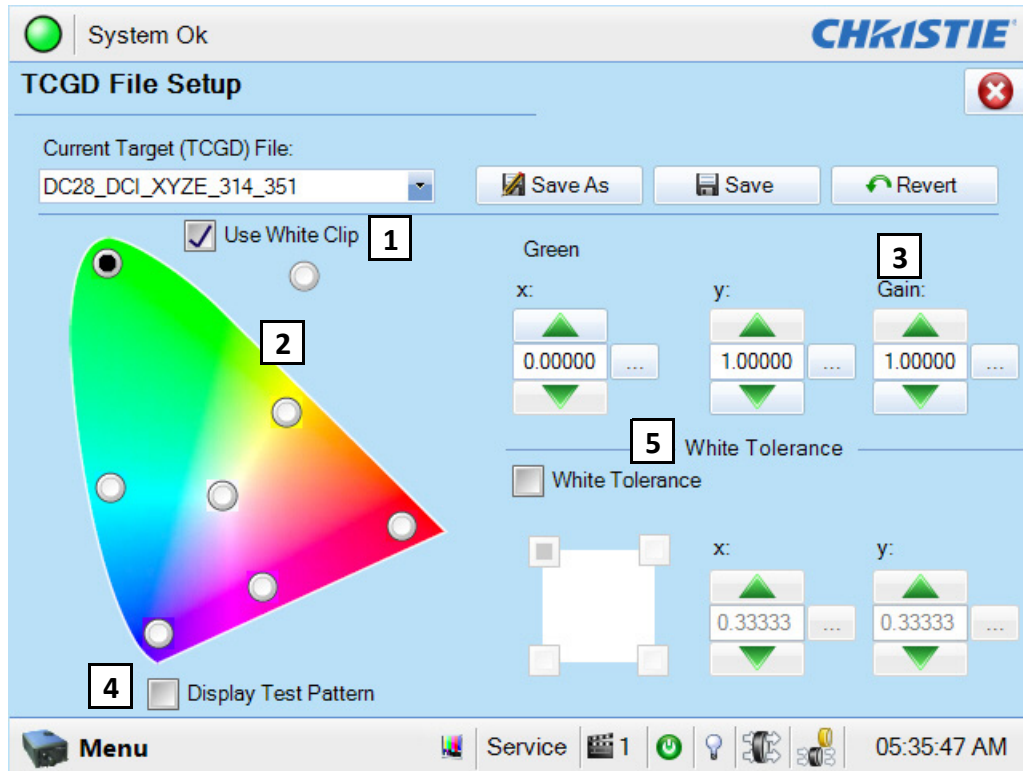


Figure 6-27 TCGD File Setup Window

Table 6.21 TCGD File Setup Window

Control	Description
1: Use White Clip	Brings the chromaticity of white within range with the cinema projector without sacrificing output brightness or contrast.
2: Gamut Visual Control	Displays the corresponding x and y color coordinates for the current target color gamut.
3: Gain	The brightness or intensity of each color when compared with a full white, ranging from 0 (0%) to 1 (100%).
4: Display Test Pattern	Shows a test pattern when the color changes.
5: White Tolerance	Enables the White Tolerance grid and x and y text boxes.

6.15 Administrator Setup Windows

To open the Administrator Setup window you need Administrator, or Service permissions.

Use the Administrator Setup windows to define cinema projector settings.

6.15.1 Preferred Channel Setup Window

To open the Preferred Channel Setup window you need Administrator or Service permissions. Tap **Menu > Administrator Setup > Preferred Channel Setup**.

Use the Preferred Channel Setup window to manage and organize the channels that appear on the Main panel of the Touch Panel Controller.

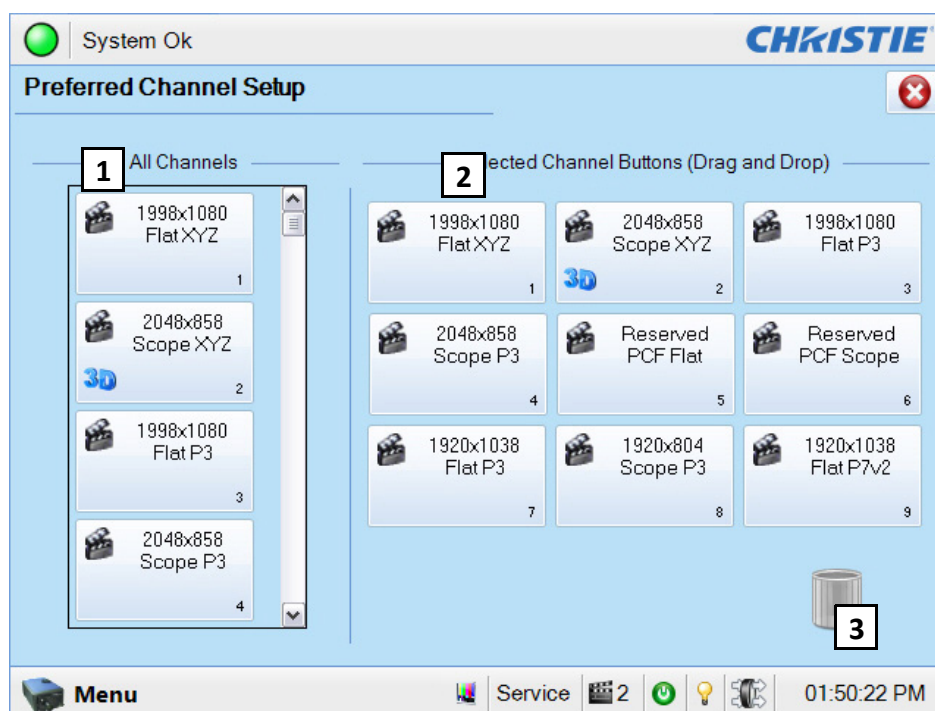


Figure 6-28 Preferred Channel Setup Window

Table 6.22 Preferred Channel Selection Window

Control	Description
1: All Channels	An alphabetical list of the 64 available channels.
2: Selected Channel Buttons	The 9 buttons that display on the Main panel of the TPC.
3: Trash Can	Deletes a channel from the Selected Channel Buttons area.

6.15.2 Preferred Test Pattern Setup Window

Use the Preferred Test Pattern Setup window to manage and organize test patterns. To open the Preferred Test Pattern Setup window you need Administrator or Service permissions. Tap **Menu** > **Administrator Setup** > **Preferred Test Pattern Setup**.

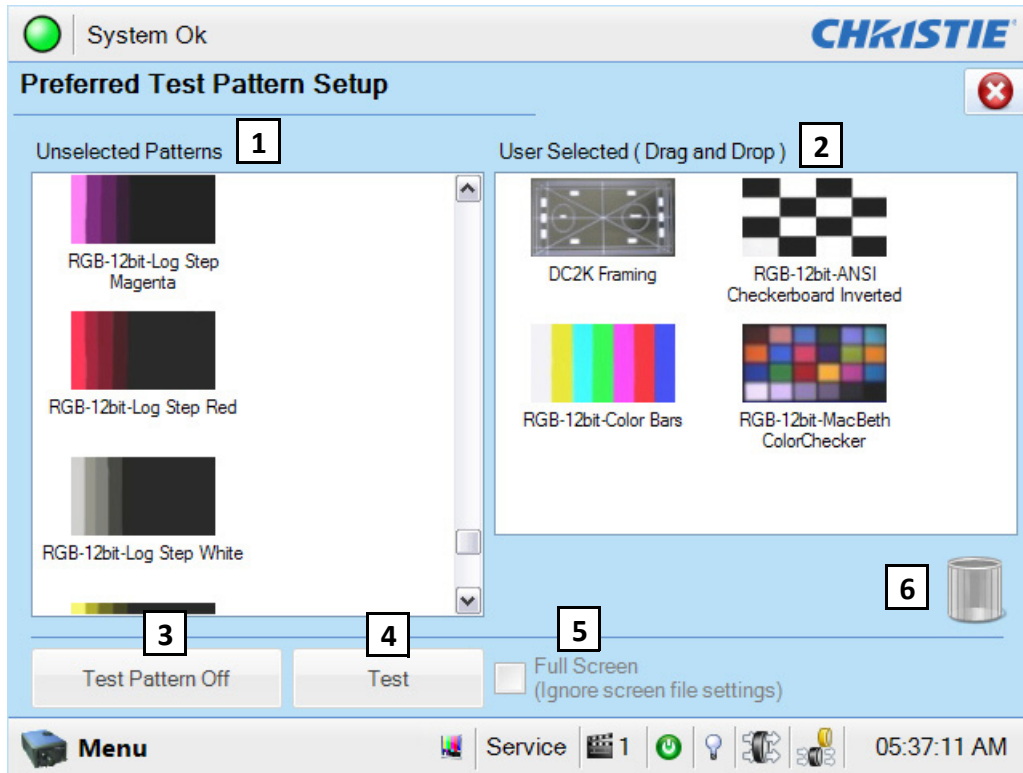


Figure 6-29 Administrator Setup: Preferred Test Pattern Setup Window

Table 6.23 Preferred Test Pattern Setup Window

Control	Description
1: Unselected Patterns	An alphabetical list of all available test patterns for display by the cinema projector for you to choose from. If a pattern is dragged to the User Selected region, it will be removed from this list.
2: User Selected	A list of test patterns selected by you.
3: Test Pattern Off	Removes the test pattern currently displayed.
4: Test	Displays the selected test pattern.
5: Full Screen	Displays the test pattern full screen, 2048 x 1080.
6: Trash Can	Used to delete a test pattern from the User Selected region.

6.15.3 Preferences Window

Use the Preferences window to modify cinema projector system settings. To open the Preferences window you need Administrator or Service permissions. Tap **Menu > Administrator Setup > Preferences**.

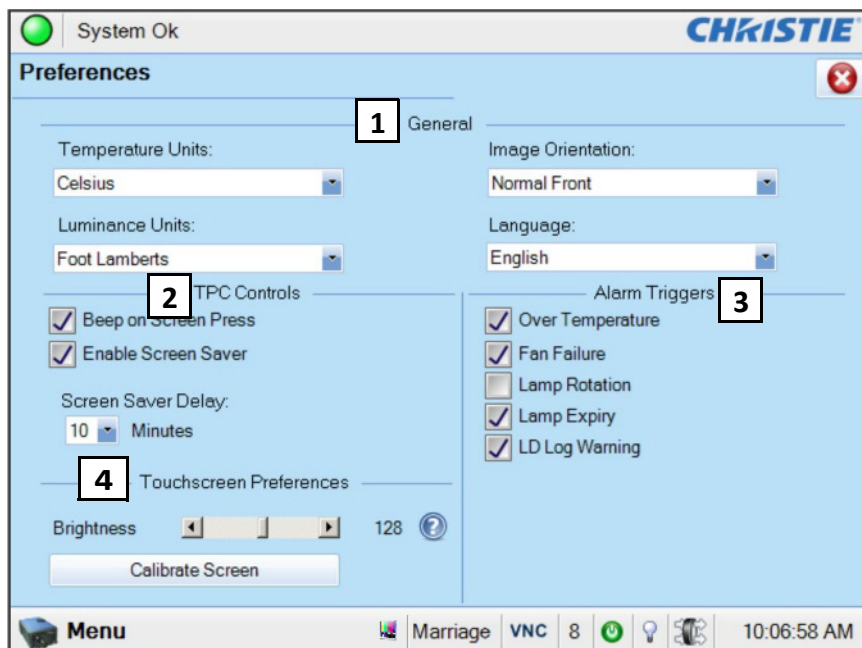


Figure 6-30 Preferences Window

Table 6.24 Preferences Window

Control	Description
Temperature Units	Determines if temperature information is displayed in Celsius or Fahrenheit.
Image Orientation	The direction of the on screen image.
Luminance Units	Determines if luminance information is displayed in Foot Lamberts or Candela.
Language	The language for the TPC and online help.
Beep on Screen Press	Plays a sound when you touch the TPC screen.
Enable Screen Saver / Screen Saver Delay	Enables a screen saver and determines the frequency that the screen saver appears.
Over Temperature, Fan Failure, Lamp Rotation, Lamp Expiry, LD Log Warning	Opens an alarm window when a pre-defined event occurs.
Brightness	Adjusts the brightness of the touch screen display.
Calibrate Screen	Opens the Calibrate window.

