

Installation and Setup Manual

020-102582-01

Christie IMB-S3



NOTICES

COPYRIGHT AND TRADEMARKS

Copyright © 2017 Christie Digital Systems USA Inc. All rights reserved.

All brand names and product names are trademarks, registered trademarks or trade names of their respective holders.

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. Canadian manufacturing facility is ISO 9001 and 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. 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.
- f. 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.
- g. 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.

CAN ICES-3 (A) / NMB-3 (A)

이 기기는 업무용(A급)으로 전자파적합등록을 한 기기이오니 판매자 또는 사용자는 이점을 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

- Safety precautions. 5**
 - General safety precautions. 5

- Introduction. 6**
 - Key features. 6
 - Prerequisites. 6
 - Christie IMB connectors. 7
 - Sample network topology. 8
 - IP and subnet considerations. 9

- Installing and configuring. 10**
 - Installing the Christie IMB. 10
 - Activating marriage. 12
 - Connect the projector to network attached storage. 13
 - Configuring audio settings. 13
 - Enabling Dolby Atmos. 13
 - Configuring multiple projectors. 14

- Synchronizing content on multiple projectors. 16**
 - Content replication network topology. 17
 - Connecting the hardware. 18
 - Setting the secondary NAS Ethernet port IP address. 18
 - Enabling content synchronization. 19
 - Viewing synchronization progress. 19
 - Viewing the Christie NAS status. 19

- Enhancements and Licensing. 20**
 - Identifying the Christie IMB electronic serial number. 20
 - Importing a product enhancement. 20
 - Enabling an enhancement. 20

- Playing content. 21**

- Specifications. 22**
 - Physical specifications. 22

Power specifications. 22

Environmental specifications. 22

Compatible cinema formats - 2D video. 23

Compatible cinema formats - 3D video. 23

MPEG-2 MXF Interop supported formats. 24

Supported audio formats. 24

Supported NAS devices. 24

AES3 port pin map. 25

Control signal compatibility. 25

Regulatory. 26

 Safety. 26

 Electro-magnetic compatibility. 26

 Environmental. 26

 Security policy. 26

 Anti-tampering circuitry. 27

Safety precautions

Learn about the safety precautions related to the Christie IMB.

General safety precautions

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

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



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

- SHOCK HAZARD! Disconnect the product from AC before installing, moving, servicing, cleaning, removing components, or opening any enclosure.
- EXPLOSION HAZARD! Allow sufficient time for the lamp to cool down before powering down the product, disconnecting it from AC, and opening the lamp door.



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

- Only Christie qualified technicians are permitted to open product enclosures.
- Observe all electrostatic precautions. Use a grounded wrist strap and insulated tools when handling, servicing, or cleaning electronic assemblies.

Introduction

This manual provides installation and setup instructions for the Christie IMB-S3.

Key features

With this release of the Christie Integrated Media Block (IMB), you can connect a network attached storage (NAS) device to play content.

The NAS device must be connected to the gigabit Ethernet port labeled NAS on the main projector communication board. Content cannot be stored on the Christie IMB; all content must be stored on a NAS device.

The Christie IMB meets Digital Cinema Initiatives, LLC (DCI) specifications and is compatible with Christie Series 3 projectors.

