

# CineLife+ RGB PLF Specifications

Learn about the product specifications. Due to continuing research, specifications are subject to change without notice.

## Product documentation

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

### CP4440-RGB

To access the documentation from the Christie website:

- Go to <http://bit.ly/2NwVsRy> or <https://www.christiedigital.com/en-us/cinema/cinema-products/digital-cinema-projectors/christie-cp4440-rgb>
- Scan the QR code using a QR code reader app on a smartphone or tablet.



### CP4450-RGB

To access the documentation from the Christie website:

- Go to <http://bit.ly/2UYil0V> or <https://www.christiedigital.com/en-us/cinema/cinema-products/digital-cinema-projectors/christie-cp4450-rgb>
- Scan the QR code using a QR code reader app on a smartphone or tablet.



## Related documentation

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

- *CineLife+ RGB PLF Installation and Setup Guide (P/N: 020-103072-XX)*
- *CineLife+ RGB PLF User Guide (P/N: 020-103073-XX)*
- *CineLife+ RGB PLF Product Safety Guide (P/N: 020-103071-XX)*
- *CineLife+ RGB PLF Service Guide (P/N: 020-103076-XX)*
- *CineLife+ 1.1.0 Serial Commands Guide (P/N: 020-103075-XX)*

## Display specifications

Learn the display specifications of the CineLife+ RGB PLF projectors.

### Panel resolution and refresh rate

|                                    |                                              |
|------------------------------------|----------------------------------------------|
| Pixel format (H x V square pixels) | 4096 x 2160                                  |
| Processing path                    | 2K: 23.97 to 120 fps<br>4K: 23.97 to 120 fps |

### Achievable brightness (measured at screen center)

| Ambient Temperature/Relative Humidity | Nominal Brightness                                                                                                         |
|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| 25°C at up to 80% relative humidity   | <b>CP4440-RGB:</b><br>Up to 45,000 lumens using High Brightness lens<br>Up to 35,000 lumens using Ultra High Contrast lens |
|                                       | <b>CP4450-RGB:</b><br>Up to 55,000 lumens using High Brightness lens<br>Up to 42,000 lumens using Ultra High Contrast lens |

### Achievable contrast ratio

|                                            |
|--------------------------------------------|
| 650:1 ANSI, using High Brightness lens     |
| 850:1 ANSI, using Ultra High Contrast lens |
| 2000:1 using High Brightness lens          |
| 6000:1 using Ultra High Contrast lens      |

### Color and grayscale

|                      |                           |
|----------------------|---------------------------|
| Displayable colors   | 35.2 trillion             |
| Grayscale resolution | 12 bits per RGB component |

## Nominal white point

$x = 0.314 \pm 0.006$

$y = 0.351 \pm 0.006$

## Gamma

Theater (nominal)

$2.6 \pm 5\%$

# Control signal compatibility

Learn the control signal compatibility for the projector.

## Ethernet port

|           |                                                                                 |
|-----------|---------------------------------------------------------------------------------|
| Interface | 10Base-T / (IEEE 802.3) / 100BASE-TX (IEEE 802.3u) / 1000BASE-TX (IEEE 802.3ab) |
| Connector | Female RJ-45                                                                    |
| Bit rate  | 1000 Mbps                                                                       |

## USB 2.0

|                             |               |
|-----------------------------|---------------|
| Interface                   | USB 2.0       |
| Connector                   | USB Type "A"  |
| Bit rate                    | 480 Mbps      |
| Available power for devices | 2A @ 5V (TBC) |

## USB 3.0 touch panel input

|                             |               |
|-----------------------------|---------------|
| Interface                   | USB 3.0       |
| Connector                   | USB Type "C"  |
| Bit rate                    | 5.0 Gbps      |
| Available power for devices | 2A @ 5V (TBC) |