6.15.4 Content Devices Configuration

Use the Content Devices Configuration window to indicate when a Link Decrypter (LD) or an Image Media Block (IMB) is installed in the cinema projector. To open the Content Devices Configuration window you need Administrator or Service permissions. Tap **Menu > Administrator Setup > Content Devices Configuration**.

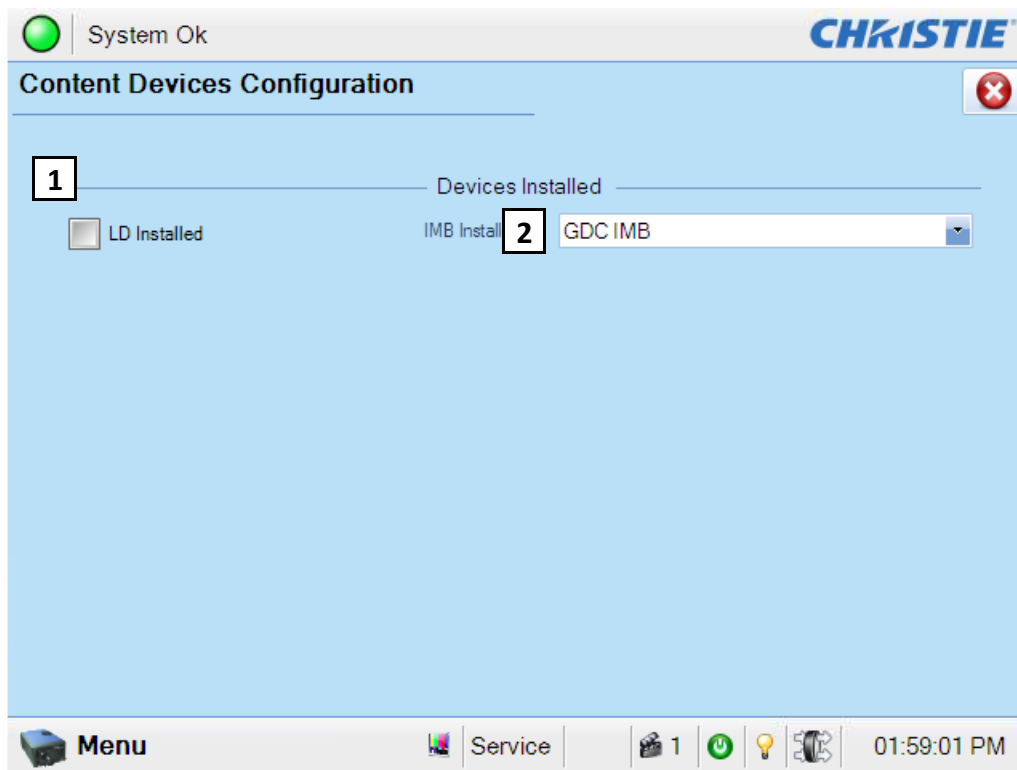


Figure 6-31 Content Devices Configuration Window

Table 6.25 Content Devices Configuration

Control	Description
LD Installed	Indicates a Link Decrypter (LD) is installed.
IMB Installed	Indicates an Image Media Block (IMB) is installed.

6.15.5 Time Setup Window

Use the Time Setup window to change cinema projector time settings. To open the Time Setup window you need Administrator or Service permissions. Tap **Menu > Administrator Setup > Time Setup**.

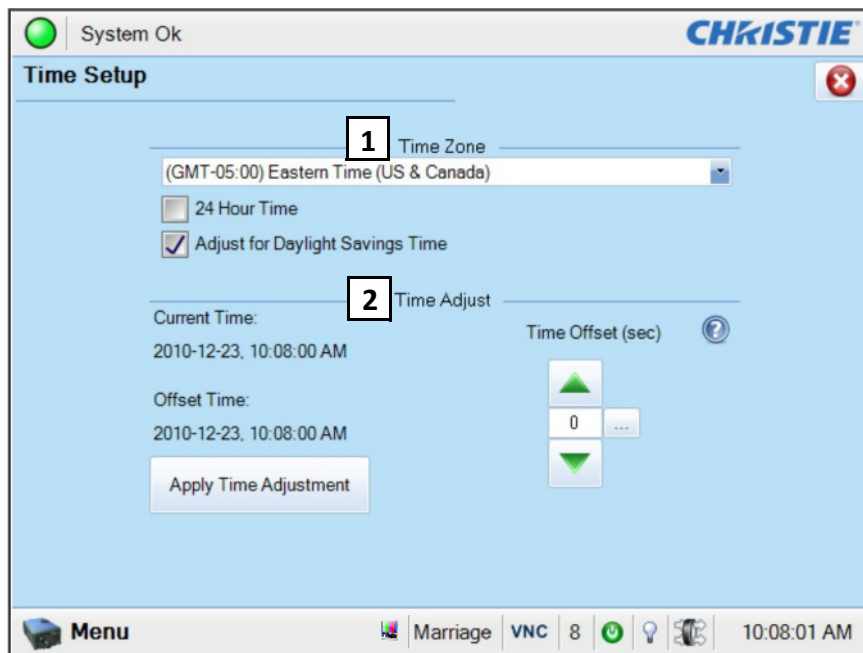


Figure 6-32 Time Setup Window

Table 6.26 Administrator Setup: Time Setup Window

Control	Description
Time Zone	The time zone where the cinema projector is installed.
24 Hour Time	Displays time in a 24-hour format.
Adjust for Daylight Savings Time	Automatically adjusts the time for daylight savings.
Time Offset	Increases or decreases the cinema projector time.
Apply Time Adjustment	Applies time adjustment settings.

6.15.6 Scheduler Window

Use the Scheduler window to schedule when the cinema projector turns on or off. To open the Scheduler window you need Administrator or Service permissions. Tap **Menu** > **Administrator Setup** > **Scheduler**.

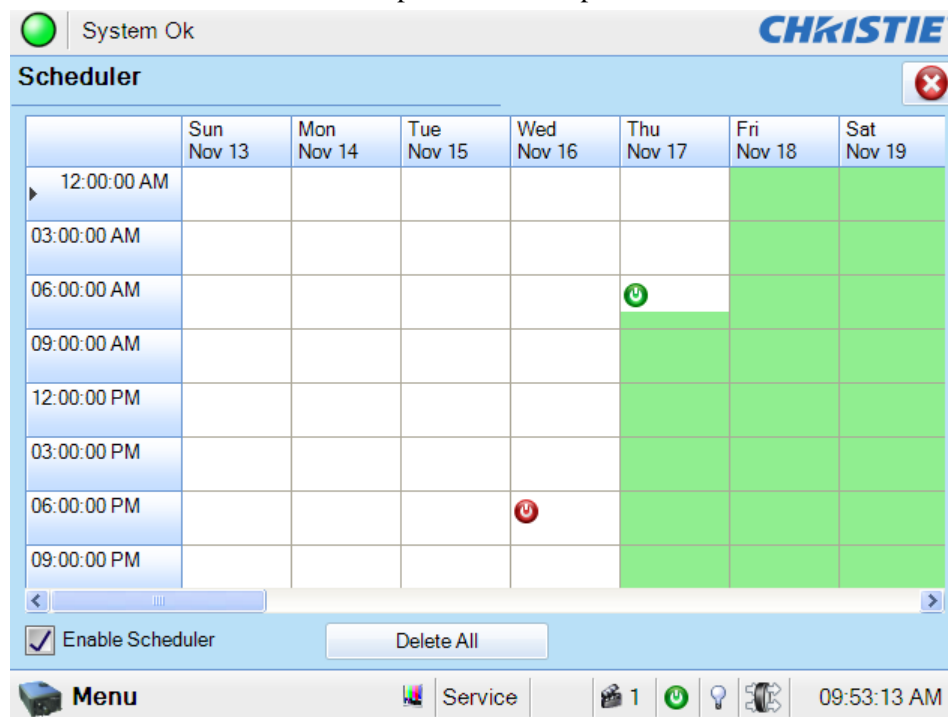


Figure 6-33 Administrator Setup: Scheduler Window

Table 6.27 Administrator Setup: Scheduler Setup Window

Control	Description
Enable Scheduler	Enables or disables the scheduler.
Delete All	Deletes all scheduled events.

6.15.7 Communications Configuration Window

Use the Communications Configuration window to configure Ethernet settings, serial communication parameters, SNMP settings, and remote access settings. To open the Communications Configuration window you need Administrator or Service permissions. Tap **Menu > Administrator Setup > Communications Configuration**.

CHKISTIE®

System Ok

Communications Configuration

Device Name: **1**
Solaria

2 Ethernet Settings

IP Address: 192 ... 168 ... 231 ... 78 ...
Subnet Mask: 255 ... 255 ... 252 ... 0 ...
Gateway: 192 ... 168 ... 228 ... 1 ...

3 RS-232 Settings

Serial Speed (Baud):
115200

4 SNMP Settings

☐ Enable SNMP ☐ SNMP V2 ☒ SNMP V3

Management IP: 0 ... 0 ... 0 ... 0 ...

