INSTALLATION MANUAL FOR SX-4000 STANDALONE INTEGRATED MEDIA BLOCK™ WITH ENTERPRISE STORAGE/ENTERPRISE STORAGE PLUS

SMS version 10.0

October 26th, 2021

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Thank you for purchasing a GDC SX-4000 Standalone Integrated Media Block™ (SX-4000 Standalone IMB®) with Enterprise Storage/Enterprise Storage Plus from GDC Technology Limited.

To ensure proper operation and to maximize value of the SX-4000 with Enterprise Storage/ Enterprise Storage Plus, please review this Installation Manual. It will guide you through all the features and benefits of the SX-4000 Standalone Integrated Media Block™.

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MANUAL DISCLAIMER

This manual is made with SMS version 10.0 and there might be slight differences depending on the software version the IMB is running. The contents, features and specifications stated in this manual are subject to change without notice due to continuous product development and improvements. In no other event shall GDC Technology Limited be liable for any loss of profit or any other commercial damages, including but not limited to special, consequential, or other damages.

FCC COMPLIANCE STATEMENT

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment 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 equipment is operated in a commercial environment. This equipment 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 this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

CONTACTS AND OFFICES

Website: **www.gdc-tech.com** Email: **info@gdc-tech.com**

24/7 Engineering Support Hotline:

North America	+1 877 743 2872 (Toll Free)	Latin America	+52 55 8851 1198
Europe	+34 928 912 295	China	+86 400 886 0966 (Toll Free)
North Asia	+852 3520 0920	India	+91 022 4044 0500
South East Asia	+65 6100 4328	Australia/ New Zealand	+61 407 040 744

Hong Kong (Headquarters)

Unit 1-7, 20th Floor,
Kodak House II,
39 Healthy Street East,
North Point, Hong Kong

Tel: +852 2507 9555

China (Beijing)

Rm. 609-618, Office Building,
20# Xinde Street, Xicheng District, Beijing, P.R. China 100088

Tel: +86 10 6205 7040

China (Shenzhen)

Room A701, 7/F,
Languang Technology Building,
No.7 Xinxi Road, North Zone,
HighTech Park, Nanshan District,
Shenzhen, China.

Tel: +86 755 8608 6000

Spain (Barcelona)

C/ Esteve Terradas, nº 27, esc. D, Despacho 1
08023 Barcelona, Spain

Tel: +34 93 159 51 75

USA (Los Angeles)

1016 West Magnolia
Boulevard Burbank,
CA 91506, USA

Tel: +1 818 972 4370 /
+1 877 743 2872
(Toll Free)

Brazil (São Paulo)

Av. Antônio Carlos Comitre,
540, 3º andar, Conjunto 31,
Campolim,
Sorocaba / São Paulo,
CEP 18047-620, Brasil
Tel: +55 15 33269301

Singapore

10 Ubi Crescent,
Ubi Tech Park,
Lobby B, #05-79,
Singapore 408564.

Tel: +65 6222 1082

Mexico (Mexico City)

S. de R.L. de C.V.,
Av. Del penon 411 esq.
Ote 168, Col. Moctezuma 2ª Sección, Venustiano Carranza,
Distrito Federal,
C.P. 01210 Mexico.

Tel: +52 55 8526 6220

Indonesia (Jakarta)

Total Building Lantai 4 Suite 0401,
Jl. Letjen S. Parman Kav. 106A,
Kel Tomang, Kec. Grogol Petamburan,
Jakarta Barat 11440,
Indonesia

Tel: +62 21 2920 4691

Japan (Tokyo)

3F, Kyobashi-Chuo Bldg,
1-14-7 Kyobashi Chuo-ku
Tokyo 104-0031, Japan

Tel: +81 3 5524 2607

India (Mumbai)

Everest Chambers,
Andheri Kurla Road,
Marol, Andheri (East),
Mumbai-400 059, India

Tel: +91 22 4044 0500

United Arab Emirates (Dubai)

Dubai World Central,
PO Box 390667,
Dubai UAE

Republic of Korea (Seoul)

4F, 127 YangHwa-ro,
MaPo-gu, Seoul,
Korea 04032
Tel: +82 10 7501 7480

1. INTRODUCTION

This document is a guide through the process of setting up the SX-4000 and Enterprise Storage/Enterprise Storage Plus with the projector, audio system, and automation devices used in cinema theatres.

Note:

- The currently supported software version for SX-4000 server is 10.0.
- In this manual there will be many instructions starting from the SMS (see Figure 1). This is the main page of the SX-4000 software that features the status of the show playing, the transport, and the buttons to access certain menus of the software.

Figure 1 SMS

1.1 Equipment List

This section provides a suggested installation configuration of GDC SX-4000 and Enterprise Storage/Enterprise Storage Plus for reference. Please contact our sales representative to specify the accessory needed for the installation.

The SX-4000 Packaging Includes:

Item	Qty	Photo
SX-4000 Unit with projector faceplate	1	
RJ45 AES Audio Cable	#	
RJ45 GPIO Cables	2#	
Network Cable	1	
RJ45 to DB25 Audio Converter	#	

Subject to actual configuration. Please specify with our sales representative.

The Enterprise Storage Packaging Includes:

Item	Qty	Photo
Enterprise Storage	1	
HDD Tray Key	1	
3.5” SATA HDD	5*	
Power Cord	1	
eSATA Cable	1	
Manual CD	1	
Quick Start Guide	1	

* The number of HDD is subject to change without notice due to ongoing product development and improvement.

The Enterprise Storage Plus Packaging Includes:

Item	Qty	Photo
Enterprise Storage Plus	1	
HDD Tray Key	1	
Tubular Key	1	
3.5” SATA HDD	5*	
Power Cord	2	
eSATA Cable	2	
Manual CD	1	
Quick Start Guide	1	

* The number of HDD is subject to change without notice due to ongoing product development and improvement.

2. INSTALLING SX-4000 INTO THE PROJECTOR

Note: If the projector comes with the GDC IMB pre-installed, the instructions in **Section 2** can be skipped.

This section of the manual describes the physical installation of the SX-4000 into the projector. If the projector does not have the GDC IMB installed, follow the steps below to install SX-4000 into the projector.

Figure 2 SX-4000 Standalone IMB®

2.1. Remove existing interface board/placeholders from projector

Before installing SX-4000, see the guidelines below to ensure proper placement.

2.1.1. Barco Projector Placement

Figure 3 shows an interface board (with SMPTE 292 inputs) connected to a Barco projector. This board must be removed in order to install SX-4000.

Figure 3 Remove interface board from Barco projector.

Figure 4 SX-4000 Placement on Barco projector.

2.1.2. Christie Projector Placement

Figure 5 shows the location where SX-4000 should be installed on a Christie projector. Remove any existing interface boards or placeholder faceplates from this position before installing SX-4000.

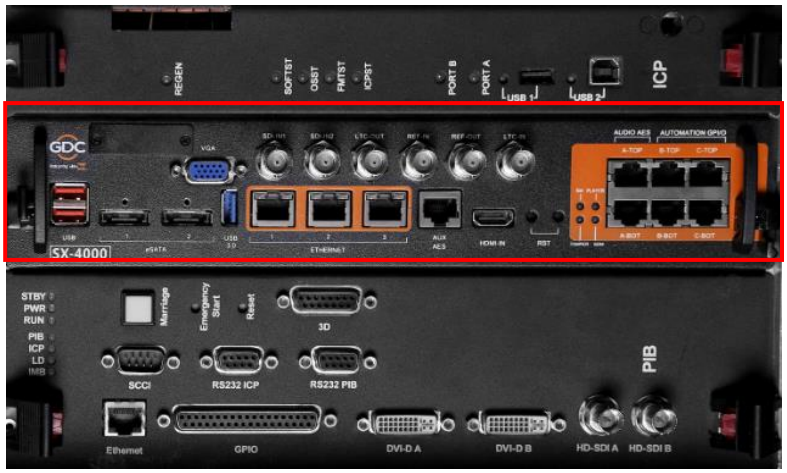


Figure 5 SX-4000 Placement on Christie projector.

2.1.3. NEC Projector Placement

Figure 6 shows the location where SX-4000 should be installed on a NEC projector. Remove any existing interface boards or placeholder faceplates from this position before installing SX-4000.

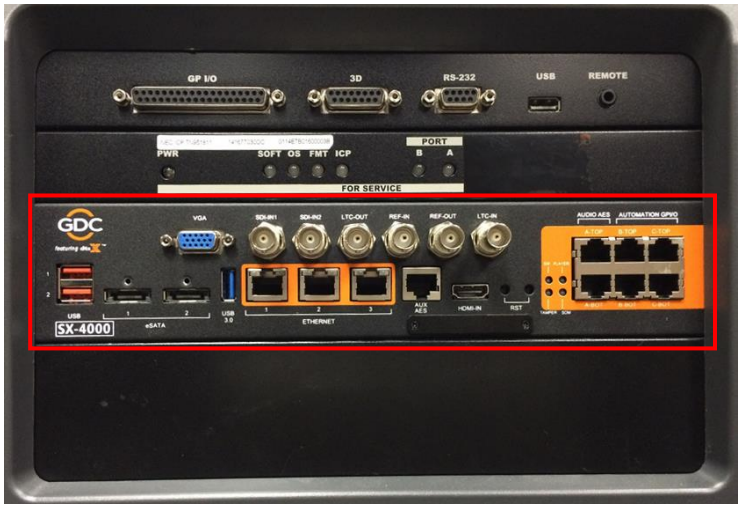


Figure 6 SX-4000 Placement on NEC projector.

Please refer to the projector manuals for more details on preparing the projector for SX-4000 installation.

2.2. Inserting SX-4000 into the projector

Please make sure the projector is powered off before installing SX-4000 on the projector.
Note: Please check SX-4000 for any physical damage like loose or burnt component before installing it into the projector.

Figure 7 Inserting SX-4000 into the projector.

Insert SX-4000 as shown in Figure 7. The SX-4000 should slide into the projector on the rails provided by the IMB slot, and the SX-4000 faceplate should be flush with the other existing faceplates once properly inserted.

Note: When installing the SX-4000 into any NEC projector, it is recommended to install it into the top slot of the projector. If the SX-4000 is installed into the bottom slot, the board runs the risk of coming in contact with the IMB enclosure.

2.3. Projector Network

Connect the provided Cat 5e LAN cable from the SX-4000 Ethernet 2 port to the projector's Ethernet port. Please see Section 6 for IMB network setup instructions after the SX-4000 is installed.

3. EXTERNAL MONITOR, KEYBOARD AND MOUSE

Before the server can be operated through the network, you will have to configure it directly. Connect a monitor, keyboard and mouse to the SX-4000 using the VGA and USB ports on the IMB.

Note: When using an external touch screen, an external keyboard and mouse is required to access touchscreen calibration. The touchscreen can be used after it is calibrated.

4. INSTALLING ENTERPRISE STORAGE/ ENTERPRISE STORAGE PLUS

4.1. Product Specifications

Figure 8 Enterprise Storage

Product Specifications
Suitable for 3.5” SATA HDD
Support Hot Swap
Dimension: 483 (W) X 330 (D) X 89 (H) mm

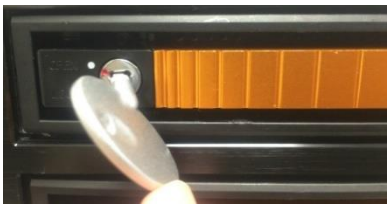
Figure 9 Enterprise Storage Plus

Product Specifications
Suitable for 3.5” SATA HDD
Support Hot Swap
Dimension: 483 (W) X 330 (D) X 123.4 (H) mm

Important Note: Please make sure the SMS version is 10 before continuing.

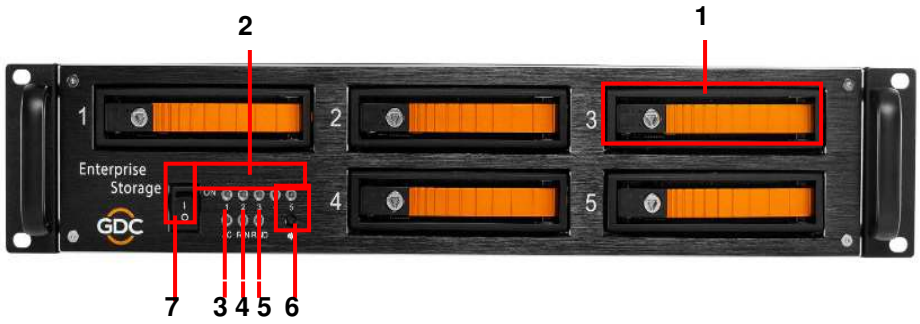
4.2. HDD Tray Lock

Using the HDD tray key provided, turn the HDD tray lock to the ‘OPEN’ position

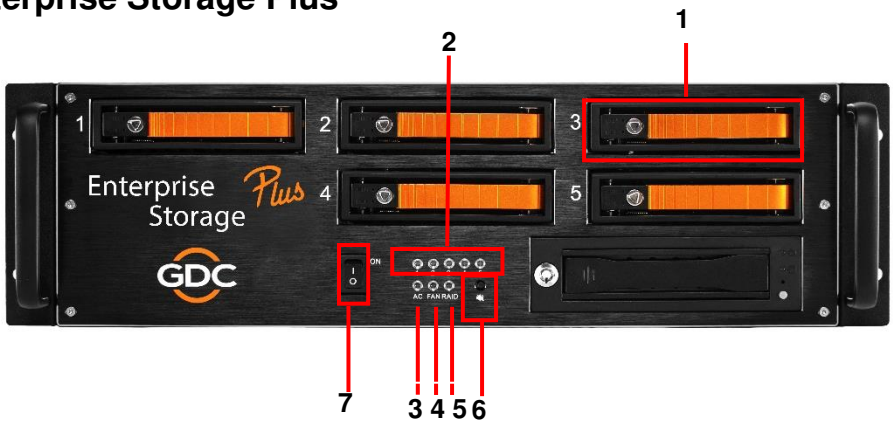


4.3. Front Panel

Enterprise Storage



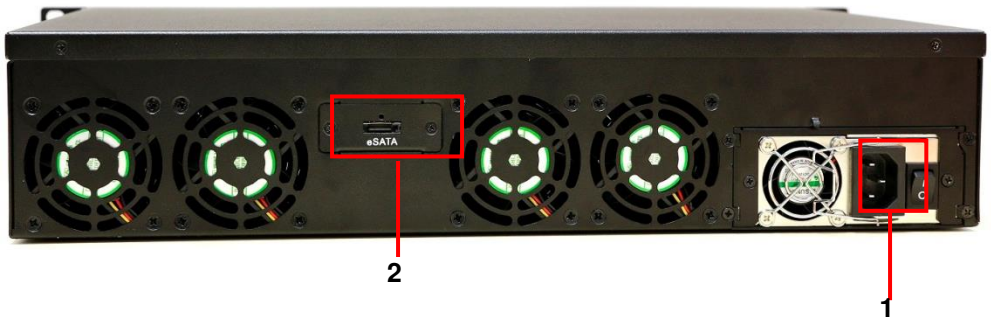
Enterprise Storage Plus



1	HDD Tray
2	HDD LED
3	Power LED
4	Fan LED
5	RAID LED
6	Buzzer Mute Button
7	Power Switch

4.4. Back Panel

Enterprise Storage



1	Power Connector
2	eSATA Connector

Enterprise Storage Plus

1	Power Connector
2	eSATA Connector
3	CRU Connector

Important Note: Always power on the Enterprise Storage/Enterprise Storage Plus before powering up the projector and SX-4000.

4.5. Install the Enterprise Storage/Enterprise Storage Plus into the Pedestal

1. Put the Enterprise Storage/Enterprise Storage Plus on the 19” pedestal.
2. Tighten four screws to fix the Enterprise Storage/ Enterprise Storage Plus as shown in Figure 10.

Figure 10 Put the Enterprise Storage on pedestal.

Note: Please insert the Enterprise Storage/ Enterprise Storage Plus into the highest position of the pedestal.

