Technical Reference

020-103239-01

4K40-RGB

Troubleshooting

CHRISTIE

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

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4K40-RGB troubleshooting

This guide provides information and procedures for resolving common projector and laser issues. If an issue cannot be resolved or you cannot find the issue in this guide, contact Christie Technical Support.

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

- Only Christie qualified technicians are permitted to open product enclosures.
- Only Christie qualified technicians who are knowledgeable about the hazards associated with laser use, high-voltage, and high temperatures generated by the product are authorized to assemble, install, and service the Christie Laser Projection System.
- SHOCK HAZARD! Do not touch the power supply when the power is on.
- Hazardous voltages are present at power system inputs. The DC output, though not dangerous in voltage, has a high short-circuit current capacity that may cause severe burns and electrical arcing.

Related information

Use this guide in conjunction with the 4K40-RGB Service, User, and Status System guides available on the Christie website (***https://www.christiedigital.com/products/projectors/all-projectors/4K40-RGB-series/***):

- *4K40-RGB Service Guide (P/N: 020-102960-XX)*
- *4K40-RGB User Guide (P/N: 020-102958-XX)/Mirage 4K40-RGB User Guide (P/N: 020-103015-XX)*
- *4K40-RGB Status System Guide (P/N: 020-102975-XX)/Mirage 4K40-RGB Status System Guide (P/N: 020-103030-XX)*

Technical support

- North and South America: +1-800-221-8025 or *Support.Americas@christiedigital.com*
- Europe, Middle East, and Africa: +44 (0) 1189 778111 or *Support.EMEA@christiedigital.com*
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  - China: +86 10 6561 0240
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  - Japan: 81-3-3599-7481
  - Singapore: +65 6877-8737
  - South Korea: +82 2 702 1601

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- Christie Professional Services: +1-800-550-3061 or *NOC@christiedigital.com*

Details to provide to Technical Support

Have the following information ready when contacting Technical Support.

- Projector model
- Serial number of the projector
- Detailed description of the problem
- Who did you purchase the equipment from
- Contact information, including phone number
- Troubleshooting performed and results
- Date and time the issue occurred, including the time zone
- Setup configuration
- Interrogator log files
- Picture of the issue

Running the 4K40-RGB interrogator

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

1. If saving the interrogator file to a USB flash drive on the projector, insert a USB flash drive in the USB port on 4K40-RGB.

   The USB flash drive must be formatted using the FAT 32 file system.
2. Select **MENU** > **Admin** > **Interrogator**.
3. Select **Run**.
   - If on the projector, the interrogator file is stored at the root directory on the USB flash drive.
   - If running 4K40-RGB interrogator from the web interface, a message appears indicating the integrator file was successfully created.
4. From the web interface to download the interrogator file to the computer, select **Download File**.

   The interrogator file is downloaded to the default location on the computer.
5. If on the projector, at the completion prompt, select **OK**.

Projector does not turn on

The projector does not turn on when pushing the **Power** button.

Details

The 12 VDC power supplies sends power to the housekeeping board and then the TruLife electronics. It also sends 12 VDC to the laser driver card cage (LDCC) to provide power to the thermal electrical controls (TECs).