5 Remote Access

Serial Access:
Free Access

Ethernet Access:
Free Access

Download MIB to USB Apply

Menu Service 1 05:41:58 AM

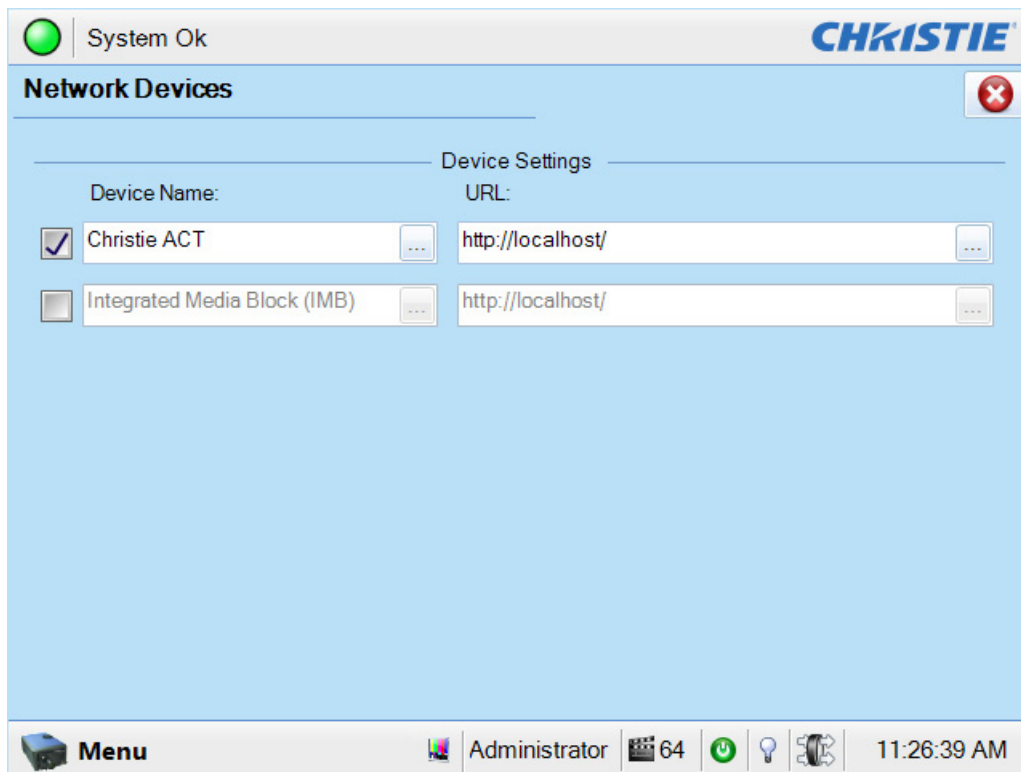
Figure 6-34 Communications Configuration Window

Table 6.28 Communications Configuration Window

Control	Description
Device Name	The name of the network device.
IP Address	The IP address of the network device.
Subnet Mask	The subnet mask to which the address belongs.
Gateway	The IP address for the network gateway.
Apply	Applies Ethernet settings.
Serial Speed (Baud)	The baud rate of the serial port. The default is 115200.
Enable SNMP	Enables SNMP.
SNMP V2 / SNMP V3	The SNMP protocol type. Contact Christie for the SNMP V3 user ID and password.
Management IP	The IP address where SNMP information and notifications are sent.
Download MIB to USB	Sends the SNMP Management Information Base (MIB) file to a USB drive.
Apply	Applies SNMP settings.
Serial Access	Grants access to serial connections.
Ethernet Access	Grants access to Ethernet connections.

6.15.8 Network Devices Setup Window

Use the Network Devices window to view the web interface of external peripherals such as Christie ACT and the Integrated Media Block (IMB). Tap **Menu > Administrator Setup > Network Devices Setup**.

**Figure 6-35 Network Devices Setup Window**

Add a Network Device

1. In the **Device Name** area, select the check box to the left of the device you are adding.
2. Enter the device name in the **Device Name** field.
3. In the **URL** field, enter the URL of the device you are adding.
4. Click **Menu**, select **Network Device**, and then select a network device. The web interface for this device appears.

6.15.9 GPIO Setup Window

Use the GPIO Setup window to configure the input and output settings of the GPIO interface. To open the GPIO Setup window you need Administrator or Service permissions. Tap **Menu** > **Administrator Setup** > **GPIO Setup**.

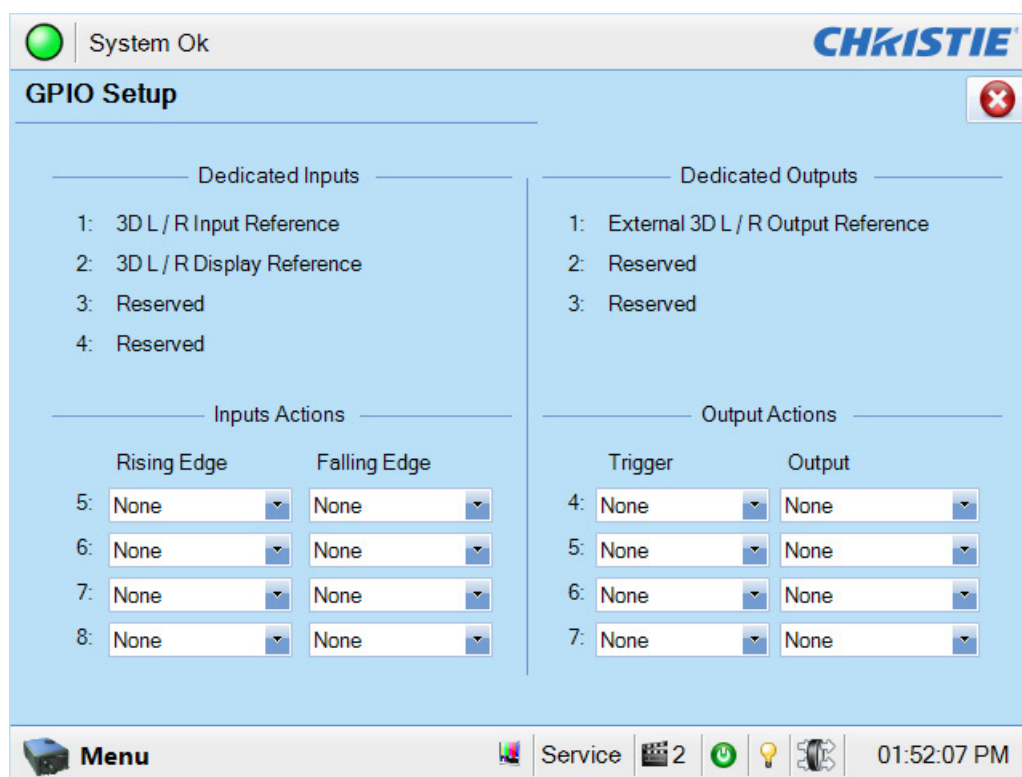


Figure 6-36 GPIO Setup Window

Table 6.29 GPIO Setup Window

Control	Description
Rising Edge	The rising edge for the signal.
Falling Edge	The falling edge for the signal.
Trigger	The trigger that is sent when the function is activated.
Output	The output that triggers the GPIO signal.

6.15.10 Foot Lamberts Calibration Window

Use the Foot Lamberts Calibration wizard to calibrate the internal light meter to Foot Lamberts. When you run Foot Lamberts Calibration during a show, the show stops. To run the Foot Lamberts Calibration wizard you need Administrator or Service permissions. Tap **Menu** > **Administrator Setup** > **Foot Lamberts Calibration**.

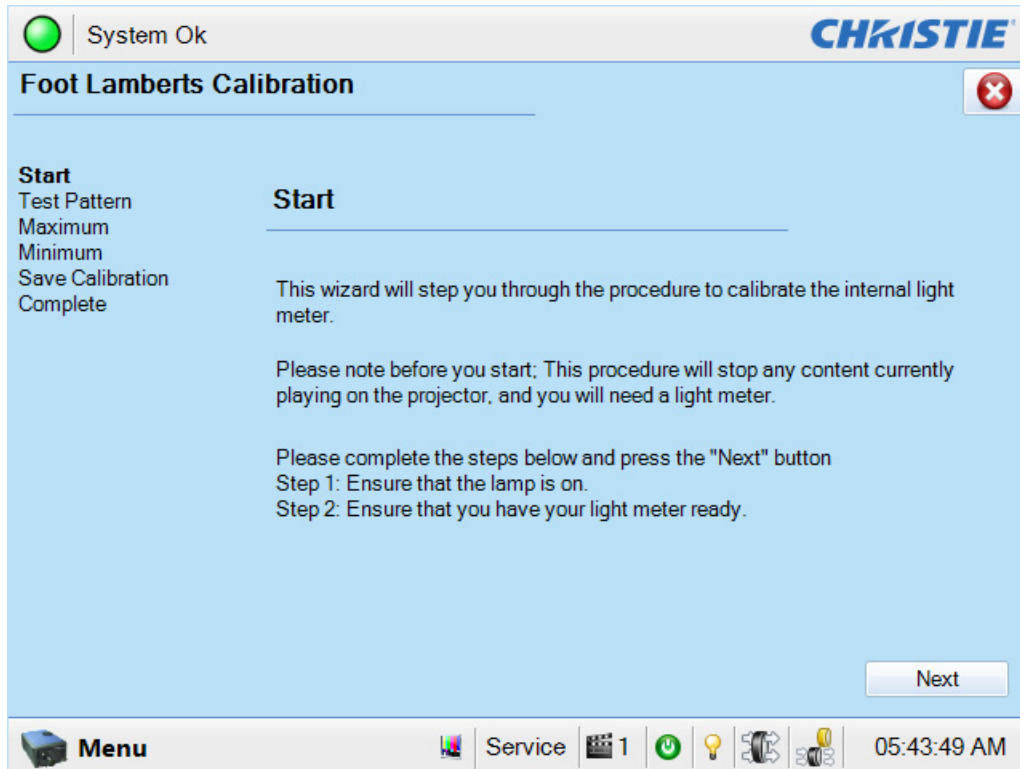


Figure 6-37 Foot Lamberts Calibration Start Window

6.15.11 User Accounts Window

The **User Accounts** window provides options for the management of users, passwords, and user access rights. Depending on your login level, you will be able to manage users having the same or fewer access rights as you. Tap **Menu > Administrator Setup > User Accounts**.

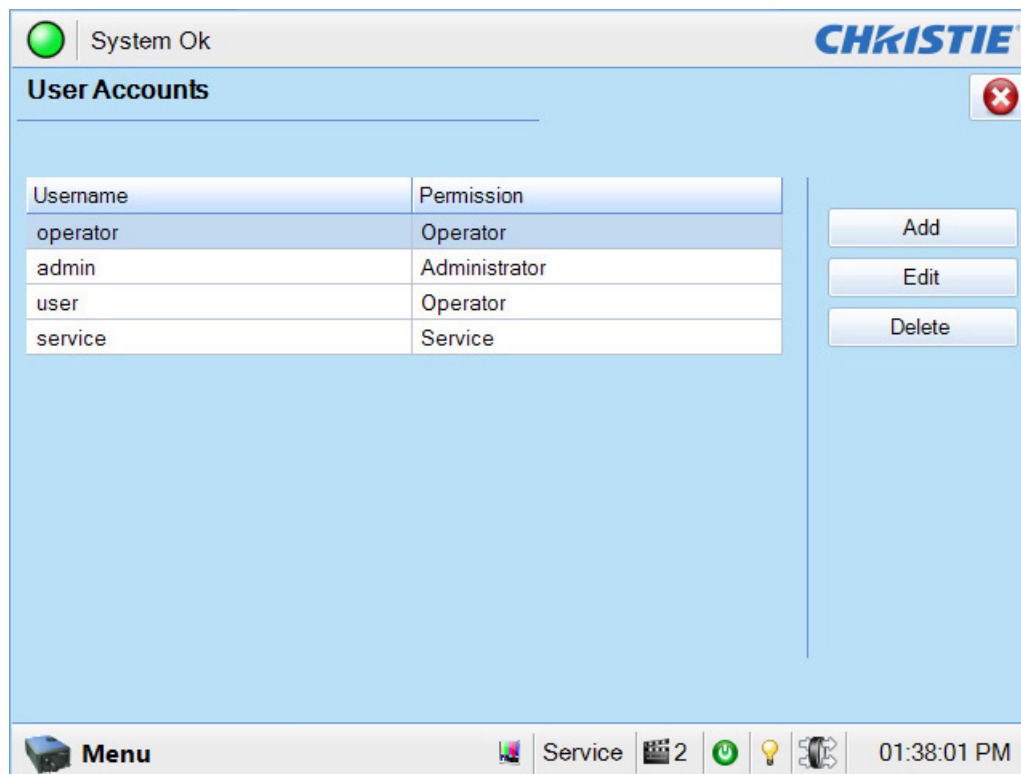


Figure 6-38 User Accounts Window

Table 6.30 User Accounts Window

Control	Description
User Name and Permission	A list of all users and their permissions.
Add	Adds a username, password and permission level for a new user.
Edit	Edit user passwords and permissions.
Delete	Deletes a user account.