4.6. eSATA connection to the SX-4000

4.6.1. eSATA connection on the Enterprise Storage/Enterprise Storage Plus

1. Take out the power cord(s) from the packaging and connect to the power connector of Enterprise Storage/ Enterprise Storage Plus. For Enterprise Storage Plus, please make sure that both power cords of the dual-redundant power supply are connected.

2. Connect the eSATA cable(s) to the back panel of Enterprise Storage/ Enterprise Storage Plus.

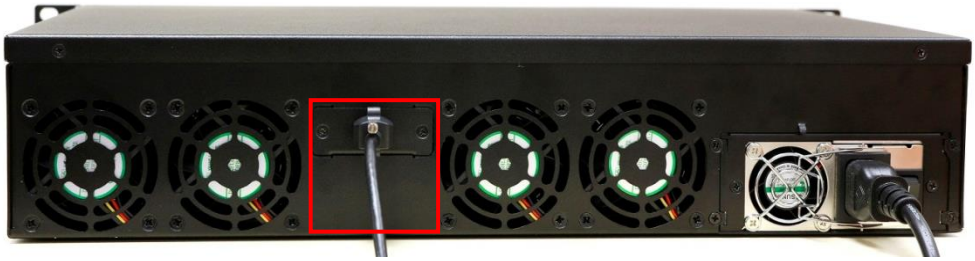


Figure 11 Connect the eSATA cable to the Enterprise Storage

Figure 12 Connect the eSATA cables to the Enterprise Storage Plus

4.6.2. eSATA connections to the SX-4000 Faceplate

1. For both Enterprise Storage and Enterprise Storage Plus, connect the eSATA cable to eSATA port 1 on the SX-4000.

Figure 13 Insert the eSATA cable into SX-4000 eSATA port 1.

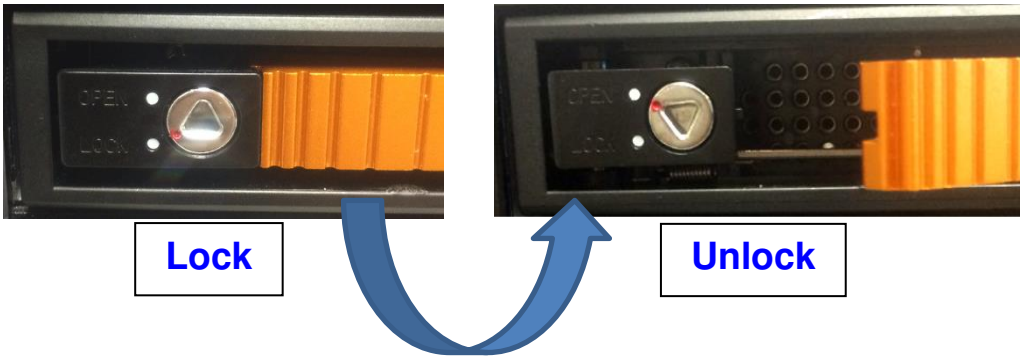
2. For Enterprise Storage Plus, connect another eSATA cable from 'eSATA CRU' port on Enterprise Storage Plus to eSATA port 2 on the SX-4000.

Figure 14 Insert the eSATA cable into SX-4000 eSATA port 2.

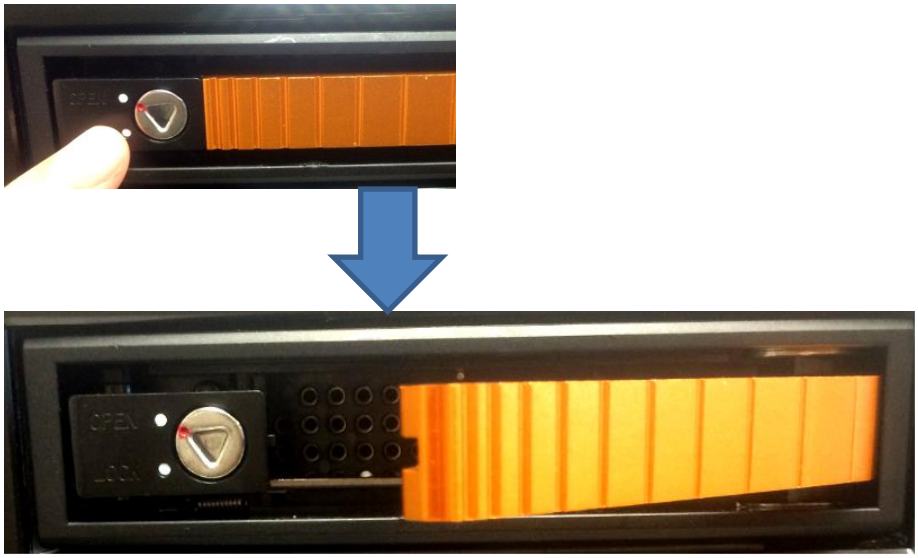
Note: The Enterprise Storage/Enterprise Storage Plus **MUST** be connected to the port 1 of the eSATA connection of the SX-4000 to be used as content storage on the SX-4000.

4.7. Procedures to install the HDD

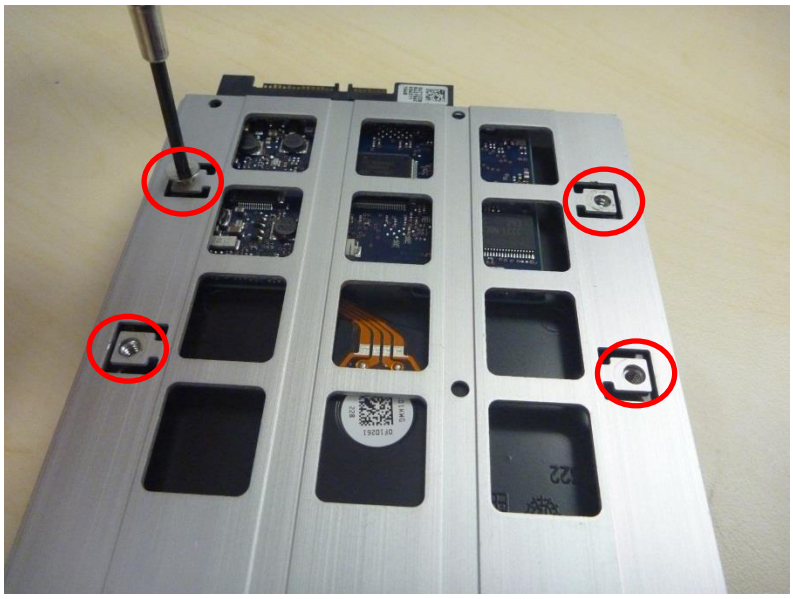
1. Using the HDD tray key provided, turn the HDD tray lock to the ‘OPEN’ position.



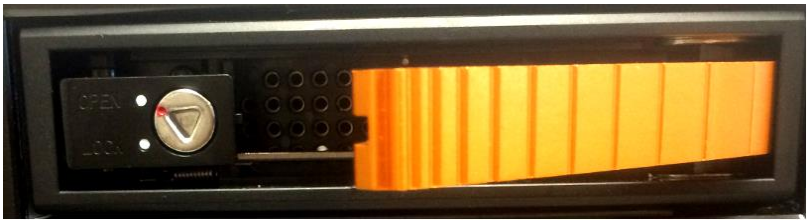
2. Push the ‘OPEN/LOCK’’ icon to release the handle and pull out the HDD tray.



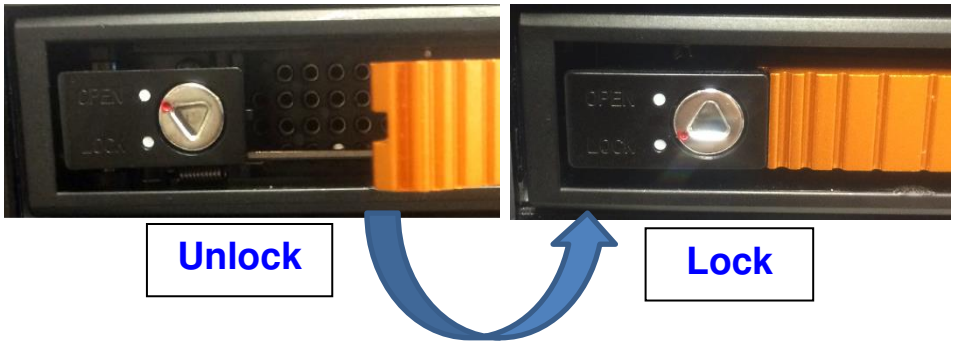
3. Put the 3.5” HDD onto the HDD tray, tighten 4 screws to fix the HDD with HDD tray on the bottom.



4. Insert the HDD tray (with HDD installed) into an open slot on the Enterprise Storage/ Enterprise Storage Plus. Push the tray handle to fully insert the HDD tray.

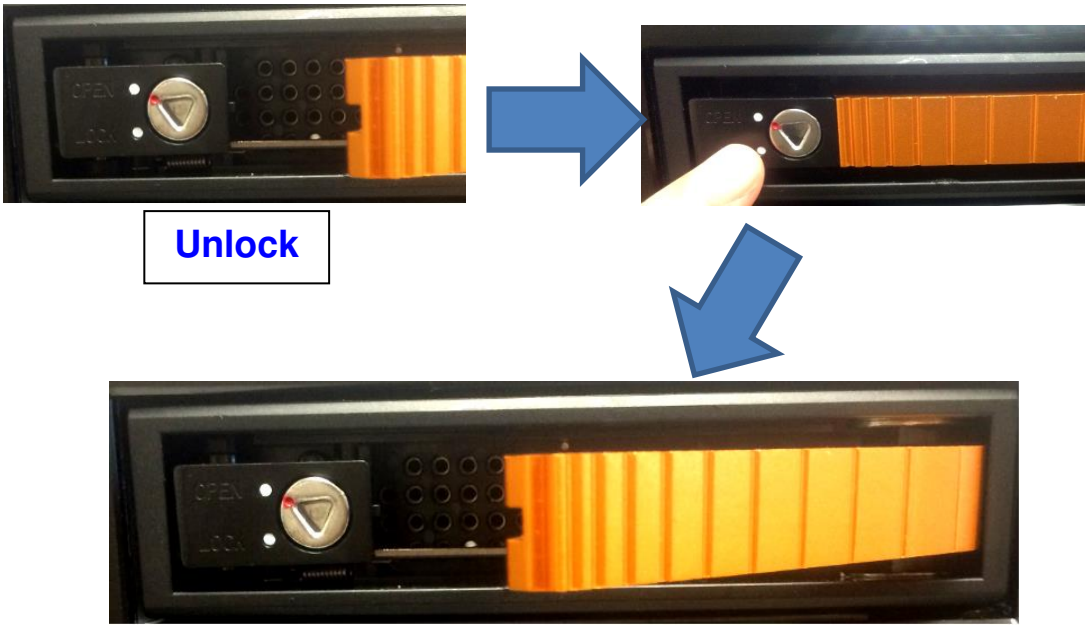


5. Using the tray key provided, turn the lock to ''LOCK'' position to lock the HDD tray to the Enterprise Storage/Enterprise Storage Plus.

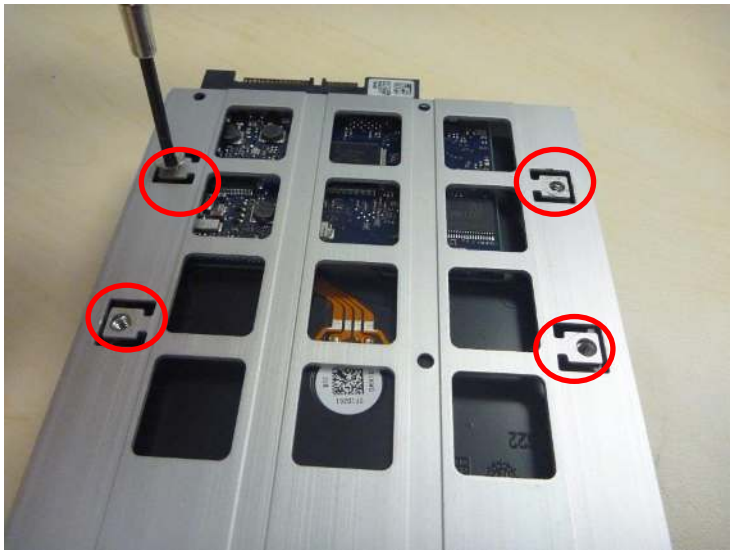


Procedure to uninstall the HDD

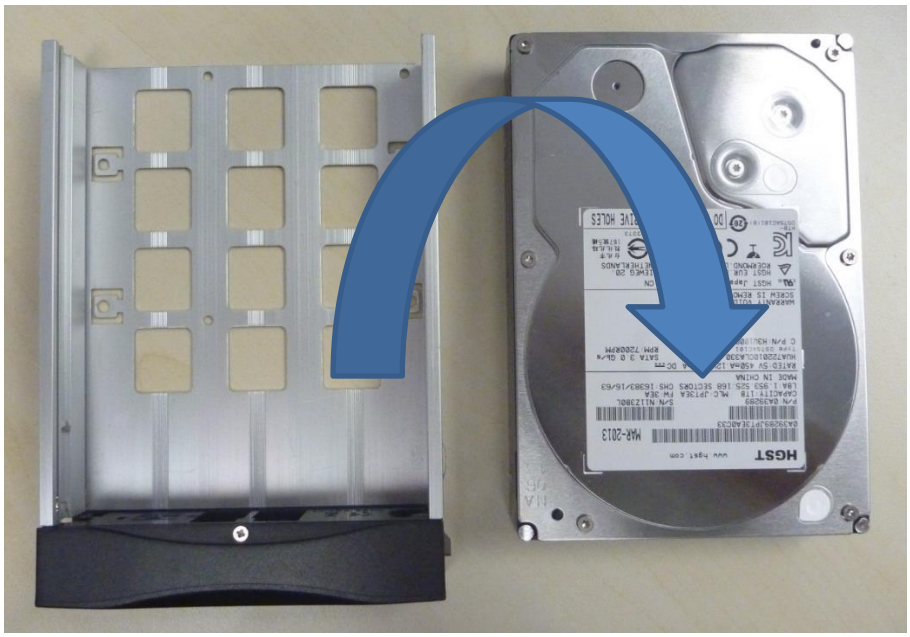
1. After releasing the HDD tray lock, push the button and pull out the HDD tray by its handle from the Enterprise Storage/Enterprise Storage Plus.



2. Uninstall the 4 screws in the bottom of the HDD tray.



3. Now, the HDD can be taken out from the HDD tray.



Caution:

- Please gently push the HDD tray when inserting to avoid damage to components.
- Do not force the HDD tray into the slot if you think it is installed incorrectly. This may damage the Enterprise Storage/ Enterprise Storage Plus.
- The HDD labels should be facing up and the connector should be facing down when installing the HDD onto the HDD tray.
- Do not remove the HDDs during operation.
- During operation, the temperature of the HDD may exceed 50°C. Please take care when handling hot drives.

4.8. Indicators on the Enterprise Storage/Enterprise Storage Plus

4.8.1. LED Indicators

There are LED indicators on the front panel that show the status of the Enterprise Storage/ Enterprise Storage Plus. Each drive has a corresponding LED lights numbered 1-5.

The lights have two colors; Blue and Red. The LED lights can change from steady to flashing depending on the status of the hard drive.

The table below describes the hard drive LED indicators.

	HDD Status for each numbered drive	**Blue**	**Red**
HDD 1-5 LED	Steady	HDD is OK, powered on.	• Errors found on HDD. • Replace the corresponding HDD.
	Flashing	Read/Write operations for normal data access from computer.	RAID is being rebuilt.
	Off	No HDD connected HDD not detected	-

Indication of LED

1) *Power LED*

Please see the table below for an explanation of Power LED indicator:

		Green
Power LED	Steady	Powered on.
	Off	Powered off.

