INSTALLATION MANUAL FOR

SX-3000 STANDALONE INTEGRATED MEDIA BLOCK™ WITH

PORTABLE STORAGE/ ENTERPRISE STORAGE

SMS version 9.0

October 24, 2013

Table of Contents

Thank you for purchasing a GDC SX-3000 Standalone Integrated Media Block™ with Portable Storage/ Enterprise Storage (SX-3000 IMB with Portable Storage/ Enterprise Storage) from GDC Technology Limited.

To ensure proper operation and to maximize value of the SX-3000 with Portable Storage/ Enterprise Storage, please review this User Manual. It will guide you through all the features and benefits of the new SX-3000 Standalone Integrated Media Block™.

COPYRIGHT NOTICE

MANUAL DISCLAIMER

This manual is made with SMS version 9.0 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.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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 2523 6851

USA (Los Angeles, CA)

1016 West Magnolia Boulevard
Burbank, CA 91506, USA

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

USA (Sterling, VA)

21155 Whitfield Place, Suite 207,
Sterling, VA 20165, USA

Tel: +1 877 337 0868 (Toll Free)

Mexico (Mexico City)

Ave Santa Fe 94, Torre A Piso 8,
Col. Zedec Santa Fe,
Alvaro Obregon,
Mexico, D.F., C.P. 01210 Mexico

Tel: +52 55 8851 1198/ +52 55 8851 1165

Brazil (São Paulo)

Rua Leôncio de Carvalho, 306,
Conj. 32 - Parte, Bairro Paraíso,
CEP 04003-010,
São Paulo/SP – Brasil

Tel: +55 15 98116 2353

Spain (Barcelona)

Centro de Negocios Josep Tarradellas, Av. Josep Tarradellas, n°38
08029 Barcelona, Spain

Tel: +34 93 355 49 72

Japan (Tokyo)

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

Tel: +81 3 5524 3607

Singapore

10 Ubi Crescent Ubi Tech Park, Lobby B,
#06-25,
Singapore 408564

Tel: +65 6222 1082

China (Shenzhen)

5th Floor GDC Building,
No.9 Hi-tech Middle 3 Rd.,
Science & Technology Park,
Nanshan District,
Shenzhen,
P.R. China 518057

Tel: +86 755 8608 6000

China (Beijing)

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

Tel: 86 10 6205 7040

India (Mumbai)

Office No. B-207/208,
Everest Chamber,
Andheri Kurla Road, Marol,
Andheri (East), Mumbai-400 059

Tel: +91 22 4044 0500

1. INTRODUCTION

This document is a guide through the process of setting up the SX-3000 and Portable Storage/ Enterprise Storage with the projector, audio system, and automation devices used in cinema theatres.

Note:

- The currently supported software version for SX-3000 server is 9.0 or higher.
- In this manual there will be many instructions starting from the SMS screen (see Figure 1). This is the main page of the SX-3000 software that features the status of the show playing, the transport, and the buttons to access certain menus of the software.

Figure 1 SMS interface.

1.1. Equipment List

This section describes the equipment shipped with the GDC SX-3000 and Portable Storage/ Enterprise Storage.

The SX-3000 Packaging Includes:

Item	Qty	Photo
SX-3000 Unit with projector coverplate	1	
RJ45 AES Audio Cable	2	
RJ45 GPIO Cables	4	
Network Cable	1	
RJ45 to DB25 Audio Converter	1	

The Portable Storage Packaging Includes:

Item	Qty	Photo
Portable Storage	1	
Bracket for specific projector model	1	
2.5” SATA HDD	3*	
Power Cord	1	
Power Adapter	1	
HDD Tray Key	2	
eSATA Cable	1	

Manual CD	1	
Quick Start Guide	1	

The Enterprise Storage Packaging Includes:

Item	Qty	Photo
Enterprise Storage	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.

2. INSTALLING SX-3000 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-3000 into the projector. If the projector does not have the GDC IMB installed, follow the steps below to install SX-3000 into the projector.

Figure 2 SX-3000 Standalone IMB®

2.1. Remove existing interface board/placeholders from projector

Before installing SX-3000, check the figures 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-3000.

Figure 3 Remove interface board from Barco projector.

Figure 4 SX-3000 Placement on Barco projector.

2.1.2. Christie Projector Placement

Figure 5 shows the location where SX-3000 should be installed on a Christie projector. Remove any existing interface boards or placeholder faceplates from this position before installing SX-3000.

Figure 5 SX-3000 Placement on Christie projector.

2.1.3. NEC Projector Placement

Figure 6 shows the location where SX-3000 should be installed on a NEC projector. Remove any existing interface boards or placeholder faceplates from this position before installing SX-3000.

Figure 6 SX-3000 Placement on NEC projector.

Please refer to the projector manuals for more details on preparing the projector for SX-3000 installation.

2.2. Inserting SX-3000 into the projector

Please make sure the projector is powered off before installing SX-3000 on the projector.
Note: Please check SX-3000 for any physical damage like loose or burnt component before installing it into the projector.

Figure 7 Inserting SX-3000 into the projector.

Insert SX-3000 as shown in Figure 7. The SX-3000 should slide into the projector on the rails provided by the IMB slot, and the SX-3000 faceplate should be flush with the other existing faceplates once properly inserted.

Note: When installing the SX-3000 into any NEC projector, it is recommended to install it into the top slot of the projector. If the SX-3000 is installed into the bottom slot, the board runs the risk of coming in contact with the below racks.

2.3. Projector Network

Connect the provided Cat 5e LAN cable from the SX-3000 Ethernet 2 port to the projector's Ethernet port. Please see *Section 6* for IP network instructions after the SX-3000 is installed.

3. EXTERNAL MONITOR, KEYBOARD AND MOUSE

Before the server can be operated through VNC from the projector, you will first need to connect an external monitor to the front VGA connection, and a keyboard and mouse to the USB connection of the SX-3000.

Note: When using an external touch screen for the first time. An external keyboard and mouse is required before the touch screen is calibrated.

FOR installation of Portable Storage, please refer to Section 4.
FOR installation of Enterprise Storage, please refer to Section 5.

4. INSTALLING PORTABLE STORAGE

4.1. Product Specifications

Figure 8 Portable Storage

Product Specifications
Suitable for 2.5”SATA HDD
Support Hot Swap
Dimension: 220(L) X 165.6(W) X 55.2(H) mm

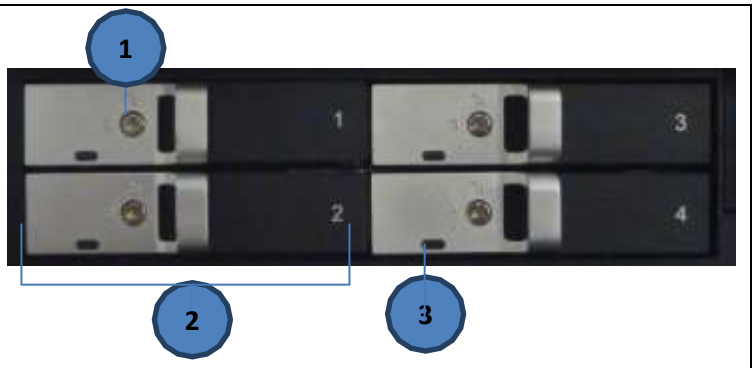
Important note: Please make sure the SMS version is 9.0-build107 or higher before continuing.

4.2. HDD Lock

Release the triangle lock by using the key (Rotate 90 degrees Clockwise).

A: **Lock**
B: **Unlock**

4.3. Front Panel

1	HDD Tray Lock	
2	HDD Tray Cover Door	
3	HDD LED	

4.4. Back Panel

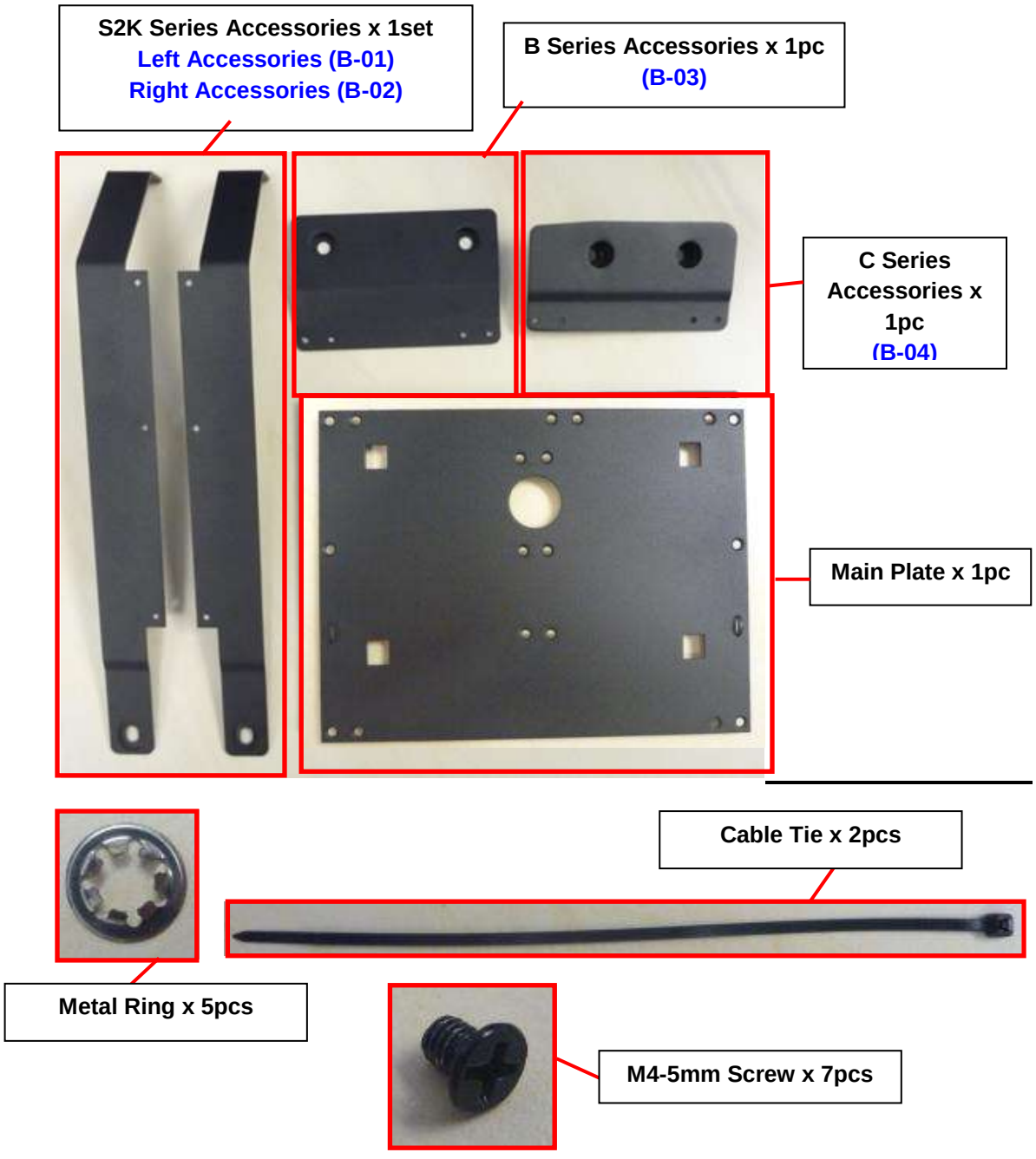
4	DC Power Connector	
5	eSATA Connector	
6	Power Switch	
7	Buzzer On/Off Switch	

Important Note: Always power on the Portable Storage external hard drive bay before powering up the projector.

4.5. Bracket Installation

4.5.1. Bracket 1 (M1000-B)- Barco B & C Series, DP2K-10S (S2K Series)

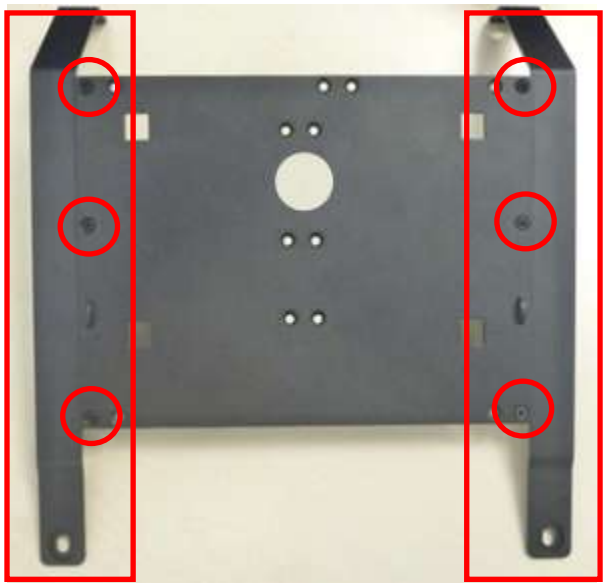
Parts List



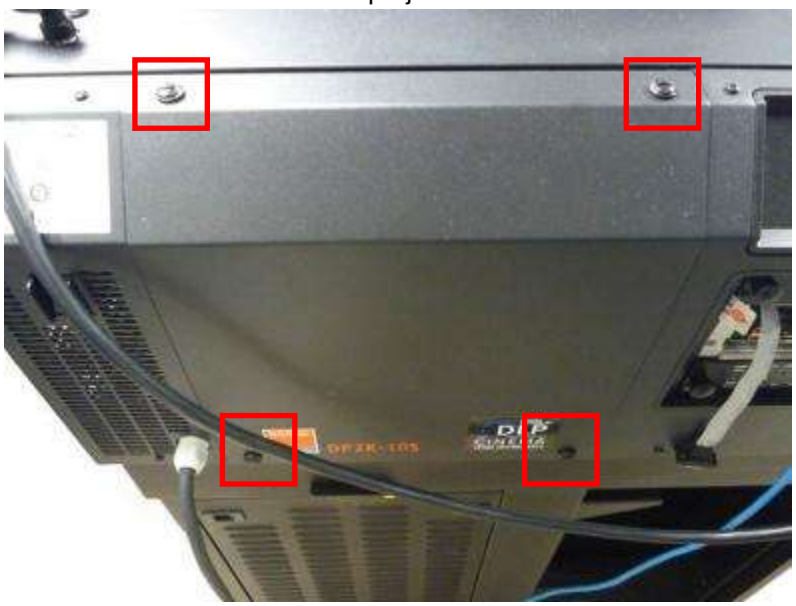
For Barco S2K Projector
Mounting Location: Side of Projector

Installation Procedure

1. Install the parts “B-01” and “B-02” onto the Main Plate with “M4-5” screws by using the six screw holes at the two sides.



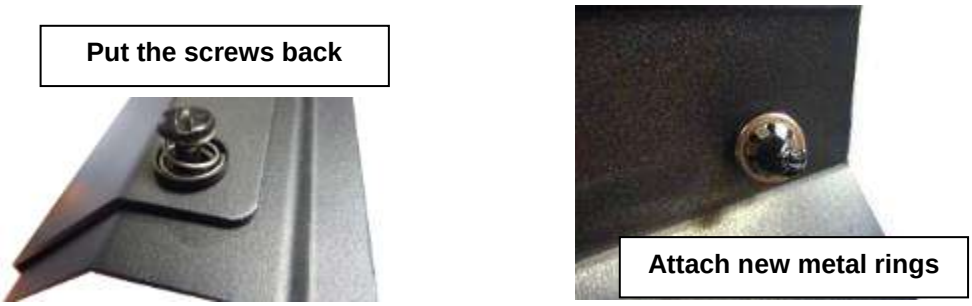
2. Loosen the four screws on the projector in order to take off the side cover.



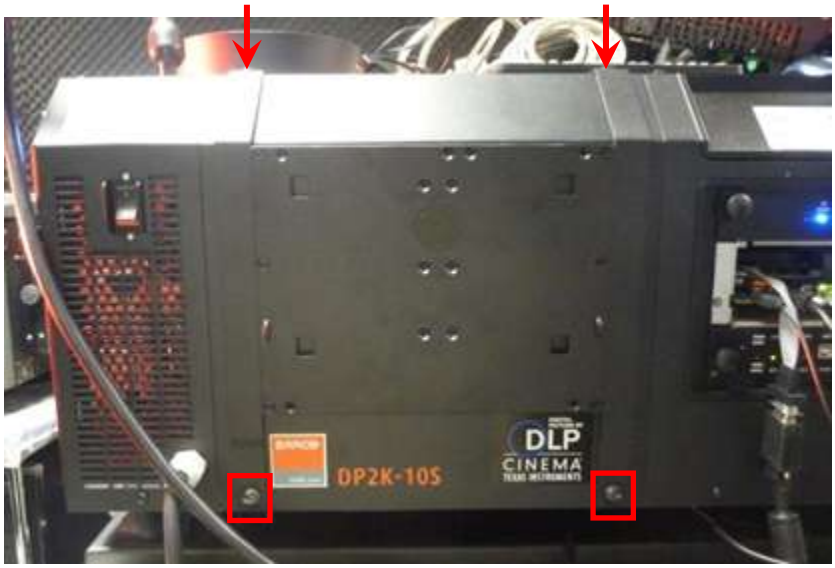
3. Cut and remove the original metal rings from the screws and remove each screw from their hole. Place the bracket onto the side cover.

Cut and remove the metal rings and take out the screws from the holes

4. Put the four screws back into the side cover and attach the new metal rings onto the screws.

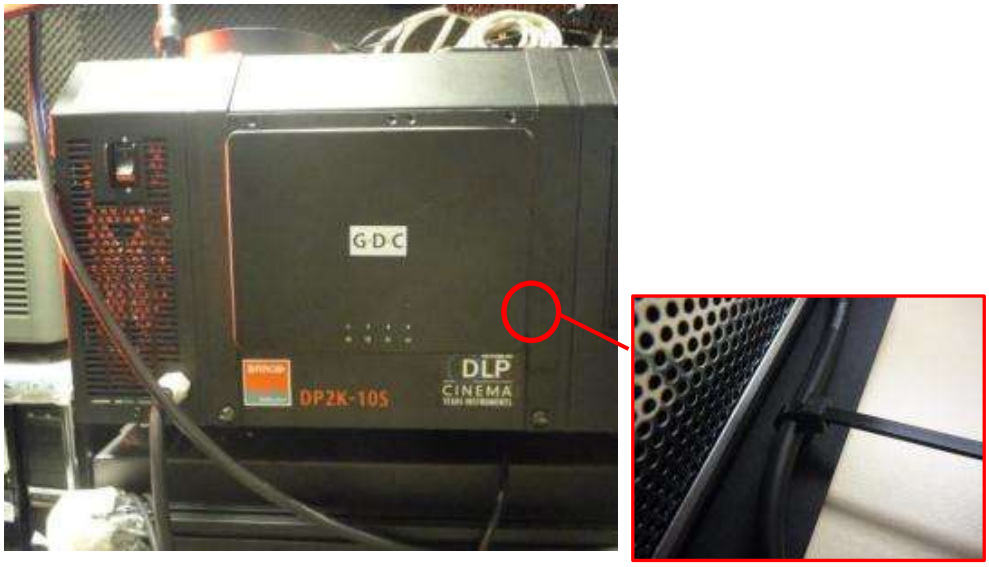


5. Install the side cover back onto the projector and tighten the four screws.



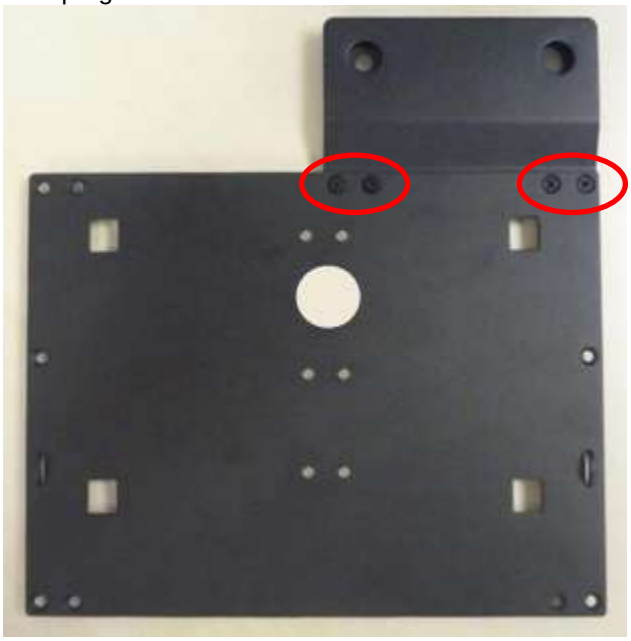
6. Insert the Portable Storage onto the bracket.