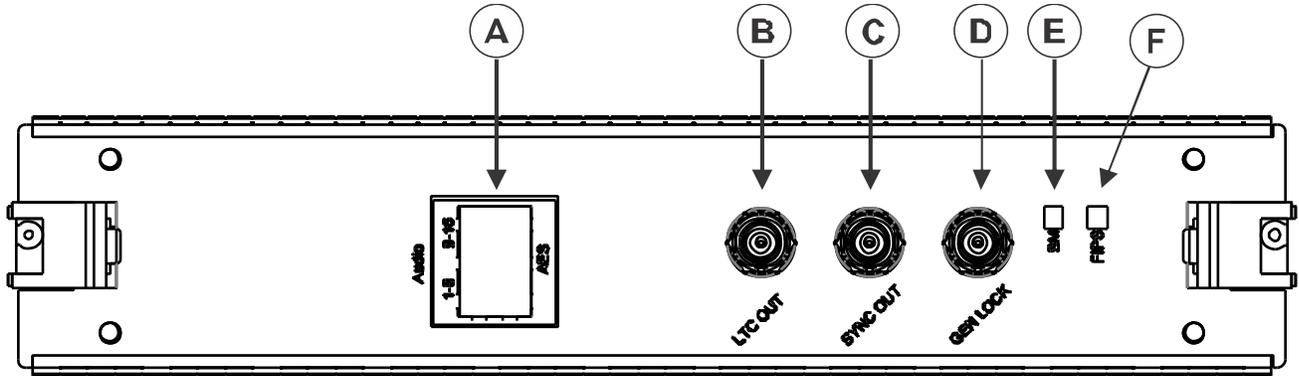
Prerequisites

To install the Christie IMB into your theater environment, the following items are required.

- A Christie CineLife Series 3 projector with firmware 2.1.0-1 or later installed. If you do not have CineLife firmware 2.1.0-1 or later installed, you should install the IMB in the projector before running the firmware upgrade.
- A network attached storage (NAS) device with the hard drives installed and properly configured. The NAS device must meet the following minimum requirements:
 - 1 TB of storage space or greater
 - RAID 5 capable
 - Gigabit Ethernet connectivity for NAS devices
 - Network file system (NFS) for NAS devices
- An AES connector for dual RJ45 ethernet ports, connecting your cinema audio processor to the Christie IMB audio output. See *AES3 port pin map* (on page 25).

Christie IMB connectors

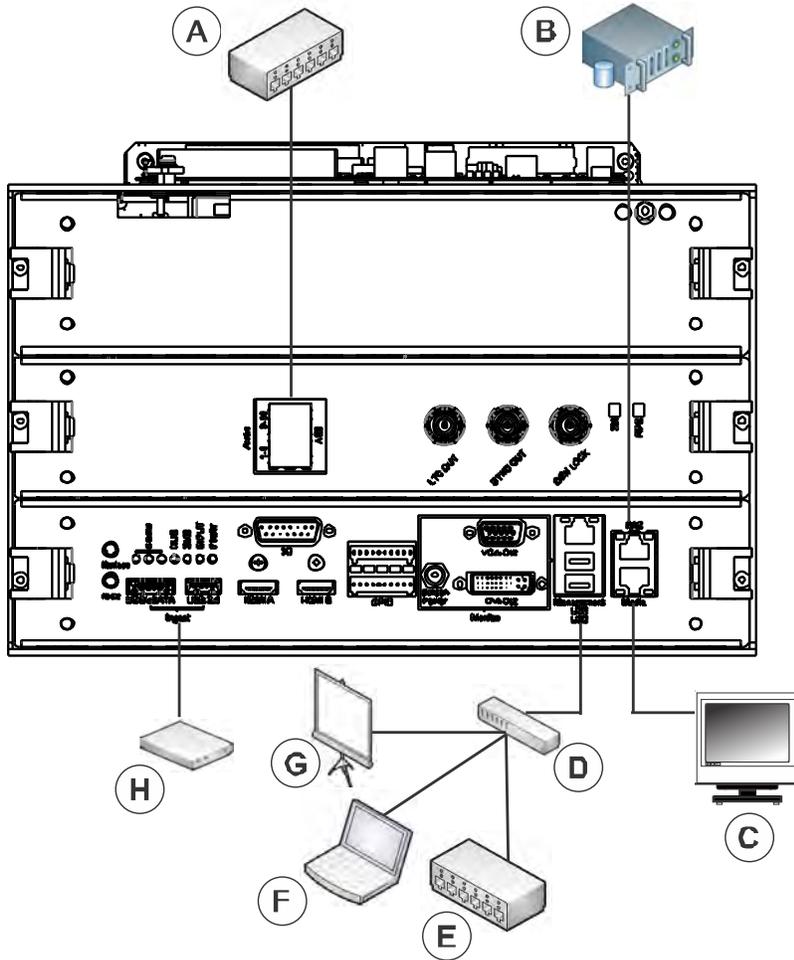
Learn about the connection ports available on the Christie IMB.