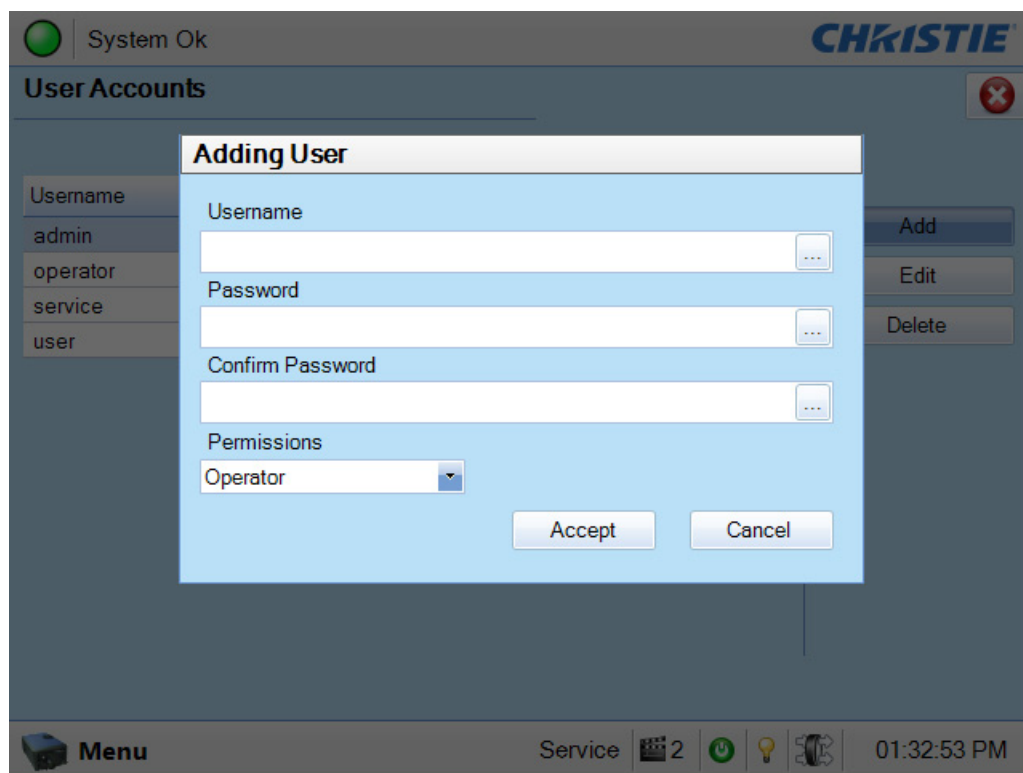


Figure 6-39 Add a New User Window

6.15.12 Upgrade Window

Use the Upgrade window to upgrade the cinema projector software. You must have Administrator or Service permissions to upgrade software.

File Selection Window

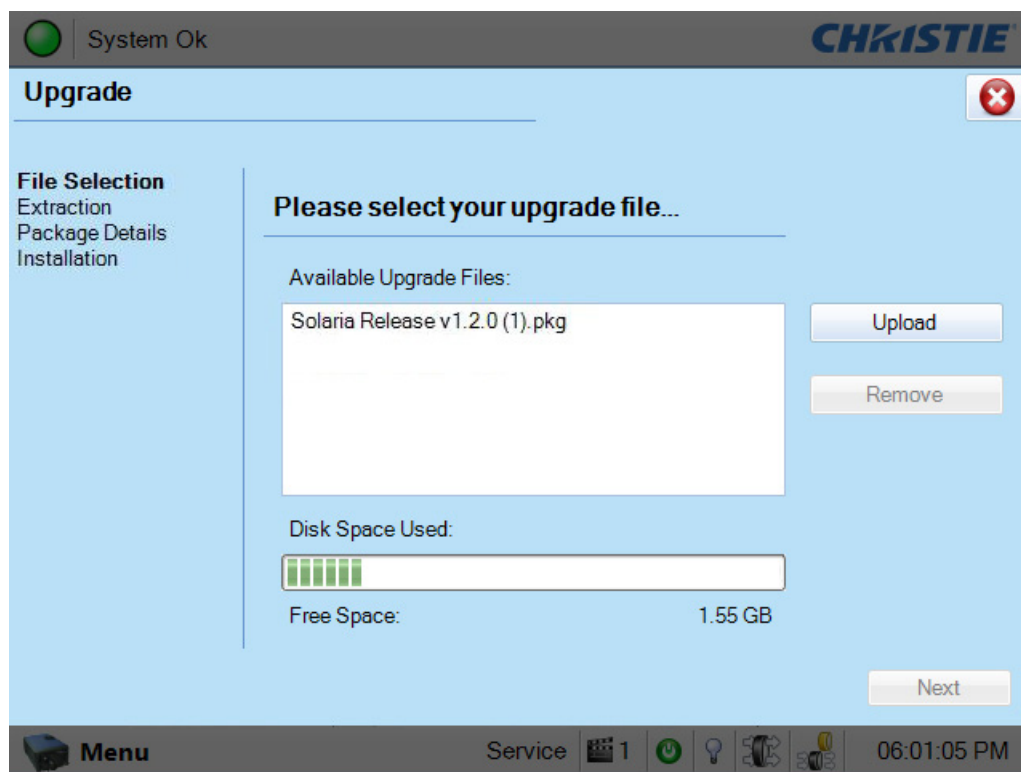


Figure 6-40 Upgrade: File Selection Window

Table 6.31 Upgrade: File Selection Window

Control	Description
Available Upgrade Files	Lists all the upgrades currently stored in the FTP directory of the cinema projector.
Disk Space Used	A visual representation of the amount of used disk space on the cinema projector.
Free Space	The amount of available free space on the cinema projector.
Upload	Uploads a file.
Remove	Deletes an upgrade file.
Next	Opens the Extraction window.

Upgrade Package Details Window

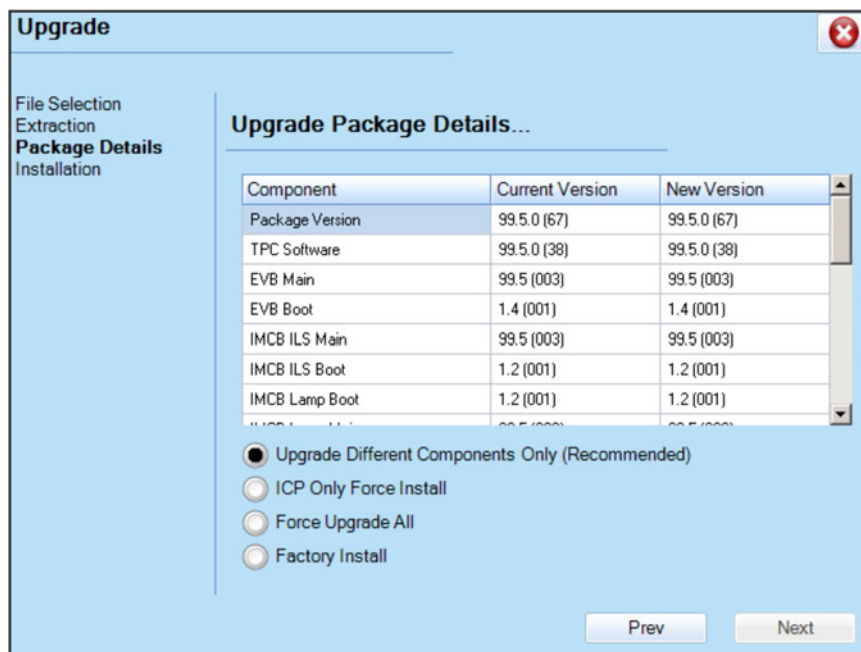


Figure 6-41 Upgrade: Package Details Window

Table 6.32 Upgrade: Package Details Window

Control	Description
Upgrade Different Components Only	Upgrades system components that are newer or older than the currently installed version.
ICP Only Force Install	Forces an ICP install regardless of what current version is installed.
Force Upgrade All	Upgrades all components in the upgrade package.
Factory Install	Removes all configurations and upgrades all components.

6.16 Service Setup Windows

To open the Service Setup window you need Service permissions.

Use the Service Setup windows to manage backup and restores of cinema projector data.

6.16.1 System Access Window

Use the System Access window to access Microsoft Windows functions. Tap **Menu** > **Service Setup** > **System Access**.

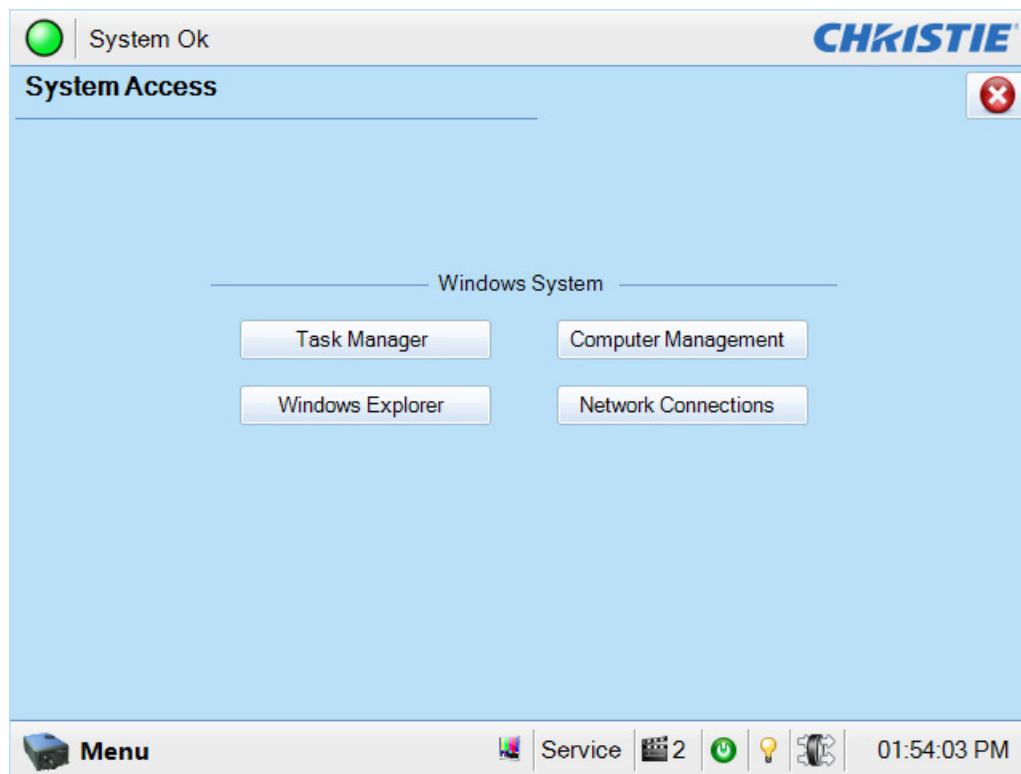


Figure 6-42 System Access Window

Table 6.33 System Access Window

Control	Description
Task Manager	Opens the Microsoft Windows Task Manager.
Computer Management	Opens the Computer Management window.
Windows Explorer	Opens Windows Explorer.
Network Connections	Opens the Network Connections window.