2) *Fan LED*

Please see the table below for an explanation of Fan LED indicator:

		Red	**Buzzer**
Fan LED	Steady	Fan failure	ON
	Off	Normal	OFF

3) *RAID LED*

Please see the table below for an explanation of RAID LED indicator:

		Red	**Buzzer**
RAID LED	Flashing	Degrade/Broken	ON
	Off	Normal	OFF

4.8.2. Warning Buzzer

Buzzer mute switch is located to the right of the RAID LED. Use a pen or similar shaped object to turn the buzzer on or off.

WARNING: This is not a reset switch for the buzzer. Once the button is toggled to the “off” position, the buzzer will remain silent if any other hard disk fails. Please remember to toggle the switch on after replacing any failed hard disks.

4.8.3. Hard Drive Failure

When a hard disk is showing an error, the hard disk must be removed.

When a replacement hard disk is inserted into the bay, it will be added into the RAID array immediately; the RAID array will start rebuilding process automatically.

Note: The hard disk must be a fresh drive. **DO NOT** reuse a hard disk from another Enterprise Storage/ Enterprise Storage Plus.

5. OPERATION OF ENTERPRISE STORAGE/ ENTERPRISE STORAGE PLUS

5.1. Selecting the Enterprise Storage/Enterprise Storage Plus for the Content Storage

The SX-4000 must be configured to use the Enterprise Storage/ Enterprise Storage Plus for content storage.

1. Under **[IMB Storage]** in [**Configuration]**, select **[Use PSD-3000 (1x Cable)].**

2. Select **[OK].**

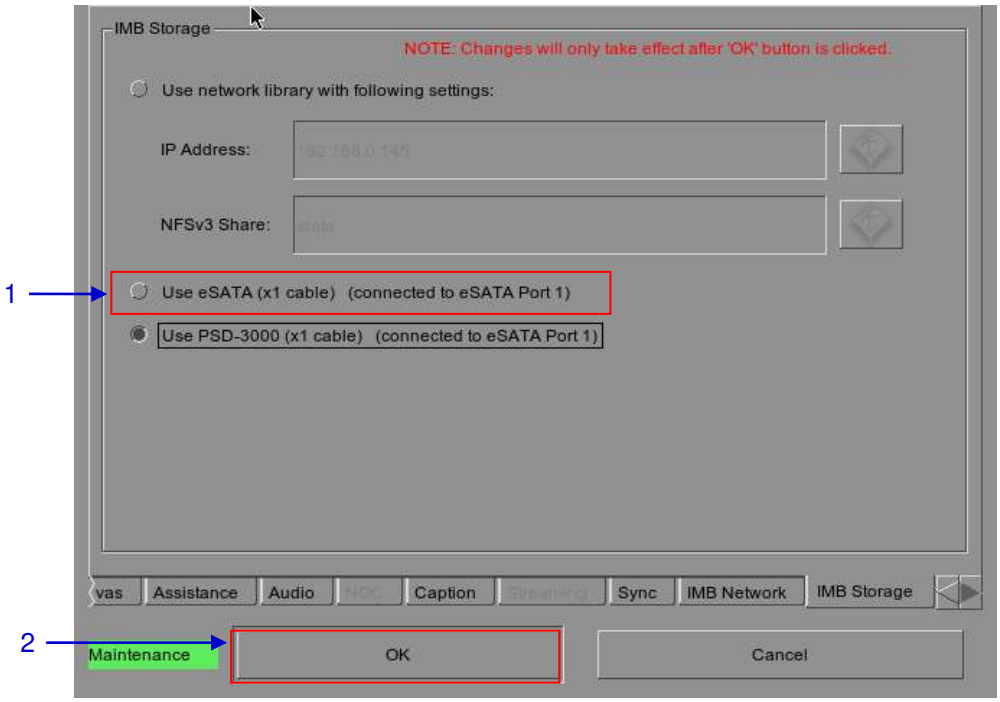


Figure 15 IMB Storage [Configuration].

3. Go to **[Control Panel],** click **[Shutdown]** and then click **[Reboot].** This will ensure all software components on the SX-4000 are able to detect the Enterprise Storage/Enterprise Storage Plus.

6. SX-4000 NETWORK SETUP

The IP addresses on the SX-4000 may need to be changed for proper operation. The following section shows the procedures.

6.1. IMB Network setup

Follow the following instructions to change the IP addresses on the SX-4000.

1. From the **[SMS],** click on **[Configuration].**
2. Select **[Maintenance access]** from the top dropdown menu.
3. Enter the password and select **[OK].**
4. Select [**IMB Network]** tab.
5. Set the **[Subnet Mask]** for IMB Ethernet 2 and SOM IP address.
6. Set the **[IP address]** for IMB Ethernet 2. This is the IP address of the Security Manager.
7. This is the main **[IP address]** of the SX-4000. The SMS interface can be reached at this IP address using VNC.
8. Set the **[Network gateway]** for the SX-4000.
9. Set an **[IP address]** and **[Subnet Mask]** for **[IMB Ethernet 1]** of the SX-4000. This is an optional network setting which can be used for IMB sync and Dolby Atmos connections.
10. Set an **[IP address]** and **[Subnet Mask]** for **[IMB Ethernet 3]** of the SX-4000. This is an optional network which can be used to connect to a content management network.

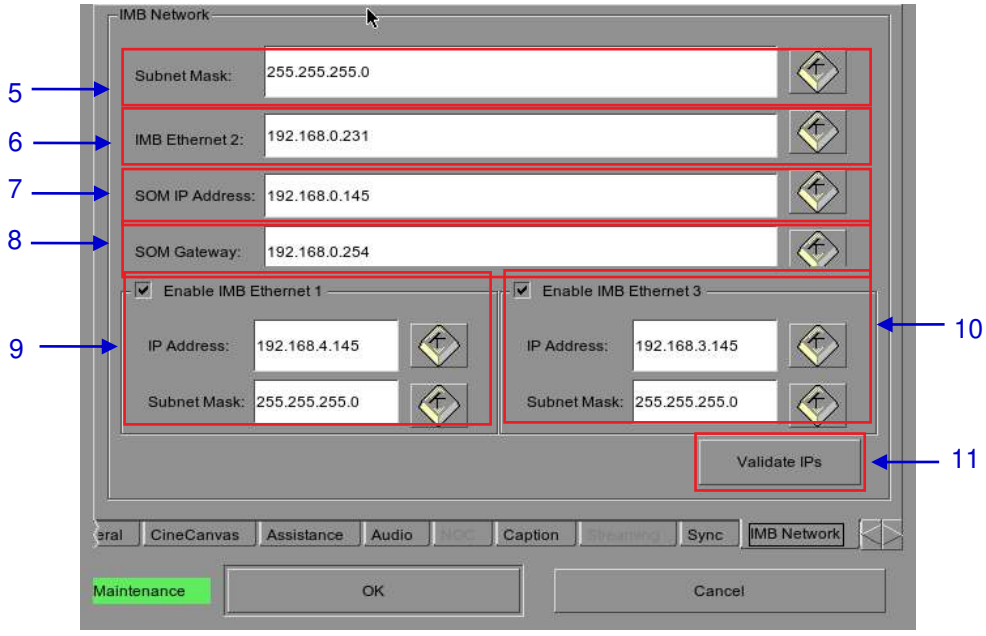


Figure 16 IMB Network [Configuration].

11. Once the settings have been entered, click on **[Validate IPs].**
12. If all of the IP addresses are valid, you will get the following pop-up window:

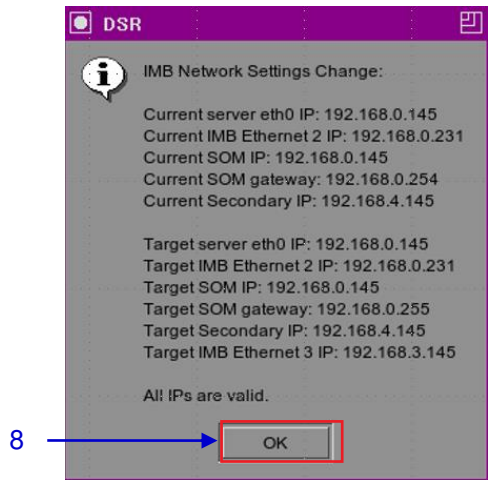


Figure 17 Confirm IPs are valid.

13. Click **[OK]** to exit.

6.2. IMB Marriage and Clearing Door Tampers from the SX-4000

Please use the following steps below to perform the marriage between the SX-4000 and to clear the door tampers on the SX-4000:

1. Enter **[SMS].**
2. Click **[Configuration]** to access **[Configuration]**.
3. Select **[Maintenance access]** from the top dropdown menu. Enter the password and select **[OK]**
4. Select **[General]**.
5. Click **[IMB]** to access the IMB Status dialog box (as seen in Figure 18)

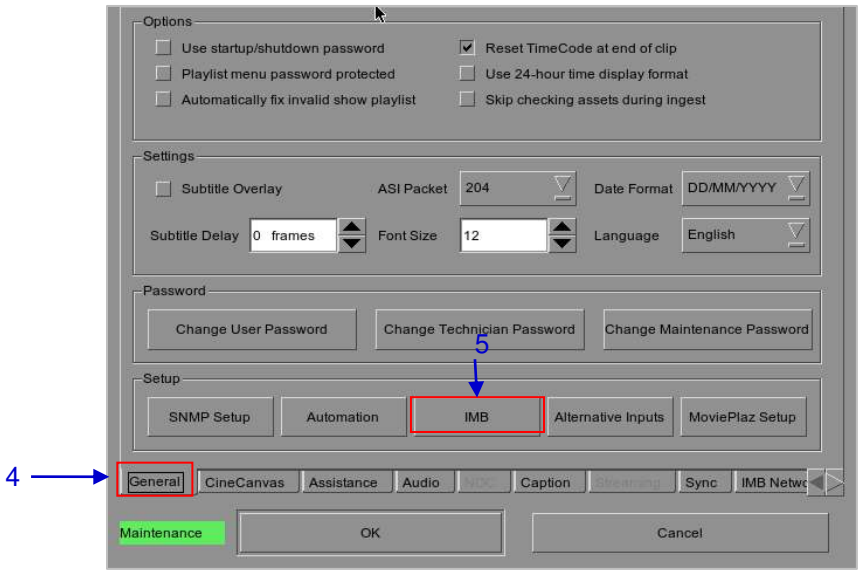


Figure 18 General [Configuration].

6. The following pop-up window will appear:

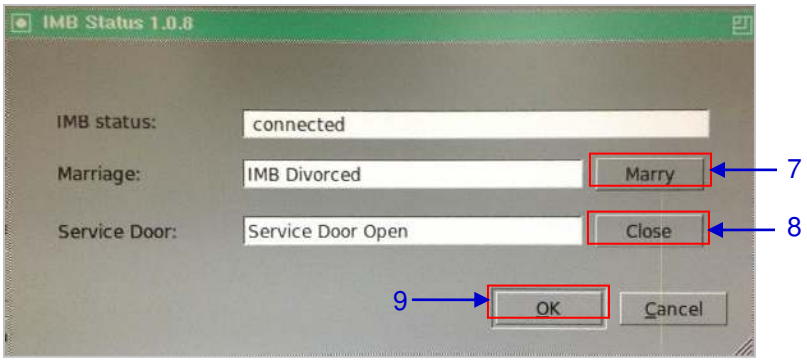


Figure 19 IMB Status.

7. Click **[Marry]** to perform the marriage of the projector and SX-4000.
8. Click **[Close]** to clear the door tamper errors with the projector.
9. After the Marriage is preformed and the tampers are clear, click **[OK]** to exit.

7. SERIES 2 PROJECTOR SETUP

The projector must be set up according to the requirements of the projector manufacturer to work with the SX-4000.

7.1. Barco Series 2 Projector Setup

No system configuration is required for Barco Series 2 projector to work with SX-4000. The Service Door/Marriage Tamper on the server must be cleared before SX-4000 can be used for playback.

In order to use SX-4000 for content playback, the INPUT source of the projector macros should be set to “MediaBlock” (as shown in Figure 20). If the input file is not present, please download and install the latest projector configuration files for your projector. For details, please refer to the projector manual.

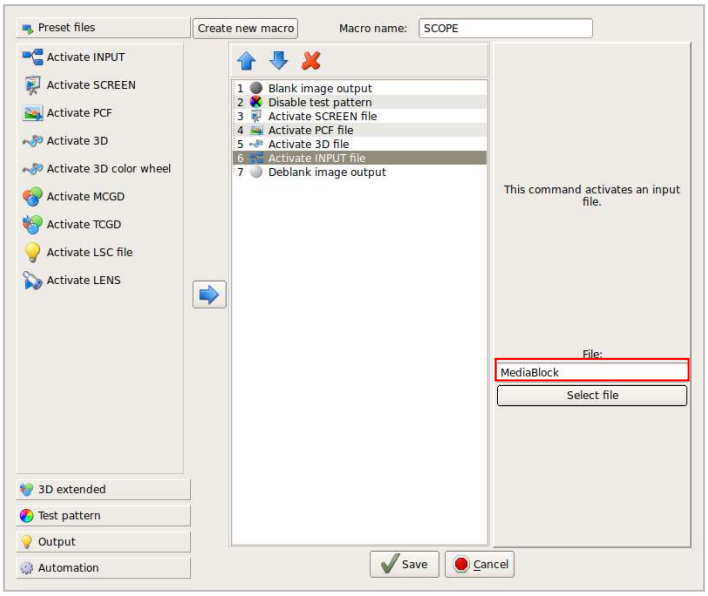


Figure 20 INPUT source settings on Barco Series 2 projector.

7.1.1. Barco Touch Panel Setup

The Barco Projector touch panel can be used to control the SX-4000. Use the following steps to set up control of the SX-4000 from the Barco touch panel.

1. On the Barco touch panel, select **[Control]** →**[Server].** The new window **[Connection Properties]** will appear as shown in Figure 21.

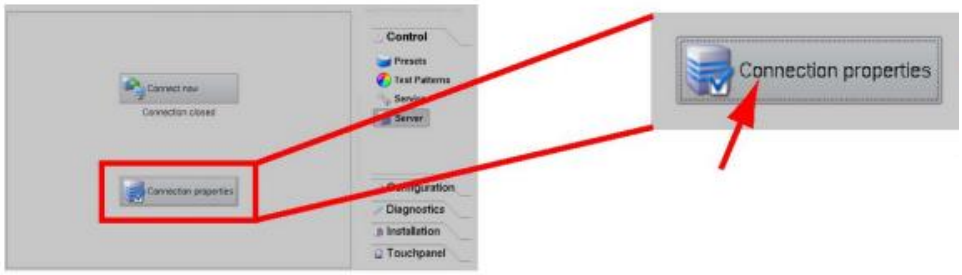


Figure 21 Barco touch panel settings [Connection Properties].

2. Enter the SOM IP address of the SX-4000 into the **[Host Name]** field. The remaining fields should be filled in as follows (please refer to Figure 22):
   Display or port: 5900
   Check the **[Use as port]** checkbox
   Password: gdcvnc

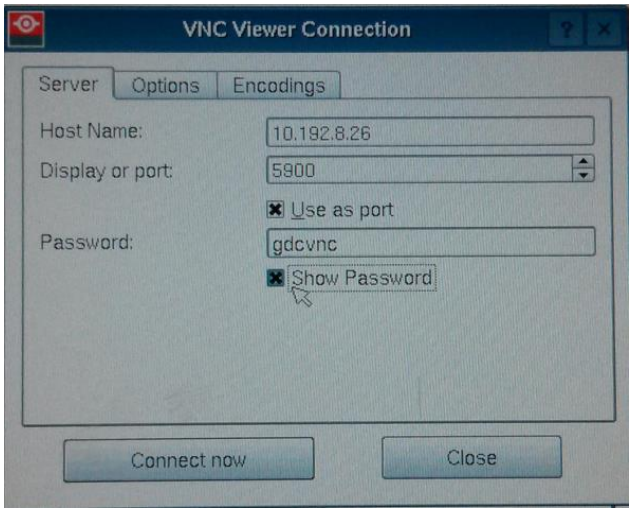


Figure 22 Barco touch panel settings [VNC Viewer Connection].