7. Lastly, use the cable tie to secure the DC power cord on the right hand side of bracket.

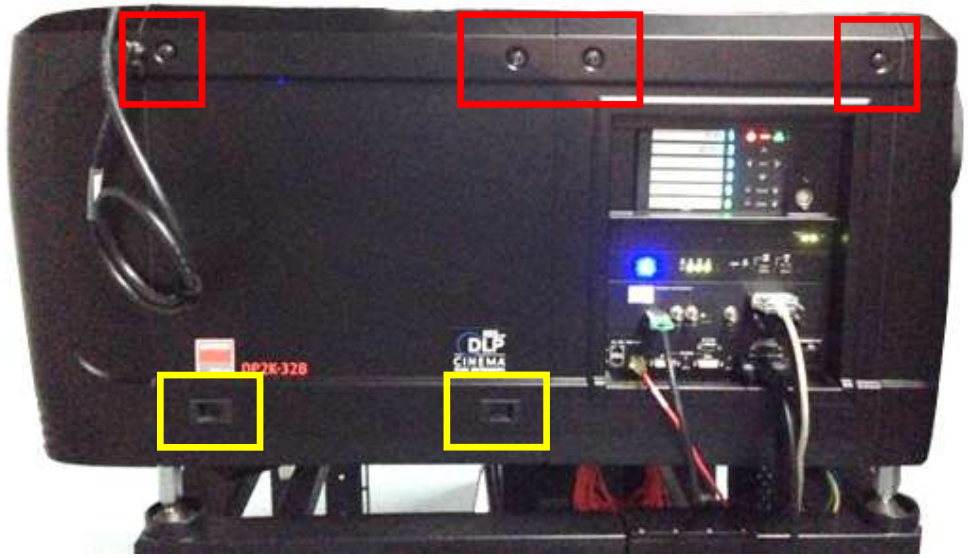


For Barco B Series Projector
Mounting Location: Side of Projector
Installation Procedure

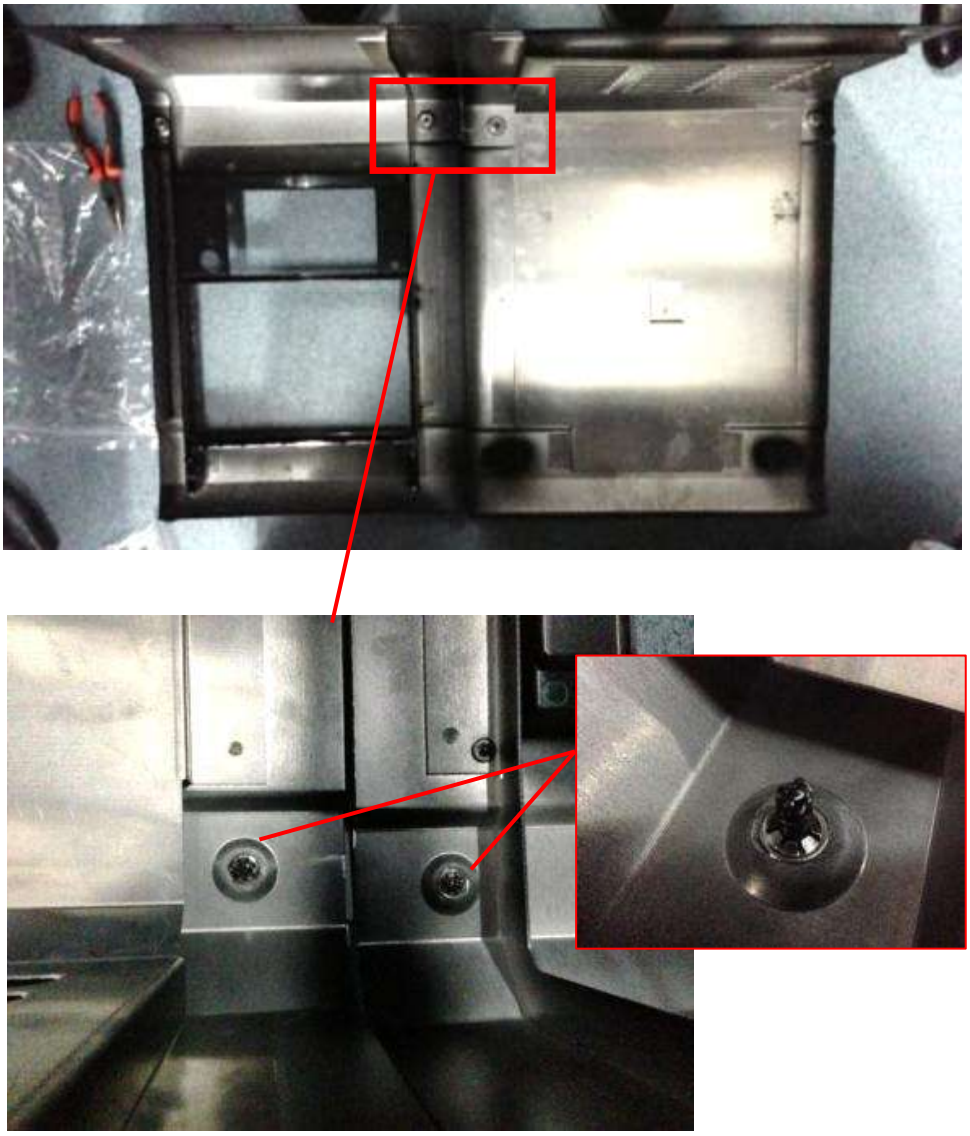
1. Install the parts “B-03” onto the Main Plate with “M4-5” screws by using the screw holes at top right corners.



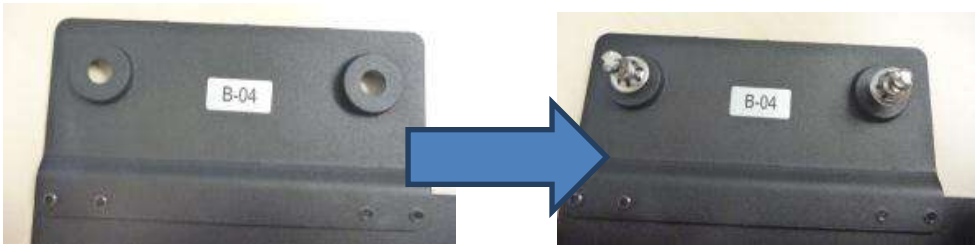
2. Loosen the four screws on the side of projector. Slide the lock on the bottom of the left side cover in order to uninstall and then take out the right hand side cover also.



3. Turn to the inside of the side cover. Cut and remove the metal rings from the screws. Take out the screws from the side cover.



4. Insert the screws into the bracket and attach the new metal rings on the back side of the screws.



5. Install the side cover back to the projector and tighten the two screws.

6. Put the bracket onto the side cover. Align the screw holes and tighten the two screws.

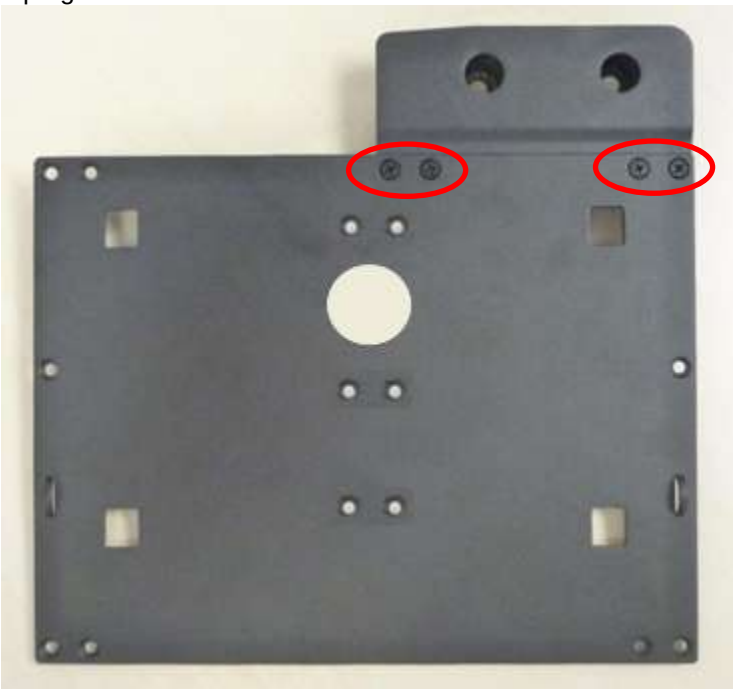
7. Insert the Portable Storage onto the bracket.

8. Lastly, use the cable tie to secure the DC power cord on the right hand side of bracket.

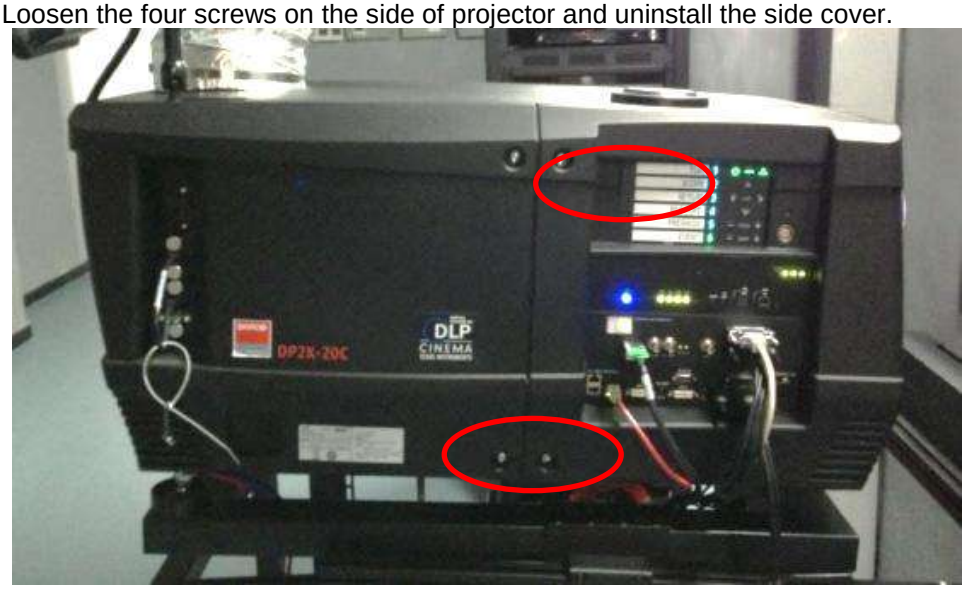
For Barco C Series Projector
Mounting Location: Side of Projector

Installation Procedure

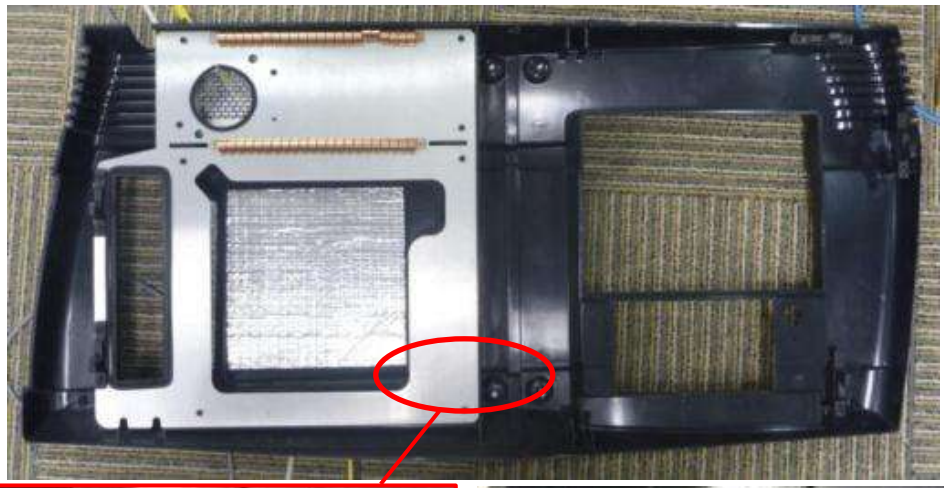
1. Install the parts “B-04” onto the Main Plate with “M4-5” screws by using the screw holes at top right corners.



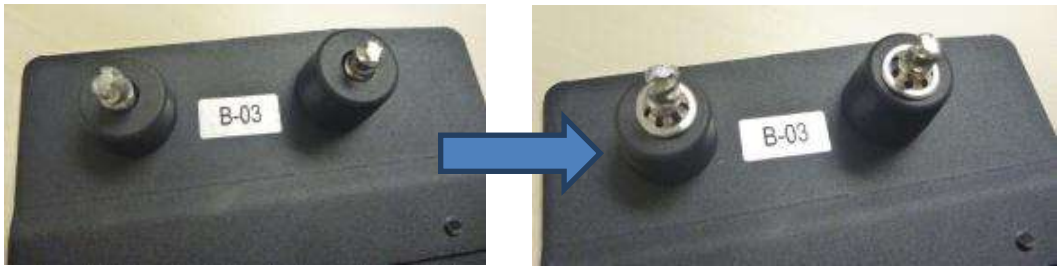
2. Loosen the four screws on the side of projector and uninstall the side cover.



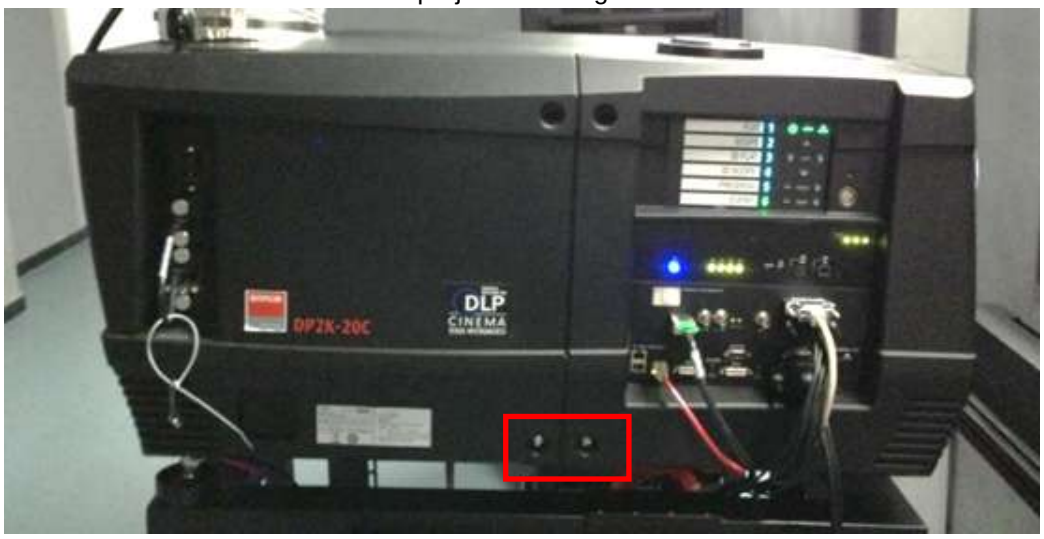
3. Turn to the inside of the side cover and remove the metal or plastic rings on the screws. Take out the screws from the side cover.



4. Insert the screws into the bracket and attach the new metal rings on the back side of the screws.



5. Install the side cover back to the projector and tighten the two screws.



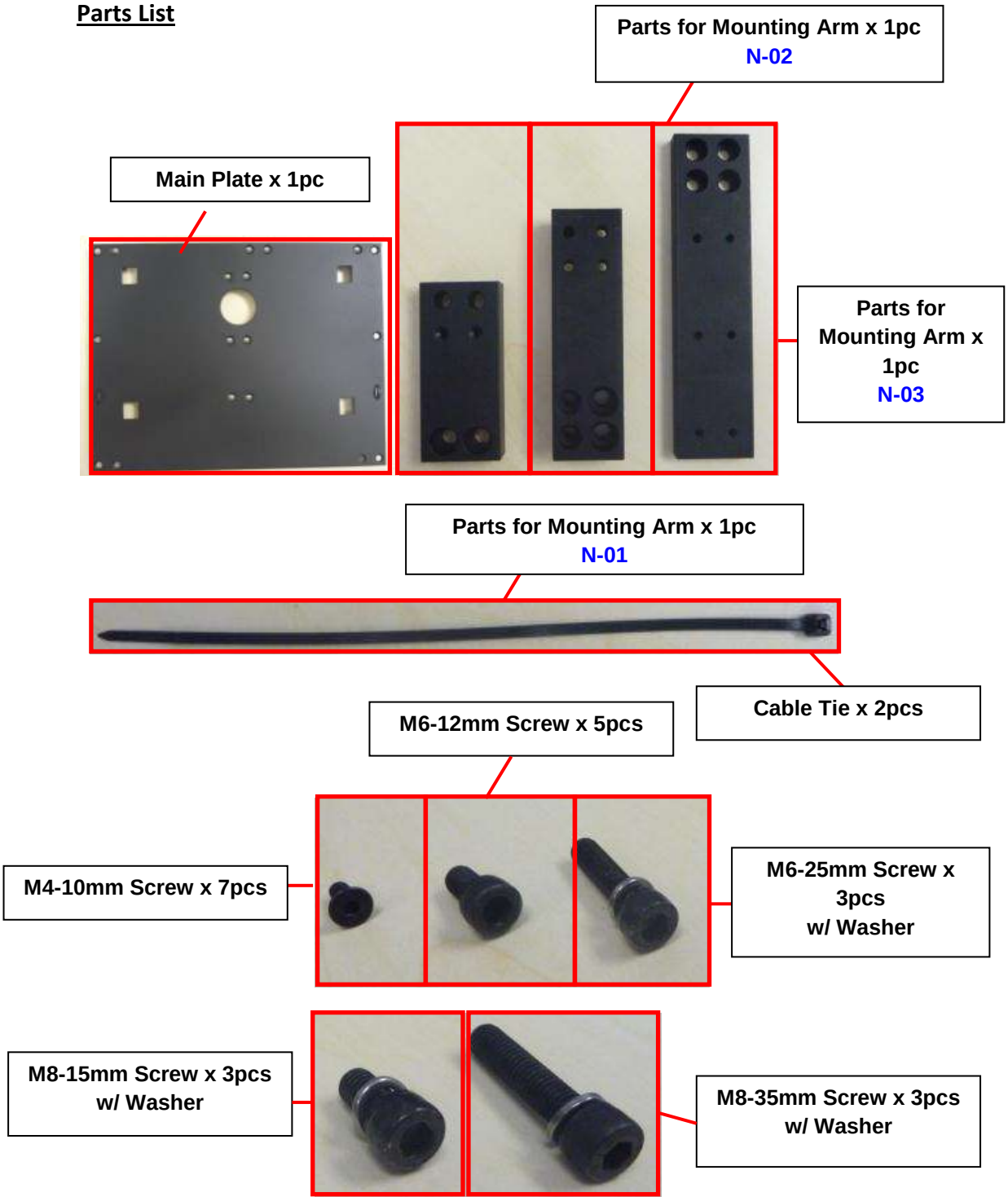
6. Put the bracket onto the side cover. Align the screw holes and tighten the two screws.

7. Insert the Portable Storage onto the bracket.

8. Lastly, use the cable tie to secure the DC power cord on the right hand side of bracket.

4.5.2. Bracket 2 (M1000-N)- NEC 2K & 4K Projector

Parts List



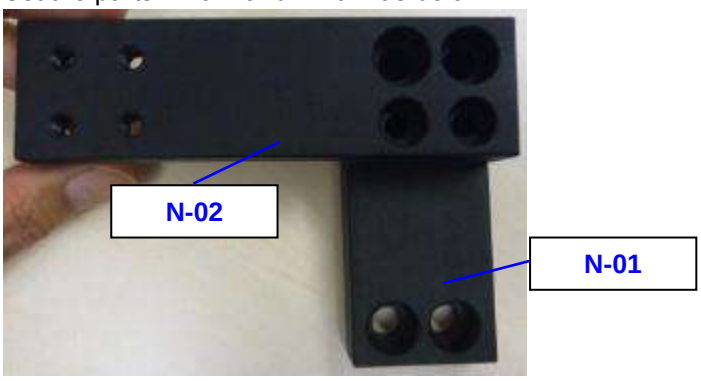
Mounting Location: Front Side of Projector

Installation Procedure

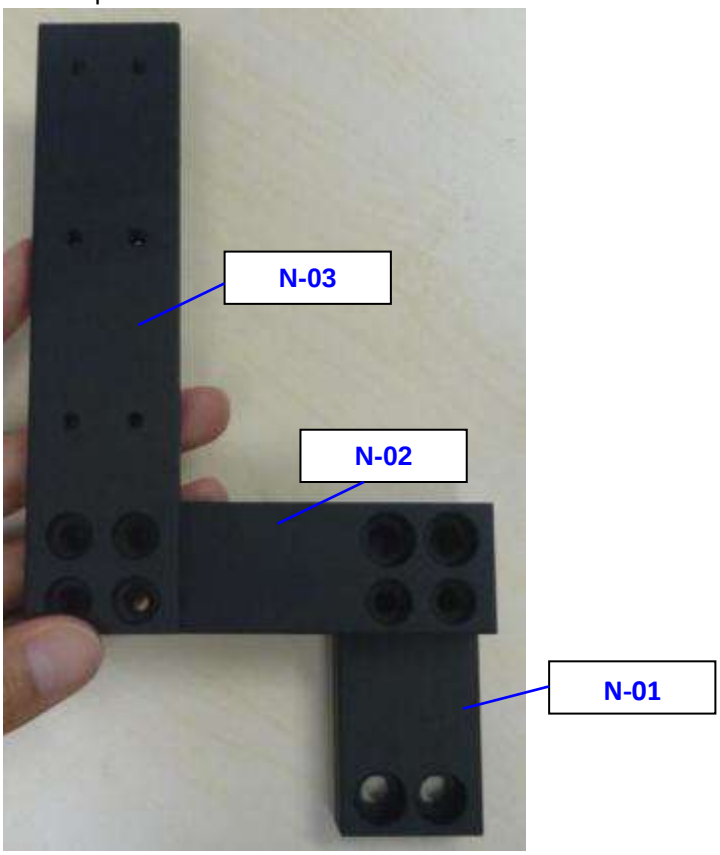
Install Bracket of Portable Storage on NEC 2K/ 4K Projector:

A. Assemble for the Mounting Arm

1. Set the parts “N-01” and “N-02” as below.



2. Set the parts “N-03” on “N-02” as below.



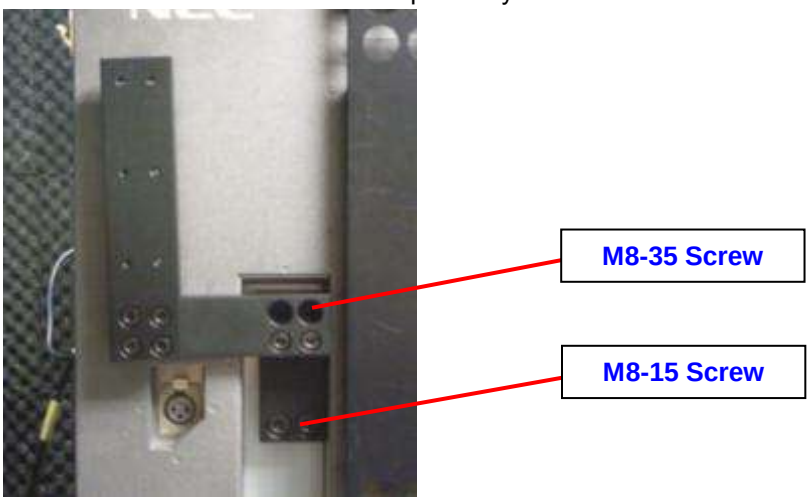
3. Use four “M6-12” screws to fix “N-02” and “N-03”.

4. Use two “M6-25” screws to fix “N-01” and “N-02”.

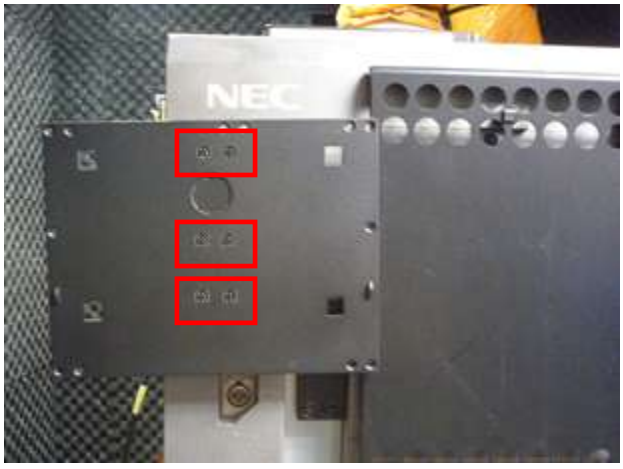
B. Install the Bracket onto the Projector

1. Loosen the screws and open the small cover in the front side of projector.

2. Put the mounting arm onto the projector. Align the screw holes with the projector and tighten with two “M8-35” and “M8-15” screws respectively.



