Cinema 4K-RGB
CP4315-RGB, CP4320-RGB, CP4325-RGB, CP4330-RGB
NOTICES
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GENERAL
Every effort has been made to ensure accuracy, however in some cases changes in the products or availability could occur which may not be reflected in this document. Christie reserves the right to make changes to specifications at any time without notice. Performance specifications are typical, but may vary depending on conditions beyond Christie's control such as maintenance of the product in proper working conditions. Performance specifications are based on information available at the time of printing. Christie makes no warranty of any kind with regard to this material, including, but not limited to, implied warranties of fitness for a particular purpose. Christie will not be liable for errors contained herein or for incidental or consequential damages in connection with the performance or use of this material. Manufacturing facilities in Canada and China are ISO 9001 certified. Manufacturing facilities in Canada are also ISO 14001 certified.

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

a. Problems or damage occurring during shipment, in either direction.
b. Problems or damage caused by combination of a product with non-Christie equipment, such as distribution systems, cameras, DVD players, etc., or use of a product with any non-Christie interface device.
c. Problems or damage caused by misuse, improper power source, accident, fire, flood, lightning, earthquake, or other natural disaster.
d. Problems or damage caused by improper installation/alignment, or by equipment modification, if by other than Christie service personnel or a Christie authorized repair service provider.
e. Use of third party product enclosures for environmental protection during outside use must be approved by Christie.
f. Problems or damage caused by use of a product on a motion platform or other movable device where such product has not been designed, modified or approved by Christie for such use.
g. Except where the product is designed for outdoor use, problems or damage caused by use of the product outdoors unless such product is protected from precipitation or other adverse weather or environmental conditions and the ambient temperature is within the recommended ambient temperature set forth in the specifications for such product.
h. Defects caused by normal wear and tear or otherwise due to normal aging of a product.

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

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

PREVENTATIVE MAINTENANCE
Preventative maintenance is an important part of the continued and proper operation of your product. Failure to perform maintenance as required, and in accordance with the maintenance schedule specified by Christie, will void the warranty. For preventative maintenance schedules, refer to www.christiedigital.com.

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

CAN ICES-3 (A) / NMB-3 (A)
이 기기는 업무용(A급)으로 전자파적합등록을 한 기기이오니 판매자 또는 사용자는 이 절을 주의하시기 바라며, 가정 외의 지역에서 사용하는 것을 목적으로 합니다.

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

Introduction ...................................................... 6
  Site requirements. ............................................. 6
  Projector components (front). ................................ 7
  Projector components (rear). ................................ 8
  Security roles. ................................................. 8
  Product documentation. ...................................... 9
  Related documentation. ..................................... 10

Service guidelines .............................................. 11
  Ordering parts. ................................................. 11
  Replacing modules. ......................................... 11
  Interconnections and line drawings. .................... 11
  Servicing live equipment. ................................ 11
  Safety precautions. ......................................... 12
    General safety precautions. ............................ 12
    Laser safety precautions. .............................. 13
    AC power precautions. ................................ 13
  Light intensity hazard distance. ......................... 14
  Product labels. ............................................. 17
    General hazards. .......................................... 17
    Mandatory action. ....................................... 18
    Electrical labels. ....................................... 18
    Additional hazard labels. ......................... 18

Service setups ................................................ 20
  Turning the projector on or off. ......................... 20
  Calibrating the Intelligent Lens System. .......... 20
  Adjusting boresight. ..................................... 20
  Adjusting the integrator rod and fold mirror. .... 23
  Adjusting DMD convergence. ............................ 26
  Adjusting the LOS coupling mirror. ................ 28
  Replacing or refilling the coolant. .................. 28

Parts and module replacement ................................ 30
  Tools required for service. .............................. 30
Maintenance prerequisites ............................................. 30
Index of parts and modules ............................................ 31

**Lens mount components** ........................................... 34
- Removing the projection lens ....................................... 34
- Replacing the lens mount .......................................... 34

**Filtration** .................................................................. 37
- Replacing the light engine compartment air filter ............ 37
- Replacing the main intake air filter ............................... 38

**Projector covers and feet** ........................................... 39
- Removing the top cover ............................................. 39
- Removing the touch panel ......................................... 40
- Removing the rear cover ........................................... 40
- Removing the electronics-side cover ............................ 41
- Removing the front cover ......................................... 42
- Removing the side-intake cover ................................. 42
- Removing the bottom cover ..................................... 43

**Electronics** ................................................................ 45
- Servicing the card cage ............................................ 45
- Removing the AC breaker ......................................... 46
- Replacing the power supplies .................................... 47
- Removing the laser driver card cage ......................... 51
- Replacing the temperature sensor ............................. 53
- Replacing the SID harness ....................................... 53
- Replacing the mini-SAS cables ................................. 54

**Ventilation and cooling** ............................................. 55
- Replacing the card cage intake fan (#1) ...................... 55
- Replacing the blue formatter fan (#3) ......................... 55
- Replacing the green formatter fan (#4) ....................... 56
- Replacing the red formatter fan (#5) ......................... 57
- Replacing the card cage exhaust fan (#4) ................. 58
- Replacing the radiator intake fans (#6-17) ................ 59
- Replacing the laser driver card cage fans (#21-24) ...... 59
- Replacing the light engine intake fans (#25-30) ....... 60
- Removing the coolant reservoir ............................... 62
- Removing the pump module ................................... 62
Replacing the radiator .......................................................... 63
Replacing the relief tank .................................................. 65
Replacing the exhaust duct .............................................. 65

**Optics** .......................................................... 67
Replacing the integrator assembly ........................................ 67
Replacing the fold mirror adjust .......................................... 69
Replacing the light dump ................................................ 70
Replacing the light engine ............................................. 71
Packing the existing light engine ....................................... 72
Replacing the LOS coupling elbow ..................................... 75
Removing the coupling elbow mirror assembly ..................... 76
Replacing the shutter ................................................ 77

**Printed circuit boards and sensors** ................................ 78
Replacing the F-Main electronics card ................................ 78
Replacing the IMB .................................................. 79
Replacing the housekeeping board (HKBB) ......................... 80
Replacing the SCCB ................................................. 81
Replacing the HUB-NX ............................................... 82
Replacing the dual temperature sensor module (DTSM) ........... 83
Replacing the status LED board (SLB) .............................. 84
Replacing the low voltage current source (LVCS) board ......... 85
Replacing the high voltage current source boards ................. 86
Replacing the laser backplane (LBP7) board ................. 87
Replacing the diffuser control board (DIB PCB) .................. 88
Replacing the color sensor board ...................................... 88
  • Replacing the color sensor board harness ....................... 90
Performing the DAC calibration ........................................ 92
Performing the LiteLOC v1 calibration ................................. 93
Introduction

This document provides technical information for assisting Christie qualified technicians in the servicing of the Cinema 4K-RGB projector.

Every effort has been made to make sure the information in this document is accurate and complete. However, due to continuing research all information is subject to change without notice. Christie assumes no responsibility for omissions or inaccuracies.

Site requirements

To safely install and operate the Cinema 4K-RGB projectors, the installation location must meet these minimum requirements.

Physical operating environment

- Ambient temperature (operating) 10°C to 35°C (50°F to 95°F)
- Humidity (non-condensing) 10% to 80%
- Operating altitude 0 to 3000 meters (0 to 9843 feet)

External exhaust ducting

Sufficient ventilation is required around the projector to regulate the temperature of the internal laser module. If necessary, air intake and exhaust HVAC ducts can be installed.

An exhaust duct is also available for purchase as an optional accessory (P/N: 163-102104-XX). Instructions for installing the exhaust duct are included with the accessory part.

The installation site must provide an airflow 450 cubic feet per minute (CFM) at 1 to 1000 meters elevation, and must accommodate a heat load of 4 kW.

For each additional 1000 meters above sea level, increase the airflow (CFM) value by 15%. If an extraction duct is not used, the operating temperature range is restricted to 10°C to 25°C at a maximum altitude of 3000 meters.

Permanent power connection

A 30 A maximum rated, certified wall circuit breaker is required. It must be part of the building and easily accessible.

The projector must be connected to power using a hard-wired connection. The projector light source requires the permanent AC connection to operate. There is also an available connector for an uninterruptible power supply (UPS) to provide backup power for the projector electronics only.
# Projector components (front)

Learn about the components on the front of the projector.

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
</table>
| A | Projector lens  
A list of available lenses is available in the projector specifications. For more information, see the *Cinema 4K-RGB Specifications Guide (P/N: 020-102729-XX)*. |
| B | Adjustable feet  
Turn the adjustable feet to increase or decrease the projector height. |
| C | Service access door |
| D | Communications panel  
External devices are connected here. |
Projector components (rear)

Learn about the components on the rear of the projector.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Touch panel</td>
</tr>
<tr>
<td></td>
<td>A touch-sensitive screen used to control the projector.</td>
</tr>
<tr>
<td>B</td>
<td>AC circuit breakers</td>
</tr>
<tr>
<td>C</td>
<td>Air exhaust</td>
</tr>
<tr>
<td>D</td>
<td>Power cord and AC receptacle</td>
</tr>
<tr>
<td>E</td>
<td>Air intake</td>
</tr>
</tbody>
</table>

Security roles

Only Christie authorized service technicians should perform field repair, marriage setup, and service to the unit.

Theater personnel should only perform diagnostic functions, such as running the projector interrogator. After performing a procedure that mandates use of the high security key, theater personnel must ensure the security of the system is reestablished.
Product documentation

For installation, setup, and user information, see the product documentation available on the Christie website. Read all instructions before using or servicing this product.

1. Access the documentation from the Christie website:

   **CP4315-RGB**
   - Scan the QR code using a QR code reader app on a smartphone or tablet.

   ![QR Code for CP4315-RGB](http://example.com/qr_code)

   **CP4320-RGB**
   - Scan the QR code using a QR code reader app on a smartphone or tablet.

   ![QR Code for CP4320-RGB](http://example.com/qr_code)

   **CP4325-RGB**
   - Scan the QR code using a QR code reader app on a smartphone or tablet.

   ![QR Code for CP4325-RGB](http://example.com/qr_code)

   **CP4330-RGB**
   - Scan the QR code using a QR code reader app on a smartphone or tablet.
2. Switch to the **Downloads** tab.