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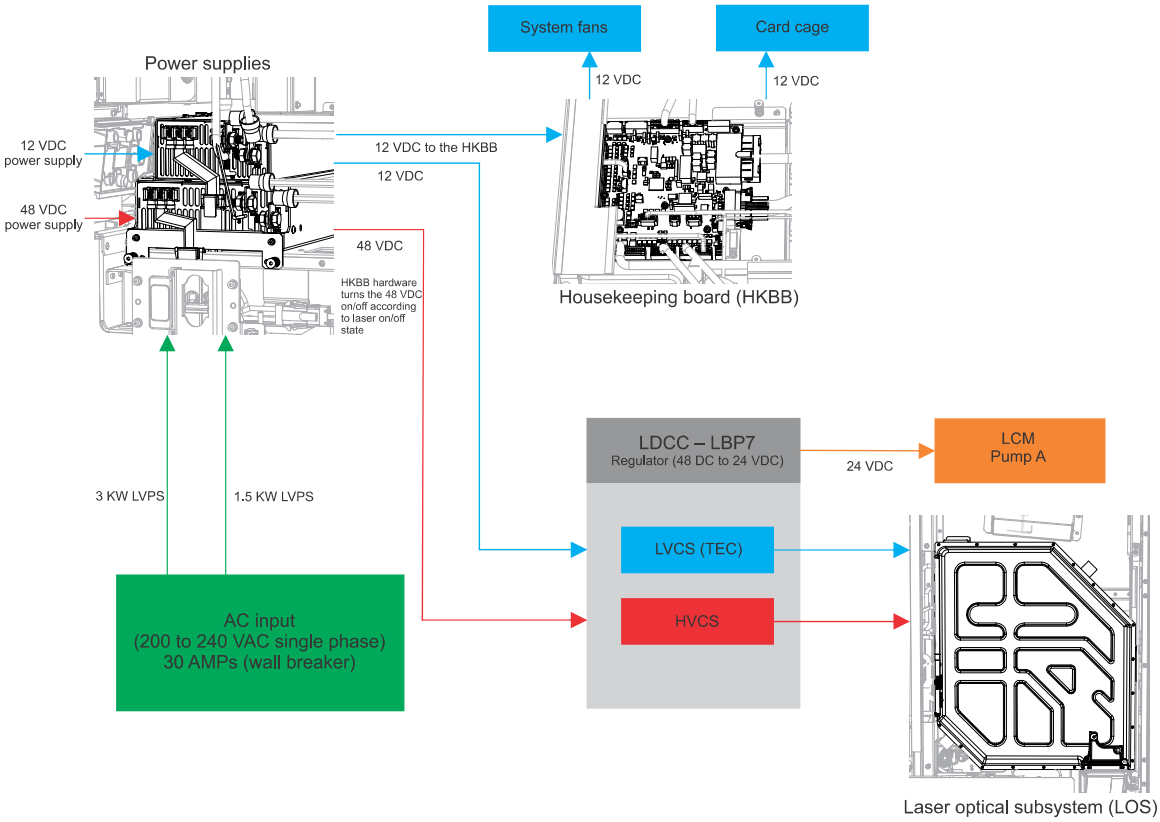

Possible causes include:

1. The breaker switch is not on.
2. Power supplies are not functioning.
3. Issue with the housekeeping board.
4. If the projector does not enter standby mode, nothing appears on the display panel, which can indicate an issue with the display panel, keypad, or the power supply.

When enabled, the Stealth mode feature does not turn off the display panel only the status and shutter LEDs and the heartbeat feature on the display panel **Enter** key.

Resolution

1. Check the breaker switch is on or the breaker is not damaged.
   - If the breaker switch is not on, turn it on.
   - Check the line cord for damage and proper connection.
   - If the breaker switch is on and the line cord is connected, contact a certified electrician to confirm 200 to 240 VAC is present at the wall breaker.
2. Confirm 200 VAC is reaching the power supplies and 12 VDC is being output by the 12 VDC low voltage power supply (LVPS).

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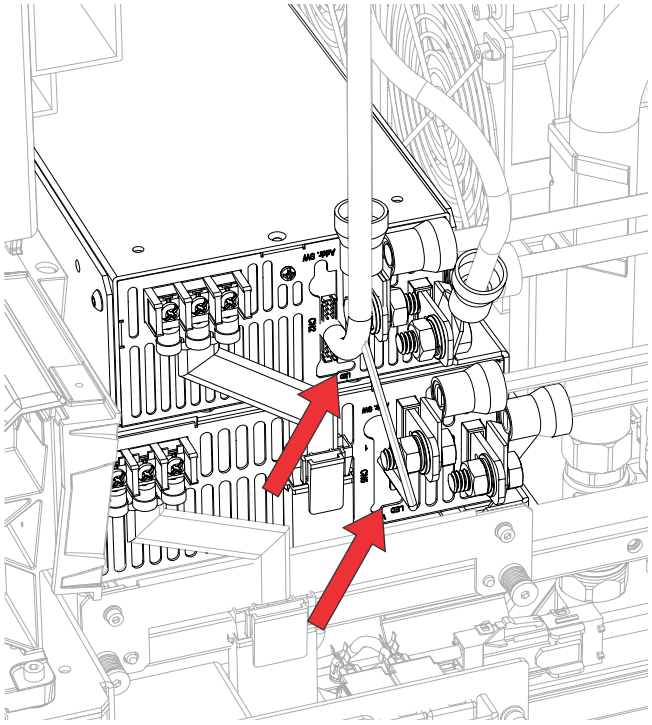

