EXU230NX Outdoor NDI HX3 PTZ Camera

User Guide

Contents

Important Information

Thank you for purchasing our product. If there are any questions, please contact the authorized dealer.

Before operating the unit, please read this manual thoroughly and retain it for future reference.

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Attention:

To ensure account security, the user should change the password after their first login. The user is recommended to set a strong password (no less than eight characters). Password login does not apply to certain models that do not need password login.

The contents of this document are subject to change without prior notice. Updates will be added to the new version of this manual. Improvements or updates to the products or procedures described in the manual will be made readily.

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This manual is a guide for multiple product models and so it is not intended for any specific product.

In this manual, the illustrations of the displayed interface, parameters displayed, drawings, and value ranges may vary with models. The user should refer to the actual product for details.

Due to uncertainties such as the physical environment, discrepancies may exist between the actual values and reference values provided in this manual.
Use of this document and the subsequent results shall be entirely on the user's own responsibility.

Before operating the unit, the user should read this manual thoroughly and retain it for future reference.

Symbols

Symbol	Description
	**WARNING** Contains important safety instructions and indicates situations that may cause bodily injury.
	**CAUTION** Users must be careful. Improper operations may cause damage or malfunction of product.
	**NOTE** Indicates useful or supplemental information about the use of the product.

Safety Information

 **WARNING**:
Installation and removal of the unit and its accessories must be carried out by qualified personnel. You must read all of the Safety Instructions supplied with your equipment before installation and operation.

• If the product does not work properly, please contact your dealer. Never attempt to disassemble the camera yourself. (We will not assume any responsibility for problems caused by unauthorized repair or maintenance.)
• This installation should be made by a qualified service person and should conform to all the local codes.
• When shipping, the camera should be packed in its original packaging.
• Make sure the power supply voltage is correct before using the camera.
• Do not drop the camera or subject it to physical shock.
• Do not touch sensor modules with fingers. If cleaning is necessary, use a clean cloth with a bit of ethanol and wipe it gently. If the camera will not be used for an extended period of time, put on the lens cap to protect the sensor from dirt.
• Do not aim the camera lens at the strong light such as sun or incandescent lamp. The strong light can cause fatal damage to the camera.

Maintenance Precautions:
• If there is dust on the front glass surface, remove the dust gently using an oil-free brush or a rubber dust blowing ball.
• If there is grease or a dust stain on the front glass surface, clean the glass surface gently from the center outward using anti-static gloves or an oil-free cloth. If the grease or the stain still cannot be removed, use anti-static gloves or an oil-free cloth dipped with detergent and clean the glass surface gently until it is removed.
• Do not use organic solvents, such as benzene or ethanol, when cleaning the front glass surface.

Regulatory Compliance

FCC Part 15

This equipment has been tested and found to comply with the limits for digital devices, 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.

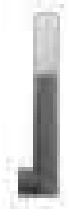
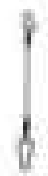
This product complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

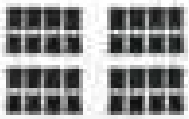
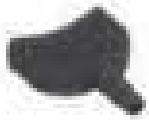
This device may not cause harmful interference.

This device must accept any interference received, including interference that may cause undesired operation.

	**LVD/EMC Directive** This product complies with the European Low Voltage Directive 2006/95/EC and EMC Directive 2004/108/EC.
	**WEEE Directive–2002/96/EC** The product this manual refers to is covered by the Waste Electrical & Electronic Equipment (WEEE) Directive and must be disposed of in a responsible manner.

What's In the Box

	EX-Ultra Outdoor PTZ Camera (EXU230NX)
	Removable Tally Light
	EXU Power Supply (P36-4)
	RS422/232 RJ45 Adapter (VCC-CC45RS)
	IR Remote Controller (VCC-RC-2)
	Protective Dust Cover
	Safety Cable
	HDMI Cable Support with Screws
	12V Power Output Cable

	Waterproof Cover
	Various sized Rubber Grommets
	Flexible Conduit Sleeve
	Water Resistant Cover

Optional Accessories

	ES Outdoor PTZ Wall Mount Bracket (ES-WM)
	10-Pin LEMO to Balanced XLR Connector (BLA-10)
	PTZ Drop Ceiling Pendant Mount System (C-PMSB)
	Large PTZ Wall Mount Bracket Bracket (C-WM3B) Cover (C-WM3B-CV)
	Outdoor PTZ Mounting Base (QR-BM)

	Optical 12G-SDI SFP Transceiver (B-OSM-12)

Recommended Peripherals

	97W POE Injector (BL-PP97)
	NDI Decoder (EG40N)
	PTZ Camera Controller (KBD-1020N)

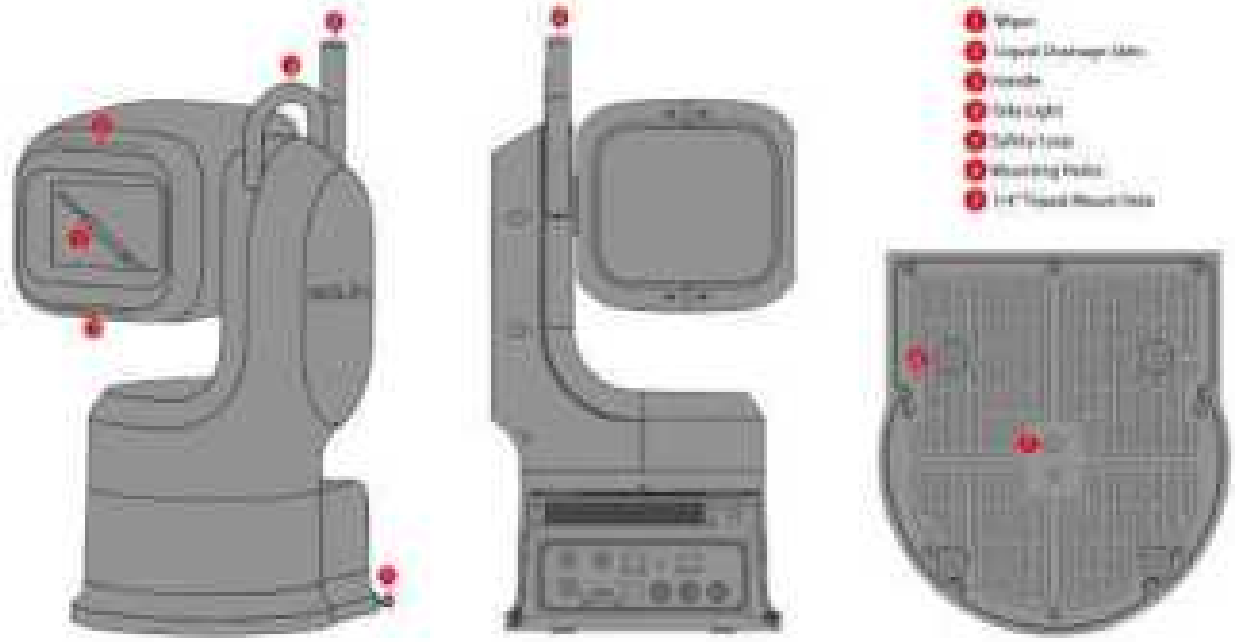
Overview

This user guide will provide users of the EXU230NX outdoor PTZ cameras with in-depth knowledge of the various features and functions of the camera and how it can be utilized.

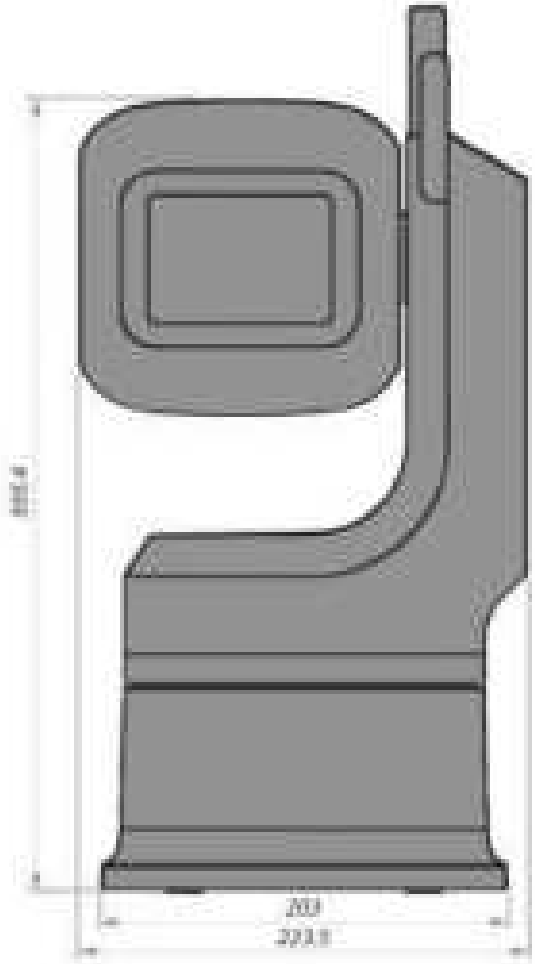
Features

- NDI HX3
- NDI 6
- Full HD, 30X Zoom, Starvis II 1/1.8" sensor
- IP67 Waterproof Rating
- Super image stabilizer
- -40°C to +60°C operating temperatures
- True Tri-Output; Simultaneous and independent outputs via HDMI, SDI, and IP Stream
- Broadcast-standard SDI outputs
- Smooth, accurate, and PTZ motors
- Support for multiple PTZ control protocols and methods
- Firmware Upgrades via IP (Web Interface)
- Removable Tally Light
- Built-In Handle - Industry First
- On-Screen Character Generator
- Mic & Line-Level Balanced Audio Input via XLR
- Genlock Supported
- Output up to 36W power
- Built-in hidden wiper and lens hood
- Support for FreeD
- Nitrogen-filled cavity to avoid condensation build-up

Camera Diagrams and Dimensions



NOTE: All dimensions listed below are in millimeters.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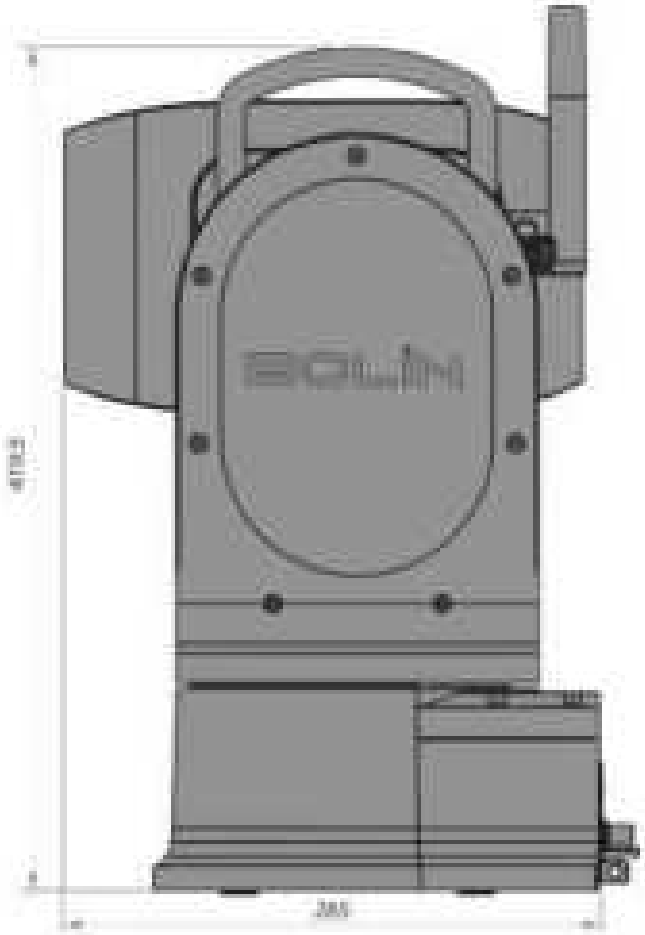
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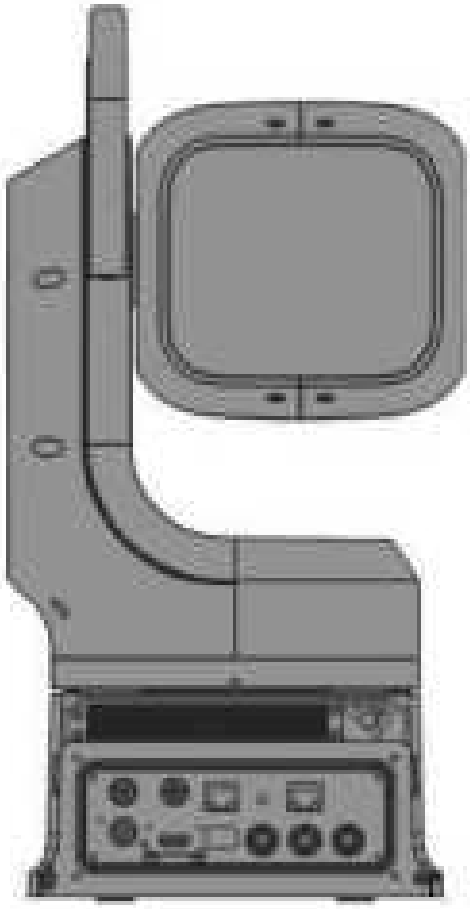
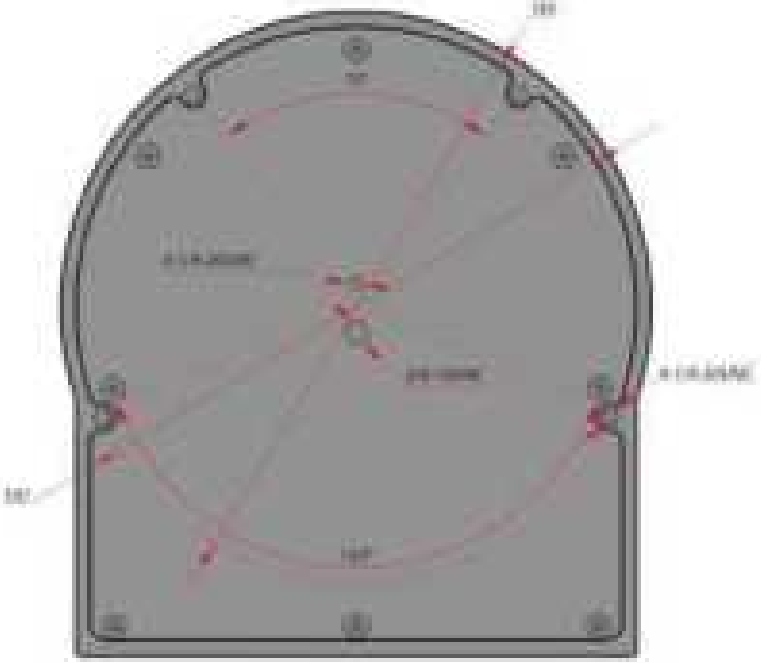




Quick Start Guide

The EXU230NX Outdoor PTZ Camera has multiple connection options for video output, power input, control input, audio input and output, and synchronization. The user can choose the appropriate connection points based on their requirements.

Power Options

Network Connection Options

This camera offers a variety of functionalities via a network connection. Besides being powered over Ethernet, a network connection enables the user to adjust camera settings remotely, stream video from the camera to a distant location, and control the PTZ camera functions via the Web Interface. To set up your camera's network connection, choose one of the following methods:

Option 1: Using the Power Adapter and a Network Switch

1. Connect the provided power adapter to the camera's DC input.
2. Use a Cat6 Ethernet cable to connect the camera's LAN port to a standard network switch.
3. Ensure the network switch is connected to your network for data transmission.

Benefit: This method is simple and works with any standard network switch, but requires both a power and data connection.

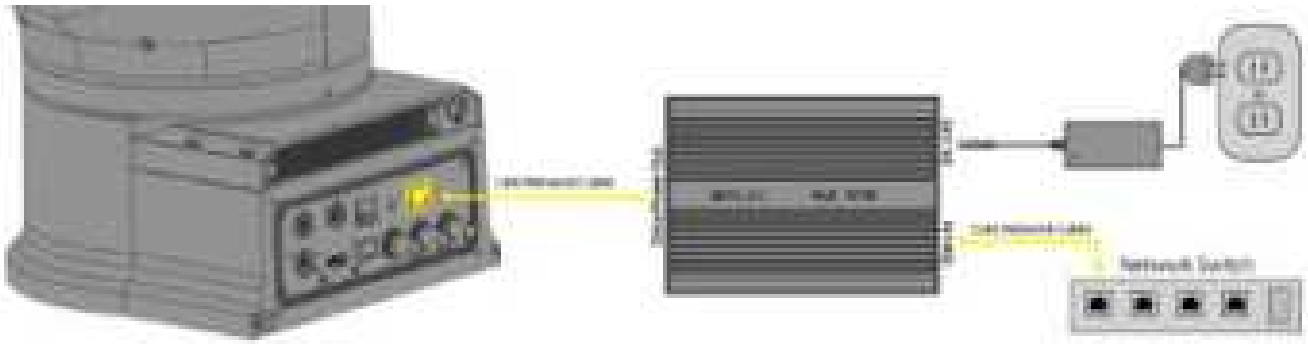
Option 2: Using a PoE++ Network Switch (Single Cable Connection)

1. Connect a Cat6 Ethernet cable from the camera's LAN/PoE++ port directly to a PoE++-enabled network switch.

Benefit: The PoE++ switch powers the camera and transmits data through a single cable, reducing cable clutter and simplifying installation.

Option 3: Using the Bolin PoE Injector (BL-PP97) for Extended Distance

1. Connect a Cat6 Ethernet cable from the PoE injector's PoE output to the camera's LAN/PoE++ port.
2. Connect another Cat6 Ethernet cable from the PoE injector's Data In port to a network switch.
3. Plug the DC power adapter into the PoE injector.



Benefit: This method allows for longer cable runs while still providing power and data transmission, ideal for installations where the camera is far from a network switch.