**Related documentation**

Additional information on the projector is available in the following documents.

- *CineLife Serial Commands Guide (P/N: 020-102714-XX)*
Service guidelines

Review safety guidelines and information required for replacing modules.

Ordering parts

When ordering replacement parts, quote the part numbers of the items required. Quote the projector model number, serial number, and date of manufacture, as indicated on the license label.

Not all parts are available separately. In addition, some parts stocked as inventory are available only until the current supply lasts.

All part numbers are subject to change.

Replacing modules

To ensure you have the correct module and the projector module is replaced correctly, check module markings, parts lists, and the relevant disassembly and replacement procedures.

Components must be replaced with exact equivalents or Christie approved replacement parts. Failure to do so may result in unsafe operation.

Interconnections and line drawings

The interconnect diagram illustrates the path of electrical connections between modules. Manufacturer’s part numbers are included. Part numbers are subject to change.

Line drawings provide projector dimensions and sizes for installation.

To download the latest interconnect diagram or line drawings, visit www.christiedigital.com.

Servicing live equipment

Only Christie accredited technicians who are knowledgeable about the hazards associated with hazardous voltage and high temperatures are authorized to assemble, install, and service Christie equipment.

To make sure you remain safe when servicing energized (live) Christie equipment:

- Locate the main AC power shut off prior to servicing the equipment. This will allow you to turn the power off quickly in an emergency.
- Disconnect the projector from the communication and management network so it cannot receive commands to turn the light source on, open the shutter, and move the lens.
- Familiarize yourself with all potential safety hazards prior to servicing the equipment. This includes, but is not limited to, the location and accessibility of hazardous voltages.
• Read and understand all written procedures prior to commencing a service procedure.
• Understand and follow all local safety codes and requirements when servicing energized (live) equipment.
• Perform equipment service in a location free of obstructions and other hazards. For example, you must have an unobstructed view of the area being serviced.

Wear personal protective equipment (PPE) clothing appropriate to the service you are performing. This includes, but is not limited to, protective (electrically insulated) footwear, safety glasses, and gloves rated for the working voltage of the equipment you are servicing.

Safety precautions

Learn about the safety precautions related to the Christie Cinema 4K-RGB projector. This projector is intended for use in a cinema environment.

General safety precautions

Read all safety and warning guidelines before installing or operating the projector.

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

- TRIP OR FIRE HAZARD! Position all cables where they cannot contact hot surfaces, be pulled, be tripped over, or damaged by persons walking on or objects rolling over the cables.
- This product must be installed within a restricted access location not accessible by the general public.
- Only personnel who are trained on the precautions for the restricted access location can be granted entry to the area.
- Install the product so users and the audience cannot enter the restricted area at eye level.
- ELECTRICAL and BURN HAZARD! Use caution when accessing internal components.
- High leakage current present when connected to IT power systems.
- FIRE AND SHOCK HAZARD! Use only the attachments, accessories, tools, and replacement parts specified by Christie.
- FIRE HAZARD! Do not use a power cord, harness, or cable that appears damaged.
- A minimum of four people or appropriately rated lift equipment is required to safely lift, install, or move the product.
- Do not install or operate the projector in any position that does not meet the stated product specifications for alignment and orientation.

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

- Only Christie qualified technicians are permitted to open product enclosures.
Laser safety precautions
Read all safety and warning guidelines before operating the projector laser.

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

- Do not operate the cinema projector without all of its covers in place.
- LASER RADIATION HAZARD! This projector has a built-in Class 4 laser module. Never attempt to disassemble or modify the laser module.
- Do not look directly into the lens when the light source is on. The extremely high brightness can cause permanent eye damage.
- Possible hazardous optical radiation emitted from this product. (Risk group 3)

AC power precautions
Read all safety and warning guidelines before connecting to AC power.

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

- SHOCK HAZARD! Only use the AC power cord provided with the product or recommended by Christie.
- FIRE AND SHOCK HAZARD! Do not attempt operation unless the power cord, power socket, and power plug meet the appropriate local rating standards.
- SHOCK HAZARD! Do not attempt operation if the AC supply is not within the specified voltage and current, as specified on the license label.
- SHOCK HAZARD! The optional UPS power cord must be inserted into an outlet with grounding.
- SHOCK HAZARD! A dedicated, protected ground or earth wire must be installed on the product by Christie qualified technicians or electricians before it can be connected to power.
- SHOCK HAZARD! Disconnect the product from AC before installing, moving, servicing, cleaning, removing components, or opening any enclosure.
- Install the product near an easily accessible AC receptacle.

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

- FIRE HAZARD! Do not use a power cord, harness, or cable that appears damaged.
- FIRE OR SHOCK HAZARD! Do not overload power outlets and extension cords.
- SHOCK HAZARD! Power supply uses double pole/neutral fusing.
Light intensity hazard distance

This projector has been classified as Risk Group 3 as per the IEC 62471-5:2015 standard due to possible hazardous optical and thermal radiation being emitted.

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

- PERMANENT/TIMORARY BLINDNESS HAZARD! Operators must control access to the beam within the hazard distance or install the product at the height that prevents exposure of spectators' eyes within the hazard distance. The hazard zone must be no lower than 2.5 meters (US installations) or 2.0 meters (global installations) above any surface upon which any persons are permitted to stand and the horizontal clearance to the hazard zone must be a minimum 1.0 meters.
- EXTREME BRIGHTNESS! Do not place reflective objects in the product light path.

The following diagram and table show the zones for ocular and skin hazard distances:

- **A**—Hazard zone. The region of space where the projection light from the laser-illuminated projector is above emission limits for Risk Group 2. The light intensity may cause eye damage after a momentary or brief exposure (before a person can avert his or her eyes away from the light source). The light may cause skin burns to occur.
- **B**—Hazard distance. Operators must control access to the beam within the hazard distance or install the product preventing potential exposure of the spectators' eyes from being in the hazard distance.
- **C**—No access zone. Horizontal clearance of the no access zone must be a minimum of 1.0 meters.
- **D**—Vertical distance to hazard zone. The hazard zone must be no lower than 2.5 meters (US installations) or 2.0 meters (global installations) above any surface upon which any persons are permitted to stand.
- **E**—Represents the top view of the projector.
- F—Represents the side view of the projector.

For US market only, hazard distances based upon FDA guidance document 1400056, *Classification and Requirements for Laser Illuminated Projectors (LIPs)*, dated February 18, 2015.

### CP4315-RGB, CP4320-RGB, CP4330-RGB

<table>
<thead>
<tr>
<th>Projection Lens (Throw Ratio 4K)</th>
<th>Part Number</th>
<th>Hazard Distance (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>CP4315-RGB</td>
</tr>
<tr>
<td>0.90:1 HB fixed lens</td>
<td>38-809071-XX</td>
<td>0.9</td>
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<tr>
<td>1.13-1.66:1 DLPCine HB zoom lens</td>
<td>108-342100-XX</td>
<td>1.5</td>
</tr>
<tr>
<td>1.31-1.85:1 DLPCine HB zoom lens</td>
<td>108-335102-XX</td>
<td>1.7</td>
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<tr>
<td>1.45-2.17:1 DLPCine HB zoom lens</td>
<td>108-336103-XX</td>
<td>2.1</td>
</tr>
<tr>
<td>1.63-2.71:1 DLPCine HB zoom lens</td>
<td>108-337104-XX</td>
<td>2.4</td>
</tr>
<tr>
<td>1.95-3.26:1 DLPCine HB zoom lens</td>
<td>108-338105-XX</td>
<td>3.0</td>
</tr>
<tr>
<td>2.71-3.89:1 DLPCine HB zoom lens</td>
<td>108-278101-XX</td>
<td>3.5</td>
</tr>
<tr>
<td>3.89-5.43:1 DLPCine HB zoom lens</td>
<td>108-279101-XX</td>
<td>5.0</td>
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<tr>
<td>4.98-7.69:1 DLPCine HB zoom lens</td>
<td>108-280101-XX</td>
<td>7.1</td>
</tr>
<tr>
<td>1.13-1.66:1 DLPCine UHC zoom lens</td>
<td>163-103105-XX</td>
<td>1.4</td>
</tr>
<tr>
<td>1.31-1.85:1 DLPCine UHC zoom lens</td>
<td>163-104106-XX</td>
<td>1.6</td>
</tr>
<tr>
<td>1.45-2.17:1 DLPCine UHC zoom lens</td>
<td>163-105107-XX</td>
<td>1.9</td>
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<td>1.63-2.71:1 DLPCine UHC zoom lens</td>
<td>163-106108-XX</td>
<td>2.2</td>
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<td>3.89-5.43:1 DLPCine UHC zoom lens</td>
<td>163-109101-XX</td>
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<td>4.98-7.69:1 DLPCine UHC zoom lens</td>
<td>163-110103-XX</td>
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### CP4325-RGB

For US market only, hazard distances based upon FDA guidance document 1400056, *Classification and Requirements for Laser Illuminated Projectors (LIPs)*, dated February 18, 2015.

<table>
<thead>
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<th>Projection Lens</th>
<th>Part Number</th>
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<tbody>
<tr>
<td>0.90:1 HB fixed lens</td>
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<td>1.13-1.66:1 DLPCine HB zoom lens</td>
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### Projection Lens Specifications

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<tr>
<td>1.13-1.66:1 DLP Cine HB zoom lens</td>
<td>108-342100-XX</td>
<td>1.2</td>
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<tr>
<td>1.31-1.85:1 DLP Cine HB zoom lens</td>
<td>108-335102-XX</td>
<td>1.4</td>
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<td>1.45-2.17:1 DLP Cine HB zoom lens</td>
<td>108-336103-XX</td>
<td>1.9</td>
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<tr>
<td>1.63-2.71:1 DLP Cine HB zoom lens</td>
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<td>2.71-3.89:1 DLP Cine HB zoom lens</td>
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<td>3.0-4.3:1 DLP Cine UHC zoom lens</td>
<td>163-108100-XX</td>
<td>3.1</td>
</tr>
</tbody>
</table>


### For Installations in the United States

The following must be in place for laser-illuminated projector installations in the United States:

- The projection room shall be clearly identified by the posting of laser warning and restricted access signs, and by restricting entry through physical means. The projection room sign must display the warning "No direct exposure to beam shall be permitted".
- The Christie Laser Projection System Installation Checklist must be fully completed after the installation and sent to lasercompliance@christiedigital.com. A copy can remain on-site. This checklist can be found as a separate document in the accessory box with the manual.
- Certain US states have additional laser regulatory requirements. Go to www.christiedigital.com for additional regulatory requirements.