Feature	Description
A	AES3 port for digital audio output
B	LTC output for encoded SMPTE time code data (LTC OUT)
C	Output for multi-projector playback (SYNC OUT)
D	Input for multi-projector playback (GEN LOCK)
E	SM Run status indicator The LED flashes green when the security manager (SM) is operating correctly.
F	FIPS (Federal Information Processing Standards Publications) status indicator The LED is green when FIPS security status is operating correctly. If the LED is red, an error has occurred. Restart the IMB. If the LED remains red, return the product to Christie Digital Systems USA Inc.

Sample network topology

This diagram illustrates a typical network topology for the Christie IMB.



Device	Description
A	Digital cinema audio processor
B	Network attached storage (NAS)
C	Theater management system (TMS)
D	Switch
E	Christie ACT automation device
F	Laptop
G	Theater network
H	Ingest hard drive

IP and subnet considerations

To ensure the Christie IMB can operate, you must configure your network settings correctly. Incorrect subnet settings can cause communication issues between the Christie IMB, the network attached storage (NAS) device, and external automation devices.

To reduce the risk of communication issues:

- Assign the projector Management, NAS, and Media networks to non-conflicting subnets. For example:

Netmask	255.255.255.0
Management	192.168.3.100
NAS	192.168.1.10
Media	192.168.2.1

- Configure the Media ports on the Christie IMB faceplate to use dynamic host configuration protocol (DHCP) when they are not in use. When you set DHCP on a NAS port and nothing is connected to the port, the Christie IMB does not mount the port and there is no risk of an IP address conflict.
- Use static IP addresses on the Management, NAS, and Media ports when they are in use.

Installing and configuring

Learn how to install and configure the Christie IMB-S3.

Installing the Christie IMB

The Christie IMB is installed in the card cage located on the side of the projector.

Marriage permissions are required to activate marriage.



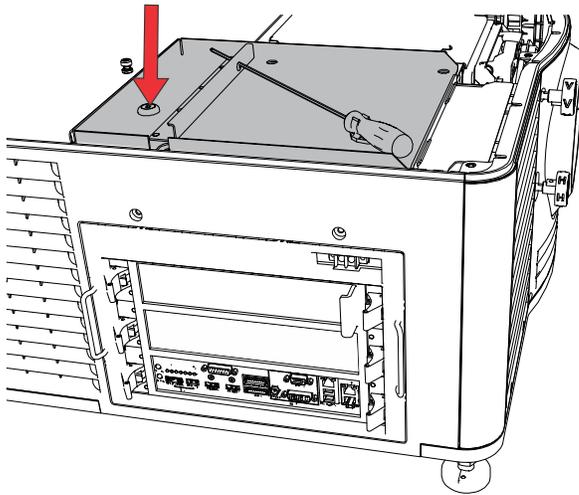
Caution! If not avoided, the following could result in minor or moderate injury.

- Observe all electrostatic precautions. Use a grounded wrist strap and insulated tools when handling, servicing, or cleaning electronic assemblies.

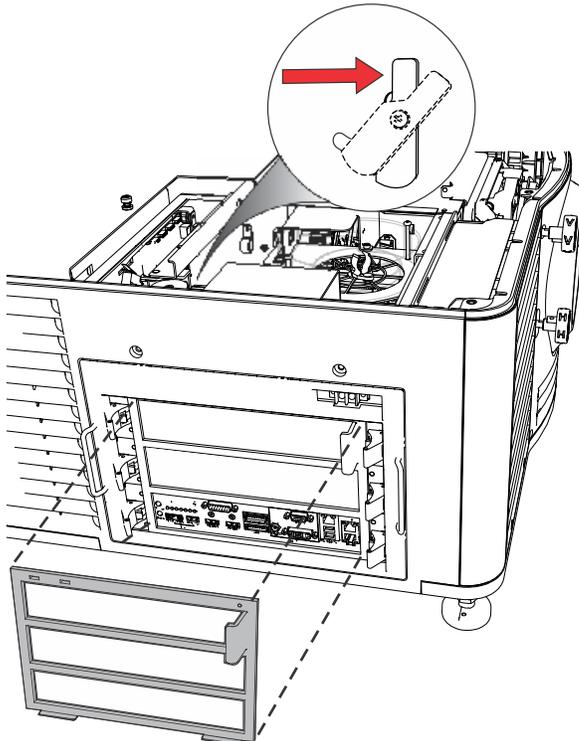


To prevent damage by static electricity, keep the Christie IMB in its anti-static package until you install it.

