INSTALLATION MANUAL FOR

SR-1000 STANDALONE INTEGRATED MEDIA BLOCK™

SMS Version 17.0

December 22nd, 2022

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Thank you for purchasing a GDC SR-1000 Standalone Integrated Media Block™ from GDC Technology Limited.

To ensure proper operation and to maximize value of the SR-1000, please review this Installation Manual. It will guide you through all the features and benefits of the new SR-1000 Standalone Integrated Media Block™.

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MANUAL DISCLAIMER

This manual is made with version 17.0 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.

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1. INTRODUCTION

This document is a guide through the process of setting up the SR-1000 with the projector, audio system and automation devices used in Cinemas.

In this manual, the SR-1000 Web UI is used to configure the SR-1000. The **Dashboard** tab of the SR-1000 Web UI is shown below (Refer to **Figure 1**).

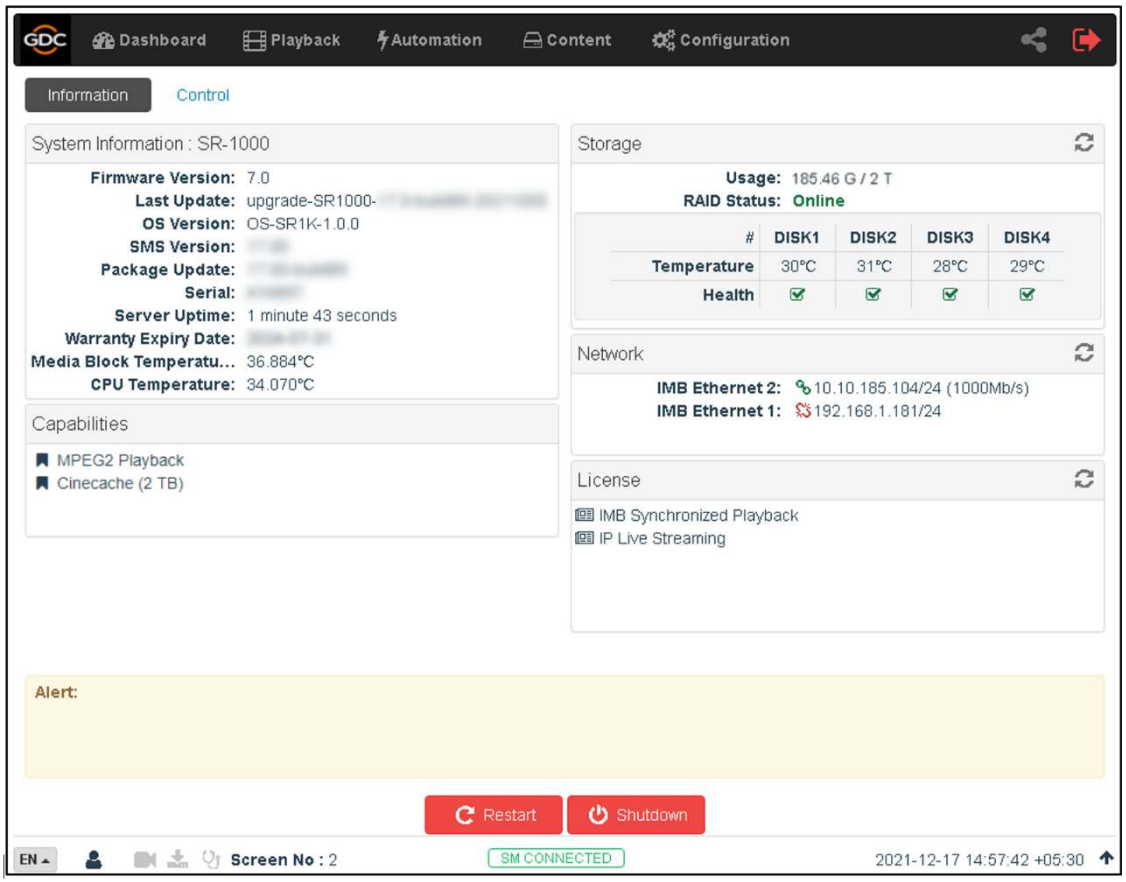


Figure 1: Dashboard tab

1.1. Equipment List

This section provides a suggested installation configuration of GDC SR-1000 for reference. Please contact our sales representative to specify the accessories needed for the installation.

1.1.1. SR-1000 IMB Equipment List

The SR-1000 packaging includes the components mentioned below:

Item	Qty	Photo
SR-1000 Unit with projector cover plate	1	
RJ45 AES Audio Cable	1#	
RJ45 GPIO Cables	2#	
Network Cable	1	
RJ45 to DB25 Audio Converter	1#	

RJ45 AES 17-24 Audio Cable	1*	

Table 1: SR-1000 Equipment List

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

** Included in packaging for SR-1000 Extreme -24 configuration only. Refer to **Section 16.2** for more details regarding this cable.*

1.1.2. Enterprise Storage Equipment List

The Enterprise Storage packaging includes the components mentioned below:

Item	Qty	Photo
Enterprise Storage unit	1	
3.5” SATA HDD	5*	
Power Cord	1	
eSATA Cable	1	
Quick Start Guide	1	

Table 2: Enterprise Storage Equipment List

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

2. INSTALLING SR-1000 INTO THE PROJECTOR

NOTE: If the projector comes with the GDC IMB pre-installed, the instructions in this section can be skipped.

This section of the manual describes the physical installation of the SR-1000 into the projector. If the projector does not have the GDC SR-1000 installed, follow the steps below to install the SR-1000 into the projector.

Figure 2: SR-1000 Standalone IMB™

2.1. Remove existing interface board/placeholders from the Projector

Before installing the SR-1000, check the sections 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 the SR-1000, as shown in **Figure 4.**

Figure 3: Remove interface board from Barco Projector

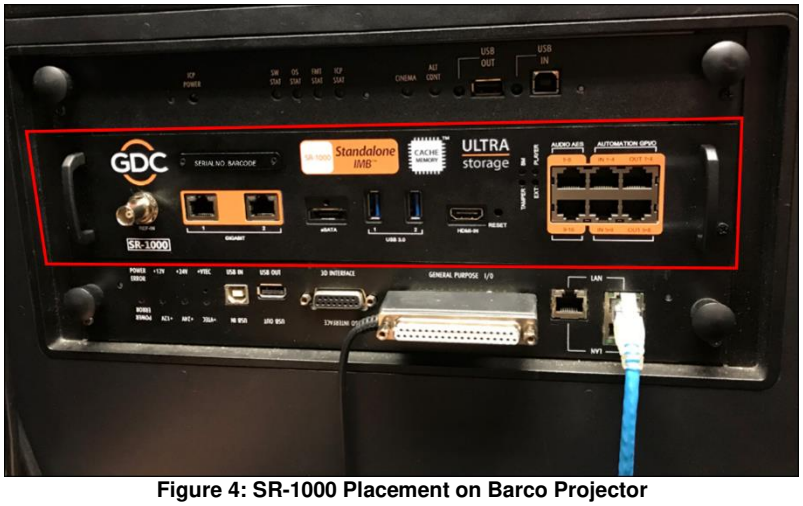


Figure 4: SR-1000 Placement on Barco Projector

2.1.2. Christie Projector Placement

Figure 5 shows the location where the SR-1000 should be installed on a Christie projector. Remove any existing interface boards or placeholder faceplates from this position before installing the SR-1000.

Figure 5: SR-1000 Placement on Christie projector

2.1.3. NEC Projector Placement

Figure 6 shows the location where the SR-1000 should be installed on a NEC projector. Remove any existing interface boards or placeholder faceplates from this position before installing the SR-1000.

Figure 6: SR-1000 Placement on NEC projector

NOTE: When installing the SR-1000 into any NEC projector, it is recommended to install it into the top slot of the projector. If the SR-1000 is installed into the bottom slot, the board runs the risk of coming in contact with the IMB enclosure.

Please refer to the respective projector manuals for more details on preparing the projector for SR-1000 installation.

2.2. Installing the SR-1000 into the Projector

Please make sure the projector is powered off before installing the SR-1000 on the projector.

NOTE: Please check the SR-1000 for any physical damage like loose or burnt component before installing it into the projector.

Figure 7: Installing the SR-1000 into the Projector

Insert the SR-1000 into the projector's IMB slot, as shown in **Figure 7**. The SR-1000 should slide into the projector on the rails provided by the IMB slot, and the SR-1000 faceplate should be flush with the other existing faceplates once properly inserted.

2.3. Projector Network

Connect the provided Cat 5e LAN cable from the SR-1000 **Gigabit 2** network port to cinema network. Please see **Section 6** for IP network instructions after the SR-1000 is installed.

3. CONNECTING PORTABLE STORAGE/ENTERPRISE STORAGE WITH THE SR-1000

For more details on installation of the Enterprise Storage, please refer to 'GDC Installation Manual for Portable Storage and Enterprise Storage'.

3.1. Connecting the Portable Storage

1. Connect the power adapter provided in the package to the DC power connector on the back panel of the Portable Storage (refer to **Figure 8**). The other end of the power cord needs to be connected to a recommended power outlet (100 to 240V~, 60 to 50Hz, 2A).
2. Connect one end of the eSATA cable provided in the package to the eSATA port of the Portable Storage and tighten the screw, as shown in **Figure 8**.

Figure 8: Connect eSATA cable to the Portable Storage

3. Connect the other end to the eSATA cable to the eSATA port on the SR-1000 IMB and tighten the screw, as shown in **Figure 9**.

Figure 9: Insert eSATA cable into SR-1000 eSATA port

NOTE: To use Portable Storage as the content source, it MUST be connected to the eSATA port of the SR-1000 board.

3.2. Connecting the Enterprise Storage

1. Connect the power cord provided in the package to the power connector on the back panel of the Enterprise Storage (refer to **Figure 10**). The other end of the power cord needs to be connected to a recommended power outlet (100 to 240V~, 63 to 47Hz, 4.5-2A).
2. Connect one end of the eSATA cable provided in the package to the eSATA port of the Enterprise Storage and tighten the screw, as shown in **Figure 10**.

Figure 10: Connect eSATA cable to the Enterprise Storage

3. Connect the other end to the eSATA cable to the eSATA port on the SR-1000 IMB and tighten the screw, as shown in **Figure 11**.

Figure 11: Insert eSATA cable into SR-1000 eSATA port

NOTE: To use the Enterprise Storage as the content source, it MUST be connected to the eSATA port of the SR-1000 board.

3.2.1. Placement of the Enterprise Storage

It is recommended that the Enterprise Storage unit should be placed on the projector pedestal as illustrated in **Figure 12**, such that the eSATA cable length (provided with the package) is sufficient enough to establish the connection between the IMB & Enterprise Storage.

Please ensure that the eSATA cable is not bent sharply or stressed.

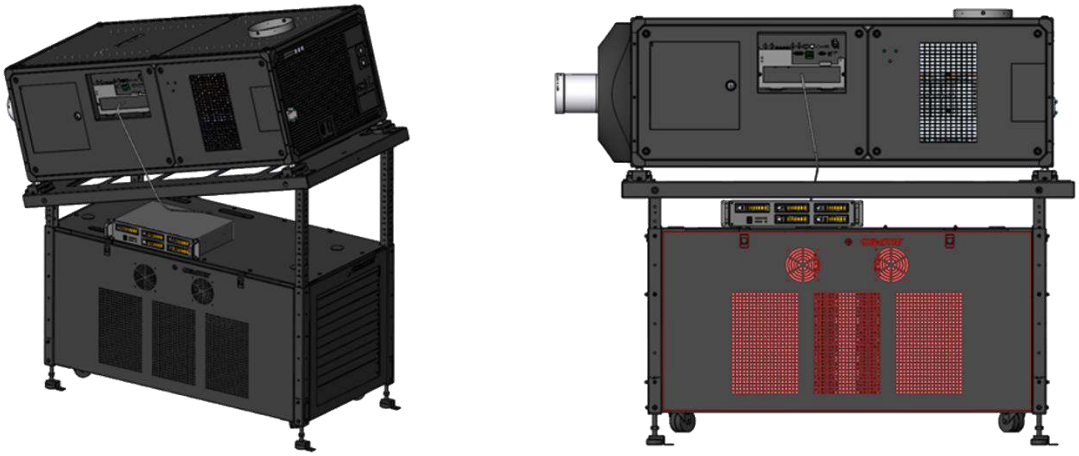


Figure 12: Enterprise Storage Placement

4. POWER ON/OFF SEQUENCE

4.1. Power Up Sequence

Always power up the Enterprise Storage/Portable Storage before powering up the Projector. The Enterprise Storage/Portable Storage must be powered up first to be correctly identified by the SR-1000 IMB.

4.2. Power Down Sequence

Always power down the SR-1000 and Projector with the following steps:

1. Power down the SR-1000 by using the Shutdown button on the Web UI Dashboard.
2. Power down the Enterprise Storage/Portable Storage attached to the SR-1000.
3. Power down the Projector after the SR-1000 has powered down.

5. SR-1000 WEB UI ACCESS

The SR-1000 uses a web-based user interface. The following steps show how to access the SR-1000 Web UI:

1. Assuming the SR-1000 is using its default IP Address, which is 192.168.1.12, connect a laptop/PC to the **Gigabit 2** network port of the SR-1000. Configure the laptop/PC to the same network as the SR-1000.
2. The SR-1000 Web UI can be accessed by a web browser (Google Chrome™ or Mozilla Firefox™ are recommended).
3. Enter the IP address of the SR-1000 in the web browser, to access the login page on the Web UI.
4. There are three levels of users available (User/Technician/Maintenance). Select the required access level and enter the corresponding password to login to the Web UI.
5. Select the preferred UI language by clicking on the corresponding flag icon, as shown in **Figure 13**.

Figure 13: SR-1000 Web UI Login Page

6. SR-1000 NETWORK SETUP

The SR-1000 Network settings can be accessed from **Configuration** → **System** sub-tab. The IPs for the IMB network interfaces can be updated by following the steps mentioned below:

1. Login as to the SR-1000 Web UI using **Maintenance** access level.
2. Go to the **Configuration** → **System** → **Network Configuration** section.
3. By default, the IMB Ethernet 2 is the main IP address of the SR-1000. The Web-UI interface can be reached at this IP address. The IMB Ethernet 2 IP Address can be updated as per the cinema's management network & the subsequent Subnet Mask & Gateway values need to be entered.
4. As an option; a Secondary IP address and Subnet Mask for the SR-1000 can be mentioned by checking the IMB Ethernet 1 checkbox. This can be used to connect to the cinema's content network.
5. Once the IP values have been entered, click on the Validate IPs button to check their correctness.