3. Click the **[Connect now]** button, the SMS user interface will be shown on the Barco touch panel.

7.2. NEC Series 2 Projector

In order to configure an NEC Series 2 projector to work with SX-4000, the following steps must be taken:

1. Switch on the projector so that it is in STANDBY mode.
2. Use the Digital Cinema Communicator for S2 Windows software provided by NEC to connect to the projector.
3. Select **[Start] →[Mode]→[Service]** and enter the Service password to activate service mode operation (as shown in Figure 23).

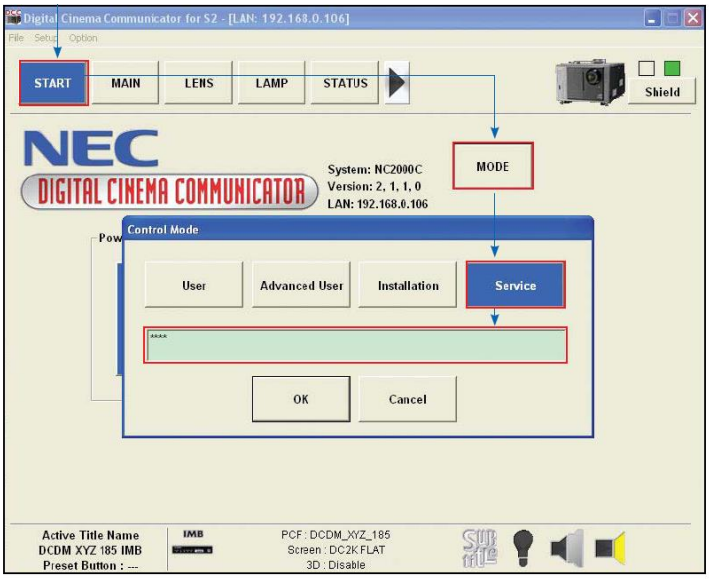


Figure 23 Service Mode on NEC Digital Cinema Communicator.

4. Select **[Setup] →[Option Slot Setting]** on the Digital Cinema Communicator and select IMB for Slot B in Option Slot Setting. (as shown in Figure 24)

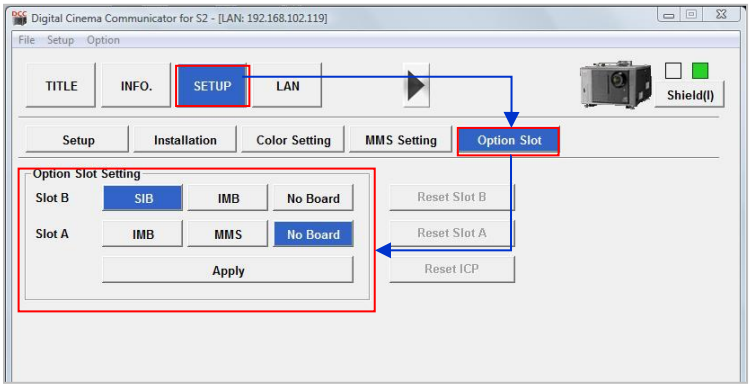


Figure 24 Option slot settings on NEC Digital Cinema Communicator.

5. Select **[Start] →[Power] →[On]** to power on the projector.
6. Clear the Service Door/Marriage Tamper on the server.

To use SX-4000 for content playback, the INPUT source of the projector macros must be set to IMB.

7.3. Christie Series 2 Projector

When the SX-4000 is installed in a Christie Series 2 projector, the following steps must be taken in order for the GDC server to play with the Christie Series 2 projector:

1. Log in to the **[Marriage]** account on the projector TPC. Select **[Menu]** → **[Login]** (as shown in Figure 25).

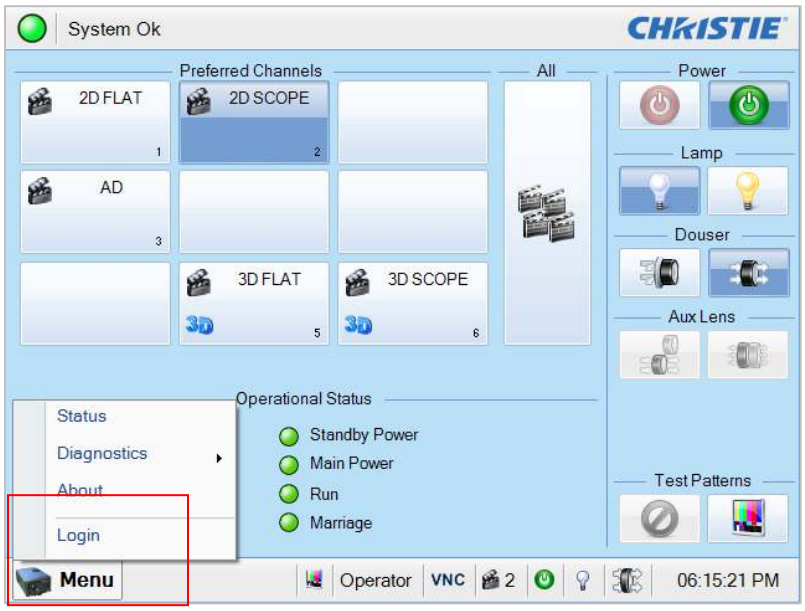


Figure 25 Marriage account

2. Enter Username as **[marriage]** and its password and click **[Login]** button. (as shown in Figure 26).

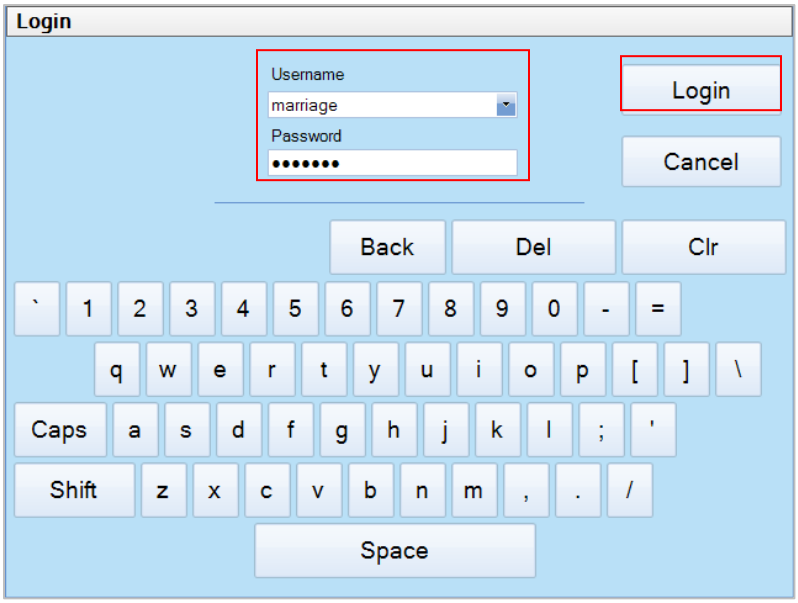


Figure 26 Marriage account login

3. Select **[Menu]** → **[Administrator Setup]** → **[Content Devices Configuration]** (as Shown in Figure 27)

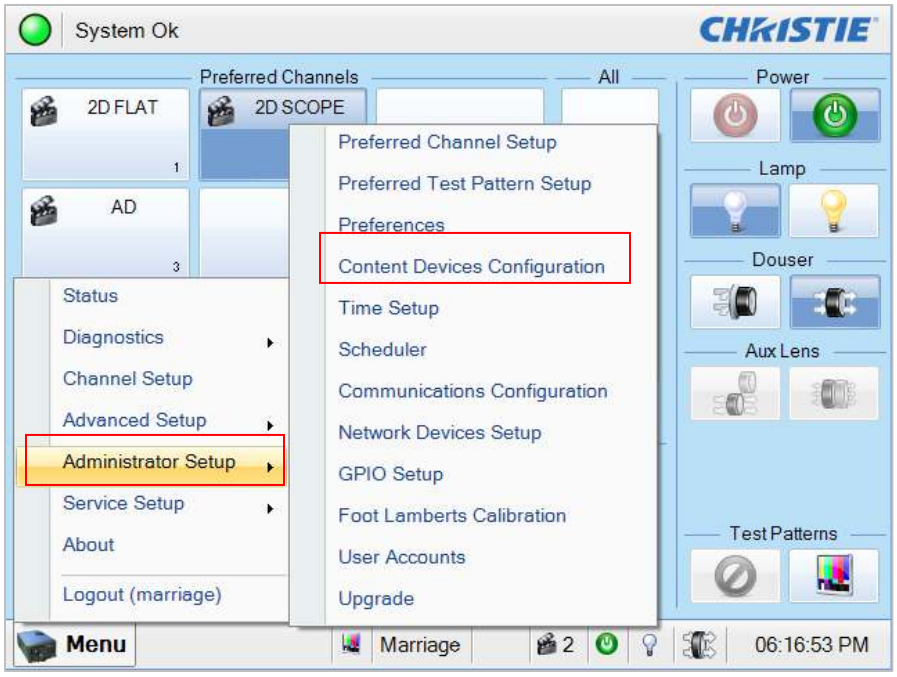


Figure 27 Content Devices Configuration

4. Select **[GDC]** for the **[IMB Installed]** (as shown in Figure 28)

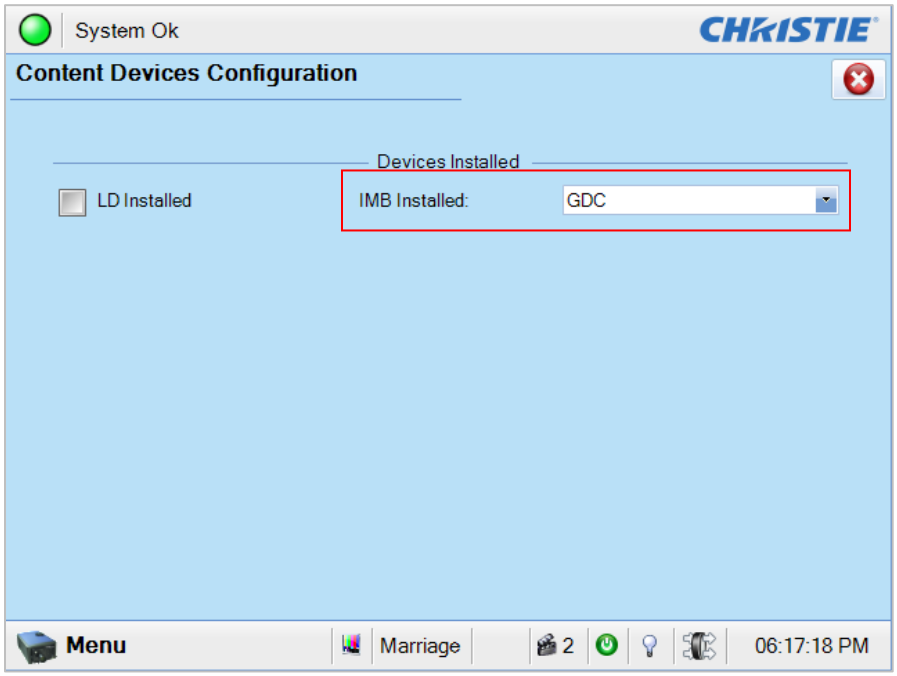


Figure 28 Content Devices Configuration

7.4. 3D settings for Series 2 projectors

The 3D macros for Series 2 projectors should be configured with the following settings for "3D Input Control":

- 3D Sync Input Mode: Use **[Line Interleave]** (first line=Left, second line=Right)
- L/R Display Reference: Not Used
- Frame Rate: 6:2
- L/R Display Sequence: Left (L1R1 L2R2)

The following shows 3D settings on a Christie projector as an example (see Figure 29).

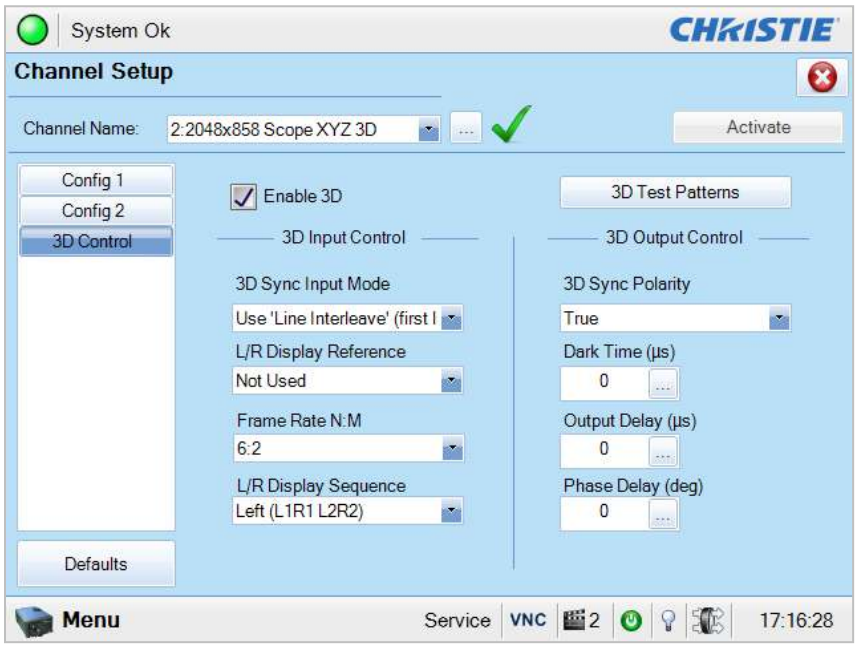


Figure 29 3D macro settings for Christie Series 2 projectors.

The settings for 3D output control (**[3D Sync Polarity], [Dark Time], [Output Delay]** and **[Phase Delay]**) should be customized according to the type of 3D system used (RealD, XpanD or Dolby3D).

If a particular model of the projector is capable of HFR 3D, set up different 3D settings for different frame rates. This will ensure all channels have a corresponding 3D macro for each playback frame rate.

For example, the following 3D FRM settings should be set for playback of content at different frame rates:

Frame Rate	FRM setting
24 fps	6:2
48 fps	4:2
60 fps	2:2

8. TIME ZONE SETUP

The SX-4000 may or may not arrive with the local time zone set. The following steps show how to change the time zone on the server.

1. From **[SMS],** click **[Control Panel]** to access the control panel.
2. From the Control Panel, click **[Admin Panel]** to access the Admin Panel.
3. Click **[Focus]** at the far bottom right of the keyboard, then click the cursor in the **[Password]** text box to enter the password.
4. Click **[Diagnostics/Maintenance]** → **[Configure Time Zone]** to access the Time zone Selection Page. A new window will appear as seen in Figure 30.

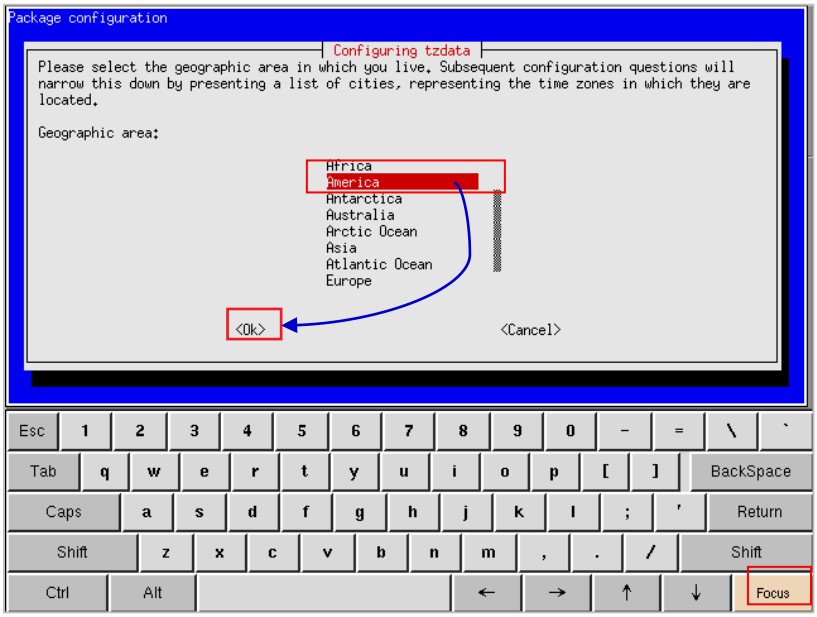


Figure 30 Time Zone – configure geographic area.