6.16.2 File Management Window

Use the File Management window to manage backups and restore system settings. Tap **Menu** > **Service Setup** > **File Management**.

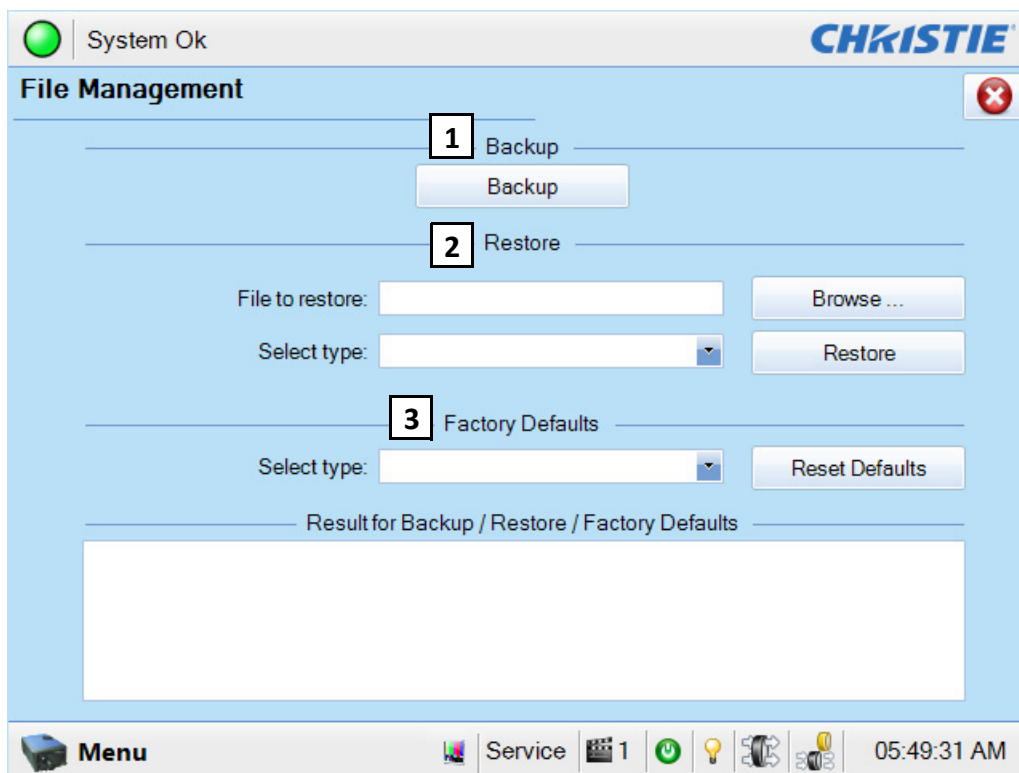


Figure 6-43 File Management Window

Table 6.34 File Management Window

Region	Description
1: Backup	Backs up configuration, preference, channel, and user data to a USB drive or an FTP site.
2: Restore	Restores backup data.
3: Factory Defaults	Resets all information on the cinema projector to the factory default.

Restore Backup Files

1. Open the **File Management** window.
1. Tap **Browse**.
2. Navigate to the location of the backup file.
3. Select the backup file and click **Open**.
4. In the **Select restore type** list, select a file type.
5. Tap **Restore**.

6.16.3 LD Marriage Window

Use the **Marriage** wizard to activate marriage on the cinema projector. Marriage engages the Direct Couple Interlock (DCI) and allows you to display secure content. You need Marriage permission to use the Marriage wizard and only Christie accredited technicians are authorized to activate cinema projector marriage.

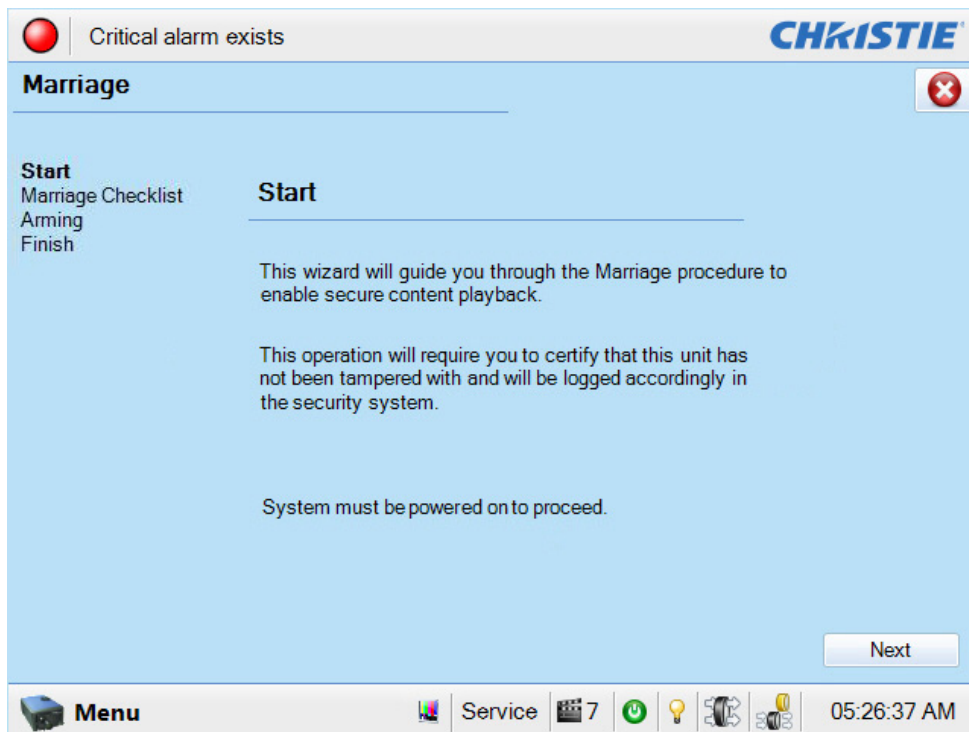


Figure 6-44 Marriage Start Window

6.16.4 System Access Window

Use the System Access window to access Microsoft Windows functions. Tap **Menu** > **Service Setup** > **System Access**.

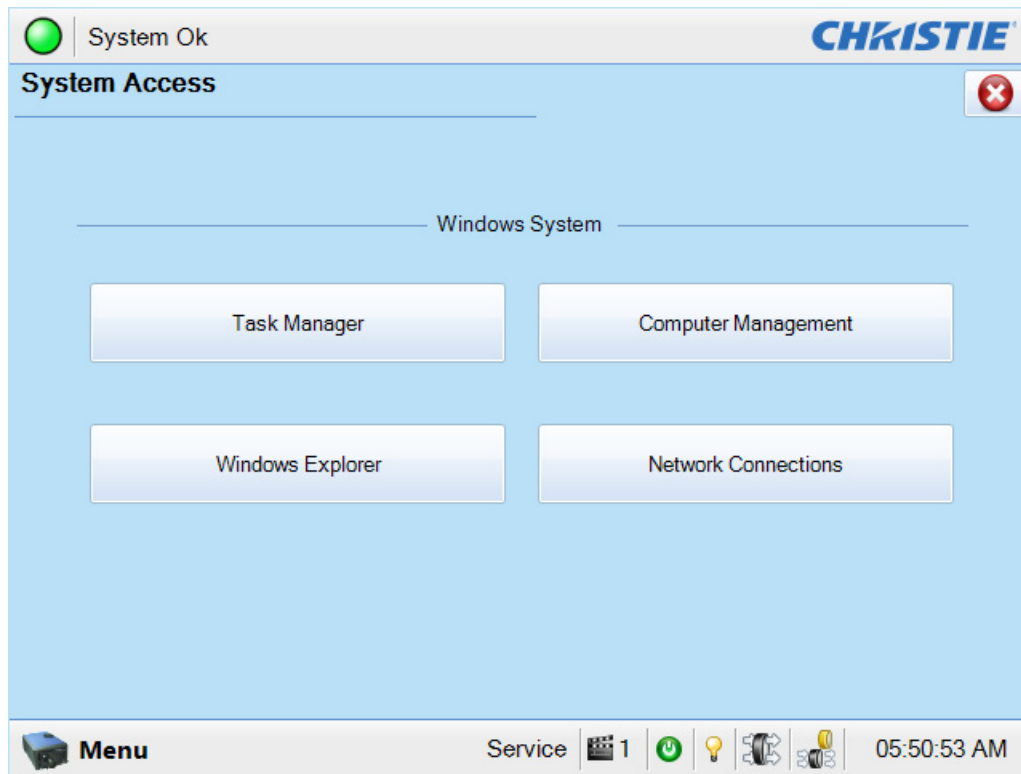


Figure 6-45 System Access Window

Table 6.35 System Access Window

Control	Description
Task Manager	Opens the Microsoft Windows Task Manager.
Computer Management	Opens the Computer Management window.
Windows Explorer	Opens Windows Explorer.
Network Connections	Opens the Network Connections window.

6.16.5 IMB Marriage Window

Use the Marriage wizard to activate Image Media Block (IMB) marriage on the cinema projector. IMB marriage engages the Direct Couple Interlock (DCI) and allows you to display secure content. You need Marriage permission to use the Marriage wizard and only Christie accredited technicians are authorized to activate IMB marriage.

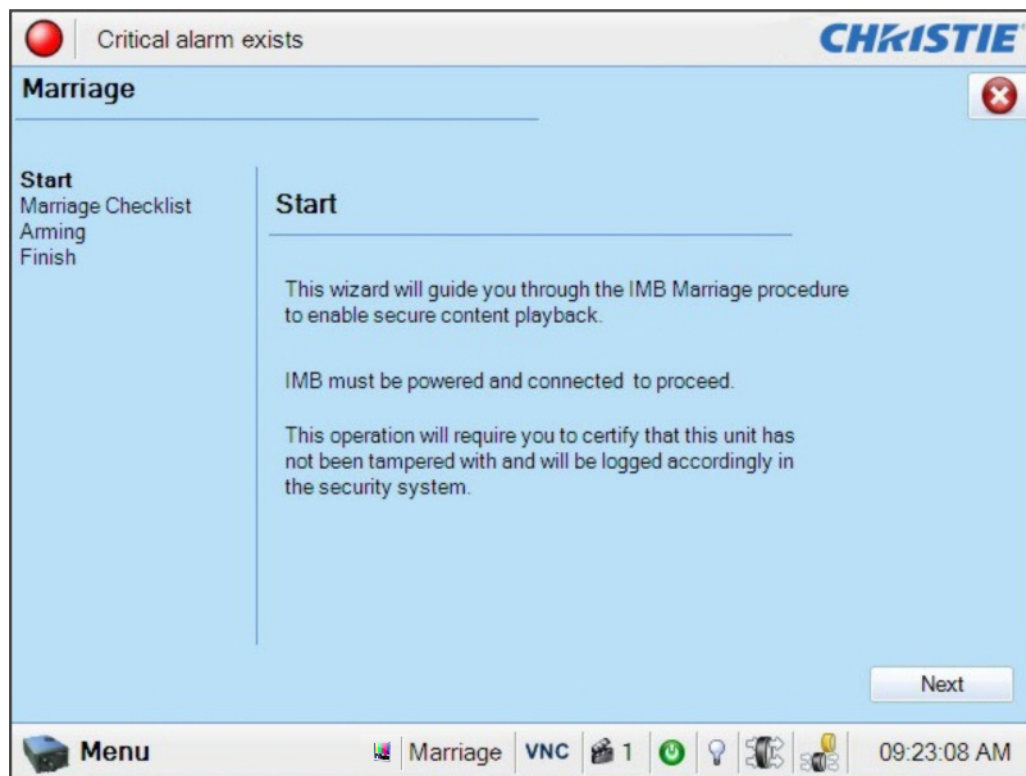


Figure 6-46 IMB Marriage Window

6.17 About Window

Use the About window to view information about the cinema projector including the serial number, the current software version, the Digital Light Processing (DLP) version, the lens and lamp type. If the cinema projector has been upgraded, a U appears at the end of the model number.