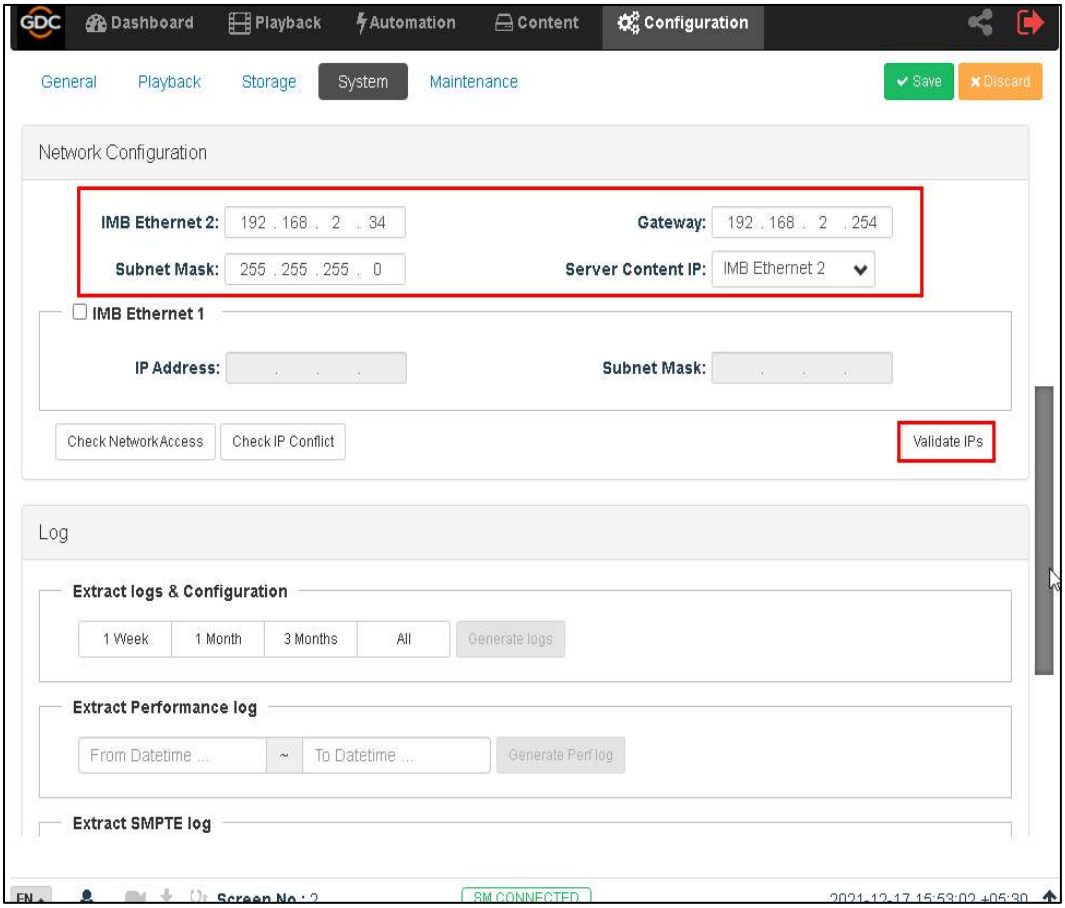


Figure 14: IMB Network Configuration (1)

6. If all of the IP addresses are valid, a popup window will appear, as shown in .
7. Click OK to exit and then Save to save these settings.

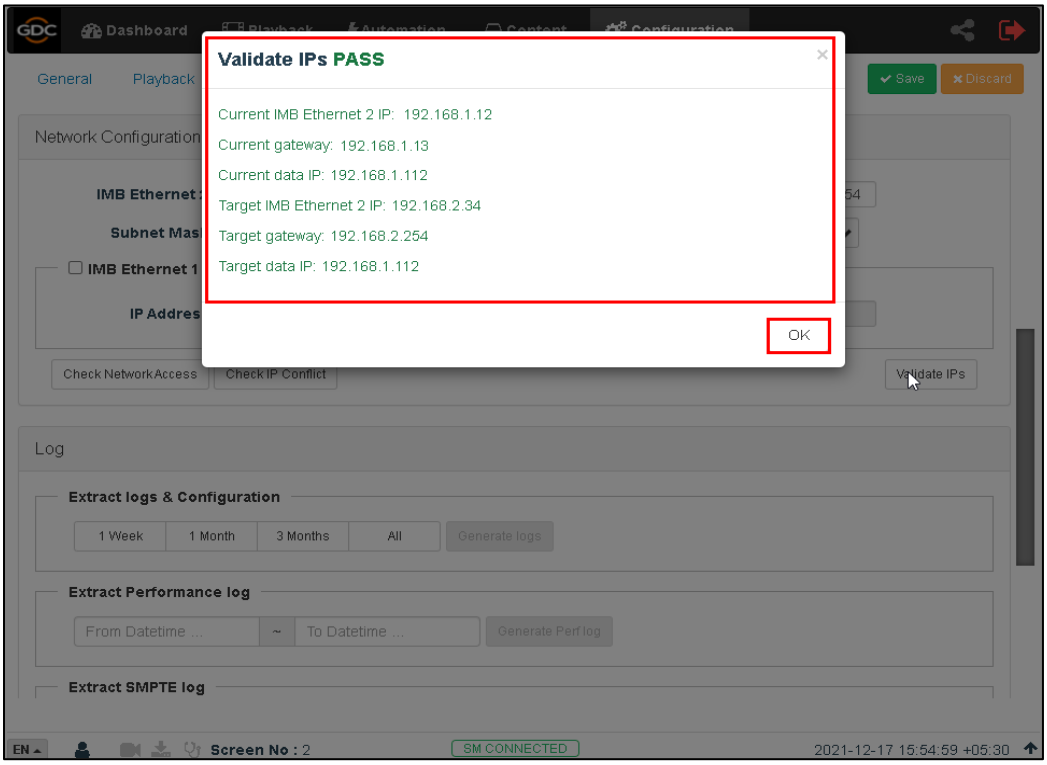


Figure 15: IMB Network Configuration (2)

NOTE: The SR-1000 IMB IPs may be changed to a cinema-specific IP scheme, keeping in mind the following rules:

- All IP Addresses must be unique.
- The IMB Ethernet 2 and IMB Ethernet 1 must be on separate subnets.
- The IMB Ethernet 1 IP must be configured as per the cinema's content network. Therefore, one IP Address must be allocated for each SR-1000 IMB on the cinema's content network.
- Assigned IP Addresses should not conflict with other devices in the cinema's network

7. STORAGE CONFIGURATION

The IMB Storage settings for the SR-1000 can be accessed from the **Configuration** → **Storage** sub-tab.

1. Go to **Configuration** → **Storage** → **IMB Storage** section.
2. Under **IMB Storage** section, the following options are available under the Storage Type dropdown:
   - **NAS**: Connect to NFS server for storage.
   - **CineCache™**: Use CineCache™ for storage (For SR-1000 with CineCache™ installed only).
   - **Portable/Enterprise Storage**: Configure the SR-1000 to use Portable or Enterprise Storage.

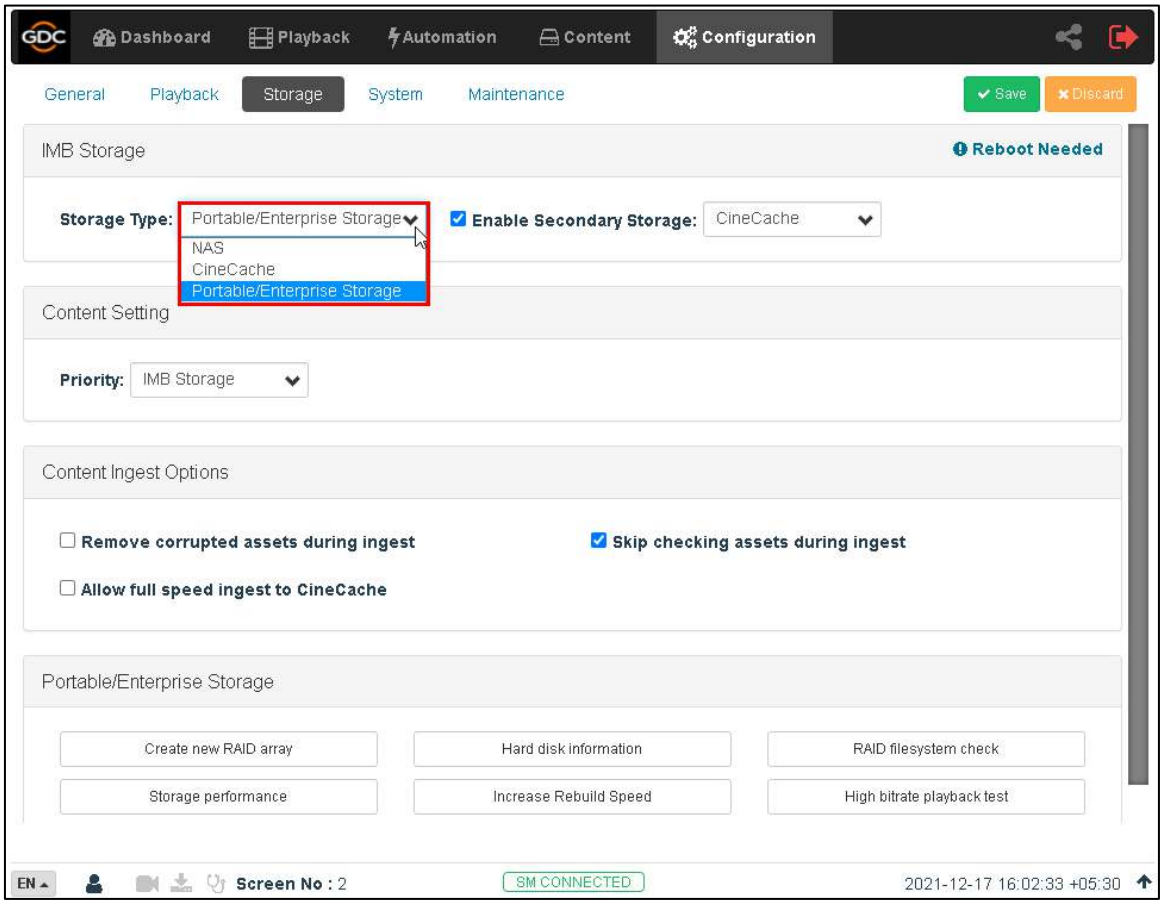


Figure 16: IMB Storage settings

3. Select the Storage Type as 'Portable/Enterprise Storage'. The Enterprise Storage/Portable Storage is now set as the Primary Storage.
4. Check the Enable Secondary Storage option & select 'CineCache' from the dropdown. The CineCache™ is now set as the Secondary Storage.
5. Click Save to save these settings.

6. Go to **Dashboard** tab**,** click the Restart button followed by OK to confirm. This is to ensure all components in the SR-1000 are able to detect the selected storage after restart.
7. The SR-1000 will restart and use the selected option for storage.

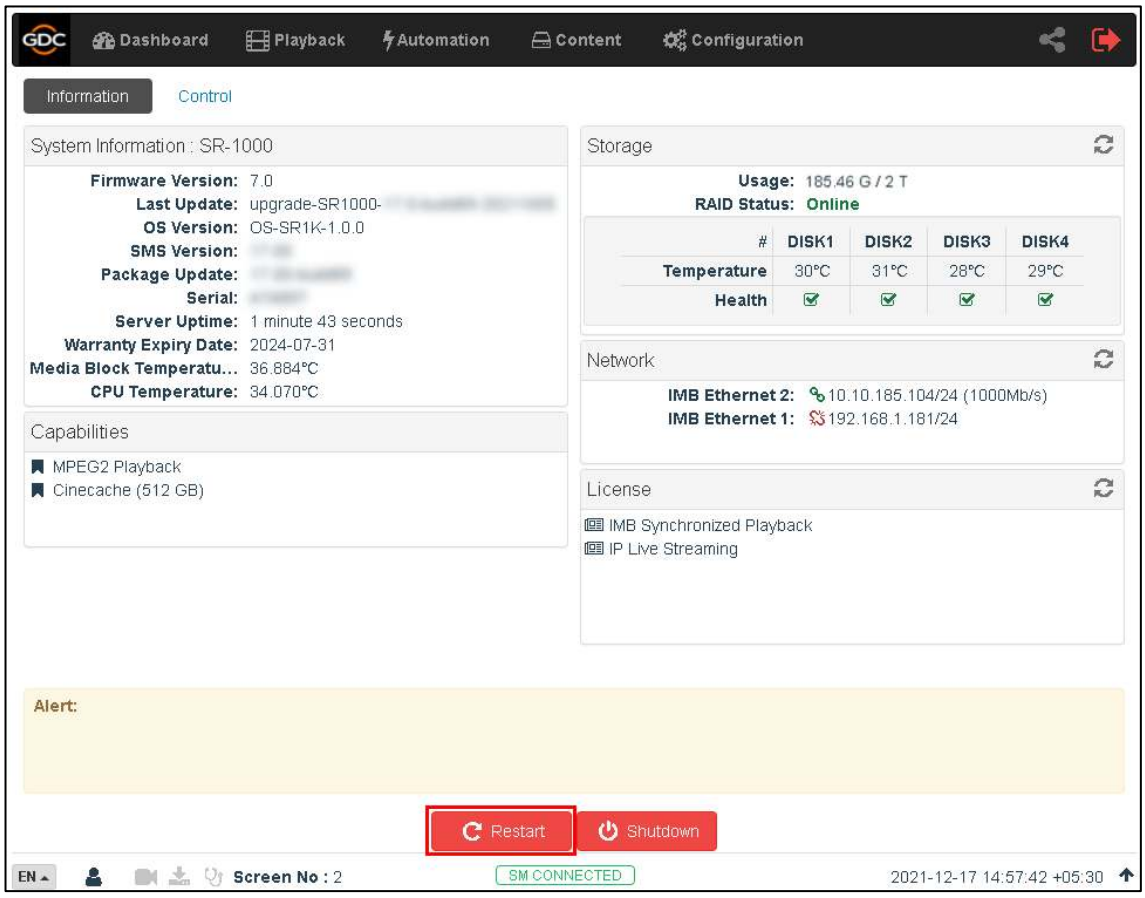


Figure 17: Dashboard tab

Figure 18: Restart window

NOTE: For **GDC Cinema Automation 2.0** (CA 2.0) setup with Centralized Playback; please choose **'CineCache'** as the Primary Storage in Storage Type along with Priority as 'Attached Storage'.

For a non-CA 2.0 setup; please choose either **'Portable/Enterprise Storage', CineCache'** or **'NAS'** as the Primary storage in Storage Type along with the Priority as 'IMB Storage'.

8. SERIES 2 PROJECTOR SETUP

To configure a Series 2 projector to play content with the SR-1000, follow the instructions mentioned below:

- IMB Marriage must be done,
- Service door tamper must be cleared
- The projector must be set up according to the requirements of the projector manufacturer.

8.1. IMB Marriage and Clearing the Service Door Tamper from the SR-1000

Follow the steps below to perform the marriage between the SR-1000 and to clear the service door tamper on the SR-1000:

1. Under the **Configuration** tab in the menu, click the **System** sub-tab.
2. Go to **Clear IMB Tampers** section.
3. Click Marry to perform the marriage of the projector and the SR-1000.
4. Click Close to clear the door tamper errors with the projector
5. After the IMB marriage is performed and the tampers are cleared; green 'Married' and 'Closed' indicators will be shown respectively (as seen in **Figure 19**).