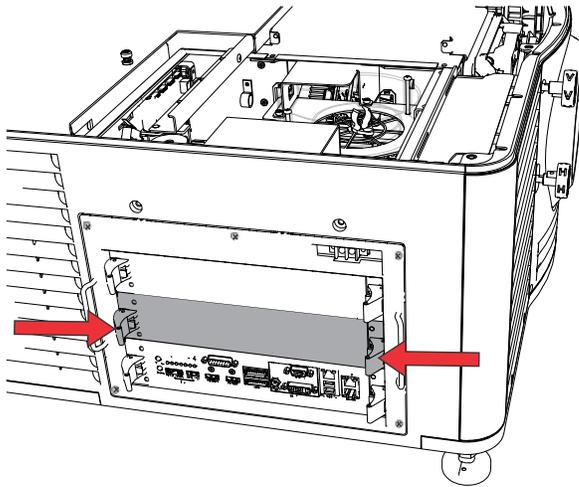
1. Turn the lamp off and allow the projector to cool a minimum of 15 minutes.
2. Disconnect the projector from AC power.
3. Remove the top cover.
 - a) Unlock the cover with the low security key.
 - b) Remove the cover and set it aside.
4. Remove the high security cover.
 - a) Unlock the high security cover with the high security key.
 - b) Remove the cover and set it aside.



5. Remove the card cage cover.
 - a) Push down on the tab on the top of the cover.
 - b) Lift the cover up as you move it away from the projector.
 - c) Remove the cover and set it aside.
6. To release the security ring, reach into the projector and press down on the lever on the right side of the card cage.



7. Remove and discard the Christie IMB filler plate.



8. Unpack the Christie IMB and verify:
 - The holographic stickers covering the fasteners on the security enclosure are intact.
 - There are no obvious signs of tampering on the security enclosure.
 - The serial number stickers are in place and legible.

If the Christie IMB shows signs of tampering, contact Christie support. For contact information for your region, see the back cover of this document.

9. Align the Christie IMB with the guides in the card cage, and then slide it into the projector until the ejector tabs click, indicating they are locked.
10. Reassemble the projector.
 - a) Install the security ring.
 - b) Install the card cage cover.
 - c) Install and lock the high security cover.
 - d) Install and lock the top cover.
11. Connect the projector to AC power and then turn it on.
12. If the faceplate marriage LED is off, or if the projector is indicating that marriage is broken, then *activate marriage* (on page 12).

Activating marriage

To display IMB content, you must complete the marriage wizard.

Marriage permissions are required to complete marriage and only Christie accredited technicians are authorized to activate projector marriage.

1. On the projector touch panel, tap **Service Setup > Marriage Setup**.
2. Tap **Start**.
3. Complete the marriage setup wizard.
4. Tap **Finish**.

Connect the projector to network attached storage

If the network file system (NFS) settings of the network attached storage (NAS) device are incorrect, the device cannot share files with the Christie IMB.



On Series 3 Christie projectors and NAS devices, the network ports are pre-configured to work without any setup.

To reduce the risk of NAS file sharing issues:

- Configure the NAS device to use a static IP address. The static IP address must be compatible with the IMB NAS Ethernet port netmask that the NAS is connected to. Christie does not recommend using dynamic host configuration protocol (DHCP).
 - Enable the NFS service on the NAS device. On most NAS devices, the NFS service option is disabled by default.
 - Enable NFS on the Christie IMB NAS share. NFS must be enabled on every shared NAS share.
 - Set the NFS access rights for the Christie IMB NAS share to **read/write** or **full rights for everyone**.
1. Follow the instructions provided by the manufacturer of your NAS device to ensure it is set up and operating correctly.
To view installation instructions for common NAS hardware, refer to *Managing storage devices* in the *Christie Integrated Media Block S3 User Manual (P/N: 020-102584-XX)*.
 2. Connect one end of an Ethernet cable to the NAS port on the main projector communication board and the other end to your NAS device or network.
 3. On the projector touch panel, tap **Service Setup > Network Settings**.
 4. In the Port list, tap **Content-NAS**.
 5. In the Settings area, enter the network settings:
 - To obtain the network settings from a DHCP server, tap **Automatic**.
 - To enter the settings manually, tap **Manual** and complete the IP Address and Subnet Mask fields.
 6. Tap **Save**.