Product labels

Learn about the labels that may be used on the product. Labels on your product may be yellow or black and white.

General hazards

Hazard warnings also apply to accessories once they are installed in a Christie product that is connected to power.

<table>
<thead>
<tr>
<th>Fire and Shock Hazard</th>
</tr>
</thead>
<tbody>
<tr>
<td>To prevent fire or shock hazards, do not expose this product to rain or moisture.</td>
</tr>
<tr>
<td>Do not alter the power plug, overload the power outlet, or use it with extension cords.</td>
</tr>
<tr>
<td>Do not remove the product enclosure.</td>
</tr>
<tr>
<td>Only Christie qualified technicians are authorized to service the product.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Electrical Hazard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk of electric shock.</td>
</tr>
<tr>
<td>Do not remove the product enclosure.</td>
</tr>
<tr>
<td>Only Christie qualified technicians are authorized to service the product.</td>
</tr>
</tbody>
</table>

General hazard.

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

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

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

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

Optical radiation hazard. To avoid personal injury, never look directly at the light source.
Moving parts hazard. To avoid personal injury, keep hands clear and loose clothing tied back.

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

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

Not for household use.

**Mandatory action**

Consult the service manual.

Disconnect all power sources before performing maintenance or service procedures.

**Electrical labels**

Indicates the presence of a protective earth ground.

Indicates the presence of an earth ground.

**Additional hazard labels**

Indicates Class 4 laser radiation when open. Avoid eye or skin exposure to direct or scattered radiation.

CLASS 1 LASER PRODUCT IEC 60825-1:2014

CP4325-RGB FDA laser variance (US projectors only)
CP4330-RGB FDA laser variance (US projectors only)

Indicates a light hazard. Do not look directly into the lens. The extreme high brightness can cause permanent eye damage. Class 1 Laser Product - Risk Group 3 according to IEC 60825-1:2014 and IEC 62471-5:2015

Indicates high leakage current. Earth connection essential before connecting the power supply.

Indicates a light hazard. Do not look directly into the lens. The extreme high brightness can cause permanent eye damage.
Service setups

Understand the special internal hardware and software adjustments and related details that may require the attention of a qualified service technician, whether done periodically or after a specific module replacement.

Turning the projector on or off

Turn on the projector to display content, or turn off the projector to conserve energy or service the projector.

To operate the projector, the circuit breakers must be in the ON position. If you are servicing the projector or removing the protective covers, ensure that the MAIN and UPS circuit breakers are in the off position.

- In the right toolbar, tap and hold Power.

If the light source is on when turning off the projector, the light source enters a ten-minute cool-down period automatically.

Calibrating the Intelligent Lens System

On Cinema 4K-RGB projectors, the Intelligent Lens System (ILS) is activated by default.

Use the Auto Calibrate feature of the ILS to find and compensate for motor backlash, and to determine the movement range for the currently installed lens.

1. In the left navigation menu, tap Image Settings > ILS File Setup.
2. From the ILS File list, select an available ILS file.
3. Tap Auto Calibrate.
4. Tap Continue.

The system performs the lens calibration.

Adjusting boresight

A boresight adjustment balances the tilt of the lens mount to compensate for screen-to-projector tilt.

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

- Do not look directly into the lens when the light source is on. The extremely high brightness can cause permanent eye damage.
- FIRE HAZARD! Keep hands, clothes, and all combustible material away from the concentrated light beam of the projector.

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

- This procedure must be performed by Christie qualified technicians.
When making the adjustments, set the light source to minimum power.

To following steps are intended to achieve the highest quality image distributed across the full screen.

1. Close the shutter on the projector to avoid accidental exposure to the projection beam when working in close proximity to the projection lens.

2. Using a 3 mm driver, unlock the horizontal and vertical lock screws (Lock A, B, and C). To unlock the vertical lock screw (Lock C), flip open the cover flap (G) using the screwdriver.

3. Open the shutter on the projector.

4. In the right toolbar, tap **Test Patterns**.

5. Select the **RGB-4K-Boresight** pattern and display it full screen.
When adjusting the boresight screws, ensure that the shutter is closed to avoid accidental exposure to the projection beam when operating in close proximity to the projection lens. Open the shutter only to view the test pattern.

6. Start with the horizontal boresight adjustment. Use the ILS controls to move the projection lens into the projector, or turn the manual focus knob (F) counterclockwise to slightly defocus the green cross-hair patterns (+) at the right and left edges of the test pattern.

7. Use the ILS controls or turn the focus knob (F) clockwise to begin focusing the image. Watch for either the left or right cross-hair patterns (+) to come into focus.

8. If the left side comes into focus first, use a 5 mm driver to turn the horizontal boresight adjustment screw (E) clockwise until the left and right are equally out of focus. If the right side comes into focus first, turn the horizontal boresight screw counterclockwise.

9. Repeat steps 6 to 8 as required to obtain an even focus at the right and left edges of the screen.

10. Next perform the vertical boresight adjustment. Use the ILS controls to move the projection lens into the projector, or turn the focus knob (F) counterclockwise to slightly defocus the green cross-hair patterns (+) at the top and bottom of the screen.

11. Use the ILS controls or turn the focus knob (F) clockwise to begin focusing the image. Watch for either the top or bottom cross-hair patterns (+) to come into focus.

12. If the bottom comes into focus first, use a 5 mm driver to turn the vertical boresight adjustment screw (D) counterclockwise until the top and bottom are equally out of focus. If the top comes into focus first, turn the vertical boresight screw clockwise.

13. Repeat steps 10 to 12 as required to obtain an even focus at the top and bottom of the screen.

14. Once the correct focus has been achieved, lock the three lock screws. When locking the lock screws, start with the horizontal lock screws (Lock A and Lock B) and turn them until they just touch the base. Repeat for the vertical lock screw (Lock C). Continue the gradual tightening of each screw, until all lock screws are tight.

When stabilizing image vibration, Lock B may be left locked or unlocked at the discretion of the installer.
15. If you used the focus knob (F) to make the adjustments manually, run an ILS auto calibration.

16. Fine tune the focus on cross-hair patterns I (horizontal) and II (vertical) using the ILS controls only.
   The goal is to obtain good focus at the center and on all sides of the screen, including the square patterns across the screen.

## Adjusting the integrator rod and fold mirror

Understand how to adjust the integrator rod and fold mirror to control the illumination spot on the DMD.

Extreme misalignment of projection optics can cause permanent damage to critical optical components. Only Christie qualified technicians can perform internal optical adjustments. The integrator rod and fold mirror adjustments are set by Christie. Make adjustments only if screen shadows are visible.

1. In the right toolbar, tap Test Patterns.

2. Select the RGB-4K-Integrator Rod test pattern and display it full screen.

Refer to the test pattern for guidance on making the adjustments. The right panel of the test pattern provides information about the integrator zoom and focus adjustments. The left panel provides information about the fold mirror adjustments.

3. Open the Service door on the side of the projector.

4. To use the integrator rod optical controls, open the access door for the Zoom and Focus paddles.
5. Loosen the lock screw for the Zoom and Focus paddles.

6. Set the integrator rod Zoom paddle to the minimum.

7. Loosen the fold mirror screws to unlock the fold mirror adjustment knobs.
8. To make horizontal adjustments on the fold mirror, use the orange adjustment knob. To make vertical adjustments on the fold mirror, use the purple adjustment knob.
9. Adjust the fold mirror until either the top left edge or the bottom right edge of the illumination spot becomes visible on the DMD.

10. Adjust the integrator rod Focus paddle to optimize focus for one of the following:
   • Along the top edge of the image, approximately one-third across the image from the left.
   • Along the bottom edge of the image, approximately one-third across the image from the right.

11. Adjust the fold mirror to center the image on the DMD array.

12. Use the integrator rod Zoom paddle to increase the zoom until the entire active area is filled, with no dark areas at the edges or corners.
   Ensure that overfill is minimized to improve DMD life and system optical efficiency for brightness.

13. Once the adjustments are complete, tighten the lock screw for the Zoom and Focus paddles, and the two fold mirror screws.

14. Close the access door for the Zoom and Focus paddles.

### Adjusting DMD convergence

A convergence problem occurs when one or more projected colors (red, green, and blue) appears misaligned when examined with a convergence test pattern.

The three colors should overlap 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.

When adjusting the convergence, you are adjusting red and green to blue.

- If you wear glasses with corrective lenses when performing this adjustment, ensure that you are viewing the test pattern on a straight angle through the optical axis of your glasses, and not from a tilted or angled perspective. This avoids a prismatic effect that can appear to shift convergence when viewing at an angle.

1. Before adjusting DMD convergence, ensure the projector has reached a steady operational state. If switching from a white or bright test pattern to a dark convergence test pattern, or if warming up the projector after a shutdown, allow 15 minutes for stabilization so that the optics can reach a steady state.

2. In the right toolbar, tap **Test Patterns**.

3. Select the **RGB-4K-Convergence** test pattern and display it full screen.
4. Open the Service door on the side of the projector.

5. To adjust the convergence knobs, use the 3 mm driver included with the projector.
   If adjusting by hand without using the tool, pull out the convergence adjustment knobs to engage them.

6. Use the Convergence test pattern to assist with adjusting the horizontal and vertical lines.
Horizontal adjustments are controlled by adjusting knob 3. Vertical convergence and rotation are controlled by adjusting knobs 1 and 2. Christie recommends rotating a single knob a maximum of a quarter rotation before adjusting the second knob a quarter rotation. For example, if using one hand, turn the left knob a quarter rotation and then the right knob a quarter rotation, and so on. Adjusting a single knob for vertical or rotational adjustment to an extreme before adjusting the second knob may result in the convergence mechanism binding.

For the best stability, Christie recommends setting convergence while rotating the knobs in a clockwise direction. This may require first adjusting convergence by turning the knobs counterclockwise, and finalizing the convergence with a clockwise approach. This applies to all knobs.

7. When complete, push in all the convergence adjustment knobs to disengage them.

# Adjusting the LOS coupling mirror

Understand how to adjust the LOS coupling mirror.