Locating the Camera on the Network

By default, Bolin cameras are set to **DHCP mode**, meaning they will automatically obtain an IP address from the network. To locate a Bolin camera on the network, use one of the following methods:

1. **Bolin Discovery Tool (Recommended)**
   - Download the **Bolin Discovery Tool** from the **Download Center** by searching for the camera model SKU.
   - Run the tool on a **computer connected to the same network** as the camera.
   - The tool will detect and display all Bolin cameras on the network, including their assigned IP addresses.
2. **Using an IP Scanner Utility**
   - Any third-party **IP scanner tool** can be used to detect network devices.
   - Run a scan to identify the camera's IP address. The camera may appear under the manufacturer name "Bolin" or with its assigned hostname.
3. **Checking via Camera OSD Menu (Using IR Remote)**
   - If the camera is connected to a monitor, use the **IR remote controller** to open the **OSD menu**.
   - Navigate to **Status**, where the current network settings, including the assigned IP address, will be displayed.

> **NOTE:** Ensure the **computer or laptop** being used for discovery is connected to the **same network.**

Video Output

The EXU has multiple video outputs, which can be used simultaneously, and the resolutions can be configured independently.

HDMI Out

Follow these steps to connect the camera:

1. **Connect the HDMI Cable** – Plug one end of an HDMI cable (compatible with the required resolution) into the camera's HDMI output. Connect the other end to your desired device, such as a switcher, converter, or display.

2. **Power On the Camera** – Turn on the camera and wait for it to initialize. Once it's ready, the video feed will appear on the screen. During the first five seconds, the camera's initial settings will be displayed.
3. **Adjust Output Settings** – Use the OSD (On-Screen Display) menu or the web interface to configure the output resolution and frame rate as needed. For detailed instructions, refer to the *Web Interface Configuration* section of this guide.

> **NOTE:** It is recommended for the user to utilize a certified "**Premium High Speed HDMI**" cable to guarantee the attainment of the maximum signal quality from their camera.

HDMI Standard	Bandwidth	Max Resolution Supported
HDMI 1.4	10.2 Gigabit/Second	1080p, 120 Hz 4K, 30 Hz

Dual SDI Out

Follow these steps to connect the camera:

1. **Connect the SDI Cable** – Plug one end of a properly rated SDI cable into one of the camera's two SDI outputs. Make sure the BNC connector is securely fastened to prevent it from coming loose during use. Connect the other end to your desired device, such as a switcher, video router, converter, or display.
2. **Power On the Camera** – Turn on the camera and allow it to initialize. Once ready, the video feed will appear on the screen. For the first five seconds, the camera's initial settings will be displayed.
3. **Adjust Output Settings** – Use the OSD (On-Screen Display) menu or the web interface to configure the output resolution and frame rate. For detailed instructions, refer to the *Web Interface Configuration* section of this guide.

> **NOTE:** It is recommended to use a high-quality, shielded SDI cable rated for the required resolution and transmission distance to ensure optimal signal integrity and reliability.

SDI Standard	Bandwidth	Resolution Supported
SD-SDI	270 Megabits/Second	480i
HD-SDI	1.485 Gigabit/Second	720p / 1080i
3G-SDI	2.970 Gigabit/Second	1080P, 60FPS

Optical Fiber

Follow these steps to set up a fiber connection for your camera:

1. **Obtain the Necessary Components** – Acquire **two** single-mode 1310 nm SFP+ 12G optical modules (transceivers) with LC duplex fiber connectors—one for each end of the signal chain. Additionally, select a single-mode duplex fiber cable with LC connectors that meets your required length.
2. **Install the SFP+ Modules** – Insert one SFP+ module into the camera's fiber port. Ensure it is fully seated before proceeding. Then, connect one end of the fiber cable to the LC connectors on the module.
3. **Repeat at the Receiving End** – Insert the second SFP+ module into the receiving device (such as a fiber converter, monitor, or recorder) and connect the other end of the fiber cable.
4. **Power On the Camera** – Turn on the camera and allow it to initialize. Once ready, the video feed will appear on the screen. The camera's initial settings will be displayed for the first five seconds.
5. **Adjust Output Settings** – Use the OSD (On-Screen Display) menu or the web interface to configure the output resolution and frame rate. For detailed instructions, refer to the *Web Interface Configuration and System Menu* section of this guide.

Recommended SFP+ Modules: Based on thorough testing, we recommend using FS and LR-TECH brands. Specifically, the **LR-8910D-SDI-LR** model (Serial Number: **BS190909052**) has demonstrated exceptional performance.

> **NOTE:** The resolution of the Optical Fiber is the same as the resolution set for the SDI outputs. These video outputs are not independent.

SFP+ 12G Optical Modules	LC Duplex Fiber Connector
	

> **CAUTION:** Make sure you keep the LC connectors on the fiber cable and SFP modules covered when not in use. Leaving connectors uncovered could lead to damage and signal degradation.

IP Stream Out

The camera's IP stream(s) can be enabled and configured through its web interface. To access the web interface, the camera must be connected to a **Local Area Network (LAN)** using a **CAT6 cable**, either through a network switch or directly to a computer. Streaming from the camera also requires an active **internet (WAN) connection**.

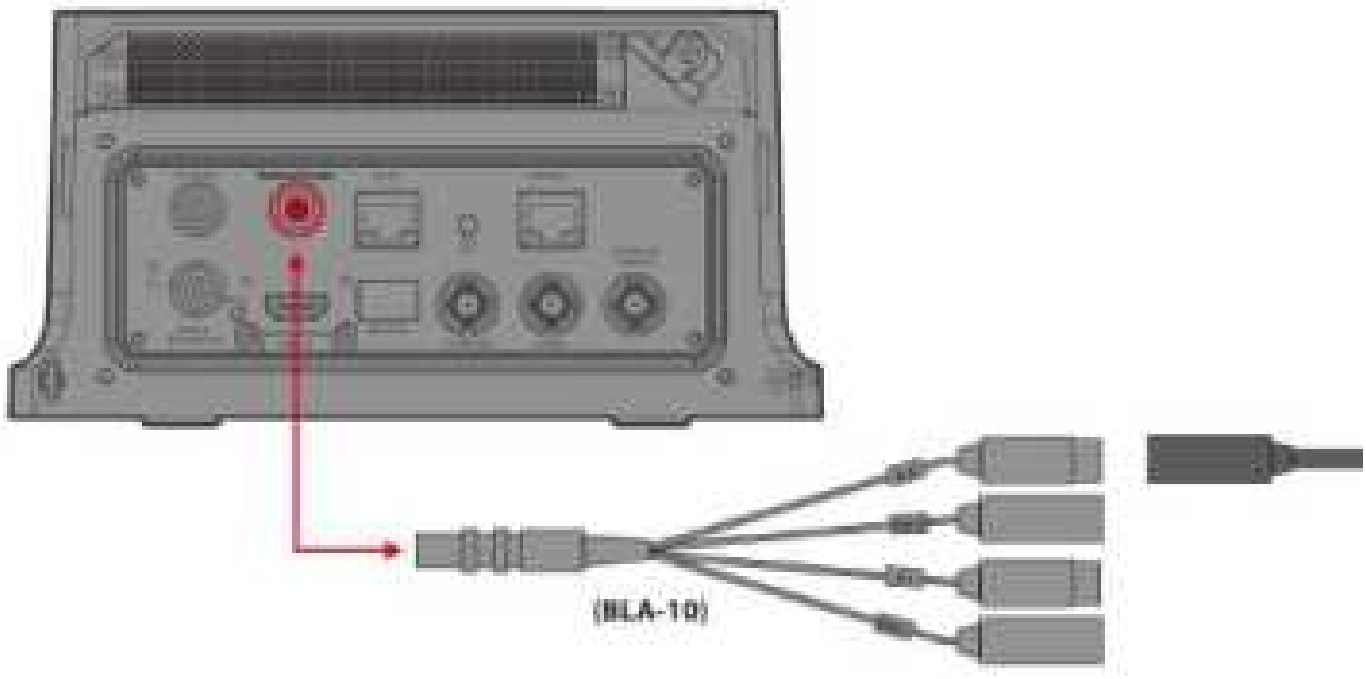
Follow these steps to set up IP streaming:

1. **Connect the Camera to the Network** – Plug one end of a **CAT6 cable** into the camera's **LAN/PoE++** port and connect the other end to either a network switch or directly to a computer.
2. **Access the Web Interface** – On a computer, open an **HTML5-enabled web browser** and enter the camera's **IP address**. By default, the camera is set to DHCP, so the IP address is assigned by the network.
3. **Enable and Configure Streaming** – In the web interface, navigate to the "**AV Setup**" menu on the left side. From here, enable and adjust the IP stream settings as needed.

For additional details, refer to the *Web Interface Configuration* section of this guide.

Audio Output

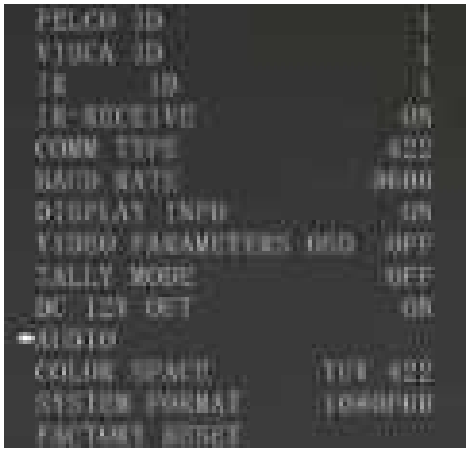
The camera is equipped with an industry-standard 10-pin LEMO connector for embedding balanced audio. Users can either use a third-party breakout cable or Bolin's **10-Pin LEMO to XLR breakout cable (BLA-10)** for seamless integration. Once connected and activated via the **Web Interface** or **OSD Menu**, the audio signal is embedded into the camera's **HDMI, SDI, and IP streams**.



Connecting an Audio Source to the Camera

Follow these steps to properly connect and enable audio:

1. **Using the 10-pin LEMO to XLR breakout cable (BLA-10).**
2. **Connect the breakout cable to the camera.**
   - Insert the **male LEMO connector** of the breakout cable into the **female LEMO port** labeled "**Balanced Audio**" on the back of the camera.
3. **Connect the audio source.**
   - Using **XLR cables**, connect the output of the audio source (**microphone, audio mixer, speaker, etc.**) to the **two female XLR connectors** on the breakout cable.
4. **Enable and configure the audio.**
   - On the **Web Interface > AV Setup > Audio: Enable.**
   - 
   - On the **OSD menu > SYSTEM > AUDIO > AUDIO: ON** to enable audio input and adjust audio levels as needed.

- 
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This setup ensures high-quality embedded audio across all video output streams.

Genlock (Synchronization)

Connecting a Genlock Signal to Your Camera
Follow these steps to properly connect and enable Genlock synchronization:

1. **Connect the Genlock Signal:**
   - Using a **75-ohm SDI cable with BNC connectors**, plug one end into the "**Genlock**" port on the camera.
   - Connect the other end to a **Genlock signal source** such as a **sync generator, video switcher, or audio mixer**.
2. **Enable External Synchronization:**
   - Access the camera's **OSD menu** and navigate to the **Genlock settings**.
   - Turn on **External Synchronization** to activate Genlock.
   - Adjust any additional Genlock settings as needed for optimal performance.

> **NOTE:** External synchronization via **Genlock is only supported over SDI.** Synchronization is **not possible** using HDMI or IP video signals.

Tally Light

Tally Light GPI I/O connection
The camera features a **removable tally light**, which serves as a visual indicator when the camera is live or actively in use. When illuminated, it signals that the camera is operational.

To enable the tally light, a **video switcher** and a **PTZ controller** are required. The tally light is triggered via the **GPI I/O connection**, allowing seamless integration with production systems.
For proper setup, refer to the video switcher and keyboard documentation to configure the tally signal output.

Installing the Tally Light on the EXU230NX
Follow these steps to properly install the tally light on your PTZ camera:
1. Locate the Tally Light Port

- The **tally light port** is positioned at the back of the camera, behind the camera's handle.
- It is covered by a **metal plate** for protection.

2. Remove the Metal Cover

- Carefully **unscrew** the metal cover to expose the tally light slot.
- The cover remains attached to the camera via a **small cable** to prevent misplacement.

3. Attach the Tally Light

- Align the **tally light connector** with the port.
- Insert it securely, ensuring proper orientation.
- Use the **arrow indicator** on the tally light to twist and lock it into place.

4. Reattach the Metal Cover

- Position the **metal cover** underneath the installed tally light.
- The cover is **magnetic**, allowing it to easily attach and stay in place.

Once installed, the tally light will function as a **visual indicator** when the camera is active.

GPI I/O Input Mode for Tally Signal from a Video Switch

This setup enables the **tally light function** on a PTZ camera by integrating a **video switch**, a **PTZ controller**, and **RS-422 control**. When switching cameras via the **video switch**, the tally signal automatically updates to indicate the active camera.
Setup Instructions:

1. **Connect the PTZ Camera to the PTZ Controller**
   - Use a **standard RS-422 control cable** to connect the camera to the **PTZ controller**.
2. **Connect the PTZ Controller to the Video Switch**
   - Use a **tally function cable** to establish a connection between the **PTZ controller** and the **video switch**.
3. **Configure the GPI I/O Input Mode on the PTZ Controller**
   - On the PTZ controller, navigate to:
     SETTINGS > GPI I/O > Mode, and set it to **Input Mode**.

- Exit to the home screen.

4. **Tally Light Functionality:**
   - After setup, switching cameras on the **video switch** will send a **tally signal** to the **PTZ controller** via the **tally function cable**.
   - The **PTZ controller** will then relay the tally signal to the corresponding camera via **RS-422**, activating the tally light.
   - For example, selecting **Camera 1** on the **video switch**:
     - The **tally signal** is sent to the PTZ controller.
     - The **controller transmits the signal** to **Camera 1** via RS-422.
     - The **tally light on Camera 1 turns on**, indicating it's active.
     - The PTZ controller is now linked to Camera 1, allowing **pan, tilt, and zoom control**.
5. **Switching Between Cameras:**
   - When selecting **Camera 2** on the **video switch**:
     - The **tally light on Camera 2 turns on**.
     - The **tally light on Camera 1 turns off**.
     - The PTZ controller now controls **Camera 2**.

This setup ensures **seamless camera switching and tally light synchronization**, improving production workflow.

GPI I/O Output Mode for Tally Signal Sent by PTZ Controller

This setup allows the **PTZ controller** to send a **tally signal** directly to the selected camera, activating its tally light when in use. The tally signal is transmitted via **RS-422**, ensuring synchronization between camera selection and tally indication.

Setup Instructions:

1. **Connect the PTZ Camera to the PTZ Controller**
   - Use a **standard RS-422 control cable** to connect the camera to the **PTZ controller**.
2. **Configure the GPI I/O Output Mode on the PTZ Controller**
   - On the PTZ controller, navigate to:
     SETTINGS > GPI I/O > Mode, and set it to **Output Mode**.
   - Exit to the home screen.
3. **Tally Light Functionality:**
   - Once configured, selecting a **camera on the PTZ controller** will send a **tally signal** to that camera via **RS-422**.
   - For example, selecting **Camera 1** on the PTZ controller:
     - The **tally signal** is sent directly to **Camera 1**.
     - The **tally light on Camera 1 turns on**, indicating it is active.
     - The **PTZ controller now has control over Camera 1's pan, tilt, and zoom functions**.
4. **Switching Between Cameras:**
   - When switching to **Camera 2** on the PTZ controller:
     - The **tally light on Camera 2 turns on**.
     - The **tally light on Camera 1 turns off**.
     - The PTZ controller now controls **Camera 2**.

This setup ensures that **camera selection and tally light activation are fully synchronized**, providing a seamless workflow for live production environments.

Control Input

The EXU2030NX offers multiple control options that can be used simultaneously, providing flexibility for various setups.
The available control methods are:

Infrared (IR) Remote Controller

The IR remote defaults to **IR ID 1**, but if multiple cameras are being used with a single remote, the remote ID can be changed in the camera's **OSD menu > System > IR ID** settings or on the camera's web interface **Image > System > IR ID.** The IR remote works best at short distances and requires a **clear line of sight** to the camera. The camera's **I/O panel has a built-in IR receiver** that processes commands from the remote.

Setting Up and Using the IR Remote:

1. **Change the Camera's IR ID (If Needed)** – If using multiple cameras with one remote, go to the **OSD menu > System > IR ID** or on the camera's web interface **Image > System > IR ID** and assign each camera a unique **IR ID (1, 2, or 3)** to prevent interference.
2. **Power On the Camera** – Ensure the camera is powered on and ready to receive commands.
3. **Match the Remote to the Camera** – On the IR remote, select the **Camera IR ID** that corresponds to the IR ID set in the camera's OSD menu.
4. **Avoid Interference** – If multiple cameras are within range, make sure each one has a different IR ID to prevent accidental control of the wrong unit.

Once these steps are completed, the IR remote will be ready to control the camera.

Functions of the IR Controller:

VISCA over IP

Bolin PTZ cameras support **VISCA over IP** communication, allowing for remote control and integration with compatible systems over a network. To establish a connection, ensure that your control system or software is configured to communicate with the camera using **port 52381**.

Key Requirements:

- **Network Configuration:** The camera and control device must be on the same subnet or properly routed for network communication.
- **Port Settings:** Ensure that **port 52381** is open and accessible for VISCA over IP commands.
- **Control Protocol:** Standard VISCA over IP commands can be used for functions such as pan, tilt, zoom, focus, and preset recalls.

> **NOTE:** The VISCA over IP port of the controller MUST be set to **52381** to communicate with and control the camera.

ONVIF Protocol

Bolin PTZ cameras support **ONVIF 2.4 (Profile S)**, ensuring compatibility with a wide range of third-party applications, including PTZ controllers and streaming software. These cameras use the **standard ONVIF port 2000** for communication.
ONVIF compliance enables **device discovery, video streaming, and PTZ control**, making these cameras ideal for **live production, broadcasting, and professional AV workflows**.