## GPIO port

|                     |                                                  |
|---------------------|--------------------------------------------------|
| Interface           | Opto-LED inputs, relay outputs                   |
| Number of I/O lines | 16 - 4 inputs, 4 outputs, 1 health signal output |
| Connector           | Terminal blocks                                  |
| Wire size accepted  | 28-20 AWG                                        |

|                              |                                    |
|------------------------------|------------------------------------|
| GPI diode forward current    | 5mA nominal, 50mA maximum          |
| GPI diode forward voltage    | 1.1V nominal, 1.4V maximum (@ 5mA) |
| GPI relay continuous current | 1A                                 |
| GPO relay output rating      | 60V                                |
| Output supply voltage        | 5VDS @ 200 mA                      |

### 3D port

|                        |                                            |
|------------------------|--------------------------------------------|
| Interface              | Proprietary 3D connector                   |
| Connector              | 15-pin subminiature D, female              |
| Bit rate               | 115,200 bps                                |
| Flow control           | Software                                   |
| Data format            | 1 start bit, 8 data, 1 stop bit, no parity |
| Communication protocol | RS232 and GPIO                             |

### SDI ports

|           |                                                                                                                                       |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------|
| Interface | SMPTE ST 259M (270 Mbps), SMPTE ST 292-1 (1.5 Gbps), SMPTE ST 424 (3.0 Gbps), SMPTE ST 2081-1 (6.0 Gbps), SMPTE ST 2082-1 (12.0 Gbps) |
| Connector | 75 ohms micro-BNC                                                                                                                     |
| Bit rate  | multi-rate to 12 Gbps                                                                                                                 |

### RS 485 port (chiller control and status)

|                         |                                                                                            |
|-------------------------|--------------------------------------------------------------------------------------------|
| Interface               | Proprietary chiller connector                                                              |
| Connector               | 9-pin subminiature D, female                                                               |
| Bit rate                | 9600 bps                                                                                   |
| Flow control            | Software                                                                                   |
| Data format             | RS 485, 28-bit start, 8-bit Address, 8-bit function, n x 8-bit data 16-bit CRC, 28-bit End |
| Communications protocol | Modbus RTU                                                                                 |

## Supported image formats for alternate inputs

Learn the supported image formats for the SDI inputs on the projector.

## SDI-1

The following single-link, 2D SDI image formats are supported for SDI Input 1.

|           | Format    | Cables | Frame/Field Rate (Hz) |    |    |    |    |    |   |   |   | Sampling  | Bit Depth | Notes                                                                        |
|-----------|-----------|--------|-----------------------|----|----|----|----|----|---|---|---|-----------|-----------|------------------------------------------------------------------------------|
| <b>HD</b> | 1920x1080 | 1      | 24                    | 25 | 30 | —  | —  | —  | — | — | — | 4:2:2     | 10 bpc    | HD1080p Component at 1.5 Gbps (ST 292-1)                                     |
|           | 1920x1080 | 1      | —                     | —  | —  | 48 | 50 | 60 | — | — | — | 4:2:2     | 10 bpc    | HD1080p Component at 3.0 Gbps (ST 425-1) Level A                             |
|           | 1920x1080 | 1      | 24                    | 25 | 30 | —  | —  | —  | — | — | — | 4:4:4:(4) | 12 bpc    | HD 1080p YCbCr / RGB Component at 3.0 Gbps (ST 425-1) Level A                |
|           | 1920x1080 | 1      | 24                    | 25 | 30 | —  | —  | —  | — | — | — | 4:2:2:(4) | 12 bpc    | HD 1080p YCbCr Component at 3.0G bps (ST 425-1) Level A                      |
|           | 1920x1080 | 1      | —                     | —  | —  | 48 | 50 | 60 | — | — | — | 4:4:4:(4) | 10 bpc    | HD 1080p YCbCr / RGB Component at 6.0 Gbps (ST 2081-10) Structure II         |
|           | 1920x1080 | 1      | —                     | —  | —  | 48 | 50 | 60 | — | — | — | 4:4:4     | 12 bpc    | HD 1080p YCbCr / RGB Component at 6.0 Gbps (ST 2081-10) Mode 2 Structure III |
|           | 1920x1080 | 1      | —                     | —  | —  | 48 | 50 | 60 | — | — | — | 4:2:2:(4) | 12 bpc    | HD 1080p YCbCr / RGB Component at 6.0 Gbps (ST 2081-10) Mode 2 Structure IV  |
| <b>4K</b> | 3840x2160 | 1      | —                     | —  | —  | 48 | 50 | 60 | — | — | — | 4:2:2     | 10 bpc    | 2160p YCbCr Component at 6.0 Gbps (ST 2081-10) Mode 1 Structure 1            |
|           | 3840x2160 | 1      | 24                    | 25 | 30 | —  | —  | —  | — | — | — | 4:4:4:(4) | 10 bpc    | 2160p YCbCr / RGB Component at 12.0 Gbps (ST 2082-10) Mode 1 Structure 2     |
|           | 3840x2160 | 1      | 24                    | 25 | 30 | —  | —  | —  | — | — | — | 4:4:4     | 12 bpc    | 2160p YCbCr / RGB Component at 12.0 Gbps (ST 2082-10) Mode 1 Structure 3     |
|           | 3840x2160 | 1      | 24                    | 25 | 30 | —  | —  | —  | — | — | — | 4:2:2:(4) | 12 bpc    | 2160p YCbCr Component at 12.0 Gbps (ST 2082-10) Mode 1 Structure 4           |