1. Navigate to the laser power setting page, and decrease the red laser power to low (30% to 40%).
2. On a tripod in front of the lens, set up an illuminance meter (such as the Konica Minolta T10 Illuminance Meter) aimed at the center of the projection beam sent to the screen. The illuminance meter must be facing the lens.
3. Set the green and blue laser power levels to 0.
4. Turn on the light source.
5. Display a white test pattern on the screen.
6. Wait 1 minute for the lasers to stabilize.
7. Remove the electronics-side cover.
8. Using a small, flat-head screwdriver, adjust the LOS coupling mirror to maximize the lux reading on the illuminance meter. Only small adjustments are necessary.
9. Remove the illuminance meter from in front of the light beam, and adjust the blue and green power levels to achieve a DCI white point, as measured by the color meter. Make sure the red laser power is still set to low.
10. Visually check for uniformity and fine tune the elbow mirror adjustment.
11. Once the adjustment is complete, adjust the laser power to the preferred level.
12. Replace the electronics-side cover and, using a 3 mm driver, secure the cover using the four quick-access fasteners.
13. Proceed to adjusting the integrator rod and fold mirror (on page 23).

# Replacing or refilling the coolant

Cinema 4K-RGB projectors rely on liquid coolant to maintain the laser optical subsystem at the required operating temperatures. This section provides service instructions and safety precautions for filling the reservoir unit and handling coolant.

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

- Use protective eye wear and gloves. Follow workplace guidelines for using personal protective equipment when installing, cleaning, and servicing the product.
Notice. If not avoided, the following could result in property damage.

- Do not attempt to fill the coolant reservoir when it is installed in the projector chassis.
- Fill the coolant to the recommended level only. Do not fill above the maximum level line shown on the reservoir unit.

1. Remove the coolant reservoir (on page 62).
2. Ensure the coolant reservoir unit is placed on a separate surface.
3. Use a flat-head screwdriver to open the top cap on the reservoir fill port.
4. Pour the required coolant (Koolance LIQ-740PR P/N: 003-005179-XX) into the fill port. Fill only to the recommended level.
5. Replace the top cap on the reservoir fill port.
6. Using the flat-head screwdriver, tighten the top cap to seal it.
7. Use a soft cloth to wipe away any coolant that drips outside the reservoir.
8. Reinstall the coolant reservoir in the projector.
Parts and module replacement

When ordering replacement parts, provide the following information found on the product license label:

- Projector Model
- Projector Serial Number
- Manufacture Date

Tools required for service

Before servicing the projector, ensure the following tools and components are available:

- High security key
- Long and stubby neck ball drivers—2.5 mm, 3 mm, and 5 mm (provided in the projector toolbox)
- 2 mm and 6 mm hex drivers
- 8 mm deep socket nut driver
- 13 mm wrench or adjustable wrench (open jaw)
- Flat-head screwdriver
- Torque driver
- Needle nose pliers
- Magnetiser
- Side cutters and cable ties
- Electrostatic protective strap and pad
- Disposable lint-free gloves (included with optical components)
- Cloth wipes

Maintenance prerequisites

Before servicing the projector, perform the following tasks.

- Always power down and disengage all power sources (on page 20) to the projector prior to servicing.
Follow all service safety precautions (on page 12).
Ensure the screws are torqued to 15 in-lb.
For a detailed breakdown of serviceable modules, see Index of parts and modules (on page 31).

Index of parts and modules

The following table lists the parts and modules for Cinema 4K-RGB.

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Light engine</strong></td>
<td></td>
</tr>
<tr>
<td>Light engine</td>
<td>003-107210-XX</td>
</tr>
<tr>
<td>Light engine air filter (6PK)</td>
<td>003-006464-XX</td>
</tr>
<tr>
<td><strong>Power supply</strong></td>
<td></td>
</tr>
<tr>
<td>12V power supply</td>
<td>003-121461-XX</td>
</tr>
<tr>
<td>48V power supply</td>
<td>003-121460-XX</td>
</tr>
<tr>
<td>AC breaker assembly</td>
<td>003-107755-XX</td>
</tr>
<tr>
<td><strong>Printed circuit boards and electronics</strong></td>
<td></td>
</tr>
<tr>
<td>HUB-NX</td>
<td>003-106802-XX</td>
</tr>
<tr>
<td>PCB F-MAIN</td>
<td>003-103914-XX</td>
</tr>
<tr>
<td>SCCB PCB</td>
<td>003-113483-XX</td>
</tr>
<tr>
<td>HKBB 4.2 PCB</td>
<td>003-113426-XX</td>
</tr>
<tr>
<td>PCB status LED board</td>
<td>003-006587-XX</td>
</tr>
<tr>
<td>HVCS PCB</td>
<td>003-113383-XX</td>
</tr>
<tr>
<td>LVCS PCB</td>
<td>003-113366-XX</td>
</tr>
<tr>
<td>LBP7 PCB</td>
<td>003-113451-XX</td>
</tr>
<tr>
<td>DIB 1.0 PCB</td>
<td>003-113605-XX</td>
</tr>
<tr>
<td>Color sensor board</td>
<td>003-113367-XX</td>
</tr>
<tr>
<td>Radiator temperature sensor</td>
<td>003-100618-XX</td>
</tr>
<tr>
<td>Dual TEMP sensor (DTSM)</td>
<td>003-111269-XX</td>
</tr>
<tr>
<td><strong>Liquid cooling</strong></td>
<td></td>
</tr>
<tr>
<td>Radiator assembly</td>
<td>003-106874-XX</td>
</tr>
<tr>
<td>Radiator filter (6PK)</td>
<td>003-006463-XX</td>
</tr>
<tr>
<td>Relief tank module</td>
<td>003-107545-XX</td>
</tr>
<tr>
<td>Pump module CP4325-RGB</td>
<td>003-106875-XX</td>
</tr>
<tr>
<td>Pump module CP4330-RGB</td>
<td>003-108521-XX</td>
</tr>
<tr>
<td>Radiator handle</td>
<td>003-107183-XX</td>
</tr>
<tr>
<td>Description</td>
<td>Part Number</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>Reservoir assembly CP4325-RGB</td>
<td>003-107512-XX</td>
</tr>
<tr>
<td>Reservoir assembly CP4330-RGB</td>
<td>003-108595-XX</td>
</tr>
<tr>
<td>Coolant propylene glycol 740</td>
<td>003-005179-XX</td>
</tr>
<tr>
<td><strong>Fans</strong></td>
<td></td>
</tr>
<tr>
<td>Fan Green/Red light engine FPGA</td>
<td>003-112555-XX</td>
</tr>
<tr>
<td>Fan Blue light engine FPGA</td>
<td>003-112556-XX</td>
</tr>
<tr>
<td>Fan 12V 0.50A 4WIR 120x25 assembly</td>
<td>003-121494-XX</td>
</tr>
<tr>
<td>Fan 12V 0.55A 4WIR 140x25 assembly</td>
<td>003-121493-XX</td>
</tr>
<tr>
<td>Fan Card Cage 120mm</td>
<td>003-121677-XX</td>
</tr>
<tr>
<td><strong>Harnesses</strong></td>
<td></td>
</tr>
<tr>
<td>F-MAIN to touch panel harness</td>
<td>003-112548-XX</td>
</tr>
<tr>
<td>SID harness</td>
<td>003-005668-XX</td>
</tr>
<tr>
<td>Light engine data cable (MiniSAS cable - 500mm)</td>
<td>003-006406-XX</td>
</tr>
<tr>
<td>LVPS harness</td>
<td>003-006405-XX</td>
</tr>
<tr>
<td><strong>Covers</strong></td>
<td></td>
</tr>
<tr>
<td>Front cover</td>
<td>003-107374-XX</td>
</tr>
<tr>
<td>Rear cover</td>
<td>003-107371-XX</td>
</tr>
<tr>
<td>Top cover</td>
<td>003-107334-XX</td>
</tr>
<tr>
<td>Bottom cover</td>
<td>003-107335-XX</td>
</tr>
<tr>
<td>Left cover (electronics-side)</td>
<td>003-107048-XX</td>
</tr>
<tr>
<td>Right cover (side-intake)</td>
<td>003-007373-XX</td>
</tr>
<tr>
<td><strong>Optics</strong></td>
<td></td>
</tr>
<tr>
<td>Coupling fold mirror assembly</td>
<td>003-107231-XX</td>
</tr>
<tr>
<td>LOS assembly CP4325-RGB</td>
<td>003-107107-XX</td>
</tr>
<tr>
<td>LOS assembly CP4330-RGB</td>
<td>003-108628-XX</td>
</tr>
<tr>
<td>Shutter assembly</td>
<td>003-104955-XX</td>
</tr>
<tr>
<td>Integrator zoom/focus</td>
<td>003-107325-XX</td>
</tr>
<tr>
<td>Fold mirror adjustment assembly</td>
<td>003-107316-XX</td>
</tr>
<tr>
<td>Rotating diffuser assembly</td>
<td>003-107244-XX</td>
</tr>
<tr>
<td>Illumination optics system (IOS) Rear CP4325-RGB</td>
<td>003-107230-XX</td>
</tr>
<tr>
<td>Illumination optics system (IOS) Rear CP4330-RGB</td>
<td>003-108603-XX</td>
</tr>
<tr>
<td>Coupling elbow with depolarizer</td>
<td>003-006597-XX</td>
</tr>
<tr>
<td><strong>Lenses</strong></td>
<td></td>
</tr>
<tr>
<td>Description</td>
<td>Part Number</td>
</tr>
<tr>
<td>------------------------------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>3.0-4.3 DLPCine HB zoom</td>
<td>108-278101-XX</td>
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<tr>
<td>1.45-2.05 DLPCine HB zoom</td>
<td>108-335102-XX</td>
</tr>
<tr>
<td>1.6-2.4 DLPCine HB zoom</td>
<td>108-336103-XX</td>
</tr>
<tr>
<td>1.8-3.0 DLPCine HB zoom</td>
<td>108-337104-XX</td>
</tr>
<tr>
<td>2.15-3.6 DLPCine HB zoom</td>
<td>108-338105-XX</td>
</tr>
<tr>
<td>1.25-1.83 DLPCine HB zoom</td>
<td>108-342100-XX</td>
</tr>
<tr>
<td>4.3-6.0 DLPCine HB Zoom</td>
<td>108-279101-XX</td>
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<td>1.25-1.83 DLPCine UHC zoom</td>
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<tr>
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<td>163-104106-XX</td>
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<tr>
<td>1.6-2.4 DLPCine UHC zoom</td>
<td>163-105107-XX</td>
</tr>
<tr>
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<td>163-106108-XX</td>
</tr>
<tr>
<td>Lens 1:1 R25K Roadie HB fixed</td>
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</tr>
<tr>
<td>Kit zoom hardware</td>
<td>003-006556-XX</td>
</tr>
<tr>
<td>Motor lens mount assembly</td>
<td>003-003903-XX</td>
</tr>
<tr>
<td>Manual lens mount assembly</td>
<td>003-102333-XX</td>
</tr>
<tr>
<td>Focus motor</td>
<td>003-101194-XX</td>
</tr>
<tr>
<td>CFast Card 8G-FMain</td>
<td>003-006303-XX</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td></td>
</tr>
<tr>
<td>Touch screen monitor</td>
<td>003-121059-XX</td>
</tr>
<tr>
<td>Touch panel hardware</td>
<td>003-003326-XX</td>
</tr>
<tr>
<td>Leveling feet</td>
<td>003-005359-XX</td>
</tr>
<tr>
<td>High security lock</td>
<td>003-006472-XX</td>
</tr>
</tbody>
</table>
Lens mount components

The lens mount provides a means of securing a projection lens to the projector. Components include the lens boot, lens mount barrel, and the lens mount offset.