Integrating with ONVIF-Supported Software:

1. Ensure the camera is connected to the network and properly configured.
2. Use an ONVIF-compliant application to detect the camera.
3. Enter the camera's **IP address, ONVIF credentials (web login credentials), and port 2000** during setup.
4. Configure video and PTZ settings as needed for the application.

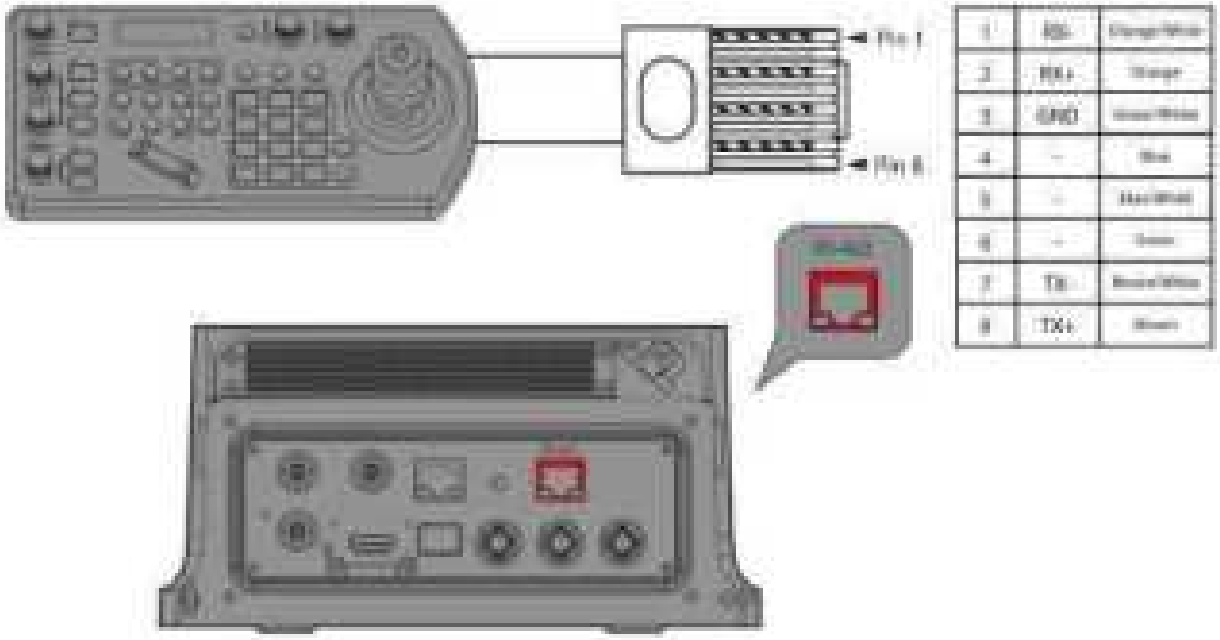
ONVIF 2.4 (Profile S)
ONVIF Port: 2000

RS-422 Serial Commands (VISCA)

The camera is equipped with an RS-422 port that facilitates VISCA control over serial commands. Additionally, the RS-422 port is compatible with RS-485. The user can establish a serial connection between the camera and a PTZ controller or computer to execute pan, tilt, and zoom operations, as well as perform preset recalls.

> **CAUTION:** Establishing a serial connection between the camera and a Sony PTZ controller differs from the process with a non-Sony PTZ controller. It is crucial to verify the pin settings for the specific controller in use.

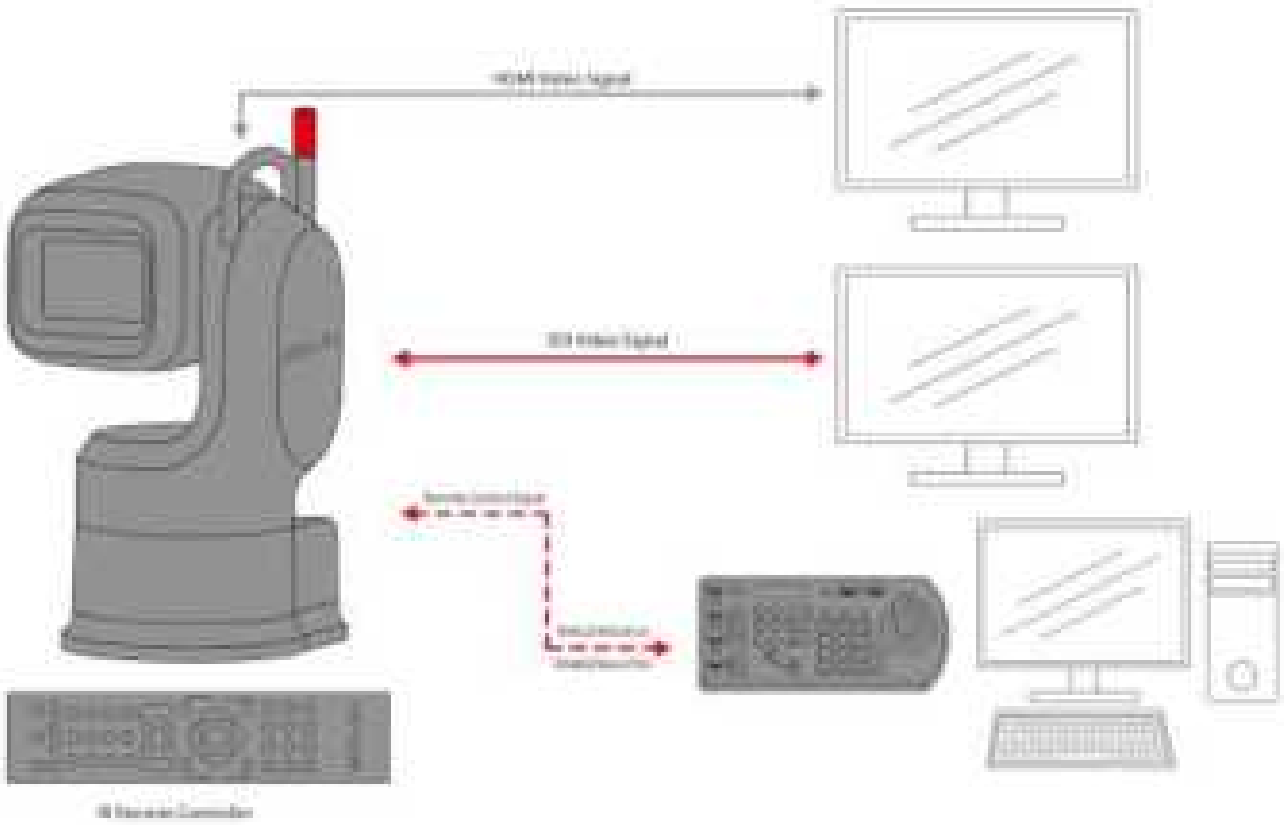
1. The camera should be powered on and the OSD menu opened or the Web Interface logged into any web browser. Proceed to the system settings and adjust the baud rate to match that of the controller's baud rate. The VISCA ID should be set to a number between 1-7.
2. A standard terminated CAT5 or CAT6 cable can be used to directly connect the camera to the controller, or the included RJ45 to RS422 Control Cable Adapter can be used to connect unterminated CAT5/CAT6 cables between the camera and controller. The pin connection diagrams provided below should be followed, based on the specific controller in use and the desired connection.



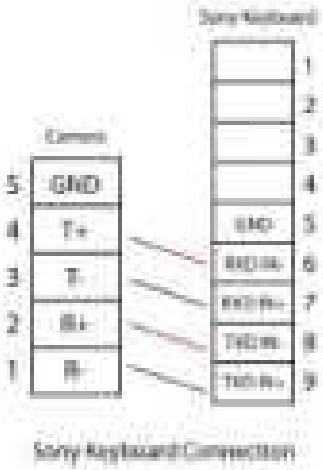
1	RX-	
2	RX+	
3	GND	
4	–	
5	–	
6	–	
7	TX-	
8	TX+	

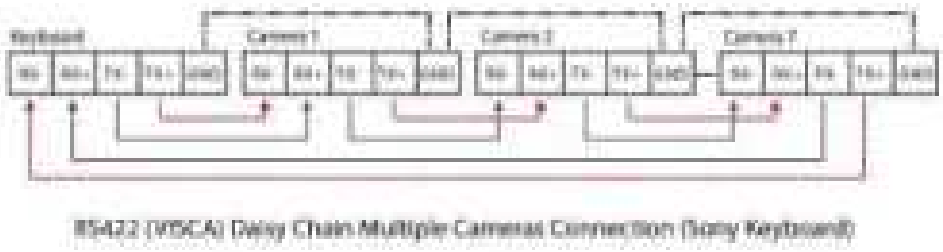
NOTE: Please refer to the KBD-1010-RNV user guide for instructions on how to establish an RS422 connection with the controller.

Use RS-422 (VISCA) / RS485 (PELCO P/D)
For camera operations, the RS-422/485 port can be utilized to connect controllers, such as a joystick keyboard or a PC station. This allows for the effortless management of pan, tilt, and zoom functions, as well as access to all preset functions using the controller's buttons.
To utilize a PC station, it is essential to have a software application that is compatible with this unit.

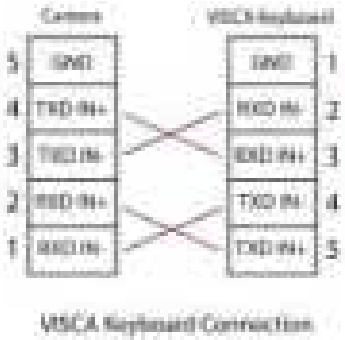


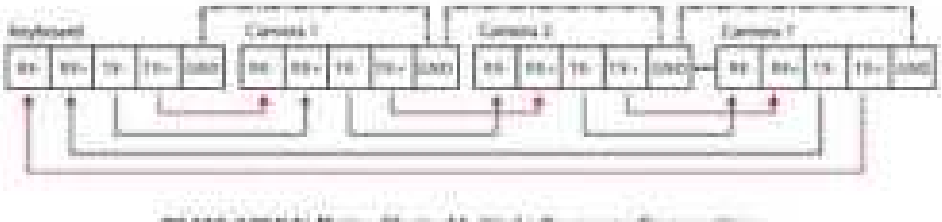
SONY Keyboard RS422 Connection
Guide for Establishing RS422 Connection and Daisy Chain Configuration for Multiple Cameras with a SONY Controller.



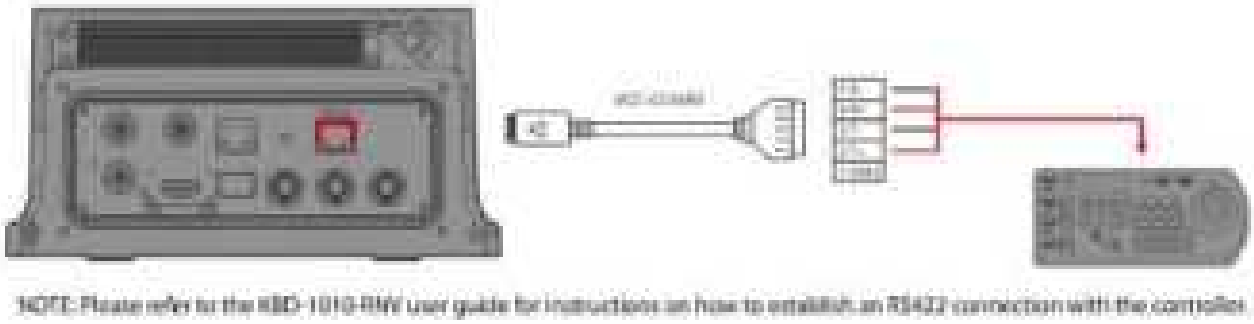


VISCA (Non-Sony) Keyboard RS422 Connection
Guide for Establishing RS422 Connection and Daisy Chain Configuration for Multiple Cameras with a Non-Sony Controller:

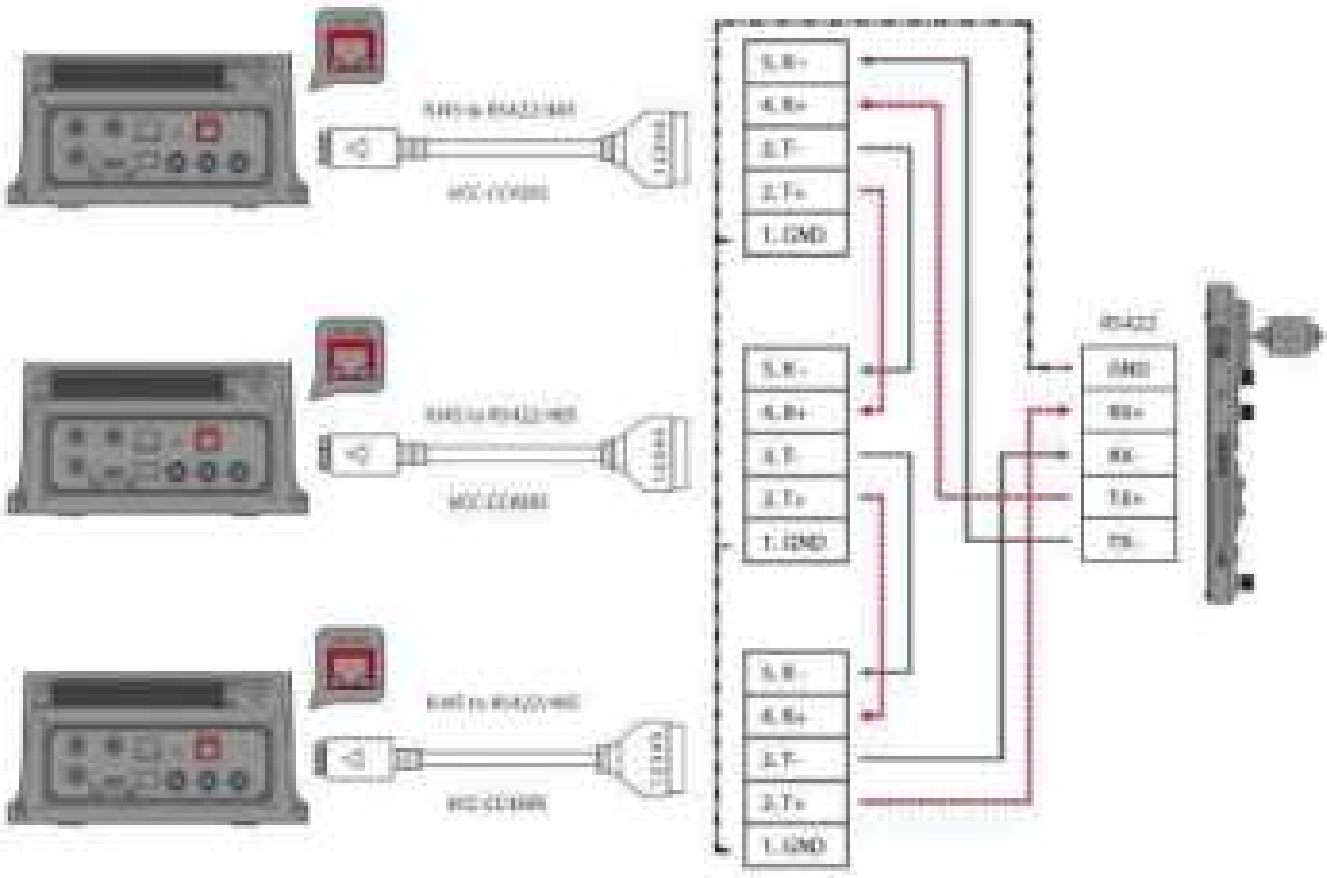




The user is advised to use the included extension cables, which come with an RJ45 to RS422 Phoenix connector adapter, to set up an RS422 connection for the control device. This will ensure a stable and reliable connection for controlling the device.



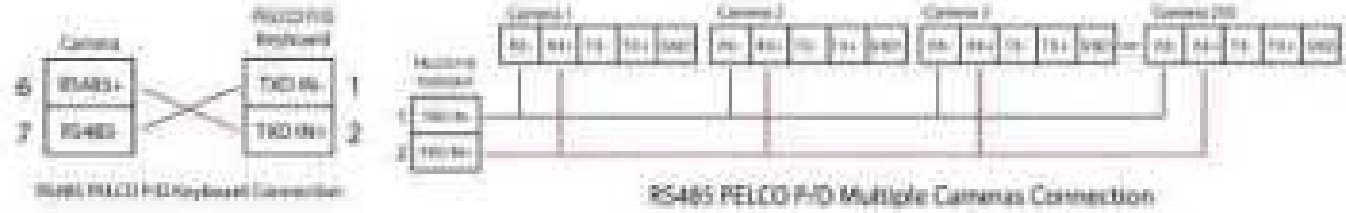
Guide to creating an RS422 Daisy Chain Connection for Multiple Cameras with an RS422 Standard Serial Port Controller.



PELCO P/D Keyboard RS485 Connection
Important: Utilize RS422 ports when establishing an RS485 connection. Only employ TX+ and TX- for RS485 connections.

• Set the RS422 control method using the OSD menu or Web interface.
• Set the camera ID on the OSD menu using the remote controller.
• To ensure the settings have been applied, restart the camera by switching it off and then back on.
• Use a PELCO P/D compatible keyboard for seamless integration.
• Utilize preset # 95 on the keyboard to access/exit the camera OSD menu.
• Navigate the OSD menu using the joystick and buttons "OPEN" or "CLOSE."
• For the keyboard operation details, refer to the user manual of the specific keyboard in use.