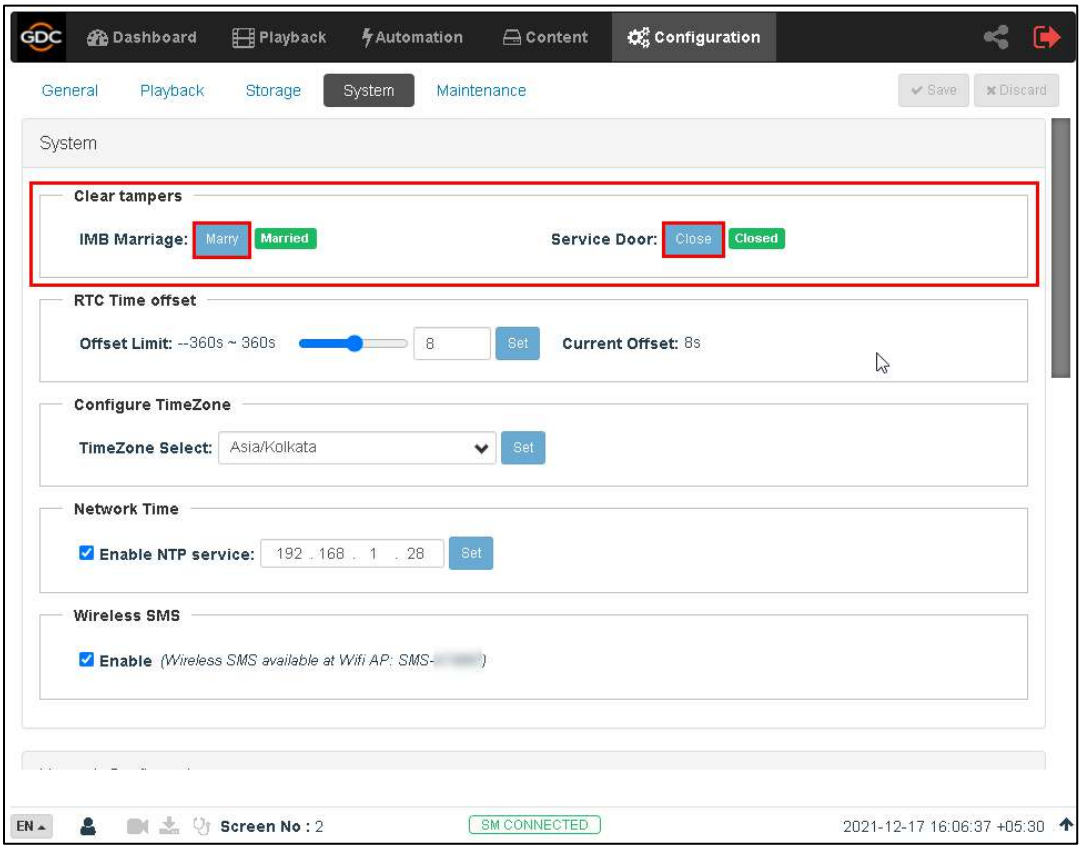


Figure 19: Clear IMB tampers

8.2. Barco Series 2 Projector Setup

No system configuration is required for Barco Series 2 projector to work with the SR-1000. The Service Door/Marriage Tamper on the server must be cleared before the SR-1000 can be used for playback.

In order to use the SR-1000 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.

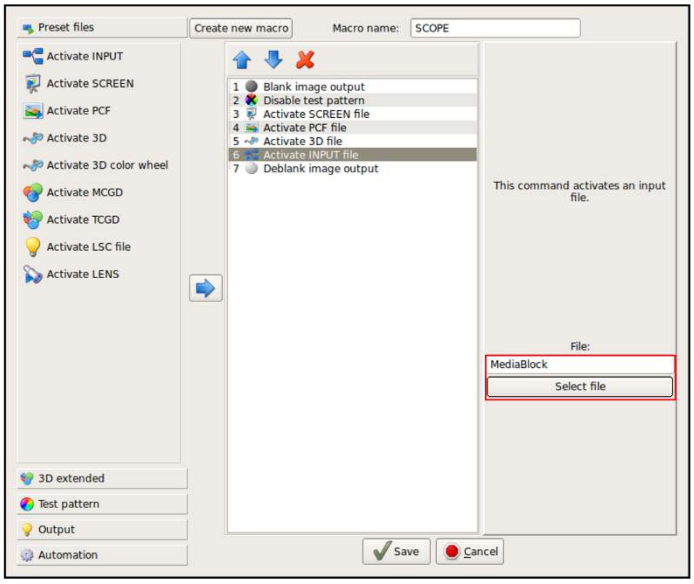


Figure 20: INPUT source settings on Barco Series 2 Projector

8.3. NEC Series 2 Projector

In order to configure an NEC Series 2 projector to work with the SR-1000, 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).

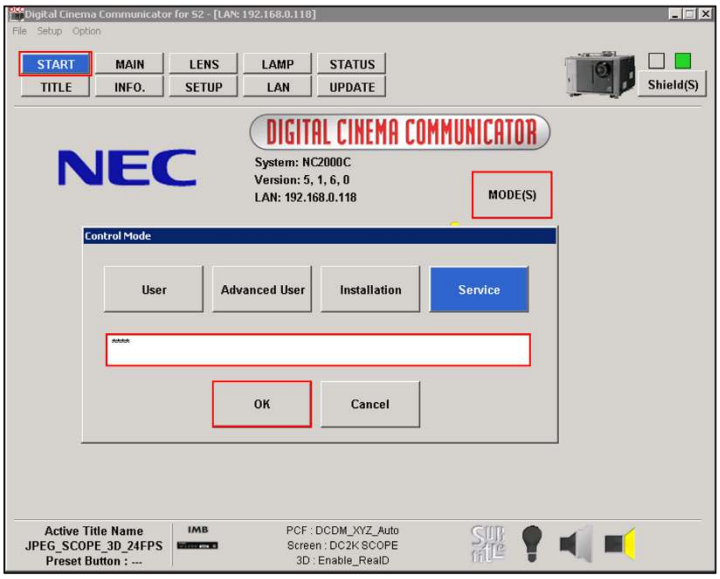


Figure 21: Service Mode on NEC Digital Cinema Communicator

4. Select [Setup] → [Option Slot] on the Digital Cinema Communicator and select IMB for Slot B in Option Slot Setting (as shown in **Figure 22**).

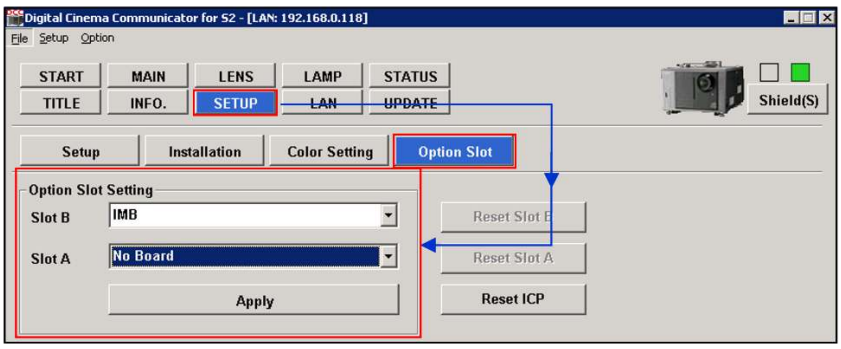


Figure 22: Option slot settings on NEC Digital Cinema Communicator

5. Select [Start] → [Power] → [On] to power on the projector.
6. Clear the Service Door/Marriage Tamper on the SR-1000.

To use the SR-1000 for content playback, the INPUT source of the projector macros must be set to IMB.

8.4. Christie Series 2 Projector

In order to configure a Christie Series 2 projector to work with the SR-1000, the following steps must be taken:

1. Switch on the projector.
2. Log in to the **[Marriage]** account on the projector TPC. Select **[Menu]** → **[Login]** (as shown in **Figure 23**).

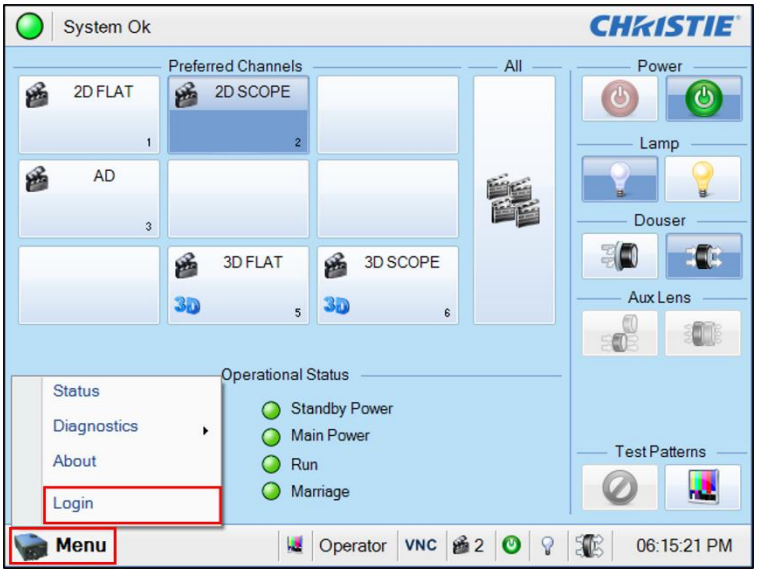


Figure 23: Marriage account

3. Enter Username as **[marriage]** and its password and click **[Login]** button (as shown in **Figure 24**).

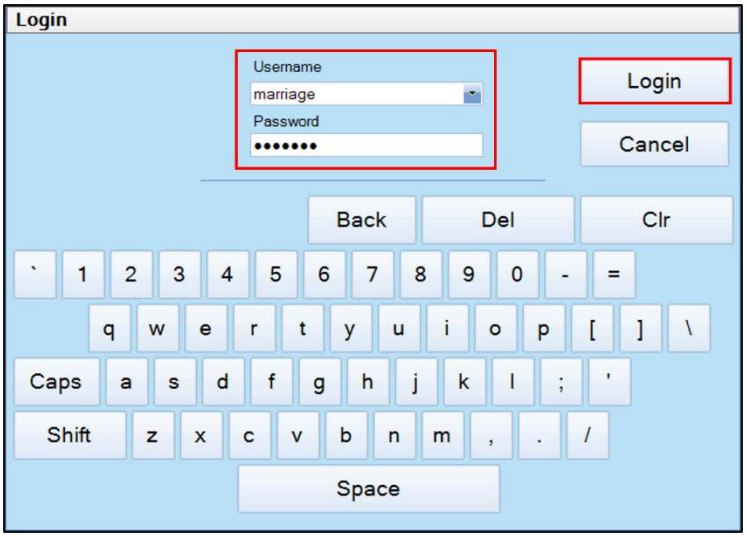


Figure 24: Marriage account login

4. Select **[Menu]** → **[Administrator Setup]** → **[Content Devices Configuration]** (as shown in **Figure 25**).

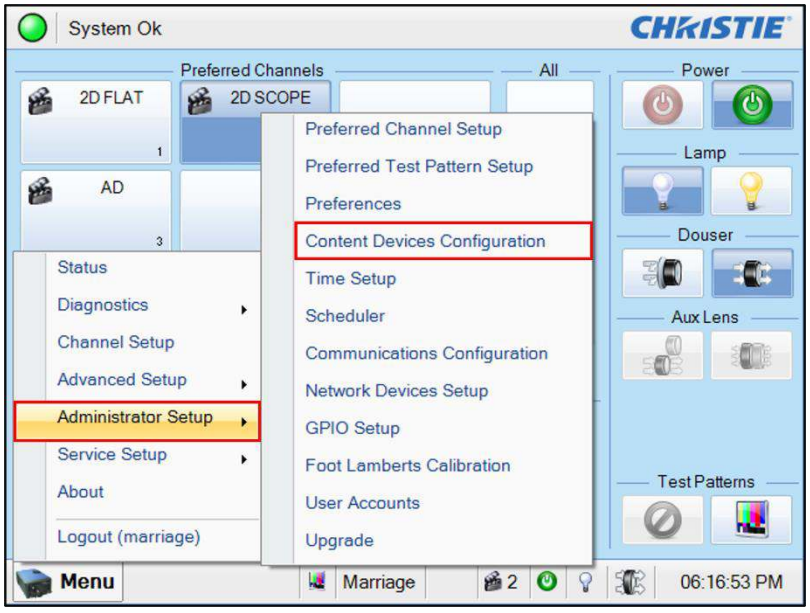


Figure 25: Content Devices Configuration

5. Select **[GDC]** for the **[IMB Installed]** (as shown in **Figure 26**).

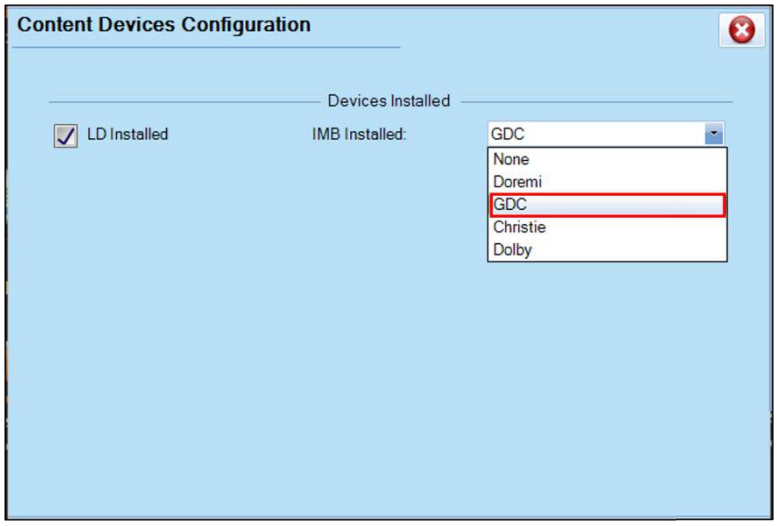


Figure 26: Content Devices Configuration

6. Clear the Service Door/Marriage Tamper on the SR-1000.

To use the SR-1000 for content playback, the INPUT for projector channel must be set to **[IMB-Generic]**.

8.5. 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 (refer to **Figure 27**).