3. Install the two parts of the bracket. Align the screw holes and tighten with six “M4-10” screws.

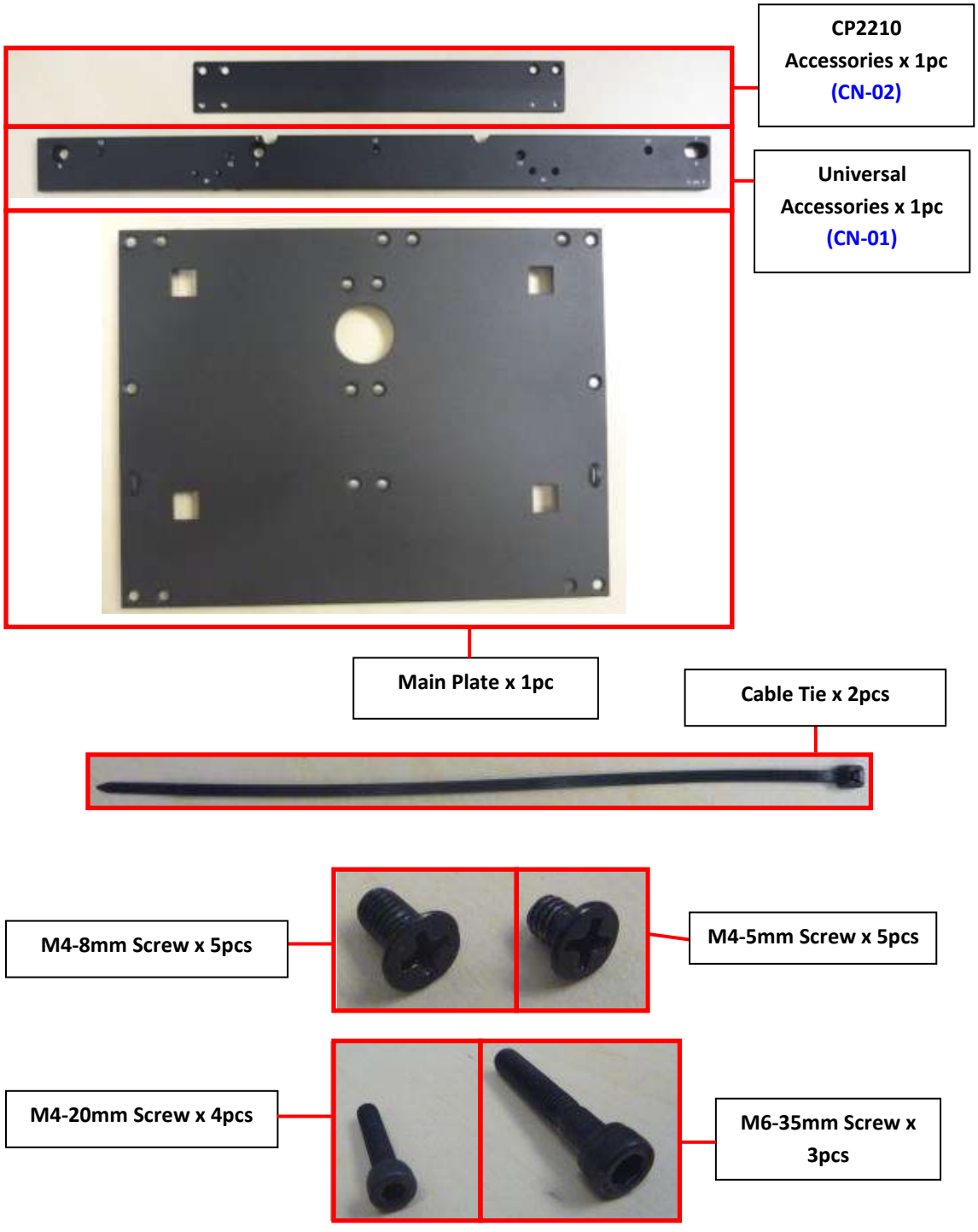


4. Insert the Portable Storage onto the bracket.

5. Lastly, use the cable tie to secure the DC power cord on the left hand side of bracket.

4.5.3. Bracket 3 (M1000-CN)- NEC NC900C (S2K Series) & Christie CP2210, CP2220 & CP2230

Parts List

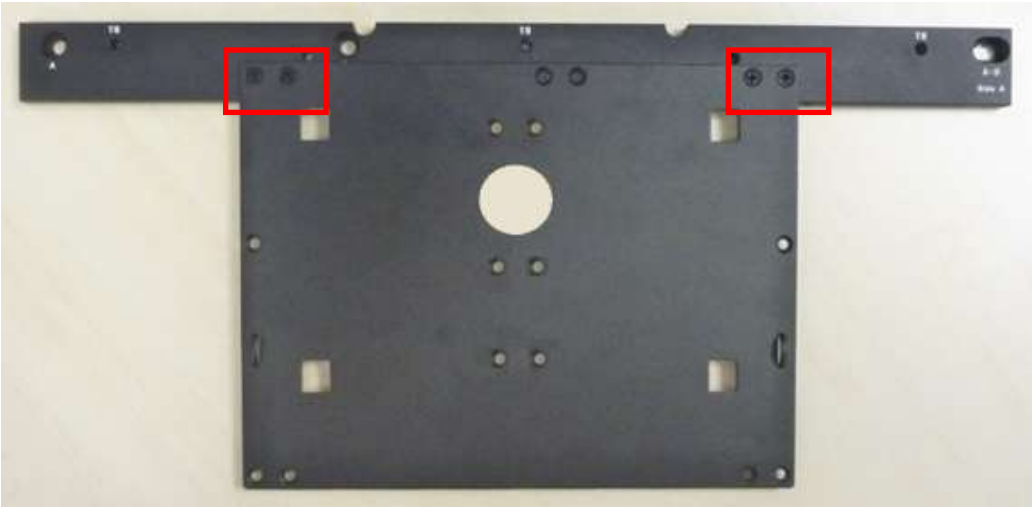


For Christie CP2220 & CP2230 Projector

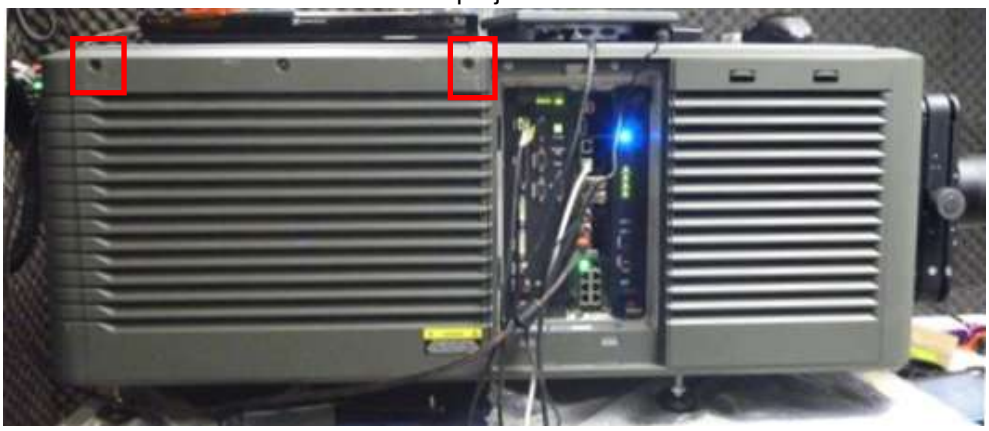
Mounting Location: Side of Projector

Installation Procedure

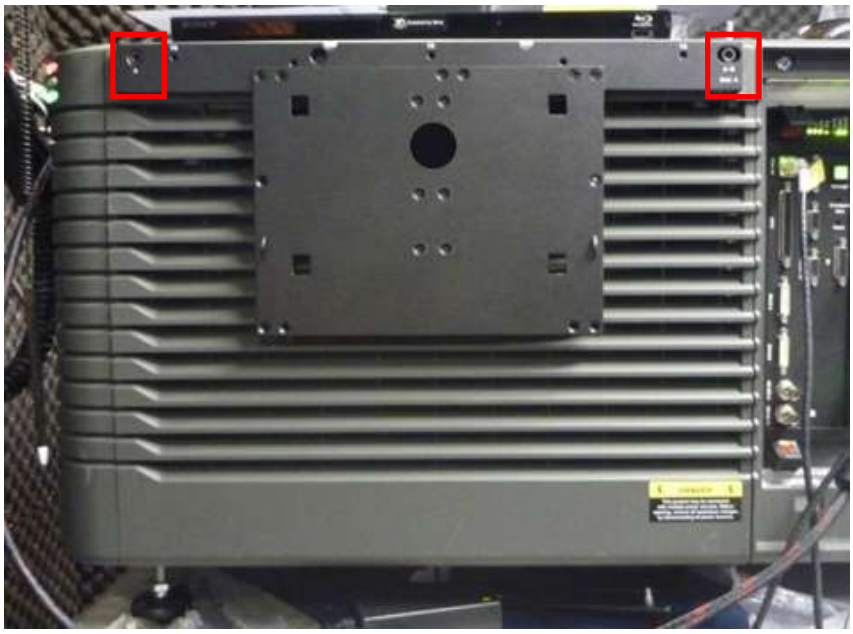
1. Install the Main Plate onto the parts “CN-01” with “M4-8” screws by using “M1” screw holes.



2. Remove the two screws on side of the projector.

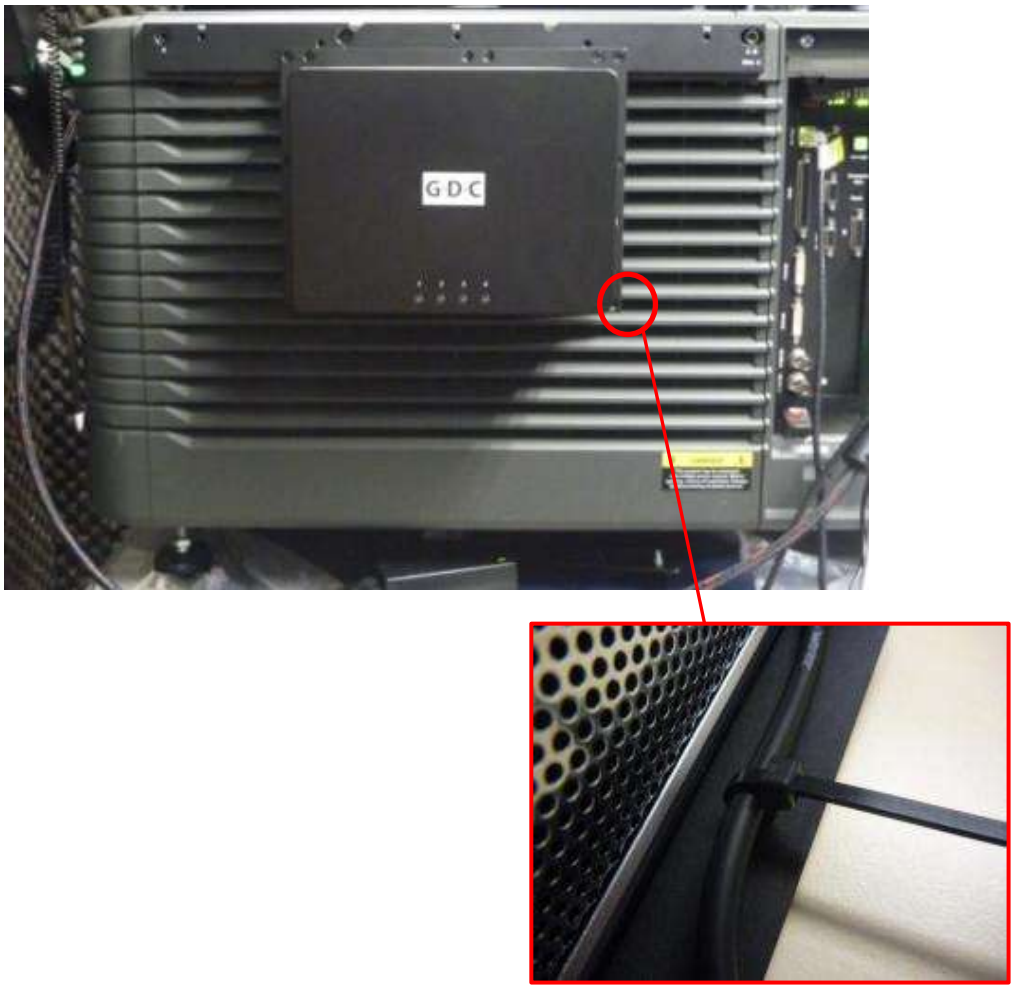


3. Place the bracket onto the projector and align the screw holes. Fix it onto the projector with two “M6-35” screws by using “B” screw holes in side A of “CN-01”.



4. Insert the Portable Storage onto the bracket.

5. Lastly, use the cable tie to secure the DC power cord on the right hand side of bracket.



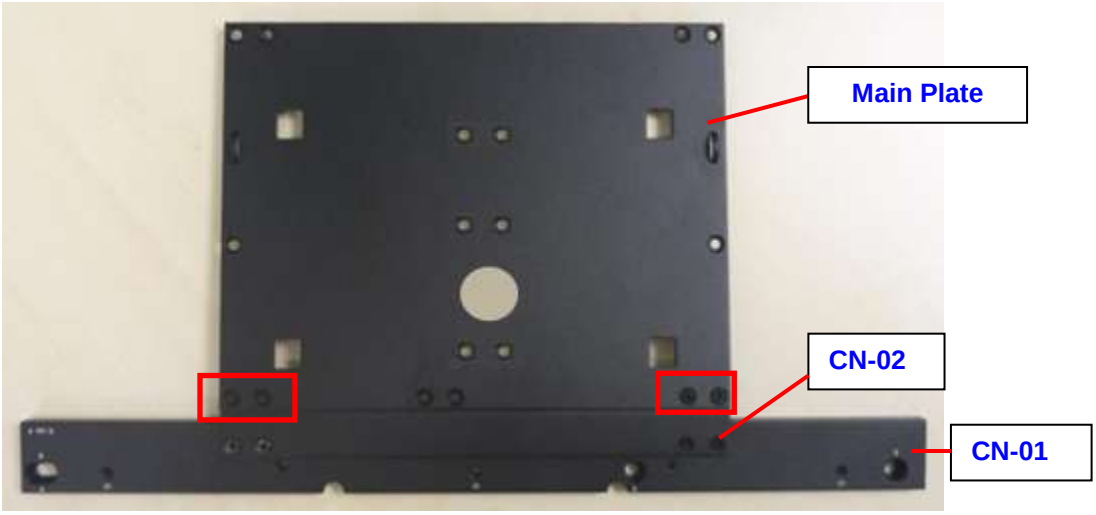
For Christie CP2210 Projector

Mounting Location: Top Side of Projector

Installation Procedure

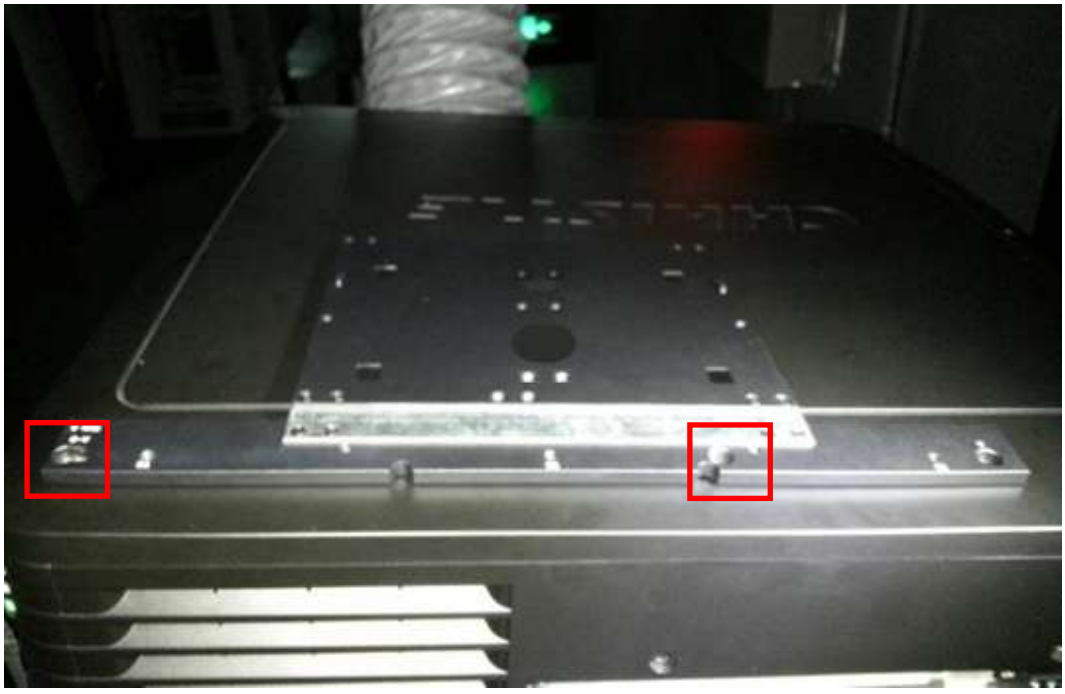
1. Install the parts “CN-02” onto “CN-01” with “M4-8” screws by using “M1” screw holes in side A of “CN-01”.

2. Connect the Main Plate with the metal bar assembly by using the four “M4-5” screws.



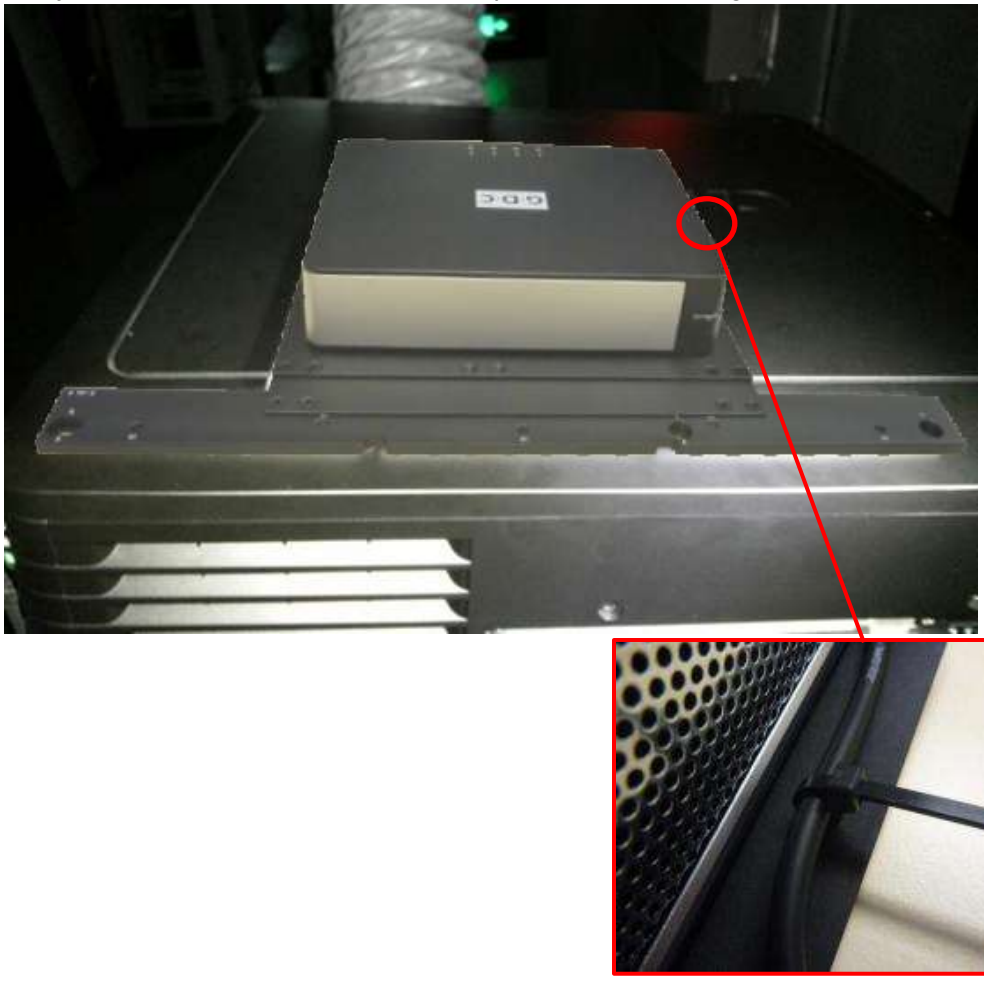
3. Remove the two screws on top of the projector.

4. Put the bracket onto the projector and align the screw holes. Fix it onto the projector with two “M6-35” screws by using “A” screw holes in side A of “CN-01”.