Configuring audio settings

Connect the digital cinema audio processor to the Christie IMB and configure the audio settings.

1. Connect the two audio cables to the Christie IMB AES3 port and the other ends to a digital cinema audio processor.
2. Configure your speaker and channel settings. See *Managing audio settings* in the *Christie IMB-S3 User Manual (P/N: 020-102584-XX)*.

Enabling Dolby Atmos

Complete the following procedure to enable Dolby Atmos audio settings.

1. On the projector touch panel, tap **Service Setup > Audio Setup**.

2. Tap the **Dolby Atmos Configuration** tab.
3. Tap the **Enable Dolby Atmos** slider.
The color of the slider changes to green to indicate it is active.
4. In the Control IP field, type the IP address of the control module.
5. In the Input IP field, type the secure IP address of the input module.
6. To test Dolby Atmos connectivity, tap **Test Connection**.
7. Tap **Save**.

Configuring multiple projectors

When you install multiple projectors, audio is only available from the master projector. To play content correctly, you must ensure that content is ingested into the network attached storage (NAS) device connected to the master projector and that all connected projectors have a valid key delivery message (KDM) key.

When using multiple projectors, you create playlists on the master projector only. After configuring multiple projectors, you can synchronize content ingested on the master projector to all slave projectors. For more information, see *Synchronizing content on multiple projectors* (on page 16).

If you are using an automation device (for example, a Christie ACT theater control), connect it to the master projector.

1. Install and align your projectors following the instructions provided with each projector.
2. Verify the main projector software is version 2.1.0-1 or later.
 - a) On the projector touch panel, tap **About**.
 - b) Verify that the version specified in the Package Version field is 2.1.0-1 or later.
If it is not, visit the Christie *website* and download the current software.
3. *Connect each projector to a NAS device* (on page 13).
A single NAS device cannot be shared by multiple Christie IMBs.
4. Connect an Ethernet cable to each projector
5. Connect the Ethernet cables to the same switch.
6. Assign each projector an IP address that is on the same subnet. Each projector must be assigned a unique IP address.
7. Connect one end of a 75 ohm BNC cable to the Sync Out connector on the master projector and then connect the other end to the Gen Lock connector on the slave projector.
If you are using multiple slave projectors, use a daisy chain cabling scheme to connect the projectors to the master projector.
To connect the slave projectors to each other, connect one end of a 75 ohm BNC cable to the Sync Out connector on the first projector and then connect the other end to the Gen Lock connector on the second projector. Repeat this cabling pattern on the remaining projectors.
8. Under Master Projector Settings, tap the **Multi-Projector Control** slider.
The color of the slider turns green to indicate it is active. When enabled, the projector is assigned as the master projector in a multi-projector setup. Do not enable this option on the slave projectors.
9. If you are using active 3D glasses and want to send left and right images to multiple projectors, tap the **Active 3D Glasses** slider. If **Active 3D Glasses** is not enabled, the master projector outputs only right-eye frames or left-eye frames, depending on what you have specified.

The color of the slider turns green to indicate it is active.

10. In the Master Eye Selection list, select **Right** or **Left** for the master projector.



This option is not available if you selected **Active 3D Enabled** in step 9.

11. To add a slave projector, tap **+ New Slave Projector**.
12. In the New Slave Projector dialog, enter the name and IP address of the slave projector.
13. To add the new slave projector settings to the list, click **Add**.
The new slave projector is added to the list and is automatically assigned the opposite eye selection of the master projector.
14. Repeat steps 11 to 13 for each additional slave projector.