- Frame rates also include fractional 1/1.001 rates.
- 1920x1080 line progressive formats include both 1920x1080 and 2048x1080.
- 3840x2160 line progressive formats include both 3840x2160 and 4096x2160.
- For all 3Gbps SDI Inputs, only Level A is supported.
- For all 4K image formats, only 2SI sub-division is supported.

## SDI-Dual-Input (1,2) and (3,4)

The following dual-link, 2D SDI input formats are supported.

| Format |           | Cables | Frame/Field Rate (Hz) |    |    |    |    |    |   |   |   | Sampling  | Bit Depth | Notes                                                                                       |
|--------|-----------|--------|-----------------------|----|----|----|----|----|---|---|---|-----------|-----------|---------------------------------------------------------------------------------------------|
| HD     | 1920x1080 | 2      | —                     | —  | —  | 48 | 50 | 60 | — | — | — | 4:4:4:(4) | 10 bpc    | Y'C <sub>B</sub> C <sub>R</sub> /RGB Component at dual-link 3 Gbps (ST 425-3) Structure II  |
|        | 1920x1080 | 2      | —                     | —  | —  | 48 | 50 | 60 | — | — | — | 4:4:4     | 12 bpc    | Y'C <sub>B</sub> C <sub>R</sub> /RGB Component at dual-link 3 Gbps (ST 425-3) Structure III |
|        | 1920x1080 | 2      | —                     | —  | —  | 48 | 50 | 60 | — | — | — | 4:2:2     | 12 bpc    | Y'C <sub>B</sub> C <sub>R</sub> Component at dual-link 3 Gbps (ST 425-3) Structure II       |
| 4K     | 3840x2160 | 2      | 24                    | 25 | 30 | —  | —  | —  | — | — | — | 4:2:2     | 10 bpc    | Y'C <sub>B</sub> C <sub>R</sub> Component at dual-link 3 Gbps (ST 425-3)                    |
|        | 3840x2160 | 2      | —                     | —  | —  | 48 | 50 | 60 | — | — | — | 4:2:2     | 10 bpc    | Y'C <sub>B</sub> C <sub>R</sub> Component at dual-link 6 Gbps (ST 2081-11) Mode 1           |
|        | 3840x2160 | 2      | 24                    | 25 | 30 | —  | —  | —  | — | — | — | 4:4:4:(4) | 10 bpc    | Y'C <sub>B</sub> C <sub>R</sub> Component at dual-link 6 Gbps (ST 2081-11) Mode 1           |
|        | 3840x2160 | 2      | 24                    | 25 | 30 | —  | —  | —  | — | — | — | 4:4:4     | 12 bpc    | Y'C <sub>B</sub> C <sub>R</sub> /RGB Component at dual-link 6 Gbps (ST 2081-11) Mode 1      |
|        | 3840x2160 | 2      | 24                    | 25 | 30 | —  | —  | —  | — | — | — | 4:2:2     | 12 bpc    | Y'C <sub>B</sub> C <sub>R</sub> Component at dual-link 6 Gbps (ST 2081-11) Mode 1           |
|        | 3840x2160 | 2      | 24                    | 25 | 30 | —  | —  | —  | — | — | — | 4:2:2:4   | —         | Y'C <sub>B</sub> C <sub>R</sub> Component at dual-link 6 Gbps (ST 2081-11) Mode 1           |



- Frame rates also include fractional 1/1.001 rates.
- 1920x1080 is equivalent to 1920x1080 and 2048x1080.
- 3840x2160 is equivalent to 3840x2160 and 4096x2160.
- Input 1 = SDI 1 and SDI 2.
- Input 2 = SDI 3 and SDI 4.