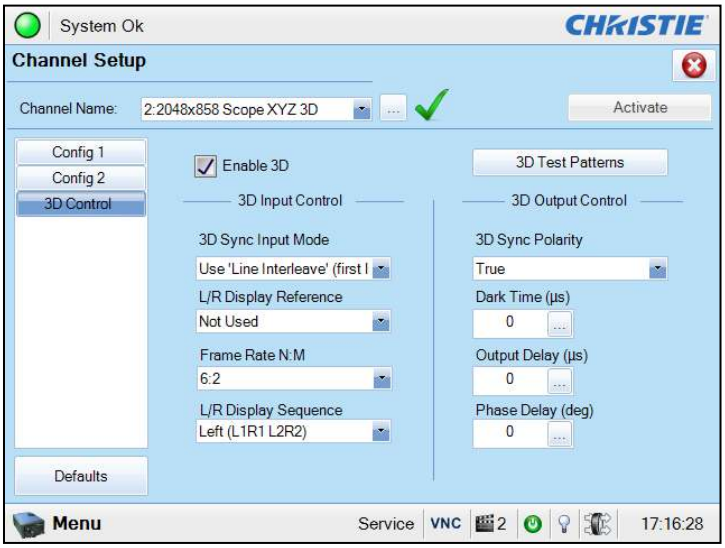


Figure 27: 3D macro settings for Christie Series 2 projectors

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).

9. TIME ZONE SETUP

The SR-1000 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. Go to the **Configuration** → **System** → **Configure TimeZone** section.
2. Select the Region/City in the TimeZone Select dropdown and click the Set button.
3. Click Save to save this setting.

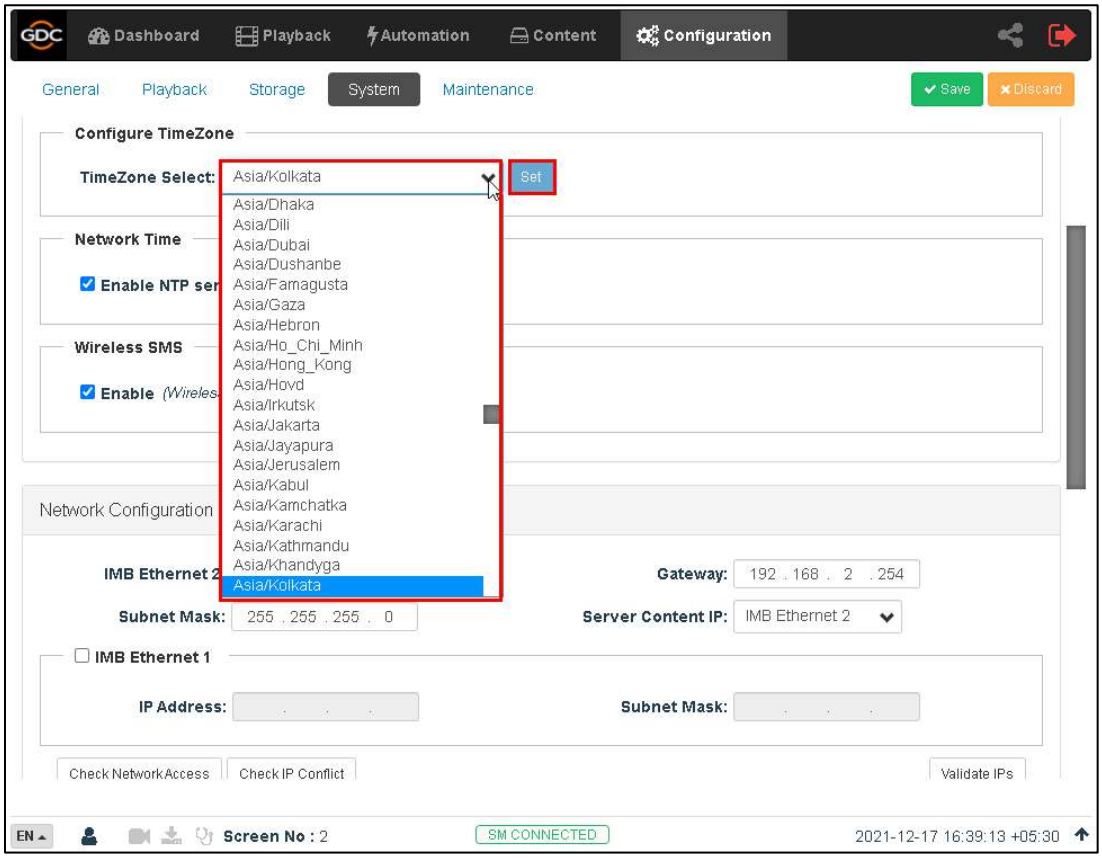


Figure 28: TimeZone setting

10. CONTENT INGEST MANAGEMENT SETUP

An ingest source must be configured before content can be transferred to the SR-1000. This section shows the configuration for content ingest from two different source types. The same steps can be used to set up content ingest sources using other sources.

10.1. Content Ingest from USB Disk

The following steps describe the content ingestion from an external USB hard drive:

1. Under the **Content** tab in the menu, click the **Source** drop-down and select the **Ingest** option.
2. Under the Source list on the left, select USB Drive.
3. Select the USB storage device and partition from the respective drop-downs.
4. Click OK to choose content to be ingested from the USB disk.

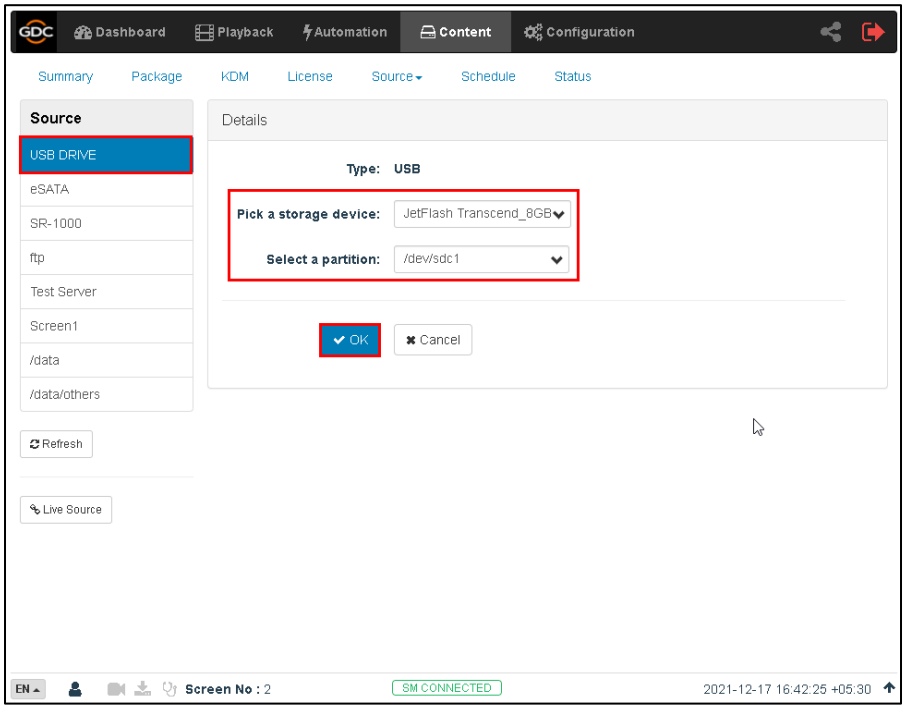


Figure 29: Content source setting

10.2. Content Ingest from FTP

Follow the steps below to setup content ingestion from an FTP server:

1. Under the **Content** tab in the menu, click the **Source** drop-down and select the **Manage** option.
2. Under the Source list on the left, click the Create button.
3. Select 'FTP' as the source Type. Enter the FTP Name. In this case, we use "Test FTP". Enter the respective parameters for IP Address, Port, Source Path, Username and Password.
4. Click Save to save these setting.

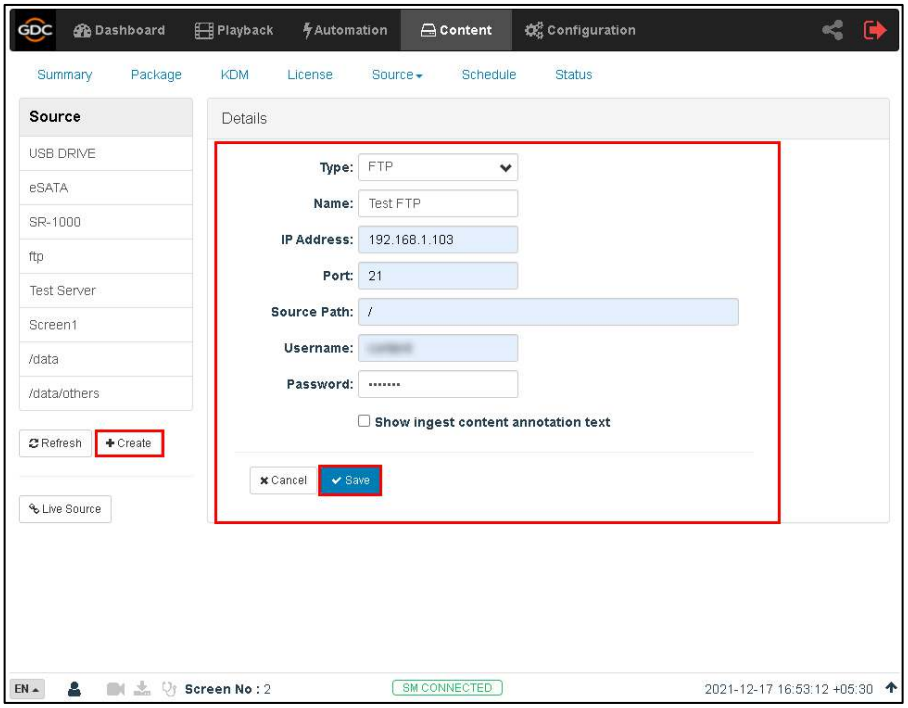


Figure 30: Content source settings

5. Click **Open** to connect to the FTP server and choose the content for ingest.

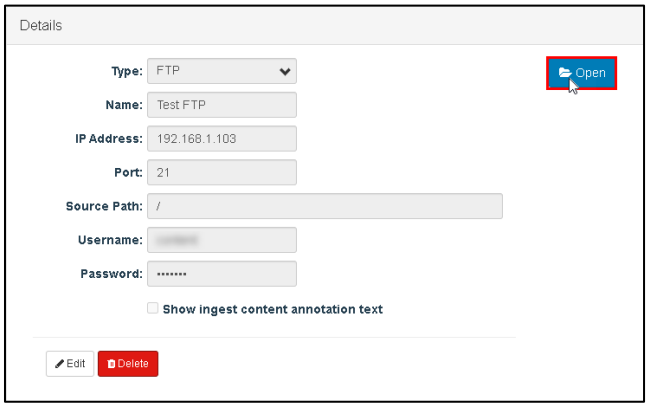


Figure 31: Content source settings

11. AUDIO SETUP

The SR-1000 features AES digital audio signal via two 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 32**).

Figure 32: 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 33: RJ45→DB25 pinout (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 34: RJ45→DB25 pinout (For CP750/JSD80 audio connector)

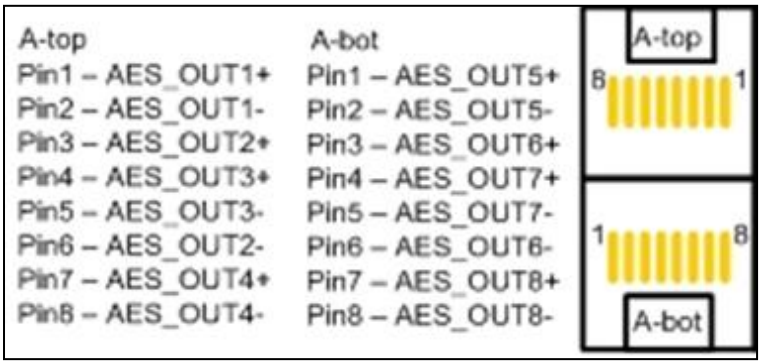


Figure 35: AES Audio RJ45 pinout

12. SUBTITLES

It is recommended to use subtitle overlay for subtitle display. To do so, please check the Subtitle Overlay option and mention the Subtitle Delay interval (*in number of frames*) under the **Playback** sub-tab of the **Configuration** menu.

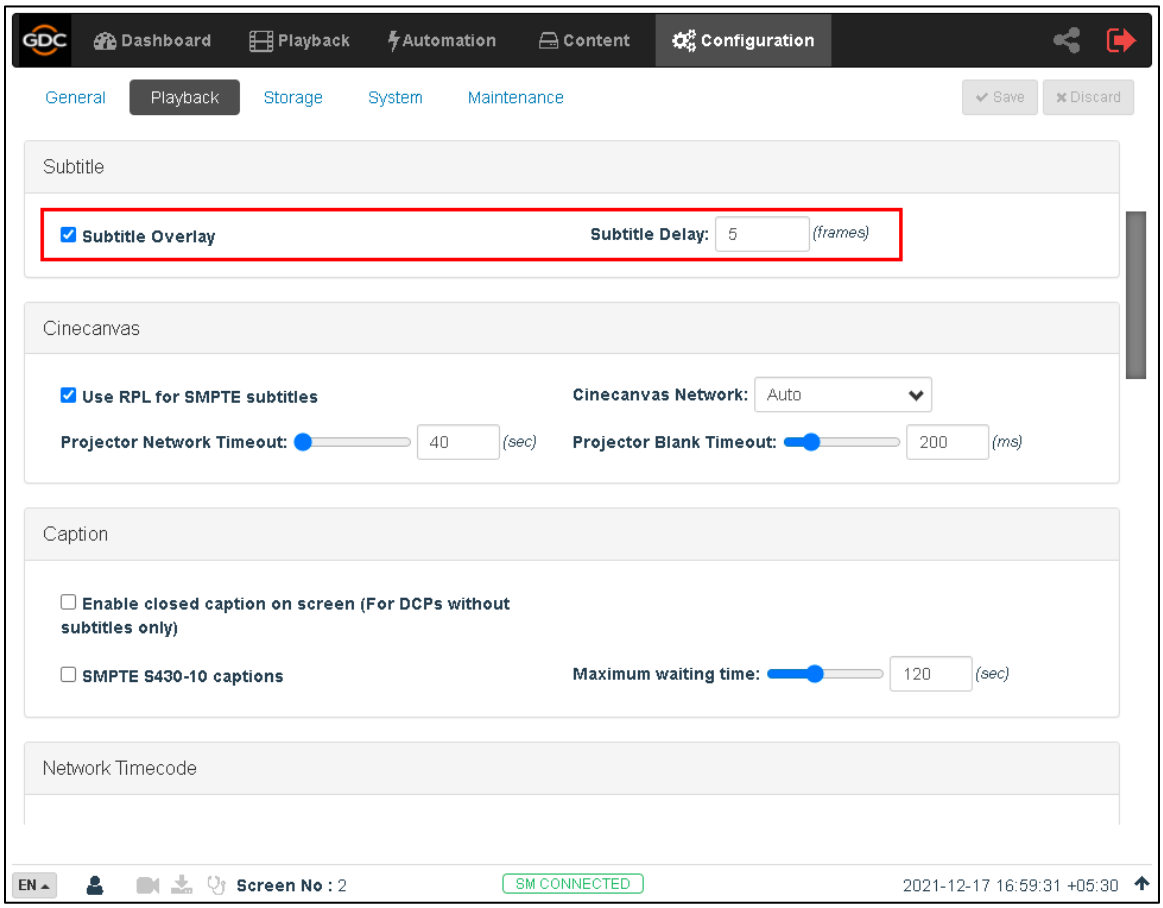


Figure 36: Subtitle settings

13. AUTOMATION SETUP

The SR-1000 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. Automation setup for Server GPIO

The SR-1000 GPIO automation device settings can be configured using the steps below:

1. Under the **Automation** tab in the menu, click the **Device** sub-tab.
2. Under the Device list on the left, select 'IMBGPIO'.
3. Enter the device Name, Input Min Pulse width and Output Pulse Width.