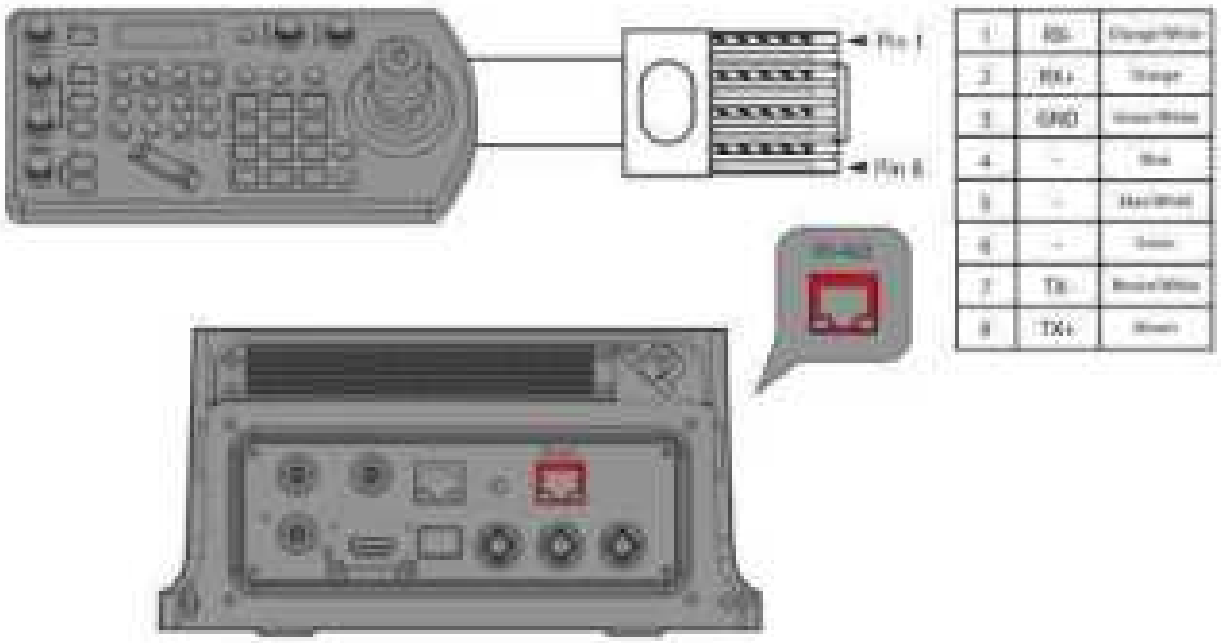
PELCO RS485 Connection



Extension cables that come with an RJ45 to RS422 Phoenix connector adapter can be utilized to establish an RS485 connection for the control device.

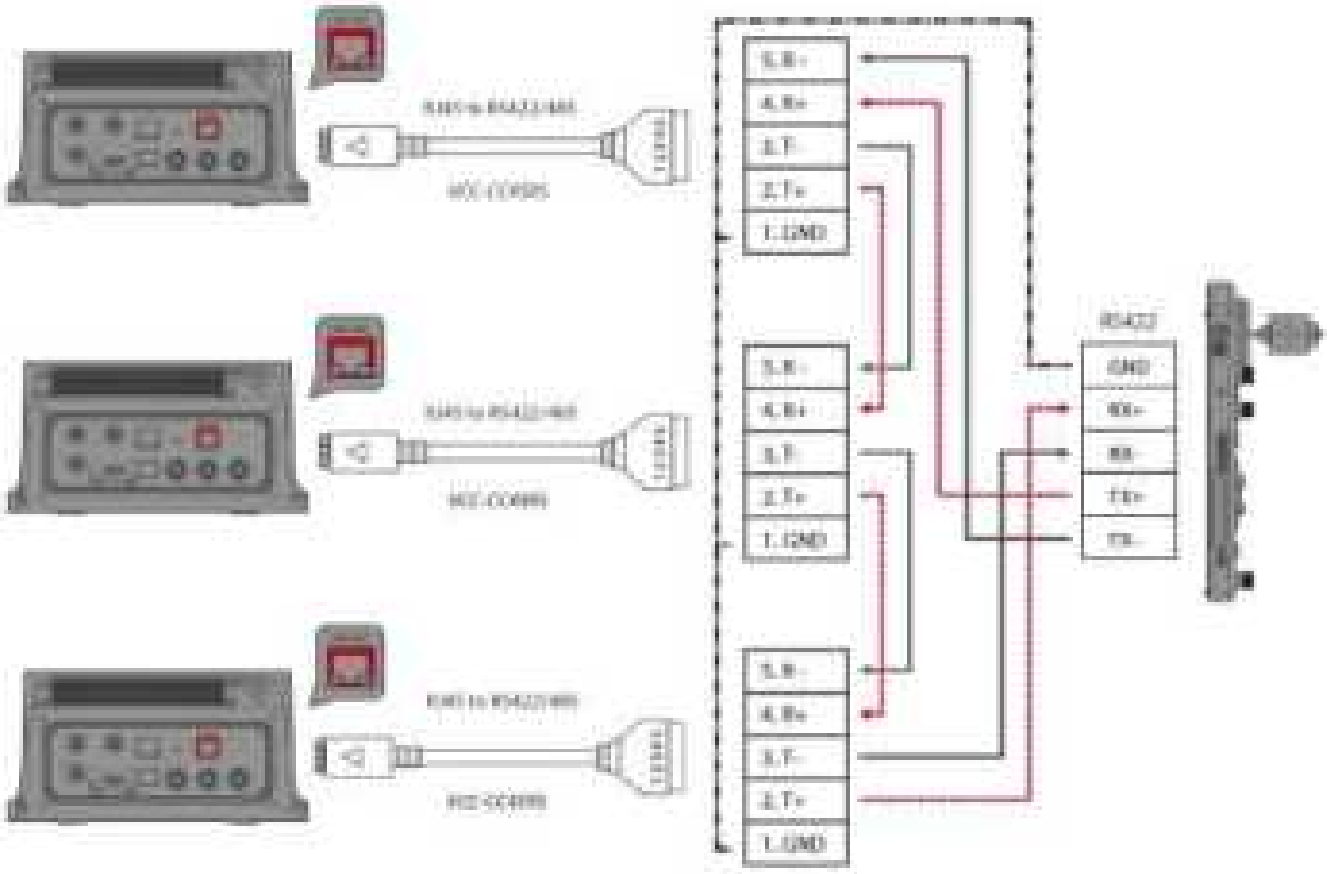
NOTE: Please refer to the KBD-1010-RW user guide for instructions on how to establish an RS422 connection with the controller.

The included extension cables, equipped with an RJ45 to RS422 Phoenix connector adapter, can be utilized to establish an RS422 connection for the control device.

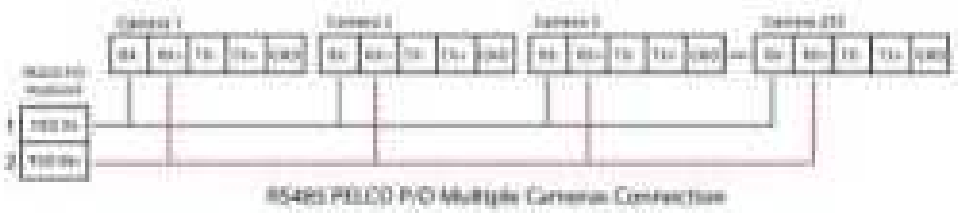


NOTE: Please refer to the KBD-1010-RNV user guide for instructions on how to establish an RS422 connection with the controller.

Alternatively, an RS485 connection can be established by directly connecting the camera and the controller using a CAT5/6 T-568B Standard Ethernet cable.



RS485 PELCO P/D Keyboard Connection



RS485 PELCO P/D Multiple Cameras Connection

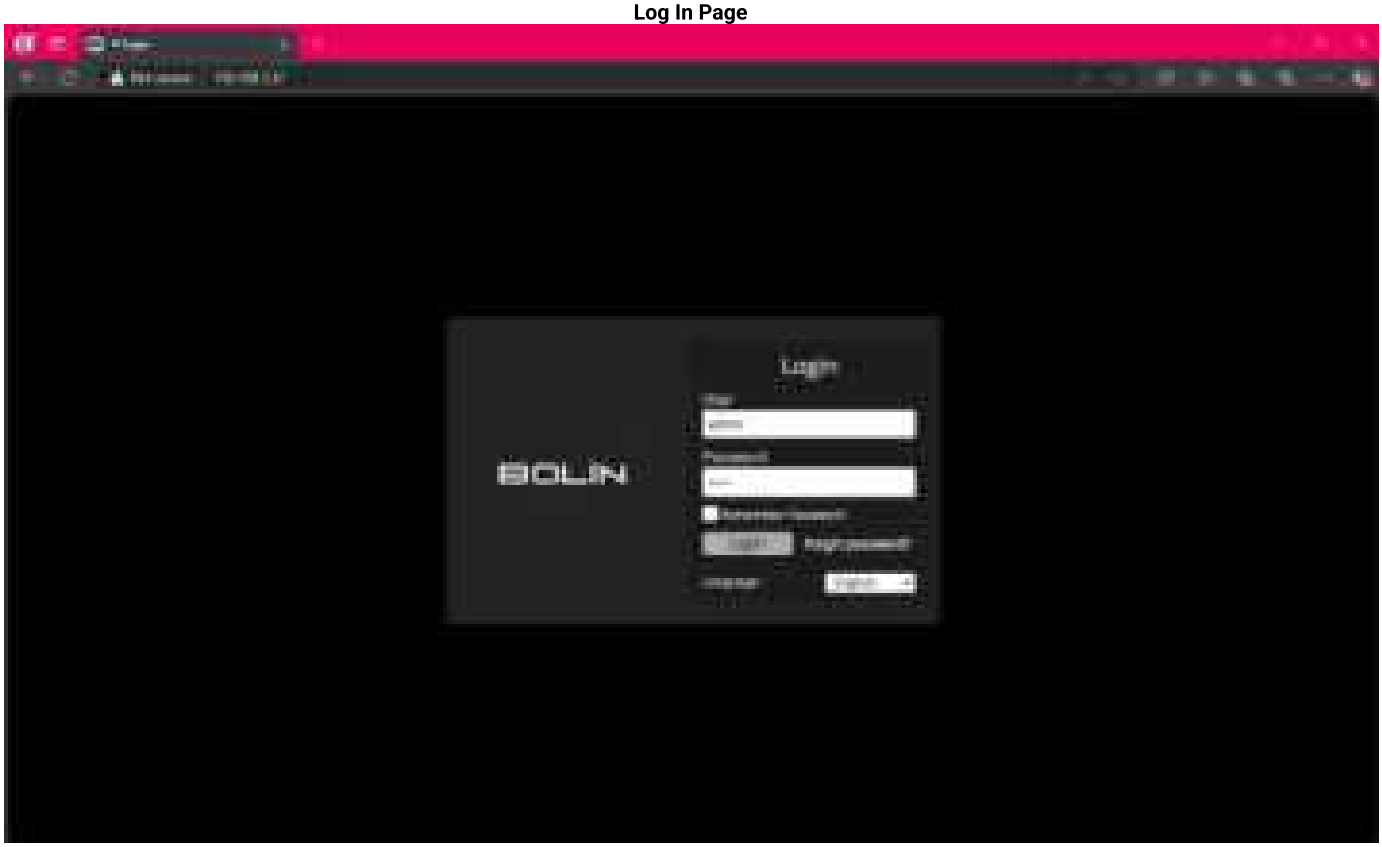
Web Interface Configuration

This camera is configured to obtain an IP address automatically via **DHCP** by default. If a DHCP server is present on the network, the camera will be assigned an IP address dynamically.

For help locating your camera on the network, use the **Bolin Discovery Tool** or any other preferred network scanning tool.

Once connected to the network, the camera can be configured and controlled through the web interface on any web browser that supports HTML5. This next section will explain the various sections of the web interface and what they can do.

Log In Page



To log in to the web interface, first, make sure that the camera is connected to the network and that your computer is on the same subnet as the camera.

1. Once the camera's IP address has been obtained, the user should enter it into the web browser on their computer.
2. The user will be prompted to enter a username and password. By default, the credentials are:
   Username: admin
3. **Password: admin**

> **NOTE:** The first time you log in to the web interface, you will be prompted to set a new password. For best security practices, enter a password that is at least 8 digits long, and contains one capital letter, one lowercase letter, one number, and one symbol.

4. Once the user enters the credentials, they should press the login button.

> **NOTE: Forgot your password?** Navigate to the "Password Reset Help" section of this user guide.

Live View

Once the user logs in to the camera, they will be taken to the Live View page. From the "Live View" page, the user will be able to:

- Displays the real-time video feed from the camera. (*NOTE: This feed will be delayed by 1–2 seconds.*)
- Users can switch between **Main Stream** (higher quality) and **Sub Stream** (lower bandwidth) using the buttons above the feed.
- Pan/Tilt/Zoom (PTZ) Control (Right Side).
- PTZ Preset Management.

1. Users can switch between **Main Stream** (higher quality) and **Sub Stream** (lower bandwidth) using the buttons above the feed.

2. Pan/Tilt/Zoom (PTZ) Control

- **Directional Buttons:** Control the camera's pan (left/right) and tilt (up/down) movements.
- **Rotation Buttons:** Rotate the camera and return it to a home position.
- **Zoom Control:** Adjusts zoom levels with "+" (increase) and "-" (decrease).
- **Focus Control:** Allows manual or automatic focus adjustments.
- **Speed Sliders:** Adjust movement speeds for pan/tilt, zoom, and focus.
- **Super Fine / Standard Mode:** Toggles between high-precision movement and standard operation.

3. The **PTZ Setting** dropdown provides options for automated camera movements and behaviors, allowing users to set predefined actions:

- **Auto Scanning:** Continuously moves the camera back and forth along a set path.
- **Preset:** Moves the camera to a predefined position.
- **Trace:** Records and replays a specific camera movement pattern.
- **Scanning:** Moves the camera between multiple points in a defined pattern.
- **Power On Action:** Determines the camera's movement behavior upon startup.
- **Cruise:** Follows a user-defined route across multiple presets.
- **Position Limitations:** Restricts the camera's movement range to prevent it from exceeding certain boundaries.

4. **Menu Button:** Opens the camera's **OSD menu**, allowing access to in-depth settings and configurations. To navigate the OSD menu, use the PTZ control arrows to move through options, press the center button to select, press the Menu button to go back or exit, and use the right arrow to adjust settings.

- **OSD Menu Options:**
  - **EXPOSURE:** Adjust brightness, shutter speed, and gain.
  - **WHITE BALANCE:** Configure color correction settings.
  - **PICTURE:** Modify contrast, sharpness, and other image properties.
  - **GAMMA:** Fine-tune gamma correction.
  - **LENS:** Control lens-related settings.
  - **PAN TILT:** Adjust pan/tilt behavior.
  - **GENLOCK:** Synchronize with external video sources.
  - **SYSTEM:** Configure network and operational settings.
  - **STATUS:** View camera diagnostics and system information.

5. Snapshot and mute/ unmute audio.

Creating and Recalling Presets

To save presets, the user should adhere to the following steps:

1. Utilize the PTZ controls of the web interface, IR controller, or a PTZ controller to adjust the camera to the position(s) they wish to save as a preset.

2. After positioning the camera, click on the ‘Create’ button. Subsequently, select the preset number under which they want to save this setting. Label the preset in the ‘Name’ field and click ‘Save’.
3. To recall a preset, select the preset number on the Web Interface and click the “Go” button.
4. A saved preset can also be deleted by selecting it and clicking on the Delete button.

In the **Preset** section of the camera's web interface, you'll find several configuration options to optimize performance for different conditions. Here’s an overview:

- **58 Night Mode (Set) / Day Mode (Call):** Activate Night Mode to enhance visibility in low-light conditions or switch to Day Mode for standard daytime operation.
- **59 Auto Day/Night (Call):** Automatically toggles between day and night modes based on ambient light levels.
- **61 Defog OFF (Set) / ON (Call):** Enables or disables the defogging feature to clear mist or fog from the lens.
- **62 Sngl. Wiper ON (Set) / OFF (Call):** Activates a single wipe to remove debris or water from the lens; can be turned off when not needed.
- **63 Heater OFF (Set) / ON (Call):** Controls the built-in heater, preventing freezing in cold environments.
- **64 Cont. Wiper ON (Set) / OFF (Call):** Engages the continuous wiper function to keep the lens clear.
- **95 OSD Menu (Call):** Opens the On-Screen Display (OSD) menu for direct camera setting adjustments.

