

# Specifications

This section provides detailed specifications for the Christie Integrated Media Block (IMB).

## Regulatory

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

### Safety

- CAN/CSA C22.2 No. 60950-1-07 2nd Edition
- UL 60950-1, 2nd Edition
- IEC 60950-1
- EN60950:2006+A11:2009

## Electro-Magnetic Compatibility

### Emissions

- FCC CFR47, Part 15, Subpart B, Class A/B - Unintentional Radiators
- CISPR 22: 2005 (Modified) / EN55022:2006, Class A/B - Information Technology Equipment
- CISPR 22:2005 (Modified) / EN55022:2006, Class A - Information Technology Equipment

### Immunity

- CISPR 24: 1997 (Modified) +A1:2001+A2:2002 / EN55024: 1998 +A1:2001 +A2:2003 EMC Requirements - Information Technology Equipment

### Environmental

- EU Directive (2002/95/EC) on the restriction of the uses of certain hazardous substances (RoHS) in electrical and electronic equipment and the applicable official amendment(s)
- EU Directive (2002/96/EC) on waste and electrical and electronic equipment (WEEE) and the applicable official amendment(s)
- Regulation (EC) No. 1907/2006 concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) and its amendments.

- China Ministry of Information Industry Order No.39 (02/2006) on the control of pollution caused by electronic information products, hazardous substances concentration limits (SJ/T11363-2006), and the applicable product marking requirements (SJ/T11364-2006)

## Security Policy

In accordance with the requirements of Federal Information Processing Standard (FIPS) 140-2, a security policy has been defined and published for the Christie IMB. This security policy identifies the ports and interfaces available on the device, the roles and services provided, and the critical security parameters protected by the Christie IMB. All users of the Christie IMB must abide by the requirements defined by the Christie IMB security policy. The Christie IMB security policy is available on the National Institute of Standards and Technology (NIST) web site (<http://csrc.nist.gov/groups/STM/cmvp/documents/140-1/1401val2013.htm>).

## Anti-Tampering Circuitry

The Christie IMB includes a security module that meets the Federal Information Processing Standard (FIPS) 140-2 Level 3 security requirements as defined by the DCI Digital Cinema System Specification v1.2. An important component of the security module is active anti-tamper monitoring. Any attempt to access the area under the security enclosure on the Christie IMB activates the anti-tamper circuitry and causes the FIPS LED to turn red. In addition, you cannot decrypt or play digital cinema content. If the anti-tamper circuitry is activated, you must return the Christie IMB to Christie Digital.

If you mishandle or drop the Christie IMB, you can activate the anti-tamper circuitry. Keep the Christie IMB in its original packaging until you install it.

A rechargeable battery keeps anti-tamper monitoring active when the Christie IMB is removed from the projector. If the Christie IMB is not installed within a year, the battery can fail and you must return the Christie IMB to Christie Digital. To allow the Christie IMB to remain out of a projector beyond a year, a charging connector allows the battery to be recharged.

If the Christie IMB is exposed to constant temperature fluctuations, the lifetime of the rechargeable battery can be shortened. The recommended temperature range for storing the Christie IMB is -20C to +25C.

## SMPTE Compatible Cinema Formats - 2D Video (JPEG2000)

The Christie IMB supports a maximum bandwidth of 500 Mbps for 2D Cinema content. JPEG content must be contained in an Interop or Society of Motion Picture and Television Engineers (SMPTE) Digital Cinema Package (DCP).

Only the Christie IMB with the 4K upgrade supports the 4096 x 2160 resolution.

Specification	Resolution	Frame Rate	Bit Depth	Color Format
SMPTE 428-1-2006	2048 x 1080	24.0	12-bits	X'Y'Z' (4:4:4)
SMPTE 428-11-2009	2048 x 1080	25.0	12-bits	X'Y'Z' (4:4:4)
SMPTE 428-11-2009	2048 x 1080	30.0	12-bits	X'Y'Z' (4:4:4)
SMPTE 428-1-2006	2048 x 1080	48.0	12-bits	X'Y'Z' (4:4:4)

Specification	Resolution	Frame Rate	Bit Depth	Color Format
SMPTE 428-11-2009	2048 x 1080	50.0	12-bits	X'Y'Z' (4:4:4)
SMPTE 428-11-2009	2048 x 1080	60.0	12-bits	X'Y'Z' (4:4:4)
SMPTE 428-11-2009	2048 x 1080	96.0	12-bits	X'Y'Z' (4:4:4)
SMPTE 428-11-2009	2048 x 1080	100.0	12-bits	X'Y'Z' (4:4:4)
SMPTE 428-11-2009	2048 x 1080	120.0	12-bits	X'Y'Z' (4:4:4)
SMPTE 428-1-2006	4096 x 2160	24.0	12-bits	X'Y'Z' (4:4:4)
SMPTE 428-11-2009	4096 x 2160	25.0	12-bits	X'Y'Z' (4:4:4)
SMPTE 428-11-2009	4096 x 2160	30.0	12-bits	X'Y'Z' (4:4:4)

## SMPTE Compatible Cinema Formats - 3D Video

The hardware configuration of the projector in which the Christie IMB is installed can affect frame rate performance. JPEG content must be contained in an Interop or Society of Motion Picture and Television Engineers (SMPTE) Digital Cinema Package (DCP)

To support 3D playback the projector must be in line interleave mode. To display 3D content at frame rates above 24.0, you must use a Christie IMB with the high frame rate upgrade.