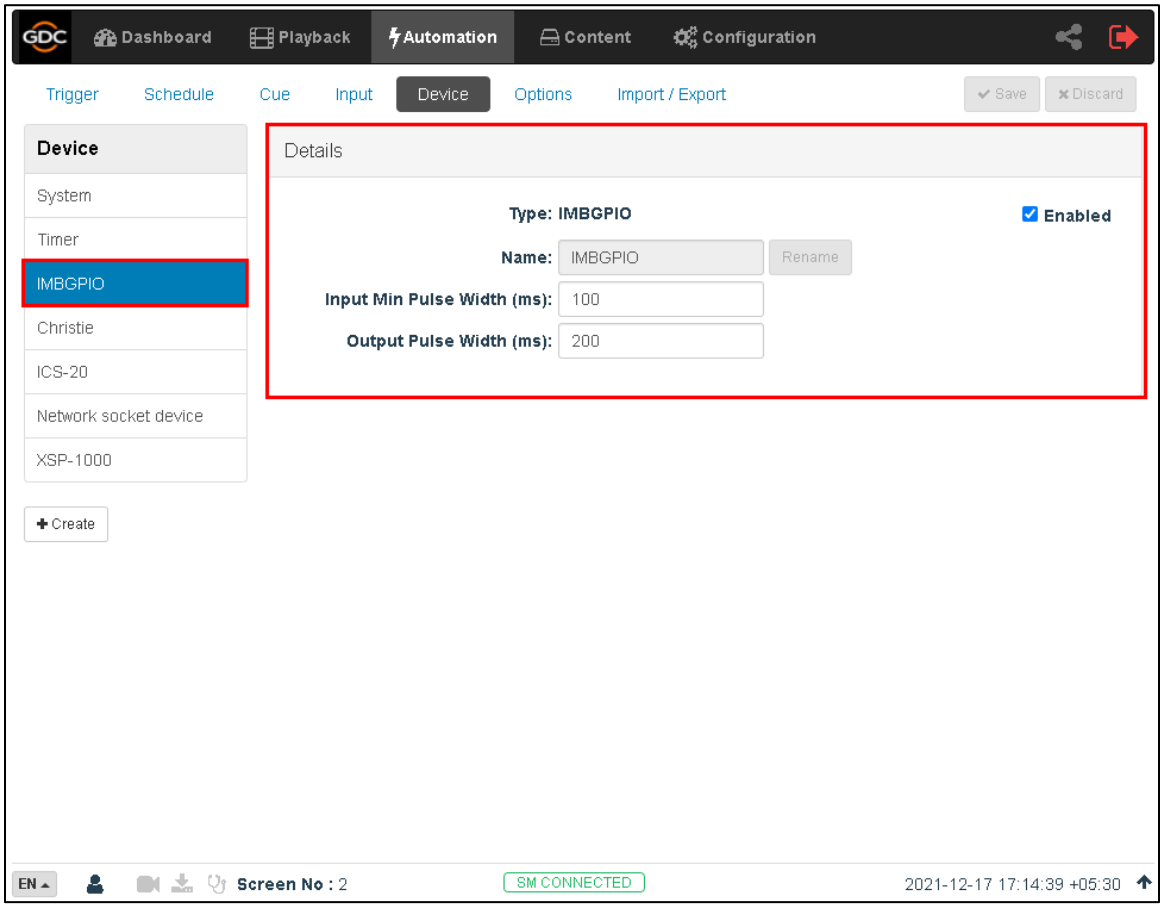


Figure 37: Server GPIO settings

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 the Save button to save any changes made.

13.2. Automation setup for Projectors

The SR-1000 supports automation for Barco, Christie and NEC projectors. Follow the steps below to configure a projector device in the server automation interface.

1. Under the **Automation** tab in the menu, click the **Device** sub-tab.
2. Under the Device list on the left, click on the Create button.
3. Select 'PROJECTOR' as the device Type. Enter the Name of the projector and click OK.
4. Enter the IP Address of the projector device
5. 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.
6. Enter Login and Password for the projector, if required.
7. Click Save to save the settings.

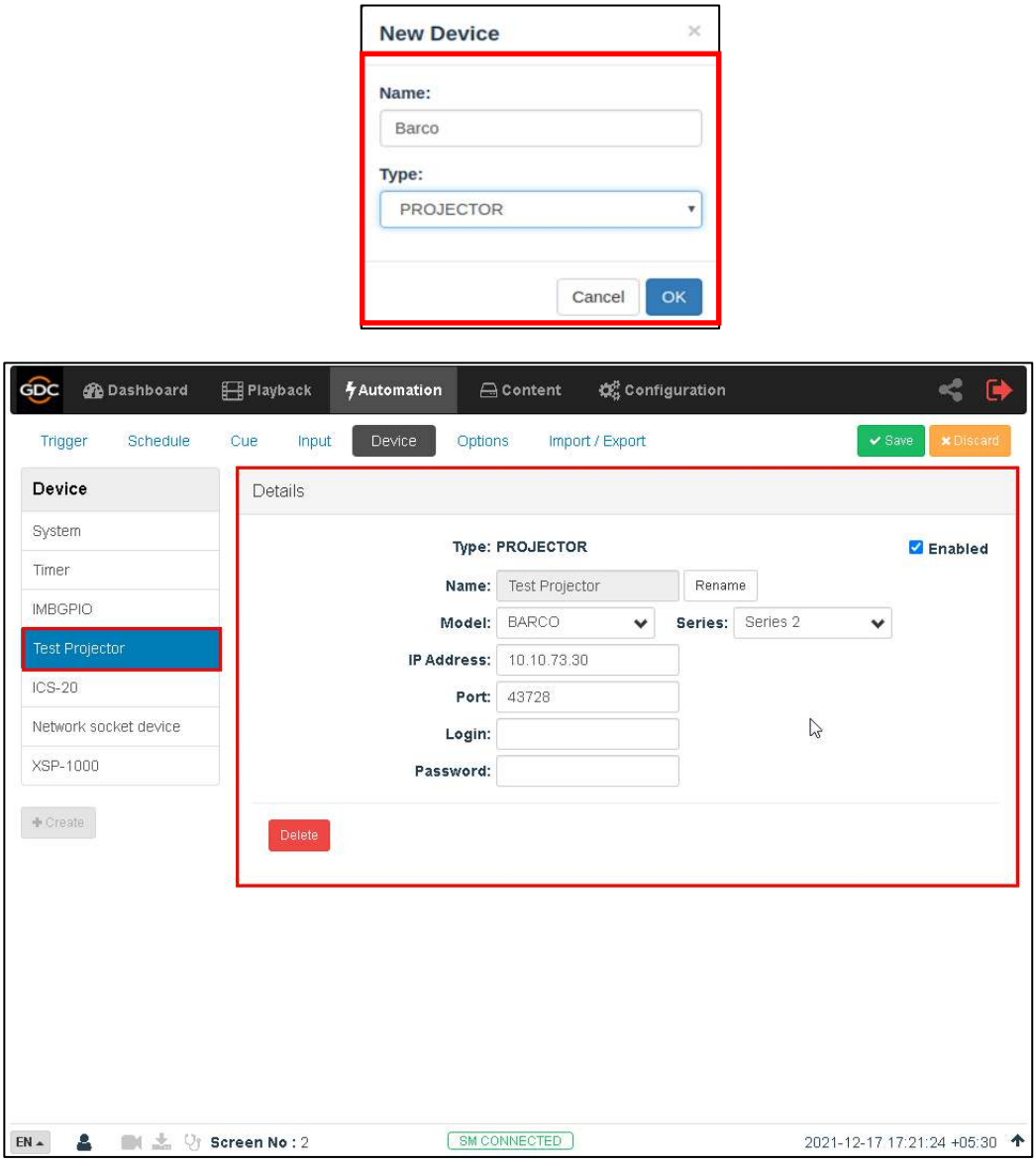


Figure 38: Projector setting

13.3. Automation setup for eCNA devices

The SR-1000 supports the eCNA-10 automation system. Follow the steps below to configure an eCNA device in the server automation interface.

1. Under the **Automation** tab in the menu, click the **Device** sub-tab.
2. Under the Device list on the left, click on the Create button.
3. Select 'eCNA_IO' as the device Type. Enter the Name of the eCNA device and click OK.
4. Enter the IP Address of the eCNA device.
5. The eCNA device has many cues available for automation. These cues can be enabled or disabled by selecting them in the Server events, eCNA controls, eCNA status and eCNA event report fields. All cues are disabled by default.
6. Click Save to save the settings.

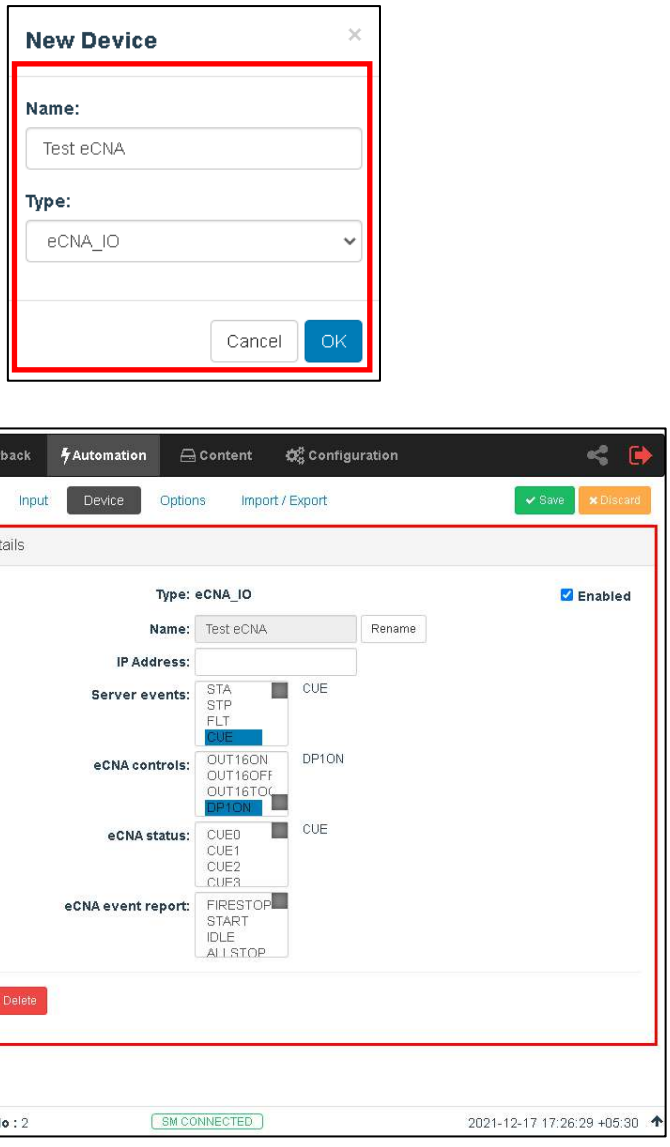


Figure 39: eCNA device setting

13.4. Automation setup for JNIOR devices

The SR-1000 supports the JNIOR Ethernet I/O controller device. Follow the steps below to configure a JNIOR device in the server automation interface.

1. Under the **Automation** tab in the menu, click the **Device** sub-tab.
2. Under the Device list on the left, click on the Create button**.**
3. Select 'JNIOR_IO' as the device Type. Enter the Name of the JNIOR device and click OK.
4. Enter the IP Address of the JNIOR device.
5. The settings for Port, Login and Password are set to the default values for JUNIOR device, if left empty.
6. Click Save to save the settings.

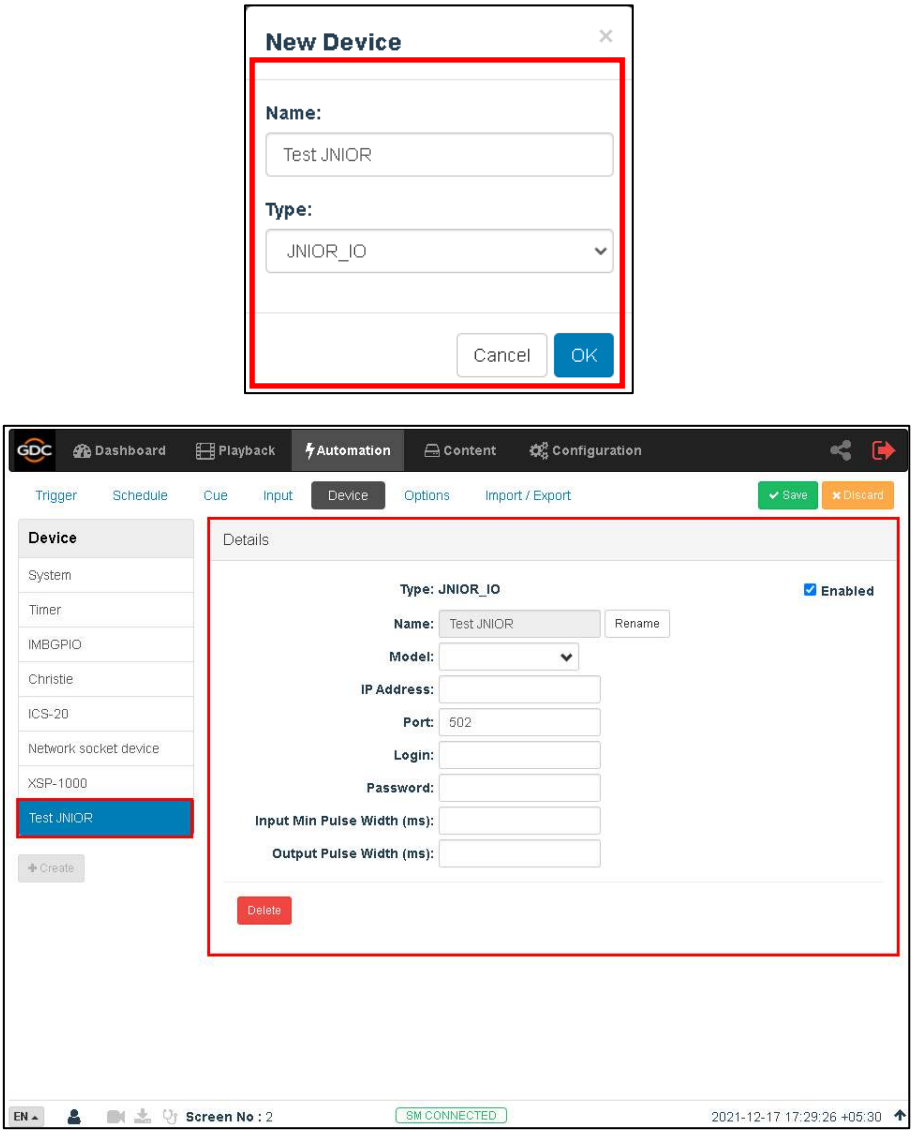


Figure 40: JNIOR device setting

13.5. Automation setup for Christie ACT devices

The SR-1000 supports the Christie ACT automation device. Follow the steps below to configure a Christie ACT device in the server automation interface.