5. Click **[Focus]** and tap the section above the keypad to bring the pointer into focus.
6. Use **[↑]** and **[↓]** to highlight the desired Country (as shown in Figure 31).
7. Click **[OK].**

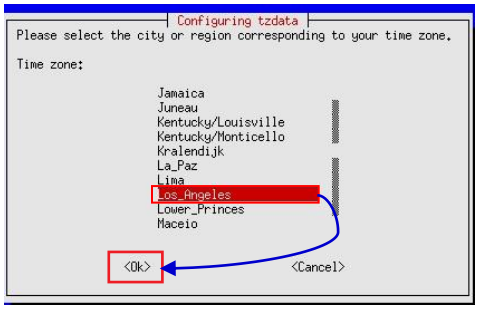


Figure 31 Time Zone – configure country/region.

8. Repeat Steps 5-7 to select the City/Region.

9. CONTENT INGEST MANAGEMENT SETUP

9.1. Configuring a content ingest source

In order for the SX-4000 to ingest content, the ingest source must be configured. The following sections describe the setup for content ingest from two different sources. The same steps can be used to set up content ingest sources using other sources.

9.1.1. Content Ingest from USB disk

The following steps describe the setup of a source for ingesting content from an external USB hard drive:

1. From **[SMS],** click **[Control Panel].**
2. Click **[Manage Content]** to access the Content Management Page.
3. Click **[Source],** followed by the **[Add].** This opens up the Source Setup Page (refer to Figure 32).
4. Enter the name of the source in the **[Source Name...]** text box. In this example, we will be setting up a USB source and naming it **[USB DRIVE].** Select **[USB]** as the Source Type.

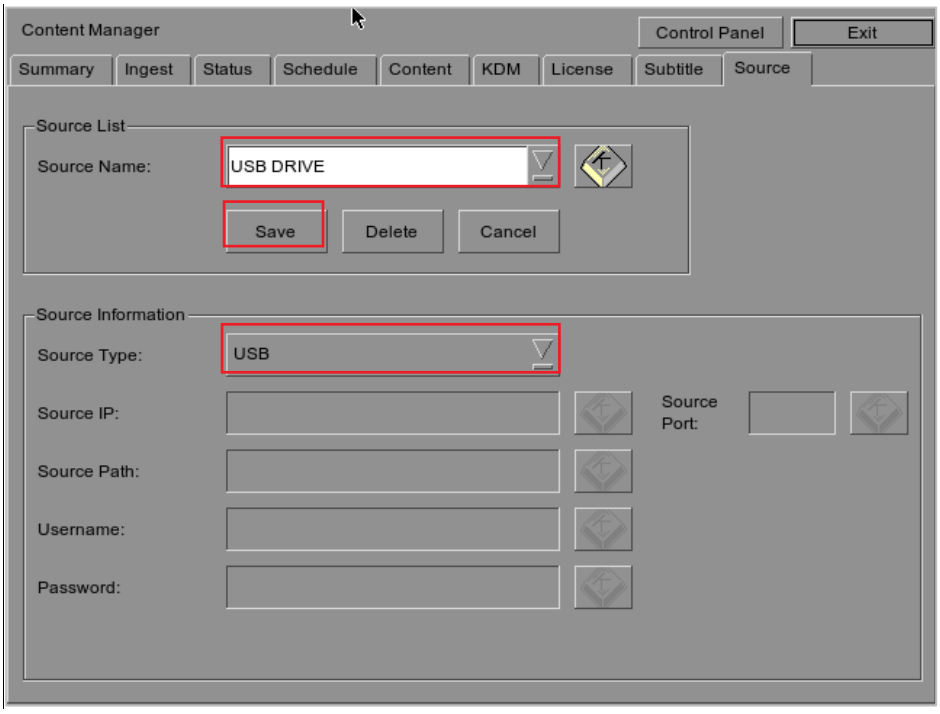


Figure 32 USB ingest source setup.

5. Click **[Save]** to save the settings for the USB content ingest source.

9.1.2. Content Ingest from FTP

The following steps describe the setup of content ingest source for ingesting content from an FTP server:

1. Select **[Source],** followed by **[Add]** (as shown in Figure 33).
2. Enter the local description for the FTP server in the **[Source Name…]** text box. In this case, we will use the source name **[FTP 192]**. Select **[FTP]** as the Source Type.

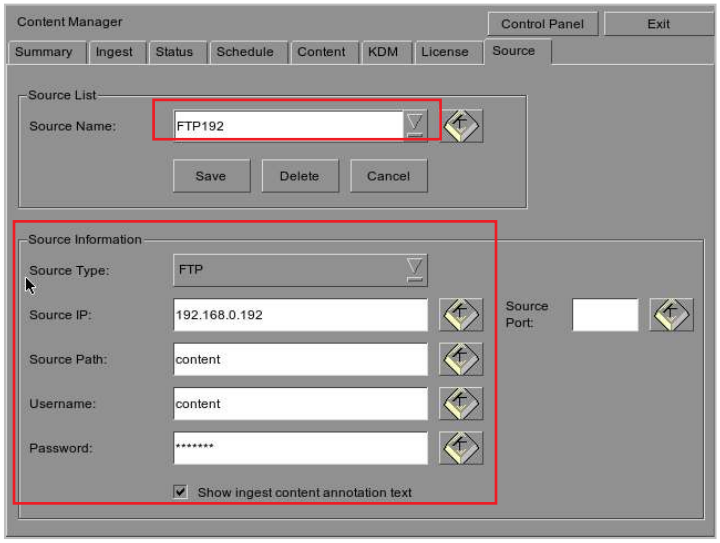


Figure 33 FTP ingest source setup.

3. Enter the respective parameters for Source IP, Source Path, Username, and Password.
4. Check the option **[Show ingest content annotation text]** if necessary.
5. Click **[Save]** to save the settings for the FTP content ingest source.

9.2. Selecting an ingest source

To select an ingest source, click  next to the **[Source to ingest from:]** label on **[Ingest].** Choose the required ingest source from the dropdown menu (as seen in Figure 34).

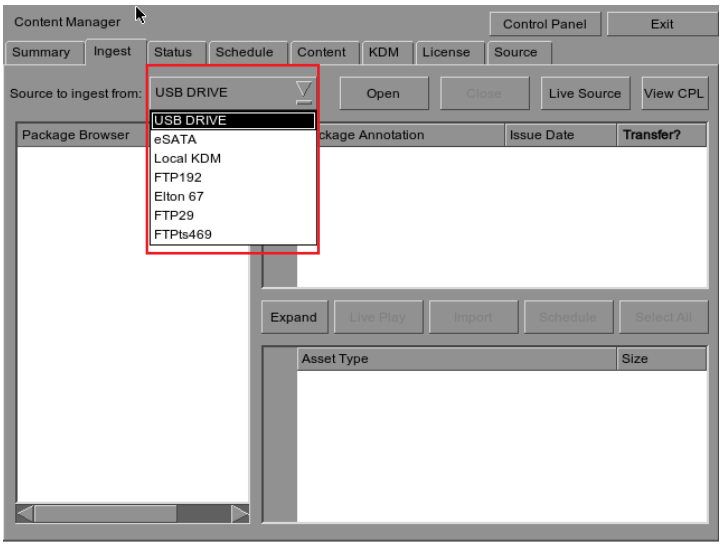


Figure 34 Ingest from USB source.

10. AUDIO SETUP

The SX-4000 features AES digital audio signal via two RJ45 Outputs (**A-TOP** and **A-BOT**). For compatibility with most audio processors on the market, a standard RJ45 to DB25 connector is included in the packaging (refer to Figure 35).

Figure 35 RJ45 →DB25 Audio Connector.

A-TOP (RJ45) (Female)	Channel	DB25 (25Pin) (Female)
Pin1	AES Out 1+	24
Pin2	AES Out 1-	12
Pin3	AES Out 2+	10
Pin4	AES Out 3+	21
Pin5	AES Out 3-	9
Pin6	AES Out 2-	23
Pin7	AES Out 4+	7
Pin8	AES Out 4-	20
A-BOT (RJ45) (Female)	**Channel**	**DB25 (25Pin) (Female)**
Pin1	AES Out 5+	18
Pin2	AES Out 5-	6
Pin3	AES Out 6+	4
Pin4	AES Out 7+	15
Pin5	AES Out 7-	3
Pin6	AES Out 6-	17
Pin7	AES Out 8+	1
Pin8	AES Out 8-	14

Figure 36 RJ45 →DB25 pinout (Optional for traditional audio connector).

A-TOP (RJ45) (Female)	Channel	DB25 (25Pin) (Male)
Pin1	AES Out 1+	14
Pin2	AES Out 1-	2
Pin3	AES Out 2+	3
Pin4	AES Out 3+	17
Pin5	AES Out 3-	5
Pin6	AES Out 2-	16
Pin7	AES Out 4+	6
Pin8	AES Out 4-	19

Figure 37 RJ45 →DB25 pinout (Optional for CP750/JSD80 audio connector).

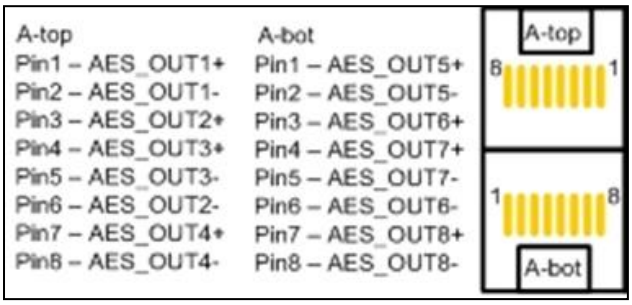


Figure 38 AES Audio RJ45 pinout.

11. SUBTITLES

We recommend using subtitle overlay rather than CineCanvas to display DCP subtitles. Subtitle overlay can be enabled with the following steps:

1. From the **[SMS],** click on **[Configuration].**
2. Select **[Maintenance access]** from the top dropdown menu.
3. Enter the password and select **[OK].**
4. Select the **[General]** tab.
5. Check the **[Subtitle Overlay]** checkbox (refer to Figure 39).

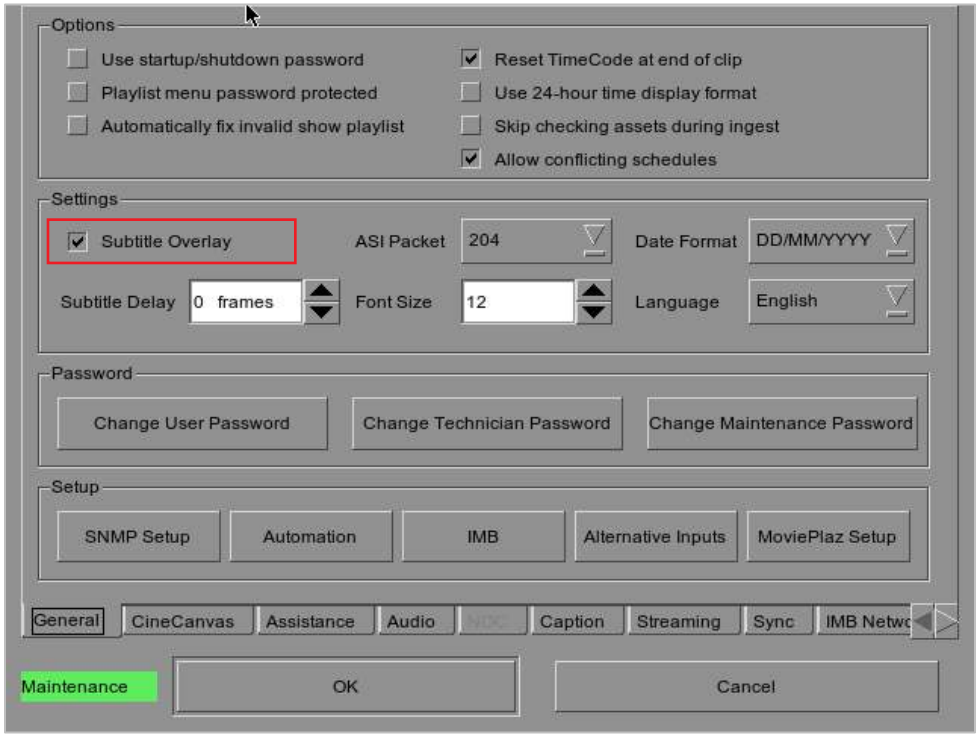


Figure 39 Subtitle overlay settings.

12. AUTOMATION SETUP

The SX-4000 is able to control external devices using its automation interface. This can be used to automate repetitive tasks for the cinema operator to prevent user error.

For settings about **'General automation setup'**, **'Adding event labels and actions'** and **'Automation Scheduling'**, refer to SX-4000 User Manual **Section 2.3.6** for more details.

12.1. Automation setup for server GPIO

The SX-4000 GPIO automation device settings can be configured from **[Devices]** after selecting the **[GPIO]** device name (refer to Figure 40).

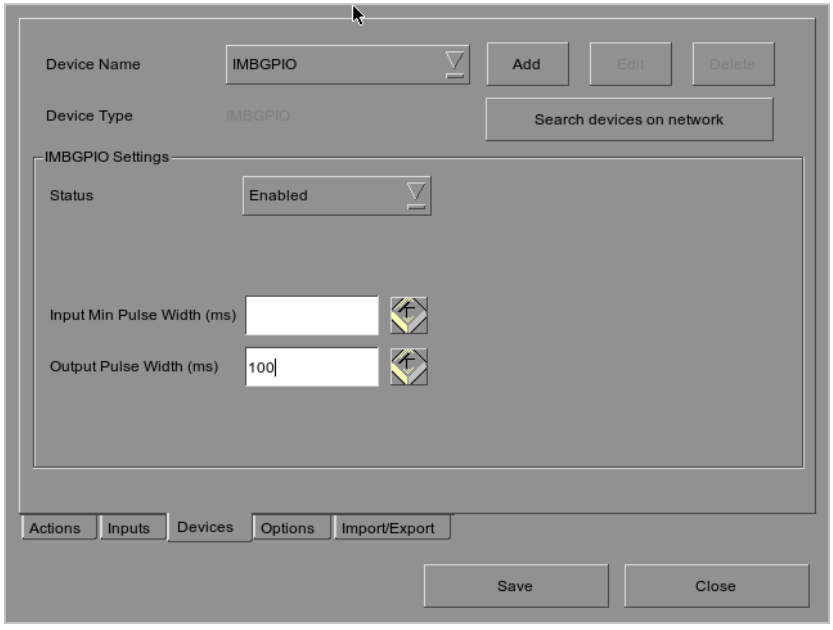


Figure 40 GPIO automation device settings.

The output pulse width must be at least 100ms. If a different output pulse width is required, the value can be entered in the 'Output Pulse Width' setting. Click **[Save]** to save any changes made.

12.2. Automation setup for projectors

The SX-4000 supports automation for Barco, Christie and NEC projectors. Follow the steps below to configure a projector device in the server automation interface.

1. Click **[Add]** button on **[Devices]** and enter the name of the device. In this case, it is **[PROJECTOR].** Set the device type to **[PROJECTOR]** (see Figure 41).
2. Click **[OK]** and set up the device parameters for the projector device (see Figure 42).
3. Enter the IP address of the projector device (see Figure 41).
4. Set the correct model of the projector. The port number will automatically change to the default automation port number for the model. If the projector is a Series 2 projector, select **[Series 2]** from the combo box.
5. Enter **[Login]** and **[Password]** for the projector if required.
6. Click **[Save]** to save the settings.