Use the LVPS status table to help determine a resolution.

LED status	Output status	Action
Solid green	DC Output OK	Indicates power to the power supplies. Proceed to step 3.
Solid orange	DC Output OK, in remote control mode	Check the communication (CN2) harness into the power supply is fully seated and connected.
Slow blinking green	Output Not Enabled	There is power but the supply is not enabled. Check the communication (CN2) harness into the power supply is fully seated and connected.
Fast blinking red	Over Voltage	Too much power is coming into the power supply. Ensure a certified electrician checks the line voltage and supply from the wall.
Solid red	Over Loaded	A potential short in the output of the power supply occurred. Inspect the DC (secondary) harnesses are fully seated and connected. Inspect the boards to ensure they are functioning.
Slow blinking red	Over Temperature	The power supply has over heated. Potential air blockage. Inspect the air intake to the power supply and clear any blockages. Check if the projector is operating in the specified projector temperature range.

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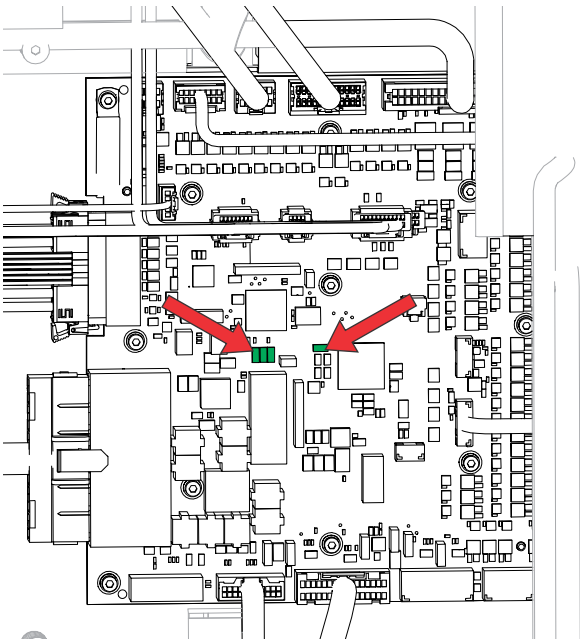
LED status	Output status	Action
Intermittent blinking red	Fan Fail	The power supply fan failed. Replace the power supply.
Short and long blinking red	AUX Standby Failure	Check the power into the power supply. Check the communication (CN2) harness. Replace the 12 VDC power supply.
No light	—	Use a multimeter to measure the 12 VDC out of the low voltage power supply (LVPS). If no power is measured, replace the 12 VDC LVPS.

3. If confirmed the projector has power out of the LVPS but the system does not boot, check the LEDs on the housekeeping board (HKBB).
   - If no light on the housekeeping board, ensure the 12V harness (J112) from the LVPS to the housekeeping board is properly seated and connected.
   - If the housekeeping board boots, the two LEDs should be blinking. If not blinking, ensure the harness (J30) between the housekeeping board and card cage is properly seated and connected. If the display panel is on, it indicates a functioning card cage.
   - If the harness is connected and properly seated between the two boards, replace the housekeeping board.