Synchronizing content on multiple projectors

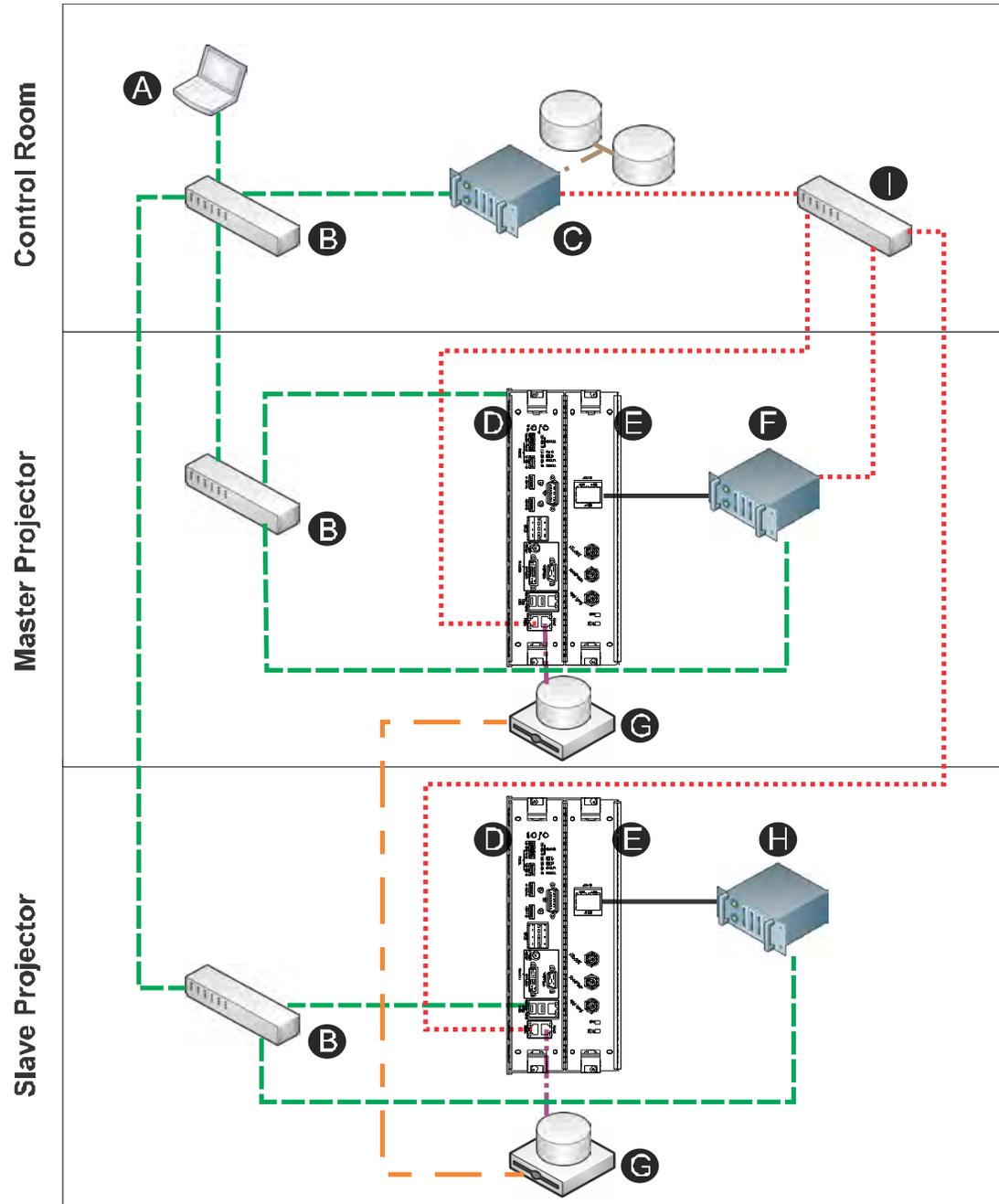
Learn how to synchronize ingested content from the master projector to all slave projectors.

Synchronizing content allows content replication across multiple Christie network attached storage (NAS) devices. You can synchronize content after you have followed the steps to *configure multiple projectors* (on page 14).

To use content replication, you must have two Christie NAS devices. Content replication is not supported in a quad projector configuration or on NAS devices from other manufacturers.

Content replication network topology

Learn the components of a content replication network.