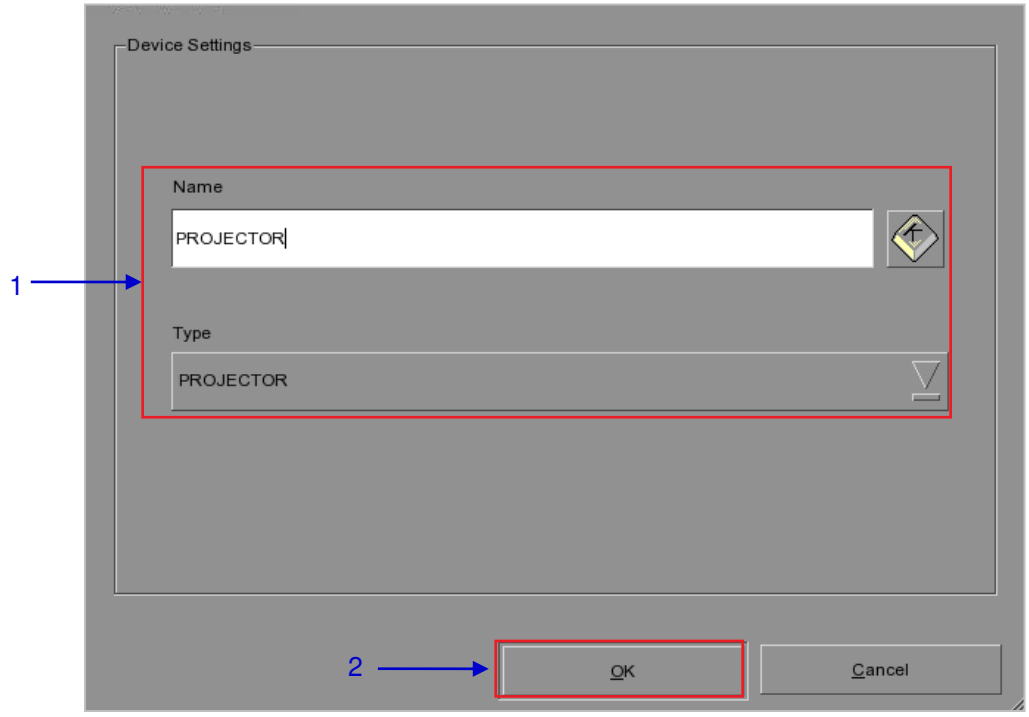


Figure 42 Projector automation device setup.

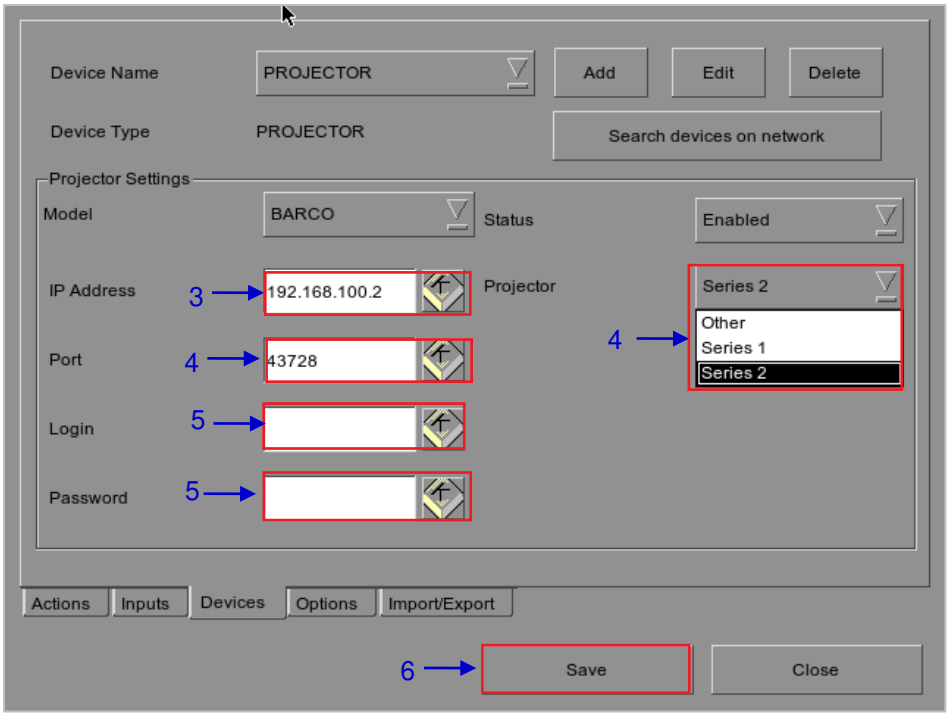


Figure 41 Automation settings for projector device.

12.3. Automation setup for eCNA devices

The SX-4000 supports the eCNA-10 automation system. Follow the steps below to configure an eCNA device in the server automation interface.

1. Click **[Add]** on **[Devices]** and enter the name of the device. In this case, it is **[eCNA].** Set the device type to **[eCNA_IO].**
2. Click **[OK]** and set up the device parameters for the eCNA device.

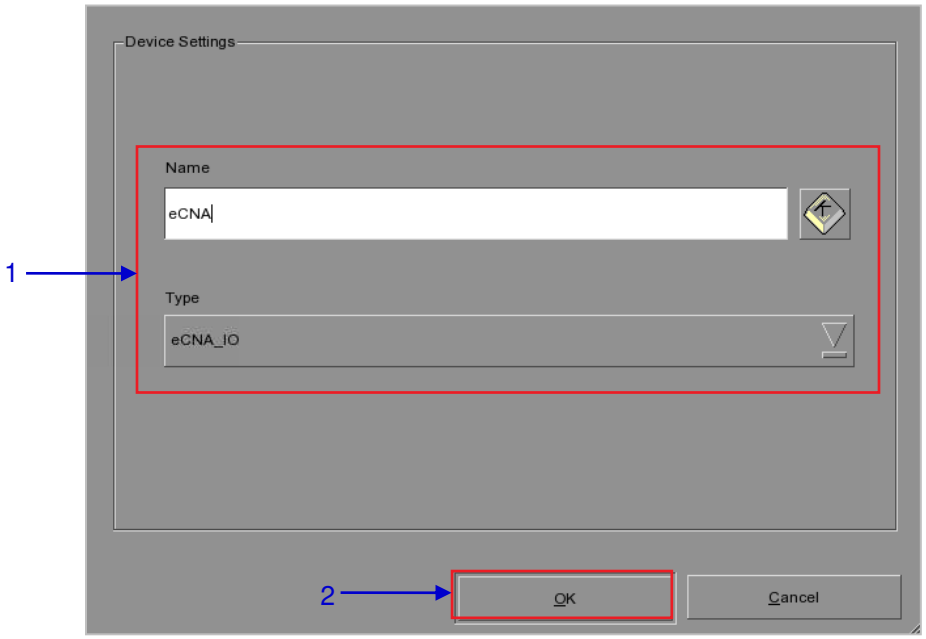


Figure 43 eCNA automation device setup.

3. Enter the IP address of the eCNA device (see Figure 44).
4. The eCNA device has many cues available for automation. These cues can be enabled or disabled by selecting them after clicking the **[Server events], [eCNA controls],** and **[eCNA status]** buttons. All cues are disabled by default.

5. Click **[Save]** to save configured settings.

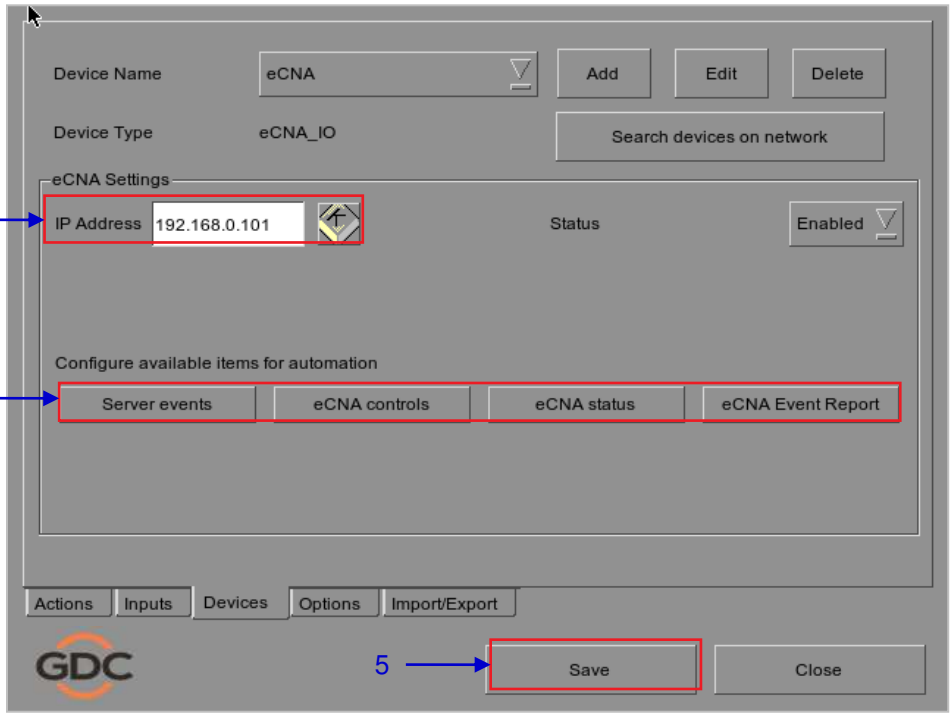


Figure 44 Automation settings for eCNA device.

12.4. Automation setup for JNIOR devices

The SX-4000 supports the JNIOR Model 310 automation device. Follow the steps below to configure a JNIOR device in the server automation interface.

1. Click **[Add]** under **[Devices]** and enter the name of the device. In this case, it is **[JNIOR].** Set the device type to **[JNIOR_IO].**
2. Click **[OK]** and set up the device parameters for the JNIOR device.

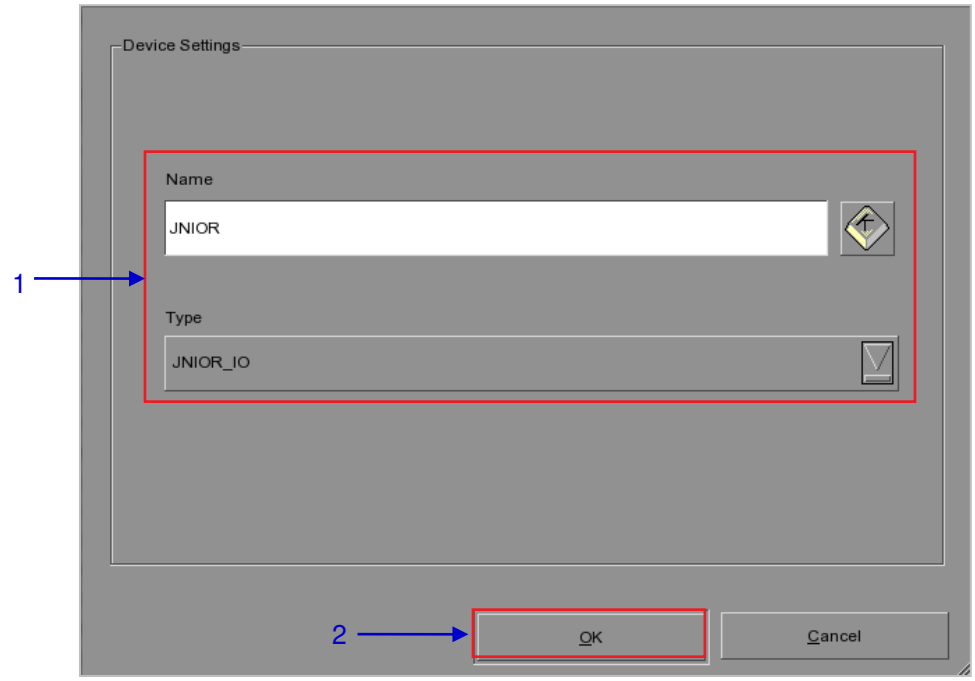


Figure 45 JNIOR automation device setup.

3. Enter the IP address of the JNIOR device (see Figure 46).
4. The settings for **[Port], [Login]** and **[Password]** are set to the default values for JNIOR devices if left empty.

5. Click **[Save]** to save configured settings.

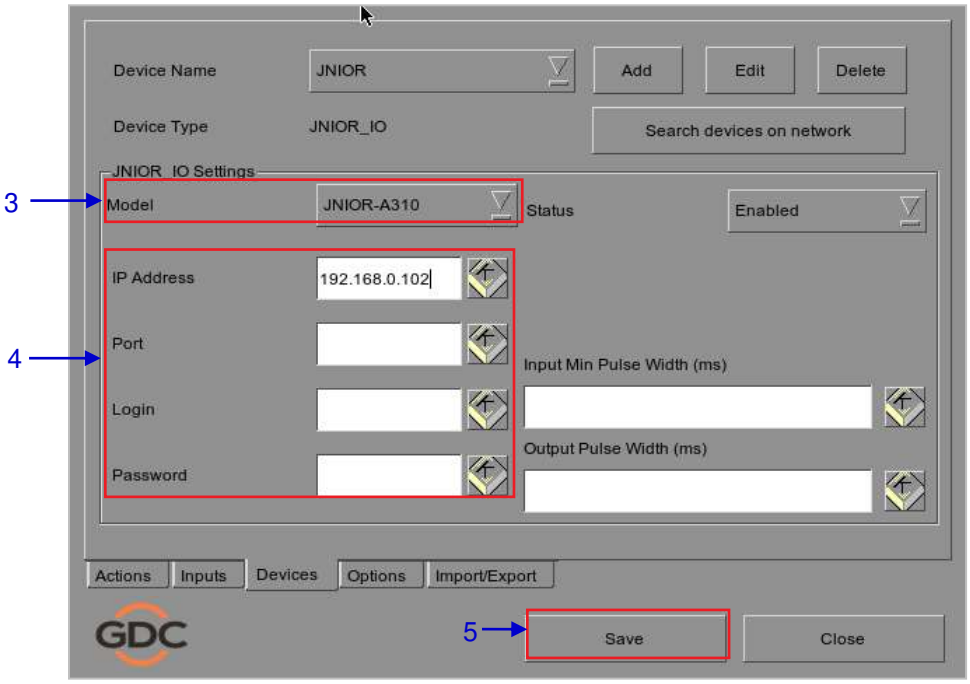


Figure 46 Automation settings for JNIOR device.

12.5. Automation setup for Christie ACT devices

The SX-4000 supports Christie ACT automation device. Follow the steps below to configure a Christie ACT device in the server automation interface.

1. Click **[Add]** under **[Devices]** and enter the name of the device. In this case, it is **[ChristieACT].** Set the device type to **[ChristieACT].**
2. Click **[OK]** and set up the device parameters for the Christie ACT device.

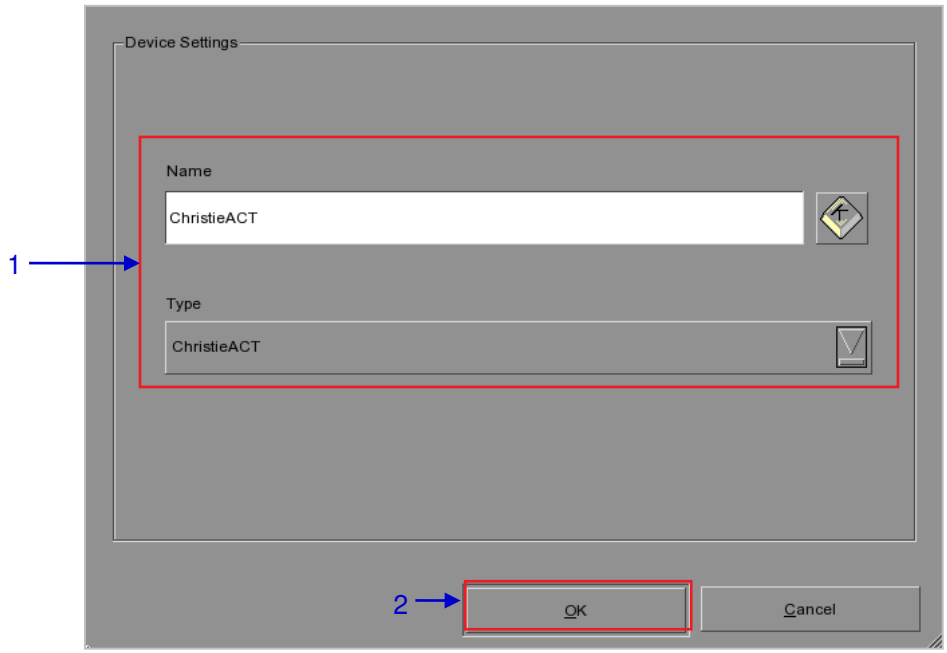


Figure 47 Christie ACT automation device setup.