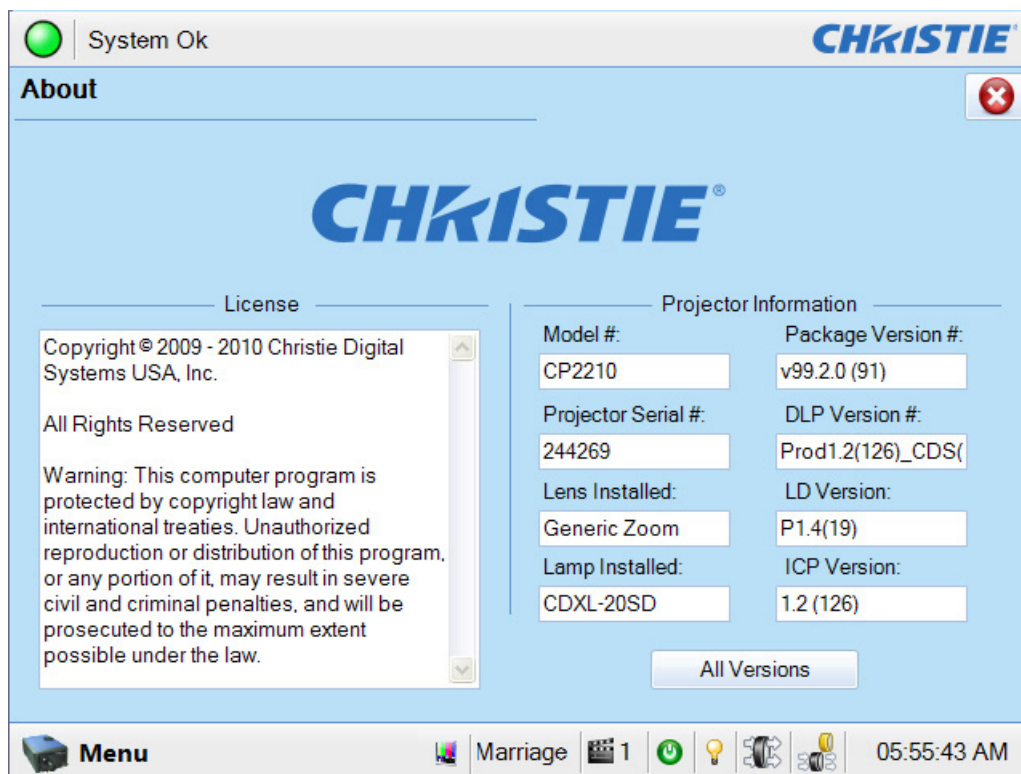


Figure 6-47 About Window

6.18 Help Window

Use the Help window to view information about the Touch Panel Controller (TPC) windows.

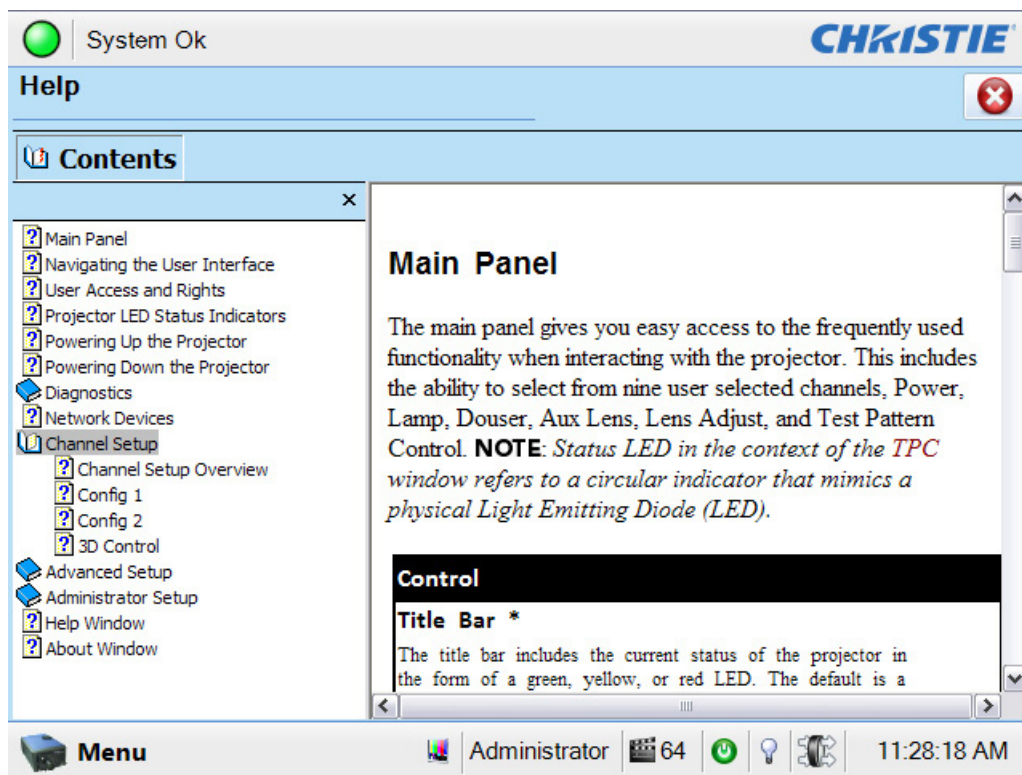


Figure 6-48 Help Window

7 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.

7.1 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.

7.2 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.

7.3 Inspect the Optional Exhaust Duct (P/N: 119-103105-xx)

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

7.4 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.

7.5 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.

7.5.1 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.

7.5.2 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.

7.6 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.
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.

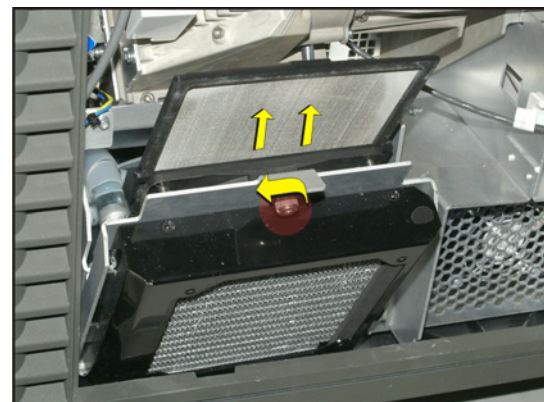


Figure 7-1 Remove Radiator Filter

7.7 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.

7.8 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 7-2/C**).
 - a. Remove the screw securing the anode wire. (**Figure 7-2/D**).
 - b. Loosen the cathode screw (**Figure 7-2/E**) on the rear access nut (**Figure 7-2/F**).
 - c. Hold the lamp from the anode end and carefully unscrew and remove the cathode nut (**Figure 7-2/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.

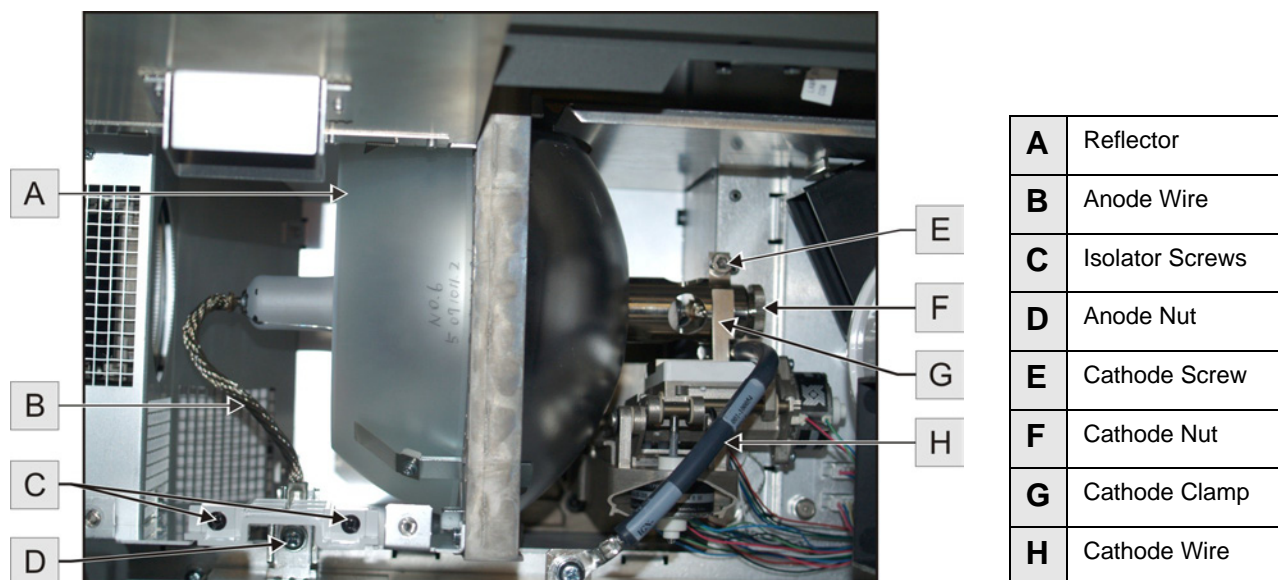



Figure 7-2 Lamp Assembly

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 7-2/E**) onto the cathode end of the lamp.
 - e. Align the ring terminal on the anode wire (**Figure 7-2/B**) with the mounting position (**Figure 7-2/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:** Return the hex key to 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 7-3**).
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.

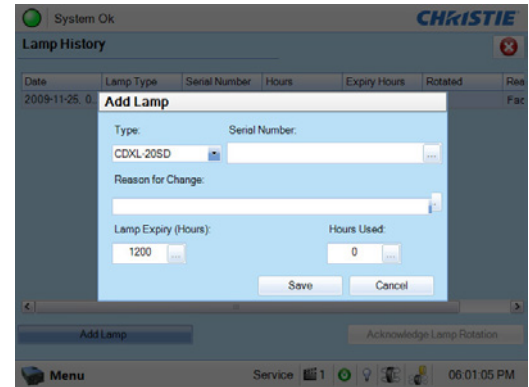



Figure 7-3 Add Lamp Window

7.9 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**.