4. Check the display panel and keypad are functional.
   - Check to ensure the display panel harnesses (J30 and J32) are connected and properly seated, or are not damaged. If damaged, replace the affected harness.
   - Check the card cage. Turn on the projector and from the web interface check for any errors on the Status page. If an error is listed, correct the error.
   - If the display panel and/or keypad are not functional, replace the user interface module.

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Projector is in Standby mode but cannot turn the lasers on

The lasers do no turn on while the projector is in Standby mode.

Details

Possible causes include:

1. 48 VDC power supply down

   The 48 VDC low voltage power supply (LVPS) requires control signal from the housekeeping board. If the communication harness from the housekeeping board to the 48 VDC LVPS is removed or not seated correctly, the LVPS does not output power.

2. Bad laser communication for the low voltage current source (LVCS), high voltage current source (HVCS), or laser backplane (LBP7) boards due to damaged or improperly connected harnesses.

To understand the power workflow, refer to the diagram in *Projector does not turn on* (on page 5).

Resolution

1. Check the 48 VDC power supply LED.

   Use the LVPS status table to help determine a resolution.

LED status	Output status	Action
Solid green	DC Output OK	Indicates power to the power supplies. Proceed to step 3.
Solid orange	DC Output OK, in remote control mode	Check the communication (CN2) harness into the power supply is fully seated and connected.
Slow blinking green	Output Not Enabled	There is power but the supply is not enabled. Check the communication (CN2) harness into the power supply is fully seated and connected.
Fast blinking red	Over Voltage	Too much power is coming into the power supply. Ensure a certified electrician checks the line voltage and supply from the wall.
Solid red	Over Loaded	A potential short in the output of the power supply occurred. Inspect the DC (secondary) harnesses are fully seated and connected. Inspect the boards to ensure they are functioning.
Slow blinking red	Over Temperature	The power supply has over heated. Potential air blockage. Inspect the air intake to the power supply and clear any blockages. Check if the projector is operating in the specified projector temperature range.

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LED status	Output status	Action
Intermittent blinking red	Fan Fail	The power supply fan failed. Replace the power supply.
Short and long blinking red	AUX Standby Failure	Check the power into the power supply. Replace the 48 VDC power supply.
No light	—	Use a multimeter to measure the 12 VDC out of the low voltage power supply (LVPS). If no power is measured, replace the 12 VDC LVPS.

2. Check the following harness connections to ensure they are not loose or damaged. If damaged, replace the affected harness.
   - Harness (J129) from the housekeeping board to the laser driver card cage (LDCC)
   - Harnesses (J70 and J71) from the laser driver card cage (LDCC) to the laser optical subsystem (LOS)

     If the communication harness from the LBP7 to the LOS is removed, loose, or partially seated and the system cannot read the LOS information, the lasers do not turn on.
   - Communications harness (J110) from the housekeeping board to the 48VDC LVPS
   - Communications harness (J112) from the housekeeping board to the 12 VDC LVPS
   - Power harness (J111) from the LCDD to the 48 VDC LVPS
   - Power harness (J113) from the LDCC to the 12VDC LVPS
3. Check to see if the housekeeping board has two blinking green LEDs.

   If the housekeeping board boots, the two LEDs should move from solid green to blinking. If not blinking, check the following:
   - Check the harness (J30) between the housekeeping board and card cage is properly seated and connected.
   - Ensure the proper version of software is installed on the projector.

     To view the installed version of software, select **MENU** > **Admin** > **About**. To download the latest version of software, go to *https://www.christiedigital.com/products/projectors/all-projectors/4K40-RGB-series*, select the model, and switch to the **Downloads** tab.
   - Check the housekeeping board. If faulty, replace the board.