5. Insert the Portable Storage onto the bracket.

6. Lastly, use the cable tie to secure the DC power cord on the right hand side of bracket.

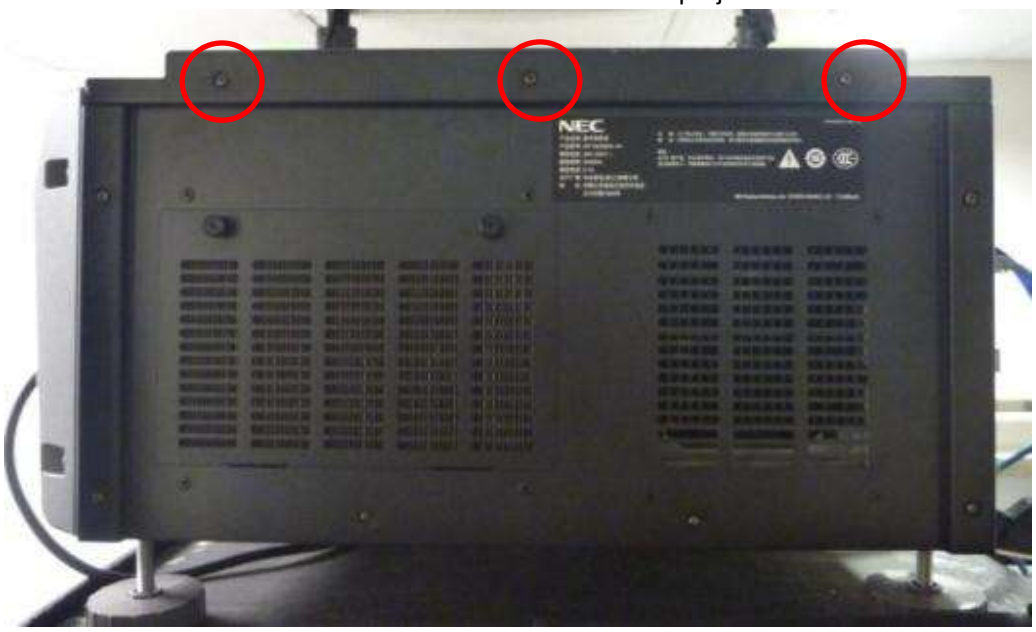


For NEC NC900C (S2K Series) Projector

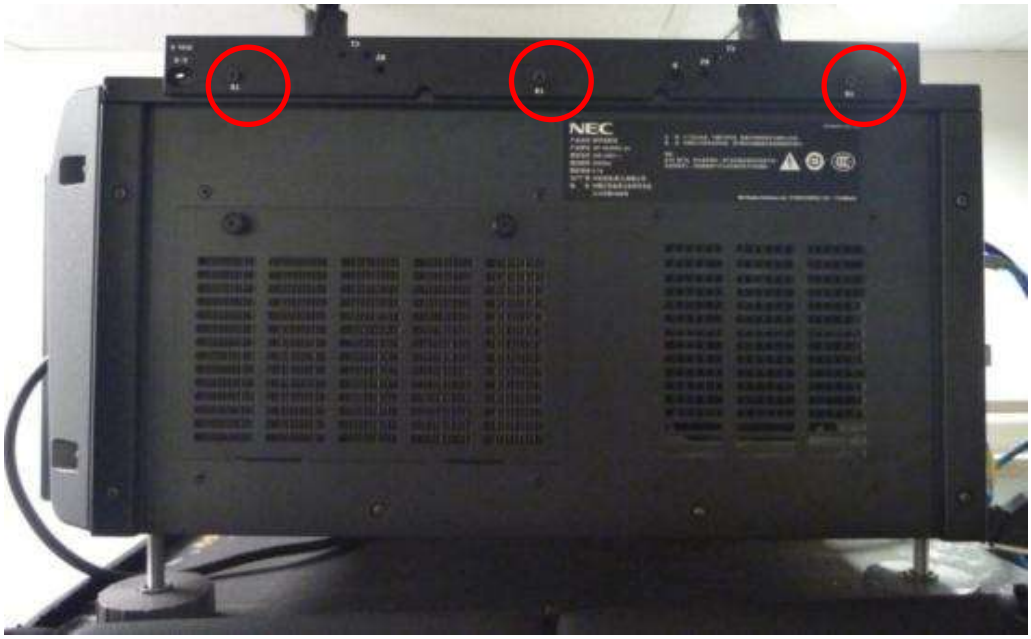
Mounting Location: Top Side of Projector

Installation Procedure

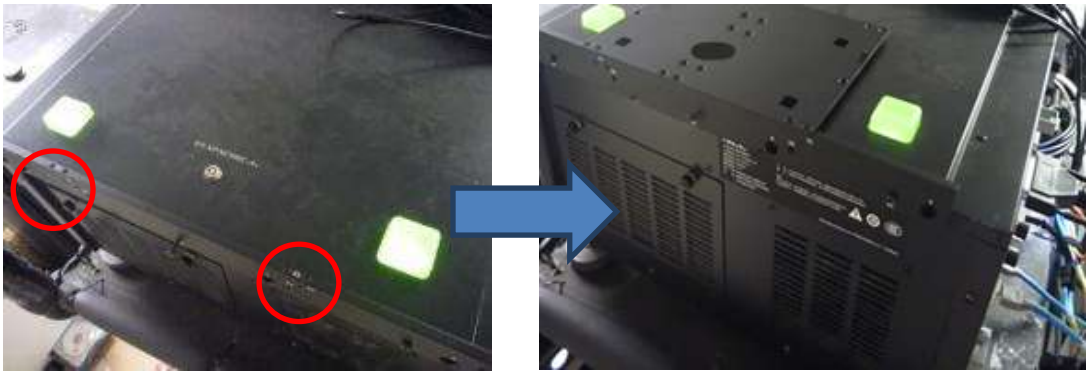
1. Remove the three screws located on the back side of the projector.



2. Install the parts “CN-01” on the projector and tighten with “M4-20” screws by using “C1” screw holes in side A of “CN-01”.

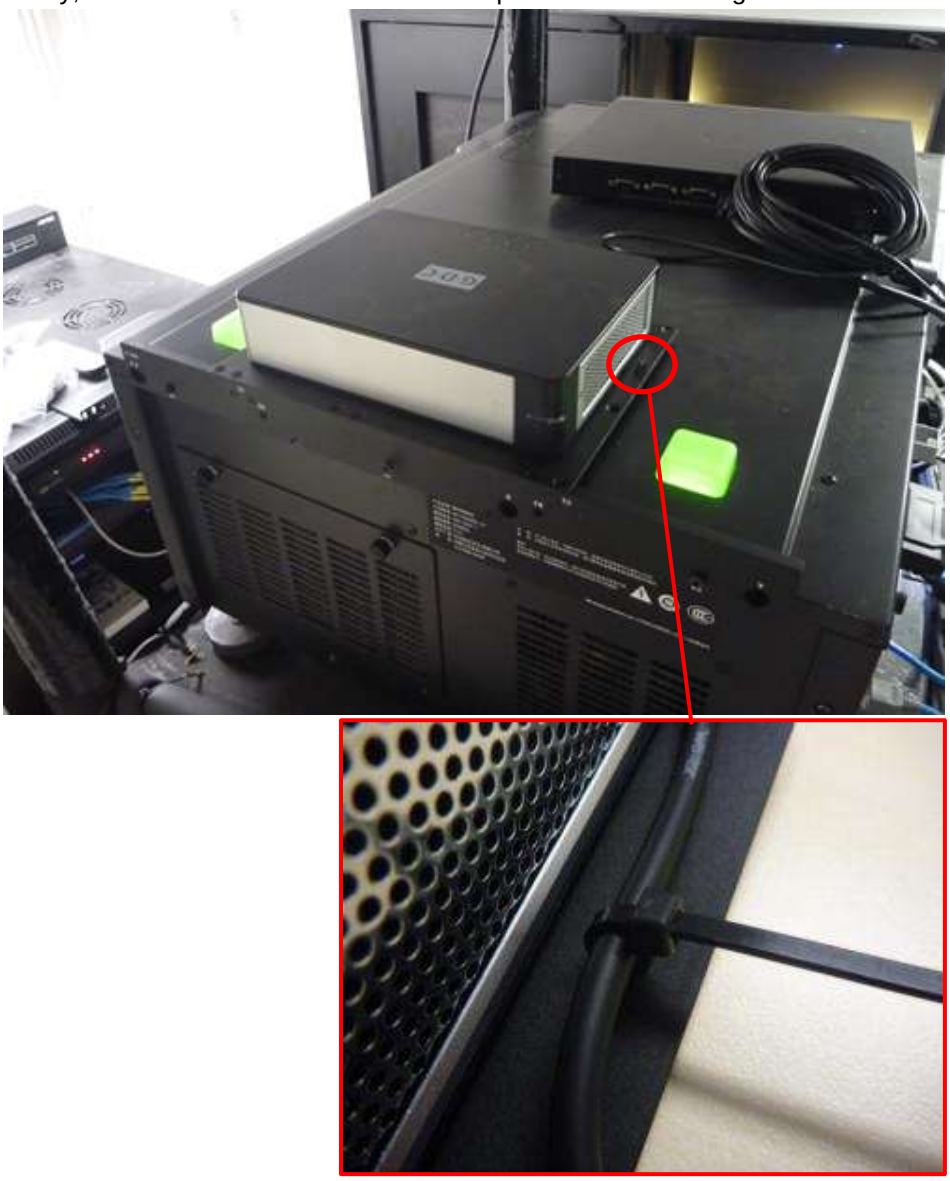


3. Put the Main Plate on top of the projector and fix it on “CN-01” with “M4-8” screws by using “M2” screw holes in side B of “CN-01”.



4. Insert the Portable Storage onto the bracket.

5. Lastly, use the cable tie to secure the DC power cord on the right hand side of bracket.



4.6. eSATA Connection to the SX-3000

4.6.1. eSATA Connection on the Portable Storage

1. Take out the adapter from the packaging and connect to the DC power connector.
2. Connect the eSATA cable to the back panel for data transfer.

Figure 26 Connect eSATA cable to the Portable Storage.

Step 2 Making the connections to the SX-3000

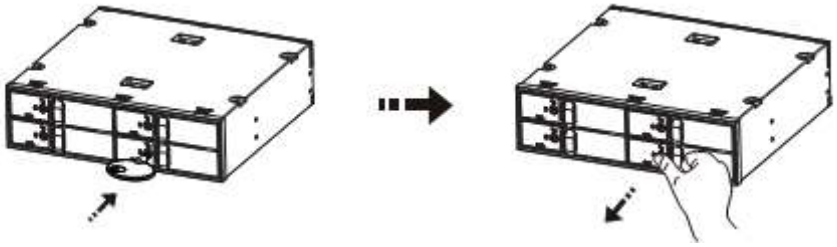
1. Insert the eSATA cable into the SX-3000 eSATA port 1.

Figure 27 Insert eSATA cable into SX-3000 eSATA port 1.

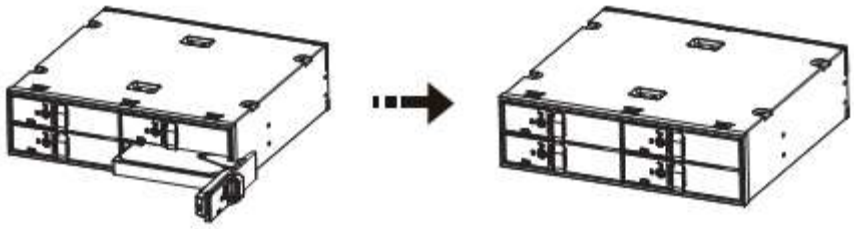
NOTE: To use Portable Storage as the content source, it MUST be connected to the port 1 of the eSATA connection of the SX-3000 board.

4.7. Procedure to Install the HDDs

1. Release the lock by using the key (Rotate 90 degrees Clockwise), open HDD tray cover door.



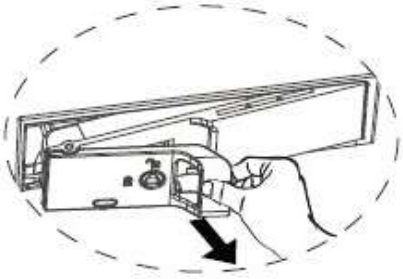
2. Insert 2.5” HDD, close the front door.



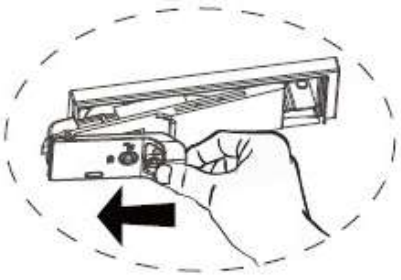
3. Lock the HDD Tray by using the key. (Rotate 90 degrees Counterclockwise)

Open Door Instruction:

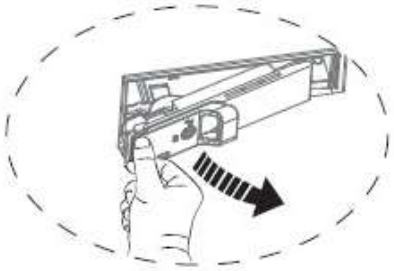
1. After releasing the HDD tray lock, use your thumb and forefinger to pull the front latch at an outward angle.



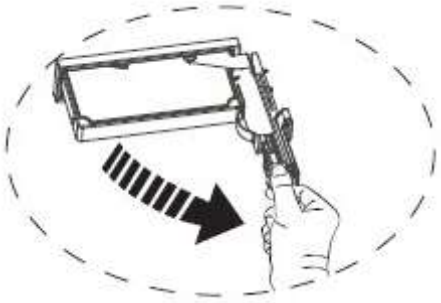
2. Hold the latch with your thumb and forefinger to move the door leftward at the utmost.



3. Hold the front of door and rotate the door to the right.



4. Pull the door aside so that it is in 90° angle of the device. Now, the HDD can be taken out or put in. (The door shall be close in the opposite steps)



Caution:

- Please gently push the door when closing to avoid damage to the component.
- If the HDD is inserted incorrectly, please do not close the HDD tray door. Forcing the door to close will damage the machine.

Procedure to Uninstall the HDD

I. Release the triangle lock by using the key (Rotate 90 degrees Clockwise) and open the HDD tray door.

II. Take out the HDD from HDD tray and close the door. Lock the HDD tray by using the key. (Rotate 90 degrees Counterclockwise)

Caution:

- The label should be facing up; the connector should be faced down in order to insert the HDD into the HDD tray. HDD cannot be inserted if it is in the wrong direction.
- Do not take out the HDDs during operation.
- The temperature of HDDs may exceed 50 ^{O}C. Please handle carefully.

4.8. The Portable Storage Indicator

4.8.1. LED Indicator

At the top of the Portable Storage, there are LED indicators that feature 2 colors in order to show status. Each drive has a corresponding LED light numbered 1-4.

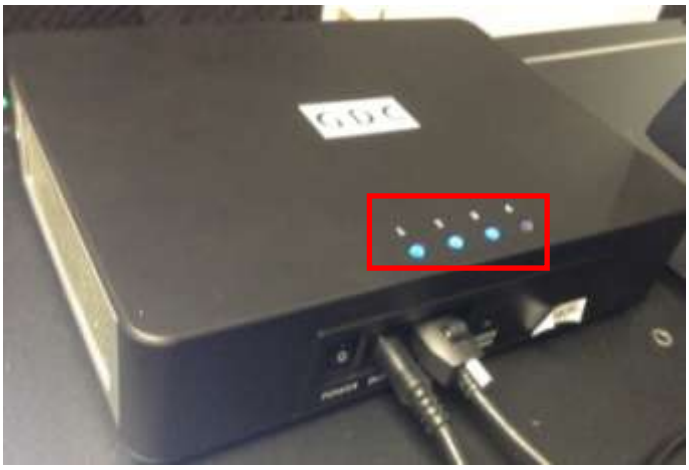


Figure 28 Hard drive LED indicators.

The lights have 2 colors; blue and red. The LED lights can change from steady to flashing depending on the status of the hard drive.

Please see the chart below for LED indications:

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

4.8.2. Warning Buzzer

Buzzer on/off toggle switch is located to the right of the eSATA connection. It can be accessed by using a pen or similar shaped object and turning off the buzzer.

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.

Figure 29 Buzzer On/ Off Toggle Switch.

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 pull from another Portable Storage.

5. INSTALLING ENTERPRISE STORAGE

5.1. Product Specifications

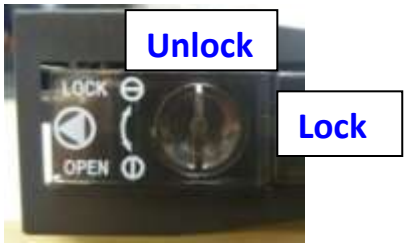
Figure 30 Enterprise Storage

Product Specifications
Suitable for 3.5”SATA HDD
Support Hot Swap
Dimension: 483(W) X 330 (D) X 86.7(H) mm

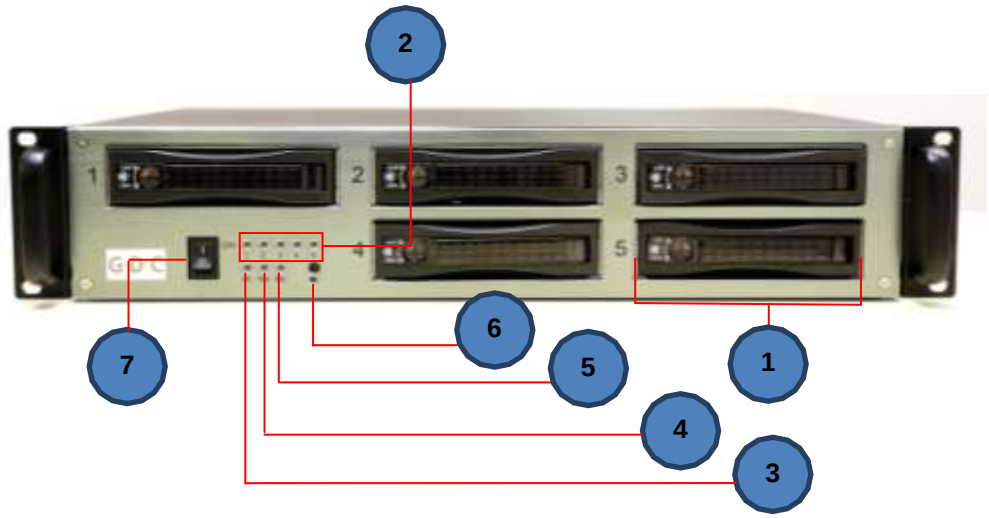
Important note: Please make sure the SMS version is 9.0-build107 or higher before continuing.

5.2. HDD Tray Lock

Release the lock by using finger (Rotate 90 degrees Clockwise)



5.3. Front Panel



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

5.4. Back Panel

1	Power Connector
2	eSATA Connector

Important Note: Always power on the Enterprise Storage external hard drive bay before powering up the projector.

5.5. Install the Enterprise Storage into the Pedestal

1. Put the Enterprise Storage on the 19” pedestal.
2. Tighten four screws to fix the Enterprise Storage as shown in Figure 31.

Figure 31 Put the Enterprise Storage on pedestal.

NOTE: Please insert the Enterprise Storage into the highest position of the pedestal.

5.6. eSATA connection to the SX-3000

5.6.1. eSATA connection on the Enterprise Storage

1. Take out the power cord from the packaging and connect to the power connector.
2. Connect the eSATA cable to the back panel for data transfer.

Figure 32 Connect eSATA cable to the Enterprise Storage.

Step 2 Making the connections to the SX-3000

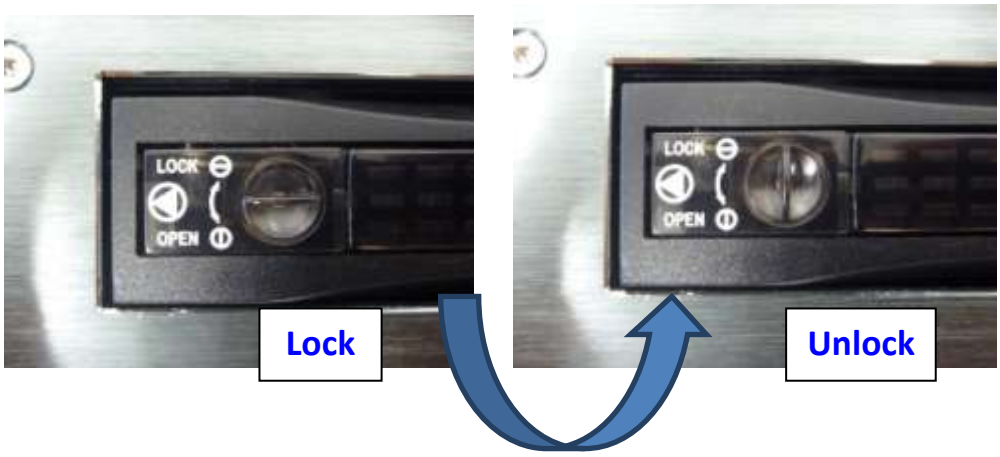
2. Insert the eSATA cable into the SX-3000 eSATA port 1.

Figure 33 Insert eSATA cable into SX-3000 eSATA port 1.

NOTE: To use the Enterprise Storage as the content source, it MUST be connected to the port 1 of the eSATA connection of the SX-3000 board.

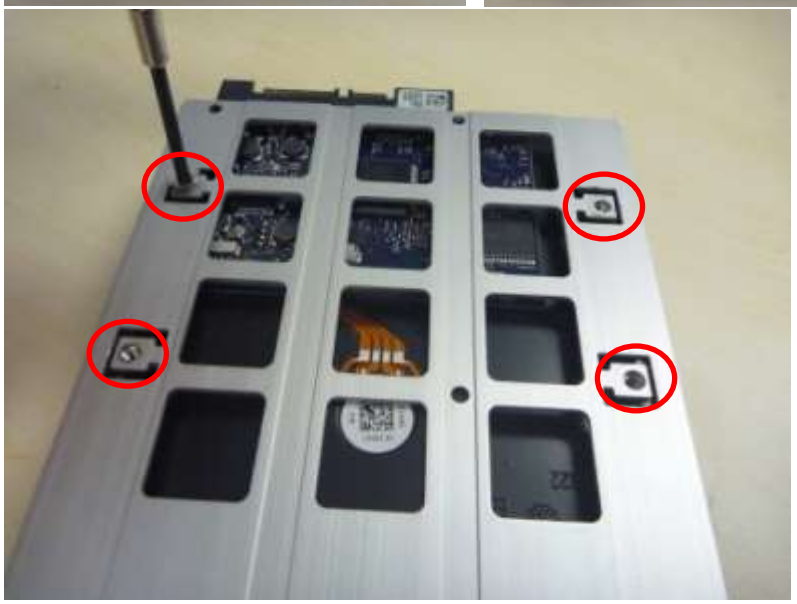
5.7. Procedures to install the HDD

1. Using your fingers, rotate the HDD tray lock 90 degrees counterclockwise to release it.



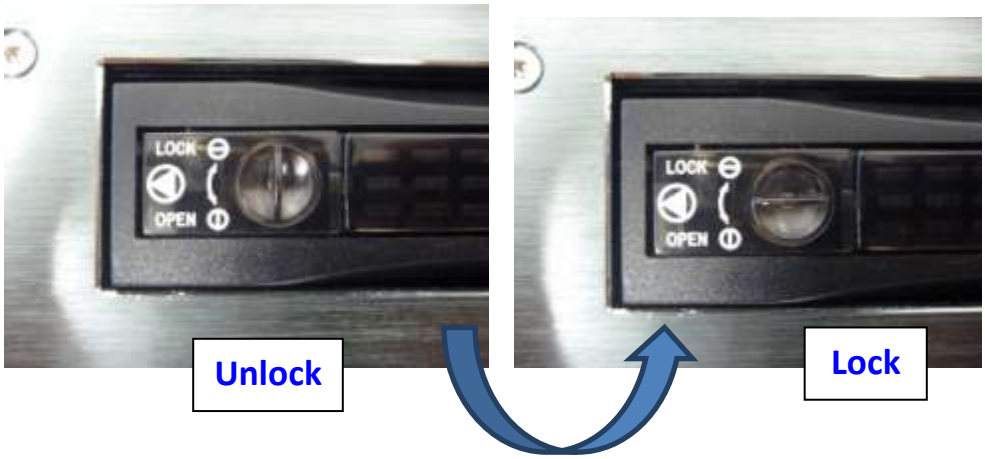
2. Push the button on the key icon to release the handle and pull out the HDD tray.