7.10 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 7-4**)
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.

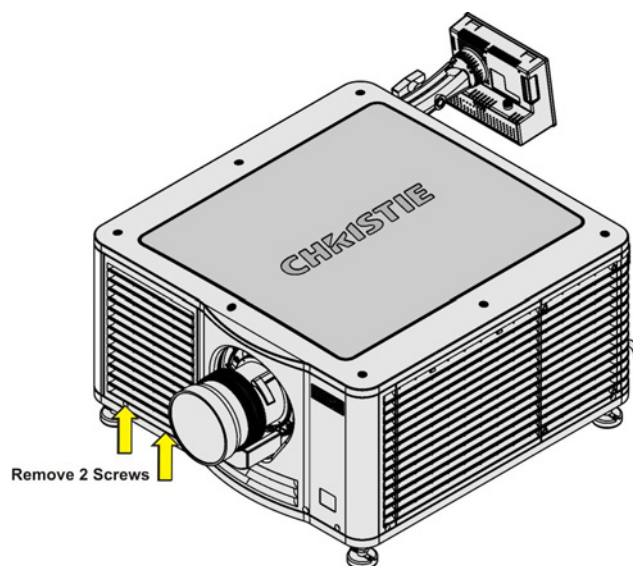



Figure 7-4 Remove Light Engine Air Filter

7.11 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.

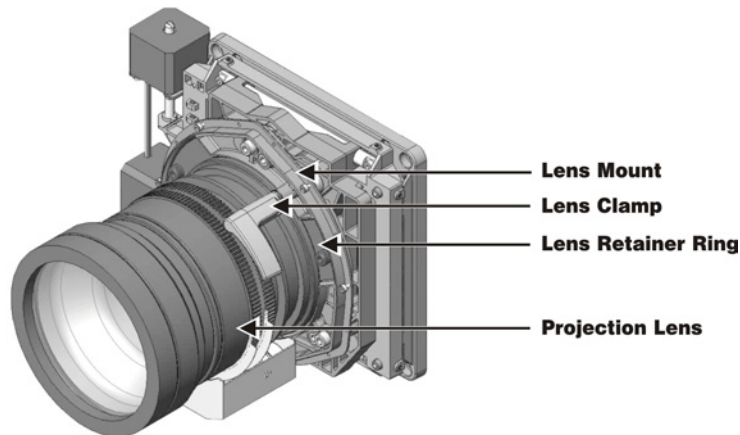


Figure 7-5 Lens Assembly

4. Install the lens cap and release the lens clamp by pushing it up (**Figure 7-6**).

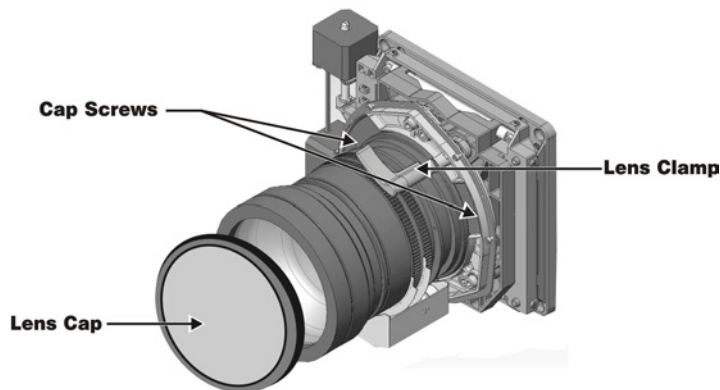


Figure 7-6 Release Lens Clamp

5. If necessary, remove the 2 cap screws securing the lens to the lens mount (**Figure 7-6**). 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 7-7**).
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.*

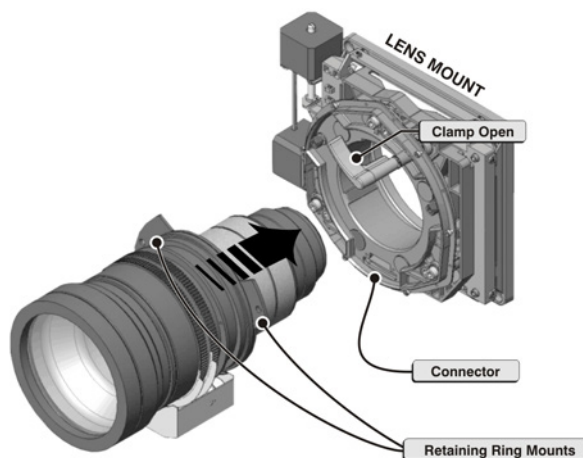


Figure 7-7 Install Lens

8 Troubleshooting

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

8.1 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. (Figure 8-1).
- 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 8-2)

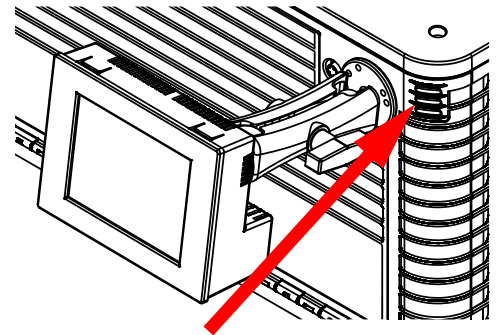
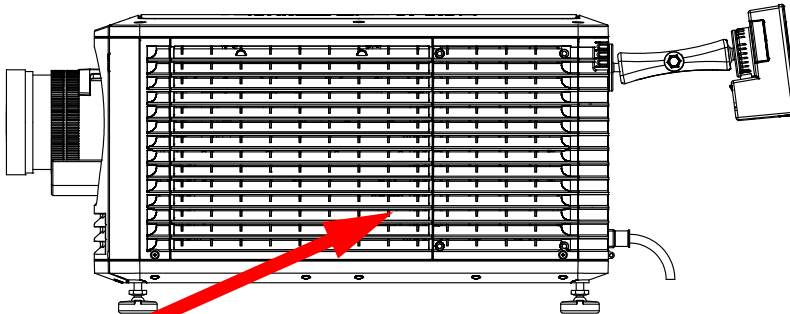


Figure 8-1 cinema projector Status



S Power LED

Figure 8-2 View Power Status LEDs

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

8.2 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 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.

8.3 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.

8.4 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.

8.5 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.

8.6 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.

8.7 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.

8.8 Cannot Establish Communication with Cinema Projector

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

8.9 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.

8.10 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.

8.11 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.

8.12 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**.

8.13 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.

8.14 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.

8.15 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.


8.16 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.

8.17 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. See [6.14.7 Screen File Setup Window](#).

8.18 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 [8.2 Lamp Does Not Ignite, on page 8-1](#).
- 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.

8.19 The Display is Jittery or 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. See [Appendix A: Specifications](#) for scan frequency ranges.
- The sync signal may be inadequate. Correct the source problem.

8.20 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.

8.21 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. See [6.14.7 Screen File Setup Window](#).

8.22 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.

8.23 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.

Appendix A: Specifications

This section provides detailed Christie CP 2210 specifications. Due to continuing research, specifications are subject to change without notice.

A.1 Display

A.1.1 Panel Resolution and Refresh Rate

Pixel format (H x V square pixels)	2048 x 1080
Processing path	23.97 - 120Hz

A.1.2 Achievable Brightness (Measured at Screen Center)

	<u>Nominal</u>	<u>Maximum</u>
1.4kW (CXL-14M)	4,750 lumens	5,000 lumens
1.8kW (CDXL-18SD)	10,215 lumens	11,220 lumens
2.0kW (CDXL-20SD)	11,350 lumens	12,470 lumens

A.1.3 Achievable Contrast Ratio

450:1 ANSI
2000:1 Full Frame ON/OFF

A.1.4 Color and Gray Scale

Displayable colors	35.2 trillion
Gray Scale resolution	45 bits total linear, 15 bits per RGB component

A.1.5 White Point

Nominal White (<i>full white, after calibration to Telecine mode, Review Rooms</i>)	$x = 0.314 \pm 0.002$
	$y = 0.351 \pm 0.002$
Nominal White (<i>full white, after calibration to Telecine mode, Theatres</i>)	$x = 0.314 \pm 0.006$
	$y = 0.351 \pm 0.006$

A.1.6 Gamma

Review Rooms (nominal)	$2.6 \pm 2\%$
Theater (nominal)	$2.6 \pm 5\%$

A.2 Source Signal Compatibility

A.2.1 Cinema Inputs

- Number of inputs 2
- Standard supported SMPTE 292M bit-serial
- Connector type BNC

Table A.1 Standard Single-link SMPTE 292M/372M Formats

Source Standard	Original Source Resolution	Vertical Frequency (Hz)	Scan Type	Display Frame Rate (Hz)
SMPTE 296M	1280 x 720	23.98 / 24	Progressive	23.98 / 24
SMPTE 296M	1280 x 720	25	Progressive	25
SMPTE 296M	1280 x 720	29.97 / 30	Progressive	29.97 / 30
SMPTE 296M	1280 x 720	48	Progressive	48
SMPTE 296M	1280 x 720	50	Progressive	50
SMPTE 296M	1280 x 720	59.94 / 60	Progressive	59.94 / 60
SMPTE 296M	1280 x 720	100	Progressive	100
SMPTE 296M	1280 x 720	120	Progressive	120
SMPTE 274M	1920 x 1080	23.98 / 24	Progressive	23.98 / 24
SMPTE 274M	1920 x 1080	25	Progressive	25
SMPTE 274M	1920 x 1080	29.97 / 30	Progressive	29.97 / 30
SMPTE 274M	1920 x 1080	48	Progressive	48
SMPTE 295M	1920 x 1080	50	Progressive	50
SMPTE 274M	1920 x 1080	59.94 / 60	Progressive	59.94 / 60
SMPTE 274M	1920 x 1080	23.98 / 24	Interlaced	11.99 / 12
SMPTE 274M	1920 x 1080	25	Interlaced	12.5
SMPTE 274M	1920 x 1080	29.97 / 30	Interlaced	14.985 / 15
SMPTE 274M	1920 x 1080	48	Interlaced	24
SMPTE 295M	1920 x 1080	50	Interlaced	25
SMPTE 274M	1920 x 1080	59.94 / 60	Interlaced	29.97 / 30
SMPTE 274M	1920 x 1080	100	Interlaced	50
SMPTE 274M	1920 x 1080	120	Interlaced	60
SMPTE RP 211	1920 x 1080	23.98 / 24	Progressive (sF)	23.98 / 24
SMPTE RP 211	1920 x 1080	25	Progressive (sF)	25
SMPTE RP 211	1920 x 1080	29.97 / 30	Progressive (sF)	29.97 / 30

	640 x 480	23.98 / 24	Progressive	23.98 / 24
	640 x 480	25	Progressive	25
	640 x 480	29.97 / 30	Progressive	29.97 / 30
	640 x 480	48	Progressive	48
	640 x 480	50	Progressive	50
	640 x 480	59.94 / 60	Progressive	59.94 / 60
	640 x 480	100	Progressive	100
	640 x 480	120	Progressive	120
	720 x 525	23.98 / 24	Interlaced	11.99 / 12
	720 x 525	25	Interlaced	12.5
	720 x 525	29.97 / 30	Interlaced	14.985 / 15
	720 x 525	48	Interlaced	24
	720 x 525	50	Interlaced	25
	720 x 525	59.94 / 60	Interlaced	29.97 / 30
	720 x 525	100	Interlaced	50
	720 x 525	120	Interlaced	60
DCI**	2048 x 1080	24	Progressive	24
DCI**	2048 x 1080	48	Progressive	48

NOTES: **1)** All formats supported at 10 bit 4:2:2 YCbCr or lower. **** DCI formats (SMPTE 428-9) are supported at 12 bit 4:4:4 XYZ.** **2)** When both SMPTE 292M inputs are used together in a dual-link configuration they will support all the formats listed in Table A.1 in 4:4:4 YCbCr or RGB format with 10 or 12 bits per component. Also supported is 4:2:2 YCbCr progressive input with 10 or 12 bits per component and a pixel format of 1920 x 1080 at 47.96 or 48 fps. **3)** For 3D content, the supported format is 4:2:2 YCbCr 10 bit per eye.