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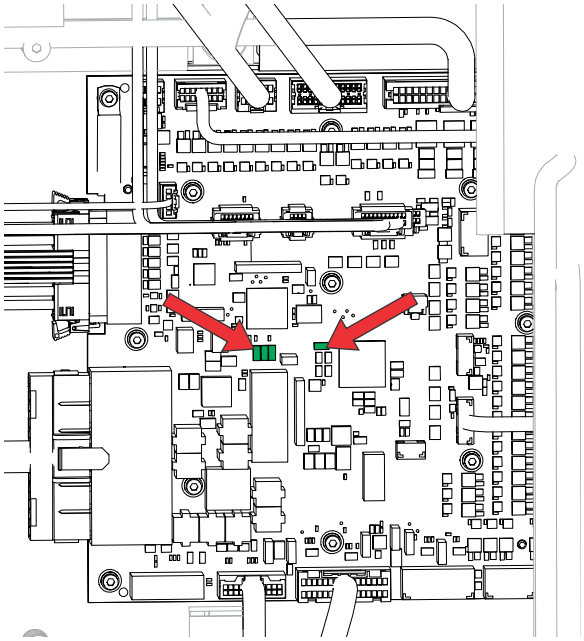

4. Check the laser optical subsystem (LOS) serial number and run the interrogator, which will capture the subtype ID. Provide the information to Technical Support.

   If the LOS is programmed with the wrong subtype ID, it does not allow some or all lasers to turn on.

Cannot move the laser slider to 100%

Why can I not move the red laser slider to 100%?

Details

The maximum ambient temperature setting determines the maximum allowable red laser power. Optimally, 25°C ambient temperature provides maximum power; however, any deviation from the optimal temperature, can limit the power, which is reflected on the red laser slider.

Some configurations may not reach 100% but the projector can still achieve maximum brightness.

Resolution

Change the maximum ambient temperature to 25°C to give the maximum allowable red laser power.

RGB sliders greyed out

Why are the red, green, and blue (RGB) sliders greyed out?

Details

Either the lasers are not on or LiteLOC™ is enabled.

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The following table describes the available Light & Output Settings functions when LiteLOC is enabled or disabled.

LiteLOC mode	R/G/B sliders	Master Laser Power	White x,y
Disabled	Enabled	Disabled	Disabled
LiteLOC 1.0	Disabled	Disabled	Disabled
LiteLOC 2.0	Disabled	Enabled	Enabled

Resolution

1. Ensure the lasers are on.
2. To adjust the red, green, and blue laser power independently, disable LiteLOC.

Master laser power slider greyed out

The master laser power slider is greyed out.

Details

Possible causes for why the Master Laser Power slider is not enabled include:

- LiteLOC™ version 2.0 is not enabled. For details on the available Light & Output Settings functions when using LiteLOC, refer to the "*RGB sliders greyed out* (on page 11)" topic.
- The color sensor board (CSBD) has not been calibrated for LiteLOC version 2.0.

Resolution

1. Ensure LiteLOC version 2.0 has been selected.
2. Calibrate the system for LiteLOC version 2.0.

Color on the screen is not stable

Why is the color on the screen not stable?

Details

Possible causes include:

- The brightness slider is lower than 30%.
- LiteLOC™ is not enabled.
- The room temperature is not stable.
- Relative humidity exceeds 80%.
- Color sensor calibration was done incorrectly.
- You may have changed the brightness or color points and they can take several minutes to stabilize.

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Resolution

1. Enable LiteLOC.

   When LiteLOC is enabled, a warning is presented if color cannot be maintained due to temperature or humidity levels being problematic.
2. If possible, implement changes to stabilize the room temperature or raise the expected ambient temperature.
3. If possible run the projector in an environment with less than 80% relative humidity.
4. If the brightness slider is too low, select **MENU** > **Configuration** > **Light & Output Settings** > **LiteLOC** > **Master Laser Power** to increase the brightness.
5. If you changed the brightness or color points, wait 5 to 10 minutes for them to stabilize.

Colors on the screen not accurate

The colors on the screen are not as expected.

Details

Possible causes include:

- The color correction modes were not selected to match the content playing on the screen.
- The precise color chromaticity was either set up wrong or not enabled.

Resolution

1. Disable the existing color settings by doing a factory default of the system.
2. Set up laser configuration, color correction mode, and primary color settings. Evaluate the image.

Blemishes appearing on the screen

Blemishes or color blotches are appearing on screen.