Removing the projection lens

Use the correct method of removing the lens.

1. For motorized lens mounts only, disconnect the lens zoom motor from the two zoom motor harness connectors.
2. Turn the clamp on the lens mount to unlock the projection lens.
3. Slide the lens straight out of the projector.
   If the lens does not slide out easily, reset the lens offset.
4. Attach the lens cap to avoid damage to the lens.

Replacing the lens mount

The lens mount, located at the front of the projector, is an assembly of mechanical and electrical components that securely holds and positions the projection lens.

1. Remove the front cover (on page 42).
2. Remove the projection lens (on page 34).
3. Ensure the lens mount is centered vertically and horizontally.
4. Disconnect the lens mount harness.

5. Remove the harness cables from the four P-clips.
6. Using a 5 mm hex driver, loosen the two boresight alignment screws.

7. Using a 5 mm hex driver, loosen the pivot screw in the center of the lens mount.
8. Remove the lens mount from the projector head and carefully set it aside.
9. To replace the lens mount, repeat these steps in reverse order.

The new lens mount includes three post screws that set the required distance of the lens mount from the projector head. To avoid damaging the lens mount, do not adjust the post screws.
Filtration

Filters help to prevent dust, smoke, fog, and other foreign materials from entering the projector.

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

- Do not operate the product without the filter installed.
- Do not operate the product with an incorrectly installed filter.
- Do not reuse an old air filter.

## Replacing the light engine compartment air filter

This air filter is located on the air intake side of the projector, behind the radiator.

These instructions detail accessing the air filter from the top of the projector. The filter can also be removed from the side of the projector by removing the radiator and radiator fan pack (on page 59).

1. *Remove the top cover* (on page 39).
2. Loosen the two captive screws on the air filter bracket and remove the bracket.
3. Lift the air filter out of the projector.
4. Replace the used air filter with a new one.
   - The airflow indicator on the new filter must point towards the fan pack.
5. Re-install the air filter bracket using the two locating pins and captive fasteners.
6. Re-install the top cover.

**Replacing the main intake air filter**

The main intake air filter is located behind the side-intake cover.

1. Remove the side cover.
2. Pull out the air filter from the projector.
3. Replace the used air filter with a new one.
4. Re-install the side cover.
Learn how to remove the covers and feet of the projector.

Removing the top cover

The top cover provides access to the light engine, electronics, and various other internal components.

1. Loosen the four captive screws securing the top cover.

2. Use the high security key to open the projector service access door.

3. Disengage the top cover lock pin by pulling on the pin and lift up the top cover to remove it.

4. If required, replace the top cover.

5. To install the top cover, repeat these steps in reverse order.
Removing the touch panel

The touch panel is a touch-sensitive screen used to control the projector, manage sources, adjust the display, and view status information.

1. Disconnect all harnesses from the card cage input panel.
2. Loosen the clamp knob.
3. Remove the touch panel from the projector.

4. If required, replace the touch panel.
5. To install the touch panel, repeat these steps in reverse order.

Removing the rear cover

Removing the rear cover provides access to the power supplies and other components allowing removal of the integrator assembly.

1. Loosen the six captive screws securing the rear cover.
2. Remove the rear cover.
3. If required, replace the rear cover.
4. To install the rear cover, repeat these steps in reverse order.

Removing the electronics-side cover

The electronics-side cover provides access to the card cage, rear IOS, and reservoir module.

1. Loosen the four captive screws securing the electronics-side cover.

2. Remove the electronics-side cover.
3. If required, replace the electronics-side cover.
4. To install the electronics-side cover, repeat these steps in reverse order.
Removing the front cover

The front cover provides access to the lens assembly.

1. Loosen the four screws securing the front cover.

2. Remove the front cover.

3. If required, replace the front cover.

4. To install the front cover, repeat these steps in reverse order.
   Check that the lens boot is properly aligned and sealed against the front cover.

Removing the side-intake cover

The side-intake cover provides access to the radiator, filter, and fans.

1. Loosen the four captive screws securing the side-intake cover.
2. Remove the side-intake cover.
3. If required, replace the side-intake cover.
4. To install the side-intake cover, repeat these steps in reverse order, noting the orientation of the cover.

   Ensure that you position the large, unvented portion of the cover adjacent to the back of the projector.

**Removing the bottom cover**

The bottom cover provides access to the laser optical subsystem (LOS) and color sensor.

1. Loosen the six captive screws securing the bottom cover.
2. Lower the cover from the projector and slide it out.
3. If required, replace the bottom cover.
4. To install the bottom cover, repeat these steps in reverse order.
Electronics

Learn how to replace the boards, cards, and other electronic components in the projector.

Servicing the card cage

The card cage contains the slots for the F-Main electronics card.

1. Remove the top cover (on page 39).
2. Remove the electronics-side cover (on page 41).
3. Disconnect all external card cage connections and any input sources.
4. Using a 3 mm driver, remove the two screws securing the electronics bracket and remove bracket.

5. Disconnect the red, green, and blue mini-SAS harnesses from the card cage through the projector service access door.
6. Disconnect the three harnesses (J5, J7, J87) from the SSCB on top of the card cage.
7. Disconnect the two harnesses (J17, J18) from the backplane board.
8. Loosen the four captive screws securing the card cage.

9. Pull on the locking pin that is located through the access door, above the card cage intake fan.
10. Slide the card cage out along the guides.
    To avoid possible damage, carefully place the card cage on a clean, flat surface.
11. To re-install or replace the card cage, follow these steps in reverse order.

### Removing the AC breaker

The AC breaker is located at the rear of the projector.

1. *Remove the rear cover* (on page 40).
2. Using an 8 mm deep socket nut driver, uninstall the ground harness ends.

3. Remove the four screws.
4. Disconnect the three AC breaker inline harnesses (MAIN/UPS connected to the 12V power supply, 48V power supply harness, and AC inlet).

5. Replace the AC breaker.

6. To re-install, follow these steps in reverse order.

   Hi-Pot testing must be performed after removing and replacing the AC breaker.

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**Replacing the power supplies**

The Cinema 4K-RGB power supply assembly includes individual 12V and 48V power supply modules secured within a support bracket.

The 12V power supply module provides the required voltages for operating the electronics in the projector and for receiving a UPS connection (if installed).

The 48V power supply module provides the required voltages for the lasers and pumps.

Before servicing, always carefully observe the original lead dress. Take extra precautions to secure all harnessing properly, especially in the high voltage circuitry areas. Replace any wire that appears to have damaged insulation.

1. Shut down the projector and ensure it is disconnected from AC.

2. *Remove the rear cover* (on page 40).

3. Unplug the 12V connector from the 12V power supply module.

4. Unplug the 48V connector from the 48V power supply module.
5. For both power supply modules, disconnect the DC output cables from the positive and negative terminals using a 6 mm driver and 13 mm open-jaw wrench. Retain all screws, nuts, washers, and lock washers.

6. Loosen the three captive fasteners securing the power supply module to the projector system.
7. Slide the power supply assembly over the rails and out of the projector, and set it on a clean, level surface.

8. Remove the two screws that secure the handle bracket to the power supply assembly.

9. Remove the eight screws that secure the support bracket around the power supply assembly.

10. Remove the affected power supply module (12V or 48V).

11. Replace it with the new power supply module.

12. To re-install the power supply assembly, follow these steps in reverse order.

   When reconnecting the DC outputs, ensure all positive and negative terminal connections are torqued to 30 in-lb.

   Hardware on the positive and negative DC terminals must be re-installed as follows:

   **12V DC Output Terminals**
When correctly oriented in the projector, the 12V power supply is located at the top of the assembly, with the handle and support brackets fitting over the three locating pins.
Removing the laser driver card cage

1. *Remove the radiator intake fans* (on page 59).
2. Disconnect the harness connectors J113, J111, J71, J70, J88, J128, and E panel harness (fan #21-24).
3. Disconnect the four panel harness connectors A, B, C, and D.
4. Loosen the four captive screws securing the LDCC module to the projector frame.

5. Using the metal flanges provided, pull the laser driver card cage out of the projector.

6. Replace the laser driver card cage.

7. To re-install, follow these steps in reverse order.
Replacing the temperature sensor

The temperature sensor is located on the light engine.

2. Disconnect the connector to the temperature sensor.
3. Remove the screw securing the temperature sensor and remove it.
4. Replace the temperature sensor.
5. To re-install, follow these steps in reverse order.

Replacing the SID harness

Learn how to replace the SID harness.

2. Release the two cable clips retaining the SID harness.
   One end of the SID harness is fastened to the projector frame top structure and the other end is connected to the in-line connector on the harness P/N: 001-113510-XX, which connects to P89 on the HKBB.
3. Gently separate the other cables in the same run away from the SID cable.
4. Remove the screw securing the SID harness to the projector.
5. Cut the zip tie restraining the SID harness to the near-by harness.
6. Unplug the SID harness at the in-line connector.
7. Remove the SID harness.
8. Replace the SID harness.
9. To re-install, repeat these steps in reverse order.
Replacing the mini-SAS cables

The mini-SAS harnesses move data from the light engine to the card cage.