3. Enter the IP address of the Christie ACT device (see Figure 48).
4. The default setting for the **[Port]** is displayed on the settings for the Christie ACT device. Change this value if required.
5. Default control cues will be set up for a new Christie ACT automation device. Control cues can be added or removed by clicking on the [+] and [-] buttons.

6. Click **[Save]** to save configured settings.

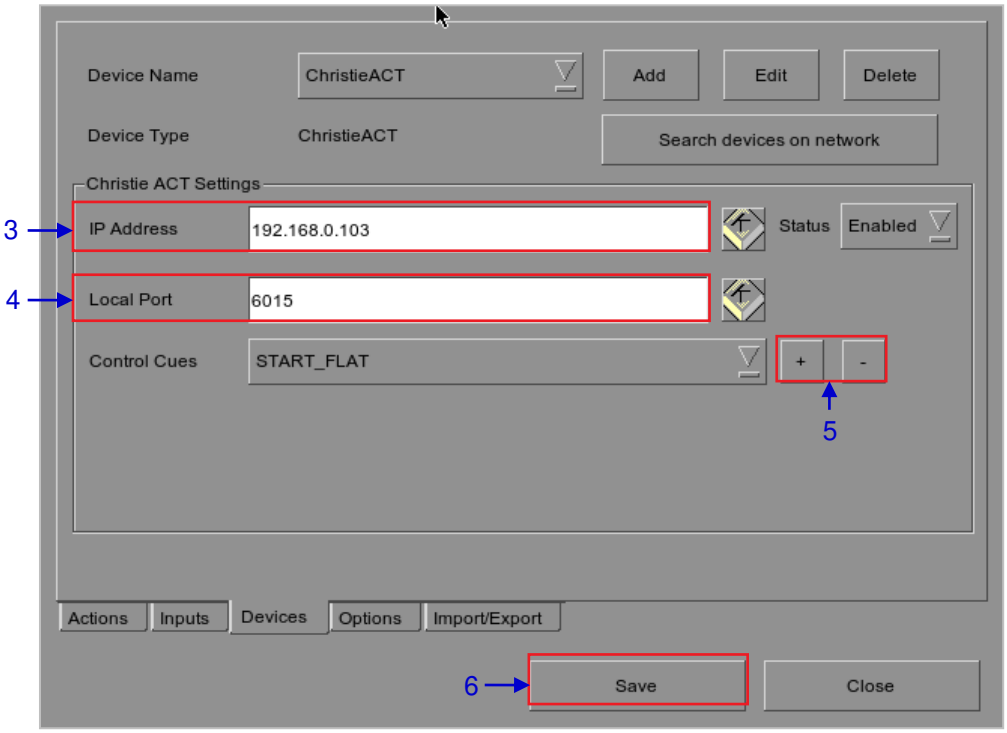


Figure 48 Automation settings for Christie ACT device.

12.6. Automation setup for GDC sound processor

The SX-4000 supports automation for GDC sound processor. Follow the steps below to configure a GDC device in the server automation interface. For this example, the device refers to the GDC XSP-1000 Cinema Processor.

1. Click **[Add]** under **[Devices]** and enter the name of the device. In this case, it is **[XSP-1000-Theater 1].** Set the device type to **[XSP-1000].**
2. Click **[OK]** and set up the device parameters for the GDC XSP-1000 Cinema Processor.

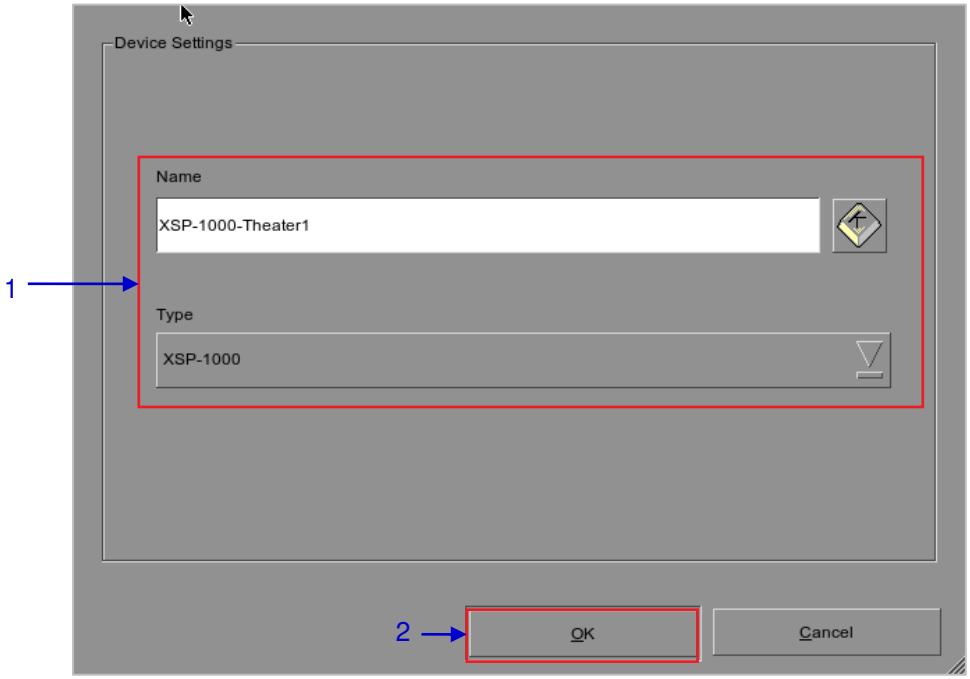


Figure 49 GDC XSP-1000 cinema processor setup

3. Enter the IP address of GDC XSP-1000 cinema processor (see Figure 50).

4. Click **[Save]** to save configured settings.

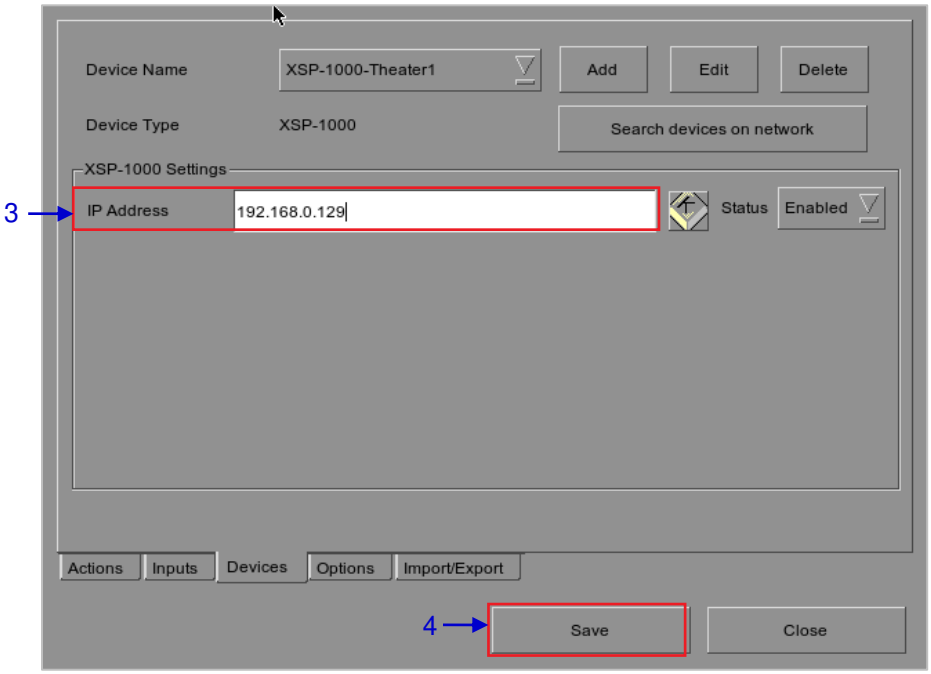


Figure 50 Automation settings for GDC XSP-1000 cinema processor

12.7. Automation setup for Dolby devices

The SX-4000 supports automation for the Dolby sound processors. Follow the steps below to configure a Dolby device in the server automation interface. For this example, the device refers to the Dolby CP650 Sound Processor.

1. Click **[Add]** under **[Devices]** and enter the name of the device. In this case, it is **[CP650].** Set the device type to **[DolbyCP650].**
2. Click **[OK]** and set up the device parameters for the Dolby CP650 device.

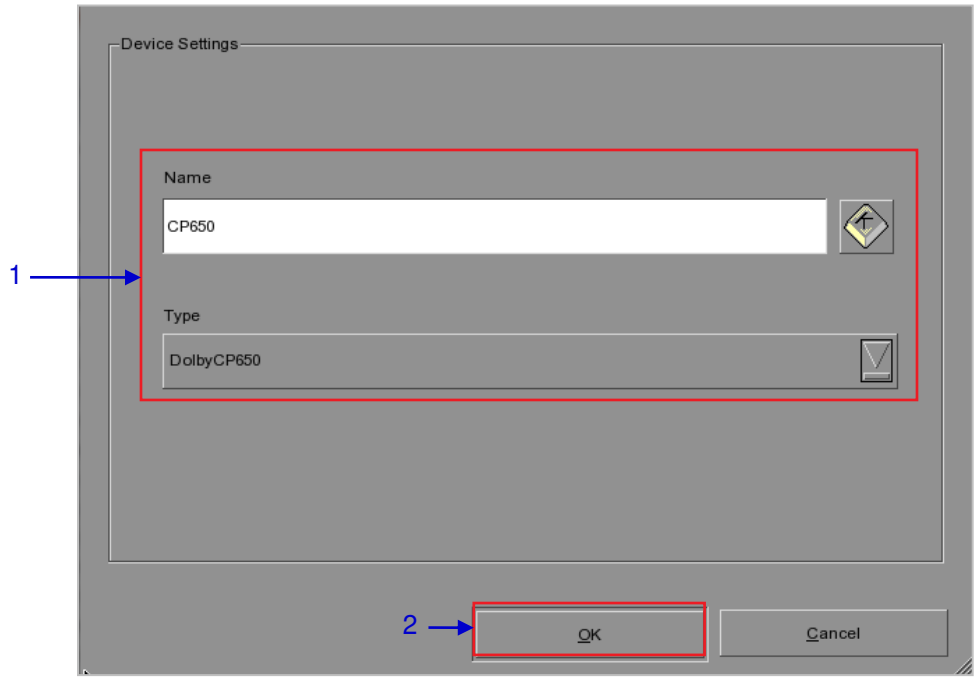


Figure 51 Dolby CP650 automation device setup.

3. Enter the IP address of the Dolby CP650 device (see Figure 52).

4. Click **[Save]** to save configured settings.

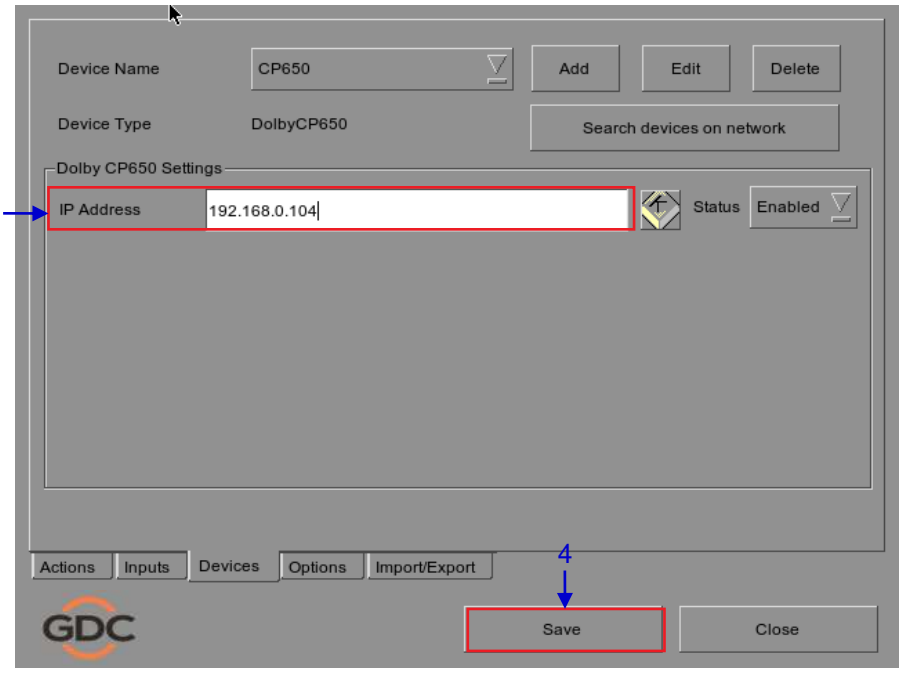


Figure 52 Automation settings for Dolby CP650 device.

12.8. Automation setup for USL DAX devices

The SX-4000 supports automation for USL DAX sound processor. Follow the steps below to configure a USL DAX device in the server automation interface.

1. Click **[Add]** under **[Devices]** and enter the name of the device. In this case, it is **[DAX].** Set the device type to **[USL-DAX].**
2. Click **[OK]** and set up the device parameters for the USL DAX device. (see Figure 53)

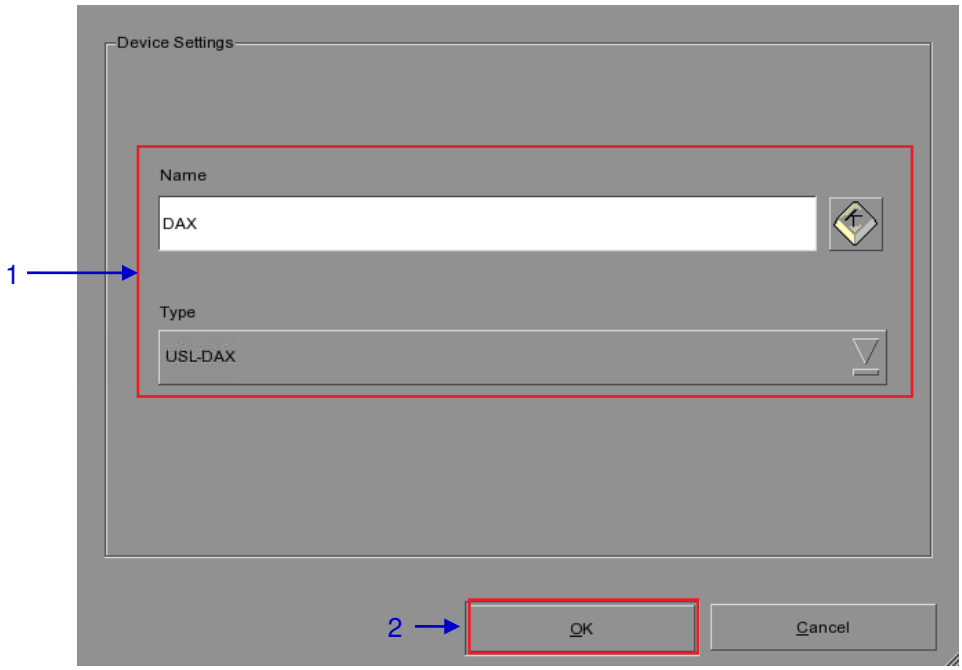


Figure 53 USL DAX automation device setup.