1. Under the **Automation** tab in the menu, click the **Device** sub-tab.
2. Under the Device list on the left, click on the Create button**.**
3. Select 'ChristieACT' as the device Type. Enter the Name of the ChristieACT device and click OK.
4. Enter the IP Address of the ChristieACT device.
5. The default setting for Port is displayed on the settings for the ChristieACT device. Change this value if required.
6. Default Control Cues will be set up for a new ChristieACT automation device. Control cues can be added or removed by clicking the + or – buttons.
7. Click Save to save the settings.

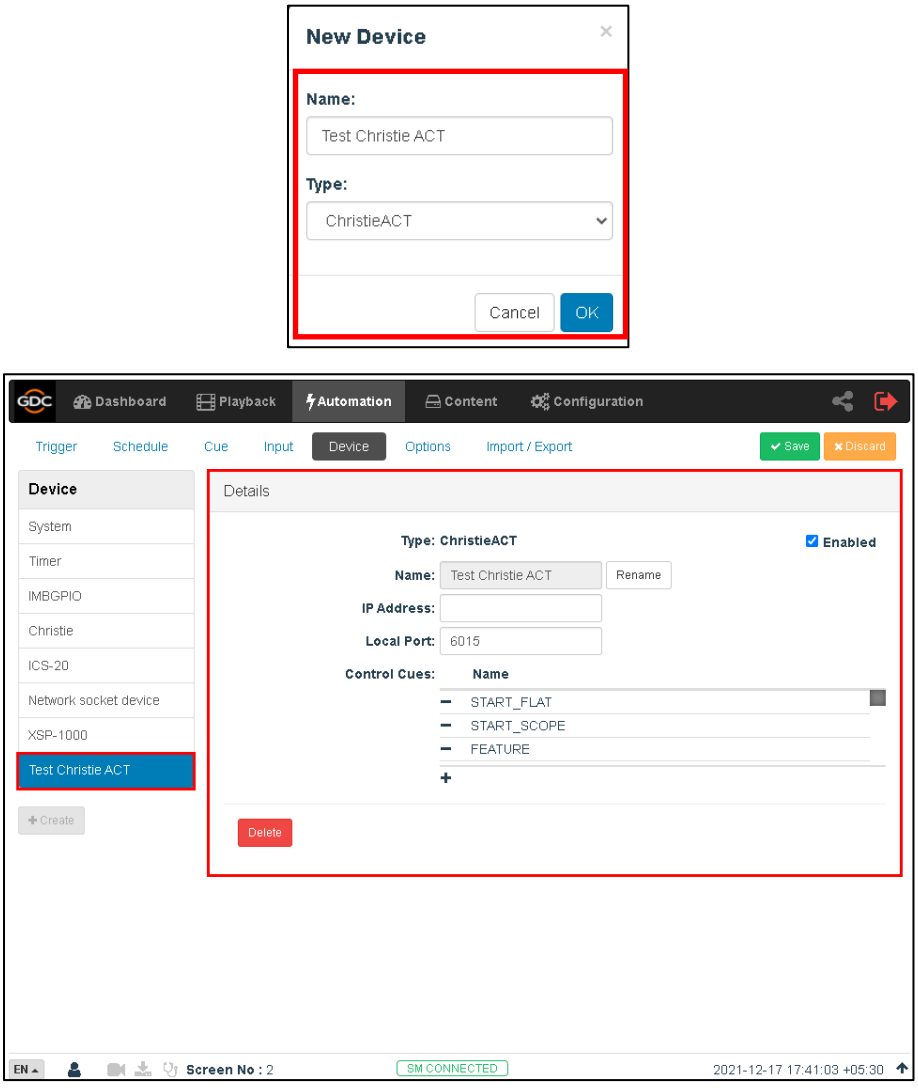
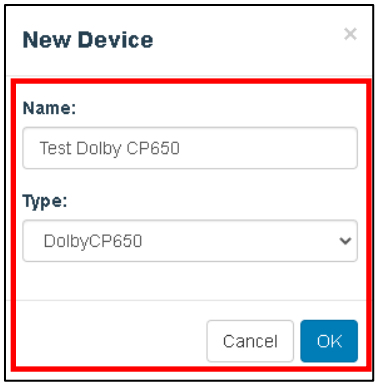


Figure 41: Christie device setting

13.6. Automation setup for Dolby devices

The SR-1000 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 Cinema Processor.

1. Under the **Automation** tab in the menu, click the **Device** sub-tab.
2. Under the Device list on the left, click on the Create button**.**
3. Select 'DolbyCP650' as the device Type. Enter the Name of the Dolby CP650 device and click OK.
4. Enter the IP Address of the Dolby CP650 device.
5. Click Save to save the settings.



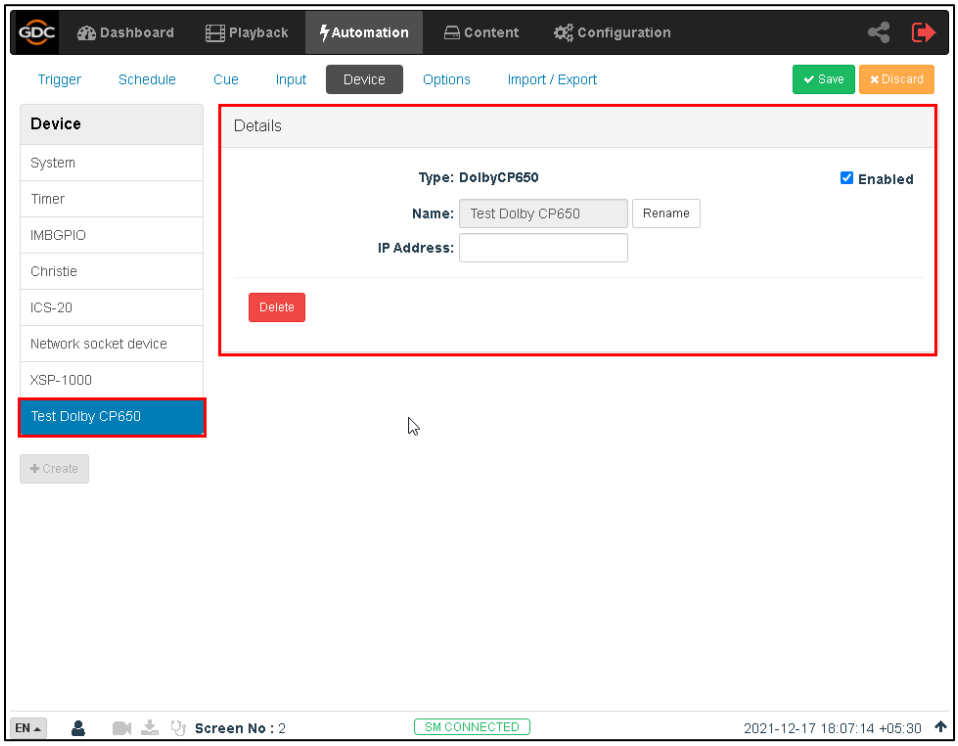


Figure 42: Dolby device setting

13.7. Automation setup for USL DAX devices

The SR-1000 supports automation for USL DAX sound processor. Follow the steps below to configure a USL DAX device in the server automation interface.

1. Under the **Automation** tab in the menu, click the **Device** sub-tab.
2. Under the Device list on the left, click on the Create button**.**
3. Select 'USL-DAX' as the device Type. Enter the Name of the USL DAX device and click OK.
4. Enter the IP Address of the USL DAX device.
5. Click Save to save the settings.

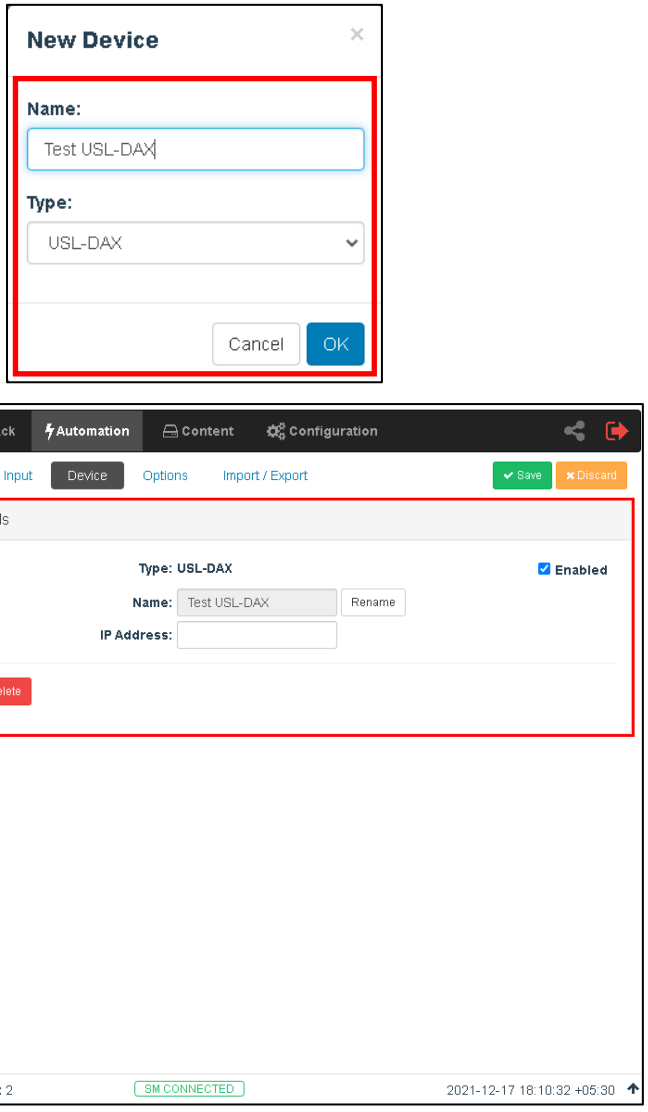
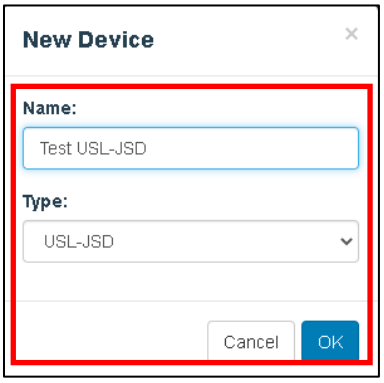


Figure 43: USL DAX device setting

13.8. Automation setup for USL JSD devices

The SR-1000 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. Under the **Automation** tab in the menu, click the **Device** sub-tab.
2. Under the Device list on the left, click on the Create button**.**
3. Select 'USL-JSD' as the device Type. Enter the Name of the USL JSD device and click OK.
4. Enter the IP Address of the USL JSD device.
5. Select the correct Model ('JSD-80' or 'JSD-100') of the device the server is connected to.
6. Click Save to save the settings.



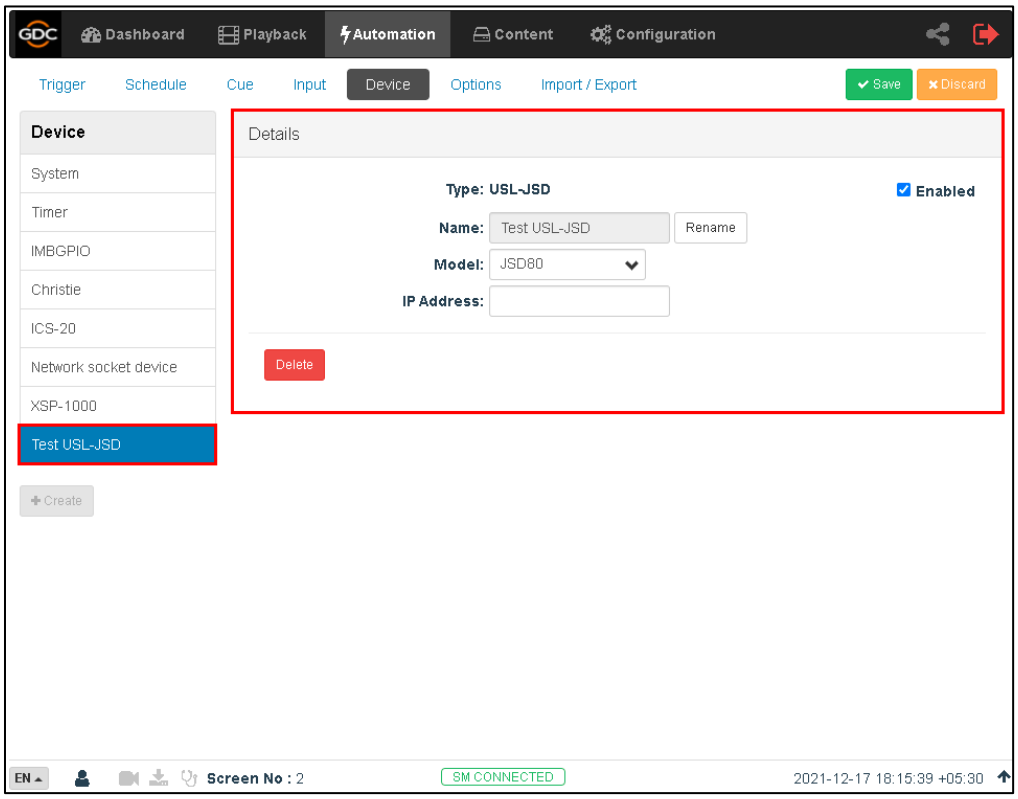
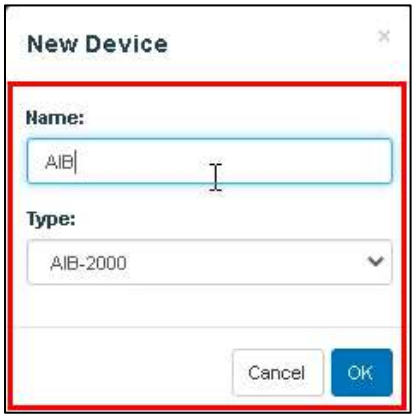


Figure 44: USL JSD device setting

13.9. Automation Setup for AIB-2000 Audio IO Box

The SR-1000 supports automation for AIB-2000 Audio IO (Input-Output) Box. Follow the steps below to configure an AIB-2000 device in the server automation interface.