2. Disconnect the red, green, and blue mini-SAS harnesses from the light engine.
3. Replace the mini-SAS harnesses.
4. Reconnect the mini-SAS harnesses to the light engine. Make sure the access and bends are identical to what was installed or the harnesses do not route properly.
5. Replace the light engine.
6. Reconnect the mini-SAS harnesses to the card cage.
Ventilation and cooling

Vents and louvers provide ventilation, both for intake and exhaust, keeping the projector components within their operating temperature specifications.
When replacing fans, ensure you confirm the fan direction for airflow. The correct orientation of the fan also ensures that the fan harness reaches the connector.

Replacing the card cage intake fan (#1)
The card cage intake fan draws in air to assist with cooling.

1. Remove the card cage (on page 45).
2. Disconnect HUB 1 fan harness P2.
3. Using a 2.5 mm driver, remove the seven screws.
4. Replace the fan.
5. To re-install, follow these steps in reverse order.

Replacing the blue formatter fan (#3)

1. Remove the top cover (on page 39).
2. To remove the light engine security cover, loosen the two captive screws using a 3 mm driver.
3. *Remove the light engine intake fans* (on page 60).
4. Disconnect the fan #3 harness inline connector.
5. To remove the fan and bracket, loosen the captive screw.

6. Remove the four screws securing the fan to the bracket.
7. Replace the fan.
8. To re-install, follow these steps in reverse order.

**Replacing the green formatter fan (#4)**

The green formatter fan provides cooling for the green light engine formatter board.

1. *Remove the top cover* (on page 39).
2. To remove the light engine security cover, loosen the two captive screws using a 3 mm driver.
3. Disconnect the fan #4 harness inline connector.
4. To remove the fan, loosen the two captive screws.

5. Replace the fan.
6. To re-install, follow these steps in reverse order.

Replacing the red formatter fan (#5)

1. Remove the top cover (on page 39).
2. If the light engine coolant hoses are in the way, disconnect them.
3. To remove the light engine security cover, loosen the two captive screws using a 3 mm driver.
4. Disconnect the fan #5 harness inline connector.
5. To remove the fan with the bracket, loosen the three captive screws.

6. Remove the two screws securing the fan to the bracket.
7. Replace the fan.
8. To re-install, follow these steps in reverse order.

## Replacing the card cage exhaust fan (#4)

The card cage exhaust fan draws hot air away from the card cage.

1. Remove the card cage (on page 45).
2. Disconnect HUB 4 fan harness P29.
3. Remove the seven screws using a 2.5 mm driver.
4. Replace the fan.
5. To re-install, follow these steps in reverse order.

Replacing the radiator intake fans (#6-17)
The radiator intake fans draw cool air in to assist in cooling the projector.
1. Remove the radiator (on page 63).
2. Disconnect the two fan harnesses G and H at rear of the projector (white/blue and white/red).
3. Remove the six screws securing the radiator intake fan assembly.
4. Swing the fan pack out from the bottom and then lower it down to remove from the projector.
5. Replace the radiator intake fan assembly.
6. To re-install, follow these steps in reverse order.

Replacing the laser driver card cage fans (#21-24)
1. Remove the laser driver card cage (on page 51).
2. Disconnect the inline harness connector for the affected fan. 
   Note the harness routing prior to disconnecting and releasing the harness.
3. Remove the four screws securing the affected fan and remove it, along with any P-clips 
   between the fan grill and fan chassis.

4. Replace the fan and install the harnesses into the P-clips. 
   Ensure the airflow direction label on top of the fan pack matches the airflow indicator on the 
   replacement fan.
5. To re-install, follow these steps in reverse order.

**Replacing the light engine intake fans (#25-30)**

The light engine intake fans draw air into the projector to cool the light engine. 

These instructions detail accessing the air filter from the top of the projector. The filter can also be 
removed from the side of the projector. Contact Christie Technical Support for more details.

1. *Remove the top cover* (on page 39).
2. To remove the light engine security cover, loosen the two captive screws using a 3 mm driver.
3. To remove the light engine intake fan cover, loosen the two captive screws.
4. Disconnect the fan harness J105 from the HKBB.
5. Release the fan harness from the cable clips.
6. Pull the light engine intake fan assembly up out of the projector.
7. Disconnect the affected fan inline harness connection.
   Note the harness routing prior to disconnecting and releasing the harness.
8. Remove the four screws securing the affected fan and remove it, along with any P-clips between the fan grill and fan chassis.
9. Replace the fan and install the harnesses into the P-clips.
   Ensure the airflow direction label on top of the fan pack matches the airflow indicator on the replacement fan.
10. To re-install, follow these steps in reverse order.
Removing the coolant reservoir

Before replacing or refilling the coolant, the coolant reservoir must be removed from the projector chassis.

1. *Remove the electronics-side cover* (on page 41).
2. Locate the coolant reservoir below the communications panel and loosen the two captive screws (3 mm) at the base of the reservoir.
3. Tilt the reservoir slightly to unhook the rear tabs out of the plate and pull the unit partially out of the projector.
4. Disconnect the two quick disconnect hoses.
5. Once disconnected, remove the reservoir unit from the projector chassis and set it aside on a separate surface.
6. To replace the coolant reservoir, follow these steps in reverse order.
   Ensure screws are torqued to 15 in-lb.

Removing the pump module

1. *Remove the front cover* (on page 42).
2. *Remove the rear cover* (on page 40).
3. Remove the radiator.
4. *Remove the radiator intake fan pack* (on page 59).
5. Disconnect the pump module coolant lines from both the LOS and light engine manifold plate.
6. If necessary, remove the one or two of metal retaining clips and release the coolant lines for the pump module, which run along the bottom, intake-side of the projector.
7. From the front of the projector, unclip the coolant lines along the bottom under the lens mount.
8. Pull the coolant lines through the baseplate opening and leave them hanging out the front of the projector.
9. From the optical access door, disconnect all electrical connections.
10. Loosen the four captive screws securing the pump module.
11. Remove the top of the pump module from the projector making sure the hoses clear the projector, and lift up to free from the bottom tabs of the pump module from the projector chassis.

12. Replace the pump module.

13. To re-install, repeat these steps in reverse order.
   Christie recommends fully securing the pump module before starting to reroute and connect the hoses.

   To avoid damage when re-routing the hoses, ensure care is taken to not kink the hoses.

Replacing the radiator

1. Remove the top cover (on page 39).
2. Remove the rear cover (on page 40).
3. Remove the side-intake cover (on page 42).
4. At the panel mount, disconnect the DTSM harness coming from the HKBB.
5. To remove the hose bracket securing the hoses, loosen the captive screw.
6. Place cloth wipes around the cooling hose connection points to capture any excess coolant that may drip upon disconnect.

7. Disconnect the three hose connectors.

8. Remove the two radiator handles from the back of the projector and attach them to the radiator.

9. Remove the radiator.
   a) Loosen the eight captive screws.
b) Swing the radiator out from the projector, being mindful of the middle coolant line attached to the LOS.

c) Lifting the radiator handles, remove the radiator.

10. Replace the radiator.

11. To re-install, follow these steps in reverse order.

Replacing the relief tank

This topic is currently not available. For information on replacing the relief tank, contact Christie Technical Support.

Replacing the exhaust duct

Complete the following procedure to replace the exhaust duct.

1. If using an alternate heat extractor, disconnect a standard Ø8” HVAC duct from the exhaust duct flange.

2. If using a Christie Heat Extractor kit (P/N: 38-814008-XX), disconnect it using a 5 mm hex driver, removing the M6 screws, and the two inserts on the metal sleeve.

3. Using a 3 mm hex screwdriver, loosen the seven captive screws, including the five captive screws on the projector frame and the two captive screws on the AC receptacle.
4. Remove the exhaust duct from around the touch panel mount and AC receptacle.

5. To replace the exhaust duct, follow these steps in reverse order.
Optics

Learn how to replace the light source, mirrors, and other optical components. The projector must be powered off and all components must be re-installed before powering on the projector for doing any optical alignment.

- Always wear powder-free latex gloves when handling optical components.
- Wear an electrostatic discharge (ESD) strap and use insulated tools when replacing the light engine.

Replacing the integrator assembly

The integrator assembly captures light from the RGB laser source and combines it into a uniform rectangular light source for the light engine.

1. Remove the rear cover (on page 40).
2. Remove the card cage (on page 45).
3. Remove the coolant reservoir (on page 62).
4. If required, release the diffuser harness (J135) from the rear card cage security bracket clips.
5. Using a 3 mm driver, remove the three top screws and lower left screw securing the rear card cage security bracket.

Using a 2.5 mm driver, remove the lower right screw securing the rear card cage security bracket.

6. Remove the bracket.

7. Disconnect the diffuser harness (J135) from the diffuser interface board (DIB).

8. Remove the diffuser harness from the clip.

9. Using a 3 mm driver, remove the six screws securing the integrator assembly.
10. Vertically, pull out the integrator assembly and place it on a clean, flat surface. To keep out dust and other contaminant, Christie recommends covering the LOS opening with a lint free cloth.

11. To re-install, follow these steps in reverse order.

12. After replacing the integrator assembly, perform the following tasks as described in the Cinema 4K-RGB User Guide (P/N: 020-102712-XX).
   - Perform an LOS coupling mirror alignment.
   - Perform a LiteLOC calibration.

Replacing the fold mirror adjust

The fold mirror directs light towards the light engine.

1. *Remove the top cover* (on page 39).
2. *Remove the electronics-side cover* (on page 41).
3. *Remove the front cover* (on page 42).
4. Unlock the service door and open the door.
5. Disconnect the left coolant hose to the light engine. This is the hose closest to the front of the projector.
6. Loosen the four captive screws securing the front laser optical subsystem (LOS) pump module.
7. Pull the LOS pump forward exposing the two access holes to the fold mirror.
8. Remove the four screws securing the fold mirror housing.