Specification	Resolution	Frame Rate	Bit Depth	Color Format
SMPTE 428-1-2006	2048 x 1080	24.0 x 2	12-bits	X'Y'Z' (4:4:4)
SMPTE 428-1-2006	2048 x 1080	48.0 x 2	12-bits	X'Y'Z' (4:4:4)
SMPTE 428-11-2009	2048 x 1080	60.0 x 2	12-bits	X'Y'Z' (4:4:4)

## MPEG-2 MXF Interop Supported Formats

The MPEG-2 format can be .mpg, mpeg, .ts, or part on an Interop formatted Digital Cinema package (DCP).

MPEG-2 MXF Interop is not watermarked. The Christie IMB converts all content to XYZ 4:4:4 12-bit before it is displayed.

Resolution	Frame Rate	Format	Bit Depth	Chroma Format
1280 x 720	25.0	Progressive	8-bits	4:2:0
1280 x 720	29.97	Progressive	8-bits	4:2:0
1280 x 720	30.0	Progressive	8-bits	4:2:0
1280 x 720	50.0	Progressive	8-bits	4:2:0
1280 x 720	59.94	Progressive	8-bits	4:2:0
1280 x 720	60.0	Progressive	8-bits	4:2:0
1920 x 1080	50.0	Interlaced	8-bits	4:2:0

Resolution	Frame Rate	Format	Bit Depth	Chroma Format
1920 x 1080	59.94	Interlaced	8-bits	4:2:0
1920 x 1080	60.0	Interlaced	8-bits	4:2:0
1920 x 1080	23.98	Progressive	8-bits	4:2:0
1920 x 1080	24.0	Progressive	8-bits	4:2:0
1920 x 1080	25.0	Progressive	8-bits	4:2:0
1920 x 1080	29.97	Progressive	8-bits	4:2:0
1920 x 1080	30.0	Progressive	8-bits	4:2:0

## Supported Audio Formats

The Christie IMB supports 8 channel pairs of AES/3 digital audio output on a standard D-SUB 25-pin connector.

Specification	Sample Rate	Bit Depth
SMPTE 428-2-2006	48.000 kHz	24-bits
SMPTE 428-2-2006	96.000 kHz	24-bits

## Supported NAS and DAS Devices

This table lists the network-attached storage (NAS) or direct attached storage (DAS) devices that are compatible with the Christie IMB. Christie does not support or endorse any of the listed devices.

Device	Manufacturer	Manufacturer Part Number
NAS	QNAP	TS-559 Pro+
NAS	Cisco	NSS 324
NAS	Iomega StorCenter	
NAS	Netgear Ready NAS 2100	
DAS	Areca	ARC-5040

## NAS Requirements

The network-attached storage (NAS) device must meet these minimum requirements:

- 1 TB storage space or greater
- Capable of running RAID 5
- Gigabit Ethernet connectivity
- Network File System (NFS)

## AES3 Port PIN Map

This table provides pin mapping for the AES3 port:

PIN	Signal Name	DIR	Description
1	Ch 15 & 16 plus	O	
2	GND		Ground
3	Ch 13 & 14 minus	O	
4	Ch 11 & 12 plus	O	
5	GND		Ground
6	Ch 9 & 10 minus	O	
7	Ch 7 & 8 plus	O	
8	GND		Ground
9	Ch 5 & 6 minus	O	
10	Ch 3 & 4 plus	O	
11	GND		Ground
12	Ch 1 & 2 minus	O	
13	nc		No Connect
14	Ch 15 & 16 minus	O	
15	Ch 13 & 14 plus	O	
16	GND		Ground
17	Ch 11 & 12 minus	O	
18	Ch 9 & 10 plus	O	
19	GND		Ground
20	Ch 7 & 8 minus	O	
21	Ch 5 & 6 plus	O	
22	GND		Ground
23	Ch 3 & 4 minus	O	
24	Ch 1 & 2 plus	O	
25	GND		Ground

## Control Signal Compatibility

### Ethernet Port

Interface: 10-Base-T/100-Base-T/1000-Base-T

Connector: Female RJ-45

Bit Rate: 1000 Mbps

## eSATA

Interface: SATA revision 2.0

Connector: eSATA

Bit Rate: 3.0 Gbps

## USB 1 Port

Interface: Universal Serial Bus 2.0

Connector: USB Device Standard Sizes (Series "A")

Maximum Bit Rate: 480 Mbps

## AES3 Audio Output

Interface: AES3 Digital Audio

Connector: 25-pin subminiature D, female

Pin-Out: Conforms to SMPTE / TASCAM pinout. For AES3 PIN mapping, see [AES3 Port PIN Map](#) on page 109.

## Power Requirements

DC Power Supply: +12.0 VDC

Voltage Tolerance: +/- 5%

Current (Max): 6.25 A

Connector: Series 2-compatible backplane, PCI Express (x16) card edge connection

## Physical Specifications

Overall Size (L x W x H): 280 mm (11 inches) x 219 mm (8.62 inches) x 57 mm (2.24 inches)

Weight: 2.0 kg (4.4 lb)

## Environment

### Operating Environment

Temperature: 0°C to 35°C (32°F to 95°F)

Humidity (non-condensing): 20% to 80%

Altitude: 0 - 3000 meters

Maximum ambient temperature: 35°C

### Non-Operating Environment

Temperature: 20°C to 65°C (68°F to 149°F)

Humidity (non-condensing): 0% to 95%