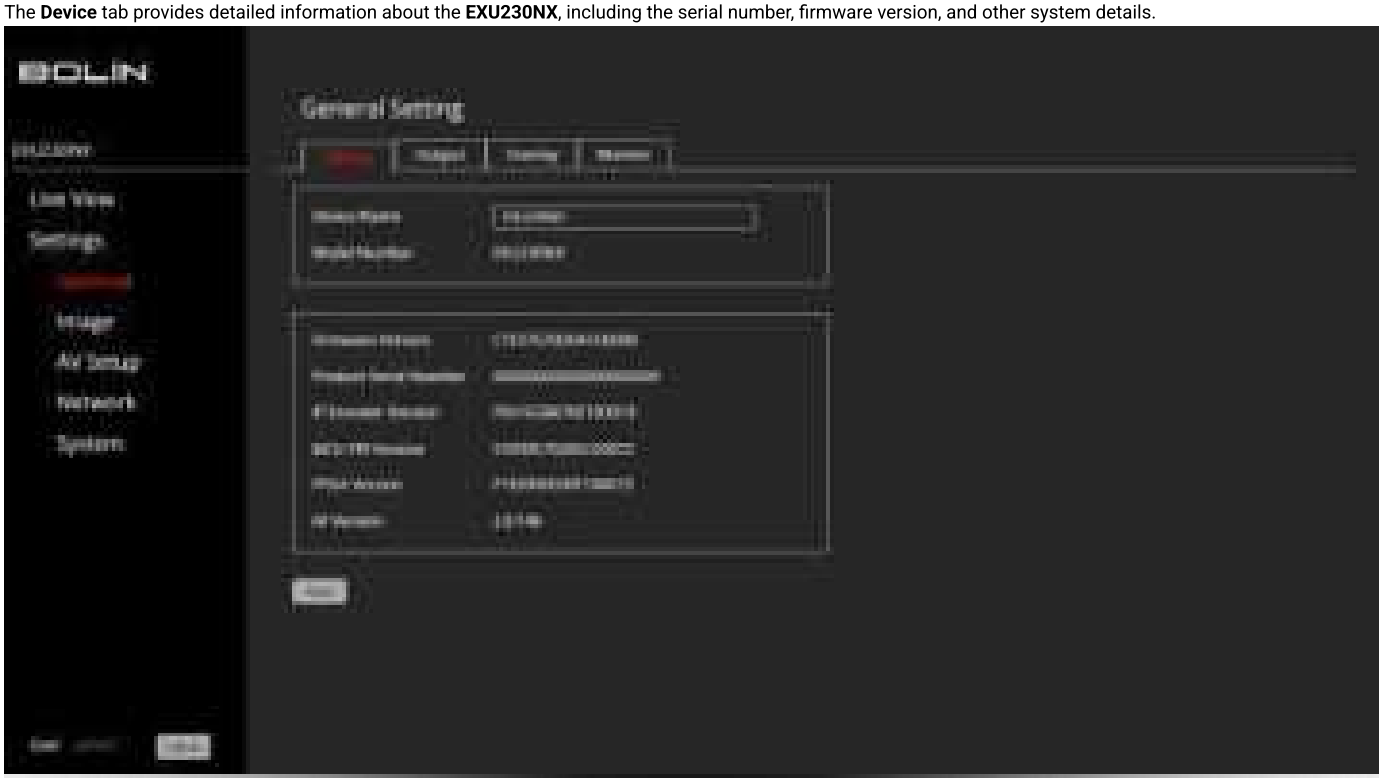
Using the 12V Output Cable on the EXU Camera

Follow these steps to enable the 12V output feature on your EXU camera:

1. **Access the Live View Page**: Open the web GUI for your EXU camera and navigate to the Live View page.
2. **Open the OSD Menu**: Click on the menu icon (located bottom right corner under the live view image) to display the On-Screen Display (OSD) menu.
3. **Select ‘System’**: Use the down arrow located on the right side of the live image to navigate through the OSD menu. Select ‘System’ by clicking the center button of the arrows.
4. **Enable 12V Output**: Continue using the down arrow to navigate to ‘DC 12V Out’. Click on the arrow pointing to the right to change its status to ‘On’.
5. **Exit the OSD Menu**: You can exit the OSD menu by clicking on the menu icon again.

General

The **Device** tab provides detailed information about the **EXU230NX**, including the serial number, firmware version, and other system details.



The **Output tab** provides a configuration interface for the camera’s **video output settings**, allowing adjustments to the resolution, color space, and bit depth for both **HDMI** and **SDI** outputs.

> **NOTE:** The "**System Format**" will set the highest resolution and frame rate for the camera. While the frame rates are the same, output resolutions are simultaneous and independent of each other. The HDMI, SDI/Optical Fiber, and IP outputs can be set to different resolutions without impacting each other. Optical Fiber output resolution is determined by the SDI resolution.

The **Overlay** function allows characters, text, or images to be displayed on the screen, enabling the integration of important information into the IP video feed.

Steps to implement an on-screen overlay:

1. Begin by adding text to the title bar, such as in '1-Title', then click on the checkbox located furthest to the left (which will turn red with a white check mark) to display it on the live feed image.
2. The box closest to the text bar is initially set in white. To alter the text color, click on this box. The user can select from white, black, yellow, red, and blue.
3. To reposition the text within the live feed image, make use of the 'position adjustment' section situated on the left of the page.
4. The '5-logo' option allows the user to upload an image. The image must be in PNG format and have dimensions less than 1920x1080 pixels. Please note that this image will only be displayed on the user's main stream.

Image Settings

The **Exposure** tab is utilized for configuring settings associated with exposure.

Exposure Mode:

- **Full Auto** mode, the Slow Shutter, S. Shutter Limit, Gain Limit, High Sensitivity, Backlight, Spotlight, AE Speed, and EX-Comp are all set automatically.
- **Manual mode**, to adjust Iris, Shutter Speed, Gain, and High Sensitivity settings manually.
- **Shutter pri**, the user has the ability to set the shutter speed. The iris and gain adjust automatically based on the subject's brightness. The exposure is also automatically adjusted using the values that the user manually sets for the electronics.
- **Iris pri**, In Iris Priority mode, the user has the flexibility to set the iris. The gain and shutter speed adjust automatically based on the brightness of the subject. The exposure is also automatically adjusted using the manually set values for the iris (IRIS), GAIN LIMIT, AE SPEED, MAX SPEED, MIN SPEED, BACK LIGHT, SPOT LIGHT, and EX-COMP.

The **White Balance** tab is utilized for choosing the mode of white balance.

1. Auto (Default)

- The camera automatically adjusts the white balance based on the scene.
- Best for general use when lighting conditions frequently change.

2. Indoor

- Optimized for artificial indoor lighting, such as fluorescent or tungsten lights.
- Reduces unnatural color casts from warm indoor lights.

3. Outdoor

- Adjusts for natural daylight conditions.
- Best for capturing outdoor scenes in sunlight.

4. OPW (One-Push White Balance)

- Requires user intervention to set white balance manually.
- Used when precise color correction is needed in a specific scene.

5. ATW (Auto Tracking White Balance)

- Continuously adjusts white balance in real-time as lighting changes.
- Ideal for environments with fluctuating lighting, such as moving from indoors to outdoors.

6. User

- Allows manual white balance adjustment according to custom preferences.
- Suitable for professional users who need specific color settings.

7. Outdoor Auto

- Similar to "Outdoor" but dynamically adapts to changing outdoor lighting.
- Best for outdoor environments with varying sunlight conditions.

8. SVL (Super Variable Lighting)

- Designed for extreme lighting conditions.
- Helps stabilize white balance in low-light or highly dynamic lighting.

9. SVL Auto

- Automatically adjusts SVL settings based on detected lighting conditions.
- Recommended for environments with high contrast lighting, such as night scenes with artificial lights.

10. SVL Outdoor Auto

- A combination of **SVL** and **Outdoor Auto**.
- Best suited for nighttime outdoor scenes, such as cityscapes with bright lights.

Lighting Condition	Recommended WB Mode
Indoor fluorescent/tungsten lighting	Indoor
Outdoor natural daylight	Outdoor
Moving between lighting conditions	ATW
Mixed indoor & outdoor lighting	SVL Auto
Outdoor night scenes with artificial lights	SVL Outdoor Auto
Custom fine-tuned color settings	User

The **Picture** tab is to configure the various image parameters of the camera.

- **Sharpness**: This setting enhances the clarity of the detail in an image.
- **2D NR (2D Noise Reduction)**: This technique reduces noise in an image by comparing it frame by frame and eliminating variations that do not consistently appear in each frame.
- **3D NR (3D Noise Reduction)**: This technique diminishes noise by analyzing differences within a single frame and between consecutive frames. This method effectively reduces noise without creating trails behind moving objects.
- **Contrast**: This setting adjusts the difference between the lightest and darkest elements in an image.
- **IR CUT Filter (Infrared (IR) Cut-Filter)**: This filter can be removed from the image path to enhance sensitivity in low-light conditions. The IR Cut-Filter will automatically activate based on the surrounding light, enabling the camera to function effectively in both day and night settings. When the automatic IR Cut-Filter mode is set to NIGHT, the image will appear in black and white.
- **Auto ICR (Infrared Cut-Filter Removal)**: This feature in cameras enhances image quality in varying lighting conditions.
- **Color Gain**: This setting allows the user to adjust the amplification of the individual color components - Red, Green, and Blue. By adjusting the gain of these individual components, the user can achieve better contrast between close shades of the same color.
- **Hue Phase**: This setting is related to the color aspect of the video signal. The hue phase controls the tint of the color in the image.
- **Chroma Suppress**: This feature reduces color noise in the image, improving the image quality.
- **Scenes**: These refer to preset configurations that optimize the camera settings for specific shooting conditions.
- **Flip**: This setting allows the user to invert the image vertically.
- **Mirror Flicker**: This refers to the flickering effect in the live feed related to the frequency of artificial lighting and the camera's shutter speed.
- **HLC Mode (Highlight Compensation)**: This mode is used to prevent overexposure in the areas of the frame that are very bright.

The **Color Matrix** tab allows for emphasizing or weakening specific color regions while maintaining the white convergence point.

The **Gamma** tab allows the user to select the basic curve type for gamma correction.

- **Gamma**: Setting Gamma in standard mode is equivalent to setting it in movie mode.
- **Straight**: This option permits the user to select a straight GAMMA curve.
- **Pattern**: This option allows the user to select a gamma curve from 512 patterns stored in the camera. The pattern can be specified using the PATTERN and PATTERN FINE settings. The PATTERN setting defines the first two digits of the pattern number, while PATTERN FINE defines the last digit.
- **Offset**: The user can select the offset of the output level of gamma curves. They can choose a value from –64 to 0 to +64.
- **VE or WDR (Visibility Enhancer or Wide Dynamic Range)**: This function in the camera adjusts according to the imaging scene. It brightens the darker areas of an image and automatically corrects brightness and contrast to display the brighter parts.
- **Brightness Level**: This feature allows the user to adjust the brightness of the camera's display.
- **Brightness COMP. (Brightness Compensation)**: This feature allows users to override exposure settings picked by the camera's light meter to darken or brighten images before they are captured.
- **COMP. Level (Compensation Level)**: This setting allows the user to adjust the camera's exposure settings to either brighten or darken the image.

The **Lens** tab is used to configure various lens parameters of the camera.

- **AF Mode**: Allows selection of the autofocus mode based on shooting conditions.
- **Spot Focus**: Enables selection of a specific area in the frame for autofocus priority.
- **Near Limit**: Sets the minimum distance for the camera's focus.
- **AF Sensitivity**: Adjusts the speed of autofocus response to scene changes.
- **Zoom Ratio OSD**: Displays the zoom ratio on the screen.
- **Digital Zoom**: Offers digital magnification of the image.
- **MF Speed**: Controls the speed of manual focus adjustments.
- **Stabilizer**: Designed to minimize camera shake and ensure smooth, clear images. This feature can be activated by selecting either the Super or Super+ options. The stabilizer is set to Super it provides an elevated level of steadiness, ensuring superior video quality even in challenging conditions. When the Stabilizer is set to Super+, it offers an even more enhanced level of stabilization, which is particularly useful in situations where there is significant camera movement, such as when shooting in a moving car or in high-wind conditions.

The **Pan Tilt** tab is used to select the desired mode for pan, tilt, and zoom operations.

- **Adaptive PT:** When enabled, the Pan Tilt speed will adapt according to the zoom range. Activating this feature allows the Pan and Tilt speed to adjust automatically to different zoom ratios. For instance, as the zoom ratio increases, the Pan/Tilt speed decreases correspondingly.
- **Pan Direction:** This setting adjusts the camera's horizontal orientation, with options for either normal or inverted left and right directions.
- **Tilt Direction:** This setting controls the camera's vertical orientation, with options to choose between normal or inverted for upward and downward movements.
- **Preset Memory:** This feature allows the PTZ camera to save specific pan, tilt, and zoom coordinates.
- **P/T Speed:** Adjust the P/T Speed value between 0 and 5 to modify the Pan/Tilt speed on the remote controller. The speed increases as the value goes from low (0) to high (5).
- **Preset Speed:** Adjust the Preset Speed value within a range of 0 to 5 to modify the speed of the preset movements. The speed increases as the value goes from low (0) to high (5).
- **Motionless Preset:** When the motionless preset is ON, the video image will not be shown during the transition to the designated preset location.
- **Reload Preset 1:** Enable this option to automatically switch to the default preset when powering on the camera.

The **Genlock** tab is used to configure generator locking, a technique for maintaining signal synchronization.

H Phase fine: is used for finely adjusting the horizontal phase during Genlock.

> **NOTE:** A sync generator must be connected before the use of Genlock.

The **System** tab is to configure the various communications parameters of the camera.

- **Pelco ID:** When utilizing RS485 (PELCO P/D) control, assign the Camera ID to the specific address you wish to control. The value for this setting can range from 1 to 255.
- **VISCA ID:** When utilizing RS422 (VISCA) control, assign the Camera ID to the specific address you wish to control. The value for the setting can range from 1 to 7.
- **IR ID:** Set the IR ID between 1 and 3, which corresponds to the camera ID number you wish to control via the remote controller.
- **IR-Receive:** When this setting is turned OFF, the camera will not receive signals from the infrared remote controller. Ensure this setting is turned ON for the camera to communicate with the infrared remote controller.
- **Comm Type:** Describes communication type.

- **Baud Rate:** The rate of data transfer, measured in bits per second.
- **Display Info:** When this setting is enabled, a message displaying the camera's configuration will appear on the screen for approximately 10 seconds each time the camera is powered on or restarted.
- **Video Parameters OSD:** Video parameters on screen display.
- **Tally Mode:** When you enable the tally mode, the camera's tally light will activate. If you've connected the camera to a Bolin keyboard controller, you can adjust the GPI I/O to Output mode in the Keyboard Settings. This allows you to control the tally directly from the keyboard.
- **Color Space:** Option to change color space from YUV 4:2:2 to RGB.
- **Factory Reset:** Resetting all the above settings to factory default.

AV Setup

From the **Streaming Server** tab, users can set up an IP stream to be sent from the camera to any destination via the network connection. This camera is capable of sending up to IP stream via RTSP, RTMP, SRT, MPEG-TS UDP, and MPEG-TS RTP.

To stream video from the camera to a destination, follow these steps:

1. Select the desired stream type, either "Main Stream" or "Sub Stream." Both streams carry the same video signal but can be configured with different codecs and resolutions under the Codec tab.
2. Enable the selected stream by toggling the button below the stream type. The stream is active when the slider appears red.
3. Click the "Edit" button corresponding to the chosen stream type. Enter the necessary stream details, such as Stream Key, URL, Stream Mode, and Max Connections. Optionally, assign a name to the stream based on its destination, title, or another identifier.
4. The Stream URL appears in red at the bottom of the RTSP and SRT stream settings. Copy and paste this link into a video viewer, ingest server, or other streaming platform to access the stream on the network.

Streaming Server & Port Number	Streaming Server Connection Strings
RTSP port: **554**	`rtsp://<IP address>:<RTSP port>/media/video<1/2>`
SRT port: **1000**	`srt://<IP address>:<SRT port>`
RTMP port: **1935**	`RTMPstreamURL/Key` ***NOTE:*** Before streaming via RTMP, log in to the video streaming platform and obtain the **RTMP stream URL and key.** Enter these details into the RTMP settings page on the camera's IP web interface to configure the stream.
UDP port: **7000**	`udp://@<IP address>:<UDP port>`
RTP port: **7004**	`rtp://@<IP address>:<RTP port>`

When configuring the streaming connection, a **username and password** can be included in the stream URL for authentication. This applies to **RTSP, SRT,** and other supported streaming protocols. The format for including credentials is as follows:

- **RTSP:**
  `rtsp://<username>:<password>@<IP address>:<RTSP port>/media/video<1/2>`
- **SRT (Caller Mode with Passphrase Authentication):**
  `srt://<IP address>:<SRT port>?passphrase=<password>`

By default, **authentication is disabled** for RTSP. However, users can enable or disable authentication under the "**Edit**" section of the RTSP settings in the camera's web interface. When enabled, the correct credentials must be included in the stream URL to establish a successful connection.

Ensure that the correct credentials are entered in the stream URL to establish a successful connection when authentication is enabled.

H.265 Streaming Requirements
To enable the **H.265** feature on the camera, the following conditions must be met:

- A **Bolin Decoder (EG40N)** must be used.
- Only **RTSP or SRT** streaming modes are supported.
- The **Main Stream** must be set to **H.265**.

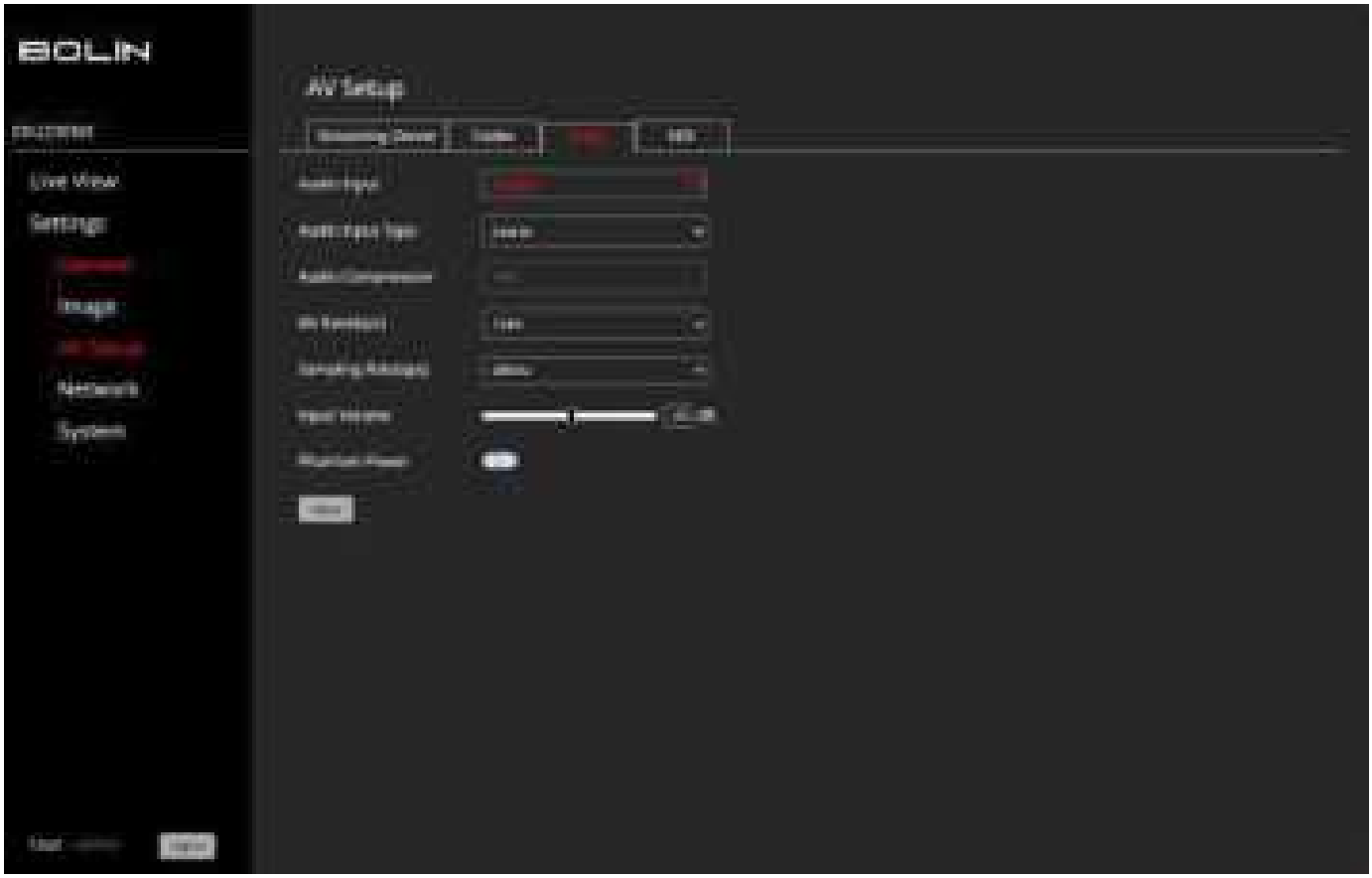
The **Codec** tab provides configuration options for encoding video streams from the camera. Settings for both the Main Stream and Sub Stream can be adjusted independently to optimize video quality, compression, and bandwidth usage.