9. Remove the fold mirror and replace.
10. To re-install, repeat these steps in reverse order.

Replacing the light dump

The light dump absorbs any off-state light from the light engine.
1. Remove the top cover (on page 39).
2. Remove the light engine fan pack (on page 60).
3. To remove the light engine security cover, loosen the two captive screws using a 3 mm driver.
4. Loosen the captive screw securing the light dump and remove.
5. Replace the light dump.

6. To re-install, follow these steps in reverse order.

**Replacing the light engine**

The light engine modulates incoming light from the light source to create an image, which is projected to the screen.

> Always wear an electrostatic discharge (ESD) strap and use insulated tools when replacing the light engine.

1. *Remove the top cover* (on page 39).
2. *Remove the light engine fan pack* (on page 60).
3. *Remove the light dump* (on page 70).
4. Disconnect the three mini-SAS cables from the card cage.
5. Disconnect the two coolant hoses to the light engine.
6. Disconnect the J89 shutter harness from the housekeeping board (HKBB).
7. Loosen the three captive screws securing the light engine to the projector base.
8. Remove the light engine from the projector.
9. Place the light engine on the light engine plate.
   If you do not have the light engine plate, place the light engine on the snood.
10. Replace the light engine.
11. To re-install, follow these steps in reverse order.

**Packing the existing light engine**

Use the shipping brackets, shipping plate, and hardware from the light engine packaging to prepare the existing light engine for return shipping.

1. Place the existing light engine onto the shipping base plate.
2. Using a 3 mm hex driver, tighten the three captive M4 screws and attach the light engine to the base plate.
Tighten the screws to 15 in-lb to ensure the light engine does not become detached from the base plate during transportation.

3. Remove the two M3 screws from the top convergence plate bracket.

4. Remove the two M3 screws from the side convergence plate bracket.

5. To stabilize the top convergence plate bracket, align the top shipping bracket (red) with the three empty screw holes.

6. To secure the top shipping bracket, insert three M3 screws and use a 2.5 mm hex driver to tighten them. Tighten the screws to 8 in-lb.

7. To stabilize the side convergence plate bracket, align the side shipping bracket (red) with the four empty screw holes.

8. To secure the side shipping bracket, insert four M3 screws and use a 2.5 mm hex driver to tighten them. Tighten the screws to 8 in-lb.

9. Attach a zip tie to secure the light engine coolant hose and Mini SAS cables, ensuring that the hose and cables are not pinched against any part of the light engine or convergence plate.
10. Place the light engine and shipping base plate assembly into the ESD bag.
11. Tape the ESD bag to seal it.
12. Place the sealed light engine into the packaging insert tray.
13. Insert the cardboard shipping sleeve into the box.

14. Place the sealed light engine and insert tray into the box.

15. Seal the box for shipment.

16. Return the packaged light engine to Christie.

Replacing the LOS coupling elbow

These instructions provide details for replacing the projector LOS coupling elbow.

1. Remove the integrator assembly (on page 67).
2. Using a 3 mm driver, remove the four screws securing the coupling elbow.
3. Install the new coupling elbow on the integrator assembly.

4. To re-install these components (except the top and electronics-side covers), follow these steps in reverse order.
   Torque all M4 screws to 15 in-lb and all M3 screws to 8 in-lb. Ensure the card cage and top cover locking pins are engaged when re-installing.
   The optical access door must be opened to make integrator rod and fold mirror adjustments and the electronics-side cover must be removed for making LOS coupling mirror adjustments. For more information, refer to the projector documentation.

5. After reinstalling the components, perform these tasks:
   a) Torque all M4 screws to 15 in-lb and all M3 screws to 8 in-lb.
   b) Ensure the card cage and top cover locking pins are engaged when re-installing.
   c) Perform a LiteLOC calibration.

Removing the coupling elbow mirror assembly

1. *Remove the card cage* (on page 45).

2. Remove the four screws securing the mirror.

3. Rotate the four spring clips clear of the mirror.

4. Replace the mirror assembly.

5. To re-install, follow these steps in reverse order.

6. After re-installing the assembly, perform optical adjustments and software calibration.
Replacing the shutter

The shutter blocks the light coming into the projector lens.

1. Remove the top cover (on page 39).
2. Remove the light dump (on page 70).
3. Disconnect the two inline harnesses cables on the shutter.
4. Loosen the one captive screw securing the shutter.

   Christie recommends using a short, right angle 3 mm allen key.

   If a right angle allen key is unavailable, the engine can be removed for front access using the provided straight 3 mm ball driver.

5. Pull out the shutter.
6. Replace the shutter.
7. To re-install, repeat these steps in reverse order.
Printed circuit boards and sensors

Printed circuit boards (PCB) mechanically support and electrically connect the projector components. Sensors convert information such as temperature, light, and communication into electrical signals.

Always wear an electrostatic discharge (ESD) strap and use insulated tools when replacing circuit boards.

Replacing the F-Main electronics card

The F-Main electronics card is the primary input panel that processes information and manages communication for the projector.

1. *Remove the top cover* (on page 39).
2. To remove the marriage ring, push the locking lever and pivot the marriage ring from the bottom to pull it out.

3. To remove the F-Main electronics card, press the two red locking tabs and pull the card out.
4. Replace the F-Main electronics card.
5. To re-install, follow these steps in reverse order.

Replacing the IMB

The integrated media block (IMB) decrypts and decodes feature-film (Hollywood) content and delivers it to the projector in a useable format.

1. Remove the top cover (on page 39).
2. To remove the marriage ring, push the locking lever and pivot the marriage ring from the bottom to pull it out.
3. To remove the IMB, press the two red locking tabs and pull the IMB out.
4. Replace the IMB.
5. To re-install, follow these steps in reverse order.

**Replacing the housekeeping board (HKBB)**

The housekeeping (HKBB) board acts as an interface board with the majority of the control devices feeding into it, including fans, power supply input, shutter, IR receivers, and so on.

1. *Remove the top cover* (on page 39).
2. Loosen the two captive screws securing the HKBB bracket and remove the bracket.
3. Disconnect the 12 harnesses from the housekeeping board.
   - The harnesses to disconnect: J30, J81, J85, J89, J101, J102, J103, J104, J105, J110, J112, and J129.
4. Remove the bracket and housekeeping board from the projector.
5. Remove the 13 screws securing the HKBB board.
6. Pull back the harnesses and remove the board.
7. Place the new board, making sure to align it with the two locating pins.

8. To re-install the HKBB, follow these steps in reverse order.

Replacing the SCCB

1. Remove the top cover (on page 39).
2. Loosen the thumb screw located on the SCCB.
3. Disconnect all harnesses from the board.
4. To disconnect the SCCB from the HUB-NX, slide the SCCB back and remove.
5. Replace the SCCB.
6. To re-install, follow these steps in reverse order.
Replacing the HUB-NX

1. Remove the card cage (on page 45).
2. Remove the IMB (on page 79).
3. Remove the F-Main electronics card (on page 78).
4. Remove the SCCB (on page 81).
5. Remove all option cards.
6. Remove the blank faceplate.
8. Using a 2 mm driver, remove the three screws securing the HUB-NX to the card cage, located at the bottom of the card cage.

9. Using a 2.5 mm driver, remove the two screws securing the HUB-NX to the card cage, located at the top of the card cage.
10. Remove and replace the HUB-NX.

11. To re-install, follow these steps in reverse order.

Replacing the dual temperature sensor module (DTSM)

The dual temperature sensor module (DTSM) monitors the ambient air temperature going into the projector.

1. Remove the side-intake cover (on page 42).
2. Disconnect the DTSM inline harness connector F and connector J82.
3. Using a 2.5 mm driver, remove the screw securing the DTSM.
4. Replace the DTSM.
5. To re-install, follow these steps in reverse order.

Replacing the status LED board (SLB)

The status LED board (SLB) provides visual information about the operational state of the projector.

1. Remove the rear cover (on page 40).
2. Disconnect the SLB harness connector J1 from the SLB.
3. Remove the two screws securing the SLB and remove the board.
4. Replace the SLB assembly.
5. To re-install, follow these steps in reverse order.
Replacing the low voltage current source (LVCS) board

1. *Remove the laser driver card cage* (on page 51).
2. Loosen the two captive screws securing the bottom cover plate and pivot to remove it.
3. Disconnect the LVCS harness connectors J162, J163, and J164.
4. Release the locking tab to slide the LVCS out of the cage and remove it.
5. Replace the LVCS.
6. To re-install, follow these steps in reverse order.
Replacing the high voltage current source boards

Learn how to replace the HVCS-R, HVCS-G, and HVCS-B boards.

1. Remove the laser driver card cage (on page 51).
2. Loosen the two captive screws securing the bottom cover plate and pivot to remove it.
3. Disconnect the HVCS harness connectors J161 from the board being replaced.
4. Slide the HVCS board out of the cage and remove it.
5. Replace the HVCS board.
6. To re-install, follow these steps in reverse order.
Replacing the laser backplane (LBP7) board

1. Remove the laser driver card cage (on page 51).
2. Loosen the two captive screws securing the bottom cover plate and pivot to remove it.
3. Remove all harnesses from the HVCS and LVCS boards.
4. Use the locking tabs located on each of the seven PCBs to disconnect them from the LBP7.
   The locking tabs are located on the bottom end of the LDCC.
5. Note the location of each board in the card cage, and carefully remove all boards from the card cage. Set the boards on an ESD-safe surface.
6. Remove the six screws securing the LBP7 bottom cover to the laser driver card cage housing.
7. Remove the LBP7 from the bracket and move the bracket to the new LBP7.
8. Replace the LBP7.
9. To re-install, follow these steps in reverse order.
Replacing the diffuser control board (DIB PCB)

1. Remove the pump module.
2. Disconnect the J135 harness connector, and the harness to the diffuser.
3. Remove the one screw (shown above) securing the board and remove the board.
4. Replace the board.
5. To re-install, repeat these steps in reverse order.

Replacing the color sensor board

Remove the color sensor board and replace it with the upgraded board. A mechanical upgrade to the housing is also required.

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

- **SHOCK HAZARD!** Disconnect the product from AC before installing, moving, servicing, cleaning, removing components, or opening any enclosure.
- Always connect the ground or earth first to reduce shock hazard.
- Observe all electrostatic precautions. Use a grounded wrist strap and insulated tools when handling, servicing, or cleaning electronic assemblies.