Item	Description	Item	Description
A	Control computer	H	Dolby Digital Cinema Sound Processor CP750

Item	Description	Item	Description
B	GigE switch for command and control network	I	GigE switch for content network
C	Theater Management System (TMS) or Library Management System (LMS)		Command and control network
D	Main projector communication board (F-Main)		Content network (GigE media network for moving content over the network)
E	Christie IMB		Home run connections (GigE)
F	Dolby Atmos Cinema processor CP850		AES connection
G	Network attached storage (NAS)		Replication connection

Connecting the hardware

Complete this procedure to connect the content replication hardware.

1. Install and configure two or more projectors and Christie network attached storage (NAS) devices.

When installing multiple projectors, the passwords and user names for the Christie NAS devices must be correct or replication will not work.

2. Connect one end of an Ethernet cable to the secondary Ethernet port (A) of one Christie NAS devices.



3. Connect the other end of the Ethernet cable to the secondary Ethernet port of a second Christie NAS.
4. Configure the secondary Ethernet ports of each Christie NAS.

The IP address assigned to each of the secondary Christie NAS Ethernet ports must be on the same subnet. To prevent communication errors, select a subnet that does not conflict with the command and control or the content networks.

Setting the secondary NAS Ethernet port IP address

The IP address assigned to each of the secondary Ethernet ports must be on the same subnet. To prevent communication errors, select a subnet that does not conflict with the primary Ethernet port.

Complete this procedure on both the master and slave network attached storage (NAS) devices.

1. Open the Christie NAS management application interface.
 - a) On your computer, open a web browser.
 - b) In the Address bar, type **http://<NAS IP Address Here>:8080**.
 - c) Press **Enter**.
2. Type your user name and password and press **Enter**.
3. On the desktop, click **Network**.
4. Switch to the **TCP/IP** tab.
5. Click **Edit**.
6. Switch to the **Network Parameters** tab.
7. Select **Use static IP address** and complete the Fixed IP Address, Subnet Mask, and Default Gateway fields.
8. Click **Apply**.

Enabling content synchronization

Complete this procedure on the master projector.

Content synchronization is supported for Christie network attached storage (NAS) devices only. To synchronize content, you must also enable the **Multi-Projector Control** option on the master projector.

1. On the master projector touch panel, tap **Service Setup > Multi-Projector Setup**.
2. Under Master Projector Settings, tap **Multi-Projector Sync of Content**.
The color of the slider turns to green to indicate content synchronization is active. When enabled, ingested content on the master projector is synchronized to all slave projectors automatically.

Viewing synchronization progress

After starting an ingest operation, you can view the progress of content synchronization on the Progress screen.

1. On the master projector touch panel, tap **Content Manager**.
2. After starting the ingest operation, click the **Progress** tab to view progress.
The Progress screen displays information on the available drive space and the percentage completion for the multi-projector synchronization.

Viewing the Christie NAS status

You can view the status of the Christie NAS on the master projector.

1. On the master projector touch panel, tap **Status**.
2. In the Status list, tap the name of the Christie NAS device.
3. Review the status information.

Enhancements and Licensing

Learn about importing licenses and activating product enhancements.

Identifying the Christie IMB electronic serial number

The Christie IMB electronic serial number (ESN) allows a distributor to identify the IMB certificate and generate the key delivery message (KDM) key to play encrypted content. The Christie ESN is also required to generate license keys that enable specific IMB features.

On Christie IMB-S3, the ESN is printed on the front of the faceplate.

1. To display the 12-digit hexadecimal ESN on the projector touch panel, tap **About**.
2. Review the displayed SM ESN number.

Importing a product enhancement

Import a license to activate a product enhancement.

1. Tap **Service Setup > Enhancements**.
2. Tap **Import License**.
3. Browse to the location of the license.
4. Select the license and tap **Accept**.

Enabling an enhancement

After importing a license, it must be enabled to activate the new functionality.

1. Tap **Service Setup > Enhancements**.
2. *Import the license* (on page 20).
3. Tap the **Enhancement** slider.
The color of the slider changes to green to indicate it is active.

Playing content

After installing and configuring the Christie IMB, complete the following tasks to play content.

For more detailed instructions, see the *Christie IMB-S3 User Manual (P/N: 020-102584-XX)*.