1. Under the **Automation** tab, click the **Device** sub-tab.
2. Under the Device list on the left, click on the Create button.
3. Select 'AIB-2000' as the device Type and enter the Name of the AIB-2000 device and click OK.
4. Select 'Network' as the Connection type.
5. Enter the IP Address of the AIB-2000 device connected to the server.
6. Click Save to save the settings.



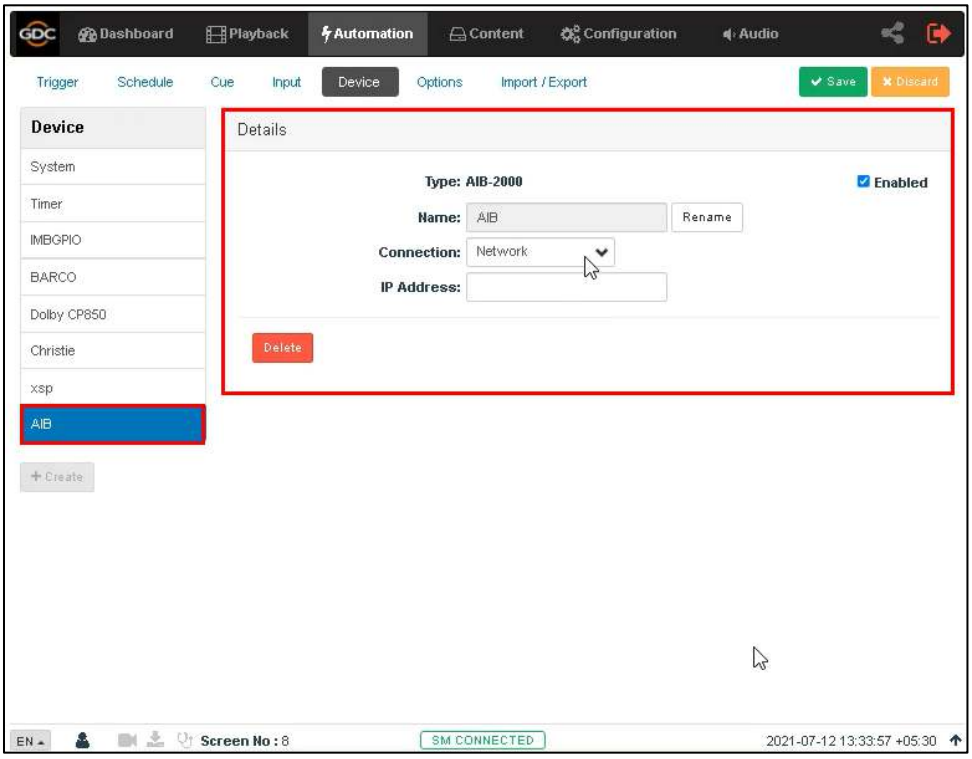


Figure 45: AIB-2000 device setting

14. COMPONENT ENGINNERING TA-10 SETUP

The Component Engineering TA-10 can be used for theater automation with the SR-1000. It requires that the TA-10 be wired in a particular configuration. A wiring diagram can be seen in **Figure 46**.

The TA-10 is connected to the SR-1000 using the server's GPIO input/output port. Configure event labels with the GPIO device to trigger the TA-10.

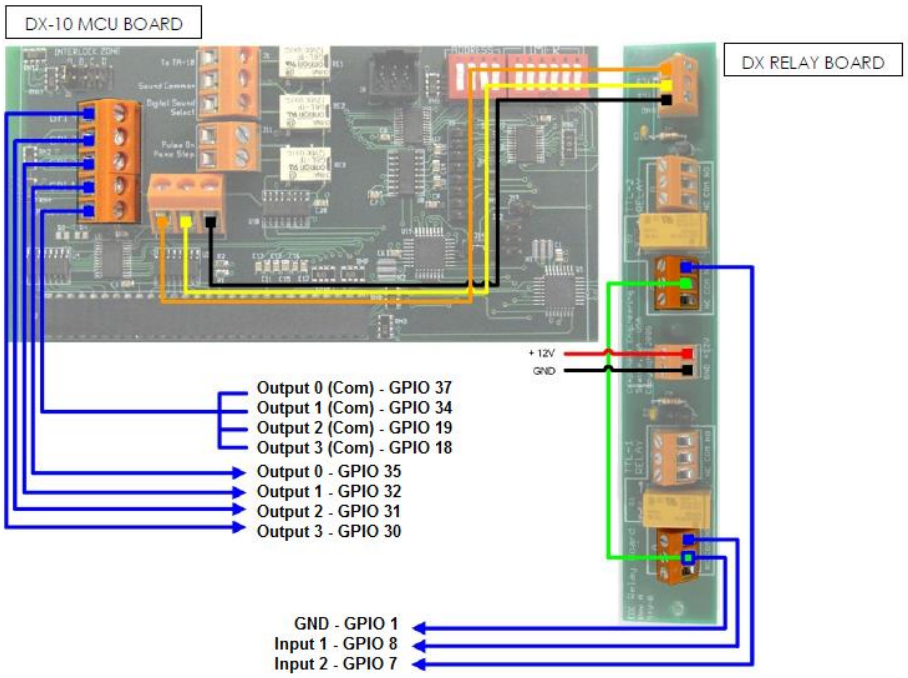


Figure 46: Component Engineering TA-10 wiring diagram

15. TESTING PROCEDURES FOR QC AFTER INSTALLATION

After the installation has been completed, it is necessary to test the following to ensure that the SR-1000 has been properly installed:

1. Test the video playback capabilities of the SR-1000.
2. Test the audio playback capabilities of the SR-1000 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 and network connectivity.

16. SR-1000 INPUT AND OUTPUT

16.1. AES Audio and GPIO Pinout

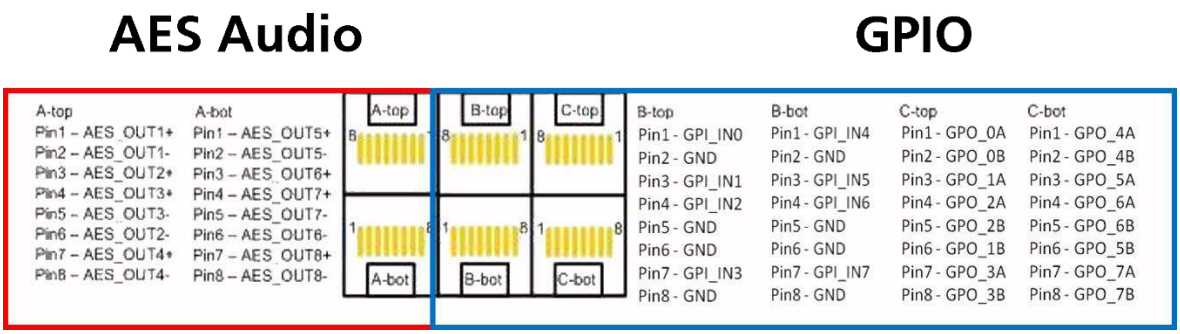


Figure 47: AES audio and GPIO pinout

16.2. Audio AES 17-24 Pinout (for SR-1000 Extreme -24)

Figure 48 describes the pinout for the **Audio AES 17-24** connector on the SR-1000 Extreme -24.

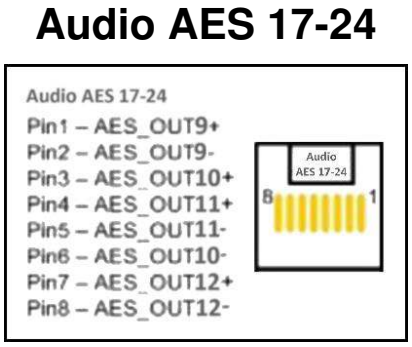


Figure 48: AUX AES Pinout

The button on the **Audio AES 17-24** extension board on the SR-1000 Extreme -24 IMB (as seen in **Figure 49**) should be set according to whether AES audio or LTC output is required on channels 23/24. See **Table 3** for the button settings.

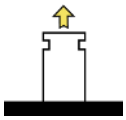
Illustration	Position	Result
	Up	CH23/24 used as AES out
	Down	CH23/24 used as LTC out

Table 3: Button Settings on AES 17-24 Extension Board

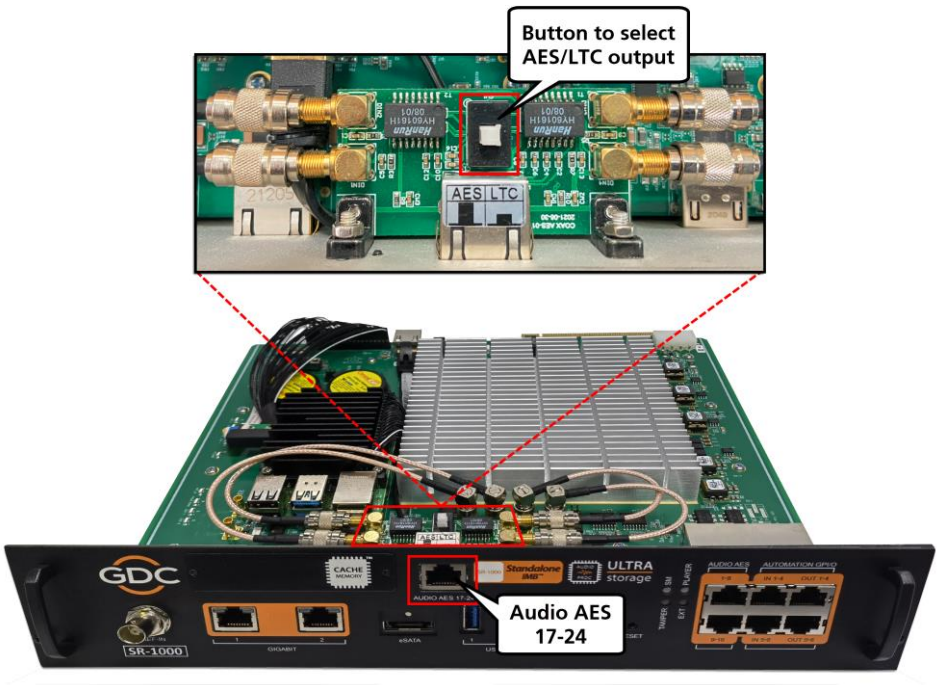


Figure 49: Button to select AES/LTC out on Audio AES 17-24

NOTE: The GRAY AES 17-24 audio cables should be used to connect **Audio AES 17-24** to external audio equipment. DO NOT use the ORANGE AES audio cables with the **Audio AES 17-24** output.

16.3. 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

16.4. Audio Output from the SR-1000

The SR-1000 features 16 channel AES3 digital audio signal via 2x RJ45 Outputs (**A-top and A-bot**) or 24 channel AES3 digital audio signal via 2x RJ45 Outputs (**A-top and A-bot**) and an additional RJ45 Output (**Audio AES 17-24**) depending on the SR-1000 configuration chosen.

Channels 1 to 8 are available on the **A-top** connector and carry the processed 6 or 8 channel main audio tracks for 5.1 and 7.1 DCPs respectively, assuming that DCPs follow the 16 channels ISDCF recommended channel order. Channels 9 to 16 are used for Hi/Vi-N, Booth Monitor, LTC (4D systems), D-Box Motion Data signal, etc. (refer to 'SR-1000 User Manual' for more details).

For DTS-X™/ IAB playback; Channels 9 to 16 carry the processed audio for the additional surround channels with the SR-1000 Extreme configuration. With the SR-1000 Extreme -24 configuration, Channels 17 to 24 are available on the **Audio AES 17-24** connector and carry the additional surround channels for upto 24 channels of DTS-X™/IAB playback.

NOTE: Since the SR-1000 Extreme -24 provides up to 16 channels of audio processing; when utilizing more than 16 channels, an external audio processor capable of processing 24 channels needs to be used.

Additionally, if audio processing feature is not available on the SR-1000 or it is disabled; the Channels 1 to 8 and Channels 9 to 16 will carry unprocessed audio and an external audio processor capable of processing 16 channels needs to be used.

16.5. Audio Input to the SR-1000

16.5.1. HDMI Input

SR-1000 allows direct input of 8 channel PCM audio via **HDMI IN** port on the IMB. The HDMI output of the source needs to be set to **LPCM** audio format.

16.6. Examples of a complete Audio input/output solution (for 5.1/7.1 Audio formats)

16.6.1. Audio input/output solution using AIB-2000 (suitable for connection to analog Amplifiers/Crossovers)

The **AIB-2000** has inputs for Microphone, Non-Sync and 7.1 channel analog input which can be routed directly to the analog outputs of the device, as shown in **Figure 50**.

AES3 digital audio outputs (Channels 1 to 8) from the SR-1000 are fed to the digital inputs on the AIB-2000 and converted to analog outputs which can be interfaced with analog audio equipment.

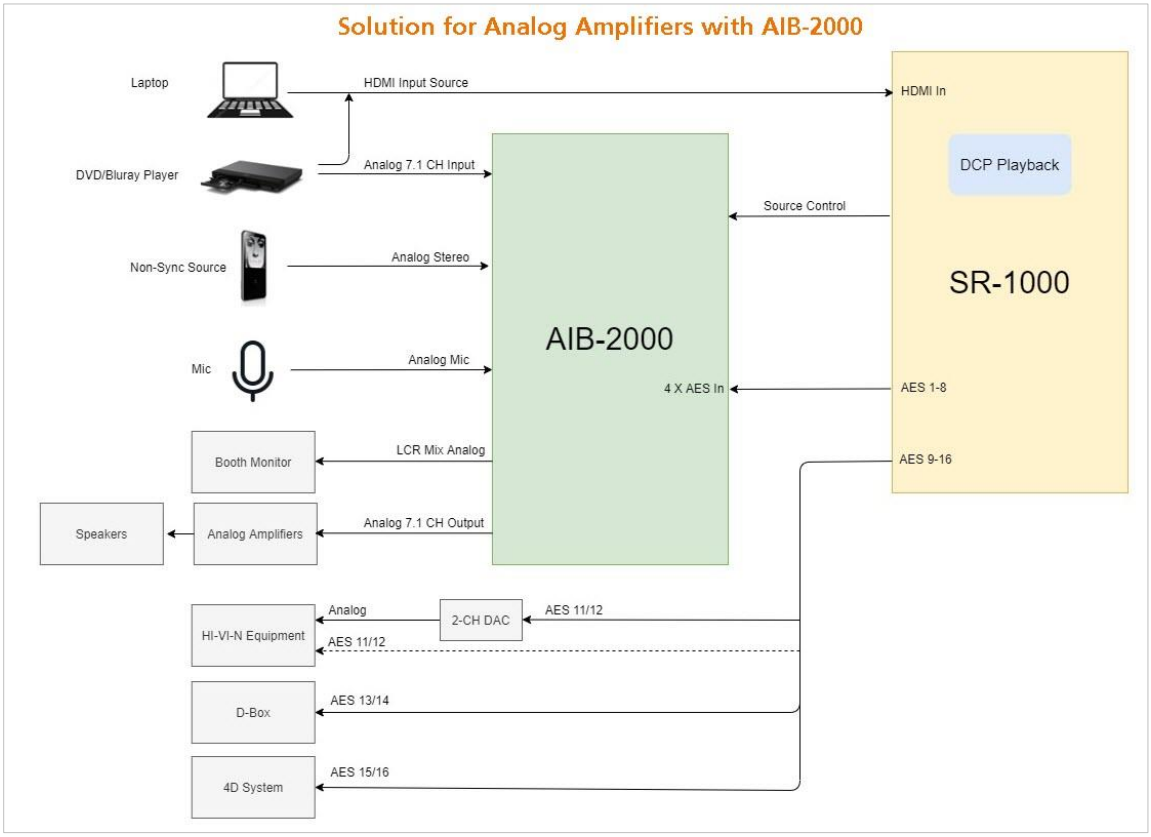


Figure 50: I/O Solution for Analog Amplifier

NOTE: The SR-1000 Automation should be used to switch between the analog sources and the 8 channel AES3 output from the SR-1000 to the AIB-2000 to ensure that the correct source is routed to the sound system.