1. Disconnect the projector from power. Allow approximately 10 minutes for the projection system and mirror to cool-down before servicing.
2. Raise the projector feet to create a clearance under the projector of approximately 12 cm or 4 ¾ in. Alternatively, tip the projector so it is resting on its side.
   Before performing the upgrade procedure on a CP4325-RGB projector, consider inverting the projector onto either its side or top-face for all service operations. If re-orienting the projector is troublesome due to environmental or logistical constraints, all service operations can be completed in typical landscape orientation, however there is increased difficulty in component access, tool manipulation, and an increased risk in component damage if glass elements are not handled very carefully.
3. Remove the bottom cover.
4. Loosen the two captive fasteners from the installed cover (A).
5. Remove the cover and set it aside.

6. Locate and loosen the four captive fasteners on the color sensor housing (B).

7. Gently pull the housing off the locating pins, allowing the assembly to hang by the harness.

8. Disconnect the harness from the PCB header and the harness retention clip.
   The cover, housing, PCB, and captive fasteners can be discarded.

9. (CP4325-RGB only) Replace the coupling elbow mirror (on page 76). After replacing the mirror, return to this procedure.
   The fold mirror installed directly behind the color sensor housing must be exchanged for the new version supplied in the upgrade kit. The surface of the legacy fold mirror is silver/reflective on both sides, while the surface of the new fold mirror is silver/reflective on one side and black with a pin-sized through-hole to allow partial light transmission on the other side.

10. On the new housing, locate and loosen the captive fastener holding the metal guard to the housing.
11. Slide the metal guard from the shoulder screws holding it in place. Discard the guard.

12. Remove the two shoulder screws holding the board to the housing. Discard the screws.
13. Connect the harness to the new board.
14. Using the locating pins, position the PCB on the housing and reinstall the three cap screws.
   Do not over-torque the screws.
15. Route the harness through the housing clip.

16. Install the new housing in the same position as the previous housing.
   It may be necessary to use a flashlight to see the screw locations.
17. Perform a DAC and Color sensor color calibration.
   Calibration of the color sensor board must be completed after replacing the LOS or the color
   sensor board. When replacing the LOS, only the Color sensor color calibration is required.
18. Reinstall the color sensor cover removed in step 5.
19. Reinstall the bottom cover.

**Replacing the color sensor board harness**

If the color sensor board harness becomes damaged during installation, replace it with the enhanced
harness included with the kit.

1. Remove the following system components:
a. Side intake cover (on page 42)
b. Radiator module (on page 63)
c. Radiator fan intake module (on page 59)
d. Light engine fan intake module (on page 60)
e. HKBB cover (A)

2. Detach the color sensor board from the housing and disconnect the harness. Set the board aside.

3. Remove harnesses from clips on the color sensor housing.

4. Standing at the radiator-side of the projector, disconnect the color sensor board harness from the HKBB at J85.

5. Remove the color sensor board harness from routing clips starting near the HKBB and finishing at the P-clip fastened to the base plate in front of the IOS.

6. Gently pull the harness out from underneath the IOS.
   Take care when removing the hose as there is a square hole on the underside of the unit which may have sharp edges.
7. Install the new color sensor board harness (P/N: 001-113506-02) starting near the HKBB, routing through all routing clips and finishing at the lowest P-clip.

8. Gently route the color sensor board harness under the IOS and pull it into position at the underside of the projector.

9. Connect the harness to the color sensor board.

10. Reinstall the color sensor board PCB.

11. Reinstall all modules and covers previously-removed.

**Performing the DAC calibration**

Calibrate the black levels for the new color sensor board.

1. Prepare the projector for DAC calibration:
   a) Turn off the laser light.
   b) Close the shutter.
   c) Install the lens cap.
      *The lens cap minimizes any stray light entering through the lens and maximizes darkness around the sensor during the calibration.*
2. Enable direct communication to photon controller.
   a) Set the IP address of the projector and the IP address of the laptop to be on the same subnet.
      This connection can be a direct connection to the management port on the FMAIN through Wired/wireless network.
   b) Connect the laptop to the projector using Net Terminal or Kore Librarian, with port 5000.
   c) Log in as the Service account.
   d) To enable the communication to the photon controller, send the command \( (\text{CAL+PASS} \ 1) \).

3. Connect the laptop to the photon controller using Net Terminal or Kore Librarian, with port 5103.

4. To start the DAC calibration, send the following command: \( (\text{ENG+CALB} \ 0 \ 0) \).
   This process takes approximately one minute. The system displays information on the start and finish of the calibration process. DAC calibration is only required after replacing the color sensor board.

5. Remove the lens cap.

6. To complete the calibration, power cycle the projector.

**Performing the LiteLOC v1 calibration**

Due to the manufacturing tolerance of the color sensor board and the LOS system, calibrate the LiteLOC v1 response to the light intensity as the temperature of the laser devices changes.

2. On the projector, display a framing test pattern.
3. Setup the color meter in the same manner as used for creating laser and MCGD files.
4. Login to the projector with Installer access or higher.
6. Set the following values:
   - **Display White Test Pattern** is enabled
   - **LiteLOC** is disabled
   - Maximum Expected Room Temperature: 35 degrees Celsius
   - Red power level: 78.3%
   - Green power level: 63.2%
   - Blue power level: 66.4%
7. Wait 15 minutes for the laser devices to acclimatize to the new values.
8. Adjust the blue and green power levels to achieve an applicable white point, as measured by the color meter. Do not adjust the red value.
   - For CP43XX-RGB series projectors, the DCI white point is \( x=0.314 \) \((\pm 0.006)\), \( y=0.351 \) \((\pm 0.006)\).
   Wait a few minutes for the lasers to stabilize and ensure that the white point is not shifting between measurements.
9. Re-establish the connection to the photon controller using NetTerminal or Kore 10-bit Librarian, on port 5103.
10. Send the command (RGB + MEAS?) to the photon controller.
   The current color sense X, Y and Z values are returned, showing the temperature of the different devices. For example:
   - Red: Color sense X value
   - Green: Color sense y value
   - Blue: Color sense Z value
   - Purple: Red devices temperature * 100
   - Brown: Blue devices temperature * 100

11. Enter the returned values into line 27 and line 63 of the spreadsheet.
   The temperature values reported in NetTerminal must be divided by 100 before being entered on line 27 and Line 63.
   All temperatures returned from serial commands are in degrees Celsius.

12. Use Kore Librarian to connect to the projector on port number 5000.

13. Login to the projector with Service access.

14. Switch to the Scripting tab.

15. To lower the fan speed and increases the internal temperature of the laser devices, use the script for the upgraded projector.
   Lowering the fan speed allows for another set of Color sensor measurements to be collected at a higher temperature without actually changing the room temperature.

   - **CP43XX-RGB series projectors**
     Kore Librarian must be used as NetTerminal is not capable of sending a script.

```plaintext
sub main()
  proj.sendstring( "(CAL+FANS 5 45 )" )
  proj.sendstring( "(CAL+FANS 6 45 )" )
  proj.sendstring( "(CAL+FANS 7 45 )" )
  proj.sendstring( "(CAL+FANS 8 45 )" )
  proj.sendstring( "(CAL+FANS 9 45 )" )
  proj.sendstring( "(CAL+FANS 10 45 )" )
  proj.sendstring( "(CAL+FANS 11 45 )" )
  proj.sendstring( "(CAL+FANS 12 45 )" )
  proj.sendstring( "(CAL+FANS 13 45 )" )
  proj.sendstring( "(CAL+FANS 14 45 )" )
  proj.sendstring( "(CAL+FANS 15 45 )" )
  proj.sendstring( "(CAL+FANS 16 45 )" )
  proj.sendstring( "(CAL+FANS 17 45 )" )
  proj.sendstring( "(CAL+FANS 18 45 )" )
  proj.sendstring( "(CAL+FANS 19 45 )" )
  proj.sendstring( "(CAL+FANS 20 45 )" )
  proj.sendstring( "(CAL+FANS 21 45 )" )
  proj.sendstring( "(CAL+FANS 22 45 )" )
  proj.sendstring( "(CAL+FANS 23 45 )" )
  proj.sendstring( "(CAL+FANS 24 45 )" )
  proj.sendstring( "(CAL+FANS 25 45 )" )
  proj.sendstring( "(CAL+FANS 26 45 )" )
```
proj.sendstring( "(CAL+FANS 27 45 )" )
proj.sendstring( "(CAL+FANS 28 45 )" )
proj.sendstring( "(CAL+FANS 29 45 )" )
end sub

16. To execute the script, click the red arrow.
   A confirmation that the command has been executed is displayed, and the projector noise level goes down.

17. In the projector software, set the following values:
   - **Display White Test Pattern** is enabled
   - **LiteLOC** is disabled
   - Maximum Expected Room Temperature: 35 degrees Celsius
   - Red power level: 78.3%
   - Green power level: 66.3%
   - Blue power level: 70%

18. Wait 15 minutes for the laser devices to acclimatize to the new values.

19. Re-establish the connection to the photon controller using NetTerminal or Kore Librarian, on port 5103.

20. Send the command *(RGB + MEAS?)* to the photon controller.

21. Compare the new blue temperature to the original value.
   If the difference is less than eight degrees wait for a few more minutes and take another reading until the blue temperature is at least eight degrees higher than the original reading.
   You may need to modify the actual room temperature to achieve the target blue temperature.

22. Adjust the blue and green power levels to achieve a DCI white point, as measured by the color meter. Do not adjust the red value.

23. Send the command *(RGB + MEAS?)* to the photon controller.
   The system retrieves the color sensor X, Y and Z values, and the blue and red devices temperatures.

24. Verify line 63 of the spreadsheet has the values identified in step 10.

25. Enter the values returned in step 23 into line 64 of the spreadsheet.

26. Type the command on line 96 of the spreadsheet into NetTerminal or Kore Librarian and send it to the photon controller.
   The calibration data is saved to the color sensor board.

27. (CP43XX-RGB series projectors only) Close the LOS port. The port must be closed.
   a) To close the direct communication to Photon, connect the laptop to the projector using NetTerminal or Kore Librarian, with port 5000, and send the following command: *(CAL +PASS 0)*

   b) To verify the port is closed, connect to port 5103 and send the following command: *(SST?)*
   If a response is returned, the port is open and must be closed.

28. To reset all fans to the normal operating speed, reboot the projector.
<table>
<thead>
<tr>
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