## SDI-Quad

The following quad-link SDI 2D image formats are supported.

|    | Format    | Cables | Frame/Field Rate (Hz) |    |    |    |    |    |   |   | Sampling  | Bit Depth | Notes                                                                        |
|----|-----------|--------|-----------------------|----|----|----|----|----|---|---|-----------|-----------|------------------------------------------------------------------------------|
| 4K | 3840x2160 | 4      | 24                    | 25 | 30 | —  | —  | —  | — | — | 4:4:4:(4) | 10 bpc    | Y'C'B'C'R/RGB Component at quad-link 3 Gbps (ST 425-5) Structure 2 Level A   |
|    | 3840x2160 | 4      | 24                    | 25 | 30 | —  | —  | —  | — | — | 4:4:4     | 12 bpc    | Y'C'B'C'R/RGB Component at quad-link 3 Gbps (ST 425-5) Structure 3 Level A   |
|    | 3840x2160 | 4      | 24                    | 25 | 30 | —  | —  | —  | — | — | 4:2:2:4   | 12 bpc    | Y'C'B'C'R/ Component at quad-link 3 Gbps (ST 425-5) Structure 4 Level A      |
|    | 3840x2160 | 4      | 24                    | 25 | 30 | —  | —  | —  | — | — | 4:2:2     | 12 bpc    | Y'C'B'C'R/ Component at quad-link 3 Gbps (ST 425-5) Structure 1 Level A      |
|    | 3840x2160 | 4      | —                     | —  | —  | 48 | 50 | 60 | — | — | 4:2:2     | 10 bpc    | Y'C'B'C'R Component at quad-link 3 Gbps (ST 425-5) Structure I Level A       |
|    | 3840x2160 | 4      | —                     | —  | —  | 48 | 50 | 60 | — | — | 4:4:4:(4) | 10 bpc    | Y'C'B'C'R/RGB Component at quad-link 6 Gbps (ST 2081-12) Mode 2 Structure II |



- Frame rates also include fractional 1/1.001 rates.
- 1920x1080 is equivalent to 1920x1080 and 2048x1080.
- 3840x2160 is equivalent to 3840x2160 and 4096x2160.

## Power specifications

Learn the power requirements for the projector.

| Item          | Main Input A<br>Main Input B | UPS Input     |
|---------------|------------------------------|---------------|
| Voltage range | 200 - 240 VAC                | 200 - 240 VAC |

| Item            | Main Input A<br>Main Input B | UPS Input    |
|-----------------|------------------------------|--------------|
|                 | single phase                 | single phase |
| Maximum current | 16 A                         | 10 A         |
| Line frequency  | 50-60 Hz                     | 50-60 Hz     |

## Physical specifications

Learn the dimensions and weight of the CineLife+ RGB PLF projectors.

| Item                                                           | Description                                   |
|----------------------------------------------------------------|-----------------------------------------------|
| Size (L x W x H)<br>(without the lens and with feet retracted) | 1555 x 712 x 588 mm (61.2 x 28 x 23.1 inches) |
| Weight (installed, without the lens)                           | 175 kg (386 lbs)                              |
| Shipping weight                                                | 211 kg (465 lbs)                              |

## Orientation and alignment

Learn about the orientation and alignment specifications of the CineLife+ RGB PLF projectors.

### Orientation

The projectors are designed to operate in a non-inverted, landscape orientation, with all four feet on a level surface.