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



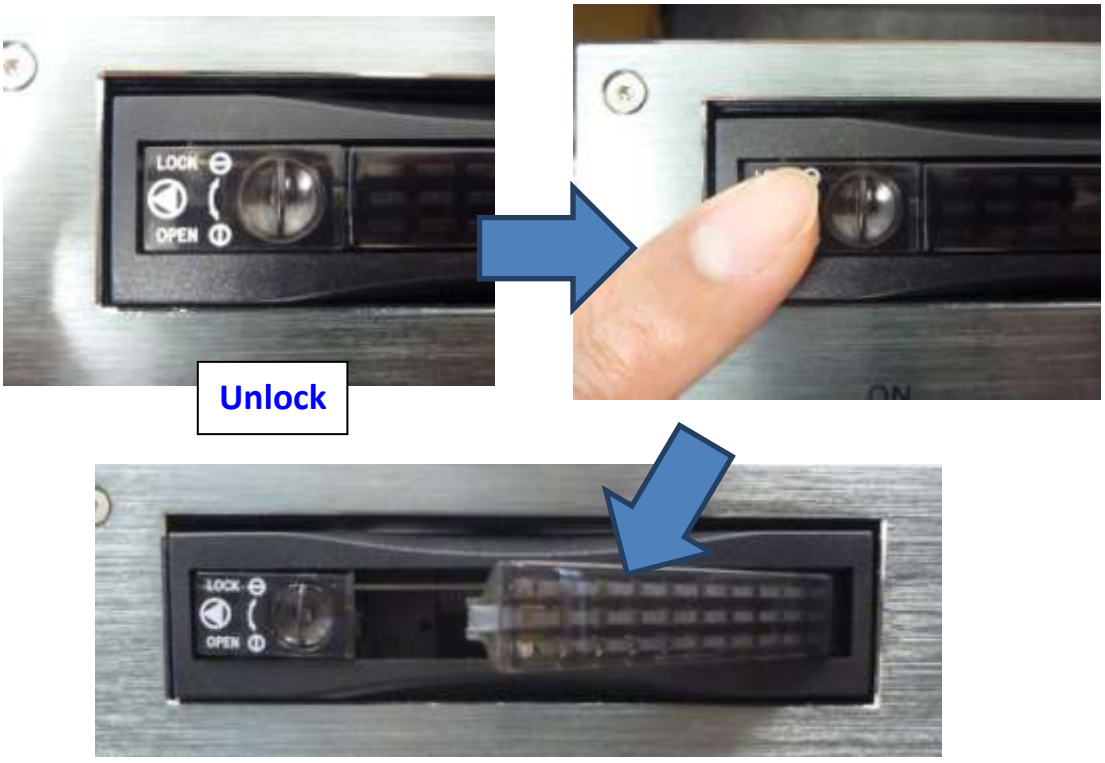
4. Install the HDD tray back into the Enterprise Storage and push the tray handle to fully insert the HDD tray.

5. Using your fingers, rotate the lock 90 degrees clockwise to lock the HDD tray to the Enterprise Storage.

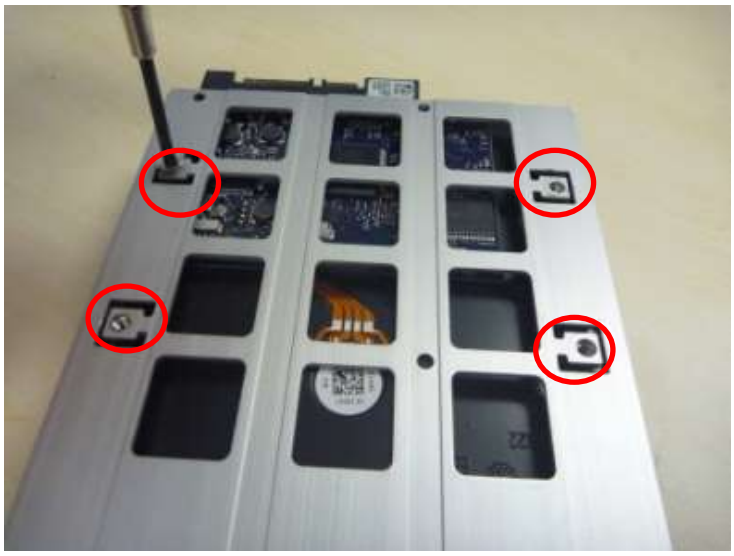


Procedure to uninstall the HDD

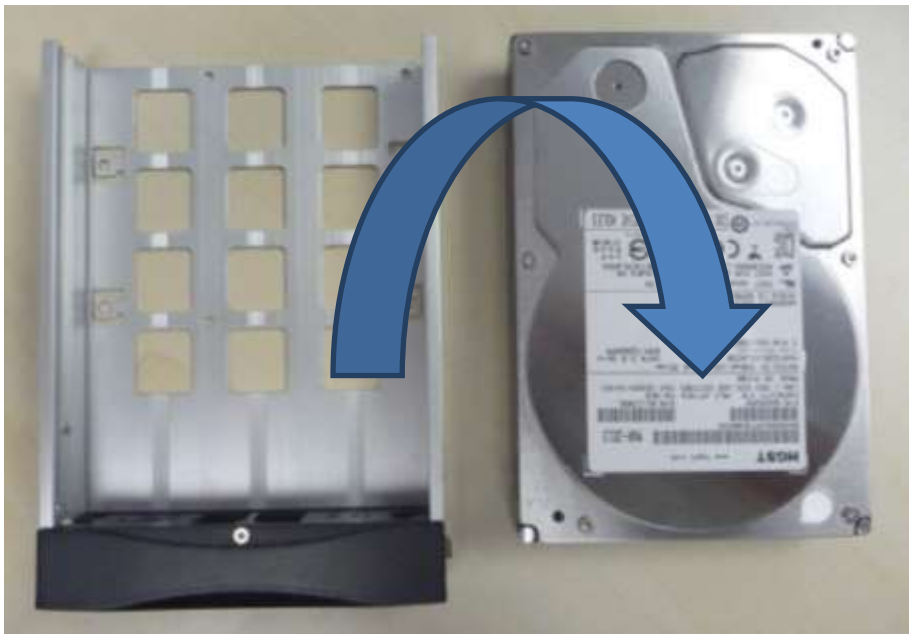
1. After releasing the HDD tray lock, push the button and pull out the HDD tray by its handle from the Enterprise Storage.



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 the component.
- Do not force the HDD tray into the housing if you think it is installed incorrectly. This may damage the Enterprise Storage.
- The HDD labels should be facing up and the connector should be facing down when installing the HDD onto the HDD tray.
- Do not take out the HDDs during operation.
- During operation, the temperature of the HDD may exceed 50°C. Please take care when handling hot drives.

5.8. The Enterprise Storage Indicator

5.8.1. LED Indicator

At the front of the Enterprise Storage, there are LED indicators that feature 2 colors in order to show status. Each drive has a corresponding LED light numbered 1-5.

The lights have 2 colors; blue and red. The LED lights can change from steady to flashing depending on the status of the hard drive.

Please see the chart below for LED indications:

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

Indication of LED

Power LED

		Green LED
Power LED	LED - Steady	Powered on.
	LED - Off	Powered off.

Fan LED

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

RAID LED

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

5.8.2. 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.

5.8.3. 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 pull from another Enterprise Storage.

6. OPERATION OF PORTABLE STORAGE/ ENTERPRISE STORAGE

6.1. Selecting the Portable Storage/ Enterprise Storage (1 x eSATA connection) for the Content Storage

1. Under the **"IMB Storage"** tab in the **Configuration** menu select **Use PSD-3000 (1x Cable).**

2. Select **[OK]** to complete this option.

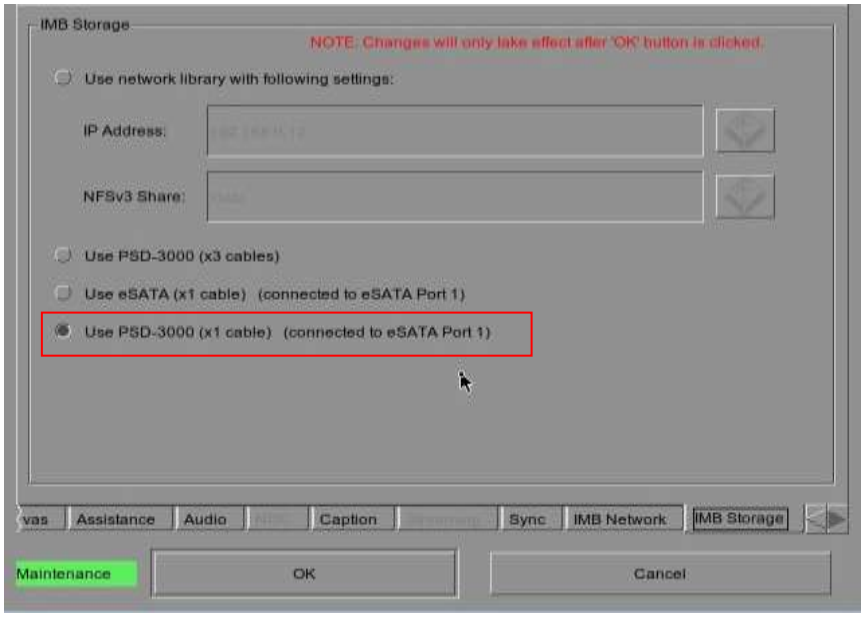


Figure 34 IMB Storage Tab [Configuration].

3. Go to **Control Panel**, click **Shutdown** and then click **Reboot**. This is to ensure all components in SX-3000 are able to detect the Portable Storage/ Enterprise Storage after reboot.

6.2. Hard Disk Information

The Portable Storage/ Enterprise Storage is seen by the SX-3000 as a hardware RAID. When the hard disk information check is done the RAID set will show as one drive, like below:

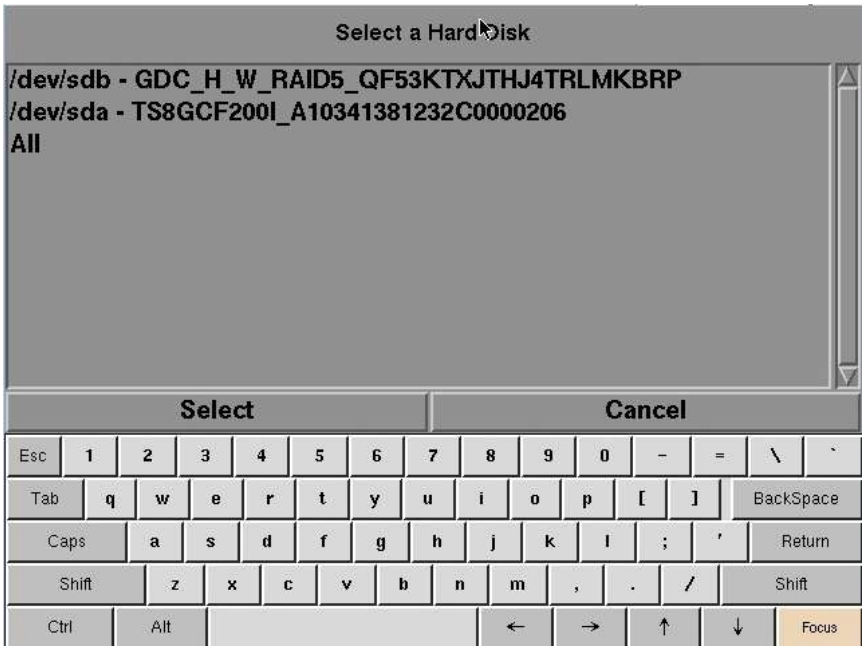


Figure 35 Hard disk information [Storage System Management].

6.3. RAID Status

When the RAID is rebuilding, the **[Monitor RAID Status]** section displays the rebuilding progress as normal function to the previous RAID setup.

6.4. Creating a new RAID Array

When creating a new RAID array the option to select the drives seen in previous systems is no longer needed. After selecting **[Create New RAID Array]** a confirmation page will pop up to confirm the decision.
The new RAID creation will take just 1-2 minutes.

6.5. Increase Rebuild Speed

If the RAID array is being rebuilt during playback, the rebuild speed will slow down significantly. To resume highest rebuild speed after playback is finished, go to **Admin Panel→ Login→ Storage System Management** menu (please refer to Figure 36). Then, click **Increase Rebuild Speed** button. This will immediately set RAID array to rebuild at highest speed.

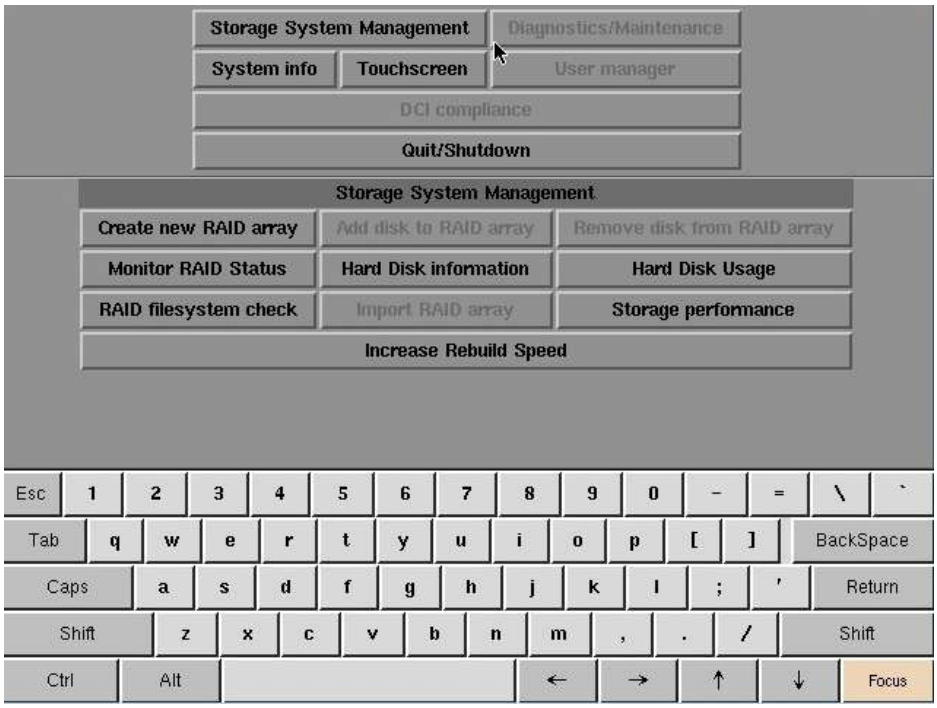


Figure 36 Increase Rebuild Speed [Storage System Management].

6.6. Disabled options when using the 1x eSATA Connection

The following options are disabled when using the Portable Storage/ Enterprise Storage (1x eSATA) content option:

- Add Disk to RAID Array – This is done automatically.
- Import RAID Array – No longer necessary
- Remove Disk from RAID Array – No longer necessary

7. SX-3000 IP SETUP

The IP address of the SOM and SX-3000 IMB will need to be set for proper operation. The SOM and the IMB IP are to be on the same subnet.

7.1. IMB Network Setup

To edit the IP addresses of the Ethernet ports, use the following instructions:

1. Enter the SMS screen.
2. Click [Configuration] to access the Configuration page.
3. Select Maintenance access from the top drop down menu. Enter the number password and select [OK]
4. Select the **IMB Network** tab
5. Enter the Subnet Mask. As well as the desired IMB IP and SOM IP addresses (please refer to Figure 37).

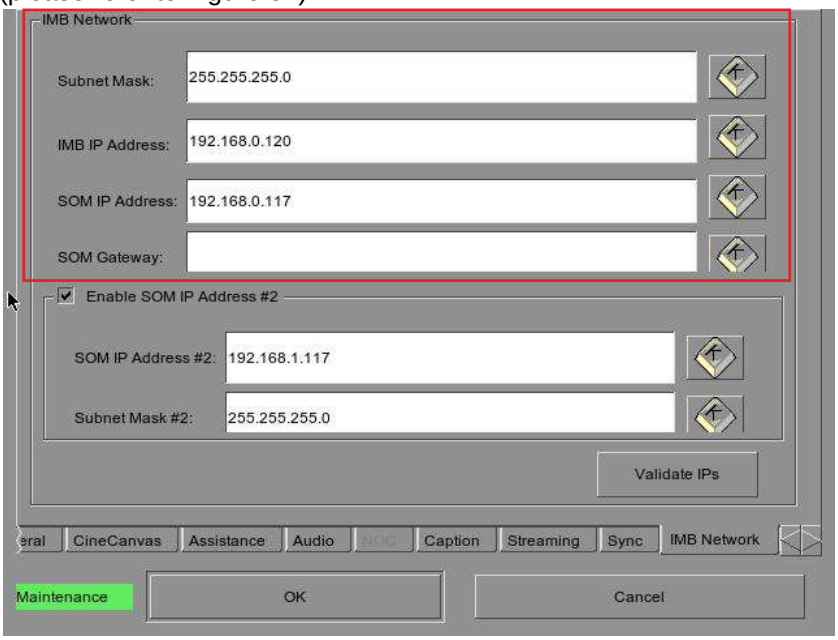


Figure 37 IMB Network Tab [Configuration].

6. Once the settings have been entered, click on [Validate IPs].

7. If all of the IP addresses are valid, you will get the following pop-screen as follow:

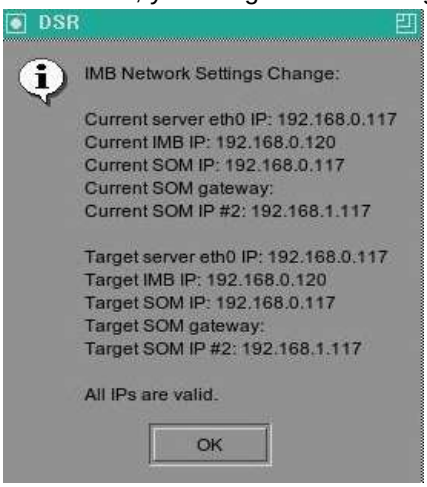


Figure 38 Confirm IPs are valid.

8. Click [OK] to exit.

7.2. Projector Connection

The Ethernet 2 connection and the projector are to be on the same subnet. Since the SX-3000 is connected directly to the Projector, there is no need to set the IP address for the server to the projector. The option to set the IP for the projector will be inactive (as shown in Figure 39).

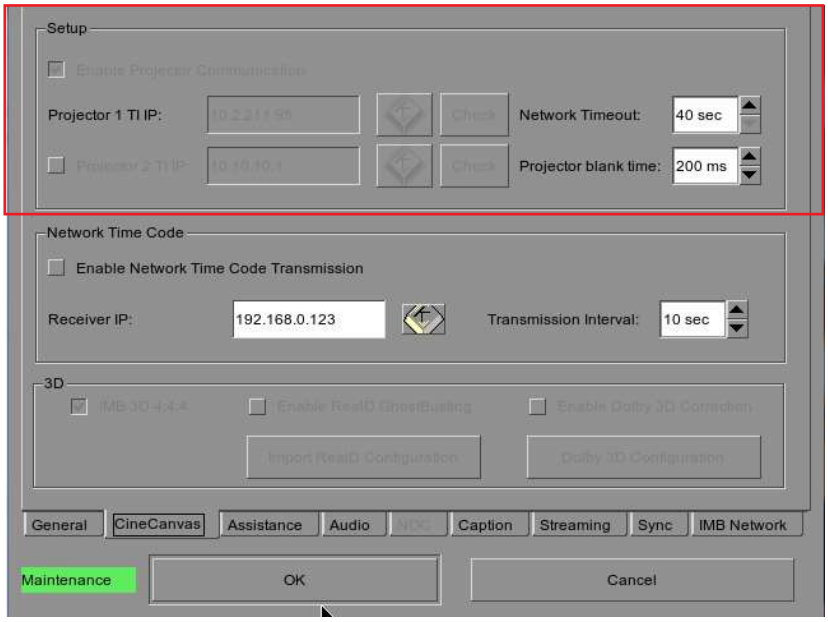


Figure 39 Cinecanvas Tab [Configuration].

7.3. IMB Marriage and Clearing Door Tampers from the SX-3000

Please use the following steps below to perform the marriage between the SX-3000 and to clear the door tampers on the SX-3000:

1. Enter the SMS screen.
2. Click [Configuration] to access the Configuration page.
3. Select Maintenance access from the top drop down menu. Enter the number password and select [OK].
4. Select the **General** tab.
5. Click [IMB] to access the IMB Status dialog box (as seen in Figure 40)

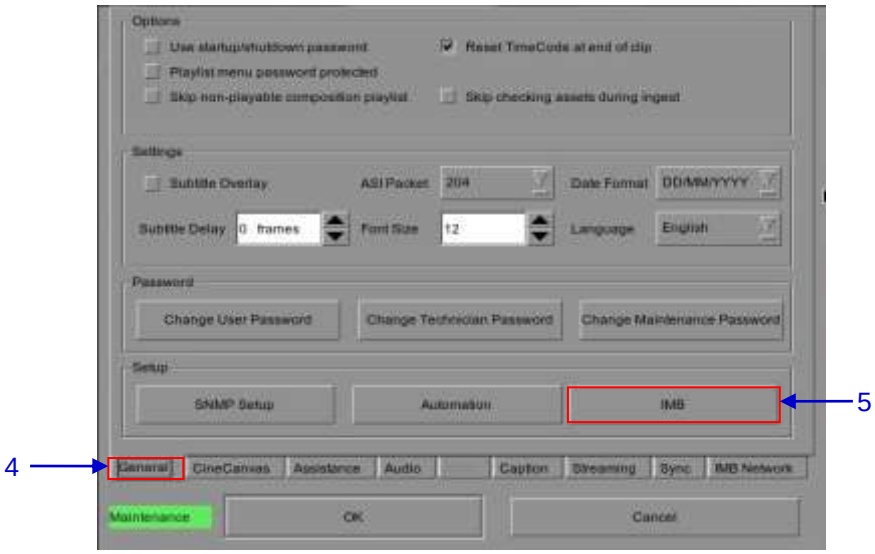


Figure 40 General [Configuration].

6. The following box will appear:

Figure 41 IMB Status.

7. Click [Marry] to perform the marriage of the projector and SX-3000.

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 this screen.

8. SERIES 2 PROJECTOR SETUP

To work with SX-3000, the projector must be set up according to the requirements of the projector manufacturer. It is required to use a VGA monitor and USB keyboard and mouse connected to the SX-3000 in order to setup the connection between SX-3000 and the projector. Once the connection is complete, the monitor, keyboard, and mouse can be removed and the SMS can be accessed via VNC from the TMS or projector.

Note: The screen file setting used for projector macros should match the screen resolution that the projector is capable of. For example, a 2K screen file should be used for a 2K projector.

8.1. Barco Series 2 Projector Setup

No system configuration is required for Barco Series 2 projector to work with SX-3000. The Service Door/Marriage Tamper on the server must be cleared before SX-3000 can be used for playback.

In order to use SX-3000 for content playback, the INPUT source of the projector macros should be set to “Mediablock” (as shown in Figure 42). 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.