16.6.1.1. Connections Requirements

Sr. No.	Device Type	Description
1	**Connection to analog Amplifier***	Connect the **8 channel Analog unbal. output** of the AIB-2000 to the inputs of analog Amplifiers/Crossovers using appropriate line level audio cables and connectors.
2	**Connection to Hi/Vi-N devices**	**AES output pair 11 and 12** on the SR-1000 carries the Hi and Vi-N channels respectively (assuming DCP's follow the 16 channels ISDCF recommended channel order). The **AES pair 11/12** is available on the **RJ45 Connector** labeled **A-bot** on the IMB and can be connected to the Hi/Vi-N device either directly or via a 2 channel D/A converter depending on whether the Hi/Vi-N device accepts AES3 or analog inputs. Appropriate cable and connectors should be chosen, keeping in mind the connectors used on the Hi/Vi-N device and 2 channel D/A converter (if used).
3	**Connection to 4D systems**	**AES output pair 15/16** on the SR-1000 carries the LTC signal used to sync 4D systems like ScreenX, 4DX and MX4D to the SR-1000. The 'Enable LTC Output on Channel 15/16' option must be checked under **Audio → Configuration** sub-tab. The **AES pair 15/16** is available on the **RJ45 Connector** labeled **A-bot** on the IMB and can be connected to the LTC input on the 4D System. Appropriate cable and connectors should be chosen keeping in mind the connector used on the 4D system. **Please Note**: LTC is not an AES3 audio signal although it uses two pins (7 & 8) of the **A-bot** connector on the SR-1000 which otherwise carries AES3 audio. When enable 'Enable LTC Output on Channel 15/16' option is checked; pins 7 & 8 carry the LTC signal. As a result, AES3 channels 15 & 16 are not available when LTC is enabled. Pins 7 & 8 of the **A-bot** connector must be wired directly to the LTC inputs of the external 4D system using a suitable cable (please check with the 4D system manufacturer for details). A break out cable may be required to allow pins 7 & 8 to be connected to an external 4D system while allowing pings 1-6 which carry AES3 channels 9-14, to be connected to the audio system.

4	**Connection to D-Box**	**AES output 13** on the SR-1000 carries the Motion Data signal used by D-Box (assuming DCPs follow the 16 channels ISDCF recommended channel order). The **AES pair 13/14** is available on the **RJ45 Connector** labeled **A-bot** on the IMB and can be connected to the D-Box system. Appropriate cable and connectors should be chosen keeping in mind the connector used on the D-Box system.
5	**Connecting a Microphone***	A Microphone can be connected to the **MIC. IN** on the front panel of the AIB-2000 using a **Male XLR Connector**. If the microphone requires Phantom power, then press the **+48V** button.
6	**Connecting a Non-Sync source***	A Non-sync source can be connected to the **NON-SYNC IN** on the front panel of the AIB-2000 using Male XLR connectors or to the **NonSync IN** on the back panel using Male stereo **RCA Connectors**. **NON-SYNC** front/back button switches NonSync input between front **XLR** and rear **RCA Connectors**.
7	**Connecting an HDMI source**	An HDMI source can be connected to the **HDMI IN** on the faceplate of the SR-1000, using an HDMI cable.
8	**Connecting a Booth Monitor***	A Booth monitor can be connected to the **LCR mon** output on the back panel of the AIB-2000 using an **RCA Connector**. Please note that the LCR mon output provides a L+C+R summation of the AES3 outputs from the SR-1000.

Table 4

** Refer to the 'AIB-2000 Manual' for more details.*

IMPORTANT: Please check and set the levels of the analog input sources to the AIB-2000 appropriately, to avoid any damage to the auditorium speakers.

16.6.2. Audio input/output solution using AIB-2000 (suitable for connection to digital Amplifiers)

It is assumed that the digital Amplifiers have both AES3 digital inputs and analog inputs with automated switching between digital inputs and analog inputs; the AES3 digital output from the SR-1000 may be fed directly to the amplifier's digital inputs and only the analog sources may be routed via the AIB-2000 to the analog inputs of the Amplifiers.

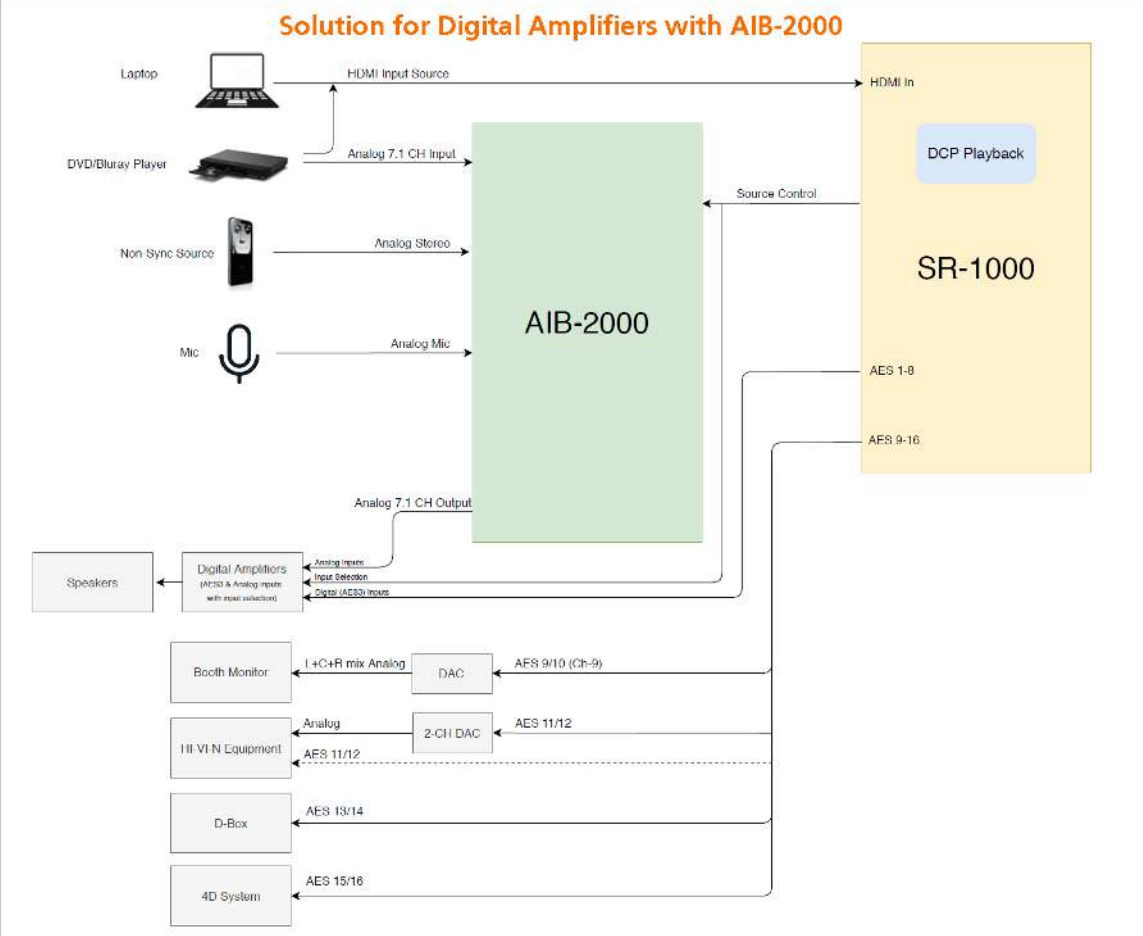


Figure 51: I/O Solution for Digital Amplifier

NOTE: The SR-1000 Automation should be used to switch between the analog sources to the AIB-2000 as well as between the analog and digital AES3 inputs on the digital Amplifiers to ensure that the correct source is routed to the sound system.

16.6.2.1. Connection Requirements

Sr. No.	Device Type	Description
1	**Connection to Digital Amplifiers***	Connect the **8 channel Digital AES3** outputs (1-8) of the SR-1000 available on the **A-top** connector of the IMB directly to the Digital Amplifiers or Crossovers using good quality shielded CAT6 cable(s).
2	**Connection to Hi/Vi-N Devices**	The **AES pair 11/12** is available on the **RJ45 Connector** labeled **A-bot** on the IMB and can be connected to the Hi/Vi-N device either directly or via a **2 channel D/A Converter** depending on whether the Hi/Vi-N device accepts digital (AES3) or analog inputs. Appropriate cable and connectors should be chosen, keeping in mind the connectors used on the Hi/Vi-N device and 2 channel D/A converter (if used).
3	**Connection to 4D systems**	**AES output pair 15/16** on the SR-1000 carries the LTC signal used to sync 4D systems like ScreenX, 4DX and MX4D to the SR-1000. The 'Enable LTC Output on Channel 15/16' option must be checked under **Audio → Configuration** sub-tab. The **AES pair 15/16** is available on the **RJ45 Connector** labeled **A-bot** on the IMB and can be connected to the LTC input on the 4D System. Appropriate cable and connectors should be chosen keeping in mind the connector used on the 4D system. **Please Note**: LTC is not an AES3 audio signal although it uses two pins (7 & 8) of the **A-bot** connector on the SR-1000 which otherwise carries AES3 audio. When enable 'Enable LTC Output on Channel 15/16' option is checked; pins 7 & 8 carry the LTC signal. As a result, AES3 channels 15 & 16 are not available when LTC is enabled. Pins 7 & 8 of the **A-bot** connector must be wired directly to the LTC inputs of the external 4D system using a suitable cable (please check with the 4D system manufacturer for details). A break out cable may be required to allow pins 7 & 8 to be connected to an external 4D system while allowing pings 1-6 which carry AES3 channels 9-14, to be connected to the audio system.

4	**Connection to D-Box**	**AES output 13** on the SR-1000 carries the Motion Data signal used by D-Box (assuming DCPs follow the 16 channels ISDCF recommended channel order). The **AES pair 13/14** is available on the **RJ45 Connector** labeled **A-bot** on the IMB and can be connected to the D-Box system. Appropriate cable and connectors should be chosen keeping in mind the connector used on the D-Box system.
5	**Connecting a Microphone***	A Microphone can be connected to the **MIC. IN** on the front panel of the AIB-2000 using a **Male XLR Connector**. If the microphone requires Phantom power, then press the **+48V** button.
6	**Connecting a Non-Sync source***	A Non-sync source can be connected to the **NON-SYNC IN** on the front panel of the AIB-2000 using Male XLR connectors or to the **NonSync IN** on the back panel using Male stereo **RCA Connectors**. **NON-SYNC** front/back button switches Non-Sync input between front **XLR** and rear **RCA Connectors**.
7	**Connecting an HDMI source**	An HDMI source can be connected to the **HDMI IN** on the faceplate of the SR-1000, using an HDMI cable.
8	**Connecting a Booth Monitor***	**AES pair 9/10** on the SR-1000 carries a mix of L+C+R which can be used as a monitor output. The **AES pair 9/10** is available on the **RJ45 Connector** labeled **A-bot** on the IMB and can be connected to the Booth monitor via a **D/A Converter.**

Table 5

** Refer to the 'AIB-2000 User Manual' for more details.*

IMPORTANT: Please check and set the levels of the analog input sources to the AIB-2000 appropriately, to avoid any damage to the auditorium speakers.

16.7. Technical Specifications of AIB-2000 Audio IO Box

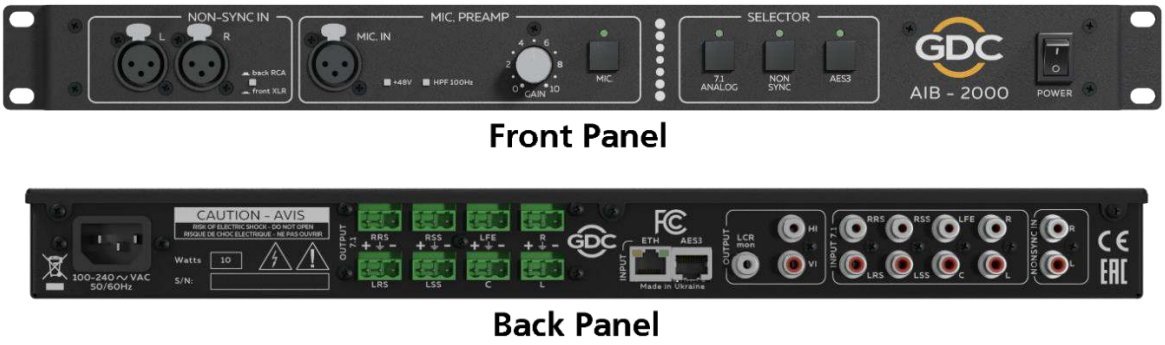


Figure 52: AIB-2000 – Front and Back Panels

Frequency range	**20 Hz - 20,000 Hz**
Microphone input	**XLR female**
Microphone switch	**Microphone in on/off**
Microphone input HPF	**100 Hz 12 dB/oct switchable**
Microphone input phantom supply	**+48 V switchable**
Microphone input maximum gain	**+60 dB**
Non-Sync input	**2 x XLR female (front)** **2 x RCA (rear)** **switchable**
Analog unbalanced 7.1 input	**8 x RCA**
Analog H/I output	**1 x RCA**
Analog V/I output	**1 x RCA**
Monitoring output L+C+R summed	**1 x RCA**
Analog balanced output	**8 x 3-pin Phoenix**
AES3 input	**1 x RJ-45**
Ethernet input	**1 x RJ-45**
Input selector	**Non-Sync / 7.1 Analog / AES3**
Mains plug	**C14**
Mains nominal voltage	**90 V- 265 V / 50-60 Hz**
Maximum power consumption	**10 W**
Rack height	**1U**
Dimensions (WxHxD)	**483 x 44 x 158 mm**
Shipping Dimensions (WxHxD)	**550 x 70 x 255 mm**
Net weight	**2.1 kg**
Shipping weight	**3.2 kg**

Table 6: AIB-2000 Technical Specifications

Website **Contact Us**

GDC Technology manufacturing facility is ISO 9001:2015 certified.