- **Stream Type:** Defines the operating mode of the stream.
- **Video Compression:** Selects the encoding format (e.g., H.264, H.265) to balance quality and efficiency.
- **Resolution:** Determines the output video resolution. The Main Stream supports higher resolutions, while the Sub Stream is typically used for lower-bandwidth applications.
- **Frame Rate (fps):** Sets the number of frames per second, impacting video smoothness and bandwidth usage.
- **BP Frame:** Configures the type of **B-frames** and **P-frames** used in encoding for compression efficiency.
- **Bitrate Type:** Choose between **CBR (Constant Bit Rate)** for stable bandwidth usage or **VBR (Variable Bit Rate)** for adaptive quality.
- **Bit Rate (Kbps):** Defines the data rate for the selected stream. Higher values improve quality but require more bandwidth.
- **I Frame Interval:** Sets the interval at which keyframes (I-frames) are generated, affecting video recovery and compression performance.

> **NOTE:** Enabling Ultra Low Latency Mode will disable the OSD overlay and lock the resolution at 1080P, as indicated in red text above the settings.

These parameters should be configured based on network capacity, video quality requirements, and streaming conditions. Click **Apply** to save changes or **Default** to reset to factory settings.

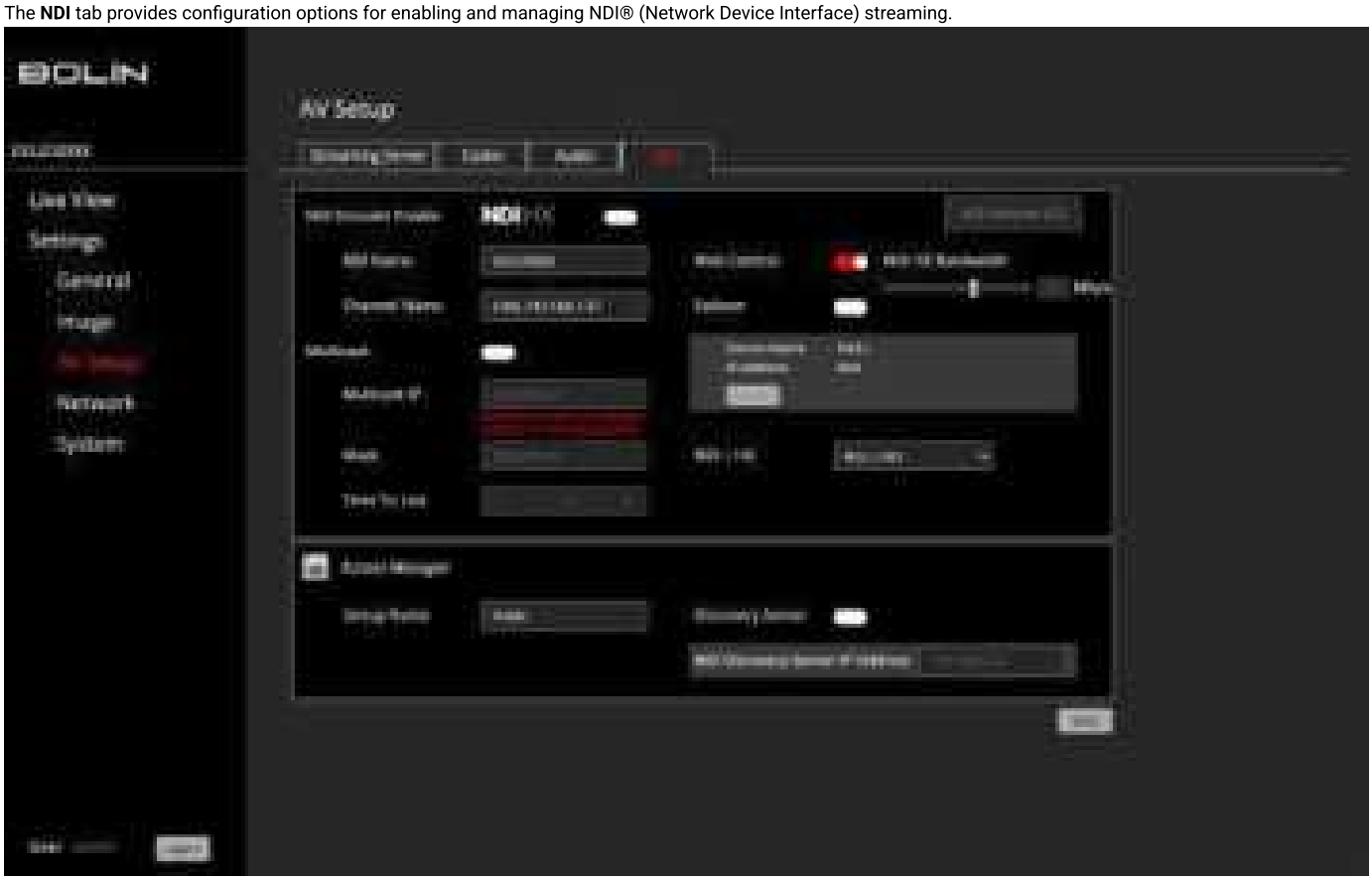
From the **Audio** tab, users can configure the audio settings on the camera to meet their requirements. The various settings and their functions are described below.



- **Audio Input:** Option to Mute audio.
- **Audio Compression:** Supports AAC, G.711a and G.711u.
- **Bit Rate(bps):** Supports 32K, 40K, 48K, 64K, 96K, and 128K.
- **Sampling Rate(sps):** Supports 16KHz, 32KHz, 44.1KHz, and 48KHz.
- **Line Out Volume:** Volume Control 0-50.
- **Phantom Power:** Phantom power is a method that provides DC electric power at 48 volts, to sensitive microphones through an XLR cable, eliminating the need for an external power supply or battery.

> NOTE: Please verify that the microphone in use specifically requires 48v of power.

The **NDI** tab provides configuration options for enabling and managing NDI® (Network Device Interface) streaming.



- **NDI Encoder Enable:** Toggle Switch: Enables or disables NDI functionality on the camera.
- **NDI Version:** Displays the current NDI version in use (e.g., NDI Version 6.0).

- **NDI Name:** The camera's unique identifier for NDI discovery on the network. Default example: EXU230NX.
- **Channel Name:** The assigned name for the NDI video stream. Example: CAM_192.168.1.37.
- **Multicast Toggle**: Enables or disables multicast streaming.
- **Multicast IP Address**: If multicast is enabled, this field must be configured with a valid multicast address (range 224.0.3.1 - 239.255.255.254).
- **Mask**: The subnet mask for the multicast stream (default: 255.255.0.0).
- **Time To Live (TTL)**: Defines how many network hops the multicast stream can take before expiring.
- **Web Control Toggle Switch:** Enables or disables web-based control for NDI HX.
  NDI HX Bandwidth Slider: Adjusts the bandwidth for NDI HX streaming, allowing you to set the desired Mbps value (default: 62 Mbps).
- **Failover Mode Toggle Switch:** When enabled, provides a backup NDI source in case of connection issues.
- **Source Name & IP Address**: Displays current source name and IP address. If no source is assigned, it will show as NULL / N/A.
- **NDI| HX Format Selection Dropdown Menu**: Allows switching between NDI | HX2 and NDI | HX3 for different streaming protocols.
- **Group Name**: Defines the NDI access group (default: Public).
- **Discovery Server Toggle**: Enables or disables the use of an NDI Discovery Server.
- **NDI Discovery Server IP Address**: If a discovery server is enabled, this field must be configured with the appropriate IP address.
- Click "**Apply**" to save and activate changes.

NOTE:
- Ensure your camera and NDI devices are on the same network subnet.
- When using Multicast, confirm network switches support multicast routing.
- Adjust NDI HX Bandwidth based on network capacity to optimize streaming performance.
- NDI Discovery Server is useful for managing multiple NDI sources in large network environments.

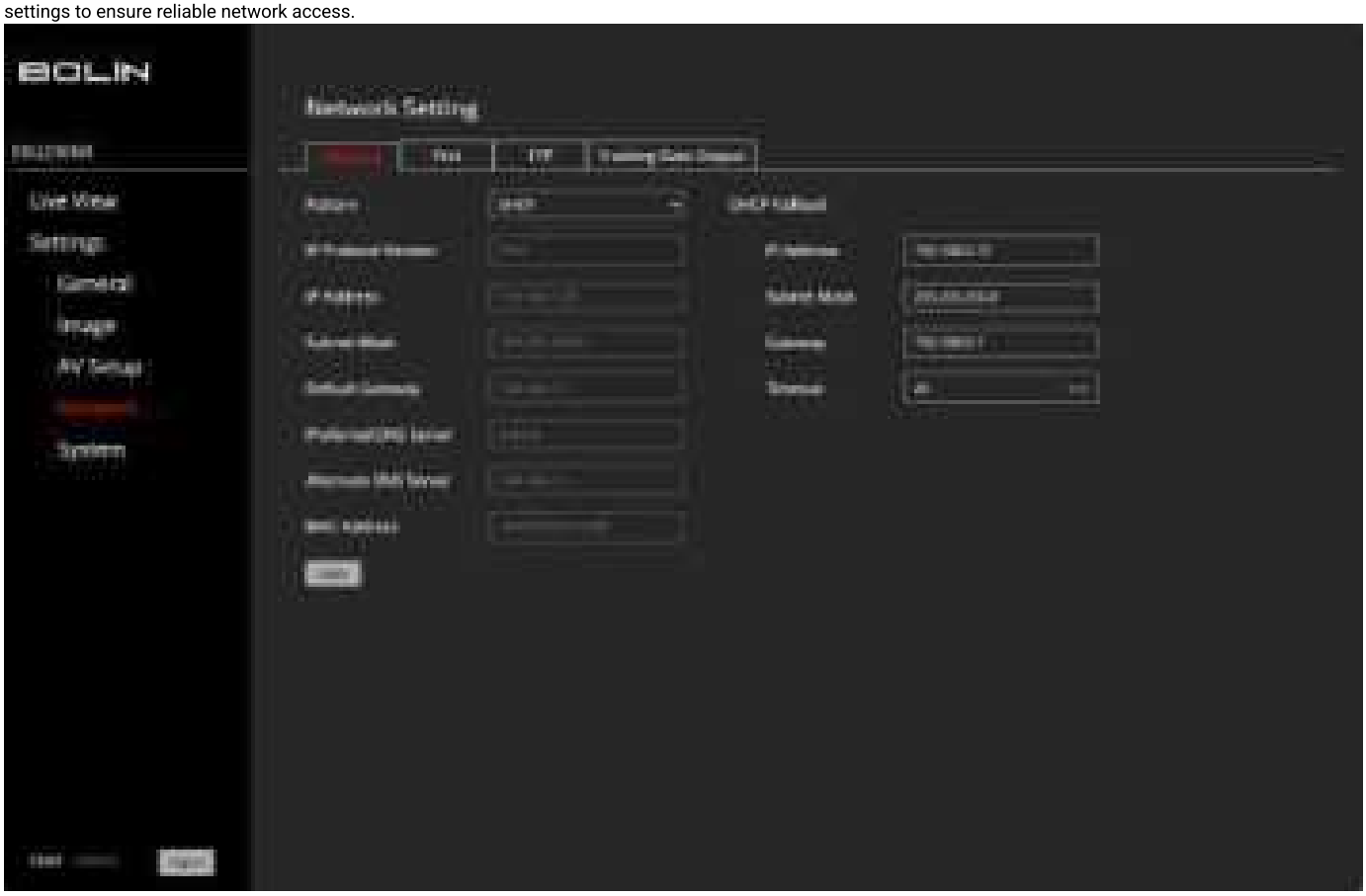
IP Resolutions
NDI OFF Mode: RTMP/RTSP/SRT/ ONVIF
1080P60、1080P59.94、1080P50、1080P30、1080P29.97、1080P25、1080P24、1080P23.98、720P60、720P59.94、720P50

HX2 Mode:
1080P60、1080P59.94、1080P50、1080P30、1080P29.97、1080P25、1080P24、1080P23.98、720P60、720P59.94、720P50

HX3 Mode:
1080P50、1080P60

Network Settings

The **Network** tab provides settings for configuring the camera's IP network connectivity. It allows the selection of DHCP or Static IP addressing, along with fallback settings to ensure reliable network access.



- **Pattern:** Select between **DHCP** (automatically assigns an IP address from the network) or **Static IP** (manually configured).
- **IP Protocol Version:** Displays the IP version in use (IPv4).
- **IP Address:** Shows the current assigned IP address of the camera. When DHCP is enabled, this is automatically assigned by the network.
- **Subnet Mask:** Defines the network segment the camera is part of.
- **Default Gateway:** Specifies the gateway used for external network communication.
- **Preferred DNS Server / Alternate DNS Server:** Configures the DNS servers for resolving domain names.

- **MAC Address:** Displays the camera's unique hardware address.

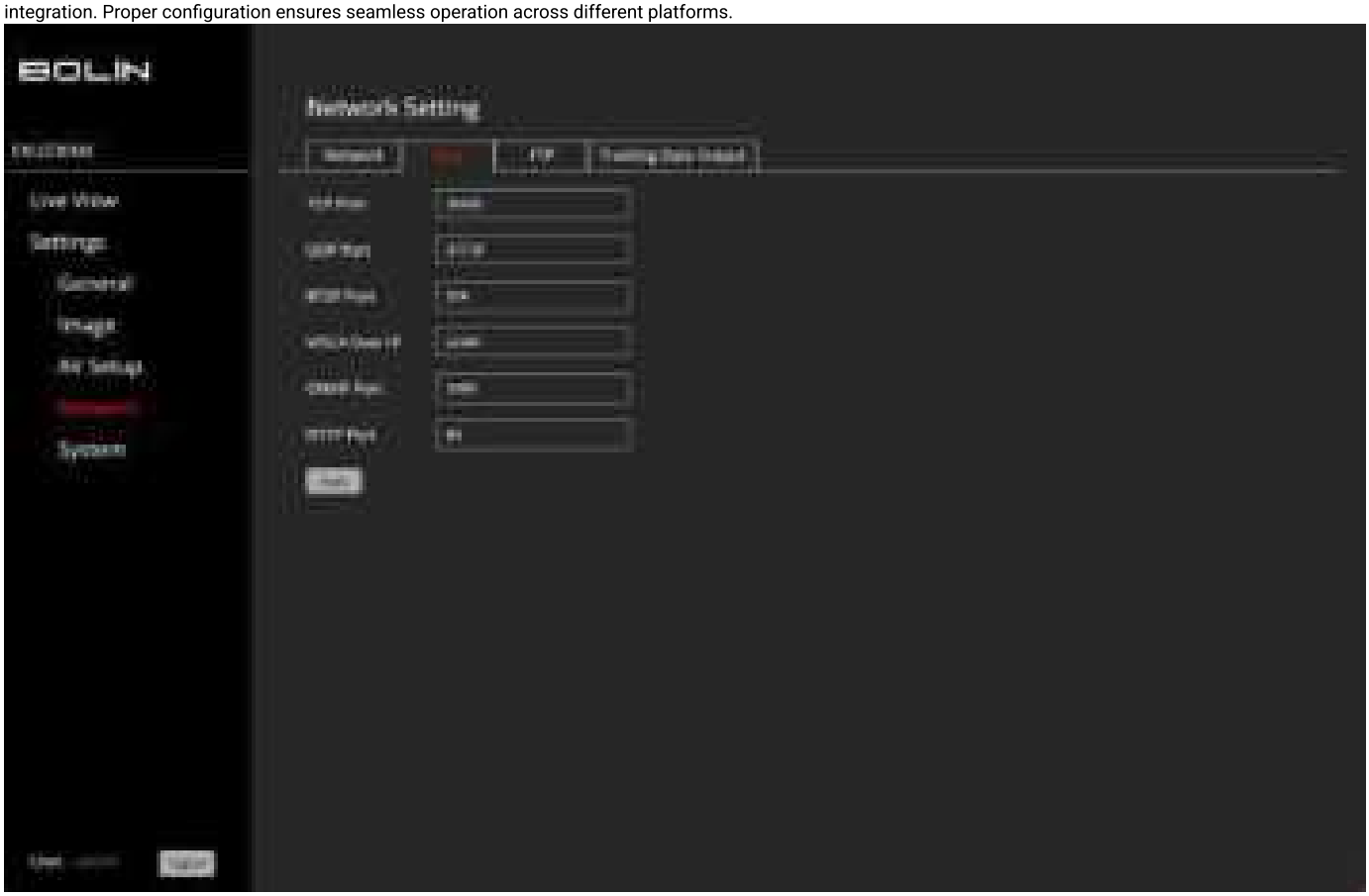
DHCP Fallback Settings:
When DHCP is selected, the camera will attempt to obtain an IP address dynamically. If unsuccessful within the specified **timeout period**, the camera will revert to the

DHCP Fallback settings, using:

- **Fallback IP Address:** Default IP address used when DHCP fails.
- **Subnet Mask & Gateway:** Defines the fallback network settings.
- **Timeout:** Duration (in seconds) before switching to the fallback IP.