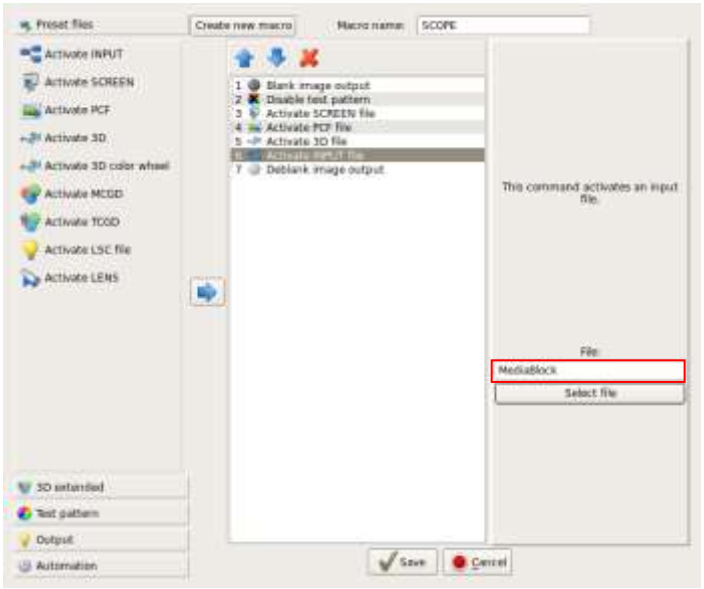


Figure 42 INPUT source settings on Barco Series 2 projector.

8.1.1. Barco Touch Panel Setup

The Barco Projector touch panel can be used to control the SX-3000. Use the following steps to set up control of the SX-3000 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 43.

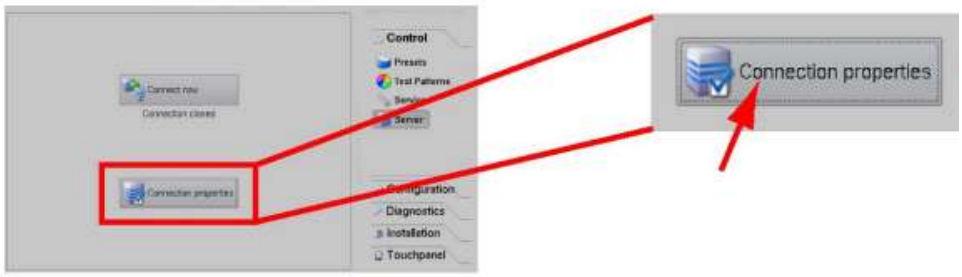


Figure 43 Barco touch panel settings [Connection Properties].

2. Enter the SOM IP address of the SX-3000 into the “Host Name” field. The remaining fields should be filled in as follows (please refer to Figure 44):
   Display or port: 5900
   Check the [Use as port] checkbox
   Password: gdcvnc

Figure 44 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.

8.2. NEC Series 2 Projector

In order to configure an NEC Series 2 projector to work with SX-3000, 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 44)

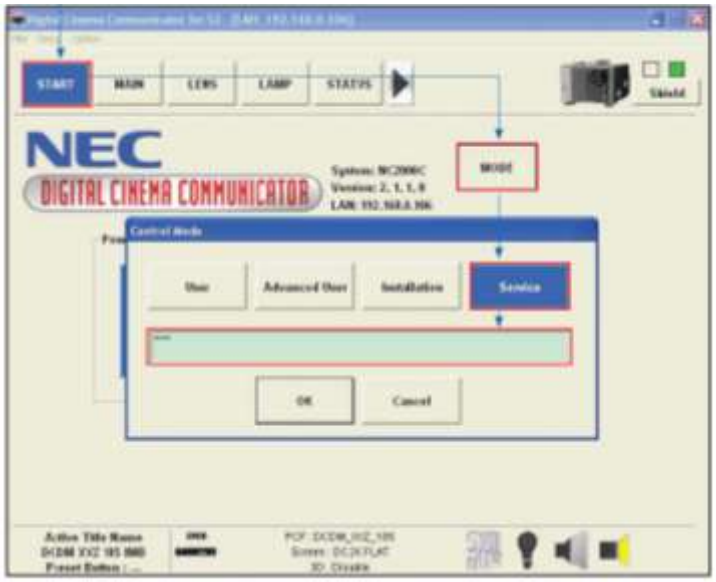


Figure 45 Service Mode on NEC Digital Cinema Communicator.

4. Select [Setup] →[Option Slot] on the Digital Cinema Communicator and select IMB for Slot B in Option Slot Setting. (as shown in Figure 46)

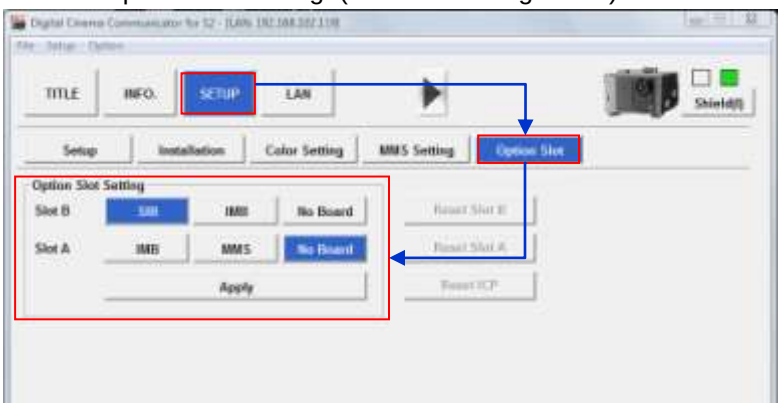


Figure 46 Option slot settings on NEC Digital Cinema Communicator.

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

To use SX-3000 for content playback, the INPUT source of the projector macros must be set to IMB.

8.3. Christie Series 2 Projector

When the SX-3000 is installed into a Christie Series 2 projector, the following steps must be taken in order for GDC server to playback with the Christie Series 2 projector:

1. Clear the projector's marriage tamper:
    a. Log in to the "Marriage" account on the projector TPC. Select Menu→Service Setup→Marriage to start the Marriage wizard (see Figure 47).

    b. Click the [Next] button to proceed to the Marriage Checklist window.

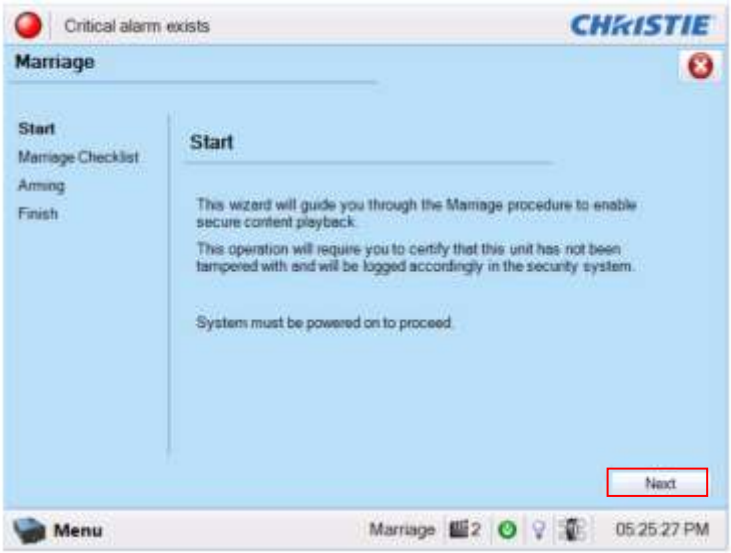


Figure 47 Projector marriage wizard on Christie projector TPC.

    c. Read and perform the actions listed in the Marriage Checklist. In the Marriage Checklist window (see Figure 48), the system checks that all tamper switches are secure and lists items that you must check to ensure the projector is secure before proceeding. Click the [Next] button to proceed to the Arming window.

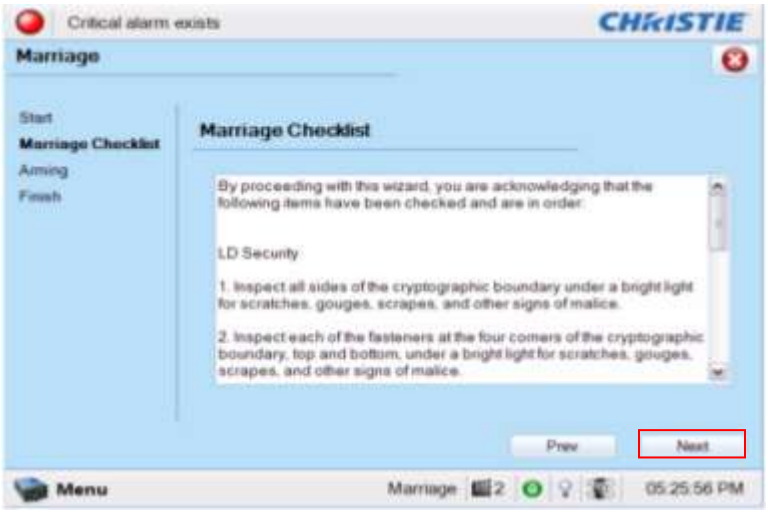


Figure 48 Marriage checklist.

d. Arm the marriage. In the Arming window, click the Arm Marriage button (refer to Figure 49). A 30 second count-down timer begins. The LED in the Marriage button on the PI Board will flash green during this count-down. You **MUST** press the Marriage button on the PI Board within this 30 second window in order for the marriage to take effect. When the Marriage button is pressed, the LED button will change to a solid green to indicate a successful marriage.

Figure 49 Arm Marriage and Marriage countdown.

e. The Finish window states the success of the marriage. Click the Finish button to return to the Main panel.

2. Clear the Service Door/Marriage Tamper on the server.
   All 3D IMB channels on the Christie Series 2 projector should use the ‘IMB’ input and ‘4:4:4 (RGB)’ input data format (see Figure 50).

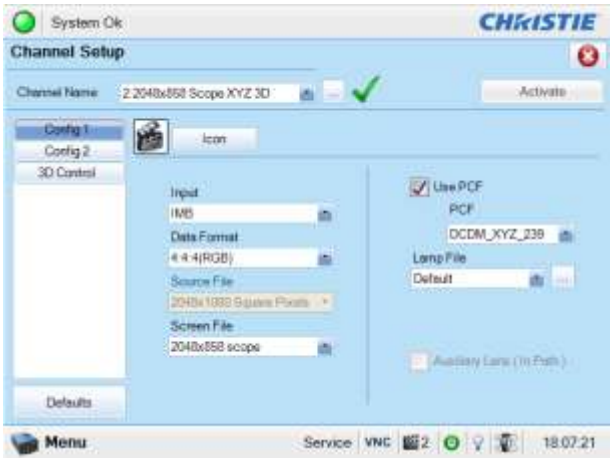


Figure 50 Projector input settings for Christie projectors.

8.4. 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 51).

Figure 51 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, It is required to setup different 3D setting for different frame rates. This will ensure all channels have a corresponding 3D macro for each refresh rate. For example, 6:2 for 24fpeps, 4:2 for 48fpeps, and 2:2 for 60fpeps.

8.5. IMB 3D macro settings changes

Server software version 9.0 makes changes to the IMB 3D output format. The following projector macro changes are required to support these changes.

Note: These are required changes on the projector. IMB 3D output will not function properly unless these changes are made.

The SX-3000 with the Software version 9.0 will always enable the "IMB 3D output in '4:4:4'" format.

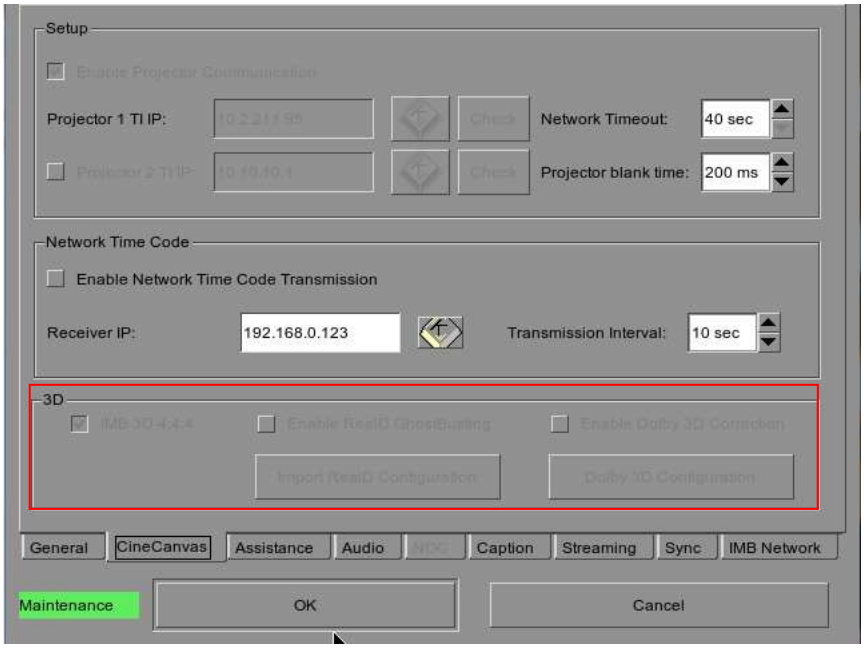


Figure 52 IMB 3D 4:4:4 configuration on SX-3000.

8.5.1. Series 2 Projector 3D Macro Settings

Since the 'IMB 3D 4:4:4' option is checked in SMS configuration, providing automatic 4:4:4 output. All 3D macros within the projector should be changed to use '4:4:4' input.

9. TIME ZONE SETUP

The SX-3000 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 the SMS screen, click on the [Control Panel] button 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 53.

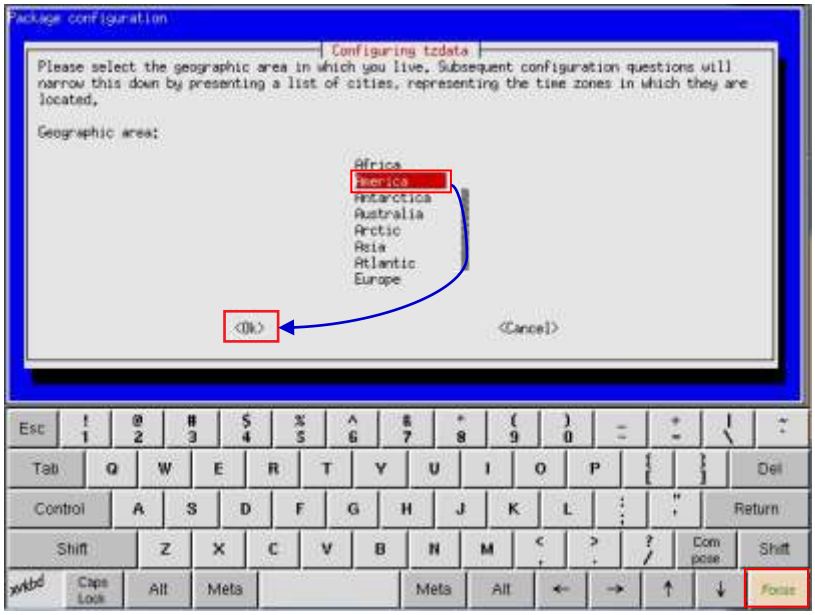


Figure 53 Time Zone – configure geographic area.

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 54).
7. Click [Tab] until the [OK]

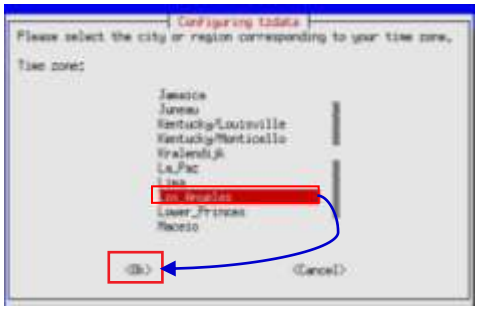


Figure 54 Time Zone – configure country/region.

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

10. CONTENT INGEST MANAGEMENT SETUP

Content ingest management must be set up before the server is able to ingest content. This section will show the setup for content ingest from two different sources. The same steps can be used to set up content ingest sources using other sources.

10.1. Configuring a content ingest source

In order for the SX-3000 to ingest content the ingest source must be configured. The following sections describe the various types of ingest sources that are used with the SX-3000.

10.1.1. 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 the SMS, click on the [Control Panel] menu.
2. Click [Manage Content] to access the Content Management Page.
3. Click the [Source] tab, followed by the [Add] button. This opens up the Source Setup Page. (please refer to Figure 55)
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”. Select “USB 2.0” as the Source Type.

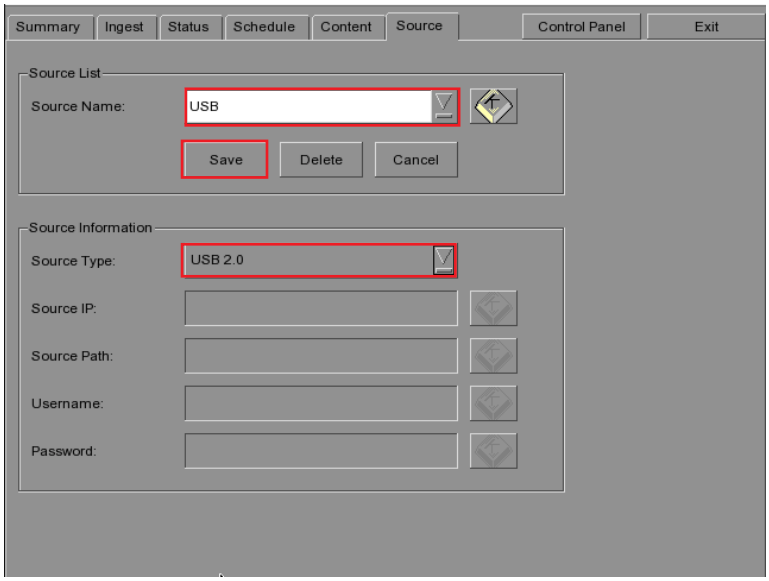


Figure 55 USB ingest source setup.

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

10.1.2. Content ingest from FTP

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

1. Select the [Source] tab, followed by the [Add] button (as shown in Figure 56).
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”. Select “FTP” as the Source Type.

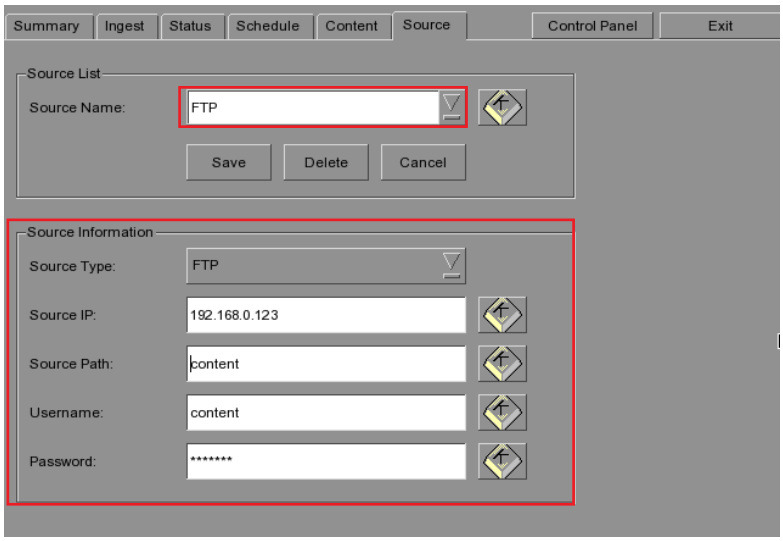


Figure 56 FTP ingest source setup.

3. Enter the respective parameters for Source IP, Source Path, Username, and Password.
4. Click [Save] to save the settings for the FTP content ingest source.

10.2. Selecting an ingest source

To select an ingest source, click  next to the “Source to ingest from:” label on the “Ingest” tab. Choose the required ingest source from the drop down menu (as seen in Figure 57).

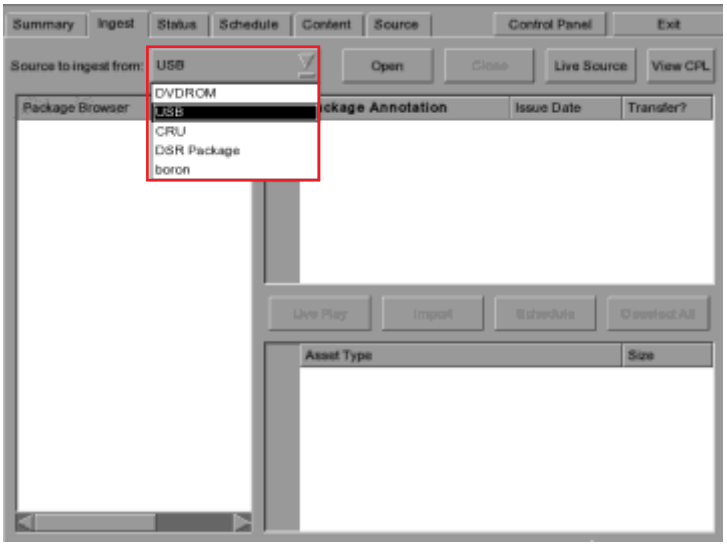


Figure 57 Ingest from USB source.

11. AUDIO SETUP

The SX-3000 features AES digital audio signal via 2 RJ45 Outputs. For compatibility with most audio processors on the market, a standard RJ45 to DB25 connector is included in the packaging (please refer to Figure 58).

Figure 58 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 59 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 60 RJ45 →DB25 pinout (Optional for CP750/JSD80 audio connector).

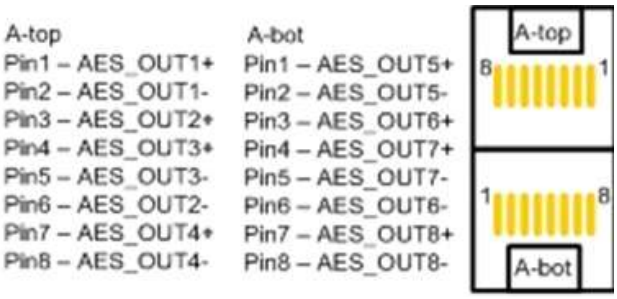


Figure 61 AES Audio RJ45 pinout.

11.1. Digital-to-Analog Converters

Not every case will require a Digital-to-Analog Converter (DAC) as some sound processors are able to receive digital input. In the case that a DAC is required the first thing that should be done is to connect the server to the DAC. This device converts the digital audio signal to an analog audio signal. The DAC is then connected to a sound processor that processes the analog audio signal and outputs it to the amplifier, and subsequently the cinema's speakers.