- Ingest the content. Content is typically provided on a hard drive sent by your movie distributor.
- Ingest the key delivery message (KDM) key. A KDM key is not required for trailers and other unencrypted content. The KDM key is typically sent separately from the encrypted content on a USB flash drive.
- Verify that the content plays correctly and the KDM is correct.
- Create a playlist. A playlist is a list of content files including trailers, features, and automated events that play in an order that you define.
- Verify that the playlist plays correctly.
- Optionally, you can schedule playback or add automation to a playlist.

Specifications

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

Physical specifications

Learn the product dimensions and weight

Item	Description
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)

Power specifications

Learn the power requirements for the product.

Item	Description
DC power supply	+12.0 VDC
Voltage tolerance	+/- 5%
Current (max)	4 A
Connector	Series 3-compatible backplane, PCI Express (x16) card edge connection

Environmental specifications

Learn about the environment requirements while operating and not operating.

Operating environment

Item	Description
Temperature	0°C to 35°C (32°F to 95°F)
Humidity (non-condensing)	20% to 85%
Altitude	0 - 3000 meters

Item	Description
Maximum ambient temperature	35°C (95°F)

Non-operating environment

Item	Description
Temperature	20°C to 65°C (68°F to 149°F)
Humidity (non-condensing)	0% to 95%

Compatible cinema formats - 2D video

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).

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)
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)

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).

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
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 devices

This table lists the network attached storage (NAS) devices that are compatible with the Christie IMB.

Manufacturer	Manufacturer Part Number
Christie	NAS-S2
Christie	NAS-S3

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
Top 1	AES Ch 1
Top 2	AES Ch 2
Top 3	AES Ch 3
Top 4	AES Ch 4
Top 5	AES Ch 5
Top 6	AES Ch 6
Top 7	AES Ch 7
Top 8	AES Ch 8
Bottom 1	AES Ch 9
Bottom 2	AES Ch 10
Bottom 3	AES Ch 11
Bottom 4	AES Ch 12
Bottom 5	AES Ch 13
Bottom 6	AES Ch 14
Bottom 7	AES Ch 15
Bottom 8	AES Ch 16

Control signal compatibility

Learn the control signal compatibility requirements.

AES3 audio output

Component	Description
Interface	AES3 Digital Audio

Component	Description
Connector	Dual RJ45 ethernet port
Pin-out	Conforms to SMPTE / TASCAM pinout

Regulatory

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

Safety

Electro-magnetic compatibility

Emissions

- FCC CFR47, Part 15, Subpart B, Class A - Unintentional Radiators
- CISPR 22: 2005 (Modified) / EN55022:2006, Class A - Information Technology Equipment
- CISPR 32: 2015/EN 55022:2015, Class A

Immunity

- CISPR 24: 2010/EN55024:2010 EMC Requirements - Information Technology Equipment

Environmental

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 Regulation (EC) No. 1907/2006 on the registration, evaluation, authorization and restriction of chemicals (REACH) 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).

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).

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) website (<http://csrc.nist.gov/groups/STM/cmvp/documents/140-1/140val-all.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 Systems USA Inc.

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 stored outside the projector beyond six months, the battery can fail and you must return the Christie IMB to Christie Digital Systems USA Inc. To allow the Christie IMB to remain out of a projector beyond six months, 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.



Corporate offices

USA – Cypress
ph: 714-236-8610
Canada – Kitchener
ph: 519-744-8005

Consultant offices

Italy
ph: +39 (0) 2 9902 1161

Worldwide offices

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 6278 7708

Eastern Europe and
Russian Federation
ph: +36 (0) 1 47 48 100
France
ph: +33 (0) 1 41 21 44 04
Germany
ph: +49 2161 664540

India
ph: +91 (080) 6708 9999
Japan (Tokyo)
ph: 81 3 3599 7481
Korea (Seoul)
ph: +82 2 702 1601
Republic of South Africa
ph: +27 (0)11 510 0094

Singapore
ph: +65 6877-8737
Spain
ph: +34 91 633 9990
United Arab Emirates
ph: +971 4 3206688
United Kingdom
ph: +44 (0) 118 977 8000