> **NOTE:** Click **Apply** to save any changes. Configuring network settings correctly ensures stable connectivity and remote access to the camera.

The **Port** tab manages network communication ports for various camera functions. These ports facilitate streaming, remote control, and third-party software integration. Proper configuration ensures seamless operation across different platforms.

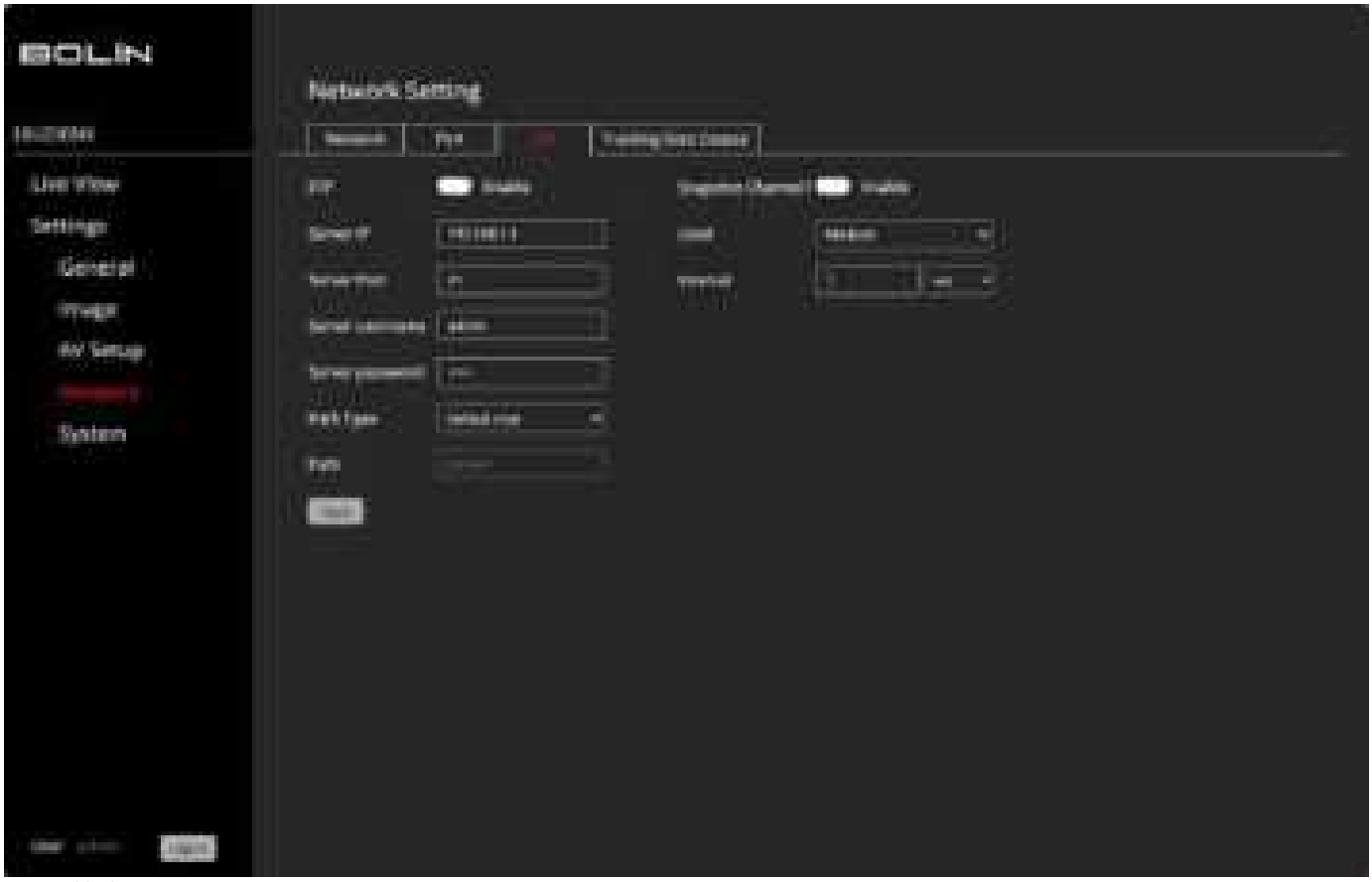


- **TCP Port:** Used for general network communication and camera control.
- **UDP Port:** Handles UDP-based data transmission, commonly used for real-time streaming with low latency.
- **RTSP Port:** Specifies the **RTSP (Real-Time Streaming Protocol)** port, which enables video streaming to compatible media players and software. Default is **554**.
- **VISCA Over IP Port:** Defines the port for **VISCA over IP**, allowing remote camera control via the VISCA protocol. Default is **52381**.
- **ONVIF Port:** Sets the port for **ONVIF (Open Network Video Interface Forum)** communication, enabling integration with ONVIF-compliant devices and software. Default is **2000**.
- **HTTP Port:** Determines the port used for web-based access to the camera's interface. Default is **80**.

> **IMPORTANT NOTE:** It is **strongly recommended not to change these port settings** on the camera. Instead, configure the receiving device, software, or control system to match these predefined ports. Modifying these values may disrupt streaming, remote control, or network connectivity.

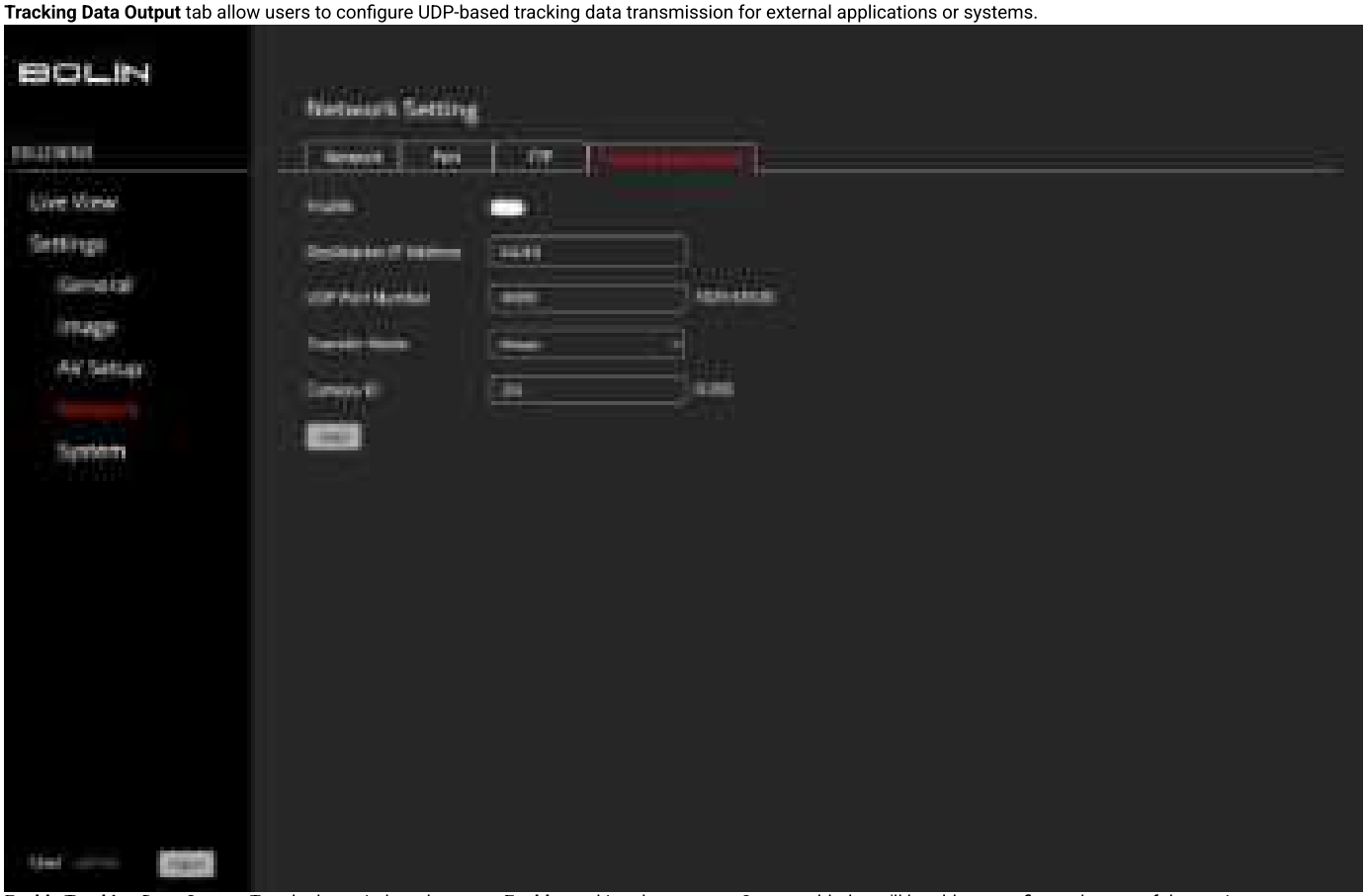
Click "**Apply**" to save any changes.

FTP tab of a device's configuration interface. The settings allow users to enable or disable FTP functionality and configure an FTP server for storing snapshots or other data.



1. Enable the FTP server.
2. Enter the IP address of the FTP server into the ‘Server IP’ field.
3. Enter the FTP server’s port number into the ‘Server Port’ field. This should match the port configured on the FTP server, typically port 21.
4. Enter the FTP server’s username and password into the ‘Server Username’ and ‘Server Password’ fields, respectively. These credentials should match those configured on the FTP server.
5. Choose the ‘Path Type’ and ‘Path’ where you want the snapshot to be saved on the FTP server.

Tracking Data Output tab allow users to configure UDP-based tracking data transmission for external applications or systems.

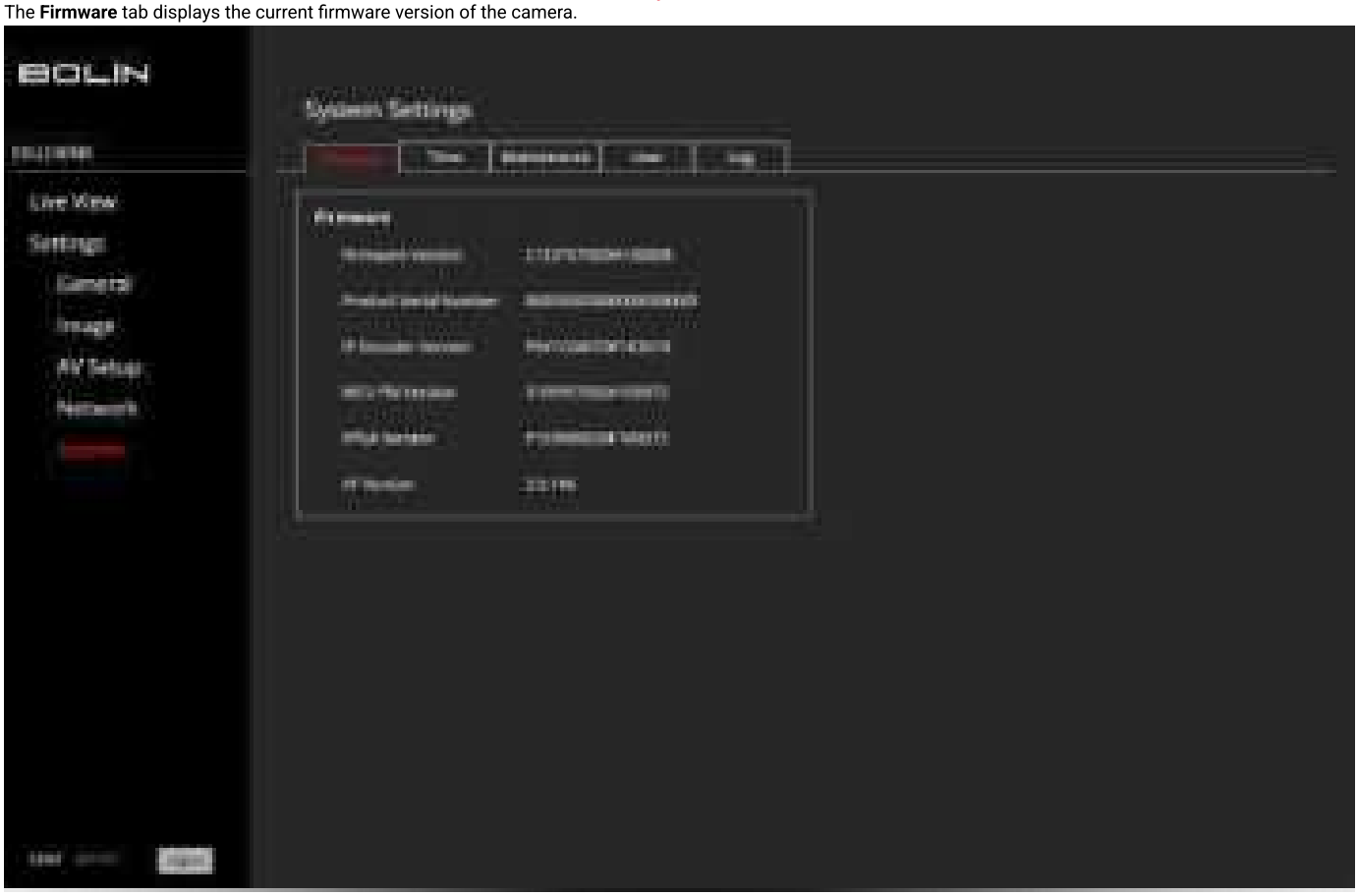


Enable Tracking Data Output: Toggle the switch at the top to **Enable** tracking data output. Once enabled, you'll be able to configure the rest of the settings.

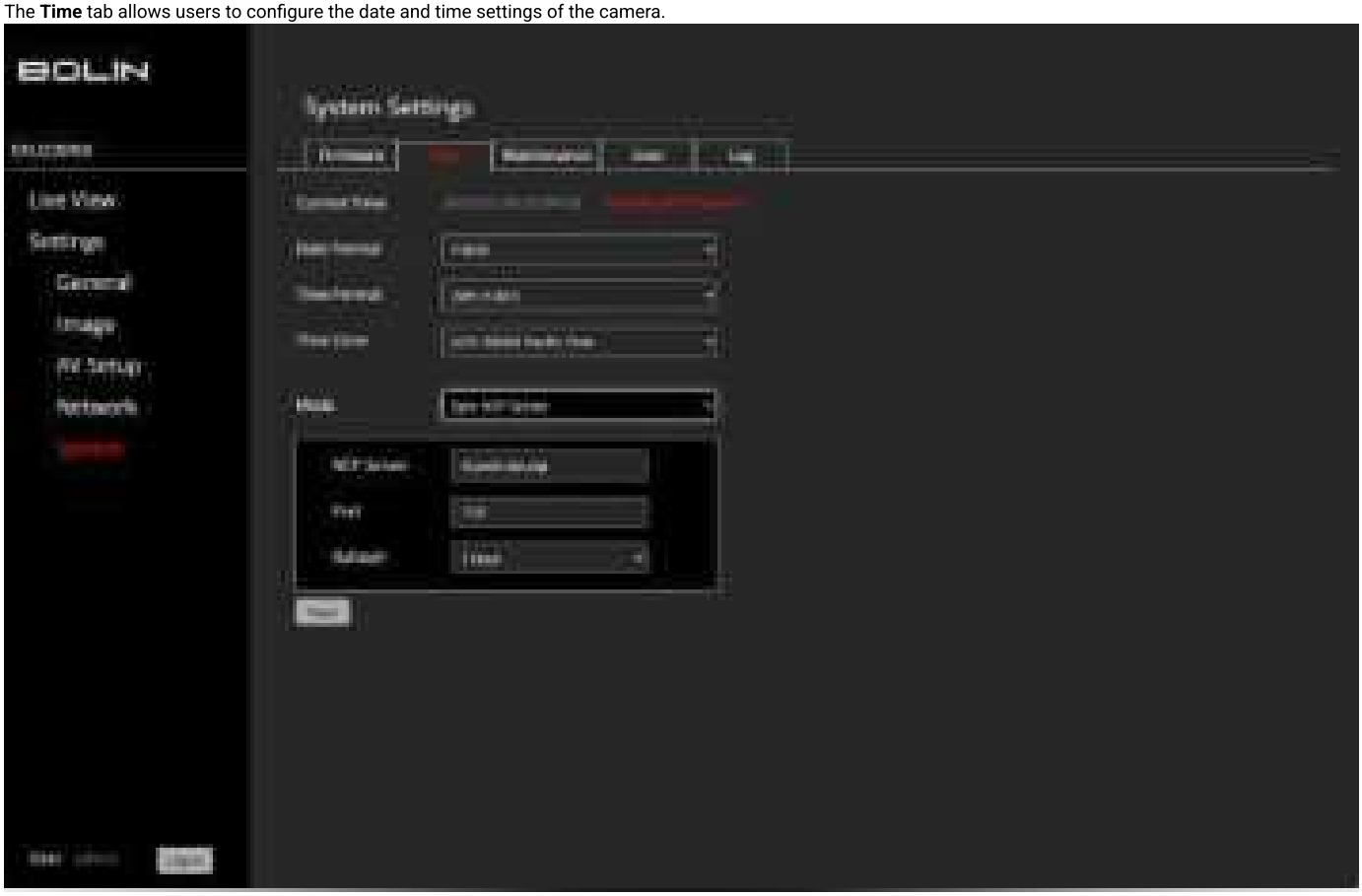
- **Destination IP Address**: Input the IP address where the tracking data will be sent.
- **Set UDP Port Number**: Input the **UDP Port Number** through which the data will be transmitted. Valid range: **1025 - 65535**
- **Transfer Mode**: Select how often the tracking data should be sent.
- **Camera ID**: To identify the camera when sending tracking data. Values between **0 - 255**, and the default is **255**.