12. SUBTITLES

It is recommended to generate subtitles from the Cinecanvas rather than the server. To do so, please ensure that the **Subtitle Overlay Option** under the ***General*** tab of the ***Configuration*** menu remains unchecked. (please refer to Figure 62 as shown below)

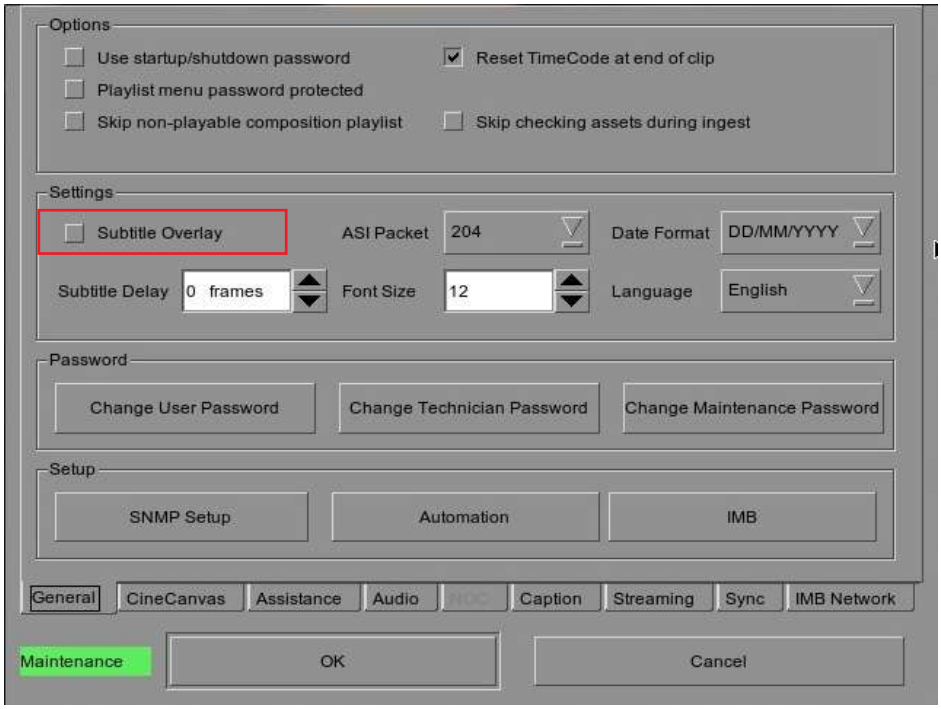


Figure 62 Subtitle overlay settings.

13. AUTOMATION SETUP

The SX-3000 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.

13.1. General automation setup

The following steps describe the general setup of an automation device on the SX-3000.

1. Click the power button once to access the Control Panel.
2. Click the following buttons to access the Automation interface [SMS]→[Configuration]→[Maintenance Access]→ (enter password)→[General]→[Automation]

Automation event labels and actions can be set up in Action menu (as shown in Figure 63):

- **Event Labels** are how automation actions can be accessed, for example, they can be triggered as automation cues from an playlist
- The **Actions** configured with an event label will be executed when an event label is triggered.

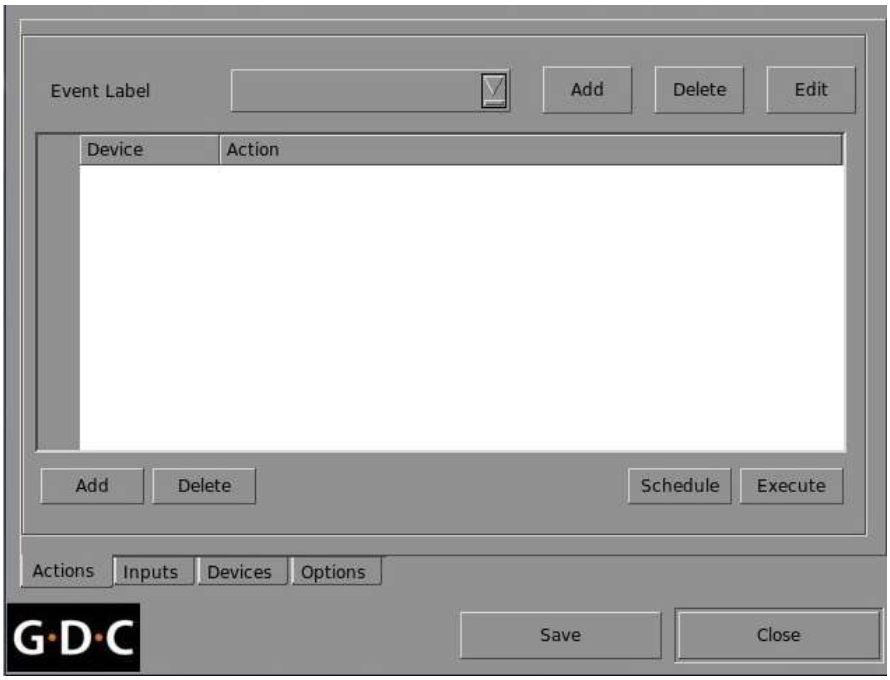


Figure 63 Actions Menu.

13.2. Adding event labels and actions

The following steps describe how to add an event label to the automation interface. This automation label is used to trigger the associated automation actions during playback. (please refer to Figure 64)

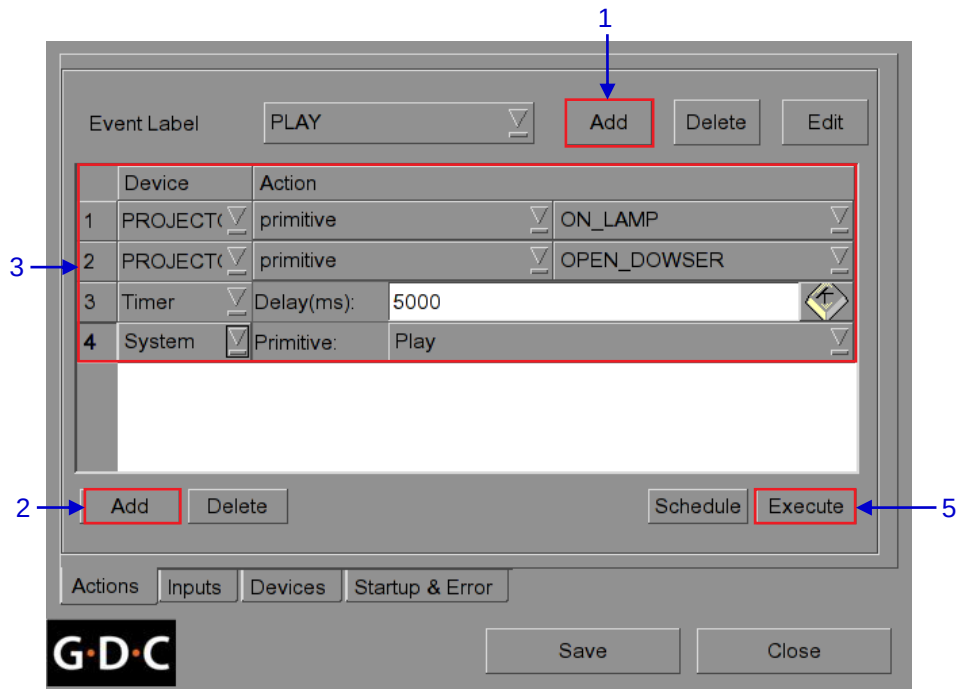


Figure 64 Adding event label.

1. Click the [Add] button next to the 'Event Label' menu to add a new event label. Enter the name of the event label.
2. Click the [Add] button below the table to add a new action associated with this event label.
3. A new action is added to the table. The 'Device' and 'Action' settings of this new action can be changed. Notice that when the 'Device' setting is changed, the possible 'Action' settings for that device are displayed. Refer to the following sections on adding automation devices.
4. Repeat steps 2 and 3 to add more actions to this event label. Use the [Delete] button below the table to remove the last action added to the list.
5. You can test the event label and the list of actions associated with the event label by clicking the [Execute] button.

13.3. Automation Scheduling

Automation event labels can be scheduled to be executed at a pre-arranged date and time, or repeated daily at a pre-arranged time. To access the automation schedule select the [Schedule] button on the [Actions] tab on the automation interface. This will bring you the automation schedule configuration screen (as shown in Figure 65).

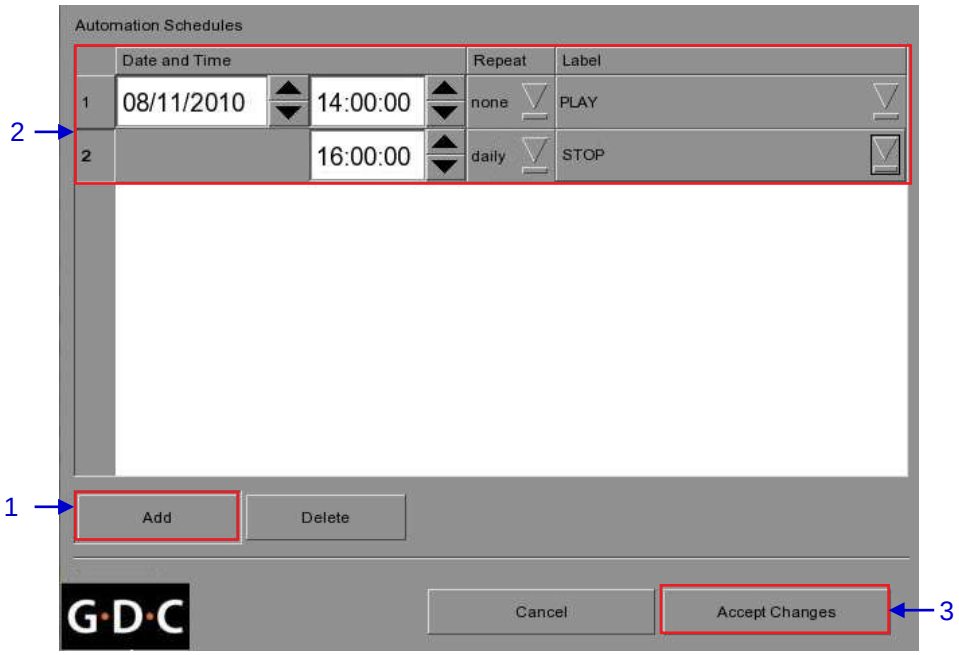


Figure 65 Schedule automation events.

To add a scheduled automation event,

1. Select the [Add] button.
2. Set the date and time of the automation event, the repeat interval, and the event label to be executed.
3. Click [Accept Changes] to save created schedules.

13.4. Automation setup for server GPIO

The SX-3000 GPIO automation device settings can be configured from the [Devices] tab after selecting the “GPIO” device name. (please refer to Figure 66)

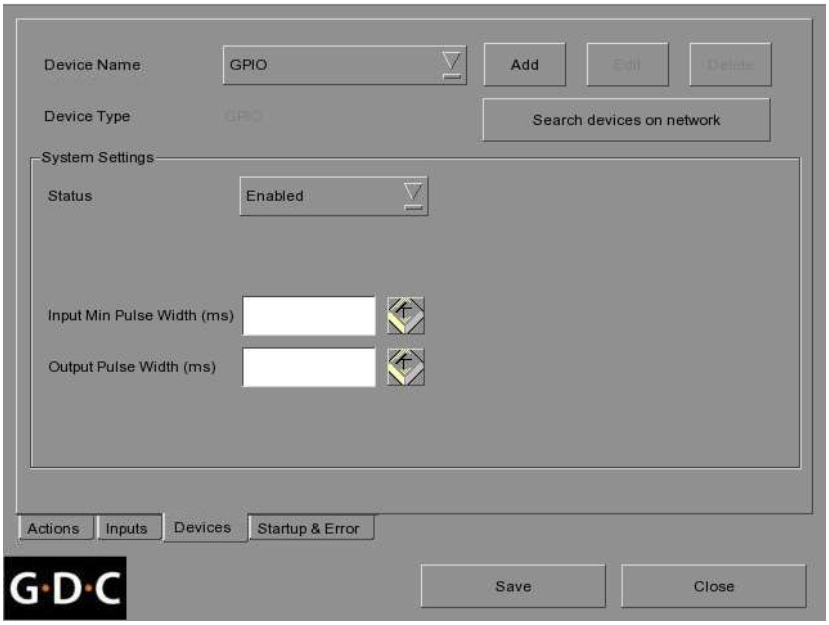


Figure 66 GPIO automation device settings.

If the output pulse width is left blank, the default value of **50ms** will be used. If a different output pulse width is required, the value can be entered in the ‘Output Pulse Width’ setting. Click the [Save] button to save any changes made.

13.5. Automation setup for projectors

The SX-3000 supports automation for Barco, Christie and NEC projectors. Follow the steps below to configure a projector device in the server automation interface.

1. Click the [Add] button on the [Devices] tab and enter the name of the device. In this case, it is “PROJECTOR”. Set the device type to “PROJECTOR” (see Figure 67).
2. Click [OK] and set up the device parameters for the projector device (see Figure 68).
3. Enter the IP address of the projector device (see Figure 67).
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, check the ‘Series 2’ checkbox.
5. Enter the ‘Login’ and ‘Password’ for the projector if required.

6. Click the [Save] button to save configured settings.

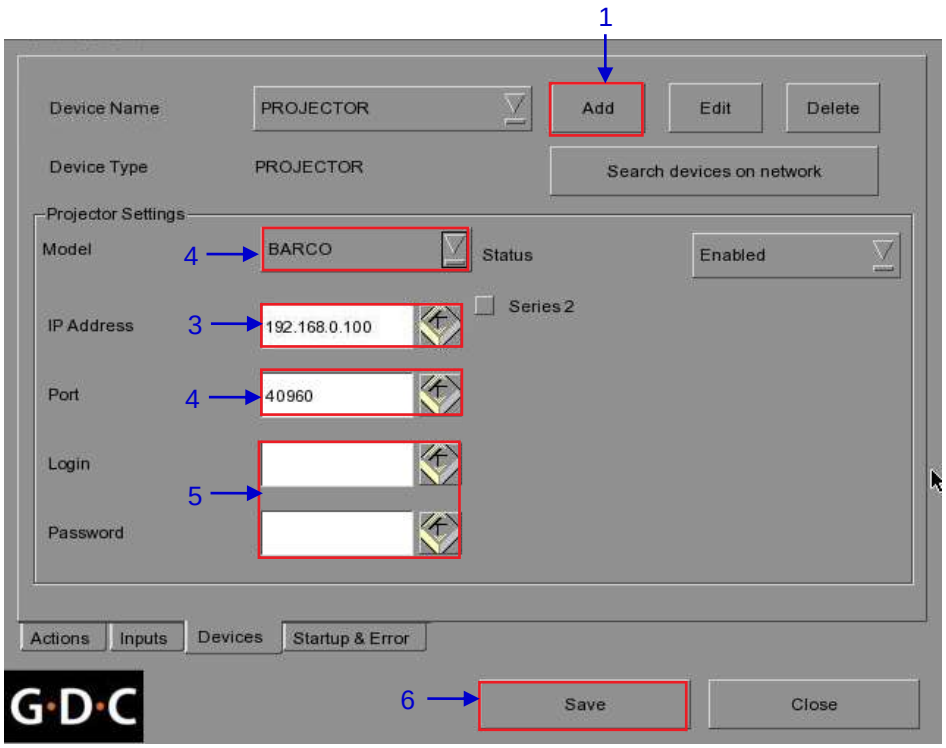


Figure 67 Automation settings for projector device.

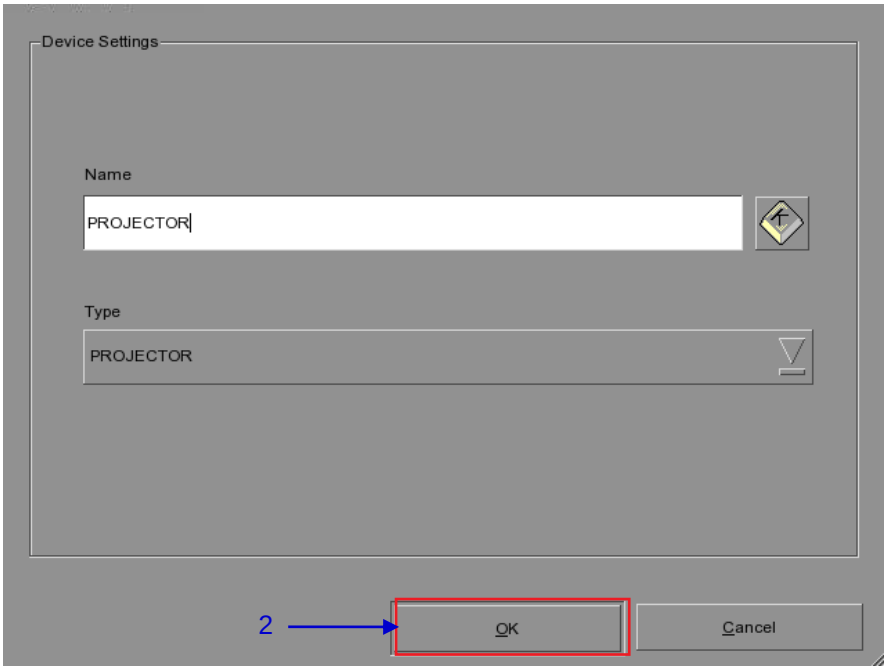


Figure 68 Projector automation device setup.

13.6. Automation setup for eCNA devices

The SX-3000 supports the eCNA-10 automation system. Follow the steps below to configure an eCNA device in the server automation interface.

1. Click the [Add] button on the [Devices] tab 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 69 eCNA automation device setup.

3. Enter the IP address of the eCNA device (see Figure 70).
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 the [Save] button to save configured settings.

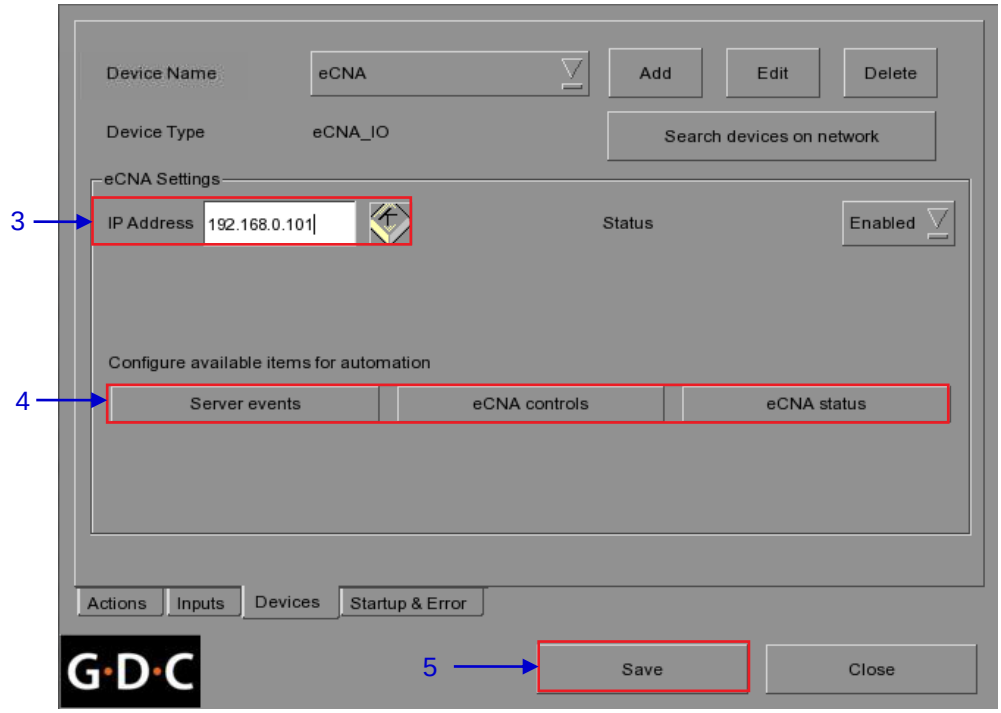


Figure 70 Automation settings for eCNA device.

13.7. Automation setup for JNIOR devices

The SX-3000 supports the JNIOR Model 310 automation device. Follow the steps below to configure a JNIOR device in the server automation interface.

1. Click the [Add] button on the [Devices] tab 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 71 JNIOR automation device setup.

3. Enter the IP address of the JNIOR device (see Figure 72).
4. The settings for ‘Port’, ‘Login’ and ‘Password’ are set to the default values for JNIOR devices if left empty.

5. Click the [Save] button to save configured settings.

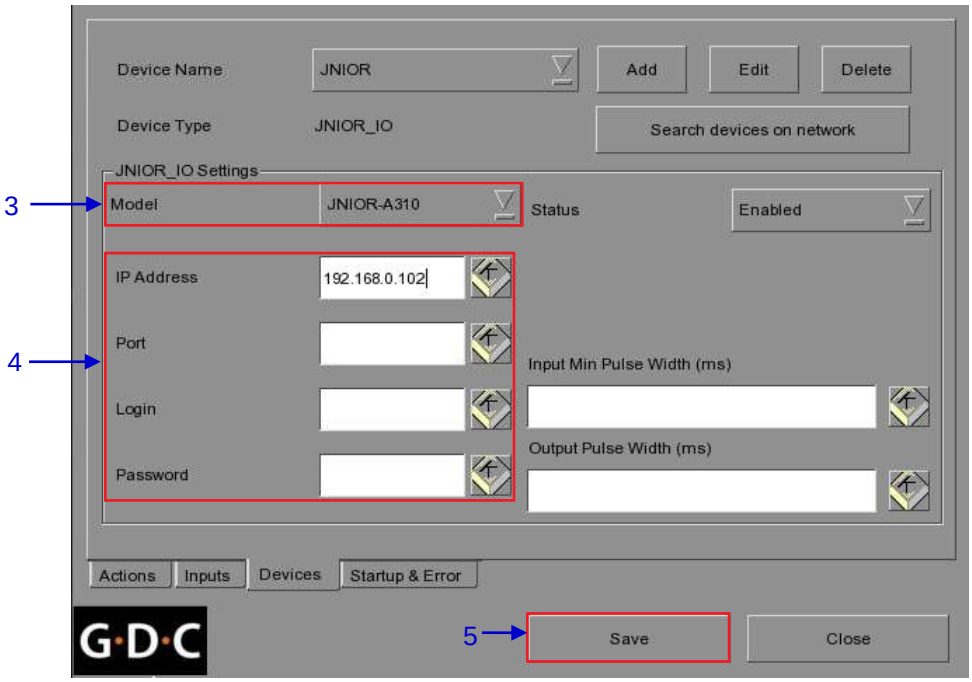


Figure 72 Automation settings for JNIOR device.

13.8. Automation setup for Christie ACT devices

The SX-3000 supports Christie ACT automation device. Follow the steps below to configure a Christie ACT device in the server automation interface.