### Alignment

The projectors are designed to operate within the following alignment angles:

| Alignment          | Permitted Angle                                                                                                          |
|--------------------|--------------------------------------------------------------------------------------------------------------------------|
| Front-to-back tilt | +3° (upwards) to -15° (downwards)<br>The maximum tilt of -15° (downwards) can be achieved using the PLF Cinema Pedestal. |
| Side-to-side tilt  | +3° to -3°                                                                                                               |

## Touch panel specifications

Learn the specifications of the touch panel.

|                                   |                                  |
|-----------------------------------|----------------------------------|
| Type of Display                   | Color LCD, backlit               |
| Display Size                      | 256.54 mm (10.1 inches) diagonal |
| Display Resolution (H x V pixels) | 1280 x 800                       |



|                                        |                                                 |
|----------------------------------------|-------------------------------------------------|
| Maximum Dimensions (W x H x D)         | 260 x 178.4 x 32.3 mm (10.2 x 7.0 x 1.3 inches) |
| Communication Interface with Projector | USB-C                                           |
| Power Requirement                      | 10W maximum (DC)                                |
| Interface Connector                    | USB-C                                           |

## Light source specifications

Learn about the specifications of the direct-coupled laser light source.

|                                                                          |
|--------------------------------------------------------------------------|
| Dual, self-contained, fully sealed, RealLaser™ optical sub-systems (LOS) |
| Discrete Red, Green, and Blue laser diodes                               |

## Approved third-party components

The following third-party components are approved for use with CineLife+ RGB PLF.

### Chiller components

| Model                       | Part Number/Description |
|-----------------------------|-------------------------|
| S&A Teyu Chiller CW-6200AN  | 163-124108-XX 50 Hz     |
| S&A Teyu Chiller NA CW-6200 | 163-136101-XX 60 Hz     |

### Integrated media blocks (IMBs)

| High Speed Interface                                  |
|-------------------------------------------------------|
| GDC SR-6400C 4K 120 fps                               |
| GCD SR-5400C 4K 60 fps                                |
| Series 2 Interface                                    |
| GDC SR-1000 (requires license for native 4K playback) |
| GDC SX-4000 (requires license for native 4K playback) |
| Dolby IMS3000                                         |



Series 2 IMBs require a CineLife+ faceplate to seat properly with the CineLife+ electronics. When ordering the IMB, ensure you indicate the correct projector model to obtain the correct faceplate from the IMB manufacturer.

## Accessories

Learn about accessories that are available for CineLife+ RGB PLF projectors.

### Projection lenses

| Description                  | Part Number   |
|------------------------------|---------------|
| 0.90:1 HB fixed              | 38-809071-XX  |
| 1.13-1.66:1 DLPCine HB zoom  | 108-342100-XX |
| 1.31-1.85:1 DLPCine HB zoom  | 108-335102-XX |
| 1.45-2.17:1 DLPCine HB zoom  | 108-336103-XX |
| 1.63-2.71:1 DLPCine HB zoom  | 108-337104-XX |
| 1.95-3.26:1 DLPCine HB zoom  | 108-338105-XX |
| 2.71-3.89:1 DLPCine HB zoom  | 108-278101-XX |
| 1.13-1.66:1 DLPCine UHC zoom | 163-103105-XX |
| 1.31-1.85:1 DLPCine UHC zoom | 163-104106-XX |
| 1.45-2.17:1 DLPCine UHC zoom | 163-105107-XX |
| 1.63-2.71:1 DLPCine UHC zoom | 163-106108-XX |
| 1.95-3.26:1 DLPCine UHC zoom | 163-107109-XX |
| 2.71-3.89:1 DLPCine UHC zoom | 163-108100-XX |

### Filters and coolant

| Description                          | Part Number   |
|--------------------------------------|---------------|
| Air Intake Filter                    | 003-006819-XX |
| Light Engine Air Filter              | 003-006464-XX |
| Coolant Propylene Glycol 702 (700ml) | 003-103148-XX |
| Coolant Propylene Glycol 702 (10L)   | 003-006744-XX |