System

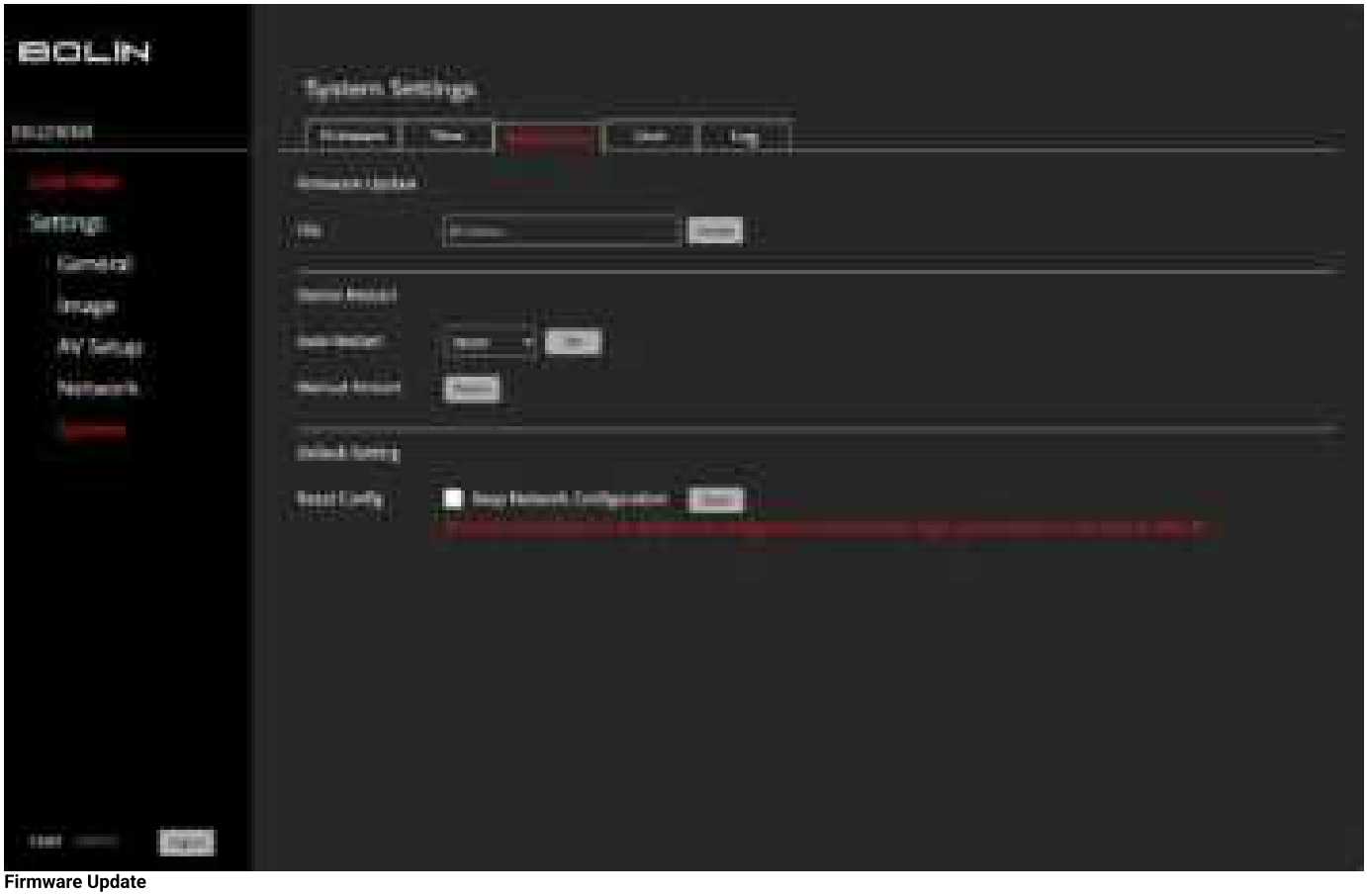
The **Firmware** tab displays the current firmware version of the camera.



The **Time** tab allows users to configure the date and time settings of the camera.



The **Maintenance** tab provides essential tools for firmware updates, device restarts, and restoring default settings. This section ensures the smooth operation and recovery of the device when needed.



Firmware Update

The **Firmware Update** section allows users to update the device's firmware to the latest version.

1. **File Selection** – Click the "Browse" button to locate and select the firmware update file.
2. **Update** – After selecting the firmware file, click "Update" to initiate the update process.
3. **Important:** Ensure the device remains powered on during the update to prevent system errors.

Device Restart

This section allows for automatic or manual restarts of the device.

1. **Auto Restart** – Users can set an automatic restart schedule using the dropdown menu.
   - Options: Never, Daily, Weekly, or Monthly.
   - Click "Set" to confirm the selection.
2. **Manual Restart** – Click "Restart" to immediately reboot the device.

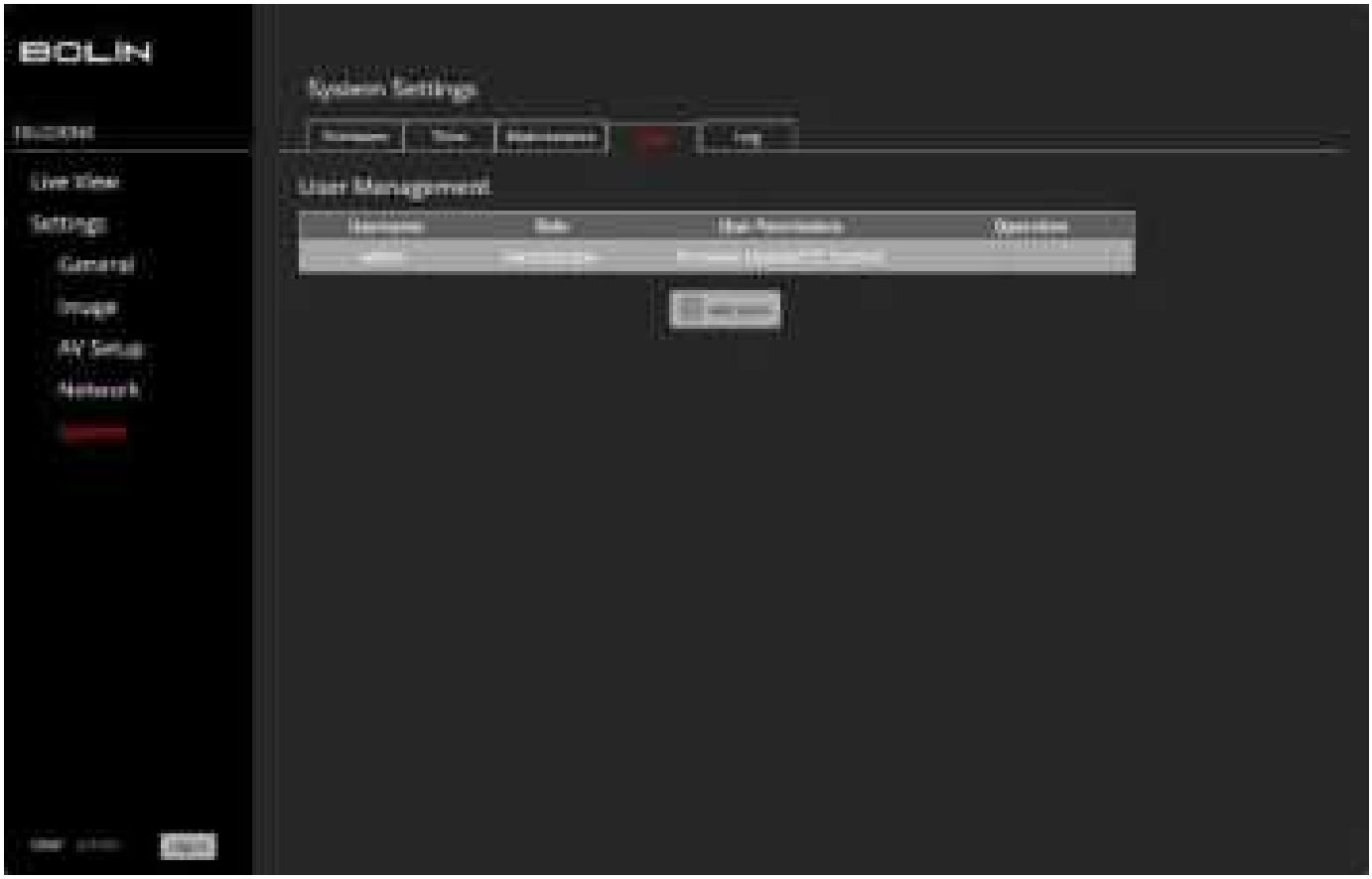
Default Setting

This section allows users to reset the device configuration.

1. **Keep Network Configuration** – Checking this box ensures that network settings, the device name, and login credentials remain unchanged when resetting.
2. **Reset Config** – Click "Reset" to restore the device to its default settings while maintaining the selected configuration options.

> **NOTE:** If resetting while keeping network configuration, the device name and login password will not be restored to factory defaults.

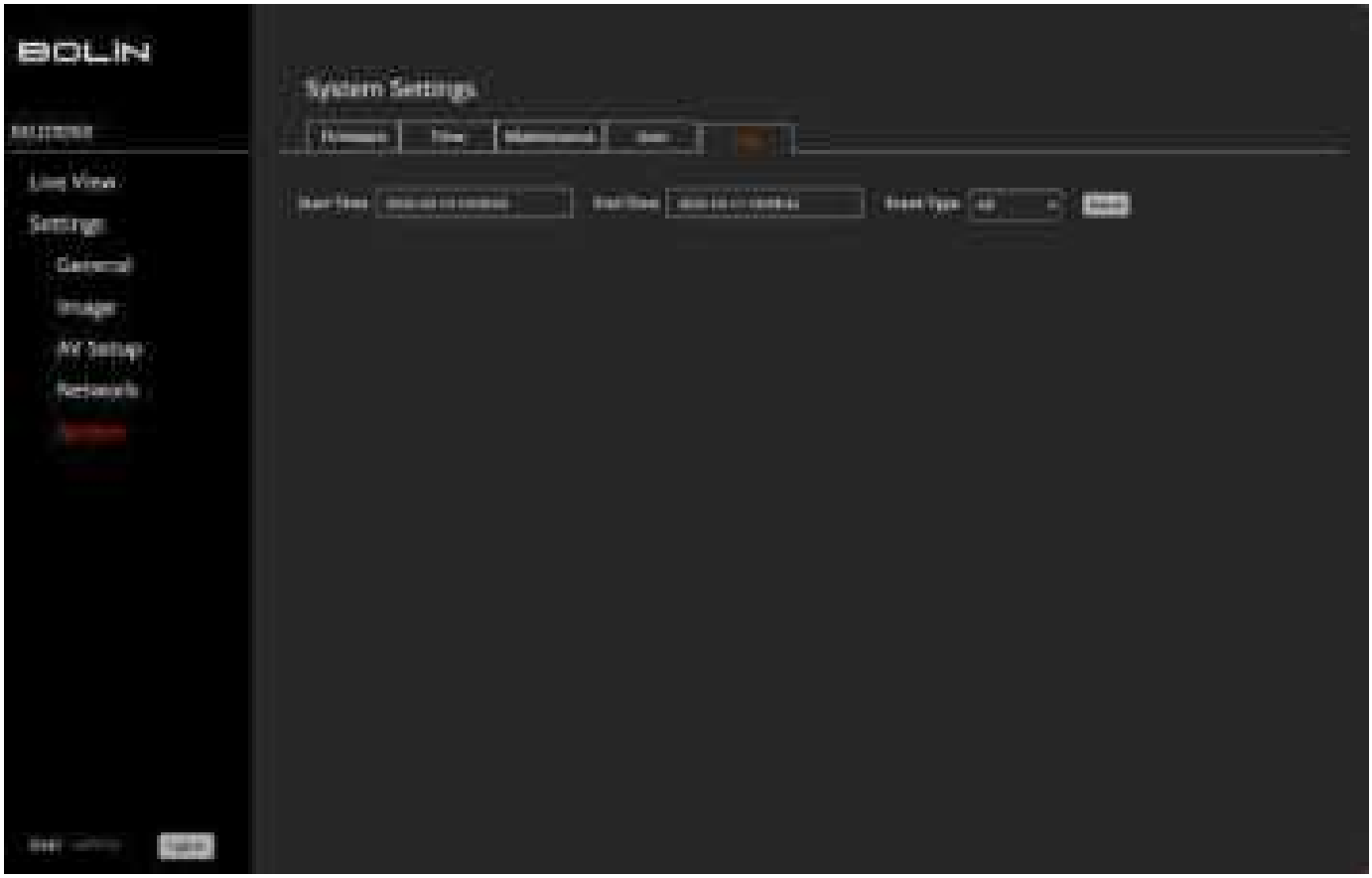
The **User** tab provides controls for managing user access and permissions for the device. This section allows administrators to add and manage users, ensuring secure and appropriate access to system functions.



Adding a User

- **Username** – Enter a unique username for the new user.
- **Role** – Select a role from the dropdown menu:
  - **Administrator** – Full access to all settings and user management.
  - **Operator** – Limited access, typically for device operation and control.
- **Password** – Set a secure password for the user. The password must be:
  - 8-15 characters in length.
  - Contain a mix of numbers, letters, and special characters.
- **Confirm Password** – Re-enter the password to ensure accuracy.
- **Save**

The **Log** tab provides users with access to recorded system events, allowing for monitoring and troubleshooting of device activity over a selected time period.



Bolin Discovery Tool

The Bolin Discovery Tool is a Windows-based utility designed to detect and manage Bolin cameras on a network. It allows users to quickly locate their Bolin devices, view essential details such as IP address, MAC address, model name, serial number, and firmware version, and access the camera's web interface. Additionally, users can reset a camera's password directly from the tool.

Right-clicking on the highlighted camera allows you to access the camera's web interface or reset the camera's password.

Password Reset Help

If the password to the camera has been lost or forgotten, follow the steps below to reset it:

1. **Download the Bolin Discovery Tool:**
   - Visit the **Download Center**.
   - Search for the camera model SKU number.
   - Download the **Bolin Discovery Tool** to the computer.
2. **Run the Bolin Discovery Tool:**

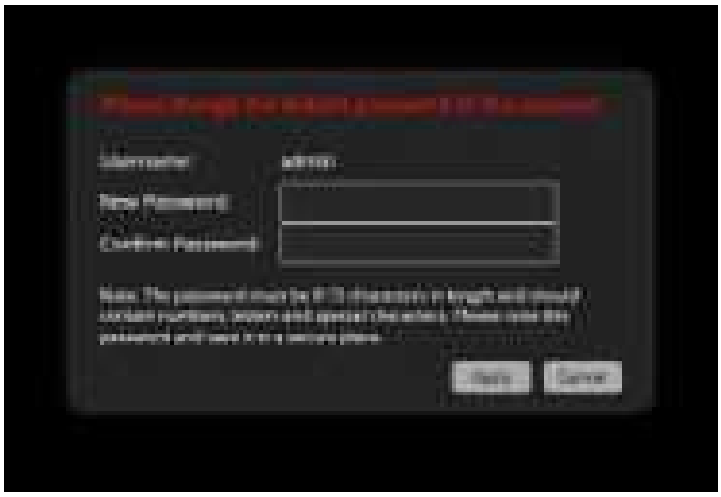
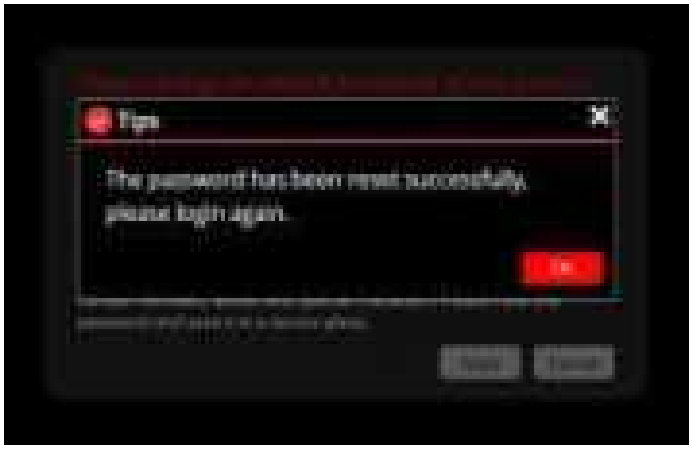
- After downloading, open the Bolin Discovery Tool.
- The tool will automatically detect any Bolin cameras connected to the network.

3. **Select the Camera:**
   - In the tool, locate and **highlight** the camera.
   - **Right-click** on the camera and select "**Forgot Password**" from the context menu.
   - 

4. **Generate Device Serial Number:**
   - A new window will appear with device information.
   - Click on "**Generate Device Serial Number**".
   - This will generate a unique code.
   - 

5. **Contact Support:**
   - Copy the generated code and email it to the technical support team at **support@bolintechnology.com**. For customers in Europe, please send it to **support-europe@bolintechnology.com**.
   - The support team will reply with a **new password** for the camera.

6. **Login and Set a New Password:**
   - Access the camera's web login page.
   - Enter the **new password** provided by the support team.
   - A prompt will appear to **create a new password**.

- 
- 
- 

Resources

	Datasheet	
EXU230NX Specs