Details

Possible causes include:

- Contamination on the light engine, projection lens, or other topical surfaces that light passes through after the lens.
- A broken diffuser can cause color blotches.

Resolution

1. Clean the optical surfaces.
2. If the issue persists, an optics failure may be indicated. Contact Technical Support.

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Projector brightness lower than expected

Why is the projector output not as bright as expected.

Details

The following are possible causes for drops in brightness:

- Ultra high contrast lenses can drop brightness by up to 35%.
- The actual ambient temperature being above 25°C limits brightness.
- From the factory, the maximum expected ambient temperature is set to 35°C, whereas 100% brightness occurs with an ambient temperature setting of 25°C.

  The ambient temperature sensor in the projector reads the current temperature. The value set through the user interface is the maximum expected ambient temperature, not the current temperature. The projector needs to know the maximum expected temperature to ensure consistency of the red power across the temperature range.
- With LiteLOC v2.0, if the ambient conditions react and reduce laser power, it does not regain the available brightness automatically. LiteLOC requires a laser power cycle or profile change to issue the laser power settings again.
- An error may have occurred due to an optical misalignment of the optical coupling mirror that shows up as a brightness drop on the screen.
- If the DMDs overfill, up to 10% loss of brightness can occur.

Resolution

1. Use a lens that is not ultra high contrast.
2. Reduce the actual ambient temperature.
3. Reduce the maximum ambient temperature set point.

   Reducing the maximum expected ambient set point increases the red output. Reducing the actual ambient temperature of the environment increases the green and blue output.
4. Reduce the brightness target using the LiteLOC™ feature.
5. Disable LiteLOC v2.0 or adjust the laser powers.

   Any adjustment to the brightness slider or an individual laser power re-sends the power settings for all colors.
6. Adjust the integrator zoom setting.

Projector noisier than expected

How do I make the projector quieter?

Details

The speed of the fans changes with the ambient temperature and as the temperature increases, the speed and noise of the fans increase. 4K40-RGB software version 1.3.0 includes dynamic fan control.

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Resolution

1. Turn off projector.
2. Install software version 1.3.0 for dynamic fan control.
   a. Go to this URL:
   https://www.christiedigital.com/products/projectors/all-projectors/4K40-RGB-series/
   b. On the product page, select the model and switch to the **Downloads** tab.
   c. Expand the Software downloads section and select the software version 1.3.0 to download.
   d. Upgrade the projector with the v1.3.0 software.

LiteLOC™ is not reachable

The LiteLOC™ status item shows a warning state.

Details

Possible causes include the following:

- One or more laser colors have reached their maximum output capacity.
- The intake temperature is higher than what was set for the maximum ambient temperature.
- Humidity has been exceeded which limits the red output to prevent condensation.

Resolution

Accurately predict how hot the environment is going to get and adjust the maximum ambient setting to this temperature. When predicting, watch for the following:

- Too low, the LiteLOC status item display a warning.
- Too high, available red laser power is limited.

Christie assumes the projector is operating in a high humidity environment.

Reducing the maximum expected ambient set point increases the red output and reducing the actual ambient temperature of the environment increase the green and blue output.

When decreasing the maximum ambient setting, even with LiteLOC enabled, there may be a period of time where the image does not achieve the required color point as the system reaches its target. This may take several minutes.

Received a coolant flow error

The projector sent a Low Flow warning or Flow Impediment error.

Details

A flow warning or error is caused by a significant difference in readings between the intake temperature sensor and the light engine DMD waterblock temperature sensor. If the coolant

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temperature is more than 15°C above ambient, the projector assumes the coolant is not flowing and the laser is turned off. This may happen if one of the following occurs:

Possible causes include:

- There is insufficient coolant volume in the liquid cooling system.
- The light engine DMD waterblock temperature sensor or harness (J83) is damaged or improperly connected.
- The intake temperature sensor or harness (J82) is damaged or improperly connected.
- A quick disconnect in the cooling loop for the light engine is disconnected or not fully connected.