3. Enter the IP address of the USL DAX device (see Figure 54).
4. Click **[Save]** to save configured settings.

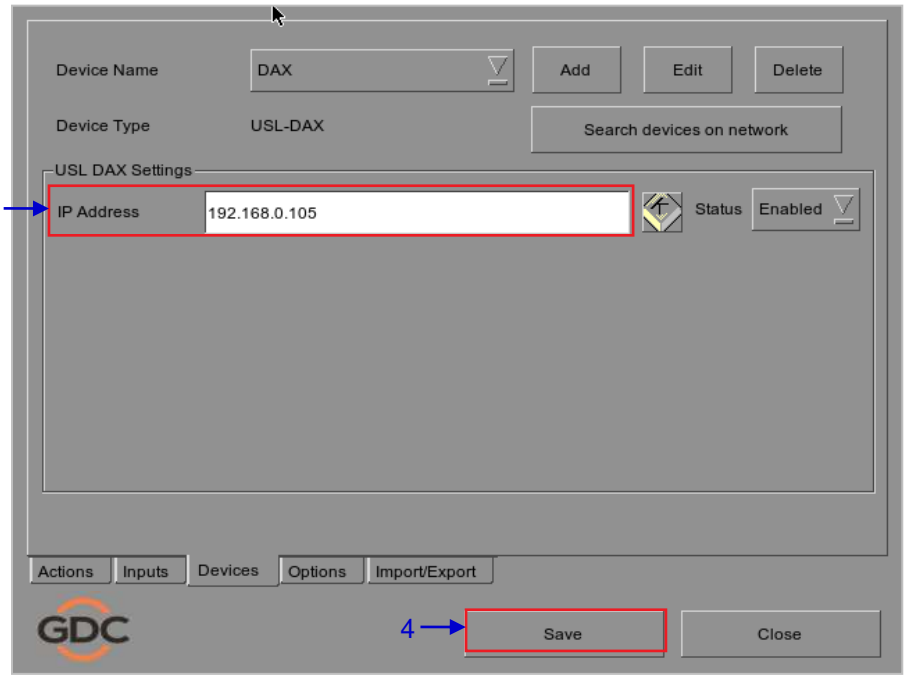


Figure 54 Automation settings for USL DAX device.

12.9. Automation setup for USL JSD devices

The SX-4000 supports automation for USL JSD-80 and JSD-100 sound processor. Follow the steps below to configure a USL JSD device in the server automation interface.

1. Click **[Add]** under **[Devices]** and enter the name of the device. In this case, it is **[JSD].** Set the device type to **[USL-JSD]** (see Figure 55).
2. Click **[OK]** and set up the device parameters for the USL JSD device.

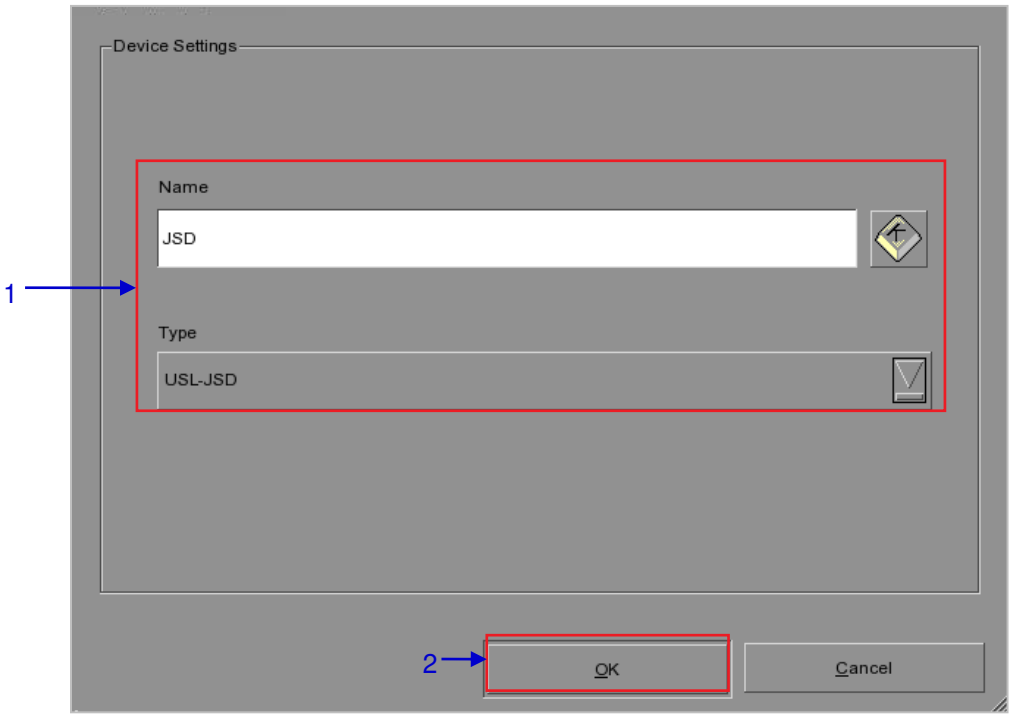


Figure 55 USL JSD automation device setup.

3. Enter the IP address of the USL JSD device (see Figure 56).
4. Select the correct model (JSD-80 or JSD-100) of the device the server is connected to.

5. Click **[Save]** to save configured settings.

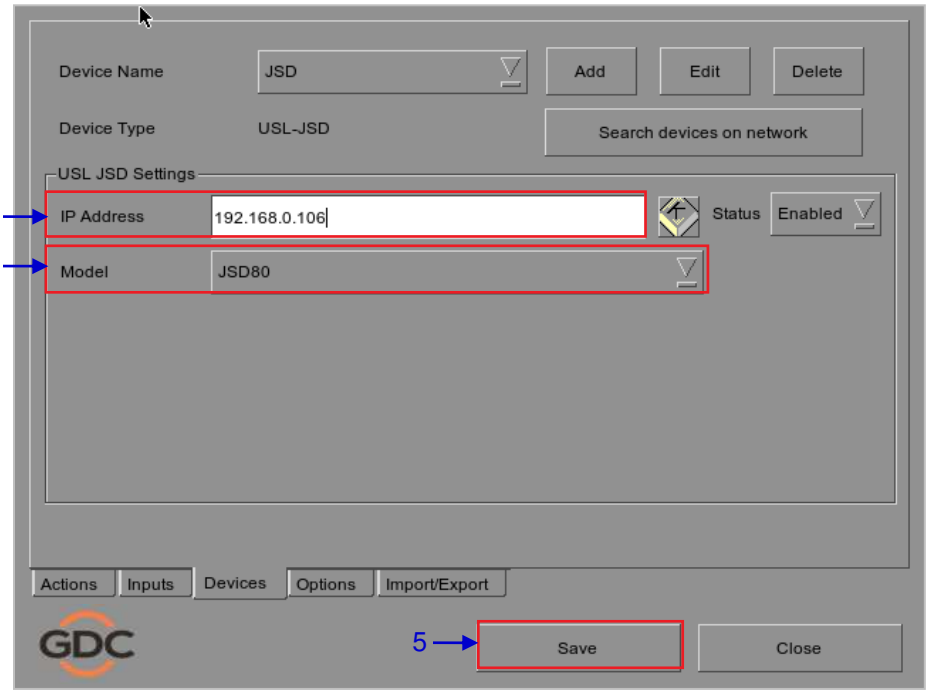


Figure 56 Automation settings for USL JSD device.

13. COMPONENT ENGINEERING TA-10 SETUP

The Component Engineering TA-10 can be used for theater automation with the SX-4000. It requires that the TA-10 be wired in a particular configuration. A wiring diagram can be seen in Figure 57.

The TA-10 is connected to the SX-4000 using the server's GPIO input/output port. Configure event labels with the GPIO device to trigger the TA-10.

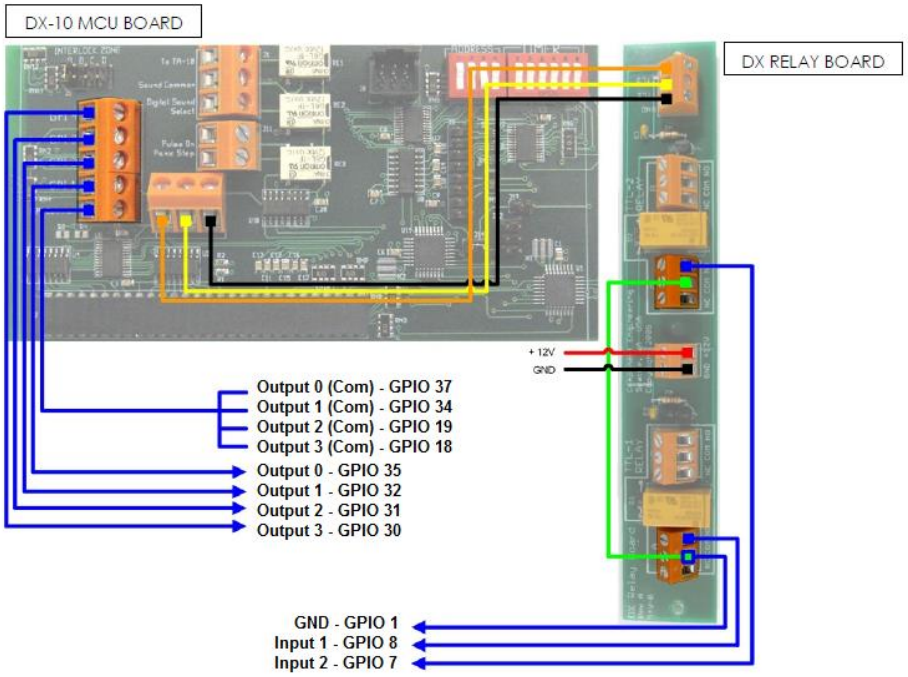


Figure 57 Component Engineering TA-10 wiring diagram.

14. TESTING PROCEDURES AFTER INSTALLATION

After the installation has been completed, it is necessary to test the following to ensure that the SX-4000 has been properly installed:

1. Test the video playback capabilities of the server using the following file formats: MPEG2, JPEG2000, Scope, Flat, 3D.
2. Test the audio playback capabilities of the server and verify that all the channels are working. Also check for any static noises.
3. Test the server's ability to activate automation cues using test cues for lights, curtains, sound and fire alarm.
4. Test the remote access capabilities of the server, including: Theatre Management System (TMS) access, network connectivity and VNC.

15. APPENDIX

14.1. AES Audio and GPIO Pinout

Figure 58 describes the AES and GPIO pinout for the six RJ-45 connectors on the SX-4000.

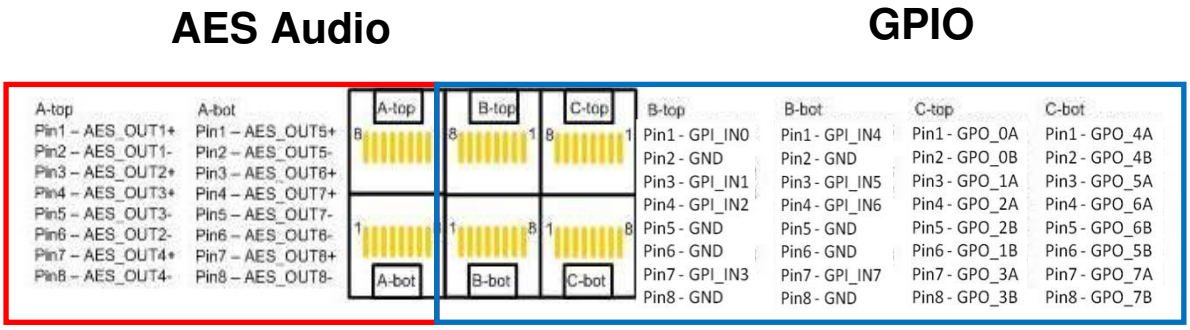


Figure 58 AES audio and GPIO Pinout

14.2. AUX AES Pinout

Figure 59 describes the pinout for the AUX AES connector on the SX-4000.

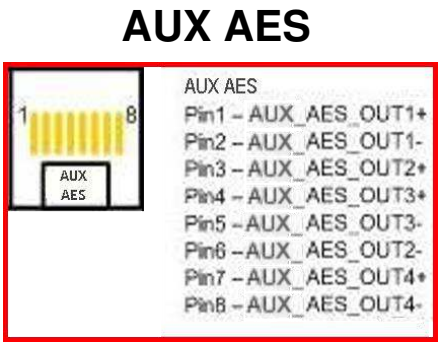


Figure 58 AUX AES Pinout

Note: It is possible to route the HI, VI-N and D-Box signals to the AUX AES connector by checking the 'HI/VI-N/D-Box on Aux' checkbox under SMS → Configuration → Audio → Audio Output when DTS:X Internal Decoding or IAB Internal decoding is used. Refer to the SX-4000 User Manual **Section 7.3** and **7.4** for more details.

AUX_AES Pair	AUX_AES Channels	DCP Channel
AUX_AES_OUT3	5 & 6	HI & VI-N
AUX_AES_OUT4	7	D-Box

14.3. GPIO Power Details

GPIO Input Details

Vin High min level is 3.5 Volts
Vin Low max level is 1.5 Volts
Iin min -20 uA
Iin max +20 uA
(Essentially no current flows; this is a voltage sensing device)
The GPI inputs have a 5.62K Ohm resistor pull-up to an isolated 5 Volts. Shorting the pins would send an input high (“dry contact”)

GPIO Output Details

Outputs use a solid state relay
Max voltage across relay contacts GPO_nA and GPO_nB = 200 Volts
Relay ON-resistance: Min = 6 / Typ = 10 / Max = 15 ohms
Relay Current limit: Min = 300 / Typ = 360 / Max = 460 mA
Relay output power dissipation (continuous) = 600 mW

GDC Technology Offices

Hong Kong (Headquarters)
Unit 1-7, 20th Floor,
Kodak House II,
39 Healthy Street East,
North Point, Hong Kong.
Tel: +852 2507 9555

China (Beijing)
Rm. 609-618, Office Building,
20# Xinde Street,
Xicheng District,
Beijing, P.R. China 100088
Tel: +86 10 6205 7040

China (Shenzhen)
Room A701, 7/F,
Languang Technology Building,
No.7 Xinxi Road,
North Zone,
High-Tech Park,
Nanshan District,
Shenzhen, China
Tel: +86 755 8608 6000

Spain (Barcelona)
C/ Esteve Terradas,
nº 27, esc. D, Despacho 1,
08023 Barcelona, Spain
Tel: +34 93 159 51 75

Mexico (Mexico City)
Av. Del peñon 411 esq. Ote 168
Col. Moctezuma 2ª Sección,
Venustiano Carranza, Distrito Federal,
C.P. 01210 Mexico
Tel: +52 55 8526 6220

United Arab Emirates (Dubai)
Business Centre,
Dubai World Central,
PO Box 390667,
Dubai UAE

Brazil (São Paulo)
Av. Antônio Carlos Comitre, 540,
3º andar, Conjunto 31, Campolim,
Sorocaba / São Paulo, CEP 18047-620, Brasil
Tel: +55 15 33269301

Singapore
10 Ubi Crescent, Ubi Tech Park
Lobby B, #05-79, Singapore 408564
Tel: +65 6222 1082

Indonesia (Jakarta)
Total Building Lantai 4 Suite 0401,
Jl. Letjen S. Parman Kav. 106A,
Kel. Tomang, Kec. Grogol Petamburan,
Jakarta Barat 11440, Indonesia
Tel: +65 21 2920 4691

Japan (Tokyo)
3F, Kyobashi-Chuo Bldg,
1-14-7 Kyobashi Chuo-ku,
Tokyo 104-0031, Japan
Tel: +81 3 5524 3607

India (Mumbai)
B-207/208, Everest Chambers,
Andheri Kurla Road, Marol, Andheri (East),
Mumbai-400 059, India
Tel: +91 22 4044 0500

USA (Los Angeles)
1016 West Magnolia Boulevard
Burbank, CA 91506, USA
Tel: +1 818 972 4370 /
+1 877 743 2872 (Toll Free)

Republic of Korea (Seoul)
4F, 127 YangHwa-ro,
MaPo-gu, Seoul,
Korea.04032
Tel: +82 10 7501 7480

Email: info@gdc-tech.com
Website: www.gdc-tech.com

ISO 9001 QMS

Cert. No. CN09/32221

GDC Technology manufacturing facility is ISO 9001:2008 certified.

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