Appendix B: Specifications

A.2.2 Non-Cinema DVI Inputs (for Alternate Content)

- Number of inputs 2
- Standard supported VESA Digital Visual Interface (DVI-D)
- Connector type 24-pin female DVI-D

Table A.2 Format for Generic Inputs to DVI-D Ports, Single-Link

NOTE: All formats listed are 4:4:4 RGB.

Source Pixel Format	Bits / Comp	Vertical Rates
640 x 480	8	59.94 / 60 Hz
1280 x 720	8	59.94 / 60 Hz
1920 x 1080	8	59.94 / 60 Hz
720 x 480	8	59.94 / 60 Hz
1280 x 720	8	50 Hz
1920 x 1080	8	50 Hz
1440 x 480	8	59.94 / 60 Hz
1920 x 1080	8	59.94 / 60 Hz
1440 x 576	8	50 Hz
1920 x 1080	8	23.98 / 24 Hz
1920 x 1080	8	25 Hz
1920 x 1080	8	29.97 / 30 Hz
720 x 480	8	119.88 / 120 Hz

Table A.3 Format for Generic Inputs to DVI-D Ports, Twin Link

NOTE: All formats listed are 4:4:4 RGB.

Source Pixel Format	Bits / Comp	Vertical Rates
640 x 480	10	59.94 / 60 Hz
1280 x 720	10	59.94 / 60 Hz
1920 x 1080	10	59.94 / 60 Hz
1280 x 720	10	50 Hz
1920 x 1080	10	50 Hz
1920 x 1080	10	59.94 / 60 Hz
1440 x 576	10	50 Hz
1920 x 1080	10	50 Hz
1920 x 1080	10	23.98 / 24 Hz
1920 x 1080	10	29.97 / 30 Hz
720 x 480	10	119.88 / 120 Hz

A.3 Control Signal Compatibility

A.3.1 Ethernet Port

Interface	10Base-T/100-Base-TX
Connector	Female RJ-45
Bit Rate	10 Mbps or 100 Mbps half and full duplex

A.3.2 RS232-PIB

Interface	TIA-232
Connector	9-pin subminiature D, female
Bit Rate	115,200 (default) bps
Flow Control	Hardware (RTS/CTS)
Data Format	1 start bit, 8 data bits, 1 stop bit, no parity
Communication Protocol	Christie Serial Protocol

A.3.3 RS232-ICP

Interface	TIA-232
Connector	9-pin subminiature D, female
Bit Rate	38,400 (default), 57,600, 115,200 bps, <u>not</u> auto-detected
Flow Control	Hardware (RTS/CTS)
Data Format	1 start bit, 8 data bits, 1 stop bit, parity odd

A.3.4 GPIO Port

Interface	Opto-LED inputs, transistor outputs
Connector	37-pin subminiature D, female
Number of I/O Lines	16 - 8 inputs, 8 outputs including 1 health signal output
Type of Connection	Opto-isolated
Input Current	5mA nominal, 50mA maximum
Output Current	50mA maximum
Input forward voltage drop	1.1V nom., 1.4V max. (@5mA)

Appendix B: Specifications**A.3.5 Simple Contact Closure Interface (SCCI) Port**

Interface	Opto-LED inputs, TTL voltage output
Connector	9-pin subminiature D, female
Number and type of I/O	Input 1 - Lamp Off Input 2 - Lamp On Input 3 - Douser Open Input 4 - Douser Closed Output 1 - cinema projector Health (high = health ok)
Input Current	5mA nominal, 50mA maximum
Input forward voltage drop	1.1V nom., 1.4V max. (@5mA)

A.3.6 3D Port

Interface	Proprietary 3D connector
Connector	15-pin subminiature D, female
Bit Rate	1,200 bps
Data Format	1 start bit, 8 data bits, 1 stop bit, no parity
Communication Protocol	RS232 and GPIO

A.3.7 MALM (located on Auxiliary Input Panel)

Interface	3.3V CMOS
Connector	9-pin subminiature D, female
Number of I/O Lines	4 GPIO

A.4 Touch Panel Controller**A.4.1 TPC-660E**

Type of Display	Color VGA TFT LCD, backlit
Display Size	144.8 mm (5.7 inches) diagonal
Display Resolution (H x V pixels)	640 x 480
Maximum Dimensions (W x H x D)	195 mm x 148 mm x 44.4 mm
Integrated Operating System	Microsoft Windows® XPe
Communication Interface with cinema projector	10/100Base-T Ethernet
Power Requirement	1.02 A maximum at 24VDC \pm 10%
Interface Connector	12-pin Circular connector (push-pull)

A.4.2 TPC-650H

Type of Display	Color VGA TFT LCD, backlit
Display Size	144.8 mm (5.7 inches) diagonal
Display Resolution (H x V pixels)	640 x 480
Maximum Dimensions (W x H x D)	195 mm x 148 mm x 58 mm
Integrated Operating System	Microsoft Windows® XPe
Communication Interface with cinema projector	10/1000Base-T Ethernet
Power Requirement	0.71A (typical)
Interface Connector	12-pin Circular connector (push-pull)

A.5 Power Requirements

A.5.1 AC Input

Voltage Range	200 - 240 VAC
Line Frequency	50 Hz - 60 Hz nominal
Inrush Current	<85 A maximum
Current Consumption	16 A maximum (at 200 VAC)
Power Consumption	3200 W maximum
Current Rating of AC Input	IEC-320-C19/20 A
Line Cord Plug Type	NEMA 6-20P

A.5.2 UPS AC Input

Activation	Discrete switch above the power inlet cord(s)
UPS inlet connector <i>(rating for powering main electronics)</i>	IEC-320-C13/10A, 240VAC
UPS Type	Universal 100-240VAC
Ballast Power AC Plug Type/Current rating <i>(on cinema projector)</i>	IEC-320-C19/20 A

A.6 Lamp

Type:	Xenon Short Arc Lamp
Power (software adjustable):	
CXL-14M	1000W min., 1430W nom., 1600W max.
CDXL-18SD	1000W min., 1800W nom., 1900W max.
CDXL-20SD	1000W min., 2000W nom., 2100W max.

NOTE: The ballast is power regulated to a maximum of 180A. Therefore the maximum power specification for a given lamp may not be achievable until the lamp has aged, since lamp voltage increases with hours of use.

Average Life:	
CXL-14M	3000 hours

Appendix B: Specifications

CDXL-18SD	1500 hours
CDXL-20SD	1500 hours
Wait time between lamp strikes	2 minutes minimum
Warm up time to full brightness	20 minutes maximum

NOTE: *Projectors typically force a 10 minute cool down period. Ensure you do not re-strike the lamp any sooner than 2 minutes into this cool down period since hot re-strikes reduce lamp life.*

A.7 Physical Specifications

Size (L x W x H): <i>(without lens, with feet at minimum length)</i>	665 mm (26.18 inches) x 688 mm (27.08 inches) x 395 mm (15.55 inches)
Weight:	
As installed with lens	43 kg (95 lbs)
Shipping (includes packaging)	60 kg (132 lbs)
Operating Position:	
Rotation about projection axis	± 15 degrees maximum
Tilt of projection axis from horizontal	± 15 degrees maximum

A.8 Regulatory

This product conforms to the following regulations related to product safety, environmental requirements and electromagnetic compatibility (EMC):

A.8.1 Safety

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

A.8.2 Electro-Magnetic Compatibility**Emissions**

- FCC CFR47, Part 15, Subpart B, Class A - Unintentional Radiators
- CISPR 22/EN 55022, Class A - Information Technology Equipment

Immunity

CISPR 24 / EN55024 EMC Requirements - Information Technology Equipment

Environmental

- EU Directive (2002/95/EC) on the restriction of the uses of certain hazardous substances (RoHS) in electrical and electronic equipment and the applicable official amendments)
- EU Directive (2002/96/EC) on waste and electrical and electronic equipment (WEEE) and the applicable official amendment(s)

- Regulation (EC) No. 1907/2006 concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) and its amendments.
- China Ministry of Information Industry Order No.39 (02/2006) on the control of pollution caused by electronic information products, hazardous substances concentration limits (SJ/T11363-2006), and the applicable product marking requirements (SJ/T11364-2006)

A.9 Environment

A.9.1 Operating Environment

Temperature	10°C to 35°C (50°F to 95°F)
Humidity (non-condensing)	20% to 80%
Altitude	0 - 3000 meters
Maximum ambient temperature	35°C

A.9.2 Non-Operating Environment

Temperature	-25°C to 65°C (-13°F to 149°F)
Humidity (non-condensing)	0% to 95%

A.10 Accessories

A.10.1 Standard (sold with product)

- Touch Panel Controller (TPC) with interface cable
- User Manual (with CD containing additional technical documentation)
- Interconnect Diagram
- Line Cord

A.10.2 Accessories (sold separately)

- Lenses (prime and auxiliary)

High Brightness Prime Zoom Lenses

- 1.05:1 DLPCine Fixed Lens (108-319104-01)
- 1.2-1.75 DLPCine Zoom Lens (108-350109-01)
- 1.3-1.75 DLPCine Zoom Lens (108-320106-01)
- 1.39-1.9 DLPCine Zoom Lens (108-327103-01)
- 1.5-2.2 DLPCine Zoom Lens (108-329105-01)
- 1.75-2.4 DLPCine Zoom Lens (108-321107-01)
- 1.9-3.0 DLPCine Zoom Lens (108-328104-01)
- 2.4-3.9 DLPCine Zoom Lens (108-322108-01)
- 3.9-6.5 DLPCine Zoom Lens (108-323109-01)

Auxiliary Lenses

- 1.25x Anamorphic Lens (38-809054-01)
- 1.26x Wide Converter Lens (108-281101-01)

Appendix B: Specifications

NOTE: *Use of the Anamorphic or Wide Converter Lens requires the optional Motorized Auxiliary Lens Mount (MALM).*

- Motorized Auxiliary Lens Mount (MALM) (119-101101-01)
- Rack Stand (108-282101-02)
- Bracket Foot Lock *used with optional Rack Stand* (119-100101-01)
- Replacement Lamps
 - CDXL-14M (003-003066-01)
 - CDXL-18SD (003-002742-01)
 - CDXL-20SD (003-001976-01)
- Replacement Air Filter (003-002311-01)
- Liquid Cooling Kit (003-001837-03)
- Extractor Adaptor Kit (119-103105-01)
- DLP Cinema® Firmware Installation Program



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