Resolution

1. Check the coolant reservoir to ensure the coolant is between the minimum and maximum fill lines.
2. Check all quick connect fittings on the radiator, light engine, and the liquid cooling reservoir. Disconnect fully and reconnect until a click is confirmed.
3. Check for any kinks or leaks in the system.
4. Check to make sure the two temperature sensors have not failed or been disconnected.

LOS Dewpoint - Approaching Limit warning

Received a LOS Dewpoint - Approaching Limit warning during calibration.

Details

The projector is reacting to humidity to prevent damage in the laser optical subsystem (LOS). Due to the laser power eventually being reduced, the brightness and color may be impacted.

Resolution

1. Operate the projector in a less humid environment.
2. If a new setup, the humidity levels inside the LOS may need 24 hours to normalize with the environment.

   For example, if the projector came from a hot, humid environment (outdoors, shipment) and then brought into a cold, dry operating environment.
3. Increase the **Maximum Expected Ambient** setting in the LiteLOC™ feature.

Received a LOS or laser driver board error

The projector displays a laser optical subsystem (LOS) or laser driver board error.

Details

Possible causes of a LOS or laser driver board error include:

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- Defective laser driver board—high voltage current source (HVCS) boards or low voltage current source (LVCS) board
- Defective harness between the LOS and driver board
- Issue with the LOS or backplane (LBP7) board
- LOS problem

Resolution

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

- Only Christie qualified technicians who are knowledgeable about the hazards associated with laser use, high-voltage, and high temperatures generated by the product are authorized to assemble, install, and service the Christie Laser Projection System.

1. Swap the board from the laser driver with another laser driver.
   - If the problem follows the board, replace the faulty board.
   - If the problem does not follow the board, the problem could be the harness, with the LOS, or a backplane board problem. Proceed to step 2.
2. If the harness (J150, J151, J152, J156, J157, J158, or J159) from the LOS to a laser driver board is not seated properly, removed, or damaged, the Cross Plug Detected warning is displayed.
   a. Check the logs to determine which one of the seven slots is causing the Cross Plug Detected warning to focus on the HVCS or LVCS board affected at that slot. Reconnect or replace the harnessing going to that board.
   b. If the warning persists, swap in a different HVCS board and if the warning persists on the same slot, replace the LBP7.
   c. If the warning follows the board, replace the affected HVCS or LVCS board.
3. To determine if an LOS or backplane problem exists, check the warnings and use the interrogator logs to narrow down what the issue is. Contact Technical Support.

   For example, if the system reports a high temperature warning from one of the devices, an LOS problem is indicated.

Formatter Fault error has occurred

One of the following Formatter Fault errors appear in the Status tab of display panel for either the red, green, or blue formatter boards

- Formatter Detection Fault
- Formatter Initialization Fault
- Formatter Runtime Fault

Resolution

Follow these steps to determine the cause of the Formattter Fault error.

The examples used in the steps below are based on a Formatter Detection Fault error on the red formatter board and use the cables labeled as red and green.

1. Remove top cover.

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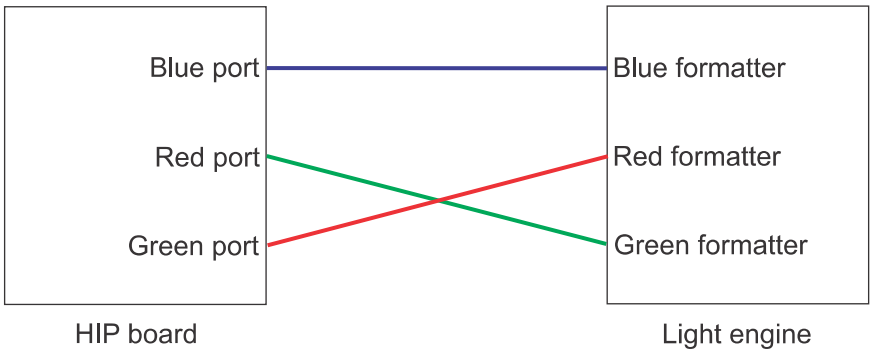
2. Disconnect and reconnect the cable for the affected formatter board on the high-speed imaging processing board (HIP) board.