1. Click the [Add] button on the [Devices] tab 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.

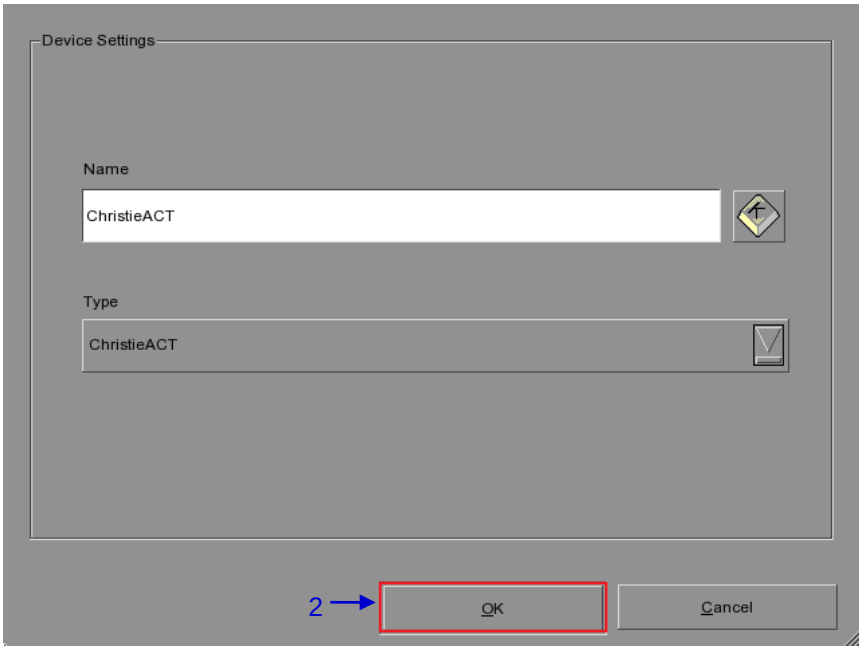


Figure 73 Christie ACT automation device setup.

3. Enter the IP address of the Christie ACT device.
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 the [Save] button to save configured settings.

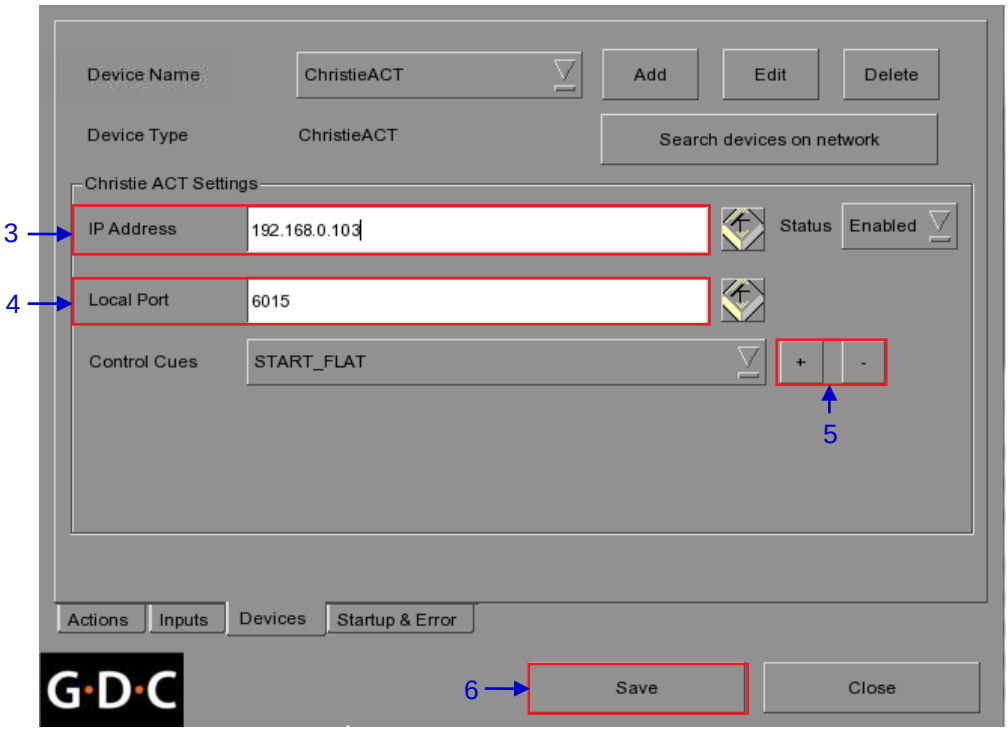


Figure 74 Automation settings for Christie ACT device.

13.9. Automation setup for Dolby devices

The SX-3000 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 the [Add] button on the [Devices] tab 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.

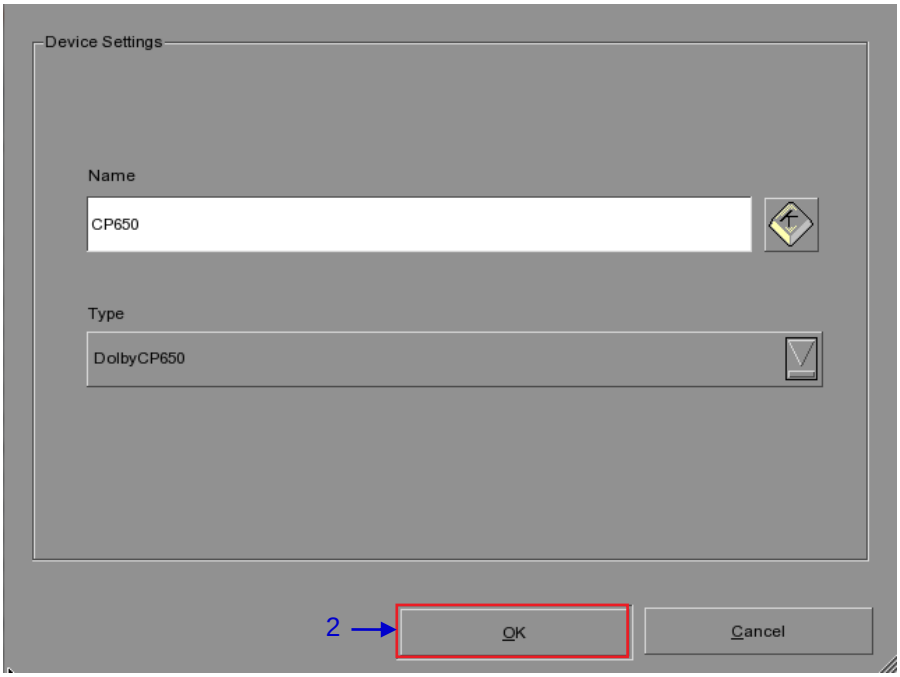


Figure 75 Dolby CP650 automation device setup.

3. Enter the IP address of the Dolby CP650 device.
4. Default Control cues are set up for a new Dolby CP650 automation device. Control cues can be added or removed using the [+] and [-] buttons.

5. Click the [Save] button to save configured settings.

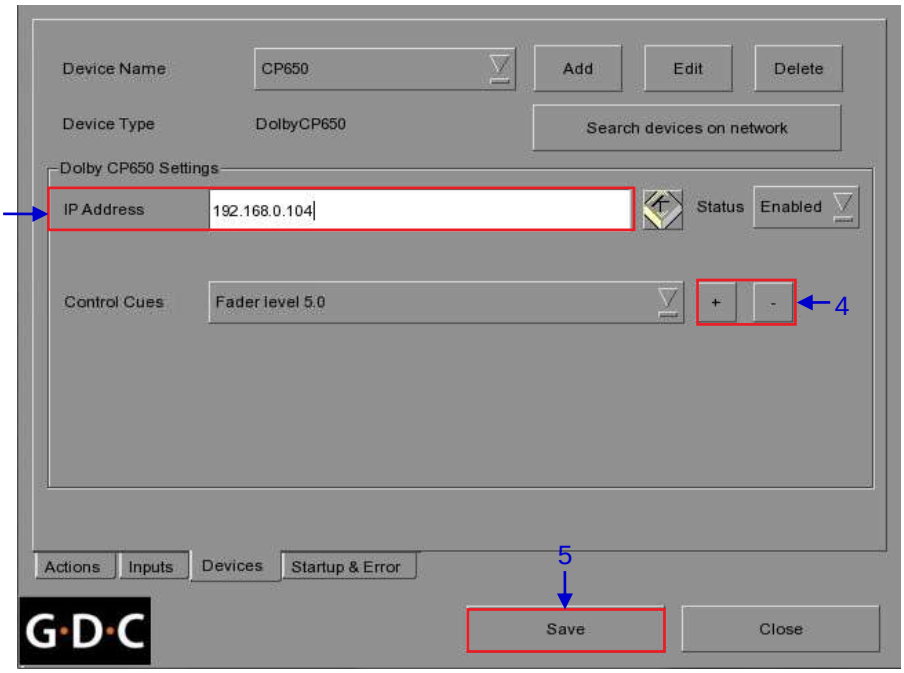


Figure 76 Automation settings for Dolby CP650 device.

13.10. Automation setup for USL DAX devices

The SX-3000 supports automation for USL DAX sound processor. Follow the steps below to configure a USL DAX device in the server automation interface.

1. Click the [Add] button on the [Devices] tab 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 77)

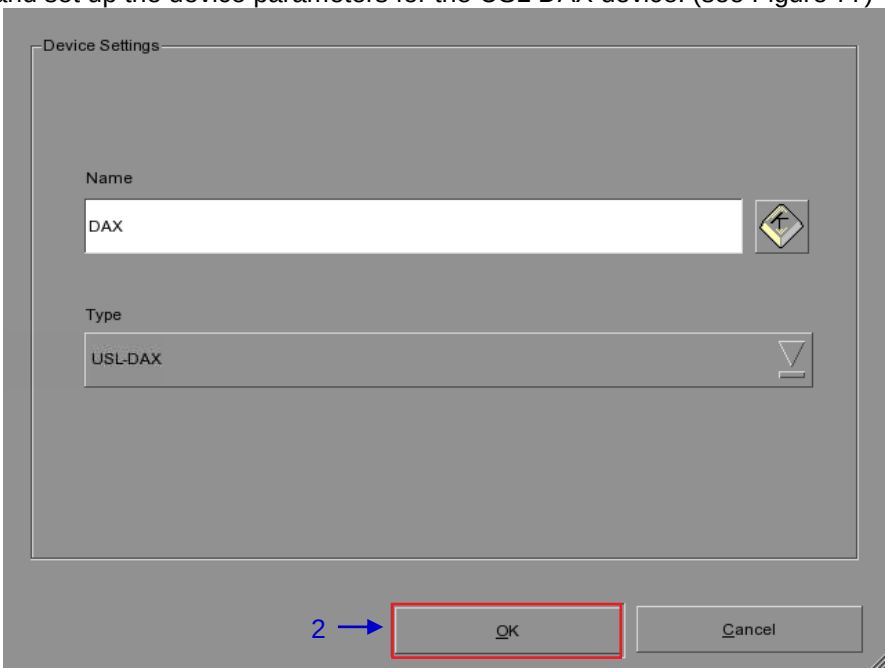


Figure 77 USL DAX automation device setup.

3. Enter the IP address of the USL DAX device (see Figure 78).
4. Click the [Save] button to save configured settings.

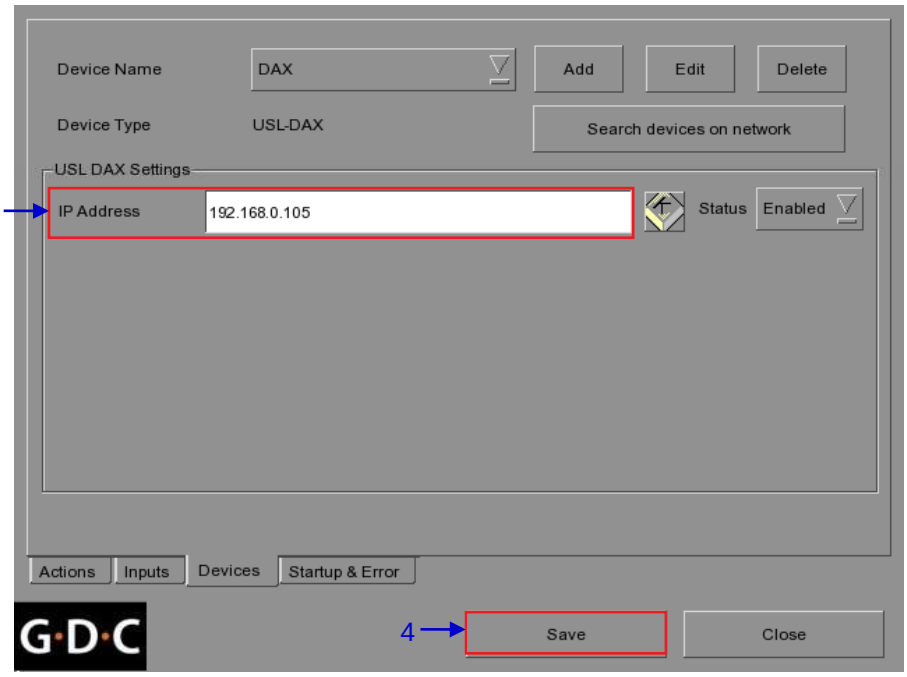


Figure 78 Automation settings for USL DAX device.

13.11. Automation setup for USL JSD devices

The SX-3000 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 the [Add] button on the [Devices] tab and enter the name of the device. In this case, it is “JSD”. Set the device type to “USL-JSD” (see Figure 79).
2. Click [OK] and set up the device parameters for the USL JSD device.

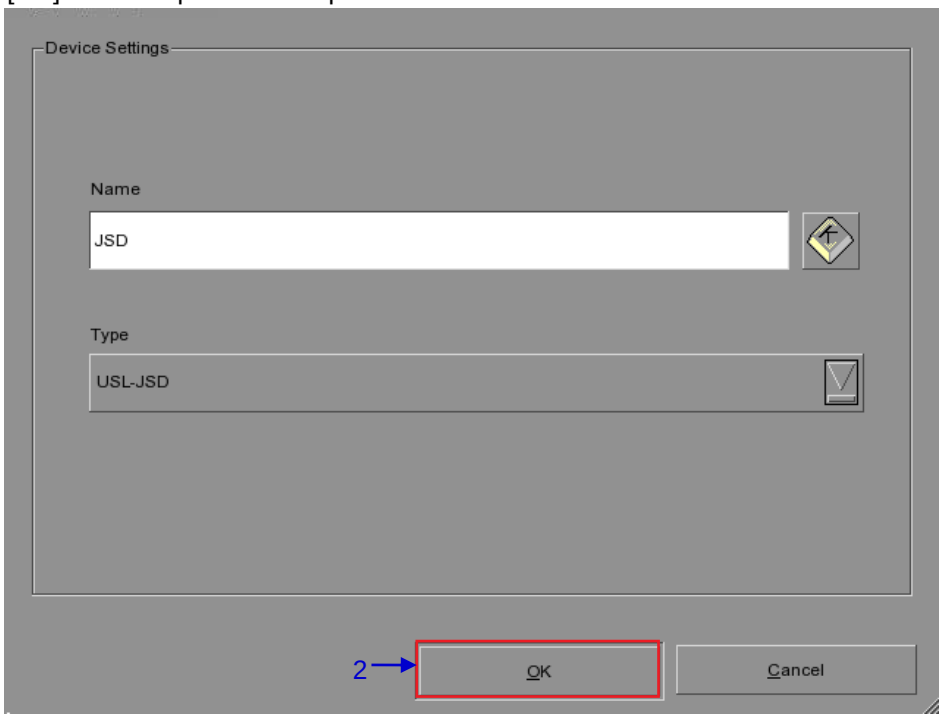


Figure 79 USL JSD automation device setup.

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

5. Click the [Save] button to save configured settings.

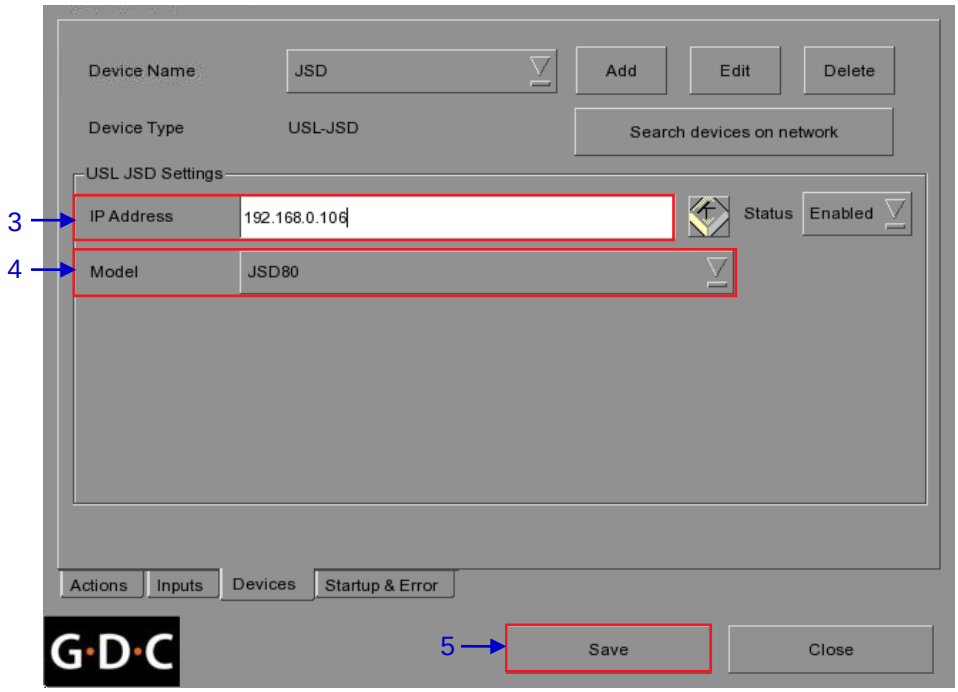


Figure 80 Automation settings for USL JSD device.

14. COMPONENT ENGINNERING TA-10 SETUP

The Component Engineering TA-10 can be used for theater automation with the SX-3000. It requires that the TA-10 be wired in a particular configuration. A wiring diagram can be seen in Figure 81.

The TA-10 is connected to the SX-3000 using the server's GPIO input/output port. Configure event labels with the GPIO device to trigger the TA-10.

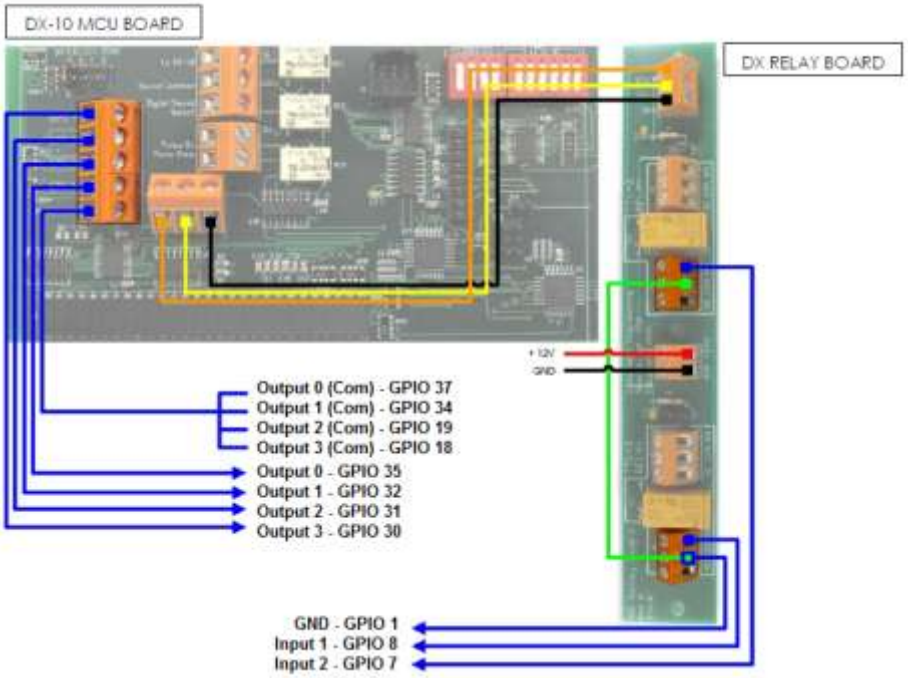


Figure 81 Component Engineering TA-10 wiring diagram.

15. TESTING PROCEDURES FOR QC AFTER INSTALLATION

After the installation has been completed, it is necessary to test the following to ensure that the SX-3000 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: Theater Management System (TMS) access, network connectivity and VNC.

16. APPENDIX

16.1. AES Audio and GPIO Pinout

AES Audio **GPIO**

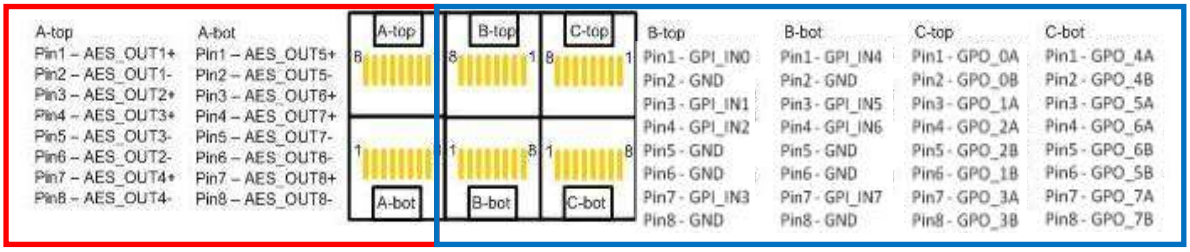


Figure 82 AES audio and GPIO Pinout

16.2. 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 2523 6851

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

USA (Sterling, VA)
21155 Whitfield Place, Suite 207,
Sterling, VA 20165, USA
Tel: +1 877 337 0868 (Toll Free)

Mexico (Mexico City)
Ave. Santa Fe 94, Torre A Piso 8,
Col. Zedec Santa Fe, Alvaro Obregon,
Mexico, D.F., C.P. 01210 Mexico
Tel: +52 55 8851 1198/ +52 55 8851 1165

Brazil (São Paulo)
Rua Leôncio de Carvalho, 306,
Conj. 32 - Parte, Bairro Paraíso,
CEP 04003-010,
São Paulo/SP – Brasil
Tel: +55 15 98116 2353

Spain (Barcelona)
Centro de Negocios Josep Tarradellas,
Office 72 and 73,
Av. Josep Tarradellas, n° 38,
08029 Barcelona, Spain
Tel: +34 93 355 49 72

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

Singapore
10 Ubi Crescent, Ubi Tech Park,
Lobby B, #06-25,
Singapore 408564
Tel: +65 6222 1082

China (Shenzhen)
5th Floor GDC Building,
No.9 Hi-tech Middle 3 Road,
Science & Technology Park, Nanshan District,
Shenzhen, P.R. China 518057
Tel: +86 755 8608 6000

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

India (Mumbai)
Office No. B-207/208,
Everest Chamber Andheri Kurla Road, Marol,
Andheri (East),
Mumbai, 400059, India
Tel: +91 22 4044 0500

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.

IM-0170-1310-V4E