### UPS power cord (optional)

| Description            | Part Number   |
|------------------------|---------------|
| North America 250V/20A | 108-386108-XX |
| Japan 250V/20A         | 108-370101-XX |
| China 250V/16A         | 108-372103-XX |
| EU/UK 250V/16A         | 108-430108-XX |
| EU 250V/16A            | 108-564106-XX |
| Korea 250V/16A         | 108-378109-XX |

| Description           | Part Number   |
|-----------------------|---------------|
| India 250V/16A        | 108-565107-XX |
| South Africa 250V/16A | 108-566108-XX |
| Australia 250V/16A    | 108-435103-XX |

### Chiller accessories

| Description                 | Part Number   |
|-----------------------------|---------------|
| Chiller Setup Kit Plumbing  | 163-149105-XX |
| Chiller Setup Kit Air Ducts | 163-150107-XX |

### Miscellaneous

| Description                    | Part Number   |
|--------------------------------|---------------|
| PLF Cinema Pedestal (optional) | 163-126100-XX |

## Environment

Learn about the environment requirements for the CineLife+ RGB PLF projectors while operating and not operating.

### Operating environment

| Item                                | Description                        |
|-------------------------------------|------------------------------------|
| Temperature                         | 10°C to 35°C<br>50°F to 95°F       |
| Humidity (non-condensing)           | 10% to 80%                         |
| Altitude                            | 0 to 3000 meters<br>0 to 9843 feet |
| Optimal maximum ambient temperature | 25°C<br>77°F                       |
| Site cleanliness                    | ISO Class 9 or cleaner             |

### Non-operating environment

| Item                      | Description                    |
|---------------------------|--------------------------------|
| Temperature               | -25°C to 70°C (-13°F to 158°F) |
| Humidity (non-condensing) | 0% to 95%                      |

## Regulatory

This product conforms to the latest regulations and standards related to product safety, environmental, and electromagnetic compatibility (EMC) requirements.

### Safety

- ANSI/UL 60950-1 – Information Technology Equipment – Safety – Part 1: General Requirements
- CAN/CSA C22.2 No. 60950-1-07 – Information Technology Equipment – Safety – Part 1: General Requirements
- IEC/EN 60825-1 – Safety of Laser Products – Part 1: Equipment Classification and Requirements
- IEC 60950-1 IEC/EN 60950-1 – Information Technology Equipment – Safety – Part 1: General Requirements
- IEC/EN 62471-5 – Photobiological Safety of Lamps and Lamp Systems – Part 5: Image projectors

## Electro-magnetic compatibility

### Emissions

- CAN ICES-003 (A)/NMB-003 (A) – Information Technology Equipment (Including Digital Apparatus) – Limits and Methods of Measurement
- CISPR 32/EN 55032, Class A – Electromagnetic Compatibility of Multimedia Equipment – Emission Requirements
- FCC CFR47, Part 15, Subpart B, Class A – Unintentional Radiators
- IEC 61000-3-2/EN61000-3-2: Limits for harmonic current emissions for equipment with input current  $\leq 16$  A
- IEC 61000-3-3/EN61000-3-3: Limitations of Voltage Changes, Voltage Fluctuations, and Flicker input current  $\leq 16$  A
- IEC 61000-3-11/EN61000-3-11: Limitations of Voltage Changes, Voltage Fluctuations, and Flicker for equipment with rated current  $\leq 75$  A
- IEC 61000-3-12/EN61000-3-12: Limits for harmonic current emissions for equipment for systems with input current  $> 16$  A and  $\leq 75$  A per phase

### Immunity

- CISPR 24/EN55024 EMC Requirements – Information Technology Equipment

## Environmental

- China Ministry of Information Industry (along with 7 other Government Agencies) Order No.32 (01/2016) on the control of pollution caused by electronic information products, hazardous substances concentration limits (GB/T 26572 - 2011), and the applicable product marking requirement (SJ/T 11364 - 2014).

- EU Directive (2011/65/EU) on the restriction of the uses of certain hazardous substances (RoHS) in electrical and electronic equipment and the applicable official amendment(s).
- EU Directive (2012/19/EU) on waste and electrical and electronic equipment (WEEE) and the applicable official amendment(s).
- Regulation (EC) No. 1907/2006 on the registration, evaluation, authorization and restriction of chemicals (REACH) and the applicable official amendment(s).