   Make sure you hear a clicking sound when you connect the cable. For example, disconnect and reconnect the red cable.

3. Re-install the top cover.
4. Turn on the projector and look at the error messages displayed in the display panel.
   - If the Formatter Fault error is still displayed, continue to the next step.
   - If the error is not reported, 4K40-RGB is working as expected. Disregard the remaining steps.
5. Remove the top cover.
6. From the HIP board side, swap the HIP port cables from the formatter board having issues with one of the two other formatter board cables.

   For example, swap the red formatter cable with the green formatter cable from the HIP side ports.



7. Re-install the top cover.
8. Turn on the projector and look at the error messages displayed in the display panel.
   - If the Formatter Fault error stays with the initial board, the issue is with the HIP board. Change the cables to their original positions and confirm the error still persists. If it does, replace the HIP.
   - If the Formatter Fault error moved from the one formatter board to the other (for example, moved from the red formatter board to the green formatter board), the issue is with the cables or the formatter board. Proceed to the next step.
9. Remove the top cover.
10. On the light engine side, swap the same formatter cables you swapped in step 6 on the HIP board side.

    For example, swap the red cable for the green cable. For more information on the light engine, see the *4K40-RGB Service Guide (P/N: 020-102960-XX)*.

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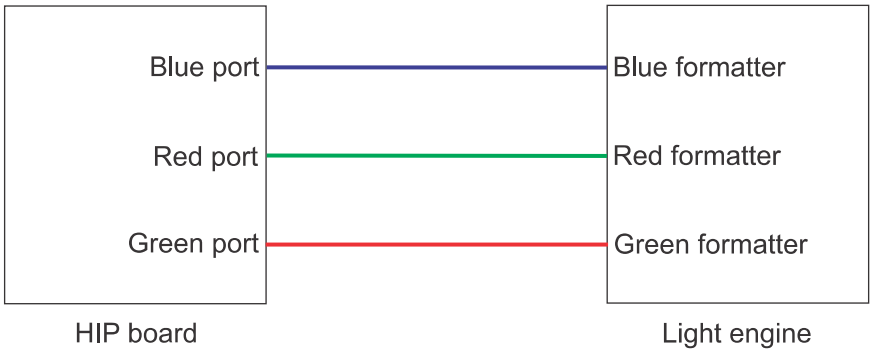

11. Re-install the top cover.
12. Turn on the projector and look at the error messages displayed in the display panel.
    - If the Formatter Fault error is displayed for the other formatter board (for example, the green board), the issue is with the initial cable (for example, the red cable). Replace the affected cable.
    - If the original Formatter Fault is still reported, the issue is with the formatter board. Replace the light engine.

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Corporate offices

Christie Digital Systems USA, Inc.
ph: 714 236 8610

Christie Digital Systems Canada Inc.
ph: 519 744 8005

Worldwide offices

Africa
ph: +27 (0)11 510 0094

Australia
ph: +61 (0) 7 3624 4888

Brazil
ph: +55 (11) 2548 4753

China (Beijing)
ph: +86 10 6561 0240

China (Shanghai)
ph: +86 21 6030 0500

Columbia
ph: +57 (318) 447 3179

France
ph: +33 (0) 1 41 21 44 04

Germany
ph: +49 (0) 221 99512 0

India
ph: +91 (080) 6708 9999

Japan (Tokyo)
ph: 81 3 3599 7481

Korea (Seoul)
ph: +82 2 702 1601

Mexico
ph: +52 55 4744 1790

Singapore
ph: +65 6877 8737

Spain
ph: +34 91 633 9990

Middle East
ph: +971 (0) 503 6800

United Kingdom
ph: +44 (0) 118 977 8000

United States (Arizona)
ph: 602 943 5700

Independant sales consultant offices

Italy
ph: +39 (0) 2 9902 1161

Russia
ph: +36 (0) 1 47 48 100

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